

# Building Permits Survey

## 2022 Building Permits Survey Sample Methodology Change

### **1. What is the methodology for the monthly Building Permits Survey prior to January 2022?**

The methodology of the monthly Building Permits Survey prior to January 2022 is a representative sample survey. About half of the permit-issuing places in the United States are surveyed monthly. The remainder of places are surveyed annually. The design of the monthly sample that has been used since January 2015 is as follows:

The monthly estimates shown for the United States, Census Regions, Census Divisions, and states are derived from a sample of 8,400 permit-issuing places selected from a universe of 20,000 such places. Selection of the monthly sample was a multiple step process. All permit-issuing places in the 99 metropolitan areas having the greatest number of housing units authorized in 2012 were selected with certainty. All permit-issuing places in states with less than 50 permit-issuing places were selected with certainty. Permit-issuing places having special data reporting arrangements were selected with certainty. The remaining places were stratified by state. Within a state, places were ordered by a weighted average of the numbers of housing units authorized in 2010, 2011, and 2012. Places with a large weighted average, varying by state, were selected with certainty. Other places were selected at the rate of 1 in 10.

This methodology was designed to produce monthly estimates representative at the state level. The state data are also aggregated to create estimates for the Census Divisions, Census Regions, and the United States. As a result, any monthly estimates below the state level, such as metropolitan areas and counties, may be incomplete and missing jurisdictions not selected to the sample.

### **2. What is the methodology for the monthly Building Permits Survey beginning in January 2022?**

Beginning with the January 2022 data, the Building Permits Survey uses a cut-off sample design. The cut-off sample includes all jurisdictions in the current target universe, like the annual Building Permits Survey. Monthly collection will be attempted on jurisdictions that issue more than an average of 5 new unit authorizations between 2018-2020. Jurisdictions that issue fewer than 6 new authorizations on average, will be imputed monthly and included in local and aggregate estimates. This results in approximately 8,600 jurisdictions where monthly collection will be attempted and 11,400 jurisdictions where monthly collection would not be attempted. Any jurisdiction where monthly data is not received or where monthly collection is not attempted would continue to be asked to report annually.

Since all jurisdictions in the target universe will be published monthly, all monthly estimates will be complete. Specifically, the local, metropolitan, and county estimates will now provide complete monthly coverage.

### **3. How is the methodology for the monthly cut-off sample different than a Census of all places?**

Monthly estimates will be produced on the complete universe, much like the annual Building Permits Survey, which operates more like a true Census of all places. Since collection is not being attempted on all places on a monthly basis, the new methodology is referred to as a cut-off sample.

#### **4. What is the benefit of the new sample design?**

A cut-off sample with all places included and representing themselves gives us complete coverage of the target universe down to the place level. This includes metropolitan and county estimates. The current methodology only allows monthly estimates that are representative down to the state level.

In addition to the local coverage increases, we anticipate the new methodology will help reduce revisions between the monthly and annual survey estimates. The current methodology includes sampling error as places selected to the sample may not accurately reflect those they are selected to represent. As the sample ages, the more likely this is to occur. However, non-response error will still be a source of revision between the monthly and annual surveys under the new methodology.

#### **5. What determined the cut-off level of an average of 6 or more new unit authorizations per year for monthly collection?**

Several considerations went into determining the appropriate cut-off level to be included in monthly collection. The most important consideration was the quality of the monthly estimates. Monthly burden on respondents and collection costs/resources were also taken into consideration.

During the research phase of this project, several cut-off levels were considered. Collecting all 20,000 places monthly was determined to not be feasible due to both the cost and burden it would place on small jurisdictions. The Building Permits Survey publishes counts of total new authorizations for new residential construction. Therefore, jurisdictions that report few or no new authorizations contribute very little to the total authorization estimates. After evaluating the cut-off of an average of 6 or more units per year, it was determined that approximately 8,600 places fit this criteria and they accounted for over 99% of the total units authorized in 2020. This criteria also kept collection burden and costs in line with the current monthly sample and would require minimal additional resources.

In comparison, setting the cut-off for monthly collection at any jurisdiction greater than 0 would result in the monthly sample nearly doubling in size and cost, while the expected total unit coverage would increase from 99% of total units to nearly 100%. Setting the cut-off at any jurisdiction greater than 12 authorizations a year resulted in a monthly sample of about 6,400, reducing collection burden and costs, but also decreasing the monthly potential unit coverage from 99% to approximately 97.7%.

The cut-off of 6 or more units on average per year gave us the best balance of collection costs, respondent burden, and data quality.

#### **6. What type of error estimates are associated with the new monthly methodology?**

Since the monthly estimates are no longer based on a representative sample, variance estimates will no longer apply and will no longer be provided with the monthly estimates. Non-response error will apply. Based on simulation studies, we expect the average error due to imputation to decrease slightly nationally and for three of the four Census Regions compared to the prior design.

**7. What is the imputation methodology for places where collection is not attempted or the jurisdiction does not report on a monthly basis?**

The monthly imputation methodology for the Building Permit Survey is not changing. If we do not have monthly data for a jurisdiction, data for that jurisdiction are imputed based on the assumption that the ratio of authorizations for the current time period to the prior year total is the same for reporting and nonreporting jurisdictions in that Census Region.

**8. What is the anticipated result of imputing an additional 11,400 places not requested to report monthly?**

By using a cut-off sample, the additional places not asked to report will be imputed each month. The result will be having complete local data available, but many small places will be imputed within that data. There will be approximately 11,400 places out of 20,000 not asked to report monthly. Those 11,400 places combined only make up about 1% of total new authorizations on an annual basis. As a result, the amount of places imputed will increase, but the amount of units imputed for those places will be relatively small.

Out of the 11,400 places where collection will not be attempted, based on their annual average for the last three years, we anticipate about 4,400 to have no new authorizations on an annual basis. Since the imputation methodology uses a ratio based on their previous annual total, this will result in those places being imputed at zero each month. The remaining 7,000 jurisdictions average between 1-5 new units authorized on an annual basis, which results in an expected monthly value of less than 1 unit per month. As a result, the imputation methodology will result in an expected value of 0 or 1 unit per month for these jurisdictions.

**9. Is the target universe changing with this methodology change?**

No, the universe is currently fixed to the 2014 universe and will remain so through this sample methodology change. This is to ensure the estimates before and after the change are consistent and comparable. The Survey of Construction is also ratio adjusted to the building permit estimates and a change to the target universe would also potentially impact estimates such as “starts” and “completions” from the Survey of Construction. The universe is scheduled to be updated in 2024 and we anticipate announcing any change associated with that in advance of that date.

**10. How is the Annual Building Permit Survey impacted by this change?**

Operationally, very little will change with the Annual Building Permit Survey. The annual survey operates by collecting jurisdictions that were asked to report monthly and did not provide a complete year, or jurisdictions that were not asked to report monthly. This will remain the

same, with the change being what jurisdictions are asked to report only annually. The jurisdictions reporting annually only will now consist of predominately jurisdictions expected to report fewer than 6 units annually. The collection, tabulation, and publication process for the annual survey will not change.

## **11. What files will be impacted by the change?**

Total authorization estimates by region and total U.S. that are released with the New Residential Construction release will continue to be released and remain comparable to the historical data. The main difference is that the estimates will no longer contain sampling error. As a result, all information related to sampling error will be removed from tables 1a and 1b. This includes the “Residual Standard Error (RSE)” and “90% Confidence Interval” information and their associated footnotes, as it no longer applies. We anticipate releasing a draft of the changes to tables 1a and 1b in the coming months.

Monthly estimates released at <https://www.census.gov/construction/bps/> will be impacted as follows:

- No changes to any table or product derived to the Annual Building Permits Survey.
- No changes to the “Permits by United States and Regions” monthly tables.
- No changes to the “Permits by State” table.
- The “Permits by Metropolitan Area – Monthly” table will change as follows:
  - All metropolitan areas will now be published in this table monthly to match the annual table.
  - The “Monthly Coverage Percent” column will be removed to match the annual table, since the coverage for all metropolitan areas is 100% under the new methodology.
- The monthly “Relative Standard Errors” table will be discontinued as there is no associated sampling error with the new methodology.
- Monthly ASCII files by place, county, and MSA will expand to provide full universe coverage in each file. Monthly ASCII files for state will not change, since coverage by state is already complete.