ADVANTAGES OF DEVELOPING CYCLE PATHS ON MOTOR ROADS IN TASHKENT

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Annotation: The article presents the positive impacts of developing cycle paths on motor roads such as improved safety, reduced traffic congestion, less environmental footprints, economic benefits and other personal profits and analyzes the results of the model which is simulated by computer software called PTV Vissim.

Keywords: Cyclists, cycle paths, traffic congestion, fuel consumption, vehicle delay, road safety, environmental footprint.

ПРЕИМУЩЕСТВА РАЗВИТИЯ ВЕЛОСИПЕДНЫХ ДОРОГ НА АВТОДОРОГАХ ТАШКЕНТА

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Аннотация: В статье представлены положительные последствия создания велосипедных дорожек на автомобильных дорогах, такие как повышение безопасности, уменьшение заторов на дорогах, уменьшение воздействия на окружающую среду, экономические выгоды и другие личные выгоды, а также анализируются результаты модели, которая моделируется с помощью компьютерного программного обеспечения под названием PTV Vissim.

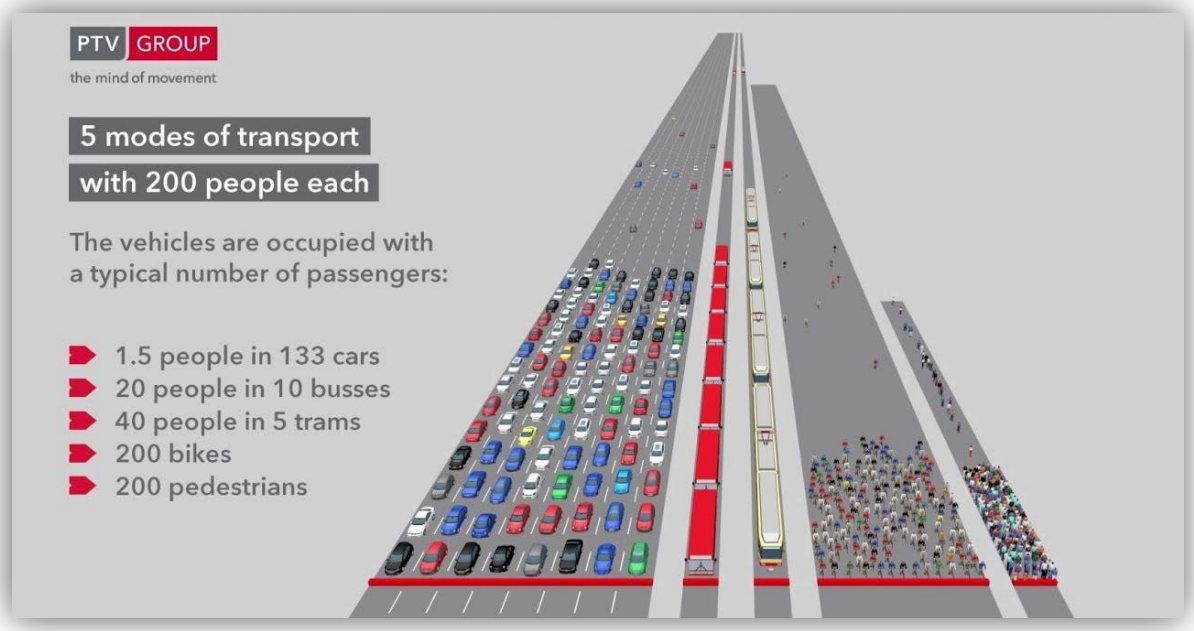
Ключевые слова: Велосипедисты, велосипедные дорожки, пробки на дорогах, расход топлива, задержка транспортных средств, безопасность дорожного движения, воздействие на окружающую среду.

Today, the number of vehicles moving in big cities is increasing day by day. The heavy flow of traffic is causing traffic jams on city roads, causing delays for commuters and drivers to get from one destination to another. In the city of Tashkent, which is considered to be the largest in Central Asia in terms of population density and city area, the increase in the number of cars has become a real problem in the last 10 years. If we look at the experience of developed countries, hundreds of engineers and geo-urbanistic specialists stopped at the bicycle competition in order to make city life more comfortable and quality, to

reduce traffic congestion on the main city roads and to give breathing space to the megalopolis. Therefore, in any advanced society on earth, their main form of transportation is becoming public transport or bicycle.

In the city of Tashkent, 10-point traffic jams are becoming a daily routine during rush hour on weekdays. For example, today there are 5 million inhabitants in Tashkent city (3.02 million permanent residents, 1.5 million daily commuters, 0.48 million temporary residents), and its number is 100,000 per year on average. the existing 760,000 motor vehicles are increasing by 76,000 per year. The need for daily movement of the population is 9 million, of which 3 million people have to move on foot, and 6 million people have to move by transport. 25 percent of the traffic, i.e. 1.5 million buses, subways and minibuses, and the remaining 4.5 million are carried out by one million vehicles (760 thousand on a permanent list and 240 thousand daily arrivals) that move in the city during the day.

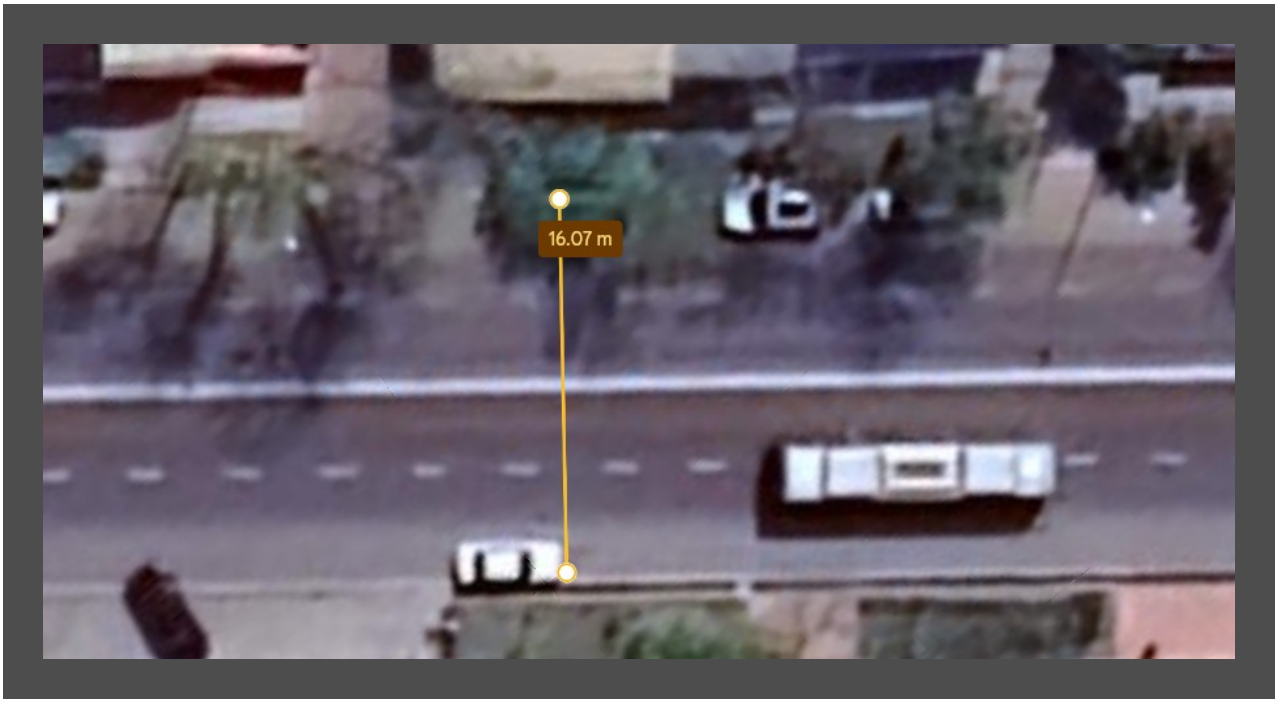
Due to the above, the traffic speed in traffic jams has decreased to 7 km/h, the time people spend on the road has almost doubled compared to 3-4 years ago, as a result, excessive fuel consumption of slow-moving vehicles and the volume of harmful gases, economic losses and our country damage to ecology is also increasing. Based on these indicators, it can be said that it is appropriate to allocate highways for greener vehicles, such as bicycles. For example, several cyclists can fit in the space occupied by one car. (Pic 1)



Pic 1. The share of space bewtween different transport modes.

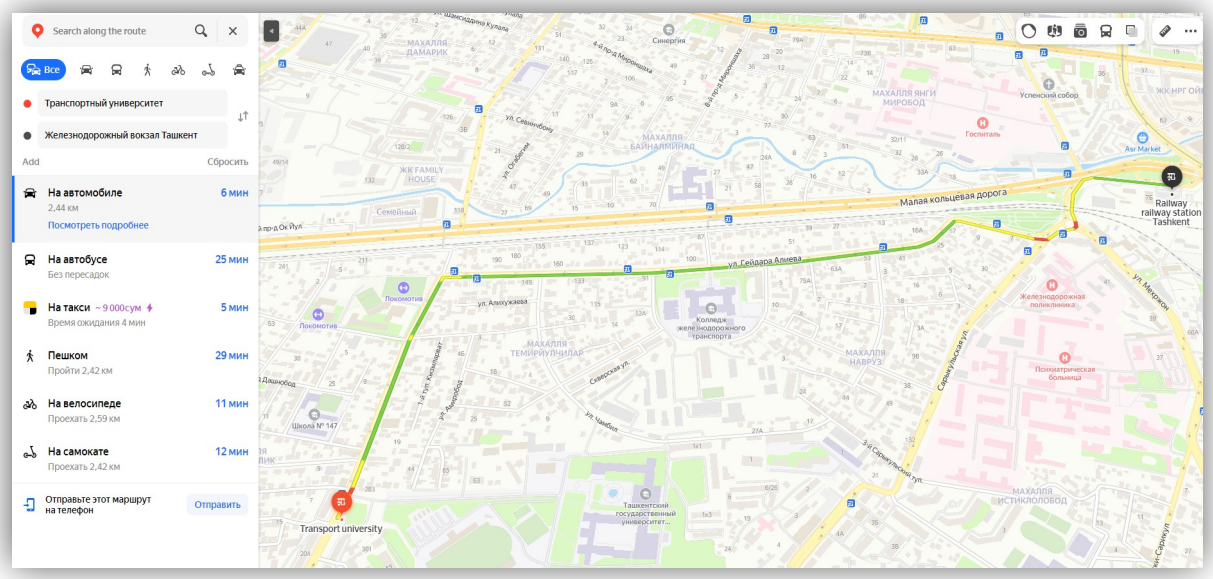
In order to solve such a problem, we modeled the movement of bicycle transport in Tashkent using the PTV Vissim computer program in order to test the advantages of the movement of cyclists. For this, the distance between the

Tashkent State Transport University and the Northern Railway Station, which is convenient for cycling or for introducing a bikesharing system for the population in the future, was chosen as a bicycle corridor. In order to reduce the traffic on the road from Oliygoh to the Northern railway station, a road for cyclists was taken on this road. Currently, the selected corridor is 2.5 km long and has 4 lanes with an average of 3 meters each. In addition, there is an unauthorized 2-meter parking space on both sides of the road. The number of cars passing through the main part of this corridor is 1040 per hour. (Pic 2)



Pic 2. The width of the selected motor road.

Currently, it takes 25 minutes by public transport, i.e. bus, 6 minutes by car, 29 minutes on foot, and 11 minutes by bicycle. This indicator is taken for an average situation, not for peak times. In terms of greenness and speed, the bike wins here. (Pic 3)



Pic 3. The data about the selected corridor between Univ. and Railway st.

In the proposed option, the 4 traffic lanes in the selected corridor were left in their condition, and a 3-meter zone on one side of the street was modeled separately for two-way bicyclist traffic. (Pic 4)

Pic 4.1. The simulated model of the selected corridor between HE and Railway st.

Pic 4.2. The cycle path modelled on motor road.

If we analyze the results obtained after the modeling work, we can see a sharp positive change in emissions, fuel consumption and time spent waiting in traffic jams. For example, it was determined that the service level of this corridor was improved from D to C. The main factor affecting the following indicators is the existence of a large and complex intersection between the two selected addresses and the losses of stopping at traffic lights during rush hour. For example, toxic gases can be reduced by almost 1/3, and fuel consumption can be reduced by 45%. This result is achieved due to the fact that traffic participants on the road have switched to bicycles, and as a result, traffic jams have decreased. (Table 1)

Indicators	**Results**	
	before	after
Average length of traffic (m)	37	25
Maximum length of traffic (m)	256	135
Level of Service (LOS)	D	C
Average number of stops	25.01	10.97
Emission CO, grams	2065	1377
Nox Emission, grams	536	306
VOC Emission, grams	510	365
Fuel consumption (liter)	56	31.5

Table 1. Indicators of the traffic from PTV Vissim model.

The following were taken into account in the organization of the dedicated lane for cyclists in the selected corridor:

- Ensuring traffic safety
- Provision of necessary infrastructure
- Giving priority at intersections
- Minimize intersections with vehicles

We can list the following advantages based on the information obtained as a result of reviewing the current state of traffic on Heydaraliyev Street between the territory of the Tashkent State Transport University and the North Railway Station and the state after the proposal using the PTV Vissim program:

- Improved safety
- Reduced traffic congestion
- Environmental benefits
- Health benefits
- Economic benefits
- Tourism and recreation

To conclude, one of the main reasons for the sharp increase in traffic in the city of Tashkent is the increasing number of private vehicles. If a separate bicycle lane is created on highways for bicycle traffic, it can significantly help the environment, especially the reduction of road traffic. In this study, the corridor we have chosen is the most efficient way to connect about 18,000 daily passengers, who are sdudying and working at the university, from the university to the metro, bus, railway and cars. In other words, instead of hundreds of cars, we can see bicycles and a few buses on the roads with the same number of daily passengers moving from A to B destinations. This means less noise, less environmental damage and less fuel consumption.

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