

## Wireless-Only and Wireless-Mostly Households: *A growing challenge for telephone surveys*

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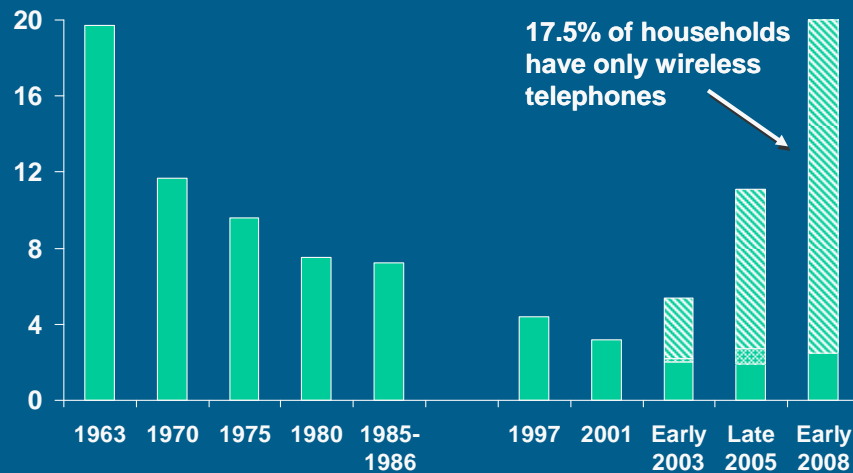


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National Center for Health Statistics

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## Percentage of U.S. Households Without Landline Telephones

■ Based on National Health Interview Survey data



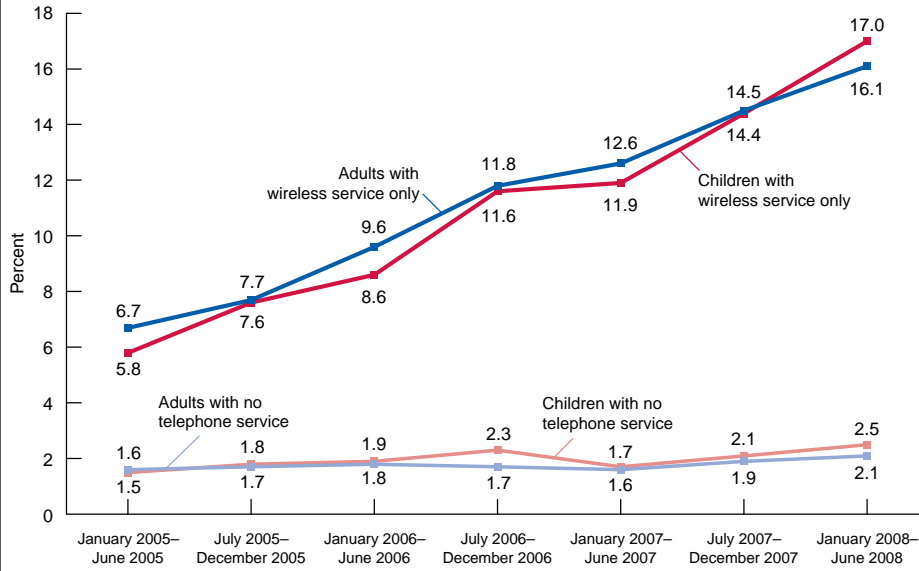
## Goals of this Presentation

- Describe the telephone coverage of the U.S. household population, with a particular focus on persons who have substituted wireless telephones for landline telephones
- Examine the potential bias that may result when health surveys exclude households without landline telephones

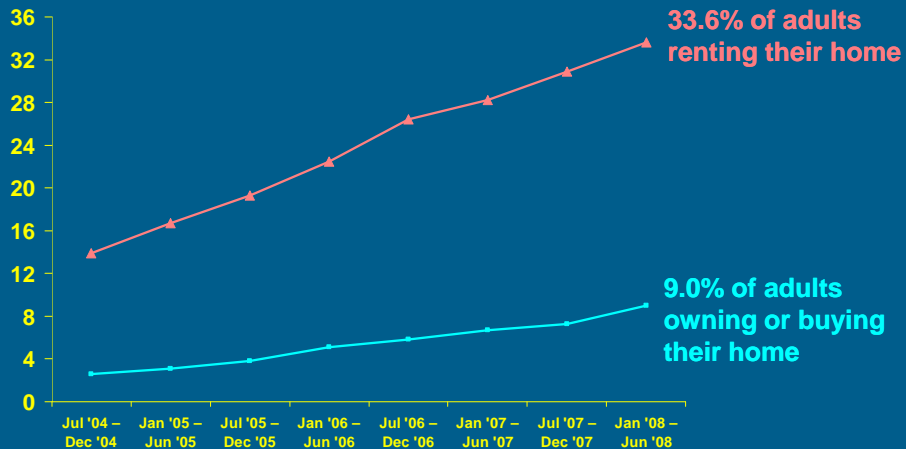
## National Health Interview Survey

- In-person survey of the civilian noninstitutionalized U.S. population
- Annual household-level response rates are very high (86-92%)
- Includes questions on residential telephone numbers to permit recontact of participants
  - 2003: Added questions on working cellular telephones
  - 2007: Added questions on relative frequency of calls received on landlines and cell phones

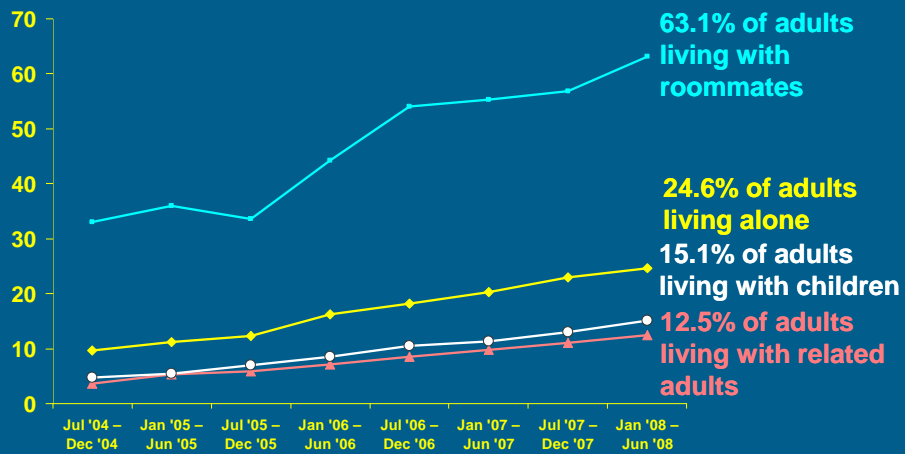
**Percentage of adults and percentage of children living in households with only wireless telephone service or no telephone service: United States, 2005–2008**



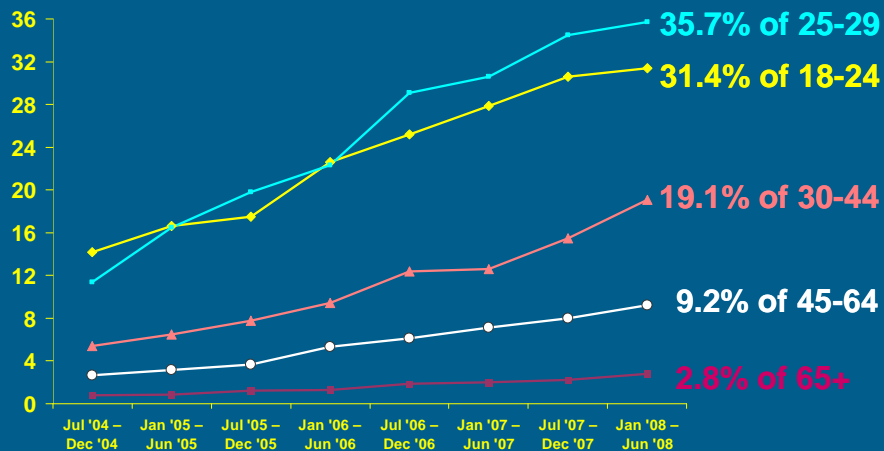
### Prevalence of Wireless-Only Adults by Home Ownership Status



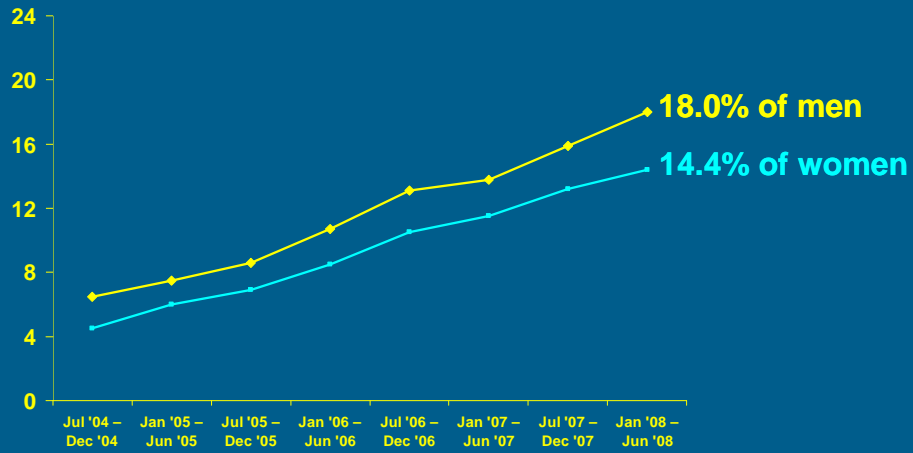
## Prevalence of Wireless-Only Adults by Household Structure



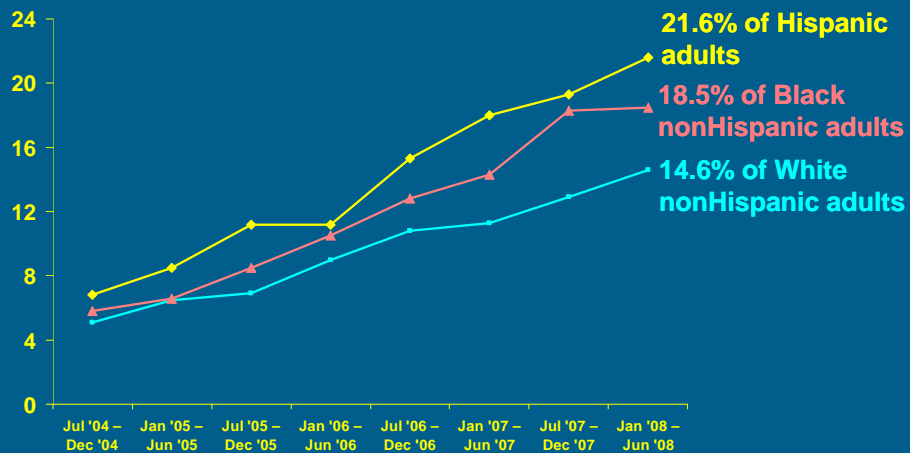
## Prevalence of Wireless-Only Adults by Age



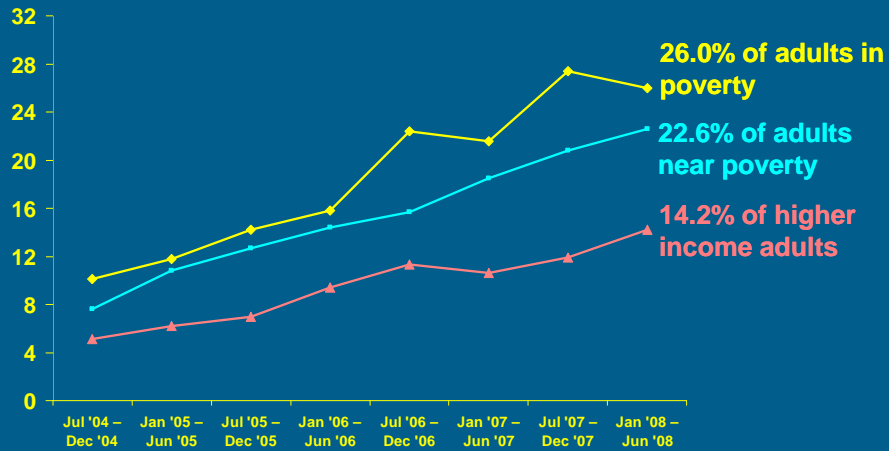
## Prevalence of Wireless-Only Adults by Sex



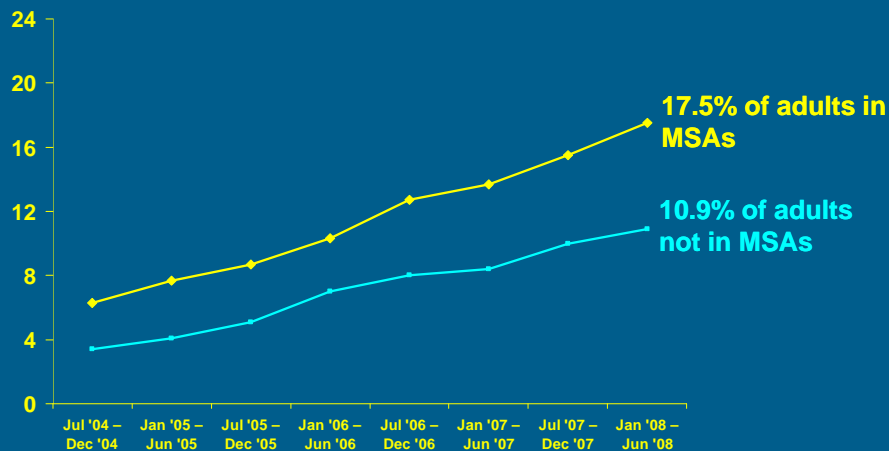
## Prevalence of Wireless-Only Adults by Race/Ethnicity



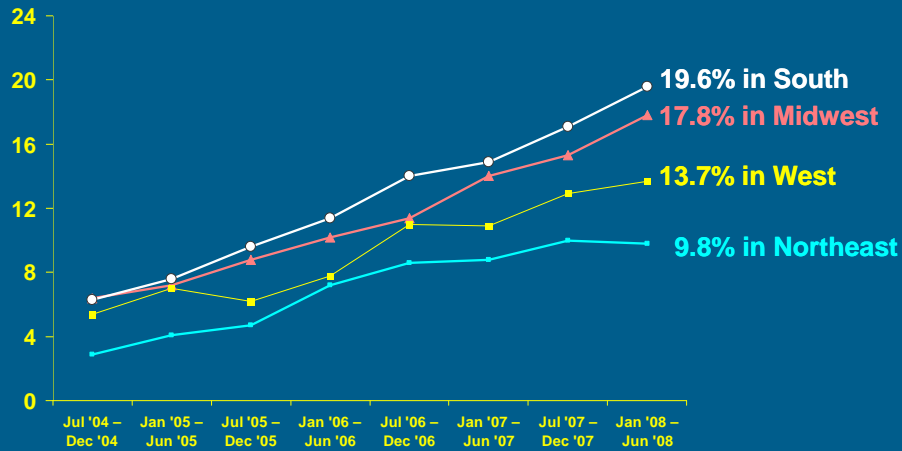
## Prevalence of Wireless-Only Adults by Household Poverty Status



## Prevalence of Wireless-Only Adults by Metropolitan Statistical Area Status



## Prevalence of Wireless-Only Adults by Geographic Region



## Coverage Bias




- Two factors determine the degree of coverage bias due to telephone ownership in a telephone survey:
  - The percentage of persons without landline telephones in the population of interest
  - The magnitude of the difference between persons with and without landline telephones for the variable of interest

## Health Characteristics Examined




- **Health-related behaviors**
  - 5+ alcoholic drinks in one day (past year)
  - Smoking (current)
  - Leisure-time physical activity (regularly)
- **Health status**
  - Excellent or very good health status
  - Serious psychological distress (past 30 days)
  - Obesity
  - Asthma episode (past year)
  - Diabetes (ever diagnosed)
- **Health care service use**
  - Has a usual place to go for medical care
  - Received influenza vaccine (past year)
  - Tested for HIV (ever)
  - Financial barrier to needed care (past year)
  - Uninsured (current)

**For these 13 estimates, preliminary weighted data from July – December 2007 were produced by the NHIS Early Release Program.**



## Percent of U.S. Adults with Various Health Characteristics, by Phone Status

	Has a landline telephone 	Wireless-only 	No telephone 
<b>July – December 2007</b>			
5+ alcoholic drinks in 1 day	17.7	37.3	27.1
Current smoker	18.0	30.6	38.6
Psychological distress	2.4	4.1	8.4
Health excellent / very good	59.5	67.5	49.2
Ever diagnosed with diabetes	8.8	4.5	5.4
Regular physical activity	29.9	36.4	22.9

## Percent of U.S. Adults with Various Health Characteristics, by Phone Status

	Has a landline telephone 	Wireless-only 	No telephone 
<b>July – December 2007</b>			
Uninsured (when interviewed)	13.7	28.7	44.1
Financial barriers to care	7.3	15.9	13.3
Has a usual place for care	87.5	68.0	61.8
Flu vaccination	32.7	16.6	20.9
Ever tested for HIV	34.7	47.6	45.8

## Percent of Young Adults with Various Health Characteristics, by Phone Status

	Has a landline telephone 	Wireless-only 
<b>January – December 2007</b>		
5+ alcoholic drinks in 1 day	28.1	46.4
Current smoker	22.0	28.2
Regular physical activity	33.8	40.8
Has a usual place for care	73.8	63.2
Uninsured (when interviewed)	26.9	31.7

## Potential Bias (in Percentage Points) if an RDD Survey Only Includes Landlines

January – December 2007	Young Adults 18-29	Statistically significant bias after controlling for demographic characteristics
5+ alcoholic drinks in 1 day	- 6.4	- 4.9
Current smoker	- 2.5	
Regular physical activity	- 2.2	- 1.9
Has a usual place for care	4.0	3.1
Uninsured (when interviewed)	- 2.2	- 1.7

## Potential Bias (in Percentage Points) if an RDD Survey Only Includes Landlines

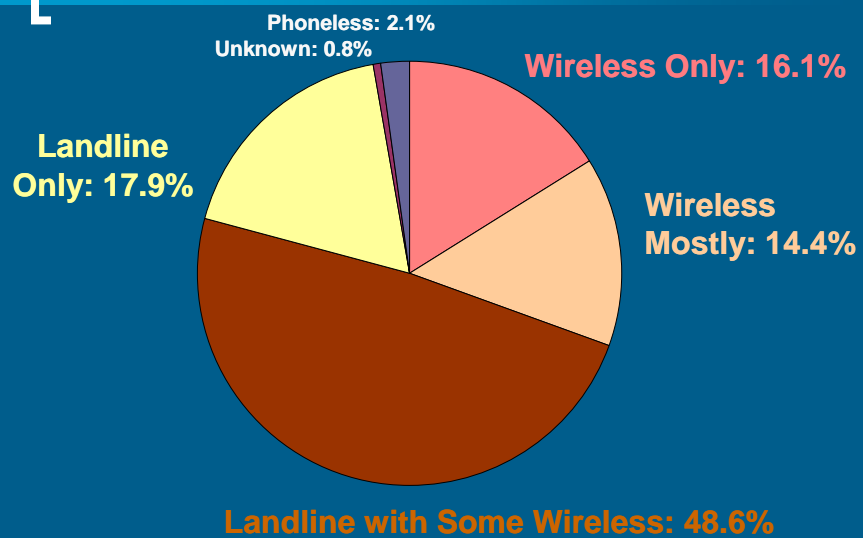
January – December 2007	Low-Income Adults	Statistically significant bias after controlling for demographic characteristics
5+ alcoholic drinks in 1 day	- 4.9	- 3.0
Current smoker	- 2.4	- 1.5
Regular physical activity	- 2.4	- 0.9
Has a usual place for care	3.7	1.5
Uninsured (when interviewed)	- 3.4	- 1.4

## Potential Bias in Uninsurance Estimates

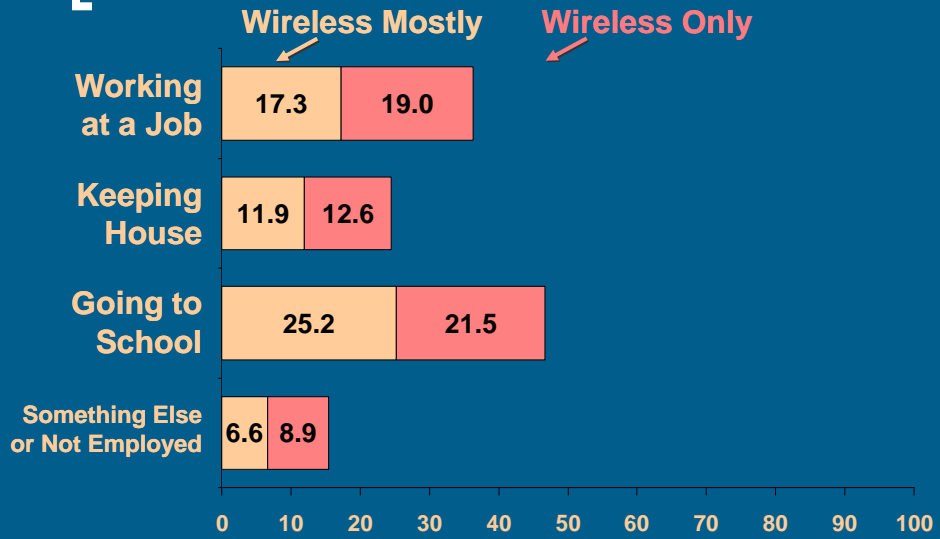
January – December 2007	Without Adjustment	With Adjustment for 10 Demographic Characteristics	With Partial Adjustment (Age, Sex, Race/Ethnicity, Education)
All Adults	-2.7	-0.9	-0.9
Young Adults (18-29)	-2.2	-1.7	-2.9
Low-Income Adults	-3.4	-1.4	-1.7

All of these estimates of potential bias are statistically significant,  $p < .05$ .

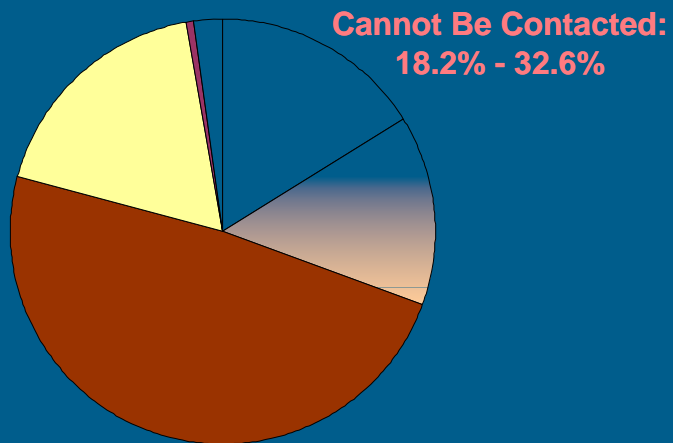
## Percent Distribution of Household Telephone Status for Adults, January-June 2008



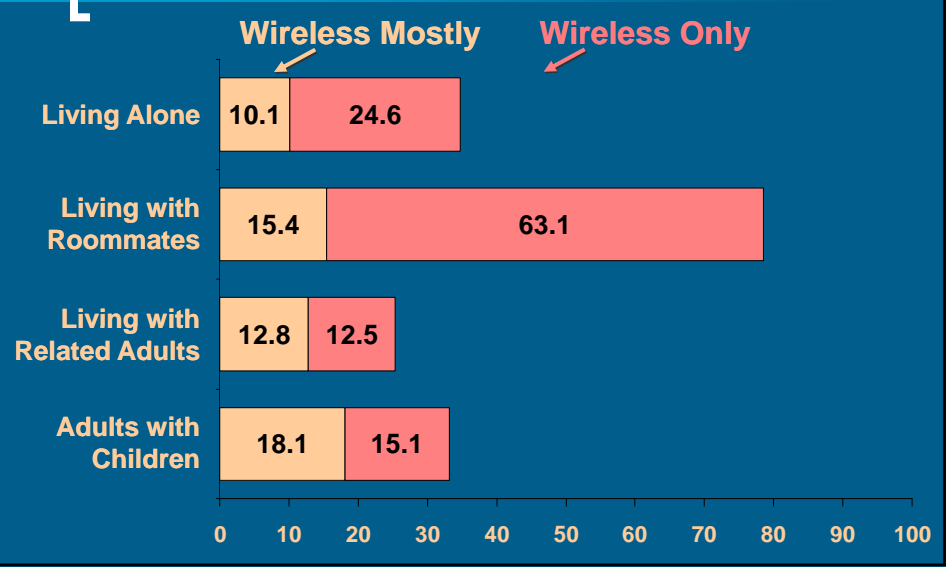
**Percent of Adults who are Wireless-Only or Wireless-Mostly by Employment Status Last Week**



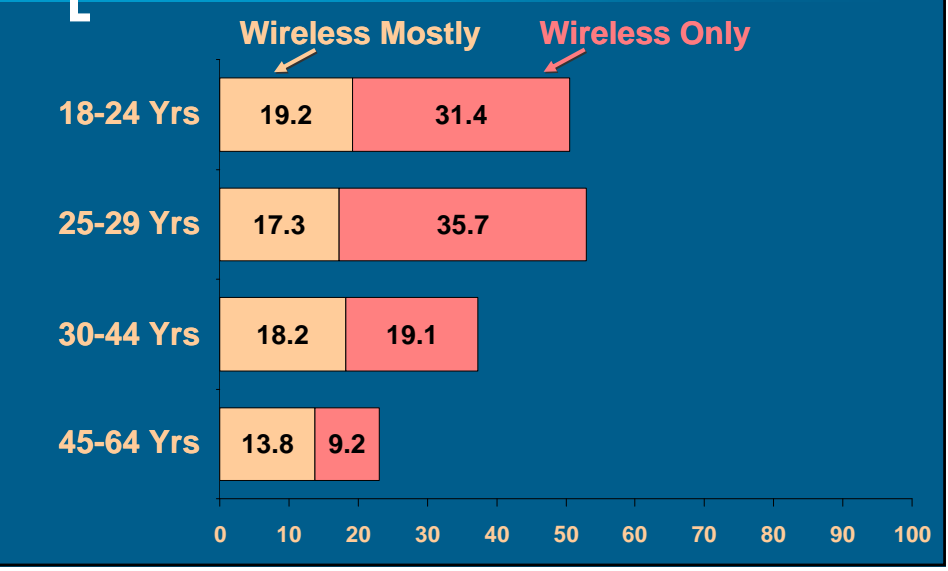
**Proportion of Adults Who Cannot Be Contacted by Landline**



## Percent of Adults who are Wireless-Only or Wireless-Mostly by Household Structure



## Percent of Adults who are Wireless-Only or Wireless-Mostly by Age




## What To Do About Undercoverage?

- Ignore this issue
- Make statistical adjustments to the sampling weights
- Add cell-phone frames to RDD surveys and conduct interviews on cell phones
- Move away from RDD sampling frames

<http://www.cdc.gov/nchs/nhis.htm>

(Released 05/13/2008)

  
Wireless Substitution:  
Early Release of Estimates From the  
National Health Interview Survey, July-December 2007

by 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 2007 National Health Interview Survey (NHIS) indicate that nearly one out of every six American homes (15.8%) had only wireless telephones during the second half of 2007. In addition, more than one out of every eight American homes (13.1%) received all or almost all calls on wireless telephones despite having a landline telephone in the home. This report presents the most up-to-date

estimates of 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 of health insurance coverage.

**Methods**

For many years, NHIS has included questions on residential telephone numbers to permit re-contact

From July through December 2007, household telephone status information was obtained for 13,083 households. These households included 24,514 adults aged 18 years and over and 9,122 children less than 18 years of age. Analyses of demographic characteristics are based on data from the NHIS Family file. Data for all civilian adults living in interviewed households were used in these analyses. Estimates stratified by poverty are based only on reported income. Income is