

Response Improvement Strategies for the 2007 Economic Census¹

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Abstract

The Economic Census is conducted every 5 years to measure and profile the American economy. It is the largest collection conducted about businesses. Data from the census are used to release more than 1600 data products and to benchmark key economic statistics, including the Gross Domestic Product. For the 2007 Economic Census, response rate goals were set at higher rates than what was achieved for the 2002 Economic Census. These new rates were negotiated with the Office of Management and Budget as part of their administration of the Performance Assessment Rating Tool to continue to “rate” the census as effective. The Economic Programs Directorate at the Census Bureau used several strategies to elevate response to the new levels. This paper discusses these strategies, their effectiveness in improving response, and identifies new research that needs to be conducted in formulating plans and response policy for the 2012 Economic Census.

Key Words: Economic Census, response rates, Performance Assessment Rating Tool (PART)

1. Background About the Economic Census

1.1 General Information

The U.S. Census Bureau conducts an Economic Census every 5 years. The Economic Census represents the most comprehensive collection of information about businesses conducted within the United States. As such, it serves as the official benchmark of economic statistics for numerous ongoing programs and indicators, including the Gross Domestic Product. Data from the census is released in more than 1600 products covering more than 1,000 unique industries and 10,000 geographic places, providing a richness of data not available in most current economic programs conducted at the Census Bureau.

While the Economic Census covers more than 28 million employer and non-employer (i.e., no paid employees) establishments (locations), only a portion of the employer frame is mailed. Of the approximately 7 million employer establishments covered in the 2007 Economic Census, only about 4.6 million establishments were canvassed.

1.2 About the Units in the Data Collection Effort

The Economic Census is conducted primarily on an establishment basis. More than 550 unique questionnaires are developed for the census, tailored by industry or industry groups. An establishment is mailed the questionnaire most appropriate for its business activity. The typical questionnaire is 10 pages in length and varies in the types of information requested, from very general financial information about the establishment, such as receipts and payroll, to very detailed data requests, such as products produced or merchandise lines sold.

¹ This report is released to inform interested parties of ongoing research and to encourage discussion. Any views expressed on statistical, methodological, technical, or operational issues are those of the authors and not necessarily those of the U.S. Census Bureau.

For purposes of tracking response during an economic census, we define categories of companies. Companies with one establishment are referred to as single units (SUs) and those with more than one establishment are known as multi-units (MUs). Within the SU category, we further distinguish establishments receiving classification forms, often referred to as short forms. These forms normally ask easy check-box inquiries to help the Census Bureau refine the industry classification of the establishment and classify new business births identified in 2007. Financial data, that typically requires the respondent to consult company records, are not requested on these forms. A sample of SU establishments and all MU establishments receive a regular economic census questionnaire, often referred to as the long form. Within MUs, we distinguish several groups, identified broadly as follows:

- Large or L companies represent the Nation’s largest companies, and in 2007, numbered about 1250. They typically have 1,000 or more employees and are significant in size as measured by receipts, payroll, or other key economic variables.
- Medium or M companies have at least 500 employees and are not L companies.
- N companies have at least 50 employees or 10 locations, and are not L or M companies.
- Small or S companies represent all other MUs.

1.3 Check-in Rates Verses Response Rates

The collection cycle for the 2007 Economic Census was October 2007 through October 2008. It covered the initial mailing to respondents, all follow-up activities, and the processing of receipts up until the processing closeout. To best monitor receipts and progress throughout this time period, managers relied on use of a check-in rate instead of a response rate.

The check-in rate differs from a response rate. At the time of the check-in action, other than postal returns identified as Undelivered As Addressed (or UAA’s), there is no way to determine if data are present. Response rates are based on the reporting of key data items. In an economic census cycle, the reported response is available at data tabulation and dissemination, which occurs after the closeout of collection activities. While the response rate is useful for assessing data quality, the check-in rate serves as a better measure to manage and adjust census activities to meet planned targets.

1.4 Comparison of 2007 and 2002 Counts and Check-in Rates

Table 1 shows the number of forms mailed and received and the resulting check-in rates for 2007 and 2002. They cover the total census, the MUs, the regular SUs (excluding classification filers) and the classification filers. Note, third quarter births identified in 2007 were mailed in the 2007 Economic Census, but excluded from mailout in 2002.² The check-in rate is the percent of forms received to the total mailed.

² Note, 1st and 2nd quarter births in 2007 are included in initial mailout counts, but the timing of administrative records means that the 3rd quarter births are identified and mailed out on a later schedule.

Table 1: 2007 and 2002 Check-in Rates for the Economic Census

| | 2007 (11/12/08) | | | | 2002 (03/16/04) | | | |
|--|--------------------|--------------|-------------------|--------------|--------------------|--------------|-------------------|--------------|
| | Total | MU | SU excl. Class | Class | Total | MU | SU excl. Class | Class |
| Forms Mailed (excl 3rd qtr births) | 4,426,790 | 1,666,497 | 1,890,777 | 869,516 | 4,774,703 | 1,543,135 | 1,992,946 | 1,238,622 |
| Forms Mailed (incl 3rd qtr births) | 4,625,712 | 1,666,497 | 2,008,008 | 951,207 | (x) | (x) | (x) | (x) |
| Forms Received (excl 3rd qtr births) | 3,838,721 | 1,519,231 | 1,552,635 | 766,855 | 4,025,235 | 1,346,413 | 1,624,614 | 1,054,511 |
| Forms Received (incl 3rd qtr births) | 3,979,558 | 1,519,231 | 1,628,278 | 832,049 | (x) | (x) | (x) | (x) |
| Check-in Rate (excl 3rd qtr births) | 86.7% | 91.2% | 82.1% | 88.2% | 84.3% | 87.3% | 81.5% | 85.1% |
| Check-in Rate (incl 3rd qtr births) | 86.0% | (x) | 81.1% | 87.5% | (x) | (x) | (x) | (x) |

Overall, check-in rates were 86.7% in 2007 and 84.3% in 2002. For comparability, the third quarter births were taken out of the 2007 rate. However, while UAA's were taken out of the numerator and denominator at the end of processing in 2002, for the 2007 they were left in the denominator to better align with the Census Bureau's new response rate standard.

In the 2002 Economic Census, the collection phase comprised primarily mailout and mail back operations. While electronic reporting was offered to establishments receiving the regular or long form, only 10 percent chose this as a way to respond.

2. Response Strategies for the 2007 Economic Census

As part of the President's Management Agenda, the Office of Management and Budget instituted a Performance Assessment Rating Tool (PART) to assess the effectiveness of government programs. Through the PART process, OMB rated the 2002 Economic Census as being "effective," which is the highest rating given. At the time, only 5 out of 30 programs were rated effective at the Department of Commerce. To continue to achieve an effective rating for the 2007 Economic Census, it was agreed that the response (check-in) target would be 86 percent, which was 1.7 percent higher than the 2002 rate.

The challenge in achieving the new rate, however, was greater than a 1.7 percent increase. Compared to 2002, the 2007 rate would include the following changes: the modification in handling UAA's in the calculation, the inclusion of third quarter births in the census mailing (new business births tend to be poor responders), and the mailing of fewer short form filers due to better industry coding methods on the business universe. Classification form filers are better responders. In total these changes amounted to an estimated loss of 4.1 percent from the 2002 rate, meaning we would need to achieve an increase of 5.8 percent over the 2002 rate to meet the 2007 target.

2.1 Planned Response Strategies

Table 2 contains the mail strategy for the 2007 census. Compared to the prior census, the plan included an additional mail follow-up for each of the components. The additional follow-up contained a strong letter from the Chief Counsel, Department of Commerce. This letter is presented to the respondent as a “Notice of Failure to Provide Mandatory 2007 Economic Census Report.”

Table 2: Basic Initial and Follow-up Mail Strategy

| Components | | Initial | 1st | 2nd | 3rd | 4th |
|------------|----------------------|---------|--------|--------|----------------------|----------------------|
| SU | Classification Forms | Form | Form | Form | Chief Counsel Letter | N/A |
| | Regular SUs | Form | Letter | Form | Form | Chief Counsel Letter |
| MU | Totally Delinquent | Form | Letter | Letter | Form | Chief Counsel Letter |
| | Partially Delinquent | Form | N/A | Letter | Letter | Letter |

The mail and follow-up strategies for the census were tested ahead of time with the ongoing Company Organization Survey (COS) and the Annual Survey of Manufactures (ASM) as well as the 2006 Refiling Operation. The Refiling Operation was conducted the year before the census to mail unclassified establishments or establishments undergoing significant revision due to changes in their industry. Use of the strong Chief Counsel letter (without an accompanying questionnaire) in the Refile, COS and ASM showed it to be effective in getting the attention and follow-through of data providers.

Historically, telephone follow-up of L and M companies was scheduled to take place after the last mail follow-up. For 2007, we expanded the definition of M companies to include more companies, and allowed for flexibility in the schedule to make reminder calls sooner. (Originally, no reminder calls were planned for N and S companies.)

Considerable effort was made to enhance electronic reporting for 2007. Two years before the census mailout, staff solicited requirements from businesses to improve the electronic reporting instruments. Some of these enhancements were introduced and tested during the ongoing COS and ASM prior to the 2007 Economic Census. We also improved the marketing of electronic reporting and prepared user guides that were easier to follow. Note, only long form filers had the opportunity to report electronically in 2007 and to do this, they had to download the software and census forms to their computer.

Other activities to support the response effort for the 2007 cycle included the following:

- Conducting an advance mailing to the top 10,000 MU companies prior to the initial mailout to announce the census and to obtain a company contact for responding. For 2007, new phone follow-up was conducted to achieve receipt of contact information for 92 percent of these companies.
- Publicizing the census and its benefits to trade associations, especially those affiliated with 16 industries identified as having the poorest response in 2002.

- Assigning L companies to account managers at headquarters to better coordinate filing requirements. Better management information reports were developed to track analyst performance.
- Imprinting “mandatory filing required “ on the envelope, as done in prior censuses.
- Offering a Business Help Website with information about the census, and services to help respondents with time extensions, additional copies of forms, and general information. This was done in 2002, but upgraded in 2007 with a new Secure Messaging Center to allow email exchanges in a secure environment.
- Staffing and training interviewers to take 1-800 calls from respondents on the census.

2.2 Unplanned Strategies

Even with all of these activities in full motion, about 4 months into the 2007 collection phase, it was clear that check-in rates lagged those for 2002. Of concern were the SUs, which were consistently 5 percentage points behind. New strategies were devised to overcome the deficit with the goal of achieving the 86 percent PART target. The new strategies focused on direct contact with the respondents, and assumed the existing mail follow-up strategy stayed intact. These new strategies were as follows:

- For classification filers, we did two new things. First, we conducted an additional phone follow-up for 14,360 cases. The phone follow-up occurred between the second and third mail follow-ups and focused on delinquent forms in the services sectors. These services forms are typically easier to industry code than say manufacturing establishments. The clerical classification unit in the census was trained to conduct the phone follow-up and code the delinquents based on information obtained during the call. The process of collecting information and coding delinquents departed from our traditional phone reminder calling. The effort resulted in completing 42 percent by phone. Based on this positive experience, the second action that we took was to change the Chief Counsel Letter included in the final mail follow-up. In the letter, we indicated to respondents that they could call, report the information, and complete their filing requirement in lieu of sending in the form. This effort resulted in 29 percent of the workload being coded and, therefore, completed.
- For MUs, we accelerated by one month the start of the planned reminder calling for M companies. We added to the reminder calling the N and S companies, targeting approximately 50,000 companies to call. Special activities preceded this operation to obtain contact phone numbers to facilitate the calling process.
- For regular SUs, we added a telephone reminder follow-up to coincide with the third mail follow-up. The phone reminder follow-up was done for the largest (in terms of payroll) 90,000 non-responding businesses. This number represented about 5 percent of all SUs mailed regular forms. In addition to the phone follow-up, we targeted 149,000 SU follow-up mail packages for certified mailing as part of the third mail follow-up. Certified means that there is a verification of delivery from the post office.

Processing improvements in other phases of the census and an increase in electronic filings provided the staffing and funding to support these unplanned strategies. The phone follow-up was conducted at the Census Bureau’s National Processing Center. Interviewers were trained on the census and given scripts to remind delinquents to file and to encourage the use of the electronic reporting tools.

Final rates reflecting the results of these initiatives are shown in Table 3. It should be noted that the check-in rate for electronic reporting was 28.6 percent overall, with 54.4 percent of multiunit establishments reporting electronically.

Table 3: Final Check-in Rates for the 2007 Census Compared to 2002

| | Final 2007 Check-in Rate (11/12/08) | Final 2002 Check-in Rate (03/16/04) | Final 2007 vs. 2002 Difference |
|-----------------------------------|-------------------------------------|-------------------------------------|--------------------------------|
| Total (excl 3qtr births) | 86.7% | 84.3% | 2.4% |
| Total (including 3qtr births) | 86.0% | NA | NA |
| MU | 91.2% | 87.3% | 3.9% |
| L companies | 96.3% | 89.7% | 6.6% |
| M companies | 88.7% | 92.6% | -3.9% |
| N companies | 88.5% | 82.9% | 5.6% |
| S companies | 86.9% | 84.5% | 2.4% |
| SU excl. Class (excl 3qtr births) | 82.1% | 81.5% | 0.6% |

3. Research on the Mailing of Small Single-Units in the Economic Census Sample

While conducting phone reminder calls for SUs, we asked respondents why they had not reported by the due date. The more common reasons were that data were not available, it was expensive, and/or respondents were too busy. Within the SU category, more than one million that we canvassed had 9 or fewer employees. Given the budget cycle from one census to the next, it has been proposed that for the 2012 census the SUs having 0 to 9 employees (small SUs) receive only classification forms. Doing so would reduce respondent burden for the smallest companies, increase overall response rates, and possibly reduce processing and follow-up costs. Core data items (receipts, payroll, and employment) for these small SUs could be obtained from administrative records. Other data could possibly be imputed or modeled from data collected from larger SU and MU establishments. The assumptions underlying the proposal are that small SUs are similar to larger SUs and MUs and/or that their contributions are too small to significantly affect the published estimates, whether data is collected from them or not. To explore the validity of these assumptions, we researched the impact on product lines (major categories of products sold) estimates if the data were not collected from small SUs.

The 2007 Economic Census universe included about 4.2 million single unit (SU) establishments in the retail, wholesale, services, finance, insurance, real estate, utilities, and transportation sectors. Of those, approximately 1.4 million were selected into the census with certainty and another 327,000 were selected as non-certainties.

3.1 Impact on Product Line Estimates of Not Collecting Data From Small SUs

Not collecting data from the small SUs may bias the product lines estimates if they report a different distribution of lines than do the larger SUs and MUs. Product line estimates

for each industry are derived by multiplying the weighted lines data for establishments with useable lines data by the ratio of the receipts (reported, imputed, or administrative) for all establishments to the weighted receipts for those reporting useable lines data.

To explore the potential bias to the product line estimates, we used preliminary 2007 census data to calculate lines estimates with and without the small SUs for each 6-digit North American Industry Code System (NAICS) industry in the retail and services sectors. From these we derived the cumulative absolute difference (CAD) between the percentage distributions of the two sets of estimates. This allowed us to quantify the differences in estimates had we not collected this data from the small SUs for the 2007 census. In addition, we computed a maximum CAD (Max CAD). Max CAD allowed us to quantify the maximum possible differences in estimates had the small SUs had a completely different distribution of lines than the larger SUs and MUs. Table 4 illustrates the types of results we examined for industries in the retail and services sectors. Highlighted columns show the distribution of product line percentages for the two sets of estimates. The CAD and Max CAD are bolded and are based on all lines, not just those displayed in the table.

**Table 4: Lines Distributions With (All) & Without (Lg) Small SUs:
Used Car Dealers**

| NAICS6 | Code | #Estabs | Line | % of Rcpts | #Estabs | Lines | % of Rcpts | CAD | MAX |
|--------|-------|---------|------------|------------|---------|------------|------------|-------------|--------------|
| 441120 | Total | 6,227 | 66,464,369 | 100.0 | 2,718 | 66,464,369 | 100.0 | 1.05 | 84.91 |
| | 20500 | 115 | 40,507 | 0.1 | 45 | 29,188 | 0.0 | . | . |
| | 20580 | 186 | 144,515 | 0.2 | 81 | 100,503 | 0.2 | . | . |
| | 20700 | 6,227 | 63,792,023 | 96.0 | 2,718 | 63,534,663 | 95.8 | . | . |
| | 20720 | 73 | 37,803 | 0.1 | 33 | 34,290 | 0.0 | . | . |
| | 20730 | 263 | 42,369 | 0.1 | 140 | 57,842 | 0.1 | . | . |
| | 20740 | 609 | 456,146 | 0.7 | 302 | 443,097 | 0.6 | . | . |
| | 29810 | 116 | 88,736 | 0.1 | 62 | 69,390 | 0.1 | . | . |
| | 29900 | 1,717 | 1,847,886 | 2.8 | 951 | 2,180,389 | 3.2 | . | . |

Table 5 summarizes the results of our analysis for retail and services. Shown for each CAD and Max CAD cell are the number of industries (Ind), the number of small SUs reporting lines (Estabs), and total receipts (Rcpts) in millions of dollars of the industries in each cell. When CAD is large there would have been a large difference in the lines estimates for 2007 had we not collected data from the small SUs. When Max CAD is large, not collecting data from small SUs has the potential to significantly bias the lines estimates in the future should there be a major change from the way small SUs were operating in 2007 as compared to the larger establishments.

Table 5: Summary of Retail and Service Industries by CAD and Max CAD**Retail**

| I/Max CAD (in % pts) | Cumulative Absolute Difference (CAD) (in percentage points) | | | | | | | | | | | | | | |
|-------------------------------|---|---------------|--------------------|-----------|---------------|------------------|----------|--------------|-----------------|----------|--------------|-----------------|-----------|----------------|--------------------|
| | 00 - 05 | | | 05 - 10 | | | 10 - 20 | | | 20+ | | | Total | | |
| | Ind | Estabs | Rpts | Ind | Estabs | Rpts | Ind | Estabs | Rpts | Ind | Estabs | Rpts | Ind | Estabs | Rpts |
| 00-05 | 10 | 3,836 | \$2,061,328 | | | | | | | | | | 10 | 3,836 | \$2,061,328 |
| 05-10 | 7 | 14,426 | 334,199 | | | | | | | | | | 7 | 14,426 | 334,199 |
| 10-20 | 12 | 20,410 | 701,892 | 2 | 2,218 | \$49,086 | | | | | | | 14 | 22,628 | 750,978 |
| 20-30 | 14 | 29,618 | 811,325 | 2 | 4,775 | 78,028 | 1 | 1,422 | \$16,316 | | | | 17 | 35,815 | 905,669 |
| 30-50 | 11 | 6,356 | 137,867 | 3 | 4,829 | 42,280 | 1 | 240 | 983 | | | | 15 | 11,425 | 181,130 |
| 50-75 | 5 | 3,732 | 59,267 | 5 | 8,330 | 60,102 | 2 | 5,250 | 52,402 | | | | 12 | 17,312 | 171,771 |
| 75+ | 7 | 9,518 | 101,212 | 2 | 4,313 | 37,926 | 3 | 2,401 | 2,823 | 3 | 3,414 | \$20,689 | 15 | 19,646 | 162,650 |
| Total | 66 | 87,896 | \$4,207,090 | 14 | 24,465 | \$267,422 | 7 | 9,313 | \$72,524 | 3 | 3,414 | \$20,689 | 90 | 125,088 | \$4,567,725 |

Services (excl. FIRE)

| Max CAD | CAD | | | | | | | | | | | | | | |
|--------------|------------|----------------|--------------------|-----------|---------------|------------------|-----------|---------------|------------------|-----------|---------------|------------------|------------|----------------|--------------------|
| | 00 - 05 | | | 05 - 10 | | | 10 - 20 | | | 20+ | | | Total | | |
| | Ind | Estabs | Rpts | Ind | Estabs | Rpts | Ind | Estabs | Rpts | Ind | Estabs | Rpts | Ind | Estabs | Rpts |
| 00-05 | 63 | 7,689 | \$1,935,260 | | | | | | | | | | 63 | 7,689 | \$1,935,260 |
| 05-10 | 26 | 11,033 | 410,380 | 1 | 23 | \$1,217 | | | | | | | 27 | 11,056 | 411,597 |
| 10-20 | 44 | 14,179 | 1,052,130 | 10 | 856 | 41,157 | | | | | | | 54 | 15,035 | 1,093,287 |
| 20-30 | 24 | 5,973 | 211,674 | 13 | 4,168 | 117,945 | 4 | 774 | \$26,908 | | | | 41 | 10,915 | 356,527 |
| 30-50 | 15 | 36,544 | 802,661 | 19 | 13,175 | 289,475 | 12 | 10,585 | 189,146 | 2 | 628 | \$6,449 | 48 | 60,932 | 1,287,731 |
| 50-75 | 16 | 22,621 | 151,552 | 9 | 7,096 | 75,560 | 8 | 6,627 | 32,903 | 5 | 5,622 | 64,096 | 38 | 41,966 | 324,111 |
| 75+ | 10 | 22,843 | 55,777 | 7 | 26,894 | 112,824 | 4 | 2,931 | 8,907 | 14 | 24,982 | 89,622 | 35 | 77,650 | 267,130 |
| Total | 198 | 120,882 | \$4,619,434 | 59 | 52,212 | \$638,178 | 28 | 20,917 | \$257,864 | 21 | 31,232 | \$160,167 | 306 | 225,243 | \$5,675,643 |

Notes: Ind. = Number of industries that fall in the cell

Estabs = Number of small establishments (employment = 0-9) reporting product lines

Rpts = Total receipts of the industries in the cell (in \$mil)

Based on 2007 Census data as of 11/21/08

3.2 Conclusion of the Research

In planning response strategies for the 2012 census, mailing only classification forms to small SUs has some advantages. In particular, doing so would reduce respondent burden, would likely increase overall response rate, and may decrease mailing and processing costs somewhat. However, the research indicates some disadvantages, namely the distribution of product line estimates for some industries would change substantially and any future divergence in the distribution of lines reported by larger establishments and the small SUs will be missed.

It may be reasonable to mail only a classification form to small SUs in industries having small CADs and small Max CADs. However, additional exploration is needed before drawing final conclusions. Our analysis to date has considered the impact on the product lines estimates, but has not yet examined other estimates that may be adversely impacted should data not be collected from small SUs. Examples include exported services, employment by class of occupation, franchises, and various industry specific inquires.

4. Summary

To achieve desired PART response rates we instituted several unplanned response strategies for the 2007 Economic Census. Given that these strategies occurred in the midst of the planned strategies, it was difficult to distinguish their actual effect on final response. Over the next two years, we will use our ongoing programs to better assess impacts and costs of these various strategies. Additionally, we will continue to evaluate the quality of response by small SUs to complement the research above. Finally, we will research new methods of improving response. Research efforts that are underway include finding better address information for UAA's using administrative information from the Bureau of Labor Statistics; developing a web-based electronic reporting instrument for SUs (instead of the downloadable version of software); and offering electronic reporting to classification filers (they did not have this option in 2007). Research and evaluations will be conducted in view of what is actually published to further validate the scope and detail of the mailed component of the Economic Census.

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