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ASSESSMENT OF AUTUBUS SPEED IN ANDIJAN CITY “222-SH.Y.T. - PISTAMAZOR - CITY HOSPITAL”

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Abstract. A distinctive feature of urban public passenger transport is its organization of movement along certain routes (including route taxis) . An important element of assessing the transport service provided to passengers is the selection of criteria for assessing the effectiveness of the final results of the transportation process . This requires the use of logistics methods in organizing the work of urban passenger transport.

The use of logistics methods in the organization of urban passenger transport is aimed at increasing the efficiency of the use of rolling stock at a given level of service quality.

Keywords : transport systems, public transport, sustainable development, simulation modeling, transport model, transport, population**.**

Introduction. Public passenger transport in the city of Andijan depends on many factors, which can be divided into two large groups:

- factors that directly affect the movement of public passenger transport (type and capacity of public transport vehicle, dynamic traction and braking performance, passenger flow, level of equipment of intermediate stops, operational performance, driver's experience and qualifications, etc.);

- factors that indirectly affect public passenger transport traffic (road conditions, weather conditions, technical condition of road networks, technical means of traffic control used in road networks, level of traffic load on roads in public passenger transport routes, etc.).

The expected results can be achieved by taking into account the above-mentioned factors when organizing public passenger transport. These factors are inextricably linked and affect public passenger transport individually or in a complex manner.

In the conditions of the Republic of Uzbekistan, the most widely used type of public passenger transport is the bus. Buses have many advantages among public passenger transport. The most important of these is their high level of mobility. Buses can move in any conditions of the road network while providing passenger transport services. However, such opportunities are limited in trams or trolleybuses. Therefore, today buses remain the leading type of transport in providing passenger transport services in cities around the world.

Analysis shows that in many cities of the Republic of Uzbekistan (except for Tashkent), small minibuses are widely used along with buses. The most widespread of these are the "Damas" minibuses, which were used on many routes during periods when bus traffic in cities decreased. Their advantages over other types of transport include high maneuverability, increased communication speed due to high traction dynamics, and the ability to move through areas with small road networks without excessive congestion. At the same time, their main disadvantages include the lack of safety and comfort. For example, it is inconvenient for passengers to get on and off the "Damas" minibuses, and

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the arrangement of seats does not provide sufficient comfort. Despite this, this type of minibuses is currently posing serious competition to buses on public transport routes.

What is the reason for the high level of competition in the "Damas" model of passenger cars, despite the inconvenience to passengers and the low level of safety?

Analyses show that the main reason for such competition is the speed of communication, that is, the ability for passengers to reach their destinations in a short time.

2. Literature review . Another factor that affects the speed of a bus is the traffic density on the road. If there are a lot of cars and traffic on the road, then the bus will have to move more slowly, because it will have to take into account many other vehicles on the road. In such conditions, the bus may reduce its speed to avoid accidents and ensure the safety of passengers. On the section of road we considered, the effect of this factor will not be significant.

The speed of a bus can also depend on the maneuverability and characteristics of the bus. Newer buses, equipped with more powerful engines and advanced technology, can reach higher speeds than older bus models. In addition, the weight and payload of the bus can also affect its speed, as less weight makes it easier for the bus to accelerate and stop.

Overall, bus speed is a complex metric that depends on many factors. Everything from road conditions to the specific characteristics of the bus itself affects the speed and efficiency of the bus.

It is important to take all of these factors into account when planning bus routes and optimizing traffic to ensure timely and quality service to passengers. Continuous upgrading of road infrastructure, modernization of the bus fleet, and measures to reduce congestion - all this serves to increase the speed and comfort of bus travel.

The speed of buses moving along designated routes is also significantly affected by the traffic load of city road networks . Therefore, the issue of reducing the traffic load of road networks, that is, preventing traffic jams, is of great importance. In this process, buses getting stuck in traffic jams on their routes leads to their being late for the scheduled schedule. For this reason, in many cases, drivers are forced to increase the speed of buses in order not to be late for the schedule on their routes. Therefore, reducing the traffic load of road networks on the routes of bus transportation is of great importance. How are works being carried out to reduce traffic jams on road networks in developed foreign countries?

The purpose of the study is to assess the speed of urban public passenger transport on routes.

- Analysis of factors affecting the speed of urban public transport on routes ;
- of urban public transport along routes ;
- Substantiation of methods for experimental research of the speed of movement of urban public passenger transport along routes;
- a mechanism for assessing changes in the speed of urban public passenger transport on routes;
- urban public passenger transport traffic speeds along routes;
- urban public passenger transport on routes;
- urban public passenger transport on routes.

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3. Methodology . Experiment is a method of cognition, with the help of which a phenomenon of reality is studied in controlled and controlled conditions . Engineering experience is a set of experiments united by a single goal and a single system of space and time constraints [Boyarshinova, AK Theory of engineering experiment: text lexicon / AK Boyarshinova, AS Fisher. – Chelyabinsk: Izd-vo YuUrGU, 2006. – 85 p.].

Experimental studies are an integral part of scientific research. The reliability of experimental studies should be considered as a key criterion for the quality of the research. The reliability of experimental studies, in turn, depends on their proper planning.

Experimental planning is the procedure for selecting the number and sequence of experiments necessary and sufficient for achieving the experimental goal with the required accuracy. [Zadorozhnaya, Ye.A. Theory of experimental planning: teaching aids / Ye.A. Zadorozhnaya. – Chelyabinsk: Publishing Center of YuUrGU, 2018. – 92 p.]

Planning experiments involves several steps:

1. Preparing for experimental research.
2. Clarifying the indicators that should be studied in experimental studies.
3. Identify methods for conducting experimental research.
4. Conducting experimental research.
5. Obtaining the results of experimental studies and their primary processing.
6. Summarizing and analyzing the results of experimental studies.
7. Comparing the results of experimental studies with the results of theoretical studies.
8. Determining the level of reliability of experimental studies.

Conducting experimental research using the methods mentioned above allows us to achieve the intended goal.

Experimental research on the speed of public passenger transport will be aimed at determining whether road conditions on certain sections of the road network or the quality of the traffic flow in general, or other factors, affect speed.

The data collected during experimental studies are used to study free-flowing speeds, as well as information about the geometry of road networks, the characteristics of traffic accidents, and traffic flows. The studies provide detailed information on some or all of the following:

- average intensity of vehicle, cyclist and pedestrian traffic;
- the speed of movement is the change in the flow in each direction and over time;
- Road elements that may cause road accidents, such as horizontal and vertical curvature of the road, entry points, drainage, condition of the road surface, limited visibility, roadside objects, signs, markings and boundary markings, etc.
- road lighting conditions and technical means of traffic control;
- speed limit recommendations .

The experimental study of factors affecting the speed of movement of public transport includes the study of the following variables:

- location and configuration of the road;
- road elements (longitudinal and plan curves on the road, intersections, junctions, road lighting conditions, etc.);

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- Areas with restrictions on the maximum speed of movement;
- weather information;
- route information;
- areas with limited visibility;
- pedestrian traffic signs;
- cyclist traffic indicators;
- the date and time of the research;
- technical means of traffic control (road signs, road markings, road barriers, etc.);
- type and condition of road surface;
- the presence of facilities that attract passengers in large numbers;
- schools and children's institutions located along the roadside;
- the area where the road is located;
- landscape design of the road.

In some cases, road organizations may impose speed restrictions on vehicles on roads based on some of the above-mentioned indicators.

Public passenger transport moves in a general flow, therefore, the study of speed limits requires first of all the study of areas that are dangerous for movement, that is, the study of factors affecting the occurrence of road traffic accidents. To do this, it is advisable to first identify the factors affecting the speed of movement in the area and study the extent to which they affect the occurrence of road traffic accidents. This process can be considered in two stages:

There are various methods for measuring the speed of public transport on a route. These methods can be divided into three groups based on the means used to collect them:

- portable devices that can be used in many places (stopwatch, radar, measuring tape, etc.);
- on-road devices, which are installed on top of the road (pneumatic tubes);
- Stationary devices installed on or near the road (radar, recording devices, etc.).

Ideally, collect data on the speed of movement:

- Images are used based on the current situation without affecting the normal traffic situation;
- free vehicles are selected, tailgating is not taken into account (the difference in time between vehicles moving in front and behind does not exceed 5 seconds);
- This is done by collecting data on the type and speed of vehicles, in order to allow the identification of the speed profile of different vehicles, if necessary.

Photo-video imaging can be cited as a universal method for determining the speed of movement. A number of characteristics of the traffic flow can be determined through photography. For example, this method allows you to measure the density of the traffic flow with sufficient accuracy, which is relatively difficult to measure using other methods.

To determine the speed of a vehicle using photo and video images taken by a camera, $\Delta t=t_2-t_1$ the distance traveled by the vehicle over time between two photo images is taken into account, i.e.

$$v=\frac{s}{t_2-t_1}=\frac{H_0 s}{f_k(t_2-t_1)}, \quad (1)$$

Here, s is the distance traveled by the car (in image scale) in mm;

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N_0 – imaging height, m;

f_k – focal length of the photo-video camera, mm.

Distance intervals between cars (ΔL_i) are determined based on distance measurement data from photo and video images:

$$\Delta L_i = l_i \frac{H_0}{f_k}, \qquad (2)$$

Here, l_i-the distance between the cars in the image (according to the image scale), mm.

To determine the density of the traffic flow, suitable images are selected from all the images obtained and used. As a result, data is collected on the number of cars moving in the area for different periods of time. The density of cars in the area where the experimental studies are conducted is determined by the sum of the number of all cars within a unit of time and distance:

$$q = \frac{n\,3600}{tL}, \quad (3)$$

Here, n is the number of cars passing through the experimental study area in time t ;

L is the length of the section where the experimental study is being conducted .

is carried out by counting the number of vehicles n moving during a certain time T *during* which photo and video images were taken in the experimental study area .

$$N = \frac{v_0(n_1+n_2)+v_{o'rt}(n_1+n_2)}{v_0\,T}, \quad (4)$$

Here, $v_{o'rt}$– the average speed of the flow of cars moving on the section, km/h;

v_0– speed of the object with the photo-video recording device installed, km/h;

n_1 – the number of cars moving in the opposite direction to the object equipped with a photo-video recording device in the traffic lane;

n_2 - the number of cars moving in the direction of the object with a photo-video recording device installed in the traffic lane;

T – recording time, hours.

The use of the above-mentioned methods is selected based on the purpose of conducting experimental research.

The speed at which 85 percent of the traffic is ensured for buses moving along the routes is 20-22 km/h. For passenger cars, this figure is 42-44 km/h, and for vehicles with a carrying capacity of up to 2 tons, this figure is 30 km/h.

The traffic load on the road in this area (in the direction of the road entering the city) is equal to:

$$z = \frac{N}{P} = \frac{2116}{4500} = 0{,}47, \quad (5)$$

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Along the way out of town

$$z=\frac{N}{P}=\frac{1471}{6600}=0,32,$$

Here, N is the traffic intensity, R is the road capacity

The results of the calculations show that the road load factor is not the main reason for the decrease in the speed of buses moving along the route. The geometric dimensions of the traffic lanes on the carriageway for bus traffic do not correspond to the category of the road, and the transport and operational quality indicators of the road do not meet the required level, which in turn negatively affect the capacity of the road. When a bus moves along the route, its speed and travel time are affected by the type of bus, its design features, traffic intensity, the presence of traffic lights along the bus route, and road factors (longitudinal slope of the road, road).

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