



VIRGINIA TECH
TRANSPORTATION INSTITUTE
VIRGINIA TECH

Advancing Transportation through Innovation

COMMERCIAL DRIVER DISTRACTION: RECENT INSIGHTS FROM NATURALISTIC DRIVING STUDIES

REBECCA HAMMOND

DIVISION OF FREIGHT, TRANSIT, AND HEAVY VEHICLE
SAFETY

CURRENT RESEARCH OBJECTIVE

- Contribute to the sparse body of research on CMV driver distraction
- Leverage previously collected naturalistic data to better understand safety-critical events involving CMVs, with a focus on distraction and fatigue
- Research Questions
 - What are the **types and frequency of tasks** in which drivers engage prior to **involvement in SCEs**
 - What are the **prevalence and characteristics of hands-free and handheld cell phone use?**
 - What are the **odds ratios of eyes off forward roadway**

METHODS



Sample Size

- 3.8 million miles of data
- 7 fleets
- 116 vehicles
- 354 drivers



WHAT ARE CMV DRIVERS DOING PRIOR TO A SCE?

Secondary Task	ALL OR	ALL CI	V1 OR	V1 CI
Talking/singing	0.60*	(0.47, 0.76)	0.62*	(0.47, 0.81)
Dancing	0.40*	(0.24, 0.67)	0.46*	(0.27, 0.81)
Reading	3.27*	(1.63, 6.59)	4.23*	(2.03, 8.81)
Reaching for object	4.57*	(3.27, 6.39)	5.81*	(4.09, 8.26)
Electronic dispatching device	1.44*	(1.05, 1.98)	1.80*	(1.27, 2.55)
Other electronic device	2.87*	(1.54, 5.36)	3.35*	(1.72, 6.52)
External distraction	1.21*	(1.04, 1.41)	1.45*	(1.23, 1.71)
Reaching for food-related or drink-related object	1.67*	(1.19, 2.33)	2.28*	(1.61, 3.22)
Removing/adjusting clothing	3.01*	(1.72, 5.27)	3.43*	(1.90, 6.21)

PREVALENCE OF CELL PHONE USE

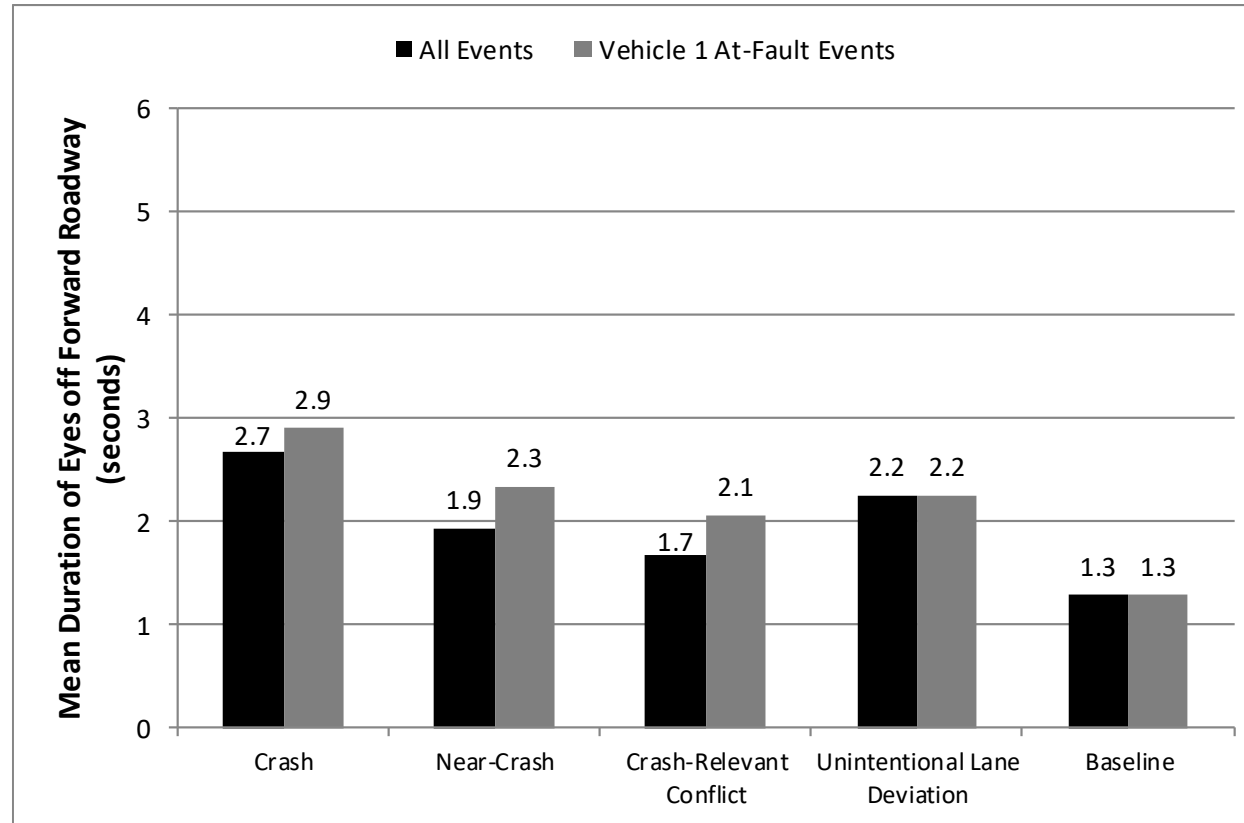
Cell Phone Task	All SCE Where Occurred	V1 SCE Where Occurred	Baseline Where Occurred
Hand-held locate/reach/answer	0.60%	0.83%	0.37%
Hand-held dial	0.14%	0.19%	0.07%
Hand-held talk/listen	0.32%	0.38%	0.63%
Hand-held holding	0.74%	0.95%	0.36%
Hand-held browsing	4.24%	5.73%	1.00%
Hand-held texting	0.28%	0.38%	0.14%
Hands-free call via headset/earpiece	3.04%	2.67%	5.52%
Hands-free call via speakerphone	0.18%	0.25%	0.21%
Hands-free talk/listen	3.22%	2.93%	5.73%

RISKS OF CELLPHONE USE

Cell Phone Task	ALL OR	ALL CI	V1 OR	V1 CI
All cell phone tasks	1.14	(0.93, 1.39)	1.40*	(1.13, 1.75)
Hand-held cell phone tasks	2.81*	(2.16, 3.66)	4.00*	(3.03, 5.27)
Hands-free cell phone tasks	0.51*	(0.38, 0.69)	0.46*	(0.33, 0.66)

Cell Phone Task	ALL OR	ALL CI	V1 OR	V1 CI
Hand-held locate/reach/answer	1.90	(0.93, 3.87)	2.71*	(1.31, 5.61)
Hand-held talk/listen	0.71	(0.30, 1.67)	0.95	(0.38, 2.40)
Hand-held holding	2.26*	(1.11, 4.61)	3.04*	(1.43, 6.46)
Hand-held browsing	4.35*	(3.08, 6.17)	6.14*	(4.26, 8.85)
Hand-held texting	3.07*	(1.03, 9.15)	4.33*	(1.42, 13.26)
Hands-free call via headset/earpiece	0.50*	(0.37, 0.68)	0.44*	(0.31, 0.63)
Hands-free talk/listen	0.51*	(0.38, 0.69)	0.46*	(0.33, 0.66)

MEAN EYE'S OFF ROAD TIME



RISK OF EYES OFF ROAD

Total Eyes Off Forward Roadway	ALL OR	ALL CI	V1 OR	V1 CI
Less than or equal to 0.5 seconds	1.17	(0.82, 1.66)	1.43	(0.95, 2.15)
Greater than 0.5 seconds but less than or equal to 1.0 second	0.99	(0.75, 1.29)	1.10	(0.80, 1.51)
Greater than 1.0 second but less than or equal to 1.5 seconds	1.28	(0.98, 1.67)	1.72*	(1.27, 2.33)
Greater than 1.5 seconds but less than or equal to 2.0 seconds	1.45*	(1.07, 1.95)	1.94*	(1.39, 2.73)
Greater than 2.0 seconds	2.73*	(2.21, 3.37)	4.05*	(3.18, 5.17)

WHAT DID THIS NEW RESEARCH TELL US?

- Results are consistent with previous naturalistic research on CMVs
 - Visual-manual tasks continue to show increased risk of being involved in a safety-critical event
 - CMV drivers talking or listening on a hands-free device was associated with a reduced risk
- Risk of being involved in a safety event rises the longer the driver's eyes are off the road
 - Especially after 2-seconds
 - Browsing on a cell phone = mean 4s eyes off road
 - Texting = mean 5s eyes off road
- Low prevalence of texting (.28% of SCEs and 0.14% of baselines)
 - Regulations, policies, and information campaigns may be working

FMCSA DATA REPOSITORY

- Provides access to FMCSA-funded datasets
- Public use datasets are available for download
 - No personally identifying information (PII)
 - No video
- Must register on website to access downloadable data
- Identifiable data is available in the secure data enclave at VTTI
 - Video
 - GPS
 - Contact us button on website or email me at rhammond@vtti.vt.edu

FMCSA DATA REPOSITORY

<https://fmcsadatarepository.vtti.vt.edu/>



Data Repository

Data Access

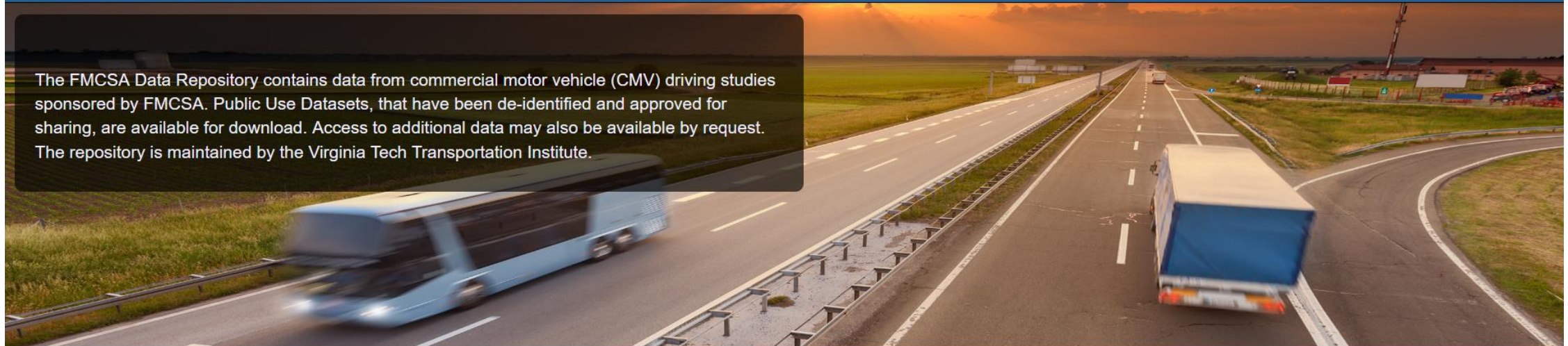
Query Data

FAQs

Contact Us

Rebecca Hammond ▾

The FMCSA Data Repository contains data from commercial motor vehicle (CMV) driving studies sponsored by FMCSA. Public Use Datasets, that have been de-identified and approved for sharing, are available for download. Access to additional data may also be available by request. The repository is maintained by the Virginia Tech Transportation Institute.



What's Available on This Website

Driver Descriptions and Assessments

Summary graphs and detailed records of driver assessments are provided addressing driver demographic information.

Summary of Data Collected

Graphs and detailed records describe data collection progress and characteristics of trips collected during the studies.

Vehicle Descriptions

Summary graphs and detailed records describe the types of vehicles involved in the studies.

Custom Query Capability

Build custom queries to search for records matching criteria that span multiple datasets.

Public Use Datasets

Deidentified public use datasets available for download.

Study Background Information

Access an overview of the FMCSA Research Data Repository and data collection procedures.

Highlighted Datasets

[Commercial Driver Safety Risk Factors](#)

[Privacy Policy](#) · [Terms of Service](#)

Records for login and use of the system are maintained under [DOT/ALL-13](#)

- About
- Dataverse
- Public Use Datasets

Public Use Datasets

To access the de-identified, Public Use Dataset, click
Data Dictionaries and Final Reports are also included.

Analysis of Distraction and Drowsiness in CMV Drivers

Analysis of Distraction and Drowsiness in CMV Drivers Overview

Analysis of Distraction and Drowsiness in CMV Drivers Public Use Datasets

[All Data \(XLSX\)](#)

[All Events Raw Eyeglance \(CSV\)](#)

[Raw PERCLOS \(ZIP\)](#)

Analysis of Distraction and Drowsiness in CMV Drivers Data Dictionary

[Download](#)

Analysis of Distraction and Drowsiness in CMV Drivers Final Report

[Download](#)