

ANALYSIS OF ROAD TRAFFIC ACCIDENTS AND THEIR IMPACT ON TRAFFIC SAFETY

Ionela Adriana Tisca
Politehnica University of Timisoara, Romania
tiscaionelaadriana@yahoo.com

Nicolae Istrat
Politehnica University of Timisoara, Romania
nicuistrat@yahoo.com

Constantin Dan Dumitrescu
Politehnica University of Timisoara, Romania
danc.dumitrescu@yahoo.ro

Georgica Cornu
Politehnica University of Timisoara, Romania
cornu.georgica@yahoo.com

Abstract:

This paper presents information relating to the causes of accidents, the place of the determinants generators. Using data analysis in the process of optimizing traffic management, to reduce the consequences of accidents highlights: property damage, destroying vehicles and road structure, reducing the number of victims; and at the same time analytics information provided locally and nationally, reducing the number of such events, representing one of the key priorities of the activities in this area in order to achieve the Global Plan for Road Safety. Statistical data have been used in road accident records of the Romanian Police. The information obtained was processed, completed and compared for use in developing concrete solutions to avoid accidents. The method used to analyze data trends analysis using a polinominale functions, targeting the number of people affected by these accidents.

Keywords: accidents, Timis county, Romanian Police, traffic safety

1. THE RISK ANALYSIS OF ROAD ACCIDENTS IN THE COUNTY OF TIMIS PRODUCTS

Timis County is the county with the largest geographical area (road) between counties.

The road network comprises: highway, European roads, national roads, county roads and municipal ring road urban center; 533 km of national roads (of which 221 km European roads) a total of 416 km are made of asphalt and sectors 4 lanes are executed on a length of 42 km. County roads totaling 1.145km (500 km asphalt) and 1222 km municipal roads, 459 km of which 624 km gravel and earth.^[1]

The geographical position of Timis county is placed in the vicinity of customs points that connect directly to Western Europe;

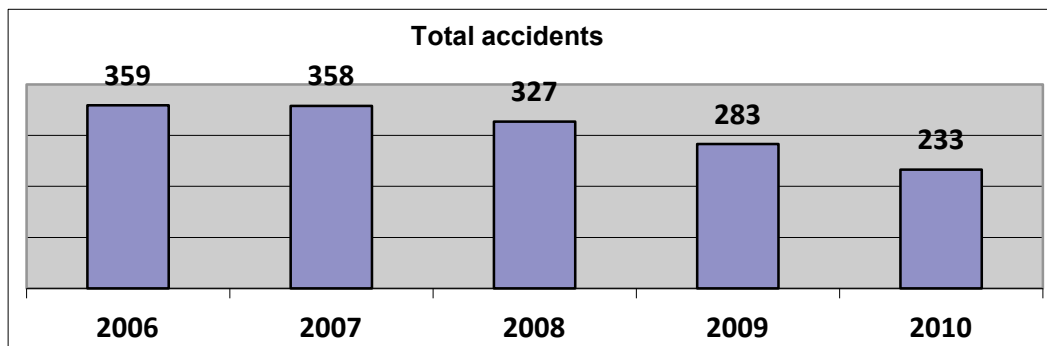
Road traffic intensity is given by the high levels of traffic to all categories of vehicles;

Economic development of Timis county situates one of the leading positions in terms of road network; In addition, there are two municipalities in the county (Timisoara, Lugoj) and a total of 8 cities (Faget, Buzias, Deta, Gătaia, Ceacova, Jimbolia, Sânnicolau Great, Recaș) with a relevant economic development. ^[2]

Car accident is an occurrence in the road, consisting of the collision of two or more vehicles or a vehicle with another obstacle, kicking or stepping pedestrians, cyclists or other road users and resulting injury bodily injuries or death of persons, property damage and impairing circulation. ^[3]

At the county level, the overall trend is a decreasing distinguished two periods with values very different: the first period between 2006 and 2007, the total number of serious accidents remained the same, located around 358 events, and the second the period between the years 2008 and 2010, the total number of accidents decreases steadily reaching 233 in 2010.

Picture 1: The total number of accidents



Source: Developed by the author with Romanian Police data

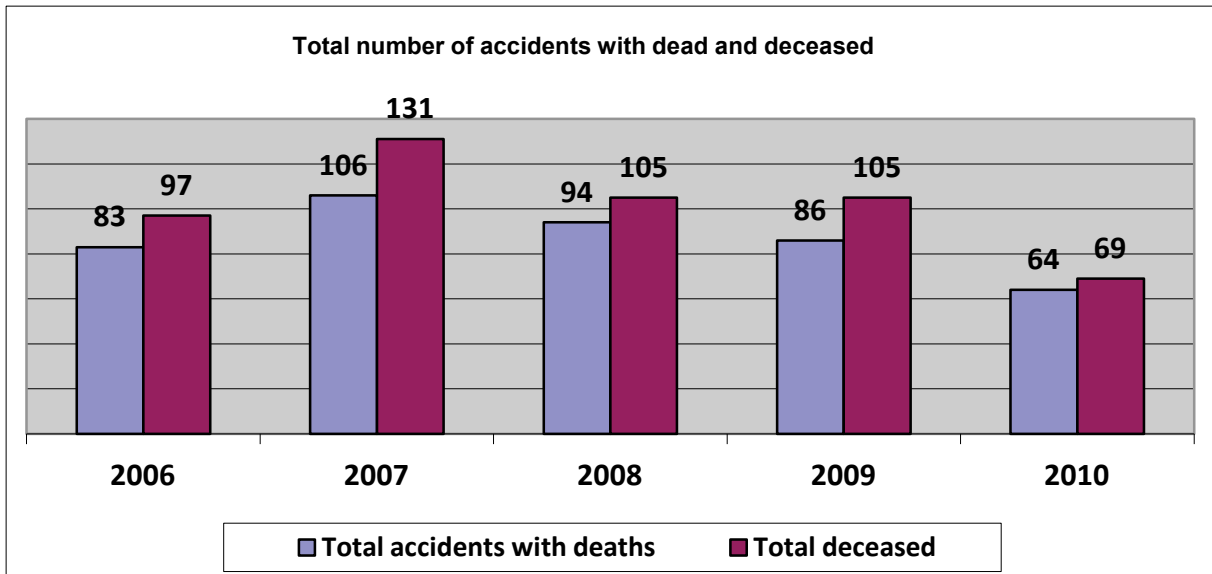
If the total number of serious accidents there are two periods mentioned above, the total number of accidents resulting deceased, evolution is tortuous, the maximum value being recorded in 2007 with 106 such events and 131 people killed

Picture 2: The total number of accidents with dead and deceased

¹ [http:// enciclopediaromaniei.ro](http://enciclopediaromaniei.ro)

² <http:// enciclopediaromaniei.ro>

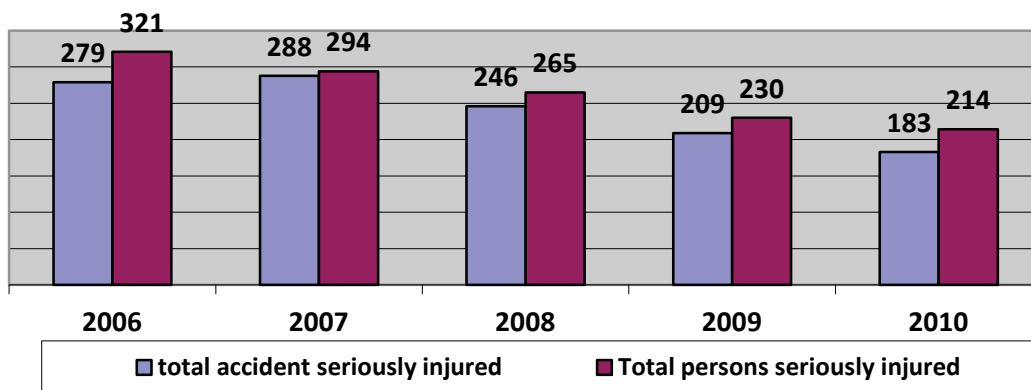
³ Virgil Popa, 2013



Source: Developed by the author with Romanian Police data

In the same year there were two accidents with 4 fatalities and an accident with 5 people dead. 2009 draws attention to two accidents, one in four people who died and one who died 6 people. Evolution of the phenomenon shows that in 2010 it decreased to 60% from the peak recorded in 2007.

Picture 3: Total number of accidents with serious injuries and number of peoples seriously injured



Source: Developed by the author with Romanian Police data

Like accidents with fatalities in 2007 recorded the highest number of accidents with serious injuries, subsequent developments show declines in 2010 recorded 37% fewer accidents.

Absolute values for the number of people injured have been registered for a minimum in 2010, with a total of 214 people seriously injured, and the maximum in 2006, with a total of 321 people seriously injured. In 2010 there were two events in which 4 people were seriously injured.

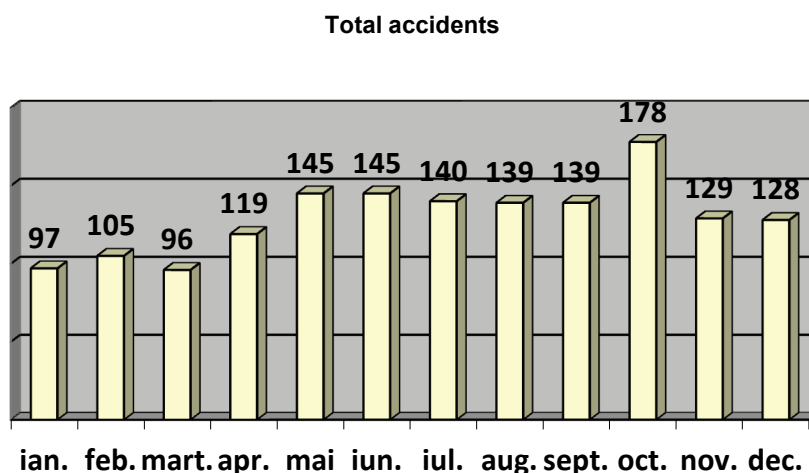
2. STATISTICAL DATA ANALYSIS

A further study of traffic accidents and the risk factors associated with causal accidents is paramount. In this study, we analyzed traffic accident data for 2006-2010 from Timis county. Study data were extracted from the database of the General Inspectorate of the Romanian Police in Timis County

2.1. Timeframes

Months

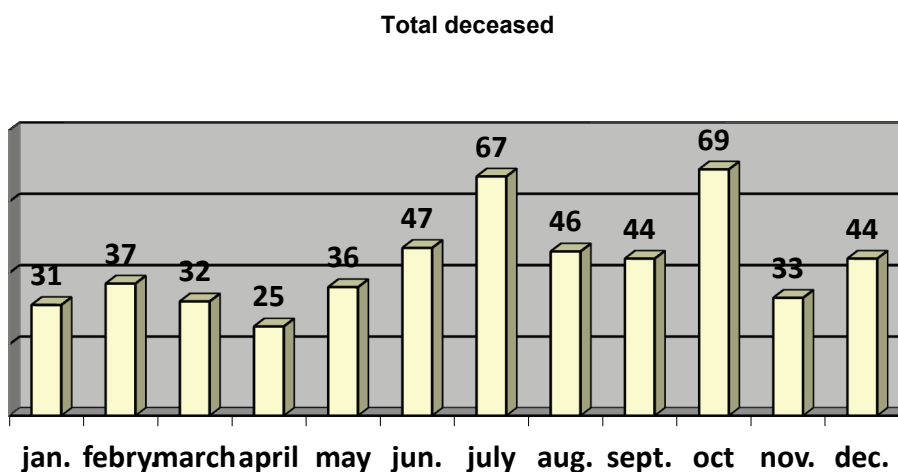
Picture 4: Total accidents in the months of the year



Source: Developed by the author with Romanian Police data

The average monthly total number of accidents is about 130 events and as noted there are two periods, the first between November and April, so while the cold season, when the number of accidents is below average, and the second it is between May and October, when the number of events exceeds the monthly average. With most accidents month is October, with 178 events, and the one with the fewest is March with 96 accidents.

Picture 5: Total deaths in the months

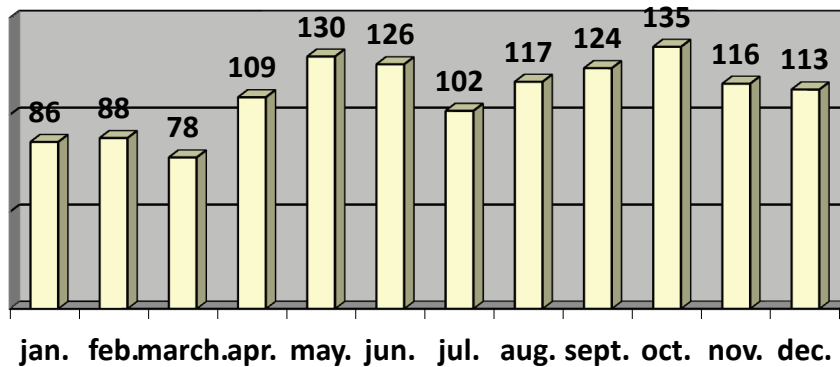


Source: Developed by the author with Romanian Police data

Just as in the total number of accidents, months are divided into two periods, the first between November and May, when the number of fatalities is below the monthly average of 42 victims, and the second located between June and October when values exceed this average. Luna with most deceased is October with 69 deaths and the one with the fewest is April with 25 people killed.

Picture 6: Total persons seriously injured

Total number of persons seriously injured



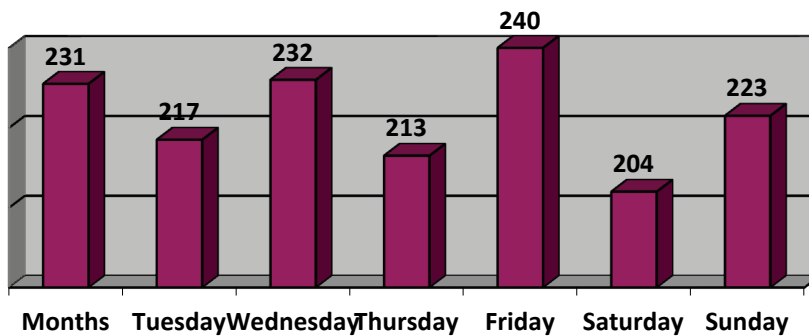
Source: Developed by the author with Romanian Police data

The average monthly total number of people seriously injured victims is 110, and the evolution trend line is sinusoidal, the months in which the values are below average as January, February, March, April and July, the rest remaining above average. The highest values are recorded in May and October, with 130 or 135 seriously injured, and the lowest in January and March, with 86 or 78 people seriously injured.

Weekdays

Picture 7: Total accidents reported over a week

Total accidentes

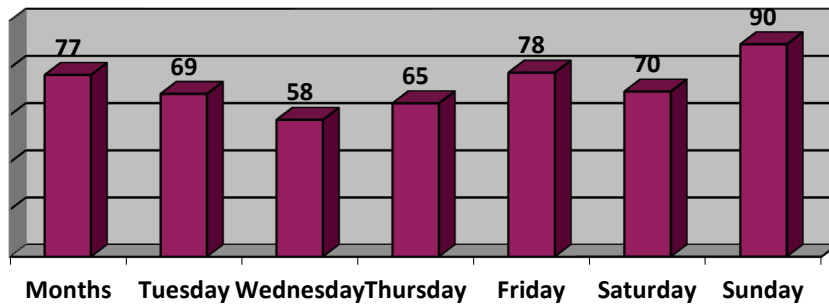


Source: Developed by the author with Romanian Police data

Average daily number of accidents total of 222 events, and as noted above, today is exceeded this average are Monday, Wednesday, Friday and Sunday. The fewer events occur on Saturdays and Thursdays, 204, 213 accidents respectively.

Picture 8: Deceased people relative to weekdays

Decesed people



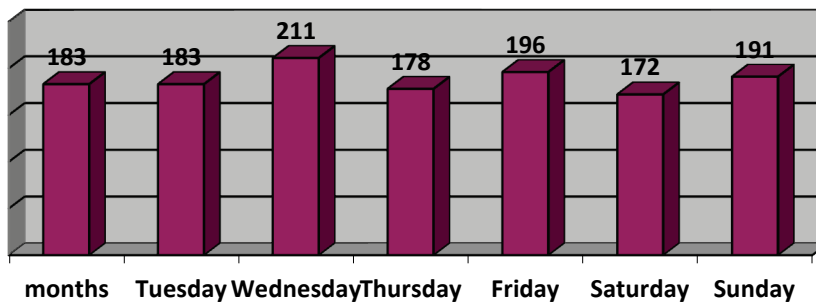
Source: Developed by the author with Romanian Police data

In terms of number of fatalities, it is noted that three days of the week exceeds the average of 72 victims, but overruns are substantial, and 90 victims on Sunday, 77 on Monday and 78 on the Friday. The fewest casualties are recorded on Wednesdays and Thursdays, 58 and 65 people dead.

One aspect to remember is that although Sunday's most accidents occur, this is the day that the most serious events with several people killed.

Picture 9: People seriously injured compared to weekdays

People seriously injured



Source: Developed by the author with Romanian Police data

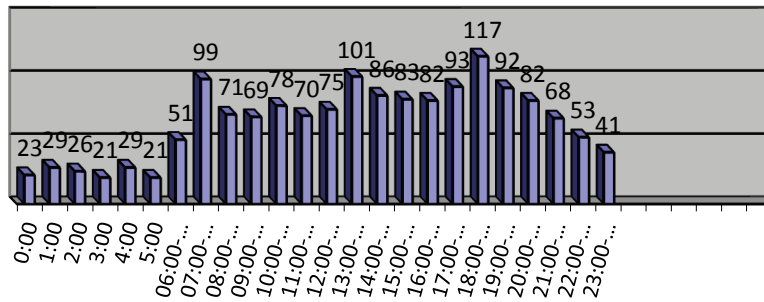
Trendline evolution in people seriously injured, is one sinuous steady earlier this week, with one exception, recorded on Wednesday, when it recorded maximum, ie 211 victims.

Daily average stands at about 187 people seriously injured, the average is exceeded on Wednesdays, Fridays and Sundays, on other days values being lower.

The hours of the day

Picture 10: Total accidents slots

Total accidents slots



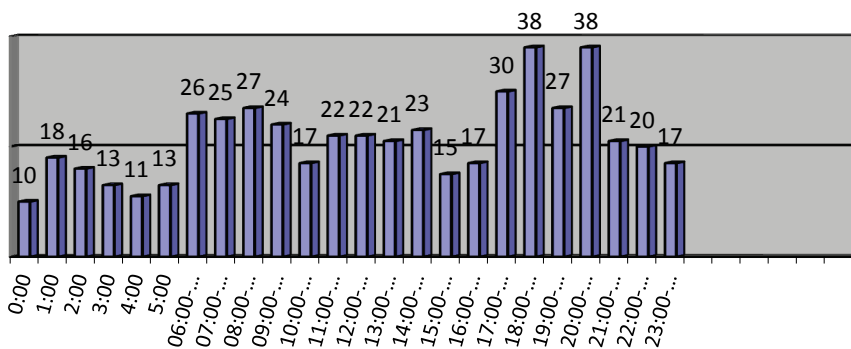
Source: Developed by the author with Romanian Police data

Average hourly total number of accidents has a value of about 65 events every hour, all day divided into two periods, the first from 07:00 to 21:00 when the number of accidents are above average, and the second between 22:00 06:00 when this number is below the average hourly.

The lowest number of accidents occur between 00: 00-06: 00, with about 25 events, when the trend line begins its upward course, with three peaks in the hours 07: 00-08: 00, with 99 accidents, 13: 00-14: 00 101 accidents and the highest between 18: 00-19: 00 117 accidents.

Picture 11: Total deceased people on slots

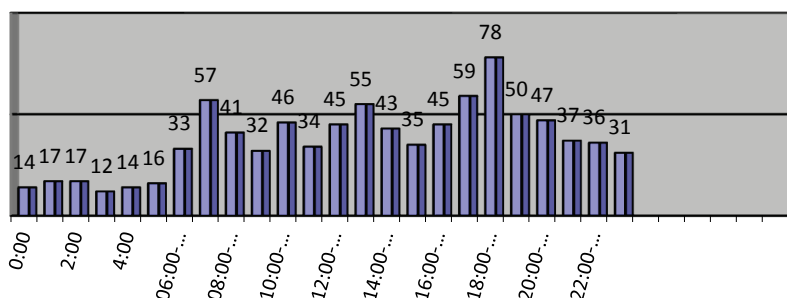
Total deceased people



Source: Developed by the author with Romanian Police data

Picture 12: Total persons seriously injured on slots

Total persons seriously injured



Source: Developed by the author with Romanian Police data

By making a comparison between the graphic representation above and on the total number of accidents is observed that the two developments are identical, but at different values. Thus, in this case we have two periods in relation to the hourly average, which is about 37 people seriously injured, namely that between 22:00 and 6:00 when the number of seriously wounded and is below the average of 07 hours : 00 to 21:00 with values above this average.

The maximum value is attained between 18: 00-19: 00, with 78 deaths and the minimum between the hours of 3:00 and 4:00 when shooting 12 people seriously injured.

3. THE CAUSES OF ACCIDENTS

For each of the years have been detained, according to their frequency, only the top six causes of accidents, and in the table below were marked top 3 reasons: Red-most frequent cause blue-second question and green third question.

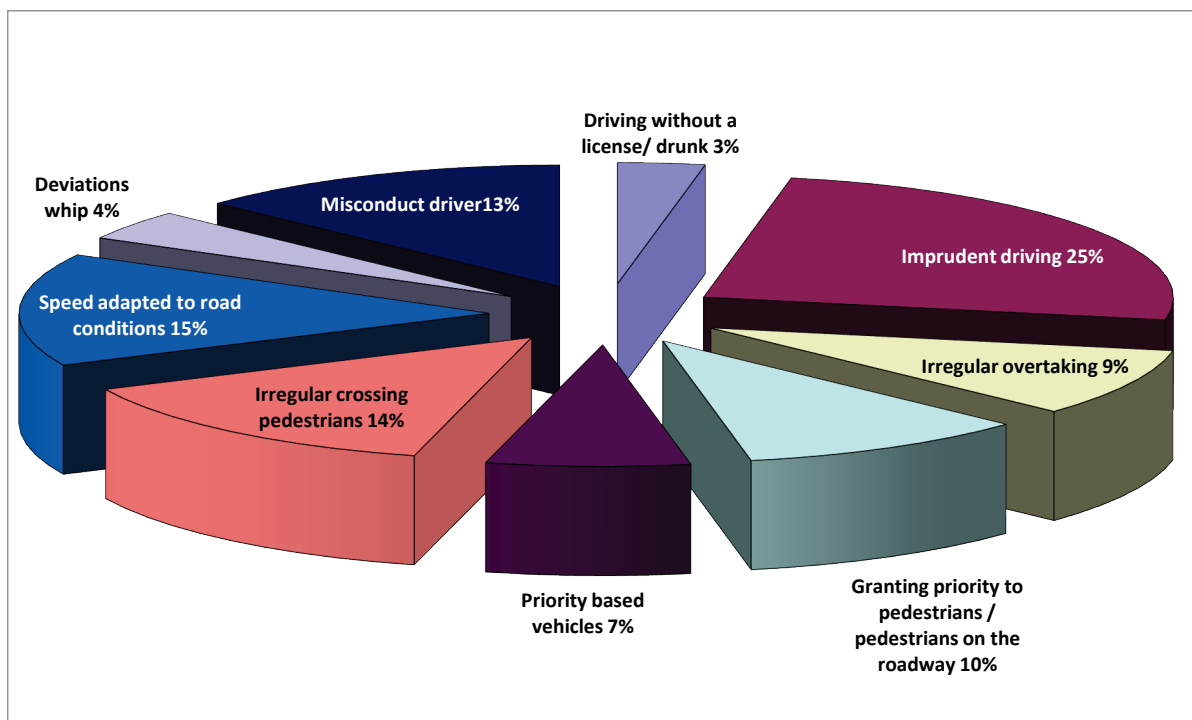
Table 1: Causes

Causes	2006	2007	2008	2009	2010
imprudent driving	47	72	49	35	25
irregular overtaking	18	25	17	9	16
Granting priority to pedestrians	34	42	37	24	28
Priority based vehicles	45	44	30	49	39
Irregular crossing pedestrians	55	60	58	39	34
Speed adapted to road conditions	30	23	45	26	30

Source: Developed by the author with Romanian Police data

It is noted that until 2008 most common causes were crossing irregular pedestrians and leadership imprudent, alternating first and second, then from 2009 until now the main cause of accidents has become not granting preference to vehicles followed by irregular crossing of pedestrians.

Picture 13: Causes



Source: Developed by the author with Romanian Police data

Accidents that have resulted in the deceased, the main cause of their production is imprudent driving (111 accidents), followed by too fast for road conditions (64 accidents) and irregular crossing pedestrians (62 accidents)

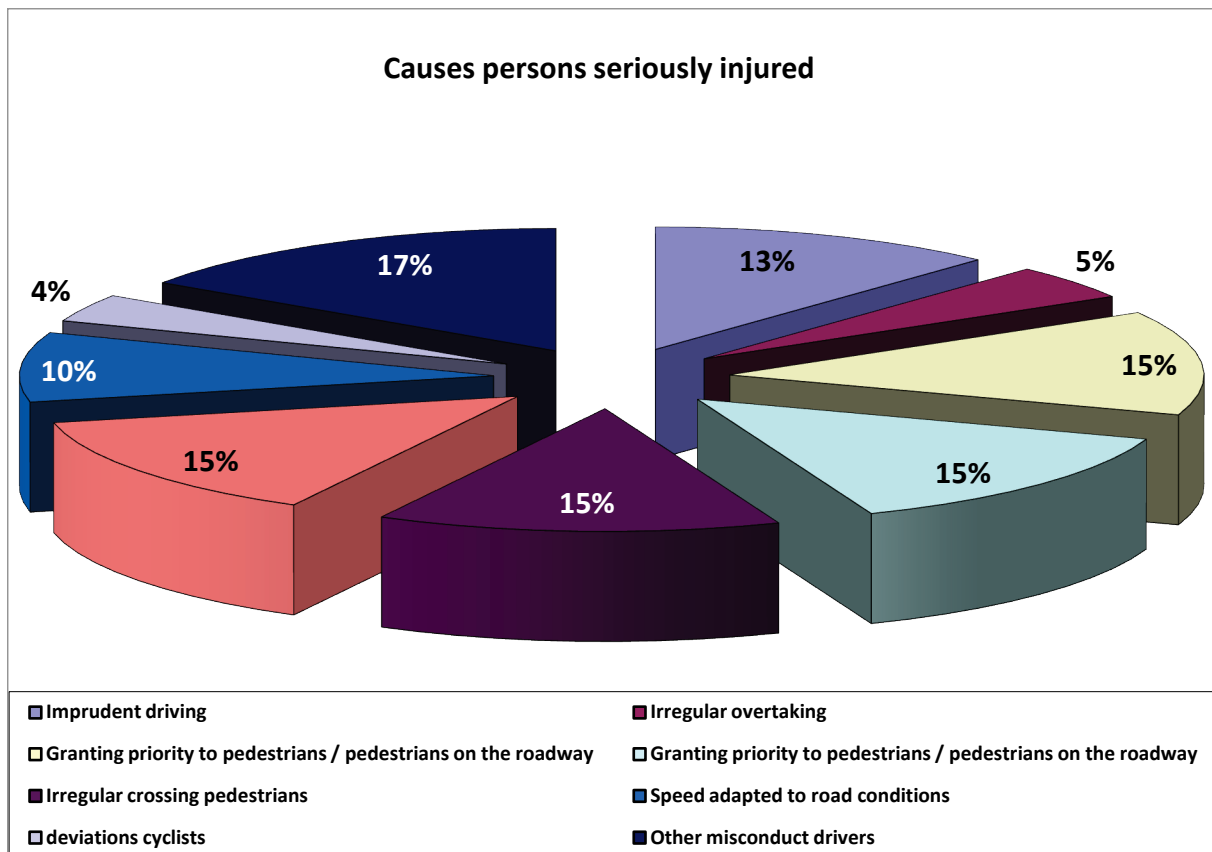
Table 2: Number of accidents with fatalities

Number of accidents with fatalities	
Imprudent driving	154
Irregular overtaking	61
Granting priority to pedestrians / pedestrians on the roadway	179
Priority based vehicles	187
Irregular crossing pedestrians	187
Speed adapted to road conditions	115
Deviations cyclists	44
Other misconduct drivers	204
Driving without a license /drunk	28
Run the opposite	39
Deviations leaders carts	8

Source: Developed by the author with Romanian Police data

For the entire period between 2006 and 2010, the main cause of accidents which resulted severely injured persons were crossing irregular pedestrians and priority based vehicles with 15% of all accidents, followed by priority based pedestrians / pedestrians on the roadway, 14% and imprudent driving, accounting for 13% of all accidents.

Picture 14: Causes persons seriously injured



Source: Developed by the author with Romanian Police data

4. CONCLUSIONS

- In the county of Timis, the overall trend is a decreasing distinguished two periods with very different values, namely the first between 2006 and 2007 when the total stood accidents every year around 358 events and the second from 2008 to the present, the total number of accidents drops by 9% in 2008 over the previous year, with 13% in 2009 compared to 2008 and by 17% in 2010 over the previous year . In late 2010 decline was 35% compared to early 2006;
- The total number of accidents which resulted deceased, evolution is decreasing since 2007, although the number of people killed was the same in 2008-2009, the minimum value was recorded last year, 64 such events, wich resulted in 69 people killed;
- Month of the year with the most accidents is October, with 178 events, and the one with the fewest is January with 97 accidents;
- Month of the year with most deceased is October with 69 deaths and the one with the fewest is April 25 deceased;
- Day of the week is recorded most events is Friday with 240 accidents, and the fewer events occurring Saturday 204;
- In terms of the number of fatalities, it is noted that three days of the week exceeds the average of 72 victims, but overruns are substantial, and 90 victims on Sunday, the day of 77 and 78 in the Friday
- One aspect to remember is that although Sunday's most accidents occur, this is the day that the most serious events with several people killed.
- The lowest number of accidents occur between 00: 00-06: 00, with an average of about 25 events, most occurring in the hours 07: 00-08: 00, with 99 accidents, 13: 00-14: 00 101 accidents and the highest between 18: 00-19: 00 117 accidents.
- The lowest number of deaths recorded in the hours 06: 00-14: 0:21: 00-00: 00, and most in interval 17:00- 8:00p.m;
- 10.The most common causes of accidents are pedestrians crossing irregular, priority based vehicles and imprudent driving too fast for road conditions;

- Regarding the places where most accidents occur, urban is ranked first with a share of about 53% of the total and Timisoara is in first place with 83% of the total of all accidents. Some of the settlements located near Timisoara City, the roads have a higher number of serious accidents: Remetea 11, Orțișoara 12, Ghiroda 14 and Sag 15.

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