



Distracted Driving and Risk of Road Crashes Among Novice and Experienced Drivers

Charlie Klauer, Feng Guo, Bruce Simons-Morton, Marie Claude Ouimet, Suzie Lee, and Tom Dingus

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Background

- Previous naturalistic driving studies have shown that some secondary tasks increase involvement in CNC.
- Case-crossover studies have estimated risk of cell phone use to be ~4 times that of alert driver.
- These studies were conducted on adult/experienced drivers...we wanted to look at novice driver's secondary task engagement
 - prevalence
 - risk

100 Car Naturalistic Driving Study: Method

- Collected data on 100 private and leased vehicles in metro Washington, DC.
- Drivers were not coached or instructed to perform any specific actions other than drive as they normally would.
- Instrumentation is unobtrusive
- Collect continuous data for 12 months

Naturalistic Teenage Driving Study: Method

- Instrument 42 private vehicles with highly capable data collection systems
 - Collected continuous data beginning within 2 weeks of licensure and continuing for 18 months
 - 25 teens 'own' vehicle/17 teens share vehicle with parents
 - 50% male/50% female participants
 - Video, video snapshots, driving performance data, and questionnaire data

VTTI

Driving Transportation with Technology

VTTI

Driving Transportation with Technology

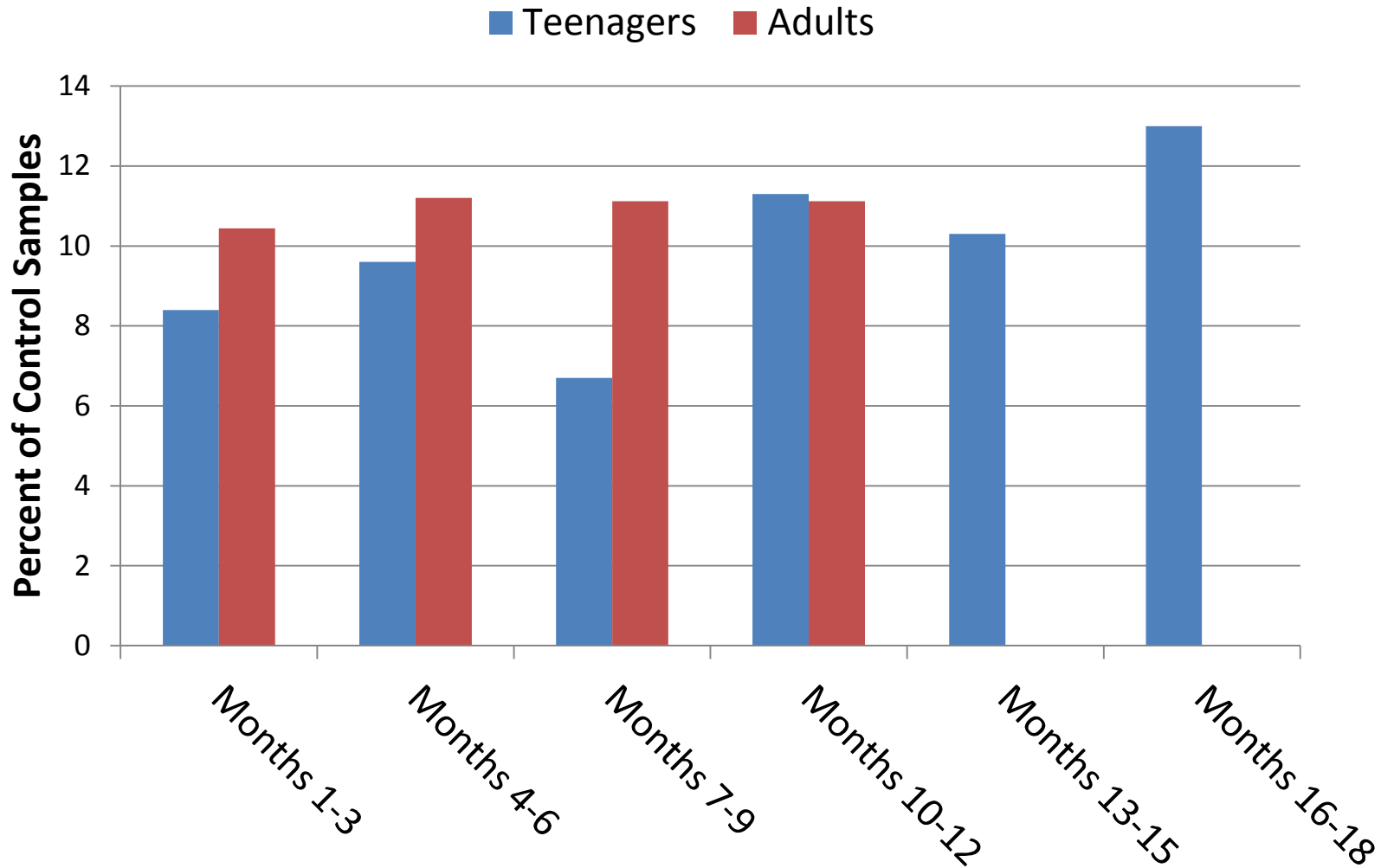
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Case Cohort Design

- ID crashes/near crashes (CNC) by reviewing high g-force and/or short TTC events
 - Coded 5 sec before/ 1 sec after each crash & near crash onset
- Random sample of non-crash road segments
 - Stratified sampling by VMT
- Mixed effects logistic regression
 - Random intercept (account for within-driver correlations)

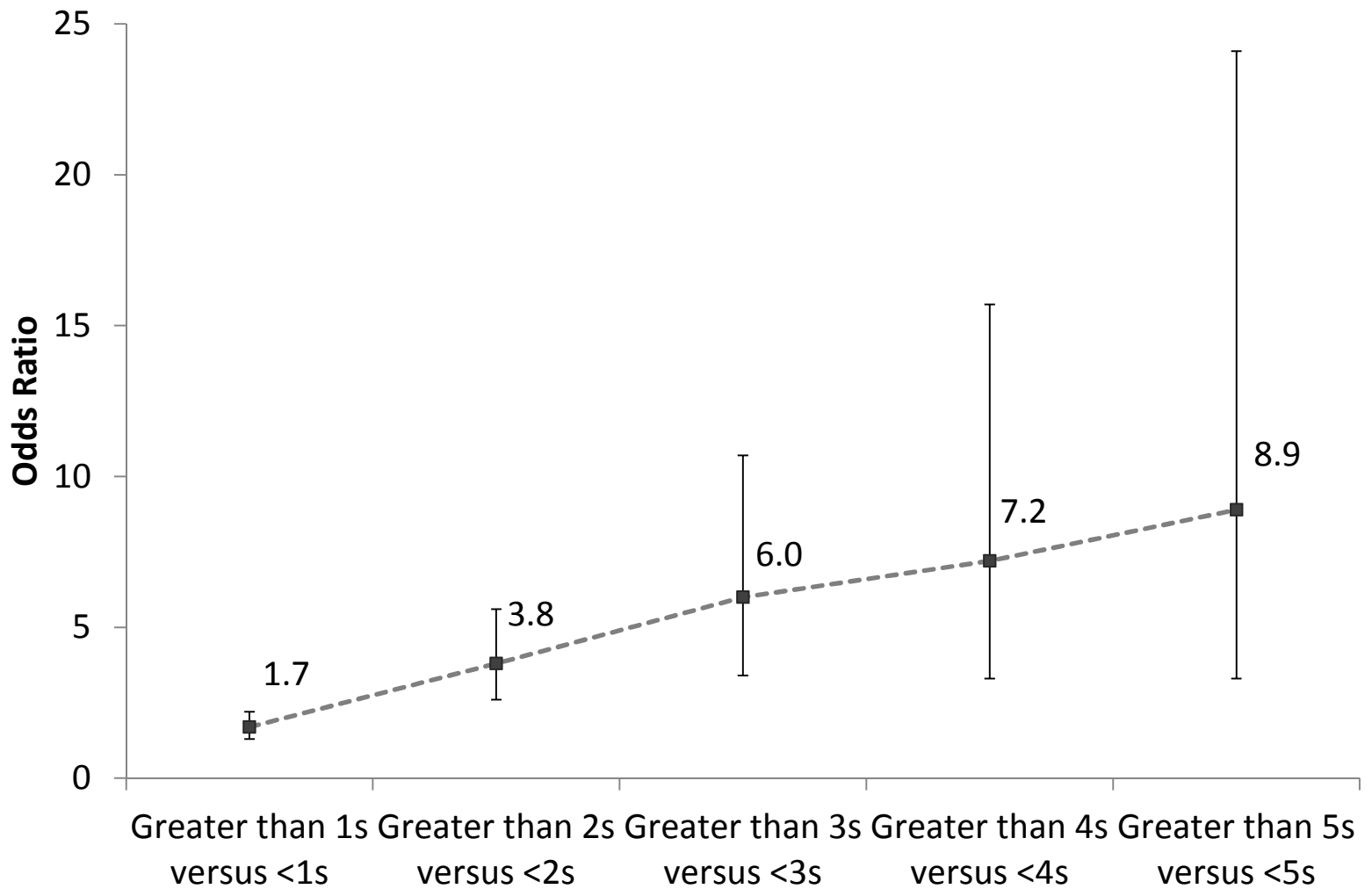
Percent of control samples over time where novice and adult drivers engaged in high-risk secondary tasks.



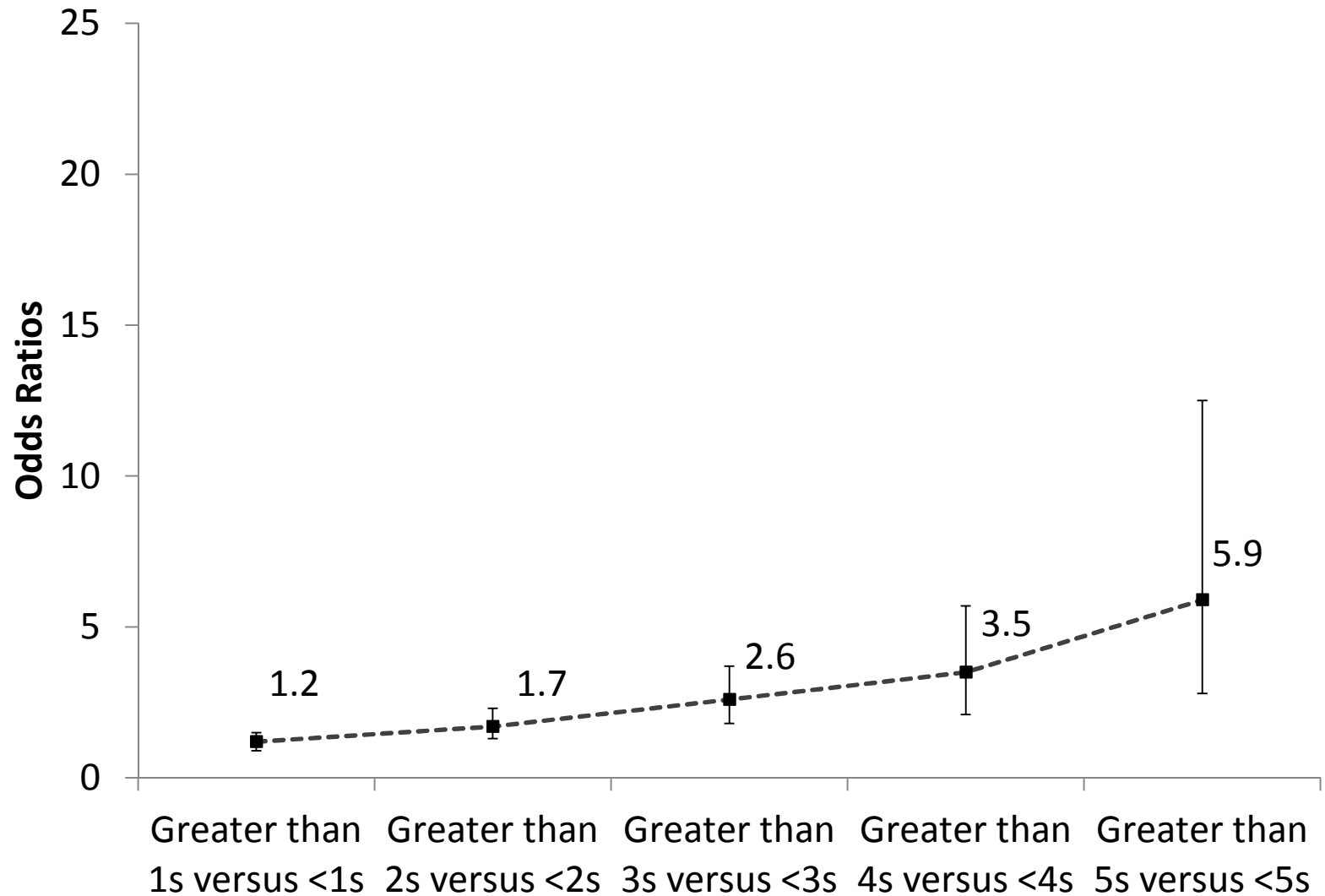
Secondary Task Engagement and CNC (Random Effects Logistic Regression)

Secondary Task	NTDS (Novice Drivers)		100-Car Study (Experienced Drivers)	
	OR	95% CI	OR	95% CI
Phone -Texting	4.3	1.9/10.0	n/a	n/a
Phone - Dialing	7.8	2.7/23.1	2.5	1.4/4.5
Phone - Talking	0.8	0.4/1.5	0.7	0.5/1.1
Phone - Reaching	4.7	1.8/11.7	1.4	0.3/6.1
Object (not phone) - reaching	7.8	3.5/16.8	1.2	0.6/2.3
Roadside Object - looking	3.7	1.7/8.5	0.7	0.4-1.2
Radio/HVAC – managing	1.4	0.8/2.7	0.5	0.3/0.9
Vehicle Operations - performing	2.5	0.9/7.3	0.6	0.2/2.7
Eating	3.3	1.5/7.2	1.3	0.7/2.1
Drinking (non-alcoholic)	1.3	0.3/5.7	0.4	0.2/1.2

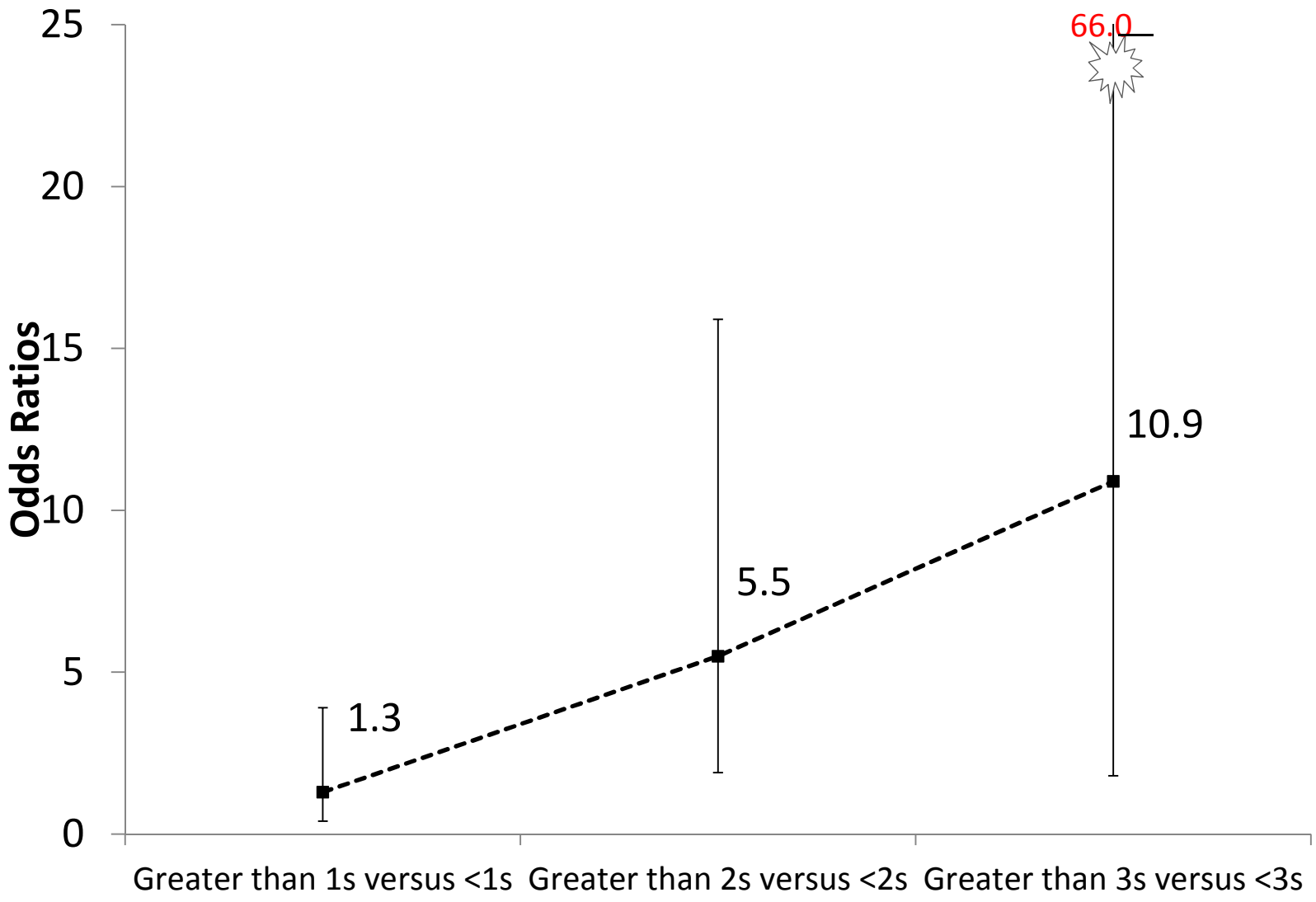
Risk of Single Longest Glance



Risk of Time Eyes Off Forward Roadway



Risk of Single Longest Glance While Using Wireless Device



Conclusions

- Prevalence of high risk secondary task engagement increases over time for novice drivers.
- Risk of CNC occurrence for novice drivers is primarily for those tasks that require their eyes to be averted from the forward roadway.
 - Tasks like talking did not increase risk.
- The longer novice drivers look away from the road, their risk increases.
- This research supports hand-held device bans for novice drivers.