

Immigration Tracking Over Time in the United States	
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Organization	N/A
Organization Description	N/A
Project Type	Data Science
Project Description	<p>We would like to create a visualization of the movement of immigrants and non-native United States residents over time. We'd also like to use past datasets to create a prediction model. This prediction model might help show where immigrant populations are likely to move to and concentrate based on historical data.</p> <p>Our intent is that our visualization will be a compendium of existing tools and datasets that track immigration patterns in the US. The prediction model that we create could be used by lawmakers, historians, and analysts as a supplemental tool.</p>
Data Sets & Sources	<p>We can use datasets from the US Census Bureau and from the Department of Homeland Security (DHS) to compile necessary immigration data.</p> <p>For census data (https://www.census.gov/data/datasets.html), use the filter "Population Estimates" under the "Population" section on the left of the page. Many datasets over the years are available for the kind of data we want to use.</p> <p>For DHS data (https://www.dhs.gov/immigration-statistics/yearbook), choose a year from 1996 to 2020 using the sidebar on the left. Each year contains a set of immigration tables along with a description of each table.</p>
Suggested Steps	<ol style="list-style-type: none"> 1. Utilize the datasets made available by the US Census Bureau and by the Department of Homeland Security. 2. Aggregate all historical datasets and refactor them for use in one or more pandas dataframes.

	<p>3. Use this aggregation to create an animated visualization of historical immigrant population movement within the United States over time.</p> <p>4. Once completed, the historical data can then be used to train a population movement model, most likely similar to the one utilized in this paper (source below):</p> <div data-bbox="613 451 1291 829"> <p>The First Great Migration: 1910-1940</p> <p>The Second Great Migration: 1940-1970</p> <p>The change in share of Blacks in cities is based on the percentage point difference in the percent of population that was Black in the later time period compared to the earlier. For example, 18.3 percent of the population in Gary, IN was Black in 1940 but was just 2.3 in 1910, which represented a 16.0 percentage-point change in the share of Blacks in the city. It was the largest change in share during the First Great Migration. By the end of the Second Great Migration, Newark, NJ had realized the largest increase in Black population share, with the Black proportion of the city rising from 10.6 in 1940 to 54.2 in 1970.</p> <p>Increasing</p> <ul style="list-style-type: none"> 10.0 or more 5.0 to 9.9 2.5 to 4.9 0.0 to 2.4 -2.4 to -0.1 -0.0 to -2.5 -10.0 to -0.1 <p>Decreasing</p> <ul style="list-style-type: none"> Less than -10.0 <p>City population (in later decade)</p> <ul style="list-style-type: none"> 1,000,000 or more 500,000 to 999,999 100,000 to 499,999 50,000 to 99,999 Less than 50,000 </div> <p>Source: http://snap.stanford.edu/class/cs224w-2015/projects_2015/Analyzing_and_Predicting_Internal_Migration_Patterns_in_the_USA.pdf </p>
Questions to be answered in Analysis	<p>How have immigrants moved throughout the United States historically?</p> <p>What are current immigration patterns by group in the United States?</p> <p>How are immigrants likely to continue moving throughout the United States in the coming years? Where have immigrants come from to the United States and has this changed drastically over time?</p>
Ideal Output + Final Deliverable	<p>We hope to deliver:</p> <ol style="list-style-type: none"> 1. An immigrant group prediction model using census and DHS data that can freely be used for any future project. 2. An animated visualization of past and predicted immigrant population movements in the United states. 3. Our implementation of a population migration model that is reasonably accurate.
Additional Information	N/A

List of Limitations	<ol style="list-style-type: none"> 1. It may be difficult to compile the extensive amount of data from the US Census and the US DHS. 2. We may have to look deeper into whether any data is being shared between the census and DHS in order to avoid duplicate data. This could end up being a difficult and tedious manual step. 3. A great deal of data cleaning will likely need to be done before working with the previously mentioned datasets. 4. DHS data spans from 1996 to 2020 while Census data spans from 1970-2021. Less data in earlier and very recent years (1970s-1980s and 2021-22) could potentially be an issue when creating an accurate model. 5. (New Limitation, Deliverable 1) There are many datasets. We will need to take a look through each relevant dataset to see which ones are best suited for our project.
Answer 1 Key Question: Deliverable 1	<p>Q: What are current immigration patterns by group in the United States? How have immigrants moved throughout the United States historically?</p> <p>A: Please see the graphs in “exploration.ipynb”. We have created basic models for:</p> <ul style="list-style-type: none"> - Number of people immigrating into the United States per year (1820-2020) - Immigration into the United States by continent (1820-2020) - Ancestry in the United States (2020-2010)
Deliverable 2	<ul style="list-style-type: none"> - Data from deliverable was used to make better visualizations - More data was aggregated and collected and made into easy to understand visualizations as well - Question answered: Where have immigrants come from to the United States and has this changed drastically over time? <ul style="list-style-type: none"> - Answer: See visualizations for where immigrants have come from. Most immigrants come from European nations. Trends in immigration at least from 2010-2020 appear to have remained relatively similar year over year. - Refining Project Scope: <ul style="list-style-type: none"> - We may not be able to create a prediction model as hoped. Gathering the data and making it usable has proven to be more challenging than anticipated. We have recently found a new source of census data that may solve this problem, but we have not had sufficient time to implement changes utilizing this data, so we are not sure yet if this will solve our problem. We hope to figure out

	<p>how to utilize the census data that is in this new format since it seems to include more historical data than we have previously had access to.</p> <ul style="list-style-type: none"> - We have also discovered that there is data for migration within the united states, but this data is not linked to the ancestry status, so while we should be able to create a visualization of migration patterns of US citizens within the united states, we may not be able to create a visualization of immigrant migration patterns within the United States as we had hoped
Deliverable 3	<p>I. Refined Analysis Questions:</p> <ul style="list-style-type: none"> - What are current immigration patterns globally to the United States? - Do these current trends differ from historical trends? - Based on historical data, how might these trends continue looking forward? <p>Answer: Please see the rough draft of our report.</p> <p>So far, we have a rough understanding of current immigration patterns globally to the United States via our analysis. We used data from the US Census and the US Department of Homeland Security (DHS) to create a decadal model. The model shows trends by decade (each decade from 1820 to 2020) for immigration to the US. In addition to this, we have created a line graph to get a better understanding of current ancestral data in the US.</p> <p>Also, our more recent data (from 2000 and on) can be used to compare with data from past decades.</p> <hr/> <p>II. Refining Project Scope:</p> <p>As discussed with our past deliverable, we may not be able to create a prediction model as we had once hoped. We have determined that the data from the US Census and the US DHS is not sufficient enough to create a proper prediction model. This is mainly due to a noticeable lack of ancestry and immigration data. Therefore, we have modified our original analysis questions to adjust accordingly.</p> <hr/>

	<p>III. List of Limitations with Data</p> <ul style="list-style-type: none">a) Lack of older data, lack of relevant data/missing fields<ul style="list-style-type: none">- There is a shortage of data preceding 1990. In much of the Census and DHS data that we have worked with, there is little to no ancestral data.b) Missing country data<ul style="list-style-type: none">- Data for many countries is not present in the datasets that we were able to work with- Data for countries that no longer exist such as Yugoslavia, Czechoslovakia, and Austria-Hungary is difficult to use (in, for example, our world map timelapse GIF)c) Older data is unorganized<ul style="list-style-type: none">- 1970s, 80s Census data is stored as a plaintext file. Even with a helper file describing the layout, this is still very difficult to work with. <hr/> <p>IV. Potential Risks of Achieving Project Goal</p> <ul style="list-style-type: none">a) Current Limitations with Data<ul style="list-style-type: none">- As discussed in Section III, we currently have several limitations with the datasets that we have available to usb) Difficulty with the Estimation of Future Immigration Trends<ul style="list-style-type: none">- With the current data that we have, it is difficult to estimate how immigration trends might look in the near and far future.
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