Overview

Preliminary results from the January–June 2011 National Health Interview Survey (NHIS) indicate that the number of American homes with only wireless telephones continues to grow. More than 3 of every 10 American homes (31.6%) had only wireless telephones (also known as cellular telephones, cell phones, or mobile phones) during the first half of 2011—an increase of 1.9 percentage points since the second half of 2010. In addition, nearly one of every six American homes (16.4%) received all or almost all calls on wireless telephones despite also having a landline telephone. 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 utilization. The survey also includes information about household telephones and whether anyone in the household has a wireless telephone.

Two additional reports are published as part of the NHIS Early Release Program. Early Release of Selected Estimates Based on Data From the National Health Interview Survey (http://www.cdc.gov/nchs/nhis/releases.htm) 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 (http://www.cdc.gov/nchs/nhis/releases.htm) is also published quarterly and provides additional estimates regarding health insurance coverage.

Methods

For many years, NHIS has asked respondents to provide residential telephone numbers, to permit recontacting of survey participants. Starting in 2003, additional questions were asked to
determine whether a family had a landline telephone. NHIS families were considered to have landline telephone service if the survey respondent for each family reported that there was “at least one phone inside your home that is currently working and is not a cell phone.”

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).

The survey respondent for each family was also asked whether “anyone in 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 working landline telephones inside 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 between families when more than one family lives in the same household.

From January through June 2011, information on household telephone status was obtained for 20,133 households that included at least one civilian adult or child. These households included 38,104 civilian adults aged 18 and over and 13,753 children under age 18.

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 18.8% 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 civilian adult randomly selected from each family were used in these analyses. From January through June 2011, data on household telephone status and selected health measures were collected from 16,998 randomly selected adults.

Because NHIS is conducted throughout the year and the sample is designed to yield a nationally representative sample each week, 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 (see Botman et al., 2000).

Point estimates and 95% confidence intervals were calculated using SUDAAN software 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 first 6 months of 2011, more than 3 of every 10 households (31.6%) did not have a landline telephone but did have at least one wireless telephone (Table 1 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T1)). Approximately 30.2% of all adults (approximately 69 million adults) lived in households with only wireless telephones; 36.4% of all children (approximately 27 million children) lived in households with only wireless telephones.

The percentage of households that are wireless-only has been steadily increasing. The 1.9-percentage-point increase from the last 6 months of 2010 through the first 6 months of 2011 is not quite as large as the 3.1-percentage-point increase from the first 6 months of 2010 to the last 6 months of 2010. However, it is similar in size to the increases observed for the previous two 6-month periods. A 1.8-percentage-point increase was observed from the first 6 months of 2009 through the last 6 months of 2009, and a 2.1-percentage-point increase was observed from the last 6 months of 2009 through the first 6 months of 2010.

The percentage of adults living in wireless-only households has also been increasing steadily (Figure 1 (#figure1)). During the first 6 months of 2011, 3 of every 10 adults lived in wireless-only households. One year before that (i.e., during the first 6 months of 2010), one of every four adults lived in wireless-only households, and 2 years before that (i.e., during the first 6 months of 2008), only one of every six adults lived in wireless-only households.

The percentage of children living in wireless-only households is also growing. In fact, as seen in Figure 1 (#figure1) and Table 1 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T1), the percentage of children living in wireless-only households has been increasing substantially faster since 2009 than the percentage of adults living in wireless-only households.

The percentages of adults and children living without any telephone service have remained relatively unchanged over the past 3 years. Approximately 2.0% of households had no telephone service (neither wireless nor landline). Approximately 4 million adults (1.8%) and 1.3 million children (1.7%) 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 the period January–June 2011, there are three demographic groups in which the majority live in households with only wireless telephones:

- Nearly 6 in 10 adults aged 25–29 (58.1%) lived in households with only wireless telephones. This rate is greater than the rates for adults aged 18–24 (46.8%) or 30–34 (46.2%). The percentage of adults living in households with only wireless telephones decreased as age increased beyond 35 years: 34.3% for adults aged 35–44; 21.6% for adults aged 45–64; and 7.9% for adults aged 65 and over.
- Nearly three in four adults living only with unrelated adult roommates (71.3%) were in households with only wireless telephones. This rate is nearly twice as high as the rate for adults living alone (38.0%) and three times as high as the rate for adults living only with spouses or other adult family members (23.2%).
- Half of all adults renting their home (52.5%) had only wireless telephones. This rate is more than twice as large as the rate for adults owning their home (20.6%).

Other demographic differences exist:

- Men (31.4%) were more likely than women (29.1%) to be living in households with only wireless telephones.
• Adults living in poverty (46.8%) and adults living near poverty (38.1%) were more likely than higher income adults (27.7%) to be living in households with only wireless telephones.
• Adults living in the Midwest (33.5%), South (33.6%), and West (30.3%) were more likely than adults living in the Northeast (18.8%) to be living in households with only wireless telephones.
• Hispanic adults (40.8%) were more likely than non-Hispanic white adults (27.6%) or non-Hispanic black adults (32.5%) 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. For example, although young adults aged 18–29 were more likely than older adults to live in households with only wireless telephones, these young adults made up fewer than half (37.6%) of all wireless-only adults. Young adults were a minority among all wireless-only adults because young adults made up only 22% of the total adult population.

Table 3 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T3) gives the percent distribution 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 sex, age, employment status, and household structure. From 2008 to the first 6 months of 2011,

• The proportion of women among all wireless-only adults increased from 46.3% to 49.6%.
• Among all wireless-only adults, the proportion aged 35 and over has increased steadily. In the first 6 months of 2011, half of wireless-only adults (49.0%) were aged 35 and over, up from 40.3% in the first 6 months of 2008.
• The proportion of employed adults among all wireless-only adults has decreased from 75.9% to 68.5%. Over the same time period, the proportion of adults with an employment status other than working, keeping house, or going to school increased. These adults (largely unemployed or retired) made up 20.3% of wireless-only adults in the first 6 months of 2011, up from 13.7% in the first 6 months of 2008.
• Among all wireless-only adults, the proportion living with children has increased. In the first 6 months of 2011, 41.7% of wireless-only adults were living with children, up from 35.3% in the first 6 months of 2008.

Selected Health Measures by Household Telephone Status
Many health surveys, political polls, and other 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 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T4) 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 the period January–June 2011,

- The prevalence of having five or more alcoholic drinks in 1 day during the past year among wireless-only adults (31.0%) was substantially higher than the prevalence among adults living in landline households (18.2%). Wireless-only adults were also more likely to be current smokers than were adults living in landline households.
- Compared with adults living in landline households, wireless-only adults were more likely to engage in regular leisure-time physical activity and less likely to have ever been diagnosed with diabetes.
- The percentage without health insurance coverage at the time of interview among wireless-only adults under age 65 (27.5%) was greater than the percentage among adults in that age group living in landline households (16.8%).
- 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 (44.9%) were more likely than adults living in landline households (31.4%) 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 and growing threat to surveys conducted only on landline telephones. Telephone surveys limited to landline households may still be viable for health surveys of all adults and for surveys of most subpopulations regarding their health status (see Blumberg and Luke, 2009 (http://ajph.aphapublications.org/cgi/content/abstract/99/10/1806)). However, for health-related behaviors, health care service use indicators, and health care access measures (such as those in Table 4 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T4)), caution is warranted when using landline surveys to draw inferences about subpopulations more likely to be wireless-only (e.g., young or low-income adults).

**Wireless-mostly Households**

The potential for bias due to undercoverage is not the only threat to surveys conducted 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 new 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 new 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, 29.8% received all or almost all calls on the wireless telephones, based on data for the period January–June 2011. These wireless-mostly households make up 16.4% of all households.

During the first 6 months of 2011, approximately 42 million adults (18.2%) lived in wireless-mostly households. This prevalence estimate was greater than the estimate for the first 6 months of 2009 (16.3%).

Table 5 (http://nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T5) gives the percentage of adults living in wireless-mostly households, by selected demographic characteristics and by survey time period. For the period January–June 2011,

- Adults working at a job or business (21.6%) and adults going to school (23.5%) were more likely to be living in wireless-mostly households than were adults keeping house (14.9%) or with another employment status such as retired or unemployed (11.3%).
- Adults with college degrees (21.1%) were more likely to be living in wireless-mostly households than were high school graduates (16.6%) or adults with less education (12.9%).
- Adults living with children (22.8%) were more likely than adults living alone (10.2%) or with only adult relatives (17.2%) to be living in wireless-mostly households.
- Adults living in poverty (10.5%) and adults living near poverty (13.3%) were less likely than higher income adults (21.6%) to be living in wireless-mostly households.
- Adults renting their home (13.9%) were less likely to be living in wireless-mostly households than were adults owning their home (20.0%).

Research by Boyle, Lewis, and Tefft (2009) (http://surveypractice.org/2009/12/09/cell-phone-and-landlines/) 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-only 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


When including wireless telephone numbers in RDD surveys, researchers have many methodological, statistical, operational, legal, and ethical issues to consider. These issues have recently 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:

http://www.cdc.gov/nchs/data/nhis/earlyrelease/wireless201112.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 level, see


For more information about NHIS and the NHIS Early Release Program, or to find other Early Release reports, please see the following:

- National Health Interview Survey website (/nchs/nhis.htm).
- NHIS Early Release Program (/nchs/nhis/releases.htm).

Suggested Citation

Tables

- Table 1. Percent distribution of household telephone status for households, adults, and children, by date of interview: United States, January 2008–June 2011 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T1)
- Table 2. Percentage of adults living in wireless-only households, by selected demographic characteristics and calendar half-years: United States, January 2008–June 2011 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T2)
- Table 3. Percent distribution of selected demographic characteristics for adults living in wireless-only households, by date of interview: United States, January 2008–June 2011 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T3)
- 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, January–June 2011 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T4)
- Table 5. Percentage of adults living in wireless-mostly households, by selected demographic characteristics and calendar half-years: United States, January 2008–June 2011 (/nchs/data/nhis/earlyrelease/wireless201112_tables.htm#T5)