

Distraction and Novice Drivers: Empirical Research and Public Policy Initiatives

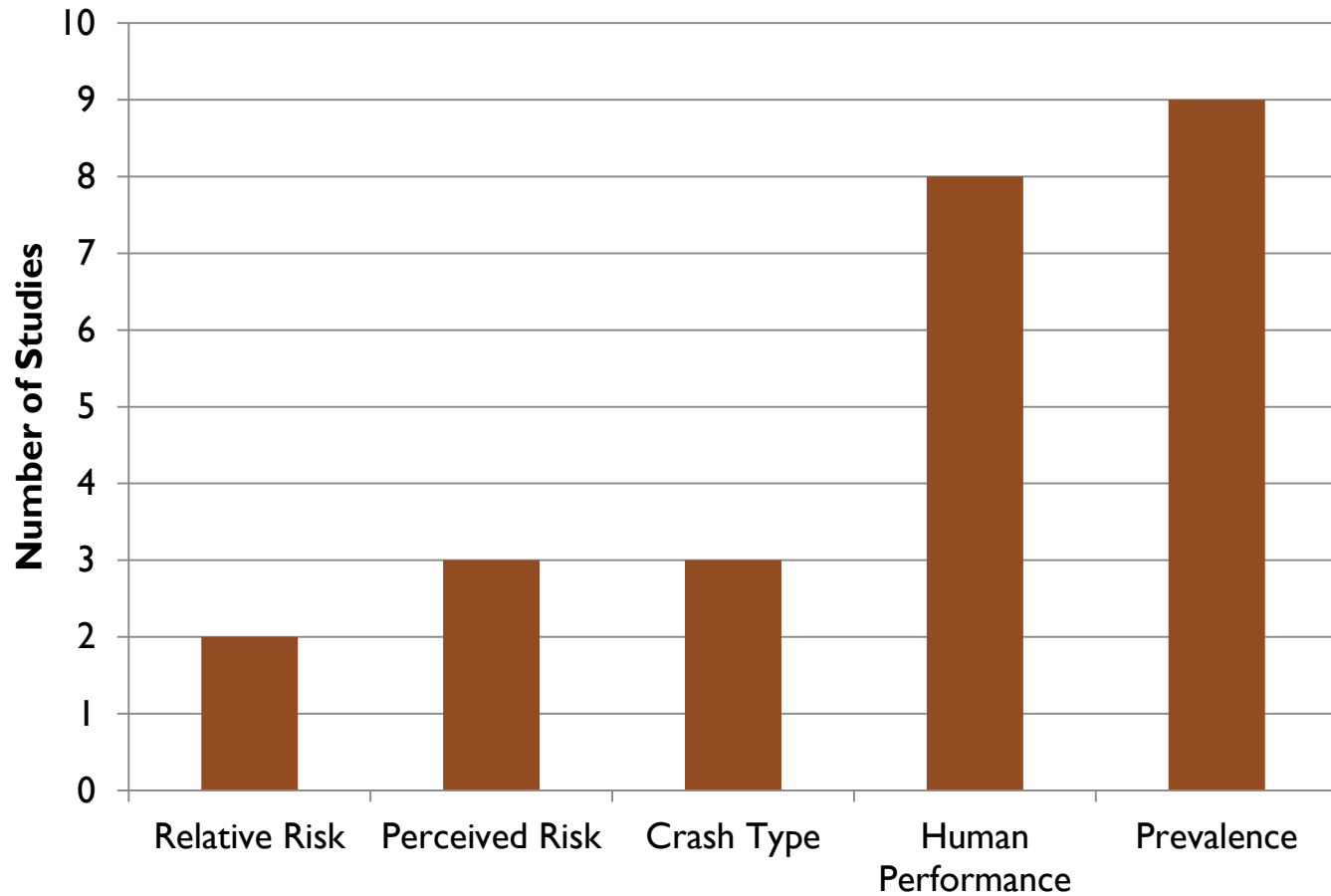
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Empirical Research Review Process

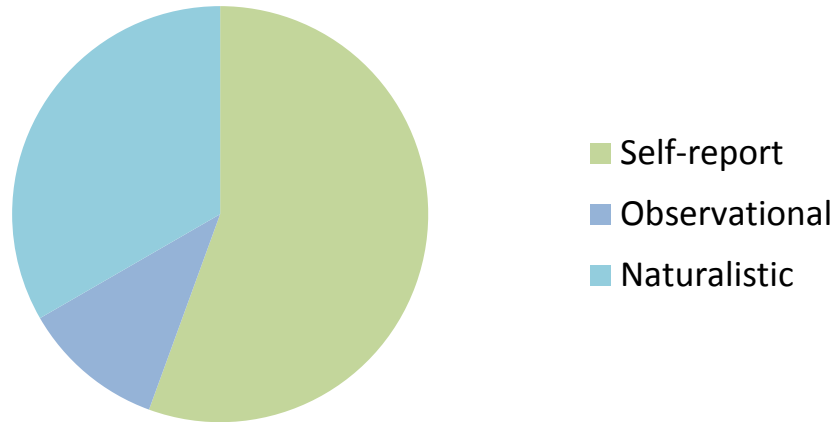
- 86 articles were identified that included teenage driver and distraction.
- Inclusion criteria:
 - Empirical research
 - Excluded articles that involved topics from hazard detection, passenger presence...
 - Novice drivers, dependent upon age of licensure
- Resulted in 21 articles

Empirical Research: 21 articles summarized



Prevalence of Secondary Task Engagement

Prevalence of Secondary Task Engagement



- Novice drivers are engaging in some type of secondary task between 15% and 50% of observations.
 - High risk tasks =13% of observations.
- 90% of novice drivers will engage in cell phone tasks of some type while driving.
- Limitations are that we need better methods of measurement. Technology is changing quickly.

Perceived Risk of Secondary Task Engagement

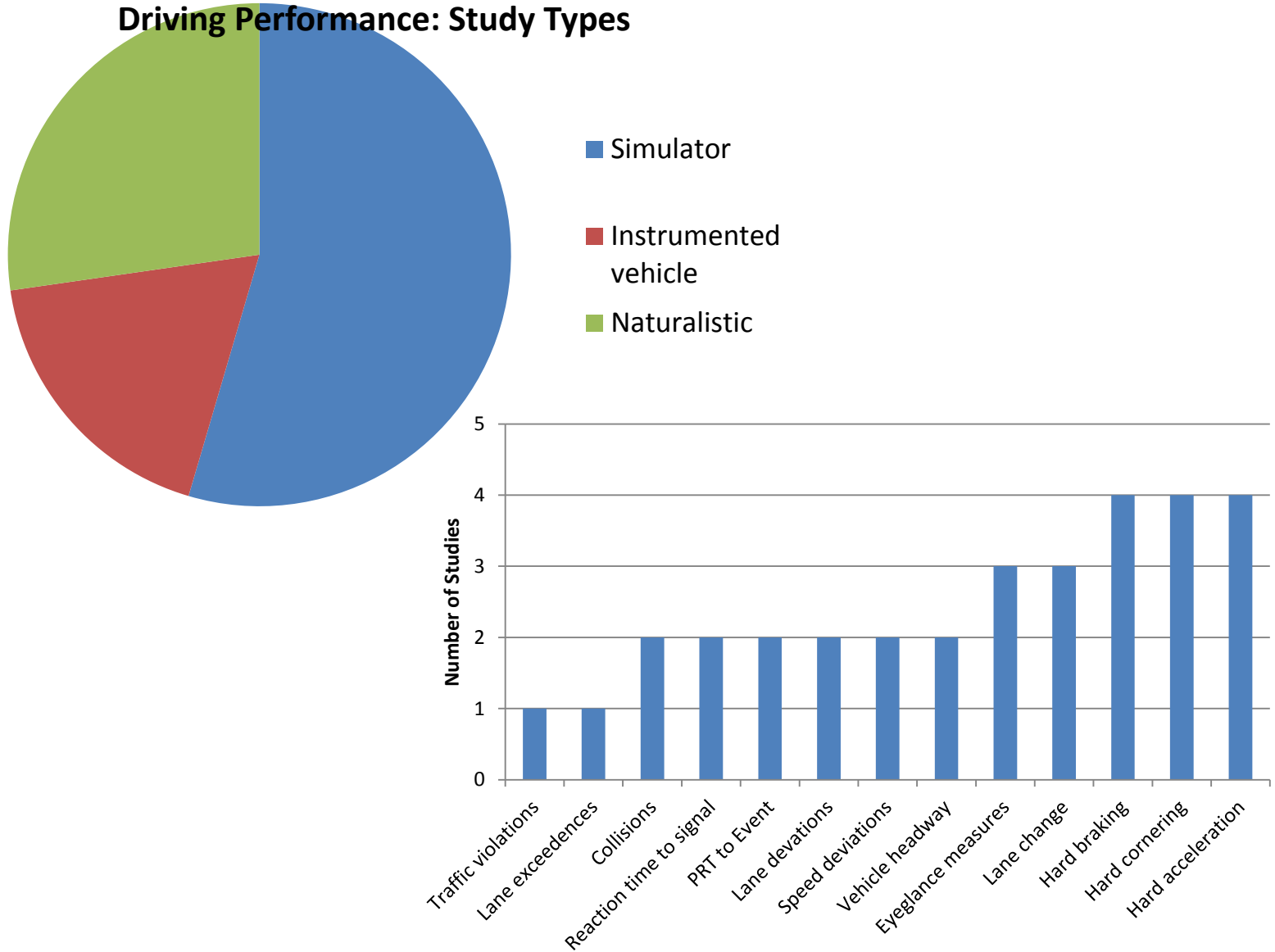
- Self-report studies only
- Most studies focused on cell phone use
 - More teenagers believe that texting is dangerous as compared to talking on cell phone.
- One study evaluating additional secondary tasks found:
 - Texting, reading/writing, and reaching were perceived as most dangerous.

Common Crash Types Associated with Secondary Task Engagement

- Teens engaging in secondary tasks are often involved in rear-end collisions and run-off road collisions.
 - This result needs to be further teased apart from 'common' teen crashes?
- These analyses used crash databases and/or crash data + interviews.
 - FARS and GES are notoriously limited in reporting of secondary task engagement. Other datasets??

Novice Driving Performance

Driving Performance: Study Types



Driving Performance

- Secondary tasks that require both visual/manual distraction result in consistent driving performance decrements.
 - Secondary tasks that are more purely 'cognitive' in nature such as talking on cell phone, mental arithmetic have mixed results.
- Comparing across studies is difficult as different metrics, different operational definitions are used.
- More research is needed to understand impacts of types of distraction.

Risk of Secondary Task Engagement

- Frequent secondary engagers were 1.45 times more likely to be involved in crashes.
- Novice driver's risk when engaging in secondary tasks is higher than it is for experienced drivers.
- Novice driver's risk of eyes off road time when engaging in secondary tasks increases as TEOR or length of longest glance increases.
- Need additional studies/analyses with larger/representative sample sizes.
- Additional studies for comparisons to experienced and older drivers.

Research Gaps

- Need additional research to further understand the interdependencies of visual, manual, cognitive, and auditory distraction for novice drivers.
 - Need better definitions/classifications
 - Need development of better metrics of measuring distraction.
 - Measure of cognitive distraction Standardized Metrics??
 - Need better theory to target research on secondary task classifications/categories versus 'cell phone' tasks.
- Research is needed on identifying and determining the effectiveness of countermeasures for novice driver's secondary task engagement; cell phones and all task types.
 - Current research on the prevalence and/or perceptions of risk for a variety of smart phone applications is also needed.

Research Gaps, con't

- How roadway/traffic demand alters the risks associated with engagement in secondary tasks needs to be studied.
 - Whether novice drivers are able to self-regulate their engagement in secondary task based upon the roadway/traffic environment is a related and is also a critical unknown.
- While connected vehicle technologies and automated systems may provide a future technological solution to distracted driving, how these technologies would be applied to novice drivers is a critical research gap.

Conclusions

- We have learned a lot about secondary task engagement and novice drivers in the last 8 years.
 - We have evidence that novice drivers are engaging in secondary tasks while they drive.
 - We have evidence that secondary task engagement is contributing to the higher crash rates we see with novice drivers.
 - We have evidence that visual/manual tasks increase risk more than other types of tasks.
- We still have work to do...