

## REPRESENTATIVENESS ANALYSIS OF THE BURNING GLASS JOB POSTING DATA – U.S.

### ABOUT OUR DATA

Burning Glass collects postings from over 45,000 online job sites to develop a comprehensive, real-time portrait of labor market demand. Our software extracts top line information about each job such as title, employer and industry, and then “reads” each job description to identify actual job titles, skills, and qualifications that employers are seeking. We then eliminate duplicate postings and place each job in a database for further analysis. Our detailed data offer the unique ability to identify and track important labor market trends as they happen, and before they are visible in other data series.

### INTRODUCTION

This brief will compare Burning Glass job posting data from the US to official government and other third-party sources that collect data on job openings. The aim is to benchmark the Burning Glass dataset against these sources to assess the representativeness of our data. The primary source of government data on job openings in the US is the Job Openings and Labor Turnover Survey (JOLTS) program conducted by the Bureau of Labor Statistics.<sup>1</sup>

### LABOR MARKET DEMAND

To understand the share of job openings captured by Burning Glass data, it is important to first note that Burning Glass and JOLTS collect data on job postings differently. Burning Glass data captures **new postings**: a posting appears in the data only on the first month it is found, and is considered a duplicate and removed in subsequent months. JOLTS data captures **active postings**: a posting appears in the data in all months that it is still actively posted, meaning the same posting can be counted in two or more consecutive months if it has not been filled. This means that to allow for apples-to-apples volume comparison in postings, the Burning Glass data needs to be inflated to account for active postings, not only new postings. The number of postings from Burning Glass can be inflated using the new jobs to active jobs ratio in Help Wanted OnLine™ (HWOL), a method used in Carnevale, Jayasundera and Repnikov (2014)<sup>2</sup>. Based on this calculation, the share of jobs online as captured by Burning Glass is roughly 85% of the jobs captured in JOLTS in 2016.

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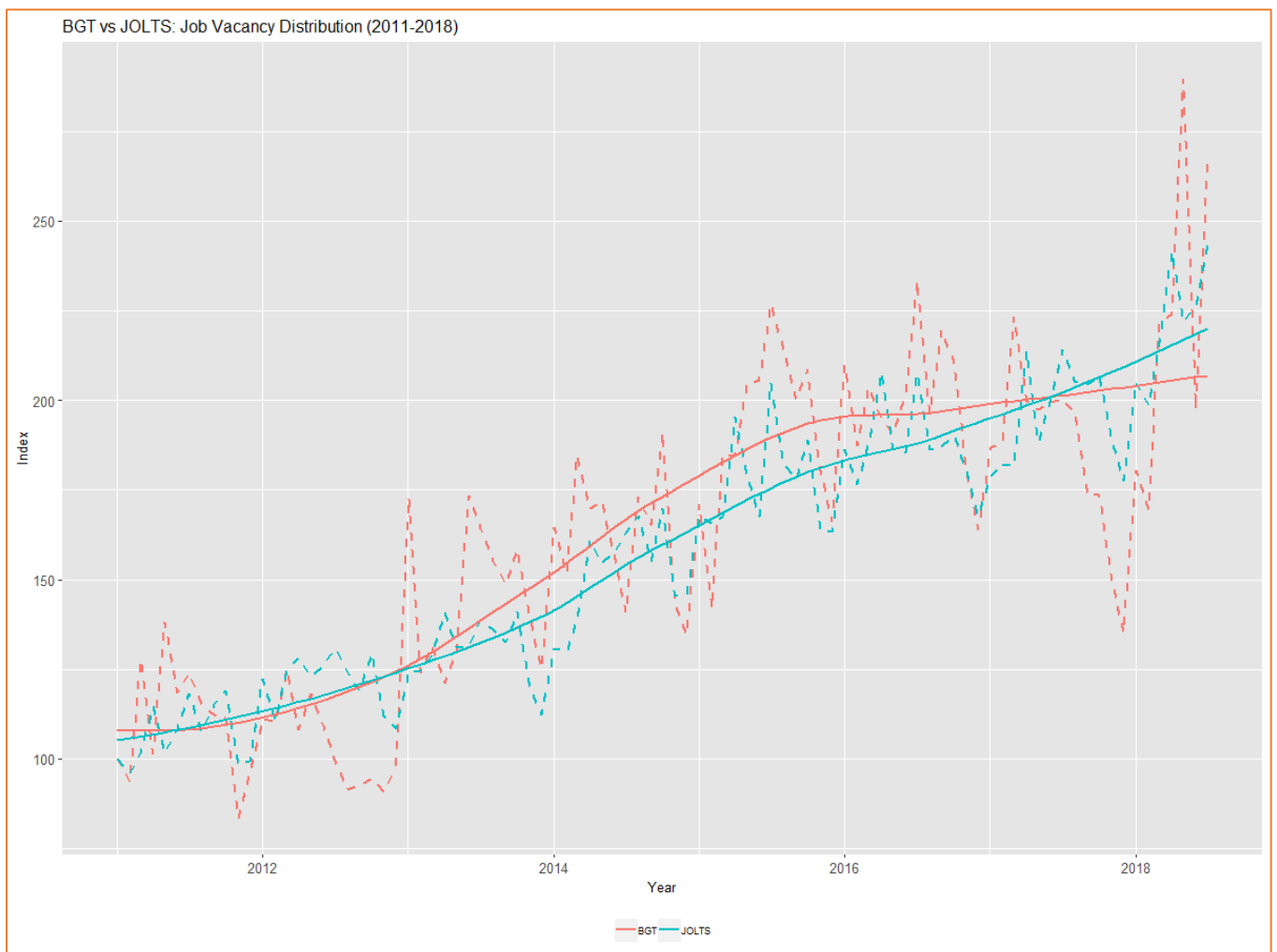
<sup>1</sup> For more information see: <https://www.bls.gov/jlt/>

<sup>2</sup> Carnevale Anthony, Tamara Jayasundera, and Dmitri Repnikov. “Understanding Online Job Ads Data” Georgetown University Center on Education and the Workforce (2014).

This implies that the labor market demand captured by Burning Glass data, represents **85% of the total labor demand**. The jobs that are not posted online are usually in small businesses (the classic example being the “help wanted” sign in the restaurant window) and union hiring halls.

### TIME SERIES ANALYSIS

The below graph<sup>3</sup> compares an indexed count of job openings from Burning Glass (red) to JOLTS (blue) over the past 7 years:



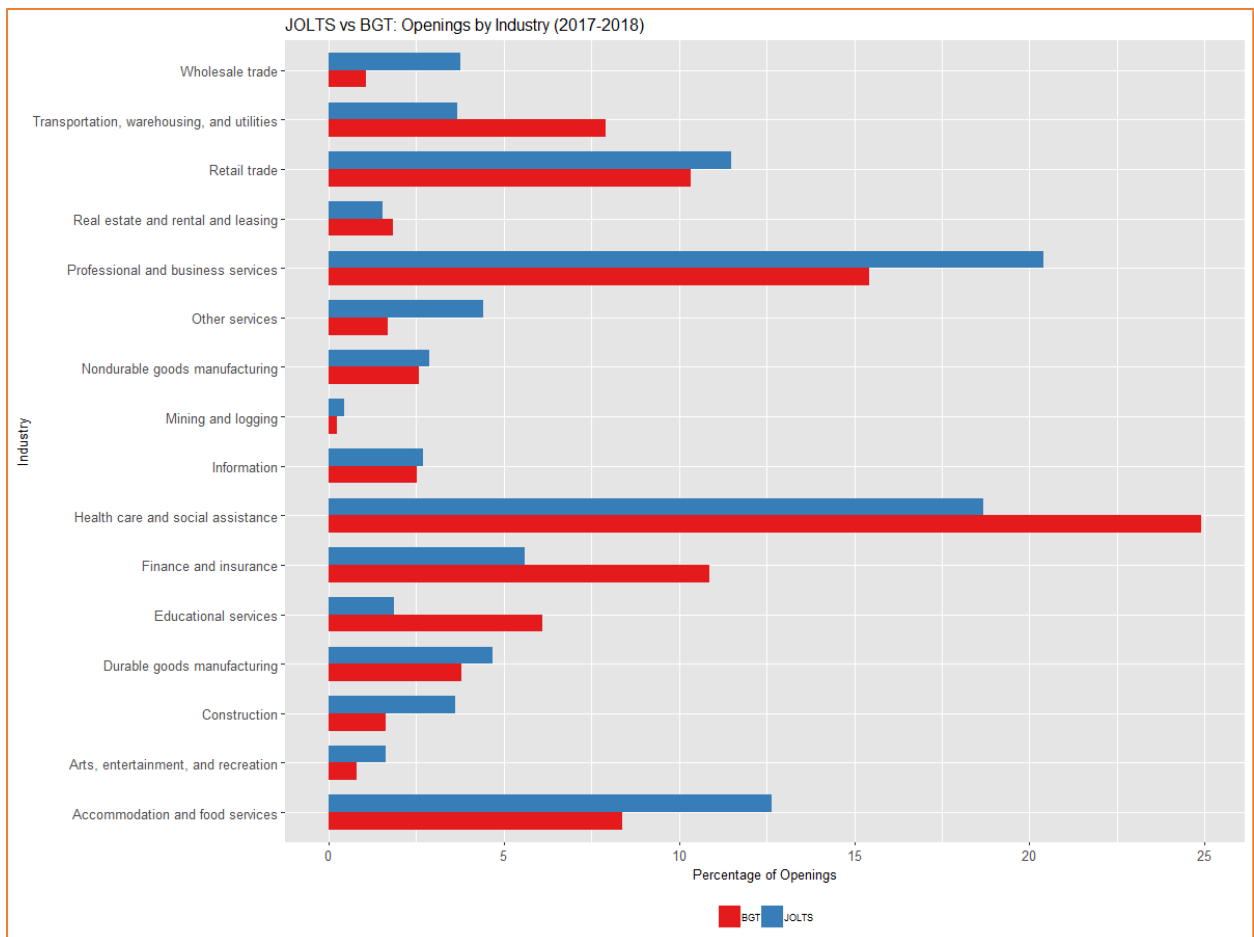
<sup>3</sup> For a similar analysis see also: Burke A. Mary, Alicia S. Modestino, Shahriar Sadighi, Sederberg Rachel, and Bledi Taska. "No Longer Qualified? Changes in the Supply and Demand for Skills within Occupations." Working Paper, Federal Reserve Bank of Boston (2018)

Not only do the two trend lines have a high correlation (87%) but the series themselves are also highly correlated (85%).

## INDUSTRY ANALYSIS

The standard industry classification used in US government data is the North American Industry Classification System (NAICS).<sup>4</sup> This system includes different levels of classification. Burning Glass maps postings to a large range of NAICS codes. For comparison purposes, only those super-sectors and select sectors within the scope of the JOLTS program<sup>5</sup> are shown below.

This chart compares the BGT (red) and JOLTS (blue) percentage distributions by Industry for the period June 2017 – June 2018:<sup>6</sup>



<sup>4</sup> For more information, see <https://www.naics.com/>.

<sup>5</sup> U.S. Bureau of Labor Statistics, 2016

<sup>6</sup> For a similar analysis see also: Hershbein, Brad, and Lisa B. Kahn. "Do recessions accelerate routine-biased technological change? Evidence from vacancy postings." *American Economic Review* 108, no. 7 (2018): 1737-72

Most industries show a close match within 3 percentage points, and all industries are represented. Certain areas such as Healthcare show robust representation in comparison to JOLTS, as jobs in these industries are consistently advertised online, usually on direct employer websites rather than on job boards or other job aggregators.

BGT data contains comparatively less representation in areas such as Construction where word of mouth, offline postings, or perpetually open positions play a large role in recruitment.

## OCCUPATION ANALYSIS

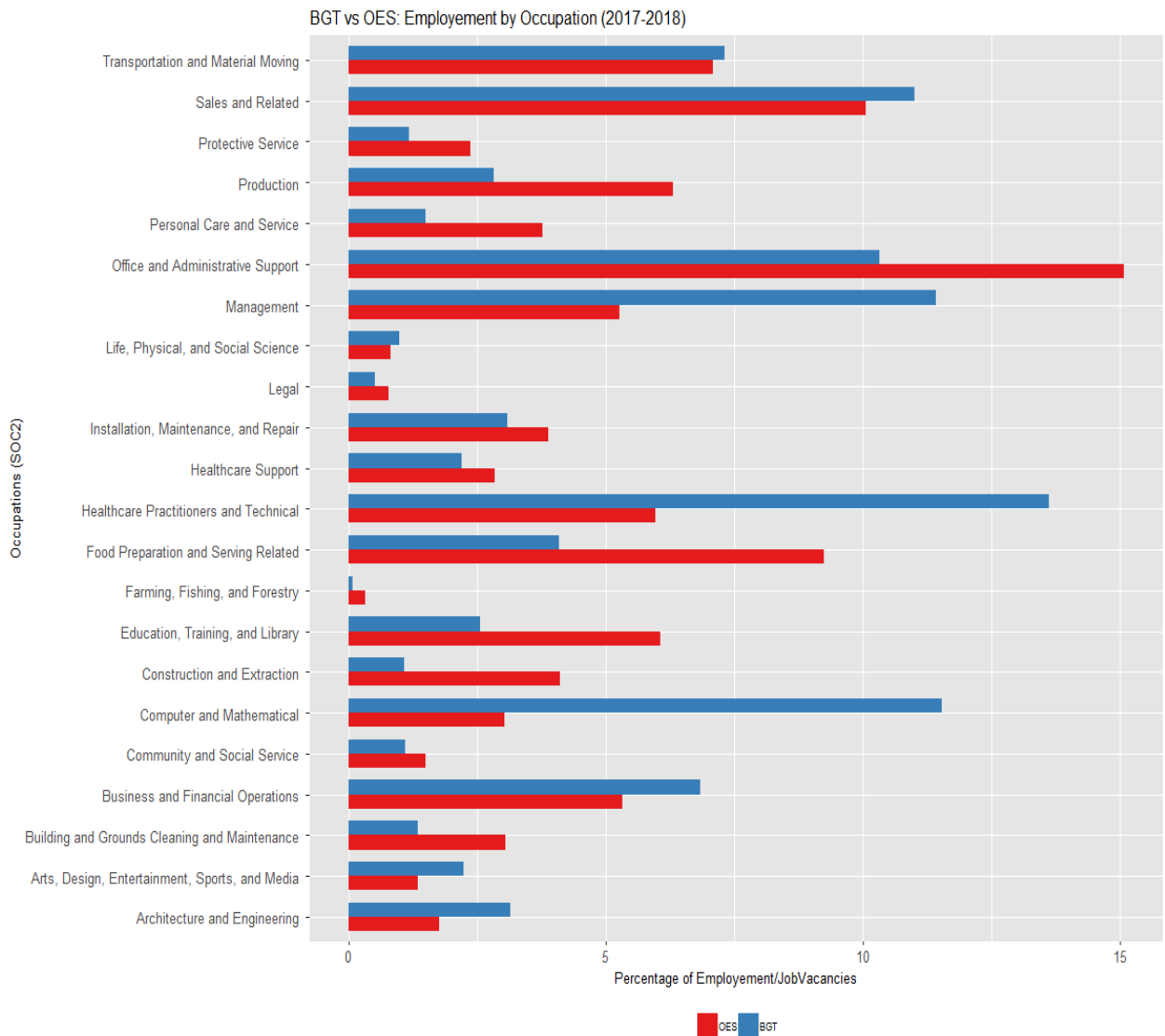
In the United States, the Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers and jobs into occupational categories for collecting, calculating, analyzing, or disseminating data. The chart below compares the occupations of all employment across US to the occupations of postings in the Burning Glass Data classified according to the SOC2 classification standard for the period June 2017 – June 2018.<sup>7</sup>

The correlation between the Burning Glass distributions and the OES distributions for occupations is approximately 62%. The primary distributional differences are described below:

- The data show an over-representation in three categories: Management Occupations, Computer and Mathematical Occupations and Healthcare Practitioners and Technical Occupations. Professional roles such as these are over-represented in Burning Glass data when compared to JOLTS data because they are posted online at higher rates than other types of occupations.
- A slight under-representation can also be observed in some categories such as Food Preparation and Serving Related, Office and Administrative Support, Construction and Extraction, Production and Personal Care and Service. These types of occupations are less frequently posted online and are often recruited through offline channels such as physical help-wanted ads or through word-of-mouth. Similarly, the under-representation in Education, Training and Library Occupations is likely to arise due to frequent promotion-from-within, which reduces the number of times a job is posted in the occupation in general, or offline recruiting.

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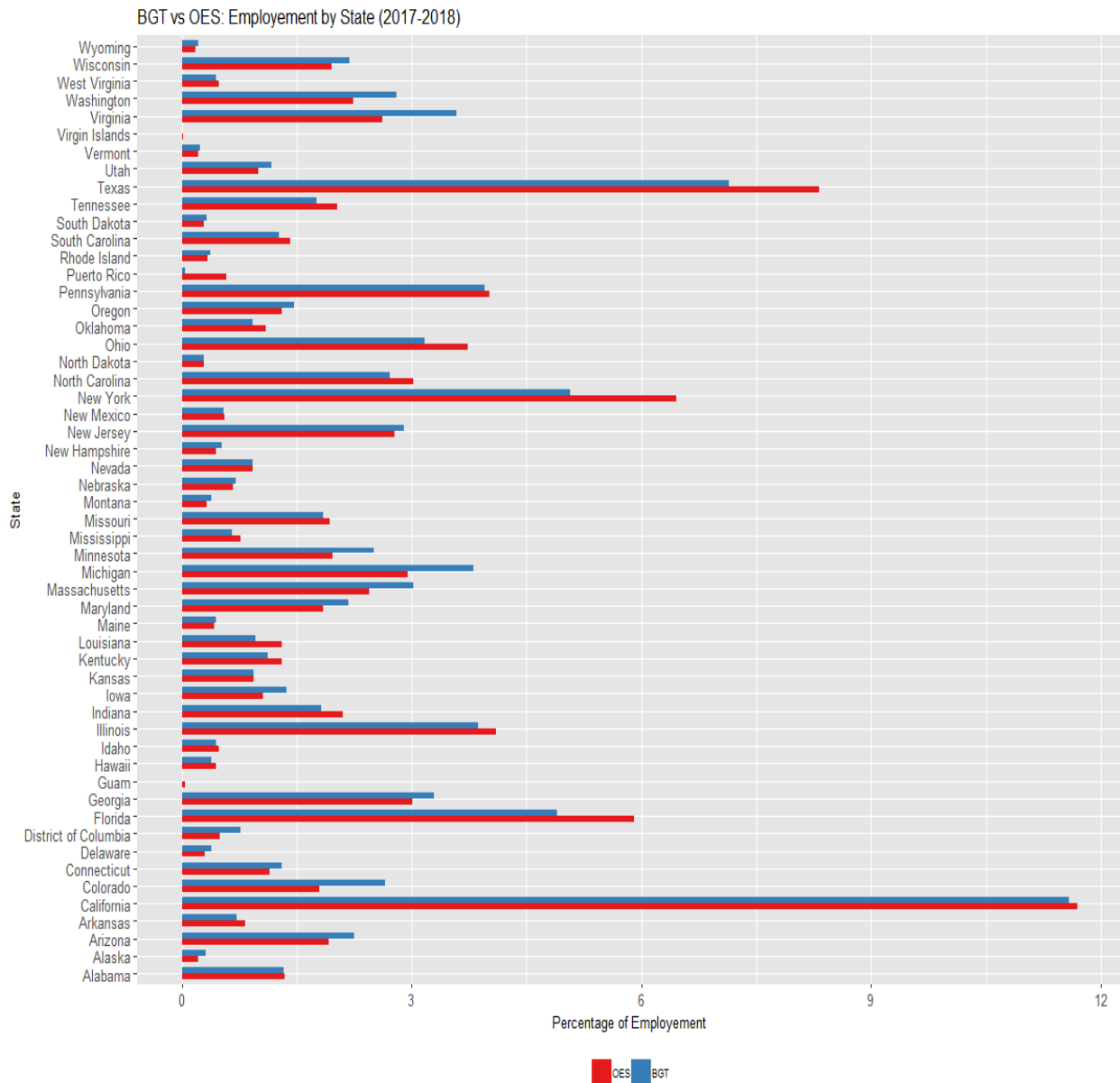
<sup>7</sup> For a similar analysis see also: Hershbein, Brad, and Lisa B. Kahn. "Do recessions accelerate routine-biased technological change? Evidence from vacancy postings." *American Economic Review* 108, no. 7 (2018): 1737-72



## GEOGRAPHIC ANALYSIS

The Bureau of Labor Statistics Occupational Employment Statistics (OES) program collects employment distribution by state which can be compared to Burning Glass job postings data by state, as seen in the chart below.

The correlation between the OES employment and BGT job postings by state distributions is 98%. All states are represented in the Burning Glass data and in each state there is a less than two percentage point difference in the distribution as compared with OES employment data.



**THIRD PARTY DATA SOURCES**

**1) Occupational Employment Statistics (OES)**

The OES survey is a federal-state cooperative program between the Bureau of Labor Statistics (BLS) and State Workforce Agencies (SWAs). This program produces employment and wage estimates annually for over 800 occupations. These estimates are available for the nation as a whole, for individual states, and for metropolitan and nonmetropolitan areas; national occupational estimates for specific industries are also available. *Source: (U.S. Bureau of Labor Statistics ).*

**2) Job Openings and Labor Turnover Survey**



The Job Openings and Labor Turnover Survey (JOLTS) is a monthly survey conducted by the Bureau of Labor Statistics of the U.S. Department of Labor. The program involves the monthly collection, processing, and dissemination of job openings and labor turnover data. *Source: (U.S. Bureau of Labor Statistics).*

While the OES data is not exactly a count of Job Openings, it is still useful to use Employment as a proxy for job openings as an increase in employment would intuitively be proportional to the increase in job postings. JOLTS data, on the other hand, is a direct count of Job Postings, and hence very useful for comparison.

## ABOUT BURNING GLASS

Burning Glass, a leading labor market analytics firm, is playing a growing role in informing the global debate on education and the workforce. Founded in 1999 with the goal of developing the world's leading technologies for matching people with jobs, our technologies deliver insight across workforce and economic development, career exploration and counseling, and job matching. Burning Glass solutions drive critical workforce, education, and economic development initiatives for more than a dozen state and national governments, as well as numerous educational institutions, regional agencies, global recruitment agencies, major employers, and job boards.