Gauging User Preference for the Display of Sampling Error in the American Community Survey: Methodology and Findings from a Web-based User Survey

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Research Question: Which variability measure is preferred by ACS data users: confidence interval (CI) or margin of error (MOE)?

- CIs presented for ACS 2004 and previous years
- MOE presented for ACS 2005 and subsequent years
- Standard error and coefficient of variation (CV) can be calculated from MOE.

Possible Methods:

- Questionnaire/survey
- Usability and/or Cognitive Testing
- Focus Groups

Considerations:

- Limited number of interviews could be done with cognitive or usability testing
- Larger response wanted
- A Web-based survey allowed for more responses

The questions asked not only about preference of CI vs. MOE, but also user background with statistics.

- The main questions that asked respondents to indicate their preference between CIs and MOE included two sample tables
- How many statistics courses a respondent had completed
- A respondent's self-rated expertise with statistics

Respondents

After considering other available sources for testing, respondents were sampled from the ACS Alert email list. These respondents:

- Use ACS products.
- Have a range of statistical sophistication.
- The email list is maintained by the Census Bureau.

Sampling from the ACS Alert List

Characteristics of ACS Alert List

- Sampling frame: 5,911 email addresses
- Sample size of 299 chosen
- 1/20 email addresses was randomly sampled using strata defined by email addresses.
  - e.g., gov, mil, edu, com, org, us, net, other country, etc.
- Reminder email sent after 3 weeks.
- Expected a response rate of 1/3

Initial Results

- Only 23 completed questionnaires were received
- 52 % of the email addresses were undeliverable
  - ACS Alert list is out of date
- Decided to send email invitation to take the survey to the rest of the email addresses

Second-Round Results

- ISSUE: One respondent forwarded the invitation to at least one Listserv
- We shut down the survey Web site; no one could respond
- We modified the email invitation to include the message: "IMPORTANT: Please do not forward the survey link to others" in bold text at top of message
- Reminder email sent after 3 weeks.
- 324 additional responses

Overall Results

- 347 Responses Overall
- 44% Delivery Failure
- 10% Response rate from eligible respondents.

Results by Question

Results are based on the 347 completed questionnaires from both rounds of sampling.
In what capacity do you use American Community Survey (ACS) data? (check all that apply).

- 33% State and local government employees
- 22% Academic researchers
- 23% Other (e.g., librarians, non–profit researchers)
- 12% Non-Census federal employees
- 10% Census Bureau employees
- 5% Business people, 5% Contractors, 2% Journalists, 2% students

How often do you use ACS data products?

- 37.1% Less than once a month
- 28.4% Weekly
- 28.1% Monthly
- 6.5% Daily

What statistics courses have you completed?

- 39.2% Advanced graduate-level statistics
- 28.6% Advanced undergraduate/beginning level graduate statistics courses only
- 21.5% Introductory statistics courses only
- 10.1% No statistics courses completed

Rate your level of expertise with statistics.

- 56.9% Intermediate
  - Moderate experience with statistics
- 28.6% Expert
  - A great deal of experience with and/or frequent use of statistics
- 14.5% Novice
  - Just beginning to use statistics or rarely use them

For what purposes do you use sampling error?

- 68.6% To get a general sense of the data
- 50.9% To look for statistically significant differences
- 38.5% To make comparisons
- 15.1% To publish sampling error
- 13.5% Do not use sampling error
- 3.9% Other, please specify

KEY QUESTION: Imagine that you are writing a report about young people and find two relevant ACS data tables. Which of these tables would you find easier to use for your job?

Table 1:

Prince George's County, Maryland

Age Group	Estimated Total	90 % Margin of Error
Under 5	66,183	+/- 422
5-9	57,917	+/- 3,624
10-14	65,199	+/- 3,624
15-19	57,851	+/- 946

Table 2:

State of Wyoming

		90% Confidence Interval	
Age Group	Estimated Total	Lower Limit	Upper Limit
Under 5	31,029	30,125	31,933
5-9	28,392	26,293	30,491
10-14	32,677	30,668	34,686
15-19	33,123	31,876	34,370

7. Which of these tables would you find easier to use for your job?

- ○ Table 1 (with margin of error displayed)
- ○ Table 2 (with confidence intervals displayed)

Imagine that you are writing a report about young people and find two relevant ACS data tables. Which of these tables would you find easier to use for your job.

- 62% Table 2 with CIs displayed
- 33.1% Table 1 with MOEs displayed
- 4.9% None- indicated in open-ended followup that they had no preference

For your job, which measures of sampling error are useful to you when working with ACS data?

- 66.4% Confidence limits
- 59.6% Margin of error
- 48.1% Standard error
- 16.4% Coefficient of variation
- 5.4% Other, please specify

Summary

Of non-Census Bureau employees who expressed a preference, 62% preferred CIs and 33% MOE.

- The majority of respondents from ACS Alert list rate themselves at an intermediate expertise level or higher with statistics.
  - Majority have taken statistics courses (at least advanced undergraduate).
- Looking at the cross–tabulations, stats courses taken and statistical expertise do not seem to make a large difference in preference.
- CIs, MOE, and standard error were all self-reported as used by at least 48% of respondents; CV only reportedly used by 16.4%.
- Future Direction: Usability testing of variability display
  - Now have important information about ACS data users

Limitations

- Only CIs and MOE given as choices in the main survey question
  - Future work may examine other options
- ACS Alert list is a self-selected group of users
- About half of the email addresses in the ACS Alert list were invalid
  - When using a large email list, a response rate of 1/3 may not be a reasonable expectation.

Thank you!

- Thank–you to the Usability Team
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