Where are the Big Data Jobs?

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The recent White House report on big data has garnered a great deal of public attention, both for its strong support for big data as a "driver of progress" and for its highlighting of privacy concerns.[1] The bottom line of the report: "Americans' relationship with data should expand, not diminish, their opportunities and potential."

However, the authors of the White House report paid little attention to one important economic topic: Big data as a jobs creator. Big data is creating a wide variety of jobs, from data analysts to software developers to the people who run the massive data warehouses that are essential to almost every large company these days. This jobs impact should be an important part of policy considerations about big data.

In this memo, we estimate the number of 'big data' jobs in the U.S. economy as of May 2014. We define a big data job as a computer and mathematical occupation that uses big data skills, such as data analytics or knowledge of big data programs such as Hadoop or Cassandra.[2] We track these big data jobs using a want-ad methodology developed by South Mountain Economics LLC in a series of papers on App Economy employment and a forthcoming analysis of big data and medtech jobs in Great Britain.[3]

We find that the United States now has about 500,000 "big data" jobs. Roughly 100,000 of these jobs are in California, and another 100,000 are in New York, Texas, and Washington. Table 1 lists the top ten states for big data jobs, as of May 2014. [4]

How does this current estimate compare to previous forecasts? The seminal 2011 McKinsey Global Institute study on big data estimated that in 2018, the U.S. would need 440,000-490,000 workers with "deep analytic talent," which is the term they use for big data jobs.[5] So it looks like the big data revolution is happening as the McKinsey report expected, but just a bit faster.

We also constructed a "PPI Big Data Jobs Index," which measures big data jobs per 1,000 total jobs in a state. The top five states are Washington, Massachusetts, California, Maryland and Virginia. The high ranking of the-

latter two states suggests that the federal government is an important generator of big data jobs. Indeed, if we included District of Columbia as a state, it would have been at the top of the list.

We would expect these employment figures to only rise over time, as data analytics becomes more and more important to the economy. From railroads to electricity to antibiotics to software, history suggests that innovation is a job creator—and that's turning out to be true for big data as well.

Table 1: Top States for Big Data Jobs, May 2014

STATE	ESTIMATED BIG DATA JOBS
California	107,245
New York	40,587
Texas	32,061
Washington	29,846
Massachusetts	28,776
Virginia	24,311
Illinois	20,843
Georgia	18,285
New Jersey	17,911
Maryland	17,412
TOTAL	507,470

Estimates using want-ad methodology described in Mandel and Scherer (2012) and *Mandel and Scherer (2014).*
Data: The Conference Board, Bureau of Labor Statistics, and the Progressive Policy Institute.

Table 2: PPI Big Data Jobs Index
Top Ten States, May 2014

STATE	ESTIMATED BIG DATA JOBS PER 1000 TOTAL JOBS*
Washington	9.9
Massachusetts	8.5
California	7.0
Maryland	6.7
Virginia	6.5
Oregon	5.7
Colorado	5.3
Delaware	4.9
New Jersey	4.6
New York	4.5
TOTAL	3.7

**Non-farm Jobs. Based on March 2014 job figures.*
Data: The Conference Board, Bureau of Labor Statistics, and the Progressive Policy Institute.

Endnotes

[1] Executive Office of the President, "Big Data: Seizing Opportunities, Preserving Values," May 2014.
[2] The full list of big data keywords can be found in Michael Mandel and Judith Scherer, "Using Want-Ad Data for Mapping of Jobs and Economic Activity Related to Innovative Technologies," (NESTA, London, forthcoming 2014).
[3] The fundamental assumption is that states or localities with more jobs in a particular occupation will also tend to have more want ads for that occupation. This assumption is successfully tested in Mandel and Scherer (2014). The methodology was originally developed in Michael Mandel, "Where the Jobs Are: The App Economy," (South Mountain Economics, February 2012) and Michael Mandel and Judith Scherer, "The Geography of the App Economy," (South Mountain Economics October 2012).
[4] Note that these figures do not include spillover jobs, so they are not directly comparable to the App Economy figures in Mandel and Scherer (2012).
[5] James Manyika, Michael Chui, Brad Brown, Jacques Bughin, Richard Dobbs, Charles Roxburgh, Angela Hung Byers. "Big data: The next frontier for innovation, competition, and productivity," McKinsey Global Institute, May 2011.

About the Author

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