Baltimore Regional Transportation Board

Cooperative Forecasting Group

Cooperative Forecasting Group Data and Travel Demand Modeling

December 15, 2021

BMC

Transportation Modeling

- **Initiative to Simulate Individual Travel Events (InSITE)**
  - Activity Based Model (ABM) –Simulation/Forecast Average Weekday Person's Travel Behavior, Choices, and Patterns.

- **InSITE – Technical Analysis**
  - Development of Long Range Transportation Plans, Mobile Source Emission Analysis (Federal Conformity Determination), Project Planning/Corridor Evaluation, Mode Alternative Analysis, and Trend Investigation

Travel Modeling - 101

- **Three Inputs**
  - The Travel Model – Estimated 2008/09 HHTS / Calibrated/Validated 2019 HHTS
    - Equations Estimating Number of Trips by Purpose, Time of Day, Destination, Mode and Household Member's Joint Travel.
  - Transportation Networks – Supply Side
    - Highway and Transit Networks – Providing Cost (Time/Distance) between Households and Destinations – Work, Shop, Recreation, and Other.
  - Demographic/Socio-economics – Demand Side
    - Cooperative Forecast provides TAZ – Households, Total Population, Group Quarter, and Total Employment.
    - BMC provides – Median Household Income, Household Workers and Employment Break Downs.
    - pOPTICS/PopGen – Households and Person Roster
- **Persons Produce Activities/Employment Attracts Activities and Transportation Network provides the Spatial Connection (Cost) between Home and Destinations.**

Demographics – Disaggregate

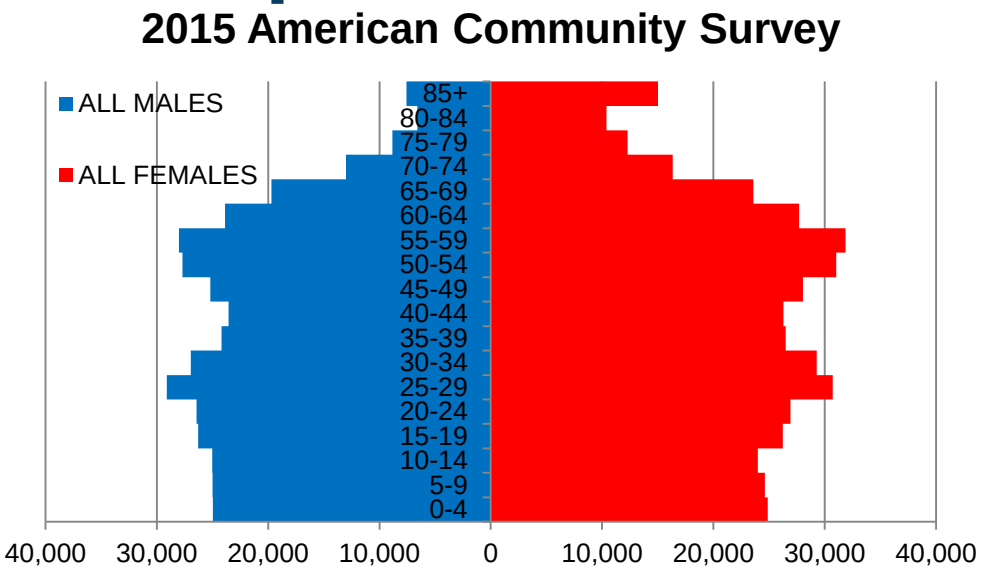
- **Cooperative Forecast Represent TAZ Aggregate Totals**

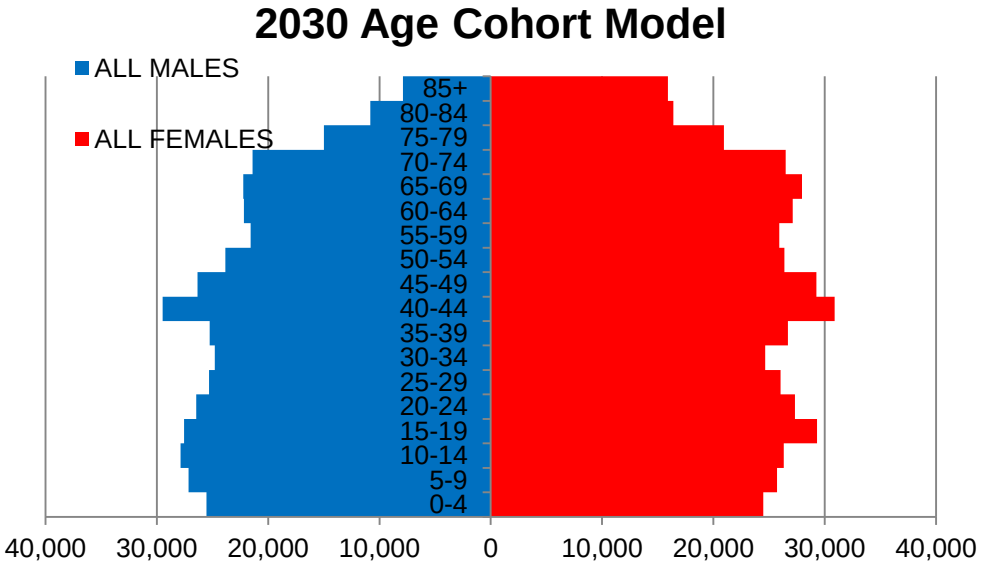
- **Synthetic Household and Person Roster**
- **PopGen – Database Record for Each Household and Person – Disaggregate**
- **Inputs – Jurisdiction and TAZ Marginal Household/Person Bi-Variate Tables**
  - pOPTICS – Jurisdiction Persons by Age (18), Gender (2), and Race/Ethnicity (2) - 18 x 2 x 2 = 72 Categories
  - Demographic Sub Models – Jurisdiction/TAZs
    - Households by Number of Persons (5), Workers (4) and Income group (5)
    - Persons – TAZ employment status (2)

pOPTICS

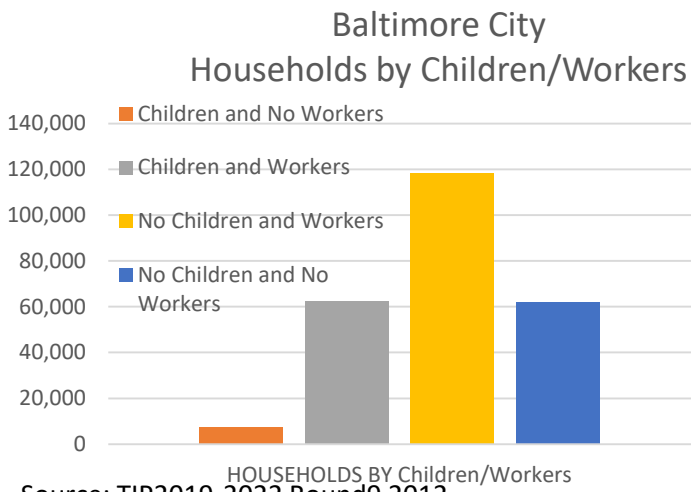
- **Cohort Component of Change Spreadsheet Model**
  - Simulating Births, Deaths and Net Migration
  - Vital Statistics used to Estimate Births/Deaths
  - 2010 and 2015 Census Data Used to Estimate Net Migration (indirect method)
- **Output**
  - Horizon Year (5 year increments) Jurisdiction Population by Age (18), Gender (2) and Race/Ethnicity (2) – 18 x 2 x 2 =72 population Categorizes.
- **pOPTICS Spreadsheet Model Designed for Scenario Planning**
- **pOPTICS output Matches MDP's Fortran Cohort Model**

pOPTICS - Output

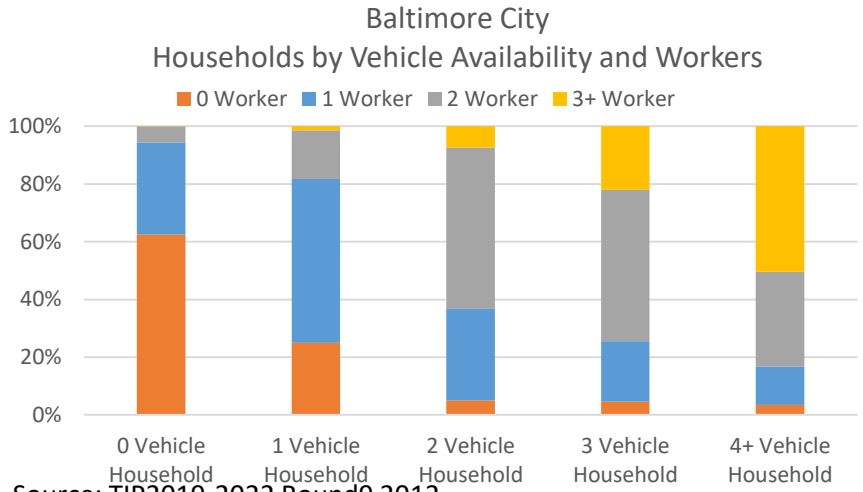




PopGen - Output

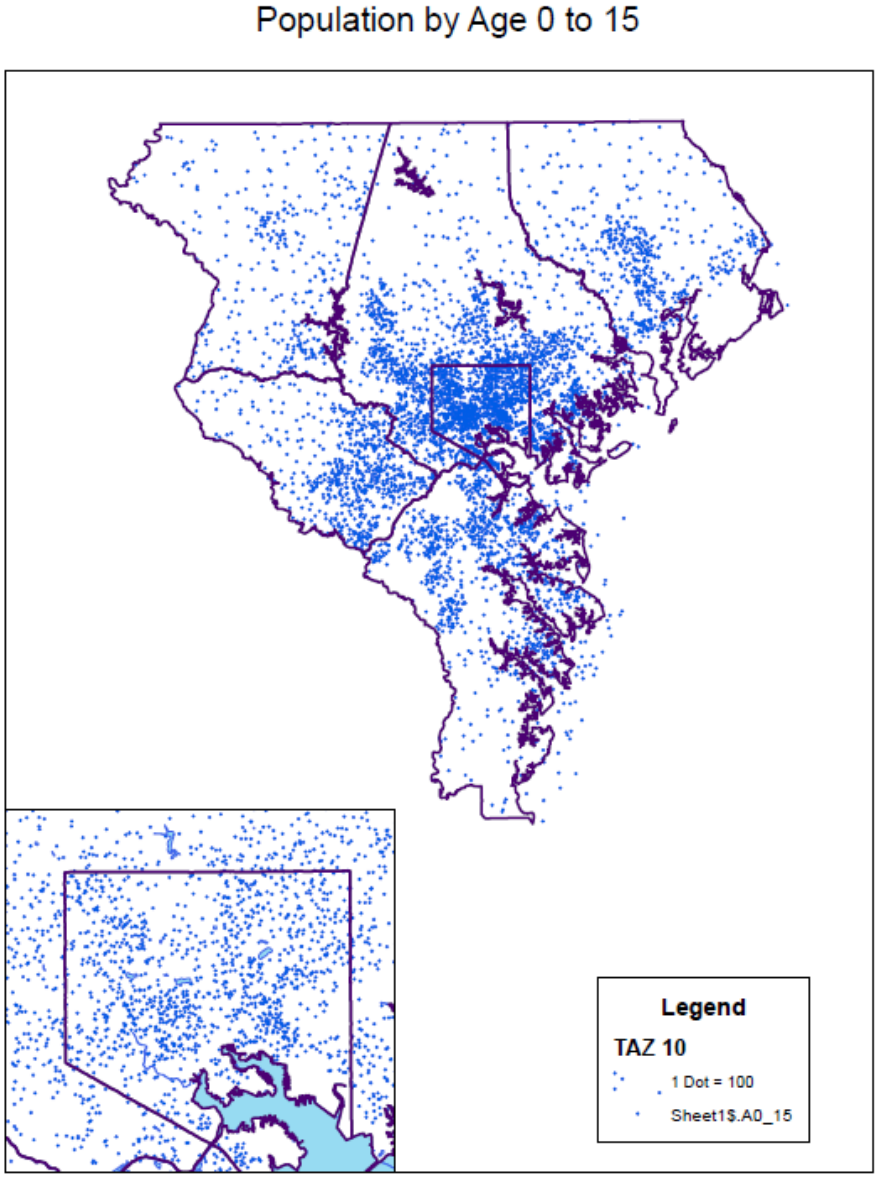


Source: TIP2019-2022 Round9 2012

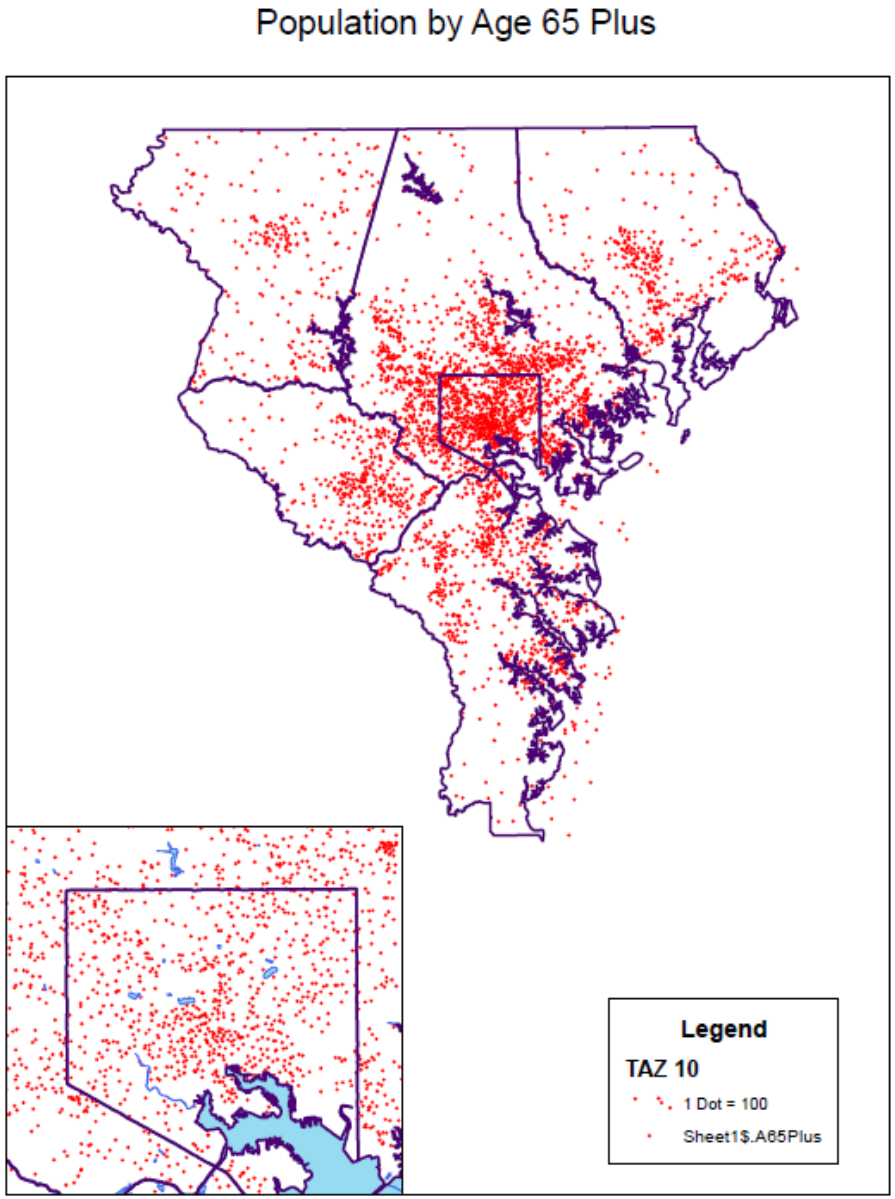


Source: TIP2019-2022 Round9 2012

PopGen - Output



PopGen - Output



For More Information

Charles Baber| Principal Transportation Planner

410-732-0500| cbaber@baltometro.org | www.baltometro.org

@BALTOMETROCOUNCIL

@BALTIMORE METROPOLITAN COUNCIL

@BALTIMORE METROPOLITAN COUNCIL