

Mapping the Impact of Policy and Infrastructure on Migration Flow Dynamics in the Mexican Corridor

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Research Objectives

This research aims to explore the complex dynamics of irregular migration in Mexico, focusing on identifying the key factors that influence the routes chosen by migrants and reconstructing the intricacies of their journey. By improving upon existing studies, the project seeks to develop a dynamic methodology for creating, managing, and maintaining a comprehensive data repository on migratory flows within transit countries. This repository will be designed to be both transmissible and reproducible. The ultimate goal is to shed light on the experiences of migrants and the human rights challenges they face along their routes, delving into the reasons behind their route selection and the inherent difficulties encountered. This investigation strives to provide valuable insights into the migratory phenomenon, contributing to a deeper understanding of its causes, consequences, and the urgent need for effective policy responses.

Overview

Our project aims to map the historical and spatial dimensions of irregular migration along the Mexico-US corridor, creating dynamic spatial visualizations of identified migration routes across Mexican territory to the US border. Through data-driven mapping, we will illustrate changes in the corridor over time, highlighting how infrastructure distribution intersects with key territorial features that impact transmigrants' human rights.

These visualizations will utilize a variety of publicly accessible spatial data to contextualize the migration phenomenon comprehensively, including;

Key Spatial Aspects	Visualization in Map Display	In possession
Gov Infrastructure	Coord Distribution	YES
Civil Society / ONG Infrastructure	Coord Distribution	YES
Previously Gov Issued Documented Routes	Existing Pathway Traces	YES
Real Routs Projections	Projected Directions Traces	PENDING*
Official Ports	Points	YES
Unofficial Illegal Entries	Points	YES
Characteristical Related Zones (Crime Networks, Informal Founts of Employment, etc)	Areas	PENDING

*See the data needs section

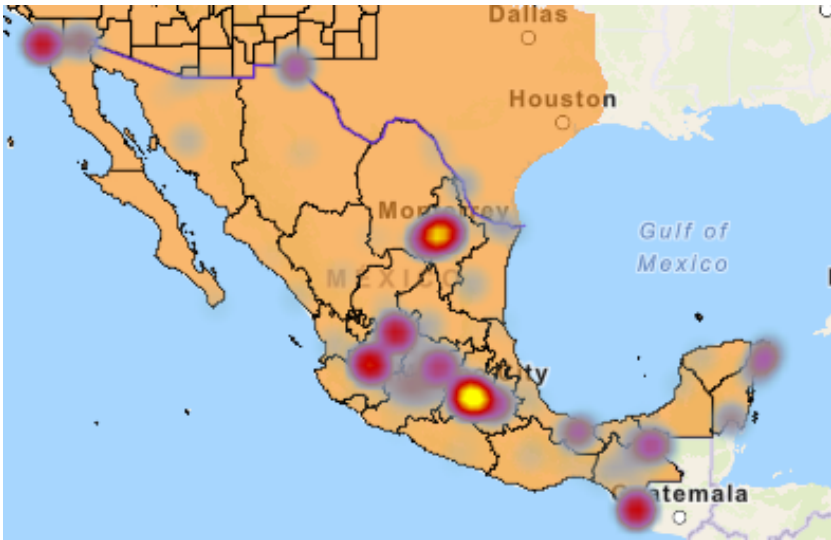


Fig. 1 Visualization of Areas (Migration Authority Presence)



Ex Fig. 2 Visualization of Previously Documented Routes (Based on outdated empirical data)

Data Needs

Mobility Data

To enhance our analysis of the interplay between policy and infrastructure on migration patterns, we seek access to a variety of data sources that offer insights into the mobility of transmigrants through the territory. Our evaluation has considered a range of databases, including empirical reports, surveys, and statistical data from government bodies, public institutions, and NGOs. Additionally, we aim to incorporate technical methods for gathering event-related data from various online platforms, such as Twitter and Google. These sources are instrumental in approximating the actual movement flows, yet we are open to exploring other, more precise data sources that align closely with our research objectives. Specifically, we require data that can be segmented into dimensions that accurately represent our study population, facilitating a comparison between documented migration routes and the distribution of institutional resources versus the migrants' actual pathways.

For this purpose, we are particularly interested in the following types of mobility data:

- **GSM Geolocation:** Leveraging data from mobile phone towers to track mobile devices, offering insights into the movement patterns of transmigrants.

- GPS Geolocation: Utilizing the global network of 30 satellites that orbit the Earth to obtain precise location data, enhancing our understanding of transmigrant routes.

Granularity Aim

JSON

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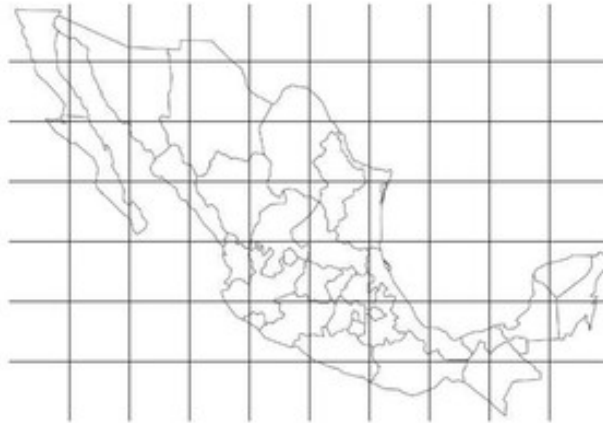
Ex Fig. 4 Example of the data we aim to use for real flow visualization

We aim to refine our data analysis through disaggregation and filtering, enhancing the accuracy of identifying spatial mobility patterns in irregular migration while maintaining anonymity. To achieve this, we have established a set of guidelines, including:

- Group Categorization: We will extract geolocation data from devices originating in specific countries: Guatemala, El Salvador, Honduras, and Venezuela, to understand the geographical origins of migration flows.
- Transportation Modality: We plan to filter location data using various dimensions that accurately reflect terrestrial mobility within the research area. These dimensions include travel time between locations, geographical coverage, and historical data usage.

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COORDINATE GRID MAP
Mexico



- **Spatial Analysis:** By applying a grid-based segmentation to location data, we aim to refine our understanding of on-foot transmigrant behavior. This approach allows us to select data that provides the most comprehensive descriptions of mobility patterns within specific time frames. Additionally, distinguishing devices that cross Mexico's southern border will enhance our ability to map the spatial dynamics of migrant mobilization across North America, offering a clearer picture of the routes and challenges faced by migrants.