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ANALYSIS OF THE SPEED DISTRIBUTION OF VEHICLES INVOLVED IN ACCIDENTS ON URBAN ROADS

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The aim of this study is to conduct a comprehensive statistical analysis of the speed distribution of vehicles involved in road traffic accidents (RTAs) with casualties on the urban road network of the city of Kharkiv (Ukraine). The empirical basis of the research consists of official police investigation materials covering 294 recorded RTA cases. Within the scope of the study, empirical speed distributions were constructed and the main statistical characteristics were analyzed, including the mean value, mode, as well as the coefficients of skewness and kurtosis.

The results indicate that the highest concentration of RTA cases occurs within the speed interval of 50–60 km/h, with an average speed of 53 km/h. It was found that in 61% of the cases the legally established urban speed limit of 50 km/h was exceeded; in 13% of the cases the speed exceeded 70 km/h, and in 4% of the cases it exceeded 100 km/h. The analysis of the empirical distribution shape revealed pronounced right-sided skewness, significant kurtosis, and a high modal frequency, which prevents an adequate approximation by the normal distribution or other closely related theoretical models. A comparative analysis of speed distributions for specific types of road traffic accidents, such as vehicle-to-vehicle collisions and pedestrian impacts, demonstrated statistical characteristics similar to those of the overall sample. The observed features of the shape and structure of the speed distributions may be attributed both to imperfections in the existing urban speed enforcement system and to the specific methodologies used to estimate vehicle speeds during accident investigations.

The findings of this study have both scientific and practical significance, as they may be used to further investigate the impact of speed as a factor in road traffic safety and to provide an additional analytical tool for assessing the probability of road traffic accidents as a function of vehicle speed.

Keywords: road traffic accident, speed, pre-accident speed, determining vehicle speed, speed analysis, accident analysis, urban traffic safety.

Introduction

Despite measures to improve traffic management and introduce intelligent transport systems, the high level of road accidents in large cities remains the biggest problem in the field of transport safety. Among all the factors that directly affect road safety, it is the speed of the car that is of paramount importance, since they affect both the probability and severity of the consequences of an accident. Exceeding the speed limit by drivers is usually listed as one of the leading causes of accidents worldwide. Therefore, the study of the speed factor in connection with road accidents is of great interest to both scientists and practitioners who deal with the issues of speed management on highways and the street and road network of cities. A separate topical area is the study of the speed distribution of vehicles directly involved in an accident. This approach combines practical significance for transport policy and traffic management with the theoretical tasks of analyzing the patterns of drivers behavior in difficult urban conditions.

The issue of the influence of vehicle speed on the probability and severity of accidents is one of the key areas of research in transport safety. A frequently used method of research is to compare the distribution of speeds of cars involved in an accident with the speed of a control group of cars. Most studies analyzed either the distribution of speeds for traffic flow as a whole, or the average values typical for different categories of streets and roads. Back in the 1980s, the Power Model was proposed, which showed that the probability of a car getting into an accident increases exponentially with increasing speed. More recent meta-analyses have confirmed this relationship by refining the coefficients of the model (Elvik et al., 2019) [1]. A 1% increase in average speed has been shown to increase the risk of fatal crashes by about 4%.

Works (Nassiri & Mohammadpour, 2023; Anderson et al., 2023) [2, 3] provide an overview of the most well-known studies on the relationship between the risk of traffic accidents and vehicle speed. A positive correlation between speed and crash can be noted, which is described by an exponential or power function. A study (Kriswardhana et al., 2023) [4] noted that a decrease in average speed of 1 mph, depending on the type of urban road, resulted in a decrease of 3 to 6% in the number of accidents. In (Azin et al., 2025) [5], the authors note that in urban traffic, specific external factors can significantly affect both the speed of cars and the likelihood of an accident, which hides and makes it difficult to identify the relationship between speed and the probability of an accident. In the paper (Doecke et al., 2021; Etika et al., 2023; Salas & Adkins, 2024) [6-8] the relationship between the speed of vehicles and road transport safety is considered. The authors conduct a systematic analysis of the literature and focus on the probability of a car being hit by an accident and the severity of the consequences. It is indicated that speeding or choosing a speed inadequate to road conditions is the main cause of accidents in many countries, including Europe. However, it is noted that the parameters of the Power Model differ in developed and developing countries, where the impact of speed may be stronger due to low levels of infrastructure, non-use of seat belts and outdated fleets. The described publications analyze individual main streets of cities and do not cover the entire road network of the city. Also, in such studies, a separate analysis of the cars speed distribution when they get into an accident is not carried out. This approach does not allow us to consider specific questions, such as: at what speeds do accidents occur?

Many researchers note a significant impact of the speeding factor on the risk of an accident. The paper (Kim et al., 2022) [9] notes that urban roads account for a relatively higher number of deaths related to speeding. In the work (Soole et al., 2023) [10] it is noted that up to 32.5% of all accidents with victims were associated with speeding by more than 20 km/h and up to 19.2% were associated with speeding up to 10 km/h.

Some studies consider pre-crash speed (speed before impact) to be a key predictor of the likelihood of serious consequences of a traffic accident. Wang et al., 2025 [11] have shown that a higher near-crash rate increases the likelihood of more severe outcomes. At the same time, there are differences for different time periods and speed ranges. The paper (Lubbe et al., 2024) [12] also shows the relationship between the pre-accident speed and the severity of the consequences of an accident. At the same time, the estimated impact speed was 59 km/h.

The article (Bucsuházy et al., 2018) [13] is devoted to the study of the speeds of vehicles before an accident, where the speeds of the participants in the accidents are analyzed, reconstructed using the Virtual Crash program based on the materials of investigations of 261 cases of accidents in the Czech Republic. The values of the pre-accident speed ranged from 5 to 140 km/h with an average value of 46.9 km/h.

Thus, well-known studies operate with average values of pre-crash speeds or present results for individual types of road network sections. A detailed analysis of the distribution shape (skewness, excess, mode, quantiles) for the entire set of traffic accident scenarios is not presented in contemporary publications. This task is relevant, since the study of characteristic distribution quantiles allows us to study various aspects of the problem of speeding by drivers and their relationship with the risks of accidents.

Another important factor is that the overwhelming majority of studies have been conducted for developed countries of advanced motorization, while in developing countries the lack of sufficiently developed transport infrastructure and the level of traffic management can affect the strength of the relationship between speed and accidents. In particular, study (Ryabushenko et al., 2019) [14] showed that the speed distribution parameters of cars involved in traffic accidents in a large Ukrainian city changed little after the general speed limit was reduced from 60 to 50 km/h.

Obviously, the method of estimating vehicles speeds immediately before an accident can affect the accuracy and reliability of the results. Data on the speed of cars to study its relationship with the occurrence of an accident can be obtained by interviewing drivers or studying driving histories (Karrouchi et al., 2023; Zhang, et al., 2025) [15, 16]. However, this method is subject to the influence of the subjective factor. Another approach is to analyse police investigations to ensure a sufficient sample of road accidents. Such a method, obviously, will allow you to appeal with more reliable data, since standard methods of auto technical examination are used to determine the speed in this case.

Ample opportunities for collecting reliable data on the speed of vehicles in an accident are provided by the use of on-board Event Data Recorder (EDR) systems (Spek & Otjens, 2023) [17]. However, this method of obtaining data limits the sample of accidents to cases where the vehicle was equipped with such systems and is therefore not suitable for research in developing countries with a significant number of obsolete vehicles.

Therefore, for the conditions of Ukraine, the use of the results of police reports on the investigation of an accident is the optimal method of obtaining data on the speed of vehicles involved in an accident.

The purpose of this study was to analyze the peculiarities of the distribution of speeds of cars involved in an accident in a large city of Ukraine, based on the data of police investigations of real cases of road accidents. To achieve the goal, the following research objectives were set:

1. To form a representative sample of data on accidents, including information on the speed of vehicles.
2. To analyze the data obtained by types of accidents.
3. Build a histogram of the distribution of pre-accident velocities and conduct a statistical analysis (determination of the median, mode, quantiles, testing hypotheses about the type of distribution).
4. To analyze the parameters of speed distributions for certain types of accidents and to identify possible differences.

Materials and Methods

To analyze the distribution of speeds of vehicles that got into an accident, data for the Kharkov (Ukraine) with a population of about 1.5 million people were used. Zonal speed limits are not applied on the street network of the city, that is, there are no urban zones with a reduced speed limit, nor highways with an increased speed limit. Thus, the current speed limit for all streets of Kharkiv is 50 km/h. On some dangerous sections of the streets, local speed limits of up to 40 or 30 km/h are introduced with the help of road signs. Thus, 7 automatic speed cameras and 4 more mobile police officers worked on the city's road network Portable speed detectors were used.

The source material for the study was archival files with the results of auto technical examinations based on the materials of criminal investigations of road accidents, which were carried out by specialists of the Kharkiv Scientific Research Expert and Criminological Center of the Ministry of Internal Affairs of Ukraine cases of road accidents for which, as a result of the investigation, the speed of cars was determined immediately before the accident (at the time of the occurrence of a dangerous road situation). Since the materials of criminal investigations were used, in all accidents there were victims who received at least moderate bodily injuries. The pre-accident speed of cars was established using standard methods of auto technical examination, such as the analysis of trace information from the scene of the accident, the analysis of damage to vehicles, the analysis of video recording of the moment of the accident, computer modeling, and interviewing the participants of the accident. The total sample size was 294 accidents.

At the first stage, a table of initial accident data was formed in Excel (Microsoft Corporation, USA), which included information about the speed of the car at the time of danger. Since the archival materials of the accident investigations are stored in paper form, the data were entered into the table manually. For further data processing, construction and analysis of the speed distribution, the built-in functions of the Statistica (StatSoft, USA) were used. In particular, the Normal Probability Plot graphical test, as well as the standard Kolmogorov-Smirnov and Shapiro-Wilk tests, were used to test the hypothesis of the normality of the distribution.

Results and Discussion

Figure 1 illustrates the distribution of the initial sample by type of accident.

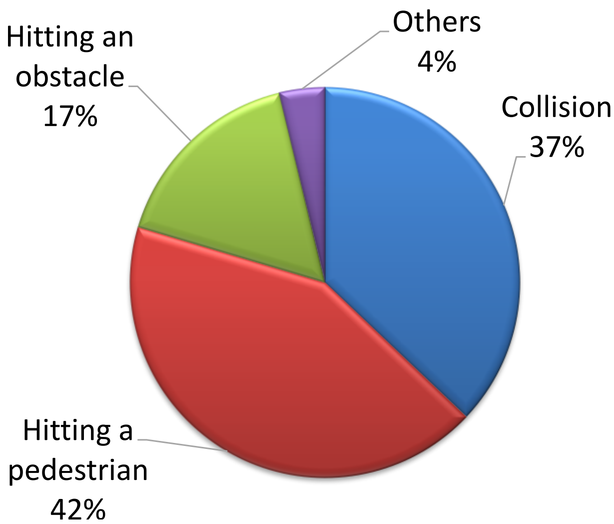

Fig. 1. Distribution of the data sample by type of accident

The largest number of accidents in the sample were collisions with pedestrians (125 cases). In second place were car collisions (109 cases). Hitting an obstacle was 49 cases.Other accidents include rollover, hitting a stationary vehicle, hitting a cyclist and drop loads. As can be seen, the bulk of cases are Hitting a pedestrians and vehicle Collision, which is typical for large cities in Eastern Europe. The relatively low number of collisions with cyclists (4 cases) is explained by the low level of development of the urban cycling infrastructure and the lack of a culture of using bicycles.

The histogram of the velocity distribution provides a visual visualization of the data distribution, allowing you to instantly assess the shape (bevel, modality), identify the most likely speed ranges and possible anomalies. Figure 2 shows the histogram of the distribution of speed over intervals. Table 1 is a table of variation series for the master sample of the data.

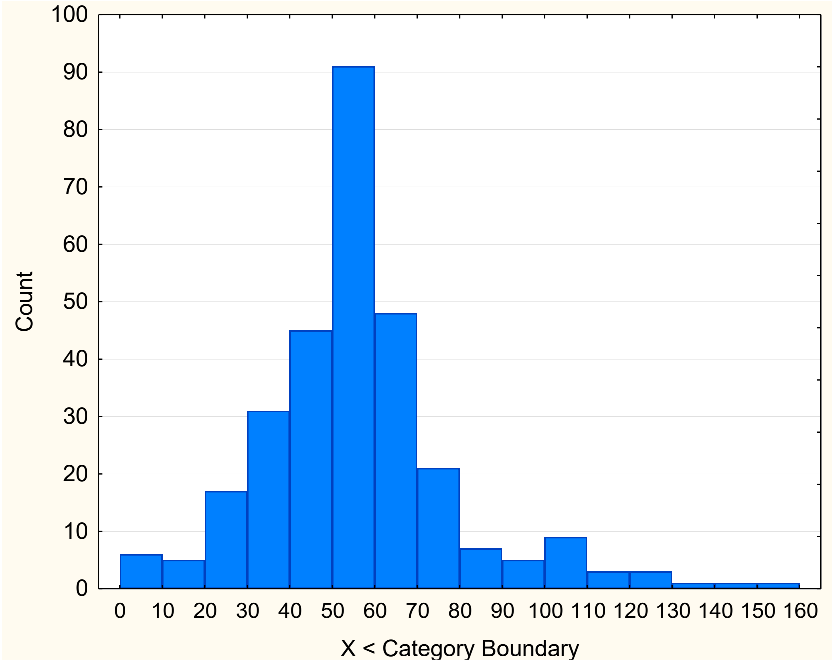

Fig. 2. Histogram of the speed distribution of vehicles

The histogram of the speed distribution for the total sample shows a pronounced right-hand bias (positive skew). The peak of accidents is observed in the zone of low and medium speeds, and the highest frequency falls on the interval of 50 - 60 km/h.

Table 1

The table of variation series for the master sample of the data

Interval bounds	Count	Cumulative Count	Percent	Cumulative Percent
0<=X<10	6	6	2,0408	2,0408
10<=X<20	5	11	1,7007	3,7415
20<=X<30	17	28	5,7823	9,5238
30<=X<40	31	59	10,5442	20,0680
40<=X<50	45	104	15,3061	35,3741
50<=X<60	91	195	30,9524	66,3265
60<=X<70	48	243	16,3265	82,6531
70<=X<80	21	264	7,1429	89,7959
80<=X<90	7	271	2,3810	92,1769
90<=X<100	5	276	1,7007	93,8776
100<=X<110	9	285	3,0612	96,9388
110<=X<120	3	288	1,0204	97,9592
120<=X<130	3	291	1,0204	98,9796
130<=X<140	1	292	0,3401	99,3197
140<=X<150	1	293	0,3401	99,6599
150<=X<160	1	294	0,3401	100,0000

Extended statistical characteristics of the distribution are shown in Table 2. Analyzing the obtained parameters, it can be noted that the highest density of distribution is observed for the interval of 50-60 km/h, the average value is 53 km/h, the median and mode are 50 km/h with a relatively large value of the modal frequency.

Table 2

Statistical characteristics of the distribution of vehicles that were involved in an accident

Statistical characteristics	Values	Statistical characteristics	Values
Valid N	294	Coefficient of variation	43.03
Mean	53.01	Standard Error	1.33
Median	50	Skewness	1.08
Mode	50	Std.Err. Skewness	1.14
Frequency of Mode	68	Kurtosis	2.68
Standard Deviation	22.81	Std.Err. Kurtosis	0.28

Considering the results of the analysis of the speed distribution of cars involved in an accident, it can be noted that the highest density of distribution is observed for the interval of 50-60 km/h, the average value is 53 km/h, the median and mode are 50 km/h with a relatively high value of the modal frequency. Exceeding the speed limit of 50 km/h established for urban roads occurred for 61% of accidents, in 13% of cases drivers moved at a speed of more than 70 km/h. Exceeding the mark of 100 km/h was recorded for 4% of cases.

Fig. 3 shows that the distribution has a positive asymmetry with a significant excess. The high value of the modal frequency can be explained by the peculiarities of the analytical methods used in the examination of accidents, which often give a range of permissible speeds or an approximate value of the speed, which is rounded to the decimal value.) indicates the presence of a sharper peak compared to the normal distribution. A positive skewness indicates a concentration of velocity values at the lower end of the scale, and the presence of a "tail" of distribution on the right. Although low speeds are more likely relative to the median than high speeds, the latter can take on larger values.

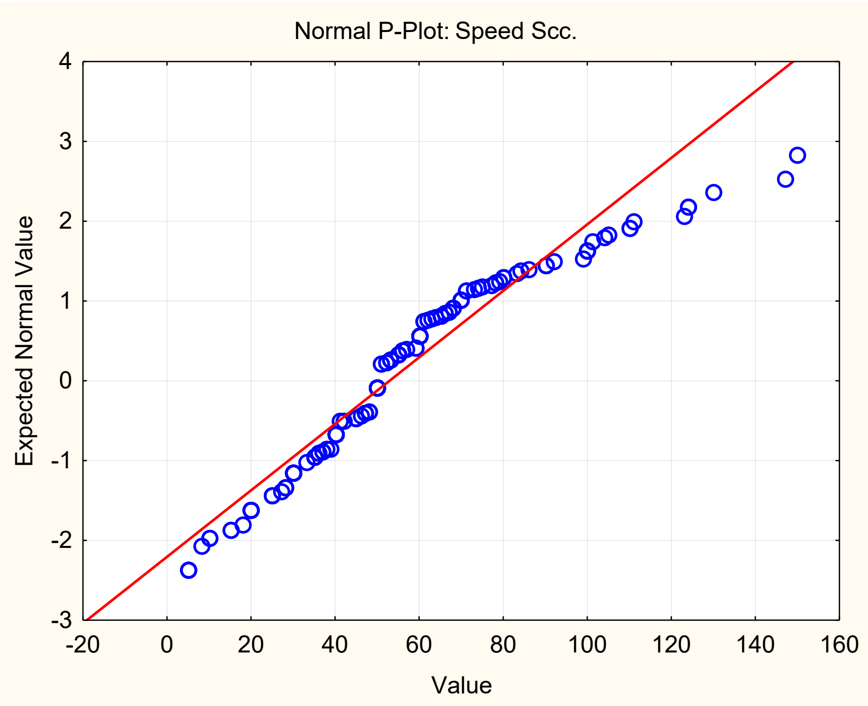

Fig. 3. Normal Probability Plot of the speed distribution of vehicles that were involved in an accident

A comparison of the data given in Table. 1. The absolute value of asymmetry and kurtosis with their standard errors does not allow us to accept the hypothesis of the normality of the distribution. Also to test the normality hypothesis, Figure 3 shows the results of the Normal Probability Plot graphical test, and Figure 4 shows the superposition of the normal distribution curve and the results of the Kolmogorov-Smirnov and Shapiro-Wilk test.

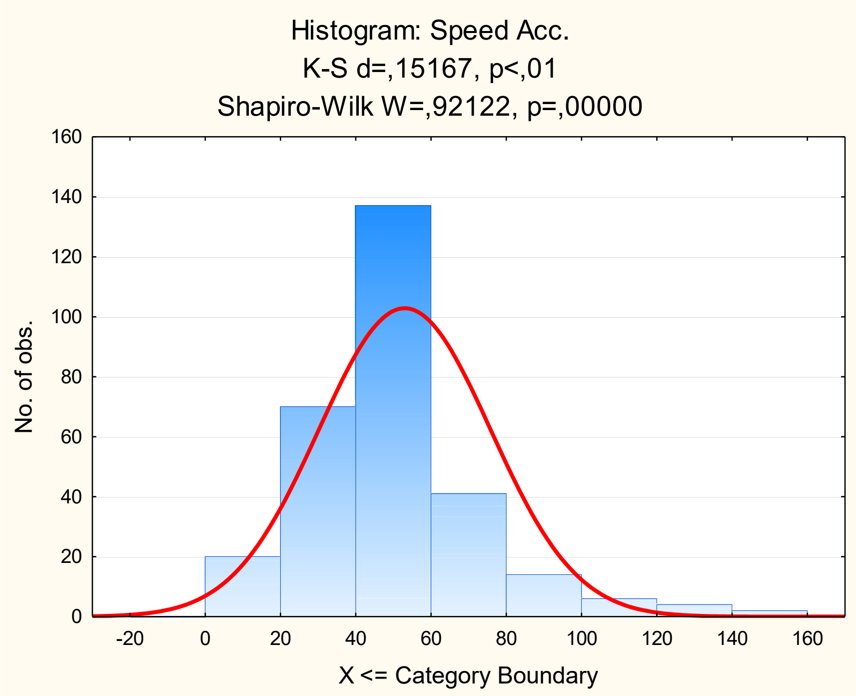

Fig. 4. Overlay of the normal distribution plot and the results of tests for normality

As can be seen from Fig. 4, the empirical sampling quantiles have deviations from the normal distribution correspondence line (a convex deviation indicates the presence of light tails in the distribution). Figure 5 shows that the value of the Kolmogorov-Smirnov test statistic is $p < 0.01$, which gives grounds to reject the hypothesis of normal distribution. Also, the p-value of the Shapiro-Wilk test is less than the specified significance level of 0.05, which also indicates that the resulting distribution of vehicle speeds involved in accidents on city roads is abnormal.

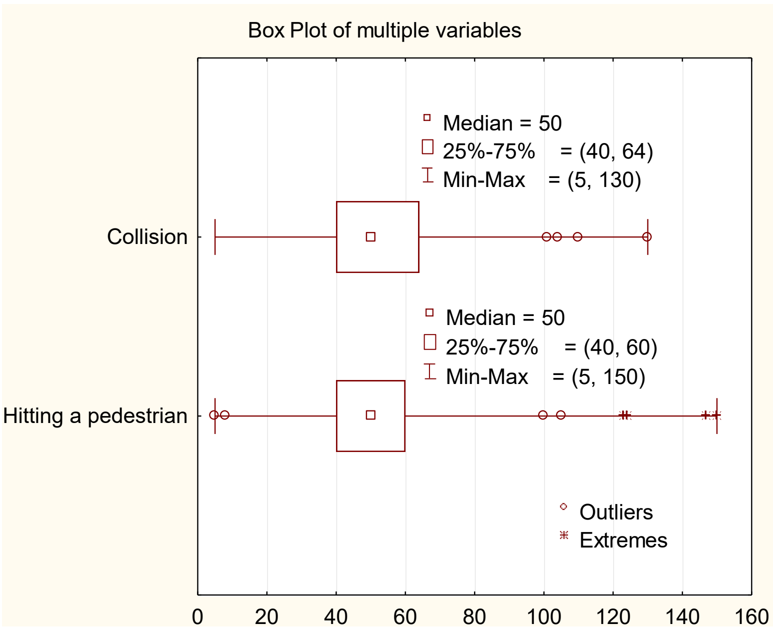

Fig. 5. Box-and-Whisker Plot of distributions for two types of accidents

A sufficiently large volume of data on vehicle speeds allows for additional analysis separately for two samples for such types of accidents as vehicle Collisions and Hitting a pedestrians. This will allow to evaluate possible differences in the distribution of vehicle speeds caused by differences in the physics of these types of accidents. A convenient tool for this can be the Box-and-Whisker Plot (Fig. 5), which allows you to show the main characteristics of the distribution structure. Figure 6 also shows polygonal speed distribution graphs for two types of accidents with the largest number of cases.

Analyzing the Box-and-Whisker Plot, it can be seen that the speed distributions for the two types of crashes are grouped in the median value of 50 km/h, which means that in half of the cases, both collisions and pedestrian collisions occurred at a speed not exceeding the permitted limit. At the same time, the spread of data has some differences. The interquartile span (IQR) for pedestrian collisions is between 40 and 60 km/h, i.e. it is a narrow and symmetrical interval around the median. The interquartile span for collisions is wider (40-64 km/h), and the "whiskers" (the range from minimum/maximum to quantiles) are somewhat longer.

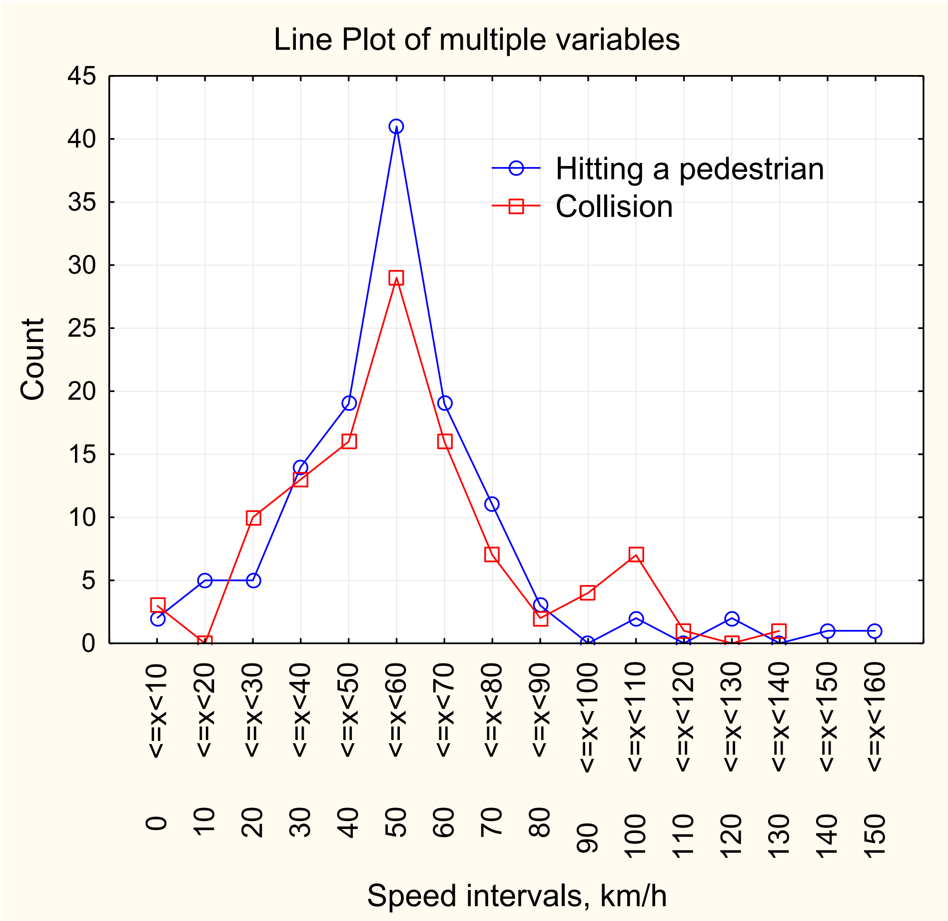

Fig. 6. Polygonal plots of distributions for two types of accidents

Analyzing the linear graph of the distribution of pre-accident velocities for the two types of accidents, only minor differences in the form of distributions can be noted. Both distributions have a pronounced peak in the 50–60 km/h zone with a sharp decrease after 60 km/h, while the distribution for collisions is more gentle. This indicates that most crashes occur at speeds close to the permitted limit, rather than at extreme exceedances. There is also a long "tail" up to 150 km/h.

The main statistical characteristics of the distributions are given in Table 3. It can be seen that the main statistical characteristics, as well as the form of speed distributions for individual types of accidents, practically coincide with similar characteristics for the general sample. The distribution for Hitting a pedestrian has a more pronounced excess. Thus, it can be said that the characteristics of the speed distribution of cars that have been involved in an accident on city roads do not depend on the type of accident.

Table 3

Statistical characteristics of distributions for two types of accidents

Statistical characteristics	Types of accidents	
	Vehicle collision	Hitting a pedestrian
Valid N	109	125
Mean	53.26	51.88
Median	50	50
Mode	50	50
Frequency of Mode	22	34
Standard Deviation	23.74	23.24
Coefficient of variation	44.58	44.79
Standard Error	2.27	2.08
Skewness	0.69	1.49
Std.Err. Skewness	0.23	0.22
Kurtosis	0.65	4.82
Std.Err. Kurtosis	0.46	0.43

It can be seen that the main statistical characteristics, as well as the form of velocity distributions for individual types of accidents, correlate well with similar characteristics for the general sample. The median and modal values of 50 km/h for both types of accidents indicate that in most cases the accidents occurred at a speed that formally did not exceed the established limit. This important observation indicates that the limit of 50 km/h is not in itself sufficient to prevent accidents. The problem is inadequate speed for specific road conditions (poor visibility, pedestrian zone, slippery surface, etc.). It is possible to note the high values of the standard deviation and the coefficient of variation for both types of accidents. This indicates a large variability in pre-crash speeds, when both very low and very high speeds are present in the sample. A positive skewness (Skewness > 0) indicates a right-hand bias and confirms the presence of a "dangerous tail" in the data – a significant number of crashes that occurred at speeds above the median. Kurtosis indicates some differences in the distributions for the two types of accidents. It can be noted that the velocities in collisions are distributed more predictably, and the distribution itself is mesocuric and closer to normal. The distribution for pedestrian collisions is more sharp-topped (leptocurtic).

Based on the results obtained, it is possible to recommend some directions for reducing accidents on the road network of large cities in Ukraine, which can also be useful in other developing countries. To combat the "dangerous tail" of high speeds, improved speed control and the introduction of Intelligent Speed Limitation (ISA) systems can have a significant effect. However, since half of the accidents occur at the permitted speed intervals, such measures will not lead to a qualitative reduction in the likelihood of an accident. Therefore, an effective additional measure can be the implementation of the concept of zonal speed limit, in which zones of reduced speed limit to 40 and 30 km/h will be allocated on the city street network.

Discussion

Although most of the accidents involved exceeding the speed limit, the impact of speeding on the likelihood of a car being involved in an accident requires further analysis, as the fact that the driver exceeded the speed limit does not mean that it will be listed as the cause of the accident in the investigation.

The high value of the modal frequency can be explained by the features of the analytical methods used in the examination of road accidents, which often give a range of permissible speeds or an approximate value of the speed, which is rounded to the decimal value.

It is known that in cases of pedestrian collisions, serious consequences of traffic accidents can occur at lower speeds than in other types of traffic accidents (Mizuno et al., 2022; Wang et al., 2024) [18, 19]. Therefore, for pedestrian collisions, one would expect relatively lower average and modal speeds compared to collisions. However, in fact, no such shift is observed. The reason may be that the study did not rank accident data according to the severity of the consequences.

Some modern methods of accident examination, such as the use of EDR data, analysis of records from on-board video recorders or traffic cameras, data from navigation and geolocation systems, can give more accurate values of the vehicle's speed before an accident than analytical calculation methods (Myung-Cheol et al., 2024) [20]. This could affect the nature of the distribution of these velocities, in particular, it would reduce the kurtosis by redistributing the modal value over adjacent velocity intervals. However, for the conditions of Ukraine, we do not have the opportunity to obtain a sufficient sample of data separately for more accurate methods of determining speed.

Also, the regional context will affect the distribution of speeds of cars that get into accidents on city roads. As influencing factors, we can indicate the general level of traffic organization, the level of technical means of traffic regulation, the presence of a smart city structure and especially automatic speed control systems. As already noted, the cases of accidents considered in the work occurred in the conditions of almost complete absence of speed control. It can be assumed that in the presence of an effective speeding control system, when most drivers will have to comply with the established speed limits, this may affect the speed distribution of cars involved in accidents.

Conclusions

In the work, the analysis of the distribution of speeds of cars that got into an accident on the road network of a large city of Ukraine was carried out. For this purpose, a representative database was collected based on the materials of police investigations of 294 accidents with victims for the period 2018–2021. The most common types of accidents in the sample are collisions with pedestrians (125 cases) and collisions with vehicles (109 cases). This confirmed the relevance of additional analysis of samples for these types of accidents.

Based on the results of histogram construction and statistical analysis of the data, it was found that the distribution of pre-accident velocities is not normal (according to the Kolmogorov-Smirnov and Shapiro-Wilk criteria) and is characterized by positive asymmetry (Skewness = 1.08) and sharpness (Kurtosis = 2.68). The largest number of accidents (30.95%) falls within the speed range of 50–60 km/h, with the median and mode equal to 50 km/h. The presence of an extended "right tail" of the distribution indicates that 61% of accidents occurred when the established limit of 50 km/h was exceeded, and in 13% and 4% of cases the speed of the car exceeded 70 km/h and 100 km/h, respectively.

The analysis of the distribution parameters for individual types of accidents showed that the speed distributions for collisions and collisions with pedestrians qualitatively repeat the form of the general distribution (right-hand asymmetry, mode and median of 50 km/h). The speed distribution in pedestrian collisions is more pointed (Kurtosis=4.82) compared to collisions (Kurtosis=0.65), indicating a greater concentration of data around the mode and therefore a more pronounced problem of "inadequate speed" (allowed, but dangerous in a particular situation) for this type of crash.

Thus, it can be stated that the main problem of road safety in a large city of Ukraine lies not only in the facts of extreme speeding (forming the "right tail" of the distribution), but also in frequent traffic at a formally permitted, but unsafe for urban conditions speed of about 50-60 km/h, which leads to a high frequency of accidents in this speed range. To reduce the number of accidents in such conditions, it may be recommended to tighten control over compliance with the speed limit in conjunction with the introduction of zonal speed limits in residential areas and in places with high pedestrian activity.

The results presented in the paper can expand our understanding of the problem of the impact of car speed on road safety and will be useful in studying the factors leading to accidents. In the future, an interesting result can be obtained by comparing the results of the analysis of the speed distribution of cars that have been involved in an accident with the distribution of actual speeds of cars on sections of the city's road network. This will provide an additional tool for assessing the impact of the current speed of a car on the probability of getting into an accident.

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Аналіз розподілу швидкостей транспортних засобів, що потрапили в ДТП на міських дорогах

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Метою даного дослідження є комплексний статистичний аналіз розподілу швидкостей транспортних засобів, що стали учасниками дорожньо-транспортних пригод із потерпілими на вулично-дорожній мережі міста Харкова (Україна). Емпіричною основою роботи слугували матеріали офіційних поліцейських розслідувань, які охоплюють 294 зафіксовані випадки ДТП. У межах дослідження було здійснено побудову емпіричних розподілів швидкостей руху транспортних засобів, а також проведено аналіз основних статистичних характеристик, зокрема середнього значення, моди, коефіцієнтів асиметрії та ексцесу.

Отримані результати свідчать, що найбільша концентрація випадків ДТП спостерігається в інтервалі швидкостей від 50 до 60 км/год, при цьому середнє значення швидкості становить 53 км/год. Встановлено, що у 61 % випадків мала місце перевищена дозволена в межах міста швидкість руху 50 км/год, у 13 % випадків швидкість перевищувала 70 км/год, а у 4 % – 100 км/год. Аналіз форми емпіричного розподілу показав наявність правосторонньої асиметрії, значного ексцесу та високої модальної частоти, що унеможливлює його адекватний опис нормальним розподілом або іншими близькими до нього теоретичними моделями.

Порівняльний аналіз розподілів швидкостей для окремих типів дорожньо-транспортних пригод, зокрема зіткнень транспортних засобів і наїздів на пішоходів, продемонстрував подібність їх статистичних характеристик до розподілу загальної вибірки. Виявлені особливості форми та структури розподілів можуть бути зумовлені як недосконалістю існуючої системи контролю швидкісного режиму на міських дорогах, так і специфікою методик, що застосовуються для оцінювання швидкості транспортних засобів у процесі розслідування ДТП.

Результати дослідження мають практичну та наукову цінність, оскільки можуть бути використані для поглибленого вивчення впливу швидкісного фактору на рівень безпеки дорожнього руху, а також як додатковий інструментарій для оцінки ймовірності виникнення ДТП залежно від швидкості руху транспортних засобів.

Ключові слова: дорожньо-транспортна пригода, швидкість руху, передаварійна швидкість, встановлення швидкості автомобіля, аналіз швидкісного режиму, аналіз ДТП, безпека руху в містах.

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