Socio-economic Consequences of Traffic Accidents in Iran

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Abstract: Millions of people have significantly changed due to accidents. The objective of this study is to assess the consequences of traffic accidents on socio-economic activities in Iran. The results show that traffic accident is the most important factor of cause of death in Iran. This is evident in the fact that about 23,000 deaths-average of three per hour, as a result of traffic accident were recorded in 2009 and the road fatality rate for the same period was 30.96 Per 100,000 population. In addition, the rate of road injuries between 2007 and 2009 increased by 10%. Also, the total cost implication of accidents within the urban and suburban areas were put at about $18 billion, this is equivalent to 1.39% of gross domestic product (GDP) of Iran in 2007. Recommendations for solving some cultural problems are proffered.

Key words: Traffic accident, Road deaths, Road injuries, Economic consequences, Iran

INTRODUCTION

In recent times, several programs and models have been proposed by professionals on the need to increase the capacity of urban streets, reduce congestion at intersections, optimize the use of sidewalks etc. but there are some social factors which most people do not pay much attention to, such as ignorance of the law, types of culture associated with transportation and wrong behavioral patterns of people among others.

Several millions of people have been significantly affected by accidents either physically or psychologically and in the process causing either temporary or permanent changes. Road traffic crashes have been known as the 11th leading cause of death which is 2.1% of all deaths globally (WHO 2004a), and was predicted that road accidents would be the third cause of death by 2020 (WHO 2004b), (see Table 1). According to the report of world health organization (WHO), road traffic death is expected in both the low and middle income countries by 83%. They also predicted to decrease in high-income countries by 27%, which leads to increase 67% by 2020 (WHO 2004a).

Table 1: The 10 leading causes of global burden of disease in 2020 (WHO 2004b).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Disease or injury</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ischemic heart disease</td>
</tr>
<tr>
<td>2</td>
<td>Unipolar major depression</td>
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<tr>
<td>3</td>
<td>Road traffic injuries</td>
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<tr>
<td>4</td>
<td>Cerebrovascular disease</td>
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<tr>
<td>5</td>
<td>Chronic obstructive pulmonary disease</td>
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<tr>
<td>6</td>
<td>Lower respiratory infections</td>
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<tr>
<td>7</td>
<td>Tuberculosis</td>
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<tr>
<td>8</td>
<td>War</td>
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<tr>
<td>9</td>
<td>Diarrhoeal diseases</td>
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<tr>
<td>10</td>
<td>HIV</td>
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</tbody>
</table>

Approximately, 3,500 people die daily globally due to road accidents and tens of millions of people are injured or disabled every year (WHO 2011). Nearly 1.3 million people die each year globally due to road accidents and between 20 –50 million sustain non-fatal injuries (WHO 2009a). Road crashes are expected to become the fifth leading cause of death by 2030; if the current trends continue (WHO 2009a). Road traffic fatality rates in low-income, middle-income and high-income countries are 21.5, 19.5 and 10.3 per 100,000 populations respectively (WHO 2009b). Although low-income and middle-
Income countries have only 48% of the world’s registered vehicles, but over 90% of the world’s fatalities on the roads occur in these countries (WHO 2009b).

**Causes of Traffic Accidents:**

Causes of traffic accidents in urban areas could be human-factor, roadway design, faulty vehicle and environmental factors. Human factors include physical disability, mental imbalance, lack of adequate training and qualification, lack of driving skills and lack of timely reward and punishment. The design, construction, performance and maintenance problems are the important road factors. According to World Bank (2003) engineering technologies and road designs to improve infrastructure are effective intervention strategies. Roadways are designed by engineers with special consideration given to the following:

- Hazard visibility
- Roadway surfaces
- Traffic control devices
- Behavioural control devices
- Traffic flow
- Roadway identification signs

Vehicle problems include technical defects and corrosion of components and parts. Strategies focusing on safer vehicles include improving vehicle visibility, incorporating crash protective design into vehicles, and promoting further development of “intelligent” vehicles for active crash avoidance World Bank (2009). Climatic factors, thick smoke and insufficient illumination are some of the environmental factors that are responsible for traffic accidents.

**Evaluation of Individual Factors Influence On Social Behavior In Traffic-Related Accidents:**

Improper behavior in urban traffic problems include:

- Wrong model of usage of city vehicles
- Wrong model of urban multi-purpose trips
- Urban-area travel pattern
- Population distribution in large cities

In almost all types of trips, passengers’ vehicle is dominant. Even, if students or professionals are embarking on a trip, public transport is used. Most of the times, private passenger vehicles are used during excursions or for visitation purposes, and this causes a lot of urban traffic problems. Most vehicles use behavioral modification methods of urban traffic culture.

**Assess the Reasons for the Creation of Infringement:**

Traffic culture is the collection and social cohesion which needs to be exhibited by the inhabitants of large cities in order to be capable to deal with more organization and social obedience with the problems of saturation expected in the immediate future due to space unavailability.

Regulations relating to traffic are consciously or unconsciously violated, these regulations may be optional or mandatory for drivers, passengers and pedestrians who use transportation facilities. The roles of educational tools include the human factors (individual and social) and non-human factors (vehicles, transportation facilities).

**Human Factors:**

Infringement effects caused by human factors are: reduced safety and increased risk for system users (Pedestrians and drivers and passengers), reduced capacity of crossing lines on network and low level of service at streets and intersections, increased travel time and delays in moving the overall increased vehicle fuel, air pollution and costs of transport system, and human and financial loss users of transport system.

Individual factors include ignorance (lack of knowledge) and cultural problems (originality force), which cause increased travel time and delays (low level movement in traffic) on the streets and at intersections. With education being an important tool used to reduce and eradicate ignorance, introduction of rules; valid driver's education (for age groups, disabled etc.) and proper training of police, most of the problems that bothers on ignorance will soon fade away.

Social Roots of creating infringement include: economic conditions (individual jobs), terms of social management (legislative and executive directors doing infringement), legal terms (Failure to observe laws), moral terms (Not being ashamed of a person who has infringement), and traffic management conditions.

The following projects are recommended for solving cultural related problems:

- Educational projects related to replacement of character of equality rather than superiority.
- Educational projects related to replacement of criteria rather than relationship.
- Educational projects related to deference rather than haggling.
Educational projects related to accepting the reality rather than expedient compliance.

**Non-human Factors:**

Non-human factors include: lack of appropriate network (highways, squares, intersections etc.), incorrect land-usage (creating users adjacent to one another or heterogeneous user to time conversion), architecture (Lack of attention to issues such as adequate parking, stopping spaces etc. which cause abnormalities), traffic engineering (non-compliance with technical issues in the design), inequality of supply and demand in the infrastructure of urban transport, place location and lack of adequate transportation facilities placement.

**Road Fatality of Iran:**

According to World organization Health (2009b) a road traffic injury is “any person killed immediately or dying within 30 days as a result of a road traffic injury”. One of the major causes of death and disability are road traffic injuries (World Bank 2009). Based this report pedestrians are the most vulnerable populations incurred the highest burden of injuries and fatalities, often as pedestrians (World Bank 2009). Road traffic deaths each year are about 1.3 million people on the world's roads and between 20 - 50 million sustain non-fatal injuries (WHO 2009b). According to WHO (2011) road traffic accident have been known as the 7th leading cause of death which is 2.4% of all deaths globally in Middle- income countries, while it have been known as the 10th leading cause of death which is 2.1% of all deaths globally in 2008 in the world (see Table 2, Table 3). Based on report of Iranian legal medicine organization (ILMO), road traffic fatality figure is terribly on the increase. According to data extracted from ILMO (2001), between 2005– 2009, rates of road deaths and rate of road injuries are calculated (Figs. 1 and 2).

Also, rates of road death (Per 100,000 population) and road injuries are calculated (Fig. 3 and Fig. 4). Fig. 3 shows that in 2009, 22,974 people died and road fatality rates were 30.96 Per 100,000 population while middle-income countries had 19.5 per 100,000 population roads traffic fatality rates. Rate of road injuries had increased by 10% after 2007 and if it continues accordingly, the consequences on socio-economic life will be drastic.

![Fig. 1: Rate of road deaths in Iran.](image1)

![Fig. 2: Rate of road injuries in Iran.](image2)

![Fig. 3: Rate of road deaths (per 100,000) in Iran.](image3)
Socio-economic Dimensions of Traffic Accidents:

Road traffic injury has a significant negative impact on society (Peden et al. 2004; Jacobs et al. 2000). Economic costs are only one consequence of motor vehicle crashes and injured persons often suffer physical pain and emotional anguish. Each death or disability resulting from road traffic accidents always constitute big problems in the families of the victims and this may lead to emotional and psychological distress which may eventually cause mental disorders and post-traumatic stress disorder (PTSD). Bryant et al. (2000) pointed out that 27.1% of the patients are diagnosed for PTSD and 19.2% of the patients with PTSD exhibited intrusive memories of the trauma.

According to WHO reports (2004c), the economic implication of road crashes and injuries in low-income, middle-income and high-income countries is estimated to be 1%, 1.5%, and 2%, respectively of the gross national product. Based on this report the global cost is predicted to be $518 billion per year which is $65 billion for low-income and middle-income countries. According to Ministry of Health and Medical Education reports (2002), the cost of Iran’s traffic accidents is estimated at about four thousand million dollars in 2001. Based on this report, the insurance companies’ annual loss is about $310 million. Transportation Research Institute of Iran (TRII), (2009) has estimated the total cost implication of accidents within the urban and suburban areas in Iran at about $18 billion in 2007, this is the equivalent of 1.39% of the domestic product (GDP) of Iran in 2007. Based on this report, Iran is allocated the global second place with little difference after El Salvador. Furthermore, the total cost implications of accidents in Iran is about 50 % of the total GDP of countries such as Ghana, Jordan and Bahrain among others in 2007 (TRII 2009).

Conclusion:

The global population is being significantly affected negatively due to traffic accidents. This study shows that Iran has the highest road fatality rates of 30.96 per 100,000 populations in the world in 2009. Statistical analysis also show the total cost implication of accidents within the urban and suburban to be about $18 billion, this is equivalent to 1.39% of the GDP of Iran in 2007. Human error accounts for most of the and this could also be accepted as traffic’s culture and this can be taken care of by engaging in any of the following projects:

- Educational projects related to replacement of character of equality rather than superiority.
- Educational projects related to replacement of criteria rather than relationship.
- Educational projects related to deference rather than haggling.
- Educational projects related to accept the reality rather than expedient compliance.
Road traffic fatality prevention must be viewed from three perspectives engineering, education and enforcement due to the socio-economic dimension ascribed to road traffic accident phenomena.

Table 3: Ten leading causes of death in the world in 2008 (World Bank 2003).

<table>
<thead>
<tr>
<th>Rank</th>
<th>Causes of Death</th>
<th>Deaths in Millions</th>
<th>% of Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ischemic heart disease</td>
<td>7.25</td>
<td>12.80%</td>
</tr>
<tr>
<td>2</td>
<td>Stroke and other cerebrovascular disease</td>
<td>6.15</td>
<td>10.80%</td>
</tr>
<tr>
<td>3</td>
<td>Lower respiratory infections</td>
<td>3.46</td>
<td>6.10%</td>
</tr>
<tr>
<td>4</td>
<td>Chronic obstructive pulmonary disease</td>
<td>3.28</td>
<td>5.80%</td>
</tr>
<tr>
<td>5</td>
<td>Diarrhoeal diseases</td>
<td>2.46</td>
<td>4.30%</td>
</tr>
<tr>
<td>6</td>
<td>HIV/AIDS</td>
<td>1.78</td>
<td>3.10%</td>
</tr>
<tr>
<td>7</td>
<td>Trachea, bronchus, lung cancers</td>
<td>1.39</td>
<td>2.40%</td>
</tr>
<tr>
<td>8</td>
<td>Tuberculosis</td>
<td>1.34</td>
<td>2.40%</td>
</tr>
<tr>
<td>9</td>
<td>Diabetes mellitus</td>
<td>1.26</td>
<td>2.20%</td>
</tr>
<tr>
<td>10</td>
<td>Road traffic accidents</td>
<td>1.21</td>
<td>2.10%</td>
</tr>
</tbody>
</table>

REFERENCES


Transportation Research Institute of Iran, 2009. Estimated Costs of Traffic Accidents of Iran.


