Effectiveness of Breath Testing of Drivers for Alcohol at Road Checks

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Acknowledgments

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Introduction

1. **As of 1 January 2010, mandatory screening breath testing of drivers for alcohol during all road checks** was introduced in the Czech Republic by virtue of a binding guideline of the Czech Traffic Police Directorate.

2. Until then tests for alcohol had been carried out as part of specific one-off campaigns or, as required practice, after accidents. As a result, the Czech Republic has become the first country in the EU to introduce such rigorous checks for drink-driving.

3. The presentation provides a preliminary evaluation of the impact of the change in terms of road safety as reflected in the numbers of accidents and fatalities associated with driving under the influence of alcohol.
1. The issue of road safety in the Czech Republic and other 22 European countries was investigated by the SARTRE 3 Project (Skládaná, 2005). The project produced data about the attitudes, opinions, and behaviours of drivers in 23 European countries.

2. This project found that drivers in the Czech Republic are aware of shortcomings in road safety. In addition, Czech drivers are even willing to accept unpopular measures (including more intensive checks and stricter sanctions) in relation to the violation of traffic regulations such as speeding and impaired driving.

3. The drivers do not want an increase in the permitted blood alcohol level and readily accept rigorous checks for blood alcohol (Skládaná, 2005).
Study objectives

The objective of the study was to test the effectiveness of the new measure *(mandatory breath testing for alcohol)* in terms of:

1. road accidents caused by drink-driving
2. the number of alcohol-related road fatalities
3. the number of positive tests for alcohol and other drugs
The study involved the comparison of the selected indicators for the first six months of the years 2009 and 2010. To illustrate the trends, the results are presented in the context of the development of the indicators since 2000.

The indicators under study included:

- the number of road fatalities in general
- the number of alcohol-related road fatalities
- the number of road accidents in general
- the number of alcohol-related road accidents
- the number of positive tests - alcohol
- the number of positive tests – other drugs (other than alcohol)

The study data were provided by the Czech Traffic Police Directorate.
Statistical data processing

- Descriptive statistics (description of trends)

- The statistical processing of data was conducted using the Wilcoxon Signed-Rank Test for related samples

- Given the limited number of observations (only the period of the first six months), it was decided to use non-parametric statistics and work with aggregate data

- Null hypothesis (the two samples for 2009 and 2010 – the first six months – show no statistically significant differences)

- Tested at the 0.05 level of significance
## Results - trends

<table>
<thead>
<tr>
<th>Year</th>
<th>Accidents</th>
<th>Accidents – alcohol</th>
<th>Accidents – alcohol/accidents general (%)</th>
<th>Fatalities</th>
<th>Fatalities general/accidents general (%)</th>
<th>Fatalities – alcohol</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>211 516</td>
<td>5 724</td>
<td>2,71</td>
<td>1 336</td>
<td>0,63</td>
<td>n/a</td>
</tr>
<tr>
<td>2001</td>
<td>185 664</td>
<td>6 672</td>
<td>3,59</td>
<td>1 219</td>
<td>0,66</td>
<td>n/a</td>
</tr>
<tr>
<td>2002</td>
<td>190 718</td>
<td>8 299</td>
<td>4,35</td>
<td>1 314</td>
<td>0,69</td>
<td>n/a</td>
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<tr>
<td>2003</td>
<td>195 581</td>
<td>9 081</td>
<td>4,64</td>
<td>1 319</td>
<td>0,67</td>
<td>n/a</td>
</tr>
<tr>
<td>2004</td>
<td>196 484</td>
<td>7 227</td>
<td>3,68</td>
<td>1 215</td>
<td>0,62</td>
<td>n/a</td>
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<tr>
<td>2005</td>
<td>199 262</td>
<td>2 821</td>
<td>1,42</td>
<td>1 127</td>
<td>0,57</td>
<td>n/a</td>
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<tr>
<td>2006</td>
<td>187 965</td>
<td>6 807</td>
<td>3,62</td>
<td>956</td>
<td>0,51</td>
<td>42</td>
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<tr>
<td>2007</td>
<td>182 736</td>
<td>7 466</td>
<td>4,09</td>
<td>1 123</td>
<td>0,61</td>
<td>36</td>
</tr>
<tr>
<td>2008</td>
<td>160 376</td>
<td>7 252</td>
<td>4,52</td>
<td>993</td>
<td>0,62</td>
<td>80</td>
</tr>
<tr>
<td>2009</td>
<td>74 815</td>
<td>5 725</td>
<td>7,65</td>
<td>833</td>
<td>1,11</td>
<td>123</td>
</tr>
</tbody>
</table>
Results – Months 1-6
2009/2010
Results – Months 1-6 2009/2010

Accidents general

Accidents - alcohol
Results – Months 1-6
2009/2010

**No. of positive checks - alcohol**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01/2010</td>
<td>750</td>
<td>832</td>
<td>951</td>
<td>79</td>
<td>1113</td>
<td>1148</td>
<td>1201</td>
</tr>
<tr>
<td>02/2010</td>
<td>1113</td>
<td>1173</td>
<td>1201</td>
<td>1014</td>
<td>1171</td>
<td>1239</td>
<td>1543</td>
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</tbody>
</table>

**No. of positive checks - drugs**

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>01/2010</td>
<td>79</td>
<td>112</td>
<td>105</td>
<td>143</td>
<td>115</td>
<td>164</td>
<td>175</td>
</tr>
<tr>
<td>02/2010</td>
<td>112</td>
<td>130</td>
<td>86</td>
<td>125</td>
<td>75</td>
<td>97</td>
<td>97</td>
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</tbody>
</table>
Results – testing for statistical significance of differences
Months 1-6 2009/2010

<table>
<thead>
<tr>
<th>Year</th>
<th>Indicator</th>
<th>Fatalities general</th>
<th>Fatalities alcohol</th>
<th>Accidents general</th>
<th>Accidents alcohol</th>
<th>Positive checks alcohol</th>
<th>Positive checks other drugs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>Fatalities general</td>
<td>0,075</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Fatalities alcohol</td>
<td>0,058</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accidents general</td>
<td></td>
<td>0,753</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Accidents alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,046</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive checks alcohol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,028</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Positive checks other drugs</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0,028</td>
<td></td>
</tr>
</tbody>
</table>

Statistically significant differences (0.5 significance level) between the first six-month periods of 2009 and 2010 were shown for the “positive checks for alcohol” and “positive checks for other drugs” indicators. No statistically significant differences were found for the “fatalities general”, “fatalities alcohol” and “accidents alcohol” indicators, although the measures show borderline levels. No statistically significant difference was identified for the “accidents general” indicator.
Discussion

1. The differences between the first six months of 2009 and 2010 showed statistical significance when model-based estimates for the 7th and 9th months were included in the calculation.

2. As a result, we can assume that the study indicators (especially the numbers of accidents and fatalities related to drink-driving) will show statistically significant differences in the future.

3. The interpretation must consider all factors which may be associated with the change, including:
   - mandatory breath tests effective from 1 January 2010
   - preventive campaigns (such as Pay Attention or Pay the Price), and
   - penalty point system (repressive effect – behavioural changes in drivers with a certain number of points)
Discussion

Allowing for alternative interpretations, the results suggest that the binding guideline of the Czech Traffic Police Directorate, effective from 1 January 2010, introducing mandatory screening breath testing of drivers for alcohol during all road checks, contributed to reductions in the numbers of alcohol-related accidents and fatalities on Czech roads.
Thank you for your attention

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