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What, Where, and When: An Examination of Opportunities Posted on Indeed

Three major questions on the minds of job-seekers are the following: one, what types of jobs are out there; two, where are they located; and three, when do those positions have openings? We sought to answer these questions through our analysis of the Indeed data set. We opted to restrict our data set to 2017 only to have an equal number of samples for each month, so we eliminated the months of December 2016 and January 2018.

One component of our research consisted of finding the distinct job postings by month for each of the 29 industries in the data set. The total number of jobs posted peaked in the months of March, October, and August, but patterns varied among the individual industries. Postings slumped universally in November and December, so opportunities are most limited around the new year. Furthermore, the two industries with the most job openings were healthcare/medicine and staffing firms. People with a focus in healthcare fields appear to have the most opportunities on Indeed.com.

To express similar data on the state level, we geospatially plotted top industry per US state per month. Similar to the above findings, the top two industries across the states for each month were health care/medicine and staffing firms. The proportion of states with one of these as the top two industries deceased in November and December, which is consistent with our findings in the previous paragraph. No state maintains the same most popular industry from month to month for the entire course of the year.

We then constructed a regression model to better explain job posting trends. We found the number of postings in each industry per month and per state. Then we modeled the natural log of job postings (our dependent variable) as a function of the natural log of state population[1], along with quarter of the year (to account for seasonal changes), each of the eight regions[1] of the United States, and each job industry category. For large populations, we expect a correspondingly high number of jobs, since people tend to aggregate where they can find work. We expect the Northeast to have the highest number of job postings given their population. For the model, we had an adjusted R^2 of .955. Then we did a residual plot, and tested for homoskedasticity using a Breusch-Pagan test, and as a result, we weighted the standard errors to correct the model. Then we performed F-tests on each group of binary variables (quarter, region, and industry). Each test resulted in a statistically significant output at the 5% level, and so we left each of those variables in the model.

All variables discussed below are statistically significantly different from 0 at the 5% level of significance. The model showed that a 1% increase in population corresponds to a 0.869% increase in job postings, holding all other variables constant. The following binary variable coefficients shift the intercept holding other variables constant. The Staffing Industry and Health Care/Medical industry binary variables had the highest coefficient estimates compared to other industries. Each quarter was similar, except for the fourth quarter having a far lower coefficient. The Mid-Atlantic and New England had the highest coefficient compared to other regions. Our conclusions matched our expectations about the model.

Prospective Job Seekers should know that most Indeed.com posting are in cities and the New England and Mid-Atlantic regions. The most prevalent fields for postings are Healthcare/Medical, and the fewest postings occur around the end of the year.

[1] Data from US Census Bureau