Three Workforce-Based Reasons
Why Amazon Should Locate its Second Headquarters in the Washington Region
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Amazon is considering three jurisdictions in the Washington region for its second headquarters (HQ2): the District of Columbia, Montgomery County, MD, and Northern Virginia, which included proposals from the city of Alexandria, and the counties of Arlington, Fairfax and Loudoun. Amazon's decision will be a pragmatic one of matching its needs and preferences with the metropolitan area's labor force, its infrastructure, its culture, and the attractiveness of the incentives the jurisdiction offers. Most bidders will accordingly seek to highlight their highly educated STEM workforce, their university system, their subways, highways, and airports, as well as their quality-of-life, and their culture of entrepreneurialism. Yet, the question of how well matched these features of an economy are to Amazon's business activity, rather than any average technology-oriented company requires a more nuanced discussion.

Here I present three data-driven reasons why the Washington region is uniquely well matched to the needs of an Amazon headquarters based on the metro's unique and specific occupation and industry mix.

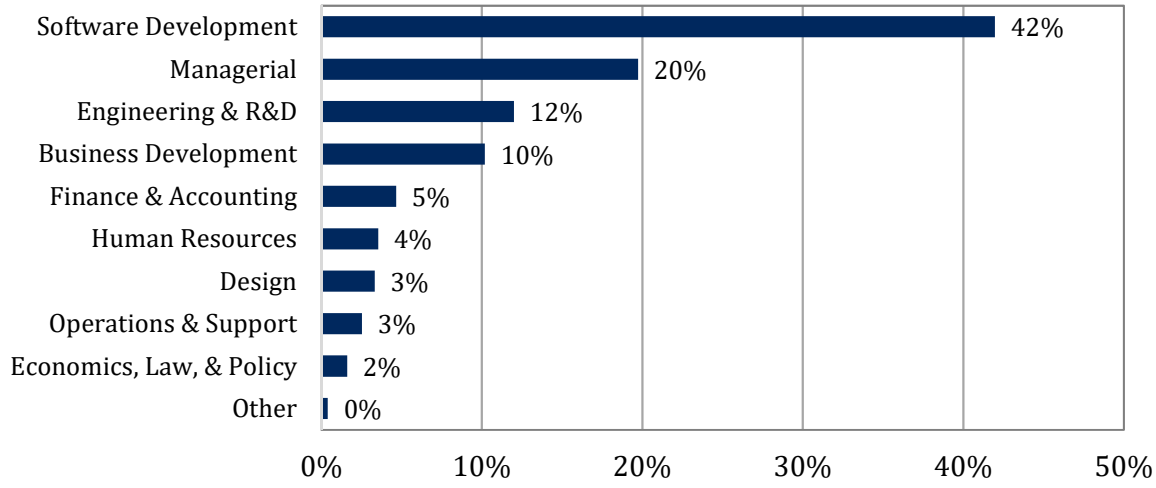
1. The Washington Region's Job Mix

An analysis of 5,948 job postings at Amazon Seattle's headquarters since 2010 reveals that 42 percent of their job-demand was concentrated in software development activities. This was followed by 20 percent concentrating in management-related activities mostly covering project, program, and product management categories, including managerial activities relating to logistics and operations. The third largest concentration of demand was for engineering and R&D related work at 12 percent, followed by business development at 10 percent. The remainder of their jobs demand sought to staff their human resource needs, push their design innovations, and support their everyday activities, including addressing the regulatory and legal environment.

If the functions of HQ2 will mirror those of the Seattle headquarters then, for HQ2, Amazon will seek metropolitan areas that have a similar occupational mix as their expected demand. However, a common issue in matching demand with the regional supply of workers is that job categories, like workers' skills and abilities, are amorphous and ever-evolving. This is visible in the plethora of job titles associated with related and similar types of work activities, such as the job titles of Programmer, Java Developer, and Software

Developer. To get around this problem, I matched Amazon's Seattle job postings to related occupational clusters in the Washington region and assessed the relative concentration of workers employed in these similar clusters.

Figure 1. Amazon Seattle Jobs Demand Since 2010



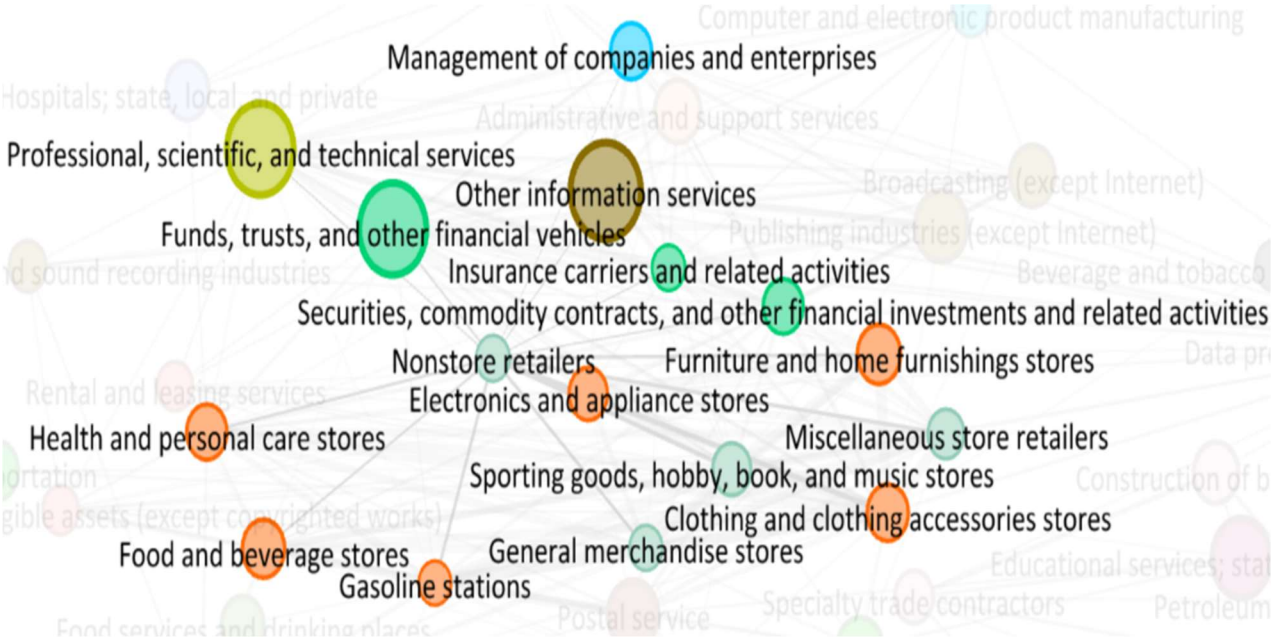
Sources: Author's analysis of jobs postings; U.S. Bureau of Labor Statistics; and The Stephen S. Fuller Institute at the Schar School, GMU

The results show that for jobs similar to those at Amazon's Seattle headquarters, the Washington region has 2.2 times the national concentration of workers in software development; 2.9 times the national concentration employed in similar managerial activities; 3.8 times the concentration of related engineering and R&D workers; and, 2.3 times the number of business development workers as compared to the national average. This analysis reveals not just that the Washington region has a high concentration of educated workers with STEM degrees, but that the region has competitive advantages in precisely the type of educated STEM workers that Amazon needs to staff its new headquarters.

2. The Washington Region's Unique Industry Mix

To say that Amazon is a leader in cross-sector innovation would surprise no one. The technology giant may file under the NAICS code 454: "Nonstore retailers", but the company's business activities span well beyond the confines of any single NAICS sector, at any level of aggregation. To maintain its innovative lead and to satiate its demand for workers with breadth of knowledge and experience, Amazon hires from a diverse list of industries. It would then be useful to know what cluster of industries' labor pool Amazon would most benefit from if it were to locate in the Washington region.

Figure 2. The Washington Region's Industries Related to Amazon's Workforce (Nonstore retailers)



Source: Author's Analysis of U.S. Bureau of Labor Statistics (QCEW); The Stephen S. Fuller Institute at the Schar School, GMU. Note: Data drawn as a network using Gephi 0.9.2.

To investigate this regional characteristic, I have clustered all 3-digit NAICS industries in the Washington region based on the skill and task similarities of their most prominent occupations. This method reveals a 'similarity' of industries based on their potential for sharing occupational labor flows. What it shows is that nationally "Nonstore retailers" share an occupational similarity almost exclusively with other "Retail Trade activities". In the Washington region this industry potentially shares labor flows with, "Professional, scientific, and technical services"; "Finance and Insurance"; and, the "Information services industries". Compared with the composition of job postings of Amazon's Seattle headquarters, the Washington region's unique mix is well matched to keep the company at the frontier of innovation by attracting new workers with a wide set of diverse but related industry knowledge.

3. The Resiliency of the Washington Region's Workforce to Automation

Last year Mckinsey & Company issued a report that assessed which jobs are most at risk of automation in the near future.[1] By evaluating work activities rather than job titles they reported that data collection, data processing and work requiring predictable physical tasks are the most susceptible to automation. Given Amazon's primary industry activity in the retail sector, its data intensive technology, and its dominant market share, it is more-

[1] https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/where-machines-could-replace-humans-and-where-they-cant-yet

than-likely that the same technical advantage of automation that favored Amazon in disrupting an industry will ultimately present the company with substantial workforce challenges in the future. The only long-term option to automation is workforce retraining and upskilling in conjunction with an update of the regulatory infrastructure to support a digitized workforce. As the seat of the federal government and with one of the nation's best education ecosystems, this is yet another competitive advantage of the Washington region that specifically benefits Amazon's future growth and headquarters.

Conclusion

Having an Amazon headquarters locate in your region is a profitable opportunity. As Amazon notes in their RFP, "every dollar invested by Amazon in Seattle generates an additional $1.40 for the city's economy overall." The RFP further mentions that Amazon's presence in Seattle has brought large positive innovation spillovers boosting the metro's engineering and R&D capabilities. For a region such as Washington that has for some time sought to diversify its private sector away from federal dependence and re-brand itself an innovation hub, landing Amazon's second headquarters would be a big win. Yet, the decision needs to also favor Amazon in a fashion that meets its current needs but also maintains its position at the frontier of innovation. The assessment summarized here provides support for such an argument by showing that the Washington region's occupation mix and its industry mix provide unique opportunities well suited for the needs of an Amazon headquarters.

About These Data

Jobs postings data were scrapped from the www.amazon.jobs website for postings in Seattle, WA between January 01, 2010 and September 30, 2017. Using techniques developed by the author, job postings were matched with the regional characteristics of occupational employment in the Washington metropolitan area. Estimates for the skill-similarity of occupations and the relatedness of industries in the report were derived using novel algorithms run on data released under the Quarterly Census of Employment and Wages and the Occupational Employment Statistics program from the Bureau of Labor Statistics for the year 2016.