Most of the synthetic population generators are cross sectional in nature and do not account for households’ and individuals’ life progression which has been proved to have impact on short- and long-term transportation decisions.

This paper proposes a demographic microsimulator (DEMOS) to capture the ‘continuum of life’ by accounting for lifecycle events that do not capture household dynamics (i.e., timing and sequence of important lifecycle events) DEMOS models are better than cross-sectional surveys which have been proved to have impact on short- and long-term transportation decisions.

DEMONS FRAMEWORK

Initiate with a base-year (t) synthetic population which is advanced through a host of lifecycle events

Households and individual-level characteristics are updated and provided as inputs to subsequent year’s (t+1) population evolution

This process is repeated to evolve the population of the study region over a span of 10-30 years.

Each module in the DEMOS framework comprises a set of sub-models to perform the changes in demographic characteristics of synthetic households and individuals

The demographic evolution process starts with the ageing model which is applied to the synthetic population of the base-year (t) to predict whether (or not) an individual (n) would continue to receive education.

Demographic microsimulator for Integrated Urban Systems: Adapting Panel Survey of Income Dynamics to Capture the Continuum of Life