# A LOOK INTO U.S. OVERSEAS HIRING PRACTICES

DS 311: Technologies in Data Analytics
Professor Norman Lo

Meliza Matute, Natalia Fonseca, Dylan Alvarado, & Steve Truong

LAM FAMILY COLLEGE *of* BUSINESS

SAN FRANCISCO STATE UNIVERSITY

# Executive Summary

The data set analyzed in this study was compiled by the US Department of Labor's Office of Foreign Labor Certification and presented alongside 167,278 records from the Labor Condition Applications, including H1-B and other types of work visas for foreigners. 25 field names were then prepared for each visa application. Including those of work state, job title, job title subgroup, paid wage per year, and employer name.

Team Cobra then depicted the Salary Data Set meticulously in order to identify the specific job titles, locations, and companies of data-related jobs most desirable by foreign non-US applicants based on salaries.

The research conducted allowed us to analyze the following:

- How offered salaries compared to prevailing wages.
  → Finding that employees among various data-related job positions were paid less whilst working on a per-hourly wage compared to employees working with a yearly salary.

- How salary in relation to data-related job title subgroups differ by location.
  → Finding that data-related job title subgroups are, on average, paid higher salaries in New York and California.

- The certification rates based on job title subgroups and country of citizenship.
  → Finding that software engineers from India were certified in higher numbers compared to their counterparts.

- Disproportions were found in wages and number of positions filled between foreign and domestic teachers in some of Texas' major cities.
  → Finding that Texas hires teachers at a rate far higher than any other employer in the U.S.

The findings in this study are beneficial to foreign job seekers who wish to research the best job title, location, wage, and company to work for in the U.S. But it is also beneficial to government agencies whose job is to make sure foreign employees are not being taken advantage of by ensuring that they are receiving similar wages to other employees with similar skills, backgrounds, and who work in the same or similar fields.

# Introduction

In the salary dataset each record indicates an application by a non-US worker for a technical position job within the US. Employers of non-US workers are required to provide the average pay they will provide and the prevailing wage for a worker with similar skills in the same position. These applications allow the department to ensure there is equity between US and non-US workers.

From the numerous job titles submitted, eight subgroup categories for the job titles were created for organization purposes: assistant professor, attorney, business analysts, data analysts, data scientist, management consultant, software engineer, and teacher.

The information drawn from this dataset reveals various trends that are affected by factors such as work states to job title subgroups.
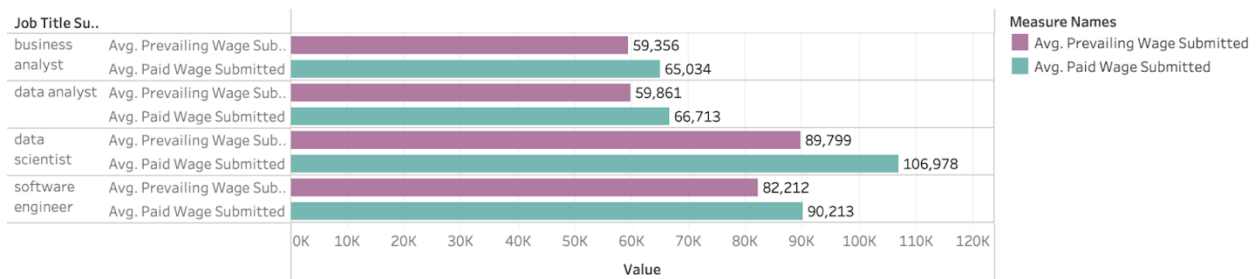
# Objectives



We investigated the following:

**How offered salaries compare to prevailing wage:** Identifying the level of equity between US and non-US workers was a trend to be noted down as a point of concern in the case that immigrant workers were being taken advantage of.

**How salary in relation to data-related job title subgroups differs by location:** Salary for data-related jobs are typically perceived as to be high but is indeed impacted by the type of data-related jobs and location.

**Certification rates:** Factors that could possibly influence rates are:
**Job title subgroup:** In general the US does tend to hire more applicants for data-related job title subgroups, and we decided to investigate it further in the constraints of three states.
**Country of Citizenship:** Applicants come from all over the globe. We investigated whether there was a certain preference for applicants from one country than another

# Findings to Objective 1

When exploring the data set what we were able to find was the differences in offered salaries and prevailing wages. On average those with salaries made more money than those of prevailing wages when it came to the data related job title subgroups. When we explored deeper into Texas and teachers we were able to find that teachers who were brought in from outside of the U.S. on average made more money than teachers who worked domestically.

Average Salary of Data Subgroups

| Job Title Su.. | | Value | Measure Names |
|---|---|---|---|
| business analyst | Avg. Prevailing Wage Sub.. | 59,356 | Avg. Prevailing Wage Submitted |
| | Avg. Paid Wage Submitted | 65,034 | Avg. Paid Wage Submitted |
| data analyst | Avg. Prevailing Wage Sub.. | 59,861 | |
| | Avg. Paid Wage Submitted | 66,713 | |
| data scientist | Avg. Prevailing Wage Sub.. | 89,799 | |
| | Avg. Paid Wage Submitted | 106,978 | |
| software engineer | Avg. Prevailing Wage Sub.. | 82,212 | |
| | Avg. Paid Wage Submitted | 90,213 | |

What we can see from the graph above is that the data related jobs such as Business Analyst, Data Analyst, Software Engineers, and Data Scientist were paid more when offered salaries vs. those who were offered an hourly wage such as the "Average prevailing wage".

| | employer_name | work_state | Avg_Premium |
|---|---|---|---|
| 1 | DALLAS INDEPENDENT SCHOOL DISTRICT | Texas | 3,329 |
| 2 | HOUSTON INDEPENDENT SCHOOL DISTRICT | Texas | 2,173 |
| 3 | FORT WORTH INDEPENDENT SCHOOL DISTRIC | Texas | 3,068 |
| 4 | GARLAND INDEPENDENT SCHOOL DISTRICT | Texas | 2,119 |
| 5 | GLOBAL TEACHERS RESEARCH & RESOURCES, | Georgia | 230 |

As we stated before, foreign teachers within the Dallas School district on average were paid $3,329 more than other teachers. With Fort Worth being the second runner up with a $3,068 average premium for foreign teachers.
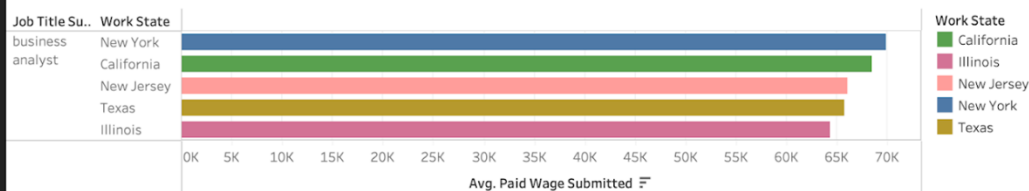
# Findings to Objective 2

For the second finding we were able to find what data-related job title subgroups were paid the most according to their locations. What we were able to find was that for Software Engineers the top state was California who paid on average around $106,877. Whereas the same job title was paid $65,067 a year in Indiana. This proved to us that the value of your dollar is truly dependent on where you live. When we compare the data related job title subgroups, like Business Analyst, Data Analyst, and Data Scientist, we found that on average the top states that paid a higher salary were New York and California in comparison to Texas, Illinois, and New Jersey.
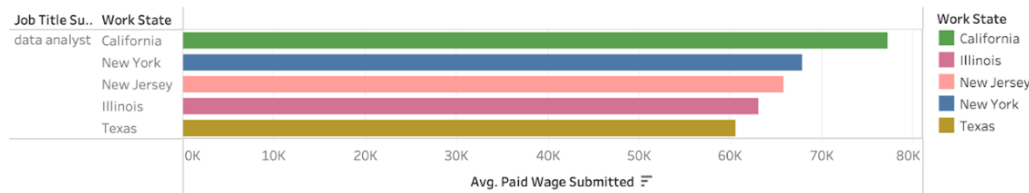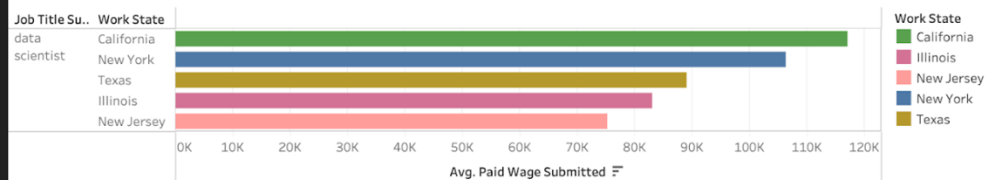
# Findings to Objective 3

Looking into the third objective, we decided to focus on three states (Arizona, California, and Texas) so that we could observe trends a bit more closely when compared to all fifty states. What we found was that indeed there was a higher certification rate for data-related job title subgroups with software engineers leading as the highest in certification rate in all three states and business analysts fluctuating within the second and third highest place for certification rates depending on the state. Apart from the data-related job title subgroups, teacher certification rates were also very high within the three states, fighting with business analysts for the place of second highest certified job title subgroup.

Now knowing that location does to an extent influence certification rates, we decided to investigate how country of citizenship may play a role in this.

| case_status | country_of_citizenship | count | job_title_subgroup | |
|---|---|---|---|---|
| 1 certified | INDIA | 72 | software engineer | **Arizona** |
| 2 certified | PHILIPPINES | 11 | teacher | |
| 3 certified | INDIA | 7 | teacher | |
| 4 certified | INDIA | 3 | assistant professor | |
| 5 certified | INDIA | 3 | business analyst | |

| case_status | country_of_citizenship | count | job_title_subgroup | |
|---|---|---|---|---|
| 1 certified | INDIA | 1501 | software engineer | **California** |
| 2 certified | CHINA | 408 | software engineer | |
| 3 certified | CANADA | 93 | software engineer | |
| 4 certified | INDIA | 51 | business analyst | |
| 5 certified | TAIWAN | 46 | software engineer | |

| case_status | country_of_citizenship | count | job_title_subgroup | |
|---|---|---|---|---|
| 1 certified | INDIA | 229 | software engineer | **Texas** |
| 2 certified | INDIA | 142 | business analyst | |
| 3 certified | MEXICO | 61 | teacher | |
| 4 certified | PHILIPPINES | 13 | teacher | |
| 5 certified | COLOMBIA | 9 | teacher | |

As depicted by the tables above, most certified applicants for technical positions in Arizona, California, and Texas are overwhelmingly coming from India. The tables also corroborate the previous finding in which a lot of the job title subgroups being certified fall under software engineers, business analysts, and teachers. It also appears that a lot of certified teachers are coming from the Philippines. After a bit of research, this can be explained by the fact that there are numerous programs to aid Filipino teachers in applying for visas to get a teaching job in the United States, where teacher shortages are widespread as the low-pay and decreasing number of teacher graduates cause there to be lots of vacancies.

Thus, it does seem that there is a strong correlation between both location and country of citizenship when looking at the rate that applicants are being certified.

# Detailed Findings

We established that California outsources by far the most workers from our data set. The leading jobs are far away in software engineering, followed with business analysts. What was interesting is Texas, who is hiring a disproportionate number of teachers, much larger in proportion than any other state.



Overseas Worker Applications by State - Certified
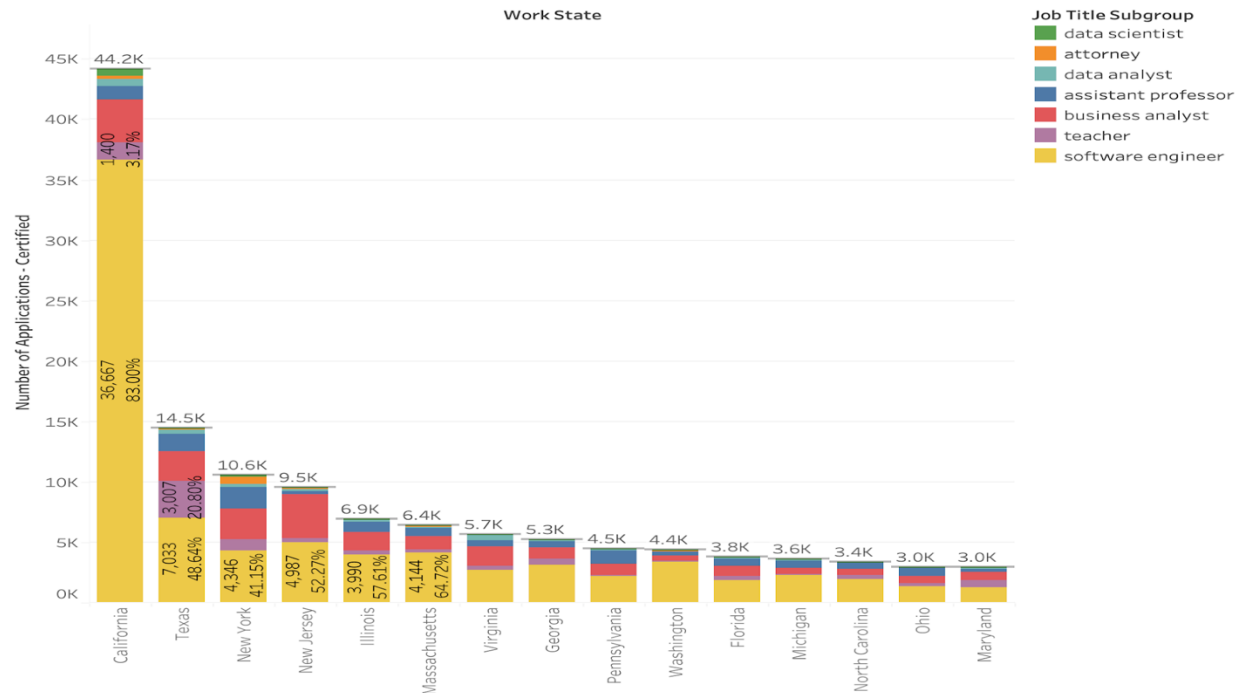
Investigating further, we found significant differences in the way Texas hires its teachers. The U.S. hires most of its teachers from the Philippines, followed by Mexico. Texas, however, hires overwhelmingly from Mexico. Furthermore, it hires its teachers at a pay rate far higher than any other employers in America.



U.S. Hiring: Where Are Our Foreign Teachers Coming From? - Certified
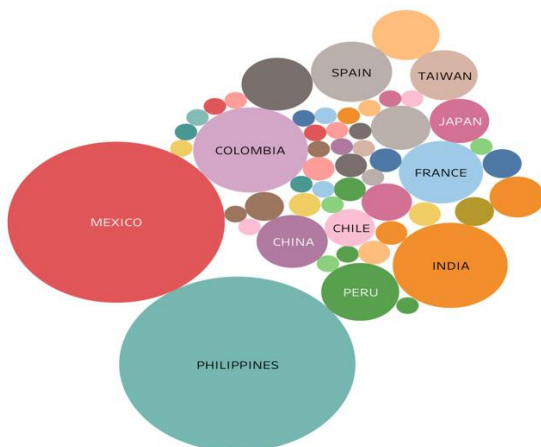


Texas Teacher Hiring: Where Are Texas' Foreign Teachers Coming From? - Certified
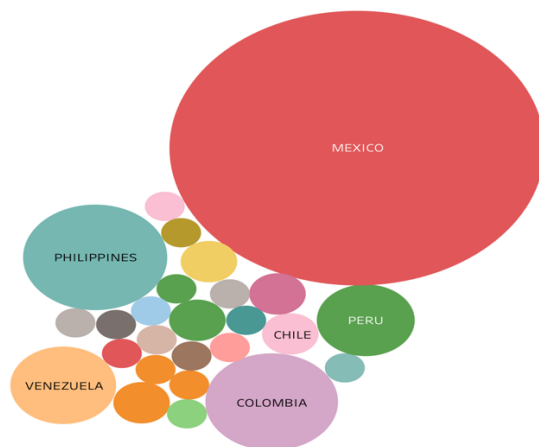
The reasons for why can be found in Texas' demographics. When looking at Texas' demographics, we saw a rapidly changing landscape. Texas has increased its Hispanic population by almost two million people from 2010 to 2020. That's a 21% increase in just ten years, greatly changing the proportions of the groups so that Hispanic is almost equal to white in population.
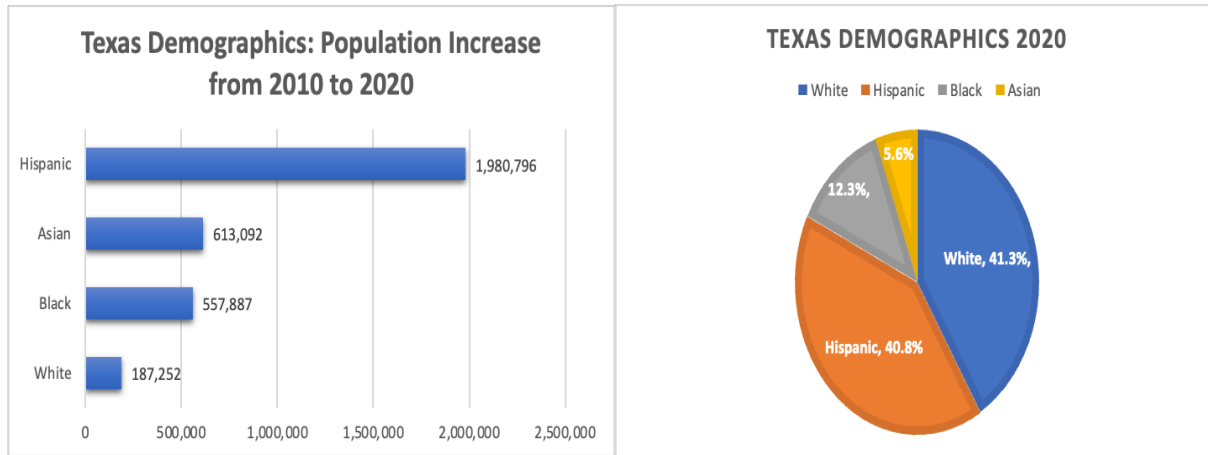


We decided to examine Texas voting practices. In the 2020 presidential election, the Texas cities that hired the most teachers were also two of the most populated (Dallas and Houston). While Dallas is historically a blue state, Houston recently flipped to Democrats after a long history of voting Republican. We also found that Democrats won the most votes in Texas since 1952. This has major implications for the future of the presidential election as Texas holds 38 electoral votes, second to only California with its 55 electoral votes.
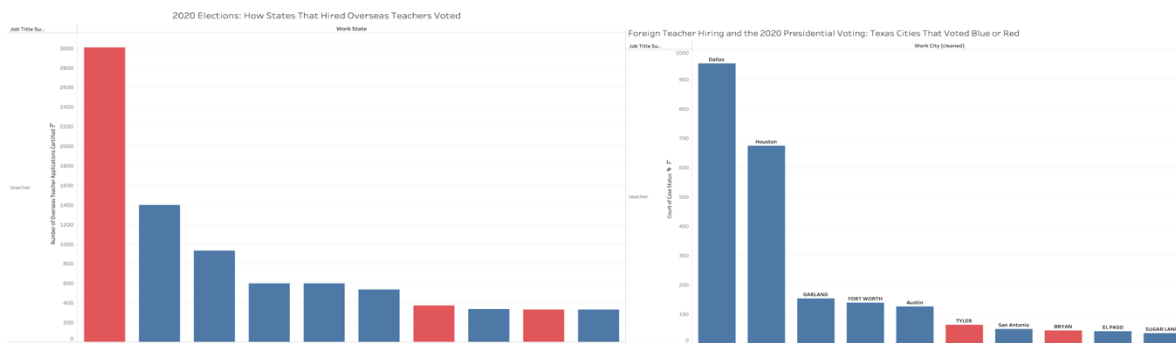
# Conclusion

The data analysis in this report generated lots of interesting findings, by manipulating the data the points of research seemed endless. But due to the clever way team Cobra manipulated the data our objectives of identifying and analyzing specific data subgroups within this dataset were accomplished.

Our results demonstrated the average salary of job title subgroups by comparing both the average prevailing wage submitted and that of the average paid wage submitted. We identified states with the best wages by analyzing the average salaries of all job title subgroups in the dataset. The country of citizenship of the employees within these subgroups was displayed along with the exact number of cases certified within each state in our area of focus to depict the strong correlation between these factors and certification. Major cities in the state of Texas were individually depicted to analyze the number of teachers being outsourced and where they came from. With critical thinking, we were able to match our findings with the current political state of Texas and provide insights on why we expect shifts from one political party to another as the percentage of minorities in the state grow each year.

Although the dataset was extensive and rich with information our gained knowledge of data analysis tools allowed us to find precise and direct answers to the high-level questions we sought to analyze.

https://github.com/Natt36/Cobra_Project