



## NASHVILLE-DAVIDSON COUNTY STRATEGIC PLAN FOR SIDEWALKS AND BIKEWAYS



The WalknBike plan will improve walking and biking in Nashville, connecting people to opportunity on a network of high-quality, comfortable, and safe sidewalks and bikeways.



**Metro-Nashville**  
**Public Works**  
Improving the Quality of Life for Nashvilleans and our Visitors

# walk**n**bike



## Public Outreach To-Date



**Metro-Nashville**  
**Public Works**  
Improving the Quality of Life for Nashvilleans and our Visitors



# We're Listening!

## **150+** Attendees at Public Kickoff Meeting on April 15, 2016

**"I'd love to walk more and encourage my children to walk more!"**

"It becomes even more dire for us to create green ways and sidewalks that will allow other means of transportation."

"I love biking in Nashville and am grateful to live in a city where the government is making walking/biking an infrastructure priority!"

## **200+** Attendees at Tour de Nash Booth

People are attracted to cities that put an emphasis on beautifying the city and making it accessible."

**"Access by foot is essential for us; we work, play, and participate in commerce in our neighborhood."**

"An excellent way to combat traffic (and to support healthy lifestyles!) is by making biking and walking a more feasible and pleasant experience. Thank you!"

**300+** Visitors to community meetings, neighborhood association meetings, festivals, and pop-up events

**1,856** Respondents to Survey #1

**1,869** Respondents to Survey #2 (to date!)

**"Protected bike lanes are crucial to giving more people confidence in safety."**

**2,994** Online Map Users

"Nashville is off to a great effort for bikers and pedestrians. Keep going for excellence in this area."

**"I love that we are making progress."**

**Total Participants:  
7,250 +**

# Top Three Values/Priorities



**SAFETY**



**CONNECTIVITY**



**EQUITY AND NEED**



# Top Five Destinations



SCHOOLS



TRANSIT STOPS  
& ROUTES



HOMES



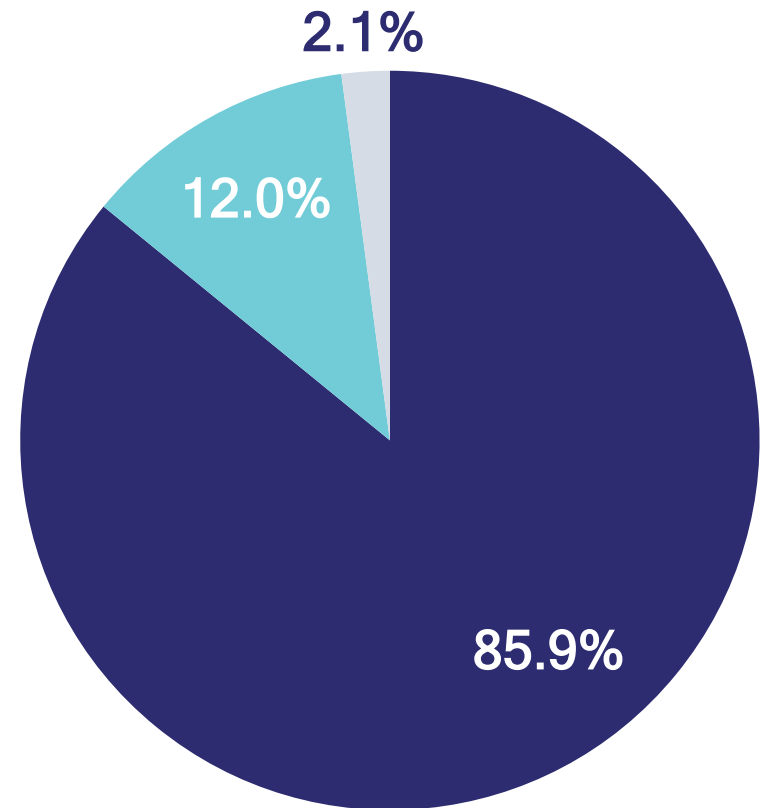
PARKS &  
GREENWAYS



COMMUNITY CENTERS, LIBRARIES, &  
OTHER CIVIC CENTERS

# Prioritized FIRST for Sidewalk Construction

- Areas where high pedestrian use is occurring or expected, regardless of location
- Areas spread geographically across Nashville and Davidson County, regardless of expected pedestrian use.
- No opinion



# If you had \$10 to spend each year, how would you allocate it among SIDEWALK funding needs?

Building New Sidewalks



Replacing Old Sidewalks



Making Sidewalks  
More Accessible



Cleaning Sidewalks



Other





# If you had \$10 to spend each year, how would you allocate it among the following SIDEWALK projects?

Filling a Sidewalk Gap



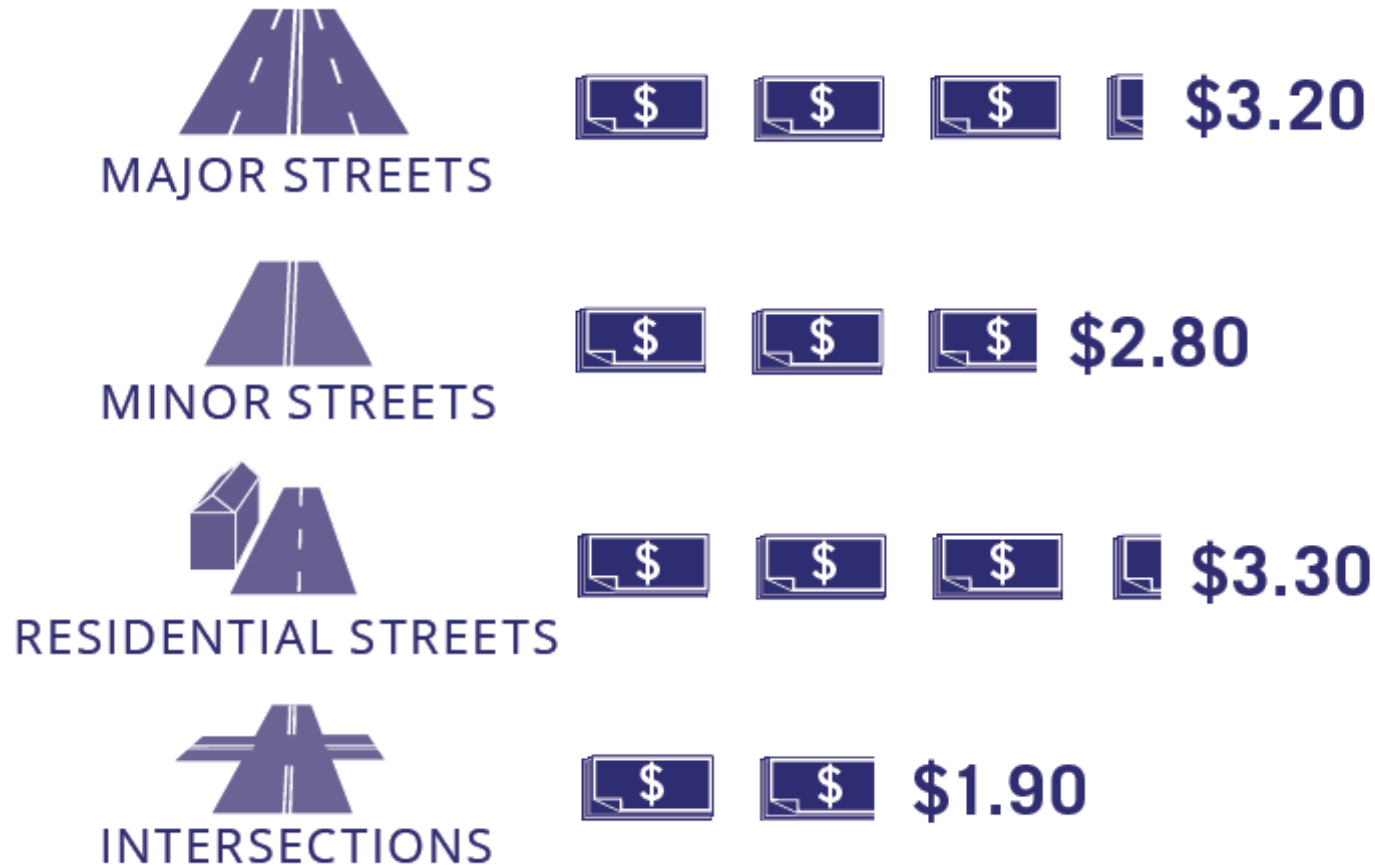
**\$5.00**

Expanding Sidewalk to New Area



**\$5.31**

# If you had \$10 to spend each year, how would you allocate it among SIDEWALK funding needs?



# Comfort Level on each Type of Walking Path

## Survey 2 Results



**76%** very comfortable

**18%** comfortable

**4%** somewhat uncomfortable

**2%** uncomfortable

**1%** no opinion



**29%** very comfortable

**38%** comfortable

**24%** somewhat uncomfortable

**8%** uncomfortable

**1%** no opinion



**56%** very comfortable

**28%** comfortable

**9%** somewhat uncomfortable

**6%** uncomfortable

**1%** no opinion



**8%** very comfortable

**15%** comfortable

**28%** somewhat uncomfortable

**44%** uncomfortable

**5%** no opinion



# If you had \$10 to spend each year, how would you allocate it among the following BIKEWAY projects?

Filling a Bikeway Gap



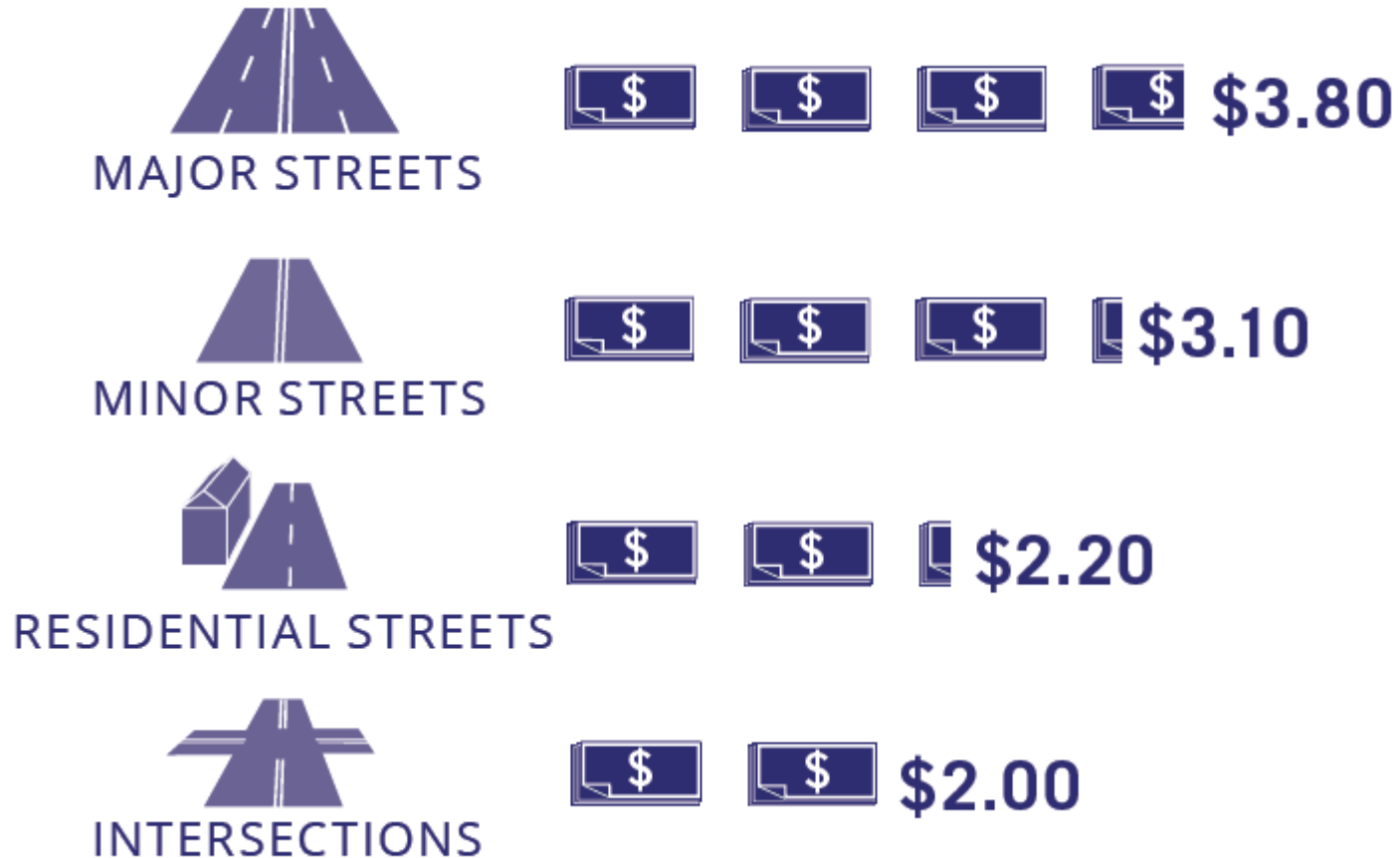
\$5.53

Expanding Bikeways  
to New Area



\$4.83

# If you had \$10 to spend each year, how would you allocate it among BIKEWAY funding needs?



# Comfort Level on each Type of Bikeway

## Survey 2 Results



Bike lanes/Buffered bike lanes



Cycle tracks



Shared-lane markings



Calm, neighborhood bikeways



Shared-use paths

22% very comfortable

40% comfortable

26% somewhat uncomfortable

10% uncomfortable

2% no opinion

69% very comfortable

24% comfortable

4% somewhat uncomfortable

2% uncomfortable

1% no opinion

2% very comfortable

12% comfortable

36% somewhat uncomfortable

45% uncomfortable

4% no opinion

22% very comfortable

41% comfortable

23% somewhat uncomfortable

10% uncomfortable

3% no opinion

63% very comfortable

25% comfortable

6% somewhat uncomfortable

3% uncomfortable

2% no opinion



# Which Programs are MOST Important?

**Enforcement**



31%

**Education**



25%

**Encouragement**



14%

**Parking, Fix it Stations**



12%

**Events & Promotion**



10%

**Education Classes**



8%

# Type of Projects to Require Sidewalks

COMMERCIAL,  
INSTITUTIONAL &  
MULTI-FAMILY  
PROJECTS

50%

50%

RESIDENTIAL  
PROJECTS

50%

50%

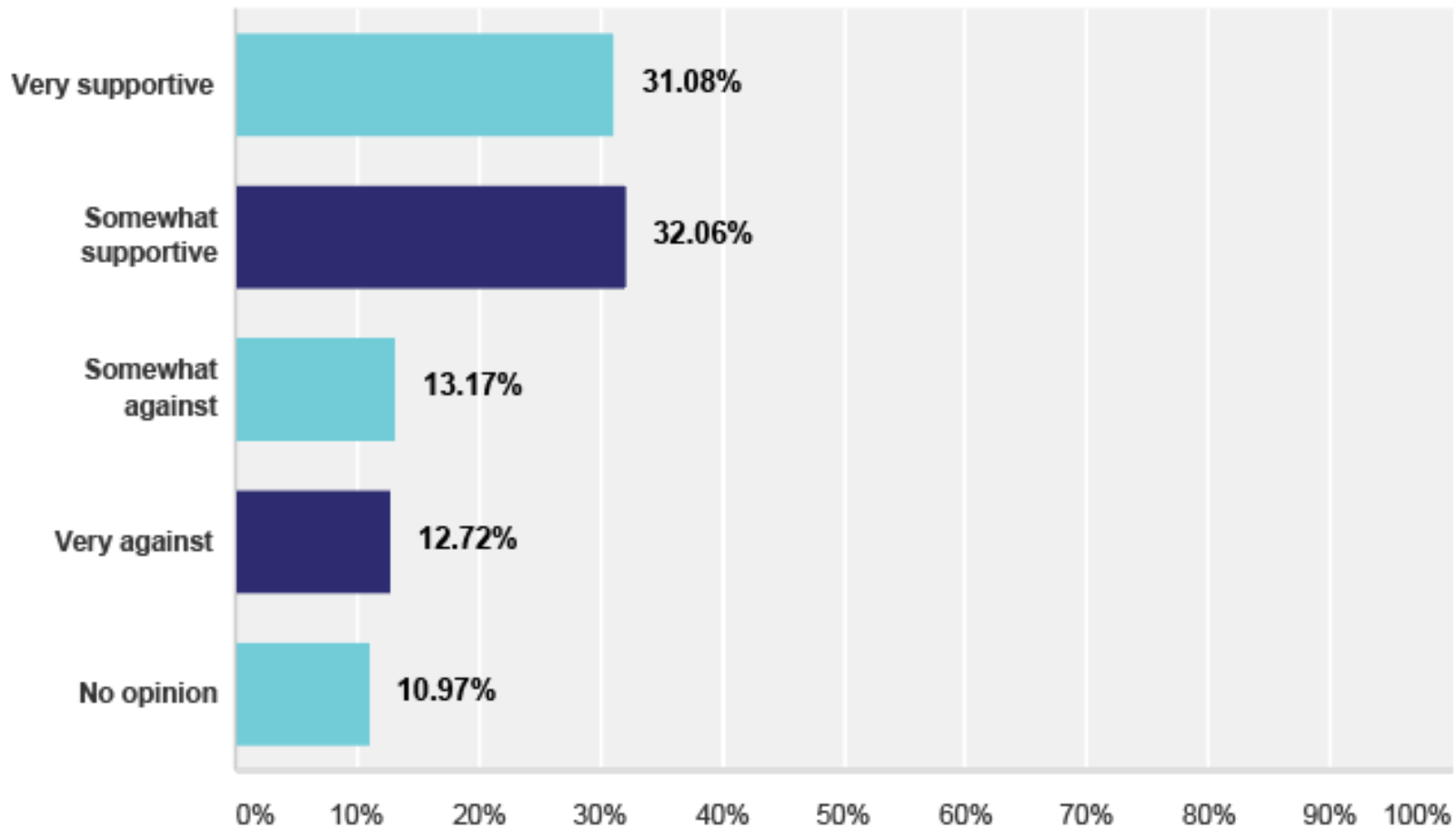


MAJOR STREETS



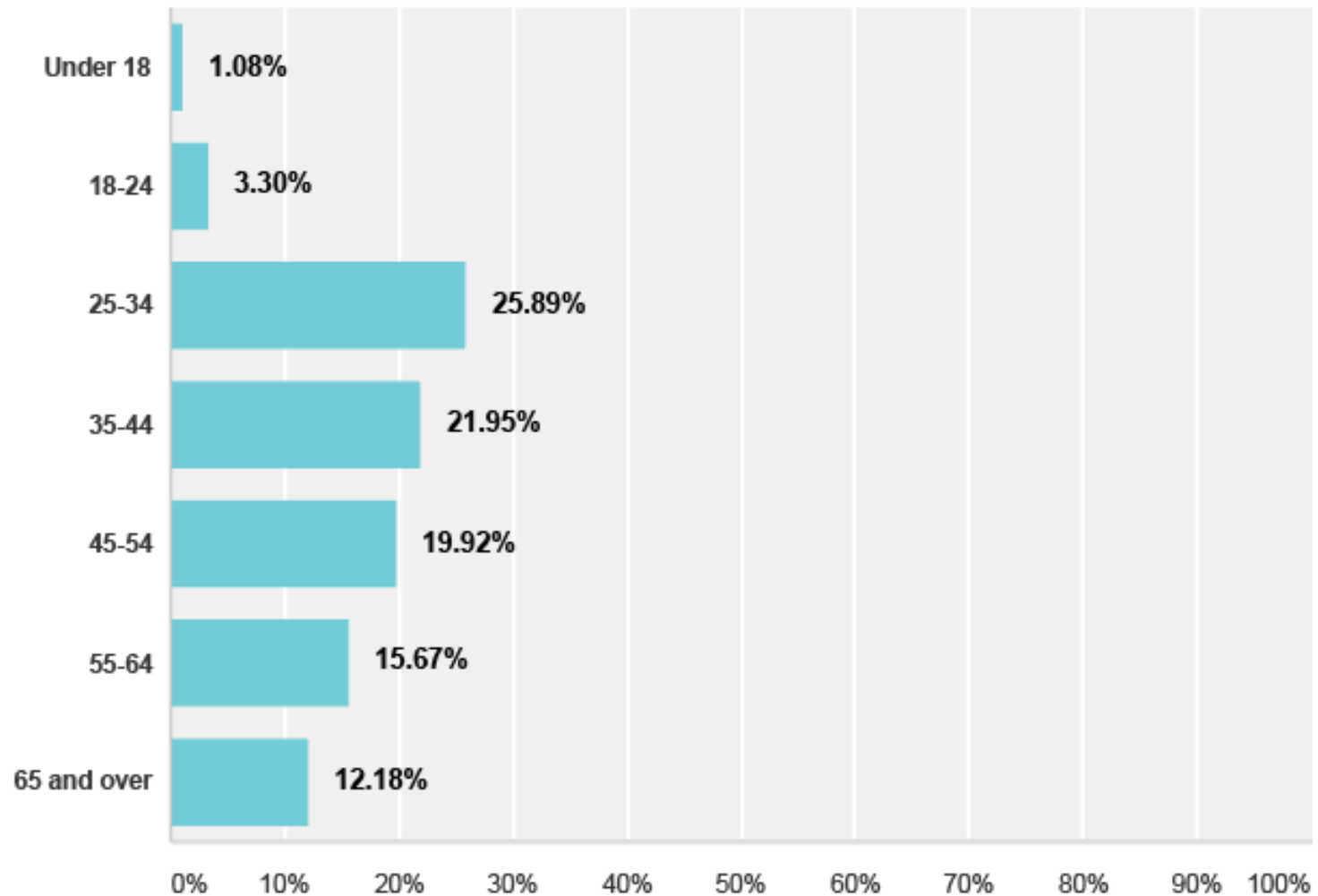
MINOR STREETS

# How supportive of more intense zoning/land use policies (such as increased density) are you?



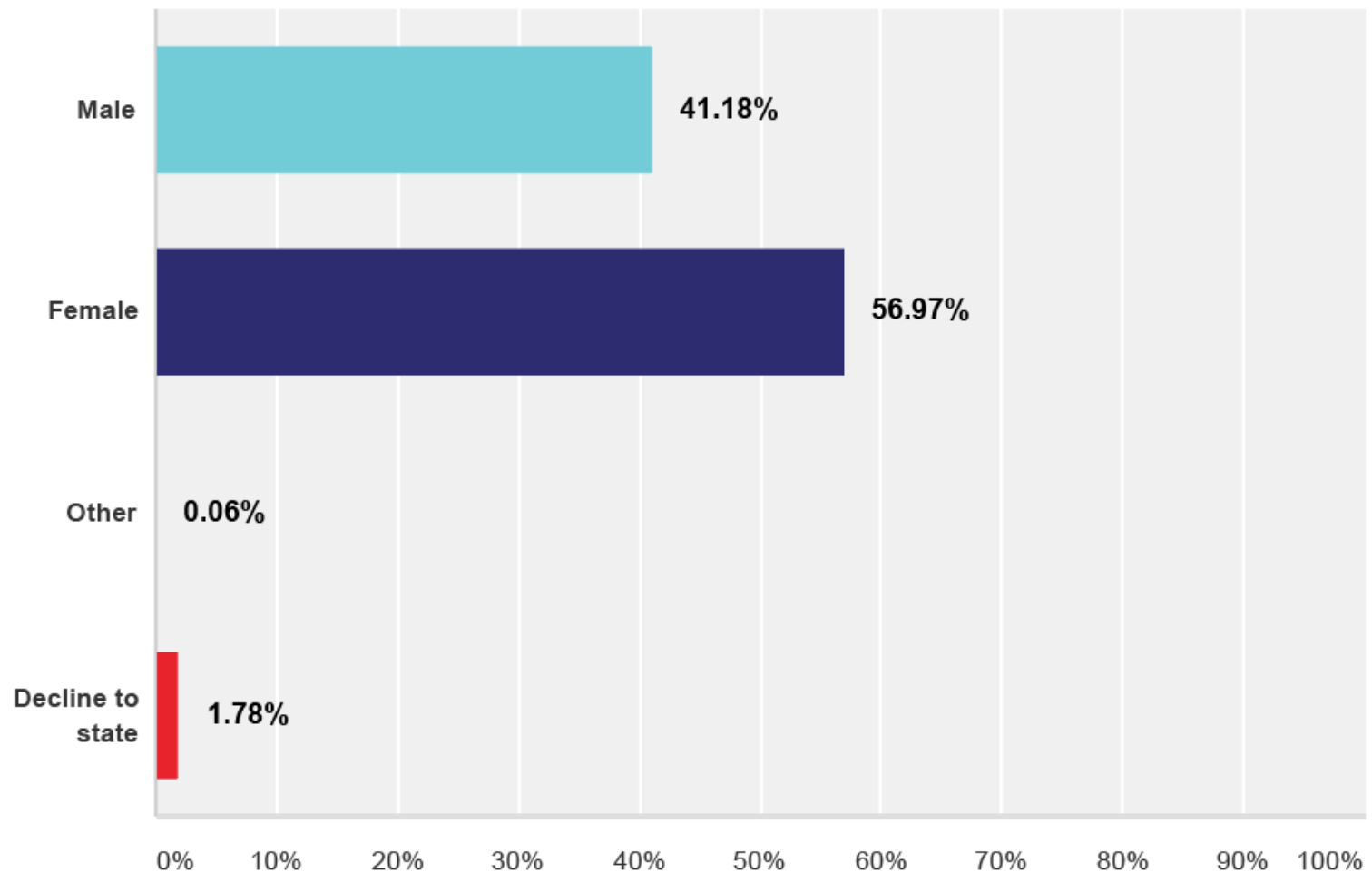


# Demographic Response: Age



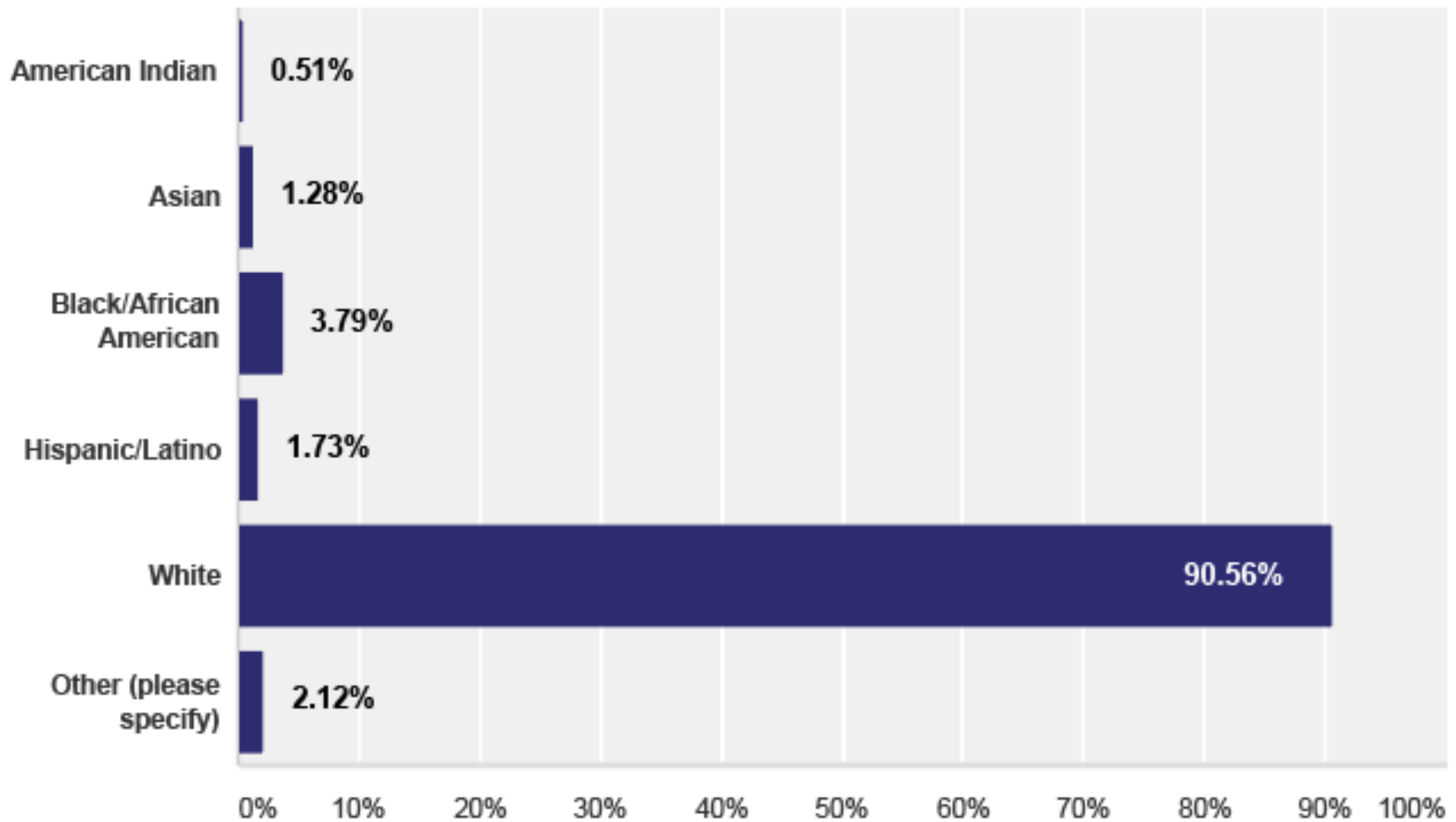
Survey 2 Results

# Demographic Response: Gender



Survey 2 Results

# Demographic Response: Background



Survey 2 Results

# Primary Use of the Existing Network...



## SIDEWALK NETWORK



TO TRANSIT  
STATIONS

**95%**



HEALTH

**92%**



RECREATION

**90%**



## BIKEWAY NETWORK



COMMUTING  
(WORK OR SCHOOL)

**57%**



RECREATION

**56%**



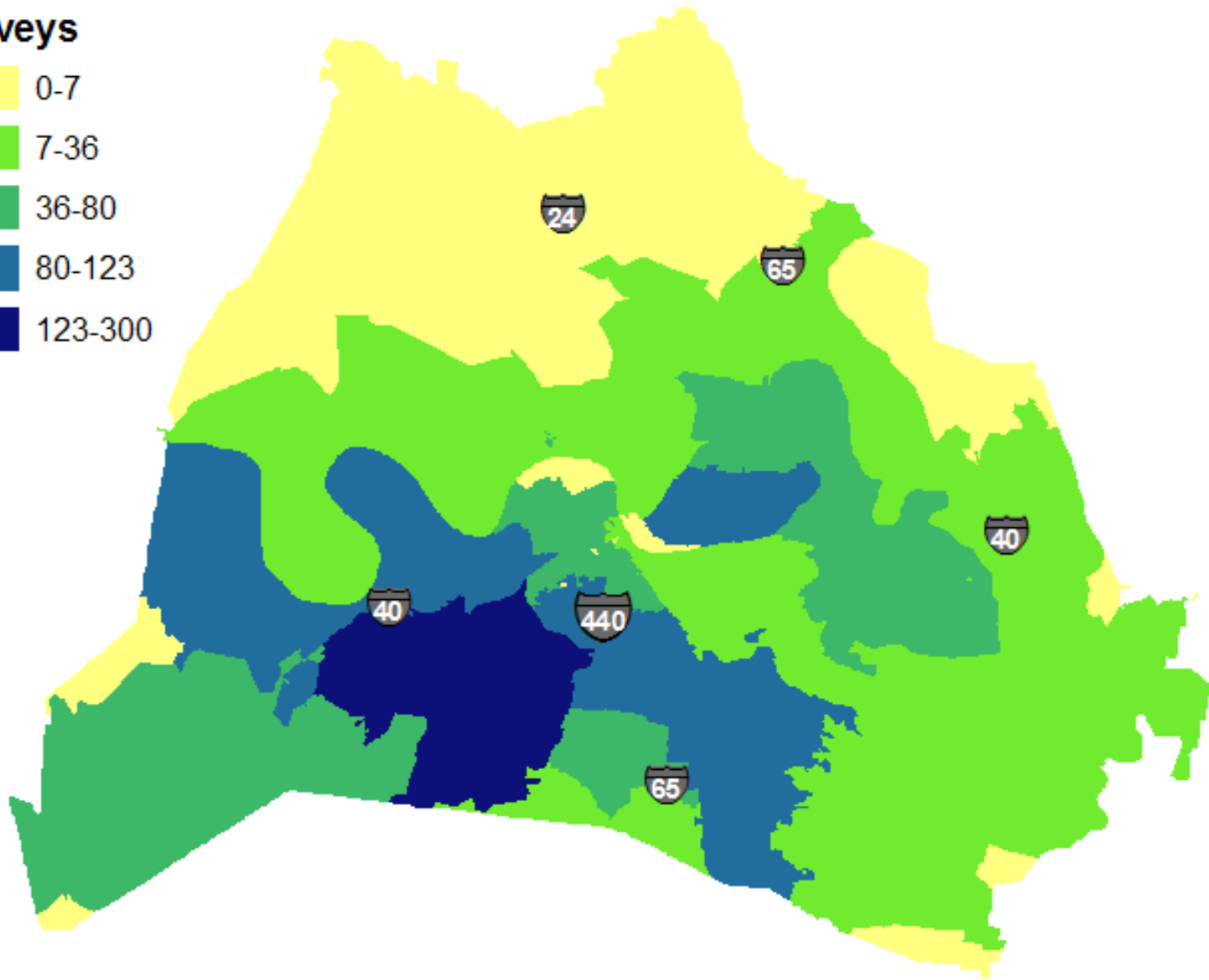
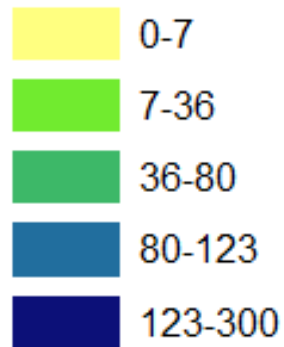
HEALTH

**52%**

Survey 2 Results

# Geographic Response by Zipcode (Survey 2)

## Surveys





# Next Steps for Public Engagement

- August 6<sup>th</sup> Bordeaux Community Meeting
  - Autumn Hills Assisted Living, 10am to Noon
- August 27<sup>th</sup> Transportation Triathlon at East Park
  - Mayor to travel from M.C. Central to East Park by walking, biking and riding the bus
- Several Pop-Up Events throughout August
- Next Round of Outreach & Public Meetings to begin once Draft Plan Available



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## Existing Conditions Analysis



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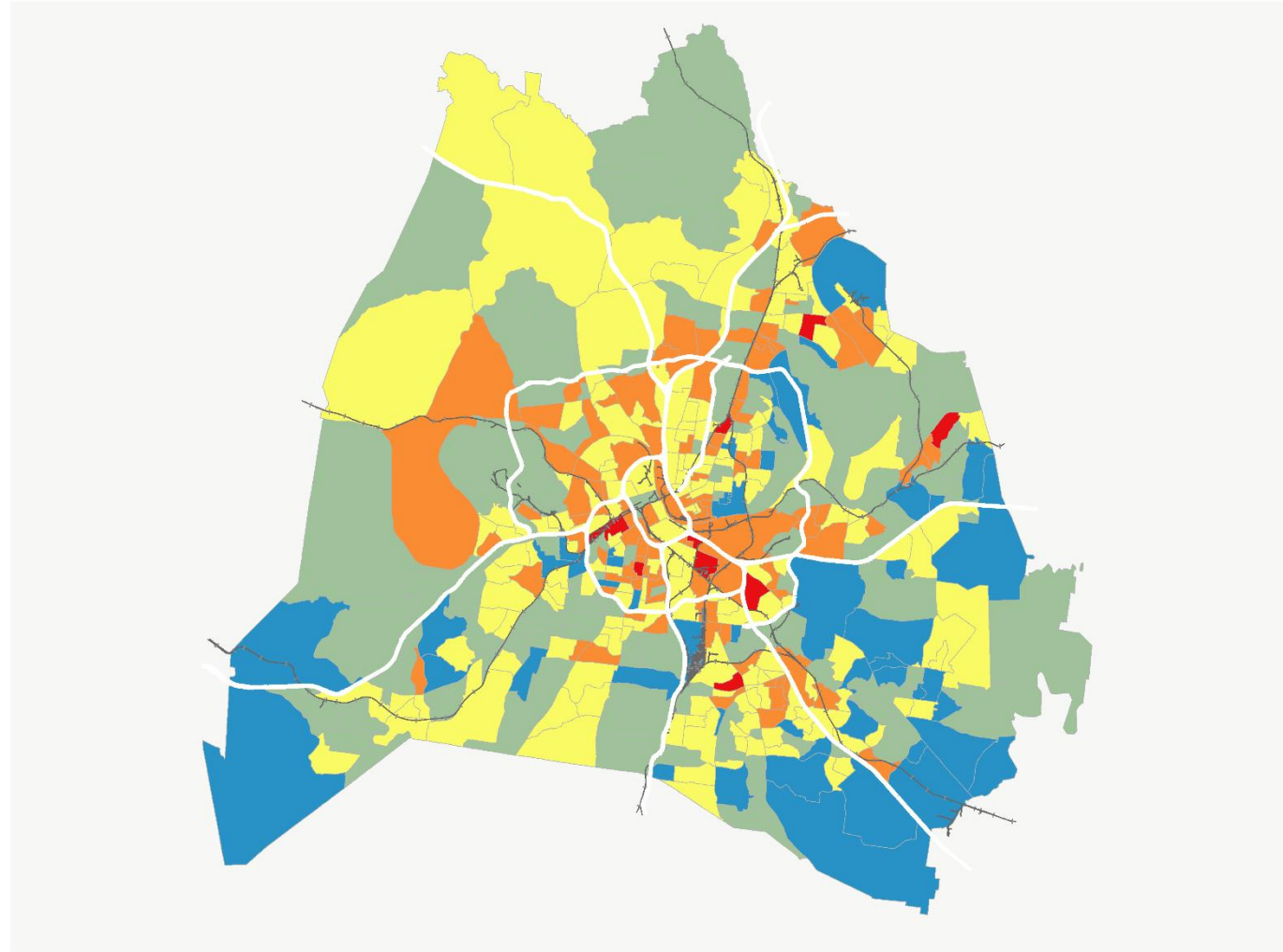
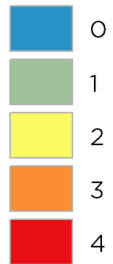
# Types of Analyses Completed

- Health + Equity\*
- Demand\*
- Crash Analysis
- Pedestrian Level of Service\*
- Bike Level of Traffic Stress

*\*2014 MPO Bicycle + Pedestrian Study*

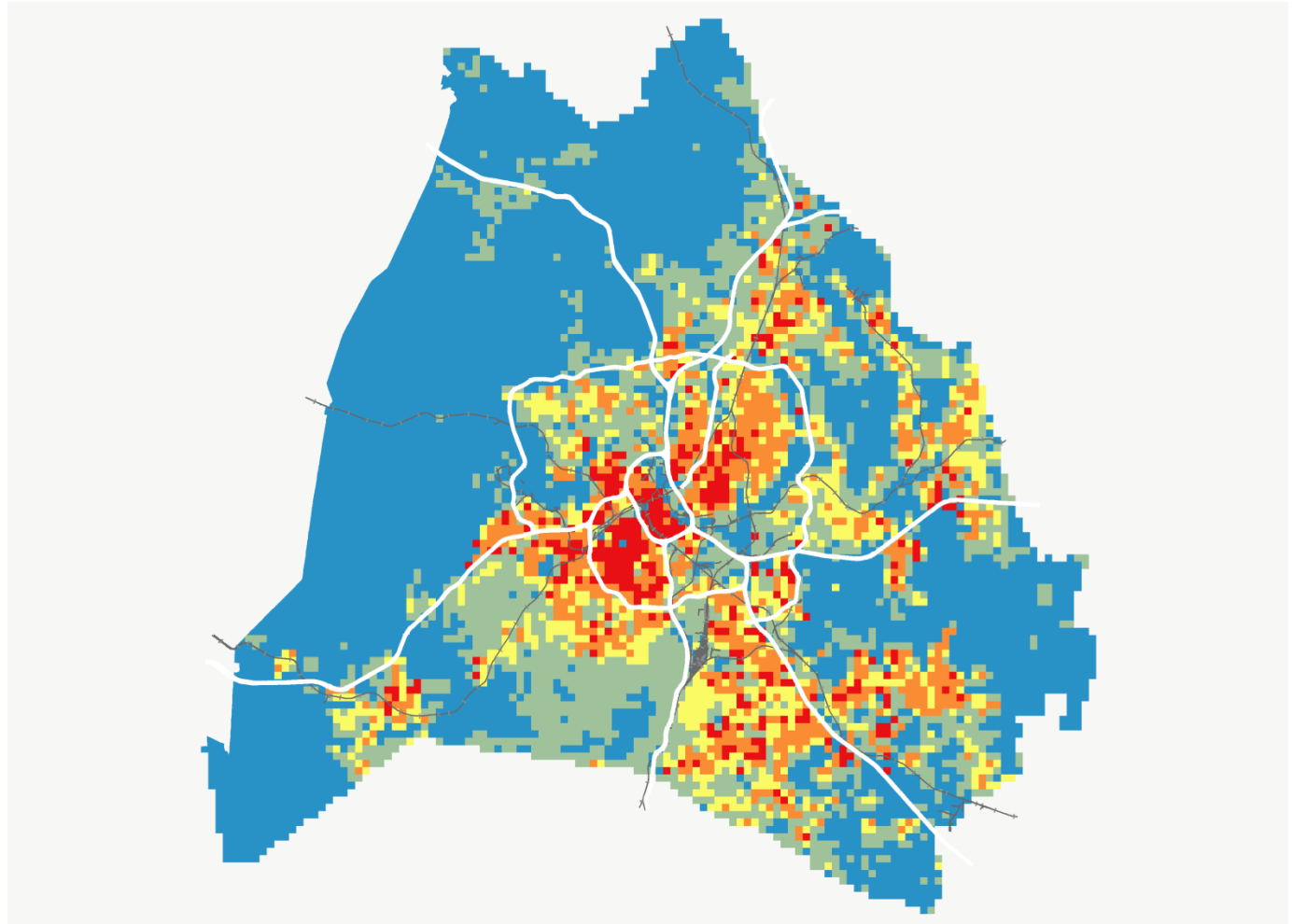
# Health + Equity Analysis

# OF CATEGORIES  
OF HIGH RISK



# Demand Analysis

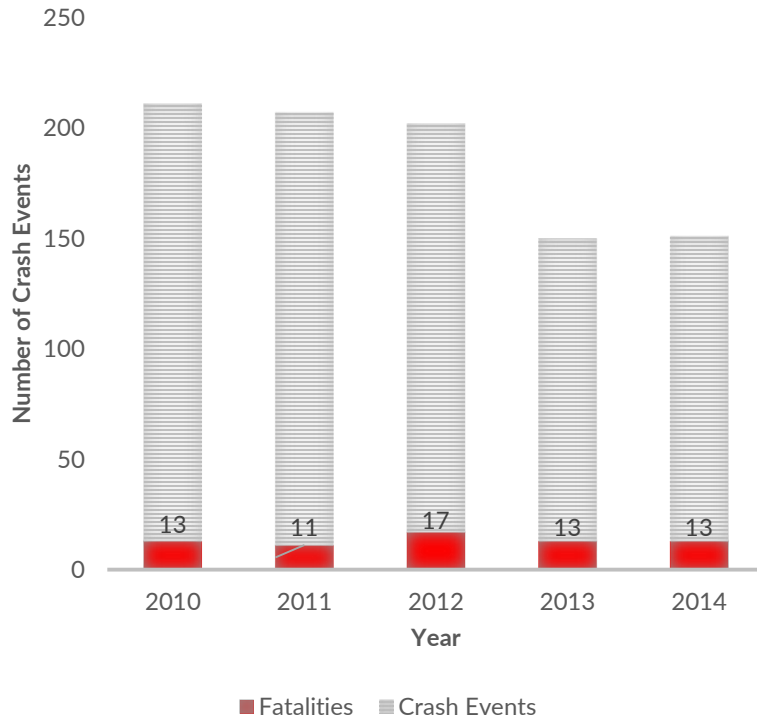
## PEDESTRIAN AND BICYCLE TRIPS



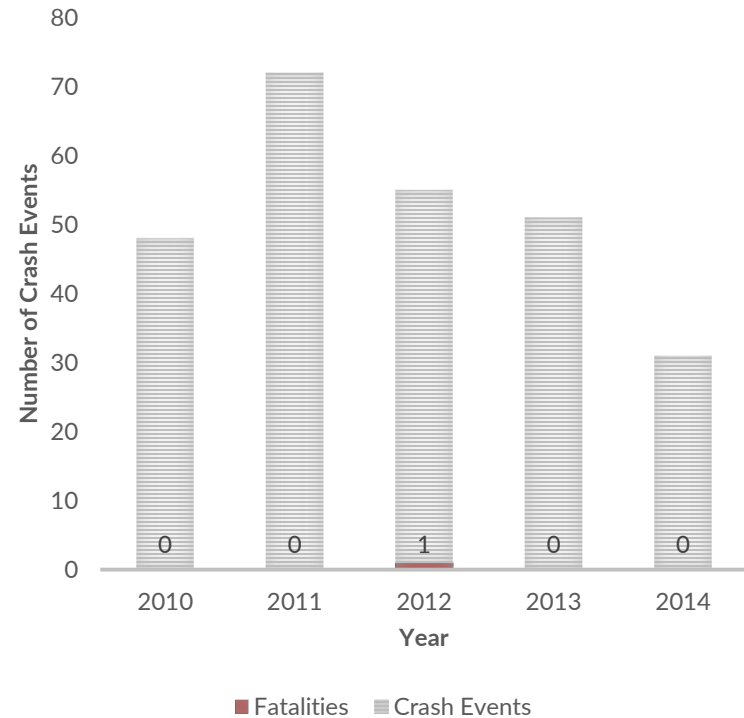


# Crash Analysis

## PEDESTRIAN CRASH EVENTS

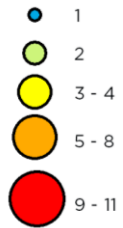


## BICYCLE CRASH EVENTS

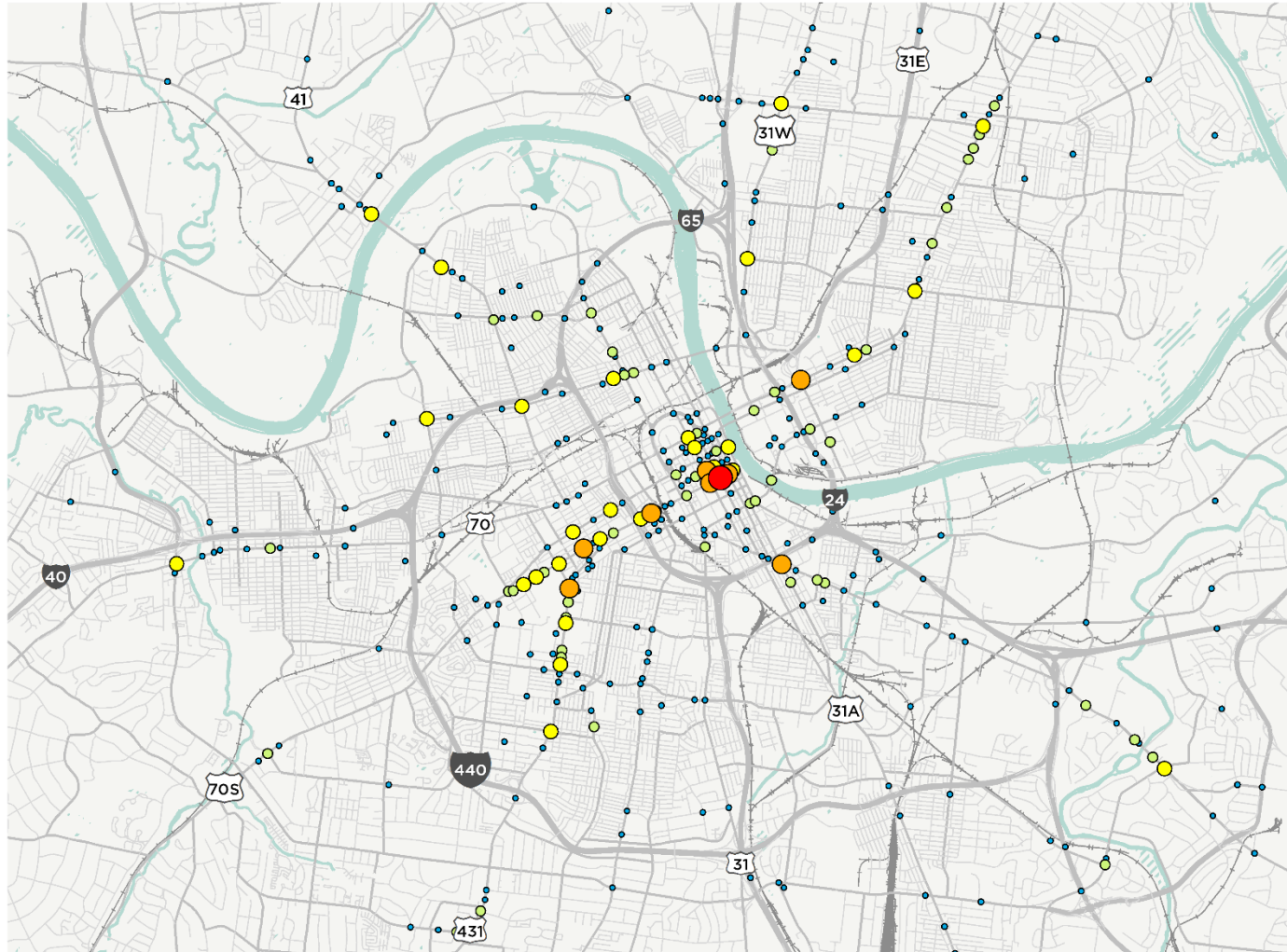
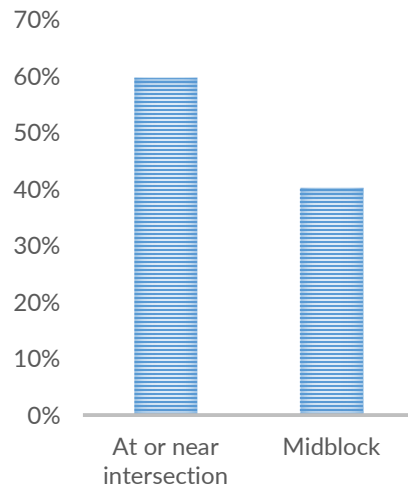


# Crash Analysis – Pedestrian Frequency

## PED CRASH FREQUENCY

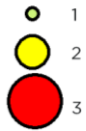


## % OF TOTAL CRASH EVENTS

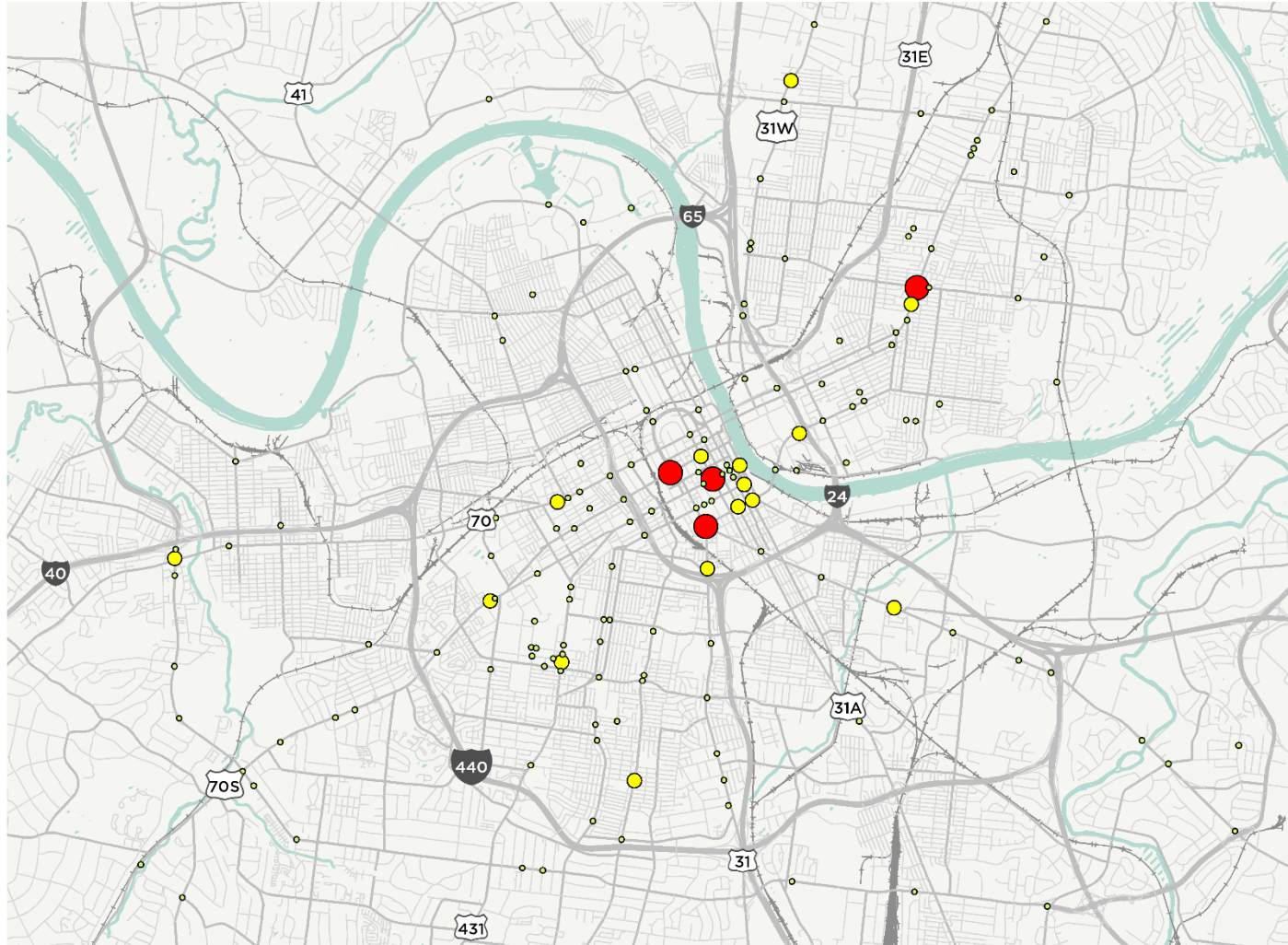
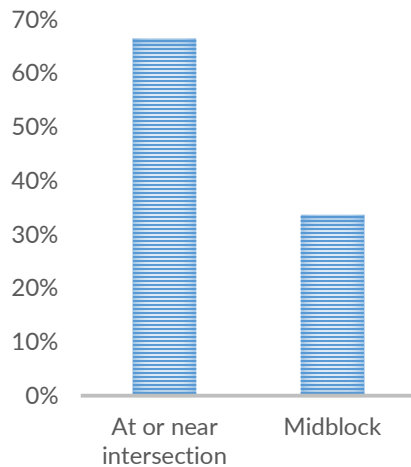


# Crash Analysis – Bike Frequency

## BIKE CRASH FREQUENCY

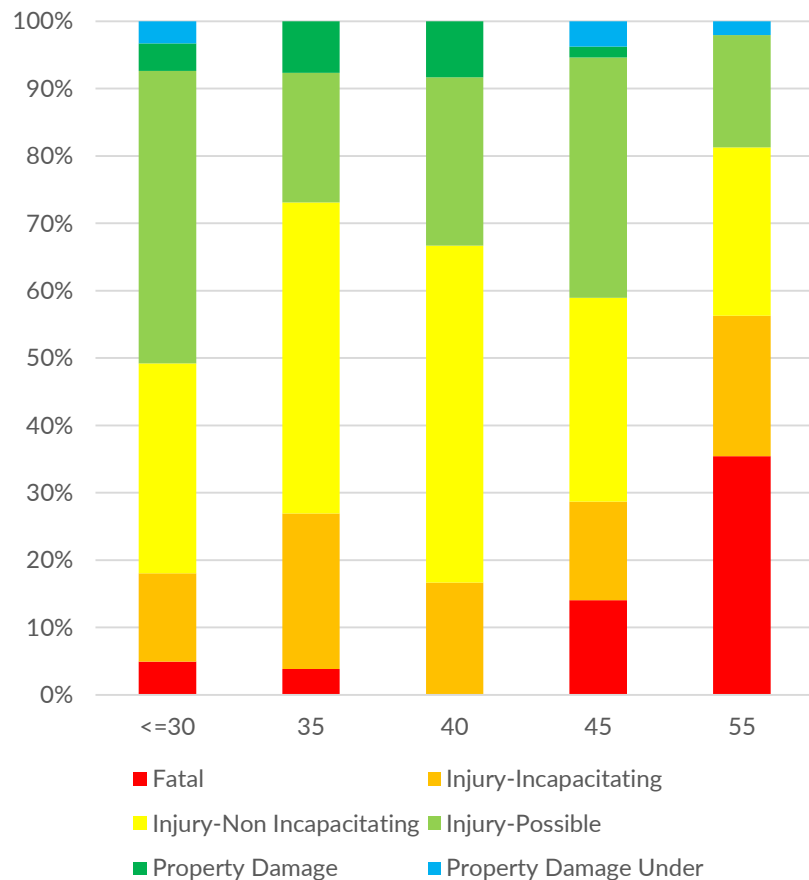


## % OF TOTAL CRASH EVENTS

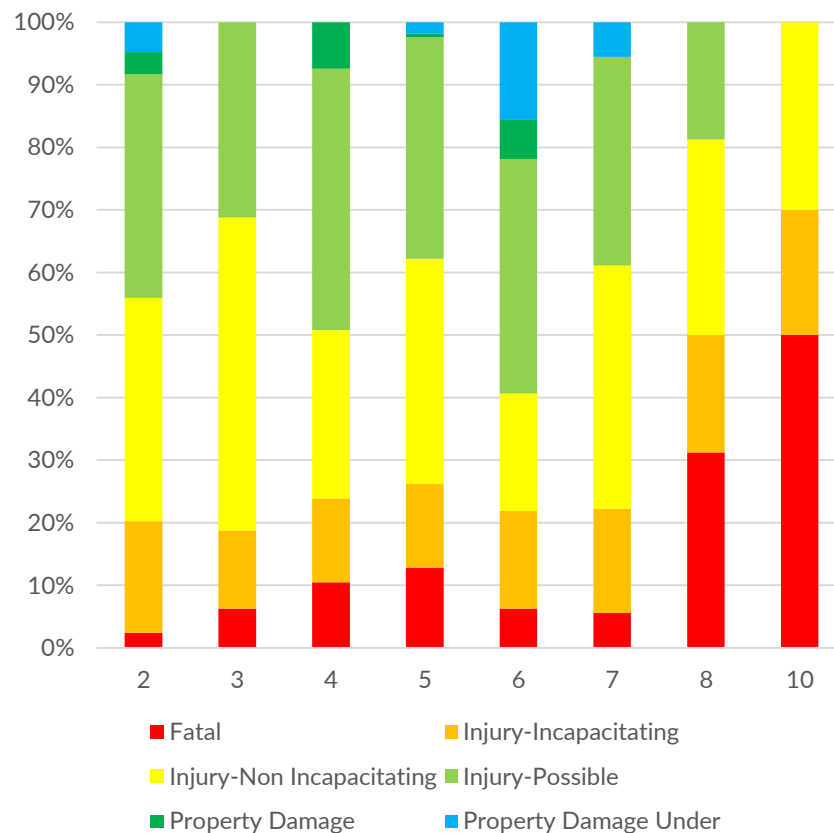


# Crash Analysis – Midblock Locations

## CRASH TYPE BY POSTED SPEED



## CRASH TYPE BY NUMBER OF TRAVEL LANES





# Why Measure Bicycle and Pedestrian Comfort and Stress?



- Increased interest in making transportation investment decisions based on system performance
- Efforts driven by public agencies and federal legislation
- Increased interest in active transportation investments (ped/bike) and putting these modes on equal footing with cars

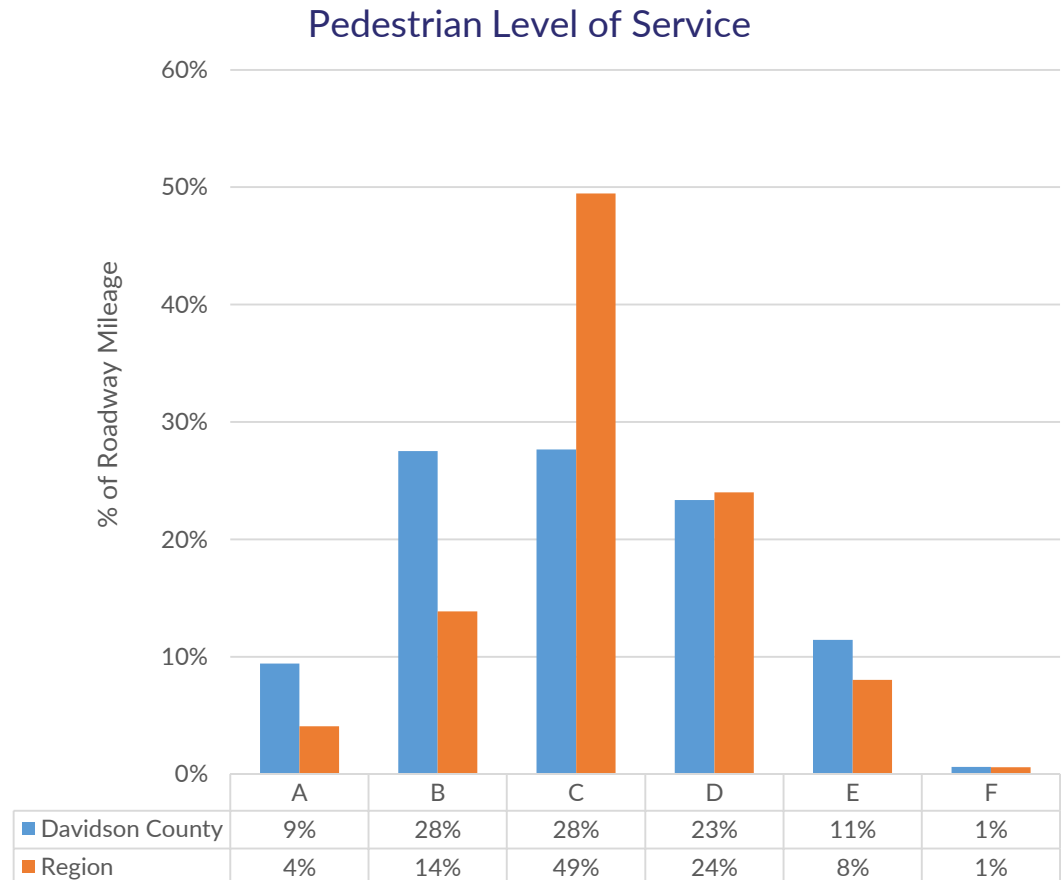


# Pedestrian LOS

## Inputs

- Presence and width of sidewalk
- Sidewalk buffer
- Roadway width
- Bike lane/shoulder width
- On-Street parking
- Traffic volume
- Number of lanes

## Results





# Pedestrian LOS

A



B



# Pedestrian LOS

C



D





# Pedestrian LOS

E



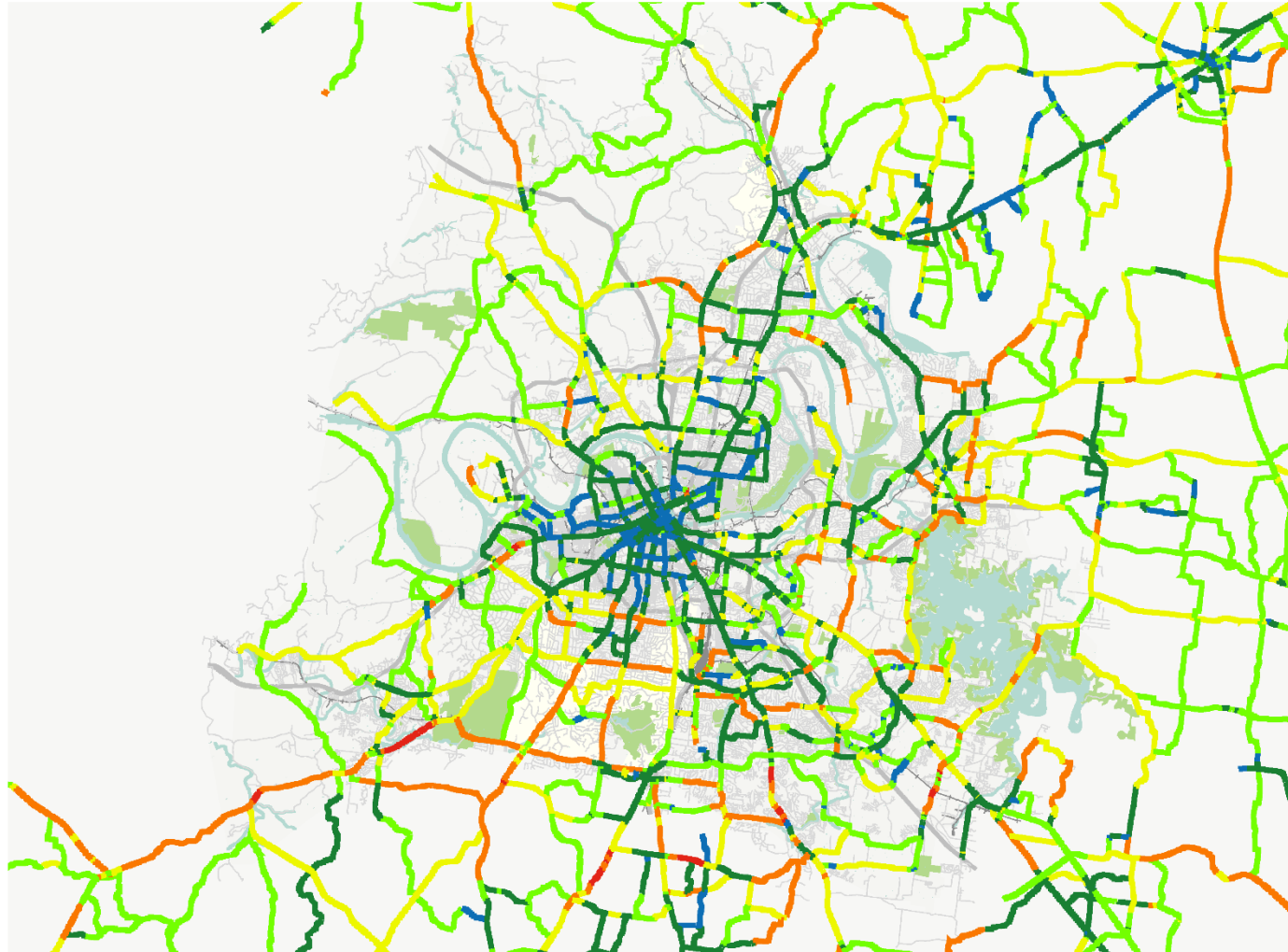
F



# Pedestrian LOS

## LEVEL OF SERVICE

- A
- B
- C
- D
- E
- F



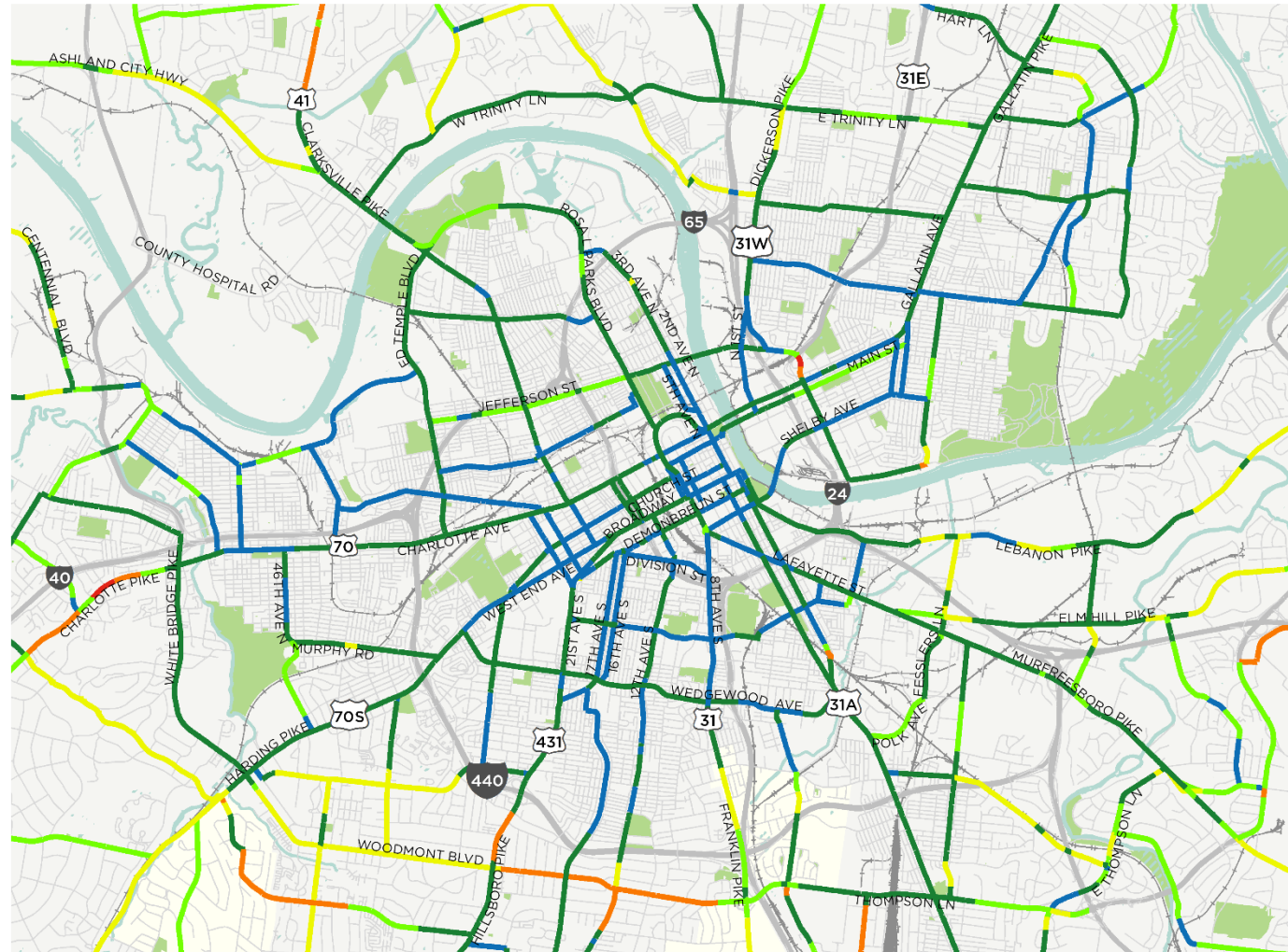
# Pedestrian LOS

## PEDESTRIAN FACILITIES

- Paved Greenway
- Unpaved Trail
- Sidewalks\_Existing

## LEVEL OF SERVICE

- A
- B
- C
- D
- E
- F





# Bicycle LTS Method: *Defining Levels of Traffic Stress*

## STRESS

4

STRONG & FEARLESS (<1%)

3

ENTHUSED & CONFIDENT (5%)



1

INTERESTED  
BUT CONCERNED  
(60%)

NO WAY,  
NO HOW (35%)

Image: Google Bike Vision Plan (2015), adapted from Roger Geller's "Four Types of Bicyclists"



# Comfort Level on each Type of Bikeway



Bike lanes/Buffered bike lanes



Cycle tracks



Shared-lane markings



Calm, neighborhood bikeways



Shared-use paths

22% very comfortable

40% comfortable

26% somewhat uncomfortable

10% uncomfortable

2% no opinion

69% very comfortable

24% comfortable

4% somewhat uncomfortable

2% uncomfortable

1% no opinion

2% very comfortable

12% comfortable

36% somewhat uncomfortable

45% uncomfortable

4% no opinion

22% very comfortable

41% comfortable

23% somewhat uncomfortable

10% uncomfortable

3% no opinion

63% very comfortable

25% comfortable

6% somewhat uncomfortable

3% uncomfortable

2% no opinion

# Bike Stress Across Nashville

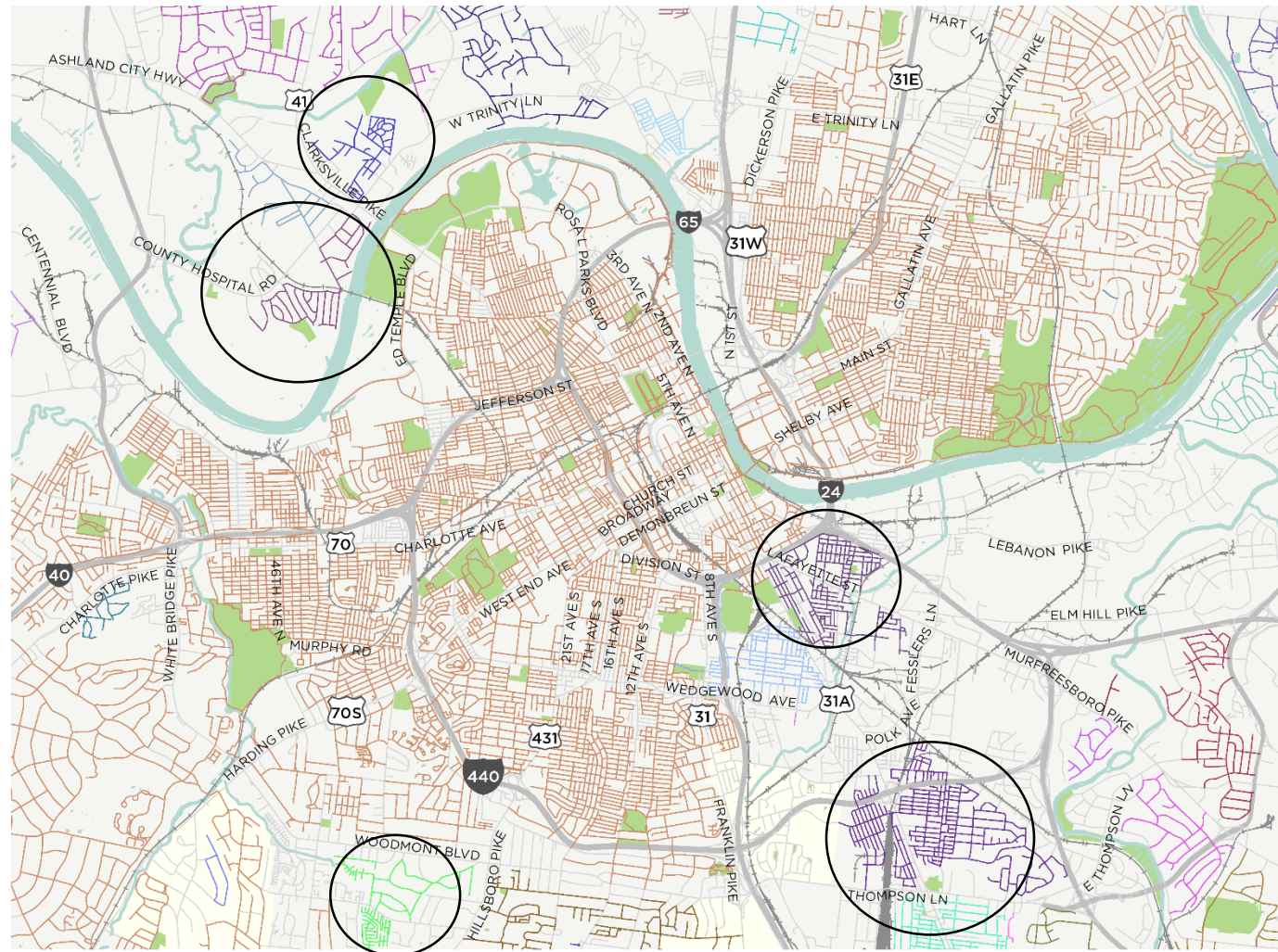
## LEVEL OF TRAFFIC STRESS



# Bike stress across Nashville

## LOW STRESS ISLANDS

— LTS Level 1 or 2 (color varies)





# Low-Stress Facilities *Greenways*



## LTS SCORE: 1



# Low-Stress Facilities *Separated Bike Lanes*



**LTS SCORE: 1.5**

# Low-Stress Facilities

## *Bike Lanes/Buffered Bike Lanes*



**LTS SCORE: 2**



# Low-Stress Facilities *Shared Streets*



**LTS SCORE: 1.5**



**LTS SCORE:**



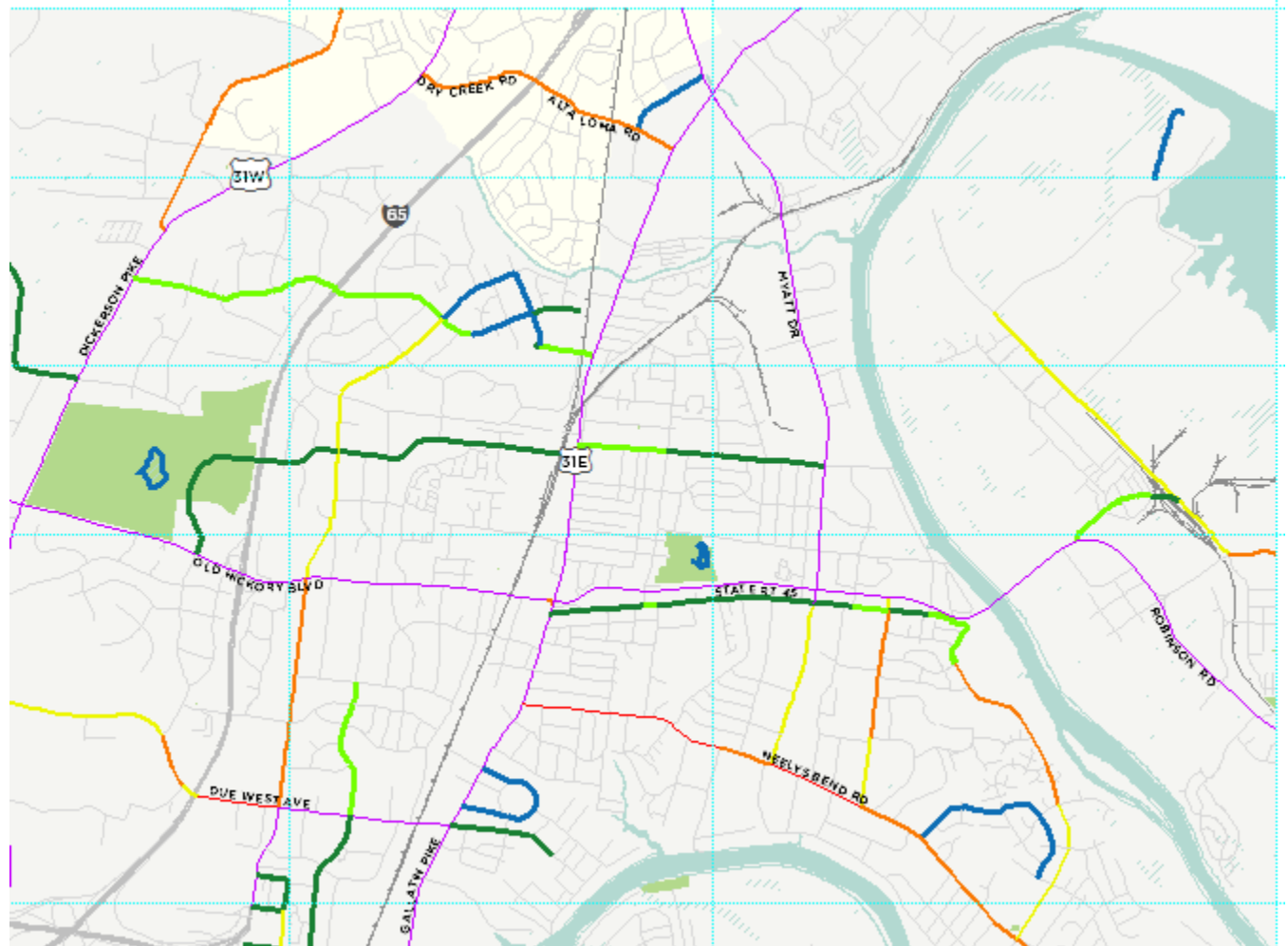
# All Bike Lanes are not Created Equal



**LTS SCORE: 4**

# Challenges: Major Corridors vs Parallel Routes

## LEVEL OF TRAFFIC STRESS



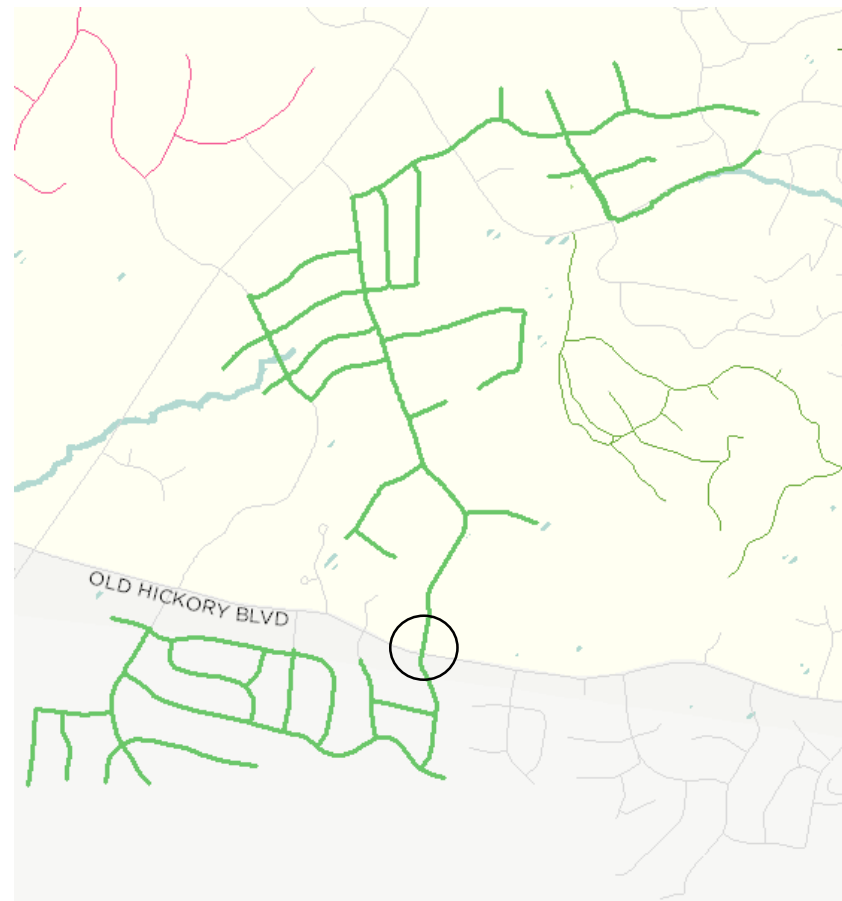
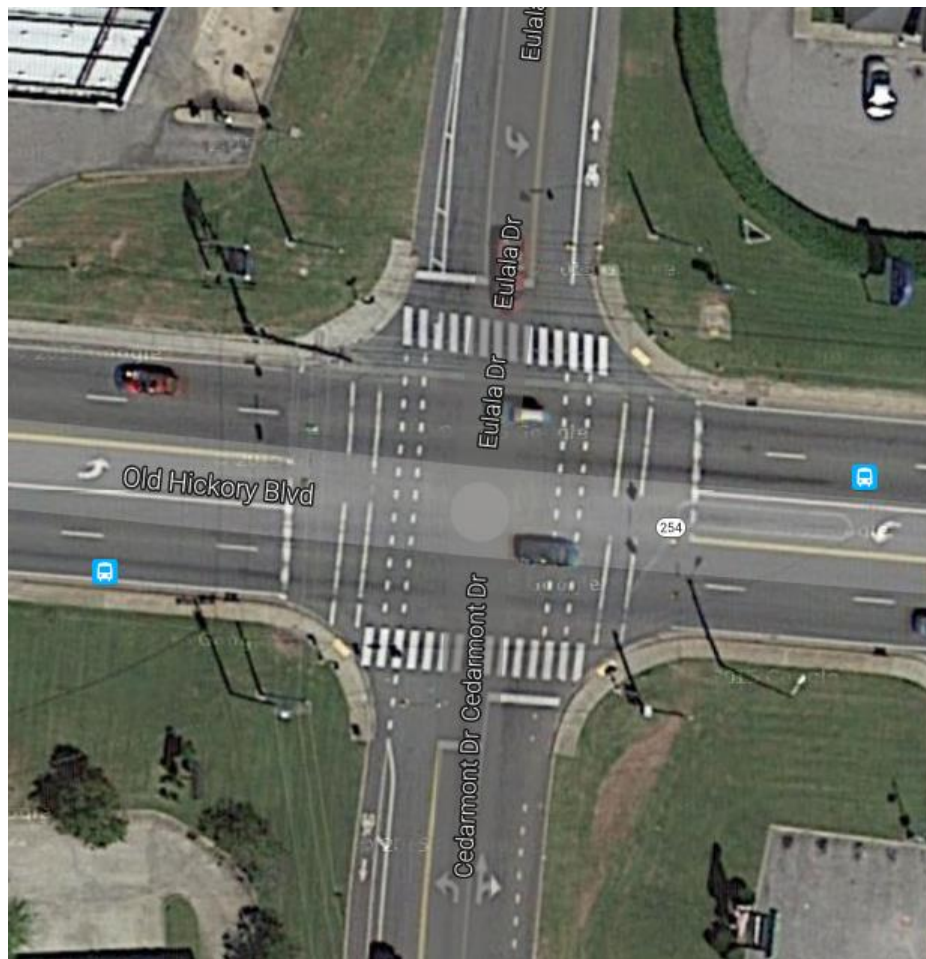
# Intersections are Key



**LTS SCORE: 3 - 4**



# Intersections are Key





# State of Practice Report



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# Coming Soon

Provides a snapshot of the existing bicycling and pedestrian environment in Metro Nashville with a focus on the 5 E's:

- Education
- Encouragement
- Enforcement
- Engineering
- Evaluation



# State of Practice Report: Education

Highlights the many different education and outreach efforts of Metro Nashville and its partners.

- Walk Bike University
- NashVitality App.
- WBN and Hands on Nashville reCYCLE Program
- Travel Green Classes and Consultation
- Oasis Bike Workshop



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# State of Practice Report: Encouragement

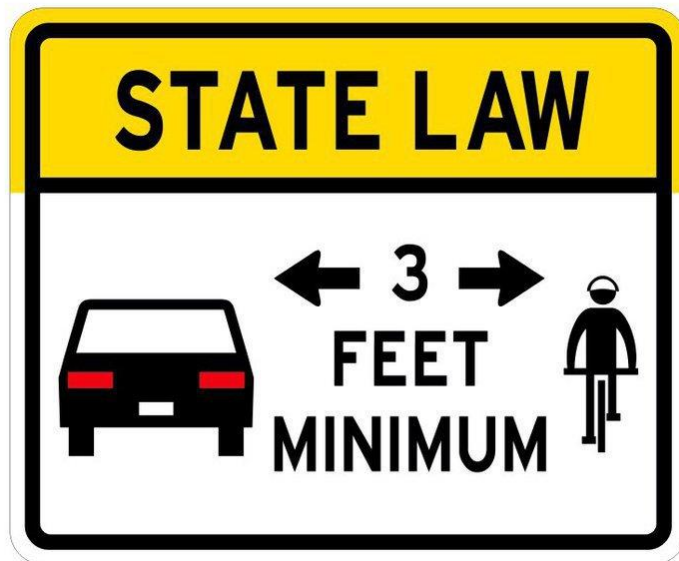
- Bike to school & work day
- Walk to school day
- Tour de Nash
- Walk Month
- Bike Month
- Policy initiatives

SafeRoutes



# State of Practice Report: Enforcement

- Local Enforcement & Advocacy Efforts
- MNPD bicycle & pedestrian initiatives and practices
- Statewide Safety and Enforcement Efforts





# State of Practice Report: Engineering

Highlights the on-the-ground improvements made to bicycle and pedestrian facilities:

- Miles of Complete Streets
- Accessibility and mobility improvements to sidewalks and curb cuts
- Miles of bikeways
- Miles of Greenways
- Bike racks
- Pedestrian scramble



# State of Practice Report: **Evaluation**

- Bike and Pedestrian Counts
- Crash Data
- Survey Data
- Public Input Meetings
- BPAC/WBN Policy Reviews

## BIKE COUNTS

- Bike counts increased 32% between 2009 and 2011
- Morning bike counts increased 42% between 2011 and 2013
- Bike counts increased 10% between 2014 and 2015

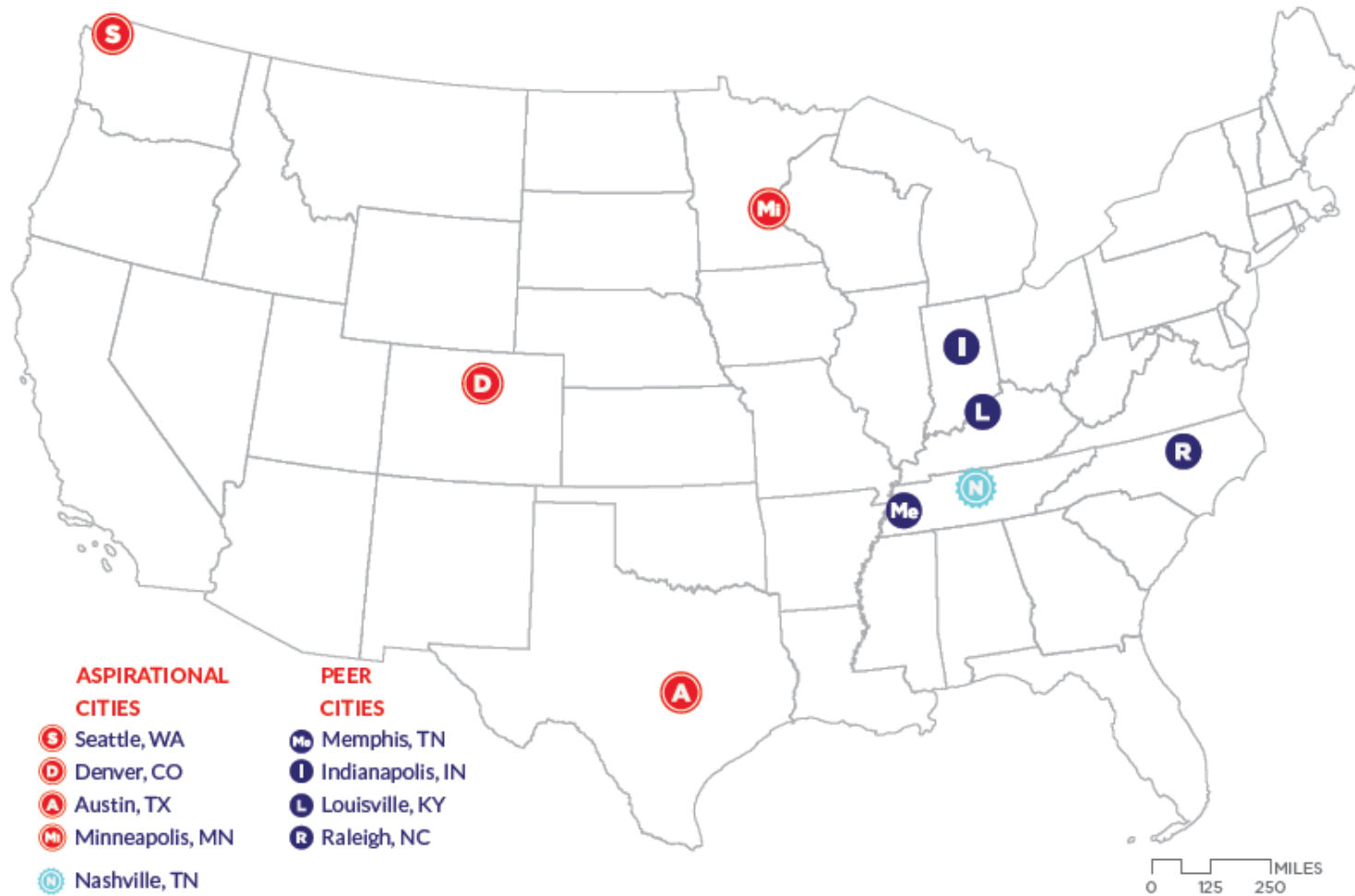
## PEDESTRIAN COUNTS

- Pedestrian counts increased 49% between 2009 and 2011
- Pedestrian counts increased nearly 50% between 2014 and 2015



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# Peer & Aspirational Cities





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## General Trends & Overarching Themes

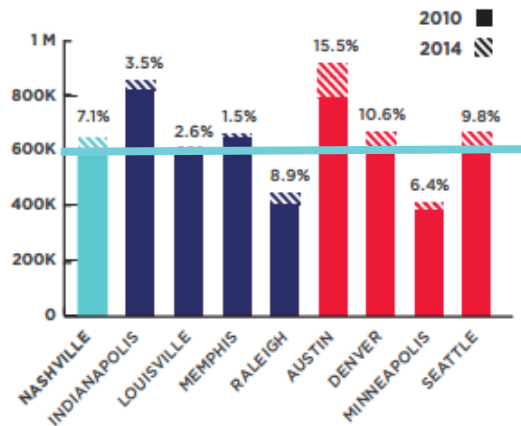


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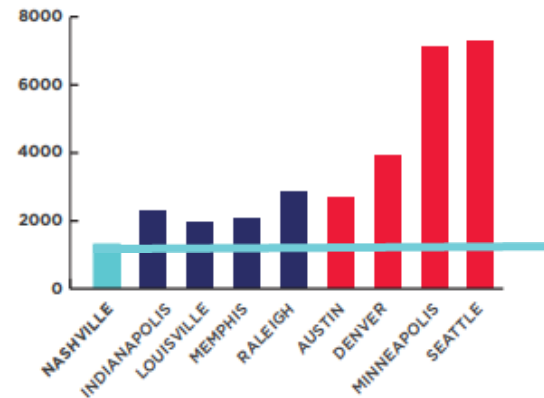
# General Descriptions

NASHVILLE ■  
PEER CITY ■  
ASPIRATIONAL CITY ■

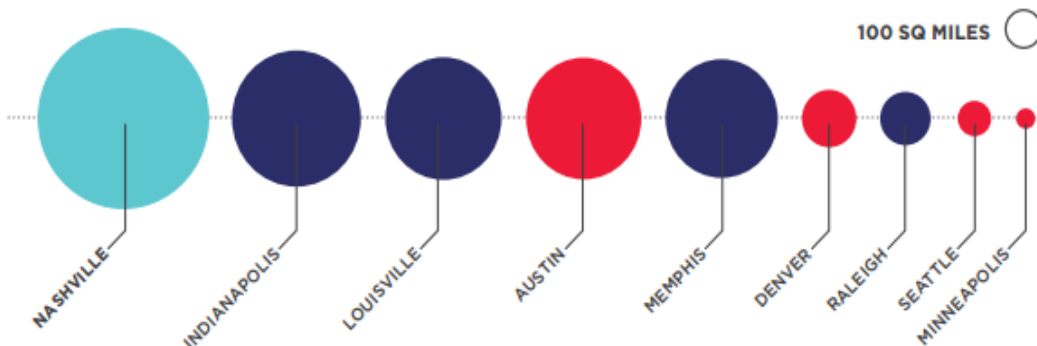
POPULATION GROWTH 2010-2014



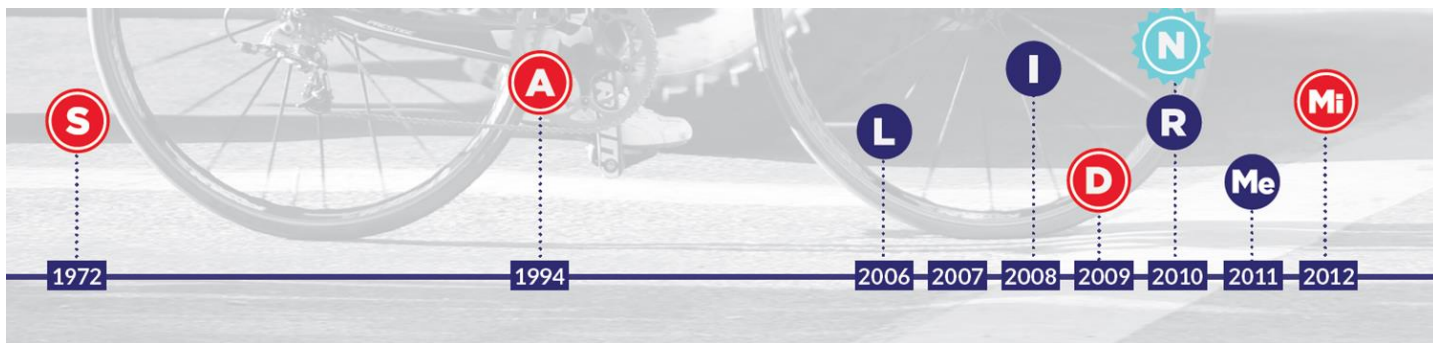
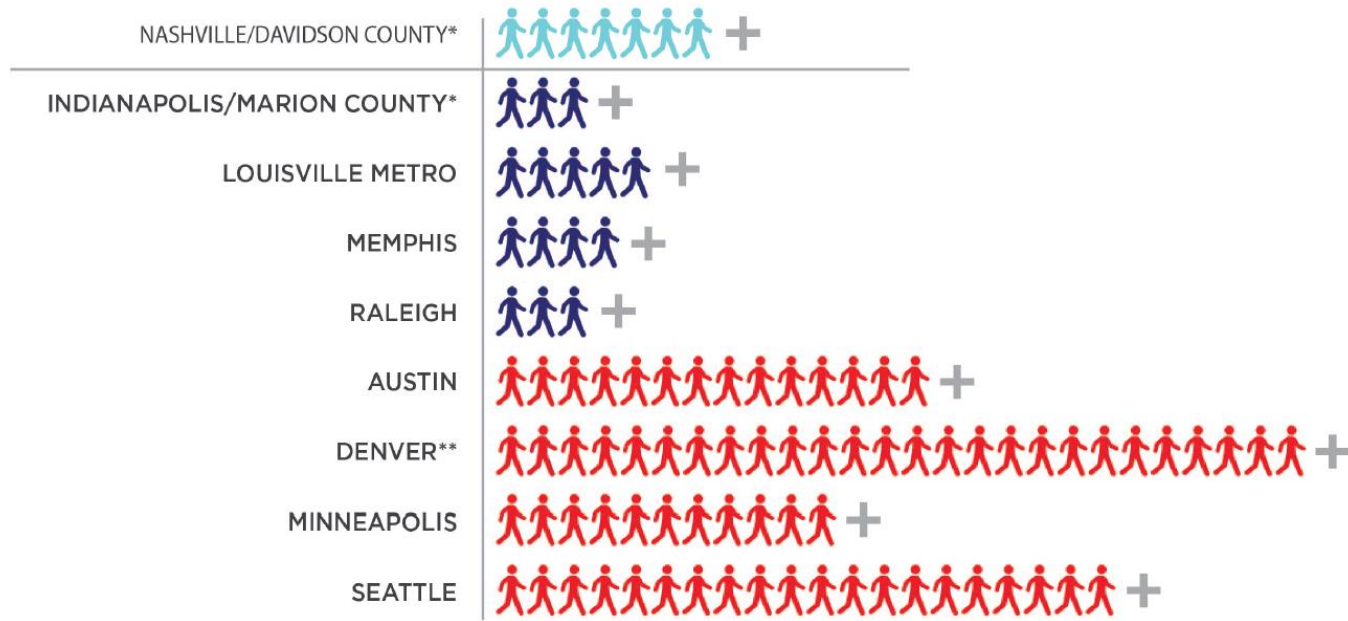
POPULATION DENSITY (per sq. miles)



AREA (sq. miles)

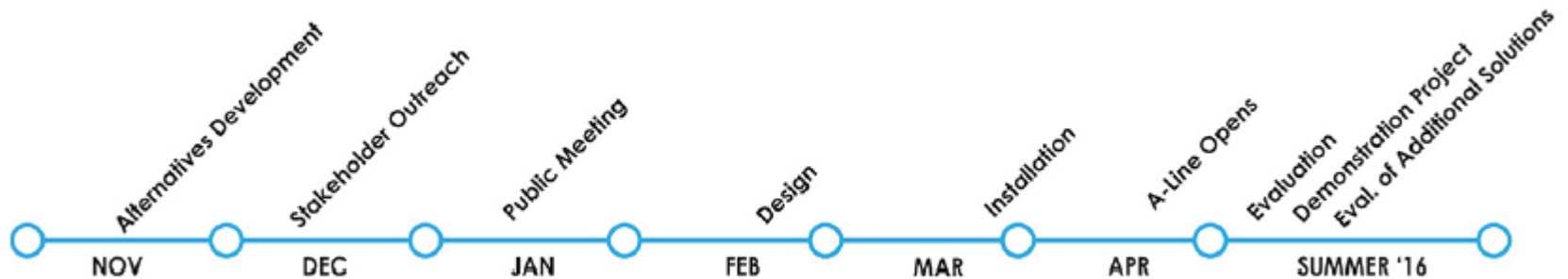


# Dedicated Staffing





# Innovative or Transformative Projects



# Group Discussion

SO  
WHAT?



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## Prioritization Methodology



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# Prioritization Criteria

System Wide Gaps

Short Segment Gaps

**Connectivity to  
Destinations**

Safety

Land Use

Density

Public Input

**Roadway  
Characteristics**

Use (Count Data)

Demographics

**Transit**

# Prioritization Outreach

Count of Transportation Projects Included: **83**

SIDEWALKS & TRAIL/PATH		INCIDENTS			ADA RAMPS	
<u>Projects Bidding</u>	<u>Projects Completed</u>	Reported In Marion County for 2015 Quarter 3			<u>Projects Bidding</u>	<u>Projects Completed</u>
5 that include sidewalks	9 that include sidewalks	Number of Automobile/Pedestrian	Number of Automobile/Bicycle	Number of Automobile	5 that include ADA ramps	10 that include ADA ramps
linear feet of sidewalk bld 22,983	linear feet of sidewalk completed 26,675	89	62	8,682	count of ADA ramps bld 143	count of ADA ramps completed 561
<u>Projects In-Progress</u>		Incidents reported herein are obtained through "ARIES; Automated Reporting Information Exchange System v2.1.2" and subject to terms of use.			<u>Projects In-Progress</u>	
35 that include sidewalks	175,700 linear feet of sidewalk in-progress	KIDS WALKING TO SCHOOL			35 that include ADA ramps	1,809 count of ADA ramps in-progress
INTERSECTION IMPROVEMENTS		DPW is beginning to work with the appropriate parties to begin reporting on this metric. Quarterly reports are not required until 2014.			BIKE LANES	
Intersection Improvements	projects bidding 2 projects completed 7	TRANSIT STOPS			<u>Projects Bidding</u>	<u>Projects Completed</u>
<u>Projects Bidding</u>	<u>Projects Completed</u>	DPW is beginning to work with the appropriate parties to begin reporting on this metric. Quarterly reports are not required until 2014.			2 that include bike lanes	2 that include bike lanes
3 projects going to bld with crosswalks	2 projects completed with crosswalks				miles of new bike lanes bld 0.1	miles of new bike lanes 6.6
count of crosswalks to bld 16	count of crosswalks completed 63				0.2 miles of rehab bike lanes bld	0.0 miles of rehab bike lanes
<u>Projects In-Progress</u>					<u>Projects In-Progress</u>	
15 that include crosswalks	count of crosswalks in-progress 158				9 that include bike lanes	12.6 new bike lane miles
						2.5 rehab bike lane miles

# Group Discussion

SO  
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## Policy & Enforcement



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# Bikeway Maintenance

		City	Standalone Sweeping Activities	Included in Roadway Sweeping - not prioritized	Separated Bikeway Equipment
		Nashville		x	
Peer		Indianapolis	x		x
		Louisville	x		x
		Memphis		x	
		Raleigh		x	
Aspirational		Austin		x	
		Denver	x	x	
		Minneapolis	x	x	x
		Seattle	x	x	x

# Sidewalk Fee in-lieu Programs

	City	Fee in lieu program	How fees are assessed and/or used
	Nashville	✓	Fee assessed based on length of sidewalk needed
Peer	Indianapolis	✓	Funds don't have to be spent in the district where development is located
	Louisville	✓	In-lieu fee has to be used to build a new sidewalk in the council district where the development is located
	Memphis		N/A
	Raleigh	✓	Fees are assessed for each side and per linear foot; Right-of-way dedication and all necessary easements shall be dedicated to the city
Aspirational	Austin	✓	Funds are set aside and used to build future sidewalks and curb ramps in the same neighborhood as the development that is being built; Funds must be spent within 10 years
	Denver		N/A
	Minneapolis		N/A
	Seattle		N/A

# Group Discussion

SO  
WHAT?



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## Outreach & Education



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# Program Efforts

	City	Local Advocacy Group
Peer	Nashville	Walk Bike Nashville
	Indianapolis	IndyCOG, Walk Urban Indy
	Louisville	B4L (Bicycling for Louisville)
	Memphis	Memphis Hightailers
	Raleigh	Oaks & Spokes
Aspirational	Austin	Bike Austin, Walk Austin, Movability Austin, Austin Gets Around, Reconnect Austin
	Denver	Bike Denver, Walk Denver, Bikes & Beers, Trips for Kids Denver
	Minneapolis	Minneapolis Bicycle Coalition, Twin Cities Bike Advocates, Bike Walk Twin Cities, Transit for Livable Communities
	Seattle	Cascade Bicycle Club, Bike Works, Feet First, Undriving, Seattle Neighborhood Greenways

## Program Implementation

	City	City Initiatives	Private Initiatives (Local Nonprofit or Advocacy)
Peer	Nashville		x
	Indianapolis		x
	Louisville	x	x
	Memphis		x
	Raleigh	x	x
Aspirational	Austin	x	x
	Denver	x	x
	Minneapolis	x	x
	Seattle	x	x

# Vision Zero

	City	Vision Zero Commitment?	Implementation Strategies
	Nashville	✓	Mayor Barry signed an Executive Order formalizing a 'Complete and Green Streets' policy in May 2016, which included a vision zero commitment saying that Metro must seek to work collaboratively toward achieving a system of streets with no traffic fatalities or serious injuries.
Peer	Indianapolis	No formal commitment.	
	Louisville	No formal commitment.	While Louisville does not have a Vision Zero commitment, the city has used its NHTSA grant to implement measures to achieve zero traffic deaths (see Spotlight: Louisville NHTSA Grant on page 14).
	Memphis	No formal commitment.	
	Raleigh	No formal commitment.	
Aspirational	Austin	✓	The Austin City Council approved a resolution calling for the City Manager to create a Vision Zero Task Force in 2014. The city has released a draft 2016-2018 Vision Zero Action Plan which it is now looking to finalize.
	Denver	✓	Mayor Hancock announced a Vision Zero commitment in February 2016 and directed staff to develop a comprehensive Vision Zero Action Plan. Heads Up, the city's former public multimodal transportation safety campaign including education, engineering and enforcement components, will be re-envisioned and re-launched as part of the Vision Zero campaign.
	Minneapolis	No formal commitment.	
	Seattle	✓	See Spotlight: Seattle's Vision for Safe Streets on page 57.

# Group Discussion

SO  
WHAT?



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## Design Practices



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# Types of Bikeway Projects

## Types of Bikeway Projects



### Resurfacing Projects

A significant portion of existing bikeway mileage have been developed across all cities through resurfacing programs. Repaving projects provide a clean slate for revising pavement markings and adding bicycle facilities.

**Nashville Example:** Highway 100 and Richard Jones Road

**Pro:** Cost to add bikeways is absorbed into the annual state or local resurfacing budget

**Con:** Roadways are selected by pavement quality, not bikeway network connectivity.



### Major Roadway Projects (Complete Streets)

Under the Complete Streets approach adopted by all of our peer and aspirational cities, every new roadway or major capital improvement project integrates traditional or separated bikeways.

**Nashville Example:** Korean Veterans Blvd (KVB) and 11th Ave (The Gulch)

**Pro:** Opportunity to gain extra width required for separated bikeways.

**Con:** Lengthy implementation timeline, often taking 1-2 years from concept to completion.

# Types of Bikeway Projects



## Standalone Bikeway Projects

Most cities have implemented standalone restriping projects where travel lanes are narrowed or removed to install bikeways.

**Pro:** Projects can be selected based on a prioritization methodology.

**Con:** Requires dedicated funding sources.



## Grouped Bikeway Projects

Nashville, along with a couple peer cities including Raleigh and Memphis, have implemented a large batch of bikeway improvements as one project. Federal funding, in particular, is often easier and more efficient to spend in large amounts, which makes grouping projects useful.

**Pro:** Big impact to the bikeway network (Raleigh added 27 miles in one project).

**Con:** Public participation can be challenging across such a large demographic. Negative feedback on one section may derail an entire project.



# Tactical Urbanism



## Nashville

Tactical Urbanism Organizers (TURBO Nashville) seeks to make permanent change through temporary pop-up installations in the built environment. They've implemented pop-up bus stops along Nolensville Pike and traffic calming measures on 51st Avenue for a one-day celebration of a complete street example.



## Austin

This spring, architecture students at the University of Texas at Austin used cinder blocks, wood and spray paint to create \$10 benches for four bus stops in East Austin that lacked seating.



## Memphis

Memphis is home to MEMFix, a community-led revitalization effort that demonstrates a temporary showcase of what a dynamic, walkable neighborhood could look like with pop-up shops, activated storefronts, vibrant public





# Group Discussion

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## Subcommittee Breakout Session



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# Subcommittee Process and Schedule

- Subcommittee Chair Updates
- September 8<sup>th</sup> Full Day Workshop for WalknBike Subcommittee Briefings
- Generate 2-3 Recommendations for:
  - Early Wins (Top Priority)
  - Mid-Term
  - Long-Term



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## Public Comments



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## Next Steps



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# Next Steps

- Thursday, Sept. 8<sup>th</sup>, 9:00am
  - Subcommittee Briefings
  - Network Development
  - Strategic Plan Layout
- Consolidate All Public Comments to Inform Draft Recommendations
- DRAFT Plan to be Released in Early December
  - Start Next Round of Public Outreach & Community Meetings



# Contact Us!

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