I. MOTIVATIONS

➢ Strong desires to understand general travel patterns (e.g., # of trips by purposes) without running complicated regional travel model (often requested by stakeholders, media and decision-makers),
➢ Increase the utility of Census data products as a whole or part (via data fusion technique) for more informed decisions to address transportation issues,
➢ Develop an easily-accessible visualization tool with various travel pattern-related information (from ACS, CTPP, private api data) in a centralized place.
➢ Experience on decade-long Census data & big data analytics, and travel demand modeling
➢ Availability of open source data analytics and visualization software (packages)

II. PROBLEM

➢ Different availability of trip generation-related Census data by geography levels
➢ Limited NHTS samples for estimating trip generation-related factors
➢ Limited public (private) data for purpose and time of day trip imputation
➢ NHTS (not used ongoing MWCOG survey)

III. SOLUTION

➢ This tool offers proof-of-concept trip production estimates using American community survey (ACS), CTPP, and NHTS data
➢ This dashboard, GENESIS, provides information for some of these key measures that derived directly or indirectly from Census products and national household travel survey (NHTS)
➢ Private location-based service (LBS) data can be used for TOD distribution (not used here)

IV. SOLUTION APPROACH

➢ Trip generation for each trip purpose was estimated in multiple stages of data processing

• Estimate HBW(HBW) trip rates by the average number of workers in HH/vehicle ownership/population density (from NHTS)
• Estimate relative trip rates for other trip purposes vs. HBW trip (from NHTS)
• Estimate a volunteer work trip rate by HH/vehicle ownership/population density (from NHTS)

➢ A number of workers (excluding workers worked at home) per HH by vehicle ownership (assign the number of workers proportionally based on the number of HH by vehicle ownership in ACS)
• Apply the estimated HBW trip rates (from NHTS) to the HH segment/vehicle ownership/population density for estimating HBW trips
• Calibrate HBW trips for areas with high GQ population
• Apply relative trip rates for other purposes vs. HBW to estimate trips for other purposes

• Estimate Trip length frequency distributions (TLFDs) from NHTS by trip purposes for peak and non-peak time periods (i.e., HBW, HBO, NHB, HBSHOP, and HBSOREC)
• Estimate auto and transit travel time using api data
• With TLFDs and average travel time, develop trip O/Ds for HBW, HBO, NHB, HBSHOP, and HBSOREC

V. VISUALIZING OTHER TRAVEL-PATTERN RELATED INFORMATION

➢ ACS & CTPP travel-pattern related information
➢ Travel Time data: API-based auto & transit data