WeCount: Citizens Observing UrbaN Transport

Deliverable D6.6: Dissemination and Communication Strategy – UPDATE 2

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Contents

Deliverable D6.6: Dissemination and Communication Strategy – UPDATE 2 1

1 Overview 5

1.1 Introduction 5

1.2 Requirements of the Dissemination and Communication Strategy 6

1.3 Objectives 6

1.4 Performance indicators 7

1.5 Deliverables for this Work Package 9

2 Target audience 10

2.1 Key messages 10

3 Communication Methods: How to disseminate? 12

3.1 Channels 12

3.2 Use of existing networks and senders of Letters of Support 12

3.3 Use of electronic media 14

4 Communication plan and activities 16

4.1 Overview 16

4.2 Communication tools 16

4.3 Local communication plan and guidelines 26

4.4 Networking and events 26

4.5 Communication and dissemination monitoring 28

5 Knowledge and Impact Management Framework 29

5.1 WeCount Impact Statement 29

5.2 Impact Framework: guiding principles 29

5.3 Specific impacts of the WeCount project 30

ANNEX 1 – WeCount Local Impact Stories 32

ANNEX 2 – Policy Brief 1: Hybrid Citizen engagement approaches to deliver citizen-led project results

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in times of a pandemic 44

ANNEX 3 – Policy Brief 2 1

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1 Overview

1.1 Introduction

The communication and dissemination tasks primarily addressed the main target audience of the WeCount project, listed in the Description of Work (hereafter DoA) and in Chapter 2 of this strategy.

A wide variety of communication and dissemination actions was planned and implemented within this work package (WP6). All activities connected with this work package, were carried out within the framework of Horizon 2020 rules and all materials created complied with the requirements of the European Commission[1].

The Dissemination and Communication Strategy was developed at the outset of the project, in the form of Deliverable 6.1 Dissemination and communication strategy, submitted in Project Month 3 (February 2020), and identified opportunities and actions for each of the partners for their countries, as well as European wide dissemination of the findings and recommendations from the project.

Deliverable 6.5 Dissemination and Communication strategy – UPDATE 1 consisted of a specific periodic update, delivered in project Month 8 (July 2020). The first strategy updated included a revision and adjustment of the plan, tools, and channels; brief overview of tasks carried out with corresponding KPIs, a brief scope of the first WeCount Policy Brief, as well as the Local Communication Plans prepared by each WeCount case study (see Annex 1).

The Communication & Dissemination Strategy provided guidance to the partner's dissemination activities and described how WP6 will collaborate with and support the other work packages. It also incorporated a **Knowledge & Impact Management Framework,** as the two strategies are intrinsically linked, and ensured the maximum exploitation of the project results (by establishing the 'WeCount project legacy'). The plan was approached as a 'living' document, prone to adjustments as deemed necessary as the project unfolds.

This final **strategy update** includes:

1. The two published WeCount Policy Briefs, (September 2020 & November 2021, see Annex 2 and 3),

2. The Local Impact Stories prepared by each WeCount case study city, as foreseen in the Knowledge & Impact Management Framework (please refer to Annex 1).

Considering that **Deliverable 6.4 Overview of WeCount communication activities** is also due in November 2021, it has been decided that the actual reporting on all dissemination activities, events organised by the project, and partners' publications online, in the specialised media and scientific journals, will be the focus of that document and not of D6.6.

[1] Guidance on the use of the EU emblem in the context of European programmes can be found here: http://ec.europa.eu/research/pdf/eu_emblem_rules_2012.pdf.

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1.2 Requirements of the Dissemination and Communication Strategy

For the effective dissemination of the findings and recommendations from the project on its completion, it was essential to engage with the key target groups and disseminate information to them throughout the life of the project.

Within each case study city (Dublin, Cardiff, Leuven, Ljubljana, Madrid/Barcelona) this action was undertaken by the partners based in those countries. Dissemination by partners included:

- Development and implementation of a programme of engagement with key target groups (in conjunction with other Work Packages),
- Identification of priority target groups for each country and research of their needs,
- Development and follow-up of database of key contacts in target groups,
- Identification of existing networks used by these target groups in each country,
- Preparation of communication material / other materials,
- Presentations at national conferences and other public events,
- Submission of articles for publication.

The Dissemination Plan remained a live document throughout the project and was regularly reviewed and updated. The Plan consisted of an overall project dissemination strategy providing guidelines at the macro-level, complemented by the Local Communication Plans (see Annex 1) developed by each case study city, with envisioned tailor-made actions, in line with local contexts.

1.3 Objectives

Below are the specific objectives related to this Work Package as they are described in the DoA (p 38). The primary objectives of this work package were to:

- Communicate the results of WeCount to relevant target groups, with specific focus on citizen groups,
- Liaise and cooperate with relevant initiatives, projects, and organisations.
- Establish and develop the WeCount project legacy ensuring access to the project results, highlights and lessons learnt beyond the project lifetime.

1.3.1 5 core areas in WeCount communication

Maximising Connectivity between WPs - To optimise the impact of this research, the Communications Team was part of the Project Executive Management Group and advised by the Project Advisory Board. This process enabled close collaboration between all the WPs to ensure all project results were communicated internally, as well as externally, ultimately meeting the outlined milestones.

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Enacting Engagement Strategies for the WPs - This document identified appropriate means of communication to reach and engage all identified audiences and stakeholders for each WP objective, goal, and deliverable.

Development of Materials - All communications and engagement materials were adapted to suit the social context and language of the EU country and/or city in which they were used for. Content and event toolkits were created as needed to help the researchers raise awareness and increase citizen engagement.

Training of WP Leaders and Partners - This project offered an excellent opportunity for the project researchers to benefit from participation in the closely interwoven citizen engagement and dissemination activities by improving their ability to understand the needs of, and communicate with, a range of different audiences and stakeholders. This project enhanced the capability of project researchers to drive public engagement, leaving a legacy for their careers and home countries.

Training of "local champions" among participating citizens – An essential element in the WeCount approach was the concept of "train the trainer" in which we identified and trained key individuals in local communities to take a leading role in shaping and supporting citizen science activities. This was an integral part of the activities in WP4, with training & communication techniques governed by this strategy.

Dissemination of Project Results - External communications are critical to ensure long-term impact and innovation driven by the project. The project has a strong communication and engagement foundation through the innovative citizen science, co-design and implementation WPs that form its core, and outreach to policymakers, schools and vested interests. The wider dissemination efforts built on these relationships with audiences to keep project participants, stakeholders, and communities of interest up to date with project developments and findings. The project objective of achieving policy change (target: policy makers) and add to the scientific transport research (target: transportation scientists) was achieved through more widespread dissemination toolkits.

1.4 Performance indicators

The DoA includes several Performance Indicators that directly relate to communication and dissemination. For reference, these are reproduced on the next page.

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Table 1

Performance Indicator	**Target**	**Plan**
Active engagement in traffic counting activities	Minimum 1,500 citizen scientists (300 citizen per case study)	Effective independent local communication plans following local needs (e.g. language) and common timeline
Engagement in local related activities (workshops, seminars)	1,000 citizens (approx. 200 per case study)	Establishment of local communication channels, communication package will be sent to all local partners, Local champions to be trained to make outreach sufficient
Overall reach through dissemination activities (publications, presentations, social media, and networks, such as POLIS, CIVITAS, IUAPPA etc.	40,000 people overall 2,000 ppl: Newsletters (through the WeCount newsletter, but also InfoPolis and the Telraam newsletter) 15,000 ppl: EU and cities networks (their outreach through own communication channels) 5,000 ppl through WeCount social media channels (Twitter, Facebook, LinkedIn) 3,000 ppl by presenting WeCount on related Conferences and events The remaining 15,000 people are expected to be reached through local media channels in the 5 pilot cities	Following the guidelines of the Dissemination Strategy
Publications in scientific and non-scientific journals	Several thousands of people	Technical partners publish at least 10 articles
Organic growth of Telraam-network outside the scope of WeCount	At least one network emerging during the lifetime of WeCount	WP2 – successful completion and dissemination of D2.1 "Infrastructuring local communities for citizen science interventions on mobility"

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The potential risks identified earlier in this section have been reflected on in the D5.4 - Final Summative Monitoring & Evaluation Project Report.

1.5 Deliverables for this Work Package

The tasks, outputs and deliverables defined for this Work Package are listed in Chapter 4.3 Overview Lists of Outputs and Deliverables of the DoA (p. 60). The following table items the deliverables specified for this Work Package and their due dates.

Table 2: WP 6 deliverables

Ref	Type of deliverable	Month of completion	Lead partner
D6.1 Dissemination and Communication Strategy	Report	M3 (delivered)	POLIS
D6.2 Website	DEC	M3 (delivered)	TML
D6.3 Innovation and Exploitation Strategy	Report	M21 (delivered)	TML
D6.4 Overview of WeCount communication activities	Report	M24 (delivered)	POLIS
D6.5 Dissemination and Communication Strategy – Update 1	Report	M8 (delivered)	POLIS
D6.6 Dissemination and Communication Strategy – Update 2	Report	M23 (delivered)	POLIS

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2 Target audience

WeCount had a wide scale target audience as the project involved different target groups While during the first months of the project it was indispensable to reach the desired number of citizens in each case study city and engage them in WeCount, in later months more concentration was directed to target decision makers, stakeholders and the scientific community to inform them about the findings and receive their input about possible policy interventions which can transform project results into real changes in form of local and EU policies. Therefore, WeCount identified the following target groups to focus on:

1. **Citizen groups (and citizens, in general)** facing problems that WeCount can help to address. Also, schools that can build student communities to realise the problems and learn about possible solutions.

2. **Local decision makers** that could use WeCount results as a tool for evidence-based local policy-assessment.

3. **Scientific community** that can analyse and maximise the output of the WeCount data.

2.1 Key messages

Key messages help to summarise the meaning of the project in a catchy way to maximise the reach of posts/articles/news items on various social media channels and the media. WeCount was all about:

- Putting citizens at the heart of the innovation process in road traffic counting.
- Empowering citizens in five European cities to take a leading role in generating data, evidence and knowledge about mobility in their own communities.
- Mobilising citizens to have their voice heard and to actively participate in local transport policy development.
- Mobilising 1500 citizens in six European cities (Madrid, Barcelona, Ljubljana, Dublin, Cardiff, and Leuven) to co-create road traffic counting sensors based on the popular Telraam experience.
- Generating scientific knowledge in the field of mobility and environmental pollution to encourage the development of co-designed, informed solutions to tackle a variety of road transport challenges.
- Gathering data to find solutions for a better quality of life at a neighborhood level by tackling a variety of road transport challenges.
- Going beyond just data gathering. WeCount wanted to turn 'citizen scientists' into advocates who will use the data to work with employers, schools and local authorities to help drive forward healthier cities and smarter planning.
- Increasing society's appetite for innovation by encouraging collaboration within the transport policy research community to build better local transport systems together.
- WeCount was the mechanism to channel citizens hyper-local knowledge on traffic situation where they live, to support evidence-based transport policy.
- WeCount aimed for self-sustaining local citizen-science activities using Telraam, in such a way active support from the project team is not required.

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- WeCount aimed to design user-friendly tools to also reach a non-tech audience. You do not have to be a tech-geek to work with Telraam.
- The aim of WeCount was to generate objective data with Telraam and other sensors to convert the often antagonistic relationship between engaged/activist citizen and local policy maker into a constructive dialogue to improve local transport policy.

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3 Communication Methods: How to disseminate?

3.1 Channels

There is a wide variety of channels available, and the appropriate methods were selected for each audience being targeted, including:

Table 3: Communication channels

Involve your target group	Inform your target audience
Workshops: • for training, and discussion; • citizens engagement; • community building	Written materials (online/offline): • leaflets; manuals; newsletters; press releases; articles, publications,
Networks (local, regional, national level): • mentoring, face-to-face or online	Online • website, social media, electronic newsletters, videos,
Online: • local case studies on social media (Facebook, Twitter, LinkedIn)	Events: • conferences (speaking or exhibiting), seminars, workshops

WeCount built upon several communication materials and methods that were created during the Telraam project in Belgium (developed by Transport & Mobility Leuven, Mobiel 21 and Waanz.in during 2018-2019). Examples of these materials are:

1. Logo, artwork and design for communication tools (adapted to this campaign),
2. Recruitment campaigns: flyers, social media messages and mailings to motivate citizens to register as a candidate,
3. Informative campaign: mailings and newsletters, social media messages to inform participants and others about Telraam (https://www.facebook.com/Telraam/ and https://twitter.com/TelraamTelraam) , MailChimp newsletter,
4. Zendesk, a helpdesk tool (https://www.zendesk.com/),
5. Website as a container of all materials: www.telraam.net/, handbook, YouTube tutorials https://youtu.be/O0NsoqYzKqk and https://youtu.be/0KVP0Sd-LKY), including a helpdesk tool,
6. Information for participants on how to talk about the results and how to interpret the data.

3.2 Use of existing networks and senders of Letters of Support

To reach the main target groups, it was essential for the project to tap into **existing networks and events** with established mechanisms for dissemination of information and best practice, including discussion groups (LinkedIn), websites, newsletters, conferences, and journals.

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These networks varied between countries but included networks representing:

- City administrations,
- Local community groups,
- Organisations working on community engagement,
- Transport operators and transport planners,
- Transport policy makers on local, regional and EU level.

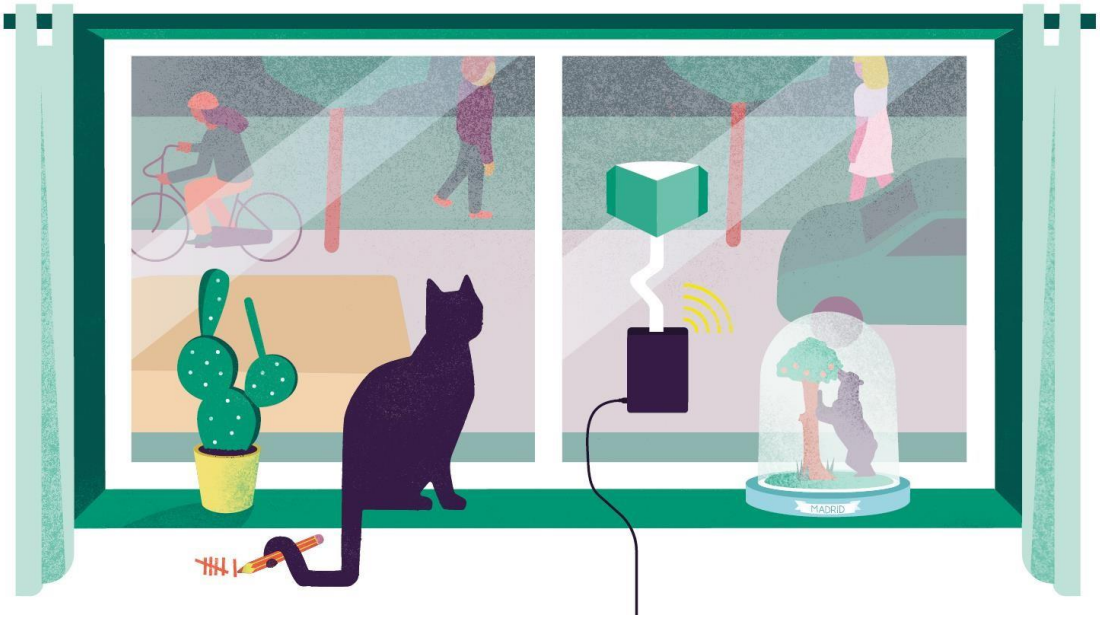
To elaborate the overall Communication Plan we asked partners in each country to develop a **Local Communication Plan (Annex 1)** for their country and pilot case, identifying the existing professional and other networks that provided access to the main target groups together with key contact people or organisations through which these networks were accessed. In fact, the metrics gathered which relate to the implementation of local communication activities were also crucial in the Evaluation tasks carried out by UWE in WP5.

The Local Communication Plans served as common template to get all outputs and the timeline of local communication highlights for central communication. An associated monitoring tool was created to keep track of the success of their execution. Additionally, a brief Local Communication Package was drafted and shared with all cities, to further assist the partners in the implementation of their Local Communication Plans. This document mostly focused on social media management tips, visual identity (i.e., fonts, logos, illustrations) and information about ethics requirements, and is complementary to the Dissemination and Communication strategy presented therein.

On the **European level, networks** such as Polis – partner in WeCount -, Global Alliance for Eco Mobility, CIVITAS and national CIVINETs, European Cyclists' Federation (ECF), ICLEI, Cities for Mobility, Eltis and the SUMP community, EUROCITIES, UITP or C40 Cities were also important partners for dissemination of the WeCount results.

3.3 Use of electronic media

All relevant promotional materials are available in an electronic format on SharePoint (project leaflet/postcard, newsletters, videos etc.). These materials were shared with all partners as a communication package to disseminate WeCount to local media.



Picture 1. – An example for the design of project postcard, newsletter headings etc.

Picture 2. – Example of logos used for explaining the project activities on dissemination materials.

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Picture 3. – Example of pilot city specific images created for dissemination

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4 Communication plan and activities

4.1 Overview

This chapter outlines the main communication activities proposed by this Strategy and deployed for each of the communication channels identified and lists timescales for completion of the activity and responsibilities. Where appropriate, the main target audience is identified, though this varied between countries.

4.2 Communication tools

All dissemination tools were defined and adapted to the communication needs of the three target groups identified in chapter 2. The following table gives an overview of the dissemination tools and which specific communities they addressed.

Table 5: Dissemination tools and target groups

Dissemination tool	Citizens and citizen advocacy groups	Public authorities and local policy makers	Sustainable transport NGOs and associations	Media	Pilot sites, sites for future uptake	Air Quality Communities	Global outreach
Project leaflet/postcard	X	X	X	X	X		
General Presentation		X	X	X	X	X	
Website	X	X	X	X	X		X
E-newsletter	X	X	X	X		X	X
Press releases and articles in specialised magazines		X	X	X	X	X	X
LinkedIn discussion group		X	X		X	X	X
Facebook page, Twitter	X	X	X				
WP 4							
Training manual/video	X	X	X				
Marketing material	X	X	X		X	X	
WeCount champion resource pack	X				X		

The above tools produced in WP6 are described in the next sections.

4.2.1 Project logotype

A suitable Visual Identity and Branding guidance including an overall corporate identity (Word template for reports, PowerPoint template) was designed and agreed upon with the partners.

4.2.1.1 Selection of project logotype

In the early stage of the project, TML (project coordinator) contacted a designer requesting a few alternative visuals for the project corporate identity.

Subsequently, we received a set of visuals of WeCount for review.

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Picture 4. – WeCount logo type 1: black colored with slogan

Picture 5. – WeCount logo type 2: black and white, abacus design with slogan

Picture 6. – WeCount logo: colored abacus design with black and grey text

The first set of visuals was discussed with all partners and a final decision was made to retain the third option (Picture 6).

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The logo put the users/local communities into the centre by highlighting WE with bold and black colour, while the expected result of the experiment (traffic counting and data) represented by the 16 multicolour dots in front. The different colours illustrate the share of modes in transport which are counted by the Telraam technology (pedestrian, cyclists, vehicles etc.).

The tagline, 'Your window on local traffic', demonstrated the individuum-centric involvement in traffic counting in private households through windows. The word 'window' is not only meant physically but also shows every individual's perception of travel behaviour and the activity of analysing the collected data by each user. The logo is available in various formats (JPG, TIF, PNG) and resolutions for partners and will be used in all communication material and social media.

4.2.2 *Project website*

The project website was a key element of the communication and dissemination channels. It includes all relevant information about WeCount and its progress.

The website is in English, but with key sections available in partner languages: Dutch, Slovenian, Spanish and Welsh.

Content was provided by all partners. They were responsible for creating content on their organisation and city.

4.2.2.1 Website structure

The interactive WeCount website served as an entrance point for the project. It was launched in M3 and has been kept up to date with the latest news, events and project developments. To save resources, it was established on the web framework of the www.telraam.net website. This merged with the initial WeCount platform (also building on Telraam – D3.1) to form a single "one- stop-shop" webpage.

While https://www.telraam.net/ introduces the technology behind WeCount and shows the real time data on a map collected by the sensors while the page about WeCount introduces the European-wide demonstration of traffic counting by Telraam technology giving platform for all partner cities to write about their approach and local experiment. The landing page is: https://we-count.net/home

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Picture 7. – WeCount Website Landing page

4.2.3 Project leaflets/postcards

Project leaflets with introductory information, objectives and approach about the project were created dedicated to each pilot city in local languages to help local dissemination and citizen involvement. The leaflets helped local dissemination during community workshops and seminars.
They included basic information and contact details to reach out to local partners and to get people engaged.

Postcards were created to disseminate WeCount during main conferences, exhibitions, and meetings on EU level with basic information about the project. They also included links to the WeCount webpage and social media.

For this purpose, as abovementioned, several city specific illustrations have been designed (Picture 3).

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4.2.4 *Social media*

The WeCount website provides a link to social media platforms including Twitter, Facebook, and YouTube. These reported on the project milestones to a wide audience and allowed the exchange between and discussion with relevant target groups and citizens.

4.2.4.1 Twitter

The project's Twitter profile (@WecountH) was created in December 2019. The profile (in English) is a central point of information for the target audiences, especially for practitioners, transport experts, sustainable mobility advocates, the civil society and the scientific community.

Twitter account name: WeCount-H2020

Picture 8. - WeCount Twitter profile appearance

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Picture 9. - WeCount Twitter Post Example

The Twitter account is linked to the LinkedIn discussion group. Hence messages posted on the two platforms simultaneously appear as tweets. The page has been updated regularly.

4.2.4.2 LinkedIn

A LinkedIn Stakeholder Group gathered stakeholders who signed the LoS (Letter of Support, detailed in chapter 6). That way they were in touch with the project on a continuous basis, able to start discussions and give input for successful transfer of project results into policy development.

The LinkedIn group's objective was twofold:

- Providing a platform for WeCount partners to communicate with each other at project level, sharing success stories and answering questions and challenges on deploying WeCount;
- Building a live public forum enabling knowledge exchange to connect to mobility practitioners, the civil society, local decision makers and the research community.

All partners were invited to join the WeCount group at https://www.linkedin.com/groups/8887383/

Relevant milestones produced by the project were promoted through the group via regular updates.

Picture 10. – WeCount LinkedIn Group appearance

4.2.4.3 Facebook

Single Facebook profile pages were created locally in some of case study cities by WeCount project partners, particularly for Ljubljana (https://www.facebook.com/wecount.slovenija/)This Facebook page also served as a direct point of contact with the local organisers and project partners to get information and help.

We linked the Facebook pages – where possible - to existing pages at a local level.

4.2.5 Electronic newsletters

During the project electronic newsletters were be prepared, released and disseminated via Mail Chimp, fitting the timing to the project's milestones and results. This plan resulted in 6 **newsletters** during the project lifetime.

The newsletter aimed at key decision makers at local and European level targeting mainly an interested urban transport community and advocacy groups to keep them up to date on the project's progress. Newsletter content reflected:

- News from the implementation sites on their WeCount programme, local activities, recruitment campaigns, traffic measurements, impact stories etc.
- WeCount results published in leading EU Transport webpages and blogs, such as the ThinkingCities Magazine, CIVITAS webpage and the ELTIS Portal.
- WeCount's presence at Conferences/events
- Info-bites from other related mobility projects across the EU: ClairCity, iSCAPE, D-NOSES, CitieS-Health, hackAIR, Telraam, LUFTDATEN/Leuvenair, SUNRISE, Making Sense etc. Different fields should intersect each other if we wish to boost more sustainable urban mobility.

Target audience: Other interested parties.

4.2.6 Instruction and awareness videos

Over the project lifetime, 8 **videos** were uploaded to WeCount's YouTube, namely:

1. Instruction videos for Telraam assembly.
2. One video per each case study city (Leuven, Madrid/Barcelona, Ljubljana, Cardiff, and Dublin)
3. Video of WeCount Presentation by UWE
4. Video created as a follow-up to low-technology visualisation of data
5. Video created by the Horizon Dissemination Booster initiative about a group of citizen science projects striving for more sustainable cities

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4.2.7 Roll up banners

Roll-ups would help the dissemination of the project during presentations at key conferences, exhibitions and visibility during seminars and workshops in case study cities. However, with the pandemic, most events took place online. In any case, a template with proposed content for roll-up creation was created and distributed among partners (see Picture 11), with some partners printing their local roll-up.

Picture 11. – WeCount Roll-Up Template

4.2.8 Press releases

Press releases were published for specific project milestone including events, local achievements, and news in the interest of a bigger target group.

Important milestones are listed below:

- Launch of the WeCount project
- Launch of the first two pilots in Leuven and Madrid
- Launch of pilots in Cardiff, Ljubljana, Dublin.

The first press release about the kick-off was published and sent to all local partners and media contacts in December 2019, resulting in the publication of several news in different outlets

Pilots site partners have communicated with their local press to inform their citizens about the project activities and results.

4.2.9 Publications in scientific journals and specialised magazines

4.2.9.1 Peer-reviewed Scientific journals

WeCount partners active in research are responsible for submitting around scientific papers produced through the project lifetime to Scientific Journals in transportation, such as Science for the Total Environment, Environment and Behaviour, Transportation Research part F, Transportation Science, Transportation Research Record, Journal of Advanced Transportation

4.2.9.2 Specialised magazines

WeCount partners aimed at publishing articles in specialised media and magazines which are targeting transport professionals and urban mobility practitioners, some examples: Thinking Cities, Cities Today, Talking Highways, Revolve, Intelligent Transport, EuroTransport.

An article has been published on "De Verkeersspecialist" in June 2020. Two additional WeCount article were published in Thinking Cities #14 in June 2020 and Thinking Cities #16 in June 2021.

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4.2.10 Existing e-mail groups – InfoPolis

During the project lifetime several articles were be published in the fortnightly Polis newsletter to raise awareness for WeCount and to communicate key developments and findings during the course of the project. InfoPolis reaches over 500 contacts from local and regional authorities.

4.3 Local communication plan and guidelines

Local communication plans are considered as part of WP4. Polis created two templates for the preparation of the local communication plans (a document for the preparation of the overall local and communication and dissemination actions and a spreadsheet which lays out the timing of action implementation and serves as a monitoring tool. The latter fulfilled the double purpose of monitoring local communication and of contributing for the evaluation work carried out in WP5).

Upon receiving the templates, each pilot City prepared their own local communication plan and will set the planned actions in motion (for more detailed information please check D6.5.) To assist the partners further in this endeavour, a brief Local Communication Package was drafted and shared with all pilot cities, with additional specific local communication tips.

This plan helped Polis to monitor dissemination activities for local case studies and collect all relevant content for further dissemination.

4.3.1 Train the trainer approach

Training of local champions among participating citizens is an essential element in the WeCount approach. Local partners identified and train key individuals in local communities to take a leading role in shaping and supporting local citizens science activity. This activity was an integral part of WP4.

4.4 Networking and events

4.4.1 Communication channels

The WeCount consortium made full use of its networks and contacts to communicate the outputs of the project using the communication tools described above.

Polis made use of its own database, which includes contact details of several thousand urban stakeholders from all over Europe and on different levels (European, national, regional, and local). The database was gradually extended throughout the project.

The key communication channels for WeCount are shown below. These are not exhaustive.

Table 6: WeCount networking channels

Channel	Details of communications channel	How?
EU networks, organisations and platforms	Polis, EUROCITIES, EPOMM Plus, CIVITAS/CIVINET, ELTIS, European Cyclists' Federation, Covenant of Mayors, Energy Cities, ICLEI, etc.	Targeted mailings, promotion at events, presentations

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EU projects	iSCAPE, D-NOSES, CitieS-Health, hackAIR, SUNRISE, Making Sense, EU-Citizen.Science, CS-Track, GRECO, REINFORCE, InSPIRES etc.	Project partner networks, workshops, one-to-one telephone calls/meetings
National networks and organisations	Sustrans (UK), CIVITAS/CIVINET (ES), other.	National seminars, targeted mailings, press releases, promotion at events
Regional and local organisations	See letters of support from organisations (transport authorities, cycling groups, education authorities, etc.)	Local seminars and workshops, press releases, publications, targeted mailings, promotion at events

WeCount continuously identified other projects, organisations and initiatives which may provide opportunities for synergies and co-operation, specifically looking at selected CSA and RIA projects in the SwafS 2018/2019 calls as well as in the Horizon 2020 CIVITAS projects on urban mobility (transport programme / Mobility for Growth). Where relevant, phone/web meetings may be arranged with multiple project coordinators, or external organisations will be invited to attend project meetings to think about bilateral dissemination activities and learn from each other's experiences. WeCount partners will also seek to present the project in relevant events and fora.

In addition, WeCount will feed the collection of best practices presented in other relevant platforms such as ELTIS and will provide input to relevant European policies and processes. For this purpose, two **policy briefs** developed throughout the project at the end of each reporting period. Additionally, a case study focusing on the Ljubljana activities was published on ELTIS.

The scientific partners specifically addressed the academic and scientific community through publication of scientific peer-reviewed papers.

WeCount also participated to the Horizon Results Booster together with other citizen science projects, namely ACTION, ClairCity, ICARUS, and iScape, forming the group named *Residents striving for sustainable cities: empowering citizens to engage in co-creating healthier, more environmentally and climate friendly metropolitan areas.* From this activity, partners benefited from capacity building, inputs to communication and dissemination activities, and fostered cooperation between the projects, which materialised in the organisation of a common workshop at the European Week of Regions and Cities 2021.

4.4.2 Seminars, workshops

Each (local) partner scanned their local community to find groups and individuals (local champions) who could be trained (train the trainer) for WeCount activities. This involved scanning the public domain, leading to direct meetings with community leaders and local champions able and willing to setup citizen science activities.

The second step consisted of the actual community building around the citizen science activity in every location. The aim was to keep the lead of the community management with the local champions and hook-up WeCount. By building on the communication techniques commonly used in each community (local facebook groups, get-togethers, community meetings etc.), to increase the sense of ownership of the local community in citizen science activities. This led to a set of workshops with local citizens, explaining the WeCount capabilities, and formulating a research question for the citizen

scientists to tackle.

In fact, thus far, WeCount has carried out local activities, training, and community engagement 147 times. Due to COVID-19 the engagement activities carried out as of early March were held online.

4.4.3 Final conference

A final conference was planned to take place, face-to-face, in Leuven, in November 2021. However, the COVID-19 situation did not allow for it to happen. Alternatively, partners will organise two webinars in January 2022: one focusing on practitioners/professionals and another one for citizen scientists. The goal is to promote the main WeCount outcomes to each community and allow for an additional moment of interaction, particularly for citizens across case studies.

4.4.4 Presenting and networking at European conferences

The outbreak of COVID-19 deeply affected the promotion, communication, and dissemination of EU funded projects in national and international events, with many of these either cancelled or changed from a physical to an online event.

Nonetheless, WeCount has participated actively in different events of dissimilar dimensions, with varied target audiences. WeCount has been presented/mentioned in 55 third party conference/events/workshops. The complete list of activities can be found in D6.4.

4.5 Communication and dissemination monitoring

Polis prepared an Excel spreadsheet to monitor the dissemination and communications activities for WeCount. The spreadsheet has been made available to all partners in SharePoint, the project's files repository. Deliverable 6.4: Overview of WeCount communication activities includes the main information gathered in this common communication and dissemination monitoring tool (see Annex section).

Each partner was required to keep track of all local dissemination activities and will be specifically requested to update the Excel file in advance of participation in and promotion of the WeCount project at local, national or European events.

Folders were available to upload dissemination materials as well, so the project dissemination activities can be easily tracked. It was also possible to use this information to update the website with relevant news and upcoming events.

With the help of this Dissemination monitoring spreadsheet, D6.4 - Communication activities were created summarising all dissemination activities of WeCount in the case studies and at the European level.

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5 Knowledge and Impact Management Framework

5.1 WeCount Impact Statement

"WeCount aims to be the first European citizen science project to enable citizens to create a substantially better understanding of road traffic flows at (hyper) local level. We will involve citizens in genuine co-created or extreme scientific enquiry with special attention to a low technological and scientific threshold to involve everyone who wants to participate. WeCount will offer citizens the mechanisms to generate evidence and utilise tools to quantitatively determine their local transport mix; understand and challenge mobility behaviour; proactively lead local transport discourse; and participate in co-designing traffic policy. WeCount will empower citizens to evolve from citizen scientists to citizen advocates and local champions that can influence a number of intractable societal and environmental challenges such as improve road safety, enhance public health, minimise social inequity, reduce air pollution and carbon emissions, and generally to improve the quality of life and liveability of residential neighbourhoods. "

5.2 Impact Framework: guiding principles

A core element was to embed impact in all our activities to engage and understand the perspectives of citizen scientists. These include general principles as well as specific principles for Citizen Science projects e.g. from the "Ten Principles of Citizen Science"[2]

Our guiding principles to achieve impact were to

- Work with citizen scientists and/or research end-users to tell the impact story through close collaboration (e.g. co-authorships), on-going engagement, testimonials etc.
- Judge our impact on reach (how widely it is felt) and significance (how important).
- Ensure that impact story is compelling, understandable, memorable and quantifiable.
- A genuine science outcome is central to the project and is evaluated for scientific output, data quality, participant experience and wider societal or policy impact.
- Both the professional scientists and citizen scientists need to benefit from taking part. Benefits include new scientific insights, learning opportunities, personal enjoyment, social benefits, satisfaction through contributing to scientific evidence, for example, to address local, national and international issues, and through that, the potential to influence policy.
- Citizen scientists may participate in multiple stages of the scientific process. This includes developing the research question, designing the method, gathering and analysing data, and communicating the results.
- Citizen science project data and metadata are made publicly available and where possible, results are published in an open-access format. Data sharing may occur during or after the project unless there are security or privacy concerns that prevent this.

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[2] Ten principles of citizen science - https://www.sei.org/publications/ten-principles-citizen-science/

5.3 Specific impacts of the WeCount project

5.3.1 *Advance citizens (and broader scientific) knowledge on traffic counting, transport management and related impacts.*

- WeCount empowered citizens to monitor (hyper) local traffic by generating a large open dataset from a network of autonomous traffic counting sensors in locations where traffic counting is typically absent.
- WeCount increased and broadened the citizen, local policy and scientific knowledge in the field of mobility through the quantitative and qualitative activities delivered through the programme.
- WeCount increased and broadened citizen, local policy and scientific knowledge in related transport-related intractable urban challenges such as urban environmental issues (e.g. air pollution), public health (e.g. quality of life) and community informatics.
- WeCount provided a platform for better coherence between citizen science and academic research.
- WeCount contributed to building citizen, policy and scientific international partnerships and knowledge exchange platforms.
- WeCount contributed new scientific knowledge in the field of citizen science concerning the methods to involve citizens in traffic counting interventions.
- WeCount aimed for a 50:50 split in terms of gender and a minimum of 25% coming from lower socio-economic background.

5.3.2 *Establish a durable ecosystem for citizen science traffic counting and related impacts*

The WeCount approach to citizen science activities was setup in such a way that local champions outside the five case studies in WeCount could easily start their use case in their community, using the same platform and sensors developed in the project. The project was designed for this outcome, with the specific aim to increase impact beyond the 5 cases in the project. We meant to achieve impact by finding and nurturing these local champions outside the project. The project installed a helpdesk and tutorial webinars to achieve this. Real life trainings ("train the trainer") was set up in conjunction with various engagement activities. The aim was to make the results available from the perspective of cooperative ownership.

Training of "local champions" among participating citizens – An essential element in the WeCount approach was the concept of "train the trainer" in which we aimed to identify and train key individuals in local communities to take a leading role in shaping and supporting the citizen science activity.

We made all WeCount traffic data open access in compliance with EU Open Access regulations for use and interrogation by scientists and communities outside the consortium. WeCount has created its own page in the ZENODO: an Open Access Repository, particularly used by Citizen Science Projects. As results became available, these were uploaded to the page, ensuring their availability for anyone wishing to use them.

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5.3.3 *Achieve meaningful change in local policy, as a direct result of the evidence collected from the citizen science activities*

From the experience in the 5 use cases, we established a common framework for a "WeCount Impact Story" to stimulate progressive multi-stakeholder dialogue. Active ownership by citizens and stakeholders will be promoted - not only of the problems but also of the solutions.

Each WeCount case study has a specific policy impact pathway that it worked towards. This served to prove there are several applications and use cases and that the citizen science approach generates meaningful output for policy development. The case-specific policy impact stories are:

- **Leuven:** Leuven citizens ensure speed compliance with the help of low-cost traffic counting sensor
- **Barcelona/Madrid:** Barcelona residents achieve lowering street speed limit building on self-generated data
- **Cardiff:** Empowering the citizen: how the WeCount project has helped amplify the voice of Cardiff citizens
- **Dublin**: Dublin schools successfully monitor traffic and air quality with the help of WeCount
- **Ljubljana:** Students from Ljubljana propose new street and traffic arrangements using data from traffic counting sensors.

Annex 1 includes the full impact stories for each WeCount Case Study.

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ANNEX 1 – WeCount Local Impact Stories

Leuven

Leuven citizens ensure speed compliance with the help of low-cost traffic counting sensor

As cities roll out new urban access regulations it becomes evident that their deployment only tells half the story. Often, local authorities struggle with enforcing new rules due to a variety of reasons: ranging from appropriate infrastructure to a lack of user awareness about the new regulations in place. Can grassroots activism assist local authorities in better enforcing specific rules? Can low-cost traffic-counting sensors like Telraam provide evidence to back these efforts? An experience resulting from the Leuven pilot of the WeCount project can answer these questions.

The Brusselsestraat is an important artery connecting to the city centre of the Belgian city of Leuven. To address air and noise pollution and promote safety for its users, local authorities have lowered the speed limit from 50km/h to 30 km/h. However, the historic nature of the street, its design and the overall lack of user awareness of these changes, make it that compliance with the speed limit is very poor.

Leuven is home to one of Europe's oldest universities and recognised as a hub for innovation and citizen engagement. Thus, it comes as no surprise that a local citizen action group "S.O.S Brusselsestraat" decided to take matters into their own hands. For years now, they have pushed local authority for more enforcement of the speed limit, and interventions in the road design to force lower speeds. A member of the community decided to sign up to receive a Telraam-device and participate in the Leuven pilot of the WeCount project. The project enables citizens to initiate a policy-making process with fully automated measurement backed data on mobility and air quality, by installing a sensor on their windows and collecting traffic data.

She did so with one very concrete goal: to objectively show how problematic the non-compliance with the speed limit is. As a matter of fact, existing Telraam data shows that prior to any intervention **47.85%** of passing cars exceeds the 30km/h speed limit.

When asked what motivated her to get a Telraam sensor, the local champion said that her street is very busy, with a lot of mixed traffic. She added that "*the speed was very high, and the 30 km/h zone was not respected at all. We wanted to demonstrate the traffic flows and ratios as well as the speed in black and white with figures to the city council and the police ".*

She highlights the potential of data collection through the sensor and its added value to make a case and present it to the local authorities. Daily summaries created by her were uploaded to the neighbourhood's Facebook group, tagging the competent aldermen and services. According to her *"That is how the ball got rolling. This autumn, our street will be redesigned. Priorities are to tackle speeding and to improve the quality of life."*

The efforts of this group eventually bore fruits, with the city authority carrying out two activities to improve speed limit compliance. In May 2020, a digital sign indicating speed to the passing car was installed, followed by the installation of a temporary speed bump in November that same year.

This is where the beauty of Telraam comes in: given that there was a device in place in the street, another member of the local action group, experienced in data analysis, carried out a detailed analysis. The analysis was carried out,

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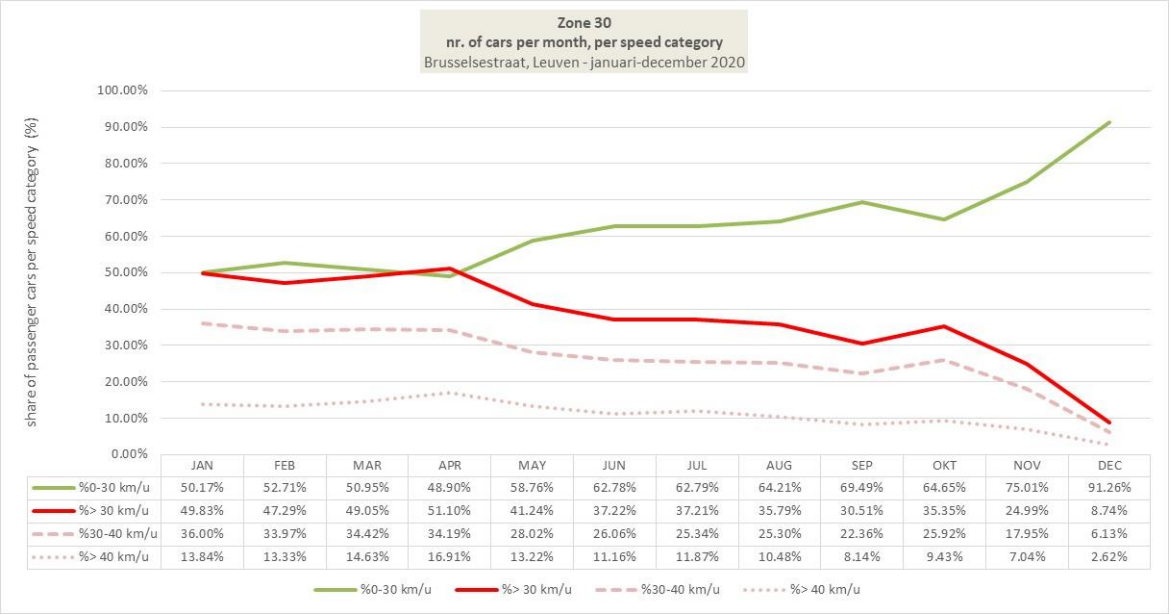
unbeknownst to the WeCount team, who only became aware of this endeavor when contacted by the citizen group to verify their findings. The results are shown in the image below.



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OKT	NOV	DEC
%0-30 km/u	50.17%	52.71%	50.95%	48.90%	58.76%	62.78%	62.79%	64.21%	69.49%	64.65%	75.01%	91.26%
%> 30 km/u	49.83%	47.29%	49.05%	51.10%	41.24%	37.22%	37.21%	35.79%	30.51%	35.35%	24.99%	8.74%
%30-40 km/u	36.00%	33.97%	34.42%	34.19%	28.02%	26.06%	25.34%	25.30%	22.36%	25.92%	17.95%	6.13%
%> 40 km/u	13.84%	13.33%	14.63%	16.91%	13.22%	11.16%	11.87%	10.48%	8.14%	9.43%	7.04%	2.62%

Figure 1 (Credits: Ludo Proost)

The effect of both interventions can be clearly seen, with a decrease of speed limit non-compliance of the first intervention from 47.85% to 36.27%. The second intervention (speed bump) decreased non-compliance further to 8.02%.

The figures below provide a summary of the speed histograms produced by the WeCount team. The first image, on the left, refers to the time-period leading up to May 2020, without intervention. The middle picture accounts for the time right after the installation of the digital sign, whereas the right image accounts for the installation of the temporary speed bump until February 2021.

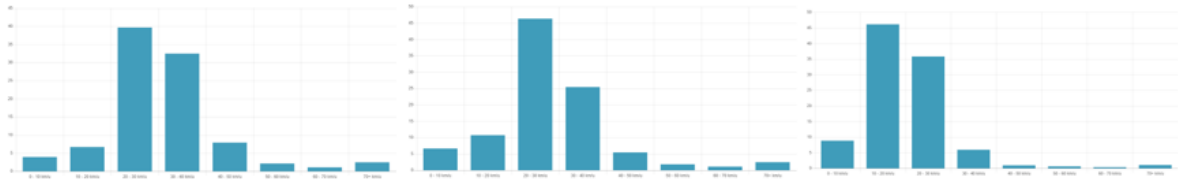


Figure 2

The citizen had a clear vision of what he aimed to achieve with the data analysis. *"I wanted to offer the residents of the street an objectified speed measurement with Telraam and to inform the city council about the actual speeds driven in zone 30 so that the city authority can introduce appropriate speed reduction measures"*, says the WeCount citizen.

The potential of Telraam for data analysis and showing the impact of policies is substantial. According to him "*the impact of Telraam can be great when addressing the city council as a citizen. I noticed that among others the alderman competent for public works frequently visited the Facebook group SOS Brusselsestraat. Every month overviews appeared there so that the impact of the interventions, provisional or otherwise, could be estimated. The residents' group should therefore connect Telraam with a social medium to keep the requirements and issues in mind."*

WeCount set out with the mission of encouraging and empowering citizens and stakeholders to tackle the common challenges of local transport systems. It aims to achieve this by giving citizens tools to monitor, analyse and interpret the impacts of local transport, local behaviour and actions. The example of the Leuven citizens not only

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shows that the traffic counting experience can provide citizens with tools for bottom-up policy change, but also that these are able to perform complex data analysis even outside of the project scope.

WeCount also aims at providing a citizen-led tool able to quantify the effects of decisions made. The example of the citizen who used the Telraam data to analyse the impact of the two interventions precisely the type of example of the sensor's potential to assist politicians and decision-makers in analysing the effect of their policies. WeCount and Telraam do so in real-time and at a low-cost.

Want to dig deeper?

Learn more about the Leuven pilot.
All data for this specific road segment is available.

Barcelona

Barcelona residents achieve lowering street speed limit building on self-generated data

In the vibrant neighbourhood of Gracia in Barcelona, Calle Ros de Olano- a small and narrow street in the area - has been experiencing significant issues related to road safety and high traffic volumes over the past two decades. Over time, a community of residents has formed and gradually established an activist citizen science group (Fumuts Ros de Olano). Their goal? To leverage the latest low-cost internet-of-things technologies to collect evidence and trigger positive change.

Several representatives of the community installed a variety of environmental sensors to collectively gather data-driven evidence of the problematic situation in the street. The community mainly concentrated on collecting and structuring air quality and noise pollution data to create solid proof of the challenges experienced by the residents. However, this information is only a proxy to the effects of the main problem perceived and experienced, highlighting traffic.

WeCount's case study in Barcelona, following the train-the-trainer approach, engaged this community and offered its people a new artefact, tools and methodology for extending their scope towards providing evidence directly related to the actual problem, i.e., traffic volumes and speed compliance. In other words, WeCount has enabled, enriched, and fostered the advancement of the local citizens' agenda, in line with citizen science principles. In the early days of the case study development, a beta-pilot was undertaken to ensure an effective knowledge transfer process to those identified as community champions, so they could act as boundary spanners and gatekeepers for the other members of their community. This consisted of a short WeCount cycle – from problem formulation throughout sensor installation, data collection and analysis - where participants could gain the required knowledge and tools to then upscale the intervention across their networks and communities. In May 2020, two representatives of the *Ros de Olano* community participated in this early stage intervention. They installed two traffic-counting Telraam sensors on their windows which have been actively measuring traffic ever since.

After the time needed to generate meaningful data, the community leveraged this information to act. The sensors have provided the missing building block for enabling an informed intervention. Now the community was able to add data-driven evidence about traffic volumes and speed compliance, complementing the already available information about air quality and noise pollution in the street. Thus, they finally achieved a full picture of the issues they experience in their everyday lives. Leveraging this new knowledge, and independently, they approached and interacted with Barcelona City Council and, through showcasing the evidence collected, the community managed to have a change in the speed limit for this street, which was decreased to 10km/h (see related news published on the community's Twitter below).

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Figure 1: Citizen group tweet with data analysis

The citizen's engagement did not stop there! After the establishment of the new speed limit in late 2020, the street residents hosting a Telraam have been monitoring compliance to this new regulation and have been very vocal in protesting when these limits are not being respected by cars and motorcycles (see an example of a related post below).

Figure 2: Local resident tweet on compliance with the speed limit

All in all, WeCount's legacy empowered the community at *Ros de Olano* to advance their existing citizen (scientists) agendas. Citizens were left with a strong socio-technical infrastructure and toolkit to enable this and other communities in the country to independently undertake similar interventions in the future.

Ljubljana

Students from Ljubljana propose new street and traffic arrangements using data from traffic counting sensors

In Ljubljana, Slovenia, students from the Department of Urbanism at the University of Ljubljana tested the use of the data obtained from the Telraam devices, in the framework of the WeCount project. They were invited to participate in a guided analysis and contribute their understanding and interpretation of the data from traffic counting sensors.

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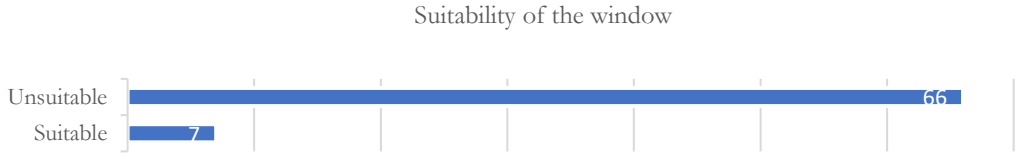
Figure 1: One of the most important traffic junctions in the centre of Ljubljana, with a special focus on bicycle traffic.

As part of the Strategic Spatial Planning course at the Faculty of Architecture, an exercise was carried out in which the students became familiar with the WeCount project, ultimately taking up the role of local champions. In other words, the students became advocates for WeCount, its activities and its goals.

They presented the project to three random residents of the city of Ljubljana and asked them to join WeCount activities either as members or as users of the Telraam device. The exercise was organised to introduce the WeCount project, which focuses on public participation through citizen science activities in planning a better living environment, becoming acquainted with new technologies, registering traffic flows and obtaining user data in concrete cases.

The students were introduced to the registration process and data collection in place. Most of the candidates - potential members or users - did not have a suitable window to assemble the traffic counting sensors. This is mainly due to the particular city layout of Ljubljana, which in the vast majority of cases does not offer satisfactory locations for the installation of a Telraam sensor.



Alternatively, each student chose their own road section with an installed Telraam sensor and outlined the existing street location, including the traffic indicators of the selected street segment and the width of the road profile in relation to the road users – car drivers, pedestrians, cyclists. Included in this information summary was also a sketch of the location for which Telraam data was available.

Finally, the students compared the analysis of the selected street segment plan and section with collected Telraam data, which allowed them the opportunity to assess the traffic flows and the adequate road infrastructure. If these two did not match, they suggested improvements to the road profile and traffic arrangement.

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Figure 2: During the covid19 crisis, traffic on Zoisova Street decreased significantly, while in the pre-crisis period the number of vehicles reached almost 20,000 per day.

The diagrams prepared by the students show the spatial proposals for the future streets and highlight the traffic density and structure. The density of bicycle traffic and the lack of cycle paths, high speeds in residential areas, the density of car flows in the city centre are just some of the problems identified. The students were enabled by data collected by the sensors to suggest quality solutions for redesigning the street profiles. The results of the exercises mostly revealed deviations from the existing traffic pattern and street profile. By applying the Telraam data, it was possible to design a better street profile based on actual rather than imaginary and speculative street use.

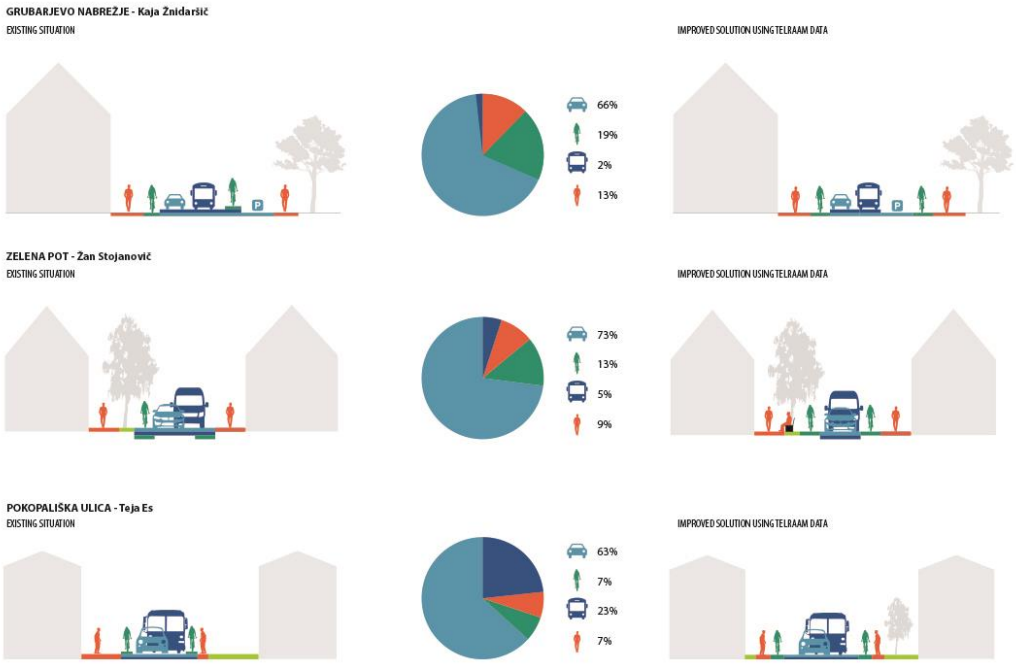

Figure 3: Redesigning the street profiles to reach better distribution of street space for various street users in Ljubljana.

The example of the Grubar embankment clearly shows that the current street design is inadequate. Namely, Telraam data displays a high percentage of cycling traffic and therefore more attention should be paid to the

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inclusion of a bicycle lane. The proposed solution separates the bicycle lane from the road, which ensures greater safety for cyclists. A similar situation can be observed on Zelena Path and Pokopališka Street, where the students' new design also separates the bicycle lane from the car lane by narrowing the pavement or lane itself.

The data obtained from the Telraam sensors is essential as the proposed street design changes can be supported by solid evidence. The city of Ljubljana could have valuable tools at its disposal to improve the quality and quantity of cycling areas by making the streets cycling-friendly, which is usually reflected in the increase in the share of cycling trips in the city.

In this particular WeCount action, we focused on involving urban planning students as engaged citizens for two reasons: First, they are future planners who will work in city government, planning offices, etc., and they can broaden their horizons to be aware of citizen science approaches and their benefits already during their studies. At the same time, as not-yet-professionals, they can be an engaged and naturally interested and empowered group that can help find concrete solutions for bottom-up policy-making, and support the premise that active involvement of local citizens will be needed during the next period of urban redesign processes of the traffic system.

Dublin

Dublin schools successfully monitor traffic and air quality with the help of WeCount

Traffic volumes around schools are a major concern for citizens in Dublin. The Dublin case study is providing traffic and air quality monitors to local schools to help them collect objective measurements outside the school gate.

Since the start of the WeCount project, schools have s been at the heart of the Dublin case study. In fact, the first engagement workshops were carried out with school children. During these initial workshops, children assembled the Telraam traffic counters and learned about the importance of citizen science when monitoring traffic in local neighbourhoods. The aim was to encourage them to become ambassadors for WeCount.

Figure 1: School children assembling traffic counters during an engagement workshop

As the WeCount project progressed and more than 100 traffic counters were deployed in Dublin, it became clear that traffic and air quality around schools is a major concern for citizens involved in the project. For example, one citizen told the WeCount team:

What I noticed at the school is, people are driving up to the school with big, dirty, old diesel engines and the fumes out of the things are just ferocious. What I want is to try and change the behaviour of people, that they encourage more cycling, walking, not basically driving up to the school window and leaving your engine running… X is going to send me a pollution sensor and that's really where [sic] we're very interested in. That's really the information we want. (Dublin Citizen Interview05)

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In response to these concerns the Dublin project team decided to invite schools to host traffic counters and air quality monitors during the second round of sensor deployment. After promoting the project via social media, around fifty schools expressed an interest in joining WeCount.

Figure 2: Tweet from Ardgillan College after joining the WeCount project

This also attracted the attention of the four local authorities part of the Greater Dublin Area. For example, Dublin City Council approached the project team with a list of more than thirty schools. As part of their School Mobility programme Dublin City Council has introduced the School Zone initiative. This initiative aims to reduce congestion, increase safety at the school gate, and to encourage active travel to and from school. School Zones will receive colourful circles on the road demarcating the school area, and pencil shaped bollards on the footpath to prevent illegal parking. Dublin City Council asked WeCount to install traffic and air quality monitors in schools selected for the School Zone initiative, as this will provide them with an objective measure of the effectiveness of this initiative.

Unfortunately, a long lockdown in Dublin during the first half of 2021 resulted in delays in the delivery and installation of monitors. This was followed by the school holidays, which means that many schools are still busy with the installation of the traffic and air quality monitors. However, preliminary results from selected schools are promising interesting datasets. Figure 4 below shows data for May 2021 from a traffic counter located near a school in the Blackrock area. During the early morning and early evening more than a third of cars are exceeding the 50km/h speed limit. The percentage of cars exceeding the speed limit only drops below 10% during the morning rush hour and tends to be 10%-20% during the day. This has important implications for children walking or cycling to school.

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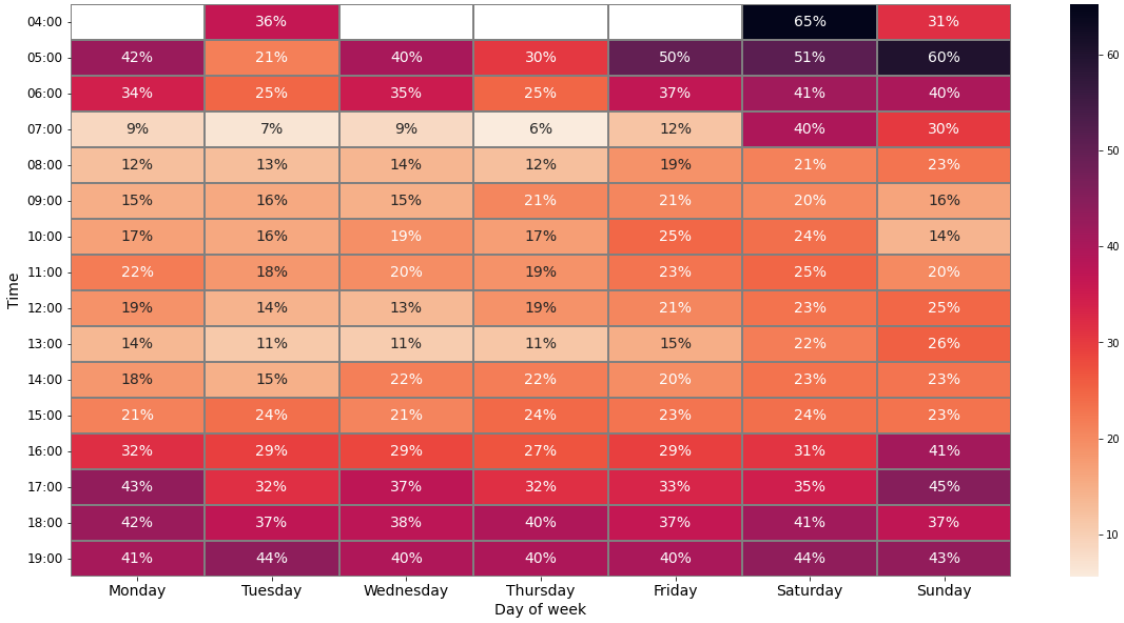

Figure 4: Average percentage of cars exceeding the speed limit by weekday and time of day

Figure 5 compares the number of cars during August 2021 and September 2021 by time of day measured near a school in Dun Laoghaire. The school holidays in Ireland ended at the end of August and it can be seen that morning car traffic in September increased by 10%-44%. Similarly, evening car traffic increase by 8% - 18%. Again, this data is very important to the school, as it can be used to encourage more active travel.

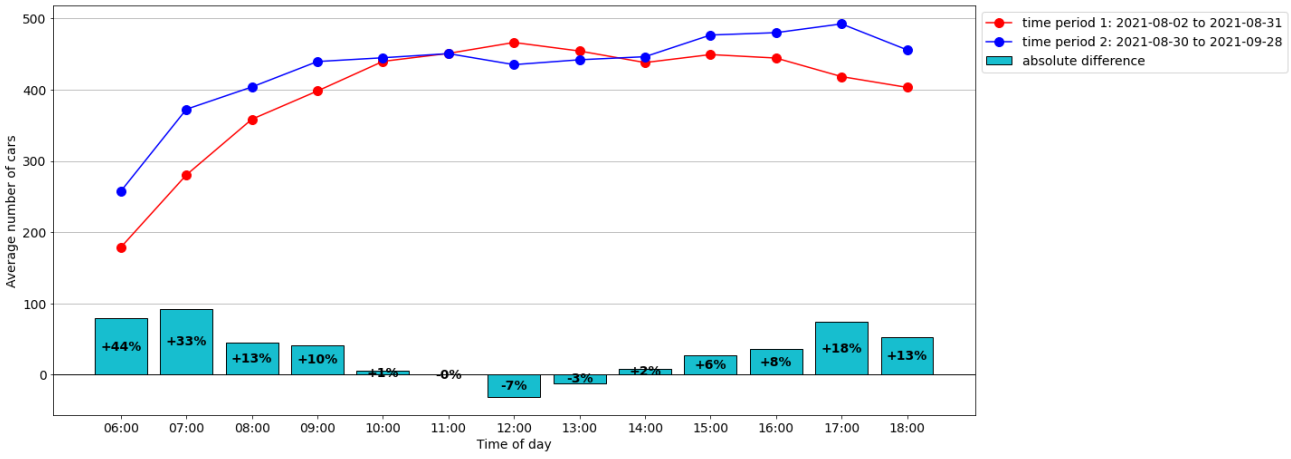

Figure 5: Comparison of average number of cars during August and September

Once the traffic and air quality monitors are installed in the schools, the datasets will be invaluable to the schools. Not only will they provide objective measurements to support applications for traffic calming measures, but they can also be used for educational purposes inside and outside of the classroom. The Dublin schools, the Dublin councils and the Dublin study team are looking forward to obtaining far-reaching insights into traffic patterns around schools in Dublin!

Cardiff

Empowering the citizen: how the WeCount Project has helped amplify the voice of Cardiff citizens

The WeCount Project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 872743

Road transport has been a contentious issue in Cardiff for several years. Born out of frustration that the city is not making sufficient use of its immeasurable potential for active travel, citizens across the city have campaigned for more sustainable urban mobility options. Now Cardiff citizens have the quantitative data to support their arguments and are using it to challenge the status quo and push for more ambitious and accelerated change.

Cardiff, the capital of Wales, United Kingdom, has a young, diverse and growing population (>400,000), but despite its economic role regionally and nationally, many of Cardiff's communities are amongst the poorest in Wales. Pre-Covid19, ~190,000 commuter trips were made by Cardiff residents and ~100,000 people travelling into the city every day (~80,000 by car). Transport, especially road transport, is an emotive and contentious issue in the city. There are many individuals and advocacy groups supporting and encouraging more ambitious and faster interventions especially related to better active travel infrastructure, road safety and restrictions in vehicle movements. Conversely, there are also prominent pro-car voices in the city, especially on social media, which challenge and cite the impact of transport interventions on increased congestion, displaced traffic and pollution and a reduction in accessibility. The Cardiff Council decision to reopen Castle Street to private car use in 2021 it the perfect example of the divisiveness of the transport debate.

The annual Ask Cardiff Survey, which provides an interesting insight into public attitudes to various issues in the city, found that almost three-quarters (73.8%) of respondents deemed travel and transport problems in Cardiff to be either serious (49.1%) or very serious (24.7%)[1]. The 2019 Ask Cardiff Survey found that the level of public satisfaction with public transport fell from 57.9% in 2018 to 51.7% in 2019 with issues like accessibility, frequency, access to information cited as some concerns. Citizens also cited safety concerns when walking or cycling with respondents feeling least safe when cycling in Cardiff after dark (24.8%), walking in the city centre after dark (36.2%) and cycling in Cardiff in the day (58.4%). Dangerous drivers (49.3%), lack of dedicated infrastructure (38.1%) and poor lighting (13.3%) were cited as reasons why people feel unsafe when cycling. The Bike Life Survey (2019) found that 27% of residents do not currently cycle but would like to and only 29% of residents think cycling safety in Cardiff is good[2].

Cardiff Council have a number of plans and strategies in place such as their Transport White Paper, One Planet Cardiff Climate Strategy, Local Wellbeing Plan 2018 – 2023, Child Friendly City Strategy in addition to extensive investment in new cycling infrastructure around the city seeking to address key transport challenges for Cardiff. For example:

1. **Congestion**: Since 2018 drivers in the city are losing 19 full working days a year at a cost of around £1,056 per driver[3].
2. **Responding to the climate emergency**: In Cardiff, 81.2% of people who took part in the Ask Cardiff Survey 2018 said they were either "very" or "fairly concerned" about climate change[4].
3. **Clean air and public health**: Cardiff have some of the highest levels of Nitrogen Dioxide (NO_2) pollution in Wales and levels exceed the EU and National limits for NO_2 in some areas.
4. **Creating Safe and Healthy Communities**: Cardiff want to create a transport network that focuses on people, as well as vehicles, to ensure streets, neighbourhoods and public spaces are safer, cleaner, and quieter
5. **A city for everyone**: Travelling around Cardiff is not always as easy as it should be, especially for people who are often the least mobile in our society

[1] Ask Cardiff Transport Survey, 2017 - https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/Transport%20Survey%202017%20Report.pdf
[2] Bike Life 2019 - https://www.sustrans.org.uk/media/5946/bikelife19_cardiff-v73_eng_web.pdf
[3] Cardiff Transport White Paper: Transport Vision to 2030 - https://cardiff.moderngov.co.uk/documents/s44138/Appendix%202.pdf?LLL=0
[4] Ask Cardiff 2018 - https://www.cardiff.gov.uk/ENG/Your-Council/Have-your-say/Ask%20Cardiff%20Library/Ask%20Cardiff%202018.pdf

The WeCount Project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 872743

WeCount Cardiff participants had several motivations for engaging with the project such as measuring and monitoring modal distribution and traffic density, a desire to improve neighbourhood liveability, road safety and air pollution. The WeCount monitoring and evaluation survey found that citizens wanted to "*make a difference*" (21%) to work towards "*sustainable mobility*" (18%). To achieve this aim, a significant challenge facing Cardiff citizens is the perceived disconnect between the high-level city-wide strategies and the very localised day-to-day transport issues that they experience. Additionally, there was a perception that anecdotal evidence of a transport issues such as speeding, rat running, and high traffic volumes was not sufficient to engage the change-makers in the city. For example, one Cardiff citizen stated "*I (and others on the street who have got involved) wanted to back up future efforts to talk to the Council and police with data. Ultimately, I and some others see the future of our area as a low traffic neighbourhood (LTN) with no access for rat-running drivers and no opportunities for speeding. To get such changes implemented, we need data*". Another said: "*I know traffic is bad in my neighbourhood. The data I've seen proves what I suspected."*

The trigger for Council's acting on traffic calming and other measures has often been stated to be incidence of actual collisions rather than reports of antisocial driving or high traffic levels and concerns about air pollution. But air quality and the sense of impaired 'subjective safety' that accompanies high levels of car traffic and especially speeding should also be treated seriously. Residential streets are improved for all when they are pleasant to live on, and where people feel encouraged and enabled to use them in a variety of different ways other than simply driving down them. A WeCount Cardiff citizen states: "*trying to get the police to act has been difficult, leading to some rather evasive responses, including a rather strange email in which officers claimed to not be able to assess speeding along the street due to not being able to find somewhere to park!".* This is where WeCount filled a prominent knowledge gap by providing real data to support and amplify the citizen voice and reassuring citizens that they the data supports their observations – "*I think the situation is actually worse than we thought it was, so it's been eye-opening really. It is a busy road, there's no denying that, but it's actually busier than we thought it was because the data actually shows us that it's busier, so yes, it's really revealing and hopefully, it can be built on and used for some kind of constructive change."*

How citizens are using the data to support their activism varies. Many focus on providing regular updates using the Telraam data to highlight transport issues, conversely, others use the data to highlight positives and what can be achieved. For example, Roath Court Play Streets use the Telraam data to illustrate the success of their play street initiative seeing more pedestrians and cyclists.

Other activism includes reaching out to local councillors on email and on social media, writing blog posts, performed their own analysis on the data and using the sensor / data as a pedagogical tool for students. Lastly, another counter explained how their proactive nature led to more people joining the project: "*I think it does give an interesting potential boost to your activism… as in its empowering I suppose is the word…I know at least two other sites have opened up because of my agency"*

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Interestingly, two participants reflected on how the project has contributed to a shift in their activism: "*I used to be really active until my life took a different turn, and so not active at all, and then this project kind of reminded me that that's my nature, I want to go back to being more proactive about sustainable travel*" and *"[I didn't used to be active], not really, I'll be honest with you, because I didn't think there was anything within my power to change the situation, you know, but there was a [Council] consultation after I installed the Telraam… so I did respond to that consultation. And probably, because I did have the Telraam, it gave me a bit more impetus to do it."*

There are no physical transport interventions in place that can be directly attributed to the WeCount project (yet) but there is plenty of evidence to show that the project has empowered citizens and given them agency to challenge the status quo and campaign for change. As one citizen stated "*Putting the numbers on social media has helped amplify [the problems], with people from all across Cardiff commenting their shock, demanding action and sharing their own numbers……the data has certainly raised awareness of the problem…..we hope the data will also be used to shape future traffic schemes in our area, with our local Living Streets Group liaising with the Council, sharing this data, we hope rat-running can be addressed in future traffic schemes".*

The WeCount Project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 872743

ANNEX 2 – Policy Brief 1: Hybrid Citizen engagement approaches to deliver citizen-led project results in times of a pandemic

WECOUNT

WECOUNT

Hybrid citizen engagement approaches to deliver citizen-led project results in times of a pandemic

14th of September 2020

WECOUNT: LIVE TRAFFIC COUNTING BY CITIZENS

Citizen Science is gaining momentum across different fields, striving to contribute to citizen innovation and the democratisation of science. The value of citizen participation and science in transport is harnessing more recognition, however, the current ad-hoc engagement approaches can result in a lack of diversity and inclusivity. Can citizens directly contribute to achieving more sustainable transport systems? Can their actions and insights contribute to policy-making, allowing for a bottom-up, participatory approach, that reflects citizen expectations in urban mobility planning?

The WeCount project is the first European Citizen Science initiative to enable citizens to create a substantially better understanding of road traffic flows at local level. WeCount will gather greater insights into the impact of local road transport on issues such as air pollution, public health, and road safety. The project involves citizens in genuine co-created scientific enquiry, focusing on the use of accessible technology and tools to those interested, with the help of Citizen Science methods. It aims to place the citizens as key central players in the evidence gathering of local road transport systems, collecting data at an unprecedented level of detail by co-(re)designing existing sensors and opening up a new data source for local policy-makers and the transport policy research community to build better local transport systems together. The main objectives are:

- WeCount will advance citizens (and broader scientific) knowledge on traffic counting, transport management and related impacts
- WeCount will establish a durable framework for Citizen Science traffic counting and related impacts
- WeCount will lower the technology threshold to reach a more diverse audience ensuring broader citizen inclusiveness, by providing technological support to those involved,

- WeCount will demonstrate the diverse potential applications, in six use cases, to tackle different issues related to local road traffic
- WeCount will achieve meaningful research and local policy change, as a direct result of the evidence collected from the Citizen Science activities
- WeCount will contribute to the vision of '15 Minutes Cities' adopted as a guiding principle across several local authorities worldwide, by providing new knowledge to re-think our urban design.

WeCount offers citizens the mechanisms to generate evidence and utilise tools to quantify local transport mix; understand and challenge mobility behaviour; proactively lead local transport discourse and **participate in co-designing traffic policy**. WeCount empowers citizens to evolve from citizen scientists to citizen advocates and local champions that can influence several intractable societal and environmental challenges. WeCount uses innovative low cost, automated, road traffic counting sensors (the Telraam sensor) and multi-stakeholder engagement mechanisms (workshops and online interactions) across **six case study cities: Leuven (BE), Madrid/Barcelona (ES), Ljubljana (SI), Dublin (IE) and Cardiff (UK).**

The primary challenge centres around what kind of Citizen Science methodologies can and should be used, ensuring quality and validation of the produced outcomes. The selection of participants, the different stages of interaction, the iterative process of knowledge sharing and learning, and even ensuring citizens remain engaged and motivated in the process will all be influenced by the methodologies selected.

The COVID-19 pandemic poses challenges to Citizen Science engagement approaches but also showcases the potential of online/hybrid approaches to reach a bigger audience, leading by example to the reduction of trips and carbon emissions, using an in-house solution ensuring that citizens engage in science while being safe. Thus, this Policy Brief builds upon the Citizen Science approach and methodology employed by WeCount, its shift from face-to-face to hybrid interactions and how the citizen-science and concept can help to tackle challenges brought about by COVID-19.

WHAT IS THE WECOUNT CONCEPT AND METHODOLOGY?

The Telraam sensor and platform are essential to achieve WeCount's ambitions. Telraam was developed by Transport and Mobility Leuven, which used to rely on traffic counting data acquired from third parties using expensive counting techniques to generate sensible policy advice. The Telraam pilot launched in April 2019 offers a proof-of-concept upon which WeCount has been working on. Telraam is a combination of a Raspberry Pi microcomputer, sensors and a low-resolution camera and a platform to collect, process and visualise the data. The device is mounted on the inside of an upper-floor window with a view over the street. To send the traffic count data straight to the central database, the device needs a continuous Wi-Fi connection. Since the device is electrically powered, it also needs a power outlet within reach.

To achieve these goals, WeCount uses a novel methodological framework that results from the combination and adaptation of two established models for Citizen Science and citizen sensing: "The Bristol Approach"[5] and the "Making Sense Framework"[6], which have been developed by Ideas for Change, and stakeholders across Europe, and have been successfully used in other participatory projects. The methodology is based on a five-step approach:

1. **Phase 1. Scoping and Community Building:** research in each city to identify urban transport matters that are of concern to citizens, while undertaking community-building efforts, to ensure that an engaged multi-stakeholder group is formed.
2. **Phase 2. Co-designing:** Phase two is about collectively deciding on the project goals, on sensing strategies and on protocols for collecting data.

[5] Balestrini, Mara, et al. "A city in common: a framework to orchestrate large-scale citizen engagement around urban issues." Proceedings of the 2017 CHI Conference on Human Factors in Computing Systems. ACM, 2017.

[6] Making Sense 2018. Citizen Sensing: A Toolkit. Making Sense Online Publication. Retrieved February 17, 2018 from http://making-sense.eu/publication_categories/toolkit/

3. **Phase 3. Data Collection**: Researchers and experts will actively support the process of data collection and sensor calibration to ensure the rigour of the intervention.
4. **Phase 4. Data Analysis and Awareness:** In this phase, the data is analysed and discussed among stakeholders.
5. **Phase 5. Reflection and Legacy:** This phase spans throughout the entire process of co-creation and involves reflecting on the intervention, documenting tools and methods and assessing if and how the goals were achieved.

CITIZEN-SCIENCE HYBRID ENGAGEMENT STRATEGIES IN A PANDEMIC

In WeCount, we empower citizens to develop evidence-led interventions into the political discourse on civic and environmental issues. By putting citizens at the heart of the innovation process, the project seeks to overcome existing technological and societal silos so that citizens can champion a new perspective on road transport that takes into account their concerns in pursuit of a better quality of life and more equitable, healthy futures. The project supports citizens in developing knowledge and insights: scientific enquiry, autonomous sensing, transport and mobility research, environmental management, data science, social science, social equity, citizen advocacy and in evidence-led policy-making.

Designed originally for face-to-face interactions, WeCount had to adapt its approach considering COVID-19. Working closely with each case study team, the project now employs a more tailored, hybridised format, mostly consisting of online engagements with some smaller, intimate meetings when safe and necessary to do so. There are numerous online engagement tools available and the team is being trained in how to use them.

In Leuven, the WeCount case study is split into five sub-pilots, each with 40-50 participants and with Citizen Science activities spread over a longer period compared to our initial plan of a concentrated set of workshops. Each of these sub-pilots seeks to address a specific transport policy challenge e.g. devices for the city centre will be used for continuous monitoring, while devices in Kessel-lo & Wilsele (sub-municipalities of Leuven) will be used to monitor the impact of changes to the Leuven circulation plan. The monitoring systems for the city centre will in part also be used to monitor COVID-impact as findings can be compared to pre-COVID traffic counting using classic techniques. There were three types of interactions. Firstly, there were brief corona-proof physical interactions to distribute the equipment during a short period at a central point in the city, followed by online sessions in which the installation process was explained. Lastly, online Q&A sessions were organised to deal with potential installation issues that citizens might have experienced.

In Spain, the WeCount intervention was initially designed around several face-to-face and hands-on interactions with citizens across all phases of the research. The COVID-19 pandemic, while limiting physical interactions, offered new opportunities for meaningfully engaging citizens in WeCount. Like the Leuven case, the narrative of the intervention was enriched by the possibility of comparing traffic and mobility before, during, and, hopefully, after the lockdown measures adopted in the country. A pre-pilot was conducted including approximately 30 users, encompassing significant diversity regarding age, gender, skills, and interests. Initial data seems to show a positive uptake, both in terms of the number of people involved, but also in the diversity of their profiles in gender and age. The current setting and hybrid approach seem to give citizens more flexibility which can result in higher engagement and/or attractiveness. However, the shift to online interactions might also entail a challenge in targeting lower income groups. The pre-pilot was conducted in Barcelona and Madrid, through three participatory workshops each, carried out online. These focused on three main dimensions: the first workshop explored the mobility issue, including an introduction to WeCount, traffic counting techniques, together with assessing how participants perceive their ideal mobility and neighbourhoods. The second workshop focused on installing the sensor, with a technical explanation and step-by-step approach with the participants. The third workshop focused on the analysis of the preliminary data, gathering general feedback from the participants and their experiences. This served as a great opportunity to develop and test resources for smooth online interactions. The learning curve from this action is being leveraged for the larger roll-out planned for the end of September 2020. Finally, significant partnerships have been established which will ensure a wider reach, also among other stakeholder groups or citizens with low socio-economic background.

All in all, as shown by the description of the methodology described above, WeCount's concept proved resilient and easily adaptable during times of unprecedented hardship and limited mobility. In a moment when citizen's ecosystems were reduced to their houses and most of the economic and social activity came to a halt, WeCount's concept allowed citizen-lead research to continue being carried out, from the safety and comfort of the individual's homes.

POLICY IMPLICATIONS AND RECOMMENDATIONS

The following policy implications and recommendations derive from the research carried out in WeCount and from the preliminary results of the Leuven and Spanish experience. The recommendations therein will be elaborated further, once these case studies are at a more advance level of development and the additional case studies in Cardiff, Dublin and Ljubljana are underway.

- **Hybrid strategies with limited face-to-face interaction in combination with online events can replace classical citizen engagement activities such as workshops.**
  - Spreading the engagement activities and choosing for a hybrid approach allows for more engagement activities with fewer attendees, which leads to a stronger involvement of the participants. Citizens who may otherwise be reluctant to do so, will now more easily accept digital engagement formats, providing an opportunity to WeCount and Citizen Science projects.
- **WeCount's potential to assist in providing data for urban mobility planning, particularly at the local level, is highlighted by the COVID-19 pandemic:**
  - The data gathered during the lockdown period, particularly in the Belgium scenario where more sensors were already up and running, managed to clearly show the substantial changes that came along with the lockdown, allowing to inform policy-makers on the traffic counting data and mobility patterns before, during, and after the lockdown. This information is of extreme importance, particularly in assisting the planning of urban mobility, considering that citizen's mobility patterns were and will continue to be influenced by their concerns about safety (i.e. less usage of public transport, more uptake of cycling, etc.).
  - In May 2020, the European Commission published the communication *"COVID-19: Guidelines on the progressive restoration of transport services and connectivity".* This document proposed a strategy for restoring transport services, as Member States recovered from the outbreak of the coronavirus and gradually lifted their lockdowns. WeCount's concept can, at local level, assist governments in better adapting overall EU-level strategies and proposed solutions, to their specific mobility setting.
- **Citizen Science should be one of the cornerstones behind co-creation processes both for policy-making and research and innovation initiatives.**
  - EU funded proposals of Research and Innovation Programmes (i.e. Horizon Europe), aim to pay special attention to co-creation processes and designs. This will entail a participatory policy-making and research and innovation development that is a result of a process conducted with people, rather than on behalf of people.
- **Citizen Science engagement methodologies can serve as an additional tool to assist the development of Sustainable Urban Mobility Plans (SUMPs), for a more inclusive, citizen-centred, policy-making process.**
  - Local government and public transport authorities understand the importance of bottom-up policymaking. The design of SUMPS in different European cities normally accounts for a dimension of citizen engagement, to better inform the process of policy design.
  - Citizen Science and the methodology developed and employed in WeCount can serve as an additional tool to actively involve citizens in this process, allowing them to identify what the local urban mobility priorities are, contribute to their co-design, data collection and analysis. An overall sense of ownership in the creation process of policies leads to higher acceptance of measures, while ensuring that they are closer to citizen's needs and expectations.

The next WeCount Policy Brief will focus more specifically on overall project experience and the data gathered from the Leuven and Madrid/Barcelona cases, as well as of that resulting from the Cardiff, Ljubljana and Dublin pilots. By then the project will have substantial data, allowing for more specific recommendations to be made on the topics related to each pilot (i.e. air-quality and traffic planning).

PROJECT INFORMATION

PROJECT NAME

WeCount (Citizens Observing UrbaN Transport)

COORDINATOR

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CONSORTIUM

Transport & Mobility Leuven - Leuven, Belgium
POLIS Network – Brussels, Belgium
Mobiel21 - Leuven, Belgium
University of the West of England – Bristol, United Kingdom
University College Dublin – Dublin, Republic of Ireland
Ideas for Change – Madrid, Spain

FUNDING SCHEME

Horizon 2020 Framework Programme for Research and Innovation (2014-2020), SwafS-15-2018-2019 Exploring and supporting citizen science, grant agreement No. 872743.

DURATION

December 2019 – November 2021 (24 months)

BUDGET

EU contribution : 1 957 897,5 €.

WEBSITE

www.we-count.net

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FURTHER READING

Europe-wide traffic survey to recruit 'citizen scientists, article on BBC World News
The People have spoken, article on the Thinking Cities Magazine
Citizen science exposes mobility impact of corona, article on the NM Magazine (in Dutch)
Neighbours will place sensors on their windows to improve mobility and air quality, articles on La Vanguardia (in Spanish)

ANNEX 3 – Policy Brief 2

EUROPEAN
POLICYBRIEF

WECOUNT

Citizen science for sustainable urban mobility: Empowering citizen traffic counters to shape local policy

30th of November 2021

KEY RECOMMENDATIONS

1. **Citizen science is an invaluable tool for bottom-up policy development in urban mobility,**

2. **The European Union should continue to fund Citizen science research and innovation projects for broadscale support and alignment with the European Green Deal,**

3. **Citizen science engagement methodologies can assist the development of Sustainable Urban Mobility Plans (SUMPs) with a more inclusive, citizen-centred policy-making process.**

WECOUNT: LIVE TRAFFIC COUNTING BY CITIZENS

One of the main challenges the WeCount project centred around was **which kind of innovative citizen science methodologies and tools are effective in empowering citizens to influence policy-making processes**. The value of citizen participation and science in urban mobility is harnessing more recognition. However, citizen engagement approaches must be well-designed and carefully implemented to empower citizens to use their data to advocate for behavioural and policy change. Involving citizens in science projects is beneficial only if their contribution is recognisable and well-identifiable in project results. Simply handing out tools (in this case, traffic counting sensors) is far from enough. Citizen engagement activities must be in place to inform citizens about how to act. **WeCount citizen science approaches proved to be effective in actively engaging the more than 1,000 citizens about the power of crowdsourced data in shaping local transport policies.** A total of 843 participants attended 52 workshops across the five case studies of the project to get informed, to analyse data collected and brainstorm about how to act. This is the challenge that this WeCount second Policy Brief addresses, **showcasing real-life examples for achieving change by proactive citizens in co-designing local traffic policies**.

Main Results achieved

- At the time of publishing, **10% of participants have so far acted**, and policy-makers have recognised the substantial added value of the project. WeCount 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, thereby creating new opportunities for transportation policy-making and research.
- An impressive **78% of all Telraam devices are still counting**, therefore, most participants stayed engaged with the project. Based on a survey, **almost half (48%) of citizens plan on using the data after the project ends**.
- Based on surveys conducted among citizen scientists, overall, **75%** saw at least some improvement in their knowledge, with 52% of these respondents seeing a drastic improvement in their knowledge on traffic and mobility, air quality and traffic safety and **how to act on it**.
- **Citizens are using the data**: **it is leading to specific policy changes; behaviour change and greater awareness**.
- We believe **data is of sufficient quality for policy-support research/consultancy**. Case study leaders have developed professional relationships with decision-makers for knowledge transfer, contacts, communication channels and strategic opportunities.
- 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**.

The main results achieved are based on the findings of D5.4 – Final Summative Monitoring & Evaluation Project Report.

empowered to positively impact local level policy-making

WeCount case study neighbourhoods prepared impact stories to showcase the positive effect the initiative had in their local communities, considering the initial goals it set out to achieve. This section briefly demonstrates some of these stories, testifying to the commitment of WeCount's engaged citizen scientists and the rigour, scientific and policy-making potential of the traffic gathering data sensor, Telraam.

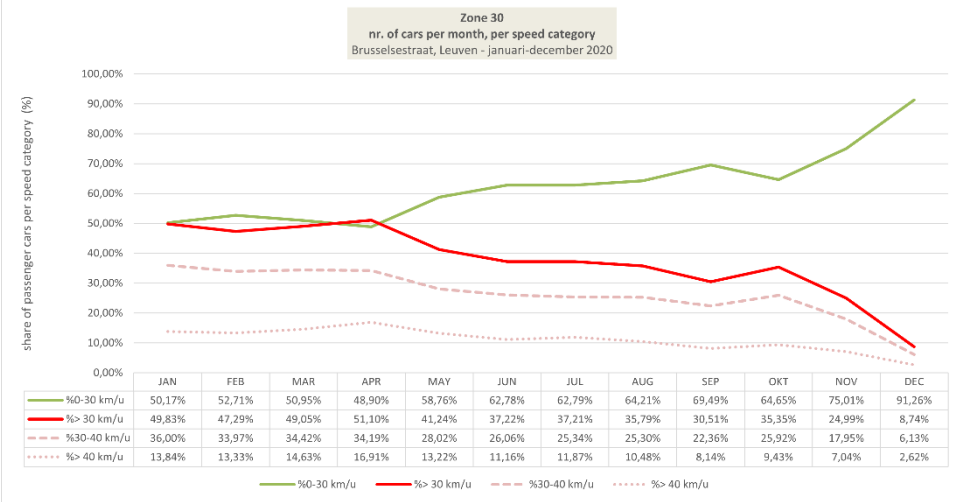
Credits: Transport & Mobility Leuven

Leuven: citizens ensure compliance with speed limit with the help of Telraam & WeCount

In Leuven, local activists joined WeCount to substantiate claims and changes they had been pushing for. A central route in the city (Brusselsestraat) had its speed limit lowered from 50km/h to 30 km/h. Despite welcoming this measure, the local citizen group "S.O.S Brusselsestraat" claimed that compliance with the speed limit remained low and campaigned to convince local authorities to implement additional measures to ensure its enforcement.

A member of the community decided to take matters into her own hands and signed up to WeCount. In her words, she did it because “The car speed was very high, and the 30 km/h limit was not respected. We wanted to demonstrate the traffic flows and ratios as well as the speed in black and white with figures to the city council and the police”.

Confronted with the claims of the citizens, now backed up with data, the local authority installed a digital sign indicating speed to the passing car in May 2020, followed by the installation of a temporary speed bump. The effect of both interventions is clear with the citizen group finding that the digital sign led to a decrease of speed limit non-compliance from 47.85% to 36.27%. The speed bump decreased non-compliance further to 8.02%.



	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OKT	NOV	DEC
%0-30 km/u	50,17%	52,71%	50,95%	48,90%	58,76%	62,78%	62,79%	64,21%	69,49%	64,65%	75,01%	91,26%
%> 30 km/u	49,83%	47,29%	49,05%	51,10%	41,24%	37,22%	37,21%	35,79%	30,51%	35,35%	24,99%	8,74%
%30-40 km/u	36,00%	33,97%	34,42%	34,19%	28,02%	26,06%	25,34%	25,30%	22,36%	25,92%	17,95%	6,13%
%> 40 km/u	13,84%	13,33%	14,63%	16,91%	13,22%	11,16%	11,87%	10,48%	8,14%	9,43%	7,04%	2,62%

Credits: Ludo Proost

Barcelona residents achieve lowering street speed limit using self-gathered Telraam data

In the central neighbourhood of Gracia in Barcelona, in Calle Ros de Olano - a small and narrow street - road safety and high traffic volumes had become an issue for citizens over the past two decades. This led to the creation of the activist citizen science group, *Fumuts Ros de Olano*, which strives to use low-cost technologies to gather data and enable positive change.

Several of their members were already experienced in using environmental sensors to collectively gather data-driven evidence of the situation in the street, focusing on air quality and noise pollution.

In May 2020, two representatives of the *Fumuts Ros de Olano* community installed two traffic counting Telraam sensors on their windows, to gather traffic data. After generating sufficient data, the community used this information to lobby the local authorities on social media and in person, leading to a subsequent reduction to the speed limit to 10km/h. The group have been monitoring compliance ever since.

Social media post announcing the new measures in Calle Ros de Olano

Ljubljana students propose new street and traffic arrangements using traffic sensor data

Students from the Department of Urbanism at the University of Ljubljana used the data obtained from the Telraam devices to assess the traffic flows and the adequacy of road infrastructure in the Slovenian Capital. The students became advocates for WeCount, reaching out to local residents to join the project, set up sensors and gathering data that could address their mobility concerns.

They presented the project to residents of the city of Ljubljana and asked them to join WeCount either as members or as users of the Telraam device. Then, each student chose a road section visible from the sensors' cameras, outlining the existing street location and traffic indicators (i.e., the width of the road profile in relation to the road users =- car drivers, pedestrians, cyclists, etc.). Finally, the students compared the analysis of the selected street segment plan and section with collected Telraam data, which allowed them the opportunity to assess the traffic flows and the adequacy of road infrastructure. If these two did not match, they suggested improvements to the road profile and traffic arrangement, as a part of the Strategic Spatial Planning course at the Faculty of Architecture.

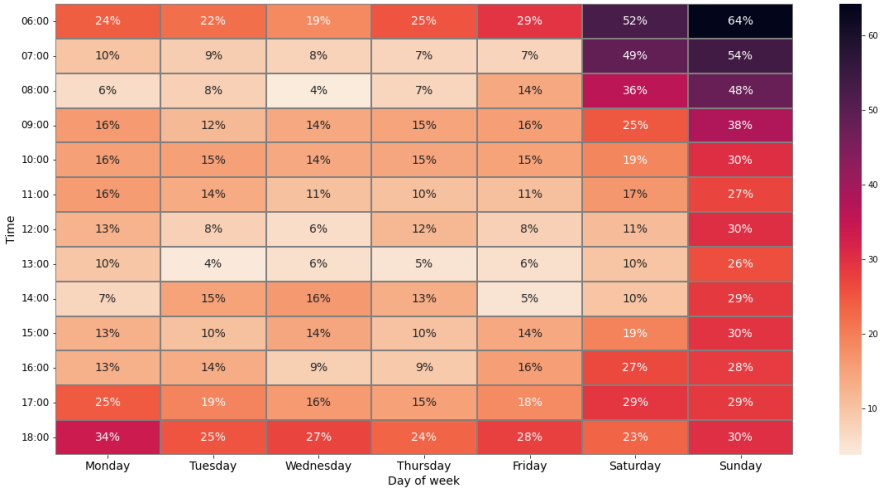
Redesigning the street profiles to reach better distribution of street space for various street users in Ljubljana.

By involving urban planning students, WeCount helped broaden their horizons and teach them about citizen science and, through that, investing in future planners who will work in city and planning offices. WeCount's educational merit lies in its ability to empower the next generation of advocates. Additional relevant positive outcomes are evident in Leuven's s plan of a school hub and network of sensors, the work carried out in Dublin (see story below), and the educational materials created by the University of West of England.

Dublin schools monitor traffic and air quality

Dublin partners teamed up with schools, organising workshops to teach school children to assemble Telraam traffic counters and educating them on the importance of citizen science. School officials followed the deployment of counters throughout the city, as it became evident that traffic and air quality around schools is a major concern for citizens involved. As a response, WeCount invited schools to host traffic counters and air quality monitors during the second round of sensor deployment.

Four local authorities in the Greater Dublin Area caught wind of the initiative, resulting in the Dublin City Council approaching the project team with a list of more than thirty schools. Dublin City Council asked WeCount to install traffic and air quality monitors in schools selected for the School Zone Initiative - an initiative to reduce congestion and increase safety at the school gate -, as this will provide an objective measure of the effectiveness of this initiative.



Average percentage of cars exceeding the speed limit by weekday and time of day

The lockdown in Dublin in the first half of 2021 resulted in delays in the delivery and installation of monitors. However, preliminary results from selected schools are promising interesting datasets. The figure shows data for May 2021 from a traffic counter located near a school in the Blackrock area. During the early morning and early evening, more than a third of cars are exceeding the 50km/h speed limit. The percentage of cars exceeding the speed limit only drops below 10% during the morning rush hour and tends to be 10%-20% during the day. This has important implications for children walking or cycling to school.

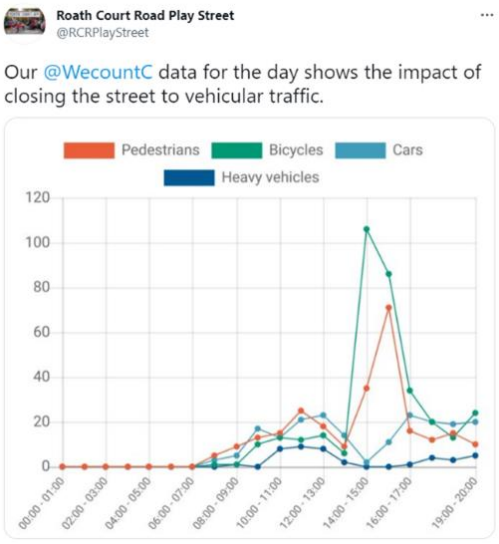
Once the traffic and air quality monitors are installed in the schools, the datasets will be invaluable to the

schools. Not only will they provide objective measurements to support applications for traffic calming measures, but they can also be used for educational purposes inside and outside of the classroom.

Cardiff citizens' voices amplified by WeCount

The Cardiff case study is a great example of the diverse forms activism takes, and the enthusiasm citizens have to make a difference for sustainable and inclusive urban mobility.

How citizens have used the data to support their activism varies. Many focused on providing regular updates using the Telraam data to highlight transport issues, conversely, others used the data to highlight positives and what can be achieved. For example, Roath Court Play Streets used the Telraam data to illustrate the success of their play street initiative seeing more pedestrians and cyclists. Other activism included reaching out to local councillors on email and on social media, writing blog posts, performing their own analysis on the data and using the sensor/ data as a pedagogical tool for students. Interestingly, two participants reflected on how the project has contributed to a shift in their activism: *"(…), I'll be honest with you, because I didn't think there was anything within my power to change the situation, you know, but there was a [Council] consultation after I installed the Telraam… so I did respond to that consultation. And probably, because I did have the Telraam, it gave me a bit more impetus to do it."*



Example of social media activism in Cardiff

There are no physical transport interventions in place that can be directly attributed to WeCount (yet) but there is plenty of evidence to show that it has empowered citizens and given them agency to challenge the *status quo* and campaign for change. As one citizen stated, *"Putting the numbers on social media has helped amplify [the problems], with people from all across Cardiff commenting their shock, demanding action and sharing their own numbers (…) we hope the data will also be used to shape future traffic schemes in our area, with our local Living Streets Group liaising with the Council (...)".*

POLICY IMPLICATIONS AND RECOMMENDATIONS

As evidenced in the previous section, WeCount activities bore fruit by achieving instances of bottom-up local policy-making (i.e., installation of speed-sensors and bumps, involvement with local schools, etc.). Work remains to be done, as ideally more participants could have taken a more active role in the project, but nonetheless, the stories above highlight the potential of WeCount and citizen science in kick-starting more dialogues between citizens and local policy-makers.

These experiences together with additional evaluation-focused outputs of project activities uncover the need for recommendations to take WeCount's results a step further, for the incorporation in existing policy tools (SUMPs), but also shine a light on the needed actions to ensure Citizen science remains an extremely useful methodology for mobility planning, shaping traffic policies and beyond.

1. **Citizen science is an invaluable tool for bottom-up policy development in urban mobility**

Each of the impact stories presented above makes it clear that citizen science initiatives can support policy-development processes which serve the people affected by them. Decisions made without the involvement of citizens are harder to get accepted and to comply with, especially in fields like urban mobility, which affects

everyone. Thus bottom-up policy development can be a great help for local and regional authorities to implement policies that are backed by the inputs of locals based on their own experiences and discoveries. The engagement and networked approach, fostering relation between the project team and amongst citizens, enables and facilitate evidence-based dialogue between citizens and decision-makers.

2. The European Union should continue to fund Citizen science research and innovation projects, backed by strategic policy/institutional support, for broadscale support and alignment with the European Green Deal.

Citizen science projects are growing, and as we have evidence, shows promise in the field of urban mobility. To capitalise on the rich, locally relevant data and citizen enthusiasm that these projects afford to policy-making processes, institutional support is required.

The European Union can send a clear message on the importance of Citizen science activities by ensuring that it occupies a central place in its policies. These policies need to be backed up by adequate and well-identifiable funding mechanisms.

Horizon 2020 was the main research and innovation instrument promoted by the EU, and it included a dedicated Programme to science with and for Society (the SwafS), with bi-yearly Work Programmes, in which citizen science projects played a prominent role. However, Horizon Europe, the new instrument for the next programming period, has scattered Citizen science funding across its different Clusters. Undoubtedly, interdisciplinary research is needed, and the composition of these cross-sectorial multidisciplinary clusters strives to promote it. Though, along the way, the important dimension of Citizen science loses strategic importance, by being scattered across clusters.

Citizen science needs to be funded continuously in Horizon Europe (and subsequent programmes) to ensure its transition into the mainstream and to refine the techniques and methodologies for more effective engagement.

When compared to large scale demonstration projects, citizen science entails substantially lower investment, than other existing actions/technologies with high return, particularly in local-level policy-making, as evidenced in the impact stories described above. A specific example of the scientific validation of WeCount data and its “spill over” into policy design and/or monitoring is reflected in its use by Belgian Air Quality researchers and students at VUB to track COVID-measures compliance (i.e., lockdown enforcement).

3. Citizen science engagement methodologies can assist the development of Sustainable Urban Mobility Plans (SUMPs), with a more inclusive, citizen-centred, policy-making process.

One of the main existing tools specifically for urban mobility planning are the Sustainable Urban Mobility Plans (SUMPs) developed by the ELTIS Platform. The design of SUMPs in European cities typically include a step of citizen engagement/consultation, to better inform the process of policy-design. However, citizen engagement/consultation is often forgotten in the later steps of the SUMP cycle, concerning implementation and evaluation.

Citizen science and the methodology[7] developed and employed in WeCount can serve as an additional tool to actively involve citizens in this entire planning process, allowing them to identify what the local urban mobility priorities are, contribute to their co-design, data collection, analysis, and implementation. An overall sense of ownership in the creation process of policies leads to higher acceptance of measures, while ensuring that they are closer to citizen’s needs and expectations, therefore, involving citizens in all stages of the SUMP planning process must be considered in future SUMP development processes.

[7] For more information on WeCount's Methodology please refer to Policy Brief #1: https://we-count.net/_uploads/WeCount_Policy_Brief_1_final.pdf

About WeCount

The WeCount project is the first European Citizen science initiative enabling citizens to create a substantially better understanding of road traffic flows and car speeds at the local level. WeCount gathered insights into the impact of local road transport on issues such as air pollution, public health, and road safety. It offered citizens the mechanisms to generate evidence and utilise tools to quantify urban traffic road flows; understand and challenge mobility behaviour; proactively lead urban mobility discourse and **participate in co-designing traffic policy** as evidenced in local impact stories described below. WeCount used innovative low cost, automated, road traffic counting sensors (the Telraam sensor) and multi-stakeholder engagement mechanisms (workshops and online interactions) across **five case study cities: Leuven (BE), Madrid/Barcelona (ES), Ljubljana (SI), Dublin (IE) and Cardiff (UK).**

PROJECT INFORMATION

PROJECT NAME

WeCount (Citizens Observing UrbaN Transport)

COORDINATOR

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CONSORTIUM

Transport & Mobility Leuven - Leuven, Belgium
POLIS Network – Brussels, Belgium
Mobiel21 - Leuven, Belgium
University of the West of England – Bristol, United Kingdom
University College Dublin – Dublin, Republic of Ireland
Ideas for Change – Madrid, Spain

FUNDING SCHEME

Horizon 2020 Framework Programme for Research and Innovation (2014-2020), SwafS-15-2018-2019 Exploring and supporting citizen science, grant agreement No. 872743.

DURATION

December 2019 – November 2021 (24 months)

BUDGET

EU contribution : 1 957 897,5 €.

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FURTHER READING (IMPACT STORIES)

Leuven citizens ensure speed compliance with the help of low-cost traffic counting sensor
Barcelona residents achieve lowering street speed limit building on self-generated data
Students from Ljubljana propose new street and traffic arrangements using data from traffic counting sensors
Dublin schools successfully monitor traffic and air quality with the help of WeCount
Empowering the citizen: how the WeCount Project has helped amplify the voice of Cardiff citizens