MULTIMODAL ACCESSIBILITY: CONCEPTS, APPLICATIONS, AND BEST PRACTICES

NCAMPO 2016 Conference: Innovations in Transportation

May 12, 2016

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RENAISSANCE PLANNING

PRESENTATION OVERVIEW

1 WHAT ACCESSIBILITY IS

ACCESSIBILITY IS A SIMPLE CONCEPT
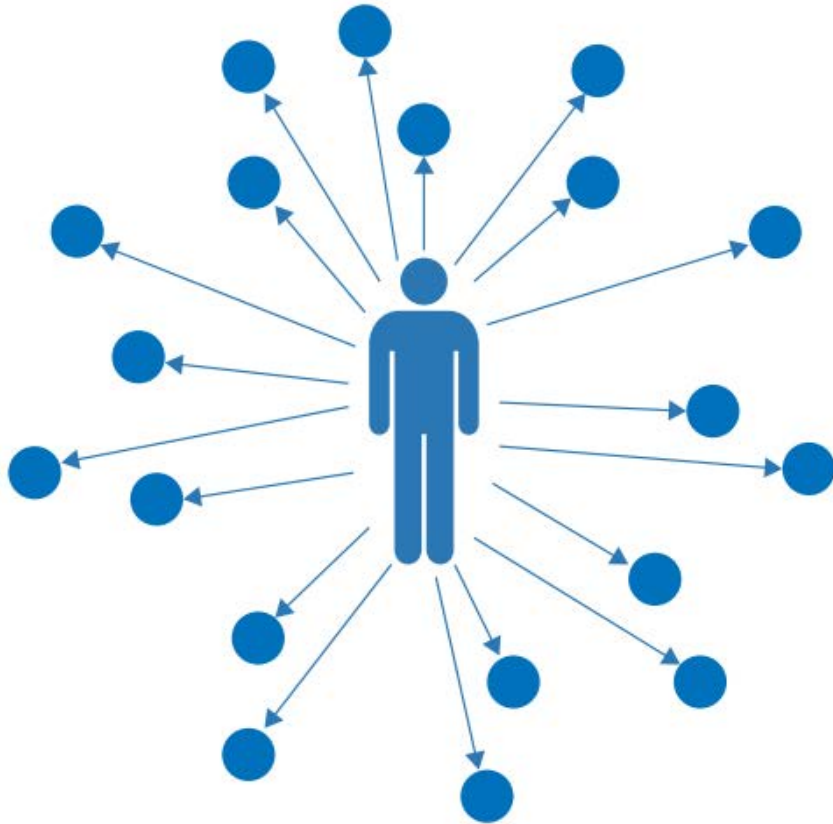
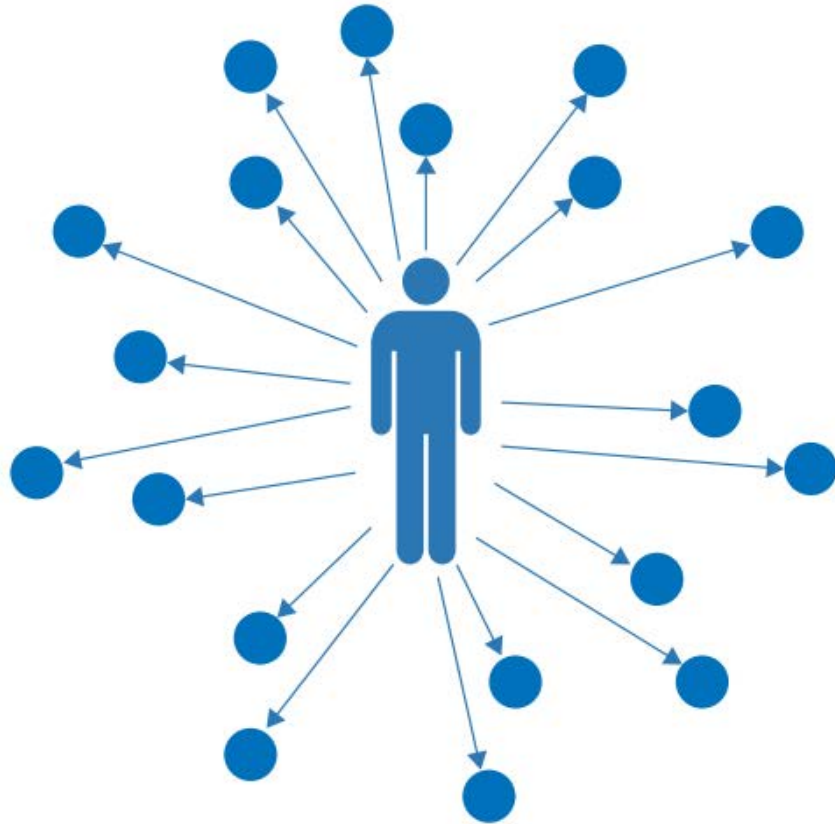We all have important destinations to get to in our daily life. Accessibility is our ability to get those destinations.

ACCESSIBILITY IS A POWERFUL TOOL

Power in simplicity – based on destinations and options for getting there

Multi-modal comparisons are natural.

5

WHAT ACCESSIBILITY IS

- Opportunities can be…
  - Jobs
  - Schools
  - Restaurants, coffee shops and nightlife
  - Essential goods and services, such as grocers and clinics

WHAT ACCESSIBILITY IS

▪ Measure of opportunities within reach that varies by…
- ▪ mode and purpose of travel
- ▪ demographics and lifestyle
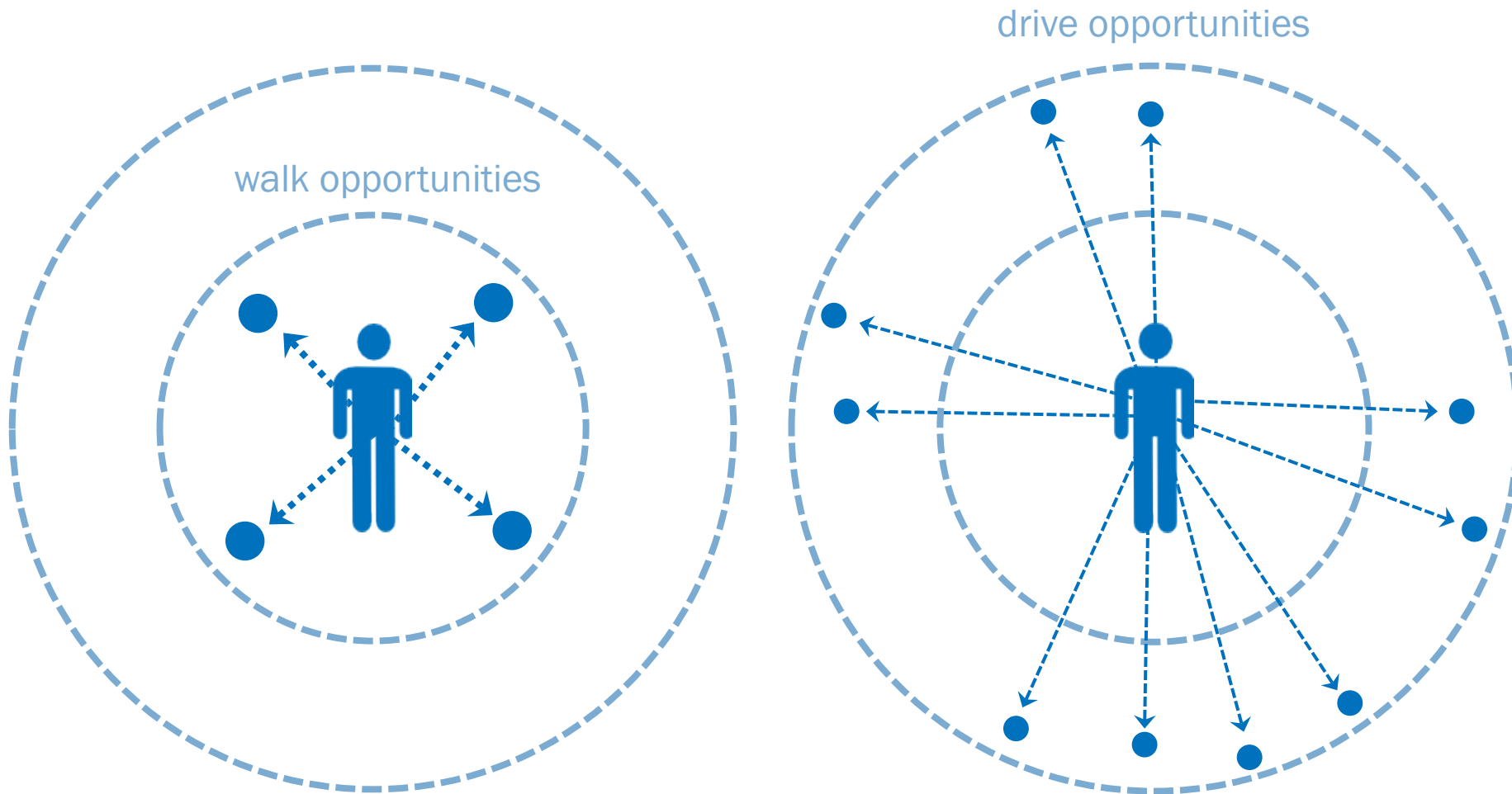- ▪ time of day
- ▪ etc.

WHAT ACCESSIBILITY IS
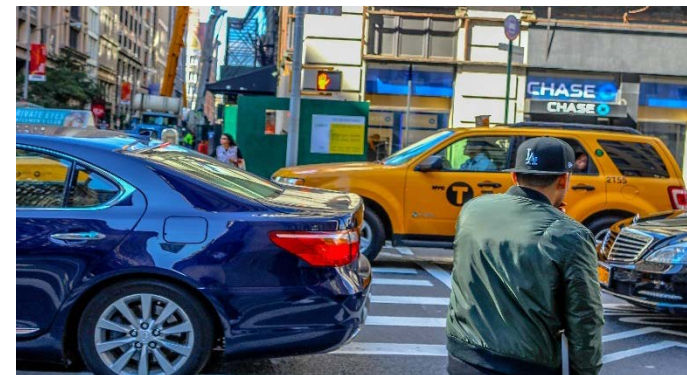
2   WHY ACCESSIBILITY MATTERS

- Accessibility influences and responds to…
    - Travel behavior
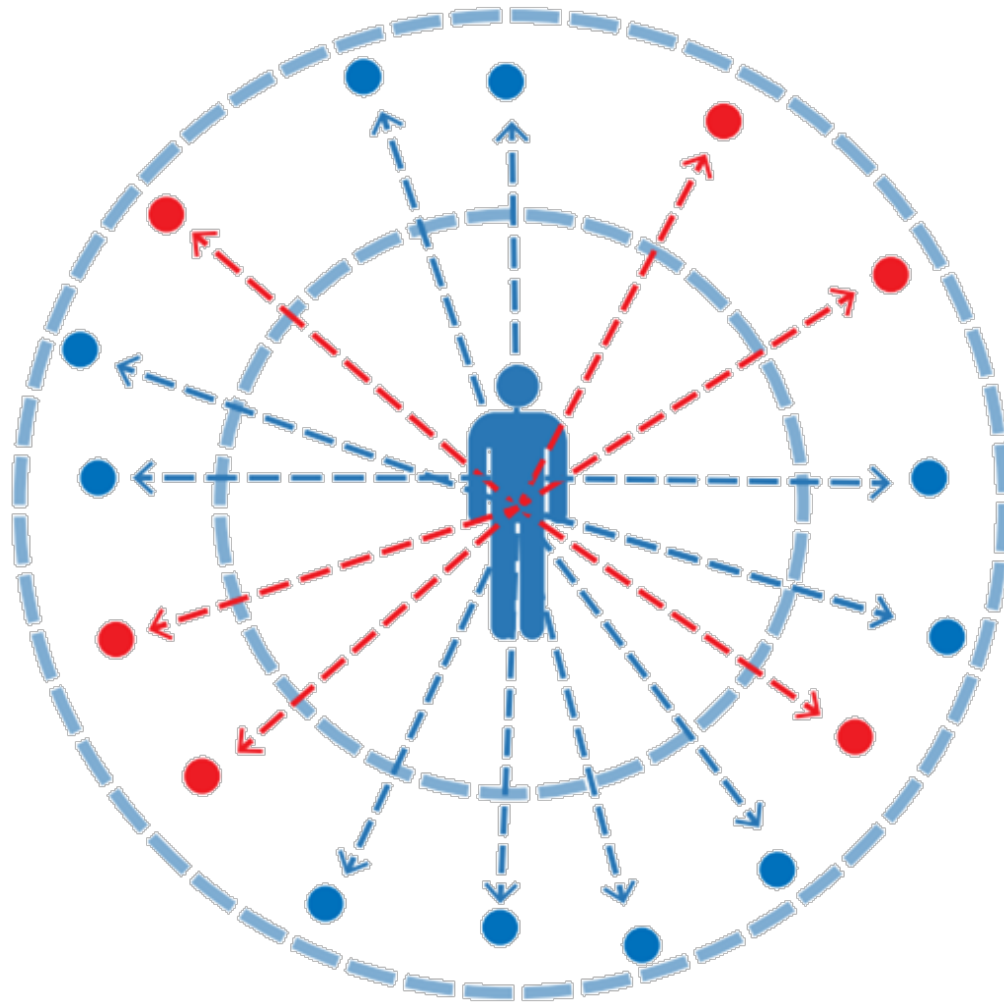   - Transportation infrastructure, technology, and policy
    - Urban development

drive opportunities

walk opportunities

Accessibility measures travel possibilities.

Travel possibilities inform travel decisions.

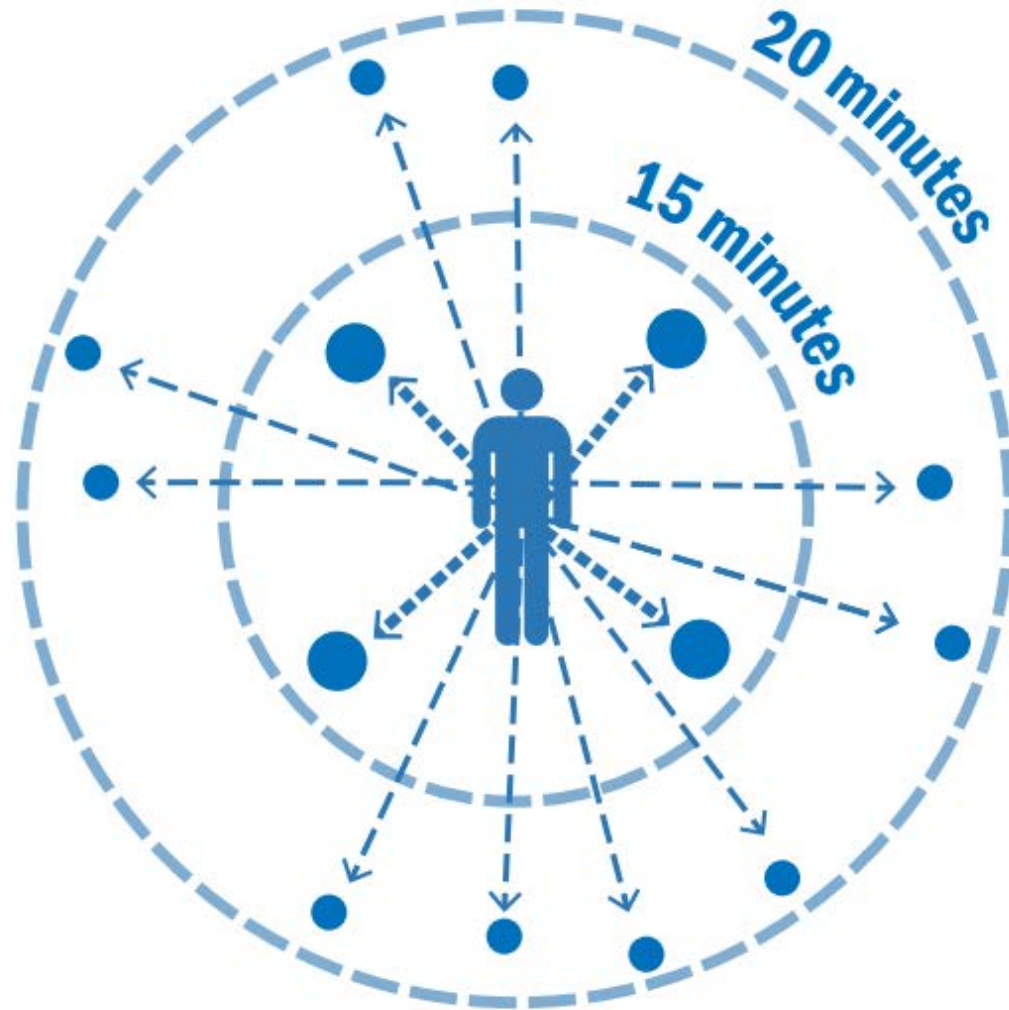**Transportation systems provide connectivity and mobility that enhance accessibility**
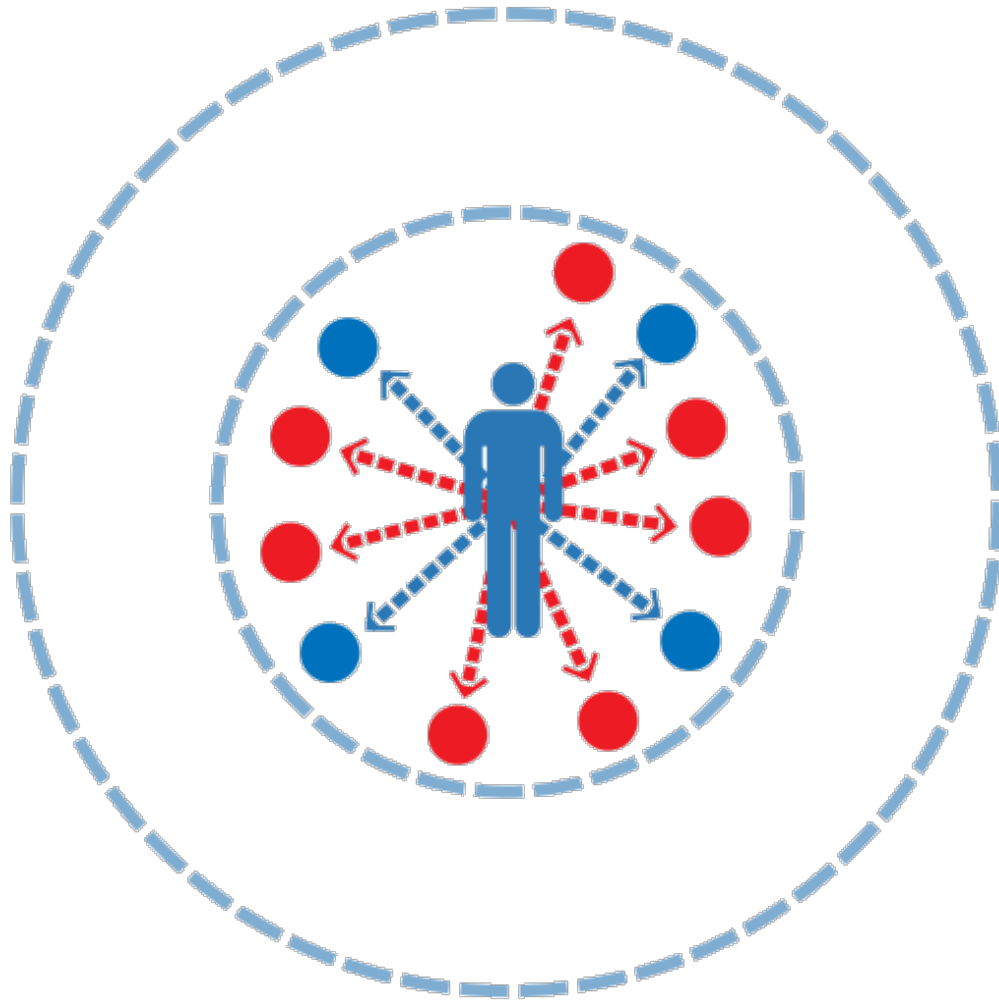
Developments bring opportunities closer together to enhance accessibility
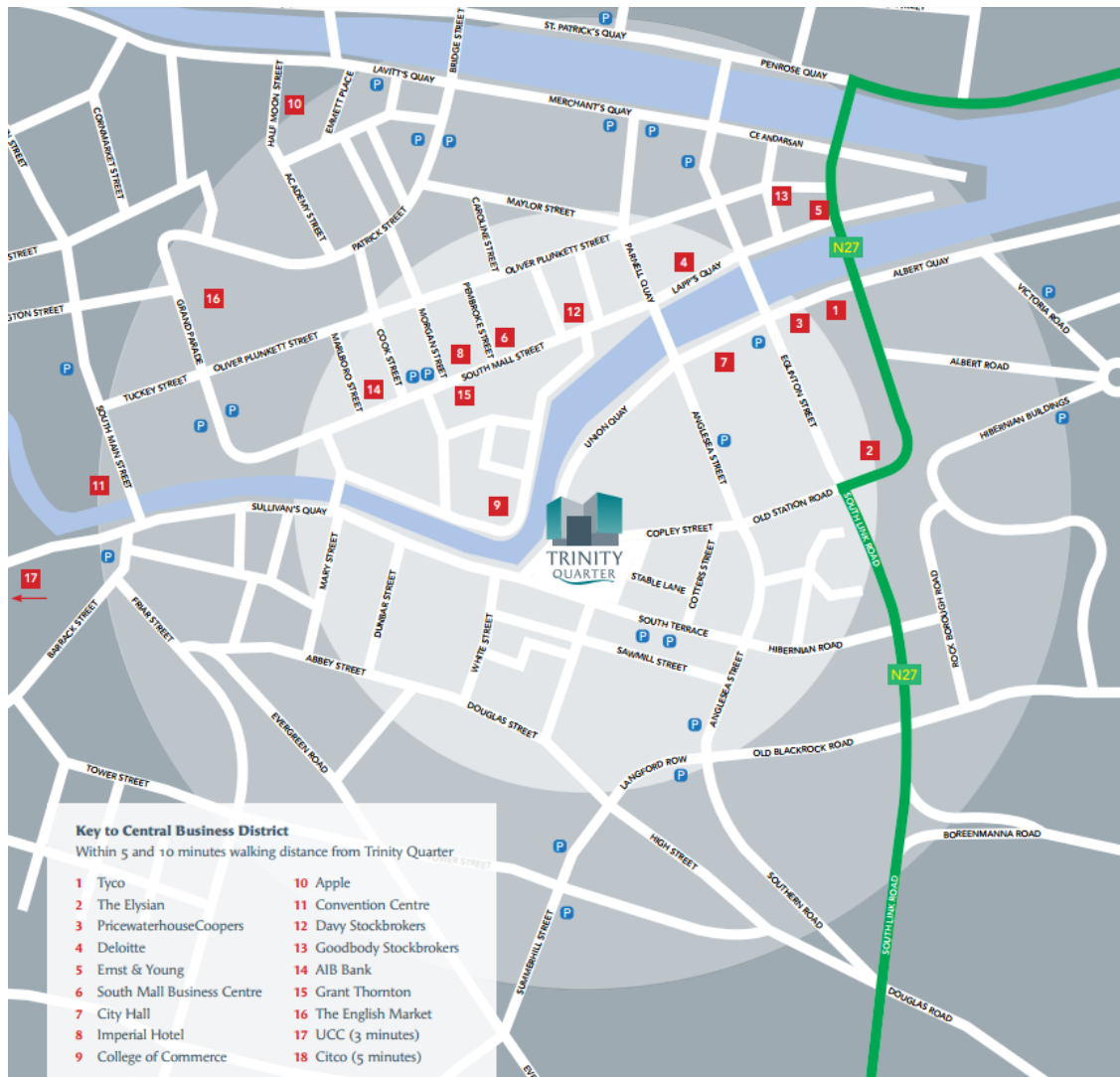
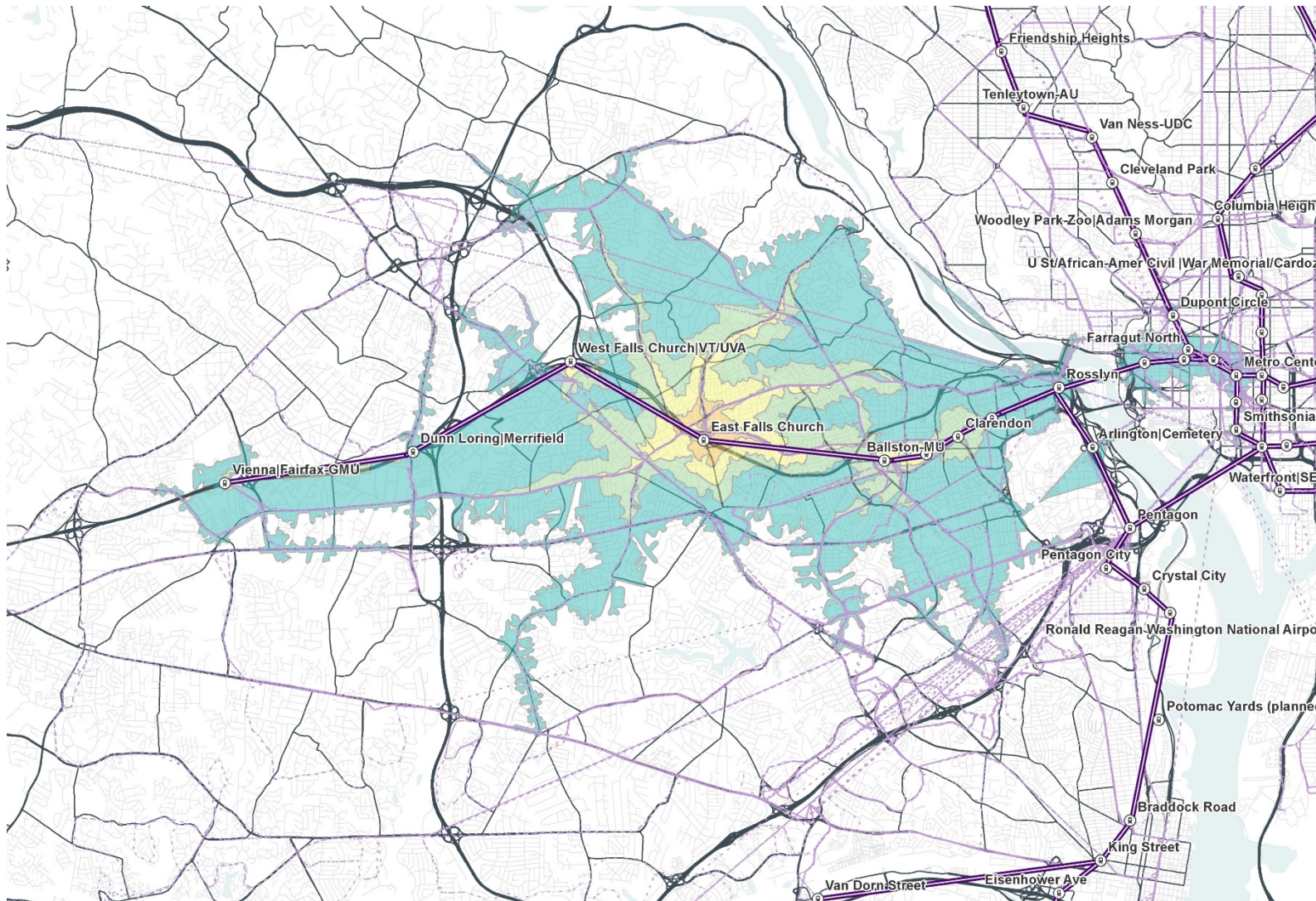# 3　HOW ACCESSIBILITY IS MEASURED

HOW IS ACCESSIBILITY MEASURED?

Accessibility is measured as the number
of destinations reachable in a given
travel time.

Key to Central Business District
Within 5 and 10 minutes walking distance from Trinity Quarter

1	Tyco	10	Apple
2	The Elysian	11	Convention Centre
3	PricewaterhouseCoopers	12	Davy Stockbrokers
4	Deloitte	13	Goodbody Stockbrokers
5	Ernst & Young	14	AIB Bank
6	South Mall Business Centre	15	Grant Thornton
7	City Hall	16	The English Market
8	Imperial Hotel	17	UCC (3 minutes)
9	College of Commerce	18	Citco (5 minutes)

Accessibility measures can be very simple

...or increasingly complex

Network-based buffers
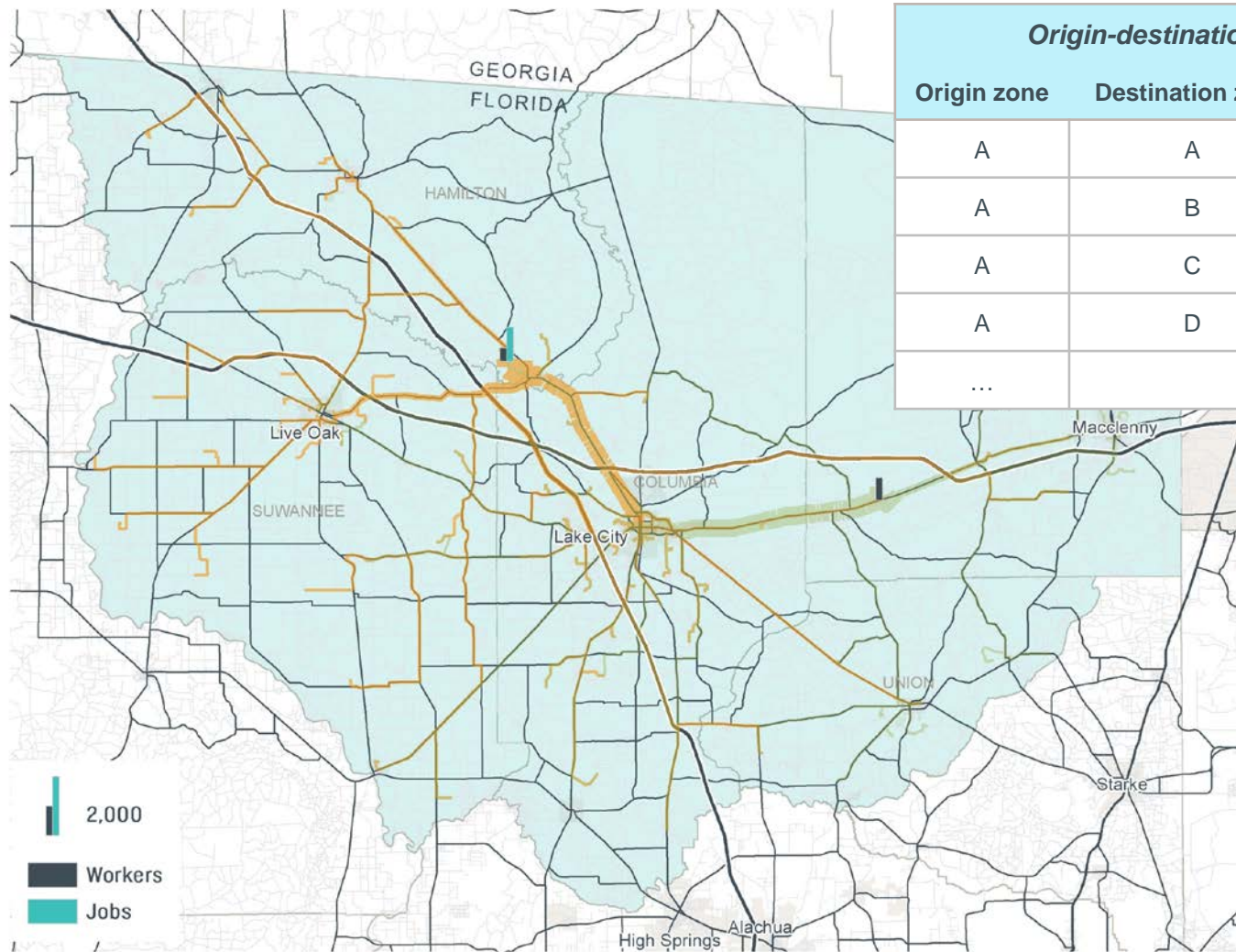
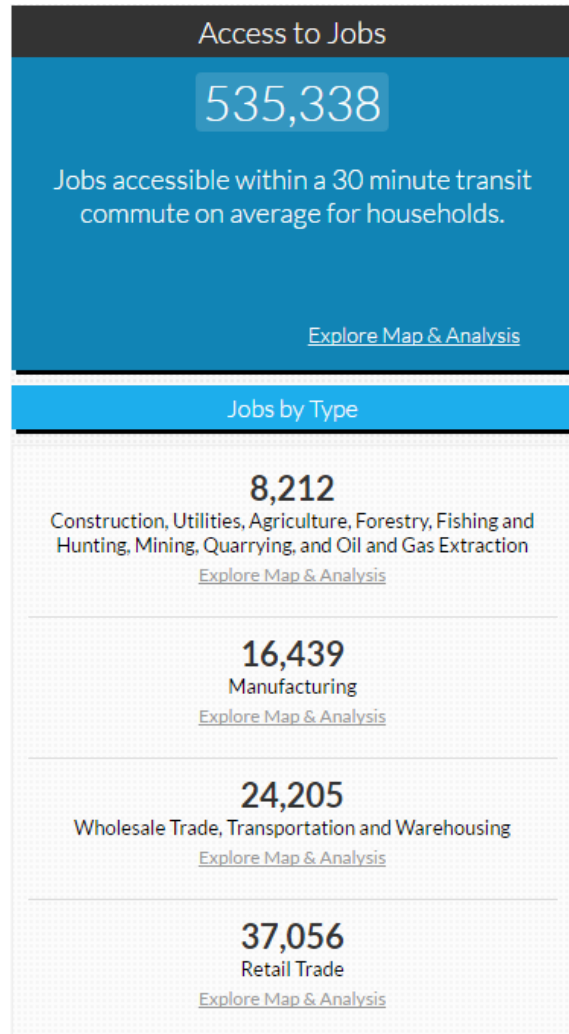| Origin-destination matrix		
Origin zone	Destination zone	Time
A	A	-
A	B	5.181
A	C	13.780
A	D	19.903
…		

...or increasingly complex

Discrete travel times (O-D matrix)

HOW IS ACCESSIBILITY MEASURED?

walkscore.com

alltransit.cnt.org

...or increasingly complex

Opportunities can be weighted by type

TRAVEL TIME DECAY BY MODE

- Auto Driver
- Auto Passenger
- Transit Drive Access
- Transit Walk Access
- Walk
- Bike
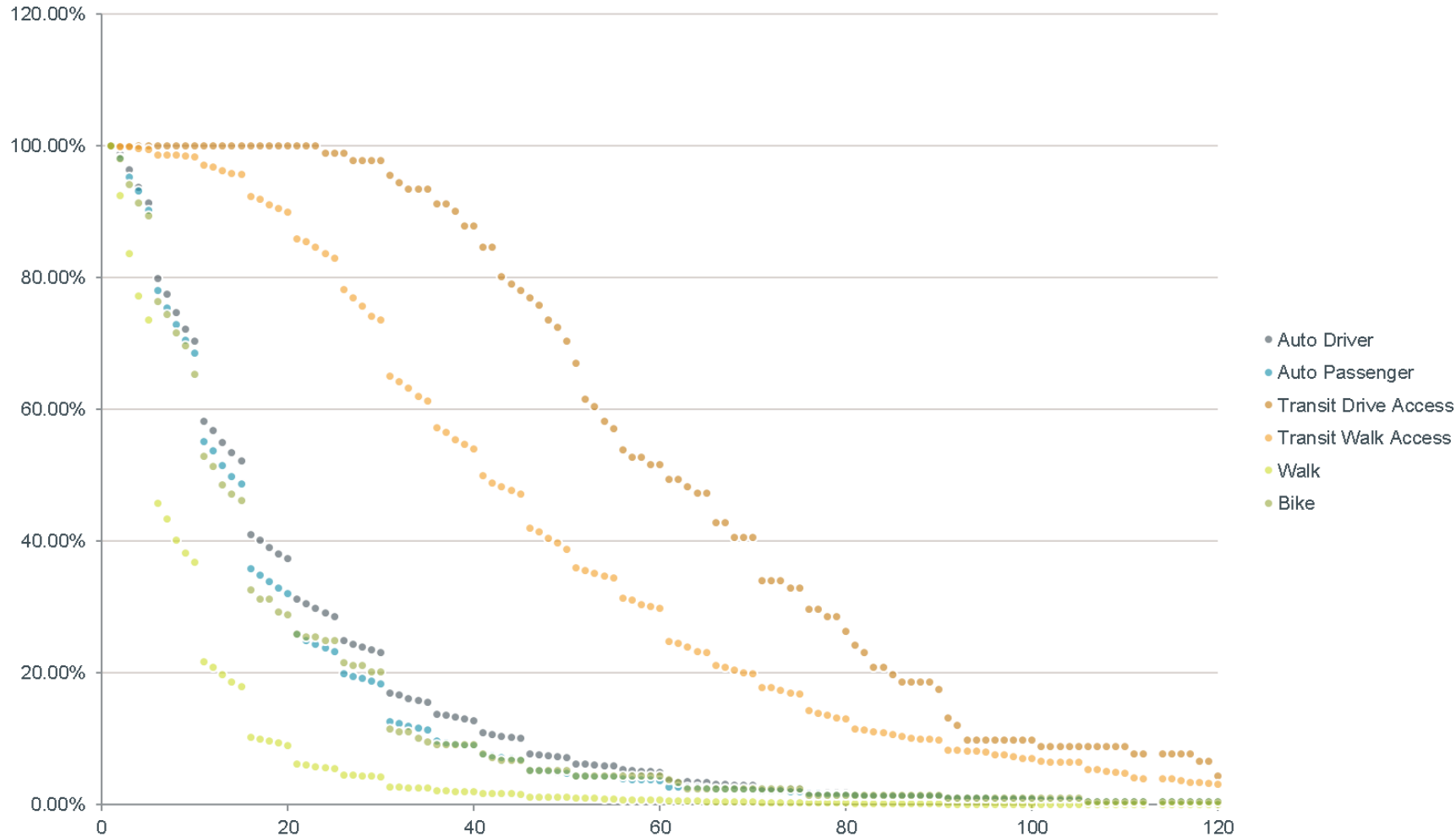
...or increasingly complex

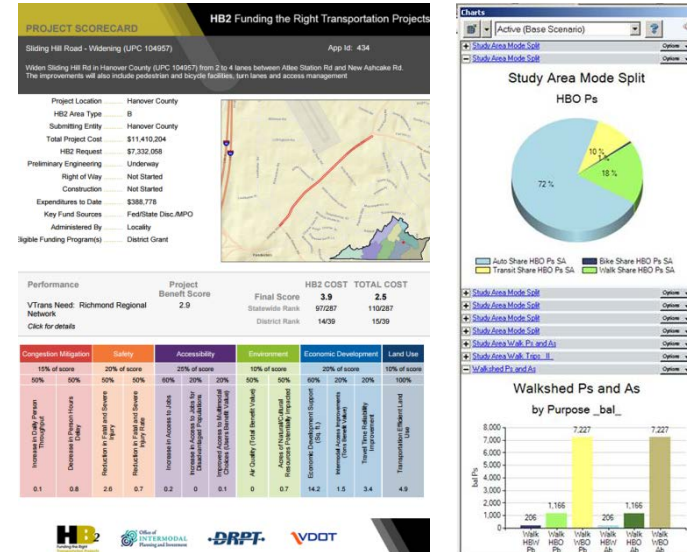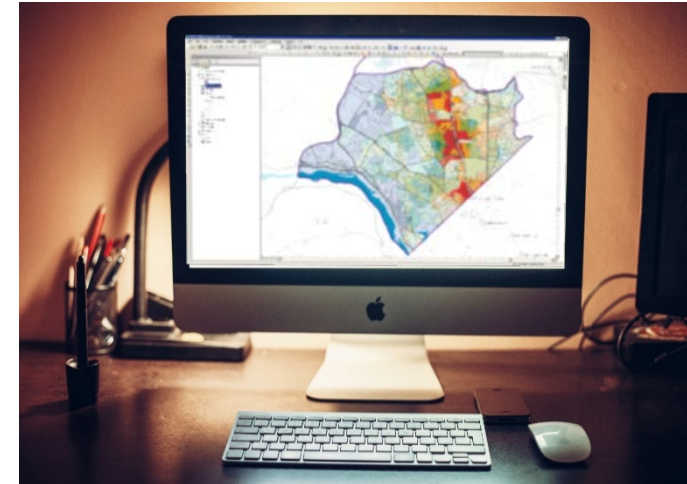*Opportunities can be weighted by cost (time, distance, etc.)*

4 HOW ACCESSIBILITY MEASURES ARE BEING USED

- Analysis of travel behavior

- Project alternatives and prioritization

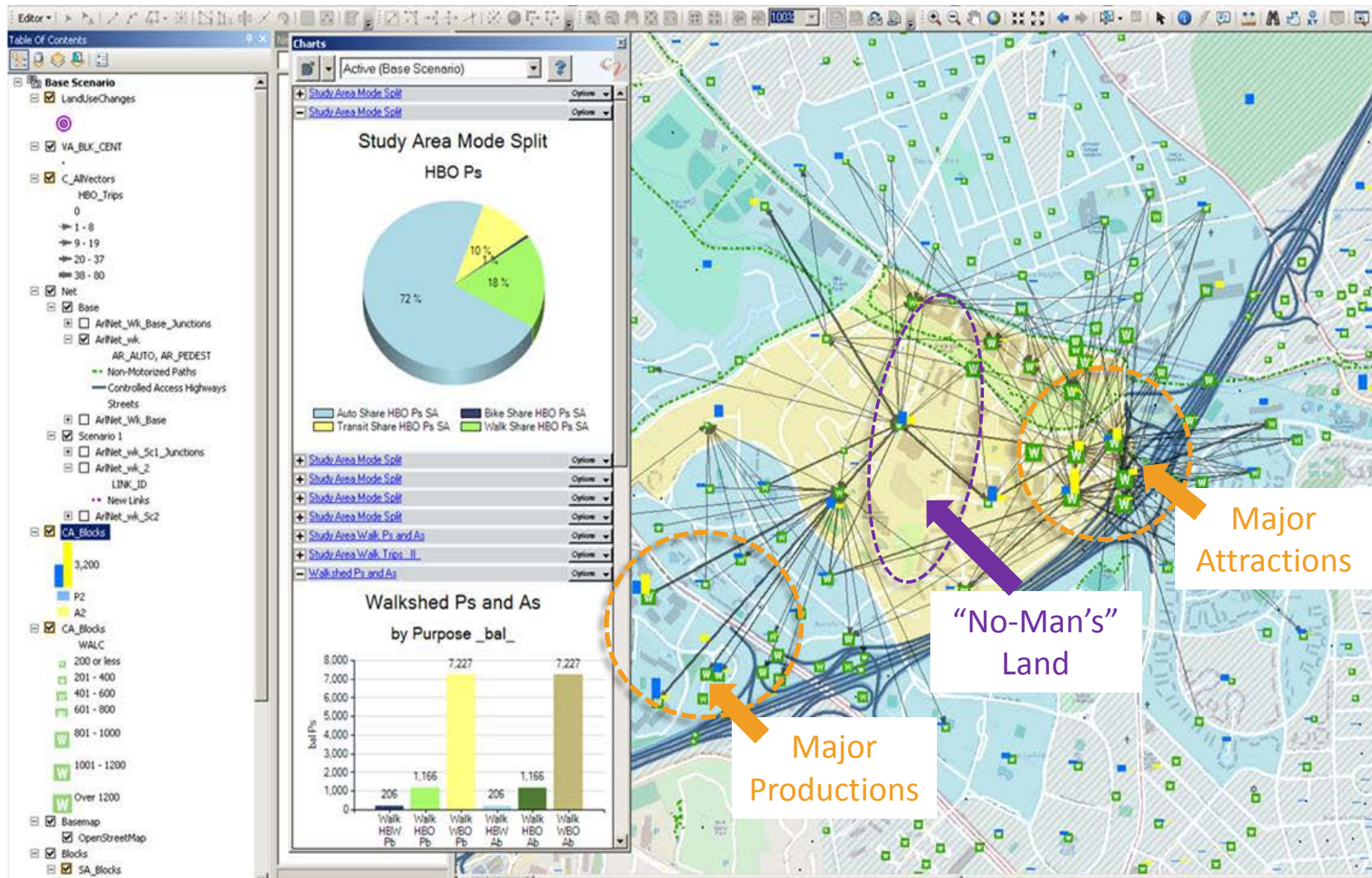- Equity analysis

- Multimodal placemaking

- Others

Pedestrian travel modeled using walk accessibility

Pedestrian travel modeled using walk accessibility

Major Attractions

"No-Man's" Land

Major Productions

Pedestrian travel modeled using walk accessibility
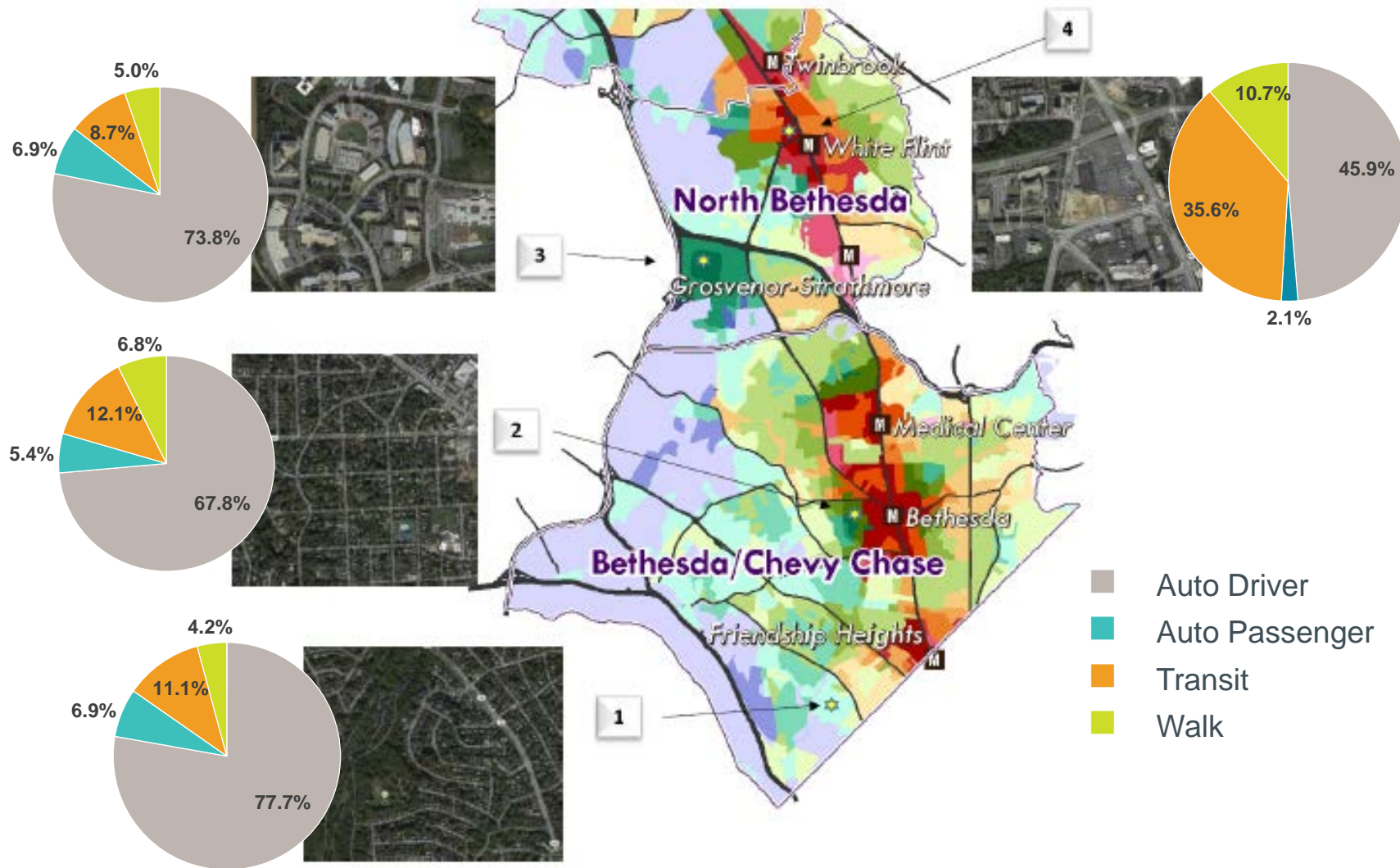
Mode choice estimated using combined accessibility scores

Legend:
- Auto Driver
- Auto Passenger
- Transit
- Walk

https://www.slc.gsa.gov/slc/

VMT modeled using multimodal accessibility and other factors

Change in number of
jobs within 30 minutes
by transit

▨	< -100%
▨	-100% – -50%
▨	-50% – -25%
▨	-25% – -10%
▨	-10% - +10%
▨	+10% – +25%
▨	+25% – +50%
▨	+50% – +100%
▨	> +100%
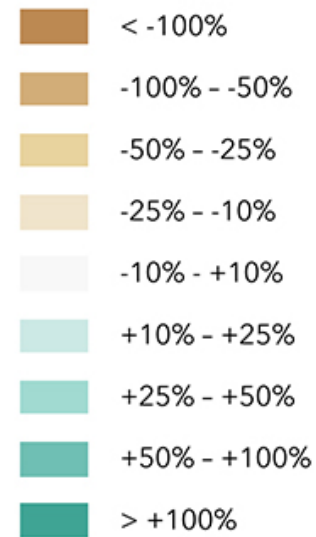
Accessibility is being used to identify winners (and losers) of transit alternatives

HOW ACCESSIBILITY IS USED

HB2 QUICK GUIDE

**What are the factor areas and measures?**
(See Policy Guide Section 3.0 – 3.6 and Appendices 7.0 – 12.0)

There are six factors required by HB2 legislation. Each factor is made up of several measures that quantify the benefit of a given project for that factor area. The factors with their respective measures are:

| Factor	Measures
Safety	◆ Number of fatal and severe injury crashes ◆ Rate of fatal and severe injury crashes
Congestion Mitigation	◆ Person throughput ◆ Person hours of delay
Accessibility	◆ Access to jobs ◆ Access to jobs for disadvantaged populations ◆ Access to multimodal choices
Environmental Quality	◆ Air quality and energy environmental effect ◆ Impact to natural and cultural resources
Economic Development	◆ Project support for economic development ◆ Intermodal access and efficiency ◆ Travel time reliability
Land Use (Only required for MPOs with populations of more than 200,000)	◆ Land use policy consistency

Accessibility is being used as a measure in a statewide project prioritization process
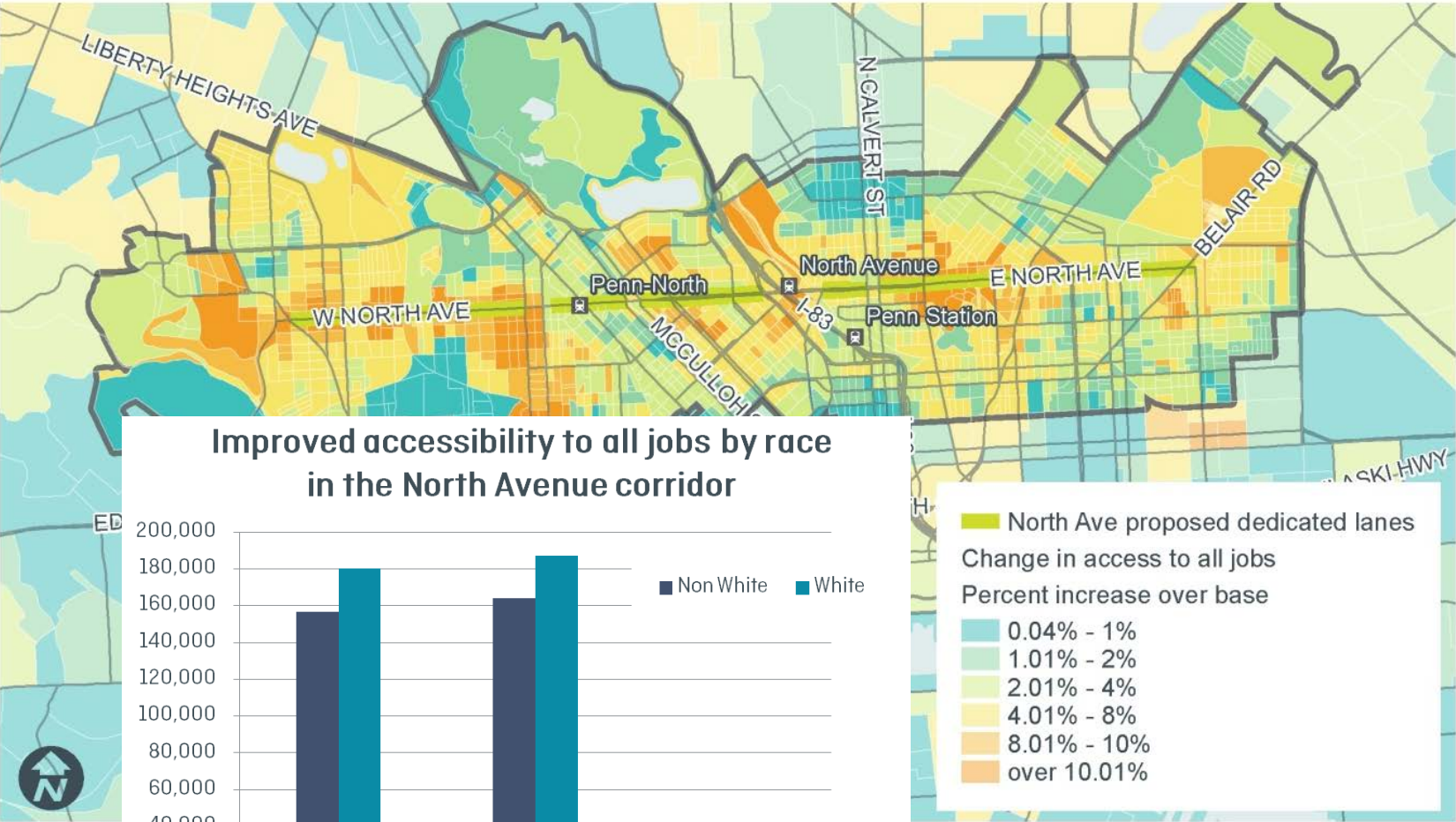
Accessibility by population group has been used to support of Ladders of Opportunity mission
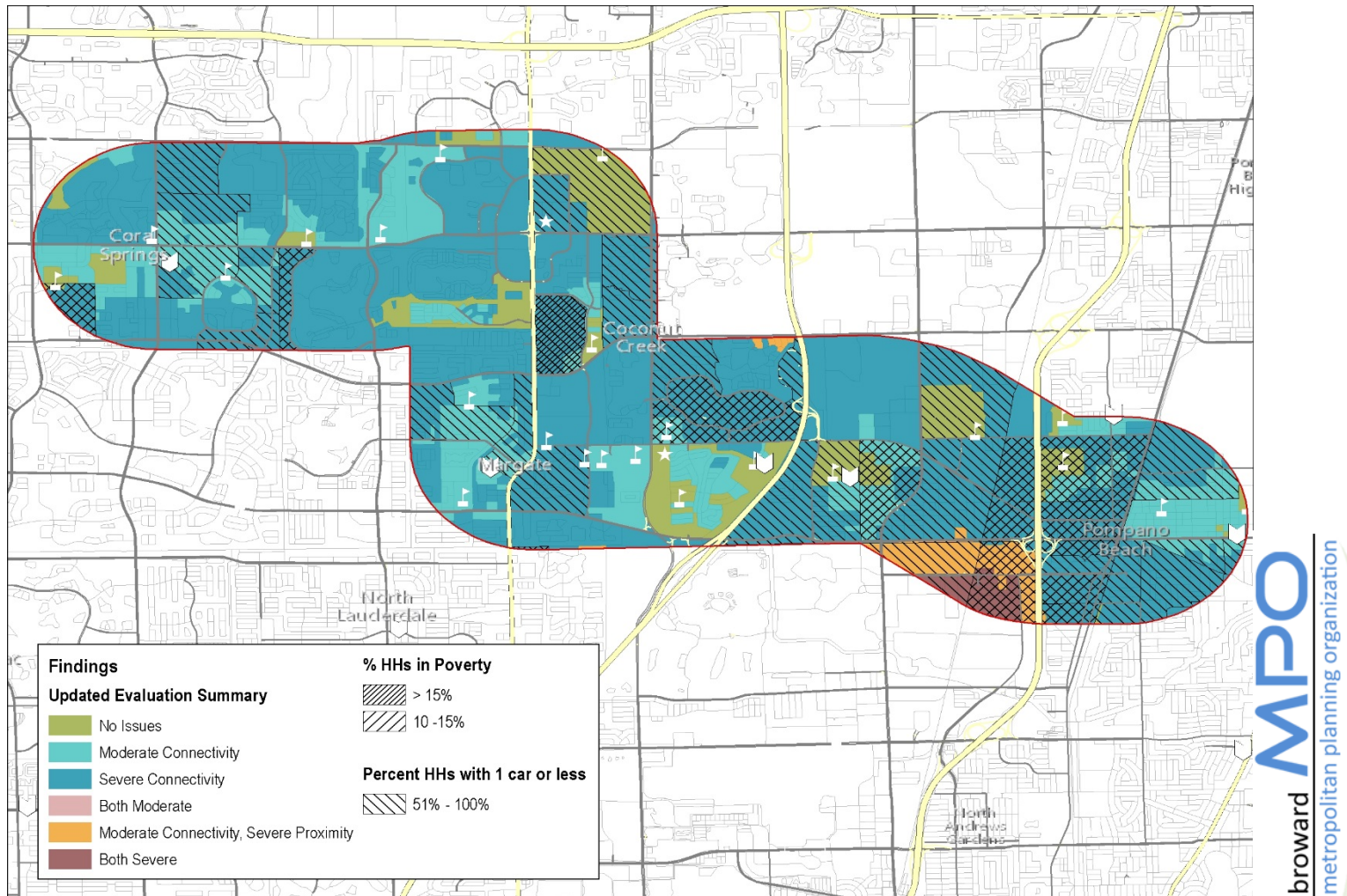
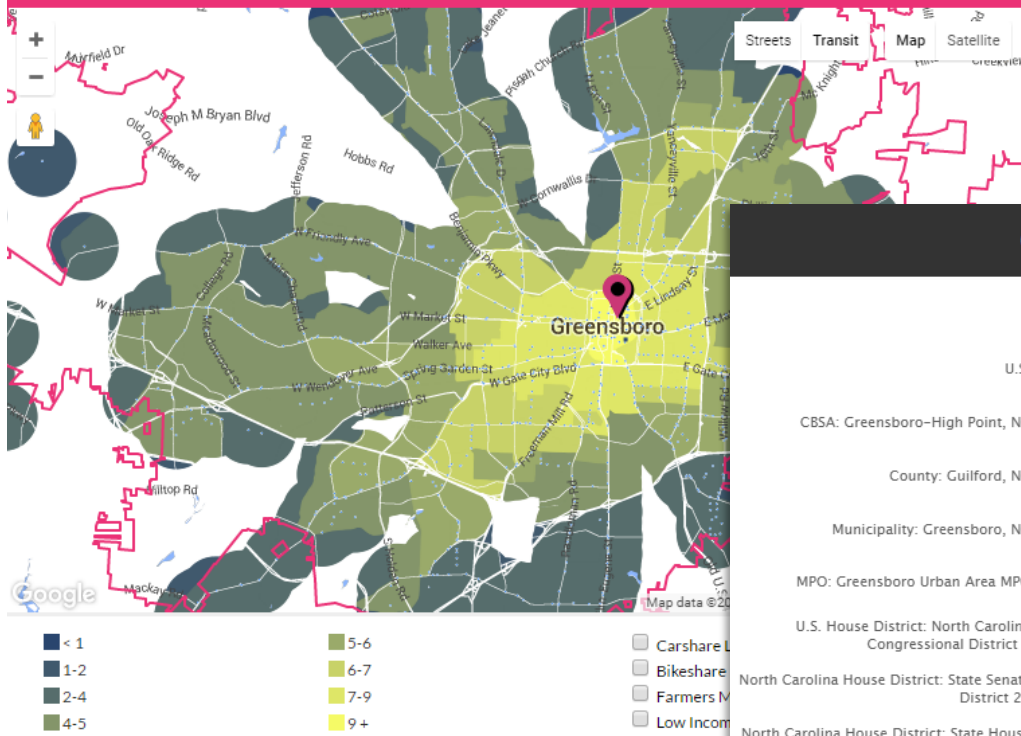Accessibility can help answer placemaking questions: "do we have a land use problem or a transportation problem?"
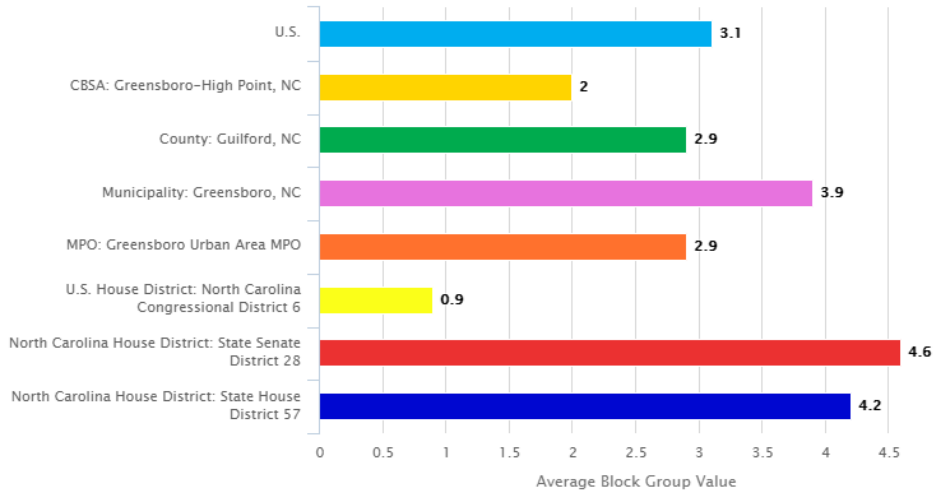
5 HOW TO GET STARTED

RESOURCES

alltransit.cnt.org

- [Accessibility Observatory (Univ. of MN)](#)
- [AllTransit (CNT)](#)
- [Smart Location Database (EPA)](#)
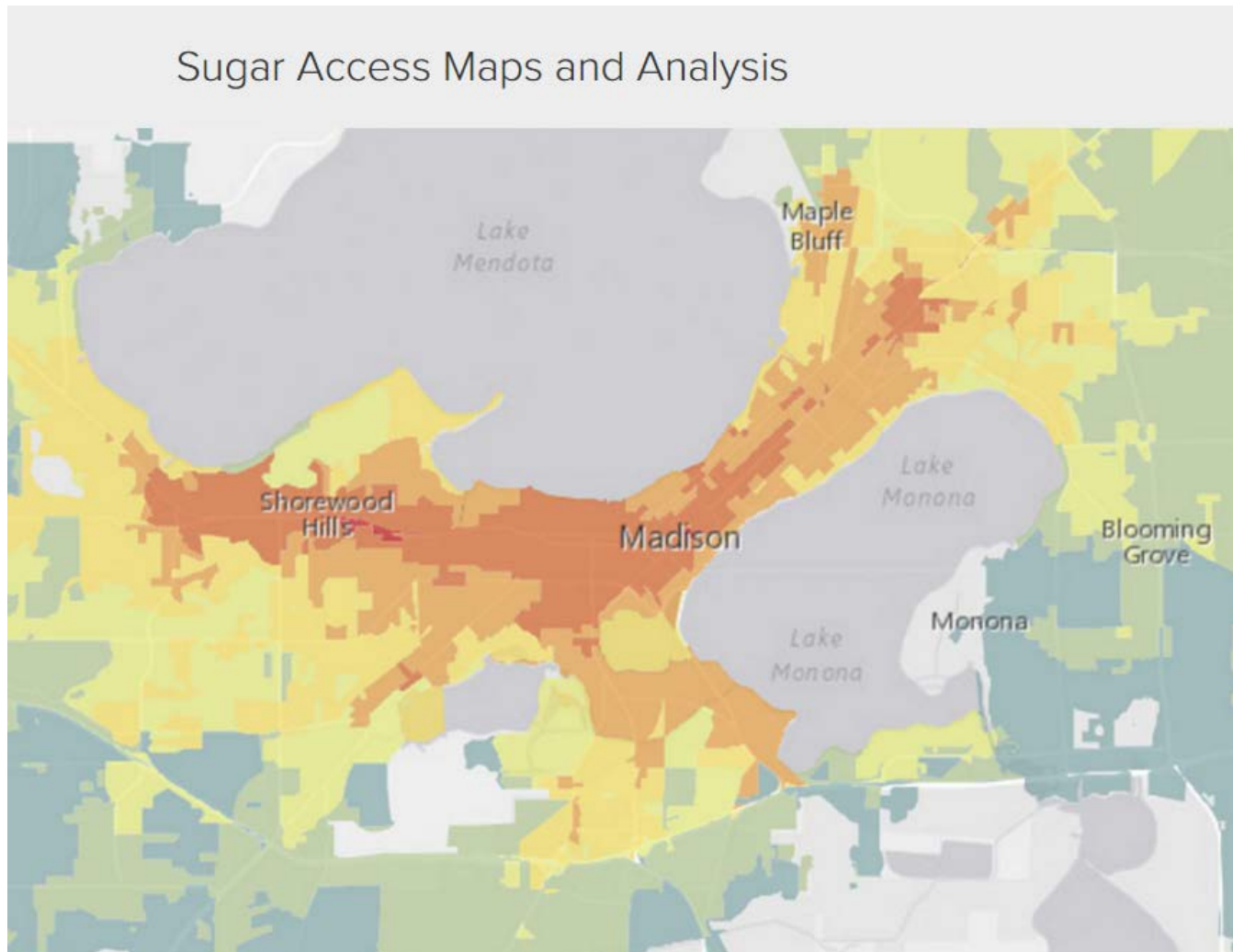- [WalkScore](#)

CUSTOM/FUTURE ANALYSIS

http://onthemap.ces.census.gov
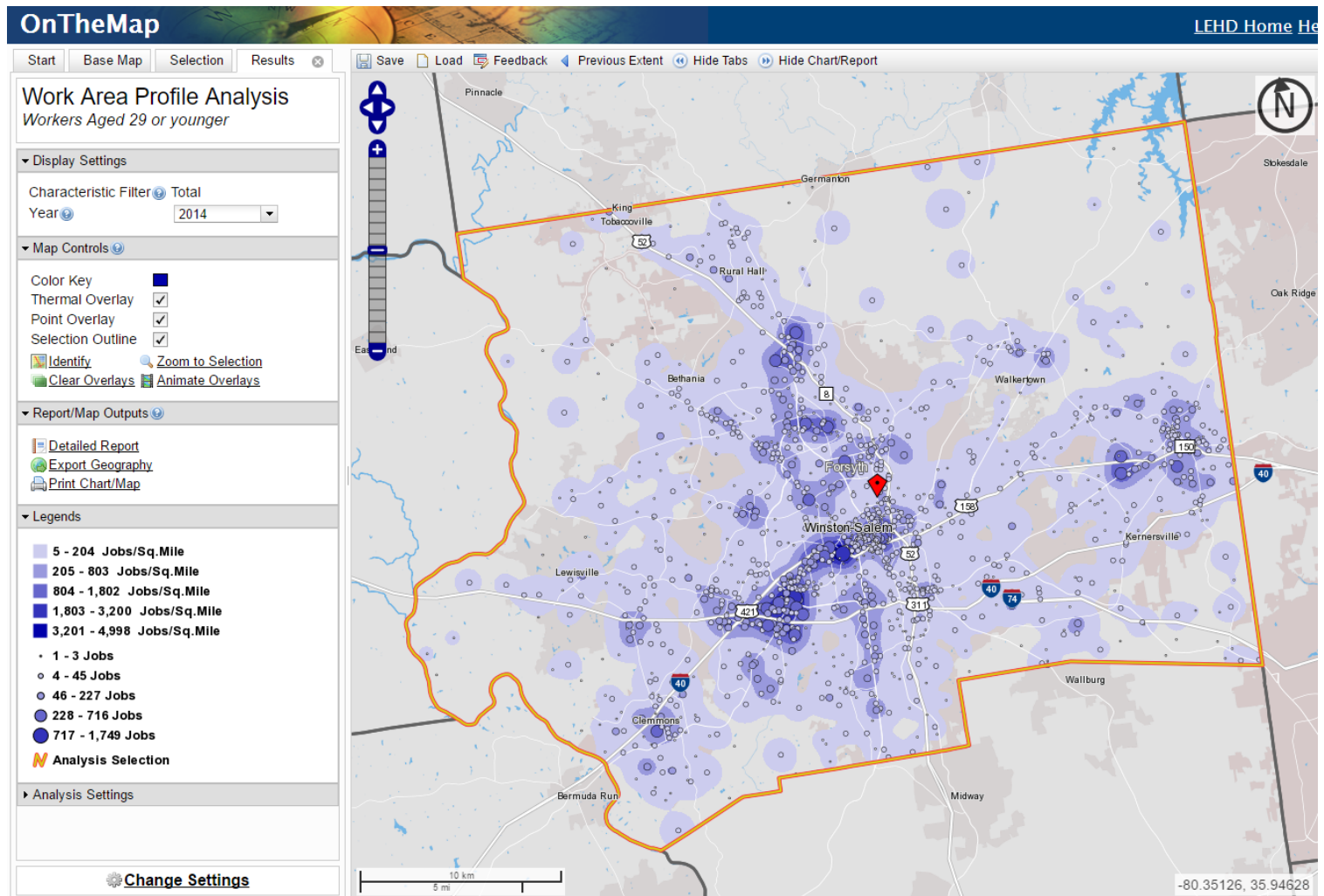
DATA
- Opportunities
  - LEHD
  - InfoUSA (or similar)
- Travel networks
  - OpenStreetMap
  - HERE, TomTom
  - Model networks
  - GTFS

HOW TO GET STARTED

CUSTOM/FUTURE ANALYSIS

Sugar Access Maps and Analysis

http://www.citilabs.com/software/sugar/sugar-access

TOOLS
- GIS
  - ArcGIS, PostGIS
- Path solving software
  - Network Analyst
  - Pgrouting
  - OpenTripPlanner
  - TransCAD, Cube
- Sugar Access

HOW TO GET STARTED

Accessibility is a simple but powerful concept that provides insight into the interactions of travel behavior, transportation systems, and land development.