Drug Impairment in Traffic: A Problem in Perspective

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Clear information about alcohol impairment

- Alcohol results in impairment of driving skills
- Clear dose-response relationship between BAC and risks of being in a crash
- Alcohol easily and quickly measured
- Strong laws define driving while intoxicated as an offense
- Almost all countries and U.S. states have per se illegal BAC
Drugged driving information not as clear

- Science of drug-impaired driving is much less well advanced
- Illegal and medicinal drugs are numerous and constantly evolving
- Measurement of presence of drugs more difficult, time-consuming and expensive
- Changing status of marijuana will change availability and likely change use
Things we need to pay attention to

- Prevalence of drugs in traffic
- Impairment caused by drugs
- Crash risk resulting from drugs
- Laws related to drugs and driving
- Enforcement techniques and difficulties
Prevalence
How many people on the road are under the influence?
How many drivers in crashes?

- In U.S., data come from Fatal Analysis Reporting System (FARS) data and roadside surveys.
  - FARS data not consistently reported or complete
  - Roadside surveys are expensive – only done infrequently

- Toxicological methods are variable.
  - Variations in sample medium (blood, urine, oral fluid)
  - Variations in analytic methods and cutoffs

- Sampling and other techniques vary and make comparisons difficult
Drug Impairment
Drug Impairment: Issues

- Measurement of drug impairment more complicated than measurement of alcohol effects.

- Blood concentration of THC declines very rapidly and is not necessarily an indicator of impairment.

- There are individual variations in impairment.

- Performance impairment in the laboratory does not necessarily translate into driving risk.

- There are many possible combinations of drugs and of drugs and alcohol.
Crash Risk
Crash Risk: The odds of getting into a crash

- Increase in crash risk most critical factor for traffic safety.

- Difficult to measure, requiring culpability and case control studies, which are expensive and demanding.

- Case control studies funded by the National Highway Traffic Safety Administration (NHTSA) in the US and DRUID in Europe provide better information about crash risk.
Risk in Traffic: Findings

- Odds ratios tend to vary widely – in part due to methodological and technological difficulties and differences

- Odds ratios for drugs tend to be lower than those for alcohol at higher BACs

- Inconsistent findings about drivers with combination of drugs or of drugs and alcohol
DRUID Findings:

• Alcohol, especially in high concentrations presents highest risk.

• The combination of alcohol and drugs or medicines leads to very high risks in traffic.

• Cannabis (THC) alone presents low risk.

• Important to consider both prevalence and risk when setting safety priorities.
# U.S. Crash Risk Study: Odds Ratios for Drug Classes

<table>
<thead>
<tr>
<th>Drug Class</th>
<th>Odds Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>THC (Marijuana)</td>
<td>1.05</td>
</tr>
<tr>
<td>Antidepressants</td>
<td>0.87</td>
</tr>
<tr>
<td>Narcotic Analgesics</td>
<td>1.14</td>
</tr>
<tr>
<td>Sedatives</td>
<td>1.27</td>
</tr>
<tr>
<td>Stimulants</td>
<td>0.94</td>
</tr>
<tr>
<td>Illegal Drugs</td>
<td>1.04</td>
</tr>
<tr>
<td>Legal Drugs</td>
<td>1.03</td>
</tr>
</tbody>
</table>

*(Adjusted for Demographic Variables: Age, Gender And Race/Ethnicity)*

Drugs and Alcohol Combined

- No difference in crash risk for THC-positive drivers who were also positive for alcohol than for THC-positive drivers with no alcohol, beyond the risk attributable to alcohol.

- No statistically significant interaction effect on crash risk was found between any drug class or drug category and BrAC level.

<table>
<thead>
<tr>
<th>BrAC Relative Risk Adjusted for Age and Gender</th>
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<tbody>
<tr>
<td>0.05</td>
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<tr>
<td>0.08</td>
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<tr>
<td>0.10</td>
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<tr>
<td>0.15</td>
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<tr>
<td>0.18</td>
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<td>0.20+</td>
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</table>

Rapid Change in Legal Status of Marijuana Raises Important Issues

- Changes in use patterns
- More prevalence in traffic
- More prevalence in crash-involved drivers
- But does it pose greater risk?
U.S. Example: Washington State

- Recreational marijuana use legalized in December 2012; Per se limit established.

- From 2010 - 2013, drivers in fatal crashes with detectable THC: 7.9% to of 8.5%.

- Several months following legalization, the proportion doubled from 8.3% in 2013 to 17.0% in 2014.

- Does not necessarily indicate impairment or that THC was causal in the crash.

Washington State: Fatal Crashes 2010-2014
Estimated 10% of drivers in fatal crashes positive for THC

THC- Positive Drivers Involved in Fatal Crashes

- 39.0%
- 34.0%
- 16.5%
- 10.5%

- had neither alcohol nor other drugs
- had detectable alcohol in addition to THC
- had other drugs in addition to THC
- had both alcohol and other drugs in addition to THC
Fatal Crashes: Colorado

The graph shows the rate of fatal accidents and fatalities per 100,000 residents in Colorado from January 2004 to January 2016. The data fluctuates over time, with some periods showing a higher incidence of fatal crashes and fatalities.
Number of Traffic Fatalities: Colorado
Drugged Driving Laws
Drug Impairment Laws: Issues

- Concern about drugs has led to new laws, especially to establish zero tolerance or per se laws.

- Effects of these laws and potential unintended consequences are not known.

- Unlike alcohol, where risky level in the blood is based on research, risky levels of drugs are difficult to establish.
How well can per se laws work?
Study of drivers in several states arrested for DUI

- Among all cannabis-positive drivers arrested for DUI, 70 percent had THC concentrations below 5 ng/mL.

- The majority of cannabis-positive drivers arrested for DUI also tested positive for alcohol and/or other drugs; only 23 percent were positive only for cannabinoids.
Study Conclusions

• All of the candidate THC concentration thresholds examined would have misclassified a substantial number of drivers as impaired who did not demonstrate impairment on the SFST, and would have misclassified a substantial number of drivers as unimpaired who did demonstrate impairment on the SFST.

• Based on this analysis, a quantitative threshold for per se laws for THC following cannabis use cannot be scientifically supported.
Drugged Driving Laws in the U.S.

- 16 States have zero tolerance for driving under the influence of specific drugs: any amount of prohibited drug found in the blood or urine of a driver is a per se violation.

- 6 States have specific cutoff levels for certain drugs.

- 5 states have specific per se limits for THC.
Important Legal Issue

- Some proven effective laws deal only with alcohol

  - RBT or Sobriety checkpoints, alcohol ignition interlocks shown to be effective

  - Not effective in dealing with drug use.

  - Must insure that increased emphasis on drugged driving does not weaken these laws,
Laws related to availability of marijuana

- Rapid changes in laws related to legality of marijuana use and possession.

- Laws controlling alcohol availability and mandating responsible beverage service have had a major impact on traffic safety.

- Should apply some of this experience and knowledge to marijuana where it is sold legally.
Enforcement
Enforcement: Issues

- Enforcement for drug impaired driving more complicated and difficult than for alcohol.

- The expense, difficulties, and delays involved in drug testing are impediments to enforcement.

- Drugged driving enforcement could compete with enforcement of alcohol impaired driving.
The most important aspect of enforcement is deterrence, but . . .

- Deterrence is difficult because enforcement is difficult and relatively infrequent.

- Prosecution is slow and uncertain.

- How can we address these challenges?
Summary and Conclusions

- Drug impaired driving poses complex problems.

- In terms of both crash risk and prevalence, alcohol impaired driving still poses greatest traffic safety threat.

- Changing situation – especially regarding Marijuana should be monitored.

- Laws dealing with drug impaired driving should be carefully evaluated.

- Sales and service laws for marijuana should be based on lessons from alcohol policy.

- Enforcement of drugged driving laws poses challenges

- Should NOT come at the expense of alcohol enforcement.