

Motor Vehicle Crash Analysis Project Final Report

**Prepared by Middlesex
Community College Service -
Learning Students Introduction
to Criminal Justice Course
for the
Bedford Police Department**

INTRODUCTION:

One of the many public safety functions of a police department includes taking appropriate actions to make the roads safer for drivers and pedestrians. The Bedford, Massachusetts Police Department would like to improve driver safety by reducing the number of accidents along what is known as “The Great Road”, a very busy stretch of road from RT 128, to the center of Bedford. The central issue to be examined and evaluated in this project was distracted driving caused by several factors including cell phones, food/drink, grooming, electronics, reading, passenger interaction, and other.

Distracted driving is a widespread problem in America and is defined as any activity that could divert a person’s attention away from the primary task of driving. *All* distractions endanger driver, passenger, and bystander safety. But, because text messaging requires visual, manual, and cognitive/mental attention from the driver, it is by far the most alarming distraction.

The number of people killed in distraction – affected crashes decreased slightly from 3,360 in 2011 to 3,328 in 2012.¹

An estimated 421,000 people were injured in motor vehicle crashes involving a distracted driver in 2012. This was a nine percent increase from the estimated 387,000 people injured in 2011.² As of December 2012, 171.3 billion text messages were sent in the US every month.³

11% of all drivers under the age of 20 involved in fatal crashes were reported as distracted at the time of the crash. This age group has the largest proportion of drivers who were distracted.⁴ For drivers 15 – 19 years old, involved in fatal crashes, 21 percent of the distracted drivers were distracted by the use of cell phones.⁵

At any given daylight moment across America, approximately 660,000 drivers are using cell phones or manipulating electronic devices while driving, a number that has held steady since 2010.⁶

Sending or receiving a text takes a driver’s eyes from the road for an average of 4.6 seconds, the equivalent – at 55 mph – of driving the length of an entire football field, blind.⁷

This report, and the information contained within about the project, is important for the Bedford Police Department to first, examine the problem of distracted driving on a national and local level, and secondly, to develop strategies to reduce accidents caused by distracted driving.

¹ “What is Distracted Driving”, (2013), [<http://www.distraction.gov/content/get-the-facts/facts-and-statistics.html>]

² “What is Distracted Driving”, (2013), [<http://www.distraction.gov/content/get-the-facts/facts-and-statistics.html>]

³ “Wireless Quick Facts”, (2012), [<http://www.ctia.org/advocacy/research/index.cfm/aid/10323>]

⁴ “What is Distracted Driving”, (2013), [<http://www.distraction.gov/content/get-the-facts/facts-and-statistics.html>]

⁵ “Traffic Safety Facts Research Note Distracted Driving 2011”, (2013), [<http://www-nrd.nhtsa.dot.gov/Pubs/811737.pdf>]

⁶ “Traffic Safety Facts Research Note Driver Electronic Device Use 2011”, (2013), [<http://www-nrd.nhtsa.dot.gov/Pubs/811719.pdf>]

⁷ “Driver Distraction in Commercial Vehicle Operations”, (2009), [<http://www.distraction.gov/research/PDF-Files/Driver-Distraction-Commercial-Vehicle-Operations.pdf>]

Hopefully, these actions will result in safer driving along the “Great Road” which ultimately benefits the entire Bedford, Massachusetts community.

The project’s report will be organized into sections including methods (how the data was obtained), results (the actual data collected), conclusion (an interpretation of the data or what the data is telling us), and recommendations (actions to be taken based on the conclusions of the report).

METHODS:

The data on distracted driving was obtained by students from Middlesex Community College in an Introduction to Criminal Justice course, using two methods; field observation and review of past accident reports from the Bedford Police Department. Students were required to do one hour of field observation and one hour of reviewing past accident reports over a three week period starting September 23 and ending October 11, 2013.

The collection of data from field work consisted of students observing drivers during specific times (7am to 9am and 4pm to 6pm) at the following locations:

Great Road at Elm Street-East bound traffic in the morning/West bound traffic in the afternoon;

Great Road at South Road- East bound traffic in the morning/West bound traffic in the afternoon;

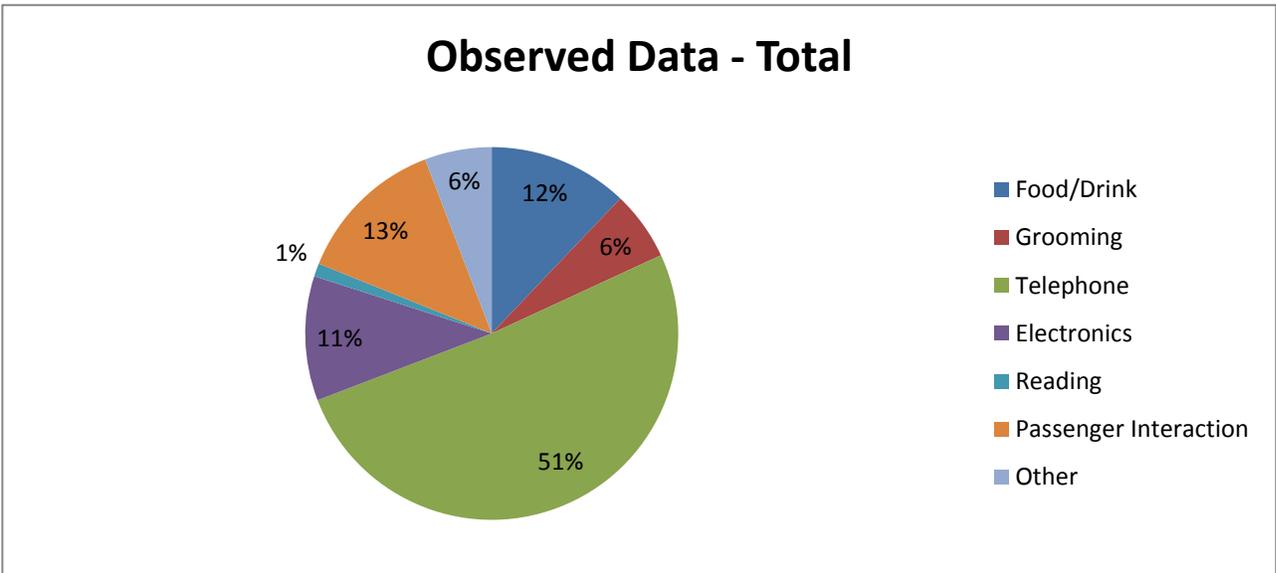
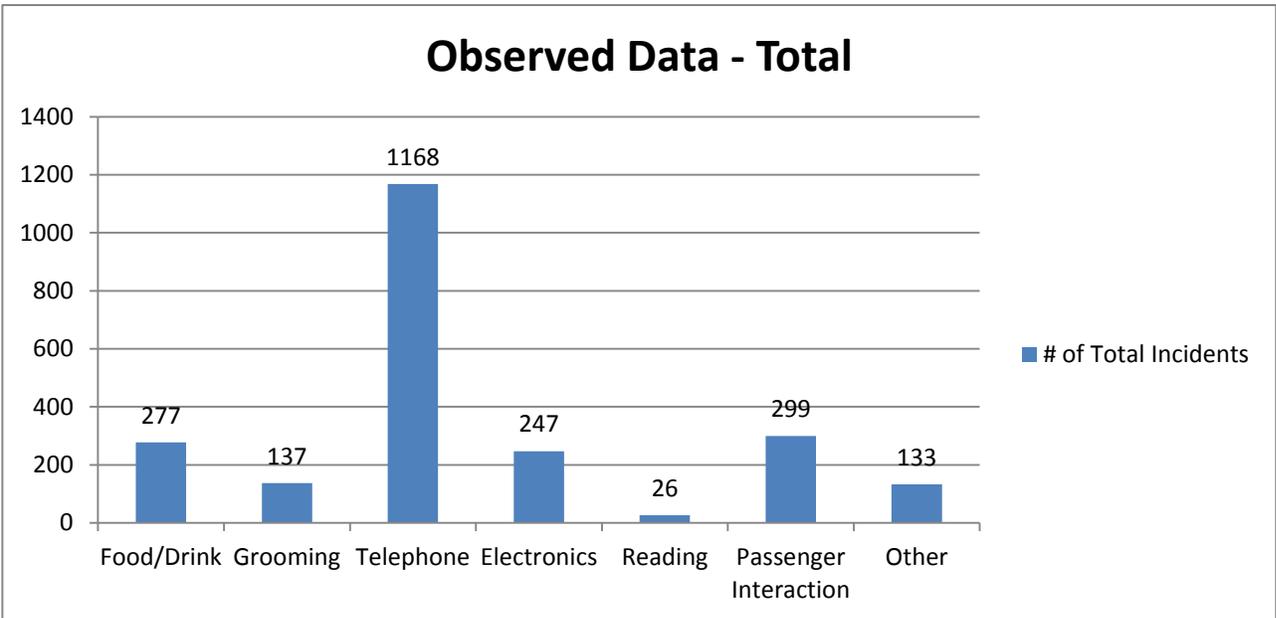
Great Road at Marsardis Road- West bound traffic in the morning or afternoon

Students doing their one hour of field work observed and noted down drivers who were distracted on a field observation report form created by Lt. Graham of the Bedford Police Department. The distractor categories included food/drink, grooming, cell phone, electronics (radio/GPS/video/mp3, etc.), reading, passenger interaction, and other.

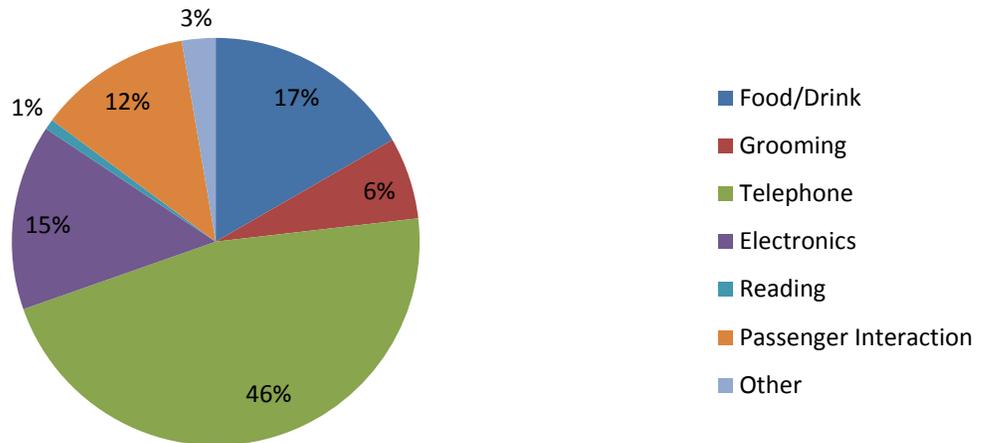
The review of past accident reports by students from the computer files of the Bedford Police Department, was done over a three week period starting September 23 and ending October 11, 2013. Data was obtained from the review of police crash reports and included the years 2011, 2012, and 2013. Students read the reports and assigned a driver contributing code from the Commonwealth of Massachusetts Motor Vehicle Crash Report that related to the cause of the accident.

RESULTS:

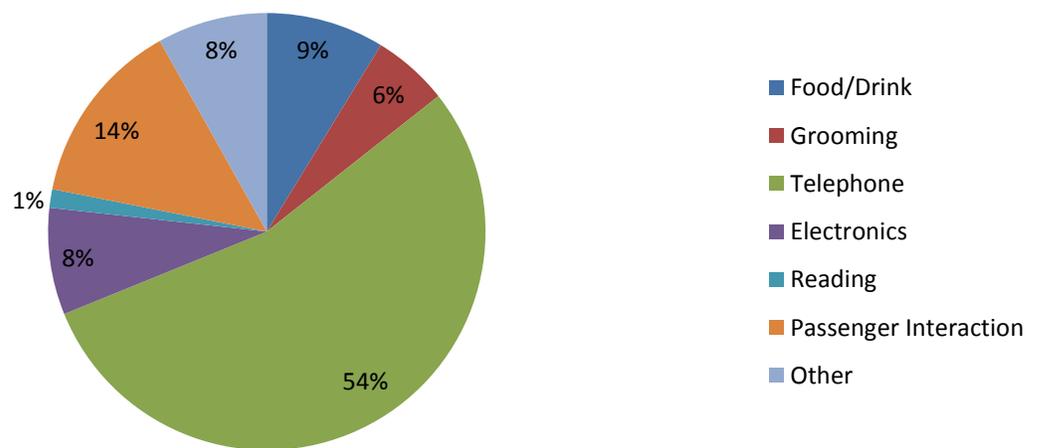
The raw data results from the field observation work done by students are as follows:



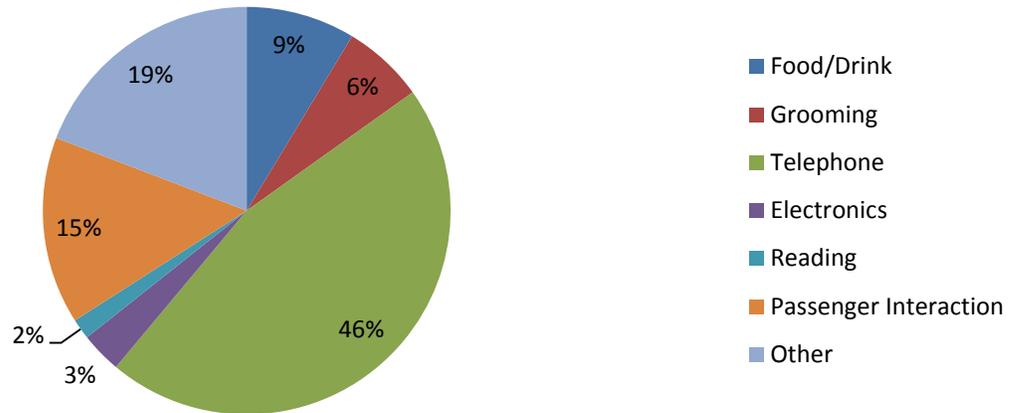
Observed Data - Morning



Observed Data - Afternoon & Evening



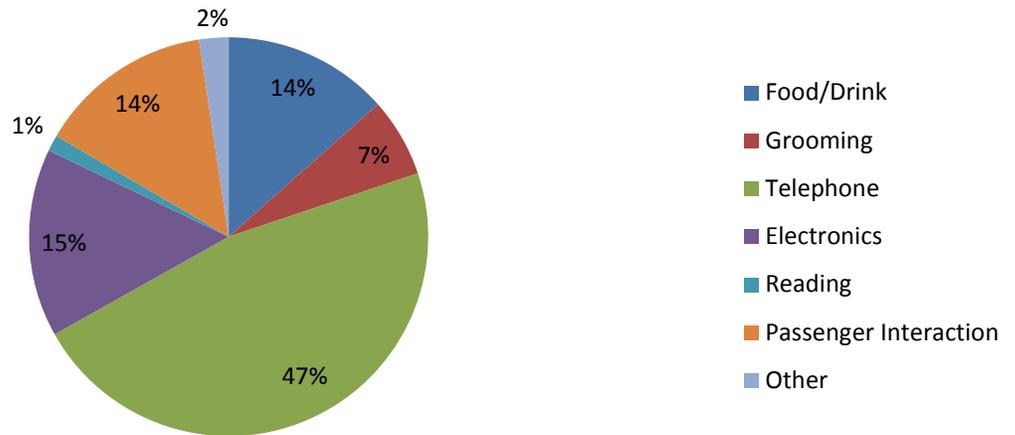
Observed Data - Great Rd & South



Great Rd & South

	4-5pm	5-6pm	Total
Food/Drink	17	15	32
Grooming	7	17	24
Telephone	119	51	170
Electronics	5	7	12
Reading	1	5	6
Passenger Interaction	38	17	55
Other	44	27	71
Total	231	139	370

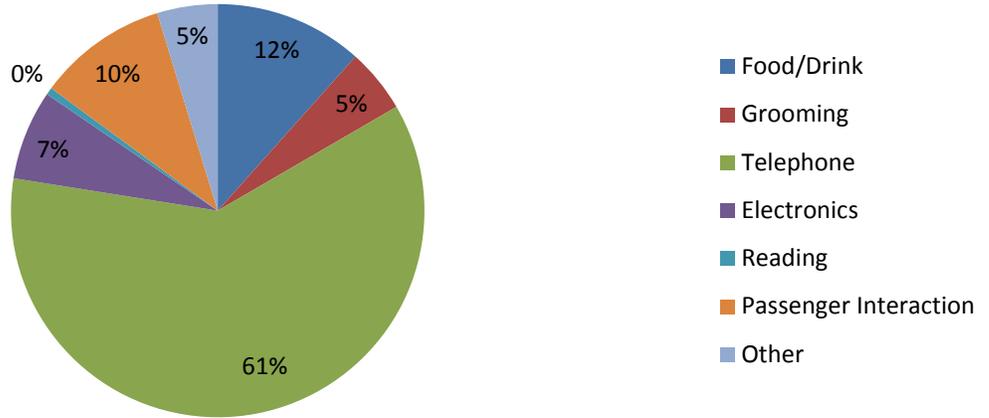
Observed Data - Great Rd & Elm



Great Rd & Elm

	7am-8am	8am-9am	9am-10am	4pm-5pm	5pm-6pm	Total
Food/Drink	48	54	5	51	6	164
Grooming	21	28	4	20	5	78
Telephone	115	200	14	196	48	573
Electronics	73	63	5	34	11	186
Reading	2	5	0	7	2	16
Passenger Interaction	19	83	7	49	15	173
Other	14	6	0	9	0	29
Total	292	439	35	366	87	1219

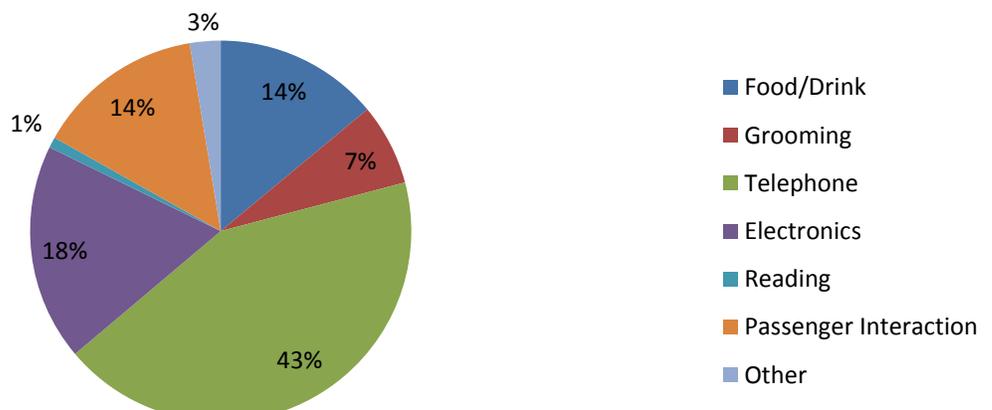
Observed Data - Great Rd & Marsardis



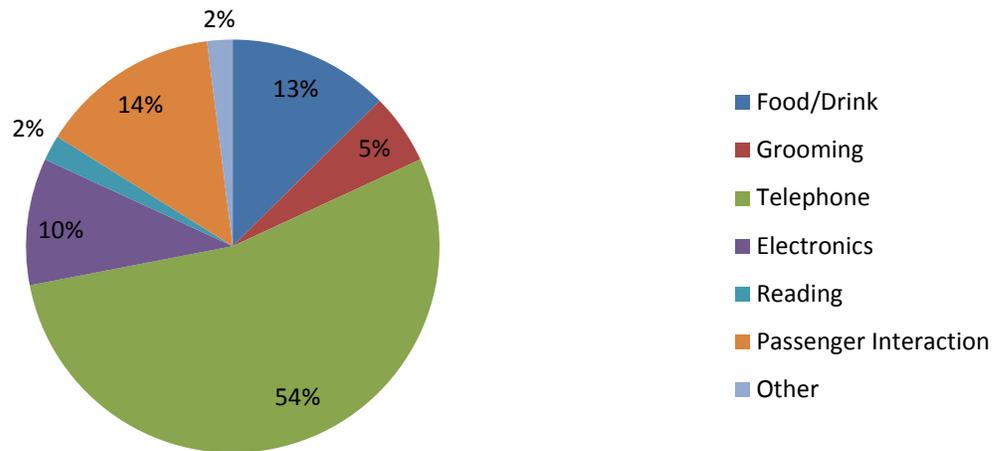
Great Rd & Marsardis

	8am-9am	2:30pm-4:30pm	4pm-5pm	Total
Food/Drink	55	18	8	81
Grooming	10	7	18	35
Telephone	122	176	127	425
Electronics	2	35	12	49
Reading	1	0	3	4
Passenger Interaction	9	29	33	71
Other	6	21	6	33
Total	205	286	207	698

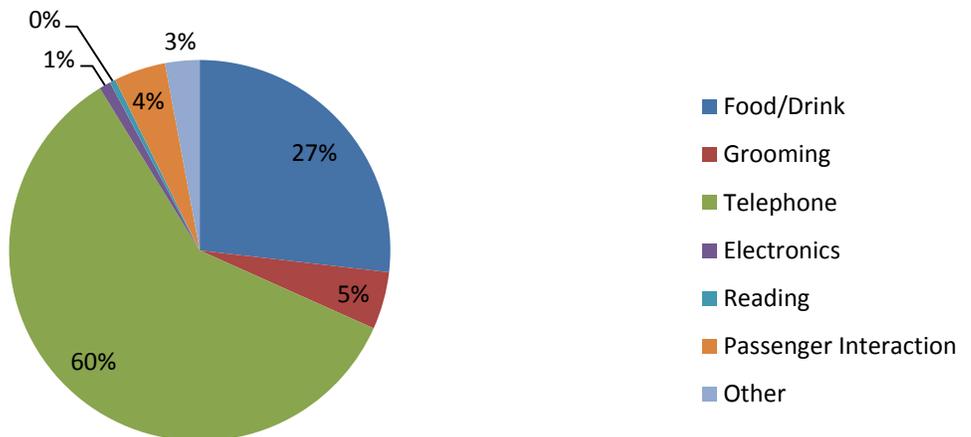
Observed Data: Great Road & Elm - Morning



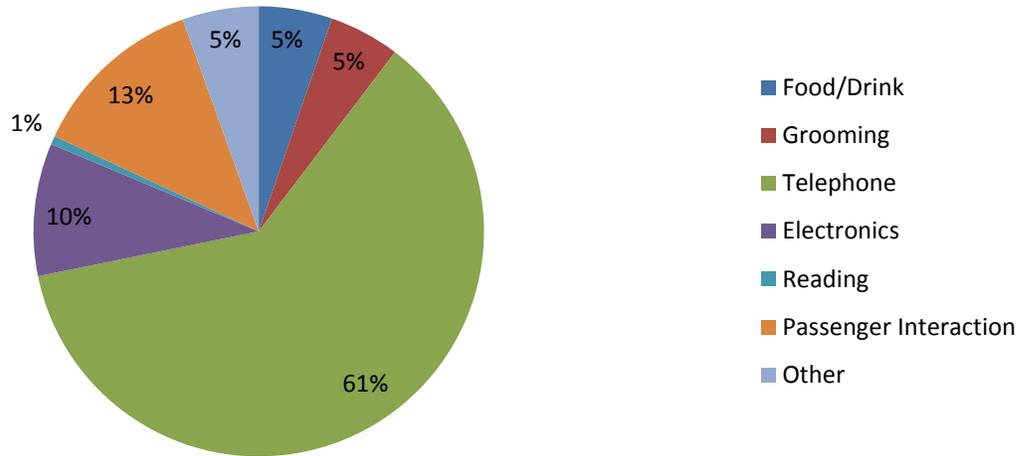
Observed Data - Great Road & Elm - Afternoon



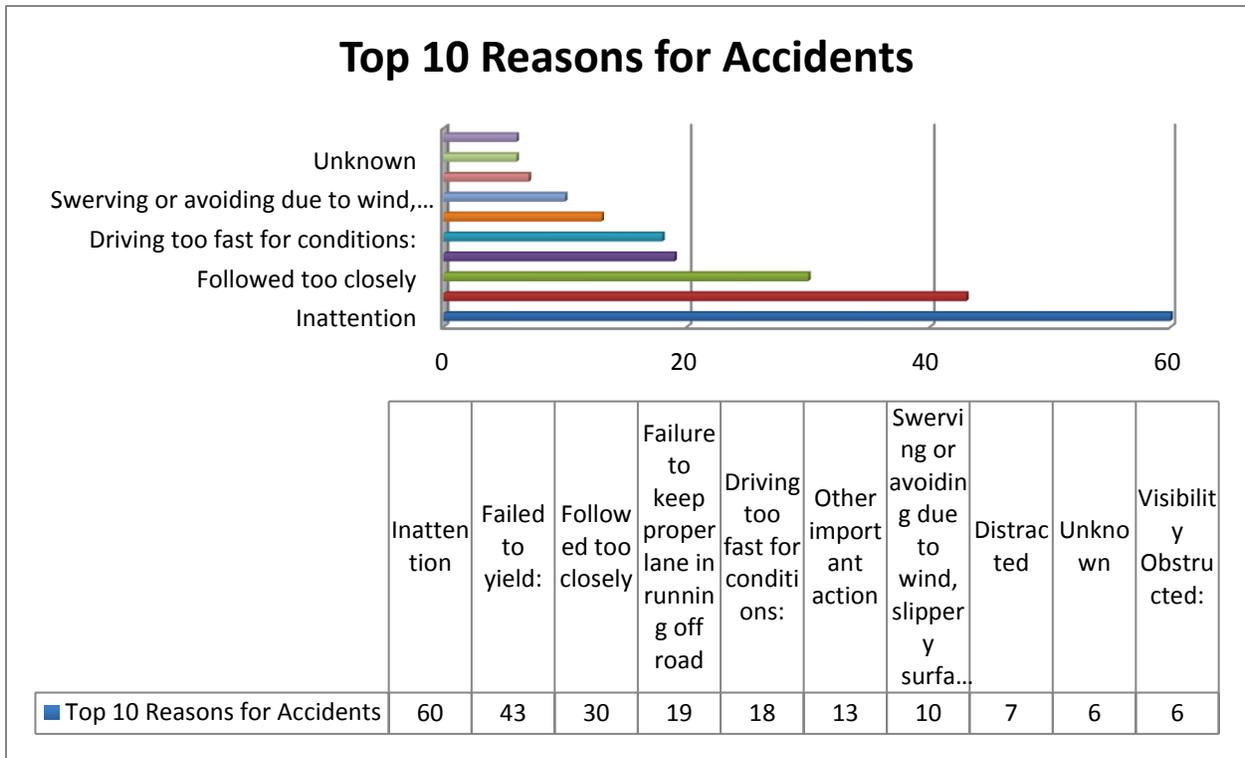
Observed Data: Great Rd & Marsardis - Morning



Observed Data: Great Rd & Marsardis - Afternoon & Evening



The raw data results from the review of past accident reports work done by students are as follows:



Reasons for Accidents

Inattention	60
Failed to yield:	43
Followed too closely	30
Failure to keep proper lane in running off road	19
Driving too fast for conditions:	18
Other important action	13
Swerving or avoiding due to wind, slippery surface, vehicle object, non-motorist in roadway, etc	10
Distracted	7
Unknown	6
Visibility Obstructed:	6
Fatigued/ asleep	4

Operating vehicle in erratic, reckless, careless, negligent or aggressive manner	4
Over-correcting/ over-steering	4
Physical impairment	3
Disregarded traffic signs, signals and markings	2
Glare	2
On-board navigation system	2
Exceeded authorized speed limit:	1
Illness	1
Wrong side or wrong way:	1

CONCLUSION:

In examining the data from the field observation work we have to interpret and explain what the data is telling us about the categories listed in this study (food/drink, grooming, telephone, electronics, reading, passenger interaction, and other) as factors contributing to distracted driving.

- **Great Road at South Road:** The data obtained at this location was only in the afternoon hours between 4pm and 5pm and 5pm and 6pm. **The highest number of occurrences (170) among the distracted driving categories overall was the telephone.** The data collected between 4pm and 5pm shows that the telephone category had the highest number of occurrences (**119**) when compared to the other categories of distractors. The category of reading had the lowest number of occurrences.

The data collected between 5pm and 6pm had similar results with the telephone category revealing the highest number of occurrences (**51**) while the reading category had the lowest number of occurrences. It is interesting to note that although the telephone distractor category had the highest number of occurrences in both time frames, the number of occurrences in the 5pm to 6pm time frame was considerably less than the 4pm to 5pm time frame.

Ranking in order of occurrences by category

Telephone: 170

Other: 71

Passenger Interaction: 55

Food/Drink: 32

Grooming: 24

Electronics: 12

Reading: 6

- **Great Road at Elm Street:** The data obtained at this location was during the hours of 7am and 10am and 4pm and 6pm. **The highest number of occurrences (573) among the distracted driving categories overall was the telephone.** The data obtained in the morning hours between 7am and 10am clearly shows the telephone category having the highest number of occurrences when compared to the other distracted driving categories, with the 8am to 9am hour much higher (**200**) than the 7am to 8am hour (**115**).

The data obtained in the afternoon hours between 4pm to 6pm revealed the telephone category as having the highest number of occurrences when compared to the other distracted driving categories, with the 4pm to 5pm hour much higher (**196**) than from 5pm to 6pm (**48**).

Ranking in order of occurrences by category

Telephone: 573

Electronics: 186

Passenger Interaction: 173

Food/drink: 164

Grooming: 78

Other: 29

Reading: 16

- **Great Road at Marsardis Road:** The data obtained at this location was during the hours of 8am to 9am and 2:30 pm to 5pm. **The highest number of occurrences (425) among the distracted driving categories overall was the telephone.** The data obtained in the morning hour showed the telephone category as having the highest number of occurrences (**122**) when compared to the other distracted driving categories.

The data obtained in the afternoon hours between 2:30pm and 5pm showed the telephone distracted driving category as having the highest number of occurrences (**303**) when compared to the other distracted driving categories.

Ranking in order of occurrences by category

Telephone: 425

Food/Drink: 81

Passenger Interaction: 71

Electronics: 49

Grooming: 35

Other: 33

Reading: 4

In examining the data from the review of crash reports from years 2011, 2012, and 2013, the top ten (10) driver contributing codes from the Commonwealth of Massachusetts Motor Vehicle Crash Report will be listed as causes of accidents and ranked according to number of occurrences.

Inattention	60
Failed to yield:	43
Followed too closely	30
Failure to keep proper lane in running off road	19
Driving too fast for conditions:	18
Other important action	13
Swerving or avoiding due to wind, slippery surface, vehicle object, non-motorist in roadway, etc	10
Distracted	7
Unknown	6
Visibility Obstructed:	6

Note: Although inattention and distracted are somewhat related, it is not known if inattention and being distracted was specifically related to the use of cell phones or some other factors that caused the inattention or distraction.

The data from the field observation work shows that the distracted driving category of using the telephone (cell phone) while operating a motor vehicle far surpasses the other categories in numbers of observed occurrences. The data from the review of crash reports shows inattention (caused by an unknown distraction) as the category with the highest number of occurrences.

RECOMMENDATIONS:

The recommendations to the Bedford Police Department in addressing the issue of distracted driving along the Great Road in Bedford, Massachusetts will be based on the data interpretation contained in the conclusion section of this report, and on information, suggested best practices, and recommendations from CTIA-The International Association for the Wireless Telecommunications Industry, the National Occupant Protection Use Survey, the National Highway Transportation Safety Administration, Distracted .Gov- the official U.S. Government website for distracted driving supported by the U.S. Department of Transportation and the National Highway Transportation Safety Administration, the Governor's Highway Safety Administration, and the Boston Globe.

Before recommendations are made, it is necessary to point out various research (limited) and programs that focused on reducing distracted driving by the use of cell phones. These efforts have shown some positive results in reducing handheld cell phone use and texting, while other initiatives need further evaluation on their effectiveness.

Recent limited research (2011) from the National Highway Transportation Safety Administration has shown dramatic reductions in distracted driving in Syracuse, New York, and Hartford, Connecticut, after two pilot projects measured the effect of increased law enforcement coupled with high-profile public education campaigns.

During four periods of stepped up enforcement over the past year, Syracuse police issued 9,587 citations for driver violations involving talking or texting on cell phones while operating a vehicle. During the same period, police in Hartford, Connecticut, issued 9,658 tickets for illegal phone use.

Before and after each enforcement wave, the National Highway Traffic Safety Administration (NHTSA) actively observed cell phone use and conducted public awareness surveys at driver licensing offices in the two cities, which found:

- In Syracuse, New York, because of high-visibility enforcement -- both handheld cell phone use and texting behind the wheel have declined by one-third.
- In Hartford, Connecticut, where researchers initially identified drivers talking on their cell phones at twice the frequency (which left more room for improvement), there was a 57 percent drop in handheld use and texting behind the wheel dropped by nearly three-quarters.⁸

A September 27, 2013 article in the Boston Globe identified efforts by the Massachusetts State Police in launching an aggressive new attempt to ticket drivers who text, the second wave of an experiment seeking the most effective way to detect illicit behind-the-wheel cellphone activity.

Some troopers stay in unmarked cars on the side of the road to catch texting drivers. Others slowly cruise the middle lane to watch as people pull out their phones. Still other troopers may try standing in plain clothes at intersections, watching people text, then radioing ahead to other officers who pull the driver over.

The troopers are hoping to deter distracted driving by ticketing as many people as possible. During the first wave of the enforcement effort, conducted during a three-week period in June,

⁸ "New Research Shows Enforcement Cuts Distracted Driving", (2011), [http://www.nhtsa.gov/About+NHTSA/Press+Releases/2011/New+Research+Shows+Enforcement+Cuts+Distracted+Driving]

police cited 440 drivers in the Merrimack Valley for sending electronic messages while driving, and another 509 drivers for the vaguer offense of “impeded operation.”⁹

The Governor’s Highway Safety Association supports comprehensive solutions to distracted driving, including a total ban on cell phone use for new drivers as well as state legislation banning hand-held cell phone use and text messaging for all drivers. Massachusetts has passed a recent law effective September 30, 2010 that restricts the use of electronic/mobile devices including public transit drivers and school bus drivers. Additionally, there are restrictions on texting for all operators of motor vehicles, and restrictions on the use of cell phones for motor vehicle operators under the age of 18.

States are stepping up enforcement. Law enforcement officers in almost every state are actively enforcing distracted driving laws, a significant uptick since 2010. From routine traffic patrols that include distracted driving enforcement as standard protocol, to targeted efforts focused on specific events such as Distracted Driving Awareness Month, law enforcement officers are cracking down on violators.

States are educating motorists. Using multiple strategies and channels, state highway safety officials are getting the word out to drivers about the dangers of distracted driving. The 2013 survey revealed that 47 states and DC have taken steps to educate the public about the dangers of distracted driving, a 26% increase from 37 states in 2010. Most states reported using social media -- including Twitter, YouTube and Facebook -- to get out these important messages, up 125% in the past three years.

States highway safety officials also recognize the power of partnering with other entities to reinforce safety messages. The survey reported that 17 states and DC work directly with employers on distracted driving prevention efforts, and 42 states collaborate with private businesses and other governmental organizations, up 20% from 2010, when 35 states used these strategies.¹⁰

The following recommendations made for the Bedford, Massachusetts Police Department should be considered as part of a comprehensive plan to address the problem of distracted driving along the Great Road. The goal of reducing traffic accidents resulting from distracted driving by using cell phones will increase safety and benefit the Bedford community.

- Enforcement efforts of the Massachusetts law enacted in 2010 on the use and restrictions of electronic/mobile devices should increase. The locations and times to focus on are:
 - [Great Road at Elm: 8am to 9am and 4pm to 5pm](#)
 - [Great Road at South: 4pm to 5pm](#)
 - [Great Road at Marsardis: 4pm to 5pm](#)

⁹ “State Police hone ways to catch drivers texting behind the wheel” (2013), [http://www.bostonglobe.com/metro/2013/09/27/three-years-after-distracted-driving-ban-police-start-get-hang-enforcement/ohMVHIIEDBYuxp4YhBZ4VK/story.html]

¹⁰ “States Take Action to Reduce Distracted Driving”, (2013), [http://www.huffingtonpost.com/kendell-poole/states-take-action-to-red_b_4221018.html]

- This should be done in conjunction with a high – profile public education campaign. It is recommended that both efforts be done consistently over a period of time to have a lasting effect.
- Strategies such as the use of plainclothes officers observing cell phone use/texting and radioing other officers to pull the vehicle over, making it a standard operating procedure as part of routine patrol, and targeting efforts focused on specific events such as Distracted Driving Awareness Month should be considered. Observing drivers who are texting can be difficult, so the use of a higher vehicle such as an unmarked SUV if available could be used.
- The high - profile public education campaign should include awareness in the local printed media, electronic bill boards such as those in use on route 128-route 3 and social media including Twitter, You Tube and Facebook.
- The Bedford Police Department should consider partnering with local businesses and corporations as well as the high school on distracted driving prevention awareness.
- Use low-cost engineering solutions such as edgeline and centerline rumble stripes to alert motorists who may drift.
- Continue to record distracted driving in crash reports.
- Evaluate crash reports in six (6) months and compare with previous periods to determine if the recommended actions are having a positive effect on reducing distracted driving and traffic accidents.

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