

### Data Description:

I am focusing on the dataset containing the variables of location name, job title category, total experience years and total money earned by employees. At the beginning, the original dataset having different categorical variables regarding money such as annual base pay, signing bonus, annual bonus, and stock value bonus. I created and mutated a new variable called total money which was the sum of annual base pay, signing bonus and annual bonus. In terms of convenience, I did not include stock value bonus because of its character. Hence, I created a dataset called mydata1 containing location name, job title category, total experience years and total money. By using mydata1, I separately created mydata2 and mydata3 by setting different location. I chose Seattle and San Francisco to compare. In terms of job title category, I chose Software. Therefore, there are 40 observations in each table and four variables. I combined the two datasets to one dataset called total. It has 80 observations and four variables. In the column of location, the data is categorical. The others are numerical. By comparison, I also created mydata5 and mydata6. The locations are Seattle and San Francisco as well, but I changed the job title to Engineering. Others remain the same. These two datasets each contain 7 and 13 observations. The data types are the same. I combined to a dataset called total1 which contained 14 observations by reducing the number of mydata 6 to 7.

### Planning and Analysis:

First, I want to examine the relation between total experience years and total money. I compared the relation by setting the location and job title the same.

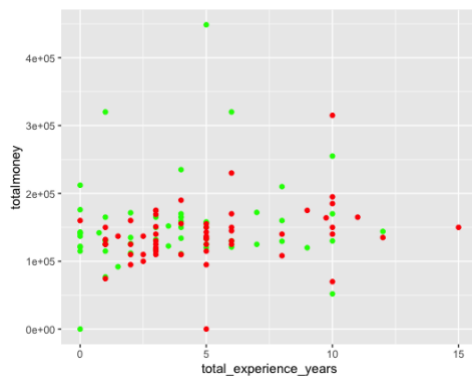


Figure1: Seattle vs San Francisco Software

I observe that, by comparing these two locations, they all match that as the total experience years increase, the money is mostly still in the range of 100,000 to 250,000. There is no major difference between these two cities as experience years increase.

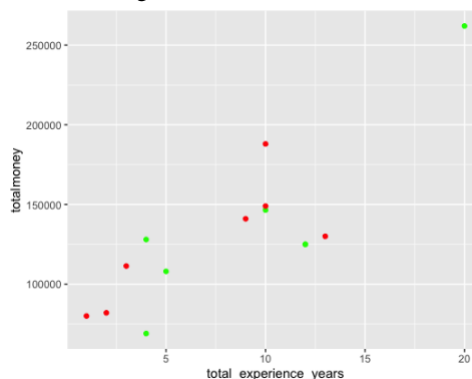
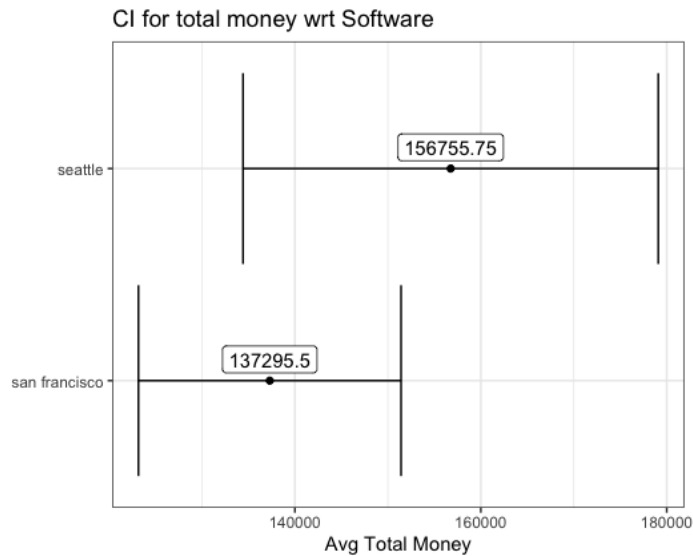


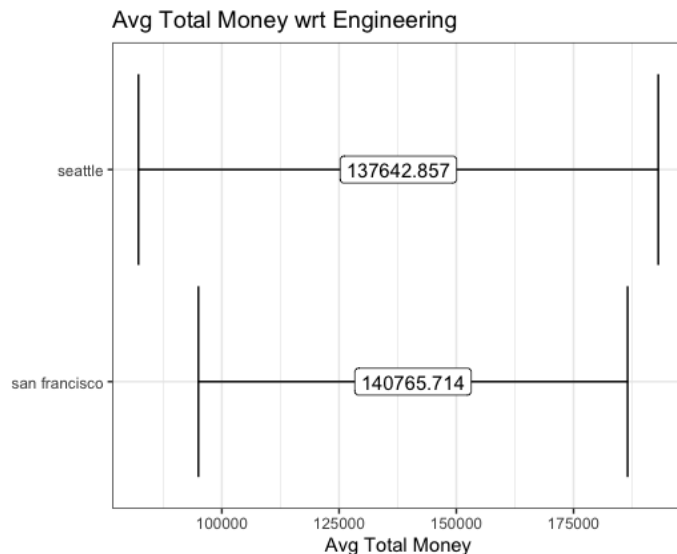
Figure2: Seattle vs San Francisco Engineering

I observe that there are just a few examples in terms of Engineering; however, the trends are still the same. As the experience years increase, the total money is majorly in the range of 50,000 to 150,000. In addition, from the two graphs, we can see that, in general, the total money of engineering is less than that of software in the two cities according to the range of money.

Furthermore, I also compared the confidence intervals regarding average total money earned by Software and Engineering in different cities. I assume that people in Seattle will make more.



We can see that average total money made by Software in Seattle is a bit more than that of San Francisco. In Seattle, it will have the probability of 95 percent to have the average money of 156755.75, in San Francisco, the range is smaller, and the average is 137295.5.

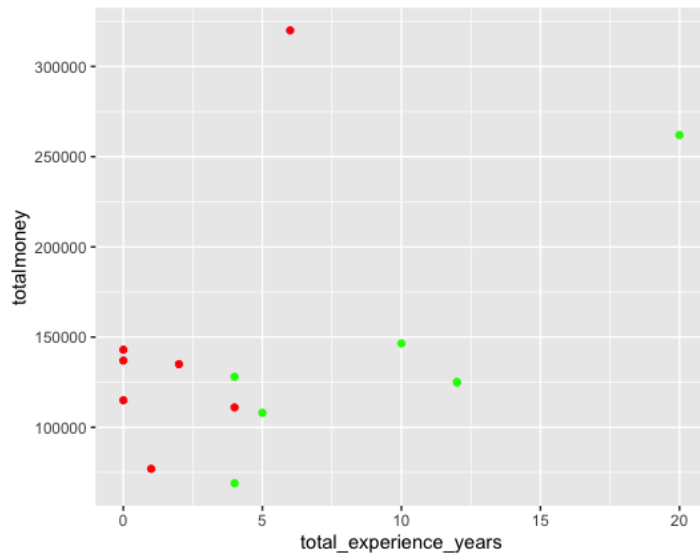


However, in this graph, although the average money fallen in the range in Seattle is a little bit smaller than San Francisco. It has bigger range of average total money, meaning that more people will likely have this money.

### Conclusion:

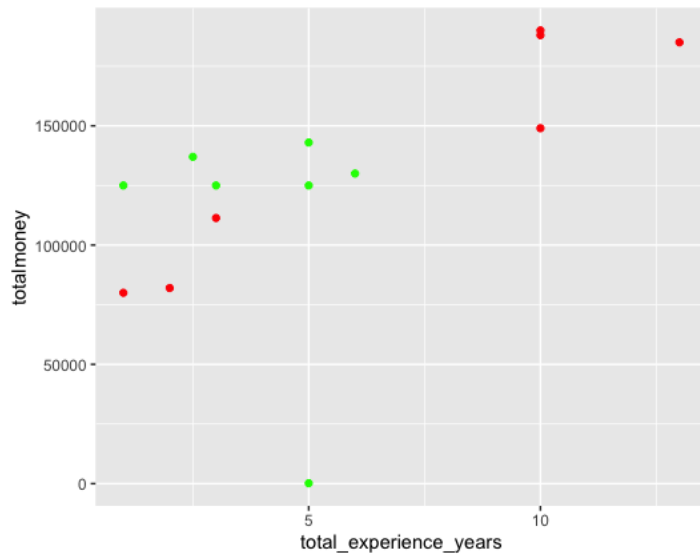
From the comparison between experience years and total money, we can see that, regardless the difference of the two cities, within the years of 15, the total money for Software and Engineering is more likely located within certain ranges. For Software, it seems like it is more likely to make money as the range of total money is larger. In addition, from the comparison between location and average total money, Seattle has more advantages as confidence intervals is bigger and the average total money is higher. A report points that Seattle attracts investment and ICT employees from all the Bay area and the U.S, and there are bases of big tech companies settled down there (Levy,2018). As more investment has come into the ICT industries, the wages will be likely to grow for those related employees (Ezell,2021).

## Appendix



Seattle, Software vs Engineering

It demonstrates that for software workers, the wages are higher than general engineers as experience increase in Seattle, and wages increase as experience years increase.



San Francisco, Software vs Engineering

It demonstrates that for software workers, the wages are slighter higher than general engineers as experience increase in San Francisco, and the wages increase as experience increase.

## References

- Levy, N. (2018, October 29). *Seattle is the nation's fastest growing tech hub, study says, as Bay Area Engineering Centers continue to expand*. GeekWire. Retrieved February 4, 2023, from <https://www.geekwire.com/2018/seattle-nations-fastest-growing-tech-hub-study-says-bay-area-engineering-centers-continue-expand/>
- Ezell, S. (2021, November 29). *Assessing the state of digital skills in the U.S. economy*. RSS. Retrieved February 4, 2023, from <https://itif.org/publications/2021/11/29/assessing-state-digital-skills-us-economy/>