Examining the Balance of Asylum Decisions
Insights from a Global Dataset

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Abstract. *In recent centuries asylum politics has gained attention due to significant migration across continents. Despite the Geneva Convention's demands for consistent asylum decisions by states, uncertainty about compliance remains. This study leverages data from the UNHCR to examine the correlation between rejected and accepted asylum applications across various countries. Utilizing statistical analysis, we uncover a global trend indicating a deliberate correlation between acceptance and rejection rates, suggesting that countries might be following an unspoken policy to maintain a balance in their asylum decisions. Further analysis reveals that while there is no significant yearly correlation in the rate of change for asylum application outcomes globally, individual countries display patterns indicative of strategic decision-making processes. The implications of these findings are profound, as they suggest the existence of underlying strategies in asylum decision-making that could influence global asylum policies. Our research further offers a publicly available tool to investigate country strategies, enhancing transparency and understanding in asylum application decisions.*

1. Introduction

In the context of significant migration trends in recent years, accompanied by the concurrent ascendance of right-wing political factions globally, the integrity and uniformity of national asylum policies have emerged as critical elements within the discourse on human rights and social justice. International mandates like the Geneva Convention stipulate consistent criteria for asylum decisions, yet the practical adherence to such standards by various countries remains ambiguous. Leveraging extensive datasets from the United Nations High Commissioner for Refugees (UNHCR), this paper sets out to scrutinize the correlation between accepted and rejected asylum applications, positing the core research question: "What is the correlation between rejected and accepted asylum application decisions?"

This investigation begins with an overview of global migration patterns, analyzing the origins and destinations of refugees alongside the outcomes of their asylum applications. By delving into the correlation between the rates of asylum application rejections and acceptances, we aim to uncover the underlying factors influencing these outcomes, potentially revealing strategic or capacity-driven motivations behind countries' asylum policies.

Furthermore, the study introduces a tool developed from our findings, designed for public use. This tool enables a deeper examination of individual countries' approaches to asylum decisions, offering a data-driven perspective to legislators, educators, and the general public. Through this analysis, we provide a lens to assess and understand the

complexities of global asylum policies, bridging the gap between public treaties and actual state practices in managing asylum applications.

2. Data

The dataset underpinning this analysis is sourced from the UNHCR, specifically their comprehensive refugee statistics available at UNHCR Refugee Statistics. This dataset offers a detailed, global perspective on asylum seekers, encapsulating information on the number of applications submitted, accepted, rejected, and pending at the end of each year, across a multitude of countries. This dataset enables the analysis of global asylum-seeking patterns for the years 2000 to 2016, providing the foundation for our exploration into the dynamics of global displacement and refuge.

While the UNHCR dataset is a valuable resource for understanding asylum trends, it is not without potential biases. These biases may arise from varying reporting standards and capacities across countries, leading to inconsistencies in data collection and reporting. Some countries may have more robust mechanisms for tracking and documenting asylum applications and outcomes, while others may face challenges in these areas, potentially resulting in underreporting or incomplete data. Additionally, the political and social contexts within countries may influence the reporting and interpretation of asylum statistics, introducing biases that could affect our analysis without our knowledge.

To ensure the reliability and accuracy of the analysis, two relevant data-preparation steps should be mentioned:

- *Filtering Relevant Columns:*
  The dataset contains a wide array of information, not all of which is pertinent to our specific research questions. As such, an initial step involved filtering out the relevant columns that directly contribute to our analysis of asylum application volumes, acceptance rates, rejection rates, and pending cases, along with the country of asylum application and country of origin. This step streamlined the dataset, focusing our analysis on the most relevant metrics.
- *Dropping Years 2015 and 2016:*
  Upon review, it was determined that the data for the years 2015 and 2016 were incomplete for most countries, which could potentially skew the analysis and lead to inaccurate conclusions. To address this issue and maintain the integrity of the dataset, these years were excluded from the analysis. This decision also resolved issues related to NaN values, meaning that the analysis of asylum applications is based on data from 2000-2014.

3. Migration Patterns

The initial exploration of the data reveals that most refugees seek asylum in Western countries or countries that are economically stronger relative to their neighbors. Conversely, the countries of origin are primarily third-world countries, which are economically weaker, or countries troubled by political turbulence (including war) during the investigated timeframe of 2000 to 2014. It is noteworthy that a few countries host millions of refugees, indicating a significant distribution of asylum seekers. Supporting these observations, the left graph in Figure 1 displays the 20 countries from which most refugees are fleeing, with bars stacked to show whether those refugees' applications were accepted,
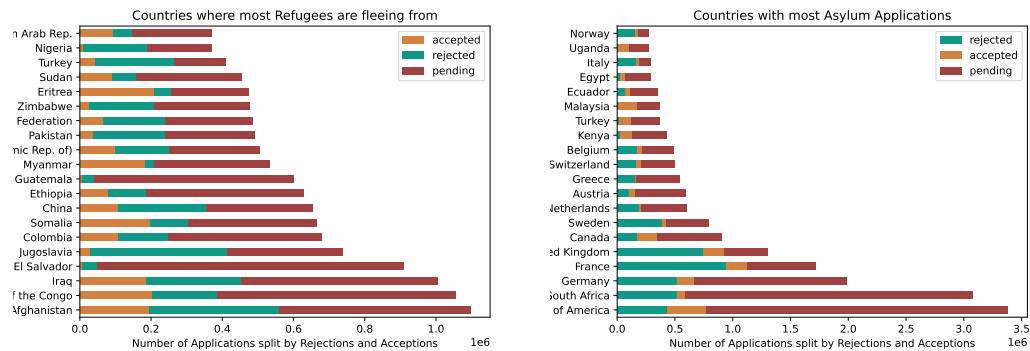
Figure 1. Comparison Asylum and Origin Country

rejected, or are pending in the country of application. In contrast, the right graph visualizes the top 20 countries receiving the most asylum applications, similarly stacking bars based on how many applications were accepted, rejected, or remain pending. Both graphs aggregate all applications from 2000 to 2014.

Interestingly, there are countries in both graphs where *pending* applications dominate. While for countries of origin, the decisions on asylum applications could be influenced by a complex array of factors and an accumulation of individual countries' decisions, for application countries, pending cases could indicate that countries take a long time, lack the capacity to process more applications, or might purposefully delay processing applications. This paper focuses on analyzing correlations for application decisions, and thus, subsequent sections will concentrate on the country of application rather than the country of origin. Moreover, the analysis will primarily address rejected and accepted applications. This focus is chosen because pending applications can be counted multiple times, as cases can remain pending over years, potentially skewing the findings.
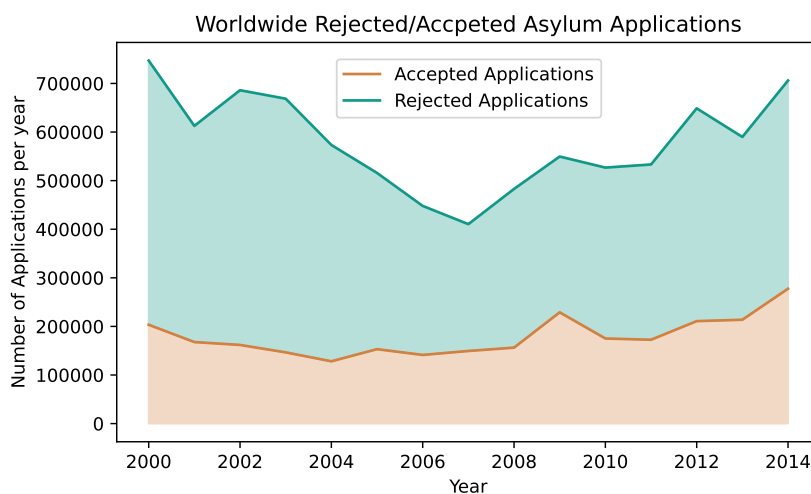

Figure 2. World Trend in Asylum Applications (Stacked)

Figure 2 visualizes the trend of rejected and accepted asylum applications over the years, showing that more applications are getting rejected than approved, without an

evident trend. Similar to the reasons why pending applications dominate in some countries, Figures 1 and 2 raise questions about the relationship between accepted and rejected applications. Consequently, the next section will delve into assessing the correlation between accepted and rejected cases, aiming to uncover political or statistical implications.

4. Analysis of Accepted-Rejected Correlations

Analyzing the correlation between rejected and accepted applications presents a complex challenge due to the temporal and geographical dimensions of the data, which preclude straightforward correlation analysis. Therefore, this section will first explore the correlation on a per-country basis before delving into the correlation with respect to the rate of change, with details elaborated in the following subsections.

4.1. Cumulative Analysis at the Country Level

The following figure 3 positions each country on a scatterplot according to its cumulative logarithmic rejected and accepted asylum applications.
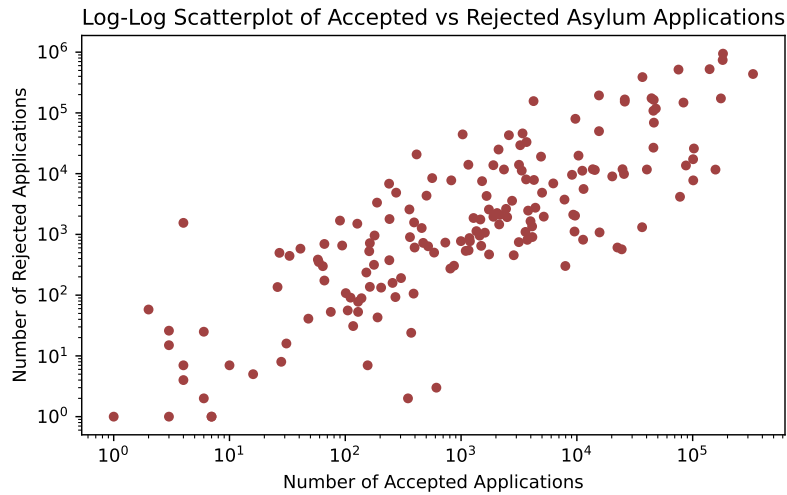

Figure 3. Scatterplot Accepted vs Rejected Asylum Applications

We examine the Null Hypothesis:

$$H_0 : \text{There is no correlation between acceptance and rejection rates per country} \quad (1)$$

Testing this hypothesis with Pearson and Spearman correlation tests yields p-values less than 10^{-27}, allowing us to reject the Null Hypothesis even at very stringent significance levels. This indicates a likely deliberate correlation globally between rejected and accepted applications. Furthermore, both tests indicate a strong correlation, with $pearson \approx 0.7$ and $spearman \approx 0.85$. The linear regression analysis that follows helps to further understand the relationship between rejected and accepted applications.

The linear regression model reveals that 49% of the variability in the number of rejections can be explained by changes in the number of acceptances. Although the R^2 value suggests that other models might better fit the data, the linear regression sufficiently indicates that a significant number of countries maintain a consistent ratio of accepted
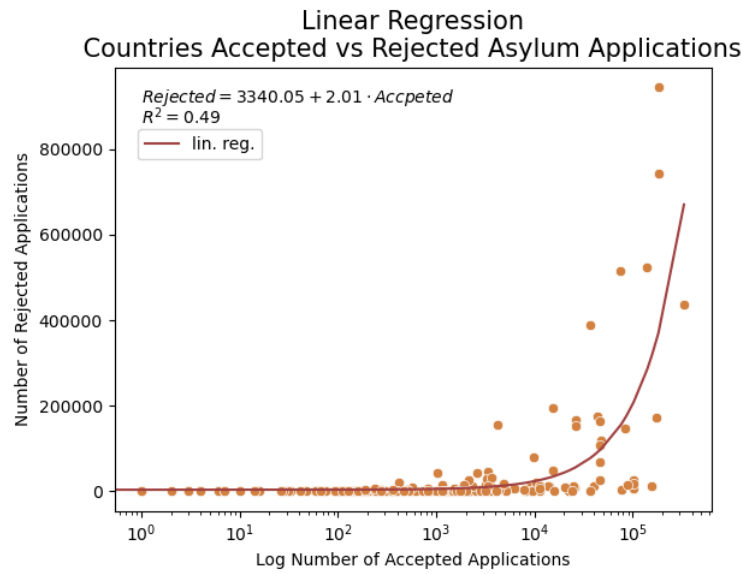
Figure 4. Linear Regression for Accepted vs Rejected Asylum Applications

to rejected asylum applications, consistent with the global trend identified by the model. This implies that the acceptance/rejection policies aim to maintain a balance over time. Countries closely aligning with this model can be identified, for example, by the residuals.

4.2. Global Trends: Rate of Change Analysis

The correlation analysis of accumulated accepted and rejected applications previously discussed does not account for the time series component of the data. To address this and enable a more nuanced country-level investigation, we analyze the rate of change in accepted/rejected applications year over year. This approach facilitates statistical testing to discern if asylum strategies appear random or follow a discernible pattern.
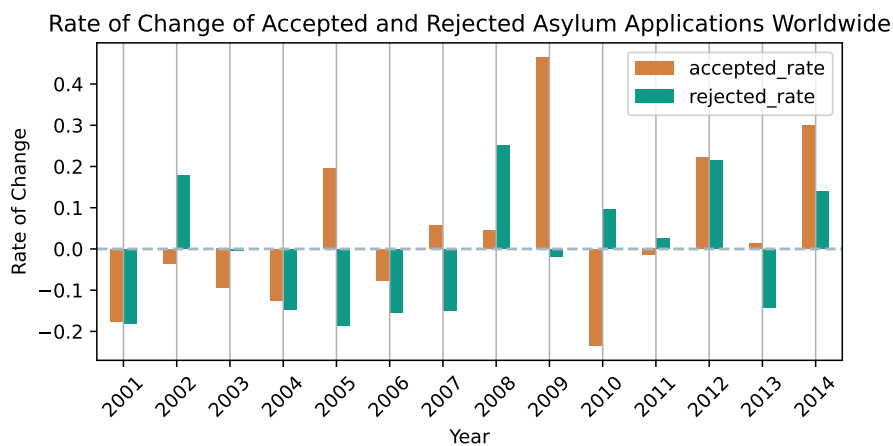
Figure 5. Global Rate of Change in Accepted and Rejected Asylum Applications

Figure 5 illustrates the annual rate of change for globally accumulated application types, offering an alternate view of the trends shown in figure 2. To assess the correlation

of this rate of change distribution, we test the following hypothesis:

H_0 : There is no correlation between the rate of change in accepted and rejected applications (2)

Given that p-values for both Spearman and Pearson tests exceed the 0.05 threshold, landing above 0.485, we lack sufficient evidence to reject the null hypothesis. Consequently, there is not enough statistical evidence to assert a significant correlation based on our data, suggesting no straightforward global pattern in the rate of change for asylum applications.

### 4.3. Detailed Country-Level Rate of Change Analysis

This part of the analysis delves into country-specific trends by testing the following null hypothesis for each country:

H_0 : For *Country*, rates of change for accepted and rejected applications are not correlated. (3)

This hypothesis is evaluated at a 5% significance level, utilizing both Spearman and Pearson correlation coefficients. The analysis is confined to countries that have processed more than 2000 applications in total. The findings suggest that, for several countries, the correlation between the rates of change in accepted and rejected applications is unlikely random. For specifics on the countries analyzed and detailed results, readers are directed to the accompanying source notebook.

4.4. Implications Exploration alongside Country Examples

The implications of the last sections findings are illustrated through several examples:
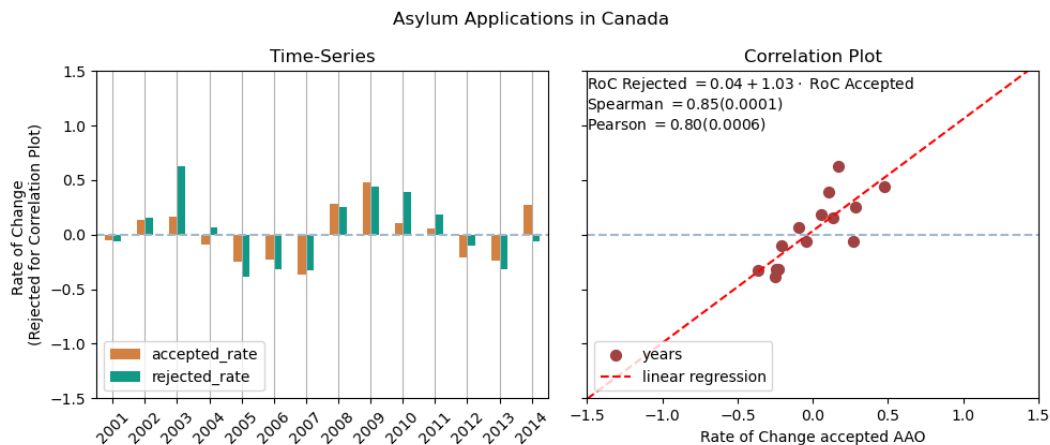

Figure 6. Canada

Figure 6 visualizes the rates of change over time for Canada, with a scatterplot on the right highlighting the relationship between accepted and rejected applications, complemented by a fitted linear regression to depict the trend. This methodological approach is consistently applied to all subsequent country examples within this section.

For Canada, exceptionally low p-values from both tests strongly suggest rejecting the null hypothesis, indicating that Canada likely has an asylum strategy or policy regulating the ratio between accepted and rejected Asylum Application Outcomes. Given

Canada's obligations under the Geneva Convention to accept asylum applications from individuals fleeing war or political dangers, these results could reflect a deliberate policy stance. It raises questions about whether this consistency in decision-making is related to the nature of the applications or an internal strategy to adhere to predetermined asylum application quotas.
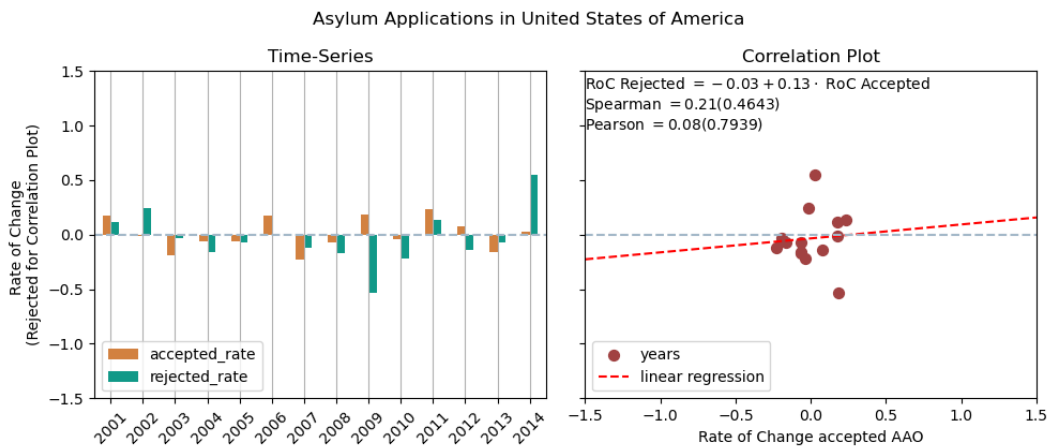
Figure 7. United States of America

In contrast, the analysis for the United States, as shown in Figure 7, does not allow for the rejection of the null hypothesis, suggesting that decisions over time could be random or not follow a discernible pattern. Notably, the data points tend to cluster near zero changes in rejection or acceptance, possibly hinting at either a high volume of applications or a fixed quota for processed applications.
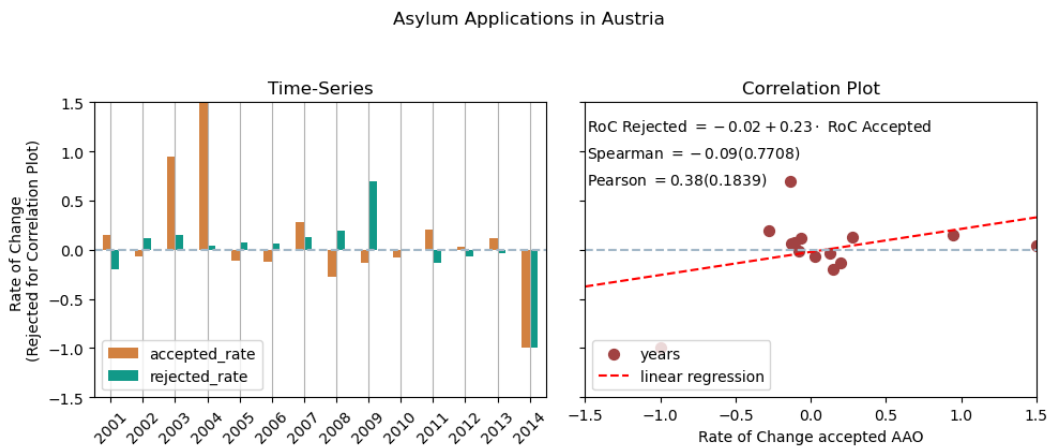

Figure 8. Austria

Austria's case, illustrated in Figure 8, shows a distinct pattern where the rejection rate change clusters around zero, while acceptance rates fluctuate more significantly. This observation leads to the next section, which compares the distribution of rate changes in accepted versus rejected applications across countries, aiming to identify broader trends and potential policy implications.

4.5. Rate of Change Distributions at the Country Level

We commence this analysis by testing:

H_0 : The Rate of Change (RoC) distributions for rejected and accepted applications are identical.

(4)

Upon applying the Kolmogorov-Smirnov (KS) test, we receive a p-value of 0.0019, enabling us to reject the null hypothesis. Thus, we conclude that the distributions are not identical. This finding aligns with earlier statistics indicating the absence of a global correlation. This segment also probes into how these distributions appear at the country level, particularly in terms of their mean and standard deviations.
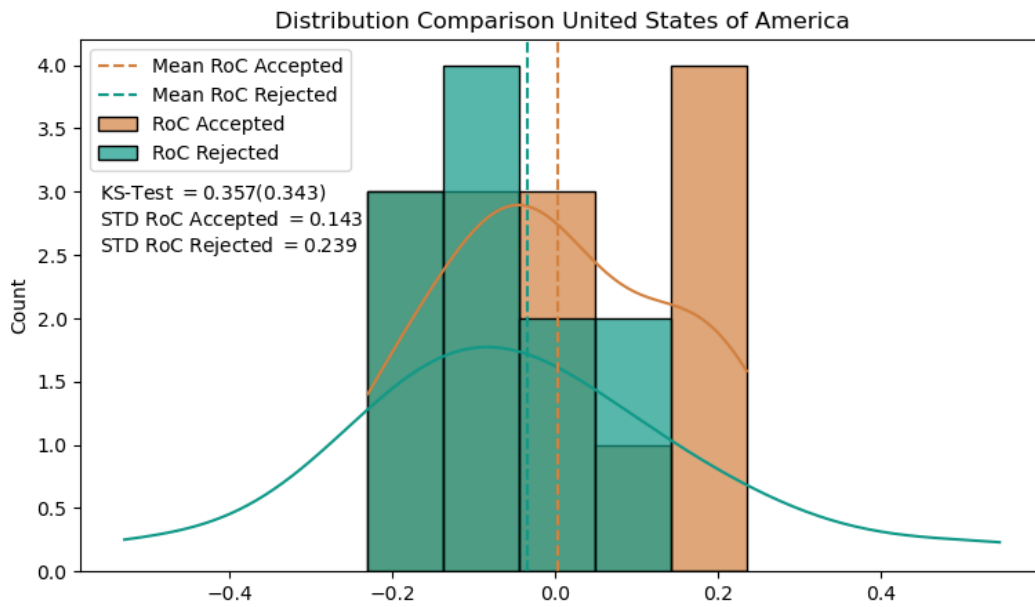

Figure 9. Rate of Change Distributions for the USA

Continuing with the United States of America as an example, Figure 9 extends the analysis to include the distributions of the USA's rate of changes for asylum application outcome types, demonstrating that the KS-test does not reject the null hypothesis for the USA, indicating that they are similar distributions. Moreover, the analysis of standard deviation and mean reveals that, for USA, as suspected, the accepted distribution is notably centered around zero with a small standard deviation, suggesting a cap on accepted cases but not on rejections.

Observing the absolute figures presented in Figure 10, it becomes evident that, beyond the apparent upper bounded nature of the data (trivial) the quantity of accepted asylum applications fluctuates within a comparatively narrow scope, especially when compared against the broader variance observed in the number of rejected applications. This observation diverges from the pattern discerned in the Canadian example; nonetheless, it too suggests the presence of distinctive patterns that may reflect underlying strategies and policy orientations, such as limit to migration capacities, either ideological or physical. To adapt the methodologies employed in our illustrative analysis for Canada, Austria and the USA, we developed a general tool for country-level analysis, see section5.
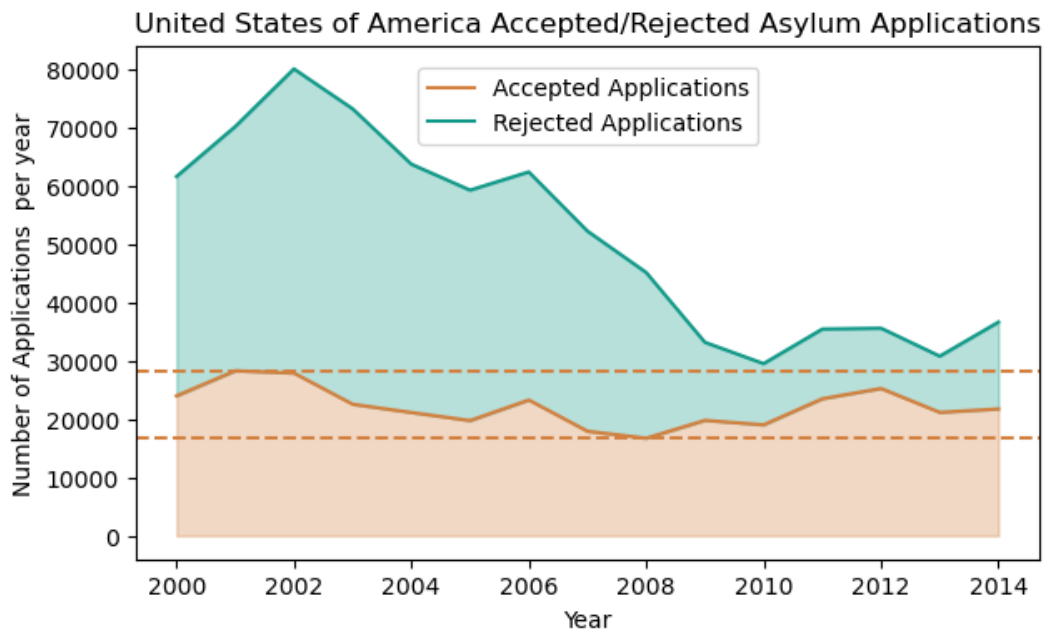
Figure 10. Absolute Accepted/Rejected Asylum Applications USA

5. Country Analysis Tool

This section outlines how the findings from our analysis can be applied to scrutinize the asylum policies of various countries. Users interested in exploring this further can find the relevant analytical repository:

$$github.com/jakthehut/Analyse - Countries - Asylum - Application - Decisions \tag{5}$$

Within the *tool-notebook*, users have the opportunity to select a country of interest for a detailed analysis. This interactive tool provides several key insights through different analytical views:

1. A time-series graph of the country's absolute numbers of rejected and accepted asylum applications, offering an immediate visualization of trends over recent years. This feature facilitates a quick understanding of how a country's asylum decisions have evolved.

2. A list of the primary countries of origin for asylum seekers applying to the selected country. This overview allows users to gauge the main sources of asylum applications and understand the direct impact of global migration patterns on the chosen country.

3. An evaluation of the predictability of a country's asylum decisions based on linear regression models, comparing its behavior to global trends. This aspect assesses how closely a country's asylum decision trends align with broader patterns.

4. A graph depicting the country's year-over-year rate of change in accepted and rejected asylum applications, accompanied by correlation and linear regression analyses (using both Spearman and Pearson coefficients). This parallels the methodologies applied in figures 6 and 7, helping users determine whether there appears to be a policy or strategy regulating the balance between accepted and rejected applications.

5. A comparison of Rate of Change distributions, similar to the analysis in figure **??**. This comparison aims to highlight differences in distributions and assess whether one or both are centered around zero with a small standard deviation, potentially indicating a cap on asylum decisions.

6. Conclusion

The analysis of asylum application outcomes yields several key findings. First, there is a global correlation between accepted and rejected cases, indicating that countries tend to follow a global trend in the ratio of their accumulated accepted and rejected applications, echoing our hypothesis of an unspoken policy aimed at balancing asylum decisions. Second, the analysis of the relative change in asylum application outcomes on a global level reveals that annual change rates do not correlate, suggesting a long-term trend without short-term correlation. Third, further analysis into the rate of changes on a country level identified approximately ten countries with significantly correlated rate changes. This finding implies a strategic dimension to asylum policy, with certain states potentially employing structured approaches to manage asylum applications in alignment with broader political, social, or economic goals. Fourth, it was observed that some countries, appear to have a *cap* on the number of cases they accept or reject, as indicated by their rate of changes clustering around zero. These insights enable further individualized analysis of countries' asylum application decision strategies using the tool described in section 5.

Looking forward, we propose to continue the development of statistical tools for analyzing decisions in asylum applications. Our goal is to enhance transparency in how countries approach asylum applications and, more importantly, to make these approaches more understandable.