

FaR 2021**International Forum “Freedom and responsibility in pivotal times”****SOCIAL AND ECONOMIC PROSPECTS FOR THE
DEVELOPMENT OF PUBLIC TRANSPORT**

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Abstract

The purpose of this article is to investigate Kazan inhabitants' reactions to the idea of not utilizing a personal automobile as a mode of mobility in the city. On the basis of the research and assessment, the goal of this study is to provide recommendations to promote the notion of Kazan city residents utilizing public transportation services. The following key tasks were established and solved in order to reach the goal: a theoretical and empirical explanation of the major concepts related to the study's subject; a comparison of the volume of public expenditures incurred by Kazan citizens when driving their own automobile vs using public transportation services was conducted, and the city of Kazan's public transportation system was assessed. A questionnaire survey and content analysis were used as part of the study's methodology. As a result of the research, we discovered that there is now a problem in Kazan, namely, the inability to provide a universal transfer of residents from the use of private automobiles to the use of public transportation services owing to a lack of development of the appropriate infrastructure. The key advice for local governments is to develop a program to update the transportation fund and enhance roadways, in tandem with the gradual implementation of restriction measures for cars.

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1. Introduction

The Russian Federation's Ministry of Transport presented an upgraded draft of the Transport Strategy in the fall of 2020, according to which the Russian government is examining a possible transition to free public transportation in cities by 2035 (Zakirova et al., 2021). The Russian Federation's Ministry of Transport recommends free public transportation for all categories of motorists under the «user pays» model. According to the concept, tolls will be collected on regionally important highways in 2025, and from «all types of road users» by 2035, including the road network of metropolitan agglomerations. According to this draft document, such a system is required in big cities to encourage the use of public transportation while decreasing the usage of private transportation.

However, according to a study on the execution of the current transportation policy, which was established in 2013, public transit has been less popular with Russian citizens than personal mobility. Despite the increased appeal of urban passenger transport systems and taxi and carsharing services, the trend of passengers abandoning public transportation persisted in 2019 (Čulík et al., 2020; de-Miguel-Molina et al., 2020; Ding et al., 2019; Jochem et al., 2020), because of substantially improved road conditions, particularly in the European half of the nation, which permitted the use of personal vehicles for both business and tourism visits (Zakirova et al., 2021).

Of course, after purchasing a personal vehicle, a new owner is confronted with a plethora of problems, difficulties, and inherent financial investments, including the need for various forms of insurance, the possibility of periodic traffic jams, congestion, and accidents, the need to change the summer tires for winter and back, the constant need to buy fuel, the need to check the technical condition and the usual routine maintenance, and the obligation to registrar of vehicles (Sun & Cui, 2018). Furthermore, it has been scientifically demonstrated that automobiles have a harmful influence on the environment, and therefore on public health indices (Andersson, 2020; Pavón & Rizzi, 2019; Saleem et al., 2018; Sinha et al., 2020). On the other hand, the use of a private automobile - a mobile alternative to public transportation - allows for freedom of movement and a sense of privacy not only at home, but also in the vehicle (Stryhul et al., 2021; Suguiry et al., 2020; Tonn et al., 2021).

To ascertain the prospects of plans to implement mechanisms to economically stimulate the influx of the population into public transportation, research on the attitudes of residents of large Russian cities toward the possibility of abandoning the use of private cars as the primary mode of transportation in their municipalities is required (Andersson et al., 2020; Bayart et al., 2020; Gundlach et al., 2018; Urbanek, 2021; Zakirova et al., 2021).

2. Problem Statement

The study's problems can be summarized as follows. The high public and personal expenditures involved with personal transportation upkeep, as well as municipal authorities' desire in lowering the number of automobiles inside city limits, need examination of the population's willingness to forego ownership of a personal car in part. However, the lack of a viable alternative in the form of public transit makes such desertion nearly impossible (Rudke et al., 2021; Tiwari & Phillip, 2021; Uskov & Kharchenko, 2021).

3. Research Questions

The analytical firm Avtostat performed research on how Russian city inhabitants estimate their capacity to cease driving their personal automobile and convert to public transportation services in spring 2020, Uber in 2018, and the All-Russian Public Opinion Research Center (ARPORC) in spring 2018.

Thus, the experts of the analytical agency «Autostat» in a joint online survey with Avito Auto found out whether Russian residents are ready to give up their personal car in favour of other modes of transport, interviewing more than 4,000 car owners at the end of April 2020. The survey showed that the majority of car owners (65,6 %) by no means ready to give up owning a personal car, but about every fifth respondent (22,2 %) reported an intention to sell their car, since there was a need to replace it with a newer one, but no financial means to do so. Another 7,2 % of car owners believe that it has become too expensive to maintain a personal car and they need to switch to other modes of transport, while a little more than 3 % of car owners have thought about alternative forms of ownership (car sharing, subscription car, etc.). About 2% of respondents expressed their willingness to give up their personal car, because their life circumstances have changed. Next, the experts found out what kind of transport the respondents would prefer in case of giving up the car. Public transit received almost one-third of all votes, making it the most popular among respondents. Furthermore, every fifth vehicle owner stated that he or she is ready to transfer from a personal automobile to a cab, and nearly 17 percent of car owners are contemplating a car on a subscription as an alternative to personal ownership. Another 14% of drivers plan to use carsharing services. In turn, more than 27% of respondents stated that they will walk instead of driving a personal vehicle.

On May 22, 2018, the All-Russian Public Opinion Research Center and Yandex.Taxi conducted research among private car owners living in cities with millions of people about their potential willingness to give up using private vehicles and found that every fifth car owner surveyed (20%) is potentially willing to limit car use. Completely to give up personal motor transport hypothetically could 5% of participants of interrogation. The main criterion for choosing a replacement for a personal car is safety - mentioned by 41% of all respondents; among parents of children under 12 years this factor was mentioned by almost every second - 46%. The top five also include the cost of travel (39%), comfort (38%), speed (38%) and convenience (29%). As the main alternatives to personal transport the motorists consider cab (27%), ground public transport - bus, trolleybus or streetcar (23%) and the subway (21%). The main factors reducing the time of use of personal cars are divided into two groups: negative - rising fuel prices, lack of parking, reducing the need to travel by car, and positive - more frequent use of urban public transportation and cab services.

An interesting study, conducted in 2018 by Uber together with the RuGenerations project, revealed the dependence of the willingness of residents of major cities to give up using a private car on their belonging to a certain generation and on the city in which they live. The survey involved 2200 representatives of generation X (age 36-52 years), Millennium (18-35 years) and «Millennium-homelanders» (15-17 years) from five Russian megacities: Moscow, St. Petersburg, Kazan, Novosibirsk and Yekaterinburg. Thus, it was obtained that young people in Moscow and St. Petersburg (18-35 years old) have already refused to move around the city daily in their car. The older generation of Muscovites («X's») no longer drive cars every day, either. Muscovites in general prefer other modes of daily

transportation than personal cars, and increasingly consider their car as a weekend vehicle. This was the answer of 44.8% of respondents from generation «X» and 32% from generation Millennials in Moscow. The picture is similar in St. Petersburg. This perception is not typical for the regions: only 12,5-23,5% of Generation «X» and Millennials from Kazan, Yekaterinburg, and Novosibirsk hold this opinion. In the regions, personal cars are still considered a convenient means of daily travel: 54,6% of Novosibirsk residents, 60,5% of Yekaterinburg residents and 63,9% of Generation «X» Kazan residents use it that way.

4. Purpose of the Study

On the basis of the research and assessment, the goal of this study is to provide recommendations to promote the notion of Kazan city residents utilizing public transportation services. The following are the major tasks that must be completed in order to reach the goal:

- a survey on the refusal of a personal car as a means of transport in the city among the residents of Kazan;
- developing recommendations on the elimination of the reasons that may make city residents want to own and use a personal car for their movements (Zakirova et al., 2021).

5. Research Methods

The methodological tools of the study consisted of:

- 1) Questionnaire survey – this method of collecting information allows you to find out the opinion about the organization of urban transport infrastructure in a wide range of the population.
- 2) Content analysis which is a special, rather strict and formalized method of qualitative-quantitative analysis of various materials (documents, articles, etc.) (Zakirova et al., 2021).

6. Findings

Conducting a survey on the refusal of a personal car as a means of transport in the city among the residents of Kazan, we were able to get answers from 200 respondents. To begin with a detailed analysis of the received answers to each question separately (Zakirova et al., 2021).

The first question was as follows: «Do you have a personal car or do you intend to buy one in the next few years?» According to the results of the survey, the answers to this question were distributed as follows (Figure 1).

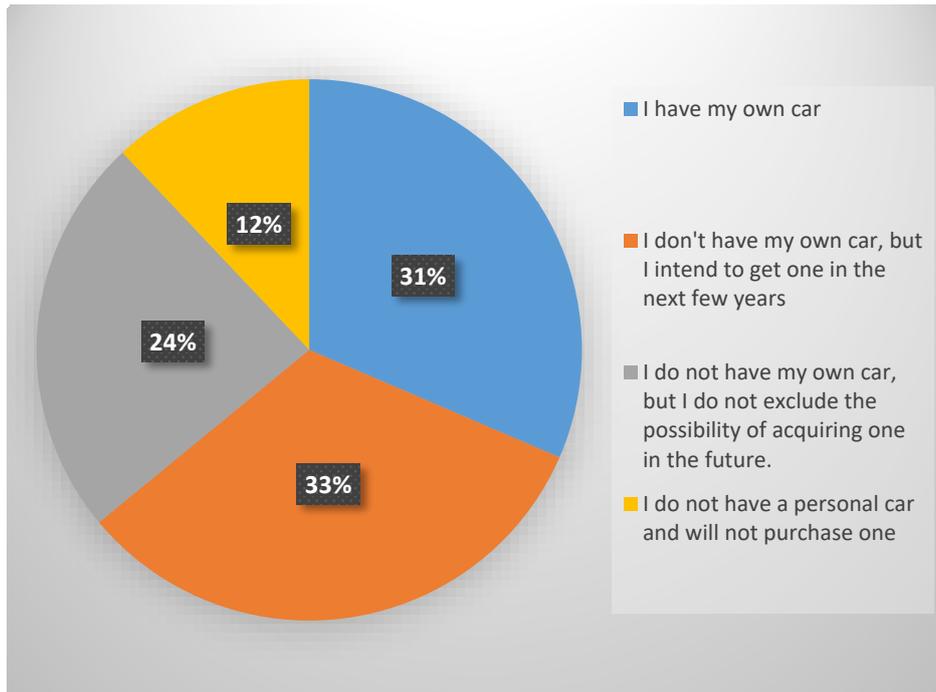


Figure 1. Diagram according to the results of the answers to question 1

Note: Reprinted from Zakirova, A., Klychova, G., Khusainov, Sh., Zakirov, Z., Zakirov, A. (2021). Study of attitudes of Kazan residents to the perspective of refusing the use of a personal car as a means of transportation in the city. *E3S Web of Conferences*, 284, 11007
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According to the graph, 31.5 percent of respondents own a personal automobile, and 32.5 percent want to get one in the next several years. That is, the majority of respondents are unwilling to give up their use of private vehicles. In this context, local officials confront the arduous challenge of establishing a qualitative alternative that will contribute to this category of inhabitants refusing to use private automobiles.

With the second question, we inquired about the circumstances under which respondents would decline to purchase or use a private vehicle. The outcomes of the responses to this question allow us to conclude that, while there are no such conditions that would contribute to the abandonment of personal transportation for the majority of respondents, namely 52 percent, 40 percent may refuse to use or buy it if there are quick and convenient alternative ways of moving around the city.

In the third question, respondents were asked to rate how much of their commute was in the city (Figure 2).

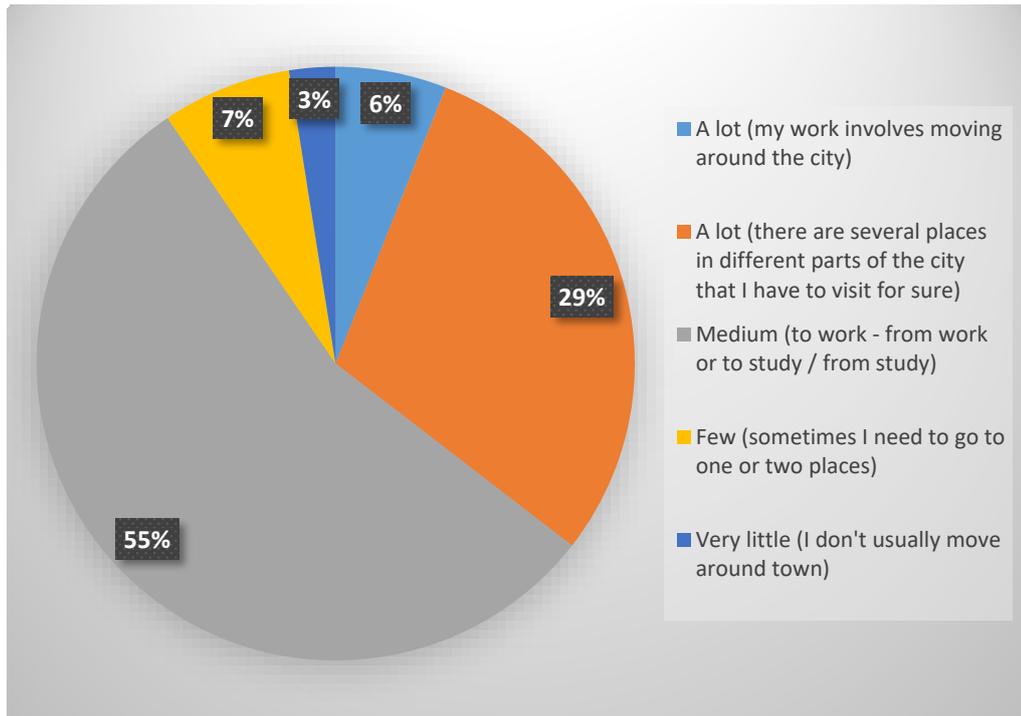


Figure 2. Diagram based on the results of answers to question 3

Note: Reprinted from Zakirova, A., Klychova, G., Khusainov, Sh., Zakirov, Z., Zakirov, A. (2021). Study of attitudes of Kazan residents to the perspective of refusing the use of a personal car as a means of transportation in the city. E3S Web of Conferences, 284, 11007
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Most people (65%) believe that they do not move around as much as they usually do to and from work (school). Consequently, there is a possibility that they can use public transportation for their movements.

Although, of course, it should be noted that a significant part of the respondents (35%) move around the city quite intensively. Therefore, it is unlikely that they will give up using private cars and switch to public transport.

In the fourth question we asked how often Kazan citizens use public transport to move around the city. According to the results of the survey, the answers to this question were distributed as follows (Figure 3).

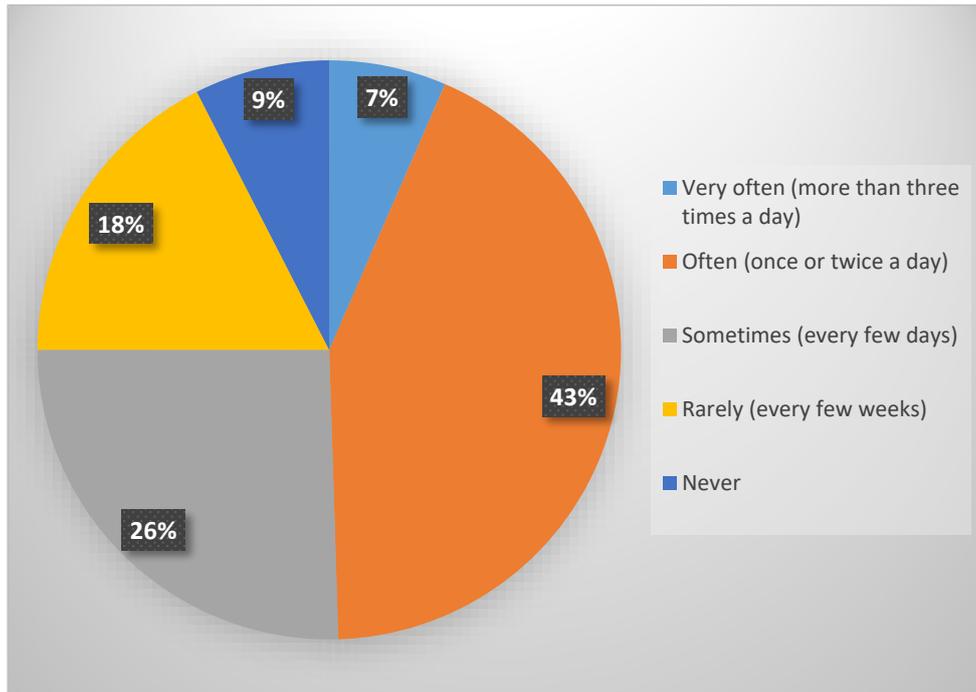


Figure 3. Diagram based on the results of answers to question 4

Note: Reprinted from Zakirova, A., Klychova, G., Khusainov, Sh., Zakirov, Z., Zakirov, A. (2021). Study of attitudes of Kazan residents to the perspective of refusing the use of a personal car as a means of transportation in the city. E3S Web of Conferences, 284, 11007
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The number of people who intensively use public transport is almost half of the total number of respondents. This fact should be noted as a positive trend, as there is a high probability that this category of respondents may refuse to purchase or use a personal vehicle.

The next fifth question allowed us to identify other means of mobility, which are used by citizens to move around (Figure 4).

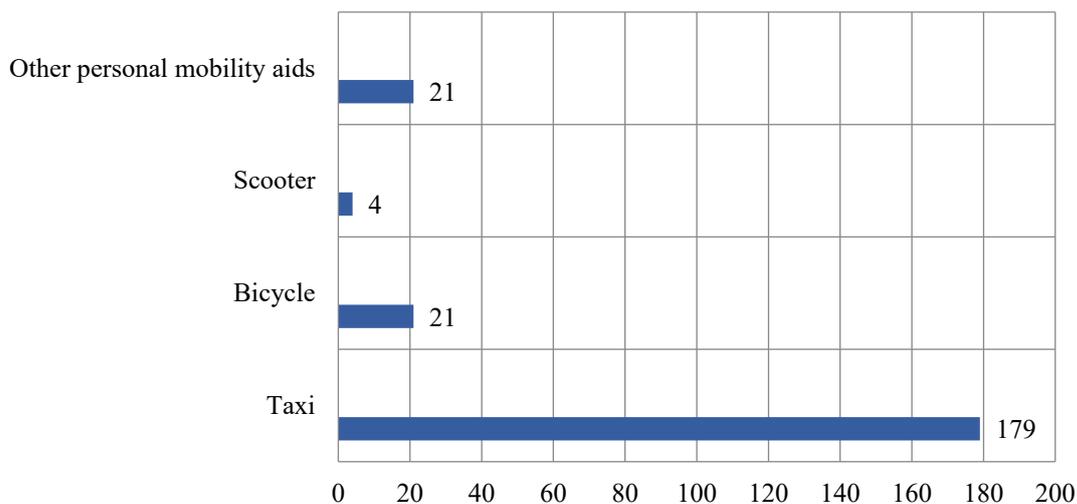


Figure 4. Diagram according to the results of answers to question 5

As one can see from the figure, a considerable part of respondents besides public and private transport use cabs to move around the city (89.5%), which has a very positive effect on the urban infrastructure. Other means of transportation are not popular among the citizens for a number of reasons. There is no infrastructure in the city, which allows you to freely use bicycles, scooters and others. So the city authorities are faced with the task of additional construction of bicycle lanes, pedestrian zones.

Answering the sixth question «What transport, except your personal car, do you use?», the majority of Kazan citizens chose such answers as subway, bus and cab. Streetcar and trolleybus are less popular among the citizens (Figure 5).

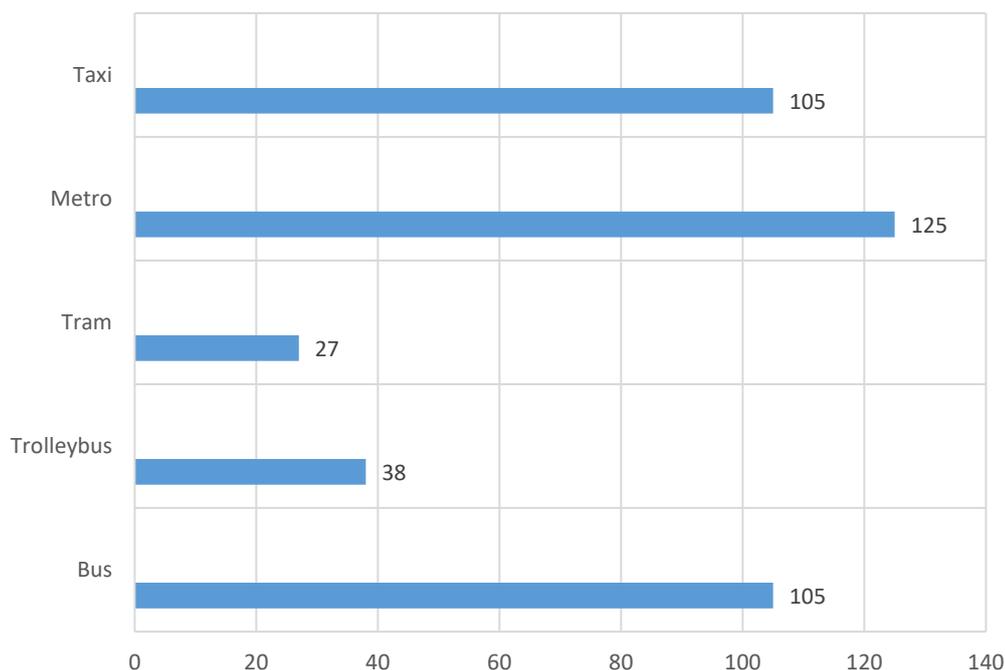


Figure 5. Diagram of the results of answers to question 6

In the seventh question when assessing the satisfaction with public transport respondents took into account a number of criteria, such as the price of the fare, speed and comfort of movement, the condition of transport and professionalism of drivers and conductors.

Thus, 142 respondents are to a greater or lesser extent satisfied with the comfort of travel, and in the aggregate only 58 people are dissatisfied. 141 respondents are totally satisfied with the speed of movement (81 rather satisfied and 60 satisfied), while 59 respondents are more or less dissatisfied (47 rather dissatisfied and 12 satisfied). The price of the fare is 135 people in total, while 65 respondents are more or less dissatisfied (more or less dissatisfied - 40, dissatisfied - 25). The state of transport in total 162 people are satisfied, and to a greater or lesser extent dissatisfied 38 respondents. Professional suitability of conductors and drivers in the aggregate 144 people are satisfied, and to some extent or another dissatisfied 56 respondents.

The eighth question allowed us to determine the degree of willingness of the interviewees to use only public transportation to get around the city (Figure 6).

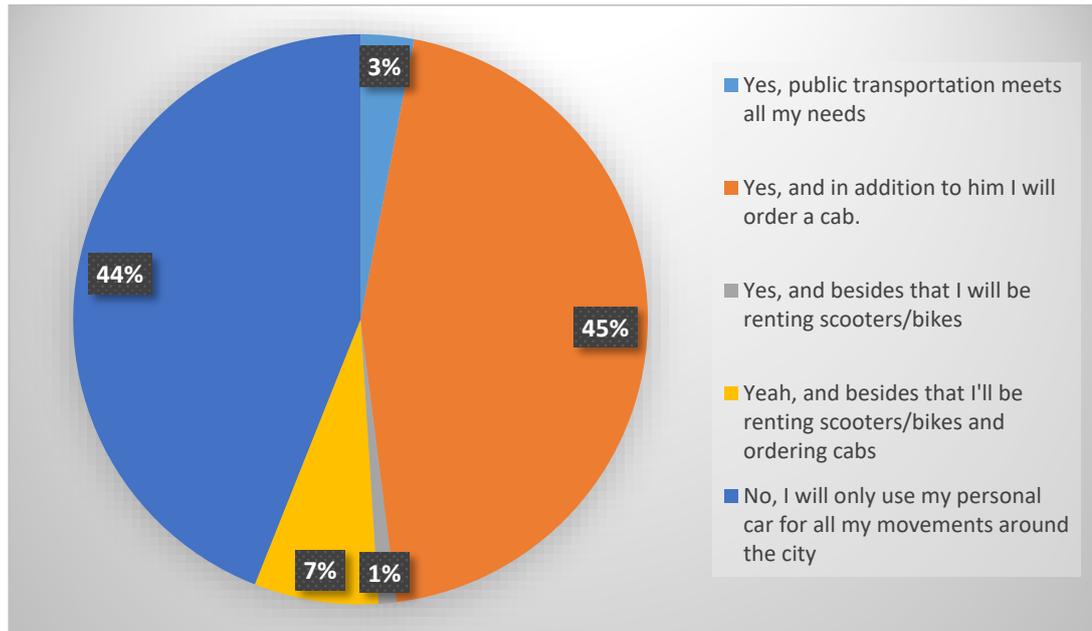


Figure 6. Diagram according to the results of answers to question

As one can see from the Figure 6 the number of people who are ready to use only private cars for moving around the city is almost equal to the number of respondents who are ready to use only public transportation. And these two groups of respondents make up the majority of interviewees 89%.

By asking the ninth question we tried to establish those measures that would allow the city authorities to increase public transportation, as a result of which the citizens would use it more often as a means of transportation (Figure 7).

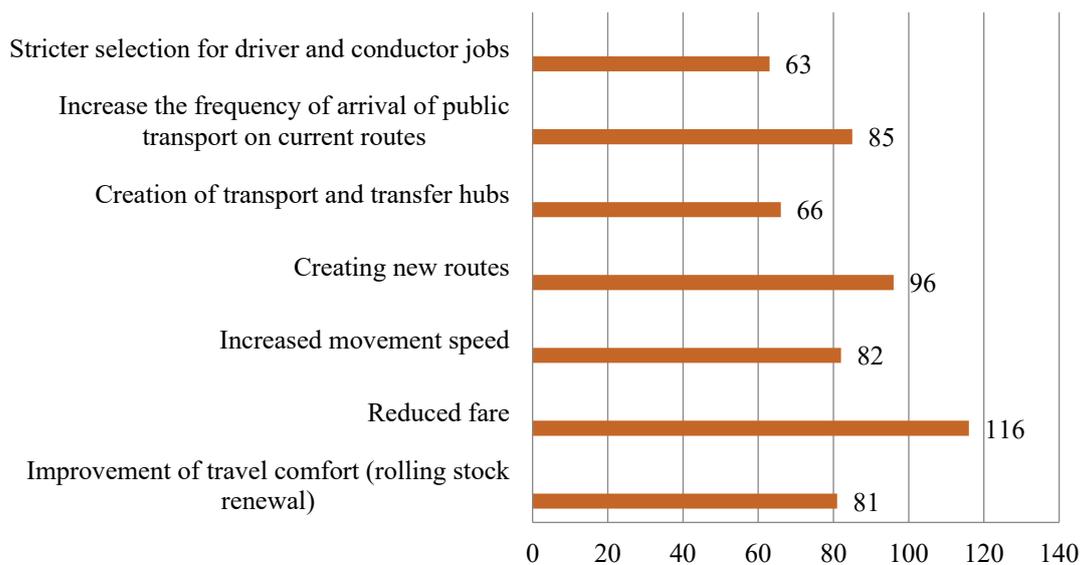


Figure 7. Diagram based on the results of answers to question 9

Note: Reprinted from Zakirova, A., Klychova, G., Khusainov, Sh., Zakirov, Z., Zakirov, A. (2021). Study of attitudes of Kazan residents to the perspective of refusing the use of a personal car as a means of transportation in the city. E3S Web of Conferences, 284, 11007

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The most popular measures, according to the citizens, are to reduce the price of travel, create new routes and increase the frequency of arrival of public transport.

In the tenth question, we identified what measures aimed at reducing the use of the private car should be taken by the city authorities (Figure 8).

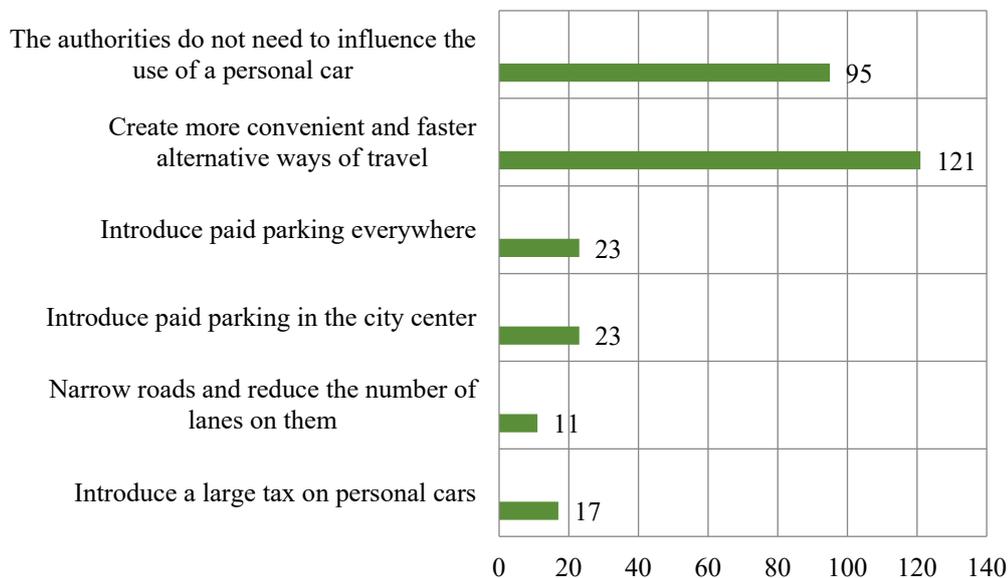


Figure 8. Diagram according to the results of answers to question 10

Note: Reprinted from Zakirova, A., Klychova, G., Khusainov, Sh., Zakirov, Z., Zakirov, A. (2021). Study of attitudes of Kazan residents to the perspective of refusing the use of a personal car as a means of transportation in the city. *E3S Web of Conferences*, 284, 11007
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As one can see from the answers received, a significant group of respondents believes that the city authorities should take more active measures to reduce the use of private cars. At the same time according to the opinion of the other not less significant group of respondents the city authorities should not take any measures to reduce the use of personal cars.

The survey allowed us to identify the main directions in changing the attitudes of residents of Russian cities to the possible complete abandonment of the use of private cars:

1. Personal cars do not have a positive impact on the urban environment, because personal cars require additional parking spaces and, as a consequence, there is a need for some infrastructure;
2. In many Russian cities there are not enough or no extra lanes for public transportation, traffic interchanges are underdeveloped, and the dense flow of cars contributes to the formation of «traffic jams» during «rush hours»;
3. The need for timely renewal and repair of public transport;
4. An increase in the proportion of citizens who are ready to switch to public transport.

7. Conclusion

Thus, according to the results of the study, the following conclusions can be formulated. The current conditions do not allow for a full-scale transition to the use of public transport by Russian city residents. Although there is awareness of the need for such a process among urban residents. The readiness of residents to refuse personal cars in favor of public transport (already existing at the moment, but in need of stimulation) local authorities should be supported by the gradual introduction of restrictive measures for motorists in a complex with the simultaneous implementation of measures to improve the transport fund and optimization of transportation routes, necessary to prevent the potential aggravation of the situation on the roads at the moments of the most intensive traffic (Zakirova et al., 2021). To eliminate the reasons why city residents would refuse to use public transport, it is necessary to create comfortable conditions by equipping public transport with air conditioning and other means that allow to heat or cool the interior when necessary. It is also necessary to create an appropriate infrastructure at bus stops, so that the citizens do not feel discomfort while waiting for transport. The city authorities must also provide the most requested routes with several types of public transport, as well as create a developed network of urban public transport, so that anyone can move freely to any part of the city.

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