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Analysis of road transportation incidents and its role in providing road safety

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ABSTRACT

This article examines the place and role of analysis in the road safety system, from the point of view of the basis for making management decisions. The types of analysis of road traffic accidents are highlighted, and indicators of accidents are analyzed, their advantages and disadvantages are revealed.

It is noted that the comparison method is used as the main method for analyzing accidents, for the use of which it is necessary to clearly understand which objects, processes, factors should be compared with each other, according to what characteristics, properties, indicators a comparison should be made, what specific calculation procedure should be put into basis of comparison. Special attention should be paid to the study and comparison of the dynamics of change in accident rate indicators, which is the most common method of analysis, both absolute indicators and any specific and relative indicators. There are several main methods for studying and comparing the dynamics of changes in the state of accidents, which can be effectively used to assess the results of activities to ensure road safety, identify unfavorable trends, and also serve as the basis for further analysis aimed at clarifying the reasons for these unfavorable changes in order to necessary preventive measures.

A method for analyzing road traffic situations is considered, which makes it possible to form the ability to predict the development of events on the roads, as well as designed to prevent road traffic accidents.

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Йўл-транспорт ходисалари тахлили ва унинг йўл харакати хавфсизлигини таъминлашдаги роли

Калит сўзлар: Йўл-транспорт ҳодисаси Йўл ҳаракати ҳавфсизлиги Таҳлил Йўл ҳаракати ҳавфсизлигини таъминлаш Абсолют кўрсаткичлар Нисбий кўрсаткичлар Солиштирма кўрсаткичлар.

АННОТАЦИЯ

Ушбу мақолада бошқарув қарорларни қабул қилиш асоси нуқтаи назаридан йўл ҳаракати хавфсизлигини таъминлаш тизимида таҳлилнинг ўрни ва роли кўриб чиқилган. Йўлтранспорт ҳодисалари таҳлили турлари ажратилган ҳамда авариялар кўрсаткичлари таҳлил қилиниб, уларнинг афзаллик ва камчиликлари аниқланган.

Таъкидланишича, таққослаш усули аварияларни таҳлил қилишнинг асосий усули сифатида ишлатилади, улардан фойдаланиш учун қайси объектлар, жараёнлар, омиллар бир-бири билан таққосланиши кераклигини аниқ билиш керак, қандай тавсифларга, хусусиятларга, кўрсаткичларга кўра таққослаш керак, қандай аниқ хисоблаш тартибини киритиш керак. Абсолют кўрсаткичлар ва хар қандай нисбий кўрсаткичларнинг энг солиштирма ва кенг тарқалган тахлил усули бўлган авариялик кўрсаткичларининг ўзгариши динамикасини ўрганиш ва таққослашга алохида эътибор қаратиш лозим. Йўл харакати хавфсизлигини таъминлаш бўйича фаолият натижаларини бахолашда, ноқулай тенденцияларни аниқлашда самарали фойдаланиш мумкин бўлган ва авариялар холатини ўзгартириш динамикасини ўрганиш ва таққослашнинг бир нечта асосий усуллари ажратиб кўрсатилган, шунингдек зарур профилактика чораларини кўриш учун ушбу ноқулай ўзгаришларнинг сабабларини аниқлашга қаратилган кейинги таҳлил учун асос бўлиб хизмат қилади.

Йўллардаги воқеалар ривожланишини башоратлаш имкониятларини шакллантирадиган ҳамда йўл-транспорт ҳодисаларини олдини олишга мўлжалланган йўл-транспорт вазиятларни таҳлил қилиш усули кўриб чиқилган.

Анализ дорожно-транспортных происшествий и его роль в обеспечении безопасности дорожного движения

Ключевые слова: Дорожно-транспортное происшествие Безопасность дорожного движения Анализ Обеспечение безопасности дорожного движения Аварийность Абсолютные показатели Относительные показатели Удельные показатели.

АННОТАЦИЯ

В данной статье рассматриваются место и роль анализа в системе обеспечения безопасности дорожного движения, с точки зрения основы при принятии управляющих решений. Выделены виды анализа дорожно-транспортных происшествий, а также проанализированы показатели аварийности, выявлены их преимущества и недостатки.

Отмечается, что в качестве основного метода анализа аварийности применяется метод сопоставления, для использования которого нужно четко представлять, какие объекты, процессы, факторы следует сопоставлять между собой, по каким характеристикам, свойствам, показателям должно проводиться сопоставление, какая конкретная расчетная процедура должна быть положена в основу сопоставления. Отдельного внимания заслуживает сопоставление изучение И изменения динамики показателей аварийности, являющейся наиболее распространенным методом анализа, как абсолютных показателей, так и любых удельных и относительных показателей. Выделяется несколько основных методов изучения и сопоставления динамики изменения состояния аварийности, которые могут эффективно использоваться для оценки результатов деятельности по обеспечению безопасности дорожного движения, выявлению неблагоприятных тенденций, а также являются основанием для дальнейшего анализа, направленного на выяснение неблагоприятных изменений причин этих С целью принятия необходимых предупредительных мер.

Рассмотрен метод анализа дорожно-транспортных ситуаций, позволяющий формировать способности прогнозировать развитие событий на дорогах, а также рассчитанный на предупреждение дорожно-транспортных происшествий.

INTRODUCTION

Due to the fact that analysis and management are an inseparable single process, which has different content depending on the specifics of the management object, the quality and effectiveness of decisions made in the field of road safety are in direct proportion to the depth and completeness of the analysis of data on road traffic. transport accidents, from identifying objective causes and conditions for their occurrence.

In social systems, which include the road safety management system, the main object of management is a person. It is for such systems that the high responsibility of the decisions made is characteristic, as well as an increased degree of uncertainty in the conditions in which decisions are made. The social system involves tens and hundreds of thousands of people in its sphere of influence. In the development of decisions, the methods of logic, psychology, philosophy, economics, sociology, mathematics and other areas of knowledge are used, which allow for a deeper analysis, more reliable forecasting and more effective influence on social, technical and economic processes [1, 2].

Based on scientific developments in the field of social systems management, a number of conditions have been formulated that must be met in order for management to be real and effective.

MATERIALS AND METHODS

The main purpose of the analysis of road traffic accidents is to systematically search for opportunities to prevent them, as well as to identify the guilt of those involved.

Today the following types of analysis of road traffic accidents can be distinguished [3, 4, 5]:

– analysis of single road traffic accidents (deterministic, causal, legal analysis, examination of road traffic accidents);



– analysis of road traffic accidents as a mass phenomenon (parametric, probabilistic, statistical analysis).

The analysis of single road traffic accidents is based on a detailed study of the causes of a specific road traffic accident and its consequences, the analysis of road traffic accidents as a mass phenomenon is based on the use of accounting data about it, statistical data on drivers, vehicles, etc.

The general scheme of the cause-and-effect approach to the analysis of road accidents is the construction of a model of the mechanism of their commission, which makes it possible to identify measures for their prevention.

For the analysis of single road traffic accidents in order to establish a connection between the fact of a road traffic accident and violations of the rules and regulations governing road safety, the possibilities of using probabilistic estimates of causal relationships are very limited, since the conclusions of the analysis, being the basis for prosecution, must meet stringent high confidence requirements.

When analyzing road accidents as a mass phenomenon, it becomes clear what are the trends in the indicators characterizing the accident rate, what factors are associated with the greatest risk of their occurrence, and on what efforts should be concentrated to prevent them.

Based on the comparison of different indicators, it is possible to establish which factors and conditions increase the likelihood of road accidents and to what extent [5, 6].

The findings can also be used in relation to individual road traffic accidents when justifying measures to prevent them.

RESULTS

As the main method for analyzing accidents, the comparison method is used, for the use of which it is necessary to clearly understand which objects, processes, factors should be compared with each other, according to what characteristics, properties, indicators a comparison should be made, what specific calculation procedure should.

For the analysis of accidents, absolute, specific and relative indicators are used.

Absolute indicators are formed as a result of collecting data on single road traffic accidents. The main purpose of absolute indicators is to reflect the scale of accidents, assess the damage from road accidents, and analyze the dynamics of accidents. Most often, the absolute indicators include the number of road accidents, the number of deaths, the number of injured, the number of road accidents due to technical malfunction of cars, etc.

To analyze the accident rate, it is also necessary to use absolute indicators characterizing the conditions in which activities to ensure road safety are carried out. The set of indicators characterizing these conditions depends on the level of road safety management (republican, regional, organization carrying out transportation activities), the main among them are the following:

 characteristics of the socio-economic development of the district or region (population size, territory);

number, condition and development of the vehicle fleet;

– condition and development of the road network (length of roads, traffic intensity, including along road sections and at different intervals);

 availability and efficiency of the ambulance system, monitoring compliance with road safety requirements; - number of organizations carrying out different types of transportation activities;

– operating conditions of transport organizations (number and structure of the fleet, data on transportation routes, number, length of service, age, qualifications of the driver's staff, etc.).

But it should be noted that absolute indicators do not provide complete information for a comparative analysis of the level of road safety, therefore, they are rarely used for these purposes. For example, in terms of the absolute number of road traffic accidents, deaths and injuries, it is impossible to compare the level of road safety in different regions, since there are differences in the number of vehicles, length of roads and other specific features that objectively affect these indicators.

Specific indicators represent the percentage of one absolute accident rate from another. The most often used is the proportion of road traffic accidents due to a certain type of traffic violations in the total number of road traffic accidents; the proportion of injured (dead, injured) of different categories of road users in the total number of injured (dead, injured); the proportion of road traffic accidents caused by drivers of certain types of vehicles in the total number of road traffic accidents caused by drivers; the proportion of certain types of road traffic accidents in the total number of road traffic accidents; the proportion of road traffic accidents in cities, other settlements, on highways in the total number of road traffic accidents; the proportion of road traffic accidents committed by drunk drivers, in.

Thus, specific indicators are used to describe the structure of accidents.

Relative indicators are formed by dividing one absolute indicator by another. The most often used are such relative indicators as the number of road traffic accidents, killed or injured per 1 million km of vehicle run, per 10 thousand vehicles, per 10 thousand drivers, per 100 thousand population, per 100 km of motor roads etc.

DISCUSSION

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Special attention should be paid to the study and comparison of the dynamics of change in accident rate indicators, which is the most common method of analysis, both absolute indicators and any specific and relative indicators. There are several basic methods for studying and comparing the dynamics of changes in the state of accidents, the expediency of which is confirmed not only by the practice of analyzing accidents, but also in many other fields of knowledge.

The main methods for analyzing the dynamics of accidents include assessing changes in accident rates [7, 8]:

in relation to the previous period of time (point to point);

in relation to the base period of time;

- in relation to the average value for several previous years (point to average);

- average indicators, for example, according to the average for the last two five-year periods (average to average).

The results of the analysis of the dynamics of accidents are very often presented for clarity in the form of tables, graphical dependencies, diagrams, maps.

The study and comparison of the dynamics of changes in accident rates are usually carried out to assess the results of activities to ensure road safety, to identify unfavorable trends, which are the basis for further analysis aimed at clarifying the reasons for these adverse changes in order to take the necessary preventive measures.



CONCLUSIONS

Thus, one of the main ways to prevent road traffic accidents is to identify and analyze the causes that gave rise to them. At the same time, it should be noted that if, as a result of the investigation of road traffic accidents, malfunctions of specific units, components or mechanisms of the vehicle, deficiencies in the maintenance and engineering of the road or road infrastructure, omissions in the processes of organizing and regulating traffic that led to the occurrence of an accident are found, then often develop appropriate technical solutions aimed at eliminating the identified factors. The situation is quite different when it turns out that the main cause of the accident is the human factor. In these cases, it is much more difficult to establish the specific causes of errors in the actions (or inaction) of the driver or pedestrian.

In these cases, a method called traffic analysis is most effectively used.

The results of the study of dangerous road traffic situations are mainly used in transport pedagogy, from preparing children for participation in road traffic, ending with special training for people who want to drive a car. The importance of the results of studies of dangerous road traffic situations lies precisely in their a priori, that is, they are aimed at developing the ability to predict the development of events on the roads, are designed to prevent not only repeated, but already the first road traffic accidents.

In fact, every road accident, regardless of the causes and conditions of its occurrence, is instructive to a certain extent both for drivers (in the first place) and for other road users. All the circumstances characteristic of dangerous road traffic situations, as a result of which a specific incident has arisen (place and time, illumination, etc.), are associated with this incident and become alarming for the future, that is, meaningful for a person, and this alone in to a certain extent, it avoids danger when faced with similar situations or their elements.

Moreover, knowledge of the danger, not only causes a conscious opposition to it, but also generates unconscious self-regulation processes.

Therefore, it is so important to warn drivers in advance about dangerous road traffic situations that they may encounter in their daily work. This is what most of the ongoing studies of road traffic situations are designed and directed towards.

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