



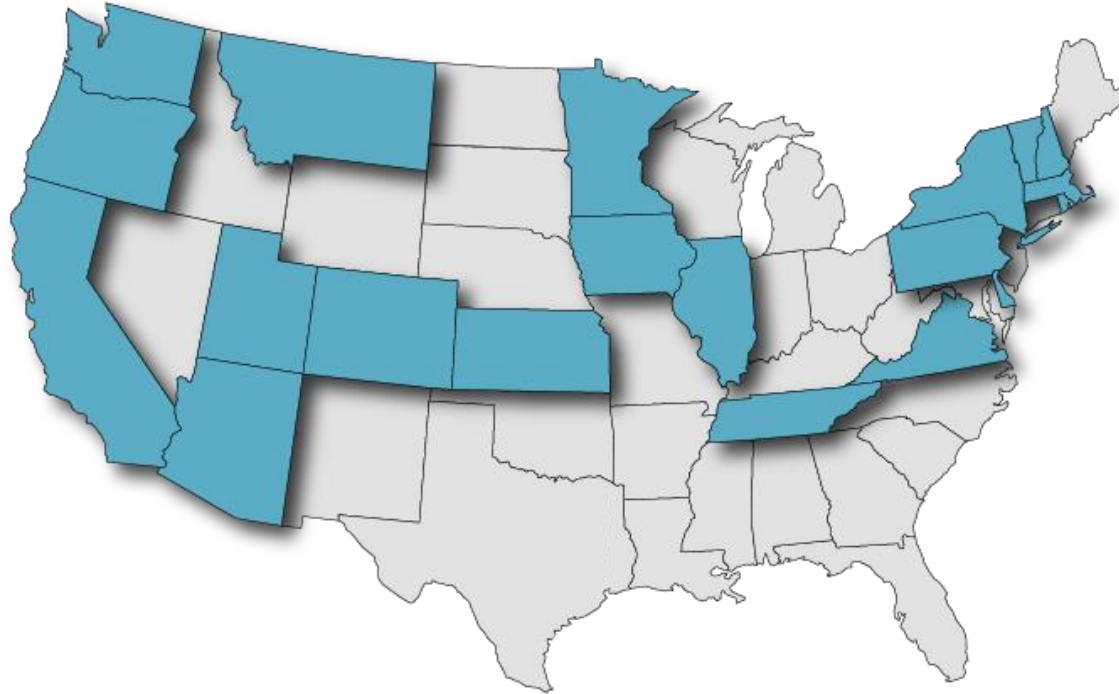
State
Smart Transportation
Initiative

Practical Solutions to Move America Forward



Improving access to destinations with TDM and “Big Data” analysis

Eric Sundquist, SSTI
Laura Schewel, StreetLight Data
May 20, 2015

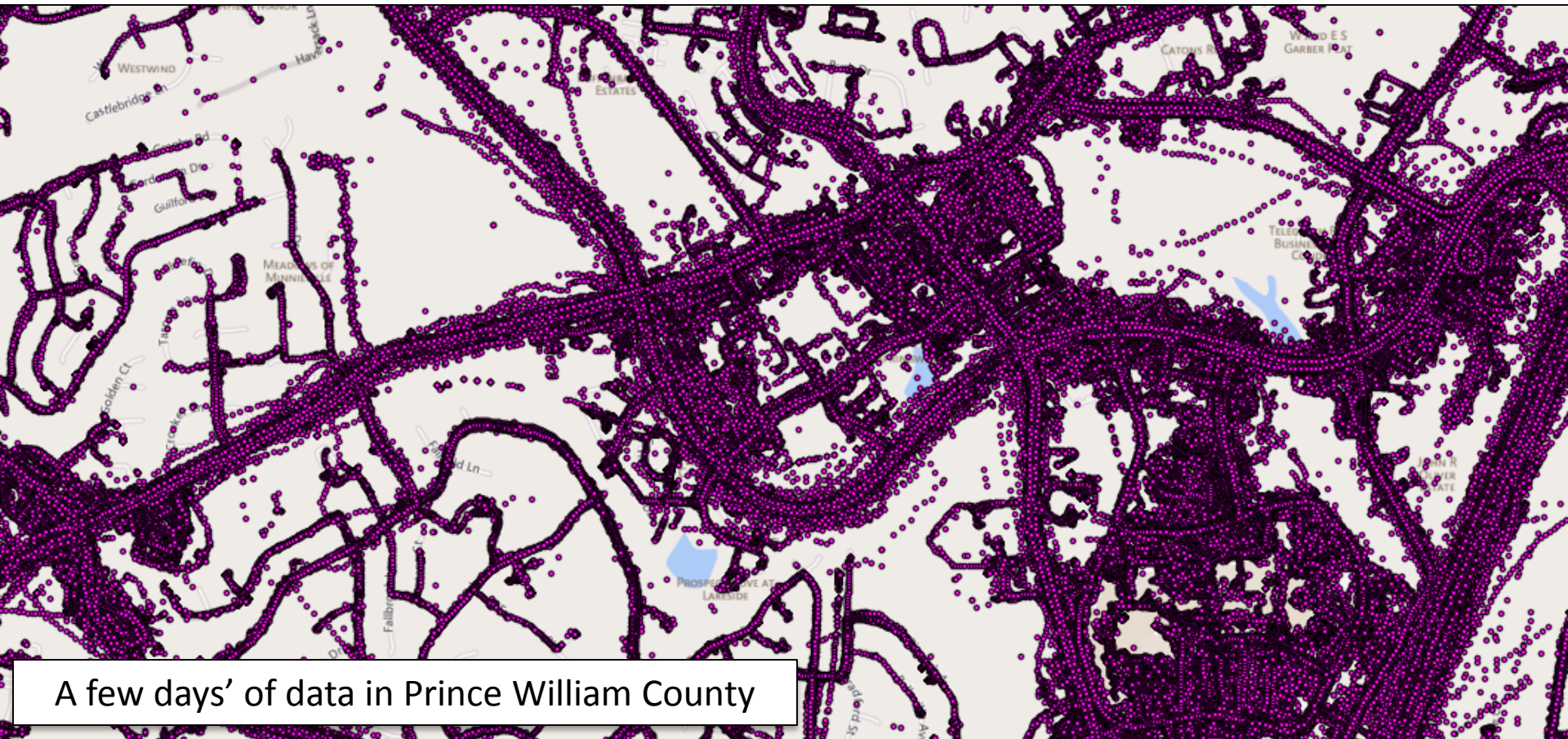


The State Smart Transportation Initiative promotes transportation practices that advance environmental sustainability and equitable economic development, while maintaining high standards of governmental efficiency and transparency.

StreetLight Data



We process anonymous, archival cellular and GPS data to understand how people actually move around cities and regions.



A few days' of data in Prince William County

Northern Virginia project



- Focus on demand-side
 - Complements other work on big transit/highway capacity
- Focus on accessibility
 - Considers trip-making rather than just speed
- Focus on personal trip-making
 - Short and long trips have equal utility
- Rely on “big data”-driven analytics
 - For origin-destination, travel time, circuitousness, reliability, etc.
- Use data as integral part of extensive stakeholder outreach
 - Visualizations, prioritization, iterative feedback from community
- Deadline: September 2015

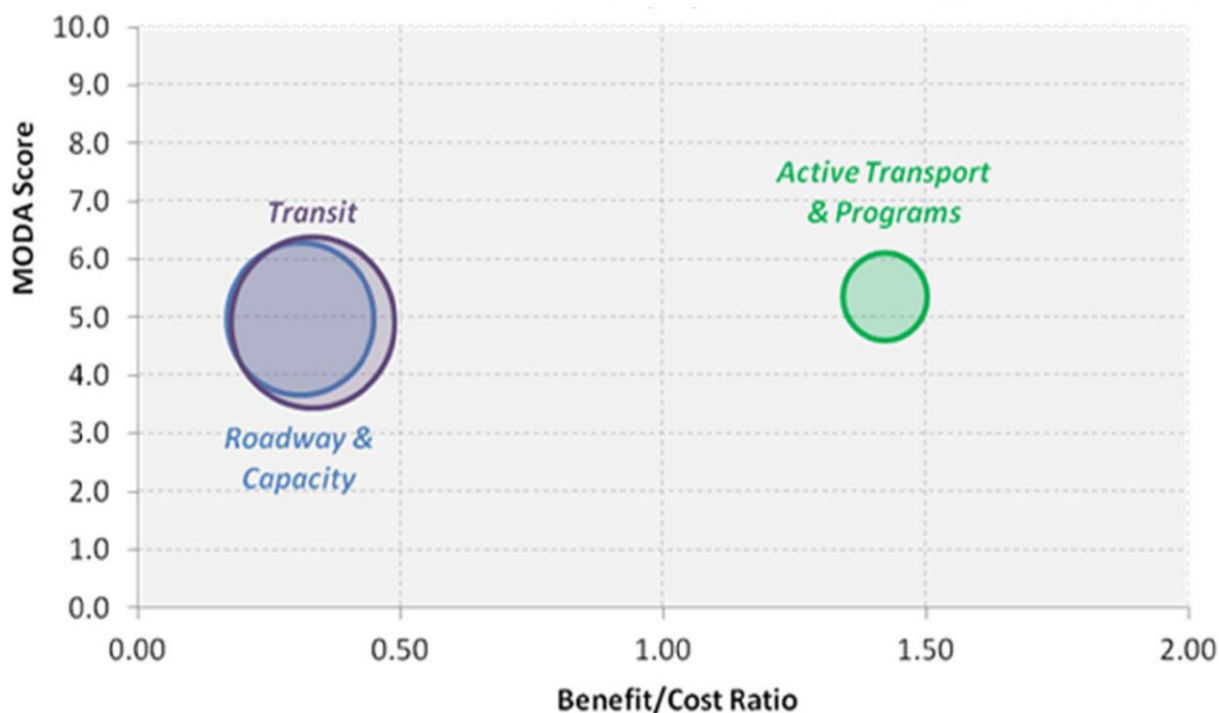
Discussion today



- The Transportation Demand Management (TDM) opportunity
- How big data helps
- Anticipated results and co-benefits

Why focus on TDM?

- Supply solutions alone can be “free lunch.”
- Demand solutions, by themselves or in concert with capacity projects, can add efficiency to the system, more options for travelers – and are often much cheaper.



CH2M Hill,
Oregon DOT



What is TDM?

For the project purposes, solutions that involve demand side management, including:

- Destination-based programs
- Connectivity
- First- and last-mile solutions

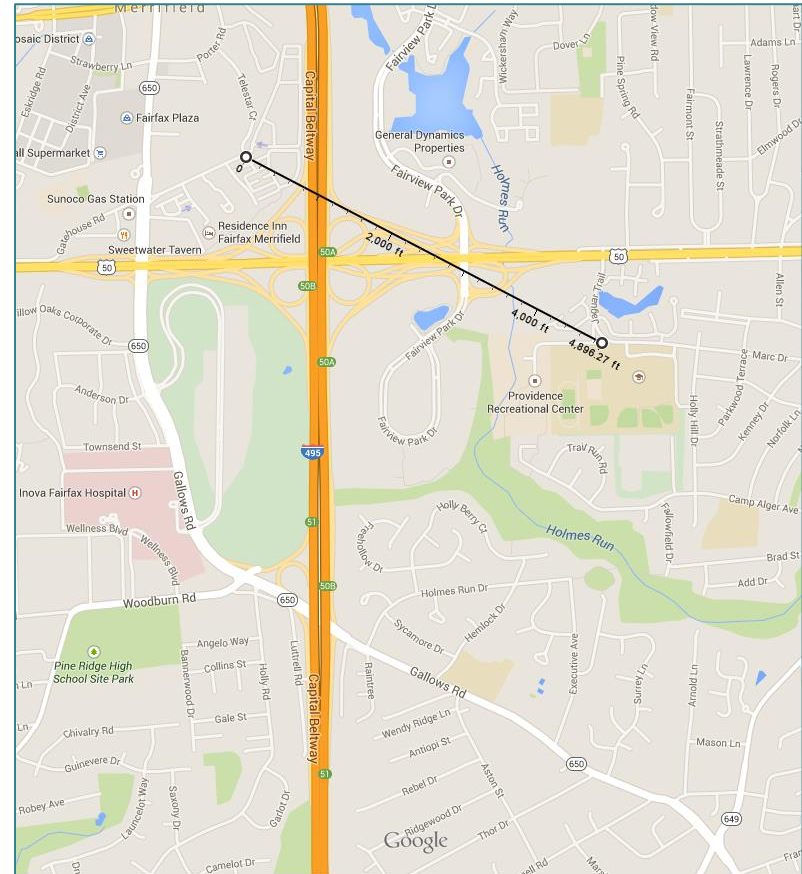
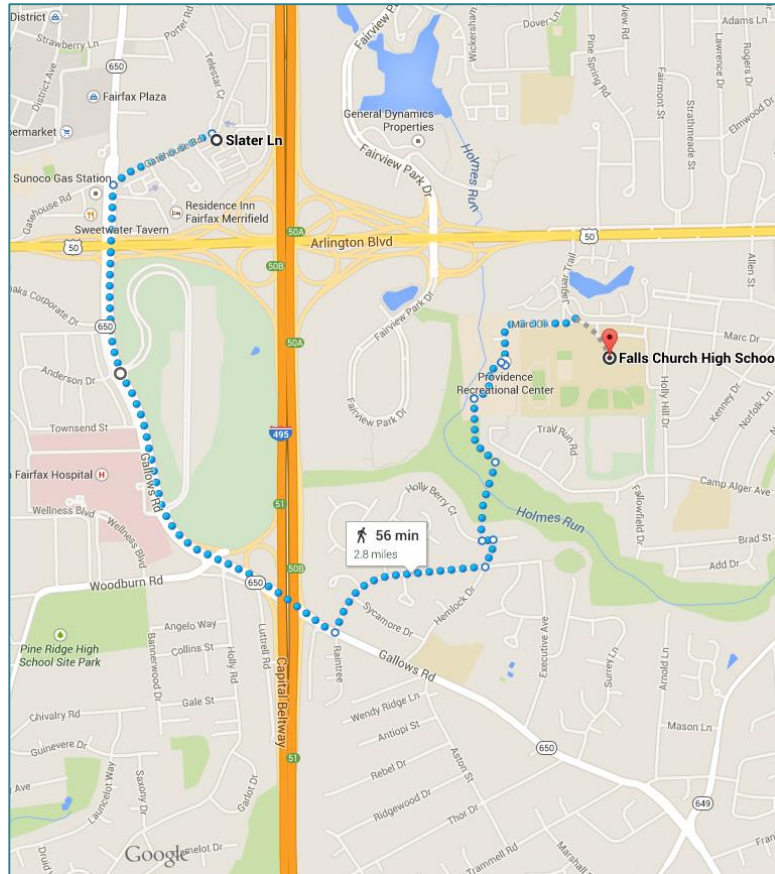
Destination-based programs



- “Conventional TDM”
 - Transit passes
 - Vanpools
 - Ride-matching
 - Bike lockers
 - Alternative work schedules
- Other measures
 - Parking availability and pricing
 - Sharing
 - Land use



Connectivity



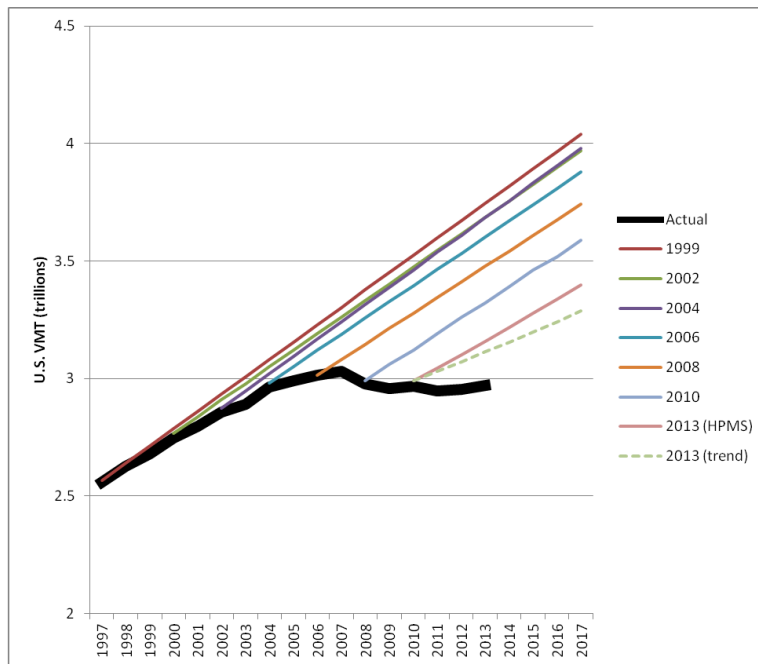
First- and last-mile solutions



Why are we doing this now?



- TDM undersupplied
- New methods allow for better analysis



Location	Internal-external	Internal	Through	Total
US 1 A	10,809	607	1,204	12,620
US 1 B	14,450	9,856	3,388	27,694
US 1 C	7,262	11,797	3,233	22,293
US 1 D	10,524	7,307	2,358	20,189
US 1 E	15,279	8,402	3,860	27,541
US 1 F	8,123	3,970	3,115	15,208
Average	11,075	6,990	2,860	20,924
Share of traffic	52.9%	33.4%	13.7%	100.0%

Goals of Big Data for TDM



- **Big Data IS NOT**

- A robot that dictates policy and investment
- A perfect forecaster of the future

- **Big Data IS**

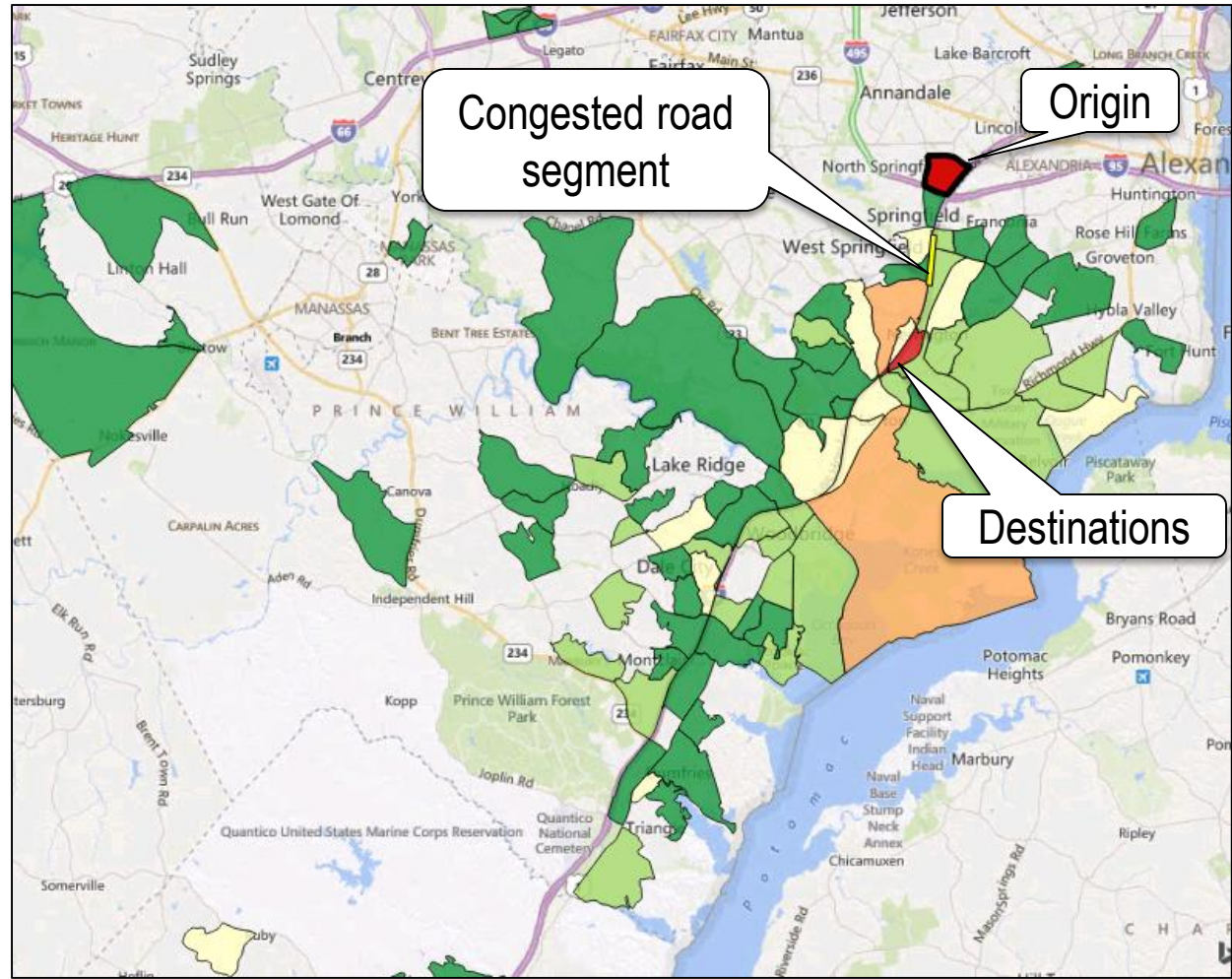
- A way to educate and communicate with stakeholders with visualizations and more
- A way to improve the effectiveness of planners and policy makers:
 - Scan for problem areas, successful areas, and areas of opportunity
 - Suggest types of solutions
- A way to measure the impact of actions

Example – Demand Solution



This map shows some of the Origin/Destination pairs frequently used by people contributing to rush hour traffic jams on one segment of I95 SB.

The red pair is a strong target for Demand solutions. The trips are ~5km, opening up options for biking, circular shuttles, etc.

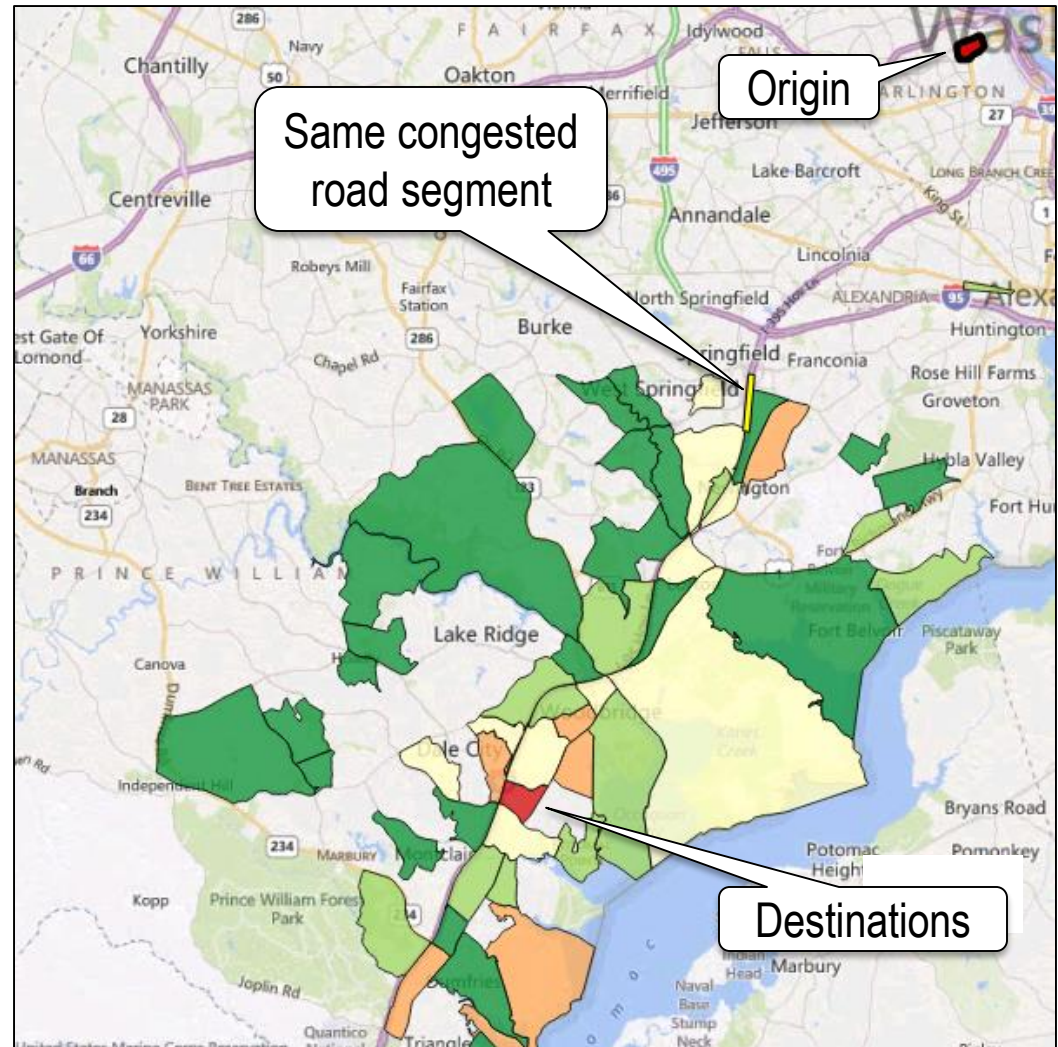


Example – Demand Solution



This map shows another of the Origin/Destination pairs frequently used by people contributing to rush hour traffic jams on one segment of I95 SB.

The red pair are very far apart from each other, pointing to solutions like employee van pools, utilization of transit options, etc.



Example – Connectivity



This map shows the average indirectness (or circuitousness) of trips on various road segments around Tyson's Corner. This Metric can help planners find locations where better connectivity, two-way streets, or easier parking may reduce driving and congestion.



Example – First/Last Mile Solution

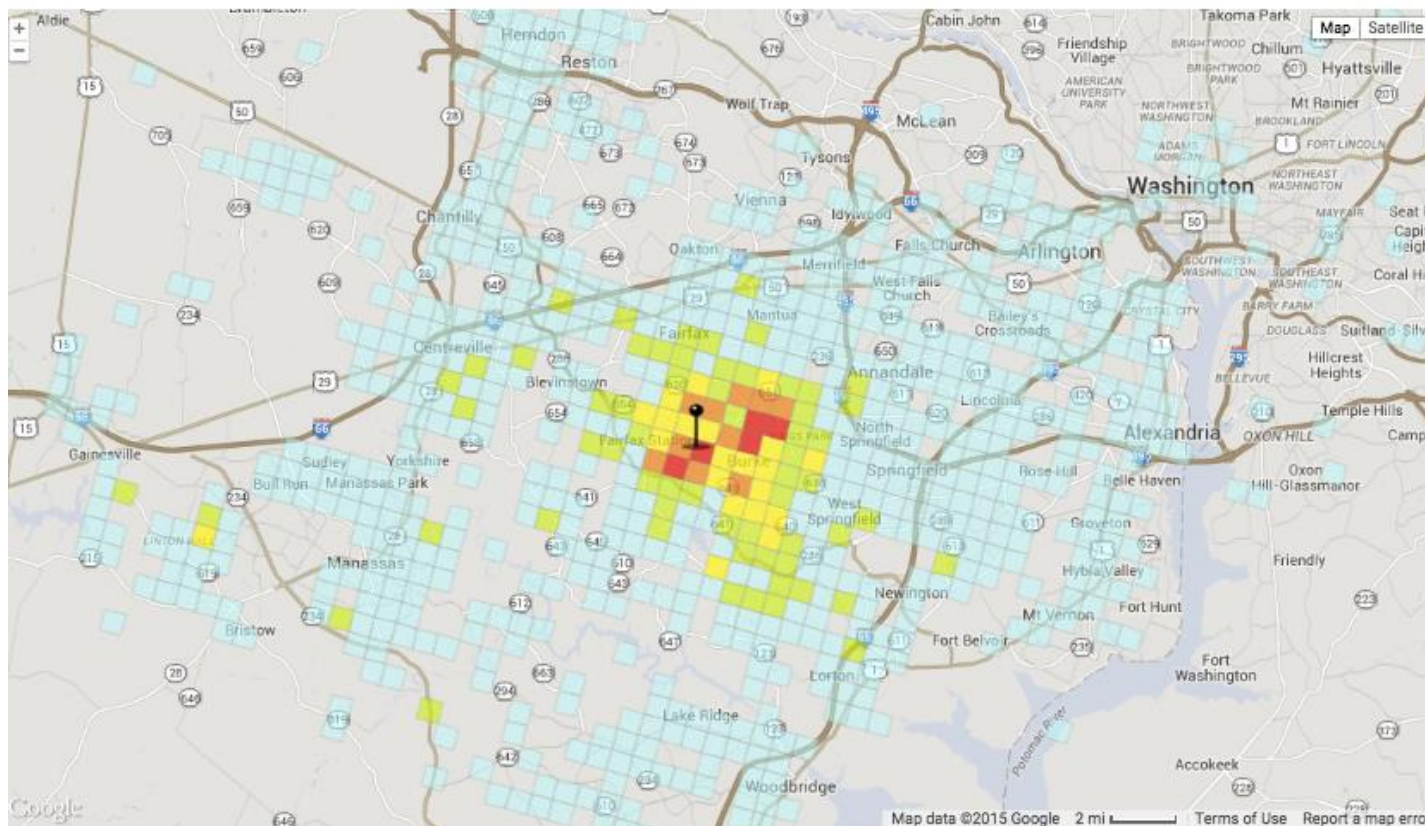


This image shows origination points for people using the Park-and-Ride at Burke Center and can help direct planning for options that improve service and mitigate excess parking demand.

Burke Center Park and Ride - Fairfax VA | Home Places | Average Day | All-Day

Colors indicate the percent of total visitors to the site who either live or work in that 1 km² grid cell.

0.01 - 0.19% 0.2 - 0.42% 0.43 - 1.03% 1.04 - 1.63% 1.64% or more.



Modify Map



Select Visitors Metric

- Home Places
- Work Places

Top Origin and/or Destination Zips

- Top Origin Zips [BETA]
- Top Destination Zips [BETA]
- Both [BETA]

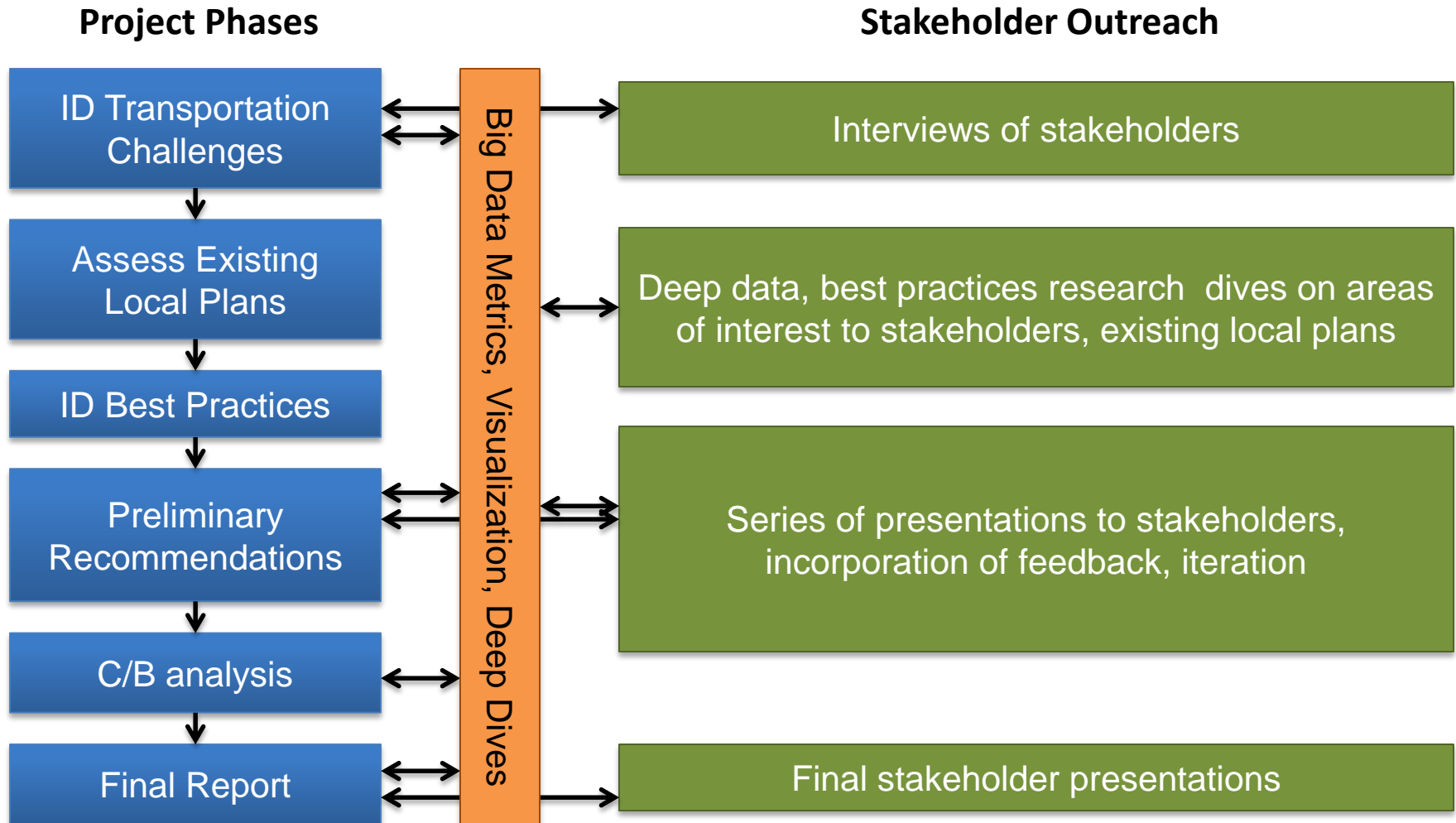
Select a Type of Day

- Average Day
- Average Weekday
- Average Weekend

Select a Time of Day

- All-Day
- Morning
- Mid-Day
- Afternoon
- Evening

Outreach Plan



Co-Benefits

