ANALYSIS OF SUICIDES IN ROAD TRAFFIC IN SWEDEN 2010-2015

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1. BACKGROUND
Suicides are a major health problem and affect a large part of the population. Besides the personal tragedies, suicides also affect professional working groups and impose costs on society. In Sweden 1500 persons per year die because of suicide. Some use the road system to commit suicide.

In September 2016 the Swedish government presented a new launch of the Vision Zero. The government stated that suicides in the traffic system is a problem that has to be addressed within the traffic safety work. Preventive measures in order to reduce fatalities in road traffic, intentional or accidental, is in line with the Vision Zero.

2. AIM
The aim of this study was to describe suicide in the road transport system in Sweden during the years of 2010-2015 with focus on finding preventive measures.

3. MATERIAL AND METHOD
During 2010-2015 a total of 1810 persons were killed in Swedish road traffic, natural deaths excluded.

A method has been developed for classification of road traffic fatalities in order to determine if the fatality was caused by an accident or by a suicide. The method is described in the abstract Suicide and accident classification methodology.

Descriptive and comparative analyses between suicides and fatalities due to accidents have been carried out.

4. RESULTS
From 2010 to 2015 a total of 151 fatalities were classified as suicides. This means that 8 % (151 of 1810) of the road traffic fatalities were suicides.

Table 1: Road fatalities in Sweden due to suicide and accident 2010 to 2015.

<table>
<thead>
<tr>
<th>Fatalities in road traffic</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Sum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suicide</td>
<td>16</td>
<td>23</td>
<td>36</td>
<td>28</td>
<td>25</td>
<td>23</td>
<td>151</td>
</tr>
<tr>
<td>Accident</td>
<td>266</td>
<td>319</td>
<td>285</td>
<td>260</td>
<td>270</td>
<td>259</td>
<td>1659</td>
</tr>
<tr>
<td>Sum</td>
<td>282</td>
<td>342</td>
<td>321</td>
<td>288</td>
<td>295</td>
<td>282</td>
<td>1810</td>
</tr>
<tr>
<td>Percentage of suicides the road traffic fatalities</td>
<td>5.7 %</td>
<td>6.7 %</td>
<td>11.2 %</td>
<td>9.7 %</td>
<td>8.5 %</td>
<td>8.2 %</td>
<td>8.3 %</td>
</tr>
</tbody>
</table>

Drivers of vehicles and pedestrians committed suicide in road traffic. Three collision types stood out; single vehicle collisions, head on collisions and pedestrians in conflict with motor vehicles. These three collision types accounted for 97 % of all suicides (147 of 151). Also for fatalities due to accidents, these three collision types were most common and accounted for 68 % of the fatalities (1135 of 1659).

Of the 54 suicide single vehicle collisions the most common collision object was tree (21 fatalities), followed by rock (12 fatalities) and bridge pillars or fundaments (8 fatalities).

One quarter of the suicides (36 of 151) occurred on motorways or 2+1 roads with median barrier. On these road types, suicides with pedestrians in conflict with motor vehicles was the most frequent collision type (27 of 36).
Suicide in head-on collisions occurred primarily (41 of 51) on roads with speed limit 80 or 90 km/h. Suicide among pedestrians occurred mostly (36 of 42) on roads with speed limit 80 km/h or higher. Suicide single vehicle collisions occurred primarily (39 of 54) on road with speed limit up to 70 km/h. Of course the speed limit and actual speed of the collision does not correspond.

A geographical analysis showed that two third of the suicides with pedestrians (28 of 42) occurred in urban areas or just outside an urban area. For single vehicle collisions and head-on collisions the percentage of the fatalities that occurred in urban near areas was 48 percent (26 of 54) respectively 29 percent (15 of 51).

More than half of the suicides in head-on collisions (28 of 51) occurred on roads with average annual daily traffic (AADT) of 4000 vehicles or more. Three quarters of the suicides with pedestrians (32 of 42) occurred on roads with AADT of 4000 vehicles or more and 60 percent (25 of 42) on roads with AADT 8000 vehicles or more.

5. **PREVENTIVE MEASURES**

More than half of the suicides in head-on collisions occurred on roads with AADT 4000 vehicles or more. These roads are suitable for reconstruction into 2+1 road with median barriers. To continue to rebuild roads to 2+1 roads will reduce the number of suicides as well as the number of fatalities due to accident.

A large amount of the pedestrian suicides in road traffic occurred in urban near areas on roads with speed limit 80 km/h or higher and on motorways or 2+1 roads with high traffic volume. On many of these roads pedestrians are not allowed or at least not desirable. To construct fences or barriers along these roads will make it harder for persons to carry on with the suicidal act. It will also hinder pedestrians to be tempted to take a dangerous shortcut that could result in a fatal accident.

Collision in high speed against a solid object in the road side area can be avoided by putting up guard rail or by removing the solid object.

6. **DISCUSSION**

Is it possible to reduce the number of fatalities due to suicide in the transport system? Restricting access to means of suicide is effective in preventing suicide, particularly impulsive suicide. A road authority can make it harder to commit the suicidal act in the infrastructure, but what the rest of the society do in order to reduce the number of suicide will also affect the number of suicide committed in the road system. The number of suicides in many countries is higher compared to the number of road fatalities due to accidents. In Sweden approximately 1500 persons die every year due to suicide compared with less than 300 persons killed in traffic accidents. It is important that road authorities cooperate with healthcare and other parties to reduce the number of suicides.

7. **CONCLUSION**

The findings suggests that preventive measures to reduce the number of suicides in the road system can be imposed. The suggested measures will reduce the number of suicides as well as the number fatalities due to accidents.

8. **FUTURE**

The analysis will be complemented with data from 2016. The final result will cover the years 2010 to 2016 and will be finalized before the end of 2017.
REFERENCES

