

B. Collection of Information Employing Statistical Methods

1a. Universe:

The universe for the JOLTS survey consists of about 8.4 million establishments from the Bureau of Labor Statistics' Quarterly Census of Employment and Wages. This universe covers private non-farm establishments as well as Federal, State, and local government entities in the 50 States and the District of Columbia with 1 or more employees that are covered by State or federal Unemployment Insurance laws. Railroads will be sampled from an auxiliary frame.

b. Sample Size:

This survey is designed to produce reliable estimates of the measured characteristics for 21 NAICS Expanded Super sectors. About 16,400 establishments are necessary as sample size to achieve this objective. It was observed that 10 percent of the selected sample is lost due to units being out-of-business, out-of-scope, or no mailing address at the time of solicitation. The response rate for the remaining sample is expected to be 75 percent. Thus, the expectation is that approximately 12,030 units will provide data.

2a. Sample Design:

The sample design is based on a probability sample of establishments. Important features of the sample design are the use of stratified random sampling, a Neyman allocation, and ratio estimators. The characteristics used to stratify the sample are industry division, geographic area, and establishment employment size class. Because these characteristics are highly correlated with an establishment's number of job vacancies, stratified sampling provides greater precision and results in a smaller sample size than simple random sampling. Given a fixed sample size, the Neyman allocation provides the maximum precision of an estimate. Some establishments will be included in the sample with certainty. The survey will utilize a ratio estimator to improve the precision of the sample estimates. This estimator improves the precision of the sample estimates by utilizing the correlation between the employment data and the characteristics to be measured.

For the national sample, the frame consisting of 50 States and the District of Columbia will be stratified by:

Industry : 21 NAICS Expanded Super sectors

Geographic Area : Four Census regions

Establishment size : 1 to 9; 10 to 49; 50 to 249; 250 to 999; 1,000 to 4,999; and 5,000 employees or more.

Within each industry, area, and size class, the units will be selected with equal probability. The selection process identifies establishments based on a permanently assigned random number (PRN). The units will be selected sequentially within a cell using this permanent random number methodology. This methodology is used to limit the overlap of sample units across different BLS surveys, and to achieve the desired overlap from one JOLTS survey year to the next.

The sample units will be divided into one certainty panel, and 24 equal non-certainty panels. One non-certainty panel of approximate size 630 establishments will be rotated into the current survey each month for 24 months to maintain the full sample size of 16,400 establishments. The new certainty units will be enrolled in the survey, if they appear in new sample. The non-certainty sample units will remain in the sample for 24 months before rotating out. The certainty units will of course always remain in the sample.

The survey will solicit data each month from 16,400 establishments. The data collected from each establishment will be total employment; job openings; hires; quits; layoffs and discharges; and other separations. The data collection methods used will include primarily telephone interviews. Phone collection is used to obtain higher response rates from selected respondents through computer-assisted interviews and touch-tone self-response.

b. Estimation Procedure:

A Horvitz-Thompson estimator with a ratio adjustment will be used to produce estimates of surveyed characteristics at several levels of geographic and industrial detail. These estimates will include the following:

- The change in the estimate from the previous month
- Rates
- Totals

Standard errors will be calculated for all the estimates. The generalized formula for all survey characteristics (job openings, hires, etc.) for time period t is as follows:

$$\hat{X}_t = \sum_{i \in cell} (W_{t,i} * NRAF_{t,cell} * BMF_{t,cell}) * X_{t,i}$$

Where:

\hat{X}_t is estimate of a characteristic at time t.

$W_{t,i}$ is sample weight at time t for ith unit.

$NRAF_{t,cell}$ is the cell non-response adjustment factor defined by $(\sum_{t,cell} \frac{W_{t,eligibles}}{W_{t,respondents}})$

at time t.

Where respondents are the units reporting employment at time t and eligibles are all sampled units excluding out-of-business units at time t.

$BMF_{t,cell}$ is the (Current Employment Statistics) Benchmark factor at time t. It is computed for each estimation cell as:

$$\text{Benchmark factor} = \left(\frac{CES_Emp_t}{JOLTS_Emp_t} \right)$$

Where CES_Emp_t is the employment level at time t obtained from the monthly Current Employment Statistics (CES) Survey, also known as monthly Payroll Survey. The CES employment serves as population control for each estimation cell and $JOLTS_Emp_t$ is the sample weighted employment at time t.

The formula for the Job Opening rate is as follows:

$$JO_Rate_t = \frac{\hat{JO}_t}{CES_Emp_t + \hat{JO}_t}$$

Where: \hat{JO}_t is the estimated level of job openings at time t.

The generalized formula for all other rates is as follows:

$$Rate_t = \frac{\hat{X}_t}{CES_Emp_t}$$

c. Accuracy:

This survey is designed to produce reliable estimates of the characteristics of interest. For the period January 2004 through December 2004, the average coefficient of variation for national estimates of job openings and total separations rate was 2 percent, hires and quits rate was 3 percent, layoffs and discharges rate was 5 percent, and for other separations rate was 7 percent.

Before estimates of these characteristics are released to the public, they are first screened to ensure that they do not violate the Bureau of Labor Statistics' (BLS) confidentiality pledge. A promise is made by the Bureau to each respondent that BLS will not release its reported data to the public in a manner which would allow others to

identify the establishment, firm, or enterprise. Estimates which fail confidentiality screening are not published.

d. Problems:

There are no unusual problems requiring specialized sampling procedures.

e. Frequency:

This is a monthly survey.

3a. Response:

To maximize the response rate for this survey, interviewers will initially refine addresses ensuring appropriate contact with employer. Then, employers will be mailed a folder containing a JOLTS brochure and data collection form, along with a cover letter explaining the importance of the survey and the need for voluntary cooperation, and pledging confidentiality. An interviewer will call the establishment after the package is sent and attempt to enroll them into the survey. Nonrespondents and establishments that are reluctant to participate will be recontacted by an interviewer specially trained in refusal aversion and conversion.

b. Nonresponse Adjustment:

A weighting class adjustment or imputation procedure is used to adjust sample estimates for nonresponse.

c. Reliability:

The Bureau uses probability sampling methodology in the design and implementation of the survey to control the sampling errors of the survey's estimates, and, from the survey data, calculates the estimates of the sampling errors.

The survey used the quality control procedures to control the non sampling errors in the survey's design. These procedures include telephone follow-up on all nonrespondents, and validation of all edit failures.

In addition, BLS is considering the feasibility of a response analysis survey (RAS) to verify and assess the quality of the respondent understanding and interpretation of the data items in the questionnaire using the RAS data collection instrument.

4. Tests:

The survey's questionnaire was developed and tested in the Bureau using cognitive design techniques. The questionnaire has also been field tested on a small group of establishments to refine the cognitive design.

5. Statistical Responsibility:

Shail Butani, Chief, Statistical Methods Division, Office of Employment and Unemployment Statistics, is responsible for the statistical aspects of the survey. Her telephone number is (202) 691-6347.