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DRIVER'S WORKING PLACE AND SAFETY: AN ANALYTICAL APPROACH

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Abstract: This article analyzes ergonomic conditions and safety factors at a driver's workplace. The study focuses on the ergonomic design of the car cabin, factors affecting driver health, and the main causes of road accidents. The research results contain important recommendations for improving driver safety and ensuring productivity.

Key words: driver safety, ergonomics, workplace, car cabin, road traffic accident

Drivers play an important role in the modern transport system. Their work requires a high level of attention and responsibility, as the safety of road users and the timely and safe delivery of cargo and passengers to their destinations depend precisely on the professional training and working conditions of the driver. Nevertheless, in practice, the workplace of drivers is rich in many risk factors that can negatively impact their health and productivity [1-3]. Prolonged movement, constant sitting in a static position, sedentary lifestyle, unfavorable environmental conditions (dust, noise, sharp temperature fluctuations), stress, and fatigue - all of this increases the risk of occupational diseases, orthopedic problems, and car accidents. The ergonomically correct organization of the driver's workstation is one of the crucial factors in ensuring the overall safety of the vehicle. Elements such as seat height, backrest angle, pedal and steering position, cabin temperature, ventilation and lighting systems directly affect the physical and mental state of the driver. The weakness of such conditions leads to attentiveness, slowed reflexes, and a decrease in decision-making speed. In recent years, manufacturers have been paying great attention to making the driver's workplace ergonomic and safe. Automatic safety systems, driver assistance functions, adaptive seats, and modern climate control systems are being implemented in vehicles. However, the effectiveness of these technologies largely depends on their proper design and how the driver perceives and operates them [4-5].

This article aims to evaluate the driver's workplace from an ergonomic and safety perspective, identify existing problems, and develop scientifically grounded recommendations for their elimination. According to the research direction, we draw conclusions about their working conditions, health problems, and attitudes toward safety technologies based on surveys and observations conducted with the participation of real drivers. Thus, it is planned to develop practical recommendations for car manufacturers and traffic organizers.

This study was aimed at a comprehensive assessment of ergonomic conditions and safety factors at the driver's workplace and was conducted using a combination of several research methods. The study was organized in three stages: theoretical analysis, empirical observation, and statistical analysis.

A road traffic accident (RTA) is an event involving a moving vehicle that causes bodily harm or financial or technical losses.

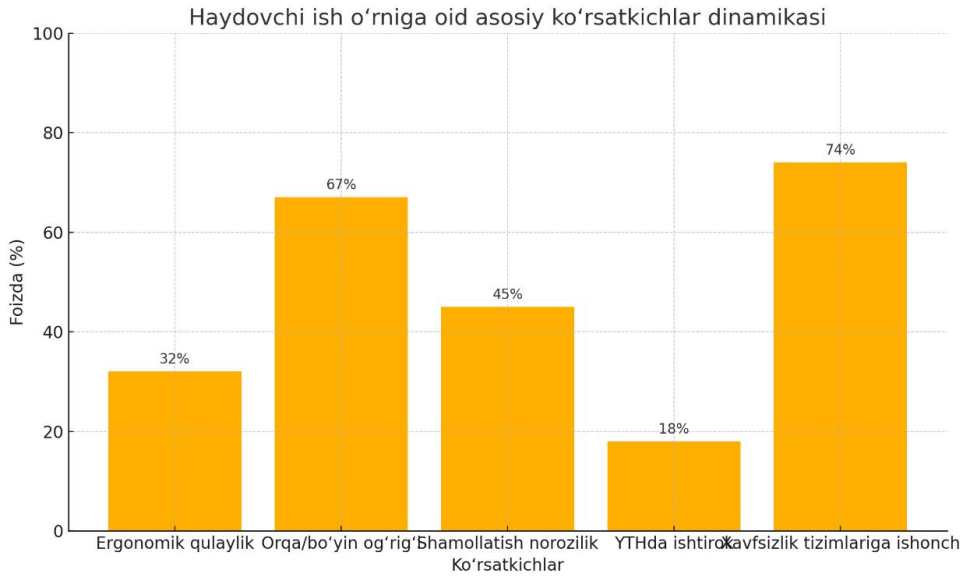
High confidence in active safety systems - 74%: 74% of participants stated that they feel safer if modern safety systems are available - for example, ABS (Anti-lock Braking System), ESP (Electronic Stability Program), and ADAS (Advanced Driver Assistance Systems). However, those who do not know how these systems work also constitute a much higher proportion.

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Active safety systems are technologies that assist the driver during the vehicle's movement and serve to reduce the probability of accidents. For example, automatic braking, off-line warning, or adaptive cruise control.

Indicators Table view

No	Indicator	Result (%)	Commentary
1.	Workplace rated as ergonomically comfortable	32%	Almost 1 in 3 drivers
2.	Complaining of back and neck pain	67%	Musculoskeletal strain present
3.	Those who found the ventilation/heating system inadequate	45%	Microclimate problem present
4.	Accidents in the last 3 years	18%	Negative impact on security
5.	Highly trusted security systems	74%	The demand for technology is high



Using this graph, you can draw the following dynamic conclusions:

Back and neck pain stand out as the highest problem (67%).

The level of trust in safety systems is relatively high (74%), which indicates that drivers need modern technologies. Although the share of those involved in accidents is relatively low (18%), this situation should not be ignored. There is dissatisfaction with the ventilation system and problems with workplace ergonomics, which negatively affects the health and productivity of the driver. The results of the conducted study clearly demonstrated the scale of problems existing in the driver's workplace. According to statistics, only 32% of the surveyed drivers considered their workplace ergonomically comfortable. This indicator indicates that the workplace of most drivers does not correspond to the human body structure, the seats are not properly adjusted, and there are problems such as the uncomfortable placement of control elements.

It can be concluded that improving the driver's workplace requires the joint efforts of not only car manufacturers but also transport organizations, road safety services, and health and occupational

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safety authorities. The introduction of seats that meet ergonomic standards, the improvement of microclimate systems, the standard installation of safety technologies on vehicles, and most importantly, regular training of drivers in ergonomics, health, and safety will serve as important tools in reducing problems in this field. In the future, it is necessary to conduct additional scientific research in this direction, develop and widely implement design approaches that take into account human health and psychological state in new cars. After all, a safe and comfortable workplace serves the traffic safety of not only the driver but society as a whole.

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