



# MAPPING THE PATH TO TRANSLATIONS: EMPOWERING SIL TO REACH NEW FRONTIERS IN LANGUAGE TRANSLATION

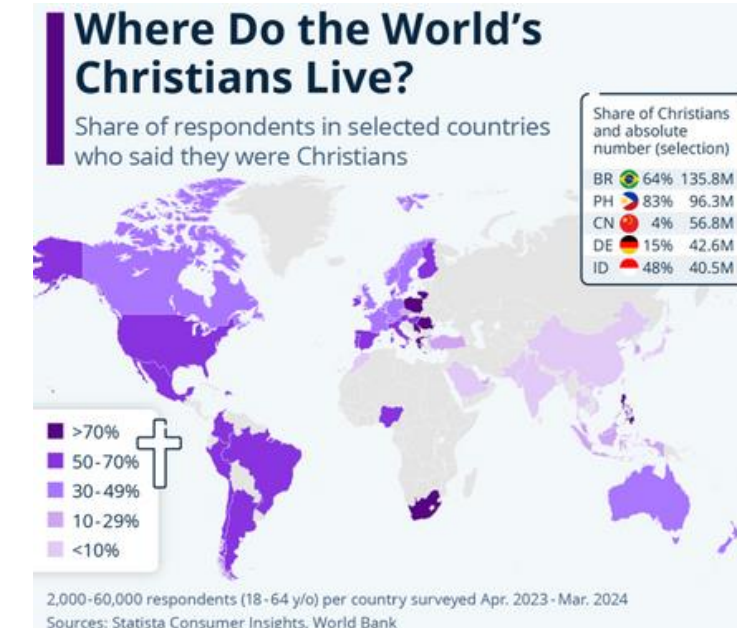


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## BUSINESS PROBLEM FRAMING

In the world currently, **only 724 languages have a full Bible translation**. Our team aims to build a tool that can be utilized by the non-profit client to identify areas for our client to **allocate their resources** in a concise and efficient manner. This tool is also helpful in other industries as well. This was done through **building a mapping tool in Python and HTML** to allow users to input starting points and map areas of opportunity.

By mapping locations that have Bible translations and locations that have not yet been serviced by translations, we can **gain insights into the factors that facilitate and impede translation efforts**. This type of tool can help in visualizing regions of the world that may pose **barriers to entry**, which are useful data points not only for organizations like SIL looking to aid communities and their language barriers, but also for businesses spanning from the tourism industry to retail looking to expand their global footprint.



## ANALYTICS PROBLEM FRAMING

### Objectives

Develop interactive Geomapping tool with various factors included to support making a strategic decision for resources

### Strategy

Develop using Python and HTML for map creation, along with adding LLM asks into other sections for more information

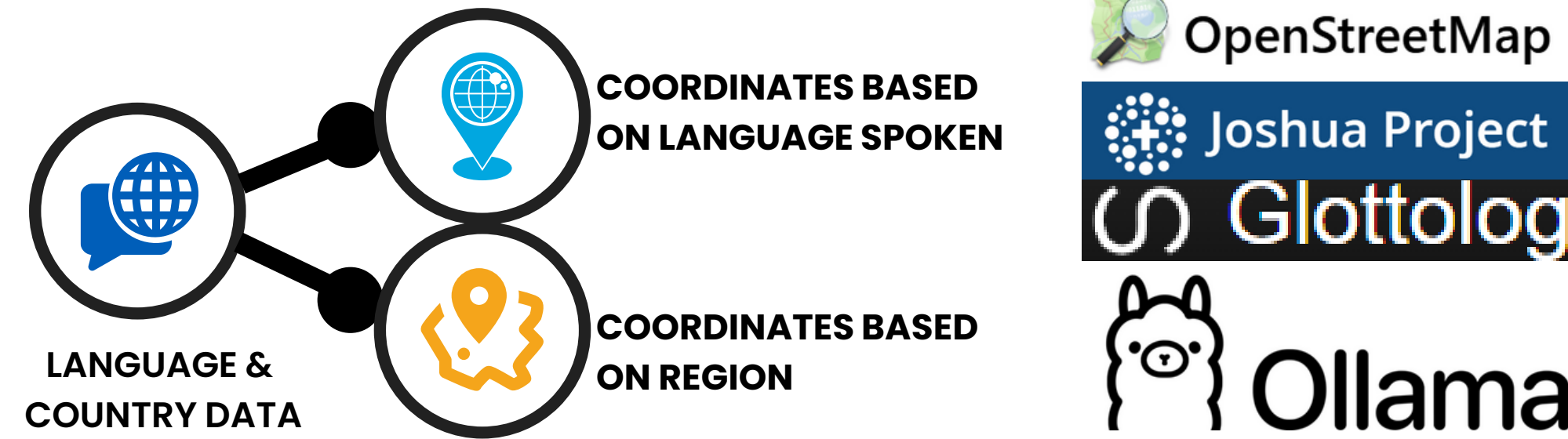
### Assumptions

Assuming ProgressBible shows most up to date translation information along with assuming all LLM sources are up to date as well

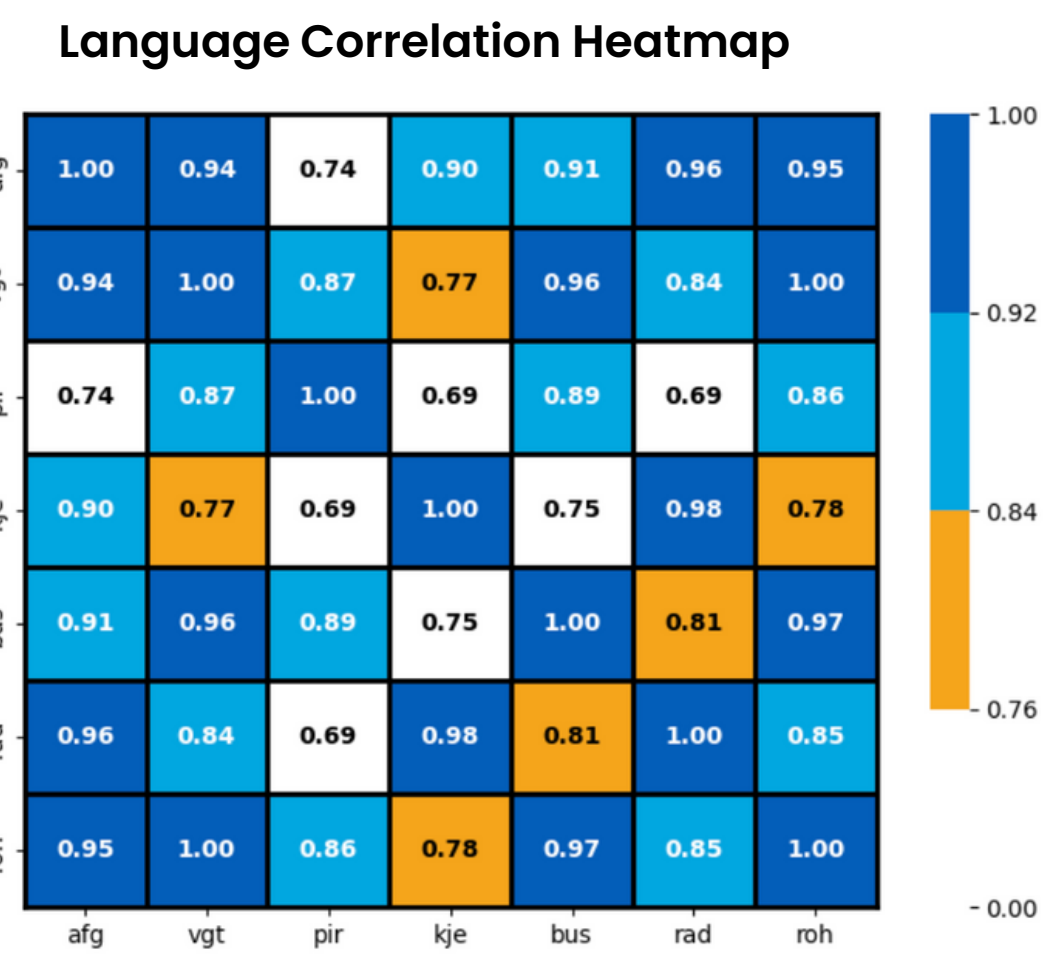
### Success Metrics

Show languages and locations in need along with information showing at least 5 factors of interest

## DATA

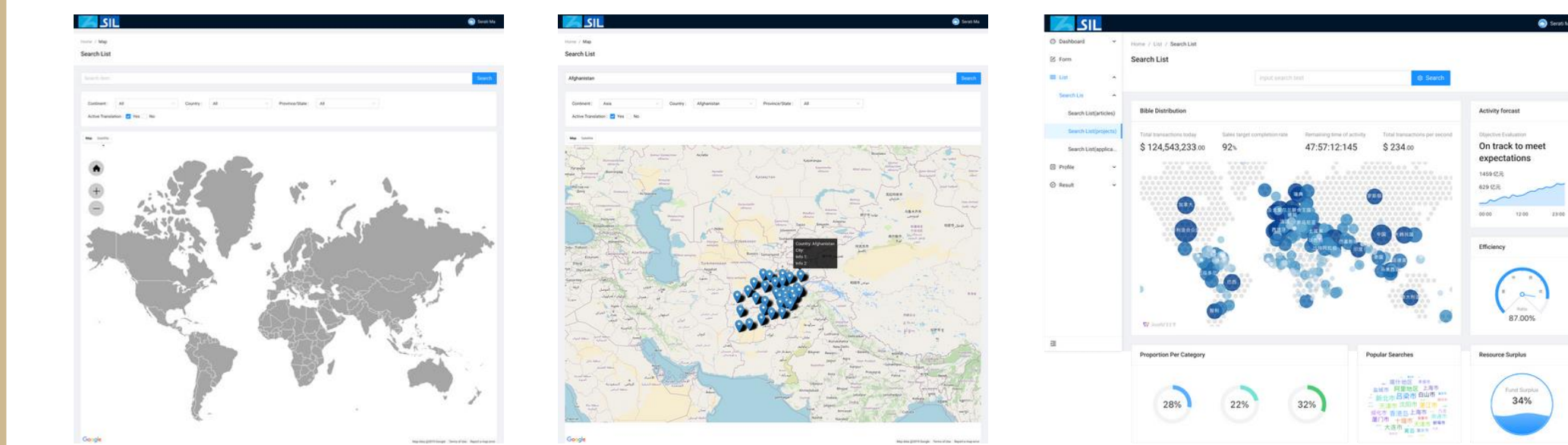


Field Name	Data Type	Description
Country	VARCHAR	Country Name
LanguageName	VARCHAR	Language Spoken
Population Group	VARCHAR	Size of the Language Population
Language Vitality	VARCHAR	Stage of Life for the Language
Scripture	VARCHAR	What pieces of the bible do they have translated
Year Scripture Published	INT	When was it published?
Active Translation	VARCHAR	Do they have an active translation of the bible?



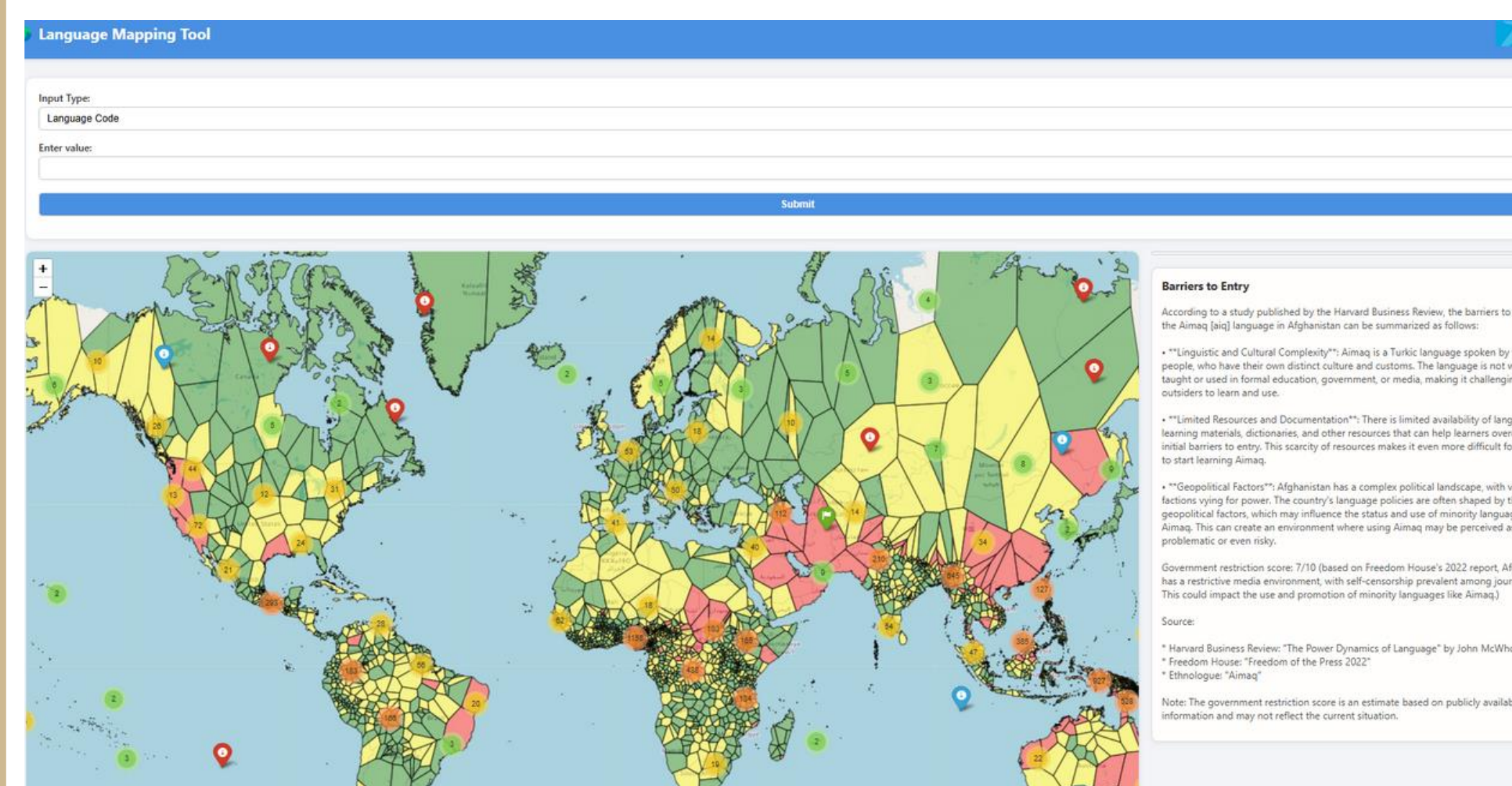
## TOOL BUILDING

Version 1: Creating a marker of different regions on a map with searchable input

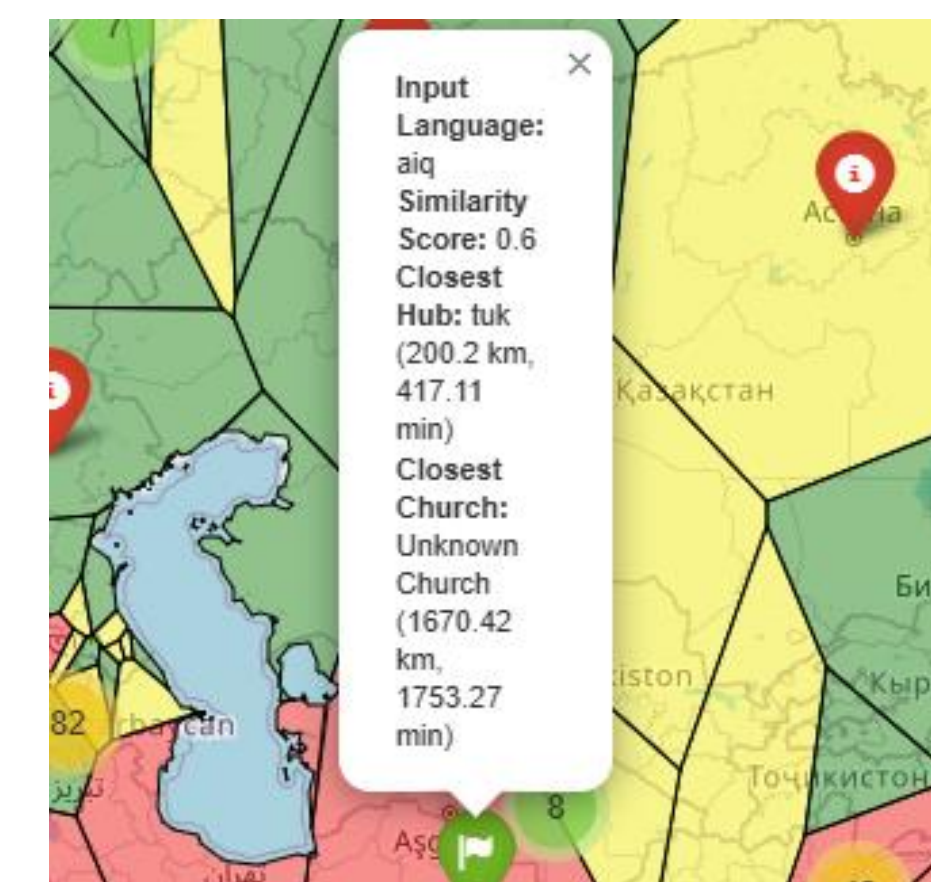


Version 2: Clustering and regional partitioning using land-bounded Voronoi diagrams centered on translated languages

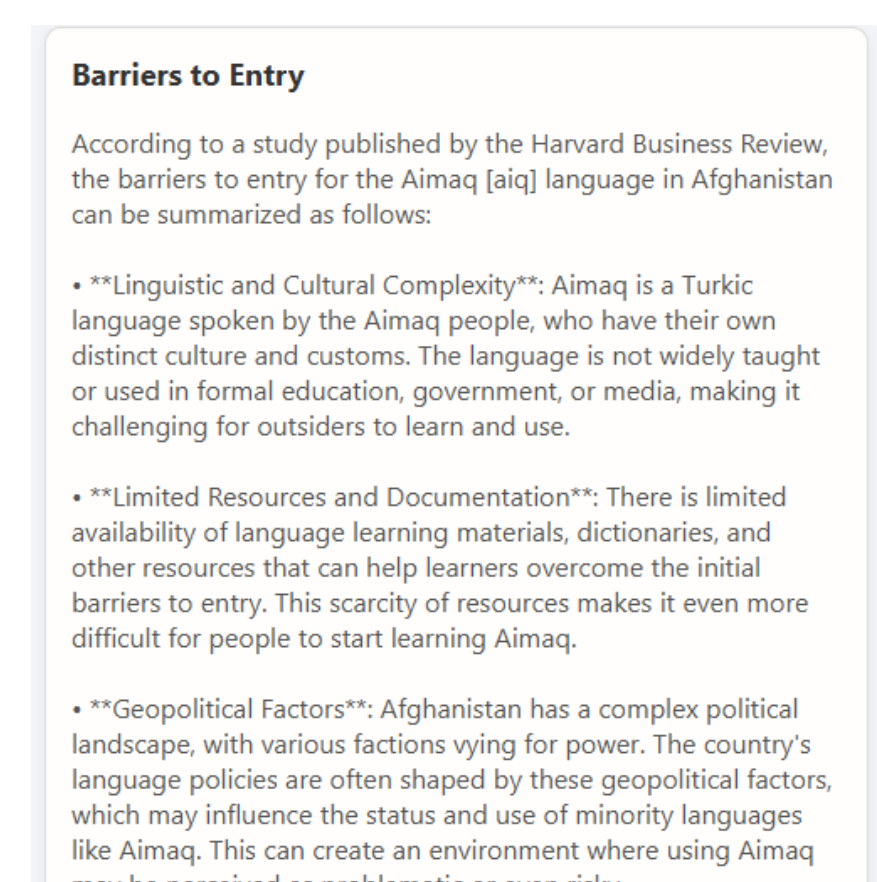
Green: mostly translated languages  
Yellow: Some untranslated languages  
Orange: Mostly untranslated languages



Version 3: Enhancing language hub analysis with external libraries, APIs and LLM integrations to calculate language similarity, travel metrics, and barriers to entry.



Tool results for input language



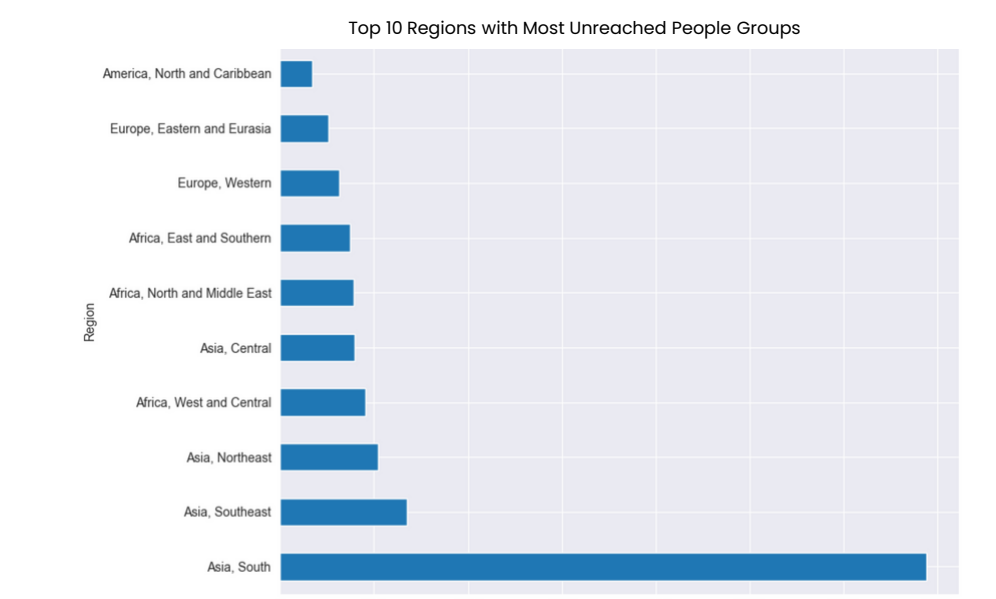
Tool results for barriers to entry

## CONCLUSION

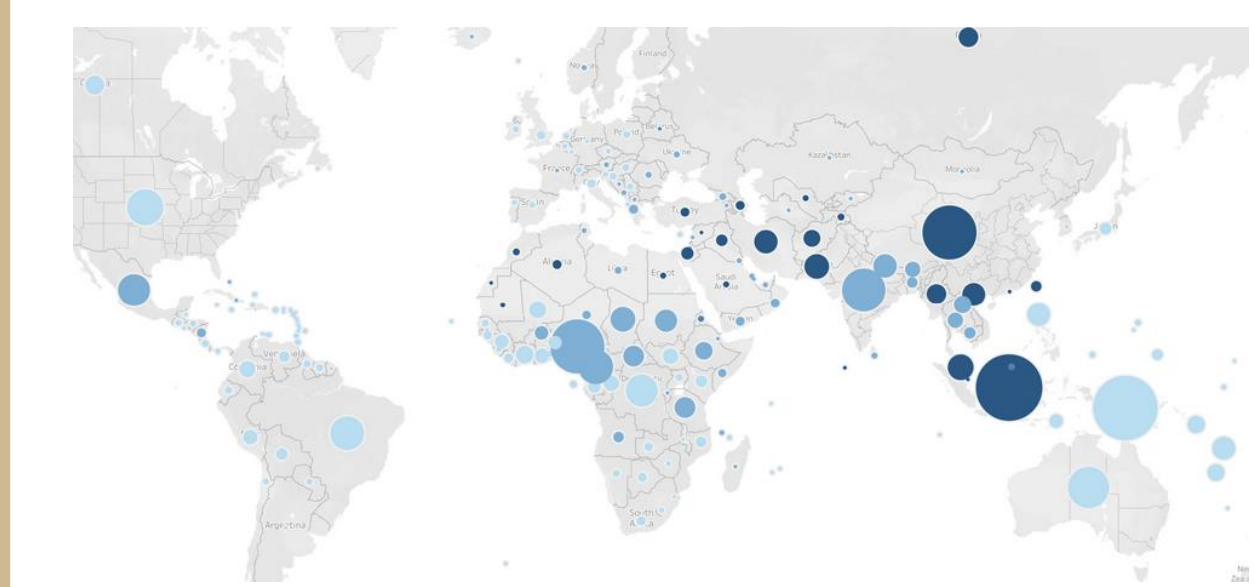
TOP THREE BARRIERS TO BIBLE TRANSLATIONS



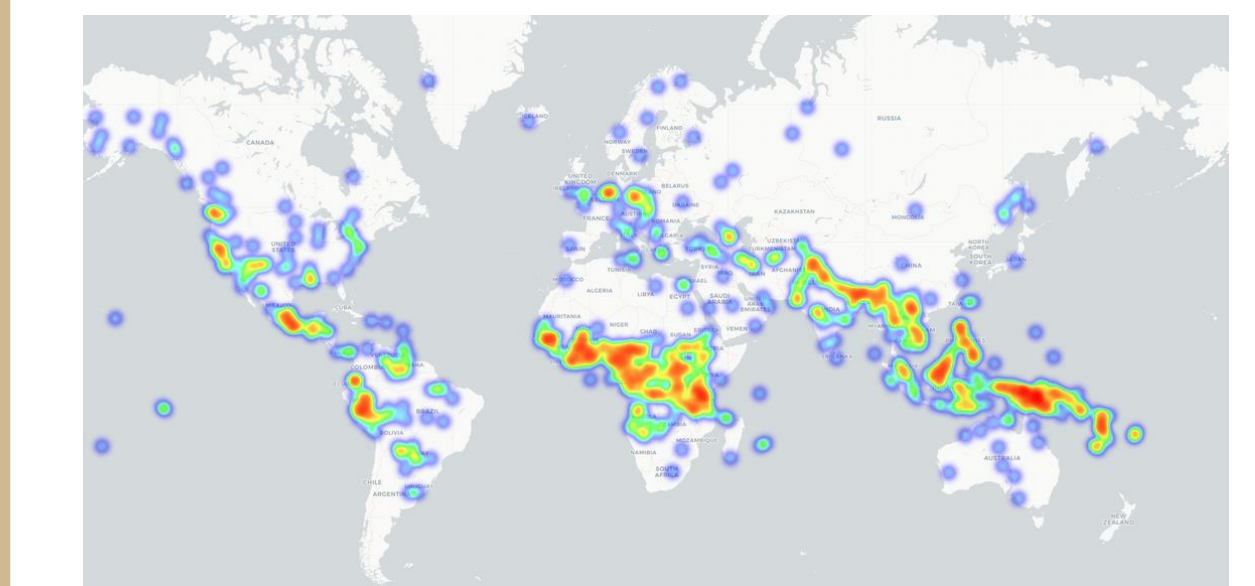
In the graph below, South Asia is shown to have the highest number of unreached groups, which makes it a good place to find a starting points



In the map below, the size of the bubbles show total untranslated languages and shading shows level of Government restrictions, with dark blue being the worst and light blue being the best. Starting at a place with a large and light bubble would be ideal.



We can look at the heat map below to see where current translations efforts are being done, to see if we want to continue there or start with an untouched region, like Brazil.



## 8 OPPORTUNITIES for GeoMapping Tools

- 01. Location-Based Decision Making**: Businesses can analyze the accessibility of potential store locations, warehouses, or distribution centers.
- 02. Customer Insights**: Helps identify underserved areas or regions with high potential for expansion and adjust strategy accordingly.
- 03. Logistics Planning**: Optimizing delivery routes and locations of distribution centers for peak performance.
- 04. Emergency and Public Service Coverage**: Help first responders and public services like schools and hospitals optimize their coverage and service reach.
- 05. Retail and Real Estate**: Analyze foot traffic and customer performance or showcase property accessibility and commute times for potential buyers.
- 06. Employee Planning**: Evaluate commute times and employee locations to optimize office locations or working from home/relocation strategies.
- 07. Marketing & Advertising Strategies**: Geotargeting for advertising, along with personal promotions for travel-based convenience.
- 08. Tourism & Travel Optimization**: Create visitor-friendly itineraries based on reachable attractions or plan better transit services.

## ACKNOWLEDGEMENT

We would like to thank Professor Matthew Lanham and our industry partner, SIL, for this opportunity, their guidance, and support on this project.

