

Navigating the Path to Legal Permanent Residency in the US: A Framework of Data and Predictive Analytics

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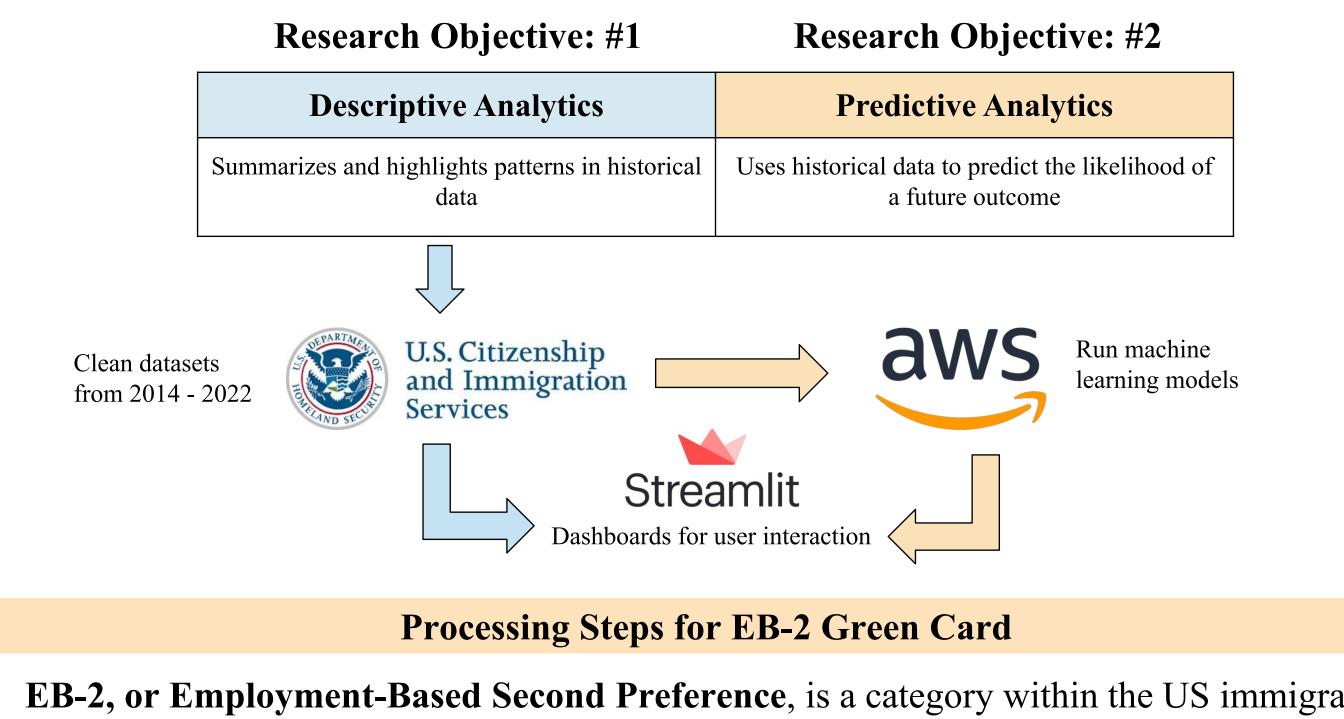
Background

- The U.S. immigration system faces a severe backlog of applications leading to delays for applications¹.
- a backlog of approximately with 2.6 million immigration applications in 2022².

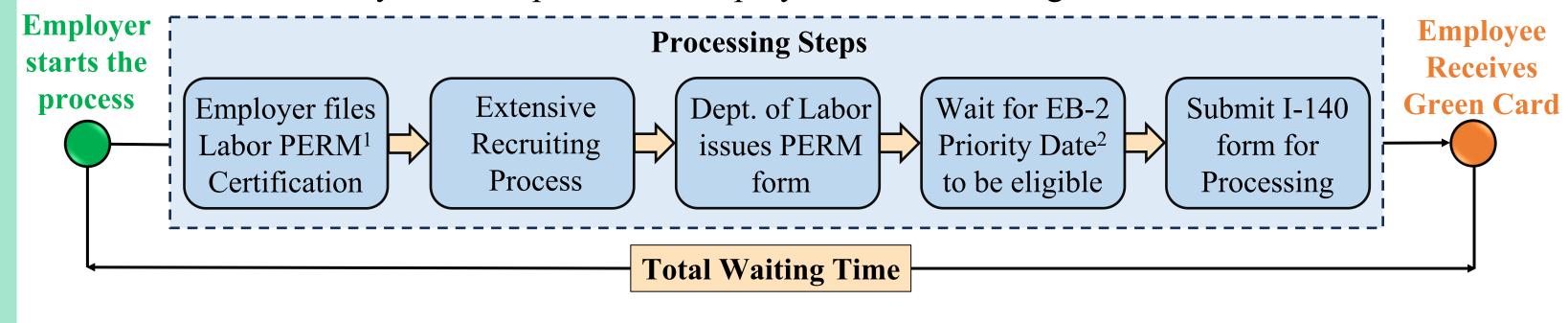
Research Objectives

- 1. Enhance transparency, reliability, and predictability in the immigration process for future applicants.
- Implement Machine Learning models historical data to forecast green card processing times, providing applicants with estimated wait times.

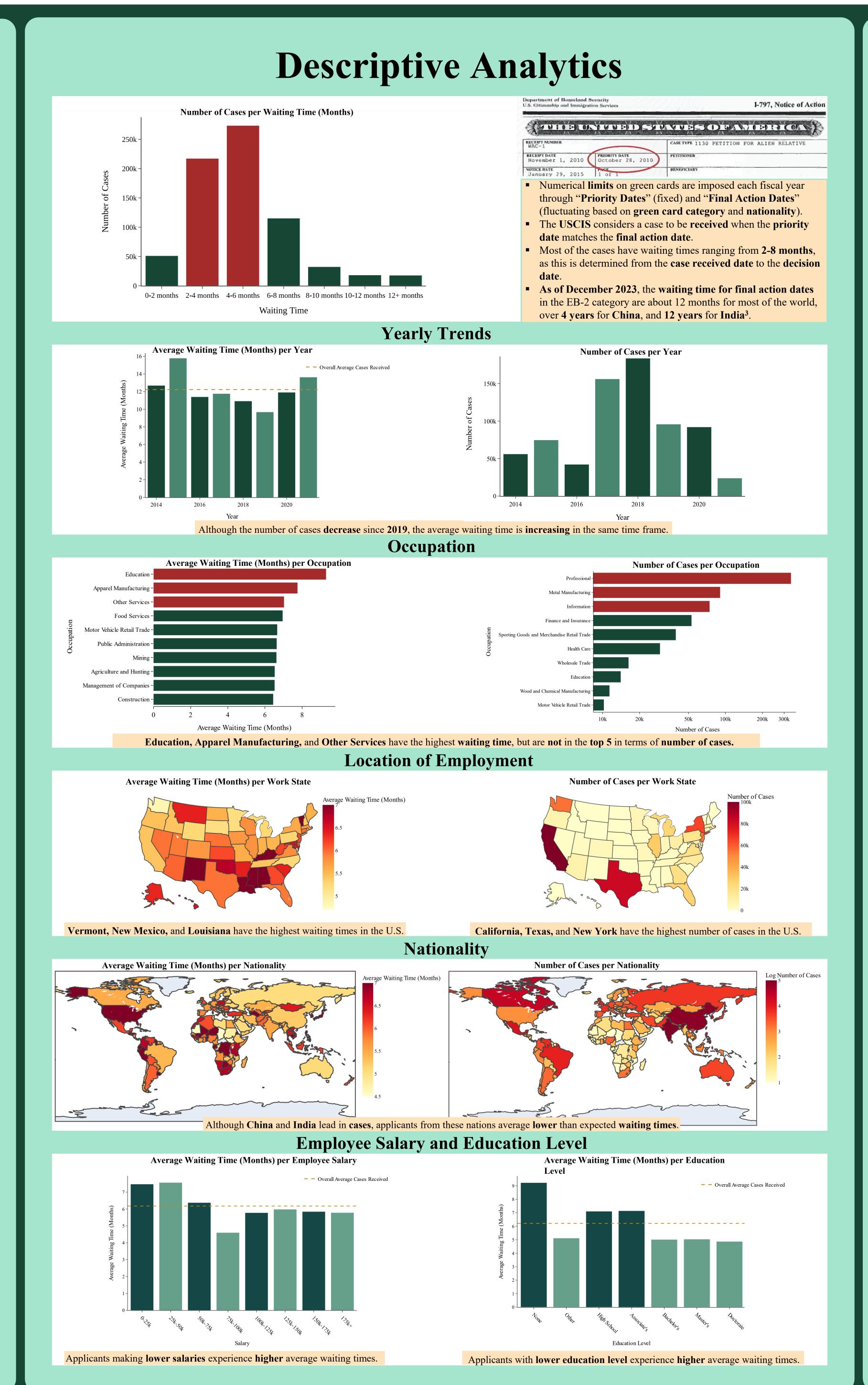
Methodology



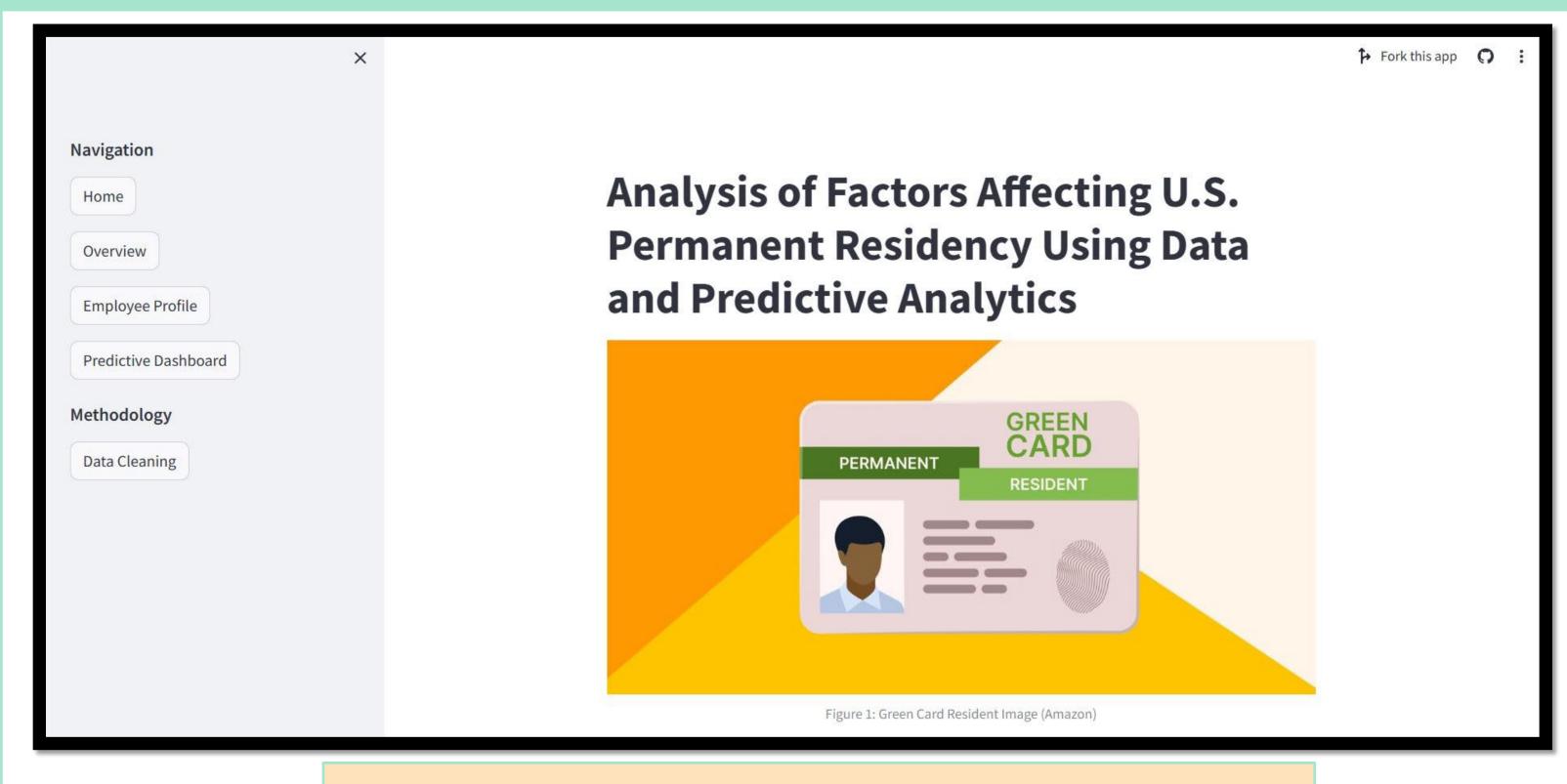
EB-2, or Employment-Based Second Preference, is a category within the US immigration system that pertains to employment-based immigration visas.



- 1. **PERM:** Program Electronic Review Management
- 2. Priority Date Assignment: The priority date is established on the date when the labor certification (PERM) or I-140 petition is filed. • For countries like **India and China** with high demand for employment-based visas, there are numerical limits on the number of
- green cards that can be issued each fiscal year.
- A backlog may cause individuals to wait for their priority date to become **current** in the green card application process. The priority date becomes current when it matches or surpasses the US government's cutoff date.

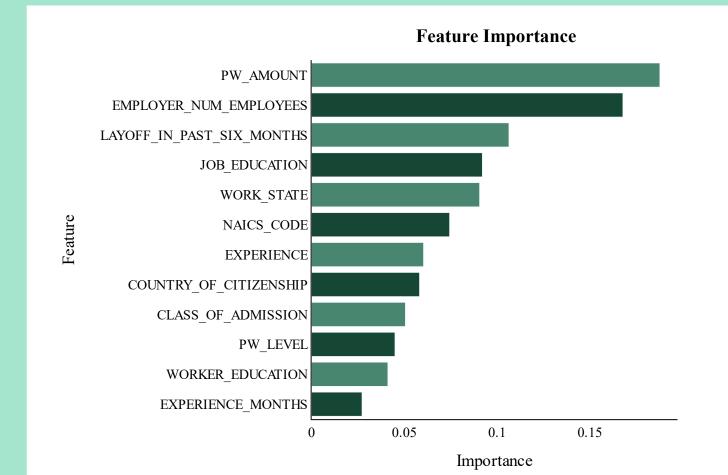


Predictive Analytics



- Our Classification Random Forest model predicts applicant waiting time, the time between the case received date and the decision date.
- The model classifies into two categories: **0-9 months** and **9+ months** waiting
- The goal is to **provide insights** into the **likelihood** of applications falling into
- distinct waiting time categories, aiding effective processing time management. Random Forest handles noise and irrelevant features well, reducing overfitting for
- effective performance on diverse datasets. • Evaluation utilizes **F1-Macro**, offering a balanced measure of **precision** and

Model Feature Importance



- PW_AMOUNT and EMPLOYER_NUM_EMPLOYEES have the largest importance, indicating that salary levels and employer size strongly influence waiting time predictions.
- Employment History, Education, and Geographic/Industry Considerations are all influential to the model's prediction.

Predictive Dashboard

Estimate Your Green Card Application Wait Time 11 - Agriculture, Forestry, Fishing and Hunting Prevailing Wage Amount Country of Citizenship **Employer Number of Employees** Do you have job/industry experience

- Utilizing the Green Card Application Wait Time Estimation Form, an applicant can gauge their expected processing duration.
- By inputting essential details associated with the model's **features**, our predictive dashboard will provide the user with an estimate of which class their wait time will fall under: 0-9 months or 9+ months.



Amazon Web Services, United States Citizenship and Immigration Services (USCIS)

- . Green Cards and Permanent Residence in the U.S. | USAGov. (2018). Usa.gov. https://www.usa.gov/green-cards 2. Waiting for Permanent Residency: Green Card Backlogs Explained. (n.d.). News.bloomberglaw.com. Retrieved November 24, 2023, from https://news.bloomberglaw.com/daily-labor-report/waiting-for-permanent-
- 3. Visa Bulletin For December 2023. (n.d.). Travel.state.gov. Retrieved November 24, 2023, from https://travel.state.gov/content/travel/en/legal/visa-law0/visa-bulletin/2024/visa-bulletin-for-december-
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