Term Project 2:

A Diversity Analysis of Vancouver: Language and Business

Jasmin Smallwood

A01437906

GIST 7160

GIS Databases and Big Data

Instructor: Bill Johnstone

Submission: March 31, 2025

Jasmin Smallwood
A01437906

Purpose

This project aims to spatially explore Vancouver's ethnic diversity through two prevalent cultural indicators: language demographics, and commercial spaces such as cuisine, commerce, and cultural facilities. By examining linguistic data from over 262,000 residents, with 2,817 storefronts analyzed to recognize 76 distinct ethnicities, this project provides a comprehensive view of how cultural communities manifest across different Vancouver neighborhoods. The interactive ArcGIS Insight's workbook helps to reflect the city's unique multicultural landscape through its language and business ownership patterns.

Data Sources

Source	URL	Data Description	Features
City of Vancouver Open Data	https://opendata.vancouver.ca/pages/census-local-area-profiles-2016-attributes/	City Subdivision Boundaries, Storefront Inventory, and 2016 Census Data by neighborhood	City_Subdivisions, Population, Language (Mother Tongue, Primary Home Language, Primary Work Language) Ethnicity (Immigrant Birthplace, Ethnic Origin, Visible Minority), Storefront Names
GeoFabrik OpenStreet Map	https://download.geofabrik.de/osm-data-in-gis-formats-free.pdf	Points of Interest (POIS)	Culture, Leisure, Restaurants, Hotels, Supermarkets, Bakeries, Tourism Attractions, Museums

The ArcGIS Insight's Workbook

Page 1: Ethnic Diversity of Storefronts in Vancouver

1. Storefront Data Collection and Classification: A dataset of commercial Points of Interest was used as primary dataset. The POIS were categorized by inferred ethnic origin based on linguistic markers and naming conventions. Names with English or generic Euro-American markers were filtered out, with the focus placed on identifiable non-Western ethnic associations. This allowed for 2,947 storefronts to be mapped.
2. Map-Card:
    - A point map showing the businesses provides geography of business diversity.

- A chloropleth map uses a neighborhood-by-neighborhood aggregation to highlight the most prevalent ethnic group based on storefront count.

3. Chart-Card:
    - Treemaps illustrate the absolute prevalence of businesses by ethnicity and storefront name.
    - Stacked bar charts break down business presence across neighborhoods, both in relative percentage and absolute count, showing comparative diversity.
    - A heat chart presents an intersection of business ethnic representation across neighborhoods.
4. Table-Card: A storefront index shows business name, inferred ethnicity, and location attributes. This is connected to the point map and allows users to explore on a business-to-business basis.

Page 2: Linguistic Diversity in Vancouver

1. Vancouver Census Data: This page draws from mother tongue, primary language spoken at home, and primary language used at work. Languages native to North America as well as English languages from other parts of the world were filtered out, leaving 263,755 reported individuals and 57 languages to work with. The language data was then joined to each Vancouver neighborhood through a matching code field.
2. Map-Card:
    a. Chloropleth maps identify concentration and per capita patterns of different language groups across neighborhoods using color-coding based on the language and on the dataset used (mother tongue, work language, or home language), allowing for easy visual comparison among different maps.
3. Chart-Card:
    a. Donut charts display the proportion of different languages spoken in the whole of Vancouver, highlighting the proportional distribution and diversity of language.
    b. An Alluvial diagram illustrates the flow of language groups into neighborhoods, showing which languages are most prevalent in which areas. This method highlights not just language, but also the wider settlement patterns of various linguistic branches, families, and associated continental sub-regions.

Conclusions

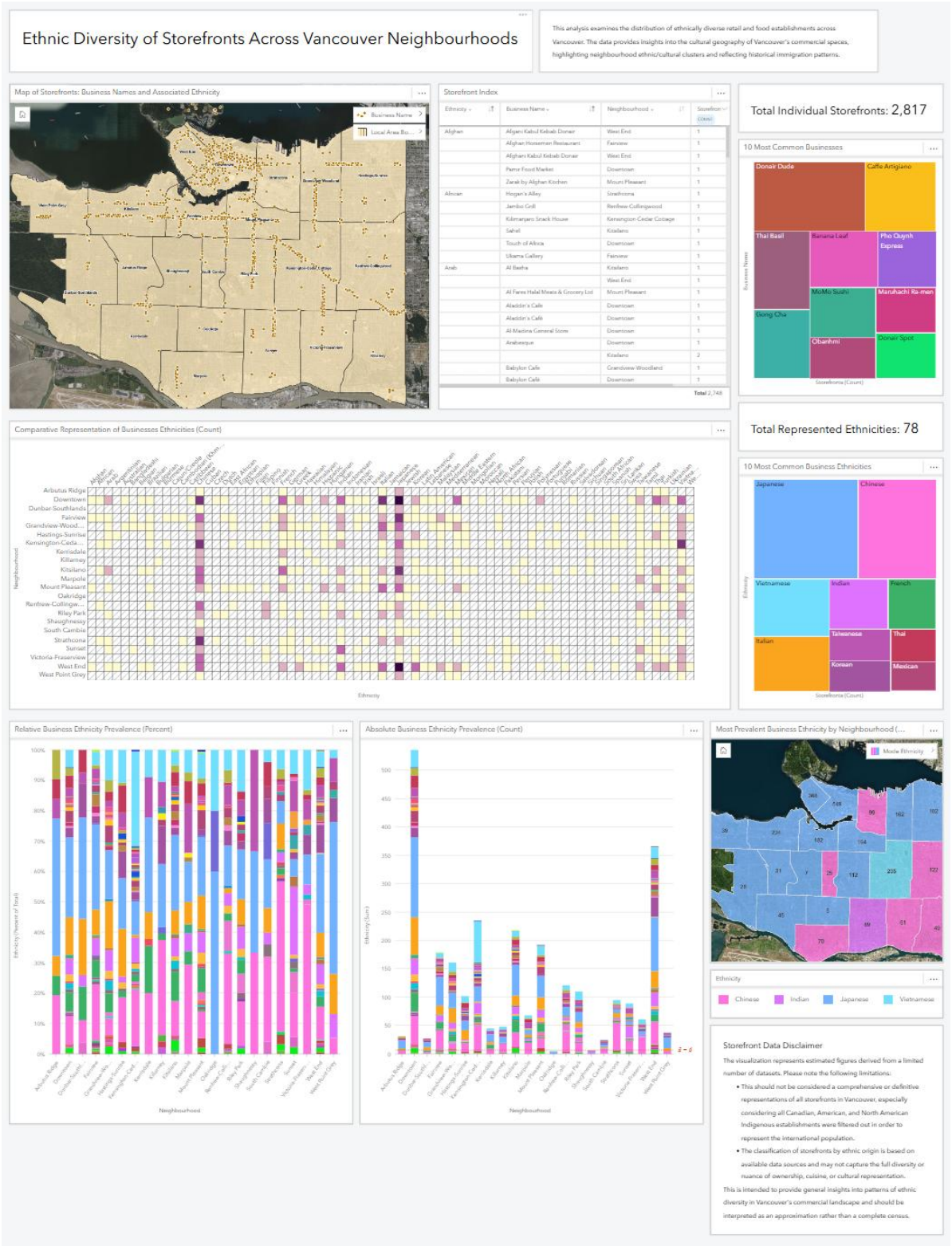
Based on the visualizations presented in the workbook:

- Cantonese, Mandarin, Punjabi, Persian and Vietnamese are among the most commonly spoken non-English languages across multiple neighborhoods, while Japanese, Chinese, Vietnamese and Indian are the most common business ethnicities.
- Most neighbourhoods, and specifically neighborhoods such as Sunset, Renfrew-Collingwood, and Kensington-Cedar Cottage, show language patterns consistent with their business patterns, showing ethnic/cultural enclaves that may reflect historical immigration patterns.
- The combined analysis reveals how cultural diversity manifests in both private (home language) and public (commercial) spheres, highlighting Vancouver's distinctive position as a Pacific Rim city with particularly strong Asian influences visible across both datasets.

Jasmin Smallwood
A01437906

Appendix

Page 1:



Jasmin Smallwood
A01437906

Page 2: