EXHIBIT AN-1

CDC Wireless Substitution Report
July–December 2013

EXHIBIT AN-2

CDC Wireless Substitution, State Level Estimates
Dec 2013

EXHIBIT AN-1

CDC Wireless Substitution Report
July–December 2013

NATIONAL HEALTH INTERVIEW SURVEY
EARLY RELEASE PROGRAM

Wireless Substitution: Early Release of Estimates From the National Health Interview Survey, July–December 2013

Stephen J. Blumberg, Ph.D., and Julian V. Luke
Division of Health Interview Statistics, National Center for Health Statistics

Overview

Preliminary results from the July–December 2013 National Health Interview Survey (NHIS) indicate that the number of American homes with only wireless telephones continues to grow. Two in every five American homes (41.0%) had only wireless telephones (also known as cellular telephones, cell phones, or mobile phones) during the second half of 2013—an increase of 1.6 percentage points since the first half of 2013 and 2.8 percentage points since the second half of 2012. However, these increases are smaller than those observed in previous years. This report presents the most up-to-date estimates available from the federal government concerning the size and characteristics of these populations.

NHIS Early Release Program

This report is published as part of the NHIS Early Release Program. Twice each year, the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS) releases selected estimates of telephone coverage for the civilian noninstitutionalized U.S. population based on data from NHIS, along with comparable estimates from NHIS for the previous 3 years. The estimates are based on in-person interviews that NHIS conducts continuously throughout the year to collect information on health status, health-related behaviors, and health care access and utilization. The survey also includes information about household telephones and whether anyone in the household has a wireless telephone.

Two additional reports are published regularly as part of the NHIS Early Release Program. *Early Release of Selected Estimates Based on Data From the National Health Interview Survey* is published quarterly and provides estimates for 15 selected measures of health. *Health Insurance Coverage: Early Release of Estimates From the National Health Interview Survey* is also published quarterly and provides additional estimates regarding health insurance coverage. Other Early Release Program products are released as needed.

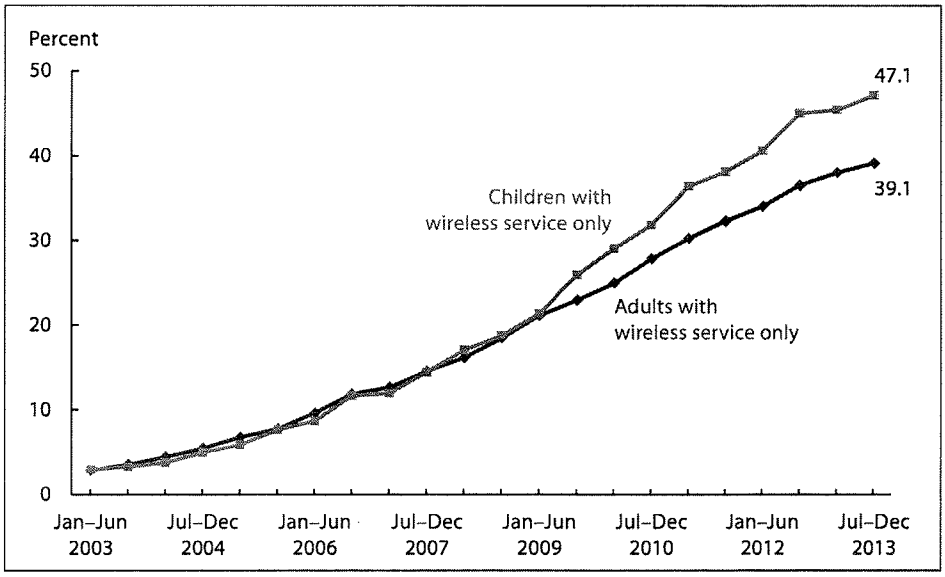
Methods

For many years, NHIS has asked respondents to provide residential telephone numbers, to permit the recontacting of survey participants. Starting in 2003, additional questions were asked to determine whether a family had a landline telephone. An NHIS family was considered to have landline telephone service if the survey respondent for the family reported that there was "at least one phone inside your home that is currently working and is not a cell phone." (To avoid possible confusion with cordless landline telephones, the word "wireless" was not used in the survey.)

An NHIS "family" is an individual or a group of two or more related persons living together in the same housing unit (a "household"). Thus, a family can consist of only one person, and more than one family can live in a household (including, for example, a household where there are multiple single-person families, as when unrelated roommates are living together).

The survey respondent for each family was also asked whether "anyone in

Figure. Percentages of adults and children living in households with only wireless telephone service: United States, 2003–2013



NOTE: Adults are aged 18 and over; children are under age 18.
DATA SOURCE: CDC/NCHS, National Health Interview Survey.

your family has a working cellular telephone." Families are identified as "wireless families" if respondents reported that someone in the family had a working cell phone at the time of interview. This person (or persons) could be a civilian adult, a member of the military, or a child.

Households are identified as "wireless-only" if they include at least one wireless family and if there are no families with landline telephone service in the household. Persons are identified as wireless-only if they live in a wireless-only household. A similar approach is used to identify adults living in households with no telephone service (neither wireless nor landline). Household telephone status (rather than family telephone status) is used in this report because most telephone surveys do not attempt to distinguish among families when more than one family lives in the same household.

From July through December 2013, information on household telephone status was obtained for 21,512 households that included at least one civilian adult or child. These households included 40,173 civilian adults aged 18 and over, and 13,714 children under age 18. Analyses of telephone status are presented separately for households, adults, and children in **Table 1**.

Analyses of demographic characteristics are based on data from the NHIS Person and Household Files. Demographic data for all civilian adults living in interviewed households were used in these analyses. "Household income" is the sum of the family incomes in the household. Estimates stratified by household poverty status are based on reported income only because imputed income values are not available until a few months after the annual release of NHIS microdata. Household poverty status was unknown for 21.5% of adults in these analyses.

Analyses of selected health measures are based on data from the NHIS Sample Adult File. Health-related data for one randomly selected civilian adult (the "sample adult") in each family were used in these analyses. From July through December 2013, data on household telephone status and selected health measures were collected from 17,967 of these sample adults.

Because NHIS is conducted throughout the year and the sample is designed to yield a nationally representative sample each month, data can be analyzed quarterly. Weights are created for each calendar quarter of the NHIS sample. NHIS data weighting procedures are described in more detail in a previous NCHS report (**Parsons et al., 2014**). To provide access to the most recent information from NHIS, estimates using the July–December 2013 data are being released prior to final data editing and final weighting. These estimates should be considered preliminary. If estimates are produced using the final data files, the estimates may differ slightly from those presented here.

Point estimates and 95% confidence intervals were calculated using SUDAAN software (RTI International, Research Triangle Park, NC) to account for the complex sample design of NHIS. Differences between percentages were evaluated using two-sided significance tests at the 0.05 level. Terms such as "more likely" and "less likely" indicate a statistically significant difference. Lack of comment regarding the difference between any two estimates does not necessarily mean that the difference was tested and found to be not significant. Because of small sample sizes, estimates based on less than 1 year of data may have large variances, and caution should be used in interpreting such estimates.

Telephone Status

In the second 6 months of 2013, two in every five households (41.0%) did not have a landline telephone but did have at least one wireless telephone (**Table 1**). Approximately 39.1% of all adults (about 93 million adults) lived in households with only wireless telephones; 47.1% of all children (nearly 35 million children) lived in households with only wireless telephones.

Although the percentage of households that are wireless-only continues to increase, there is evidence that the rate of growth may be slowing. Considering the annual change from the second 6 months of one year through the second 6 months of the next, the 2.8-percentage-point increase from 2012 through 2013 is less than the 4.2-percentage-point increase from 2011 through 2012 and the 4.3-percentage-point increase from 2010 through 2011. The annual growth from 2009 to 2010 was 5.2 percentage points (results not shown).

The percentages of adults and children living in wireless-only households has also been increasing over time (**Figure**), although neither the 1.1-percentage-point increase for adults from the first 6 months through the second 6 months of 2013 nor the 1.7-percentage-point increase for children over the same period was statistically significant.

The percentages of adults and children living without any telephone service have remained relatively unchanged over the past 3 years. Approximately 2.5% of households had no telephone service (neither wireless nor landline). About 5.2 million adults (2.2%) and 1.8 million children (2.5%) lived in these households.

Demographic Differences

The percentage of U.S. civilian noninstitutionalized adults living in wireless-only households is shown, by selected demographic characteristics and by survey time period, in **Table 2**. For July–December 2013, there are five demographic groups in which the majority live in households with only wireless telephones: adults aged 18–34, adults living only with unrelated adult roommates, adults renting their home, adults living in poverty, and Hispanic adults.

- Nearly two-thirds of adults aged 25–29 (65.7%) lived in households with only wireless telephones. This rate is greater than the rates for those aged 18–24 (53.0%) or 30–34 (59.7%). The percentage of adults living in households with only wireless telephones decreased as age increased beyond 35 years: 47.8% for those aged 35–44; 31.4% for those aged 45–64; and 13.6% for those aged 65 and over.
- Three in four adults living only with unrelated adult roommates (76.1%) were in households with only wireless

telephones. This rate is higher than the rates for adults living alone (46.6%) and for adults living only with spouses or other adult family members (31.0%).

- Three in five adults living in rented homes (61.7%) had only wireless telephones. This rate is more than twice the rate for adults living in homes owned by a household member (28.5%).
- Adults living in poverty (56.2%) were more likely than adults living near poverty (46.1%) and higher income adults (36.6%) to be living in households with only wireless telephones. (**Table 2**, footnote 3, gives definitions of these categories.)
- Hispanic adults (53.1%) were more likely than non-Hispanic white (35.1%) or non-Hispanic black (42.7%) adults to be living in households with only wireless telephones.

Other demographic differences were also noted:

- Men (40.4%) were more likely than women (37.9%) to be living in households with only wireless telephones.
- Adults living in the Midwest (43.7%), South (41.9%), and West (41.2%) were more likely than those living in the Northeast (24.9%) to be living in households with only wireless telephones.

Demographic Distributions

The demographic differences noted in the previous section are based on the distribution of household telephone status within each demographic group. When examining the population of wireless-only adults, some readers may instead wish to consider the distribution of various demographic characteristics within the wireless-only adult population.

Table 3 gives the percent distributions of selected demographic characteristics for adults living in households with only wireless telephones, by survey time period. The estimates in this table reveal that the distributions of selected demographic characteristics changed little over the 3-year period shown. The exceptions were related to age and home ownership status. From the second 6 months of 2010 to the second 6 months of 2013,

- Among all wireless-only adults, the proportion aged 35 and over has increased steadily. In the second 6 months of 2013, more than one-half of wireless-only adults (54.6%) were aged 35 and over, up from 47.6% in the second 6 months of 2010.
- Among all wireless-only adults, the proportion living in homes owned by a household member increased. In the second 6 months of 2013, 48.5% of wireless-only adults were living in homes owned by a household member, up from 43.3% in the second 6 months of 2010.

Selected Health Measures by Household Telephone Status

Many health surveys, political polls, and other types of research are conducted using random-digit-dial (RDD) telephone surveys. Until recently, these surveys did not include wireless telephone numbers in their samples. Now, despite operational challenges, most major survey research organizations are including wireless telephone numbers when conducting RDD surveys. If they did not, the exclusion of households with only wireless telephones (along with the small proportion of households that have no telephone service) could bias results. This bias—known as coverage bias—could exist if there are differences between persons with and without landline telephones for the substantive variables of interest.

The NHIS Early Release Program updates and releases estimates for 15 key health indicators every 3 months. **Table 4** presents estimates by household telephone status (landline, wireless-only, or phoneless) for all but two of these measures. ("Pneumococcal vaccination" and "personal care needs" were not included because these indicators are limited to older adults aged 65 and over.) For July–December 2013,

- The prevalence of having five or more alcoholic drinks in 1 day during the past year among wireless-only adults (29.0%) was substantially higher than the prevalence among adults living in landline households (17.2%). Wireless-only adults were also more likely to be current smokers than were adults living in landline households.
- The percentage without health insurance coverage at the time of interview among wireless-only adults under age 65 (25.2%) was greater than the percentage among adults in that age group living in landline households (14.7%).
- Compared with adults living in landline households, wireless-only adults were more likely to have experienced financial barriers to obtaining needed health care, and they were less likely to have a usual place to go for medical care. Wireless-only adults were also less likely to have received an influenza vaccination during the previous year
- Wireless-only adults (45.1%) were more likely than adults living in landline households (32.3%) to have ever been tested for human immunodeficiency virus (HIV), the virus that causes AIDS.

The potential for bias due to undercoverage remains a real threat to surveys conducted only on landline telephones.

Wireless-mostly Households

The potential for bias due to undercoverage is not the only threat to surveys conducted only on landline telephones. Researchers are also concerned that some people living in households with landlines cannot be reached on those landlines because they rely on wireless telephones for all or almost all of their calls.

In 2007, a question was added to NHIS for persons living in families with both landline and cellular telephones. The

respondent for the family was asked to consider all of the telephone calls his or her family receives and to report whether "all or almost all calls are received on cell phones, some are received on cell phones and some on regular phones, or very few or none are received on cell phones." This question permits the identification of persons living in "wireless-mostly" households—defined as households with both landline and cellular telephones in which all families receive all or almost all calls on cell phones.

Among households with both landline and wireless telephones, 33.6% received all or almost all calls on wireless telephones, based on data for July–December 2013. These wireless-mostly households make up 16.1% of all households. During the second 6 months of 2013, about 44 million adults (18.3%) lived in wireless-mostly households. This prevalence estimate was greater than, but not significantly different from, the estimate for the second 6 months of 2010 (17.4%).

Table 5 gives the percentage of adults living in wireless-mostly households, by demographic characteristics and by survey time period. For July–December 2013,

- Adults with college degrees (22.3%) were more likely to be living in wireless-mostly households than were high school graduates (16.5%) or adults with less education (12.4%).
- Adults living with children (22.6%) were more likely than adults living alone (9.4%), with roommates (11.2%), or with only adult relatives (18.1%) to be living in wireless-mostly households.
- Adults living in poverty (9.1%) and adults living near poverty (12.0%) were less likely than higher-income adults (22.1%) to be living in wireless-mostly households.
- Adults living in rented homes (12.4%) were less likely to be living in wireless-mostly households than were adults living in homes owned by a household member (21.0%).

Research by **Boyle, Lewis, and Tefft (2009)** suggests that the majority of adults living in wireless-mostly households are reachable using their landline telephone number. NHIS data cannot be used to estimate the proportion of wireless-mostly adults who are unreachable or to estimate the potential for bias due to their exclusion from landline surveys.

References and Other Sources of Information

For more information about the potential implications for health surveys that are based on landline telephone interviews, see

- Blumberg SJ, Luke JV. Reevaluating the need for concern regarding noncoverage bias in landline surveys. Am J Public Health 99(10):1806–10. 2009. Available from: http://ajph.aphapublications.org/cgi/content/abstract/99/10/1806.
- Blumberg SJ, Luke JV, Cynamon ML, Frankel MR. Recent trends in household telephone coverage in the United States. In: Lepkowski JM et al., eds. Advances in telephone survey methodology. New York: John Wiley and Sons, 56–86. 2008.
- Boyle JM, Lewis F, Tefft B. Cell phone mainly households: Coverage and reach for telephone surveys using RDD landline samples. Survey Practice 2(9). 2009. Available from: http://surveypractice.wordpress.com/2009/12/09/cell-phone-and-landlines/.

When including wireless telephone numbers in RDD surveys, researchers have many methodological, statistical, operational, legal, and ethical issues to consider. These issues have been described in a report from a task force of the American Association for Public Opinion Research (AAPOR). That task force included staff from CDC, and its report is available online:

- AAPOR Cell Phone Task Force. New considerations for survey researchers when planning and conducting RDD telephone surveys in the U.S. with respondents reached via cell phone numbers. Deerfield, IL: American Association for Public Opinion Research. 2010. Available from: http://aapor.org/cell_phone_task_force.htm.

The potential for bias may differ from one state to another because the prevalence of wireless-only households varies substantially across states. For more information about prevalence estimates at the state and local levels, see

- Blumberg SJ, Ganesh N, Luke JV, Gonzales G. Wireless substitution: State-level estimates from the National Health Interview Survey, 2012. National health statistics reports; no 70. Hyattsville, MD: National Center for Health Statistics. 2013. Available from: http://www.cdc.gov/nchs/data/nhsr/nhsr070.pdf.

For more information about NHIS and the NHIS Early Release Program, or to find other Early Release Program products, see

- NHIS home page at http://www.cdc.gov/nchs/nhis.htm.
- Early Release Program home page at http://www.cdc.gov/nchs/nhis/releases.htm.
- Parsons VL, Moriarity CL, Jonas K, et al. Design and estimation for the National Health Interview Survey: 2006–2015. National Center for Health Statistics. Vital Health Stat 2(165). 2014. Available from: http://www.cdc.gov/nchs/data/series/sr_02/sr02_165.pdf.

Suggested Citation

Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, July–December 2013. National Center for Health Statistics. July 2014. Available from: http://www.cdc.gov/nchs/nhis.htm.

Table 1. Percent distribution of household telephone status for households, adults, and children, by date of interview: United States, July 2010–December 2013

Date of interview	Number of households (unweighted)	Household telephone status						
		Landline with wireless	Landline without wireless	Landline with unknown wireless	Nonlandline with unknown wireless	Wireless-only	Phoneless	Total
		Percent of households						
July–December 2010	16,676	55.0	12.9	0.3	0.1	29.7	2.0	100.0
January–June 2011	20,133	55.0	11.2	0.2	0.1	31.6	2.0	100.0
July–December 2011	19,311	53.4	10.2	0.2	0.0	34.0	2.2	100.0
January–June 2012	20,608	52.5	9.4	0.2	0.0	35.8	2.1	100.0
July–December 2012	21,709	50.8	8.6	0.2	0.1	38.2	2.1	100.0
January–June 2013	19,765	49.5	8.5	0.1	0.0	39.4	2.3	100.0
July–December 2013	21,512	47.7	8.6	0.1	0.1	41.0	2.5	100.0
95% confidence interval[1]	...	46.53–48.92	8.05–9.15	0.06–0.16	0.02–0.11	39.82–42.28	2.22–2.79	...
		Percent of adults						
July–December 2010	31,791	59.4	10.7	0.3	0.1	27.8	1.8	100.0
January–June 2011	38,104	58.8	9.0	0.2	0.0	30.2	1.8	100.0
July–December 2011	36,564	57.3	8.3	0.2	0.0	32.3	1.9	100.0
January–June 2012	38,896	56.1	7.8	0.2	0.0	34.0	1.9	100.0
July–December 2012	40,839	54.4	7.0	0.2	0.1	36.5	1.9	100.0
January–June 2013	37,268	52.8	6.9	0.1	0.0	38.0	2.2	100.0
July–December 2013	40,173	51.5	7.0	0.1	0.1	39.1	2.2	100.0
95% confidence interval[1]	...	50.27–52.74	6.54–7.53	0.05–0.16	0.02–0.11	37.86–40.36	1.97–2.51	...
		Percent of children						
July–December 2010	11,815	59.8	6.2	0.1	0.1	31.8	2.0	100.0
January–June 2011	13,753	56.7	5.1	0.1	0.0	36.4	1.7	100.0
July–December 2011	13,028	54.7	4.8	0.1	0.0	38.1	2.2	100.0
January–June 2012	13,905	52.7	4.5	0.1	–	40.6	2.2	100.0
July–December 2012	14,083	49.5	3.4	0.1	0.1	45.0	1.9	100.0
January–June 2013	12,932	48.3	3.6	0.1	0.0	45.4	2.6	100.0
July–December 2013	13,714	46.4	3.8	0.1	0.0	47.1	2.5	100.0
95% confidence interval[1]	...	44.64–48.21	3.26–4.43	0.03–0.19	0.01–0.07	45.38–48.89	2.06–3.15	...

0.0 Quantity more than zero but less than 0.05.

... Category not applicable.

–Quantity zero.

[1]Refers to July–December 2013.

NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, July 2010–December 2013.

Table 2. Percentage of adults living in wireless-only households, by selected demographic characteristics and calendar half-years: United States, July 2010–December 2013

Demographic characteristic	Calendar half-year							95% confidence interval[1]
	Jul–Dec 2010	Jan–Jun 2011	Jul–Dec 2011	Jan–Jun 2012	Jul–Dec 2012	Jan–Jun 2013	Jul–Dec 2013	
Race/ethnicity								
Hispanic or Latino, any race(s)	38.4	40.8	43.3	46.5	50.5	49.9	53.1	50.77–55.35
Non-Hispanic white, single race	25.0	27.6	29.0	30.4	32.9	35.1	35.1	33.59–36.61
Non-Hispanic black, single race	31.1	32.5	36.8	37.7	39.0	39.4	42.7	40.22–45.25
Non-Hispanic Asian, single race	27.0	27.7	31.6	33.4	34.4	35.2	38.1	34.79–41.59
Non-Hispanic other, single race	31.9	33.8	44.1	43.4	43.9	50.1	51.7	42.50–60.82
Non-Hispanic multiple race	36.1	39.3	36.7	40.2	45.3	46.2	45.7	40.11–51.45
Age (years)								
18–24	45.5	46.8	48.6	49.5	53.2	54.3	53.0	50.34–55.60
25–29	53.5	58.1	59.6	60.1	62.1	65.6	65.7	63.16–68.17
30–34	43.8	46.2	50.9	55.1	56.7	59.9	59.7	57.31–62.09
35–44	30.9	34.3	36.8	39.1	43.5	44.5	47.8	45.75–49.79
45–64	18.8	21.6	23.8	25.8	28.4	29.8	31.4	30.09–32.73
65 and over	7.7	7.9	8.5	10.5	11.6	12.6	13.6	12.42–14.81
Sex								
Male	29.0	31.4	33.7	35.2	38.0	39.7	40.4	39.00–41.73
Female	26.8	29.1	30.9	32.9	35.1	36.5	37.9	36.69–39.20
Education								
Some high school or less	29.2	32.1	34.7	36.4	42.4	41.7	41.8	39.73–43.97
High school graduate or GED[2]	27.6	30.8	32.7	33.9	35.9	37.2	38.8	37.15–40.43
Some post-high school, no degree	30.9	31.8	35.1	36.7	38.3	40.6	41.7	39.97–43.43
4-year college degree or higher	24.3	26.9	27.8	30.1	32.2	34.5	35.5	33.63–37.51
Employment status last week								
Working at a job or business	31.5	34.2	36.8	38.4	41.4	43.5	44.4	43.02–45.78
Keeping house	25.8	31.2	32.7	34.0	38.6	39.4	40.5	37.79–43.23
Going to school	38.6	35.3	40.8	41.9	46.0	48.1	46.3	42.23–51.49
Something else (incl. unemployed)	19.2	21.0	22.3	23.6	25.1	25.2	27.0	25.71–28.24
Household structure								
Adult living alone	36.8	38.0	41.3	43.0	43.9	46.4	46.6	44.65–48.54
Unrelated adults, no children	69.7	71.3	77.5	75.9	76.2	74.7	76.1	69.07–81.97
Related adults, no children	22.1	23.2	25.1	27.0	28.2	29.6	31.0	29.56–32.46
Adult(s) with children	29.4	33.6	35.4	37.2	42.2	43.6	44.8	43.12–46.40
Household poverty status[3]								
Poor	42.8	46.8	51.4	51.8	54.3	54.7	56.2	53.47–58.96
Near-poor	35.2	38.1	39.6	42.3	45.9	47.5	46.1	43.65–48.50
Not-poor	24.1	27.7	28.9	30.7	33.2	35.3	36.6	35.02–38.16

See footnotes at end of table.

Table 2. Percentage of adults living in wireless-only households, by selected demographic characteristics and calendar half-years: United States, July 2010–December 2013—*Continued*

Demographic characteristic	Calendar half-year							95% confidence interval[1]
	Jul–Dec 2010	Jan–Jun 2011	Jul–Dec 2011	Jan–Jun 2012	Jul–Dec 2012	Jan–Jun 2013	Jul–Dec 2013	
Geographic region[4]								
Northeast	17.2	18.8	20.6	23.1	23.6	27.1	24.9	21.89–28.15
Midwest	30.0	33.5	35.2	37.5	40.6	39.6	43.7	41.02–46.40
South	31.1	33.6	35.9	37.2	39.7	41.8	41.9	39.87–43.86
West	28.7	30.3	33.0	34.0	37.8	39.0	41.2	38.86–43.39
Metropolitan statistical area status								
Metropolitan	29.1	31.4	33.6	35.7	38.1	39.5	40.5	39.07–41.90
Not metropolitan	22.9	25.6	27.2	27.1	30.5	32.4	33.7	30.92–36.59
Home ownership status[5]								
Owned or being bought	17.7	20.6	21.2	23.2	25.4	27.2	28.5	27.22–29.76
Renting	50.3	52.5	56.0	58.2	59.7	61.5	61.7	60.15–63.30
Other arrangement	35.1	38.4	40.7	37.7	49.1	42.6	49.3	42.80–55.90
Number of wireless-only adults in survey sample (unweighted)	9,228	11,872	12,350	13,724	15,589	14,512	16,436	...

... Category not applicable.

[1]Refers to July–December 2013.

[2]GED is General Educational Development high school equivalency diploma.

[3]Based on household income and household size using the U.S. Census Bureau's poverty thresholds. "Poor" persons are defined as those below the poverty threshold. "Near-poor" persons have incomes of 100% to less than 200% of the poverty threshold. "Not-poor" persons have incomes of 200% of the poverty threshold or greater. Early Release estimates stratified by poverty status are based on reported income only and may differ from similar estimates produced later that are based on both reported and imputed income. NCHS imputes income when income is unknown, but the imputed income file is not available until a few months after the annual release of National Health Interview Survey microdata. For households with multiple families, household income and household size were calculated as the sum of the multiple measures of family income and family size.

[4]In the geographic classification of the U.S. population, states are grouped into the following four regions used by the U.S. Census Bureau: *Northeast* includes Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania; *Midwest* includes Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Kansas, and Nebraska; *South* includes Delaware, Maryland, District of Columbia, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Oklahoma, Arkansas, and Texas; and *West* includes Washington, Oregon, California, Nevada, New Mexico, Arizona, Idaho, Utah, Colorado, Montana, Wyoming, Alaska, and Hawaii.

[5]For households with multiple families, home ownership status was determined by considering the reported home ownership status for each family. If any family reported owning the home, then the household-level variable was classified as "Owned or being bought" for all persons living in the household. If one family reported renting the home and another family reported "other arrangement," then the household-level variable was classified as "Other arrangement" for all persons living in the household.

NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, July 2010–December 2013.

Table 3. Percent distributions of selected demographic characteristics for adults living in wireless-only households, by date of interview: United States, July 2010–December 2013

Demographic characteristic	Calendar half-year							95% confidence interval[3]
	Jul–Dec 2010	Jan–Jun 2011	Jul–Dec 2011	Jan–Jun 2012	Jul–Dec 2012	Jan–Jun 2013	Jul–Dec 2013	
Race/ethnicity								
Hispanic or Latino, any race(s)	19.5	19.0	19.1	20.3	20.6	19.7	20.5	18.82–22.34
Non-Hispanic white, single race	61.0	61.8	61.0	59.6	59.7	61.0	59.2	57.35–61.09
Non-Hispanic black, single race	13.0	12.5	13.1	12.7	12.3	12.0	12.6	11.53–13.76
Non-Hispanic Asian, single race	4.5	4.3	4.7	5.1	4.9	5.0	5.2	4.67–5.83
Non-Hispanic other, single race	0.7	0.8	0.9	0.8	0.8	0.9	1.0	0.70–1.35
Non-Hispanic multiple race	1.3	1.6	1.3	1.5	1.6	1.5	1.4	1.23–1.69
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Age (years)								
18–24	21.1	20.0	19.4	18.9	18.9	18.4	17.4	16.30–18.65
25–29	17.7	17.6	17.0	15.5	14.8	15.2	14.8	13.92–15.66
30–34	13.7	13.3	14.0	14.0	13.4	13.5	13.3	12.59–13.99
35–44	19.3	19.5	19.2	19.5	20.0	19.7	20.4	19.45–21.34
45–64	23.6	25.0	25.8	26.7	27.1	27.2	27.8	26.72–28.81
65 and over	4.7	4.5	4.6	5.5	5.7	6.0	6.4	5.78–7.05
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Sex								
Male	50.3	50.4	50.7	49.8	50.1	50.3	49.7	49.04–50.38
Female	49.7	49.6	49.3	50.2	49.9	49.7	50.3	49.62–50.96
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Education								
Some high school or less	15.4	15.6	15.2	15.2	16.1	15.0	14.5	13.58–15.44
High school graduate or GED[2]	28.1	27.8	28.2	27.1	27.4	26.7	26.9	25.83–27.98
Some post-high school, no degree	32.7	32.2	32.7	33.3	31.8	32.6	32.4	31.14–33.71
4-year college degree or higher	23.9	24.3	23.9	24.5	24.6	25.8	26.2	24.82–27.65
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Employment status last week								
Working at a job or business	68.8	68.5	69.0	69.3	68.9	69.7	70.1	69.02–71.12
Keeping house	5.5	5.9	5.6	5.3	5.8	5.9	5.7	5.21–6.13
Going to school	4.7	4.2	4.0	4.3	4.0	4.4	3.6	3.10–4.28
Something else (incl. unemployed)	20.0	20.3	20.6	20.2	20.5	19.2	19.8	18.92–20.81
Unknown, not reported	1.1	1.0	0.7	0.9	0.9	0.7	0.8	0.58–1.02
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Household structure								
Adult living alone	20.0	18.7	19.8	18.9	18.6	18.8	18.6	17.56–19.65
Unrelated adults, no children	4.0	4.3	4.0	3.8	3.1	3.2	2.9	2.24–3.69
Related adults, no children	36.0	35.3	35.8	36.9	35.7	35.8	36.9	35.60–38.28
Adult(s) with children	40.0	41.7	40.5	40.4	42.6	42.2	41.6	40.11–43.13
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...

See footnotes at end of table.

Table 3. Percent distribution of selected demographic characteristics for adults living in wireless-only households, by date of interview: United States, July 2010–December 2013—*Continued*

Demographic characteristic	Calendar half-year							95% confidence interval[1]
	Jul–Dec 2010	Jan–Jun 2011	Jul–Dec 2011	Jan–Jun 2012	Jul–Dec 2012	Jan–Jun 2013	Jul–Dec 2013	
Household poverty status[3]								
Poor	17.4	15.6	15.9	15.0	15.4	13.9	14.1	13.00–15.27
Near-poor	18.6	17.7	18.2	17.7	18.0	17.8	16.6	15.66–17.58
Not-poor	52.3	47.8	46.2	47.1	46.1	48.5	47.8	46.14–49.48
Unknown, not reported	11.7	18.8	19.8	20.2	20.6	19.7	21.5	20.16–22.90
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Geographic region[4]								
Northeast	11.0	11.1	11.7	12.4	11.7	12.6	11.3	9.63–13.15
Midwest	24.7	24.9	25.2	24.5	24.8	23.1	25.1	22.91–27.35
South	40.2	40.5	39.9	40.4	40.1	40.8	39.9	37.59–42.19
West	24.1	23.5	23.3	22.8	23.4	23.6	23.8	21.93–25.78
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Metropolitan statistical area status								
Metropolitan	82.7	82.8	82.3	83.9	82.6	82.8	82.6	80.34–84.58
Not metropolitan	17.3	17.2	17.7	16.1	17.4	17.2	17.4	15.42–19.66
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Home ownership status[5]								
Owned or being bought	43.3	47.0	44.2	46.5	46.6	48.0	48.5	46.65–50.27
Renting	54.2	49.9	53.3	51.2	50.9	49.6	49.1	47.28–50.99
Other arrangement	2.5	3.0	2.5	2.3	2.6	2.4	2.4	1.94–2.97
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	...
Number of wireless-only adults in survey sample (unweighted)	9,228	11,872	12,350	13,724	15,589	14,512	16,436	...

... Category not applicable.

[1]Refers to July–December 2013.

[2]GED is General Educational Development high school equivalency diploma.

[3]Based on household income and household size using the U.S. Census Bureau's poverty thresholds. "Poor" persons are defined as those below the poverty threshold. "Near-poor" persons have incomes of 100% to less than 200% of the poverty threshold. "Not-poor" persons have incomes of 200% of the poverty threshold or greater. Early Release estimates stratified by poverty status are based on reported income only and may differ from similar estimates produced later that are based on both reported and imputed income. NCHS imputes income when income is unknown, but the imputed income file is not available until a few months after the annual release of National Health Interview Survey microdata. For households with multiple families, household income and household size were calculated as the sum of the multiple measures of family income and family size.

[4]In the geographic classification of the U.S. population, states are grouped into the following four regions used by the U.S. Census Bureau: *Northeast* includes Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania; *Midwest* includes Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Kansas, and Nebraska; *South* includes Delaware, Maryland, District of Columbia, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Oklahoma, Arkansas, and Texas; and *West* includes Washington, Oregon, California, Nevada, New Mexico, Arizona, Idaho, Utah, Colorado, Montana, Wyoming, Alaska, and Hawaii.

[5]For households with multiple families, home ownership status was determined by considering the reported home ownership status for each family. If any family reported owning the home, then the household-level variable was classified as "Owned or being bought" for all persons living in the household. If one family reported renting the home and another family reported "other arrangement," then the household-level variable was classified as "Other arrangement" for all persons living in the household.

NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, July 2010–December 2013.

Table 4. Prevalence rates (and 95% confidence intervals) for selected measures of health-related behaviors, health status, health care service use, and health care access for adults aged 18 and over, by household telephone status: United States, July–December 2013

Measure	Household telephone status		
	Landline[1]	Wireless-only	Phoneless
Health-related behaviors			
Five or more alcoholic drinks in 1 day at least once in past year[2]	17.2 (16.09–18.45)	29.0 (27.30–30.69)	27.4 (21.68–33.99)
Current smoker[3]	15.2 (14.27–16.26)	22.4 (20.96–23.84)	21.4 (17.38–26.07)
Engaged in regular leisure-time physical activity[4]	36.4 (34.99–37.85)	40.9 (39.36–42.53)	32.2 (26.85–38.12)
Health status			
Health status described as excellent or very good[5]	57.4 (55.95–58.90)	63.8 (62.31–65.33)	57.9 (52.00–63.59)
Experienced serious psychological distress in past 30 days[6]	3.5 (2.96–4.07)	4.4 (3.80–5.08)	6.8 (4.37–10.49)
Obese (adults aged 20 and over)[7]	29.9 (28.41–31.50)	29.0 (27.50–30.48)	29.0 (23.56–35.16)
Asthma episode in past year[8]	3.3 (2.83–3.82)	3.5 (3.03–4.12)	3.4 (2.00–5.69)
Ever diagnosed with diabetes[9]	11.7 (10.86–12.52)	6.2 (5.50–6.91)	7.9 (5.10–11.89)
Health care service use			
Received influenza vaccine during past year[10]	46.5 (44.92–48.14)	31.8 (30.36–33.27)	26.2 (20.75–32.57)
Ever been tested for HIV[11]	32.3 (30.84–33.77)	45.1 (43.41–46.90)	40.4 (34.38–46.62)
Health care access			
Has a usual place to go for medical care[12]	90.2 (89.20–91.07)	74.9 (73.46–76.29)	75.0 (69.79–79.64)
Failed to obtain needed medical care in past year due to financial barriers[13]	5.4 (4.76–6.04)	10.9 (10.04–11.92)	10.7 (7.74–14.65)
Currently uninsured (adults aged 18–64)[14]	14.7 (13.36–16.10)	25.2 (23.54–27.00)	27.2 (22.09–32.90)
Number of adults in survey sample (unweighted)	9,648	7,875	444

[1]Includes households that also have wireless telephone service.

[2]A year is defined as the 12 months prior to interview. The analyses excluded adults with unknown alcohol consumption (about 1.1%).

[3]A person who had smoked more than 100 cigarettes in his or her lifetime and now smokes every day or some days. The analyses excluded adults with unknown smoking status (about 0.8%).

[4]Regular leisure-time physical activity is defined as engaging in light-moderate leisure-time physical activity for greater than or equal to 30 minutes at a frequency greater than or equal to five times per week, or engaging in vigorous leisure-time physical activity for greater than or equal to 20 minutes at a frequency greater than or equal to three times per week. Persons who were known to have not met the frequency recommendations are classified as "not regular," regardless of duration. The analyses excluded adults with unknown physical activity participation (about 2.2%).

[5]Health status data were obtained by asking respondents to assess their own health and that of family members living in the same household as excellent, very good, good, fair, or poor. The analyses excluded persons with unknown health status (about 0.1%).

[6]Six psychological distress questions are included in the National Health Interview Survey. These questions ask how often during the past 30 days a respondent experienced certain symptoms of psychological distress (feeling so sad that nothing could cheer you up, nervous, restless or fidgety, hopeless, worthless, that everything was an effort). The response codes (0–4) of the six items for each person were weighted equally and summed. A value of 13 or more for this scale indicates that at least one symptom was experienced "most of the time" or "all of the time" and is used here to define serious psychological distress.

[7]Obesity is defined as a body mass index (BMI) of 30 kg/m2 or more. The measure is based on self-reported height and weight. The analyses excluded adults with unknown height or weight (about 4.4%). Estimates of obesity are presented for adults aged 20 and over because the Healthy People 2020 objectives (http://www.healthypeople.gov) for healthy weight among adults define adults as persons aged 20 and over.

[8]Information on an episode of asthma or an asthma attack during the past year is self-reported by adults aged 18 and over. A year is defined as the 12 months prior to interview. The analyses excluded persons with unknown asthma episode status (about 0.1%).

[9]Prevalence of diagnosed diabetes is based on self-report of ever having been diagnosed with diabetes by a doctor or other health professional. Persons reporting "borderline" diabetes status and women reporting diabetes only during pregnancy were not coded as having diabetes in the analyses. The analyses excluded adults with unknown diabetes status (about 0.1%).

[10]Receipt of flu shots and receipt of nasal spray flu vaccinations were included in the calculation of flu vaccination estimates. Responses to these two flu vaccination questions do not indicate when the subject received the flu vaccination during the 12 months preceding the interview. In addition, estimates are subject to recall error, which will vary depending on when the question is asked because the receipt of a flu vaccination is seasonal. The analyses excluded adults with unknown flu vaccination status (about 2.5%).

[11]Individuals who received human immunodeficiency virus (HIV) testing solely as a result of blood donation were considered not to have been tested for HIV. The analyses excluded adults with unknown HIV test status (about 3.9%).

[12]Does not include a hospital emergency room. The analyses excluded persons with an unknown usual place to go for medical care (about 1.0%).

[13]A year is defined as the 12 months prior to interview. The analyses excluded persons with unknown responses to the question on failure to obtain needed medical care due to cost (about 0.1%).

[14]A person was defined as uninsured if he or she did not have any private health insurance, Medicare, Medicaid, Children's Health Insurance Program (CHIP), state-sponsored or other government-sponsored health plan, or military plan at the time of interview. A person was also defined as uninsured if he or she had only Indian Health Service coverage or had only a private plan that paid for one type of service such as accidents or dental care. The data on health insurance status were edited using an automated system based on logic checks and keyword searches. The analyses excluded adults with unknown health insurance status (about 1.0%).

NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, July–December 2013.

Table 5. Percentage of adults living in wireless-mostly households, by selected demographic characteristics and calendar half-years: United States, July 2010–December 2013

Demographic characteristic	Calendar half-year							95% confidence interval[3]
	Jul–Dec 2010	Jan–Jun 2011	Jul–Dec 2011	Jan–Jun 2012	Jul–Dec 2012	Jan–Jun 2013	Jul–Dec 2013	
Total	17.4	18.2	17.8	17.6	18.0	17.7	18.3	17.51–19.09
Race/ethnicity								
Hispanic or Latino, any race(s)	17.2	16.3	17.0	16.1	17.4	16.4	16.6	15.29–17.95
Non-Hispanic white, single race	17.2	18.4	17.9	17.6	17.7	17.4	18.6	17.61–19.59
Non-Hispanic black, single race	16.2	18.4	17.1	17.6	18.6	19.0	18.2	16.17–20.48
Non-Hispanic Asian, single race	22.5	21.0	20.3	21.5	22.2	20.9	20.4	17.46–23.74
Non-Hispanic other, single race	23.8	17.6	15.6	15.1	12.5	22.7	14.1	9.08–21.27
Non-Hispanic multiple race	20.7	16.1	21.7	18.7	18.0	18.0	16.9	13.29–21.29
Age (years)								
18–24	18.7	20.1	18.9	20.1	18.2	18.6	20.0	18.32–21.74
25–29	16.8	16.3	15.8	15.0	17.0	14.8	14.5	12.95–16.27
30–44	21.6	21.9	21.2	20.7	21.2	20.7	20.0	18.78–21.22
45–64	18.9	19.8	19.9	19.3	20.3	19.8	21.6	20.50–22.82
65 and over	7.1	8.9	8.9	8.9	9.1	10.3	10.3	9.28–11.32
Sex								
Male	17.8	18.5	18.3	17.9	18.3	17.8	18.6	17.80–19.47
Female	17.1	17.9	17.3	17.3	17.7	17.6	18.0	17.15–18.81
Education								
Some high school or less	12.1	12.9	11.7	11.9	11.6	12.8	12.4	11.20–13.74
High school graduate or GED[2]	15.3	16.6	15.7	15.5	16.3	16.0	16.5	15.42–17.68
Some post-high school, no degree	18.9	20.0	19.4	19.1	19.3	18.6	18.9	17.74–20.08
4-year college degree or higher	21.3	21.1	21.4	21.0	21.5	20.7	22.3	21.13–23.47
Employment status last week								
Working at a job or business	20.5	21.6	20.9	20.6	21.1	20.2	21.4	20.41–22.37
Keeping house	16.7	14.9	16.6	15.5	17.5	19.0	16.9	15.02–18.90
Going to school	24.4	23.5	20.0	23.7	18.2	22.2	21.1	17.94–24.58
Something else (incl. unemployed)	10.2	11.3	11.4	10.8	11.6	11.7	11.4	10.56–12.28
Household structure								
Adult living alone	9.5	10.2	10.1	10.2	9.8	9.5	9.4	8.51–10.28
Unrelated adults, no children	13.4	*15.6	10.3	13.0	12.3	12.9	11.2	7.59–16.31
Related adults, no children	15.8	17.2	16.9	16.2	17.4	17.0	18.1	16.97–19.37
Adult(s) with children	22.7	22.8	22.5	22.4	22.4	22.2	22.6	21.33–23.93
Household poverty status[3]								
Poor	10.2	10.5	8.8	10.8	8.6	10.8	9.1	7.79–10.58
Near-poor	13.8	13.3	13.5	11.1	12.7	12.0	12.0	10.75–13.41
Not-poor	20.4	21.6	21.9	21.5	21.8	21.4	22.1	21.05–23.29

See footnotes at end of table.

Table 5. Percentage of adults living in wireless-mostly households, by selected demographic characteristics and calendar half-years: United States, July 2010–December 2013—*Continued*

Demographic characteristic	Calendar half-year							95% confidence interval[1]
	Jul–Dec 2010	Jan–Jun 2011	Jul–Dec 2011	Jan–Jun 2012	Jul–Dec 2012	Jan–Jun 2013	Jul–Dec 2013	
Geographic region[4]								
Northeast	18.5	19.5	17.9	18.9	20.0	18.2	20.1	18.42–21.90
Midwest	16.3	17.7	16.6	15.5	15.3	16.7	16.2	14.77–17.80
South	17.2	18.0	17.7	17.3	17.7	17.0	18.0	16.78–19.35
West	18.0	18.1	19.1	18.9	19.3	19.4	19.3	17.50–21.26
Metropolitan statistical area status								
Metropolitan	17.8	18.4	18.2	17.9	18.5	17.9	18.7	17.84–19.57
Not metropolitan	16.1	17.3	16.4	16.4	15.8	17.0	16.7	14.94–18.56
Home ownership status[5]								
Owned or being bought	19.4	20.0	19.9	19.9	20.1	20.0	21.0	19.95–22.17
Renting	13.0	13.9	13.5	12.7	13.0	12.8	12.4	11.41–13.49
Other arrangement	15.6	20.0	11.7	13.8	17.3	17.0	14.8	10.86–19.85
Number of adults in survey sample who live in landline households with wireless telephones (unweighted)	18,357	21,626	20,184	21,100	21,194	19,106	22,879	...

* Estimate has a relative standard error greater than 30% and does not meet standards for reliability or precision.

... Category not applicable.

[1]Refers to July–December 2013.

[2]GED is General Educational Development high school equivalency diploma.

[3]Based on household income and household size using the U.S. Census Bureau's poverty thresholds. "Poor" persons are defined as those below the poverty threshold. "Near-poor" persons have incomes of 100% to less than 200% of the poverty threshold. "Not-poor" persons have incomes of 200% of the poverty threshold or greater. Early Release estimates stratified by poverty status are based on reported income only and may differ from similar estimates produced later that are based on both reported and imputed income. NCHS imputes income when income is unknown, but the imputed income file is not available until a few months after the annual release of National Health Interview Survey microdata. For households with multiple families, household income and household size were calculated as the sum of the multiple measures of family income and family size.

[4]In the geographic classification of the U.S. population, states are grouped into the following four regions used by the U.S. Census Bureau: *Northeast* includes Maine, Vermont, New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, and Pennsylvania; *Midwest* includes Ohio, Illinois, Indiana, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Kansas, and Nebraska; *South* includes Delaware, Maryland, District of Columbia, West Virginia, Virginia, Kentucky, Tennessee, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Oklahoma, Arkansas, and Texas; and *West* includes Washington, Oregon, California, Nevada, New Mexico, Arizona, Idaho, Utah, Colorado, Montana, Wyoming, Alaska, and Hawaii.

[5]For households with multiple families, home ownership status was determined by considering the reported home ownership status for each family. If any family reported owning the home, then the household-level variable was classified as "Owned or being bought" for all persons living in the household. If one family reported renting the home and another family reported "other arrangement," then the household-level variable was classified as "Other arrangement" for all persons living in the household.

NOTE: Data are based on household interviews of a sample of the civilian noninstitutionalized population.

DATA SOURCE: CDC/NCHS, National Health Interview Survey, July 2010–December 2013.

EXHIBIT AN-2

CDC Wireless Substitution, State Level Estimates
Dec 2013

National Health Statistics Reports

Number 70 ■ December 18, 2013

Wireless Substitution: State-level Estimates From the National Health Interview Survey, 2012

by Stephen J. Blumberg, Ph.D., National Center for Health Statistics;
Nadarajasundaram Ganesh, Ph.D., NORC at the University of Chicago;
Julian V. Luke, National Center for Health Statistics; and
Gilbert Gonzales, M.H.A., State Health Access Data Assistance Center, University of Minnesota

Abstract

Objectives—This report updates subnational estimates of the percentage of adults and children living in households that do not have a landline telephone but have at least one wireless telephone (i.e., wireless-only households). State-level estimates for 2012 are presented, along with estimates for selected U.S. counties and groups of counties, for other household telephone service use categories (e.g., those that had only landlines and those that had landlines yet received all or almost all calls on wireless telephones), and for one earlier 12-month period (July 2011–June 2012).

Methods—Small-area statistical modeling techniques were used to estimate the prevalence of adults and children living in households with various household telephone service types for 93 disjoint geographic areas that make up the United States. This modeling was based on 2007–2012 data from the National Health Interview Survey, 2006–2011 data from the American Community Survey, and auxiliary information on the number of listed telephone lines per capita in 2007–2012.

Results—The prevalence of wireless-only adults and children varied substantially across states. State-level estimates for 2012 ranged from 19.4% (New Jersey) to 52.3% (Idaho) of adults and from 20.6% (New Jersey) to 63.4% (Mississippi) of children.

Keywords: cell phones • telephone surveys • small domain estimation

Introduction

The prevalence and use of wireless telephones (also known as cellular telephones, cell phones, or mobile phones) has changed substantially over the past decade. Today, an ever-increasing number of adults have chosen to use wireless telephones rather than landline telephones to make and receive calls. As of the second half of 2012, nearly two in every five American households (38.2%) had only wireless telephones (1). The prevalence of such "wireless-only" households markedly exceeds the prevalence of households with only landline telephones (8.6%), as it has since 2009, and this difference is expected to grow.

The National Health Interview Survey (NHIS) is the most widely cited source for data on the ownership and use of wireless telephones. Every 6 months, the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS) releases a report with the most up-to-date estimates available from the federal government concerning the size and characteristics of the wireless-only population (1). That report, published as part of the NHIS Early Release Program (http://www.cdc.gov/nchs/nhis/releases.htm), presents both national and regional estimates.

Direct state-level estimates of this prevalence were not available previously from NHIS data because the NHIS sample size was insufficient for direct, reliable annual estimates for most states. However, in April 2011 NCHS released the results of statistically modeled estimates of the prevalence of wireless-only adults and children at the state level, using data from NHIS and the U.S. Census Bureau's American Community Survey (ACS), along with auxiliary information on the number of listed telephone lines per capita (2). Those estimates for 12-month periods from January 2007 through June 2010 were the first multiyear state-level estimates of the size of this population

available from the federal government. In October 2012, those estimates were updated through December 2011 (3).

In this report, the estimates are further updated through December 2012. Estimates are presented for adults and children living in wireless-only households, wireless-mostly households (defined as households that have landlines yet receive all or almost all calls on wireless telephones), dual-use households (which receive significant numbers of calls on both landlines and wireless telephones), landline-mostly households (which have wireless telephones yet receive all or almost all calls on landlines), and landline-only households.

Methods

The methods employed to produce the estimates for this report were identical to those used for the estimates published in 2011 and 2012 (2,3). Small-area statistical modeling techniques were used to combine NHIS data collected within specific geographies (states and some counties) with auxiliary data that are representative of those geographies, to produce model-based estimates. Specifically, a combination of direct survey estimates from the 2007–2012 NHIS and the 2006–2011 ACS, and auxiliary information on the number of listed telephone lines per capita in 2007–2012, were used. The small-area model was used to derive estimates of the proportion of people who lived in households that were wireless-only, wireless-mostly, dual-use, landline-mostly, and landline-only for twelve 6-month periods: January–June and July–December in each year from 2007 through 2012.

Selection of small areas

Estimates were derived separately for adults (aged 18 and over) and children (under age 18) for 93 nonoverlapping areas that make up the United States. Twenty-six of these areas were states and one was the District of Columbia; other areas consisted of selected counties, groups of counties, or the balance of the state population excluding the selected counties. No areas crossed state lines, and every location in the United States was part of one (and only one) of the 93 areas. Areas considered for inclusion in this report were urban areas that receive federal Section 317 immunization grants, and other substate areas that are strata for CDC's National Immunization Survey (4). Areas were selected based on the available survey sample sizes and the stability of the modeled estimates.

Production of model-based estimates

For each telephone category, the 6-month estimates for all 93 small areas were modeled jointly. That is, all 6-month periods were modeled together in a single model rather than separately as 12 models (one for each 6-month period). Separate small-area models were fitted for each telephone service use category (e.g., wireless-only, dual-use) and by age group (adults or children). The model-based estimates for each telephone service use category, small area, and 6-month period were derived using a standard small-area modeling and estimation approach known as "empirical best linear unbiased prediction" (5–7). The model-based estimates were a weighted combination of three distinct sets of estimates: (a) the direct estimate from NHIS for the small area during the 6-month period of interest, (b) a synthetic estimate derived from a regression model involving ACS and auxiliary data for the small area during the 6-month period of interest, and (c) adjusted direct estimates from NHIS for the small area during all 6-month periods other than the 6-month period of interest. By using estimates from all twelve 6-month periods, the model-based estimate allows for "borrowing strength" across time. When these three distinct sets of estimates were combined, the weights associated with each set reflected the relative precision of each estimate.

Model-based estimates were produced for every small area and 6-month period, and consecutive 6-month estimates were combined to produce 12-month estimates. The small-area estimates for 12-month periods were obtained by averaging the two consecutive 6-month estimates. This helped to reduce the variability of the estimates. The 12-month small-area estimates for each telephone category were then adjusted to agree with the national direct estimates from NHIS for the corresponding telephone category and year. The 12-month estimates were further adjusted to agree with annual ACS estimates for the population without telephone service (landline or wireless) for each small area. For states with multiple small areas, 12-month state-level estimates were obtained by appropriately weighting the 12-month small-area estimates by population size.

Model-based estimates were produced for 2007–2012. Because the models now included full-year data from 2012, the estimates for 2007–2011 differed from the estimates previously reported (3) that were based on models that did not include data from 2012. The differences in the estimates for 2007–2011 were generally small (e.g., for the prevalence of wireless-only adults, mean = –0.01, interquartile range = 0.5). Therefore, the updated estimates for 2007–2011 are not presented here. Instead, this report includes estimates for July 2011–June 2012 and January–December 2012 only.

Estimates for Adults and Children Living in Wireless-only Households

Results from the small-area modeling strategy showed great variation in the prevalence of adults living in wireless-only households across states. Estimates for 2012 ranged from a high of 52.3% in Idaho to a low of 19.4% in New Jersey (Table 1). Other states in which the prevalence of wireless-only adults was relatively high (exceeding 45%) were Mississippi (49.4%), Arkansas (49.0%), and Utah (46.6%). Several other states in the northeast joined New Jersey with prevalence rates below 25%, including

Connecticut (20.6%), Delaware (23.3%), New York (23.5%), Massachusetts (24.1%), and Rhode Island (24.9%).

Similarly, results showed great variation in the prevalence of wireless-only children across states, ranging from a high of 63.4% in Mississippi to a low of 20.6% in New Jersey (Table 1). Other states with a high prevalence of wireless-only children included Idaho (62.2%), Arkansas (59.8%), Missouri (55.2%), and South Carolina (54.5%). Other states with a low prevalence of wireless-only children included Vermont (24.5%), Connecticut (25.4%), Alaska (25.7%), and Massachusetts (26.7%).

Estimates for Adults and Children Living in Households With Wireless Telephones

Table 2 presents modeled estimates for 2012 for the prevalence of adults living in households with various telephone service types, including but not limited to wireless-only status. Estimates are presented for adults living in wireless-mostly households, landline-mostly households, dual-use households, and landline-only households. These results can be used to obtain the prevalence of adults living in households with any wireless telephones (regardless of whether the wireless telephones are the only telephones). Estimates ranged from a high of 94.1% in Utah to a low of 80.8% in West Virginia. Two-thirds of the states (33 total) exceeded 90%, with Maryland (93.8%), New Hampshire (93.6%), Minnesota (93.6%), and Illinois (93.0%) joining Utah with the highest rates. Along with West Virginia, states with the lowest rates included New Mexico (81.1%) and North Dakota (82.6%).

Table 2 can also be used to examine the prevalence of adults living in households that receive all or almost all calls on wireless telephones, regardless of whether the households have landline telephones. Both wireless-only and wireless-mostly adults are in this group. Estimates of the prevalence of adults living in households where wireless telephones are the primary means of receiving calls ranged from 64.1% in Arkansas to 39.4% in Connecticut. Thirty-two states had rates of primary wireless use exceeding 50%, with Texas (63.0%), Idaho (62.7%), and Mississippi (62.0%) joining Arkansas at the top end. Other states at the low end included Massachusetts (41.1%), New York (41.2%), West Virginia (41.3%), and Vermont (41.3%).

Table 3 presents modeled estimates for 2012 for the prevalence of children living in households with various telephone service types. The table can be used to calculate estimates for children similar to those for adults as described above.

Implications of Findings

The increasing prevalence of wireless-only households has implications for random-digit-dial (RDD) telephone surveys. Historically, such surveys did not include wireless telephone numbers in their samples. Now, despite operational challenges (8), most major RDD telephone surveys include wireless telephone numbers (9,10). If they did not, the exclusion of households with only wireless telephones (along with the 2.1% of households that have no telephone service) could bias results (11).

Statistical challenges exist when samples of wireless-only households are combined with samples of landline households from RDD surveys. To ensure that each sample is appropriately represented in the final data set and appropriately weighted in the final analyses, reliable and current estimates of the prevalence of wireless-only households are needed (8). Moreover, if the persons interviewed on their wireless telephones are not screened to exclude those who also have landlines, reliable and current estimates of the prevalence of landline and wireless telephone service use may be required in order to address the probability that an individual could be in both samples (8).

This report presents survey researchers with the most up-to-date estimates available from the federal government concerning the prevalence of landline and wireless telephone service use in each state. Telecommunications companies may also find these estimates useful for understanding changing conditions in state and local markets.

References

1. Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates based on data from the National Health Interview Survey, July–December 2012. National Center for Health Statistics. June 2013. Available from: http://www.cdc.gov/nchs/nhis.htm.
2. Blumberg SJ, Luke JV, Ganesh N, et al. Wireless substitution: State-level estimates from the National Health Interview Survey, January 2007–June 2010. National health statistics reports; no 39. Hyattsville, MD: National Center for Health Statistics. 2011. Available from: http://www.cdc.gov/nchs/data/nhsr/nhsr039.pdf.
3. Blumberg SJ, Luke JV, Ganesh N, et al. Wireless substitution: State-level estimates from the National Health Interview Survey, 2010–2011. National health statistics reports; no 61. Hyattsville, MD: National Center for Health Statistics. 2012. Available from: http://www.cdc.gov/nchs/data/nhsr/nhsr061.pdf.
4. CDC. National Immunization Survey: A user's guide for the 2010 public-use data file. 2011. Available from: ftp://ftp.cdc.gov/pub/Health_Statistics/NCHS/Dataset_Documentation/NIS/NISPUF10_DUG.PDF.
5. Jiang J, Lahiri P. Mixed model prediction and small area estimation (with discussion). Test 15(1):1–96. 2006.
6. Rao JNK. Small area estimation. Hoboken, NJ: Wiley-Interscience. 2003.
7. Rao JNK, Yu M. Small area estimation by combining time-series and cross-sectional data. Can J Stat 22(4):511–28. 1994.
8. AAPOR Cell Phone Task Force. New considerations for survey researchers when planning and conducting RDD telephone surveys in the U.S. with respondents reached via cell phone numbers. Deerfield, IL: American Association for Public Opinion

Research. 2010. Available from: http://aapor.org/cell_phone_task_force.htm.
9. CDC. Methodologic changes in the Behavioral Risk Factor Surveillance System in 2011 and potential effects on prevalence estimates. MMWR 61(22):410–3. 2012. Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6122a3.htm?s_cid=mm6122a3_w.
10. CDC. Announcement: Addition of households with only cellular telephone service to the National Immunization Survey, 2011. MMWR 61(34):685. 2012. Available from: http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6134a5.htm?s_cid=mm6134a5_w.
11. Blumberg SJ, Luke JV. Reevaluating the need for concern regarding noncoverage bias in landline surveys. Am J Public Health 99(10):1806–10. 2009.

EXHIBIT AN-2

Table 1. Modeled estimates (with standard errors) of the percentage of persons living in wireless-only households, by selected geographic areas, age, and period: United States, 2011–2012

Geographic area	Adults aged 18 and over		Children under age 18	
	July 2011–June 2012	January–December 2012	July 2011–June 2012	January–December 2012
	Percent (standard error)			
Alabama	34.4 (1.9)	36.4 (2.0)	46.8 (3.1)	49.6 (3.2)
Jefferson County	40.8 (2.7)	41.7 (2.8)	55.7 (4.4)	55.2 (4.4)
Rest of Alabama	33.4 (2.1)	35.5 (2.3)	45.4 (3.5)	48.7 (3.7)
Alaska	30.2 (2.8)	31.6 (2.7)	22.8 (3.8)	25.7 (3.7)
Arizona	39.4 (1.8)	41.2 (1.9)	45.8 (2.6)	49.9 (2.7)
Maricopa County	42.7 (2.4)	44.6 (2.6)	48.1 (3.5)	52.0 (3.7)
Rest of Arizona	34.6 (2.6)	36.1 (2.7)	42.1 (3.8)	46.3 (3.9)
Arkansas	45.7 (2.1)	49.0 (2.1)	56.6 (3.3)	59.8 (3.1)
California	30.1 (0.7)	32.6 (0.8)	33.8 (1.1)	38.2 (1.2)
Alameda County	31.4 (2.6)	34.2 (2.9)	34.3 (4.1)	37.0 (4.3)
Fresno County	31.8 (2.8)	33.8 (2.9)	31.6 (3.7)	36.1 (3.6)
Los Angeles County	30.2 (1.5)	31.7 (1.6)	33.7 (2.1)	36.7 (2.2)
Northern counties[1]	27.0 (2.7)	30.5 (3.0)	32.0 (4.1)	38.2 (4.4)
San Bernardino County	33.7 (2.5)	38.9 (2.7)	38.0 (3.5)	45.8 (3.9)
San Diego County	23.5 (1.8)	26.6 (2.0)	23.1 (2.7)	29.5 (3.0)
Santa Clara County	30.9 (2.4)	31.4 (2.5)	32.8 (3.6)	34.9 (3.7)
Rest of California	30.8 (1.2)	33.6 (1.3)	35.4 (1.9)	40.0 (2.0)
Colorado	39.9 (1.9)	41.7 (2.0)	42.2 (2.7)	45.1 (2.8)
City of Denver counties[2]	35.2 (2.4)	37.8 (2.7)	41.7 (3.6)	46.3 (3.9)
Rest of Colorado	42.9 (2.6)	44.3 (2.7)	42.6 (3.8)	44.2 (3.8)
Connecticut	19.1 (1.7)	20.6 (1.7)	21.2 (2.4)	25.4 (2.6)
Delaware	23.0 (2.1)	23.3 (1.9)	24.5 (3.5)	26.8 (3.3)
District of Columbia	44.4 (2.9)	46.0 (2.6)	43.7 (4.9)	42.2 (4.4)
Florida	37.1 (1.2)	39.7 (1.2)	45.6 (1.8)	49.2 (1.8)
Miami-Dade County	36.6 (3.0)	37.6 (3.1)	48.8 (4.6)	53.2 (4.6)
Duval County	43.5 (2.2)	44.4 (2.3)	52.8 (3.2)	54.2 (3.3)
Orange County	43.9 (3.2)	46.5 (3.2)	49.1 (4.8)	51.4 (4.6)
Rest of Florida	35.4 (1.5)	38.4 (1.5)	43.7 (2.3)	47.7 (2.3)
Georgia	34.3 (1.6)	37.0 (1.7)	41.3 (2.4)	45.9 (2.4)
Fulton/DeKalb counties	40.7 (2.9)	41.8 (3.0)	46.8 (4.5)	48.8 (4.4)
Rest of Georgia	33.0 (1.8)	36.0 (1.9)	40.3 (2.7)	45.4 (2.7)
Hawaii	29.2 (2.1)	31.6 (2.2)	38.8 (3.9)	43.8 (3.9)
Idaho	49.7 (2.0)	52.3 (1.9)	58.3 (2.9)	62.2 (2.6)
Illinois	35.2 (1.4)	38.0 (1.5)	39.7 (2.2)	42.4 (2.3)
Cook County	39.7 (2.0)	42.2 (2.1)	41.1 (3.1)	42.3 (3.2)
Madison/St. Clair counties	35.1 (3.5)	36.5 (3.6)	43.8 (5.7)	45.6 (5.5)
Rest of Illinois	33.9 (1.8)	36.8 (2.0)	39.1 (2.7)	42.2 (2.9)
Indiana	33.4 (1.6)	36.1 (1.8)	43.3 (2.7)	46.3 (2.9)
Lake County	30.3 (2.8)	33.1 (3.0)	41.3 (5.0)	44.5 (5.2)
Marion County	41.5 (3.3)	44.9 (3.3)	51.0 (5.1)	52.8 (4.7)
Rest of Indiana	32.3 (2.0)	34.8 (2.2)	42.0 (3.2)	45.3 (3.5)
Iowa	40.1 (2.0)	42.2 (2.1)	41.3 (3.2)	45.4 (3.2)
Kansas	40.0 (1.8)	42.3 (1.9)	48.6 (2.8)	52.5 (2.7)
Johnson/Wyandotte counties	31.1 (3.1)	35.0 (3.3)	33.7 (4.4)	41.5 (4.8)
Rest of Kansas	42.9 (2.2)	44.8 (2.2)	53.8 (3.4)	56.4 (3.2)
Kentucky	35.3 (2.2)	37.0 (2.2)	47.1 (3.2)	52.5 (3.2)
Louisiana	34.0 (2.1)	36.2 (2.2)	42.8 (3.1)	45.1 (3.1)
Maine	33.0 (2.4)	35.0 (2.3)	38.6 (3.6)	41.6 (3.3)
Maryland	27.9 (1.5)	29.4 (1.6)	31.1 (2.3)	33.6 (2.4)
Baltimore City	37.2 (3.1)	39.6 (3.2)	46.7 (5.0)	51.8 (5.3)
Prince George's County	§	§	§	§
Rest of Maryland	26.2 (1.9)	27.6 (2.0)	28.0 (2.8)	30.0 (3.0)
Massachusetts	22.3 (1.5)	24.1 (1.6)	23.7 (2.4)	26.7 (2.7)
Suffolk County	35.1 (3.4)	37.5 (3.6)	41.9 (6.4)	48.9 (6.8)
Rest of Massachusetts	20.9 (1.6)	22.6 (1.7)	22.2 (2.6)	24.9 (2.8)
Michigan	37.5 (1.6)	39.5 (1.7)	42.7 (2.5)	44.2 (2.6)
Wayne County	43.5 (2.6)	46.6 (2.8)	54.5 (4.2)	59.6 (4.1)
Rest of Michigan	37.0 (1.8)	39.0 (1.9)	41.7 (2.7)	42.9 (2.8)

See footnotes at end of table.

EXHIBIT AN-2

Table 1. Modeled estimates (with standard errors) of the percentage of persons living in wireless-only households, by selected geographic areas, age, and period: United States, 2011–2012—Con.

Geographic area	Adults aged 18 and over		Children under age 18	
	July 2011–June 2012	January–December 2012	July 2011–June 2012	January–December 2012
	Percent (standard error)			
Minnesota	34.4 (1.6)	35.7 (1.7)	33.0 (2.5)	36.7 (2.6)
Twin Cities counties[3]	35.6 (2.1)	36.7 (2.3)	33.7 (3.5)	37.0 (3.7)
Rest of Minnesota	33.1 (2.3)	34.6 (2.5)	32.2 (3.4)	36.3 (3.7)
Mississippi	45.6 (2.0)	49.4 (1.9)	59.0 (3.2)	63.4 (3.0)
Missouri	38.1 (1.8)	41.4 (2.0)	49.8 (2.8)	55.2 (3.0)
St. Louis County/City	34.2 (2.9)	38.1 (3.2)	32.4 (4.3)	39.2 (4.8)
Rest of Missouri	39.3 (2.1)	42.4 (2.4)	54.5 (3.4)	59.4 (3.5)
Montana	§	§	§	§
Nebraska	37.4 (2.0)	37.5 (2.0)	40.5 (3.3)	43.7 (3.2)
Nevada	36.0 (1.8)	38.9 (1.8)	37.9 (2.8)	41.7 (2.8)
Clark County	37.2 (2.2)	40.7 (2.2)	36.3 (3.3)	40.6 (3.4)
Rest of Nevada	33.1 (2.9)	34.4 (2.9)	42.2 (5.0)	44.6 (5.0)
New Hampshire	25.4 (2.0)	26.7 (1.9)	29.3 (3.6)	30.3 (3.2)
New Jersey	17.8 (1.3)	19.4 (1.4)	19.8 (2.1)	20.6 (2.2)
Essex County	35.9 (3.4)	40.2 (3.7)	29.9 (4.4)	38.2 (5.0)
Rest of New Jersey	17.2 (1.3)	18.8 (1.5)	19.4 (2.2)	19.9 (2.3)
New Mexico	35.8 (2.0)	36.8 (2.0)	50.7 (3.3)	53.4 (3.3)
Southern counties[4]	38.1 (2.8)	40.1 (3.0)	56.1 (4.4)	59.1 (4.6)
Rest of New Mexico	35.0 (2.5)	35.6 (2.5)	48.6 (4.2)	51.2 (4.1)
New York	21.4 (1.1)	23.5 (1.2)	23.2 (1.7)	26.8 (1.9)
City of New York counties[5]	26.0 (1.5)	29.4 (1.6)	25.7 (2.4)	29.8 (2.7)
Rest of New York	18.0 (1.5)	19.1 (1.6)	21.5 (2.3)	24.7 (2.6)
North Carolina	34.3 (1.7)	34.7 (1.7)	46.3 (2.6)	47.1 (2.6)
North Dakota	39.9 (1.8)	40.2 (1.7)	44.9 (3.5)	50.0 (3.2)
Ohio	35.5 (1.3)	36.8 (1.4)	41.2 (2.2)	44.7 (2.4)
Cuyahoga County	34.3 (2.9)	38.1 (3.2)	31.1 (4.0)	37.0 (4.2)
Franklin County	40.9 (3.7)	41.8 (3.7)	43.9 (4.4)	43.1 (4.5)
Rest of Ohio	34.9 (1.6)	35.9 (1.7)	42.2 (2.7)	46.0 (2.9)
Oklahoma	37.1 (2.0)	39.0 (2.0)	46.1 (3.2)	50.9 (3.4)
Oregon	37.2 (2.1)	36.8 (2.2)	38.6 (3.4)	41.5 (3.4)
Pennsylvania	25.0 (1.2)	26.2 (1.3)	29.9 (2.1)	31.4 (2.1)
Allegheny County	39.4 (3.2)	40.4 (3.4)	42.0 (5.2)	43.9 (5.4)
Philadelphia County	33.5 (2.6)	37.8 (2.9)	40.8 (4.2)	46.8 (4.4)
Rest of Pennsylvania	21.8 (1.4)	22.7 (1.6)	26.9 (2.5)	27.6 (2.5)
Rhode Island	19.5 (1.7)	24.9 (1.8)	25.5 (3.4)	34.8 (3.4)
South Carolina	37.0 (1.9)	39.0 (2.1)	48.3 (3.2)	54.5 (3.3)
South Dakota	§	§	§	§
Tennessee	35.9 (1.6)	37.8 (1.7)	47.3 (2.6)	52.3 (2.6)
Davidson County	48.0 (3.5)	51.2 (3.6)	55.5 (5.2)	61.8 (5.4)
Shelby County	43.2 (3.2)	46.2 (3.3)	49.4 (4.8)	54.1 (4.7)
Rest of Tennessee	32.9 (2.0)	34.5 (2.1)	45.8 (3.2)	50.7 (3.3)
Texas	42.6 (1.1)	44.5 (1.2)	51.9 (1.7)	54.2 (1.7)
Bexar County	41.4 (2.3)	42.6 (2.5)	52.1 (3.6)	57.0 (3.9)
Dallas County	55.0 (2.6)	56.5 (2.6)	63.0 (3.6)	65.9 (3.6)
El Paso County	§	§	§	§
Harris County	44.1 (2.0)	47.0 (2.1)	49.2 (2.8)	54.8 (2.9)
Rest of Texas	40.9 (1.5)	42.9 (1.6)	50.4 (2.2)	52.0 (2.2)
Utah	42.3 (2.0)	46.6 (1.9)	43.8 (2.8)	48.5 (2.6)
Vermont	29.0 (2.1)	29.9 (1.9)	22.6 (3.5)	24.5 (3.2)
Virginia	30.1 (1.8)	32.0 (1.9)	32.2 (2.5)	36.2 (2.7)
Washington	37.3 (1.5)	39.4 (1.6)	37.5 (2.1)	41.8 (2.2)
Eastern counties[6]	32.1 (2.2)	34.2 (2.4)	40.7 (3.6)	44.2 (3.7)
King County	45.3 (2.8)	46.0 (2.9)	38.6 (4.0)	41.0 (4.0)
Rest of Washington	34.6 (2.3)	37.6 (2.4)	35.4 (3.1)	41.1 (3.4)
West Virginia	27.3 (2.4)	30.2 (2.4)	36.1 (3.6)	42.7 (3.6)
Wisconsin	35.2 (1.8)	39.0 (2.0)	38.0 (2.8)	44.5 (3.0)
Milwaukee County	§	§	§	§
Rest of Wisconsin	32.9 (2.1)	36.6 (2.2)	34.8 (3.2)	41.0 (3.5)
Wyoming	§	§	§	§

§ Model-based estimates for Maryland-Prince George's County, Montana, South Dakota, Texas-El Paso County, Wisconsin-Milwaukee County, and Wyoming are not reported because, for at least one telephone service use category, direct estimates from the National Health Information Survey were more than double or less than one-half the synthetic estimate. These differences between two components of the model-based estimates suggest that the direct estimates for these areas may be biased. Biased estimates violate a key model-based estimation assumption.

EXHIBIT AN-2

[1]Includes Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity.
[2]Includes Adams, Arapahoe, Denver, and Douglas.
[3]Includes Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington.
[4]Includes Catron, Chaves, Curry, De Baca, Dona Ana, Eddy, Grant, Hidalgo, Lea, Lincoln, Luna, Otero, Roosevelt, Sierra, and Socorro.
[5]Includes Bronx, Kings, New York, Queens, and Richmond.
[6]Includes Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, and Yakima.

NOTE: Estimates were calculated by NORC at the University of Chicago.

SOURCES: CDC/NCHS, National Health Interview Survey, 2007–2012; U.S. Census Bureau, American Community Survey, 2006–2011; and infoUSA.com consumer database, 2007–2012.

Table 2. Modeled estimates (with standard errors) of the percent distribution of household telephone status for adults aged 18 and over, by selected geographic areas: United States, 2012

Geographic area	Wireless-only	Wireless-mostly	Dual-use	Landline-mostly	Landline-only	No telephone service[1]	Total
	Percent (standard error)						
Alabama	36.4 (2.0)	16.0 (1.5)	21.6 (1.9)	16.3 (1.6)	7.8 (1.3)	2.0	100.0
Jefferson County	41.7 (2.8)	17.6 (2.1)	20.7 (2.5)	12.1 (1.8)	6.5 (1.6)	1.5	100.0
Rest of Alabama	35.5 (2.3)	15.7 (1.7)	21.7 (2.1)	17.0 (1.8)	8.0 (1.4)	2.0	100.0
Alaska	31.6 (2.7)	17.7 (2.2)	30.3 (2.9)	12.2 (1.9)	6.6 (1.6)	1.6	100.0
Arizona	41.2 (1.9)	16.4 (1.4)	18.8 (1.6)	10.7 (1.1)	10.8 (1.4)	2.1	100.0
Maricopa County	44.6 (2.6)	17.1 (1.9)	18.8 (2.2)	6.0 (1.2)	11.8 (1.9)	1.8	100.0
Rest of Arizona	36.1 (2.7)	15.5 (2.0)	18.9 (2.4)	17.6 (2.1)	9.4 (1.9)	2.6	100.0
Arkansas	49.0 (2.1)	15.1 (1.5)	15.8 (1.6)	10.9 (1.3)	6.7 (1.1)	2.4	100.0
California	32.6 (0.8)	21.5 (0.7)	25.6 (0.8)	11.3 (0.5)	7.4 (0.5)	1.5	100.0
Alameda County	34.2 (2.9)	17.6 (2.3)	30.1 (3.1)	10.6 (1.8)	6.3 (1.7)	1.2	100.0
Fresno County	33.8 (2.9)	9.6 (1.8)	32.1 (3.1)	10.8 (1.9)	12.3 (2.3)	1.3	100.0
Los Angeles County	31.7 (1.6)	22.9 (1.4)	26.6 (1.5)	9.8 (1.0)	7.5 (0.9)	1.4	100.0
Northern counties[2]	30.5 (3.0)	15.2 (2.3)	23.6 (3.1)	19.2 (2.5)	10.1 (2.3)	1.4	100.0
San Bernardino County	38.9 (2.7)	22.5 (2.3)	23.6 (2.6)	9.8 (1.6)	*3.9 (1.2)	1.2	100.0
San Diego County	26.6 (2.0)	21.1 (1.8)	32.0 (2.3)	9.4 (1.3)	8.3 (1.4)	2.6	100.0
Santa Clara County	31.4 (2.5)	21.2 (2.2)	27.9 (2.7)	9.3 (1.6)	9.0 (1.8)	1.1	100.0
Rest of California	33.6 (1.3)	22.1 (1.1)	23.3 (1.2)	12.5 (0.9)	7.1 (0.7)	1.4	100.0
Colorado	41.7 (2.0)	16.9 (1.5)	20.9 (1.8)	11.9 (1.3)	6.7 (1.1)	1.8	100.0
City of Denver counties[3]	37.8 (2.7)	19.0 (2.1)	23.5 (2.6)	12.0 (1.8)	6.1 (1.5)	1.7	100.0
Rest of Colorado	44.3 (2.7)	15.6 (2.0)	19.3 (2.4)	11.8 (1.8)	7.1 (1.6)	1.9	100.0
Connecticut	20.6 (1.7)	18.8 (1.6)	32.0 (2.1)	18.5 (1.6)	9.0 (1.3)	1.1	100.0
Delaware	23.3 (1.9)	22.5 (1.9)	30.0 (2.2)	17.1 (1.7)	6.0 (1.1)	1.2	100.0
District of Columbia	46.0 (2.6)	18.3 (2.1)	17.3 (2.1)	9.1 (1.5)	6.6 (1.4)	2.6	100.0
Florida	39.7 (1.2)	17.2 (0.9)	22.6 (1.1)	11.5 (0.8)	6.5 (0.7)	2.5	100.0
Miami-Dade County	37.6 (3.1)	13.0 (2.1)	27.8 (3.2)	11.9 (2.1)	7.1 (2.0)	2.6	100.0
Duval County	44.4 (2.3)	18.8 (1.8)	19.9 (2.0)	6.4 (1.1)	6.5 (1.3)	4.0	100.0
Orange County	46.5 (3.2)	22.2 (2.7)	18.7 (2.8)	6.2 (1.6)	*4.5 (1.6)	1.9	100.0
Rest of Florida	38.4 (1.5)	16.7 (1.2)	23.1 (1.4)	12.9 (1.1)	6.6 (0.8)	2.3	100.0
Georgia	37.0 (1.7)	22.8 (1.4)	20.2 (1.5)	11.0 (1.1)	6.4 (0.9)	2.6	100.0
Fulton/DeKalb counties	41.8 (3.0)	21.6 (2.5)	21.3 (2.8)	9.0 (1.8)	*4.2 (1.4)	2.1	100.0
Rest of Georgia	36.0 (1.9)	23.1 (1.7)	20.0 (1.7)	11.4 (1.3)	6.8 (1.1)	2.7	100.0
Hawaii	31.6 (2.2)	19.6 (1.8)	28.9 (2.2)	11.6 (1.5)	6.5 (1.2)	1.7	100.0
Idaho	52.3 (1.9)	10.4 (1.1)	17.5 (1.5)	12.3 (1.2)	4.9 (0.9)	2.7	100.0
Illinois	38.0 (1.5)	17.5 (1.2)	24.3 (1.5)	13.2 (1.1)	5.5 (0.8)	1.6	100.0
Cook County	42.2 (2.1)	14.9 (1.5)	24.2 (2.0)	10.4 (1.3)	6.3 (1.1)	2.0	100.0
Madison/St. Clair counties	36.5 (3.6)	17.5 (2.8)	25.3 (3.7)	13.7 (2.5)	*5.4 (2.1)	1.6	100.0
Rest of Illinois	36.8 (2.0)	18.2 (1.6)	24.3 (1.9)	14.0 (1.4)	5.2 (1.0)	1.4	100.0
Indiana	36.1 (1.8)	15.4 (1.4)	20.9 (1.6)	15.5 (1.3)	9.5 (1.2)	2.7	100.0
Lake County	33.1 (3.0)	15.1 (2.2)	23.5 (2.9)	16.8 (2.3)	10.1 (2.2)	1.4	100.0
Marion County	44.9 (3.3)	8.8 (1.9)	16.5 (2.7)	16.8 (2.5)	9.0 (2.2)	3.9	100.0
Rest of Indiana	34.8 (2.2)	16.6 (1.7)	21.4 (2.0)	15.1 (1.6)	9.5 (1.5)	2.6	100.0
Iowa	42.2 (2.1)	18.4 (1.6)	19.4 (1.8)	11.9 (1.4)	5.7 (1.1)	2.3	100.0
Kansas	42.3 (1.9)	13.5 (1.3)	23.2 (1.7)	11.0 (1.2)	8.3 (1.2)	1.7	100.0
Johnson/Wyandotte counties	35.0 (3.3)	14.2 (2.4)	31.8 (3.5)	10.8 (2.1)	*6.6 (2.0)	1.7	100.0
Rest of Kansas	44.8 (2.2)	13.3 (1.5)	20.3 (1.9)	11.0 (1.4)	8.8 (1.4)	1.7	100.0
Kentucky	37.0 (2.2)	15.3 (1.7)	19.7 (2.0)	16.6 (1.7)	9.1 (1.5)	2.4	100.0
Louisiana	36.2 (2.2)	16.5 (1.7)	26.4 (2.2)	11.9 (1.5)	7.1 (1.3)	1.9	100.0
Maine	35.0 (2.3)	13.4 (1.6)	21.0 (2.1)	22.6 (2.0)	6.8 (1.3)	1.3	100.0
Maryland	29.4 (1.6)	18.1 (1.4)	28.4 (1.7)	17.8 (1.4)	4.6 (0.8)	1.6	100.0
Baltimore City	39.6 (3.2)	11.7 (2.1)	23.4 (3.1)	12.1 (2.2)	9.4 (2.3)	3.8	100.0
Prince George's County	§	§	§	§	§	§	§
Rest of Maryland	27.6 (2.0)	17.9 (1.7)	30.3 (2.2)	19.0 (1.8)	3.8 (1.0)	1.4	100.0
Massachusetts	24.1 (1.6)	17.0 (1.4)	34.3 (2.0)	15.0 (1.4)	8.4 (1.2)	1.1	100.0
Suffolk County	37.5 (3.6)	17.5 (2.8)	19.8 (3.4)	12.2 (2.5)	11.2 (2.8)	1.6	100.0
Rest of Massachusetts	22.6 (1.7)	16.9 (1.6)	36.0 (2.1)	15.4 (1.5)	8.1 (1.2)	1.1	100.0
Michigan	39.5 (1.7)	14.4 (1.2)	21.6 (1.6)	15.8 (1.3)	6.5 (1.0)	2.2	100.0
Wayne County	46.6 (2.8)	16.9 (2.1)	16.8 (2.4)	9.4 (1.6)	5.8 (1.5)	4.6	100.0
Rest of Michigan	39.0 (1.9)	14.2 (1.3)	21.9 (1.7)	16.3 (1.4)	6.6 (1.0)	2.1	100.0
Minnesota	35.7 (1.7)	17.5 (1.3)	26.5 (1.7)	13.8 (1.2)	5.0 (0.9)	1.4	100.0
Twin Cities counties[4]	36.7 (2.3)	18.3 (1.8)	27.9 (2.3)	12.5 (1.6)	3.2 (0.9)	1.3	100.0
Rest of Minnesota	34.6 (2.5)	16.6 (1.9)	24.9 (2.5)	15.3 (1.9)	7.2 (1.5)	1.4	100.0

See footnotes at end of table.

EXHIBIT AN-2

Table 2. Modeled estimates (with standard errors) of the percent distribution of household telephone status for adults aged 18 and over, by selected geographic areas: United States, 2012—Con.

Geographic area	Wireless-only	Wireless-mostly	Dual-use	Landline-mostly	Landline-only	No telephone service[1]	Total
	Percent (standard error)						
Mississippi	49.4 (1.9)	12.6 (1.3)	16.0 (1.5)	14.2 (1.3)	5.8 (1.0)	2.1	100.0
Missouri	41.4 (2.0)	15.8 (1.4)	20.6 (1.7)	14.1 (1.4)	5.9 (1.0)	2.1	100.0
St. Louis County/City	38.1 (3.2)	15.4 (2.3)	25.1 (3.2)	13.4 (2.2)	6.4 (1.9)	1.5	100.0
Rest of Missouri	42.4 (2.4)	15.9 (1.7)	19.3 (2.0)	14.3 (1.7)	5.7 (1.2)	2.3	100.0
Montana	§	§	§	§	§	§	§
Nebraska	37.5 (2.0)	15.3 (1.5)	25.0 (1.9)	12.9 (1.4)	7.7 (1.2)	1.6	100.0
Nevada	38.9 (1.8)	21.2 (1.5)	19.9 (1.6)	9.4 (1.0)	9.1 (1.2)	1.5	100.0
Clark County	40.7 (2.2)	21.6 (1.9)	19.8 (1.9)	7.9 (1.2)	8.6 (1.4)	1.5	100.0
Rest of Nevada	34.4 (2.9)	20.1 (2.4)	20.1 (2.6)	13.0 (2.0)	10.5 (2.1)	1.7	100.0
New Hampshire	26.7 (1.9)	17.5 (1.6)	31.8 (2.1)	17.6 (1.6)	5.2 (1.0)	1.2	100.0
New Jersey	19.4 (1.4)	25.7 (1.6)	31.1 (1.8)	15.2 (1.3)	6.9 (1.0)	1.6	100.0
Essex County	40.2 (3.7)	14.8 (2.6)	30.9 (3.9)	*3.3 (1.3)	8.2 (2.4)	2.5	100.0
Rest of New Jersey	18.8 (1.5)	26.0 (1.6)	31.1 (1.8)	15.5 (1.3)	6.9 (1.0)	1.6	100.0
New Mexico	36.8 (2.0)	13.2 (1.4)	21.7 (1.9)	9.4 (1.2)	15.1 (1.7)	3.8	100.0
Southern counties[5]	40.1 (3.0)	9.4 (1.7)	22.7 (2.8)	9.2 (1.8)	15.3 (2.5)	3.3	100.0
Rest of New Mexico	35.6 (2.5)	14.6 (1.8)	21.4 (2.3)	9.4 (1.5)	15.1 (2.1)	4.0	100.0
New York	23.5 (1.2)	17.7 (1.1)	30.9 (1.4)	16.5 (1.1)	9.4 (0.9)	2.0	100.0
City of New York counties[6]	29.4 (1.6)	16.7 (1.3)	30.3 (1.7)	10.2 (1.1)	10.6 (1.2)	2.7	100.0
Rest of New York	19.1 (1.6)	18.4 (1.6)	31.3 (2.0)	21.3 (1.7)	8.6 (1.3)	1.4	100.0
North Carolina	34.7 (1.7)	12.7 (1.2)	26.2 (1.7)	17.2 (1.4)	7.6 (1.0)	1.7	100.0
North Dakota	40.2 (1.7)	10.8 (1.1)	23.2 (1.5)	8.4 (1.0)	15.6 (1.3)	1.7	100.0
Ohio	36.8 (1.4)	16.1 (1.1)	24.0 (1.3)	15.8 (1.1)	5.3 (0.7)	2.1	100.0
Cuyahoga County	38.1 (3.2)	18.4 (2.5)	19.3 (2.9)	16.2 (2.4)	6.1 (1.8)	1.9	100.0
Franklin County	41.8 (3.7)	17.1 (2.8)	25.4 (3.8)	10.7 (2.4)	†	2.4	100.0
Rest of Ohio	35.9 (1.7)	15.6 (1.3)	24.4 (1.6)	16.4 (1.3)	5.5 (0.8)	2.1	100.0
Oklahoma	39.0 (2.0)	19.2 (1.6)	21.2 (1.8)	11.3 (1.3)	7.6 (1.2)	1.8	100.0
Oregon	36.8 (2.2)	16.1 (1.7)	19.7 (1.9)	16.4 (1.7)	9.2 (1.4)	1.8	100.0
Pennsylvania	26.2 (1.3)	18.7 (1.2)	26.4 (1.4)	18.4 (1.2)	8.7 (0.9)	1.5	100.0
Allegheny County	40.4 (3.4)	12.6 (2.3)	24.5 (3.3)	14.4 (2.4)	*6.8 (2.0)	1.4	100.0
Philadelphia County	37.8 (2.9)	18.1 (2.2)	21.8 (2.7)	13.0 (2.0)	6.6 (1.7)	2.7	100.0
Rest of Pennsylvania	22.7 (1.6)	19.5 (1.5)	27.4 (1.7)	19.7 (1.5)	9.3 (1.2)	1.4	100.0
Rhode Island	24.9 (1.8)	22.0 (1.7)	28.5 (1.9)	15.9 (1.5)	6.9 (1.1)	1.7	100.0
South Carolina	39.0 (2.1)	16.3 (1.5)	18.7 (1.8)	16.0 (1.5)	8.0 (1.2)	2.0	100.0
South Dakota	§	§	§	§	§	§	§
Tennessee	37.8 (1.7)	16.7 (1.3)	24.6 (1.7)	13.3 (1.2)	5.4 (0.9)	2.1	100.0
Davidson County	51.2 (3.6)	16.5 (2.6)	16.1 (3.0)	10.4 (2.2)	*4.1 (1.7)	1.7	100.0
Shelby County	46.2 (3.3)	17.9 (2.5)	19.7 (2.9)	8.7 (1.8)	*5.6 (1.8)	1.9	100.0
Rest of Tennessee	34.5 (2.1)	16.5 (1.6)	26.7 (2.1)	14.6 (1.6)	5.6 (1.1)	2.2	100.0
Texas	44.5 (1.2)	18.5 (0.9)	18.0 (1.0)	9.4 (0.7)	7.5 (0.6)	2.0	100.0
Bexar County	42.6 (2.5)	16.1 (1.9)	17.7 (2.1)	5.8 (1.2)	16.0 (2.1)	1.7	100.0
Dallas County	56.5 (2.6)	16.4 (1.9)	13.1 (1.9)	7.1 (1.3)	5.2 (1.3)	1.8	100.0
El Paso County	§	§	§	§	§	§	§
Harris County	47.0 (2.1)	20.7 (1.7)	16.4 (1.7)	9.7 (1.3)	3.7 (0.9)	2.5	100.0
Rest of Texas	42.9 (1.6)	19.0 (1.2)	19.3 (1.3)	10.2 (1.0)	6.7 (0.8)	1.9	100.0
Utah	46.6 (1.9)	15.2 (1.3)	22.1 (1.6)	10.2 (1.1)	4.1 (0.8)	1.8	100.0
Vermont	29.9 (1.9)	11.5 (1.3)	23.9 (1.8)	22.4 (1.7)	11.1 (1.4)	1.2	100.0
Virginia	32.0 (1.9)	22.1 (1.7)	24.0 (1.9)	14.6 (1.4)	5.3 (1.0)	1.9	100.0
Washington	39.4 (1.6)	17.4 (1.2)	22.1 (1.5)	13.4 (1.1)	6.3 (0.9)	1.4	100.0
Eastern counties[7]	34.2 (2.4)	19.4 (2.0)	22.8 (2.3)	15.8 (1.9)	6.2 (1.4)	1.7	100.0
King County	46.0 (2.9)	16.9 (2.2)	21.0 (2.6)	9.8 (1.7)	*4.7 (1.4)	1.5	100.0
Rest of Washington	37.6 (2.4)	16.7 (1.9)	22.5 (2.3)	14.6 (1.8)	7.4 (1.5)	1.2	100.0
West Virginia	30.2 (2.4)	11.1 (1.6)	14.6 (1.9)	24.8 (2.2)	16.7 (2.1)	2.5	100.0
Wisconsin	39.0 (2.0)	11.3 (1.3)	20.2 (1.7)	18.0 (1.6)	9.8 (1.3)	1.7	100.0
Milwaukee County	§	§	§	§	§	§	§
Rest of Wisconsin	36.6 (2.2)	11.9 (1.5)	20.3 (2.0)	19.5 (1.8)	10.1 (1.5)	1.5	100.0
Wyoming	§	§	§	§	§	§	§

* Estimate has a relative standard error greater than 30% and less than or equal to 50% and is considered unreliable.

§ Model-based estimates for Maryland-Prince George's County, Montana, South Dakota, Texas-El Paso County, Wisconsin-Milwaukee County, and Wyoming are not reported because, for at least one telephone service use category, direct estimates from the National Health Information Survey were more than double or less than one-half the synthetic estimate. These differences between two components of the model-based estimates suggest that the direct estimates for these areas may be biased. Biased estimates violate a key model-based estimation assumption.

† Estimate has a relative standard error greater than 50% and is not shown.

[1]The proportion of adults living in households with no telephone service was not modeled. Other proportions were adjusted so that this estimate agreed with the 2011 American Community Survey estimate for this proportion.

[2]Includes Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity.

[3]Includes Adams, Arapahoe, Denver, and Douglas.
[4]Includes Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington.
[5]Includes Catron, Chaves, Curry, De Baca, Dona Ana, Eddy, Grant, Hidalgo, Lea, Lincoln, Luna, Otero, Roosevelt, Sierra, and Socorro.
[6]Includes Bronx, Kings, New York, Queens, and Richmond.
[7]Includes Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, and Yakima.

NOTE: Estimates were calculated by NORC at the University of Chicago.

SOURCES: CDC/NCHS, National Health Interview Survey, 2007–2012; U.S. Census Bureau, American Community Survey, 2006–2011; and infoUSA.com consumer database, 2007–2012.

Table 3. Modeled estimates (with standard errors) of the percent distribution of household telephone status for children under age 18, by selected geographic areas: United States, 2012

Geographic area	Wireless-only	Wireless-mostly	Dual-use	Landline-mostly	Landline-only	No telephone service[1]	Total
	Percent (standard error)						
Alabama	49.6 (3.2)	19.8 (2.7)	18.5 (2.9)	6.6 (1.6)	*3.5 (1.5)	2.1	100.0
Jefferson County	55.2 (4.4)	20.3 (3.7)	16.4 (3.7)	†	†	1.4	100.0
Rest of Alabama	48.7 (3.7)	19.7 (3.1)	18.8 (3.3)	7.2 (1.9)	*3.5 (1.6)	2.2	100.0
Alaska	25.7 (3.7)	27.6 (3.9)	30.6 (4.2)	10.1 (2.6)	*5.1 (2.1)	0.9	100.0
Arizona	49.9 (2.7)	19.7 (2.3)	16.3 (2.3)	3.7 (0.9)	8.4 (1.9)	2.0	100.0
Maricopa County	52.0 (3.7)	18.6 (3.0)	15.7 (3.0)	†	10.9 (2.8)	1.6	100.0
Rest of Arizona	46.3 (3.9)	21.4 (3.5)	17.4 (3.4)	7.8 (2.0)	*4.2 (2.0)	2.8	100.0
Arkansas	59.8 (3.1)	16.3 (2.5)	14.1 (2.5)	*4.1 (1.3)	*3.0 (1.3)	2.8	100.0
California	38.2 (1.2)	22.9 (1.1)	24.1 (1.1)	7.4 (0.6)	6.0 (0.6)	1.4	100.0
Alameda County	37.0 (4.3)	22.7 (4.0)	34.2 (4.9)	*4.9 (1.8)	†	0.7	100.0
Fresno County	36.1 (3.6)	11.5 (2.5)	28.3 (3.8)	8.1 (2.1)	14.7 (3.3)	1.3	100.0
Los Angeles County	36.7 (2.2)	24.4 (2.0)	23.5 (2.0)	7.2 (1.2)	6.5 (1.3)	1.6	100.0
Northern counties[2]	38.2 (4.4)	18.3 (3.8)	25.8 (4.6)	8.6 (2.4)	*7.6 (3.1)	1.5	100.0
San Bernardino County	45.8 (3.9)	22.9 (3.5)	19.8 (3.5)	6.9 (1.9)	*3.4 (1.7)	1.1	100.0
San Diego County	29.5 (3.0)	23.4 (2.9)	28.4 (3.3)	8.2 (1.8)	8.2 (2.1)	2.3	100.0
Santa Clara County	34.9 (3.7)	24.1 (3.5)	31.7 (4.1)	*3.9 (1.5)	*4.6 (2.0)	0.7	100.0
Rest of California	40.0 (2.0)	22.9 (1.7)	22.2 (1.7)	7.9 (1.1)	5.6 (1.0)	1.3	100.0
Colorado	45.1 (2.8)	21.1 (2.4)	23.7 (2.6)	6.1 (1.3)	*2.2 (1.0)	1.9	100.0
City of Denver counties[3]	46.3 (3.9)	20.2 (3.3)	24.5 (3.7)	*5.5 (1.7)	†	1.4	100.0
Rest of Colorado	44.2 (3.8)	21.7 (3.3)	23.1 (3.6)	6.5 (1.9)	†	2.2	100.0
Connecticut	25.4 (2.6)	20.6 (2.5)	32.9 (3.0)	11.8 (1.9)	8.4 (1.9)	0.8	100.0
Delaware	26.8 (3.3)	28.5 (3.5)	35.5 (3.9)	5.9 (1.8)	†	1.2	100.0
District of Columbia	42.2 (4.4)	19.4 (3.7)	25.3 (4.0)	*3.8 (1.7)	*7.2 (2.6)	2.2	100.0
Florida	49.2 (1.8)	21.1 (1.6)	21.4 (1.6)	2.6 (0.6)	2.7 (0.7)	3.1	100.0
Miami-Dade County	53.2 (4.6)	18.3 (3.8)	21.1 (4.3)	†	†	2.9	100.0
Duval County	54.2 (3.3)	18.6 (2.8)	18.6 (2.9)	*1.9 (0.9)	†	5.7	100.0
Orange County	51.4 (4.6)	23.3 (4.2)	21.1 (4.4)	†	†	1.7	100.0
Rest of Florida	47.7 (2.3)	21.5 (2.0)	22.0 (2.1)	3.0 (0.8)	3.0 (0.9)	2.7	100.0
Georgia	45.9 (2.4)	24.6 (2.2)	18.7 (2.0)	3.9 (1.0)	3.8 (1.1)	3.0	100.0
Fulton/DeKalb counties	48.8 (4.4)	25.1 (4.1)	22.8 (4.3)	†	†	2.1	100.0
Rest of Georgia	45.4 (2.7)	24.5 (2.5)	18.0 (2.3)	4.5 (1.1)	4.4 (1.3)	3.2	100.0
Hawaii	43.8 (3.9)	18.6 (3.2)	28.6 (3.9)	*3.7 (1.4)	*3.5 (1.7)	1.7	100.0
Idaho	62.2 (2.6)	9.1 (1.6)	17.8 (2.2)	7.0 (1.4)	†	2.7	100.0
Illinois	42.4 (2.3)	21.3 (2.0)	26.5 (2.2)	5.9 (1.1)	*2.3 (0.8)	1.6	100.0
Cook County	42.3 (3.2)	16.2 (2.5)	32.4 (3.3)	*4.1 (1.3)	*2.5 (1.2)	2.4	100.0
Madison/St. Clair counties	45.6 (5.5)	21.4 (4.7)	25.9 (5.6)	*5.8 (2.4)	†	1.2	100.0
Rest of Illinois	42.2 (2.9)	22.7 (2.6)	25.0 (2.8)	6.4 (1.4)	*2.3 (1.0)	1.4	100.0
Indiana	46.3 (2.9)	16.0 (2.2)	19.5 (2.5)	6.5 (1.4)	8.3 (1.9)	3.4	100.0
Lake County	44.5 (5.2)	18.9 (4.2)	21.0 (4.8)	*5.5 (2.3)	*8.0 (3.6)	2.1	100.0
Marion County	52.8 (4.7)	11.0 (3.1)	21.0 (4.3)	*5.2 (2.0)	*5.9 (2.8)	4.1	100.0
Rest of Indiana	45.3 (3.5)	16.6 (2.8)	19.1 (3.1)	6.9 (1.7)	8.7 (2.4)	3.4	100.0
Iowa	45.4 (3.2)	27.5 (3.0)	18.0 (2.7)	*3.3 (1.1)	*2.7 (1.2)	3.0	100.0
Kansas	52.5 (2.7)	15.9 (2.1)	21.9 (2.4)	5.2 (1.2)	*3.2 (1.1)	1.4	100.0
Johnson/Wyandotte counties	41.5 (4.8)	17.6 (3.9)	32.9 (5.2)	*5.0 (2.0)	†	1.1	100.0
Rest of Kansas	56.4 (3.2)	15.3 (2.4)	18.0 (2.7)	5.3 (1.4)	*3.6 (1.4)	1.4	100.0
Kentucky	52.5 (3.2)	16.2 (2.5)	14.6 (2.5)	9.4 (1.8)	*4.3 (1.5)	3.0	100.0
Louisiana	45.1 (3.1)	21.5 (2.7)	24.4 (3.0)	4.8 (1.3)	†	2.2	100.0
Maine	41.6 (3.3)	17.9 (2.7)	21.8 (3.0)	16.1 (2.5)	†	0.6	100.0
Maryland	33.6 (2.4)	22.7 (2.3)	30.6 (2.7)	9.7 (1.6)	†	2.1	100.0
Baltimore City	51.8 (5.3)	12.5 (3.6)	22.0 (4.9)	*6.7 (2.5)	†	5.4	100.0
Prince George's County	§	§	§	§	§	§	§
Rest of Maryland	30.0 (3.0)	23.3 (2.9)	32.8 (3.4)	10.6 (2.0)	†	1.9	100.0
Massachusetts	26.7 (2.7)	22.3 (2.7)	37.9 (3.3)	8.6 (1.7)	*3.3 (1.3)	1.2	100.0
Suffolk County	48.9 (6.8)	22.0 (5.8)	*20.2 (6.1)	†	†	2.8	100.0
Rest of Massachusetts	24.9 (2.8)	22.3 (2.9)	39.4 (3.5)	8.9 (1.8)	*3.4 (1.4)	1.1	100.0
Michigan	44.2 (2.6)	18.6 (2.2)	23.5 (2.5)	8.1 (1.5)	*3.2 (1.1)	2.3	100.0
Wayne County	59.6 (4.1)	19.5 (3.7)	12.4 (3.4)	*2.8 (1.3)	†	3.5	100.0
Rest of Michigan	42.9 (2.8)	18.6 (2.3)	24.5 (2.7)	8.6 (1.6)	*3.3 (1.2)	2.2	100.0
Minnesota	36.7 (2.6)	22.5 (2.4)	30.0 (2.8)	8.3 (1.5)	†	1.2	100.0
Twin Cities counties[4]	37.0 (3.7)	19.9 (3.2)	33.1 (4.0)	9.0 (2.1)	†	0.8	100.0
Rest of Minnesota	36.3 (3.7)	25.7 (3.6)	26.1 (3.8)	7.4 (2.0)	†	1.5	100.0

See footnotes at end of table.

Table 3. Modeled estimates (with standard errors) of the percent distribution of household telephone status for children under age 18, by selected geographic areas: United States, 2012—Con.

Geographic area	Wireless-only	Wireless-mostly	Dual-use	Landline-mostly	Landline-only	No telephone service[1]	Total
	Percent (standard error)						
Mississippi	63.4 (3.0)	15.4 (2.4)	11.3 (2.2)	5.5 (1.4)	*2.5 (1.1)	1.9	100.0
Missouri	55.2 (3.0)	17.8 (2.4)	16.4 (2.4)	5.9 (1.4)	*2.3 (1.1)	2.5	100.0
St. Louis County/City	39.2 (4.8)	22.9 (4.4)	28.6 (5.1)	*6.5 (2.3)	†	2.1	100.0
Rest of Missouri	59.4 (3.5)	16.5 (2.8)	13.1 (2.6)	5.8 (1.6)	†	2.5	100.0
Montana	§	§	§	§	§	§	§
Nebraska	43.7 (3.2)	19.7 (2.7)	26.8 (3.2)	5.8 (1.5)	*2.4 (1.2)	1.6	100.0
Nevada	41.7 (2.8)	27.2 (2.6)	20.8 (2.5)	4.0 (1.1)	*4.7 (1.4)	1.7	100.0
Clark County	40.6 (3.4)	25.0 (3.1)	22.9 (3.1)	*4.0 (1.3)	*6.1 (1.9)	1.5	100.0
Rest of Nevada	44.6 (5.0)	33.5 (4.8)	15.0 (3.9)	*3.9 (1.9)	†	2.2	100.0
New Hampshire	30.3 (3.2)	23.4 (3.1)	32.7 (3.6)	9.8 (2.1)	†	1.2	100.0
New Jersey	20.6 (2.2)	31.2 (2.7)	33.2 (2.9)	8.5 (1.6)	4.8 (1.4)	1.7	100.0
Essex County	38.2 (5.0)	20.4 (4.3)	33.1 (5.5)	†	†	4.3	100.0
Rest of New Jersey	19.9 (2.3)	31.6 (2.8)	33.2 (3.0)	8.8 (1.6)	*4.8 (1.5)	1.6	100.0
New Mexico	53.4 (3.3)	15.2 (2.5)	18.7 (2.8)	*2.7 (1.1)	*5.1 (1.8)	4.8	100.0
Southern counties[5]	59.1 (4.6)	10.4 (2.9)	20.7 (4.3)	†	†	4.5	100.0
Rest of New Mexico	51.2 (4.1)	17.1 (3.2)	17.9 (3.5)	*3.4 (1.5)	*5.5 (2.3)	5.0	100.0
New York	26.8 (1.9)	21.0 (1.8)	34.5 (2.2)	10.7 (1.3)	4.9 (1.1)	2.0	100.0
City of New York counties[6]	29.8 (2.7)	20.3 (2.5)	34.7 (3.0)	7.3 (1.5)	5.3 (1.5)	2.7	100.0
Rest of New York	24.7 (2.6)	21.6 (2.5)	34.3 (3.1)	13.1 (2.0)	*4.7 (1.4)	1.6	100.0
North Carolina	47.1 (2.6)	17.8 (2.1)	23.2 (2.4)	6.9 (1.3)	*3.4 (1.1)	1.6	100.0
North Dakota	50.0 (3.2)	16.3 (2.4)	25.2 (2.9)	†	6.8 (1.8)	1.5	100.0
Ohio	44.7 (2.4)	18.1 (1.9)	22.8 (2.2)	8.5 (1.3)	*2.9 (1.0)	3.0	100.0
Cuyahoga County	37.0 (4.2)	20.5 (3.8)	25.5 (4.4)	14.2 (3.0)	†	2.5	100.0
Franklin County	43.1 (4.5)	19.7 (3.8)	28.5 (4.7)	*5.4 (2.0)	†	1.6	100.0
Rest of Ohio	46.0 (2.9)	17.5 (2.3)	21.7 (2.6)	8.2 (1.6)	*3.4 (1.2)	3.2	100.0
Oklahoma	50.9 (3.4)	24.8 (3.0)	15.1 (2.6)	*3.3 (1.2)	*4.6 (1.6)	1.3	100.0
Oregon	41.5 (3.4)	21.4 (3.0)	22.3 (3.2)	7.2 (1.8)	*5.7 (1.9)	1.9	100.0
Pennsylvania	31.4 (2.1)	24.6 (2.1)	29.9 (2.4)	8.5 (1.3)	3.6 (1.0)	2.1	100.0
Allegheny County	43.9 (5.4)	21.7 (4.7)	28.6 (5.6)	*4.7 (2.2)	†	0.9	100.0
Philadelphia County	46.8 (4.4)	17.1 (3.4)	22.3 (4.1)	8.5 (2.3)	†	2.7	100.0
Rest of Pennsylvania	27.6 (2.5)	26.1 (2.6)	31.2 (2.8)	8.9 (1.6)	*4.1 (1.3)	2.2	100.0
Rhode Island	34.8 (3.4)	27.9 (3.3)	25.4 (3.4)	6.5 (1.8)	*3.4 (1.5)	1.9	100.0
South Carolina	54.5 (3.3)	19.0 (2.7)	16.2 (2.6)	5.8 (1.5)	*2.5 (1.2)	2.1	100.0
South Dakota	§	§	§	§	§	§	§
Tennessee	52.3 (2.6)	18.1 (2.1)	20.6 (2.4)	5.9 (1.3)	†	2.3	100.0
Davidson County	61.8 (5.4)	17.6 (4.2)	17.5 (4.6)	†	†	2.1	100.0
Shelby County	54.1 (4.7)	22.4 (4.2)	16.8 (4.0)	†	†	1.4	100.0
Rest of Tennessee	50.7 (3.3)	17.2 (2.6)	21.8 (3.0)	7.2 (1.7)	†	2.5	100.0
Texas	54.2 (1.7)	21.6 (1.5)	14.7 (1.3)	4.1 (0.7)	3.4 (0.7)	2.1	100.0
Bexar County	57.0 (3.9)	18.4 (3.2)	16.4 (3.2)	†	*5.9 (2.2)	1.6	100.0
Dallas County	65.9 (3.6)	17.6 (3.0)	10.7 (2.6)	*3.6 (1.4)	†	2.0	100.0
El Paso County	§	§	§	§	§	§	§
Harris County	54.8 (2.9)	22.6 (2.5)	13.5 (2.1)	4.7 (1.2)	*2.1 (1.0)	2.4	100.0
Rest of Texas	52.0 (2.2)	22.8 (1.9)	15.3 (1.7)	4.6 (0.9)	3.4 (0.9)	1.9	100.0
Utah	48.5 (2.6)	19.7 (2.1)	23.5 (2.3)	4.5 (1.0)	*1.9 (0.8)	1.9	100.0
Vermont	24.5 (3.2)	13.5 (2.6)	32.8 (3.7)	20.7 (3.0)	8.2 (2.3)	0.2	100.0
Virginia	36.2 (2.7)	24.3 (2.5)	27.6 (2.7)	6.9 (1.4)	*3.1 (1.1)	2.0	100.0
Washington	41.8 (2.2)	20.6 (1.9)	23.9 (2.1)	7.8 (1.2)	4.6 (1.2)	1.3	100.0
Eastern counties[7]	44.2 (3.7)	23.4 (3.3)	21.5 (3.4)	7.2 (1.9)	†	1.8	100.0
King County	41.0 (4.0)	19.3 (3.5)	31.9 (4.4)	*4.7 (1.7)	†	1.4	100.0
Rest of Washington	41.1 (3.4)	19.9 (3.0)	20.7 (3.2)	9.8 (2.0)	7.5 (2.2)	1.0	100.0
West Virginia	42.7 (3.6)	11.9 (2.4)	13.9 (2.7)	18.6 (2.8)	10.0 (2.5)	2.9	100.0
Wisconsin	44.5 (3.0)	17.4 (2.5)	24.3 (3.0)	8.6 (1.7)	*2.6 (1.2)	2.7	100.0
Milwaukee County	§	§	§	§	§	§	§
Rest of Wisconsin	41.0 (3.5)	18.5 (2.9)	25.6 (3.5)	9.9 (2.1)	†	2.5	100.0
Wyoming	§	§	§	§	§	§	§

* Estimate has a relative standard error greater than 30% and less than or equal to 50% and is considered unreliable.

† Estimate has a relative standard error greater than 50% and is not shown.

§ Model-based estimates for Maryland-Prince George's County, Montana, South Dakota, Texas-El Paso County, Wisconsin-Milwaukee County, and Wyoming are not reported because, for at least one telephone service use category, direct estimates from the National Health Information Survey were more than double or less than one-half the synthetic estimate. These differences between two components of the model-based estimates suggest that the direct estimates for these areas may be biased. Biased estimates violate a key model-based estimation assumption.

[1]The proportion of children living in households with no telephone service was not modeled. Other proportions were adjusted so that this estimate agreed with the 2011 American Community Survey estimate for this proportion.

[2]Includes Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Plumas, Shasta, Sierra, Siskiyou, Tehama, and Trinity.
[3]Includes Adams, Arapahoe, Denver, and Douglas.
[4]Includes Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington.
[5]Includes Catron, Chaves, Curry, De Baca, Dona Ana, Eddy, Grant, Hidalgo, Lea, Lincoln, Luna, Otero, Roosevelt, Sierra, and Socorro.
[6]Includes Bronx, Kings, New York, Queens, and Richmond.
[7]Includes Adams, Asotin, Benton, Chelan, Columbia, Douglas, Ferry, Franklin, Garfield, Grant, Kittitas, Klickitat, Lincoln, Okanogan, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman, and Yakima.

NOTE: Estimates were calculated by NORC at the University of Chicago.

SOURCES: CDC/NCHS, National Health Interview Survey, 2007–2012; U.S. Census Bureau, American Community Survey, 2006–2011; and infoUSA.com consumer database, 2007–2012.

Technical Notes

Survey data sources

The estimates presented in this report are based on National Health Interview Survey (NHIS) data collected from January 2007 through December 2012, and on American Community Survey (ACS) data collected from 2006 through 2011. NHIS is a multipurpose health survey conducted by the Centers for Disease Control and Prevention's (CDC) National Center for Health Statistics (NCHS). ACS is a multipurpose survey conducted by the U.S. Census Bureau to produce estimates of demographic, social, economic, and housing characteristics.

National Health Interview Survey

NHIS is a multistage probability household survey of a large sample of households drawn from the civilian noninstitutionalized household population of the United States. This face-to-face interview survey is administered by trained field representatives from the U.S. Census Bureau, under contract to NCHS. NHIS interviews are conducted continuously throughout the year to collect information that is used to assess progress toward meeting national health objectives. Survey content includes health status, health risk factors, health-related behaviors, health care access, and health care utilization. NHIS also includes questions about demographic and socioeconomic characteristics, household telephones, and whether anyone in the household has a wireless telephone.

The sample for NHIS is stratified by state, which allows NHIS data to be used in statistical models that produce state-level estimates. However, for most states the limited number of sampling strata and small sample sizes preclude reliable direct state-level estimates. Household telephone status information was obtained for 75,150 persons in 2007, for 73,749 persons in 2008, for 88,053 persons in 2009, for 89,620 persons in 2010, for 101,449 persons in 2011, and for 107,723 persons in 2012. Fewer than 0.5% of persons with completed NHIS family-level interviews had missing data for household telephone status.

NHIS was used to derive direct estimates for each telephone service use category by age group (adults aged 18 and over or children under age 18), small area, and 6-month period. These estimates were the dependent variables in the statistical models. Also, NHIS was the source for the national estimates used for raking the model-based estimates for each telephone service use category by age group and year.

American Community Survey

ACS is a multistage probability survey that provides data on households and group quarters. In this report, a subset of the full ACS sample—the civilian noninstitutionalized population—is used to represent a population similar to that sampled for NHIS. Data are collected continuously through a combination of mailed, telephone, and face-to-face interviews. ACS is both nationally and state-representative and has included approximately 2 million housing units per year since 2006.

ACS data are released for calendar years rather than for 6-month periods. Moreover, 2012 ACS data will not be released until Fall 2013. Therefore, ACS data for 2006 were used in models for both 6-month periods of 2007 (i.e., January–June 2007 and July–December 2007). Similarly, ACS data for 2007 were used in models for both 6-month periods of 2008; data for 2008 were used in models for 2009; data for 2009 were used in models for 2010; data for 2010 were used in models for 2011; and data for 2011 were used in models for 2012. Moreover, ACS was the source for the proportion of adults or children living in households with any telephone service (landline or wireless). These ACS estimates were used as benchmarking totals when raking the model-based estimates.

Auxiliary data source

The numbers of listed telephone lines within each state for 2007–2012 were obtained from a consumer database compiled by infoUSA.com (Infogroup, Papillion, NE). This database is updated bimonthly with information from 37 sources, including postal delivery sequence files, National Change of Address lists, utility company records, and more than 4,000 white pages directories. These data were available for each calendar year rather than each 6-month period. Therefore, annual data on listed telephone lines were used in models for both 6-month periods of the selected calendar year. The count of listed telephone lines was divided by the number of civilian noninstitutionalized persons and, because these proportions were available at the state level only, the same state-specific proportion was used in the model for each small area in the state.

Definitions

For each family contacted by NHIS, one adult family member is asked whether "you or anyone in your family has a working cellular telephone." An NHIS family can be an individual or a group of two or more related persons living together in the same housing unit (a "household"). Thus, a family can consist of only one person, and more than one family can live in a household (including, for example, a household where there are multiple single-person families, as when unrelated roommates are living together).

To produce the statistics for this report, families are identified as "wireless families" if anyone in the family had a working cellular telephone at the time of interview. This person (or persons) could be a civilian adult, a member of the military, or a child. Households are identified as "wireless-only" if they include at least one wireless family and if there are no working landline telephones inside the household. To determine whether there was a working landline telephone inside the household, survey respondents were asked if there was "at least one phone inside your home that is currently working and is not a cell phone."

Household telephone status (rather than family telephone status) is used

because most telephone surveys draw samples of households rather than families. Adults and children are identified as wireless-only if they live in a wireless-only household. Individual ownership or use of wireless telephones is not determined. A similar approach is used to identify adults and children living in landline-only households and in households with both landline and wireless telephones.

NHIS includes an additional question for persons living in families with both landline and wireless telephones. The respondent for the family is asked to consider all of the telephone calls the family receives and to report whether "all or almost all calls are received on cell phones, some are received on cell phones and some on regular telephones, or very few or none are received on cell phones." This question permits the identification of persons living in "wireless-mostly" households (defined as households with both landline and cellular telephones in which all families receive all or almost all calls on cell phones) and "landline-mostly" households (defined as households with both landline and cellular telephones in which all families receive all or almost all calls on landline telephones). "Dual-use" households are those with both landline and cellular telephones that are neither wireless-mostly nor landline-mostly. That is, they receive some calls on cell phones and some on landline telephones.

Small-area model

Detailed descriptions of the small-area model and the derivation of the model-based estimates and standard errors are provided elsewhere (2). As noted above, the model-based estimates were a weighted combination of three distinct sets of estimates: (a) the direct estimate from NHIS for the small area during the 6-month period of interest, (b) a synthetic estimate derived from a regression model involving ACS and auxiliary data for the small area during the 6-month period of interest, and (c) adjusted direct estimates from NHIS for the small area during all 6-month periods other than the 6-month period of interest.

NHIS and ACS sampling weights adjust for the probability of selection of each household, and are adjusted for nonresponse. The results in this report are based on weighted estimates. *R* software (http://www.r-project.org) was used to derive the model-based estimates and standard errors. Design effects were included in the models to account for the complex survey designs.

The approach used to create the model-based estimates can produce substantially biased prevalence estimates and unstable variance estimates when the direct estimate from NHIS is based on small sample sizes, when that sample is drawn from only a few geographic areas, and when those few geographic areas are not representative of the state or county of interest. To identify potentially problematic model-based estimates, the person-level prevalence ratio of the direct survey estimate to the synthetic regression-based estimate was examined for each telephone service use category and for each small area. Ratios were computed across all 6-month periods. If the ratios for any telephone service use category were greater than two or less than one-half, then all model-based estimates for that reporting area were suppressed from Tables 1–3 in this report. This occurred for six small areas: Maryland-Prince George's County, Montana, South Dakota, Texas-El Paso County, Wisconsin-Milwaukee County, and Wyoming. For these areas, the synthetic estimates derived from the regression model are presented in the Table below.

Table. Synthetic regression-based estimates (with standard errors) of the percent distribution of household telephone status, by age, for selected geographic areas where model-based estimates are not reported: United States, 2012

Age and geographic area	Wireless-only	Wireless-mostly	Dual-use	Landline-mostly	Landline-only	No telephone service[1]	Total
	Percent (standard error)						
Adults aged 18 and over							
Maryland-Prince George's County	32.2 (5.7)	21.3 (4.3)	29.6 (6.0)	13.3 (3.6)	†	1.0	100.0
Montana	39.9 (6.1)	16.9 (3.8)	17.7 (4.9)	14.7 (3.8)	†	2.4	100.0
South Dakota	38.6 (5.9)	15.1 (3.6)	21.8 (5.1)	13.9 (3.7)	†	2.0	100.0
Texas-El Paso County	43.8 (6.3)	14.3 (3.7)	23.2 (5.5)	†	†	3.8	100.0
Wisconsin-Milwaukee County	44.1 (6.1)	13.7 (3.5)	20.8 (5.1)	*9.7 (3.2)	†	2.4	100.0
Wyoming	39.3 (6.1)	15.7 (3.7)	19.8 (5.1)	13.3 (3.7)	†	2.1	100.0
Children under age 18							
Maryland-Prince George's County	35.6 (7.5)	24.8 (6.4)	31.2 (7.8)	†	†	1.0	100.0
Montana	49.7 (8.1)	22.9 (6.2)	*15.6 (6.0)	†	†	2.5	100.0
South Dakota	46.2 (7.7)	19.3 (5.6)	22.3 (6.5)	†	†	2.5	100.0
Texas-El Paso County	55.9 (7.4)	*15.2 (5.0)	*17.7 (6.0)	†	†	5.2	100.0
Wisconsin-Milwaukee County	51.5 (8.1)	*16.4 (5.4)	*21.1 (6.6)	†	†	3.4	100.0
Wyoming	47.3 (8.0)	21.0 (5.9)	*17.9 (6.3)	†	†	1.7	100.0

† Estimate has a relative standard error greater than 50% and is not shown.

* Estimate has a relative standard error greater than 30% and less than or equal to 50% and is considered unreliable.

[1]The proportion of persons living in households with no telephone service was not modeled. Other proportions were adjusted so that this estimate agreed with the 2011 American Community Survey estimate for this proportion.

NOTES: Model-based estimates for these six areas are not reported in the main-text tables because the direct National Health Interview Survey estimates (a component of the model-based estimates) may be biased. This table presents synthetic estimates (another component of the model-based estimates) for these areas. These synthetic estimates are the best available estimates for these areas but should be used with caution because they are generally less reliable than the model-based estimates reported for other geographic areas. Estimates were calculated by NORC at the University of Chicago.

SOURCES: U.S. Census Bureau, American Community Survey, 2006–2011; and infoUSA.com consumer database, 2007–2012.

EXHIBIT AN-2

U.S. DEPARTMENT OF
HEALTH & HUMAN SERVICES

Centers for Disease Control and Prevention
National Center for Health Statistics
3311 Toledo Road, Room 5419
Hyattsville, MD 20782

National Health Statistics Reports ■ Number 70 ■ December 18, 2013

Acknowledgments

NCHS thanks NORC at the University of Chicago and the State Health Access Data Assistance Center (SHADAC) at the University of Minnesota for providing resources that supported this research. The authors are solely responsible for the content of this report. Nadarajasundaram Ganesh developed the statistical models. The authors thank Marketing Systems Group for providing the auxiliary data on listed telephone numbers, and the staff of the NCHS Research Data Center for their assistance.

Suggested citation

Blumberg SJ, Ganesh N, Luke JV, Gonzales G. Wireless substitution: State-level estimates from the National Health Interview Survey, 2012. National health statistics reports; no 70. Hyattsville, MD: National Center for Health Statistics. 2013.

For e-mail updates on NCHS publication releases, subscribe online at: http://www.cdc.gov/nchs/govdelivery.htm.
For questions or general information about NCHS: Tel: 1–800–CDC–INFO (1–800–232–4636) • TTY: 1–888–232–6348
Internet: http://www.cdc.gov/nchs • Online request form: http://www.cdc.gov/cdc-info/requestform.html
DHHS Publication No. 2014–1250 • CS243817