

Andijan City Transport Infrastructure System Analysis

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Abstract

As one of the major and rapidly developing regions of Uzbekistan, Andijan City faces several challenges associated with population growth and increasing traffic flow. Issues such as delays in public transport, route inconsistencies, and technical conditions of vehicles lead to poor-quality transport services, negatively affecting the daily lives of residents and necessitating improvements in the system. This article analyzes the current state of the transport infrastructure and public transport system in Andijan City. Recommendations for resolving existing problems and improving the system are provided.

Keywords: public transport, buses, transport infrastructure, routes, vehicles, electronic payment systems, congestion, taxis

Introduction

Modernizing and improving Andijan City's transport system serves not only to create comfortable conditions for passengers but also to contribute to the sustainable development of the city's infrastructure.

The Presidential Decree No. PQ-59 dated February 16, 2023, on "Measures for Reforming the Public Transport System" outlines plans to improve service quality by introducing modern technologies such as electronic payment systems and GPS monitoring into the public transport system.

The decree specifies that by August 1, 2023, Andijan City will implement a new network of bus routes, automated payment systems, and dispatching services. From January 1, 2024, a gross-contract-based model for passenger transportation with regulated tariffs will be introduced for urban bus routes.[1-2].

Main Section. *Andijan City's transport infrastructure* plays a critical role in ensuring daily mobility. The system comprises buses, taxis, and other passenger-

oriented transport. The relationship between the city's residents and the transport system impacts numerous social and economic aspects, making efficient infrastructure vital for urban development.

Public transport primarily consists of buses, route taxis, and non-route taxis. Buses cover wider routes, focusing on central areas, while taxis offer faster services, reaching narrow streets and small residential zones. However, traffic congestion is prevalent on main streets, causing delays, increased fuel consumption, and environmental harm. [4].

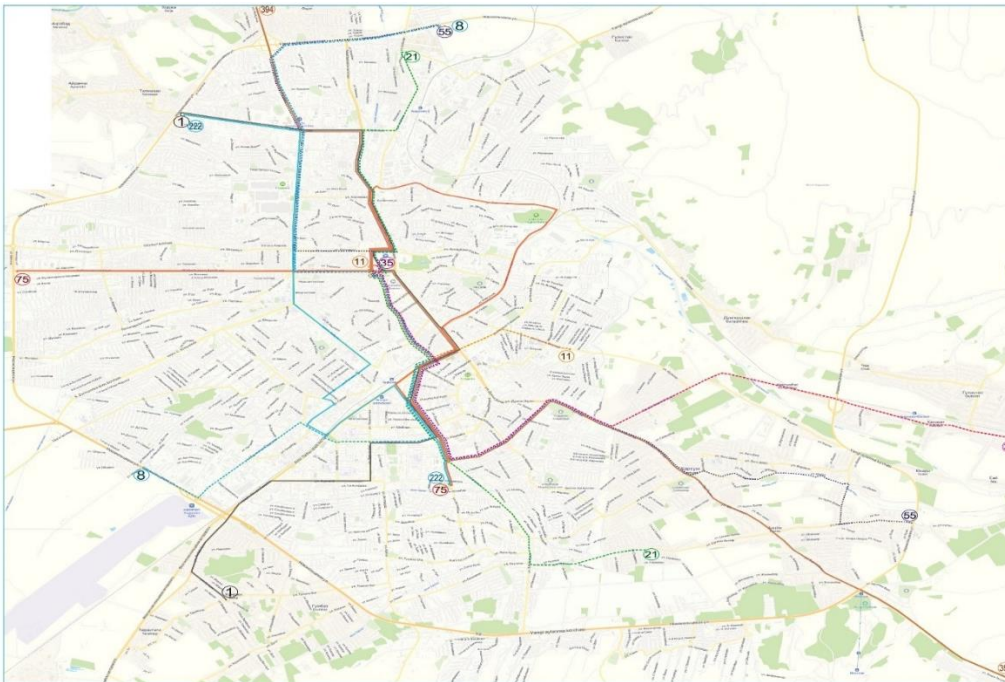


Figure 1. Map of Public Transport Routes in Andijan City

The growth rates of the population of Andijan in recent years are one of the important factors requiring the optimization of transport infrastructure. Given that the city's population increased by 30% from 2010 to 2024 and is growing rapidly, it is important to analyze the city's transport infrastructure and increase the attractiveness of public transport [5].

EMPIRICAL ANALYSIS AND METHODS. The analysis of urban transport infrastructure and public transport mainly used quantitative and qualitative methods.

Analyzing the population and demographic growth of the city of Andijan is important in planning transport infrastructure.

Below is a graph showing the population growth of Andijan from 2010 to 2024 (as of July 1).

Diagram

1

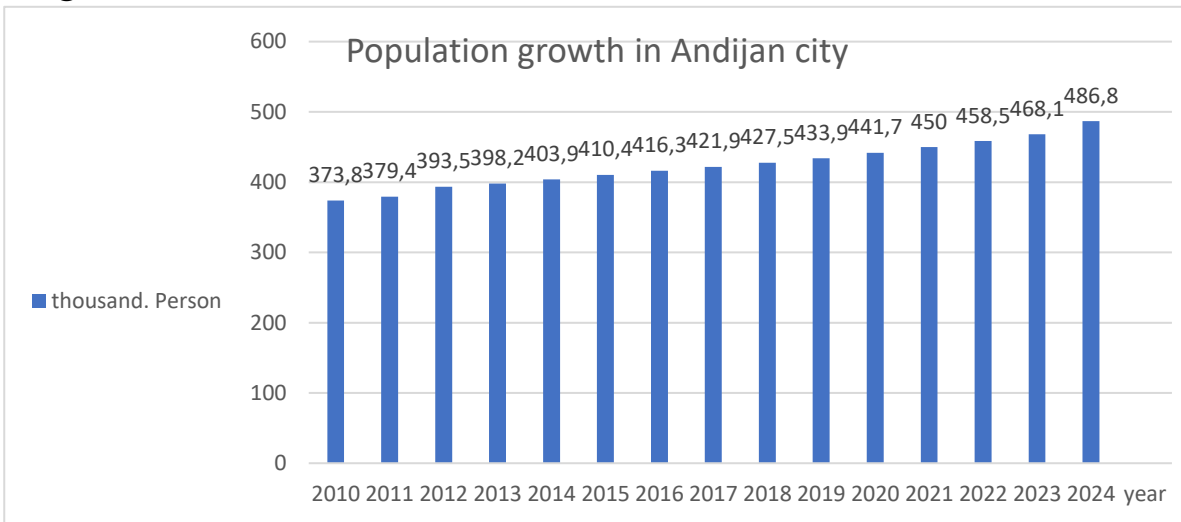


Diagram 1. Population growth rates of Andijan city in 2010-2024

The city's population is expected to grow by 30% (see Figure 1) between 2010 and 2024. This growth marks the city as a socio-economically developing region and means that the burden on public transport is also increasing. This requires the development of new solutions for strategic planning of the transport system in the coming years.

In 2019, the number of cars registered by legal entities and individuals in Andijan was 47,906, while by 2022 this figure had increased by 18% to 56,507. This data is shown in Figure 2. Due to cars entering from outside the city, there is a daily flow of more than 70,000 cars in the city [3].

Diagram

2

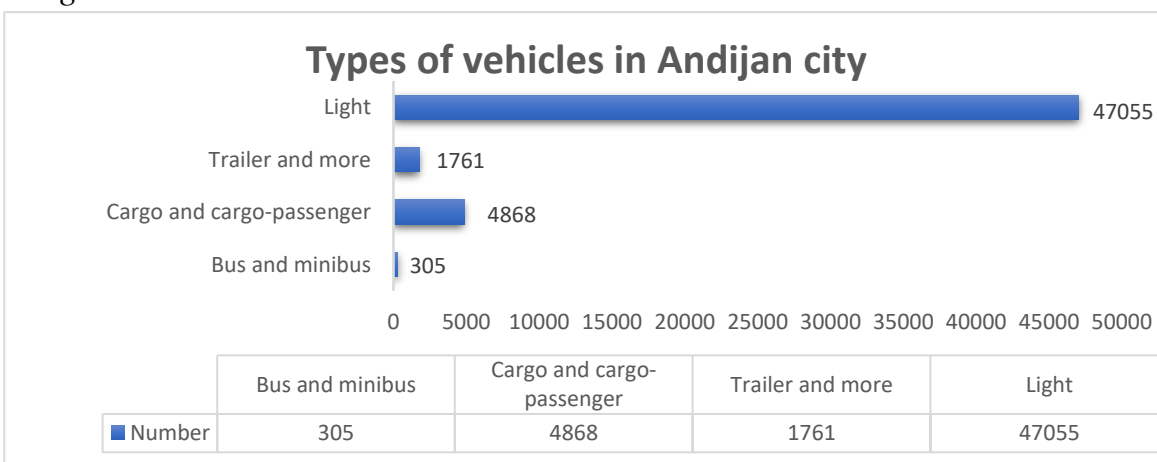


Diagram 2. Types of vehicles in Andijan city

The statistical distribution of transport types in Andijan is shown in the form of a diagram. As can be seen from the data, passenger cars occupy the main share in the

urban transport system (87.1%). The growth of personal vehicles, the lack of analog routes on city streets, currently leads to traffic jams of 7-8 points. Traffic jams not only reduce the throughput of roads, but also lead to an increase in toxic gases emitted by vehicles. The share of electric cars in the city, which are considered relatively environmentally friendly, is also not that high (Diagram 3).

Diagram

3

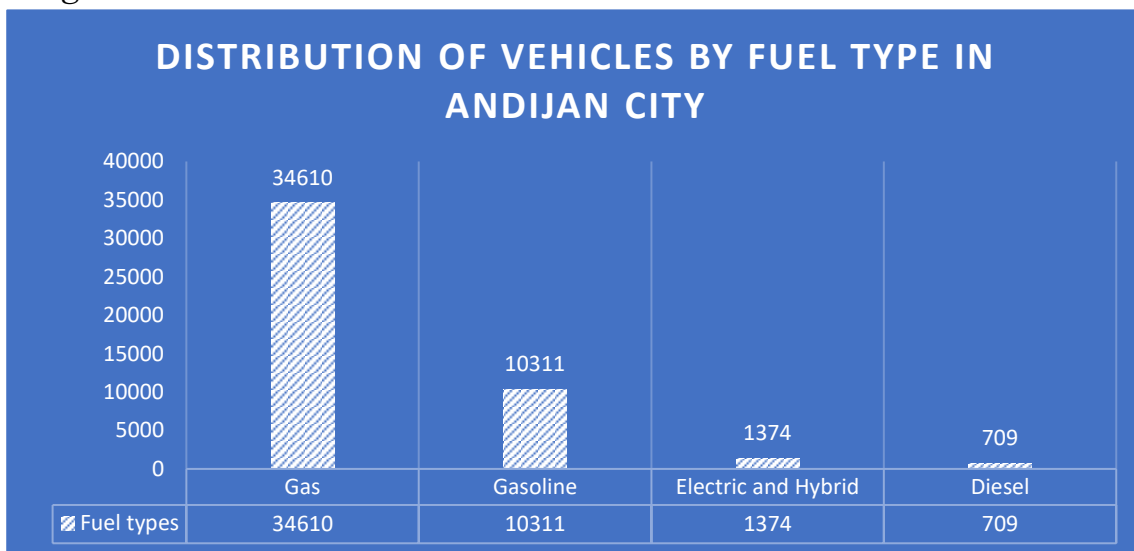


Diagram 3. Distribution of vehicles in Andijan by fuel type

The total length of the city's internal roads is 829.6 thousand km, and there are 7 main connecting central streets. They are Uzbekistan Street (6 km), Boburshok Street (9 km), Amir Temur Street (6.4 km), A. Navoi Street (2 km), Chulpon Street (1.7 km), Y. Otabekov Street (4 km), Mustakillik Street (1.5 km). There are 13 regulated

pedestrian crossings and 51 unregulated crossings on these streets. There are also 31 traffic lights installed to control vehicle traffic.

The public transport system in Andijan occupies an important place in the city's transport infrastructure. Currently, buses, minibuses, and routed and non-routed taxis are the main means of public transport in the city. Public transport in the city mainly serves to meet passenger demand, connect densely populated areas within the city, and provide transport links with suburban areas.

According to available data, the daily passenger flow is 731 thousand people. 137 buses, 35 minibuses and 3316 taxis are operated for these passengers. The total number of routes is 9. It also serves residents visiting from outside the city through 92 intermediate stops, 1 bus station and 5 bus stations.

Diagram 4

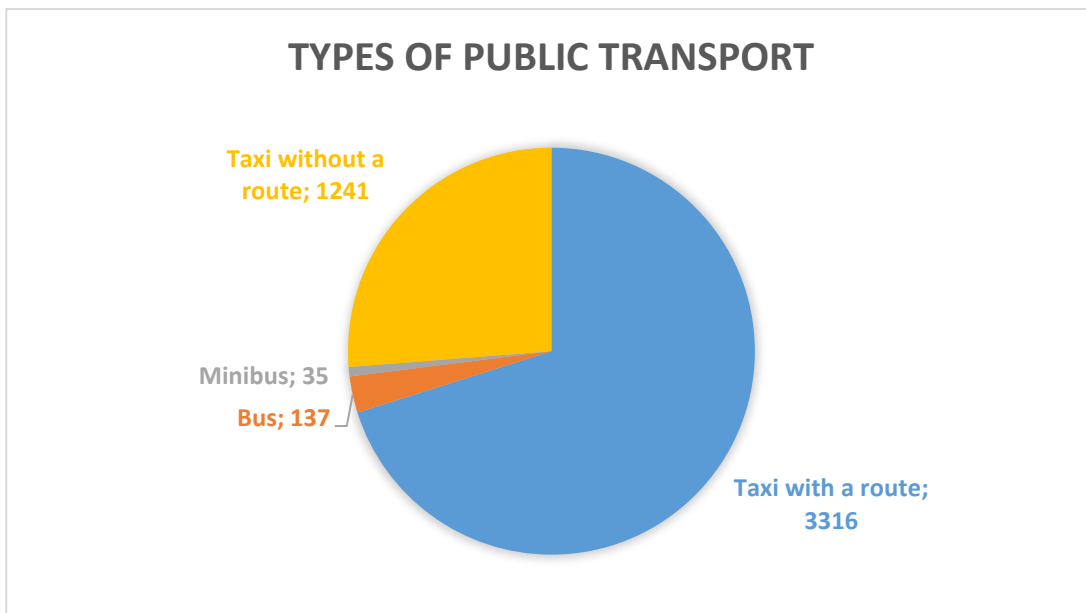


Diagram 4. Types of public transport in Andijan city

Passenger transportation in Andijan is carried out by the following carriers: “Alpomish Me'rosi” LLC (SHI-1, SHI-75, SHI-222, SHI-394), “Buyuk Qurilish Elite” LLC (SHI-35, SHI-55), “Firdavs Avtotrans Lux” LLC (SHI-8, SHI-11), and Isuzu Trans LLC (SHI-21). “Alpomish Me'rosi” LLC operates modern buses manufactured by the Chinese company ZHONG TONG ASIA STAR on designated routes. Local Isuzu buses are used on other routes.

Transportation is also carried out by scheduled and non-scheduled taxis within the city. The majority of scheduled taxis are Damas cars. Non-scheduled taxis are operated by local and foreign taxi fleets. The number of scheduled and non-scheduled taxis operating within the city is 3,316.

Result.

Problems:

1. Traffic jams occur due to the insufficient organization of public transport, as a result of which the population uses private cars for transportation;
2. There are no alternative routes to connect the streets;
3. Excessive density of vehicles in some directions (Babur branch street), and in some areas, unsatisfied passenger demand;
4. Inadequate equipment of the stations (no monitors installed to monitor the movement schedule and data in real time);
5. Technical condition and environmental aspects of buses (there are no electric buses);
6. Low level of use of electronic payment systems among the population.

According to the results of a survey conducted to determine the public's opinion on public transport, the majority of respondents consider the system's performance to be average and below the required level.

Diagram 5

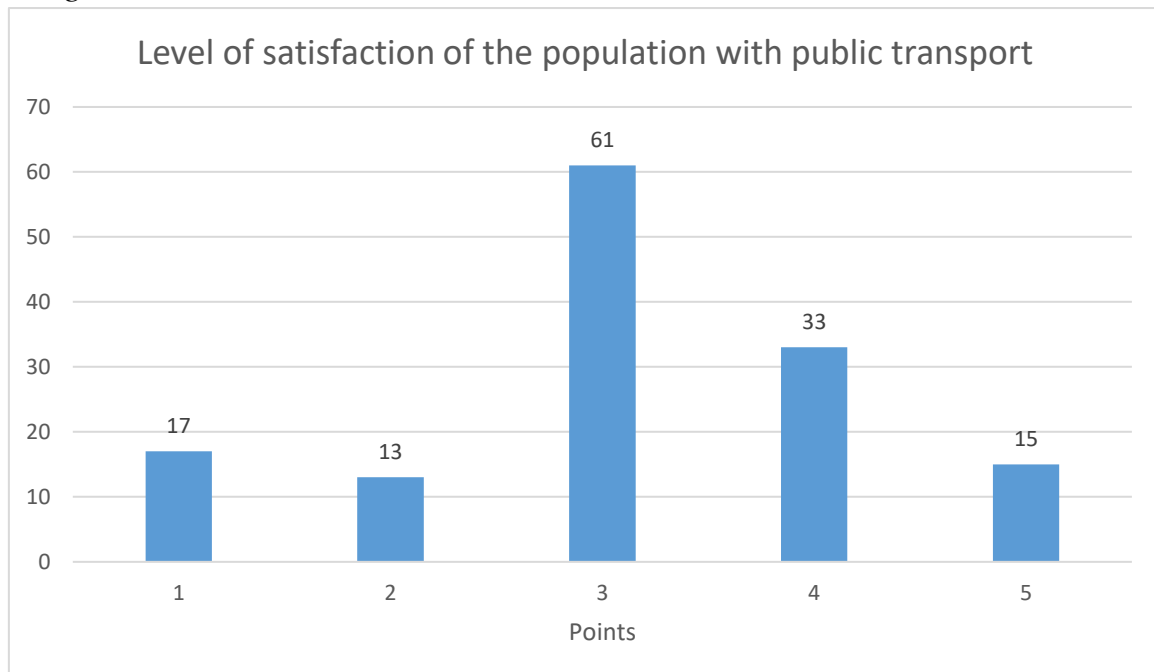


Diagram 5. Results of a survey conducted among the people of Andijan city

It also showed that there is work to be done regarding the behavior and skills of drivers.

Diagram 6

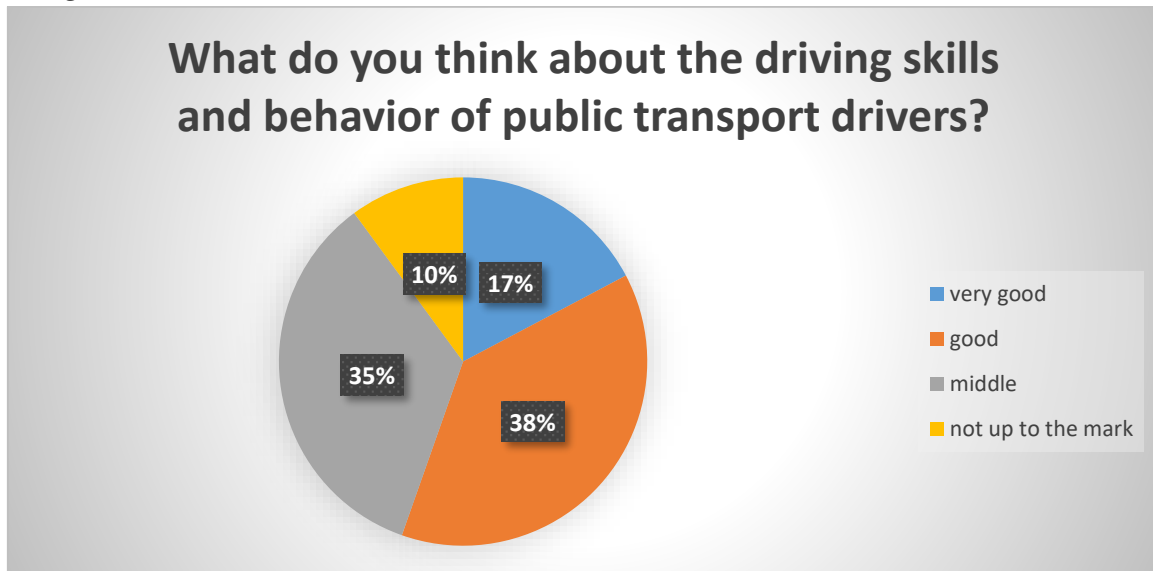


Diagram 6. Results of a survey conducted among the people of Andijan city

CONCLUSION. An analysis of the current state of the transport infrastructure and public transport system of the city of Andijan showed that it is necessary to carry out systematic work to eliminate existing problems, strategically plan future actions, and implement the work to be carried out taking into account the opinions of the population. It is also necessary to implement important tasks such as the use of modern technologies in the development of urban transport infrastructure and the modernization of public transport, the formation of a socio-economic demographic database of the territory, the formation and constant updating of an electronic database of public transport, the development of a transport system model and forecast model based on the current situation, the identification of systemic problems, the development and implementation of a Master Plan for the prospective development of the transport system. The results of the study provide the following proposals for improving the efficiency of the city's transport system.

Offer:

1. Review public transport routes, analyze overlapping routes (1, 8, 11, 21 35, 55, 75, 222, 394) and redirect them to underserved areas based on the results; 311 new buses are required for the city's public transport system, of which 174 (10.5 m) buses will be provided;

2. Develop a Master Plan for the city and pay attention to the issues of reducing traffic congestion in the road infrastructure based on the plan;

3. Make stops more convenient for passengers, install the above-mentioned equipment;
4. Replace buses with environmentally friendly electric buses;
5. Strengthen public awareness of the use of electronic payment systems.

The transport infrastructure and public transport system of Andijan city play an important role in creating convenience for the population. This analysis shows that there is an opportunity to create more convenient conditions for the population by modernizing the system and solving problems. This will ensure not only the city's transport system, but also its overall economic and social development.

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