

Dynamic Visualizations of Household Travel Survey Data

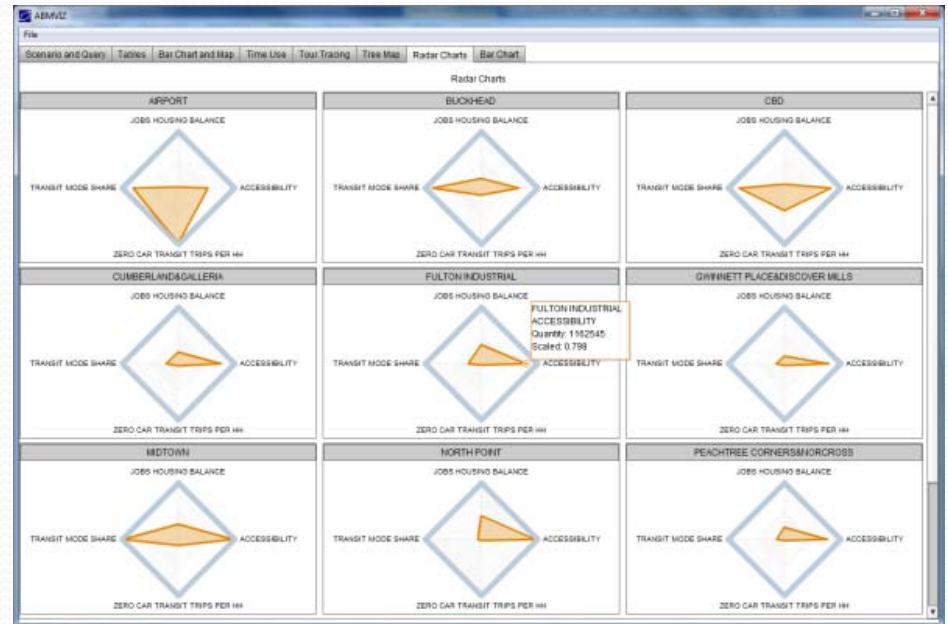
*Using National Household Travel Survey Data for
Transportation Decision Making: A Workshop*

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Topics

- Travel Forecasting
- Visualizations
 - Tour Tracing
 - Time Space Diagrams
 - Time Use
 - Interactive Desire Lines
 - Tree Maps
 - Daytime Population
- What's Next



Travel Forecasting

- Computer models to forecast travel
- Primarily used as a part of the transportation planning process
- Two modeling paradigms
 - **Four Step Trip-Based Models**
 - Fractional trips, aggregate types of trip makers
 - Unit of analysis: trip matrices
 - **Activity-Based Microsimulation (ABM) Models**
 - Generate a synthetic population of households (HHs) and persons
 - Model whole trips for each synthetic person
 - Unit of analysis: HHs, persons, tours, trips
 - Output: basically a synthetic HH travel survey for every person
- Both types of models developed from HH travel surveys

Atlanta ABM Example

- 20 county MPO region
- Microsimulation of entire population's (4.7 million persons) activity for an average day
- Runs for 16 hrs on 3 computers to produce >15 GB of data per run
- Produces basically a HH travel survey for every person in region



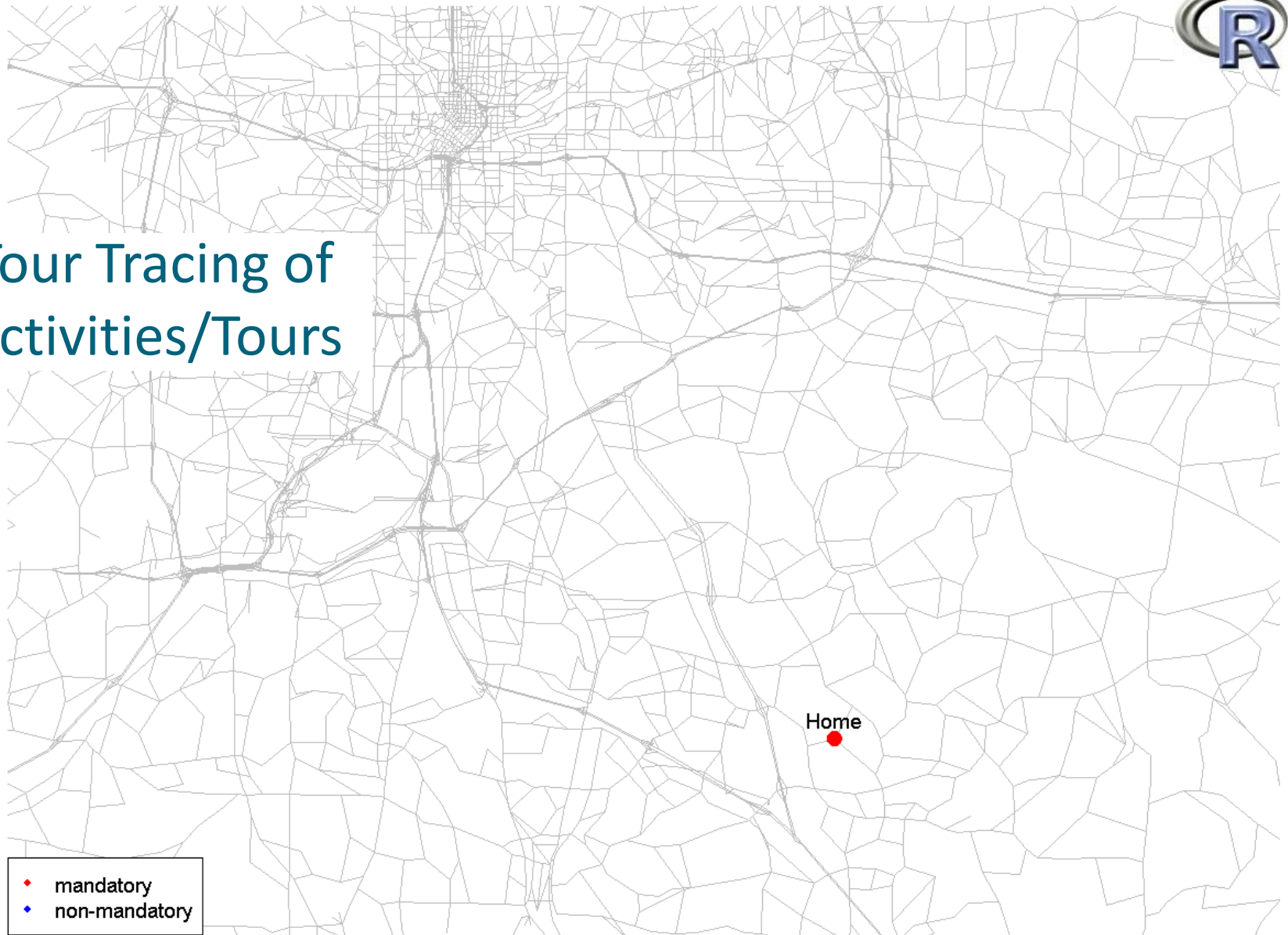
Visualizations

- Focus on new types of visualizations
 - Whole person travel
 - Household interactions
 - Time
 - Interactive visuals
- Visualizations of NHTS data and ABM model results

- All visualizations developed with  & Adobe 

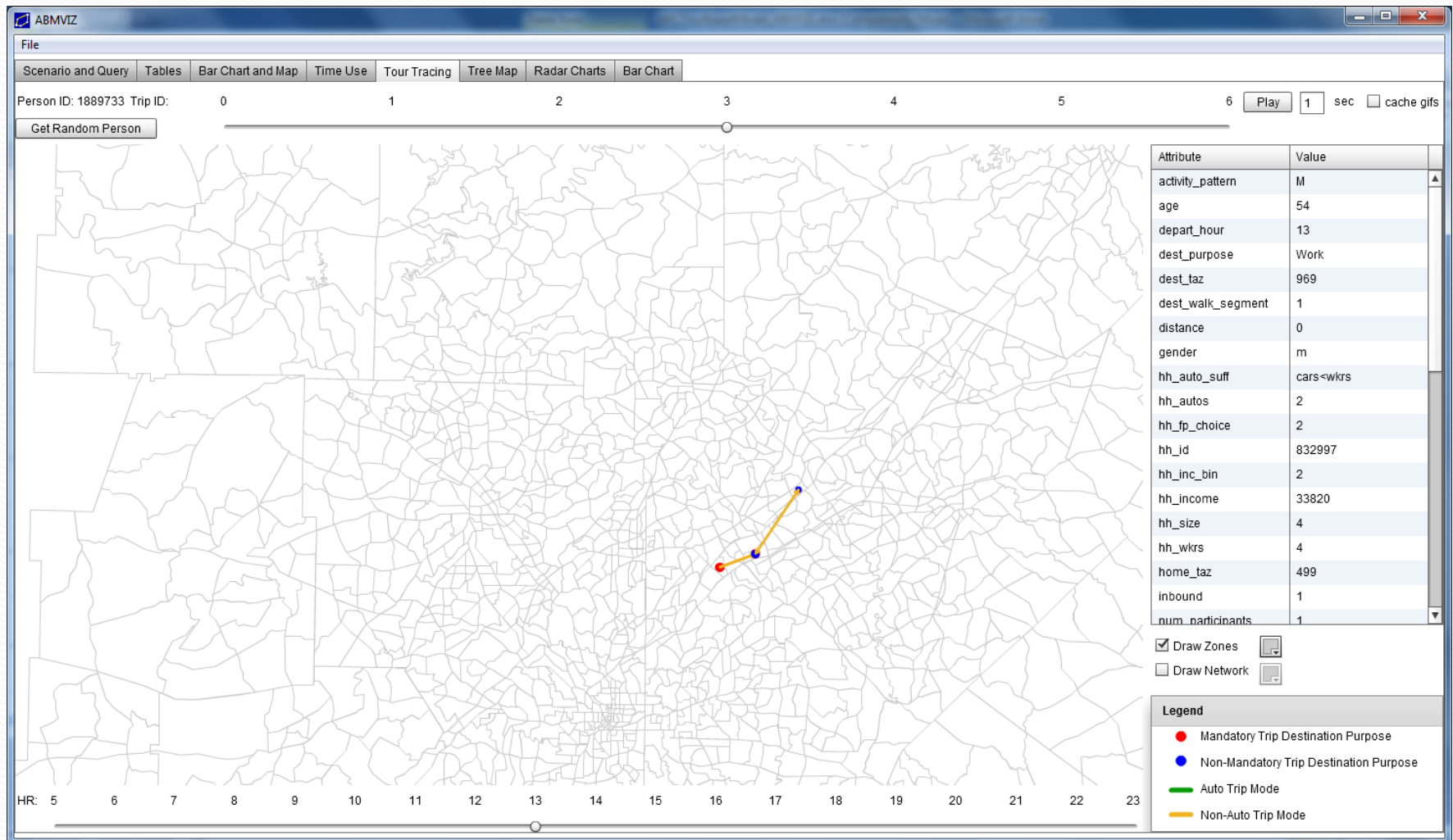


Tour Tracing of Activities/Tours



- mandatory
- non-mandatory

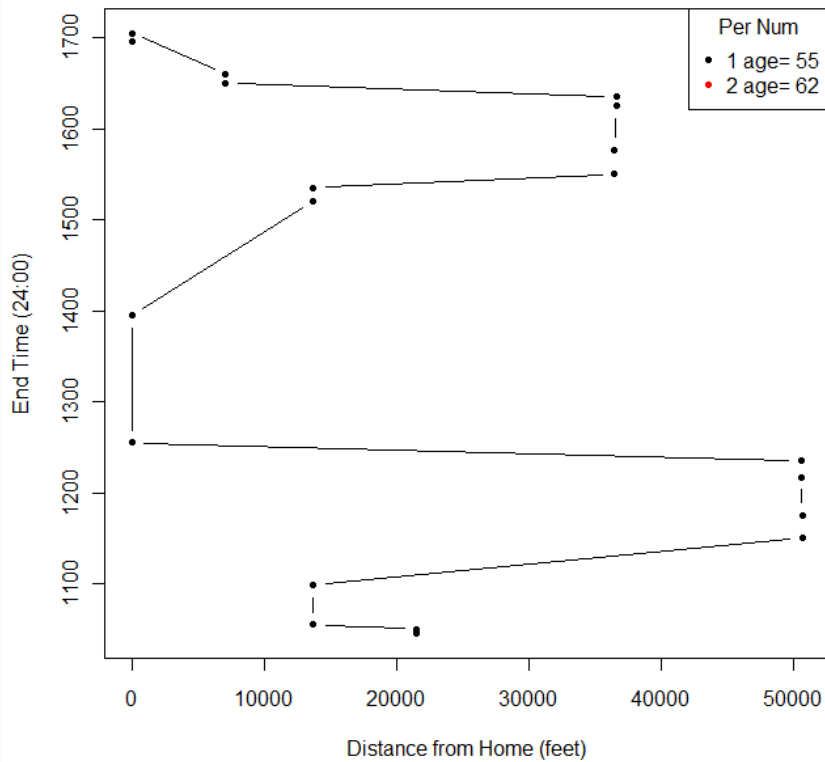
Dynamic Tour Tracing



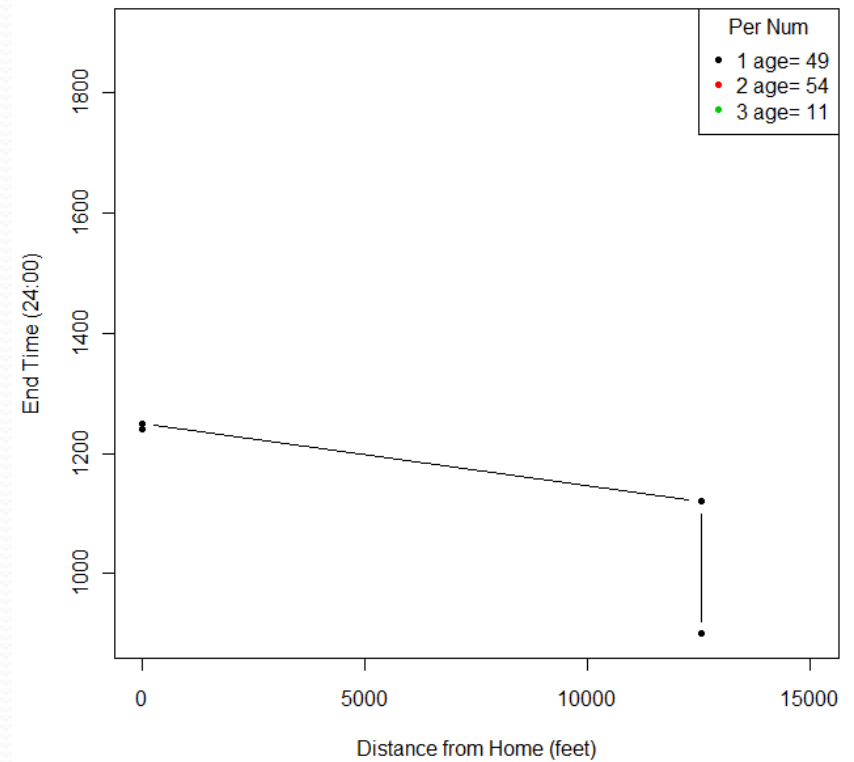


Time Space Diagrams

HH 33985075 Time Space Diagram (num veh = 2)



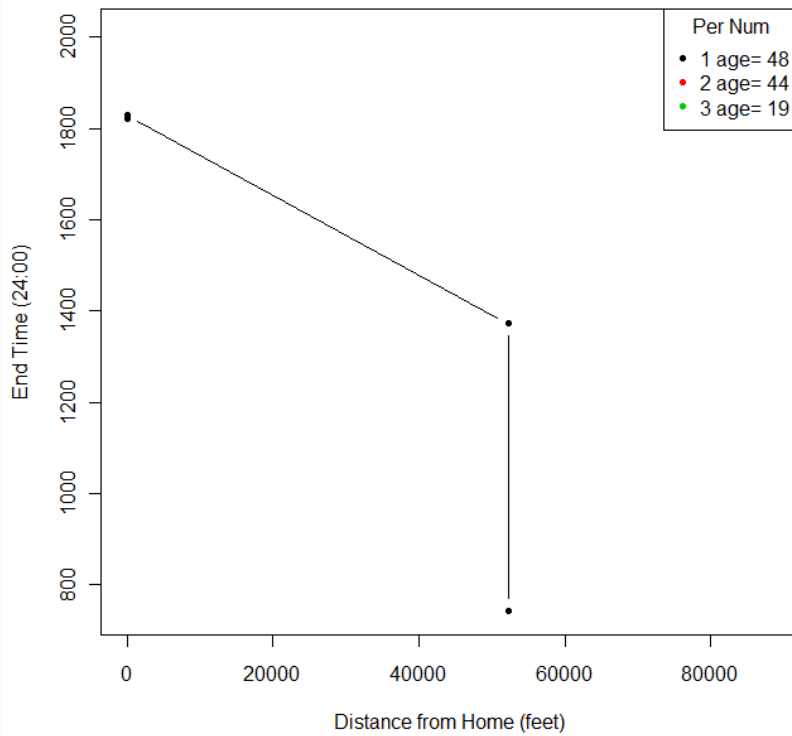
HH 29467529 Time Space Diagram (num veh = 2)



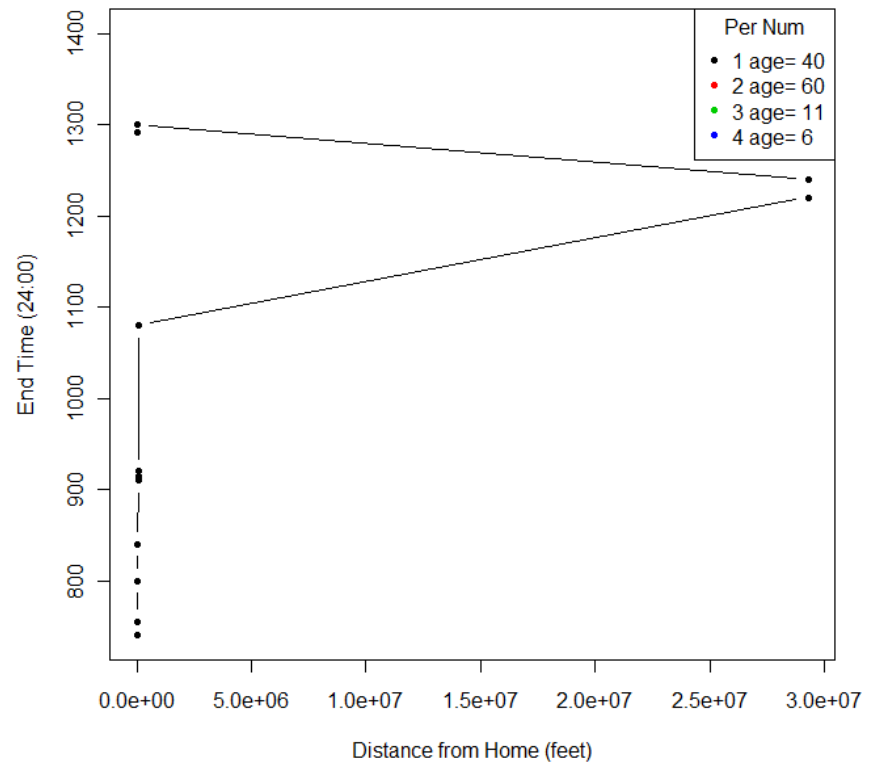


Time Space Diagrams

HH 35175375 Time Space Diagram (num veh = 3)



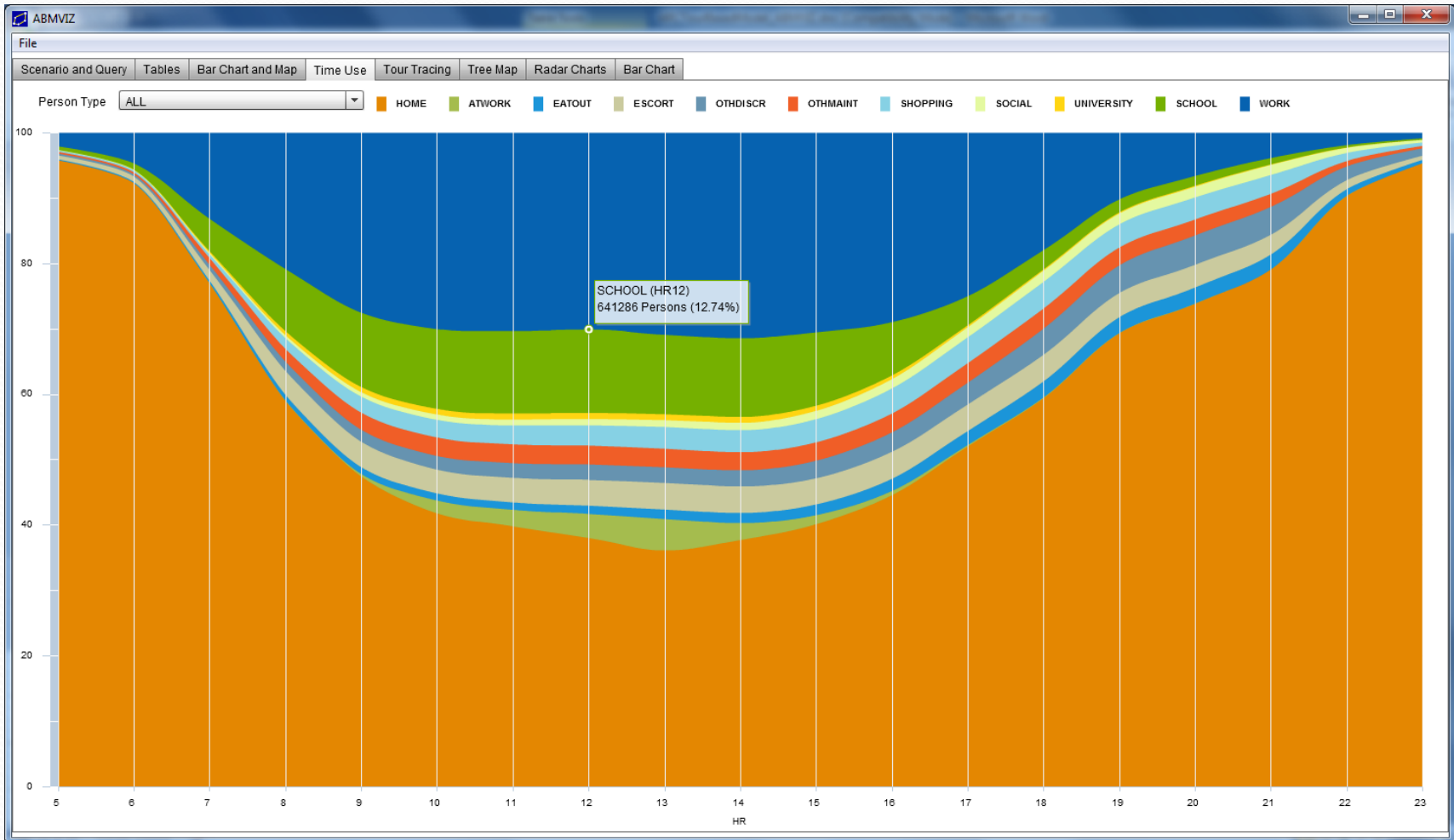
HH 36584189 Time Space Diagram (num veh = 4)



Time Use



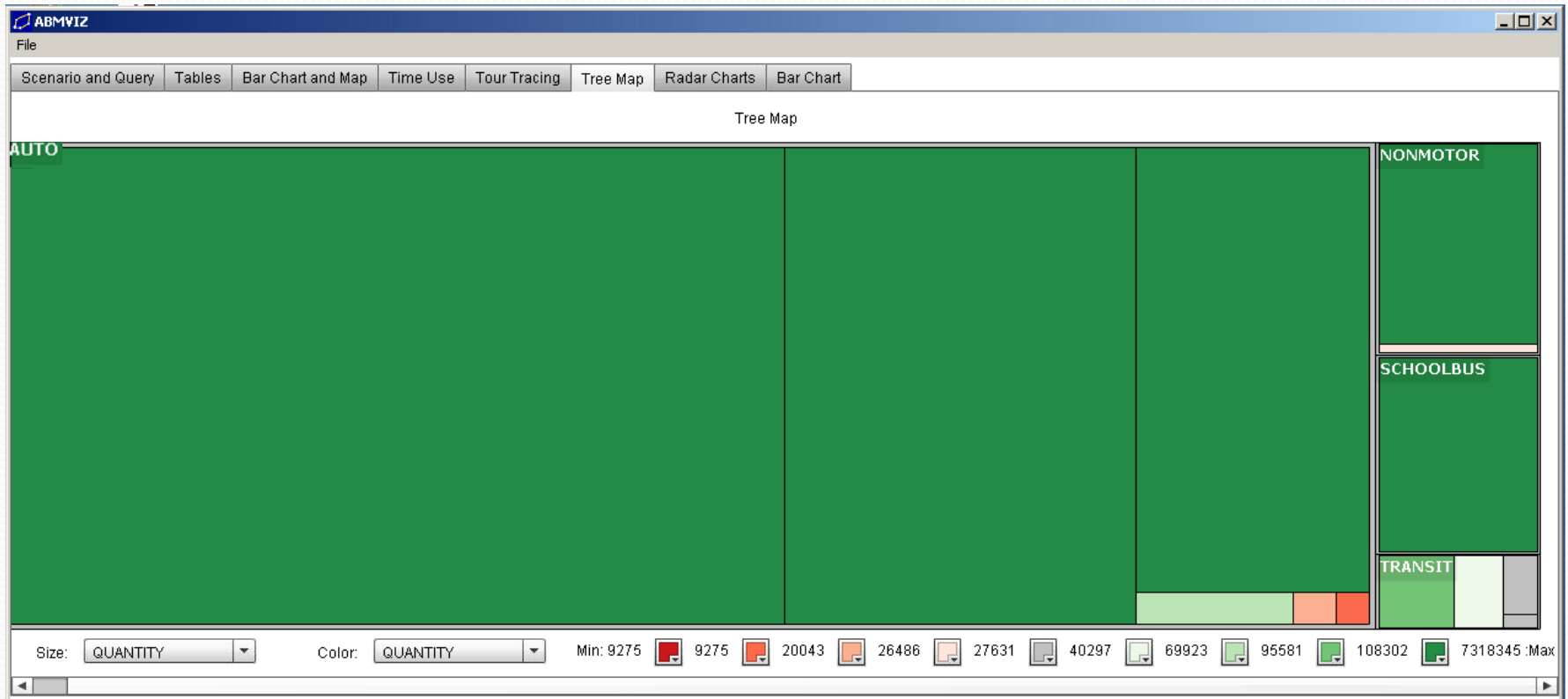
- Share of time use by purpose and person type



Tree Map



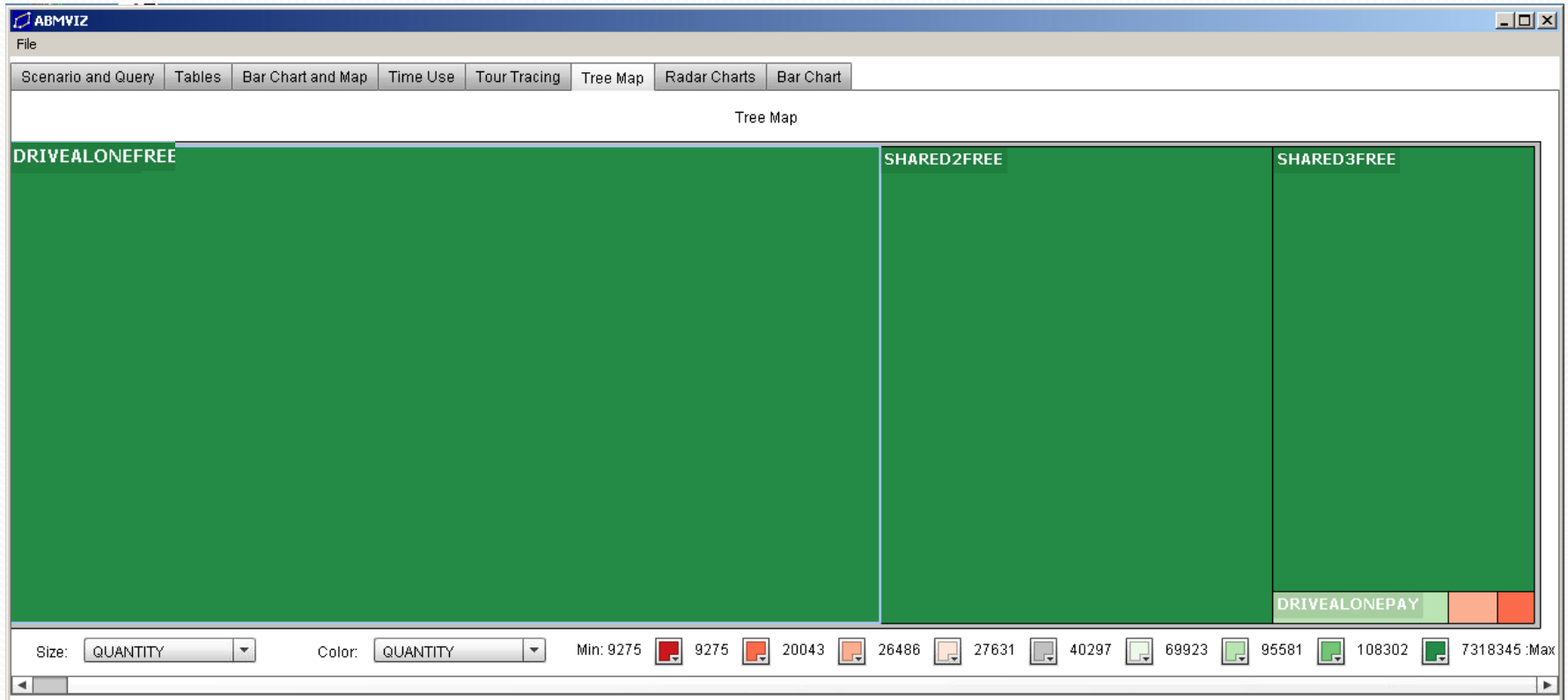
- Displays (hierarchical) data values as rectangular areas



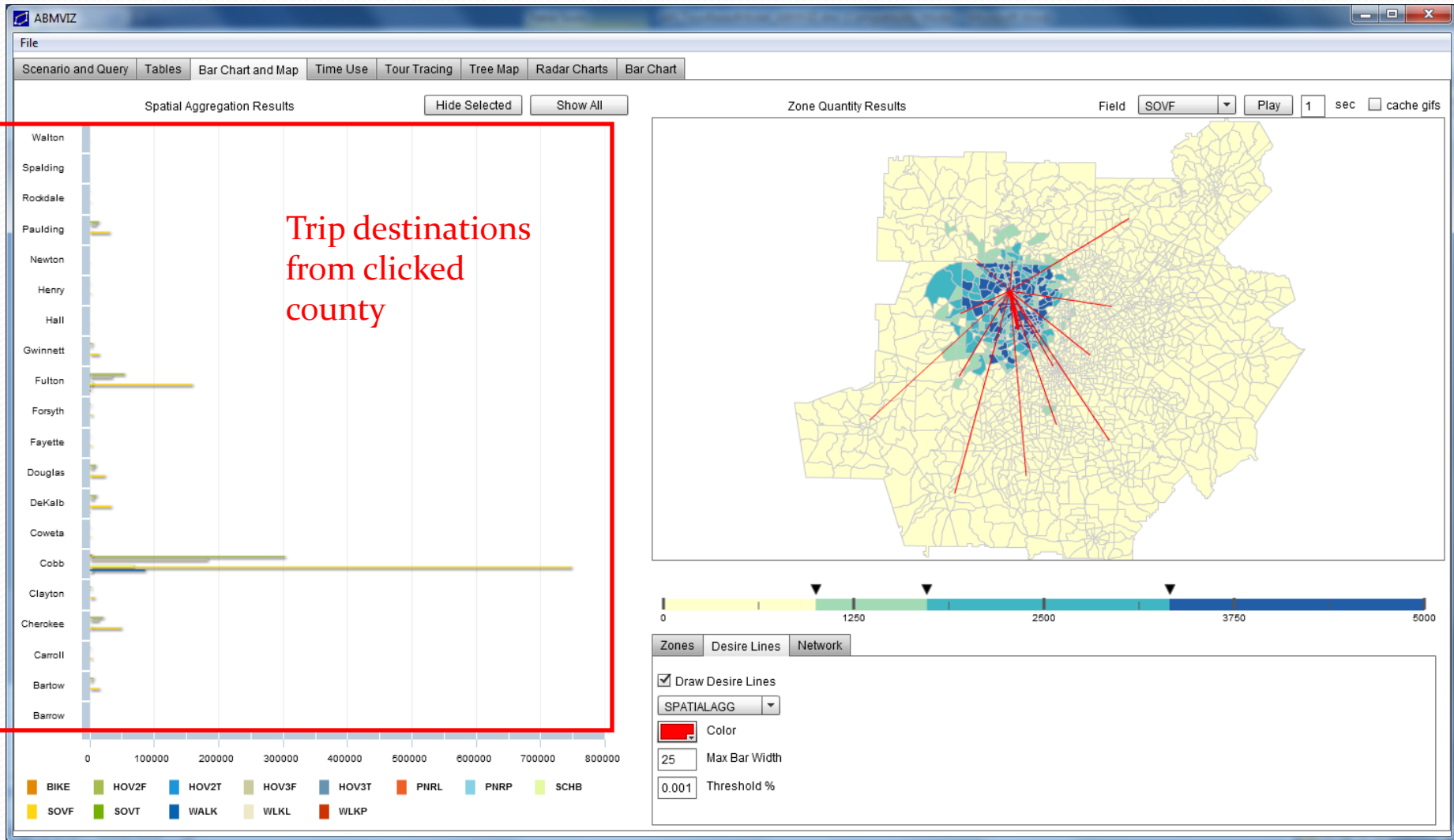
Tree Map



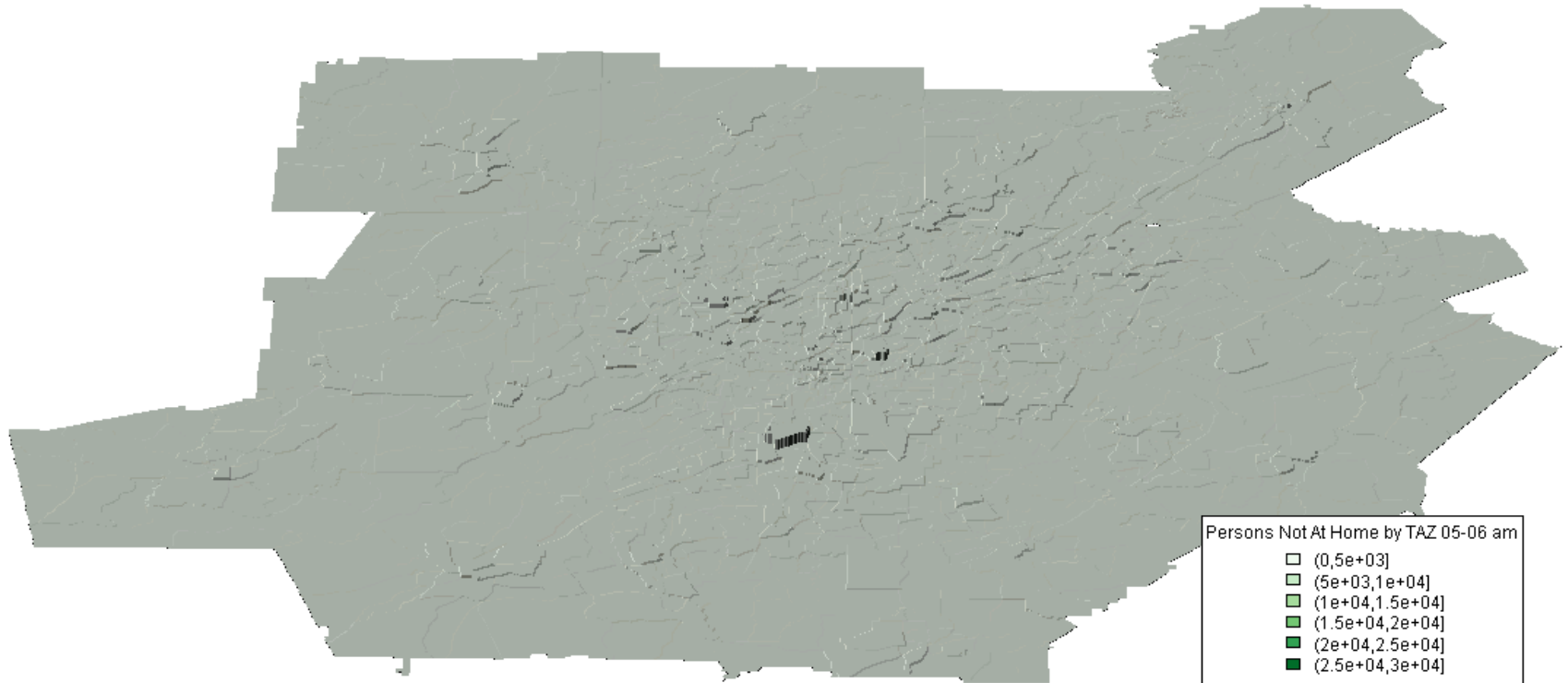
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Interactive Desire Lines



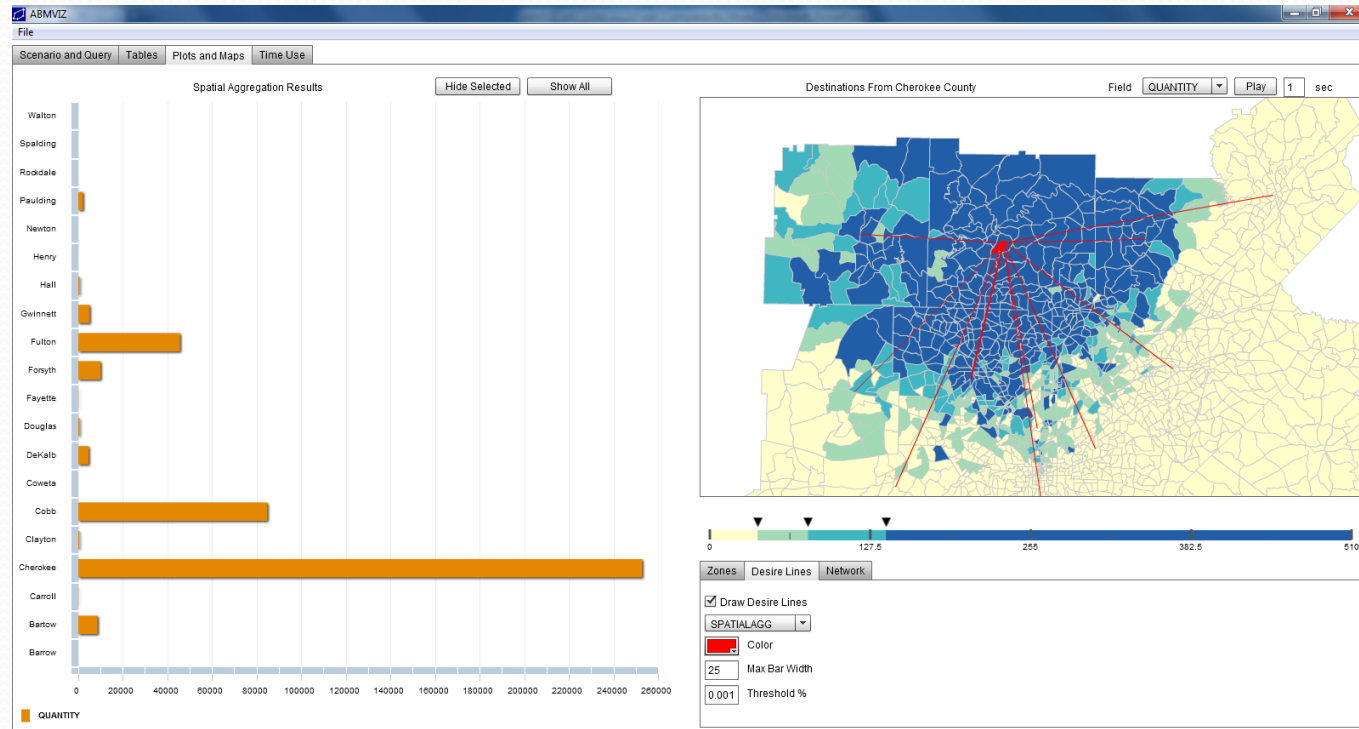
Daytime Population



What Next?

- Better understand what visuals are useful / easy to understand for:
 - **modelers / analysts**
 - More data, more flexible configurations
 - **planners / engineers / project leads**
 - Simplified displays, less settings, more defaults
 - **clients / stakeholders**
 - Even simpler, more “polish”, more storytelling
- Integrate proven visuals into Flash-based visualization dashboard and add interactive features like sliders, drop downs, color pickers, etc
- New visualizations?

Thanks and Questions



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