

 **WECOUNT**

Evaluation summary

Citizen Science on urban mobility

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For access to the full report, Final Summative Monitoring & Evaluation Project Report, please see: <https://zenodo.org/record/6337258#.YicxZ-jP1PY>

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Executive summary

WeCount was a Horizon 2020 project which aimed at quantifying local road transport, produce scientific knowledge in the field of mobility and environmental pollution and co-design informed solutions for several road transport challenges. Uniquely, this citizen science project empowered citizens to take a leading role in the production of data, evidence and knowledge around mobility in their local areas. Five case studies across Europe were involved in WeCount: **Madrid and Barcelona** in Spain, **Leuven** in Belgium, **Ljubljana** in Slovenia, **Dublin** in Ireland and **Cardiff** in the UK. Citizens were given low-cost traffic sensors to install in their homes, enabling them to collect and analyse traffic data, as well as engage with key stakeholders throughout the process. Citizens took part in several workshops, from assembling the sensor to learn how to analyse the data.

The project has engaged **with more than 1,000 citizens and stakeholders** through workshops, seminars, mutual learning and science-policy dialogue workshops, as stipulated in the bid. A total of **368 citizen scientists** from WeCount case studies directly engaged with the project over its 24-month duration. An estimated 230,000 people were engaged indirectly through social media and the project website. There was a nearly perfect split of males (51%) and females (49%) participants in the project. WeCount was able to attract **a younger demographic than most citizen science projects with 29% of participants being younger than 16**. This skew towards younger audiences reflects the effort of staff in reaching them when possible. WeCount reached **16 schools** across Europe and engaged with **305 school children**. WeCount citizens were **highly educated** (82% had a degree or above) which maybe a reflection of the online and digital conduct of the project due to COVID-19 restrictions.

Across case studies a total of **52 events** and workshops took place, most of these were online. These events and workshops engaged a total of **843 citizens across Europe**. Overall, citizens tended to enjoy the activities; 75% saw some improvement in their knowledge and almost half (48%) of citizens plan on using the data after the project ends.

At the time of writing, **10% of participants have so far taken action** and policymakers see **huge added value** in the project. WeCount was able to reach and sustain engagement with a broad demographics in society, with Telraam acting as a constant reminder to citizens to look at the data and stay curious about what data others in the network were capturing. The sensor is low cost and open access and is currently being refined, in response to citizens feedback to improve installation, design and accuracy. Alternatives have been explored for non-tech users such as strawberry plants, facilitated discussions looking at the data and awareness-raising roles created for citizens.

The project provided **cost-effective data** for local authorities, at a far greater temporal and spatial scale than what would be possible in classic traffic counting campaigns. The five WeCount case studies developed **professional relationships with decisionmakers**, which led to mutual benefits such as knowledge transfer, new contacts and access to widely subscribed communication channels.

This evaluation shows **the importance of co-designing citizen science projects with citizens** so that they are engaging, enjoyable and empowering. The more a citizen enjoyed their time in the project, the more likely they are to continue working with WeCount data after the project ends, which will eventually lead to taking more action. In addition, the greater the street-level knowledge improvement the more likely a participant is to act.

We hope this evaluation report proves useful to other researchers and practitioners working on mobility and citizen science projects.

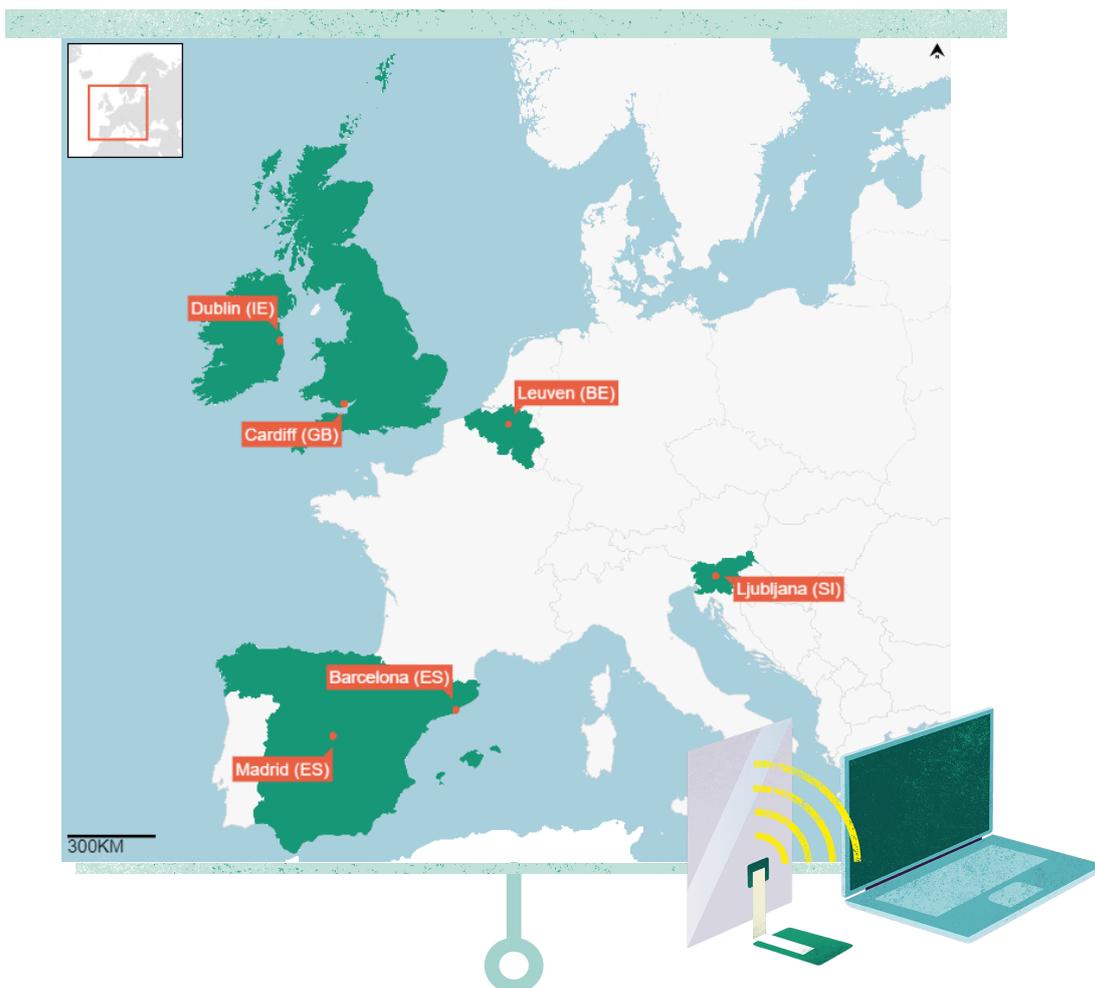


The WeCount project

WeCount was a **citizen science** project working across five case studies in Europe to empower citizens to take a leading role in the production of data, evidence and knowledge around mobility in their own neighbourhoods, and at the street level. The project followed participatory citizen science methods to co-create and use innovative low cost, automated, road traffic counting sensors (i.e., Telraam) and multi-stakeholder engagement mechanisms across five case studies.

Citizen scientists in the five case studies were involved in collecting the data, analysing it and engage with key stakeholders throughout the process. WeCount aimed at quantifying local road transport (cars, large vehicles, active travel modes and speed), produce scientific knowledge in the field of mobility and environmental pollution, and co-design informed solutions to tackle a variety of road transport challenges.

The case studies followed a similar execution pathway, Leuven & Madrid deploying first and serving as pilots for the remaining three case studies.



The case study cities of WeCount (centre); a graphic representation of a Telraam (right)

Evaluation Methodology

The social, political, and technical aspects of the project were evaluated by asking the following research questions and methodology.

Research questions



Methods

A variety of methods were used to monitor and evaluate WeCount. Methods were selected based on how appropriate they were for the given audience and how practical they were to be used by case study leads, across five different countries and several different languages.

- **Online surveys**
- **Interviews**
- **Demographic data**
- **Feedback during workshops**
- **Self-reflective logs**
- **ACTION impact scoring**

Following a co-design process with sensor owners, the project segmented its audience into **four participant types** and devised **four event types** to maximise engagement success.

Participant types



Counting Citizens

Citizens that were counting traffic or speeds in WeCount. They might have had a sensor at their window (Telraam or another sensor), a strawberry plant or do manual counts.



Involved Citizens

Citizens that were involved in WeCount but did not count. They may have taken part at WeCount events, subscribe to the newsletter or have applied for a sensor but were not selected.



Local champions

Citizens that supported their local network, hosting meetings, organising events, spreading the WeCount message etc., to build momentum in their communities. They may or may not be counting.



Local stakeholders

Policy makers, neighbourhood workers, 'techies', teachers, etc. Everyone that was identified in the local stakeholder mapping and was involved in WeCount in a more strategic capacity.

WeCount Events



Co-design

These preliminary events aimed to work with citizens to create a suitable data collection protocol and to design the project governance structure relevant to that community.



Kick-off recruitment

Kick-off events happened after co-design. The aim was to inform the target groups about the project and to recruit participants more broadly.



Kick-off Telraam workshop

This event invited all potential counting citizens to participate. During the workshop, participants received information about Telraam, including installation instruction, and the data they were likely to see.



Data analysis

This final workshop invited all stakeholders to participate. The aim was to analyse the data with the citizens, showcasing practical examples on how to use it, and offering training to empower citizens to use the data for societal good.



Evaluation framework

1

Direct evaluation

Registration form

Consent, demographic information and motivation for joining.

Monitoring and feedback

Before activities: demographic information, number and type of attendees. After: enjoyment of activity, knowledge improvement.

Final survey

Experiences of Wecount, behaviour change and activity, demographic information, Telraam feedback, enjoyment of activity, knowledge improvement.

Citizen and stakeholder interviews

Opportunity for more in-depth discussion on points raised in final survey.

Photographs and screenshots

Visual evidence of the impact of the project/to illustrate activities.

2

Monitoring

Social media, press coverage, website analytics etc

Indirect reach and engagement.

Data platform membership and customer support

Activity with Telraam, e.g. number of active counters, drop-out rates, feedback.

3

Self-reflection

Staff reflective logs and meetings

Critical assessment of how events and activities went and how they were perceived.

Staff final interviews and impact scores

Critical assessment of the evaluation framework and the citizens' experience. ACTION Impact score assessment.

Staff training and evaluation mentor

Opportunity to improve staff skillset and equip them for evaluation (on- and offline).

Reporting and publications

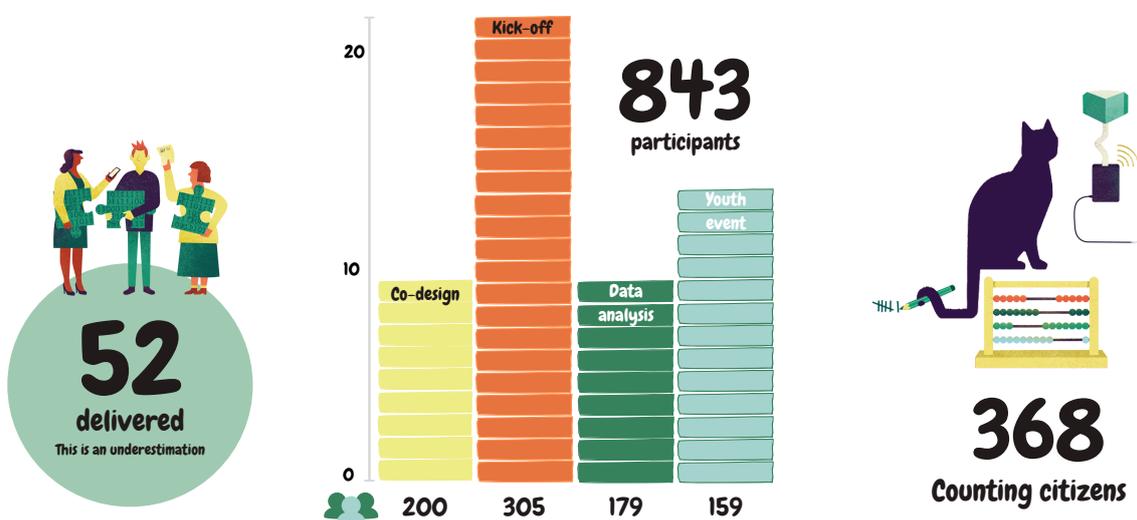
Reports on: pilot cities, final cities and overall summary.

Results

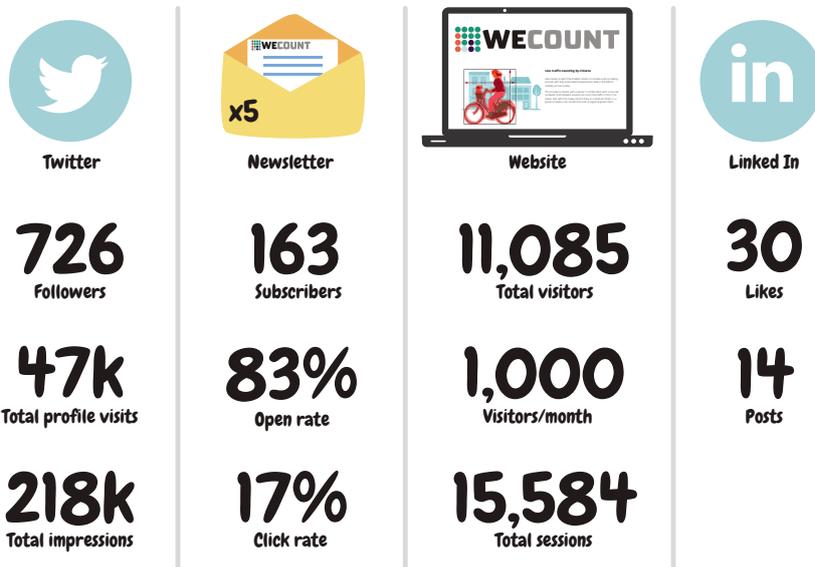
Engagement figures

The project engaged directly with more than 1,000 citizens and stakeholders through citizen sensing and the **52 workshops and events**. Of these, **368 citizens counted** using a Telraam sensor. An estimated **230,000 people** were engaged indirectly through social media and the project website. There were **11,085 visitors to the website** specifically, and over **218,916 social media impressions**.

Direct engagement



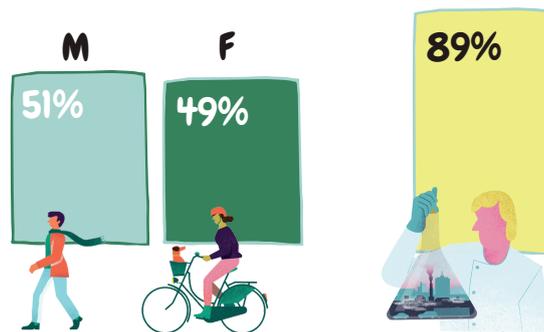
Indirect engagement



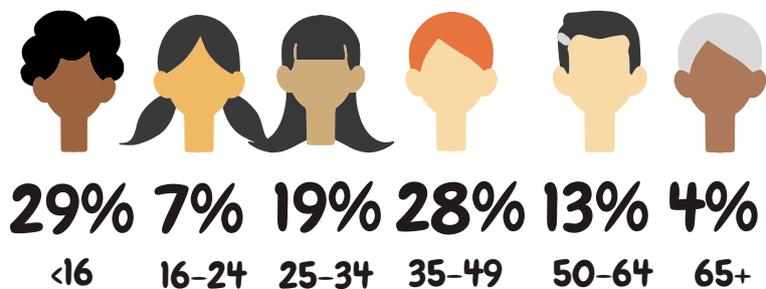
Citizen demographics

Demographics and socio-economic status

There was a **51:49 split between males and females**, very close to WeCount's original aim of attracting an even number of men and women. **Educational attainment was exceptionally high – 81%** of participants had a degree or above. While it is common for more highly educated individuals to join citizen science projects, it was a hope of the project to break free from this pattern.



29% of participants were younger than 16. This means that, in general, WeCount was able to attract a younger demographic than most citizen science projects.



Analysis suggests that about **10% of WeCount citizens had a low socioeconomic status.** This comes from the following facts: 18% of WeCount participants have low levels of educational attainment and 10% of survey respondents stated they were either a school leaver or had a technical qualification. Meanwhile, 9% reported their occupation as skilled manual, semi-skilled or unskilled. As each case study defined occupational categories differently, we may be under- or over reporting the number of low-paid workers.



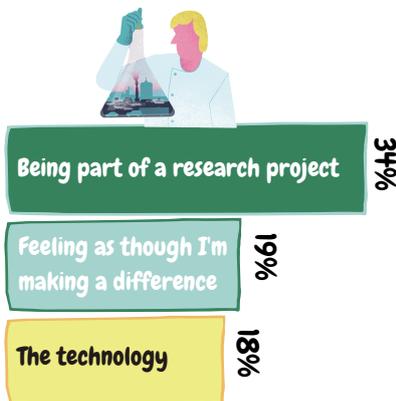
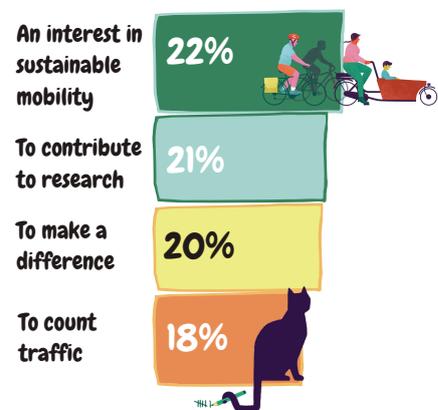
The citizen experience

In total, 236 participants completed the final survey; this represents 43% of all WeCount members who were part of a case study network, well above the ambition of collecting feedback from 20% of WeCount citizens. 37 of the survey respondents also took part in the citizen interviews.

Overall, survey respondents had a positive experience, with 83% rating their time as either excellent or good. Survey respondents' expectations were largely met, with 67% saying they were met 'extremely' or 'very' well.

Motivations for joining

The main motivations from the survey were as follows: an interest in sustainable mobility (22%), to contribute to research (21%), to make a difference (20%) and to count traffic (18%). **Men were significantly more likely than women to join WeCount out of an interest in technology. Also, highly educated people were more likely to choose science-related motivations.**

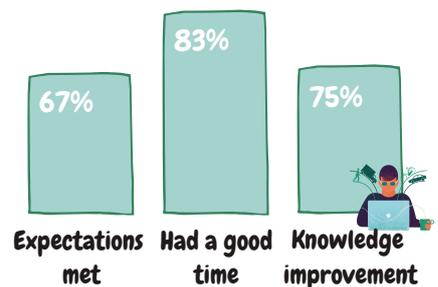


Favourite aspect

Being part of a research project' was their favourite part of being involved (34%). Largely reflecting original motivations for joining, this was followed by a feeling that they were making a difference (19%). Interestingly, the technology (18%) came third. **Women were statistically more likely to consider collective problem solving to be their favourite aspect of WeCount.**

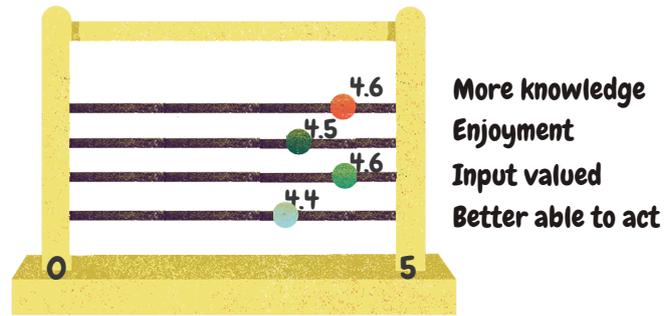
Knowledge improvement

Overall, 75% saw at least some improvement in their knowledge, with 52% of these respondents seeing a drastic improvement. Analysis found that **the greater the street-level knowledge improvement the more likely a participant is to act.**



Workshop feedback

Workshop attendees were asked whether the sessions: enhanced their knowledge, empowered them to act, were enjoyable; and whether the hosts valued their input. Findings were overall very positive.



WeCount related action and behaviour change

Survey respondents reported 24 individual actions, which emerged after seeing their data. This equates to 10% of respondents and to 24 individual actions.



The top five actions:

1. Notified local government/responded to a consultation
2. Shared knowledge among the community
3. Applied for a neighbourhood action grant
4. Notified the police, business, or other
5. Shared on social media

On average, 45% of respondents saw a change in opinion about about traffic-related issues to some degree (N=94 of 209). ***The more someone's opinion or knowledge changed about street-level traffic issues the more likely it was they were to take action.***

People who favoured technology or campaigning, and/or were driven by active motivations (e.g. to make a difference) were more likely to act than those that did/were not.

The greater the street-level knowledge improvement (and/or opinion change) the more likely a participant was to act.

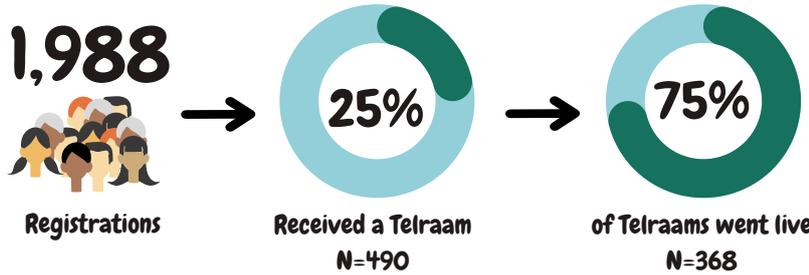
Purpose +
knowledge
= power

Project improvements

The most voted for improvements were:

- 1) a mechanism to show if efforts were impactful/ successful (33%);
- 2) more ways to get involved (15%);
- 3) improvements to the technology (13%); and
- 4) support in making it easier to understand the data (13%).

Technical review



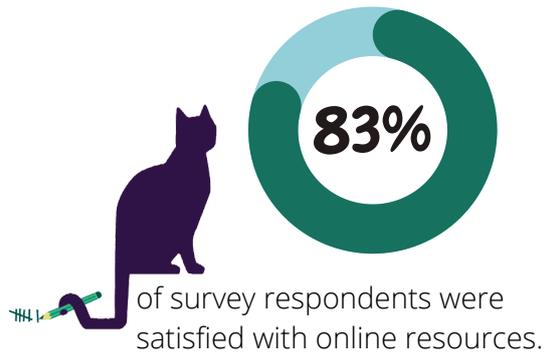
Inability to install was largely due to:

- Faulty devices
- Lost motivation from technical issues
- A gap in technical knowledge
- A "very difficult" installation process

Support available to citizens

- Training sessions
- Printed installation instructions
- Online FAQ and Zendesk
- Email support
- Face-to-face set up for those in need

"I'm not sure I would have been able to [set up my Telraam] without having him"



Improvements made

Based on citizens' feedback

- A co-designed data platform
- An updated sensor
- New pages added to the Telraam website to help with installation.

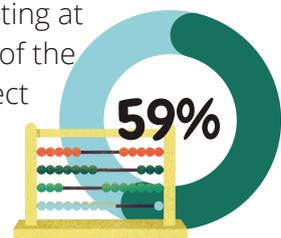


All tools seen as largely good/very good (>73%) by those that used them



+/- 10% Telraam degree of error - and this largely reflects citizens' manual checks.

Still counting at the end of the project



Self-sustaining networks



48% of participants were willing to continue using the data post-WeCount. Enjoyment and level of involvement significantly influenced the willingness to continue.

The more a participant enjoyed their time, the more likely they were to say they will continue working with WeCount data after the project ends.

Participants who see themselves as local champions, professionally or as a more active member of the project, are more likely to continue than if they are a counting citizen.

How can WeCount be self-sustaining? Local champions (individuals or action groups) recruit neighbours, schools, community groups and employers. Additional door knocking occurs to reach priority streets outside of their networks. In the first instance, local champions are found through the community connections within the project team, and it spirals out from there. Hubs act as a place for learning and knowledge exchange, bringing in local decision makers and scientists to have evidence-based conversations with and respond to the concerns of the community. For this hub model to work, hubs need resourcing (e.g., to cover staff time).



What a self-sustaining WeCount network might look like.

The policymaker experience

All case studies developed professional relationships with decisionmakers, often involving them as early as the proposal stage. This has led to mutual benefits such as:

- knowledge transfer (e.g., to Council offices; Policy Masterclasses; advocacy training)
- the monitoring of local sustainable mobility initiatives with Telraams, e.g., School Zones in Dublin, Healthy Community Neighbourhoods in Cardiff, speed bumps and digital signs for speed compliance in Leuven
- access to new networks, with interest from other authorities (e.g., Catalonia) to replicate WeCount
- Independent initiatives by citizens that have led to legal changes to speed limits and awareness raising in the media
- access to widely subscribed communication channels

There is a willingness from the Councils involved to find synergies. However, time, resources and communications were barriers to fruitful city-citizen-researcher relationships. While discouraging, the local official does see “huge added value” in the project as it is participatory in nature and provides objective data to the subjective experience of citizens.

Leuven’s Vice Mayor for mobility said: " [These sensors provide] a wealth of information; information we use when making all kinds of mobility decisions. We will certainly include these analyses in our mobility plans for the boroughs".



Impact on the project team

Interviews from the project team revealed that the Engagement and Evaluation Frameworks were sufficiently adaptable for different skillsets and different case study environments. Training was offered along the way in monitoring and evaluation, and the iterative project design allowed for the lessons learnt from the pilots (and each case study) to contribute to improvements in the engagement and evaluation material available.

This meant that the project team felt capable of engaging with citizens, and they enjoyed working with them, even if they had not done so before. Many indicate they will continue working with citizens in future projects.

However, due to COVID-19 restrictions, the project team felt they missed out on sharing some of their knowledge and skills, and on truly impactful collaborations. They also mentioned how the pandemic prevented the project from reaching its full potential. To learn from these experiences, the evaluation team interviewed staff about the impact of the pandemic on the project, and how they adapted. The findings from this research are detailed on page 21.

The impact of the COVID-19 Pandemic on WeCount



Community relationship building hindered



Team building limited by online-only interaction



Slower deployment of sensors

While there is definite room for improvement (in terms of participant diversity and inclusion, technical glitches and the ability of the project to continue long after the researchers step away) WeCount has taken **big strides towards participatory citizen science for sustainability.**

Indeed, WeCount is unlike most citizen science projects to date, which are designed to crowdsource or distribute intelligence (Sardo and Laggan, 2021). Through a process of co-design, asking citizens what matters to them and working with them where needed to analyse and act upon the data, WeCount adds to the small but **growing number of projects that democratise the production of knowledge and make space for citizen-led policy change.** It is clear from the project evaluation that this approach works in making **people feel empowered.**



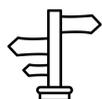
Printable resources



Citizen science in times of global crisis

In times of pandemics, natural disasters, and restrictions on human freedoms, our approach to recruiting and engaging participants needs to shift. While online or distanced engagement will never replace in-person, sometimes it is our only choice. In this infographic we present the barriers our project faced during the Covid-19 Pandemic and adaptations we made to continue working with citizens.

Challenges



Uncertainty

Recruitment is difficult as you have to define a new approach in spite of the uncertainties and without knowing which restrictions will be in place and for how long. Meanwhile, engagement is hard as you may need to change event plans in line with changing policies and Government advice.



Reaching certain groups

Recruiting some demographic groups, such as children and senior citizens is even more challenging online. Participants may struggle to access the technology (e.g. laptop, WiFi) or have trust issues with online engagement.



Online fatigue

In times of lockdown, participants see a huge increase in online events and email-based communication. With everything moving online, people start getting tired of online/email engagement.



Digital skills

Not all participants (or staff members) have the same digital skills.



Balance

It is tricky to find the right size for an online workshop and still be able to reach the target number stipulated in your proposal. It's a balance between number of participants and number of workshops. The same goes for the number of emails your sending out!



Changing priorities

Partnering authorities and schools are faced with significant daily challenges, as their priorities shift to deal with the global crisis. This might mean original plans for engagement need to be changed.



Fear of face-to-face

If in person events are allowed, people are hesitant to attend due to concern for individual and collective safety.



Logistics

Difficulties are presented in terms of engaging in safe ways, in line with national guidelines, while wanting to make an initial face-to-face connection.

Solutions



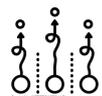
Prioritise participants' needs

While this should always be our priority, now is the time to be extra sensitive to the needs of those you wish to involve.



Re-focus and shift approach

Who is still active for the cause? How can you work more collaboratively? Consider targeting specific volunteer groups, leveraging activists and existing networks of contacts; and have the project endorsed by local venues and institutions, as well as existing communities to build trust.



Explore indirect routes

Find ways to reach people indirectly. Liaise with community centres, schools and care homes, finding indirect routes to your audience. Make activities implementable by an intermediary (e.g. a teacher).



Take a hybrid approach

Can you meet for a quick and safe initial face-to-face meeting, even outside?



Find ways to make in-person connections whilst adhering to the current rules and guidelines. This will set the foundations for better bonds within the group and between the groups and researchers.

Campaign online

Make the most of the online environment to deliver a social media campaign or recruitment drive. Choose a platform that suits you and your audience and link with community organisations to reach them.



Manage expectations

Carefully and closely manage participants expectations from the outset. Explain what is and isn't possible during this period, and be upfront about the uncertainties.



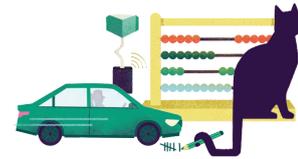
Make online intimate

Split participants into smaller groups/rooms during online sessions to allow everyone the chance to talk and share their opinions and stories. Get to know one another... pets included. Zoom, Microsoft Teams and Eventbrite are all useful platforms for online events.

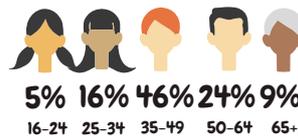
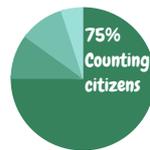


WECOUNT

Final survey

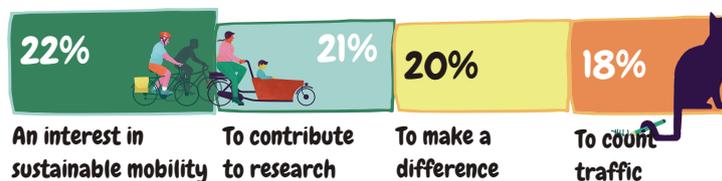


236
Citizens and
stakeholders



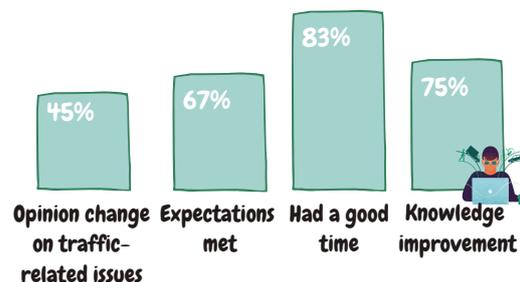
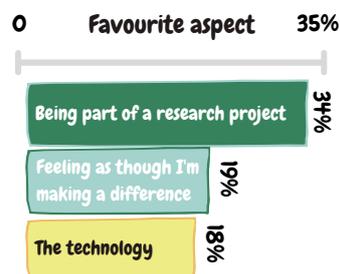
Men were significantly more likely than women to join WeCount out of an interest in technology.

Motivations for joining



Highly educated people were more likely to choose science-related motivations.

Women were more likely than men to consider collective problem solving to be their favourite aspect of WeCount



10%
taken action

30
km

Purpose +
knowledge
= power

The top five actions:

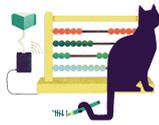
1. Notified local government/responded to a consultation (N=9)
2. Shared knowledge among the community (N=7)
3. Applied for a neighbourhood action grant (N=2)
4. Notified the police, business, or other (N=2)
5. Shared on social media (N=1)

People who favoured technology or campaigning, and/or were driven by active motivations (e.g. to make a difference) were more likely to act than those that did/were not. The greater the street-level knowledge improvement (and/or opinion change) the more likely a participant was to act.

Participants who see themselves as local champions, professionally or as a more active member of the project, are more likely to continue than if they are a counting citizen, and even more so than if they are an involved citizen.



The more a participant enjoyed their time, the more likely they were to say they will continue working with WeCount data after the project ends.



Keys to success in participatory citizen science processes

Phase 1: Foundations



Commit to the long haul: at least three years, preferably longer.



Aim to make efforts self-sustaining: once project ends/find ways to continue.



Collaborate: its ingredients being time, space and facilitation. Work closely with more active citizens and stakeholders for new avenues of exploration and greater opportunity to expand the network (including to poorer communities).



Recruit broad and narrow: make use of conventional media and social media, strategic partnerships with local government and community workers, and unconventional spaces (pubs, cafes, places of worship, the street, etc). Work with local active individuals/groups to spread the message of the project.



Provide technology-free opportunities for involvement: should technology have been an insurmountable barrier. I.e. analogue sensing.



Develop hubs within the network: by working with schools and community spaces for further sensor deployment and training. Support with finances to fund facilitation staff and cover expenses.

Phase 2: Train citizens and scientists



In community organising: to explore issues around power, agency, civil rights and collective action with citizens and scientists. Target areas with an established voluntary and community sector.



In technicalities, with doorstep assistance: to support those less confident with technology. Where possible, encourage peer tutoring.



In scientific literacy: for citizens on data accuracy and topical knowledge, as well as for project team in terms of the need to capture demographic data, and how to capture it. Involve citizens in evaluation.



In cultural awareness: of participating scientists and citizens to understand how to engage different audiences. For example, communities not exposed to higher education will not be used to PowerPoints, online meetings or technical language.

Phase 3: Make the project sticky



Hook people in with something tangible: that is relevant to their everyday lives.



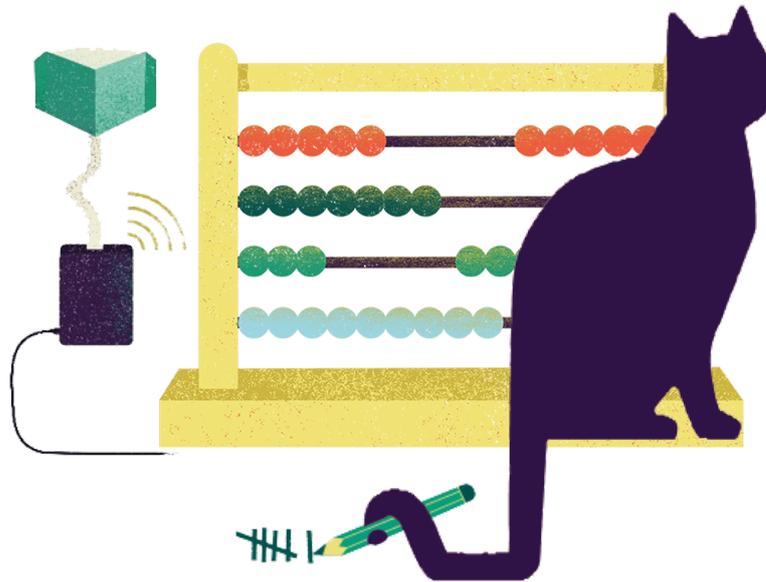
Celebrate contributions: individual and collective, big or small, communicating achievements and failures back to communities so they can be inspired by role models.



Reward: with beer, cake, impact booklets or whatever is most relevant to the audience.



Blend: offer periodic online workshops together with in-person kick-off and wrap up events.



Thanks to our partners:



IDEAS
FOR
CHANGE

University of Ljubljana



WeCount was funded by the European Commission's Horizon 2020 Swafs programme, under the grant agreement ID: 872743.