

Traffic Safety Facts

Research Note

DOT HS 810 963

June 2008

Driver Electronic Device Use in 2007

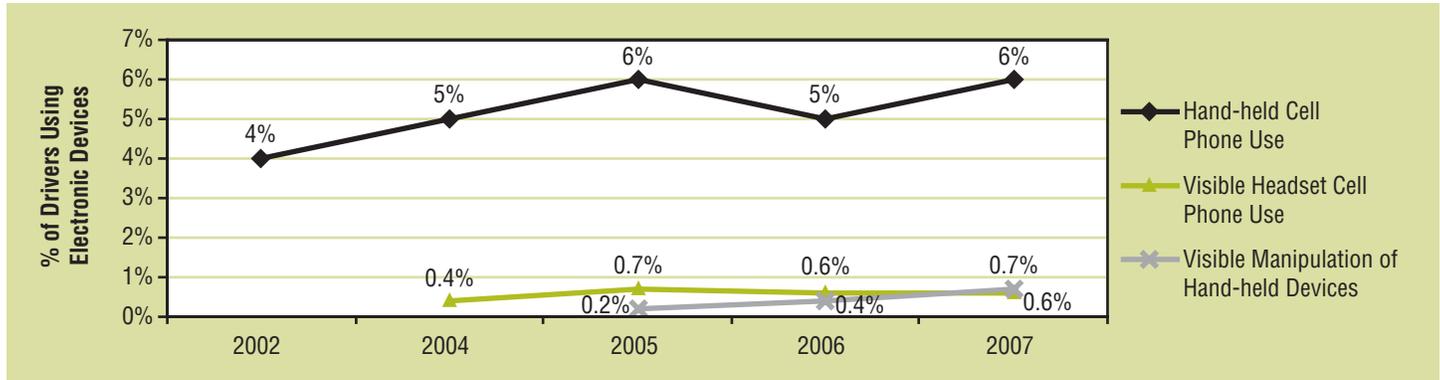
Hand-held cell phone use by drivers was up again to 6 percent in 2007 compared to 5 percent in 2006, and this increase in use occurred in many driver categories, including male drivers, female drivers, drivers age 25 to 69, drivers of all races, and drivers in all vehicle types. This result is from the National Occupant Protection Use Survey (NOPUS), which provides the only probability-based observed data on driver electronic device use in the United States. The NOPUS is conducted annually by the National Center for Statistics and Analysis (NCSA) of the National Highway Traffic Safety Administration.

The 2007 rate translates into 1,005,000 vehicles on the road at any given daylight moment being driven by

someone using a hand-held phone. It also translates into an estimated 11 percent of vehicles in the typical daylight moment whose driver is using some type of phone, either hand-held or hands-free. The 2007 survey also found the following:

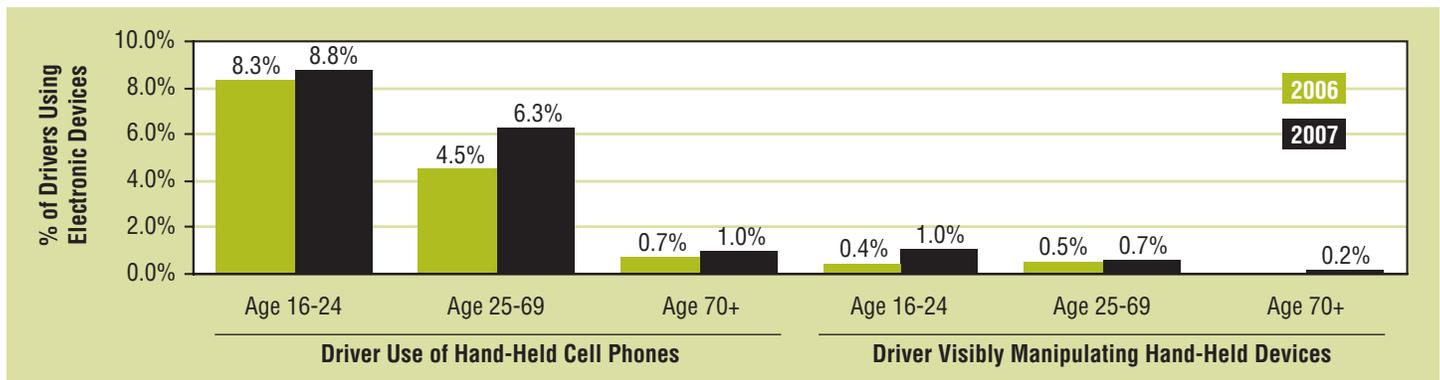
- Hand-held cell phone use continued to be higher among 16- to 24-year-olds and lower among drivers 70 and older.
- About 1 percent of drivers 16 to 24 were visibly manipulating hand-held devices.
- The use of visible headsets while driving was still less than 1 percent.

Driver Use of Electronic Devices



Source: National Occupant Protection Use Survey, NCSA/NHTSA, 2006-2007

Drivers Use of Electronic Devices by Age



Source: National Occupant Protection Use Survey, NCSA/NHTSA, 2002-2007

The Percent of Drivers Holding Phones to Their Ears, by Major Characteristics

Driver Group ¹	2006		2007		2006–2007 Change	
	% of Drivers Holding Phone to Ear ²	Confidence That Use Is High or Low in Group ³	% of Drivers Holding Phone to Ear ²	Confidence That Use Is High or Low in Group ³	Difference in Percentage Points	Confidence in a Change in % of Drivers Holding Phone to Ear ⁴
All Drivers	5%		6%		1	100%
Males	4%	100%	5%	100%	1	98%
Females	6%	100%	8%	100%	2	100%
Drivers Who Appear to Be						
Age 16-24	8%	100%	9%	100%	1	31%
Age 25-69	4%	96%	6%	79%	2	100%
Age 70 and Older	1%	100%	1%	100%	0	76%
Drivers Who Appear to Be						
White	5%	66%	6%	86%	1	100%
Black	5%	64%	8%	99%	3	100%
Members of Other Races	4%	86%	6%	86%	2	96%
Drivers on						
Expressway Exit Ramps	5%	77%	7%	99%	2	100%
Other Surface Streets	5%	77%	6%	99%	1	100%
Drivers Traveling Through						
Light Precipitation	5%	67%	5%	92%	0	4%
Fog	5%	60%	5%	83%	0	3%
Clear Weather Conditions	5%	65%	6%	95%	1	100%
Drivers of						
Passenger Cars	4%	94%	6%	100%	2	100%
Vans & SUVs	6%	97%	7%	100%	1	99%
Pickup Trucks	5%	63%	6%	89%	1	95%
Drivers in the						
Northeast	4%	99%	4%	100%	0	74%
Midwest	4%	77%	6%	76%	2	99%
South	5%	89%	8%	100%	3	100%
West	5%	89%	6%	68%	1	46%
Drivers in						
Urban Areas	5%	66%	6%	53%	1	95%
Suburban Areas	5%	97%	7%	99%	2	100%
Rural Areas	4%	95%	5%	100%	1	99%
Drivers Traveling During						
Weekdays	5%	100%	7%	100%	2	100%
Rush Hours	6%	91%	8%	100%	2	100%
Nonrush Hours	5%	91%	6%	100%	1	96%
Weekends	3%	100%	4%	100%	1	97%
Drivers With ⁵						
No Passengers	6%	100%	8%	100%	2	100%
At Least One Passenger	2%	100%	2%	100%	0	98%
Drivers With ⁵						
No Passengers	6%	100%	8%	100%	2	100%
Passengers All Under Age 8	6%	70%	7%	76%	1	61%
Passengers All Age 8 and Older	1%	100%	2%	100%	1	99%
Some Passengers Under Age 8 and Some Age 8 or Older	2%	100%	2%	100%	0	28%

¹Drivers of passenger vehicles with no commercial or government markings stopped at a stop sign or stoplight between the hours of 7 a.m. and 6 p.m.

²The percentage of drivers who appeared to be holding a phone to their ears. Age, gender, and racial classifications are based on the subjective assessments of roadside observers.

³The level of statistical confidence that use in the driver group (e.g., drivers who appear to be White) is higher or lower than use in the corresponding complementary driver group (e.g., combined drivers who appear to be Black or members of other races). Confidence levels that meet or exceed 90 percent are formatted in boldface type. Confidence levels are rounded to the nearest percentage point, and so levels reported as "100 percent" confidence are between 99.5 percent and 100.0 percent.

⁴The degree of statistical confidence that the 2007 use rate is different from the 2006 rate. Confidence levels that meet or exceed 90 percent are formatted in boldface type.

⁵Among passengers observed in the right-front seat and the second row of seats (but NOPUS only counts up to two passengers in the second row and none in the third row and beyond).

Source: National Occupant Protection Use Survey, NCSA/NHTSA

The Percent of Drivers Speaking With Visible Headsets on, by Major Characteristics

Driver Group ¹	2006		2007		2006-2007 Change	
	% of Drivers Speaking with Headsets ²	Confidence That Use Is High or Low in Group ³	% of Drivers Speaking with Headsets ²	Confidence That Use Is High or Low in Group ³	Difference in Percentage Point Tenths	Confidence in a Change in % of Drivers Speaking With Headsets ⁴
All Drivers	0.6%		0.6%		0.0	3%
Males	0.4%	98%	0.6%	98%	0.2	91%
Females	0.8%	98%	0.5%	98%	-0.3	87%
Drivers Who Appear to Be						
Age 16-24	0.7%	72%	0.6%	52%	-0.1	27%
Age 25-69	0.6%	55%	0.6%	93%	0.0	17%
Age 70 and Older	0.3%	98%	0.1%	100%	-0.2	72%
Drivers Who Appear to Be						
White	0.5%	63%	0.6%	59%	0.1	7%
Black	0.8%	80%	0.9%	98%	0.1	40%
Members of Other Races	0.5%	64%	0.3%	99%	-0.2	55%
Drivers on						
Expressway Exit Ramps	0.8%	90%	0.7%	85%	-0.1	31%
Other Surface Streets	0.5%	90%	0.5%	85%	0.0	2%
Drivers Traveling Through						
Light Precipitation	0.7%	67%	0.5%	66%	-0.2	41%
Fog	NA	NA	NA	NA	NA	NA
Clear Weather Conditions	0.6%	51%	0.6%	79%	0.0	10%
Drivers of						
Passenger Cars	0.5%	83%	0.6%	79%	0.1	52%
Vans and SUVs	0.7%	94%	0.6%	60%	-0.1	59%
Pickup Trucks	0.4%	75%	0.4%	90%	0.0	14%
Drivers in the						
Northeast	0.6%	59%	0.7%	70%	0.1	25%
Midwest	0.5%	52%	0.3%	98%	-0.2	76%
South	0.6%	56%	0.7%	69%	0.1	18%
West	0.5%	65%	0.5%	60%	0.0	5%
Drivers in						
Urban Areas	0.4%	88%	0.4%	86%	0.0	4%
Suburban Areas	0.6%	89%	0.6%	87%	0.0	1%
Rural Areas	0.5%	72%	0.5%	76%	0.0	0%
Drivers Traveling During						
Weekdays	0.7%	98%	0.7%	100%	0.0	14%
Rush Hours	0.7%	59%	0.9%	95%	0.2	56%
Nonrush Hours	0.6%	59%	0.5%	95%	-0.1	54%
Weekends	0.3%	98%	0.2%	100%	-0.1	71%
Drivers With ⁵						
No Passengers	0.8%	100%	0.8%	100%	0.0	4%
At Least One Passenger	0.1%	100%	0.1%	100%	0.0	32%
Drivers With ⁵						
No Passengers	0.8%	100%	0.8%	100%	0.0	4%
Passengers All Under Age 8	0.3%	96%	0.2%	100%	-0.1	65%
Passengers All Age 8 and Older	0.1%	100%	0.1%	100%	0.0	57%
Some Passengers Under Age 8 and Some Age 8 or Older	NA	NA	NA	NA	NA	NA

¹Drivers of passenger vehicles with no commercial or government markings stopped at a stop sign or stoplight between the hours of 7 a.m. and 6 p.m.

²The percentage of drivers who appeared to be wearing a headset with a microphone and speaking. Age, gender, and racial classifications are based on the subjective assessments of roadside observers.

³The level of statistical confidence that use in the driver group (e.g., drivers who appear to be White) is higher or lower than use in the corresponding complementary driver group (e.g., combined drivers who appear to be Black or members of other races). Confidence levels that meet or exceed 90 percent are formatted in boldface type. Confidence levels are rounded to the nearest percentage point, and so levels reported as "100 percent" confidence are between 99.5 percent and 100.0 percent.

⁴The degree of statistical confidence that the 2007 use rate is different from the 2006 rate. Confidence levels that meet or exceed 90 percent are formatted in boldface type.

⁵Among passengers observed in the right front seat and the second row of seats (but NOPUS only counts up to two passengers in the second row and none in the third row and beyond).

NA: Data not sufficient to produce a reliable estimate.

Source: National Occupant Protection Use Survey, NCSA/NHTSA

The Percent of Drivers Visibly Manipulating Hand-Held Devices, by Major Characteristics

Driver Group ¹	2006		2007		2006-2007 Change	
	% of Drivers Manipulating Hand-Held Devices ²	Confidence That Use Is High or Low in Group ³	% of Drivers Manipulating Hand-Held Devices ²	Confidence That Use Is High or Low in Group ³	Difference in Percentage Point Tenths	Confidence in a Change in % of Drivers Manipulating Hand-Held Devices ⁴
All Drivers	0.4%		0.7%		0.3	78%
Males	0.3%	93%	0.5%	99%	0.2	74%
Females	0.6%	93%	0.9%	99%	0.3	72%
Drivers Who Appear to Be						
Age 16-24	0.4%	51%	1.0%	99%	0.6	93%
Age 25-69	0.5%	87%	0.6%	69%	0.1	66%
Age 70 and Older	NA	NA	0.2%	99%	NA	NA
Drivers Who Appear to Be						
White	0.5%	75%	0.7%	80%	0.2	76%
Black	0.5%	66%	0.6%	64%	0.1	11%
Members of Other Races	0.2%	99%	0.4%	84%	0.2	85%
Drivers on						
Expressway Exit Ramps	0.5%	70%	0.7%	67%	0.2	51%
Other Surface Streets	0.4%	70%	0.6%	67%	0.2	75%
Drivers Traveling Through						
Light Precipitation	0.4%	61%	1.9%	93%	1.5	87%
Fog	NA	NA	NA	NA	NA	NA
Clear Weather Conditions	0.5%	78%	0.5%	92%	0.0	46%
Drivers of						
Passenger Cars	0.4%	55%	0.8%	96%	0.4	87%
Vans and SUVs	0.5%	69%	0.7%	52%	0.2	55%
Pickup Trucks	0.3%	79%	0.3%	98%	0.0	4%
Drivers in the						
Northeast	0.6%	84%	0.9%	73%	0.3	51%
Midwest	0.4%	51%	0.5%	73%	0.1	34%
South	0.4%	73%	0.6%	58%	0.2	54%
West	0.4%	59%	0.6%	56%	0.2	46%
Drivers in						
Urban Areas	0.5%	63%	0.6%	63%	0.1	33%
Suburban Areas	0.5%	77%	0.9%	96%	0.4	85%
Rural Areas	0.3%	94%	0.3%	99%	0.0	0%
Drivers Traveling During						
Weekdays	0.5%	99%	0.8%	97%	0.3	70%
Rush Hours	0.5%	63%	0.7%	70%	0.2	52%
Nonrush Hours	0.6%	63%	0.8%	70%	0.2	67%
Weekends	0.2%	99%	0.4%	97%	0.2	76%
Drivers With ⁵						
No Passengers	0.5%	96%	0.8%	99%	0.3	82%
At Least One Passenger	0.3%	96%	0.3%	99%	0.0	34%
Drivers With ⁵						
No Passengers	0.5%	96%	0.8%	99%	0.3	82%
Passengers All Under Age 8	NA	NA	0.6%	61%	NA	NA
Passengers All Age 8 and Older	0.2%	98%	0.2%	100%	0.0	27%
Some Passengers Under Age 8 and Some Age 8 or Older	NA	NA	0.3%	92%	NA	NA

¹Drivers of passenger vehicles with no commercial or government markings stopped at a stop sign or stoplight between the hours of 7 a.m. and 6 p.m.

²The percent of drivers who appeared to be wearing a headset with a microphone and speaking. Age, gender, and racial classifications are based on the subjective assessments of roadside observers.

³The level of statistical confidence that use in the driver group (e.g., drivers who appear to be White) is higher or lower than use in the corresponding complementary driver group (e.g., combined drivers who appear to be Black or members of other races). Confidence levels that meet or exceed 90 percent are formatted in boldface type. Confidence levels are rounded to the nearest percentage point, and so levels reported as "100 percent" confidence are between 99.5 percent and 100.0 percent.

⁴The degree of statistical confidence that the 2007 use rate is different from the 2006 rate. Confidence levels that meet or exceed 90 percent are formatted in boldface type.

⁵Among passengers observed in the right front seat and the second row of seats (but NOPUS only counts up to two passengers in the second row and none in the third row and beyond).

NA: Data not sufficient to produce a reliable estimate.

Source: National Occupant Protection Use Survey, NCSA/NHTSA

Survey Methodology

The NOPUS is the only probability-based observational survey of driver electronic device use in the United States. The survey observes usage as it actually occurs at a random selection of roadway sites, and so provides the best tracking of the extent to which people in this country are using cell phones and other electronic devices while driving.

Sites and Vehicles Observed

Numbers of	2006	2007	Percentage Change
Sites Observed	1,200	1,500	25%
Vehicles Observed	43,000	58,000	36%

The survey data is collected by sending trained observers to probabilistically sampled intersections controlled by a stop sign or stoplight, where vehicle occupants are observed from the roadside. Data is collected between the hours of 7 a.m. and 6 p.m. Only stopped vehicles are observed to permit time to collect the variety of information required by the survey, including subjective assessments of occupants' age and race. Observers collect data on the driver, right-front passenger, and up to two passengers in the second row of seats. Observers do not interview occupants, so that the NOPUS can capture the untainted behavior of occupants. The 2007 NOPUS data was collected between June 4 and June 25, while the 2006 data was collected between June 5 and June 26.

Because the NOPUS sites were chosen through probabilistic means, we can analyze the statistical significance of its results. Statistically significant increases in the use of hand-held phones (respectively, headset use or manipulation of hand-held devices) between 2006 and 2007 are identified in the tables of hand-held use estimates (respectively, headset use estimates or the percent of drivers manipulating devices) by having a result that is 90 percent or greater in column 7. Statistical confidence levels that hand-held use, headset use, or the manipulation of hand-held devices in a given driver group, e.g., drivers in the Northeast, is higher or lower than in the complementary driver group, e.g., combined drivers in the Midwest, in the South and in the West, are provided in columns 3 and 5. Such comparisons are made within categories delineated by changes in row shading in the tables. The exception to this is the grouping "Drivers Traveling During..." in which weekdays are compared to weekends, and weekday rush hour to weekday non-rush hour.

As we will discuss in much more detail later in the definition section, some cell phone use, such as hands-free

cell phone use via a Bluetooth car kit or drivers using wireless earpieces obscured by hair or clothing or on their left ears, could not be observed from the roadside and thus would not be captured by NOPUS.

NHTSA's 2007 Motor Vehicle Occupant Safety Survey (MVOSS) estimated that, for drivers using cell phones while driving, 55 percent tended to use hand-held cell phones and 45 percent tended to use hands-free phones. Applying the proportion of these percentages (45%/55%) to the 6 percent estimate of drivers using hand-held cell phones from NOPUS, shows an estimated 5 percent of drivers using hands-free cell phones. Thus, 11 percent of drivers are estimated to be using either a hand-held or hands-free cell phone while driving in a typical daylight moment.

The estimates of the number of drivers using hand-held phones and the percent of drivers on phones were derived via calculations explained in our report "Cell Phone on the Roads in 2002". The report is available at the Web site <http://www-nrd.nhtsa.dot.gov/CMSWeb/index.aspx>.

The 2007 survey yielded nearly a 40-percent increase in the number of occupants observed (59,000 in 2006 vs. 82,000 in 2007). This could be due in part to our additional efforts to find eligible sites and consequently data was collected from 300 more sites in 2007 than in 2006. Therefore, we have more accurate results in 2007.

In order to better capture early commuters, the NOPUS began collecting data one hour earlier in 2007. NOPUS data collection now begins at 7 a.m., instead of 8 a.m. in the 2006 and prior surveys. The survey also changed its definitions of "weekday rush hour" in order to end the morning rush hour 30 minutes earlier. The definition of weekday rush hour in 2006 and prior survey years was that data collection at the site began before 10 a.m. or after 3:30 p.m. The definition used in 2007 is that data collection at the site began before 9:30 a.m. or after 3:30 p.m. Neither the new start time nor the new definition of rush hour appeared to have an appreciable impact on the survey results.

The NOPUS uses a complex multistage probability sample, statistical data editing, imputation of unknown values, and complex estimation and variance estimation procedures. The 2007 survey results reflect the partial incorporation of a new set of probabilistically-designed observation sites. Specifically, like the 2006 survey, the 2007 survey used half of the observation sites from the survey years before 2006 and half of the sites from the newly designed sample of observation sites. Data from

2005 and prior years were obtained from the old observation sites only.

Data collection, estimation, and variance estimation for the NOPUS are conducted by Westat, Inc., under the direction of the National Center for Statistics and Analysis in NHTSA under Federal contract number DTNH22-07-D-00057.

The 2007 NOPUS hand-held cell phone use estimate is consistent with estimates from some State surveys conducted in different years ranging from 3.2 percent¹ in New York in 2006 to 5.8 percent² in Michigan in 2005. In the United Kingdom (UK), government-sponsored research³ shows that 1 percent of car drivers were using hand-held cell phones in 2007. The lower use rate in the UK might be due to the country's more stringent laws (using a hand-held mobile phone while driving was made illegal in December 2003 in the UK).

Definitions

The estimates of the number of vehicles or drivers on the road during the typical daylight moment were formed from data collected at stop signs and stoplights. The estimates effectively assume that the number of vehicles and occupants on a road do not depend on whether the road has a stop sign, stop light, or neither. To the extent that driver cell phone use at stop signs and stop lights is different than elsewhere, the NOPUS estimate of the number of drivers holding phones to their ears during the typical daylight moment might overestimate or underestimate the true quantity.

Drivers were counted as "holding phones to their ears" if they were holding to their ears what appeared to the observer to be a phone. This would include such behaviors as drivers engaged in conversation, listening to messages, or conducting voice-activated dialing while holding a phone to their ears. Note that PDAs such as Blackberrys would count as phones.

Drivers were counted as "speaking with visible headsets on" if they appeared to be speaking and wearing a headset with a microphone. This would include such behaviors as talking in conversation or conducting voice-

activated dialing via a wireless earpiece on the driver's right ear or via an earbud connected by wire to a cell phone. It would not include drivers using headsets that do not involve cell phones (such as iPods) since these headsets do not involve microphones. Note that wireless earpieces that are obscured by hair or clothing or are on the driver's left ear would not be included because they would not be visible to the roadside observer. In addition, some wireless earbuds would not be included as they are too small to be observed from the roadside. Drivers with headsets who were not speaking at the time of observation were not included because they might not have recently completed a call or be waiting for an expected call, for example. We estimate that each driver in the survey was observed for about 10 seconds before the data collector decided whether or not the driver was speaking. Note also that drivers counted as speaking with a headset on might have been talking to a passenger or using voice-activated computer software rather than using a phone.

Drivers were counted as "visibly manipulating hand-held devices" if they appeared to be manipulating some type of electronic device, whether a cell phone, PDA, video game, or other device. This would include such behaviors as: manual dialing; text messaging; using a Web-capable cell phone or a PDA (such as a Blackberry) to view travel directions, check e-mails or calendar appointments, or surf the Internet; playing hand-held games; and holding phones in front of their faces to converse or check messages via speakerphone or use voice-activated dialing. Manipulation of non-hand-held devices (adjusting volume on stereos, pressing buttons on a dashboard GPS unit, etc.) was not included. Also note that drivers characterized by the survey as "visibly manipulating hand-held devices" might or might not have been speaking.

We note that there are means by which drivers can use cell phones that would neither be recorded as "holding phones to their ears," nor as "speaking with visible headsets on," nor as "visibly manipulating hand-held devices" in the NOPUS. These would include: (1) a driver using a cell phone headset who is not speaking during the approximately 10 seconds the driver is observed, and (2) a driver using technologies that cannot be observed from the roadside. Such technologies would include: a driver using a wireless earpiece obscured by hair or clothing or on the left ear; a driver conversing via a speakerphone with the phone on the passenger seat or in a cell phone holder on the vehicle dashboard; a driver using a phone that is built into the vehicle (such as OnStar); and a driver using the cell phone hands-free

¹ "Effects of Cell Phone Use and Other Driver Distractions on Highway Safety: 2006 Updates," Research Note prepared by the Institute for Traffic Safety Management and Research.

² D.W. Eby, J. W. Vivoda, & R. M. St. Louis (2006) "Driver Hand-held Cellular Phone Use: A Four Year Analysis," *Journal of Safety Research*, Volume 37, Issue 3, 2006, P261-265.

³ "The Mobile Phone Use by Drivers, 2005-2007," report prepared by the TRL Limited on behalf of the Department for Transport, and the report is available at http://www.trl.co.uk/store/reports_trl.asp?pid=304.

via a Bluetooth car kit or via a Bluetooth system that is built into the vehicle (such as Sync). It is possible that at some point in the future, NOPUS may be able to capture such behaviors by directing a device that can detect cell phones in use at passing vehicles.

The racial categories “Black,” “White,” and “Other Races” appearing in the tables reflect subjective characterizations by roadside observers regarding the race of occupants. Likewise observers recorded the age group (8-15 years; 16-24 years; 25-69 years; and 70 years or older) that best fit their visual assessment of each observed occupant.

“Expressway exit ramps” are defined as the access roads from roadways with limited access, while “other surface streets” comprise all other roadways.

States With Laws Banning Hand-Held Cell Phone Use While Driving¹

New York	New Jersey	District of Columbia	Connecticut
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¹ States with laws in effect as of June 30, 2007. Also includes DC. In no other States did such laws take effect during the period June 30, 2006 – June 30, 2007.

Driver cell phone use is largely unrestricted by State laws. No States ban use outright. Currently, only three States and the District of Columbia ban the use of hand-held phones while driving. One of these bans took effect in 2001 (New York), two in 2004 (New Jersey in May 2004 and DC in July 2004), and one in 2005 (Connecticut). In 2007, similar laws were passed in California and Washington and will take effect on July 1,

2008. Seventeen States and the District of Columbia have special cell phone driving laws for novice drivers. A few States ban use in certain situations, such as when operating a school bus or public transit vehicle. In addition, some major cities have hand-held bans or otherwise restrict use.

Driving while using a headset is even less restricted by traffic laws. No States or major cities ban use outright. As with driver cell phone use, a small number of States restrict the manner of use, e.g., by requiring sound to travel unimpaired to at least one of the driver’s ears, or ban certain types of use in certain situations, such as by banning cell phone use (whether hand-held or hands-free) when operating a school bus or public transit vehicle.

In May 2007, Washington became the first State to ban texting while driving for all drivers. New Jersey followed suit in November and a few other States are considering similar legislations.

NHTSA’s policy on using cell phones while driving is conveyed in the following statements from www.nhtsa.gov: “The primary responsibility of the driver is to operate a motor vehicle safely. The task of driving requires full attention and focus. Cell phone use can distract drivers from this task, risking harm to themselves and others. Therefore, the safest course of action is to refrain from using a cell phone while driving.” More information on the agency’s policy can be found on this Web site.



U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

For More Information

For questions regarding the information presented in this document, please contact Timothy M. Pickrell at timothy.pickrell@dot.gov or Tony Ye at tony.ye@dot.gov. Detailed analyses of the data in this publication, as well as additional data and information on the survey design and analysis procedures, will be available in upcoming publications to be posted at the Web site <http://www-nrd.nhtsa.dot.gov/CMSWeb/index.aspx> in 2008.