

Exploring the relationship between car brands and risky driving

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Highlights

1. This work examines how critical social marketing may be used to address the possible harms of commercial car advertising.
2. The effects of commercial branding on road safety were examined through UK data showing how collisions caused by risky driving varies between car brands.
3. After correcting for other effects, collision incidence was found to significantly vary according to vehicle brand.
4. One explanation is the possibility that auto-sector marketing activity may be negatively influencing driver behaviours.
5. Various responses are discussed, in particular in how critical social marketing can inform the design of interventions: both counter marketing and brand regulation were regarded as potentially effective.

Abstract

Critical social marketing can play a vital role in countering the consequences of behaviours toxified by commercial marketing. In this paper the authors hypothesised that auto sector brand activities may be associated with riskier driving. UK collision data was examined, focusing on collisions that occurred because of an 'injudicious action' (risky or aggressive driving manoeuvres), and analysing this dataset by comparing the incidence of vehicle brands involved. After allowing for other effects, a gradient graph illustrated differing associations between vehicle brands and collision rates. The paper discusses this finding, positing that branding activities may interact with the psychology of some drivers in a toxic manner. A discussion was offered, adopting the position that if such a problem exists the solutions cannot be left to the sector itself, and that socially responsible interventions may be required. A number of social marketing strategies are proposed including regulatory support, 'Truth Campaign' style exposure of commercial damage, and counter-marketing that promotes safe driver behaviour.

Keywords

Car brands; collisions; branding; driver behaviour

Introduction

Social marketers concern themselves with behaviours that may damage society or individuals therein. One domain of indisputable international concern is that of road safety: in June 2021 the WHO (2021) reported an incredible 1.3m road deaths worldwide, with no major country escaping the burden of trauma. The WHO estimated deaths from road collisions to be the number one cause of death among those aged 15-29, with the particular tragedy of unexpected death amongst young people adding to the misery, and with the additional distress and social burden of at least 20 million people seriously injured worldwide. The UK, the context of the data used in this work, does not escape lightly either. Regarded as a relatively 'safe' country to drive, the UK still endured 1558 road deaths in 2021 (Department for Transport 2022).

Traffic collisions have been the focus of a great deal of academic and professional work worldwide, and include work on safer road designs, car technologies, better enforcement and so on. Not surprisingly, a key focus has been on driver behaviour and the psychology of driving, not least with the findings that people often drive in an optimistic manner, taking risks in the belief that they will not crash (early work by Svenson (1981) and more recently by for example White et al. (2011)). However shifting these beliefs has proven very difficult, and social marketing interventions in road safety have met with mixed success. For example, messaging centred on safety and lowering risk has been significantly more limited than expected (McKenna 2010), and while 'fear appeals' have been extensively deployed in road safety campaigns, they too have been criticised as having strong limitations (Hastings et al. (2004), Lewis et al. (2007)). More complex interventions such as that of Tapp et al (2013) have proven more promising, but these are expensive and designed to target only the most risky drivers.

It is therefore somewhat surprising that to date, relatively little attention has been paid to the commercial determinants of road safety and in particular to the possible effects of brand advertising on driver behaviour. There has been criticism, not least by social marketers, of car manufacturers and their marketing activity (e.g. Egan and Wright (2000), Ferguson et al (2003), May et al. (2008) and Douglas et al (2011)), and we locate this paper within this body of work later on. The contention here – expanded on later – is that drivers' optimism bias may be exacerbated by commercial advertising, with some brands taking advantage of misplaced beliefs about driving, for example promoting the idea of 'cars for superior drivers'. The aim of this paper is to shine a light into this specific topic. In doing so, we locate this work in the domain of critical social marketing (CSM). Thus, before moving to the specifics of the work done by us, a reminder of the CSM paradigm follows.

Critical Social Marketing (CSM)

Interest in critical marketing has emerged from long standing academic interests in the effects of marketing on society above and beyond those of commercial and consumer constraints. The field of social marketing encompassed these interests early on in its development: indeed the original definitions of social marketing

proposed using marketing principles to influence the acceptability of social ideas (Kotler and Zaltman, 1971), taken forward by Lazer and Kelly (1973) who explicitly referenced commercial marketing activities in their definition: *“Social marketing is concerned with the application of marketing knowledge, concepts, and techniques to enhance social as well as economic ends. It is also concerned with the analysis of the social consequences of marketing policies, decisions and activities”*. Since then, critical marketing has been an important part of the development of social marketing, most prominently by Hastings and colleagues in the 1990s and 2000s, addressing the importance of marketing as a causal factor within the commercial determinants of health (Hastings and Heywood (1994), Hastings and Saren (2003), Gordon et al. (2007), Hastings (2009)) and indeed with a paper mentioning critical marketing in the very first edition of this journal by Lefebvre (2011), leading Dibb (2014) to observe that the growth of critical marketing illustrated how social marketing has reached greater maturity through its wider contributions to social change.

Much of this work centred on a simple insight: that while social scientists spent decades trying to ascertain, for example, why people take up smoking, focusing on age, gender, parental behaviour and many other variables, there was a much more obvious answer: that people start (and continue) smoking because the tobacco industry uses the full panoply of marketing techniques and ideas to encourage them so to do. Notable successes in critical marketers exposing commercial marketing damage in tobacco, alcohol and food marketing have followed (e.g. Hastings and Sheron 2013).

Critical social marketing has built on the foundations of critical marketing, most notably developed by Gordon and others (Gordon 2011, 2013a, 2013b, Gordon et al 2016, Hastings and Domegan 2017, Gordon 2019). This paper locates itself within Gordon’s (2011, p. 89) definition of critical social marketing as *“critical research on the impact commercial marketing has upon society, to build the evidence base, inform upstream efforts such as advocacy, policy and regulation, and inform the development of downstream social marketing interventions”*. Critical social marketing seeks to sharpen the focus of critical marketing, critically evaluating commercial practice with the purpose of informing intervention designs – in this sense it is explicitly action oriented, bridging the gap between mainstream academic marketing and public health. Critical social marketers adopt the position that while business and commerce are broadly ‘good things’ for society, they cannot be left to their own devices without scrutiny. Therefore, for example, the stance of self-regulation adopted by some in business and policy should be exposed to challenge.

From public health perspectives this is welcome insight: there is concern from public health scholars and others focusing on the harms to health from commercial activity (e.g. Alexander et al (2011), Stuckler and Nestle (2012), McKee and Stuckler (2018), McKee (2019)), echoed by social marketers (e.g. Fry and Polonsky (2004), Hastings (2010a, 2010b), Hastings and Domegan (2017)). The strength of agreement that harm exists and that measures to address harm are needed varies according to sector, with at one extreme the case against tobacco marketing no longer seriously disputed outside of vested interests, but at another level the case of (the subject of

this paper) automotive marketing and its possible deleterious effects on road safety still uncertain.

We can now move to specifics. The assertion here is that commercial automotive advertising may be contributing to poor road safety outcomes. The next section explores this assertion in more detail.

How automotive brands might influence driving behaviour

The amount of effort, resources and skill deployed by firms into building automotive sector brand associations and brand positions is vast: advertising spend was estimated at \$35Bn worldwide in 2019 (Zenith Media). Concerns about the content of some of these adverts have been raised. A content analysis by Shin et al (2005) found that almost half of US car adverts featured an unsafe driving sequence, with aggressive driving accounting for 85% of these driving sequences. Questions regarding the strength of advertising regulations were raised by Jones (2007), and research on audience responses to car advertising (Donovan et al 2010) found that some adverts promoted ‘undesirable driving behaviours’. More recently, quite graphic examples of concern were raised by Harris (2021) quoting US adverts that, as he put it “invite drivers to *conquer the streets of America* with an *aggressive and intimidating* fleet. Purchase a Dodge and enter the *brotherhood of muscle*. The company sells cars named Charger, Demon and Ram... Consumers can choose, among others, to acquire a “Ford Tough” truck, to purchase a BMW with *design that dominates* or to buy a Nissan because *you deserve a car that thrills you*” (emphases from original author).

What is going on? Cars are relatively expensive purchases that are typically marketed in an extremely competitive environment – the UK for example has over 250 brands and models competing for sales. These conditions have created an industry where *brands* are absolutely core to the business model of each manufacturer. Social marketers will of course know that automotive marketers create brands with many objectives, most prominently to differentiate their products from competitor brands, and to increase their attractiveness to potential buyers (Kapferer 2008). As Diagram 1 illustrates, marketers use advertising and other techniques to create associations – linkages – between their product and something attractive – in the minds of buyers (De-Chenatony et al. 2011).

Diagram 1: A theoretical illustration of associations created for a car brand

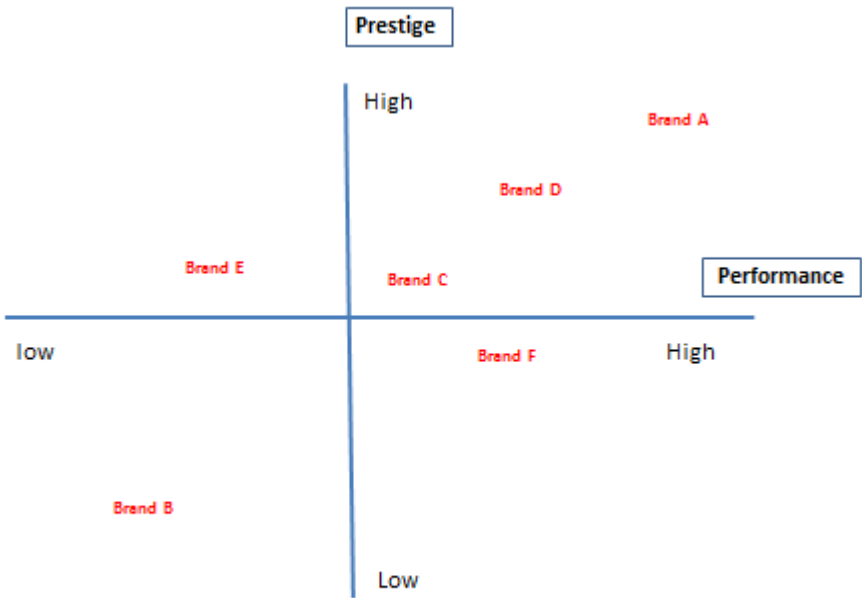


Source: authors

These associations are no accident. The concepts are all part of a carefully orchestrated proposition to the customer – to communicate benefits to the customer, and to build and reinforce both self and social-image – ‘how I see myself’, ‘how I would like others to see me’. Brand experts (e.g. Kapferer 2008, De-Chenatony et al (2011), Kotler et al (2019), and Keller and Swaminathan V. (2020)) tend to agree in broadly categorising brand associations as functional (‘what can the brand do for me’) or symbolic (‘what does the brand say about me’). Functional product features such as horsepower, alloy wheels, suspension levels, and so on, may be bundled together to communicate benefits – superior cornering, easy to park, more reliable, faster acceleration, etc. (Fuchs and Diamantopoulos 2010, Vigar-Ellis et al. (2009)). Functional benefits are often framed by auto manufacturers as *experiential* (experiential car branding typically communicates confidence, fun, driving pleasure, excitement, joy and so on) (Crawford 1985). Symbolic benefits are often *expressive* (‘Car Brand X communicates my high-status to others’) (Aaker 1991). Additionally, given the way in which product features are quickly copied and so become commodified, more and more marketing effort nowadays goes into *surrogate* branding – building associations with concepts *not* directly related to product features or benefits (De-Chenatony et al 2011) that allow the buyer to use their purchase to communicate self and social esteem, approval, or belonging to a ‘special’ group (aligning the car/brand with a racing driver or film star, enabling buyers to express themselves as ‘better drivers’ or to build identity with social groups: ‘by using brand X, I belong to a “high-performance category” of driver’). Both car makers and buyers need to be able to make sense of a potentially bewildering variety of possible associations. This sense-making is done through positioning maps in which the various marketplace offerings are assembled into some sort of order. Competitor brands become a frame of reference for buyers to make judgements

(Aaker and Shansby, 1982), creating rank orders of different brands and models according to desirable dimensions, including performance (Diagram 2).

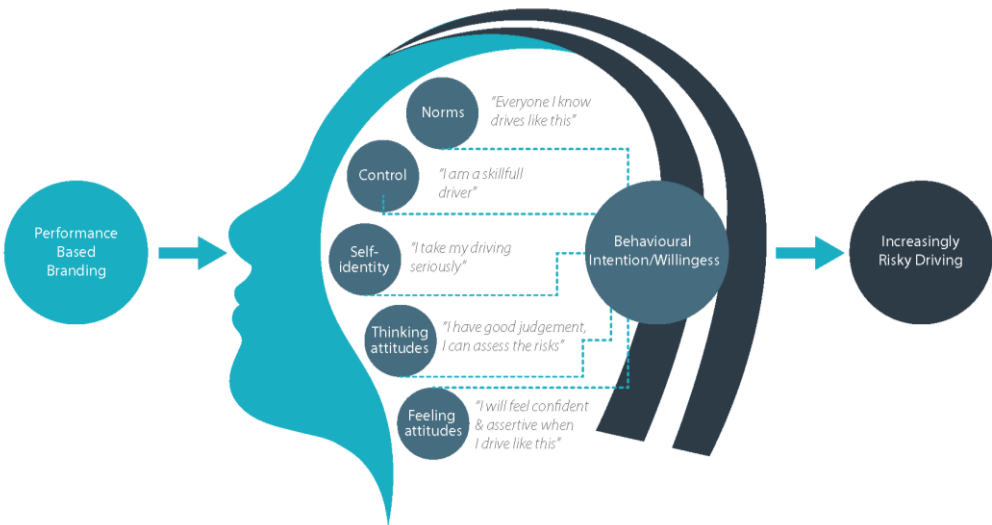
Diagram 2: An Illustrative Automotive Sector Market Positioning Map



Source: authors

It is possible that some of this branding activity might interact with the behavioural psychology of some drivers to create toxic outcomes. Diagram 3 summarises the key psychological traits that are attributed by road safety scientists to driver behaviour.

Diagram 3: A model of how brands might be associated with driving behaviour



Source: adapted by authors from Fylan, (2017)

Broadly, driving can be explained by a variety of psychological effects. Diagram 3's illustration includes norms and copycatting (I'll copy other drivers) (Recarte and Nunes 2002); a sense of control (that in reality is often illusory – McKenna 1993); various self-identities (e.g. I take my driving seriously – Musselwhite et al 2010); and judgements and feelings, in particular for us here self-enhancement bias (first coined by Svensson in 1981), also called skill-risk optimism: a confidence, often misplaced, in one's own abilities (see e.g. Delhomme (1991) McKenna et al. (1991), Groeger and Grande (1996), Musselwhite et al (2010) and Wells (2012)). It is not difficult to see how brand messages might reinforce these pre-existing driving tendencies. Brand messaging, shared publicly, infers social permission that some beliefs ("good drivers are 'winners'"; "skilful drivers don't crash", etc), are culturally 'ok', *normal*, or even *approved of*. Similarly, brands that depict unusual acceleration, cornering performance and control may resonate with some drivers' sense of self-efficacy and (misplaced) ability to perform the driving task to a very high level.

Having set up the paper's theoretical premise, we now explain the study undertaken of UK collision data.

Method

Put simply, from the point of view of safe driving, our hypothesis was that there may be 'good' brands and 'bad' automotive brands, that is, that the advertising and promotion of some makes may influence risky driving, whilst other makes may be innocent in this regard.

To test this hypothesis, using UK government data, we examined whether the incidence of road collisions caused by risky driving behaviours varies by car brand. We used the official UK Government collision dataset known as 'Stats19'¹. The Stats19 database is a collection of all UK road traffic accidents that resulted in a personal injury and were reported to the police within 30 days of the accident. The data are collected by the police at the roadside or when the accident is reported to them by a member of the public in a police station. This dataset therefore provides reasonably robust, comprehensive and objective data that may add value to audience surveys, content analyses or self-reported data of other types.

Stats19 data organises collisions according to severity of injury and death, and each collision is accompanied by various data, including 'vehicle make' (brand). The selected dataset used in this analysis comprises all reported collisions between 2011 and 2015 in the UK, where a police officer attended, and to which at least one *Contributory Factor* (e.g. 'driving too quickly', 'driver failed to look', etc.) had been assigned to drivers. Car crashes can be complex events and Contributory Factors themselves may be complex, reflecting the Reporting Officer's opinion at the time of reporting. To quote the data owners: "The Contributory Factors in a road collision are the key actions and failures that led directly to the actual impact. They show why the collision occurred and give clues about how it may have been prevented.

¹ <https://www.gov.uk/government/publications/stats19-forms-and-guidance>

Contributory Factors should only be completed for collisions where a police officer attended the scene and obtained details for the report.” (DfT, 2004)².

Our method of exploring if ‘good’ and ‘bad’ brands might be distinguished from each other was to examine whether a ‘brand gradient’ of collisions exists – that is, after controlling for other variables, whether some auto brands are more involved in collisions than others. Controlling for other explanations (other than poor driving behaviour) of why some car brands are more prevalent in crash data than others was very important. In particular, the ‘headline’ dataset of *all* collisions would inevitably show that some car brands are more prevalent in collisions than others but this in itself is not useful for two main reasons. The first issue is that car brands with large market share are more likely to be present in the data than brands that have fewer cars on the road - thus we need to control for the fact that there are for example more Ford cars on the road than Nissan cars, and that their greater risk exposure will mean more Fords will likely be involved in collisions. The second issue was to recognise that collisions happen for many reasons whereas the collisions of interest here are only those that occurred because of aggressive or over-confident driving styles.

We were able to account for both these issues by creating a ‘risky collision score’ for *each* brand that measured the proportion of each brand’s total collisions made up by collisions attributed to risky driving. Thus, the absolute number of collisions was not compared; instead, we compared each brand’s risky collision ratios with other brands: we examined the ratio (for each brand) of *collisions attributed to aggressive driving vs collisions of all types* (for each brand), with each brand therefore having its own unique ‘aggressive driving’ ratio. If there was no brand effect each ratio would be the same, whereas if different brands affected aggressive driving differently, the ratios would be different. In this way we controlled for the differing populations of cars on the road, and focused only on collisions where risky driving was identified as a contributory factor. The selection of these ‘risky driving’ CFs for this study was chosen to reflect the driving behaviour related factors that are in the driver’s control, represent their choice to disobey the rules and legislation, and may, in theory, be influenced by their mindset and therefore by brand messaging. Contributory Factors chosen for analysis were therefore:

Injudicious Actions:

- 301 – Disobeyed automatic traffic signal
- 302 – Disobeyed Give Way or Stop sign or markings
- 303 – Disobeyed double white lines
- 304 – Disobeyed pedestrian crossing facility
- 306 – Exceeding speed limit
- 307 – Travelling too fast for conditions
- 308 – Following too close

2

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/230596/stats20-2011.pdf

The ‘population’ dataset comprised 426,543 drivers involved in collisions while driving cars, for which *any* CF was assigned (those listed above plus others such as impaired by drugs, impaired by alcohol, driver using mobile phone, distraction in vehicle, distraction outside vehicle etc.). To test our hypothesis we conducted a multilevel mixed-effects logistic regression, utilizing the hierarchical nature of the data (individuals driving different vehicle brands). The dependent variable measured whether drivers had been assigned one of the selected CFs and was based on a dummy variable with recoded value 1 if the driver was assigned a selected CF (301-304, 306-308) in collisions and 0 otherwise.

In addition to car-make population and collision type, we wanted to eliminate other possible explanations for brand - collision differences, most notably different road categories identified in collisions and the crash severity differences. Thus, three categories of independent variables were used, namely: i) road category, ii) driver related variables and iii) crash severity. To evaluate drivers with selected CFs assigned in collisions, firstly a descriptive analysis by Vehicle Make was provided, and secondly a multilevel mixed-effects logistic regression was conducted, according to the following logit random intercept model specification (Steele 2009):

$$\log\left(\frac{\pi_{ij}}{1-\pi_{ij}}\right) = \beta_0 + \beta_1 X_{ij} + u_j$$

(1)

Where, β_0 is the overall intercept, β_1 is the cluster specific effect, X_{ij} is the vector with explanatory variables, and u_j is the group (random) effect.

In the final stage, the regression models were used to graphically display whether significant variations between vehicle brands existed in the propensity to have assigned one of the selected CFs and contributed to crashes, after controlling for road category variables, driver related variables and crash severity.

Findings

Of the 426,543 drivers involved in reported injury collisions while driving cars between 2011 and 2015 in the UK for which a CF was assigned, 21.93% had assigned one of the selected (aggressive driver/possible brand effect) CF. Table 1 reveals that 33.33% of the drivers contributing to crashes while driving Subaru, 28.99% of the drivers driving Porsche, 27.96% of the drivers driving MG, and so on for each make, had been assigned one of the selected CF (302-304; 306-308).

Table 1. Descriptive statistics (N = 426,543)

Vehicle Make	% with CF 301- 304, 306-308	Vehicle Make	% with CF 301- 304, 306-308	Vehicle Make	% with CF 301- 304, 306-308
ALL CARS		21.93			
SUBARU	33.33	mitsubishi	22.19	VOLVO	19.79
PORSCHE	28.99	ISUZU	22.07	MCC	19.46
MG	27.96	MERCEDES-BENZ	22.05	NISSAN	19.11
SEAT	25.37	VAUXHALL	22.02	DAIHATSU	19.03
BMW	25.22	HONDA	21.79	DODGE (USA)	19.01
LEXUS	24.75	FORD	21.76	PROTON	18.92
LONDON TAXIS	24.60	MERCEDES	21.75	SKODA	18.81
INT					
AUDI	24.22	FIAT	21.71	CHRYSLER	18.80
OPEL	22.94	MAZDA	21.55	CHEVROLET	18.79
PEUGEOT	22.79	ROVER	21.43	SUZUKI	18.55
VOLKSWAGEN	22.78	JAGUAR	21.26	JEEP	18.42
MINI	22.62	SMART	21.26	HYUNDAI	17.98
AUSTIN	22.55	CITROEN	21.09	DAEWOO	17.85
DACIA	22.52	TOYOTA	20.43	KIA	17.30
ALFA ROMEO	22.51	SAAB	20.38	<i>Other</i>	21.81
RENAULT	22.32	LAND ROVER	19.98	<i>Unknown</i>	22.02

Model 1 in Table 2 below reveals that crashes with selected CFs are more common for drivers using certain categories of roads. Those using main, secondary and tertiary roads are significantly more likely to have assigned a selected CF and contribute to crashes than those using motorways. Meanwhile, those using unclassified roads are significantly less likely to have assigned a selected CF and contribute to crashes than those using motorways.

Table 2. Multilevel logistic regressions of the propensity to cause “CF 301-304, 306-308” related crashes in UK

	Model 1		Model 2		Model 3	
Fixed part	β	se(β)	β	se(β)	β	se(β)
<i>Road class</i> (Ref: Motorway)						
Upgraded main road	- 0.059 0.014		-0.019 0.060		- 0.060 0.020	
Main road	0.081 ***	0.020	0.085 ***	0.020	0.085 ***	0.020
Secondary road	0.084 ***	0.023	0.085 ***	0.023	0.086 ***	0.023
Tertiary road	0.171 ***	0.024	0.159 ***	0.024	0.160 ***	0.024

Unclassified road	- *** 0.022 0.089	-0.100 *** 0.023	- *** 0.023 0.098
<i>Road type</i> (Ref: Roundabout)			
One way street	- *** 0.036 0.192	-0.226 *** 0.037	- *** 0.037 0.225
Dual carriageway	0.150 *** 0.017	0.101 *** 0.018	0.100 *** 0.018
Single carriageway	- ** 0.015 0.030	-0.065 *** 0.015	- *** 0.015 0.064
Slip road	0.133 *** 0.035	0.099 *** 0.036	0.098 *** 0.036
Unknown road type	- *** 0.080 0.429	-0.441 *** 0.081	- *** 0.081 0.443
<i>Speed limit</i> (Permanent)	0.002 *** 0.001	0.002 *** 0.001	0.002 *** 0.001
<i>Sex of driver</i> (Ref: Male)			
Female		-0.302 *** 0.008	- *** 0.008 0.303
Not known		-0.230 *** 0.025	- *** 0.025 0.227
<i>Age of driver</i> (Ref: -20 years)			
21-25		-0.109 *** 0.014	- *** 0.014 0.109
26-35		-0.314 *** 0.013	- *** 0.013 0.314
36-45		-0.478 *** 0.014	- *** 0.015 0.478
46-55		-0.622 *** 0.016	- *** 0.016 0.621
56-65		-0.769 *** 0.018	- *** 0.018 0.767
66-75		-0.985 *** 0.022	- *** 0.022 0.983
76+		-1.157 *** 0.024	- *** 0.024 1.157
Not known		-0.111 *** 0.022	- *** 0.022 0.113
<i>Crash severity</i> (Ref: Fatal)			
Serious			- *** 0.035 0.368
Slight			- *** 0.034 0.274

Constant	- *** 0.038 1.412	-0.814 *** 0.037	- *** 0.050 0.534
Random part			
Vehicle Make – level variance	0.0230***	0.0111***	0.0111***
(Standard error)	0.0056	0.0032	0.0032
Vehicle Make	48	48	48

Notes: Significant at *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$; All coefficients are compared to the benchmark category (in brackets).

Model 2 in Table 2 adds the sex and the age of the driver variables. The drivers involved in collisions and receiving the selected CFs are significantly more likely to be male than female. Regarding the age of the drivers, the drivers under 20 years old are significantly more likely to be involved in collisions and receive at least one of the selected CFs, when comparing to any other age-band. Model 3 introduces the crash severity variable, revealing that crashes where at least one driver was assigned at least one of the selected CFs are significantly more likely to result in fatalities when compared to crashes where none of the involved drivers was assigned any of the selected CFs.

To determine whether significant variations between vehicle brands exist in the propensity to have assigned a selected CF and contribute to crashes, after controlling for road category variables, driver related variables and crash severity, Diagram 4 displays the residual (brand) Vehicle Make effects. If a Vehicle Make whose confidence interval does not overlap the line at zero it is considered to differ significantly from the UK average (at the 5% significance level). Accordingly, at the upper end, for instance, those driving these vehicle brands and contributing to crashes have a significantly higher propensity to have assigned one of the selected CF.

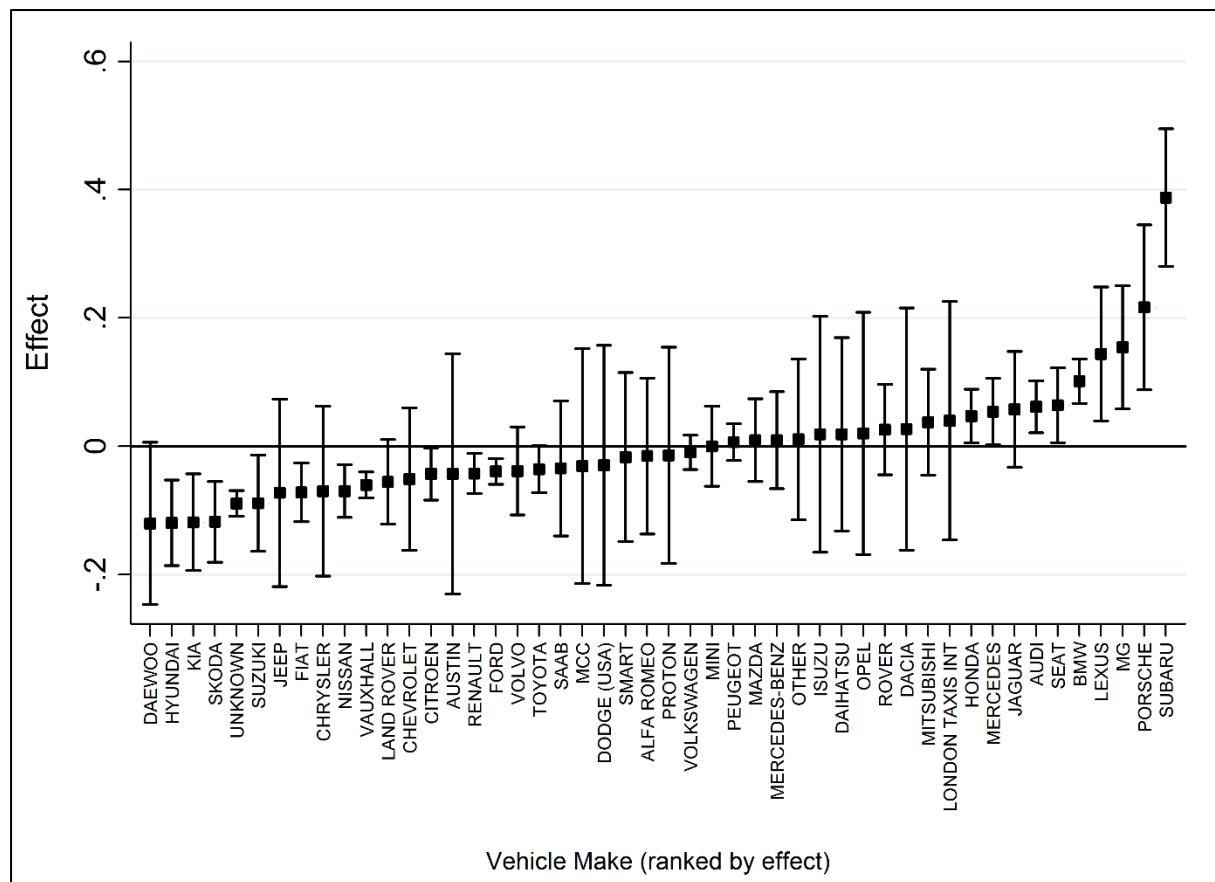


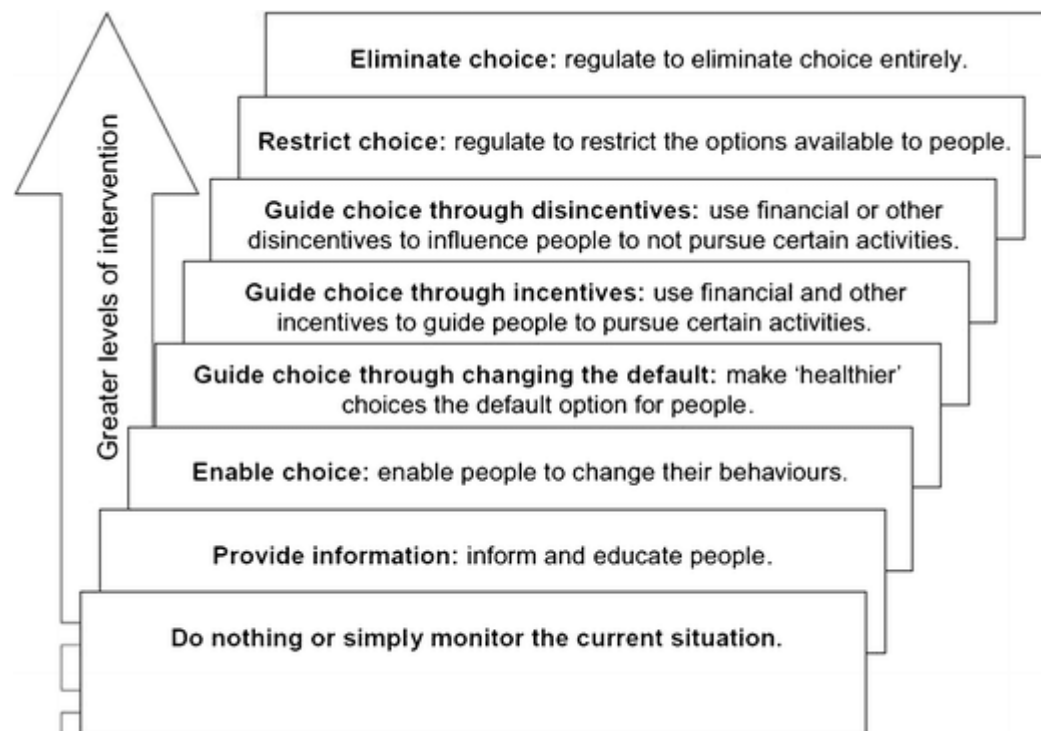
Diagram 4. Variations between Vehicle Brands in the propensity to cause “CF 301-304, 306-308” related crashes in UK: residual Vehicle Make effects within a 95% confidence interval (N = 426,543)

Discussion

Before we discuss the findings in more detail it may be prudent to set the boundaries of what is reasonable to conclude about this data. Our hypothesis is that some branding activities may increase risky driving behaviours, and that the different brand-positions (see diagram 2 earlier) adopted by some car brands as opposed to others may explain the collision gradient in Diagram 4. As explained, we isolated collisions *allocated specifically to risky driving* and examined their propensity, by car make, within a ‘population’ of *that make’s* collisions of *all* types. If there was no brand effect then we would not expect to find any differences in the levels of risky-driving-incidents split by car make – but as Diagram 4 illustrates, there are statistically significant differences – and this finding sets up the possibility that branding activities may contribute to risky driving. It is not possible to be more definitive than this, and we note the limitations of this study below. Nevertheless, given that the findings here support a series of earlier work (Egan and Wright (2000), Ferguson et al (2003), Shin et al (2005), Jones (2007), Redshaw (2007), May et al. (2008), Donovan et al (2010) and Douglas et al (2011)), it seems reasonable to proceed with a discussion of how to respond to the possibility that the marketing activities of some car brands contribute to inappropriate driving.

Convincing commercial marketers of the need to adopt care to avoid societal harm is difficult: they are, quite naturally, focused on their main task of maximising market share in highly competitive markets such as that in the UK. As is the case with other sectors such as alcohol and food, therefore, external intervention options may be needed. Options range from informing and educating the public through to regulatory policies that can extend to, at the extreme, outright bans on marketing (Nuffield Ladder 2007).

Diagram 5: The Nuffield Ladder of Interventions



Source: <https://www.nuffieldbioethics.org/publications/public-health/guide-to-the-report/policy-process-and-practice>

A brief consideration of Diagram 5's intervention choices from bottom to top follows. Whilst the idea of education campaigns aimed at drivers is a popular solution amongst many, the evidence that education – on its own - can change driving behaviour is not convincing (McKenna 2010). Indeed, education is often called for by commercial players in other sectors (food, alcohol, etc) but this seems to be a diversionary tactic to avoid regulatory intervention. Car firms' previous behaviour does not inspire confidence: for example Roberts et al. (2002) illustrated how when faced with complaints about their commercial practices, car firms diverted attention towards educating pedestrians. Moving further up the ladder, a popular middle-ground intervention is self-regulation: governments are often reluctant to legally restrict what they may see as the legitimate freedoms of industry to promote their products (Douglas et al. 2011). However self-regulation has had at best mixed success in fields such as alcohol harm (Hastings 2010), and as alluded to by the work of Roberts et al. (2006) it is difficult to envisage how the vested interests

of the auto industry to grow consumer spend can be squared with voluntary self-restraint.

There may therefore be merit in advocating the more assertive form of education (sitting within the auspices of critical social marketing) of ‘critical exposure’ of the practices of commercial automobile marketing akin to that undertaken in tobacco control by the Truth campaign (Farrelly et al. (2002); Farrelly (2005); Hastings (2022)). This kind of counter-marketing can be successful: the Truth campaign began in Florida where research showed clearly that young people knew about the health consequences of smoking extremely well – but weren’t motivated to stop smoking by these consequences. It became clear that traditional public health messages would not work, whereas exposing the deceit and duplicity of the tobacco industry did strike a chord – with young people seemingly angry that they were being taken for a ride (Hastings 2022). The tricks of the industry – manipulation of facts, diversionary techniques, multiple deceptions over decades – were regarded in a dim light. The result was the Truth campaign, co-created with young people into a social movement. Events were staged and social marketing ads were made – hard hitting depictions of what was going on with the tobacco executives exposed as telling untruths. The campaign was regarded as successful, reaching three quarters of American teenagers and alerting them to the unscrupulous practices and deceptive marketing of the tobacco industry. Farrelly’s evaluation (2005) showed a successful reduction of youth smoking prevalence where the campaign ran. At question here, of course, is whether an adapted Truth-style campaign would be similarly effective in exposing car marketing practices and reducing driving harms, but a benefit of educational counter-marketing of this type is that it preserves the agency of individuals to make their own choices, whilst also creating a public stimulus for debate.

If counter-marketing is deemed not to be effective, the top layers of the Nuffield ladder come into play – restricting or eliminating choice – in this instance restricting or banning auto-sector advertising. Sector advocates may argue that the UK already has significant regulatory control, for example with regulators having the power to remove adverts that fail to *“avoid portraying or referring to practices that encourage or condone anti-social behaviour or unsafe or irresponsible driving”* (<https://www.asa.org.uk/advice-online/motoring.html>). However there are many issues of concern. These codes rely on the public to complain to trigger an investigation; but, far more seriously, the codes only apply to broadcast advertising, leaving regulators outflanked by sponsorship, product placement, third party messaging, and (now by far the biggest recipient of ad-spend) online marketing of various types, in particular social media. Surrogate branding strategies for ‘performance’ car brands will particularly benefit from sponsorship and product placement – these include strong association of major brands with car racing (Formula 1 and so on), and it is remarkable how much car firms will pay to have their products deployed in major movie franchises such as ‘Bond’ or ‘Bourne’ movies – often seen in high-octane action sequences of car chases, getaways, etc. Meanwhile, third party sources (such as consumer lifestyle car TV programmes (for example Top Gear has been one of the more popular franchises worldwide), or numerous easily found online depictions of cars, for example retailers (e.g.

<https://heycar.co.uk/guides/cars-that-are-fun-to-drive>), and online forums (e.g. <https://www.quora.com/What-is-the-most-fun-car-to-drive-in-terms-of-acceleration-and-handling>) create an accumulated cacophony of driving-as-performance messaging that the present codes have limited power to curb. This picture is concerning but not new: Donovan et al. (2010) pointed out that whilst many countries have adopted regulatory codes that restrict *explicit* depictions of cars relating to power, speed and acceleration, they do not necessarily identify when advertisements *implicitly* communicate these and other undesired messages about unsafe driving behaviours.

These criticisms may be justified but there is arguably little sign that many societies are ready for draconian legal curbs on car marketing. Internationally there are few exemplars of such an approach, and the lack of enthusiasm of policy makers to get involved may be because their wariness with their publics' continuing love-affair with cars (Paterson 2000, Sperling 2018). Thus, if outright bans are off the agenda, but current codes are struggling to work, policy makers interested in addressing the negative externalities of branding need to think afresh. The positioning maps in Diagrams 1 and 2 above offer one route – regulating *brands themselves* rather than sector-wide communications. Some brands behave responsibly – maybe promoting safety, family-friendliness, and so on. This brings to mind the idea of regulatory frameworks differentiating between 'good' and 'bad' brands. A framework may be envisaged that responds to collision data: a brand disproportionately involved in collisions might generate a graded response leading to the brand's products being withdrawn from sale until improvements are made. Firms may be instructed to, for example, foreground product attributes that do not exacerbate aggressive driving in order to have their products reinstated.

The novelty of the idea of brand-based regulation is surprising. Legislation restricting marketing typically concentrates on commercial marketing 'inputs' (pricing, packaging, advertising, etc), but the marketing industry knows that 'inputs' can be by-passed as long as the key 'output', the brand, is created in other ways. They know that it is the brand that drives behaviour. Indeed, public health evidence in other sectors supports the idea that brands have behavioural power above and beyond individual adverts for pursuing the brand: long after advertising and other promotion disappeared, for example, branding was still driving teen smoking (Grant et al 2008). The argument therefore is that the logic of regulatory frameworks needs to mirror the logic of market forces, rather than, as is currently the case a misplaced logic of codes aimed at media and messaging. To take an apt example from other motoring issues, regulators of car pollution don't regulate spark plugs, they regulate the problem itself - exhaust fumes. Cars have to pass an MOT test: why shouldn't brands have to pass a safety test?

We finish the discussion with a reminder of the scientific limitations of this work and suggestions for further research.

Study Limitations

Collisions are complex entities with multiple causes, so whilst there is confidence to be gained in reporting on a robust database of over 400,000 collisions over a five year period, we nevertheless must be cautious. Three issues are noted: firstly, the gradient in Diagram 4 is likely to be partly attributable to car *model* differences within a car firm's product mix (for instance the proportion of sports/off road cars vs family saloons) as well as brand image and messaging effects. Secondly, this study cannot attribute direction of causation: it may be that branding activities have caused or reinforced aggressive driving; or it may be that a *pre-existing* aggressive driver was attracted to a particular brand. Thirdly, we posited a possible explanation for the brand gradient by suggesting that 'bad' brands might build upon a driver's self-enhancement bias, but specific research designs are needed to underpin such a claim. To conclude this passage, we see this work not as definitive proof of cause-effect, but as an analysis that can be viewed in the round alongside that of authors from Roberts (2002) to Harris (2021) who have expressed similar concerns.

Further Research

It is clear that more work is needed to further examine the road safety consequences of automotive sector marketing. This could include further work using the Stats19 data: this is a powerful database that could be further used by social marketers. The brand gradient of Diagram 4 could be the foundation for a quantified brand content analysis, seeking correlations between car-performance messaging (of all types – including movies, sponsorship of motor racing, etc) and greater propensity to be involved in injudicious driving-based collisions. Finally, the investigation of consumer responses to a selection of brands would be very illuminating – by simply mirroring the methodology of commercial marketers, using qualitative and quantitative methods a customer positioning map could be created that could be compared with collision data, again seeking evidence of correlation.

Conclusion

In this paper we presented UK collision data showing that a brand-gradient exists for collisions caused by injudicious driving, and that this gradient was not immediately explained by other causes. It is possible therefore that there may be a relationship between auto brands and collisions. We discussed the possibility that messaging that implicitly reinforces, augments and normalises the idea of driving-as-performance might increase risks of collisions. The methodological constraints of this work restrict any more than tentative conclusions, but a short discussion of possible solutions was offered that suggests that leaving the sector to solve problems themselves is unlikely to succeed. A number of regulatory options exist in theory, but given the continuing public popularity of 'driving freedoms', pragmatically the best options may be in counter-marketing campaigns similar to the Truth work, or to differentiate between 'good' and 'bad' brands, with regulators focusing on 'bad-brand' damage rather than relying on media-restricted advertising, in particular given that the latter approach is so easily by-passed with social media, product placement, third party messaging and sponsorship. Noting the useful role social and critical marketers have had in exposing commercial harms elsewhere, we call for further work of this type, and of course further action to be taken to address the annual global death and injury toll of road collisions.

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