

as a supporting tool, while keeping humans in control of the concept and creative direction of the project.

It is also worth noting that the audience is gradually learning to recognize AI-generated content. According to a 2025 study, people were able to correctly identify an AI-generated image in approximately 62% of cases, which is only slightly better than guessing at random. This shows that the visual boundary between human-created and AI-generated work is becoming increasingly blurred. In the future, this could lead to a situation where the main factor in evaluation is no longer the origin of the image, but its emotional impact, originality, and ability to inspire trust in the audience.

Thus, current research paints a rather contradictory picture. On the one hand, artificial intelligence is already capable of creating advertisements, images, and visual content at nearly human levels. On the other hand, people still tend to value works created by human authors more highly. For many viewers, it remains important to understand that real emotions, experience, and creative intent lie behind a visual product. Therefore, in the coming years, the most successful model for the development of visual communication will likely be collaboration between humans and artificial intelligence, rather than the complete replacement of one by the other.

**СЕКЦІЯ
ПИТАННЯ СУЧАСНОГО РОЗВИТКУ ТРАНСПОРТНИХ
ТЕХНОЛОГІЙ.
НАУКОВІ ЗАСАДИ ІЗ ЗАБЕЗПЕЧЕННЯ ОРГАНІЗАЦІЇ ТА
БЕЗПЕКИ ДОРОЖНЬОГО РУХУ.
ТРАНСПОРТНА ЛОГІСТИКА - ВИКЛИК СУЧАСНОСТІ.**

**PRACTICAL RECOMMENDATIONS FOR THE DEVELOPMENT OF «BIKE
& RIDE» INFRASTRUCTURE**

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The Role of Bicycle Infrastructure in Sustainable Urban Mobility

In the period of building a sustainable and reliable bicycle infrastructure, the development of practical guidelines plays a crucial role in the transition from theoretical analysis to the implementation of specific steps. It is at this stage that scientific achievements, analytical research and urban planning are transformed into specific engineering solutions that can be implemented on urban roads and transport interchanges. The results of the analysis of the current state of the transport system, the results of the implementation of similar projects in other cities, as well as the methods of regulation and standards that regulate the organization of bicycle traffic in Ukraine are presented. In recent years, bicycles have increasingly gained favor as an effective, affordable and environmentally friendly means of transportation. The growing interest in cycling is explained by a number of factors, including the cost of fuel, congestion of motor vehicles, consumption, reduction of air pollution, and promotion of a healthy lifestyle. At the same time, the use of cycling increases significantly when it is perceived not only as a separate mode of transport, but as a component of an integrated transport system of the city.

Integration of Cycling with Public Transport: The “Bike & Ride” Concept

The connection of cycling with public transport allows you to form a multimodal transport system in which different means of transport complement each other. The integration of cycling infrastructure with the public transport network makes it possible to quickly and conveniently cover both short and long distances, reducing the duration of the journey, shortening the road network and improving environmental pollution in the city. This approach is one of the main elements of the “Bike & Ride” doctrine, which has already proven its effectiveness in many European cities.

International experience shows that the introduction of the “Bike & Ride” system can significantly increase the percentage of bicycle use in urban transportation structures. For example, in cities of the Netherlands, Denmark and Germany, large bicycle parking lots are equipped near railway and metro stations, which can accommodate hundreds or

even thousands of bicycles. Such solutions will allow people to quickly get to a transport hub by bicycle and continue their journey by train or metro.

Identification of Locations and Demand for Bicycle Infrastructure At the initial stage of integrating bicycle transport with public transport, it is necessary to conduct an inventory of public transport stops and stations, including bus, tram, trolleybus stops, metro stations, railway platforms and other transport and transfer points. The main purpose of such a survey is to identify places where the development of bicycle infrastructure will be most useful. Preference is given to nodes with a high passenger flow, which exceeds 1000 passengers per day. It is in such places that there is the greatest potential for connecting bicycle transport with the public.

For a more substantiated assessment of the legality of placing bicycle parking lots, it is also necessary to take into account the intensity of bicycle traffic in this area. The determination of this parameter can be made using modern reporting methods, in particular the use of GPS data from mobile applications for cyclists, analysis of video surveillance at intersections and streets, as well as the results of field research. The information obtained allows us to identify the main routes of cyclists and indicate the concentration of cycling.

An important stage of the study is also conducting a sociological survey of residents of the city or a separate district. The results obtained allow us to assess the possible demand for a “Bike & Ride” infrastructure. In addition, it is advisable to analyze information on the modal share, which reflects the group of trips made by the above means of transport. Analysis of this indicator makes it possible to assess the current state of mobility in the city and the prospects for the development of cycling transport.

Location of bicycle parking lots must meet certain technical and organizational requirements. First of all, it is necessary to ensure the convenience of using such facilities. The distance from the bicycle parking place to the entrance to the public transport station should not exceed 30 meters. In addition, bicycle parks must be well lit, have protection from precipitation and be equipped with anti-vandal structures. Special attention should be paid to the safety of bicycle storage.

Design and Organization of Bicycle Parking Facilities When planning a bicycle parking space, it is necessary to determine the type of bicycle parking. There are several main types of such structures. The most common are open U-shaped racks, which are used for short-term parking. For long-term storage of bicycles, closed bicycle boxes or special bicycle garages can be used. In large transport interchanges with limited space, it is advisable to use multi-level bicycle storage systems, which allow you to significantly raise the capacity of the parking without increasing the occupied space.

The number of bicycle parking spaces is determined by the average daily passenger flow at a particular transport interchange. Typically, typically the number of passengers using a given station or stop daily is between 5 or 10 percent. The design area required to accommodate one bicycle is approximately 1.5–2 m². In this case, it is necessary to take into account not only standard bicycles, but also electric bicycles, cargo bicycles and bicycles with trailers, which are gradually becoming popular in large cities.

For a more complete integration of bicycle transport with public transport, it is also important to provide for the possibility of transporting bicycles in vehicles. This is especially important for the metro, suburban trains, trams and electric trains. In some cases, special carriages or zones in transport equipped with bicycle racks can be used. Such solutions can significantly expand the possibilities of using bicycles for daily trips.

Modern technologies also play an important role in the development of bicycle infrastructure. The use of mobile applications allows users to plan multimodal routes that combine cycling and public transport. Such services can provide information on the availability of free spaces in bicycle parking lots, the best routes for cyclists, as well as public transport schedules. Information boards and signs with the “Bike & Ride” sign should be installed at all key transport nodes to facilitate orientation for users.

To assess the efficiency of the measures implemented, it is necessary to conduct constant monitoring of their results. The main criteria may be the number of bicycles parked daily at the appropriate sites, the percentage of bicycle parking spaces occupied, as well as a change in the structure of transport trips in the area. The reduction in the number of short car trips made in the project implementation area can be assessed

separately.

A study of the transport behavior of residents shows that bicycles are most often left in places where daily visit objects are concentrated. Such places include metro stations and large public transport stops, educational institutions, office centers, shops, administrative institutions, shopping and entertainment centers, markets, hospitals, parks and recreation areas. It is in these locations that bicycle parking is most appropriate.

Monitoring and Benefits of Bicycle Infrastructure Development

When designing bicycle parking lots, it is also important to consider the average duration of parking. In places of short-term stay, such as shops and cafes, small open parking lots are sufficient. On the other hand, near transport hubs or office centers, large parking lots designed for long-term storage of bicycles may be required. Analysis of changes in the occupancy of parking spaces during the day makes it possible to optimally determine the required number of spaces and predict the prospects for further expansion of the infrastructure.

The introduction of comprehensive steps for the development of bicycle infrastructure has a significant environmental and socio-economic effect. Increasing the share of bicycle trips contributes to a reduction in the number of private cars on the roads, which, in turn, leads to a reduction in traffic jams, a decrease in noise levels and reduced emissions of harmful substances into the air. In addition, the development of bicycle transport has a positive effect on the health of the population, as it stimulates an increase in the level of physical activity.

From an economic point of view, the development of bicycle infrastructure is relatively inexpensive compared to the construction of new roads or the expansion of existing ones. At the same time, the profit from such investments can be significant, as they contribute to increasing the mobility of the population, reducing transport costs and improving the quality of the urban environment. Thus, the development of bicycle infrastructure and its combination with public transport is a strategic vector of the development of modern cities, which contributes to increasing their environmental sustainability, transport efficiency and competitiveness.

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AUTONOMOUS VEHICLE IMPACT ON ROAD SAFETY

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Road safety is among the most pressing challenges of the modern world, directly influencing the population's standard of living, the performance of the economy, and the effectiveness of the transport system. Every year, millions of traffic incidents occur worldwide, resulting in severe human and material losses. A substantial share of crashes is commonly attributed to human factors—namely driver fault, including errors, inattention, fatigue, aggressiveness, and intentional violations of traffic regulations—an assessment supported by international research. Against this background, the