What the American Community Survey Can Tell us About Mixed Mode Surveys

Presented at the
Institute for Social Research
University of Michigan
February 3, 2009
What I’ll cover

• Background on the ACS
• How ACS data are collected
• Mixed mode observations
• Mixed mode issues
The American Community Survey is …

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

- Initial sample cases are selected from the Census Bureau’s Master Address File – about a 2.1% sample is selected each year and allocated into 12 monthly sample panels.

- One frame is used for initial sample selection but frame limitations exist for mode-specific data collection.
Continuous Measurement

- Continuous data collection

- Monthly sample panels are cumulated over TIME to produce the lowest levels of geographic detail - 5 years or 60 months of data are required to produce data for smallest geographic areas
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
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<tbody>
<tr>
<td>Nov 2004</td>
<td>Personal Visit</td>
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<tr>
<td>Dec 2004</td>
<td>Phone</td>
<td>Personal Visit</td>
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<tr>
<td>Jan 2005</td>
<td>Mail</td>
<td>Phone</td>
<td>Personal Visit</td>
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<td>Feb 2005</td>
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<td>Mail</td>
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<td>Personal Visit</td>
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<td>Mar 2005</td>
<td></td>
<td></td>
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<td>Phone</td>
<td>Personal Visit</td>
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<tr>
<td>Sample Panel</td>
<td>Calendar Month</td>
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<td>Phone</td>
<td>Personal Visit</td>
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</table>
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
THE American Community Survey

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 1-800-954-7271. The telephone call is free.

Telefóno para personas con pérdida de audición (TDD):
Call 1-800-954-7230. The telephone call is free.

¿NECESITA AYUDA? Si usted habla español y necesita ayuda para completar su cuestionario, llame sin costo alguno al 1-877-893-5626.
Usted también puede pedir un cuestionario en español o completarlo su entredos 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/

US CENSUS BUREAU

Helping You Make Informed Decisions
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 – 2007 ACS, weighted mail response rates
Mail Mode

2007 ACS Mail Response Rates

Some of the highest mail response rates

- Wisconsin
- Minnesota
- Iowa
- Nebraska
- Michigan

Some of the lowest mail response rates

- Puerto Rico
- Alaska
- Mississippi
- Louisiana
- Texas
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
Questions on the mail mode?
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 – 2007 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
Questions about the telephone mode?
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

• 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 – 2007 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
Questions on personal visit?
How do the three modes all work together?
Combination of Modes
An example of the timing of data collection activities for the October 2006 sample panel

<table>
<thead>
<tr>
<th>SEPTEMBER 2006</th>
<th>NOVEMBER 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/21 – Mail pre-notice letters</td>
<td>11/1 – CATI interviewing begins</td>
</tr>
<tr>
<td>9/25 – Mail initial packages and begin mail check-in</td>
<td>11/26 – CATI interviewing ends</td>
</tr>
<tr>
<td>9/28 – Mail reminder cards</td>
<td>11/28 – Create CAPI workload</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OCTOBER 2006</th>
<th>DECEMBER 2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>10/19 – Mail 2nd package</td>
<td>12/1 – CAPI interviewing begins</td>
</tr>
<tr>
<td>10/30 – Create CATI workload</td>
<td>12/31 – CAPI interviewing ends</td>
</tr>
<tr>
<td></td>
<td>12/31 – End mail check-in</td>
</tr>
</tbody>
</table>
Combination of Modes
Survey Response Rates

Year:
- 2005: 97.3
- 2006: 97.5
- 2007: 97.7

Survey Response Rates
Distribution of State-level Rates

Percent

<table>
<thead>
<tr>
<th>Percent</th>
<th>Number of States</th>
</tr>
</thead>
<tbody>
<tr>
<td>98% or more</td>
<td>20</td>
</tr>
<tr>
<td>97 - 98%</td>
<td>23</td>
</tr>
<tr>
<td>96 - 97%</td>
<td>7</td>
</tr>
<tr>
<td>95% or less</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: 2007 ACS, weighted survey response rates
## Workloads and Costs by Mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>Cost per case</th>
<th>Monthly workload</th>
<th>Interviewers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mail</td>
<td>$13</td>
<td>230,000</td>
<td>NA</td>
</tr>
<tr>
<td>Telephone</td>
<td>$16</td>
<td>98,000</td>
<td>580</td>
</tr>
<tr>
<td>Personal Visit</td>
<td>$147</td>
<td>45,000</td>
<td>3,500</td>
</tr>
</tbody>
</table>
Mixed Mode Observations

- Use of sequential mixed mode design is effective in increasing survey response

- Interview outcomes by mode vary across the country due to frame considerations and propensity to respond by a certain mode
Increasing Survey Response

- 43% Mail Interviews
- 30% Phone Interviews
- 15% Personal Visit Interviews
- 2% Ineligible
- 9% Noninterviews
- 1% Subsampled Out

Source: 2007 ACS, unweighted outcome codes
Distribution of Interview Outcomes
Variation in Selected States

Source: Unweighted 2007 ACS, State Level
Mixed Mode Observations

• Variation in item nonresponse across modes

• Several factors can contribute to these rates including questionnaire design, interviewer training and instruction, social desirability
## Item Nonresponse by Mode

<table>
<thead>
<tr>
<th>Mode</th>
<th>Population Items</th>
<th>Housing Items</th>
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</thead>
<tbody>
<tr>
<td>All modes</td>
<td>5.9</td>
<td>5.3</td>
</tr>
<tr>
<td>Mail</td>
<td>6.8</td>
<td>4.7</td>
</tr>
<tr>
<td>Telephone</td>
<td>4.3</td>
<td>5.9</td>
</tr>
<tr>
<td>Personal Visit</td>
<td>4.8</td>
<td>6.2</td>
</tr>
</tbody>
</table>

Source: 2000 - 2001 ACS
## Item Nonresponse by Mode

<table>
<thead>
<tr>
<th>Item</th>
<th>Mail</th>
<th>Phone</th>
<th>PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year Built</td>
<td>4.7</td>
<td>14.8</td>
<td>27.9</td>
</tr>
<tr>
<td>Yearly other fuel cost</td>
<td>16.3</td>
<td>1.8</td>
<td>1.8</td>
</tr>
<tr>
<td>Property Value</td>
<td>3.8</td>
<td>14.0</td>
<td>18.1</td>
</tr>
<tr>
<td>Income</td>
<td>7.7</td>
<td>17.8</td>
<td>20.2</td>
</tr>
</tbody>
</table>

Source: 2006 ACS
Mixed Mode Observations

• Self-selection into certain modes means that the characteristics of interviewed households vary across modes
### Characteristics by Mode

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Mail</th>
<th>Phone</th>
<th>PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Renter</td>
<td>22.6</td>
<td>24.0</td>
<td>54.6</td>
</tr>
<tr>
<td>%Moved in Last Year</td>
<td>12.6</td>
<td>6.8</td>
<td>28.6</td>
</tr>
<tr>
<td>% Less than HS education</td>
<td>11.3</td>
<td>16.6</td>
<td>20.5</td>
</tr>
<tr>
<td>% Below Poverty Level</td>
<td>8.9</td>
<td>11.9</td>
<td>20.5</td>
</tr>
</tbody>
</table>

Source: Joshipura, 2005 ACS
### Characteristics by Mode

<table>
<thead>
<tr>
<th></th>
<th>Mail</th>
<th>Phone</th>
<th>PV</th>
</tr>
</thead>
<tbody>
<tr>
<td>% Not in Labor Force</td>
<td>26.8</td>
<td>20.4</td>
<td>15.6</td>
</tr>
<tr>
<td>% Household all over 65</td>
<td>20.0</td>
<td>15.1</td>
<td>7.3</td>
</tr>
<tr>
<td>% Household all under 30</td>
<td>7.7</td>
<td>5.1</td>
<td>17.8</td>
</tr>
<tr>
<td>% Black householder</td>
<td>6.9</td>
<td>14.0</td>
<td>20.2</td>
</tr>
</tbody>
</table>

Source: Joshipura, 2005 ACS
Mixed Mode Issues

- Maintaining and translating multiple data collection instruments
- Equivalent Stimulus
- Maximizing quality of each mode
Research

• Mode effects

• New Modes - Web Response Option

• Measuring and reducing mode-specific errors
Research

- Cognitive testing of translations and the development of interviewer instruments in additional languages

- Testing additional mailings and new messages
Any questions?

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(301) 763-2855