Today’s Agenda

• Predictors for DUI and RWI and Adolescent Cognitive Development
• One Topic, 3 Flavors: Streamlining Distracted Driving Education Efforts
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Presenter

Bruce Simons-Morton
National Institute of Child Health and Human Development: Associate Director for Prevention
Senior Investigator in the Intramural Research Program at the NICHD
Prevalence and Predictors of DWI and RWI

Bruce Simons-Morton, EdD, MPH

Health Behavior Branch
National Institute of Child health and Human Development
Alcohol-Related Fatal Crash Risk (FARS, 2007)

Figure 3. Relative risk—involvement in all crashes. *Involvement* denotes drivers who were involved in a fatal vehicle crash but were not fatally injured.

NEXT GENERATION Health Study:
1) Predictors of impaired driving – 11th grade
2) Does RWI predict DWI - 12th grade
3) Do unsafe driving and DWI co-vary?
4) Impaired driving among emerging adults
5) Do physicians advise adolescents about SU?
NEXT Generation Health Study

- Study Purpose: ID trajectories & determinants of health status & behaviors
- Design: national cohort (n=2600), annual surveys 10th grade through 3 years post high school
- Covariates: demographics, parenting, peer influence, residence, previous behavior, etc.
- Prevalence: driving, SU, diet, PA, MH, driving
- Driving outcomes: DWI, RWI, risky driving, 2nd task engagement

Funding: NICHD, NHLBI, NIDA, NIAAA, HRSA
### NEXT: Prevalence of DWI and RWI*

<table>
<thead>
<tr>
<th>GRADE</th>
<th>DWI (%) 30-Day</th>
<th>RWI (%) 12-Month</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tot</td>
<td>F</td>
</tr>
<tr>
<td>10th Grade</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>11th Grade</td>
<td>13</td>
<td>8</td>
</tr>
<tr>
<td>12th Grade</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>1st yr post HS</td>
<td>15</td>
<td>12</td>
</tr>
</tbody>
</table>

*NEXT data indicates alcohol or drug impaired driving
Study #1: Do SU & parenting practices in 10\textsuperscript{th} grade predict impaired driving behaviors in 11th?

Design: prospective
Outcomes: **DWI** (30 days); **RWI** (12 mo)

Predictors (in 10\textsuperscript{th} grade)
- Heavy episodic drinking – 4, 5 drinks/occasion
- Illegal SU in last yr
- Mother’s, Father’s monitoring knowledge (5 items)
- Parental control (8 items)

Potential confounders: gender, race/ethnicity, affluence, parent education, family structure, exposure (driving days/mo)

Study #1: Adjusted logistic regression of SU & parenting practices in 10th grade predicting DWI / RWI in 11th grade

<table>
<thead>
<tr>
<th>Predictor</th>
<th>DWI (AOR)</th>
<th>RWI (AOR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy episodic drinking - 30 days</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Yes</td>
<td>3.73***</td>
<td>3.92***</td>
</tr>
<tr>
<td>Illegal drug use - past year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>Ref</td>
<td>Ref</td>
</tr>
<tr>
<td>Yes</td>
<td>1.40</td>
<td>1.23</td>
</tr>
<tr>
<td>Mother’s monitoring knowledge</td>
<td>0.74</td>
<td>0.81</td>
</tr>
<tr>
<td>Father’s monitoring knowledge</td>
<td>0.66*</td>
<td>1.12</td>
</tr>
<tr>
<td>Parental control</td>
<td>0.88</td>
<td>1.12</td>
</tr>
</tbody>
</table>

Study #2: Does RWI (W1-3) increase risk for DWI in 12th grade?

- Design: Prospective, Waves 1-3
- Outcome: DWI (1+ vs. 0/30 days) in 12th grade
- Predictors
  - RWI timing (never, W1, W2, W3)
  - RWI amount (never, 1 wave, 2 waves, 3 waves)
  - Driving licensure (not licensed, W1, W2, or W3)
### Study #2: Predictors of DWI (Past Month) Among 12th-Grade (W3) Students

<table>
<thead>
<tr>
<th>Predictor</th>
<th>W3 DWI (AOR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driving licensure time (Ref = W3)</td>
<td></td>
</tr>
<tr>
<td>W2</td>
<td>0.89</td>
</tr>
<tr>
<td>W1</td>
<td>1.83*</td>
</tr>
<tr>
<td>RWI start time (Ref = Never)</td>
<td></td>
</tr>
<tr>
<td>W1</td>
<td>21.12***</td>
</tr>
<tr>
<td>W2</td>
<td>19.97***</td>
</tr>
<tr>
<td>W3</td>
<td>30.52***</td>
</tr>
<tr>
<td>RWI amount (Ref = Never)</td>
<td></td>
</tr>
<tr>
<td>At only 1 wave</td>
<td>10.89***</td>
</tr>
<tr>
<td>At only 2 waves</td>
<td>34.34***</td>
</tr>
<tr>
<td>At all 3 waves</td>
<td>127.43***</td>
</tr>
</tbody>
</table>

Study #3: Do unsafe driving & DWI co-vary over time?

- Design: Prospective; Waves 1-3; cross-lagged auto-regression
- Outcome variables
  - DWI (1+ vs. 0/30 days) in 10th, 11th, 12th
  - Checkpoints Self-Reported Risky Driving Scale (C-RDS) in 10th, 11th, 12th
Percent of Drivers who Engaged in Distracting and Risky Behaviors in Traffic - 12th Grade

<table>
<thead>
<tr>
<th>DISTRACTING BEHAVIOR</th>
<th>Drive After Drinking</th>
<th>Drive After Marijuana</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes (%) n=122</td>
<td>No (%) n=1132</td>
</tr>
<tr>
<td>Made/answered call</td>
<td>93</td>
<td>69</td>
</tr>
<tr>
<td>Read sent email</td>
<td>48</td>
<td>17</td>
</tr>
<tr>
<td>Surfed web</td>
<td>61</td>
<td>26</td>
</tr>
<tr>
<td>RISKY BEHAVIOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20+ miles/hour over limit</td>
<td>70</td>
<td>21</td>
</tr>
<tr>
<td>Race other vehicles</td>
<td>40</td>
<td>12</td>
</tr>
<tr>
<td>Not wear seat belt</td>
<td>55</td>
<td>20</td>
</tr>
<tr>
<td>2+ peer passengers</td>
<td>88</td>
<td>57</td>
</tr>
<tr>
<td>Drove drowsy</td>
<td>87</td>
<td>44</td>
</tr>
</tbody>
</table>
Study #3: Autoregressive cross-lagged models

Fig. 1. Autoregressive cross-lagged model of DWI and C-RDS.

Study #4: Prevalence and predictors of alcohol-, marijuana-, and poly-SU-impaired driving among emerging adults.

- Design: Prospective, W3-4
- Outcome variables: W4 DWI specified for alcohol-, marijuana-, other-drug.

Manuscript in preparation.
## Study #4: Prevalence of DWI in W3 and W4

<table>
<thead>
<tr>
<th></th>
<th>Wave</th>
<th>N</th>
<th>% of yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>DWI, overall</td>
<td>W3</td>
<td>1208</td>
<td>14.31</td>
</tr>
<tr>
<td></td>
<td>W4</td>
<td>1215</td>
<td>15.15</td>
</tr>
<tr>
<td>DWI, by type</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drinking</td>
<td>W4</td>
<td>1215</td>
<td>4.34</td>
</tr>
<tr>
<td>Marijuana</td>
<td>W4</td>
<td>1215</td>
<td>5.02</td>
</tr>
<tr>
<td>Drinking, mj, &amp; drug</td>
<td></td>
<td></td>
<td>5.78</td>
</tr>
</tbody>
</table>

*Weighted*
# Study #4: Associations with W4 DWI

<table>
<thead>
<tr>
<th></th>
<th>Alcohol based DWI only (AOR)</th>
<th>Marijuana based DWI only (AOR)</th>
<th>Combined DWI (AOR)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residency (Ref = live at home), W4</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On campus</td>
<td>2.62</td>
<td>0.77</td>
<td>0.49</td>
</tr>
<tr>
<td>On own</td>
<td>2.75</td>
<td>1.00</td>
<td>1.09</td>
</tr>
<tr>
<td><strong>Binge drinking (Ref = No), W3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>1.51</td>
<td>1.17</td>
<td>2.16</td>
</tr>
<tr>
<td><strong>Marijuana use (Ref = No), W3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.59</td>
<td>10.02</td>
<td>2.27</td>
</tr>
<tr>
<td><strong>Drug use except marijuana (Ref = No), W3</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>0.96</td>
<td>1.66</td>
<td>2.69*</td>
</tr>
<tr>
<td>Important to parent no alcohol, W3</td>
<td>1.08</td>
<td>1.23</td>
<td>1.13</td>
</tr>
<tr>
<td>Mother’s monitoring knowledge, W3</td>
<td>0.99</td>
<td>0.89</td>
<td>0.85</td>
</tr>
<tr>
<td>Friends drunk, W3</td>
<td>1.25</td>
<td>1.92</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Study #5: Do physicians advise adolescents about substance use?

- Design: W1-4
- Outcome variables: Participant reported physician advise.
Percentage asked by physician about engagement in health/risk behaviors

Hingson, Simons-Morton, et al., under review
DWI/RWI
Prevention Objectives

- Delay licensure
- Discourage binge drinking
- Focus on RWI
- Focus on safe driving behavior
- Increase parental monitoring & supervision
- Assess peer norms
Collaborators and Sponsors

- *Eunice Kennedy Shriver* National Institute of Child Health and Human Development (**NICHD**)
- National Heart, Lung and Blood Institute (**NHLBI**)
- National Institute on Drug Abuse (**NIDA**)
- National Institute on Alcohol Abuse and Alcoholism (**NIAAA**)
- Maternal and Child Health Branch of the Health Resources and Services Administration (**HRSA/MCHB**).
Thank You
Presenter

Stephanie Busch
EMSC Program Coordinator
Division of Emergency Preparedness, Response, and Injury Prevention
Vermont Department of Health
One Topic, 3 Flavors: Streamlining Distracted Driving Education Efforts

Stephanie Busch
EMS for Children Coordinator
Vermont Dept. of Health
Division of Emergency Preparedness, Response, and Injury Prevention
Vermont Team

• Chrissy Keating
  – UVM Medical Center

• Jim Lockridge
  – Youth Safety Council of Vermont

• Susan Clark
  – Governor’s Highway Safety Program

• Sally Kerschner
  – Vermont Dept. of Health Maternal and Child Health

• Stephanie Busch
  – Vermont Dept. of Health Emergency Preparedness
Texting while driving has quickly become one of the greatest hazards on the road. It causes 1.6 million car accidents and 330,000 injuries per year, and 11 teen deaths every single day.

- Distracted Driving is cited as a factor in 24% of all major crashes on Vermont Highways.
- In 2014, young drivers (under the age of 21) were involved in about 21% of those crashes.
Txt U L8R

Discourage high school students from texting while driving.

• Advanced driving simulator
• Realistic trauma scenario
• Testimonial from the victim of an accident caused by a teen driver who was texting
• Demonstration of smartphone apps designed to prevent texting while driving
Txt U L8R

Benefits:

- Multi-dimensional program that keeps the students engaged
- Auditorium style that allows for up to 125 students to attend
- Ability to ask the ED medical staff questions about their personal experiences
- Listening to the personal story of an accident survivor who was hit by a teenager who was texting and driving
- Participants don’t need driving permit

Challenges:

- Travel budget limitations for schools
- Difficulty getting permission for students to leave school for the program
- Staff and scheduling intensive
- Not mobile
- AV intensive
Turn Off Texting (TOT)

Raise awareness about the dangers of distracted driving.

• Students navigate a golf cart through a course of cones while texting
• Online resources
  – Smartphone apps
  – Anti-texting Pledge
  – Videos
Turn Off Texting

Benefits

• Real driving opportunity to experience driving a vehicle and text
• Allows permitted students hands-on experience
• Can be a school or community event
• Quality presenters conduct TOT
• TOT comes to the class location
• Engaging for participants & observers
• High Visibility

Challenges

• Fair Weather Activity (Seasonal)
• Needs a 50’ x 150’ paved lot
• 12-15 students per hour
• Students must have permit or license
Distracted Driving Simulator

Enhance participant’s awareness of the dangers of distracted driving behaviors, specifically texting driving.

Computer-based simulation
Talking Points Fact Sheet

Use in Drivers’ education classroom & Safety fairs

Students gain better understanding on the dangers of driving distracted.
Distracted Driving Simulator

**Benefits**

- Students often familiar with technology
- Highly mobile
- Compact (fits on a table)
- Can be used year around
- Can be used with no staff time commitment
- Limited training required
- Participants don’t need driving permit

**Challenges**

- Must be used indoors
- Staff Travel limitations
- Technology gremlins
Pre- & Post- Survey Data

Over all goal is to see improvements in self-reported positive behavior change rates.

Positive behavior and attitude change regarding texting while driving of the participants and the family members.
Converging Programs

- Common Goals
- Common Audience
- Unique Programs
- Great Ideas
Present and Future

Successes

• Two programs have combined surveys to be collecting the same information
• Joining this CoP team with the VHSA Distracted Driving Taskforce to promote sustainability and continuance beyond this CoP
• Progress on development of common outreach material
• Commitment from programs

Challenges

• Staff time
• Funding
• Varied outreach to target audience
• Variation in implementation
Questions?

Stephanie Busch
Stephanie.busch@state.vt.us
Upcoming Webinars & Reminders

- **July**: Drowsy Driving
- **August**: Alcohol and Prescription Drug Impaired Driving
- **September**: Wrapping up the CoP
Thank you for your participation

Please take a moment to complete our short evaluation:

https://www.surveymonkey.com/r/V82MPPR

Questions or Comments? Contact:

Rhunt@edc.org

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