

TRANSPORTATION
LEADERSHIP ACADEMY

2017 Transportation Leadership Academy

November 14, 2017

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About Transportation for America

Transportation for America is the alliance of elected, business and civic leaders from communities across the country that want smart, locally-driven transportation solutions — because these are the investments that hold the key to our future economic prosperity.



2017 Transportation Leadership Academy



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T4America



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Upcoming Workshops

Next in-person workshops are planned for...

December 12, 2017: 11:00AM - 5PM

February 13, 2018: 11:00AM - 5PM

March 13, 2018: 11:00AM - 5PM

Today's Agenda

Workshop Learning Objectives:

T4America will work with Massachusetts' leaders to develop a shared understanding about how:

- To develop performance measures to address evaluate the economic, health and access impact of transportation investments as well as the equitability of the benefits created;
- The Metropolitan Council incorporated equity into transportation planning; understand ways that environmental goals can be incorporated into performance measures; and
- the Massachusetts Global Warming Solutions Act impactstransportation performance management.

Today's Experts

Beth Osborne

Transportation for America (T4America)

Eric Sundquist

State Smart Transportation Initiative

Dan Marckel

Metropolitan Council, Twin Cities, MN

Rafael Mares

Conservation Law Foundation

What does it take to create a vibrant economy through transportation investments?

Congestion as an Economic Measure



PERFORMANCE MEASURE 10.7

Total User Cost Savings for the Traveling Public due to Congestion Management

Chart 10.7.1: Annual User Cost Savings Through MDOT Congestion Management Efforts CY2011-CY2015



Congestion as an Economic Measure



Congestion as an Economic Measure

Atlanta Travel Time

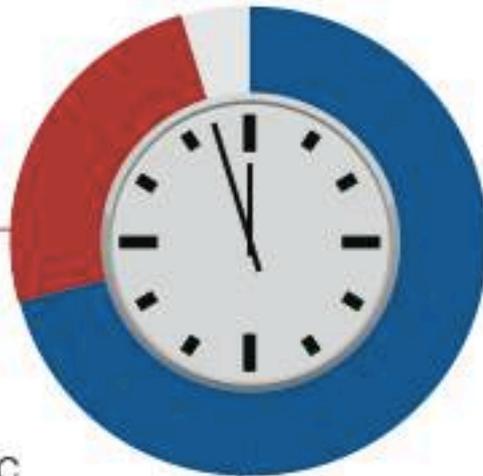
57.4 minutes

Extra rush hour delay

14.8 mins

Travel time without traffic

42.5 mins



Chicago Travel Time

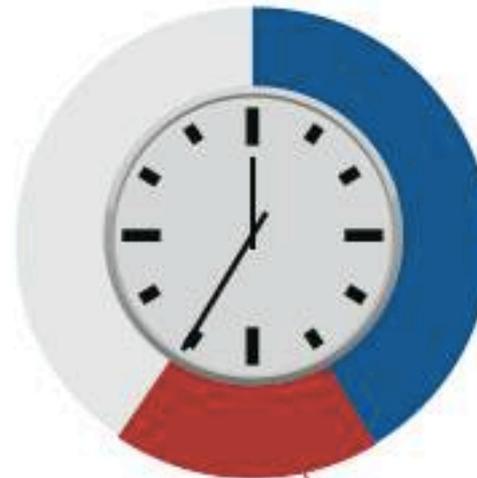
35.6 minutes

Travel time without traffic

24.9 minutes

Extra rush hour delay

10.7 minutes



How do transportation investments impact the economy?

1. Attracting development
2. Increasing property values
3. Creating jobs
4. Connecting people to jobs and employers to workers
5. Reducing travel costs (time and dollars)
6. Improving freight access and reliability
7. Reducing energy use and reliance on imported energy

Maximizing return on investment

Job Creation

Executive Office of the President (2011):

Every \$1 billion in Federal highway and transit investment would support 13,000 jobs for one year.

Maximizing return on investment

HB2 Funding the Right Transportation Projects

PROJECT SCORECARD

I-64 Peninsula Widening App Id: 550

Widen I-64 corridor from 1.55 miles west of Jefferson Ave (Exit 255) to Route 199 west of Williamsburg (Exit 234) with addition of travel lane and shoulder in each direction within median to widen roadway from 4 to 6 lanes.

Performance	Project Benefit Score	Final Score	HB2 COST	TOTAL COST
VTTrans Need: East-West Corridor of Statewide Significance	24.9	1.7	1.7	0.4
<i>Click for details</i>		Statewide Rank	151/287	228/287
		District Rank	14/40	21/40

Congestion Mitigation	Safety		Accessibility			Environment		Economic Development			Land Use	
45% of score	5% of score		15% of score			10% of score		5% of score			20% of score	
50%	50%	50%	50%	50%	60%	20%	20%	50%	50%	60%	20%	100%
Increase in Daily Person Throughput	Decrease in Person Hours Delay	Reduction in Fatal and Severe Injury	Reduction in Fatal and Severe Injury Rate	Increase in Access to Jobs	Increase in Access to Jobs for Disadvantaged Populations	Improved Access to Multimodal Choices (Users Benefit Value)	Air Quality (Total Benefit Value)	Acres of Natural/Cultural Resources Potentially Impacted	Economic Development Support (Sq. ft.)	Intermodal Access Improvements (Tons Benefit Value)	Travel Time Reliability Improvement	Transportation Efficient Land Use
52.3	38.2	100.0	0.4	2.7	3.4	0	0.1	0	35.2	16.4	6.0	







Maximizing return on investment



Table 3.7 Economic Development Measures

ID	Measure Name	Measure Description	Measure Objective	Measure Weight
ED.1	Project Support for Economic Development	Project consistency with regional and local economic development plans and policies and support for local development activity	This measure assesses if the project is supporting new economic development and the progress made toward development in the project corridor at the local level. The scoring value is scaled by square footage of sites being developed in the area of influence of the project.	60%
ED.2	Intermodal Access and Efficiency	Rate projects based on the extent to which the project is deemed to enhance access to critical intermodal locations, interregional freight movement, and/or freight intensive industries	<p>This measure assesses the:</p> <p>Level to which the project enhances access to distribution centers, intermodal facilities, manufacturing industries or other freight intensive industries;</p> <p>Level to which the project supports enhanced efficiency on a primary truck freight route (or high volume/ high value truck or rail freight corridor);</p> <p>Level to which the project enhances access or reduces congestion at or adjacent to VA ports/ airports</p>	20%
ED.3	Travel Time Reliability	Improvement in travel time reliability attributed to the project	This measure determines the projects expected impact on improving reliability which supports efforts to retain businesses and increase and economic activity.	20%

Maximizing return on investment

Transportation Economic Development Program (TED)

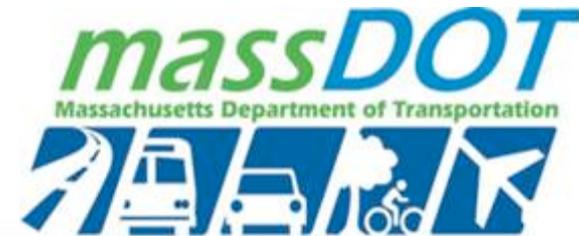
TED program applications will be evaluated based on the following criteria:

Criteria	Percent of Score
Economic Benefits:	40%
<ul style="list-style-type: none">• Job creation/retention• Income creation/retention• Benefits to targeted industry and labor	
Transportation Benefits:	40%
<ul style="list-style-type: none">• Benefit-cost analysis• Need for the project• Consistency with state and local plans• Improvements for freight and multimodal transportation	
Project Readiness Risk Assessment	20%



Additional points may be awarded for project applications that include contributions from non-public sources or that advance the geographic distribution objectives in Minnesota State Statute 174.12 Subd. 7(b).

Maximizing return on investment

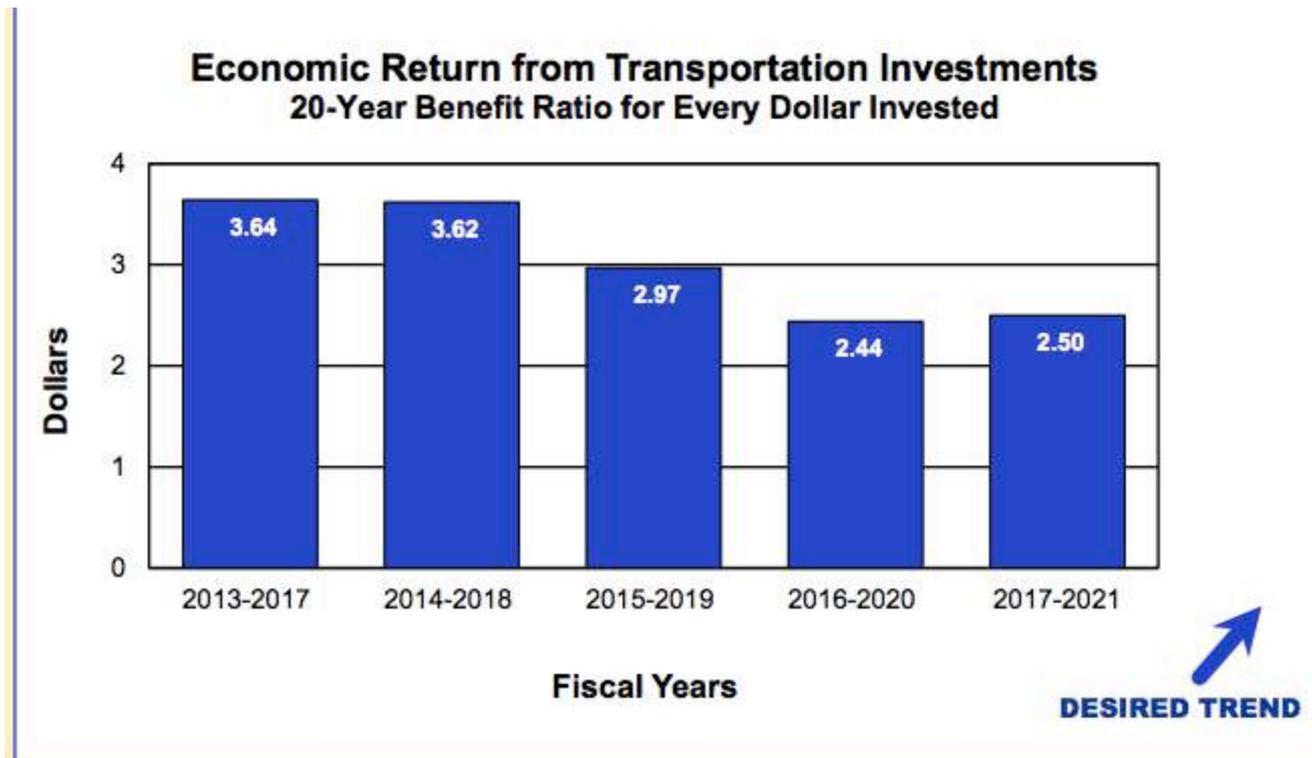


System Preservation	<ul style="list-style-type: none">• Projects should contribute to a state of good repair on the transportation system.
Mobility	<ul style="list-style-type: none">• Projects should provide modal options efficiently and effectively.
Cost Effectiveness	<ul style="list-style-type: none">• Projects should result in benefits commensurate with costs and should be aimed at maximizing the return on the public's investment.
Economic Impact	<ul style="list-style-type: none">• Projects should support strategic economic growth in the Commonwealth.
Safety	<ul style="list-style-type: none">• Projects should contribute to the safety and security of people and goods in transit.
Social Equity & Fairness	<ul style="list-style-type: none">• Projects should equitably distribute both benefits and burdens of investments among all communities.
Environmental & Health Effects	<ul style="list-style-type: none">• Projects should maximize the potential positive health and environmental aspects of the transportation system.
Policy Support	<ul style="list-style-type: none">• Projects should get credit if they support local or regional policies or plans; or state policies not addressed through the other criteria.

Maximizing return on investment



Economic impact analysis



Maximizing return on investment

New SGA tool will evaluate:

Upfront and long-term project costs + development subsidies

VS.

Revenues to public agency: property tax, user fees, etc.

Maximizing return on investment

Takeaways

1. Job creation is hard to implement; difficult to get agreement on reasonable job creation numbers per dollar spent
2. Comparing benefits and costs can be done several ways – as one measure or as an overall approach
3. Economic impact analysis doesn't help distinguish one project from another

Keeping the economy running

Keeping the Economy Running

State of Good Repair



TAKING CARE OF WHAT WE HAVE



Source: <http://www.dot.ga.gov/BS/Performance>



Congestion as an Economic Measure

- American Society of Civil Engineers 2017 infrastructure report card:
 - Overall: D+
 - Bridges: C+
 - Rail: B
 - Roads: D
 - Transit: D-



Warning: not a pure “state of repair” measure.

Keeping the Economy Running



Chart 5.1B.1: Average Annual Truck Turn Around Time per Unit (Box) at Seagirt Marine Terminals FY2012 - FY2016



Keeping the Economy Running



Maryland DOT Excellerator – Freight Measures

Table 10.3A.1 Freight Originating and Terminating in Maryland 2016

METHOD FOR MOVING FREIGHT	TOTAL VALUE (BILLIONS)	TOTAL TONNAGE (THOUSANDS)
Air*	\$13.4	141
Pipeline & Other**	\$72.5	39,488
Rail*	\$15.1	26,206
Truck*	\$318.1	214,317
Water***	\$49.9	31,834
All Freight	\$469.0	311,986

Keeping the Economy Running

Freight – North Carolina DOT (NCDOT)
2018-2027 State Transportation Improvement Program



Freight Volume: The number of trucks or equivalent vehicles that utilize the facility on a daily basis. Percentage of truck volume of average daily traffic converted to a number of trucks or equivalent.

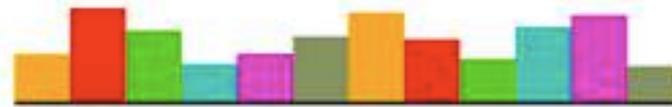
- 0 points for ≤ 500 trucks/equivalent per day
- 1 point for >500 and <1000 trucks/equivalent per day
- 2 points for ≥ 1000 trucks/equivalent per day

Keeping the Economy Running

What is access to opportunity or destination access?

An assessment of how well the transportation network and land use patterns within a community are enabling all members of the community to reach jobs and other resources and services, such as education, healthcare, healthy food, and recreation centers.

Keeping the Economy Running



**SMART
SCALE**

*Funding the Right
Transportation Projects
in Virginia*

Table 3.5 Accessibility Measures

ID	Measure Name	Measure Description	Measure Objective	Measure Weight
A.1	Access to Jobs	Change in average jobs accessibility	Measure assesses the average change in access to employment opportunities as a result of project implementation based on the GIS accessibility tool.	60%
A.2	Access to Jobs for Disadvantaged Populations	Change in average jobs accessibility for disadvantaged populations	Measure assesses the average change in access to employment opportunities as a result of project implementation based on the GIS accessibility tool.	20%
A.3	Access to Multimodal Choices	Assessment of the project support for connections between modes, and promotion of multiple transportation choices	Measure assigns more points for projects that enhance interconnections among modes, provide accessible and reliable transportation for all users, encourage travel demand management, and potential to support emergency mobility.	20%

Keeping the Economy Running

Takeaways

1. State of repair often measured elsewhere
2. Measures of access to jobs and non-work destinations rise to the top
3. Freight measures are useful, though often difficult to quantify without being duplicative of other measures.

Adding economic value

Adding economic value



Maryland DOT Excellerator – Change in Productivity due to Improvements in the Transportation Network

Transportation Economic Impact model will assess:

1. Travel cost savings;
2. Reliability benefits for industry;
3. Delivery logistics and supply chain benefits; and
4. Agglomeration effects on access to specialized skills and services.

Adding economic value



Table 3.8 Transportation Efficient Land Use Measure

ID	Measure Name	Measure Description	Measure Objective	Measure Weight
L.1	Transportation Efficient Land Use	Amount of population and employment located in areas with high non-work accessibility	This measure determines the degree to which the project supports population and employment that on averages has a reduced impact on the transportation network	70%
L2	Increase in Transportation Efficient Land Use	Increase in amount of population and employment located in areas with high non-work accessibility between present day and the horizon year of 2025	This measure determines the degree to which the project supports population and employment that on averages has a reduced impact on the transportation network	30%

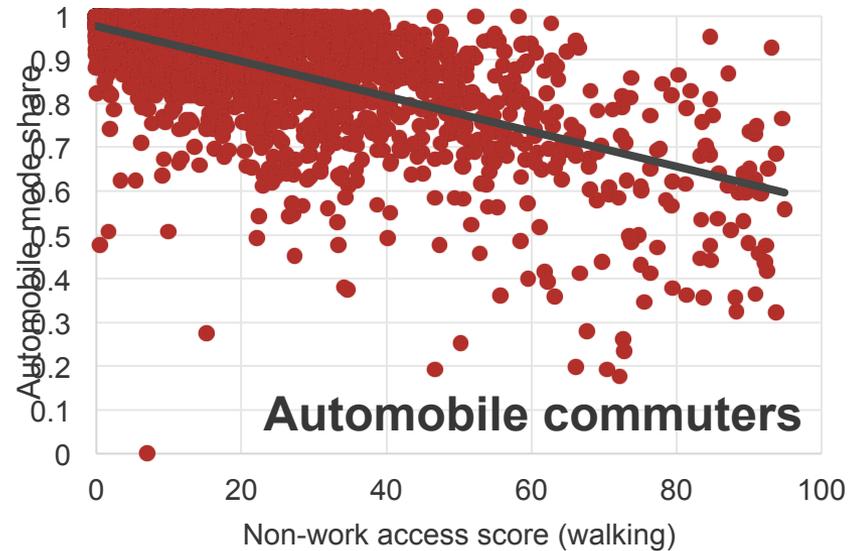
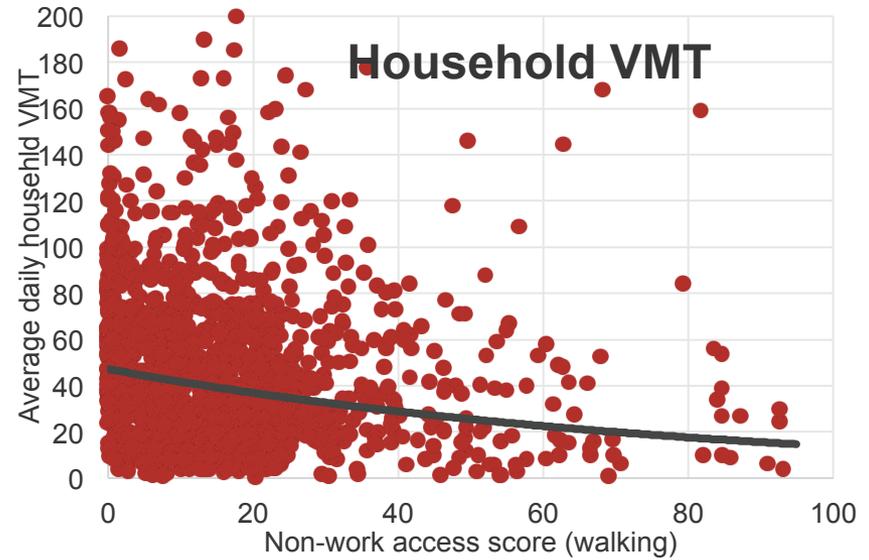
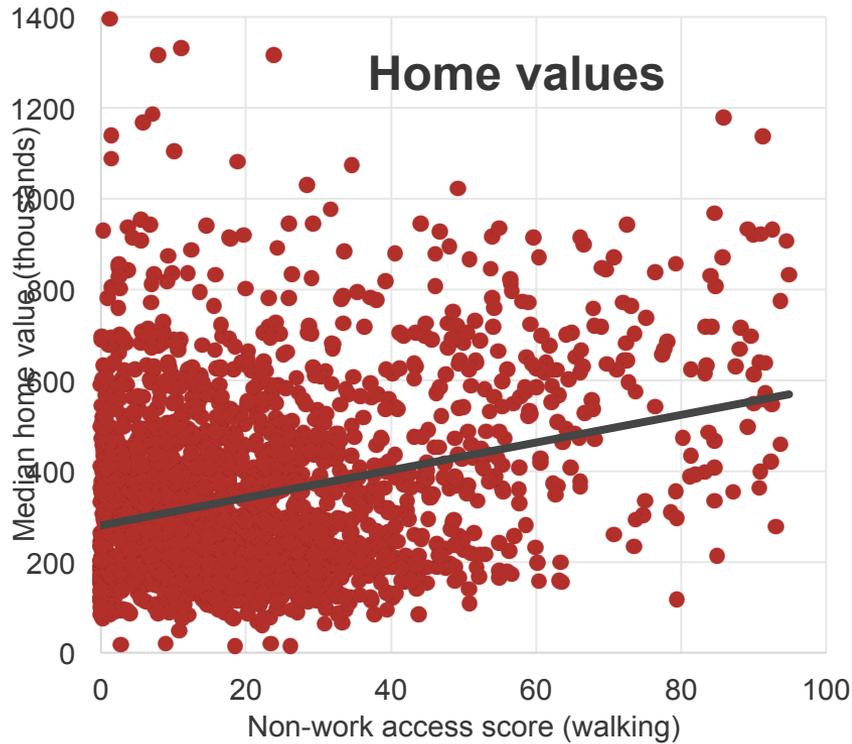
Adding economic value



Table 3.6 Transportation Efficient Land Use Measure

ID	Measure Name	Measure Description	Measure Objective	Measure Weight
L.1	Transportation Efficient Land Use	Project support for mixed-use development with multimodal choices, in-fill development, and corridor access management policies	This measure determines the degree to which the project and adjacent future land use will help achieve goals for transportation efficient land use.	100%

Non-work accessibility



Adding economic value

Takeaways

1. The impacts of transportation on these factors tend to be very hard to isolate
2. Access to non-work essentials is a good proxy for many of these benefits

Other critical policy considerations

Equity

What is equity? The term transportation equity relates to how transportation planners can provide access to affordable and reliable transportation to meet the needs of all community members, particularly traditionally underserved populations.

Is our transportation system providing economic benefits equitably?

Other critical policy questions and considerations

1. What is your agency's role in driving versus reacting to economic development?
2. When, if ever, should your agency subsidize private development by providing infrastructure?
3. Should transportation investments be directed toward the greatest economic opportunities or the greatest economic needs?



State
Smart Transportation
Initiative

Accessibility

A performance measure for guiding transit and land use decisions

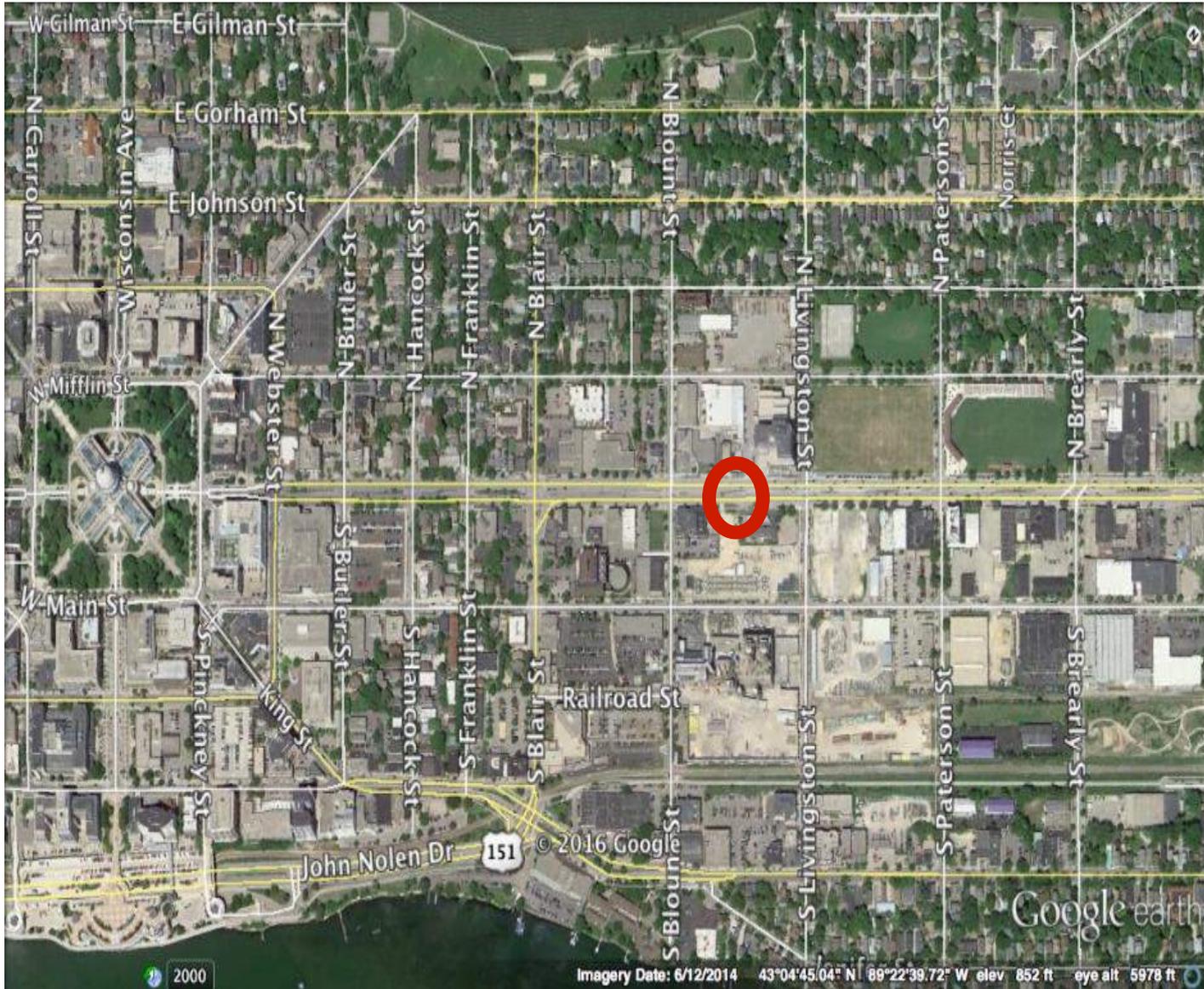
Nov. 14, 2017

1

What is accessibility?

And why does it matter?

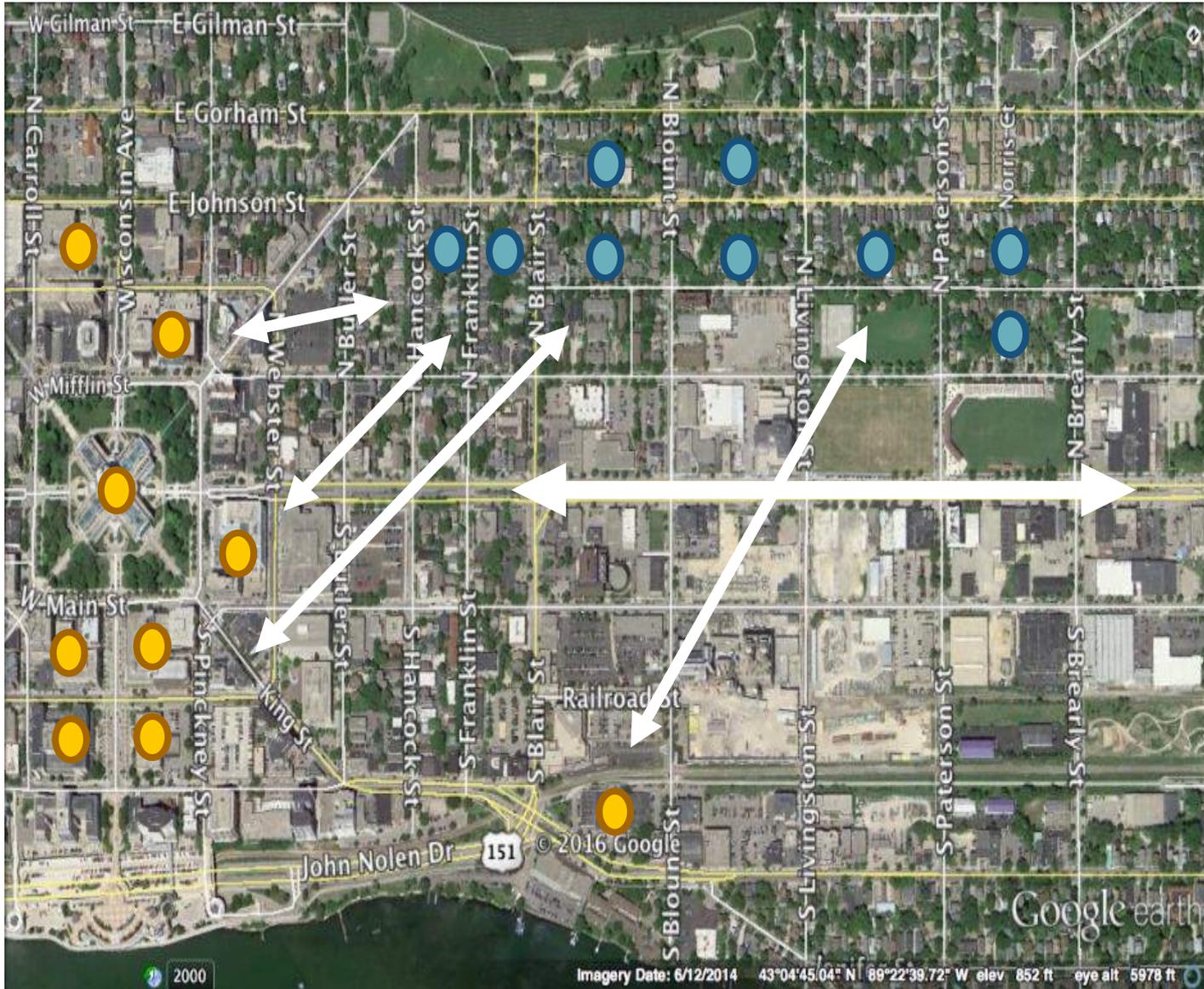
Why measure accessibility?



Mobility measures

- Travel speed
- Level of service
- Vehicle throughput
- Person throughput

Why measure accessibility?

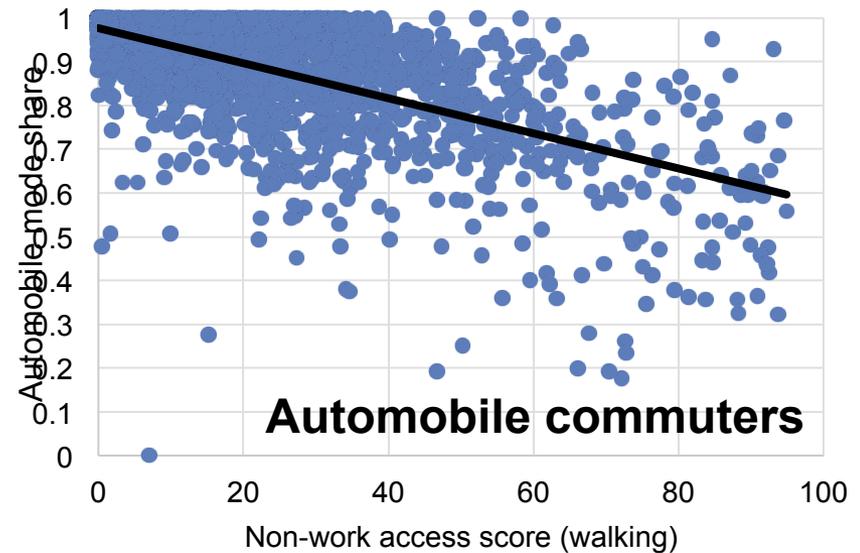
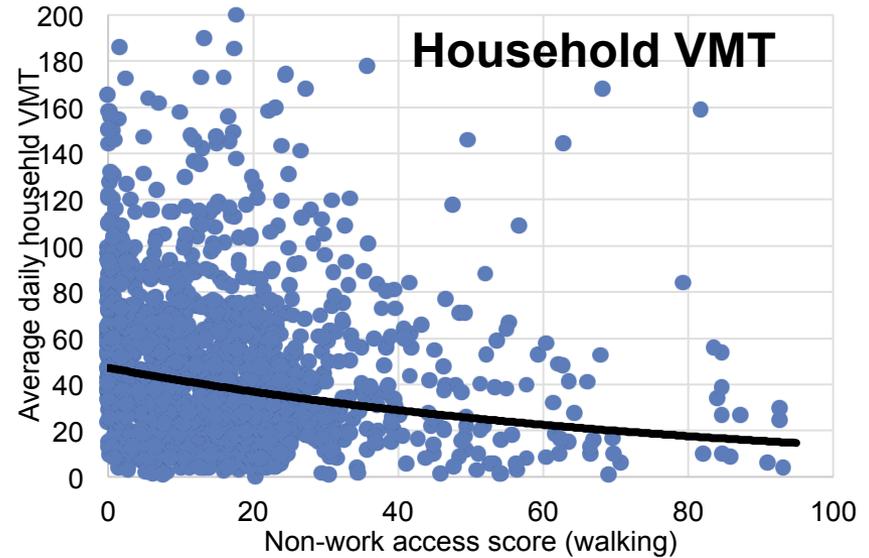
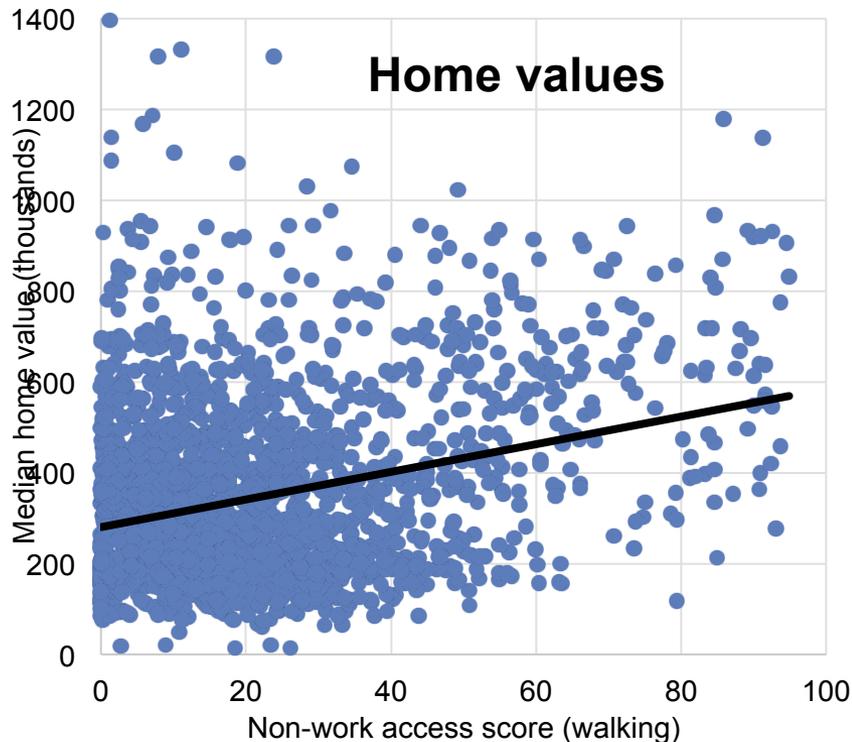


Accessibility measures

- Origins
- Destinations
- Ability to travel between them

Related outcomes

Accessibility is associated with lower travel demand and greater economic value



Applying access scores

Scan
conditions

Diagnose
problems

- Predict mode share
- Estimate transit ridership
- Estimate travel demand / VMT
- Estimate transportation costs

Track
performance

Predict
outcomes

Two measures

- Access to jobs
 - 20% of trips; 30% of VMT
 - Reported as “number of jobs”
- Non-work access
 - Groceries, parks, schools, restaurants, and other non-work destinations
 - 80% of trips; 70% of VMT
 - Reported as a score (0-100)

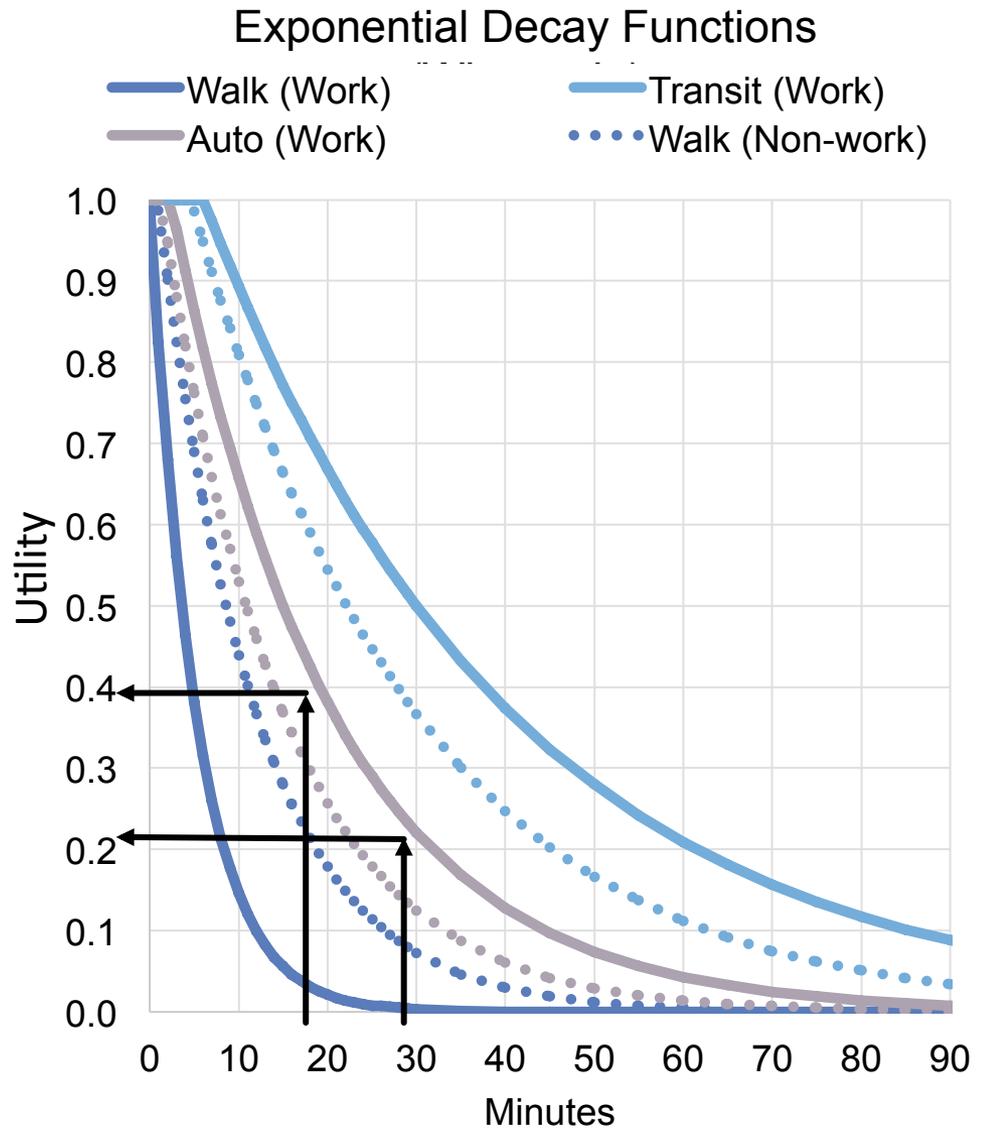
What’s needed?

- Transportation networks
 - Roads, bike paths, sidewalks, vehicle speeds, and transit routes and schedules
- Land uses
 - Jobs and non-work destinations
- Calculation methods

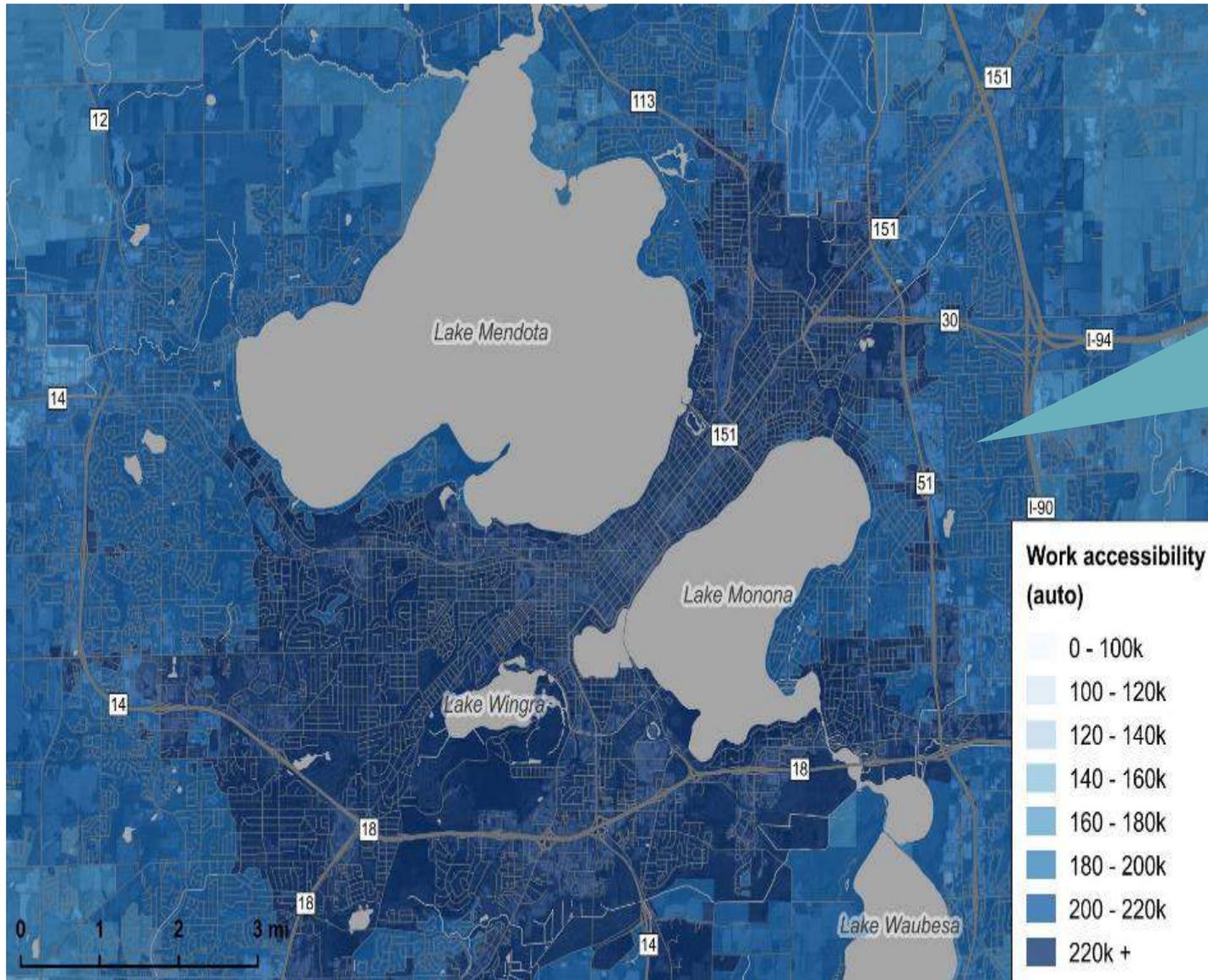
How long am I willing to travel?

Decay-weighted measures

- Opportunities that take less time to reach are more valuable
- Used in Sugar Access calculations



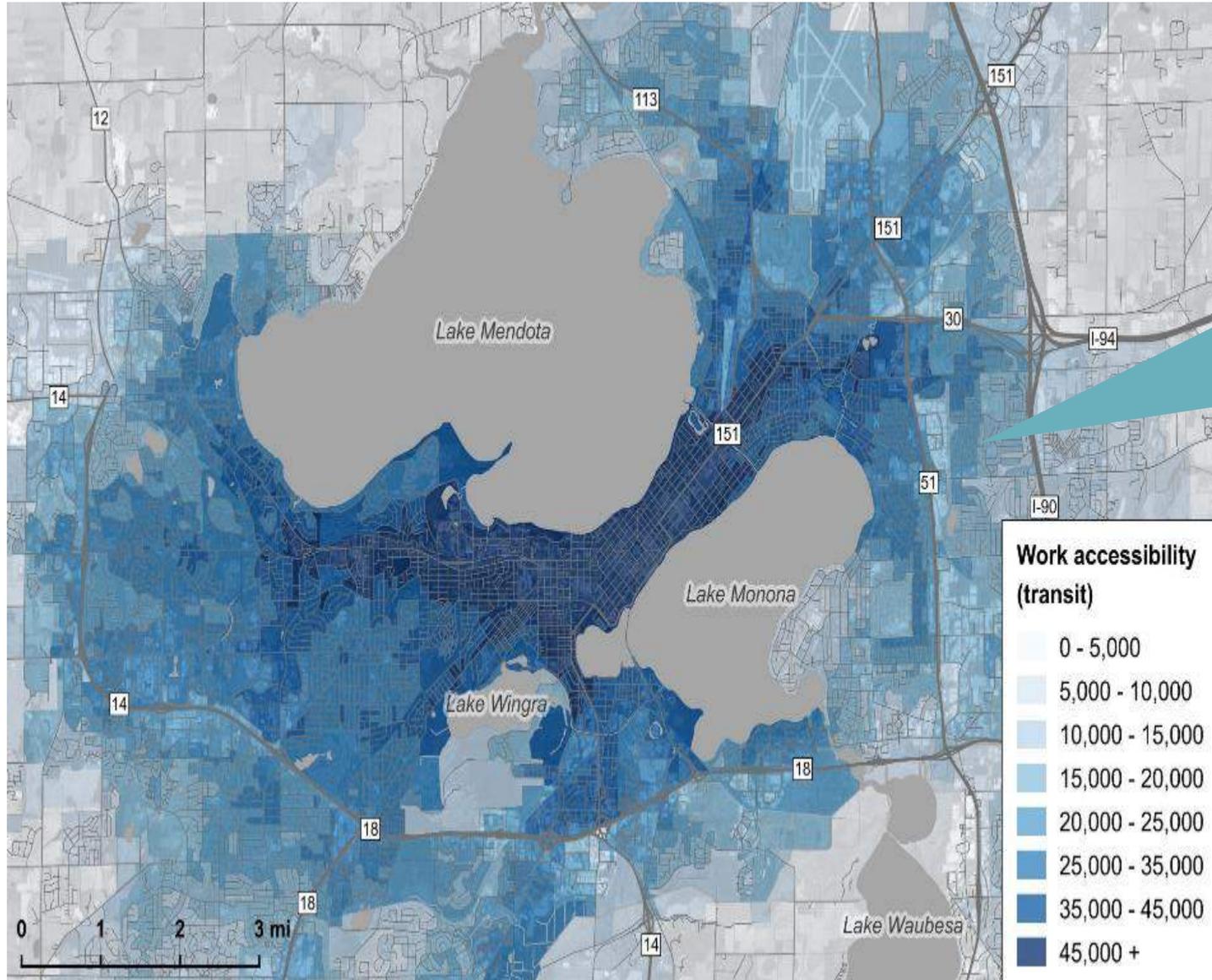
Access to jobs by automobile (morning)



Jobs accessible

< 15 min	29,000
< 30 min	293,000
< 45 min	308,000
< 60 min	308,000
Final score	212,000

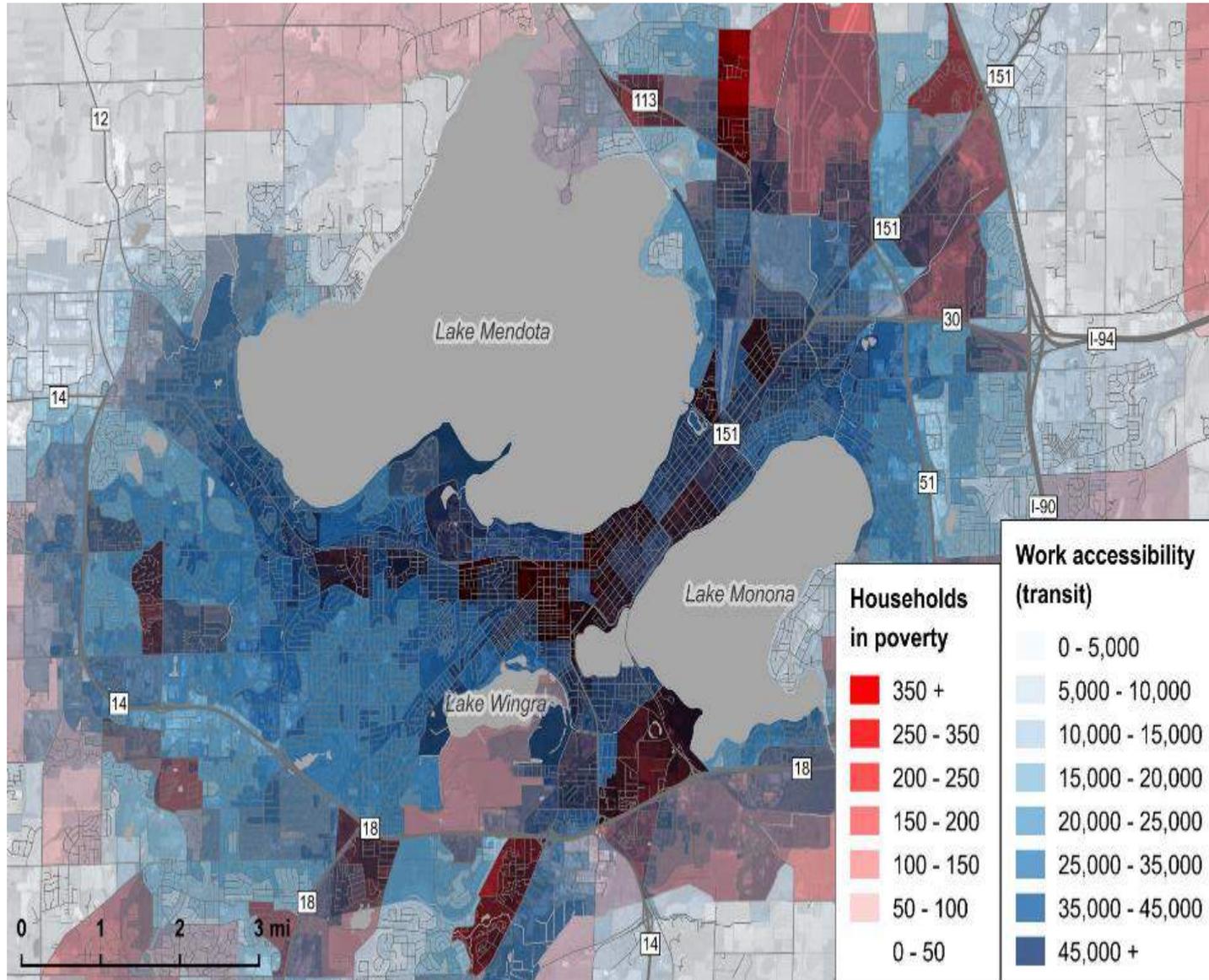
Access to jobs by transit (morning)



Jobs accessible

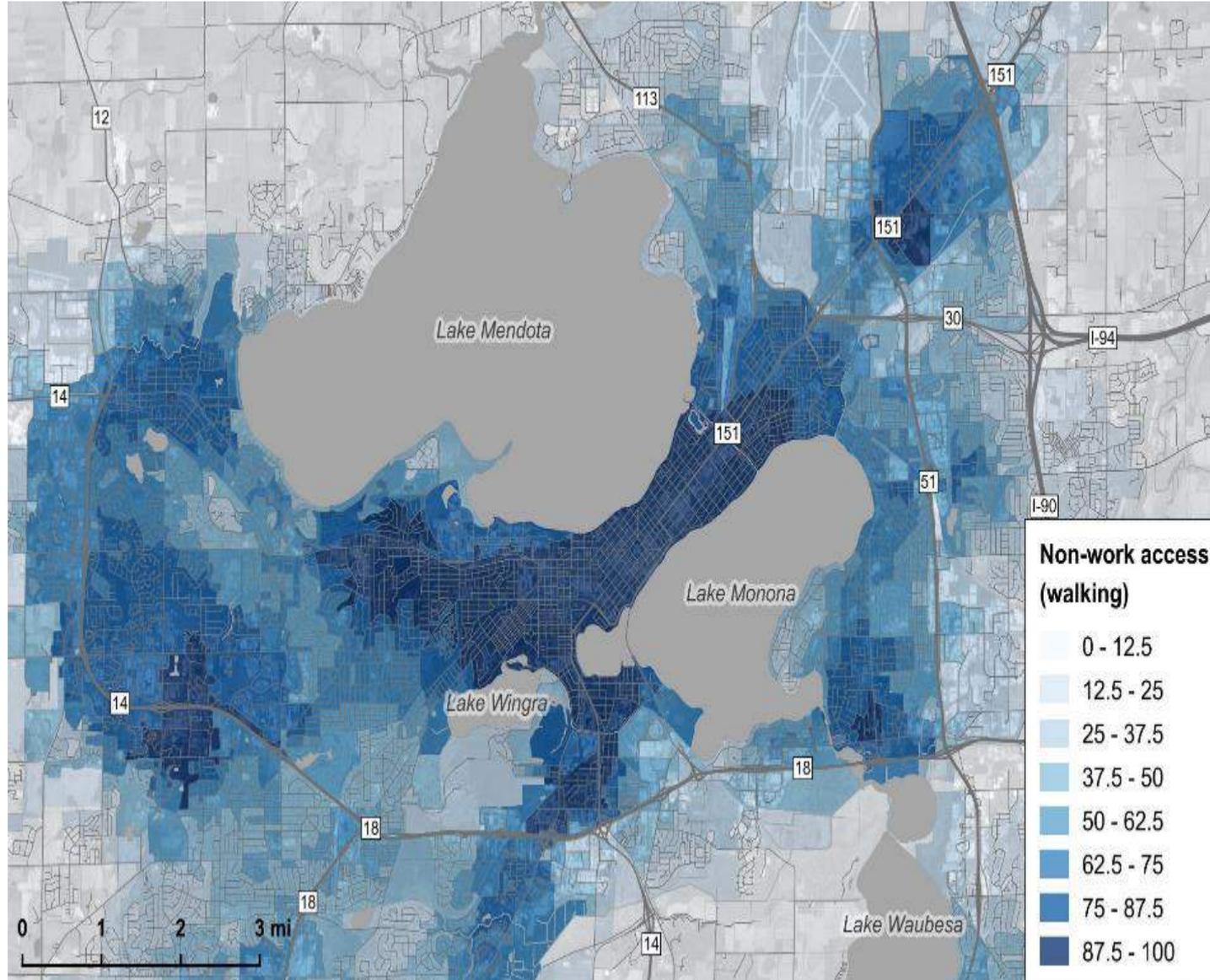
< 15 min	250
< 30 min	24,000
< 45 min	33,000
< 60 min	122,000
Final score	18,000

Access to jobs by transit & poverty



- Scan for equity issues
- Set policy goals
 - Percent of households with minimum level of access
- Evaluate proposals
 - Transit improvements
 - Affordable housing sites
- Track progress

Non-work access



- Access to bins of destinations
- Access to particular destinations
 - Grocery stores (food deserts)

Non-work access score in development in Virginia.

Non-work access score (proposed)

Category	Points	Definition
Bank	0.74 each (up to 15 occurrences)	Bank, ATM
Education	5.6 each (up to 2 occurrences)	School
Entertainment	5.6 each (up to 2 occurrences)	Cinema, Performing Arts, Museum, Nightlife*, Sports Complex, Convention/Exhibition Center, Sports Center, Animal Park
Food & Drink	0.25 each (up to 45 occurrences)	Restaurants, Coffee Shop, Winery, Bar or Pub*
Grocery	3.7 each (up to 3 occurrences)	Grocery
Healthcare	3.7 each (up to 3 occurrences)	Hospital, Medical Service*, Pharmacy
Public Services	3.7 each (up to 3 occurrences)	Library, Post Office, Community Center, City Hall, Court House, Police Station
Recreation	3.7 each (up to 3 occurrences)	Golf Course, Ice Skating Rink, Campground, Park/Recreation Area
Shopping	0.34 each (up to 33 occurrences)	Shopping, Convenience Store, Clothing Store, Department Store, Specialty Store, Home Improvement & Hardware Store, Office Supply & Service Store, Bookstore, Home Specialty Store, Sporting Goods Store, Consumer Electronic Store
Total points	100	<i>* Incomplete data</i>

2

Application to projects

Employment accessibility

Non-work accessibility



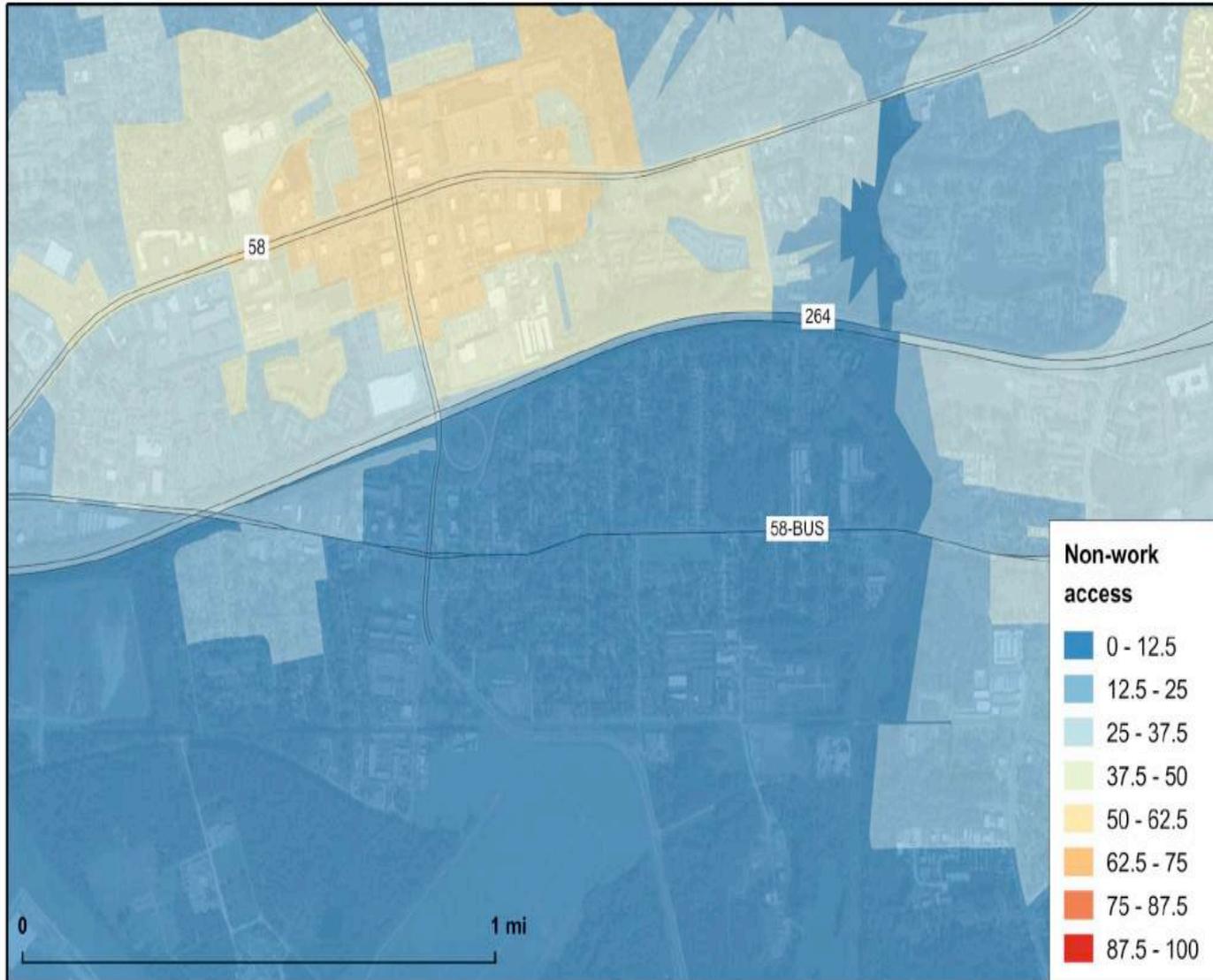
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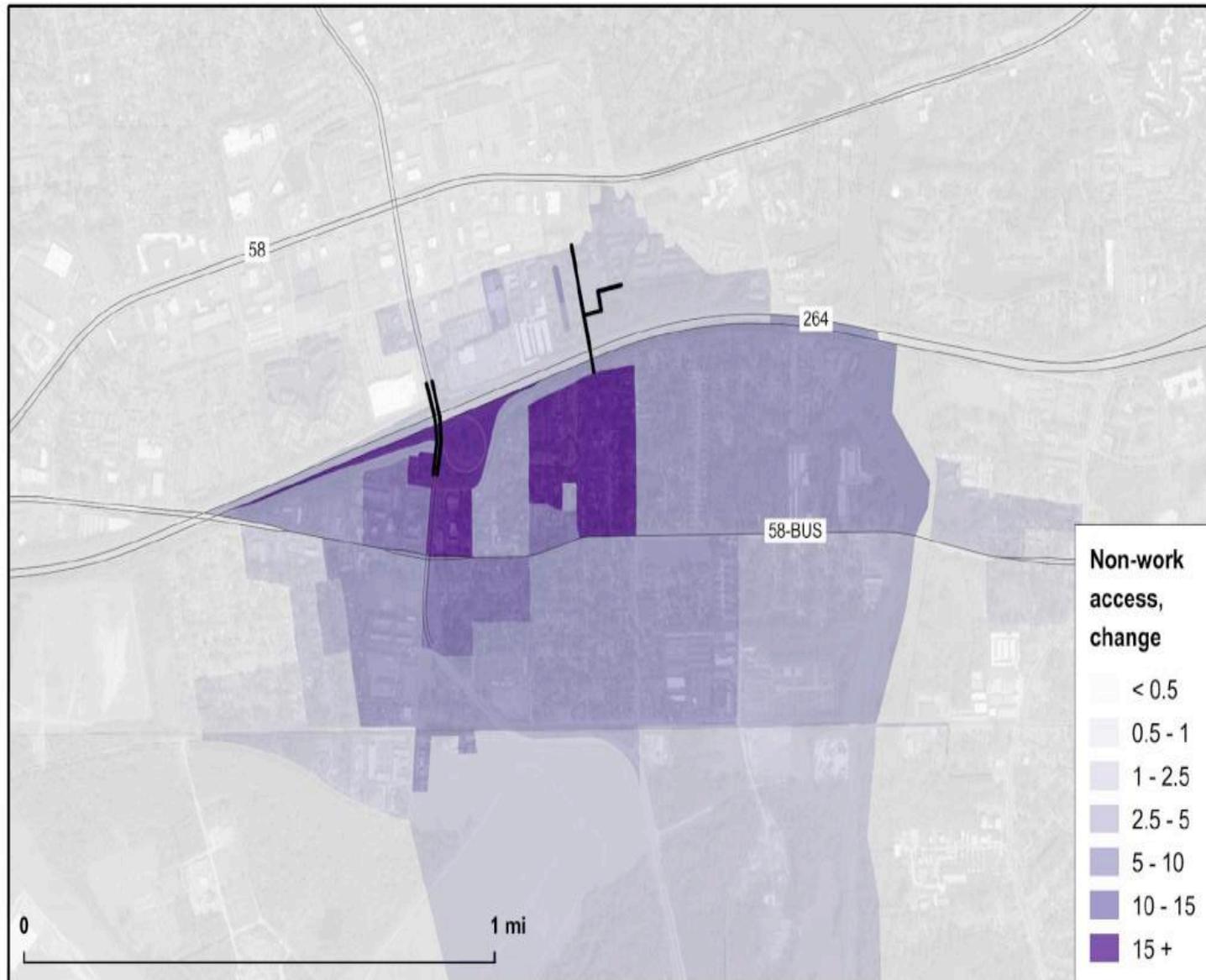


SMART SCALE is about investing limited tax dollars in the right projects that meet the most critical transportation needs in Virginia.

Virginia Beach barrier to non-work destinations



Virginia Beach crossings added

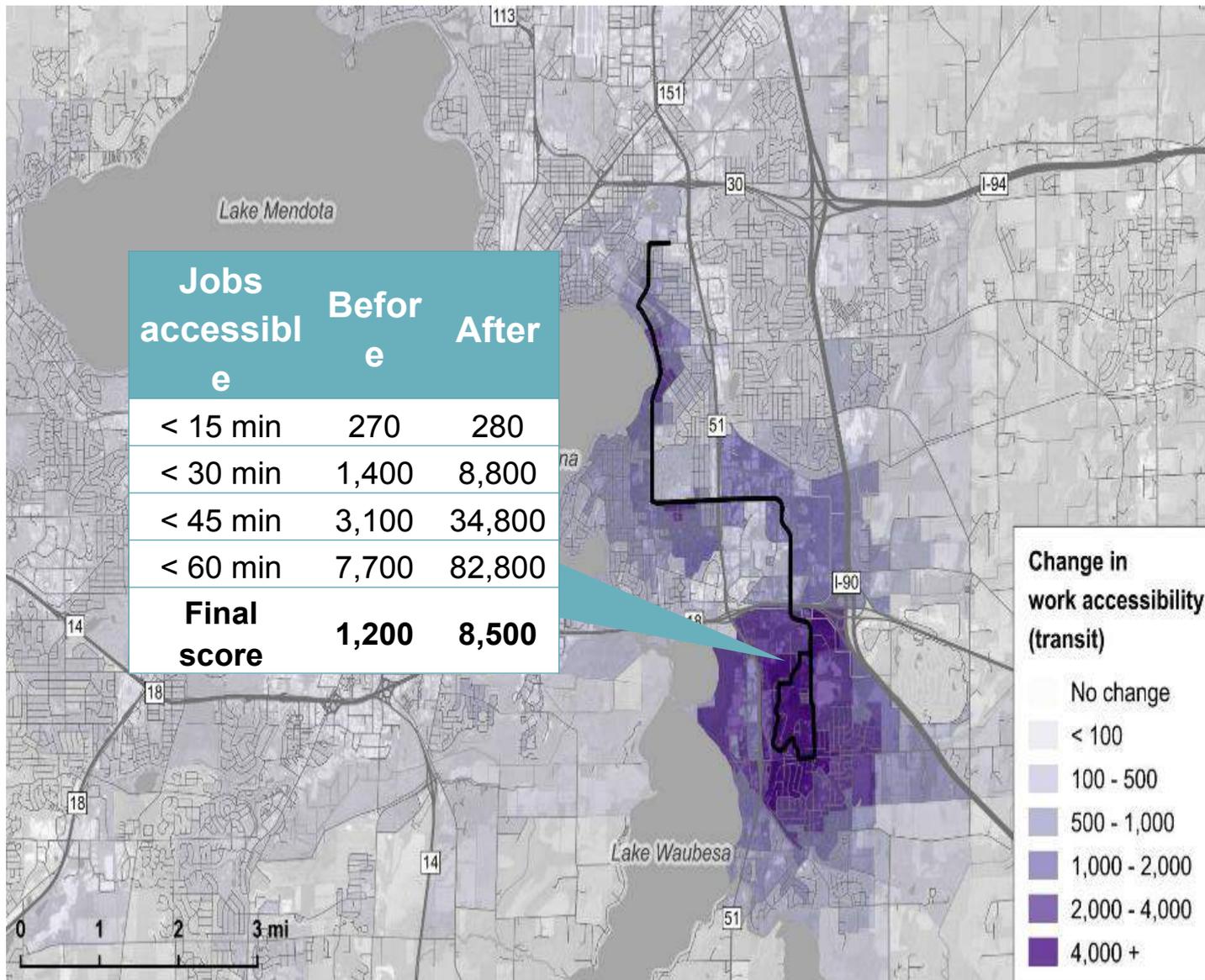


Virginia Beach accessibility change

Pedestrian non-work access				Weight (population)	Weighted change
Census blocks with greatest change	Before	After	Change		
	6	32	26	0	0
	6	31	25	0	0
	7	31	24	0	0
	7	29	22	0	0
	8	29	22	0	0
	9	25	16	0	0
	9	25	16	12	192
	5	20	16	203	3,191
	6	21	15	487	7,378
	10	24	14	4	55
	Total				706
Total for entire project*				67,438	33,498
Average impact of entire project*				0.497	

**within three miles of the project area*

Madison transit project evaluation



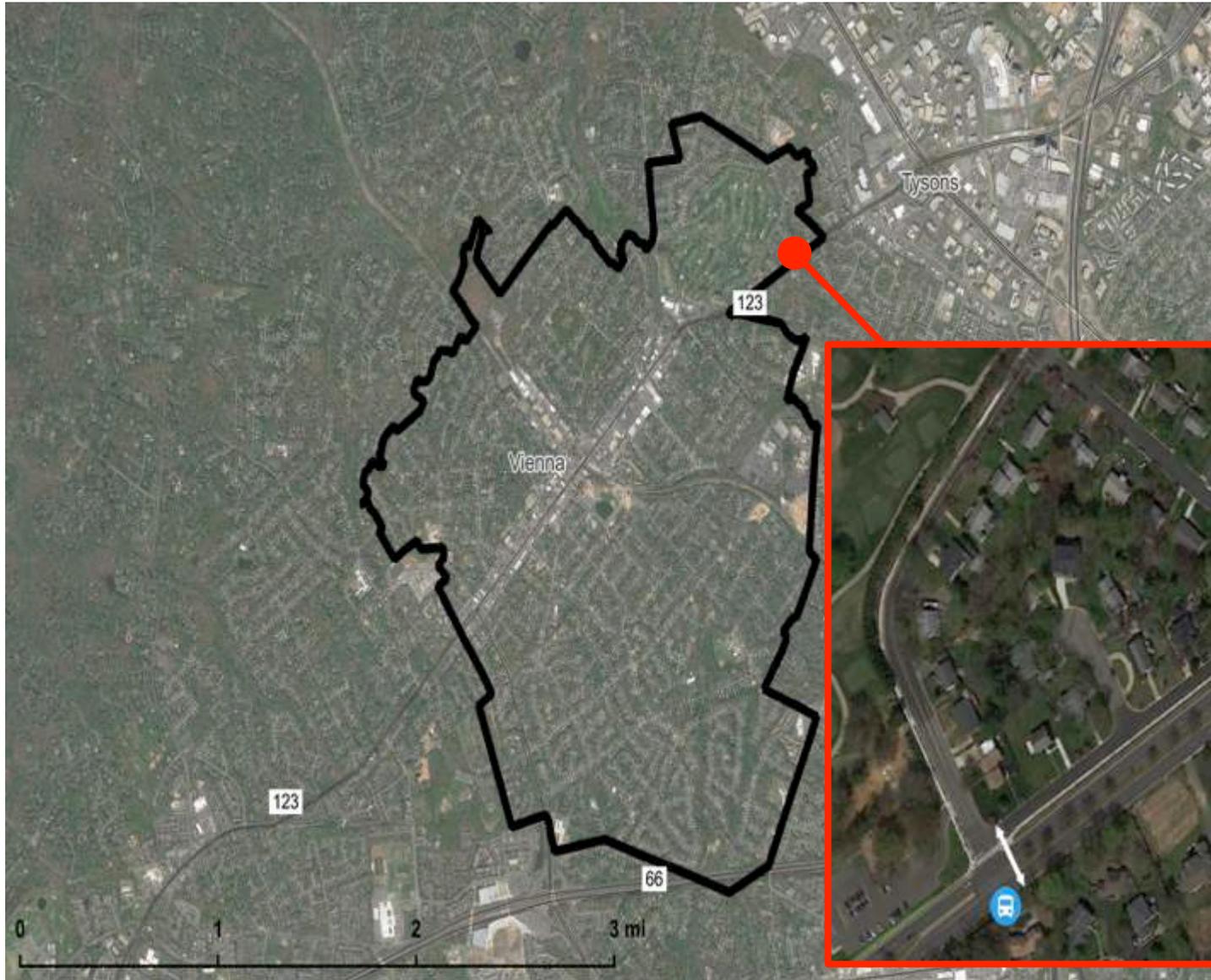
Total impact

- 1.03 million household-jobs

Average impact

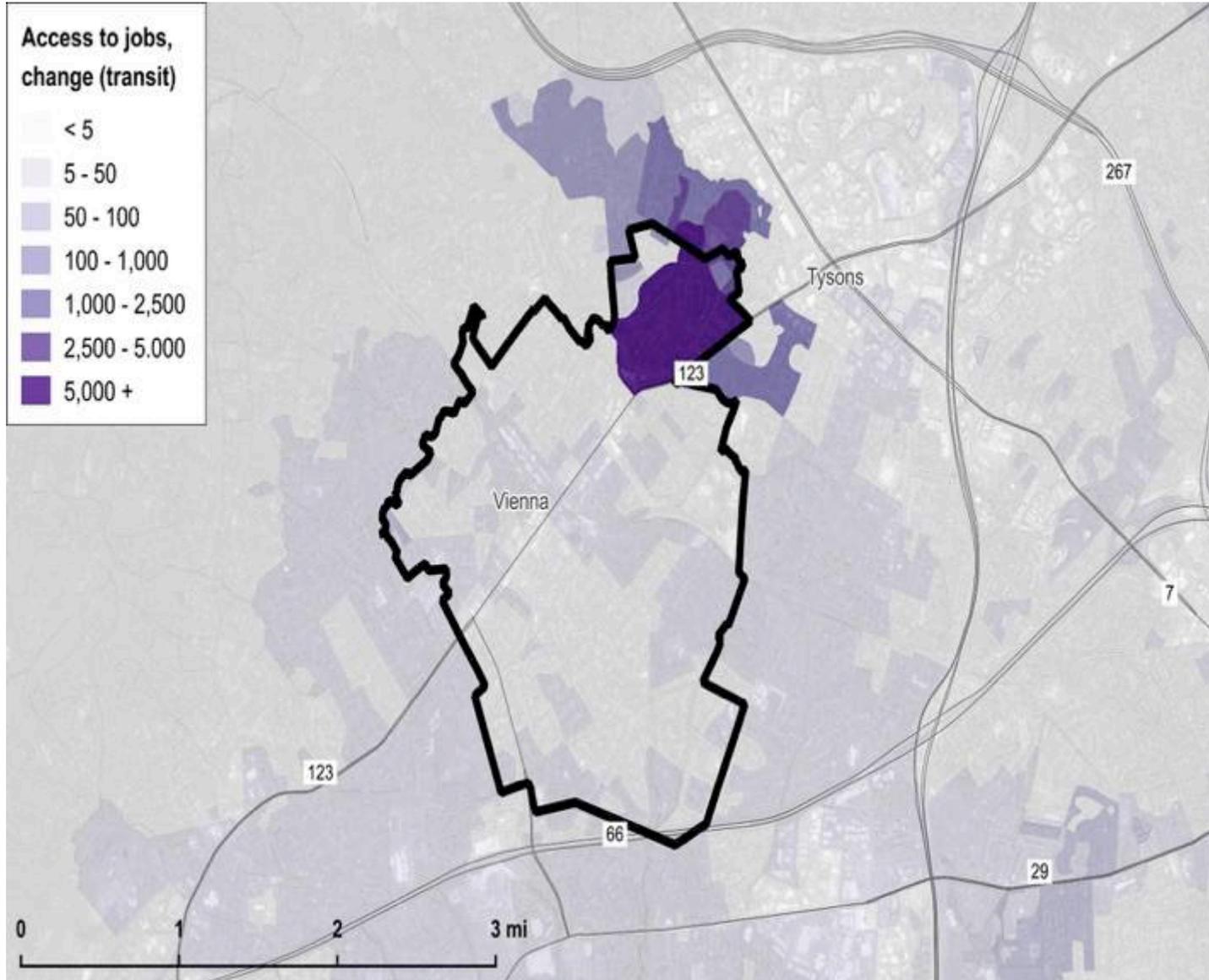
- 5 jobs
- Across 200,000 households

Vienna transit accessibility analysis



- New crossings connect neighborhoods to bus

Access to jobs by transit, change



Average impact

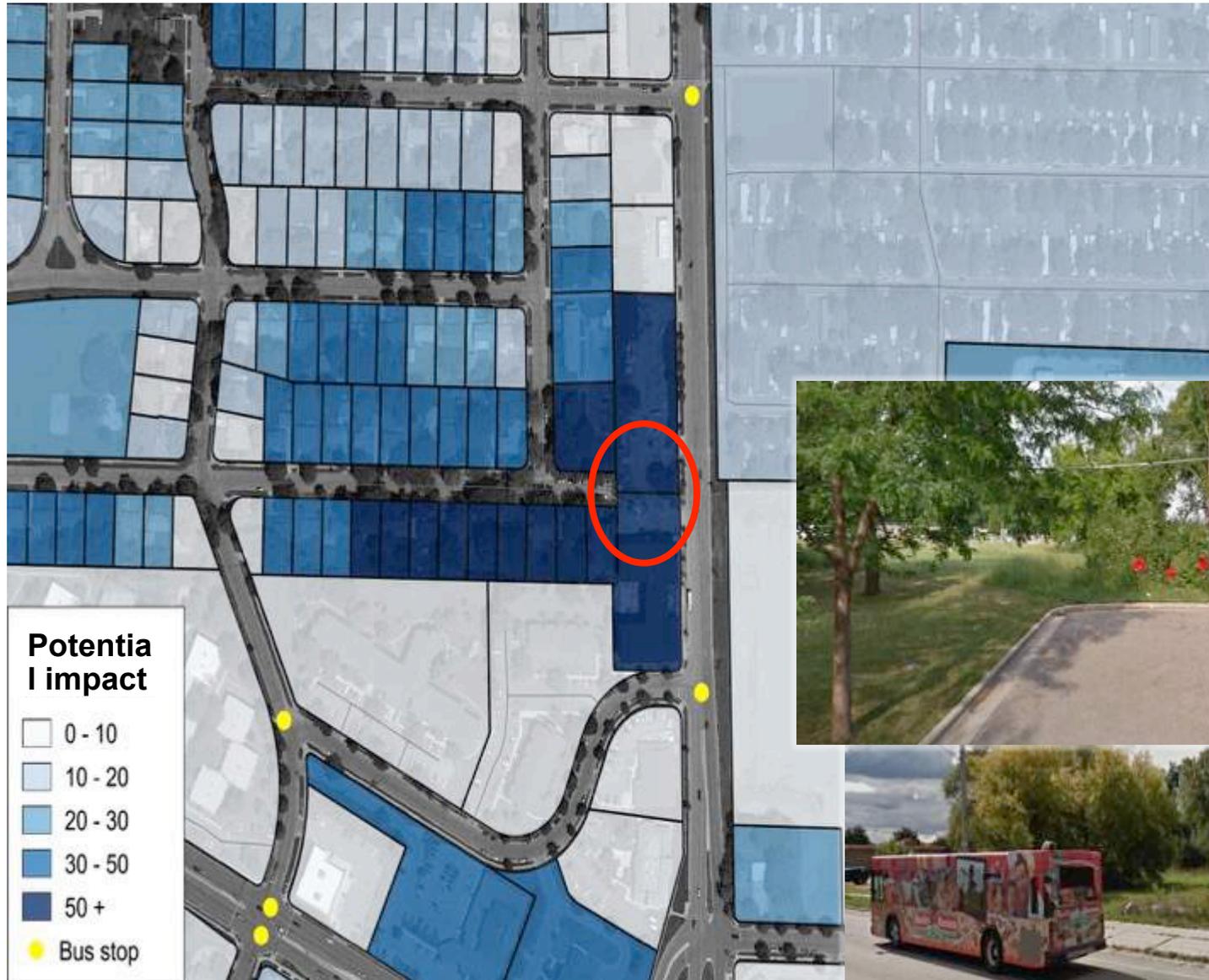
- 37 jobs
- Across more than 175,000 households

Total impact

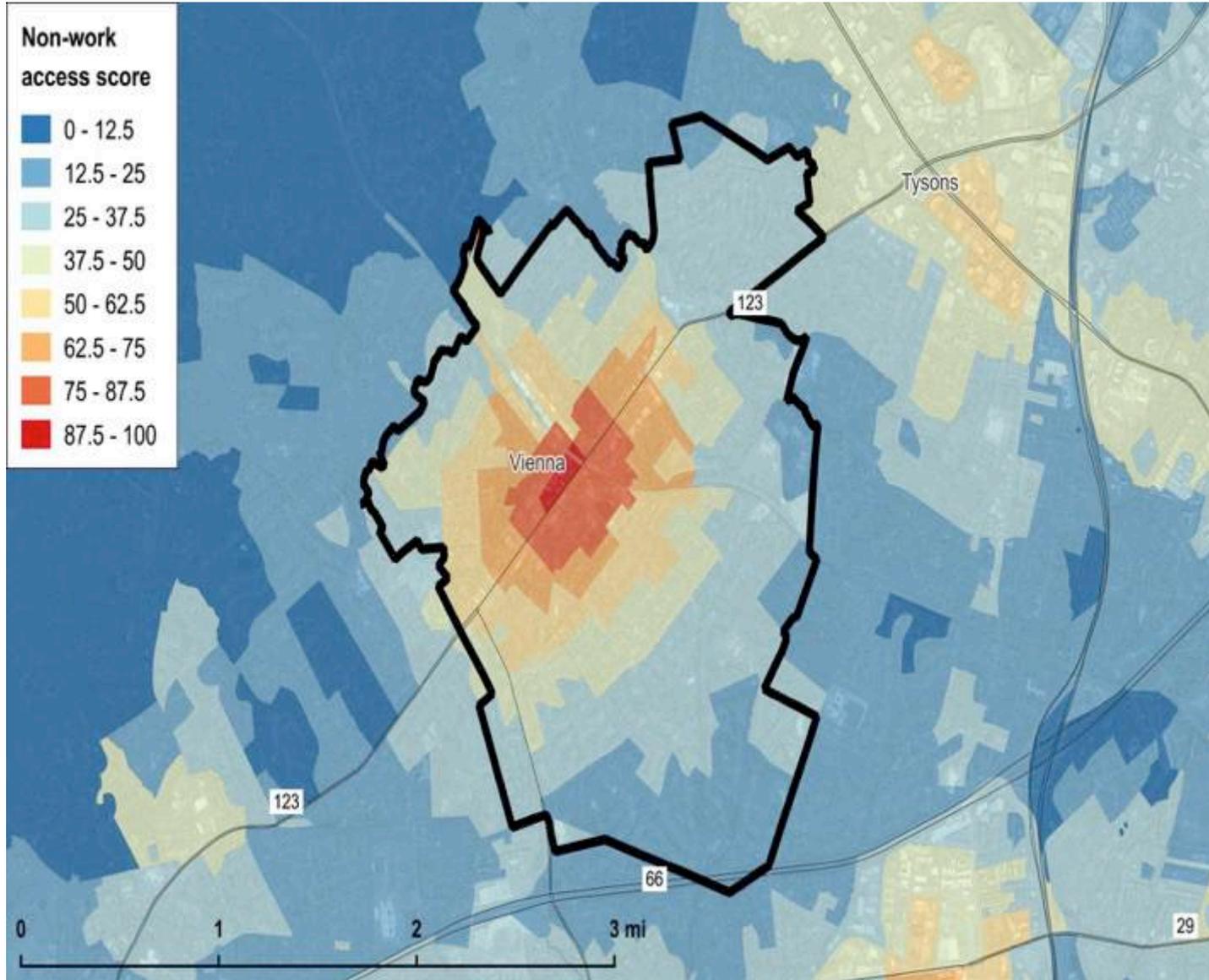
- 6.5 million household-jobs

Madison transit connectivity study

- Packers Ave north of Northport Dr

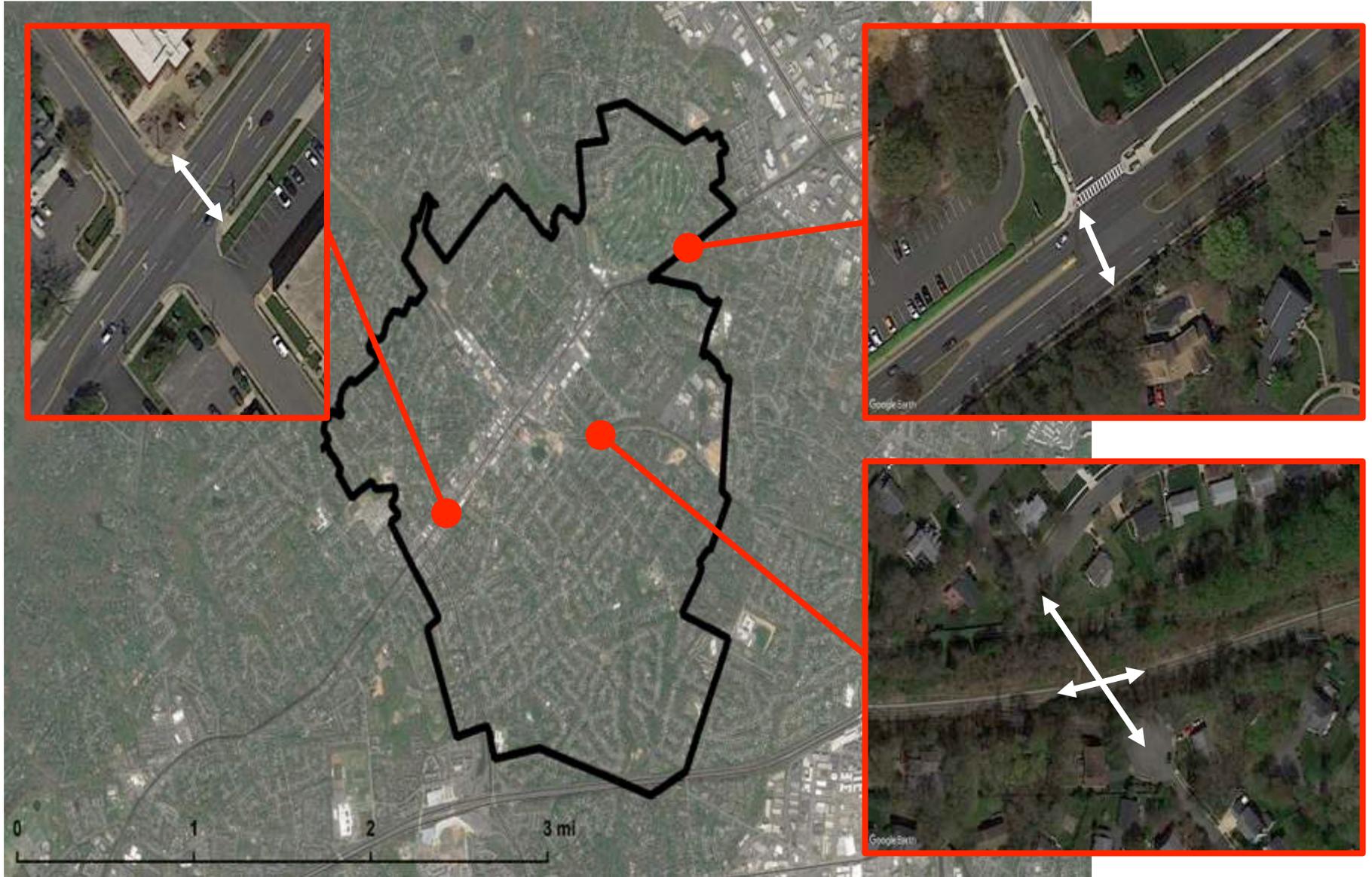


Non-work access in Vienna

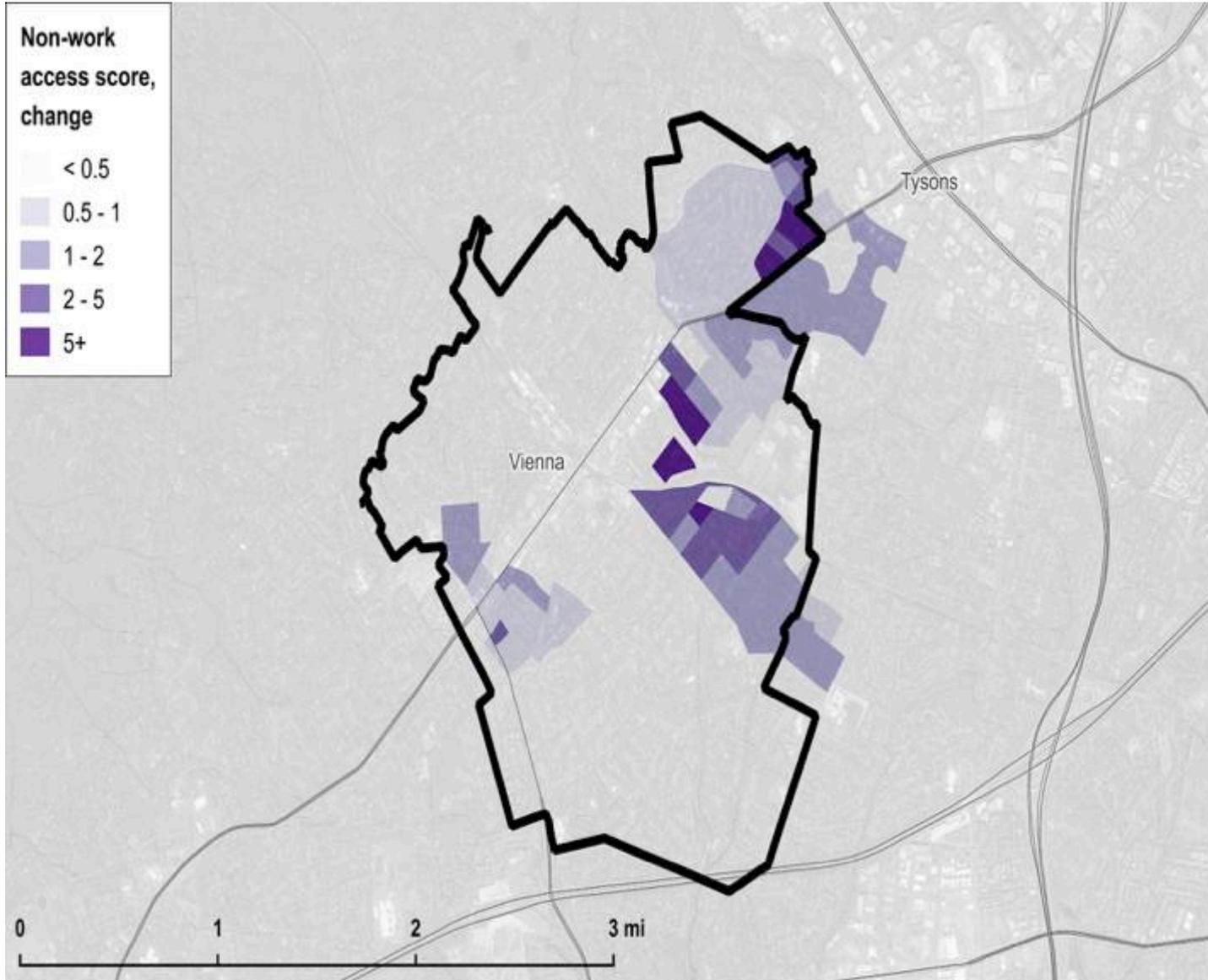


- Variety of destinations
- Quality and connectivity of the pedestrian network

Spot improvements



Non-work access, change

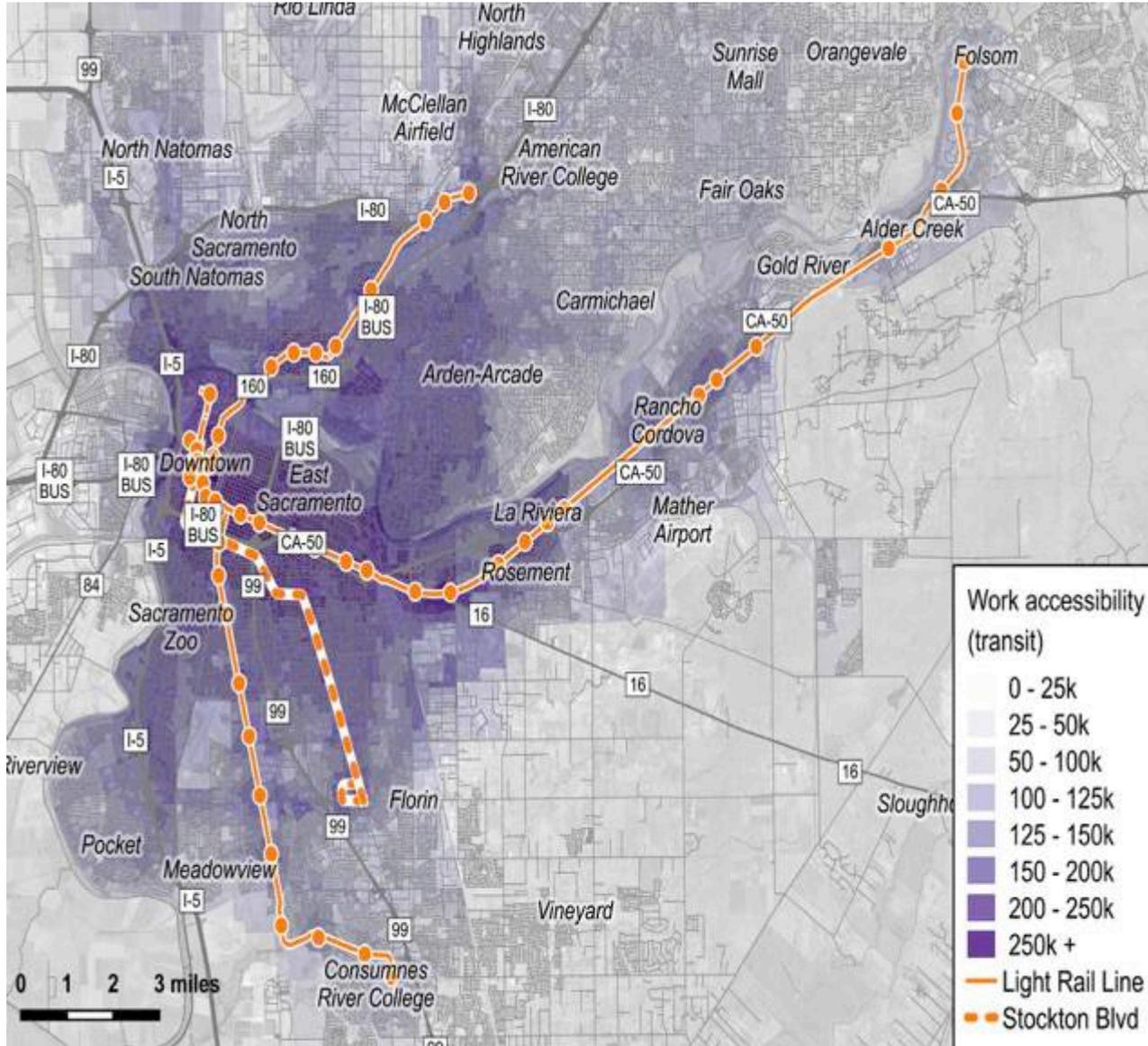


- More than 1,000 households earn at least one point

Total impact

- 4,165 points

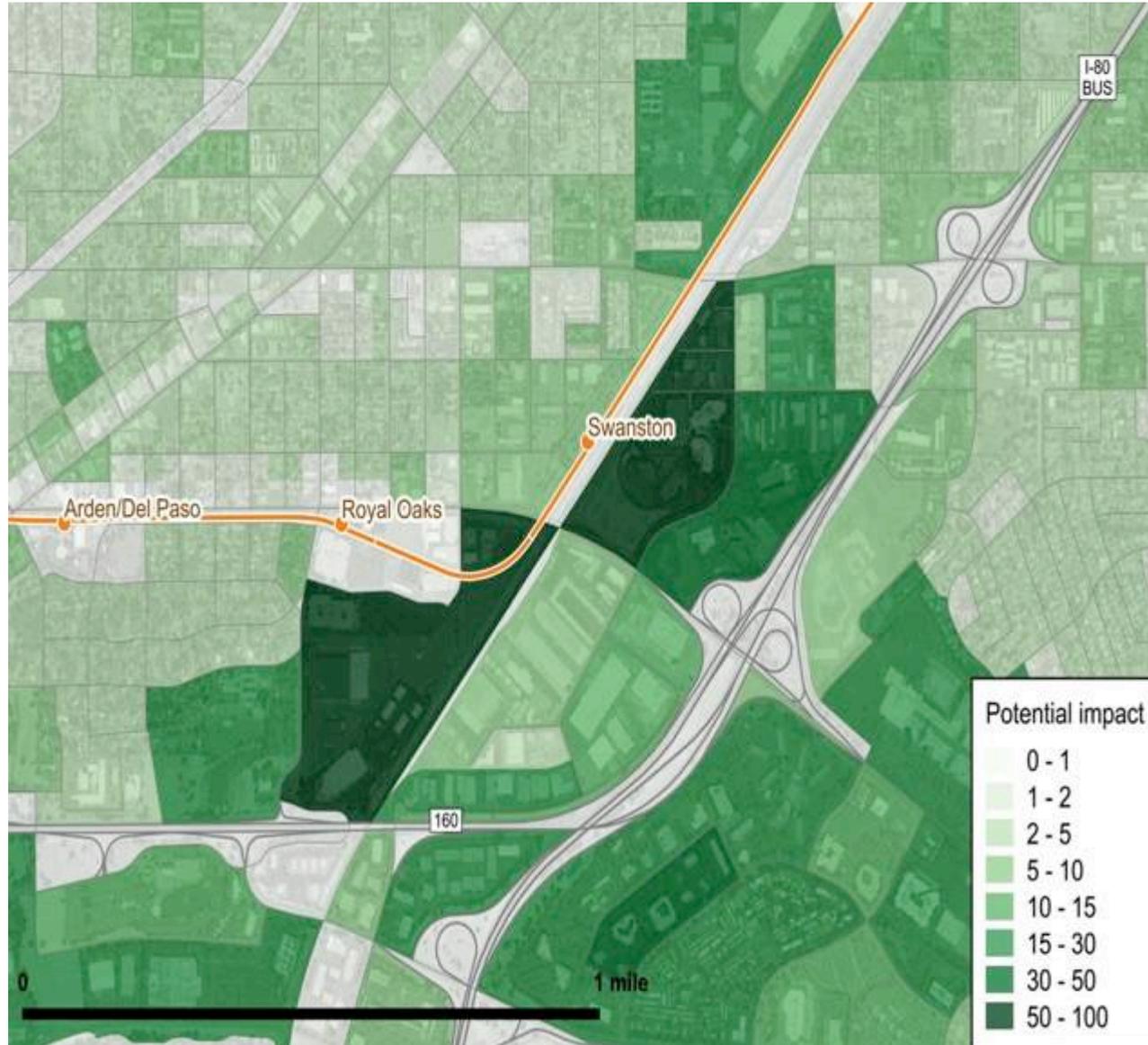
Sacramento LRT optimization



- Jobs reachable by transit (and walking) during AM
- Decay weighted

Potential impact

- Large numbers of households and jobs



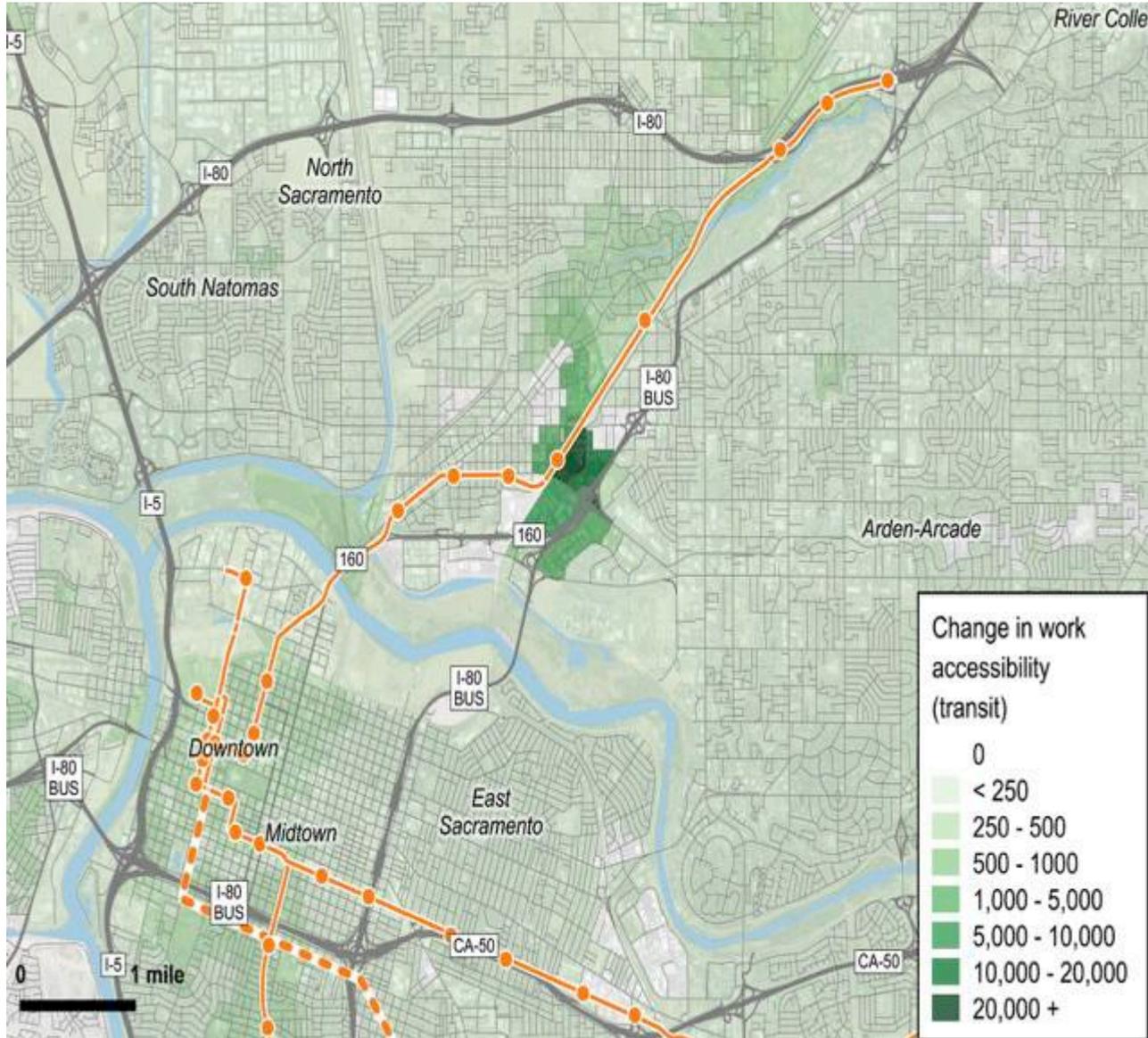
Station area improvements



Transit Village Specific Plan (2007)



Transit access improvements (bridge + freeway crossing)



Total impact

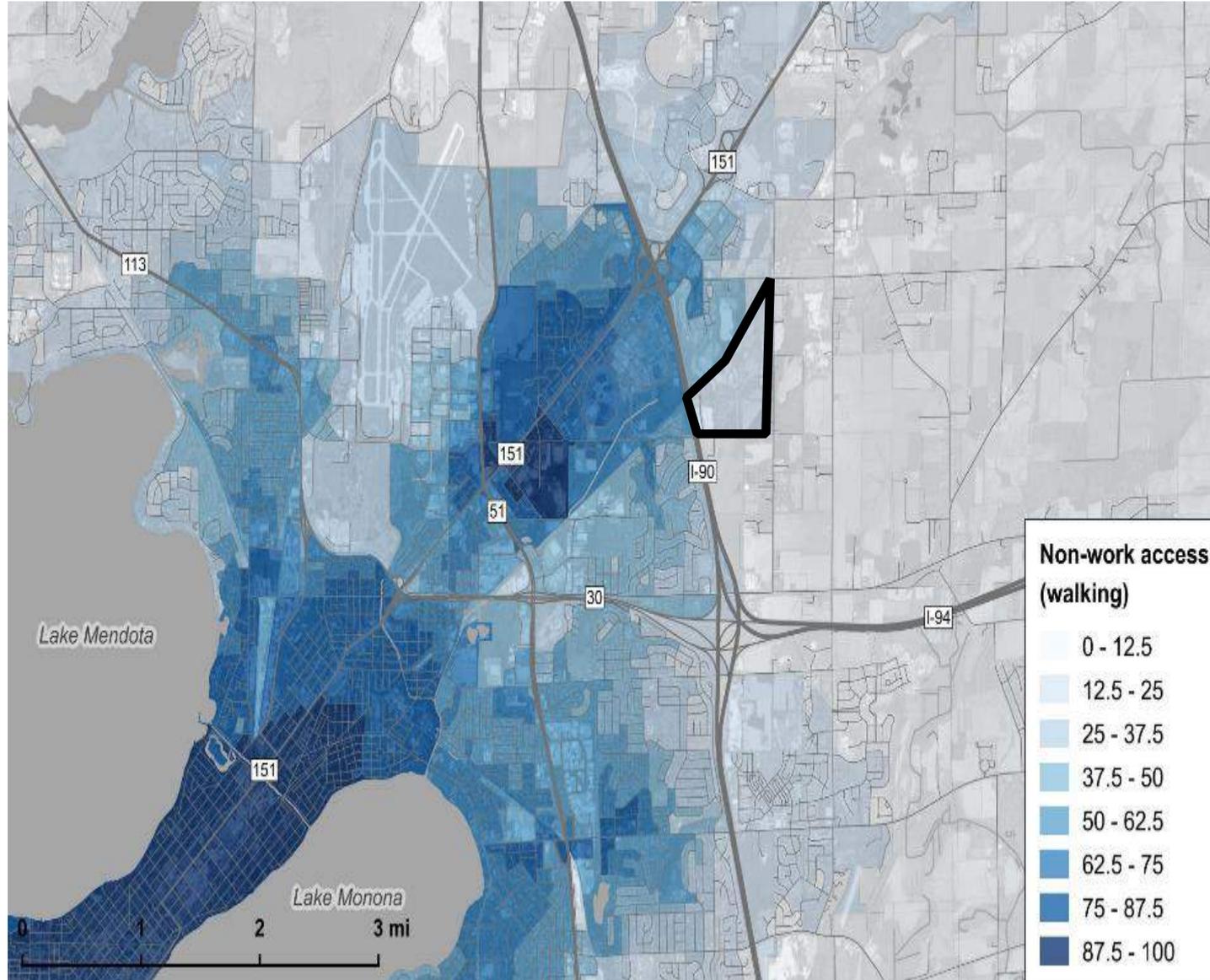
- 29 million household-jobs

Average

- Before: 85,180 jobs
- After: 85,230 jobs
- **Change: 50 jobs**

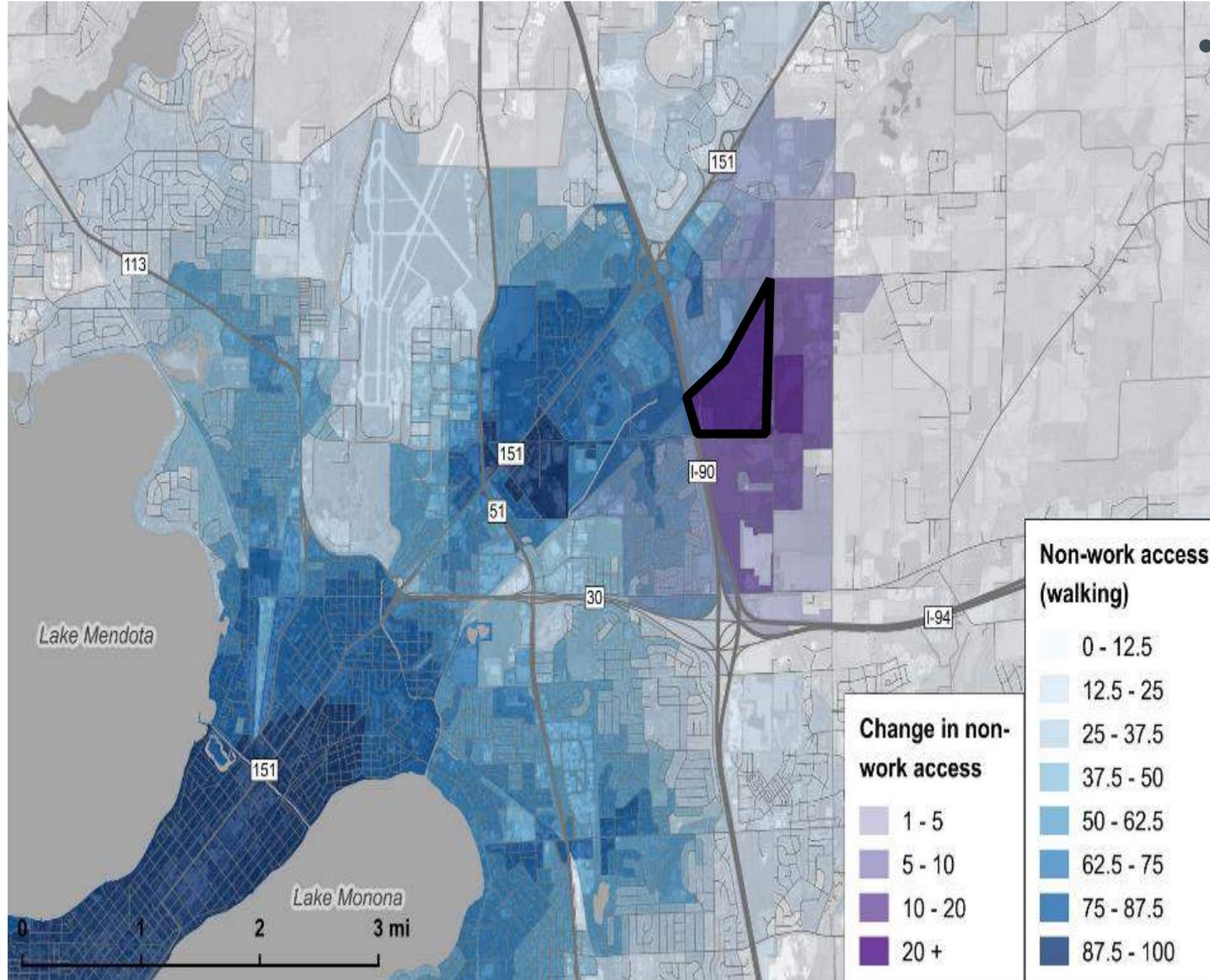
Land use project evaluation

- Existing residential development

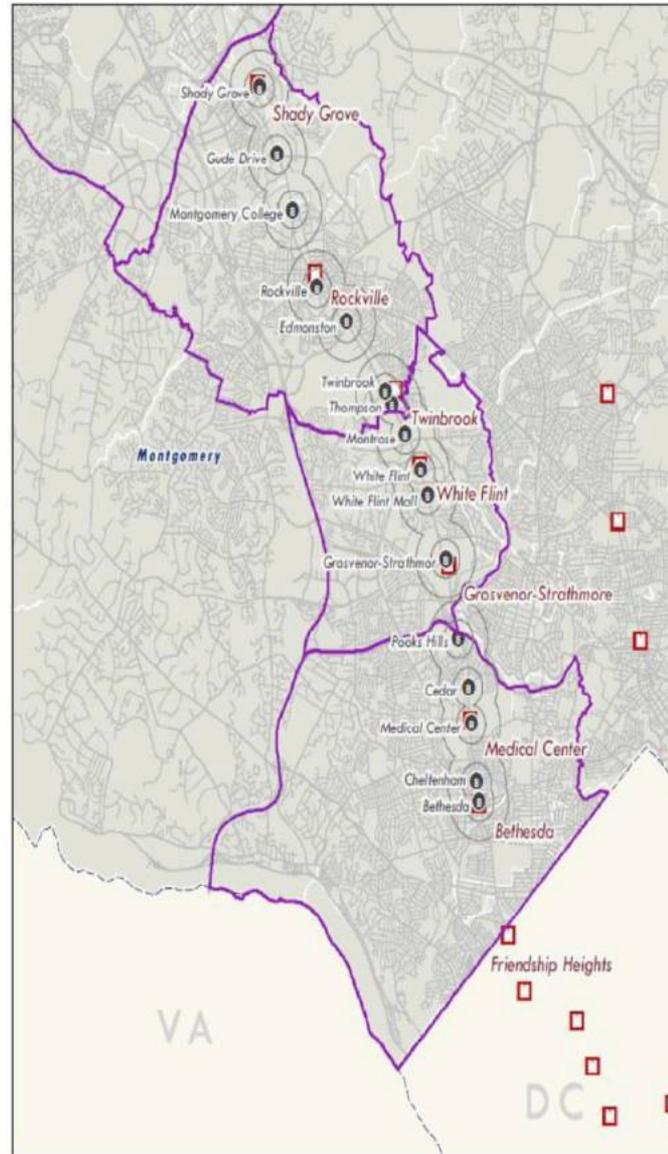


Land use project evaluation

- Improved accessibility with mixed-use development



BRT concept study



Mode share, transit only

Station Area	Existing				BRT only				Change			
	HBW-Auto	HBW-Dtransit	HBW-Wtransit	HBW-Walk	HBW-Auto	HBW-Dtransit	HBW-Wtransit	HBW-Walk	HBW-Auto	HBW-Dtransit	HBW-Wtransit	HBW-Walk
Shady Grove	68.3%	6.9%	20.4%	4.2%	68.0%	6.9%	20.7%	4.3%	-0.3%	0.0%	0.3%	0.1%
Gude Drive	77.4%	8.5%	11.4%	2.6%	76.5%	8.3%	12.2%	2.8%	-0.8%	-0.1%	0.8%	0.2%
Montgomery College	72.5%	7.5%	16.5%	3.4%	71.5%	7.3%	17.5%	3.6%	-1.0%	-0.2%	1.0%	0.2%
Rockville	57.9%	4.8%	31.7%	5.3%	57.3%	4.7%	32.3%	5.5%	-0.6%	-0.1%	0.6%	0.1%
Edmonston	71.4%	7.1%	17.4%	4.0%	70.7%	7.0%	18.0%	4.1%	-0.7%	-0.1%	0.7%	0.1%
Templeton	77.6%	8.2%	11.1%	3.0%	77.3%	8.2%	11.4%	3.0%	-0.3%	-0.1%	0.3%	0.1%
Twinbrook	61.1%	5.1%	28.0%	5.6%	60.8%	5.1%	28.3%	5.6%	-0.3%	-0.1%	0.3%	0.1%
Hubbard	62.5%	5.2%	27.4%	4.8%	62.4%	5.2%	27.4%	4.8%	-0.1%	0.0%	0.1%	0.0%
White Flint	55.9%	3.9%	33.9%	6.0%	54.8%	3.7%	35.0%	6.3%	-1.1%	-0.2%	1.1%	0.2%
White Flint Mall	75.1%	7.2%	14.1%	3.5%	75.0%	7.2%	14.2%	3.5%	-0.1%	0.0%	0.1%	0.0%
Grosvenor-Strathmore	61.9%	4.8%	26.4%	6.8%	61.0%	4.6%	27.3%	7.0%	-0.9%	-0.2%	0.9%	0.2%
Pooks Hill	74.2%	7.2%	14.6%	4.0%	71.4%	6.7%	17.3%	4.5%	-2.7%	-0.5%	2.7%	0.6%
Cedar	69.8%	6.1%	20.4%	3.6%	67.0%	5.6%	23.0%	4.2%	-2.7%	-0.5%	2.6%	0.6%
Medical Center	65.9%	5.1%	23.8%	5.2%	65.8%	5.1%	23.9%	5.2%	-0.1%	0.0%	0.1%	0.0%
Cheltenham	52.7%	3.0%	39.1%	4.9%	52.1%	2.9%	39.6%	5.1%	-0.6%	-0.1%	0.5%	0.1%
Bethesda	41.4%	1.6%	50.4%	6.3%	41.0%	1.6%	50.6%	6.4%	-0.3%	0.0%	0.3%	0.1%
Entire Corridor	80.3%	9.9%	8.0%	1.5%	80.3%	9.9%	8.0%	1.5%	0.0%	0.0%	0.0%	0.0%

Mode share, transit and land use

Station Area	Existing				BRT + Land Use				Change			
	HBW-Auto	HBW-Dtransit	HBW-Wtransit	HBW-Walk	HBW-Auto	HBW-Dtransit	HBW-Wtransit	HBW-Walk	HBW-Auto	HBW-Dtransit	HBW-Wtransit	HBW-Walk
Shady Grove	68.3%	6.9%	20.4%	4.2%	67.3%	6.6%	21.4%	4.5%	-1.0%	-0.3%	1.0%	0.2%
Gude Drive	77.4%	8.5%	11.4%	2.6%	74.4%	7.8%	14.5%	3.1%	-2.9%	-0.6%	3.1%	0.4%
Montgomery College	72.5%	7.5%	16.5%	3.4%	71.4%	7.2%	17.9%	3.3%	-1.1%	-0.3%	1.4%	-0.1%
Rockville	57.9%	4.8%	31.7%	5.3%	55.6%	4.3%	34.2%	5.7%	-2.4%	-0.5%	2.5%	0.4%
Edmonston	71.4%	7.1%	17.4%	4.0%	65.0%	5.8%	24.5%	4.5%	-6.5%	-1.3%	7.2%	0.5%
Templeton	77.6%	8.2%	11.1%	3.0%	75.0%	7.6%	13.8%	3.4%	-2.6%	-0.6%	2.7%	0.5%
Twinbrook	61.1%	5.1%	28.0%	5.6%	60.2%	4.8%	29.0%	5.9%	-1.0%	-0.3%	1.0%	0.3%
Hubbard	62.5%	5.2%	27.4%	4.8%	61.8%	5.0%	28.0%	5.0%	-0.6%	-0.2%	0.6%	0.2%
White Flint	55.9%	3.9%	33.9%	6.0%	53.6%	3.4%	36.2%	6.6%	-2.3%	-0.5%	2.3%	0.6%
White Flint Mall	75.1%	7.2%	14.1%	3.5%	74.7%	7.0%	14.5%	3.7%	-0.4%	-0.2%	0.4%	0.2%
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Bethesda	41.4%	1.6%	50.4%	6.3%	40.2%	1.5%	51.4%	6.6%	-1.2%	-0.1%	1.0%	0.3%
Entire Corridor	80.3%	9.9%	8.0%	1.5%	80.3%	9.9%	8.1%	1.6%	-0.1%	-0.1%	0.1%	0.0%

Eric Sundquist
erics@ssti.us

Incorporating Social Equity in Transportation Planning

Lessons from the Twin Cities



Dan Marckel
Metropolitan Council
(Minneapolis-Saint Paul)



Overview of presentation

- Overview of the Metropolitan Council
- Introducing equity into the regional conversation
 - Sustainable Communities Regional Planning Grant
 - *Choice, Place, and Opportunity: An Equity Assessment*
- Adopting equity into regional plans
 - *Thrive MSP 2040*
 - *2040 Transportation Policy Plan*
- Using equity in funding decisions
 - Regional Solicitation for federal transportation funding

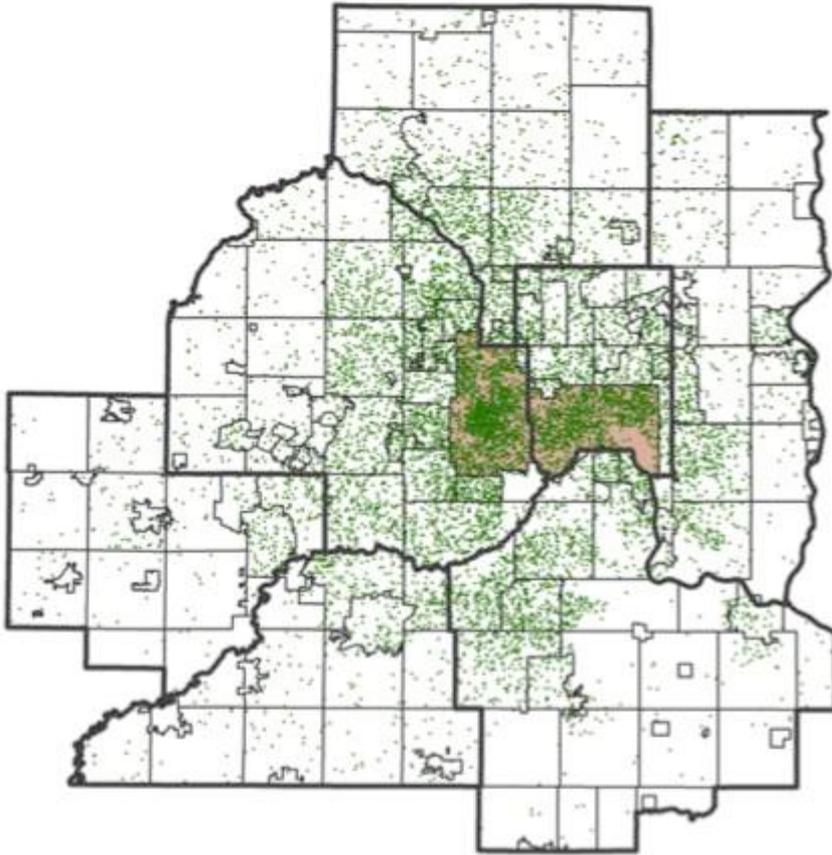


**Lessons learned:
The Wisdom of 20/20 Hindsight**

About the Metropolitan Council



About the Metropolitan Council



- Created by the state legislature in 1967 as a planning organization
- Seven counties, three million residents
- Merged with operations functions (transit and wastewater) in 1994
- “Orderly and economical development of region”

Introducing equity into the regional conversation:

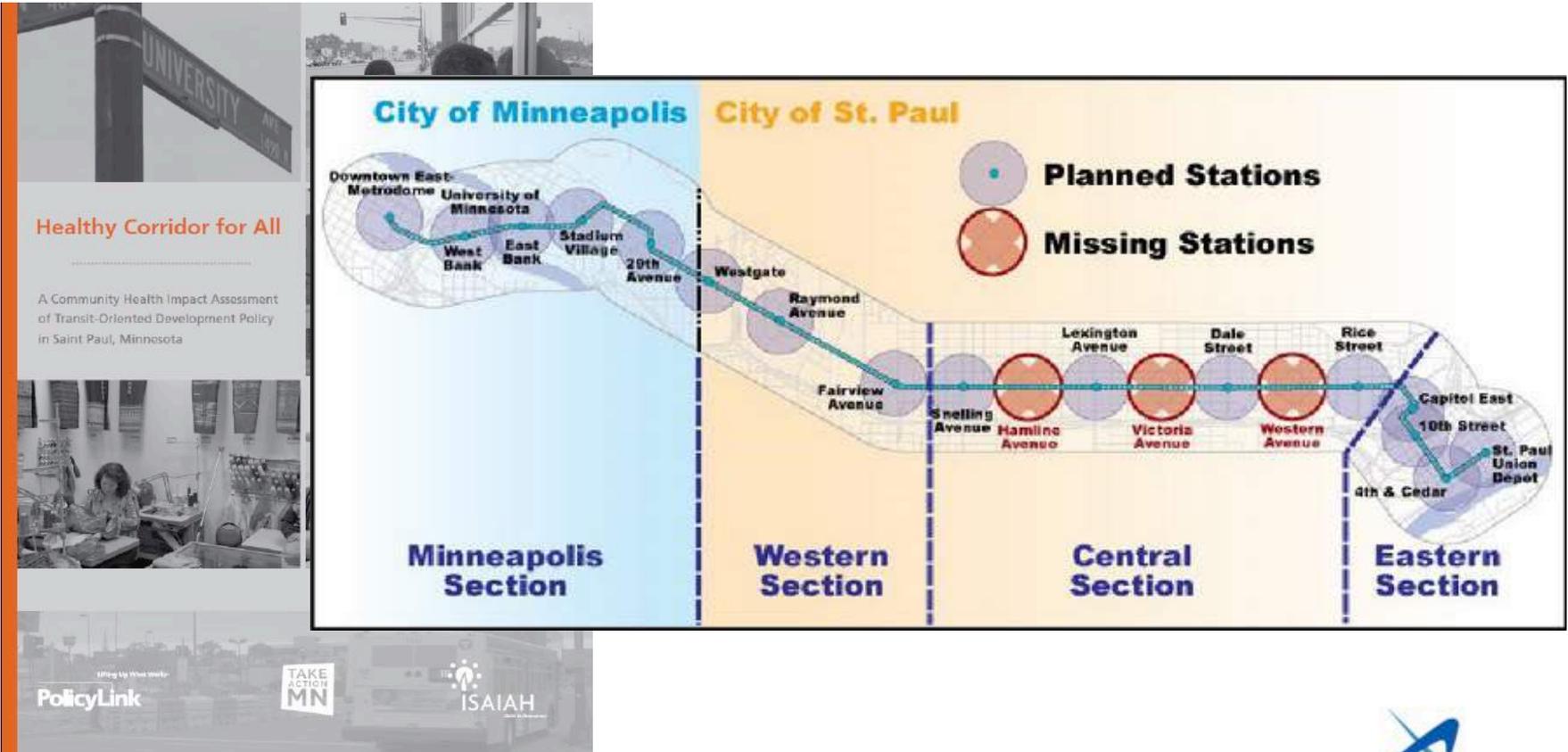
- Corridors of Opportunity (2011-2013)
- Choice, Place and Opportunity (2011-2014)

Transitway construction in a historical context

Remembering the Rondo neighborhood decimated by interstate construction



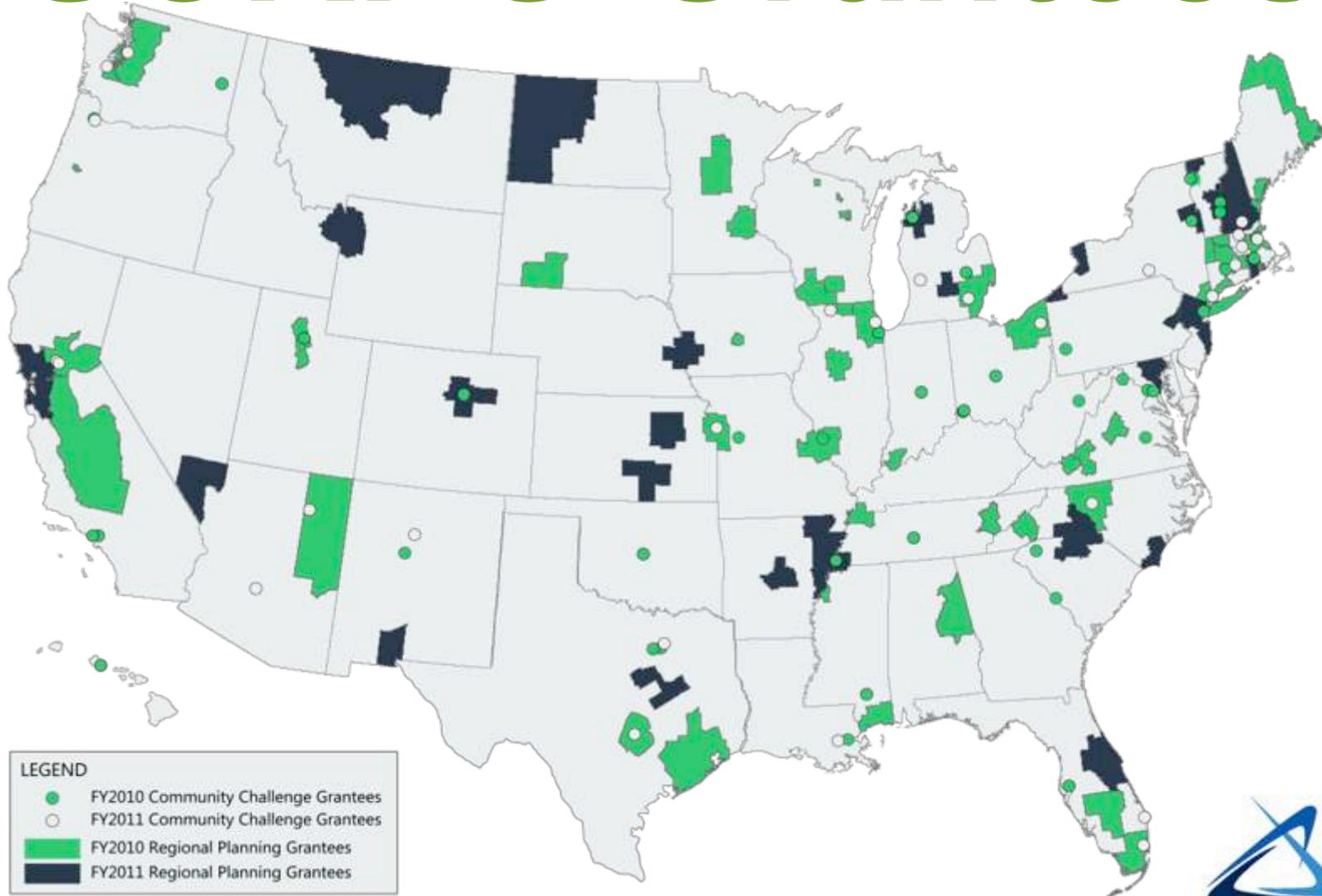
Rising equity issues along the Central Corridor



Sustainable Communities Regional Planning Grant

- Selected to receive \$5 million from HUD in 2010
- HUD's priorities for the grant:
 - New, inclusive decision-making tables
 - Emphasis on community engagement informing decisions
 - "...strategies that direct long-term development and reinvestment, demonstrate a commitment to addressing issues of regional significance, use data to set and monitor progress toward performance goals, and engage stakeholders and residents in meaningful decision-making roles"
 - "...craft an authentic vision for an equitable and prosperous future"

SCRPG Grantees



Corridors of Opportunity Consortium Vision

Transitway corridors will guide our region's growth, vitality and competitiveness. Development along transitways will create distinctive places and strengthen local assets while increasing ridership and expanding access to jobs, affordable housing, and essential services ***for residents of all incomes and backgrounds.***

- Adopted by the consortium of elected officials, philanthropy, non-profit leaders, and community leaders
- Balance between equity and economic competitiveness

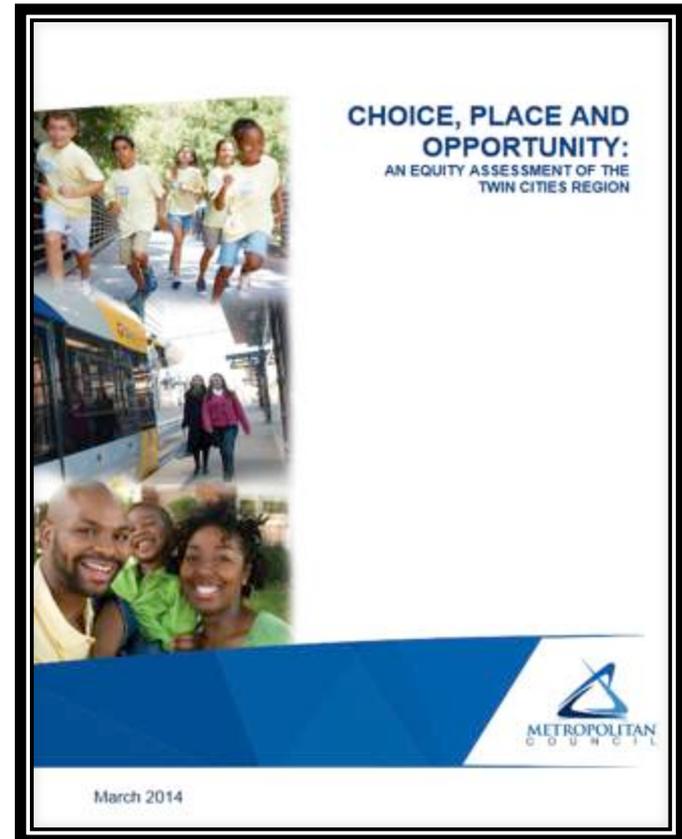
Corridors of Opportunity

Definition of Equitable Development

Equitable development creates healthy vibrant communities of opportunity where low income people, people of color, new immigrants and people with disabilities participate in and benefit from systems, decisions, and activities that shape their neighborhoods.

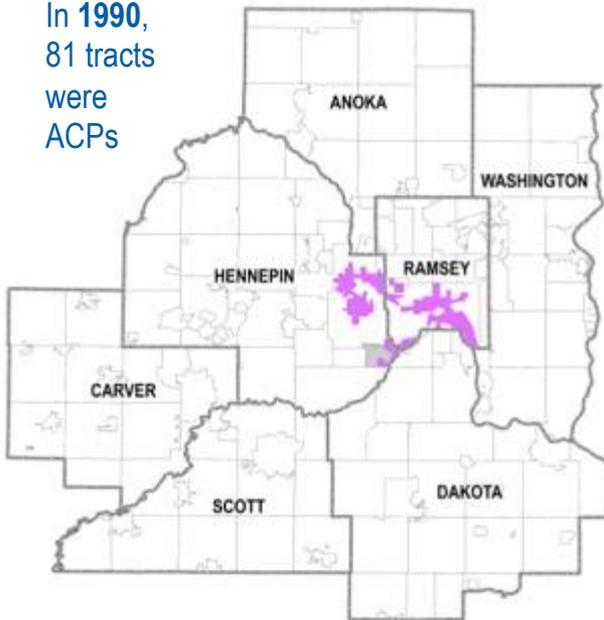
Choice, Place and Opportunity

- Fair Housing and Equity Assessment required by HUD grant
- Where are Areas of Concentrated Poverty where at least 50% of residents are people of color?
- What is our history of housing segregation? What is the geography of opportunity across the region?

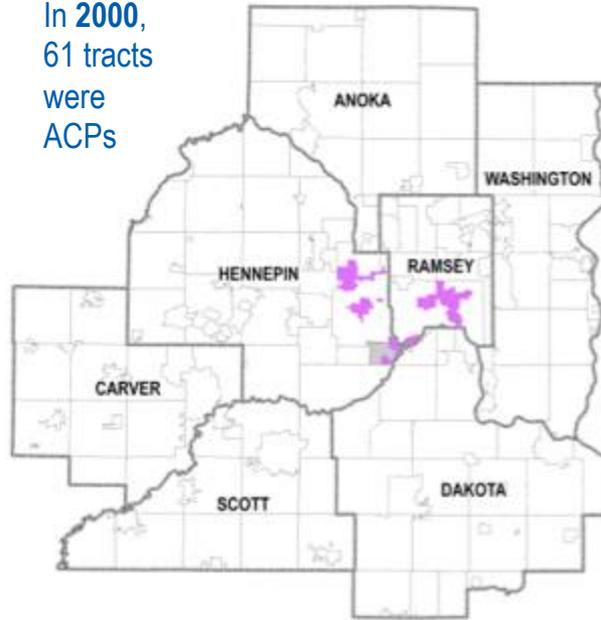


Areas of concentrated poverty are spreading...

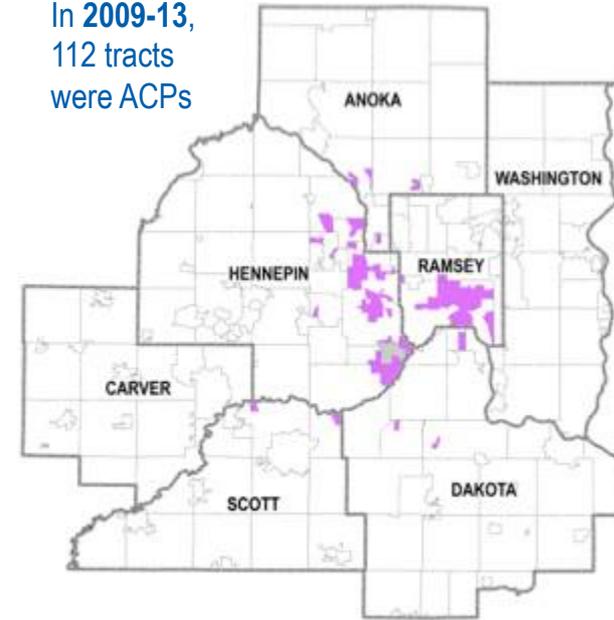
In 1990,
81 tracts
were
ACPs



In 2000,
61 tracts
were
ACPs

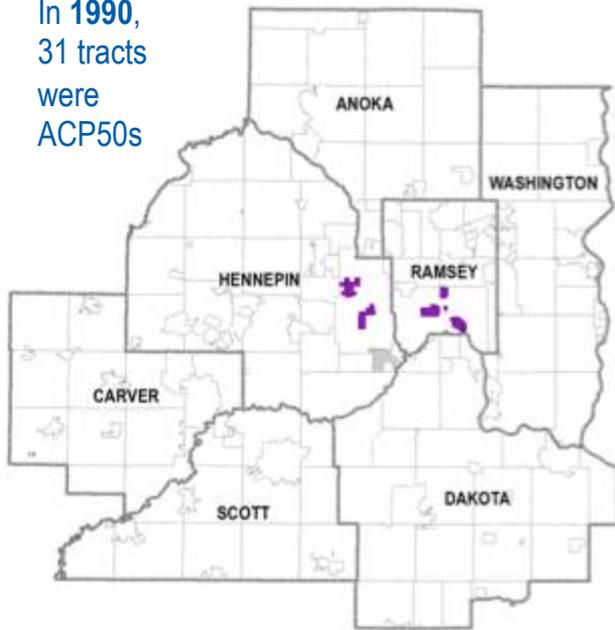


In 2009-13,
112 tracts
were
ACPs

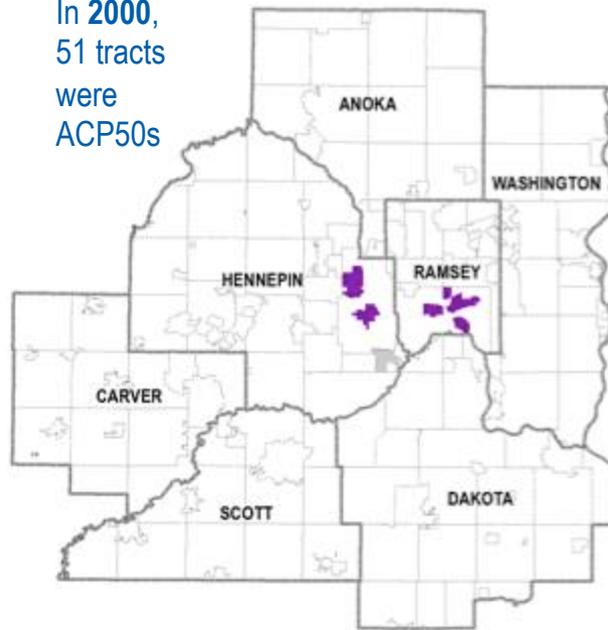


...and more characterized by majorities of people of color

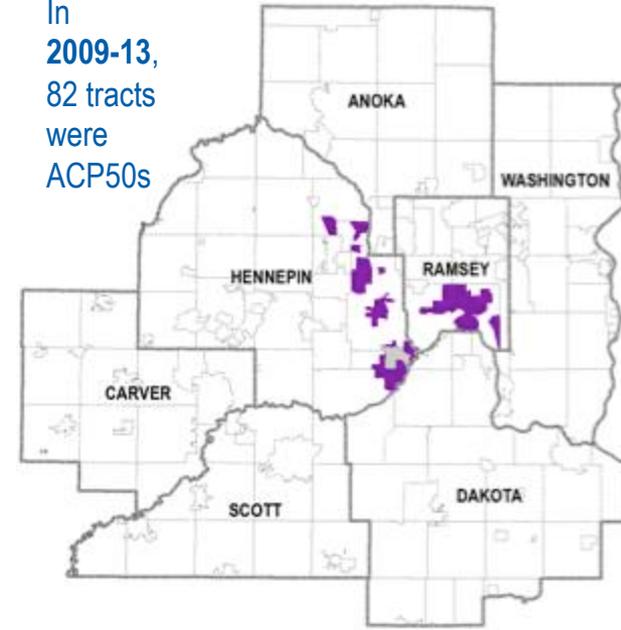
In 1990,
31 tracts
were
ACP50s



In 2000,
51 tracts
were
ACP50s

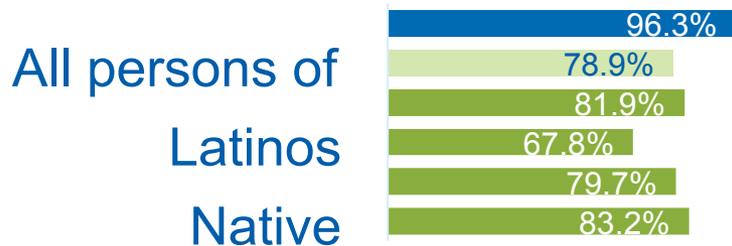


In
2009-13,
82 tracts
were
ACP50s

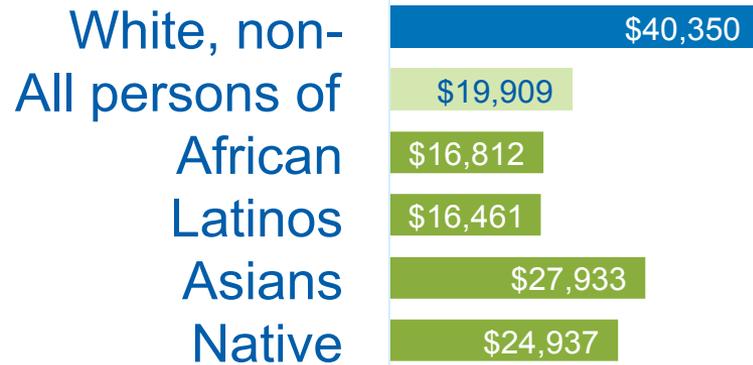


Disparities by race and ethnicity

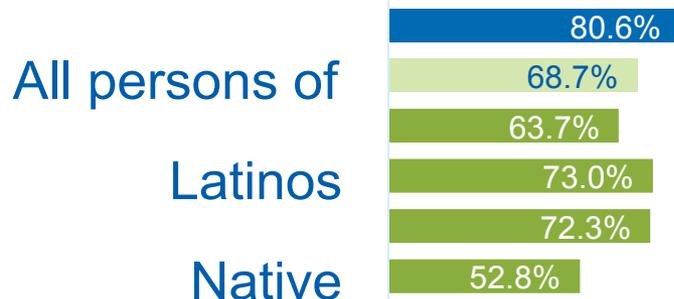
High school diploma or more



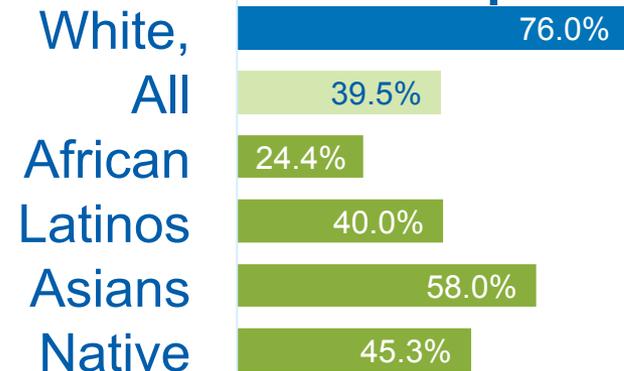
Per capita income



Percent Employed



Homeownership rate



If everyone in the Twin Cities in 2040 enjoyed the same socioeconomic profile as white non-Latino people do today:

- 171,000 more people with a high school diploma
- 124,000 more people with jobs
- 274,000 fewer people in poverty
- 186,000 more homeowners
- \$31.8 billion in additional income



Lessons Learned: The Wisdom of 20/20 Hindsight

- Institutionalizing an equity table takes time, effort & money
- Tension between government and community: Who owns a neighborhood's history and future?
- Assessing equity is easier than developing policies that advance equity
- Race and poverty are interconnected in our society and yet trigger different reactions
- Poverty and lack of investment are the problems neighborhoods face, not “too many” people of color living in proximity

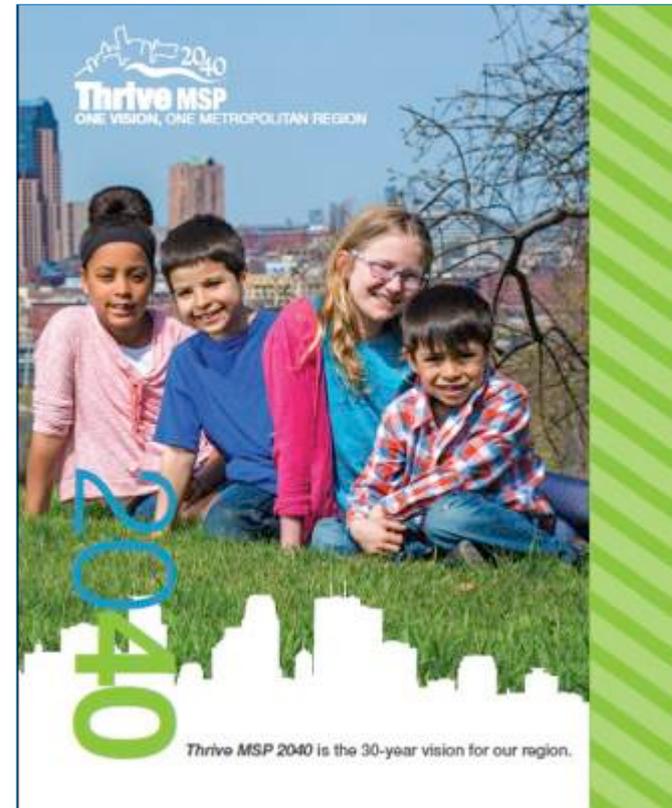
Adopting equity into regional plans:

- *Thrive MSP 2040 (2011-2014)*
- *2040 Transportation Policy Plan (2013-2015)*

What is *Thrive MSP 2040*?

The Metropolitan Council shall prepare and adopt, after appropriate study and such public hearings as may be necessary, a **comprehensive development guide** for the metropolitan area...”

(M.S. 473.145)



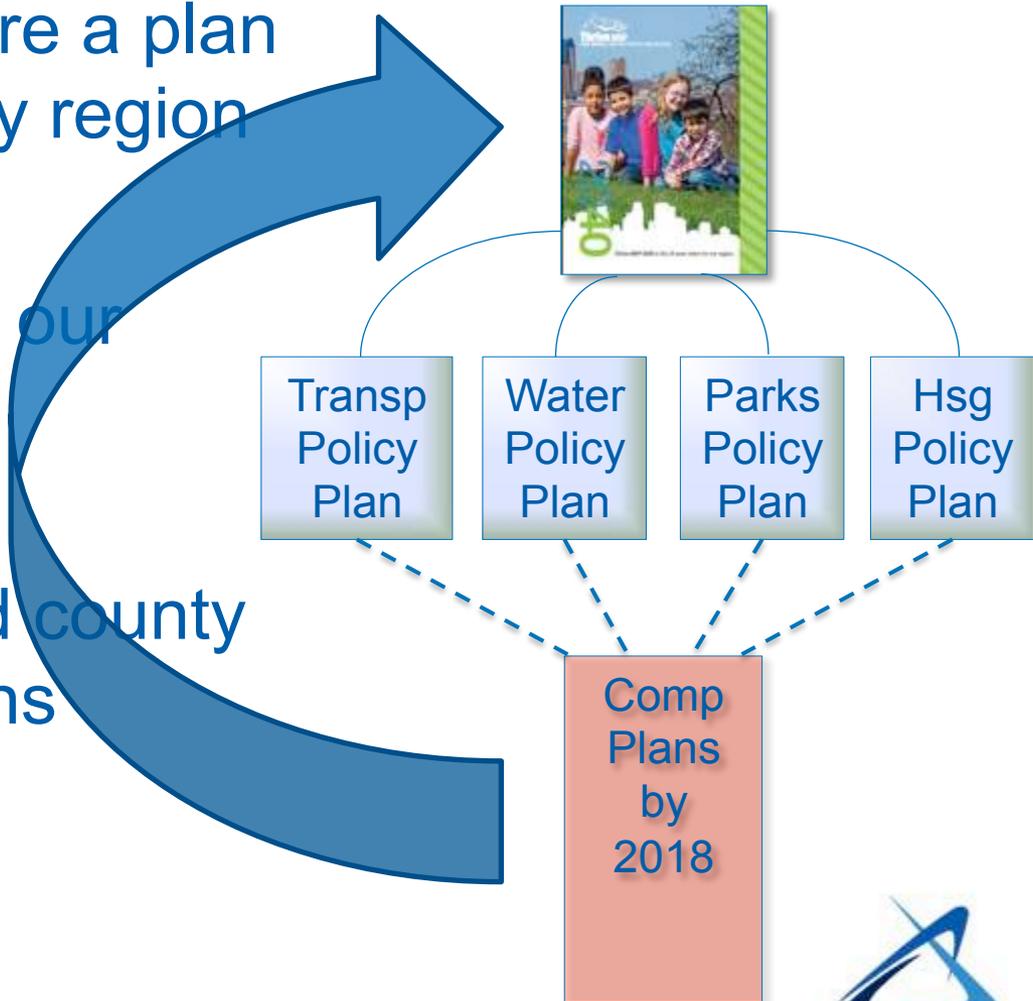
Regional planning structure

State statutes require a plan for the seven-county region

Directs and informs our systems and policy plans

Guides 186 city and county comprehensive plans

And will start again in the next decade...





Over 100 in-person meetings:

What does our region need to **thrive**?

What kind of region do we want for our children?

For our children's children?

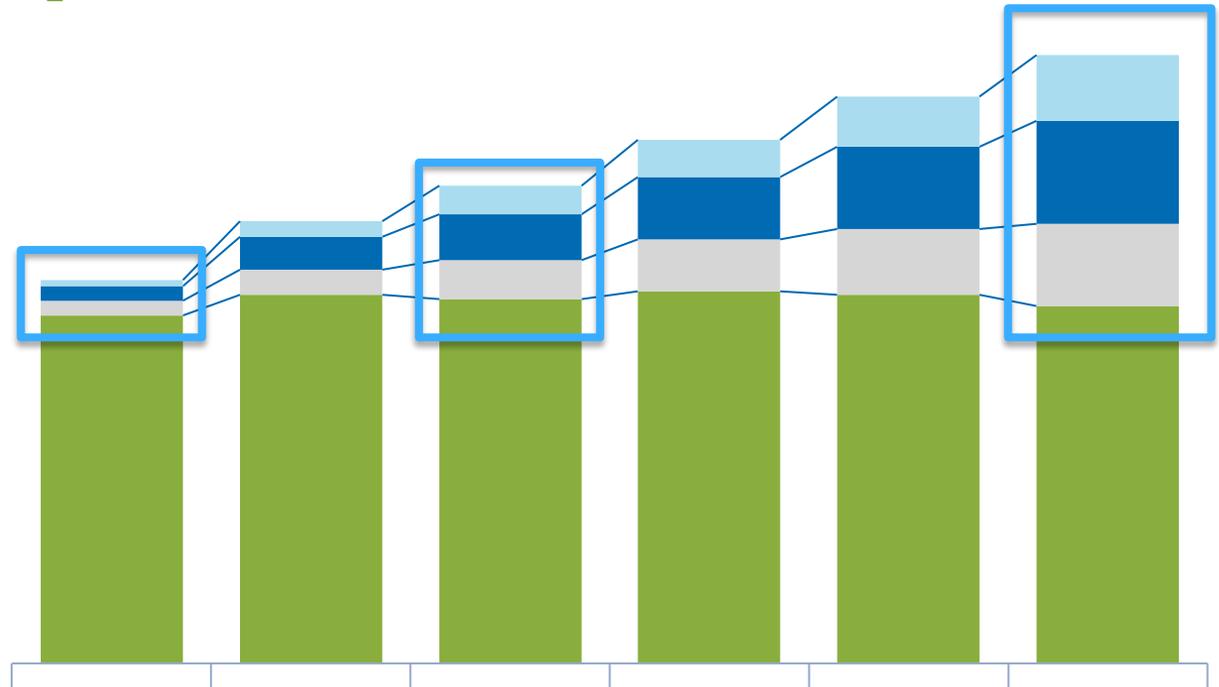
What **decisions** can we make today to set us on a path toward achieving that vision?

More people of color!

9 percent
people of
color in 1990

24 percent
people of
color in 2010

41 percent
people of
color in 2040



■ Latino

Source: 1990-2010 data on population from Census Bureau;
2040 forecasts from the Metropolitan Council (March 2015 release)

Focusing the approach to equity

Original language:

- The opportunities and challenges of growth and change are *equitably shared across our communities, both geographic and cultural.*

To:

- **Regional Balance:** Balancing investments and activities across the region so no part of the region is consistently favored or consistently ignored

AND

- **Equity:** Viable housing, transportation, and recreation options for people of all races, ethnicities, incomes, and abilities

How Thrive defines equity:

Equity connects all residents to opportunity and creates viable housing, transportation, and recreation options for people of all races, ethnicities, incomes, and abilities so that all communities share the opportunities and challenges of growth and change.

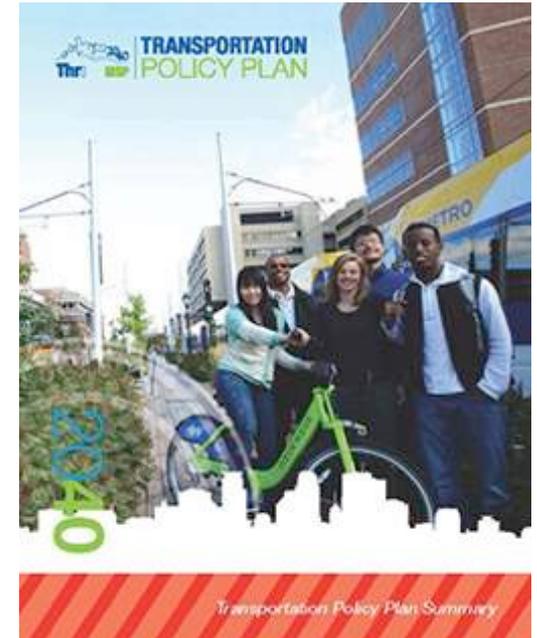


For our region to reach its full economic potential, all of our residents must be able to access opportunity. Our region is stronger when all people live in communities that provide them access to opportunities for success, prosperity, and quality of life.

2040 Transportation Policy Plan

Considering the impact on ... those who have been historically underrepresented in regional planning efforts, including communities of color, low-income households, people with disabilities, and people with limited English proficiency:

- Measure accessibility to jobs for people of color and low-income people
- Study potential disparities by race/ethnicity and income in spending, transportation facility condition, and safety outcomes
- Analyze benefits and impacts of transportation investments by race/ethnicity and income to aid in using equity to prioritize projects





Lessons Learned: The Wisdom of 20/20 Hindsight

- It's hard to plan for inflections and change – particularly the growing racial / ethnic diversity of the region
- Geographic considerations had a longer association with “equity” than considerations around social identity
- Our regional understanding of equity inspires us beyond the baseline expectations of federal expectations around environmental justice and Title VI
- Reflecting equity in plans is easier than implementing policies that advance equity

Using equity in funding decisions

- Regional Solicitation for federal transportation funding (2014 -)

About the Regional Solicitation for federal transportation funding

- \$150+ million in federal transportation funding:
 - Surface Transportation Block Grant Program (STBGP), including the Transportation Alternatives Program (TAP)
 - Congestion Mitigation and Air Quality Improvement (CMAQ)
- Modal categories:
 - Roadways Including Multimodal Elements
 - Transit and Travel Demand Management (TDM) Projects
 - Bicycle and Pedestrian Facilities
- Allocated every two years
- Project selection by the Transportation Advisory Board, approval by the Metropolitan Council



Equity criteria added 2014

- 7% of a project's total points from the city's Housing Performance Score
- 3% to 13% (category-dependent) from advancing equity:
 - Connection to Area of Concentrated Poverty with 50% or more of residents are people of color (Up to 100% points)
 - Connection to Area of Concentrated Poverty: (Up to 80% points)
 - Connection to tracts above the regional average for population in poverty or population of color: (Up to 60% points)
 - Connection to tracts below the regional average for population in poverty or populations of color, or includes children, people with disabilities, or the elderly: (Up to 40% points)
 - Geographic proximity alone is insufficient; applicant must fully describe the positive benefits and negative impacts (with mitigation to address the issue) for those identified groups.

How projects advance equity

- Transportation investments provide access to opportunities, both local and regional
 - Opportunities to access jobs and services
 - Opportunities for active transportation
- Projects earned equity points by describing how the proposed project influences:
 - How a project improves local development and movement patterns
 - Who affected populations are and how the project affects them
 - How a project increases job accessibility or reduces transportation barriers to job opportunity
- All projects have an equity dimension

September meeting of the five county boards: Rebellion!

- “There’s just a feeling that Thrive is not applied equally throughout the region.”
- “The 2040 TPP guides the Regional Solicitation criteria to favor urban and urban centers.”
- “...the incorporation of unreasonable equity requirements into Regional Solicitation without adequate data...”
- “...these criteria put the suburban counties at a significant disadvantage for highway and transit funding...”
- “...the selection [of projects for funding] should be based on technical, not social criteria.”



Equity Workshops with the Transportation Advisory Board

- A series of three workshops designed to bring TAB appointees and Council Members together to develop stronger understandings of equity
- Presentations on the history of equity and disparities; review of equity discussion in Regional Solicitation applications:
 - Equity content appeared in all applications
 - How does equity influence individual project scoring vs. equity points by category vs. overall funding allocation to each project type (e.g., bridges)
- Small group discussion to develop improved understandings of equity ideas



Lessons Learned: The Wisdom of 20/20 Hindsight

- Equity becomes real when **money** is involved!
- Equitable development crosses institutional boundaries
- “Advancing equity” was heard as code for “funding transit” and “funding the core” of the region, triggering rebellion from suburban counties
- The temptation is strong to add age to the equity definition
- Thoughtful assessments of equitable impacts scored well even from exurban applications
- By the 2016 round, equity was normalized as a scoring criteria – less controversial, more thoughtful applications
- 2018 round will refine scoring to reflect lessons.



A photograph of a diverse group of young students sitting on the floor in a classroom. They are all looking upwards with expressions of interest and attentiveness. The classroom background is decorated with colorful streamers and educational posters. A semi-transparent white text box is overlaid on the lower half of the image.

**Lessons Learned:
Using our history to
inform your future**



Lessons Learned: The Wisdom of 20/20 Hindsight

- Moving the equity conversation from admiring the problem to developing policy is hard but important
- Practice may not make perfect but it definitely makes better!
- The more we talk about equity the more accepted the conversation becomes and the more well-known the demographic facts become
- The Twin Cities has among the most aligned planning structures in the country – and alignment is still really hard
 - Aligning between transportation conversation and the HUD-mandated Assessments of Fair Housing is coming

For more information:

Visit: www.metrocouncil.org

Contact: Dan Marckel

Planning Analyst

Regional Policy & Research

dan.marckel@metc.state.mn.us



Massachusetts Transportation Leadership Academy

Transportation, Climate Change, and Performance Measures

clf

Rafael Mares
Vice President and Program Director,
Healthy Communities and
Environmental Justice

NOVEMBER 14, 2017



Index to Cities, Towns, and Localities

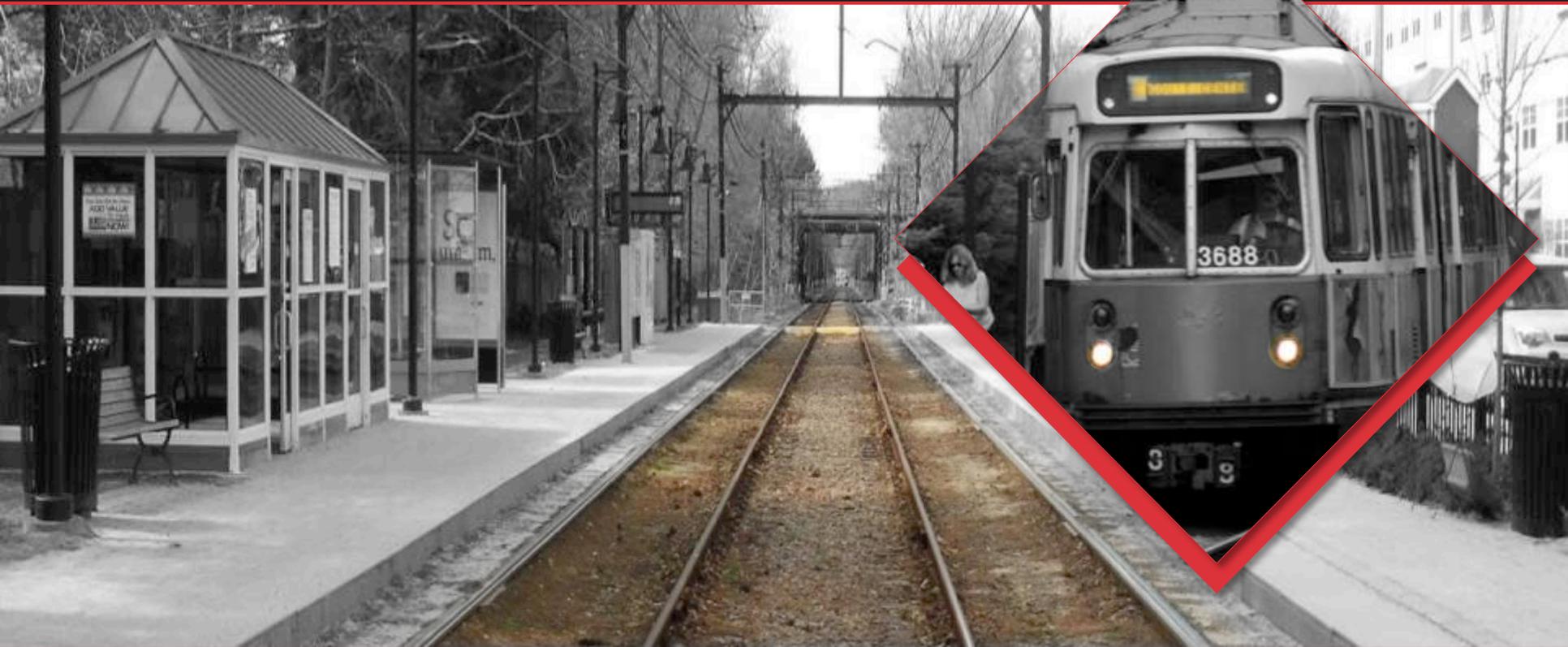
ATLANTIC OCEAN

TODAY'S

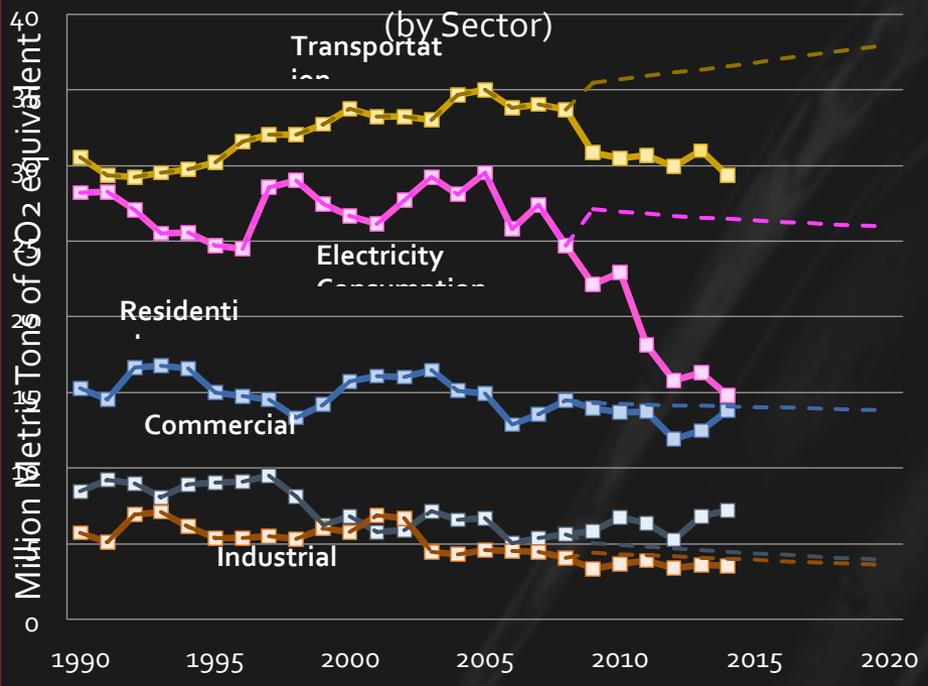
AGENDA

- 1| Background: Impact of the transportation sector on climate change
- 2| Background: How to reduce GHGs from transportation
- 3| Overview: Global Warming Solutions Act Requirements
- 4| Overview: Climate change and current MA transportation project selection criteria/performance measures (MassDOT and MPOs)
- 5| Overview: National example of climate change performance measures
- 6| Overview: measuring GHGs from transportation sector
- 7| Discussion

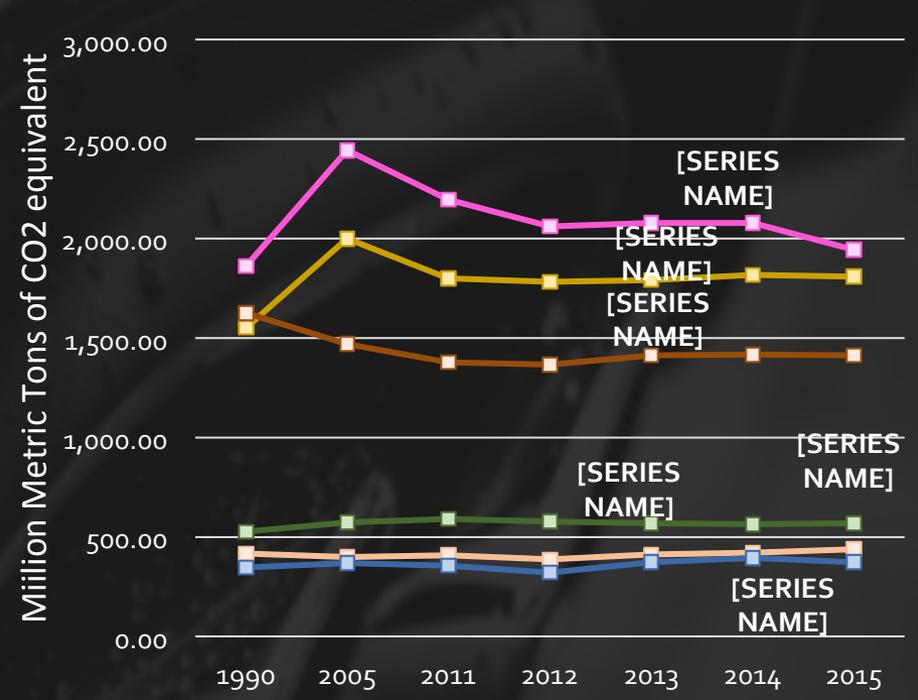
- ‡ Since 2016, the transportation sector is the largest emitter of GHG emissions in US.
- ‡ In 1990, GHG emissions from the transportation sector was 24% of total emissions from all sectors. By 2015, it increased to 27% of total emissions.
- ‡ In MA, transportation has been largest emitter of GHGs since 1992. Also fastest growing sector.

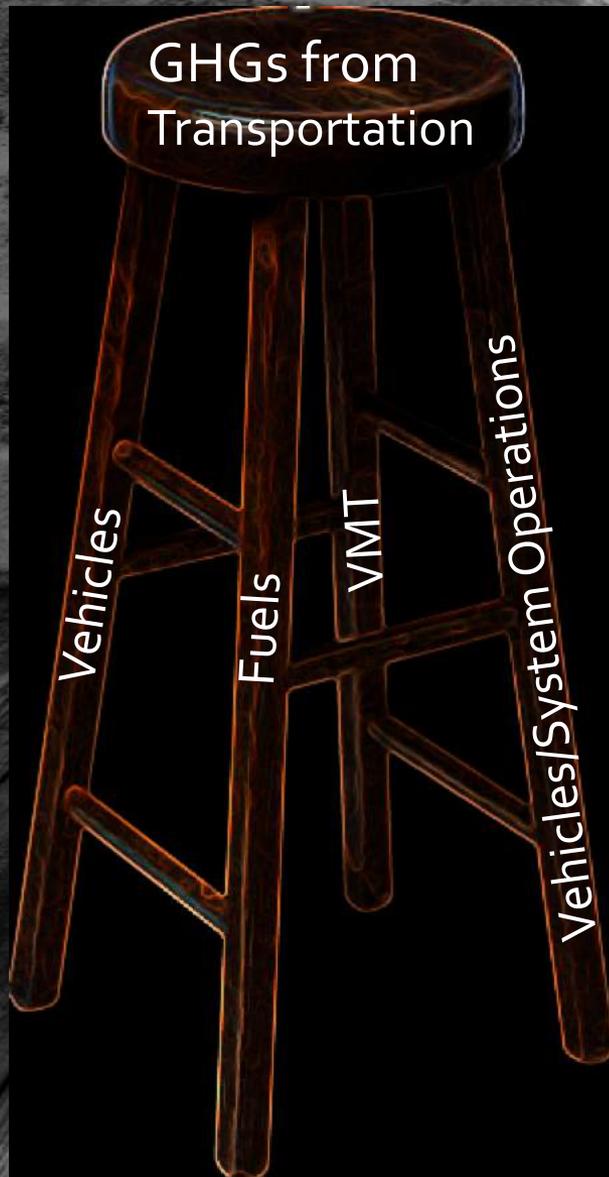


Massachusetts GHG Emissions from Fuel Combustion (by Sector)



U.S. GHG Emissions (by Sector)





GHG emissions from the transportation sector result from an interplay of four factors:

- 1| Fuel efficiency of the vehicles on the road
- 2| Carbon content of the fuel used to power those vehicles
- 3| Vehicle miles traveled
- 4| Operational efficiency of vehicles during travel

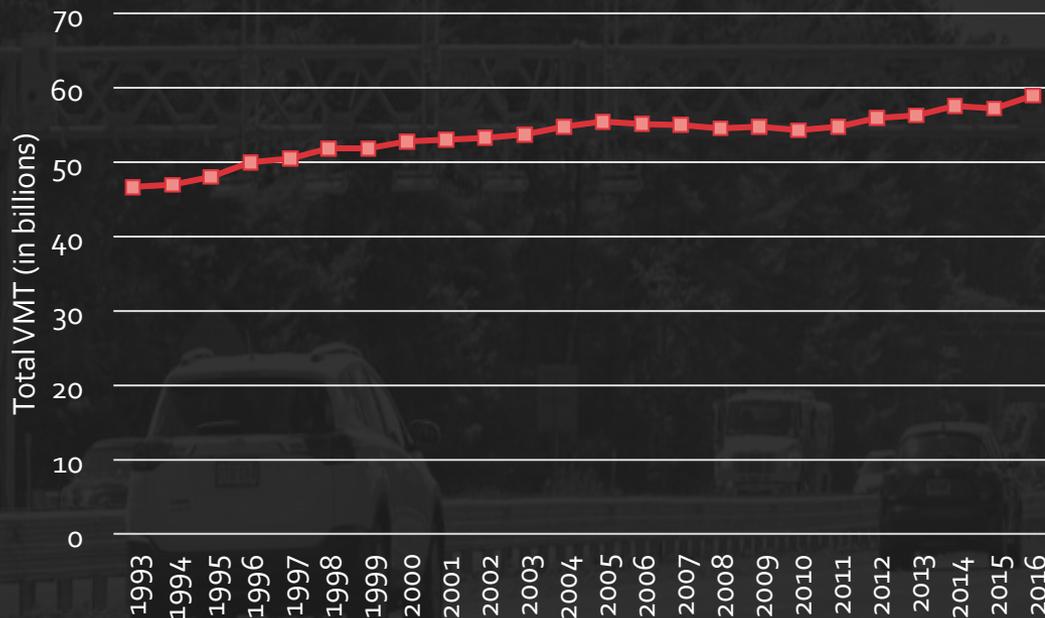


- ‡ The efficiency of the fleet can be improved through advances in **vehicle technology** and **alternative fuels with lower carbon content** can be used.
- ‡ While promising, neither of these areas is primarily influenced by state-level policies or actions or sufficient to solve the problem (Cambridge Systematics, 2009) .
- ‡ DOE and DOT agencies have concluded that expected technological innovations and the effects of more stringent standards will substantially reduce GHG emissions; these benefits, however, will be largely offset by anticipated increases in travel and in the US population as a whole (Cambridge Systematics, 2009).
- ‡ Continued technological advances in the form of cleaner burning fuels and more efficient vehicles will help curtail emissions; however, a projected increase in VMT of 50% between 2005 and 2030 will undermine much of the total expected emissions reductions from these innovations (Ewing, 2007; Bhatt et al, 2010).
- ‡ Even if the most stringent fuel-efficiency proposals under consideration are enacted, vehicle emissions still would be 34% above 1990 levels in 2030 – entirely off-track from reductions of 60-80% below 1990 levels by 2050 required for climate protection. (Growing Cooler, 2007).

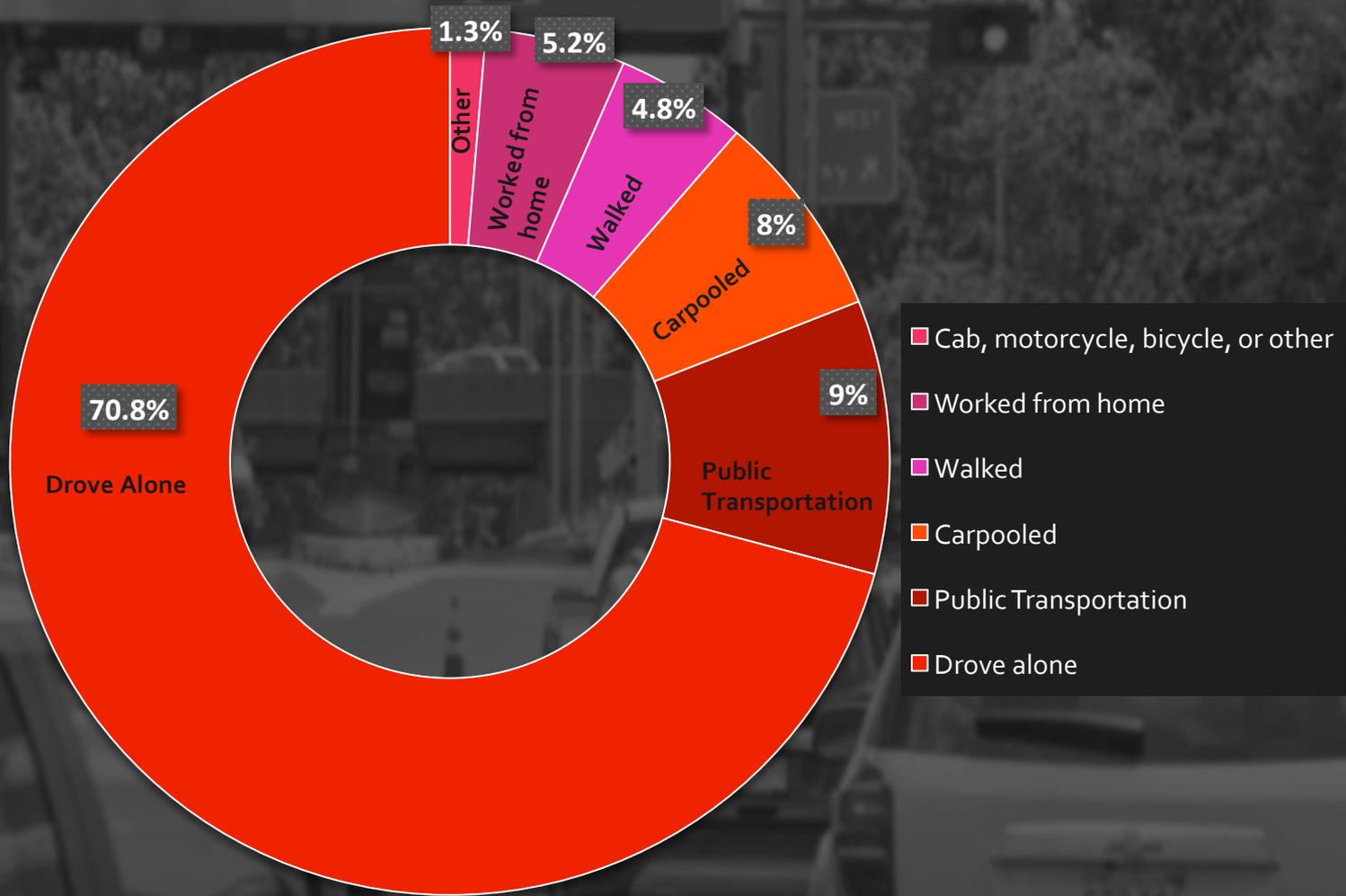
MASSACHUSETTS VMT

- Behind this trend are growth in VMT, which has increased by 151% between 1977 and 2001 in the US, proportion of drivers traveling alone, average trip length, and trips per capita (Bhatt et al, 2010), all of which are responsible for increasing energy (fuel) consumption within the sector.
- In MA, VMT has increased from over 46.7 billion in 1993 to 59 billion in 2016.
- Further increases expected as a result of autonomous vehicles.

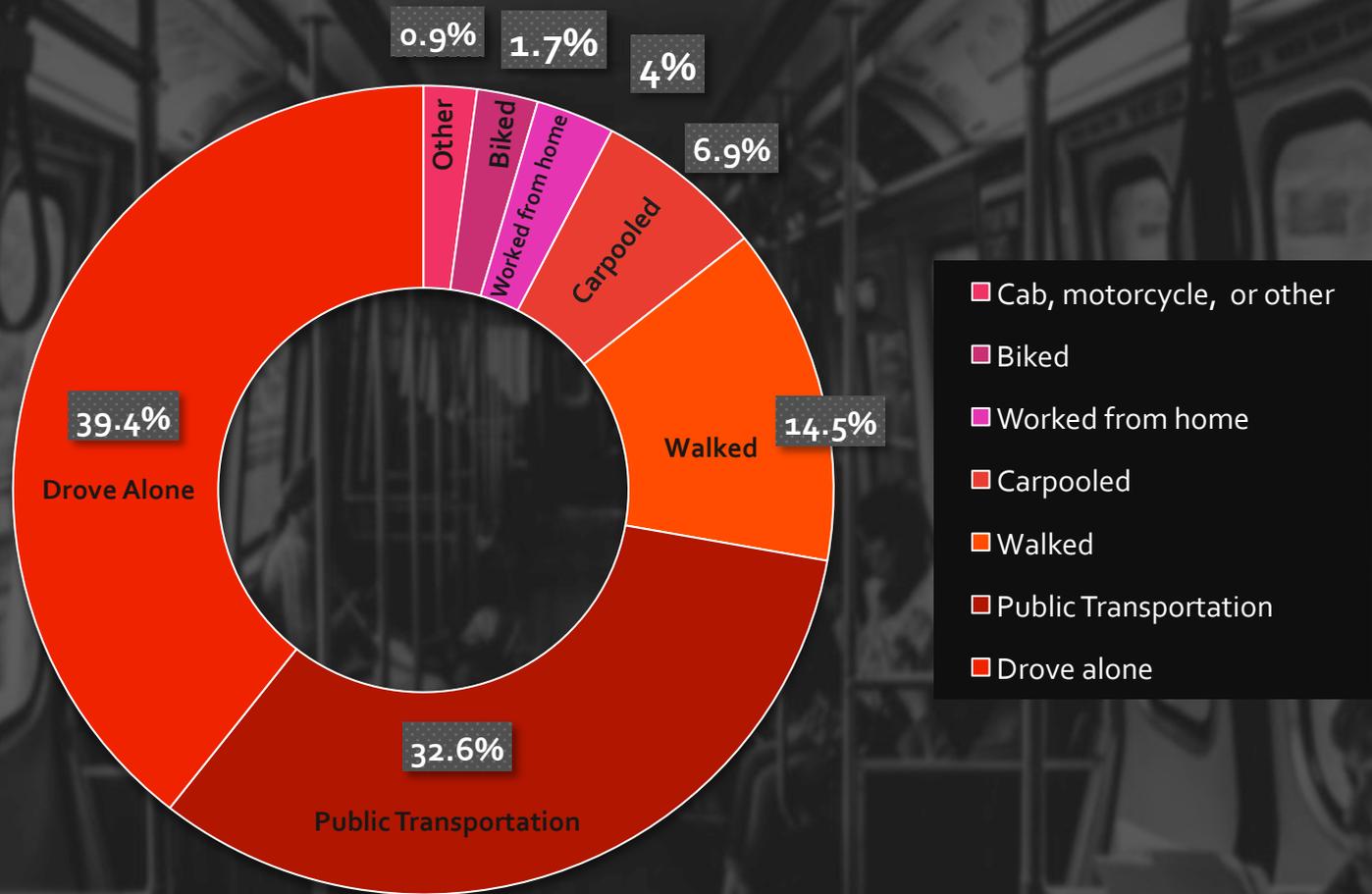
Total MA VMT per year



How 3.3 MILLION WORKERS IN MA TRAVELED TO WORK IN 2016



How 300,000+ WORKERS IN BOSTON TRAVELED TO WORK IN 2016



TODAY'S CO₂ EMISSIONS BY MODE

Pounds CO₂ per Passenger Mile

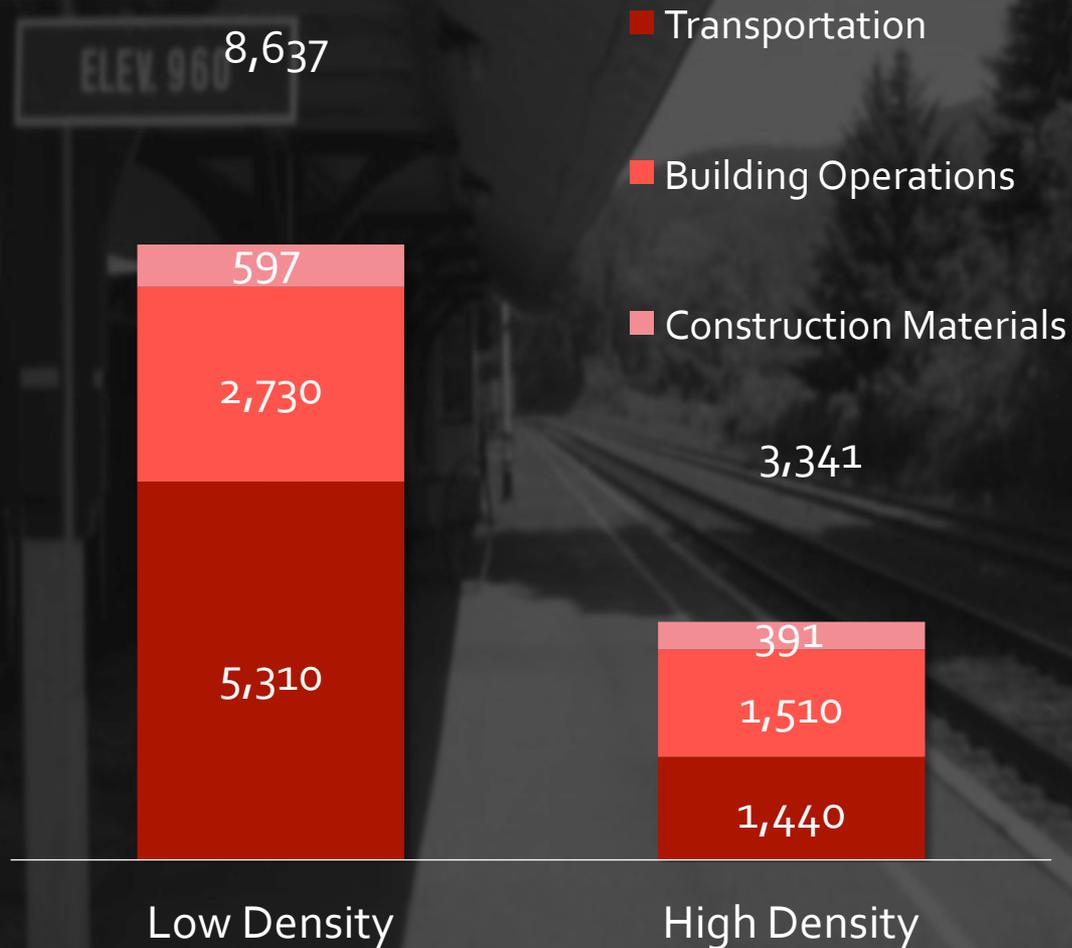


□ Pounds CO₂ per Passenger
*based on average occupancy



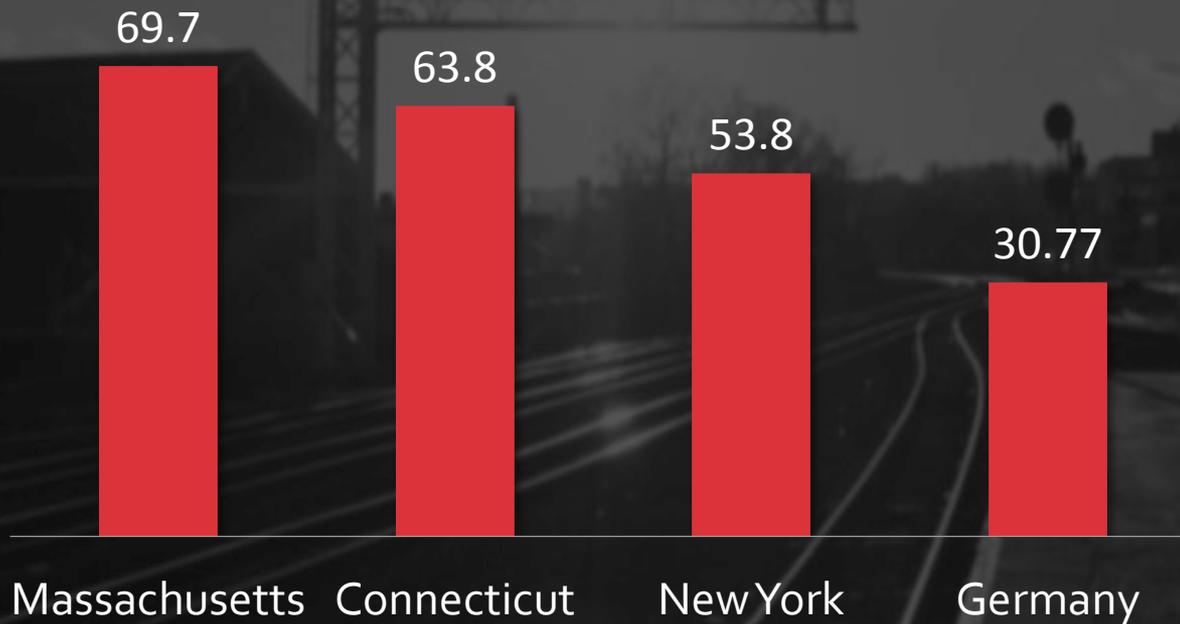
HIGH VS. LOW RESIDENTIAL DENSITY

Annual GHG Emissions per person (kg CO₂)



VS. OTHERS

Transportation Energy Consumption per Capita, 2013 (million Btu)



Btu = British thermal unit

HOW IS MASSACHUSETTS RESPONDING TO CLIMATE CHANGE?

- ‡ Passed Global Warming Solutions Act in 2008 which requires:
 - ‡ Reductions of GHG emissions below 1990 levels by 25 percent by 2020, and 80 percent reduction by 2050
- ‡ To ensure these goals will be met, the GWSA Act required MA to:
 - ‡ Promulgate regulations.
 - ‡ Establish a baseline assessment for 1990 base year.
 - ‡ Business as usual projection of likely statewide GHG emissions for 2020.
 - ‡ Develop a climate plan for achieving 2020 reductions.
 - ‡ Analyze strategies and make recommendations for adapting to climate change.

- ‡ In 2010, Executive Office of Energy and Environmental Affairs developed the **Massachusetts Clean Energy and Climate Plan for 2020** that outlines programs to attain the 25 percent reduction by 2020 (updated in 2015).
- ‡ Under the GWSA Climate Plan 7.6% of the required reduction are to be achieved from state transportation programs.
- ‡ Climate Plan includes three sustainability goals to reduce GHGs for transportation:
 - ① reduce emissions from construction and operations,
 - ② promote healthy transportation modes by improving pedestrian, bicycle, and public transit infrastructure and operations,
 - ③ transportation investments that enable denser, smart growth development patterns.

- ‡ Long-range planning documents must address three sustainability goals and evaluate, track, and plan for reducing GHG emissions over time.
 - ✓ State-wide planning documents (e.g., State Freight Plan, MassDOT CIP, etc.)
 - ✓ LRTPs
- ‡ Shorter-range plans must be consistent with the Commonwealth's GHG reduction target.
 - ✓ Regional Transportation Improvement Programs (TIPs)
 - ✓ State Transportation Improvement Programs (STIPs)
- ‡ "This will require that the MPOs and MassDOT balance highway system expansion projects with other projects that support smart growth development and promote public transit, walking and bicycling"
- ‡ "In addition, the project programming mix included in the RTPs, TIPs and STIP can contribute to GHG reduction through prioritizing roadway projects that enable improved system operational efficiency, without expanding overall roadway system capacity."



- ‡ **310 CMR 60.05** *Global Warming Solutions Act Requirements for the Transportation Sector* (amended August 2017)
 - ✓ MassDOT to demonstrate its aggregate MassDOT GHG emissions reduction limits as established for 2018, 2019, and 2020 are achieved;
 - ✓ MPOs to evaluate and report the aggregate transportation GHG emissions impacts of Regional Transportation Plans (RTPs) and Transportation Improvement Programs (TIPs);
 - ✓ MPOs, in consultation with MassDOT, to develop and utilize procedures to prioritize and select projects in RTPs and TIPs based on factors that include aggregate transportation GHG emissions impacts; and
 - ✓ MassDOT to evaluate and report the aggregate transportation GHG emissions impacts of State Transportation Improvement Programs (STIPs) and state-funded projects that are not included in STIPs.
- ‡ **310 CMR 60.06** *CO₂ Emission Limits for State Fleet Passenger Vehicles* (August 2017)
 - ✓ Mass-based limits are set on CO₂ emissions from the fleet of passenger vehicles for each Executive Office and decline each year from 2018 through 2025

MASSDOT:

PROJECT SELECTION CRITERIA

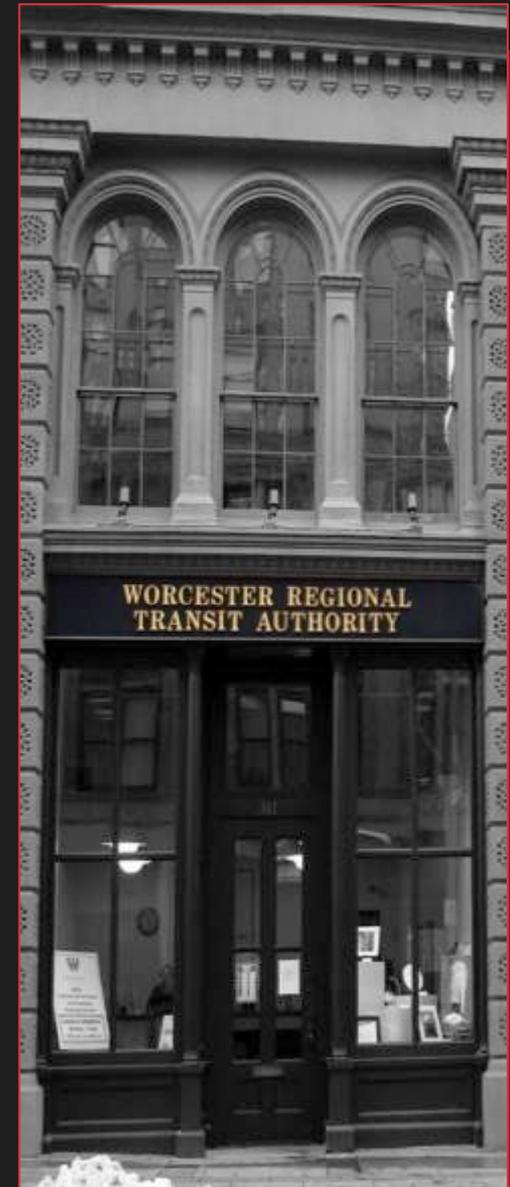
Project Selection Criteria: Environmental & Health Effects

- ✓ Objective: Reduce greenhouse gas emissions
- ✓ Data Needs: Federally required air quality analysis modified to incorporate greenhouse gases; transportation demand modeling outputs

“The Environmental & Health Effects criterion, while important, was not weighted more heavily because there was consensus among the Council that this factor would not be a significant differentiator. In addition to being a national leader in this area, MassDOT is subject to rigorous federal and state laws and regulations related to environmental impacts and greenhouse gas. **Projects that would set MassDOT backwards in achieving its greenhouse gas reduction goals, or that would cause significant harm to the environment or public health, should be eliminated from consideration prior to initiation.**” See Recommendations for MassDOT Project Selection Criteria (July 1, 2015), p.14

PROJECT PRIORITY FORMULA SUMMARY TABLE

Goals/Criteria	Roads & Paths Modernization	MBTA/Regional Transit Modernization	Roads & Paths Capacity	MBTA/Regional Transit Capacity
Cost Effectiveness	15	20	20	25
Economic Impact	10		15	20
Environmental & Health Effects	10	5	10	10
Mobility	10	30	25	25
Policy Support	10	10	10	10
Safety	10	10	10	
Social Equity			10	10
System Preservation	35	25		
Total	100	100	100	100



MASSDOT: OVERALL EMPHASIS

“In Massachusetts now, climate is very much about transportation.”
-Secretary Pollack, Keynote Address, Moving Together Conference, 9/28/17.

“Encouraging people to walk, bike and use transit is one of the department's two strategies on greenhouse gas emissions, along with supporting electric vehicles and other “cleaner cars.”
-Secretary Stephanie Pollack, Statement to SHNS on 9/28/17

BOSTON MPO: CLIMATE-RELATED PERFORMANCE MEASURES

Goal: Create an environmentally friendly transportation system

- ✓ Reduce greenhouse gases generated in the Boston region by all transportation modes as outlined in the Global Warming Solutions Act

Goal: System Preservation

- ✓ Prioritize projects that support planned response capability to existing or future extreme conditions (sea level rise, flooding, and other natural and security-related man-made hazards)
- ✓ Protect freight network elements, such as port facilities, that are vulnerable to climate-change impacts



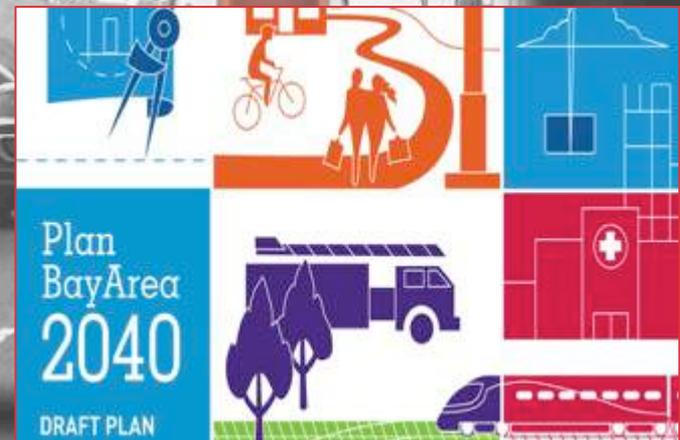
NATIONAL EXAMPLE OF CLIMATE CHANGE PERFORMANCE MEASURES

PLAN BAY AREA 2040 (METROPOLITAN TRANSPORTATION COMMISSION IN SAN FRANCISCO BAY AREA)

Required to reduce per-capita CO₂ emissions from cars and light duty trucks by 15% by 2035 (plan reduces GHGs by 16% by 2035).

Increase non-auto mode share by 10%. Plan increases non-auto mode share by 3%.

Reduce per-rider transit delay due to aged infrastructure by 100%. Plan achieves 75% reduction.



MEASURING GHG FROM TRANSPORTATION SECTOR

- ‡ CO₂ emissions can be estimated using a simple formula:
$$\text{CO}_2 = \text{VMT} / \text{avg. fuel economy (mpg)} \times \text{carbon content of fuel (g/gal)}$$
- ‡ Emissions models can therefore be used to estimate CO₂ emissions from travel demand inputs. EPA's MOVES model is EPA's traditional tool for estimating greenhouse gas emissions from the transportation sector.
- ‡ If fleet mix, average fuel economy, and the mix of fuels are relatively constant, there is a near linear relationship between VMT and on-road CO₂ emissions. Thus VMT per capita can serve as a proxy for CO₂ emissions.
- ‡ VMT is a poorer proxy for CO₂ emissions when:
 - ❑ Traffic-smoothing measures, changes in vehicle technology, or changes in fleet mix are expected to improve average fuel economy.
 - ❑ Changes in the type of fuel used are expected to change the carbon emissions of fuel per gallon.
 - ❑ Some passenger travel is expected to shift from private vehicles to buses or trains, or freight is expected to shift from truck to train.



TRAVEL DEMAND MODEL V. ACCESSIBILITY INPUT

	Travel Demand	Accessibility
Zone	TAZ	Census Block
Modes	Automobile and Public Transit	Automobile, Public Transit, Biking, and Walking
Routes	Shortest time	Adjustments for transit waiting times and walking/biking level of stress

- ‡ VMT can also be calculated through accessibility model.
- ‡ Accessibility as Transportation Metric: regression model that predicts VMT from modal accessibilities and other household or neighborhood attributes.
- ‡ Need to develop an accessibility-based framework with an operational tool that can be employed to determine changes in mode choice and vehicle-miles traveled from particular transportation investments.

Thank you!



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Moving Forward: Part I – Group Exercise

Below are the recommendations for MassDOT Project Selection Criteria. The goals are:

System Preservation	<ul style="list-style-type: none">• Projects should contribute to a state of good repair on the transportation system.
Mobility	<ul style="list-style-type: none">• Projects should provide modal options efficiently and effectively.
Cost Effectiveness	<ul style="list-style-type: none">• Projects should result in benefits commensurate with costs and should be aimed at maximizing the return on the public's investment.
Economic Impact	<ul style="list-style-type: none">• Projects should support strategic economic growth in the Commonwealth.
Safety	<ul style="list-style-type: none">• Projects should contribute to the safety and security of people and goods in transit.
Social Equity & Fairness	<ul style="list-style-type: none">• Projects should equitably distribute both benefits and burdens of investments among all communities.
Environmental & Health Effects	<ul style="list-style-type: none">• Projects should maximize the potential positive health and environmental aspects of the transportation system.
Policy Support	<ul style="list-style-type: none">• Projects should get credit if they support local or regional policies or plans; or state policies not addressed through the other criteria.

Moving Forward: Part I – Group Exercise

FHWA performance measures:

- Safety: fatalities, serious injuries, fatality rate, serious injury rate, and bike/ped fatality and serious injury
- System preservation: Interstate pavement condition, NHS pavement condition and NHS bridge condition
- Performance: Interstate travel time reliability NHS travel time reliability, truck travel time Interstate travel time reliability, on-road mobile source emissions, annual hours of peak hour excessive delay per capita, and non-SOV mode share.

Thank You

