

# Job Market across the US

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## Discussion Article

The job market is now and will always be a significant market for the national and global economies. In this market, both employers and employees search for the candidates who best meet their needs. One of the most important things for someone to consider when making future plans is the availability of jobs that match their interests and abilities. There are various sites for job searching that assist people in finding employment that matches their interests, time constraints, and skills. One of these websites is called Monster, and it shows job openings in various US states based on the user's interests. I created a US map that is interactive and displays the number of jobs listed by Monster in each state. Users can select the type of employment they seek, as well as whether they prefer full- or part-time work. For instance, if you are a business major and would like to know which state has the most full-time business jobs, you can select the category of business and the type of full-time job. The map will then display a range of color intensities, with the darkest color denoting the most jobs. You may see the precise amount of employment in a state by hovering over it. Along with the map, I have also made an interactive table that shows the number of jobs in each state by your desired job type and category. When you select part-time as the job category, you'll see that there are significantly fewer states that provide part-time employment, indicating that the majority of the jobs offered on Monster are full-time positions. The category "Others" includes employment opportunities in almost every state. This indicates that there are the most employment opportunities in industries not included in the list of alternatives. Other industries with varying skill sets include plumbing, media, real estate, and many more. Since the employers in this case did not specify a specific industry, it is listed as "others". The "General" category, which comprises common jobs that typically don't require a degree or a lot of skills, has the second-highest number of jobs. Considering the variety of businesses we have today, it is surprising that the second-lowest number of full-time positions are in the field of accounting. The visualizations demonstrate that the creative industry, which was highlighted by Monster as having the fewest job openings nationwide, does not have a wide range of opportunities. Given the development of technology in this century, as shown by the map and table, there are many career prospects associated with the IT sector. Business and Medical fields also have a good number of opportunities. Texas is the state with the most job opportunities that are featured in Monster and Hawaii has the least number of job opportunities. Knowing the employment opportunities in each state can help workers make plans if they need to relocate or select where they would get their ideal position. Therefore, in terms of expectations and future planning, this shiny app is helpful to employees.

## Technical Report

In my first Data Science course, Data Scientific Programming, I gained a proper understanding of topics like data wrangling, data merging, data cleansing, and creating an informative, interactive visualization. I used employment market data from Monster that I got from Kaggle to practice these skills. I found Kaggle to be a fantastic resource for researching data sets and related information. In order to be able to create a visualization out of the original dataset I utilized, it required a lot of cleaning. There were more than simply "part time" or "full time" in the job\_type column, making it untidy. Using the str\_extract() function, which searches for the pattern "part time" or "full time" and extracts it to the job\_type column, I limited the information in the column to these two items. I removed the columns that weren't needed. Similar to that, I needed the abbreviation for US states but there was a lot of extra information in the location column that I did not need, so I first used the separate() function to separate the location by a space and then used

`str_extract()` to find the pattern where there are two uppercase letters and extract them to the location column. In order to further categorize the words into basic categories, I also used the `separate()` function to extract the first word from the sector column. I was able to clean the data in the way I desired by using `separate` and `str_extract`. Afterward, I exported the tidy file to Excel, separated the sectors into simple categories, and combined the new “Categories” data with data that had state names. This was necessary because the map only accepts the state’s entire name. To make some variables work for a shiny app, I renamed them. I was initially worried about creating a map because it was my first time, and I wasn’t sure if it would function as I had hoped. I used the R graph gallery as a resource and was exposed to the `ggplot2` library. At first, I created several ranges using highly difficult approaches such as using bins and labels, which caused issues with the shiny app and it was not running in .R file but was running in .Rmd that I used for coding initially. I, therefore, took an effort and simplified the shiny code once more. I was able to obtain the graph I desired after consistent trials. I had a lot of help from the `plotly` library in making the graph more interactive. R Graph Gallery and Shiny for R Gallery were very helpful resources for me to complete the coding. When I started looking for the data, I was really confused on how to structure the shiny app so I had to spend 3-4 days finding a proper data set. I finally got this data set and planned my ideas out in a paper and took small steps and experimented a lot to come to this conclusion. Overall, it was an amazing opportunity to put my understanding into a logical implementation.