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POLICY BRIEF

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The Role of Bike Lanes and Their Effectiveness in a Congested Urban Environment

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Executive Summary

One of the most notable outcomes of the Tbilisi Transport Reform has been the introduction for the first time in the city's history of bike lanes. Despite that, the use of bike infrastructure remains the least popular mode of transport, in contrast to public transport which has had an increasing number of users. While dedicated bus lanes have proven effective, bike lanes' success remains uncertain. In most cases, the creation of bike infrastructure has followed on from the large-scale rehabilitation works of main streets and avenues, that have been carried out step by step, one at a time over the last decade - which is one of the main reasons why the bike lane network is not yet fully connected. In addition to that problem, there are no specific safety rules or regulations for bike lanes. As a result, the popularity of bike lanes among commuters is low, and their existence is often unrecognised by both pedestrians and car drivers. In the Georgian capital, and not only there, the increase in traffic congestion and air pollution caused by heavy dependence on cars remains a pressing issue. In this context, it is necessary to investigate the potential of transport alternatives such as bike lanes, and manage them effectively to reduce car usage and dependency. The purpose of this policy paper is to explore the potential of bike lanes and analyze what role bike infrastructure can play in the fight against heavy traffic congestion. The idea of researching this issue arose precisely for the purpose of establishing a sustainable and green urban environment in Georgia, since this is an often forgotten but important aspect of the path to European integration. In this regard, the development of bike

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lanes plays a crucial part. As part of research for this paper two focus group studies on the use of bike lanes were conducted, as well as interviews with the Caucasus Cycling Network, CCN, and the Partnership for Road Safety, whose recommendations are reviewed in this document.

Key Words: *Bike Lane, Cycle Infrastructure, Non-Motorized Form of Transportation, Bike Lane Network, Bike Sharing Service, Heavy Congestion, Transport Reform, Public Transport*

Introduction

While in the last century Tbilisi and other cities of Georgia did not experience significant traffic congestion, the fight against traffic jams has been an urgent and relevant issue for the last decade (Patsatsia 2022).

The problem of today's large traffic jams in Tbilisi is caused by the excessive number of cars (Babunashvili 2021). One factor contributing to this picture is the limited availability of other modes of transport, such as bikes and of services for them. This means that cycling infrastructure and sharing services are poorly available or, in some places, non-existent.

The construction of bike lanes is considered an effective ways to reduce traffic congestion in the city. This practice is backed by successes in European cities, such as Amsterdam, Berlin, Paris, Prague, Vienna and others (Mobycon 2022).

The use of bike paths brings many benefits to the city and its residents. They allow people to move quickly from one point to another without being hindered by traffic jams, and help reduce overall road congestion. This is because when an alternative is available more people are encouraged to travel by bike or similar non-motorized transport, especially for shorter distances, instead of using cars. Recent observations show that in Tbilisi the average distance driven by cars per journey is only 5 kilometers, which can becovered quite feasibly using non-motorized transport (CCN 2024).

The excess number of cars today can be attributed to both current lifestyles and the relative affordability, unlike in the last century. Additionally, most road space in the city is dedicated to cars, with public transport and bike paths trailing. This hierarchy discourages citizens from switching from personal cars to public transport or non-motorized options like bikes and scooters (Patsatsia 2023).

To prevent future traffic chaos the city's government first emphasized the need to prioritize pedestrians, public transport, and non-motorized travel in 2015. This marked the beginning of

Tbilisi's new transport policy. The city began implementing reform with the assistance of international financial institutions such as the European Bank for Reconstruction and Development and the Asian Development Bank. With their assistance, the development of the Sustainable Urban Mobility Plan (SUMP) began in 2019 (Patsatsia 2023).

As part of this, ten bus lane corridors have been established in Tbilisi to allow buses to move without interruption by private vehicles. However, public transport is often overcrowded, making it inconvenient for many (Pertaia 2022). This discourages some people from switching to public transport, preferring for comfort to use private cars. Unlike buses, bike lanes do not face overcrowding issues and offer citizens greater freedom of movement. Additionally, promoting bike lanes helps reduce pollution in the city, as the primary cause of it is vehicle emissions. Beyond environmental benefits, cycling also promotes physical and mental health (Mobycon 2022).

In recent years, as part of Tbilisi's ongoing and extensive street rehabilitation nearly all streets have been equipped with dedicated bike lanes. This has created a bicycle corridor or network, a key component of the "Sustainable Urban Mobility Plan" (Green Alternative 2023).

Tbilisi currently has 45 kilometers of bike infrastructure spread across 11 main avenues and streets [**Attachment 1**]. However, this network lacks cohesion and completeness as it fails to cover crucial junctions such as Heroes' Square, Queen Tamar Avenue, Rustaveli Avenue and others. The inauguration of the first bike lane on Peking (Pekini) Avenue in 2017 marked a significant milestone. Yet, even seven years later, bike lane usage remains relatively uncommon, with the number of cyclists using them far below expectations. Consequently, bike infrastructure remains an unpopular aspect of Tbilisi's transport reform, in contrast to the increasing popularity of public transport (Metro, bus) in recent years.

Along with various personal arguments, an important reason why the use of bike infrastructure has not gained popularity is the lack of relevant services in the city, for example, bike sharing services and bike parking stations [**Attachment 2**]. As of July 2024, only e-kick scooter sharing services are available in Tbilisi, and only in the central and close-to-center areas. High safety risks are the next factor that leads to the avoidance of the use of bikes (Kvashilava 2024).

Identification of Bike Lane Users

To research the issue, a survey was conducted in two focus groups - **1.** Bachelor and Master students of the International School of Economics of Tbilisi State University - ISET (age range 18-27 years) and **2.** A group of residents who daily use the bike paths when commuting (age range 16-40 years).

The survey was conducted from April 29, 2024 to May 10, 2024, with 61 respondents interviewed from the first group and 11 respondents from the second.

The first focus group was selected because the ISET campus, located on Mikheil Zandukeli Street in the central part of Tbilisi, is a prominent example of how students are using the bike infrastructure to commute to the city center for their studies.

(Special thanks to the Caucasus Cycling Network (CCN) for providing the survey form to the second group of respondents.)

The survey comprised 30 complex questions covering issues such as bike use and frequency, use-related experiences and problems, personal reasons and factors related to bike use/non-use, and assessments, including the implementation of existing transport policies in the cities of Georgia.

A limitation of the study was the small number of respondents, which represents a low turnout considering the total number of ISET students. To address this, future research could benefit from including students from other universities to make the findings more representative. The questionnaire did not include questions on whether traffic congestion and transport have worsened or improved over the past years. Additionally, the policy brief format does not allow for a comprehensive analysis of all 30 survey questions and their implications. Furthermore, while the document discusses the potential of bike lanes qualitatively and in terms of content, it lacks a quantitative impact assessment model. The creation of such a model was not feasible within the time constraints of this research.

Patterns of Bike Lane Usage: Who, why and how often uses/does not use bike lane?

In European countries, students are a group of people for whom cycling is particularly popular for daily commuting. The first question of the survey was "Have you used the bike path in Georgia?", to which only 23 of the 61 ISET students respondents stated they had used the bike infrastructure at least once. This indicates that the majority of students in this group never had a reason or opportunity

to use the bike lanes [**Attachment 3**]. Consequently, to the question of the extent to which bike lanes are one of the methods of mobility in the city, 44 respondents from the first group stated that it is not a transport option for them at all, the answer "rarely" prevailed among the rest of the respondents, and only five respondents noted that they sometimes or often used this method of transport. Not surprisingly, the ratio of answers from the second group of respondents to the questions is significantly different, and 70% of bike users consider that the bike lane is one of the main options for them to use to move around the city [**Attachment 4**].

Among the reasons and factors that influence the use of bikes, for ISET students there are arguments such as promotion of physical activity (60.7%), time-saving (46.4%), care for environment (42.9%), better lifestyle (35.7%), cost-effectiveness (17.9%) and others. It is worth noting that 15 interviewees expressed their desire to use bike lanes in future. Percentage distribution among respondents from the second group is not radically different. Interestingly, in contrasts to the students, the respondents from the second group who daily use bike paths, are more likely to think that using non-motorized transport is more cost-effective (55.6%) and that it is a convenient method of getting to other major modes of transportation, such as the metro (44.4%).

Among the circumstances that influence students not to use the bike lanes are factors such as the non-availability of a connected network of bike lanes (61.4%), their absence in some locations (43.2%), dangers (31.8%), not knowing how to ride a bike (25%) and the argument that Georgian cities are hilly (27.3%). Among bike users, the most common reason for avoiding the use of bike lanes is that their network is not fully connected, i.e. it is not possible to move from one neighbourhood to another by bike (80%) and also that the respondent often has to travel with others - family members, colleagues, etc. (30%). The members of the second group do not consider the hilliness of the Georgian cities to be a problem.

Bike Lanes and Their Popularity: Where Are They Most Frequently Used?

The bike lane on Ilia Chavchavadze Avenue is notably popular for both groups of respondents due to the buses in this street being overcrowded, making cycling a preferred alternative (Pertaia 2022).

Unlike for ISET students, the newly opened bike lane on Akaki Tsereteli Avenue is popular among bike user group. The latter can be explained by the fact that cyclists are more informed about the opening of bike lanes in new locations.

The Impact of Owning Non-Motorized Transport on Bike Lane Usage

European practice shows that the ownership of personal non-motorized transport affects the daily use in cities. When asked whether the student respondents own their own bikes or other means of transport allowed in the bike lane, 25 out of 61 respondents stated that they do [**Attachment 5**]. This data is interesting because it exceeds the number of people who use the bike lane rarely [**Attachment 4**]

Safety of Bike Lanes: Reasons Behind User Concerns and Critical Locations

One key factor influencing the decision to use bike lanes is the perceived safety of the bike infrastructure based on experience. The next section of the survey was dedicated to the safety of the existing infrastructure, and respondents were given the opportunity to rate existing bike lanes. Among the three characteristics - dangerous, satisfactory and safe - respondents in the first group rated all existing bike lanes as mostly satisfactory. However, the bike lane in the Vake district was predominantly rated as safe by the majority. In contrast, students rated the bike lane in Gldani as relatively dangerous, which may be attributed to cars' frequent disregard for speed limits on the streets in that area [**Attachment 6**].

As for the second group, the bike lane on the right bank is considered the most dangerous and least safe (70%) [**Attachment 7**]. This is due to the absence of barriers and frequent violations of traffic rules by car drivers. On the other hand, most of the existing bike lanes are also of satisfactory safety for active cyclists. There is a similar trend among the bike lanes in other cities of Georgia [**Attachment 8**].

According to the students, the safety challenges of bike lanes on some streets are caused mainly by the absence of barriers (69.7%), the carelessness of pedestrians and their ignoring of the bike lanes (72.7%), and the lack of special mirrors where streets curve (39.4%), etc.

Respondents' Evaluations of Transportation Policy

Taking all factors into consideration, it was interesting to see how satisfied the interviewees are with the existing bike lanes, rating them from 1 - 5 points, where 1 means no satisfaction and 5 means high satisfaction. This included assessing how secure they feel about the quality of existing services as well as their attitudes towards the prices.

On a scale of 1 to 5, for the first group the general satisfaction rating with existing bicycle paths is below average, and for the second group it is at an average level [**Attachment 9**]. Regarding Tbilisi's

transport policy, there is a notable contrast between the groups. While the majority of students rate the existing transport policy as either 1 (24.3%) or 2 (35.1%), most active bike users rate it as 4 (60%). This suggests that, despite the challenges, bike users generally appreciate and support the current priorities [**Attachment 10**].

Respondent Comments and Suggestions

Respondents could also respond to open-ended questions where they could reflect on their experiences, wishes and recommendations. From the respondents of the first group, in the open-ended question about what changes in addition to those already mentioned would affect their decision to use the bicycle path, there were aspects such as the introduction of an efficient bike sharing service, increasing safety to the maximum level, adding to the network a number of locations such as Rustaveli Avenue, Didi Digomi, Ortachala, Vazha-Pshavela avenue, Varketili, Samgori, Kakheti highway, Guramishvili and Dadiani avenues and others. Further, the separation of bike lanes from bus lanes, which are integrated in some streets of Tbilisi, as well as the need for stricter safety control, were mentioned. From the second group, all issues mentioned above were observed, as well as the importance of awareness-raising for both pedestrians and car drivers.

Recommendations from Field Experts

As part of the research, interviews were held with the Caucasus Cycling Network (CCN) founder and representative Mar Mikhelidze, and Gela Kvashilava, an expert in the field and chairperson of the Partnership for Road Safety. The discussion with experts addressed the current state and challenges of bike infrastructure, followed by the identification of crucial steps to be taken.

Expert Gela Kvashilava reflects and agrees with the opinions and trends revealed by the survey, highlighting that given Tbilisi's heavy traffic, the creation of more bike lanes is a viable way to solve traffic congestion in the city. He emphasizes that on streets where the speed limit is 30 km/h or lower, cyclists should be automatically permitted on the roadway, with appropriate safety regulations. On streets where there is a need for bike lanes but insufficient space for them, the motorized vehicle speed should be reduced to 30 km/h to safely accommodate cyclists (Kvashilava, 2024).

The expert confirms the fact that without connecting the existing bike lanes, the city will not be able to show maximum efficiency. It is necessary to combine and connect existing bike lanes, as well as

to integrate them with public transport – that cyclists can travel a certain distance by public transport to locations at which there are bike parking facilities [Attachment 11]. Connection with public transport means creating bike stations at such transport locations and junctions as the metro, railway and cable car stations.

However, according to the expert, there is a need to introduce a bike-sharing service, which can potentially be integrated with the existing transport pass in the city. Tbilisi City Hall introduced a subscription system in early 2022. The target number of bike users in the city can be increased to 8% only by introducing effective sharing services. The latter is impossible in current conditions without the involvement of the municipal authorities. Kvashilava points out that in every city, a supportive local government is behind successful sharing services. The effective sharing service should be affordable and accessible (Kvashilava 2024).

The lack of support from the City Council and the local government is demonstrated by the fact that there is no entry in the budget for the development of bike infrastructure. During street reconstruction programmes the creation of bike lanes is managed as an afterthought, without thorough unified planning or legislative approval. Consequently, some measures have contradicted their intended objectives - Tbilisi's "Sustainable Urban Mobility Plan," which should guide the capital's transportation policy, remains unapproved (Patsatsia 2022).

If the State aims to achieve the UN sustainable development goals and promote alternative methods of transport, it must not only take direct action but also run effective campaigns to educate the public on the importance and benefits of bike infrastructure in reducing city congestion.

It should be noted that the expert considers Tbilisi's hilly terrain to be a non-issue, as electric bicycles with small engines are becoming widely available and can easily manage the city's slopes [Attachment 12].

Mar Mikhelidze, one of the founders of the Caucasus Cycling Network (CCN), agrees with the approaches and ideas mentioned regarding the problems of bike lanes and notes that important documents, for examples the general plan for bicycle transport in Tbilisi - the South Caucasus Project of Sustainable Urban Mobility - have been developed with the assistance of Western international organizations such as GIZ. Although these have been presented to the City Council, politics have hindered their approval, which CCN finds disappointing. The network considers it necessary to introduce an efficient sharing service and also parking hubs in the city [Attachment 2], because, despite the stereotypes, Tbilisi provides a great opportunity for many citizens to travel by bike on a daily basis. (CCN 2024).

On several streets where there are currently no bike lanes, many cyclists travel on existing bus lanes. However, the recent decision to allow white-colored A-category taxis to drive on bus lanes makes the use of them more dangerous for cyclists and often impossible. This is considered a clear step backwards from the reforms implemented in recent years, CCN notes, and expresses disappointment with the recent approaches from the local government. The CCN is one of the platforms in the region advocating advancement of a cycling culture, aiming to improve accessibility for cycling and raise awareness in society.

Conclusion and Recommendations

A European city of the 21st century, regardless of its terrain and climate, is unimaginable without bike infrastructure. As a country in the process of European integration, Georgia should ensure that its cities should respond to modern challenges with modern solutions. As mentioned above, developing bike infrastructure plays a decisive role in creating a sustainable urban environment in Tbilisi and other cities of Georgia. The potential for this development exists and must be utilized. The survey reveals the specific needs and benefits that bike lanes bring to the daily life of the city. These benefits can be realized only with the right campaigns and effective information sharing. Unfortunately, discussions within civil society groups about these issues are rare.

This policy brief can be a useful tool and guide for decision-makers at the municipal level who are interested in evaluating the effectiveness and efficiency of the bike lane component of transport reform. Furthermore, this study can be useful for initiating additional research in this direction.

Recommendations for solving the challenges of bike lanes in Tbilisi and other cities of Georgia can be formulated and combined as follows:

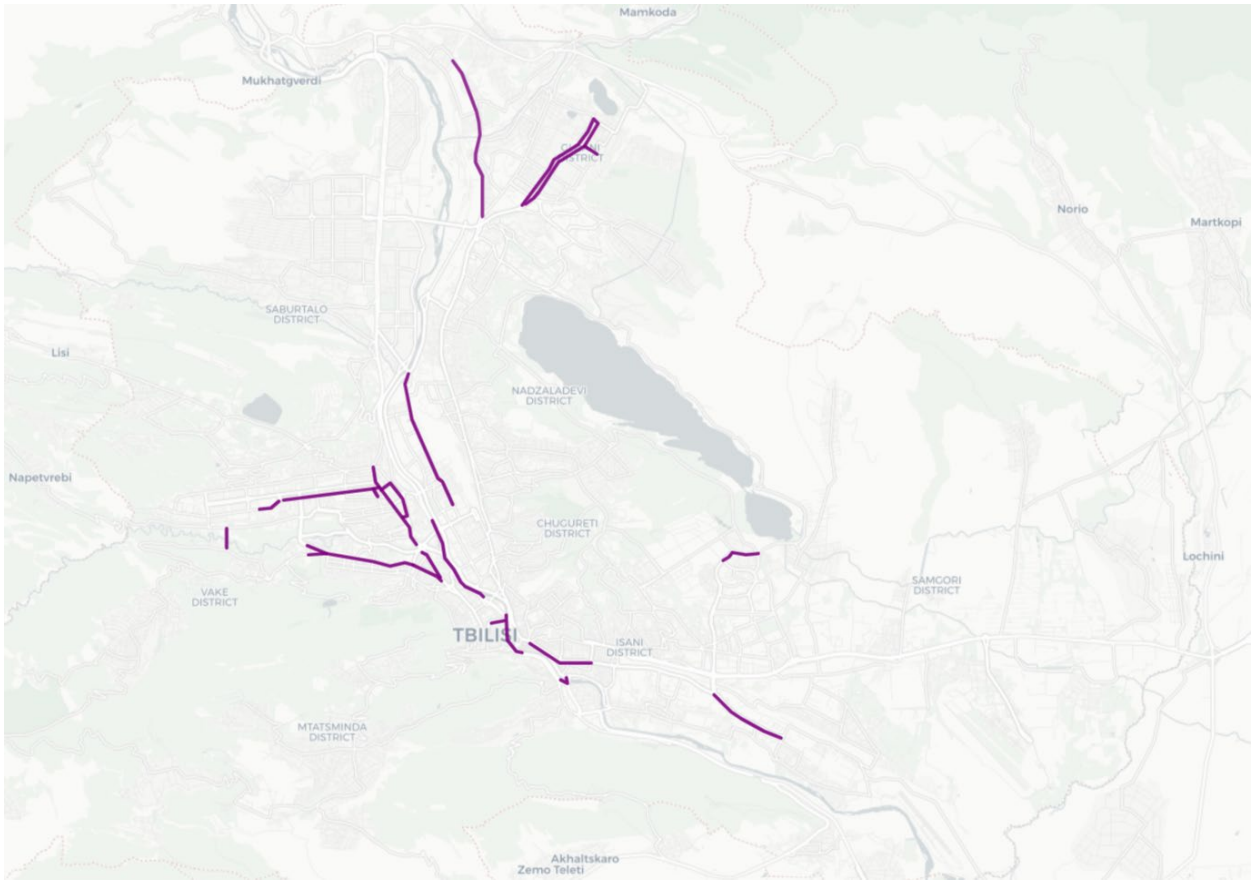
- The reform launched in Tbilisi seven years ago is not yet accomplished and the full utilization of bike infrastructure will remain elusive until the network is fully interconnected. Currently, bike lanes are localized within neighborhoods, making it challenging to commute between different districts by bike (Kvashilava 2024). This shows that Tbilisi's transport reform has been delayed and is showing little progress or results despite the city’s large-scale rehabilitation works. Unfortunately, the prolonged duration and slow implementation of the reforms are diminishing the expected effects that the city should have seen over the past seven years.

- The absence of a bike sharing service in the city also contributes to the lack of users and daily commuters on bike lanes. Moreover, relying on so-called electric scooters for transportation, which is the only available non-motorized vehicle sharing option in Tbilisi, is not the safest or most efficient option (Bieliński & Ważna, 2020). In Western cities, the use of bicyles is more common thanks to dedicated bike paths and services (Mobycon 2022).
- In the city, establishing hubs and parking centers also encourages the use of cycling infrastructure (Kvashilava 2024). This is significant because at least 70% of Tbilisi's population resides in multi-story apartment buildings where storing personal bicycles may be challenging or require designated space.
- Promoting bike lanes requires the active involvement and participation of both the central and local authorities, as demonstrated by Western practices (CCN 2024).
- Increasing safety on bike lanes should be a priority if decision-makers want to ensure an increase in the number of users. The installation of barriers on difficult and risky sections will significantly increase the safety of travel and the use of the bike lanes **[Attachment 13].**
- Finally, it is important for all parties, including motorists and pedestrians, to be involved in raising awareness and ensuring order on the roads for the community.

Attachment 1:

Map of bike lanes in Tbilisi as of first half of 2024.

Source: Tbilisi City Hall Unified Map (Municipal Services Development Agency)



Author's comment: Even at first glance, it is obvious how scattered and uncoordinated the network of bike lanes is, as well as their absence in a number of neighborhoods and districts.

Note: The bike lanes that pass through sections where the space is shared with existing bus lanes are also marked.

Attachment 2:

Bike stations for bike parking and sharing services.

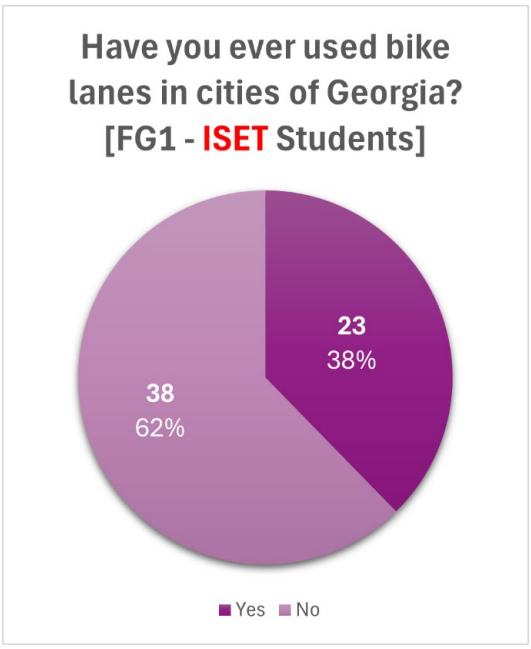
Belfast, United Kingdom

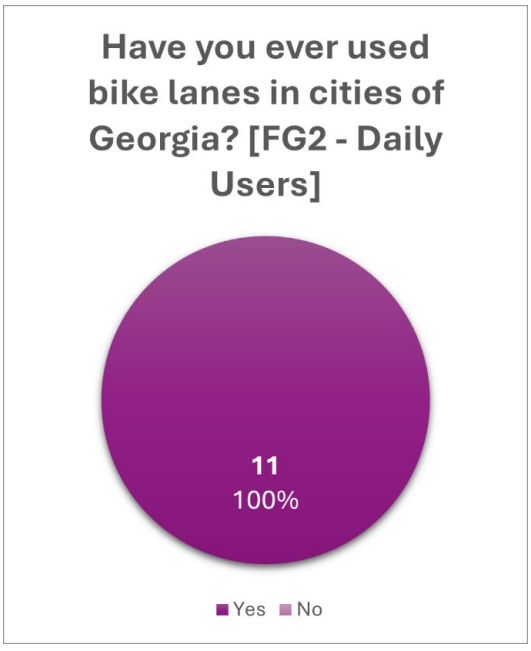
Source: William Murphy. Flickr, 2015

Brussels, Belgium

Source: European Cyclists' Federation, 2012

Attachment 3:





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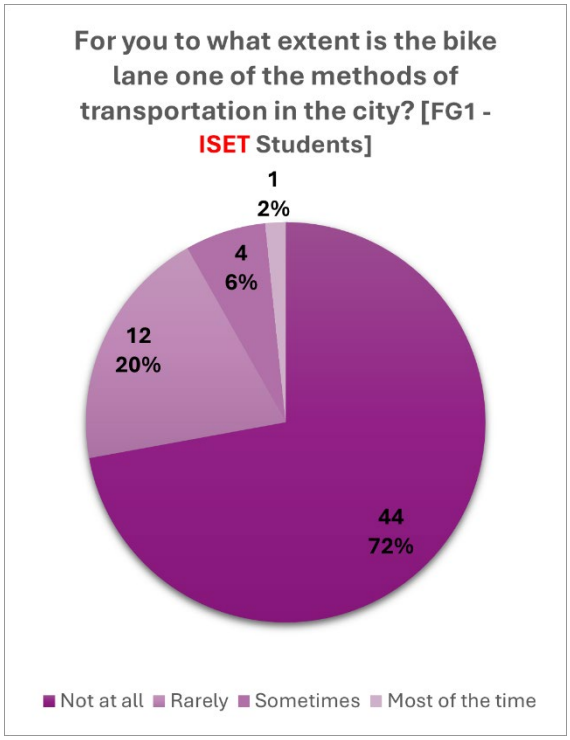

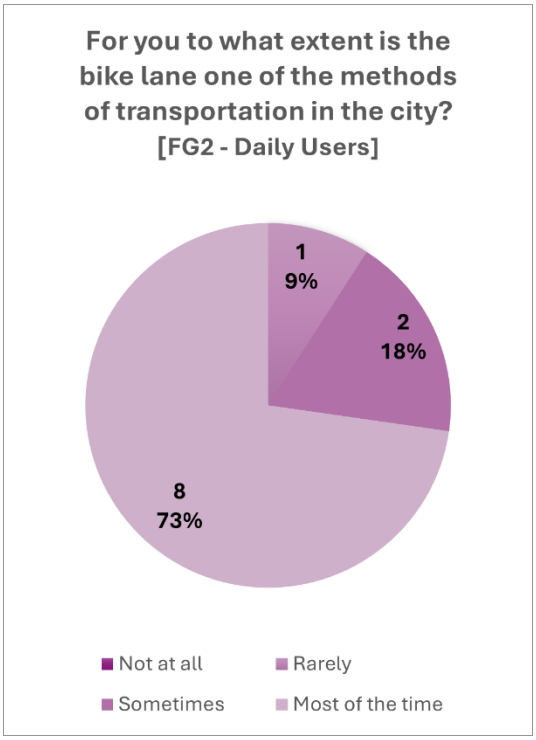

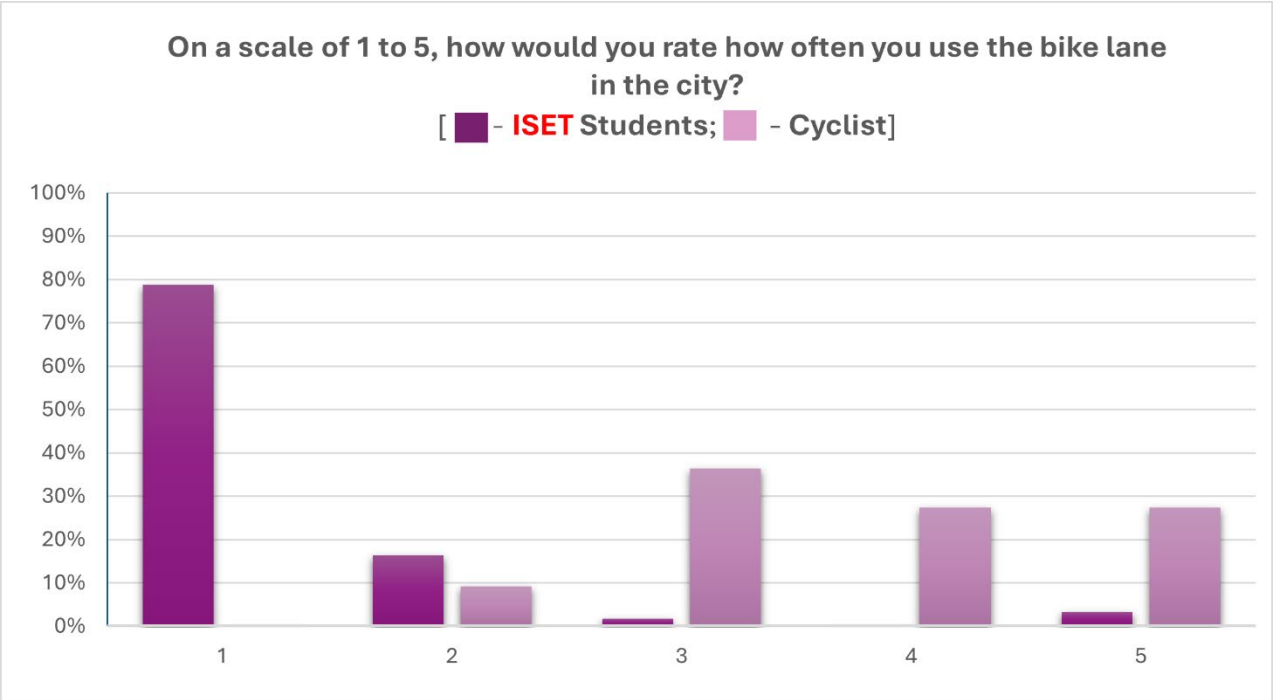

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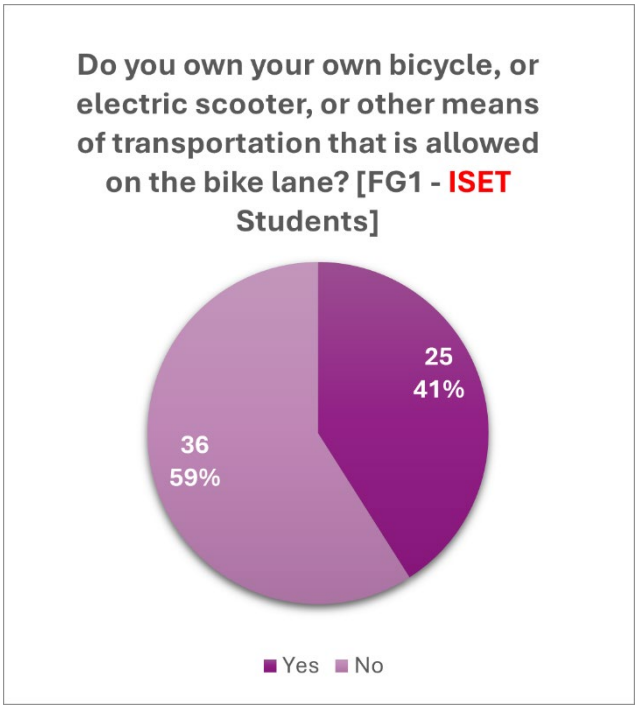
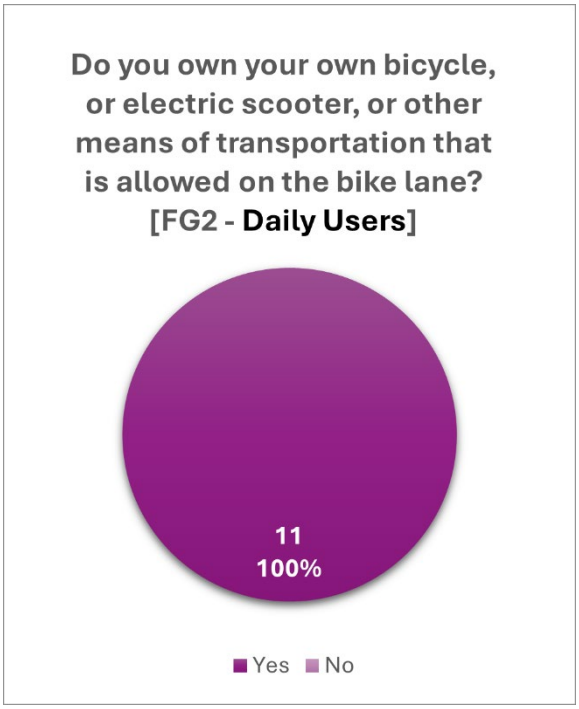
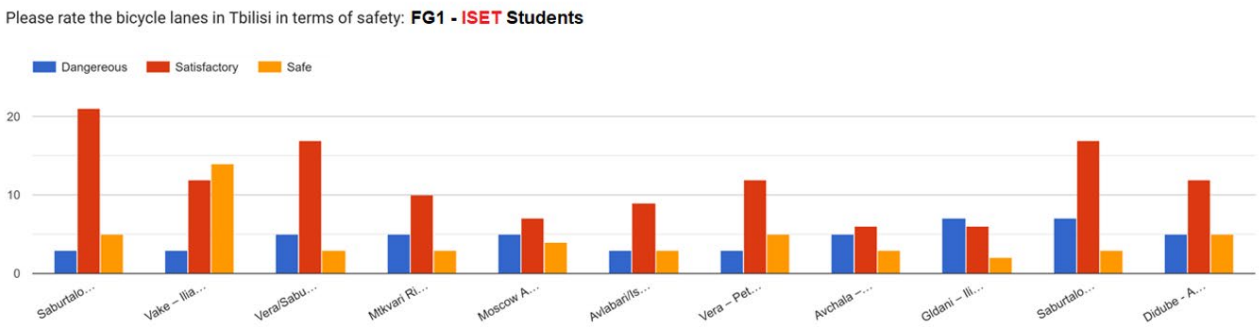




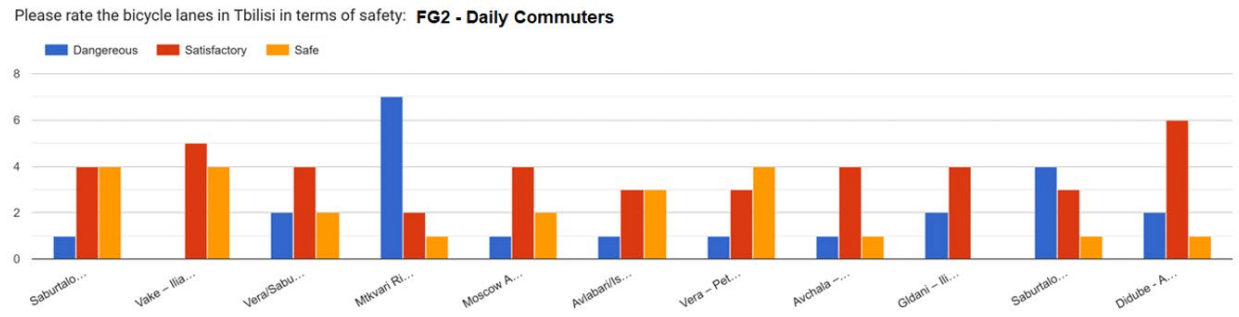
Attachment 6: Evaluation of the safety of existing bike lanes in Tbilisi

I Focus Group – ISET Students



Attachment 7: Evaluation of the safety of existing bike lanes in Tbilisi

II Focus Group – Regular Cyclists



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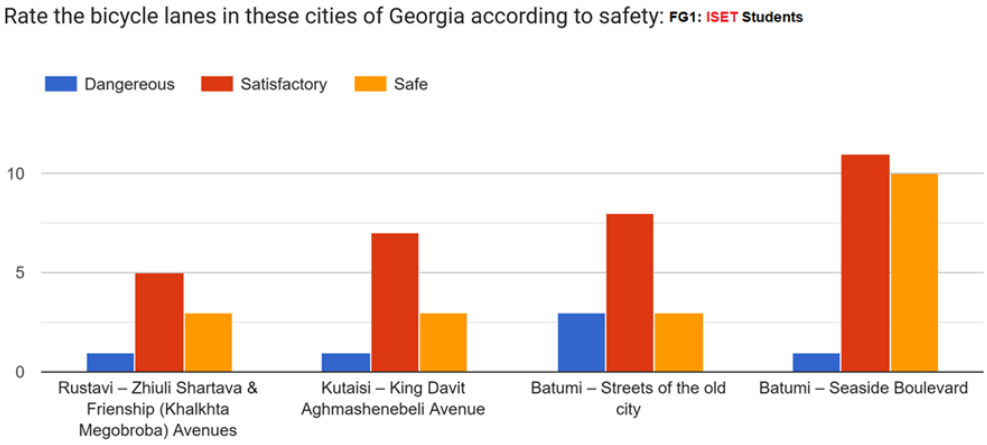
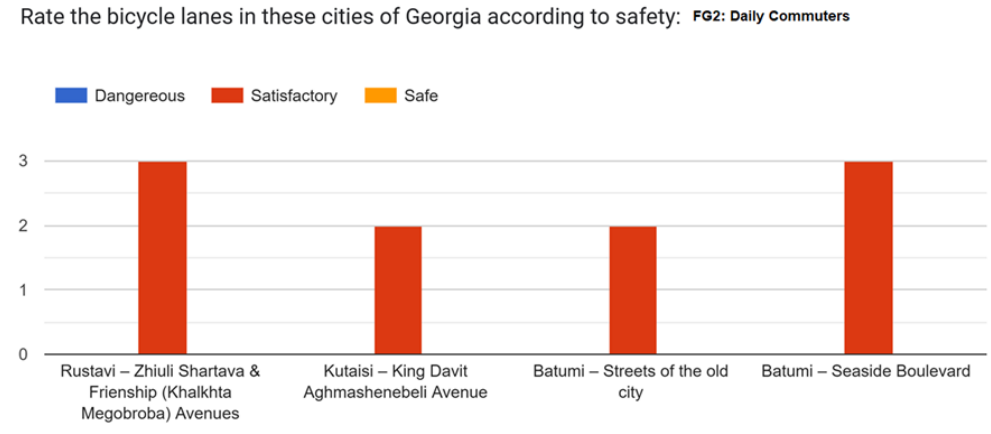


Focus Group II:



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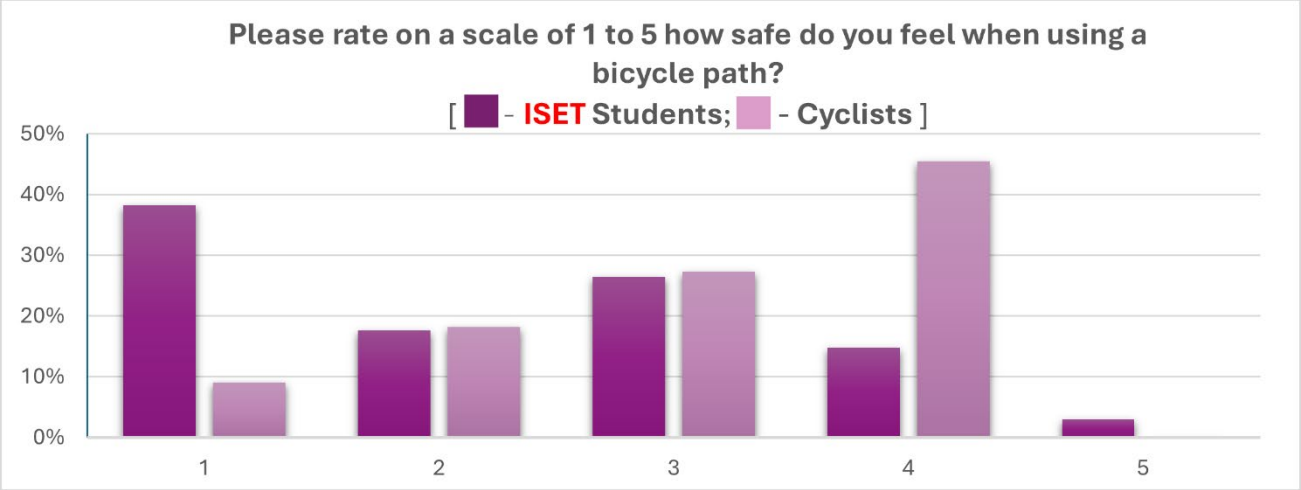

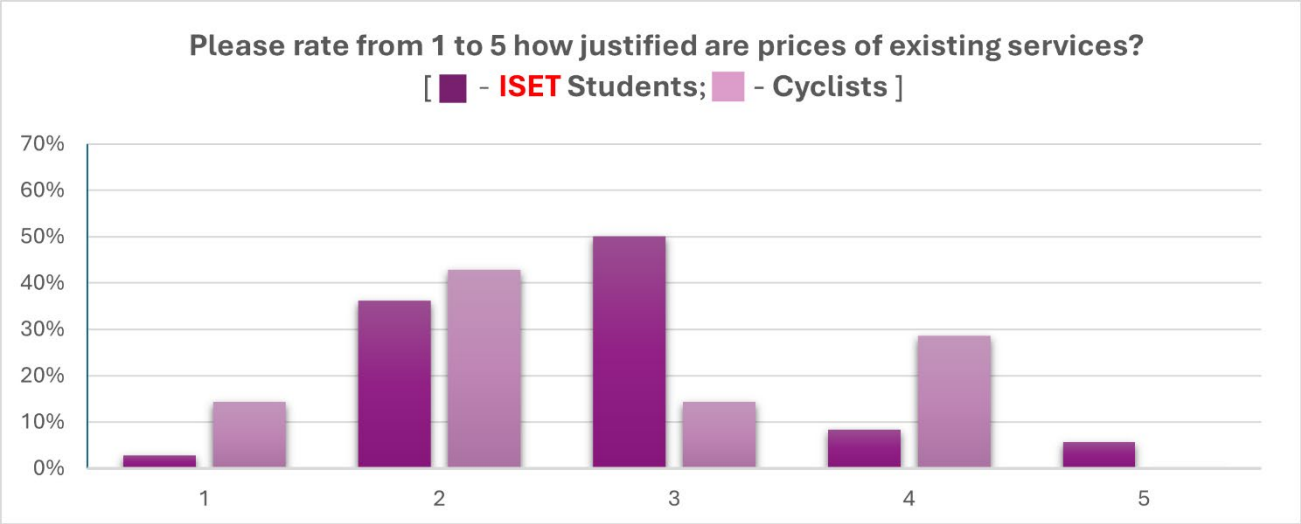

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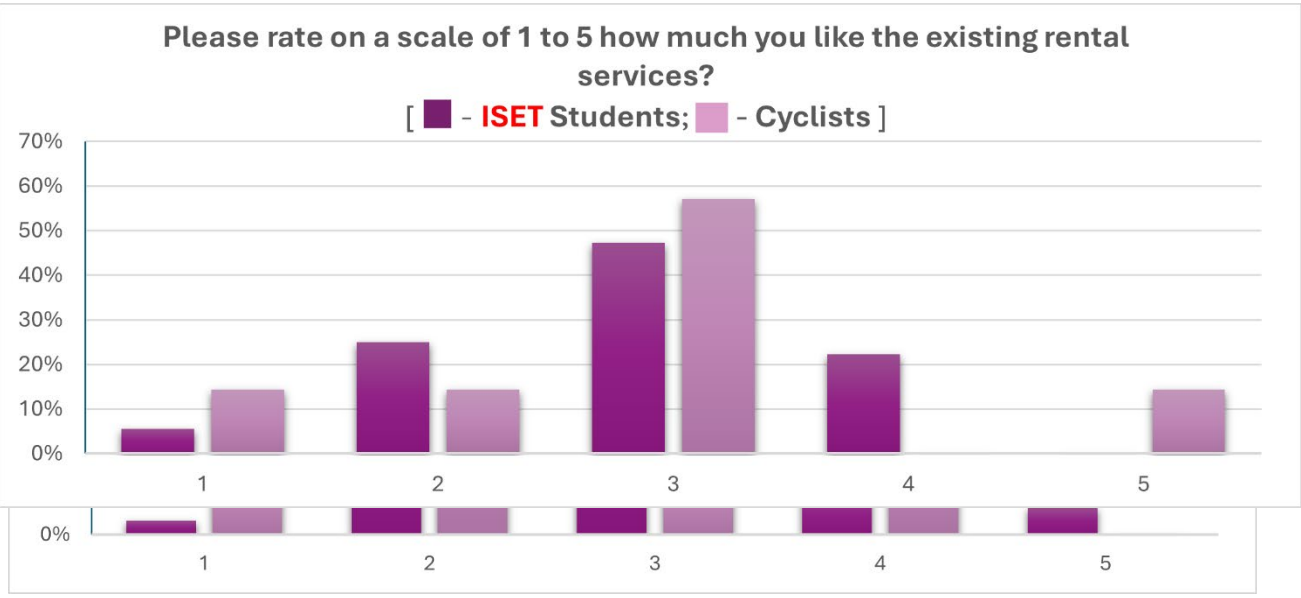

Attachment 11:

An example of the integration of personal non-motorized vehicle and public transport.

Source: Philip Mallis. Flickr, 2018

Attachment 12:

E-bike in San Francisco - a city known for its steep inclines.

Source: waltarrrrr. Flickr, 2018.

Attachment 13:

Barriers for bike lanes in Stockholm and Seville. There are many types of bike infrastructure offering protection and creating isolation.

Source: nickfalbo. Flickr, 2017

Source: BikeTexas, 2012

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Mikhelidze, Mar, 2024. Founder, Caucasus Cycling Network (CCN).

Survey:

https://forms.gle/dgqHeN9gyeGTueRf6

Questions used in the survey

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