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Federal Motor Carrier Safety
Administration

FINAL RULE

Limiting the Use of Wireless Communication Devices
Regulatory Evaluation

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EXECUTIVE SUMMARY

The Federal Motor Carrier Safety Administration (FMCSA) amends the Federal Motor Carrier Safety Regulations (FMCSRs) to restrict texting, including texting while using dispatching devices and fleet management systems, by certain drivers while operating commercial motor vehicles (CMVs) in interstate commerce. The agency also amends the FMCSRs to impose sanctions, including civil penalties and disqualification, on such drivers who do not comply with this final rule. The goal of the regulatory revision is to prevent or reduce the prevalence of truck and bus crashes, fatalities, and injuries on our Nation's highways due to texting while driving. In addition, the revisions will reduce the financial and environmental burdens associated with these crashes, and promote the efficient movement of traffic and commerce on interstate highways.

Recent studies, including one commissioned by FMCSA, show that texting is among the riskiest behaviors of the distracting activities that are undertaken by CMV drivers. Because texting while driving is a fairly recent phenomenon, empirical research on its impact on safety is limited. FMCSA carefully evaluated all available national-level crash data and found the data do show that distracted driving often results in crashes. While these data do not identify the number of fatalities or crashes attributable to texting, there are numerous studies on driver distraction in general. FMCSA analyzed those studies and found that many of their findings can be applied as a supplementary explanation to a texting prohibition. With regard to the current data on texting, the regulatory analysis focuses on one particular study — "Driver Distraction in Commercial Vehicle Operations" (also referred to as "The VTTI Study")[1] — which, though limited in scope and application, does shed light on the potential harm of texting while driving CMVs.

Currently, FMCSA does not have sufficient data that show an explicit empirical link between texting and CMV crashes. Therefore, the Agency exercised its professional judgment consistent with Office of Management and Budget Circular A-4 ("Regulatory Analysis") and conducted a threshold analysis. A threshold or break-even analysis is called for when it is impossible, or difficult, to express in monetary units all of the important benefits and costs of a proposed rule. The

[1] Olson, R. L., Hanowski, R.J., Hickman, J.S., & Bocanegra, J. (2009). Driver distraction in commercial vehicle operations. (Document No. FMCSA-RRR-09-042) Washington, DC: Federal Motor Carrier Safety Administration, July 2009. Retrieved on October 20, 2009.

most efficient alternative will not necessarily be the one with the largest quantified and monetized net-benefit estimate. In such cases, the Agency is required to make a determination of how important the non-quantified benefits or costs may be in the context of the overall analysis. The threshold analysis approach therefore answers the question: how small does the value of the non-quantified benefits (safety benefits in terms of crash prevention) have to be in order for the rule to yield zero net benefits (i.e., break even)?

This regulatory evaluation considers the following potential costs: (a) loss in carrier productivity due to time spent while parking or pulling over to the side of the roadway to perform texting activities; (b) increased fuel usage due to idling as well as exiting and entering the travel lanes of the roadway; (c) increased crash risk due to CMVs that are parked on the side of the roadway and exiting and entering the travel lanes of the roadway, and (d) costs to the States.
The Agency estimates that this rule will cost $3.8 million annually. Current guidance from the Office of the Secretary of Transportation (OST) places the value of a statistical life at $6.0 million. Consequently, the texting restriction would have to eliminate at most one fatality every year in order for the benefits of this rule to at least equal the costs. Given the unchecked expansion of texting, FMCSA believes the rule will save lives and prevent a substantial number of crashes. Therefore, the rule is justified based on the safety benefits. The table below presents a summary of the estimated costs of this rule and a threshold analysis of the number of fatalities that would need to be avoided in order to break even.

Summary of Costs and Threshold Analysis (First Year)

Lost Carrier Productivity (millions)	$0.3
Increased Fuel Consumption (millions)	$1.1
Parking, Entering and Exiting Roadway Crashes (millions)	$0.2
Costs to the States	$2.2*
Total Costs	$3.8
Benefit of Eliminating One Fatality (millions)	$6.0
Break-even Number of Lives Saved	< 1

*One-time cost.

FMCSA also conducted a 10-year annualized projection of the discounted costs and benefits of the rule, in which the benefits are the simply the value of statistical life saved (i.e., $6 million).

The results, summarized below, show that the net benefits, under both a 3% discount rate and a 7% discount rate, are positive.

Summary of Estimated Net Benefits

10-Year Discounting

	3% discount rate	7% discount rate
Total Costs	$15.7 million	$14.0 million
Total Benefits*	$52.7 million	$45.0 million
Net Benefits	$37.0 million	$31.0 million

*$6 million VSL

FMCSA also conducted a sensitivity analysis (the details of which are contained in Appendix A) whereby the extent of texting while using a dispatching device or fleet management system is varied. The results of that analysis show an estimated minimum total cost of this rule of approximately $1.4 million and an estimated maximum total cost of approximately $2.0 million.

1. Background

1.1 Agency Mission

Transportation safety is the Department of Transportation's (DOT's) top strategic priority. Because the human toll and economic cost of transportation crashes are substantial, improving transportation safety is an important objective of all DOT modes. Within DOT, FMCSA is primarily focused on the safe use of public roadways by motor carriers, with the goal of reducing crashes, injuries, and fatalities involving large trucks and buses. The Secretary of Transportation has promulgated the FMCSRs to further this purpose. Many of the FMCSRs are related to safeguarding safe-driver operations, including controls for and guidance on ill or fatigued operators and prohibitions of drivers who abuse drugs and alcohol. A driver's physical condition can diminish his or her awareness and have negative effects on driver reaction time. Likewise, driver distraction can compromise drivers' abilities while operating CMVs in interstate commerce. This rulemaking is intended to reduce or prevent truck and bus crashes, fatalities, and injuries due to one type of driver distraction-texting.

1.2 Executive Order 12866 — Regulatory Planning and Review

FMCSA has determined that this rulemaking action is a significant regulatory action under Executive Order 12866, Regulatory Planning and Review, and significant under DOT regulatory policies and procedures because of the substantial Congressional and public interest concerning the crash risks associated with distracted driving, even though the economic costs of the rule do not exceed the $100 million annual threshold.

1.3 Policy Issues Spurring Regulation

The Secretary has pledged to work to ensure that the issue of distracted driving is appropriately addressed. At a Distracted Driving Summit held from September 30 through October 1, 2009 in Washington, D.C., safety experts, researchers, industry representatives, elected officials, and members of the public shared their expertise, experiences, and ideas for reducing distracted driving behavior and addressed the safety risk posed by this growing problem across all modes of transportation. At the conclusion of the Summit, the Secretary pledged to work with Congress so that the issue of distracted driving would be appropriately addressed. He also announced a number of immediate actions the Department would take to combat distracted driving, including the Department's plan for FMCSA to prepare three separate future actions to address distracted driving in the motor carrier industry.

As a result of this Summit, and based on data from studies on distracted driving, FMCSA is considering a number of immediate actions to combat distracted driving by CMV drivers. Specifically, in addition to this rulemaking, FMCSA is considering future rulemaking actions that could address cell phones and other interactive devices in vehicles.

Various entities of the Federal government have responded to the risks of wireless communication devices and texting. The Federal Railroad Administration (FRA) of DOT issued an emergency order in October 2008 restricting on-duty railroad operating employees' use of

cell phones and other distracting electronic and electrical devices. In an NPRM published May 18, 2010, FRA proposed to amend its railroad communications regulations by restricting the use of mobile telephones and other distracting electronic devices by railroad operating employees (75 FR 27672). President Barack Obama issued an executive order on October 1, 2009 (Executive Order 13513, "Federal Leadership on Reducing Text Messaging While Driving"), banning Federal employees from text messaging while driving in a government-owned vehicle, or when driving a personally owned vehicle while on official Government business, or when using electronic equipment supplied by the Government while driving.

In addition, the National Transportation Safety Board (NTSB) issued a recommendation to FMCSA to publish regulations prohibiting cell phone use by commercial driver's license (CDL) holders with a passenger-carrying or school bus endorsement, while driving under the authority of that endorsement, except in emergencies. While this final rule does not explicitly address cell phone use for purposes other than texting, it does serve as a significant first step in addressing an aspect of the broader problem of distracted driving while using wireless electronic devices. Moreover, the Agency intends to consider NTSB's recommendation in a later rulemaking.

More recently, the Motor Carrier Safety Advisory Committee (MCSAC), a committee mandated under the Safe, Accountable, Flexible, Efficient Transportation Act: A Legacy for Users, and composed of the motor carrier industry, safety enforcement and safety advocate representatives, in its report to the Secretary of Transportation titled, "Developing a National Agenda for Motor Carrier Safety," dated March 27, 2009, recommended that as part of the National Agenda, FMCSA should add "distracted driving" to the FMCSRs. According to MCSAC, documented research shows that there are cognitive distractions and increases in crashes from cell phone use and text messaging. Therefore, the committee recommended that FMCSA initiate a rulemaking to prohibit the use of hand-held and hands-free cell phones and text messaging.

A majority of States have already implemented some type of texting restriction, which have varying degrees of enforcement and compliance. Currently, 30 States, plus the District of Columbia and Guam, have implemented laws or regulations restricting texting and/or cell phone use while driving.

2. Economic Analysis

2.1 Regulatory Alternatives Considered

This section provides an overview of the alternatives FMCSA considered in this rulemaking. The Agency focused on reducing crash risk, which is the ultimate consequence of texting and driving. Due to the inherent dangers of texting while driving, FMCSA concluded that a restriction of such activity was the best course of action and that an education program alone was not the appropriate option. In this case, there were two paths FMCSA could take. FMCSA chose Option One, to amend the current regulations to restrict texting while driving. The other option, Option Two, would be to take no action. These options are further described below, followed by an assessment of their potential costs and benefits. Past and current actions by FMCSA and DOT related to this rulemaking include conducting outreach activities, e.g., webinars, press releases, and the creation of a new Web site on distracted driving (www.distraction.gov).

OPTION ONE: IMPLEMENTING A RESTRICTION AGAINST TEXTING WHILE DRIVING

This option implements the rule basically as proposed in the Notice of Proposed Rulemaking (NPRM) (April 1, 2010, 75 FR 16391), thereby restricting CMV drivers from texting while driving CMVs in interstate commerce and disqualifying those drivers who engage in these activities. In response to comments, the final rule will now also cover carriers operating small-passenger carrying vehicles (designed or used to transport 9-15 passengers including the driver) not for direct compensation and are otherwise exempt from most of the FMCSRs under 49 CFR 390.3(f)(6). The Agency includes this carrier and driver group in the final rule to cover as many vehicle drivers as possible within its statutory authority. In addition, the definition of texting has been modified in this final rule to include texting on a dispatching device or a device that is part of a fleet management system, but it does not restrict the use of the other functions of such devices.

OPTION TWO: NO-ACTION

This option would maintain the status quo and provide for no new action. It is the baseline upon which this analysis is conducted. FMCSA firmly believes that choosing this option would be detrimental to highway safety. Considering that texting while driving is recognized as a risky activity and that texting is on the rise nationwide, FMCSA foresees that, unless a restriction is implemented, the risk of CMV crashes due to texting while driving will increase.

2.2 Research and Data

2.2.1 Current Research on Driver Inattention and Distraction

Driver distraction has been defined by Trezise et al. [2] as the voluntary or involuntary diversion of attention from primary driving tasks that is not related to impairment (from alcohol, drugs, fatigue, or a medical condition), where the diversion occurs because the driver is performing an additional task (or tasks) and temporarily focusing on an object, event, or person not related to the primary driving tasks. The diversion reduces a driver's situational awareness, decision making, and/or performance, resulting, in some instances, in a collision, near-miss, or corrective action by the driver or other road user.

From a practical standpoint, driver distraction can be defined as the combination of inattention and a critical incident(s). Driver inattention is related to driver behavior and is caused by many possible events or tasks. These tasks vary in complexity, but are typically divided into three categories: (1) primary tasks (required for vehicle control), (2) secondary tasks (driving-related, but not required for vehicle control, such as checking mirrors or the speedometer), and (3) tertiary tasks (non-driving related, such as texting or eating). For tertiary tasks, the level of complexity is further divided into complex, moderate, and simple. Among complex tertiary

[2] Trezise, I., Stoney, E. G., Bishop, B., Eren, J., Harkness, A., Langdon, C., & Mulder, T. (2006). Report of the road safety committee on the inquiry into driver distraction. Rep. No. 209. Melbourne, Victoria, Australia: Road Safety Committee, Parliament of Victoria.

tasks, texting ranks the highest,[3] meaning that the odds of being involved in a critical incident are greater than when this task is nonexistent.

According to the National Highway Traffic Safety Administration (NHTSA), there are four types of driver distraction: Visual (taking one's eyes off the road), auditory (listening to something that would distract one from driving/road), physical (taking one's hands off the wheel), and cognitive (thinking about something other than the road/driving). Texting while driving involves at least three types of distraction,[4] and thus poses a considerable risk to road safety. Critical incidents can be viewed as near-crash events. There are three main factors that could lead to a critical incident:[5] driver factors, vehicular factors, and environmental factors. Driver factors are the most prominent cause of traffic crashes. Driver distraction statistics based upon police accident reports attribute driver distraction as a primary factor in 25-30 percent of crashes. However, most research attributes a much higher percentage since there are potential errors and deficiencies with police accident reports. First, these reports are not designed to account for pre-crash behavior. Second, they cannot account for near-crashes or close-calls. Considering the relative rarity of traffic crashes in relation to the total number of vehicle miles traveled, it is imperative, from statistical and practical standpoints, to also account for pre-crash behavior and near-crashes.

Many studies have examined the link between driver distraction and potential crashes. For a review of literature, the reader may refer to "Driver Distraction: A Review of the Current State-of-Knowledge."[6] Following is a recapitulation of some recent studies on driver distraction, in general, and some studies on texting-related activities in particular.

2.2.2 Studies and Data on Texting-Related Crashes

[3] Olson et al. (2009).
[4] Auditory distraction is the least applicable to texting.
[6] For critical incidents attributable to long-haul and short-haul drivers, the three most prevalent types are: Entering roadway without sufficient clearance, backing in roadway (in presence of through traffic), and late braking for stopped/stopping traffic, tied with wide turn into adjacent lane (FMCSA Technical Brief: Light Vehicle-Heavy Vehicle Interactions: A Preliminary Assessment Using Critical Incident Analysis,), August 2004). Available ate http://www.fmcsa.dot.gov/facts-research/research-technology/tech/lv-hv-inteeractions-tech-brief.htm).
[6] NHTSA- Driver Distraction: A Review of the Current State-of-Knowledge, April, 2008.

Driver Distraction in Commercial Vehicle Operations ("the VTTI Study") – Olson et al., 2009[7]

Under contract with FMCSA, the Virginia Tech Transportation Institute (VTTI) completed its "Driver Distraction in Commercial Vehicle Operations" study[8] and released the final report on October 1, 2009. The purpose of the study was to investigate the prevalence of driver distraction in CMV safety-critical events (i.e., crashes, near-crashes, lane departures) recorded in a naturalistic data set that included over 200 truck drivers and 3 million miles of data. The dataset was obtained by placing monitoring instruments on vehicles and recording the behavior of drivers conducting real-world revenue-producing operations. The study found that drivers were engaged in non-driving related tasks in 71 percent of crashes, 46 percent of near-crashes, and 60 percent of all safety-critical events. Tasks that significantly increased risk included texting, looking at a map, writing on a notepad, or reading.

Odds ratios (OR) were calculated to identify tasks that were high risk. For a given task, an odds ratio of "1.0" indicated the task or activity was equally likely to result in a safety-critical event as it was a non-event or baseline driving scenario. An odds ratio greater than "1.0" indicated a safety-critical event was more likely to occur, and odds ratios of less than "1.0" indicated a safety-critical event was less likely to occur. The most risky behavior identified by the research was "text message on cell phone,"[9] with an odds ratio of 23.2. This means that the odds of being involved in a safety-critical event are 23.2 times greater for drivers who text message while driving than for those who do not.

Texting drivers took their eyes off the forward roadway for an average of 4.6 seconds during the 6-second interval surrounding a safety-critical event. At 55 mph (or 80.7 feet per second), this equates to a driver traveling 371 feet, the approximate length of a football field, including the end zones, without looking at the roadway. At 65 mph (or 95.3 feet per second), the driver would

[7] Olson, R. L., Hanowski, R.J., Hickman, J.S., & Bocanegra, J. (2009) Driver distraction in commercial vehicle operations. (Document No. FMCSA-RRR-09-042) Washington, DC: Federal Motor Carrier Safety Administration, July 2009. Retrieved October 20, 2009, from http://www.fmcsa.dot.gov/facts-research/art-public-reports.aspx?

[8] The formal peer review of the "Driver Distraction in Commercial Vehicle Operations Draft Final Report" was completed by a team of three technically qualified peer reviewers who are qualified (via their experience and educational background) to critically review driver distraction-related research.

[9] Although the final report does not elaborate on texting, the drivers were engaged in the review, preparation and transmission of, typed messages via wireless phones.

have traveled approximately 439 feet without looking at the roadway. This clearly creates a significant risk to the safe operation of the CMV.

Other tasks that drew drivers' eyes away from the forward roadway in the study involved the driver interacting with technology: calculator (4.4 seconds), dispatching device (4.1 seconds), and cell phone dialing (3.8 seconds). Technology-related tasks were not the only ones with high visual demands. Non-technology tasks with high visual demands, including some common activities, were: reading (4.3 seconds), writing (4.2 seconds), looking at a map (3.9 seconds), and reaching for an object (2.9 seconds).

The study further analyzed population attributable risk (PAR), which incorporates the frequency of engaging in a task. If a task is done more frequently by a driver or a group of drivers, it will have a greater PAR percentage. Safety could be improved the most if a driver or group of drivers were to stop performing a task with a high PAR. The PAR percentage for texting is 0.7 percent, which means that 0.7 percent of the incidence of safety-critical events is attributable to texting, and thus, could be avoided by not texting.

Table 1. Odds Ratio and Population Attributable Risk Percentage by Selected Task

Task	Odds Ratio	Population Attributable Risk Percentage*
Complex Tertiary Task**		
Text message on cell phone	23.2	0.7
Other – Complex (e.g., clean side mirror)	10.1	0.2
Interact with/look at dispatching device	9.9	3.1
Write on pad, notebook, etc.	9.0	0.6
Use calculator	8.2	0.2
Look at map	7.0	1.1
Dial cell phone	5.9	2.5
Read book, newspaper, paperwork, etc.	4.0	1.7
Moderate Tertiary Task**		
Use/reach for other electronic device	6.7	0.2
Other – Moderate (e.g., open medicine bottle)	5.9	0.3
Personal grooming	4.5	0.2
Reach for object in vehicle	3.1	7.6
Look back in sleeper berth	2.3	0.2
Talk or listen to hand-held phone	1.0	0.2
Eating	1.0	0
Talk or listen to CB radio	0.6	*
Talk or listen to hand-free phone	0.4	*

* Calculated for tasks where the odds ratio is greater than one.
** Non-driving related tasks

A complete copy of the final report for this study is included in the docket referenced in this final rule.

In addition to FMCSA-sponsored research, the Agency considered other research reports and studies that highlight the safety risks of distracted driving in general or of texting, specifically. These studies conclude that texting is extremely risky and that it impairs a driver's ability to respond to driving situations. Most of these studies were small simulator studies, involving young automobile drivers. But they provide support for the conclusions of the comprehensive study of CMV operations commissioned by FMCSA and conducted by VTTI. One limitation of the VTTI study was that the data used were collected naturalistically, and not in a controlled environment; the "cognitive distraction" effects of driver behaviors could not easily be determined. This information, which includes ongoing research, is summarized below.

Text Messaging During Simulated Driving — Drews, et al., 2009[10]

This research was designed to identify the impact of text messaging on simulated driving performance. Using a high fidelity driving simulator, researchers measured the performance of 20 pairs of participants while: (1) only driving; and (2) driving and text messaging. Participants followed a pace car in the right lane, which braked 42 times, intermittently. Participants were 0.2 seconds slower in responding to the brake onset when driving and text messaging, compared to driving-only. When drivers are concentrating on texting, reading or entering, their reaction times to braking events are significantly longer.

Driver Workload Effects of Cell Phone, Music Player, and Text Messaging Tasks with the Ford SYNC Voice Interface Versus Handheld Visual-Manual Interfaces ("The Ford Study") — Shutko, et al., 2009[11]

A recent study by Ford Motor Company[12] involving 25 participants compared using a hands-free voice interface to complete a task while driving with using personal handheld devices (cell phone

[10]Drews, F.A., Yazdani, H., Godfrey, C.N., Cooper, J.M., & Strayer, D.L. (Dec. 16, 2009). Text messaging during simulated driving. Salt Lake City, Utah: The Journal of Human Factors and Ergonomics Society Online First. Published as doi:10.1177/0018720809353319. Retrieved December 22, 2009, from http://hfs.sagepub.com/cgi/rapidpdf/0018720809353319?ijkey=gRQOLrGlYnBfc&keytype=ref&siteid=sphfs.

[11] Shutko, J. Mayer, J., Laansoo, E., & Tijerina, L. (2009). Driver workload effects of cell phone, music player, and text messaging tasks with the Ford SYNC voice interface versus handheld visual-manual interfaces (paper presented at SAE World Congress & Exhibition, April 2009, Detroit, MI). Warrendale, PA: Society of Automotive Engineers International. Available from SAE International at: http://www.sae.org/technical/papers/2009-01-0786.

[12] The Engineering Meetings Board has approved this paper for publication. It has successfully completed SAE's peer review process under the supervision of the session organizer. This process requires a minimum of three (3) reviews by industry experts.

and music player) to complete the same task while driving. Of particular interest were the results of this study with regard to total eyes-off-road time when texting while driving. The study found that texting, both sending and reviewing a text, was extremely risky. The median total eyes-off-road time when reviewing a text message on a handheld cell phone while driving was 11 seconds. The median total eyes-off-road time when sending a text message using a handheld cell phone while driving was 20 seconds.

The Effects of Text Messaging on Young Novice Driver Performance — Hosking, et al., 2006[13]

Hosking studied a very different driver population, but obtained similar results. This study used an advanced driving simulator to evaluate the effects of text messaging on 20 young, novice Australian drivers. The participants were between 18 and 21 years old, and they had been driving 6 months or less. Legislation in Australia prohibits hand-held phones, but a large proportion of the participants said that they use them anyway.

The young drivers took their eyes off the road while texting, and they had a harder time detecting hazards and safety signs, as well as maintaining the simulated vehicle's position on the road than they did when not texting. While the participants did not reduce their speed, they did try to compensate for the distraction of texting by increasing their following distance. Nonetheless, retrieving and particularly sending text messages had the following effects on driving: difficulty maintaining the vehicle's lateral position on the road; harder time detecting hazards; harder time detecting and responding to safety signs; and up to 400 percent more time with drivers' eyes off the road than when not texting.

The Effect of Text Messaging on Driver Behavior: A Simulator Study — Reed and Robbins, 2008[14]

[13] Hosking, S., Young, K., & Regan, M. (February 2006). The effects of text messaging on young novice driver performance. Victoria, Australia: Monash University Accident Research Centre. Retrieved October 15, 2009, from: http://www.monash.edu.au/muarc/reports/muarc246.pdf.

[14] Reed, N. & Robbins, R. (2008). The effect of text messaging on driver behaviour: A simulator study. Report prepared for the RAC Foundation by Transport Research Laboratory. Retrieved January 12, 2010, http://www.racfoundation.org/files/textingwhiledrivingreport.pdf.

The RAC Foundation commissioned this report[15] to assess the impact of text messaging on driver performance and the attitudes surrounding that activity in the 17 to 24-year old driver category. There were 17 participants in the study. The results demonstrated that driving was impaired by texting. Researchers reported that "failure to detect hazards, increased response times to hazards, and exposure time to that risk have clear implications for safety." They reported an increased stopping distance of 12.5 meters, or three car lengths, and increased variability of lane position.

Cell Phone Distraction in Commercial Trucks and Buses: Assessing Prevalence in Conjunction with Crashes and Near-Crashes — Hickman[16]

The purpose of this research was to conduct an analysis of naturalistic data collected by DriveCam®. The introduction of naturalistic driving studies that record drivers (through video and kinematic vehicle sensors) in actual driving situations created a scientific method to study driver behavior under the daily pressures of real-world driving conditions. The research documented the prevalence of distractions while driving a CMV, including both trucks and buses, using an existing naturalistic data set. This data set came from 183 truck and bus fleets comprising a total of 13,306 vehicles captured during a 90-day period. There were 8,509 buses and 4,797 trucks. The data sets in the current study did not include continuous data; it only included recorded events that met or exceeded a kinematic threshold (a minimum g-force setting that triggers the event recorder). These recorded events included safety-critical events (e.g., hard braking in response to another vehicle) and baseline events (i.e., an event that was not related to a safety-critical event, such as a vehicle that traveled over train tracks and exceeded the kinematic threshold). A total of 1,085 crashes, 8,375 near-crashes, 30,661 crash-relevant conflicts, and 211,171 baselines were captured in the dataset.

Odds ratios were calculated to show a measure of association between involvement in a safety-critical event and performing non-driving related tasks, such as dialing or texting. The odds

[15] The work described in this report was carried out in the Human Factors and Simulation group of the Transport Research Laboratory. The authors are grateful to Andrew Parks [check spelling?] who carried out the technical review and auditing of this report.

[16] Hickman, J., Hanowski, R., and Bocanegra, J. (2010). Distraction in Commercial Trucks and Buses: Assessing Prevalence and Risk in Conjunction with Crashes and Near-Crashes. Washington, DC: Federal Motor Carrier Safety Administration. (Final Report due Spring 2010).

ratios show the odds of being involved in a safety-critical event when a non-driving related task is present compared to situations when there is no non-driving related task. The odds ratios for text/email/accessing the Internet tasks were very high, indicating a strong relationship between text/e-mail/accessing the Internet while driving and involvement in a safety-critical event. Very few instances of this behavior were observed during safety-critical events in the current study and even fewer during control events. Although truck and bus drivers do not text frequently, the data suggest that truck and bus drivers who use their cell phone to text, e-mail, or access the Internet are very likely to be involved in a safety-critical event.

2.3 Cost Benefit Analysis

2.3.1 Estimated Costs of the Rule

This restriction on texting while driving is consistent with the recommendations of some manufacturers of wireless electronic devices — specifically, not to use the devices while operating a motor vehicle. Moreover, the restriction of texting while driving is a rational course of action consistent with common business sense. Many trucking corporations, such as FedEx, Southeastern Freight Lines, and UPS, do not allow their employees to use any electronic devices while behind the wheel.[17] In addition, passenger motor carriers, Greyhound and Peter Pan, prohibit the use of electronic devices by their drivers when vehicles are in motion. Drivers of CMVs, or of any vehicles for that matter, are presumed to perceive the risk to themselves and to others of texting while driving. Refraining from such behavior, voluntarily or otherwise, is therefore in the driver's best interest as well as in the best interest of others. Considering that numerous States have already implemented some type of texting restriction (and more are considering doing so), many CMV drivers are already operating under a texting restriction and have presumably modified their behavior accordingly. This, in turn, suggests that the actual cost of this rule is likely to be even lower than this analysis indicates.

The rule restricts texting on nearly all types of electronic devices while driving regardless of the device. FMCSA foresees that the costs of imposing the rule will be minimal. This analysis

[17] McNally, S. (November 1, 2009). Government to Ban In-Cab Texting. All Business, a D&B Company- www.allbusiness.com.

evaluates four potential costs of the rule: (a) value of lost productivity due to texting while not driving during on-duty time; (b) increased fuel usage due to idling, as well as exiting and entering the travel lanes of the roadway; and (c) increased crash risk due to CMVs that are parked on the shoulder of the road to send and receive text messages, and concurrent exiting and entering the travel lanes of the roadway. The analysis also considers potential costs to States. Because FMCSA removed the exception proposed in the NPRM for texting on dispatching devices for the final rule, this final Regulatory Evaluation includes the additional economic impact from the removal of this exception. Regarding CMV drivers of 9-15 passenger carrying vehicles, no change was necessary to the economic impact analysis because FMCSA applied the largest universe of CMV drivers in its preliminary regulatory evaluation, which included these additional drivers. However, because the populations of carriers and drivers affected by this rule are only those involved in interstate commerce, the analysis has been modified from the wider universe of all CMV drivers to only interstate operations and employed by carriers with recent activity.

(a) Cost due to lost productivity

The Agency has identified four general scenarios for carrier and driver response to the restriction: (1) Driver will forego entering or reading messages altogether; (2) Driver will revert to alternative means of communication; (3) Driver will undertake texting during a scheduled stop; and (4) Driver will pull off the roadway or drive an additional distance to park at a safe and permissible location to conduct texting.

Only in the last case does the texting restriction result in a loss of time for the driver and lost productivity to the carrier. The cost impact of pulling over or driving to park at a safe and permissible location consists of the allocation for both time lost and increased fuel usage, in addition to other environmental costs (addressed in the Agency's Environmental Assessment accompanying this Final Rule). It is to be noted that the estimation of driver time lost must account for *both* pulling over, which incurs no additional driving distance (or, at most, negligible), and parking at a safe location, which incurs additional driving distance of seeking and arriving at the location. Considering the likelihood of the two alternatives, the analysis uses

an average estimated distance of 1 mile travelled for the calculation of time required for all instances of drivers sending/receiving text messages.

Typically, loss in productivity is measured as lost output in terms of units of input(s), but considering the lack of sufficient detailed data on the U.S. transportation industry from which adequate conclusions could be made, the Agency is applying a general proxy of lost labor (driver) time. Labor input in the transportation industry constitutes a large percentage of carrier operating expenses.[18] Moreover, labor is a complementary component to other carrier inputs, mainly capital (i.e., vehicles) and technology. Labor transports the output, or passengers, which generate revenues. Impediments or delays in those "movements" impact potential output, and hence revenues. Yet, en-route texting for the purpose of conducting motor carrier business is arguably a minor contributor to a carrier's overall productivity. Therefore, we apply a discount factor of 90% to that productivity proxy, whereby only 10% of driver time lost is considered in the calculation of the total cost of the rule.

Yet the loss of productivity due to the restriction on texting while driving a CMV is not expected to persist indefinitely- certainly not beyond the standard 10-year discounting horizon. Future technological innovations will present multiple alternatives for the use of the texting functionality. The transportation industry, in turn, will adopt these new innovations and thus gradually adjust to the loss in productivity. However, this technological impact on productivity will depend on many factors such as business operations, company size, cost structure and existing utilization of technology. FMCSA does not have sufficient and specific information on the manner and degree of industry adjustment to this texting restriction, nor does it have, for the purpose of this analysis, data on the projected technological changes in this area of communication. Therefore, the Agency proceeds with two approaches: (1) a standard 10-year discounting of the productivity loss variable (i.e., value of lost driver time), and (2) a 10% declining cost estimation whereby productivity loss variable is assumed to decline annually by 10%, along with the other two cost components: fuel usage and crash risk. The latter two components are correlated with the productivity loss component, in that productivity losses (or gains) are reflected in increased (or decreased) fuel usage and crash risk.

[18] Salaries, wages and fringes constitute 55.4% of carrier operating expenses (2006), American Trucking Associations' American Trucking Trends 2008-2009.

The first step in calculating the cost of lost productivity is therefore to estimate the amount of texting occurring throughout the year by CMV drivers. First, FMCSA estimated the number of trips during which texting on mobile phone devices occurs. FMCSA did not have a direct measure of the frequency of truck driver texting, so a proxy was constructed using crash data from the VTTI study. This frequency was estimated by the ratio of the number of crashes involving texting to the total number of crashes. Based on this data FMCSA estimated that texting on mobile phone devices occurred in approximately 0.20 percent of trips or about once every five hundred trips. The Agency estimates that there are approximately 4.033 million interstate CMV drivers with recent activity,[19] of which 3.780 million are involved in transporting property and 253 thousand transporting passengers. It is further estimated that a full-time property carrier driver will work 240 days per year.[20] Because some drivers make multiple trips in a day, the number of working days would underestimate the number of trips. However, a fraction of the 3.780 million property carrier drivers are not employed full-time. The net result is that it is likely that these drivers average fewer than 240 trips per year. Nevertheless, the Agency will use this 240-trip figure to estimate the number of trips conducted each year because it can be associated with an upper bound for the cost estimate of this rule.

For passenger carrier drivers, the Agency assumes an average of 208 days (or trips) per year because of the greater use of part-time drivers. As a result, it is estimated that property carriers conduct 907.200 million trips per year (3,780,000 × 240 = 907,200,000), and passenger carriers conduct 52.624 million trips per year (253,000 × 208 = 52,624,000), for a total estimate of 959.824 million trips per year by interstate CMVs. Applying the texting rate of 0.20 percent to both property and passenger carrier driver populations, texting on mobile phone devices is estimated to be occurring on 1.920 million trips annually; 1.814 million by property carriers ((907,200,000 × 0.002 = 1,814,400) and 105 thousand by passenger carriers (52,624,000 × 0.0020 = 105,248).

[19] This estimate was a result of analysis by FMCSA based on June 2010 Motor Carrier Management Information System (MCMIS) data. Recent activity is determined by the carrier having had an inspection, reportable crash, compliance review, safety audit, a new or updated MCS 150 carrier registration, vehicle registration activity, or UCR payment within the last three years.
[20] See Information Collection Supporting Statement for Hours of Service of drivers (November 19, 2008, 73 FR 69567).

Next, FMCSA estimated the amount of texting that occurs annually on dispatching devices. In the VTTI study, a broad category of "interact with/ touch dispatching device" is the metric identifying use of dispatching devices. Recognizing that these devices perform multiple and various functions, FMCSA researched the extent to which texting is performed. The consensus among the motor carriers, device manufacturers and FMCSA field staff indicates that such use, as defined in this final rule, is infrequent. Therefore FMCSA concluded that an estimate of 5 percent[21] of the "interact with/touch dispatching device" metric would be reasonable and would fit the definition of texting as described in this final rule.

Applying the same methodology as the mobile phone device texting estimate(based on the ratio of the number of crashes involving the use of dispatching devices to the total number of crashes), FMCSA estimated that the activity of "interact with/touch dispatching device" occurred in approximately 1.1 percent of trips or about once in every hundred trips. Assuming 4.033 million drivers are using dispatching devices on 1.1 percent of 959.824 million trips annually, then the use of dispatching devices occurs during 10.558 million trips annually; 9.979 million by property carriers (907,200,000 × 0.011 = 9,979,200) and 579 thousand by passenger carriers. (52,624,000 × 0.011 = 578,864). As stated above, only a fraction of these interactions -estimated to be 5 percent- is texting, however. Adding the estimated 528,000 trips where texting on a dispatching device occurs ((9,979,200 × 0.05 = 498,960) + (578,864 × 0.05 = 28,943) = 527,903) to the estimated number of trips on which texting on mobile phones occurs (1.920 million) leads to a total of 2.448 million trips annually on which texting occurs.

Next, FMCSA estimated the maximum annual amount of time drivers spend driving to safe and permissible locations to park in order to send and receive text messages. Assuming an average additional driving distance of 1 mile per trip and an average speed of 40 miles per hour, a CMV driver will spend an additional .025 hours (1/40 or 1.5 minutes) driving in order to park. This amounts to an industry total of 61,200 hours (2.448 million trips x 0.025 hours).

Next, FMCSA estimated the average duration of texting per interaction. Text messages tend to be short and abbreviated and can often be entered and sent in less than a minute. Other types of

[21] FMCSA conducted a sensitivity analysis using the following alternative percentages: 1 percent and 10 percent. The results are summarized in Appendix A.

texting covered by this restriction, such as e-mailing, however, may consume more time. Moreover, drivers who engage in texting will likely do so multiple times while driving. The Agency assumes that a driver on average spends 2 minutes per trip engaged in texting.

Therefore, the Agency estimates the maximum aggregate annual amount of time drivers send and receive text messages to be 142,800 hours. This is the sum of both the time spent texting [(2,448,000 trips × 2 minutes) ÷ 60 minutes per hour = 81,600] plus the time spent driving to a suitable location [(2,448,800 trips x 1.50 minutes)/60 minutes per hour = 61,200][22].

The next step for calculating the cost of lost productivity is to estimate the value of driver time. The median wage for drivers of medium and heavy vehicles is $18.79 per hour.[23] There is some variation in wages among drivers of different types of vehicles; therefore, the Agency uses a figure of $18 per hour in this analysis. The estimate of the annual cost of time accumulated by drivers due to the texting restriction is calculated to be $2.570 million [142,800 hours × $18/hour = $2,570,400)]. Reducing this productivity estimate down to 10% yields $ 257,040 ($2,570,400 x 0.10) or $0.257 million.

The productivity losses, as well as other costs, were estimated for only one year, as the entire threshold analysis was performed as an undiscounted annual estimation. The loss of productivity is expected to diminish, (but not necessarily vanish within one year), as the motor carrier industry adjusts to the texting restriction and as new (permissible) technologies arise that compensate for the loss of the texting functionality. FMCSA is unaware of the specific future technologies that might arise, but we continue to research and monitor technological changes in the market.

(b) Cost of Increased Fuel Usage Due to Trucks Idling and Exiting and Entering the Travel Lanes of the Roadway

[22] Hours are rounded to the nearest hundred.
[23] Bureau of Labor Statistics, Occupational Employment Statistics, May 2008. Figure is for Standard Occupational Classification code 53-3032, Truck Drivers, Heavy and Tractor-Trailer for North American Industry Classification System code 484000, Truck Transportation. See http://www.bls.gov/oes/2008/may/naics3_484000.htm#b53-0000, accessed 16 November 2009.

To comply with the texting restriction, some CMV drivers may opt to temporarily park their vehicles on the sides of roadways to send or read text messages. Generally, there are state, city, and local restrictions on where and when a CMV is permitted to park. FMCSA assumes that CMV drivers will obey and adhere to all applicable State and government laws in this regard.

The analysis estimates the cost of increased fuel usage due to trucks being parked on the side of the roadway. If drivers opt to read and send text messages, but do so while being pulled over to the side of the roadway, or at other safe legally permissible places, one can estimate the maximum engine idle-time emissions that could be produced by this rule. For short texting messages, FMCSA assumes that most drivers, if not all, will idle their trucks while performing texting tasks. If drivers pull over to the side of the road or pull off the highway, additional fuel is burned exiting and returning to the roadway.

Based on the analysis in the Environmental Assessment, FMCSA uses an estimate of 0.8 gallons of fuel burned in a large truck or bus per hour of idling.[24] It is estimated above that drivers will spend a total of 81,600 hour texting while pulled off the roadway. The Agency estimated that the average text communications will last 2 minutes, during which the driver will idle the engine while conducting the texting. Fuel consumption while idling is therefore estimated at 65,280 gallons (81,600 hours × 0.8 gallons/hour = 65,280 gallons).

In addition, drivers may travel extra distances to arrive at a safe place to text, or they may pull over to the side of the road where legally permitted. As stated above, FMCSA estimates that, on average, a distance of 1 mile will be travelled to reach a location to park and send/receive text messages. Truck fuel efficiency varies, but it is generally between 5 and 10 miles per gallon, so an average of 7.5 miles per gallon (0.13 gallons per mile) is used in this analysis. Motorcoach fuel efficiency is estimated to be 6 miles per gallon (or 0.17 gallons per mile).[25] Property carriers are estimated to conduct 2.313 million texting sessions per year using either mobile phones or dispatch devices (1,814,000 + 499,000 = 2,313,000). Using a distance of 1 mile per session and

[24] EPA's Smartway at http://www.epa.gov/smartway/transport/documents/tech/idling-reduction.pdf, last accessed November 25, 20009.
[25] Based on a study performed for the American Bus Association in 2006 (ABA 2006) indicating average fuel efficiency of a motorcoach which can carry 30 or more passengers.

7.5 miles per gallon, property carriers will consume an additional 300,690 gallons of fuel (2,313,000 × 0.13 = 300,690). Similarly, passenger carriers are estimated to conduct 135,000 texting sessions (106,000 + 29,000 = 135,000), and will also travel a distance of 1 mile but at a rate of 6 miles per gallon. Therefore, passenger carriers will consume an additional 22,950 gallons of fuel (135,000 × 0.17 = 22,950).

If Option 1 of this rule causes drivers of CMVs to idle their vehicles while texting and to drive an additional 1 mile to an appropriate location from which to text, a total of 388,920 additional gallons of diesel fuel would be consumed because of this rule. If the current price of a gallon of diesel fuel of $2.924[26] is applied, the cost of this increase in fuel usage amounts to $1.137 million (388,920 × 2.924 = $1,137,202).

(c) Cost of Increased Crash Risk Due to CMVs Parking and Exiting and Entering the Travel Lanes of the Roadway

The Agency examined the potential increase in crashes due to the increased frequency of trucks and buses pulling into and out of the travel lanes of a roadway in order to conduct texting activities. Data gathered and analyzed by FMCSA show that such crashes are rare, in terms of total vehicle miles traveled, and are overwhelmingly property-damage-only (PDO) crashes.

FMCSA compiled the weighted crash estimates from NHTSA's 2008 General Estimate System (GES) dataset. Table 2 below presents crashes in which a truck is leaving a parked position, entering a parked position, or merging (not including lane changes) immediately prior to a crash.

Table 2
2008 FARS* and GES Truck Crash Data Estimate: Parking or Re-Entering Roadway

	Leaving Parked	Entering Parked	Merging	Totals
All	**1875**	**1352**	**1326**	**4,553**
Fatal	**0**	**0**	**0**	**0**
Injury	**9**	**29**	**181**	**219**
PDO[27]	**1609**	**1323**	**1145**	**4,077**

[26] US Department of Energy, Energy Information Administration @http://tonto.eia.doe.gov, accessed on 7/528/2010.
[27] PDO: Property Damage Only.

Unknown Severity	**257**	**0**	**0**	**257**

*Fatality Analysis Reporting System

In this Regulatory Evaluation, FMCSA estimated that interstate property- and passenger-carrying drivers make 959.824 million trips per year, and that texting occurs in 2.447 million of those trips. As shown in Table 2, large truck and bus crashes due to pulling into and out of a roadway occurred 4,553 times in 2008 based on Fatality Analysis Reporting System (FARS) and General Estimates System (GES) data. Because the crash data includes both interstate and intrastate crashes, and historically 62 percent of the reported crashes involve interstate carriers, the estimated number of annual crashes for vehicles in interstate operations is 2,823 (4,553 × 0.62 = 2,823). Therefore, it is assumed that the rate of these types of crashes is 0.0003 percent (2,823 crashes ÷ 959,824,000 total interstate trips × 100 = 0.00029 percent).

It is difficult to produce an exact estimate of how many crashes this rule will prevent. Therefore, FMCSA applies a threshold analysis to determine how many crashes the rule would have to prevent in order for the costs and benefits to break even. Assuming at worst that all 2.448 million texting trips will result in a driver pulling over, we would expect, at most, 7 additional crashes (0.0003% x 2.448million), most of which (90%) would be PDO crashes. A PDO crash costs approximately $17,000. If one allocates[28] the potential crashes between Injury (approximately valued at $331,000) and Unknown Injury Severity (approximately valued at $52,000), as 5 percent each, and PDO as 90 percent the cost of additional crashes occurring because of this rule would be $241 thousand ((7 × 0.9 × $17,000) + (7 × 0.05 × $331,000) + (7 × 0.05 × $52,000) = $241,150).

Total Cost of Option One (Rule)

The total cost of Option One is the sum of the value of driver time lost due to having to pull off the roadway to perform texting activities, increased fuel usage due to having to pull over to the side of the roadway or park at a safe permissible location, increased crash risk of possible rear-end collision of CMVs being parked off the roadway and of pulling into and out of roadway, and

[28] The weighted average crash rate using the three parameters descried in the text is $34,450.

the cost to the States (see the following section). In monetary terms, this amounts to the following (respectively): $257,000 + $1,137,000 + $241,000+ $2,200,000 = $ 3,800,000 (or approximately $3.8 million).

2.4 Estimated Costs to the States

As stated above, 30 States plus the District of Columbia, Guam and the Virgin Islands currently have rules prohibiting or restricting texting while driving. Clearly then, most States are aware of the severity of this problem and have already taken action to correct it. FMCSA does not presume to have knowledge of the likely specific approach of every State in responding to this rule, but it does find that its impact will not be too onerous or too costly. States happen to conduct the overwhelming majority of roadside inspections in the Nation.[29] Consequently, the addition of a texting restriction is not expected to necessitate making considerable new expenditures. Also, States already have various transportation safety programs that cover a wide variety of CMV driver activities. The texting restriction component, if not already included, is only an additional one.

Adding texting while driving as a new a serious traffic violation to Table 2 of 49 CFR § 383.51(c) would essentially amount to adding a new code to the American Association of Motor Vehicle Administrators (AAMVA)[30] code dictionary (ACD) for the CDL Information System (CDLIS). Adding a penalty to the restriction may necessitate taking legislative or administrative action on the part of the States — the cost and duration of which would vary by State. From the perspective of AAMVA,[31] adding a new ACD code would require incurring a one-time cost of approximately $40,000 per State,[32] which would include costs for documentation updates, development, testing, and State test planning. The average cost estimate for testing is $4,000 per State.[33] Assuming testing for all 50 States plus the District of Columbia, the total cost of a new code is estimated to be approximately $2,244,000 ($204,000 + $2,040,000).

[29] In fiscal year 2009, States performed 97 percent of roadside inspections of trucks, and 83 percent of roadside inspections of buses (FMCSA Motor Carrier Safety Progress Report, as of June 30, 2009).
[30] The American Association of Motor Vehicle Administrators is a tax-exempt, nonprofit organization developing model programs in motor vehicle administration, law enforcement and highway safety.
[31] The inclusion of these cost estimates is provided for the sake of exposition.
[32] Email correspondence, December 2009.
[33] This cost estimate assumes CDLIS modernization; otherwise an additional cost of $3,000-$4,000 per State will be incurred.

States are responsible for adopting compatible State rules within three years of the date of the final rule. Because States perform the overwhelming majority of commercial vehicle roadside inspections and perform all traffic stops, enforcement of the final rule would be carried out primarily by the States. The requirement for States to adopt and enforce compatible rules does not, in and of itself, establish enforcement priorities for States. Each year, States submit to FMCSA a Commercial Vehicle Safety Plan (CVSP) in which the States set safety performance goals and priorities. Therefore, FMCSA assumes that the adoption of compatible State rules would not necessarily result in increased enforcement costs. The States would include enforcement of a texting ban in their CVSPs as warranted by their analysis of truck and bus crash data, but they would not be required to prioritize enforcement based solely on the issuance of this rule. States that currently have texting prohibitions may not incur much in costs, whereas states that do not may have to allocate new resources and undertake new expenses. FMCSA did not quantify additional costs that these states might bear as a result of this rule. Participating States may use MCSAP grant money for enforcement of this rule.

2.5 Threshold Analysis

Currently, FMCSA does not have sufficient data that show a significant empirical link between texting while driving by CMV drivers and CMV crashes. Therefore, the Agency exercised its professional judgment consistent with Office of Management and Budget Circular A-4 ("Regulatory Analysis") and conducted a threshold analysis. While the VTTI study found a large number of occurrences of unsafe driving behavior when CMV drivers were texting, relative to when they are not, it did not observe any texting-related crashes. The study did show there were 31 safety critical events related to texting. However, the Agency believes that the low cost of the texting restriction requires a quite modest improvement in safety for the rule to break even, that is, for safety benefits to equal or exceed costs. This assessment does not consider the potential benefits of the disqualifications for CDL and non-CDL drivers because it cannot reliably estimate how many will occur.

The Agency estimates that this rule will cost $3.8 million annually. Additionally, it found no significant increase in crash risk associated with drivers' strategies for complying with the rule. Current guidance from OST places the value of a statistical life at $6.0 million. Consequently, the texting restriction would have to eliminate at most one fatality every year for the benefits of this rule to exceed the costs.

The Agency further estimated the discounted costs (and benefits) of this rule. The results are summarized in the next five tables below. The 10-year discounted total costs (assuming constant cost values) are $$13,553,237 (Table 3) using a 3% discount rate and $$11,888,364 (Table 4) using a 7% discount rate. The 10-year discounted total costs (assuming a declining 10% cost for each of the three cost components) are $9,593,262 (Table 5) using a 3% discount rate, and $8,466,819 (Table 6) using a 7% discount rate.

Table 3- Estimated Discounted Costs of the Rule- 3% Discount Rate

Year	Productivity Loss	Increased Fuel Usage	Additional Crashes
1*	$257,000	$1,137,000	$241,000
2	$249,515	$1,103,883	$225,234
3	$242,247	$1,071,732	$210,499

4	$235,191	$1,040,516	$196,728
5	$228,341	$1,010,210	$183,858
6	$221,690	$980,786	$171,830
7	$215,233	$952,220	$160,588
8	$208,965	$924,485	$150,083
9	$202,878	$897,558	$140,264
10	$196,969	$871,416	$131,088
Total	$2,258,030	$9,989,806	$1,305,401
10-Year Total: $$13,553,237			

*An estimated one-time cost to the States, equaling $2.24 million, is incurred.

Table 4- Estimated Discounted Costs of the Rule-7% Discount Rate

Year	Productivity Loss	Increased Fuel Usage	Additional Crashes
1*	$257,000	$1,137,000	$241,000
2	$240,187	$1,062,617	$210,499
3	$224,474	$993,100	$183,858
4	$209,789	$928,131	$160,588
5	$196,064	$867,412	$140,264
6	$183,237	$810,665	$122,512
7	$171,250	$757,631	$107,007
8	$160,047	$708,066	$93,464
9	$149,576	$661,744	$81,635
10	$139,791	$618,453	$71,303
Total	$1,931,415	$8,544,819	$1,412,130
10-Year Total: $$11,888,364			

*An estimated one-time cost to the States, equaling $2.24 million, is incurred.

Table 5- Estimated Discounted Costs of the Rule- 3% Discount Rate
Declining Annual Costs (10%)

Year	Productivity Loss	Increased Fuel Usage	Additional Crashes
1*	$257,000	$1,137,000	$241,000
2	$224,563	$993,495	$210,583
3	$196,220	$868,103	$184,004
4	$171,455	$758,536	$160,780
5	$149,815	$662,799	$140,488
6	$130,906	$579,144	$122,756
7	$114,384	$506,049	$107,263
8	$99,947	$442,178	$93,725
9	$87,332	$386,369	$81,895
10	$76,310	$337,604	$71,559

Total	$1,507,932	$6,671,278	$1,414,053
10-Year Total: $9,593,262			

*An estimated one-time cost to the States, equaling $2.24 million, is incurred.

Table 6- Estimated Discounted Costs of the Rule- 7% Discount Rate
Declining Annual Costs (10%)

Year	Productivity Loss	Increased Fuel Usage	Additional Crashes
1*	$257,000	$1,137,000	$241,000
2	$216,168	$956,355	$202,710
3	$181,824	$804,411	$170,504
4	$152,936	$676,607	$143,415
5	$128,638	$569,109	$120,629
6	$108,200	$478,690	$101,464
7	$91,009	$402,636	$85,343
8	$76,550	$338,666	$71,784
9	$64,388	$284,859	$60,379
10	$54,158	$239,601	$50,786
Total	$1,330,870	$5,887,935	$1,248,014
10-Year Total: $8,466,819			

*An estimated one-time cost to the States, equaling $2.24 million, is incurred.

The projected benefits, in this case, are simply the discounted values of the value of statistical life (VSL) which serves, in this threshold analysis, as a point of reference and valuation in comparison with the projected discounted costs. The results of are summarized in Table 7 below. The estimated 10-year discounted benefit of a $6-million VSL is $52,716,654 using a 3% discount rate and $45,091,393 using a 7% discount rate.

Table 7- Estimated Discounted Benefits (10-Year Period)-3% and 7% Discount Rates

Year	VSL	3%	7%
1	$6,000,000	$6,000,000	$6,000,000
2	$6,000,000	$5,825,243	$5,607,477
3	$6,000,000	$5,655,575	$5,240,632
4	$6,000,000	$5,490,850	$4,897,787
5	$6,000,000	$5,330,922	$4,577,371
6	$6,000,000	$5,175,653	$4,277,917
7	$6,000,000	$5,024,906	$3,998,053
8	$6,000,000	$4,878,549	$3,736,498
9	$6,000,000	$4,736,455	$3,492,055

10	$6,000,000	$4,598,500	$3,263,602
Total		$52,716,654	$45,091,393

Estimated Net Benefits of the Rule

The estimated 10-year net benefits of the rule are summarized below. The net benefits are positive under all scenarios.

Table 6- Estimated 10-Year Net Benefits of the Rule

Constant Costs		
	3% Discount Rate	7% Discount Rate
Costs*	$15.7 m	$14.0 m
Benefits**	$52.7 m	$45.0 m
Net Benefits	$37.0 m	$31.0 m
Declining Costs		
Costs*	$11.7 m	$10.6 m
Benefits**	$52.7 m	$45.0 m
Net Benefits	$41.0 m	$34.4 m

*Cost components (productivity loss; fuel usage; and increased crashes) are assumed to decline annually by 10%.
**$6 million VSL

As noted, many States have already implemented texting restrictions, which have varying degrees of enforcement and compliance. Given that some drivers are already operating under a texting restriction and have modified their behaviors accordingly, the already low costs of FMCSA's rule may be even lower. Even without considering the cost of compliance with the rule, the Agency believes that the net safety benefits of a texting restriction are evident.

3. Regulatory Flexibility Analysis

The Regulatory Flexibility Act of 1980 (5 U.S.C. 601-612) requires Federal agencies to consider

the effects of the regulatory action on small business and other small entities and to minimize any significant economic impact. The term "small entities" comprises small businesses and not-for-profit organizations that are independently owned and operated and are not dominant in their fields, and governmental jurisdictions with populations of less than 50,000. DOT policy also requires an analysis of the impact of all regulations on small entities, and mandates that agencies strive to lessen any adverse effects on these businesses.

FMCSA has conducted an economic analysis of the impact of this rule on small entities and certifies that a Regulatory Flexibility Analysis is not necessary because the rule will not have a significant economic impact on a substantial number of small entities subject to the requirements of this rule. This rulemaking will affect all of the approximately 493,480 [34] small entities. However, the direct costs of this rule that small entities may incur are only expected to be minimal. They consist of the costs of lost productivity from foregoing texting while on-duty and fuel usage costs for pulling to the side of the road to idle the truck or passenger-carrying vehicle and send or receive a text message. The majority of motor carriers are small entities. Therefore, FMCSA will use the total cost of the rule in the first year ($3.8 million) applied to the number of small entities (493,480) as a worse case evaluation which would average $7.7 per carrier. In subsequent years, the cost of the rule per carrier is estimated to be $3.3.

[34] This number represents 99% of 498,465, the current number of interstate motor carriers with recent activity (source: MCMIS data 6/17/2010).

Appendix A— Sensitivity Analysis

FMCSA conducted a sensitivity analysis whereby the estimate of "interact with/touch dispatching device" metric, a proxy for texting, is varied. The Agency considered 1% of all interactions with dispatching devices and 10%. The results affect the estimation of costs, as summarized below. A 1% estimate leads to an annual total cost of the rule of approximately $1.4 million, whereas a 10% estimate leads to an annual total cost of approximately $2 million.

	Productivity Loss	Fuel Usage	Crash Risk	Total Cost*
1%	$212,000	$940,000	$207,000	$1,359,000
5%	$257,000	$1,137,000	$241,000	$1,635,000
10%	$312,000	$1,382,000	$310,000	$2,004,000

***An estimated one-time cost the States, equaling $2,240,000, would be incurred in the first year of each scenario.**