

**Department of Commerce
U.S. Census Bureau
OMB Information Collection Request
Construction Progress Reporting Surveys
OMB Control Number 0607-0153**

Part B. – Collections of Information Employing Statistical Methods

1. Universe and Respondent Selection

The monthly universe for private construction is approximately 6,200 projects with an estimated sample size of 580 new projects selected each month. State and local governments have a monthly universe of approximately 8,700 projects with an estimated sample size of 750 new projects selected each month. The federal government has a monthly universe of approximately 300 projects with an estimated sample size of 60 new projects selected each month. The monthly universe for multifamily is approximately 240 projects with all projects selected each month. Construction projects stay in sample until conclusion of the project (an average of 12 months). On average 22,000 projects are active in the sample each month and are asked to report two key items: the value of construction per month (ongoing basis) as well as the total value (one time) for the entire project. There are another 10,000 sample cases on average that do not receive a monthly survey because those respondents were refusals when they were contacted for a current or prior project.

The monthly value of construction unit response rates and total quantity response rates after 3 months of collection effort are shown in the table below¹. These rates reflect all eligible sample cases, both active and refusals.

Survey (including all eligible sample cases)	Unit Response Rate (URR)	Total Quantity Response Rate (TQRR)
Private Non-residential	24%	29%
State and Local	61%	68%
Federal	54%	64%
Private Multifamily	17%	33%

¹ Rate calculation based on survey periods May 2023-Apr 2024.

If we consider only the cases being actively collected, which represent about 56% of all sample cases, the monthly value of construction URR and TQRR after 3 months of collection effort are:

Survey (including only active sample cases, i.e. non-refusals)	Unit Response Rate (URR)	Total Quantity Response Rate (TQRR)
Private Non-residential	65%	67%
State and Local	89%	88%
Federal	89%	86%
Private Multifamily	78%	86%

When a sample case refuses to participate in the reporting of monthly value put in place, an effort is made to obtain the total construction value, and estimated start and completion dates for the project. This reduces the number of items that we must impute to impute monthly value put in place. The total value of construction unit response rates and total quantity response rates are shown in the table below:

Survey (including all eligible sample cases)	Unit Response Rate (URR)	Total Quantity Response Rate (TQRR)
Private Non-residential	36%	56%
State and Local	78%	85%
Federal	69%	80%
Private Multifamily	32%	56%

If we consider only the cases being actively collected, the total value of construction URR and TQRR are:

Survey (including only active sample cases, i.e. non-refusals)	Unit Response Rate (URR)	Total Quantity Response Rate (TQRR)
Private Non-residential	80%	82%
State and Local	95%	94%
Federal	94%	95%
Private Multifamily	86%	91%

The lower response rates for total construction value are mainly due to the inability to collect data due to respondent refusals, which make up about 44% of all sample cases. The average TQRR for total construction value for refusals is 34% for multifamily projects, 35% for private nonresidential projects, 37% for federal projects, and 53% for state & local projects.

Projects are selected each month using stratified systematic sampling procedures. Projects are stratified within ownership (private nonresidential, state & local, federal) by type of construction (TC) and estimated project value. Stratum sampling rates were initially determined by applying Chromy's algorithm for multivariate sample allocation which optimizes sample size based on cost and variance constraints. The target coefficients of variation (CVs) for major TCs were set between 10-20%, and 35% and 50% for nested subcategories within each major TC. Optimal sample sizes were then boosted to account for expected rate of nonresponse in each TC group and sampling rates for each strata were determined. Starting in January 2023, a new certainty stratum boundary was introduced, so that only projects with a selection value of \$100M or more are selected with certainty for private non-residential projects, state & local or federal projects. The previous certainty stratum was \$10M or more. Projects valued between \$10M and \$99M are now sampled at a rate of 1/2. This change was made to reduce the workload of new cases entering the sample each month. Sampling rates for the remaining value strata (under \$10M) were also lowered. Since this change the new case workload has been reduced by about 540 cases on average each month, decreasing the total number of cases for the year by about 6,500. Currently, as of July 2024, about 27% of the active cases were sampled prior to January 2023, with the remaining 73% sampled under the new stratum sampling rates. We close out about 1,400 cases on average each month while taking on about 1,630 number of new cases each month. About 15-20% of our sample cases become complete refusals after 3 months of non-response, resulting in a need to impute the monthly spending for these cases until their completion, but also reducing the interview workload. These rates can be found in the survey methodology posted online at <http://www.census.gov/construction/c30/methodology.html>. Multifamily residential projects that are not duplicates or out-of-scope are selected with certainty from multi-unit projects included in the sample for the Survey of Construction.

2. Procedures for Collecting Information

The Census Bureau is contracted with an outside vendor to provide source data on private, state and local government, and federal government construction projects valued at \$75,000 or more. Projects in areas not covered by building permit systems or reported by the outside vendor are obtained by Census field staff within a small number of non-permit areas, and are selected with certainty. Projects are stratified by type of construction and valuation and then a systematic sample is taken in each strata using predetermined sampling rates which can be found in the methodology posted on our webpage. Each month all new privately owned multi-unit residential building projects with 2 or more units are selected to report in CPRS from the sampled cases used in the Census Bureau's Survey of Construction.

Once a project is selected, it remains in the sample until it is completed. Monthly construction project reports are requested from the appropriate owner, contractor, builder, or agent responsible for the project. Imputations are made for projects that have not reported at the time of the monthly tabulation, based on estimated total construction value and month of start of the project. Estimates of value put in place are obtained by multiplying the final weight of each project by the monthly reported value and summing all projects. The final weight is a product of the basic weight (reciprocal of the probability of selection) and adjustment factors to account for outliers, costs not included in the monthly construction spending such as architectural and engineering fees, and frame duplication. Weighted data are summed over all sample projects by type of construction and ownerships (private, state and local, and federal). In addition, undercoverage factors are applied to projects in each ownership to account for projects not included in the frame. Private manufacturing construction is benchmarked to the Annual Capital Expenditures Survey.

3. Methods to Maximize Response

To increase response rates, respondents are encouraged to report online. Respondents who choose to respond via Centurion receive email notifications rather than letters or paper forms. Thus, we have also drastically reduced the amount of paper survey forms that are generated each month. Instead, a pressure sealed letter is sent to respondents to encourage them to report online via their login credentials. Because of the speed in submitting and loading data via Centurion versus having to mail back a paper form, respondents are indirectly given more time to complete the survey. This is a positive improvement for the response rate.

We have expanded the use of email for contact, leveraging an automated “eblast” process for both initial and follow-up operations. We now utilize the email blast twice a month. The first blast is delivered on the first day of the processing month to eligible Centurion respondents. The second email blast occurs in the middle of the month and is targeted to respondents that have yet to report, which potentially increases the response rate.

Several attempts are made to collect information by telephone follow-up if a response has not been received online or by mail or fax. In conjunction with ongoing efforts to transition from reliance on mailed survey forms to paperless options, we are encouraging as much online reporting as possible. This effectively provides respondents with more time to complete their response while still meeting our indicator processing deadlines, and in turn can support a positive impact on our overall response rate.

In April 2020, the CPRS robocall was first introduced to quickly call thousands of respondents to encourage them to report online. Because of the success of the robocall, its relative low cost, and NPC’s inability to completely their normal monthly calling workload, the robocall was permanently implemented for CPRS later in 2020. We utilize robocall technology to ensure every active respondent is contacted at least once per month. If a respondent has more than one project in the sample, information is requested

for all projects with one telephone call. Each respondent is contacted at their requested time by the computer assisted interview process known as the Call Scheduler. In addition to telephone follow-ups, letters are mailed to respondents to encourage response (see Attachments F-H). Today the robocall continues to be used in coordination with the Call Scheduler table and is utilized to call over 3,000 respondents each month. This has freed NPC staff to concentrate their efforts on contacting delinquent respondents for a second (and possibly third time) each month to get their VIP.

For State and Local Government's that publish their project spending on their websites, we extract the relevant spending information that is needed for our survey without requesting additional response from the respondent. Additionally, we have developed reporting arrangements with other State and Local Governments who send us consolidated reporting via a monthly spreadsheet. Beginning with the November 2019 statistical period, Census HQ staff began transitioning state Department of Transporations (DOTs) to an autoloading process. Since that initial effort, we have successfully converted 13 DOTs comprising over 1,600 projects to this more streamlined and efficient collection process.

We can see this improvement in response rates best if we consider only the cases being actively collected. The monthly value of construction unit response rates after 3 months of collection effort are much improved because of these collective efforts. The tables below show the average monthly unit response rate and total quantity response rates for 2020 compared to an average based on the most recent available 12 months (May 2023-April 2024).

Based on January 2020-December 2020, these average monthly rates were:

	Unit Response Rate (URR)	Total Quantity Response Rate (TQRR)
Private Non-residential	49%	58%
State and Local	79%	80%
Federal	79%	83%
Private Multifamily	60%	76%

Based on May 2023- April 2024, these average monthly rates are now:

	Unit Response Rate (URR)	Total Quantity Response Rate (TQRR)
Private Non-residential	65%	67%
State and Local	89%	88%
Federal	89%	86%
Private Multifamily	78%	86%

These tables show that both the URR and TQRR increased for all four surveys following the implementation of the strategies discussed above. Unit response rates increase 10% or more and the total quantity response rates increased slightly for State and Local (8%) and Federal (3%) surveys and about 10% for the both the Private Non-residential and Multifamily surveys.

Refusal to participate in the survey continues to be our most difficult challenge, as refusals make up about a third of the active sample projects each month. Thus, we will continue to search for innovative and effective new ways to address the ever-present issue of declining participation in surveys that support official statistics. One way we could do this is through public messaging that helps to increase awareness of the importance of survey participation. We are also looking for new methodological approaches to estimation. One method we are currently investigating involves replacing the reporting of monthly VIP with a phased spending model. We are typically successful at obtaining responses for total value of construction and start and completion dates in the initial interview for a sample project, even when respondents refuse to participate in the monthly survey. Using this information and reported spending pattern history we are researching the development of phasing patterns that can be applied to the total value of construction to produce monthly spending estimates over the life of a project. We also continue to identify potential alternative data sources and investigate new data collection methods, i.e. satellite imagery, as part of the construction re-engineering project. The Construction Re-engineering project includes assessing the availability, reliability, and accuracy of alternative data sources that can be leveraged in lieu of direct response. This includes acquisition of third-party data sources, development of proof-of-concept estimate curation that leverages these sources, and analysis of the comparability with established indicator estimates. Additionally, the team is exploring the application of satellite imagery and machine learning models to not only detect new construction but also track these projects through their construction lifecycle. This information could be combined with other data sources to model the value of construction put in place. Through these modernization efforts, our goal is to reduce the program's reliance on traditional survey collection modes, reduce overall respondent burden, and at the same time, improve the quality and accuracy of the construction spending indicator.

4. Tests of Procedures of Methods

We completed an evaluation of the CPRS as required by the Statistical Policy Directive on Compilation, Release, and Evaluation of Principal Federal Economic Indicators; this evaluation was submitted to the OMB in March 2022.

All changes to methodology or processing systems are tested.

For example, prior to implementing the new certainty sampling strata in 2023, research was conducted to determine the impact on imputation and variance rates.

5. Contacts for Statistical Aspects and Data Collection

The Economic Indicators Division (EID) plans and coordinates the survey. This includes the design of the reporting forms, instructions for collecting and editing information, tabulation, and publication of the data. The Economic Statistical Methods Division (ESMD) is responsible for the survey methodology and sample selection.

The contact person for questions relating to the statistical aspects of the survey is Ms. Sarah Konya, Assistant Division Chief for Manufacturing, Investment, and Construction Programs, ESMD. She can be reached on (301) 763-9835.

The contact person for questions relating to the collection, analysis and processing of the data is Mr. Aidan Smith, Assistant Division Chief for Construction Indicator Programs, EID. He can be reached on (301) 763-2972.

Attachments:

- A. Form C-700: Construction Progress Reporting Survey for Private Construction Projects
- B. Form C-700(R): Construction Progress Reporting Survey for Multifamily Residential Projects
- C. Form C-700(SL): Construction Progress Reporting Survey for State and Local Governments
- D. Form C-700(F): Construction Progress Reporting Survey for Federal Government
- E. BEA Letter of Support for CPRS
- F. Respondent Letter for Newly Selected Private Construction Projects (C-700-L1A)
- G. Respondent Letter for Newly Selected Public Construction Projects (C-700-L1B)
- H. Pressure Sealed Letter for Continuing Projects (C-700-L2(PS))
- I. Picture of Centurion Login Screen for Confidentiality
- J. Picture of Centurion Burden Statement
- K. Picture of Website 'About the Survey'
- L. Legal Authority