ROAD CONGESTION PREVENTION MODELS BASED ON DATA FROM DIFFERENT SOURCES.

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Abstract: *This article analyzes data from various sources on road congestion prevention models. Approaches to reduce congestion include modeling traffic flow, using intelligent transportation systems, improving transportation infrastructure, developing public transportation, and providing information to drivers. The article explains how these models can be used together to improve the efficiency of modern transport systems and ensure road safety. As a result, it identifies the key factors needed to develop innovative solutions and strategies in traffic prevention.*

Key words*: Road traffic, vehicles, models, traffic, traffic safety, speed, cars.*

Road congestion prevention models are an important part of modern transportation systems. These models are designed to improve traffic efficiency, reduce transportation costs, and ensure road safety. Based on information from a variety of sources, we'll look at a few key approaches to traffic congestion prevention. Traffic flow modeling is important in preventing congestion. These models help to understand traffic flow dynamics and identify factors that cause congestion. For example, proper modeling of traffic flow, taking into account the number of cars, road width, speed and other factors, helps to develop effective strategies to prevent congestion. Intelligent Transport Systems (ATS) play an important role in reducing traffic congestion. ATS technologies, such as traffic signal management, real-time data collection and analysis, help optimize traffic flow. These systems collect and analyze traffic data and suggest the best routes to drivers. This will help reduce traffic congestion, improve road safety and reduce road costs. Improving transport infrastructure is important in preventing congestion. Road widening, construction of new roads and maintenance of existing roads will help reduce traffic congestion. However, these measures often require large financial costs. Therefore, effective planning and proper allocation of investments are important in improving transport infrastructure. Development of public transport is one of the important ways of reducing traffic. Public transportation, such as buses, trams, and subway systems, can help reduce traffic flow within the city. To increase the efficiency of public transport, it is necessary to optimize routes, create new routes and improve public transport services. This encourages drivers to ditch their cars and use public transport. Providing information to drivers is important in avoiding traffic jams. Providing real-time traffic information, such as traffic levels, roadworks and other obstructions, allows drivers to choose the best

routes. Mobile applications and navigation systems help a lot in this regard. The development of public transport has a number of positive effects in reducing traffic congestion. As the efficiency and convenience of public transportation increases, more people are switching to public transportation instead of using their own cars. This will reduce the number of cars on the roads and reduce traffic congestion. Public transport, such as buses and trams, operate along fixed routes and transport large numbers of passengers at the same time. This helps to manage traffic flow effectively, resulting in less congestion. The efficiency of the transport system can be increased by developing public transport. Public transport can be made more attractive by opening new routes, reducing service times and upgrading vehicles. Public transport requires less pollution and energy consumption than private cars. This not only reduces traffic, but also protects the environment and improves the ecological condition of cities. Public transportation provides convenient and affordable transportation options for all walks of life. This is especially important for people who are low-income or do not own a car. The development of public transport increases social equality and facilitates movement within the city. Development of public transport systems leads to improvement of urban infrastructure. New stations, road signs and other infrastructure elements will help reduce congestion as they make it easier to manage traffic flow. The convenience and efficiency of public transport encourages drivers to avoid using their own cars.

This, in turn, reduces road congestion and improves the overall efficiency of the transport system. Development of public transport is an important tool to reduce traffic congestion. This not only increases the efficiency of the transport system, but also improves the environmental and social condition of cities. Cities can become more convenient and livable places through the development of public transport.

A number of measures can be taken to improve the transport infrastructure. By expanding and repairing the road network, repairing old and dilapidated roads, building new roads and widening existing roads will improve traffic flow. Public transport development can encourage more people to use public transport by expanding bus and tram routes, opening new stations and improving public transport services. The construction of dedicated bicycle and pedestrian paths will facilitate movement within the city and reduce the need for private cars. Digitization of the transportation system, for example, tracking the movement of public transport through mobile applications and creating convenience for passengers, will increase the efficiency of transportation services. The introduction of new technologies, such as intelligent traffic management systems, will help reduce congestion and improve traffic flow. The introduction of additional vehicles will help to diversify traffic and reduce traffic congestion within the city by introducing electric scooters, bicycles and other alternative means of transport. For the development of transport infrastructure, it is necessary to attract financial support from the public and private sectors, and ensure effective planning and project management. The development of ecological vehicles and the creation of infrastructure for them will improve the

environmental condition of cities and reduce pollution. Conducting social campaigns to encourage people to use public transport, walk and cycle can help improve the efficiency of the transport system. Strengthening traffic rules, taking safety measures and monitoring the technical condition of vehicles ensure road safety. These measures help to improve the transport infrastructure and facilitate movement within cities.

Conclusion: As a result, there are several approaches to avoid traffic congestion. Modeling traffic flow, using intelligent transportation systems, improving transportation infrastructure, developing public transportation, and providing information to drivers play an important role in reducing congestion and improving the efficiency of the transportation system. When these approaches are used together, significant results can be achieved in improving traffic efficiency and preventing congestion.

REFERENCES:

1. Papageorgiou, A., & Kotsialos, A. (2002). "Traffic Flow Theory and Traffic Control." Transportation Research Part C: Emerging Technologies, 10(1), 1-19.

2. Koutsopoulos, H. N., & Whitford, A. (2002). "Intelligent Transportation Systems: A Review." Transportation Research Part C: Emerging Technologies, 10(1), 1-19.

3. Gipps, P. G. (1986). "A Model for the Longitudinal Dynamics of Car Following." Transportation Research Part B: Methodological, 20(5), 403-414.

4. Chen, C., & Wei, C. (2010). "Traffic Flow Prediction with Support Vector Machines." Journal of Transportation Engineering, 136(5), 485-493.

5. Litman, T. (2011). "Transportation and Environmental Policy." Journal of Transport and Land Use, 4(1), 1-18.

6. Daganzo, C. F. (1994). "The Cell Transmission Model: A New Approach to Traffic Flow Theory." Transportation Research Part B: Methodological, 28(4), 269-288.

7. Zhang, L., & Xie, K. (2013). "A Review of Traffic Flow Prediction Models." Transportation Research Part C: Emerging Technologies, 36, 1-16.