

JOLTS Overview

Introduction

The Job Openings and Labor Turnover Survey (JOLTS) tells us how many job openings there are each month, how many workers were hired, how many quit their job, how many were laid off, and how many experienced other separations (which includes worker deaths).

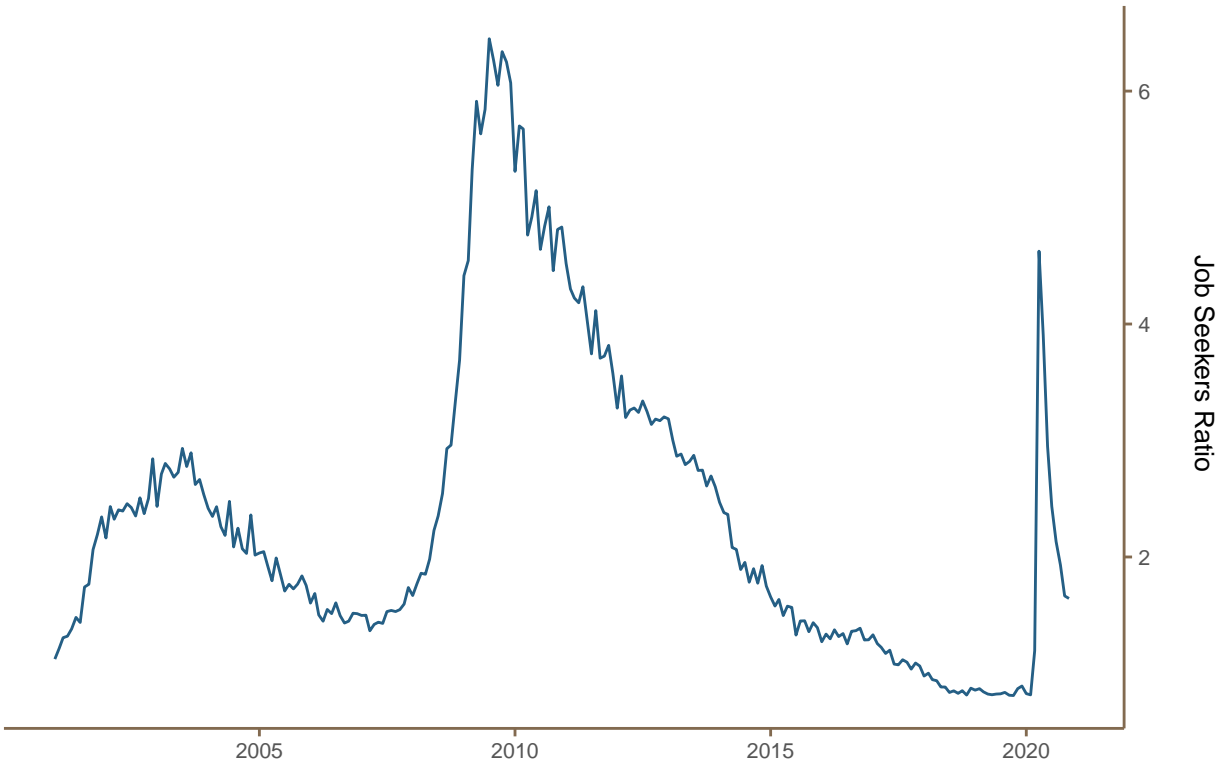
The JOLTS survey design is a stratified random sample of 20,700 nonfarm business and government establishments. The sample is stratified by ownership, region, industry sector, and establishment size class. The establishments are drawn from a universe of over 9.4 million establishments compiled by the Quarterly Census of Employment and Wages (QCEW) program which includes all employers subject to state unemployment insurance laws and federal agencies subject to the Unemployment Compensation for Federal Employees program.

Employment estimates are benchmarked, or ratio adjusted, monthly to the strike-adjusted employment estimates of the Current Employment Statistics (CES) survey. A ratio of CES to JOLTS employment is used to adjust the levels for all other JOLTS data elements.

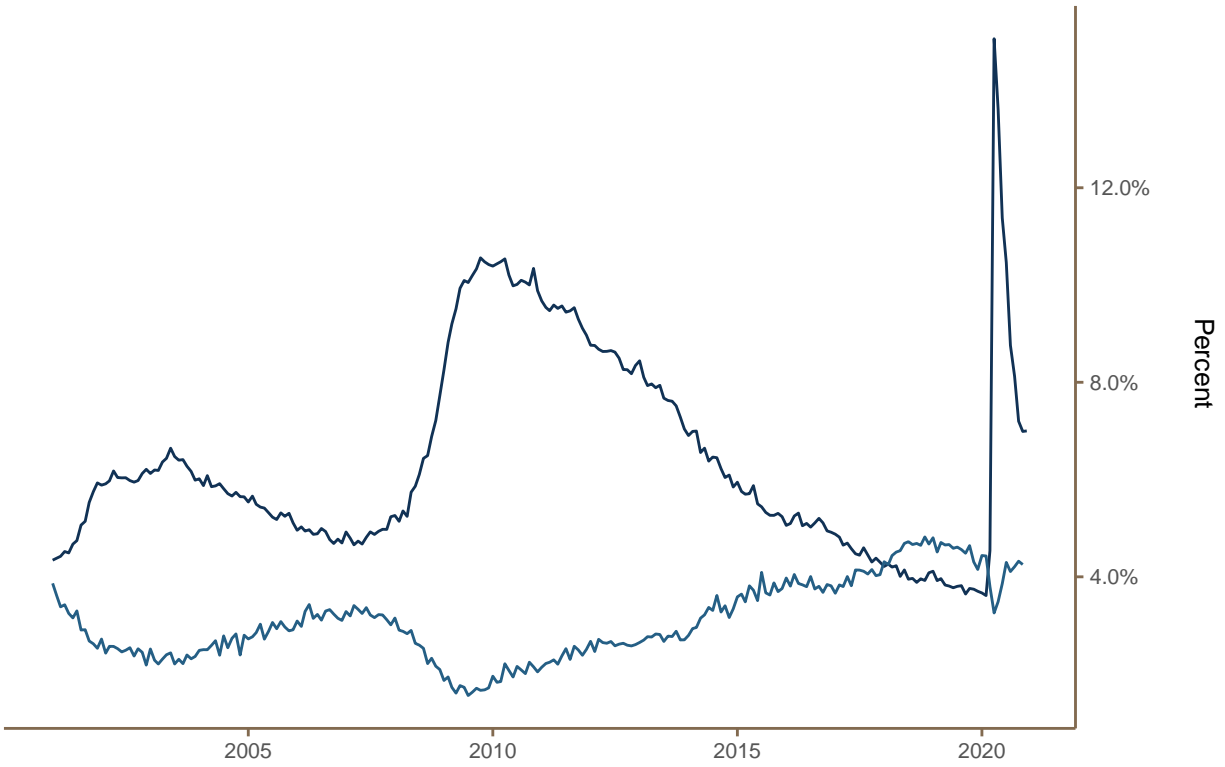
JOLTS data provide information on all pieces that go into the net change in the number of jobs. These components include hires, layoffs, voluntary quits, and other job separations (which includes retirements and worker deaths). Putting those components together reveals the overall (or net) change. JOLTS data provide information about the end of one month to the end of the next, whereas the monthly employment numbers provide information from the middle of one month to the middle of the next.

JOLTS estimates are subject to both sampling and nonsampling error. Nonsampling error occurs when a sample is surveyed rather than the entire population. There is a chance that the sample estimates may differ from the true population values they represent. The difference, or sampling error, varies depending on the particular sample selected. This variability is measured by the standard error of the estimate. BLS analysis is generally conducted at the 90-percent level of confidence. That means that there is a 90-percent chance, or level of confidence, that an estimate based on a sample will differ by no more than 1.6 standard errors from the true population value because of sampling error. Sampling error estimates are available at www.bls.gov/jlt/jolts_median_standard_errors.htm.

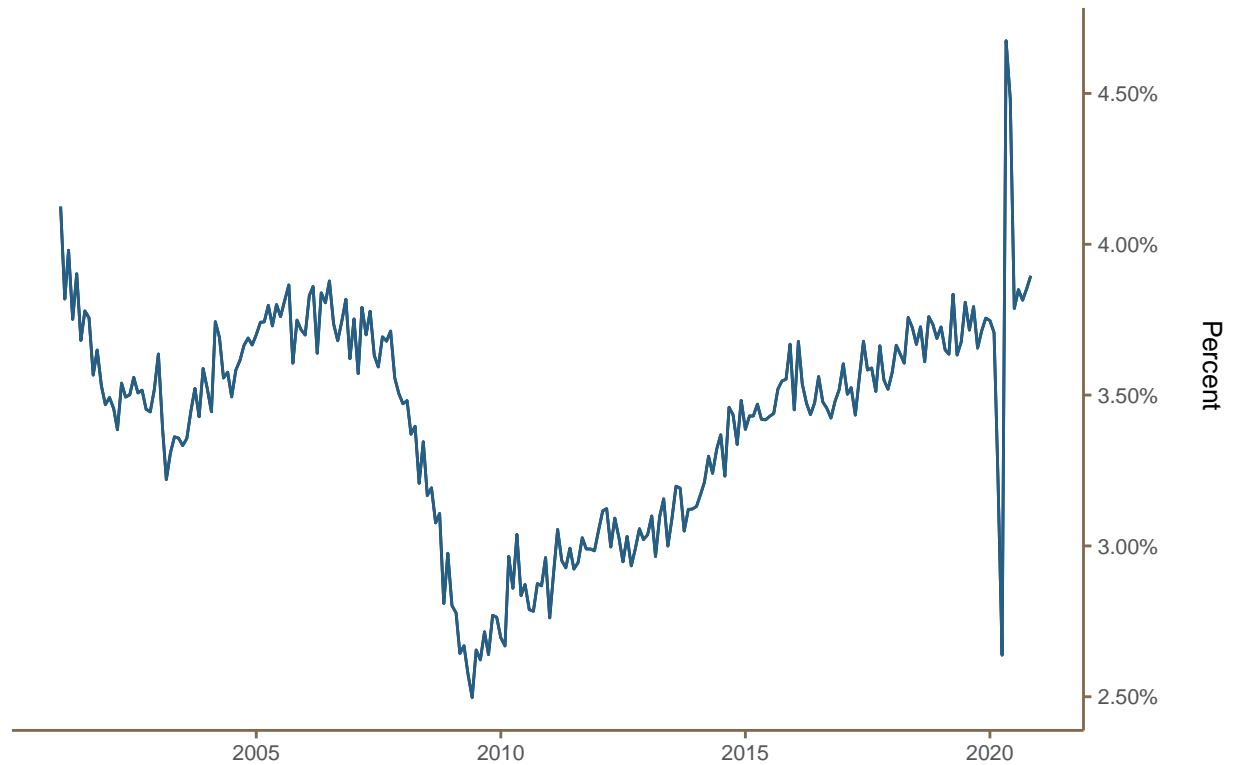
The JOLTS estimates also are affected by nonsampling error. Nonsampling error can occur for many reasons including: the failure to include a segment of the population; the inability to obtain data from all units in the sample; the inability or unwillingness of respondents to provide data on a timely basis; mistakes made by respondents; errors made in the collection or processing of the data; and errors from the employment benchmark data used in estimation.



Source: Bureau of Labor Statistics: Job Openings and Labor Turnover Survey



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Methods

An autoregressive integrated moving average (ARIMA) model is a generalization of an autoregressive moving average (ARMA) model. Both of these models are fitted to time series data either to better understand the data or to predict future points in the series (forecasting). ARIMA models are applied in some cases where data show evidence of non-stationarity in the sense of mean, where an initial differencing step (corresponding to the “integrated” part of the model) can be applied one or more times to eliminate the non-stationarity of the mean function (that is, the trend).

When there is seasonality shows in the time series, seasonal-differencing could be applied to eliminate the seasonal component. As the ARMA model, according to the Wold’s decomposition theorem, is theoretically sufficient to describe a wide-sense stationary time series, we are motivated to make stationary a non-stationary time series, for example, by using differencing, before we can use the ARMA model.

The AR part of ARIMA indicates that the evolving variable of interest is regressed on its own lagged (i.e., prior) values. The MA part indicates that the regression error is actually a linear combination of error terms whose values occurred contemporaneously and at various times in the past. The I (for “integrated”) indicates that the data values have been replaced with the difference between their values and the previous values (and this differencing process may have been performed more than once). The purpose of each of these features is to make the model fit the data as well as possible.