DESIGNING OF PARKING LOTS AROUND SOCIO-ECONOMIC OBJECTS IN THE SOFTWARE OF PTV VISSIM

Turatov Bekzod

Teacher of Department of Transport Logistics
Jizzakh polytechnic institute
Republic of Uzbekistan, Jizzakh
E-mail: bekzod.turatov94@mail.ru

Azizbek Nishonov

Teacher of Department of Transport Logistics
Jizzakh polytechnic institute
Republic of Uzbekistan, Jizzakh
E-mail: nishonov_azizbek@list.ru

ПРОЕКТИРОВАНИЕ ПАРКОВОК ВОКРУГ СОЦИАЛЬНО-ЭКОНОМИЧЕСКИХ ОБЪЕКТОВ В ПРОГРАММЕ PTV VISSIM

Туратов Бекзод

преподаватель кафедры транспортной логистики
Джизакский политехнический институт
Республика Узбекистан, г. Джизак

Нишонов Азизбек

преподаватель кафедры транспортной логистики
Джизакский политехнический институт
Республика Узбекистан, г. Джизак

ABSTRACT

Today, with the rapid pace of urbanization, there is an increase in mobility between regions due to improved living standards. This, in turn, increases the demand for transport. As a result, urban centers in many developed and developing countries are facing congestion. Nowadays, along with the widespread use of private vehicles among the population, the efficient use of existing parking lots is one of the important issues.

The article analyzes the level of impact of roadside dwellings on road capacity using the capabilities of the PTV Vissim software and discusses the effectiveness of the use of intelligent systems in the use of parking lots.

АННОТАЦИЯ

Сегодня в условиях быстрого темпа урбанизации наблюдается рост мобильности между регионами за счет повышения уровня жизни. Это, в свою очередь, увеличивает спрос на транспорт. В результате городские центры во многих развитых и развивающихся странах сталкиваются с заторами. В настоящее время, наряду с широким использованием личного автотранспорта населением, одним из важных вопросов является эффективное использование существующих парковок. В статье анализируется пропускную способность дорог с использованием возможностей программы PTV Vissim и обсуждается эффективность использования интеллектуальных систем при использовании парковок.

Keywords: PTV Vissim, parking, level of service, intelligent transport systems.
Ключевые слова: PTV Vissim, парковка, уровень обслуживания, интеллектуальные транспортные системы.

Main part

As a result of population growth and living standards, there is an increase in traffic on the roads of our country. Even though vehicles are now equipped with modern technology, driving is still dangerous. Accidents are more likely to occur in city centers and on highways with heavy traffic. The system depends on many elements, and if nothing is done about it, it will be difficult to prevent accidents. However, there are always opportunities for positive change, that is, to get out of the risk situation and minimize the negative effects. However, this is a short-term, quantitative solution to the problem, which cannot be completely eliminated, as the number of cars on the roads will continue to grow over the years. Therefore, an intelligent transport system can solve this problem qualitatively, using the achievements of science and technology.

Библиографическое описание: Turatov B., Nishonov A. DESIGNING OF PARKING LOTS AROUND SOCIO-ECONOMIC OBJECTS IN THE SOFTWARE OF PTV VISSIM // Universum: технические науки : электрон. научн. журн. 2022. 6(99). URL: *https://7universum.com/ru/tech/archive/item/13991*

Intelligent transportation systems are an important part of a smart city. It makes full use of intelligent technology, Internet products. Allows to systematize and expand the scope of application of the transport system [1].

The introduction of intelligent transport can lead to a comprehensive improvement of socio-economic interests in several areas, including its advantages [2]:

- Save time on the road, reduce driver labor and traffic congestion;
- Reduces the damage caused to the environment by transport;
- reduction of road infrastructure construction costs.

With the growth of automation in large cities, the need for the introduction of intelligent vehicles will increase [3].

An intelligent transportation system (ITT) is a complex engineering structure that is an innovative approach to modeling transport systems and managing traffic flows. Maximizing the use of the transport network will increase the efficiency and safety of the transport process, further increase the level of convenience for transport users and drivers, as well as provide prompt access to emergency medical care. As a result, consumers are provided with a greater level of information and security, as well as the level of interaction between the participants of the movement. In developed countries such as the United States, Japan, Germany, France, and China, these technologies were widely used in transportation management 20-30 years ago.

Several methods have been proposed by experts to address the above problems [4]:

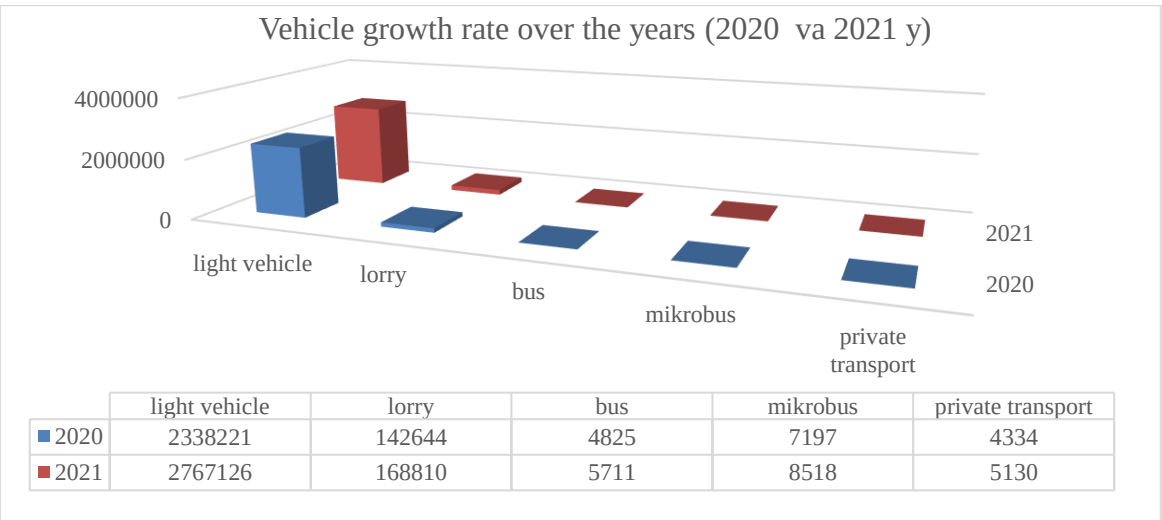
- construction and expansion of extensive road infrastructure;
- Intensive use of ITT in traffic optimization and management.

In foreign experiments, it is necessary to use an intensive approach to solving the transport problem. ITT is an important, efficient and safe way to increase traffic flow on highways. The United States Government is actively developing and supporting the ITT. Because the introduction of these systems, unlike the standard method of building new highways, is a useful, effective way to solve this problem. The role of ITTs in increasing road capacity is significant, but the erratic placement of vehicles on the roadway by drivers has a negative impact on addressing these issues and ensuring road safety. Therefore, the establishment of modern car parks in cities, the use of ITT in their activities is a topical issue and will lead to more efficient use of parking resources and bring significant economic, social and environmental benefits. The use of intelligent transport systems and computer software in the management of parking lots can reduce the demand for parking lots by 20-40% and contribute to the efficient use of parking space and driver comfort. Transport and urban planning interact. Co-development is important and it should also include several objectives, in particular car and parking management. As a result, it increases road throughput efficiency, reduces stops and conflict points, and increases revenue.

In foreign countries, the cost of parking varies depending on the time and location. This means that it is more expensive in large cities than in small towns, more expensive in neighborhoods in business districts, and more expensive during the day than at midnight .With the rapid personalization of vehicles, many cities are suffering from a lack of parking spaces. This is a mismatch between supply and demand for parking spaces. This is one of the most common problems with cars on the subway. This disparity is partly due to inefficient land use planning and incorrect calculation of space requirements in the early stages of planning.

Today, the urban population is ≈ 4.4 billion (55% in cities). By 2050, it is projected to reach 20 7 billion (68% in cities) and it will account for about 65% of developing countries and 88% of developed countries. This leads to an increase in the number of cars.

The number of vehicles owned by individuals in Uzbekistan (according to the State Statistics Committee as of January 1, 2021) was 2,955,295 [4], an increase of 14.5% compared to 2020 (Figure 1).



	light vehicle	lorry	bus	mikrobus	private transport
2020	2338221	142644	4825	7197	4334
2021	2767126	168810	5711	8518	5130

Figure 1. Vehicle growth rate in recent years (2020 and 2021)

It is understandable that such a growth rate of transport is expected to become the most pressing issue in the future. The problem of parking in cities and towns is actually the demand for parking (the number of cars in need of parking) and the supply of parking spaces (sufficient for cars in need of parking) the number of parking spaces). The main indicators in the analysis of the object are the time spent by the driver to search for a place to park the vehicle, the average level of congestion, the average number of cars parked in the parking lot during the day (Figure 2), (Figure 3).

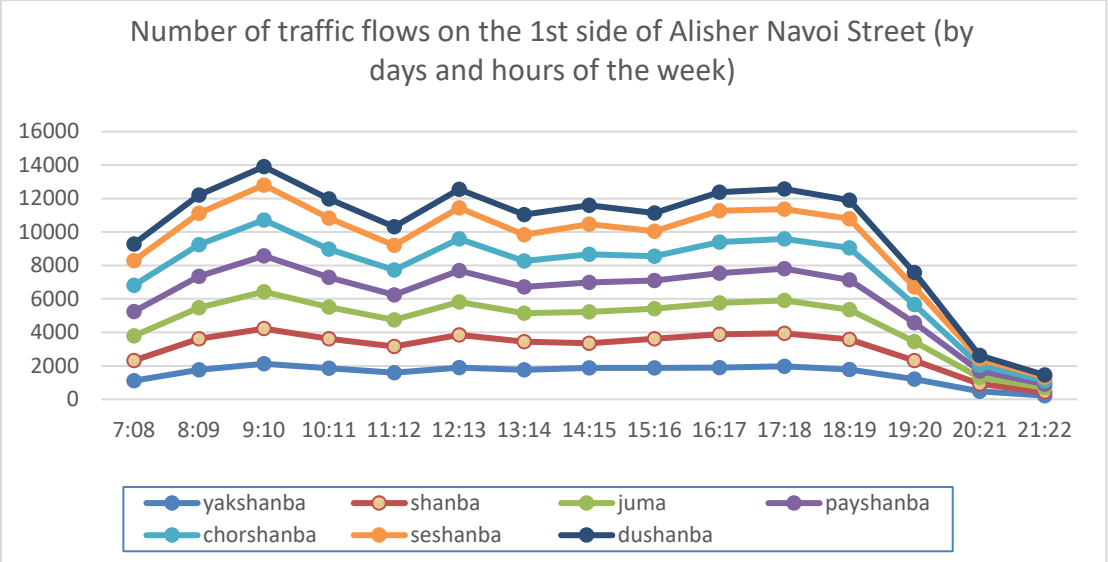


Figure 2. Number of traffic on the 1st side of Alisher Navoi Street

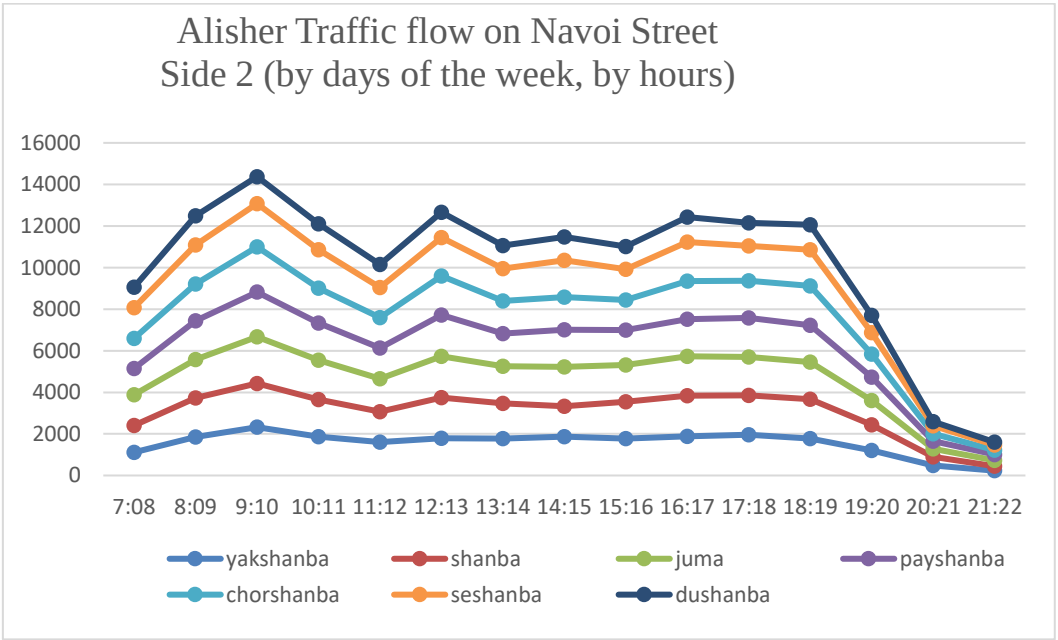


Figure 3. Number of traffic on the 2nd side of Alisher Navoi Street

The traffic speed of this street was studied as a result of practical observations, and the effect of the vehicles parked on the side of the street in the current situation on the traffic level was studied. Using the PTV vissim program to obtain indicators such as congestion, wasted time, delay time, and the amount of harmful gases emitted into the environment as a result of vehicles parked on the side of the road. and as a test we can observe a comparative analysis of the results obtained in a non-residential condition at the roadside. Once we have the current data, we get results from the program, even if there are no parking lots on the side of the road, and compare it with our current results. The following is a diagram of the non-residential drawing in the program (Figure 4) and the results obtained in the non-residential condition.

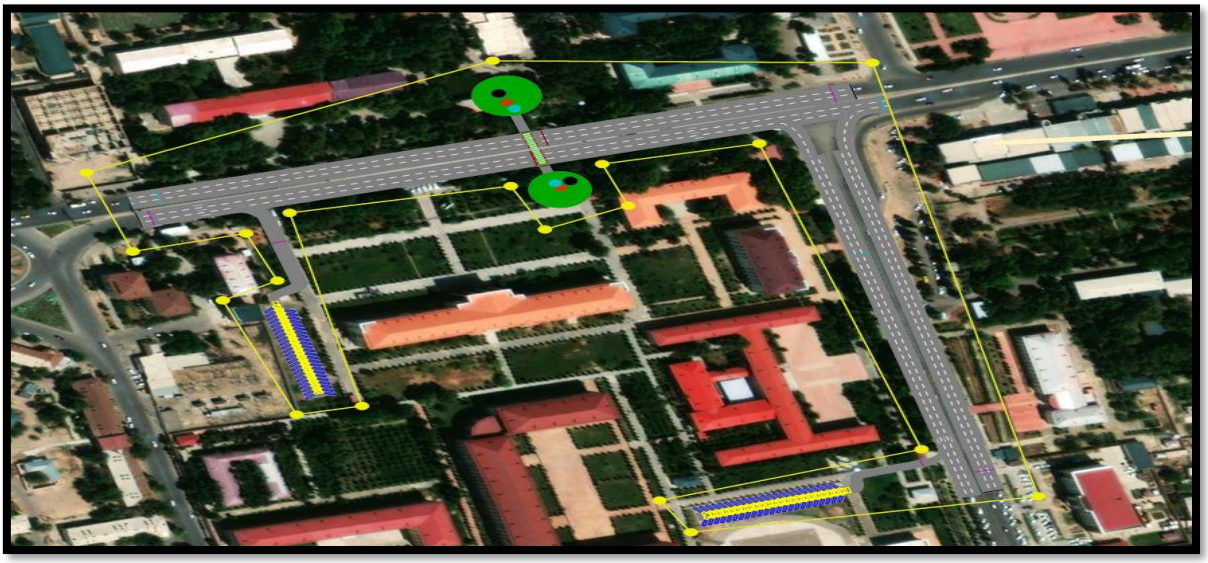


Figure 4. Drawing of A. Navoi Street in Termiz without housing in PTV Vissim program

Analyzing the results, we can see that the current level of road maintenance is equal to LOS F, and without settlements, this figure will improve to LOS B. When we obtain the results of one hour of practical observation of the peak time of this area in the current state of residential and non-residential as a test on the street, the program includes the average length of the queue, number of vehicles, average delay time, harmful gases, fuel we can see a significant difference between indicators such as consumption. For example, the difference between the average lengths of the queue in the two cases was 128 meters. One of the most pressing problems in cities today is congestion. From this figure we can clearly see how interconnected the problems of congestion and parking area.

To avoid congestion, we need to make full use of the road's capacity. According to the results obtained in the residential and non-residential condition on the side of the street, in the absence of housing on the side of the road can carry 2080 cars more than in the current situation. It turned out that the two cases differed by almost 15 minutes compared to the average delay time of cars.

At the same time, the stagnation of vehicles on the road has a significant negative impact on the environment due to the release of harmful gases into the atmosphere. According to a study conducted in this area, we can observe the emission of harmful gases in this area in an hour in the current state of 13,808 COx (grams), and in the non-residential state - 3,878 COx (grams). Another important aspect of the transport sector is fuel consumption. Naturally, the search for accommodation prolongs travel time and, as a result, wastes fuel. From the above results, it was found that in the study area, the fuel consumption in the non-residential condition is 142 liters less than in the residential area on the side of the street.

In conclusion, this article examines the extent to which the problem of congestion, which is currently the most pressing issue for both developed and developing countries, is related to parking. Conflicting points of cars parked and parked on the side of the road were analyzed. According to the above-mentioned analysis, the parking lots along the A.Navoi Street will be tightened by the installation of a curfew on the side of the road for a certain period of time.

References:

1. Yue jian-ming, Lin pileu. Analysis on the integration and development of China's intelligent transportation industry and Internet of things technology. Productivity research, 5th issue, 2012.
2. Hui Jie Yang/ Xi'an Intelligent Transportation System Construction Platform Research/ https://creativecommons.org/licenses/by-nc-nd/4.0/ Selection and peer-review under responsibility of the 8th International Congress of Information and Communication Technology, ICICT 2019.
3. Zhankaziev S., Gavrilyuk M., Morozov D., Zabudsky A. Scientific and methodological approaches to the development of a feasibility study for intelligent transportation systems/ https://creativecommons.org/licenses/by-nc-nd/4.0/. Thirteenth International Conference on Organization and Traffic Safety Management in Large Cities (SPOTSIC 2018).
4. AASHTO, A Policy on Geometric Design of Highways and Streets, Washington, D.C., 1994.