

# TRAFFIC ACCIDENTS IN IRAQ FOR THE PERIOD (2010-2016) ANALYTICAL STUDY IN THE GEOGRAPHY OF TRANSPORT

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## ABSTRACT:

*The study indicated that the highest level of accidents for the period (2010-2016) was during the year 2012, where the total number of incidents reached to (24842) accidents, and the number of injured reached to (68544) for the same period above mentioned. The study showed that the driver was the main cause of the accidents, as the total accidents caused by the driver for the period studied reached to (45953) accidents with ratio (70%). The classification of accidents according to the category of road was the main road with the largest share of the total, where the total incidents in this category reached to (34639) accidents with ration (52.65%). The classification of accidents by type of incident highlights the type of collision accident was in the first place with a total of (32206) accidents by (51.93%). As for the time of the accident (at the noon), most of the accidents occurred during the day, reached to 43551 accidents with ratio (66.19%).*

## INTRODUCTION

Traffic accidents are considered as one of the most important problems confronted by the transport sector and are reflected negatively on the economy of the country in general and the individual in particular. The accidents' risk and disadvantages are as serious as the magnitude of the traffic accident and its danger leaving behind innocent victims have no fault except that they were using the road and thus become dead or disabled, they are sentenced to spend the rest of their lives in a wheelchair that is adjacent to them in their daily lives

Traffic accidents have become a major concern for all members of the society and have become one of the most important problems that exert the material resources and human resources and target societies in the most important elements of life which is the human element in addition to the social and psychological problems and material losses. This become necessitated to find out solutions and suggestions to be placed under implementation to reduce such incidents or, at the very least, to address their causes and to mitigate their negative effects.

Despite many awareness campaigns that have been presented to society over the past decades, they are still unable to achieve the desired results, perhaps because they are individual judgments that do not get to high level of organized awareness work according to a transparent clear and long-term policy.

However, the concern of the State and its efforts to raise awareness to protect human in respect to his security and his safety, whatever the results of the awareness campaigns are simple and not at the desired level and do not meet the expectations of observers and interested, but we support and emphasize the need to continue these campaigns regardless their impact and responsiveness to their content.

## FIRST / PROBLEM

The research problem can be framed by the following question

What are the main indicators of traffic accident statistics recorded for the years (2010-2016).

What are the main reasons behind these incidents and how dangerous they are to road users?

**SECOND: HYPOTHESIS**

There are several reasons behind the occurrence of traffic accidents as varied and multiple causes and vary in the number of deaths and injuries and physical damage from one accident to another Thus the driver is the first responsible for the occurrence of accidents and then the vehicle , and the road and its users as well as type of road. In order to address this phenomenon, there should be joint cooperation between the state and the citizen through the development of tactical programs that raise the general culture in the use of the road and review the laws, and regulations legislated regarding the movement of vehicles and the reconsideration of road networks.

**A - Driver and road user**

The driver shall be responsible for the occurrence of accidents through several factors, the most important of which are the following<sup>(i)</sup>

- Inadequate driver and low traffic culture
- Non-compliance and attention to the road and violation of laws and regulations

- Driving the vehicle in situations that its conditions do not allow for driving (such as drunkenness, exhaustion,) etc.

**B. Vehicle**

Is the means that transport us from place to place and carry our goods and our luggage, so it is a means and not an end must be maintained, and the vehicle is a cause of traffic accidents through<sup>ii)</sup>(2)

- Lack of interest in the periodic maintenance of the vehicle
- Vehicle abuse
- Load the vehicle more than its capacity

**The road**

Is considered the third cause of traffic accidents when it lacks the necessary traffic safety conditions, the most important of which are tunnels, bridges, and crossings. The large number of lights and intersections, the presence of columns fixed on both sides of the road and the presence of spikes and bends in the road are the main reasons for traffic accidents<sup>(iii)</sup>.

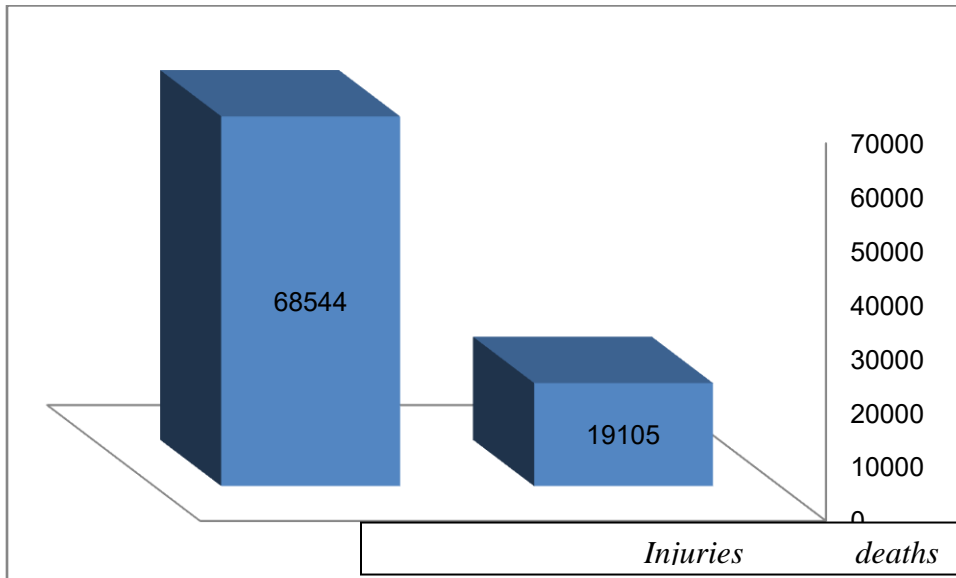
**Table (1) Main Indicators of Traffic Accidents Statistics recorded for the years (2010-2016).**

N	Years	Accidents	Deaths	Injuries
1.	2010	8861	2505	8996
2.	2011	10082	2703	10198
3.	2012	10709	3132	11001
4.	2013	9725	2951	10694
5.	2014	8814	2769	9210
6.	2015	8836	2514	9429
7.	2016	8763	2531	9016
<b>Total</b>		<b>65790</b>	<b>19105</b>	<b>68544</b>

**\*Source / from the work of the researcher depending on the Ministry of Planning, the Central Statistical Organization, Directorate of Transport and Communications Statistics, the statistics of traffic accidents registered for the year 2016.**

From Table (1), the researcher shows that the number of incidents in (2010) was (8861) accidents to continue in a increase in 2011 to reach to (10082) accident and then continue to increase to reach a peak in 2012 to (10709) accident and then began declining for the following years to be between (8700 -8800). The explanation for this increase in the number of traffic accidents is due to the large number of vehicles entering the country within this time period, as well as the failure to apply traffic laws, public safety and driving vehicles by young people who have not reached the suitable age to drive and lack of driving licenses and reckless driving with High speeds in ways that are not compatible with these speeds such as subways.

Figure (1) Total deaths and injuries for the period (2010-2016)



Source / From the work of the researcher based on Table (1) and using Microsoft Excel 2010.

Figure (1) shows the researcher that the total number of injured for the period (2010 -2016) is more than the number of accidents and the number of deaths to reach to (68544) injured. When this number is divided on seven years study period from (2010- 2016) we get the number (9792), which represents the annual rate. When dividing this number by (12) months, we get (816) injured per month caused by traffic accidents. This indicates a decrease in the public safety of citizens either they were passengers, pedestrians or drivers. These incidents caused significant material and moral damage to public and private property, leaving behind orphans, widows, disabled people and people with special needs.

Table (2) Number of accidents based on the causes of accident.

N	Years	Road	Car	Driver	Pedestrian	Passenger	Other Factors	Total
1.	2010	585	1369	6021	611	158	117	8861
2.	2011	708	1495	6813	718	205	143	10082
3.	2012	750	1655	7161	804	266	118	10754
4.	2013	754	1414	6527	772	171	87	9725
5.	2014	755	1035	6345	508	116	55	8814
6.	2015	738	998	6393	516	101	90	8836
7.	2016	567	984	6693	400	60	59	8763
<b>Total</b>		<b>4857</b>	<b>8950</b>	<b>45953</b>	<b>4329</b>	<b>1077</b>	<b>669</b>	<b>65835</b>
<b>%</b>		<b>7.30%</b>	<b>13.50%</b>	<b>70%</b>	<b>6.57%</b>	<b>1.63%</b>	<b>1.01%</b>	<b>1005</b>

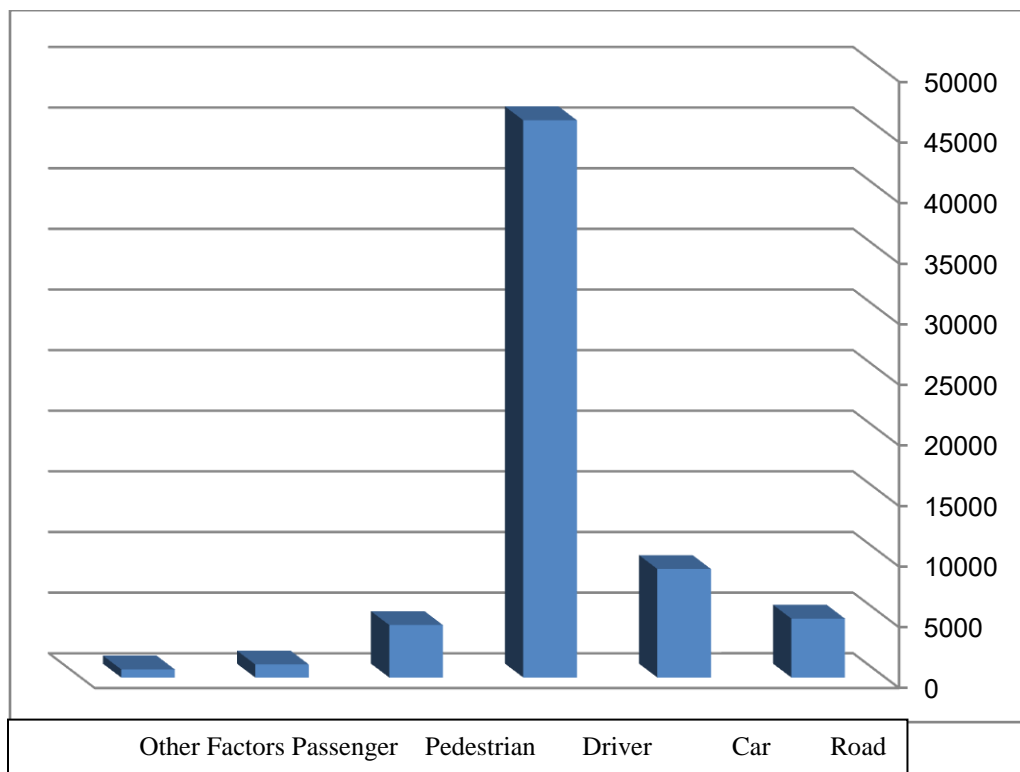
Source / from the work of the researcher depending on the Ministry of Planning, the Central Statistical Organization, Directorate of Transport and Communications Statistics, the statistics of traffic accidents registered for the year 2016.

From the table (2), the researcher shows that the driver was the main cause of the accidents. The total number of accidents for the period studied amounted to (45953) accidents with ratio (70%). This indicates that most drivers have no experience in

driving cars and do not obtain driving license or age May be still under age in addition to reckless driving and the use of speeds that are commensurate with the type of road and non-compliance with the rules of traffic and traffic instructions and non-compliance with the laws and regulations and traffic regulations that regulate the movement of vehicles. Followed by the second place is the car to reach the total number of accidents for the period studied to (8950) accidents by (13.50%).

This Indicated the obvious negligence of cars and lack of periodic maintenance , non-perpetuation and continuous examination of parts, especially tires and air pressure inside and not to conduct a continuous examination of engine oil and fuel type used and the neglect of periodic inspection of the brakes, which have an effective role on stopping the vehicle during emergency situations that require stopping. But the road came in third place where the total number of accidents caused reached to (4857) accidents with ratio (7.30%). Which indicates that most of the roads used in the study area are not qualified in terms of furnishing and not in terms of construction and paving of the asphalt layers. The researchers noted through the field study that most of the roads are plagued by cracks and ripples and high grooves due to high weights of the load of the vehicle in conjunction with the height temperature, which is reflected negatively on the body of the road and asphalt layer, and these grooves and cracks, in addition to the large number of military checkpoints located on the roads, which make the movements of vehicles, especially large ones, defined by a single line before entering the inspection. This acutely makes severe pressure on one passage and thus cracking, expanding and deforming so that small vehicles cannot walk in this passage . Thus , all these reasons are the disadvantages of the road reflected directly on the performance of the driver, which contributes to the increase in the number of accidents on the roads, (both internal and external). As in Figure (2).

**Figure (2) Number of accidents based on causes of accident**



**Source / From the work of the researcher based on Table (2) and using Microsoft Excel 2010.**

From Table (3), it is clear to the researcher that the main cause of accidents according to road category is the main road, which received the largest share of the total. The total number of accidents in this category reached to (34639) accidents (52.65%) for the non-compliance to the speed limit within the limits allowed for this type of road in addition to the lack of respect for the

rules and rules of traffic and traffic safety as well as the general disregard for the right way of passing according to precedence, in addition to other factors, including natural or human contribute to increase the number of traffic accidents in this Category of the road

This is followed by the secondary road. The number of accidents in this road reached to (14837) accidents by (22.55%). This is due to the fact that the secondary road uses inappropriate speeds.

**Table (3) Number of accidents by road category.**

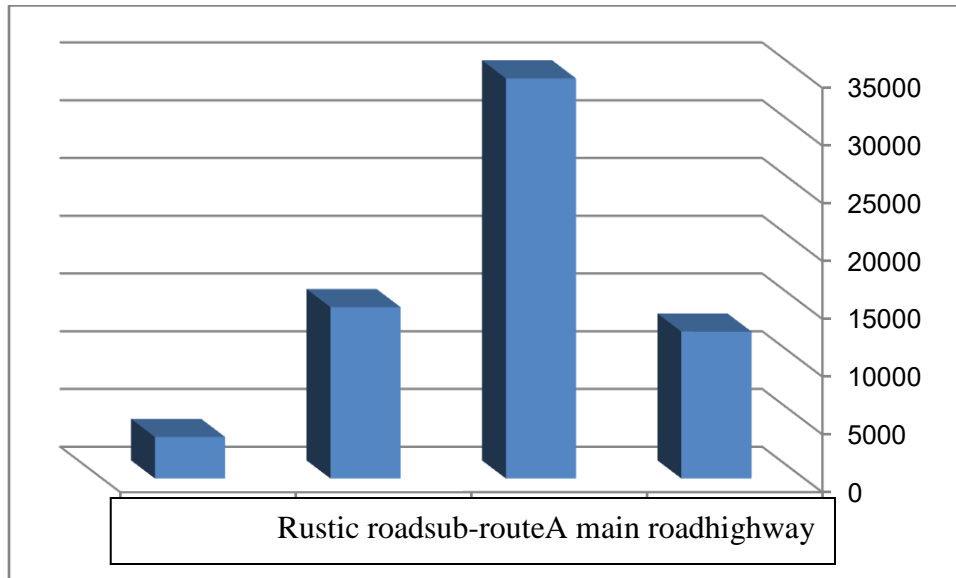
N	Years	highway	A main road	sub-route	Rustic road	Total
1.	2010	1866	4921	1590	484	<b>8861</b>
2.	2011	1664	5921	1997	501	<b>10082</b>
3.	2012	1929	5805	2391	584	<b>10709</b>
4.	2013	1951	4880	2362	532	<b>9725</b>
5.	2014	1779	4348	2159	528	<b>8814</b>
6.	2015	1761	4303	2266	506	<b>8836</b>
7.	2016	1767	4462	2072	462	<b>8763</b>
<b>Total</b>		<b>12717</b>	<b>34639</b>	<b>14837</b>	<b>3597</b>	<b>65790</b>
<b>%</b>		<b>19.34%</b>	<b>52.65%</b>	<b>22.55%</b>	<b>05.46%</b>	<b>100%</b>

Source / from the work of the researcher depending on the Ministry of Planning, the Central Statistical Organization, Directorate of Transport and Communications Statistics, the statistics of traffic accidents registered for the year 2016.

The road is characterized by the large number of intersections and exits that branch out from it, whether in the case of getting out of or entering the road in addition to the intersections of the surface, as well as movement of pedestrians that use the road and the movement of motorcycles, which use the walk in the opposite direction most often.

The road comes in the third place where 1277 accidents were recorded (19%.34), which is lower than the previous two categories because this type is free of surface intersections and there is no pedestrian movement and free movement of motorbikes and road capacity. One-way passage organized according to certain speeds in addition to the method of paving the road where the highways were prepared with higher specifications than the rest in terms of the path of the road and the trench, bridges, and tunnels, there is no surface intersection, but bridges and tunnels are prepared with three layers of asphalt. In addition to furnishing where the road has protective fences preventing the entry of animals into the road, see figure (3)

figure (3)Number of accidents by road category.



Source / From the work of the researcher based on Table (3) and using Microsoft Excel 2010

Table 4 indicates number of accidents according to the type of accident, the type of collision incident in the first place, with a total of (32206) accidents by (51.93%) for the period studied. The researcher attributed this to the increase in the number of citizens (2003) in using cars for accomplishing their works, especially after 2003 where a very large numbers of vehicles entering to all governorates without a planned plan or specific programs to regulate this work so that the capacity of the roads is not commensurate with the number of vehicles and in return We see that the road networks were not expanded or increased , but very little, which resulted in the confusion of the movement of vehicles and many other problems, including traffic congestion as well as the increase in the number of traffic accidents, including collisions of all kinds.

As for the run over , it came in second place after the collision, which reached to 22090 accidents by (35.62%) The same reasons are attributed to the same by increasing the pedestrian traffic, especially in networks Internal roads (inside the city), non-compliance with traffic safety rules, transit from non-transit areas, and non-use of tunnels and bridges built for pedestrians.

Table (4) Number of Road Accidents by Type of Accident

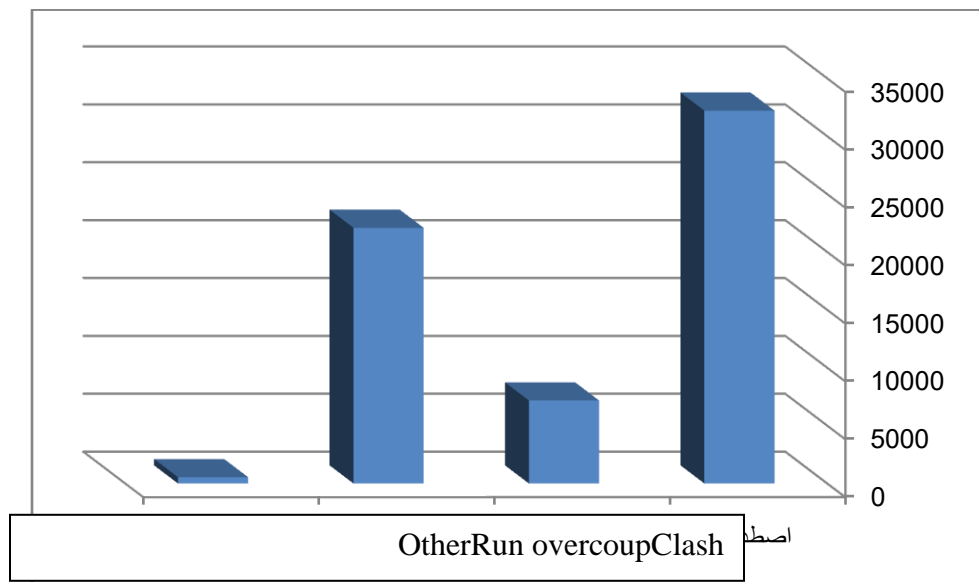
N	Years	Clash	Coup	Run over	Other	Total
1.	2010	4102	1011	3661	87	8861
2.	2011	4771	1161	4025	125	10082
3.	2012	6022	1672	3297	18	11009
4.	2013	4568	1288	3793	76	9725
5.	2014	4288	993	3442	91	8814
6.	2015	4213	98	441	01	4753
7.	2016	4242	946	3431	144	8763
<b>Total</b>		<b>32206</b>	<b>7169</b>	<b>22090</b>	<b>542</b>	<b>62007</b>
<b>%</b>		<b>51.93%</b>	<b>11.56%</b>	<b>35.62%</b>	<b>00.89%</b>	<b>100%</b>

Source / from the work of the researcher depending on the Ministry of Planning, the Central Statistical Organization, Directorate of Transport and Communications Statistics, the statistics of traffic accidents registered for the year 2016.

The economies have played a prominent role in the sidewalks of pedestrian by street vendors using janabars and pastas for the sale of clothing, perfumes and other household items. Here, pedestrians are barred from using the pavement for movement and mobility and to descend into the road.

The number of accidents came in third place, where it is reached to (7169) accidents (11.56%). The researcher attributed this to the control of normal and human conditions. The natural factors were the elements of the climate especially the rain that stop and diminish the extent of vision. The fog leads to limited vision, forcing the driver to use slow speeds, as well as dust storms. Besides, human factors played a prominent role in the events of the incident involving the driver and the state alike. The role of the driver involves using high speeds and negligence and not to take caution in the adverse weather conditions and non-compliance with the rules and regulations of the traffic and the maintenance of the periodic maintenance of the vehicle. It highlights the role of state institutions, particularly the Ministry of Transport and the General Directorate of Traffic, through the organization of vehicular traffic, the expansion of road networks, the periodic maintenance of roads and the dissemination of traffic awareness. Therefore, these institutions bear full responsibility when we find that most roads today are filled with cracks, ripples and grooves and the lack of validity of high speeds and traffic jams due to the increase in the number of vehicles and the expansion of the network all factors lead to a high number of incidents on the roads, especially external (roads).

**(4)Number of road accidents by type of accident**



**The source / work of the researcher based on Table (4) and the use of Microsoft Excel 2010.**

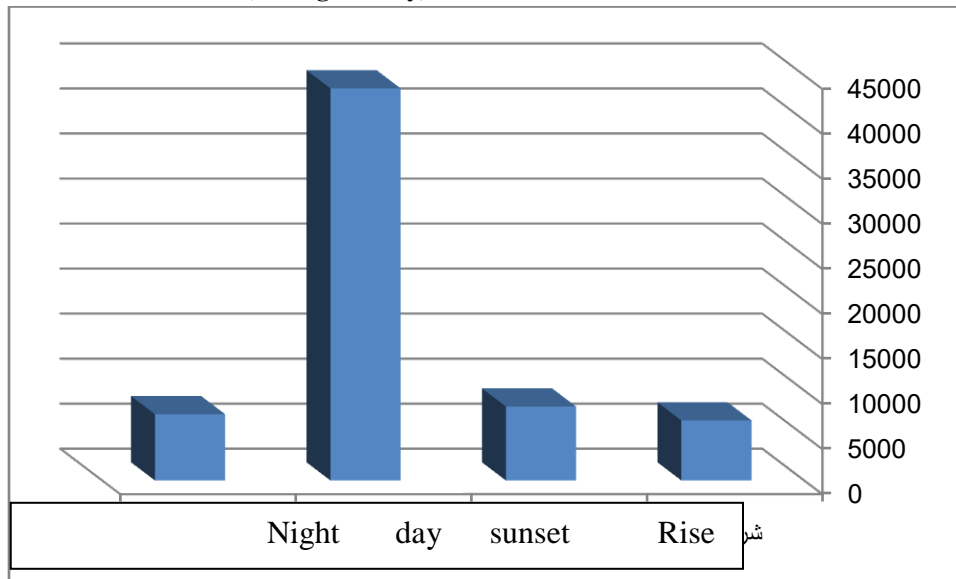
In Table (5), which represents the time of occurrence of the accident or the state of light at the time of the accident, most of the incidents occurred during the day, the number reached to (43551) accident, and the researcher attributed the reason that most of the movement of the population is at its peak from the early morning hours to sunset where the employees go out to their places of work, as well as the workers, the shop owners and the students for all the stages which necessitates reviewing the state departments and their governmental institutions, so all these contribute to the high density of road use during the day, as in (figure 5).

**Table (5) Number of accidents by time of accident ( in day).**

N	Years	Rise	sunset	day	Night	Total
1.	2010	840	1064	6154	803	<b>8861</b>
2.	2011	952	1320	6734	1076	<b>10082</b>
3.	2012	977	1336	7093	1303	<b>10709</b>
4.	2013	1112	1197	6350	1066	<b>9725</b>
5.	2014	995	1091	5781	947	<b>8814</b>
6.	2015	963	1100	5775	998	<b>8836</b>
7.	2016	829	1104	5664	1166	<b>8763</b>
<b>Total</b>		<b>6668</b>	<b>8212</b>	<b>43551</b>	<b>7359</b>	<b>65790</b>
<b>%</b>		<b>10.13%</b>	<b>12.48%</b>	<b>66.19%</b>	<b>11.20%</b>	<b>100%</b>

Source / from the work of the researcher depending on the Ministry of Planning, the Central Statistical Organization, Directorate of Transport and Communications Statistics, the statistics of traffic accidents registered for the year 2016.

**Figure (5) time of the incident' occur (during the day).**



The source / work of the researcher based on table (5) and the use of Microsoft Excel 2010.

**(Table 6) Accidents according to danger (non - fatal accidents).**

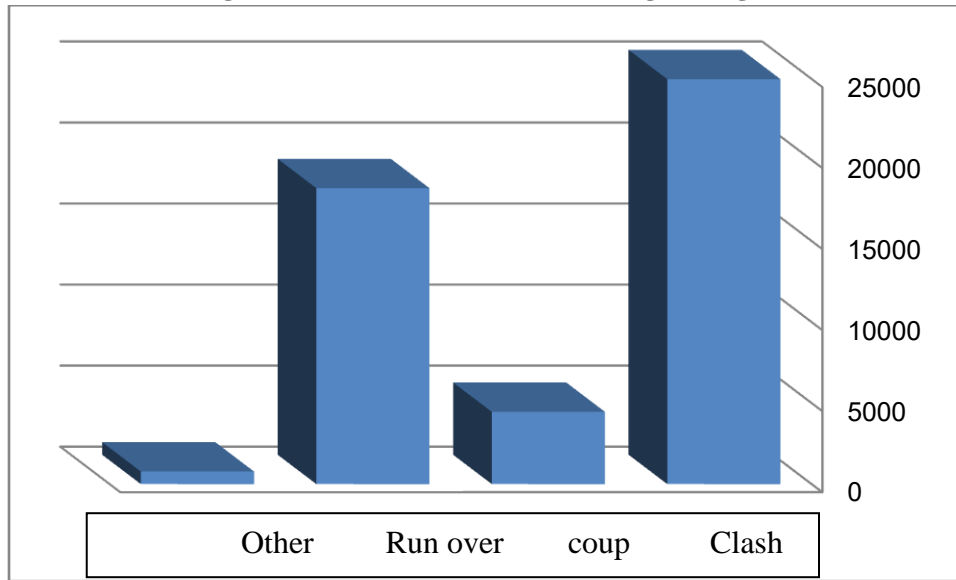
N	Years	Clash	coup	Run over	Other
1.	2010	3372	615	2601	79
2.	2011	3925	703	2968	114
3.	2012	4074	732	2926	77
4.	2013	3629	750	2675	70
5.	2014	3312	567	2321	83
6.	2015	3212	494	2401	216
7.	2016	3462	596	2367	135
<b>Total</b>		<b>24986</b>	<b>4457</b>	<b>18259</b>	<b>774</b>

Source / from the work of the researcher depending on the Ministry of Planning, the Central Statistical Organization, Directorate of Transport and Communications Statistics, the statistics of traffic accidents registered for the year 2016.



Table (6), shows the number of accidents according to gravity (non-fatal accidents), it follows that the collision accident ranked first, where it got (24986) accident for the duration of the study followed by run over , reached to (18259) accident and comes third rank , incident reached to (4457) and another category (774) accident, as shown in Figure (6).

Figure (6) Non-fatal accidents according to danger.



The source / work of the researcher based on Table (6) and the use of Microsoft Excel 2010.

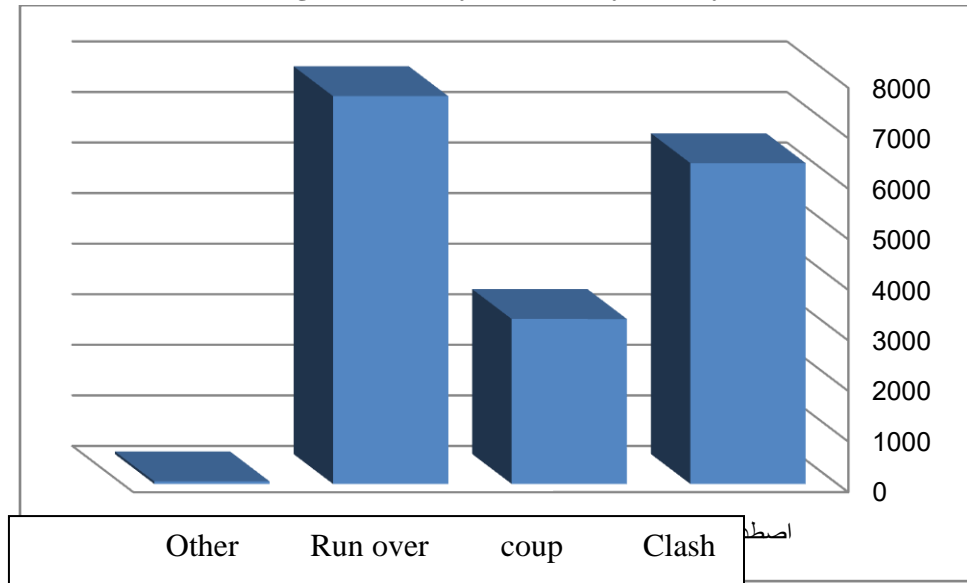
Table (7) Accidents by severity (fatal accidents).

N	Years	Clash	coup	Run over	Other
1.	2010	730	396	1060	08
2.	2011	864	458	1057	11
3.	2012	1057	588	1248	07
4.	2013	939	538	1118	06
5.	2014	976	426	1121	08
6.	2015	1001	507	1004	02
7.	2016	780	350	1064	09
<b>Total</b>		<b>6347</b>	<b>3263</b>	<b>7672</b>	<b>51</b>

Source / from the work of the researcher depending on the Ministry of Planning, the Central Statistical Organization, Directorate of Transport and Communications Statistics, the statistics of traffic accidents registered for the year 2016.

The table (7), shows the fatal accidents by danger , as it is clear to the researcher that the run over occurred in the first place where the number of accidents reached to (7672) accidents for the same period, followed by the collision category reached to (6347) accident, and the class of the fatal incident ranked third (3263) accidents . The latest category comes from another accident (51) accidents, see figure (7).

Figure (7) Deadly Accidents by Severity.



The source / work of the researcher based on Table (7) and the use of Microsoft Excel 2010.

**CONCLUSIONS:**

The study reached a number of conclusions summarized as follows:

- 1.The peak of accidents in 2012 for the period studied (2010 2016), reached to (10709) accidents.
- 2.The rate of injuries per month for the period studied reached to (816) wounded at all different levels and most of these wounds generate permanent disability for the person.
- 3.The study indicated that the main cause of accidents is due to the driver. The accidents for the same period, which was caused by the driver, reached to (45953) or 70% of the total.
- 4.The study showed that the number of accidents according to road category is characterized by the main road category. The total number of accidents in the same period reached to (34639) accidents, or 52%.65.
- 5.The study showed that the number of road accidents by type of accident was the type of collision accident, with 322.6 accidents representing 51%.93.
- 6.The number of accidents according to the time of the accident ( day ), the time of the day has been different from the rest of the time, with a total of (43551) accidents, or (66%.19)
- 7.The study concluded that accidents cause the society y to be deprived of the human potential s that can contribute to

its construction, as well as the high economic cost and material losses.

8.It also contributes to the handicap and disruption of productive capacities of society, as well as disabilities and consequent negative psychological effects on the injured and inability to care for his family and children, resulting in social problems.

**SUGGESTIONS:**

The study reached to a set of suggestions summarized by:

- 1- The need to develop a national strategy to reduce traffic accidents in general and road accidents in particular, with special emphasis on youth and children accidents, especially solutions for dangerous areas and areas, and focus on solutions that include awareness, engineering, supervision, legislation and medical aspects.
- 2.A better level of traffic safety can be achieved by rightly dealing with the injured persons, timely reporting about incidents, immediate action to prevent successive accidents and control of the traffic accident scene.
- 3 - There is a need for specific detailed studies in the field of traffic safety based on statistical data of accidents, violations and vehicles that have become well available in many Arab countries, such as those related to youth accidents, run-ins, bus accidents and other specific studies

that serve the system and Security and contribute to finding scientific and practical solutions.

4 - The need to expand the construction of the road network and modernize and expand with a focus on circular and bypass roads around the cities to reduce traffic incompetence and accidents.

5 - The need to increase coordination among neighboring countries on transit transport and conditions of transport of cargo , insurance , dimensions and weights.

6 - The need to find databases and digital maps of the network of roads and intersections including traffic volumes and accidents and data on road numbers as well as classification and road furniture, and there is a need to

address the lack of registration of some important statistical and traffic data such as the number of kilometers per year per vehicle, , And statistical tables should be extracted for road accidents.

7 - The need to introduce modern technology in the field of road uses such as protection of bridges and the development of electronic boards and the use of multiple vehicles of roads survey using laser and other modern technology.

8. Many roads lack specialized supervision, such as patrols, as well as start-up centers for ambulances, rescue and firefighting vehicles.

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## REFERENCES

<sup>i</sup>Charles D. Reese, Accident / Incident Prevention Techniques Francis Group LLC, , New York, USA, 2012.

<sup>ii</sup>Eiichi Taniguchi, Urban Transportation and Logistics Health, Safety, and Security Concerns, Francis Group, LLC, USA, 2013.

<sup>iii</sup>KjellHausken , Jun Zhuang, Game Theoretic Analysis of Congestion Safety and Security Traffic and Transportation Theory, The State University of New York, Springer, USA, 2015.

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