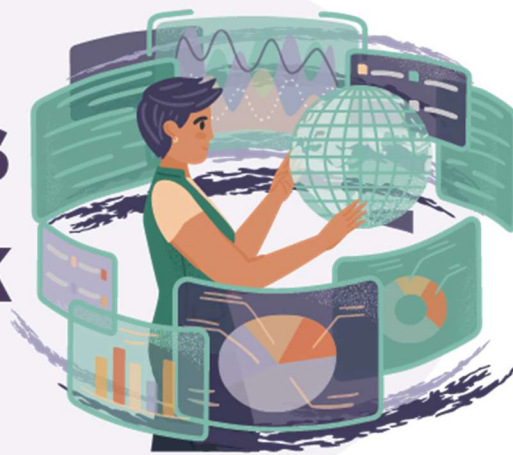


# Data Jobs Outlook



## SALARIES FROM DATA

Drawing Conclusions from US Foreign Visa Applications (2008-2015)

CREATED BY

Ana Paula Felix  
De Queiroz,  
Gabrielle  
Salamanca,  
Catarina  
Tegtmeier,  
Russell Chan

DS311  
SPRING 2023

---

## Table of Contents

EXECUTIVE SUMMARY .....	2
1. INTRODUCTION.....	2
2. QUESTIONS .....	3
2.1 Do specific sub-types of data-related jobs have higher or lower salaries than others? .....	3
2.1.1 Which companies have the highest salaries for those sub-types? .....	4
2.1.2 Changes with location of the job? .....	4
2.1.3 Will the answer change if I take standard of living into account? .....	6
2.2 What states (that I am willing to move to) have the highest paying data-related salaries?.....	6
2.2.1 Differences between job sub-categories? .....	7
2.2.2 Which companies have the highest salaries for those sub-types? .....	8
2.2.3 Will the answer change if I take standard of living into account? .....	10
2.3 How do offered salaries compare to the prevailing wage? .....	10
2.3.1 Are there job sub-categories that tend to get overpaid or under-paid? .....	10
2.3.2 Are there companies that tend to over-pay or under-pay? .....	11
2.4 Which City or State offer the best job opportunities? .....	12
2.4.1 Which states have the biggest job market? .....	13
2.4.2 Which cities have the biggest job market? .....	13
2.4.3 Now contrast with pay. Which city or state has the biggest job market and greatest overall salary? (i.e., what's the best place to find well-paying work?) .....	14
2.5 Does the nationality of the candidate affect the status of case? .....	16
2.5.1 Does job subtitle of the candidate affect the status of the case?.....	16
2.5.2 Are specific job titles being offered to candidates of a specific nationality?.....	19
2.6 What are the states with the largest change in salary adjusted wage? .....	20
2.6.1 Which are the top and bottom states in terms of salary considering adjusted wage? ...	21
2.6.2 Looking at job subtypes, how does salary change for top and bottom 5 considering the cost of living? .....	22
CONCLUSION .....	24
APPENDIX.....	26
REFERENCES.....	29

---

# EXECUTIVE SUMMARY

This report answers a series of questions, both assigned and developed by the team “We-R-Finished”, regarding a salary data set compiled by the US Department of Labor’s Office of Foreign Labor Certification. It chronicles data from various job applications from foreign workers applying for US jobs over the years 2008-2015. We performed exploratory data analysis on this set and answered questions using a variety of tools, such as Python, Tableau, and R.

From our results we made various conclusions regarding jobs from certain tech-related sub-categories, analyzed the worth of a salary with regards to standard of living, desirable states, and cities to live in both including and excluding California, the best-paying specific and median jobs, companies, states, and cities, as well as which states provide the most “bang for your buck” with the adjusted wage. We also analyzed which countries foreign workers come from, which jobs they are offered, and how successful salary negotiations are for these future employees.

Overall, Data Scientists and Management consultants tend to dominate the highest salary ranges, with variations depending on state, cost of living, adjusted wage, etc., job title matters more than nationality, and the likeliest guarantee of a high salary comes from an employer that is not afraid to pay to acquire top talent.

## 1. INTRODUCTION

In today's globalized and data-driven economy, understanding the dynamics of salaries and employment conditions in data-related jobs is important to start your career. With an increasing number of foreign workers seeking opportunities in the United States and employers looking to attract and retain top talent, it is crucial to have comprehensive insights into the compensation landscape. We will use the salary dataset from the US Department of Labor (US Department of Labor: Office of Foreign Labor Certification, 2008-2015) to draw conclusions and help people seeking a United States based data-related occupation.

By delving into this dataset, we will analyze the key factors influencing salaries, the relationship between prevailing wages and offered salaries, and the geographic distribution of high-paying data-related jobs. The findings of this analysis have practical implications for multiple stakeholders. For job seekers, the insights help in making informed decisions regarding career paths, relocation choices, and salary negotiations. Employers can benefit from understanding salary benchmarks, prevailing wage standards, and regional variations to ensure competitive compensation packages.

Moreover, incorporating an extra data source, The “Cost of Living 2023” dataset (Cost of Living Index by State 2023) allows us to examine the relationship between salaries and the cost-of-living index in

---

different states. This analysis will provide a comprehensive view of the economic factors impacting the financial well-being and standard of living for foreign workers in data-related jobs.

Through this analysis, we aim to shed light on the intricacies of wage compensation, cost of living standards for data related jobs, and general job seeking advice. The subsequent section of this report will investigate the datasets and provide detailed analysis and key findings, addressing specific questions related to salary variations, location disparities, prevailing wage compliance, job title preferences, and the affordability of different states for data-related job seekers.

## 2. QUESTIONS

### 2.1 Do specific sub-types of data-related jobs have higher or lower salaries than others?

In order to see if job subtypes are higher or lower, I grouped the data by job subtypes, and their median paid wage per year. The median is the best aggregation to describe the paid wage in each subtype group because outliers have less of an effect. These values are depicted below both in numerical and graphical format (Figure 1).

JOB\_TITLE\_SUBGROUP

data scientist        110000.0

management consultant    100000.0

software engineer        88275.2

business analyst        65000.0

data analyst            65000.0

Name: PAID\_WAGE\_PER\_YEAR, dtype: float64

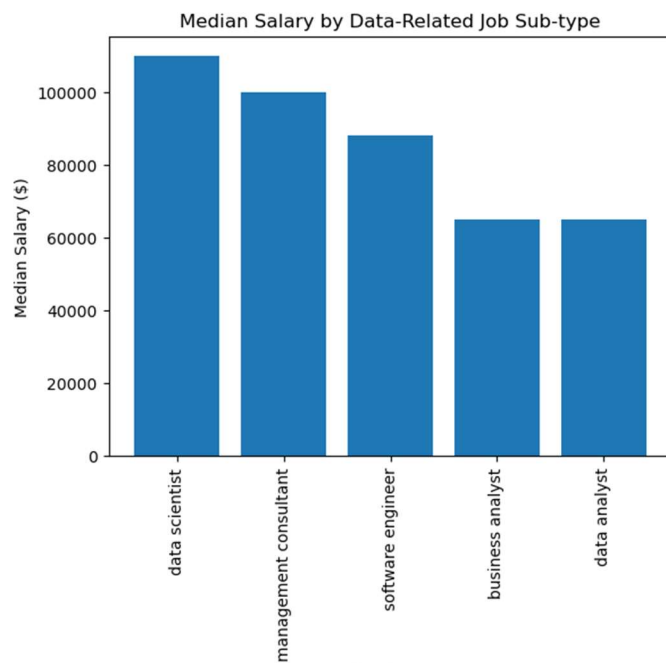


Figure 1

Based on the dataset analyzed, it appears that certain subtypes of data-related jobs have higher median salaries than others. Specifically, the median pay for a data scientist was found to be \$110,000, which is higher than the median pay for a management consultant (\$100,000), software engineer (\$88,275.2), business analyst (\$65,000), and data analyst (\$65,000). This suggests that data scientists may be more highly valued and compensated for their specialized skills and expertise in the field. We can also see that business analyst and data analyst have the same median pay, which shows they likely have similar compensation rates. There is more than \$40,000 difference

between median data scientist and data analyst pay.

### 2.1.1 Which companies have the highest salaries for those sub-types?

After performing and exploratory data analysis (EDA), it appears that specific subtypes of data-related jobs have higher salaries than others. The median pay for each subtype, ranging from data scientists to business analysts, was collected by grouping the data by employer name. The top paying companies for each subtype were determined and we will list the highest three.

For data scientists, Netflix was the highest paying company at \$220,000, followed by The PNC Financial Services Group (\$205,000), and Adobe Systems Incorporated (\$181,667). Management consultants earned the most at Co-Creation Partners (\$582,400), followed by Baker Botts L.L.P. (\$350,000) and Netflix (\$325,000). Software engineers were compensated the highest at Sigmatek Systems LLC (\$600,000), Aliaswire Inc. (\$528,000), and Load Dynamix Inc. (\$486,650). Business analysts are paid the most at The University of Texas System Administration (\$677,508), OfficeMax Inc. (\$603,711), and Ascendum Solutions LLC. (\$264,992). Data analysts make the most at Intuit (\$433,161), Knowlagent Group Inc. (\$185,000), and Netflix (\$177,355).

### 2.1.2 Changes with location of the job?

After filtering the dataset for each job sub type and printing the median pay in each state, I found that there are some changes in the highest paying location of the job for each sub type (Figure 2).

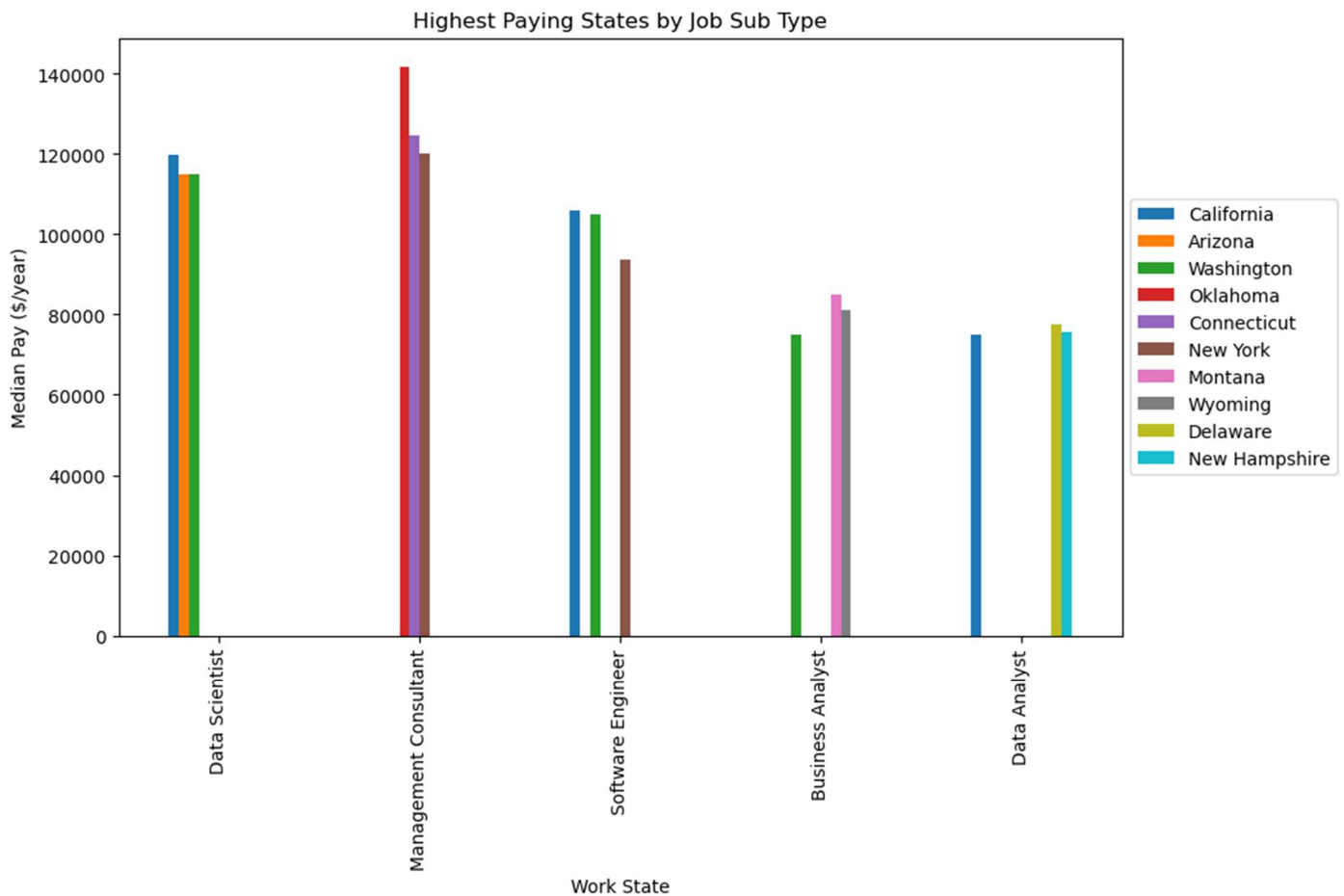


Figure 2

For data scientists, the highest paying states were California, Arizona, Washington, District of Columbia, and Minnesota, with median pay of \$119,800, \$115,000, \$115,000, \$114,500, and \$111,457 respectively. For management consultants, the highest paying states were Oklahoma, Connecticut, New York, Pennsylvania, and Georgia, with median pay of \$141,847, \$124,785, \$119,995, \$119,995, and \$119,995, respectively. For software engineers, the highest paying states were California, Washington, New York, Massachusetts, and Vermont, with median pays of \$105,972, \$105,000, \$93,621, \$88,691, and \$85,000, respectively. For business analysts, the highest paying states were Montana, Wyoming, Washington, California, and Connecticut, with median pay of \$85,000, \$81,000, \$75,000, \$70,000, and \$70,000, respectively.

For data analysts, the highest paying states were Delaware, New Hampshire, and California, New Mexico, and South Dakota, with median pay of \$77,700, \$75,591, \$75,046, \$71,869, and \$70,000 respectively. These results indicate that the location of the job has an impact on the median pay for each job sub type, with some states consistently offering higher pay than others.

### 2.1.3 Will the answer change if I take standard of living into account?

To take standard of living into account, we found a cost of living dataset by state, and divided each wage by their corresponding state cost of living index, and multiplied by 100 to get their adjusted wage. We find that the answer does not change that different job sub types are paid more than other data related jobs. Here are the median adjusted wages by job sub type., in both numerical and graphical format (Figure 3)

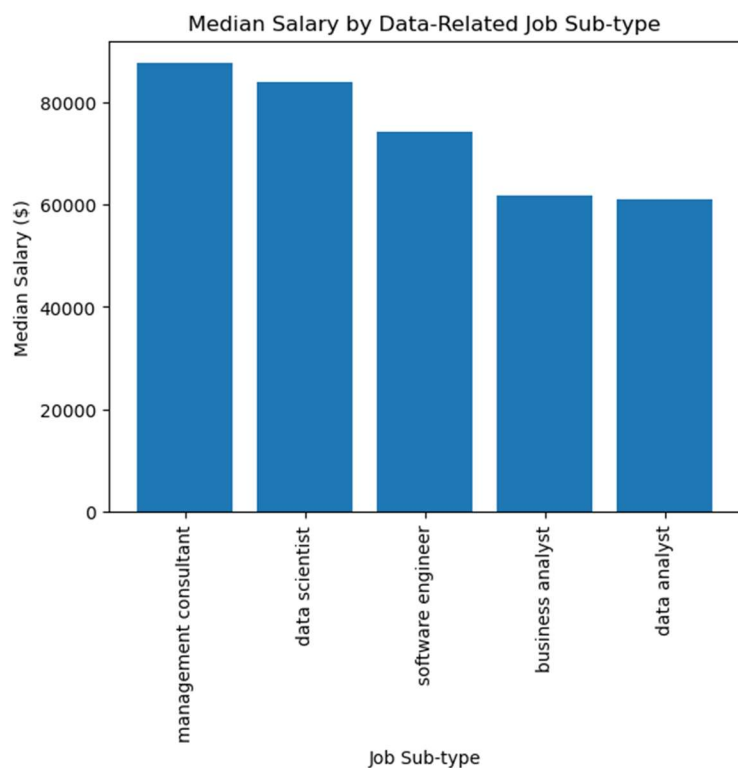


Figure 3

JOB\_TITLE\_SUBGROUP

management consultant 87602.812940

data scientist 83829.113924

software engineer 74170.124481

business analyst 61715.616054

data analyst 61027.777778

Name: ADJUSTED\_WAGE, dtype: float64

The difference in pay is not as large as the original wage comparison, and management consultants are the highest paid. There is about a \$25,000 difference between median pay of management consultant and data analyst.

## 2.2 What states (that I am willing to move to) have the highest paying data-related salaries?

When considering this question, the dataset includes all 50 states and territories, but we will remove the latter for obvious reasons. This means Guam, Palau, Northern Mariana Islands, Puerto Rico, and Virgin Islands will not be considered. Considered that this group lives in California, we will exclude it from our considerations as well due to inherent bias.

California is much more friendly towards immigrants and quite open to people of all walks of life. We may be biased to stay within the West Coast, especially considering the natural disasters and how certain minorities are treated here either by law or general perception in other states. This would

greatly narrow the scope, so we have decided to use the top 10 work states in the pool. So, we will only use: Texas, New York, New Jersey, Illinois, Massachusetts, Virginia, Pennsylvania, Washington, Michigan, and North Carolina, which all have a respectable number of jobs available (Figure 4)

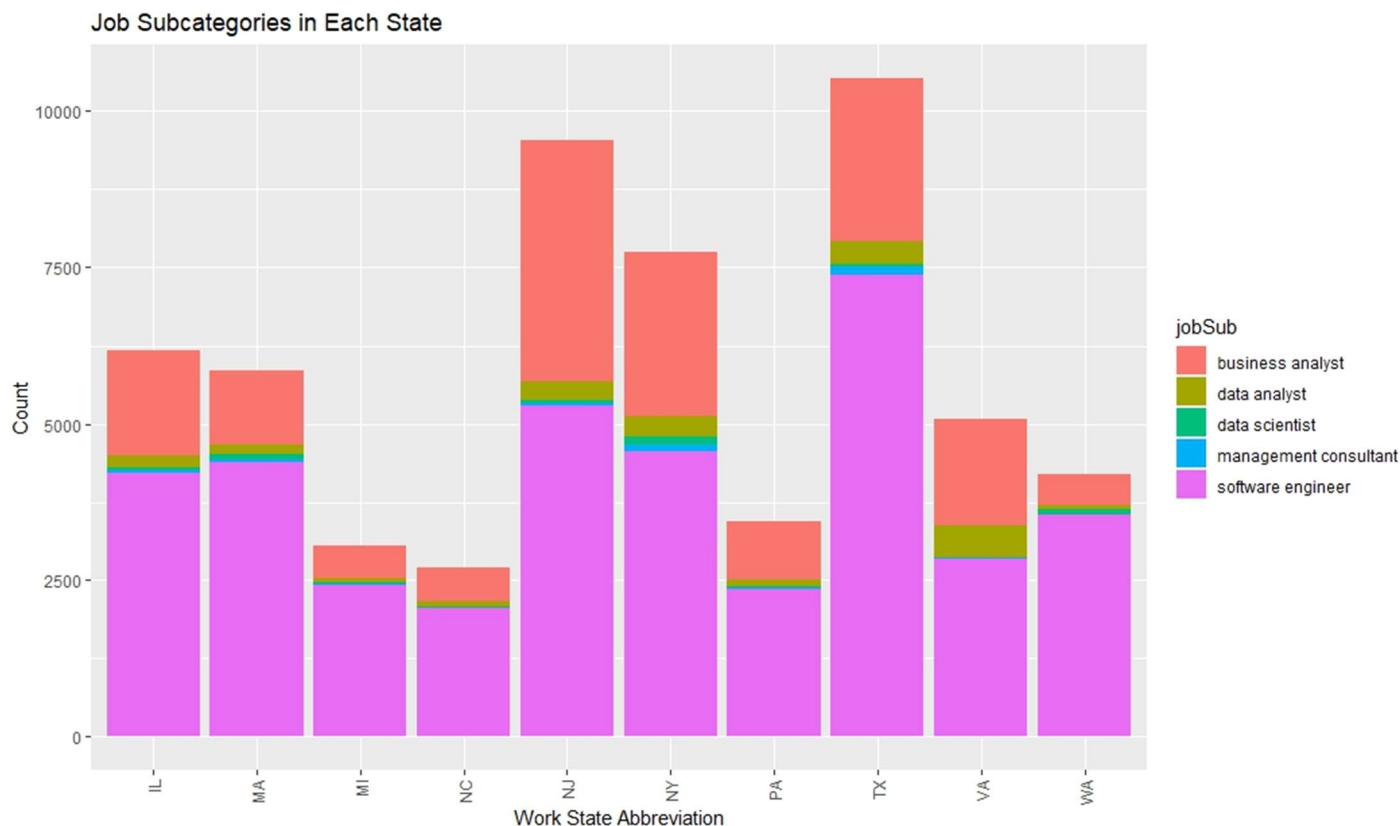


Figure 4

### 2.2.1 Differences between job sub-categories?

There are differences between the job sub-categories, both in paid wage and sheer number of jobs available. The two most popular job sub-types are software engineer and business analyst. If we include these two sub-types, we see that they have one of the highest salary ceilings compared to the rest (Figure 5). However, if we exclude the outliers, the range of highest to lowest salaries would be: data scientist, management consultant, software engineer, business analyst, and data analyst.



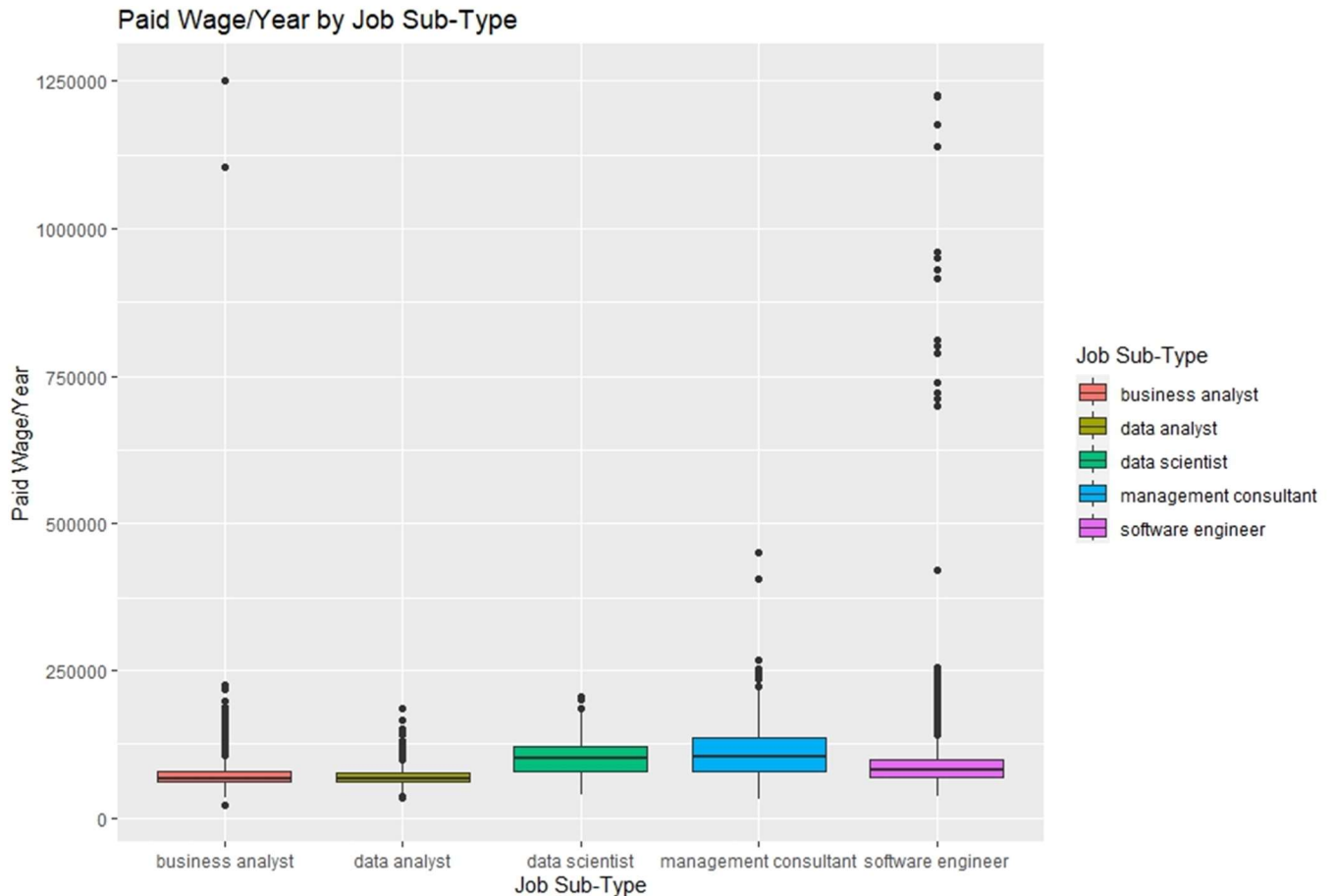


Figure 5

Now, if we look at each state for each job sub-type, it generally follows that order. Usually, data scientist and management consultant switch for which is the top paying job sub-category in each state. Business analyst and data analyst also sometimes are roughly the same, but in Virginia, data analyst had a larger interquartile range, implying a greater range of salary. The most surprising boxplot was North Carolina, where data scientist was the smallest interquartile out of the five. The median also was right at Q1, which it also showed in Michigan.

### 2.2.2 Which companies have the highest salaries for those sub-types?

We decided to do a top five *highest*, *average*, and *median* salary for each job sub-type. However, I will only show the number one spot for each one here.

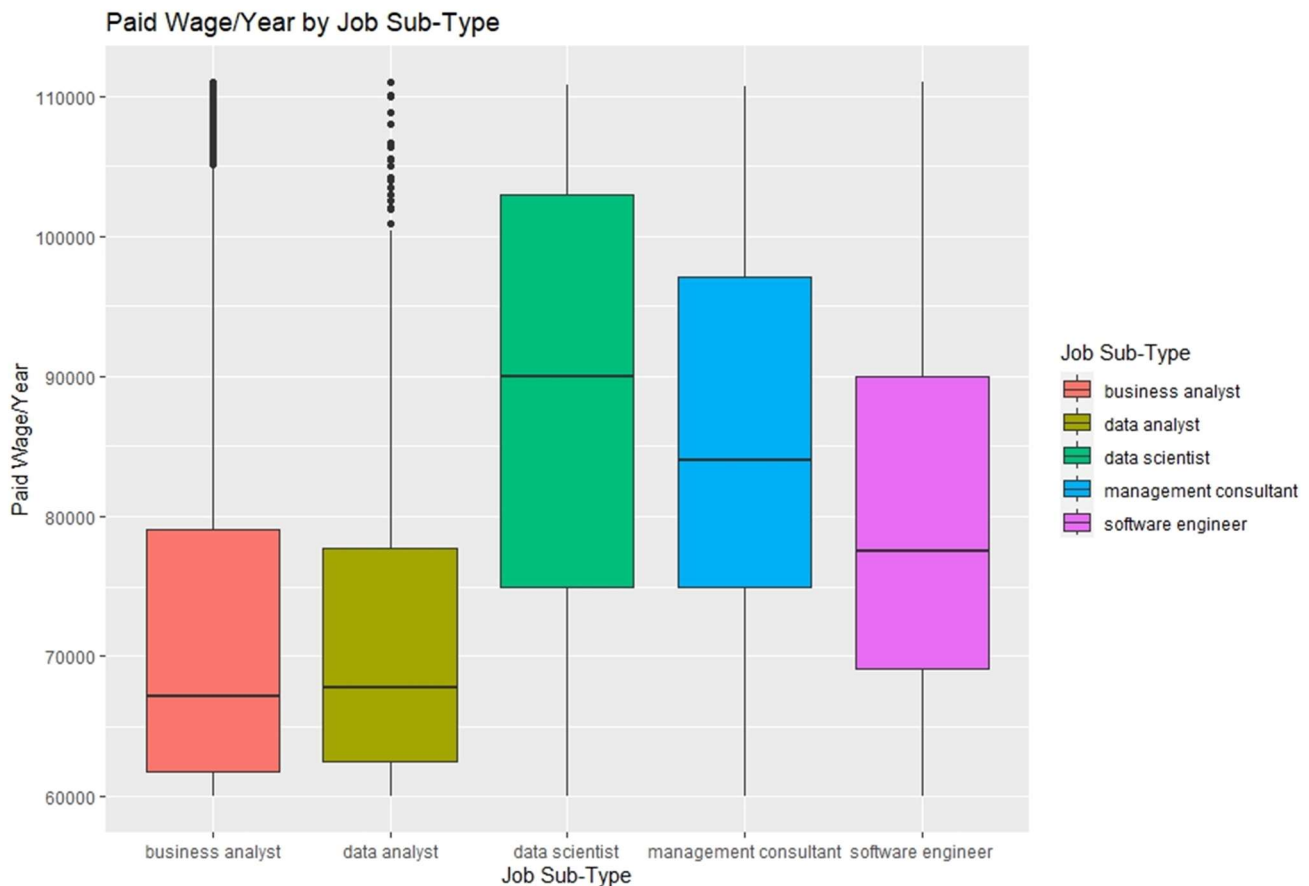


Figure 6

The percentile was restricted from 5th to 95th to help with the outliers (Figure 6). If we did not do that, we would see business analyst having a salary of \$1,250,784 and software engineer with \$1,224,801. So, for the max salary, business analyst had a salary of \$124,898 at Tesoro Companies, Inc, data analyst had \$122,000 at UBS Services LLC, data scientist had \$124,800 at Edataforce Consulting LLC, management consultant had \$124,571.20 at McKinsey & Company, Inc US, and software engineer had \$124,999.90 at Zulily, Inc.

For average, business had Accelerated Innovators Inc for \$124,800, data analyst had UBS Services LLC for \$122,000, data scientist had Edataforce Consulting LLC for \$124,800, management consultant had Fuel Exchange LLC for \$120,000, and software engineer had IST, Inc for \$124,800.

But averages may be skewed if there's a small group of points that have exorbitant numbers, such as software engineer and business analyst. So, let us look at the median. Business analyst has a median salary of \$124,800 with Accelerated Innovators Inc, data analyst has \$122,000 with UBS Services LLC, data scientist receives \$124,800 with Edataforce Consulting LLC, management consultant receives \$120,000 with Fuel Exchange LLC, and software engineer earns \$124,999.90 with Zulily Inc.

---

We see that all the data-related jobs are within the \$120,000 to \$125,000 range when we restrict the percentile and choose the median. Going with the max will reveal how inordinate some companies will pay, and average can't be entirely trusted if there are a handful of those types of companies.

### *2.2.3 Will the answer change if I take standard of living into account?*

If I took the standard of living into account, my answer will change. If it's only based on the cost index, I would move to **Michigan, Texas, and Illinois**. They are the lowest out of the 10, within the low 90s. I would not want to move to New York, knowing how it's equally as expensive as the Bay Area. But if I take in other factors, Texas suffers from extreme heat and cold, and their infrastructure is unable to handle the extreme cold. Other states on the east coast also suffer from severe winters, so I'd rather be somewhere where winter isn't as severe.

I would probably, out of all the ten states, would want to move to **Illinois** or **Washington**. Despite knowing Illinois has a high crime rate, I personally have family in Illinois, so I would be okay moving there. Meanwhile, Washington perhaps is a little closer to what I'm used to, both in weather and close cost index, but it's also a safer bet for those who are non-white.

## 2.3 How do offered salaries compare to the prevailing wage?

This question is all about comparing the prevailing wage to the paid wage. The prevailing wage is what employers expect to offer for the position, while the paid wage is the resulting salary agreement after negotiations between the employer and candidate. In essence, it shows how successful negotiating for a higher salary are by job category and company.

### *2.3.1 Are there job sub-categories that tend to get overpaid or under-paid?*

All job sub-categories listed (business analyst, data analyst, data scientist, management consultant, software engineer) have a higher paid wage, implying that average candidates tend to receive a salary higher than originally offered (Figure 7). The average is ~7k. Data scientists however seem to be the most successful at negotiations, as their average increase in salary is around 15k.

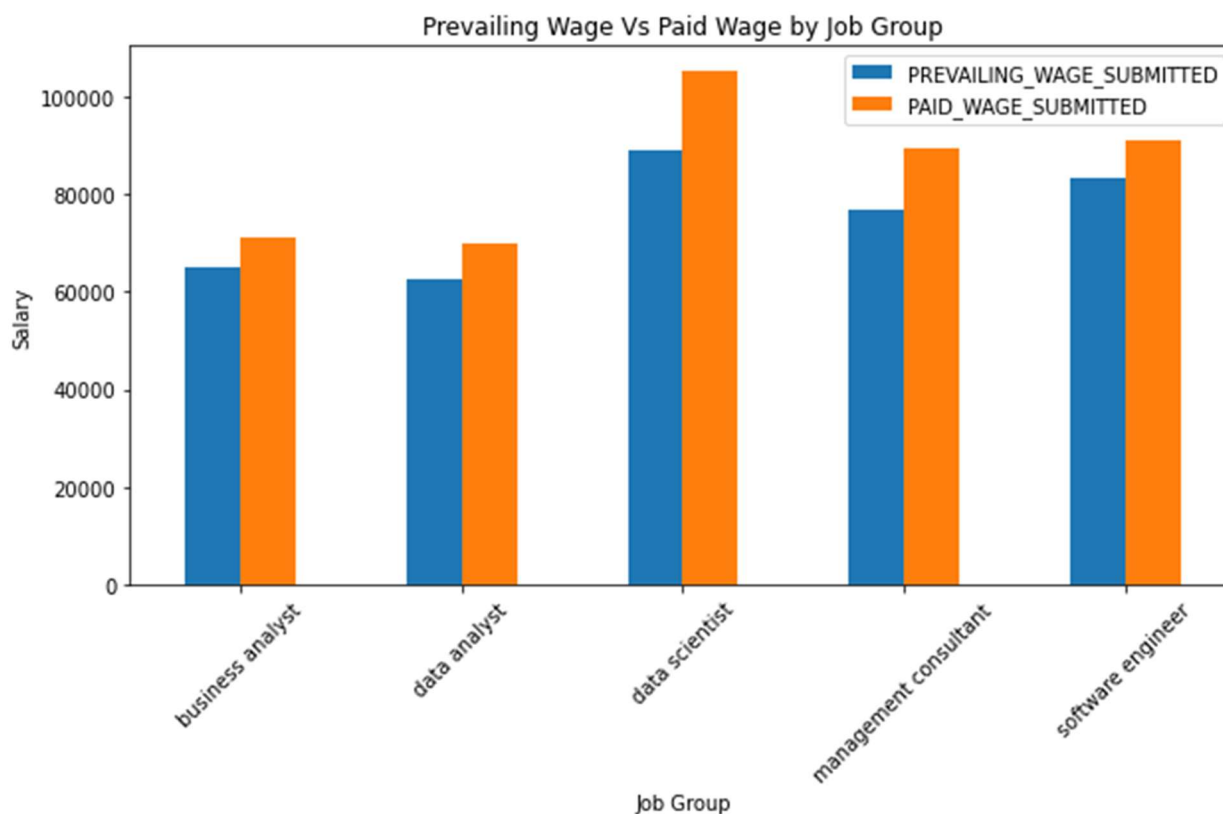


Figure 7

### 2.3.2 Are there companies that tend to over-pay or under-pay?

Figure 8 depicts the highest paying companies, with a red trendline depicting the mean salary of 92k. The rest of the graph (including companies paying below the median) is included in the Appendix C.

The highest paying company is McKinsey & Company, with a median paid wage of 135K. They are closely followed by Twitter, Apple, and Walmart. The median wage for companies selected (with outliers removed and with over 170 employees) was 92k, with only 27/86 companies paying wages above this median. Most over-paying companies are predominantly “big Tech” companies such as Google, Twitter, Apple, LinkedIn, as well as large electronics corporations like Samsung and Qualcomm technologies, or SaaS companies such as Symantec or Intuit. Banking and finance companies seemed to pay around the median or below, and the lowest paying companies are overall less-known entities.

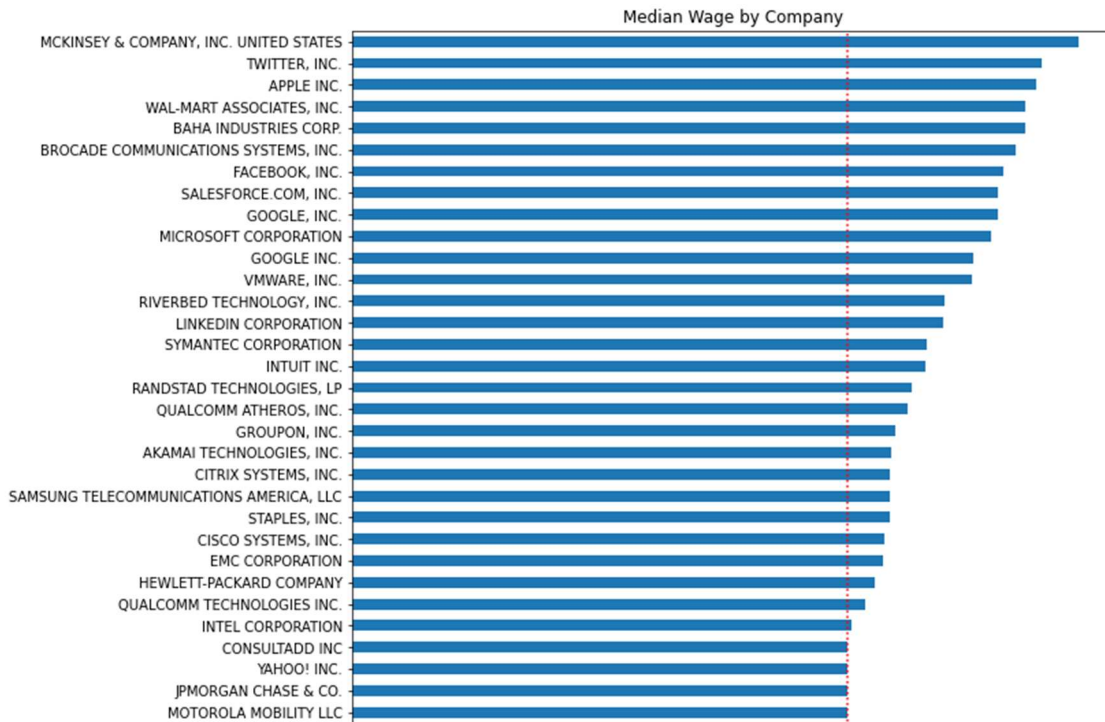


Figure 8

## 2.4 Which City or State offer the best job opportunities?

This question is all about choosing the best place to live with regards to job security (by having a large job market) and salary (which places pay the most?). First, we will look at the best states, followed by cities, and then contrast the size of the job market with the highest salary potential. All states were included in calculations, though only cities with <1000 jobs were included to provide a more representative job market and salary. This is to prevent a small city, for example, entirely composed of CEO software engineers with matching salaries from affecting the data set.

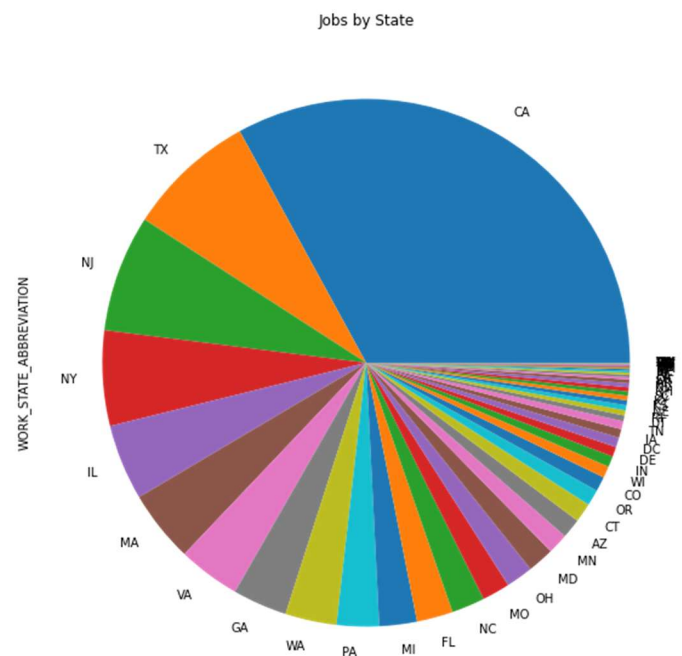


Figure 9

### 2.4.1 Which states have the biggest job market?

California has the largest job market by far, taking up a third of the entire US job market with over 44k jobs available. They are followed by Texas (10k), New Jersey (9.5k), and New York (7.8k), each of which are around ~8% (Figure 9).

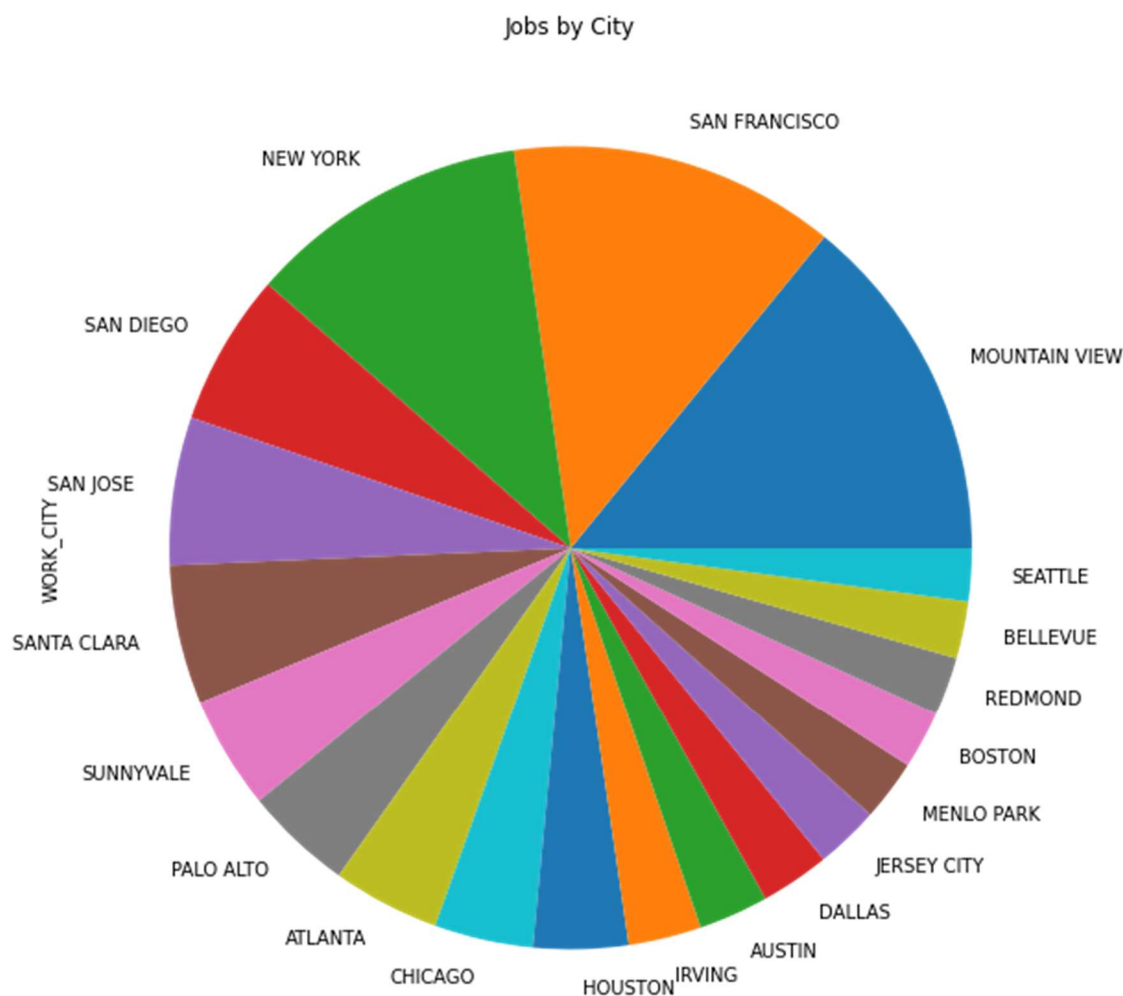


Figure 10

### 2.4.2 Which cities have the biggest job market?

Mountain View has the largest job market, followed by San Francisco, New York, and San Diego. Following cities are all in California and predominantly in the bay area, followed by large cities such as Atlanta, Chicago, and Houston (Figure 10).

2.4.3 Now contrast with pay. Which city or state has the biggest job market and greatest overall salary? (i.e., what's the best place to find well-paying work?)

California has the largest number of jobs and pays the highest salaries by far, with a median wage of 104k. The next largest job markets are in Texas and New Jersey, but they pay substandard salaries by comparison, both at 70k. More well-paying states are Washington (102k), followed by Massachusetts (85k) and New York (82k), with all paying over the median (Figure 11). The figure depicts the job market as a function of size, while color represents the median wage.

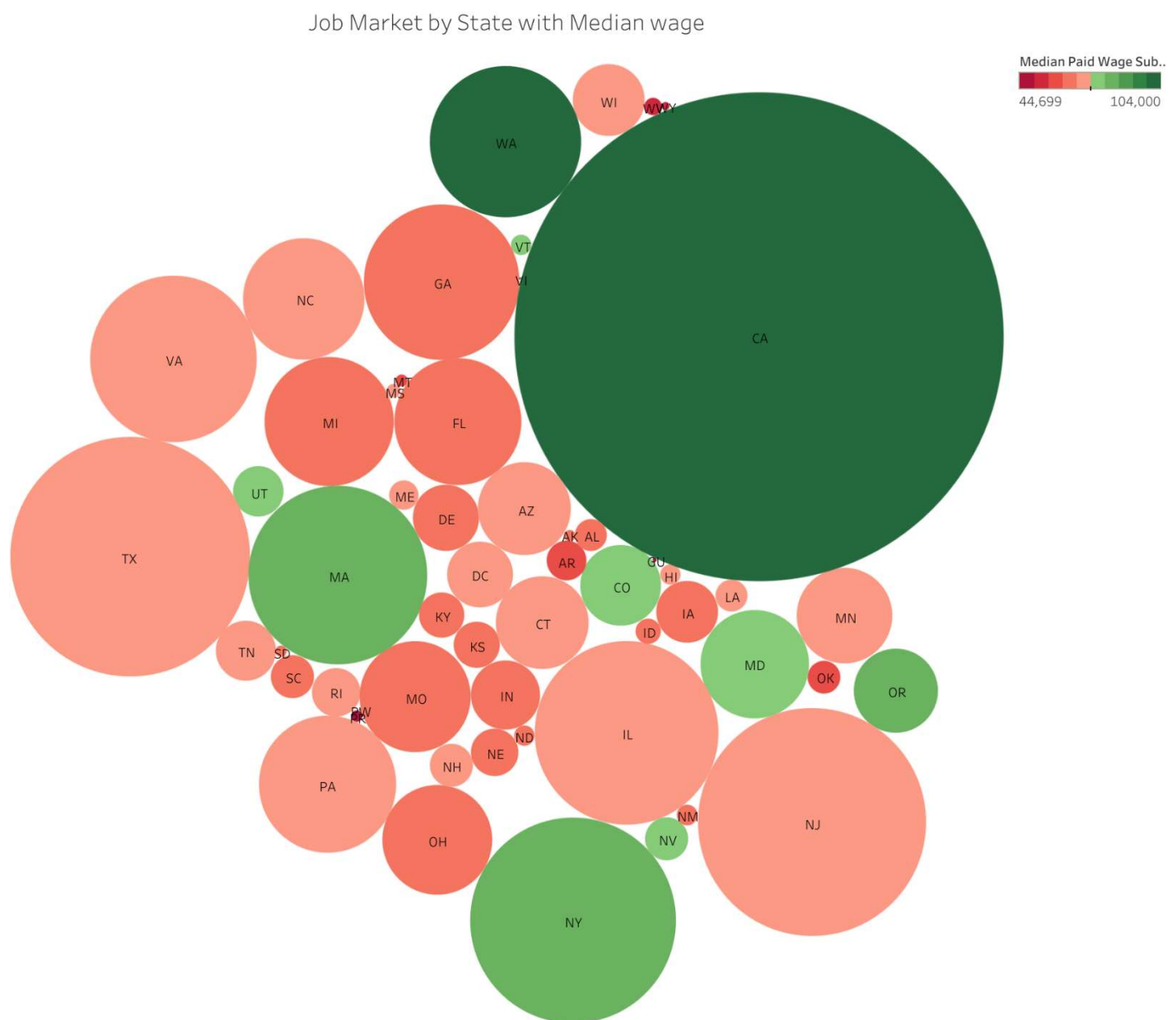


Figure 11

For cities, although Mountain View has the largest job market and a respectable median salary of 115k, jobs in Menlo Park pay the best, with the highest median salary of 120k. Tied for 3rd place are San Francisco and Palo Alto, with a median salary of 110k, and job markets of 6.5k and 3.7k respectively. New York City also has a solid job market at 5.6k jobs, but the median salary is much lower at 90k.

Job Market by City with Median Paid Wage

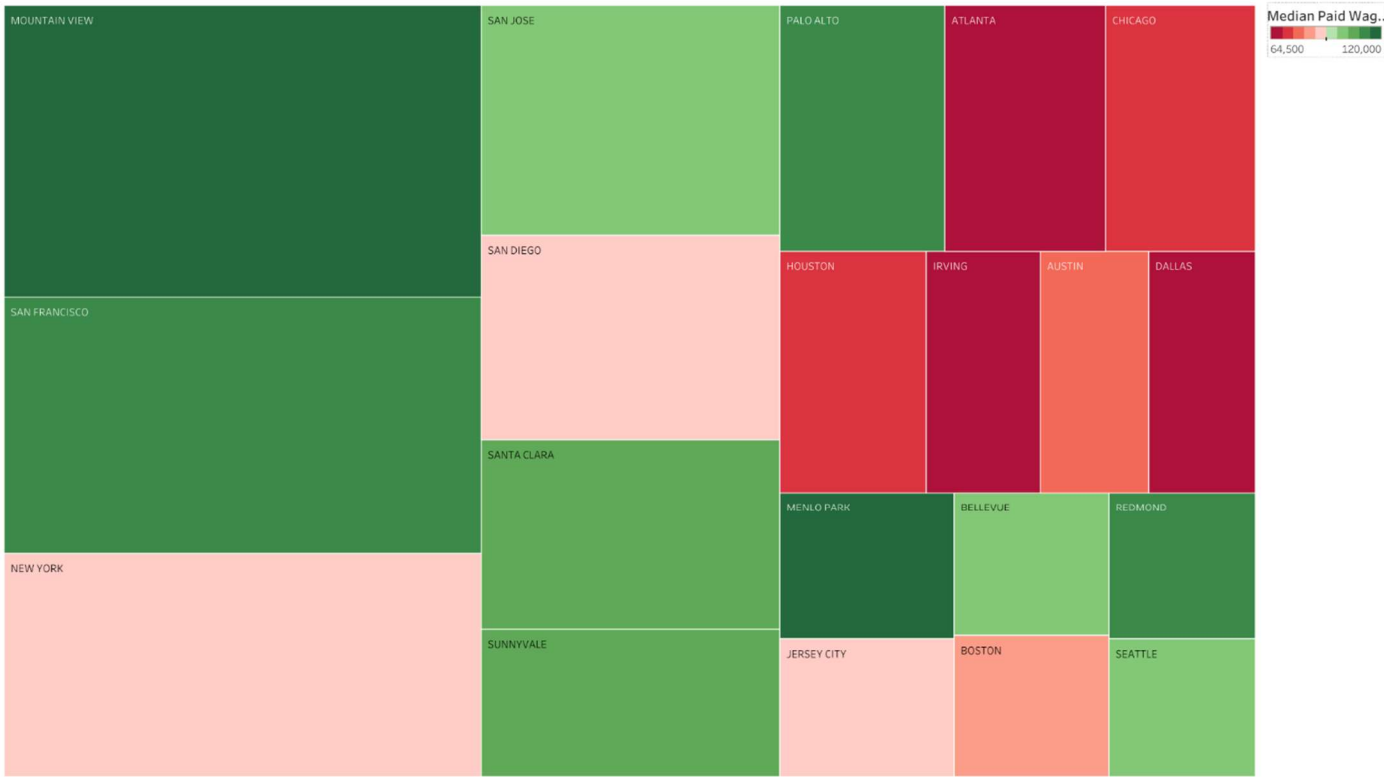


Figure 12

Overall, California and the Bay Area specifically is the best place to enjoy a robust job market and receive a large salary. Ideally, one would live in Mountain View or San Francisco for the job potential but try to get a position paying out from Menlo Park (Figure 12).



## 2.5 Does the nationality of the candidate affect the status of case?

In order to have a binary response we coded “certified withdrawn”, “certified-expired” and “certified” as positive and “denied” as negative. We used logistic regression analysis and ANOVA to test the significance of nationality as a predictor of case status.

The logistic regression analysis showed that the intercept is significant ( $p < 0.001$ ), indicating that there is a significant relationship between the predictor variable (country) and the response variable (positive or negative status). However, the individual coefficients for the different countries were not all significant ( $p > 0.05$ ).

Therefore, we conclude that the nationality of the candidate does not influence the status of the case (Table 1).

Table 1

CASE_STATUS	certified	certified-expired	denied	withdrawn
COUNTRY_OF_CITIZENSHIP				
INDIA	4158	1864	279	286
CHINA	670	340	34	57
CANADA	236	151	19	19
SOUTH KOREA	154	82	14	19
RUSSIA	70	30	6	3
NEPAL	55	28	6	3
PAKISTAN	50	26	4	4
TAIWAN	72	33	3	2
UKRAINE	45	20	2	4
MEXICO	124	65	58	8

### 2.5.1 Does job subtitle of the candidate affect the status of the case?

We used python to visualize the relationship between job title subgroup and case status using a stacked bar chart (Figure 13). From the visualization it seems like the difference between case status

frequency for job title subgroup does not change much, so we decided to run a chi square test for independence to check if our assumption is correct.

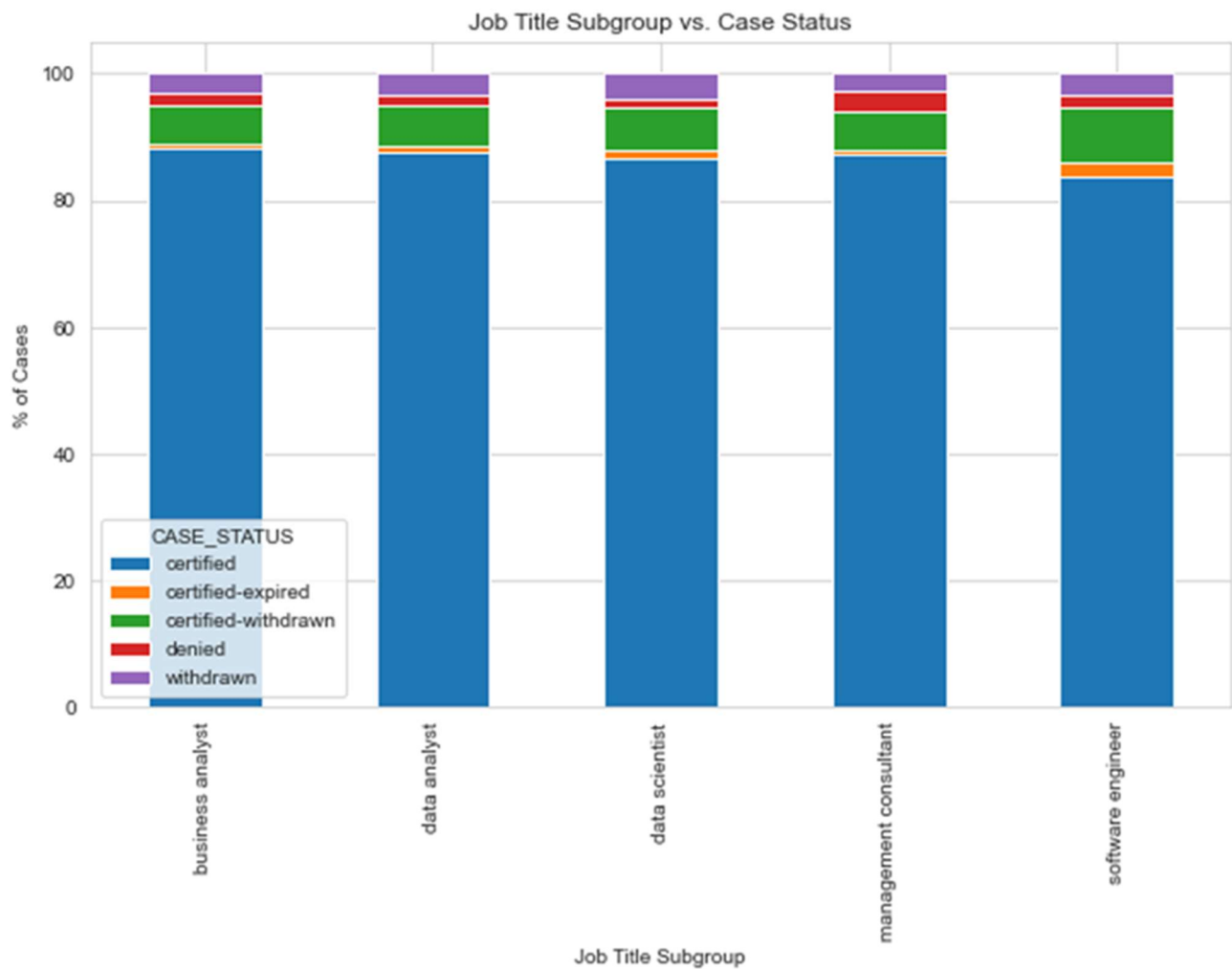


Figure 13

The result of the chi-square test suggests that there is a significant association between job title subgroup and case status (Figure 14). The very small p-value ( $< 2.2e-16$ ) indicates that the null hypothesis of independence between the two variables can be rejected. Therefore, the job title subgroup of the candidate does seem to influence the case status.

Pearson's Chi-squared test

```
data:  ct
X-squared = 571.87, df = 16, p-value <
2.2e-16
```

Figure 14

We also used a mosaic graph (Figure 15) to gain more insight into this question: We found out that business analysts are more likely to be certified than software engineers and are and less likely to have their certification expired or withdrawn compared to software engineers. Data analysts are less likely to have their certification expired or withdrawn compared to software engineers.

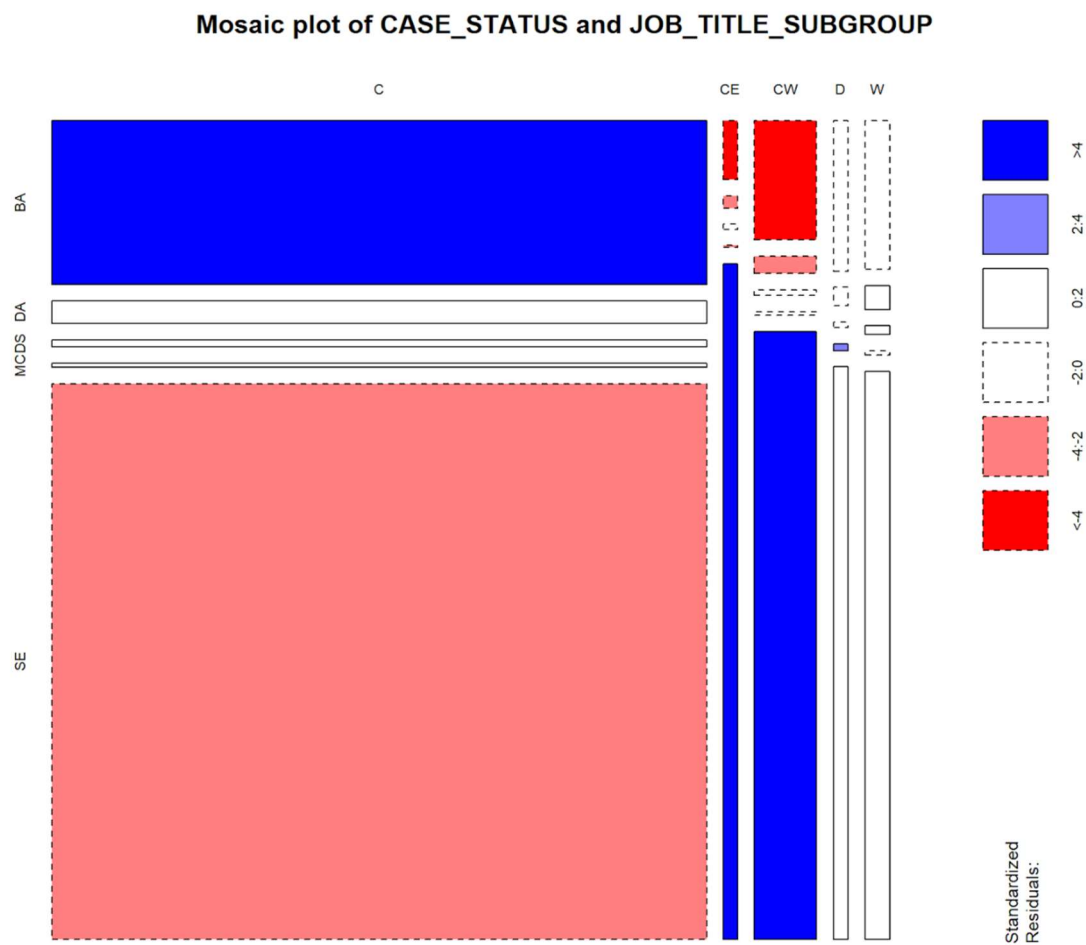


Figure 15

Software Engineers are more likely to have been denied a visa. They are less likely to have a certified case status compared to business analysts and are more likely to have their certification expired, which means companies didn't move forward with the hiring after their case was certified, as well as have their certification withdrawn, which means that the applicant didn't move forward with the application after the case was certified.

### 2.5.2 Are specific job titles being offered to candidates of a specific nationality?

In other words, we want to know if there is a significant difference in number of hiring for a particular job subtitle considering country of citizenship.

First, we conducted an analysis in Python looking at the top 10 countries with higher hiring frequency. We then looked at the frequency of job subtitles in each of these countries (Figure 16). We found out that there are different jobs title subgroups being offered in significant difference to different countries. The key takeaways considering the top 10 countries with higher hiring percentages:

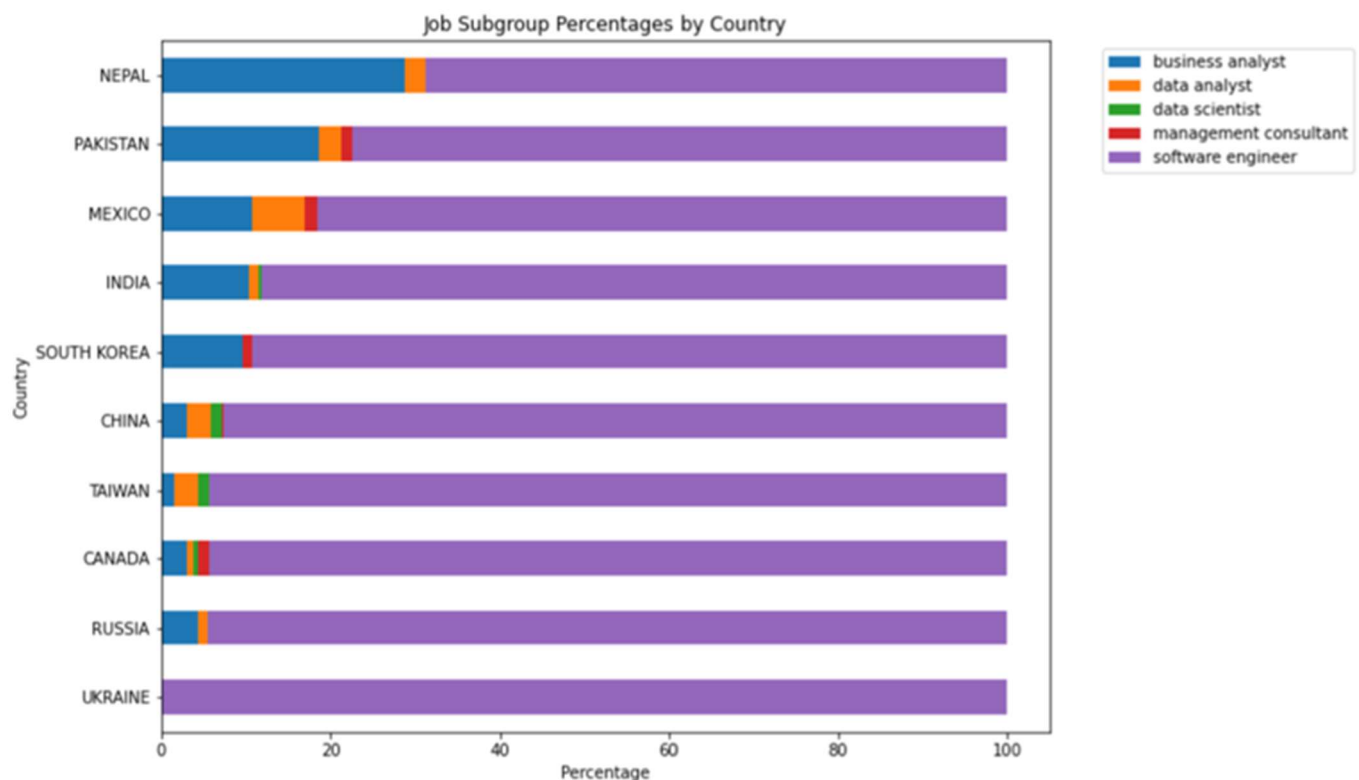


Figure 16

Software engineers are the most sought out professionals across the board in the top 10 countries. Countries such as Canada, Russia, Taiwan, and China have over 90% of its hiring pool being directed to software engineers professionals. Ukrainian applicants are universally software engineers.

Nepal has the highest percentage of individuals working as business analysts, with over 28%, followed by Pakistan with over 18%. Mexico has the highest percentage of individuals working as data analysts with over 6% of the pool of job titles. Taiwan and China have the highest percentage of individuals working as data scientists, with over 1.4% and 1.3%. Pakistan has the highest percentage of individuals working as management consultants, with over 1.3%. A numerical table depicting this data can be found in Appendix B.

## 2.6 What are the states with the largest change in salary adjusted wage?

To find the states with the largest change in salary adjusted wage we must sort the states with the greatest decrease to greatest increase in adjusted wage. The states with the greatest decrease in adjusted salary are Hawaii, New York, California, Massachusetts, and Oregon with a decreased wage percentage of 48.3%, 32.5%, 29.7%, 35.9%, and 23.1%, respectively. The states with the greatest increase are Mississippi, Kansas, Oklahoma, Alabama, and Georgia with an increased wage percentage of 20%, 15.6%, 13.8%, 13.8%, and 12.6%, respectively. The adjusted wage in states that have a decreased adjusted wage have a greater difference than the states with an increased adjusted wage (Figure 17).

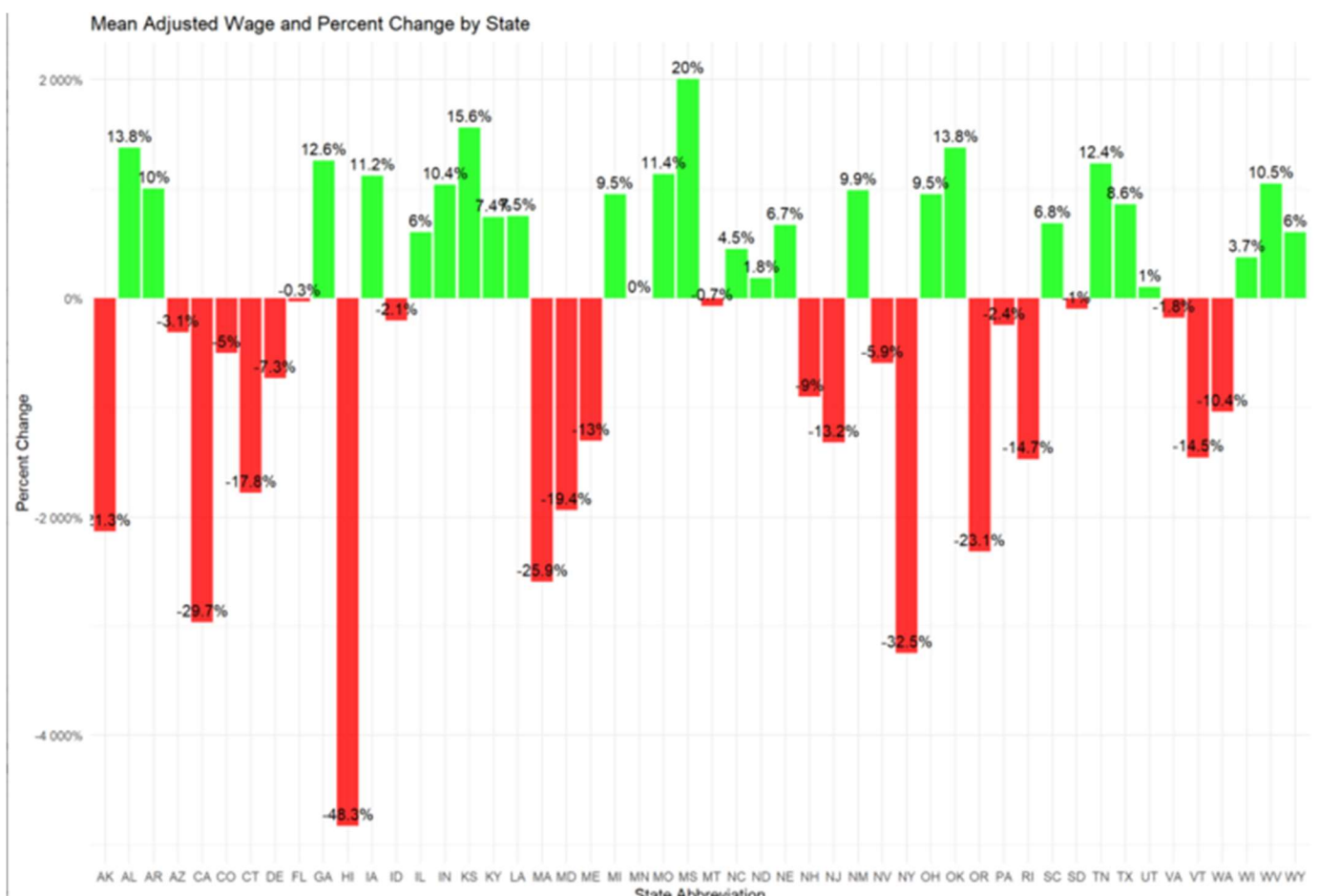


Figure 17

---

### 2.6.1 Which are the top and bottom states in terms of salary considering adjusted wage?

To find the top and bottom states considering adjusted salary, I sorted all median adjusted wages by state. The 5 highest median adjusted salaries are in Washington, Mississippi, Utah, Kansas and Tennessee with median pay \$91,397.84, \$82,232.89, \$80,531.31, \$78,612.72, and \$78,292.13, respectively. The 5 lowest median adjusted salaries are in Hawaii, Alaska, New York, Montana, and Rhode Island with median pay \$36,646.66, \$52,731.70, \$57,354.92, \$59,582.91, and \$59,726.96, respectively (Table 2).

Table 2

Then we can look at the updated list of top and bottom states which is:

5 top:

Top 5 States	Adjusted Wage	Bottom 5 States	Adjusted Wage
Washington	91397.85	Rhode Island	59726.96
Mississippi	82232.89	Montana	59582.92
Utah	80531.31	New York	57354.93
Kansas	78612.72	Alaska	52731.71
Tennessee	78292.13	Hawaii	36646.66

## 2.6.2 Looking at job subtypes, how does salary change for top and bottom 5 considering the cost of living?

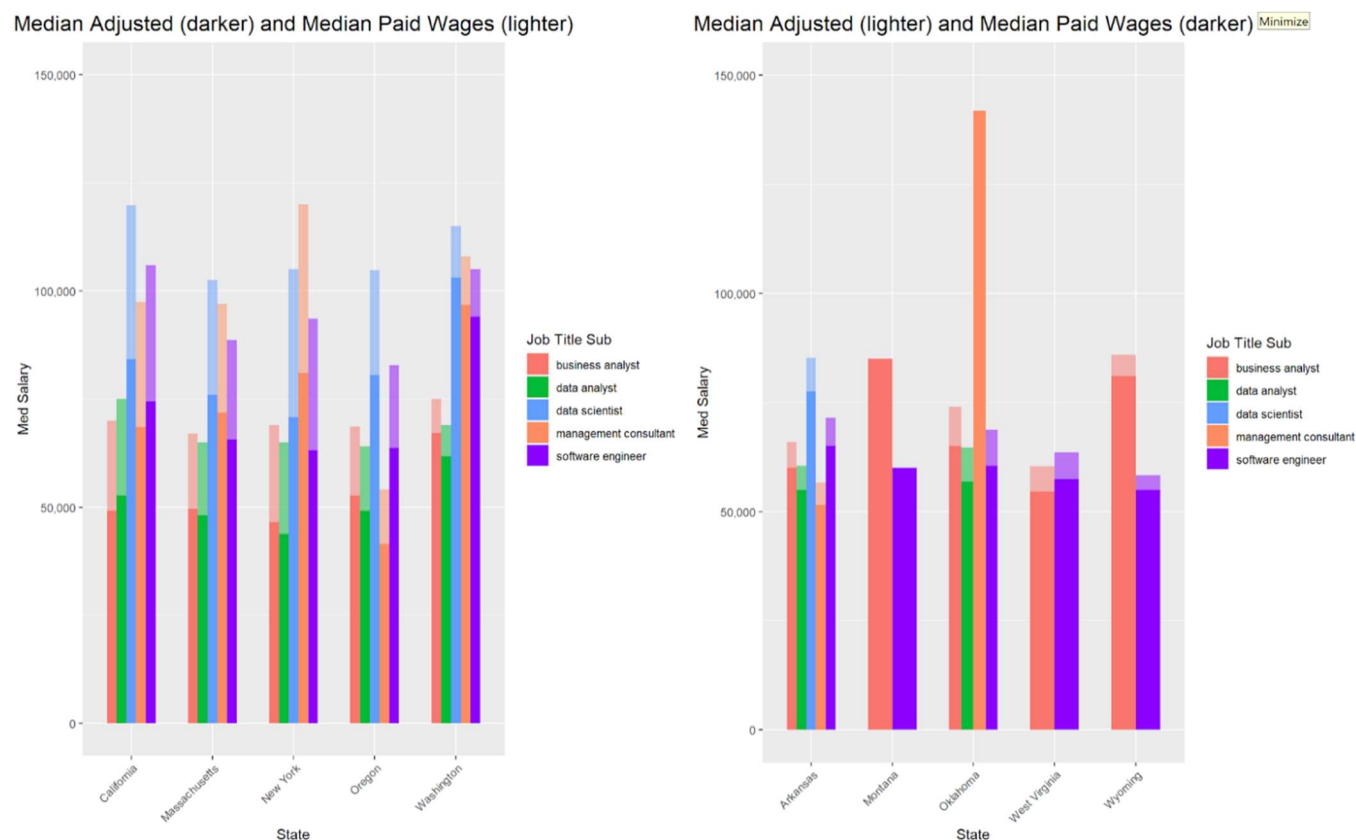


Figure 18

When examining job subtypes, we can observe significant changes in salaries based on the cost of living in the top and bottom five states (Figure 18). The top five states, which have the highest median salary, show a considerable decrease in wages after accounting for the cost of living. Conversely, the bottom five states, with the lowest median salary, exhibit a substantial increase in wages after adjusting for the cost of living, except for Montana and for management consultants in Oklahoma.

It's worth noting that, in the graph depicting the top states, the adjusted wage falls below \$50,000 for most business and data analysts, while these job titles in the bottom states remain above \$50,000. The states with the most significant decrease in adjusted wages experience a decrease of approximately \$40,000 to \$50,000. However, not all job sub-titles exhibit an increase in adjusted wages; only business analysts and software engineers appear in all the states. The adjusted wage for business analysts indicates that low cost-of-living states provide better compensation than high cost-of-living states.

---

Conversely, software engineers' paid wages show that they receive better compensation in high cost-of-living states, while adjusted wages demonstrate that they are compensated similarly across the board.



---

## CONCLUSION

To summarize, the analysis of job subtypes in the data-related field reveals distinct differences in salary levels. Among specific subtypes, data scientists earn the highest median salary, followed by management consultants, software engineers, business analysts, and data analysts. Geographic location also plays a crucial role, with California, Arizona, and Washington being top-paying states for data scientists, while Oklahoma, Connecticut, and New York stand out for management consultants.

California boasts the largest job market, representing a third of all available positions in the US, followed by Texas, New Jersey, and New York. Cities such as Mountain View, San Francisco, New York, and San Diego are the primary hubs for these jobs, primarily situated in California's Bay Area. Notably, the highest-paying companies include Netflix, Co-Creation Partners, Sigmatek Systems LLC, The University of Texas System Administration, and Intuit.

Salaries vary across job sub-categories, with data scientists generally having the highest earning potential. While there may not be significant changes in salary when moving states, the choice of company can make a difference. It is crucial to consider salary ranges along with other factors such as cost of living and personal preferences when making decisions about job locations in the data-related field.

Negotiating salary often results in candidates receiving higher offers than originally presented, with an average increase of approximately \$7,000. Data scientists tend to be the most successful negotiators, securing an average increase of around \$15,000. Certain companies such as McKinsey & Company, Twitter, Apple, and Walmart tend to pay above the median salary.

Nationality does not significantly impact visa certification or denial, but there is a notable association between job subtypes and case status. Business analysts have a higher likelihood of certification, while management consultants are more likely to face visa denials. Overall, job titles appear to have a stronger influence on case status compared to nationality.

The cost of living significantly impacts salary variations across states and job subcategories. In top states, most business and data analysts experience a notable decrease in adjusted wages, falling below \$50,000, while bottom states maintain salaries above \$50,000. Some states witness a decline of approximately \$40,000 to \$50,000. Business analysts fare better in low-cost-of-living states, whereas software engineers find better compensation in high-cost-of-living states. Adjusting wages based on the cost-of-living index confirms varying compensation levels among job subtypes, with management consultants emerging as the highest-paid group, earning approximately \$25,000 more than data analysts. Considering the cost of living is vital when negotiating salaries and making job decisions.

---

In summary, job subtype, company, location, and cost of living all contribute to determining salaries in the data-related field. Employers and job seekers alike must consider these factors carefully.

---

# APPENDIX

*A. Appendix – Table of Figures*

FIGURE 1 ..... 4

FIGURE 2 ..... 5

FIGURE 3 ..... 6

FIGURE 4 ..... 7

FIGURE 5 ..... 8

FIGURE 6 ..... 9

FIGURE 7 ..... 11

FIGURE 8 ..... 12

FIGURE 9 ..... 12

FIGURE 10 ..... 13

FIGURE 11 ..... 14

FIGURE 12 ..... 15

FIGURE 13 ..... 17

FIGURE 14 ..... 17

FIGURE 15 ..... 18

FIGURE 16 ..... 19

FIGURE 17 ..... 20

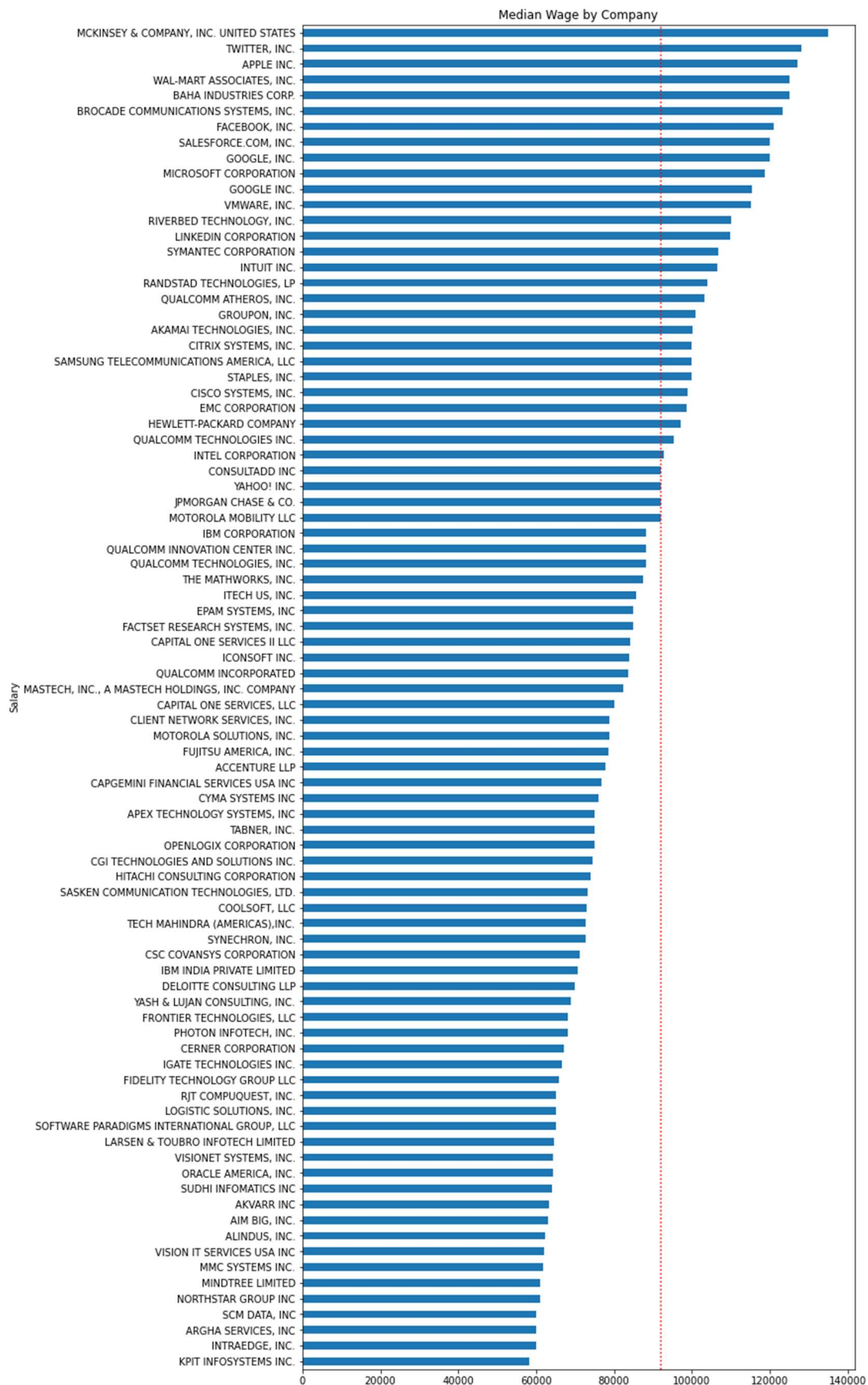
FIGURE 18 ..... 22

## B. Appendix - Tables

JOB_TITLE_SUBGROUP	business analyst	data analyst	data scientist	management consultant	software engineer
COUNTRY_OF_CITIZENSHIP					
INDIA	10.433286	1.094948	0.297200	0.109495	88.065071
CHINA	3.100775	2.768549	1.328904	0.110742	92.691030
CANADA	3.004292	0.858369	0.429185	1.287554	94.420601
SOUTH KOREA	9.677419	0.000000	0.000000	1.075269	89.247312
RUSSIA	4.347826	1.086957	0.000000	0.000000	94.565217
NEPAL	28.750000	2.500000	0.000000	0.000000	68.750000
PAKISTAN	18.666667	2.666667	0.000000	1.333333	77.333333
TAIWAN	1.428571	2.857143	1.428571	0.000000	94.285714
UKRAINE	0.000000	0.000000	0.000000	0.000000	100.000000
MEXICO	10.769231	6.153846	0.000000	1.538462	81.538462

CASE_STATUS	certified	certified-expired	denied	withdrawn
COUNTRY_OF_CITIZENSHIP				
INDIA	4158	1864	279	286
CHINA	670	340	34	57
CANADA	236	151	19	19
SOUTH KOREA	154	82	14	19
RUSSIA	70	30	6	3
NEPAL	55	28	6	3
PAKISTAN	50	26	4	4
TAIWAN	72	33	3	2
UKRAINE	45	20	2	4
MEXICO	124	65	58	8

## C. Appendix C – Supplemental



---

## REFERENCES

*Cost of Living Index by State 2023*. (n.d.). Retrieved from worldpopulationreview.com:

<https://worldpopulationreview.com/state-rankings/cost-of-living-index-by-state>

US Department of Labor: Office of Foreign Labor Certification. (2008-2015). Salary Dataset. Retrieved from <http://www.foreignlaborcert.doleta.gov/performance/data.cfm>