Understanding the travel behaviour of immigrants and how and why this changes over time: A case study of Polish immigrants in Bristol and Weston-super-Mare, UK

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Abstract

Immigrant travel behaviour is an understudied field. The small amount of existing research suggests that immigrants culturally assimilate to car-driving to conform to local travel behaviour norms. Examination of this concept with Polish immigrants in Bristol and Weston-super-Mare revealed that cultural conformity is not a driving factor in immigrants post-immigration transition towards car-driving. Instead this occurs as a consequence of the interaction of life-events, life-stage, and structural-context. Using two-stage semi-structured life-course interviews, aided by visual prompts for memory recall and analysis, the travel behaviour journeys of 26-Polish immigrants in Bristol and WSM are examined. Throughout the examination, the methodological value of visual life-history methodologies is explored, concluding that visual analytical methods increase research transparency and aid cross-case comparison.

Key words:

Immigration; travel behaviour; sustainable travel; behaviour change; assimilation; motility; cultural norms; life-course; life-history research; visual methodologies; visual analysis; life-history timelines; life-history calendars.

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1. Introduction

Research Outline

When immigrants arrive in a new country, they bring with them behaviours, habits, preferences and norms of travel formed in their country of origin, which may differ from the dominant travel mode in their new country of residence. A small number of studies examining immigrants' travel behaviours suggest that over time, immigrants assimilate to the travel norms of their new country and areas of residence. They also suggest that despite such assimilation, many immigrants retain a higher tendency to engage with sustainable travel behaviours than locally born nationals. However, very few studies have focused on immigrants' daily travel behaviour, especially in the UK. Examining and gaining an understanding of immigrants' travel behaviours is important to inform policy-makers' targeting of transport policy and infrastructure to address rising immigration to the UK. Increasing understanding of immigrants' tendency toward more sustainable travel modes could allow for further exploration of the role of recently arrived immigrants as agents of change within their new communities. Furthermore, deeper exploration of the co-occurring life transitions that immigrants encounter, and the impact this has on travel behaviour, could improve understanding of how complex behaviours develop over the life-course.

Research Aim and Research Questions

The aim of the research is to investigate whether, how and why immigrants' travel behaviours change over time. Specifically, this is assessed within a sample of Polish immigrants in Bristol and Weston-super-Mare in the UK – urban and suburban (urban-feeder) locations respectively. The aim is to examine both why immigrants travel as they do, and why immigrants' travel behaviours change. Additionally, the value of life-history interviews and life-history timelines is examined to assess alternative, visual approaches to mobility biography research.

Analysis of the literature on both transport and migration led to the development of a primary question and four overarching research sub-questions:

1. What are the travel behaviours of Polish immigrants living in Bristol and Weston-super-Mare, UK?

2. How and why do the travel behaviours of immigrants change over time?

3. How do Polish immigrants' travel behaviours in Bristol and Weston-super-Mare compare to immigrant travel behaviours reported in other research?

4. How can the design of life-history interviews and the visual depiction of life-course research be improved to better capture change and stability in complex behaviours across social and temporal contexts, thereby better facilitating case comparisons?

Contribution to Knowledge

This study's main contribution to knowledge is the collection of empirical data that facilitates the assessment of *how* the travel behaviours of Polish immigrants to the UK evolve over time, as well as the determination of what factors and processes influence their travel behaviours while they are living in the UK. This advances beyond survey-based research by examining the motivations immigrants attribute to their behaviours, as well as by situating these explanations in a temporal narrative to examine corresponding influences throughout their life-course. This research will contribute new knowledge to the field of immigrant travel behaviour at both the conceptual and methodological levels. The study examines existing concepts, such as migrant transport assimilation, while developing an enhanced methodological approach for the visual depiction and analysis of life histories and changes in immigrants' travel behaviour. This approach differs from prior life-history approaches to travel-behaviour research in that it builds a holistic narrative of immigrants' lived experiences, thereby extending analysis beyond factors directly connected to travel behaviours (e.g. residential location).

The approach developed for this study allows for the collection, analysis and examination of events occurring throughout participants' life-courses, from their earliest memories in their countries of origin to their present-day travel behaviours. This approach generates opportunities to examine a range of theoretical approaches to travel behaviour in an integrated way: It first provides details of early childhood travel socialisation in countries of origin; second, the study proceeds through the transport assimilation (or acculturation) process in destination countries while considering immigrants' motility and use of social capital; third and finally, it examines the life events, mobility milestones, habits and structures that affect immigrants' day-to-day travel behaviours in destination countries.

Knowledge Gap

The research will fill the existing knowledge gap around the underlying processes that explain the travel behaviour of immigrants, examining how and why their travel behaviours change in destination countries. Extant research consists of a small number of studies considering immigrant travel behaviour from a quantitative perspective, mostly descriptive studies comparing self-reported travel behaviour from large-scale travel surveys of immigrants and non-immigrants (see Smart, 2015; Tsang and Rohr, 2011). These studies indicate that immigrants' travel behaviours transform over time during residence in destination countries, assimilating towards dominant non-immigrant travel behaviours.

However, a small body of research suggests that despite cultural (and behavioural) assimilation, immigrants retain an underlying tendency towards more sustainable travel behaviours when compared against data for non-immigrants.

The study provides qualitative insights in terms of explaining the interaction of life factors which influence immigrants' travel behaviours in destination countries, examining *whether*, *how* and *why* behaviours change and locating these influences temporally to assess corresponding influences. By revealing the motivations that immigrants attribute to sustainable travel tendencies, it is possible to assess the applicability of the assumption that immigrants' favour more sustainable travel behaviour. In doing so the study differentiates between urban and suburban immigrants where extant research with nationals in the UK indicates variation in travel behaviours (Beige and Axhausen, 2012; Beckman and Goulias, 2008). Insights will be gained into the underlying motivations for car ownership, the transfer of travel behaviours between home and destination countries, and the role of factors (hitherto not explored fully) such as length of residence, life-stage, socio-cultural capital interactions, and structural inhibitors such as urban form and social structure. Examining these events and milestones facilitates greater understanding of the roles these phenomena play in changing travel behaviours. This examination also reveals unique complexities about the migration process and the influence of multiple, co-occurring life events – new country, new residential location, new employment, and different access to transportation – on travel behaviour (see Chapter 2, section 2).

Conceptual Contribution

This research expands existing conceptual approaches to understanding travel behaviour and behaviour change, which are examined in depth in Chapter 3. The research is embedded in a life-course approach as defined by Giele and Elder examining the sum total of a persons lived experience over time (Giele and Elder, 1998:22). It expands Lanzendorf et al.'s (2003) conceptualisation of the life-course by incorporating life domains not ordinarily integrated into transport research. However, it also incorporates transport-specific concepts such as *life events*, and *mobility milestones* raised by Rau and Manton (2016:53) to organise analysis. Rather than treating travel behaviour in isolation, the research is informed by and builds on Scheiner's (2018) conceptualisation which highlights the importance of a holistic approach to life-course research. This incorporates wider social context, social networks, life and mobility biographies, individual-level considerations, and socialisation (Scheiner, 2018). This approach moves beyond existing investigations into migrant transport assimilation in the UK, which are mostly quantitative. Studies have focused on the impact and cost of immigrants on the transport system, problematically drawing on analysis of secondary data sets rather than primary qualitative data collection (MigrationWatch, 2011; Tsang and Rohr, 2011). These quantitative

approaches have been unable to probe at the underlying motives for travel behaviours, nor the wider web of influences that affect travel behaviours. Examining immigrants' travel behaviour through qualitative interviews using the life-course approach is more effective at eliciting such detail within individual narratives. This will advance Scheiner's (2018) conceptualisation of travel behaviour over the life-course by examining a relatively understudied social group in the travel behaviour field, considering behavioural change across structural contexts.

Methodological Contribution

Travel behaviour and migration are two complex processes with myriad influences affecting behaviour change. Existing literature on the life-course approach, particularly life histories based on qualitative interviews, highlights its suitability for analysis of complex behaviours. Recent studies have utilised visual depiction of specific life domains to illustrate changes in travel behaviour throughout the life-course. This study enhances visual analysis of life-histories by removing the separation of life domains, embracing the complexity of interactions among domains, and utilising the analytical as well as descriptive value of data collected through life-course interviews. Life-history timelines (LHTs) utilise standardised symbols and temporal measures to visually highlight key life events, mobility milestones and mode choices, facilitating easier cross-case analysis of early-life behaviours, current behaviours, and events of influence (see Figure 1). Utilising visual LHTs enhances the research apparatus available within life-course research by developing a method to integrate analysis of complex relationships, embracing the often under-utilised visual narrative provided by traditional life-history calendars.

Value of Knowledge Contribution

Given the very limited number of studies about immigrants' travel behaviours in the UK, the new insights from the primary data collection and analysis will be a valuable contribution. Increasing understanding of Polish immigrants' travel behaviours is particularly relevant for Bristol policy-makers because Polish immigrants constitute the largest immigrant population in the area (ONS, 2017b; Bristol City Council, 2017). The research can be used to better target policy and resources for immigrant integration and access to infrastructure. In the context of Bristol's transport considerations, population growth rate and expanding immigrant population, insights into immigrant travel behaviours and their tendency towards more sustainable transport modes (or not) will provide avenues for exploration in addressing Bristol's road congestion problems. With immigrants experiencing multiple life transitions that create opportunities for behaviour change, immigrants who have not assimilated to local, national behaviours may be engaged as *agents of change.* Actively engaging un-acculturated immigrants in alternative, more sustainable travel behaviours may provide opportunities to socialise and encourage change among the wider (national) population (Tal and

Handy, 2010:85; Handy et al., 2008:10). The findings are also transferable to the travel behaviours of immigrants generally, offering a unique depth of analysis into the social, cultural, and welfare components of immigrants' lives in destination countries.

Figure 1: Example of digitised life-history timeline (LHT)
Example of an LHT developed for this research during the early stages of methodological development and testing
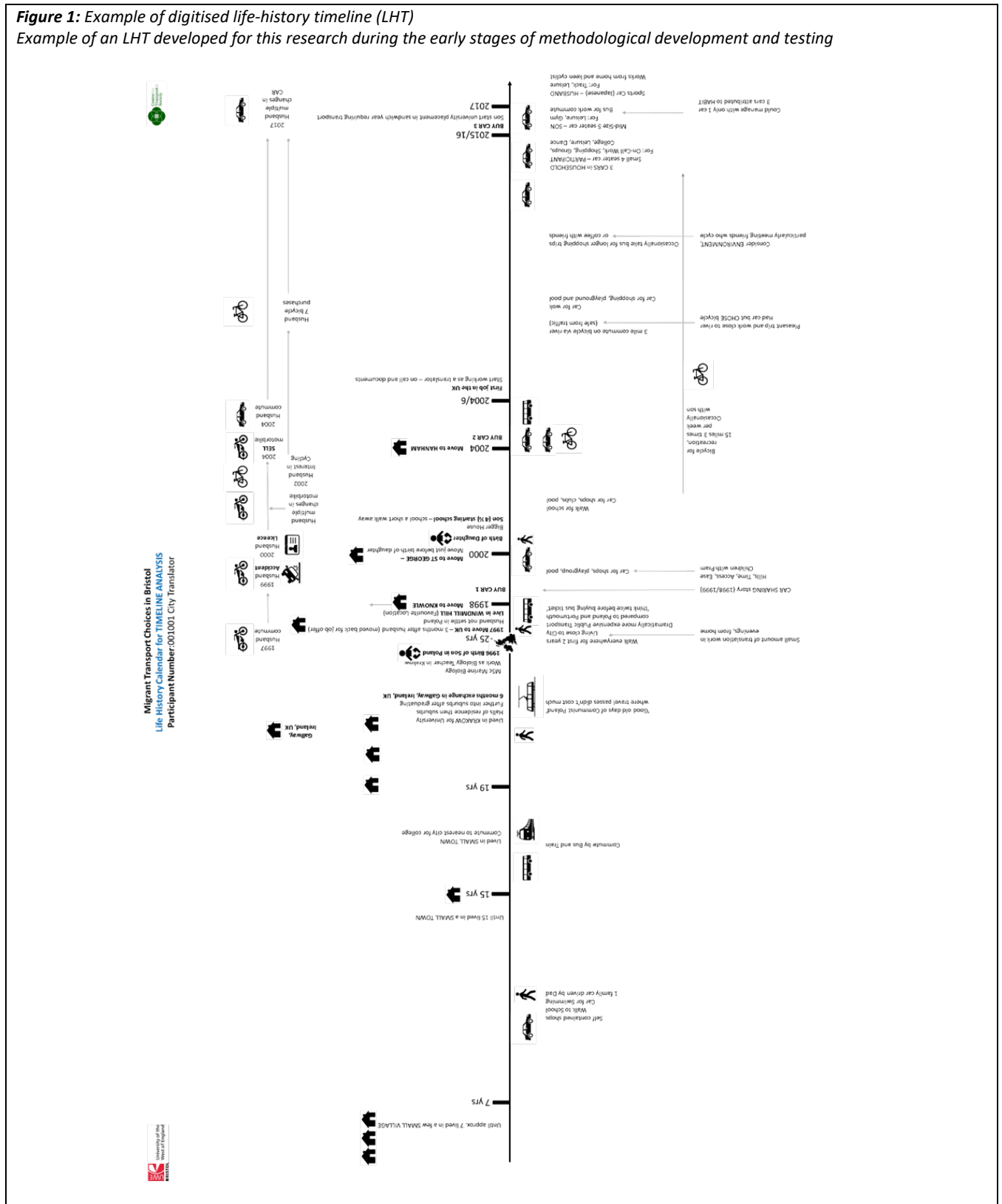
Summary

There are some substantial knowledge gaps around immigrants' travel behaviours and the impact this has on receiving countries. Likewise, there are gaps in the methodological process used for life-course research, with an apparent under-utilisation of visual analytical approaches. Alongside knowledge gaps, there are opportunities to increase understanding of immigrants' 'greener' travel tendencies to socialise and encourage behavioural change within the wider population. The following chapter offers thematic examination of current research on immigration and travel behaviour, broadly examining UK travel-behaviour research, assimilation, motility, Polish migration to the UK, and theories of travel behaviour change.

2. Literature Review

The conceptual framework developed for this study merges consideration two key topics: migration and changing travel behaviour. These topics are viewed through the lens of two key themes emerging in the literature: *migrant transport assimilation* (grouping behavioural assimilation and acculturation) and *migrant motility* (loosely grouping cultural capital utilisation and social exclusion alongside conventional factors considered within motility). This framework is based on a small set of evidence and ideas from existing transport research on immigrant travel behaviours, and on wider general research on both travel behaviour and the migration process. Literature research into the migration process highlighted behavioural assimilation, utilisation of ethnically defined social capital, and social exclusion as key conceptual issues of relevance to immigrants' travel behaviours. These underlying concepts interact in a variety of ways, first focusing on how immigrants arrive in the UK, establish themselves, and acculturate or assimilate into their new environment. Second, they prompt consideration of how social and cultural capital are acquired, formed and used by immigrants to settle into their new environment. Finally, these concepts lead to consideration of how the aforementioned factors interact to affect an immigrants' level of social inclusion or exclusion in a location. Each lens provides a different optic on immigrants' access to resources and access to travel options and, therefore, their travel behaviours.

The remainder of this chapter is split into five sections. The first section examines research on travel behaviour in the UK, looking at what is known about the travel context and behaviours of UK nationals. The second section examines *migrant transport assimilation* in depth, exploring the concepts from existing migration literature and relating them back to the limited available literature on immigrants' travel behaviours. The third section puts forward the argument for *migrant motility*, examining the ways in which capital and exclusion interact and allow immigrants to build their relationship with space and utilise transport possibilities. The fourth section is an examination of Polish immigrants' experiences in the UK, focusing on the available literature on Polish immigrants' life-courses, context

for migration, and motivations for migration and settlement in the UK. The final section provides an overview of the key concepts and literature on changing travel behaviour, examining community, interpersonal and individual perspective on behaviour change, and relating them back to immigrants' travel behaviours.

2.1 UK Travel Behaviour Research

Research on travel behaviour in the UK is extensive, although such research focusing on immigrants is scarce. In discussing immigrants' travel behaviours, migrant transport assimilation and migrant motility, this research builds on existing UK-based transport research. Studies of motility (social capital, social exclusion, and transport disadvantage), changing travel behaviours, life events and mobility milestones, and transitions to sustainable travel behaviours all inform this research. Building on the discussion of motility and social capital above, Shergold et al. have examined the role of car ownership in (rural) communities and the connections between social capital, motility, and reducing social exclusion (Shergold et al., 2012:70/82). Their research revealed how mono-modal focus on car-based travel can reduce the acquisition of motility capital in relation to other modes of transport, reducing social inclusion. A report published for the UK Social Exclusion Unit (2003) likewise highlighted risks associated with lack of social inclusion in the UK as they relate to transport. Notably, the research highlighted issues with transport provisions and access to services and activities such as work, education, medical/healthcare, food shops and leisure, that are intricately related to motility capital (SEU, 2003:1).

UK-based research has also considered the impact of activities such as the school run and childcare commitments on travel behaviours (Jain et al., 2011). This research highlights the complexities of non-standard hours, part-time working patterns, household dependence on a single vehicle, infrastructure concerns such as congestion, public transport (hereinafter PT) provision, distances between activity sites, and the disproportionate effect these have on children's main carers' travel behaviours (Jain et al., 2011:13/15). Alongside consideration of constraints and barriers to transport, UK researchers have also considered the benefits that can be gained from travel time itself, in contrast to traditional utilitarian economic approaches (Jain and Lyons, 2008:8; Lyons and Urry, 2005), indicating that a solely utility-focused approach to immigrants' travel behaviour may be restrictive. In examining changes in UK car ownership at a household level, Clark (2012) revealed that life events and associated alterations to household attributes account for the majority of changes in car ownership. Alterations to household income, household composition and resource shares, household roles and associated activity patterns, as well as the spatial and temporal distribution of activity sites, all affect car ownership

(Clark, 2012:248/249). Vehicle ownership, the number of vehicles owned, and changes of vehicles owned appear to correlate with the life cycle (Clark, 2012:249). While examining patterns of walking and cycling throughout the life-course in the UK, Jones identified the importance of life events and the co-occurrence of multiple interrelated life events on changes in travel behaviour (Jones, 2013:194). Jones also revealed the importance of micro- and macro-environmental contexts and the opportunities and constraints these can place on travel behaviours, alongside the influence of intrinsic individual motivations. Furthermore, Jones highlighted the importance of gender and gendered experiences on travel behaviour, particularly noting the role of marriage, motherhood and employment on women's travel behaviours (Jones, 2013:195). Chatterjee et al. conducted research into turning points in the life-course that may affect cycling behaviour; their research highlighted the importance of past experience as an influential factor in subsequent changes in travel behaviour related to life events and changing contexts (Chatterjee at al., 2013a:9). Likewise, as a result of research with children in schools in West Yorkshire, Baslington's (2008) *theory of travel socialisation* emphasises the role of past experience on the development of travel behaviours, highlighting the critical role of early childhood socialisation in the development of habitual behaviours and preference. Baslington emphasised the importance of family, media, and peer groups in the formation of travel behaviours during childhood, and the ways in which mainstream UK culture (and cultures elsewhere) create a societal dependence on car-based travel (Baslington, 2008:93/110). From this perspective, it is important to consider the socialising environment of immigrants' countries of origin. Interestingly, the theory of travel socialisation brings into question the role of individual 'choice' in travel behaviour and its use in other travel behaviour theories (Ibid; Scheiner, 2013:343; Haustein et al., 2009).

Car-sharing also represents an important area of travel behaviour research in the UK, particularly in relation to sustainable travel behaviours. In assessing the influence of joining a car-share in the UK, Chatterjee et al. (2013b) identified a number of important findings. Combined with financial context, life events can have a notable influence on individuals' decisions about car ownership or membership to car-shares. The current requirement for flexible transport solutions, alongside the growing costs of motoring – coupled with life events such as changes in employment or insurance renewal – can encourage individuals to shed their cars in favour of the increased flexibility and lower costs of car-sharing (or car clubs) (Chatterjee et al., 2013b:83). However, some car-share members appear to use membership in car clubs as a stepping-stone to eventual car ownership while keeping costs down (Ibid)., The net effect of car-sharing in the UK is seen to be positive for the environment (Ibid:76), indicating that car-sharing and alternative modes of travel may increase participation in sustainable travel behaviours. However, the research also revealed that reliance on car-shares for access to vehicles constrains individual travel options and requires different decision-making processes

(Ibid:84). Car-sharing requires advanced travel planning and knowledge of other transport options such as PT, altering habitual relations with single-occupant vehicle (hereinafter SOV) driving (Ibid:84/76).

Beyond car-shares, Heinen and Chatterjee (2015) examined intra-individual modal variability in travel behaviour, considering what influences and predicts the range of transport modes used by individuals. Their quantitative research from the National Travel Survey (NTS) revealed that the majority of the adult population in the UK use multi-modal travel on a weekly basis, and that gender (as well as associated roles and responsibilities), age, income and urban settlement size have a large influence on modal choice (Heinen and Chatterjee, 2015:280). They identified a number of constraints associated with reduced multi-modality, including full-time employment, mobility difficulties, residence in small settlements, lack of access to non-SOV travel options, and lower household income (Ibid:281). Most of their findings also mirrored conclusions from similar studies in the US and Germany, although they acknowledged that infrastructural provisions may increase multi-modality for older groups in Germany (Ibid:281). Consideration of each of these factors in immigrants' (potential) multi-modal travel behaviour is essential, particularly in considering influential factors in the use of more sustainable travel modes.

Stanbridge and Lyons (2006) and Stanbridge et al. (2004) revealed some interesting insights around the role of residential relocation, habit, and adjustments to travel behaviours in the UK. Stanbridge and Lyons developed a Residential Relocation Timeline (RRT) to conceptually frame the residential relocation process and identify stages in the process where those relocating are most open to considering alternative travel choices (Stanbridge and Lyons, 2006:7/15). A combination of qualitative and quantitative research, their study revealed that travel choices are most consciously considered relatively early in the RRT, at stage three of the eight-stage process; this is when residents are selecting areas to search. Although considerations are also made at a number of other stages, the researchers highlight how stage three closely relates to considerations around employment, childcare, schooling, and access to shops and leisure activities, with specific concern for distance, mode type, and travel time (Ibid:8). They also revealed that, although many may only relocate short distances, residential relocation as a life event acts as a break (even if only temporarily) in habitual travel behaviour, serving as a doorway through which governments and travel planners may promote and encourage more sustainable travel behaviours (Ibid:3/15). Furthermore, they suggest a number of systematic changes in the residential relocation process, such as the role of estate agents in promoting multi-modal sustainable travel options as a part of the relocation process (Ibid:16). Immigrants undergoing international migration and experiencing the associated changes in employment (i.e. multiple life transitions) may be particularly open to reconsidering habitual travel behaviours. If they later choose

to residentially relocate away from ethnic-enclaves and the associated agglomeration benefits, they may again be open to changes in behaviour. Un-acculturated immigrants may potentially be engaged during points of transition as 'agents of change', encouraged to use and, in turn, promote increased use of more sustainable travel modes within their local environment (Tal and Handy, 2010:85; Handy et al., 2008:10).

Further examining the role of residential relocation (and other life events) on travel behaviour, Rau and Manton (2016) move beyond the notion of examining a single life event, instead examining thematically grouped life events with transport-specific influence. Rau and Manton labelled these 'mobility milestones'; their research emphasises the importance of (infra)structural opportunities and constraints on travel behaviours, intimately related to residential relocation (Rau and Manton, 2016:51). They also reveal some interesting insights around desirable behaviours, or 'life-stage-adequate mobility options' and prevailing social norms (Ibid:15). Their research reinforces the importance of life events in travel behaviour change, particularly the importance of residential relocation and starting employment, as well as their connections with increased rates of car driving and reduced use of other modes of transport (Ibid:57). This research emphasised the potential to use key life events and mobility milestones, within the wider structural context, to target policies that seek to promote more sustainable mobility (Ibid:59).

Based on the considerations made in reference to immigrants' travel behaviours, the phenomena identified by these studies may have an important influence on immigrants' travel behaviours, as immigrants must operate within the same constraints and opportunities as nationals, while simultaneously dealing with the complexity of settling into a new environment and learning its nuances (Buhr and McGarrigle, 2017:228/232). One of the key themes emerging throughout all of the research outlined is the importance of life events, mobility milestones and individual capacity to be mobile within environmental and personal circumstances – also known as 'motility'.

2.2 What Is Migrant Transport Assimilation?
A small number of studies have examined immigrants' travel behaviours. Most of these studies have found that, over time, immigrants assimilate to the dominant travel behaviours of their new location (Blumenberg, 2008:2; Tsang and Rohr, 2011). A range of influences have been explored in order to explain this assimilation in the different countries where it has been studied. Two dominant influences appear in all studies: the influence of time spent in the destination country, and the influence of ethnic-clustering on the travel behaviours of recently arrived immigrants. A small number of studies have replicated these findings and have reached the same conclusions: that travel behaviours are different for immigrants of different nationalities or ethnicities; that different waves of migration have

a noticeable influence on the speed of the transport assimilation process; and that even after assimilating, immigrants are more likely than nationals to use sustainable modes of travel (Tal and Handy, 2010; Blumenberg, 2008; Smart, 2010). Although existing qualitative and quantitative studies have indicated the complexity of the transport assimilation process, persuasive explanations of immigrants' behaviour changes remain elusive. Furthermore, no consensus has been reached as to the amount of time required for immigrants' transport assimilation. Neither the influence of different motivations for migration nor the different residential patterns of immigrants have been fully examined. Although some studies have indicated that past travel behaviours may influence travel behaviours in destination countries, this has not been specifically investigated (Tal and Handy, 2010; Handy et al., 2008; Blumenberg, 2008). As such, many questions remain over the travel behaviour of immigrants and what influences these behaviours. This area of transport research is in its, with recent studies advocating for increased qualitative and ethnographic examination of the range of social influences believed to drive travel behaviours (Scheiner, 2018:56).

Migrant Assimilation

Assimilation is a well-established concept in the social sciences; it refers to the process by which immigrants homogenise toward the cultural and behavioural norms of a host community (De Palo et al., 2006:3). In other words, immigrants' behaviour over time is seen to become increasingly similar to that of nationals (Ibid). In the context of international migration, a number of studies have examined the processes involved in immigrants' cultural and behavioural assimilation and have revealed the importance of residential locations in the assimilation process (McGuckin and Srinivasan, 2003).

Pamuk (2004) examined a number of models of immigrant residential settlement established in assimilation theory. The study built on US Census data in California, specifically examining Asian and Hispanic populations in San Francisco. A distinction is made between US- and foreign-born populations, in order to examine sub-populations within the broader Asian and Hispanic communities, alongside their geographic and socio-economic distribution. In the first model, immigrants settle into 'ethnic-enclaves' (Pamuk, 2004:288) providing *agglomeration benefits* – a socio-economic and cultural network based on spatial proximity that enhance livelihood opportunities. These enclaves are often occupied by low-wage immigrant groups and accompanied by an ethnic economy and social infrastructure (Pamuk, 2004:295; Logan et al., 2002:301). Such populations include the Latino community in the Mission District of San Francisco in the 2000s. In the second model, immigrants undergo a process of 'spatial assimilation' (Pamuk, 2004:288) in which they initially settle in ethnically defined 'transitional' neighbourhoods, moving out of 'congested' conditions towards wealthier suburban 'clusters' as their financial situation improves and they become more familiar with the

culture (Logan et al., 2002:299; Pamuk, 2004:288). Examples of such communities include ethnic Chinese suburbs around San Francisco's Golden Gate Park, facilitated in part by ethnic Chinese real-estate agents' active marketing of such suburban areas (Pamuk, 2004:305). The specific reasons behind these different settlement patterns – which vary in time and between ethnic groups (Alba et al., 1999:453) – remain unclear. In the US, Massey (2001) identified a loose trend in which immigrant groups experiencing high rates of in-migration and slow socio-economic mobility tend to *enclave* (or segregate), whereas immigrant groups with low rates of in-migration and rapid socio-economic mobility tend to integrate or inhabit less tightly knit 'clusters' (Massey, 2001:391) through the spatial assimilation process.

Immigrant settlements can provide socio-economic as well as cultural assistance in low-wage immigrant clusters, and for wealthier immigrants in more affluent suburban areas, they can serve as ethnically defined clusters (or *ethnoburbs)* (Li, 1998). *Ethnoburbs* no longer serve as transitional locations, or as locations for low-wage immigrants to find work in 'ethnic economies', and they are preferred by immigrants for reasons not captured by the models (Pamuk, 2004:289; Logan et al., 2002:300). However, for immigrants who spatially assimilate, some of the underlying assumptions of the assimilation model appear to remain true. Cultural assimilation is the first stage in the assimilation process whereby immigrants acquire language skills and formal and informal education about their destination country. This facilitates access to 'better jobs' and higher incomes, which in turn corresponds with later marital and spatial assimilation into areas with fewer immigrants (Allen and Turner, 1996:141). De Paolo et al. (2006) also note the importance of education in the assimilation process due to its effect on the types of activities individuals engage in and the ways in which they interact with the neighbourhoods and broader communities (de Paolo et al., 2006:14). Their study utilised data from the 1994–2001 European Community Household panel, drawing on participants from 12 European Union (EU) member states, seeking to discern different patterns of, and approaches to migration throughout Europe, as well as the impact these have on social relations. Although the data was limited in some respects – utilising proxy measures and not adapting to in-migration changes – it offers data spanning a longer period (compared with the 'snapshot' nature of data captured in many other studies of migration). Preliminarily, interpretation of their findings suggests that variations in immigrant assimilation via ethnic-clusters or ethnoburbs may lead to variations in immigrants' travel behaviours.

Migrant assimilation can be understood as a complex process influenced by a multitude of factors, some of which can be explained by existing conceptions; others are more difficult to define. The underlying motivations for Li's *ethnoburbs* or Massey's partial spatial assimilation have not yet been definitively explained. Income and ability to culturally assimilate appear to have a notably influence

on immigrants' residential locations and associated behaviours. However, preference for occupying ethnic-enclaves rather than spatially assimilating is also an important consideration, particularly among higher-income immigrant groups. Konya (2002) loosely examined this in relation to the costs and benefits of assimilating, drawing on theoretical dynamic modelling from an economic perspective (Konya, 2002:2). Konya's research builds on the concept of minority and majority societies, and 'melting pots' of 'multiculturalism', with the aim of identifying optimal equilibrium. Although these are slightly dated concepts in the immigration research field – and the raw data that premises the research is not transparent – the examination of complex decision-making offers insightful points for consideration. In Konya's view, rather than being passive actors in the assimilation process, with cultural and behavioural changes naturally occurring with increasing time spent in a destination, immigrants are active agents in the assimilation process. They weigh the costs of assimilation in the immediate and long terms, with consideration of the benefits to future generations (Ibid:5). In this temporal context, partial assimilation is an active and considered choice for many immigrants (Ibid:2), paralleling the process of *selective acculturation*. Immigrants who selectively *acculturate* actively retain components of their ethnic identities and resist assimilation – despite taking on components of a destination country's behaviours, such as residence in wealthy suburban areas and employment in higher-income jobs (Logan et al., 2001:301; Allen and Turner, 1996:151).

The process of acculturation focuses on only one element of the assimilation process: cultural assimilation (Allen and Turner, 1996:141). Within assimilation theory, cultural assimilation could be considered as partial assimilation – that is, the first stage in the process, preceding social, marital, economic and spatial assimilation. Acquiring the linguistic and educational skills of the destination country also features heavily in the assimilation process (Ibid). Immigrants who selectively acculturate and resist assimilation (Allen and Turner, 1996:151) may therefore adapt their travel behaviours in their new location quite differently to immigrants who assimilate. For example, Chinese immigrants residing in Californian ethnoburbs as identified by de Paulo et al. (2002) may assimilate to local national travel behaviours while selectively retaining other elements of their cultural identity. Their behaviours may not necessarily blend with those of the national population as they economically advance; however, the spatial location of their residence appears to socially and physically affect their behaviours (Tal and Handy, 2010:85). Regardless of whether immigrants selectively acculturate or assimilate, the variety of factors that influence these processes influence immigrants' travel behaviours. The factors that predicate ethnic-clustering, selective acculturation, and assimilation will influence travel behaviour, increasing or reducing immigrants' mobility in a number of ways. As Tal and Handy (2008) emphasise, selective acculturation of Chinese migrants into Californian ethnoburbs influences their structural conditions and transport choices; San Francisco's ethnically clustered Latino

immigrants utilise culturally organised 'jitney' services (community-run mini-buses), maximising the agglomeration benefits of culturally defined stocks of social capital for transport purposes (Ibid).

Migrant Transport Assimilation

Beyond migration research, a number of the factors associated with migrant assimilation have been examined in the transport literature, albeit under different pretences. Consideration has been given to residential relocation, employment and income opportunities, socio-economic status, urban form, population density and habitual behaviour formation (see Rau and Manton, 2016; Chatman, 2009; Scheiner and Holz-Rau, 2013; Scheiner, 2013; Mokhtarian et al., 2015; Klinger and Lanzendorf, 2015; Krizek, 2000; Adjei and Behrens, 2012; Ajzen, 1991; Bamberg et al., 2003; Weinberger and Goetzke, 2010; Badoe and Miller; Clarke, 2012; Stanbridge and Lyons, 2006; Schwanen et al., 2012; Verplanken et al., 2008; Beige and Axhausen, 2012). These factors – conceptually associated with *migrant transport assimilation* – are linked to consideration of immigrants' length of residence in destination countries, immigrants' residential locations, and the co-occurrence of migration and other life events. Cultural assimilation (and acculturation more broadly), as well as their wider influence on immigrants' travel behaviours, are also considered in the following discussion.

Limited research into assimilation of immigrants' travel behaviours appears within the transport literature. The same basic premise of *assimilation* outlined above applies to the concept of *transport assimilation*; it can be defined as immigrants gradually assuming the travel behaviours of nationals in their destination countries (Blumenberg, 2008:2). In the UK and US, full immigrant transport assimilation appears to be towards the nationally dominant mode of (i.e. car travel), although there is some evidence in the research to suggest that immigrants in London may assimilate to Tube travel, and that immigrants in urban centres may assimilate to the walking and PT norm of the local area (Chatman, 2009; McGuckin and Srinivasan, 2003). In many ways, the definition of 'assimilation' highlights the Western dominance of this field of transport research, with very few studies examining the travel behaviour of immigrants arriving in non-car-dominated transport systems. This definition also highlights issues regarding the spatialisation of the assimilation process: are the norms and behaviours of the local population or the national population adopted? Furthermore, it highlights issues regarding the temporal components of assimilation and what constitutes 'gradual'. Existing research also brings into question the variability between low-wage immigrants who cluster in ethnic-enclaves and immigrants with higher incomes who spatially assimilate (or selectively acculturate without fully assimilating) into more suburban areas. Transport research with UK nationals identified variations in travel behaviours between structurally different spatial locations, indicating a higher reliance on car-driving among suburban residents compared to urban residents, often associated with increased affluence (Beige and Axhausen, 2012; Beckman and Goulias, 2008; Daragay, 2000; 808/819;

Weinberger and Goetzke, 2010:2122). The key issues of ethnic-clustering, spatial assimilation or selective acculturation, and influence of length of residence in a destination location are examined in more detail below.

Ethnic-Enclaves, Selective Acculturation and Travel Behaviour

Within the transport literature, Smart (2010) refers to the concept of ethnic-enclaves as immigrants' 'heightened propensity to co-locate with co-ethnics' (Smart, 2010:157). Although the motivation for immigrants to co-locate with co-ethnics remains uncertain, Blumenberg suggest that this behaviour may enable immigrants to utilise ethnically defined social capital to maximise (transport) resources (Blumenberg, 2008:10). This aligns with the idea of agglomeration benefits put forward in the migration literature by Pamuk (2004:288) and Logan et al. (2002:301). The agglomeration benefits of ethnic-enclaves include the network of relationships and sources of social capital provided by co-locating with co-ethnics, which are considered 'critical for success' for newly arrived immigrants (Pamuk, 2004:290). Within assimilation theory, ethnic-enclaves are considered to be transitionary sites that allow immigrants to benefit from familiar social and institutional infrastructure until their cultural assimilation has advanced and their household affluence improved such that they can leave the enclave for more affluent suburbs (Pamuk, 2004:289; Logan et al., 2002:300). This transition appears as a stage in the assimilation process indicated by Allen and Turner (1996). It also parallels findings regarding the travel behaviours of nationals whose residential relocation from urban centres to suburbs or rural areas in both the US and the UK correlates (to some degree) with increased household income (Daragay, 2000; 808/819; Weinberger and Goetzke, 2010:2122). However, among lower-income immigrants who continue to lack the capital(s) required to live in more affluent areas, assimilation theory and the concept of ethnic-enclaves remain highly relevant (see Douma, 2004; Liu and Schachter, 2004; Blumenberg and Shiki, 2007; Bohon et al., 2008; Lovejoy and Handy, 2008; Blumenberg, 2008; Tal and Handy, 2010; Smart, 2010). This may be increasingly true as internationally migration continues to rise and immigrants settle in newer 'gateway cities' that may have predominantly suburban – rather than urban – designs. Blumenberg identified this trend in the US as early as 2008, and the University of Oxford's Migration Observatory (2020) indicate this can be seen in the UK, with immigrants increasingly residing outside London. Luthra et al.'s (2014) review of changing post-accession motivations for Polish migration in Europe suggests that variations in Polish immigrants' motivations and intentions are associated with different levels of social and economic integration (Luthra et al., 2014:5). Their findings further indicate that economic (temporary), circular and settled migrants are more likely to reside in clusters around particular employment opportunities in the UK (and Europe) (Luthra et al., 2014:49). Family migrants, students and those seeking 'adventure', by contrast, were seen to reside in 'less Polish-dominated' locations (Ibid).

The most extensive research into travel behaviour and ethnic-clustering has been conducted in California, looking at the travel behaviours of Latino immigrants. Blumenberg (2008) analysed US travel behaviour data for immigrants and nationals available from the US Census Bureau and the National Household Travel Survey. Their secondary analysis and literature review revealed that Latino immigrants in California are more likely than native-born workers to rely on alternative, non-solo car-driving modes of transport – and that ethnically, religiously or culturally defined 'stocks of social capital' are used by immigrants to 'maximise the utility' of 'limited [travel] resources' aided by residential 'spatial proximity to other immigrants' (Blumenberg, 2008:10). Alternative modes of transport included higher propensity to car-share or carpool, walk, cycle, use public transit – and, in some cases, establish privately operated minibus services (Tal and Handy, 2004:86). As a non-solo car-driving mode of travel, carpooling represents an interesting travel mode for immigrants that serves as a strong example of the agglomeration benefits of co-ethnic location. Although considered here in relation to immigrants, similar recourse to carpooling or car sharing has been discussed in relation to lower-income or potentially socially excluded nationals in the UK. For example, Ricci (2016) examined attitudes towards lift-sharing among socially excluded young people in Bristol, UK. Ricci's research examined groups excluded due to geographic, structural and economic factors (Ricci, 2016:4). This highlighted the potential importance of culture and socio-economic position in formation of attitudes towards particular travel modes, and highlighted the tensions lift-sharing can place on social relationships (Ibid:15,13,26).

With specific consideration of immigrant carpooling, Blumenberg and Smart (2010) analysed the 2001 US National Household Travel Survey (NHTS) data using a nested logit model. They considered the correlation of immigration status and length of residency in the US with driving alone (or not driving alone), as well as with intra- and extra-household carpooling. Throughout their research, they found that immigrants have a lesser propensity to travel by car alone, but a greater propensity to use intra- and extra-household carpools, as well as to travel by alternative modes (foot, bicycle, public transit) compared with US-born natives (Blumenberg and Smart, 2010:436). Although these tendencies decay slightly with length of residence in the US, they were still present among immigrants residing in the US for ten years or more (Ibid). Their research also identified behavioural differences between immigrant subgroups along ethnic lines. Within the ethnic groupings captured by the NHTS, variations were identified in which ethnic group preferences for intra- or extra-household carpools, yet all retained a higher propensity for all types of carpooling compared with US-born natives. Although these patterns were evident, Blumenberg and Smart were unable to isolate the cause of this difference. Such co-ethnic-clustering may have been driven by various motivations, or the difference

may be attributable to preferences, employment patterns, or cultural norms that prevail within particular ethnic groups (Ibid:441).

In either case, limited or reduced access to employment and social support – or limited social capital and cultural capital (Vershinina et al., 2011:103; Bourdieu, 1986:243) – could have important consequences for the way immigrants settle into their new environment and the ways in which they access travel options. Shin's (2017) study of ethnic neighbourhoods and carpooling in the US, which drew on multi-logit analysis of the 2009 US NHTS data, identified differences in intra- and extra-household carpooling along ethnic lines in the US. Although Shin concluded that further analysis is needed, she also suggested that within ethnic-enclaves, vehicle availability, occupation types and low-economic status are key motivations to participate in inter-household carpools among immigrants (Shin, 2017:24). Shin, alongside Chatman and Klein (2013), suggest that inter-household carpooling requires strong social network connections, or good social capital (Blumenberg and Smart, 2010:442), because it is based on mutual trust (Shin, 2017:16). Because extra-household carpooling or extra-household transport assistance serves as a form of social support aiding with the management of day-to-day living, Shin suggests that carpools may reflect social support networks within ethnic-enclaves (Ibid). Although intra-household carpools appear to be the most prevalent carpool type in immigrant enclaves, research indicates that immigrants remain more likely to engage in extra-household carpools than native-born residents (Blumenberg and Smart, 2010:437/440). Where the ethnicity of new immigrants mirrors the ethnic characteristics of the neighbourhood, Shin suggests that immigrants are just as likely to extra-household carpool as native-born ethnic minorities. Like Shin, Blumenberg and Smart (2010) suggest that the greater propensity to participate in carpooling, particularly intra-household carpooling, may follow patterns of social support resulting from high reliance on family networks in the initial period following migration, to compensate for lack of social support from other sources (Blumenberg and Smart, 2010:442). Likewise, Lovejoy and Handy's (2011) research highlights the importance of (social) network size, bonding (or cultural) capital along ethnic lines, and attitude towards seeking help, as central considerations in carpooling. These parallel more practical considerations such as compatibility of activity schedules, size of the favour, and ability to reciprocate in cash or in kind (Lovejoy and Handy, 2011:255). Attitude towards seeking help and the internalisation of socially constructed norms appear to be a particularly complicated consideration that is likely to vary not only among ethnic groups, but also at an individual level (Schwanen et al., 2015:130). Although immigrants may carpool in order to maximise the utility of their limited transportation resources (Blumenberg and Smart, 2010:443), socio-economic and cultural considerations alone are not sufficient to explain this greater propensity (Ibid:440); a number of other potential factors may influence carpooling (Ibid). Ethnic-enclaves are typically located in urban areas;

urban design within ethnic-enclaves tends to limit the spatial distribution of facilities and common trip destinations (Ibid:437). Shared destinations may ease the carpooling process when compared with suburban locations, where there is typically wider spatial distribution of trip origins and destinations.

Social networks within enclaves may encourage immigrants (as well as non-immigrants) within these locations to adopt non-SOV travel by learning from the examples set by the churn of newly arrived immigrants (Smart, 2015:194). Tal and Handy (2010) support this theory, noting that immigrant status itself does not have a 'causal effect' of travel behaviour variations, but instead serves as an indicator of underlying mechanisms that may create differences in behaviour. Travel behaviour may be affected by different activity patterns based on cultural traits, different cognitive maps of locations, and different attitudes towards transport that are deeply rooted in immigrants' national or ethnic identities (Tal and Handy, 2010:87). However, with the exception of the focus group research conducted in studies by Chatman and Klein (2013), Lovejoy and Handy (2011) and Douma (2004), the majority of immigrant transport research has been descriptive, analysing self-reported travel behaviour from large-scale travel surveys. The underlying mechanisms indicated by Smart (2015) and Tal and Handy (2010) – despite not having been adequately analysed or tested from any of the survey data – are usually suggested when variations in travel behaviours between immigrant groups and nationals may be due to reasons not captured by explanatory variables in the prevailing models (Tal and Handy, 2010:91). As such, supporting Chatman and Klein's conclusions, research should focus on the underlying motivations for the choices behind immigrants' travel behaviours as well as associated behaviours such as spatial and cultural assimilation (Chatman and Klein, 2013:341).

Migrant Assimilation and Motility

Discussion of the agglomeration benefits ethnic that enclaves provide for immigrants revolves around 'ethnically defined stocks of social capital' (Blumenberg, 2008:10) as well as associated trust, behavioural norms and social network connections. Within the transport literature, social capital and its relationship to travel behaviour is loosely examined under the wider umbrella of *motility,* first put forward by Flamm and Kaufman (2006). *Motility* can be considered as a persons' capacity to plan travel activities and to evaluate and access available travel options within a given environment (Flamm and Kaufmann, 2006:167/8). Motility transcends consideration of the mobility options offered by a given environment in terms of socio-spatial mobility and transportation, focusing on how an individual builds their relationship with space to utilise transport possibilities (Ibid). This includes consideration of temporal, spatial, economic and other opportunities and constraints (Schwanen et al., 2015:125/128). Motility also encompasses consideration of not only the travel capabilities that individuals possess, but also of their aspirations, plans and anticipated needs that affect behaviours and define an individual's potential to be mobile (Ibid). In the context of immigrants' travel behaviour,

there is scope to consider *migrant motility* examining immigrants' ability to become mobile in their destination locations. Buhr and McGarrigle (2017) studied migrant mobility in urban space in Lisbon, Portugal. They utilised qualitative interviews, mental maps and time–space journals to understand immigrants' urban knowledge and skills to employ urban resources. They also examined how immigrants utilised cultural/religious resources in the settlement process. They reported that immigrants must mobilise specific sets of knowledge and skills in order to be mobile in their new environment and to utilise a city's resources as their own (Buhr and McGarrigle, 2017:228/232,233). Immigrants must manage the immediate demands of settling into their new environment, within the opportunities and constraints experienced by nationals in terms of urban form, residential location and their position within their social network and the socio-economic system (Ibid:233). One agglomeration benefit of co-ethnic location identified by Blumenberg (2008) is the sharing of knowledge of transport options within ethnically defined social networks (Blumenberg, 2008:10; Blumenberg and Smart, 2011). This may assist recently arrived immigrants in managing the immediate demand of settling in, mediating their short-term reduction in mobility while they settle into to their new environment. This discussion ties into the broader discussion of bonding and bridging capital among immigrants, as well as the different ways these are formed, used, and affected by distance and regularity of contact between individuals (Viry et al., 2017:220; Stanley and Stanley, 2017:112). This particularly affects the ways in which immigrants use social capital to 'get ahead' in their new environment (Schwanen et al., 2015:127). The notion of motility also ties into the notion of transport disadvantage – issues that reduce the relative ease with which individuals can access opportunities, services and social networks, thus potentially excluding them from economic, political and social life (Ibid:125). As such, this ethnically defined social capital may form a key element of *migrant motility*, with the potential to influence both immigrants' travel behaviours and wider experience of their new destination.

Beyond discussion of cultural assimilation, spatial assimilation is a nuanced process. For immigrants who spatially assimilate, Chatman and Klein (2013) found that, as they choose to move away from low-wage enclaves, their travel behaviours in their new locations change to align more closely with those of their native-born neighbours (Chatman and Klein, 2013:341). However, unlike the assimilation literature (outlined in Chapter 3), focus group research conducted by Chatman and Klein revealed that increased affluence is not necessarily a key driver in transport assimilation in the same way that it is believed to be in spatial assimilation. Chatman and Klein suggest that structural conditions may underlie immigrants' travel behaviour – initially residing in urban centres for access to social or cultural networks and employment opportunities results in more difficulty driving and parking, better accessibility via public transit and walking, better carpooling opportunities, and

relatively close proximity to work locations, thereby reducing the need for solo car-driving (Ibid:341). These factors may be more important in determining immigrants' travel behaviour than income or previous travel habits in countries of origin (Tal and Handy, 2010:86). Travel behaviours learned in these initial years may be carried over to other residential locations as immigrants relocate, with past habitual behaviours affecting future behaviours (Weinberger and Goetzke, 2010). Weinberger and Goetzke's (2010) analysis of the 2000 US Census Public Use Micro Sample data highlighted that although preference is not stable, car ownership tends to be driven by past experience while relocating (Ibid:2125). For immigrants, residential relocations may not always be motivated by affluence or higher levels of cultural assimilation. Instead, Chatman and Klein suggest that employment opportunities, as well as access to better schools and more desirable social networks, may be more important drivers of relocation within destination countries (Chatman and Klein, 2013:341). Varying motivations for relocation within a new country may result in differing levels of importance placed on travel during the relocation process. In the case of immigrants who spatially assimilate, a higher level of independent motility may have been achieved compared with immigrants who utilise the agglomeration benefits of ethnic-clusters.

Over time, immigrants' travel behaviours are seen to assimilate to the national norm of single-occupant car driving in many studies. However, findings from the US indicate that even after many years in a country, immigrants maintain a higher use of alternative transport modes, regardless of economic affluence or residential location (see Blumenberg and Shiki, 2007; Chatman and Klein, 2013; Smart, 2015). Blumenberg and Shiki (2007) analysed the 2000 US Census Public Use Microdata Sample to explore immigrant commuter-mode choices in California, focusing specifically on length of residence in the US. They concluded that different immigrant groups assimilate at different speeds, but that over time, immigrants remain more likely than nationals to use PT. Chatman and Klein (2013) analysed focus group data with Filipino, Indian, and Latin American immigrants living in New Jersey, US. Their research examined current travel behaviours, changes in travel behaviours, and motivations for residential relocations. They concluded that the combination of structural and spatial distribution factors influencing migration, urban form and habits adopted when first arriving in a destination country may condition subsequent moves and travel behaviours. This may habitually condition preference for alternative mode choices among immigrants. Smart's (2015) study of immigrants' travel behaviours in the US used on data from the 2001 US National Household Travel Survey as well as the 2000 US Census. It built upon the hypothesis that all residents in communities with high proportions of immigrants 'learn from the [non-car-driving] example' demonstrated by recently arrived immigrants. Smart concluded that immigrants have a higher propensity to use alternative, non-SOV-travel modes, nationals in immigrant neighbourhoods may acculturate to immigrants' travel

behaviours, and immigrants residing in non-immigrant neighbourhoods may assimilate more rapidly to car travel. All of these studies indicate that travel behaviour learned within transitionary ethnic-enclaves through ethnically defined social networks may have a long-term influence on immigrants' future motility and travel behaviours. This may, in turn, influence the ways in which immigrants negotiate the opportunities and constraints experienced by nationals in their new, suburban or more affluent residential locations (Buhr and McGarrigle, 2017:233).

Assimilation as a Matter of Time

Research conducted into immigrant travel behaviour in the US indicates that as length of residence in a destination country increases, the more immigrants buy and use cars for their daily activities. Research in the US has largely focused on Latino – and, especially, Mexican – immigrants (Smart, 2015; Blumenberg, 2008; Blumenberg and Evans, 2010; Handy et al., 2008; Tal and Handy, 2010; Chatman and Klein, 2013), but has also briefly considered Asian immigrants (Hu, 2017). A few studies in Australia have also considered Asian immigrants, examining the ways in which the transport system may be adapted to enable immigrants to travel more sustainably (Klocker et al., 2015). In the UK, two key studies have considered immigrants in general, focusing on the cost that immigrants impose on the transport system, rather than the influences and motivations behind changes in immigrants' travel behaviour (MigrationWatch, 2011; Tsang and Rohr, 2011). MigrationWatch (2011) built on a combination of Office for National Statistics, Department for Transport, and European Union data as proxies for immigrant travel behaviours in the UK, making a number of future projections; all of its conclusions were politically focused on the additional costs imposed by immigrants on the UK transport network. The research indicates that expansion of the immigrant population will cost the UK £5 billion in congestion by 2025, even after accommodating for immigrants' increased propensity for urban residence and reduced vehicle ownership. While the MigrationWatch study forms one of just a few research papers on immigrants changing travel behaviours in the UK, it is not without substantial criticism. Research conducted by MigrationWatch is consistently criticised for poor quality, oversimplistic methodologies, reliance on often unsupported assumptions, and a strong far-right political agenda related to government lobbying on immigration. As a result, their research is deemed to lack rigor, accuracy, and fair analysis of the immigration debate. The data presented in the 2011 study is heavily criticised for its use of proxy measures of migration which assume that almost migration will be from Black and Minority Ethnic (BME) communities who will replicate the travel patterns of settled ethnic minorities; an assumed linear relationship between road length and traffic; and poor consideration of co-ethnic location, congestion and use of PT (Tsang and Rohr, 2011:7). Conversely, although also reliant on proxy measures, Tsang and Rohr's research can be regarded as more robust with a transparent and nuanced methodology, lacking political bias (Ibid). Tsang and

Rohr's (2011) research, carried out on behalf of the RAND Migration Advisory Committee, built on data from the UK Annual Population Survey and partial analysis of the 2010 National Travel Survey (NTS); they drew a number of conclusions: importantly, in relation to length of residence in the UK, they found that (i) immigrants have a greater propensity to live in urban centres and, in turn, tend to travel less by car; (ii) after approximately six years, immigrants' transport habits assimilate to the travel behaviours of the native-born populations; and (iii) although immigrants take more commuter trips, they travel less overall (Tsang and Rohr, 2011:63/64). Their study acknowledged the limitations posed by the proxy variables used to compile the data sets used, and they also highlighted the need for further qualitative research in this area. Importantly, Tsang and Rohr's research provided an initial indication that time (or length of residence) is a factor that influences immigrants' travel behaviours in the UK.

In the US, Blumenberg and Evan (2010) examined the temporal components of the transport assimilation process, finding that transport assimilation occurs slowly. They identified five years of residence in a destination location as a key inflection point in the assimilation process, comparable to Tsang and Rohr's conclusions (Blumenberg and Evan, 2010:32). These findings are supported by a number of other studies of immigrants' transport assimilation, and of immigrants' cultural and behavioural assimilation in general (Tal and Handy, 2010; Blumenberg and Shiki, 2007; Rosenbloom and Fielding, 1998). Tal and Handy (2010) utilised US National Household Travel Survey data from 2001 and applied a number of regressions to identify variables influencing travel behaviours. These focus on immigrant and non-immigrant status, socio-demographics and spatial variables, and immigrants' countries of origin. They concluded that immigrants typically assimilate to the national car-travel behaviour after approximately five years. Although immigrant status and place of birth have a notable influence on travel behaviour, Tal and Handy see this to be associated with other factors not captured in the NHTS, such as prior experience, culture, attitudes, preference and limitations, which called for further exploration through qualitative research (Tal and Handy, 2010:91). Blumenberg and Shiki (2007) indicated that transport assimilation occurs after five years – noting, however, that it occurs more rapidly for Asian immigrants living in California, and more slowly for Hispanic immigrants to California, who continue to have higher PT use even after 20 years. Rosenbloom and Fielding's (1998) early study of US societal changes and the impact on PT use in the 1990s likewise indicated that recent immigrants have a greater propensity to travel by PT. Their research also found that immigrants who had resided in the US for 10–30 years had a greater propensity to use PT compared to more recent immigrants, but they also acknowledged this data might confound age with length of residence (Rosenbloom and Fielding, 1998:9).

Despite agreement in the transport literature that immigrants transport-assimilate in each location where studies have been conducted, there is no consensus as to the exact number of years that must pass before the inflection point indicated by Blumenberg and Evan (2010) is reached: Handy et al. (2008) indicate five years, Tal and Handy (2010) indicate six to ten years, and Chatman and Klein (2013) indicate 15 years as alternative temporal markers. This rather wide range suggests that there may be other influencing factors more important than length or residence on immigrants' transition to the dominant local or national modes of travel. These factors may well be intricately associated with length of residence, but length of residence alone is unable to explain immigrants' changing travel behaviours. Research in this field also indicates that the length of time required for assimilation to occur can vary based on the ethnicity or nationality of different immigrant groups, wave of migration and age of immigrants (Blumenberg, 2008; Tal and Handy, 2010; Allen and Turner, 1996:141). Blumenberg (2008) suggests that race, household income and household composition may have a notable influence on immigrants' travel behaviours through their impact on vehicle access (Blumenberg, 2008:6). Likewise, in developing the theoretical basis for their research, Tal and Handy indicate that socio-demographics, activity patterns, cognitive maps, and attitudes and beliefs may play important roles in the assimilation to car travel (Tal and Handy, 2010:85). Allen and Turner's (1996) research utilised the Public Use Microdata Sample from the 1990 US Census. Their research indicated that the context for migration changes, and that immigrants to the US in the 1990s were arriving and establishing themselves outside of historical 'ethnic concentrations' (Allen and Turner, 1996:152). This settling outside of ethnic concentrations is attributed to a number of reasons, including oversaturation of the housing market for Mexican immigrants as well as the arrival of immigrants with higher levels of income and education eliminating forced settlement in areas of low-cost housing (Ibid:153). Allen and Turner reported that cultural and economic assimilation increased with greater distance from ethic concentrations or ethnic-clusters (Ibid). However, wealthy immigrants nevertheless formed ethnic concentrations in some circumstances – perhaps to utilise cultural capital – with notable variations with wave of migration (Ibid).

Contextual factors associated with the 'wave' of migration in which immigrants arrived, as well as their associated motivations for migration, have been associated with variation in the time taken to assimilate (Hu, 2017; Klocker et al., 2015). Hu (2017) studied Asian immigrants' travel behaviours in the US, drawing on US National Household Travel Survey data from 2001 and 2009. Hu found that wave of migration is associated with variation in both level of adaptability and selection of places of residence as newly arrived immigrants (Hu, 2017). Hu suggests that Asian immigrants arriving in recent waves may possess greater social capital compared to immigrants arriving in earlier waves, and may also have different working patterns – both factors translating into travel behaviours that differ from

those of nationals as well as other Asian immigrants who arrived in earlier waves. As such, levels of cultural capital may have an influence on both immigrants' spatial assimilation and the temporal dimensions of their migration. Tying this concept to *migrant motility*, reduced awareness of travel options may be compounded by lack of cultural capital as well as the necessity of learning to travel in a new environment after arriving in a destination country (Buhr and McGarrigle, 2017:228/232). In assessing immigrants' access to public services in the UK, Cierpial et al. (2010) examined the role of English language ability as a barrier to access. Their findings suggest that among younger immigrants arriving after the 2004 accession of Eastern European countries to the EU, better knowledge of the English language may give them advantages in accessing resources, reflecting structural changes in education in countries of origin compared to the context in which older, pre-accession immigrants may have migrated (Cierpial et al., 2010:7). Although immigrants may possess the cognitive capacity to assess and access resources in their native languages, limited ability with the language of the destination country, as well as limited cultural capital in terms of knowledge of where to seek information on travel options, may reduce immigrants' motility in their destination country. Therefore, cultural capital affects immigrants' knowledge of where to look for information on travel in their destination countries, while also affecting their behaviours in terms of cultural preferences and norms (Schwanen et al., 2015:127). Szewczyk's (2013) research on the migration of Polish university graduates further highlights how socio-cultural capital can play an important role in the migration process, impacting whether and how migration to the UK may occur (Szewczyk, 2013:265). Szewczyk suggest that some Polish immigrants migrate to the UK as a stepping-stone to upskill a theory-heavy degree obtained in Poland with workplace-focused skills obtained within the UK education system (Ibid).

Vershinina et al. (2011) considered the ways in which different forms of capital are utilised by immigrants who arrived in the UK during different waves of migration. In doing so, they revealed that use of cultural capital by immigrants can be multifaceted. On the one hand, cultural capital in the form of home-country (ethnic) capital can provide access to ethnic social networks and niche markets; on the other hand, cultural capital in the form of knowledge of how things are done in destination countries can enable engagement with mainstream (economic) opportunities (Vershinina et al., 2011:104). As such, immigrants' migration strategies – whether they intend to migrate for a short, seasonal period, or for a medium or long period of time, and regardless of their associated residential location choices (i.e. in ethnic-enclaves or not) – may affect the types of cultural capital that immigrants engage with as well as their associated travel behaviours. Likewise, length of residence may influence the accumulation of cultural capital that immigrants use to access opportunities within their destination country (Vershinina et al., 2011:104), further affecting their travel behaviours.

However, length of residence may be counteracted by immigrants' age. Some studies indicate that immigrants' age plays a significant factor in the assimilation process. For example, Blumenberg suggests that some younger immigrants transport-assimilate to US car-driving tendencies more rapidly than older immigrants, perhaps due to increased adaptability (Blumenberg, 2008:7; Myers, 1997). Interestingly studies in both the US and the UK find that, regardless of how much time they have spent in a destination location – or of their relative affluence or level of assimilation – immigrants maintain an underlying higher engagement with sustainable travel behaviours for incidental travel than nationals – a 'green' tendency – even after assimilating to the local travel behaviour for primary transport needs (Smart, 2015; Chatman and Klein, 2013). Smart (2015) also highlighted this in his analysis of the NHTS data in California, specifically identifying that slower modes of travel (i.e. non-car travel) are retained for trips such as shopping in co-ethnic shops, even after vehicle purchases (Smart, 2015:206). Chatman and Klein's (2013) research building on qualitative focus group research with Indian, Filipino and Latino immigrants in New Jersey, US, drew similar conclusions. Their findings suggest that the typical pattern of immigrant settlement in the US – initially in public-transport-accessible locations, followed by relocation to car-dependant suburbs as economic affluence increases – may be an oversimplification of the transport assimilation process (Chatman and Klein, 2013:339). In some cases, immigrants initially settle in less-accessible areas in order to join family or social networks, later relocating to more accessible locations to increase accessibility and associated opportunities (Ibid:341). Although car ownership may be part of the cultural assimilation process, material factors such as employment, school and access to social networks appear to be influential. Immigrants settling with family may car-share with greater ease, and immigrants settling in more accessible locations may have better access to non-SOV travel modes. Greater retained propensity for 'green travel' among immigrants is also repeated in an Australian study by Klocker et al. (2015), who found that immigrants (and non-white ethnic groups) have more environmentally sustainable travel behaviours than white Australians (Klocker et al., 2015:394). Klocker et al. utilised quantitative analysis of the 2011 Australian Census data to review the role of ethnicity in travel behaviour; after controlling for socio-economic disadvantage, they discovered a lower rate of car ownership and a greater propensity to use PT among immigrants in Australia (Klocker et al., 2015:402). Although they were unable to attribute cause for this, they suggested that the variables of affluence and length of residence alone are insufficient to explain the increased use of 'green' travel modes.

In order to demonstrate the modal variety of immigrants' travel behaviours in a format comparable to late stages of analysis in this research, Figure 2 illustrates changes in immigrants' travel behaviours over the life-course. The travel behaviours of four hypothetical immigrants are mapped over the life-course, identifying the point of migration and primary travel mode usage, illustrating a noticeable

change in travel behaviour after migration. However, the events associated with these behaviours vary among participants and do not always lead to car-driving assimilation. This observation indicates how migration and length of residence alone may be insufficient for explaining changes in travel behaviour among immigrants. It is therefore necessary to consider other influential factors during the life-course.

Figure 2: Immigrants' changing travel behaviours over the life-course
This model hypothetically illustrates changes in immigrants' travel behaviours throughout their life-course, featuring pre- and post-migration behaviours
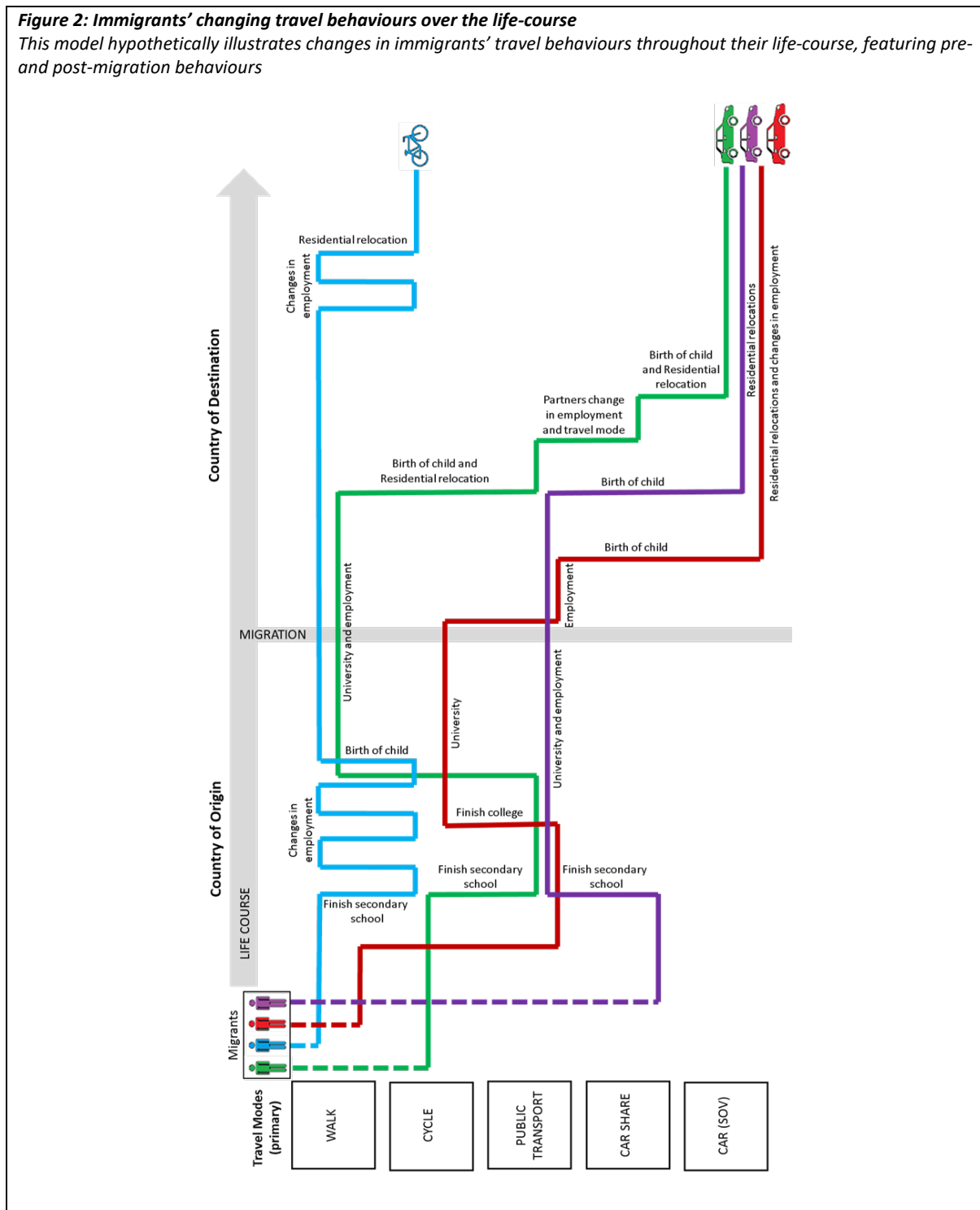
Migration, Life Events and Mobility Milestones

Travel behaviours, migration and immigrants' travel behaviours have been investigated in a number of ways, as outlined; recent research has emphasised the value of the life-course approach in examining travel behaviour. The life-course approach offers opportunities to examine the ways in which travel behaviours are formed throughout the life-course, and how these behaviours are influenced by changes in context. The life-course approach can draw on quantitative as well as qualitative data. One approach adopted by some transport researchers, which draws heavily on in-depth interviews examining life events and trajectory developments in great detail, has provided some interesting findings in relation to the development of travel behaviours (Clark, 2012; Jones, 2013; Jones et al., 2014). Rau and Manton's (2016) use of mobility biographies has likewise revealed relationships between the role of life events and mobility milestones (transport-related life events) on changing travel behaviours (Rau and Manton, 2016:53), providing a useful conceptual distinction between the two types of events. Likewise, the life-course approach has been used to examine immigrants' spatial mobility with some success (see De Jong et al., 2008; Frändberg, 2006; Frändberg, 2008; Bailey, 2009; Findlay et al., 2015; Kleinepier et al., 2015; Botterill, 2013; Lubke, 2015). The life-course approach has been particularly well utilised by Jones (2013) for the study of cycling and walking behaviours. At a conceptual and methodological level, Jones's (2013) research provides a number of insights that inform the conceptual framework adopted for this study.

In looking at neighbourhood effects from a large quantitative data set, Smart (2015) found that neighbourhoods with large immigrant populations may facilitate non-SOV travel choices by providing higher concentrations of co-ethnic shops, jobs, churches and schools, thereby reducing trip distances. Non-immigrants (nationals) within these high-density immigrant communities (or enclaves) may likewise acculturate to immigrant travel behaviours (Smart, 2015:206), demonstrating a higher propensity to use non-SOV travel modes compared with national data for socio-demographically similar areas (Ibid). This suggests that immigrants may serve as agents of change, encouraging more sustainable travel behaviours among local nationals (see also Tal and Handy, 2010:85; Handy et al., 2008a:10). Immigrants have been identified as agents of social change in the wider migration literature, transferring objects, ideas and practices via social remittances (Grabowska and Garapich, 2016:2155). Examining the motivations for the choices immigrants make about their travel behaviours will help to untangle the entwined processes that co-occur in ethnic-enclaves, potentially revealing causal relationships. Chatman and Klein (2013) suggest that driving licence acquisition, increased family size, residential relocations due to school considerations, and employment network-based carpools may have a greater influence on travel behaviour than affluence-driven assimilation (Chatman and Klein, 2013:339/340). This suggests that influences on immigrants' travel behaviours

may align more closely with influences considered in general travel behaviour research that are typically referred to as 'life events' and 'mobility milestones'. Rau and Manton (2016) conducted life-course research on travel behaviour in Ireland with 324 participants, utilising an online life-history calendar segmented into five-year intervals to document life events and mobility milestones (Rau and Manton, 2016:51/55). Their research suggests that life events (such as having children) or mobility milestones (such as licence acquisition) may serve as turning points where more sustainable travel behaviours occur or may be incentivised (Ibid:59). Examining these events and milestones for immigrants will facilitate greater understanding of the roles these phenomena play in changing travel behaviours. It will also reveal unique complexities about the migration process and the influence of co-occurring life events: new country, new residential location, new employment and different access to vehicles.

Although life events may create 'cognitive openings' that allow for conscious consideration of latent travel preferences, it is not a given that individual preference will incline towards more sustainable travel. Klinger and Lanzendorf (2015) examined 'residential self-selection': the idea that when people move house, they select areas that allow them to continue their preferred travel behaviour (Klinger and Lanzendorf, 2015:244). This was examined using retrospective survey data from 1,450 German nationals who relocated in three German cities between 2006–2011. Their research indicates that open-mindedness towards new travel options does not necessarily result from exposure to the changed built environment, but is instead attributed to new residents expressing and actively attempting to engage with pre-existing latent travel-related preferences (Ibid:247; Krizek, 2000:54). As such, although residential relocation may affect travel behaviours in terms of congestion in densely developed areas, people who like to drive might not be dissuaded from doing so (Chatman, 2009:1073). This was also supported by Chatman's (2009) survey-based research examining choices for residential relocation and travel behaviours post-move living in California, USA, during 2003–2004. Both studies concluded that if those relocating latently preferred walking, they might be willing to walk farther, even when relocating to less densely developed areas with more widely distributed activity sites (Chatman, 2009:1074). This highlights a central issue concerning extrinsic (functional) and intrinsic (experiential) motivations to travel considered both passively and actively (Mokhtarian et al., 2015). Adding to the idea of latent travel preferences put forward by Klinger and Lanzendorf (2015), Mokhtarian et al.'s (2015) examination of behavioural theory suggest that there may be context-specific motivations for travel that extend beyond functional considerations and are instead influenced by the experiential value associated with a mode and destination choices (Mokhtarian et al., 2015:260). For example, social pleasure may be gained in shopping in particular locations rather than functionally selecting the nearest location; more distant locations may be selected due to the

scenic value of a particular route; or a particular travel mode may be enjoyed for its social value even if an alternative travel mode may be functionally more rational (Ibid, 2015:265/268; also see Adjei and Behrens, 2012; Ajzen, 1991; Bamberg et al., 2003). As such, immigrants' personal preferences may have a substantial influence on immigrants' travel behaviours, beyond considerations linked to structure, culture and assimilation (Tal and Handy, 2004:91). They may also be deeply rooted in attitudes and preferences based on previous experience in countries of origin (Tal and Handy, 2010:92).

Socio-demographic changes in households that accompany relocation may influence travel behaviours, and they are difficult to isolate from other potentially co-occurring influences (Scheiner and Holz-Rau, 2013:454; Scheiner, 2007:164). In 2007, Scheiner's theoretical paper highlighted the potential interrelation between life domains (residential, employment and household) and travel behaviours. Although empirical conclusions were not drawn, this research established the basis for future biographical analysis of travel behaviours. Scheiner and Holz-Rau's (2013) subsequent analysis of the 1994–2008 German Mobility Panel data captured life events and changes in travel behaviour for participants over a three-year period. The three-year observation period was a limitation in that delayed effects on travel behaviours may not have been captured (Scheiner and Holz-Rau, 2013:180). Nevertheless, they found that changes in household biography, changes in labour market access, changes in workplace accessibility, mobility milestones, access to vehicles, and residential relocation all have an influence on travel behaviour (Ibid). Importantly, the research found that although changes in these domains often lead to changes in travel behaviour, such changes are not always immediate. Changes in household biography, such as co-habitation, lead to increased car-sharing over time; residential relocation to suburbs can lead to reduced walking and increased car travel (Ibid:179). However, there may be a delay for these events to translate into changes in travel behaviour – for example, changes in household car ownership may not occur immediately following co-habitation, but instead may occur at the point when a vehicle depreciates (Ibid:180). Although inconclusive, the research indicates that life events in the household biography – such as having children – could lead to changes in residential relocation and thereby affect travel behaviour (Stanbridge and Lyons, 2006:5; Clark, 2012:176; Schwanen et al., 2012:523; Verplanken et al., 2008:125; Rau and Manton, 2016:53; Beige and Axhausen, 2012:858).

Corresponding with this, Stanbridge and Lyons (2006) examined the role of residential relocation in creating openings in habitual travel behaviour. Their research built on 11 qualitative interviews and 229 postal surveys with respondents who had recently moved homes in Bristol, UK. Among them, 56% of households reported changes in travel mode for at least one regular household journey. This figure was high compared to the 'naturally' occurring change of travel mode of 17% identified in the 1991–

2001 British Household Panel Survey (Stanbridge and Lyons, 2006:5). They suggest that residential relocations were motivated by life events such as childbirth, changing jobs and retirement. Although only 56% of those who moved homes changed their travel mode, 87% reported considering changes to travel mode choice (Ibid:6). Stanbridge and Lyons (2006) concluded that travel choices are given considerable attention relatively early in the residential relocation process, which they subdivide into an eight-stage Residential Relocation Timeline (see Table 1) (Ibid:9). Regardless of stage in the relocation process, 'weakened habit' triggered by reconsideration of travel options was identified as the prerequisite for changes in travel behaviours (Ibid:15).

Table 1: The Residential Relocation Timeline (RRT) stages
Stanbridge and Lyons's RRT indicating the stages in the residential relocation process where travel behaviours are considered by nationals residentially relocating in the Bristol area

	Stage	Example of possible travel consideration
Prompt	1: The prompt for the move	*I wish to reduce my commute time.*
Search	2: Search criteria (deciding on what sort of property is being sought)	*I need a house on a bus route to work.*
	3: Selecting areas to search	*Which areas are within cycling distance of work?*
	4: Viewing properties and areas	*I now realise that I could not move to this area as congestion is too high.*
Selection	5: Before making an offer on a property	*If I buy this house will I be able to travel where I want?*
	6: Offer accepted on a property, but before moving	*What will be the best way to travel to work?*
Post-move	7: Moving and settling in (physical relocation)	*Which are the easiest shops for me to get to?*
	8: After some time in the new home	*My car has broken down, how will I travel to work now?*

Source: Stanbridge and Lyons, 2006:7

Clark (2012) subsequently examined changes in household car ownership in Bristol, using surveys followed by telephone interviews. A total of 184 households participated in the survey, and 125 participated in the follow-up telephone interviews. Through the research, Clark identified 14 key reasons for changes in car ownership, which include residential relocation, change in household structure, and childbirth (Clark, 2012:181). Clark concluded that life events trigger changes in circumstances that lead to changes in car ownership (Ibid). Schwanen et al.'s (2012) review of theory underpinning habitual travel behaviours aligns with this finding, indicating that life events are key triggers in behavioural change. However, Schwanen et al., like Weinberger and Goetzke (2010), highlight the importance of past behaviour in shaping travel behaviours. Schwanen et al. examine how

deliberative and preferential decision-making can be 'short-circuited' over time to develop into script-based habitual behaviours (Schwanen et al., 2012:524). Here, structural factors, life events, and mobility milestones combine with past experience to influence travel behaviours, giving weight to the conclusion that immigrants' early experiences after immigrating could have a lasting influence on subsequent travel behaviours. Similar findings were also drawn by Verplanken et al. (2008:125) in their survey-based analysis of context change and changes in travel behaviour among university staff. They expanded on the idea that cognitive openings in habitual behaviours are triggered by changes in context, to examine the interaction with the activation of pro-environmental values (Verplanken et al., 2008:123). The research highlighted how rational choice-based cost–benefit analysis alone may be insufficient to explain travel behaviours after residential relocation, as both habit and values (embedded in an individual's self-concept) also play an important role. After migrating to a new country, immigrants may be in a position where the change in context forces more disruption to habitual behaviour and more self-focus on identity and beliefs. Cognitively, this may force self-activation of dormant values and beliefs that may influence subsequent travel behaviours.

Drawing related findings, Beige and Axhausen (2012) utilised retrospective life-course questionnaires with 1166 participants in Zurich, Switzerland, covering a period from 1985 to 2004 in six-month intervals. Although the study design was limited by potential recall bias, mechanisms were built into the data collection tool to aid recall through visual reconstruction of context across multiple life domains (Beige and Axhausen, 2012:860). Through quantitative analysis, the authors conclude that there are only small windows throughout the life-course during which people consider their travel behaviours. 'Turning points' such as family events or changes in residence, education and employment represent key times when travel behaviours are reconsidered – or where cognitive openings occur. Many life events – and, in turn, changes in long-term travel behaviours – occur early in the life-course. Although childbirth leads to considerable changes in behaviour and vehicle ownership, children are seen to have a stabilising effect on long-term travel behaviour (Ibid:870). Typically, this life-stage has been associated with car dependence and car ownership among young families as well as individuals with child-related travel needs (McCarthy et al., 2017:774). Although car dependence is typically associated with parenthood in Western countries, it is not a universal transition (Ho and Mulley, 2013; McCarthy et al., 2017:775). Because key life events such as these are often associated with migration, these events, both pre- and post-immigration, are likely to impact travel behaviours. With immigration serving as a potentially major life event, there may be substantial associated cognitive openings or turning points that lead to changes in immigrants' travel behaviours.

Life-stage is particularly pertinent to immigrants, family formations, and travel behaviours post-migration. In contrast to previous assumptions that migration disrupts and delays the childbearing

process (Carlson, 1985; Ng and Nault, 1997; Stephen and Bean, 1992), more recent research indicates that childbirth rates are higher among immigrants compared to nationals (in destination countries as well as in immigrants' countries of origin) for two years after migrating. This is known as the 'migration effect' (Lubke, 2015:4; Mulder and Wagner, 1993; Andersson, 2004; Milewski, 2007). Lubke's (2015) study of Polish women and childbearing in relation to migration drew on some unique data, examining the impact of immigration on female Polish immigrants in the UK, and comparing them to Polish females who did not immigrate over the same period. Lubke was able to do this by drawing on the British Labour Force Survey and the Polish sample of the European Social Survey to capture the impact of migration on childbearing and separate it from the effect of originating in another country (Lubke, 2015:2). Lubke concluded that migration influences childbearing and family formation in two ways. First, in the year preceding migration, childbearing is delayed (Ibid:17); in relation to travel behaviours, this suggests that behaviours may not yet be stabilised pre-migrations. Second, childbearing is accelerated within the first two years of arriving in the UK (Ibid). In relation to the stabilising influence of children on travel behaviour, this suggests that there may be substantial disruption to travel behaviour after arriving in the UK, but that this may stabilise for female Polish immigrants after they bear children. This may relate to the length of time required for immigrants to transport-assimilate. This exemplifies the unique and interrelated life events and influences co-occurring for immigrants, adding additional layers of influence behind travel behaviours. Despite having relocated internationally, immigrants' travel behaviours may be influenced by the socio-economic and environmental structure of their new locations, latent travel preferences, or co-occurring life events such as delayed or rapid childbearing. These influences may be compounded by the additional layer of immigrants' cultural alienation. Immigrants encounter the same issues faced by nationals within a location, but they must also learn mobility within their new environment, settle in, find work, make personal connections, and address the needs of everyday life (Buhr and McGarrigle, 2017:226/227). Although immigrants may assimilate to the normal travel behaviours of nationals, it is a complex challenge to identify and isolate the causes of *migrant transport assimilation*.

2.3 Migrant Motility

A substantial amount of research on capital inequality and social exclusion, as well as their impacts on travel behaviour, exists beyond consideration of immigrants' travel behaviours. These issues can be broadly considered under the term *motility*, applying it as a lens through which to view, discuss and analyse the entwined processes of social and cultural capital formation, social exclusion and transport disadvantage (Bourdieu, 1986:243; Urry, 2002:263; Gray et al., 2006:91; Putnam, 2000:8; Woolcock, 1998:156; Kaufman et al., 2004). *Migrant motility* conceptually frames these considerations in relation to characteristics unique to immigrants – particularly trends relating to co-ethnic location, possession

and use of ethnically defined stocks of social capital, as well as increased rates of inter-household transport assistance (including carpooling). As discussed, motility can be considered as a person's capacity to plan, evaluate and access available travel options in a given environment, within temporal, spatial, economic and other constraints (Flamm and Kaufmann, 2006:167/8; Schwanen et al., 2015:125/128). Some researchers have separated the role of social networks from motility (Ibid), considering social networks instead as *network capital* (Urry, 2007). However, this distinction has not been made by all (Shergold et al., 2012). Due to the centrality of social networks in the settlement process for immigrants, social networks – loosely discussed in terms of social and cultural capital – are considered under the term 'migrant motility'. This is reinforced by Kaufman et al.'s (2004) suggestion that socio-structurally embedded actors are central to consideration of spatial mobility (Kaufman et al., 2004:749). Motility also encompasses consideration of not only travel capabilities individuals possess, but also aspirations, plans and anticipated needs that affect behaviours – an individual's potential to be mobile (Schwanen et al., 2015:125/128). Motility can therefore be seen to have a cyclical influence that greatly affects socio-spatial mobility, in turn influencing access to transport and transport resources (Kaufman et al., 2004:750).

Mobility-related social exclusion can be considered as processes that prevent participation in economic, political and social life within a community as a result of reduced accessibility (Kenyon et al., 2002:210/211; Ricci et al., 2016:1). The notion of transport disadvantage adopts this idea but also considers the (relative) ease of reaching destinations for social interaction and participation in society (Schwanen et al., 2015:125). Those who are deprived of access to multi-scalar, life-enhancing opportunities because of transport-related problems (disadvantage) are at risk of social exclusion (Ricci et al., 2016). Individuals with low levels of motility (or limited motility capital) and reduced participation in society may have a limited ability to contribute to, and gain from, their social networks in terms of practical, material, informational or emotional support (Schwanen et al., 2015:128), thus reducing their social capital (Shergold et al., 2012:81; Kaufman et al., 2004:747). This can affect an individual's sense of identity, with further consequences for participation in economic, political, social and cultural life (Schwanen et al., 2015:128). If motility remains low – particularly at the cognitive level of knowledge of transport options – there is a risk of intergenerational transmission of transport disadvantage, as well as associated reduction of social capital that may lead to social exclusion (Ibid:129; Viry et al., 2017:112).

Considering the experiences of recently arrived post-accession immigrants, many immigrants arriving in the UK may experience social exclusion (Robinson et al., 2007; Spencer et al., 2007; Trevena, 2009; Ryan et al., 2009). A sense of exclusion or inequality relative to nationals may be generated through the circumstantial requirement to live in crowded accommodation due to high UK living costs

(Robinson et al., 2007a). Working more hours for lower pay, compared to nationals, may again contribute to an immigrant's sense of inequality relative to nationals (Trevena, 2009:19). Furthermore, language barriers, cultural differences, and highly-qualified immigrants' residence in lower-income areas may lead to a sense of relative exclusion compared to pre-immigration experience (Trevena, 2009:21). As such, social exclusion is an especially important concept to consider in relation to immigrants' travel behaviours due to the increased number of layers where exclusion may be felt, and the chance that immigrants may arrive in a position of relative social exclusion. Schwanen et al. (2015) suggest that it is possible to identify pathways in individual characteristics – as they relate to social capital, transport disadvantage and social exclusion – that may have causal relationships with changes in other characteristics. For example, it may be possible to identify how transport disadvantage may lead to, or be caused by, a lack of social capital, thereby contributing to or compounding social exclusion (Schwanen et al., 2015:128). These pathways and characteristics may vary greatly by local context, and as such are best considered not as 'general rules', but rather as 'sensitising devices' or 'pointers' (Ibid) that are dynamic and require examination within specific contexts (Gray et al., 2006:91). Consideration of the wider societal causes beyond the local context is also important (Schwanen et al., 2015:124-5), considering that the ways in which wider socio-structural issues and their relationship with access to transport may contribute to social exclusion (SEU, 2003:30). In relation to wider structural considerations, it is important to consider issues such as thresholds of non-motorised transportation, which refers to the distance residents can travel by non-motorised transportation with relative ease to access services (Barton et al., 2003:119). Within specific locations, these thresholds may have an important influence on levels of motility and social exclusion, particularly in consideration of forced car ownership and associated costs in some locations (Stanley and Stanley, 2017:109). Motility provides a conceptual framework to examine these complex inter-dependencies (Kaufman et al., 2004:750), providing space to consider motility potential related to both micro- and macro-contexts.

In consideration of *migrant motility*, cognitive knowledge of travel options may be compounded by lack of cultural capital and the need to learn to travel in a new environment after arriving in a destination country (Buhr and McGarrigle, 2017:228/232). In assessing immigrants' access to public services in the UK, Cierpial et al. (2010) examined the role of English language ability as a barrier to access. Their assessment suggests that better knowledge of English language among younger post-2004-accession immigrants may be advantageous in accessing resources – reflecting structural changes in education in countries of origin – compared to the context in which older, pre-accession immigrants may have migrated (Cierpial et al., 2010:7). They found that this was particularly the case among ex-Soviet Bloc countries in Eastern Europe, such as Poland (Ibid). In terms of migrant motility,

although immigrants may possess the cognitive capacity to assess and access resources in their native languages, limited facility with the language of the destination country, as well as limited cultural capital in terms of knowledge of where to seek information on travel options, may reduce immigrants' motility in their destination country. However, as discussed by Blumenberg (2010), ethnically defined stocks of social capital – sharing of knowledge of transport options within an ethnically defined social networks (Blumenberg, 2008:10) – may mediate this short-term reduction in motility while immigrants settle into to their new environment. This loosely aligns with the idea of 'emplacement' from the *new mobilities* literature (Buhr and McGarrigle, 2017; Urry, 2007).

In examining immigrants' urban mobility in their destination countries, Buhr and McGarrigle (2017) suggest that immigrants must mobilise knowledge and skills in order to be mobile in their (new) environment and utilise a city's resources as their own resources (Buhr and McGarrigle, 2017:228/232/233). Immigrants must manage the immediate demands of settling into their new environment, within the opportunities and constraints also experienced by nationals in terms of urban structure, residential location and their position within their social networks and the socio-economic system (Ibid:233). In addition to affecting day-to-day travel behaviour and wider social mobility (in terms of its relationship with social capital and social exclusion), migrant motility may also influence immigrants' broader migration strategies. Buhr and McGarrigle (2017) found that immigrants may address contextual changes in destination countries, such as economic crises – which nationals may address through changes in travel behaviour – by re-shaping their migratory plans, perhaps leading to on-migration to a new destination (Ibid:233). Migrant motility therefore encompasses a broad range of considerations, perhaps extending beyond current use of the term 'motility' in the transport literature.

Woolcock (1998) and Wilson (1996) demonstrate the complexity associated with social capital in relation to social exclusion, highlighting how in inner-city 'ghettos', micro-level social capital may be helpful in disseminating strategies to survive in a particular context (avoiding eye contact, developing a 'tough' public demeanour), but is less helpful in developing skills to get ahead in 'society at large' (Woolcock, 1998:202; Wilson, 1996). Woolcock concludes, much like the discussion by Schwanen et al. (2015), that many forms and dimensions of social capital exist in multiple contexts that can be considered at both the micro and macro levels (Woolcock, 1998:156). Social capital is associated with a range of social benefits for individuals who possess it, granting access to contacts, resources, skills, influence, reassurance and mutual support (Gray et al., 2006:91; Putnam 2000:8; McQuaid et al., 2003). 'Bridging capital' is seen to play a particularly important role in encouraging trust and reciprocity among people of different social backgrounds (Putnam, 2000:8). However, as Schwanen et al. (2015) indicate, social capital may not always be benignly helpful in terms of accessing transport

and social opportunities (Schwanen et al., 2015:124), with high levels of bonding within particular networks potentially contributing to social exclusion of individuals who lack shared forms of social capital with the network.

Recent research that has focused on immigrants' mobility has revealed the importance of considering both bonding and bridging capital as well as the different ways these are formed, used, and affected by distance and regularity of contact between individuals (Viry et al., 2017:220; Stanley and Stanley, 2017:112). Viry et al. conducted research in Switzerland using data from two cohorts in the Swiss Federal Statistical Office Family tiMes data set. The data built on face-to-face interviews with 803 participants, including review of a life-history calendar and a review of participants' family network structure. Viry et al.'s (2017) research indicates that immigrants have more spatially dispersed social networks compared to nationals. These networks are formed through bridging capital and are associated with greater numbers of emotional support ties, compared to spatially close networks, which are formed through bonding capital and associated with higher levels of trust (Viry et al., 2017). A consequence of fewer spatially close social network connections is that immigrants may have reduced ability to benefit from local membership in a cohesive social group and the support, security and sense of group identity associated with such membership (Ibid:220). This creates a higher risk of social exclusion (or isolation), particularly among vulnerable groups such as low-wage or single-parent households. In Viry et al.'s research, distance from place of birth – rather than country of origin or ethnicity – was a key factor in the type of capital formed, suggesting that membership in highly dispersed social networks and reduced levels of locally applied bonding capital may reduce the social support available to immigrants, regardless of their ethnicity or country of origin (reiterated by Mattioli and Scheiner (2022)). A number of studies have considered the capital gained through social networks via the internet (Schwanen et al., 2015:127) as part of the extended, long-distance family maintenance strategies used by immigrants (Trevena, 2009:12). However, such strategies are likely to provide only emotional support formed through bridging capital, rather than social support. Lack of proximal social support may reduce immigrants' access to certain travel options, such as carpooling, as connections used in inter-household carpooling are seen to follow patterns of social support (Shin, 2017:16). This affects the ways immigrants use social capital to 'get ahead' in their new environment (Schwanen et al., 2015:127). Considering the spatial dispersion of social networks and social capital through the lens of motility highlights potential transport disadvantage, reducing the relative ease of accessing opportunities, services and social networks for some immigrants, leading to exclusion from economic, political and social life (Ibid:125; Kenyon et al., 2002:210/211; Ricci et al., 2016:1).

Cultural capital can be considered as another important concept in relation to migrant motility. It affects not only immigrants' knowledge of where to look for information on access to resources in

their destination countries, but also their behaviours in terms of cultural preferences and norms (Schwanen et al., 2015:127). Cultural capital is also something that may be institutionalised in the form of educational qualifications. In the post-2004 accession context, migration perceptions around institutional forms of cultural capital, such as education received in countries of origin, may have a particularly strong influence on immigrants' behaviours in their destination countries (Szewczyk, 2013:265). Szewczyk identified this through interview research with Polish immigrants in the UK, examining their labour market mobility. Cultural capital was deemed to be particularly important in relation to language skills, both for those choosing to engage with higher education for the first time as well as for those seeking Western university qualifications to supplement home-country qualifications to compete in the international job market (Ibid:264/266). Utilisation of different levels of cultural capital – for different purposes – may impact immigrants' migration plans as well as their ability to access travel information and resources. Luthra et al. (2014:17) indicated that cultural capital often correlates with social and financial capital, and can lead to greater mobility across international borders; this correlation could have a notable influence on immigrants' integration and subsequent travel behaviours. Identifying the motivations for migration may be an important factor in investigating the motivations behind immigrants' travel behaviours.

In the health sciences, Heikkinen (2011) conceptualised the *accumulation model* for considering how socio-structural disadvantages accumulating over the life-course may contribute to development of non-communicable diseases. Heikkinen suggests that disadvantages experienced from as early as foetal life – such as poor maternal nutrition – may accumulate through the life-course in infancy and childhood, adolescence, midlife and old age, increasing the risk of non-communicable diseases through biological, social and behavioural factors (Heikkinen, 2011:9). This model can be adapted to outline how the social disadvantages experienced by certain immigrants – particularly low-wage immigrants – may enforce social exclusion throughout the life-course, reducing travel options and increasing transport disadvantage due to structural influences which accumulate longitudinally (Ibid:9). Choice of engagement with ethnically defined cultural capital (or accumulation of knowledge of the way things work in destination countries) may be an example of this phenomenon. Low-wage immigrants, often employed in the 'dirty, dangerous and difficult' jobs (DDDs) (Hessle, 2014:86) may find themselves exposed to multiple factors that inhibit access to social advantages and the financial opportunities to adopt more expensive (i.e. less sustainable) travel behaviours such as car driving. Underemployment of immigrants relative to their level of education (Trevena, 2009:19/21), as well as their employment in the DDD sectors, may result in a compounding effect that reinforces social exclusion. Utilisation of social and cultural capital in its various forms, including through spatial or co-ethnic-clustering, may be seen to increase immigrants' motility, potentially serving as a transition from

the accumulation of social disadvantages that immigrants may experience. Knowledge of local systems – or exploitation of opportunities within ethnically defined networks – may result in the formation of social capital that enhances social mobility and facilitates transition away from accumulated social disadvantages. This conceptualisation highlights the importance of considering immigrants' lived experiences in their entirety. This means considering wide-ranging factors of influence in their lives – family, friendship networks, residential locations, structural context, employment, and social, cultural and economic capital – rather than focusing exclusively on components of life with an overt influence on travel behaviour in order to identify causal relationship in the development of their travel-behaviour trajectories. Conceptualising this range of factors as *migrant motility* enables such a holistic approach, which is defined and conceptually modelled in Chapter 3.

2.4 Polish Immigrant Experience in the UK

Immigrant Acculturation and Assimilation

Research into Polish immigrants' settlement, acculturation and assimilation in the UK is varied, covering issues that include the role of religion in migration (Trzebiatowska, 2010; Davis et al., 2006), Polish use of social networks in the migration process (Vershinina et al., 2011; Ryan, 2010), the impacts of migration on the timing of childbearing among Polish immigrants (Trevena, 2009; Osipovic, 2007; Lubke; 2015), and the effect of structural context on the migration process (Sliwa and Taylor, 2011; Düvell and Garapich, 2011; Szewczyk, 2013; Botterill, 2013; Siemieńska, 2010). Each area of research offers insights into influences affecting Polish immigrants' life-course in the UK, in turn influencing life events and milestones that may affect travel behaviours.

By examining the different roles of Catholicism in the lives of Polish immigrants in the UK, compared to UK-born Catholics, and the associated impacts on integration, Trzebiatowska (2010) exposed the central role of Catholicism in the integration (or lack of integration) of Polish immigrants to the UK. Trzebiatowska conducted interviews with ten Polish and ten non-Polish Catholic parishioners in Aberdeen, Scotland, as part of a wider research project examining changes in pastoral care dynamics caused by migration. Due to the language and cultural requirements of Polish Catholics following the post-accession influx of immigrants from Poland, the Catholic Church rapidly transferred Catholic priests from Poland to the UK to offer pastoral care for Polish churchgoers, reducing the strain placed on UK Catholic churches (Trzebiatowska, 2010:1057). However, this influx of Polish priests came with cultural implications. Polish priests attempted to protect their flocks from widespread secularisation in the UK, rather than using the universality of Catholicism to encourage 'integration' based on shared beliefs (Ibid:1068/1057). With continued Polish cultural practices, language and ethnic rituals in Polish

Catholic churches in the UK, Trzebiatowska argues that Polish Catholicism in the UK has impeded and diminished integration (Ibid:1069; Davis et al., 2006). Although Polish immigrants in the UK may not spatially cluster in ethnic-enclaves like Latino immigrants in California, ethnically defined stocks of social capital via the Polish Catholic Church may provide a community network and sources of social capital that are 'critical for success' among newly arrived immigrants (Smart, 2010:157; Pamuk, 2004:290). If Polish immigrants in the UK engage with a socio-cultural network that reduces integration, this may have a wider impact on their assimilation to UK behavioural norms across many life domains. This may also have a longer-term impact than the influence of ethnic-clusters, perhaps aligning with the type of benefits Li (1998) outlined in relation to 'ethnoburbs'. Rather than ethnically defined social capital being used as part of a transitionary process, it may instead be used to selectively acculturate (Logan et al., 2001:301; Allen and Turner, 1996:151).

Vershinina et al. (2011) examined how Polish immigrants in the UK engaged with different forms of capital (social, cultural and economic) to engage with social, political and economic opportunities (Vershinina et al., 2011:101). Through interview research with Polish immigrants in Leicester, UK, the authors considered the differences in entrepreneurial behaviour exhibited by Polish immigrants, distinguishing between post-World War 2 and contemporary immigrants. Importantly, they identify distinctions between the types of capital possessed and used by immigrants based on length of residence – post-war immigrants possessed more cultural (and, in turn, economic capital), enabling them to understand UK financial structures and engage with opportunities beyond their Polish social network (Ibid:112/ 106). Contemporary Polish immigrants, on the other hand, relied more heavily on social capital, utilising connections within their Polish social network, often at the expense of utilising their educational experience (cultural capital) or economic capital in Poland (such as wealth in property) to gain advantages in the UK (Ibid:112). Much like Trzebiatowska's (2010) research, this research supports the idea that contemporary Polish immigrants may selectively acculturate rather than assimilate in the UK. Expanding on concepts put forward by Bourdieu (1986), Vershinina et al. found that timings related to the storage, conversion and use of different forms of capital affected the range of capital available to immigrants. They suggested that certain forms of capital diminish and decay over time, and are affected by use of other forms of capital (Ibid:113,103). This highlights intra-ethnic variation in immigrants' ability to access 'shared resources' within the locations where they reside within the UK. It also suggests that Polish immigrants in the UK may vary in their levels of integration based on migration wave and use of capital, indicating that there may be a similar level of variation in transport assimilation.

Düvell and Garapich (2011) conducted a literature review and analysis of official immigration statistics to provide historical context for the different waves of Polish migration to the UK. They rooted Polish migration in a broader tri-factor context (Düvell and Garapich, 2011:9/10). The first factor is national and transnational structural contexts that consider politics, migration networks and socio-economic opportunities. The second is varying individual motivating factors for migration, including economic and non-economic, political and non-political. The third is the heterogeneity of immigrants' aspirations and intentions, influenced by the social class and regional differences in Poland – particularly emphasised by Sliwa and Taylor (2011:363). These factors are also seen to be dynamic and changing over time, as are immigrants' identities and migration strategies. Much like Vershinina et al. (2011), Düvell and Garapich consider post-War immigrants, but also distinguishing between pre-accession and post-accession immigrants (Düvell and Garapich, 2011:7), a distinction also made by Sliwa and Taylor despite their focus on the pre-/and post-1989 variation (Sliwa and Taylor, 2011:359). Interestingly, Düvell and Garapich find that, despite distinct waves of migration from Poland, immigrants from each structural wave do not appear to be separated from each other but are instead interconnected and interdependent (Düvell and Garapich, 2011:16). They distinguish immigrants by characteristics of their migration strategies, identifying long-term immigrants (or 'stayers' – with clear intentions of long-term settlement); medium-term immigrants (or 'hamsters' – with financial targets driven to improve their lives in Poland); short-term economic immigrants (or 'storks' – supplementing incomes in Poland through temporary or seasonal employment); and on-immigrants for whom the UK is but one of many destinations in a highly mobile life, often influenced by employment opportunities within an international professional network (Ibid:12/13/14). Much like Vershinina et al. (2011), Düvell and Garapich indicate that Polish immigrants use network connections to find opportunities in the UK. They suggest that Polish immigrants arriving in earlier periods facilitate subsequent migration of Polish people migrating in later periods under different conditions. They further suggest that the majority of temporary workers ('storks', as defined above) rely on such connections (Ibid:9/10), particularly when staying in the UK for an average of only one month (Ibid:7). Furthermore, they suggest that there are complex connections between different types of Polish immigrants – circular, permanent or flexible – with the hypermobile or transnational practices of one group affecting the practices of another. As more Polish immigrants are permanently incorporated into British society, more employment opportunities are created for seasonal and temporal immigrants (Düvell and Garapich, 2011:10). This could have wider implications for how immigrants settle and establish a sense of identity in the UK, in turn influencing this use of 'capital' and their travel behaviours.

Düvell and Garapich's research, much like Burrell's (2011), revealed a dual identity among Polish immigrants, with transnational activities and connections in both the UK and Poland simultaneously

incorporated into individual self-identities (Ibid:11/10). As a result of increasingly accessible international travel opportunities, Düvell and Garapich suggest that short- and medium-term Polish immigrants may now view international migration as an extension of internal migration, migrating to London rather than Krakow (as they might have done during previous waves) depending on economic context and personal financial needs at a particular time (Düvell and Garapich, 2011:12). Sliwa and Taylor (2011) support this notion, suggesting that Polish immigrants may not view international migrations as more significant than internal migrations within Poland (Sliwa and Taylor, 2011:363), perhaps attributable to the creation of 'borderless zone for mobility' among EU member states, bringing international migration more in line with traditional patterns of medium-term internal migration (Szewczyk, 2013:2). On-migration presents as another option, which may be tied back to Szewczyk's notion of 'stepping stones' among graduate immigrants. While migrating, Polish graduates may attain symbols of settlement and integration in their destination countries – such as citizenship and UK passports – which they subsequently use to facilitate further migration beyond the EU with more freedom, decoupling citizenship from identity (Ibid:267). Different migration strategies may impact identity formation and utilisation of capital in notably different ways, each potentially influencing travel behaviours.

Appreciating the centrality of family in the migration process, Ryan (2010) argued that the meaning of 'family' in transnational living needed further consideration. Ryan recognised that different inter- and intra-generational relatives and extended family considerations are likely to have different effects on the migration strategies of immigrants at different stages of their life-course. Cousins and siblings were seen to affect the behaviours of younger immigrants, whereas children and elderly parents were likely to influence the behaviours of older immigrants (Ryan, 2010:97/98). Unlike Botterill (2013) and Siemieńska (2010), Ryan also highlighted the important role that acquaintances in destination countries play in integration – particularly family and friendship ties as well as local neighbours (Ryan, 2010:99). The role of family relations and transnationality in migration to the UK may be increasingly important with rising gender parity in migration from Poland, as well as the increased number of older (26–34 years old) immigrants since Poland acceded to the EU (Düvell and Garapich, 2011:8). This may add a layer of complexity to immigrants' settlement in the UK that simultaneously influences assimilation into UK culture(s) as well as travel behaviours.

Context for Polish Migration

Trevena (2009) provided context to the nature of post-2004 accession Polish migration to the UK with a detailed analysis of characteristics including age, gender, birth rates, spatial distribution and sectors of employment. Trevena's evidence review indicated that Polish immigrants quickly became the

largest foreign-born national group in the UK following Poland's EU accession, whereas they had been the thirteenth-largest group pre-accession (Trevena, 2009:1). According to the most recent UK Annual Population Survey available at the time of data collection for this study (2017), this trend remained true in 2016, with 911,000 Polish-born immigrants living in the UK (ONS, 2016).

Structural context offers a broad explanation for migration to the UK from Poland but may not capture the changes in motivation among immigrants, nor the implications these may have for integration or assimilation into UK behaviours. Many post-accession Polish immigrants possess a highly employment-oriented attitude: they go where the work is, settling in every UK locality – rural or urban – and abandoning historic patterns of settlement around a small number of urban centres (Trevena, 2009:14). Despite high levels of educational attainment, perhaps reflecting the increasing levels of education in post-1989 Poland (Trevena, 2009:17), Polish immigrants were generally employed in low-skilled jobs, with the more highly educated often settling for lower-skilled jobs than their vocationally trained compatriots (Trevena, 2009:15/16; Pollard et al., 2008:37). The most common sectors of employment for Polish immigrants to the UK include factory and warehouse work, packing, catering, cleaning and agriculture, often involving long hours for minimal pay (Trevena, 2009:15). Szewczyk (2013) indicates that this underemployment may not result from lack of labour market opportunities or recognition of qualifications in highly skilled industries, nor from lack of cultural capital, as discussed by Vershinina et al. (2011:112). Instead, Szewczyk suggests that it is because Polish immigrants lack confidence in the value of their education. Szewczyk's research with Polish graduates indicated that many Polish immigrants perceived Polish education to have a theoretical focus that lacks applicability to real-life labour market requirements, delaying employment in their studied professions. For some, further training in the UK provided the confidence needed to compete in the international job market (Szewczyk, 2013:265). The combination of high educational achievement with low-wage employment, as well as the associated implications for residential location, may result in a 'clash of cultural norms' affecting Polish immigrants' activity with local nationals and their settlement and assimilation into the UK (Trevena, 2009:21; see also De Lima et al., 2005; Spencer et al., 2007).

Likewise, varying intra-ethnic migration strategies among Polish immigrants (both short- and medium-term) may influence their desire to 'integrate' in their residential locations. Trevena (2009) suggests that Polish immigrants are often willing to live in poor-quality, overcrowded accommodation, in part due to the perceived temporality of their situation (Trevena, 2009:18; Robinson et al., 2007a:26; Robinson et al., 2007b). This may be explained by immigrants' expectations of short-term migration; by their financial goal-oriented migration; and by their use of low-cost accommodation as a transitionary residence where agglomeration benefits can be gained in the short-term (Domański, 2007; Eurostat, 2017). These variations in motivation for migration, as well as associated influence on

selection of residential location, may affect integration and assimilation. For highly skilled immigrants who reside in lower-income areas, this may lead to clashes of cultural norms that affect their interactions with the local community. Such clashes may influence utilisation of cultural capital and interaction with local services, which in turn influence travel behaviours. Migration strategy and intention for short-, medium-, long-term or stepping-stone migration may likewise influence cultural engagement. Depending on life-stage and household circumstances, factors such as language barriers and knowledge of local transport networks (motility) may also influence travel behaviours. Considering the assertion that immigrants who do not assimilate may act as agents of change for greener travel behaviours, motivations underlying migration may be important factors in travel behaviours (Smart, 2015:206; Tal and Handy, 2010:85; Handy et al., 2008a:10).

A central finding among almost all of the relevant studies of Polish immigrants in the UK, prior to data collection, is that coming from a former Soviet Bloc country (and related implications) may have notable influences on Polish immigrants' cultural capital, life expectations and migration strategies. This was particularly evident in studies taking a life-course approach (Sliwa and Taylor, 2011; Trevena, 2009; Siemieńska, 2010; Ryan, 2010; Lubke, 2015; Düvell and Garapich, 2011). In particular, Szewczyk (2013) noted the important influence of the prevailing socio-political situation during future immigrants' formative years, suggesting that socio-political context influences one's world view, which in turn affects later decision-making around migration (Szewczyk, 2013:263; Edmunds and Turner, 2002). Careful consideration must be given to immigrants' capital (including *motility capital*), expectations, and migration strategies in considering their integration, levels of assimilation or acculturation, and the influence this has on the trajectories of immigrants' travel behaviour.

Life-course and Polish Migration to the UK

Migration occurs at many stages throughout the life-course, varying by age, gender and motivation for migration. These variations can result in notable differences in how immigrants interact with their destination country, and in turn influence immigrants' travel behaviours. Influential research conducted by Menninger (1988) reveals the phases immigrants are believed to experience after arriving in a new location. Menninger's conceptualisation of the *morale curve* (see Figure 3) suggest that, on average, immigrants take 12 months to settle into their new location. This process involves phases of high expectation (in the first 2–3 months); plummeting morale and frustration (after 2–3 months); acceptance of their situation in which expectations are adjusted (from 4–9 months); and finally adaptation to their new location and assimilation of local cultural expectations, norm, practices and behaviours (9–12 months) (Szewczyk, 2015; Whisler et al., 2008). Cierpial et al.'s (2010) research

with post-accession European immigrants in the UK supports the notion that a basic understanding of English language is usually acquired within 12 months of residence in the UK (Cierpial et al., 2010:6; see also Drinkwater and Garapich, 2013:10; Trevena, 2011; White, 2016). Although this research offers an explanation for variation in experience post-migration, it does not account for variations in age, gender, motivation for migration, or life-course stage.

Figure 3: Menninger morale curve
*As part of research conducted with the US Peace Corps in the 1950s, Menninger identified the morale curve as a predictable **emotional cycle** people go through. This model is used in business case scenarios when, for example, a company decides to send an employee to work in another part of the world on assignments lasting a few months or a few years. This can also apply to a self-selected individual who decides to migrate.*
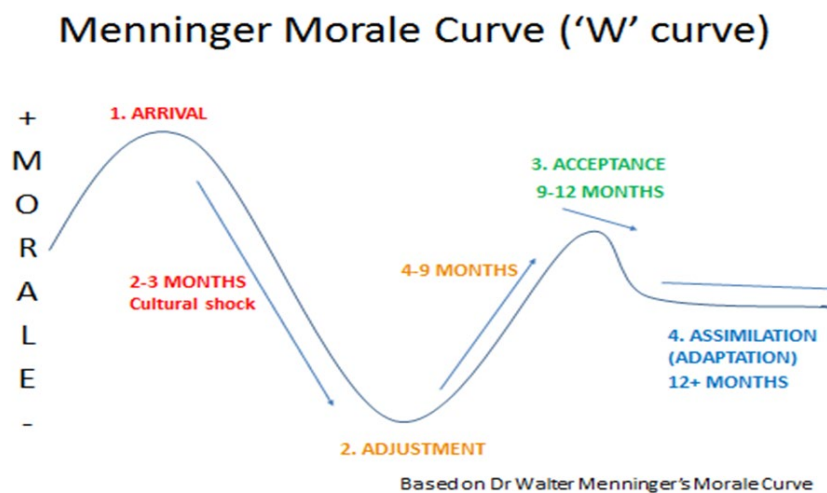
*1. ARRIVAL - The honeymoon period. **Morale is high** and **people have high expectations** about how everything is going to be. Immigrants experience curiosity and observation, non-involvement with culture, enthusiasm and apprehension*
*2. ADJUSTMENT - The **morale starts plummeting**. Individuals start encountering **communication difficulties** for example. There may be a wide-spread of negativity, general complaints about people and culture. This all happens within 2-3 months' time after arrival. **Reality is discovered to be different from anticipation**.*
*3. ACCEPTANCE - The acceptance stage (within 4-9 months). **People accept responsibility for their own lives**. Their **morale is raised** with the discovery that they are responsible for themselves and can have an influence on their circumstances, by making one of three choices:*
    1) Accept things the way they are;
    2) Change behaviour, attitudes, and approaches to work, and reactions to circumstances;
    3) Or leave the situation and go somewhere else. Individuals ADJUST their expectations to REALITY.
*4. ADAPTATION - Individuals cope with environment, they accept the reality – they have **realistic evaluation of cultural differences**; they move towards becoming their very own 'experts'.*

Source: Menninger, 1988

While examining changes in migration patterns in post-accession Europe, Luthra et al. (2014) examined the heterogeneity in Polish immigrants' motivation to migrate throughout Europe. Their research focused on migration to Germany, the Netherlands, London and Dublin, utilising a sample of 3,500 Polish migrants between 2009–2010 (777 from the UK). The data used came from the 'Causes and Consequences of Early Socio-Cultural Integration Processes among New Immigrants in Europe'

(SCIP) survey, focusing solely on Polish participants from the first phase of data collection. The research was built on the premise that 'new migration' (post-accession) is qualitatively different from earlier waves of economic migration (Luthra et al., 2014:11). This suggests that earlier models of immigrant settlement, such as Menninger's morale curve, may be more challenging to apply to immigrants whose demographics, motivations, and social and economic experiences are more diverse than those who migrated in the 1980s. Luthra et al. drew a number of important conclusions from their research after grouping participants into six categories: *temporary* (economic), *settled*, *family*, *student*, *circular*, and *adventurer* migrants. First, they found that economic migrants are more likely to be employed in lower-status jobs and have lower levels of social integration, and also report being less likely to 'feel at home' (Ibid:46) compared to other migrant groups. Second, they found that 'family', 'settled' and 'student' migrants are more likely to be actively invested in the country of destination, reporting feeling more at home than temporary (economic) migrants. Likewise, compared to economic migrants, these groups are likely to perceive more life opportunities for Poles in their destination country (Ibid:47). Whereas temporary (economic) migrants are the least likely to feel socially integrated, students and settled migrants report higher levels of social integration when compared to family migrants. Family migrants report strong relationships and friendships but are less likely to integrate into broader social networks (Ibid:49). These variations, based on Luthra et al.'s immigrant typologies, have important implications – but in broad strokes, they suggest that not all immigrants integrate in the same way, and that residential location choices may be influenced by different motivations for migration. They also suggest that life-course or life-stage, and associated pre-migration (social) capital, influences how immigrants integrate. Variation in integration, as discussed in relation to transport assimilation and migrant motility, may influence travel behaviours in the destination country.

Trevena (2009) highlighted the potential consequences of the large number of immigrants from Poland arriving at a stage in their lives when they are forming partnerships and starting families (Trevena, 2009:13). Trevena indicated that the dominant age range of Polish immigrants entering the UK was between 18–34 years old, split approximately equally by gender. The number of births to Polish women residing in the UK also notably increased post-accession, from fewer than 1,000 in 2001 to more than 16,000 in 2008 (up to more than 22,000 in 2016 (ONS, 2017; Trevena, 2009:13)). Interestingly, the majority were born to co-ethnic Polish parents, rather than Polish mothers and non-Polish fathers (Trevena, 2009:13; Osipovic, 2007). This may be particularly important in relation to Luthra et al.'s findings regarding integration of family immigrants. Where co-ethnic parenting occurs – that is, when Polish remains the primary language in the household – there may be less need or motivation to integrate into the local community. Lubke's (2015) examination of childbearing among

Polish immigrants identified a trend of increasing childbirth rates shortly after migration among Polish women in the UK (Lubke, 2015:4). This 'migration effect' was also noted by a number of researchers considering immigrants and childbirth in contexts outside the UK (Mulder and Wagner, 1993; Andersson, 2004; Milewski, 2007). Furthermore, it correlates with age at migration, or 'life-stage', as termed by Trevena (2009:13; see also Szewczyk, 2013:261), with female Polish immigrants in the 26- to 30-year-old age bracket having higher rates of childbirth immediately after migration, compared with younger immigrants (Lubke, 2015:12). This could have a number of implications for research on immigrants' travel behaviours. In relation to travel behaviours and life events, having children has been observed to have an important and recurring influence on behaviour change (Rau and Manton, 2016:59; Jones, 2013:195). Likewise, childbirth and the life-stage associated with parenthood has been observed to influence immigrants' post-migration decision-making around ethnic-clustering, acculturation and assimilation (Logan et al., 2002; Massey, 2001). Changes in socio-structural context of post-accession migration, combined with changes in life-stage at which Polish immigrants migrate, provide valuable avenues for further exploration. Further examination of underlying individual motivations for migration, as well as potential co-occurrences of life events not captured by Trevena (2009) and Lubke's (2015) research, would likewise be valuable.

Life-stage may also raise a number of questions about social capital and the type of capital immigrants may bring with them to the UK. Ryan et al.'s (2008) research on social support networks among Polish immigrants in London indicates that migration researchers may assume that all migrants arrive in their destination country with suitable cultural capital to slot into social support networks (Ryan et al., 2008:676). Some immigrants may arrive better prepared to bond with others 'like them', and others better equipped to bridge into networks of people 'not like them' (Ibid). Likewise, for some, social bridging with the national population or local community may be a less important priority if transnational support networks are maintained (Ibid:684). Migration strategy, or 'typology', as put forward by Luthra et al. (2014), may influence residential location and associated social capital developed through places of residence. Qualitative data collected by Spencer et al. (2007), who examined Central and Eastern European migrants' lives beyond the workplace in the UK, highlighted how immigrant expectations around residential location may change over time. Immigrants may recognise the cultural (i.e. linguistic) capital value of residing outside co-ethnic-clusters or houses in multiple occupation (HMOs) with co-ethnics. Over time, they may opt to reside with other nationals in order to develop cultural capital beyond the 'ethnic stock' afforded by co-ethnic-clusters or HMOs (Spencer et al., 2007:40-42; Ryan, 2008). In relation to travel behaviour, Shin (2010) and Blumenberg and Smart (2010) suggest that car-sharing follows social support networks, which are often afforded by co-ethnic location. Where the desire to develop inter-ethnic social capital occurs, it may have a

notable impact on travel behaviours. Likewise, development of cultural capital – particularly language skills – may increase migrant motility (Flamm and Kaufmann, 2006:167/8), thereby easing access to local travel resources. Sime and Fox (2015) also suggest that social capital (or lack thereof) leads to restrictions in immigrant access to resources due to perceived local safety issues. Schwanen et al. likewise suggest that socially constructed norms may influence travel behaviours (Schwanen et al., 2015:130). This suggest that perceptions about the local area and local norms, influenced by life-stage-related context, may influence immigrants' travel behaviours. Importantly, arriving at different life-stages with different levels of social capital influences how immigrants negotiate intra- and inter-ethnic bonding.

By reviewing the ways in which immigrant children use and interact with social capital to access services post-migration, Sime and Fox found that children and families' ability to access local services was conditioned by socio-economic status pre- and post-migration (Sime and Fox, 2015:527). Their research drew on focus groups with migrant children aged 6–16 years old (n = 57) resident in the UK from 3 months to 3 years. They also utilised 23 family case studies with Polish, Lithuanian, Slovak, Hungarian, Romanian, Hungarian, Russian and Czech families (Ibid:526). Their research revealed that 'resources' needed to be mobilised to translate into 'capital'. Those immigrants arriving with low socio-economic capital struggled to mobilise sufficient resources to identify and access opportunities (Ibid), much like Luthra et al. (2014). Furthermore, they found that for some immigrants, 'intra-ethnic ties' hindered the development of social capital, marginalising them from local inter-ethnic opportunities, corroborating Spencer et al.'s (2007) findings. Interestingly, Sime and Fox found that in some circumstances, children occupied an active role in facilitating their families' access to services – utilising cultural capital gained through inter-ethnic interactions (Sime and Fox, 2015:533). Although transport research focuses strongly on the role of childbearing in changes to household-level travel behaviour, the agency of children themselves is rarely considered in the behaviour-change process. Sime and Fox's research highlights that children's agency, as well as the wider influence of children on travel behaviour, should be considered moving forward. Although in the majority of cases, migrant children may depend on parents' stocks of capital, there are scenarios in which children may employ their own capital as agents of change. This means that life-stage and childbearing may have multifaceted influences on immigrants' travel behaviours.

Life-stage, therefore, may influence immigrants' travel behaviours in a number of ways. Life-stage can affect the social capital that immigrants bring to their destination country, and it can affect their motivation to stay and/or integrate. Moreover, it can influence how immigrants bond, and it can influence how immigrants interact and engage with local opportunities. Life-stage can also affect 'needs' within the local context – for example, through the life-stage-related needs of family members

having children. For Polish immigrants, migration strategy, the 'migration effect' on childbearing, and intra- and inter-ethnic bonding are particularly important considerations. Future research must factor in the complex interaction of life-stage with immigration and travel behaviours, considering both the explicit and implicit influences of life-stage on behaviours and decision-making.

Gender and Migration

Trevena's (2009) research highlighted how gender may have a particularly important influence on Polish immigrants' migration strategies – and, in turn, on their post-immigration travel behaviours. Although the demographics of Polish immigrants to the UK are approximately equally split by gender, Trevena recognised that many were migrating at a stage in their lives when they were forming partnerships and starting families. In this respect, gender and socio-cultural norms related to parenting are likely to have a considerable influence on subsequent travel behaviours. Hanson's review of the literature on gender and sustainable travel behaviour highlighted the potential for variation in culturally defined behaviour related to gender along ethnic lines (Hanson, 2010:12). Although, historically, female travel differs from male travel in a number of ways – such as in terms of trip range, frequency, purpose and mode – Hanson suggests that these norms are culturally constructed and may be ethnically mediated. These differences may be in practical terms – factors such as trip type – or through culturally associated gendered roles and childrearing needs (Schwanen et al., 2012). Such differences may also be due to socialised gender norms associated with different travel modes – for example, socially coded perceptions of hitchhiking as a 'dangerous' activity for females; or reduced female solo travel due to perceptions of vulnerability (Law, 1999:580/581). This can be extended to the broader Western perception of males moving between spheres (via car), and women moving within spheres via foot and PT (Ibid:582). These perceptions perpetuate wider gender stereotypes related to driving that have developed into behavioural norms in Western societies (Moè et al., 2015). Although gender perceptions are evolving in the UK, the influence of local cultural norms in immigrants' places of origin should be factored into post-migration travel behaviours. Pykett's research on behaviour change suggests that 'soft paternalist' policies related to travel may perpetuate gender inequalities in travel behaviour (Pykett, 2012; Schwanen et al., 2012:530) because such policies overlook how people engage with the world and the responsibilities they have towards others, each shaping travel behaviours (Schwanen et al., 2012:530; Hanson, 2010). As Law suggests, policies treat travellers as independent units often overlooking the complexities of travelling with (and for) dependents such as children (Law, 1999:581). UK-based travel research conducted by Jones (2013:195), and Jain et al. (2011:13/15) highlights how gender can have a notable influence on travel behaviours, particularly on parents, for broadly similar reasons to those outlined by Law (1999).

Szewczyk's (2013) research on Polish immigrants' migration to the UK reported a number of interesting findings in relation to the influence of gender on migration strategy. Szewczyk observed that, compared to males, female migrants showed stronger emotional attachments to family in Poland, and that this hindered on-migration beyond Europe. For female graduates, remaining in the EU with easy access to hometowns in Poland was a key consideration in the decision to migrate (Szewczyk, 2013:256). This was mediated by both distance and financial considerations related to return travel. Different migration strategies are associated with different approaches to integration and assimilation to local behaviours. Retaining easy access to hometowns as a broader mobility strategy is likely to influence wider travel considerations. Among other outcomes, this could influence residential locations and perceived access to (air)ports, travel considerations for (air)port access, and financial planning for recurrent home visits. Erel and Ryan's examination of migrant capitals, building on qualitative longitudinal data from Polish, Turkish and Kurdish immigrants in London, supports the idea that gendered position in ethnic groups and society of residence impacts access to capital (Erel and Ryan 2018:6). They suggest that masculinities and femininities simultaneously shape and are shaped by the locations where migrants reside (Ibid:3). In particular, they suggest that gender, parenting, and time (as a resource) act as barriers to immigrants building, accessing and utilising capital (Ibid:9). In the context of travel behaviour, this again supports Jones (2013) and Jain et al.'s (2011) findings that gender and parenting affect travel behaviours.

Erel and Ryan (2018) also suggested that gender norms or stereotypes influence migration strategies and how immigrants interact in their country of residence. Their research identifying Polish immigrants in London who actively avoided intra-ethnic cultural interactions with the Polish community and religious associations typically utilised by Polish immigrants as a source of ethnically defined stocks of social capital for support in the UK (Erel and Ryan, 2018: 8; Tal and Handy, 2008). Erel and Ryan attributed this separation to the perception that homosexuality disrupted traditional Polish gender norms (2018:8). In their review of gender stereotypes and driving competence, Moè et al. (2015) reported that strong nationally or ethnically defined gender norms are also seen to influence travel behaviours. Although not focusing specifically on immigrants, their research revealed the influence of gendered stereotypes about driving on females' perceived and actual driving ability (Moè et al., 2015:199). Although Moè et al. found that cultural norms influence perceptions of female driving ability, Mast et al. (2008) similarly found that Western stereotypes of masculinity, driving and risk-taking subconsciously influence male driving ability. 'Masculine' stereotypes encouraged risk-taking behaviour while driving in the presence of other males (Mast et al., 2008:842). Because stereotypes are embedded in culture and socially transmitted (Moè et al., 2015:205), immigrants

migrating from other countries are likely to be influenced by gendered stereotypes embedded from an early age in their country of origin.

Gender, therefore, has an evolving and highly influential potential impact on both migration and subsequent travel behaviours. Gender influences the stages in life when immigrants migrate as well as associated migration strategies. This can, in turn, influence intended length of residence in the UK, potentially impacting immigrants' motivation to acculturate or assimilate into local behaviours. There is an interaction between gender, and the cultural norms and stereotypes of countries of origin and destination. In the case of Poland and the UK, travel opportunities between the two are shaped by structural factors, such as travel policies, potentially developed around gendered stereotypes; these can create a disparity in travel opportunity based on gender lines and tend to be highly influenced by caring responsibilities associated with childrearing. Gender and sexual identities can influence immigrants' desire to utilise ethnically defined capital while settling in the destination country, in turn influencing level of intra-ethnic interaction and associated acculturation processes. Furthermore, culturally embedded gendered perceptions associated with transport modes have been observed to have a tangible influence on travel behaviour. Changing structural contexts for migration (up to the point of data collection for this project) have also been observed to influence approaches to migration and gender parity in terms of numbers and engagement with labour markets. Gender, therefore, is an important factor for further analysis through a life-course approach.

Polish Migration and Travel Behaviour

In the UK, research on Polish immigrants' travel behaviours is extremely limited, due in large part to a dearth of research on immigrants' travel behaviours in general – and the scant research that does exist on the travel behaviours of Polish immigrants to the UK has focused on air-based return travel between the UK and Poland (Burrell, 2011), rather than on daily travel behaviours. However, a range of research exists that provides context to Polish immigrants' experiences of immigration to the UK. Key studies consider the role of religion in cultural integration (Trzebiatowska, 2010; Davis et al., 2006); Polish use of social networks in the migration process (Vershinina et al., 2011; Ryan, 2010); the impacts of migration on the timing of childbearing among Polish immigrants (Trevena, 2009; Osipovic, 2007; Lubke; 2015); and the effect of structural context on the migration process (Szewczyk, 2013; Botterill, 2013; Sliwa and Taylor, 2011; Düvell and Garapich, 2011; Siemieńska, 2010). These studies highlight the influence that migration from a former Soviet Bloc country has on immigrants' cultural capital, life expectations and migration strategies. This emphasises the need to consider immigrants' capital, desire for integration, and 'levels' of assimilation on their travel behaviours in the UK. Each factor may influence immigrants' overall levels of settlement in a location, influencing the ways in

which they engage with their new environment and form their relationship with the travel options available there.

Burrell's (2011) study of Polish immigrants' travel behaviours in the UK combined secondary in-depth life-course interviews collected from Polish migrants in the UK with additional interviews of 25 Polish immigrants in the Midlands. Burrell examined the role of aero-mobility on the Polish immigrant experience. The study focused on the role that low-cost air carriers have in Polish immigrants' experience of migration, post-accession to the EU. The study reveals that Ryanair, among a small number of other low-cost carriers, have become highly depended upon by Polish immigrants in the UK as part of their 'hypermobile' transnationality in which regular movement between the UK and Poland has become a normal part of their lives (Burrell, 2011:1025/1028). Although the initial influx of post-accession immigrants levelled out, in 2011 there remained a tenfold increase in air travel between Poland and the UK post-2004, which is a dramatically larger increase than any seen in trips between the UK and other European Accession (or A8) countries (Burrell, 2011:1024). In 2017, prior to data collection for this project, estimates from the International Passenger Survey (IPS) indicate the figure remained stable at approximately 4.6 million annual trips between the UK and Poland (ONS, 2022). Much of the post-accession increase was attributed to *visiting friends and relatives* (VFR) travel, which complements a range of strategies used by Polish immigrants to maintain connections with Poland (see Vertovec, 2004; Graham and Shaw, 2008; Dobruszkes, 2009). In 2017, VFR travel accounted for approximately 52% of travel between the UK and Poland (ONS, 2022) (see Appendix A: Analysis of the 2017 IPS).

Burrell concludes that low-cost travel routes primarily provided by air and coach have aided potential immigrants in moving abroad easily and have become an integral part of the migration process (Burrell, 2011:1024/1029). However, Burrell's research also revealed that, due to the often unpleasant, cramped and restricted experience of travel on low-cost airlines (and coaches), some Polish immigrants still preferred to travel between countries by car (Ibid:1027). For some, although it is time-consuming, travel by car offers unrestricted ability to transport goods and material possessions (often Polish foods) between countries (Ibid:1029). In 2017, air travel accounted for approximately 78% of trips between the UK and Poland (ONS, 2022; see Appendix A). Tunnel and sea – modes that accommodate cars and coaches – accounted for only 6% and 15% of travel, respectively. Although these findings are of value in themselves, Burrell's research largely focused on the structural factors influencing air travel with limited engagement with transport and mobility theory. The impact of *travel socialisation* in selection of air or coach travel over car travel, for example, is not considered.

While there is a dearth of research on Polish immigrants' travel behaviours in the UK, there is a body of research examining transport policy and behaviour within Poland, providing insightful historical and political context. The transformation of Poland's transport system post-1990 was marked by a shift from public to private modes of transportation. The economic and social implications of these changes have been deep (Pucher, 1995:5). Increased car and lorry use put a strain on road infrastructure, led to shifts in travel demand from public to private transport, and resulted in parking and congestion challenges (Ibid: 6). The newfound symbolism of automobiles as emblems of freedom and status further fuelled this shift, despite the glaring inefficiencies and environmental toll of increased car usage (Ibid:12). Data Puchner collated across a 30-year span from 1970 to 2000 from the Ministry of Transport of Poland indicate a notable increase in car ownership per 1000 of the population: 1970 (2%), 1980 (7%), 1985 (10%), 1988 (12%), 1990 (14%), 1992 (17%), 2000 (21% estimated) (Ibid: 6) increasing to 27% in 2001 (Pucher & Buehler, 2005:726). Alongside this, the fall of communism in Poland led to a notable turning point in the country's urban development and transport policies. Post-1990, there was a shift towards suburban accommodation, with new housing and commercial developments emerging on the urban fringe. This contrasted starkly with the high-density, government-owned apartment complexes that characterized the Communist era (Pucher & Buehler, 2005:731). The impact on transport policy was to reduced subsidies for PT and shift financial responsibility for transport to municipal governments. This resulted in increased fares and reduced service quality, prompting the move towards private car ownership (Ibid:734). The post-Communist era saw the non-enforcement or removal of restrictions on car use, leading to parking challenges and increased traffic congestion (Ibid:735). In some regions private car ownership became a necessity due to the deterioration of PT services, particularly in smaller cities and rural areas where public transport became scarce (Ibid). Furthermore, freight transport by train decreased, shifting to roads and increasing lorry traffic and strain on road networks. Financial constraints prevented the Polish government from adequately subsidizing public transport, with international lenders prioritizing roads and vehicle manufacturing over PT. Despite these challenges, Pucher and Buhelr's (2005) research indicated the majority of Polish citizens favoured prioritizing public transport in the lead up to the early 2000s, suggesting a need for policy changes to accommodate those preferences (Suchorzewski, 2002). Strategic investments in public transport infrastructure, such as tram modernization, and policy interventions like car taxes were considered as interventions that could help mitigate the adverse effects of car dependency as early as 1995. The experiences of Poland offer valuable lessons for other transitioning economies grappling with similar urban transport challenges. They perhaps also form important lessons for Western economies such as the UK, highlighting in recent history the wider

social and economic impact of the inefficacy of privatized PT. This research to some extent frames the experience of Polish immigrants prior to arriving in the UK.

2.5 Changing Travel Behaviours

Research into changing travel behaviours is not limited to research focused on immigration. Research on changing travel behaviour spans a wide range of approaches and areas of focus. Importantly, it draws heavily on broader theories of behaviour change from environmental psychology (community theories), social psychology (interpersonal theories), habit theory and the theory of planned behaviour (individual theories). This section provides a brief overview of how broader theories of behaviour change are conceptualised and how they underpin consideration of immigrants' changing travel behaviours.

Behaviour change can be approached at a community level. In relation to immigrants' travel behaviours, community level behaviour change is most commonly discussed in relation to 'agents of change' (Tal and Handy, 2010:85; Handy et al., 2008:10). Recently arrived immigrants as 'agents of change' may promote use of more sustainable modes of transport within the communities they inhabit. This concept ties into diffusion innovation theory – the idea that the adoption of new practices or ideas follows a normal distribution curve (Yasuda and Batres, 2012; Rogers, 1962). Innovators (approximately 2.5% of a population) may be the first adaptors of a behaviour, progressively followed by others until a modal shift occurs and the majority adopt the 'new' behaviour (Yasuda and Batres, 2012). This also corresponds with the notion of 'tipping points', proposed by Gladwell (2000). Tipping point theory suggests that there may be a point in time when behaviours become socially endemic, and the rate of adoption accelerates among the general public (Scheiner, 2018; Lane, 2011). Gladwell's position has been interpreted in many different ways in different fields of study. Appended to diffusion innovation theory in the context of changing travel behaviour, it suggests that once a critical mass of behaviour changes has occurred within a community, this can stimulate endemic behaviour change for the majority of the community. On a superficial level, this argument is engaging and complements the notion of *agents of change* within existing immigrant travel behaviour research. However, this approach can be critiqued for overlooking the more complex facets of human need, behaviour and interaction, or how different types of capital interact – economic, cultural, social and symbolic (Erel, 2010:646).

Although popularity can increase adoption, other community factors can also have an important role. Rogers (1962) considered these other factors in the original conception of innovation diffusion theory; however, in relation to travel behaviour change, factors such as social capital, social inclusion and social exclusion, which are broadly connected to the idea of motility, are also important

considerations. Bourdieu (1986) argues that everything is not equally possible or impossible for all members of society, and that the social world involves constraints that can determine individual chances of social and occupational success (Bourdieu, 1986:15). As a consequence, people may interact differently with their physical, cultural and social environments, and the norms embedded within them (Halpern et al., 2004:16). These different interactions – and, in turn, level of access to different opportunities – are mediated through variations in capital. Tying this back to tipping points and innovation diffusion theory, new behaviours may diffuse within a particular environment among those with appropriate and sufficient capitals. In relation to travel behaviour, this may be, for example, adequate economic capital to engage with a transport mode; adequate cultural capital (language skills) to comprehend information on PT options; or adequate social capital and interaction with others in the community (including working hours and patterns) to observe others engaging with new travel modes. In the context of immigrants' travel behaviours, behavioural changes influenced at a community level feed quite fluidly into the idea of motility, or migrant motility (Flamm and Kaufmann, 2006:167/8). Behaviour changes depend on the interaction of the individual within the environment. Therefore, individual-level theories of behaviour change also play an important role in conceptualising immigrants' changes in travel behaviour.

Within the transport domain, the Theory of Planned Behaviour (TPB) and Habit Theory are frequently evoked in relation to changing travel behaviours. Ajzen's (1985, 1991) Theory of Planned Behaviour provides an integrated approach to conceptualising behaviour change. This incorporates individual attitude toward a behaviour, perceived social pressures (norms), and perceived behavioural controls (or perceived ability to achieve a given behaviour) (Halpern et al., 2004:22; Ajzen, 1991:184). The TPB therefore considers individual attitudes towards a particular behaviour, alongside community considerations.

Consideration of individual attitudes also ties into wider, individually focused theories such as Instrumental Conditioning and Habit Theory (or heuristics), which builds on Pavlov's (1927) examination of physiological activity and cerebral reactions. Interpretation of Pavlov's research suggests that people build associations with particular stimuli that condition their future responses or attitudes towards the stimuli. Applied to travel behaviour, this could suggest that transport users may have conditioned associations and attitudes towards particular modes of transport. Although there may be rational arguments for behaviour change, or an endemic adoption of a new behaviour within a community, conditioned attitudes towards particular travel modes may inhibit behavioural change at an individual level (Halpern et al., 2004:18). Likewise, Habit Theory, or the idea of heuristic reasoning, can also influence behaviour change at an individual level. Within the transport domain, habits and heuristics are often cited as barriers to behaviour change (Scheiner, 2018:47). Heuristics

represent short-hand judgements that individuals make about frequently occurring decisions. These judgements avoid engagement with the full range of information, simplifying often complex situations to make choices more quickly and easily (Ibid; Tversky and Kahneman, 1974:1130; Halpern et al., 2004:19). Applied to travel behaviour change, this theory suggests that individuals with strong habits and heuristic reasoning may neither engage in rationally driven motivations for changes to travel mode, nor be influenced by wider social norms or newly popularised travel modes. Instead, often for the sake of ease, they will default to their habitual travel behaviours using pre-existing short-cuts in the decision-making process. This interacts with much of the research by Fujii et al. (2001) and Verplanken et al. (2008) on temporary structural changes to travel choices to interrupt habitual behaviours, as well as Baslington's (2008) research on early childhood socialisation and habituation of travel behaviours. Both suggest that individual-level factors play a key role in behaviour change, beyond rationality and community influences.

Interpersonal theories to some degree extend or supplement integrated theories such as the Theory of Planned Behaviour. Whereas the TPB incorporates individual attitude, perceived social norms, and perceived behavioural controls, the Theory of Interpersonal Behaviour (TIB) considers personal norms, beliefs about appropriate behaviour within perceived social role, interpersonal agreements and individual self-definitions (Bamberg and Schmidt, 2003:268). Rather than relying on perceived social controls, the TIB integrates the objective presence of facilitating factors (behavioural controls), providing a stronger indication of the role of behavioural intention and habit in behaviour change (Ibid). Although the theories sit separately, research in the travel behaviour domain suggest TPB and TIB may be better considered as complementary models (Ibid:280). Applied to immigrants' travel behaviours, this could suggest that immigrants' self-perceptions of their social roles, behavioural intentions, bonds with others, or interpersonal agreements may have a notable influence on changing travel behaviours. This influence ties in with Bandura's (1977) conception of self-efficacy, and House's (1981) conception of the role of social networks in behaviour change (or social capital). Self-efficacy falls into the domain of behavioural controls or facilitating factors – focusing on the way individuals process, weigh and integrate diverse sources of information to assess effort expenditure against their self-perceived capability (Bandura, 1977:212). These behavioural controls (or facilitating factors), in turn, interact with and influence behavioural intentions. Although self-assessment of capability to achieve a desired travel behaviour appears, on the surface, to be an individualised endeavour, consideration of social networks and social capital suggest that assessment may involve interpersonal factors. Social relationships hinging on emotional closeness, reciprocity and geographical dispersion can impact individuals' capability to achieve an intended travel behaviour (Halpern et al., 2004:24). Applied to immigrants' travel behaviours, social networks and the role of social relationships are

frequently raised in relation to immigrants' travel behaviours, particularly among recently arrived immigrants. In US studies of recently arrived Latino immigrants, co-ethnic location and the utilisation of ethnically defined stocks of social capital were seen to have notable influence on short- and longer-term travel behaviours (Tal and Handy, 2008; Blumenberg, 2008; Smart, 2010). This particularly impacted inter- and intra-household car-sharing as well as the use of ethnically defined travel services such as jitneys (Tal and Handy, 2008). Interpersonal relationships, capital and networks could therefore have an important influence on immigrants' changing travel behaviours.

Broader theories of behaviour change underpin consideration of travel behaviour in a number of ways. Community, individual, and interpersonal approaches all have relevance when applied specifically to immigrants' travel behaviours. Innovation and diffusion of travel behaviours within a community with recent immigrants serving as agents of change; conditioned and habituated usage and perceptions; socially embedded norms; and travel strategies utilising social networks and cultural capital can all be seen to influence immigrants' travel behaviours in existing immigrant transport research. All also have a unique bearing on behaviour change and resistance to behaviour change at structural, interpersonal and psychological levels. An integrated approach to analysis of influences on immigrants' travel behaviours facilitated by a qualitative, semi-structured life-course approach to this study enables holistic consideration of these complementary approaches.

Summary

Chapter 2 provided an overview of a relatively broad range of topics to establish the current state of knowledge on immigrants' changing travel behaviours. Core concepts emerging from the review included immigrant transport assimilation, migrant motility, and immigrants' 'green' travel tendencies. The review also offered deeper insights into factors underpinning behaviour changes, including the role of structure, early childhood socialisation, habit formation, and the importance of linked lives and life stage in travel behaviours. To examine these concepts further, the following chapter outlines the conceptual framework developed for this study. The chapter also indicates how the life-course approach fuses with the conceptual framework as a pathway to examine development and change in travel behaviour over time. The chapter finishes with a brief outline of the context of Polish immigration in the UK.

3. Conceptual Framework, Life-Course Approach, and Context of Study

3.1 Integrated Conceptual Framework

The life-course approach has become an established paradigm of research in the social sciences, with increasing applications in both transport and migration research (Scheiner, 2018). The approach

provides a framework for understanding both social systems and environments in which an individual's decision-making is located, as well as an individual's (changing) motivations for behaviours. Focusing on the life-course facilitates the collection and consideration of a diverse range of events from multiple dimensions of life – not necessarily occurring sequentially – that constitute the 'sum total' of a person's 'actual experience over time' (Giele and Elder, 1998:22). This focus also allows for the 'encoding of historical events and social interaction outside the person' as well as age-related biological and psychological considerations (Giele and Elder, 1998:23). In relation to the research sub-questions of this project, adopting a life-course approach enables investigation of how travel behaviours have evolved at individual and household levels over time. In doing so, it captures changes in circumstances beyond the individual, thus facilitating documentation of wider contextual factors of influence at local and national levels, in countries of origin as well as destination. Informed by Lanzendorf et al.'s (2003) conceptualisation of the life-course, this framework integrates consideration of the lifestyle, accessibility and mobility domains with a temporal component (building on Salomon's (1983) original conception) but transcends consideration of only those trajectories conventionally considered relevant to travel behaviour, also considering individuals' entire lived experiences (Lanzendorf, 2003:9/1).

Figure 4: Giele and Elder's conceptualisation of the life-course paradigm
Giele and Elder's original conceptualisation of the four key elements of the life-course paradigm
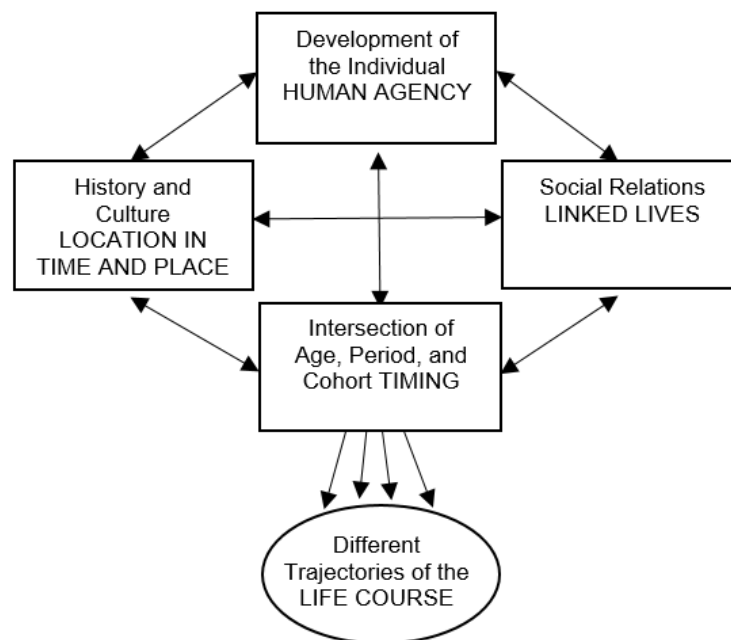
Source: Giele and Elder, 1998:11

Considering the complexity of immigrants' life-courses, as well as the range of life events overlapping, co-occurring and occurring across context, it is necessary to adopt a holistic approach that moves

beyond focusing on conventionally transport-related behaviours. As outlined above, residential locations, language barriers, access to transport, education and employment, possession and use of capital, life events (especially family formation), family obligation in countries of origin, levels of motility (or motility capital), social exclusion, migration strategy, and desire to assimilate in a destination country may all interact to affect an individual's travel behaviours in the destination country. This framework enables exploration of relationships and interconnections between different domains, processes, events and concepts of relevance, and provides opportunities to identify causal relationships. In order to simplify how the above-mentioned key concepts related to immigrants' changing travel behaviours can be integrated into a fluid conceptual framework, the concepts are framed within four basic components of the life-course approach. These were developed by Giele and Elder, who offer a conceptualisation of the life-course approach that is deconstructed into four basic, interrelated components that reciprocally feed back into one another to form different life-course trajectories (Giele and Elder, 1998:11; Elder et al., 2003). These components are *human agency, linked lives, location in time*, and *timing*. The interrelation of these components, below examined in more detail and related specifically to the study of immigrants' changing travel behaviours, result in different *life-course trajectories*. Figure 4 illustrates the interaction of these components in Giele and Elder's (1998) original conceptualisation of the life-course, used as a basis for the conceptual framing of the life-course in this study. Three additional components of the life-course approach that are transferable between studies are *trajectories*, *transitions* and *turning points*. 'Trajectories' are considered as paths (or sequences) of change in developmental processes related to long-term behaviours, resulting in, for example, working life trajectories, educational trajectories or parental trajectories (Benner et al., 2021). 'Transitions' are considered as changes in status or identity (such as marriage, residential relocation or career changes) leading to a new state that open up opportunities for behavioural change during transitions between states (Elder et al., 2003:8). 'Turning points' are considered as substantial (and perhaps abrupt) changes in an individual's life, often related to changes in employment (Ibid). Although not reflected in Giele and Elder's model, these are key conceptual terms for discussing life-course research.

Human agency as a conceptual component can broadly be considered as the role of the individual in actively making decisions about their lives rather than passively receiving a predetermined life-course (Black et al., 2009). In relation to immigrants' travel behaviours, this can be considered as immigrants' self-determined decision-making regarding transport modes, which may be intricately related to preferences rooted in early-life experiences or desires affecting later-life trajectories (Scheiner, 2013:343; Haustein et al., 2009). Examples of this include strong early childhood connections to cycling, socialisation of particular travel norms, or acceptance of a particular economic position and

its associated effect on travel behaviour. Such preferences could have an influence on later life across a range of domains – including employment type (or career development), leisure preferences and family formation – each affecting individuals' transport requirements. Early-life experiences could also influence individual motivations to migrate, such as life, employment or relationship aspirations. Examining early experiences and influences in terms of self-perceptions of economic positions, as well as exposure to materials and events that promoted migration as an economic strategy, is important in exposing factors underlying the formation of individual agency and decision-making strategies. Likewise, *agency* is influenced by temporal context and may be dynamically shaped throughout the life-course. This component particularly relates to consideration of immigrants' migration strategies (short, medium, long term or onward), and their desire to ethnically cluster or culturally assimilate. Furthermore, agency may be central to consideration of immigrants' greater tendency to use non-SOV travel modes, even after assimilating to the behaviours of their destination country. Agency, combined with *linked lives* and *timing*, may also be particularly relevant to consideration of family formation, particularly higher rates of childbirth immediately after migrating. The types of capital employed by immigrants, as well as the ways this is used to access resources from ethnic social networks or networks formed with nationals in the destination country, may again be heavily influenced by individual agency (preference), while also fundamentally rooted in *location in time*.

Linked lives, as a conceptual component, can be considered as the way in which lives are lived interdependently with others, influenced by particular social, historical and environmental contexts (Black et al., 2009). Linked lives can extend beyond proximal consideration of family ties to include friends, neighbours and work colleagues with whom social linkages shape how individuals interpret life events (Marshall and Mueller, 2003:11). Linked lives could be considered as a central motivation in the migration process. They can be considered at the individual level, intra-household level, and at the network or community level. As a conceptual component, linked lives can also be intricately linked to financial considerations, with travel behaviour research highlighting the importance of financial consideration at a household level in relation to mode choice. Likewise, evidence from the migration literature suggests that complex family relationships influence migration decisions, and that both forming (and disbanding) relationships as well as having children are strongly influential factors in immigrants' travel behaviours. Discussion of linked lives can also be extended conceptually to consider both the ethnically defined stocks of social capital and the facilitating role they serve for immigrants settling in and accessing (transport) resources within a destination country. Inter-household transport assistance, as well as the use of agglomeration benefits of residence in ethnic-enclaves to access employment, may all be considered in relation to linked lives, alongside *location in time*. Linked lives, in this respect, can be considered in terms of their influence on daily travel behaviour and planning

(including levels of motility); facilitating, enabling and sustaining migration; and immigrants' social inclusion and transport assimilation.

Location in time and place refers to the way in which an individual's life-course is embedded in and shaped by socio-historic context and place (Elder et al., 2003:12). This can influence the opportunities provided in a particular location, acculturation to particular norms and behaviours, and the meaning individuals apply to particular experiences with potentially lasting effects (Ibid). Location in time and place encompasses a range of socio-temporal factors, both in terms of life-course trajectory development and post-migration travel behaviour. Local factors may include the nature and composition of an area an individual migrated to or from, whether socially (in terms of network connections, socio-economic position and structural context) or spatially (in terms of (infra)structural context, accessibility and wider spatially related socio-political influences). Spatially, living in rural areas with primarily agricultural employment opportunities and limited public transit infrastructure may dramatically affect immigrants' (travel) behaviours compared to living in large cities with urban employment opportunities and well-connected PT services. In the context of migration, changing spatiotemporal contexts from countries of origin with state-owned PT services to destination countries with privately owned PT service may also have a significant influence on immigrants' travel behaviours. This may be particularly relevant to the trajectory development of Polish immigrants transitioning from Soviet-era communist rule and state-owned transport infrastructure. Careful consideration of immigrants' locations in time and place in their countries of origin, as well as its influence on early behavioural developments and socialisation of behavioural preferences, is also important. Likewise, socio-temporal factors, such as Polish accession to the European Union in 2004, and the UK's decision to depart the European Union in 2016, are important considerations due to their potential influence on the opportunities, motivations and experiences of (Polish) immigrants – each with possible influences on travel behaviours. Locations in time and place may also have an important influence on immigrants' integration or assimilation into a destination country, with research indicating that migration during different waves of migration has a dramatic influence on the types of capital immigrants employ in their destinations. This also influences the behaviours of immigrants in subsequent waves of migration, with differential access to ethnically defined support networks affecting both migrant motility and migrant (transport) assimilation.

Timing can loosely be considered as biological and psychological chronology of certain life events, which – although not rigidly predetermined – tend to occur in a particular order (Black et al., 2009). When they occur outside this order at alternative stages in the life-course, the consequences of – and meaning attributed to – events may change (Elder et al., 2003:12). Timing is an intersectional element

of life-course trajectory development, with considerations and life events from all of the above life-course elements occurring at particular or stages in an individual's life-course. Transport researchers have adopted two main categories of events with strong influences on travel behaviour that tend to occur at particular stages: *key life events* and *mobility milestones* (Rau and Manton, 2016:53). Events that occur throughout the life-course, such as attending university, leaving home, starting or changing employment, marriage, childbirth and residential relocations (including migrations), can be considered as key life events influencing travel behaviours (see Chapter 3 for further discussion of events considered in this study). These events occur at a particular time or stage in an individual's life-course, often related more to age-related biological and psychological considerations (Giele and Elder, 1998:23) than to location in time and place. Mobility milestones – or transport-related life events such as driving licence acquisition and bicycle or motor vehicle purchases – similarly occur at a particular moment in an individual's life-course. These are, again, associated with life transitions and changes in travel behaviour due to their direct influence on access and ability to use different modes of transport, and are often (although not exclusively) related to age. In consideration of immigrants' changing travel behaviours, timing may also have a direct influence on migrant transport assimilation, and recent research suggests that migration may have a direct influence on the timing of other life events, such as childbearing, which has been identified as an event with a strong influence on travel behaviour. Timing of events can also influence immigrants' motility; possessing (or not) qualifications such as driving licences that can be used in their destination countries greatly affects immigrants transport options.

The life-course and associated trajectories result from the interrelated and reciprocal feedback between the above life-course components, representing the sum total of an individual's lived experience (Giele and Elder, 1998:22). The data produced through life-course research enables researchers to document and unpick the processes by which social and contextual change influences and alters the developmental of an individual's life-course and behaviours (Ibid:16). Epistemologically, the life-course documented by researchers exists only as an interpretation of events constructed by the individual and researcher at the time of the study, at a particular stage in the participant's life-course. In the context of immigrants' changing travel behaviours, conceptualising the life-course approach in this way facilitates consideration and construction of individual life histories, spanning life in immigrants' countries of origin to their country of destination. Adopting Giele and Elder's integrated life-course framework enables consideration of both individual and contextual factors of influence in life trajectories and travel behaviours, providing opportunities to examine (causal) relationships. This framework accommodates consideration of in-depth, personal information about travel behaviours, while also framing discussion of findings at a conceptual level. This framework also enables deep

exploration of factors that may not be considered in extant research on immigrants' travel behaviours (unidentified influences) while providing a structure to integrate emerging findings with existing concepts, particularly as they relate to migrant motility and migrant transport assimilation. Aligning with both existing transport and migration research, the integrated framework ensures that socio-spatial and temporal contexts remain a central component of the data collection and analysis process. One important purpose of this research is to consider the ways in which findings from Polish immigrants' experiences in Bristol and WSM relate to the travel behaviours of immigrants from any country as well as how and why these behaviours change over time. The conceptual framework used for this study facilitates transferability of findings across studies rather than focusing on generalisability. Embedding transferability with proximally similar studies in the design process ensures later transferability of findings and (potential) theoretical contributions (Polit and Beck, 2010:1455).

Figure 5: Conceptualisation of migrant motility
Conceptual model illustrating the role of capital, transport disadvantage and social inclusion in migrant motility
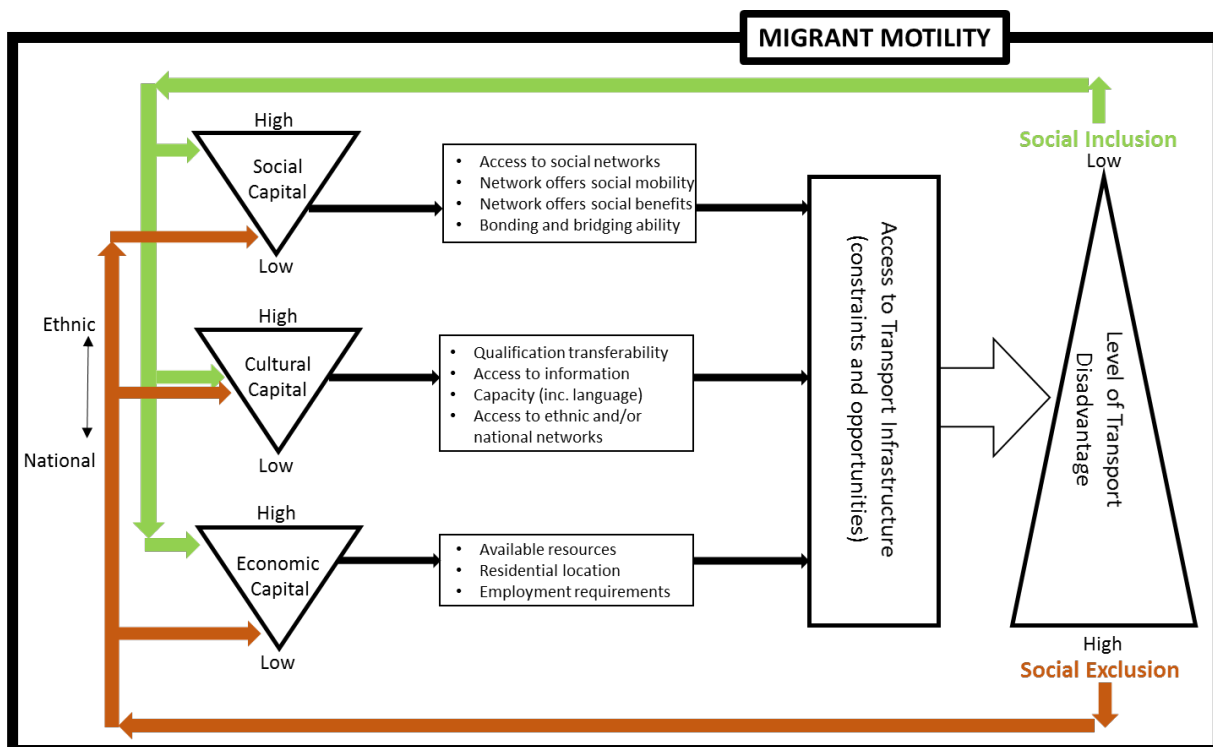
Migrant motility forms a further underpinning concept throughout this study, as discussed in Chapter 2, section 3. The varying ways in which cultural capital is employed by immigrants may affect their motility due to the influence that cultural capital utilisation may have on engagement with ethnically

defined social networks or national networks through knowledge of local systems. Figure 5 illustrates the relationships between capital, transport disadvantage and social inclusion in migrant motility. This incorporates consideration of the way ethnically defined capital may be utilised, as well as its influence on other forms of capital. The model demonstrates how migrant motility is dynamic in nature, with levels of capital, advantage or inclusion potentially reinforcing disadvantages as outlined above. Cultural capital, as the model highlights, may be a fluctuating factor: immigrants may possess high levels of cultural capital within an ethnically defined community – which, combined with environmental considerations, may facilitate social mobility even if social capital is low. As the model demonstrates, this can influence access to transport and associated levels of inclusion, cyclically influencing their overall level of motility. This is particularly relevant to consideration of ethnic co-location and agglomeration benefits, which may have an important influence on assimilation, transport assimilation and immigrants' travel behaviours. While motility provides an excellent theoretical framework through which to conceptualise and analyse how people build the capacity to plan travel activities and evaluate travel options within their environment, it is not without limitations (Flamm and Kaufmann, 2006:167/8). Key criticisms include failure to distinguish speed potentials from their use, leading to criticisms of technological determinism and failure to capture values, norms and social standard in peoples' evaluations of available travel options (Kaufmann, 2003: 76). Here, it is possible that complex social factor may be overlooked due to social and behavioural changes driven by technological innovation within transport systems. Others have also criticised the concept of motility for not capturing gendered differences in movement and spatiality. Joshi and Bailey (2023) examining female transport motility in Delhi, India, argue that the concept of motility often overlooks the unique ways in which different genders move and interact with space (Joshi and Bailey, 2023:2). Their research highlights how motility may not be as simple as an evaluation of travel options, and that factors such as gender, past experiences and preference can be overlooked where these may have a profound influence on perceived travel 'choices' (De Witte et al., 2013:339). Despite these limitations, motility remains a useful framework for conceptualising the relationships between capital, transport disadvantage and social inclusion.

3.2 Conceptual Model

The way in which factors of influence on immigrants' travel behaviour have been conceptualised for this study are demonstrated in Figure 6. This model focuses on the individual rather than immigrants as a group, capturing the complexity of factors associated with immigrants' travel behaviour development. On the left-hand side, contextual influences in an individual's country of origin (Poland) are considered. In immigrants' early life and life pre-immigration, contextual factors such as (infra)structural context (what transport options were available and accessible given the individuals'

social position), residential location (rural or urban), family obligations (care requirements for elderly, children or extended family), and the position of the country of origin in the wider context of international migration. The factors in the country of origin are perceived as influencing the socialisation of particular travel behaviours and preferences, directly influencing their behavioural heuristics.

Figure 6: Influences on immigrants' travel behaviours over the life-course
Conceptualisation of the influences on immigrants' travel behaviours throughout the life-course,

On the right-hand side, the contextual influences in an individual's country of destination (the UK) are considered. Post-immigration contextual factors include (infra)structural context (what transport options are available and accessible given the individuals' social position), residential location (rural or urban, ethnic-enclave or transitional residence), family needs (care requirements for immediate family), and the position of the country of destination in the wider context of international migration (Is the country receiving high numbers of in-migration? What is influencing in migration? What are the societal perceptions of migration?).

Immigrants' experience in their countries of origin may have continued influence through remittance income to Poland. Factors of influence in an immigrants' country of origin, and country of destination – mediated through concerns in their immediate environment – lead to development of multiple behavioural trajectories across an individual's life. Factors of influence throughout the life-course outlined in this model may affect the development of travel-behaviour trajectories, and may also influence career trajectories, family trajectories or leisure trajectories, among others, throughout the entirety of an individual's lived experience. The lower component of the model illustrates how the above influences merge to form an individual's travel behaviour as one of these trajectories.

3.3 The Life-Course Approach

Travel behaviours, migration, and immigrants' travel behaviours have been researched using a variety of approaches, as outlined in Chapter 2, section 2. Most of the limited research that exists on immigrant travel behaviour has been in the form of descriptive studies that compare self-reported travel behaviour from large-scale travel surveys of immigrants and non-immigrants; very few studies examine the motivations behind immigrants' travel behaviours (with the exception of Chatman and Klein, 2013; Lovejoy and Handy, 2011; Douma, 2004). Research into changing travel behaviours has taken on many forms, both quantitatively (Heinen and Chatterjee, 2015) and qualitatively (see Jain and Lyons, 2008; Baslington, 2008; Jain et al., 2011; Chatterjee et al., 2013a; Chatterjee et al., 2013b), with some studies combining approaches (see Stanbridge and Lyons, 2006; Shergold et al., 2012). Particularly relevant to examining the complexity of individual-level changes in travel behaviour, some transport researchers have adopted a life-course approach that draws heavily on in-depth interviews with relatively small sets of participants, examining in detail the role of life events and mobility milestones on individual-level travel behaviour (Clark, 2012; Jones, 2013; Jones et al., 2014). This approach provides a functional framework for examining the variety of possible interactions occurring throughout an individual's life, aiding identification of causal relationships among different life domains (Lanzendorf, 2003:16). It is particularly useful for understanding decision patterns in a complex reality (Ibid), capturing information on engagement and disengagement from activities, patterns, continuity and change, and exposing behavioural heterogeneity that may lead to a common outcome (Nelson, 2010:414).

Although a number of other approaches to life-course research have been used by transport researchers examining panel and retrospective survey data (Beige and Axhausen, 2012), the qualitative, in-depth interview approach as exemplified by Jones (2013) offers some unique advantages in consideration of the complex life-course of immigrants. Lanzendorf et al. (2003) reinforce the appropriateness of the qualitative methods for examining complex issues within the life-

course approach (Lanzendorf et al., 2003:16; Elder et al., 2003:6). The growing body of biographical life-course research into travel behaviour has revealed a number of interesting insights into how changes in travel behaviour are influenced by life events occurring at particular times, in particular places, and connected to particular relationships, throughout the life-course (Lanzendorf, 2003; Chatterjee at al., 2013; Müggenburg et al., 2015; Clark et al., 2015). This has complemented the biographical approach taken to construct mobility biographies by Rau and Manton (2016), who made some transport-specific conceptual advances, advocating mobility milestones (Rau and Manton, 2016:53) in place of what other studies utilising other forms of life-course research have described as 'transport-related life events' (Chatterjee et al., 2013c). The life-course approach has been particularly well utilised for the study of cycling and walking behaviours (Jones, 2013), general travel behaviour (Schoenduwe et al., 2015), mobility decisions (Geist and McManus, 2008), and the effect of socialisation on commuter mode choices (Döring et al., 2014). Jones' examination of cycling and walking over the life course is a particularly influential, highlighting to some extent advancement in qualitative life course methodology through use two-stage retrospective interviews and LHCs to support memory recall. However, Jones' approach is not without criticism. Beyond the general critiques posed at qualitative life course research such lack of generalisability, issues with retrospective recall and overemphasis of sociocultural context (Elder and Giele, 2009: 20; Wingens, 2022), Jones' research suffers on two other fronts: a priori dimensions of analysis; and limited transparency and account of visual data analysis. While qualitative life history research affords detailed insight into lived experiences of a particular sample, predetermined analytical dimensions and limited transparency in the visual analysis process hinder transferability of finding and replication of methods. These are two key considerations that must be integrated into future enhancement of the life course methodology (Elder and Giele, 2009). That said, Jones' research serves as an exemplar of insight that can be gained into travel behaviour through a qualitative life course approach. Beyond the insights into changing travel behaviour outlined in Chapter 2, section 5, research adopting the life-course approach has revealed a number of further insights with relevance to the study of immigrants' travel behaviours. In an examination of travel behaviour and residential relocation, Scheiner (2012) emphasised the benefits of the life-course approach in terms of the span of life domains from which information can be collected. In particular, Scheiner emphasised the importance of not only conventionally studied life events – such as acquisition of a driving licence and purchase or disposal of a vehicle – but also the importance of the household and family biography (including the impact complex family formations), the employment biography, the residential biography, the effect of childhood and adolescent socialisation, and the temporally variable effect of ageing (Scheiner, 2012:434).

Lanzendorf (2003) highlights the importance of three key life domains (similar to those advocated by Scheiner (2012): the lifestyle domain, accessibility domain, and the mobility domain, which contain life events affecting travel behaviour (Lanzendorf, 2003:1/9). The lifestyle domain refers to the social, cultural or political environment, such as the formation of a family, participation in the labour force or orientation towards leisure; the accessibility domain refers to the relevant locations of residence, job, leisure or others activities (and, therefore, of relevant urban form elements); and the mobility domain refers to the availability of modes of transport (car ownership, PT season ticket) and the actual activity and travel patterns (Lanzendorf, 2003:9). Other research into travel behaviour has indicated that behaviours are the outcome of a complex interplay between person-specific and context-specific factors that can change over the life-course (Ricci, 2016:14). Beliefs, attitudes and past experience can all play an important mediating role in the travel decision-making process, especially when travel behaviour is consciously and actively considered (during a life transition), rather than simply habitually performed (Ibid). A recent review of life-course research by Chatterjee and Scheiner concluded that life-course research has contributed to a 'better understanding of travel', revealing the individual processes embedded in personal networks and wider societal, economic and spatial processes (Chatterjee and Scheiner, 2015:28). Research to date has shown that changes in travel behaviour are closely associated with events in the life-course and with broader life-trajectory developments (Ibid).

In more recent research, Scheiner (2018) has developed a theoretical framework for mobility biographies, or transport-specific life-course research. Although the paper does not specifically address migration and travel behaviour, conceptualising interrelated influences affecting changes in travel behaviour is eased by the framework Scheiner provides. It also highlights the importance of wider social contexts on travel behaviour and, in the context of this research, it emphasises the potential complexities involved in the study of travel behaviour development across two different structural contexts. This model is outlined in Figure 7 below. Furthermore, Scheiner's framework provides strong justification for incorporating detailed information across different life domains, timing and structural contexts into visual depictions of the life-course, or life-history timelines (LHTs). This is also supported by Findlay et al.'s (2015) study, which sought to establish a conceptual framework for analysing demographically linked drivers of migration. Reiterating Giele and Elder's (1998) original conception of the interrelation of human agency, location in time and place, linked lives, and timing, Findlay et al. suggest that migration is fundamentally embedded within linked lives and the time–space of an immigrant's life-course. Specifically, this embeddedness enables analysis and comparison of contexts typically considered as cohort effects and life-stage, as well as and comparison of period effects typically associated with structural forces operating at the time of

migration (Findlay et al., 2015:392). This again lends support to the notion that visual depiction of influences across these life domains can aid in analysing the complexity of migrant travel behaviour while also enabling comparison across periods and contexts. The life course approach adopted for this study integrates visual data collection and analysis and demonstrates a methodological advancement of Giele and Elder's (1998) original conception of the life course. This advancement addresses a number of criticisms of Giele and Elder's approach: primarily the concern that conceptual advancements in theory have outpaced advances in research design, methods, and data analysis (Elder and Giele, 2009: 20). This disconnection risked limiting full exploration of the complexities of the life course. Furthermore, by adopting a visual methodology and collecting data through a two-stage interview using life history calendars and life history timelines, concerns about loss of study participants from the sample due to multiple data collection points become less relevant (George, 2019). Likewise, by adopting this approach, concerns posed by Wingens (2022) regarding the overemphasis of sociocultural context in life course research can be partially alleviated. Empowering participants to co-create their timelines and focus on the factors - personal or social - that anchor memories they perceive to be important to behaviours changes, enables a more holistic approach incorporating human agency and psychological considerations (Wingens, 2022). These critiques highlight the need for ongoing refinement and evolution in life course research methodologies to ensure they are capable of capturing the complexity and nuance of human development across the lifespan.

Figure 7: Scheiner's conceptualisation of travel behaviour development over the life-course
Scheiner's conceptualisation of travel behaviour development over the life-course incorporates a number of theoretical approaches to travel behaviour change. This framework highlights the importance of both context (structural factors) and personal life events (individual factors) on the development of travel behaviour throughout the life-course.
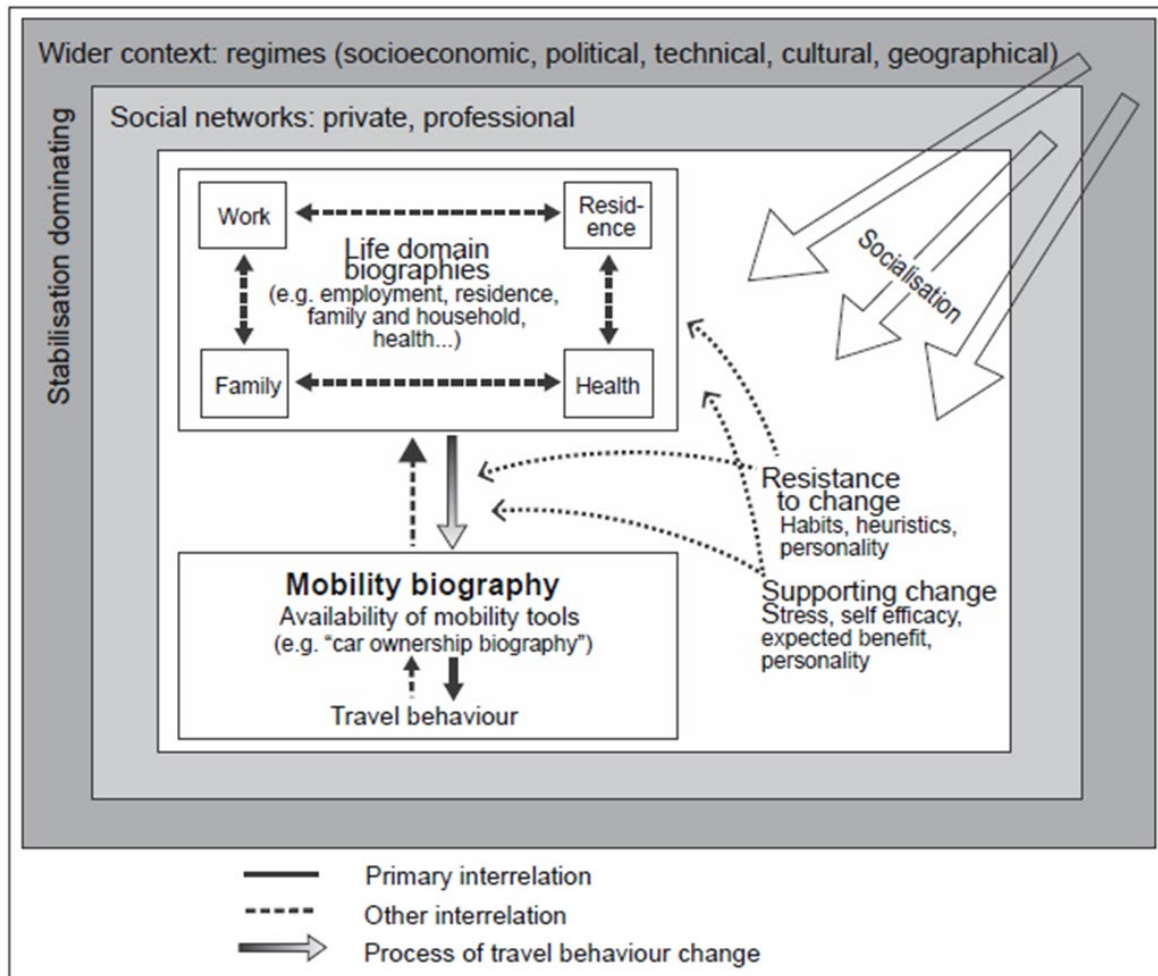
Source: Scheiner, 2018

From a geographical perspective, the life-course approach has been used to examine the spatial mobility of immigrants, both internal (De Jong et al., 2008) and international (Frändberg, 2006 and 2008; Bailey, 2009; Findlay et al., 2015), with a number of studies specifically considering Polish immigrants' experiences in the UK (Kleinepier et al., 2015; Botterill, 2013; Lubke, 2015). Frändberg's work on transnational mobility revealed how life-course transitions was related to travel behaviour change, and also indicated the potential effect of international mobility during childhood, adolescence and post-adolescence on individuals' travel behaviour later in life (Frändberg, 2006; Rau and Manton, 2016:52). The application of life-course research in other areas, such as intimate partner violence (Yoshihama et al., 2005; Myers, 1999) and the impact of childhood on later life (Dornan and Woodhead, 2015: Johnson et al., 2011; Blaauboer, 2011), has conceptually advanced the framework and associated methodological approaches. The range of applications and insights provided by qualitative life-course research situates the life-course approach as an ideal framework in which to collect information about travel behaviours of international immigrants, as well as to explore the

influence of home-country beliefs, attitudes and past experiences on transport practices in a destination country. The purpose of biographical life-course research in the methodological form applied for this study is not to generalise findings to a wider population; instead, the aim is to show where findings have meaning or relevance in the understanding of other individuals, contexts and situations (Finlay, 2006; Jones, 2013), examining personal choices and strategies that underpin decision-making (Ryan, 2010:80).

At a conceptual level, Jones's (2013) exploration of walking and cycling behaviours closely aligns with the approach conceptualised for this study, with obvious transferability across some conceptual and theoretical findings as well as the methodological approach. As outlined in Chapter 2, a number of Jones's findings about travel behaviour throughout the life-course may be of relevance to consideration of immigrants' travel behaviours. In particular, the co-occurrence of multiple interrelated life events (Jones, 2013:194), the opportunities and constraints created by micro- and macro-environmental contexts, the influence of intrinsic individual motivations, and the effect of gendered experiences on travel behaviour (Ibid:195). In terms of travel choices, immigrants encounter the same opportunities and constraints as nationals, with an additional layer of complexity as a consequence of migration. As such, each of Jones's (2013) findings may be identified as driving behaviours behind immigrants' travel behaviours. Furthermore, Jones's conceptual framework roots present day travel behaviour in past events and experiences (Ibid:92). Although this position is, in many ways, taken for granted within the life-course approach, Jones's strong focus on the way that past experience with particular modes of transport at particular stages in the life-course influences future travel behaviour is particularly relevant (Ibid:92/222). Considerations made in existing studies of immigrants' travel behaviour indicate that immigrants have a greater tendency to use some modes of transport over others in ways that have yet to be accounted for by other variables – such as access to resources or (infra)structural context. Specifically considering the ways in which past experience with particular travel modes has influenced 'present' travel behaviours among immigrants in their destination country may offer explanations for this behaviour not yet provided by existing research. Furthermore, Jones's (2013) study targets 'sustainable' travel behaviours. Existing research on immigrants' travel behaviours suggest that immigrants have a greater tendency to engage with sustainable travel modes, offering some transferability of findings and approaches. Alongside this, Jones's study specifically examined the interwoven trajectories related to different life domains and the influence these have on travel behaviour. The depth of analysis is beyond that usually examined within life-course research on travel behaviour (Jones, 2013:91). This depth of focus on interrelated trajectories across life domains is particularly relevant to the study of immigrants' travel behaviours, where co-occurrence of life events across multiple domains (e.g. migration, residential relocation,

starting new employment, transitional need to engage with new travel options) requires holistic engagement with immigrants' entire lived experiences (Giele and Elder, 1998:22). Methodologically, Jones' study also offers some transferability, particularly in the construction of interpretative, visual biographies with the aid of life-history calendars (LHCs) (Ibid:2/99), and use of a two-stage interview process in order to ensure the quality of LHCs, enhance the retrospective recall of participants, and offer opportunities to further examine certain details emerging from the first interview (Ibid:90/99/104/107). As such, it is anticipated that there may be a high degree of conceptual and methodological transferability between Jones's study of walking and cycling behaviours, as well as from the outcomes of this research, to the changing travel behaviours of immigrants.

3.4 Context of Study: Polish Immigration to the UK

In order to investigate *how and why the travel behaviours of immigrants change over time,* this research uses case studies of Polish immigrants living in two structurally different locations in the South-west of England: Bristol and Weston-super-Mare. The Bristol Primary Urban Area (PUA) and Weston-super-Mare (WSM) were selected as case study areas due to their structurally different characteristics in terms of urban form, density, economy, employment and transport infrastructure. Polish immigrants to the UK were selected as a case study group due to the scale of Polish migration to the UK. Historically, the UK has had a sizeable Polish immigrant population (Trevena, 2009:1; Vershinina et al., 2011). After Poland's accession to the European Union in 2004, Polish immigrants became the largest immigrant population in the UK, estimated at 911,000 in 2016 (Trevena, 2009:1; ONS, 2016:8). Similarly, Polish immigrants are the largest immigrant population group in the Southwest of England (approximately 66,000 (14%) of the 446,000 immigrants in the region (Migration Observatory, 2017; ONS, 2017b)). Bristol contains an estimated at 15,400 immigrants from Poland, 3% of its population of 454,200) (Bristol City Council, 2017:37). WSM's population of 83,641 consists of around 4% Polish immigrants – approximately 3,346 (North Somerset Council, 2016:15; ONS, 2014: gssE35001322; Bristol City Council, 2015b). In assessing the motivations underlying Polish immigrants' travel behaviours, their motility and their transport assimilation, two key structural differences between the populations of the selected locations offer opportunities for analysis. First, self-containment within the areas – considered as the percentage of the working-age population in employment who live and work in the same area – varies greatly between Bristol (85%) and WSM (64.5%) (ONS, 2011). Likewise, a breakdown of commuter mode choices indicates that 44% of the working-age population in employment in Bristol commute to work by car (BQLS, 2015:28), whereas this figure is 65% in WSM (ONS, 2011). Levels of car-borne out-commuting and access by this mode (socially and practically) offer interesting areas for investigation by facilitating consideration of structural factors of influence, such as transport availability and thresholds for non-motorised

transportation (Barton et al., 2003:119; SEU, 2003; Ricci, 2016:14). They also offer opportunities to consider immigrants' transport assimilation or behavioural acculturation, where non-SOV travel is used despite structural considerations. Focusing on structural factors such as thresholds for non-motorised transportation facilitates consideration of how access to transport (and livelihood) opportunities is mediated and negotiated by immigrants. After the British referendum on exiting the European Union, there were concerns that the Polish population in Bristol might fluctuate. However, effects were not seen ahead of completing data collection, which occurred before the exit agreements were finalised (see Barnard and Ludlow, 2016; White, 2015; Berg, 2015). Although there were some cultural shifts in the UK, Polish immigrants in Bristol remained open to participating in immigrant-focused research.

Polish immigrants' travel behaviours (in the UK) have not been studied, and there has been little research into the social and transport provisions required to accommodate the increasingly diverse population of Bristol, of which Polish immigrants constitute a large proportion. Although linguistic barriers may pose a limitation, Cierpial et al.'s (2010) study identifies the importance of language for immigrants in accessing public services in the UK, indicating that studying a non-English speaking immigrant group may be of particular value in capturing an accurate account of immigrants changing travel behaviours in Bristol and WSM. Cierpial et al. also note that after approximately 12 months, a basic understanding of English language is normally acquired (Cierpial et al., 2010:6). Recruiting long-term immigrants reduces many of the potential issues arising from participants' limited English language ability, as well as the researcher's limited Polish language ability. A further limitation may arise if Polish travel behaviours transpire to be very similar to those of UK nationals in Bristol, as the degree of 'alienation' from UK socio-cultural practices may be limited (Lijewski, 1982:18/19; Morokvasic, 2004; Stolle and Hooghe, 2011; Vincenza and Weinar, 2014). Although Mexican immigrants in California have been the focus of the majority of research into immigrants' travel behavioursthere may be a degree of transferability between the findings of research with Polish immigrants in Bristol and WSM based on volume of migration and changing structural contexts (despite a lack of a quantifiable measure of 'alienation' between Mexican immigrants in California, and Polish immigrants in Bristol and WSM). Furthermore, available data provides tentative evidence of co-location among immigrants in Bristol (see Bristol City Council, 2015b:30, 2015c:17), further increasing the transferability of findings to Californian studies, and highlighting that local infrastructural and built environmental conditions may be important factors affecting immigrant travel behaviours. This information is not available for immigrants in WSM. Findings from the 2003 UK Government Social Exclusion Unit report indicate that social and infrastructural factors play an important role in accessibility, social inclusion, and travel behaviours in the UK (SEU, 2003:30),

reinforcing the importance of considering structurally different areas as well as immigrants from different occupation types. Beyond differences in terms of self-containment and commuter modes, residence in Bristol compared to WSM may be associated with a number of other structural differences. Bristol, the UK's eighth-largest city, is classified as an affluent urban centre of business, education and heritage – whereas WSM is a smaller, seaside urban town classified as 'countryside living' (ONS, 2011). These differences may be associated with variations in terms of employment opportunities, transport infrastructure, socio-economic opportunities and average household incomes.

Summary

Chapter 3 provided an overview of how immigration and changing travel behaviours are conceptualised for the purpose of this study. Importantly, the conceptual framework highlights how both immigration and travel behaviour development are complex processes. Rather than reducing the data collected for the study to factors that the researcher deemed important, the conceptual framework highlights the need to collect information on the entirety of immigrants' lived experiences. The life-course approach was chosen because it enables this holistic consideration and facilitates further examination of the macro-contextual factors framing participants' experiences. Chapter 4 details the methodological approach developed for this study. Detailed consideration is given to visual tools for data collection and analysis, advancing current approaches to visual data analysis within the field of life-course research.

4. Methodological Approach

This study addresses the gap in current migration and travel behaviour research investigating *how and why the travel behaviours of immigrants change over time.* This is studied by examining Polish immigrants living in two distinct areas in the Southwest of England. The four sub-questions below inform the methodological approach used for this study and address the study question: *What are the travel behaviours of immigrants, why do they travel as they do, and how do these behaviours change over time?*

Research Sub-Questions:

1. **What are the travel behaviours of Polish immigrants living in Bristol and WSM, UK?**
   - *What* are the methods of transport used by Polish immigrants?
   - Are Polish immigrants able to use their preferred travel modes in their destination country?

- Do immigrants adopt 'different' travel behaviours in their destination countries, or are 'home' travel behaviours transferred to new locations?

2. <u>**How**</u> and <u>**why**</u> **do the travel behaviours of immigrants change over time?**
   - *What* influences immigrants' travel choices?
   - *How* and *when* do these influences change over time?
   - *Why* do some immigrants face barriers to using preferred methods of transport?

3. <u>**How**</u> **do Polish immigrants' travel behaviours in Bristol and WSM compare to immigrant travel behaviours reported in other research?**
   - *What* similarities and differences are there in the travel behaviour of immigrants in Bristol and WSM, and other locations?
   - *How* comparable are the factors influencing immigrants' travel behaviours in Bristol and WSM with other locations?

4. <u>**How**</u> **can the design of life-history interviews and visual depiction of life-course research be improved to better capture change and stability in complex behaviours across social and temporal contexts, thereby better facilitating case comparisons?**
   - *What* are the benefits of visual life-course analysis, and how can they best be used in the analytical process?
   - Is there value in visual presentation of life-course data for description and explanation of findings?
   - *How* effectively can change, stability and context be depicted in visual presentation of life-course research?

Throughout Chapters 2 and 3, various approaches to the study of travel behaviour and immigrant travel behaviours were discussed. However, in-depth understandings as to why immigrants travel in the way that they do warrants further investigation with new approaches. Life-course analysis based on in-depth interview is one method that has been effective in capturing information about travel behaviour changes. This approach offers the opportunity to gain insights into the motivations underpinning behaviours alongside an understanding of the broader contexts for behavioural choices from immigrants' perspectives (Ryan, 2010:80). It also allows for improved validity of data compared with analysis of quantitative secondary data sets or data from retrospective self-completion surveys (Jones, 2013:94; see also Elder et al., 2003). The life-course approach provides a framework to collect, document and analyse retrospective and present-day information about individuals' behaviours. This moves beyond the traditionally positivistic, quantitative approach to transport research, which has been criticised for its limited ability to analyse the processes that characterise and explain individual

travel behaviours and decision-making (Lanzendorf, 2003:6). Early iterations of the study considered travel diaries, focus groups and self-completion postal surveys (for an outline of approaches tested, see [Appendix B](#)). The final approach engaged participants in a two-stage, semi-structured interview utilising life-history calendars (LHCs) to improve memory recall. The period between initial and follow-up interviews facilitated initial analysis of interview data during audio transcription and conversion of LHCs into simplified life-history timelines (LHTs), which were used as a visual aid to guide the follow-up interview. Typed transcriptions of audio from both interviews were used to compile case summaries to aid analysis and increase case familiarity. Travel-trajectory timelines (TTTs) were created for each participant as a further visual aid for analysis of changes in travel behaviour over the life-course, being aligned to key event, transitions, and turning points narrated by participants. Interviews were conducted with a small sample of 26 participants – 13 participants from each location.

4.1 Ontological and Epistemological Positions

Traditionally, transport research has been rooted in engineering and has adopted both positivist ontological and epistemological positions, which assume that reality can be directly apprehended through observation (May, 2001) and that the purpose of research is to generalise laws about transport phenomena from observed empirical patterns (Jones, 2013:88). However, research that focuses on the variable behaviours of specific social and cultural groups using a transport system requires an approach tailored to *understanding* rather than *objectively observing* travel behaviours (Ibid; May, 2001).

By contrast, this study adopts a subjectivist ontological perspective to research, which assumes that reality is shaped by the perceptions of individuals and groups experiences (O'Gorman and Macintosh, 2015), and the resulting data and analysis is created from the 'shared experiences' of the participant and researcher (Charmaz, 2006:330). Adopting the subjectivist ontological perspective indicates that the research is not seeking a stable and universal truth (O'Gorman and Macintosh, 2015) about Polish immigrants' experiences of travel in Bristol in the form of *laws* (Jones, 2013:88), but rather a collection of perceptions of experiences from which commonalities, trends and notable variations may be identified. This approach strongly aligns with the researchers training in anthropology and ethnographic research methods.

The interpretivist epistemological perspective of this study acknowledges that in the social sciences, unlike the natural sciences, a finite explanation for phenomena is unlikely to be achieved through qualitative research (O'Gorman and Macintosh, 2015). Instead, this perspective accepts that research participants' 'self-awareness' 'permeates the research process', resulting in continually updating interpretations of the multiple realities influencing the 'phenomenon under investigation' (Ibid).

When participants are encouraged to verbalise and visualise their life histories and decisions around transport choices, it is likely that their current contexts will affect the ways in which they interpret recalled events, and may in turn influence perceptions of their current transport practices. The interpretivist approach recognises the different subjective experiences of individuals in society (influenced by race, gender, class, age and sexuality), alongside other variables such as disability and language (Lake, 1993). Rather than viewing these characteristics as creating essential differences among individual research participants, the interpretivist approach allows for consideration of the ways in which the meanings applied to their experiences were socially constructed (Ibid), and how they influence narrative content and narrative construction (Blumenberg, 2008; Lake, 1993).

Within the context of life-course research (or the 'biographical' approach), individuals are considered to be 'the carriers of their own history' (Giele and Elder, 1993:103). Their accounts may not be factually correct, but this 'failure' is not 'crucial' (Tierney and Lanford, 2019) as long as the researcher can understand why a participant 'elaborates' certain responses (Miller, 2000:3). In essence, the interpretivist perspective recognises that the 'truth' about phenomena of interest (i.e. travel behaviours) (Corbally and O'Neil, 2013) is contextually situated and influenced by dominant social discourses (Stanley, 1992; Plummer, 2001). Recall of events and the meanings that participants apply to events are shaped and reshaped as narratives are recounted. Likewise, readers and researchers' interpretations of participant narratives are interpreted in particular contexts that influence the meaning and ideas of reality applied to the phenomena of interest (Corbally and O'Neil, 2013; Plummer, 2001).

Unlike conventional interviews, participants in this study are invited to construct the narrative using LHC and TTTs; interview respondents can participate in linking and connecting events documented, thereby more equitably distributing the analytical power within the interview between interviewer and interviewee (Adriansen, 2012:49). In the subjectivist-interpretivist context of this study, the approach recognised the interpretive nature of recall of life events in the construction of life histories and visual biographies. Recognition was also given to the contextual influences on the process of constructing these narratives in an interview setting aided by an LHC as a tool to prompt recall; this may place increased significance on life domains featured on the LHC in the interpretive reconstruction process. Situating narratives in socio-temporal and spatial context, the research process provided opportunities to consider the ways participants interpreted their contexts while also enabling the researcher to revisit the wider socio-temporal spatial context and consider other interpretive perspectives on events, gauging the plausibility of particular events in narratives provided.

4.2 Sampling Strategy and Recruitment Process

The study was based on a sample of Polish immigrants living in two structurally different locations in the Southwest of England: a city (Bristol) and a town (WSM). Length of residence in the UK was considered as a second sampling dimension. A sample of 26 Polish participants was selected for the study: 13 from each case study area, split approximately equally by gender in each area. It is unfeasible to utilise a small, qualitative sample within the life-course framework to make statistical generalisations of the type often associated with large-scale transport surveys. A smaller sample enabled collection of more in-depth detail on factors influencing travel behaviours, thereby facilitating a better understanding of what influences participants' travel choices (Mokhtarian, 2015) and how consideration of these influences may be transferred to consideration of others' behaviours (Polit and Beck, 2010:1455). Gender is also an important sampling criterion within each location. The existing literature on travel behaviour (Law, 1999; Uteng, 2021; Turner and Grieco, 2000; Beckman and Goulias, 2008) as well as migration (Morokvasic, 2004; Donato et al., 2006) reinforces the importance of considering gendered experiences in (qualitative) research. Research specifically focusing on Polish migration indicates that women constitute approximately 49% of post-accession Polish immigrants in Europe; this statistic guided the use of an approximately 50% gender split in the sample for this research (Luthra et al., 2014:15; Botterill, 2013; Lubke, 2015; Trevena, 2009). The sample is not recruited to be representative of the wider population to facilitate generalisation, but instead to gather a range of different life-course experiences among Polish immigrants in Bristol and WSM.

The sample is focused on long-term international migrants (LTIMs) as defined by the UN and adopted by the UK Office for National Statistics. An LTIM is defined as 'someone who changes his or her usual residence for a period of at least a year, so that the country of destination becomes the country of usual residence' (ONS, 2014a:6). This contrasts to a short-term international migrant (STIM), defined as 'a person who moves to a country other than that of his or her usual residence for a period of at least three months but less than a year' (ONS, 2014a:6). Because this definition is applied by the ONS as well as the UN, there should be a degree of comparability and transferability between the data collected during this research, and with existing national and international data sets. Furthermore, in order to collect a robust narrative on immigrants' experiences of migration and the establishment of travel behaviours in their new environment, a number of characteristics of the migration process itself indicate that recruiting participants who have been resident in the UK for a minimum of 12 months is advisable. This is supported by Menninger's research on the morale curve, which indicates that it takes approximately 12 months, on average, for immigrants to settle into their new location after passing through a number of phases of optimism and frustration (Menninger, 1988; see also Szewczyk, 2015; Whisler et al., 2008). As such, collecting a robust narrative on immigrants' experience of migration and

travel in their destination country is unlikely to be achieved within this first 12 months, considering fluctuations in experiences. Furthermore, as Cierpial et al. indicated, a basic understanding of English language is usually acquired within 12 months of residence in the UK (Cierpial et al., 2010:6; Drinkwater and Garapich, 2013:10; Trevena, 2011). It is easier (for both parties) to interview participants who possess some English language ability, as the researcher has only limited knowledge of the Polish language. Basic understanding of English is sufficient for the researcher to modify the language used throughout the life-course interview, making it more comprehensible and less technical across language barriers. A number of other strategies, such as the use of online translation services, were also used to address issues in comprehension of specific and technical transport-related terms. This reinforces the importance of recruiting participants who had been resident in the UK for a minimum of 12 months.

Bristol and WSM were selected as sampling areas to accommodate the variation in structural and built environmental factors that may influence immigrants' travel behaviours. Rather than attempting to select Polish immigrants from a tightly controlled area within these locations, the goal was to collect information on the experience of a wide range of Polish immigrants within loosely bounded, structurally different areas to diversify the sample. Extant transport research indicates that residential location type can have a demonstrable influence on travel behaviours. Likewise, Handy et al. indicate that recently arrived immigrants can face very low incomes, putting notable constraints on transportation, job and residential location choices (Handy et al., 2008:10). These factors can contribute to residential clustering as well as similarities in travel behaviours, and can also contribute to the formation of local travel 'cultures' (Ibid:11). Residential clustering may both shape and be shaped by consideration of distances to work, schools and local amenities (thresholds of non-motorised transport (see Barton et al., 2003:119)), which can vary dramatically between structurally different areas (Beige and Axhausen, 2012; Beckman and Goulias, 2008). Considering both town and city locations is useful in the identification of travel behaviours and motivations that may both transcend and be shaped by these varying factors (see Handy et al., 2008; Chatman and Klein, 2013; Buchanan and Barnett, 2006). Furthermore, Bristol and WSM evince great variation in their levels of self-containment and out-borne car commuting, thus offering opportunities to examine how immigrants address these structural differences. Population estimates for both Bristol and WSM indicated adequately large populations of Polish immigrants for sampling purposes – estimated at 15,400 and 3,346 Polish immigrants, respectively (Bristol City Council, 2015b).

In order to achieve a sample that fulfils the dimensions outlined above, a purposive snowball sampling strategy was used. Outside the field of transport research, studies of immigrant groups typically employ snowball sampling in which participants recruited early on in the research recommend friends

or family who may also be suitable and willing to participate in the research (Beauchemin and González-Ferrer, 2011; Biernacki and Waldorf, 1981). Although snowball sampling risked introducing self-selection bias – as secondary participants may be incentivised by financial reimbursement (Beauchemin and González-Ferrer, 2011:108) – pragmatically, the minor risk of self-selection bias was difficult to avoid (Jones, 2013:114). Furthermore, snowball sampling can result in the recruitment of family members, which may lead to homogenisation of accounts of immigrants' travel behaviours and life-courses. To mitigate this risk, preference was given to the recruitment of friends and acquaintances over family members, thereby encouraging heterogeneity in the sample. The sample was recruited in rounds so that recruitment of later participants was contingent upon the characteristics of those already interviewed, again promoting heterogeneity in the sample (Ibid:112). The final sample was composed of 26 LTIM from Poland: 13 living in Bristol and 13 living in WSM.

Participants were recruited in person by the researcher, who visited community groups, local restaurants, shops, churches and other locations identified as points of interaction for Polish immigrants. In-person recruitment allowed the researcher to explain the nature of the research, including recruitment criteria and research objectives, to potential participants (Jones, 2013). Likewise, it ensured that the introspective nature of the research could be communicated to participants before they agreed to participate. If necessary, an English-speaking point of first contact in the community group (a 'gatekeeper') assisted in explaining the purpose of the research. If the participant remained interested in contributing to the research, a Polish-language participant information sheet and a consent form were issued to the participant, thus enhancing their understanding of the research and what their participation entailed while the researcher was on hand to explain and answer any questions. At this stage, an interview date was arranged. Through the contact details provided on the participant information, sheet the participant had the ability to communicate with the researcher about any questions or concerns prior to the interview date. When attending interview(s), participants were once more guided through the consent form and participant information sheet, and the researcher addressed any remaining questions, thus ensuring fully informed participation.

Financial reimbursement for the participants' time (as indicated above), in the form of £10 high-street vouchers, was offered *after* willingness to participate had already been expressed – thereby avoiding the risk of incentivising participation (see Jones, 2013). The vouchers were used to reimburse participants for time spent on interviews, and as a strategy to reduce participant drop-out by reducing costs to participants (e.g. travel); the vouchers were handed over after completion of the second interview. A study by UWE researchers into Bristol economic immigrants for Bristol City Council reiterated the benefits of financially reimbursing participants in this format, as many immigrants in

the research reported feeling a lack of appreciation of the cost of their participation in previous research projects (Maddrell et al., 2016). Financial reimbursement proved effective in reducing participant withdrawal, although there was some drop-out between the point of first contact in the community and the first interview. However, once participants engaged in the first interview, they did not drop out before the follow-up interview and fully engaged with the research process. Possibly due to Brexit, during discussions with participants, the phrases 'migrant research' or 'people who have migrated' appeared to immediately discourage potential participants from contributing to the research because of the rising 'social stigma' attached to migration in the UK and growing feelings of 'discrimination' expressed by immigrants; these issues posed challenges in the direct recruitment of participants.

In response to such reluctance surrounding Brexit discourse, most participants were recruited through community 'gatekeepers' and snowball sampling. Recruitment was attempted in a range of locations and groups in Bristol and WSM identified at an early stage in the research. 'Gatekeepers' such as prominent members of social networks, shop or restaurant owners, and religious figures played an important role in accessing participants. Prior to recruiting participants from their community or network, discussion and explanation of the research project with community 'gatekeepers' led to more successful recruitment efforts compared to direct recruitment. Such 'gatekeepers', often speaking in Polish, were able to briefly explain the research to their network and present the researcher as a 'trusted' person, which encouraged community members to consider talking about participating, even if they ultimately chose not to contribute. Although research through 'gatekeepers' has a number of limitations, including the bias they may introduce through their selection of potential participants, in the early stages of the research the use of 'gatekeepers' opened doors to small networks of participants in which snowball sampling was subsequently conducted (Andoh-Arthur, 2019; McFadyen and Rankin, 2016).

4.3 Data Collection

Life-History Calendars

Retrospective, in-depth life-course interviews engage autobiographical memory. The act of remembering is a fundamentally reconstructive process, and as such it is vulnerable to distortions and reinterpretations (Giele and Elders, 1998:10/11). A number of researchers have identified recall issues in respect to qualitative retrospective interview data (Dawson et al., 2003; Scheiner and Holz-Rau, 2013). Although recall of autobiographical events is deemed to be relatively successful, researchers have employed a number of techniques to improve recall. Jones utilised life-history calendars (LHCs) during in-depth qualitative interviews to enhance recall by cueing autobiographical retrieval

mechanisms (Jones, 2013:102). Cues (or prompts) can include temporal, contextual and event-based triggers, and are easily recorded by the researcher in chronological order on LHCs during the interview process (see Jones, 2013; Lanzendorf, 2003; Ladkin, 2002). In essence, more events act as more reference points that help respondents recall the timing of less memorable events (Nelson, 2010:415). Alongside enhancing recall, Jones (2013) demonstrated that during a two-stage interview process, LHCs can reduce recall bias by facilitating cross-referencing of details across life domains, easily identifying gaps and contradictions within narratives (Jones, 2013:102; Martyn and Belli, 2002; Nelson, 2010:415). In a small-scale study by Yoshihama et al. (2005) examining recall of intimate partner violence over the life-course, the utility of LHCs to improve recall was tested. The researchers found that the use of LHCs improved recall, particularly of early-life events, compared with structured interview methods (Yoshihama et al., 2005:151). LHCs are therefore a tool to turn data collection into the co-production of data, whereby the LHC itself helps participants remember past events and reflect on unconsidered relationships (Tierney and Lanford, 2019). This is an important consideration from the interpretivist epistemological position of this research, potentially informing participants (re)interpretations of events. It also allows participants to visually cross-reference details across life domains, thus improving the accuracy of recall, and it allows researchers to ask *what*, *how*, *why* and *when* questions simultaneously (Blane, 1996:752; Tierney and Lanford, 2019). By allowing participants to review and amend LHCs in the second interview, the credibility of histories collected is also enhanced (Jones, 2013:108). Furthermore, LHCs enable easy identification of life events that appear improbable given the chronology of events in relation to participants' life-courses and the broader social context (Giele and Elders, 1998:78/79). Visual life-history methods are ultimately intended to ease recall and facilitate data validation while also enhancing interview transparency and data co-generation (Vila et al., 2022:895; Sheridan et al., 2011:565).

Other researchers who have utilised LHCs for in-depth interviews also emphasise the greater ease with which sequential events can be recorded graphically by LHCs, compared with straightforward interviews or questionnaires (Freedman et al., 1988:41). Freedman et al. specifically studied the accuracy of retrospective autobiographical data collected using LHCs, and compared against data for the same sample collected five years earlier. Their results identified a notable accuracy of retrospective recall using LHCs, evidenced through remarkable correspondence with the 1980s data set: of 900 participants in the study, only four LHCs were missing details for any given month compared with the original data collected nine-years earlier. Freedman et al. utilised complex LHCs in terms of life domains and time units, which resulted in a large calendar with relatively small units for data recording (Ibid:44). This contrasts with the calendar utilised by Jones, which focused on only five

Figure 8: Jones's life-history calendars and visual biographies documenting cycling behaviour over the life-course

Life-History Calendar
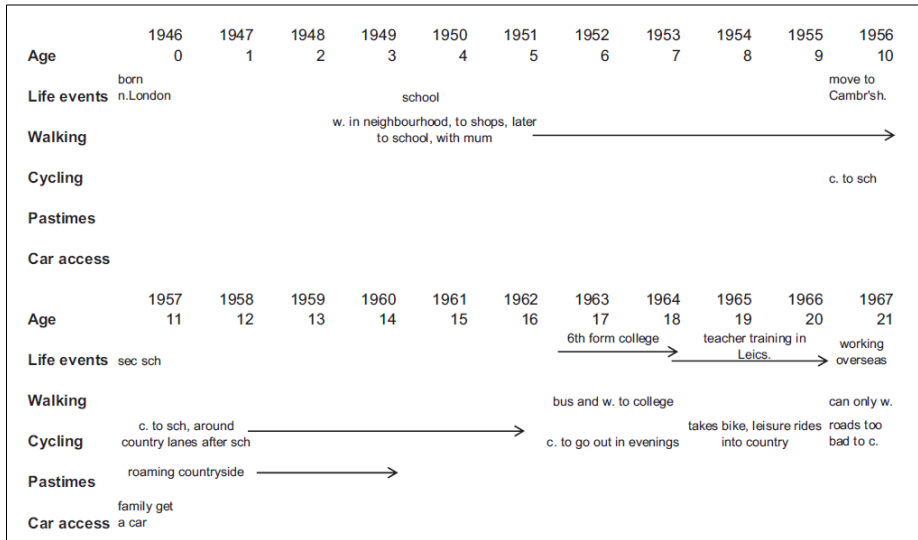
Visual Biography
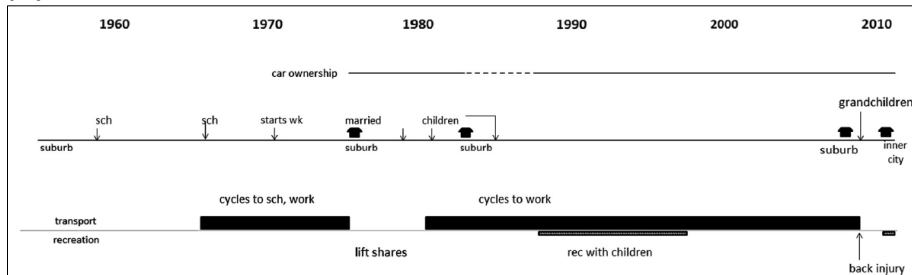
Source: Jones et al., 2014:184

domains and a timeframe of years, rather than the month-wise timeline used by Freedman et al. (Jones, 2013:101). With the life domains for this study outlined below (which include transport choices, international migration, employment, family, home life and relationships, and places of residence), a calendar format closer to that utilised by Jones proved to be the most appropriate tool for eliciting detailed information about key life events and milestones (see Figure 8). Building on both Freedman et al. and Jones's research, LHCs also serve as an organising framework for the analysis and presentation of findings. The narrative chronology documented using the LHC can also be supplemented by additional contextual research focusing on specific time periods and geographic locations. The chronological approach also enables the accurate establishment of temporal patterns in travel behaviour without the need to probe explicitly at travel choice decisions. Instead, this approach anchors travel behaviours to other memorable events and periods in the individual's life-course that may be recalled more easily. The use of LHCs to enhance recall and aid chronological recording of the life-course provides a tried and tested set of principles as a basis to guide both data

collection and visual analysis (Giele and Elder, 1998; Schoenduwe et al., 2015; Beige and Axhausen, 2012; Jones, 2013).

Figure 9: Life-history calendar example
Example of LHC used during interviews as a recall prompt and data collection tool
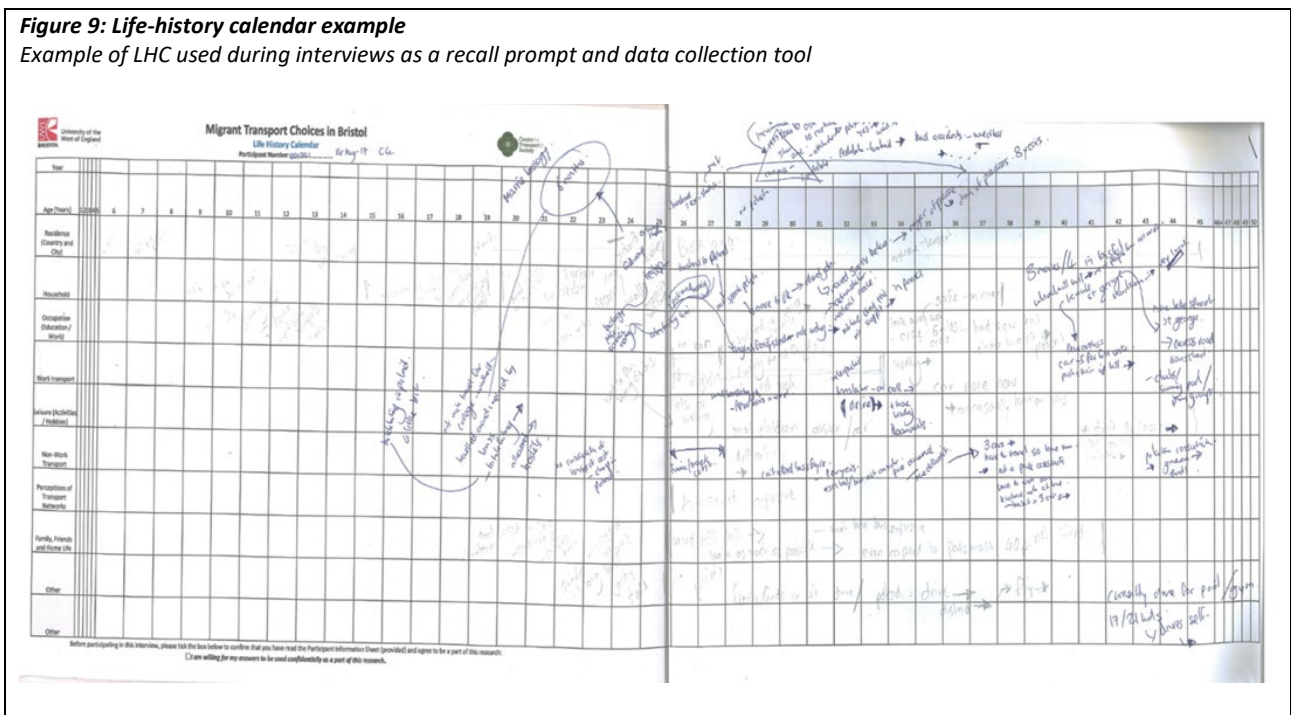
During the piloting stage, the utility of LHCs was tested with a small number of immigrants living in Bristol. LHCs proved to be useful tools to guide the interview process and aid participants' autobiographical recall. Pilot interviews established chronologies both backwards (from the present day to early childhood) and forwards (from early life to the present day) (see Figure 9). Lanzendorf (2003:5) and Ladkin (2002) advocated for life-course studies based on reverse chronologies; however, piloting indicated that LHCs were most effective in the initial interview when working chronologically from early childhood to the present day. The chronologies established in this format led to straightforward follow-up interviews with comparatively few adjustments. The visual chronology provided by the LHC provided a timeline of temporal events to which participants could relate specific memories, and also facilitated a standardised format for data collection. A number of LHC formats were piloted, leading to the development of a large LHC (approximately 84 cm wide) for the data collection process. This ensured adequate space for prompt documentation of LHC details without interrupting the fluidity of the interview process (Figure 9).

Table 2: Qualitative vs quantitative methods in the life-course approach

Qualitative Approaches	Quantitative Approaches
Retrospective Interviews (Qualitative) Negative: • Relies on individual recall and limits of human memory (Beige and Axhausen, 2012) • Difficult to recall daily travel behaviours and short-term decisions (Verhoeven, 2010) Positive: • Suitable for collecting information on important life-events (Lanzendorf, 2004) • Easier, cheaper, faster (Beige and Axhausen, 2012) • Uncovers interactions between events unlikely to be captured in quantitative surveys (Jones, 2013:74) • Captures what participants consider meaningful and salient about behavioural trajectories (Ibid) • Retrospective recall can be enhanced via LHCs, allowing incremental construction of accounts (Ibid:240)	**Panel Surveys (Quantitative)** Negative: • Time consuming, expensive, long period of data collection (Beige and Axhausen, 2012) Positive: • Reliable, minimal loss of memory, recorded temporally close to events (Lanzendorf, 2003) **Retrospective Surveys (Quantitative)** Negative: • Relies on individual recall and limits of human memory (Bruckner, 1994; Lanzendorf, 2004) • Difficult to recall daily travel behaviours and short-term decisions (Verhoeven, 2010) • Misunderstandings during self-completion (Behrens and Del Mistro 2008) • Relationships between events and trajectories established through statistical analysis (Beige and Axhausen, 2008; Jones, 2013) Positive: • Suitable for collecting information on important life-events (Lanzendorf, 2004) • Easier, cheaper, faster (Beige and Axhausen, 2012)

Qualitative in-depth interviews were selected for this study over other approaches to collecting life-course data on immigrants' travel behaviours. Although quantitative options such as collection of data via surveys, long-term panels or secondary data sets were considered, each had limitations. Table 2 indicates the strengths and weaknesses of interviews over other approaches where the aim of the research is to develop a deeper understanding of the array of influences affecting behaviours. In-depth interviews guided by LHCs, combined with verification of timing, sequencing and participants' subjective meaning via follow-up interviews, provided an effective approach to collecting and analysing the meanings that immigrants attributed to their travel behaviours. This approach supports Scheiner's conclusions in regard to mobility biographies, indicating that more focus is needed within transport research to understand self-(re)constructed biographies at a given point in time, and validating narratives with other background sources of information at the individual and societal levels (Scheiner 2018:55). Combining visual and interview approaches enhances the accuracy and completeness of the information recorded, adding opportunities to capture hidden meanings, complexities and simultaneity not captured in interviews alone (Berends, 2011:2).

Life-History Timelines and Travel-Trajectory Timelines

The LHT serves as a tool for collecting, validating and analysing data. LHTs are constructed collaboratively with participants to enhance the accuracy of timings, relationships and behaviours recorded during the interview process. The timeline forms a type of visual biography, outlining participants' visual biography, outlining participants' life histories from their earliest recollections in Poland through to the present day in the UK. A provisional LHT was produced by the researcher following the first interview (Figure 10). This drew on information documented in the LHC during the interview as well as transcription of the audio recording of the interview. The timeline was used to present a singular integrated life narrative of events across multiple life domains. Previous studies

Figure 10: Example of follow-up and refined LHTs
Examples of the development of LHCs into LHTs after the first and second interviews
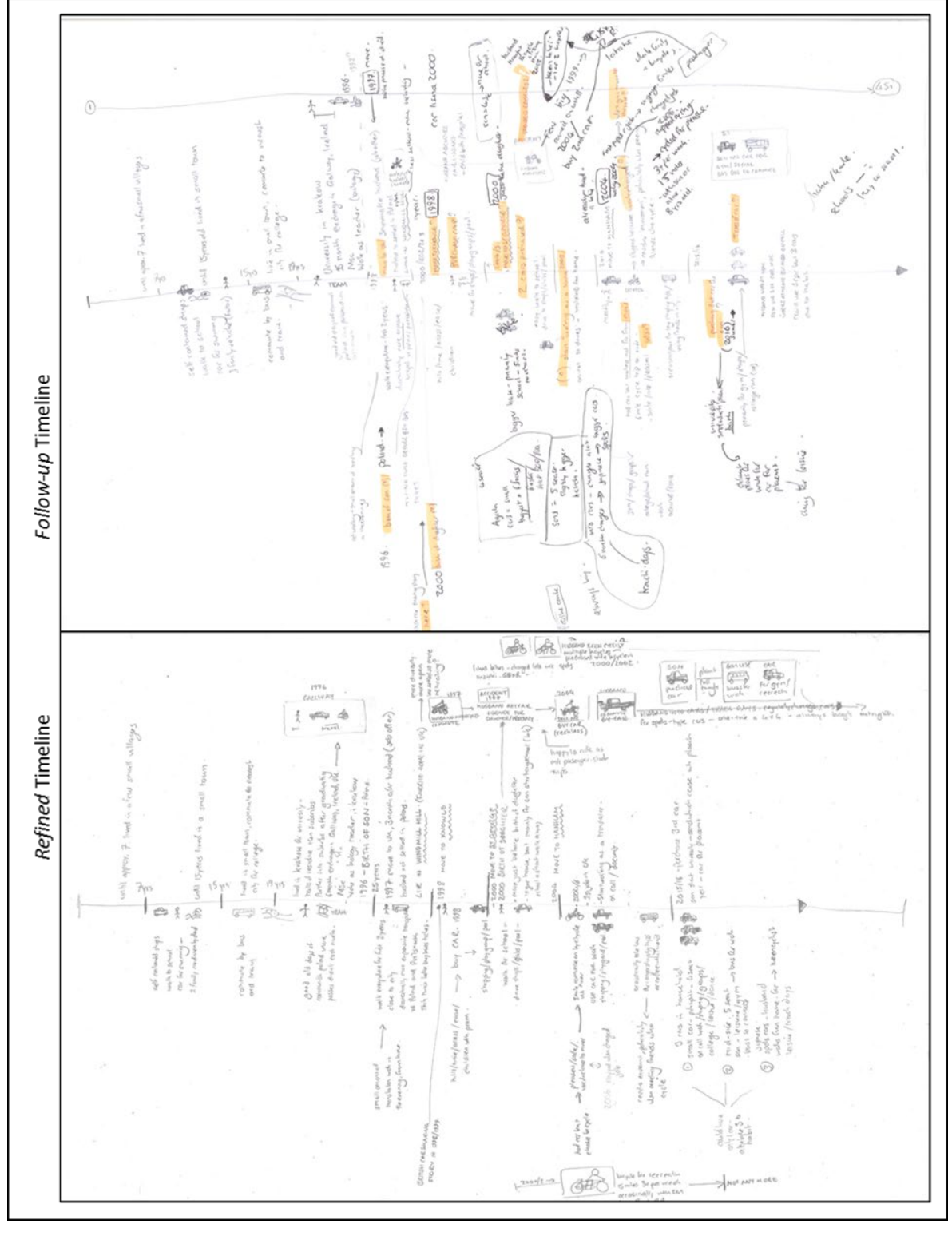
 (Jones, 2013; Clark, 2012; Lanzendorf, 2003; Salamon, 1983) have separated the presentation of visual biographical information collected during life-course research into different life domains – for example, focusing on the 'lifestyle domain', the 'accessibility domain' and the 'mobility domain', or having separate lines to represent essential information about key life events such as residential

relocations (see Jones, 2013:106/125; Clark, 2012:72). Merging domains aids in understanding the holistic range of factors that may influence immigrants' travel behaviours. Ultimately, LHTs ease recall, assist with data validation, enhance transparency in the interview process, and ease establishment of rapport and data co-generation (Vila et al., 2022:895).

In the follow-up interview, the timeline is presented in a provisional format (Figure 10) and replaces the calendar as a prompt to enhance memory recall. The researcher uses analysis of the timeline to inform questions asked in the follow-up interview, and also as a prompt in front of the participant to co-create and co-correct the sequence of events to further explore meanings and motivations applied. On completion of the follow-up interview, an enhanced, digitally constructed version of the LHT was produced, thus increasing the accuracy of the temporal component of the timelines and further standardising presentation of timelines for use in cross-case visual analysis. This was achieved by using a standardised timeframe and standardised symbols to illustrate key events, mobility milestones and travel modes on the finalised timeline (Figure 11). The finalised timeline was compiled from information added to the provisional timeline during the follow-up interview, from the transcription of the second interview, and via insight gained while compiling a case summary for each participant. Utilising both interview and visual data enabled the researcher to capture not only transitions into and from travel behaviours, but also the underlying *how's* and *why's* behind each transition. Visually presenting events alongside explanatory interview data provides more nuanced insights into behaviour change (Nelson, 2010:425). These simplistic visual timelines were used to capture the complexity of interrelationships between life events (co-)occurring throughout the life-course, specifically capturing information on pre- and-post-migration time periods, visually documenting travel behaviours, changes in travel behaviour and associated motivations for change in relation to a wide range of life events and mobility milestones.

Migrant Transport Choices in Bristol
Life History Calendar for TIMELINE ANALYSIS
Participant Number: 001003 WSM student

Figure 12: Example of a travel-trajectory timeline (TTT)
Figure depicts a TTT for one participant selected from the sample. This TTT represents the realisation of a TTT based on a participant's life-course. Note the complexity of life events and mobility milestones in relation to mode(s) of travel.
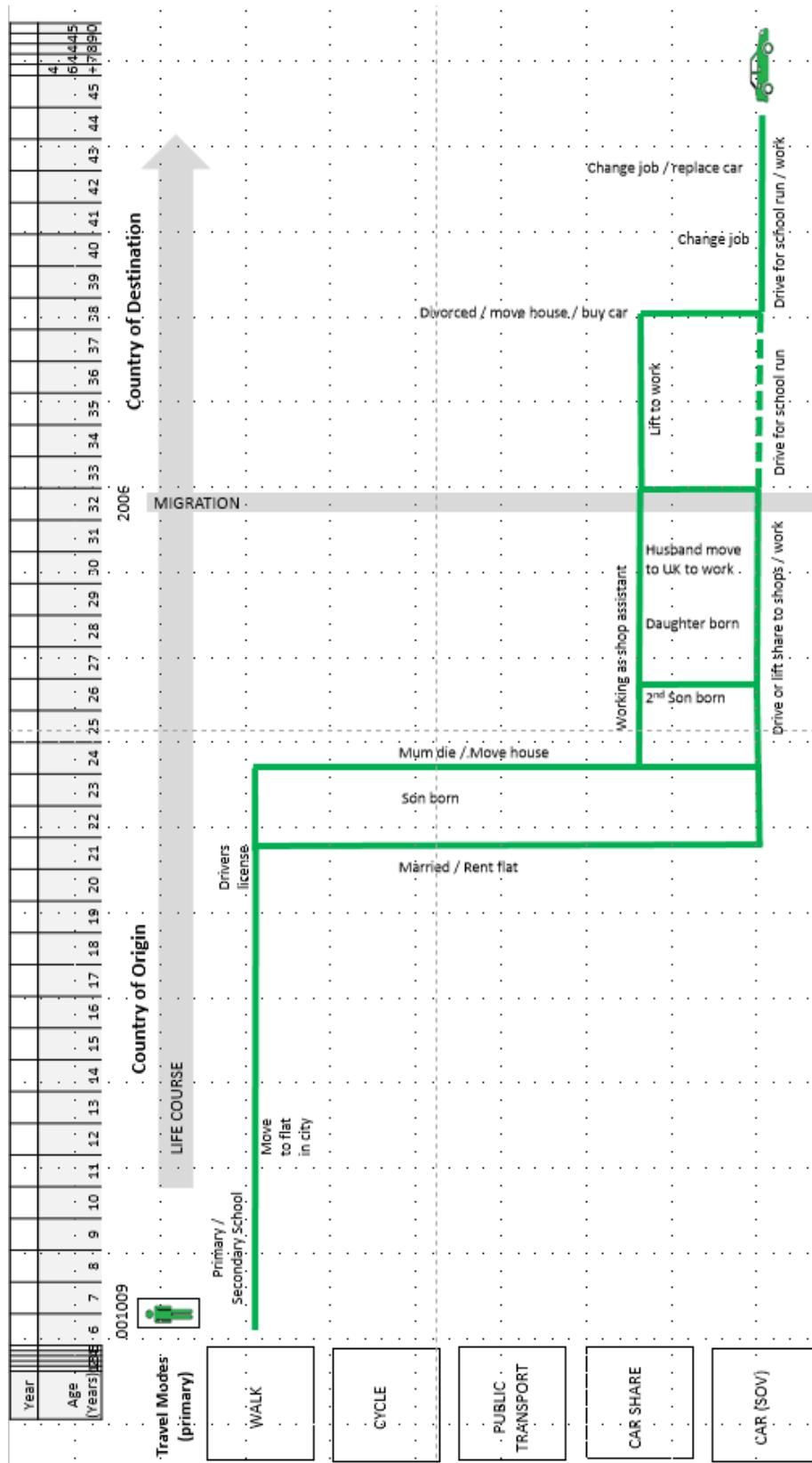
TTTs are another analytical tool generated to aid cross-case analysis of travel behaviours among participants. This further visual simplification maps primary travel modes throughout the life-course against age, point of migration, mobility milestones and key life events as narrated by participants (an example of this is depicted in Figure 12). TTTs map primary travel modes along the left axis, mark point of migration within the life-course, and visually depict the final primary mode of travel for participants at point of interview. Primary travel modes depicted are those that participants defined as their most frequently used modes of travel on a weekly basis; this definition draws on Scheiner et al.'s (2016) definition from their study of multi-modal travel behaviour over the life-course. Where multi-modality exists in the account, it is depicted across multiple lines. Likewise, close secondary modes of travel are depicted with dashed lines. Travel modes are ranked from more sustainable (e.g. walking and cycling) to less sustainable (e.g. single-occupant vehicle travel), allowing easy review and comparison of the thesis that migrants use more sustainable modes of travel (Tal and Handy, 2010; Blumenberg, 2008; Smart, 2010). Visually marking transitions between primary travel modes also allows for easy analysis of the transport assimilation hypothesis (Blumenberg, 2008:2), with pre- and post-migration travel behaviours plainly expressed. Key life events and mobility milestones are marked on participants' trajectories, particularly where there are turning points or transitions in travel mode. Each of the 26 participants' trajectories are depicted in different colours to assist with cross-case analysis. TTTs can be digitally overlaid and centred around point of migration to ease analysis of pre- and post-migration change and stability throughout the life-course. Combined with LHTs, these analytical tools facilitate simple analysis of travel behaviour change via TTTs that can be rooted in broader life-course narratives across multiple domains via LHCs.

In-depth Interviews: Initial Interview and Follow-Up Interview

Participants were engaged in two semi-structured interviews – an initial interview and a follow-up interview – held approximately seven days apart. Each interview was guided by a semi-structured interview protocol to ensure comparability of findings and maintain focus. The initial interview was strongly guided by the protocol. The follow-up interview primarily examined gaps in 'life narratives' identified via analysis of the initial interview and construction of the LHT. The initial interview utilised an LHC to improve retrospective memory recall of participants' life histories. LHCs prompted participants' memory of life events and associated travel behaviours across life domains, situating them in socio-temporal and spatial contexts, as well as relationally to other life events. In the follow-up interview, details of the LHC were revisited in the form of LHTs, facilitating modifications and additions (i.e. of events, ages and dates) where needed, with the days between interviews occasionally prompting new or more accurate memories. Although two-stage interviews can be burdensome, participants were offered £10 high-street vouchers to compensate them for their time at the end of

interview process, a gesture used to good effect in previous life-course studies employing in-depth interviews (see Jones, 2013:108; Clark, 2012). A similar two-stage interview approach was utilised by Jones (2013) to study cycling behaviour over the life-course, resulting in insightful contributions to knowledge about travel behaviour. Corresponding with the subjectivist and interpretivist approach adopted for this study, this interview design enabled participants to reveal and pursue experiences that they deemed relevant to their life narrative, facilitating the identification of unanticipated factors in the development of trajectories within participants' accounts. This prevents participants' accounts from being shaped by preconceived research expectations (Jones, 2013:97).

As part of the initial interview, a record of participants' seven most frequently visited destinations in their average week was also collected. This was used as a pseudo-validation tool during the follow-up interview to assess participants' autobiographical narrative of travel behaviours against actual travel behaviours reported via different recall mechanisms. This is particularly important because previous life-course interviewers indicate that participants tend to recall primary modes of travel more easily than supplemental modes often used incidentally (Jones, 2013:99; Scott et al., 2007; Schacter, 1999). Furthermore, to avoid disrupting the narrative flow, specific trip details were not always probed by the researcher during the initial interview process. Recording frequent trips also served as a tool to prompt discussion of incidental trips that may be overlooked in the narrative process, aiding assessment of participants' multi-modal travel behaviours. Nobis's research indicated that walking, for example, may not be considered a mode of transport by some participants in travel studies (Nobis, 2007; Scheiner, 2016). The selection of seven trips – although not explicitly stated to participants – was to encourage consideration of participants' most commonly visited destinations on a daily basis. Initially, five destinations were selected to reflect the working week; however, as the 2003 Social Exclusion Unit study revealed, leisure activities are also an important consideration in relation to travel behaviour – and particularly immigrants' travel behaviours (SEU, 2003:1; Tsang and Rohr, 2011:64). This effort to validate the narrative accounts provided by participants was important to ensure that the researcher's interpretations of participants' life narratives aligned as accurately as possible with participants' weekly travel behaviours. In lieu of a travel diary, the record served as a form of triangulation, in addition to serving as a prompt to increase the accuracy of participants' accounts (Sousa, 2014:211).

The majority of interviews were conducted in English in neutral locations where it was possible to buy the participants a tea or coffee and establish a friendly rapport. Initial interviews typically lasted 40 to 60 minutes, and follow-up interviews typically lasted 20 to 30 minutes. All interviews were recorded on a Dictaphone. Although this approach often involved recording some less relevant conversation and led to a number of digressions, it created a rapport that quickly established a willingness in

participants to share in-depth information. Interviews were often shorter for immigrants who had been resident in the UK for less time, and also tended to be shorter with male participants in general, regardless of their length of residence.

Interview Protocol Design

The interview protocol was designed to guide the direction of the interviews and ensure some standardisation of the topics discussed, thereby facilitating cross-case comparison of participants' life narratives. In designing the interview protocol, it was important to ensure that the overall study question would be addressed. The relationship between the interview protocol and the study questions is mapped in Table 3 (Appendix C). Because the epistemological position of the research is rooted in understanding interpretations of the narrative constructed by participants, transparency and standardisation facilitated interpretation of the context (between researcher and participant) in which life narratives were constructed. In the semi-structured guide, flexibility was also retained so that participants could focus on events they deem relevant to their life narrative, allowing unanticipated factors to emerge while reducing bias introduced by researchers' preconceptions in the design of the interview protocol (Jones, 2013:97). Furthermore, transparency in the design of the interview protocol contributes to thicker description of the research process, augmenting the transferability of findings (Polit and Beck, 2010:1455).

The burden placed on participants was also an important consideration in designing the interview protocol, which aimed to facilitate easy engagement with the process and minimise participant drop-out caused by an overly onerous process. These factors were balanced against the need to collect data of suitable depth and quality, moving beyond a narrow focus on life domains that directly influence travel behaviour to include consideration of key life events and transitions alongside latent travel-related preferences (see Klinger and Lanzendorf, 2015; Krizek, 2000). Even without the offer of financial compensation during interview piloting, pilot-participants' feedback indicated that the interview process was enjoyable and that viewing the final LHT was novel and rewarding. The two-stage interview process and approximately seven-day intermission did not appear excessively burdensome on participants, consuming in total only around two hours of their time. The final interview protocol and associated two-stage format served as a productive guide and data collection tool within the 26 interviews conducted, with only minor variations in length of interviews among participants.

4.4 Model of Research Design

The model provided in Figure 13 provides a step-by-step overview of the research design, integrating each stage of the process – from initial contact with participants through data collection and analysis. Multiple stages of data analysis and processing must be completed before the data is ready for the final stage of visual and thematic analysis, and cross-case comparison.

Figure 13: Model of research design

Summary of the research design for this study, simplifying the stages of the data collection and analysis process as outlined throughout Chapter 4.

Initial Interview	Initial Analysis	Follow-up Interview	Data Preparation	Data Analysis
Contact with participant	Transcription of Initial Interview	Follow up interview guided by LHT	Transcription of follow-up interview	Thematic Analysis of Transcripts and Case Summaries
Face-to-face review of participant information sheet and consent form	LHC converted to LHT	Verification of narrative against weekly trip information	Digitisation of LHT verified against the interview transcripts	Visual analysis of LHT and TTTs based on thematic analysis
Initial interview (approx. 40-60 minutes. Completion of LHC	Gaps in narrative and timeline identified.	Co-creation / co-correction of LHT	Compilation of case-summary to increase data familiarity	
Collection of participants seven most frequent weekly trips	Further area of investigation for follow-up interview identified		Generation of TTT verified against LHT and case summary	

4.5 Ethical Considerations

A life-history interview constitutes an introspective process that individuals would not necessarily experience outside a research context (Miller, 2000:104/105); it may approach sensitive topics and negative life experiences that could cause psychological harm to the participants. Safeguarding participants' rights and wellbeing has been carefully considered with the research design, which is intended to fully inform participants about the purpose and methods used for the research. At the recruitment stage, before seeking consent to participate in the research, it was emphasised to participants that although the focus of the research was on travel behaviour in Bristol, the interview might also approach other life experiences, both positive and negative. It was made clear that participants were not obligated to talk about any aspect of their life that they did not wish to, and that they could terminate the interview at any point. Furthermore, they were fully informed of their right to withdraw their information from the study up to two weeks after the completion of the interview.

At the point of recruitment, participant information sheets and consent forms were provided (in English and Polish; see Appendix D), which contained details for contacting the researcher with any questions before the interview. This form contained consent for personal, anonymised archiving. The Polish copy was kept by participants and the English copy was kept by the researcher. In addition to ensuring that participants were fully informed, provision of this information in Polish also enhanced participants' understanding of the aims of the research in participants' own language, thus enhancing their engagement with the research process. A secondary safeguard to ensure ethical research practice and protection of participants' interests comes in the form of research supervisors, who could be consulted to discuss any ethical or safeguarding issues that might have arisen at any stage in the data collection process. Full details of the ethical approval forms from UWE's Faculty Research Degrees Committee (FRDC) can be found in Appendix E.

Care was taken in the presentation of data collected through in-depth life-course interviews aided by LHCs to ensure confidentiality of participants' identities. One of the benefits of life-course interviews guided by LHCs is the safe space created between participant and researcher. Another benefit is the depth of information that can be collected through the interview process. As a result, the interviewer has substantial responsibility to ensure that interviews do not become overly personal or intimate, and must exercise caution and emotional intelligence to ensure that interviews neither deviate from their stated focus nor approach issues that are too sensitive (Goodson and Sikes, 2001). The interviewer must guide interviews in an ethical manner, and must also present data ethically (Adriansen, 2012:47).

Only information pertinent to the study was presented on LHTs and transcribed from interview audio recordings. Data on sensitive topics was neither sought nor collected, and participants' identities were kept confidential by assigning each participant a unique reference number. Although broad areas of residence (i.e. rural vs urban) could be identified from interview data, timelines and summary tables, specific details were withheld from data presentation to avoid breaches of confidentiality. Furthermore, although information on participants' life events and milestones was visually presented, personal details were either reduced or entirely removed to ensure that participants' identities remained confidential.

4.6 Analytical Approach

The research design involved multiple stages of analysis, beginning with the preliminary analysis of the initial interview transcript during the creation of the LHT. The follow-up interview allowed for re-review of LHT information and for following up key themes that emerged during the initial interview.

Following completion and transcription of both interviews, and construction of the finalised LHT, data familiarisation was increased through creation of a two-page case summary for each participant. Familiarity with specific details of travel behaviours was also increased through the creation of TTTs. Although each interview was guided by a semi-structured interview protocol to aid cross-case comparison and ensure focus, participants were able to narrate their own life histories and assign their own meaning to events and behaviours (Jones, 2013:97). This approach embedded well with the subjectivist–interpretivist ontological and epistemological position of this study. The flexibility in the follow-up interview protocol enabled the researcher to adopt an inductive approach to analysis. Extensive literature research about changes in travel behaviour and immigrants' travel behaviour set the evaluation objectives to guide the inductive analysis (Thomas, 2006:242). Initial analysis grouped participants based on shared travel behavioural journeys across study locations. Inductive analysis was conducted on a case-by-case basis to identify themes within participants' narratives and timelines, further refined through analysis within and between groups. For the small sample of 26 participants, this constituted approximately 52 hours of biographical interview transcription, 26 LHTs, TTTs, case summaries, records of travel behaviour, and a number of summary tables. Summary tables documented participants' characteristic travel modes at key moments in time, life events, mobility milestones and life transitions. These were produced to reduce certain elements of the data for analytical purposes (Jones, 2013:126/117), simplifying cross-case (and later, cross-group) comparison. The primary aim of the research was to reveal biographical details about Polish immigrants' travel behaviour development, both over the life-course and within the UK. The secondary aim was to identify transitions, turning points and life events in the development of travel-behaviour trajectories that might have meaning or relevance to understanding the development of other immigrants' travel behaviours in other contexts (Jones, 2013:107; Finlay, 2006). The relatively small, qualitative sample of Polish immigrants in Bristol and WSM reduces the generalisability of findings (Bernardi and Hutter, 2007:553; Ryan, 2010:82). However, there remains a high degree of *transferability* of findings to other conceptually related studies (Polit and Beck, 2010:1455). The transferability of findings was enhanced by ensuring the collection and presentation of information suitable for *thick description*. Presenting specific details about the sample promotes the transferability of its findings by strengthening future researchers' ability to assess the proximal similarity of study findings to other concepts on the basis of case similarity (Ibid:1456). Adoption of the life-course approach, LHCs and in-depth interviews, as well as engagement with existing concepts within the travel behaviour literature (including transport assimilation and motility) facilitate conceptual transferability of findings. Focus on the life events and mobility milestones offers a range of opportunities for transferability of findings within the transport and immigration research fields. Likewise, robustly documented methodological and analytical

adaptations to the use of LHCs (or visual biographies) offers opportunities for transferability from a methodological perspective (Mayring, 2007).

The life-course approach outlined in Chapter 3 framed recording, organisation and analysis of the data in this study. The life-course approach provided the analytical structure for the research, guiding consideration of the influence of key life events, mobility milestones, transitions, and turning points in the development of travel-behaviour trajectories (Giele and Elder, 1998; Lanzendorf, 2003:9/1; Elder et al., 2003:8). A summary of life events and mobility milestones of initial interest in this study is provided in Table 4. The life-course approach also facilitated consideration of the culmination of experiences throughout the life-course, moving beyond focusing only on events. As outlined in Figures 2, 5 and 6, the conceptual approach applied in this study facilitated consideration of factors of influence in the formation of migrant motility, examining interactions, relationships and social connections throughout the life-course – in countries of origin and destination – loosely considered as the culmination of experiences. Giele and Elder (1998) effectively summarise these different types of data, highlighting their distinctions from an analytical perspective in Table 5.

Table 4: Sample of life events and mobility milestones	
Life-events	**Mobility milestones**
Move home town	Bought a bike
Started college	Got a public transport pass
Started employment	Got a driving licence
Changed employment	Bought a car
Became unemployed	Sold my car
Moved in with partner	Gained access to a car
Separated from partner	Lost access to a car
Had a child	Had a traffic accident
Child(ren) moved out	Learned to cycle
Became ill/acquired a disability	Got a mobile device (e.g. smart phone)
Retired	

Adapted from Rau and Manton (2016:55)

Particular attention was also given to identifying and examining factors of influence in the socialisation of travel behaviours, considering both social interactions and the structural influences of environmental contexts. From an analytical perspective, this combined examination not only of culminated experiences, but also of the socio-temporal, spatial contexts in which events and experiences occur. Contextual events are analysed through examination of contextual provided on LHCs against available historical information for particular places of interest for specific timeframes. This also served a secondary function of assessing the plausibility of participants' chorographical recall. Contextual influences were also assessed, as outlined by Giele and Elder in Table 5, through identification and consideration of participants' interpretations of experiences, specifically considering the ways in which they interpret and frame the socio-political environments they are recalling (Giele and Elder, 1998:102). This is particularly important given the interpretivist

epistemological position of the study. Alongside aiding analysis of travel socialisation, consideration of contextual influences also aided consideration of the (infra)structural opportunities available to participants – assessing, for example, the provision of state-funded, low-cost PT infrastructure. The analytical approach also focused on distinguishing between experiences uniquely relevant to individual participants (which may be of value in themselves), and experiences that were relevant to many participants in the study, whether across cases or groups (Ayres at al., 2003). Themes identified across participants and across groups were refined and iteratively combined to form the final analytical themes (Thomas, 2006:242), leading to the development of general conclusions about immigrants' changing travel behaviours throughout the life-course. Although analytical generalisation may not produce general rules or laws of immigrant behaviours, they are considered to be of sufficient depth to justify transferability of concepts within the field of changing immigrant travel behaviour (Polit and Beck, 2010:1453; Thorne et al., 2009:1385).

Table 5: Types of life history data

Event Histories
- **a.** Past events: Domain-specific event, their timing, duration and sequences
  Examples: Residential, marital, fertility, employment, job/occupation, and schooling histories
- **b.** Present statuses: Current domain specific statuses, the duration of which we are right-censored
  Examples: Current residence, marital status, parity, employment, job/occupation, and school attendance
- **c.** Future expectations
  Examples: Fertility intentions, mobility expectations concerning residence or job

Culmination of experiences
- a. Past experiences
  Examples: Parental statuses, schooling, labour force experience, achievements, skills, past interests, past attitudes, values and so on
- b. Present experiences
  Examples: Schooling, work, abilities, skills, interests, attitudes, and values
- c. Expectations of future experiences
  Examples: Longer term aspirations concerning careers and life plans

Evaluations/interpretations of events and experiences
- a. Past evaluations
  Examples: Evaluations of past circumstances in contrast to present conditions to determine direction of chang
- b. Present evaluations
  Examples: Income, job and marital satisfaction, assessment of quality of life
- c. Evaluations of future expected events and experiences
  Examples: Evaluations of future in contrast to past and present, optimism, and beliefs in efficacy of planning

Source: Giele and Elder, 1998:102

A number of inductive approaches to qualitative analysis could have been adopted for this study, such as grounded theory, discourse analysis or phenomenology, all of which might have had value for this study. Grounded theory, for example, could have allowed the emergence of underlying behavioural theories (DePoy and Gitlin, 2016); discourse analysis could have allowed deep exploration of the multiple-meanings participants applied to their narratives (Charmaz, 2011); and phenomenological analysis could have enabled deep understanding of participants' lived experiences (Thomas, 2006:241). However, the complexity introduced to the analytical process through use of LHC, LHT, and

TTTs indicated that a general inductive approach to analysis would be more appropriate (Ibid). Retaining an inductive approach facilitated the identification of themes that were not limited to researcher preconceptions. Inductive, thematic analysis enabled structured exploration of patterns and themes identifiable within the data (O'Gorman and Macintosh, 2015). The specific approach to thematic analysis used for this study was informed by Braun and Clarke's (2006) model of thematic analysis (Table 6). A similar analytical process was utilised by Clark (2012) in a life-course-based study of travel behaviour, which was beneficial because it ensured a standardised approach to analysis on a case-by case basis. *Initial codes* were generated through identification of themes of interest in the initial transcript, and visual analysis of relationships between events and milestones when creating the LHT. A further round of *code generation* was completed during transcription of the *follow-up* interview audio, as well as refinement of the LHT and TTT with additional details and corrections made during the *follow-up* interview. Transcripts from all interviews and refined LHTs were used to generate case summaries and search for intra-case *codes*. Analysis of *TTTs* contributed to the *refinement of themes* across the data set, easing travel behaviour-specific analysis across individual and grouped data (Ayres et al., 2003). Themes were subsequently *defined* and *named*, and analysed against themes and concepts identified during the literature review. Data extracts were recorded and retained throughout the analytical process to facilitate convincing *reporting* of findings.

Table 6: Summary of the thematic analysis process

Phase 1: *data familiarization*	Becoming familiar with the depth and breadth of the content of the data, through immersion, via transcription, repeated reading of the data, and reading the data in an active way.
Phase 2: *generating initial codes*	Building on an initial list of ideas about what is interesting in the data, coding involves organising the data into meaningful groups prior to development of themes.
Phase 3: *searching for themes*	From the different codes identified across the data set, analysis re-focuses to the broader level of themes, rather than codes, involving sorting the different codes into potential themes. This may involve development of main themes and sub-themes.
Phase 4: *reviewing themes*	Refinement of those themes by removal, merging, and breaking down into separate themes. Themes should exhibit internal homogeneity (codes in a theme should cohere together meaningfully) and external heterogeneity (the theme should be distinct from other themes). All coded extracts are read to ensure coherence in the theme. If there is thematic coherence, the whole data set need to be re-read to assess if themes 'work' in relation to the data set.
Phase 5: *defining and naming themes*	Identify each themes 'essence' and its relationship to other themes and what data each theme incorporates. Provide a narrative of what is interesting about the data and why. Identify hierarchies within the themes.
Phase 6: *producing the report*	Write up the analysis tell the story of the data, convincing the reader of the merit and validity of the analysis. Write-up and data extracts must be concise, coherent, logical, non-repetitive, and interesting – within and across themes – and provide sufficient data extracts to evidence the prevalence of the theme.

Adapted from Braun and Clarkes (2006:16)

In order to facilitate the depth of analysis required to reveal potentially causal relationship, is was necessary to establish clarity over the classification of *turning points, life events*, and *mobility milestones* in the analytical process. Distinction between *turning points* and *life events* was an important consideration in relation to how *life events* and *turning points* were documented and

recorded. Giele and Elder (1998) suggest that major role transitions should be considered as *turning points* as life after the *turning point* is very different from what it before. Examples of turning points include marriage, or entering a career (Giele and Elder, 1998:203; Hareven and Masaoka, 1988). In relation to travel behaviour, this may include residential relocation due to potential structural changes in transport connectivity. Associated considerations in relation to *turning points* include cause of the turning point, effect on relationships, timing, and participants' perceptions of the consequences (Giele and Elder, 1998:203). *Life events*, in contrast, may have had an influence on life-course *trajectory* development but were not directly associated (temporally or in participants' interpretation) with *transition* to a *turning point* in a life *trajectory*. *Mobility milestones*, as a complement to *life events*, are categorised as mobility-related life events (Rau and Manton, 2016:52)*.

In order to promote the transferability of findings in future research, *thick description* of the data and interview process was provided. Table 7 provides a summary of the participants' socio-demographic characteristics. Pursuant to Polit and Beck's (2011) guidelines on the transferability of findings in qualitative research, this *thick description* is intended to strengthen future researchers' ability to assess the proximal similarity of study findings to other concepts on the basis of case similarity. Likewise, providing transparency with regard to the sample and interview process is advocated by Hitchings and Latham (2019), who suggest that the current 'taken-for-granted' quality of in-depth interviews may hinder the quality of research in human geography. This transparency enables future researchers to independently assess the quality and relevance of the findings. Throughout the data presentation and discussion, efforts were made to ensure transparency in the interview process by providing an indication of how particular responses were derived from participants. To facilitate the interviewers' transparency sections, questioning or summaries of the direction of the conversation are provided alongside quotes from participants. Responses offered by participants were presented as sections of *intelligent transcriptions*, to clean up the array of pauses and repetitions present in the *verbatim transcriptions.* In Poland's analysis of the importance of transcription quality for the rigour of qualitative research, intelligent transcription removing pauses and 'ums' and was deemed a suitably rigorous approach to interview transcription on the proviso that the meaning of the extract remained unaltered (Poland, 1995; Miles et al., 2013). Case summaries are provided in Appendix F (sterilised verbatim interview transcripts are available on request). LHTs and TTTs for each participant are provided in Appendix G and Appendix H.

Table 7: Summary of Participant Characteristics

Participant #	postcode	age	gender	length of residence	years in uk	year of migration	education	occupation	children	under 18	over 18	income	relationship status	polish / english partner	pre-existing social network	home owner
001003	BS23	35-39	F	10+	13	2004	BSC	MSc student and mother	2	2		31-35	cohabiting	polish	no	yes
001004	BS23	35-39	M	3-4	3	2014	5 YEAR COLLEGE	priest	0	0		no	no	n/a	yes	no
001005	BS22	30	F	10+	10	2008	college	factory worker	2	2		n/a	married	polish	no	yes
001006	TA8	30-34	M	10+	11	2007	college	factory worker	2	2		no	married	english	no	yes
001007	BS23	50+	F	10+	12	2004	college	agency work	2	0	2	no	yes (divorced)	n/a	no	no
001008	BS23	35-39	M	10+	11	2007	2 years post college	store shift manager	3	3		35-39	cohabiting	polish	yes	yes
001009	BS23	40-44	F	10+	12	2006	college	warehouse operator	3	1	2	no	divorced	polish	no	no
001010	BS23	40-44	F	7-10	8	2010	degree	carer (dementia)	1	1		no	single	n/a	yes	no
001011	BS23	30-34	F	10+	13 or 7	2005 or 2011	degree	pharmacy assistant	1	1		no	single	english	no	no
001013	BS23	40-44	F	10+	11	2008	degree	accountant / finance	3	2	1	no	married	polish	no	yes
001012	BS23	30-34	M	10+	12 or 5	2006 or 2010	school, min. college	car bodywork painter	2	2		no	married	polish	no	no
001016	BS23	35-39	F	10+	12	2005 (husband 2003)	high school	economist	2	2		yes	married	polish	no	no
001015	bs23	40-44	F	10+	13	2006	degree	payroll administrator	1	1		no	married	polish	no	no (in poland)
001001	BS16	45-49	F	10+	20	1998	MSC	translator	2	0	2	31-35	married	english	no	yes
001002	BS16	30-34	F	10+	12	2006	PHD	manager	0	0		31-35	new relationship	belgian	no	yes (2018)
001014	BS10	40-44	M	10+	12	2007	college	business owner	2	0	2	56+	married	polish	no	yes
001025	BS6	50+	F	10+	13	2006	MASTERS	SCHOOL ADMINISTRATOR	2	0	2	no	married	polish	no	yes
001026	GL5	20-24	F	3-4	2013/2015	2013 / 2015	BSc Student	student / waitress	0	0		no	cohabiting	slovakian	yes	no
001019	BS4	35-39	M	10+	13	2006	MSc	RESEARCHER	0	0		31-35	cohabiting	polish	no	yes
001017	BS6	35-39	F	10+	20	1998	Masters	Research Associate	2	2		56+	cohabiting	polish / english	no	yes
001018	BS2	35-39	F	10+	14 or 11	2005 / 2008	MASTERS	Wellbeing practicioner	2	2		31-35	cohabiting	polish	yes	no
001020	BS3	30-34	F	7-10	7	2012 (2010 to Spain)	MASTERS	Teacher	0	0		no	single	english / none	no	no
001021	BS4	25-29	F	7-10	9	2010	BSc	Charity Worker	1	1		46-55	cohabiting	english	yes	yes
001022	BS2	35-39	M	10+	11	2008	Foundation degree	benefits assessor	2	2		16-30 (30)	cohabiting	polish	no	no
001023	BS2	20-24	M	5-6	6	2013	HIGH SCHOOL (BA student)	Student and operations assistant	0	0		16-30	cohabiting	polish	no	no
001024	BS2	50+	M	10+	12	2007 (2005 to USA)	MSC	Cleaner / Kitchen assistant	3	1	2	16-30 (border)	married (re-)	polish	no	yes

Participants grouped in pink were resident in WSM, and participants grouped in green were resident in Bristol. The postcode column indicates participants who commuted into the area on a daily basis. Many participants were reluctant to share information on 'income' therefore occupation is included as a proxy for SEC.

The contrasts between the shared and varying influences on participants' travel behaviours was of particular interest for the analysis, revealing the complexity of travel behaviour development as well as the tension between the primacy of structure or choice in the development of travel behaviours. Analysis of these differences and similarities revealed a number of key themes running through immigrants' experiences of travel throughout the life-course. Within each of the *travel-behaviour journey* groups, issues were considered against the four elements of the life-course approach outlined in Table 8, and connections were made with existing concepts in travel behaviour research as well as the conceptual framework of this study.

Table 8: Themes associated to key life-course elements

Themes	Life-course Element
Considering wider social context and built and social environmental factors, specifically participants' perceptions of and interaction with travel options in pre- and post- migration locations.	Location in Time and Place
Focusing on both the influence of life-stage and the influence of length-of-residence in a destination country. Life-stage is integral in consideration of the role of children in the development of travel behaviours.	Timing
Incorporating relational elements related to life-stage, and *migrant motility* in terms of social and network capital, and the utilisation of agglomeration benefit from co-ethnic location. Also considers the influence of 'partner effects'.	Linked-lives
Incorporating habitual travel behaviour formation and individual circumstances, experiences and preferences. Strongly connected to consideration of the level of importance associated with structural influences or individual influences on travel behaviour development.	Human Agency

Key elements of the life-course examined in Chapter 3 are central and implicit considerations throughout the analysis. In the interest of transparency, the themes with which these life-course elements have been associated during the analysis are set out, ensuring that any preconceptions that may influence the analysis are clear to the reader.

Interview Analysis

Central to analysis of the in-depth interviews was identification of meaning participants attributed to events, milestones and experience, particularly in relation to motivations underpinning transitions and turning points in travel behaviours. During analysis of initial interviews, the life events, mobility milestones and turning points were identified as part of the initial coding process. Interview transcripts were used to identify potential meanings and motivations for these events, contributing to the initial codes and guiding follow-up interview questions. The follow-up interview facilitated deeper consideration of the meaning participants attributed to events in order to identify the underlying motivations. Careful consideration of these motivations revealed potentially causal relationships between events and behavioural changes; this was a particularly weak area of knowledge in existing immigrant travel behaviour research. Case summary construction facilitated intra-case refinement of themes. Constructing case summaries required re-reading of the transcripts while also highlighting transcription errors and errors in narrative chronology. This involved capturing extracts related to specific codes and analysing them to assure alignment with allocated themes. Selection and exclusion of details from case summaries contributed to the refinement of intra-case themes. Exclusion of details was as important as inclusion in terms of coding and theme identification. In some instances,

elements of participants' narratives were excluded on the grounds of irrelevance if they fell outside the evaluation objectives for this study (Thomas, 2006). While reviewing themes during analysis of transcripts, careful attention was also given to plausibility in the macro-context (Giele and Elder, 1998:248/9) and factors that may have influenced the ways in which participants recalled and interpreted events. This also involved consideration of the context in which themes within particular extracts were drawn out during the interviews (i.e. direct questioning, relational prompting or independently recall). This interpretive construction of findings was carefully considered during data presentation. Although a number of processes were employed throughout the data collection and analytical process to ensure accurate presentation of the narratives provided by participants, the iterative analytical process will have unavoidably influenced the narratives constructed and presented. The general inductive approach allowed for identification of codes and subsequent themes that existed in the data without preconceptions (Thomas, 2006). As outlined by Jones, some degree of researcher influence on the themes identified in the data cannot be avoided; practicing mindfulness to actively identify the researchers' potential influence on the participants' narrative aided in reducing this influence (Jones, 2013:118). Transparency about themes examined as a result of preliminary analysis is important in interpreting findings from both an interpretivist epistemological position and a general inductive approach (O'Gorman and Macintosh, 2015; Thomas, 2006). Themes are identified and then re-examined iteratively across travel behaviour groups.

As part of the interview transcription and analysis process, details about participants and their life narratives were recorded in summary tables, reducing the data to simplistic forms to aid analysis. These tables facilitated consideration of individual demographic characteristics such as gender, age and marital status in the analytical process. Reducing the data in this way also facilitated cross-case analysis, easing the process of grouping participants for analysis based on travel-behaviour journeys (herein TBJs). TBJs were broadly grouped into two categories: participants *continuing pre-immigration travel behaviours* (Chapter 5, section 2), and participants *discontinuing pre-immigration travel behaviours* (Chapter 5, section 3). Within each of these groups, travel behaviours were refined down to transport modes, focusing on driving, walking, cycling and PT use (see Table 9). Utilising groupings – rather than typologies – for analysis in the first instance lent some analytical benefits. Following Ravnda's (2015) review of typology development in the social sciences, a number of criteria are required for a good typology. In brief, these include an overarching concept, descriptive or explanatory value, inductive or deductive construction, an intuitive model, and a degree of mutual exclusivity (Ravnda, 2015:5). During data familiarisation, it was evident that many of the participants could not be allocated to a specific, mutually exclusive typology due to cross-over in terms of characteristics, life-stage and travel-behaviour trajectories. Groupings based on TBJ rather than typologies enabled

allocation of participants to thematic groups based on analytical value. Themes identified within the data were analysed within and between groups, considering both demographic characteristics and traditional life-course factors. These included location in time and place, timing, linked lives, and human agency. Combined with visual analysis, this enabled rigorous consideration of themes identified as well as of how these themes were interpreted by participants and influenced behaviours across different groups.

Initial coding of interviews was conducted manually within Microsoft Word. Intra-case codes were marked using colours, and the same colour scheme was used across cases. Codes were then refined into themes. During the transcription process, time-coded segments were highlighted and captured in case summaries. These were subsequently colour-coded and utilised as extracts to support themes. On some occasions, one segment or extract was categorised to multiple codes but subsequently refined as subtopics were identified and themes were developed (Thomas, 2006:241). Extracts were eventually used as quotes in the analysis to support – and, on occasions, contradict – the essence of the themes identified (Ibid:242). Themes were iteratively considered alongside further analysis of both LHTs and TTTs. Not only were LHTs and TTTs used to inform groupings for comparative analysis of themes across groups, they were also used as an iterative second stage of visual analysis.

Table 9: Summary of travel-behaviour journey groupings	
Discontinuing pre-immigration travel behaviours	**Continuing pre-immigration travel behaviours**
Discontinued Driving	Continued Driving
Discontinued Walking	Continued Walking
Discontinued Public Transport	Continued Public Transport
Discontinued Lift Sharing	Continued Cycling

Groups and subgroups of participants based on TBJs facilitating cross-case analysis. These broadly include discontinuation and continuation of pre-immigration travel behaviours, further split by travel mode.

Pre-existing theory was influential when analysis moved beyond semantic consideration of the data (Boyatzis, 1998). Latent analysis was used to examine the 'underlying ideas, assumptions and conceptualisations' that could be theorised as 'shaping or informing the semantic content of the data' (Braun and Clarke, 2008:84). Identifying underlying influences on behaviours could be characterised as a secondary level of analysis (Braun and Clarke, 2008:84). For example, gender stereotypes related to driving may influence participants' travel behaviours. This may not be directly discussed in the semantic data (i.e. the wording in the transcripts) but may instead be hinted at throughout. Such hints may be present across different participants' experiences, indicating a potentially influential role on travel behaviours. These latent themes, which were examined across participants and TBJ groups,

informed grouping of participants. This level of analysis was informed by existing theories, but was not used to identify or support a specific theoretical position.

Visual Analysis of Life-History Timelines

An anticipated benefit of the research was development of a visual analysis strategy that increases research transparency, eases analytical validation and increase the transferability of the research (Polit and Beck, 2010:1455). Visual methodologies offer more comprehensive pictures of social phenomena, thereby enabling collection and examination of participants' feelings and experiences that may not be accessible in verbal interviews alone (Guillemin and Drew, 2010; Jackson, 2012:427; Vilá et al., 2022). Although a small number of studies have examined the use of visual methodologies and 'timelining' in the research processes, most have not provided a detailed or comprehensive approach to the analysis of visual narratives. The LHCs and LHTs used in this study differ from the visual timelines discussed by Jackson in her social work-based analysis of the complexity of multiracial lived experience (Jackson, 2012). Jackson utilised an approach to visual analysis which focused on the production site, image site, and audience site. The production site considered the social context of the research, the image site examined how participants chose to arrange and depict their timeline, and the audience site considered the influence of the researcher on both depiction and interpretation of the timeline (Jackson, 2012:419). Although insights offered by this analytical approach were valuable, data collection using structured LHCs, rather than autonomously constructed timelines, reduced the analytical value of this approach. Jackson did utilise a fourth stage of thematic analysis of visual timelines; this thematic analytical stage was used to identify recent theoretical conceptions within the data presented, alongside examining the impact of impact of interpersonal relationships, environmental context and life transitions (Ibid). However, much like Nelson's (2010) examination of LHCs as a visual methodology to study the educational trajectories of young Latinos in America, Jackson was unable to provide a clear strategy for visual thematic analysis. Nelson indicated that, due to variation on recording of information on LHCs, it was not possible to formally analyse each LHC, instead focusing thematic analysis on transcripts of audio recordings (Nelson, 2010:424). In the visual analysis conducted for this study, the primary focus is on sequencing and chronology, identifying key life events and the associated feelings and explanations participants offer about these events, and the influence of interpersonal relationships and environmental and wider temporal macro-context (Ibid). Because a structure was provided for the initial LHC, with a standardised timeframe, symbology and format being used for the finalised versions of the co-created LHTs, visual analysis was eased and served as a core tool for case comparison. Analysis was also iterative due to the two-stage interview process and the translation of the initial calendar into a timeline for the follow-up interview. This

means that, to some extent, analysis began during the interview process, as indicated by Goodson and Sikes (2001) and Adriansen (2012:43).

Throughout the research, LHTs served as a tool for both the researcher and participant to revisit event narratives where tensions and contradictions became apparent in participants' stories (Ibid:50; Jones, 2003; Giele and Elder, 1998). Although participants often attempted to narrate their stories in a linear, chronological fashion, collection within LHCs and LHTs enabled narratives to be iteratively re-constructed. Importantly, this gave space to simultaneity, enabling participants to revisit feelings and emotions attached to events visually represented on the timelines (Ibid; Bar-On, 2006; Guenette and Marshall, 2009). Compared with verbal interviews alone, this provided opportunities to examine not only the sequence of events but also the feelings, meanings and emotions applied (Ibid). Collection and presentation of LHCs and LHTs in a standardised format meant that motivation and meanings further examined in the transcript analysis were accurately anchored temporally and chronologically. When translated onto TTTs for the purpose of reviewing changes in travel behaviours, this meant that motivations and associated feelings were also visually documented alongside objective behavioural changes. Unlike other analyses conducted using LHC in the travel behaviour field, this approach extended comprehension of participants' motivations and meanings associated with behaviour changes. This, in turn, enabled not only comparative analysis against life events and behaviour changes, but also visual temporal analysis based on participants' motivations.

Visual analysis of LHTs therefore focused on sequencing and chronology of key life events and mobility milestones, and identification of periods of stability and change in travel behaviours. In doing so tensions and contradictions in participants narratives were identified and examined. At this stage, environmental and wider temporal macro-contexts were also considered, and examined through further secondary research if needed. Interpersonal relationships, as well as the feelings and emotions participants attached to events, milestones and changes in behaviour, were then examined. With this information documented, it was possible to group participants based on various measures to explore changes in travel behaviours. These groupings included – but were not limited to – age, gender, rural and urban residence in Poland and the UK, childbearing, migrations, early childhood travel behaviours, pre- and post-immigration travel behaviours, residential locations, environmental concerns, travel preferences, changes in relationships and changes in employment. LHTs were printed and manually grouped (and regrouped) into these categories. LHTs were temporally organised by the point in time when the event or experience of interest occurred, and were thematically analysed to identify shared patterns and trends in experiences. A key event of interest for all participants in this study was points of migration. Migrations to the UK were marked clearly on each timeline, and these were a central consideration in all variations of groups analysed. Around this point, thematic analysis was used to

examine interpersonal relationships, environmental contexts, life transitions and mobility milestones (or biographies) in the first instance. Combined with analysis of transcripts, thematic analysis led to grouping of participants based on themes evident in their TBJs: participants continuing pre-immigration travel behaviours (Chapter 5, section 2), and participants discontinuing pre-immigration travel behaviours (Chapter 5, section 3); these grouping were further split by travel mode. Although alternative groupings were considered, these groupings enabled the most effective analysis of stability and change in travel behaviour while utilising immigration as a central organising event. In addition to ensuring that the evaluation objectives were met, this enabled further examination of themes present across participants and groups.

Examining the production site and image site, as advocated by Jackson (2012), falls outside the remit of visual analysis due to the use of structured LHCs and LHTs in the data collection process. However, consideration was given to events recorded on timelines where participants chose to revisit and re-examine sequencing themselves, where they had not originally recalled the co-occurrence or simultaneity of events and behaviour changes. Participant revisions were eased through depiction of events, milestones and travel behaviours with standardised visual symbols, thereby simplifying understanding of relationships between events. Visual simplification enabled discussion of the role or influence that participants perceived the events to have on their travel behaviours. Where the connections had not previously been identified, this discussion was particularly fruitful as participants discussed the perceptions of meanings they applied to events of behaviour changes. Enabling participant revisions to timelines also corresponded with the interpretivist epistemological position of this research, and the analytical considerations for life-course research proposed by Giele and Elder (1998) in Table 5, examining the ways in which participants recall, interpret and attribute meaning to events. Very similar to Vila et al.'s (2022) findings in their examination of timelining to aid memory recall in climate-change research, timelines in this study provided temporal anchors to enhance recall of events and attached meanings. Rather than providing a reductive approach to recall, this approach guided discussion and interpretation of experiences (Vila et al., 2022:900; Morselli et al., 2016). Combining visual and interview methods also prompted the (re)-consideration of analytical categories stemming from interview analysis alone (Banks, 2007).

Analysis was guided by concepts presented in the literature. However, analysis was also guided by Thomas's general inductive approach, enabling identification of events and themes that existed within the data without preconceptions (Thomas, 2006). Visual analysis did not seek to satisfy any specific hypotheses, much like the analysis of interview data. Although timelines were organised into *continuing* and *discontinuing* travel behaviour groups and split by dominant travel modes, standardised symbols facilitated intra- and inter-group analysis. Within each sub-grouping, timelines

were printed and organised by different central events of interest, thematically analysed for similarities, then re-organised around a new central event of interest. Events of interest for analysis within TBJ subgroups included: age, residential relocations, changes to household composition (including relationships and childbirths), changes in occupation, introduction of leisure activities, interpersonal events involving family and friends, and key mobility milestones such as access to travel modes, licence acquisitions and travel accidents. These concepts broadly aligned with the life events and mobility milestones identified by Rau and Manton (2016:55). Because LHTs utilised standard units of measure to represent time (i.e. years spaced equally along timelines) and as timelines were printed to the same scale, it was possible to visually depict potential relationships between events and behaviour changes, and compare these across cases. Compared with analysis of interview transcripts, this capability dramatically eased examination of events related to behaviour changes, and eased cross-case and cross-group comparison. It also guided further examination of interview transcripts, giving direction to re-examine feelings and motivations relayed about specific events or behaviour changes. This further examination enabled the researcher to unpick relationships between events and milestones that may have been overlooked in audio- or transcript-based analysis. Combining approaches enabled audio- and transcript-based analysis to iteratively inform meanings analytically associated with visually identified relationships. Although time-intensive, digitising and ensuring standardisation of timelines enhanced their utility for identification of potentially causal relationships. In this way, visual analysis of LHTs became a central tool in the analytical approach developed for this research, enhancing approaches taken by others utilising visual methodologies in life-course research.

Visual Analysis of Travel-Trajectory Timelines

Reduction of participants' narratives and LHTs into TTTs enhanced analysis of immigrants' behaviour changes by easing visual comparison of the modal change throughout the life-course (Figure 12). TTTs were again presented with standardised measures of time as well as clear, year-dated indications of migrations to ease contextual analysis. Key life events and mobility milestones identified during interview and LHT analysis were also indicated on TTTs. Due to the two-stage interview process, the meaning attributed to these behavioural changes benefited from co-construction and verification with participants (Vila et al., 2022:895), meaning that the researcher did not have to infer meanings related to behavioural changes. Reviewing participants' travel trajectories in this reduced format enabled increased focus specifically on periods of change and stability throughout the life-course, as well as visual identification of patterns or trends across travel behaviour groupings (continuing and discontinuing, split by travel mode). This was particularly helpful for assessing the approximate speed of behavioural change after migration; whether migration or other life events were proximally related

to behaviour changes; and whether participants, over their life-course, assimilated to the national travel behaviour norm (Blumenberg, 2008:2) or retained an increased use of 'green' travel modes (Smart, 2015:206).

Analysis of TTTs therefore followed a similar process to analysis of LHTs. TTTs were grouped by continuation and discontinuation of pre-migration travel behaviours, sub-grouped by primary travel modes (broadly considered as participants' TBJs). These groupings were verified by initial analysis of TTTs and participants re-allocated to appropriate groups, as indicated based on participants' TBJs. Within groups, timelines were printed and manually organised and centred around point of migration, which enabled in-depth comparison of events and factors of influence on behaviour changes. Within groups, similarities and differences in experiences were identified and discussed. Analysis moved beyond groups and subgroups by manually regrouping and reorganising TTTs. Groupings included in this secondary level of visual thematic analysis include: rural and urban residence in Poland, rural and urban residence in the UK, gender, parenthood, travel-related accidents, and early childhood travel behaviours. Each thematic group was organised and analysed around the event of interest, as well as around point of migration, to identify patterns, trends and commonalities that fed into the overall discussion. Although this secondary level of analysis identified some interesting points for discussion, the primary value remained in analysis based in subgroups (groups based on TBJs). Each participant was allocated a different colour timeline to facilitate overlapping of TTTs for cross-case and cross-group analysis. Modes of travel on the left axis were ranked from most sustainable to least sustainable, thereby enabling easy analysis of immigrants' preference for sustainable travel behaviours (Tal and Handy, 2010; Blumenberg, 2008; Smart, 2010). Marking the point of migration on TTTs enabled easy identification of behaviour changes related to migration as well as any potential behavioural assimilation (Blumenberg, 2008:2). Utilising Scheiner et al.'s (2016) definition of primary travel modes, it was also possible to depict and analyse multi-modality, with solid lines indicating primary modes of travel, and hashed lines indicating regularly used supplemental modes. This structure enabled easy review and comparison of the thesis that migrants use more sustainable modes of travel. It also allowed easy analysis of the transport assimilation hypothesis through clear visual depiction of assimilation towards the national norm of car driving, and proximally associated key life events and mobility milestones. The combination of LHCs and interview transcripts, LHTs, case summaries and TTTs led to a thorough analysis of behavioural developments throughout the life-course, and a robust approach to validating the meanings and motivations participants associated with their travel behaviours.

Model of Analytical Process

A summary of the analytical process utilised for the research project is provided in Figure 14. This advances the model of the research design presented in Figure 13, separating the stages of analysis (interview and visual) and highlighting the iterative nature of the analytical process. Analysis involved transcription, coding and thematic grouping of interviews. This ran alongside – and was informed by – digital construction and visual thematic analysis of LHTs. Case summaries including key time-referenced extracts were developed to concentrate analysis on key events and milestone influencing travel behaviours. Interview analysis and LHT analysis informed the thematic grouping of participants. Analysis of TTTs formed the final stage of analysis, focusing specifically on analysis of travel mode choice as well as change and stability in travel behaviour over time. This analysis also considered the participants' propensity for 'green' travel.

Figure 14: Model of analytical processes

Figure 14 outlines the key stages of the analytical process after completion of data collection. Visual analysis is an integral, iterative stage of the analytical process informing theme development, aiding data reduction, and guiding further analysis of interview data. Case summaries were central in the refinement process, focusing complex life histories into summaries with direct relevance to travel behaviours. Visual thematic analysis of TTTs formed the final stage of analysis, enabling specific focus on travel trajectory development post-migration, as well as easing consideration of change and stability over time while being visually informed by key life events and mobility milestones defined by participants.

The model highlights the value of visual analysis of LHTs alongside interview analysis. Whereas other life-course researchers utilising LHCs and timelining have lacked a detailed methodology for integrating visual analysis, the model highlights the centrality of visual analysis in the analytical

process. The first two stages of the model (i.e. interview analysis and LHT analysis) offer a high degree of transferability within the broader field of life-course research, setting out a step-by-step plan for the iterative analysis of both interview and visual data to identify, code and refine themes within and between cases, as well as within and between themed groups. The third step of analysis is tailored to transport-specific research, specifically addressing the research aims of this study: 1) *How do participants travel?* 2) *How and why do travel behaviours change over time?* 3) *Do participants assimilate to national travel behaviours?* 4) *Do immigrants have an underlying tendency towards 'green' travel modes?*

After multiple stages of analysis, the TTTs provided refined information on life events, mobility milestones and contextual information most relevant to changes in travel behaviour. The simplified presentation indicates pre- and post-immigration travel modes, key events associated with behavioural change, transition towards car driving (assimilation), and potential underlying tendencies towards 'green travel' or multi-modality. The model also begins to highlight the potential value of LHTs to better capture change and stability in complex behaviours across social and temporal contexts, as well as to ease cross-case and cross-group comparisons. Although determining reliability in qualitative data analysis is complex, efforts were made assess the confirmability of findings through corroboration of analytical products produced using this methodology (Jones, 2013:108). In order to ensure that analytical decisions were not irreproducible products of idiosyncratic analysis, the supervisory team were drawn into analysis of an extended case summary, LHT, and TTT for the first participant (Hayes and Krippendorff, 2007:78). Discussed at length with supervisors, the analytical products were deemed plausible, with minimal variation in independent observers' identification of key life events and mobility milestones (Ibid). Ultimately, the methodology was developed to enhance transparency in the analytical process, providing visual summaries that enable readers to assess relationships between events and behaviour changes.

Summary

Chapter 4 detailed the methodology used to collect and analyse data for this research project. This chapter also offer an initial overview of the initial themes considered in the analytical process, as well as highlighting the value of visual data collection and analysis tools in improving qualitative life-course research. Importantly, a framework was developed to structure and aid visual analysis of LHTs, advancing the analytical approach adopted by other researchers utilising visual data collection tools in qualitative life-course research. Chapter 5 provides an integrated, thematic analysis and discussion of the data. It begins with an overview, which is followed by an examination of continuing and discontinuing travel behaviours, transport assimilation, motility, structural opportunities and sustainable travel behaviours.

5. Analysis and Discussion

This chapter presents visual analyses of LHT and TTTs, as well as inductive analysis of interview data. As indicated in Chapter 4, the general inductive approach enabled identification of themes present within the data, rather than deductively identifying extracts to support existing theories (Patton, 1990; Braun and Clarke, 2008:83; Braun and Clarke, 2013). This frames the interpretation of factors that participants perceive to influence their behaviours; rather than viewing themes as naturally 'emerging' from the data, themes are instead identified, interpreted as important and reported by the analyst (Ely et al., 1997:205). To facilitate understanding of how the researcher identified and interpreted themes, the prompts and contextual information leading to responses are provided. The provision of thick description of the data, case summaries, anonymised transcripts, LHTs and TTTs increased the transparency of the research process. These provisions also increase the ability of other researchers to examine the value of the findings as well as the analytical approach applied; this, in turn, contributes to the future 'transferability' of findings (Polit and Beck, 2010:1455; Hitchings and Latham, 2019).

The following section provides a brief overview of the sample characteristics, accompanied by tables demonstrating key socio-demographic characteristics and travel behaviours of participants in the sample. This is followed by a brief discussion defining national travel behaviour norms for the purpose of analytical comparison. The remaining analytical sections provide analysis within TBJ groups, focusing on those that continued and those that discontinued pre-immigration travel behaviours. Table 10 outlines participants' allocation to TBJ groups for analysis. Within these sections, analysis is further broken down by mode choice within TBJ groups. This is followed by cross-group thematic analysis focused on length of residence, migrant motility, the influence of structure and choice, and sustainable travel considerations.

5.1.a Sample Summary

The data analysed and discussed in this chapter was collected from a sample split equally across Polish immigrants living in WSM and Bristol, with 13 participants being interviewed from each location. In total, nine participants were male (four from Bristol and five from WSM), and 17 were female (eight from Bristol and nine from WSM). Participants' ages ranged from 22 to 55 years, and residence in the UK ranged between 3 to 20 years. Bristol and WSM each provided one participant apiece who lived outside the area and commuted in, and both locations also provided one couple residing together. Most (21) of the participants were either married or cohabiting with a partner, with five participants considering themselves single or residing alone. Most (20) participants had children (12 from WSM and eight from Bristol). Only six participants did not have children (five from Bristol and one from

WSM). Of the 20 participants with children, 16 had children under 18 years of age; the remaining four had adult children. Three of the 20 had children both over and under 18 years of age. Four of the participants had only one child. The remaining participants had more than one child.

Participants' socio-demographic characteristics and travel behaviours pre- and post-immigration are summarised in Tables 11, 12 and 13, respectively, for ease of reference. Participants' levels of education varied greatly from secondary-school qualifications through to doctorates, with limited variation between immigrants in Bristol or WSM. Occupations likewise varied greatly, and are summarised in Table 7. It was evident that the household income of participants also varied greatly; however, only 11 of the 26 participants disclosed specific income details. Among those who disclosed, incomes ranged from the £16,000–30,000 per annum bracket to the £56,000+ per annum bracket. Participants' residential situations varied, with 13 owning a home in the UK (eight from Bristol and five in WSM), and 13 renting (five in Bristol and eight in WSM).

Table 10: Participants grouped by travel-behaviour journey

Travel Behaviour Journey Group		Continued Driving	Continued Walking	Continued Public Transport	Continued Cycling	Discontinued Driving	Discontinued Walking	Discontinued Public Transport	Discontinued Lift Sharing
Participants in WSM	male	001004,						001006, 001008,	001012,
	female	001009, 001015, 001016,	001010,		001007,			001003, 001005, 001011, 001013,	
Participants in Bristol	male	001014, 001024,	001022, 001023,					001019,	
	female	001025,		001018,		001017*	001002,	001001, 001026, 001017*, 001020, 001021,	
Totals		7	3	1	1	1*	1	12	1
		Continued Behaviour, 12				Discontinued Behaviour, 14 (15*)			

*Participants are allocated to their appropriate travel behaviour groups for analysis, based on their TBJ and primary mode of travel in the UK at point of interview. They are split by place of residence in the UK and gender. *Participant 001017 features in the discontinued public transport user group as well as the discontinued driver group due to the unique features of her TBJ throughout the life-course.*

Most of the participants had a driving licence (22); only four were non-drivers without licences (two in Bristol and two in WSM). Of these four, three reported their intention to acquire a licence in the future. Most (20) of the licence-holders gained their licences in Poland, while two gained their licences in the UK (both residing in WSM). Car driving was the primary mode of transport for 17 of the participants. Of the remaining participants, four cycled, two walked, one travelled by train, one combined walking with cycling, and one combined walking with bus travel (see Table 11, column 7). Gender appears to have had little difference on the long-term travel behaviours of immigrants in either location. Of the nine male participants, six were primarily car drivers (all of the male participants

in WSM, and two in Bristol). The remaining three male participants relied on walking, bus or cycling. Of the 17 female participants, 11 were primarily car drivers (four in Bristol and seven in WSM). In Bristol, the remaining three females cycled and one used the train, whereas in WSM, one female walked and one cycled (see Tables 11 and 12, respectively). However, there appears to have been slightly more variation in mode use for females throughout the life-course.

In total, 11 participants continued to travel in the UK by the same mode as they had travelled in Poland and did not report a long-term change in post-immigration travel modes. The remaining 15 participants discontinued pre-immigration travel behaviours, transitioning to alternative modes of travel. As outlined in Table 10, participants were grouped for analysis based on their TBJs and their primary travel modes in the UK at point of interview. Rather than grouping participants based solely on their primary modes of travel in the UK (e.g. car, PT, cycling, walking), grouping them against their TBJ aids in the analysis of behavioural changes and continuities alike over the life-course, specifically in relation to immigration. In total, 10 participants converted to solo car-driving as their primary mode of travel while they were in the UK. Of the remaining participants seven were primarily car drivers in Poland and continued to drive in the UK. None of the participants converted from a primarily car-driving mode in Poland to a non-car driving mode of travel in the UK. However, a number of participants did report short-term changes in their travel behaviour for the first 6–12 months of residence in the UK. A number of participants who started driving after immigrating reported experiencing some modal shifts within the UK, such as adopting car driving and transitioning back to multi-modal travel not primarily reliant on car use (two from Bristol, one from WSM). One participant transitioned away from driving due to costs and lack of 'need'. One participant transitioned to multi-modal travel due to personal preference and the desire to be more sustainable. Another participant appeared to adapt to situational needs, sharing a vehicle with a partner and managing travel behaviour around employment, family commitments and cost-/time-effectiveness. Multimodality appears to be a common connection among these three participants. Only two of the 26 participants reported integrating PT into their primary travel behaviour in the UK. Although a number of participants reported cycling recreationally in Poland, none of the participants used cycling as their primary mode of travel pre-immigration. However, when living in the UK, five participants reported transitioning to cycling as part of their primary travel behaviour. Within this group, none had been car drivers in Poland; they were either walking or using PT.

The below tables provide a summary of the TBJ groups to which participants were allocated, the demographic characteristics of the participants, and the travel behaviours of participants at key stages throughout their lives in both Poland and the UK. Throughout the analysis, these tables are revisited

to aid discussion. Likewise, the definition of nation travel behaviour norms set out in Chapter 5, section 1.b is revisited throughout the analysis.

5.1.b Defining National Travel Norms

The dominant mode of travel for the majority of the population in the UK is by car. According to the 2018 National Travel Survey (NTS), 61% of trips in the UK are taken by car, and 76% of households own at least one car (DFT, 2019:2). Walking accounts for 27% of trips. Only 7% of trips are taken by PT (5% by bus and 2% by train) indicating a relatively limited culture of travel by PT compared with other modes. This contrasts sharply with travel culture in Poland, where PT has historically been described as having 'supremacy', with 'railways [and], a well-developed inter-urban bus system and many local city systems' (Lijewski, 1982:1). Data provided to Eurostat on behalf of the European Commission provides a tentative comparison between the respective travel-behaviour cultures of Poland and the UK. As part of the European Commission's monitoring of progress toward achieving the UN's 2030 Agenda for Sustainable Development, Eurostat annually update data on the modal split of passenger transport for trend analysis of modal shifts to environmentally friendly transport modes. The earliest available data in this data set is from 1990 – approximately 10 years after Lijewski's (1982) review of the transport system in Poland.

Compiled from data made available annually for all 28 EU states, Table 14 provides a summary of shifts in modal distribution of passengers in the EU, Poland and the UK at key intervals. This data highlights a number of trends. First, the UK lags behind both the EU and Polish averages in PT use – specifically in bus and coach travel – as indicated by the UK NTS data. Second, in recent years the distribution of car travel between the UK and Poland has begun to equalise. However, in reviewing this data historically, it is apparent that the UK has seen a slight decrease in travel by car, whereas Poland has seen a dramatic increase in car travel. Correlating with this trend, Poland has seen a fairly rapid decrease in travel by train, whereas the UK has seen a slight increase. As such, participants immigrating to the UK before (approximately) 2005 would have been entering a travel culture that was much more dependent on car travel and less dependent on travel by train or PT, compared to the travel culture they left in Poland. Participants immigrating after this date are likely to find a similar (albeit slightly less dramatic) trend, likely most noticeable in relation to PT, where the UK dips below the EU average, and where Poland peaks above.

Table 11: Travel modes in the UK

Participant #	age	gender	household vehicle ownership	1 - lisence acquisition	License acquired in UK	primary transport in UK	secondary transport in UK	6 months	12 months	2 years	3 years	4 years	5 years	6 years	7 years	10 years
001003	35-39	F	car	2004 never drove in	Poland	car	walking	bus	walk / cycle	car	walk / car	train	train / bike	car	walk	car
001004	35-39	M	car / para-glider	1996	Poland	car	n/a	car / cycle	car / cycle / motorbike	car / cycle / motorbike	car / cycle / motorbike	car	n/a	n/a	n/a	n/a
001005	30	F	2 cars	2008	Poland	car	bus	minibus	minibu	car	car	car	car	car	car	car
001006	30-34	M	2 cars	1999	Poland	car	n/a	bus	bus	cycle / car	cycle / car	car	car	car	car	car
001007	50+	F	3 bicycles	aspiring	n/a	bicycle	walking	walk	walk	walk	walk	walk	walk	walk	walk	cycle
001008	35-39	M	car	2014	UK	car	walking	walk	walk	walk	cycle / car share	cycle / car share	cycle / car share	cycle / car share	walk / lift share	walk / lift share
001009	40-44	F	car	21	Poland	car	walking	car share	car share	car share	car share	car share	car share	car share	car	car
001010	40-44	F	n/a	n/a	n/a	walking	bus	walk	walk	walk	walk	walk	walk	walk	walk	walk
001011	30-34	F	car (bicycle for daughter)	2002	Poland	car	walking	walk/ car share	walk / car share	walk / car share	walk	walk	car	car	car	car
001013	40-44	F	2 cars	2010	UK	car	n/a	walk /	car	car	car	car	car	car	car	car
001012	30-34	M	1 car, bicycle	2003 before move to grandmas	Poland	car	walking	walk	car share / car	car	car	car	car	car	car	car
001016	35-39	F	2 cars	1996 (18)	Poland	car	n/a	walk	walk	car	car	car	car	car	car	car
001015	40-44	F	2 cars	1992 (18)	Poland	car	walking	walk	walk	car	car	car	car	car	car	car
001001	45-49	F	3 cars, 10 bicycle	1989 (17)	Poland	car	n/a	walk	car	car	car	car	car	car	car / cycle	car
001002	30-34	F	thinking of buying car	2000	Poland	bicycle	walking	walk	walk	walk	walk	walk/train/car	cycle	cycle	cycle	cycle
001014	40-44	M	1 car / 1 van	1996 (18)	Poland	car (van)	car	walk/car	car	car	car	car	car	car	car	van
001025	50+	F	2 cars	1986/7 (18)	Poland	car	walking	bus / car	car	car	car	car	car	car	car	car
001026	20-24	F	2 cars	2013 (17)	Poland	car	n/a	carshare	car	car	car	n/a	n/a	n/a	n/a	n/a
001019	35-39	M	2 bicycles, sold car	1998 (17)	Poland	walking / bicycle	train (car club if needed)	bus / walk	cycle	cycle / car	cycle	cycle	cycle	cycle	cycle / car share	walk / cycle / car share / train
001017	35-39	F	1 car, 1 motorbike, 4 bicycles	1995 (17) / motorbike 2017	Poland	bicycle	passenger on motorbike	underground	underground	underground	underground	underground	underground	bus / walk	walk	walk
001018	35-39	F	thinking of cycling more	2001 (18)	Poland	train	walking	bus	bus	walk	walk	walk	walk	walk	walk / train	walk / train
001020	30-34	F	personally owns car, bicycle and longboard	2005 (18)	Poland	bicycle	car / long-board	walk / car share	car share	walk	walk	walk / cycle / car	walk / cycle / car	walk / cycle / car / longboard	n/a	n/a
001021	25-29	F	1 car (partner has no lisence)	2009 (17)	Poland	car	walk (occasionally)	underground	underground	underground	underground	walk	walk / car	car / bus / wak	car/ walk	n/a
001022	35-39	M	thinking of getting driving lisence	n/a	n/a	walking	bus / train	bus	bus	walk	walk	walk	walk	walk	walk	walk
001023	20-24	M	getting driving lisence soon (and partner)	n/a	n/a	walking / bus	cycling	walk	walk / cycle / car share	walk / cycle / car share	walk / cycle / bus	walk / cycle / bus	walk / cycle / bus	walk / cycle / bus	n/a	n/a
001024	50+	M	2 cars	1981 (17)	Poland	car	walking	walk / cycl	car	car	car	car	car	car	car	car / walk

Table 11 summarises participants' modes of travel after immigrating to the UK, providing information on primary and secondary modes of travel at point of interview, travel at key points in time after migrating, and details of key mobility milestones. Column 7 details participants' primary travel modes in the UK at point of interview.

Table 12: Travel modes in Poland

Participant #	age	gender	household vehicle ownership	1 - lisence acquisition	License acquired in UK	Primary transport in Poland before migration	Secondary transport in Poland before migration	Early childhood	Secondary school	18	20	21	25	30
001003	35-39	F	car	2004 never drove in Poland	Poland	bus/tram	cycle	walk / cycle	bus / tram		underground	cycle	bus	car / train / cycle
001004	35-39	M	car / para-glider	1996	Poland	car	walk	walk	bus	bus	mini bus	mini bus	mini bus	car / walk
001005	30	F	2 cars	2008	Poland	bus	n/a	walk / cycle	bus	tram / bus		mini bus		car
001006	30-34	M	2 cars	1999	Poland	bus	motorcycle	walk	walk	bus / motorcycle	bus / motorcycle	bus / motorcycle	bus / motorcycle	bus
001007	50+	F	3 bicycles	aspiring	n/a	walk	bus / cycle	walk/ cycle / bus	bus	walk / bus / train	walk / bus / train	walk / bus / train	walk / cycle	walk / cycle
001008	35-39	M	car	2014	UK	bus	walking	bus / walk / cycle	bus / walk / cycle	bus	bus		walk	car share
001009	40-44	F	car	21	Poland	car	lift share	walk	walk	walk	walk	walk / car	car / car	car / car
001010	40-44	F	n/a	n/a	n/a	walk	walk	bus	walk	walk	walk	walk	walk	walk
001011	30-34	F	car (bicycle for daughter)	2002	Poland	car share	tram	bus	bus	car / tram	tram	bus	walk / car	drive / walk
001013	40-44	F	2 cars	2010	UK	bus / tram	train	walk / bus	walk / bus	walk	bus / tram	bus / tram	bus / tram	walk / bus
001012	30-34	M	1 car, bicycle	2003 before move to grandmas house	Poland	walking	car share	walk	bus	car share	car share	car share	car share	car
001016	35-39	F	2 cars	1996 (18)	Poland	car	n/a	walk	walk/ bus	bus	walk	train / walk	car share	car
001015	40-44	F	2 cars	1992 (18)	Poland	car	n/a	walk	bus	car	car	car	car	car
001001	45-49	F	3 cars, 10 bicycle	1989 (17)	Poland	bus/tram	walk	walk	bus / tram	walk / bus / tram	walk / bus / tram	walk / bus / tram	walk / bus	walk / drive
001002	30-34	F	thinking of buying car	2000	Poland	bus	walk	walk / car share	cycle / bus / car	bus / tram / train	walk	walk	cycle / train / work	cycle
001014	40-44	M	1 car / 1 van	1996 (18)	Poland	car	n/a	walk	bus	car	car	car	car / car	car share
001025	50+	F	2 cars	1986/7 (18)	Poland	car	n/a	walk	tram	tram / bus / train	tram . Bus / train	tram / bus / train	car	car
001026	20-24	F	2 cars	2013 (17)	Poland	train / tram	walk	cycle	train / tram	train / tram / car	UK	UK	n/a	n/a
001019	35-39	M	2 bicycles, sold car	1998 (17)	Poland	bus	car share	walk	bus	bus	bus	bus	bus/walk	cycle
001017	35-39	F	1 car, 1 motorbike, 4 bicycles	1995 (17) / motorbike 2017	Poland	walk	tram / bus	bus	bus	walk / car	underground	underground	walk / bus	walk
001018	35-39	F	thinking of cycling more	2001 (18)	Poland	walk	tram	walk	walk	walk / tram	walk / tram	walk / tram	bus	walk
001020	30-34	F	personally owns car, bicycle and longboard	2005 (18)	Poland	bus / train	walk	walk	bus	bus	bus / tram	bus / tram	walk / car share	walk / cycle / car / longboard
001021	25-29	F	1 car (partner has no lisence)	2009 (17)	Poland	bus	n/a	walk / cycle	cycle	bus	underground	underground	walk/ bus/ car	n/a
001022	35-39	M	thinking of getting driving lisence	n/a	n/a	train / walk	lift share	car share	bus	bus	train	train	walk	walk
001023	20-24	M	getting driving lisence soon (and partner)	n/a	n/a	walking	bus / car share	walk	car share	walk / cycle / car share	UK	UK	n/a	n/a
001024	50+	M	2 cars	1981 (17)	Poland	car	lift share	walk	bus	bus	bus	bus	bus / walk	car

Table 12 summarises participants' modes of travel in Poland, pre-migration. It provides information on participants' primary and secondary modes of travel immediately prior to immigrating, alongside details of participants' primary travel modes at key life-stages.

Table 13: Summary of residential locations and primary travel modes

Participant #	age	gender	Town or city in Poland child	Town or city in Poland pre-migration	Early childhood	Secondary school	age 18	primary transport in Poland	secondary transport in Poland	primary transport in UK	secondary transport in UK
001003	35-39	F	C	C	walk / cycle	bus / tram	underground	**bus/tram**	cycle	**car**	walking
001004	35-39	M	T	T	walk	bus	bus	**car**	walk	**car**	n/a
001005	30	F	T	T	walk / cycle	bus	tram / bus	**bus**	n/a	**car**	bus
001006	30-34	M	T	T	walk	walk	bus / motorcycle	**bus**	motorcycle	**car**	n/a
001007	50+	F	T	T	walk/ cycle / bus	bus	walk / bus / train	**walk**	bus / cycle	**bicycle**	walking
001008	35-39	M	T	T	walk	bus / walk / cycle	bus / walk / cycle	**bus**	walking	**car**	walking
001009	40-44	F	C	C	walk	walk	walk	**car**	lift share	**car**	walking
001010	40-44	F	C	C	bus	walk	walk	**walk**	walk	**walking**	bus
001011	30-34	F	C	C	bus	bus	car / tram	**car share**	tram	**car**	walking
001013	40-44	F	T	T	walk / bus	walk / bus	walk	**bus / tram**	train	**car**	n/a
001012	30-34	M	C	T	walk	bus	car share	**walking**	car share	**car**	walking
001016	35-39	F	T	T	walk	walk / bus	walk/ bus	**car**	n/a	**car**	n/a
001015	40-44	F	V	V	walk	bus	car	**car**	n/a	**car**	walking
001001	45-49	F	T	C	walk	bus / tram	walk / bus / tram	**bus/tram**	walk	**car**	n/a
001002	30-34	F	T	C	walk / car share	cycle / bus / car share	bus / tram / train	**bus**	walk	**bicycle**	walking
001014	40-44	M	C	C	walk	bus	car	**car**	n/a	**car (van)**	car
001025	50+	F	C	C	walk	tram	tram / bus / train	**car**	n/a	**car**	walking
001026	20-24	F	T	C	cycle	train / tram	train / tram / car	**train / tram**	walk	**car**	n/a
001019	35-39	M	T	C	walk	bus	bus	**bus**	car share	**walking / bicycle**	train (car club if needed)
001017	35-39	F	V	C	bus	bus	walk / car	**walk**	tram / bus	**bicycle**	passenger on motorbike
001018	35-39	F	T	C	walk	walk	walk / tram	**walk**	tram	**train/ walk**	walking
001020	30-34	F	C	C	walk	bus	bus	**bus / train**	walk	**bicycle**	car / long-board
001021	25-29	F	V	V	walk / cycle	cycle	bus	**bus**	n/a	**car**	walk (occasionally)
001022	35-39	M	T	C	car share	bus	bus	**train / walk**	car share	**walking**	bus / train
001023	20-24	M	C	C	walk	car share	UK walk / cycle / car share	**walking**	bus / car share	**walking / bus**	cycling
001024	50+	M	T	T	walk	bus	bus	**car**	lift share	**car**	walking

Table 13 outlines residential locations of participants in their country of origin, as well as primary modes of transport at key life-stages in Poland and the UK. The upper (pink) half of the table indicates participants from WSM; the lower (green) half of the table indicates participants from Bristol. The 'C' and 'T' in the fourth and fifth columns, respectively, denote residence in Towns (including villages) or Cities in Poland both as a child and immediately prior to migration.

Examining these trends and travel norms in finer detail in the UK, data from the UK census can be used as a proxy to identify local travel behaviour norms in the two local authorities from which participants were recruited. Below, Table 15 provides a summary of travel behaviours in the two areas. The table is compiled from 2011 Census data at local authority level. The green column indicates the City of Bristol, from which Bristol participants were recruited. The red column indicates North Somerset, from which WSM participants were recruited. Census question QS701EW, which examines 'Method of travel to work', is used as a proxy for local travel behaviours. As can be seen from the rows highlighted in bold, travel behaviours recorded in both areas appear to align with the national norm identified in the 2018 NTS data. Travel by car, or as passengers in cars, is the dominant travel mode. PT use remains low relative to both driving and walking, although bus use is comparatively higher in Bristol. This data provides the baseline for consideration of whether participants in this study assimilated to the national travel behaviour norm, encompassing both national and local travel norms of the UK population.

Table 14: Modal split of passenger transport in the European Union (1990–2017)								
	Trains, motor coaches, buses and trolley buses			Trains			Passenger cars		
TIME/GEO	EU	Poland	UK	EU	Poland	UK	EU	Poland	UK
1990	n/a	58.7	12.0	n/a	30.6	5	n/a	41.3	88
1995	n/a	35.4	10.9	n/a	15.5	4.4	n/a	64.6	89.2
2000	17.5	35.7	11.9	7.1	10.3	5.3	82.5	64.3	88.1
2005	16.6	25.4	11.7	6.9	6.8	5.9	83.4	74.6	88.3
2010	16.5	23.9	13.7	7.2	7.1	7.5	83.5	76.1	86.3
2015	17.1	21.5	14.1	7.8	6.8	8.7	82.9	78.5	85.9
2016	16.8	21.5	13.5	7.8	7.3	8.8	83.2	78.5	86.5
2017	16.7	21.5	13.9	7.9	7.7	8.8	83.3	78.5	86.1

Compiled from Eurostat, 2019 – Modal split of passenger transport
The indicator is expressed as the percentage of passenger transport by car, buses and coaches, and trains, respectively in total inland passenger transport (measured in passenger-kilometres). It is calculated as PKM = TPC x TDC, where TPC is Total Passengers Carried and TDC is the Total Distance Covered measured in kilometres.

Table 15: Travel to work data at local authority level (Census 2011)

Census QS701EW	Total (City of Bristol)	%	Total (North Somerset)	%
Method of Travel to Work				
All categories: Method of travel to work	321,506	100	145,352	100
Work mainly at or from home	9,578	2.98%	6,422	4.42%
Underground, metro, light rail, tram	287	0.09%	102	0.07%
Train	**4,150**	**1.29%**	**2,339**	**1.61%**
Bus, minibus or coach	**20,216**	**6.29%**	**2,941**	**2.02%**
Taxi	618	0.19%	366	0.25%
Motorcycle, scooter or moped	2,375	0.74%	975	0.67%
Driving a car or van	**104,729**	**32.57%**	**66,826**	**45.98%**
Passenger in a car or van	**10,233**	**3.18%**	**5,115**	**3.52%**
Bicycle	16,211	5.04%	2,692	1.85%
On foot	**40,468**	**12.59%**	**9,249**	**6.36%**
Other method of travel to work	1,130	0.35%	536	0.37%
Not in employment	111,511	34.68%	47,789	32.88%

Compiled from ONS, 2011: QS701EW
Table 15 is compiled from 2011 Census data at the local authority level. The green column indicates the City of Bristol, from which Bristol participants were recruited. The red column indicates North Somerset, from which WSM participants were recruited. Census question QS701EW, which examined 'Method of travel to work', is used here as a proxy for local travel behaviour norms.

5.2 Continuation of Travel Behaviours

This section considers the TBJs of participants who continued their pre-immigration travel behaviours developed in Poland while residing in the UK. The analysis of participants' TBJs focuses on participants' explanations of travel-mode decisions. It also examines temporal elements of events proximally related to travel-mode decisions. Both of these considerations are central to identifying what influenced the continuation of pre-migration travel behaviours, and why. Of the 26 participants in the study, 12 demonstrated continued travel behaviours: seven continued driving, three continued walking, one continued cycling, and one continued using PT. For a breakdown of the gender and residential location of these participants, refer to Table 16.

Throughout the discussion of continued travel behaviours, existing research on habitual behaviours is strongly considered. Although the focus of this study is on the unique characteristics of immigrants' travel behaviours, many parallels can be seen with research on habitual travel behaviours more broadly. Existing research on changing travel behaviour emphasises the importance of habit in the development of travel-behaviour trajectories. Baslington (2008:110) and Scheiner (2013:343) both highlight the importance of socialisation into particular travel habits at an early age. Therefore, it may be reasonable to expect that pre-immigration travel habits would continue after immigrating. Weinberger and Goetzke (2016) likewise indicated that travel behaviours may be socialised and

learned from peers. These behaviours, although learned in one context, may be continued in other contexts despite different structural conditions (Weinberger and Goetzke, 2010).

Table 16: Summary of residential locations and primary travel modes for continuing travel behaviour group

Participant #	age	gender	Town or city in Poland child	Town or city in Poland pre-migration	Early childhood	Secondary school	age 18	primary transport in Poland	secondary transport in Poland	primary transport in UK	secondary transport in UK	change travel mode form poland
001004	35-39	M	T	T	walk	bus	bus	car	walk	car	n/a	no
001007	50+	F	T	T	walk / cycle / bus	bus	walk / bus / train	walk / cycle	bus / cycle	bicycle	walking	no
001009	40-44	F	C	C	walk	walk	walk	car	lift share	car	walking	no
001010	40-44	F	C	C	bus	walk	walk	walk	walk	walking	bus	no
001016	35-39	F	T	T	walk	walk / bus	walk/ bus	car	n/a	car	n/a	no
001015	40-44	F	V	V	walk	bus	car	car	n/a	car	walking	no
001014	40-44	M	C	C	walk	bus	car	car	n/a	car (van)	car	no
001025	50+	F	C	C	walk	tram	tram / bus / train	car	n/a	car	walking	no
001018	35-39	F	T	C	walk	walk	walk / tram	tram / walk	tram	train/ walk	walking	no
001022	35-39	M	T	C	car share	bus	bus	walk / train	car share	walking	bus / train	no
001023	20-24	M	C	C	walk	car share	UK walk / cycle / car share	walking	bus / car share	walking / bus	cycling	no
001024	50+	M	T	T	walk	bus	bus	car	lift share	car	walking	no

Table 16 outlines residential locations of participants in their country of origin as well as primary modes of transport at key life-stages in Poland and the UK. The upper (pink) half of the table indicates participants from WSM; the lower (green) half of the table indicates participants from Bristol. The 'C' and 'T' in the fourth and fifth columns, respectively, denote residence in ṭowns (including villages) or çities in Poland, both as a child and immediately prior to migration.

When analysing continued travel behaviours, it is important to consider pre- and post- immigration travel modes, life events, and mobility milestones. The structural contexts of participants' locations of residence in Poland prior to immigration are also important considerations. Broader macro-social contexts, as outlined by Meurs and Haaijers (2001), Tyrinopoulos and Antoniou (2013), Scheiner and Holz-Rau (2013) and Van Acker et al. (2016), can have an important influence on the interactions that contribute to the development of travel behaviours. Table 16 provides a summary of participants' residence in towns or cities throughout the life-course. This summary facilitates consideration of the immediate pre-migration influence (and longer-term life-course influence) of structure on participants' travel behaviours and travel trajectories. Those highlighted in pink are participants from WSM, and those highlighted in green are participants from Bristol. Columns four and five indicate

participants' residence in towns (T) or cities (C) in early childhood and immediately before migrating to the UK. Villages (V) are incorporated into the *town* category for this analysis, although the influence of residence in more remote villages is examined separately. Participants who continued travel behaviours are allocated to three behavioural groups based on primary travel mode: continuing drivers, continuing walkers and cyclists, and continuing public transport users. These subgroups are analysed in detail below.

5.2.a Continued Driving

At the point of interview, 17 participants were using cars as their primary mode of transport in the UK (11 residing in a town (WSM), and six residing in a city (Bristol)). Immediately before migrating to the UK, only seven participants used cars as their primary mode of transport (four residing in towns and three residing in cities in Poland). This indicates that there was a travel-mode shift toward car driving among participants in both WSM and Bristol. TTTs for the seven participants who drove cars in Poland visually demonstrate the pre- and post-immigration car-driving behaviours of these participants (Figure 15, Appendix I). Simplified accounts of these participants' primary travel behaviours pre- and post-immigration are provided in Table 17.

Table 17: Continuing car users' mode variation

Participant #	age	gender	Town or city in Poland child	Town or city in Poland pre-migration	primary transport in Poland	secondary transport in Poland	6 months	12 months	2 years	3 years	4 years	5 years	6 years	7 years	10 years	primary transport in UK	secondary transport in UK
001004	35-39	M	T	T	car	walk	car / cycle	car / cycle / motorbike	car / cycle / motor bike	car / cycle / motor bike	car	n/a	n/a	n/a	n/a	car	n/a
001009	40-44	F	C	C	car	lift share	car share	car share	car share	car share	car share	car share	car share	car	car	car	walk
001016	35-39	F	T	T	car	n/a	walk	walk	car	car	car	car	car	car	car	car	n/a
001015	40-44	F	V	V	car	n/a	walk	walk	car	car	car	car	car	car	car	car	walk
001014	40-44	M	C	C	car	n/a	walk/car	car	car	car	car	car	car	car	van	car (van)	car
001025	50+	F	C	C	car	n/a	bus / car	car	car	car	car	car	car	car	car	car	walk
001024	50+	M	T	T	car	lift share	walk / cycle	car	car	car	car	car	car	car	car / walk	car	walk

Table 17 details the mode variations at key life-stages for participants who were primarily car drivers in Poland and who continued to rely on car driving in the UK. Note the adjustment period in the first year of arriving in the UK, which highlights the need to consider travel behaviour in countries of origin to identify whether mode changes represent 'rapid transport assimilation' (Hu, 2017) or a return to 'habitual behaviour' after a period of adjustment.

Of the seven participants who reported using cars as their primary mode of travel in Poland, all continued to use car travel in the UK. Upon closer examination of the experiences of these continuing

car drivers, it is evident that there was some mode variation in their travel behaviour during their first 12 months in the UK. This corresponds with the *adjustment period* indicated by Menninger's morale curve, which suggests that a predictable emotional cycle of adjustment to a new location is experienced by immigrants after arriving in their destination countries (Figure 3). After this initial adjustment period, each of the participants appears to have quickly resumed car travel. Although not captured in Table 17, this initial adjustment period is well captured by the TTTs (Appendix I).

Visual analysis of the TTTs for this group highlights the immediate mode shift that occurred for all participants following immigration. Mode shifts occurred to either walking, buses or lift-sharing. In most cases, this shift lasted only a few weeks or months. Participant 001025 commented on having to buy a car after five weeks in the UK because PT was unreliable. She stated:

> …in some cases I would rather use public transport, but this is so unreliable. That's why I never use it…Well, I used it at the beginning because I didn't buy the car straight away. I used it [PT] when I came for about 5 weeks, before I bought a car here…Like, even now, if somebody asked me 'which bus do you take to go there?' I'd say, 'I have no idea. I need to look it up'. Then I just I got put off that. (Participant 001025)

Participants 0010016 and 001024 (male and female, respectively) both reported shifting to primarily walking during their first two to six months in the UK, and being prompted to purchase a vehicle when their partners and children arrived to join them. Participant 001016 reported purchasing a car after six months when her husband and sons arrived. She delayed purchasing a car before this, instead walking or taking the bus, because she felt she was

> …not really very good at, you know, choosing a car, so….(deep breath)…and then it's the other side of the road, so…I found it quite difficult at the beginning. (Participant 001016)

Participant 001024 likewise described purchasing a 'cheap car' two or three months after arriving in the UK, at the time that his wife and four-year-old daughter arrived to join him. At this point, he and his wife made the decision to permanently reside in the UK, selling their car in Poland. Prior to this, he recalled that during his

> …first week or two weeks of my work, I lived in Knowle, and my first employment opportunity was in Clifton (laughs). My walk to the job lasts about one and half hours… Very soon my friend bought for me bicycle and therefore I start getting there by bicycle. (Participant 001024)

When this point was followed up in the second interview, the participant clarified that his friend lent him a bicycle:

…because he could see that I was walking one and half hour to get to work and he say it was crazy you know. 'I have spare bike, old bike' and he borrow it to me so I can get to job quicker. Forty minutes instead of one and half hours yeah (laughs). It was superb. (Participant 001024)

When asked about PT use during the initial period in the UK, Participant 001024 reports that he never used the bus in the UK, because:

…reading was a challenge for me then […] when I came over 12 years ago, I spoke only a little English. And could not read easily, so I didn't know which bus I was supposed to catch you know (laughs). (Participant 001024)

In both cases, participants described the arrival of their spouse and children as the motivation for purchasing a car in the UK, thus improving their access to a vehicle. However, both cases also demonstrate a number of complex factors influencing decision-making regarding travel prior to family arrival. These include trip distance and financial considerations, but also socialised factors such as gendered attitudes towards vehicle purchases (Moè et al., 2015), the utilisation of social networks to gain access to travel (Siemieńska, 2010; Blumenberg, 2008), and the utilisation of cultural capital to understand transport resources in the new location (Liu and Schachter, 2007).

Participant 001015 reported a mode shift to walking, but explained that this was because she and her family had only one of their cars in the UK. After a few weeks in the UK, she flew back to Poland and drove the family's Polish car to the UK. She then resumed her normal travel by car. This was interrupted briefly due to a misunderstanding with car tax. The Polish car was returned to Poland before the purchase of a second car in the UK. Limited 'institutional knowledge of owning a car' appears common among immigrants in other travel studies (Liu and Painter, 2012:63). Liu and Painter (2013) identified this as a partial explanation for initial low levels of car ownership among immigrants in the US. Participant 001015's car purchase was almost immediate due to a heavy reliance on the car for her travel needs. In this instance, the participant and her children were joining her husband in the UK, who had immigrated two years earlier. However, he had already purchased a car before his family joined him.

Participant 001009 reported a temporary mode shift to walking but not due to lack of access to a car, instead due to feeling uncomfortable driving in the UK. However, due to household transport needs, her husband pushed her to drive in the UK to manage the school run for their three children, as she had done in Poland. The participant stated:

It was strange driving on the other side. So I never was driving, really. But then my husband, he said I really need to try to drive because then I can get the boys around and stuff, and I did. And then here we are. From then I travelled with them in the car almost everywhere. (Participant 001009).

The final two male participants who continued car driving both reported quickly purchasing a vehicle for work. Participant 001014 commented that he briefly lift-shared with a colleague for a week or so before buying a cheap car to get to work. This was because working as a labourer in construction involved working in many different locations. This mirrored the need for a car that the participant reflected on in Poland, working in many different locations as a cross-border trader. Participant 001004, the only participant in the continued car driving group who was not married with children, reflected on being told by his employer that a car was essential and purchasing one immediately.

> [My employer] told me 'I must – you must buy car because the car is very important for you, for your job'. (Participant 001004)

Participant 001004 experimented with other modes of travel out of curiosity (underground and bicycle), but found that SOV travel, by car and/or motorcycle, remained his best option. Although this participant continued driving by car as his primary travel mode during his initial residence in London, a motorcycle became a well-used secondary mode of travel. Both in Poland and the UK, the participant reported needing a car for work. He suggested the need emerged due to distances between places of employment, working in different locations throughout the week, and the need to carry resources with him for work. His choice of vehicle also reflected his 'hobby', needing a larger vehicle with a 'big back…for my hobby' (paragliding). In Participant 001004's case, it appears that urban form, as suggested by Barton et al. (2003:119), had an influence the participant's SOV travel. The participant's use of different modes of SOV travel in his built environmental context allowed him to manage the travel and time demands of his work. While reflecting on his initial residence in London, the participant needed SOV travel options to manage employment-related travel:

> For [my] job, for example, to go to ill people, go to hospitals, every Sunday I was going to a second church near Heathrow….
>
> *So you used the car for that?*
> Because the church was about half hour by the feet from the underground. It is a long time, yeah. And I take some things with me.
>
> *And later you took your motorbike licence?*
> Yes…because to drive motorbike it is easier and quicker in London, yeah… For me it was very – very easier to life, yeah. (Participant 001004)

However, after relocation to Bristol from London, the urban form and distances between trips appear to have minimised his need to use a motorcycle to get through local congestion. Due to the distances between trip destinations while living in WSM, the participant favoured car use over motorcycle use at point of interview.

> Yeah, car. Because it is like here, every Sunday you visiting, for example, three places

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and they all must be visited in special time. Short-short you must quick go to another church, [then] speaking with people, and quickly go to another church [...] And I must drive carefully and FAST (laughs).

Why I drive the car? Because I must many-many places visiting on one day, for example, Sunday, yeah. Three places in different towns. It is impossible driving by bus or trains. And this is cheaper, than if I will be calling to taxi, yeah (laughs). (Participant 001004)

Both Participant 001004 and 001014's cases indicate the importance of wider structural influences on the formation of travel behaviours, related to both employment and opportunities and constraints within the built environment. Such influences were also identified in other studies of immigrants' travel behaviours. Handy et al.'s (2008) quantitative study of immigrant travel behaviours in America revealed the important influence of being employed at variable work sites and needing to carry equipment for work, on assimilation to car driving in the US (Handy et al., 2008:ix).

Residence in towns or cities, whether in Poland or the UK, appears to have had little shared influence on the continuing car-drivers' group. However, as indicated in the accounts above, structural factors related to residential location had an influence at an individual level. Based on the findings of studies examining the role of structural changes on travel behaviours, such as those by Fujii et al. (2001:805), Bamberg (2006) and Lyon and Stanbridge (2006), it might be reasonable to expect that immigration may lead to a transition away from habitual car-driving behaviours. If immigration is considered as a structural change (entry into a new structure), positive experience of alternative modes of travel may result in longer-term transition to these behaviours. However, for participants who continued pre-immigration habitual car driving, this transition did not occur.

In response to residential relocation, Klinger and Lanzendorf suggest that individuals may experience periods of 'open-mindedness towards new mobility options' during periods of adjustment to new circumstances' (Klinger and Lanzendorf, 2015:247). Visually analysing the TTTs for continuing car drivers (Appendix I), and considering the associated accounts offered by participants, it appears that all of the continuing car drivers experienced at least a brief period (between two weeks to six months) when they were open to trying new travel options. Participants recount use of trains, buses, walking, cycling and lift-sharing during this period. However, every participant transitioned back to car driving. The cognitive openings created by structural change did not lead to transitions to more sustainable travel behaviours, as other researchers have found – perhaps because participants' experiences of alternative travel modes were not positive. Below, Figure 16 depicts the findings of Fujii et al.'s study in Japan; they found that temporary structural changes in travel options (i.e. a road closure) influenced individuals future travel choices and induced lasting behaviour change by altering negative perceptions of alternative travel modes (Fujii et al., 2001:805).

Figure 17 illustrates an adaptation of Fujii et al.'s model, substituting immigration and a temporary lack of car access as a structural change, in place of a road closure. In Fujii et al.'s study, users reported a positive experience of PT, which altered their perceptions of the viability of PT use for commuting. When Polish immigrants in the continued driving behaviour group experienced alternative modes of travel in the UK during the cognitive opening created by structural change (migration), all reported having negative experiences. It is not possible to say that this negative experience created (or even reinforced) pre-existing negative perceptions of the usability of PT, because a number of additional factors must be considered on a case-by-case basis. However, it is possible to say that immigrants' experiences of PT during their arrival period was insufficient to create a positive perception of longer-term PT usability in Bristol and WSM. Participant 001025's experience demonstrated this well:

> Definitely I would be prone to public transport if, I mean, like, you know, here there is more bus stops and like, everything, every single type of bus goes here and goes to the city centre and I would rather – but as I said, I drive…[because PT] is so unreliable. (Participant 001025)

**Figure 16: The process of change to public transport use due to a temporary freeway closure**
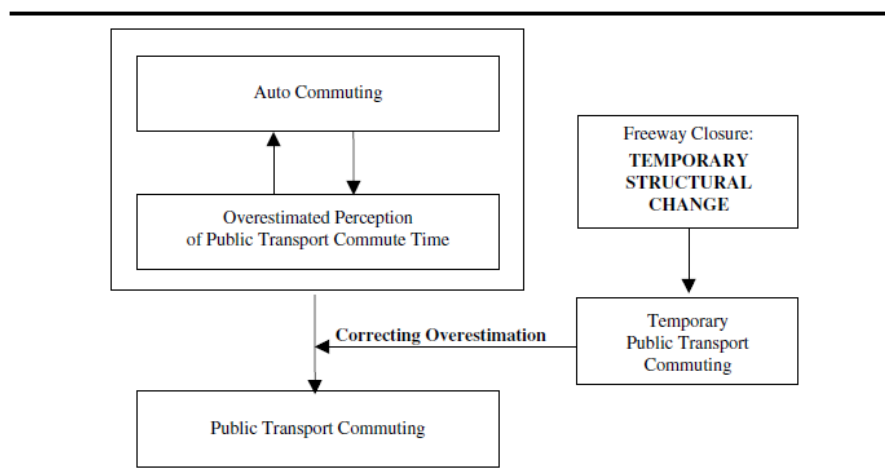
Fujii et al. discovered that structural changes (such as a road closure) may push car drivers to temporarily travel by other means such as PT. When this occurs, drivers' negative perceptions of PT (commute time) are altered, and these temporary users may become regular PT users.

Source: Fujii et al., 2001:806
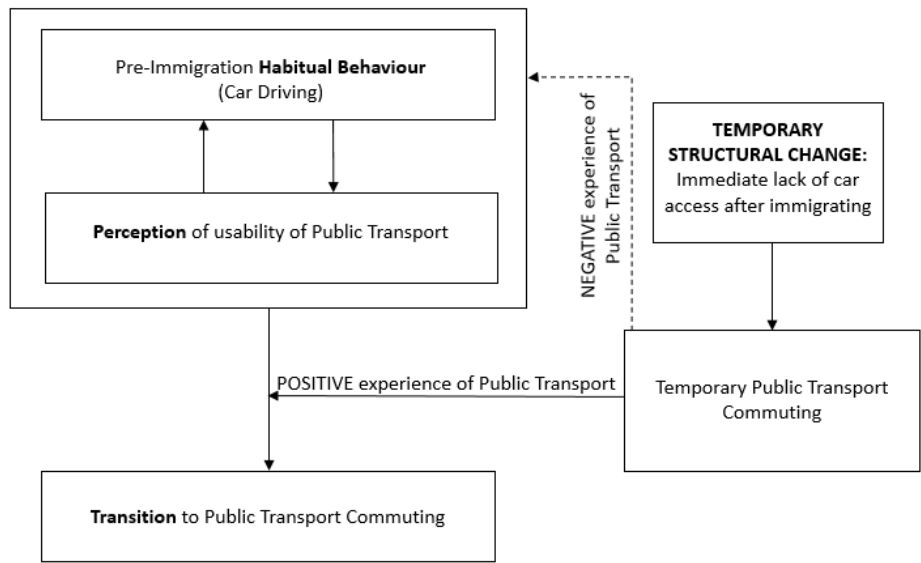
Building on Fujii et al.'s model of travel behaviour change in response to a cognitive opening created by a temporary structural change (see Figure 16 above), this model illustrates how immigration may be considered as a structural change that creates opportunities to adjust habitual travel behaviours. In this model, immigrants arrive with their pre-immigration habitual travel behaviours. Aligning with the experience of the continuing drivers' subgroup identified in this study, immigrants who continue pre-immigration driving behaviours all experienced short-term lack of access to a car. In this period (the two-week to six-month arrival period) immigrants engaged with alternative modes of travel, often PT. In all cases, continuing car drivers had a negative experience with PT in Bristol and WSM related to cost, convenience, connectivity and reliability; this indicates these factors as key barriers in their continued PT use and eventual transition back to car travel.

Source: Author's enhancement of Fujii et al., 2001:806

Similar experiences were recounted by participants in the discontinuing public transport users' group, examined in Chapter 5, section 3.c. Although it is challenging to separate the influence of life-stage, life events and personal preference from the influence of initial experiences of transport after immigrating (as discussed below), Figure 17 clearly demonstrates how opportunities for immigrants to engage with sustainable travel have been missed. This is examined further in Chapter 5, section 4 in relation to both the continuing and discontinuing travel behaviour groups, as well as sustainable travel behaviours. Based on the literature, it would be reasonable to expect a transition to alternative modes of travel once immigrants arrive in the UK, due to the cognitive opening created by a structural change. However, in all cases this did not occur, indicating that the UK transport system (in Bristol and WSM) hinders adoption of non-SOV travel by habitual car users. Attributing this entirely to negative experiences of the PT system is insufficient to explain the continued travel behaviour, in part due to variability in experience of alternative travel modes. Alongside this, there are subtle and latent themes in the accounts offered by participants in the continued driving group which suggest that human agency and habit, alongside socialised 'norms', play a key role in travel behaviour among immigrants. Likewise, the importance of life-stage and associated habits and child-related travel needs had an evident influence on travel behaviour among participants in this group.

In this regard, *timing* can be considered as an intersectional element of life-course with certain life events occurring at particular stages with notable influence on travel behaviour. As supported by the transport research literature, key life events and mobility milestones all influence travel behaviours (Rau and Manton, 2006:53). The culmination of these events and milestones throughout the life-course contribute to an individual's life-stage. All participants in the continuing drivers' group, with the exception of Participant 001004, had reached a particular life-stage pre-immigration. They were all over 30 years of age at point of migration, had at least two children pre-immigration, and had acquired their driving licences in Poland (four of the remaining six acquiring this before having children). These six participants were all married (or had been married) and were currently cohabiting with their Polish spouse while living in the UK. Table 18 provides a summary of key socio-demographic characteristics for the continuing drivers group. In the accounts offered by the six continuing drivers who had children, each shared a similarly negative experience of PT in Bristol and WSM that appeared to influence their continued car driving. However, each participant also reflected on the influence of children and family on their need to travel by car. Participant 001016, for example, arrived in the UK six months before her husband immigrated to WSM with their children. She had two children in Poland who were five and eight years old when she immigrated, and a third child born two years after arriving in the UK. She secured a job as a carer before she migrated, and rented a flat for her family to move into during this period. Until her family joined her, the participant travelled to work by walking or bus. When her husband arrived, he purchased a car. The car was used for work and the school run. Initially they had one car, but after two years the couple purchased a motorbike for the husband's work commute. After two and a half years of this, they sold the motorbike and purchased a second car for safety reasons. The participant reflected that she needed a car because she was working in Portishead and needed the car to cover the distance and school run. As a consequence of having to get to Portishead each day, the participant suggested that she had to do the school run by car despite it being a walkable distance:

> I mean, because I have to go to work and I have to take my daughter to school just, then it's driving. (Participant 001016)

The participant was willing to use PT, occasionally using the train or bus when travelling into Bristol alone:

> I used the train sometimes when I was doing my accountancy course. At the weekends, in Bristol, I am using train because [the course] is close to Temple Meads Station; I am walking and taking the train. Sometimes going into Bristol I take a bus as well, but if we go together [as a family], obviously, we always take the car. (Participant 001016)

Participant #	postcode	age	age @ migration	gender	years in uk	year of migration	education	occupation	children	under 18	over 18	years children born	children pre-immigration	relationship status	polish / english partner	pre-existing social network	home owner	licence acquisition	license acquired in UK
001004	BS23	35-39	33	M	3	2014	5 YEAR COLLEGE	priest	0	0	0	0	no	no	n/a	yes	no	1996 (17)	Poland
001009	BS23	40-44	32	F	12	2006	college	warehouse operator	3	1	2	1998, 2000, 2002	3	divorced	polish	no	no	1996 (21)	Poland
001016	BS23	35-39	31	F	12	2008 (husband 6 month>)	high school	economist	3	2	0	2000, 2003, 2010	2 of 3	married	polish	no	no	1996 (18)	Poland
001015	bs23	40-44	32	F	13	2006	degree	payroll administrator	1	1	0	1996, 2000	2	married	polish	no	no - in poland	1998 (18)	Poland
001014	BS10	40-44	30	M	12	2007	college	business owner	2	0	2	1997, 1999	2	married	polish	no	yes	1996 (18)	Poland
001025	BS6	50+	38	F	13	2006	MASTERS	SCHOOL ADMINISTRATOR	2	0	2	1992, 2000	2	married	polish	no	yes	1986/7 (18)	Poland
001024	BS2	50+	44	M	12	2007 (2005 to USA)	MSC	Cleaner / Kitchen assistant	3	1	2	1986, 1989, 2004	3	married (re-)	polish	no	yes	1981 (17)	Poland

Table 18 summarises key socio-demographic characteristics of immigrants in the continuing driving group, including details of characteristics related to life-stage. These include level of education, occupation and home ownership, but also details of family status – number of children, child's approximate age, child's birth pre- or post-immigration, relationship status, nationality of spouse and access to pre-existing social networks in the UK. All of the participants were over 30 years old at the point of migration. With the exception of Participant 001004, all had been married and had at least two children in Poland pre-immigration. Again, pink denotes participants residing in WSM, green in Bristol.

The participant's travel behaviours appear to have been influenced by 1) having children and having to incorporate the school run with work commitments, 2) trip distances between locations of employment and locations related to children's travel needs, and 3) travelling with family. Each of these considerations is heavily influenced by life-stage. Participant 001016's explanations suggest that her travel behaviours might have been different if she were not factoring children into her travel schedule. This ties into existing concepts in the research related to children and their influence on travel behaviour. In their study of the influence of children on parental travel behaviours, Zwerts et al. (2008) suggest that children have an effect on parents' travel behaviours that is 'not equally spread over mothers and fathers'. After childbirth, many women become involved in more travel trips involving 'bringing' or 'getting' someone, becoming characterised as 'the taxi-driver'. The time-use rhythm of children determines (at least in part) the time-use rhythm of mothers (Zwerts et al., 2008:13). Similar influences can be seen in the account offered by Participant 001009 (above), who was told by her husband to try driving in the UK to 'get the boys around and stuff' (Participant 001009). Participant 001009, much like 001016, migrated to the UK with three children (two boys and a girl) who were born in Poland pre-immigration. She gained her driving licence in Poland, where she usually drove to work. Unlike Participant 001016, Participant 001009 migrated to join her husband in the UK who had relocated two years before. Her account revealed another layer of complexity to the influence of children on parental travel behaviours: the influence of a child's age. She had children aged 20, 18, and 16 at point of interview:

…so you have kids. Do you take them to school or anything?

Yeah, I have daughter and go in car to take her to school, but she's the younger one. I have two guys as well, but one lives alone and one lives with his father, but sometimes I take them places. (Participant 001009)

Zwerts et al. (2008) found that the age of the youngest child has a remarkable influence on parental travel, with particular influence on the number of trips parents make each day. Having children under age six appears to reduce daily trips, which increase when the child is aged seven to fourteen, reduce again when the child is aged 14–17, and increase when over 18 years old (Zwerts et al., 2008:8). Participant 001019's experience may have reflected this, with reduced child-related travel for her children over 17 years of age, and ongoing involvement in her 16-year-old daughter's travel being limited to school runs.

Participant 001024 provided an alternative account of the influence of children on travel behaviour, with the primary influence occurring in Poland. Participant 001024 was a male participant who resided in a small city in Poland a few hours from the German border. He had a multitude of jobs, including national military service, teaching, serving as a border guard and working as a cross-border trader. He has a master's degree in physical education. His three children were born in Poland – two by his first wife in the 1980s and a third by his second wife in the early 2000s. The youngest daughter arrived three years before the participant migrated to the UK, but only one year before the participant attempted to migrate to the US. The participant recalled this in relation to Polish accession to the EU and the associated changes in employment opportunities as a border guard or cross-border trader on the German border. Participant 001024 did not purchase a car immediately proximally to the birth of his children, instead gaining access to a car around six months after his second child was born. This was a result of his parents and his in-laws gifting him and his wife a car as a belated wedding present, because they could see that the family needed one with two children. In Poland, the participant managed to travel by PT and walking with one child, but once he had a second child, a car was needed to assist with the additional travel needs. When the participant had one child, he was able to work as a teacher. However, quite soon after the second child was born, the participant sought out more profitable employment as a cross-border trader. Similarly, after his third child was born, the participant sought out even more profitable opportunities – attempting trading, migration to the US, then migration to the UK – to secure a better income. In the early 1990s, the participant was divorced and purchased a larger car to facilitate working as a cross-border trader between Poland and Germany. Although not specifically related to this in the account provided, this change was temporally proximal to the fall of the Berlin Wall, widely associated with opportunities for increased cross-border trading (Wright, 2015). Initially in response to family needs of having two children, then in response

to employment needs of working as a cross-border trader, the participant had 18 years habituating to car driving before migrating to the UK.

In the UK, Participant 001024 – like Participants 001015, 001016 and 001025 – raised a number of issues related to urban form and distribution of trip destinations in relation to their continued driving in the UK. Trip distances were often increased in relation to their continued need to use cars as their primary mode of travel. Participant 001024 also referred to trip distance in relation to subsequent car use, but related this to the convenience of parking in Bristol and the time-cost of parking when driving against the time-distance of walking. Existing studies qualitatively examining immigrants' travel behaviour have similarly identified parking as a concern for immigrants when making travel mode choices (Chatman, 2013:339).

> For my second job, [I get there] by walk, because why? This is because of problems with parking, you know, because [parking] everywhere at the places until 6pm is paid. After 6pm is for free. And when the nursery is closed, I clean up the place. I clean the toilet, I clean up. I use my car because I have got a parking space for free…It is not far from here, it's just the same on walk: 20 minutes. (Participant 001024)

Participant 001024 also reflected on the challenge of comprehending the PT system relating this to level of English-language reading ability:

> Now I live here 12 years and I never used the bus. Never. I never use the bus […] You know I can stop, maybe not everywhere but it's easier for me [to drive] because I don't need to know which bus I have to use, and I have, maybe not now but earlier, had a very big problem with reading the time table – I can't read (laughs). (Participant 001024).

Participant 001024's experiences of travel throughout the life-course, as well as his reflections on what influenced his travel at different life-stages, illustrate the interaction of a number of life-course elements in the development of his travel behaviours. Life-stage (or timing), combined with family travel needs (linked lives), motivated his adoption of car driving; employment needs and wider employment opportunities in the location where he was living (position in time and place) further reinforced the need to drive. Wider socio-structural changes (position in time and place) and family needs (linked lives) motivated his migration. Habit, family needs, and lack of cultural capital in relation to English language ability (human agency and linked lives) contributed to the continuation of his travel behaviour in the UK. Although this indicates a complex web of influential factors interacting to generate travel behaviours, all of these influences ultimately occurred in a particular time and place to result in a particular travel behaviour. The participant did not report any specific, individual circumstances affecting his ability to engage in any of the available travel options. Instead, he responded directly to structural context, engaging with travel behaviours within the built environment that satisfied his habitual preferences while also enabling timely and cost-effective travel. Time-costs,

as reflected in this participant's comment that driving took approximately the same amount of time as walking, appear to be influential in the pragmatic sense. Rather than evaluating his time involved in travel associated with specific trips as high or low, as indicated by Goodwin (2019:11), this participant indicates a lack of desire to spend time finding a parking space out of preference. In some ways, this relates time-cost considerations of the 'bother' of locking up a bicycle, discussed by Participant 001019 in the discontinued PT-use group (Chapter 5, section 3.c). Rather than an overall concern with time-costs, there is a latent behavioural preference to avoid the 'problems' or 'bothers' subjectively associated with different travel modes at different times of day. Convenience may play a central role in travel behaviour, as reflected in accounts of PT use in Bristol and WSM. Absence of effort, or minimised effort (ITF, 2014:11), underlies the accounts offered by these participants. Such findings are echoed in European-level transport research examining the role of convenience and time-efficiency in travel behaviour (ITF, 2014; ITF, 2019).

5.2.b Continued Walking and Cycling

This section considers the travel behaviours of participants who continued pre-immigration walking or cycling behaviours after migrating. Due to case similarities, walking and cycling are considered together in the analysis, with the only continuing cyclist in this group transitioning from walking to cycling after migrating to the UK. Of the seven participants who primarily walked or cycled in Poland, at the point of interview, only four continued to use these travel modes in the UK (see Table 19). The three participants who continued to walk resided in cities before migrating to the UK. Two of these participants now live in Bristol, and one has transitioned to town living in WSM. The one remaining participant who continued to cycle resided in a Polish town before migrating and a UK town (WSM) after migrating. None of the participants who continued to walk or cycle possessed driving licences, although three were aspiring to get a licence. The three participants who primarily walked in Poland had resided in cities prior to migrating to the UK, indicating that structural factors (locations) may have an important influence on the adoption and continuation of walking behaviours. Visual analysis of TTTs for the continuing walking and cycling group (Figure 18) indicated a notable disruption to pre-immigration travel behaviours for two participants (001007 and 001022). The remaining participants immediately continued to walk or cycle as their primary mode of travel, just as they had done in Poland.

Table 19: Continued walking and cycling mode variation

Participant #	age	gender	Town or city in Poland child	Town or city in Poland pre-migration	lisence acquitsition	Early childhood	Secondary school	primary transport in Poland	secondary transport in Poland	6 months	12 months	2 years	3 years	4 years	5 years	6 years	7 years	10 years	primary transport in UK	secondary transport in UK
001007	50+	F	T	T	aspiring	walk/ cycle / bus	bus	walk / cycle	bus / cycle	walk	walk	walk	walk	walk	walk	walk	walk	cycle	cycle	walk
001010	40-44	F	C	C	n/a	bus	walk	walk	walk	walk	walk	walk	walk	walk	walk	walk	walk	walk	walk	bus
001022	35-39	M	T	C	aspiring	car share	bus	walk / train	lift share	bus	bus	walk	walk	walk	walk	walk	walk	walk	walk	bus / train
001023	20-24	M	C	C	aspiring	walk	car share	walk	car share	walk	cycle / car	cycle / bus	cycle / bus	cycle / bus	cycle / bus	cycle / bus	n/a	n/a	walk / bus	cycle

Table 19 details the mode variations at key life-stages for participants who were primarily walkers or cyclists in Poland, and continued to rely on walking or cycling as their primary mode of travel in the UK beyond the 12-month adjustment period. Pink participants are resident in WSM, green participants in Bristol. The cream-coloured columns marked '6 months' and '12 months' indicate the arrival and adjustment periods, respectively, discussed in Chapter 5, section 2.a, in relation to Menninger's morale curve. The years following this represent length of residence in the UK.

Participant 001022 grew up in Szczecinek – a small to mid-sized town in Poland with a population he estimated at approximately 40,000 residents. Although the town was small, due to living on the outskirts, the participant relied heavily on lifts in his father's car as a child. Immediately before immigrating to the UK, the participant resided with his girlfriend in the city of Czczecin, where he attempted three different university degree programmes. The participant exclusively walked, travelling by train only to return to Szczecinek. Participant 001022 experienced some disruption to his habitual walking behaviour after arriving in the UK, relying instead on PT to commute to work. This adjustment period, or transitional travel period, lasted approximately two years through two changes of employment and a period of inactivity, unemployment and low motivation. In both instances, when the participant relied on the bus to commute to work, the main motivation was distance. Although the participant resided close to the city, he was working in Cribbs Causeway. Travel over this distance by other modes was considered unrealistic by the participant, suggesting that structural factors relating to the built environment had an important influence on his travel behaviour. Much of the research conducted into travel behaviour in the UK indicates that travel choices are affected by the built environment, availability of viable PT infrastructure, and distances between activity sites (Jain et al., 2011; Jain and Lyons, 2008; Lyons and Urry, 2005; see Chapter 2, section 1). This finding is not limited to nationals in the UK context. Tal and Handy note similar influences on Mexican and Latino immigrants living in ethnic-clusters in California, finding that the distribution of activity sites and the structure of the transport network influenced how immigrants travelled (Tal and Handy, 2010:86; see Chapter 2, section 2). Likewise, built environments were seen to influence immigrants' travel

behaviours in other countries, moving beyond clustering of activity sites to consider familiarity with travel options within an environment. Buhr and McGarrigle (2017) suggest that recognising the different constraints and opportunities of urban structures is important for the urban mobility of immigrants in Lisbon, Portugal (Buhr and McGarrigle, 2017:232). Change in structural context can also be seen as highly influential in Participant 001022's return to walking as his primary travel mode in the UK.

Participant 001022 was interviewed as part of a Polish couple residing in Bristol, enabling reflection on the differing experiences of travel within an immigrant household. The participant's travel behaviour was very similar to his spouse's (Participant 001018) travel during his transitional travel period, but their *experiences* of travel varied dramatically. As a continuing public transport user, Participant 001018's experience is considered in Chapter 5, section 2.c. Her negative experiences of bus travel in Bristol align with those of participants in the discontinuing public transport users' group (see Chapter 5, section 3.c). These contrast with Participant 001022's relatively positive reflection on bus travel in Bristol. Participant 001022 did not mind the bus service on a day-to-day basis, nor did he mind being sat on the bus in traffic:

> *Okay, and how did you find the bus?*
> It's not too bad. It's quite a good connection. It was around 40 minutes to get there,
> but, I didn't mind […] so it was quite okay actually (laughs). (Participant 001022)

When the participant transitioned back to walking, this resumption of his pre-immigration travel behaviour the motivation was not attributed to discontent with the PT system. The participant resumed walking in Bristol at the same time as a change in employment, working at a location within the city much closer to his residence – indicating that structure was influential in this transition.

> I got the job in [a shop], so it's city centre, so five-minute walk from my home, so didn't
> use transport for this….I didn't use any specific transport really. (Participant 001022)

Other than for occasional family trips to see friends in South Bristol, the participant was exclusively walking at the point of interview. After changing to yet another job within walking distance, the participant continued to walk. In both his temporary PT use and his return to walking (as he had done pre-immigration), trip distance (or non-motorised access) to the participants place of work appeared to be the central influencing factor. Even after a change in life-stage, becoming a father of two children, Participant 001022 continued walking. He adapted to travel needs associated with life-stage without using alternative modes of travel, such as a car. This stands in contrast to the explanations offered by discontinuing public transport users. Reflecting on having children the participant stated:

> *And […] you had children some time?*

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> I had daughter in 2012. I was 31 […] and had son in 2017.

> *And did that change how you were using transport at all?*
> No, not greatly, because my daughter's school is just here and it is just basically 15 minutes' walk. Then my son, he's in the nursery, which is basically two minutes' walk from my office now. So I leave him in the morning in the nursery, and when I am done with my work then I'll pick him up and then go home. (Participant 001022)

Participant 001022 reveals a travel behaviour at this life-stage that is more commonly discussed among participants in this study as occurring in Poland, pre-immigration, among the discontinuing public transport users' group (see Chapter 5, section 3.c). Participants in this group found that even after having children, they were still able to travel by PT in cities in Poland due to low costs, high convenience, good connectivity, and reliability of the service (Participant 001001). PT use appears to have been possible for Participant 001022 in Bristol because of the relative clustering of activity sites (see Barton et al., 2003:119). Each of his activity sites was within an easily accessible walking distance, and there were few inconveniences to travelling short distances with children on foot (see ITF, 2014:11). Not having a driving licence may have forced the participant to adapt (Bohon et al., 2007:289) to manage certain child-related maintenance needs, such as grocery shopping (Zwerts et al., 2008). Rather than child-related maintenance needs being a motivation for car travel, as the discontinuing public transport users group described it, Participant 001022 reflected on it adaptively.

> *Okay, so for food shopping and stuff, do you do the same, or do you do….?*
> The same. Oh, well probably that's a thing that changed. But doesn't change the transport much because we do online shop mostly. So we get stuff delivered to the door […] well, I mean food […] So it's much better to do it once a week with a big box, than to walk around (laughs) with three or four bags in your hand […] That's not what you need to have when you pick up kids, so it's much better, to just order it […] I mean 'cos, who wants to spend time walking around the shops when you've got the weekend when you want to spend time with your family? You don't want to be walking around with them or dragging ten bags of food with you. (Participant 001022)

Participant 001022's experience and account of his travel behaviour after migrating, and at different life-stages, revealed a number of key themes particularly relevant to the continuing walking and cycling group. These themes are relevant to participants across all TBJ groups. Structure, built environment and thresholds for non-motorised travel (or trip distance) have an important influence on travel behaviour. They can enable continuation of pre-immigration travel behaviours, and contribute to discontinuation and transition to other travel modes. Trip distances, for example, were mentioned by participants in relation to their continued need to use cars as their primary mode of travel (Barton et al., 2003). Life-stage – including children and employment – were both mentioned in relation to trip distance (Zwerts et al., 2008). Life-stage, therefore, has an important influence on travel behaviour. However, shared travel needs that justified car travel for some participants were

accommodated by others without resorting to car travel (Lanzendorf, 2010; see Chapter 5, section 3.a, Participant 001017).
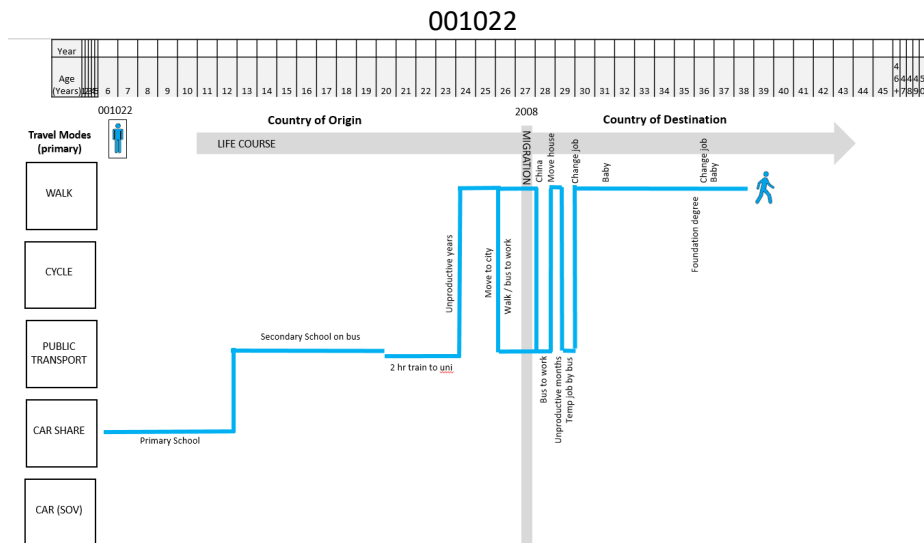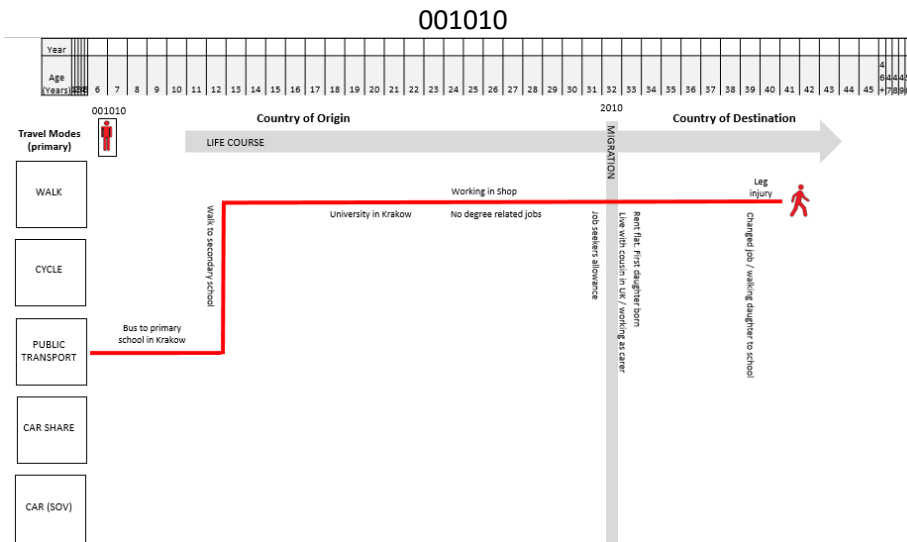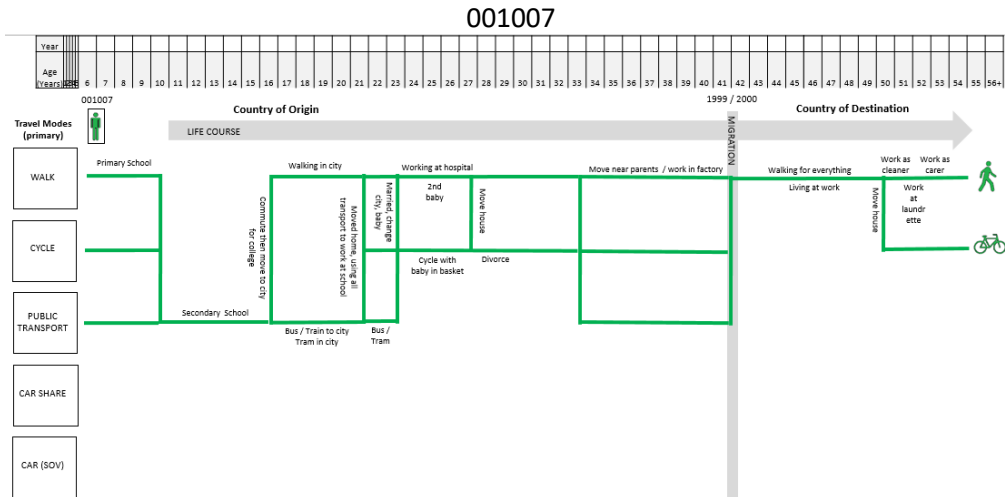
Despite a positive perception of day-to-day bus travel in Bristol, Participant 001022 was more critical of the lack of UK-wide connectivity in the PT system. He desired to independently take his family on trips outside Bristol, but struggled to do this due to poor PT connections between train stations and final destinations, such as campsites. Participant 001022 reflected on this in relation to his desire to gain a driving licence and access to a car in the UK, so that he might enable his family to take weekend trips out of Bristol. Reflecting on a particular short break, the participant said that:
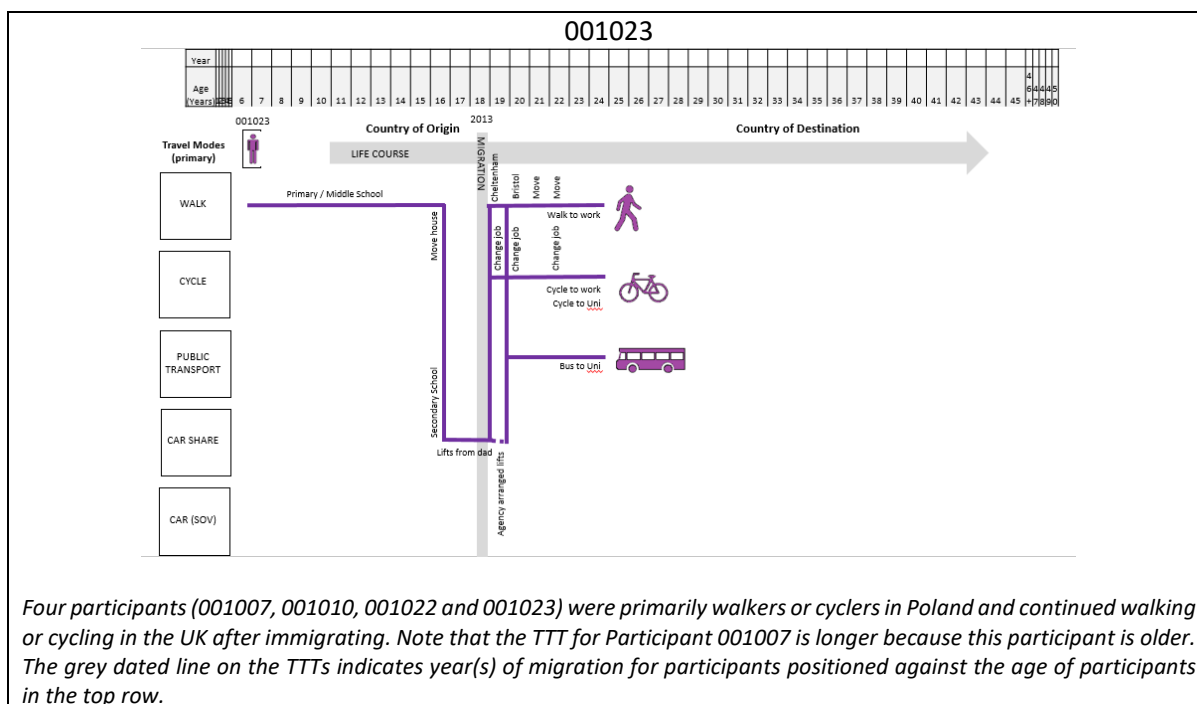
> our friends have got kids also, they stayed at a campsite with us…around Weston- super-Mare. […] They went by car, both of the [other] families, but we used the train. And then they picked us up from Weston. So, that's my main motivation […] everybody else can get to their own car and get to their spot directly […] We need to go on a train, then we need to rely on friends to give us a lift from Weston to the actual camping fields. So […] it's challenging. (Participant 001022)

Participant 001022's account suggests that social norms may encourage car driving among immigrants in the UK to some extent, via a desire to travel how peers travel, and the desire to take 'breaks' from the city (Mast et al., 2008; Moè et al., 2015). Social norms also appeared to influence Participants 001006 and 001019 in the discontinuing public transport users group (reporting aspirations to own particular vehicles) as well as Participant 001016, who upgraded vehicles to fulfil aspirations associated with social status (Handy et al., 2008:ix).

Participant 0010123 was a young male university student living in Bristol. In Poland, he had resided in the mid-sized city of Czezstoehowa, whose population he estimated at 250,000 residents. When starting secondary school, he relocated from one side of the city to the other, transitioning to bus travel for school rather than walking due to trip distance. Immediately prior to migration, the participant travelled primarily by walking, occasionally lift-sharing and using PT. He did not 'find time' to complete his driving licence. Like Participant 001022, Participant 001023 reported experiencing a notable shift in travel behaviour after arriving in the UK. Post-immigration, during a transitional period of about 12 months in Cheltenham, the participant's travel became heavily multi-modal; mode choice related to perceived need, distance and accessibility (walking, cycling and car-sharing). After relocating to Bristol, this levelled out to some extent – primarily walking, with only occasional cycling and bus use. During some seasons, Participant 001023 could be considered a multi-modal transport user – cycling more in the sun, and using the bus more in the rain. At the point of interview, the participant primarily walked, cycling occasionally. Rather than mode habituation or specific mode preference – as

Figure 18: TTTs for continuing walkers and cyclists

Four participants (001007, 001010, 001022 and 001023) were primarily walkers or cyclers in Poland and continued walking or cycling in the UK after immigrating. Note that the TTT for Participant 001007 is longer because this participant is older. The grey dated line on the TTTs indicates year(s) of migration for participants positioned against the age of participants in the top row.

identified among some participants in this group (e.g. Participant 001010) – his travel choices appeared to be a response to the inconvenience of Bristol's transport system:

> In terms of the whole network in Bristol, it's really inconvenient, like when you go to the [university] campus it is fine because you know there is a direct route and it's quite frequent – but, like, for instance, I've got a dance class on Mondays which is next to Ikea, so that's close kind of to St Werburgh's or St Paul's area. I can't get a bus in there, I don't really get there on time if I use the bus, so then I just use a bicycle, really. So it is really inconvenient, I really don't like using buses in in Bristol and in general in the UK. (Participant 001023)

Participant 001023 offers further criticism of the challenges of the PT infrastructure available in Bristol:

> There is no joint ticket…I was actually really surprised you don't get the bus stops properly displayed on the timetable. On the bus timetable, it's in the bus stop, and maybe there is a queue, you know and…I remember asking them 'where do I need to go, this doesn't tell me anything', so...

> It is really bad, you know […] it's late – the buses, they're not regular, it's really hard to know where you're going […] Since the metro bus actually, it's a bit, you know, better […] but still you can wait for the bus and it says it's coming, it's coming, but then, it just it disappears. (Participant 001023)

As a consequence of the inefficiencies of the PT network in Bristol – specifically, its lack of connectivity and lack of reliability – Participant 001023 resorted primarily to walking (and cycling) to fulfil his day-to-day travel needs. This reinforces the influence of distribution of trip destinations (structure) and availability of viable PT infrastructure on the development of immigrants' travel behaviours. Similar influences were found by Handy et al. (2008) among immigrants in the US. Handy et al.'s study found

that where low costs, high convenience, good connectivity, and reliability of the service are not present, immigrants in the US had concerns about using PT to commute to work (Handy et al., 2008:ix). At the point of interview, Participant 001022 was situated in the continuing travel behaviours group; however, he was aspiring towards car driving, much like Participant 001022. The motivations described by the participant as pushing him towards this behaviour were structural. His desire for a driving licence in the UK was not directly in response to daily travel needs, but rather in response to a lack of PT connectivity within the UK more broadly. This hindered his and his partner's ability to 'explore' the UK. Reflecting on the difficulty he experienced taking trips outside Bristol without having a car, the participant stated:

> Without a car in the UK, especially going to different cities, it's really difficult. You know, it's not affordable. So maybe there is some kind of train, but then we find getting to a village or like a town without a car just impossible. (Participant 001023)

Much like Participant 001022, this could be interpreted as a desire to engage with car travel in response to social norms or lifestyle choices. Participant 001023 and his partner were in their mid- to late 20s with limited family-related commitments. They were at a life-stage where they were engaging in regular travel to 'explore' (Brückner and Mayer, 2005; Modell et al., 1976:22). Participant 001022, although not in the same life-stage, sought:

> to get out of Bristol […] just to get our family frequent travel, just somewhere where it's a bit quieter. (Participant 001022)

This lifestyle choice – the decision to engage in regular travel outside of the home city – formed an integral part of these participants' aspirations for car travel. Participant 001022's motivation also appears to connect to social norms.

> So, that's my main motivation […] everybody else can get to their own car and get to their spot directly […] We need to go on a train, then we need to rely on friends to give us a lift. (Participant 001022)

This response may be tied to personal insecurities rooted in inability to drive, reflecting on needing 'the courage to do it' when talking about taking a driving test in the UK (Law, 1999; Mast et al., 2008). This is examined further in Chapter 5, section 2.c, with specific reference to different gendered experiences of travel within immigrant households. Here, personal influences, structural influences, life-stage, as well as social norms and relationships (human agency, location in time and place, timing, and linked lives, respectively) all factor into travel trajectory development. Although members of the continuing travel behaviour group continued pre-immigration behaviours at point of interview, post-interview, some participants may assimilate to the UK's car-driving norm. This may be in response to factors beyond life-stage and viability of the PT network for day-to-day travel. Latent social norms

appear to play an important role in the narratives of those who continue pre-immigration behaviours. Participant 001016, for example, described how she did not drive in the UK until her husband arrived because she was 'not really very good at, you know, choosing a car' and perceived driving on the other side of the road to be a challenge. Likewise, female Participant 001009 reflected on feeling uncomfortable driving on the other side of the road, and not driving in the UK until her husband said she really needed to try. The low self-perception of these participants' driving abilities, both of whom proceeded to drive in the UK without reporting any accidents, may reflect wider gender stereotypes relating to driving that have developed into behavioural norms (Moè et al., 2015). A comparable influence of stereotypes was also identified for male Participants 001022, 001019, 001006 and 001012.

Participant 001007 demonstrated continued cycling as a primary travel mode, but again suggested that post-interview assimilation to car travel might occur. Participant 001007 was female, in her 50s, and working in WSM as a carer. In Poland, she had travelled via a combination of walking and cycling. At the point of interview, the participant continued to cycle in the UK. In response to employment and accommodation needs, the participant spent her first eight years in the UK travelling exclusively through walking – the participant lived in the hotel where she worked, did not have any space for a bicycle in her accommodation, and did not need to travel because everything she needed was provided by her employer or was within walking distance. After changing her employment and place of residence – to work as a cleaner, and then as a carer, in WSM – the participant resumed daily travel by bicycle. Although this participant cycled for her daily travel at the time of interview, she was training to get a driving licence. Her desire to gain a driving licence in the UK was motivated by a desire to stay mobile while ageing, identifying that having a car is beneficial in older age when older people might not have the energy or ability to travel by other means.

> *I was really wondering how long you've wanted to get a driving licence for? And why you'd like one?*
> I want to use it when I will not [be] well or something, or sometimes it is to help to [get to] work or for long distance. That's why I need it. And especially, I think because younger [people] they [cycle] very quick now, but [it] should be, the licence is for old people if they need it [...] because they are not [well] enough to walk long distance, or its difficult to walk or hard to walk, you know. That's why...and shopping. (Participant 001007)

Participant 001007's experience of training to get a driving licence is interesting in itself, in that she must navigate language barriers and devise ways to rehearse question and adapt her learning approach in a way UK nationals may not have to. For her, comprehending the language used in a driving test in the UK was more of a challenge than effectively employing the highway code.

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I have a test on the mobile, you know […] I translate, I have to understand everything, every single question […] if I don't [know] one word, I can do wrong […] it's absolutely silly, stupid, you know, the questions so simple and easy.

So it's not about the driving but about understanding the words?
Oh no. Yes. It's just common sense. (Participant 001007)

Although in a different travel journey group, Participant 001008 reflected similarly on language ability as a barrier to passing a driving test in the UK and accessing car travel. However, he passed his driving test in the UK and discontinued his pre-immigration travel behaviour, transitioning to car driving. Language as a barrier to transport access and local services more broadly was considered by Cierpial et al., who suggested that reduced knowledge of English language among pre-2004 accession immigrants may be disadvantageous in accessing travel resources (Cierpial et al., 2010:7; Sanchez et al., 2004; see Chapter 2, section 2). However, this has not been examined in any depth in relation to immigrants' driving licence acquisition.

In Participant 001007's TBJ, social norms played a particularly important role. Initially, the participant indicated that she enjoyed cycling, and that enjoyment was her main motivation for cycling throughout her life. However, in the follow-up interview, the participant revealed the influence of other pressures related to family, financial and time commitments related to gender norms and her role as a mother:

I was just wondering how long you've wanted a driving licence. Did you want to drive [before], or have you only recently wanted to drive?
Yes, I wanted to all the time, but was not enough money […] sometimes I said I've not [got] time to study, and […] maybe little bit too lazy […] always there is something to do. (Participant 001007)

Likewise, while engaged in conversation about a motorcycle 'meet' in WSM, the participant offered further insight on the influence of social norms on her TBJ:

I thought to have at first driving licence for the motorbike, but I thought no […] when we are younger.

I am all the time excited by [motorbikes], and I really love some […] I am still excited when I see them on the road […] I am bit crazy.

Maybe it's partly from my family because my dad has a bike, all of them have a bike. Not grandpa, but dad he has, and my brothers, two, and some of my uncles […] I remember when I [was] growing, my uncles they took me, they put me on the back when I was a little bit bigger, the front when I was little. Oh, I remember! I never not forget that! No really, honestly, it's amazing!

I am excited when I see ladies when they use the motorbike. Oh, I am really impressed! (Participant 001007)

This account suggests that, despite a continued desire to ride a motorcycle, socially or self-imposed social norms relating to gender and age prevented the participant from independently utilising this mode of travel. However, it also suggests habituation to the normality of motorcycle travel at a young age. Further exploration of the topic revealed that the participant actually quite enjoys speed – driving fast with her son – which may contribute to her enthusiasm for motorcycles. She reflected on being excited and impressed by women on motorcycles, and does not consider this mode to be particularly 'risky', having been brought up on motorcycles from a young age in Poland. This circumstantially reinforces the idea that social norms – and particularly gender norms, as outlined above in reference to Participants 001016 and 001019 – may have an important influence on travel behaviour throughout the life-course. In consideration of the different gendered experiences of travel, Law (1999) highlighted how understanding of travel behaviour should move beyond derived demand to recognise the physical pleasure of travel – indeed, Law specifically referred to the pleasure of riding a powerful motorcycle, and 'the way that those pleasures are differently experienced and made available to men and women' (Law, 1999:580). However, isolating this as an influence unique to immigrants is complex, and the accounts offered by participants, as well as their correspondence with existing research in the transport literature, appear to suggest that this is an issue applicable to the formation of travel behaviour more generally. This experience may not be specific to immigrants, nor the result of norms relating specifically to gender stereotypes in Poland at a particular time. Participant 001025, for example, in the continuing drivers' group, was of a similar age to Participant 001007. They both migrated at similar times (2006 and 2004, respectively), and both had two children born in Poland. Participant 001025 did not reflect on the influence of any gender norms in relation to her car driving, which began in Poland. The primary difference between the participants was Participant 001007's residence in a rural town throughout childhood and pre-migration, whereas Participant 001025's resided in a small city. They both immigrated to structurally similar environments (WSM and Bristol, respectively). Although perceptions of gender norms relating to travel have been reflected on by participants, they cannot be specifically tied to the experience of Polish immigrants pre- or post-immigration. Social norms, including gender, may have an important impact on travel behaviour throughout the life-course, but may not be unique to the experiences of immigrants from Poland.

In analysis of the final participant in the continued walking and cycling behaviour group (below), the influence of a number of social norms is evident. However, unlike for Participants 001007, 001022 and 001023 above, for this participant the influence appears to correspond more with those described by Baslington and Schwanen in relation to childhood travel socialisation – rather than norms related to gender or lifestyle preferences. Participant 001010 is the fourth participant in the continuing walking

and cycling group. The participant was a female in her 40s residing in WSM. She had one daughter, born approximately one year after immigrating to the UK. She lived alone with her daughter in WSM, and worked as a carer for people with dementia. Visual analysis of this participant's TTT ([Figure 18](#)) revealed that the participant had almost exclusively walked as her primary mode of travel throughout her life. Unique within this group, the participant did not express any desire to gain a driving licence or drive a vehicle, and was happy walking – despite being on crutches at the point of interview. She reflected that she 'loves walking', and that she lived in a city in Poland and never needed to travel by any other means, nor did her parents. When she migrated to WSM, she found the town to be so small she could continue walking:

> *How do you get to work?*
> (Laughs) I'm walking.
>
> *And is that far?*
> Maybe five minutes from my place.
>
> *And, do you ever have to go anywhere else where you might have to take the bus, or car, or bike or anything?*
> No, I'm walking all the time
>
> Because Weston is so tiny, you know, even my daughter's school is so close from my flat, because I'm renting in the centre [of] Weston, then [it's] maybe five minutes. (Participant 001010)

The participant reflected on social norms in relation to walking exclusively, saying 'Weird, isn't it?' but these norms appear not to have had an influence on her continued walking. Socialised into walking throughout her life by her parents, who likewise walked to work in Krakow, walking appears to be a normalised and habituated behaviour for her. This parallels the point made by Schwanen et al. (2012) in relation to positive parental attitudes towards travel behaviours. It also hints at travel socialisation as suggested by Baslington (2008), albeit in the context of walking rather than driving. Similar influences can be seen in relation to Participant 001018's continued PT use.

In all cases in the continuing walking and cycling behaviours group, 'length of residence' appears to have had minimal influence on the participants' travel behaviours. Structural factors, social norms, habit and life-stage appear to have had an interactional influence on their behaviours that was not specifically related to immigration. Although participants in this group continued pre-immigration behaviours, structural issues related to the connectivity of the PT network were pushing most members of this group towards car travel. This indicates that structure may have a primary role in the development of travel-behaviour trajectories while also being influenced by other factors. This can be seen across TBJ groups. If structure were the primary influence on the travel behaviour of immigrants, it would raise interesting questions in relation to motility and social exclusion, as well as perceptions

of the necessity of car ownership within the UK, potentially linking to a variation of the concept of forced car ownership (Stanley and Stanley, 2017:109; SEU, 2003:30). This may have a wider impact for sustainable travel behaviours. Although inconclusive, the examples provided in the continuing walking and cycling group provide subjective evidence that structural contexts had an important influence on immigrants' travel behaviours. This influence can be pre-immigration in Poland, where behaviours are formed, socialised and habituated. It can also influence how participants respond to the immediate needs of their new environment and daily activity requirements post-immigration. Participants 001019, 001023 and 001025 were not alone in their critique of the PT infrastructure in Bristol. In the analysis of the discontinuing travel behaviours group, an ongoing theme that relates to structural considerations was surprise at the inefficiency and lack of connectivity of the Bristol and WSM PT networks. Participants considered these issues to 'push' them to travel by other modes. This pattern is evident in other studies on immigrants' travel behaviours (Handy and Lovejoy, 2008) and in travel behaviour research more broadly (Fujii et al., 2001). Of the 26 participants involved in this research, 12 reflected negatively on negatively in some manner, commenting that its inefficiency encouraged travel by other modes. Although structure had a clear influence on travel behaviours, participants in the continuing walking and cycling group also highlighted the importance of social norms in behavioural development. Contrary to the assimilation literature, the norms of influence appear to have been habituated pre-immigration.

5.2.c Continued use of Public Transport

This section reviews the travel behaviours of participants who continued to use PT as their primary mode of travel in the UK, as they had done in Poland pre-immigration. Only one participant continued PT use as her primary mode of travel in the UK. Although a number of participants used PT occasionally (or seasonally, as with Participant 001023), Participant 001018 was the only participant who relied on PT for her daily travel needs at point of interview. In the discussion of her travel behaviours, specific consideration is given to her gendered experience of events and influences (alongside her partners 001022) because Participant 001018 was one half of the couple interviewed in Bristol. Tables 20 and Table 21 (above) provide summaries of the participant's (and her partner's) demographic characteristics and their mode variations. Participant 001017 (from the discontinued public transport users' group) was included for comparison on the basis of case similarity.

Participant 001018 was a female in her late 30s. She resided in central Bristol after migrating from Szczecin. This is a mid-sized city in western Poland approximately 500 km from the German border, with a population of approximately 410,000 residents in the mid- to late 2000s when the participant migrated. The participant lived with her Polish partner and two children (two and six years old) born in the UK. The participant and her partner both worked in Bristol. The participant gained her driving

licence in Poland in 2001, aged 18. The participant migrated to the UK twice, first arriving in 2005 for an 18-month gap in her studies, during which she worked in the UK to fund an advanced degree qualification. In 2008, the participant migrated to the UK for a second time, accompanied by her boyfriend. On the second migration, the participant used her previous connections to secure employment for herself and her boyfriend. The participant initially rented a very small flat before renting a larger three-bedroom new-build flat in 2009 to accommodate a future family. Although the participant acquired a driving licence in Poland, she reflected on only 'driving [a] car a couple of times' while working as a nanny when she was studying at university (Participant 001018). Day to day in Szczecin, she had relied exclusively on PT (tram) and walking. Prior to university, the participant lived in Szczecinek, a large town in north-western Poland with a population of approximately 40,000 residents. As a child in Szczecinek, the participant's travel behaviour was similar to her behaviour in the city, but she relied on the bus due to the lack of a tram network.

Table 20: Demographic characteristics of continuing public transport users' group

Participant #	postcode	age	age @ migration	gender	years in uk	year of migration	education	occupation	children	under 18	over 18	years children born	children pre-immigration	relationship status	polish / english partner	pre-existing social network	home owner	1 - lisence acquisition	license acquired in UK
001017	BS6	35-39		F	20	1998	Masters	Research Associate	2	2	0	2009, 2011	0	cohabiting	(polish) now english	no	yes	1995 (17) / motor bike 2017	Poland
001018	BS2	35-39	(22) 25	F	(14) 11	(2005) 2008	MASTERS	Wellbeing practicioner	2	2	0	2012, 2017	0	cohabiting	polish	yes	no	2001 (18)	Poland
001022	BS2	35-39	27	M	11	2008	Foundation degree	benefits assessor	2	2	0	2012, 2017	0	cohabiting	polish	no	no	no	n/a

Table 20 summarises key socio-demographic characteristics of Participant 001018 in the continuing PT users' group, alongside details of her partner 001022. Details of Participant 001017 are also included on the basis of case similarity, despite being a discontinuing PT user at point of interview. The table includes details of characteristics related to life-stage (level of education, occupation, and home ownership) but also details of family status (number of children, child's approximate age, child's birth pre- or post-immigration, relationship status, nationality of spouse, and access to pre-existing social networks in the UK). All resided in the city.

Table 21: Continued public transport users' mode variation*

Participant #	Lisence acquistition	Early childhood	Secondary school	primary transport in Poland	secondary transport in Poland	6 months	12 months	2 years	3 years	4 years	5 years	6 years	7 years	10 years	primary transport in UK
001017	1995 (17) / a1 2017	bus	bus	walk	tram / bus	under-ground	under-ground	under ground	under ground	under ground	under ground	bus / walk	walk	walk	bicycle
001018	2001 (18)	walk	walk	walk	tram	bus	bus	walk	walk	walk	walk	walk	walk / train	walk / train	train/ walk
001022	n/a	car share	bus	train / walk	car share	bus	bus	walk	walk	walk	walk	walk	walk	walk	walk

*Table 21 details the mode variations at key life-stages for Participant 001018, who primarily used PT in Poland, and continued to rely on PT for travel in the UK beyond the 12-month adjustment period. The participants' partner as well as a participant sharing case similarities (001022 and 001017, respectively) are included for comparison. The cream-coloured columns marked '6 months' and '12 months' indicate the arrival and adjustment periods, respectively, discussed in Chapter 5, section 2.a, in relation to Menninger's morale curve. *There is only one member in this group. The details of her partner (interviewed as part of a couple) are included for comparison. The details of one further female participant are included on the basis of case similarity.*

The participant reported a varied experience of PT in the UK; however, she relied exclusively on non-car travel after arriving in the UK. When the participant first migrated, she recollected relying on a combination of the bus and walking:

> Mostly I walked, because I really love Bristol, especially harbour side […] actually, the first job was on the bus. So, the factory job for two months, it was travelling by bus […] So it was crazy. We walked to Lawrence Hill [from Bedminster] to grab the first bus at 05:00, and then from there, we took a bus to Warmley […] it was really expensive.

> *And then after those two months?*
> I was working on top of the Park Street […] I walked by myself. It's just a nice walk […] almost an hour's walk, probably because I was so fed up with buses. A couple of times I was late to work and I hated it, and I was like, 'Well if I could walk, if it's less than an hour, I will walk'.

> So, normally if my job was up to one hour walking distance to where I live, I preferred walking. So I could save money, that was one thing, and I could use this as my exercising. So, walking was a type of exercising for me also. (Participant 001018)

After migrating back to the UK in 2008, the participant's place of work changed, as did her travel choice. The participant relocated to a residence near Stokes Croft, and secured a job in Cribbs Causeway. In order to travel this route daily, the participant relied on the bus. When reflecting on her travel during this period, the participant recollected not enjoying bus travel:

> *How did you find the bus?*
> Horrible, (laughs) horrible […] So, the buses were always full of people that were late and I hated being late to work. The only thing that I really liked is when I was tired after work I could just chill on the bus. But sometimes coming back from work, stuck in the traffic in Filton, it was like two hours […] You feel the tension of people getting angry, it's hot, they start arguing, and you think, 'I just paid £4 for a day ticket – or a weekly ticket cost me like £20 – so why is this service is so horrible?' (Participant 001018)

After a year, the participant changed employment and started working in the city where she was able to walk to work. Shortly after having her first child and returning to work from maternity leave, the participant changed employment, but again walked or 'jogged' to work. She reflected on travelling less in general after her daughter was born, but this did not result in the temporally proximal purchase of a car, as it did for other participants (in both the continuing drivers' group and the discontinuing public transport users' group). The participant expressed some concerns with travel on PT after having children, concerns shared with the discontinuing public transport users' group. Participant 001018's frustration with buses in Bristol – related to the cost, time, 'tension' and reliability of the bus service – pushed her to walk for journeys under one hour. However, her partner who travelled on the same bus routes at the same times (and continued to do so for longer) reported a relatively positive perception of the bus service in Bristol:

How did you find the bus?
It's not too bad. It's quite a good connection. It was around 40 minutes to get there, but I didn't mind […] so it was quite okay, actually (laughs). (Participant 001022)

Participant 001018's frustration and reflection that structural factors (lack of viable bus service for her needs) may have pushed her to alternative modes of travel is therefore a subjective interpretation of Bristol's PT service – given that the same travel route, during the same hours, was considered viable by another participant. Personal preference, human agency and choice, therefore, had a notable influence not only on the participant's mode choice, but also on perceptions and experiences of different travel modes. Despite their frustration with the bus service and having access to car travel, Participant 001018 continued to travel by PT rather than by car. At the point of interview, Participant 001018 combined train travel with walking to accommodate employment and childcare responsibilities. She reported finding this efficient and economical, but was also frustrated by the lack of warning about occasional bus replacement services. In addition to responding to frustration with Bristol's bus service, the participant's continued PT use was influenced by personal dislike of driving – or, more broadly, single-occupant vehicle travel (extending even to bicycle use). She described herself as 'terrified' of driving, having to 'learn from basics again', as she had barely driven since gaining her licence when she was 18 years old. Reflecting on cycling in Bristol as part of a scheme to increase cycling among families (KidicalMass), the participant's reflection became merged with her general experience of being on the road, stating:

I was too scared and terrified of the roads. Sometimes I would see people on the bikes and cars, and I was like 'Ooohhhhhhhhhhh' […] I don't know if my thinking in my mind and my brain is ready for it, like focusing on so many things. I don't know if naturally my brain is ready to drive. I don't think so. It's too much. (Participant 001018)

This experience aligns with Aldred and Woodcock's notion that car driving creates demands on attention, which among other things produces stress in car drivers (Aldred and Woodcock, 2008:490). In the first instance, this gives more weight to the argument that human agency (or individual 'choice') has more bearing on immigrants' travel behaviours in the UK than structural influences. With further examination, it also gives weight to the importance of early childhood socialisation of travel behaviours as well as the influence of gendered perceptions of driving. As a child, both of the participant's parents had worked and, as a consequence, the participant and her brother became quite independent and familiar with non-car travel:

We had to look after ourselves. […] we used to do things and [our] parents were at work. So if there's anything you need to get, you just do it yourself and you just get there. There's no question. Just go. (Participant 001018)

At age 15, the participant's father died. This forced her mother to get a driving licence after not previously having had an interest in driving, as the father used to drive the family. The participant recalled that despite having a driving licence, her mother never drove: 'she was absolutely terrified of driving' (Participant 001018). Eventually the participant's aunt, who drove, moved back to Szczecinek from the countryside to help. The account suggests that childhood socialisation of travel behaviours and the influences of gendered perceptions of driving again have an important role in travel behaviours. The participant reflected that:

> I'm thinking now, like probably [it] is a big influence for me not to drive, thinking, like, mum didn't have the driving licence […] so I'm probably following her pathway, potentially […] to be honest, like my mum's generation, most of the ladies I know, they don't drive […] So it's the husband who's driving. (Participant 001018)

An additional layer of complexity in Participant 001018's case relates to the influence of linked lives on travel behaviours. In particular, the influence of her daughter's (and later, sons') motion sickness. Baslington (2008), Zwerts et al. (2008) and Lanzendorf (2010) all put forward research recognising the influence of having children on travel behaviours throughout associated life-stages. However, none of these studies appears to examine the influence of illness of a family member on travel behaviours. Illness more generally, as well as disability, may be considered to contribute to social exclusion and have a negative impact on lives and livelihoods unless managed effectively. Cycling-related studies by Aldred and Woodcock (2008) and Clayton and Parkin (2016) have demonstrated this. Clayton and Parkin note that in the 'auto-centric design of the UK transport system', disabled people (or people with 'mobility impairment') must rely on the private car (be this through driving, lifts or taxis) for their travel needs (Clayton and Parkin, 2016:2). However, motion sickness appears to have received minimal attention in this field of research, for it is rarely recognised as a disability, despite the disabling and incapacitating effect of nausea and vomiting after the induction of motion sickness (Lackner, 2014:2495). Neurological studies have discovered that during severe motion sickness, many manual performance and cognitive tasks are substantially impaired (Ibid:2494). The remarkable influence of this 'less-severe' disability, alongside invisible disabilities more broadly, is an issue that is under-recognised and little understood in travel behaviour research. This is surprising because, as Participant 001018's experience below illustrates, even one family member having motion sickness can dramatically restrict and alter travel behaviours for an entire family. In this case, it especially restricted the mother's travel. Without the ability to travel by car, families experiencing motion sickness in dependent children, much like disabled people who lack access to a car in Clayton and Parkin's (2016) study, must adapt to and negotiate built environmental barriers to non-car travel. Infrequent or non-existent PT, disjointed walking and cycling paths, dangerous road crossings, and circuitous routes all require adaptation to socially accepted travel norms to avoid social exclusion (Clayton and Parkin,

2016:2). For immigrants who have children in their destination country, children with motion sickness can dramatically alter return travel to their country of origin.

As a child, Participant 001018 suffered from motion sickness, and both of her children (two and six years old) suffered from motion sickness at the point of interview. The participant remembered that as a child, her parents were 'really stressed' about her travel sickness during their fortnightly car trips to visit family. Mirroring her own experiences as a child, the participant's children's severe motion sickness appeared to have a marked impact on the travel behaviours of her family. The daily travel behaviours of Participant 001018 are – at least in part – influenced by her children's motion sickness. In terms of daily travel, the participant walked to school rather than travelling by bus due to motion sickness. However, it was challenging to separate the influence of motion sickness in this decision from other influences such as preference, cost or time. The participant's broader travel needs for social reasons were affected by her daughter's motion sickness, reflecting that they travelled less after having children. Their preference was always walking, but on occasions they tried to take the bus or taxi; if there was a need for automobile travel, they tried to take a taxi instead of a bus due to a bad experience on the bus that had left the participant and her family waiting in the cold for two hours. Reflecting on this relatively short, but late-night trip during autumn months, the participant recalled:

> The worst situation was the bus coming back home. No buses – I'm not joking – for two hours. So, we were like walking from one bus stop [to another thinking] 'we left the party 8:00, and now it's 10:00, it's ridiculous', and we're sitting there with two little children. My daughter is sleeping on a bench like a homeless person and I was like, 'We will never do it again'. (Participant 001018)

Although the participant opted for taxis over buses while travelling with children, this was not without its difficulties:

> If we have to, occasionally, we will take a taxi. If we're in a friend's house and we stay longer, and kids are tired, so we would just take taxi, but then I struggle, thinking, 'Oh, my God. They will be unwell'. So, if it's longer than 12 minutes' drive, they're always unwell […] I'm thinking like, 'what a nightmare with them?' (Participant 001018)

Her realisation that the train was a safe option for her daughter's travel came via a chance experience with a travel scheme, coinciding with a suggestion from a friend that trains may be an efficient way to manage the school run and get to work on time. Analysis of the participant's LHT revealed that this advice was received proximally to a positive experience on a Great Western Railway (GWR) day trip organised to promote train use among Eastern European women in the Southwest of England in 2016 (Ricci, 2017). This could be considered as a *turning point* in this participant's travel behaviour. Although travel by PT represented a continuation of travel behaviour for the participant, utilising the train rather than the bus within Bristol had a remarkable influence. The participant's 'good experience'

of train travel through the travel scheme was the point at which she 'realised that local trains are so good (laughs)'. This aligns with the enhancement of Fujii et al.'s (2001) model of travel behaviour change following structurally driven positive experiences of PT use (Figure 17). As soon as her daughter started school, the participant started travelling on the train, walking her daughter to school then taking a 10- to 12-minute train journey to work from the nearby station. Although unhappy using buses, describing the service in Bristol as 'horrible', the participant said she 'loves' using the train because:

> It's so convenient. It's so easy. It's so nice (laughs)…and so cheap. (Participant 001018)

Within the participant's account, this is considered to have had a life-changing effect on the family, not only opening a door to a new approach to her daily travel behaviours, but also completely changing how the participant and her family were able to return to Poland to see family. Moving forward, when the participant plans a holiday or trip in the UK, she checks which trains leave from Bristol and chooses a holiday destination in a direction to 'follow the train'.

> To go to Poland [in] April for Easter, I'm terrified because the little one [her son] he's started having the same sickness.
>
> Just getting the plane […] you have to change them, and all the journey looks like, I'm trying to catch the vomit and then change her clothes really quickly. So I have bags, papers, wipes, everything ready! So, that's when I'm on the plane or a car. And then I leave the car and I'm like, 'Oh, I got to move' (gestures stretching backward), because I've been sitting on my back for three hours, and I'll be like this for another three hours.
>
> I was saying to my partner, 'Why don't we look at the train to see if we can travel from here to Poland on train?' I would prefer to spend two days on the train, to be honest.
>
> Once we did that, we flew to Germany and we took a train from Germany, and that was good, just with my daughter that time. (Participant 001018)

In the above extracts from this participant, a number of influences are clear. The people with whom the participant's life is linked have a remarkable influence on her behaviour; children and life-stage have a strong influence on travel behaviour; positive (and negative) experiences of different transport modes can have a lasting influence on travel behaviours; and individual circumstances as well as human agency can dramatically influence the ways in which individuals interact with travel modes available within a given structural environment. In addition, there appear to be few influences on this participant's travel-mode decisions that are unique to her experience of being an immigrant.

Interestingly, motion sickness appears to be a far more influential issue in the TBJ of Participant 001018 (Figure 19) than in that of her male partner, Participant 001022, who at the point of interview aspired to have the courage to get a driving licence to help his family take independent trips out of

the city. Although he briefly mentioned his daughter's tendency towards motion sickness, unlike his partner he did not report it as a central consideration in his TBJ.

> *If you go on trips now, how do you go?*
> […] If I can say for my daughter, then she prefers train because she [has] motion sickness […] So for her, it's more in cars. So if you're going to do something that's on transport it's mostly train because the bus and the car, they give her motion sickness.
>
> *And does that affect if you go back to Poland or…?*
> […] It mostly happens on the way to the air – to the airport, and then the plane is okay, and then, we go by train to our hometown so it's okay (laughs). (Participant 001022)

This difference in reporting may reflect gender roles within the relationship, with female Participant 001018 describing the challenges of caring for a child with motion sickness during journeys, whereas male Participant 001022 appears to dismiss the issue as 'okay'. Alternatively, this could represent a different dynamic between male and female participants with a male researcher. This may affect reporting due to issues relating to masculinity, perhaps inclining male participants to down-play 'difficulties' to fulfil the social perception of masculinity (Schwalbe and Wolkomir, 2001:90). Extrapolating from the language both participants used to describe travel by car – 'terrifying' and something 'husbands do', by female Participant 001018; and something male Participant 001022 needs the 'courage' to do – it is fair to posit that socialised gender norms had an important influence on both participants' travel behaviours. Within the migration field, a number of researchers working with Polish migrants – and migrants more broadly – have identified important differences in the gendered experience of migration. In their examination of migrants' capital formation, Erel and Ryan suggest that masculinities and femininities both shape, and are shaped, by the locations where migrants reside (Erel and Ryan, 2018:3). Likewise, when investigating the timing of Polish immigrants' childbearing in the UK, Lubke noted the influence of socio-cultural contexts on immigrants, with gendered and locational influences affecting immigrants' fertility norms (Lubke, 2015:4). Although of seemingly limited influence in the reporting of some immigrants, gender appears to have an important latent influence on this couple's travel behaviours – both pre- and post-immigration.

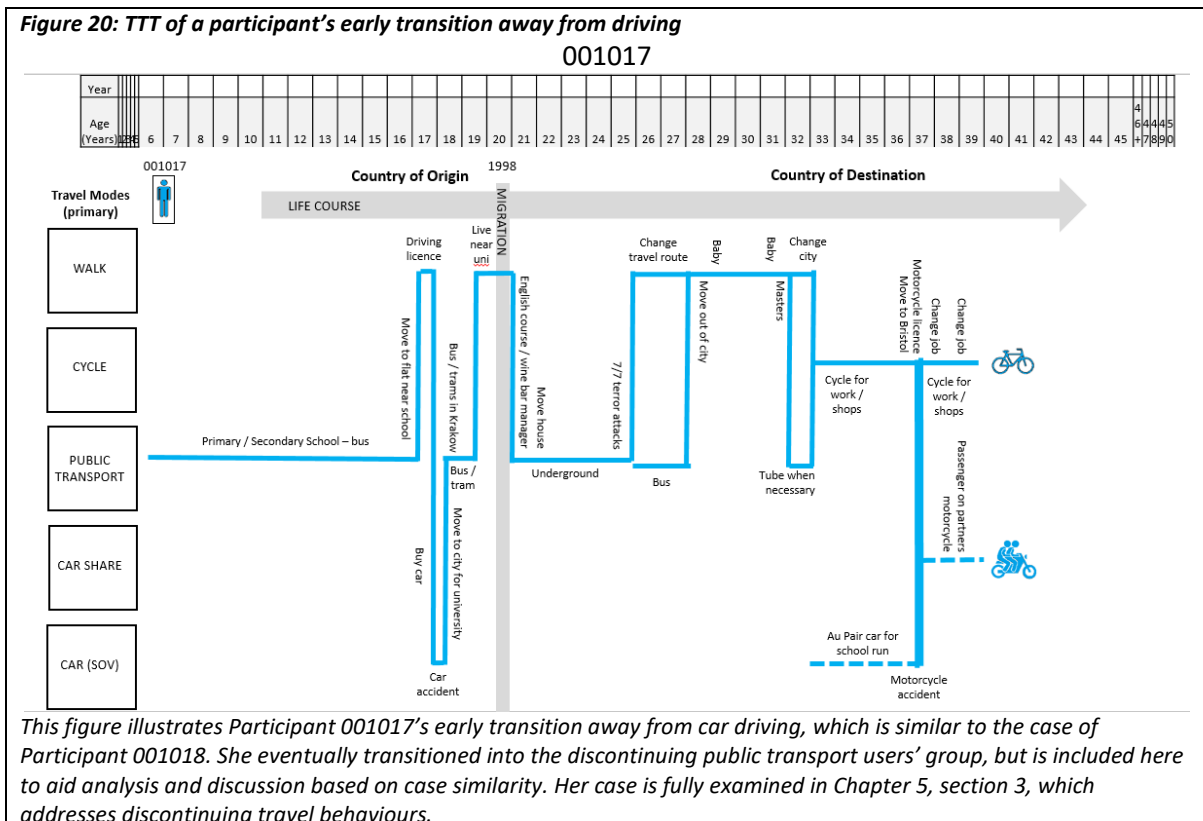**Figure 19: TTTs for continuing public transport users**
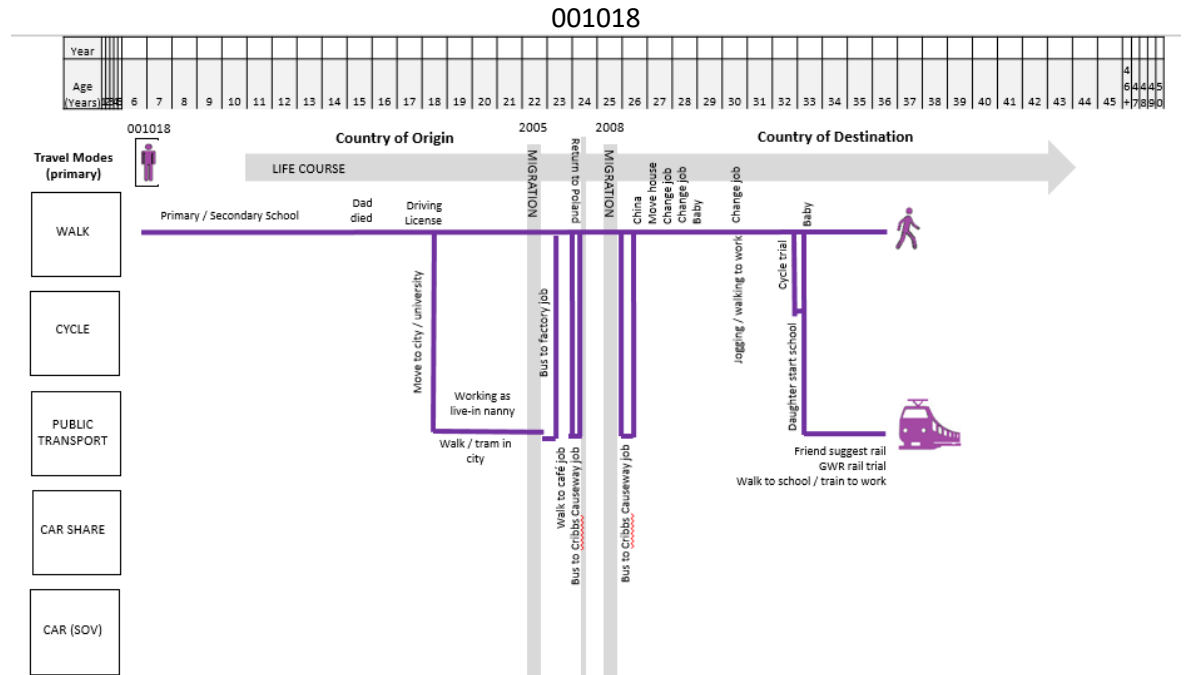
Only one participant (001018) continued her pre-immigration primary use of PT in the UK. Although she discontinued use of public buses while resident in Bristol, a positive experience with train travel within Bristol lead to a rapid transition back to PT use.

Participant 001017 falls outside the continuing public transport users' group, and was considered under both the discontinuing car driving and lift-sharing group, and the discontinuing public transport users' group in Chapter 5, section 3. Participant 001017's TBJ was unique but is comparable to Participant 001018's TBJ in the early transition away from car driving in Poland. Rather than transitioning away due to a cognitive aversion to car travel, Participant 001017 transitioned away as a result of a traumatic car accident. Participant 001017 transitioned to PT use in Poland; after immigrating to the UK, she transitioned away from PT to cycling (and occasionally travelling on the back of her husband's motorbike). Participant 001017 had a varied TBJ, seemingly influenced by a large number of 'traumatic' life events. Analysis of Participant 001017's TTT ([Figure 20](#)) instantly revealed mode changes throughout her life-course. Analysis of the participant's LHT (see [Appendix G](#)) demonstrates interaction between traumatic events, changes in travel behaviour, and residential relocations. The brief summary that follows indicates the role of traumatic events in the development of her TBJ.

Participant 001017 gained her driving licence in Poland at age 18 while living in Krakow – a large city in southern Poland with a population of approximately 745,000 residents in the late 1990s (when the participant migrated). The participant transitioned away from car driving following a traumatic accident in Poland when she was 18. She regularly travelled on the underground while living in London but transitioned away from regular Tube travel in 2005 after the 7/7 terrorist attacks. She described

this event as having a 'huge influence', causing her to think 'about actually changing the way [she] travelled in London just because of this'. After relocating from London to Reading, the participant cycled, which she enjoyed. Relocating again to Bristol for lifestyle reasons and for her husband's job, the participant took her motorcycle test (Compulsory Basic Training (CBT) for a 125cc motorcycle) and began riding a Vespa for commuting and leisure. However, after an accident with a parked vehicle, the participant ceased independent travel by motorcycle and returned to commuting by bicycle. The participant's household had a car and motorcycle at point of interview. These were driven by her husband and were used, for family needs, almost exclusively on weekends and holidays. As a consequence of transitioning away from car travel at a young age, Participant 001017, like Participant 001018, had to negotiate the fundamental reorganisation of household travel needs in response to child-related maintenance activities without resorting to car travel (Lanzendorf, 2010:289). Participant 001018 and her partner reflect on adapting to these needs through engagement in activities such as online grocery shopping – thereby reducing the need to manage children while carrying large shopping loads (see Chapter 5, section 2.c above in relation to Participant 001022). Participant 001017's adaptation to these needs presents uniquely within the study. Examples of similar behaviours have not previously been identified in the existing immigrant travel behaviour literature.

Figure 20: TTT of a participant's early transition away from driving

This figure illustrates Participant 001017's early transition away from car driving, which is similar to the case of Participant 001018. She eventually transitioned into the discontinuing public transport users' group, but is included here to aid analysis and discussion based on case similarity. Her case is fully examined in Chapter 5, section 3, which addresses discontinuing travel behaviours.

Although Participant 001017 transitioned away from car driving at a young age, she found that many of the day-to-day needs associated with child-related maintenance required a car. The participant's

partner had both a car and a motorcycle, which he used for daily long-distance commuting. However, within the household there was also a second car, used by the participant's *au pair* to drive the children to school and for associated travel needs. The participant herself did not drive this vehicle, but it was purchased to facilitate management of child-related activities. Participant 001017 and her husband were both employed in fields that required early attendance, hindering their ability to manage the school run. Their rearrangement of daily activity scheduling was facilitated by the *au pair*'s ability to drive the children to where they needed to be, thus fulfilling the parental 'taxi-driver' role referred to by Zwerts, et al. (2008) in Chapter 5, section 2.a. This position has typically been associated with mothers' travel behaviours after having children, but in this case appears to be out-sourced to the *au pair*. Participant 001017 recounted that:

> The children's school in Reading was probably about four, five miles away from where we lived. So we had extra car for *au pair* who lived with us […] She was taking, well, doing the school runs basically, so she used the car.

> *So did you have another car in your house at that time?*
> Yes, we had two cars. One was used daily pretty much by *au pair*, but the other was just a family car. (Participant 001017)

Although both participants transitioned away from driving for personal reasons, and did not return to driving after having children, Participants 001017 and 001018 both had to adapt their behaviours to accommodate travel needs that typically required car use. Participant 001018 (and her partner, 001022) successfully reconciled their child-related maintenance needs with their lack of car driving by having someone else make the trip for them, essentially paying a driver to drive their weekly grocery shopping to their door. Participant 001017 and her partner paid for someone else to drive their children around to manage trip distances and time constraints related to the school run. Although their personal behaviours did not change, the need for car travel to manage needs associated with their life-stage, in the structural context where they resided, persisted. The issue of adaptation to child-related maintenance needs is discussed in detail in Chapter 5, section 4, incorporating the experiences of participants across the discontinuing travel behaviours group.

Participant 001018 was the only participant in the continued behaviours group who continued PT use after immigrating to the UK. The unique events and circumstances that influenced this participant's continued travel behaviour have opened many avenues of investigation, all of which have merit. Socialised travel behaviours and gendered perceptions of transport options had a notable influence. However, individual circumstances and chance have also interacted to enable adaptation of travel needs related to the participant's life-stage in a wider structural context. The connection with her partner's travel behaviours provided a valuable line of investigation, as did consideration of other

participants' behaviours based on case similarity. This participant's TBJ was complex, and raised questions over the primacy of structure of choice in the development of travel behaviour. Cross-cutting themes spanning TBJ groups are discussed in Chapter 5, section 4.

Summary of Continued Travel Behaviours

The TBJs of the 12 participants who continued pre-immigration travel behaviours in the UK reveal a number of issues related to the development of travel behaviours – some quite complex, and others less so. Interestingly, migration was reported as having relatively little influence on the development of participants' travel behaviours. Most influences on the participants' continuing travel behaviours appear to be relevant in travel behaviour research more broadly, with only a few exceptions. Immigrants' travel behaviours are greatly influenced by the development of social norms, habitual behaviours and life-stage. For immigrants, many of these influences occurred in their country of origin. Consideration of the life events occurring throughout the life-courses of immigrants (pre- and post-immigration) is therefore essential in the study of immigrants' travel behaviours. This was hinted at in the early study of immigrants' travel behaviours by Myers (1996:86), who indicated the necessity of considering immigrants' travel careers over time rather than from a cross-sectional perspective. However, this recommendation appears to have been largely overlooked in subsequent studies, which instead focused on post-immigration travel behaviours.

A key finding is that each participant – with only a few exceptions – experienced a period of transitional travel behaviour within the first 12 months of residing in the UK. This finding aligns with research on immigration more broadly, with immigrants experiencing an arrival and adjustment period in line with Menninger's morale curve (Menninger, 1988; Whisler et al., 2008; Szewczyk, 2015). The temporary mode shift reflects a period of adaptation for immigrants when they are negotiating access to the transport system (and employment) in their new location. After adapting, participants tend to rapidly transition back to habitual pre-immigration travel behaviours developed in response to life-stage (Bamberg, 2006). However, this transitional period represents an important opportunity for the adjustment of travel behaviours; it is a period when structural change and cognitive opening facilitate adoption of non-habitual travel behaviours – if they are experienced positively (Fujii et al., 2001; Gärling and Fujii, 2006). This finding has been mirrored in similar travel behaviour studies. Tentative behavioural changes may become established for the longer term if 'a personal goal has been achieved' (Ampt and Engwicht, 2007:3), highlighting the importance of positive experiences associated with high-quality mode alternatives (Scheiner, 2018:51). In Bristol and WSM, negative experiences of alternative modes of travel, such as bus travel, resulted in continued travel by car. This

is examined further in the discontinuing travel behaviours group (Chapter 5, section 3), and across groups in Chapter 5, section 4.

Life events also had an important influence on participants' travel behaviours. With only a few exceptions, response to changes in life-stage triggered by childbirth were addressed similarly by participants' increased child-related maintenance needs (pre- and post-immigration) that are perceived to be best accommodated by car (Lanzendorf, 2010; Zwerts et al., 2007). The development of this perception may be socialised in early childhood and may also be intimately connected to gender norms. Once habitual car driving to address child-related maintenance was embedded in participants (pre- or post-immigration), there appeared to be limited motivation or cause to transition away from it. Participants who transitioned away from car driving did so while not tending to child-related travel needs. Among participants with children, those who relied on PT or walking at point of interview often adapted to child-related maintenance by out-sourcing driving. With only one exception, non-driving participants with children expressed the desire to gain a licence to satisfy child-related travel activities. This finding is not new in the travel behaviour domain, but its influence on car-driving behaviours has not yet been considered to such an extent in migrant transportation research (Chatman and Klein, 2013; Blumenberg and Shiki, 2007). Likewise, personal circumstances also had an important influence on participants' travel behaviours. Circumstances as simple as motion sickness and road accidents markedly transformed the TBJs of a number of participants. Although travel behaviours occurred within a wider structural context, as well as in response to options available within that context (Chatterjee et al., 2013), individual circumstances overrode contextual concerns. Structural factors, social norms, habit and life-stage appear to have had an interactional influence on the behaviours of participants that was not specifically related to immigration. The overlap of life-stage and the appearance of migrant transport assimilation, as well as the influence of structure on sustainable travel behaviours among immigrants, is examined across TBJ groups in Chapter 5, section 4. The following section considers the TBJs of the discontinued travel behaviours groups, revealing many connections between continuing and discontinuing TBJs.

5.3 Discontinuation of Travel Behaviours

This section considers the TBJs of participants who discontinued their pre-immigration travel behaviours and transitioned to different modes of travel while residing in Bristol and WSM. Of the 26 participants in the study, 14 discontinued travel behaviours they had developed in Poland: 12 participants discontinued public transport use, one discontinued walking, and one discontinued lift-sharing. One participant is considered in two categories because she discontinued SOV travel and subsequently discontinued PT use. Table 22 provides a breakdown of the gender and residential

location of these participants. Parallels are made with research on habitual travel behaviours more broadly, with many themes identified in Chapter 5, section 2 having relevance to the discussion. The influence of life-stage, structure and experience of the PT system have a central role in the transition to alternative modes of travel for many participants. An outline of participants' pre- and post-immigration travel behaviours is provided in Tables 22 and 23. The influence of pre-immigration travel behaviours is well contemplated by participants in the discontinuing travel behaviours group. Table Table 22 summarised the discontinuing travel behaviour group's residential locations in Poland and the UK, as well as associated travel behaviours in these locations throughout the life-course. Those highlighted in pink are participants from WSM, and those highlighted in green are participants from Bristol. Columns four and five indicate participants' residence in towns (T) or cities (C) in early childhood, and immediately before migrating to the UK. Villages (V) are incorporated into the town category for analysis due to dissimilarity with city-experiences. Participants who discontinued travel behaviours are allocated to four behavioural groups based on primary travel mode: discontinuing drivers, lift-sharers, walkers and public transport users.

All factors influencing participants discontinued use of pre-immigration travel modes occur in a wider structural context as outlined by Meurs and Haaijers (2001), Tyrinopoulos and Antoniou (2013), Scheiner and Holz-Rau (2013), and Van Acker et al. (2016). Development of TBJs are considered in this context. A number of participants transitioned to car driving, aligning with the UK travel norm (see Chapter 5, section 3.a). This transition could be considered as an assimilation to car-driving behaviours (Table 23). However, identifying and separating the influence of 'cultural norms' from other factors is a complex challenge. The influence of transport assimilation – to some degree – can be seen for 11 of the 14 participants in the discontinuing travel behaviours group. Four of these participants integrated car travel into their travel behaviours after arriving in the UK, although they did not transition to cars as their primary mode of travel. Seven of these participants fully transitioned from non-SOV travel to travel almost exclusively by car after immigrating to the UK. The motivations and explanations for this transition, as well as for partial adoption of car travel, are examined in the participants' respective TBJ groups.

Table 22: Summary of residential locations and primary travel modes for discontinuing travel behaviour group

Participant #	age	gender	Town or city in Poland child	Town or city in Poland pre-migration	Early childhood	Secondary school	age 18	primary transport in Poland	secondary transport in Poland	primary transport in UK	secondary transport in UK	change travel mode from Poland
001003	35-39	F	C	C	walk / cycle	bus / tram	under-ground	bus/tram	cycle	car	walking	yes
001005	30	F	T	T	walk / cycle	bus	tram / bus	bus	n/a	car	bus	yes
001006	30-34	M	T	T	walk	walk	bus / motorcycle	bus	motorcycle	car	n/a	yes
001008	35-39	M	T	T	walk	bus / walk / cycle	bus / walk / cycle	bus	walking	car	walking	yes
001011	30-34	F	C	C	bus	bus	car / tram	car share	tram	car	walking	yes
001013	40-44	F	T	T	walk / bus	walk / bus	walk	bus / tram	train	car	n/a	yes
001012	30-34	M	C	T	walk	bus	car share	walking	car share	car	walking	yes
001001	45-49	F	T	C	walk	bus / tram	walk / bus / tram	bus/tram	walk	car	n/a	yes
001002	30-34	F	T	C	walk / car share	cycle / bus / car share	bus / tram / train	bus	walk	bicycle	walking	yes
001026	20-24	F	T	C	cycle	train / tram	train / tram /	train / tram	walk	car	n/a	yes
001019	35-39	M	T	C	walk	bus	bus	bus	car share	walking / bicycle	train (car club if needed)	yes
001017	35-39	F	V	C	bus	bus	walk / car	walk	tram / bus	bicycle	passenger on motorbike	yes
001020	30-34	F	C	C	walk	bus	bus	bus / train	walk	bicycle	car / long-board	yes
001021	25-29	F	V	V	walk / cycle	cycle	bus	bus	n/a	car	walk (occasionally)	yes

Table 22 outlines residential locations of participants in their country of origin, as well as primary modes of transport at key life-stages in Poland and the UK. The upper (pink) half of the table indicates participants from WSM; the lower (green) half of the table indicates participants from Bristol. Columns 4 and 5 denote residence in towns and cities, respectively.

Table 23: 'Transport assimilation' among the discontinuing travel behaviours group

Participant #	age	gender	length of residence	Town or city in Poland child	Town or city in Poland pre-migration	Lisence acquisition	Early childhood	Secondary school	primary transport in Poland	primary transport in UK	secondary transport in UK	change form poland	Public transport inefficency	Transport assimilation
001003	35-39	F	10+	C	C	2004	walk / cycle	bus / tram	bus / tram	car	walking	yes	n	partially
001005	30	F	10+	T	T	2008	walk / cycle	bus	bus	car	bus	yes	n	yes
001006	30-34	M	10+	T	T	1999	walk	walk	bus	car	n/a	yes	n	car from motorcycle
001008	35-39	M	10+	T	T	2014	walk	bus / walk / cycle	bus	car	walking	yes	n	partially
001011	30-34	F	10+	C	C	2002	bus	bus	car share	car	walking	yes	n	partially
001013	40-44	F	10+	T	T	2010	walk / bus	walk / bus	bus / tram	car	n/a	yes	n	yes
001012	30-34	M	10+	C	T	2003	walk	bus	walking	car	walking	yes	n	yes
001001	45-49	F	10+	T	C	1989 (17)	walk	bus / tram	bus/tram	car	n/a	yes	y	yes
001026	20-24	F	3-4	T	C	2013 (17)	cycle	train / tram	train / tram	car	n/a	yes	y	yes
001020	30-34	F	7-10	C	C	2005 (18)	walk	bus	bus / train	bicycle	car / long-board	yes	y	partially
001021	25-29	F	7-10	V	V	2009 (17)	walk / cycle	cycle	bus	car	walk (occasionally)	yes	y	yes (partially)

The final column of Table 23 indicates participants' transport assimilation – transitioning from non-car travel in Poland to car travel after immigrating to the UK. Partial assimilation indicates a transition to car use, but not as the primary mode of transport. Full assimilation indicates transition to car use as the primary mode of travel. The motivations and explanations for these transitions are examined within behaviour groups below, and across groups in Chapter 5, section 4.

Socialisation into travel behaviours post-migration is an explanation rarely provided by participants in this study. This indicates that migrant transport assimilation where it appears to occur for participants may not be as a result of acculturation into local (or national) travel behaviour norms (Blumenberg and Shiki, 2007). Likewise, the use of culturally defined social capital, or migrant motility as defined in Chapter 2, sections 2 and 3, appears to have had minimal influence on the transition to alternative travel behaviours (Blumenberg and Smart, 2011:236). As Polish immigrants who participated in this study were dispersed widely throughout Bristol and WSM, there appears to have been limited utilisation of agglomeration benefits referred to in other studies of immigrants' travel behaviours who resided in 'ethnic-clusters' (Blumenberg, 2008; Blumenberg and Smart, 2011). The influence of habitual behaviour, and behaviours socialised in early childhood or pre-immigration also appear to have little influence on participants discontinued travel behaviours, contrasting to the continued travel behaviours group (Baslington, 2008; Weinberger and Goetzke, 2010; Scheiner, 2013). However, paralleling experiences in the continued travel behaviour group, poor experience of PT use in the UK compared to Poland led a number of participants to view PT in Bristol and WSM unviable. This structural factor appears to have had a notable influence on travel behaviours (Table 23). These

factors are considered within travel behaviour groups below, and are considered across groups in Chapter 5, section 4.

5.3.a Discontinuing Driving and Lift-Sharing

Within the discontinuing driving and lift-sharing group, two participants discontinued SOV travel or lift-sharing (in a car) after immigrating – Participants 001017 and 001012. Participant 001017 was briefly examined in continuing TBJ group (Chapter 5, section 2) due to case similarity. The participant was a female in her late 30s living in Bristol. She migrated to London in the late 1990s and relocated to Bristol in 2014. The participant transitioned away from car travel at a young age due to a car accident. While living in London the participant travelled by PT, relying on the underground until the 7/7 terror attacks in 2005. After briefly relocating to Reading and travelling by bicycle, the participant and her partner relocated again, moving to Bristol. In Bristol, Participant 001017 took her compulsory basic training (CBT) to begin travelling by moped. However, after another accident, the participant transitioned away from SOV travel by moped, returning to travelling by bicycle. The participant also lift-shared with her partner, commuting as a passenger on her husband's motorcycle, and travelling recreationally as a passenger in the family car. The participant had two children after immigrating to the UK, and managed child-related travel needs through a second family car driven by an au pair (see Figure 20).

Participant 001017 transitioned away from SOV travel (by car and motorcycle) after immigrating and having children. This experience contrasts to the experience of Participant 001012, who transitioned towards car travel after having children. In both cases, life-stage was proximally related to changes in travel behaviour. For Participant 001017, having children resulted in the purchase of a car for the au pair to manage child-related travel needs. Participant 001012 was able to manage his own travel needs through lift-sharing without the need for SOV travel. However, after his wife and young son arrived in the UK to join him, Participant 001012 immediately purchased a car and ceased lift-sharing. In both cases, the transition to alternative modes of travel from the pre-immigration norms appear to be more complex than the explanation commonly offered in the transportation literature. Changes in behaviour are about more than 'the accessibility of opportunities' (Scheiner, 2007:166) and distances between activity sites in new destinations. Likewise, they appear to be more complex than simple consideration of the relative rural/urban similarity of pre- and post-immigration contexts (Ibid).

Figure 21: TTTs of discontinuing lift-sharers group
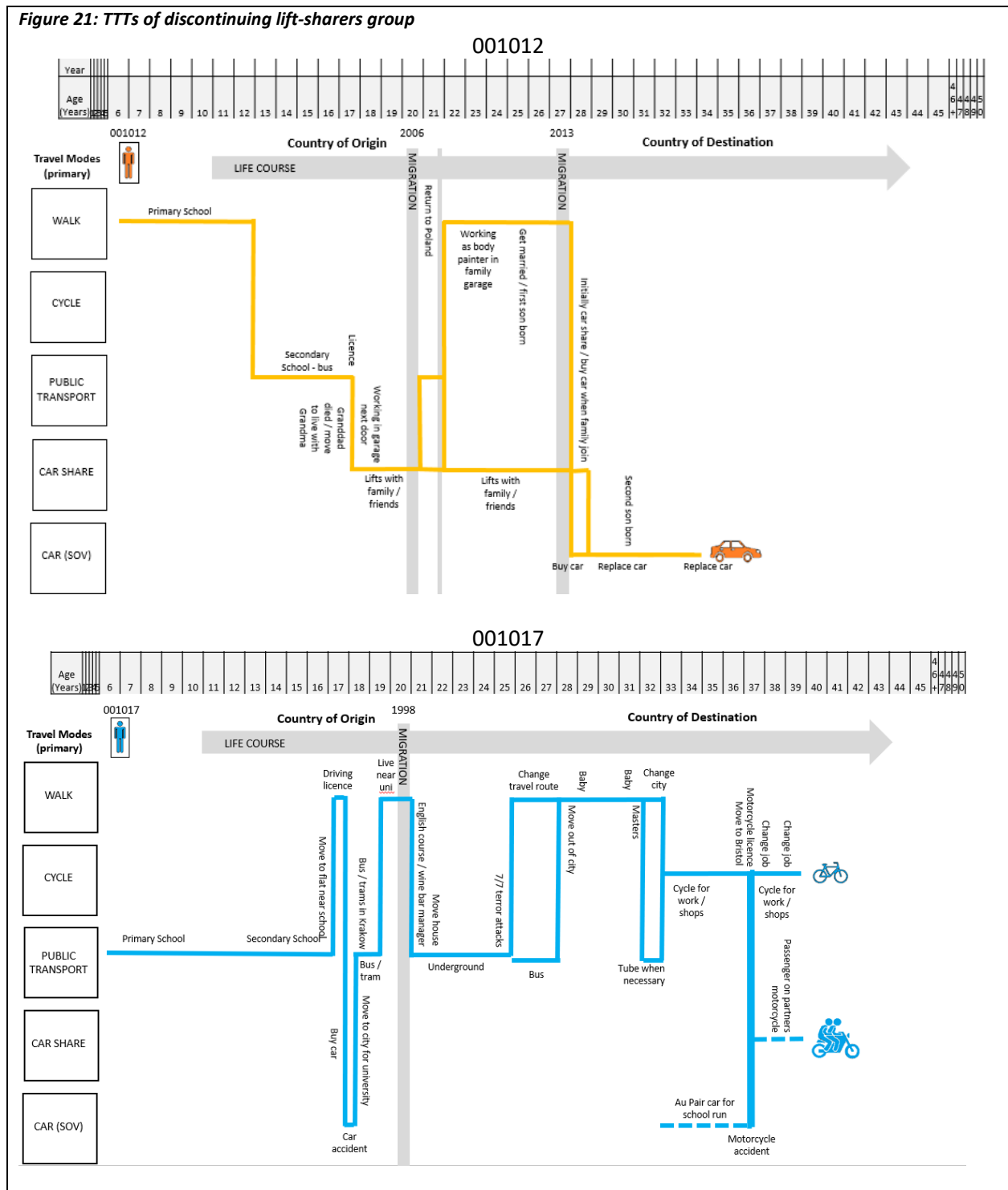
Participant 001012 was a male participant in his early 30s living in WSM with his Polish wife and two young children. He relocated to WSM first in 2006 and then again in 2013, bringing his family with him. He migrated from a small town in Poland outside the city of Lublin, where he lived with his grandmother after the death of his grandfather. While living there, he trained as a car painter in his cousin's garage, a skill that secured him employment in the UK after immigrating. He first travelled to the UK with a friend to work for a few months in casual employment. In 2013, he decided to migrate

to the UK for better employment opportunities as a car painter, bringing his wife and one-year-old son with him shortly thereafter (approximately 12 months later). While living in Poland, the participant was not in a financial position to buy his own car, instead lift-sharing and car-sharing with his cousins. After immigrating to the UK, the participant briefly walked and then relied on lifts to work from colleagues. After his wife and son joined him, he purchased a cheap car to facilitate travelling.

> *So did you buy a car…?*
> Well, not straight away […] because I was travelling with some friends then. Because I had no money for it yet. (Participant 001012)

The participant changed cars a number of times while living in WSM, often purchasing low-value cars that were cheaper to replace than to repair when faults occurred – 'the cost of repairing the vehicle was too high comparing to the value of the car' (Participant 001012). The participant's car at the time of interview was a larger Renault Laguna Estate, replacing the last car which he purchased proximally close to the birth of his second child. The TTT for Participant 001012 (see Figure 21) provides a clear visual summary of the participant's travel behaviour, highlighting their apparent transport assimilation. Pre-immigration, the participant relied exclusively on non-SOV travel modes: car-sharing, PT, and lift-sharing. After immigrating to the UK, and after the initial 12-month period of adjustment, the participant transitioned exclusively to car travel (Menninger, 1988). Although the participant used the car daily to commute, he admitted that he could walk the distance to the paint shop if required. Likewise, the participant's son typically walked to school with his mother, although occasionally the participant gave him lifts in the car because:

> I just want to, you know, give him a lift in the morning – you know, like a father, and father figure. (Participant 001012)

Rather than evincing a reasoned need to travel by car, as would be predicted by traditional economic models of travel behaviour such as rational choice theory (Ajzen, 1991; Adjei and Behrens, 2012:57), Participant 001012 exhibited behaviours and explanations suggesting that his transition to car travel may have been influenced by cultural perceptions of the role of car travel in family life (Baslington, 2008). The participant latently evinces a narrative that the male 'breadwinner' should drive to work and fulfil his fatherly responsibilities by occasionally driving his children around. This aligns with the idea of gendered associations with travel behaviours suggested by Law (1999) as well as the notion that these gender norms become socialised at a young age, as suggested by Baslington (2008). Examining the participant's narrative of travel throughout his life-course, it is evident that his father drove a car for work in Poland and also drove the family on occasional trips to nearby towns. The participant's mother did not drive, and neither did the participant's wife. Circumstantially, this could indicate a latent fulfilment of a travel behaviour norm developed at a young age. As indicated by

Baslington, this could be intricately associated with life-stage, as car driving can be culturally associated with parenting (Baslington, 2008:110). In this respect, it is a complex challenge to isolate the cause of Participant 001012's transition to car travel. In one interpretation, it might be a transition to car travel due to assimilation to the UK's travel norms. Alternative interpretations suggest that the participant's transition was to fulfil travel behaviour norms that were culturally embedded within the participant's family in Poland, and which emerged while he was resident in the UK due to the correlation with life-stage. In both scenarios, life-stage played an important role, as did structural contexts. Although life-stage correlated with the purchase of a car in the UK, the participant had one child in Poland prior to migrating. In Poland, the participant was able to manage family transport needs without purchasing a car (Lanzendorf, 2010), instead relying on lifts from friends and sharing a car with his brother. After arriving in WSM, the participant continued to lift-share, suggesting that the contextual change may have had limited influence on the opportunities to travel by this mode. Lift-sharing continued until his wife and son arrived to join him, at which point he purchased a car. This may suggest that something about the context (in WSM) and life-stage (child-related travel needs) pushed the participant to transition to car travel. During the transition, the participant did not appear to consider travel by other modes such as PT or walking, although his wife occasionally used the bus when she needed to visit the shops.

Much like participants in the continuing travel behaviours group, Participant 001012 did not explicitly express any desire to travel by car that could be connected to acculturation into new travel behaviours, nor any aspiration to specifically engage in UK-typical travel behaviours. The participant did not transition to 'car cultures' as an inevitable consequence of 'pursuing the American Dream' – or the *British* dream – as identified in early studies of immigrants' travel behaviours (Myers, 1996:85). This is, however, something that was expressed by male Participants 001006 and 001019 (see Chapter 5, section 3.c). Participant 001012's transition to car driving appears to have been influenced by latent processes connected to gendered perceptions of travel behaviour developed during the participant's childhood in Poland merging with child-related travel needs associated with life-stage (Baslington, 2008; Zwerts et al., 2007). Both result in what appears to be the participant's assimilation into the UK travel behaviour norm of car driving.

With a more nuanced examination of the context of the participant's travel behaviours, an alternative or additional layer of explanation of the participant's TBJ is possible. Distinguishing between lift-sharing and car-sharing across both Polish and UK contexts provides an interesting avenue for investigation. As outlined above, Participant 001012 was able to lift-share in Poland and manage the travel needs of a young family. In addition to lift-sharing, the participant also car-shared, or shared

vehicles with his cousins and his brother. Although the participant was able to continue lift-sharing in WSM, he did not continue car-sharing whereby he would drive a vehicle belonging to someone else.

> [In Poland,] I drove my brother's car, or my friends cars because there is a different insurance system so obviously if the car is insured everyone can drive the car. So, usually friends lent me [their car] if I need a car, then my cousins or my brother lent me their car. (Participant 001012)

Discontinuation of car-sharing is perhaps due to a lack of cultural capital. Car-sharing is based on mutual trust (Shin, 2017:16) and often follows patterns of social support associated with high reliance on family networks in the initial period following migration (Blumenberg and Smart, 2010:442). Upon arriving in the UK, Participant 001012 did not integrate into a pre-existing social network, nor did he live with family or within an ethnic-cluster; thus, he was not able to utilise familial and co-ethnic agglomeration benefits. Another explanation for his discontinuation of car-sharing may be the wider social context. In the UK context, car-sharing (rather than lift-sharing) is complicated by an insurance system wherein the driver and a particular vehicle are insured, rather than the vehicle alone, as is the case in Poland. In the UK, drivers are not automatically insured to drive other vehicles, and must either specify their desire for insurance cover while driving other vehicles in their fully comprehensive insurance details, or they must become a named driver on a particular vehicle. A number of app-based insurance products providing cover for a set number of hours on specified vehicles may be changing this situation in the UK (products such as Veygo and Cuvva); however, these have not been mentioned by participants in their explanations of their travel behaviours. The UK insurance system – as well as participants' lack of knowledge of the vehicle insurance market to engage in alternative insurance options (related to lack of motility and English language ability) – may have pushed the participant (subconsciously) towards car ownership. The wider structural context prevented car-sharing, a travel mode that had addressed travel needs related to the participant's life-stage while residing in Poland.

Much like the proposition set out by Gärling and Auxhausen (2003) in relation to habit formation theory, Participant 001012 appears to have engaged in minimal deliberation of alternative modes of travel before settling on car travel. Participant 001012 had limited engagement with PT after immigrating to the UK. Perhaps as a consequence, Participant 001012 had little criticism of the PT system, unlike other participants in the discontinuing public transport users' group. However, for Participant 001012, positive experience of car travel resulted in habituation to this mode. According to existing research on immigrant travel behaviour (see Chapter 2, section 2) transport assimilation is indicative of a cultural shift towards a new behaviour prominent in the new location (Blumenberg and Shiki, 2007). Participant 001012's transition to car driving could be considered as a response to behavioural acculturation into local travel norms in the UK in general, or WSM in particular.

Considered against the national and local travel behaviours of UK nationals defined in Chapter 5, section 1.b, this modal transition to car travel while residing in WSM corresponds to the local travel behaviour norms in the North Somerset local authority. Participant 001012 joined the approximately 50% of residents in the area who travelled to work by car. After excluding the percentage of the population not in employment in the area (32.88%), this is a much larger percentage (73.74%). His lack of consideration of PT use may reflect the minimal use (3.62%) among locals living in the area, although this is proportionately slightly higher again (5.41%) when excluding the population not in employment (see Table 15; ONS, 2011). Although structural context, habit and life-stage had a consistent influence on both participants' accounts, participants integrated car travel into their household travel behaviours to accommodate child-related maintenance needs in different ways. Individual experiences and changes in context did not trigger consistent behavioural changes among the participants.

Interestingly, across travel behaviour groups, lift-sharing was mentioned by a number of participants. Although intra-household lift-sharing appears to be relatively common among participants pre- and post-immigration, inter-household lift-sharing appears to be much less common. Six participants in the discontinuing travel behaviours group reported engaging in lift-sharing at some point in their TBJ after immigrating to the UK. These participants were split equally between Bristol and WSM, 2:1 male in WSM, and 2:1 female in Bristol (see Figure 21). For most, this was something the participants engaged in proximally close to immigrating; however, for male Participants 001008 and 001019, this behaviour continued for up to 10 years. Participant 001012 was able to share lifts with colleagues from his place of work, much like Participant 001018 (see Chapter 5, section 3.c). However, lift-sharing outside the household beyond these examples appears to be very rare post-immigration. Participant 001001 reflected on a cultural difference in attitudes towards car-sharing between Polish immigrants and UK nationals, indicating that UK nationals are reluctant to lift-share in circumstances when Polish immigrants would find it odd not to lift-share.

> [We were] going away, and we had a very good friend who was going away as well […] My car was playing up and I suggested to him maybe we can go together, car-share. To me it seemed a very natural solution. And I was pretty shocked that he was very reluctant. He didn't want to car-share. And, I just […] felt like it would be an inconvenience to them […] He's very much a sort of very 'hippy' person, very keen on, you know, the environmental stuff, and to save the world and all this and yet, in practical terms, he wanted us to drive all the way and waste all this petrol instead of just car-sharing. So […] people in England […] are quite standoffish […] You know, I think a Polish person would straight away say, 'yeah, let's car-share, [that] makes sense'. And, in fact, it would be almost weird if we didn't. (Participant 001001)

Likewise, Participants 001001, 001007 and 001018 all recounted brief periods of hitchhiking in their late teens and early 20s. Participant 001006 (male) reflected on this when probed, and Participant 001008 (male) provided a brief story of train-hopping across Poland rather than hitchhiking. Participant 001001 (female) hitchhiked around Ireland during an Erasmus year. Participant 001007 (female) used to hitchhike to her parents' village (sometimes with her young children) as she had no other means of transport and the village was very remote. Participant 001018 (female) hitchhiked a number of times to Krakow, and a few times to Germany to a music festival. Each participant commented on it being a different time back then and relatively 'normal, not like now…' (Participant 001006). Participant 001018 suggested that although it was a 'different time, different generation, with more trust than now', she was 'lucky to get home safely', saying 'I don't know if I would agree for my daughter to do that, probably not' (Participant 001018). Although hitchhiking served a purpose at the time – enabling travel where there was limited connectivity or when participants had limited resources – most agreed that the social context for this behaviour has now changed, and that it is not an activity they or their children would engage with in the UK. The cultural attitude toward lift-sharing, as well as the cultural context in which both lift- and car-sharing occur, appear to have reduced participants' desire and ability to engage with this mode of travel. Changing social context, personal circumstances, habit, structural opportunities and life-stage all interact to influence discontinuation of pre-immigration travel behaviours among the driving and lift-sharing group.

5.3.b Discontinued Walking

Only four participants in the study walked as their primary mode of travel in Poland immediately before immigrating. Three of these participants continued to travel by walking after arriving in the UK (discussed in Chapter 5, section 2.b); only one participant discontinued walking post-immigration. Unlike the other three walkers in Poland, this participant (001002) had already gained a driving licence and was not aspiring to gain a UK licence after immigrating. Despite having a driving licence, Participant 001002 did not transition from walking to car driving; instead, they transitioned to cycling. As indicated in Participant 001002's TTT (see Figure 22) and LHT (Appendix G), the participant had a strong childhood connection to cycling, having cycled every day until she started commuting to college in a city using PT. For a period of time throughout the participant's life, the participant did not engage in cycling with the same motivation she had for cycling in her childhood, which she reflected on with nostalgia. The participant's life-stage, relationships and familiarity with the locations where she resided were all reflected on as having influenced her early-life transition away from cycling and subsequent reliance on PT, then walking, as her primary mode of travel in Poland. Participant 001002 provided a unique account in which her desire to purchase a vehicle was not dominated by travel

needs and child-related maintenance, but was instead related to leisure and the desire to use a car to increase her travel and leisure options.

Figure 22: TTTs of discontinuing walkers' group
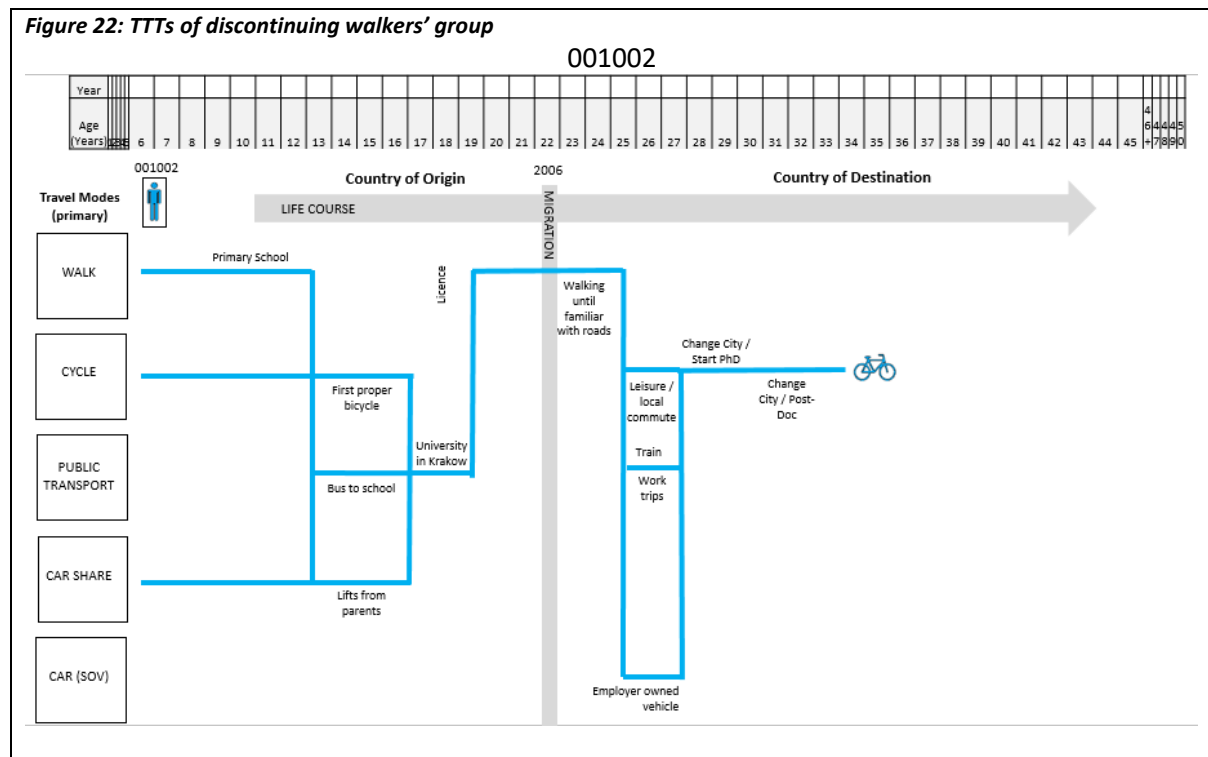
Participant 001002 was a highly educated female in her early 30s living in Bristol. She grew up in a small town on the outskirts of Krakow, and later attended university in Krakow, first commuting by train and then living in student accommodation in the city. Krakow is a large city in southern Poland with a population of approximately 757,000 residents in the mid-2000s when the participant migrated. As a child, the participant referred to herself as being very independent compared with friends and cousins, cycling almost everywhere. If she had to travel longer distances, she would go with her mother on the train – or on weekends, either her mother or father would drive her in the family car. Her father used the family car for work, and her mother cycled for work, but both had a driving licence and drove regularly. The participant transitioned away from cycling when she started university and began commuting into Krakow by train. After relocating 30 km to Krakow, the participant travelled almost exclusively by walking, only occasionally using the tram. The participant travelled extensively in Europe on coaches as a child, and continued to travel regularly as an adult on planes. The participant immigrated to the UK in 2006 to continue a relationship with a partner who had immigrated to the UK six months earlier. The participant originally immigrated to Nottingham, worked there for a few months to save money, then started a graduate degree in Leicester where she would commute by train. After two years, the participant graduated with a second master's degree and began working for the Local Authority (LA), travelling by train, bus, walking and, occasionally, by driving an LA car for

work. She occasionally cycled on a heavy old second-hand bicycle. In 2009, after a relationship came to an end, the participant won a scholarship to complete a PhD. The participant relocated to Loughborough and quickly started a new relationship. The participant resided there for around five years, and recollected moving house within the area 13 times. While there, the participant purchased an old bicycle (which she fondly recalled as 'Franken-bike') pieced together from many different bits of bicycles. Although the bicycle was 'heavy' and 'old', the participant depended on it for her daily commute, cycling approximately 26 km a day to attend her typical activity sites. After completing her PhD, and after another relationship ended, the participant secured new employment and relocated to Bristol. She took 'Franken-bike' with her and continued to travel almost exclusively by bicycle in the city. While in the city, the participant developed a relationship that she described as 'enabling' – motivating her to cycle more.

> *Before you said a relationship was enabling in terms of cycling. Can you tell me more about how it was enabling?*
> Yeah. Because the person was a cyclist himself, and he was a very active cyclist. And that was infectious. And in all positive ways. But because I already had this background of cycling quite a bit, he just enabled me to reconnect with that aspect of me and just become braver and go and do more of it. (Participant 001002)

During this period of time, despite a severe cycling accident, the participant's childhood enthusiasm was reignited. The participant cycled for pleasure – rather than simply to get around, as she had in Loughborough. More broadly, the participant's cycling and travel behaviours appear to be closely connected to the travel behaviours of individuals with whom she has had relationships. This issue is loosely examined under the concept of travel socialisation, social embedding of travel behaviours, and the 'partner effect' in existing travel behaviour research (Scheiner, 2018:55; Chatterjee and Scheiner, 2015:20). A number of researchers have considered this issue in studies examining cycling behaviour. Research into the influence of psychosocial factors on cycling behaviour by De Geus et al. (2007:703) found that individuals are more likely to commute by bike if they have relatives or a partner who cycles. Likewise, in a study of factors influencing cycling behaviour among a student population in Austria, Titze et al. (2007:76) found that knowing peers who cycle to the same destination is likely to encourage regular cycling. Although these issues have been touched upon in existing research – and indicate that interpersonal relations have some influence on cycling behaviour (Jones, 2013:58/76; Sherwin et al., 2012) – they do not appear to have been fully examined. Further examples of an intricate connection between partners and travel behaviours such as that described by Participant 001002 have not been identified in the existing literature on immigrant travel behaviour.

While living in both Krakow and Nottingham, Participant 001002's partner did not cycle and neither did she, despite a period of cycling in the Netherlands while studying there on an Erasmus programme.

After relocating to Loughborough, her partner occasionally cycled, although they had never been an enthusiastic cyclist. At that point the participant cycled, but only to 'get around'. After relocating to Bristol, the participant continued to cycle simply to get around until she formed a new relationship with an enthusiastic cyclist. That is the point at which the participant considered herself to have re-engaged with cycling. This partly highlights the role of early socialisation of travel behaviours and preferences as suggested by Baslington (2008) and discussed previously in Chapter 5, sections 2.d and 3.a. Despite a severe bicycle accident, the participant continued to love cycling, both to commute and to explore, purchasing 'better' bikes to enhance their cycling experience. This participant resided in the UK for approximately 10 years before indicating a desire to purchase a car. The motivation she expressed for the car purchase was a desire to increase the distances that she could explore by bicycle.

> I feel like I want to explore things that I haven't been able to explore so far in the UK because I never had a car, and a bike can take you only so far [...] If I wanted to cycle, in some different locations to those that I already know, it would be nice to just put the bike at the back of my car and just go somewhere. So, I would really enjoy that. (Participant 001002)

Participant 001002's experience was unique in the level of influence that linked lives, or close relationships, had on her travel behaviour. Although linked lives and life-stage in terms of child-related maintenance needs were often reported to motivate participants' transitions to travelling by car, Participant 001002's motivation to purchase a car in the future was to extend her leisure cycling options. In this respect, two interesting latent themes present in relation to the participant's TBJ: lack of feeling settled after immigrating, and lack of responsibility associated with life-stage. After immigrating to the UK, Participant 001002 had been a student, in and out of employment, and in and out of relationships. She had moved house 16 times within 10 to 11 years after arrival, and had changed cities three times. Beyond looking after herself, she had no responsibilities for dependants and had been free to travel throughout the UK and Europe with ease. Lack of feeling 'settled' affected her TBJ, influencing her travel mode choice in a number of locations. In Nottingham, for example, the participant reflected:

> I had a bike by then [...] it was just to get from point A to B, and not to go too far distance really [...] I lived in an area where I worked, so I could walk. [It] was only 17 minutes along the river, which was really nice [...] I would not cycle as much as I used to.

> *And again, was that just getting used to the UK, or…?*
> No. I think that was carrying on with the sort of habit you develop in a new place. And also not really feeling settled and happy in that spot as well, and thinking that maybe I'm not going to stay there for that long and constantly thinking about being unsettled [...] which wasn't conducive to thinking 'I need a bike' and 'what sort of bike', you know. Thinking 'I need to leave'. (Participant 001002)

This suggests that the participant's sense of belonging in a particular location post-immigration – and, in turn, sense of identity – was intricately connected to her travel behaviour. Berger et al. suggest that immigrants may continuously experience an ever-present feeling of 'searching for home' that may 'never be found' – neither in the immigrants' country of origin, nor in their country of destination (Berger et al., 1973:82; Szewczyk, 2013:46). Participant 001002's sense of being unsettled may be connected to this lack of grounding in 'home', in turn contributing to travel behaviours that appear temporary, rather than committal – such as not purchasing an expensive bicycle or vehicle. This may form part of a cyclical process. Blunt suggests that the feeling of settlement (or a sense of 'home') relates in part to engagement in 'everyday practices' that shape the 'lived experience' (Blunt, 2005:506). If immigrants feel unsettled – and if this hinders their engagement with travel behaviours that contribute to their sense of pre-immigration identity – immigrants are unlikely to engage in 'everyday practices' that would contribute to feeling settled. Participant 001002's account of purchasing a house and considering purchasing a car after returning to her pre-immigration enthusiasm for cycling circumstantially supports this position. Once engaging in an everyday practice that contributed to her pre-immigration sense of identity (cycling), she began to feel settled and, in turn, began to engage in other activities that further contributed to a sense of being settled (e.g. buying a house and car). This temporal correlation is visually clear on Participant 001002's LHT (see Appendix G). Hay links this correlation to a 'stage of maturation' in which owning a home (and raising a family) strongly contributes to immigrants' sense of identity in place (Hay, 1998:19; Szewczyk, 2013:42). Although supporting the notion of settlement – a return to cycling potentially leading to property and vehicle purchases – Participant 001002 had not purchased a car at the point of interview. As can also be identified from analysis of her LHT the life event of purchasing a house in Bristol co-occurred with meeting a new partner abroad. This co-occurrence raises questions over whether this will become a period of 'settlement' or further change for the participant.

> I keep thinking more and more now that probably I should get one [a car] if I stay here. That will happen probably next year. But at the same time, I'm contemplating moving [abroad], so I don't know what's going to happen. (Participant 001002)

Feeling unsettled in the UK and not having firm ties appears to have affected Participant 001002's lack of desire to purchase a car. However, this lack of settlement is also connected to a lack of responsibilities typically associated with the participant's life-stage. Participant 001002 is in her early to mid-30s, an age when many participants in this study – both male and female – encountered the added responsibility of child-related travel needs. As indicated above by Hay (1998), raising a family can greatly contribute to an individual's sense of identity and settlement in a location; thus, not yet having developed a family in the UK may contribute to an individual's lack of settlement. In terms of

travel behaviour, lack of children and child-related travel needs appears to have provided a number of travel opportunities (or reduced travel restrictions) that enabled Participant 001002 to engage in a wider range of travel behaviours. In this study, similar behaviours can be identified for other childless participants in their early to mid-30s. For Participant 001002, not having children may contribute to her lack of feeling settled in the UK, as indicated by Hay (1998), and may partially explain both why she was contemplating moving overseas as well as why she had not yet transitioned to car travel. With strong pre-parenthood emotional ties to cycling, it may be fair to assert that if or when Participant 001002 has children (for which she expressed a desire), she may at least partly continue cycling. This would align with the experience of participants with strong emotional connections to cycling in Lanzendorf's study, which examined the effects of childbirth on mobility biographies in Leipzig, Germany (2010). Participant 001002's reflections and experience again highlight the importance of life-stage, structural contexts, interpersonal considerations and childhood habituation on travel behaviours.

5.3.c Discontinued Use of Public Transport

Discontinuation of PT use is the most common TBJ documented among participants in this study. Within this group, 12 participants discontinued pre-immigration travel behaviours that they had developed in Poland, transitioning to alternative modes of travel after arriving in the UK. Of the 12 participants transitioning away from PT, nine transitioned to car driving (six from WSM and three from Bristol), and three transitioned to cycling – although two of these could be considered as transitions to multi-modal travel (all three from Bristol). Table 24 provides a summary of the key characteristics and travel behaviours of the discontinuing public transport users group. The TBJs of participants in this group are further broken down into two subgroups: those who discontinued PT and transitioned to cycling, and those who discontinued PT use and transitioned to car travel.

Discontinuing PT Users Transitioning to Cycling

Participants 001017, 001019 and 001020 transitioned from PT use in Poland to cycling in the UK. Participant 001017's account was briefly examined in the continuing behaviour group. Her experience is included in both groups due to her transition away from car driving to PT use, and then away from PT use (and motorcycling) to bicycling. Unlike the remaining two participants in this subgroup who referred to themselves as cyclists – but were in practice multi-modal travellers – Participant 001017 transitioned almost exclusively to cycling. Participant 001017 and her family relocated to Bristol from Reading four years prior to the interview when her husband secured employment in Bristol. The participant's husband actively selected Bristol because he had an older daughter from a previous relationship in the area, and that he and the participant wanted to change their lifestyle. In Reading,

the participant cycled to work locally while her husband commuted to London by motorcycle. Both the participant and her husband came to consider the risks associated with these journeys too high, and sought a change. Bristol was selected because the family were 'trying to live healthy lives'. The participant recalled

> really enjoy[ing] working and living in Reading […] being able to cycle everywhere, that that was just the best thing. You know, I really enjoyed it and the idea was for [my husband] to be able to do the same […] And so, you know, the idea of actually having a nice community around is something that was always very important to us […] We [already] spent lots and lots of weekends in Bristol; [it was] the natural place for us. (Participant 001017)

Likewise, the participant reflected on the perceived safety of her husband's daily commute to London:

> [My husband] was commuting to London every day on his motorbike and it was just, you know, it was too dangerous. So, we wanted to work locally, you know, somewhere you could cycle and not commute, and with shops and schools. (Participant 001017)

The participant's transition to cycling is therefore more complex than a transition motivated by accidents during SOV travel. The participant and her partner actively relocated to Bristol in order to facilitate a particular lifestyle. This connection between relocation and travel behaviour has been examined in some detail in existing research. In their study of travel behaviour and residential relocation, Stanbridge and Lyons (2006:5/7) identified consideration of travel behaviour prior to a residential relocation, as well as the associated temporary break in travel habituation, to be highly influential in transitions to alternative travel modes. Participants in their study who spent time considering their anticipated travel behaviour prior to relocating demonstrated weaker travel habits as consciousness of their travel behaviour was raised, rather than defaulting to habitual behaviours (Stanbridge and Lyons, 2006:6). For Participant 001017, the relocation itself may have been sufficient to motivate the change, although in this participant's case the relocation was at least in part motivated by a conscious desire to change travel behaviours. Rather than considering the available travel options in a particular area, as outlined by Stanbridge and Lyons, the participant based their choice on the area's potential to enable her family to transition to a healthier cycling lifestyle. Klinger and Lanzendorf (2015), among others (Verplanken et al., 2008:125; Schwanen et al., 2012:523; Rau and Manton, 2016:52), question the importance of travel behaviour considerations in relation to residential relocation. Their research suggests that changes in structural contexts (opportunities and restrictions in the built environment) are perhaps less important than the act of relocating. Much like Stanbridge and Lyons concluded, *consideration* of travel behaviour during the process of relocation may lead individuals to realise travel-related preferences that 'existed latently at the previous residential

Table 24: Discontinuing public transport users Group

Participant #	age	gender	length of residence	children	Town or city in Poland child	Town or city in Poland pre-migration	Licence acquisition	primary transport in Poland	secondary transport in Poland	6 months	12 months	2 years	3 years	4 years	5 years	6 years	7 years	10 years	primary transport in UK	secondary transport in UK
001003	35-39	F	10+	2	C	C	2004	bus / tram	cycle	bus	walk / cycle	car	walk / car	train	train / bike	car	walk	car	car	walk
001005	30	F	10+	2	T	T	2008	bus	n/a	mini-bus	mini-bus	car	car	car	car	car	car	car	car	bus
001006	30-34	M	10+	2	T	T	1999	bus	motorcycle	bus	bus	cycle / car	cycle / car	car	car	car	car	car	car	n/a
001008	35-39	M	10+	3	T	T	2014	bus	walk	walk	walk	walk	cycle / car share	cycle / car share	cycle / car share	cycle / car share	walk / lift share	walk / lift share	car	walk
001011	30-34	F	10+	1	C	C	2002	car share	tram	walk/ car share	walk / car share	walk / car share	walk	walk	car	car	car	car	car	walk
001013	40-44	F	10+	3	T	T	2010	bus / tram	train	walk / bus	car	car	car	car	car	car	car	car	car	n/a
001001	45-49	F	10+	2	T	C	1989 (17)	bus/tram	walk	walk	car	car	car	car	car	car	car / cycle	car	car	n/a
001026	20-24	F	3-4	0	T	C	2013 (17)	train / tram	walk	carshare	car	car	car	n/a	n/a	n/a	n/a	n/a	car	n/a
001019	35-39	M	10+	0	T	C	1998 (17)	bus	car share	bus / walk	cycle	cycle / car	cycle	cycle	cycle	cycle	cycle / car share	walk / cycle / car share / train	walk / bicycle	train (car club if needed)
001017	35-39	F	10+	2	V	C	1995 (17) / a1 2017	walk	tram / bus	under-ground	under-ground	underground	underground	underground	underground	bus / walk	walk	walk	bicycle	passenger on motorbike
001020	30-34	F	7-10	0	C	C	2005 (18)	bus / train	walk	walk / car share	car share	walk	walk	walk / cycle / car	walk / cycle / car	walk / cycle / car / long-board	n/a	n/a	bicycle	car / long-board
001021	25-29	F	7-10	1	V	V	2009 (17)	bus	n/a	underground	underground	underground	underground	walk	walk / car	car / bus / wak	car/ walk	n/a	car	walk (occasionally)

Table 2 summarises the travel behaviours for participants in the discontinuing public transport users' group. Participants highlighted in red are from WSM; participants in green are from Bristol. Columns six and seven indicate participants' residence in towns or cities, respectively, prior to migration. Columns nine and ten indicate participants' primary and secondary modes of travel (public transport), respectively, pre-immigration. The final two columns indicate participants' primary and secondary modes of travel, respectively, in the UK.

location' (Klinger and Lanzendorf, 2015:247). Klinger and Lanzendorf suggest that there is often a 'mismatch between actual and preferred travel behaviour' and 'current and the desired neighbourhood type' (Ibid). Therefore, individuals' *self-selection* to live in a particular locality may be motivated – at least in part – by travel-related preferences associated with neighbourhood type. Participant 001017 and her family may be considered to embody an explicit example of this type of behaviour, suggesting that Participant 001017's relocation was motivated by her preference for travelling by bicycle and living in a community that facilitated a healthy lifestyle, and that the opportunities afforded by the location shaped her specific travel behaviours. It also suggests that environmental sustainability is a key consideration for some participants.

Participants 001019 and 001020 transitioned to cycling as part of a multi-modal approach to travel. Much like Participant 001002 in Chapter 5, section 3.b, Participants 001019 and 001020 were both in their early to mid-30s, and neither had children. Participant 001019 was male, working as a researcher while completing a PhD. He lived with his Polish partner in a property they owned in Bristol. Participant 001020 was female, working as a specialist teacher for the council. She lived in rented, shared accommodation in Bristol and at the point of interview was single after ending a long-term relationship that had been her original motivation for immigrating to the UK. These participants' TBJs are summarised in Figure 23. Their TTTs illustrate the variation and involved in their respective TBJs over their life-courses, highlighting their multi-modality at point of interview. Further details of their travel behaviour throughout the life-course are available in Table 23, and can be seen in their LHTs in Appendix G. The TBJs of Participants 001019 and 001020 contradict the premise of transport assimilation. Despite lengthy residence in the UK, neither participant fully transitioned to car travel as a matter of course. Furthermore, a lack of child-related travel needs appeared to ease multi-modal travel for these participants, supporting the premise that life-stage is more important than length of residence in immigrants' travel behaviour development. At the point of interview. Participants 001019 and 001020 both referred to themselves as cyclists. However, in practice, Participant 001019 cycled many times throughout the week, but also walked for various trips, lift-shared with friends and travelled by train on a weekly basis, and used a commercial car club (and Uber) on a monthly basis. Although the participant considered himself a cyclist and was enthusiastic when discussing cycling and sustainable travel choices, in practice he was a heavily multi-modal traveller.

Participant 001020 likewise reported that she was a cyclist who cycled everywhere. In the first few minutes of the interview, the participant claimed that although she owned a car, she was considering selling it due to lack of use:

> All year, my car is parked with camping gear. And I only camp twice a year, so…
> (Participant 001020)

However, as the interview progressed, the travel behaviour narrative offered by the participant was adjusted. This was perhaps because as rapport was built, the participant realised the positionality of the researcher – not focused on sustainable travel behaviours, but simply how the participant travelled, why, and how this changed over time. In the adjusted narrative offered by the participant, she began to admit that, in practice, her car had an integral role in her weekly travel behaviour:

> *So…do you have to go out [to Southmead] a lot, or…?*
> Once every few months. But I do go to Hartcliffe every Tuesday and that's usually when I use the car because then I go to swimming […] But that's if I go, for example, to work. And then from work I need to go to the office. And then from the office I want to go

swimming. And then I would use the car then…and maybe when the weather is bad. (Participant 001020)

Participant 001020's reflections on her travel behaviours demonstrated a deep concern for the environment and the sustainability of her behaviours. Although these were present in her daily travel choices, her primary concerns came with overseas air travel. Despite concerns, the participant continued to travel by plane (and car) based on cost-efficiency rather than carbon-efficiency. This aligns with Mattioli and Scheiner's recent finding when examining migration, social network dispersion and air and car travel in the UK through analysis of 1991-2017 UK Household Longitudinal Study data (UKHLS). Mattioli and Scheiner identified that within the first five years of immigrating, immigrants travelled more frequently by airplane than UK nationals, despite a higher tendency towards more sustainable daily travel choices. This was attributed to social network dispersion, VFR travel, and assimilation to the national norm as less dispersed social networks were established (Mattioli and Scheiner, 2022: 72/73). Interestingly, life-stage was not considered as a variable within their analysis.

> Recently I discovered that if you travel not just with direct flights […] It's much cheaper to travel with [a] change-over, like, when you change the plane somewhere

> This is really bad thinking about ecology […] like all this carbon, which I probably would like to consider more […] I do try really hard to be green, not so many wastes and stuff, so maybe this is the balance […] using all this information about how much pollution [flying] produces you know, you can only do so much. (Participant 001020).

Participant 001019 also expressed an underlying narrative of concern for sustainable travel, or 'green' travel. Rather than making travel decisions based on sustainability and *cost*, at the point of interview, Participant 001019's travel behaviours were influenced by sustainability and *convenience*. Reflecting on the challenges of talking a bicycle on the train to commute for work, shortly after immigrating to Cardiff, the participant stated:

> I just cannot understand why people don't get their act together and don't travel in the more sensible and sustainable ways [from Cardiff] often it would be a bit confrontational. I would have to ask people [in] the bike spaces [with] folding seat […] to stand up and leave space so [I could] put [my] bike in and if I'm the person that is sitting and I see a cyclist or somebody or a person with a bike coming on, I just volunteer the space because there's nowhere else to put the bikes. But often somebody would go like 'So, sir, your bike is more important than I am?' or 'I've got a ticket, does your bike have a ticket? or any of that bullshit and it was just so tedious. So I hate that attitude. (Participant 001019)

Figure 23: TTTs of discontinuing PT users transitioning to cycling and multi-modality
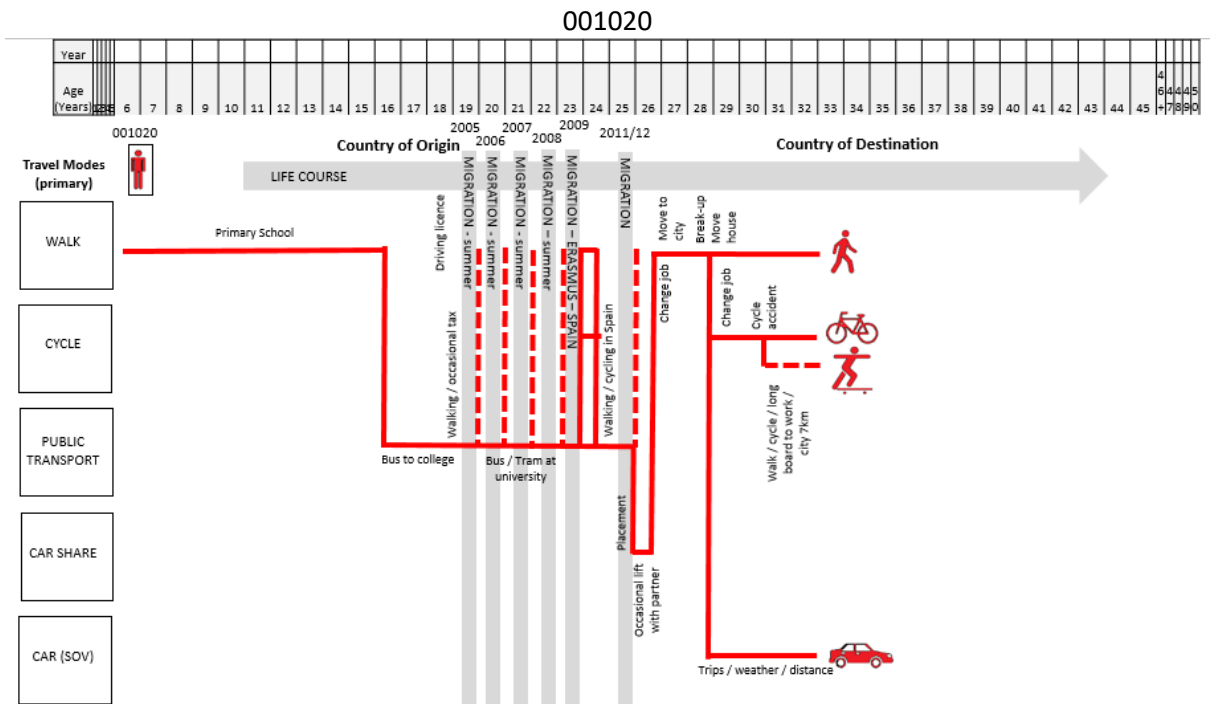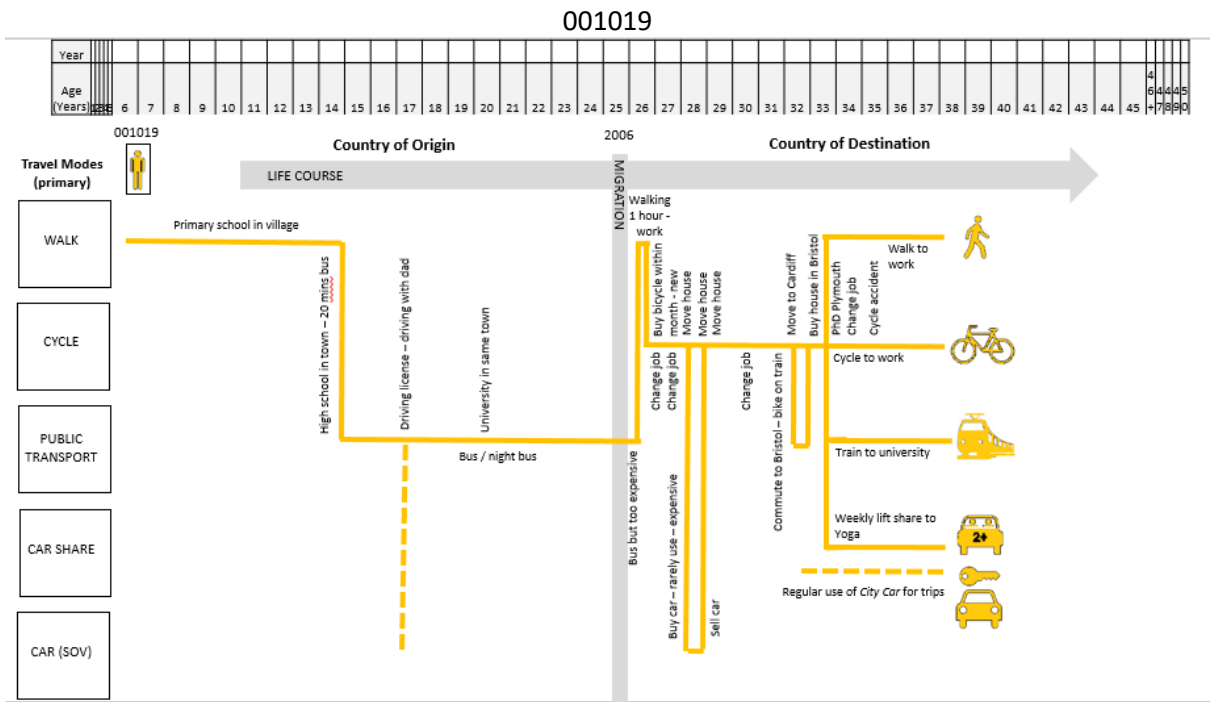
Reflecting on overseas travel, Participant 001019 actively planned his travel to be sustainable. When air travel was unavoidable, the participant would fly. For example, the participant attended a conference in South Africa and could not travel that distance by any other mode. Where possible, when travelling within Europe, the participant actively took steps to travel by train, despite what he perceived as barriers to booking European train travel from the UK.

> When I travel overseas [...] I use trains as well whenever I can afford it or whenever I have the time, and so sometimes the weird thing if quite often going to Poland for Christmas, catching a train is cheaper than flying.
>
> *From the UK?*
> Yeah, it's cheaper. It can be cheaper than Ryanair, but that's because of European trains not because of the UK trains. Once I went by train, I booked Bristol–London separately, and then London–Berlin separately with the Deutsche Bahn website. Bristol–London with a rail card was more expensive than London–Berlin [...] and the standard of trains is just un-comparable [...] on the Deutsche Bahn [...] you feel like [you're] on [the] Orient Express, like you're taking luxury trip.
>
> I'd probably go even more if it was easier to book, because [...] the main problem is booking the overseas rail travel [...] you can't book it all on one website [...] The sheer time involved in booking it can be a deterrent. (Participant 001019)

Alongside concerns for the environment, the daily travel behaviour of Participant 001020 was motivated by convenience. The participant's TTT indicated variance in travel behaviour after arriving in the UK, and at the point of interview was heavily multi-modal. Factors influencing this behaviour were varied, but a key motivator throughout his TBJ was convenience. In regard to cycling, the participant often reflected on the time requirements for locking and unlocking a bicycle, and the challenges of accessible bike storage depending on residential location. Issues of convenience, or time-cost, often led to use of alternative modes, mainly cycling, but also travel by car when the participant briefly owned a vehicle.

> It's all the things that deter you from cycling, like getting down the stairs and locking and unlocking, and finding somewhere to lock it.
>
> Having your bike ready to go downstairs makes it so much easier and that's the incentive to actually use it, especially if you have a car parked outside and a bicycle in your bedroom. It's even true for committed cyclists like I am. (Participant 001019).

However, Participant 001019 varied his travel behaviour due to other influences beyond convenience. For example, he reflected extensively on the 'excitement' related to travel, and the influence of new bicycle or car purchases, and new residential locations.

> When you get a new bike or a new car, or even when you move house, it's kind of exciting. It's all new and you want to see the place, try the different ways of walking and if it's a

new bike I just want to ride it fast, get it into corners and it's just exciting to get on it when it's new […] then after a while it wears off. (Participant 001019)

This narrative aligned with changes in the participants' TTT that were proximally close to vehicle or bike purchases, and changes in residential location or place of employment. Changes in travel behaviour associated to residential changes appear to apply to all individuals, not just immigrants. Klinger and Lanzendorf's (2015) research on the impact of residential relocation on travel behaviour in Germany highlights this, alongside changes in travel behaviours associated with changes in employment. They found that employment changes and associated adjustments forced habitual behaviour to become conscious, and therefore open to reconsideration (Klinger and Lanzendorf, 2015:4). Participant 001019's account of excitement and desire to explore new routes after relocating emphasised this point. Furthermore, the participant also demonstrated self-selection related to relocation (Stanbridge and Lyons, 2006). The participant and his girlfriend specifically selected their residential location based on travel considerations:

When we came back from Cardiff and my girlfriend had her PhD in Exeter. We wanted to be able to get to the train station without, you know, cycling or bus. We wanted it to be easy. So Totterdown was a good, a good choice. (Participant 001019)

In contrast, Participant 001020 reflected on residential relocation within the South West of England without considering the travel implication. Participant 001020 originally immigrated to live in a small town approximately 22 miles north-east of Bristol. She relocated there as she had worked in a nearby hotel during the summer break from university, and there met her boyfriend, whom she immigrated to join. She and her boyfriend lived in his mother's house before relocating to a rental in Bristol. During this period, the participant walked to work nearby. After the relationship came to an end, the participant quickly moved into shared, rental accommodation in Bristol. Initially the participant continued to walk to work as she continued to live relatively close. While living with other immigrants from Europe, the participant became friends with housemates who both cycled and skateboarded (longboarded) and over time developed an interest in travelling via these modes. This perhaps demonstrates Bamberg and Schmidt's (2003) theory of interpersonal behaviour in action, or the role of travel socialisation (Scheiner, 2018:55; De Geus et al., 2007). The participant started cycling within Bristol, particularly after changing employment to an education-related role more relevant to her degree. She also started taking long cycling trips each summer for leisure, something she had never done before. Approximately two to three years before the interview, a housemate began teaching the participant to longboard. This was initially for leisure, but as she grew in confidence this was integrated into her travel behaviour during dry summer months. In addition to this, at the point at which the relationship came to an end, the participant almost immediately purchased a car – she referring to

having a car as giving her 'more freedom' (Participant 001020). Thus, the end of the relationship that brought Participant 001020 to the UK presented a significant turning point in her TBJ. The participant's experience therefore reflected influences considered in a number of existing travel behaviour theories. Like Participant 001019, for Participant 001020, residential relocation created a cognitive opening in habitual travel behaviour during a period of adjustment (Klinger and Lanzendorf, 2015:4; Stanbridge and Lyons, 2006), which contributed to a behavioural transition. Much like Participant 001002 in Chapter 5, section 3.b, the participant's travel behaviour was strongly influenced by linked lives and 'partner effects' (Scheiner, 2018:55). Participant 001020's travel behaviour during her initial immigration to a town outside Bristol involved heavy reliance on lifts from her partner in his car. After relocation to Bristol with her partner, the relative distance of activity destinations enabled walking to work. However, after separating from her partner, who was heavily reliant on car driving, the participant was exposed to others who travelled using alternative modes. Parallels are apparent with Participant 001002, whose exposure to peers who used alternative travel modes led to socialisation of travel behaviours (De Geus et al., 2007; Jones, 2013). Becoming friends with others who used alternative travel modes led to adoption of these modes – cycling, recreational cycling and longboarding. In both instances, the theories applicable to these behaviours are applicable to travel behaviour more broadly, and are not exclusive to the experience of immigrants. This suggests that behaviour change may not be driven culturally rather by immigrant conformity to local behavioural norms (Smart, 2015).

Unlike other participants in the discontinuing travel behaviours group, such as Participant 001017, Participants 001019 and 001020 both experienced travel accidents without a notable influence on their travel behaviour. For Participant 001017, an accident represented a travel behaviour turning point – transitioning away from SOV travel modes. For Participant 001002, an accident occurred shortly after a passion for cycling was reignited. The accident appeared to have minimal influence on the participant's continued engagement with cycling. Unlike Participant 001017, Participant 001020 was not discouraged in her travel behaviours by accidents:

> *Weird question...have you ever had any accidents or anything like that in the car or, bike or...?*
> On my bike I had couple of accidents but only one [...] with a car. I think three accidents [...] that's quite a few actually (laughs) [...] I hit a car twice on a bike, and I was hit by a car once, and then I had two accidents with other cyclists.

> *Did it ever change how you were cycling?*
> Yes. I started to wear a helmet (laughs) [...] I did have a [...] broken toe twice after the accident with the cyclist and broken elbow after I hit a car. [There was a film crew] filming and I didn't look to the front, I just looked to the side and I hit a car in front of me. [...] And even though I was wearing a helmet, I had like massive chin pain so I hit the jaw and

was bleeding […] I actually went to hospital the day after […] but I was fine, really, nothing serious.

And how did you get around?
I think I drove then. Yeah. I think I had to drive then […] Also when I had a broken hand was another accident […] I also drove…but I wasn't allowed to drive, they told me not to drive, but I had to get to different places, so... (Participant 001020)

Although accidents led to short-term changes in travel behaviours, the participant's overall travel behaviours remained very similar. For Participant 001017, an accident led to an increased perception of travel risk. For Participant 001020, despite repeated accidents, her perceptions of risk and associated level of worry related to her travel choices appeared unchanged – beyond beginning to wear a helmet (Kummeneje and Torbjørn, 2019:2; Loewenstein et al., 2001). In contrast, Participant 001019 experienced a number of accidents while travelling by bicycle. The smaller accidents – sliding on drain covers while cornering – appear to have had minimal influence on the participant's travel choices. However, an accident involving a lorry on a busy stretch of road while cycling had a larger influence on his behaviour.

I stopped cycling to work, even though it made sense because of the distance, and I started walking […] because I had to cycle through Saint Phillips […] that was the first […] couple of times when I got knocked over by cars.

There is so many tip lorries and vans going, the roads are relatively wide, people are speeding […] it's mainly depots and waste sites and stuff like that, so people drive in crazy ways […] the accident with the turning lorry, [that was] when that happened.

So you started walking after the lorry accident?
Probably, although it wasn't like a trauma. It was more like, 'Phew – can I deal with this crap' […] I didn't want to get hit, obviously, and I also didn't want to get all worked up every time I go to work or come back, because somebody over-taking you with a lorry full of crap, leaving you like two inches because another lorry is coming from the other direction. […] So it was about safety but it was also about me just constantly shouting abuse at people while cycling. (Participant 001020)

Although in the participant's account, he strongly reflected that his accident had minimal influence on his travel behaviour, the participant's LHT (see Appendix G) highlighted how this accident aligned with a transition to walking and cycling this particular route. This supports the latent analysis of a transition away from cycling due to risk aversion (Kummeneje and Torbjørn, 2019). As indicated in Chapter 5, section 2.b, the participant's narrative may reflect gendered social norms. While being interviewed by a male interviewer, the participant may have been demonstrating his *masculinity* by presenting himself as a reckless driver, prone to driving fast and causing accidents (Mast et al., 2008:842; Schwalbe and Wolkomir, 2001). Despite a mode change on this route, the participant continued to cycle as part of his multi-modal travel behaviour.

Unlike Participant 001002, neither Participant 001019 nor Participant 001020 were particularly enthusiastic cyclists during their childhood or adolescence in Poland. Participant 001019 went as far as to describe 'being fit' – which he associated with cycling – as 'very uncool' (Participant 001019). In Poland, both participants were heavily reliant on PT. Participant 001019 immigrated to Bristol in 2006 from Poznan, a large city in northwest Poland approximately 170 miles from Berlin. The city itself had a population of approximately 550,000 residents at time of migration, with approximately 1.4 million residents in the wider metro area. The participant lived in a military garrison approximately 10 miles outside the city – a 30-minute bus ride. As a child, the participant walked (or ran) the half-mile distance to school, only occasionally cycling. The participant lived at his parents' home while attending university in Poznan, although he spent most of his week on friends' sofas in the city. The participant occasionally borrowed his father's car to drive in to the city, but primarily relied on PT.

> It was pretty much, it was pretty much moving around by trams and buses then […] Night buses quite a lot because Poznan has like 15 night bus lines […] you could get literally anywhere […] they would go every 20 minutes or half an hour at night. It was really good. [In the day] the buses were every 10 minutes and you could get everywhere, and they were nice […] it's like new trams, it's clean [and] a lot of people use it. (Participant 001019)

This contrasts starkly to the participant's first experience of PT in Bristol:

> I remember the first bus ride, from the city centre to Air Balloon Hill […] that took like 40, 45 minutes, I couldn't believe it […] on day one we figured out that we're quite far away from the city and that the buses in Bristol are absolutely dreadful […] So the commute was, was a big thing right away.'

> The first thing was the shock: 'why is this so expensive?' […] on day one, we started walking to the centre to find work […] it was, it was 6 k. It pretty much took a straight hour'.

The cost also contrasted dramatically with Poland:

> It was five or six pounds for me for the month of commuting on trams and buses in Poland, and then if I wanted to go to work and back in Bristol it was six pounds just for that […] we had to walk because we couldn't even afford the bus. (Participant 001019)

This led the participant and his partner quickly towards cycling, after spending the first month in Bristol walking an hour each way to work in the city centre. The participant reflected that:

> Cycling in Poland was more like a lifestyle choice than a necessity […] very quickly we wanted to get bicycles [but] that was the weird thing. [It took] probably four weeks [in the UK] to enough money to go […] and just buy two new hybrid bikes. That was a great moment for me because I think that was the kind of the aspirational thing in Poland. (Participant 001019)

Much like the experiences of participants in the continued travel behaviours group, Participant 001019's negative experience of PT in the UK contributed to his use of alternative travel modes. Figure 16Figure 16 provides an outline of Fujii et al.'s (2001) research into structural changes and travel behaviour. The model outlines how positive experiences of PT after a structural change can contribute to a long-term transition to this mode, dispelling negative perceptions associated with the mode. Figure 24 provides an adaptation to this model, considering the ways in which immigrants may develop perceptions of different travel modes during their arrival and adjustment period post-immigration. As in Participant 001019's case, habitual PT use may be abandoned if a negative experience alters the participant's perception of the usability of the mode in the new context. This experience is not limited to Participant 001019, and can be seen in the TBJs of others throughout the discontinuing travel behaviour group. Participant 001019's first experience of PT in Bristol on the bus was sufficiently negative to discourage him and his partner from regular use. The participant did occasionally use PT when it appeared more convenient – for example, to travel to a yoga class carrying equipment he was uncomfortable carrying on a bicycle – although he did not use buses on a regular basis in Bristol. Through occasional use, the participant developed strong criticism of the PT offer in Bristol. Compared to Poznan, where PT was a relatively cheap, connected and frequent service, the service in Bristol was 'late, expensive [and] not nice'.

> In Bristol, we never go to catch a bus without checking the schedule, even though the schedule is really not that reliable anyway […] the most annoying thing are those displays which say the bus is due in five minutes and there are never there […] in Poznan you never check the timetable […] you just go and catch it […] worst case scenario is you'll wait nine minutes. […] it's so much better than here, that's for sure […]. I mean, if we are comparing to here, it costs next to nothing and it's very reliable. And a lot of people use it […]. If you go on the bus in Bristol […] it's not 'segregated' but it but it's close to that. (Participant 001019)

As part of their multi-modal response to the poor-quality, expensive PT service in Bristol, the Participant 001019 purchased a car. However, unlike others in the study who purchased vehicles, he did not transition to car travel. Reflecting on his period of car ownership in Bristol, the participant indicated that he purchased a car based on the freedom of having 'purchasing power' and having 'always wanted' one.

> We got a car, a Saab 800, which I always wanted, but we didn't use it for commuting. Actually it didn't make sense having the car, it's just, I was like 'wow, I can buy a car with the money that I earned', so I bought one, but then it just stayed on the parking lot. […] The funny thing was we started driving to the supermarket because we had a car. […] because we have to drive it for a bit otherwise it'll all get rusty and seize up. […] So we had it maybe for a year and then we sold it. (Participant 001019)

Figure 24: The importance of immigrants' initial experiences in the development of travel behaviours

Building on Fujii et al.'s model of behaviour changes in response to structural changes, the model below depicts the dual directional importance of structural changes in the development of immigrants' travel behaviours. Negative experiences of PT during the arrival and adjustment period (the first 6–9 months), or other periods of adjustment throughout the life-course, can result in a transition away from PT use for previously habitual users.
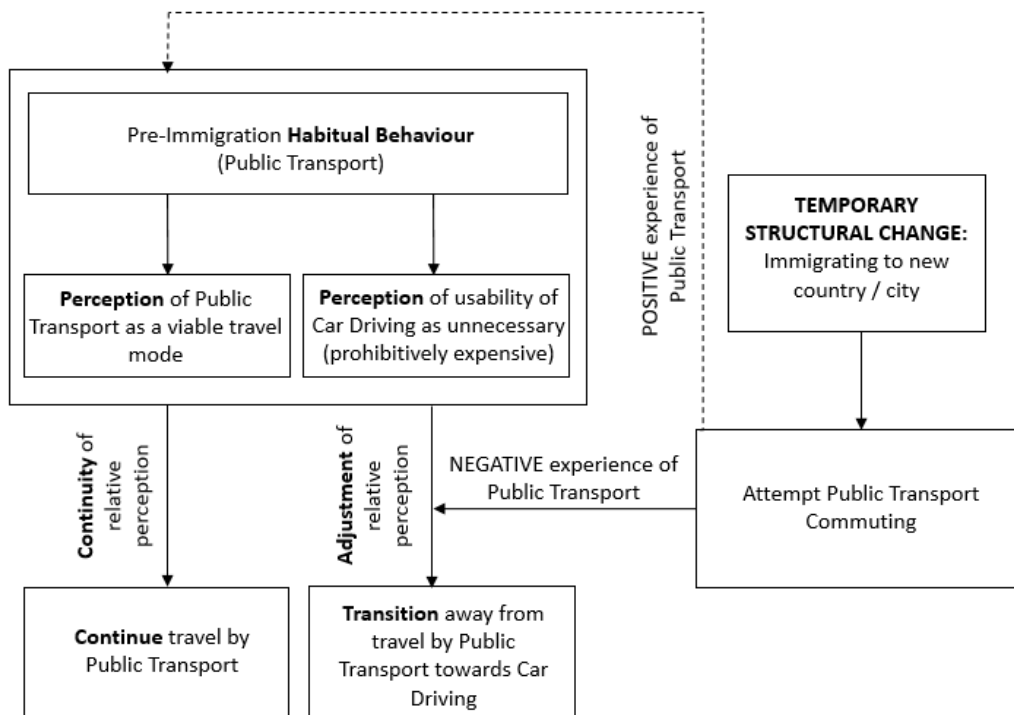
Whereas Figure 16 demonstrated the utility of cognitive openings after structural changes in the development of sustainable travel behaviours, Figure 24 depicts the opposite. For immigrants who already use PT, experience with the transport system over the first few months can have a strong impact on their continued use or transition to other modes. Many participants in this study had negative experiences with PT in Bristol and WSM related to cost, convenience, connectivity and reliability. These barriers to continued use of PT use resulted in many participants transitioning to alternative (often less sustainable) modes of travel, such as car travel (as depicted in this model) or train travel (as for Participant 001018 in the continued public transport users' group).

Overall, it is apparent that Participant 001019's travel behaviours were influenced primarily by changes in social structure. The structural change between the PT provision in Poland and Bristol deterred and prevented the participant's PT use. Socio-economic changes with structural context related to relative income and purchasing power enabled the purchase of both a vehicle and a new bicycle – both purchases the participant considered 'aspirational' in Poland. Life-stage appears to be influential in the participant's travel behaviours in the respect that he maintained multi-modal travel behaviour without transitioning to car travel often associated with life-stage for people in their early to mid-30s.

Participant 001020 immigrated to the UK from Szczecin, a mid-sized city in western Poland approximately 500 km from the German border. It had a population of approximately 406,000

residents in the late 2000s, when the participant migrated. The participant considers the city comparable to Bristol in size, and resided in a semi-suburban area of the city comparable to Easton in Bristol. As a child in Szczecin, the participant travelled primarily by walking, later taking a bus to secondary school. Her parents had a car, which she recalls as being 'very, very rare in the 80s in Poland' although they used it only to travel long distances, rather than for daily travel.

> We used to travel by car [when] we used to go long distances. We'd get up at 3 A.M. in the morning to go to the mountains, in this tiny little car that was definitely not safe […] with all the luggage, all the equipment if we were going skiing or something. We hardly ever took trains because they were very unreliable in Poland, and buses as well, so we drove. (Participant 001020)

The participant lived in a flat with her mother from a young age, travelling across the city by tram to see her father. Although the participant went to university in Szczecin, she decided to rent a flat in the building next to her mother's because she wanted to be 'independent'. She continued to travel by bus to university, a 30-minute journey she made three or four times a week that was not too expensive.

> If you're a student […] student tickets are not expensive at all. You pay for like a monthly card. I actually don't know how it works here because I NEVER use buses, actually. (Participant 001020)

Although the participant experienced a structural change, she considered Szczecin and Bristol to be similar in structure. The 'shock' over the disparity between PT provisions in the UK and Poland appears to have been minimal, with the participant suggesting she did not know how PT worked in Bristol. The participant's residential location in Bristol, and relative proximity to activity sites reduced the need to engage with PT. Rather than adopting a particular approach to travel in the UK, the participant appeared to remain quite flexible, selecting travel modes that suited her preference rather than a rationalised objective. As for Participants 001002 and 001019, life-stage appears to have been extremely influential in Participant 001020's travel behaviour development. Not having child-related responsibilities appears to be closely associated with multi-modal travel among participants in their 30s. Unlike participants in this study who had children, the participant did not transition to car travel, despite integrating car travel into her multi-modality. For Participant 001020, car travel appears to have been associated with 'freedom' and convenience – despite an expressed concern for sustainable travel. As indicated above, both her relocation and her travel behaviours in the UK appear to be influenced by relationships. 'Partner effect' and 'life events' related to relationships are the primary correlates with travel behaviour (Scheiner, 2018:55; Chatterjee and Scheiner, 2015:20).

Overall, it appears that the factors influencing the travel behaviours of those transitioning away from PT use to cycling and multi-modality are different to the factors influencing other participants. Although the narratives provided by participants in this subgroup indicate a multiplicity of different

influences – reacting differently to structural changes, personal preferences and partner effects – the primary similarity among all three participants is life-stage. Each of these participants was in their mid-30s without children. In contrast, almost all other participants in this study in this age bracket had children, and child-related travel needs formed part of their motivation for car travel. The cross-group influence of life-stage on participants travel behaviours is considered in Chapter 5, section 4, following analysis of participants who transitioned away from PT use to car driving.

Discontinuing PT Users Transitioning to Driving
Among the participants who transitioned away from PT use towards car travel in the UK, a number of central themes were evident. Most important were the influence of life-stage, child-related travel needs, and household-level financial consideration of travel options. Second in importance were structural factors expressed through criticism of the relative cost, convenience, connectivity and reliability of PT in Bristol and WSM compared to systems in Poland. As with participants in other TBJ groups, each of the participants transitioning to car driving had their own personal influences. For this group, there are also a number of broader influences that appear to be shared by participants. Of the 12 participants transitioning away from PT, nine transitioned to car driving – six from WSM and three from Bristol.

The influence of household-level financial considerations was particularly apparent for Participants 001003 and 001008, both resident in WSM; they were interviewed separately albeit as part of a couple. Participant 001013 was a female in her late 30s residing with her Polish partner (Participant 001008) in WSM. She had two children residing with her in the UK, and her partner had a daughter from a previous relationship who visited from Poland. The participant immigrated to the UK from Krakow in 2004, immediately after acquiring her driving licence. The participant did not drive while living in Poland, instead relying on PT in Krakow. Krakow is a large city in southern Poland with a population of approximately 760,000 residents when the participant migrated, with integrated public bus and tram service. During her childhood, the participant primarily walked to school, before transitioning to bus and tram travel for secondary school, and train travel when starting employment. The participant changed mode when changing jobs in Poland, before gaining her driving licence and immigrating to the UK. The participant immigrated to WSM working in manual labour before progressing to working as a carer. She quickly became pregnant with an English partner, but the relationship ended before the child was born. The participant enrolled at university while pregnant. During university, the participant briefly resided outside of WSM in a nearby town, then returned to WSM for work. In the initial period after immigrating, the participant walked everywhere until she could afford to buy a bicycle. After buying a bicycle, she cycled everywhere until she could afford to buy a car at auction.

> First of all, I walked to my work, which was around 25 minutes' walk. Erm, then when I saved some money, I got myself a bike. And after a while (and a horrible winter) I got myself a first car.
>
> *So on your bike did you reduce your…you were going to the same place for work?*
> So it made it 15 minutes then instead of 25 minutes, and then 5 minutes by car. (Participant 001003)

The participant noted the influence of macro-context on her ability to purchase a vehicle in the UK.

> It's so much cheaper to get a car here than in Poland […] relatively speaking. Compared to your earnings, buying a car, it's not a big deal [in the UK]. In Poland you would have to save money for long time to get a car. (Participant 001003)

Her experience of transitioning to car travel around the time of childbirth was an unconventional one. The participant purchased a car shortly after finding out she was pregnant in preparation for having a baby, but shortly after having her baby, she wrote the car off in a car accident. For the next seven years, the participant alternated in and out of car ownership following a series of car crashes, adapting travel needs as required. Each accident was minor and neither involved injury nor dissuaded the participant from driving – although, as can be seen from the participant's LHT and TTT, these resulted in marked short-term disruptions to her travel behaviour. Participant 001003's LHT is included in Figure 25. At 31 years of age, pregnant with her second child, the participant decided to upgrade her car for a safer vehicle. This corresponded with her partner deciding to get a driving licence so they could share driving needs associated with the new baby. Despite having a reliable vehicle at the point of interview, the participant continued to transition through different travel modes as personal, household, and employment circumstances required.

Participant 001013's partner, Participant 001008, immigrated from a town approximately 26 miles northwest of Krakow called Olkusz. The couple did not know each other before immigrating. Olkusz had a population of approximately 36,000 residents at the time of immigration. Participant 001008's father worked as a miner in the area, while the participant worked in a metalworking factory prior to immigrating to the UK. As a child, the participant walked and cycled most places, living a very active lifestyle while attending a sports school. After graduating high school, the participant commuted to work in a factory by bus. He attempted to get his driving licence in Poland but suggested that he was unable to as he did not have the money needed to secure the licence in a corrupt system. At age 21, the participant had his first daughter in Poland. Shortly after the relationship ended with his daughter's mother in 2007, the participant came to the UK to spend some time earning money, living with his sister who had already immigrated. After arriving, the participant decided not to return to Poland, learned English, settled into a steady job, and started another family. The participant worked

a number of low-skilled jobs while learning English, and by chance met an old friend from his hometown with whom he ended up living. After changing employment to warehouse work, the participant travelled primarily by walking, cycling, or lift-sharing with other Eastern European colleagues. Shortly before the birth of his second child, the participant gained his driving licence, and purchased a safer car for himself and his partner (Participant 001003). As a household, the family had one shared vehicle, and the participant mostly walked or lift-shared to work with colleagues who passed his house on their way to work. Participant 001008 was the only participant who, despite residing in the UK for over 10 years, continued to lift-share with co-ethnic colleagues. His experience demonstrated utilisation of ethnically defined social capital as discussed by Tal and Handy (2008), Blumenberg (2008) and Smart (2010). Initially residing with a family member, an old friend from Poland, then integrating co-ethnic lift-sharing into his daily travel behaviours.

Both participants' travel behaviours reflect the influence of contextual change, and the influence of life-stage and household-level financial decision-making on travel behaviours. Change of macro-context facilitated the purchase of a vehicle for both participants, which would have been a large purchase in Poland but was achievable relatively quickly in the UK. This parallels Participant 001019's ability to buy a new bike in the UK, as discussed above. Life-stage appears to have influenced both participants' travel behaviours in a number of ways as well. Participant 001003 purchased a vehicle when she was pregnant and intended to use it while travelling with children. Although car accidents disrupted this plan, when possible the participant purchased a car again to manage work and child-related travel needs. Decisions over replacing damaged vehicles became household-level decisions, affecting how both the participant and her partner were able to travel for work and study. As can be seen in Participant 001003's LHT (see Figure 26), the participant had three accidents that required vehicle replacement. The participant's travel behaviours were very varied during these periods, transitioning between walking, cycling and train use between car purchases. These financial considerations at a household level led to periods of time without a vehicle when vehicles were out of service or damaged. Participant 001003 often had to wait many months to be in a financial position to purchase another vehicle, reflecting on the significant influence this had on other parts of her life.

Figure 25: LHT of Participant 001003
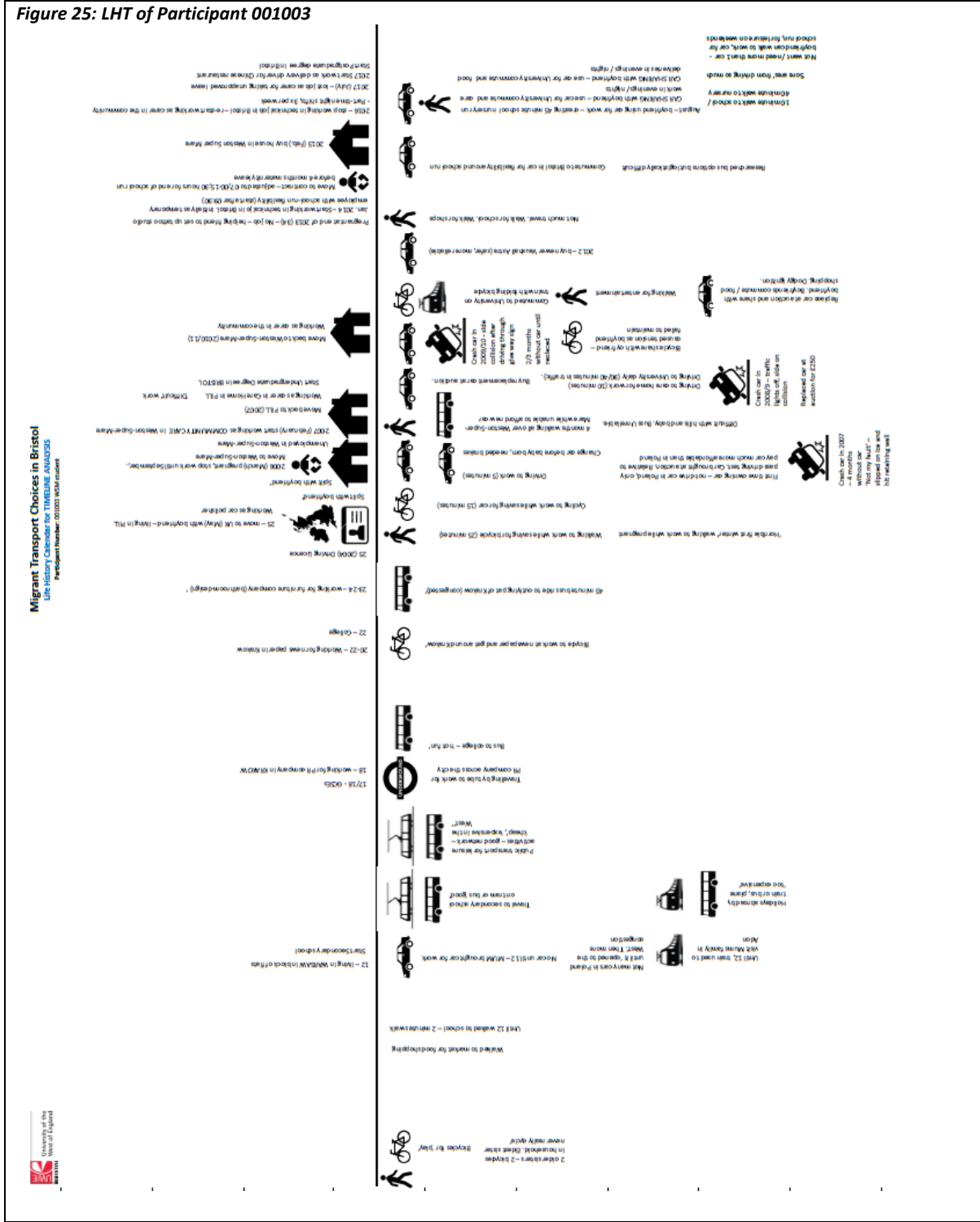
Household-level financial decisions were also noted as influencing the travel behaviours of other participants. Participant 001001 reflected on the culture shock of PT costs in the UK in her initial years after arrival, opting to walk (with child) more than she used PT due to financial constraints at a household level.

> When I first moved here, to Bristol, at the beginning we lived in Windmill Hill […] it's not far from the centre, so we tried literally to walk as much as we could because we were quite new to Bristol, we didn't have very much money. We were just starting off, so we had to literally think twice before spending £4 on the bus. […] It was fine. But I just found it a little bit of a shock how much more expensive it was here to use the bus. (Participant 001001)

In the initial years after immigrating, a number of participants experienced financial constraints restricting their travel behaviours. These constraints often reflect the wider change in context related to the cost of travel. In Poland, PT tended to be relatively cheap, reliable and efficient, whereas private car ownership – and in some cases, bicycle ownership – was prohibitively expensive relative to income in Poland. Although a number of participants arrived in the UK habituated to PT use, the structural context of the UK transport system deterred PT use and, in a relative sense, incentivised SOV travel. The combination of contextual change merged with life-stage-related travel needs appears to push participants towards car travel. Much like McCarthy et al. (2017) found in their research into travel mode choices for families, inadequacies in PT infrastructure and operations – such as infrequent and indirect services – can deter use, especially 'when travelling with young children' (McCarthy et al., 2017:772). Furthermore, they suggest that 'structural factors such as poor access to affordable and accessible PT or a lack of good quality active transport infrastructure facilitate an auto-mobile lifestyle' and 'reinforce psychosocial factors' that promote car ownership (Ibid:774). Relative to participants' experience in Poland, structural factors are reported to discourage and inhibit PT use in Bristol and WSM.

Participant 001001 arrived in the UK from Krakow in 1998 with her British husband and her two-year-old son. While residing in Krakow, the participant worked as a teacher, and neither she nor her husband owned a vehicle to fulfil their travel needs. They lived relatively close to the participant's mother, who was able to assist with childcare, and all of their travel needs were fulfilled using the PT system in Krakow.

> When I started working, I was all the way in the suburbs and the whole tram journey was quite long, at least half an hour. But, you know, it was just one tram journey. I didn't have to mess around with five trams, go into the centre, out again, so…. I thought it was quite good. (Participant 001001)

Figure 26: TTTs of couple who transitioned away from PT use to car travel

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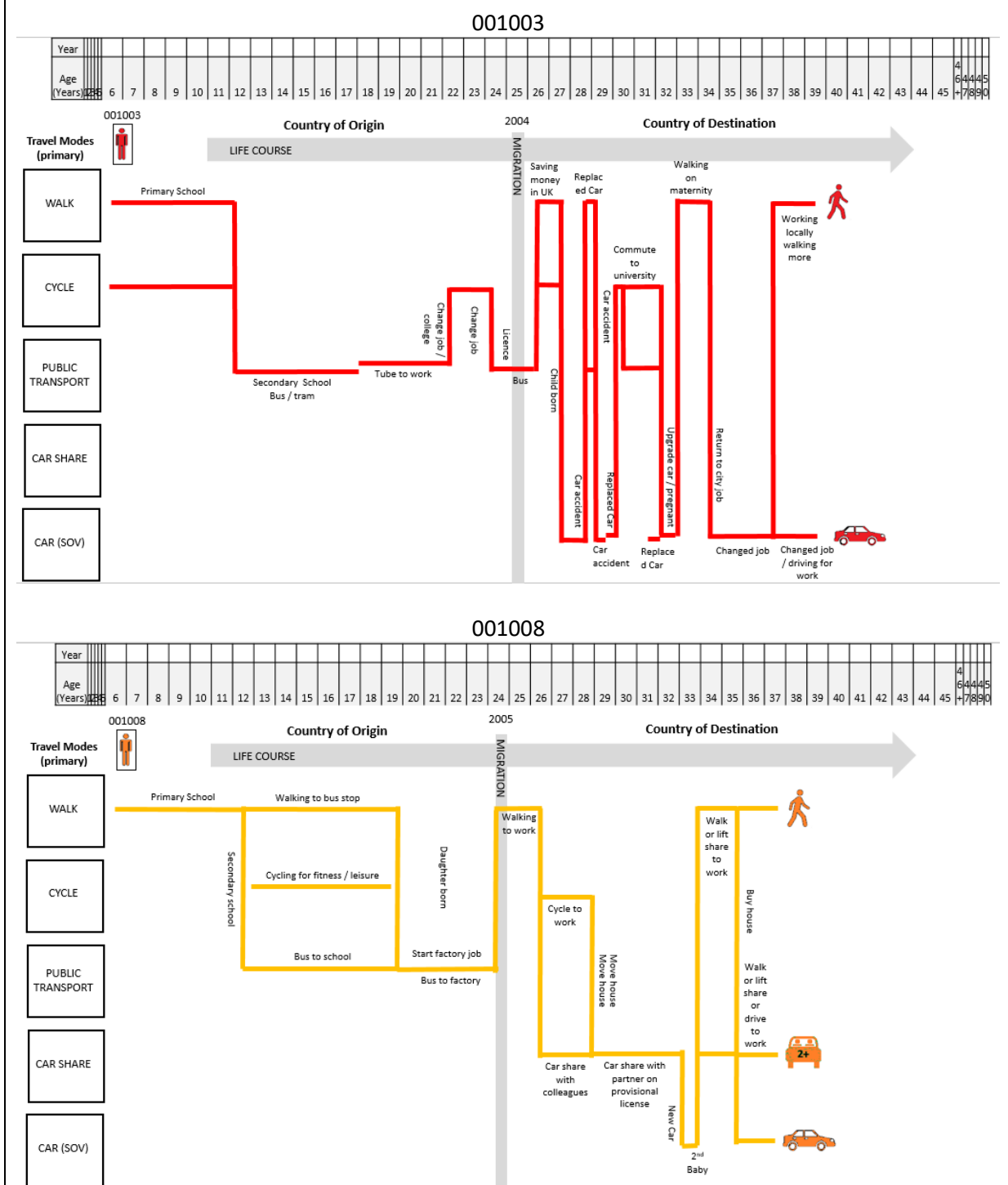
However, as indicated above, experience of PT use in Bristol led to a transition to travel by other modes. Beyond concerns with costs, Participant 001001 also reflected on poor connectivity as a disincentive for travel by PT:

> [In Bristol] they have those massive buses that don't stop anywhere, don't seem really to go anywhere you want to go, and cost a few pounds for a single trip […] It's very annoying […] you have to go to the centre to get to anywhere really […] there are no direct links […] between different places in the suburbs, for example.

> We've been on the bus once with a pram and we wouldn't do it again, it's stressful. And hot. I think it's the buttons that are the worst. All the toddlers, they just seem to want to press the buttons to stop the bus. (Participant 001001)

While residing in Bristol, the participant was happy to walk with a pushchair with her first child. In close proximity to having her second child, the participant also moved house to a hillier location in Bristol. The relocation, combined with the need to walk with one child and push another in a pushchair, motivated the participant to buy a car. Apart from a brief period of cycling a scenic canal route to work after her second child started school, the participant remained a car driver. In addition to the challenge with hills and a pushchair, the participant found lack of 'direct links between different places in the suburbs' and the necessity to 'go to the centre to get to anywhere' a further hindrance to regularly using PT in Bristol as she had done in Krakow (Participant 001001). Interestingly, the highest number of participants criticising the PT system resided in Bristol (Table 25). The main criticisms were its lack of connectivity, infrequency and its high cost compared to the PT networks in participants' towns or cities of origin in Poland. As indicated by Participant 001001's experience, travel with children on PT in Bristol and WSM was also extremely challenging, pushing participants away from PT use.

The remaining six participants in this subgroup report a fairly straightforward transition from PT use to car travel. Four were resident in WSM and two in Bristol. From each location, one participant was recruited who commuted in for work. In WSM, Participant 001006 was male in his mid-30s, living with his wife and two young children in a town approximately 10 miles south of WSM. He transitioned from PT use and motorcycling in Poland to car travel in WSM. While living in the hotel where he worked during his initial arrival and adjustment period in the UK, the participant travelled by bus. After changing employment, the participant moved into rented accommodation and purchased a car. He met his partner, who had her own car, changed employment again, bought a house, and upgraded his vehicle in advance of the birth of both his children. He described his desire for car travel, and to continue upgrading his car, as achieving childhood 'dreams' or 'aspirations'. The participant actively gained satisfaction from owning a BMW with a 3-litre engine. Although the distance required for his daily commute was manageable by bicycle, the participant cycled rarely – only in good weather during

the summer. Much like Gärling and Auxhausen's (2003) interpretation of habit formation theory, the participant engaged in car driving with minimal deliberation of alternative modes of travel. He aspired to car ownership, partnered with a habitual car driver, and quickly became a habitual car driver himself.

Table 25: Participants criticising the public transport systems in Bristol and WSM

Participant #	age	gender	length of residence	Town or city in Poland child	Town or city in Poland pre-migration	Lisence acquitsition	6 months	12 months	2 years	3 years	4 years	5 years	6 years	7 years	10 years	primary transport in UK	secondary transport in UK
001004	35-39	M	3-4	T	T	1996	car / cycle	car / cycle / motorbike	car / cycle / motor bike	car / cycle / motor bike	car	n/a	n/a	n/a	n/a	car	n/a
001015	40-44	F	10+	V	V	1992 (18)	walk	walk	car	car	car	car	car	car	car	car	walking
001001	45-49	F	10+	T	C	1989 (17)	walk	car	car	car	car	car	car	car / cycle	car	car	n/a
001025	50+	F	10+	C	C	1986/7 (18)	bus / car	car	car	car	car	car	car	car	car	car	walking
001026	20-24	F	3-4	T	C	2013 (17)	carshare	car	car	car	n/a	n/a	n/a	n/a	n/a	car	n/a
001019	35-39	M	10+	T	C	1998 (17)	bus / walk	cycle	cycle / car	cycle	cycle	cycle	cycle	cycle / car share	walk / cycle / car share / train	walking / bicycle	train (car club if needed)
001018	35-39	F	10+	T	C	2001 (18)	bus	bus	walk	walk	walk	walk	walk	walk / train	walk / train	train/ walk	walking
001020	30-34	F	7-10	C	C	2005 (18)	walk / car share	car share	walk	walk	walk / cycle / car	walk / cycle / car	walk / cycle / car / longbo ard	n/a	n/a	bicycle	car / long-board
001021	25-29	F	7-10	V	V	2009 (17)	undergrou nd	undergrou nd	under groun d	under groun d	walk	walk / car	car / bus / wak	car/ walk	n/a	car	walk (occasionall y)
001022	35-39	M	10+	T	C	n/a	bus	bus	walk	walk	walk	walk	walk	walk	walk	walking	bus / train
001023	20-24	M	5-6	C	C	n/a	walk	walk / cycle / car share	walk / cycle / bus	walk / cycle / bus	walk / cycle / bus	walk / cycle / bus	walk / cycle / bus	n/a	n/a	walking / bus	cycling
001024	50+	M	10+	T	T	1981 (17)	walk / cycle	car	car	car	car	car	car	car	car / walk	car	walking

The 12 participants detailed in Table 25 were particularly critical of the PT systems in Bristol and WSM. Details of their travel behaviours at key life-stages are included below to examine their use of/relationship with PT prior to migrating. Note that most of the participants criticising the transport system reside in Bristol (green), and rarely used PT in the UK.

Participant 001026 likewise resided outside of Bristol and commuted in for work and study. Much like Participant 001020, she immigrated to the UK to continue a relationship she started while working in hospitality in the UK during summer vacations. Prior to immigrating, the participant relied on PT to commute to secondary school. Residing outside Wroclaw, the participant cycled to the train station, took a train to the city, and a tram across the city to school. At the point of interview, the participant resided in a small- to medium-sized town approximately 30 miles north-east of Bristol. The participant gained her driving licence in the UK after realising she wanted to go to university here. After gaining her licence, she ceased lift-sharing with her partner, and they purchased two cars. Due to unviable train travel into Bristol (due to costs and connectivity) the participant relied on daily car driving.

Although she was not in a position to relocate to Bristol at the point of interview, she was considering relocating to reduce her travel time and costs. However, for the participant, this calculation involved rational assessment of the additional rental and tax costs against the cost of fuel, vehicle tax and maintenance. Figure 27 highlights the relatively simple TTT pattern for these participants.

Of the remaining participants who transitioned to car travel, three resided in WSM. One resided in a city in Poland pre-immigration; the others lived in towns near cities. All three experienced a period of adaptation between the first 6–18 months of arrival in the UK (Menninger, 1988). All were female. Participant 001013 resided in a small town of approximately 10,000 residents called Rzozow, 15 miles southeast of Krakow. While studying as a student in Krakow, the participant travelled by tram. Relocating to Rzozow after getting married, the participant commuted to study and work in Krakow by bus. She suggested that this was because having a car at that time would have been 'too expensive'. After splitting up with her partner in Poland, the participant immigrated to the UK, collecting her daughter after three months. The participant primarily walked to work and school in WSM; however, she would use the bus for night classes and night shifts as a care worker. After gaining her driving licence in the UK in 2010, the participant bought a car and transitioned exclusively to car travel. This change correlated with – or enabled – a change in employment, thereby increasing the distance that the participant could travel out of WSM for work.

Participants 001005 and 001011 were both in their early 30s with children. Participant 001011 immigrated to the UK in 2010, following an initial migration to the UK for three years in 2005. Pre-immigration, she travelled by bus – apart from a brief period of driving to university in Krakow after gaining her driving licence. She spent two years working in a Polish shop in WSM, lift-sharing with her partner, before being made redundant and subsequently applying for an apprenticeship. This period correlated with the birth of her daughter. The participant initially walked to work after this change, and subsequently purchased a car and drove to work when the location of her employment changed. She also used the car to take her daughter to extra classes outside of school. At the point of interview, she drove for work on a daily basis, but continued to walk within WSM for grocery shopping. Participant 001005's TBJ was straightforward. She walked to primary school, used PT for secondary school, and acquired her driving licence immediately before immigrating. After arriving in WSM, the participant spent two years working in a food production factory where travel was provided by the company minibus. After two years, the participant purchased a car (a second car for the household) and travelled almost exclusively by car. The participant upgraded her car immediately prior to the birth of each of her children. In the summer months, the participant occasionally took her children on

the bus, and she reported having future plans to walk more and to take her children to nursery school on foot.

Figure 27: TTTs of discontinuing public transport users commuting into Bristol and WSM
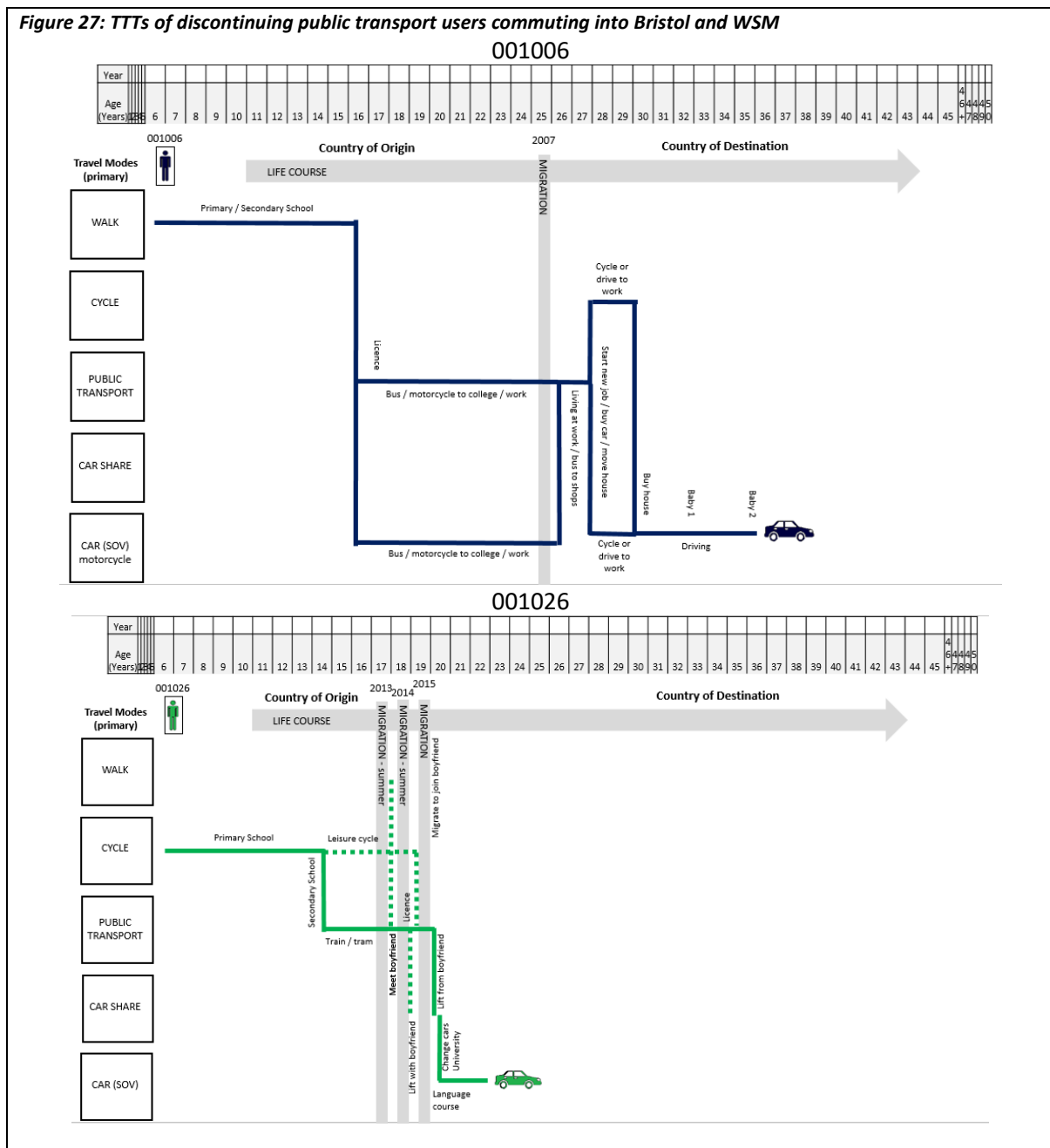
The final participant in this subgroup resided in Bristol from 2015, relocating after initially immigrating to London in 2010. Pre-immigration, the participant travelled to college by bus in Poland, but considered this to be a 'challenging' and lengthy route with multiple transfers required. After immigrating to London, the participant travelled via a combination of underground, bus and walking

depending on her residential location, place of employment and place of study. Due to multiple residential relocations, her behaviour changed quite often. After her daughter was born in 2013, the participant relocated further out of central London and purchased a car. Due to limited motility, the participant was unable to drive the car immediately, due to some challenges in understanding the road tax system. After resolving the tax issues, the participant's transition to car driving temporally aligned with relocation to Bristol, although it took 'some time to be happy to drive here'. The participant reflected that she was motivated to transition to driving because of having a child:

> *Do you think you would have bought the car if you hadn't had your daughter?*
> No. Well, I would have eventually (laughs), but it was just because we needed the car when we had a baby. To get around. Not just the underground and buses. I don't think, I don't think we ever went on the underground or bus with her as a baby. (Participant 001021)

Although the participant transitioned to almost exclusively car driving in Bristol, she later started trying to walk in Bristol:

> *Did you say you were walking once a week as well at the moment?*
> I walk once a week now. Well, I try. Maybe I don't if it's raining or really cold. But I drop my daughter at her school and then I walk to work.
>
> *Is there a reason why you walk, or just?*
> It's for health. Staying or getting fit. It's just healthy to walk.
>
> Walking is more manageable in Bristol. It's smaller. [I tried] buses to begin with but […] just for a while because they were so unreliable. They made me late for my job so, I started driving. (Participant 001021)

As with other participants in this subgroup, Participant 001021's travel behaviours can be explained by a number of theories in existing travel behaviour research. The participant exhibited the influence of residential relocation and cognitive openings in habitual behaviour (Stanbridge and Lyons, 2006:7; Verplanken et al., 2008:125; Schwanen et al., 2012:523), adaptation to structural changes (Fujii et al., 2001), and behavioural changes in response to life-stage (Scheiner, 2007:165; Zwerts et al., 2007; Lanzendorf, 2010:289). Although Participants 001005, 001011 and 001021 exhibited assimilation to UK travel behavioural norms in terms of mode choice, it is not possible to attribute behaviour change to behavioural acculturation alone. Participants' accounts also revealed the central importance of structural factors, pushing participants away from PT and creating openings in habitual behaviour. They also highlight the importance of life-stage and child-related travel needs. For this travel behaviour group, contextual changes between Poland and the UK are important in explaining *why immigrants travel as they do.* Participant 001001 (in her late 40s) reflected on the efficiency and low cost of travel in 'the good old days of communist Poland'. The change in context for this participant –

from a communist state-funded transport system to the UK's high-cost, under-efficient privatised system – was dramatic. This was reflected on by others, such as Participant 001023, who considered Bristol's PT system to be 'the worst' he had seen in Europe. This is examined across groups in Chapter 5, section 4.c.

Summary of Discontinuing Travel Behaviours

Participants in the discontinuing travel behaviours group discontinued pre-immigration travel behaviour for a variety of reasons. Some discontinued for individualistic reasons – often related to preference, negative experiences or accidents with certain modes. Others in the subgroup described overt linkages between changes in travel behaviour and life events, giving support to the notion that life-stage has an important role in the development of travel behaviours. A striking finding from this group overall – much like for the continuing travel behaviours group – is the central importance of common, non-immigration-specific factors of influence in the development of immigrants' travel behaviours. Although pre-existing studies of immigrants' travel behaviours have indicated that migrant specific factors influence immigrant travel behaviours – cultural assimilation, co-ethnic location and the utilisation of co-ethnic agglomeration benefits – these factors do not appear to have dominant role for most participants. Building on the discussion of how migrant transport assimilation may be assessed in Chapter 5, section 3.a, many participants in the discontinuing travel behaviours group *could* be considered to have transport assimilated. Table 23 summarised the level of assimilation demonstrated by participants in the discontinuing travel behaviours group. Although surface-level transport assimilation was identified for 11 participants in the discontinuing travel behaviours group, this is only at a behavioural level. None of the participants in the study either latently or overtly expressed a desire to acculturate into a UK-specific travel behaviour. Although Participants 001006 and 001019 both aspired to own particular vehicles (a 300bhp BMW and a Saab, respectively), both developed this desire while residing in Poland. Furthermore, upon acquiring the Saab he had desired, Participant 001019 quickly transitioned back to multi-modality. This finding is important for broader immigrant travel behaviour research because it indicates that that immigrants may not necessarily assimilate to national travel behaviour norms as a matter of course associated to length of residence (Smart, 2008; Tsang and Rohr, 2011). Therefore, future travel planning policy built on the assumption that immigrants will default to national behavioural norms may be wrong. Although many participants in this study have defaulted to the national norm of car travel after immigrating to the UK, this has been due to interacting influences. Individually, the concepts of behavioural acculturation, length of residence, life-stage, and travel socialisation are insufficient to explain immigrants' travel behaviour transitions.

Although life-stage has a clear association with transition to car travel for most participants, this is not guaranteed. A number of immigrants who had children while residing in a structural context that provided viable means of travel by PT did not transition to car driving after having children. When they subsequently immigrated to a structural context where PT was experienced or perceived as unviable – due to cost, convenience, connectivity and reliability – these participants transitioned away from PT use, often to less sustainable travel modes. In order to effectively plan to address the travel needs of immigrants while maintaining a focus on sustainable travel, policy must be informed of the nuances influencing immigrants' travel behaviours. Assuming a preference for sustainable travel or a default transition to car driving may be misguided. More nuanced understanding may allow for the development of policies that can address immigrants' criticisms of sustainable travel options in the UK in order maintain their viability as a travel option post-immigration. Based on the strong – albeit relatively simple – critiques recurrently offered by participants, identifying and implementing effective changes based on 'best practices' from PT systems in other countries may warrant consideration. These themes are examined across TBJ groups below.

5.4 Cross-Group Thematic Analysis

In the following section, themes evident across TBJ groups are analysed. Themes broadly considered include length of residence as well as the associated overlapping influences of life-stage and cultural assimilation over time. Migrant motility is examined, as too are themes including cultural and linguistic barriers to accessing transport. The interaction between structure and choice is examined further, exploring how infrastructure and access to travel options is interrelated with behavioural preferences and socialised behavioural norms. Finally, the influence of concerns for environmental sustainability are considered. This encompasses both the potential to promote sustainable behaviours among recently arrived immigrants through cognitive openings created by structural change, as well as the latent potential of recently arrived immigrants as agents of behavioural change.

5.4.a Assimilation: Length of Residence and Life-stage

Two key themes emerging from analysis of the TBJs include the roles of length of residence and life-stage in the formation travel behaviours. Life-stage appears to be particularly influential for both those who continue and discontinue pre-immigration travel behaviours. Likewise, life-stage was influential in the narrative's participants provided in relation to *barriers* to the use of certain modes of travel. For the continuing car-drivers' group, life-stage appears to have had a marked influence on behavioural development. With the exception of one participant, all of the continuing car drivers shared similar

characteristics relating to life-stage, family commitments, and age at point of migration. All participants arrived in the UK aged 30 years or older, and all had children pre-immigration. The one participant who differed did so on the basis of beliefs, which precluded having relationships and children. He was employed in a career which he described as requiring car travel, and had become habituated to this mode of travel early in his career in Poland. The remaining participants in the continuing car-driving group transitioned to car travel in timeframes proximal to the birth of children. In all cases, having two children appears to be associated with owning a car in Poland. Although this group represents only a small subset of participants, the sharing of these characteristics and continued reliance on car driving is revealing. Both age and childbearing can be considered as indicators of life-stage, or norms and expectations related to age and social transitions (Giele and Elder, 1998; also see Macmillan, 2005:14). A similar trend was identified among the discontinuing public transport users' group. Car travel was associated with travel needs related to childbirth and corresponding transition to a new life-stage. This suggests that linked lives as outlined by Giele and Elder (1998) in their framework for life-course analysis play an important role in immigrant travel decisions. Participant 0001008 provides an interesting example of the influence of life-stage. He arrived in the UK without a driving licence and had been able to manage child-related travel needs in Poland without a car. Despite passing his driving test and being in a financial position to afford a car, he remained carless until he moved in with a partner who had children. Entering a life-stage where he had parental responsibilities in the UK appeared to encourage the purchase of a vehicle, rather than purchase of vehicles being linked to length of residence in the UK.

Visual analysis of timelines indicated that the majority of participants who had children also drove cars. Four participants with children did not drive cars – one resided in WSM, and the other three were in Bristol. The participant in WSM had children over 18 years of age and migrated to the UK when those children were adults. After her first child was born, the participant walked and cycled more than she used PT prior to having children, but did not transition to car driving. Aged 55, the participant was studying for her driving test in the UK. Two of the three city participants with children had driving licences but did not drive. One had a licence but had never driven and preferred walking and train travel (Participant 001018). The other had a licence but had not driven since a car accident as a teenager; however, she reported that there is a car in her household driven by her partner and an au pair to manage child-related travel needs (Participant 001017). The final participant with a child but without access to a car was male, who reported not having a licence because he did not have the courage to drive. Having children appeared to have a minimal effect on his travel behaviour, as he continued to primarily walk because all locations he needed to visit on a regular basis were within

walking distance (Participant 001022). However, it is clear that child-related maintenance and linked lives had an important influence on travel behaviour development.

Linked lives in terms of partners and children were seen to have a notable influence on the narratives expressed by participants, particularly the narratives provided by female Participants 001001 and 001003. Having children appears to be associated with purchasing a first or second car across the sample. Early assumptions that the migration process forces individuals to take a break in the life-course, thus hindering family formation (childbirth among immigrant women), have recently been disputed. Lubke's (2015) research examined in Chapter 2, section 4 indicated 'there is often an acceleration of childbearing shortly after migration' (Lubke, 2015:1). Lubke's (2015) research deals explicitly with the experience of Polish women who have migrated to the UK, using the life-course approach to compare the timing of childbirth for women who remained in Poland, against the timing of childbirth for Polish women who migrated to the UK. Combined with the propensity to purchase a car and engage in car driving in the time leading up to childbirth (see Participants 001003 and 001008), this trend may have a notable impact on travel behaviours. Within the discontinuing public transport users' group, five of the seven participants had children. Participant 001007 migrated long after having children in Poland and is excluded from consideration. None of the remaining four participants arrived in the UK with a car, but by the point of interview, all possessed at least one car in their household. Two of the participants were male, and two were female. Male Participant 001006 offered little information on his car purchase in relation to family formation; however, Participant 001008 discussed both the necessity of having a car when moving in with his current partner (who already had a child), and the process of buying a 'good' car when he and his partner were having a second baby, because a reliable vehicle was important to him with young children. Female Participant 001003 reported purchasing a car when she discovered she was pregnant, and also highlighted the importance of having a car as a parent when discussing periods in her life in the UK when she had to manage without a car with her young son. Participant 001001 also provided an account of how important a car was as a parent. Although she managed in Bristol without a car when she lived a within level walking distance from the city centre, when she relocated to a hilly part of Bristol she deemed a car to be essential for getting the children around. This was because of the 'stress' of PT network as a parent and frustrations with the lack of network connectivity. Likewise, Participant 001001's LHT strongly illustrated a connection between childbearing, residential relocation, and changes in travel behaviour. Two of the four female participants had children within two years of arriving the UK; one had had children many years before immigrating; and one came to the UK to start a life with her fiancé, but after a series of relationship mishaps had not had children as planned. This trend indicates that Lubke's (2015) findings around childbirth close to migrations may be applicable for Polish immigrants in Bristol. Furthermore,

the data indicates that – for both male and female participants – parenthood is associated with the purchase of a car and a change in life-stage. Jones et al. (1983) provided detailed findings on how travel behaviour varied by family life-cycle stage, particularly noting the importance of constraints that exist at each stage.

Existing literature suggested that reduced travel was a behavioural adaptation disproportionately associated with mothers after the birth of a child (Zwerts et al., 2008:8). One of the female participants who did not transition to car travel following childbirth recalled a general reduction in her travel after her daughter was born (Participant 001018). Clark (2012) found that childbirth was one of a number of life events associated with changes in household levels of vehicle ownership, often associated with increased car ownership or the first acquisition of a car (Clark, 2012:185). This finding mirrored other life-course studies of travel behaviour (Jones, 2013; Rau and Manton, 2006). Participant 001018's experience of not purchasing a vehicle, despite having a driving licence, was unique among participants in this study who had children, especially for participants whose children were born after arriving in the UK. However, in the wider transport literature this is not an entirely unique finding. Lanzendorf, for example, identified parental travel behaviour patterns in the direction of reduced car driving, transition to other modes of transport, and stability in 'green-mode' travel (Lanzendorf, 2010:289). Through qualitative interviews, one of the key motivations Lanzendorf identified for stability in 'green-mode' travel, or non-car travel, was strong emotional ties to new parents' modes of transport, particular for cycling (Ibid). Interestingly, rather than displaying an emotional connection to her pre-existing travel mode, Participant 001018 appeared to present with emotional aversion to travel by car generally, and frustration with travel by bus in Bristol. Rather than being habitually tied to particular modes of travel, Participant 001018 appeared to be open to change. The participant reported actively engaging with three different travel schemes offering alternative modes of travel after having children in the UK: two aimed at increasing cycling, and one aimed at reducing social exclusion through promotion of train travel in the Southwest of England. That said, a health narrative potentially reflecting the latent influence of social norms also ran through Participant 001018's experience – initially walking for 'exercise', then jogging after childbirth and reporting being 'impressed' by her weight loss.

The supposed de-standardisation of the life-course (Modell et al., 1976) has led to some contestation about the notion of life-stages in life-course research. Modell et al. found that the life events contributing to the transition to adulthood were more temporally connected, and showed less age variation. This contributed to a restructuring the way people organised their lives – delaying marriage and childbirth alongside non-marital unions, divorce and remarriage (Brückner and Mayer, 2005). Thus, the research conducted by Brückner and Mayer (2005) provides the basis for a general

consensus that the shared experiences of life-stage remain relevant in contemporary societies. Although they recognise some socio-demographic and gendered variations in the timing of life-stage transitions, generally they find that there has been limited age variation in transitions. Variations identified in their study were related more to 'period effect' – the influence of a particular socio-economic context on a cohort – rather than a de-standardisation of the life-course (Ibid:47). Participants in this study may have experienced different 'period effects', with two of the seven in the continued car-drivers' group aged 50+. However, the life-course approach, combined with visual analysis of LHT and TTT timelines, revealed that despite variations in socio-structural context, life-stage had a similar influence on participants in the 50+ age bracket as for those born in different periods (from 1960/70s Poland compared to 1980/90s Poland). Findings within the broader transport literature generally support the notion that key life events and mobility milestones associated with life-stages have an important influence on travel behaviours (Rau and Manton, 2006:53). Lanzendorf refers to parents' fundamental reorganisation of household travel needs in response to child-related maintenance activities (Lanzendorf, 2010:289). Scheiner and Zwerts et al. likewise found that children play a key role in car dependence narratives associated with child-related travel needs within a tight time-budget (Zwerts et al. 2007; Scheiner 2012:453). Furthermore, McCarthy et al. (2017) found that childbearing disrupts travel behaviours, thereby creating opportunities (and barriers) to modify parental travel behaviours in a sustainable way. Jones (2013), Chatterjee at al. (2013a), and Baslington's (2008) studies all highlighted how the influence of life events on travel behaviour is embedded in a wider socio-structural context. Recent research in the migration domain, in contrast to traditional disruption hypothesis, revealed that migration is associated with accelerated childbearing in the destination country (Lubke, 2015). Lubke's research specifically examined Polish immigrants' fertility patterns in the UK. Accelerated childbearing post-migration contributed to increased social transitions to different life-stages among immigrants. These link to narratives of transitions to car driving among the discontinuing public transport users' group. Among the continued car-drivers' group, participants perceive the continuation of driving as a socialised behavioural norm (McCarthy et al., 2017) in response to needs associated with life-stage and travel for child-related maintenance (Zwerts et al., 2007).

A brief summary of the travel behaviours of participants who did not have children at point of interview is provided in Table 26. One male was located in WSM, was single and never intended to have children due to a commitment to his job. He travelled by car for work but also to facilitate recreational paragliding (Participant 001004). The remaining five participants were located in Bristol: two males and three females. Two of these participants were still university students in their 20s: one male displaying multi-modal travel behaviours (Participant 001023), and one female commuting by

car into Bristol from a nearby town (Participant 001026). The remaining three (one male, two female) were in their 30s. The male was cohabiting with his long-term partner in a house they own in Bristol, one female lived in a shared rental property, and Participant 001002 lived alone in a house she recently bought in Bristol but was considering relocating overseas. Each of the participants had driven a car for at least a short period of time in the UK. Each participant would describe themselves primarily as a cyclist, although upon closer analysis, two (001019 and 001020) were better defined as multi-modal travellers, travelling by cycling, walking, car, train, rental vehicle and longboard on a relatively regular basis, primarily selected for enjoyment over necessity. Participants 001019 and 001020 likewise use car travel primarily for recreational trips. Lack of child-related travel needs associated with linked lives and life-stage meant that these participants resorted to car driving only occasionally, out of convenience. Although each participant resided in Bristol (or the UK) for seven years or more, none of these participants consistently transitioned to car driving.

Existing research on migrant travel behaviour attempts to explain assimilation to the local travel behaviour norm (as defined in Chapter 5, section 3.a) through length of residence (Smart, 2008; Tsang and Rohr, 2011. However, participants accounts suggest that transition to car travel is more strongly associated with life-stage and increased child-related travel needs (see Rau and Manton, 2006:53; Zwerts et al., 2007; Lanzendorf, 2010:289; Scheiner, 2012; McCarthy et al., 2017). For some participants, length of residence may correlate with life-stage and associated responsibilities (predominantly child-related maintenance needs). Where this correlation did not occur for participants, length of residence does not appear to be associated with vehicle purchases. Despite residing in the UK for 12 years, Participant 001002 did not assimilate to car driving, even though she possessed the prerequisite motility capital to do so. Likewise, Participants 001019 and 001020, who resided in the UK for 13 years and 7 years, respectively, did not 'assimilate' to car driving. This reveals two potentially important findings. First, it suggests that the premise proposed by Smart (2008) and Tsang and Rohr (2011) that immigrants acculturate and assimilate to the national travel behaviour norms as a matter of course associated to length of residence may be erroneous or at least overly simplistic. Second, it indicates that life-stage and child-related maintenance needs have a remarkable influence on travel behaviour among immigrants. A direct relationship between transition to car driving and childbirth is evident for only four participants. The inverse analysis examining behaviours of those without children gives some additional support to the notion that life-stage influences transitions to car driving more directly than length of residence in the UK. Participants 001002, 001019 and 001020 were able to continue multi-modal travel without the need to purchase a vehicle to address child-related travel needs, or the needs arising from time and distance of travel between locations related to children's travel needs (as was the case for Participant 001016 in Chapter 5,

section 2.a). Very few participants (001017, 001018 and 001022) were able to manage the additional travel needs associated with having children in the UK without transitioning to car travel. Participant 001017 accomplished this by employing an au pair to drive her children. Participant 001018 and 001022 (a couple) were in some respects prevented from driving due to their children's motion sickness, and were forced to adapt their travel behaviours through means such as online grocery shopping. Living in close proximity to places of employment and their children's school meant they could manage their travel needs through walking, although Participant 001022 continued to aspire to car ownership. This gives substantial weight to the notion that, compared with a cultural assimilation process linked to length of residence, needs associated with life-stage have a greater influence on the transition to car driving. Motility capital within structural context is needed to navigate travel options where car driving is not deemed viable.

Table 26: Participants without children

Participant #	age	gender	years in uk	year of migration	education	occupation	children	relationship status	home owner	household vehicle ownership	1 - lisence acquitsition	Early childhood	6 months	12 months	2 years	10 years	primary transport in UK	secondary transport in UK	primary transport in Poland	secondary transport in Poland
001004	35-39	M	3	2014	5 year college	priest	0	no	no	car, para-glider	1996	walk	car / cycle	car / cycle / motor bike	car / cycle / motor bike	n/a	car	n/a	car	walk
001002	30-34	F	12	2006	PHD	manager	0	new relationship	yes (2018)	2 bicycles, considering car	2000	walk / car share	walk	walk	walk	cycle	bicycle	walk	bus	walk
001026	20-24	F	3	2013 / 2015	BSc Student	student / waitress	0	cohabiting	no	2 cars	2013 (17)	cycle	car-share	car	car	n/a	car	n/a	train / tram	walk
001019	35-39	M	13	2006	MSc	Researcher	0	cohabiting	yes	2 bicycles, sold car (under-used)	1998 (17)	walk	bus / walk	cycle	cycle / car	walk / cycle / car share / train	walk / bicycle	train - car club if needed	bus	car share
001020	30-34	F	7	2012 (2010 to Spain)	Masters	Teacher	0	single	no	car, bicycle and longboard	2005 (18)	walk	walk / car share	car share	walk		bicycle	car / long-board	bus / train	walk
001023	20-24	M	6	2013	High School (BA student)	Student and operations assistant	0	cohabiting	no	getting driving lisence soon (and partner)	n/a	walk	walk / cycle / car share	walk / cycle / bus	n/a		walk / bus	cycling	walk	bus / car share

Table 26 provides a summary of key characteristics and travel behaviours over the life-course for all six participants in this study who did not have children. With the exception of Participants 001004 and 001023 all the participants included here are in the discontinuing travel behaviours group. Participant 001002 is the only participant in the discontinued walking group. Participants in red are located in WSM, participants in green reside in Bristol. The beige columns indicate primary and secondary modes of travel in the UK. *Note Participants 001004 and 001023's TBJs were considered in the continuing travel behaviours group.*

Analysis of the continuing car-drivers' group highlighted an important point: when studying immigrants' travel behaviours, it is not sufficient to assess travel behaviours from an immigrants' point of entry to a new country and make claims regarding the length of time required for an immigrant to assimilate to a local behaviour. First, this is because immigrants undergo a transitional period of arrival and adaptation during which they are negotiating access to the transport (and employment) system in their new location (Menninger, 1988). Temporary mode shifts where participants rapidly transition back to their normal or habitual travel behaviour may be conflated with rapid transport assimilation, a notion suggested by Hu (2017) in relation to young Asian immigrants and their rapid transition to car driving in the US (Handy et al., 2008:11); as Chapter 5 has demonstrated, this may not be the case. Where this occurred in Bristol and WSM, participants were in fact returning to pre-immigration travel behaviours. Therefore, pre-immigration travel behaviours strongly influence post-immigration behaviours. Second, the concept of migrant transport assimilation is indicative of a cultural shift towards a new behaviour prominent in the new location. Tal and Handy noted the possible influence of travel attitudes developed pre-immigration in countries of origin; however, subsequent studies have not examined this in any depth (Tal and Handy, 2004:92). The accounts from the continuing drivers group suggest that when car driving is continued, it is not as a result of assimilation to a new cultural behaviour (Blumenberg and Shiki, 2007), but is rather a continuation of a pre-existing habits developed earlier in the life-course (Weinberger and Goetzke, 2010). Continuing car driving after immigrating does not appear to occur in response to behavioural acculturation in the destination country. Immigrants in this study are not adopting 'car cultures' as an inevitable consequence of 'pursuing the American Dream' (Myers, 1996:85) – or the *British* dream in this case. In fact, participants in the continued car-drivers' group did not make any reference to the influence of specific cultural norms associated with travel behaviours in the UK. A number of participants in the discontinuing public transport users' group reflected on the influence of UK travel cultures on their transition to alternative modes of travel, but also reflected on travel socialisation in Poland and the continued need for such behaviours in the UK. This was either in response to employment needs, child-related travel needs, or due to poor perceptions of the viability of PT use in the UK (Handy et al., 2008; Lanzendorf, 2010; Fujii and Kitamura, 2003). As outlined in the conceptual model in Figure 6 (Chapter 3), this reinforces the importance of pre-immigration circumstances, habits and behaviours in the development of post-immigration travel behaviours. Analysis of immigrants' travel behaviours without this consideration are likely to be flawed. Third, the data clearly evidenced how an immigrants' life-stage is a central consideration in the development of their travel behaviour (Rau and Manton, 2006; Lanzendorf, 2010; Scheiner, 2012). Assessment of immigrants' travel behaviours without considering life-stage may have a considerable influence on findings. For car drivers, life-stage

appears to have been heavily influential in their continued driving (Zwerts et al., 2007), with the 'need' for a car justified by 'needs' associated with life-stage – such as child-related maintenance.

5.4.b Migrant Motility

Lives can be linked as discussed in the literature through what could loosely be described as culturally defined stocks of social capital (Blumenberg, 2008:10). Migrant motility broadly captures consideration of immigrant social capital in relation to travel behaviour, referring to a person's capacity to plan travel activities and evaluate and access available travel options within a given environment (Flamm and Kaufmann, 2006:167/8). Migrant motility is broadly discussed under three key themes: ethnic-clustering, cultural capital and social exclusion. In contrast to findings relating to immigrants' travel behaviours in other locations, migrant motility appears to be a less influential factor for Polish participants in Bristol and WSM. This might be explained by the limited co-ethnic location of Polish immigrants in 'ethnic-clusters' compared with immigrants in US studies (Liu, and Painter, 2012). Furthermore, lift-sharing does not appear to be a prominent behaviour among Polish participants, contrasting with findings for Latino immigrants in other studies. Likewise, although immigration led to socio-cultural tensions for a small number of participants, social exclusion is minimal, again contrasting with the extant literature. Accounts offered in relation to cultural capital and the linguistic skills required to navigate the transport network post-immigration offer a valuable line of enquiry. They reveal not only challenges with utilising cultural capital, but also wider structural contrast in accessing travel among immigrants.

Migrant motility refers to many forms of capital a person utilises to maximise the benefits of the transport network, and a key concept in the immigrant travel behaviour literature is the utilisation of ethnically defined stocks of social capital to fulfil travel needs (Blumenberg, 2008:10). Use of ethnically defined social capital to enhance travel opportunities was introduced in Chapter 2 and discussed in relation to both migrant transport assimilation and migrant motility. In existing literature on immigrant travel behaviours, lift-sharing (or getting assistance in travelling) through ethnically, culturally or religiously defined social networks is a central theme. In their study of Mexican immigrants living in California, Blumenberg found that lift-sharing within immigrant networks compensated for the limited availability of other forms of financial and social capital (Blumenberg, 2008:10; Lovejoy and Handy, 2008). WSM Participant 001010's travel behaviour account revealed indications of Polish immigrants using ethnically defined stocks of social capital for travel. Beyond residing with a close family member (cousin) during her first 12 months in the UK, the participant reported lift-sharing with a Polish friend for occasional trips to Bristol and lifts to the airport when

flying to Poland. (Note: throughout the following extract, the Polish friend referred to is pseudo-named as Maja.)

> *In England, when you take holidays, do you ever…how do you get places?*
> Like I said, Maja! (laughs). Everything I need, a lift to airport, yeah, and […] very rarely, sometimes I was maybe going to Bristol. But usually I'm doing everything with Maja! […]
> in the car. (Participant 001010)

Participant 001010 reported using lift-sharing to manage travel needs beyond those she could fulfil by walking. However the only other participant in the study who reflected on lift-sharing in this way (Participant 001008) resided with a close family member (sister) for his first 12 months in WSM, like Participant 001010. Participant 001008 was a *discontinuing public transport user* who reported lift-sharing with other Polish and Eastern European immigrants throughout his time in WSM. Rather than a short-term strategy to compensate for a lack of cultural capital in the arrival period, this behaviour continued even after gaining a driving licence, purchasing a car and having children. His motivations for lift-sharing appeared to be pragmatic – related to cost, efficiency and trip distance – more than culturally specific behaviour. Beyond these two participants, the limited references to ethnically defined lift-sharing among all participants in this study may reflect the lack of ethnic-clustering of Polish immigrants in both Bristol and WSM. Blumenberg and Smart's (2008) research focused on immigrants residing in ethnic-clusters, with a high population density of ethnically similar residents. Charles and Kline's research revealed that ethnic and racial residential clustering contributed to increased levels of car-sharing, as individuals were more likely to car-share with neighbours who are similar to them (Charles and Kline, 2006). Reporting of car-sharing for the two participants who arrived in the UK without driving licences may suggest that individual adaptation in response to travel needs is a more relevant explanation for this behaviour. The wider contextual influences of co-ethnic-clustering relevant to findings among immigrants in California may result in different motivations for this behaviour compared with Polish immigrants in Bristol and WSM (Lovejoy and Handy, 2011:250). Where lift-sharing occurred in Bristol and WSM, it happened as a result of chance encounters with others who shared the same trip destination. Neither location could be described as an ethnic-enclave. Despite being home to relatively high numbers of Polish residents, they were widely dispersed within these locations.

Lift-sharing was not a result of intentional co-location within an ethnically defined network to maximise agglomeration benefits (Blumenberg and Smart, 2011:236; Blumenberg and Shiki, 2007; Bohon et al., 2008). Furthermore, where lift-sharing occurred, it extended past the transitionary period reported in other studies (Blumenberg and Smart, 2010). Although none of the participants reported formal carpooling while in the UK, eight participants engaged with car-sharing at some stage

in their travel trajectory development in the UK (four from Bristol and four from WSM). A small number of participants reported lift-sharing or car-sharing in Poland, typically among those more than 16 years of age or following completion of secondary school. Although lift-sharing could be an habituated behaviour, LHT analysis indicated that in Poland, lifts were commonly provided to participants by their parents, indicating a life-stage association.

Beyond lift-sharing, motility also entered participants' travel-behaviour narratives in terms of cultural capital. A number of participants reported a lack of cultural capital in the form of the linguistic skills required to negotiate and utilise PT effectively (Cierpial et al., 2010). Some participants lacked the linguistic skills to understand the bus timetables and bus routes in Bristol and WSM. Unlike immigrants in other studies examining travel behaviours, participants in this study did not appear to utilise ethnically defined social capital to gain access to the PT system (Blumenberg, and Smart, 2010). Instead, most participants transitioned away from PT use, citing language barriers. Although all participants in the study spoke English, five participants reflected on language and limited understanding of the transport system. Three participants from Bristol reported language challenges in understanding the bus timetables (two male, one female). However, even participants who were linguistically capable also reported having trouble understanding PT schedules. Both could be considered as lack of motility capital (Flamm and Kaufmann, 2006). At the time of data collection, the bus service in Bristol and WSM (unlike in Poland) lacked an up-to-date live travel information system, which participants had found to ease travel in Poland. Had this been available, the participants might have been able to overcome linguistic barriers, as the system itself would have been more familiar and straightforward to use. Linguistic barriers were also reported to influence driving licence acquisition for two participants: a male and a female, both from WSM. Each had to devise strategies to overcome the challenge of studying for a driving licence in a second language. Again, although motility in this respect appears to have been a consideration for some participants, the importance of this factor for Polish immigrants in Bristol and WSM appears to be minimal compared with immigrants in other studies.

A final consideration in relation to migrant motility across travel behaviour groups was social exclusion. None of the participants included in this study migrated to live in pre-existing ethnic communities, and a number of participants spoke of the challenge of finding a Polish community in Bristol or WSM. Six of the 26 participants indicated that when they migrated, they had some social connections in the location they migrated to. In one case, this involved contacts established during an earlier gap year in the UK. In the remaining five cases, participants migrated to live with family (brothers, sisters, cousins) in the short term while saving money to rent properties of their own. One participant had a chance encounter with an old friend. Although not widely referred to in the

narratives provided by participants in this sample, there was some indication that social and cultural capital may play a role in the way participants travelled (or more broadly survived) when they first arrived in the UK. Participant 001008 referred to the use of social capital to find accommodation after arrival. Participant 001001 expressed a feeling of openness, friendliness and connectedness (or social support) when living in areas with higher numbers of immigrants generally – unrelated to ethnicity. This suggests that ethnically defined stocks of social capital (bonding with other Polish immigrants) may not be a central consideration for Polish immigrants in Bristol and WSM compared to immigrants' residing in ethnic-clusters in other travel behaviour studies. Social exclusion does not appear to have been a particularly salient issue for participants in this study. Although a number of participants discussed living in lower-quality rented accommodation to begin with, only one participant offered an account of a 'clash of cultural norms' with other residents in the areas where he was living (Trevena, 2009:21). One participant appears to have experienced a degree of social exclusion, residing in her place of work, which significantly hindered her travel and mobility options, but did not overtly consider herself excluded. Recent research on immigrants' capital formation by Erel and Ryan (2018) suggests that meso-level network ties with migrants and non-migrants may need to be considered because of their potential impact on mentoring and access to information for immigrants. In Erel and Ryan's conception, meso-level networks were seen as crucial in immigrants' negotiation of dynamic forms of capital post-immigration (Erel and Ryan, 2018:6). Although meso-analysis was an important consideration, data analysis did not reveal the importance of networks in reducing social exclusion for participants in this study.

Moving beyond network analysis, reflections offered by a small number of participants in the study latently indicated that participants with children who did not resort to car travel had to actively avoid social exclusion; these participants had to adapt their household travel behaviours to accommodate child-related travel needs without car travel. Rather than social exclusion resulting from lack of socio-cultural capital, reduced use of car travel resulted from car-related-trauma and travel sickness (Participants 001017, 001018 and 001022). All participants with children who did not resort to car travel in the UK found it necessary to adapt their behaviours and out-source car-based travel requirements to others, indicating that immigrants without the means (or motility capital) to adapt thusly could face social exclusion in the UK. Participant 001022 gave a strong account of this in relation to exclusion from leisure activities and holidays due to limited public transport network connectivity. Participant 001022 and his family adapted their travel behaviours, utilising social capital and lift-sharing with 'friends' in order to travel from public transport hubs to final holiday destinations (having 'lifts' from train stations to rural camp-sites). Life-stage and wider structure appear to result in forced car dependence (Stanley and Stanley, 2017:109). Structural considerations such as thresholds of non-

motorised transportation were important considerations for non-drivers who were parents, who may have faced social exclusion had they not negotiated other travel options (Barton et al., 2003:119; SEU, 2003:30). This was particularly evident for participant 001018, whose motility-capital in negotiating public transport options was essential to manage both child-related, employment related, and leisure related travel needs. Considered in relation to the conceptual model of migrant motility introduced in Chapter 3, section 1 (Figure 5), participants narratives demonstrate the entwined processes that can be created by and lead to low-motility and potential social exclusion. Referring to Figure 5, the few participants with children but who did not drive demonstrated low social exclusion. Their social capital in terms of networks to access employment, as well as their cultural capital in terms of access to information about travel options, was relatively high. As a consequence, they were able to maximise opportunities and manage constraints to access local transport infrastructure. Cognitive knowledge of travel options, with one participant supported by a local travel scheme, enabled non-car drivers to learn to travel in a new environment after arriving in a destination country (Buhr and McGarrigle, 2017:228/232). Consequently, this reduced the risk of transport disadvantage and associated social exclusion for participants in this study (Kenyon et al., 2002:210/211; Ricci et al., 2016:1; Schwanen et al., 2015:125).

5.4.c Structure and Choice

Motility and structure have an interactional relationship in terms of travel behaviour. Motility refers to the capacity an individual has to navigate the travel opportunities within a given environment. This includes capacity to understand car tax regulations, bus timetables and rail cards. It could be argued that structure lies outside of motility in the sense that individuals must navigate travel opportunities that exist within their built environment. Different environments offer different opportunities that will be navigated differently. All factors influencing participants continued and discontinued use of pre-immigration travel modes occurred in a wider structural context as outlined by Meurs and Haaijers (2001), Tyrinopoulos and Antoniou (2013), Scheiner and Holz-Rau (2013) and Van Acker et al. (2016). This context, or the change in context for Polish immigrants in Bristol and WSM, appears to have had an important influence on travel behaviours for almost all participants. Within both Bristol and WSM, available data on travel behaviour norms suggests high dependence on car travel. Self-containment within the areas, which is measured as the percentage of the working-age population in employment who live and work in the same area, varies between Bristol (85%) and WSM (64.5%) (ONS, 2011). Likewise, a breakdown of commuter mode choices indicates that 44% of the working-age population in employment in Bristol commute to work by car (BQLS, 2015:28), whereas this figure is 65% in WSM (ONS, 2011). Levels of car-borne out-commuting and access by this mode indicate highly car-dependent environments. However, relatively high levels of self-containment suggest that transport

availability and thresholds for non-motorised transportation within each location may also influence travel behaviour and potentially minimise social exclusion through transport disadvantage (Barton et al., 2003:119; SEU, 2003; Ricci, 2016:14). Structural context post-immigration could therefore shape the ways in which immigrants can engage with travel options. What is often less understood is the influence of pre-immigration travel behaviours developed in alternative structural contexts. Introducing this consideration forces the review and assessment of factors such as habitual behaviour, social norms, preferences and choices outside of rationally based capital and economic drivers of travel behaviour. This draws on the discussions offered by Scheiner (2007, 2018) that highlight the embeddedness of individual life-courses within macro-level structures and contexts, reflecting that travel modes are selected, at least in part, in response to the built environment (Meurs and Haaijers, 2001; Tyrinopoulos and Antoniou, 2013; Scheiner and Holz-Rau, 2013; Van Acker et al., 2016). Throughout this section, habitual behaviour formation, socialised behavioural norms and infrastructural context are considered, drawing on recurring accounts of cost, convenience, connectivity and reliability as barriers to PT use in Bristol and WSM.

Existing research on changing travel behaviour emphasises the importance of habit in the development of travel-behaviour trajectories. Habits tend to be formed at a young age and to become embedded in individuals' lives. Therefore, it might be reasonable to expect a continuation of pre-immigration travel habits after immigrating. Furthermore, Weinberger and Goetzke (2016) indicate that travel behaviours may be socialised and learned from peers. These behaviours, although learned in one context, may be continued in other contexts despite different structural conditions. Both Baslington (2008) and Schwanen et al. (2012), for example, highlight the importance of socialisation into particular travel habits at an early age and the associated influence on mode choice. Baslington suggests that thinking and attitudes toward transport modes are embedded in childhood (Baslington, 2008:91) and can create cultural associations to different modes of travel. Specifically, Baslington suggests that the embedding of car travel at a young age can create associations between car travel and the cultural values of parenting linked to time-keeping as a status symbol (Ibid:110). Qualitative responses from children and parents involved in Baslington's study were particularly interesting in relation to managing school runs, employment commitments and the daily routine, and the ways children correspondingly viewed car driving as a time saving necessity (Ibid:97). Baslington argued that embedding travel behaviours at a young age could create socialised mode dependency. However, this is not a solely individual or parental responsibility for habituation into travel behaviours, as cars are part of 'mainstream travel culture' and are incorporated into daily life at a socio-structural (macro) level in many countries (Ibid). Schwanen et al. (2012) likewise found that people who experience non-car-based travel when they are young find it easier to adapt to travelling without a car in later life.

Furthermore, they identified that positive parental attitude towards cycling is associated with increased cycling (to school) in children. (Schwanen et al., 2012:529). Analysis of TTTs highlights how immigrants' travel behaviour in the UK appears to assimilate to the UK behavioural norm of car driving. However, the majority of participants in the study who continued to drive began driving in Poland rather than transitioning to driving while in the UK. Likewise, most who aspired to car driving developed this aspiration while residing in Poland. Both are discussed below.

Childhood socialisation of travel behaviours and the potential influences of gendered perceptions of driving were examined in relation to continued walking and cycling group (see Chapter 5, section 2.b). Participant 001018's experience demonstrated elements of both Law's (1999:580) account of different perceptions of access to travel options between genders, and the socialisation of travel behavioural norms from a young age as suggested by Baslington (2008:110). Rather than being habituated to travel by car, or habituated to travel using a particular mode, Participant 001018 appeared to have been socialised into not driving a car. She did not have a particular mode preference, other than not driving a car or being in control of a moving vehicle in traffic (e.g. bicycle). This is not something she felt 'naturally' able to do. Although a unique case, Participant 001018's experience reinforces the importance of human agency in travel behaviour – individuals must be willing to travel by certain modes before assessing which mode to use based on availability, cost, and convenience in a particular macro-context. Likewise, Participant 001017 reported a habitual aversion to travel by car, further emphasising the importance of agency (or choice) in travel behaviour decision-making. For this participant, three traumatic incidences were reported to have had a remarkable influence on her proximally temporal travel behaviours, with lasting effects on future travel behaviour. Although the influence of risk perception and its influence on travel behaviour has been considered in the transport literature, understanding of the role of trauma, and trauma in relation to immigrants' travel behaviour appears to be little understood. The European Commission's SARTRE4 study, examining perception of risk among road users in Europe, indicates locational (national) variation in perceptions of risk (Cestac and Delhomme, 2012:48/49). However, consideration of the ongoing impact of travel accidents, the associated trauma, and influence on future travel behaviours is outside the scope of their study. When studying travel risks in Norway, Kummeneje and Torbjørn established that perceptions of risk and associated worries relate to individuals' travel behaviour choices (Kummeneje and Torbjørn, 2019:2). Building on the work of Loewenstein et al. (2001), Kummeneje and Torbjørn suggest that behavioural assessments connected to emotions such as worry and fear are unresponsive to information such as relative probability estimates of risk (Ibid). Furthermore, their study connects different perceptions of risk to different modes of travel, suggesting that pedestrian travel was associated with the lowest perceived risk (Ibid). Beyond immediate risks posed by travel accidents, they suggest that terrorism is

also associated with increased perceptions of risk, particularly during daytime travel (Ibid:3). Participant 001017's individual experience of trauma caused by transport accidents and fear associated with risks of terrorism had a remarkable influence on her travel behaviour that encouraged the transition to exclusively cycling. This individual personal experience, much like 001018's individual experiences, led to TBJs being dominated by personal preferences and choices rather than directly responding to structural contexts. Throughout their life-courses, the participants' transitions away from car travel led to the need to make adaptations to behaviours in order to accommodate needs that other participants met by car travel.

Alongside human agency (or preference), latent social norms related to gender, life-stage and parenthood appear to interact with structural considerations (Moè et al., 2015; Mast et al., 2008; Zwerts et al., 2007). The idea that social norms influence socialisation into particular travel behaviours is well considered in the transport literature; Moè et al. (2015) and Mast et al. (2008) specifically considered gender norms in travel behaviour. Gender stereotypes may present themselves as normative behaviours within societies both pre- and post-migration (Koenig, 2018:11). Experiments relating to gender stereotypes and driving reveal that stereotypes have a remarkable influence on driving performance. Moè et al. (2015) conducted a laboratory-based experiment examining the influence of negative stereotypes of female driving ability on driving performance in simulations replicating daily travel conditions, and self-reporting of overall driving performance. They found that within the experiment, all of the female participants gave equally low assessments of their own overall driving performance. However, participants exposed to negative stereotypes of female driving ability before the experiment made more driving mistakes than those in the control group, who were led to believe the study was about age rather than gender (Moè et al., 2015:204). Although circumstantial, this gives some support to the idea that factors beyond life-stage and availability of viable PT options have an important influence on the development of travel behaviours.

Interestingly, four female participants reported transport accidents (Participants 001003, 001017, 001020 and 001021), most having 'multiple' accidents throughout their life-course. Perhaps controversially, these contrast to only one male participant's reported involvement in a transport accident (Participant 001019). Participant 001001's husband was also involved in a motorcycle accident, although he was a UK national rather than a Polish immigrant. These experiences may reflect negative gendered stereotypes of driving more broadly. Stereotypes and social norms, as identified by Moè et al. (2015), may have a noticeable impact not only on travel choices, but also at a behavioural level in the sense of how participants engage with and use specific modes of travel. Male Participant 001019, for example, recurrently reported his enjoyment of 'moving fast and cornering', and his tendency to be an 'angry cyclist' – changing travel mode for a while because he did not want to be

'constantly shouting abuse at people while cycling' (Participant 001019). He may be seen to fulfil the inverse gendered stereotype for males – perceived as reckless drivers prone to driving fast and causing accidents to demonstrate their masculinity (Mast et al., 2008:842). Alternatively, his reporting of events during the interview may be motivated by a desire to demonstrate masculinity (Schwalbe and Wolkomir, 2001). Female participants reporting of challenges with driving in the UK may reflect the influence of negative social stereotypes of their driving ability (Moè et al., 2015).

Consideration of latent stereotypes and social norms moves beyond the focus on acculturation to local 'car cultures' typically associated with immigrant transport research (Chatman and Klein, 2013:341; Liu and Painter, 2012:63; Blumenberg and Shiki, 2007). Social norms or stereotypes present in pre- and post-immigration locations may have a dramatic influence on travel behaviours across the genders. This is hinted at in Tal and Handy's (2004) quantitative analysis of immigrant travel behaviour in the US. Their study concluded that post-immigration travel behaviours and assimilation to car driving may result from underlying attitudes based on previous experiences in countries of origin (Tal and Handy, 2004:92). Gendered stereotypes and attitudes towards car driving in Poland may have a continued and lasting influence on immigrants' travel behaviours in the UK. Although the findings here are circumstantial and may reflect only the individual experiences in a small and disproportionately female sample, the importance of social norms associated with gender are clear. Gendered social norms related to car driving permeate both male and female accounts of car-ownership aspirations (Participants 001018, 001009 and 001019). Furthermore, it was clear that gendered social norms influence not only car travel, but also narratives related to hitchhiking and motorcycle use (Participants 001001, 001007, 001016 and 001018). These norms – and perceptions of 'safety' – also changed across macro socio-cultural contexts.

Whereas habituated behaviours and socialised behavioural norms all occur in a wider socio-structural context, infrastructural context was also reported as having an important role by participants, and featured latently in a number of accounts. For example, Participant 001010 exclusively walked throughout her life-course; her account highlights the influence of urban form, residential location and distances between activity sites. Existing research into the role of the built environment and travel mode choice reveals an important connection between the two (Chen et al., 2008:297; Ding et al., 2017). Likewise, high numbers of 'activity sites' within an area have been related to reduced reliance on car travel, potentially contributing to travel by other means such as walking or public transport (Badoe and Miller 2000; Chatman, 2009:1072). Similar findings have been made in relation to travel behaviour in 'ethnic-clusters' associated with high population and activity-site densities in the US (Smart, 2015:195). Participant 001010's experience of only walking throughout their life-course appears to be associated with her experience of living in either urban or semi-urban environments

pre- and post-immigration. She resided in Krakow (a highly urbanised city) in Poland, and in the centre of WSM (a semi-urban town centre) in the UK. Residence in these locations could be seen as – and is described as – enabling continued walking. Multiple factors influenced this behaviour. As Stanbridge and Lyons (2006) highlight, these influences may have contributed to residential choices by which one self-selects to reside in a semi-urban area in order to travel by walking. Self-selection and residential relocations that overtly factored into travel options were also evident for Participant 001019, whose narrative was considered in the discontinued public transport users' group. It is evident that choice of residential location enabled these participants to engage with their preferred travel options.

Other participants reflected on the cost, convenience, connectivity and reliability of the travel networks in Bristol and WSM as posing barriers to PT use. Participant 001023 (in his early 20s) had expected PT to work 'very well' in a liberal system (i.e. in the UK) that was 'not regulated by the councils or by the national government'. However, his experience was not positive, with criticism strongly focused on inconvenient ticketing, lack of live timetabling, and infrequency of travel. Although he used the network, he also referenced cycling. Participant 001023's partner was also Polish; the same week that the participant was interviewed, their partner started a new job in Stroud (a mid-sized town approximately 30 miles outside Bristol). In immediate response to the inefficiency of the PT system, the participant's partner started planning to get a driving licence.

> He's just started working in Stroud, and actually there is a train, which is good. But it's always late […] he's just started, you know – he's been there maybe four days. And [now] he's like 'I'm going to get a driving licence as soon as possible!' He never considered this really before, because he really didn't need it…now he sees that it's, like, a must – he has to have it. Without it, he's just, he cannot travel, he cannot be there on time. And yeah, it's a big pain. (Participant 001023)

Similar experiences were reported by Participants 001004 and 001015 before they continued car driving. Participant 001004 briefly attempted to use the underground system in London, before relocating to Bristol. Due to lack of English language skills at the time difficulty comprehending the system, the participant found this very challenging, abandoning the underground system for travel by car or motorcycle. Participant 001004 was also dissuaded from using the PT system in London after witnessing its insecurity through the 7/7 terrorist attacks. Participant 001015 reflected on using the bus two or three times but finding it too time-consuming to get to work because of the number of stops it made on the route, and quickly resumed car driving in the UK, as she had in Poland. These accounts highlight how, rather than infrastructure enabling a preferred travel mode, infrastructural context can deter travel by certain modes while promoting travel by others. With commuter trip distance and mode aligning with the local norm for Bristol (BQLS, 2015:28), it is evident that local infrastructure may force car ownership among out-commuters (Stanley and Stanley, 2017:109).

Meurs and Haaijers (2001) examined the influence of environmental context on travel behaviour. They suggested that reduced car travel can be achieved when day-to-day facilities are located close to home, the road network is laid out for slow traffic and unsuitable for cars, and accessibility of out-of-neighbourhood locations discourages car use (Meurs and Haaijers, 2001:445). For Participant 001010, these infrastructural factors appear to have enabled sustainable travel behaviour. However, for others, this does not appear to be the case. Tyrinopoulos and Antoniou (2013) indicate that, among all infrastructural factors, densely built-up areas contribute to the greatest reduction in car travel (Tyrinopoulos and Antoniou, 2013:28). For participants residing and working in the centre of Bristol and WSM, this appears plausible. For others who needed to travel outside of these central areas, dependence on less sustainable travel modes was apparent. Horeni et al. (2007) has suggested that habitual car drivers lack knowledge about alternative travel modes; therefore, it stands to reason that providing car drivers with positive information about alternative travel modes can encourage behavioural change (Horeni et al., 2007; Tyrinopoulos and Antoniou, 2013:36). In this study, this was a pattern identified among a number of Polish immigrants who transitioned to or continued car travel with minimal consideration of alternative travel modes. Gardner and Abraham's interview-based research examining motivations for car driving suggested that providing greater access to interactive travel service information increased perceived autonomy in PT use, and encourage further use (Gardner and Abrahams, 2007:197). Comments from Polish participants in both Bristol and WSM indicate that easier-to-navigate PT infrastructure, with live timetabling as many had experienced pre-immigration in Poland, would go a long way towards enabling PT use. While this was not the experience of all participants in Poland, Pucher's (1995) research highlighted how in post-communist rural communities, increased costs, deteriorating investment and quality of service necessitated car ownership for many (Pucher, 1995: 6), despite preference for PT use. This finding highlights how infrastructure has a central influence on travel behaviour, but also that this influence interacts with choice (habit and preference) in complex ways.

Structure may have some explanatory value when considering the different travel experiences of immigrants from Poland to Bristol (UK) and from Mexico to California (USA) - where the majority of immigrant travel behaviour research has been conducted. While there are some similarities, there are also substantial differences. The economic positioning of both countries with strong focus on manufacturing and export while having limited socioeconomic mobility offers similar drivers for migration. Likewise, there has been a long history of immigration from Mexico to California, and from Poland to the UK, with multiple waves of immigration in both locations. However, there are also substantial differences, culturally, financially and socio-geographically that differentiate both locations: a central difference being lack of co-ethnic location or ethnic clustering of Polish immigrants

in Bristol and WSM. This variation, stemming from cultural, socio-economic and immigration policy variations, potentially accounts for the variation identified between Latino immigrant transport research in California, and the findings regarding Polish immigrant travel behaviours in Bristol and WSM. High concentrations of Latino immigrants in specific counties in California can be seen to substantially change patterns of travel behaviour, potentially through different opportunities to car-share or travel by non-car driving modes (Blumenberg, 2008). Furthermore, the changing context in countries origin for immigrants from both locations may result in variation in travel preferences and norms. Pucher and Buehler (2005) highlight how access to transportation and associate travel behaviour norms have shifted dramatically in Poland post-communism, leading to different expectations around travel behaviours among different waves of Polish immigrants in the UK (Luthra et al., 2014). While immigrants in both destinations contribute to the labour force, Latino immigrants in California face notable economic disparities compared with local averages, indicating that income may serve as a more prominent factor in travel choice decisions (UNIDOS, 2022). Finally, immigration research in California indicates that many Latino immigrants actively seek residence in Latino communities to secure culturally defined social capital and support (Blumenberg, 2008). Accounts offered by participants from Poland indicate that while some draw on the social support offered by the Polish Catholic Church (Trzebiatowska, 2010), some may also emigrate from Poland to distance themselves from traditional social support structure such as the Church. As such different socio-structural drivers may also create a different environment in which travel behaviours are established, leading to different choices when navigating local transport options.

5.4.d Sustainable Travel Behaviours

Sustainable travel behaviours occur throughout the accounts provided by participants in three key ways; the overarching focus on sustainability features in discussion of structural context and the influence of transport infrastructure on travel behaviour. Sustainability also features in the underlying discussion around life-stage. With only a few exceptions, all participants in Bristol and WSM with children either adopted or continued car travel. Although most participants considered alternative modes of travel post-immigration, poor experiences of PT in both locations pushed most participants away from more sustainable travel modes. Finally, travel behaviours are considered in relation to immigrants' potential as agents of change, promoting and encouraging sustainable travel behaviours among nationals, post-immigration. These themes are discussed sequentially, with overlapping interactions considered.

Within all TBJ groups, the efficacy of the Bristol and WSM PT systems was considered. Analysis of continued travel behaviours specifically revealed the discouraging influence of the PT provision on immigrants' adoption and continued use of sustainable travel behaviours. Participants who

experienced cognitive openings to behavioural change triggered by migration reported experimenting with alternative travel modes, but ultimately transitioning to habitual car-driving due to poor experiences. It is clear that participants' brief experiences with PT after immigrating were insufficiently positive to facilitate lasting transition to PT use in the UK (Fujii and Kitamura, 2003). This was reported for both discontinuing PT users and continuing car drivers. Lack of reliability, poor connectivity and costs of PT services appear to be influential in immigrants' travel behaviours in many contexts, suggesting that this finding is not limited to the unique characteristics of Bristol and WSM's PT offers (Handy et al., 2008). Whereas in other studies, immigrants adapted travel behaviours to fulfil travel needs (for example, through ethnically defined minibus services or carpooling), in this study Polish immigrants in Bristol and WSM addressed their travel needs through car travel (Tal and Handy, 2010:85).

A number of participants' accounts highlighted the important influence of positive as well as negative early experiences of PT post-immigration. Many participants reported negative experiences of the PT network, leading them to transition away from PT use (001001, 001016, 001019, 001021, 001023). Participant 001018's TBJ demonstrates positive experience of train travel and subsequent travel behaviour change aligning with the model of travel behaviour change proposed by Fujii et al. (2001). Figure 16 illustrates Fujii et al.'s model of travel behaviour change in response to a structural interruption. A positive experience of travel by an alternative mode may influence individuals' future travel choices and induce lasting behaviour change by altering negative perceptions of alternative travel. Considering immigrants' sustainable travel behaviours, Fujii et al.'s model has been further adapted to enable modelling of immigrants' discontinued PT use (see Figures 17 and 24). Although Participant 001018 continued PT use, she discontinued bus travel within Bristol. Recurrent negative experience led the participant to transition away from buses, instead walking or jogging as her primary mode of travel for almost seven years. Having to consider how to get her daughter to school, her son to nursery, and herself to work on time could be considered as a transitional period for the participant. Positive experience of train travel due to external intervention led to a lasting change in the participant's travel behaviour. In many ways, this mirrors the findings of a second study by Fujii and Kitamura in Japan, which found that structural interventions, such as temporarily offering free bus tickets to car drivers, may contribute to converting car drivers to bus users (Fujii and Kitamura, 2003:81). Fujii and Kitamura's study found that a structural intervention that leads to use of another travel mode may result in negative beliefs being corrected by actual experiences. In turn, it contributes to a positive adjustment of perceptions of the alternative mode (Ibid:84). Participant 001018's experience of a travel intervention – the Great Western Rail Days Out project (2016–17) (Ricci, 2017)

– suggests that interventions, leading to positive experience of alternative travel modes, can have important and lasting influences on travel behaviours.

In the context of immigrants who experience a 6- to 12-month period of adjustment after arriving in the UK, it is reasonable to assert that non-car travel may be adopted during this period if a positive experience is gained. This turning point in Participant 001018's travel behaviour, after which her daily life was very different from before (Giele and Elder, 1998:203), resulted from a combination of coincidental factors: negative experience of bus travel, personal aversion to car travel, transport intervention, period of adjustment (daughter starting school), a travel need within a particular macro- and micro-context, and exposure to a *trusted messenger* who shared positive views of train travel (a friend who made a recommendation at the same time as the intervention). Many participants in this study did not experience these multiple factors simultaneously. However, when they coincide as they did for Participant 001018, there appears to be a positive influence on both quality of travel experience and increased use of sustainable travel modes. Although this association has not been made in direct relation to immigrants' travel behaviours, Chatman and Klein suggested that improvements to private transport provisions in the US may ease strain on road networks, with dispersed benefits for nationals (Chatman and Klein, 2013:342). In many ways, the accounts from participants confirm Lyons and Standridge's findings about 'the potential for residential relocation to be an important juncture for bringing about travel behaviour change' (Stanbridge and Lyons, 2006:7). For Lyons and Stanbridge, cognitive openings created during the planning stages of relocation were key drivers of behaviour change. Accounts for Polish immigrants in Bristol and WSM indicate that early positive or negative experiences of the transport network are influential in the development of long-term behaviour change. This also aligns with Gardner and Abraham's (2007) findings.

Life-stage appears to be a central influence in adoption of car travel. Cultural differences, such as the relatively high cost of PT, the relatively low cost of car purchases, and the British cultural aversion to car-sharing, feature in the discussion of travel behaviours offered by participants. However, life-stage and associated child-related travel needs appear to be a key driver behind car driving for most participants. Although a small number of participants without children resorted to car travel, most remained multi-modal. With only two exceptions, all participants with children transitioned to car travel. Life-stage, therefore, had an interactional relationship with structural context. Participants navigated child-related travel needs within the travel opportunities afforded by the transport network. Two participants were able to out-source child-related travel needs; however, they required substantial motility capital to achieve this. Although some participants outwardly discussed adapting travel behaviours due to environmental concerns, LHT and TTT analysis indicate that other factors had important and temporally proximal influence on their travel choices. For example, Participant 001003

relocated to Bristol to live more sustainably. However, her transition away from both car and motorcycle travel stemmed from vehicle accidents rather than environmental concern. While life-stage was examined in depth in Chapter 5, section 4.a, there is a clear influence of structural context on transition to sustainable travel behaviours.

Immigrant travel behaviour research in the US indicates that immigrants may have untapped potential as agents of change within communities, demonstrating – and, in turn, promoting – 'green' travel behaviours among local residence (Smart, 2015:206; Tal and Handy, 2010:85; Handy et al., 2008a:10). The accounts offered by Polish immigrants in Bristol and WSM indicate that, much like Smart (2015) found, immigrants may be more open to 'green' travel options, compared to locally born nationals. Participants appear to transition to alternative, non-car driving modes of travel when these alternatives are considered viable and positively experienced. This ties to Fujii et al.'s study in Japan, which found that temporary structural changes in travel options can influence individuals' future travel choices and induce lasting behaviour change (Fujii et al., 2001:805). Cognitive openings during which perceptions of travel behaviours may be adjusted, such as those created by immigration, may be seen as opportunities to encourage engagement with alternative and more sustainable travel behaviours. This finding is apparent in both Bamberg (2006) and Lyon and Stanbridge's (2006:15) research on travel behaviours after residential relocation, and is referred to in some studies as 'open-mindedness towards new mobility options' during periods of adjustment to new circumstances (Klinger and Lanzendorf, 2015:247). This is also considered in relation to 'disruptions' in habit formation (Adjei and Behrens, 2012:58). Much like Stanbridge and Lyon's (2006) conception of opportunities to adjust travel behaviour following residential relocation, immigration poses a potential opportunity to adjust travel behaviours. Residential relocations focused on cognitive openings to enable realisation of latent behavioural preferences; immigration offers opportunities to allow continuation of pre-habituated sustainable travel behaviours. Although negative experiences of UK PT relative to Polish PT pushed participants away from regular use, repeated reports of early attempts to utilise PT during the arrival and adjustment period support this potential.
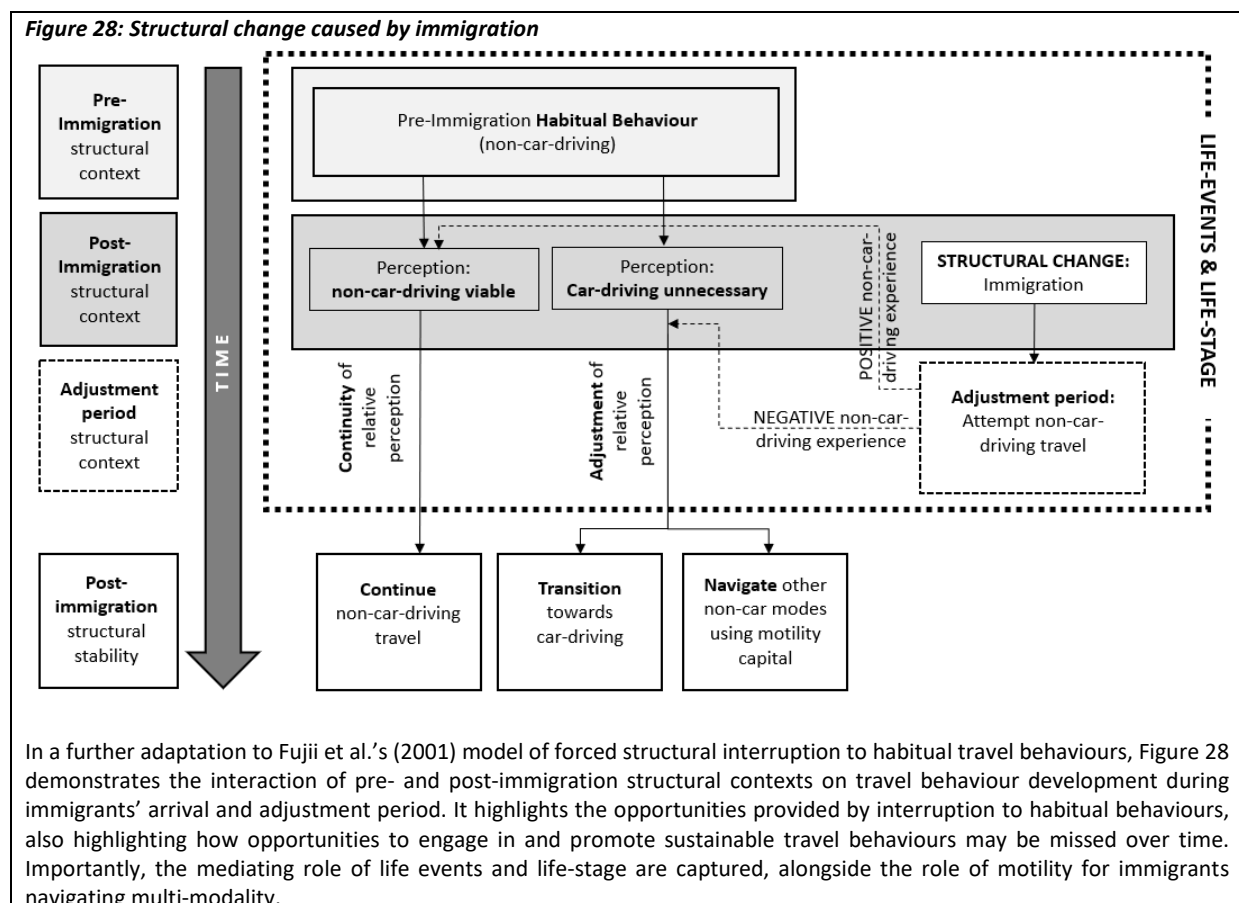
Interestingly, the participants most open to non-car travel, or multi-modal travel strategies, were participants at a life-stage where they did not have child-related responsibilities. These participants typically engaged with car travel to facilitate hobbies (Participants 001002 and 001004). This poses an interesting area of opportunity when considered against Lanzendorf's conclusion that strong emotional ties to green travel modes contribute to parental travel behaviour patterns in the direction of reduced car use (Lanzendorf, 2010:289). If the cognitive opening in travel behaviour created by migration can be harnessed early in the migration process to promote sustainable travel behaviours, immigrants may embed and habituate to these behaviours in their new context, forming strong

emotional ties as they transition into new life-stages. Although none of the parents in this study expressed strong emotional ties to a particular mode (though some reported strong emotional affliction), a number of participants without children reported enthusiasm for non-car driving modes. Lubke (2015) concluded that there is no immigration-related pause in childbearing timelines for Polish immigrants; in fact, in some cases, there is an acceleration. Embracing opportunities to allow continuation of pre-habituated sustainable travel behaviours post-immigration may allow habituation and emotional connections to non-car driving modes to develop in a new structural context. If positive experiences of non-car driving modes of travel (that demonstrate good-quality infrastructure) can be achieved while immigrants are in their initial arrival and adjustment period, immigrants may develop less car dependence (Fujii et al., 2001; Gardner and Abraham, 2007; Stanley and Stanley, 2017; Fujii and Garling, 2005; Brown et al., 2003). While examining the factors influencing the car travel of parents in the US, McCarthy et al. (2017) found that parental resort to car driving is not universal. McCarthy et al.'s findings support the notion that positive experiences of public transport infrastructure (i.e. favourable environments) can encourage mainstream use of sustainable travel modes among parents. They, like Ho and Mulley (2013), indicate that adjustments to infrastructure that remove barriers that discourage PT use and active travel may be effective at easing access to sustainable travel for parents (McCarthy, 2017:774; Ho and Mulley, 2013).

5.5 Analytical Conclusions

Analysis of themes evident in the accounts provided by participants in the continuing and discontinuing travel behaviour groups, as well as across behavioural groups, has led to a number of conclusions. First, although immigrant travel behaviours do appear to change over time in the direction of car travel, this is not due to cultural assimilation to conform to local behavioural norms. Instead, immigrants' travel behaviours were largely influenced by factors found to influence the behaviours of nationals as well. Habit, structure, life events and life-stage all had an interactional influence on participants' reported travel behaviours. Immigration stimulated a transitionary adjustment period following arrival, creating cognitive openings to break habitual behaviours. After approximately 6 to 18 months, participants' adjusted behaviours led to periods of modal stability. Habits formed in early childhood and pre-immigration greatly influence post-immigration travel behaviours, particularly during the arrival and adjustment period (Smart, 2015; Tsang and Rohr, 2011). Immigration from a structural context with relatively low levels of habitual car driving led to an openness to sustainable travel behaviours for most participants during the adjustment period (Smart, 2015). Participants who had habituated to car driving to address life-stage-related travel needs pre-immigration tended to retain this behaviour to address similar needs. Although time was a factor

associated with travel behaviour change, it was not reported as a driving factor for participants (Tsang and Rohr, 2011). Instead, timeframes associated with social or morale adjustment to immigration aligned with adjustments to travel behaviours (Menninger, 1988; Whisler et al., 2008; Szewczyk, 2015). Although a number of participants utilised social capital (such as by residing with friends and family as part of their immigration strategy), wider utilisation of ethnically defined social capital to aid transportation and settlement was not reported by participants. This was perhaps because of limited ethnic-clustering in Bristol and WSM compared with studies of immigrant travel behaviours in the US.

Throughout the analysis, comparisons were made to Fujii et al.'s (2001) research on structural interruption to habitual behaviour to alter perceptions of alternative travel modes. The cognitive opening created by immigration and the associated adjustment period present as a similar structural interruption during which perceptions of travel modes can be adjusted. Figure 28 conceptualises structural change caused by immigration, integrating consideration of pre- and post-immigration travel behaviour, the period of adjustment, and the period of relative modal stability following the adjustment period. Habitual travel behaviours formed pre-immigration have an important influence

Figure 28: Structural change caused by immigration

In a further adaptation to Fujii et al.'s (2001) model of forced structural interruption to habitual travel behaviours, Figure 28 demonstrates the interaction of pre- and post-immigration structural contexts on travel behaviour development during immigrants' arrival and adjustment period. It highlights the opportunities provided by interruption to habitual behaviours, also highlighting how opportunities to engage in and promote sustainable travel behaviours may be missed over time. Importantly, the mediating role of life events and life-stage are captured, alongside the role of motility for immigrants navigating multi-modality.

on post-immigration travel behaviours – if positive experiences of pre-habituated sustainable travel behaviours can be achieved, these behaviours are continued post-immigration. Where positive experiences are not achieved, immigrants may abandon pre-immigration sustainable travel

behaviours and be pushed towards car driving or multi-modality. These behaviours were mediated by life-stage and life events. Among participants who lacked child-related travel needs, opportunities for multi-modal travel occurred more frequently. Unless life events had engendered aversions to car travel, all participants addressed child-related travel needs through car driving. Much like the local populations in Bristol and WSM, among immigrants, structural factors led to relatively high car dependence to address child-related travel needs. Interestingly, within this model, poor experience of the PT system pushed habitual PT users towards other modes despite their lack of child-related travel needs. Motility capital was utilised – often to navigate multi-modality – by participants who chose to address child-related travel needs without resort to car driving. Although this did not hinge upon ethnically defined stocks of capital, motility capital as well as both linguistic and informational knowledge of the transport system were important in minimising transport disadvantage. This did not occur as a structural issue for participants; however, potential disadvantages arose among those with aversions to car driving caused by specific life events such as vehicle accidents.

Figure 29 outlines the Immigration-Travel Disruption Model, outlining how pre- and post-immigration structural contexts influence habitual travel behaviour development, mediated through consideration of life event- and life-stage-related travel needs. The central role of structural change emphasises the importance of habit disruption during the arrival and adjustment period in determining the continuation or discontinuation of pre-habituated behaviours. It also recognises that although PT may be unviable for some, life events may continue to deter car travel. In such cases, immigrants rely on motility capital to navigate travel options.
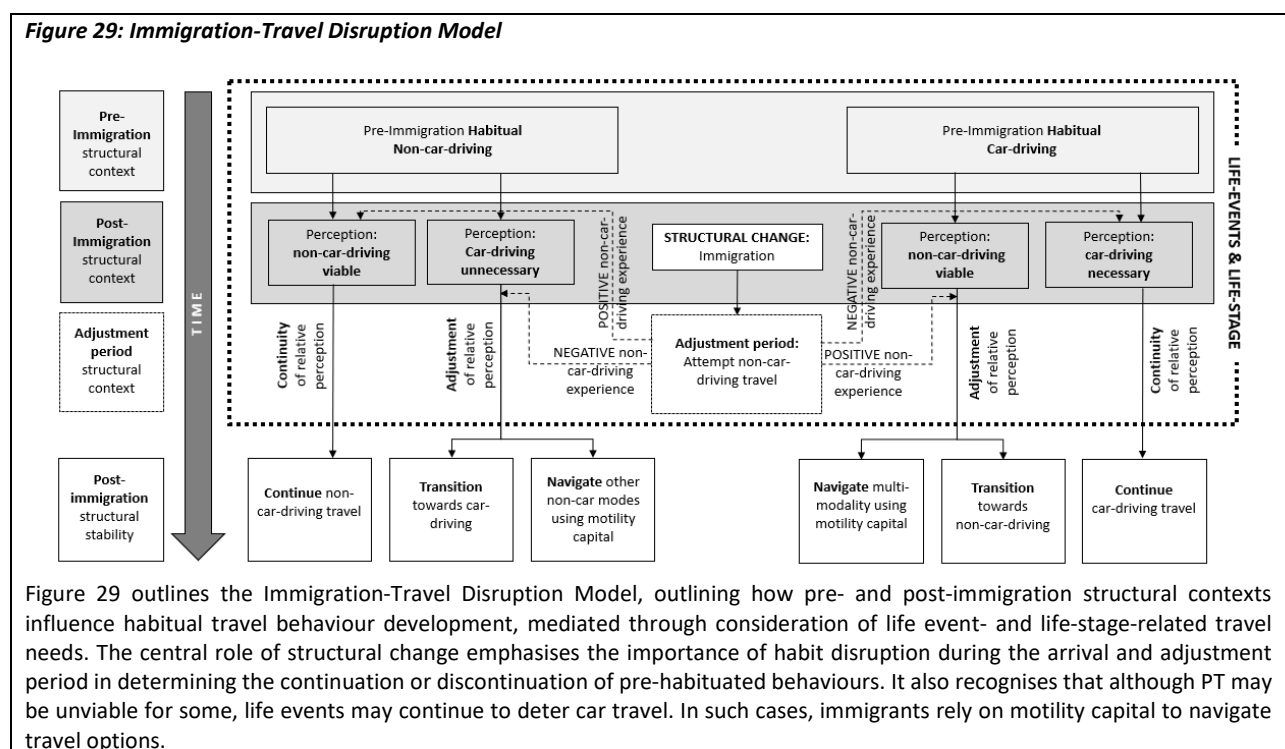
Figure 29 is characterised as the Immigration-Travel Disruption Model, accommodating consideration of both pre-habituated non-car-driving and car-driving behaviours. This model highlights how structural disruption caused by immigration is a central opportunity either to engage immigrants in sustainable travel behaviours, or to allow sustainable travel behaviours to continue. Although this opportunity is mediated by life events, if immigrants do not migrate with a car, there is a temporary period of adjustment that presents both cognitive and experiential openings for behavioural change.

For some, this adjustment period may enable activation of dormant values not necessarily aligning with pre-habituated travel behaviours (Verplanken et al., 2008:123). Live travel information systems, increased frequency of service, and improved connectivity were all reported by immigrants as issues that needed to be addressed with the PT offer to increase perception of viability relative to their experiences of PT in Poland. Although the transport policy context and provision has changed in Bristol and WSM since the data collection period for this study, these findings from participants who have lived experience of sustainable travel in different structural contexts remain relevant.

TravelWest's latest Joint Local Transport Plan (JLTP4, 2020) advocates discouragement of private car use, reduction of structural barriers to active travel and public transport use, smarter ticketing, and improved access to accurate travel information (JLTP4, 2020:26,50,69,84,88). Furthermore, the plan recognises the value of targeting sustainable travel-planning information at people during transitional periods in their lives before behavioural habituation occurs (Ibid:94). Although the JLTP4 recognises the need to address structural barriers to public transport access, minimal attention is given to real-time information provisions, instead conflating this with ticketing improvements (Ibid:60). Likewise, although regional connectivity is recognised as an area for improvement, local connectivity strategies (i.e. strategies to avoid the need for travelling into the city to reach outer-city destinations) received minimal attention. Furthermore, the strategy recognises the importance of children, schools and promotion of active travel, but fails to recognise the influence of child-related travel needs on transport choices. Although a wider range of ticketing options may be available to families of diverse compositions, broader structural changes may be needed to remove structural barriers that push people with child-related travel needs towards car dependence. Finally, although the strategy recognises the need to engage people at life transitions before habit formation occurs, it fails to consider immigrants as part of the population using Bristol and WSMs transport system. Following diffusion innovation theory, utilising immigration as a life transition may help achieve a 'tipping point' in Bristol and WSM's sustainable travel behaviours, potentially contributing to socially endemic sustainable travel behaviours (Yasuda and Batres, 2012; Gladwell, 2000; Scheiner, 2018). As demonstrated by immigrants' accounts in this study, life-stage and life events mediate pre- and post-immigration behavioural development, based on how successfully travel needs can be met within structural opportunities in both locations. Positive experiences of sustainable travel modes allowing family-related travel must be addressed successfully, as they had been in Poland, to enable continued use of sustainable travel modes post-immigration in Bristol and WSM. Almost all immigrants experience an adjustment period in their travel behaviour after arriving. As the Immigration-Travel Disruption Model demonstrates (Figure 28), positive experience of sustainable travel modes fulfilling

life-stage-related needs during this period could interrupt habitual car driving and encourage transition to sustainable modes.

Summary

This section has highlighted a number of themes running across TBJ groups. Importantly, the relationship between transport assimilation, length of residence and life stage was examined. Life stage was found to have a more important influence on participants' travel behaviours than cultural assimilation to the local travel behaviour norm. Migrant motility was examined, revealing that language barriers and embedded cultural norms had an influence on participants' travel behaviours; however, utilisation of ethnically defined cultural capital to compensate for social exclusion and minimise transport disadvantage is not referenced by Polish participants. The interactional relationship between structure and choice was examined, revealing that trauma and habit had an important influence for participants often trumping behaviours that might be expected based on rational economic assessment of available travel options. Finally, when sustainable travel behaviours were examined, it was found that openness to PT use was often crushed by poor experiences of the UK's PT system compared to PT experiences in Poland. Across-group examination revealed opportunities to engage immigrants in sustainable travel during their initial arrival and adjustment period. Analysis led to the development of the Immigration-Travel Disruption Model ([Figure 29]), demonstrating the complex interactions of habit, life events and life stage with structural context throughout the life course, as well as their influence on post-immigration travel behaviours after a period of arrival and adjustment. The following section draws out the overall knowledge contributions of this study.

6. Knowledge Contribution

Throughout this study, substantial insight has been gained into the travel behaviours of Polish immigrants in Bristol and WSM, contextualised within the wider immigrant travel behaviour research. Unique depth of insight was gained through novel development of visual data collection and analysis methods. The following sections address each of the research sub-questions sequentially, drawing-out the novel contribution to knowledge in each area, moving into considerations for future research.

What Are the Travel Behaviours of Polish Immigrants Living in Bristol and WSM?

Empirical accounts of Polish immigrants' travel behaviours in Bristol and WSM were presented throughout this study with a novel depth of detail. Narratives collected and presented deeply embed travel behaviours within participants broader life-course. The analysis revealed a diversity of travel behaviours for Polish immigrants in Bristol and WSM, highlighting two important findings: first, that participants travel behaviours closely aligned with the local travel norms of car driving within both

locations; and second, that most participants experienced an arrival and adjustment period following migration which created cognitive openings for travel behaviour change. While most participants transitioned to car driving, many experimented with alternative travel mode during their adjustment period with only a few exceptions. Poor experiences of those both considering and discontinuing PT use pushed many participants away from habitual PT use developed in Poland. With only one trauma-induced exception, participants habituated to car driving in Poland did not transition away from car driving. Only five participants continued non-car travel, utilising motility capital to navigate local travel needs normally fulfilled by car. This suggests that Polish immigrants attempt to transfer habituated travel behaviours from Poland to the UK. Many of these habituated behaviours stemmed from early childhood socialisation in low-car-use environments. Unlike studies in the US where Asian and Latino immigrants were seen to assimilate to car driving to conform to national norms, structural barriers inhibited PT use and pushed Polish immigrants towards car travel.

How and Why Do the Travel Behaviours of Immigrants Change Over Time?

The accounts provided by participating Polish immigrants in Bristol and WSM suggest that cultural assimilation is insufficient to explain increased car driving among immigrants over time (Smart, 2015; Tsang and Rohr, 2011). Much like Chatman and Klein (2013) found in their focus groups of immigrants in New Jersey, participants in this study provided little evidence of culturally assimilating to car driving to conform to national norms (Chatman and Klein, 2013:342). Although many participants did resort to habitual car driving, factors other than cultural assimilation had important influences. Immigration led to a clear period of adjustment and adaptation during which most participants reported travel mode variations for the first 6 to 18 months. Travel behaviours emerged after this period in response to residential location choices, infrastructural opportunities, behavioural habituation, socially embedded norms, and life-stage. For participants who transitioned away from pre-immigration PT use, poor experiences based on cost, convenience, connectivity and reliability pushed them towards car travel. Structure, choice and habit were mediated by life-stage and associated travel commitments. Even for participants who did not resort to car driving, strategies were developed to manage life-stage-related travel needs that required car travel. Although life-stage (and associated travel needs) appears to be a driver in travel mode change, a number of participants reported having managed life-stage-associated travel needs in Poland (i.e. pre-immigration) without resorting to car travel. This suggests that the combination of structural context and life-stage has a more influential role in development of travel-behaviour trajectories than behavioural acculturation. Future planning and policy targeted at immigrants' travel needs in the UK (focusing on spatial and infrastructural factors) may be well suited to encourage transition to – and continuation of – sustainable travel behaviours (Ibid; Glaeser et al., 2008). This corroborates McCarthy (2017) and Ho and Mulley's (2013)

findings about the importance of removing barriers to sustainable travel. Existing research and accounts offered by participants in this study reiterate how past habits can affect future travel behaviours (Chatman and Klein, 2013). Habits formed easily by immigrants during the arrival and adjustment period may have a lasting influence on their future travel behaviours. Measures to remove barriers to sustainable travel may be more effective and more practical to implement than measures addressing cultural change, and may also have deferred benefits for nationals (Chatman and Klein, 2013).

How Do Polish Immigrants' Travel Behaviours in Bristol and WSM Compare to Immigrant Travel Behaviours Reported in Other Research?

Despite constituting the largest immigrant population in Bristol and WSM (ONS, 2017b; Bristol City Council, 2017), Polish immigrants involved in this study did not immigrate into the 'ethnic-clusters' that have been central to studies of Latino and Asian immigrants' travel behaviours in California (Blumenberg, 2008; Tal and Handy, 2010; Smart, 2015). Although a small number of participants from Poland indicated use of culturally defined social capital to support 'settling in' during their initial arrival period, participants did not report use of ethnically defined capital to maximise transport benefits. In contrast to the findings of studies conducted in California, Bristol and WSM appear not to feature any ethnically defined transport services, such as jitneys (Tal and Handy, 2010). Instead, Polish immigrants in Bristol and WSM either transitioned to car travel or adopted a multi-modal approach to travel, mediated by life-stage-related needs. Despite habitual car driving among many participants following their period of arrival and adjustment, neither length of residence nor cultural assimilation to car driving (i.e. to conform to national norms) was reported by participants (Smart, 2015; Tsang and Rohr, 2011) as an influence on their travel behaviour. However, Polish participants did demonstrate an openness towards sustainable travel behaviours, much like immigrants in the US (Smart, 2015). Although most were discouraged from PT use due to structural barriers, during the arrival and adjustment period many participants considered and trialled the PT system. Despite distinct differences to immigrants in related studies, their potential as agents of travel behaviour change remains relevant (Smart, 2015:206; Grabowska and Garapich, 2016:2155). Cognitive openings created by structural adjustments are opportunities to engage immigrants with positive experiences of non-car-driving travel options, thereby capturing and promoting pre-immigration openness and in many cases preference for, sustainable travel behaviours (Fujii et al., 2001; Pucher & Buehler, 2005:742).

The unique depth of detail afforded by novel data collection and visual analysis conducted for this study facilitated the expansion of Smart's conception of immigrants as agents of travel behaviour change. Analysis revealed that a key mediating factor in behaviour change among immigrants was life-stage and associated child-related travel needs. In Poland, many participants were able to navigate

child-related travel needs without resort to car driving. If the PT infrastructure in Bristol and WSM were able to consistently provide positive experiences comparable with the low-cost, convenient, connected and reliable PT offer in Polish cities, immigrants would be able to continue pre-habituated travel behaviours. Detailed analysis revealed that the key concerns for participants were convenience (which could be improved by introducing interactive timetabling) and connectivity issues related to route planning. While lower costs were a consideration, convenience and connectivity were the most important factors of influence for participants in this study: cost was considered relative to the quality, convenience and related connectivity of the PT provision. Acknowledging that inconvenient ticketing and service information, and poor connectivity and routing are stronger barriers to PT use than cost, indicates that improvements to service that marginally increase to cost may not deter PT users. This should be an important consideration for policy makers moving forward. These insights into immigrant travel behaviours provide avenues for future exploration of potential solutions to Bristol's road congestion problems. These findings also lend support to McCarthy's findings that transport policy focused on addressing the factors that discourage travel by sustainable modes may be more effective than policies restricting car use, which appears to be the current approach (McCarthy, 2017:777; JLTP4, 2020:119). This may help achieve a critical mass of sustainable travel behaviour change, thus leading to endemic behaviour change for the majority of the community and would be valuable to consider in future transport policies.

The Life-Course Approach and Visual Life-Course Analysis

The methodology developed for data collection and analysis in this study was unique. Although there were extensive examples of life-course research within the extant literature for the travel behaviour and immigration fields, few (if any) had developed methodologies to integrate visual data collection strategies with visual data analysis (Jackson, 2012; Nelson, 2010). Data collected using LHCs as tools to improve memory recall was successfully combined with LHTs and TTTs to inform visual comparative analysis, which produced a unique depth of detail and richness to the data presented. Unlike immigrant transport assimilation research based on national survey data sets, surveys or focus groups, the data collected and presented for this study provided substantial insights into the motives underpinning travel choices among Polish immigrants (Smart, 2015; Tal and Handy, 2010; Blumenberg, 2008). These insights were temporally located within immigrants' broader life-course and socio-structural contexts. This depth of insight led to alternative explanations of immigrants' adoption of post-immigration car driving that may provide broader policy insights; specifically, it aided in discrediting the assumption that immigrants' adoption of car driving was motivated by cultural assimilation (i.e. a desire to satisfy local behavioural norms). Furthermore more, the depth of insight gained from this methodology revealed that while cost, convenience, connectivity, and reliability were

key factors influencing PT use, convenience and connectivity were reported as the most important factors of influence. For many participants, while costs were perceived as high compared to Poland, the limited convenience and connectivity for the increased cost were deemed to be the most important inhibitors. This insight resulted from the depth of detail gained through the methodology's novel level of participatory co-creation.

The methodological approach advanced recent life-course studies of travel behaviour by adopting a holistic approach to travel behaviour research, moving beyond a narrow focus on life domains pre-emptively considered relevant to travel behaviour development (Scheiner, 2018). The underlying premise of Giele and Elder's (1998) approach to the life-course remain unaltered; however, the approach to collecting and analysing data from qualitative in-depth life-course interviews has been advanced. The approach developed in this study provides new empirical data on an understudied topic in a new geographical area. It has highlighted the value of two-stage qualitative life-course interviews in gathering accurate information about long-term behaviours for hard-to-access populations, without resort to more expensive longitudinal methods. The value of the data gathered by these means supported findings about life-course research reported by other researchers (Bruckner, 1994; Morselli et al., 2016), but also advances them by providing a structured methodological approach to integrate visual data analysis with visual data collection (Goodson and Sikes, 2001; Adriansen, 2012). Utilising two-stage interviews to collect responses – then further verify, probe and explore latent associations within them – enhanced the quality of the research process (Vila et al., 2022:895). This methodology allowed for a high level of participation and interaction in the data collection process, resulting in a novel level of co-creation in both data collection and initial data analysis. Revisiting participants for two-stage interviews facilitated trust and rapport between participants and interviewer; utilising visual collection tools as prompts enabled collection of uniquely detailed accounts of participants lived experiences. Furthermore, the study has highlighted the power of visual data analysis to refine complex behaviour developments into simplified visual presentations to examine specific topics of interest. Refinement of LHCs into TTTs to visualise the development of travel behaviour over the life-course – temporally in relation to immigration, and conceptually in relation to sustainable travel behaviours – increases transparency in the life-course research field. First, such refinement substantially simplifies cross-case analysis of life-course interviews, thereby dramatically easing the depiction of change and stability across macro-contexts. Second, whereas alternative methodologies reliant on interviews alone are dependent on researchers' subjective interpretation of participants' narratives, co-creation of visual life-histories provides simple and tangible research 'products' that others can independently use to interpret, reinterpret and evaluate the quality of research findings themselves. Embracing visual data collection and analysis constitutes a methodological advancement

with methodological potential for the study of other complex behaviours across many fields of research. Due to the power of visual methodologies to identify latent motivations in behavioural development, this methodology has a great deal of potential for examining sensitive subject matters. For example, utilising this methodology to document the development of deviant behaviours across the life-course, drawing on a small sample size from potentially hard to reach populations. Focusing holistically on the broader life-course may reveal life events and turning points not hitherto associated with specific behavioural developments.

This research underscores the efficacy of a narrative life course approach for retrospective data collection. Contrary to conventional wisdom, the pilot study found that beginning with participants' earliest memories and progressing chronologically resulted in a more coherent narrative, fewer timeline adjustments, and richer detail during the two-stage interview process (Lanzendorf, 2003l Ladkin, 2002). However, this approach was not without challenges: these include logistical issues related to the second interview stage, building rapport across language barriers, and engaging Polish immigrants in immigration research during the politically charged Brexit period. Additionally, the methodology required substantial time resources for transcription, initial analysis, and the generation of LHTs between interviews. Post-data collection, creation of digitised analytical tools, such as LHTs and TTTs, demanded a substantial time investment compared to other methodologies used in travel behaviour research (Lanzendorf, 2003). Nevertheless, with adequate time commitment and rapport-building with participants, these challenges were overcome, generating a rich depth of data and novel insights from a relatively small and politically sensitive sample population. The research methodology presented in this thesis, complete with a detailed description of the data collection and analysis process (Polit and Beck, 2010) could serve as a blueprint for future in-depth life course researchers. It also emphasises the value of the insight gained from qualitative methodological approaches in a transport research discipline that typically favours quantitative methods to inform policy making (May, 2001; Jones, 2013).

Future Research

Future examination of immigrant travel behaviours must expand beyond Polish immigrants in Bristol and WSM to consider other immigrant groups in other locations. Although Polish immigrants in this study have provided a coherent narrative of their own potential as agents of change towards sustainable travel behaviours, Poland offered a unique, post-Soviet structural context for pre-immigration behavioural habituation. Examining the travel behaviours of immigrants from other structural contexts may provide a more rounded picture of immigrants' travel behaviours.

Since the commencement of this research project in 2014 and the collection of data across 2017–18, the UK has undergone substantial changes as a macro-context for immigrants. Brexit brought a dramatic shift that affected motivations for migration among future immigrants. Furthermore, it caused shifts in how current immigrants assessed the costs and benefits of continuing to reside in the UK. Further data collections following the same methodology and using a similar sample would be valuable to assess the impact of Brexit on Polish immigrants' travel behaviours. Participants in the current study made few references to the influence of UK immigration policy on travel behaviour development. Although visa policy influenced the selection of the UK over the US for one participant – and the relative cost of car ownership based on income comparison was considered by a number of participants – immigration policy more broadly did not feature in travel narratives. Interestingly, life events and life-stage influences equally common among nationals as among immigrants were reported to have the greatest influence on travel behaviour. To assess any unexpected influences not captured in the data for this study, future research examining the impact of Brexit on travel behaviour development would be valuable. Future research may also capture the influence of public health crises and growing concern about climate change on travel behaviours.

The methodology for data collection and analysis developed for this study offers potential for applications across an array of research topics. The two-stage interview process, coupled with visual tools to prompt and verify memory recall, offers promising opportunities in the investigation of complex subject matter. This is due to the potential of this process to unpick latent relationships and associations not initially recalled by participants, and to visually present and compare across cases at the analytical stage. Methodological enhancement through a simplified digital platform may ease its application in the future. Further research is needed to develop an app-based interface that could allow researchers and participants to visualise LHCs on a tablet computer and process the data to generate LHTs and trajectory timelines focused on specific behaviours of interest. Reducing the time cost associated with manually digitising visual data could remove perceived barriers to in-depth, qualitative life-course research. Likewise, it could improve adoption of visual methodologies in life course research and increase the potential richness of insight gained about sensitive populations using this methodology. In addition to its application here in the context of immigrants' travel behaviours, other potential applications include – among many others – sensitive topics such as the development of deviant or criminal behaviours, unpicking acculturation or radicalisation processes, and modelling vulnerability.

7. References

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