**Human Mobility in an Era of Population Alarmism:  
New Visualizations of Nepal’s Migration Context**  
Project by Sophia Graybill

Visualization Webpage: <https://sgraybill.github.io/NepaleseMigration_Final/Final.html>

Background

Humans are an inherently mobile species, migrating voluntarily and by force throughout history. The International Organization for Migration (IOM, 2020) estimates that globally, there are over 272 million international migrants, a figure that already surpasses the predicted number of global migrants for 2050. Additionally, there are over 41.3 million Internally Displaced Persons (IDPs)[[1]](#footnote-1) globally (IDMC, 2019). People move for myriad factors including war, oppression, slow onset environmental change, natural disaster, economic improvement, and a perceived better life (United Nations, 2019).

Despite the myriad factors contributing to migration dynamics and the historical legacy of human mobility, migrants have become constructed by popular discourse as a threat to national and global security (Baldwin, 2016, Bettini, 2017). Stemming from Western coloniality, we are in an era of *geopopulationism* in which non-Western people living outside of their home countries are presented as a threat to the current global order, rendering them in need of being controlled and managed by Western governance apparatuses (Bhatia et al, 2020; Boyce et al, 2020). Concerns about climate change have been harnessed to further perpetuate this xenophobic and racist conceptualization of migrants. Migrants, whether motivated by environmental change, war, oppression, or desire to seek out better opportunities, are faced with having to overcome stigma and misunderstandings that are deeply racist and inaccurate.

Inspiration and Justification for My Project

Therefore, research that contextualizes migration by presenting more than just a quantitative representation of migration dynamics can assist in challenging these harmful narratives and re-orienting public and political opinion about migrants. One such opportunity is through educational, interactive, and accessible visualizations of migration patterns and motivations. As the audience I am targeting with this work is the general American public, I drew inspiration from well-known and easily accessible online sources.

The ‘big names’ in monitoring and support of migrants such as the United Nations (UN), the International Organization for Migration (IOM), and the Internal Displacement Monitoring Center (IDMC) tend to rely primarily on static maps as these are printable and can be incorporated into annual reports. Static maps have great value and utility however Dodge (2014) reminds us that maps represent just one reality at one time and scale and for this reason I believe static maps have the potential to contribute to misunderstandings to a greater degree than digital maps. Static maps also inherently lack the ability to represent mobility and movement owing to their static nature, and therefore my inspiration for this project came from the Pew Research Center’s interactive mobility map website found [here](https://www.pewresearch.org/global/interactives/global-migrant-stocks-map/) (Fig 1).

Fig 1. Screenshot from the Pew Research Center’s Migration Monitoring Website.

Map

Description automatically generated

While the Pew Research Center’s map is visually appealing and contains very useful and abundant information, I drew several critiques that served as the basis for my own rendition of a mobility map:

* First, I found this map to lack important details about what type of migration is being observed and visualized. It is unclear from this map if labor migrants, refugees, or asylum seekers are being represented, and without this context, the information could be misunderstood and aligned with migration alarmist narratives.
* This map also excludes important political, economic, and social context about why people are choosing to migrate, again opening the possibility for misinterpretation.

I believe this type of map website can be improved by embedding qualitative information into the margins of the website for more easily accessible explanations of the visualizations observed. I also believe this map can be improve with greater attention to the various types of migration occurring (asylum seeking, labor migration, disaster-related migration…etc).

Project Methods

Therefore, my project incorporates both dynamic visualizations of migration patterns and some environmental, economic, political, and social context motivating migration. I apply this framework to focusing specifically on Nepal, a country from which over 1,750 people migrate abroad for work daily (Kunwar, 2020) and where ethnic caste and religious extremist groups as well as the Communist (Maoist) Party of Nepal pose reoccurring threats to people’s freedom and safety. Nepal is also a country with high vulnerability to climate change and natural disasters which are likely to increase economic, social, and political tensions that may shift migration dynamics (MoPE, 2016).

My final product is by no means comprehensive and I encountered several problems with data consistency and availability that made certain visualizations out of the scope and timeline of this project. However, this final project incorporates a Graphics Interchange Format (GIF) to represent several types of migration in and out of Nepal, a technique that is not commonly utilized for this purpose yet has great applicability for representing dynamic processes. This project also presents information about migration in three different formats, appealing to a wide audience of viewers. Therefore, despite limitations and challenges, I think my project succeeds in its mission to try something new and to expand my skillset in programming and geovisualization. These methods include:

I used a Graphics Interchange Format (GIF) to visualize asylum and labor dynamics, producing three final maps: Nepalese migrant laborer destinations, origins of people seeking asylum in Nepal, and destinations of Nepalese asylum seekers. For each of these maps I utilized the following method:

* Utilized QGIS to produce a new projection called Robinson\_84 that cuts the world at a specified latitude (84) to center Nepal in the map.
* Applied this projection to ArcMap and produced individual choropleth maps for each year, representing the total numbers of people migrating to/from their destinations. I produced my own scale for the colors and applied that same scale to each year’s map. I then formatted each year’s map, changing only the date so that each map is identical apart from changing colors and dates.
* Individual year maps were saved as JPEG files and imported into Adobe Premiere where I produced GIFs that loop through each year on repeat to show change in origin/destination over time. GIFs have been popularized in social media and therefore I felt they have the potential to normalize trends in mobility. They are also inherently dynamic and therefore are useful for mapping dynamic data while being very easy to understand.
* For the map of destinations of Nepalese people seeking asylum abroad, I also produced graphs for each year using the same color scheme as the choropleth map to show the total number of people migrating to each country being visually represented. I embedded graphs in each corresponding year’s map before producing the GIF. This helped to keep the map itself clear of bulky country labels and contributed an added dimension of movement.

The textbox and scroll feature offer the qualitative and contextual information to frame the dynamics being represented in the GIF. This data represents the external and internal political tensions and internal environmental and social tensions that motivate people to seek asylum or temporary protection status outside of Nepal. I utilized Visual Studio Code to configure the webpage, photos, contextual information, and GIFs. Data for this project came from myriad sources listed below and was organized and edited in R-Studio for consistency.

My migration website offers three different types of information sources: visual, numerical, and written. Through this approach, I hope to accommodate a wider audience and a wider array of preferred learning styles. Use of three types of interconnected information also paints a more comprehensive understanding of the migration dynamics in Nepal, leaving less room for misinterpretation.

Limitations and Challenges

I had difficulty finding accurate and consistent data that had elements of spatiality and/or temporality for this project. Datasets tended to be either stock data (no geographic information included) or lacked temporality (data only available for a singular year or a few years). For example, I have labor remittance data for 1990-2020 but foreign labor destination data for only 2006-2011. This made it challenging to produce a single comprehensive map to show all these dynamics in one place like the Pew Research Center map. I overcame this challenge by producing a webpage with multiple visualizations and components, however I think the lack of consistent data takes away from the robustness of this project.

I also struggled with the technical aspects of this project. I had a difficult time producing codes in Visual Studio Code that worked and did not have glitches, and I could not do as much with this project as I initially hoped. Other renditions of this project or aspects I would have liked to include are:

* An interactive Leaflet map in which you can zoom into countries where Nepalese people have sought asylum to learn about that country’s migration policies and context.
* A map that utilizes the migration plugin in Leaflet to show dynamic arrows of migration flows. I did attempt this method, but the data I had was insufficient to produce this type of map.
* A map that incorporates a hover option over countries that breaks down the types of migrants they receive from Nepal (e.g. hovering over Qatar would show a pie chart of demographic characteristics of Nepalese labor migrants, or a break down of types of labor they are involved in).
* I would love to produce a StoryMap of migrant’s first-person experiences outside of Nepal if I had access to people’s stories. If I had more technical skills and natural talent in programming, I might consider this as part of my dissertation work.

**Data Sources**

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| **Source** | **Dataset(s)** |
| [Humanitarian Data Exchange](https://data.humdata.org/) | * 2001-2019: Total number of Nepalese asylum seekers in other countries, by year and country of asylum * 2001-2019: Total number of foreigners seeking asylum in Nepal, by year and country of origin. |
| [Open Data Nepal](https://opendatanepal.com/dataset) | * 2006-2012: Total number of people out-migrating from Nepal for work, by destination |
| [The World Bank](https://data.worldbank.org/indicator/BX.TRF.PWKR.CD.DT?locations=NP) | * 1990-2020 remittance data for Nepal |

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1. The Internal Displacement Monitoring Center (IDMC, 2020) defines an Internally Displaced Person (IDP) as someone who is “forced to flee their homes or places of habitual residence each year, including in the context of conflict, violence, development projects, disasters and climate change, and remain displaced within their countries of residence”. [↑](#footnote-ref-1)