BUSES SPEED OF MOVEMENT AND THEIR RATIONING

Anvarbek Ahmadjon o'g'li Xomidov [1]
PhD student
Ne'matov Muxammadrasul Farhodjon o'g'li[2]
student
Ortiqov Abror Nematillo o'g'li[3]
student
Niyozov Davron Bobonazar o'g'li[4]
student
[1-4]Andijan machine building institute. Uzbekistan, Andijan.
Email: xomidovanvarbek07@gmail.com
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Annotation. One of the factors that directly affect the productivity of buses and the quality of transportation services to the population is the speed of movement. Bus commuting and round-trip commuting times depend on speed, and the greater the speed, the smaller they are, which means the greater the number of commutes. This in turn leads to an increase in productivity, i.e. the amount of passengers transported and the turnover of passengers, to the fact that passengers can reach their destination with a shorter amount of time. Increasing speed also leads to a decrease in the number of buses required for passenger transportation.This article describes information about the speeds of movement of buses in urban and suburban areas, methods for calculating them, as well as methods for normalizing them.

Keywords: bus, bus speeds, intermediate stops, meowing, Traffic Safety, maximum speed, technical speed, operational speed.

In Real road conditions, the speeds of buses, like other types of transport, will also be much smaller than the speed specified in its technical classification (especially in intra-city and suburban routes).

Motor enterprises also need to take into account the safety of movement and many other factors during the period of maturing the speeds of buses. For example, if the planned speed is smaller than the speed that real road conditions allow, drivers will reach the last stop in a short time from the scheduled commuting time. This leads to a violation of the regularity of movement. If the speed in the plan is greater than the safe speed at which it is possible to move in real road conditions, drivers will not be able to follow the movement schedule or cause a dangerous or accident situation to occur as a result of increasing speed.

Therefore, employees of the disposal service, together with the Traffic Safety Service, must mend the speed for each route based on real road conditions.

As an objective evaluative indicator of real road conditions on highways, a graph is calculated indicating the change in the speed of movement along the entire route. The graph of the change in such a speed over the entire length of the route can be built only with the help of a special "car-laboratory". All buses must be equipped with tachographs according to resolution 482 dated November 4, 2003 "on approval of the rules for the transportation of passengers and baggage in automobile transport in the Republic of Uzbekistan and the requirements for ensuring the safety of passenger transportation on buses". But such an opportunity is currently not possessed by most motor vehicles, in addition, such accuracy is practically not required to normalize the speed of buses on the routes.

Existing motorways form downward slopes, from small curvatures in the plan, and the visibility (lateral and longitudinal) distance is made up of small, vertical curvatures specified in road building regulations and Meurs. In Real road conditions, the amount of movement and the variety of content also have a big impact on speed. Research shows that it turns out that even the speeds of cars moving in a clear way (in free order) under exactly the same conditions can differ from each other by 20-30 km/h.

There are many factors that influence the speed of movement of buses on intra-city routes, an example of which can be shown: the allocation of a separate traffic corridor for the movement of buses, the provision of privileges for the movement of buses at intersections, and finally the order of movement of buses.

It is known that the distance between stops on intra-city routes will be about 300-700 m, on suburban routes-about 700-1500 m. In order to plan the technical and disposal indicators of motor vehicles, it will be necessary to determine the speeds of buses in each direction at the first turn and mend them. To do this, it is necessary to monitor the speeds of movement of buses on the routes and process the data obtained using mathematical-statistical methods.

There are several ways to track the speeds of movement, the main ones of which can be shown:

1. Mechanical contact measurement method. In this method, the speed is carried out using pneumatic, electronic contact or other types of sensors.
2. Method of irradiation of cars. In this method, the speed is carried out using infrared light, ultra - sound or radiolocation sensors.
3. Photoelectric method. This method is done by taking a motion picture or movie.
4. A special moving car is a method of using a laboratory. In this method, the car-laboratory will be equipped with speed-measuring instruments.
5. Method for determining the speed using the" fifth wheel". In this method, a fifth wheel with a tachometer is attached to the car. When the car moves, the radii of the wheels change under the influence of dynamic forces and introduce errors into the measurement work. Since the fifth additional wheel is not affected by Dynamic Forces, when using it, the measurement work becomes clear. The tachometer shows the speed at each moment, and this speed is recorded using a self-written instrument, a tachograph, on a tool of some kind.
6. Method of determining and meowing speed using a stopwatch. In this method, a special observer records the interval of each stop at how long the bus has traveled, the time it takes to stop at intermediate and final stops to a special schedule.

If the instantaneous speeds of cars are determined using the methods 1-6 listed above, then the average speed is determined by the length of the entire route using the remaining Method 5 and 6.

When using method 5, the distance between the direction and stops is automatically determined. During the use of this method, it will be enough to select experienced drivers for observation and give them a guide on how to move at the maximum safe speed based on road conditions.

And in Method 6, in addition to experiments, it is necessary to determine the distance between directions and stops with an error of up to 10% at most, otherwise the tracking results will be considered unsatisfactory. To measure distances, a special instrument “Kurvimeter” has been developed today, the measurement error of which does not exceed 10 cm every 1000 m, that is, the measurement error is even smaller than 1%.

Because the chronometer method is the simplest method, it is widely used in the meowing of speeds in directions.

To normalize the speeds, the following work is carried out.

In the first Gal, a special leaflet is prepared to record the results of the chronometer. The form of the leaflet will be optional and will depend on what purposes the observations will be made:

- only to determine the technical speeds of cars;
- to determine the technical and communication speeds;
- to determine the technical, communication and disposal speeds;
- to study the flow of passengers in addition to speeds (the number of observers for this purpose is taken equal to the number of doors of the bus).

ordinal number	Station number	Distance between stops	Time, hour-min.						Speed, km / h			Commute time	
			Excitation	Arrive	Movement	Stop at the intermediate stop	Stop at the intermediate stop	Unnecessary stop	Technical	Contact	Exploitation	In the right direction	In the opposite direction
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	1												
2	2												
3	3												
.													
.													
Total		l_m			$\sum t_x$	$\sum t_{ob}$	$\sum t_{ox}$	$\sum t_z$	V_T	V_a	V_e	t_{qt}	$t_{q.or}$

Figure 1. Speed chronometer sheet

With the help of the data in the table, the speeds for the length of the direction are determined as follows:

In cars, in general, speed can be divided into the following types:

a) maximum speed. The maximum speed depends on the power of the bus engine, which in their technical classification will be indicated by the factory;

b) technical speed. The technical speed of cars, based on road conditions, will depend on the speed of movement chosen by the driver and will be determined by the ratio of the time of movement of the traveled road:

Technical speed: $V_T = \frac{l_y}{t_{harak}}; \frac{km}{hour}$,km/h;

here: l_y-route length, km;
t_{harak}-time of action, hour;
c) communication speed. The speed of communication is smaller than the technical speed and describes how quickly passengers are delivered to their destination. The speed of communication is determined by the ratio of the path traveled by the bus to the sum of parking times at moving and intermediate stops:

Communication speed: $V_a = \frac{l_y}{t_{harak} + (t_{ob} \cdot i_{ob})}$, km/h;

here: iob-the number of intermediate stops, pieces;
tob-stop time at intermediate stop, s;
e) rate of disposal (operational). This speed is determined by the ratio of the path traveled to the bus operating time or the length of the route to the commuting time:

- Operational speed for a commute: $V_e = \frac{l_y}{t_{harak} + (t_{ob} \cdot i_{ob}) + t_{oxb}}$, km/h.

here: t_{ohb}-time to stop at the last stop, hour;

- for one day: $V_e = \frac{l_{kun}}{T_{ish}}; \frac{km}{hour};$

here: l_{day} - daily walking distance, km;
T_{work}-time at work, hour.
Measurements are returned several times to make the bus movement chart, and their average arithmetic values are considered sufficient for practice.
In practice, the distances between intermediate stops, the existing road conditions in them differ from each other and change over time. Therefore, speed meowing along the entire length of the route will not be enough in terms of movement safety. When drivers are given instructions to ensure safe movement on routes, along with information about road conditions in the direction, dangerous sections, how the movement is organized, it should also be clarified how and at what speeds it is necessary to move between each stop. To do this, the average technical speeds between each intermediate stops must be calculated and meowed. The Departments of the disposal and Traffic Safety Service must develop linear graphs of the meyorical values of speeds (safe speeds) along the entire length of the route and convey them to the mind of each driver.

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