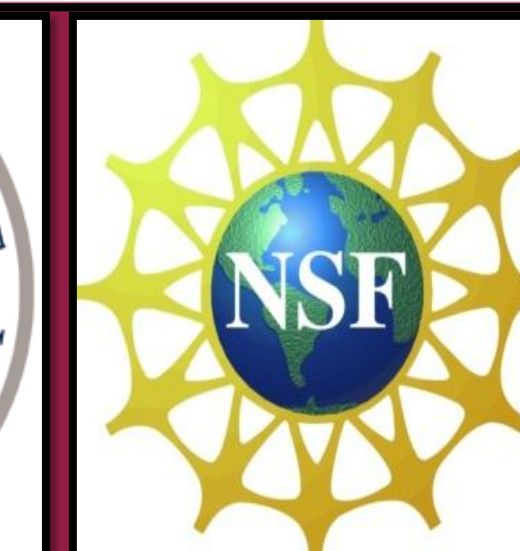


A 2008-2012 Case Study: US Visa Applicant Security Screening Wait Time Analysis

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Abstract

Security screening reduces risk; however, it can also create delays that deter normal applicants and thus, decrease the welfare of the approver. This research studies trends in visa applicants from 2008 to 2012 by comparing two data sets. One data set contains over 5,000 self-reported visa profiles and the other contains millions of US government data points. We show that the number of applicants increases at the beginning of each academic semester, visa type generally does affect wait time, and wait times for most academic majors depend on the number of data points observed.

Methods



- **Data Source 1:** www.checkee.info
- Over 5,000 self-reported data points from mostly Chinese Applicants, Data from December 2007 to present.
- **Data Source 2:** www.travel.state.gov/visa/
- Data on: Yearly Visa Issuance and Process/Application Information.

Results

- We created a boxplot with a sampling of academic majors, where the number of data points increases from left to right (Figure 4). We conclude that wait times for academic majors converge to a similar distribution with an increase in the number of data points.

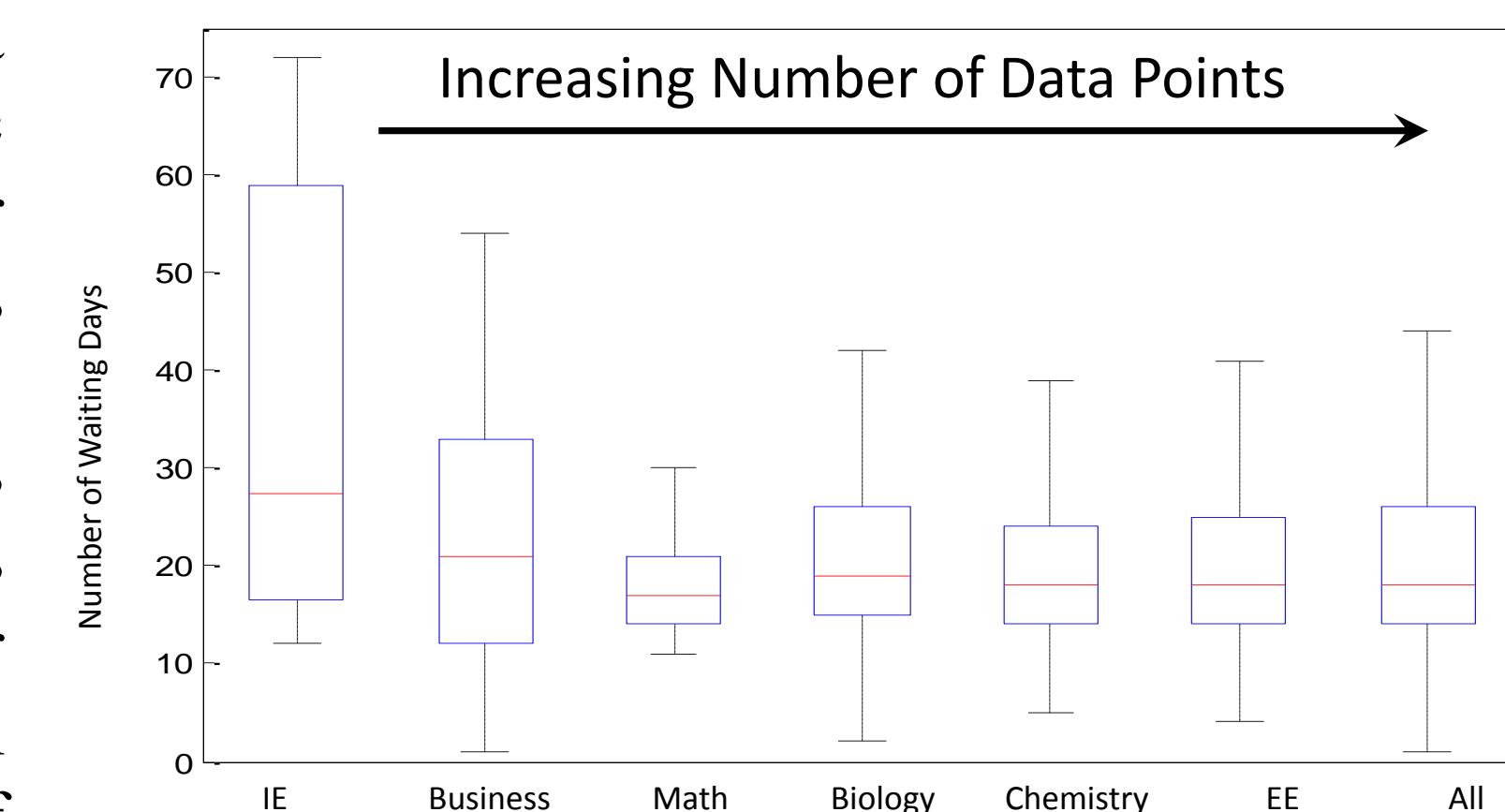


Figure 4: Boxplot of the Number of Waiting Days v. Academic Major



United States visa 9/11 Twin Towers Attack Increased security screening since 9/11/01

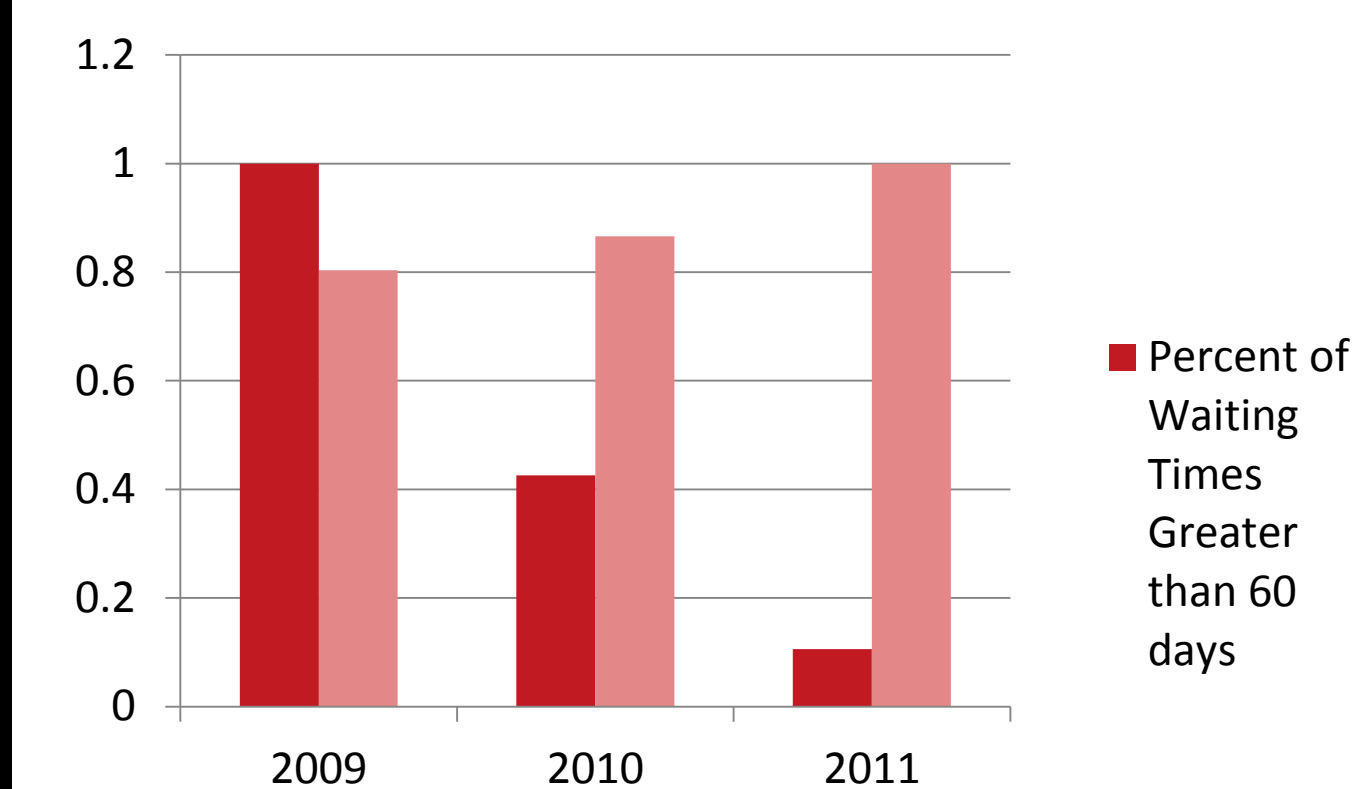


Figure 5: Histogram of the Comparison Between Number of Visas Issued and Percent of Wait Times Greater than 60 days

- Lastly, we compared the number of visas issued to the wait times (Figure 5), where we find as the number of visas issued increases, the number of waiting times greater than 60 days decreases.

Results

When we plotted the sorted data we observed several trends:

- We created a histogram showing the relation of the number of applicants v. the month they applied (Figure 2), where we can conclude that the number of applicants increases with the start of an academic semester.

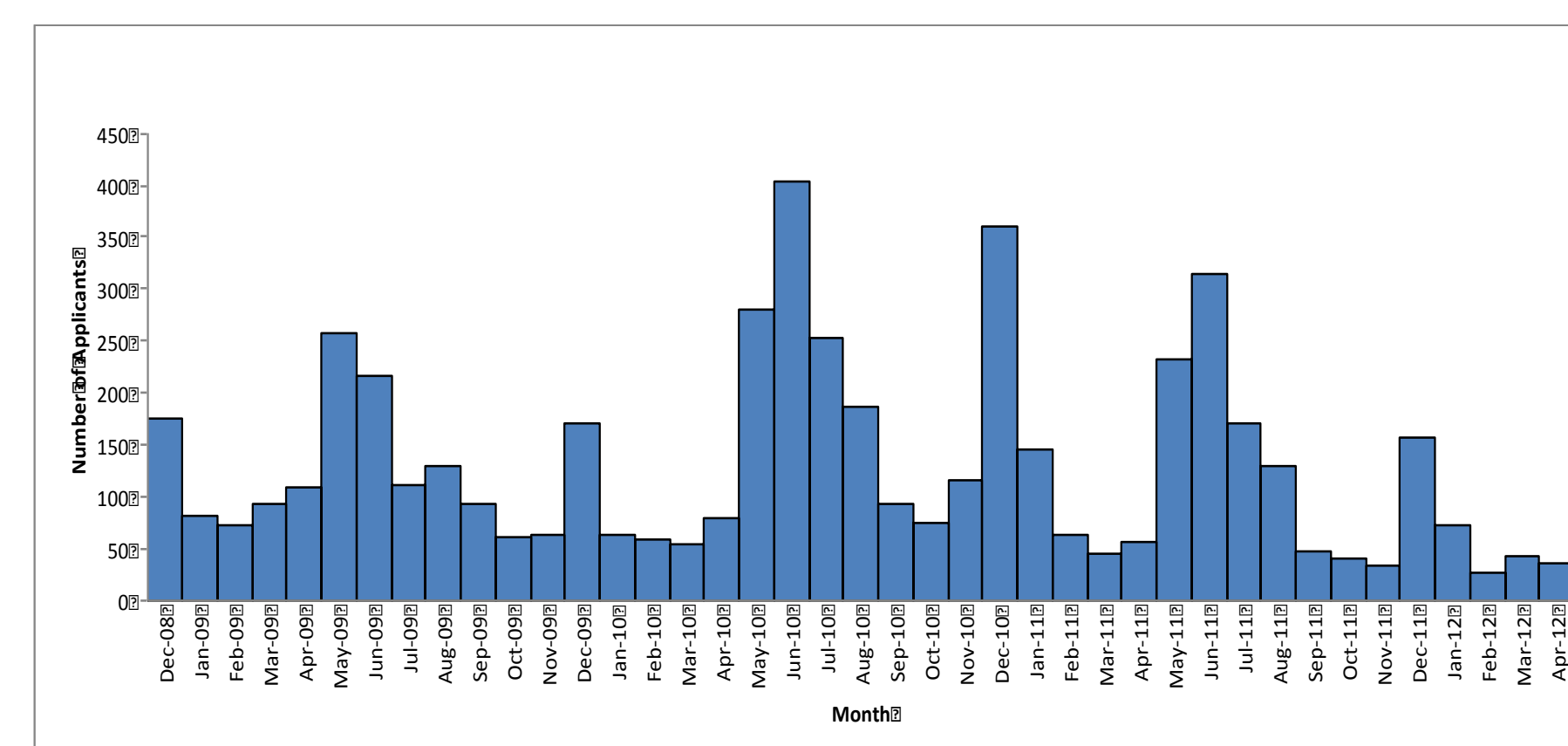


Figure 2: A Histogram of the Total Number of Applicants v. Month Applied

- We also created a box plot showing the visa type v. the number of waiting days (Figure 3), where we find that visa type generally does not affect wait time.

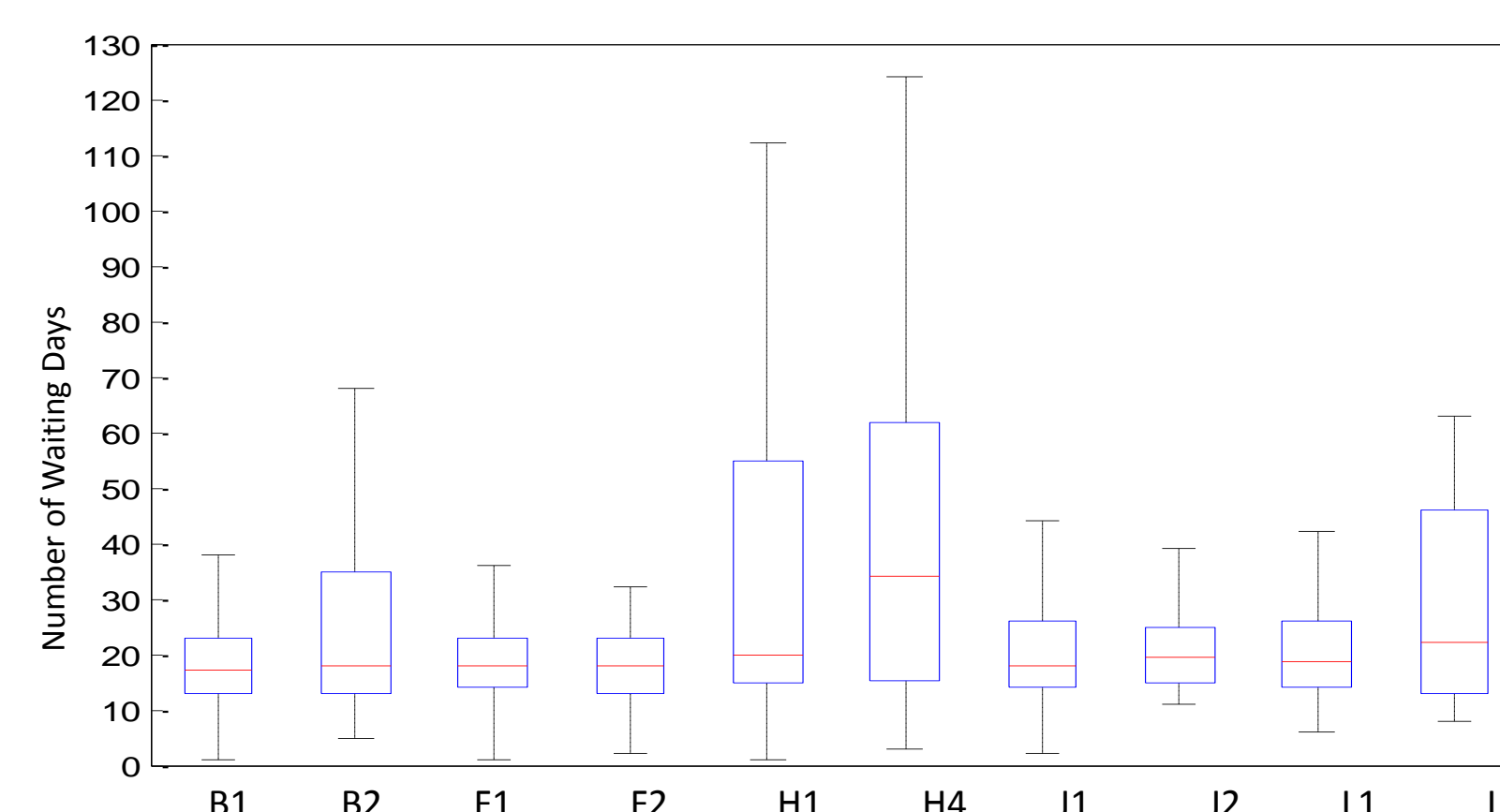


Figure 3: A boxplot of the Total Number of Applicants v. Month Applied, where the center red line represents the mean, and the top and bottom of the box represents the 75th and 25th percentiles respectively and the black dotted lines extend to the highest and lowest data points.

Background

- Following the tragic events of 9/11/2001, security screening has become more rigorous for applicants in both transportation and immigration systems.
- This research looks into the visa immigration screening process in order to understand the complex process, data and trends that exist between visa types, academic major of the applicant, and the month and number of visas issued.

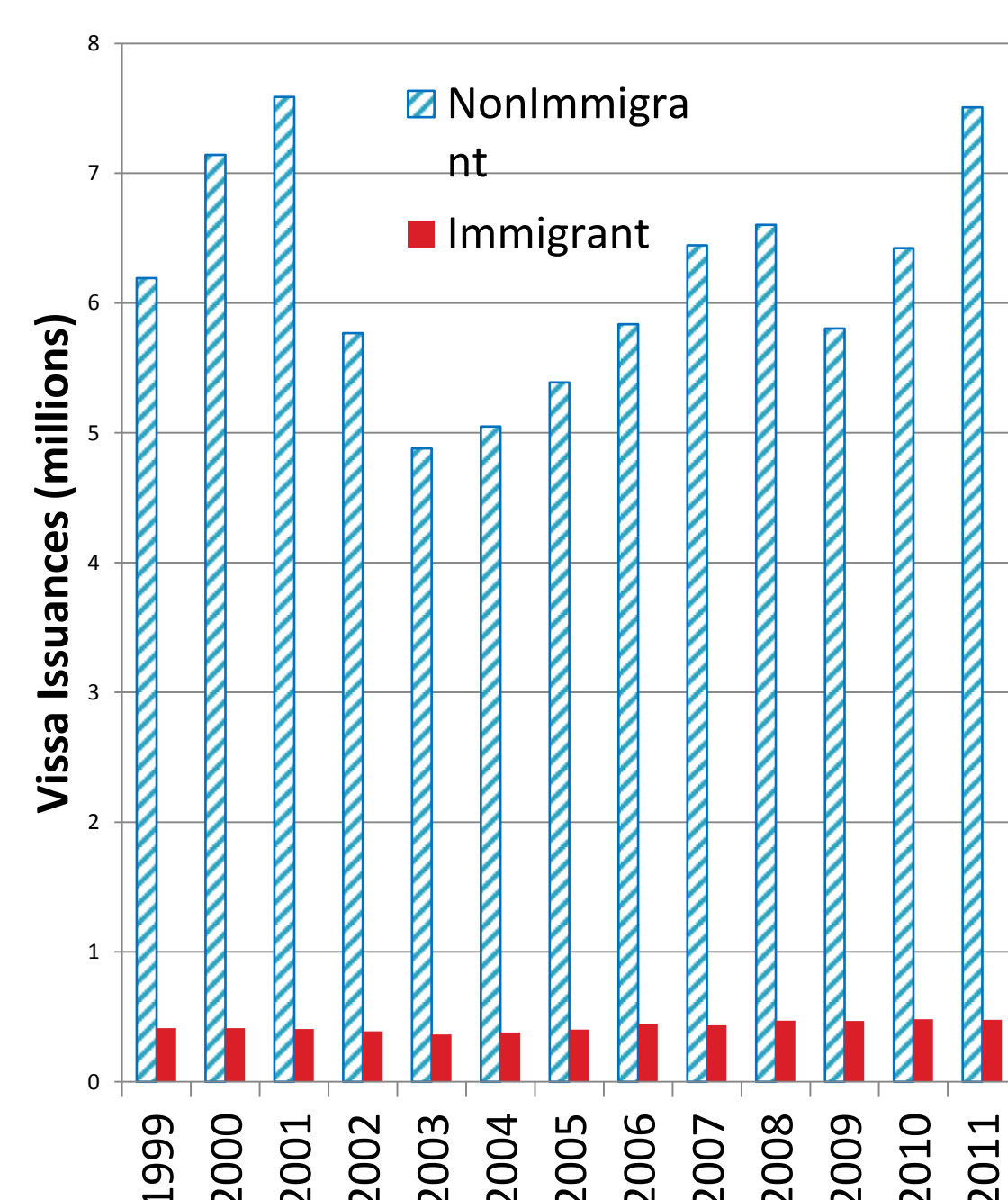


Figure 1: Number of Applicants v. Year

- In general, a visa is a certificate of permission for a non-citizen who wishes to enter a foreign country; however, it does not guarantee entry into the country.
- The majority of visas issued by the US are nonimmigrant visas and thus we focus here (Figure 1).

Future Work

- Model screening process using Rockwell Automation Arena Software.
- Distributions could be used to feed robust screening models and multi-stage screening papers.
- Waiting times could be used for server process rates (using Queuing Theory)

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