MINISTRY OF TRANSPORT AND COMMUNICATIONS OF LITHUANIA

Kurk LT

Creation of the Sustainable Mobility Index

Survey Technical Methodology document

Project Managers: Kimberly Kreiss and Greta Šimeliūnaitė
Project Owners: Gintarė Janušaitienė and Kristina Puleikytė

Table of Contents

Appendix I.

Introduction

While the Sustainable Mobility Index primarily relies on institutional data, there remains a notable gap in understanding how residents perceive transport services and mobility options in their everyday lives. To address this, a Sustainable Mobility Survey was conducted to capture the views and experiences of residents across municipalities in Lithuania. The insights gathered through this effort will be integrated into the Index to ensure that public satisfaction and lived experience are reflected alongside technical and administrative data.

This document serves as a technical appendix to the survey and outlines key methodological details, including:

- Data Collection Platform
- Survey Questionnaire
- Demographics and Representativeness
- Limitations and Potential Biases

Together, these components provide transparency in the survey design and implementation, strengthening the validity of the data used in the final Index.

Survey Implementation

Platform selection

After evaluating multiple survey platforms, SurveyHero.com was selected as the most appropriate tool for conducting the survey. This platform showed a strong commitment to user privacy, data security, and full GDPR compliance, which align with our ethical standards for responsible data collection.

SurveyHero includes a built-in “Anonymous Survey” option, which, when enabled, guarantees complete respondent anonymity. This feature ensures that no personally identifiable information (PII) such as IP addresses, email addresses, device details, link parameters, or metadata - is collected or stored. A visible “Anonymous Survey” label is added to reassure participants of this protection.

By eliminating traceable data and complying with GDPR requirements, SurveyHero fosters an environment where respondents can engage openly and truthfully. This not only protects individual privacy but also improves the quality and reliability of the survey data by reducing potential response bias.

Data Collection Procedures

The survey was distributed through a combination of QR codes and direct web links to ensure broad accessibility. It was promoted by approximately half of all municipalities across Lithuania, as well as by LTG (Lithuanian Railways) and several private sector companies, helping to reach a diverse cross-section of the population.

To promote inclusivity and ensure accessibility for a broader audience across Lithuania, the survey was made available in both Lithuanian and English. This bilingual approach accommodates participants with varying language preferences and enhances the clarity and reach of the survey content.

The survey targets respondents aged 16 and above across all Lithuanian municipalities. Given the promotion strategy, which involved distributing the survey widely through various channels in each municipality, we anticipate collecting responses from a diverse cross-section of the population but acknowledge that bias is introduced.

The sampling approach used is convenience sampling, relying on voluntary participation from individuals who access the survey via promoted links, QR codes, and online platforms. While this method enables broad reach and efficient data collection, it also introduces selection bias to those who see the survey promotions and opt to complete the survey. As such, people who do not see our promotional materials are generally not included in our sample. Because our survey was advertised entirely through digital platforms, groups that have an overall lower rate of technology usage will be underrepresented in our survey.

Survey Timeline

The survey was conducted between June 18 and July 28. In the future, it's important to consider the timing of the survey, as the period during which it is conducted may significantly influence the results. For example, people may be more likely to report they walk or cycle in summer than winter.

Statistical Methods

To ensure that our survey results are meaningful and reliable for our sample, it's important to have a large enough number of respondents. A sufficient sample size allows us to provide more precise point estimates for our sample and in turn provide strong signals about overall attitudes in Lithuania. Still, because our sampling method does not account for the fact that different people have different likelihoods of responding to our survey, our results should be interpreted as a general barometer for public opinion and not fully nationally representative point estimates of attitudes in Lithuania.

In our case, 2,262 people completed the survey. This large sample size leads to a smaller margin of error and, in turn, greater confidence in the results. It allows us to estimate the “true” proportion of opinions or behaviors in our sample within a narrow range.

To calculate these ranges, we used:

- Wilson (score) confidence intervals for estimating single proportions
- Score-based confidence intervals from a two-proportion test when comparing groups

All estimates are based on a 95% confidence level and a 5% margin of error, which are standard in survey research. This ensures that our results are statistically sound and representative of the respective populations. More information about the sample size and the confidence intervals can be found here[1].

[1] https://www.surveymonkey.com/mp/sample-size-calculator/

Demographics, Representativeness, and Bias

This section provides an overview of the demographic distributions of our survey respondents. This allows us to understand the representativeness of our sample and where bias is introduced in our inference.

- Our survey overall had 2,262 responses, with 1,684 respondents finishing the entire survey.
- For each question, we considered responses that were not left blank, regardless of whether the respondent completed the entire survey or not.
- Thus, because non-completers as a group may be different from completers as a group, non-response bias may be present for some questions.
- Additionally, our sample is slightly biased towards people under age 55 and those living in Vilnius or Kaunas.

Household Composition

Of our respondents, 18% report only 1 person in their household, 34% report 2 people in their household, 20% report 3 people in their household, 22% report 4 people, and 5%, report 5 people in their household. Less than 1% of people individually report 6, 7, 8, 9, 10, or 10+ people in their household.

Age, Gender, and Region

The age distribution of our survey differs somewhat from the age distribution in Lithuania[2]. In particular, older adults, particularly those above 54, are underrepresented in our survey relative to the age distribution of Lithuania, while those aged 25-45 are overrepresented.

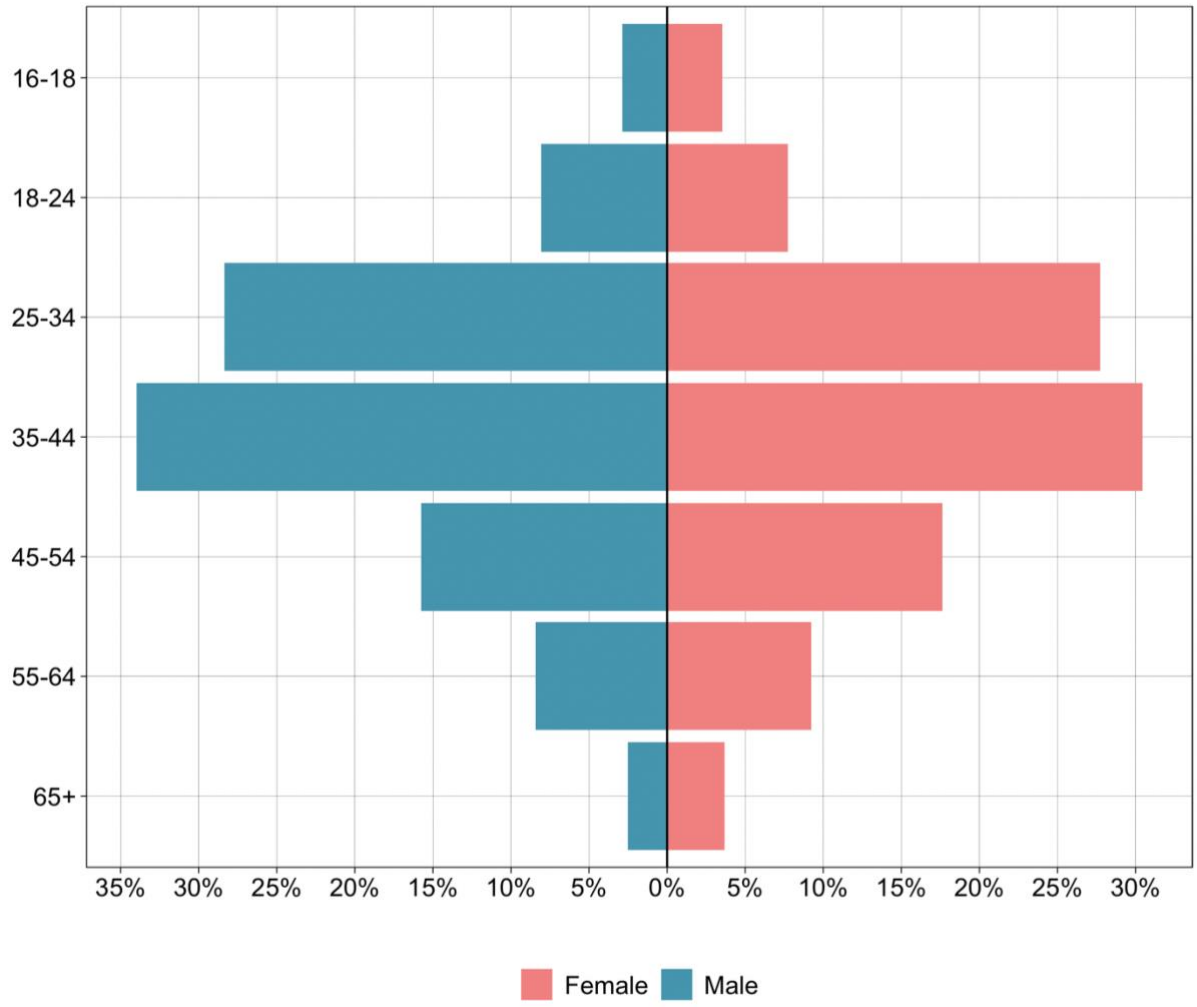
Overall, our survey respondents' gender identity is evenly distributed between male and female. A very small share identifies as a gender other than male or female or preferring not to say. Because the sample sizes for these groups are too small for statistical inference, any analyses that consider gender will only consider those identifying as male or female.

The gender distribution between male and female between age groups is roughly uniform overall and across age groups.

[2] United Nations, Department of Economic and Social Affairs, Population Division (2024). *World Population Prospects: The 2024 Revision*, custom data acquired via website. Link to Custom Data Pull. See Figure 1 in Appendix III for data table.

Figure 1

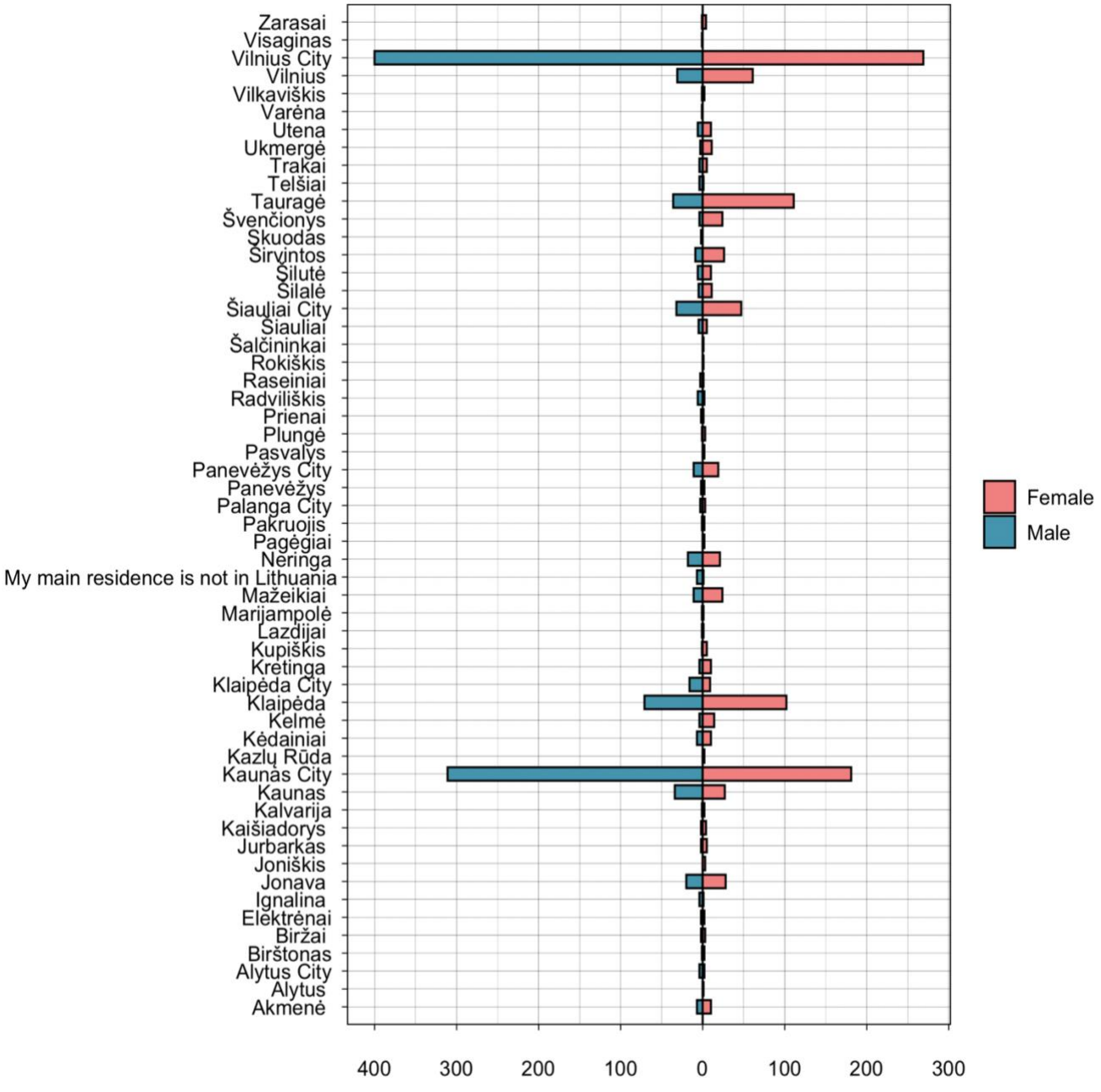
Gender and Age Distribution of Survey Participants



Additionally, we have the highest share of respondents from Vilnius (~35%), Kaunas (~25%), Klaipėda (~8%), Tauragė (~7%), and Šiauliai (~4%). In Vilnius and Kaunas, men are slightly overrepresented than women while the opposite is true for Tauragė, Klaipėda, and Šiauliai.

Figure 2

Main Municipality of Residence



Limitations

The survey provided us with several limitations to consider and consider:

- **Possible sampling biases or coverage errors:** the survey uses a convenience sampling method as opposed to probability-based sampling methods. As such, bias is introduced since our sample biases towards people who are already more likely to respond.
- **Language limitations (despite bilingual design):** While the survey was made available in English and Lithuanian, other populations who primarily speak other languages maybe underrepresented, for example, Ukrainian refugees.
- **Limitations due to online-only survey deployment (digital divide issues):** The survey was advertised entirely through online platforms and channels. As such, people without internet access or who get their information from other mediums are underrepresented in our survey.

Appendix II.

Survey Questionnaire

The survey is structured into six main sections, each designed to explore the current state of sustainable mobility in Lithuania and understand public perceptions related to it. The sections are as follows:

- *Introduction*
- *Section A. Demographic Information*
- *Section B. Travel Patterns*
- *Section C. Perceptions & Barriers*
- *Section D. Infrastructure & Service Quality*
- *Section E. Suggested Improvements*
- *Section F. Additional Comments*

Below is the English-version of the questionnaire.

Introduction

This section introduces the purpose and goals of the survey, providing respondents with a clear understanding of why their participation matters. It aims to encourage honest and thoughtful responses by highlighting the importance of their input in shaping sustainable mobility solutions in Lithuania.

Section A. Demographic Information

This section collects essential background data to support sample representativeness and enable segmentation by key social groups. It helps identify patterns across demographics and detect inconsistencies in responses. The section uses **closed-ended multiple-choice questions** and **drop-down lists** for clarity and ease of response. Required questions (e.g., age, gender, municipality) ensure analytical relevance, while optional items (e.g., income, education) balance depth with respondent privacy.

1. **Age** *(required)*
   ☐ 16–18
   ☐ 18–24
   ☐ 25–34
   ☐ 35–44
   ☐ 45–54
   ☐ 55–64
   ☐ 65+

2. **Gender** *(required)*
   ☐ Male
   ☐ Female
   ☐ Other
   ☐ Prefer not to say

3. **Main Municipality of Residence** *(required)*
   ☐ My main residence is not in Lithuania
   Drop-down list of all Lithuanian municipalities

4. **Employment Status** *(optional)*
   ☐ Employed (full-time or part-time)
   ☐ Self-employed
   ☐ Student
   ☐ Retired
   ☐ Unemployed

5. **Education Level** *(optional)*
   ☐ Primary
   ☐ Basic (incomplete secondary)
   ☐ Secondary
   ☐ Vocational (vocational school, secondary with professional qualification)
   ☐ Post-secondary non-tertiary (technical school, post-secondary school)
   ☐ Non-university higher education (college)
   ☐ University higher education

6. **Monthly Household Income Before Taxes (EUR)** *(optional)*
   ☐ 0–749 €
   ☐ 750–1,499 €
   ☐ 1,500–2,249 €
   ☐ 2,250–3,000 €
   ☐ 3,000–3,749 €
   ☐ 3,750–4,499 €
   ☐ 4,500 € and above
   ☐ Prefer not to say

7. **Number of People in Your Household** *(required)*
   Drop-down list: 1–10, then >10

8. **Number of Cars in Your Household** *(required)*
   Drop-down list: 0–10, then >10

9. **Number of Usable Bicycles in Your Household** *(required)*
   Drop-down list: 0–10, then >10

Section B. Travel Patterns.

This section explores the demand, frequency, and usability of various mobility options. It focuses first on recent weekday travel to account for seasonal variation, then shifts to general usage habits over the past year. The section uses **closed-ended multiple-choice** and **rating scale questions.**

1. **Thinking about your recent travel patterns, please answer the following question about your typical weekday travel. Main mode to reach your main activity (e.g., work, school)**

   ☐ Walk
   ☐ Private Bicycle
   ☐ Shared bicycle (e.g., Bolt or Cyclocity bikes)
   ☐ Private scooter
   ☐ Shared scooter (e.g., Bolt scooters)
   ☐ Bus or trolleybus
   ☐ Train
   ☐ Private gas or diesel vehicle
   ☐ Private electric vehicle
   ☐ Private hybrid vehicle
   ☐ Car-sharing/renting (e.g., Spark, CityBee)
   ☐ Taxi (e.g., Bolt ride, Taxi)
   ☐ Other micromobility transit (e.g. hoverboards, roller blades, etc.)

2. **Approximate one-way distance of that trip** (km)

   ☐ < 2 km ☐ 2–5 km ☐ 5–10 km ☐ 10–15 km ☐ 15-20 km ☐ > 20 km

3. **Now, thinking more generally about your travel patterns over the last year, how often do you use the following modes?**

   (1 = Never, 2 = <Monthly or Few times/year, 3 = Few times/month, 4 = Few times/week, 5 = Daily)

MODE	1	2	3	4	5
Walking for trips of 10 minutes or more	☐	☐	☐	☐	☐
Private Bicycle	☐	☐	☐	☐	☐
Shared bicycle (e.g., Bolt or Cyclocity bikes)	☐	☐	☐	☐	☐
Private scooter	☐	☐	☐	☐	☐
Shared scooter (e.g., Bolt scooters)	☐	☐	☐	☐	☐
Bus or trolleybus	☐	☐	☐	☐	☐
Train	☐	☐	☐	☐	☐
Private gas or diesel vehicle	☐	☐	☐	☐	☐
Private electric vehicle	☐	☐	☐	☐	☐
Private hybrid vehicle	☐	☐	☐	☐	☐

Car-sharing/renting (e.g., Spark, CityBee)	☐	☐	☐	☐	☐
Taxi (e.g., Bolt ride, Taxi)	☐	☐	☐	☐	☐
Other micromobility transit (e.g. hoverboards, roller blades, etc.)	☐	☐	☐	☐	☐

Section C. Perceptions & Barriers

This section assesses perceived barriers and attitudes toward various transport modes. Respondents evaluate a series of statements using **rating scale questions**, helping to identify key challenges to sustainable mobility adoption.

1. Please indicate how much you agree with each statement.
(1 = Strongly disagree, 2 = Slightly disagree, 3 = Neither agree nor disagree, 4 = Slightly agree, 5 = Strongly agree, NA = Not Applicable)

STATEMENT	1	2	3	4	5	NA
Cycling routes feel unsafe because of motor traffic.	☐	☐	☐	☐	☐	☐
Cycling routes feel unsafe because of poor surface or maintenance.	☐	☐	☐	☐	☐	☐
I avoid cycling because bike lanes are too disconnected or incomplete.	☐	☐	☐	☐	☐	☐
I'm discouraged by the risk of theft or vandalism of my bicycle/e-scooter.	☐	☐	☐	☐	☐	☐
I don't cycle because I lack access to showers or changing facilities at my destination.	☐	☐	☐	☐	☐	☐
I avoid walking because of air pollution or noise.	☐	☐	☐	☐	☐	☐
High vehicle speeds and lack of pedestrian crossings make walking unsafe.	☐	☐	☐	☐	☐	☐
I feel unsafe walking after dark due to poor street lighting.	☐	☐	☐	☐	☐	☐
Weather is a major barrier to active travel for me.	☐	☐	☐	☐	☐	☐
Fares make public transport unaffordable.	☐	☐	☐	☐	☐	☐
Bus/trolley stops are too far from my origin or destination.	☐	☐	☐	☐	☐	☐
I don't use public transit because real-time schedules or route maps are hard to access.	☐	☐	☐	☐	☐	☐
Using public transport takes too much time.	☐	☐	☐	☐	☐	☐
Public transport reliability (delays/cancellations) discourages me.	☐	☐	☐	☐	☐	☐
Transit vehicles are often overcrowded, making the ride uncomfortable.	☐	☐	☐	☐	☐	☐
I feel unsafe either on public transport vehicles or at public transport stops.	☐	☐	☐	☐	☐	☐

Section D. Infrastructure & Services Quality

This section evaluates the quality of infrastructure and services across different mobility modes. Respondents rate various aspects using **rating scale questions** to help identify strengths and gaps in current mobility systems.

1. **Using a similar 1-5 scale, please rate the <u>quality in your city</u> of:**
   (Using the same 1–5 scale: 1 = Very poor, 2 = Poor, 3 = Fair, 4 = Good, 5 = Very good, NA = Not Applicable or I don't know)

STATEMENT	1	2	3	4	5	NA
Quality of cycle lanes and paths	☐	☐	☐	☐	☐	☐
Availability of secure bicycle parking	☐	☐	☐	☐	☐	☐
Sidewalk continuity & condition	☐	☐	☐	☐	☐	☐
Quality of pedestrian crossings	☐	☐	☐	☐	☐	☐
Coverage of public transport routes	☐	☐	☐	☐	☐	☐
Frequency of public transport services	☐	☐	☐	☐	☐	☐
Real-time information & ticketing (apps, qr, contactless)	☐	☐	☐	☐	☐	☐
Integration between modes (bike-and-ride, park & ride, etc.)	☐	☐	☐	☐	☐	☐
Availability of ev charging / car-sharing services	☐	☐	☐	☐	☐	☐
Maintenance & cleanliness of public transport vehicles and stops	☐	☐	☐	☐	☐	☐
Safety of public transport, including on public transit vehicles or at public transit stops	☐	☐	☐	☐	☐	☐

Section E. Improvements

This section explores potential improvements to promote sustainable mobility, including walking, cycling, and public transport. Respondents rank the **most important measures** that would encourage them to use these modes more often.

1. **Which of the following improvements would encourage you to <u>CYCLE or WALK</u> more often?**
   (Please rank your TOP THREE in order of importance (1 = most, 3 = least).)

☐ Safer, wider and better-maintained dedicated cycling/walking paths
☐ Secure bike parking/lockers at destinations
☐ Better lighting and CCTV along routes
☐ More cycling paths physically separated from street traffic
☐ Lower speed limits for cars in mixed-traffic streets (e.g. 30 km/h zones)
☐ More greenery, shade, benches and water fountains along routes
☐ Integration with public transport (e.g. bike-on-board, connected paths, bike-share at stops)
☐ Financial or in-kind incentives from employers or schools
☐ Public bike-sharing or e-scooter services near my home/destination
☐ Clearer way-finding signage and digital navigation aids
☐ Improved winter maintenance (snow & ice removal)

2. **Which of the following improvements would encourage you to use <u>PUBLIC TRANSPORT</u> more often?**
   (Please rank your TOP THREE in order of importance (1 = most, 3 = least))

☐ More frequent services during peak and off-peak hours
☐ Lower fares or subsidized passes
☐ Integrated ticketing across buses, trolleybuses, trains and shared mobility
☐ Real-time information at stops and in apps

☐ CCTV in the public transport stations
☐ Cleaner, more comfortable and safer vehicles and waiting areas
☐ Faster, more direct routes or fewer transfers
☐ Park-and-ride or bike-and-ride hubs at the edge of the city
☐ On-board Wi-Fi and charging sockets
☐ More highly qualified drivers
☐ Improved personal safety and security measures
☐ Ability to take bicycles / scooters on board
☐ Better accessibility for passengers with reduced mobility or parents with prams

Section F. Anything else you'd like to tell us?

In this final section, you have the option to share any additional thoughts or feedback regarding your satisfaction or perceptions of different transportation modes in your municipality.

1. **Optional open-ended question**

Anything else you would like to share about your satisfaction or perception of various transportation modes (e.g., bus/trolleybuses, cycling, walking or driving) in your municipality?

Data Security and Storage

The data gathered through the questionaries will be stored in the sustainable data mobility platform.

Appendix III

Figure 3

UN Population Estimates by Age for Lithuania

		Location	Sex	Category	Variant	Year
		Lithuania				
		Both sexes				
		N/A				
		Median				
Indicator	Age	2023		2024		2025
Percentage of total population by broad age group	0-17	17.77		17.67		17.56
	15-24	10.42		10.43		10.26
	25-49	33.42		33.61		33.61
	50+	41.27		41.25		41.62

Source: United Nations, Department of Economic and Social Affairs, Population Division (2024). *World Population Prospects: The 2024 Revision*, custom data acquired via website. Link to Custom Data Pull.