2012 U.S. CENSUS OF AGRICULTURE

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National Agricultural Statistics Service
United States Department of Agriculture
Any place that produced and sold, or normally would have produced and sold, $1,000 or more of agricultural products during the calendar year.

~ currently about 2.2 million farms
CENSUS OF AGRICULTURE

- Conducted every five years
  - Reference years ending in “2” and “7”
- Information collected for the entire calendar year
- Different than most other countries
  + Primarily a mail survey
  + Not associated with a population census
  + Personal interview the last choice
5 YEAR CYCLE

YEAR 1
Evaluate
Plan

YEAR 2
Content
Specifications

YEAR 3
Develop
Test

YEAR 4
Collect
Process

YEAR 5
Product Release
Follow-on
FOLLOW ON CENSUSES

- Farm and Ranch Irrigation 2008-2013
- Renewable Energy 2009-2013
- Aquaculture 2013
- Land Tenure 2014
- Horticulture 2009-2014
- Organic 2008-2015
SAMPLING FRAMES

- List Frame
  - Names and addresses of known and potential farm operations
- Area Frame
  - Blocks of land
Ongoing maintenance every year
Major update before census
  - National Agricultural Classification Survey
  - Mailed 1,236,000 questionnaires for 2012
Census questionnaire mailed to every operation on list
  - Mailed 3,200,000 questionnaires in 2008
Blocks of land totally enumerated
- 14,773 in 2012

Name, address and operation information recorded

Compared to Census Mail List

Farms not on Census Mail List noted (NML)
- 12,821 farm operations noted in 2007
- 2,204,792 total farm operations in 2007
QUESTIONNAIRE

- Nine different versions
  - Seven regions
  - Puerto Rico
  - American Indian
- Twenty-four pages
  - 37 sections
  - Covers all WCA 2010 core items
  - Covers most WCA 2010 supplementary items
- Four pages of instructions
RESPONSES - 2007

- Mail 83%
- Telephone 7%
- Electronic 4%
- Enumerator 2%
- Total 96%
DATA CAPTURE

- Questionnaire scanned for image
- Image reviewed and paper destroyed
- Data entry from the image
- Data edits performed
  - Some have automatic corrections
  - Some require human review
- Error review with image and keyed data
SUMMARIZATION

- County is lowest level
- Sum has three parts and adjustments
  - Total from list (reported)
  - Total from non-response adjustment (no report)
  - Total from calibrated coverage adjustment (NML)
NON-RESPONSE ADJUSTMENT

- Based on classification tree analysis
- Use 10 input variables
- Create non-response adjustment groups
- All reports assigned to proper adjustment group
- Weights are adjusted within each group
COVERAGE ADJUSTMENT

- Components
  - Non-response adjusted weights
  - Targets for calibration (over 100 per state)
  - Tolerance for targets
  - Weight range limit

- System of linear equations solved to determine coverage weight

- Iterative procedure
\[ \hat{t}_y = \sum_k g_k d_k y_k = \sum_k w_k y_k \]

- \( g_k \) = coverage adjustment factor for farm \( k \)
- \( d_k \) = non–response adjusted weight for farm \( k \)
- \( y_k \) = reported value for farm \( k \)
- \( w_k \) = coverage adjusted weight for farm \( k \)
TABULATIONS

- Separate publication for each state + U.S.
- 120 tables in each publication
- 6120 tables
- 15,000,000 cells across all tables
<table>
<thead>
<tr>
<th>Task</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>First mailing</td>
<td>28 Dec. 2012</td>
</tr>
<tr>
<td>3,000,000 for 2012</td>
<td></td>
</tr>
<tr>
<td>EDR reporting</td>
<td>2 Jan. – 31 May 2013</td>
</tr>
<tr>
<td>Reminder/Thank you</td>
<td>16 Jan. 2013</td>
</tr>
<tr>
<td>Second mailing</td>
<td>14 Feb. 2013</td>
</tr>
<tr>
<td>Third mailing</td>
<td>25 March 2013</td>
</tr>
<tr>
<td>Phone/personal follow-up 2013</td>
<td>11 Feb. – 14 June</td>
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<tr>
<td>Data capture and edit June 2013</td>
<td></td>
</tr>
<tr>
<td>Data analysis</td>
<td>13 Apr. – 30 May 2013</td>
</tr>
</tbody>
</table>
SCHEDULE

- Summary
  - Initial: 25 July 2013
  - Second (No disclosure): 30 Sept. 2013
  - Final (Disclosure): 25 Nov. 2013

- First publication: 4 Feb. 2014
LESSONS LEARNED

- Optical scanning for data capture failed
  - Must design questionnaire for scanning
  - Scan for image
  - Key from image

- Short vs. long version questionnaire failed
  - Different versions but same structure
Thank you for your attention