

# The American Community Survey Motivation, History, and Design

Workshop on the  
American Community Survey  
Havana, Cuba  
November 16, 2010

# Outline

What is the ACS?

Motivation and design goals

Key ACS historical milestones

Current ACS design, alternative designs, and lessons learned

# The American Community Survey is ...

A large national survey that uses continuous measurement methods to produce detailed demographic, socioeconomic, and housing data each year

A new way to produce critical information for small areas that had previously come from the decennial census

# Demographic Characteristics



- Sex
- Age
- Race
- Hispanic Origin
- Relationship

# Social Characteristics



- Education
- Marital Status
- Fertility
- Grandparents
- Veterans
- Disability
- Language Spoken at Home
- Place of Birth
- Citizenship
- Year of Entry
- Ancestry and Tribal Affiliation

# Economic Characteristics

- Income
- Benefits
- Employment Status
- Occupation
- Industry
- Commuting to Work
- Place of Work



# Housing Characteristics



- Tenure
- Occupancy & Structure
- Housing Value
- Taxes & Insurance
- Utilities
- Mortgage/Monthly Rent

# Motivating Goals

Produce more timely social, economic and housing data for all geographic areas, particularly for small areas

Simplify decennial census operations to collect only the most basic data

Choice of continuous measurement methods and benefits beyond replacing the long form

# More timely data for small areas

Decennial “long form” sample served as primary source of detailed data to inform federal decision-making and allocate billions of dollars in federal funds

Majority of governments receiving federal funding have populations less than 5,000

Rapid change had outpaced the usefulness of data from a once-a-decade sample for these areas

# Simplify Decennial Census

1940 – introduced sampling to allow several questions to be asked of 5% of the population

1960 – sample design used housing unit (rather than population) as primary sampling unit and ratio estimation to full census

1970 – introduction of differential sampling rates

# Simplify Decennial Census

Increased challenges associated with collecting complete long form data in a census environment

Recognition of need to streamline decennial census to focus on counting the population

Elimination of long form in decennial supports options and innovations that weren't possible with a long form

# Design Goals

Eliminate the need for a long form sample in the census

Give data users more current survey-based data to meet their needs

# Initial Ideas and Early Proposals

Concept of “rolling sample design”

Mid-decade census

Proposed “Decade Census Program”

Continuous measurement alternatives to the  
Census 2000 long form

# Proposed Alternative Design

Required 3 major components

1. A continuously updated address frame to support sample selection
2. An intercensal survey collecting data using rolling samples
3. A population estimates program to provide annual estimates for use as survey controls

# Other Possible Benefits

## Containing Cost

More effective management of the budget process by spreading the cost of collecting the long form data over 10 years

Master Address File development and updating mechanisms

# Other Possible Benefits

Improve quality of population estimates  
program

Provide sampling frame for other sample  
surveys

# ACS Design Principles

Must provide similar data to the census long form, fit for similar uses and applications

Selected sample would be spread over multiple years throughout the decade

Accumulation of data over time would permit the generation of increasingly reliable data for small geographic areas

# ACS Design Principles

For cost efficiencies survey data collection should be continuous

To contain costs the survey must include successful mail methods

Follow up by other modes would be needed

# ACS Design Principles

Survey estimates would differ from decennial estimates as they would be based on annual averages and multiyear averages

# Early Decisions Residence Rules

Should the residence rule in the ACS be based on current residence or should be made to be more consistent with a more usual residence based rule?

# Lessons Learned and General Thoughts

Do not overpromise

Emphasis on Research and Evaluation

Secure resources with specific knowledge and skills set to accomplish broad spectrum of objectives

# The Design of the ACS

## Frame and Sample Selection

# Design Goals

Survey designed to include

- U.S. Stateside and Puerto Rico

- Population in both housing units and group quarters

Survey designed to produce annually updated single-year and multi-year estimates

# Sample Design

Sample is cumulated over TIME to produce estimates at lowest levels of geographic detail to replace census sample

Five years of data are required for areas with less than 20,000 population

# Sample Design

## Estimated Population of Geographic Area

65,000 or more

20,000 to 64,999

Less than 20,000

## Type of ACS Estimates Released

1-year, 3-year, and 5-year

3-year and 5-year

5-year

# Housing Unit Sample Design

Sample cases selected from an updated Master Address File (MAF)

MAF updated through the use of

- Postal Service updates in most areas

- Special field updating in more rural areas

- ACS updates

- 2010 Census operations

# Housing Unit Sample Design

Unclustered one-stage systematic sample selected as initial sample each month

Uses several sampling rates based on size

Subsample of nonrespondents selected after mail and phone attempts for personal visit follow-up

Variable rates based on mail and telephone response patterns at tract level

# Housing Unit Sample Design

## Initial sample size

- 2.9 million addresses each year

- 240,000 addresses each month

- 15 million addresses over 5-year period

## Results in an initial sampling rate

- Roughly 2.2% each year

- 11% over 5-year period

# Group Quarters Sample Design

Maintain sampling frame

Frame updated through the use of

- Update MAF

- ACS updates including Internet research

- 2010 Census operations

# Group Quarters Sample Design

Sample Group Quarters (GQ) people

34 states, District of Columbia, and Puerto Rico sampled at 2.5% - 16 small states rates > 2.5%.

Sampling rate

Roughly 2.5% each year

180,000 people each year

# Data Collection

# Data Collection Methods

Methodology based on best practices from decennial census and demographic surveys

Monthly samples use three sequential modes of data collection

Mail

Telephone

Personal Visit

# Data Collection

Sample Panel	Calendar Month				
	Jan 2005	Feb 2005	Mar 2005	Apr 2005	May 2005
<b>Nov 2004</b>	Personal Visit				
<b>Dec 2004</b>	Phone	Personal Visit			
<b>Jan 2005</b>	Mail	Phone	Personal Visit		
<b>Feb 2005</b>		Mail	Phone	Personal Visit	
<b>Mar 2005</b>			Mail	Phone	Personal Visit

# Data Collection

Sample Panel	Calendar Month				
	Jan 2005	Feb 2005	Mar 2005	Apr 2005	May 2005
<b>Nov 2004</b>	Personal Visit				
<b>Dec 2004</b>	Phone	Personal Visit			
<b>Jan 2005</b>	Mail	Phone	Personal Visit		
<b>Feb 2005</b>		Mail	Phone	Personal Visit	
<b>Mar 2005</b>			Mail	Phone	Personal Visit

# Data Collection

Sample Panel	Calendar Month				
	Jan 2005	Feb 2005	Mar 2005	Apr 2005	May 2005
Nov 2004	Personal Visit				
Dec 2004	Phone	Personal Visit			
Jan 2005	Mail	Phone	Personal Visit		
Feb 2005		Mail	Phone	Personal Visit	
Mar 2005			Mail	Phone	Personal Visit

# Mail Mode

Four mailings are used to maximize mail response

- Pre-notice (or advance) letter
- Initial mailing package
- Reminder postcard
- Second mailing package (for nonrespondents)

Mandatory messages used

**U.S. DEPARTMENT OF COMMERCE**

*Economics and Statistics Administration*

**U.S. CENSUS BUREAU**

1201 East 10th Street  
Jeffersonville, IN 47132-0001

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ACS-46(2005) (3-2006)

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PRESORTED  
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U.S. Census Bureau  
Permit No. G-58

The American Community Survey  
Form Enclosed

**YOUR RESPONSE IS  
REQUIRED BY LAW**

U S C E N S U S B U R E A U



# THE American Community Survey

U.S. DEPARTMENT OF COMMERCE  
Economic and Statistics Administration  
U.S. CENSUS BUREAU

**Please complete this form and return it as soon as possible after receiving it in the mail.**

This form asks for information about the people who are living or staying at the address on the mailing label and about the house, apartment, or mobile home located at the address on the mailing label.



If you need help or have questions about completing this form, please call 1-800-354-7271. The telephone call is free.

Telephone Device for the Deaf (TDD):  
Call 1-800-582-8330. The telephone call is free.

¿NECESITA AYUDA? Si usted habla español y necesita ayuda para completar su cuestionario, llame sin cargo alguno al 1-877-833-5625. Usted también puede pedir un cuestionario en español o completar su entrevista por teléfono con un entrevistador que habla español.

For more information about the American Community Survey, visit our web site at <http://www.census.gov/acs/www/>

U S C E N S U S B U R E A U



## Start Here

➔ Please print today's date.

Month Day Year

➔ Please print the name and telephone number of the person who is filling out this form. We may contact you if there is a question.

Last Name

First Name

MI

Area Code + Number  
  -

➔ How many people are living or staying at this address?

- INCLUDE everyone who is living or staying here for more than 2 months.
- INCLUDE yourself if you are living here for more than 2 months.
- INCLUDE anyone else staying here who does not have another place to stay, even if they are here for 2 months or less.
- DO NOT INCLUDE anyone who is living somewhere else for more than 2 months, such as a college student living away or someone in the Armed Forces on deployment.

Number of people

➔ Fill out pages 2, 3, and 4 for everyone, including yourself, who is living or staying at this address for more than 2 months. Then complete the rest of the form.

FORM ACS-1(2009)KFI  
09-22-2008

OMB No. 0607-0810

# Mail Mode

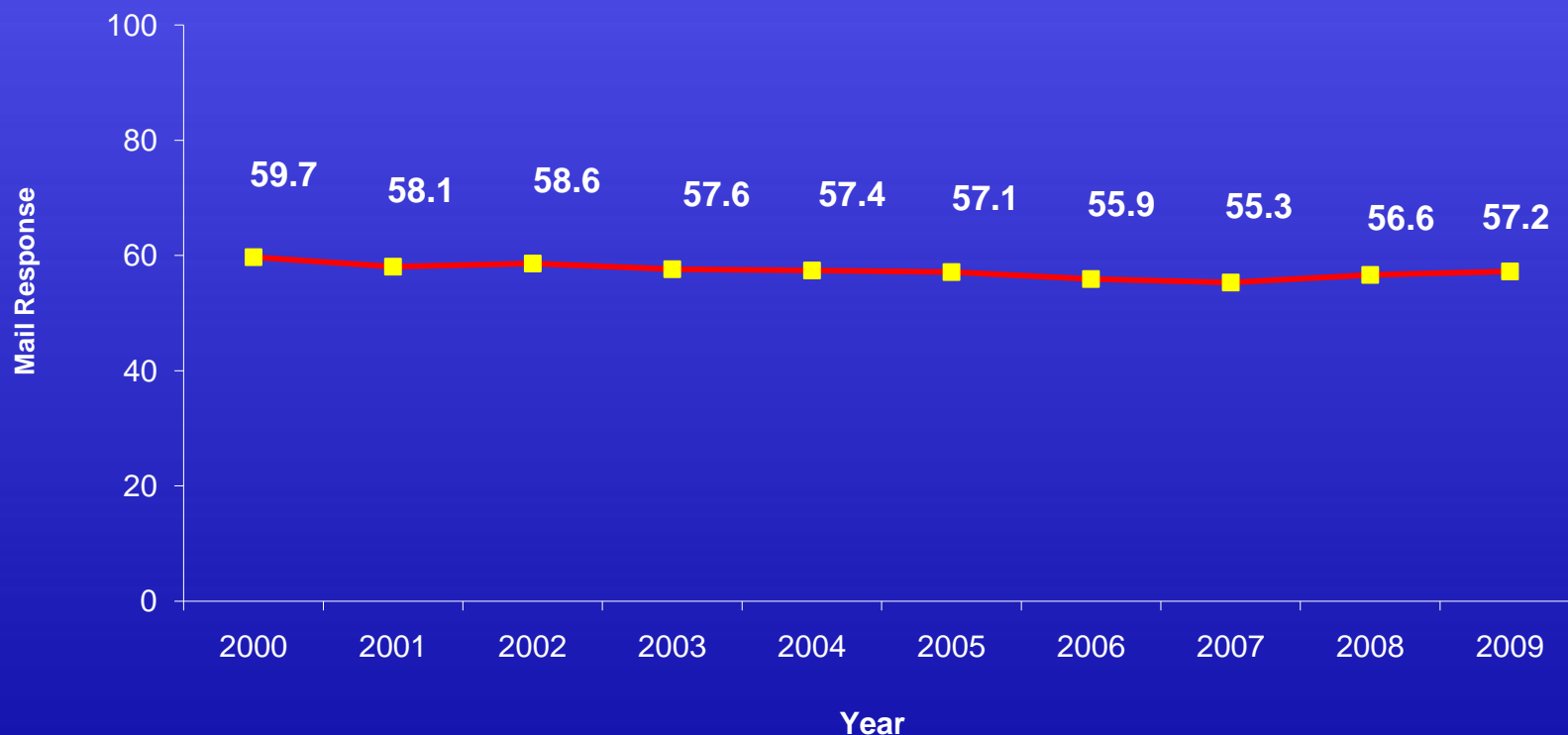
Mail out is in English with Spanish forms available upon request

Toll-free telephone assistance and an instructional booklet are provided to help respondents correctly complete their forms

Data for mail returns are reviewed for completeness with a telephone follow-up to resolve missing and inconsistent responses

# Mail Mode

## Mail Response Rates



Source: 2000 – 2009 ACS, weighted mail response rates

# Mail Mode

## Issues

Survey cost containment relies on the success of the mail mode

Research needed to maintain/improve mail response rates

Improvements in mailability and deliverability needed in some areas

# Mail Mode

## Data Capture

Original data capture methodology was key-from-paper

Transitioned to imaging and key-from-image capture

# Telephone Mode

About 5 weeks after the initial mailout the workload is identified for telephone follow-up

Commercial vendors provide telephone numbers and 3 call centers conduct interviews using computer-assisted methods (WebCATI)

Telephone follow-up lasts about four weeks

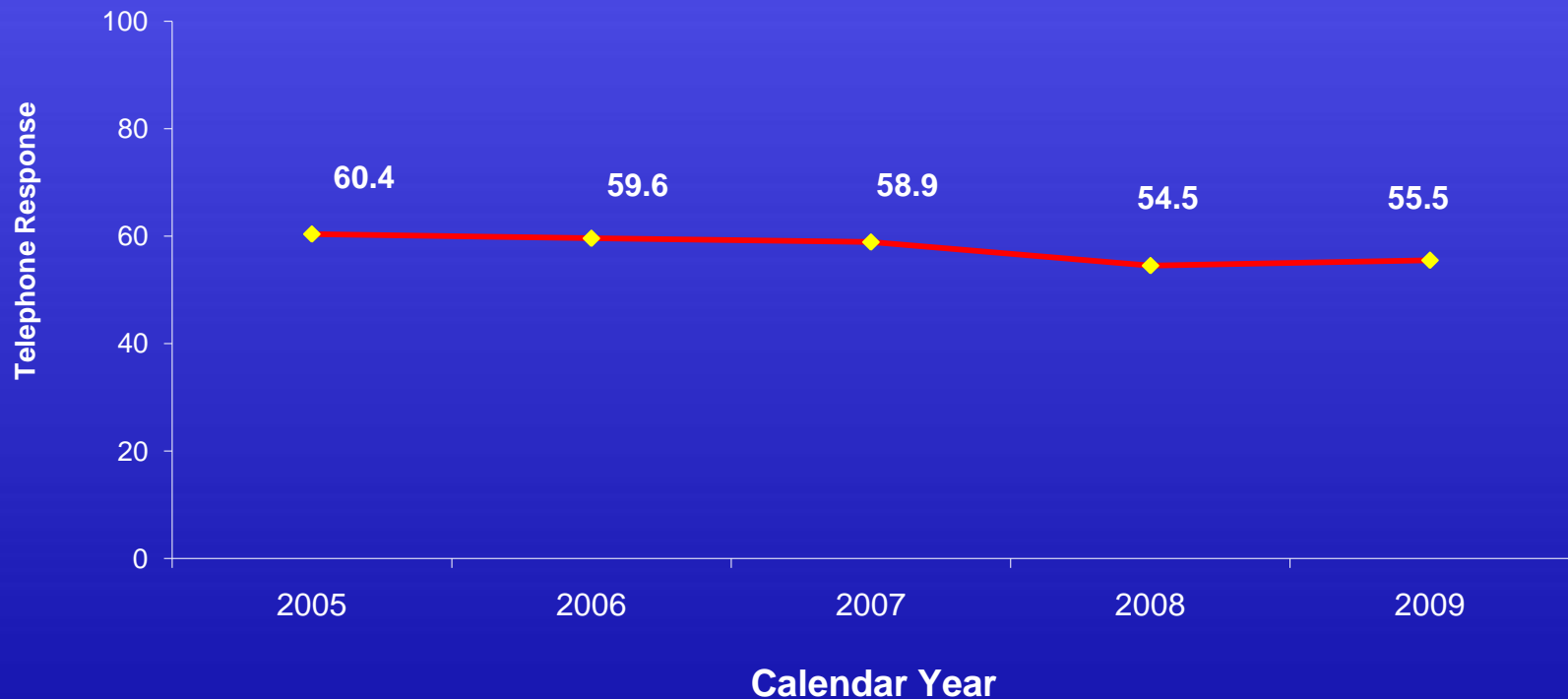
# Telephone Mode

Survey instruments in English and Spanish,  
bilingual staff conduct interviews in additional  
languages

Interviewers receive initial detailed training and  
periodic refresher training on special topics,  
monitored for quality with feedback provided  
to improve performance

# Telephone Mode

## Telephone Response Rates



Source: 2005 – 2009 ACS, weighted telephone response rates

# Telephone Mode

## Issues

Obtaining valid phone numbers

- Multi-units

- Cell phones

Maintaining/expanding language support

Ensuring high standards of data quality through training and monitoring of interviewing

# Personal Visit Mode

- Two universes for personal visit follow-up
  - Sample cases with a mailable address but without a mail or telephone response
  - Sample cases ineligible for mail due to incomplete addresses
- A subsample of each universe is selected for personal visit follow-up

# Personal Visit Mode

Interviewing is managed out of 12 Census Bureau Regional Offices

Regional offices recruit bilingual staff to ensure data collection from non-English speaking households

# Personal Visit Mode

Interviewers are experienced, continuously employed

Interviewers use laptops with English and Spanish translations

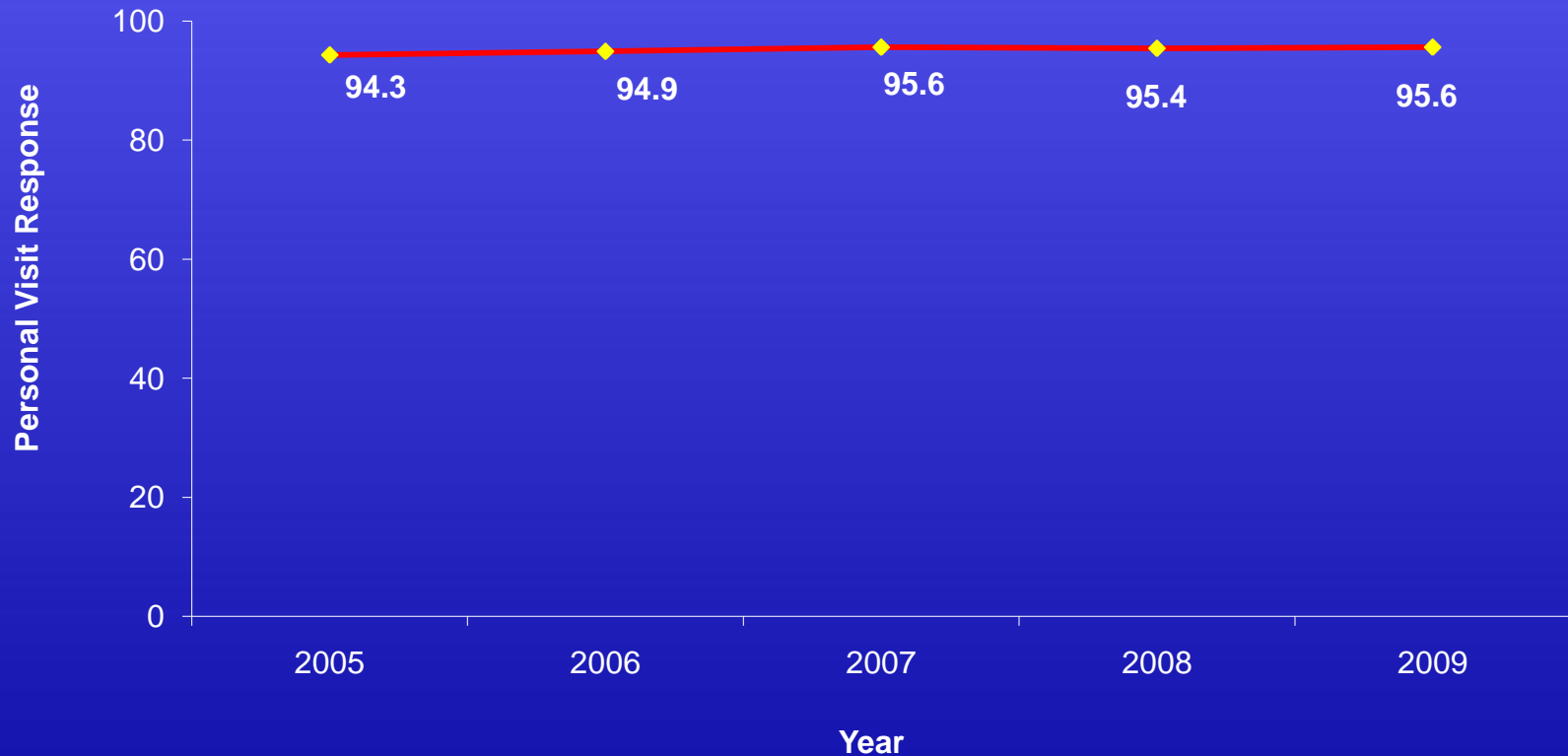
# Personal Visit Mode

Interviewers receive initial detailed training and monthly reminders on special topics

Interviewers are monitored for quality with feedback provided to improve performance

# Personal Visit Mode

## Personal Visit Response Rates



Source: 2005 – 2009 ACS, weighted personal visit response rates

# Personal Visit Mode

## Issues

### Costs

Maintaining high levels of respondent cooperation

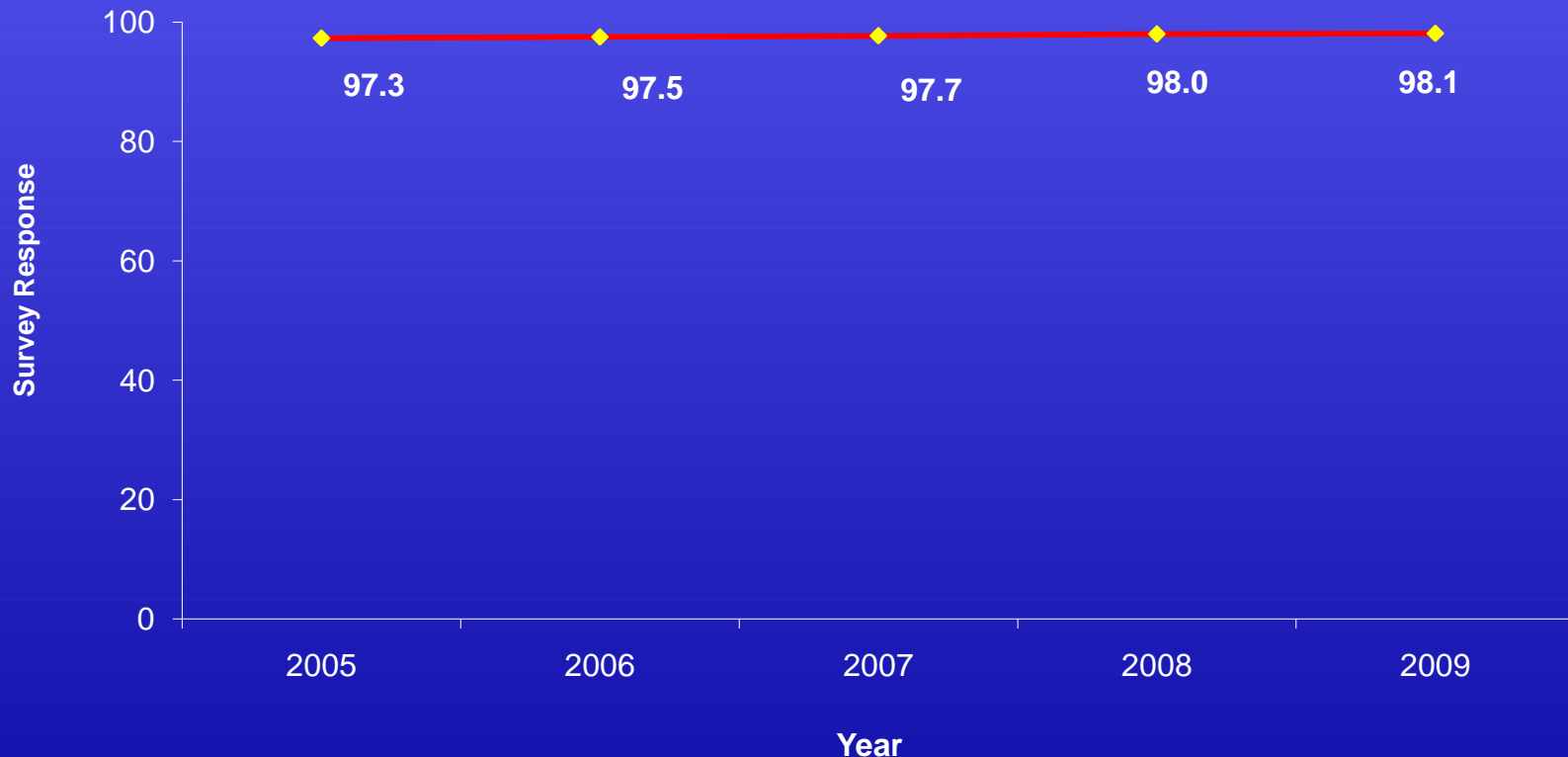
Ensuring high standards of data quality

Training

Monitoring interviewing & completed work

# Combination of Modes

## Survey Response Rates

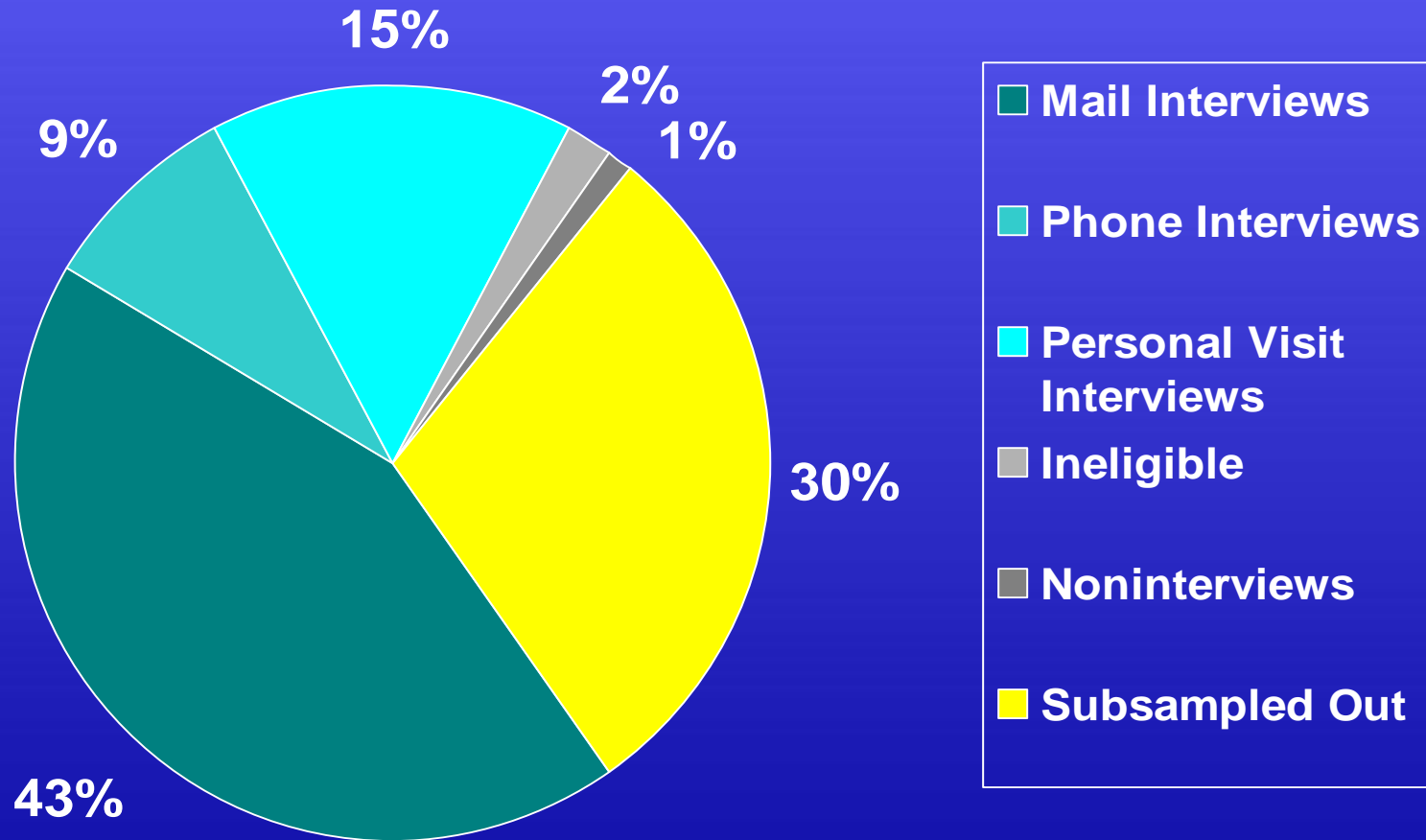


Source: 2005 – 2009 ACS, weighted survey response rates

# Workloads and Costs by Mode

Mode	Cost per case	Monthly workload	Interviewers
Mail	\$13	230,000	NA
Telephone	\$16	98,000	580
Personal Visit	\$147	45,000	3,500

# Increasing Survey Response



Source: 2007 ACS, unweighted outcome codes

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Helping You Make Informed Decisions

# Data Collection

## Lessons Learned

Efficiency and quality gains with continuous data collection are demonstrated

Continuous data collection requires different reference periods and residence rules

Continuous research to improve methods requires considerable resources

# Data Collection

## Lessons Learned

Changes in survey content imply a major workload for changes to forms, instruments, and systems across modes of data collection

Producing high quality translations in multiple languages is costly and resource-intensive

Challenges in testing new content and new collection methods

# Data Collection

## Current Research

Testing an internet response option (4<sup>th</sup> data collection mode)

Testing methods to maintain/improve levels of mail response

Testing new and revised content

# Data Processing

# Data Processing

## Annual Accumulation

All data collected in a given calendar year are used to produce the ACS estimates for that year

Sample used for estimation is not the sum of the 12 sample panels for a given year

# Data Processing

## Annual Processing

Coding

Editing

Imputation

# Data Processing

## Coding

Automated and clerical coding used for write-in entries such as

- Race, Hispanic origin

- Language

- Place of work

- Ancestry

- Industry, occupation and class of worker

# Data Processing

## Editing

First step involves distinguishing between interviews and noninterviews

- Only interviews continue into edit

- Noninterviews dealt with during weighting

For interviews, identify inconsistent and missing answers requiring imputation

# Data Processing

## Imputation

### Assignments

- Rule based

- Use other reported information from the data record

### Allocations

- Nearest neighbor or hot-deck methods

- Use data from other data records

# Data Processing

## Lessons Learned

Greater diligence is needed when changes are made to processing systems

Errors found in final data as a consequence of minor changes/updates to programs

Testing of new data collection methods must include full testing of all associated processing

# Your Questions?

# Production and Dissemination of American Community Survey Data

# Outline

Development of population estimates

Weighting and estimation

Preparation of data products

Data review and dissemination

# Outline, continued

Data user education and support

Challenges for data users

Other uses of ACS data

# Overview of Population Estimates Methodology

# Overview of Population Estimates Used as Survey Controls for the ACS

Population estimates - what we produce and  
how

Population estimates as controls for the ACS

# Annual Estimates

## Population

Nation by age, sex, race, and Hispanic origin

States by age, sex, race, and Hispanic origin

Counties by age, sex, race, and Hispanic origin

Incorporated places and minor civil divisions (total population only)

Puerto Rico Commonwealth and municipios by age and sex

## Housing units

States

Counties

# Nation, State, and County Population Estimates Methodology

National level:

Cohort-component method (also called the Administrative records or ADREC method)

$$P_2 = P_1 + B - D + NIM$$

NIM = Net International Migration

State and county level:

Cohort -component of change method

$$P_2 = P_1 + B - D + NM$$

NM = Domestic and International Migration

(controlled to the national estimates)

# Subcounty Population Estimates Method

## Distributive housing unit method

County population is distributed to subcounty parts based on updated estimates of housing

## Housing unit method:

$$\text{Population} = \text{HU} * \text{PPH} * \text{O} + \text{GQ}$$

HU = Number of housing units, PPH = Persons per household

O = Occupancy rate, GQ = Group quarters population

# Population Estimates as Survey Controls for ACS

Population estimates are the U.S. Census Bureau's official estimates for the nation, states, counties, cities, and towns.

Population estimates are used as survey controls for the ACS to reduce variance and coverage bias.

# Population Controls Provided to ACS

Population estimates provided as controls

County by age (single years 0-84,85+),  
sex (male, female), race (31 race groups), and  
Hispanic origin (Hispanic, non-Hispanic)

Puerto Rico municipios by age (single years 0-84,  
85+) and sex

For ACS 2009 – subcounty total population  
estimates

Group quarters population by the 7 major types at the  
state level and for Puerto Rico

Housing units at the county level and subcounty level

# ACS Controls

ACS creates their set of controls from the population estimates for weighting areas which are counties or groups of counties

- 13 age groups

- 5 race alone categories (non-Hispanic)

- Hispanic

Group quarters controlled at the state level by type (7 major types)

ACS uses the housing unit estimates to control the number of housing units in a weighting area

# Weighting and Estimation

# Annual Weighting Process

## 3 Major Components

Initial weights to reflect the probability of selection

Adjust weights of interviewed households to account for noninterviews

Adjust weights to independent housing unit and population estimates (controls)

# Initial Weight Probabilities of Selection

Initial probability of selection is assigned as a function of the sample design

Nonresponse follow-up (Personal Visit – CAPI)  
sample design

# Initial Weight

## Variation in Monthly Response Factor

Seasonal variations in response patterns

Smooth out the total weight for all sample months

Makes tabulated HUs in a month = sample HUs in a month

# Variation in Monthly Response Factors

1 <sup>st</sup> Quartile	Median	3 <sup>rd</sup> Quartile
0.875	1.014	1.096

# Nonresponse Adjustment

The weight of the nonrespondents is transferred to the respondents

Nonresponse adjustment is carried out at the census tract level for groups of households with characteristics correlated with nonresponse:

- Census tract

- Type of building (single vs. multi-unit)

- Month of data collection

# Nonresponse Adjustment Factors

1 <sup>st</sup> Quartile	Median	3 <sup>rd</sup> Quartile
1.000	1.000	1.010

# Ratio Adjustments

## Housing Unit and Population Controls

Post-censal estimates are produced by updating the previous census results using various administrative records data

In a multi-stage process, housing unit and population adjustment ratios are applied to the weights

Applied at the county (or group of counties) level by race/ethnicity and age/sex groups

# Ratio Adjustments to Controls - Why?

Reduce variability of the estimates

Reduce bias

- Undercoverage of housing units

- Undercoverage of people within housing units

# Housing and Population Control Factors

	1 <sup>st</sup> Quartile	Median	3 <sup>rd</sup> Quartile
Housing	1.000	1.021	1.052
Population	0.844	1.079	1.397

# Multi-Year Estimates

Combining or “pooling”

Population controls

Tabulation geography

Inflation adjustments

# Both Single- and Multi-Year Estimates are Period Estimates

2009 single-year estimates are based on Jan 2009 – Dec 2009 interviews (12 months)

2007-2009 three-year estimates are based on Jan 2007 – Dec 2009 interviews (36 months)

2005-2009 five-year estimates are based on Jan 2005 – Dec 2009 interviews (60 months)

# Multi-Year Estimates

## Pooling Advantages

Improved accuracy of estimates – taking advantage of increased number of sample cases

More up-to-date controls

Flexibility of developing weighting procedures

Production of multi-year data products mirror the 1-year data products

# Multi-Year Estimates

## Population Controls

Simple average of the set of population controls for the years comprising the multi-year estimate

For example, for the 2005-2009 five-year estimates, sum the controls released in 2010 for 2005, 2006, ..., 2009 divided by 5

Use the most recently released estimates for each year

# Multi-Year Estimates

## Tabulation Geography

Boundary changes can occur through annexations during the multi-year period

Plan is to tabulate using the geography of the most recent year in the multi-year estimate

For 2005-2009 estimates, tabulate using all interviews for the period of 2005-2009 that were conducted in blocks that define the area in 2009

# Multi-Year Estimates

## Inflation Adjustments

Need to compute inflation factors for all monetary related variables, particularly income

Dollar valued data items are inflation adjusted to the most recent year of the period

For example, for the 2005-2009 estimates, appropriate inflation factors are applied to reported income values for 2005, 2006, ..., 2008 to adjust to 2009 constant dollars

# Multi-Year Estimates

## Medians

Medians are produced using combined data records from all years

A 3-year median household income estimate is determined by combining the household records from the 3 years into one data set and determining the median from this combined distribution

# Alternative Choices of Estimand

Unequal weight estimator where the weights must be forced to unity - one such choice will give more weight to the last year (current data) or the middle year of the estimation period

The major disadvantage of unequal weight estimators is increased variance

# Possible Issues with Population Controls for Surveys

The U.S. Census Bureau has a Population Estimates Program

- Estimates are produced annually

- Estimates are delivered to ACS as population controls annually

If you do not have independent population estimates what would you use for survey controls?

# Challenges and Opportunities

ACS and administrative data are available for the same places and times and often force data users' attention to differences and error

ACS updates background characteristics used in the production of population estimates

# Challenges and Opportunities

ACS can provide additional variables for modeling

Recognition of error in population estimates

# Preparation of Data Products

# ACS Data Products

Pretabulated data in table and downloadable file formats (over 1000 tables)

Public Use Microdata Sample files

Full Microdata files (Research Data Centers)

Custom Tabulations

# Data Product Definition

Started with Decennial Census data products

Changes and design of new products

Involving data users

# Data products for all users

Data profiles

Narrative profiles

Comparison profiles

Selected population profiles

Subject tables

Ranking tables

Geographic comparison tables

Thematic maps

# Data Profile

## Data Profile

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Geography](#) ▶ [Results](#)

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### 2007 Data Profiles:

#### ▶ Social

[Economic](#)

[Housing](#)

[Demographic](#)

[Narrative](#)

#### View this table...

▶ from 2007

#### View this table...

[for other geographies \(state, county, place...\)](#)

- [Subject Definitions](#)
- [Quality Measures](#)



## Ann Arbor city, Michigan

Selected Social Characteristics in the United States: 2005-2007

Data Set: 2005-2007 American Community Survey 3-Year Estimates

Survey: American Community Survey

[Social](#) - Education, Marital Status, Relationships, Fertility, Grandparents...

[Economic](#) - Income, Employment, Occupation, Commuting to Work...

[Housing](#) - Occupancy and Structure, Housing Value and Costs, Utilities...

[Demographic](#) - Sex and Age, Race, Hispanic Origin, Housing Units...

[Narrative](#) - Text profile with graphs for easy analysis...

NOTE. Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the [official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties](#).

For more information on confidentiality protection, sampling error, nonsampling error, and definitions, see [Survey Methodology](#).

Selected Social Characteristics in the United States	Estimate	Margin of Error	Percent	Margin of Error
<b>HOUSEHOLDS BY TYPE</b>				
<b>Total households</b>	<b>44,559</b>	<b>+/-827</b>	<b>100%</b>	<b>(X)</b>
Family households (families)	21,152	+/-807	47.5%	+/-1.9
With own children under 18 years	9,622	+/-547	21.6%	+/-1.2
Married-couple family	16,690	+/-787	37.5%	+/-1.8
With own children under 18 years	7,159	+/-553	16.1%	+/-1.2
Male householder, no wife present, family	1,397	+/-389	3.1%	+/-0.9
With own children under 18 years	683	+/-292	1.5%	+/-0.7
Female householder, no husband present, family	3,065	+/-385	6.9%	+/-0.9
With own children under 18 years	1,780	+/-349	4.0%	+/-0.8
Nonfamily households	23,407	+/-1,037	52.5%	+/-1.9

# Narrative Profile

## United States

### Selected Social Characteristics in the United States: 2006 ?

Data Set: **2006 American Community Survey**

Survey: **2006 American Community Survey**

[Social](#) - Education, Marital Status, Relationships, Fertility, Grandparents...

[Economic](#) - Income, Employment, Occupation, Commuting to Work...

[Housing](#) - Occupancy and Structure, Housing Value and Costs, Utilities...

[Demographic](#) - Sex and Age, Race, Hispanic Origin, Housing Units...

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### Selected Social Characteristics in

### United States

#### HOUSEHOLDS BY TYPE

#### Population and Housing Narrative Profile: 2006

Total households

HOUSEHOLDS AND FAMILIES: In 2006 there were 111.6 million households in United States. The average household size was 2.6 people.

Family households (families)

With own children under 18 years

Married-couple families

With own children under 18 years

Male householder, no wife present

With own children under 18 years

Female householder, no husband p

With own children under 18 years

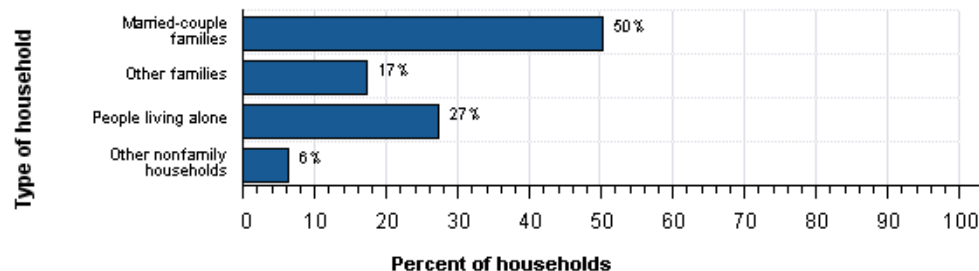
Nonfamily households

Householder living alone

65 years and over

Families made up 67 percent of the households in United States. This figure includes both married-couple families (50 percent) and other families (17 percent). Nonfamily households made up 33 percent of all households in United States. Most of the nonfamily households were people living alone, but some were composed of people living in households in which no one was related to the householder.

The Types of Households in United States in 2006



# Comparison Profile

## Comparison Profile

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Geography](#) ▶ [Results](#)

Use the links above to change your results

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### 2009 Comparison Profiles:

- ▶ [Social](#)
- [Economic](#)
- [Housing](#)
- [Demographic](#)

### 2009 Data Profiles:

[Change geography \(state, county, place...\)](#)

- [Subject Definitions](#)
- [Quality Measures](#)



## New York

### Selected Social Characteristics in the United States: 2009 ?

Data Set: **2009 American Community Survey 1-Year Estimates**

Survey: **American Community Survey**

[Social](#) - Education, Marital Status, Relationships, Fertility, Grandparents...

[Economic](#) - Income, Employment, Occupation, Commuting to Work...

[Housing](#) - Occupancy and Structure, Housing Value and Costs, Utilities...

[Demographic](#) - Sex and Age, Race, Hispanic Origin, Housing Units...

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An \* indicates that the estimate is significantly different (at a 90% confidence level) than the estimate from the most current year. A 'c' indicates the estimates for that year and the current year are both controlled; a statistical test is not appropriate.

Selected Social Characteristics in the United States	2009 Estimate	2008 Estimate	2009 - 2008 <a href="#">Statistical Significance</a>	2007 Estimate	2009 - 2007 <a href="#">Statistical Significance</a>	2006 Estimate	2009 - 2006 <a href="#">Statistical Significance</a>
<b>HOUSEHOLDS BY TYPE</b>							
<b>Total households</b>	<b>7,187,555</b>	<b>7,137,679</b>	*	<b>7,099,940</b>	*	<b>7,088,376</b>	*
Family households (families)	64.1%	64.5%	*	64.7%	*	64.5%	*
With own children under 18 years	29.1%	29.5%	*	29.8%	*	30.0%	*
Married-couple family	44.7%	45.2%	*	45.4%	*	45.1%	*
With own children under 18 years	19.3%	19.5%		19.9%	*	20.1%	*
Male householder, no wife present, family	4.8%	4.7%		4.9%		4.8%	
With own children under 18 years	2.0%	2.0%		2.1%		2.0%	
Female householder, no husband present, family	14.6%	14.6%		14.4%		14.6%	

# Ranking Tables

## Ranking Tables

You are here: [Main](#) > [Data Sets](#) > [Ranking Tables](#) > [Results](#)

[Print / Download](#) | [Related Items](#)

**View this table...**

- ▶ for states
- ▶ from 2009
  - from [2008](#)
  - from [2007](#)
  - from [2006](#)
  - from [2005](#)
- [with statistical significance](#)

**View...**

- as a [chart](#)

**Other tables...**

- [Select another ranking table](#)

- [Subject Definitions](#)
- [Quality Measures](#)



### United States and States

**R1704. Percent of Children Under 18 Years Below Poverty Level in the Past 12 Months (For Whom Poverty Status is Determined)**

**Universe: Children under 18 years for whom poverty status is determined** ?

Data Set: **2009 American Community Survey 1-Year Estimates**

Survey: **American Community Survey, Puerto Rico Community Survey**

NOTE. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see [Survey Methodology](#).

Rank	State	Percent	Margin of Error
1	Mississippi	31.0	+/-1.3
2	District of Columbia	29.4	+/-4.1
3	Arkansas	27.2	+/-1.3
4	Kentucky	25.6	+/-1.2
5	New Mexico	25.3	+/-2.0
6	Alabama	24.7	+/-0.9
7	South Carolina	24.4	+/-1.0
7	Texas	24.4	+/-0.5
9	Louisiana	24.2	+/-1.1
10	Tennessee	23.9	+/-0.9
11	West Virginia	23.6	+/-1.4
12	Arizona	23.4	+/-1.0
13	Michigan	22.5	+/-0.7
13	North Carolina	22.5	+/-0.7
15	Georgia	22.3	+/-0.8
16	Oklahoma	22.2	+/-1.1
17	Ohio	21.9	+/-0.6
18	Montana	21.4	+/-2.3
19	Florida	21.3	+/-0.6
20	Missouri	20.7	+/-0.9

USCENSUSBUREAU  
Helping You Make Informed Decisions

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# Sample Subject Table

## Subject Tables

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Geography](#) ▶ [Tables](#) ▶ [Results](#)

[Options](#) | [Print / Download](#) | [Related Items](#)

### View this table...

▶ from 2006  
from [2005](#)

### Change...

[geography \(state,  
county, place...\)](#)  
[table](#)

- [Subject Definitions](#)
- [Quality Measures](#)

## Colorado

### S2301. Employment Status <sup>?</sup>

Data Set: 2006 American Community Survey

Survey: American Community Survey

NOTE: For information on confidentiality protection, sampling error, nonsampling error, and definitions, see [Survey Methodology](#).

Subject	Total	Margin of Error	In labor force	Margin of Error	Employed	Margin of Error	Unemployment rate	Margin of Error
Population 16 years and over	3,712,889	+/-4,084	70.0%	+/-0.4	65.5%	+/-0.4	5.5%	+/-0.2
<b>AGE</b>								
16 to 19 years	256,659	+/-4,312	51.2%	+/-1.5	40.2%	+/-1.5	19.9%	+/-1.8
20 to 24 years	337,730	+/-4,063	79.7%	+/-1.3	69.9%	+/-1.4	9.1%	+/-1.1
25 to 44 years	1,431,521	+/-4,901	83.5%	+/-0.4	79.0%	+/-0.5	4.5%	+/-0.3
45 to 54 years	720,742	+/-3,534	82.7%	+/-0.7	79.1%	+/-0.8	4.2%	+/-0.4
55 to 64 years	489,352	+/-1,960	66.8%	+/-1.0	64.3%	+/-1.0	3.7%	+/-0.5
65 to 74 years	256,742	+/-1,995	26.3%	+/-1.1	25.6%	+/-1.1	2.6%	+/-0.9
75 years and over	220,143	+/-1,749	5.7%	+/-0.7	5.6%	+/-0.7	1.3%	+/-1.2
<b>RACE AND HISPANIC OR LATINO ORIGIN</b>								
One race	N	N	N	N	N	N	N	N
White	3,131,383	+/-10,150	70.1%	+/-0.4	66.0%	+/-0.4	4.9%	+/-0.2
Black or African American	133,385	+/-3,286	69.6%	+/-2.1	61.5%	+/-2.2	9.7%	+/-1.5
American Indian and Alaska Native	33,355	+/-2,850	66.7%	+/-3.6	58.7%	+/-4.1	11.0%	+/-3.2
Asian	104,209	+/-2,663	70.1%	+/-2.5	64.8%	+/-2.6	6.3%	+/-2.0
Native Hawaiian and Other Pacific Islander	N	N	N	N	N	N	N	N
Some other race	241,644	+/-9,387	70.3%	+/-1.4	64.0%	+/-1.5	8.5%	+/-1.3
Two or more races	65,740	+/-4,730	69.6%	+/-3.3	61.9%	+/-3.2	10.1%	+/-2.6



# Data products for advanced users


Detailed tables

Summary files

Public Use Microdata Sample (PUMS) files

Research Data Center Microdata files

# Detailed Tables



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---

## Detailed Tables

You are here: [Main](#) > [Data Sets](#) > [Data Sets with Detailed Tables](#) > [Geography](#) > [Tables](#) > [Results](#)

[Use the links above to change your results](#) | [Options](#) | [Print / Download](#) | [Related Items](#)

[B18020. DISABILITY STATUS BY SEX BY AGE BY EMPLOYMENT STATUS FOR THE CIVILIAN NONINSTITUTIONALIZED POPULATION 16 TO 64 YEARS - Universe: CIVILIAN NONINSTITUTIONALIZED POPULATION 16 TO 64 YEARS](#)  
 Data Set: [2007 American Community Survey 1-Year Estimates](#)  
 Survey: American Community Survey

NOTE. Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the [official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties](#).

For information on confidentiality protection, sampling error, nonsampling error, and definitions, see [Survey Methodology](#).

View the [collapsed version of this table](#). Geographies missing from this table are listed below the table.

	Ann Arbor, MI Metro Area	
	Estimate	Margin of Error
<b>Total:</b>	249,569	+/-867
With any disability:	24,183	+/-2,340
Male:	11,405	+/-1,597
16 to 34 years:	4,032	+/-1,051
Employed	1,714	+/-711
Not employed	2,318	+/-832
35 to 64 years:	7,373	+/-1,237
Employed	3,209	+/-812
Not employed	4,164	+/-946
Female:	12,778	+/-1,498
16 to 34 years:	3,344	+/-821
Employed	1,528	+/-541
Not employed	1,816	+/-693
35 to 64 years:	9,434	+/-1,412
Employed	3,407	+/-814
Not employed	6,027	+/-1,118

# Geography

Determination of geographic areas that are most useful to data users

Includes legal, administrative and statistical areas

Annual releases require maintaining geographic area boundaries

# Geography

Use of population thresholds to determine which geographic areas receive 1-year, 3-year, and 5-year estimates

# Population Thresholds

<b>Estimated Population of Geographic Area</b>	<b>Type of ACS Estimates Released</b>
65,000 or more	1-year, 3-year, and 5-year
20,000 to 64,999	3-year and 5-year
Less than 20,000	5-year

# Geography Supported

ACS 1-year estimates	7K
ACS 3-year estimates	14K
ACS 5-year estimates	670K

# Generation of Data Products

Subject-matter analysts specify the logic used to calculate every estimate in every product and the textual descriptions associated with each estimate

Additional data release restrictions are specified to reduce disclosure risks and minimize the release of unreliable estimates for certain products

# Generation of Data Products

Programming staff use final weighted data files to generate and verify all estimates and margins of error in all tables, summary files, and public use microdata sample files

# Total Data Products

Production of most tables for most geographic areas means a lot of tables are generated (about ½ billion total 5-year tables)

May not be feasible or desirable to produce all these data every year

# Data Products

## Lessons Learned

Designing data products is a challenge given the diverse set of data users

Using one basic set of tables across all geographies and data sets may not be optimal

Should unique tables be created for smallest areas?

# Data Products

## Lessons Learned

Greater interaction needed with users to understand how estimates will be used

Should unreliable estimates be released to users with associated margins of error or withheld?

# Data Review

# Data Review

Subject-matter analysts review and provide clearance of all ACS estimates

Review takes place at various stages of processing

# Data Review

Automated review tools exist with predesigned reports and query capabilities

These tools are critical to the review and approval of this huge amount of data

# Data Dissemination

# Release Schedule

Data product	Population threshold	Year of Data Release							
		2006	2007	2008	2009	2010	2011	2012	2013
		Year(s) of Data Collection							
1-year estimates	65,000+	2005	2006	2007	2008	2009	2010	2011	2012
3-year estimates	20,000+			2005– 2007	2006– 2008	2007– 2009	2008– 2010	2009– 2011	2010– 2012
5-year estimates	All areas*					2005– 2009	2006– 2010	2007– 2011	2008– 2012

# Dissemination History

For decades decennial data were released as paper products (reports and volumes) or as large summary tape files

Internet dissemination allows many more users to access and manipulate data

# Data Dissemination Plan

The data dissemination vehicle for all ACS data is the Census Bureau's American FactFinder web site

Tables can be accessed, downloaded or printed

Summary and Public Use Microdata Sample files can also be accessed



FactFinder

[Main](#) [Search](#) [Feedback](#) [FAQs](#) [Glossary](#) [Site Map](#) [Help](#)

Your source for population, housing, economic, and geographic data

POPULATION FINDER

FACT SHEET

PEOPLE

HOUSING

BUSINESS AND GOVERNMENT

ABOUT THE DATA

DATA SETS

DOWNLOAD CENTER

MAPS

TOOLS AND REFERENCES

Address Search...

Enter a [street address](#) to find Census 2000 data

- [Browser Notes](#)
- [Confidentiality](#)
- [Citing FactFinder](#)

### Fast Access to Information



Get a Fact Sheet for your community...

city/ town, county, or zip

state

[or select a state using a map »](#)

### Getting Detailed Data

**Decennial Census** - taken every 10 years to collect information about the people and housing of the United States

[learn more](#) | [get data](#)

See the [Count Question Resolution Program](#) for information on Census 2000 count corrections.

**American Community Survey** - an ongoing survey that provides data about your community every year

[learn more](#) | [get data](#)

**Puerto Rico Community Survey** - the equivalent of the American Community Survey for Puerto Rico

[learn more](#) | [get data](#) | [en español](#)

**Population Estimates Program** - population numbers between censuses

[learn more](#) | [get data](#)

**Economic Census** - profiles the U.S. economy every 5 years

[learn more](#) | [get data](#)

**Annual Economic Surveys** - data from the Annual Survey of Manufactures, County Business Patterns and Nonemployer Statistics

[learn more](#) | [get data](#)

### Population Data

#### Population Finder

Use the [Population Finder](#) to view population trends for your community.

#### U.S. Population Clock



22:26 GMT (EST+5) Jan 09, 2009

**305,584,179**

more [population clocks »](#)

### What's New



**Updates to American FactFinder** released December 9, 2008. [more »](#)

**2005-2007 American Community Survey 3-Year**

Estimates are now available for cities, counties and other areas with populations of 20,000 or more from the [Data Sets page](#).

**2007 Commodity Flow Survey** data are now available from the Economic Census [Data Sets page](#).

**2006 Annual Survey of Manufactures** has been [updated](#). New data are now available from the [Data Sets page](#).

**2007 Population Estimates** for housing units are now available from the [Data Sets](#)



Data Sets

- POPULATION FINDER
- FACT SHEET
- PEOPLE
- HOUSING
- BUSINESS AND GOVERNMENT
- ABOUT THE DATA
- DATA SETS**
  - Decennial Census
  - **American Community Survey**
  - Puerto Rico Community Survey
  - Annual Population Estimates
  - Economic Census
  - Annual Economic Surveys
- DOWNLOAD CENTER
- MAPS
- TOOLS AND REFERENCES

Main ▶ Data Sets

AMERICAN COMMUNITY SURVEY

[Load Query](#) | [Clear all selections](#)

The American Community Survey is a nationwide survey designed to provide communities a fresh look at how they are changing. The Puerto Rico Community Survey is the equivalent of the American Community Survey for Puerto Rico. [more...](#)

[2007 Quick Guide](#) | [Errata Notes](#)

Other Resources

- [American Community Survey Main Page](#)
- [Quality Measures](#)
- [Public Use Microdata Sample \(PUMS\)](#) - download data and view documentation
- [Download Center](#)
- [Download 1996-2004 data via FTP](#)

[Explain Table and Map Formats](#)

2007

2005-2007 American Community Survey 3-Year Estimates

- Data from the American Community Survey and the Puerto Rico Community Survey
- Collected during calendar years 2005, 2006 and 2007
- Available for geographic areas with populations of 20,000 or more

[Explain 1-year vs. 3-year estimates](#)

2007 American Community Survey 1-Year Estimates

- Data from the American Community Survey and the Puerto Rico Community Survey
- Collected during calendar year 2007
- Available for geographic areas with populations of 65,000 or more

[Explain 1-year vs. 3-year estimates](#)

Select from the following:

- [Data Profiles](#)
- [Selected Population Profiles](#)
- [Subject Tables](#)
- [Detailed Tables](#)
- [Geographic Comparison Tables](#)
- [Thematic Maps](#)
- [Reference Maps](#)
- [Custom Table](#)
- [Enter a table number](#)
- [List all tables](#)
- [List all maps](#)
- [About this data set](#)

2006

2006 American Community Survey

Includes results from both the American Community Survey and the Puerto Rico Community Survey. The 2006 data products include:



### Select Geography

You are here: [Main](#) > [Data Sets](#) > [Data Sets with Detailed Tables](#) > [Geography](#) > Tables > Results  
2005-2007 American Community Survey 3-Year Estimates, Detailed Tables

Choose a selection method

list

name search

address search

map

geo within geo

[i Explain Census Geography](#) | [i Where are Geographic Components \(Urban and Rural\)?](#)

Select a [geographic type](#)

..... County

Select a state

Michigan

Select one or more geographic areas and click 'Add'

- Sanilac County
- Shiawassee County
- St. Clair County
- St. Joseph County
- Tuscola County
- Van Buren County
- Washtenaw County
- Wayne County

[Explain Missing Geographies](#)

Map It

Add

Current geography selections:

==== County =====  
Washtenaw County, Michigan

Download data for more than 7,000 geographic areas using the [Download Center](#).

Remove

Next



### Select Tables

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Data Sets with Detailed Tables](#) ▶ [Geography](#) ▶ [Tables](#) ▶ Results  
2005-2007 American Community Survey 3-Year Estimates, Detailed Tables

■ Choose a table selection method

[by subject](#) [by keyword](#) [show all tables](#)

■ Select one or more tables and click 'Add'

[i explain table numbers](#)

- B04007. Ancestry
- C04007. Ancestry
- B05001. Citizenship Status in the United States**
- C05001. Citizenship Status in the United States
- B05001-PR. Citizenship Status in Puerto Rico
- B05002. Place of Birth by Citizenship Status
- C05002. Place of Birth by Citizenship Status
- B05003. Sex by Age by Citizenship Status
- C05003. Sex by Age by Citizenship Status
- B05003A. Sex by Age by Citizenship Status (White Alone)

Abbreviations:

Black - Black or African American  
 AIAN - American Indian and Alaska Native  
 NHPI - Native Hawaiian and Other Pacific Islander  
 SOR - Some Other Race

[What's this?](#)

[Add](#) ▼

Current table selections:

B05001. Citizenship Status in the United States

[Remove](#)

[Show Result](#) ▶



### Detailed Tables

You are here: [Main](#) ▶ [Data Sets](#) ▶ [Data Sets with Detailed Tables](#) ▶ [Geography](#) ▶ [Tables](#) ▶ **Results**

Use the links above to change your results

| [Options](#)

| [Print / Download](#)

| [Related Items](#)

### [B05001. CITIZENSHIP STATUS IN THE UNITED STATES - Universe: TOTAL POPULATION IN THE UNITED STATES](#)

Data Set: [2005-2007 American Community Survey 3-Year Estimates](#)

Survey: American Community Survey

NOTE. Although the American Community Survey (ACS) produces population, demographic and housing unit estimates, it is the Census Bureau's Population Estimates Program that produces and disseminates the [official estimates of the population for the nation, states, counties, cities and towns and estimates of housing units for states and counties](#).

For information on confidentiality protection, sampling error, nonsampling error, and definitions, see [Survey Methodology](#).

View the [collapsed version of this table](#). Geographies missing from this table are listed below the table.

	Washtenaw County, Michigan	
	Estimate	Margin of Error
Total:	347,670	*****
U.S. citizen, born in the United States	304,831	+/-1,887
U.S. citizen, born in Puerto Rico or U.S. Island Areas	446	+/-204
U.S. citizen, born abroad of American parent(s)	2,706	+/-501
U.S. citizen by naturalization	13,912	+/-1,136
Not a U.S. citizen	25,775	+/-1,612

Source: U.S. Census Bureau, 2005-2007 American Community Survey

Data are based on a sample and are subject to sampling variability. The degree of uncertainty for an estimate arising from sampling variability is represented through the use of a margin of error. The value shown here is the 90 percent margin of error. The margin of error can be interpreted roughly as providing a 90 percent probability that the interval defined by the estimate minus the margin of error and the estimate plus the margin of error (the lower and upper confidence bounds) contains the true value. In addition to sampling variability, the ACS estimates are subject to nonsampling error (for a discussion of nonsampling variability, see [Accuracy of the Data](#)). The effect of nonsampling error is not represented in these tables.

# Data User Education and Support

# ACS Data Users

The ACS has a diverse set of data users including federal, state, and local governments, academia, media, and the private sector

Uses range from a single estimate for a grant application or homework assignment to complex research using microdata files

# Education Strategy

The diversity of ACS data users and user applications lead to the decision to produce several different types of educational materials, including a series of ACS handbooks – each written for a different audience including audience-specific issues and case studies

# Handbook Audiences

General Data Users

Federal Agencies

Business Community

Researchers

Congress

High School Teachers

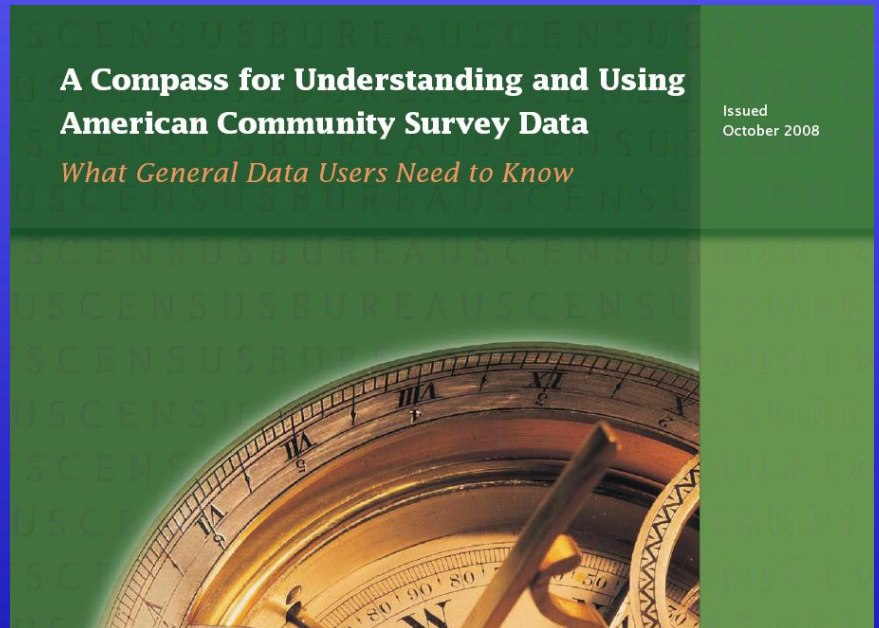
Public Use Microdata Sample Users

State and Local Governments

**A Compass for Understanding and Using  
American Community Survey Data**

*What General Data Users Need to Know*

Issued  
October 2008



# Handbook Audiences

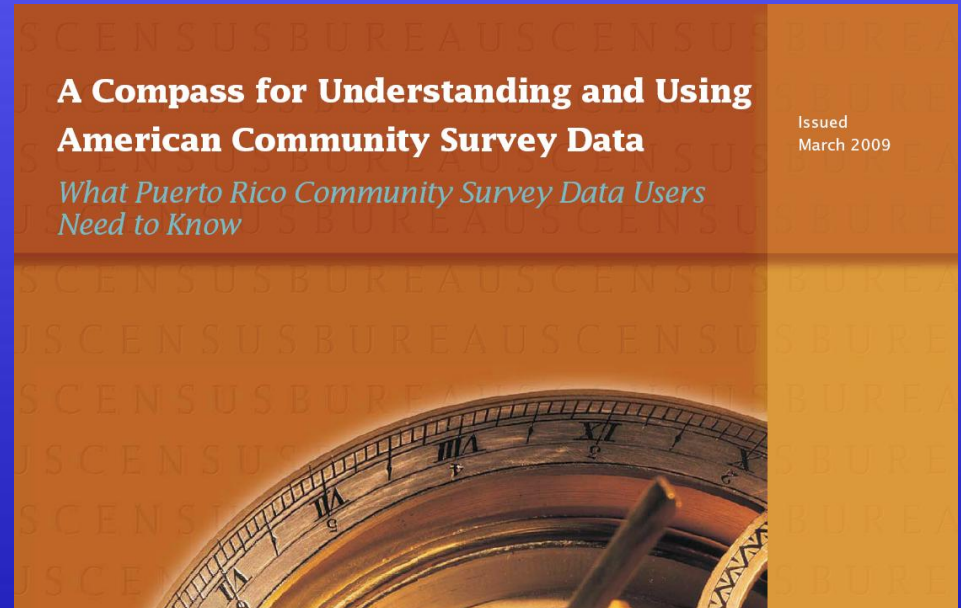
Media

Users of Data for Rural  
Areas

Users of Data about

American Indians and Alaska Natives

Puerto Rico Community Survey Data Users



# Technical Appendices

## Calculating Margins of Error for Derived Estimates

One of the benefits of being familiar with ACS data is the ability to develop unique estimates called derived estimates. These derived estimates are usually based on aggregating estimates across geographic areas or population subgroups for which combined estimates are not published in American FactFinder (AFF) tables (e.g., aggregate estimates for a three-county area or for four age groups not collapsed).

ACS tabulations provided through AFF contain the associated confidence intervals (pre-2005) or margins of error (MOEs) (2005 and later) at the 90-percent confidence level. However, when derived estimates are generated (e.g., aggregated estimates, proportions, or ratios not available in AFF), the user must calculate the MOE for these derived estimates. The MOE helps protect against misinterpreting small or nonexistent differences as meaningful.

MOEs calculated based on information provided in AFF for the components of the derived estimates will be at the 90-percent confidence level. If an MOE with a confidence level other than 90 percent is desired, the user should first calculate the MOE as instructed below and then convert the results to an MOE for the desired

Table 1. Data for Example 1

Characteristic	Estimate	MOE
Females living alone in Fairfax County (Component 1)	52,354	±3,303
Females living alone in Arlington County (Component 2)	19,464	±2,011
Females living alone in Alexandria city (Component 3)	17,190	±1,854

The aggregate estimate is:

$$\hat{X} = \hat{X}_{Fairfax} + \hat{X}_{Arlington} + \hat{X}_{Alexandria} = 52,354 + 19,464 + 17,190 = 89,008$$

Obtain MOEs of the component estimates:

$$MOE_{Fairfax} = \pm 3,303,$$

$$MOE_{Arlington} = \pm 2,011,$$

$$MOE_{Alexandria} = \pm 1,854$$

# Case Studies

## Case Studies

---

### Distribution of Funds to Senior Centers

#### Overview

The Department for the Aging (DFTA) in New York County, New York, is working to enhance the quality of life of the elderly in a cost-effective manner. It maintains a network of neighborhood-based senior centers across the county that provide meals and recreational activities, as well as education, health, housing, and social services under the auspices of federal-, state-, and county-sponsored programs. A utilization study recently revealed that use of the centers' resources was unbalanced, with some centers, especially in wealthier areas, experiencing chronic underutilization. A policy decision then followed to tilt the allocation of the annual budget to a few centers located in communities with larger numbers of the elderly who are poor or near poor. This move was seen as a precursor to future allocation efforts, since the local planning department has projected a huge increase in the elderly population over the next 20 years, when cost-effective allocation

income to poverty level for broad age groups.<sup>6</sup> A portion of this table is shown in Figure 3. Refer to the text box for step-by-step instructions of how the analyst found this information.

#### Step-by-Step Instructions for Case Study 1

Start at <[www.census.gov](http://www.census.gov)>.

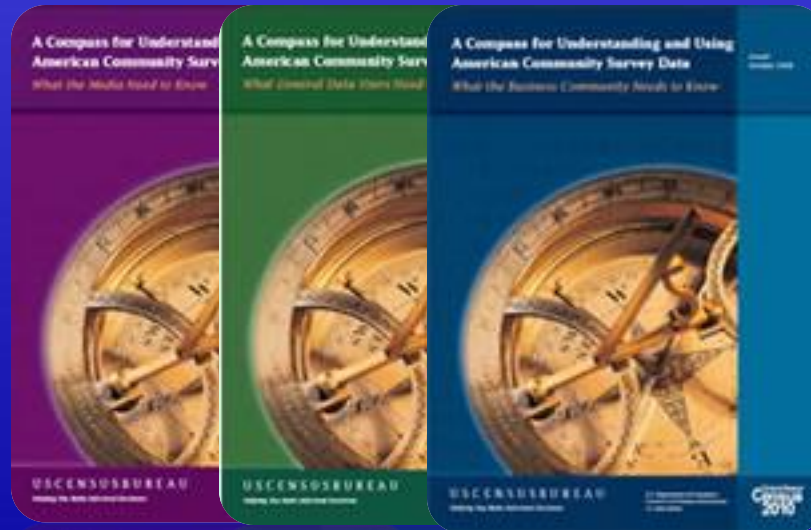
1. Select American FactFinder.
2. Under "Getting Detailed Data," select American Community Survey—get data.
3. **Choose your data set.** From the list of data sets, select the 2006 American Community Survey.
4. **Choose your data product.** From the list of data products on the right, select detailed tables. The detailed tables contain the greatest variety of information for many topics so it makes sense to start here to search for information.



Customer Service  
Operator



E-tutorial



Compass Products

# Data User Challenges

Consistency of ACS estimates with other estimates

Understanding sampling error

Interpreting multiyear estimates

# Data User Challenges

Annual releases – too much data

Availability of multiple ACS estimates for largest areas

# Other Uses of ACS data

Population Estimates Program

Frame for household surveys

Special tabulations

Support for Decennial Census planning

# Other Lessons Learned

Need for robust research and evaluation program

Communication with data users and stakeholders is critical and very time intensive

Challenging to maintain annual collection and production cycles and accommodate survey improvements

# Your Questions?