

Research Projects Update
- Seizure Standard
- Length of Medical Certification

Presentation at MRB Meeting
May 20, 2021



Outline

- Examining the Seizure Standard for CMV Drivers
- Effect of the Length of Medical Certification on Safety

Examining the Seizure Standard for CMV Drivers

- The objective of the project is to examine the risk of seizure recurrence for CMV drivers who have experienced one or more seizures or have been diagnosed with a seizure disorder, such as epilepsy.
- Methodologies:
 - Literature review
 - State driving regulations relating to seizure disorders
 - CMV regulations in other countries
 - Consultation with medical experts

Literature Review

- A broad and comprehensive systematic literature review was made to review and identify high quality and moderate quality original research studies.
- Medical subject heading terms were used to highlight the most effective articles and narrow down search results to relevant test, treatments and diagnoses.
- Five databases were searched:
 - Google Scholar
 - PubMed
 - CINAHL
 - Scopus
 - Cochrane Central Register of Controlled Trials

Literature Review

- Articles were graded for quality using objective scoring tools:
 - Observational studies were scored using the Newcastle Ottawa Score Criteria.
 - Randomized controlled trials (RCTs) were scored using the American College of Occupational and Environmental Medicine Score Criteria.
- Articles were reviewed to determine what type of seizure was specifically treated within the article, i.e.:
 - Tonic-Clonic
 - Tonic
 - Atonic
 - Myoclonic
 - Absence
- Various kinds of articles were included such as RCTs, longitudinal studies, cohort studies, retrospective studies, prospective studies, and observational studies.

State Seizure Laws

- Statutes regarding people who have seizures and their ability to drive were analyzed from each of the 50 States along with Washington D.C. and Puerto Rico.
- State statute summaries followed a systematic review in which multiple attributes were analyzed, including the amount of time after an accident a person with seizures must be seizure-free before being allowed to drive again.

Next Steps

- Literature review – finalizing results
- State driving regulations relating to seizure disorders – finalizing results
- CMV regulations in other countries – scheduled to begin soon
- Consultation with medical experts – scheduled to begin soon

Effect of the Length of Medical Certification on Safety

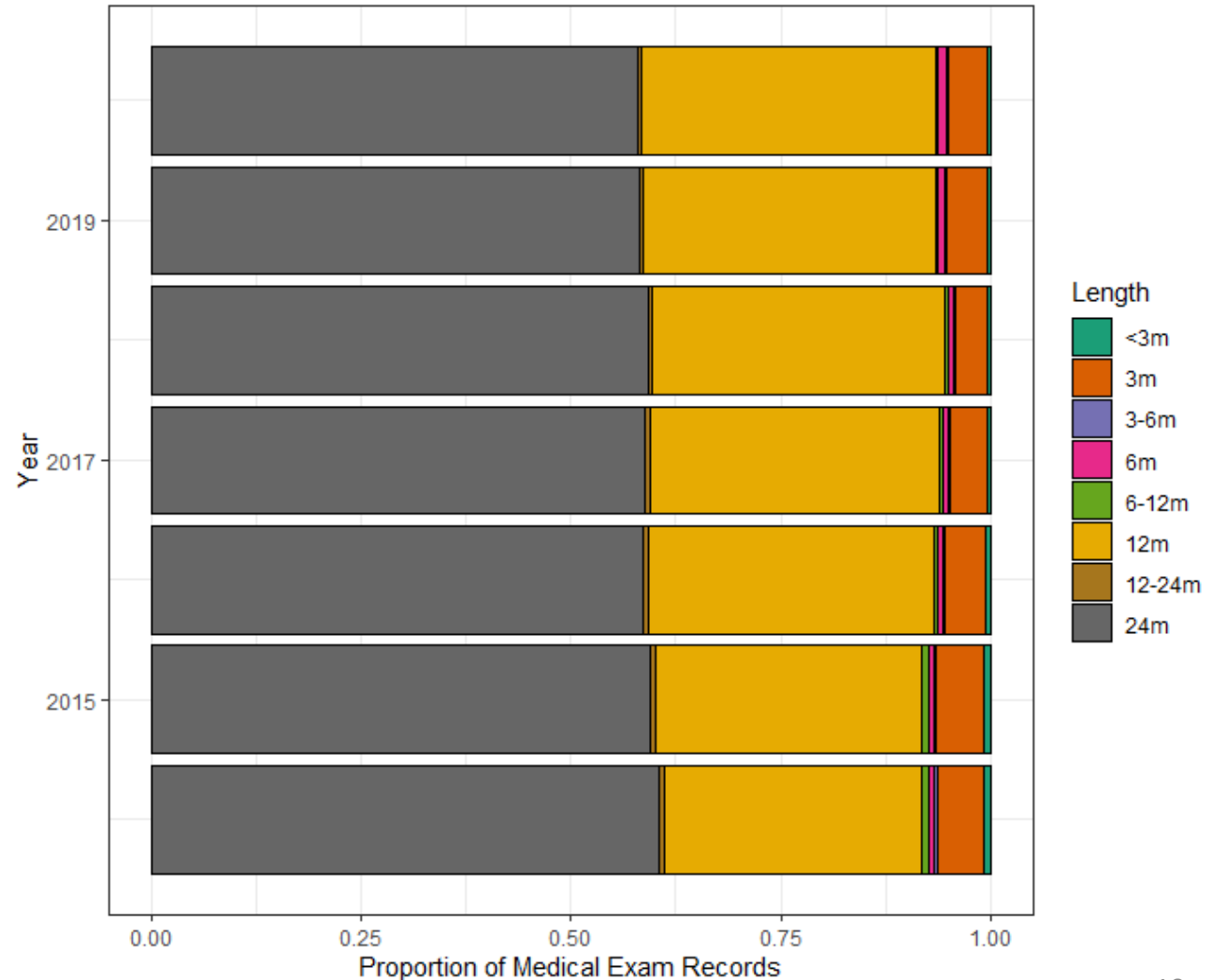
- This project will assess the safety performance of drivers who are medically certified for less than 2 years.
 - Use data from the National Registry of Certified Medical Examiners (National Registry) and crash data from Motor Carrier Management Information System (MCMIS).
 - Research question: What is the prevalence and crash risk of drivers who are medically certified for less than 2 years compared to drivers who are medically certified for 2 years?

National Registry of Certified Medical Examiners (NR)

- Study used NR data from January 1, 2014 to September 30, 2020
- 31,719,500 clean records
 - Clean is defined as (a) removal of duplicates (there were 1,340,203 duplicates in the NR) and (b) satisfying our *a priori* constraints:
 - Must be ≥ 18 years old
 - $0 \text{ days} < \text{medical exam card (MEC) length} \leq 24 \text{ months}$
 - Exclude medically disqualified records
 - Exclude 49 CFR § 391.64 – Grandfathering (vision and diabetes; due to restricted MEC length)

MEC Length by Year

- MEC length does not vary by calendar year
 - No need to stratify by calendar year



Linking NR and MCMIS (1 of 2)

- Linking NR with crashes and moving violations in MCMIS is difficult.
- Matching across five variables:
 - First name
 - Last name
 - DOB
 - Driver license number
 - Driver license state
- If a discrepancy exists, the NR data is used.
- Five- and four-variable matches require no human review
 - Three-variable matches undergo automatic processing and human review to determine validity of match.

Linking NR and MCMIS (2 of 2)

- 733,453 records in the NR linked with a crash
 - 40,331 records completed human review to verify the match
- 4,370,461 records in the NR linked with a moving violation
 - 246,043 records completed human review to verify the match
- Overall, small number of errors, human review is time consuming
 - However, w/out this review ~40,000 records would be coded as no crash, when it fact there was one
 - 5 percent of crash dataset could impact results

Next Steps

- Prepare dataset for analysis.
- Complete statistical analysis.

Project Status

- Both projects started in the fall and will be completed in September 2021.
- The report may take up to a year to publish.

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