

A Study on H1B – VISA Petitions 2011-2016

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ABSTRACT

The H1B Visa enables foreign skilled workers to stay in the US for up to six years and apply for permanent residency in the interim. Because this visa permits a foreign national to have "dual intent", there is no conflict when an H1B temporary worker applies for a green card. It is important for the U.S. Department of Labor to identify which employers are sending the most number of H1B Visa applications and what is the percentage share of the annual 85,000 visa cap for the employers with most applications. At the same time, figure out the most common job title, examine the data science jobs, and their relative wages for which the application is coming in larger frequency. This study provides information about the employment gaps within the U.S., which are filled by foreign workers. This gives an idea as to which areas the U.S. government should emphasize to encourage domestic students to develop more local workforce in those job domains for the future.

Introduction

This study on the H1B Visa answers some of the questions that could be formed regarding H1B applications in the U.S. H1B Visa applications are increasing year by year and this study helps to identify the jobs that are being filled by the foreign workers. Also, Data Science is a new field since 2010, and this study provides information about the rising demand of the jobs related to the field of data science.

The source of the data set is the Office of Foreign Labor Certification (OFLC) – United States Department of Labor.

Some interesting questions that are answered in this study.

- 1) What has been the status of the petitioned applications in the time frame.?
- 2) Which employers send the most number of H-1B visa applications?
- 3) Most common job titles and their relative wages to the Industry standard as well as absolute?
- 4) What percentages of the job is full time and what percentage is part-time?
- 5) Which are the most common cities where the H1B employee lands in?
- 6) How have the Data Science related jobs has performed.

Data Set Collection:

The H1B data set was collected from United States Department of Labor - Office of Foreign Labor Certification (OFLC). The Office of Foreign Labor Certification (OFLC) generates disclosure data that is useful information about the immigration programs including the H1-B visa.

<https://www.foreignlaborcert.doleta.gov/performance/data.cfm>

Data Set Description:

The data set includes 40 columns and covers a total of 3 million records spanning from 2011-2016. The relevant columns description that are included in the study:

Employer Name: Name of the employer submitting H1B Visa.

Job Title: Title of the job.

Wage: Salary of the employee based on employer's minimum requirement.

Since more than 90% of the wage was on annual basis, only these records were consider in the analysis.

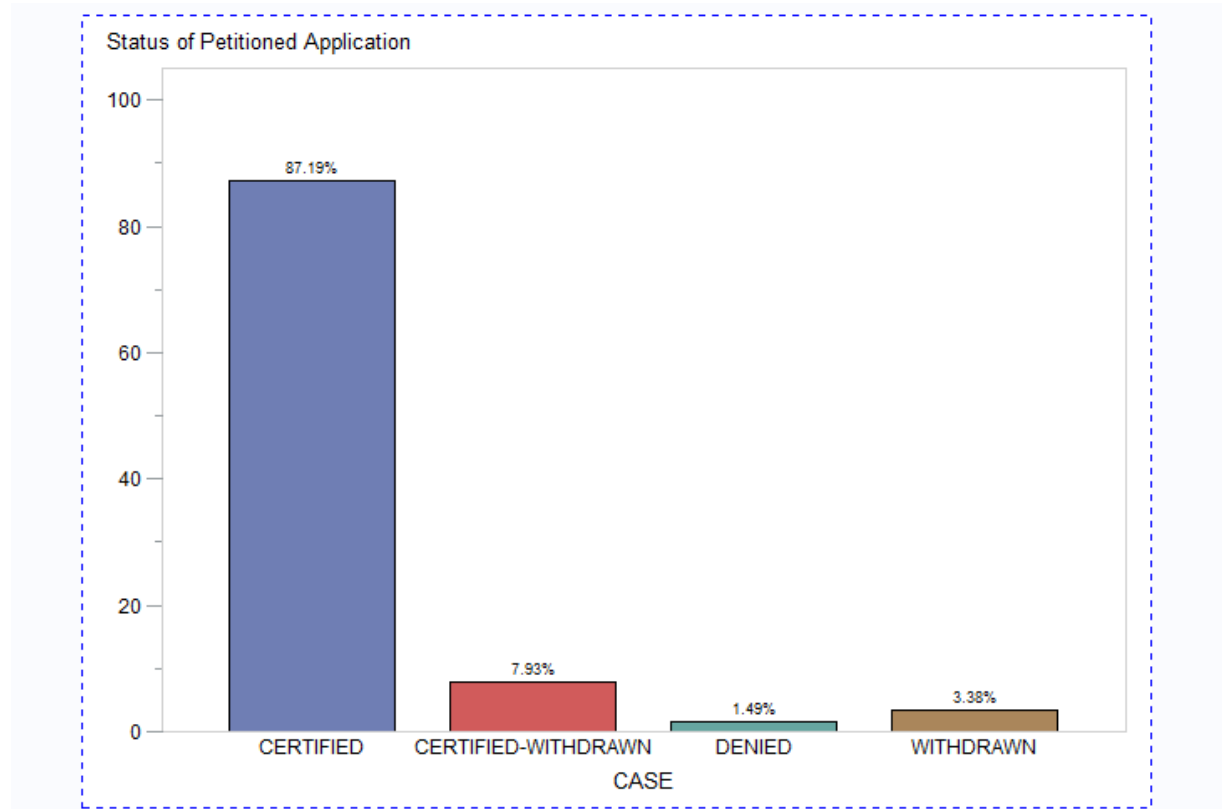
Case Status: Status of the application after LCA processing. This does not mean the applicant got his/her H1B Visa approved. "Certified," "Certified-Withdrawn," "Denied," and "Withdrawn".

Year: Year of application.

State: State where the worker is employed.

Full-Time Position: Whether this is Full Time/ Part Time Position.

Petition status of Labor Condition Application (LCA):



The above report lists the petition status of Labor Condition Application (LCA) submitted by US employer for H1B Visa during last five years and denials by the Department of Labor. The H1B Visa Petitions is the number of LCA for H1B Visa. The number includes new, renew and transfer of LCA.

They are not the actual H1B approvals or denial stats by United States Citizenship and Immigration Services(USCIS).

A new LCA is needed if the foreigner worker changes his or her work location (even within the same state and same company), because the prevailing wage of the position depends on geographic location.

Top 30 Company that submits most H1B Applications:

```
proc summary data=tmp00001.h1_b_data nway;  
  class employer_name / descending order=freq;  
  output out=count;  
run;  
□ proc print data=count (obs=30);  
  run;
```

Obs	EMPLOYER_NAME	_TYPE_	FREQ
1	INFOSYS LIMITED	1	48680
2	TATA CONSULTANCY SERVICES LIMITED	1	23125
3	IBM INDIA PRIVATE LIMITED	1	19026
4	WIPRO LIMITED	1	18644
5	CAPGEMINI AMERICA INC	1	16725
6	ACCENTURE LLP	1	16018
7	DELOITTE CONSULTING LLP	1	12021
8	TECH MAHINDRA (AMERICAS),INC.	1	9254
9	HCL AMERICA, INC.	1	8853
10	MICROSOFT CORPORATION	1	8116
11	ERNST & YOUNG U.S. LLP	1	7399
12	COGNIZANT TECHNOLOGY SOLUTIONS U.S. CORPORATION	1	7399
13	GOOGLE INC.	1	7305
14	IGATE TECHNOLOGIES INC.	1	5331
15	LARSEN & TOUBRO INFOTECH LIMITED	1	4569
16	IBM CORPORATION	1	3946
17	AMAZON CORPORATE LLC	1	3762
18	UST GLOBAL INC	1	3695
19	INTEL CORPORATION	1	2938
20	JPMORGAN CHASE & CO.	1	2508
21	L&T TECHNOLOGY SERVICES LIMITED	1	2479
22	DELOITTE & TOUCHE LLP	1	2456
23	HEXAWARE TECHNOLOGIES, INC.	1	2442
24	SYNTEL CONSULTING INC.	1	2389
25	APPLE INC.	1	2337
26	NTT DATA, INC.	1	2055
27	PRICEWATERHOUSECOOPERS LLP	1	1886
28	KPMG LLP	1	1854
29	FACEBOOK, INC.	1	1737
30	TECH MAHINDRA (AMERICAS), INC.	1	1692

Here we observe that:

Infosys has submitted highest H1B Visa Applications in last 5 years.

Top 3 Companies that submit most H1B Visa Applications are companies based in India associated with software /IT services.

Some companies may apply for more than what they need to increase the chances of getting their petitions selected in the lottery system.

Top 20 Jobs for which Petitions are made:

```
❑ proc summary data=tmp00001.h1_b_data nway;  
  class job_title / descending order=freq;  
  output out=count;  
  run;  
-----  
❑ proc print data=count(obs=20);  
  run;|
```

Obs	JOB_TITLE	_TYPE_	FREQ
1	PROGRAMMER ANALYST	1	91745
2	SOFTWARE ENGINEER	1	49275
3	SOFTWARE DEVELOPER	1	21391
4	COMPUTER PROGRAMMER	1	20965
5	SYSTEMS ANALYST	1	20693
6	BUSINESS ANALYST	1	15520
7	COMPUTER SYSTEMS ANALYST	1	12480
8	TECHNOLOGY LEAD - US	1	10524
9	TECHNOLOGY ANALYST - US	1	10204
10	SENIOR SOFTWARE ENGINEER	1	9919
11	DEVELOPER	1	8750
12	CONSULTANT	1	8470
13	PROJECT MANAGER	1	7605
14	ASSISTANT PROFESSOR	1	6990
15	SENIOR CONSULTANT	1	6925
16	DATABASE ADMINISTRATOR	1	6331
17	ANALYST	1	4767
18	LEAD ENGINEER	1	4727
19	SYSTEMS ENGINEER - US	1	4704
20	PHYSICAL THERAPIST	1	4685

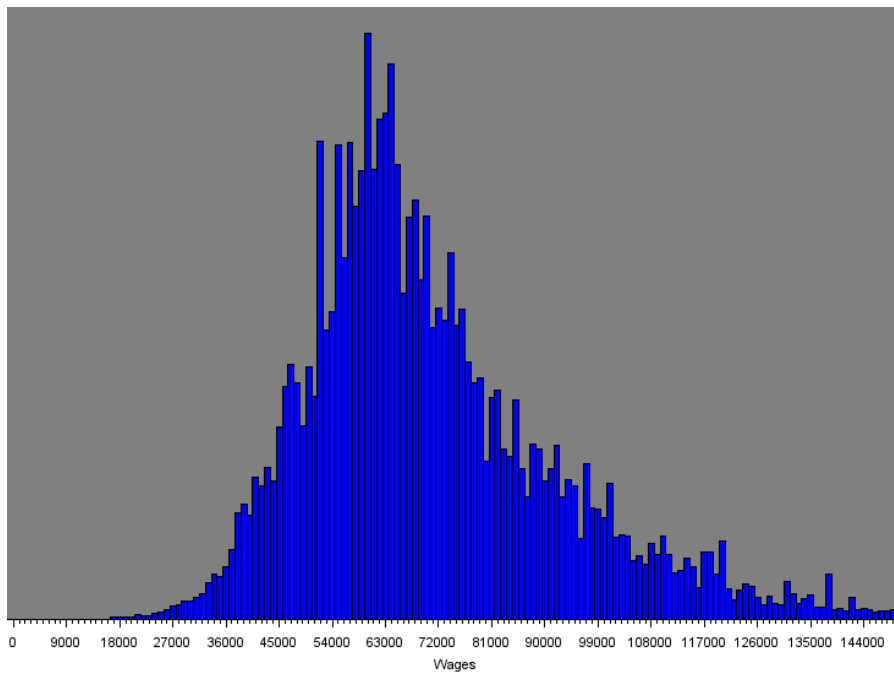
Technical Jobs fill up the majority of Top 20 Jobs among foreign workers.

Assistant Professor and Physical Therapist are the only non-technical jobs in the top 20.

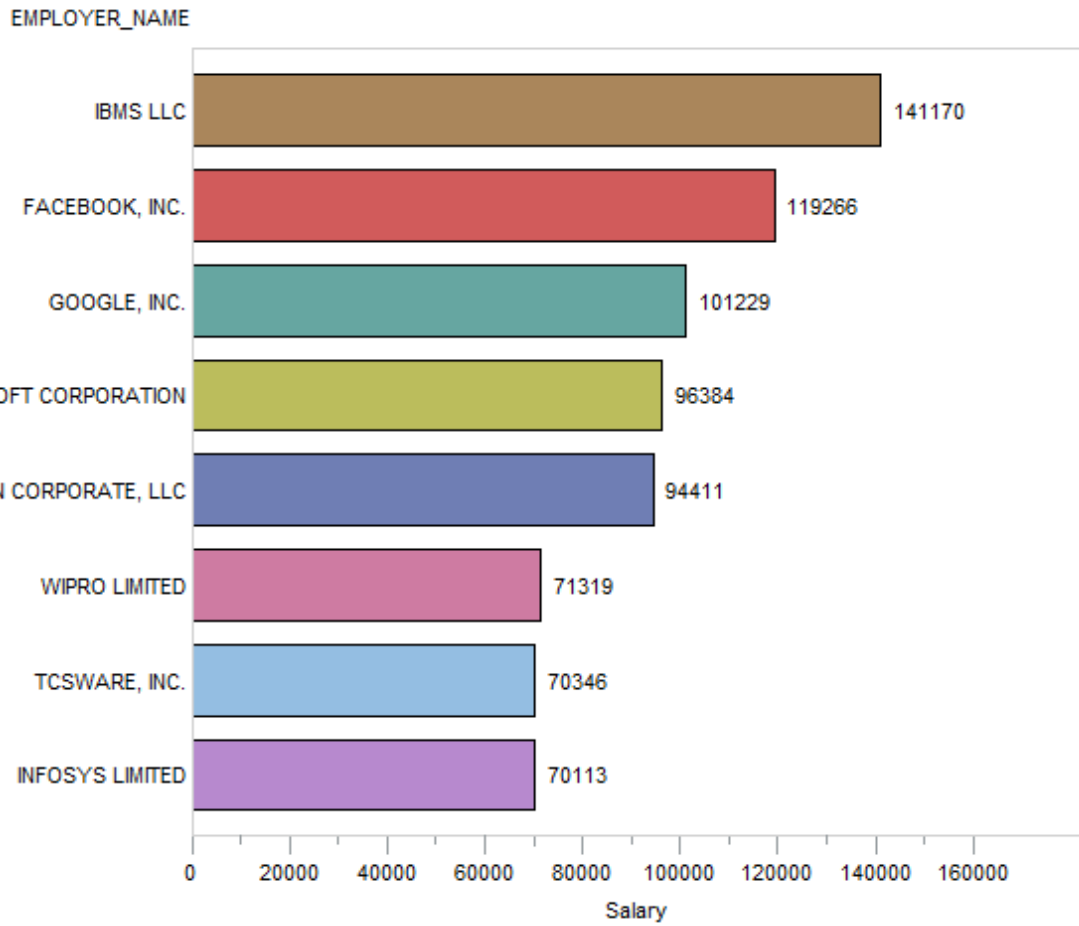
Salary Distribution:

Basic Statistical Measures			
Location		Variability	
Mean	70611.53	Std Deviation	21471
Median	66165.00	Variance	460986889
Mode	60000.00	Range	150000
		Interquartile Range	25417

Basic Confidence Limits Assuming Normality			
Parameter	Estimate	95% Confidence Limits	
Mean	70612	70570	70653
Std Deviation	21471	21441	-
Variance	460986889	459732894	-



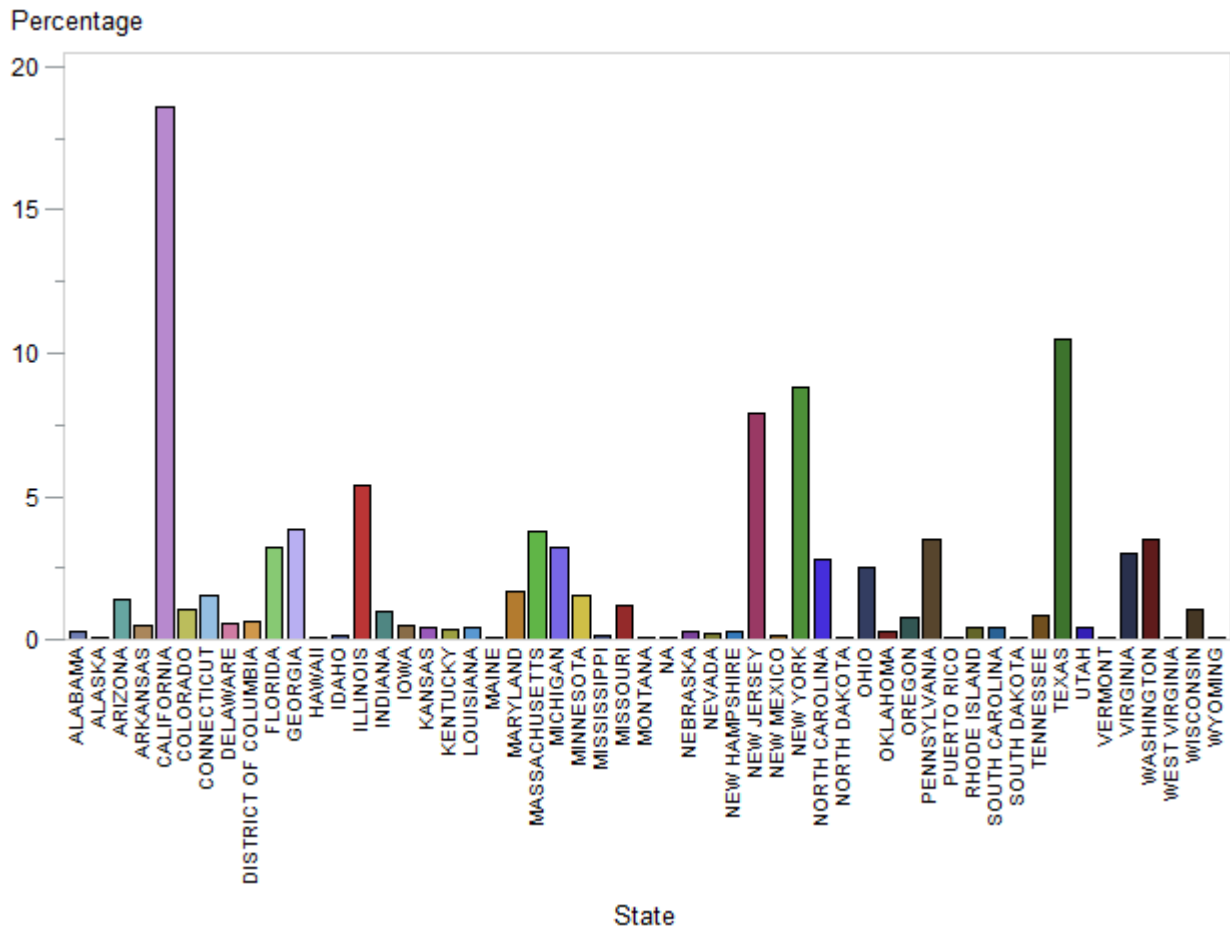
The average salary reported on an H1B application for last 5 years was around 70k USD, but this includes all job types.



High-applicant employers such as Infosys, TCS and Wipro, with the most H-1B visas have significantly lower wages for software job positions.

For Top IT Companies, the mean wage is above 100k. Again, this includes all job types.

Filed Petition vs. State [Normalized to total population/state]

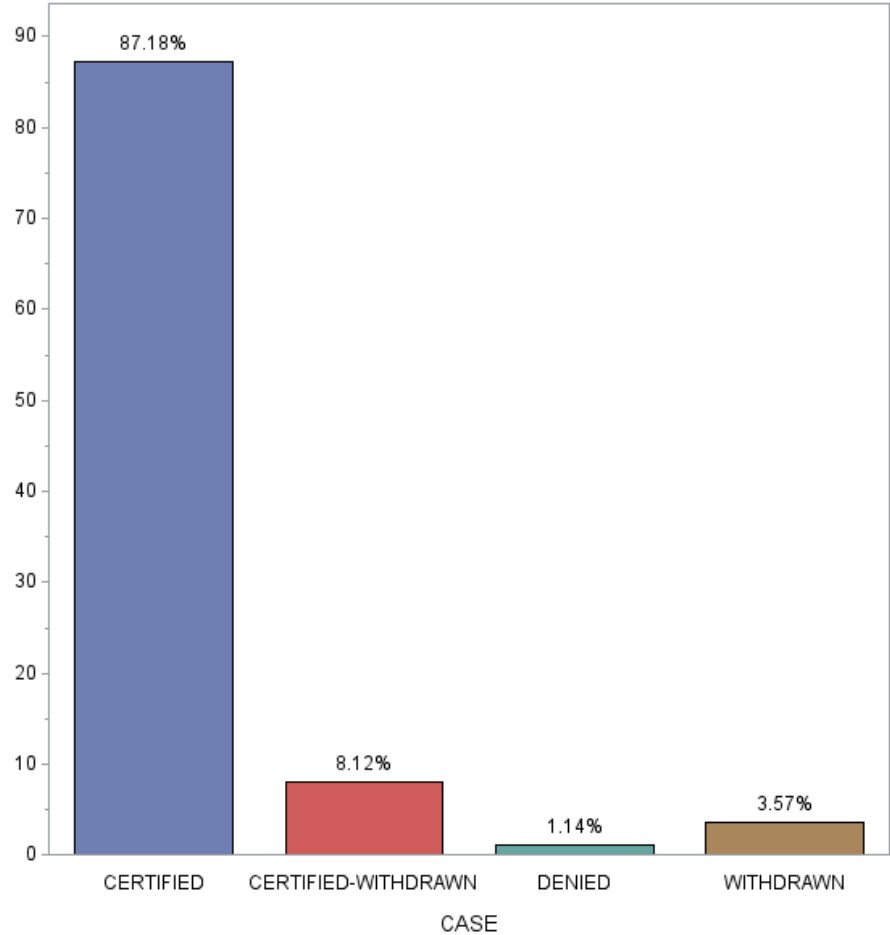


It was figured out that California is the state with most H1-B petitions. It is true because there are many technical companies in California. Also, states like Texas, New York and New Jersey provide many job opportunities. Students in these states have much more job opportunities as compared to other states.

DATA SCIENCE RELATED JOBS ANALYSIS:

Data Science Job Status of Labor Condition Application:

Status of Data Science Petitioned Application



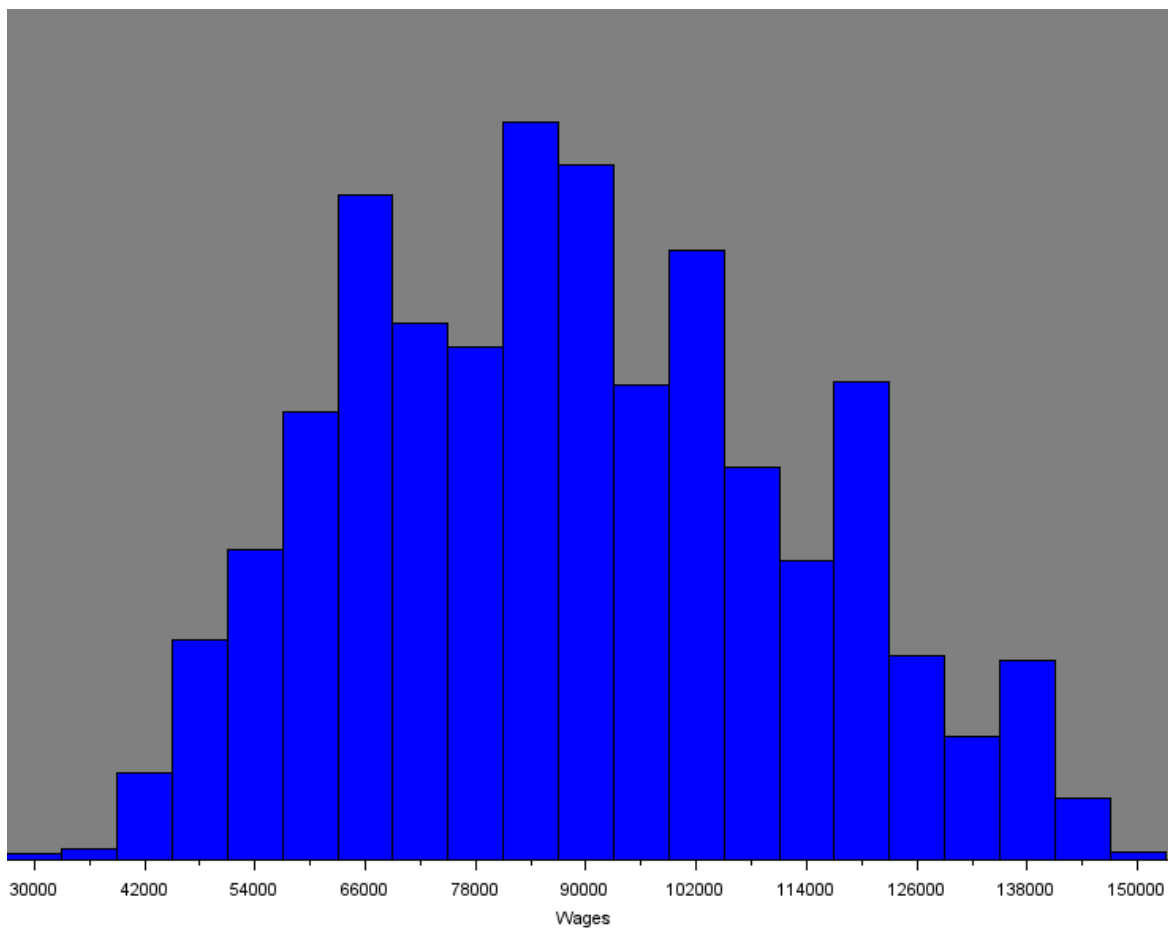
The above report lists the petition status of Labor Condition Application (LCA) submitted by US employer for H1B Visa for Data Science or Machine Learning related jobs during last five years, and denials by the Department of Labor. The denial rate for Data Science related job is less than the denial rate for overall petition status.

Salary Distribution: DATA Science Jobs

Distribution analysis of: Wages for DATA SCIENCE Job

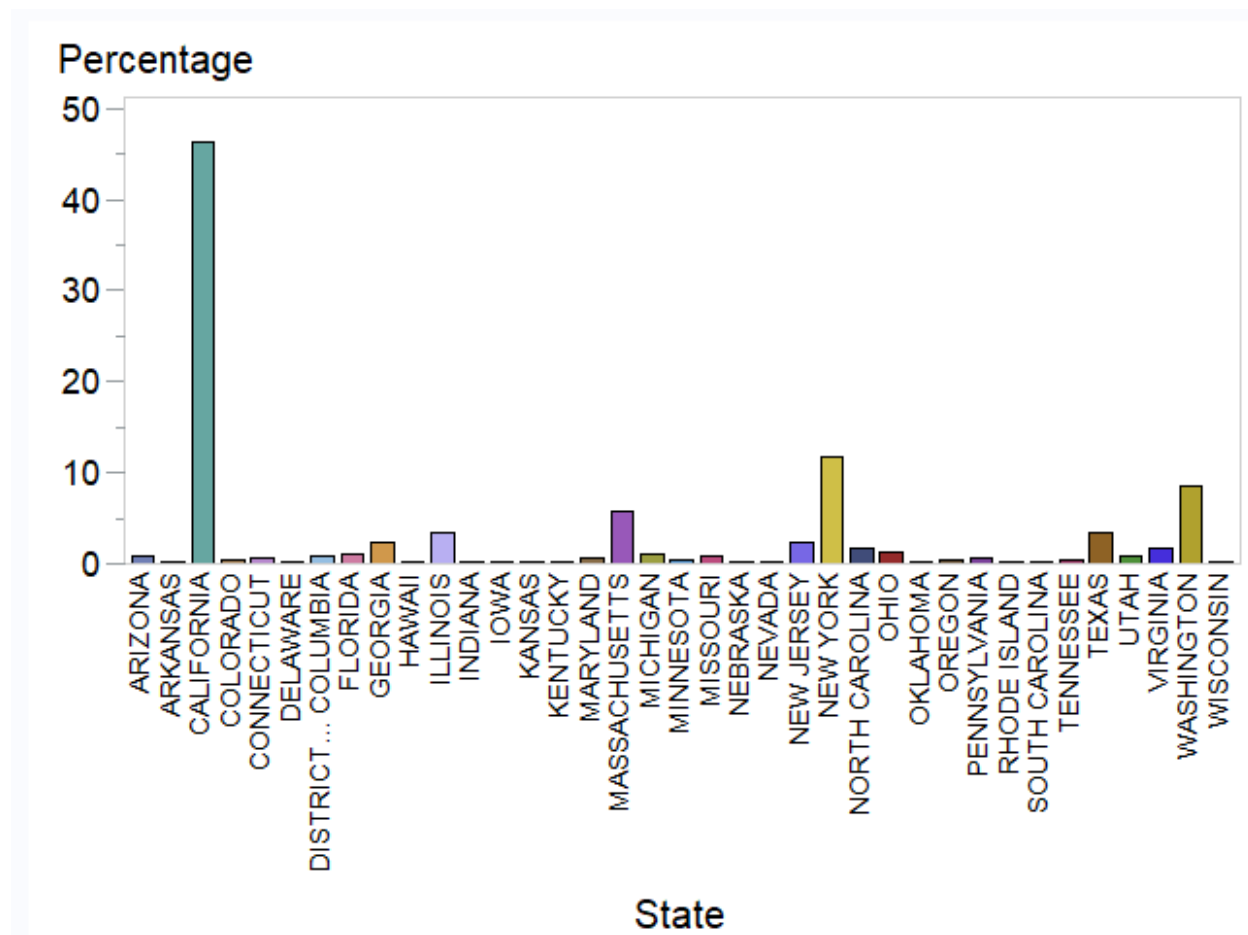
The UNIVARIATE Procedure
Variable: Wages

Basic Statistical Measures			
Location		Variability	
Mean	88452.49	Std Deviation	24011
Median	87027.00	Variance	576511970
Mode	83699.00	Range	119205
		Interquartile Range	35505



The average salary reported on an H1B application for last 5 years was around ~89k USD for Data Science related jobs. This figure is 25% above than the average salary reported for H1B application for overall jobs.

FILED PETITION vs STATE: [Normalized to total population/state]



Here we could see that California is the most attractive place for Data Science related jobs, followed by New York, Washington, and Massachusetts.

Conclusion:

- It is the technical jobs that are mostly filled by foreign workers. So emphasis should be driven on promoting coding in schools across U.S. such that more technical labor force is available for the jobs in the field. Only 40% of the schools in the United States teach computer programming. [Source: Code.org]
- States like California, New York, Washington, New Jersey, Massachusetts, Illinois, and Texas are the prime location for foreign workers.
- Average Salary of Data Science related job in the current decade is higher than overall mean for all the jobs that lands to foreign workers.

References:

OFLC Performance Data, www.foreignlaborcert.doleta.gov/performancecfm. Accessed 17 Aug. 2017.

H-1B Visa Petitions 2011-2016 | Kaggle, www.kaggle.com/nsharan/h-1b-visa. Accessed 17 Aug. 2017.
https://en.wikipedia.org/wiki/H1B_VISA

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