

**National Reported Patterns
of Driver Cellphone Use**

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ABSTRACT

Objectives: To obtain detailed information on patterns of driver cellphone use, including how often drivers talk and text, the extent to which they use hands-free devices, and knowledge of and reaction to state cellphone laws.

Methods: Telephone surveys were conducted with 1,219 drivers in the 48 contiguous US states and the District of Columbia, using random samples of landline and cellphone numbers.

Results: Forty percent of drivers reported talking on phones at least a few times per week. The percentages were highest for males (49 percent) and drivers ages 25-29 (66 percent). The percentage of drivers who reported never talking on phones was higher in states with all-driver bans on hand-held phone use (44 percent) than in states without a ban applying to all drivers (30 percent). The percentage of drivers who talk on phones and always talk hands-free was higher in states with all-driver hand-held phone bans (22 percent) than where such bans are not in effect (13 percent). Thirteen percent of drivers reported some texting while driving, and this percentage was highest among drivers ages 18-24 (43 percent). Twelve percent of drivers in states with all-driver texting bans reported texting while driving, compared with 14 percent in states with no texting ban. Among drivers ages 18-24, the percentages were 45 and 48 percent, respectively.

Conclusions: Most drivers reported talking on phones while driving, even though earlier surveys have found that most people think this behavior should be banned. Fewer drivers overall reported texting, but the frequency of texting was higher among young drivers. Laws banning hand-held phone use seem to discourage some drivers from talking on any type of phone and motivate some drivers to talk hands-free. Laws banning texting while driving have little effect on the reported frequency of texting while driving in any age group.

INTRODUCTION

Cellphone use in the United States has grown quickly during the past decade. There were more than 276 million wireless cellphone subscribers as of June 2009, up 42 percent from 194 million in June 2005 and nearly 3 times more than the 97 million subscribers in June 2000. Minutes of use surged to more than 1.1 trillion in June 2009 from 195 billion in June 2000 (Cellular Telecommunications and Internet Association, 2009).

Observational surveys of drivers stopped at intersections during daylight hours indicate that 6 percent of drivers in 2008 were using hand-held phones at any moment during the day. This means about 812,000 passenger vehicles on the road at any daytime moment were driven by people talking on hand-held phones. Female drivers more frequently used hand-held cellphones than male drivers (8 percent vs. 5 percent), and drivers ages 16-24 were more likely than other drivers to talk on hand-held cellphones. Combining the observational data with drivers' self-reported hands-free phone use, the federal government estimates that 11 percent of drivers were using any kind of phone at any moment during the day in 2008 (Pickrell and Ye, 2009).

Self-reported studies have indicated that phone use among drivers is frequent and generally higher among younger drivers than older ones (AAA Foundation for Traffic Safety, 2008; Boyle and Lampkin, 2008; Nationwide Mutual Insurance Company, 2008; State Farm Mutual Insurance, 2009). Results by driver gender have been inconsistent. Some studies found that female drivers talk more than male drivers (Nationwide Mutual Insurance Company, 2008; State Farm Mutual Insurance, 2009), but another study found that male drivers talk more (AAA Foundation for Traffic Safety, 2008).

To date, no survey has detailed patterns of driver cellphone use, including information not only on the extent of phone use but also on hands-free use, dialing methods, knowledge about state cellphone laws, and beliefs about enforcement. The objective of the current study was to collect such data and to analyze patterns of use by age and gender and by whether or not drivers are banned from talking on hand-held phones and texting. For a companion study to derive the number of crashes attributable to cellphone

use, drivers also were asked to provide details about trips and cellphone use on the last day they had driven (Farmer and Braitman, 2010).

METHODS

Random samples of more than 16,000 landline numbers and more than 12,000 cellphone numbers were obtained from an industry supplier of telephone samples. Telephone interviews were completed during November and December 2009 with 1,219 drivers ages 18 and older in the 48 contiguous US states and the District of Columbia, with a goal of achieving 20 percent of the sample from cellphone-only households. Interviews were conducted by TMR, Inc., a professional survey organization. For both phone number types, interviewers asked to speak to the youngest member of the household who was 18 or older. For cellphone numbers the interviewer asked if the respondent was driving. If so, the interviewer ended the call and called back later. Drivers were interviewed only if they had driven within the past week. Quotas were used to ensure approximately equal numbers of interviews by day of the week last driven. Drivers also were asked what vehicle type most of their trips were in the last day they drove. Motorcyclists were excluded. Table 1 summarizes completion results by phone number type.

[Insert Table 1 here]

Respondents were asked their age, gender, education level, and state of residence. They were asked whether they used landline telephones, cellphones, or both. Questions about cellphones assessed patterns and extent of driver cellphone use including talking, dialing, and texting, the extent to which drivers use hands-free devices, and the driving conditions in which drivers report talking on phones. For a companion study estimating the number of crashes attributable to cellphone use (Farmer and Braitman, 2010), respondents were asked to specify the last day on which they had driven, not including the day of the interview. For each trip during that day, they were asked to approximate the amount of time spent driving, the number of cellphone calls made or received, and the amount of driving time spent talking on a cellphone. This information was used to estimate the average driving time per day, average length of each call, and percentage of driving time spent talking on a cellphone.

At the time of the survey, a variety of laws limiting cellphone use had been enacted. The use of hand-held cellphones by all drivers was banned in 6 states and the District of Columbia; laws prohibiting use of both hand-held and hands-free cellphones by certain classes of drivers (young drivers and/or school bus drivers) were in effect in 20 states; laws prohibiting texting by all drivers were in effect in 16 states and the District of Columbia; and 9 states banned texting by young drivers and/or bus drivers. Laws in 4 additional states had been enacted but would not go into effect until January 1, 2010 (an all-driver ban on hand-held cellphones in Oregon; a ban on all cellphone use, including texting, by certain drivers in Kansas; and an all-driver ban on texting in Illinois and New Hampshire). In most states, the laws limiting cellphone use by young drivers applied only to those who were younger than 18. The exceptions were Illinois and Arkansas, where the laws applied to drivers younger than 19 and 21, respectively. Because all survey respondents were 18 or older very few, if any, were subject to the young driver cellphone laws.

Chi square analysis was used to explore relationships between patterns of cellphone use and driver age group and gender as well as patterns of use in states with and without laws banning hand-held cellphone use and texting. The Mantel-Haenszel chi-square statistic was used to test the statistical significance of trends involving driver age. The Pearson chi-square statistic was used for analyses involving driver gender and states with and without hand-held cellphone bans and with and without texting bans. P-values of 0.05 were used to evaluate all statistical tests, and all statistically significant findings are reported in the text.

RESULTS

Phone interviews were completed with 1,219 drivers. Of these, 3 drivers who completed interviews from the landline number sample had forwarded their calls to their cellphones. Therefore, 40 percent (487 drivers) were reached on cellphones and 60 percent (732 drivers) on landline phones. Sixteen percent (189 drivers) owned only cellphones, 7 percent (82 drivers) had only landline phones, and 78 percent (948 drivers) had both cellphones and landline phones. Forty-six percent (563 drivers) were male, and 54 percent (656 drivers) were female. Seven percent (89 drivers) were 18-24 years old, 6

percent (70 drivers) were 25-29 years old, 52 percent (634 drivers) were 30-59 years old, and 33 percent (406 drivers) were 60 and older. Two percent of drivers (20) did not report their ages.

The number of interviews completed by day of the week last driven ranged from 134 (11 percent) on Thursday to 223 (18 percent) on Sunday. Drivers were asked the type of vehicle they were in the last day they drove. Fifty-five percent (671) drove cars, 22 percent (264) drove SUVs, 14 percent (168) drove pickups, 8 percent (95) drove minivans, and 2 percent (21) drove commercial vehicles.

General Patterns of Cellphone Use When Driving

Drivers were asked how often they talk on the phone when driving. Responses by gender and age are shown in Table 2. Overall, 40 percent of drivers reported talking on the phone at least a few times per week, and this was higher for males than females ($\chi^2(4) = 41.7, p < 0.001$). Thirty-five percent of drivers of all ages reported never talking on the phone when driving; this generally increased across driver age groups ($\chi^2(1) = 4.8, p = 0.029$).

[Insert Table 2 here]

Drivers were asked how often they talk hands-free (Table 3). Distributions vary significantly by age ($\chi^2(1) = 7.6, p = 0.006$) and by gender ($\chi^2(7) = 37.3, p < 0.001$). Overall, 16 percent talk on the phone when driving and always talk hands-free. This percentage was higher for males than females, highest for drivers ages 30-59, and lowest for drivers ages 60 and older.

[Insert Table 3 here]

The percentages who always use hands-free phones were 30 among drivers who reported talking daily, 24 among drivers who talk on the phone a few times per week, and 21 among drivers who talk on cellphones fewer than 1 time per week ($\chi^2(2) = 5.8, p = 0.05$) (table not shown).

Frequency of phone use and extent of hands-free phone use were examined among drivers in states with and without all-driver bans on hand-held phone use (Table 4). Frequency of driver phone use of any type was higher in states without all-driver bans ($\chi^2(4) = 30.1, p < 0.001$). In states with such - driver bans, 22 percent of drivers talk on phones and always talk hands-free, while 19 percent talk on

phones and always use hand-held. In states without all-driver bans on hand-held phones, 13 percent talk on phones and always talk hands-free, whereas 40 percent talk on phones and always use hand-held ($\chi^2(7) = 65.1, p < 0.001$).

[Insert Table 4 here]

Drivers were asked whether they typically place a call when driving by voice dialing or pushing buttons (Table 5). Forty-four percent of drivers place calls by pushing buttons, and 11 percent said they voice dial. Responses varied by driver age ($\chi^2(15) = 157.8, p < 0.001$), gender ($\chi^2(5) = 33.1, p < 0.001$) and by whether or not the state has an all-driver ban on hand-held phone use ($\chi^2(5) = 104.8, p < 0.001$). Among drivers who push buttons to dial, 80 percent said they sometimes use a short cut such as speed dialing; the range was 64 percent among drivers 60 and older to 95 percent among drivers ages 18-24 (table not shown).

[Insert Table 5 here]

Drivers were asked if they sometimes pull to the side of the road to make or answer calls (table not shown). Overall, 41 percent said they sometimes pull over to make calls. The percentage was higher for males than females ($\chi^2(1) = 9.5, p = 0.002$), highest for drivers 30-59, and lowest for drivers 60 and older ($\chi^2(3) = 24.4, p < 0.001$). Twenty-four percent of drivers said they sometimes pull over to answer calls; the percentage was higher for males than females ($\chi^2(1) = 17.8, p < 0.001$), highest for drivers 30-59, and lowest for drivers ages 18-24 ($\chi^2(3) = 32.9, p < 0.001$).

Overall, 20 percent of drivers who reported phone use while driving said more than half of such calls are business-related (table not shown). This percentage was higher for males (31 percent) than females (8 percent) ($\chi^2(3) = 87.8, p < 0.001$), highest for drivers ages 30-59 (23 percent), and lowest for drivers ages 18-24 (13 percent) ($\chi^2(1) = 9.2, p = 0.002$).

Drivers were given a checklist of driving scenarios and asked if they have talked on the phone in each of the situations (Table 6). Calls were most likely in clear weather and during the day and least likely in inclement weather and heavy, high-speed traffic.

[Insert Table 6 here]

Cellphone Use on Last Day of Driving

Total driving time and driving time spent talking on phones were estimated based on questions about trips taken and phone calls placed on the last day of driving (Farmer and Braitman, 2010). Overall, the 1,219 subjects drove for approximately 73,860 minutes on their last day of driving, which represents an average of about 1 hour per driver per day. Total driving time spent talking on the phone was approximately 4,980 minutes, or 6.7 percent of total driving time. Although drivers did not provide the exact number of minutes spent talking on hands-free cellphones, they did approximate the percentage of talking time that was hands-free (see Table 3). These percentages were multiplied by the overall cellphone use time for each driver. For example, a driver who talked hands-free more than 75 percent of the time, but not always, had 87.5 percent of cellphone talking minutes coded as hands-free. Based on these estimates, total driving time spent talking on the phone hands-free was approximately 2,718 minutes, or 3.7 percent of driving time, and time spent talking on a hand-held phone was 2,262 minutes, or 3.1 percent of driving time. For drivers in states with bans on hand-held phone use, 3.6 percent of driving time was spent talking on the phone hands-free and 1.5 percent was spent talking on a hand-held phone. For drivers in states without bans, 3.7 percent of driving time was spent talking on the phone hands-free and 3.8 percent was spent talking on a hand-held phone.

Texting, Emailing, and Using the Internet When Driving

In addition to questions about phone calls, drivers were asked about the frequency of texting, e-mailing, and using the internet or other phone applications while driving. The frequency of each activity generally was low. Texting was the most common, with 13 percent reporting some texting while driving. Six percent of drivers reported e-mailing while driving, and 4 percent reported using the internet or another application (table not shown).

Frequency of texting by driver age and whether or not the state banned texting for some or all drivers is shown in Table 7. The percentage of drivers reporting some texting while driving was highest among drivers 18-24 years old (43) and lowest among drivers 60 and older (less than 1) ($\chi^2(1) = 7.4, p <$

0.001). There was no significant relationship between state law and frequency of texting while driving among all drivers or among any of the age groups.

[Insert Table 7 here]

Knowledge and Perceived Enforcement of Cellphone and Texting Bans

To assess knowledge about cellphone and texting laws, drivers were asked if their states banned hand-held phone use or texting while driving. In states with laws banning all drivers from using hand-held phones, 82 percent said there was a ban, 12 percent said there was not, and 5 percent were unsure. Twenty-nine percent of those who said there was a ban believed it was being strongly enforced (Table 8). Among drivers in states with laws banning texting for all drivers, 52 percent said there was a texting ban, 20 percent said there was not, and 28 percent were unsure. Twenty-two percent of drivers who said there was a texting ban thought it was being strongly enforced (Table 9).

[Insert Tables 8 and 9 here]

DISCUSSION

Most drivers admitted to talking on cellphones when driving, even though several earlier surveys have found that most people think drivers should not talk or text on phones when driving (Nationwide Mutual Insurance Company, 2009; State Farm Mutual Insurance, 2009). Phone use was highest among males and drivers ages 25-29. Fewer drivers overall reported texting while driving, but texting was much higher among younger than older drivers.

Laws banning hand-held phone use seem to have an effect on self-reported phone use. Drivers in states with laws banning hand-held phones for all drivers were less likely than other drivers to report talking on phones when driving, and when they do talk they are more likely than drivers in states without hand-held bans to talk hands-free. In comparison, laws banning texting while driving seems to have little effect on texting behavior. Older drivers did not report texting very often, regardless of whether or not their state had a law banning texting while driving. Among drivers most likely to text (18-24 years), the

percentage who reported texting while driving was 45 in states with all-driver texting bans compared with 48 in states without such bans.

A limitation of the survey is the reliance on drivers to report details about their cellphone use. Besides misremembering cellphone use, drivers also may underreport use because of negative public views of using cellphones while driving. Still, driver interviews are a good technique for gaining detailed information about use that cannot be gathered through observation, and other factors such as driver age can be determined rather than estimated. A strength of the study is the inclusion of adults whose only phone is a cellphone. The latest data from the National Center for Health Statistics reveal that the percentage of adults who have cellphones only (no landline number) ranges from 5 in Delaware to 25 in Oklahoma and the District of Columbia (Blumberg et al., 2009). Inclusion of this population is particularly important in a survey about driver cellphone use.

In conclusion, many drivers report talking on cellphones when driving, and many young drivers report frequent texting. Laws banning hand-held phone use seem to reduce the frequency of phoning while driving and increase hands-free use among drivers who talk, but laws banning texting while driving seem to have little effect.

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TABLES

Table 1. Results of attempted contacts by phone number type

	Landline number	Cellphone number
Initial sample	16,474	12,456
Did not reach	13,779	9,730
Refused	1,459	1,878
Language barrier	112	242
Did not drive in past week	119	78
Motorcyclist	1	0
Over quota by day of week	269	44
Completed interview	735	484

Table 2. Percent distribution of frequency of cellphone use when driving by gender and age

	Daily	Few times per week	Few times per month	Less than once a month	Never	Do not know
Total (n=1,219)	19	21	12	13	35	<1
Gender						
Male (n=563)	24	25	13	12	27	1
Female (n=656)	15	17	11	14	41	<1
Age						
18-24 (n=89)	20	31	18	10	20	0
25-29 (n=70)	39	27	13	1	20	0
30-59 (n=634)	24	24	14	13	25	<1
60 and older (n=406)	7	13	8	16	55	1

Table 3. Percent distribution of frequency of hands-free cellphone use when driving, by age and gender

	Total (n =1,219)	18-24 years (n =89)	25-29 years (n =70)	30-59 years (n =634)	60 and older (n =406)	Male (n=563)	Female (n=656)
Talk on phone when driving:							
Always hands-free	16	16	17	22	8	18	14
Hands-free more than 75 percent of time but not always	4	6	9	5	2	4	4
Hands-free more than half of the time, but less than 75 percent	1	3	0	1	1	2	<1
Hands-free about half of the time	5	8	10	4	3	6	3
Hands-free less than half of the time, but more than 25 percent	2	8	3	2	0	2	2
Hands-free less than 25 percent of the time	5	7	9	6	3	5	5
Always hand-held	33	33	33	36	28	35	31
No cellphone use when driving	35	20	20	25	55	27	41

Table 4. Percent distributions of frequency of phone use when driving, and how often talking is hands-free, by states with and without all-driver ban on hand-held phone use

	States with all-driver hand-held phone bans (n=395)	States without all-driver hand-held phone bans (n=824)
Frequency of phone use when driving		
Daily	13	22
Few times per week	17	22
Few times per month	12	12
Less than once a month	14	13
Never	44	30
Do not know	0	1
Hands-free use		
Talk when driving:		
Always hands-free	22	13
Hands-free more than 75 percent of time but not always	4	4
Hands-free more than half of the time, but less than 75 percent	1	1
Hands-free about half of the time	4	5
Hands-free less than half of the time, but more than 25 percent	2	2
Hands-free less than 25 percent of the time	4	5
Always hand-held	19	40
No cellphone use when driving	44	30

Table 5. Percent distribution of how drivers place when driving, by gender and age

	Voice dial	Push buttons to dial	Other	Do not know	Do not make calls when driving	No cellphone use
Total (n=1,219)	11	44	1	<1	10	35
Gender						
Male (n=563)	13	48	<1	<1	12	27
Female (n=656)	10	41	1	<1	8	41
Age						
18-24 (n=89)	21	57	10	0	1	20
25-29 (n=70)	14	61	0	1	3	20
30-59 (n=634)	14	49	1	<1	11	25
60 and older (n=406)	5	29	<1	<1	10	55

Table 6. Percent of drivers who said they have talked on the phone in each driving situation (n = 1,219)

	Percent
In clear weather	61
During the day	60
On trips lasting more than one hour	53
At intersections	51
At night	45
In free-flowing traffic on high speed highways	45
In stop-and-go traffic	42
In inclement weather like rain or snow	29
In heavy, high-speed traffic	24

Table 7. Frequency of text-messaging by driver age and states with all-driver texting bans, partial ban (some drivers banned from texting), and no ban

	States with all-driver texting ban	States with a texting ban for certain drivers	States with no texting ban	All states
18-24 years	(n=38)	(n=18)	(n=33)	(n=89)
Daily	18	6	12	13
Few times per week	18	17	15	17
Few times per month	3	6	12	7
Less than once per month	5	0	9	6
Never	55	72	52	57
25-29 years	(n=37)	(n=7)	(n=26)	(n=70)
Daily	5	0	23	11
Few times per week	8	0	8	7
Few times per month	16	0	12	13
Less than once per month	11	43	12	14
Never	59	57	46	54
30-59 years	(n=343)	(n=84)	(n=207)	(n=634)
Daily	2	1	2	2
Few times per week	3	4	2	3
Few times per month	2	1	5	3
Less than once per month	5	5	3	4
Never	88	88	88	88
60 years and older	(n=231)	(n=61)	(n=114)	(n=406)
Daily	0	0	0	0
Few times per week	0	3	0	<1
Few times per month	0	0	0	0
Less than once per month	0	0	1	<1
Never	100	97	99	99
All ages	(n=655)	(n=176)	(n=388)	(n=1,219)
Daily	3	1	4	3
Few times per week	3	5	3	3
Few times per month	2	1	4	3
Less than once per month	4	4	3	4
Never	88	88	86	87

Table 8. Knowledge about law banning hand-held phone use while driving and perceived level of enforcement, by states with all-driver hand-held phone bans, partial ban (some drivers banned from using phones), and no ban

	Percent who said there is a ban on hand-held phone use in their state	Percent who said ban is being strongly enforced, among drivers who said there was a ban
States with all-driver ban		
Yes	82	29
No	12	--
Don't know	5	--
States with partial ban		
Yes	19	18
No	62	--
Don't know	19	--
States with no ban		
Yes	14	24
No	62	
Don't know	24	

Table 9. Knowledge about law banning texting while driving and perceived level of enforcement, by states with all-driver texting bans, partial ban (some drivers banned from texting), and no ban

	Percent who said there is a ban on texting while driving in their state	Percent who said ban is being strongly enforced, among drivers who said there was a ban
States with all-driver ban		
Yes	52	22
No	20	--
Don't know	28	--
States with partial ban		
Yes	23	39
No	43	--
Don't know	34	--
States with no ban		
Yes	13	20
No	52	--
Don't know	35	--