README: ArcGIS Demographic Change Mapping Project

# **Project Overview**

This project aims to visualize demographic changes across neighborhoods in Greenbelt, Maryland over four U.S. Census decades: 1990, 2000, 2010, and 2020. Using shapefiles and summary data from NHGIS, we created maps showing changes in racial composition and population distribution.

**Workflow Summary**

## **1. Shapefile Preparation**

- Identified and downloaded tract-level shapefiles for each decade: 1990, 2000, 2010, and 2020.  
 - Extracted geographic identifiers including GISJOIN, block, and tract for spatial and tabular joins.

## **2. NHGIS Data Extraction**

- Used the NHGIS platform to select demographic datasets based on GISJOIN, block, or tract GEOID.  
 - Focused on total population and race. Only the total Hispanic population was used, rather than breaking it down by race.  
 - Acknowledged NHGIS guidance regarding missing values due to decennial geographic updates:  
 > For example, GISJOINs G2400330806704103A and G2400330806708101 are present in the 1990 block shapefile, confirming they existed in 1990 Census geography. However, these GISJOINs were absent from the NHGIS 1990 population and race data, which, per NHGIS and U.S. Census Bureau practice indicates no recorded population in those blocks (References)

**3. Data Aggregation and Processing**

- Calculated total population per neighborhood.

- Computed percentage breakdowns for each racial/ethnic category per neighborhood:  
 Group Percentage = (Group Population) / (Total Neighborhood Population)  
 - Performed consistency checks across all years, noting missing blocks and data discontinuities due to redistricting.

## **4. Map Creation and Export**

- Imported all spatial layers into ArcGIS Map Viewer.  
 - Symbolized maps by race percentages and Hispanic share.  
 - Enabled interactive pop-ups with pie charts to visually display racial and Hispanic proportions within each neighborhood.

# **Deliverables**

- Four ArcGIS maps representing demographic distributions in 1990, 2000, 2010, and 2020.  
 - Each map includes:  
 • Boundaries based on tract geography.  
 • Interactive pop-ups with pie charts showing racial and Hispanic distribution per neighborhood.  
 - Processed shapefiles and joined CSVs.

References:

[Number of unique blocks in the Crosswalk file vs. 1990 STF1 - NHGIS - IPUMS Forum](https://forum.ipums.org/t/number-of-unique-blocks-in-the-crosswalk-file-vs-1990-stf1/5426?utm_source=chatgpt.com)

[Block-Level Tables from 1990 - Missing Uninhabited blocks? - NHGIS - IPUMS Forum](https://forum.ipums.org/t/block-level-tables-from-1990-missing-uninhabited-blocks/6301?utm_source=chatgpt.com)