



D6.1. Multi-Stakeholder Impact Assessment Methodology (common/city specific)

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Index

List of Tables.....	4
List of Figures	4
1. Introduction	5
2. Methodology plan	5
2.1 Choice of the survey typology	6
2.2 Survey design	7
2.2.1 Questionnaire supporting focus groups	8
2.2.2 Focus groups outline	10
2.3 Design of the sampling plan	11
2.4 Survey administration.....	12
2.5 Data analysis design	13
3. Conclusions	13
References.....	14

List of Tables

Table 1. Gantt of activities of WP6	6
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List of Figures

Figure 1. Methodology plan	6
Figure 2. Structure and content of the questionnaire	9
Figure 3. Focus group layout	10

1. Introduction

Within the framework of the FORTHCOMING project, WP6 is the last technical work package aimed to evaluate the strategies co-constructed with the stakeholders of the six Living Labs (LLs).

The strategies identified in the six LLs needs firstly to be evaluated according to the possible barriers to implement them; secondly, the impact expected after the implementation of such strategies will be quantified. The framework for conduction the evaluation of the strategies and the methods used will be the purpose of D6.1 while the results of the evaluation, including the comparison among the six LLs will be the focus of D6.2. The current deliverable represents the outcome of Task 6.1. that is two-fold:

- designing a comprehensive methodology for conducting a multi-stakeholder impact assessment of the 15minC strategies implemented in the suburban city of each Urban Living Lab (ULL). The assessment will concern all ULLs and aims to be a common approach allowing a comparison among the different cities, but considering possible specificities as ULLs present some differences in terms of both territorial context and strategies adopted;
- identification of the tools for conducting the impact assessment in each LL.

The two above activities constitute the Methodology Plan presenting the choice of the survey typology, the design of the survey, the selection of the sampling plan, the administration of the survey and, finally, the data analysis design, as detailed in the next sections

2. Methodology plan

The methodology plan is needed to evaluate the strategies developed in the project, giving to the partners specific and common guidelines to ensure a good collection of the data and, thus, a proper evaluation of the collected data.

To this end, the methodology defines a standardised protocol, allowing a common approach in data collection (Task 6.2) across all the LLs. The protocol of the survey provides five steps (Fig. 1):

1. choice of the most appropriate survey typology;
2. design of the survey to evaluate and validate the strategies;
3. design of the sampling plan that will be formed by two panels: a first sample formed by the stakeholders composing the Experts Validation Group (EVG); a second sample formed by citizens;
4. the design of the administration of the survey;
5. and data analysis design to evaluate the impacts of implementing 15minC strategies in the ULLs, according to the four dimensions of the 15minC: density, proximity, diversity, and digitalization.

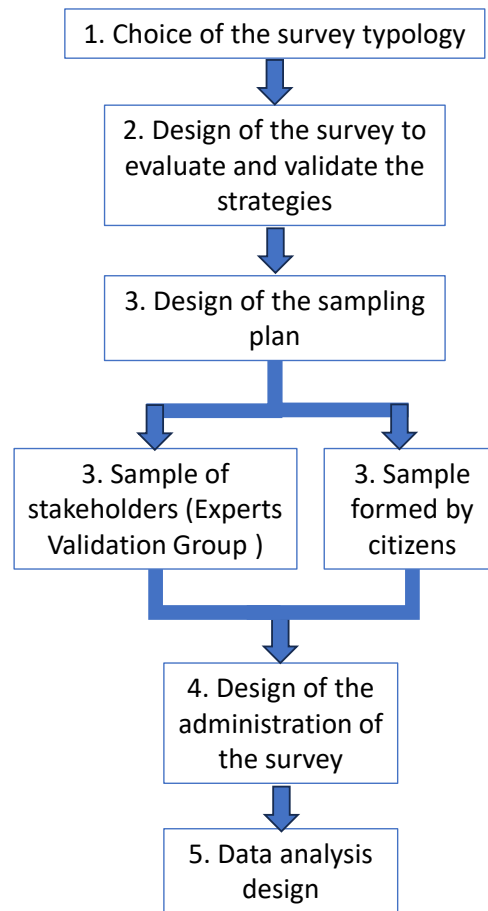


Figure 1. Methodology plan

The data collection will start after having finalised all the above steps. The timeline of the different steps provided by the methodology plan and subsequent activities (T6.2 and T6.3) are reported in Table 1.

Table 1 - Gantt of activities of WP6

		M17	M18	M19	M20	M21	M22	M23	M24	M25	M26	M27	M28	M29	M30
		Year 2025												Year 2026	
WP6	Establishment of knowledge creation living hubs														
T6.1	Methodology and Tools for Impact Assessment														
	Choice of the most appropriate survey typology;														
	Design of the survey to evaluate and validate the strategies;														
	Design of the sampling plan that will be formed by two panels: a first sample formed by the stakeholders composing the Experts Validation Group (EVG); a second sample formed by citizens;														
	Data analysis design to evaluate the impacts of implementing 15minC strategies in the ULLs, according to the four dimensions of the 15minC: density, proximity, diversity, and digitalization.														
T6.2	Data collection for Impact Assessment														
	Administration of quantitative questionnaire														
	Focus groups with stakeholders and citizens														
T6.3	Impact Assessment of each Living Lab and Cross-sectional Analysis														
	Analysis of data from the questionnaire and focus group														
	Comparison of results among the ULLs														

In next subsections, each methodological step is described in detail.

2.1 Choice of the survey typology

The choice of survey typology is important to standardise the evaluation procedure for all the ULLs. To this extent a unique approach has been conceived, choosing to carry out a **mixed method** (Creswell and Clark,

2017), providing both a qualitative and a quantitative survey to be addressed to stakeholders and citizens, composed by quantitative questionnaires and focus groups. A **quantitative questionnaire** will be administered via web to the sample of citizens, a subset of whom will participate in the discussion organised through the **focus groups**. The same approach is followed for the stakeholders with the difference that all the stakeholders to which questionnaire is administered will also participate to the focus groups.

The questionnaire is suitable for studying behaviour, attitudes and, at most, opinions, but not for investigating motivations. In essence, the comparability of the results comes at the cost of preventing in-depth investigation (Richardson et al., 1995; Ruel et al., 2016). This is the reason why the mixed method is adopted, to complement the information obtained through the questionnaire with those related to motivation through a discussion allowed by the focus group technique.

The focus group approach is well suited to the objectives, allowing to contain the costs by working with a relatively small group of people, but going in depth on the key aspects related to the strategies and to their impact. The focus groups are typically used in market analysis. Usually, a group of four to ten people participate in the discussion. The participants in the group represent different categories. The discussion is led by an independent moderator with extensive experience in discussion management and in the formulation of conclusions and suggestions.

The focus group is a useful method for reaching basic groups from which obtaining information and that do not participate in large meetings or do not submit written comments. However, the discussions should not replace administrative trials, etc. with the public as a whole or with the most important interested parties (interest groups, nongovernmental organisations, etc.) but this shortcoming will be uninfluential thanks to the mixed method approach, including a quantitative questionnaire administered to a larger sample. For details on focus group theory and practice, please refer for instance to Morgan (1998), Greenbaum (1998), Krueger and Casey (2000), and Zammuner (2003).

The two investigation tools, web-questionnaire and focus group, are conceived to work in synergy, allowing to shed light on more aspects than those only tackled during the discussions or only asked in the questionnaire. Although the addressed issues are similar, the difference is the way these issues are tackled: the quantification of the issues in the questionnaire and the deep discussion of the same issues during the focus group, where the exchange of opinions among the participants will be of utmost interest to better understand the reasons and motivations behind people preferences and opinions. The mixed method implying a complementarity of the two approaches is the strength of the evaluation methodology.

2.2 Survey design

The survey allows to collect information about how the strategies are perceived. It should be able to get two main elements:

- main citizens' needs (all modes), what they want or expect from such strategies and what is feasible considering the current barriers (inadequate regulations, lack of adequate information and infrastructures, etc.);
- attributes that the strategies should have to induce citizens to address their behaviours towards more sustainable modes.

The background for designing both focus groups and questionnaires will be the selection of KPIs (based on WP3 and WP4). The design of the questionnaire and the subsequent focus group will start immediately

after having defined the set of KPIs to adopt.

The outcomes of such a survey will allow defining a set of policies that could be used also in other cities than the ULLs, leveraging the diversity of the ULLs and making the results exportable in other cities and countries.

The survey will entail:

- design of the web questionnaires administered to the samples (see section 2.2.1) before the focus group;
- test of the web questionnaire with the partners of the consortium;
- translation of the web questionnaire in the national languages;
- programming of the questionnaire on the Lime Survey platform;
- administration of the questionnaire;
- design of the layout of the focus groups;
- test of the focus group layout with the partners of the consortium;
- definition of the rules on which to conduct the focus groups that will target to:
 - ~ 10 stakeholders (those already engaged in WP3 and WP4);
 - ~ 10 citizens selected from those who have given the availability to be contacted after having filled in the questionnaire.

2.2.1 Questionnaire supporting focus groups

As previously mentioned, a questionnaire will be administered to stakeholders and citizens who will then participate in the focus groups (all the stakeholders and a small subset of citizens). The questionnaires will be designed to collect:

- main mobility patterns of the respondents;
- user's opinions about;
 - private and public transport, including soft modes, highlighting the weaknesses;
 - use of technological tools.
- evaluation of the strategies;
- personal data of the participants.

Questionnaire is composed by four sections. As depicted in Figure 2:

Section 1: users' travel behaviour

Sections 2: users' opinion

Section 3: evaluation of strategies

Section 4: personal information

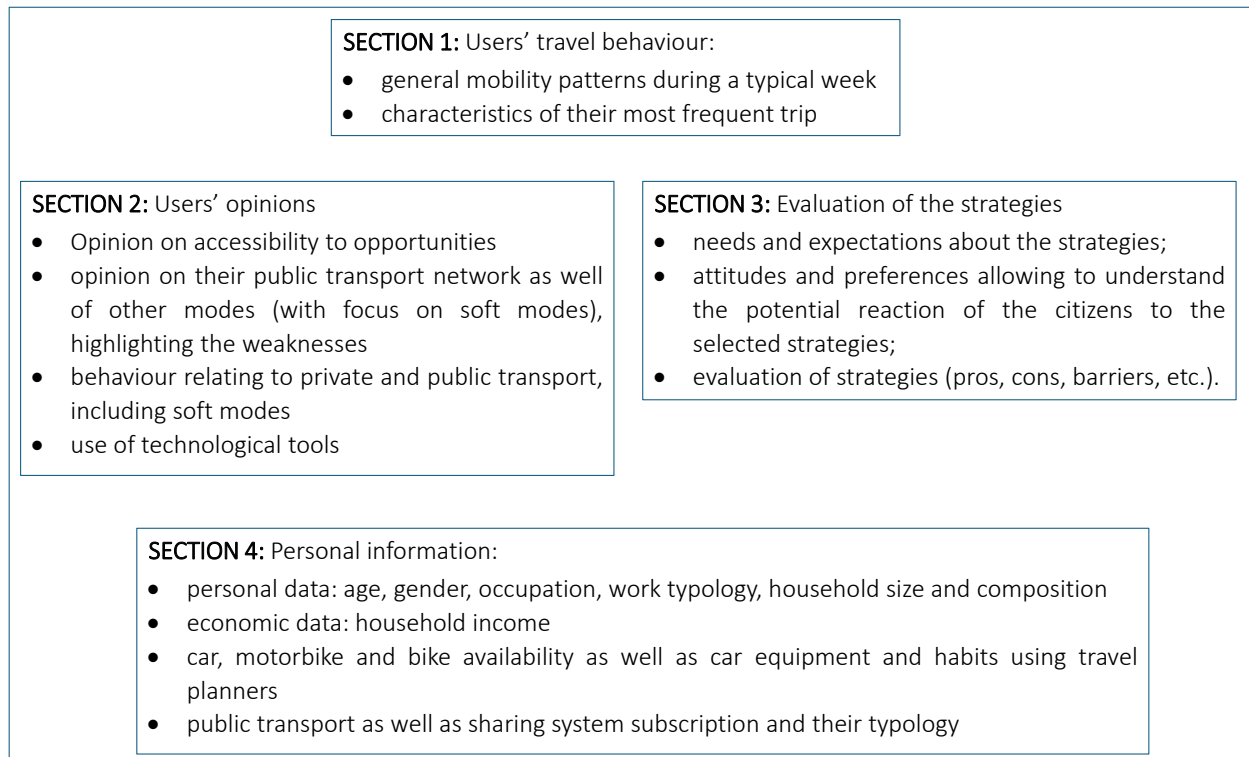


Figure 2. Structure and content of the questionnaire

The first section of questionnaire will be related to the users' travel behaviour to understand the transport mode they use and in which way (frequency, reasons); in this case questions will deal with:

- general mobility patterns during a typical week to understand users' travel behaviour: transport mode they use and in which way (frequency, reasons):
- characteristics of their most frequent trip: purpose and used mode, frequency, distance, time, etc.;

The second section will be focused to understand user's opinions about specific topics: in this case a six-point Likert scale (Joshi et al., 2015; Likert, 1932) will be adopted. The covered subjects will be:

- opinion on accessibility to opportunities;
- opinion on their public transport network as well of other modes (with focus on soft modes), highlighting the weaknesses;
- behaviour relating to private and public transport, including soft modes;
- use of technological tools.

The third section will aim at evaluating the strategies investigating:

- needs and expectations about the strategies;
- attitudes and preferences allowing to understand the potential reaction of the citizens to the selected strategies;
- evaluation of strategies (pros, cons, barriers, etc.).
- evaluation of the potential impacts of the strategies.

Questions about personal information covering different personal aspects will be complementary to the discussion's topics and along with social, economic and attitudinal questions, useful to study the social and

economic profiles of the sample (for the citizens). In particular, respondents will be asked about:

- personal data: age, gender, occupation, work typology, household size and composition;
- economic data: household income;
- car, motorbike and bike availability as well as car equipment and habits using travel planners;
- public transport as well as sharing system subscription and their typology.

The questionnaire will be designed in English and then translated in the different national language for the administration. To ensure consistency, one person per each ULL will translate from English in the national language and a second person will translate from the national language to English. Then, a comparison between the original English version and the re-translated in English version will be made to verify that the initial meaning has been maintained.

2.2.2 Focus groups outline

The outline of focus group starts with a presentation of the project to make the participants aware of the issues to be discussed. Then, a “tour de table” will allow the participants to interact with one another and create a “friendly climate”, which is beneficial in facilitating the discussion.

The layout of the discussion will be tailored to the two target samples: citizens and stakeholders. First, the focus group with stakeholders will be organised and, after that with citizens. Both stakeholders and citizens will be asked to check strategies’ feasibility, challenges, barriers for the possible implementation and expected impacts (Fig. 3).

- Introductory section
- Part A – presentation of participants
- Part B – Evaluation of the strategies
- Part C – Assessment of barriers to the implementation of strategies
- Part D – Assessment of the impacts of strategy implementation
- Closing section.

Figure 3. Focus group layout

Stakeholders

Concerning stakeholders, after the presentation (quick tour de table), the first part of the discussion will be dedicated to the understanding their general mobility patterns, their role and investigating their perceptions related to citizens’ mobility and the way they live the city.

The second section will provide discussion of the following aspects:

- what the operators want (desired attributes) to fulfil their needs (information, monitoring, data collection, safety, security, etc.);
- institutional, organisational, financial, and legal constraints in implementing these strategies;
- and any possible suggestion useful for the implementation of strategies and possible financing mechanisms.

Citizens

After the presentation (quick tour de table), the first part of the discussion will be dedicated to the

understanding of personality traits of the individuals, investigating perceptions, preferences related to their mobility and the way they live the city.

The second section will deal with travel habits, to understand the mobility behaviour, emotions and attitudes towards public transport, bike, shared mobility, car and other transport modes.

The last two sections will be addressed to technological issues and to policies and strategies. The technological issues will be debated to understand the level of confidence of participants with both simple and more advanced technologies (Advanced Traveller Systems, MaaS). After having collected a great deal of information on people and their habits, attitudes, and feelings, they will be readily prepared to enter more in detail in the FORTHCOMING strategies, which will be orally and visually (slides) represented. Thus, the interest in proposed strategies, as well as their evaluation should embody will be discussed:

- what the users want (desired attributes) to travel through their city and destinations around (technology, safety, rapidity, comfort, etc.);
- what the users need to use more PT and soft modes;
- how the selected strategies should be implemented to convince car drivers to divert to PT and soft modes (at least partially);
- any possible suggestions useful for the implementation of the strategies and possible financing mechanisms.

2.3 Design of the sampling plan

The participants shall be selected following non probabilistic sampling methods, using a hybrid approach mixing more methods in chain (Sirwan, 2024).

Concerning citizens, we will start with a *quota sampling* with attention to typologies of population we want to include according to specific attributes. Thus, the population is categorised into different groups from which selecting participants, ensuring that certain quotas within each subgroup are guaranteed. Quotas ensure that the characteristics of the population we need are included in the sample, e.g., people with disabilities. The selection within the subgroup is non-random, adopting a convenience sampling, thus selecting the portion of the population most accessible to the researcher. Then, a snowball sampling will be used referring to those that also fit the criteria, building a network of referrals. To limit the risk on non-representativity of the sample, a parallel approach will be used advertising the survey through several channels (social media, etc.; see section 2.4) trying to reach a wider population according to a more random approach.

Concerning the stakeholders the sample will be selected according to the convenience sampling that, in this case, it is also the only meaningful method being the stakeholders those operational in the territory and being in a limited number. The selection will be based on the stakeholders already selected that participated in previous focus groups carried out within WP3.

The sample can vary according to the site of experimentation and tailored to the city needs.

Concerning the citizens, the best option is selecting around 300 respondents. The minimum sample size is 60-70 citizens. The sample will be selected according to the following quotas that can be checked “a posteriori”:

- gender;

- age;
- educational level
- profession/income;
- presence of children under 14 in the household;
- transport mode: motorised, public transport (PT), soft modes, intermodal (motorised + PT);
- residential location: city centre, suburbs, rural locations considering also the geographical position (north, east, south, and west). It is important to get the origins and destinations to better choose the people profile also in terms of their residential location.
- people with disabilities should be taken into account considering the EU data (2023) reporting that ~ 27% of the EU population over the age of 16 have some form of disability¹.

For the subsequent focus group with citizens, a small subsample that will give the availability (writing their e-mail at the end of the questionnaire) to participate in the focus group will be selected (see section 2.4).

For the stakeholders, all the ten stakeholders will also participate to the focus group. The group of 10 relevant local stakeholders selected in WP3 and WP4, representing public authorities, public transport operators, technology providers, companies and associations such as cycling and community organisations, schools as well as other relevant value chain key players, is maintained. In WP6, also a few mobility managers from the most important companies located in the ULLs will be selected if these profiles exist in the ULLs.

2.4 Survey administration

The survey is a CAWI (Computer Assisted Web Interview) and will be administered online through the Lime Survey web platform (owned by Politecnico di Torino). According to the sampling plan described in section 2.3, the link to the questionnaire will be sent via e-mail to several repositories: commuter associations, environmental associations, companies, etc. and spread via social media. In addition, it will be asked to the transport operators, city and associations to advertise the survey in their website and through their social media.

The respondents will participate voluntary, without any incentive or reward. All the respondents to the questionnaire will be asked to accept the privacy policy to continue to fill in the questionnaire. Concerning the focus group, all the participants will be requested to sign a consent form (the same already used for the focus groups in WP3).

At the end of the questionnaire, a question to collect availability to participate in the focus group is provided, allowing to recruit the citizens for the focus group. For the stakeholders, all of them will participate also in the focus group.

The number of participants in the focus group is suggested to be approximately 8-10 individuals. More than one focus group with citizens could be done according to the capacity of each ULL.

In terms of management of the focus groups, one moderator is to be provided, supported by assistants taking notes. All discussions should be audio-recorded and filmed using a video camera (where this will be accepted by participants, otherwise only recording will be done or, in the worst case, only notes will be

¹ <https://www.consilium.europa.eu/en/infographics/disability-eu-facts-figures/>

taken). A gadget should be given to participants, and a buffet should be offered, if the budget allows that.

The discussion will last about 2-3 hours and will take place preferably in the evening for the citizens (but can be adapted to the participants needs), after regular working hours, to eliminate eventual constraints due to business duties. Concerning stakeholders, the focus groups will take place during working hours to facilitate their participation.

2.5 Data analysis design

Concerning quantitative data collected through the web-questionnaire, the first step is focused to reveal the interdependencies between attitudinal variables, finding eventual latent constructs through exploratory factor analysis. The second step defines homogeneous groups of citizens, through the use of cluster analysis, based on the defined latent constructs.

The focus group results will be analysed using the technique of the “content analysis”, that is a deep analysis of the content of the discussion and a qualitative evaluation of the opinions expressed by the participants.

The evaluation will allow to quantify whether expected impacts will be attained and satisfied. Some specific analysis will be carried out to deal with the following issues:

- economic impacts of the strategies: how needed money to implement the strategies will be funded; which difficulties can be encountered
- environmental impacts: if a positive modal diversion (increased use of PT, soft modes) can be obtained
- social impacts: if people can save while travelling; if there are some improvements in life quality; if transport poverty decrease; if inclusion and participation can increase; etc.

The data analysis will allow to compare the implementation of the strategies in the different ULLs and to eventually refine the set of Key Performance Indicators (KPIs). To this last extent, all the data coming from the questionnaires will be analysed using multivariate statistical analysis to:

- investigate how attitudes, preferences, and all the other influencing factors affect the behaviour, and which are the most relevant variables affecting certain behaviours of a population to identify the inputs for the strategy implementation;
- assess the effectiveness of the strategies;
- define clusters having homogeneous profiles to understand the motivation of the users’ choices as well their reaction to the strategies helping them in better travelling through their territory.

3. Conclusions

The methodology plan allows to follow a rigorous and scientifically sound approach in the evaluation of selected strategies for each LL. However, some challenges could be faced:

- difficulty in obtaining a sufficient number of respondents in the survey (questionnaire);
- difficulty in engaging citizens in the focus group.

The above risks could be decreased if the governance of the LLs will be actively involved because this will facilitate the administration of the survey and attract the interest of citizens. We are aware that availability of people to participate to such initiatives is more and more decreasing. Several actions have been shared among the partners to reach the biggest number of citizens: poster, flyers with QR code and material to be used also on the field to approach and attract people to participate.

In addition, a posteriori check of the sample can support in identifying which part of the population is less represented and which actions can be adopted to bridge the gap.

References

- Creswell, J.W.; Clark, V.L.P. (2017) Designing and Conducting Mixed Methods Research, 2nd ed.; Sage Publication. London, UK, 2011; ISBN 978-141-297-517-9.
- Greenbaum, L. (1998), The Handbook for Focus Group Research, Second Edition, Sage Publications Inc., USA.
- Joshi, A., Saket K., Satish C., Pal, D. K.. (2015). Likert Scale: Explored and Explained. Current Journal of Applied Science and Technology 7 (4):396-403. <https://doi.org/10.9734/BJAST/2015/14975>.
- Krueger, R.A. & Casey, M.A. (2000), Focus Groups: A Practical Guide for Applied Research, Third Edition, Sage Publications Inc., USA.
- Likert, R. (1932) A technique for the measurement of attitudes. Arch Psychol. 22(140):55–55.
- Morgan, D. (1998), The focus group guidebook, SAGE publications Inc., USA.
- Richardson, A.J., Ampt E.S., Meyburg, A.H., (1995) Survey Methods for Transport Planning. ISBN 064621439X, 9780646214399. Ed. Eucalyptus Press, 1995, 492 pp.
- Ruel, E., Wagner III, W.E., Gillespie, B.J., (2016) Questionnaire Design. In: The Practice of Survey Research: Theory and Applications. SAGE Publications, Inc. DOI: <https://doi.org/10.4135/9781483391700>
- Zammuner, V. (2003), I focus group, Il Mulino, Bologna.
- The SAGE Encyclopedia of Educational Research, Measurement, and Evaluation (2018) <https://doi.org/10.4135/9781506326139.n155>
- Sirwan, K.A., (2024) How to choose a sampling technique and determine sample size for research: A simplified guide for researchers, Oral Oncology Reports, Volume 12, 2024, 100662, <https://doi.org/10.1016/j.oor.2024.100662>.