Motivation:

Full Professors at the University of Washington command salaries that ranges from $33,000 and $675,400 with a median salary of $121,200. Similar disparities can be observed in the salaries of Associate Professors and Assistant Professors. It would be interesting to uncover the underlying factors that contribute to the amount of compensation received by the faculty. To be specific, I want to understand the effects of university location, university reputation, major and individual research reputation on the salary received by the professor.

Data Sources:

Washington State publishes the salaries of all State Employees at <http://fiscal.wa.gov/Salaries.aspx>. Various other states like California and Illinois also publish the compensation of all State Employees. The university reputation can be best judged by the rankings published from reputable sources. To this end, I’ll use three global university rankings - The Times Higher Education World University Ranking, The Academic Ranking of World Universities and The Center for World University Rankings. The dataset is available at <https://www.kaggle.com/mylesoneill/world-university-rankings>. The individual research reputation can be obtained by web scraping the Google Scholar website (<http://scholar.google.com>) and extracting the h-index and the number of citations of each professor.

Analysis:

I started out by analyzing the Washington State employee’s salary dataset to find out who commanded the most salary at the University of Washington. Unsurprisingly, the football and basketball coach were the highest paid employees. I then proceeded to find out the median salary of all positions at the University of Washington that have at least 10 employees. Non-Classified Position and Research Summer Appointment positions led this list. I was also interested in the salary growth of all positions that had at least 10 employees. Surprisingly, Non-Classified Position and Research Summer Appointment positions had the highest growth rate among all positions. Since, I was primarily interested in the salaries of faculty positions (Professor, Associate Professor and Assistant Professor), I made box plots and analyzed the growth of salaries of the above 3 positions. Although all boxplots had outliers, I observed that the most number of outliers were in the Professor position (which can be attributed to individual research reputation). Hence, I decided to focus on the relationship between salary and individual research reputation. I wrote a web-scraping script to get the number of citations of each faculty at the University of Washington. The p-value obtained for the linear regression of Salary received in 2016 vs Total number of Citations for a Full Professor is 0.0000000006. This conclusively proves that there is a relationship between a professor’s salary and number of citations. I performed similar linear regressions for Associate and Assistant Professors and the p-value obtained was 0.24774 and X respectively.

Future work:

The analysis described above considered only the total number of citations for each faculty. Google Scholar also provided information of year-wise citations and h-index. I plan to incorporate these and find out interesting insights. I also plan to explore data from other universities like Washington State University and from other datasets mentioned above. It would also be interesting to understand the relationship between a faculty’s salary and the university reputation. To this end, I will analyze The Times Higher Education World University Ranking, The Academic Ranking of World Universities and The Center for World University Rankings and find out if it is correlated to the median faculty salaries. This project can be useful to PhD and Postdoc students who are looking to enter academic positions. It can serve as a useful tool to predict future salaries and help them make the right choice.