National Registry of Certified Medical Examiners Impacts: Driver and Carrier Experiences

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<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDL</td>
<td>Commercial Driver’s License</td>
</tr>
<tr>
<td>CME</td>
<td>Certified Medical Examiner</td>
</tr>
<tr>
<td>CMV</td>
<td>Commercial Motor Vehicle</td>
</tr>
<tr>
<td>DOT</td>
<td>Department of Transportation</td>
</tr>
<tr>
<td>DMV</td>
<td>Department of Motor Vehicles</td>
</tr>
<tr>
<td>FMCSA</td>
<td>Federal Motor Carrier Safety Administration</td>
</tr>
<tr>
<td>FMCSR</td>
<td>Federal Motor Carrier Safety Regulations</td>
</tr>
<tr>
<td>GAO</td>
<td>Government Accountability Office</td>
</tr>
<tr>
<td>NHTSA</td>
<td>National Highway Traffic Safety</td>
</tr>
<tr>
<td>NTSB</td>
<td>National Transportation Safety Board</td>
</tr>
<tr>
<td>NRCME</td>
<td>National Registry of Certified Medical Examiners</td>
</tr>
<tr>
<td>O-O</td>
<td>Owner-Operator</td>
</tr>
<tr>
<td>OOIDA</td>
<td>Owner Operator Independent Drivers Association</td>
</tr>
<tr>
<td>SAFETEA-LU</td>
<td>Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users</td>
</tr>
<tr>
<td>SSA</td>
<td>Social Security Administration</td>
</tr>
</tbody>
</table>


1.0 BACKGROUND

While medical conditions can impair the safe operation of any vehicle, the potential consequences associated with commercial motor vehicle (CMV) crashes make identifying and treating commercial driver medical conditions even more critical. CMV drivers (with limited exceptions) are required by 49 CFR § 391.45 to be medically certified at least every two years, ensuring that they do not have physical or mental conditions that would interfere with their ability to safely operate a CMV.

**49 CFR §391.45  Persons who must be medically examined and certified.**

The following persons must be medically examined and certified in accordance with §391.43 of this subpart as physically qualified to operate a commercial motor vehicle:

(a) Any person who has not been medically examined and certified as physically qualified to operate a commercial motor vehicle;

(b)(1) Any driver who has not been medically examined and certified as qualified to operate a commercial motor vehicle during the preceding 24 months; or

(2) Any driver authorized to operate a commercial motor vehicle only with an exempt intra-city zone pursuant to §391.62, or only by operation of the exemption in §391.64, if such driver has not been medically examined and certified as qualified to drive in such zone during the preceding 12 months;

(c) Any driver whose ability to perform his/her normal duties has been impaired by a physical or mental injury or disease; and

(d) Beginning June 22, 2018, any person found by a medical examiner not to be physically qualified to operate a commercial motor vehicle under the provisions of paragraph (g)(3) of §391.43.

Prior to May 2014, medical examiners issuing CMV medical certificates were only required to be licensed by their state to conduct physical examinations, familiar with the demands of CMV operations and knowledgeable of the requirements established in 49 CFR § 391.43. While medical examiners were expected to understand the demands of CMV operations and Federal Motor Carrier Safety Administration (FMCSA) medical requirements, there was no required training or certification process in place to verify that they met these qualifications.

The lack of a medical examiner training and certification process was first addressed by Congress in 2005 in the enactment of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, known as SAFETEA-LU. The Act mandated that FMCSA create and maintain a National Registry of Certified Medical Examiners (NRCME) to guarantee that the medical examiners certifying CMV drivers adhere to Federal Motor Carrier Safety Regulations (FMCSRs) related to driver fitness, and be aware of the physical and mental demands of CMV operation. Additionally, FMCSA was tasked with developing training courses, materials, and requirements for medical examiners to transmit medical examination certificates on a monthly basis, and for establishing procedures for the removal of medical

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examiners from the national registry. The NRCME seeks to improve public safety by training and certifying medical examiners. Additionally, the requirements for medical examiners to submit medical certificates to FMCSA each month will allow the agency to better detect patterns of errors and improper certification.

Interest in certifying medical examiners dates back to 1978, when the National Highway Traffic Safety Administration (NHTSA) evaluated the feasibility of a medical examiner certification system and concluded that there was not a sufficient pool of qualified physicians necessary to certify all interstate CMV drivers.³

In 2000, a motor coach crash investigation by the National Transportation Safety Board (NTSB) found the CMV driver had multiple disqualifying medical conditions which should have prevented medical certification.⁴ Additionally, the report identified issues with the medical certification processes in place at the time, focusing on medical examiner qualifications and driver medical certification tracking. Medical examiners were described as “commonly untrained and inexperienced with FMCSA’s medical qualifications regulations.” Consequently, NTSB prescribed tracking driver medical certification to prevent fraudulent medical certificates and “doctor shopping” — the practice of visiting multiple medical examiners and withholding aspects of medical history to get medically certified.⁵

The NRCME notice of proposed rulemaking identified two informal analyses conducted by states that support the need for the NRCME. The California State Department of Motor Vehicles (DMV) found that 10 percent of drivers certified between January and June of 2005 were medically certified to drive, despite information on the drivers’ Medical Examination Reports indicating that the driver should not have been medically certified.⁶ The Indiana commercial driver’s license (CDL) program concluded that mistakes are present on 28 percent of all Medical Examination Reports collected.⁷ These informal state analyses support the NTSB’s contention that medical examiners were generally unfamiliar with FMCSA medical requirements.

A 2012 Government Accountability Office (GAO) report further supports the need to ensure that medical examiners understand and follow medical qualification FMCSRs. The GAO report cross-referenced roadside inspection data, Commercial Driver License Information System (CDLIS) data and Social Security Administration (SSA) disability insurance files.⁸ The report identified 230 drivers involved in a crash or vehicle inspection between 2008 and 2011, after the driver started receiving SSA disability benefits for epilepsy (a disqualifying medical condition).

These numerous observations that medical examiners should be trained and certified led to the NRCME mandate included in SAFETEA-LU. Following a formal rulemaking process, the requirement to become medically certified by a certified medical examiner (CME) on the NRCME became effective May 21, 2014.

⁵ Ibid.
⁷ Ibid.
In light of the historical findings, ATRI and Mayo Clinic collaborated to analyze the impact of the NRCME, as ATRI was uniquely suited to query motor carriers and CMV drivers and Mayo Clinic had access to a network of medical examiners. Together, both organizations were able to reach the major stakeholders affected by the NRCME.

2.0 METHODOLOGY

To assess the impact the NRCME has had on the medical examination and certification process, ATRI and Mayo Clinic jointly developed surveys for commercial drivers, motor carriers, and medical examiners. The three surveys were reviewed by Mayo Clinic’s Institutional Review Board and subsequently approved. The carrier and driver surveys were distributed online through ATRI databases, industry publications and industry associations. The online surveys were launched September 14, 2016 and remained open through October 21, 2016. The timing of this research initiative was deliberately selected as following the two-year adoption of the NRCME, thus ensuring that CMV driver respondents would have experienced an examination by medical examiner from the registry.

ATRI researchers also interviewed numerous industry stakeholders to provide additional context to the survey results, including motor carrier safety directors, commercial drivers and staff from a state DMV.

3.0 DRIVER SURVEY RESULTS

The driver survey included 33 multiple choice questions related to demographics and medical certification, of which eight questions were contingent on responses to other questions, and a single open-ended question (Appendix A). Response rates vary from question to question, as responding to all questions was not mandatory. A total of 902 drivers completed the survey.

Driver Demographics

First, researchers collected information on driver demographics, to better understand the sample population and to assess whether drivers in the sample were representative of the industry as a whole.

A majority of drivers in this sample operate in the for-hire sector (69.1%) and the remainder (30.1%) drive for private fleets. The distribution of for-hire driver operating segments in this sample is displayed in Figure 1. Truckload operations (60.4%) were most common, followed by flatbed operations (10.7%). Responses of “other” primarily specified they operate in multiple segments.
The employment status distribution of drivers in this sample includes 62.8 percent employee drivers, 25.6 percent Owner-Operators (O-Os) or Independent Contractors contracted to a motor carrier, and 11.6 percent O-Os with their own authority.

Fleet sizes of participating drivers are shown in Table 1. Over half of drivers (68.9%) represented small- to mid-sized fleets (less than 250 power units), and 31.1 percent of drivers represented large fleets of more than 250 power units.

### Table 1: Fleet Size

<table>
<thead>
<tr>
<th>Power Units</th>
<th>Percent of Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - 6</td>
<td>27.0%</td>
</tr>
<tr>
<td>7 - 19</td>
<td>11.6%</td>
</tr>
<tr>
<td>20 - 249</td>
<td>30.3%</td>
</tr>
<tr>
<td>250 - 999</td>
<td>12.2%</td>
</tr>
<tr>
<td>1,000+</td>
<td>18.9%</td>
</tr>
</tbody>
</table>

Table 2 details the primary vehicle configuration operated by drivers in this sample. Tractor trailer/dry vans were the most common vehicle configuration in this sample (37.5%). Responses of “other” primarily indicated the driver operates multiple configurations or that their vehicle configuration does not have five axles.
Table 2: Vehicle Configuration

<table>
<thead>
<tr>
<th>Vehicle Configuration</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-axle Dry Van</td>
<td>37.5%</td>
</tr>
<tr>
<td>5-axle Refrigerated Trailer</td>
<td>15.1%</td>
</tr>
<tr>
<td>5-axle Flatbed</td>
<td>12.9%</td>
</tr>
<tr>
<td>5-axle Tanker</td>
<td>7.2%</td>
</tr>
<tr>
<td>Straight Truck</td>
<td>10.2%</td>
</tr>
<tr>
<td>Longer Combination Vehicle (Doubles, Triples, etc)</td>
<td>5.3%</td>
</tr>
<tr>
<td>Bus</td>
<td>1.3%</td>
</tr>
<tr>
<td>Other</td>
<td>10.3%</td>
</tr>
</tbody>
</table>

Drivers’ average trip lengths are displayed in Figure 2. Average trip lengths of 100 to 499 miles were the most common in this sample (32.7%). Long-haul and inter-regional average trip lengths each comprised nearly 25 percent of the sample (24.1% and 24.0% respectively). Local drivers (average trip lengths of less than 100 miles) comprised only 19.2 percent of the sample.

Figure 2: Length of Haul

Table 3 displays the length of time drivers in this sample have held a CDL. Most respondents have had a CDL for over 10 years (81.3%), followed by one to five years (9.3%) and six to 10 years (8.9%). The composition of this sample suggests that most participating drivers have considerable experience with the medical certification process, as drivers must be recertified at least every two years. As such, this sample cumulatively represents a minimum of 3,968 individual medical examinations.
Table 3: Years Driver has had a CDL

<table>
<thead>
<tr>
<th>Years Driver has had a CDL</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>0.6%</td>
</tr>
<tr>
<td>1 - 5 years</td>
<td>9.3%</td>
</tr>
<tr>
<td>6 - 10 years</td>
<td>8.9%</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>81.3%</td>
</tr>
</tbody>
</table>

Finding a Certified Medical Examiner

Drivers in this sample found a CME on the national registry in various methods, shown in Figure 3. Nearly half of the drivers in this sample (48.0%) were instructed by their employers to go to a specific CME. Of drivers who chose their own CME, the most common method of identifying a CME was through the NRCME (19.3%). Roughly 15 percent of responses indicated the driver identified a CME in another manner. Specifications of “other” responses generally indicated the driver was certified by their primary care physician, referred to a CME by their primary care physician, used a search engine to locate a CME, or identified a CME based on prior experience.

Figure 3: How Drivers Identified a CME

Table 4 displays how many drivers had to find a new CME following the implementation of new Department of Transportation (DOT)/FMCSA rules in 2014, segmented by whether drivers or employers chose the CME. In this sample, drivers with an employer-mandated CME were less
likely to change CMEs following the implementation of the NRCME. For drivers choosing their own CME, the relatively high prevalence of having to find a new CME (48.1%) after NRCME implementation suggests that their former medical examiner did not want to complete or could not complete the process of becoming a CME. The associated CME survey found that since the implementation of the NRCME, 1.9 percent of CMEs have discontinued medical certification services and that 13.4 percent of CMEs do not plan to renew their certification when it expires. Depending on the geographic distribution of CMEs who have quit performing DOT physicals or plan to quit when their certification expires, driver access to CMEs may be reduced considerably in the future. Possible impacts of reduced access to CMEs include traveling greater distances to see a CME, longer wait times for an appointment with a CME, and increased examination costs.

### Table 4: Impact of 2014 DOT/FMCSA Regulation Changes

<table>
<thead>
<tr>
<th>Did you have to change your CME after new rules went into effect in 2014?</th>
<th>Driver-Chosen CME</th>
<th>Carrier-Chosen CME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>48.1%</td>
<td>26.0%</td>
</tr>
<tr>
<td>No</td>
<td>48.1%</td>
<td>64.4%</td>
</tr>
<tr>
<td>Unsure</td>
<td>3.8%</td>
<td>9.6%</td>
</tr>
</tbody>
</table>

As detailed in Table 5, drivers primarily went to an outpatient clinic or office for medical certification (91.1%). A small number of drivers went to truck stops (2.0%), hospitals (2.6%) or motor carrier terminals (3.8%) for their medical examination.

### Table 5: Examination Facilities

<table>
<thead>
<tr>
<th>Location Type</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outpatient Clinic or Office</td>
<td>91.1%</td>
</tr>
<tr>
<td>Truck Stop</td>
<td>2.0%</td>
</tr>
<tr>
<td>Hospital</td>
<td>2.6%</td>
</tr>
<tr>
<td>Motor Carrier Terminal</td>
<td>3.8%</td>
</tr>
<tr>
<td>Other</td>
<td>0.6%</td>
</tr>
</tbody>
</table>

Figure 4 displays the professional qualifications of the CMEs that examined drivers in this sample. Generally, doctors, chiropractors, physician assistants, and nurse practitioners are qualified to become a CME and be added to the NRCME. In this sample, half of the drivers (51.1%) were certified by a medical doctor or doctor of osteopathy. The remainder of the sample was certified by a nurse practitioner (16.8%), chiropractor (13.3%), or physician’s assistant (13.1%).

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Figure 4: CME Occupation

Driver Examination Experiences

The driver survey also solicited information from drivers about their medical examination. At a minimum, medical examinations for CMV driver certification include:

- A review and discussion of any conditions in a driver’s health history that may impact their ability to safely operate a CMV;
- Recording the driver’s pulse rate (whether the pulse is irregular), driver height and weight, and blood pressure;
- Testing urine for proteins, blood, and sugars;
- Vision testing;
- Hearing testing; and
- Physically checking all major body systems for abnormalities and discussing any abnormalities discovered.

Driver respondents were asked the length of time the driver spent with the CME, for tasks such as completing paperwork and completing the examination (Tables 6 and 7). Almost half of drivers in this sample spent more than 30 minutes with their CME (46.8%). However, nearly seven percent of drivers spent less than 10 minutes with their CME, suggesting that the examination was perfunctory given the minimum requirements listed above for medical examinations.
Next, drivers were asked questions related to the medical application form. Driver respondents primarily completed written medical application forms (92.4%), with a small percentage of drivers completing an electronic version of the medical application (7.6%). Table 6 details the length of time drivers spent completing the medical application form.

While the medical application is relatively short (less than two single sided pages), over one third of drivers spent more than 15 minutes completing the form (34.3%). This finding seems at odds with the fact that most drivers (85.2%) also reported that completing this form was not difficult. The prevalence of spending more than 15 minutes on the medical application may be partially due to the vague wording of the driver health history section. Here drivers are asked to report if they have, or have ever had, a variety of conditions, including “nervousness” or “digestive problems.” The ambiguous wording of these health history questions may lead drivers to spend additional time interpreting the questions or asking office personnel for assistance. A second possibility is the degree of detail needed to explain more than 32 potential conditions. For example, this form asks for an exhaustive health history, from every time a CMV driver has been hospitalized to every broken bone a CMV driver has had.

Drivers who reported some difficulty completing the medical application were asked to specify why it was difficult. Factors that made completing the medical application difficult are shown in Figure 5. The most frequently cited reason was that the form was too long and time-consuming (65.9%), followed by the form’s language being confusing (39.4%). Driver specifications of “other” responses primarily related to confusion over why particular information was requested, vague language, or duplicate questions.

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Drivers were asked if CME or office staff offered assistance with the medical application form. In this respondent group, 62.9 percent of drivers were provided assistance with their medical application form and 37.1 percent of drivers were not. Drivers who reported difficulty completing the medical application form as a result of no staff assistance represent a relatively small subset of drivers – less than seven percent.

Drivers were also asked questions to gauge the thoroughness of their physical examination. Figure 6 displays these responses, segmented by the type of CME who performed their examination. Examinations conducted by chiropractors omitted the examination procedures in Figure 6 more frequently relative to other professionals who conduct medical examinations. Chest examinations were common for all CME qualifications, but the removal of clothing, hernia checks, and the use of a light to examine eyes and ears varied significantly.

Considering that CMEs are required to verify there are no abnormalities in all major body systems – including examining the eyes/ears and checking for hernias – this suggests that the requirements outlined on the medical application form are not completed in many cases. Omitting these crucial examination procedures for many CMV drivers suggests that the NRCME has not fully succeeded in ensuring all drivers are examined thoroughly when undergoing medical certification.
Figure 6: Examination Procedures by CME Qualification

Records and Exemptions

The survey also sought information related to requests for additional medical records and medical exemptions. Table 8 displays the distribution of drivers who brought additional medical records to their examination or were requested by the CME to provide additional medical records. These requests can delay the medical certification process for drivers. Clear instructions from FMCSA on what conditions require additional medical records for certification could potentially improve the process of medical certification. The magnitude of providing clear standards for additional medical records is unknown, due to some drivers in the sample providing these records without being required by their CME to do so.
Table 8: Driver Brought or Was Asked to Provide Additional Medical Records

<table>
<thead>
<tr>
<th>Did you bring or were you asked to provide additional medical records?</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>26.8%</td>
</tr>
<tr>
<td>No</td>
<td>73.2%</td>
</tr>
</tbody>
</table>

Less than two percent of drivers in this sample had conditions requiring a medical exemption or waiver, such as insulin-controlled diabetes (Table 9). Medical exemptions allow drivers who can prove they manage their condition to hold a valid CDL. For example, drivers with insulin-controlled diabetes must complete a diabetes exemption process which includes additional endocrinologist and vision evaluations in order to be medically certified. In such cases, CME knowledge of how to handle medical exemptions is crucial to keeping CMV drivers with certain conditions in the industry, provided that they manage their condition as required. One driver interviewed noted that to get their vision waiver, an expensive medical test is required annually.

Table 9: Medical Exemptions/Waivers

<table>
<thead>
<tr>
<th>Are you required to hold a medical exemption or waiver?</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>1.6%</td>
</tr>
<tr>
<td>Diabetes</td>
<td>69.2%</td>
</tr>
<tr>
<td>Monocular Vision</td>
<td>30.8%</td>
</tr>
<tr>
<td>No</td>
<td>98.4%</td>
</tr>
</tbody>
</table>

Driver Health History

Table 10 displays driver health conditions and histories. High blood pressure was the most commonly reported medical condition, with almost 40 percent of respondents reporting a diagnosis of high blood pressure (“hypertension”). High blood pressure is over-represented in this sample relative to the long-haul truck driver population at large, where 26.3 percent of drivers are estimated to have high blood pressure. Diabetes is also over-represented in the sample. 18.6 percent of the sample reported a diabetes diagnosis, exceeding estimates that 14.4 percent of long-haul truck drivers have diabetes. Prior estimates of sleep apnea prevalence found almost 30 percent of CMV drivers are affected by sleep apnea of varying severities. This sample may under-represent CMV drivers with sleep apnea, or, CMV drivers

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13 Ibid.
with mild sleep apnea (previously estimated to affect 17.6 percent of CMV drivers) may not exhibit the physical symptoms that lead to diagnosis.\textsuperscript{15}

These medical conditions can affect the ability of the driver to be medically certified for the standard two-year term, may require the driver to apply for a medical exemption, or may result in a driver being asked for additional medical documentation prior to certification. Slightly over 12 percent of respondents listed having a medical condition not covered by the binned responses in Table 10, however, they are omitted here due the likelihood that these underestimate the prevalence of these conditions significantly.

**Table 10: Driver Health Conditions and History**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Sample Percent</th>
<th>CMV Driver Population Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>High blood pressure</td>
<td>37.6%</td>
<td>26.3%\textsuperscript{16}</td>
</tr>
<tr>
<td>Diabetes (no insulin required)</td>
<td>17.5%</td>
<td>14.4%\textsuperscript{17}</td>
</tr>
<tr>
<td>Diabetes (insulin required)</td>
<td>1.1%</td>
<td></td>
</tr>
<tr>
<td>Obstructive sleep apnea</td>
<td>14.6%</td>
<td>28.1%\textsuperscript{18}</td>
</tr>
<tr>
<td>Heart condition</td>
<td>6.5%</td>
<td>N/A</td>
</tr>
<tr>
<td>Chronic back pain</td>
<td>6.4%</td>
<td>N/A</td>
</tr>
<tr>
<td>Chronic knee/hip pain or hip/knee replacement</td>
<td>4.5%</td>
<td>N/A</td>
</tr>
<tr>
<td>Depression or other mood disorders</td>
<td>4.5%</td>
<td>N/A</td>
</tr>
<tr>
<td>Asthma</td>
<td>3.7%</td>
<td>N/A</td>
</tr>
<tr>
<td>Cancer (current or past history)</td>
<td>3.7%</td>
<td>N/A</td>
</tr>
<tr>
<td>Blood clot in legs or lungs</td>
<td>1.2%</td>
<td>N/A</td>
</tr>
<tr>
<td>Color blindness/Color vision deficiency</td>
<td>1.2%</td>
<td>N/A</td>
</tr>
<tr>
<td>Monocular vision (blind in one eye)</td>
<td>0.9%</td>
<td>N/A</td>
</tr>
<tr>
<td>Prior stroke or history of TIA (“mini-stroke”)</td>
<td>0.7%</td>
<td>N/A</td>
</tr>
<tr>
<td>History of substance abuse or dependence</td>
<td>0.6%</td>
<td>N/A</td>
</tr>
</tbody>
</table>

**Certification Time Period**

Next, drivers were asked if they were issued a standard two-year medical certificate, or one for a shorter length of time – as FMCSA guidelines advise issuing medical certificates valid for a shorter period of time for CMV drivers with certain conditions.\textsuperscript{19} Table 11 displays the length of time that medical certificates are valid for survey respondents. Drivers in this sample were primarily issued the standard two year certificate (52.1%), followed by one-year certificates

\textsuperscript{15} Ibid.


\textsuperscript{17} Ibid.


(41.5%). Responses of “other” were primarily left blank or specified why their medical certificate was not issued for the standard two years, rather than providing the time length that the certificate was issued.

The associated CME survey found that the most commonly cited reasons for not issuing a two-year medical certificate were high blood pressure (90.1% of CMEs) and diabetes (6.1% of CMEs). Similarly, these health conditions are the most prevalent health conditions of driver respondents shown in Table 9: 37.6 percent of drivers in this sample have been diagnosed with high blood pressure and 18.6 percent of drivers have been diagnosed with diabetes. The prevalence of these two health conditions may explain the relatively high frequency that drivers in the sample were issued one-year medical certificates. Conversely, the associated CME survey found a majority of CMEs reported that they issue two-year certificates to over half of all drivers they examine. The majority of CMEs (80.5%) surveyed reported that they deny medical certificates to one to five percent of drivers they examine, similar to the driver sample where 1.2 percent of respondents had their medical application denied.

<table>
<thead>
<tr>
<th>Medical Certificate</th>
<th>Sample Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard 2-Year Medical Certificate</td>
<td>52.1%</td>
</tr>
<tr>
<td>Not a Standard 2-Year Medical Certificate</td>
<td>47.9%</td>
</tr>
<tr>
<td>1 Year</td>
<td>86.5%</td>
</tr>
<tr>
<td>6 Months</td>
<td>1.4%</td>
</tr>
<tr>
<td>3 Months</td>
<td>4.2%</td>
</tr>
<tr>
<td>Certification denied</td>
<td>1.2%</td>
</tr>
<tr>
<td>Exam put on hold to request additional tests or health records</td>
<td>1.2%</td>
</tr>
<tr>
<td>Other</td>
<td>3.2%</td>
</tr>
<tr>
<td>Blank</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

Drivers who were not issued a medical certificate the day of their exam (5.9%) were asked to explain why (Figure 7). The primary reason drivers were not issued medical certificates on the same day as the exam were requirements to provide additional medical records (60.4%) or requirements to treat a medical condition (22.6%). In the associated CME survey, 71.2 percent of CMEs surveyed request additional records occasionally and 11.8 percent request additional records in almost every case.

Expiration of the medical certificate can be a significant burden on a commercial driver who is then not able to work until a new medical certificate is obtained. This can result in lost wages (which can average $835 per week) until the driver can provide the required documentation for certification or provide proof of medical treatment for the condition. Additional circumstances may increase the costs associated with documenting or treating a medical condition – such as wait times to see a specialist or travel time and expenses to see a medical professional. One driver noted that to obtain his sleep apnea treatment compliance data, he had to provide six weeks advance notice to his compliance monitoring company.

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In some cases, expensive testing is necessary to prove that a driver does not have a medical condition. For example, a driver exhibiting numerous risk factors for sleep apnea who is sent for sleep apnea screening prior to medical certification could incur the following costs: sleep study cost, wages lost while completing the overnight sleep study, and, if diagnosed, treatment and compliance monitoring costs. A 2016 ATRI study found that drivers spent an average of $1,220 in out-of-pocket costs for a sleep study, and 47 percent of drivers missed work to complete their sleep study.\textsuperscript{21} The commercial driver interviews revealed that sleep apnea screening often involves wait times of up to a month. The costs of being unable to work, medical testing, travel costs, and lost wages to see a medical professional can cumulatively represent a significant cost to drivers.

\textbf{Figure 7: Reasons Drivers Were Not Issued Medical Certificates}

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>More medical records were requested by the medical examiner or medical staff.</td>
<td>60.4%</td>
</tr>
<tr>
<td>I had a medical condition that required treatment before certification.</td>
<td>22.6%</td>
</tr>
<tr>
<td>My medical application was denied.</td>
<td>9.4%</td>
</tr>
<tr>
<td>Other</td>
<td>5.7%</td>
</tr>
<tr>
<td>I needed to file for an exemption for my medical condition.</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

\textbf{Examination Quality}

Drivers were asked to rate both the quality of their examination, and the certification process overall (Figure 8). Almost half of the sample was comprised of drivers satisfied with the quality of the examination and certification process (48.5%). The remaining drivers were fairly evenly split between drivers dissatisfied with examination and certification quality (25.8%) and drivers that were neither satisfied nor dissatisfied with the quality of the examination and certification process (25.6%).

The driver interviews elucidated additional metrics for how drivers evaluate the quality of the examination. Among these are the CME following the standards and guidelines set forth in the FMCSRs, specifically considering the relationship that a medical condition has to crash risk (rather than simply trying to identify anomalies), and informing the driver of why certain procedures are being performed (e.g. explaining to the driver how motor skills tests relate to the

motor skills needed to operate a CMV). Other aspects of quality identified by the drivers interviewed included:

- CME/staff treat driver with respect and dignity;
- CME/staff are professional and qualified;
- CME/staff respect driver’s time; and
- Consistency and clarity on why a driver is disqualified.

Conversely, other drivers identified concerns related to medical certification quality. Sleep apnea-related concerns were common, such as the burden of providing proof of treatment and concerns about referrals for sleep apnea testing regardless of whether or not the driver experiences daytime fatigue. Other drivers described quality as low due to the medical examination being simply testing to see that the driver falls within specific parameters without much consideration for overall health or physical condition – a potential pitfall of strict adherence to medical FMCSRs and medical guidelines.

**Figure 8: Please rate your satisfaction with the examination and certification process**

However, driver satisfaction with the examination and certification process is not directly reflective of the driver perception of the Registry’s impact on quality. Table 12 displays driver perceptions of the impact that the NRCME has had on medical examination quality. Only 6.2 percent of drivers surveyed reported that examination and certification process quality has improved since the NRCME was implemented. Over half of drivers reported no change in quality (57.4%) and slightly over one third of drivers reported that the quality has worsened (34.7%).
Table 12: NRCME Impacts on the Quality of the Examination and Certification Process

<table>
<thead>
<tr>
<th>Has the quality of the examination and certification process changed since the NRCME was implemented in 2014?</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes, quality has improved.</td>
<td>6.2%</td>
</tr>
<tr>
<td>Yes, quality has become worse.</td>
<td>34.7%</td>
</tr>
<tr>
<td>There has been no change in the overall quality of the medical certification.</td>
<td>57.4%</td>
</tr>
<tr>
<td>I was not examined before 2014.</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

While some of the drivers interviewed indicated that they have not had any change in examination quality following NRCME implementation, there were others that noted isolated instances where the NRCME training and certification has improved CME knowledge of FMCSRs and guidelines. Specifically, the interviewees referenced the fact that drivers that were erroneously certified for the standard two-year term previously have received shorter-term medical certificates since the NRCME implementation.

However, instances of CME confusion related to FMCSRs have been experienced including anecdotal reports of the following CME requirements of drivers they are examining:

- A driver requiring hearing aids must bring spare batteries to the exam.
- A driver requiring eyeglasses must bring a spare pair to the exam.
- Screening for sleep apnea is always required.
- Drivers involved in a crash, regardless of whether the crash was preventable, must be screened for sleep apnea.
- Laboratory pulmonary function tests are always required.
- All drivers with a history of cancer require a “complete cancer screening,” regardless of when the cancer occurred.
- Examinations include testing for drug use.

Drivers examined by CMEs adhering to incorrect standards may require a second opinion (and incur a second exam fee and suffer lost wages) in order to be medically certified according to relevant FMCSRs and guidelines, or may not seek a second opinion and have to incur the costs associated with complying with the requests of the CME.

**Examination Cost**

Next, drivers were asked how much they paid out-of-pocket for their examination (Figure 9). Almost 40 percent of drivers paid $75 to $124 for their examination out-of-pocket. Employers or medical insurance covered exam costs for 36.6 percent of drivers in this sample. A minority of drivers’ medical insurance paid for exam costs, and the remaining 63.4 percent of drivers are personally responsible for medical examination costs. While the direct costs of the physical are relatively low (less than $125), the drivers may also be impacted by lost wages. Drivers must take off time to be at their appointment, may need to take time off for a follow-up appointment, and may need to take off more time in advance of an appointment to ensure that they do not miss it due to a delay at a shipper/receiver.
Next, drivers were asked about the impact of the NRCME on examination costs (Figure 10). The majority of drivers (63.3%) reported that examination costs increased following the implementation of the NRCME. Similarly, an OOIDA survey found that examination costs increased for 50 percent of drivers after the NRCME was implemented. The NRCME has resulted in higher examination costs for many drivers, yet driver perception is that corresponding improvements in examination quality have not occurred.
Behavioral Changes

Drivers were also asked if they have changed health habits as a result of new medical regulations, such as quitting smoking or losing weight (Table 13). Approximately one in five drivers reported changing their health habits to comply with new medical regulations. Changes to health habits could reduce the number of sleep apnea screening referrals drivers are receiving.

Table 13: Driver Behavior Changes Due to New Medical Regulations

<table>
<thead>
<tr>
<th>Have you changed any habits (e.g. exercise regularly, quit smoking, lose weight) due to new medical regulations?</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>21.8%</td>
</tr>
<tr>
<td>No</td>
<td>78.2%</td>
</tr>
</tbody>
</table>

Free Responses

Finally, drivers were asked for recommendations to improve the medical certification process. Major themes included:

- Concerns over unnecessary test referrals. The issue of CMEs requiring additional testing in order to be certified was a major concern of driver respondents. One driver stated that he was required to have a test that costs over $1,000 each of the last three times he has been certified, despite having no change in his condition. Driver respondents frequently cited concerns related to sleep study referrals, noting that referral frequency may be the result of profit incentives and questioning the use of body mass index and neck circumference as
valid referral criterion.\textsuperscript{23} Drivers are also voicing these concerns to state Department of Motor Vehicle offices (who require proof of medical certification for licensing). Staff from one state DMV stated that they have frequent complaints from drivers related to requirements for additional testing and that both drivers and CMEs are confused by the guidelines related to sleep study referrals.

- Clear standards and consistency. Drivers often stated concerns that fitness determinations were largely subjective and dependent on the CME. Other concerns related to the “clarity of standards” included confusion as to what additional information to bring to their appointments. One respondent stated they are not consistently asked to provide the same information over the years for a chronic medical condition – which resulted in the expiration of their medical certificate. Clear and consistent standards for requiring additional medical documentation could reduce the primary reason for certification delays.

- Primary care physicians. Some drivers expressed a preference for having their primary care physician perform their medical examination, as they have a better understanding of a driver’s health history than a CME that a driver has not seen before.

The expressed desire for objective national standards conflicts somewhat with preferences for medical experts being able to make more customized and subjective determinations. For example, some respondents would prefer sleep study referrals be based on consistent standards that all drivers can cite if the CME referral does not meet federal guidelines (e.g. the driver only exhibits two symptoms and three are required to mandate a sleep study). Conversely, some respondents would prefer to have more subjective measures used to determine whether a sleep study is warranted, for example, if the driver does not experience daytime fatigue.

\textsuperscript{23} For more information on driver experiences related to sleep studies, please see the Commercial Driver Perspectives on Obstructive Sleep Apnea white paper published by ATRI in 2016.
4.0 CARRIER SURVEY RESULTS

Motor carriers were also surveyed to better understand their perceptions related to the medical certification process and the effect that the NRCME has had on overall medical examination quality. The survey was comprised of 10 multiple choice questions, of which two were conditioned on answers to other questions, and one ranking question (Appendix B). Response rates vary from question to question, as responding to all questions was not mandatory. Over 300 carriers completed the survey.

Motor Carrier Respondent Demographics

Respondents’ fleet roles were primarily safety-related (39.2%), followed by executive/senior management (25.4%) or O-Os (18.6%). Most “other” responses indicated the respondent had multiple roles in their fleet (Table 14).

<table>
<thead>
<tr>
<th>Role</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive / Senior Management</td>
<td>25.4%</td>
</tr>
<tr>
<td>Safety</td>
<td>39.2%</td>
</tr>
<tr>
<td>O-O</td>
<td>18.6%</td>
</tr>
<tr>
<td>Other</td>
<td>7.7%</td>
</tr>
<tr>
<td>Human Resources / Risk Management</td>
<td>7.4%</td>
</tr>
<tr>
<td>Driver Training</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

Table 14: Respondent Fleet Role

Industry sector representation was primarily for-hire (76.6%) with the other 23.4 percent of respondents with private fleets. Industry segments of for-hire respondents are shown in Table 15. A majority of respondents operate in the truckload segment (55.7%). Responses of “other” were often specified to be auto carriers, livestock carriers, or multiple industry segments. Less than one percent of respondents represent passenger carriers.

<table>
<thead>
<tr>
<th>Industry Segment</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Truckload</td>
<td>55.7%</td>
</tr>
<tr>
<td>Less-than-Truckload</td>
<td>6.8%</td>
</tr>
<tr>
<td>Flatbed</td>
<td>11.8%</td>
</tr>
<tr>
<td>Tanker</td>
<td>7.2%</td>
</tr>
<tr>
<td>Express / Parcel Service</td>
<td>5.1%</td>
</tr>
<tr>
<td>Intermodal Drayage</td>
<td>5.1%</td>
</tr>
<tr>
<td>Passenger Transport</td>
<td>0.4%</td>
</tr>
<tr>
<td>Other</td>
<td>8.0%</td>
</tr>
</tbody>
</table>

Table 15: For-Hire Industry Segment

24 Respondents identifying as a “driver” or “company driver” were omitted here.
Figure 11 displays respondent fleet size. Respondents primarily represented small- to mid-sized fleets (less than 250 power units), with 84.6 percent of respondents representing fleets of less than 250 power units.

![Figure 11: Respondent Fleet Size](image)

Vehicle configurations are displayed in Table 16. Five-axle dry vans were the most common vehicle configuration in the sample (29.5%), followed by 5-axle refrigerated trailers (15.1%) and 5-axle flatbeds (14.1%). Specifications of “other” responses (17.3%) often indicated their fleet operates multiple vehicle configurations, vehicle configurations with more than five axles, grain hoppers, livestock trailers, or intermodal chassis.

<table>
<thead>
<tr>
<th>Vehicle Configuration</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-axle Dry Van</td>
<td>29.5%</td>
</tr>
<tr>
<td>5-axle Refrigerated Trailer</td>
<td>15.1%</td>
</tr>
<tr>
<td>5-axle Flatbed</td>
<td>14.1%</td>
</tr>
<tr>
<td>5-axle Tanker</td>
<td>8.3%</td>
</tr>
<tr>
<td>Straight Truck</td>
<td>10.9%</td>
</tr>
<tr>
<td>Longer Combination Vehicle (Doubles, Triples, etc)</td>
<td>4.8%</td>
</tr>
<tr>
<td>Other</td>
<td>17.3%</td>
</tr>
</tbody>
</table>

Figure 12 displays the average length of haul of responding fleets. Average haul lengths of less than 500 miles comprised 58.1 percent of the sample, and average haul lengths exceeding 500 miles comprised 41.9 percent of the sample.
Next, researchers asked about carrier practices and concerns related to driver medical certification. A majority of carrier respondents paid for driver medical certification (75.5%). Nearly half of carriers in the sample mandated what clinic or CME that drivers must go to (49.0%). The reason carriers require a specific clinic or CME is detailed in Figure 13. Most explanations for “other” responses were multiple reasons (e.g. they contract with a clinic and the clinic is located nearby) or that the clinic provides other services in addition to medical certifications for their drivers.
Finally, carriers were asked to rank their top three concerns related to the medical certification process. Of over 300 respondents, only 18 stated that they have no significant concerns related to driver medical certification. The highest ranked carrier concerns about medical certification, in descending order of rank, were:

1. Certification delays caused by requests for additional testing;
2. Driver confusion on how regulatory changes affect their ability to hold a valid medical certificate;
3. Unqualified or incompetent medical examiners performing DOT examinations on drivers;
4. Medically unqualified drivers becoming certified; and
5. Changes in the medical exam process occurring too rapidly.

These concerns generally align with the driver survey, where delays in certification were primarily caused by requests for additional medical documentation or testing (60.4%). However, the persistence of concerns related to CME qualifications and competence may indicate that the NRCME has not fully achieved its goals. Researchers interviewed several motor carrier safety directors to gather more information on the top ranked concerns. Among the representatives interviewed, there was variance in the changes related to the NRCME.

Carrier interviewees were asked about processes to ensure that drivers bring the additional medical documentation. All interviewees stated that their company has policies and procedures in place to remind drivers of conditions that will require additional documentation and that these processes are generally effective. Carrier methods to reduce “additional information” delays included the use of proprietary platforms that prompt drivers to bring specific documentation and specific driver forms prior to their appointment. Since carrier interviewees mandate what clinic/CME a driver must go to, this may allow for greater consistency in terms of what additional medical documentation is required and further streamline the process of medical certification. When asked why they mandate the clinic/CME that certifies their drivers, the only reason cited outside of those shown in Figure 13 related to ensuring consistency.
One interviewee stated that the NRCME assisted with identifying qualified examiners, reducing the need to review driver medical certificates to ensure that there are not any discrepancies on the form. Conversely, other interviewees noted that their process has not changed significantly since the adoption of the NRCME; they continue to monitor the medical forms to ensure that medical certificates do not contain errors or certify drivers with disqualifying medical conditions. Due to these independent review processes, most of the individuals interviewed reported no changes in examination quality as a result of the Registry.

While reductions in medical form errors were observed by one representative, the continued practice of independent carrier medical form review suggests errors have not been totally eradicated by the NRCME. This issue is corroborated by the state DMV staff interview, where it was noted that seven percent of medical forms received have errors are still present. These errors often relate to the expiration date provided on the form. The informal Indiana case study of medical forms found 28 percent had errors – so seven percent does represent a vast improvement. Assuming that the informal analyses cited are representative of the national effects of the NRCME, form errors have been significantly reduced. While reductions in errors have been observed by some industry stakeholders, the continued need to review forms suggests that additional work must be done to achieve the NRCME’s goals.

Improvements to the medical certification process and NRCME offered by motor carrier interviewees included:

- Allowing CMEs to access a driver’s prior medical certificate to prevent the practice of doctor shopping.
- Increasing the frequency of reporting by CMEs to daily submissions. One particular individual cited the recent case of the Atlanta chiropractor whose certification was revoked, stating that more frequent data transmissions could have potentially allowed the fraud to be identified earlier, preventing thousands of drivers from having to be certified by another CME.
- Increased accountability for areas where subjectivity may occur to force CMEs to err on the side of caution rather than risk potential liability if a driver is subsequently involved in a crash.

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5.0 CONCLUSIONS

This data collection and analysis provides important insight and guidance on the impact that the NRCME has had on industry stakeholders.

The research is based on more than 900 CMV driver respondents representing at least 3,968 individual medical examinations and more than 300 motor carrier respondents. Furthermore, additional context was provided to the results through interviews with crucial industry stakeholders including motor carrier safety directors, commercial drivers and staff from a state DMV.

Key information discerned from these key stakeholders includes:

- **Medical certification delays are a significant concern for both motor carriers and CMV drivers.** Motor carriers’ top ranked medical certification concern was driver delays caused by requests for additional testing. This closely reflects the primary reason identified by CMV drivers for not being issued a medical certificate the day of their exam – the requirement to provide additional medical records. Carrier interviewees actively seek to prevent these delays by providing guidance to their drivers on what conditions require additional documentation. Despite these proactive measures to prevent delays, drivers may be significantly impacted multiple ways. Lost wages (an average of $835 per week) from being unable to work without a medical certificate are the most obvious consequence of these delays. Additionally, if testing or treatment is required for certification, the time and money expended on doctor visits, testing and potential treatment can be significant. The concerns related to medical certification delays are also evident in the driver free responses, where concerns about medical testing that is not necessary were frequently referenced. Almost six percent of drivers in this sample were not issued a medical certificate the day of their examination. These delays were primarily caused by requests for additional documentation (60.4%) or requirements to treat a medical condition (22.6%). Furthermore, the delays may impact the industry’s ability to retain drivers if they decide that medical certification is not worth the effort.

- **The NRCME accomplishment of its stated goals – ensuring medical examiner knowledge of the relevant FMCSRs and guidelines – is not corroborated by the results of the carrier survey.** Unqualified or incompetent examiners were ranked the third most critical issue by carrier respondents. This ranking suggests many carriers have not experienced driver medical certification improvements from the NRCME. Several of the carriers interviewed continue to review all driver medical forms to ensure consistent quality and application of the relevant FMCSRs. The need for independent reviews is corroborated by estimates that paperwork errors are still present on roughly seven percent of all medical application forms. Similar to carriers, most CMV drivers did not report improvements in examination quality and the certification process following the implementation of the NRCME, with only 6.2 percent of CMV drivers reporting improved quality.

- **CMV drivers did note that the NRCME has had at least one tangible impact – increased examination costs.** Over half of CMV drivers reported that the cost of their medical examination has increased following the implementation of the NRCME (63.3%). Increased costs were also reported in an OOIDA survey, in which 50 percent...
of drivers reported increased exam costs following the NRCME implementation. Given that drivers do not believe that the quality of the exams has increased despite increased costs, the NRCME has not had an overall positive impact for this stakeholder group. Of drivers paying for their own medical examination costs, costs ranging from $75 to $124 were the most common.

- **The impact of costs may be exacerbated when CMEs are required to renew their certification.** In the associated CME survey, 15.3 percent of CMEs reported they have quit performing DOT physicals or plan to quit when their certification expires. If this loss of CMEs is not offset, access to DOT physicals may be significantly affected. Potential impacts of reduced access include drivers traveling greater distances to see a CME, longer wait times to see a CME, and increased costs.

- **Almost half of the carriers continue to mandate what CME or clinic certifies their CMV drivers (49.0%).** This requirement may relate to quality concerns, with 26.2 percent of carriers mandating specific CMEs and/or clinics in order to improve quality and consistency. Of CMV drivers who choose their own CME, nearly half had to find a new CME after the implementation of the NRCME (48.1%).

- **Omitted or overlooked examination procedures suggest that examination quality still needs improvement.** The required procedures for eye and ear examinations and hernia checks did not occur for many drivers in the sample. Chiropractors in particular skipped examination procedures relative to other medical professionals in the sample who perform medical examinations.

The impacts of the NRCME on industry stakeholders are summarized in Table 17.

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Table 17: NRCME Industry Impacts

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Finding</th>
<th>Industry Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>CME</td>
<td>15.3 percent of CMEs have quit or plan to quit performing DOT physicals.</td>
<td>Drivers may have difficulties finding local CMEs, or will have to travel greater distances. Could impact the driver shortage.</td>
</tr>
<tr>
<td>Driver</td>
<td>6.5 percent spent less than 10 minutes with their CME and 20.1 percent spent 10 to 20 minutes with their CME, which is likely insufficient to complete all required DOT physical procedures.</td>
<td>Certain medical conditions may go undetected.</td>
</tr>
<tr>
<td>Driver</td>
<td>Required examination procedures were more likely to be omitted when the CME was a chiropractor.</td>
<td>The unwieldy application process may further drive CMEs and truck drivers from industry.</td>
</tr>
<tr>
<td>Driver</td>
<td>The medical application form was time consuming, with 34.3 percent taking more than 15 minutes to complete it.</td>
<td></td>
</tr>
<tr>
<td>Driver</td>
<td>26.8 percent brought or were asked to bring additional medical records.</td>
<td></td>
</tr>
<tr>
<td>Driver</td>
<td>Provision of additional medical records was the primary reason for not receiving a medical certificate the day of the exam (60.4%).</td>
<td>Delays in medical certification exacerbate the current driver shortage. Drivers lose wages and carriers do not have needed labor.</td>
</tr>
<tr>
<td>Driver</td>
<td>Concerns related to unnecessary test referrals were frequently cited in the free responses.</td>
<td></td>
</tr>
<tr>
<td>Carrier</td>
<td>Medical certification delays due to requests for additional documentation are a top ranked issue.</td>
<td></td>
</tr>
</tbody>
</table>
| Driver     | 47.9 percent were issued certificates valid for less than the standard two years. Issuance of short-term certificates may relate to the prevalence of certain medical conditions, such as:  
  - 37.6 percent had high blood pressure,  
  - 18.6 percent had diabetes, and,  
  - 14.6 percent had obstructive sleep apnea. | Shorter-term medical certification may reflect health and wellness issues among the driver population. A secondary impact is added cost and time associated with re-applying annually, which may result in drivers leaving the industry. |
| Driver     | Only 6.2 percent experienced improved exam quality after the implementation of the NRCME. |  |
| Driver     | 63.3 percent had higher exam costs following the implementation of the NRCME. | The NRCME objective to improve CME knowledge of FMCSRs and medical guidelines may not have been met across all CMEs. |
| OOIDA survey | 50 percent reported higher exam costs following the implementation of the NRCME. | A majority of drivers experienced increased costs following the NRCME implementation, which may be another factor in drivers leaving the industry. |
| Carrier    | Carriers identified unqualified/incompetent CMEs as a top concern. |  |
| Carrier    | 49.0 percent require drivers to be certified by a specific CME. One of the primary reasons for this requirement was the CME’s reputation for exam quality. |  |
| Carrier    | Less than one percent had no significant issues related to driver certification. |  |
| State DMV Staff | Seven percent of the medical long forms submitted have errors. |  |
APPENDIX A: DRIVER SURVEY

Q1 As you know, there have been significant regulatory changes in who can perform DOT/FMCSA medical certification exams and how those exams are conducted. Medical examiners are now required to take an approved course, pass a secure test, and be listed in the National Registry of Certified Medical Examiners (NRCME) in order to issue medical certificates. These changes were implemented more than two years ago; therefore, all commercial drivers requiring a medical certificate have now completed the process of seeing an examiner since those changes were made.

The American Transportation Research Institute (ATRI) and Mayo Clinic are collaborating on research to better understand how effective these changes have been, and whether you have noted any changes in the quality or length of your examination.

Please take a few minutes to complete the survey below to provide your input on the DOT/FMCSA medical certification process. The survey does not ask for your name or other individually identifying information. All responses to this survey will be kept strictly confidential and will only be reported in aggregate form. Your participation is completely voluntary and any current or future medical care or employment at Mayo Clinic will not be jeopardized if you choose not to participate.

Thank you for your willingness to help shape the future of medical certification in the transportation industry.

****************************************

Q2 In what segment of the trucking industry do you primarily operate? (Check one.)
- For-Hire (1)
- Private (2)

Answer If In what segment of the trucking industry do you primarily operate? (Check one.) For-Hire Is Selected

Q3 Which sector best describes your operation?
- Truckload (1)
- Less-than-Truckload (2)
- Specialized, Flatbed (3)
- Specialized, Tanker (4)
- Express / Parcel Service (5)
- Intermodal Drayage (6)
- Other (please specify): (7) ____________________
Q4 Which of the following best describes your employment? (Check one.)
- Employee Driver (1)
- Owner-Operator (O-O) with own authority (2)
- Owner-Operator / Independent Contractor (I-C) leased to a motor carrier (3)

Answer If Which of the following best describes your employment? (Check one.) Employee Driver Is Selected Or Which of the following best describes your employment? (Check one.) Owner-Operator / Independent Contractor (I-C) leased to a motor carrier Is Selected

Q5 If you are an employee or a leased driver, how many total tractors does your fleet operate? (Check one.)
- 1 to 6 (1)
- 7 to 19 (2)
- 20 to 249 (3)
- 250 to 999 (4)
- 1,000 or more (5)

Q6 What is the primary vehicle configuration that you typically operate? (Check one.)
- 5-axle Dry Van (1)
- 5-axle Refrigerated Trailer (2)
- 5-axle Flatbed (3)
- 5-axle Tanker (4)
- Straight Truck (5)
- Longer Combination Vehicles (Doubles, Triples, etc.) (6)
- Other, please specify: (7) __________________________

Q7 What is your average length of haul? (Check one.)
- Local (less than 100 miles per trip) (1)
- Regional (100-499 miles per trip) (2)
- Inter-regional (500-999 miles per trip) (3)
- Long-Haul (1,000+ miles per trip) (4)

Q8 How long have you held a Commercial Driver's License (CDL)?
- Less than 1 year (1)
- 1 to 5 years (2)
- 6 to 10 years (3)
- More than 10 years (4)
Q9 What chronic condition(s) do you have or have been diagnosed by your physician or other health care provider? (Check all that apply.)

- A. Diabetes mellitus (no insulin required) (1)
- B. Diabetes (injectable insulin required) (2)
- C. Hypertension (high blood pressure) (3)
- D. Asthma (4)
- E. Prior stroke or history of TIA ("mini-stroke") (5)
- F. Cancer (current or past history) (6)
- G. Blood clot in legs or lungs (7)
- H. Coronary artery disease (heart attack, angina or chest pain, blocked coronary arteries, or testing showing parts of the heart not receiving enough oxygenated blood (called "ischemia") (8)
- I. Monocular vision (one eye blind) (9)
- J. Color blindness/Color vision deficiency (10)
- K. History of substance abuse or dependence (11)
- L. Amputation of hand, wrist, arm, extremities (not including finger or toe amputations) (12)
- M. Obstructive Sleep Apnea. (13)
- N. Chronic back pain (with or without prior back surgery) (14)
- O. Chronic knee or hip pain (or had a joint replacement of the hip or knee) (15)
- P. Depression or other mood disorders (16)
- Q. Other condition(s), please specify: (17) ____________________

Q10 Where did you obtain your DOT/FMCSA medical certificate?

- Outpatient clinic or office (1)
- Truck stop (2)
- Hospital (3)
- Motor carrier terminal (4)
- Other, please specify: (5) ____________________

Q11 At the completion of your DOT physical, were you given a standard 2-year medical certificate?

- Yes (1)
- No (2)

Answer: At the completion of your DOT physical, were you given a standard 2-year medical certificate? No is selected

Q12 Was your examination completed and a certificate issued on the same day as your exam?

- Yes (1)
- No (2)
Q13 Why did you not receive a certificate on the same day as your exam?
- More medical records were requested by the medical examiner or medical staff. (1)
- I had a medical condition that required treatment before the medical examiner would issue a certificate. (2)
- My medical application was denied. (3)
- I left the visit before the examination was completed. (4)
- I cannot recall the reason why I did not receive a certificate. (5)
- Other, please specify: (6) ____________________

Q14 When you applied for your medical certificate, it was time-limited to:
- 3 months (1)
- 6 months (2)
- 12 months (3)
- Exam put on hold to request additional tests or health records. (6)
- Exam started but not completed (you left the office, examiner discontinued exam, etc.) (7)
- Other, please specify: (4) ____________________

Q15 Did you bring additional medical records to your medical application visit or did the Medical Examiner request specific additional medical records be obtained in order to become certified?
- Yes (1)
- No (2)

Q16 Are you required to hold a medical exemption (or waiver) for insulin-dependent diabetes, monocular vision or other impairments?
- Yes (1)
- No (2)

Q17 What was the medical condition for which you are required to hold a medical exemption?
- Diabetes (1)
- Monocular vision (2)
- Prior seizure disorder (3)
- Other, please specify: (4) ____________________
Q18 How did you identify where to go to obtain your DOT/FMCSA medical exam?
- Looked on the National Registry of Certified Medical Examiners (NRCME). (1)
- Told by employer where to go. (2)
- Referred to a specific Medical Examiner by a friend, co-worker, or another driver. (3)
- Advertising in newspapers, TV or on the Internet. (4)
- Referred by your union or industry association. (5)
- Other, please specify: (6) ____________________

Q19 Approximately how long did it take for you to complete your DOT/ FMCSA medical application form?
- Less than 5 minutes (1)
- 5 to 10 minutes (2)
- 11 to 15 minutes (3)
- More than 15 minutes (4)

Q20 Did you find the medical application difficult to complete or understand?
- Yes (1)
- No (2)

Answer If Did you find the medical application difficult to complete or understand? Yes Is Selected
Q21 Why was the medical application difficult to complete or understand? (Check all that apply.)
- Language on the form was confusing. (1)
- No one offered to help me fill out form from examiner’s office. (2)
- I was too rushed to complete the form. (3)
- The form was too long and time-consuming. (4)
- Other, please specify: (5) ____________________

Q22 In what format was the medical application form completed?
- Written or “hard copy” format (1)
- Electronic format (2)

Q23 Were you given the opportunity to ask questions to the medical examiner or supporting staff regarding how to answer questions that you may have had on the medical application form?
- Yes (1)
- No (2)
Q24 Who performed the physical examination portion of your certification examination? (NOTE: the examiner’s title is listed on your medical card.)
- Nurse Practitioner (1)
- Physician Assistant (2)
- Chiropractor (3)
- Medical Doctor (MD) or Doctor of Osteopathy (DO) (4)
- Office support staff such as a technician or clinical assistant (5)
- Unsure (6)

Q25 Were you forced to change medical examiners after the new DOT/FMCSA rules went into effect in 2014?
- Yes (1)
- No (2)
- Unsure (3)

Q26 During the DOT/FMCSA medical examination, did the provider...

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes (1)</th>
<th>No (2)</th>
<th>Unsure (3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ask you to remove clothing (e.g. remove shirt or put on an examination gown)?</td>
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<tr>
<td>perform a hernia check by examining the groin region?</td>
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<tr>
<td>examine your chest with a stethoscope?</td>
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<tr>
<td>examine your eyes and ears with a light?</td>
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</tbody>
</table>

Q27 How long (approximately) did you spend with the examiner in total (completing paperwork, undergoing the exam, etc.)?
- Less than 10 minutes (1)
- 10 to 20 minutes (2)
- 21 to 30 minutes (3)
- More than 30 minutes (4)
Q28 Please rate how dissatisfied or satisfied you were with the examination and certification process.
- Very dissatisfied 0 (1)
- 1 (2)
- 2 (3)
- 3 (4)
- 4 (5)
- 5 (6)
- 6 (7)
- 7 (8)
- 8 (9)
- 9 (10)
- Very satisfied 10 (11)

Q29 Have you noticed a difference in the quality of the examination and certification process since the new medical requirements were established in 2014 to see a medical examiner listed on the national registry (NRCME)?
- Yes, it is improved. In what way? (1) _________________
- Yes, it has become worse. In what way? (2) _________________
- There has been no change in overall quality of the medical certification process since 2014. (3)
- I was not examined before 2014. (4)

Q30 How much did you pay out-of-pocket for your DOT medical exam/physical?
- Less than $75 (1)
- $75 to $124 (2)
- $125 to $200 (3)
- More than $200 (4)
- Unsure since my own medical insurance covered it. (5)
- Unsure since my employer covered the cost of the exam. (6)

Q31 If you paid out-of-pocket for the exam, is the cost different now compared to prior to the FMCSA changes?
- Yes, it is now more expensive. (1)
- No, the cost is about the same. (2)
- Yes, the cost is now less. (3)
- I cannot recall. (4)
- Not applicable (someone else paid for it). (5)

Q32 Since the National Registry for Certified Medical Examiners came into effect, have you done anything different to prepare or look up information on who you would see for the exam?
- Yes (1)
- No (2)
Q33 Have you changed any habits such as exercise regularly, quit smoking, or lose weight because of new medical regulations?
○ Yes (1)
○ No (2)

Q34 What can be done to improve the quality of the medical certification process?

Q35 THANK YOU FOR COMPLETING THE SURVEY! Please click SUBMIT to record your answers.
APPENDIX B: MOTOR CARRIER SURVEY

Q1 As you know, there have been significant regulatory changes in who can perform DOT/FMCSA medical certification exams and how those exams are conducted. Medical examiners are now required to take an approved course, pass a secure test, and be listed in the National Registry of Certified Medical Examiners (NRCME) in order to issue medical certificates. These changes were implemented more than two years ago; therefore, all commercial drivers requiring a medical certificate have now completed the process of seeing an examiner since those changes were made.

The American Transportation Research Institute (ATRI) and Mayo Clinic are collaborating on research to better understand how effective these changes have been, and to identify motor carrier concerns with the NRCME process.

Please take a few minutes to complete the survey below to provide your input on the DOT/FMCSA medical certification process. The survey does not ask for your name or other individually identifying information. All responses to this survey will be kept strictly confidential and will only be reported in aggregate form. Your participation is completely voluntary and any current or future medical care or employment at Mayo Clinic will not be jeopardized if you choose not to participate.

Thank you for your willingness to help shape the future of medical certification in the transportation industry.

****************************************

Q2 In what segment of the trucking industry do you primarily operate? (Check one.)
○ For-Hire (1)
○ Private (2)

Answer If In what segment of the trucking industry do you primarily operate? (Check one.) For-Hire Is Selected

Q3 Which sector best describes your operation?
○ Truckload (1)
○ Less-than-Truckload (2)
○ Specialized, Flatbed (3)
○ Specialized, Tanker (4)
○ Express / Parcel Service (5)
○ Intermodal Drayage (6)
○ Other, please specify: (7) ____________________
Q4 What best describes your role with the fleet? (Check one.)
- Executive/Senior Management (1)
- Human Resources/Risk Management (2)
- Safety (3)
- Driver Training (4)
- Owner-operator (5)
- Other, please specify: (6) ____________________

Q5 How many total tractors does your fleet operate? (Check one.)
- 1 to 6 (1)
- 7 to 19 (2)
- 20 to 249 (3)
- 250 to 999 (4)
- 1,000 or more (5)

Q6 What is the primary vehicle configuration that you typically operate? (Check one.)
- 5-axle Dry Van (1)
- 5-axle Refrigerated Trailer (2)
- 5-axle Flatbed (3)
- 5-axle Tanker (4)
- Straight Truck (5)
- Longer Combination Vehicles (Doubles, Triples, etc.) (6)
- Other, please specify: (7) ____________________

Q7 What is the average length of haul for your drivers? (Check one.)
- Local (less than 100 miles per trip) (1)
- Regional (100-499 miles per trip) (2)
- Inter-regional (500-999 miles per trip) (3)
- Long-Haul (1,000+ miles per trip) (4)

Q8 Does your firm pay for a driver’s commercial medical exam?
- Yes (1)
- No (2)
- Not applicable (for owner-operators) (3)

Q9 Does the firm specify a specific medical examiner or clinic that all drivers must use?
- Yes (1)
- No (2)
Q10 Why is a specific examiner mandated?
- There is a contract with a specific provider or clinic. (1)
- The examiner(s) has/have a good reputation in the community for comprehensive examinations. (2)
- It is the least expensive option. (3)
- It is the closest clinic or provider to our facility(ies). (4)
- Other, please explain: (5) ____________________

Q11 What are your greatest concerns (if any) in terms of the medical certification examination?  (Drag and drop your top 3 into the box.)

<table>
<thead>
<tr>
<th>TOP 3 GREATEST CONCERNS</th>
</tr>
</thead>
<tbody>
<tr>
<td>_____ Cost of exams (4)</td>
</tr>
<tr>
<td>_____ Medically unqualified drivers becoming certified (5)</td>
</tr>
<tr>
<td>_____ Poor driver health/wellness (6)</td>
</tr>
<tr>
<td>_____ Driver retention (7)</td>
</tr>
<tr>
<td>_____ Lack of access to medical examiners (8)</td>
</tr>
<tr>
<td>_____ Unqualified or incompetent medical examiners performing DOT examinations on drivers (9)</td>
</tr>
<tr>
<td>_____ Complexity of the process (e.g. recording who is certified and who is not) (10)</td>
</tr>
<tr>
<td>_____ Concern about certification delays due to medical examiners requesting additional testing (11)</td>
</tr>
<tr>
<td>_____ Changes in the medical exam process occurring too rapidly (12)</td>
</tr>
<tr>
<td>_____ Confusion of drivers on how changes in the process affect their ability to hold a valid medical certificate (13)</td>
</tr>
<tr>
<td>_____ No major concerns with the current process (14)</td>
</tr>
</tbody>
</table>

Q12 THANK YOU FOR COMPLETING THE SURVEY! Please click SUBMIT to record your answers.