

COMPETITIVENESS OF INDEED JOBS

We analyze job market circumstances for general job seekers based on Indeed's job postings data. While we recognize individuals have their own preferences, our analysis will focus on education level, region, specific industries, company size and rating, and job descriptions.

As a supplement to Indeed's data, we created two additional variables to help us analyze the job market. One is the general competitive ratio, which is total available positions divided by total applicants, to measure the probability of getting a job. We also used the popularity ratio, which is total applicants divided by the age of the job, as an indicator of the competitiveness of a job.

We categorized jobseekers into three types based on when they intended to enter the job market: after dropping out of high school, after high school graduation, and after pursuing higher education. Jobs with no education requirements are more numerous and are essentially as competitive as those requiring a high school diploma. 37,631 Indeed jobs require no education. Each of those jobs, on average, received 5.45 applications per day. The most jobs for high school dropouts and graduates are offered with the health care/medical industry, staffing firms, the food/beverage industry, the retail/consumer goods industry, and other industries. This shows that high school dropouts and graduates have a high chance of working in the same industry.

While college graduates (or those who pursue higher education) saw fewer Indeed jobs (9,700) requiring their higher education, they faced less competition: those jobs averaged only 4.08 applications per day. For people who pursue higher education, we made a map to show the general competitiveness of job market in each state. When choosing an academic institution, those students could look for colleges in states with less competition in the local job market. The states with the lowest job application ratios are Delaware, Alaska, North Dakota, and Kansas.

For college students who have preferences for particular job industries, we built decision trees to investigate the factors influencing the competitiveness of a job. Random forest model was also developed to detect the variable importance in determining the competitiveness of jobs in different industries. Because the data included so many different industries, we only focused on two specific industries in this project: Financial Services and Manufacturing. For these two industries, the description length of the job, popularity ratio, company size and age of a job are all significant factors deciding the competitiveness. For a job posted on Indeed, if the description of the job is relatively long, the job is recently posted, and the company size is large, the competitiveness of the job is predicted to be low. The error rate of the decision tree model on the test set is 30%. However, there is one difference between these two industries. Compared with manufacturing, jobs in financial services often require a license and the company rating level becomes a more significant predictor. Generally, between industries, the significance of the factors in determining the competitiveness of jobs may differ based on the structure of the industry and required skills, etc.

In conclusion, education level, region, different industries, length of job descriptions, company size and company rating can affect the competitiveness of a job. In the future, we want to build a shiny app to show the competitiveness of different jobs in various industries and combine external resources to conduct more rigorous research.