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Research Article

Spatial Analysis of Traffic Accidents in the Iraqi Middle Euphrates Provinces: A Case Study

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Abstract

Traffic accidents are among the most important problems that leave economic and social impacts as a burden on the citizen. In addition, they leave economic costs in terms of material or human losses. Some traffic accidents lead to a permanent disability or temporary disability that needs a period of time, which of course, requires financial costs for the purpose of medical treatment. The problem of traffic accidents is witnessing an increase at the present time. This is primarily attributed to the increase in the number of residents and vehicles of various kinds. They leave negative effects, which became a human tragedy. Therefore, this problem can be attributed to a set of factors causing the increase in traffic accidents of various types, such as those accidents related to the driver, including lack of compliance with the law, regulations, traffic signals, lack of maintenance for the transportation network in general, as well as failure to adhere to the legal age related to the driver's age and recklessness... etc. The present study aims to study traffic accidents in Iraq in general and in the Middle Euphrates region, as it is a central focus in Iraq, in addition to identifying the causes that led to the development of the problem in the study area and thus taking measures that would reduce or limit the problem.

Traffic accidents have recently increased in Iraq at high rates for the period (2001-2018). The total number of traffic accidents reached about (539,496) accidents, according to the statistics of the Ministry of Planning, the Central Agency, the Transportation and Communications Department. This number is considered high in comparison with the population of Iraq.

Keywords
Traffic, Traffic accident, Traffic safety

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Introduction

Iraq, in general, and the Middle Euphrates region suffer from the high ratio of traffic accidents due to the growing population and the increase in the number of vehicles without being accompanied by any development in the service sector of the transport and communications network. Therefore, the number of accidents on the transport roads, including highways, main, secondary, and even rural is increasing day after day. This has become a social and economic problem that affects the whole society alike. Despite the measures taken by the concerned authorities to reduce or limit traffic accidents throughout Iraq, they are witnessing an increasingly large increase than they were in 2001. The spatial limit of the present study is Iraq, with special reference to the Middle Euphrates region, which is astronomically located between two latitude circles (4, 29´° 33´,3 - ° north) and two longitudes (43 ° - 45 ° east), whose area reaches (98870) km2 of the total area of Iraq. From the north, it is bounded by Baghdad, from the east and south-east, it is bounded by Wassit, Nasiriyah, and Basra, from the south, it is bounded by an area that represents the political borders of the Kingdom of Saudi Arabia, and from the west, it is bounded by Anbar as shown in Maps (1) and (2).

Problem of the Study

The study problem can be summarized in the following questions:

Has the number of traffic accidents doubled in the Middle Euphrates region compared to the other Iraqi provinces? What are the factors and causes of traffic accidents? What are the effects of traffic accidents? Are traffic accidents variant in the provinces of the Middle Euphrates?

Objectives of Study

The present study aims at:

1. Identifying the number of traffic accidents and their causes in the study area.
2. Determining the extent of the negative effects resulting from traffic accidents.
3. Identifying the geographical distribution of traffic accidents and the measures that can be taken to achieve traffic safety.

Design of the Study

The present study is divided into four sections represented by the following:

Section one discusses types and development of traffic accidents in Iraq for the period (1980-2018).Section two tackles the factors causing traffic accidents, their types, and their effects in Iraq for the year 2018.Section three presents the social and economic effects of traffic accidents in Iraq and the resulting injuries and deaths for the year 2018.

Classification of accidents and the evolution of traffic accidents in the Iraqi Middle Euphrates region for the period (1980-2018).

Classification of traffic accidents

According to the damage they cause, traffic accidents are classified into four groups:

1. Fatal accidents that lead to the loss of a person's life.
2. Accidents of severe injuries that lead to disability of individuals for a period of time or cause them a permanent disability that remains with them for life.
3. Minor accidents that disappear after a period of time.
4. Accidents that do not cause any deaths or injuries, whose damage is primarily material, such as the damage of vehicles (Al-Ajwad, 1995).

Forms of traffic accidents

Traffic accidents take different aspects as follows:

1. Collisions between cars or between fixed or moving solid objects.
2. Accidents involving pedestrians on roads or sidewalks inside cities.
3. Car accidents.
4. Cars combustion accidents (ibid).

Elements of traffic accidents

1. The driver of the vehicle; It is the person who drives the vehicle or an animal that drives, loads, or rides, directly. Neglecting these factors and not being aware of them leads to the occurrence of accidents (Al-Jubouri, 2015)
2. Vehicle; It is all that is allocated to traffic on the highway. It often results in losses.
3. The highway; It is the passage through which the means of transport pass (Al-Jubouri, 2015).

The number of traffic accidents in the Iraqi Middle Euphrates provinces has increased for the period (1980-2018).

Krug Wanger believes that about 90% of disabilities resulting from traffic accidents occur in developing countries. The United Nations report for the year 2010 indicates that more than half of the victims of traffic accidents are of the working age group. This prompted the United Nations to issue the first global report on prevention of traffic accidents. Great importance was given to this matter when the United Nations General Assembly issued the Resolutions 58/289 in 2004, 5/60 in 2005, and 62/244 in 2008. All resolutions aim to take measures to improve road safety at the global level (Al-Rayani et al., 2014).

Statistics issued by the Ministry of Planning, the Central Agency for Development Cooperation, Transport and Communications Department for the period (1980-2018) indicate that traffic accidents amounted to about (395231) accidents as shown in Table (1) and Figure (1).

From the aforementioned, it is concluded that the number of traffic accidents for the period (1980-1989) amounted to (293981) accidents. From (1990-1999), the number decreased to (94455) accidents from the total traffic accidents in Iraq. Accidents amounted to (539,496), in the period (1980-2018) due to the application of laws and regulations related to safety and security as well as the decrease in the number of cars due to the economic conditions in Iraq.

Table 1.
Evolution of traffic accidents in Iraq for the period (1980-2018).

The year	Number of accidents	The year	Number of accidents
1980	28985	2000	6795
1981	29285	2001	7759
1982	28686	2002	8535
1983	31988	2003	6826
1984	33076	2004	8191
1985	32003	2005	9010
1986	34413	2006	3389
1987	28886	2007	3135
1988	21669	2008	5502
1989	24990	2009	7452
1990	25310	2010	8861
1991	11512	2011	10082
1992	12381	2012	10709
1993	8998	2013	9725
1994	5765	2014	8814
1995	5223	2015	8836
1996	5331	2016	8763
1997	6752	2017	8824
1998	6400	2018	9852
1999	6783		

Source; The work of the two researchers depending on the Republic of Iraq, the Central Agency for Statistics and Development Cooperation, Department of Transport and Communications Statistics, unpublished data, for the period (1980-2018).

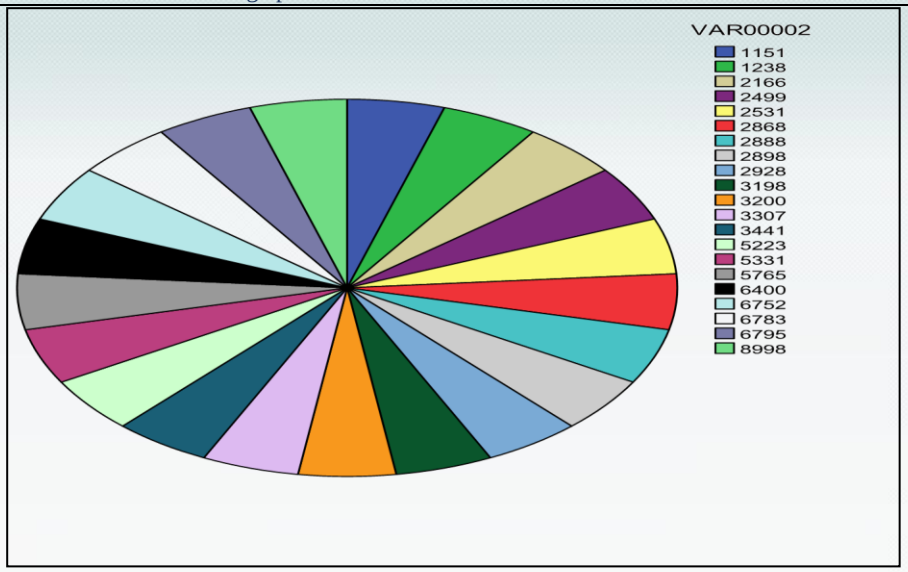


Figure 1. The evolution of traffic accidents in Iraq for the period (1980-2018).
Source; The two researchers, based on Table (1).

Traffic accidents are a global problem. They cause human and material damages in all regions of Iraq alike. Most of the accidents occur on the external roads of cities. From the data of Table (2) and Figure (2), the number of accidents varied between the provinces of Iraq. Baghdad ranked first in the number of traffic accidents that amounted to (45,380) traffic accidents. There are provinces that occupied the last three levels according to the number of traffic accidents, which are the provinces of (Karbala, Salah al-Din, and Muthanna) with about (3.2%), (2.9%) and (2.7%) for each of them for the period (1980-2018).

Table 2.
The number of traffic accidents in the Iraqi provinces for the period (1980-2018).

Province	Number of accidents	%
Ninveh	6526	4.2
Salahuldin	4466	2.9
Kirkuk	4919	
Dyala	8333	5.3
Anbar	8301	3.7
Baghdad	45380	29.1
Babylon	13697	8.8
Karbala	5669	3.6
Najaf	13752	
Qadisya	10440	6.7
Al-Muthanna	4265	2.7
Thiqar	9675	6.2
Wassit	9024	5.8
Meisan	7918	5.1
Basra	6167	3.9
Total	539496	100%

Source; The two researchers depending on The Republic of Iraq, the Central Agency for Statistics and Development Cooperation, Department of Transport and Communications Statistics, unpublished data, for the period (2001-2018).

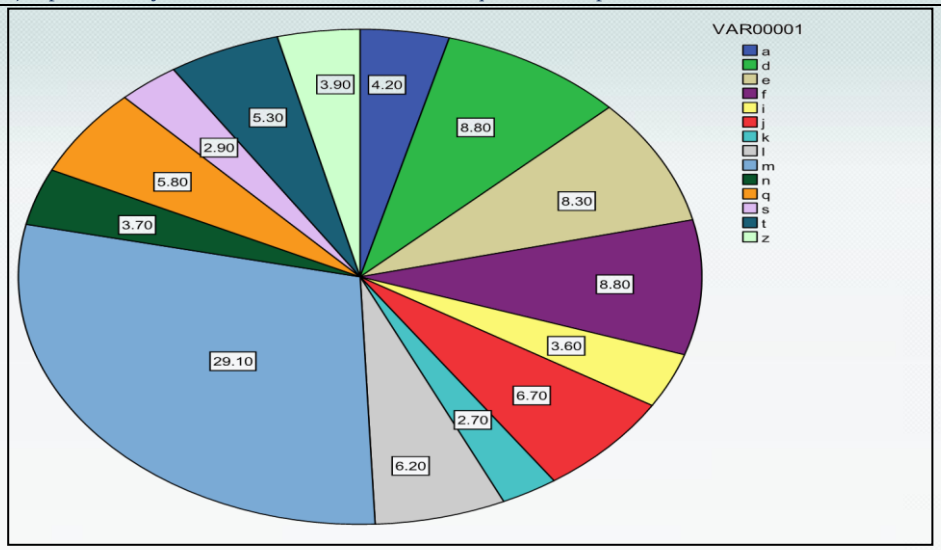


Figure 2. Number of traffic accidents according to the Iraqi provinces for the period (1980-2018). Source: The two researchers based on Table (2).

As for the number of traffic accidents in the Middle Euphrates provinces shown in Table (3) and Figure (2), Najaf occupies the first rank of the number of traffic accidents with (13752) traffic accidents with a percentage of (28.7%) of the total traffic accidents in the middle Euphrates region for the period (2001-2018). The reason for this is attributed to the urban expansion, in addition to the traffic congestion as it includes the shrine of Imam Ali (peace be upon him). Babylon occupies the second rank with regard to traffic accidents with (13697) accidents at a percentage of (28.6%) of the total Traffic accidents in the Middle Euphrates region due to the large increase in the number of cars and the volume of traffic movement as it is a central focus in the Middle Euphrates region. Qadisiyah occupies the third rank in the number of traffic accidents with (10440) accidents with a percentage of (21.8%) of the total traffic accidents In the Middle Euphrates region. In the fourth rank, comes Karbala with (5669) accidents with a percentage of (11.8%) of the total traffic accidents in the Iraqi Middle Euphrates region due to its religious importance, especially during religious events, which causes traffic congestion. Al-Muthanna governorate ranks Fifth with (4265) accidents at a percentage of (8.9%) of the total traffic accidents in the Iraqi Middle Euphrates region.

Table 3.

The number of traffic accidents in the Iraqi Middle Euphrates region for the period (1980-2018).

Province	Number of accidents	Percentage
Babylon	13697	28.6
Karbala	5669	11.8
Najaf	13752	28.7
Qadisyya	10440	21.8
Al-Muthanna	4265	8.9
Total	**47823**	100%

Source; The researcher's based on: the Republic of Iraq, the Central Agency for Statistics and Development Cooperation, Department of Transport and Communications Statistics, unpublished data, for the year 2018.

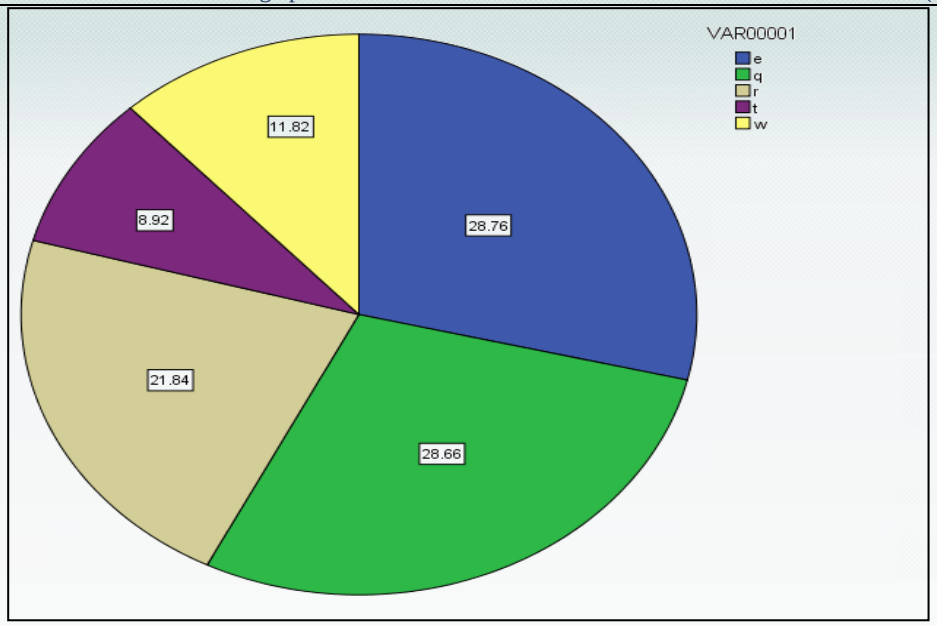


Figure 3. the number of traffic accidents in the Iraqi Middle Euphrates region for the period (1980-2018).
Source: The two researchers based on Table (3).

The foregoing comparison between the Middle Euphrates Provinces and the whole Iraq reveals that the number of traffic accidents for the period (2001-2018) in the Middle Euphrates region amounted to (47823) accidents out of the total number of accidents throughout Iraq, which amounted to about (156032) accidents, which gives a clear indication that traffic accidents increased at the level of Iraq in (Baghdad, Babylon, Najaf, and Qadisiyah). In comparison with the Middle Euphrates region reveals a significant increase in the number of traffic accidents in Najaf, Babylon, and Qadisiyah, which indicates an increase the rate of traffic accidents. The reason is primarily attributed to the high number of cars, traffic congestion, and the increase in the population without moving towards developing the situations of the land transport network and the lack of maintenance and services.

Reasons and types of traffic accidents in Iraq and the Middle Euphrates provinces for the year 2018.

1. Traffic related reasons; driver.

There are many reasons associated with traffic accidents. Some of the reasons are related to the person and others are related to vehicles and roads. But, man is one of the most influencing factors in the occurrence of the tragedy resulting from traffic accidents being the driver and pedestrian at the same time. The occurrence of traffic accidents is due to various reasons, including recklessness, failure of the driver to abide by traffic signs, speed in driving, and not paying attention to the road... etc. From the data of Table (4), it becomes clear that the number of driver related traffic accidents amounted to about (10.439) accidents. Speed related traffic accidents formed the highest percentage among the total reasons of traffic accidents with about (7.314) Accidents, followed by wrongly passing related traffic accidents with about (602) accidents. Inattention related traffic accidents ranked third with about (508) accidents distributed as follows:

1. Babylon ranked first in the number of speed related traffic accidents with about (991) accidents at a percentage of (13.5%) of the total traffic accidents. Basra and Najaf followed with about (965) and (952) accidents in the second and third rank by (13.2%) and (13%) respectively for each of them. Nasiriyah ranked fourth in the number of speed related traffic accidents with about (886) accidents with a percentage of (12.1%) of the total traffic accidents amounting to (7314) speed related traffic accidents. Salah Al-Din ranked last with about (56) speed related traffic accidents with a percentage of (0.7%).

Table 4.
The main reasons of driver related traffic accidents in Iraq for the year 2018.

Province	Extreme speed	Driving in the wrong direction	Wrong crossing	Prohibited rotation	Incompliance with traffic instructions	Incompliance with traffic signals	Driving while drunk	Unlicensed driving	Inattention	Others	Total
Neneveh	103	24		6	5	12	-	-	9	-	170
Salah Al-Din	56	2	11	3	11	-	-	10	13	-	103
Kirkuk	203	-	8	-	-	21	36	-	-	27	203
Dyala	412	52	-	17	27	6	1	66	42	19	840
Anbar	107	31	123	-	19	5	8	1	52	13	265
Baghdad	527	54	21	40	3	-	13	23	28	83	745
Babylon	991	17	28	2	17	19	18	-	38	4	1.200
Karbala	371	33	23	8	46	-	-	34	8	26	537
Najaf	952	33	3741	-	46	-	-	--	-	36	1.064
Qadisiyah	667	56	37	32	31	1	16	7	30	27	956
Al-Muthanna	414	2323	80	5	-	-	3	3	4	6	506
Nassiriya	886	--	-	-	-	-	-	-	-	68	892
Wassit	457	9988	78	31	69	52	46	22	192	22	1.123
Meisan	203	55	3	-	-	-	-	-	12	3	245
Basra	965	116	122	74	58	47	72	53	80	334	1.590
Total	7.314	528	602	218	340	163	213	219	508		10.439

Source; The two researchers based on Republic of Iraq, the Central Agency for Statistics and Development Cooperation, Department of Transport and Communications Statistics, unpublished data, for the year 2018.

2. Najaf ranked first about wrongly crossing traffic accidents with about (374) traffic accidents. Maysan ranked last with (3) accidents with (0.4%) of the total wrong crossing related traffic accidents.
3. Wassit ranked first in inattention related traffic accidents with about (192) accidents with a percentage of (37.8%). Maysan ranked last with about (3) accidents with a percentage of (0.5%) of the total inattention related traffic accidents.

Following up the occurrence of driver related traffic accidents in the Middle Euphrates provinces for the year 2018 shows that the number of traffic accidents reached (2001,246) accidents varying according to their types as follows:

1. Babylon ranked first about speed related traffic accidents with about (991) with a percentage of (49.5%) of the total traffic accidents in the middle Euphrates region. Najaf ranked second with about (952) accidents with a percentage of (47.5%). Qadisiyah ranked third with about (66) accidents with a percentage of (33.3%) of the total speed related traffic accidents in the Middle Euphrates region. Al-Muthanna and Karbala ranked fourth and fifth with about (414) and (317) accidents with a percentage of (20.6) %) and (15.8%) respectively for each of them in 2018.
2. Al-Muthanna ranked first about wrong crossing related traffic accidents with about (80) accidents with a percentage of (3.9%) of the total traffic accidents in the Middle Euphrates region. Babylon ranked second with about (38) accidents with a percentage of (1.9%). Najaf ranked third with about (37) accidents with a percentage of (1.8%) of the total traffic accidents in the Middle Euphrates region. Qadisiyah and Karbala ranked fourth and fifth with about (37) and (23) accidents with a percentage of (1.8%) and (1.5%), respectively for each of them.

2. Road related traffic reasons.

It is evident from the data of Table (5) that the percentage of the number of road related traffic accidents registered in Iraq varies among the provinces. The highest percentage of road related traffic accidents was about (70.9%). Car collision related traffic accidents were about (13.1%). In Iraq. Speed, loosening, excavation, and lack of maintenance for road related traffic accidents ranked third with about (8.2%). Pedestrian crush related traffic accidents ranked fourth with about (3.9%). Finally, there were other reasons with about (1.8%) and (2.1%).

Following up the road related traffic accidents in the Middle Euphrates provinces reveals that they have an increase in the number of driver related traffic accidents with about (2,920) accidents, from the total number in Iraq which is about (3,334) accidents. The number of cars related traffic accidents was about (359) traffic accidents out of the total number in Iraq which is about (357,846) accidents. Road problems related traffic accidents were about (285) accidents from the total number in Iraq for the year 2018, which was about (440) accidents. The number of unknown reason traffic accidents were about (89) accidents from the total number in Iraq, which was about (100) traffic accidents in 2018.

Province	Road	%	Car	%	Pedestrian	%	Passengers	%	Others	%	Total
Kirkuk	5	0.6	75	6.4	-	-	-	-	2	1.1	82
Dyala	29	4	75	6.4	-	-	47	30,1	81	42.9	232
Salah Al-Din	16	2.2	25	2.2	25	7.2	7	4.6	-	-	73
Baghdad	142	19.6	249	21.5	43	12.4	39	25	3	1.6	476
Babylon	4	0.6	55	4.7	26	7.5	2	1.3	6	3.2	93
Karbala	113	15.7	42	3.5	23	6.6	8	5.1	3	1.6	189
Najaf	157	21.7	157	13.5	22	6.4	-	-	22	11,6	358
Qadisyah	9	1.2	77	6.5	11	3.2	1	0.6	38	20.1	136
Al-Muthanna	2	0.3	28	2.4	1	0.3	-	-	-	-	31
Thiqar	-	-	-	-	3	0.9	-	-	4	2.1	7
Wassit	96	13.2	85	7.4	124	35.8	29	18.6	12	6.3	346
Meisan	1	0.1	20	1.7	2	0.5	-	-	18	9.5	41
Basra	151	20.8	266	23.1	66	1	23	14.7	-	-	506
Total	725	%100	1.154	%100	346		156	%100	189	%100	1417.154

Source; the two researchers depending on Republic of Iraq, the Central Organization for Statistics and Development Cooperation, Transport and Communications Statistics Section, unpublished data, for the year 2018.

3. Climate related traffic accidents.

It is one of the important factors affecting the different transport methods and their networks in terms of characteristics and geographical distribution. It is limited to minimizing the impact of these climatic characteristics and trying to adapt to them (Zouka, 2000).

In the Middle Euphrates region, transport and transportation network is affected by the climatic conditions. The fall of heavy rains leads to the occurrence of many accidents because of the coup and collision. This effect is directly more in the dry areas because the transport routes in these areas are not well paved to enable them to resist these problems. The phenomenon also increases the severity of the sabotage process and the lack of services represented in water drainage streams. Thus, the roads sink and cracks. The indirect effect is the fall of the hail on the road. When the hail falls, it causes problems on the roads because of traffic disruption (Al-Ajwad, 1995) including the high temperature. Winds play a major role in bringing sandstorms and disrupting transport movement on the roads. Fog is a source of danger to air, sea, or landforms of transport. It reduces the degree of visibility of uneven distances. Thus, it results in the lack of clarity of the road, which results in many accidents, such as collision, run over, and overturning, especially during the early morning (Abda,1994).

Types of traffic accidents in Iraq and the Middle Euphrates region for the year 2018.

Table (6) indicates that the classification of traffic accidents varies according to the shape or form in which the traffic accident occurred. Collision accidents occur either between cars or collisions with a solid object. Rollover accidents happen because of vehicles out of control and lack of periodic maintenance of vehicles. Run over accidents occur due to the collision of vehicles with animals or pedestrians. In the study area, the total types of traffic accidents amounted to (8757) traffic accidents of all kinds. Collisions between vehicles represent about (50.8%) of the traffic accidents occurring in Iraq for the year 2018 because of speed, inattention, and lack of safety distance between vehicles. Run-over accidents reached about (37.3%) of the total traffic accidents amounting to (8,757) accidents. They ranked second in Iraq for the year 2018 constituting one third of the traffic accidents. Overturning accidents ranked third with (10.5%) of the total traffic accidents throughout Iraq. Collisions with a fixed object reached (1.4%) of traffic accidents according to the type of accident in Iraq in general, and the Middle Euphrates region in particular. There is a clear disparity at the level of the whole Iraq and the Middle Euphrates region in the type of traffic accidents. Basra has high traffic accidents due to collisions between two or more vehicles reaching to (14.8%) of the total traffic accidents. Najaf ranks second with (12%). Baghdad and Qadisiyah follow with About (10.2%) of total traffic accidents recorded throughout Iraq. Babylon follows with about (9.4%) of the total collision accidents. Wassit ranks fifth with (8.6%) of the total collision accidents. Looking at the various types of traffic accidents for the year 2018 indicates that the percentage in the Middle Euphrates region increases by more than a third (43.3%) of the total traffic accidents because of the traffic congestion in the Middle Euphrates region.

Crushing accidents increase in Baghdad, Najaf, and Basra with about (14.7%), (14.3%), and (13.4%), out of the total traffic accidents. Qadisiyah and Wassit follow with about (7.6%) of the total traffic accidents because they are related to the area of dangerous curves, intersections, and lack of safety. As for coup accidents, Wassit, Qadisiyah, and Nasiriyah ranked first with (14.4%) and (11.5%). Babylon ranked second with about (11%) of the total traffic accidents.

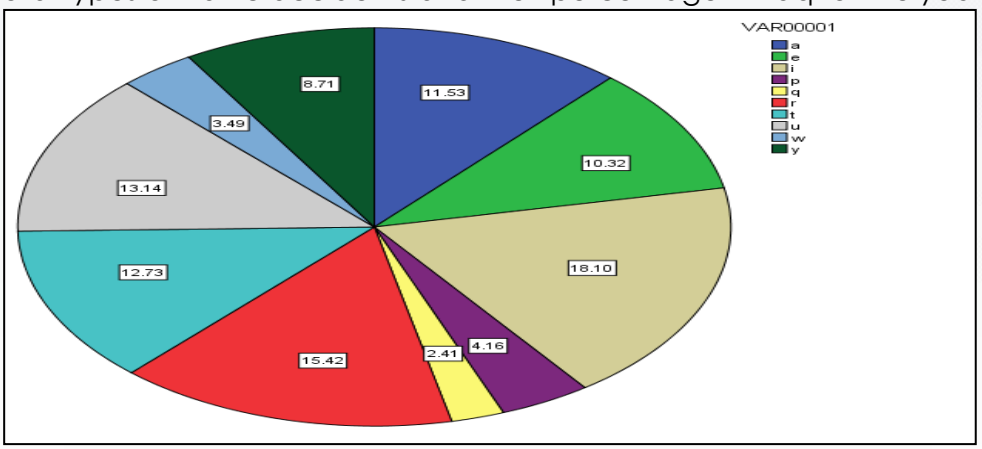
Table 6.
Types of traffic accidents in Iraq for the year 2018.

Province	Types of accidents									
	Crashing	%	Collusion	%	Overturning	%	Crashing a fixed object	%	Number of accidents	%
Nineveh	-	-	-	-	-	-	-	-		
Salah Al-Din	75	1.6	33	3.6	54	1.7	-	-	-	-
Kirkuk	117	2.6	45	4.9	68	2.1	2	1.6	162	1.8
Dyala	318	7.2	66	7.2	182	5.6	113	89.7	232	2.6
Anbar	-	-	-	-	-	-	-	-	679	7.7
Baghdad	453	10.2	82	8.9	480	14.7	-	-	-	-
Babylon	419	9.4	101	11	310	9.5	-	-	1,015	11.5
Karbala	243	5.5	17	2	310	9.5	-	-	830	9.5
Najaf	534	12	57	6.2	466	14.3	-	-	570	6.5
Qadisyah	449	10.2	106	11.5	247	7.6	-	-	1057	12
Al-Muthanna	230	5.2	46	5	125	3.8	-	-	869	9.8
Thiqar	441	9.9	106	11.5	249	7.612	-	-	401	4.5
Wassit	384	8.6	132	14.4	239	7.3	1	0.8	796	9.0
Meisan	124	2.8	46	5	97	2.9	10	7.9	756	8.6
Basra	659	14.8	81	8.8	440	13.4	-	-	277	3.1
Total	4446	%100	918	%100	3267	%100	126	%100	1180	13.4

Source, The two researchers depending on Republic of Iraq, the Central Organization for Statistics and Development Cooperation, Transport and Communications Statistics Section, unpublished data, for the year 2018

From the above table, it is concluded that the total traffic accidents increase in the Iraqi Middle Euphrates region in comparison with the total number of accidents in Iraq. They also vary between the Middle Euphrates provinces. Najaf recorded the highest percentage of types of traffic accidents followed by Babylon and Qadisiyah as in figure (4).

Figure 4. Total types of traffic accidents and their percentage in Iraq for the year 2018.



Source: The two researchers based on Table (6)

Human, social, and economic impacts of traffic accidents in Iraq for the year 2018.

First; Injuries and deaths resulting from traffic accidents in Iraq for the year 2018.

From the data of Table (7) and Figure (5), the number of injuries in all of Iraq reached (9,388) cases of injury due to collision with a fixed object or being run over and recklessly driving by the driver. They were distributed among the provinces of Iraq. Basra, Najaf, Babylon, and Wasit took the lead with the highest percentage of injuries of about (1,222), (1,155), (1,062), and (1,029) respectively for each of them out of the total number of injuries in Iraq for the year 2018.

As for the number of deaths, it ranked second in Iraq as about (2,621) deaths were recorded throughout Iraq distributed on Nasiriyah and Basra. The number of deaths reached about (311) deaths. That is followed by the number of deaths in Baghdad, Babylon, Dyala, Najaf, Wassit, and Qadisiyah with about (293), (263), (230), (221), (213), and (204) deaths respectively for each of them of the total number of deaths in Iraq. The number of deaths in Al-Muthanna and Karbala reached about (143) and (117) accidents, respectively.

In the Middle Euphrates region, the number of injuries and deaths has increased by more than half in comparison with all Iraq for the year 2018. Basra ranked first in terms of the number of injuries and deaths with (312,222). Najaf and Babylon ranked second and third with About (264.062) and (222.115) respectively for each of them. The number of deaths and injuries in Najaf reached about (8.4%) and (11.9%), respectively. In Babylon, it formed a percentage of (10%) and (11.3%) followed by Al-Muthanna and Karbala with (679) and (650). The number of deaths represented (5.1%), (4.5%) and injuries (5.7%) for each of them respectively.

From the foregoing, it is concluded that the Middle Euphrates region gives a clear indication of the high number of accidents in comparison with Iraq. The reason is attributed to the lack of maintenance, inattention to the external transport network, and poor services.

Table 7.

Injuries and deaths in traffic accidents recorded in Iraq for the year 2018.

province	Number of deaths	%	Number of injures	%	Total accident
Kirkuk	107	4.1	210	2.2	317
Dyala	230	8.1	802	8.5	1032
Salah Al-Din	80	3.1	110	1.2	190
Baghdad	293	11.2	699	7.4	992
Babylon	263	10	1.062	11.3	264.062
Karbala	117	4.5	533	5.7	650
Najaf	221	8.4	1.115	11.9	222.115
Qadisyah	204	7.8	898	9.6	1102
Al-Muthanna	143	5.1	532	5.7	675
Thi Qar	311	11.9	875	9.3	1186
Wassit	213	8.1	1.029	11	214.029
Maisan	137	5.2	301	3.2	438
Basrah	311	11.9	1.222	13	312.222
Total Percentage	2.621	%100	9.388	%100	12.009

Source; The two researchers based on Republic of Iraq, the Central Agency for Statistics and Development Cooperation, Transport and Communications Statistics Section, unpublished data, for the year 2018.

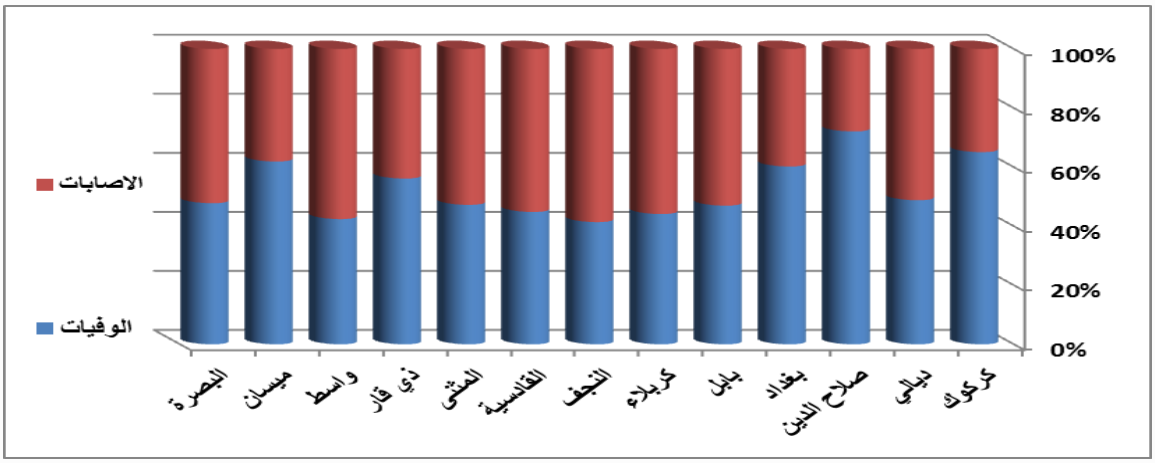


Figure (5) the percentage of the number of injuries and deaths recorded in traffic accidents in Iraq for the year 2018.
Source; The two researchers based on Table (7).

Second; Social and economic impacts of traffic accidents.

Traffic accidents in Iraq, in general and the Middle Euphrates region have created social and economic impacts that cannot be separated from one another because both are reflected on all persons associated with the accident, including:

1. Traffic accidents have social consequences that are not limited to the driver, but this aspect encroaches on a sample of community members causing health and psychological suffering, especially the traffic accident is linked to the death of the head of the family, which causes destabilization of the family.
2. Traffic accidents leave psychological impacts on vehicle owners who survive the accident. Those impacts are represented in the underlying fear of the accident happening again. This obsession may lead to another accident or may turn into suffering that cannot be treated easily.
3. Traffic accidents leave economic impacts that cause financial losses because of vehicle crashes. Rather, indirect losses occur in road infrastructure, which are related to

the working age category. This constitutes a waste of human energies that can contribute to pushing the economic wheel.

Recommendations

In light of the results of the present study, the two researchers recommend the following:

1. Holding seminars in schools, governmental institutions, universities, institutes, and media in order to increase awareness in relation to driving vehicles and abiding by laws and regulations.
2. Developing transportation networks, road maintenance, service provision, and using the information system by installing cameras for the purpose of monitoring, imposing financial fines, and determining speed and legal age for the purpose of achieving safety and security of traffic.
3. Preventing traffic except through specific places to cross by erecting fences in addition to placing optical traffic signs.
4. Reducing traffic congestion, which is one of the factors that cause accidents and is attributed to reasons, including losses, digging in roads, rainwater gathering, or because of road blockages.

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