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## An analysis to road safety in roads of Khorasan province in recent years



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### Abstract

Today, transportation industry is considered to be one of the significant factors of development in a society. Among different sub sectors of transportation industry, road transportation is the most considerable one playing an important role in passenger and cargo conveyance and in Iran, due to expanse of road network this issue is much more important. In Khorasan province, due to its touristic, pilgrimage, industrial and commercial importance, much more attention must be paid to road transportation system. On the other hand, high rate of accidents and death toll in roads of Iran has led to lots of negative consequences and therefore, because of high potentials of travel in Khorasan province, any attention to this issue can result in positive and helpful consequences. In this paper the main factors of accidents on the roads of Khorasan province are categorized regarding the rate of accidents occurred. Then apart from studying the main reasons of accidents of every category, the main factors of these events are studied and its strategies in Iran are introduced.

**Key words:** Road, Safety, Transportation.

### 1. Introduction

Industry of transportation as one of the development features of societies has been consisted of various sectors including road transportation.

Considering the development of roads in our country, the importance of considering their security is of the major priorities.

Region of "Khorasan" especially "Khorasane Razavi" requires considering the appropriate maintenance of roads with regard to the main tourism, economic, industrial and mineral potentials.

Considering the importance of the issue at first apart from mentioning the situation of roads of Khorasane Razavi, The loss and events process caused by non urban accidents in this area and their factory were studied and some strategies to decrease them are suggested.

## 2. Methodology

Considering the requirement for collecting the statistics and data on accidents occurred on the roads of "Khorasane Razavi", the main studies are represented as library and documentary studies considering the necessary statistics.

It should be mentioned that the represented data obtained from collecting and studying the information reprinted by the police of Khorasane Razavi and other references in the paper. Considering the volume limitation of the paper, just the statistics of recent year (3 past years in average) has been mentioned as the results in every diagram and table, and it is not possible to include the accident report papers.

## 3. General situation of Khorasane Razavi Roads and their eventfulness

Khorasane Razavi with Having 5676 kilometers road (39 kilometers freeway, 760 kilometers highway, 928 kilometers main road and 3939 kilometers secondary road), and with passenger displacement of 6252000 people outside the province and with 17099000 passengers inside the province during a year, (Ministry of road and transportation (2010)) province of Khorasane Razavi is the second province of country in these regards.

Considering the important usings of this province in the field of voyage, the statistics of accidents and injuries caused by driving events in this province has been significant over the recent years which have been indicated in (Table 1). (Iran road maintenance and Transportation organizations, (2009))

ulcerous			mortalities			year
Ranking in states of Iran	percent	numbers	Ranking instates of Iran	percent	numbers	
2	11	26827	2	8	1835	2007
2	10.7	29210	3	7.7	1797	2008
2	10.1	29668	2	7.9	1821	2009

Table 1. Numbers of deathtolls and ulcerouses in recent years in accidents in "Khorasane Razavi"

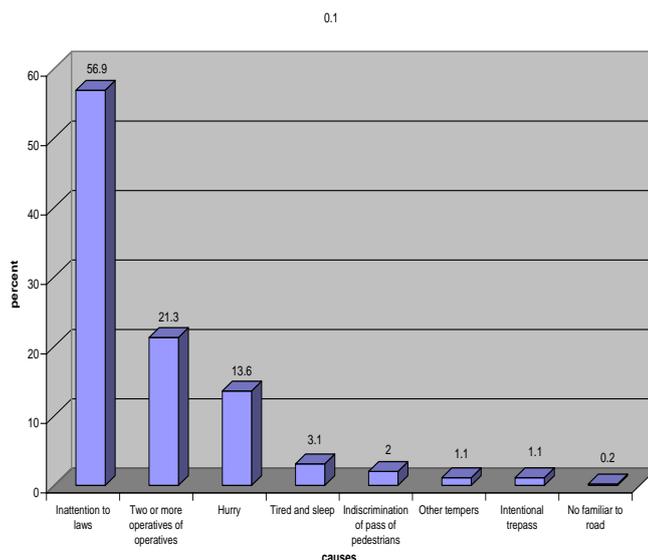
Comparison of this statistics shows an almost stable rate over the recent years in the province in this field which indicates the importance of attitude towards the reasons of this subject which is studied then.

## 4. Studying the main causes of accidents

In studying the results of accidents factors, the causes of accidents are grouped into four categories including human factors, vehicle factors, road factors and environmental factors with the relevant parameters which can be studied as follows' considering that the description of statistics is not included in this paper just the statistical results and causes of accidents in Khorasane Razavi have been represented and the statistical comparison over 3 past years has been considered regarding the control of road accidents. (Rasouli, E., Vafaei, R. (2008))

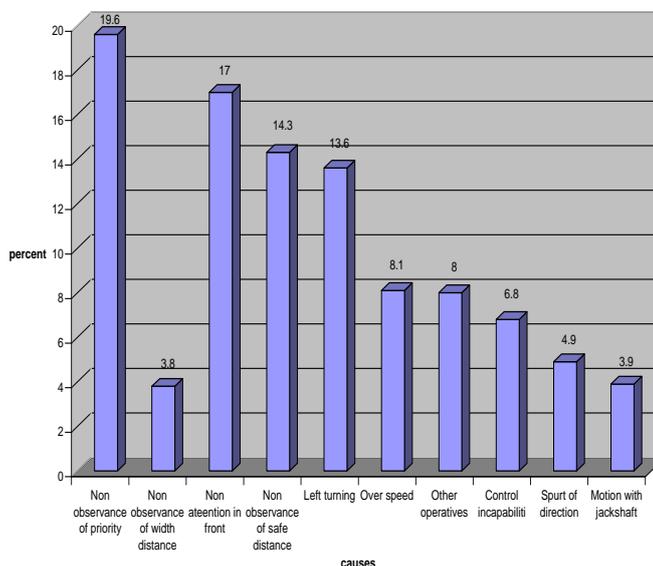
## 5. Accidents caused by the effect of man factors

In studying the man factory (which cause 90% of accidents), the main behavioral factors relevant to the drivers of the province and their individual effect have been shown in (Fig. 1). (Islamic republic of Iran Police, (2007), Islamic republic of Iran Police, (2009) , Islamic republic of Iran Police, (2008) , Mashhad Traffic organization, (2009)).



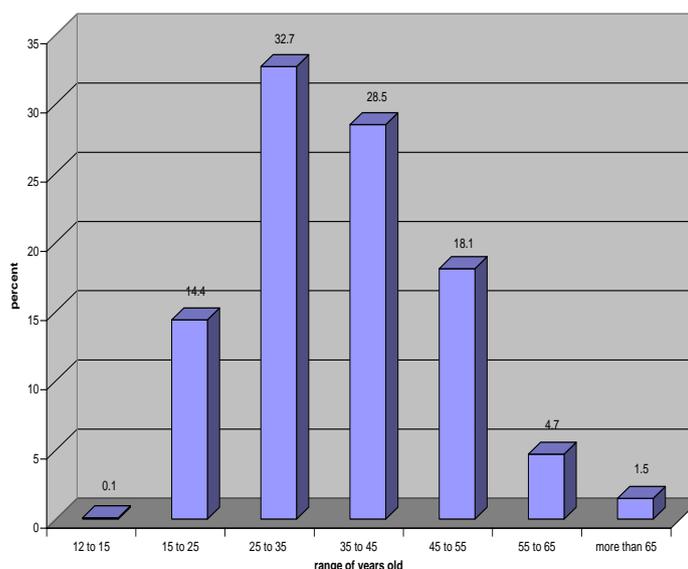
**Fig 1:** Percentage of accidents caused by the effect of man factors

Also studying the reports of the police, the general reason of accidents caused by the above mistakes is according to (Fig. 2). (Islamic republic of Iran Police, (2007), Islamic republic of Iran Police, (2009) , Islamic republic of Iran Police, (2008) , Mashhad Traffic organization, (2009)).



**Fig 2:** Percentage of accident caused by the general reasons of them.

In addition, in studying the age of guilty drivers, their average age is according to (Fig. 3). (Mashhad Traffic organization, (2009))



**Fig 3:** The range of years old of guilty drivers in accidents.

### 6. Accidents caused by the effect of vehicles

The factor of guilty vehicle in the accidents can be studied separately. Considering the distinct statistics taken in provinces and their ranking as the ratio of suburban accidents of the individual vehicles, of the total accidents, the statistics of (Table 2) is represented: (Islamic republic of Iran Police, (2007), Islamic republic of Iran Police, (2009) , Islamic republic of Iran Police, (2008) , Abdus, H. (2007))

Quantity and percentage of accidents and proportion to whole of Iran	Type of vehicles
438 - (%5.4) - Ranking in states of Iran: 6	Motor cycles
3700 - (% 4.6) - Ranking in states of Iran: 7	passenger cars
about 700 - (%4) - Ranking in states of Iran: 10	Open Back vehicles
Straw - (Straw) - Ranking in states of Iran: -	minibuses
231 - (8.4) Ranking in states of Iran: 2	Buses
1127 - (5.6) Ranking in states of Iran: 5	trucks

Table 2. Accident among and percentage due to vehicles type in "Khorasane Razavi"

### 7. Accidents caused by the effect of accident place

In the case of inappropriate designing, the road direction and its side effects cause accident. (Table 3) shows the rate of accidents caused by the unappropriate designing in this province. (Abdus, H. (2007) , Islamic republic of Iran Police, (2008), Islamic republic of Iran Police, (2009), Islamic republic of Iran Police, (2007)).

Quantity and percentage of accidents and proportion to whole of Iran	Location of accidents
Straw - (Straw) - Ranking in states of Iran: -	Highways and freeways
5378 - (5.7%) - Ranking in states of Iran: 6	Arterial roads
1272 - (7.8%) - Ranking in states of Iran: 4	Intersections
136 - (17.7%) - Ranking in states of Iran: 6	tunnels

Table 3. Accident among and percentage in "accident black spots"

## 8. Accidents caused by the effect of accident time

Considering the high rate of accidents in day times, in this province, the rate of accidents occurred in night time are 40% more than day time; this is the case with the neighbor provinces, this high rate has been mainly observed in the region of Khorasane Razavi (Abdus, H. (2007)) which needs consideration.

## 9. Conclusion

Considering the represented information, the following main results are mentioned:

- Lack of main changes in the process of reducing the loss and injuries caused by accidents in the province of Khorasane Razavi indicates the necessity of consideration to the subject of security in suburban directions of this region.

- Of the mentioned human factors, disregarding the regulations and hurry are of the main reasons of the accidents; this indicates the necessity of more consideration to the educations and traffic controls. The results of these individual violations is observed in disregarding priority and not following the length distance which requires the supervision of the police on the roads.

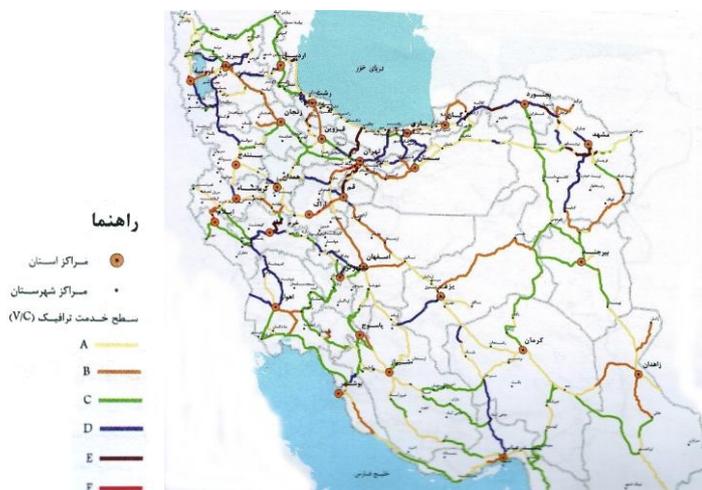
- In discussion of different vehicles, the events of buses include high percent, the main of which in the reports of the police has been sleepiness and tiredness of the bus driver, which in the end of voyage had been faced with event from the central, west and south of this province, this mentions the necessity of supervision on the drivers in this direction.

Considering the dimensions of vehicles and the culture of drivers and inclination to violate lawful speed have been eventful which requires appropriate culture.

- Considering the inappropriate geometrical plan, main difficulties have been observed in intersections and tunnels which require necessary arrangements.

- Despite less night time trips, in the reports of the police, the main reasons of night time accidents are high speeds and inclination to disregarding the regulations for hurry to reach the destination and reduction of the roads night time controls by the police which should be considered.

- Apart from the mentioned factors, according to (Fig. 4), the service level of one third of the roads of this province is on an inappropriate level (E and D), the development of new directions or using other transportation systems should be considered. (Iran road maintenance and Transportation organizations, (2009)).



**Fig 4:** Level of service (V/C) of roads in Iran.

## **10. Suggestions and strategies necessary to increase the security of roads in provinces.**

- Enhancement of the police patrols on the roads between the cities of province and enhancement of the police stations between the roads considering the man mistakes caused by disregarding the regulations.
- Supervision on the members of bus drivers in terminals for sufficient drivers and their health on long directions.
- Providing the lightness of tunnels, their suitable ventilation and enjoying the Intelligent Transportation systems (I.T.S) in tunnels and installing suitable signs on them.
- Identification and priority of eventful points and making them secure and transforming flat to unflat intersections.
- Increasing night time supervision on trafficking for high percent of night time accidents in the direction.
- To equip the directions with I.T.S. systems suitable for the drivers unfamiliar with the direction.
- Widening the main roads as a priority in developing the roads of province and development of rail transportation systems to increase the capacity of roads.
- Representing the necessary traffic educations to the drivers of heavy vehicles in terminals and making it obligatory.

## **References**

- Abdus, H. (2007). *Safety analysis of road transportation for Iran* road and transportation ministry, 20-40.
- Iran road maintenance and Transportation organizations, (2007). *Year book of transportation*.
- Iran road maintenance and Transportation organizations, (2008). *Year book of transportation*.
- Iran road maintenance and Transportation organizations, (2009). *Year book of transportation*.
- Islamic republic of Iran Police, (2007). *Accident statistics in non-urban ways for Iran*.
- Islamic republic of Iran Police, (2008). *Accident statistics in non-urban ways for Iran*.
- Islamic republic of Iran Police, (2009). *Accident statistics in non-urban ways for Iran*.
- Mashhad Traffic organization, (2009). *Transportation Magazine Mashhad Vol 5, 5-7*.
- Ministry of road and transportation (2010). *Report of statistics on roads in Iran*.
- Rasouli, E., Vafaei, R. (2008). *Analyzing the main causes of non urban accidents in road transportation of Iran and measures taken for its reduction* 10<sup>th</sup> international conference on applications of advanced technologies in transportation, Athens, 2-7.