



**POLICY BULLETIN**

# **ADOPTING CAR ALTERNATIVES: WHO NEEDS ENCOURAGEMENT?**

**Tbilisi, Georgia**

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## ABSTRACT

People talk about there being too many cars in Tbilisi. Traffic jams, a lack of parking, and high levels of air pollution are all perceived to be common issues. Yet, the data suggest that despite the scope of car-related issues, the number of cars in Tbilisi is still far fewer than in European cities of similar size. However, with continued economic growth, the number of cars (and scale of the problems) in the city streets will continue to grow. This suggests the need for policy interventions to prevent the situation surrounding cars, which people are already unhappy with, from getting worse moving forward. As international experience shows, the successful interventions encourage car-users to shift to more efficient mobility alternatives, including walking. The data shows that a significant share of car rides are made at short distances and potentially can be substituted with walking or cycling. The data help identify the population groups who use cars at short distances and need to be encouraged to use other modes of transportation, which include men residents of Tbilisi's central districts, the employed, individuals with higher incomes, and parents.

## BACKGROUND

People in Tbilisi often talk about the growing number of vehicles and problems associated with them. According to NDI and CRRC public opinion surveys, every third<sup>1</sup> Tbilisi resident considers traffic, every fifth<sup>2</sup> parking, and every other pollution<sup>3</sup> among the most important public goods related issues in the city. These issues clearly relate to the cars on Tbilisi streets. Yet official data does not provide a realistic estimate of the number of cars in Tbilisi streets. This brief shows that there are actually fewer cars in Tbilisi than in government statistics. Through making international comparisons, the brief demonstrates that despite people in Tbilisi considering the problem severe, the number of cars in Tbilisi is relatively low. However, the number of cars is expected to grow, meaning that current transportation related issues will become worse without effective policy intervention. To contribute to this goal, this brief discusses who should be the target audience for policies that encourage usage of car-alternative mobility modes.

Thinking about current transportation related problems, such as traffic, the lack of parking, and environmental pollution among others, there are multiple explanations and proposed solutions. Some argue that the increased number of cars is not the source of the problem. Rather more cars is an

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<sup>1</sup> CRRC and NDI, 2018.

<sup>2</sup> CRRC and NDI, 2018.

<sup>3</sup> CRRC and NDI, 2018.

unavoidable process that comes with economic development and increasing incomes. Therefore, the argument goes that policy makers must face this reality and implement policies improving drivability in the city: building new automotive road infrastructure, new parking places, widening of existing roads, etc. On the other hand, modern transport planners tend to suggest that investing in car-centered policies does not provide a sustainable solution for mobility: the more roads and parking lots built, the more cars appear in the streets,<sup>4</sup> and the new infrastructure becomes insufficient for the growing number of cars. In a few years, there is a need to build more and more roads, still never reaching the sustainable point of free mobility. To break this cycle requires reductions in the number of cars and the encouragement of people to use more efficient modes of transportation rather than trying to approach the growing number of cars with ever increasing infrastructure.

Car-alternative approaches come from calculations about the effective use of space for different modes of transportation. While one individual uses 8.5 square meters as a car driver/passenger,<sup>5</sup> the same individual uses from 0.4 to 1.2 square meters as a ground public transport passenger, a cyclist, or pedestrian, while not using land space as a metro passenger. Besides ineffective use of space, in Georgia, vehicles are the largest contributors of harmful emissions, such as Carbon Oxides and Nitrogen Oxides,<sup>6</sup> Road safety is another challenge related to car usage. According to the WHO, cars users contributed to 44.7% of road fatalities in the world in 2013.<sup>7</sup>

Given the above, encouraging car users to substitute cars with other modes of transportation (public transport, cycling or walking) can lead to more efficient street space usage, reductions in traffic, declines in harmful emissions, and reduced numbers of road accidents. Based on this line of thinking, modern cities around the world adopt policies that encourage the use of non-car modes of transportation, discourage car use, and impose strict safety and environmental-related regulations to reduce the harmful effects of growing numbers of cars.

Yet, the number of cars in Tbilisi continues to grow. The Ministry of Internal Affairs (MIA) maintains a list of the number of registered vehicles, and provides them in annual reports and monthly updated lists of vehicles that have valid registration status. According to these sources, the number of cars is growing by

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<sup>4</sup> Durant, G., Turner M. A., 2011.

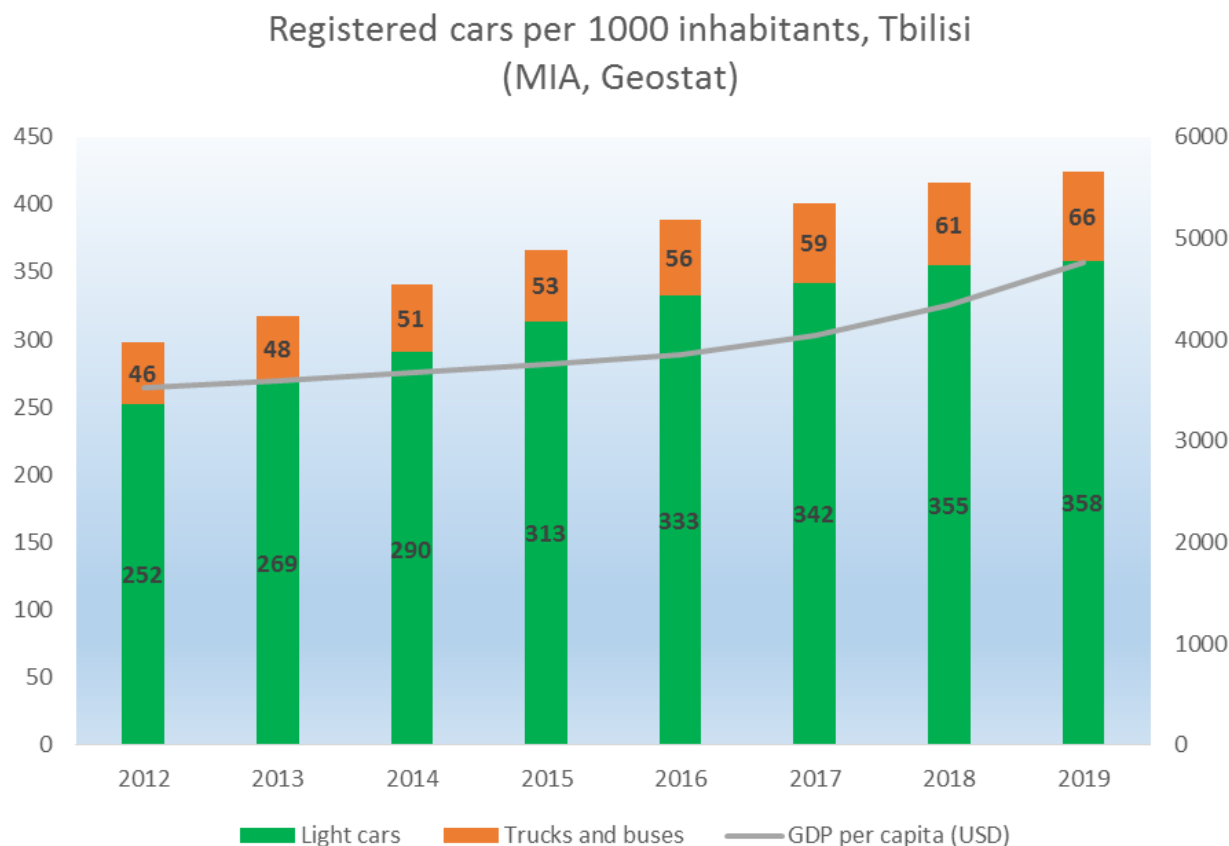
<sup>5</sup> Babunashvili. Spatial Mobility in Tbilisi 2016. <https://bit.ly/2FNIQpu>

<sup>6</sup> State Audit Office, 2018.

<sup>7</sup> WHO, 2019.

6%, on average, annually, and reached up to 497 thousand vehicles, including 423 thousand passenger vehicles, by the end of 2019.

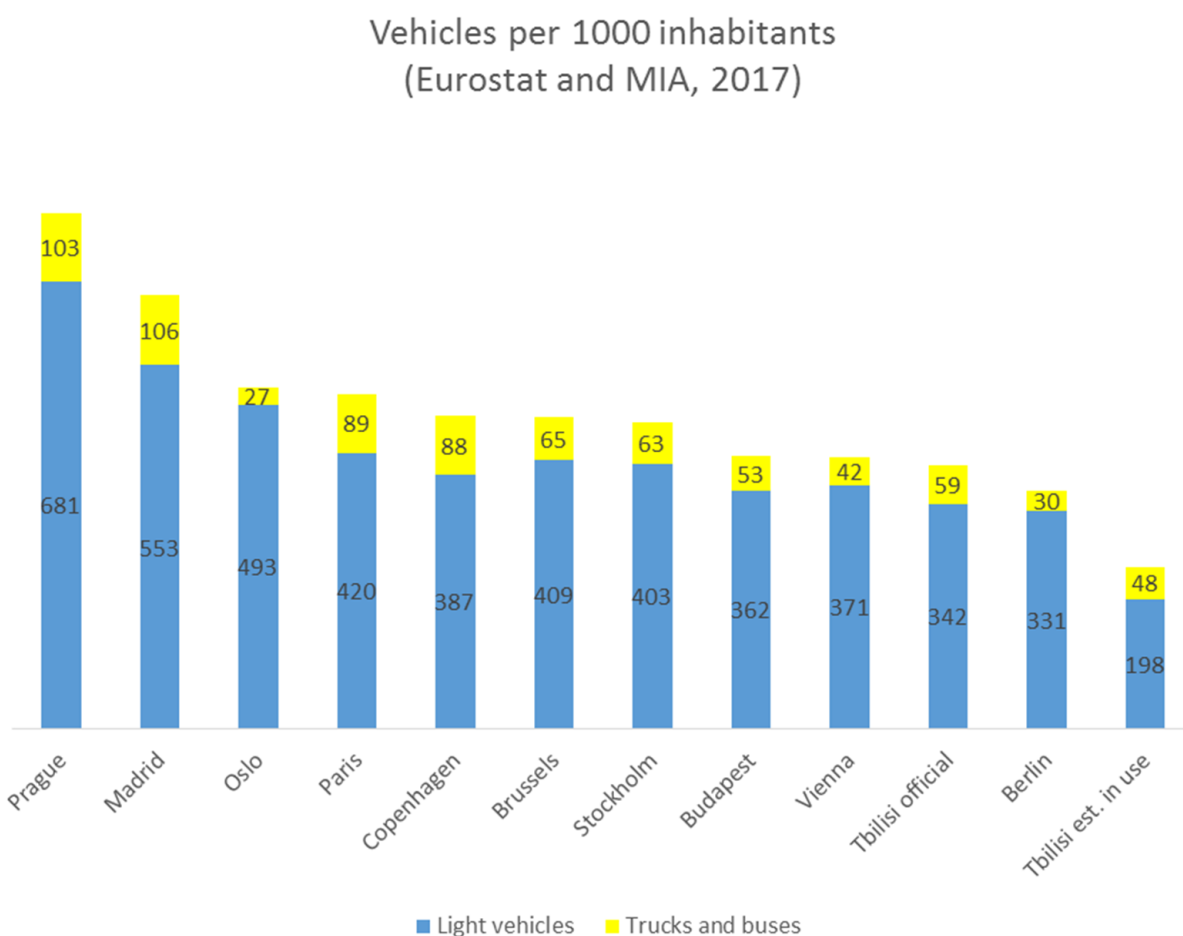
FIGURE 1: REGISTERED CARS PER 1000 INHABITANTS, TBILISI



A common practice in transportation planning is adopting best practices from comparable cities. Following international experience, national and local authorities in Tbilisi have introduced a variety of policy initiatives to attempt to ameliorate the situation around the above noted transportation issues. To make public transportation a more appealing alternative to cars, the Tbilisi municipal government has started investing in municipal transport. From 2016 to 2020, up to 700 new buses were purchased (with an additional 180 planned). A new transportation plan was developed, which will introduce bus rapid transit corridors and dedicated bus lanes to avoid road congestion. A new metro station was opened, eight renovated trains went into service in the metro, and ten new trains are planned to be purchased. Furthermore, a new rail line is proposed to Rustavi, which has a large population which commutes to Tbilisi. Underground pedestrian passages are being replaced by crosswalks and cycling lanes are being added to encourage car-alternative travel.

But how does Tbilisi compare internationally? There are approximately 308.3 million motor vehicles in use in the EU, from which 268 mln are passenger cars (2017), which translates to 602 vehicles<sup>8</sup> and 543 light vehicles per 1000 inhabitants. While Tbilisi official figures are comparable with European cities such as Berlin, Budapest, and Vienna, an estimated number of actual vehicles on Tbilisi streets (detailed methodology below) puts Tbilisi at the lower end of the list of European cities.

FIGURE 2: VEHICLES PER 1000 INHABITANTS



Of course, the number of cars is not the only indicator of similarity of the context and cities that are alike on one variable may significantly differ on others. Still, given the scope of the traffic problem in Tbilisi, the above data suggests that as the number of cars continues to get close to European cities, Tbilisi's already serious traffic and ecological problems will get even worse. To support efforts at reducing the issues



associated with cars in Tbilisi, this brief next attempts to estimate the actual number of cars on Tbilisi streets. It then provides car user profiles to enable an understanding of who alternative modes of transport have to appeal to in order to reduce the number of cars on Tbilisi's streets.

## THE CHALLENGE WITH EXISTING DATA

Considering these important policies and more possible upcoming options (e. g. after adopting the new transportation master plan), it is important to have accurate data on mobility variables to make informed decisions and develop policy effectiveness indicators. The number of cars in the city is one of the key variables, as it is the number that new mobility policies focus on decreasing. Below available data is discussed on the number of cars in use in Tbilisi and challenges associated with the accuracy of this data.

The Ministry of Internal Affairs (MIA) is responsible for car registration and maintains a database of registered vehicles in the country. The number of registered vehicles are available from the MIA in annual reports<sup>9</sup> and monthly updated lists<sup>10</sup> of vehicles that have valid registration status. The official data suggests that at the moment there are 494,627 vehicles registered in Tbilisi. Excluding agricultural vehicles, specialized vehicles, non-motorized trailers, and two-wheeled vehicles, as some international reports do,<sup>11</sup> suggests there are 462,922 light vehicles, trucks, vans and buses registered in Tbilisi. This is equivalent to 395 vehicles per 1000 residents.

While these numbers are informative, what they really say is how many vehicles are actively registered rather than driving on Tbilisi's streets. These numbers likely differ, because the registered vehicle list includes cars that are no longer working, but still have valid registration status. These cars are not removed from the vehicle registry, because there is rarely an incentive to do so for the owner such as registration fees or fines for failing to remove the car from the registry. The exceptions to this are when inactive cars are sold for scrap or for export, because the people purchasing the vehicle often request that the owner remove it from the registry. Given this situation, it is reasonable to believe that the actual number of vehicles driven in the city is lower than the official number of registered vehicles. The next section tries to address this data problem.

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<sup>9</sup> MIA, 2020.

<sup>10</sup> MIA, 2020.

<sup>11</sup> ACEA, 2018.

## ESTIMATING THE NUMBER OF CARS

As noted above, there is good reason to believe that there are fewer individually owned vehicles in operation than registered in Tbilisi. This section addresses the unavailability of data regarding the car fleet and attempts to define the actual number of cars in Tbilisi. First, it provides definitions of which types of vehicles are included in the analysis, then proceeds with the data analysis. It concludes with an estimate of the number of cars that are likely in use in Tbilisi.

To estimate the number of vehicles driven in the city, the following assumptions are used:

1. Only light vehicles, trucks, vans, and buses are included in the data analysis. Agricultural vehicles, specialized vehicles, non-motorized trailers, and two-wheeled vehicles are excluded from the data analysis, though they are provided in the MIA data. Aside from international practice, this generally makes sense: agricultural vehicles are on the streets relatively rarely compared to cars and vans. Generally two-wheeled vehicles are not considered due to their lighter impact given their lighter size and parking space needed.
2. The analysis assumes all registered vehicles under corporate ownership are in working condition and in use, while only some individually owned vehicles are. The rationale behind this is that corporate owners (both state and private) have stronger incentives to de-register vehicles, as they appear on their balance sheets, a factor individual owners do not consider.
3. The share of registered vehicles in working condition is estimated using household survey data from April-June, 2016. The analysis assumes that the share of vehicles registered and in working condition has not changed significantly.

**Definition:** from here, when **vehicles** is mentioned, it means light vehicles, buses/vans and trucks together. Otherwise, the specific group of vehicles is used (e.g. light vehicles or buses/vans and trucks). All statistics refer to Tbilisi only. When the ownership status is not specified as individual or corporate, all vehicles are included. **Light vehicles** do not include trucks, vans, and buses, but do include SUVs.

In this section, survey data is used to estimate the number of individually owned vehicles in use in Tbilisi. The latest publicly available survey data comes from the Tbilisi Metropolitan Area Transportation Household Survey, which Systra conducted in April-June, 2016.<sup>12</sup> It is used to estimate the share of individually owned vehicles in use among all individually owned vehicles. Based on the third assumption

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<sup>12</sup> Systra, 2016.

above, this number is used to estimate the number of vehicles in combination with 2019 official registry data.

The survey had 6,092 respondents in Tbilisi. It asked about the number of vehicles households have, the vehicle type (light car/SUV, pickup truck, van/boxcar, heavy truck, light truck, microbus or other), ownership status (owned, professional use, rented or other), and frequency of usage. Vehicles in working condition are defined as those that have driven at least one kilometer during the 12 months prior to the survey.

According to the survey, there were 168,314 (+/-5,702) individually owned vehicles in use in Tbilisi in 2016. The next step is the calculation of the share of working vehicles among individually owned registered vehicles in 2016. However, the official registry data provides information about ownership status only for 2017-2019 data, while for 2016, there are only two official statistics available: the number of light vehicles (376,962) and the number of total vehicles (440,042). Ownership status, however, is not available. Hence, to estimate the number of individually owned vehicles in 2016, this brief uses the average of 2017-2019 data to estimate:

- The share of individually owned light vehicles among all registered light vehicles and;
- The share of individually owned trucks, vans, and buses among all registered vehicles.

Between 2017 and 2019, the average share of individually owned light vehicles in Tbilisi was 83%. The analysis assumes that the average share of individually owned vehicles among all vehicles did not change significantly between 2016 and 2017-2019. Under this assumption, multiplying the average share of individually owned light vehicles by the total number of registered light vehicles leads to an estimate of the total number of individually owned registered light vehicles. According to the MIA data, there were 376,962 light vehicles registered in Tbilisi in 2016. Of these, approximately 313,896 of them were individually owned based on the above estimate.

As for buses/vans and trucks, the average share of individually owned buses/vans and trucks among all vehicles in 2017-2019 was 4%, which translates to 16,780 individually owned buses/vans and trucks (from 440,042 registered vehicles in 2016). Adding the two estimates leads to an overall estimate of 330,675 individually owned, registered vehicles in 2016. By comparison, the survey data from 2016 indicates that there were 168,314 (+/-5,702) individually owned vehicles that were working in 2016. These figures taken together suggest that among registered, individually owned vehicles, 51% (+/- 1.7%, due to a survey error) are in working condition and being used. This proportion is partially confirmed by nationwide statistics: in

2019, total 691,619 vehicles have passed the periodic technical inspection successfully, which make approximately 49% of all registered vehicles in the country. This nationwide ratio of vehicles-in-use/registered vehicles might be close to the ratio in Tbilisi.

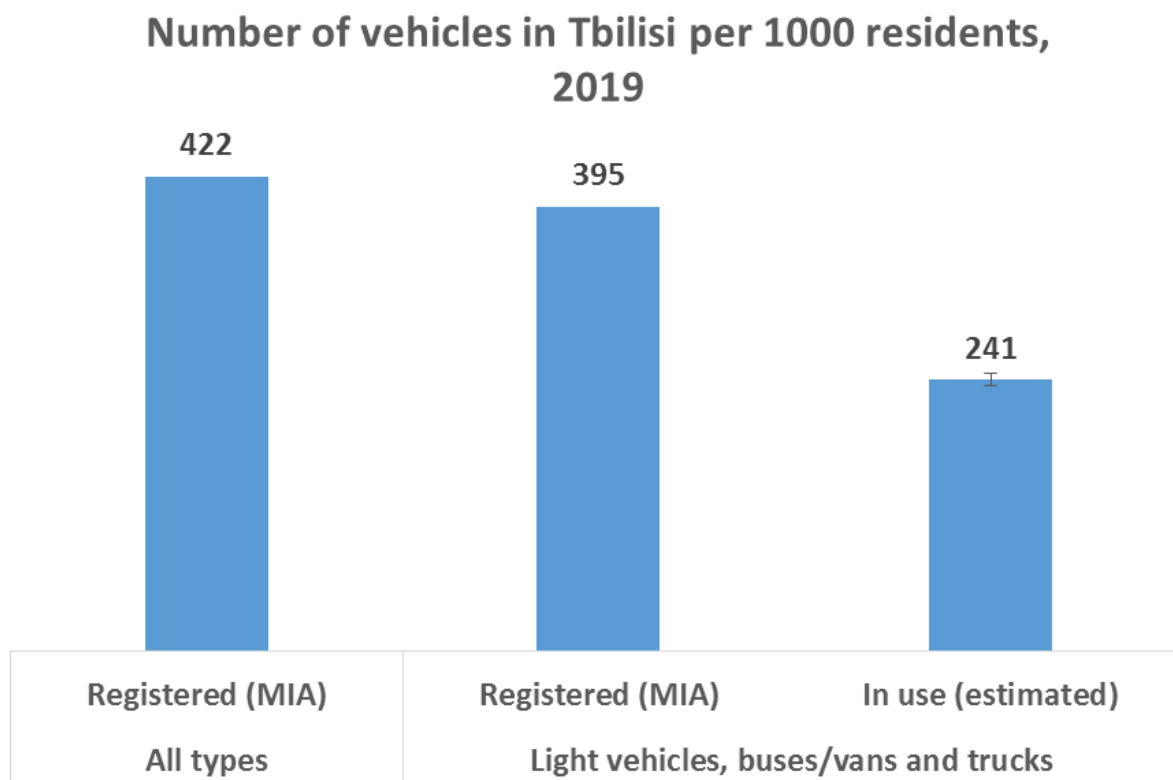
Assuming that the share of vehicles in use is the same for individually owned vehicles and has not changed significantly in recent years, the number of individually owned light vehicles, buses/vans and trucks in Tbilisi in 2019 is approximately 186,855, out of the 367,101 registered individually owned vehicles. Assuming that all corporate vehicles are working (95,821), there are 282,676 light vehicles, trucks and buses, on the streets of Tbilisi of the 462,922 which are currently registered.

**FIGURE 3: REGISTERED VEHICLES AND ESTIMATED NUMBER OF VEHICLES IN USE**

	SHARE OF VEHICLES IN USE	MIA REGISTERED	ESTIMATED NUMBER OF VEHICLES IN USE
<b>IND. OWNED LIGHT VEHICLES, BUSES/VANS AND TRUCKS</b>	50.9% (+/- 1.7 %)	367,101	186,855 (+/- 6,330)
<b>CORP. OWNED LIGHT VEHICLES, BUSES/VANS AND TRUCKS</b>	100% assumed	95,821	95,821
<b>TOTAL</b>		<b>462,922</b>	<b>282,676 (+/- 6,330)</b>

Based on the above figures, there are 241 vehicles driving on Tbilisi's streets per 1000 residents in 2019, 57% of the number that are registered in Tbilisi. The real number of vehicles in Tbilisi's streets might still be higher than this estimate, as some vehicles are not registered in Tbilisi, but drive on its streets. At the same time, many cars registered in Tbilisi are likely to be driven outside of Tbilisi. Even taking this into account, it seems unlikely that there are so many cars that drive on Tbilisi's streets but that are registered elsewhere that it would throw this estimate off dramatically.

FIGURE 4: VEHICLES IN TBILISI PER 1000 RESIDENTS, 2019

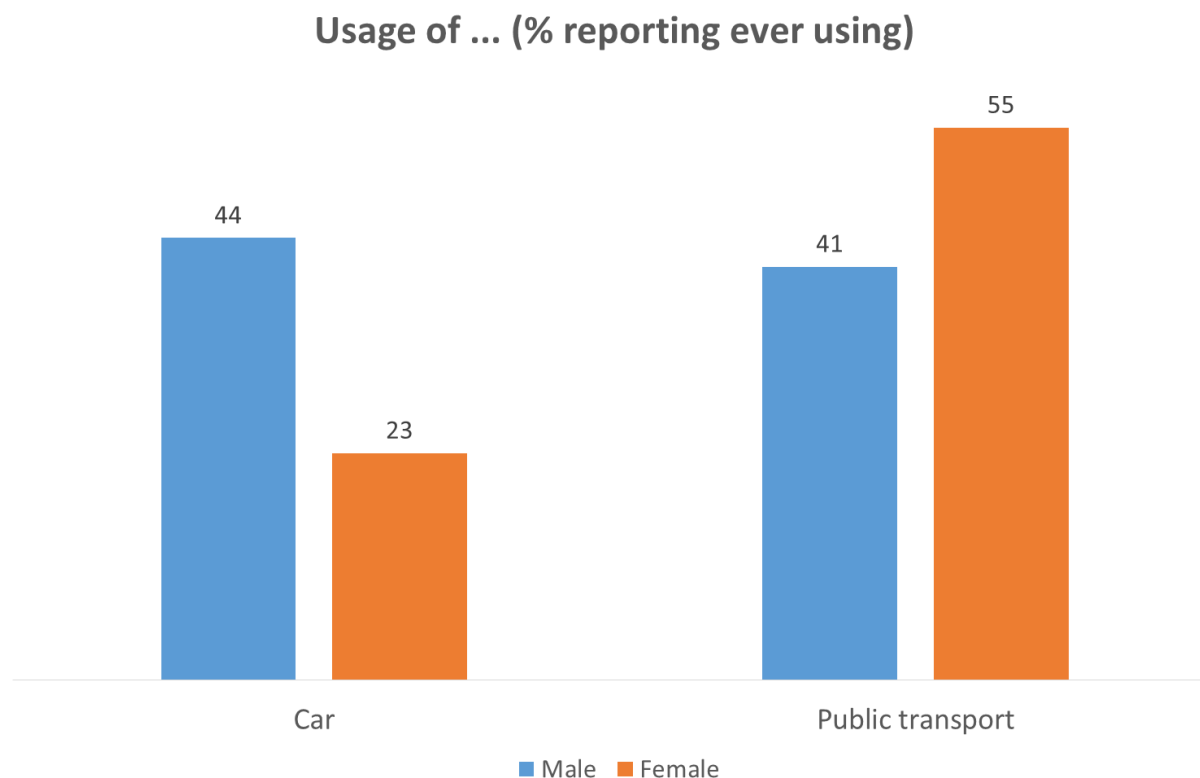


## CAR USER PROFILES

The same survey data used to estimate the number of cars above also enables an understanding of who is more or less likely to use cars in Tbilisi. This in turn enables Tbilisi government to target specific demographics to use alternative transport. The data shows that men, the employed, and people with higher incomes use cars more frequently and use public transport less frequently than women, students, the unemployed, and people with lower incomes.

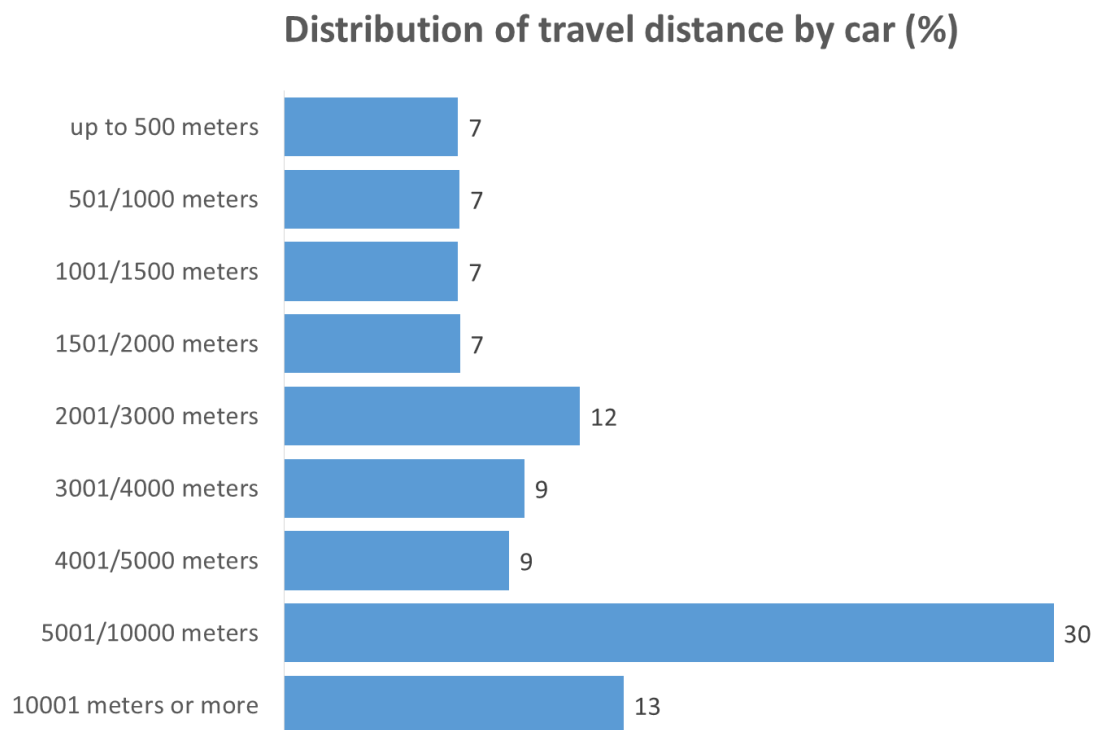
Men use cars more often than women: 44% of men reported using a car at least once in their trips, while only 23% of women reported the same. As for public transport, the difference is lower, but still significant: 41% of men in contrast with 55% of women use public transport.

FIGURE 5: USAGE OF TRANSPORT BY SEX



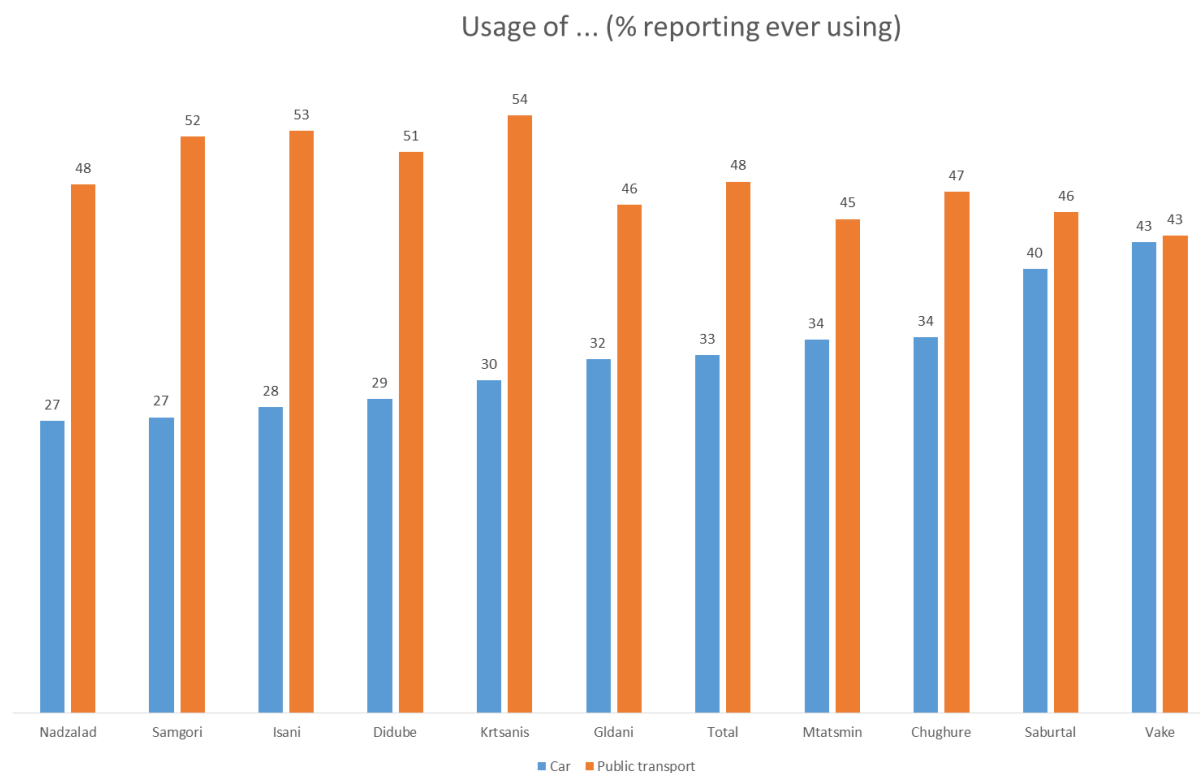
The data suggests that 14% of all the trips made by car (either as a driver or passenger) are less than 1 km distance and 7% of all trips made by car are shorter than 500 meters. These could potentially be replaced by walking, reducing the traffic volume in the city. The data suggests that 5-17 years old are using cars (as passengers) for shorter distances more frequently than other groups, mostly from and to kindergartens and schools. In terms of gender differences, although women use cars less frequently, they use cars for shorter trips slightly more frequently than men: 8% vs 6% up to 500 meters and 16% vs 13% up to 1 km.

FIGURE 6: DISTRIBUTION OF TRAVEL DISTANCE



People living in prestigious districts of the city use cars more often and public transport less often, compared to their counterparts in less well-off parts of the city. Mtatsminda, Chughureti, Saburtalo, and Vake residents use cars more often in their trips than people living in other districts. At the same time, residents of wealthier districts along with the residents of Gldani and Nadzaladevi use public transport less frequently. Variation between the districts in car usage is higher (16% range between lowest and highest shares) than for public transport (11% range).

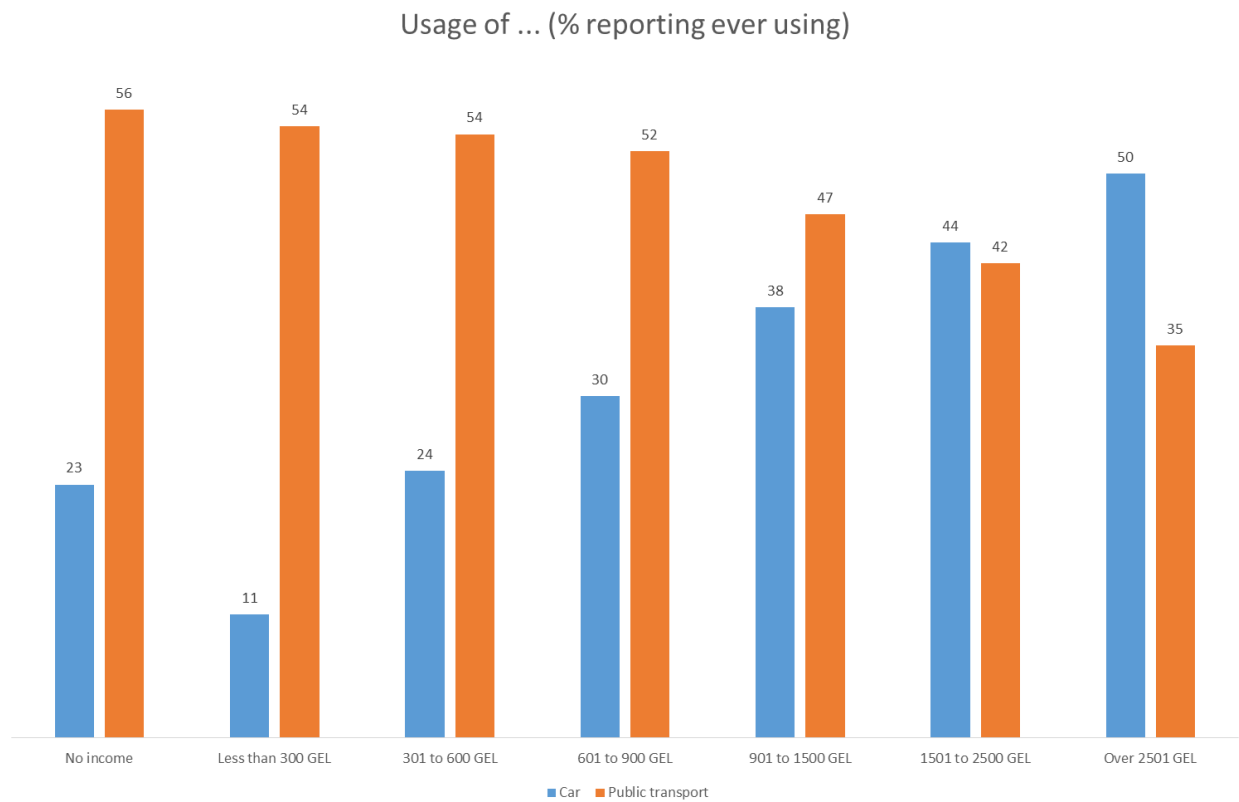
FIGURE 7: USAGE OF TRANSPORT BY MUNICIPALITIES OF TBILISI



Unemployed people and students use cars less frequently and public transport more than employed people: 49% of students use public transport and 18% use cars. Among unemployed people these numbers are 47% and 25% respectively. Among employed people the same share use public transport (48%), however the share of car usage is much higher than in other groups (46%). Higher income also translates to more frequent usage of cars and less frequent usage of public transport.

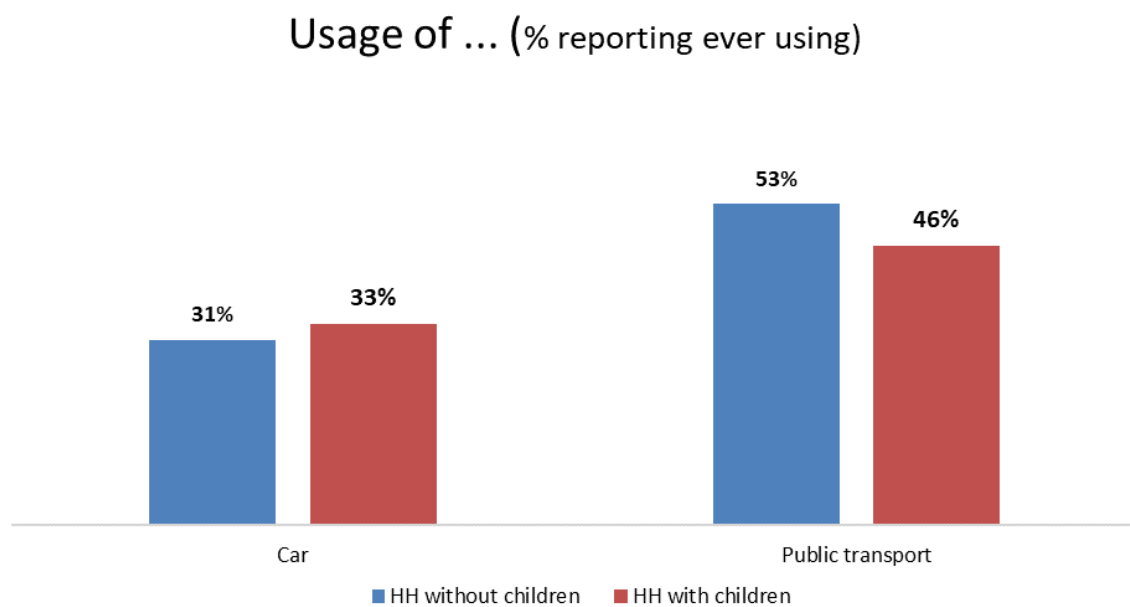


FIGURE 8: USAGE OF TRANSPORT BY INCOME



People living in HHs which have young children, use public transport less frequently: 46% versus 53%.

FIGURE 9: USAGE OF TRANSPORT BY HOUSEHOLDS WITH AND WITHOUT CHILDREN



## CONCLUSIONS

The above analysis suggests that there are approximately 300,000 cars in use in Tbilisi, translating to 241 cars per 1000 residents. Even though there are likely less cars on the road than previously thought, the problems they create are foremost in the minds of the residents of Tbilisi. In turn, the data suggests that the impact per car on the problems with parking, traffic, and pollution are larger than one might believe based on the official estimates of cars registered in Tbilisi.

In turn, this suggests a clear need for policy to address the issues before they become worse. If no policy interventions are made to address vehicle growth, the number of cars is likely to continue to grow and result in a worsened situation with mobility, the environment, and safety in Tbilisi. The data shows that policy makers need to especially focus on citizens with higher income and living in central areas, as the main users of cars and offer them effective mobility alternatives.

To achieve a lower number of cars on the streets, numerous policies are needed. The policies Tbilisi's government is implementing will likely contribute to lowering the number of cars on the streets. Yet, for policy to be effective, car-alternatives need to appeal to those currently in cars. This study has shown that this includes:

- Male residents of Tbilisi;
- Residents of central districts of Tbilisi (Mtatsminda, Chugureti, Saburtalo, Vake);
- Employed individuals;
- Individuals in higher income groups;
- Individuals who have children.

Based on these findings, it is recommended that Tbilisi government develop a car-alternative encouragement strategy. This strategy should focus on attracting the above groups into car alternatives.

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