

# Processing and Visualizing Land Use Model Scenarios

Developer: Paridhi Mathur | Instructor: Dr. Kathy Weaver | Client: National Center for Smart Growth



COLLEGE OF  
INFORMATION  
STUDIES

## About NCSG

The National Center for Smart Growth is a non-partisan center for research and education on smart growth in Maryland, in metropolitan regions round the nation, and around the world. The Center's independent, objective, interdisciplinary research uses the diverse resources of the University of Maryland and a network of national experts to explore issues related to land use and the environment, transportation and public health, housing and community development, and international urban development.

## Requirements:

- Develop a stand-alone application to analyze specific CSV files..
- Create visualizations of the various metrics in the file.

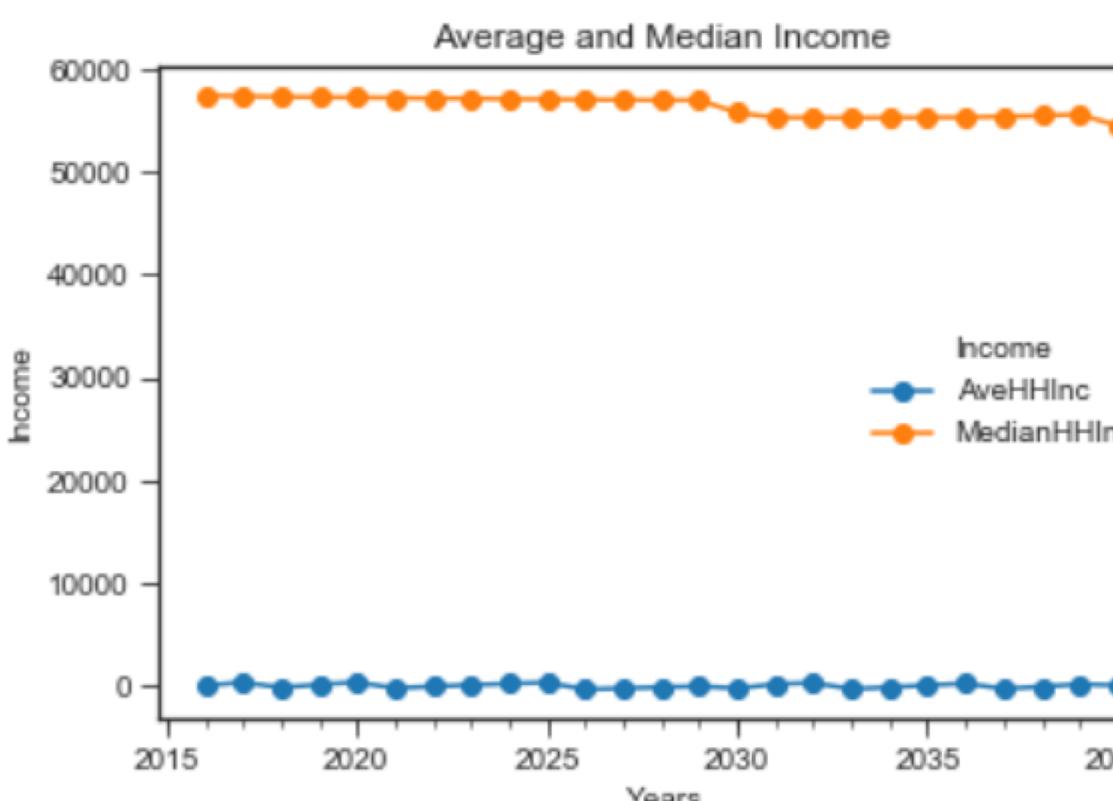
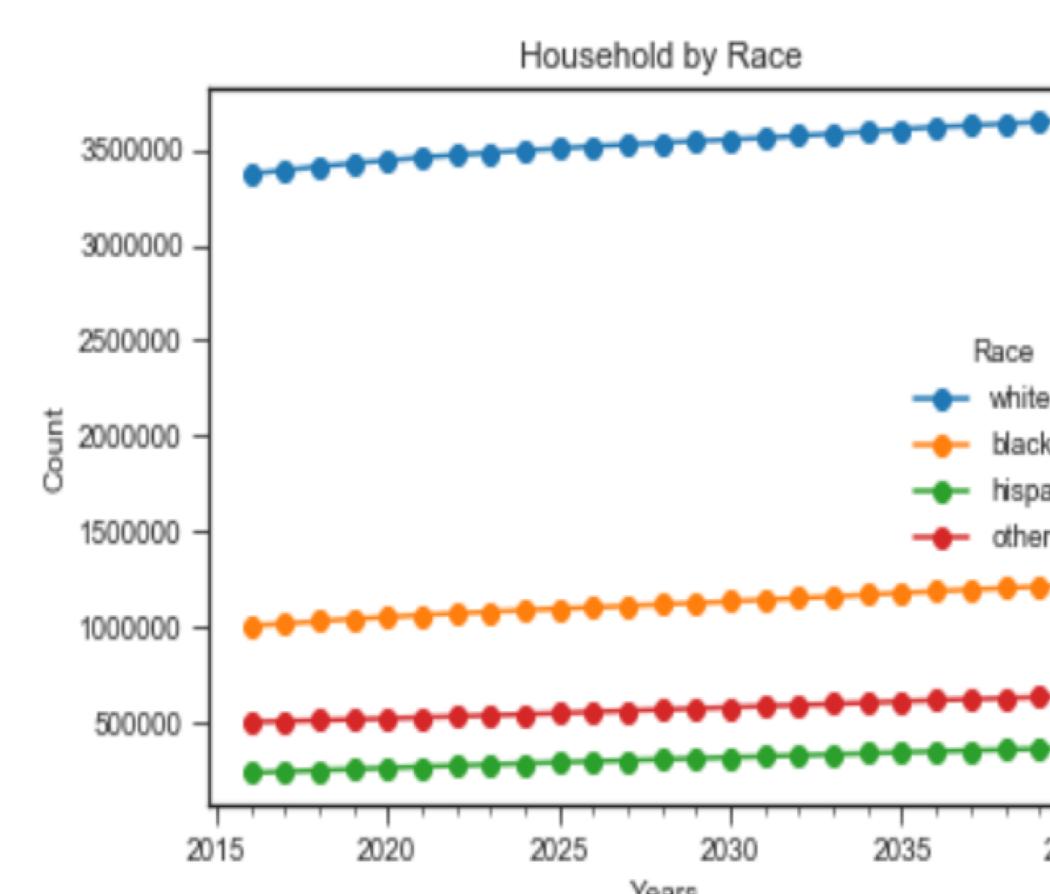
## Python Libraries Used:

Tkinter      Matplotlib  
Pandas      Seaborn  
Numpy      CSV  
Ipython      Bokeh



## A look at the visualizations

| Race      | white   | black   | hispanic | other  |
|-----------|---------|---------|----------|--------|
| Year 2016 | 3371396 | 1001126 | 229909   | 496345 |
| Year 2017 | 3392023 | 1013577 | 236930   | 501032 |
| Year 2018 | 3410694 | 1025869 | 243669   | 505964 |
| Year 2019 | 3428023 | 1037288 | 250123   | 510582 |
| Year 2020 | 3443119 | 1047989 | 256588   | 515976 |
| Year 2021 | 3458754 | 1058114 | 262823   | 521257 |
| Year 2022 | 3472239 | 1067339 | 268825   | 526441 |
| Year 2023 | 3483436 | 1075979 | 274366   | 532080 |
| Year 2024 | 3495681 | 1083940 | 280014   | 537892 |
| Year 2025 | 3505706 | 1091284 | 285435   | 543846 |
| Year 2026 | 3516806 | 1098851 | 290761   | 550127 |
| Year 2027 | 3526493 | 1106336 | 295995   | 556258 |



| Parameters | AveHHInc | MedianHHInc |
|------------|----------|-------------|
| Year 2016  | 3.0      | 57448.0     |
| Year 2017  | 332.0    | 57371.0     |
| Year 2018  | -182.0   | 57318.0     |
| Year 2019  | 100.0    | 57278.0     |
| Year 2020  | 345.0    | 57251.0     |
| Year 2021  | -247.0   | 57215.0     |
| Year 2022  | -74.0    | 57161.5     |
| Year 2023  | 75.0     | 57157.0     |
| Year 2024  | 195.0    | 57095.0     |
| Year 2025  | 305.0    | 57068.0     |
| Year 2026  | -368.0   | 57028.0     |
| Year 2027  | -260.0   | 57007.0     |

## Project Workflow:



Design the GUI for file selection



Extract the data for all the metrics.  
Transform data into tables.



Create visualizations for each metric.

## Successes:

- Hands-on experience in implementing advanced Python libraries.
- Used different data structures to manipulate data for analysis.
- Gained experience in various analysis and visualization techniques.

## Challenges:

- Identifying the best platform for application development.
- Understanding the unstructured csv file from which data was extracted.
- Trying to implement different data manipulation strategies for analysis.