Evaluation of Maryland’s State Police Impaired Driving Reduction Effort (SPIDRE)

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As required by the Alcohol Policy 18 Conference, I/we have signed a disclosure statement and note the following conflict(s) of interest:

- March 9, 2016: Gave presentation to ABI on three strategies to reduce impaired driving: (1) .05 BAC; (2) sobriety checkpoints; (3) all DWI offender interlock laws. ABI paid for my travel.
- Currently on the Board of Directors and Treasurer for the Washington Regional Alcohol Program (WRAP), a “big tent” coalition. Some Board members are from the alcohol industry. I advocate for evidence-based solutions only.
To address the dangers of impaired driving, the Maryland Highway Safety Office funded a select team of seven Maryland State Troopers who engaged in full-time driving-under-the-influence (DUI) enforcement starting in 2013.

The SPIDRE effort was modelled after the State of Washington’s Target Zero Teams (TZT) program, which was highly successful in reducing impaired driving fatal crashes (24% reduction).
Washington State
Target Zero Team
Objectives

- Compare the SPIDRE team’s impact on impaired driving crashes in Montgomery County (pre-and-post intervention) to Cecil/Harford County where the SPIDRE would not operate (pre-post also).
- Compare the SPIDRE team’s DUI arrests to DUI arrests made by non-SPIDRE troopers and non-SPIDRE police officers in the counties where SPIDRE operated.
- Determine the cost/benefit of the SPIDRE program.
Methods

• Analyze impaired driving crash data (police reported alcohol and a surrogate measure: single vehicle nighttime (SVN) crashes where alcohol is prevalent as a ratio to multiple vehicle daytime (MVD) crashes where alcohol is rare).

• Analyze DUI arrest data including adjudicative outcomes (final dispositions).

• Conduct public opinion and bar patron surveys on awareness of the SPIDRE program.

• Conduct focus group discussions with SPIDRE troopers.
Crash Analyses

• Because police do not test every driver involved in a crash for alcohol, police reported alcohol in crash data files are severely underreported.

• The ratio of SVN crashes (6 pm-6 am) to MVD crashes (6 am-6 pm) has served as a surrogate measure of impaired driving crashes in past research. SVN/MVD=outcome measure.

• Crash data were examined over the period from 2010 (3 years before SPIDRE) to 2016 (3 years post-SPIDRE)
There was a significant decrease of 0.0096 in the ratio of SVN to MVD in the SPIDRE counties but not in the non-SPIDRE counties.

The average monthly SVN crashes post-SPIDRE was calculated twice: once assuming the same ratio as in pre-SPIDRE, and then a second time assuming a reduced rate of 0.0096. The difference between the two estimates was then calculated and extrapolated to 1) the entire SPIDRE period and 2) an average annual reduced rate.
Ratio of SVN to MVD Crashes

The graph shows the ratio of SVN to MVD crashes over a period from early 2010 to late 2016. The data is divided into two segments: before and after a specific date, indicated by a vertical dashed line. The graph includes three lines:

- **SPIDRE**
- **No SPIDRE**
- **Comparison**

The ratio values range from approximately 0.1 to 0.3. The data suggests some variability in the ratio over time, with potential changes before and after the specified date.
• The decrease in the ratio translated to **178 SVN crashes avoided** in the SPIDRE counties over the 35 month SPIDRE period. Using a similar methodology, if the SPIDRE team had operated in the non-SPIDRE counties and had the same effect, 192 SVN crashes would have been avoided.

• There were no significant changes in police reported alcohol-related crashes in SPIDRE counties (pre-post) or in non-SPIDRE counties.
DUI Arrests
DUI Arrest Analyses

• SPIDRE counties did not experience any measurable change in the number of DUI arrests while DUI arrests decreased in the comparison counties (Cecil & Harford) by 27.5 DUI arrests per month or about an 18.7% decrease.

• DUI arrests decreased in the other non-SPIDRE counties by 133 per month or a 12.8% decrease. Both decreases were statistically significant.
DUI Arrests in SPIDRE and Non-SPIDRE Counties
DUI Arrests

- The SPIDRE team was associated with preventing a significant downward trend in impaired driving arrests in the SPIDRE counties (reduced enforcement) experienced by the rest of the state.
- When each of the SPIDRE counties was examined by the actual start date in that county, Baltimore County experienced an increase in DUI arrests by approximately 14.2% and Prince George’s County experienced an increase by approximately 43.1%. Both of these increases were statistically significant.
Positive adjudicative outcomes [defined as a guilty verdict or probation before judgement (PBJ)] were significantly greater in arrests made by the SPIDRE team (82.78%) than those made by non-SPIDRE police officers (69.24%).

The increase in positive adjudicative outcomes is very important. Ahlin et al., (2011) found that rates of DUI recidivism in Maryland for offenders convicted of DUI (or given PBJ) were consistently lower compared to offenders found not guilty or whose cases were dismissed.
Telephone Survey
The results of the pre-post comparative analyses of the phone survey data (N=400) revealed that there was no evidence of an increase in perceptions of police presence in any of the jurisdictions, as measured by the question “In the past 6 months, have you seen police on the roads you normally drive?”

There was no evidence of an increase in awareness of police efforts to reduce driving under the influence of alcohol in any of the jurisdictions, as measured by the question “In the past 6 months, have you seen or heard of any efforts by police in your community to reduce driving under the influence or drink driving?”
Do you think the chances of being stopped have changed in the past 6 months? That is, compared to 6 months ago, do you think a driver who had been drinking alcohol is more likely, less likely or about as likely to be stopped by the police?

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<tr>
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<th>Pretest</th>
<th>Posttest</th>
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<tbody>
<tr>
<td>More likely</td>
<td>38.4</td>
<td>30.3*</td>
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<tr>
<td>Less likely</td>
<td>4.5</td>
<td>7.5</td>
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<tr>
<td>About the same</td>
<td>49.6</td>
<td>52.5</td>
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<tr>
<td>Don’t know/refused</td>
<td>7.4</td>
<td>9.8</td>
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* statistically significant (p < .05) difference between pretest and posttest
Do you think the chances of being stopped have changed in the past 6 months? That is, compared to 6 months ago, do you think a driver who had been drinking alcohol is more likely, less likely or about as likely to be stopped by the police?

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<td>More likely</td>
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<td>26.8</td>
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<tr>
<td>Less likely</td>
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<td>4.5</td>
</tr>
<tr>
<td>About the same</td>
<td>57.3</td>
<td>56.5</td>
</tr>
<tr>
<td>Don’t know/refused</td>
<td>9.8</td>
<td>12.3</td>
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Bar Patron Surveys

• There was no evidence of any statistically significant change in perceptions of enforcement efforts by police to reduce driving under the influence in either county/jurisdiction in the bar patron surveys (N=100 pre and N=100 post in each county).

• There was a marginal difference suggesting a slight increase in awareness in Montgomery County (63.9% pre vs. 68.7% post). However, there was evidence of a significant increase in perceptions that police are enforcing efforts to reduce drunk driving regularly in Cecil/Harford counties (32.4% vs. 47.4%) but not in Montgomery County (43.4% vs. 43.6%).
Suppose you drove a motor vehicle after drinking alcohol and the amount of alcohol in your body was more than what the law allows for drivers. How likely is it that the police would stop you? Would the police be...........?

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<tr>
<td>Very likely to stop you</td>
<td>23.4</td>
<td>37.4**</td>
</tr>
<tr>
<td>Somewhat likely to stop you</td>
<td>45.0</td>
<td>18.7</td>
</tr>
<tr>
<td>Not likely to stop you</td>
<td>30.6</td>
<td>37.4</td>
</tr>
<tr>
<td>Don’t know/refused</td>
<td>0.9</td>
<td>6.6</td>
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Suppose you drove a motor vehicle after drinking alcohol and the amount of alcohol in your body was more than what the law allows for drivers. How likely is it that the police would stop you? Would the police be...........

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<tr>
<td>Very likely to stop you</td>
<td>31.5</td>
<td>29.3</td>
</tr>
<tr>
<td>Somewhat likely to stop you</td>
<td>25.0</td>
<td>30.3</td>
</tr>
<tr>
<td>Not likely to stop you</td>
<td>35.2</td>
<td>27.3</td>
</tr>
<tr>
<td>Don’t know/refused</td>
<td>8.4</td>
<td>13.0</td>
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The results of PBT readings of the bar patrons showed that the bar patrons of Cecil/Harford counties were less likely to have positive BACs upon exiting the premises in the posttest (17% had BACs=.00) than in the pretest (23% had BACs=.00), while there was no difference in Montgomery county.

However, a non-significant trend suggested that the exiting bar patrons in Cecil/Harford counties were more likely to be legally intoxicated (BACs greater than .08) in the posttest (43%) compared to the pretest (40%), while the opposite was observed in Montgomery County (38% posttest vs. 40% pretest with BACs>.08).
Focus Group Discussion
Focus Group Discussion

- The focus group discussion with the seven troopers was quite informative and revealed a high level of morale amongst team members and commitment to the SPIDRE effort.
- The SPIDRE team’s level of success in DUI arrest report writing, court room testimony and adjudicative outcomes was considered a significant accomplishment.
- The value of special training they received (e.g., DUI Institute) was mentioned along with the need for further advanced training and equipment.
Cost/Benefit of SPIDRE

• The SPIDRE program costs over the 35 month period was $4,436,108 in salaries for the troopers, training, equipment, media and other costs.

• Using NHTSA estimated costs of alcohol-related crashes, the 178 SVN crashes avoided would have cost $16,549,174 assuming 70% were property damage; 10% were possible injury; 10% were evident injury and 10% were serious injury.
Cost/Benefit of SPIDRE

• A benefit of saving $16.5 million divided by a cost of $4.4 million results in the following: For every $1.00 spent on SPIDRE, the State saved $3.75 in crash costs avoided.

• This does not include the SPIDRE benefit of preventing a downward trend in DUI arrests nor the 12% increase in the rate of positive adjudicated outcomes of DUI arrests by the SPIDRE team.
Conclusions

• The **SPIDRE troopers made 2,451 DUI arrests** between 2013 and 2016. An additional 114 criminal arrests were made and the SPIDRE **troopers issued 16,671 traffic citations** during that period.

• DUI arrests made by the SPIDRE team resulted in a significantly higher rate of **positive adjudicative outcomes (e.g., PBJ or conviction, 83%)** than arrests made by non-SPIDRE officers in those counties where the SPIDRE team operated (69% PBJ or conviction).

• The SPIDRE program appeared able to prevent a downward trend in DUI arrests, experienced by the rest of the state, and achieved higher quality arrests resulting in more positive adjudicative outcomes.
Conclusions

• Evidence from this evaluation indicated that the SPIDRE team was associated with preventing a downward trend in DUI arrests, as high as 6% in some counties and even produced an increase of 14 - 43% in DUI arrests in some SPIDRE counties.

• The SPIDRE program was associated with a 12% increase in the rate of positive adjudicative outcomes from DUI arrests.

• Together these findings suggest that the level of improvement in enforcement and adjudicative outcomes approaches the projected 10% estimate for improvement in arrests needed to achieve a significant reduction in crashes and their related injuries, fatalities and costs.
Recommendations

1. It is recommended that the SPIDRE team increase its enforcement activities for at least 9 – 12 consecutive months in the county where they are deployed (as opposed to the current 1-3 months). It is recommended that Maryland adopt an implementation program similar to the one used in the state of Washington‘s Target Zero Teams Project (Thomas et al., 2015).

2. It is recommended that SPIDRE teams be expanded so that each county (or at least the largest counties) will have its own team of various sizes. This would provide greater continuity and reduce travel time for court case hearings that occur out of county from where the SPIDRE team member operates.
3. It is recommended that the **DUI Institute be continued** for training highly motivated police officers and recommended that the DUI Institute for prosecutors be continued.

4. It is recommended that **publicity and media strategies** (including social media) of the SPIDRE team **use more innovative methods**. There was very low awareness of the SPIDRE team in the telephone and bar patron surveys. This is important if a general deterrent effect is to be experienced.
This evaluation was funded by the Maryland Highway Safety Office via grant funding from the National Highway Traffic Safety Administration (NHTSA).

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The opinions, findings and recommendations are those of the authors and not necessarily those of the sponsor.
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