The use of video in teen driving: age vs. experience

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The University of Iowa Public Policy Center
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Driving is the single most dangerous thing we let our children do

Number 1 cause of death and injury among our 14-19 year-olds
- Young drivers and passengers
- Occupants of other vehicles
- Non-motorists – pedestrians, bicyclists

These deaths are premature and preventable
Crash causes

1. Novices in vehicle control skills
2. Poor ability to anticipate & identify hazards
3. Sensitivity to peer influence and willingness to take risks
4. Poor understanding of driving abilities relative to demands
   Texting and cell phone conversations compound
Compelling recent teen driving research

- Crash risk increases about 10-fold when teens begin driving unsupervised and decreases at a moderate rate over first several years
- More young passengers → more crashes
- Most severe crashes occur before midnight
- Enhanced Graduated Driver Licensing (GDL) showing positive results in other states
  - More supervised driving
  - Passenger restrictions
  - Nighttime driving limitations
Event-triggered video as an intervention tool

- The intervention is more important than the technology itself
- Purpose is to extend parent *mentoring*, not *monitoring*
  - Goal is to enhance learning for long term
- Video provides the driver and parent the *context* of safety-relevant events
- Looking for teachable moments
  - The good, the bad, and the “you almost died”
- User acceptance is critical for success
Event-triggered video recorders

- Two cameras
- 3-axis accelerometer
- Video/audio buffer
- GPS location and speed
- Triggers and saves video clips when g-force exceeds threshold (~ .5 g)
- Records 8 sec before/4 sec after trigger
- Wi-Fi or cellular download
- Video events made available through website or proprietary software
Two previous evaluations
- 25 rural teen drivers
- 36 suburban teen drivers

Pre-post study design

Event rates decrease significantly with feedback

About 1/3 of teens “high event” drivers

Limitation: no control group to account for maturation
Current evaluation: age and experience

- Three different groups of participants
  - School license holders (14.5 – 15.5 years old)
  - Inexperienced intermediate license (16 years old) – never held a school license
  - Experienced intermediate license (16 years old) – had a school license for at least 4 months
- Half the participants in each group assigned to control condition
- 90 participants
ETVR installed prior to independent driving under applicable license

First 4 weeks were no-feedback baseline for all (pre-intervention)

16 weeks of feedback
   - Flashing light on ETVR (immediate feedback)
   - Weekly report and CD of video (delayed feedback)

Four weeks of baseline (post-intervention)
Preliminary analysis

- Data collected for 39 participants
- Primary dependent measure is number of safety-relevant events per 1000 miles driven
  - Event frequency
- Negative binomial regression
  - Log of mileage as offset variable
  - Repeated measures
Miles per 4-week segment
# Effectiveness of intervention

<table>
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<th>License group</th>
<th>Intervention condition</th>
<th>Event rate</th>
<th>Lower 95% CL</th>
<th>Upper 95% CL</th>
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<th>P &gt; X²</th>
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</tr>
</tbody>
</table>
Effect of experience

Event frequency

Segment

Inexper ctrl  Inexper intv  Exper ctrl  Exper intv
Preliminary results (39/90 drivers) suggest:

- Feedback significantly decreases event frequency relative to control
  - For all driver groups
- Effect of age for feedback condition
  - 16 year olds have more events than younger drivers
- Effect of experience for feedback condition
  - Inexperienced drivers have more events
- Effect of experience for control condition
  - After about 3 months, event rates seem to increase for inexperienced drivers