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The Conference Board Help Wanted OnLine® Data Series
Technical Notes

Background
The Conference Board Help Wanted Online Data Series® (HWOL) was first published in July 2005 as a developmental series. A major publication expansion of the program was initiated in October 2006. Annual revisions to the series are normally published with the January data.

The HWOL program provides data on online advertised job demand. HWOL fills a critical gap in the current U.S. economic indicators by providing timely monthly measures of labor demand (advertised vacancies) at the national, regional, State, and metropolitan area levels. These monthly measures are comparable in timing and geographic detail to the Bureau of Labor Statistics (BLS) monthly measures of labor supply (unemployment) and employment.

The Conference Board HWOL program is one of the earliest published monthly indicators of economic activity in the previous month with data publication centered around the first of each month. The program provides measures of levels and rates for both Total Online Ads and New Online Ads. The online vacancy program is one of the few indicators to provide extensive occupational detail with national estimates published at the major occupational group level and State and MSA estimates at higher-level aggregates. To provide users with a broader analytical view of labor supply and labor demand, the press release includes the most recently available data from the Bureau of Labor Statistics on labor supply (unemployment) along with average wage levels for the occupational detail.

In addition to the HWOL press-release time series, the HWOL program also produces detailed time series for the US, Regions, States, MSAs, counties, and cities by 6-digit SOC and 8-digit O*Net occupational level. Historical time series for the extensive HWOL detail of occupations by local geographies are available for purchase by contacting the HWOL team listed above.

HWOL Concepts and Definitions
Survey Coverage. The HWOL program is targeted to cover the full universe of all online advertised vacancies which are posted directly on Internet job boards. The HWOL program uses data collected from over 16,000 online job-board sources including corporate job boards. Each year new job-board sources are added as they emerge while some existing sources may be dropped if it is determined that they primarily spider their ads from other job boards.

Survey Reference Period. The HWOL program uses a mid-month survey reference period. For example, data for October would be the sum of all posted ads from September 14th through

October 13th. This reference period is aligned to the BLS unemployment "job search" time period to provide a more accurate comparison of labor supply and labor demand in the U.S. economy.

New ads. New ads are all unduplicated ads which did not appear in the previous reference period. An ad is counted as "new" only in the month it first appears.

Total ads. Total ads are unduplicated ads appearing in the reference period. This figure includes both new ads and ads reposted from the previous month.

Ad Rates. Ad rates are the number of advertised vacancies as a percent of the BLS civilian labor force data for a geographic area. Ad rates represent the number of ads per 100 participants in the civilian labor force. The HWOL ads rate definition parallels the construction of the widely understood unemployment rate, i.e. unemployed persons divided by the civilian labor force.

Supply/Demand Rate. The supply/demand (S/D) rate is the number of unemployed divided by the number of advertised vacancies (i.e. the number of unemployed per advertised vacancy). The S/D rate provides an indication of the tightness of the labor market and whether overall supply/demand is out of balance. Additionally, because of the economic trend relationship between unemployment and vacancies, this rate should also provide a sensitive indicator of trend changes in an area or occupation.

Regional data. Regions are as defined by the U.S. Census Bureau.

Metropolitan area data. The Conference Board uses the 2015 Office of Management and Budget (OMB) county-based MSA definitions for the HWOL data; however, the BLS unemployment program uses the OMB alternative NECTA (New England Cities and Town Area) MSA definition.

Occupational data. Occupational data use the 2010 OMB Standard Occupational Classification (SOC) system. All ads are coded to the 6-digit SOC level and 8-digit O*Net level. National data in the monthly release are at the 2-digit major occupational group level; State and MSA data are at the1-digit occupational level.

Unemployment data. The unemployment and labor force data used in this release come from the BLS Current Population Survey (CPS) and the Local Area Unemployment Statistics (LAUS) program. Taken together, both programs provide a timely and accurate profile of labor force information for the nation and all major levels of geographic detail.

Wage data. The average hourly wage data used in this release are the latest available from the BLS Occupational Employment Statistics (OES) program. The OES wage data provide an accurate, comprehensive point-in-time snapshot of wage levels across all 800 SOC occupations at the national, State, and MSA levels.

BLS Job Openings Data. The BLS publishes monthly job openings data from its Job Openings and Labor Turnover Survey (JOLTS) http://www.bls.gov/jlt/home.htm. This program provides a broad national picture of hiring activity, which includes openings, hires and separations. The Conference Board HWOL data series is a complementary dataset that measures "online ads" and

provides measures of labor demand for US, Regions, States, MSAs, counties, and cities at the 6-digit SOC/8-digit O*Net level.

Methodology

Data Collection. The HWOL program uses data collected from over 16,000 online job sources including traditional job boards, corporate boards, and social media sites. Internet job sources that are aggregators (i.e. only scrape ads from other sources and provide no unique ads) are identified and removed from active collection in order to eliminate a major source of duplication in counting online ads. New job sources are identified using independent research and recommendations from industry sources across the U.S. This process results in periodic updates to the HWOL coverage. Job sources that cover smaller niche markets are also included in HWOL; however, smaller local job sources in an area with a limited number of ads may not be targeted for collection.

Duplication. Data in the HWOL time series reflect unduplicated ads. A major issue in producing estimates of the actual level of advertised vacancies for a geographic area is the elimination of duplicate ads. There is a significant amount of ad-scraping across job sources, and there are large nationwide job boards that contain only scraped ads. As noted above, the HWOL program first identifies job sources that are only aggregators of ads from job sources and eliminates these from active collection. Ads are then unduplicated across all in-scope HWOL job sources, and duplicates are eliminated from the HWOL published estimates. This process significantly limits the level of potential duplicates in the final estimates. The unduplication process reduces the count of overall ads collected from over 13 million ads to over 4.5 million ads after unduplication and therefore indicates that duplicates represented about 2 out of 3 of the ads prior to unduplication. The resultant unduplicated ad levels for the HWOL program compare favorably to those produced by the BLS Job Openings Labor Turnover (JOLTS) program after allowing for coverage and definitional differences.

Occupational coding. The HWOL program uses the Federal Government's Standard Occupational Classification (SOC) Manual to assign an occupational code to each ad. Occupational coding is done at the 6-digit Standard Occupational Classification (SOC) level and the 8-digit O*Net level using autocoder software selected by The Conference Board for its accuracy. The Conference Board periodically updates the O*Net classification of HWOL data and reclassifies the entire HWOL database of ads with each new Federal Government revision to the SOC manual.

Area coding. The area coding for an ad is determined first by the location cited in the text of the ad itself; approximately 93% of all ads are coded to a county/city level. Of the remaining ads, approximately 5% are coded as "Statewide" with 2% coded as "nationwide" ads; nationwide ads would appear in the national total but not in any regional, state, or metropolitan area totals.

Estimation. All HWOL level counts are produced as a direct sum of the unduplicated city counts (i.e. a county total is a sum of the cities contained within the county). There are two exceptions: the State counts, which also include "Statewide ads" (i.e. ads which are only posted at the State level — approximately 2% of total ads), and the US counts, which include both Statewide ads along with "Nationwide ads" (i.e. ads which are only posted at the US level—approximately 5% of total ads).

Seasonal Adjustment. The HWOL program uses the Census Bureau's X-12 seasonal adjustment software to annually update the seasonal adjustment factors for each of the publication time series. The new seasonally adjusted series are released with the publication of each year's January data.

Reliability of Estimates
The HWOL program includes most online job ads and aims to capture a universe count and is not subject to the typical sampling error and non-response error components associated with most statistical surveys. The non-sampling error sources for the HWOL program would include population under-coverage due to missing a portion of the targeted population (e.g. a large Internet job source) and over-coverage due to the inability to fully eliminate duplicate ads from survey estimates. Additional potential sources of non-sampling error would include occupational and/or geographic coding errors which could affect the proper classification of individual ads.

HWOL 2017 Annual Revision
With the February 2017 press release, the HWOL program has incorporated its annual revision, which helps ensure the accuracy and consistency of the HWOL time series. This year's annual revision includes updates to the job board coverage, a revision of the historical data from May 2005 forward, a complete historical update of the Metropolitan Statistical area definitions, and the annual update of the seasonal adjustment factors.