

Global Workforce Analysis Report

Shravan Kumar Gajula

1. Project Overview

Project Name: Global Workforce Analysis

Objective: Analyze the migration patterns of skilled professionals (primarily H-1B visa holders) between the U.S. and India, and their impact on the economies of both countries, and create a visual dashboard to present the findings.

2. Data Collection & Cleaning

Data Sources:

- H-1B Visa Application Data
- Country, Employer, Industry, and City-wise visa application data (Top 20 list).

Data Cleaning:

- Used **Python** (with libraries like **Pandas** and **NumPy**) to clean and preprocess the data.
 - Used **SQL Workbench** to clean and preprocess the data.
 - Executed **SQL queries** (available in the Scripts folder) to remove duplicates, handle missing values, and filter relevant data.
 - Further processing was done using **Python (Pandas, NumPy)** to transform data into a format suitable for **Tableau** visualization.
 - Used **Matplotlib in Jupyter Notebook** to generate bar chart data for analysis, using:
 - **Stacked bars with multiple colors for top countries.**
 - **Horizontal bars with blue color for top cities.**
 - **Pie charts with multiple colors for top employers.**
 - **Pie charts with multiple colors for top industries.**
 - Data was split into multiple columns for granular analysis (Employer, Industry, Country, City, Applications).
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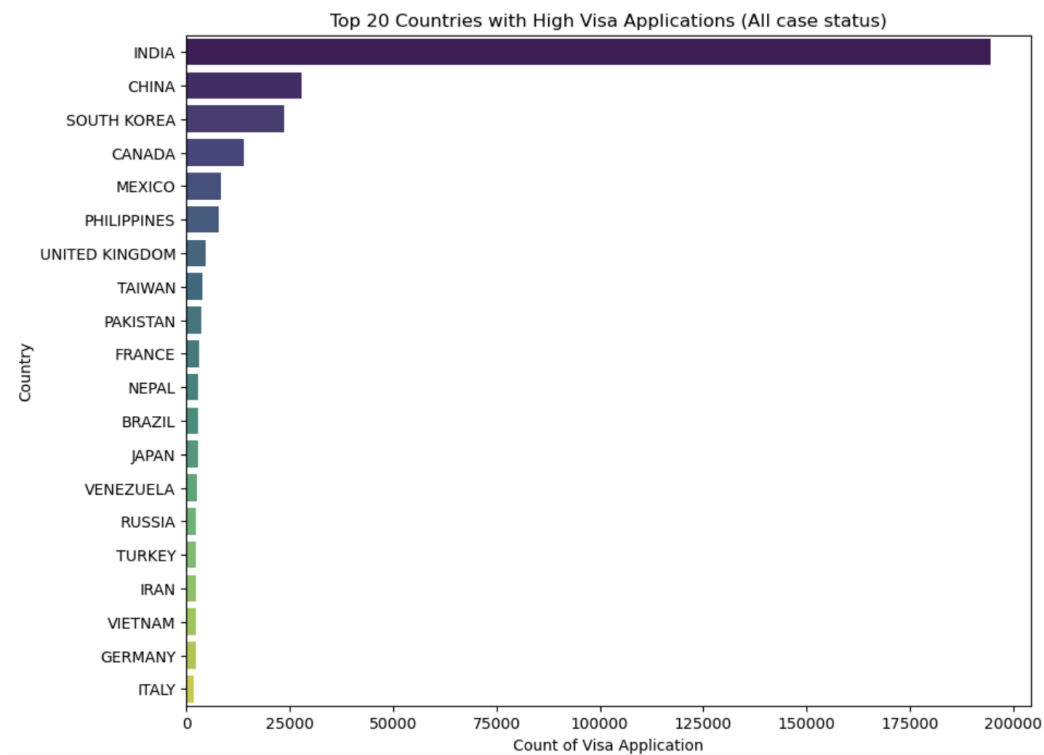
3. Tools & Technologies Used

- **Data Cleaning & Preprocessing:** Python (Pandas, NumPy)
- **Data Analysis & Visualization:** Tableau Desktop
- **Data Sources:** H-1B Visa Application Data, Country/City-level Applications Data

4. Data Analysis and Insights

The analysis aimed to uncover insights regarding the following:

- **Top Employers:** Identifying companies with the highest number of visa applications.
- **Top Industries:** Analyzing industries that hire the most foreign talent.
- **Top Countries:** Identifying which countries (especially India) contribute the most skilled labor to the U.S.
- **Top Cities:** Looking at U.S. cities with the highest visa application numbers.



5. Visualization – Tableau Dashboard

Tool Used: Tableau Desktop

The data was visualized using Tableau, focusing on **four key visualizations**:

1. Top Employers by Visa Applications (Pie Chart)

- A pie chart displaying the top 20 employers and their respective visa application counts with multiple colors.

2. Industry Distribution (Pie Chart)

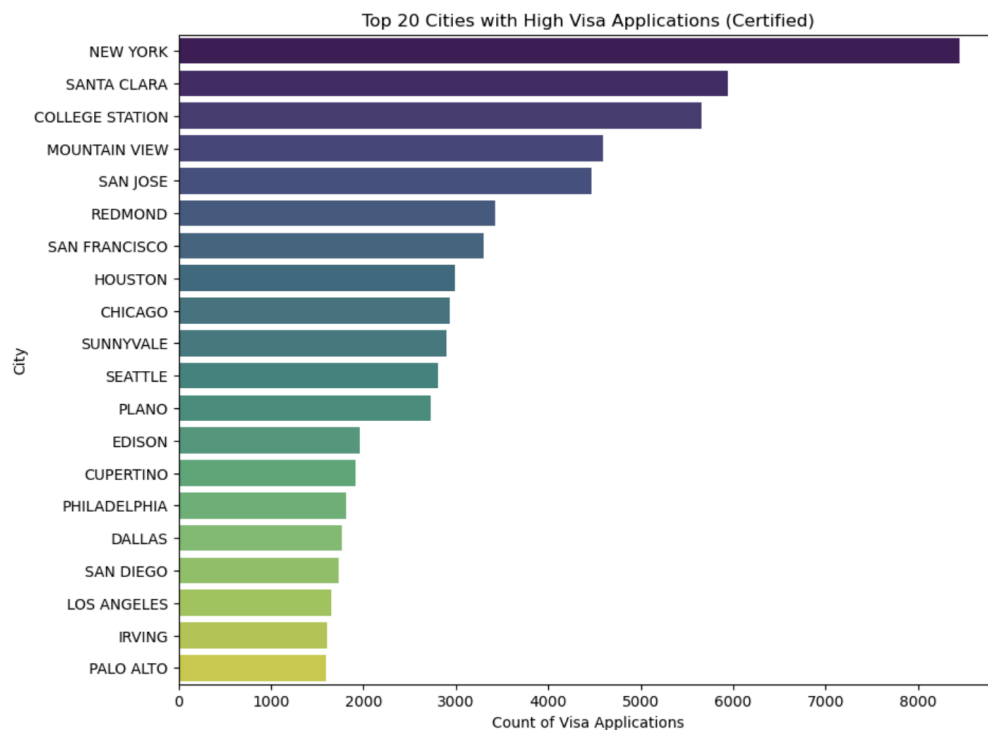
- A pie chart depicting the distribution of visa applications across different industries with multiple colors.

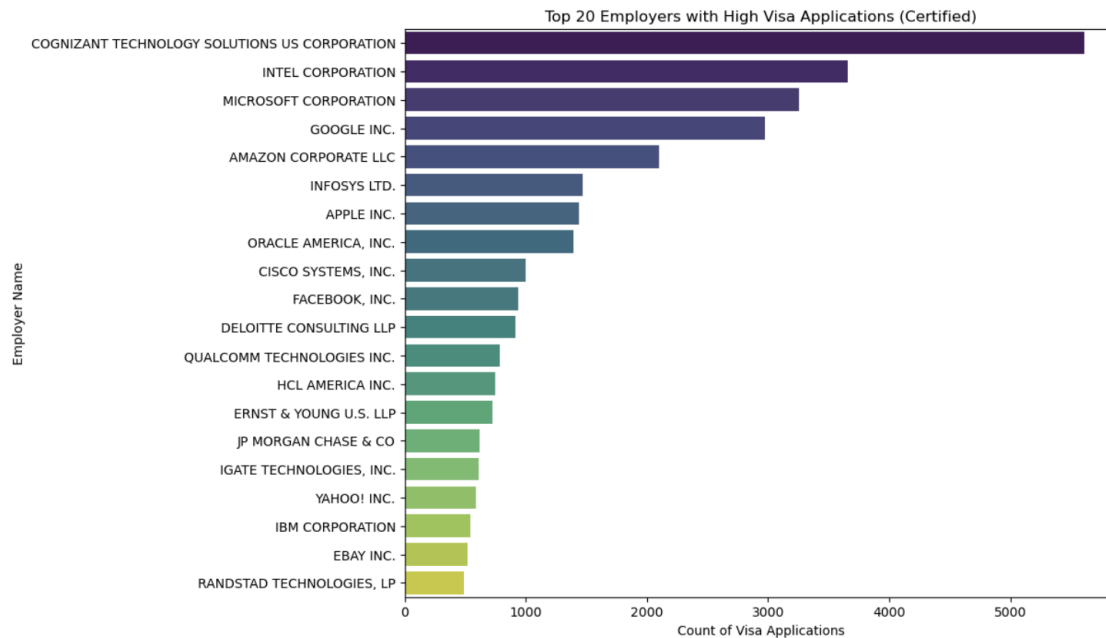
3. Visa Applications by Country (Stacked Bar Chart)

- Stacked bar chart with multiple colors showing visa application distribution by country.

4. Top Cities by Visa Applications (Horizontal Bar Chart)

- A horizontal bar chart with blue color listing the top U.S. cities and the number of visa applications.





6. Impact Analysis (India & USA)

Impact on the U.S. Economy

- **Loss of Skilled Labor:** Significant reduction in skilled professionals if H-1B visa holders return to India.
- **Potential GDP Decline:** Key industries like tech, healthcare, and finance would experience labor shortages, affecting productivity.
- **Wage Increase:** With fewer workers, wages in tech and similar sectors could rise.

Impact on India's Economy

- **Brain Gain:** India would benefit from the return of skilled professionals, boosting innovation and entrepreneurship.
 - **GDP growth:** An influx of experienced professionals could stimulate growth in India's economy, particularly in the tech and startup sectors.
 - **Workforce Expansion:** A larger pool of skilled workers would help fill critical roles in various industries.
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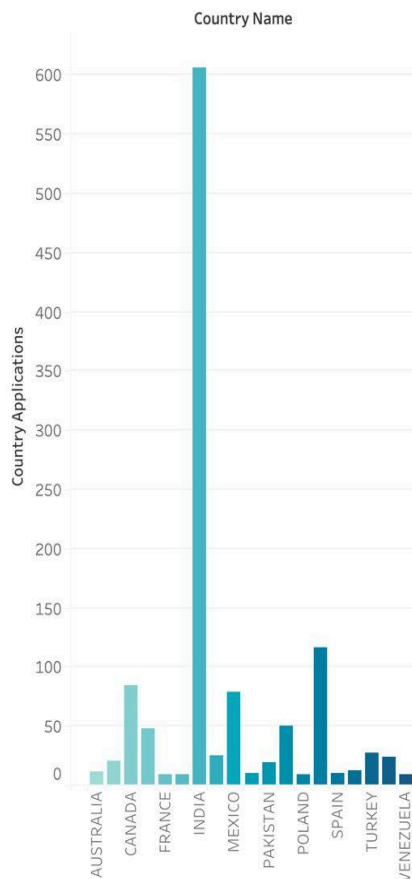
7. Dashboard Features

The Tableau dashboard was designed to provide interactive insights into the following:

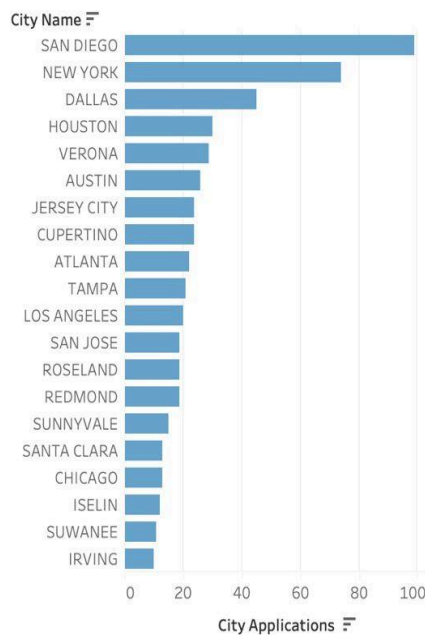
- **Interactive Filters:** Users can filter by Employer, Industry, Country, and City to see the impact in different regions.
- **Scenario Simulation:** Simulated scenarios like the return of 70% of Indian professionals to India, and its impact on both economies.
- **Forecasting & Trends:** Insights into how workforce migration could evolve in the future, with forecasting for both the U.S. and India.

H-1B Visa Workforce Analysis

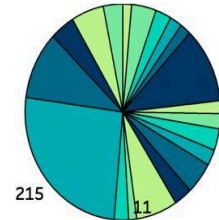
Top Countries



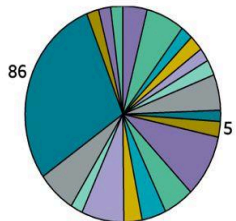
Top Cities



Top Industries



Top Employers



✓ Impact on the U.S.:

Loss of skilled labor if visa holders return to India.
Impact on tech, healthcare, and finance industries.
Potential increase in wages due to labor shortages.

✓ Impact on India:

Brain gain and rise in skilled workforce.
Growth in India's startup ecosystem and innovation.
Increase in GDP due to returning professionals.
Reduce India's **\$120B** annual remittance inflow.

8. Conclusion and Recommendations

- **For the U.S.:**
 - Short-term impact includes loss of skilled labor and possible GDP reduction. The long-term focus should be on improving domestic workforce development.
 - Policies to retain skilled workers should be considered.
 - **For India:**
 - In the short term, India would see a major boost in workforce quality and innovation.
 - Long-term effects could include sustained economic growth and technological advancements.
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9. Sources

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