

ITSMR RESEARCH NOTE

EFFECTS OF CELL PHONE USE AND OTHER DRIVER DISTRACTIONS ON HIGHWAY SAFETY: 2006 UPDATE

INTRODUCTION

The use of cell phones and other driver distractions continue to be high profile traffic safety issues. There are more than 220 million wireless subscribers in the U.S., with recent surveys finding that 50%-90% of cell phone users use them while driving at least some of the time.¹⁻⁴ In 2005, the National Highway Traffic Safety Administration (NHTSA) estimated that 10% of drivers use a cell phone in some manner at any given time during their daylight driving hours and that 6% of drivers use a hand-held cell phone.⁵ To address the safety concerns associated with the use of a cell phone while driving, New York became the first state in the nation to prohibit the use of hand-held cell phones while driving, effective November 1, 2001. Since the implementation of New York's law in 2001, Connecticut, New Jersey, and the District of Columbia have also enacted legislation banning the use of hand-held cell phones while driving.^{4,5}

New York's cell phone law also called for a study of the effects of cell phone use and other driver distractions on highway safety. At the request of the NYS Department of Motor Vehicles, the Institute for Traffic Safety Management and Research (ITSMR) conducted the study which was due to the Governor and State Legislature by November 1, 2005. The study included four major components: 1) an analysis of motor vehicle crashes in which the use of a cell phone or some other form of distracted driving was identified as a contributory factor, 2) observational surveys of drivers on New York's roadways, 3) an analysis of traffic tickets issued to drivers for non-compliance with the cell phone law, and 4) telephone surveys of New York State licensed drivers. The study report was published in October 2005.

This *Research Note* updates three components of the 2005 study: the analyses of the 2002-2005 crash and ticket data and the 2002-2006 observational surveys. For a more detailed discussion on these components of the study, including the data collection methods and data used and the analyses conducted, the reader is referred to the October 2005 report.

SUMMARY

CRASH ANALYSES: 2002 - 2005

- 9% of the state's fatal crashes and 18%-19% of the personal injury crashes had "driver inattention/distracted" reported as a contributing factor each year.
- 6 fatal crashes and 887 personal injury crashes had cell phone use reported as a contributing factor over the four years.

TICKET ANALYSES: 2002 - 2005

- The number of tickets issued for non-compliance with the cell phone law tripled between 2002 and 2005 (81,268 vs. 252,340).
- 7% of all tickets issued in 2005 were for cell phone violations, compared to 2% in 2002.
- 91% of the drivers ticketed in 2005 were convicted as charged, up from 85% in 2002.
- \$47 was the average fine imposed for a cell phone conviction in 2005, down from \$67 in 2003.

OBSERVATIONAL SURVEYS: 2002 - 2006

- 18%-21% of the drivers observed each year were engaged in some type of distracted driving behavior.
- 4% of the 34,144 drivers observed in the 2006 survey were using a cell phone while driving, up from 3% in the 2005 survey (a statistically significant increase).
- Of the drivers using a cell phone while driving, 83% in the 2006 survey were observed holding a phone to their ear in violation of the law, up from 67% in 2002.

CONCLUSION

- ❖ **Distracted driving as a factor in crashes continues to remain constant at one out of five crashes.**
- ❖ **Cell phone use while driving, especially the use of hand-held cell phones, continues to increase each year. Despite this upward trend, the use of a cell phone while driving remains a relatively minor factor in crashes, with a cell phone being cited as a factor in about 0.2% of all police-reported fatal and personal injury crashes.**

For further information regarding this *Research Note*, please contact:

Anne M. Dowling, Ph.D., Deputy Director
Institute for Traffic Safety Management and Research
80 Wolf Road, Suite 607
Albany, NY 12205-2604
Phone 518-453-0201 FAX 518-453-0298 E-mail adowling@itsmr.org

ANALYSIS OF CRASHES: 2002-2005

The crash analysis focused on fatal and personal injury crashes that occurred in the years 2002-2005. The objectives of the analysis were to determine the extent to which driver distractions, including the use of a cell phone while driving, have been reported to be a contributory factor in fatal and personal injury crashes and examine changes over time in such crashes. In the absence of complete data on cell phone use at the time of crashes, the best information is available from the police officers who investigate and report on traffic crashes and their judgment as to whether cell phone use or another type of driver distraction was a factor in a crash. Hence, the crash data used in the analysis were obtained from the NYS Department of Motor Vehicles' Accident Information System. Key findings from these analyses are summarized below.

RESULTS OF CRASH ANALYSIS

CELL PHONE CRASHES

Over the four-year period, 2002-2005, only six fatal crashes had cell phone use reported as a contributing factor (Table 1). The number of fatal and personal injury crashes that had cell phone use reported as a contributing factor represented about 0.2% of the total number of fatal and injury crashes in those years. Of the fatal and personal injury crashes involving the use of cell phones, the proportion that involved the use of a hand-held phone increased from 81% in 2002 to 86% in 2005 (Figure 1).

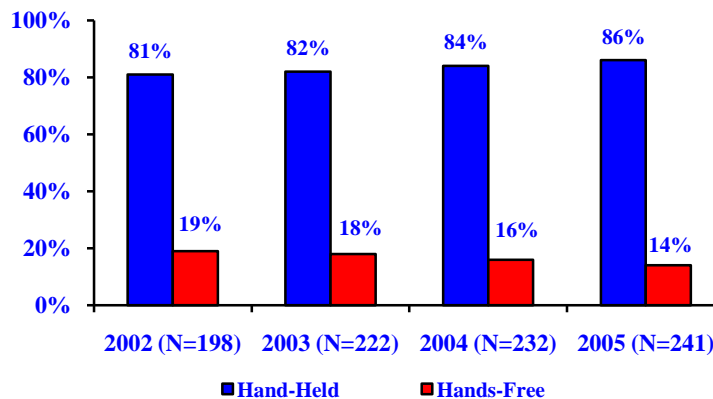
Table 1 NYS Police-Reported Fatal and Personal Injury Crashes								
	2002		2003		2004		2005	
	#	%	#	%	#	%	#	%
Fatal Crashes	1,390		1,351		1,369		1,308	
Cell Phone Use*	1	0.1	1	0.1	3	0.2	1	< 0.1
Distracted Driving**	127	9.1	118	9.1	119	8.5	122	9.3
Personal Injury Crashes	157,477		140,936		131,945		127,273	
Cell Phone Use	197	0.1	221	0.1	229	0.2	240	0.2
Distracted Driving	30,088	19.1	25,586	19.1	24,169	18.3	23,211	18.2
Total F&PI Crashes	158,867		142,287		133,314		128,581	
Cell Phone Use	198	0.1	222	0.1	232	0.2	241	0.2
Distracted Driving	30,215	19.0	25,704	19.0	24,288	18.2	23,333	18.1

* Represents the contributing factors of "Cell Phone (hand-held)" and "Cell Phone (hands-free)" included on the police crash report forms.

** Represents the contributing factor of "Driver Inattention/Distraction" included on the police crash report forms.

Figure 1

NYS Police-Reported Fatal and Personal Injury Crashes
Involving Cell Phone Use

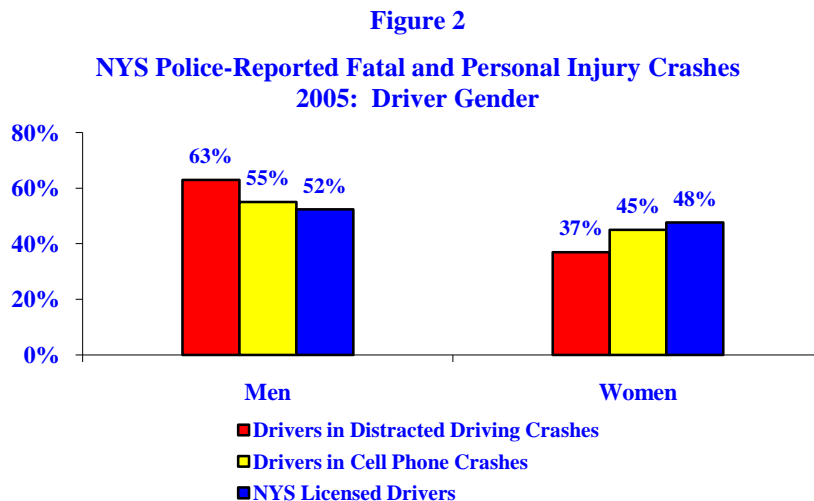


DISTRACTED DRIVING CRASHES

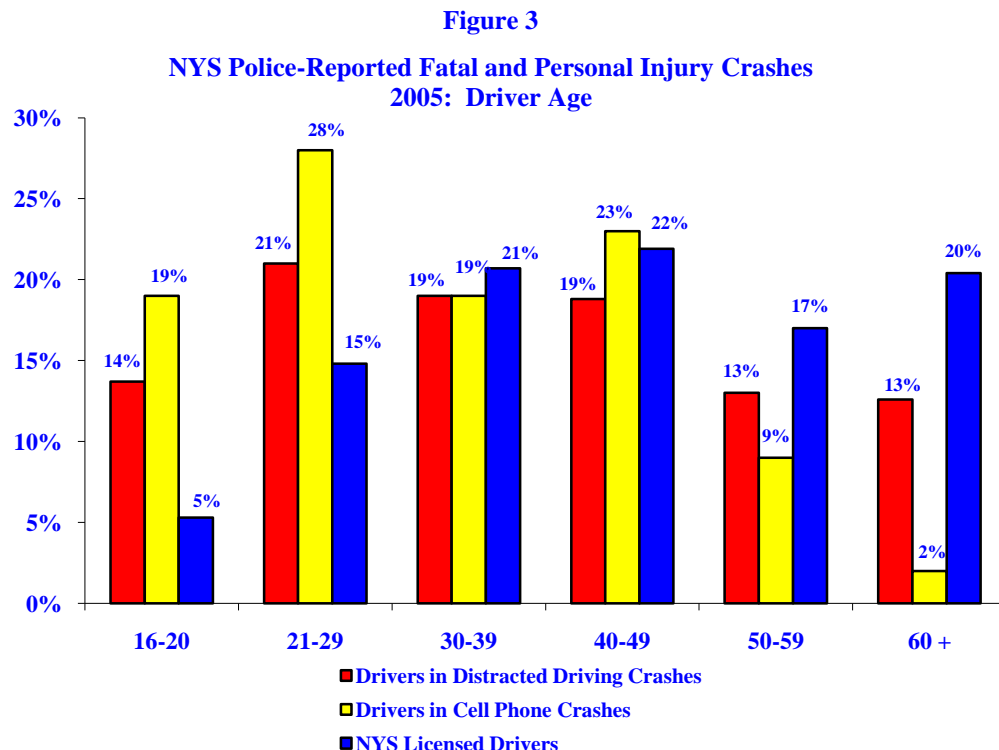
Distracted driving was much more likely than cell phone use to be reported as a contributing factor in fatal and personal injury crashes in each of the years, 2002-2005 (Table 1). Distracted driving was reported as a factor in 9% of the fatal crashes and 18%-19% of the injury crashes.

DRIVER CHARACTERISTICS

Analyses were also conducted comparing the characteristics of drivers involved in distracted driving and cell phone crashes in 2005 with the characteristics of all New York State licensed drivers. As Figure 2 shows, male drivers were overrepresented in crashes involving distracted driving and in crashes where cell phone use was a factor; 52% of the licensed drivers were men, but men accounted for 63% of the drivers in distracted driving crashes and 55% of the drivers in cell phone crashes.



As Figure 3 shows, young drivers were overrepresented in both distracted driving and cell phone crashes. Five percent of the state’s licensed drivers were under age 21 in 2005, compared to 14% of the drivers in distracted driving crashes and 19% of the drivers in cell phone crashes. Drivers ages 21-29 were also overrepresented in cell phone crashes, accounting for 15% of the licensed driver population and 28% of the drivers involved in these crashes.



OTHER DISTRACTED DRIVING BEHAVIORS

An additional set of analyses focusing exclusively on distracted driving crashes was conducted to identify the specific types of driver distractions involved and determine whether the type of distraction involved varied by the severity of the crash. Since the police accident report form requires police officers to note the specific type of distraction in the “accident description/officer’s notes” section of the form, this set of analyses required an extensive review of the paper copies of the crash reports.

The paper copies for all 486 “distracted driving” fatal crashes in 2002-2005 were reviewed; paper copies for the 2005 injury crashes were not available for review in time for this report. Because of the large number of “distracted driving” personal injury crashes each year, random samples of injury crashes were drawn for each year and reviewed. Of the 79,843 distracted driving personal injury crashes in years 2002-2004, 6,661 (8%) were randomly selected for inclusion in the analyses. Since only very small changes were noted year to year, the data were aggregated for the three years, 2002-2004. The results of the analyses are summarized in Table 2.

Table 2 shows that 12% of the fatal crashes in 2002-2005 and 14% of the personal injury crashes involving distracted driving in 2002-2004 had the specific type of distraction noted on the police crash report. The most common type of specific distraction reported for fatal crashes was “action outside the vehicle” (25%), followed by “talking/dealing with a passenger or child” (20%). For personal injury crashes, “daydreaming/looking elsewhere/simply not paying attention” was cited most often (42%), followed by “reaching for object” (14%).

Table 2
NYS Police-Reported Distracted Driving Fatal and Personal Injury Crashes
Type of Driver Distraction as Percent of Crashes with Specific Distraction Reported

	Fatal Crashes 2002-2005	Personal Injury Crashes 2002-2004
Number of Crashes	486	6,661
Specific Distraction Noted		
Number of Crashes	56	951
% of Total	12%	14%
Specific Distraction		
Action Outside Vehicle	25%	9%
Talking/Dealing with Passenger or Child	20%	10%
Adjusting Car Controls	14%	7%
Daydreaming/Looking Elsewhere/Simply not Paying Attention	9%	42%
Pet/Insect in Car	7%	2%
Reaching for Object	7%	14%
Eating/Drinking	7%	4%
Other	12%	11%

Note: Totals more than 100% since more than one specific type of distraction was reported for some crashes.

ANALYSIS OF TICKETS: 2002-2005

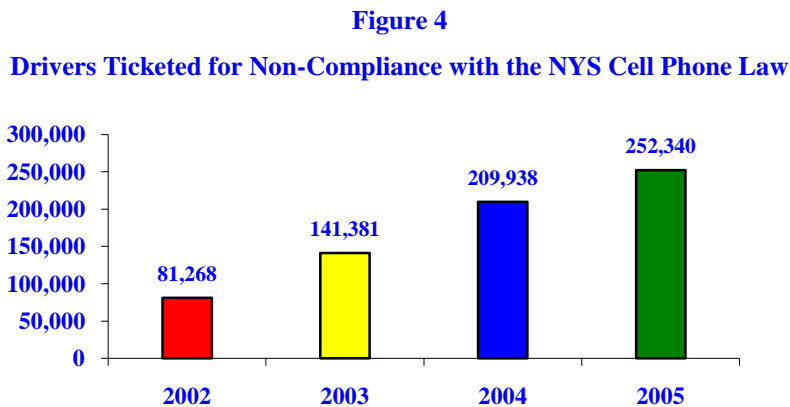
In banning the use of hand-held cellular phones while driving, New York's cell phone law carries a penalty of a fine of up to \$100 for violation of the law. To determine the extent to which the law is being enforced and provide information on drivers violating the law, data on tickets issued to drivers for violation of the law over the four-years, 2002-2005, were examined.

Ticket data for the analysis were obtained from the NYS Department of Motor Vehicles' Traffic Safety Law Enforcement and Disposition system (TSLED) and its Administrative Adjudication system (AA). The TSLED system covers all areas of the state except for New York City, the five western towns of Suffolk County on Long Island, and the cities of Buffalo and Rochester. These areas not covered under TSLED are covered by the AA system. Key results from these analyses are presented below.

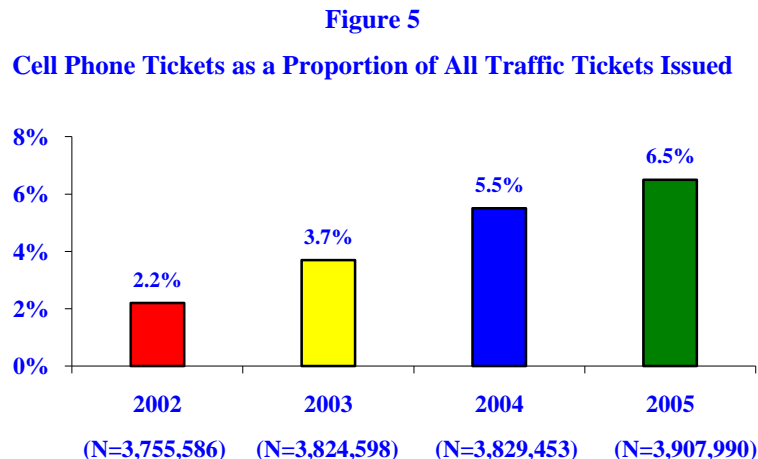
RESULTS OF TICKET ANALYSIS

TICKETS ISSUED

During four years, 2002-2005, 684,925 drivers were ticketed for violating the law. As reflected in Figure 4, the number of drivers ticketed statewide for non-compliance with the cell phone law more than tripled between 2002 and 2005 (81,268 vs. 252,340).



Cell phone tickets as a proportion of the total traffic tickets issued also more than tripled between 2002 and 2005, increasing from 2% to over 6% (Figure 5).



An analysis of tickets issued by region of the state shows that the majority of cell phone tickets were issued in New York City. As indicated in Table 3, 61% of the 2005 cell phone tickets were issued in New York City, compared to 34% of all the tickets issued.

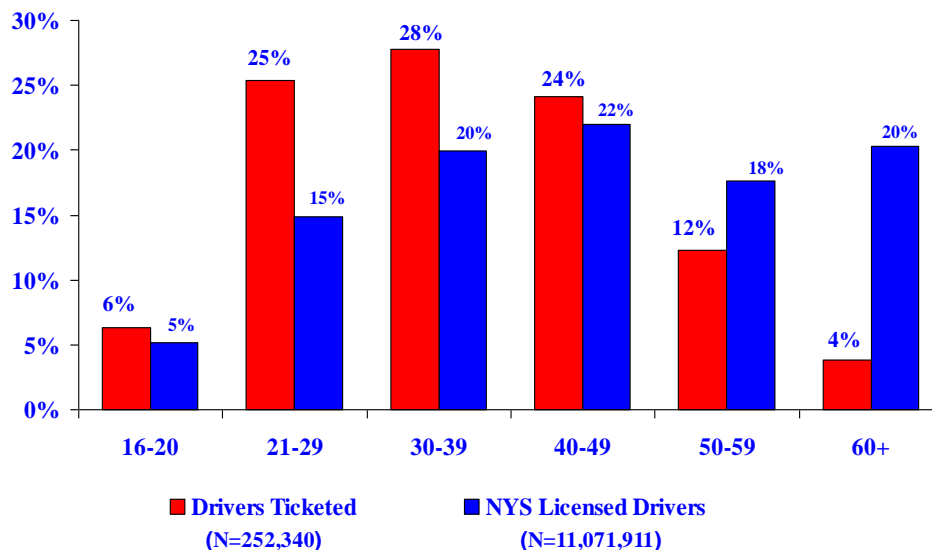
Table 3 Tickets Issued for Non-Compliance with the Cell Phone Law Region: 2005				
	Total Tickets		Cell Phone Tickets	
	#	%	#	%
Long Island	506,657	13.0	33,249	13.2
New York City	1,339,549	34.3	153,727	60.9
Upstate	2,061,784	52.8	65,364	25.9
Total	3,907,990	100.0	252,340	100.0

DRIVER CHARACTERISTICS

Analyses were also conducted by driver age and gender for the years 2004 and 2005, the first two full years for which such data are available from both the TSLED and AA systems. Men were much more likely to be ticketed for non-compliance with the cell phone law. In each of the two years, 70% of the drivers ticketed were men and 30% were women. For the analyses by age, the population was divided into six categories: 1) 16-20 years, 2) 21-29 years, 3) 30-39 years, 4) 40-49 years, 5) 50-59 years, and 6) 60 years and over. Since little variation occurred between the two years with regard to driver age, the analyses by age focused on the 2005 data. Figure 6 shows that the largest proportion of the drivers ticketed for non-compliance were 30-39 years of age (28%).

Additional analyses were conducted to examine whether the age distribution of drivers ticketed for non-compliance was similar to that of all New York State licensed drivers. As Figure 6 shows, drivers ages 21-29 were the most overrepresented in tickets issued for non-compliance with the cell phone law; 25% of the drivers ticketed were in this age group, but only 15% of the licensed drivers were 21-29 years of age. Drivers 50 years of age and older were underrepresented in the tickets issued for cell phone violations.

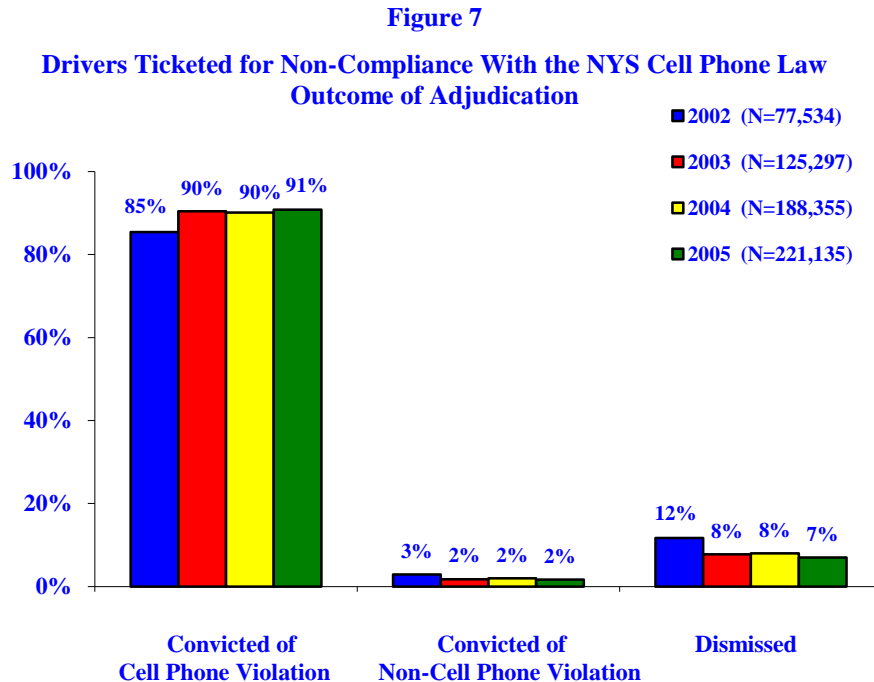
Figure 6
Non-Compliance with the NYS Cell Phone Law
Drivers Ticketed vs. NYS Licensed Drivers
Driver Age: 2005



ADJUDICATION OF TICKETS

Analyses related to the adjudication of tickets issued to drivers for non-compliance with the cell phone law during the four-year period, 2002-2005, were conducted to determine the extent to which drivers ticketed for a cell phone violation were convicted of the original charge and to examine the fines imposed upon conviction. As of July 1, 2006, 90% of the 610,321 drivers whose ticket had been adjudicated were convicted of the cell phone violation, 2% were convicted of a non-cell phone violation, and 8% percent had their ticket dismissed.

When the data on adjudicated tickets were examined by year, the proportion of drivers who were convicted of the cell phone violation increased from 85% in 2002 to 91% in 2005 (Figure 7). The proportion of drivers who had their ticket dismissed dropped from 12% in 2002 to 7% in 2005.



Fines Imposed Upon Conviction

The average fine imposed for conviction of a cell phone law violation for the four-year period, 2002-2005, was \$56, well below the maximum fine of \$100 provided for in the law. Changes in the pattern of fines and the average fine imposed for non-compliance with the cell phone law occurred between 2002-2003 and 2004-2005. In 2002 and 2003, approximately three-quarters of the fines imposed for convictions on cell phone tickets were more than \$50, with the average fine being \$62 in 2002 and \$67 in 2003. In 2004 and 2005, more than three-quarters of the fines imposed were \$50 or less, with the average fine being \$46 in 2004 and \$47 in 2005. It is likely that this change was due to “pushback” dynamics in the system related to surcharges. In 2004, the administrative surcharge imposed upon a driver convicted under the AA system increased from \$30 to \$50. This increase likely resulted in the fine being reduced to compensate for the increase in the surcharge.

OBSERVATIONAL SURVEYS: 2002-2006

Observational surveys of distracted driving behavior on New York's roadways have been conducted each spring, 2002-2006, in conjunction with ITSMR's annual statewide observational survey of seat belt use. The survey included 200 sites in 20 counties and was conducted on both major and local roads. The population observed in the survey included drivers in passenger cars, minivans, vans, sport utility vehicles, and pick-up trucks.

More than 175,000 observations were made during the five annual surveys. The primary purpose of the surveys was to collect data on the distracted driving behaviors or activities that drivers are engaging in, including the use of a cell phone. The surveys were designed to identify the proportion of drivers using hand-held versus hands-free cell phones while driving, identify other distracted driving behaviors, and examine changes in observed cell phone use and distracted driving over time. The results of the survey are summarized below.

SURVEY RESULTS

The driving behavior of 30,000 to 40,000 drivers was observed and recorded in each of the surveys conducted annually, 2002-2006. Table 4 shows that the proportion of drivers who were observed using a cell phone while driving increased from 3% in the years 2002-2005 to 4% in 2006. The increase between 2005 and 2006 (3.3% vs. 3.9%) was statistically significant ($p < .001$). Other types of distracted driving behavior were observed for 15%-18% of the drivers in each survey.

Table 4					
Driver Distraction Observational Surveys					
	2002	2003	2004	2005	2006
Total Drivers Observed	39,042	33,180	36,897	32,451	34,144
Drivers Using Cell Phones					
Number	1,160	965	992	1,082	1,322
Percent of Total	3.0%	2.9%	2.7%	3.3%	3.9%*
Percent Using Hand-Held Phones	2.0%	2.1%	2.0%	2.7%	3.2%**
Drivers Engaged in Other Distracted Driving Behaviors					
Number	5,733	5,998	6,057	5,098	5,243
Percent of Total	14.7%	18.1%	16.4%	15.7%	15.4%
Total Distracted Drivers	6,893	6,963	7,049	6,180	6,565
Percent of Total Drivers	17.7%	21.0%	19.1%	19.0%	19.2%

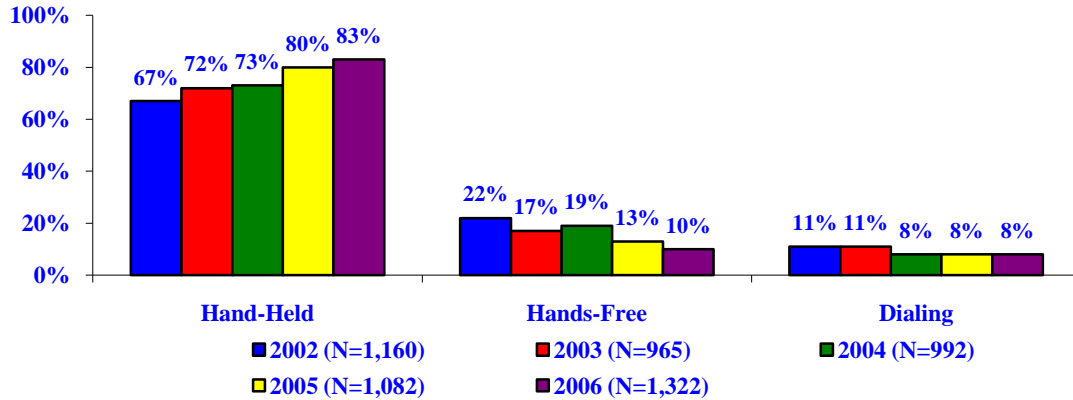
* Statistically significant increase over 2005 ($p < .001$); ** Statistically significant increase over 2005 ($p < .001$)

CELL PHONES AND DRIVING

Since the New York State cell phone law prohibits the use of hand-held cell phones while driving, one of the primary objectives of the observational surveys was to determine the extent to which drivers use cell phones while driving and whether they use a hands-free feature or adapter. As Table 4 also indicates, the proportion of drivers observed using a hand-held cell phone in violation of the law ranged increased from 2% in 2002-2004 to 3% in 2005 and 2006. The increase from 2.7% in 2005 to 3.2% in 2006 was statistically significant ($p < .001$).

Figure 8 shows that of those drivers who were using a cell phone, the proportion observed holding a phone to their ear in violation of the law is on an upward trend, increasing from 67% in 2002 to 83% in 2006. Over the same five-year period, the proportion of drivers observed using a hands-free phone dropped from 22% in 2002 to 10% in 2006. In 2002 and 2003, 11% were observed dialing their phones; 8% were observed dialing in 2004-2006.

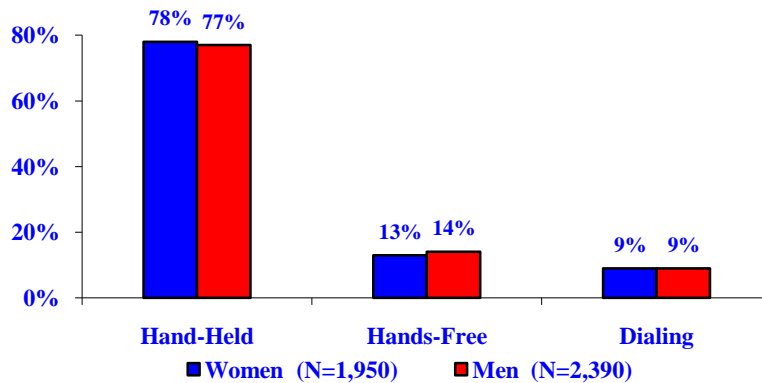
Figure 8
Driver Distraction Observational Surveys
Type of Cell Phone Use Observed



Driver Characteristics

To determine whether the use of cell phones while driving varied by the characteristics of the driver, the 2003-2006 data were analyzed by the gender and age of the drivers; data on gender and age were not collected during the 2002 survey. Since preliminary analyses showed there was no overall pattern by either age or gender over the four years and that the changes observed were non-significant, the data for 2003-2006 were aggregated. As shown in Figure 9, of those observed using a cell phone while driving, men and women were equally likely to hold the phone to their ear in violation of the law (77% and 78%, respectively).

Figure 9
Driver Distraction Observational Surveys
Cell Phone Use: Driver Gender 2003-2006



Analyses conducted on the age of drivers observed using cell phones indicated that more than three-quarters of the drivers in every age group were using a hand-held cell phone in violation of the law (Table 5). Drivers age 60 and over were most likely to be observed using a hand-held phone (81%), while drivers ages 25-39 were somewhat more likely to be observed using a hands-free phone (15%).

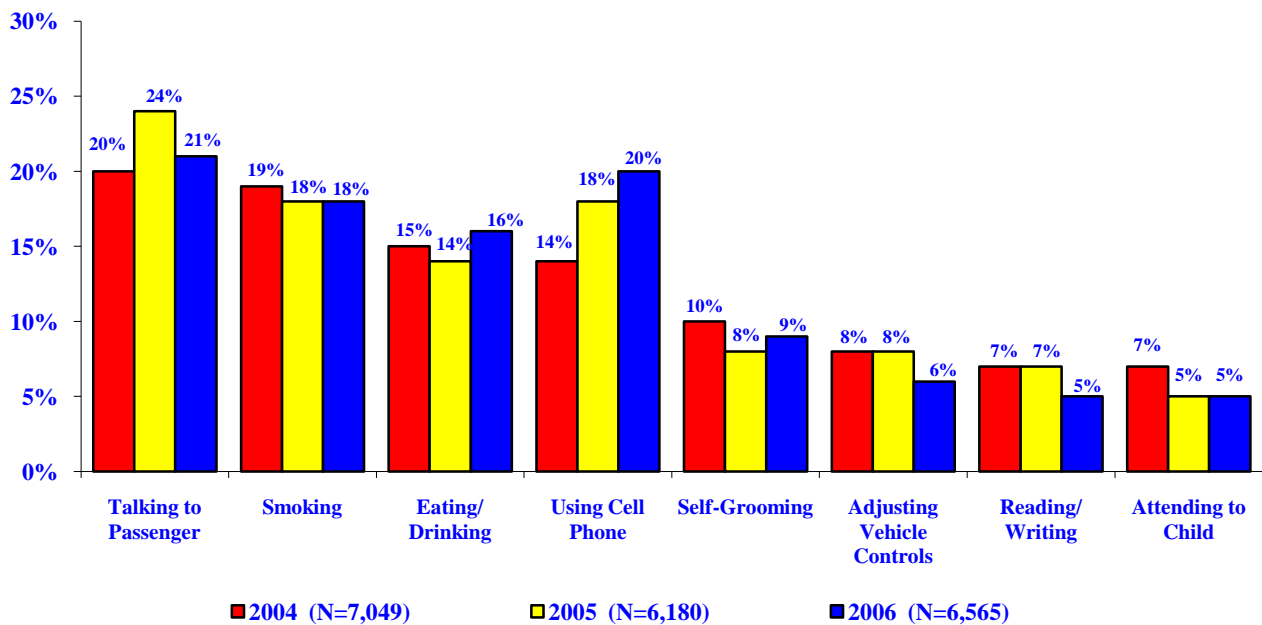
Table 5
Driver Distraction Observational Surveys
Cell Phone Use: Driver Age 2003–2006

	16-24 years (N=804)	25-39 years (N=1,879)	40-59 years (N=1,325)	60+ years (N=338)
Hand-Held	79%	76%	78%	81%
Hands-Free	12%	15%	14%	9%
Dialing	9%	9%	8%	10%

CELL PHONE USE AND OTHER DISTRACTED DRIVER BEHAVIORS

Overall, approximately one out of five (18%-21%) drivers observed was engaged in using a cell phone or some other type of behavior that took their attention away from driving. Figure 10 shows the extent to which specific types of behaviors, including cell phone use, were observed among these drivers in the 2004-2006 surveys. The behaviors most frequently observed were talking to a passenger, smoking, eating or drinking, and using a cell phone. In the 2006 survey, using a cell phone increased to nearly the same level as talking to a passenger, the most frequently observed distracted driving behavior in each survey.

Figure 10
Driver Distraction Observational Surveys
Distracted Driving Behaviors (Including Cell Phone Use)



REFERENCES

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