



Spatial Variation of Traffic Accidents Recorded in the City of Al-Amirah, Southern Iraq

Salah Mahdi Oraibi

College of Education, University of Misan, Misan, Iraq
salah1977@umisan.edu.iq

Mohamed Ismail Karim

Directorate of Misan Education, Ministry of Education, Iraq
mohamedismail1101989@gmail.com

Asaad Resen Manwar

Directorate of Misan Education, Ministry of Education, Iraq
asaadrasin2022@gmail.com

ABSTRACT

The study addressed the definition of traffic accidents as well as the incidents by their types, and found that they are classified into three categories, but that collisions, which ranked first by (730) collisions of all accidents recorded in the city of Amarah during the length of the study (2010-2020) or accidents of coup or run over, and showed a discrepancy in the number of accidents between the years covered, It was the highest rate in 2012 with a total of 136 incidents, Monthly, April had the highest accident rate with 88 accidents, and accident-causing vehicles varied between cars and motorcycles of all types, and the study divided the city streets into four categories according to the number of accidents, and a group of streets where accidents were concentrated, indicating a discrepancy in the spatial distribution of accidents within the study area, and the study identified a number of factors that exacerbated the problem of accidents in the study area. The study concluded with a number of results and recommendations that the researchers hope will be implemented to address the problem of traffic accidents in Amarah.

Keywords:

Spatial Variation, Traffic Accidents, City of Al-Amarahh

Introduction

Traffic accidents have become a growing, complex, and dangerous problem in both developed and developing countries, despite efforts to prevent them, as a result of the wider social and economic transformation that the world is experiencing (Racioppi et al., 2004). This has increased traffic and movement, whether on external roads or internal streets, as a result of an increase in economic and investment projects, educational, health, tourism, leisure, commercial, and other movements, as well as an increase in vehicles, particularly automobiles, and their daily use for mobility (Bull & CEPAL, 2003).

The Problem of Study

The study's problem includes several questions, such as what types of traffic accidents occur frequently in the study area, how traffic accidents are distributed spatially and temporally in the city of Amarah, what the main causes of them are, and what losses result from them.

The Hypothesis of Study

The hypothesis is an initial answer to the study's problem, and here is the initial answer to the study's problem: the rapid increase in the number of vehicles entering Amarah, which does not correspond to the capacity of the city's streets, caused traffic problems such as

congestion, which led to an increase in traffic accidents.

The Objective of Study

Traffic accidents are one of society's most serious challenges, a factor that contributes to the loss of both physical and human capacities by increasing the rates of injuries, deaths, and financial loss, and the effects of accidents are related to disability or disability affecting the person and limiting his or her various abilities,

Spatial Boundaries of study

The study's physical borders were at the city of Amarah, the administrative centre of Misan province in southern Iraq, but astronomically it is positioned on two viewing circles (31.42 - 32) north and two length lines (46.52 - 47.22) east.

The Time Limits of Study

The time limits for research extend from 2010 to 2020.

First: The Concept of Traffic Accidents

Traffic accidents are dangerous problems for human communities in general because of the damage and human and material losses they cause, as well as the psychological and economic effects they have on citizens, so we should study them, identify their causes, and try to develop solutions to reduce them (Gopalakrishnan, 2012; Retallack & Ostendorf, 2019).

1. Definition of Traffic Accident: It is an interceptor occurrence when a vehicle collides unexpectedly with another vehicle, a stationary object, an animal, or a person on foot (Ren et al., 2018; Zhou et al., 2020). It is also described as an incident that happens without warning and unexpectedly due to the presence of specific conditions that are likely to materialise and have unfavourable outcomes (Bao, Yu & Kong, 2020; Moosavi et

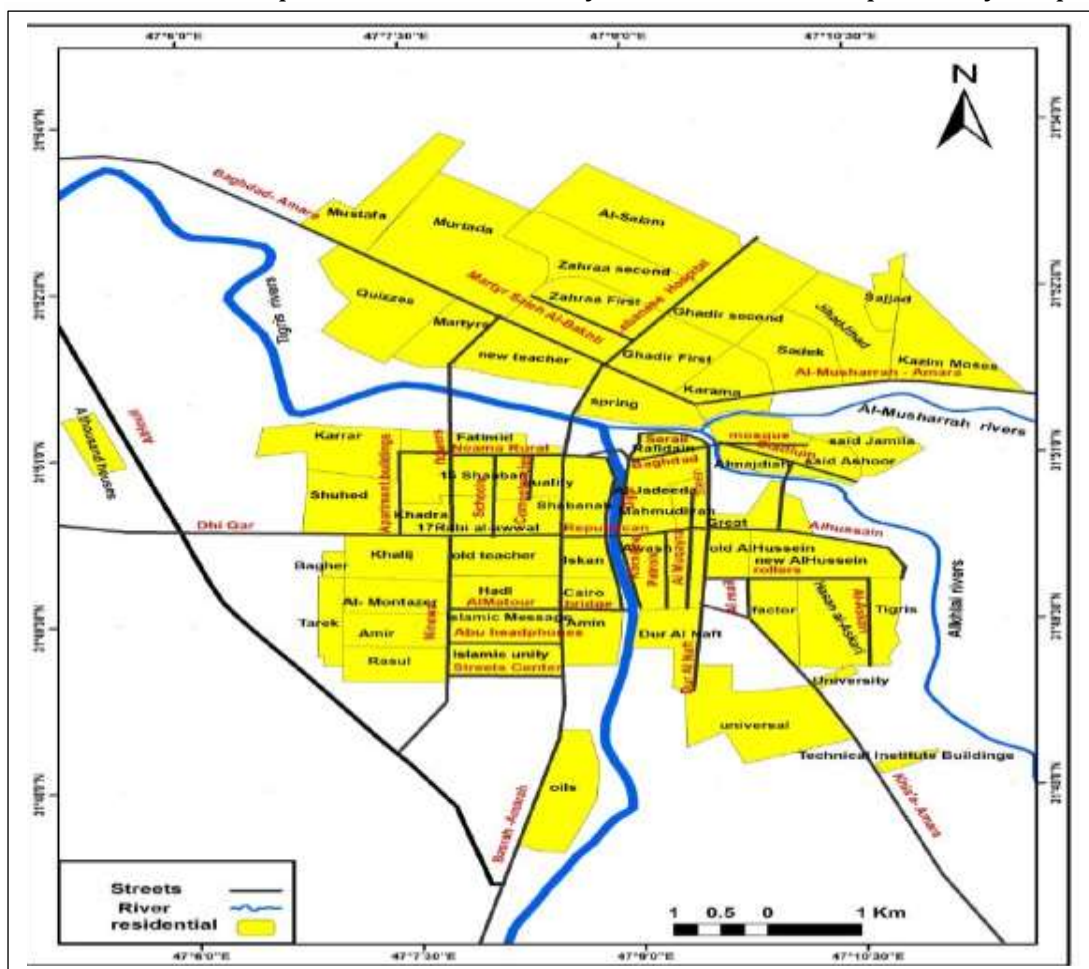
as well as the associated social, psychological, and economic problems that are extremely serious. This study aims to identify the spatial distribution of traffic accidents in the city of Amarah, the most important streets where they are increasing, and the reasons that led to the concentration of accidents at these points of the city, which initially seem obscure. This study will be useful in identifying the decision-makers and officials responsible for these causes, thereby decreasing the percentage of accidents.

al., 2019). Another definition of the term "traffic accident" describes it as "a traffic problem that results in inadvertent damage, injury, or death as a result of the operation of the vehicle" (Lee, Chae, Yoon & Yang, 2018; Wang, Lin, Guo & Wan, 2021). Looking back at earlier definitions, a traffic accident is an unforeseen event that results in both material and human losses, including potential death or injury. It happens either as a result of the driver, the car, the road, or external forces in the car.

2. Types of Traffic Accidents:

- a) **Collision:** An incident involving two or more automobiles, an animal, or fixed roadside objects like lampposts, electricity, fences, barricades, and bridges (Kostek & Aleksandrowicz, 2017).
- b) **Coup:** The car flips over due to excessive speed, mechanical problems brought on by poor maintenance and infrequent inspection, road imperfections like potholes and bumps, or adverse weather conditions including heavy rains, fog in the winter, and dust storms in the summer (Monroe & Sanders, 2000).
- c) **Run Over:** It means running over pedestrians and inflicting serious bodily harm, which could result in death (Zhongming et al., 2020).

Map 1: Location of the city of Amara from Iraq and Maysan province



Second: Traffic Accidents in the city of Amarah

Especially after the year 2003, the city of Amarah, along with other cities in Iraq, saw a significant increase in the number of vehicles in all forms, cars as well as motorcycles. This increase occurred in an ill-considered manner and was disproportionate to the size of the city as well as the size and quality of its streets. This increase was brought about by the population's improved economic circumstances and the abundance of avenues for purchasing vehicles through both public and commercial businesses that engage in instalment sales (Al-Duhaidahawi et al., 2021). Until the impacted vehicles are introduced, trade doors are open to merchants and citizens for the import of automobiles of any country. For a number of reasons, including the project to register vehicles in Misan province, which grants licence plates for vehicles at the level of the province as a whole and not just the city of Amarah, and the

existence of a significant number of vehicles bearing Kurdistan Region numbers not indicated in the Directorate of Traffic of Misan, the number of vehicles in the study area cannot be limited (Asad, 2017). Other types of vehicles, particularly motorcycles in all of their forms, including bi- and triple-axle (Tectonic and stowt), are not registered (introduced in very large numbers that disrupted traffic in the city).

1. Traffic Accidents in The City of Amarah By Type For Duration.(2020-2010)

Table Data (1) and Figure (1) show that from 2010 to 2020, the Misan Provincial Traffic Directorate's census revealed just a total of 61 traffic accidents in the city of Amarah (831) The lowest number of accidents was 25 in 2020, while 136 accidents, or 16.4%, occurred in 2012. (3.0 percent). The Misan Traffic Directorate's count of traffic accidents, which shows a noticeable decrease in numbers, does

not reflect the actual number of accidents in Amarah, as the majority of drivers of vehicles involved in accidents tend to settle their disputes without calling for help from traffic officers or reporting the incident, for a variety of reasons, including the risk of further legal repercussions, particularly in recent years, when the number of these vehicles has increased within the city, it has been discovered that accidents that result in human injury that may result in death or damage to government or public property, requiring compensation by the cause of the accident, are frequently recorded. It turns out that collisions came in first place with a total of (730) accidents because the majority of the city's streets are congested and do not permit drivers to travel at high speeds, which decreased the coup d'état and increased the accidents, with the highest rate in 2012 with (125) accidents and a percentage (17.1%) of the total number, The lowest number of collisions

was 22 in 2020 and a percentage of (3.0%) as a result of the opening of several new streets and the building of the Flower Bridge, which lessened congestion within the city. In second place in 2011, there were 116 collisions (15.9%), while the highest number was 137 collisions (28.9%) in 2011.

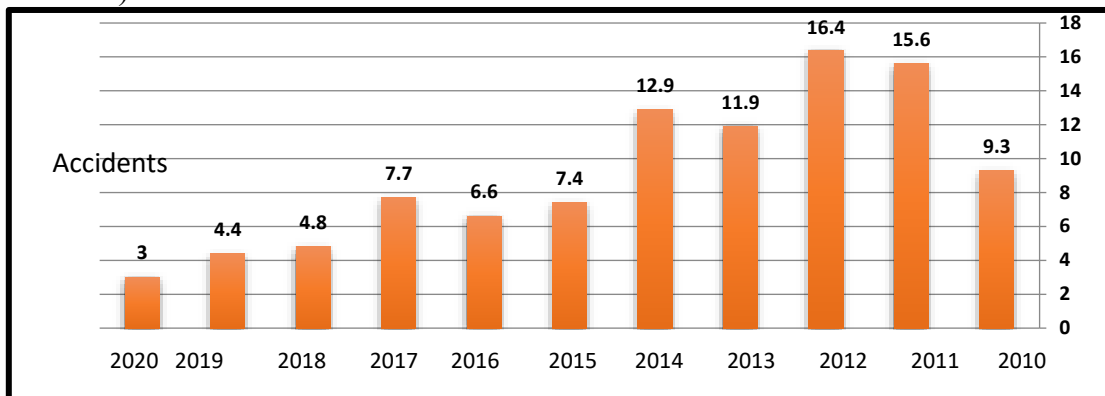
The Run over came in second place with a total of 76 Run over, with the highest rate occurring in 2011 and 2014 with 11 Run over and 14.5 percent of all Run over, and the lowest rate occurring in 2019 with (2.6%) (2) of all Run over in the city of architecture over the course of the study. The coups d'état had the fewest number of incidents, amounting to 25 of the city's total traffic accidents over the course of the study period. There were 4 coups in each of the years 2013, 2014, 2016, and 2017, accounting for 16.0 percent of the total number of coup d'état incidents. However, there was not a single coup d'état recorded in the year 2020.

Table 1: Traffic accidents in the city of Amarah registered with the Misan Traffic Directorate by type for duration (2010-2020)

No	yaers	Number of Accidents	%	Collision	%	Run over	%	Coup	%
1	2010	77	9.3	73	10.0	3	3.9	1	4.0
2	2011	130	15.6	116	15.9	11	14.5	3	12.0
3	2012	136	16.4	125	17.1	10	13.2	1	4.0
4	2013	99	11.9	89	12.2	6	7.9	4	16.0
5	2014	107	12.9	92	12.6	11	14.5	4	16.0
6	2015	61	7.4	51	7.0	9	11.9	1	4.0
7	2016	55	6.6	43	5.9	8	10.5	4	16.0
8	2017	64	7.7	50	6.9	10	13.2	4	16.0
9	2018	40	4.8	36	4.9	3	3.9	1	4.0
10	2019	37	4.4	33	4.5	2	2.6	2	8.0
11	2020	25	3.0	22	3.0	3	3.9	0	0.0
Total		831	100	730	100	7	100	25	100

Source: From the work of the researcher based on, The Republic of Iraq, The Ministry of Interior, The Directorate of Passage of Misan, Department of Statistics, Non-Advisory Data, for 2021.

Figure 1: Traffic accidents in the city of Amarah registered with the Misan Traffic Directorate for the period(2020-2010)



Source: From the researcher's work based on table data (1).

2. Monthly variation of traffic accidents in Amarah city for duration (2010-2020)

Table data (2) and figure 2 revealed that the number of traffic accidents in the study area varies depending on the month of the year. January ranked first with 90 incidents and 10.8% at a total of 8.2 incidents over the course of the study, while April and December came in second with 10.6% and 8.0 incidents per month, respectively. With 81 events, 9.8%, and monthly rates of 7.4 and 6.8 incidents, respectively, November and September came in third and fourth. This increase in the number of accidents that occurred during these months came in

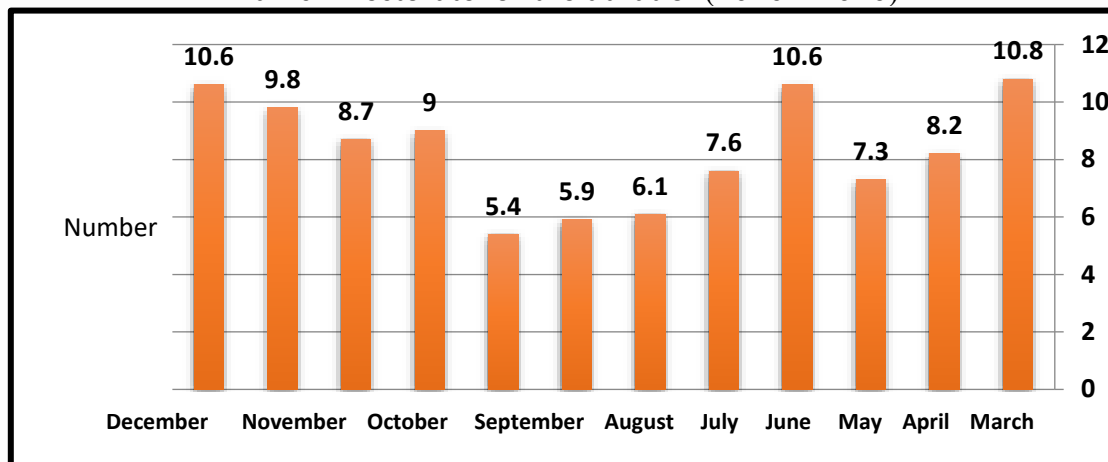
conjunction with winter due to the fall of rain and fog on some days of the year, which is one of the primary causes of traffic accidents, as well as the permanence of schools and universities that significantly increase traffic, especially during the morning peak time at the beginning of working hours. As a result of rising temperatures during these months, population movement is restricted and school and college attendance is disrupted, resulting in August having the lowest rate of traffic accidents in Amarah at 45, 4.9, 51 July at 5.4%, and June at 5.9%, and 6.1 %.

Table 2: Monthly variation of traffic accidents in The City of Amarah registered with the Misan Traffic Directorate for duration(2020-2010)

NO	Months	Number of accidents	%	Monthly rate
1	January	90	10.8	8.2
2	February	68	8.2	6.2
3	March	61	7.3	5.5
4	Nissan	88	10.6	8.0
5	May	63	7.6	5.7
6	June	51	6.1	4.6
7	July	49	5.9	4.5
8	August	45	5.4	4.1
9	September	75	9.0	6.8
10	October	72	8.7	6.5
11	November	81	9.8	7.4
12	December	88	10.6	8.0
Total		831	100	6.29

Source: From the work of the researcher based on ,The Republic of Iraq ,The Ministry of Interior , The Directorate of Passage of Misan ,Statistics Department ,Unpublished Data, 2021.

Figure 2: Monthly variation of traffic accidents in the city of Amarah registered with the Misan Traffic Directorate for the duration(2020 – 2010)



Source: From the work of a researcher based on table data (2)

3. Repeating Traffic Accidents in the city of Amarah by Type of Vehicle and the Resulting Human Damage for the Duration (2020-2010).

Table (3) and figure (3) show that the number of accidents caused by different types of vehicles in the study area varied. For example, cars alone were responsible for (561) accidents over the course of the study period, reaching their highest rate in 2011 with 104 accidents (18.5%) of the total, while 2020 saw the lowest number of accidents with (13) and (2.3%) of the total. It was discovered that throughout the course of the study, there were (270) motorcycle accidents involving cars, with the year 2014 ranking first with (51) accidents and 18.9% of the total, and the year 2020 ranking last with 12 accidents (4.5%) of all bicycle accidents involving cars in the city of Amarah. As we've shown, this fall in

accidents, both for vehicles and bicycles, is not indicative of their diminution, but because they haven't been properly documented in the Traffic Directorate and for other reasons. In the research region, traffic accidents caused human harm ranging from death to injuries, with 67 deaths and the greatest rate of 13 deaths and (19.4%) of the total number in 2011 and the lowest rate of one death (1.5%) of the total in 2010. The overall number of injuries reached 677, with the biggest number occurring in 2012 with 118 cases of injuries, or (17.4%) of the total, and the lowest number occurring in 2020 with 23 cases of injuries, or (3.2%) of all injuries in the city of Amarah. This high frequency of traffic-related fatalities and injuries in the study area highlights the severity of these incidents as well as the material, moral, and psychological harm they inflict on the offenders and their families.

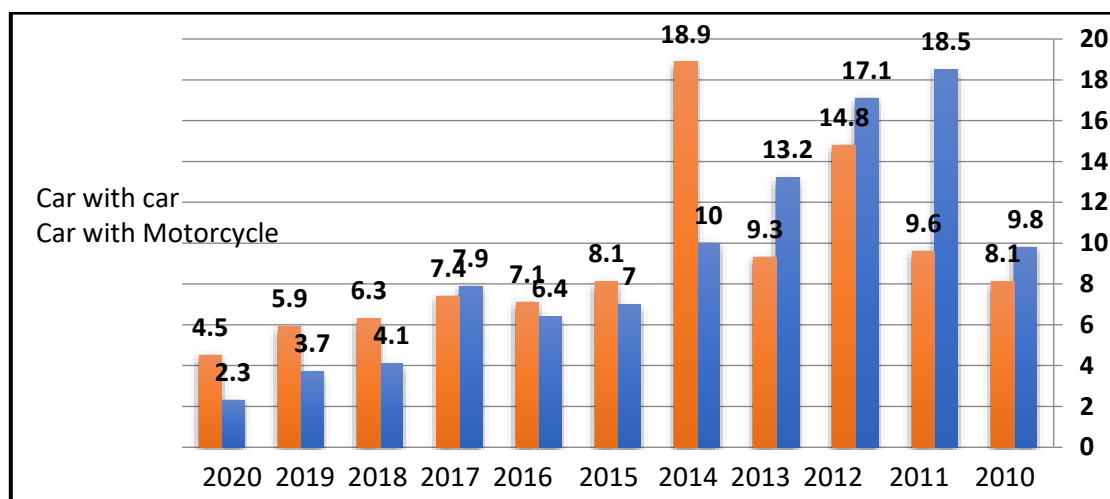
Table 3: shows the number of accidents in the city of Amarah that were reported to the Misan Traffic Directorate, broken down by the kind of vehicle that caused them and the injuries that resulted over the time period (2010-2020)

No	Year	Harm to humanity						Vehicle type			
		Car with Car	%	Car Motorcycle	with	%	Mortality	%	Wounded	%	
1	2010	55	9.8	22	8.1	1	1.5	66	9.7		
2	2011	104	18.5	26	9.6	7	10.4	97	14.3		

3	2012	96	17.1	40	14.8	6	9.0	118	17.4
4	2013	74	13.2	25	9.3	4	5.9	60	8.9
5	2014	56	10.0	51	18.9	7	10.4	86	12.7
6	2015	39	7.0	22	8.1	6	9.0	65	9.6
7	2016	36	6.4	19	7.1	11	16.4	44	6.5
8	2017	44	7.9	20	7.4	13	19.4	56	8.2
9	2018	23	4.1	17	6.3	5	7.5	38	5.6
10	2019	21	3.7	16	5.9	5	7.5	25	3.7
11	2020	13	2.3	12	4.5	2	3.0	23	3.4
Total		561	10.0	270	10.0	67	10.0	677	10.0

Source: From the work of the researcher based on ,The Republic of Iraq ,the Ministry of Interior ,the Directorate of The Passage of Misan ,the Department of Statistics ,unpublished data ,for 2021.

Figure 3: shows the frequency of traffic accidents in the city of Amarah reported to the Misan Traffic Directorate for the time period (2010-2020)



Source: From the researcher's work based on table data 3 .

4. Spatial Distribution of Traffic Accidents in Amarah City for Duration(2020-2010)

Table data (4) and map (2 and 3) show that traffic accidents in Amarah are distributed in four categories (as follows):

- a) The first category consisted of streets that had fewer than twelve incidents over the course of the research project. The Market Street of Zahraa neighborhood (Martyr Saleh Al-Bakhati Street), Corniche Al-Saray Street, and Cemetery Street from Awasha to Rafidain neighbourhood had the highest

number of incidents in this category, with eleven each. These three streets had an average of 1.3 percent of the total incidents recorded in the study area, although Club Street and Awasha had the lowest rate of accidents in this category, with 6 incidents at a rate of (0.7%) of all accidents, the decrease in the number of incidents in these streets was due to the fact that the majority of them are local streets where driving at high speeds is not permitted.

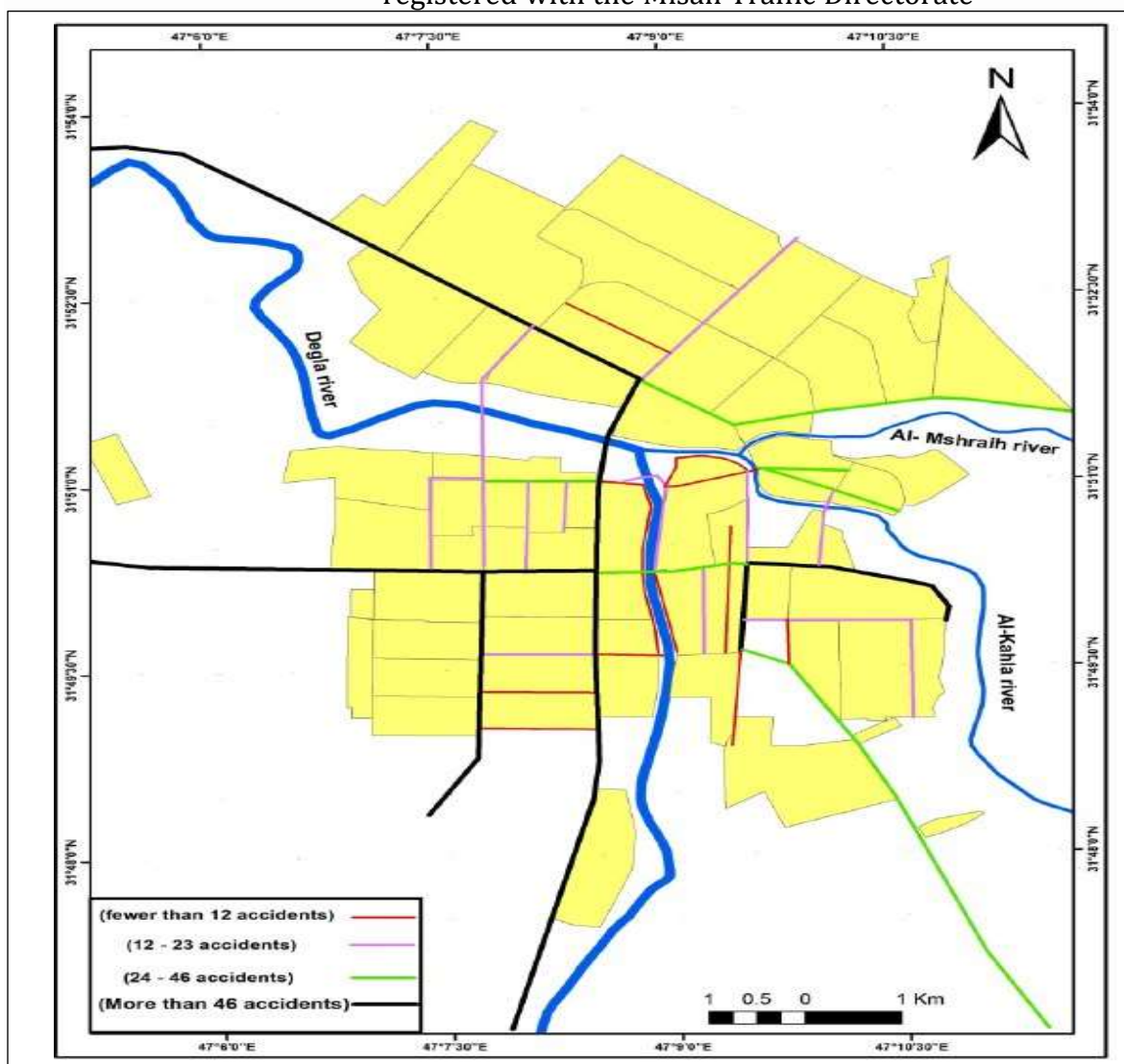
- b) The second category contained a collection of streets with a range of occurrences ranging from 12 to 23, with the greatest rate in both Tigris Street and Competencies Street sector 15 persons by 18 incidents each and 2.2 percent of the total incidents recorded in the city of Amarah, Al-Hassan Al-Askari Street came in second, accounting for a total of 17 events and 2.0% of the total, the study area's streets with the lowest rates of incidents—Al-Resala Islamic Street (Al-Mater Street), Al-Bakrat Street, which connects the old al-Hussein neighbourhood to the al-Hassan al-Askari neighbourhood, and Al-Zahraaa Street, which runs from the Al-Zahraaa Bridge to Al-Batira Street—and their combined total of incidents per (12) were 1.4 percent of all, local streets accounted for very few incidents in this category, which were distinguished by speed bumps and the presence of traffic police at most of their intersections.
- c) Category three number of incidents on its streets (24-46) incidents in each of them, and Neama Rural Street from Sadr Bridge to Falkah hourly received the highest rate of accidents (45), accounting for 5.4 percent of the total number of incidents recorded in the city, being one of the busiest commercial streets and having nearly all of its pavements taken over by store owners, whereas the morgue street extending from the Yugoslav bridge got the control of the morgue on the lowest rate in this category with a number of accidents amounting to (28) accidents (3.4 percent) of all recorded incidents, it is one of the main streets connecting the city centre to the road to the morgue area and because to the harm caused by construction projects like the Karama Tunnel project.

Table 4: Spatial distribution of traffic accidents in the city of Amarah registered with the Misan Traffic Directorate by categories for duration(2020-2010)

Category	The scene of the accident.	Number of accidents	%
Less than 12 Incidents.	Club Street and Awasha	6	0.7
	Martyrs Bridge Street	7	0.8
	Al, Amel Neighborhood Street	8	1.0
	Dur Al Naft Street	9	1.1
	Islamic Unity Street	9	1.1
	Islamic Unity Street (Al-Center Street)	10	1.2
	Corniche Street	10	1.2
	Baghdad Commercial Street	10	1.2
	Souk Street, Zahraa 1st District	11	1.3
	Alserai Corniche Street	11	1.3
	Cemetery Street	11	1.3
12-23 Incidents	Al, Mator Street	12	1.4
	Al, Bakrat Street	12	1.4
	Al, Zohr Street	12	1.4
	Al, Douriat Awasha Street	13	1.6
	Residential Building Street	13	1.6
	Lebanon Hospital Street	13	1.6
	Schools Street	14	1.7
	Nazem Al, Kahlah Street	14	1.7
	Steen Street	14	1.7
	Al, Hassan Al, Askari Street	17	2.0
	Tigris Street	18	2.2
	Al- Khayam Street Sector 15 Shaaban	18	2.2
24-46 Incidents	Al, Al-Musharrah Street	28	3.4
	Mosque Street	30	3.6
	Republican Bridge Street	30	3.6
	Amarah Street Kahla	32	3.8
	Stadium Street	38	4.6
	Neama Rural Street	45	5.4
More than 46 Incidents	Amarah Dhi Qar Street	47	5.7
	Al, Hussein New Street	48	5.8
	Old Hussein Neighborhood Street	53	6.4
	Baghdad Amarah Street	54	6.4
	Nineveh Street	62	7.5
	Amarah Basra Street	92	11.1
Total		831	100

Source :From the work of the researcher based on ,The Republic of Iraq ,the Ministry of Interior ,the Directorate of Traffic of Misan ,the Department of Statistics ,unpublished data ,for 2021.

Map (2) : Spatial distribution of streets where traffic accidents occurred in the city of Amarah registered with the Misan Traffic Directorate



Source :From the researcher's work based on table data (4).

The city of Amarah's category four roadways had more than (46) accidents per street, especially on the city's main high streets, which lack intersections and speed-reducing industrial bumps and stretch primarily through areas where the government is dispersed, which raises traffic congestion rates. Amarah Basra Street, which runs from the control of Al-Memona to the Yugoslav bridge, has the highest rate of accidents in this category with 92 accidents, or 11.1% of all incidents reported in the study area. Some of them are connected to the city centre by external roads, some of which are busy commercial streets, As a result, it took the top spot in terms of the quantity of traffic accidents in the city of Amarah. This is because

it is a main street without intersections because of the presence of bridges along it, and because there are numerous offices of the government, educational institutions, and commercial establishments on both sides. While Amarah Dhi Qar Street, which runs from Hattin Bridge to Houli Road, recorded the lowest rate of traffic accidents in this category with 47 accidents (5.7 percent) of the total incidents recorded in the city of Amarah, as it is one of the main highways and because of the numerous turns, is one of the streets connecting the city centre to the road of Building Fajr and the Houli Highway.

5. Traffic accidents registered in the city of Amarah in accordance with their causes over the course of ten years (2010-2020).

Driver-related causes can be divided in principle into general ones that affect most drivers and can vary by city and place; however, city-specific reasons can differ from those in other cities (Papantoniou, Papadimitriou & Yannis, 2015), and in the study area, several factors have emerged that have exacerbated and heightened the severity of accidents, including: The poor planning of some streets and bridges with sharp bends and turns caused a large number of accidents, such as on the bridge of the dam of architecture and the bridge of the new neighbourhood Hussein, the design of the middle islands and sidewalks that are in many areas of the city wider than the streets, the closure of many turn holes causing drivers to walk in the opposite direction, and the lack of expansion of streets to accommodate the growing number of vehicles. The constructions found throughout the city, such as the Karama Tunnel project, which cancelled The President Street without a substitute over six years ago ⁽¹⁾. The incorrect afforestation of the central islands with tall trees and the placement of images and billboards with considerable reluctance, which obstruct the driver's and pedestrians' eyesight while in transit, contributed to a rise in run-over accidents. The lack of electric bridges and specific points for pedestrian crossings, especially in highways such as the building

street of Basra passing in front of the Court of Architecture, as well as the overrun on the streets and sidewalks by the owners of houses and shops in most areas of the city, the small number of bridges connecting the east and west sides of the city, as the number of existing ones is not proportional to the number of vehicles used, especially during rush hours. Examining the numerical distribution of traffic accidents recorded in the city of Amarah according to their causes, table data (5) and figure (5) revealed that high speed was the primary cause of the majority of accidents, with (275) accidents recorded (33.1% of all accidents recorded), placing high speed at the forefront of the causes of accidents. The number of accidents recorded by (104) by (12.5 %) was due to the wrong pass from the right, so this reason occupied the third place as a cause of accidents in the study area. There are a number of other reasons that occupied the last place among the reasons registered in the Directorate of Traffic Amarah , while the cause of reverse traffic ranked second as the cause of accidents with 137 accidents, accounting for 16.5 percent of all recorded incidents (51) These causes led to an accident that accounted for 6.1% of all events reported in the city of Amarah throughout the research.

Table 5 : Traffic accidents in the city of Amarah registered with the Misan Traffic Directorate according to its causes for the duration(2020-2010)

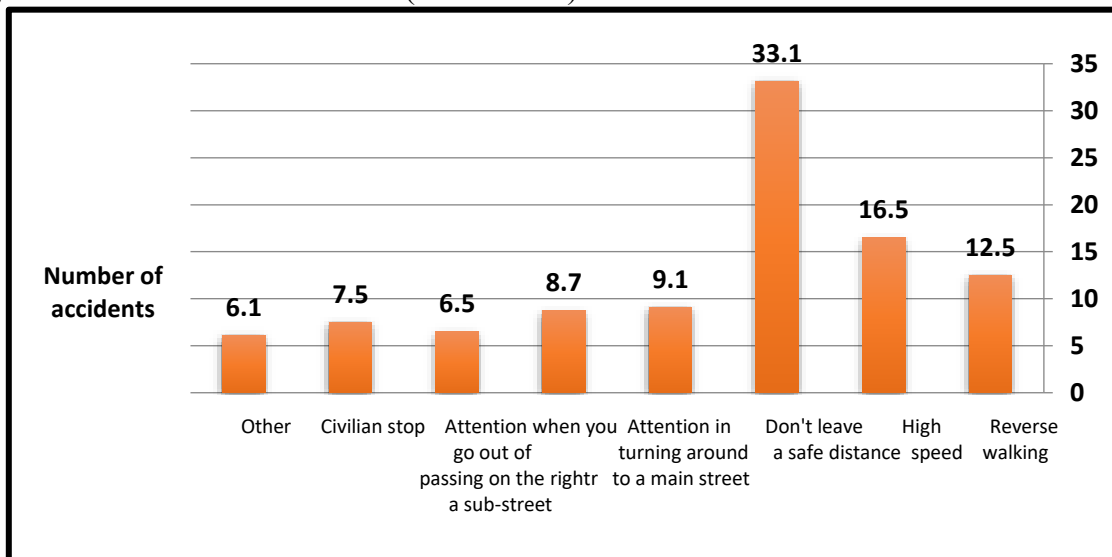
N o	Cause of accidents	Number of accidents	%
1	Wrong passing on the right	104	12.5
2	Reverse walking	137	16.5
3	High speed	275	33.1
4	Don't leave a safe distance	76	9.1
5	Attention in turning around	72	8.7
6	Attention when you go out of a sub-street to a main street	54	6.5
7	Civilian stop	62	7.5
8	Other	51	6.1

¹⁾ Interview with Colonel Salam Ghali Radhi ,
Director of the Town Traffic Department in Amarah ,
,2021-11-23at 9 A. m.

Total	831	100
-------	-----	-----

Source: From the work of the researcher based on ,The Republic of Iraq ,The Ministry of Interior ,The Directorate of Passage of Misan, Statistics Department ,Unpublished Data 2021.

Figure 4: Traffic accidents in the city of Amarah registered with the Misan Traffic Directorate according to its causes for the duration(2020-2010)



Source: From the researcher's work based on table data 5.

6. Type-Specific Spatial Distribution of Traffic Accidents in Amarah City

It is evident from table (6) and map (4) that The Street of Amarah Basra, which extends from the control of Al-Maimuna to the Yugoslav bridge, ranked first in the number of collisions with 72 accidents, as it is one of the busiest streets in the vicinity of a number of commercial centers and government offices. Second, the ancient al-Hussein neighborhood street was involved in 49 collisions since it is a bustling business and residential route. Third, Nineveh Street (the four directions extending with the Gulf neighbourhood and the old teachers and the neighbourhood of Prince and the Prophet) and the street of the new Neighborhood of Hussein by (46) collisions in each of them; the first is characterised by the large openings of the rotation and the lack of commitment of the drivers in it, the second is a vital commercial street in the middle of the city centre, which increased traffic and congestion and incentivized accidents. Baghdad Street Amarah, which extends from the Yugoslav bridge to the control of Baghdad, ranked fourth with a

number of accidents(45) accidents, as it is considered from the highways and the absence of industrial bumps that limit the speed, wherea the street Flower extending from the Flower Bridge to Al-Batira Street recorded the lowest number of collisions by 5 accidents, as it is considered from open streets, followed by the club street extended with a number of (6) accidents. Due to the numerous excesses on the pavement of pedestrian traffic on either side by the parents and shopkeepers, Nineveh Street (the four directions extending with the Gulf neighbourhood and the old teachers and the neighbourhood of Prince and The Prophet) recorded the first place by (15) accident run over. The Street of Amarah Basra, which extends from the control of Al-Maimuna to the Yugoslav bridge, took second place. With regard to the distribution of coup d'état incidents, The Street of Amarah Basra, which extends from the control of Al-Maimuna to the Yugoslav bridge, came first with 8 incidents, followed by the street of the morgue extending from the Yugoslav bridge to the control of the morgue second with a number of (6) coup incidents as it

is also a highway, and the third was the Baghdad Building Street extending from the Yugoslav bridge to the control of Baghdad, where it

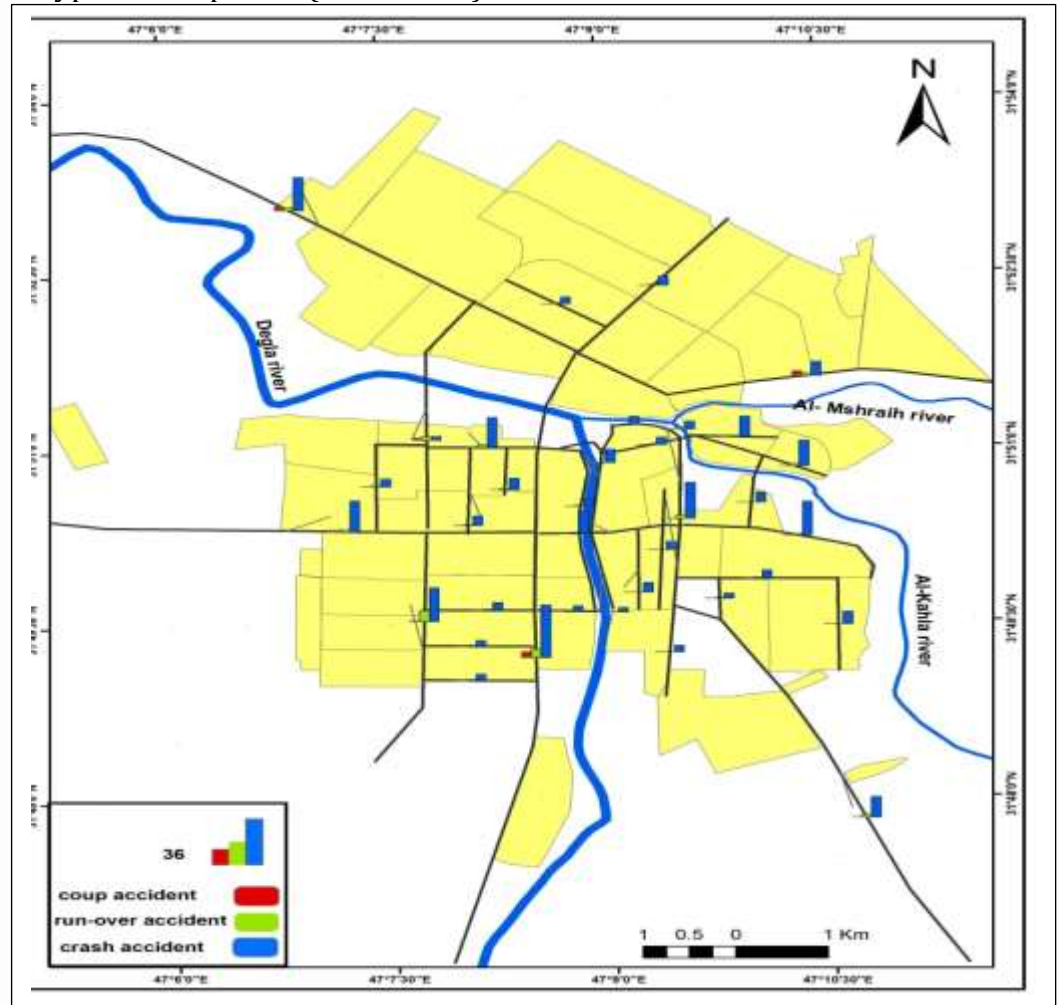
recorded (5) coup incidents and for the same reasons.

Table (6) Spatial distribution of traffic accidents in the city of Amarah registered with the Misan Traffic Directorate by type for duration (2010-2020)

No	The Scene of the Accident	Collisi on	Run Over	Revolut ion
1	Neama Rural Street	41	4	0
2	Al , Khay	16	2	0
3	Schools Street	13	1	0
4	Al , Zohr Street	5	4	3
5	Residential Building Street	11	2	0
6	Amara Basra Street	72	12	8
7	Corniche Street	10	0	0
8	Al , Mator Street	11	1	0
9	Baghdad Building Street	45	4	5
10	Al , Al-Musharrah Street	19	3	6
11	Lebanese Hospital Street	12	1	0
12	Souq Street	9	2	0
13	Center Street	9	1	0
14	Islamic Unity Street	8	1	0
15	Nineveh Street	46	15	1
16	Martyrs Bridge Street	7	0	0
17	Club Street	6	0	0
18	Tigris Street	18	0	0
19	Alserai Corniche Street	11	0	0
20	Baghdad Commercial Street	10	0	0
21	Steen Street	11	3	0
22	Old Hussein Neighborhood Street	49	4	0
23	Al , Hussein New Street	46	2	0
24	Majdi Stadium Street	35	3	0
25	Al , Majdyye Mosque Street	28	2	0
26	Al , Douriat Awasha Street	13	0	0
27	Amara Street Kahla	28	4	0
28	Amara Dhi Qar Street	42	3	2
29	Al , Hassan Al , Askari Street	17	0	0
30	Nazem Al , Kahlah Street	14	0	0
31	Cemetery Street	11	0	0
32	Republican Bridge Street	30	0	0
33	Al , Bakrat Street	11	1	0
34	Dor Oil Street	9	0	0
35	Al , Amel Neighborhood Street	7	1	0
Total		730	76	25

Source :From the work of the researcher based on ,Republic of Iraq ,Ministry of Interior ,Traffic Misan , Statistics ,Unpublished Data, 2021.

Map 3: Spatial distribution of traffic accidents in the city of Amarah registered with the Misan Traffic Directorate according to its type for the period (2010-2020)



Source :From the researcher's work based on table data (6).

Conclusions

The investigation has led us to the following conclusions, which might be stated as follows:

1. Amarah Basra Street, which extends from the control of Al-Memona to the Yugoslas bridge, ranked first in the number of incidents recorded in the study area the length of the search and in fact (92) accidents and a percentage (11.1% of all incidents), as it is one of the main streets that is crowded and lacks the presence of intersections and the distribution of government departments and commercial centres on the side.

2. The study demonstrated that the inner streets of the city have the lowest registration of traffic accidents, as the club street extending with the area of Awasha in the city centre with the lowest rate of accidents recorded (6) accidents only (0.7 percent) of the total accidents recorded in the city of Amarah during the study period, as the majority of the internal streets are characterised

- by the presence of speed-limiting bumps.
3. According to data collected by the Misan Traffic Directorate, the driver was the leading cause of traffic accidents, with high speed being the leading reason in 275 of the total accidents (33.1%).
 4. June and August had the lowest number of traffic accidents in the city of Amarah due to the high temperatures that

reduce traffic and the school and college closures.

5. 730 of the total incidents documented in the study region were collisions, the greatest proportion of all other categories of accidents.
6. The number of accidents of the type of collision of a car with a car and then comes a collision with a car with a motorcycle.

Recommendations

The researchers arrived at the following scientific recommendations for minimizing the number of traffic accidents in the city of Amarah through the study and analysis of data and results:

1. Organizing comprehensive media initiatives and educational seminars that demonstrate the severity of road accidents and their detrimental physical, psychological, and physiological impacts in an effort to reduce them.
2. Adopting a modern and advanced scientific approach to evaluate and develop the work of traffic men.

3. The curriculum must, especially at the elementary level, incorporate components of the definition of the severity of traffic accidents, as well as their causes and effects.
4. Periodically perform street maintenance and remove obstructions that impede drivers' view.
5. Rehabilitation of parked traffic lights.
6. Driving leave applicants have instituted education and training programmers, as well as severe time limits on when they can drive a car or a motorcycle.
7. Increase the penalty for traffic violations for violators, especially driving at high speed and reversing direction.

References

1. Al-Duhaidahawi, Z. S., Almuhanha, R. R., Al-Jameel, H. A., & Al-Jumaili, M. A. (2021, February). Evaluating noise and pollution indices for the Al-Kufa road network. In *IOP Conference Series: Materials Science and Engineering* (Vol. 1067, No. 1, p. 012062). IOP Publishing.
2. Asad, F. H. A. (2017). Road Traffic Accidents In Iraq: A Review Of Evidence-Based Literature. *International Journal for Traffic & Transport Engineering*, 7(2).
3. Bao, W., Yu, Q., & Kong, Y. (2020, October). Uncertainty-based traffic accident anticipation with spatio-temporal relational learning. In *Proceedings of the 28th ACM International Conference on Multimedia* (pp. 2682-2690).
4. Bull, A., & CEPAL, N. (2003). *Traffic Congestion: The Problem and how to Deal with it*. ECLAC.
5. Gopalakrishnan, S. (2012). A public health perspective of road traffic accidents. *Journal of family medicine and primary care*, 1(2), 144.
6. Kostek, R., & Aleksandrowicz, P. (2017, October). Simulation of car collision with an impact block. In *IOP Conference Series: Materials Science and Engineering* (Vol. 252, No. 1, p. 012008). IOP Publishing.
7. Lee, J., Chae, J., Yoon, T., & Yang, H. (2018). Traffic accident severity
8. analysis with rain-related factors using structural equation modeling—A case study of Seoul City. *Accident Analysis & Prevention*, 112, 1-10.
9. Monroe, D. G., & Sanders, M. M. (2000). The COUP-adjacent repressor (CAR) element participates in the tissue-specific expression of the ovalbumin gene. *Biochimica et Biophysica Acta*

- (BBA)-Gene Structure and Expression, 1517(1), 27-32.
10. Moosavi, S., Samavatian, M. H., Parthasarathy, S., & Ramnath, R. (2019). A countrywide traffic accident dataset. *arXiv preprint arXiv:1906.05409*.
 11. Papantoniou, P., Papadimitriou, E., & Yannis, G. (2015). Assessment of driving simulator studies on driver distraction. *Advances in transportation studies*, (35).
 12. Racioppi, F., Eriksson, L., Tingvall, C., & Villaveces, A. (2004). *Preventing road traffic injury: a public health perspective for Europe*. World Health Organization. Regional Office for Europe.
 13. Ren, H., Song, Y., Wang, J., Hu, Y., & Lei, J. (2018, November). A deep learning approach to the citywide traffic accident risk prediction. In *2018 21st International Conference on Intelligent Transportation Systems (ITSC)* (pp. 3346-3351). IEEE.
 14. Retallack, A. E., & Ostendorf, B. (2019). Current understanding of the effects of congestion on traffic accidents. *International journal of environmental research and public health*, 16(18), 3400.
 15. Wang, B., Lin, Y., Guo, S., & Wan, H. (2021, May). GSNet: Learning spatial-temporal correlations from geographical and semantic aspects for traffic accident risk forecasting. In *Proceedings of the AAAI Conference on Artificial Intelligence* (Vol. 35, No. 5, pp. 4402-4409).
 16. Zhongming, Z., Linong, L., Xiaona, Y., Wangqiang, Z., & Wei, L. (2020). This Beetle Can Survive Getting Run Over by a Car. Engineers Are Figuring out How.
 17. Zhou, Z., Wang, Y., Xie, X., Chen, L., & Liu, H. (2020, April). RiskOracle: a minute-level citywide traffic accident forecasting framework. In *Proceedings of the AAAI Conference on Artificial Intelligence* (Vol. 34, No. 01, pp. 1258-1265).