



# DESIGNING TRANSIT ACCESSIBLE COMMUNITIES STUDY

Technical Working Group Meeting #3  
July 19, 2012





# Agenda

1. Introductions & Progress Report (10 minutes)
2. Survey & Field Review Process (15 minutes)
3. Toolbox Discussion (60 minutes)
4. Case Studies Discussion (30 minutes)
  - Elliot Road & Lakeview Drive, Gilbert - Low Suburban Transit Connector
5. Break (10 minutes)
6. Case Studies Discussion (60 minutes)
  - 75th Avenue & Bell Road, Glendale - Suburban Transit Connector
  - 90th Street, South of Shea Boulevard, Scottsdale - Suburban Peak Hour Transit Corridor
7. Break (10 minutes)
8. Case Studies Discussion (60 minutes)
  - 19th Avenue & Southern Avenue, Phoenix - Suburban Transit Corridor
  - 16th Street & Thomas Road, Phoenix – Urban Transit Corridor
9. Next Steps (5 minutes)
10. Adjourn at 4:00 pm



# Project Overview – Work Program

## Existing Conditions

- Gather GIS data
- Develop database for all stops
- Literature search

Winter  
2011/2012

## Categorize Stops & Case Studies

- Cluster analysis
- Ground truth data
- Field review

Spring  
2012

## Develop Prototypes

- Conceptual design for each category
- Implementation strategies
- Develop access toolkit

Summer  
2012

## Financial Analysis

- Prototype costing
- Funding options
- Funding policies & guidelines

Summer  
2012

## Final Report

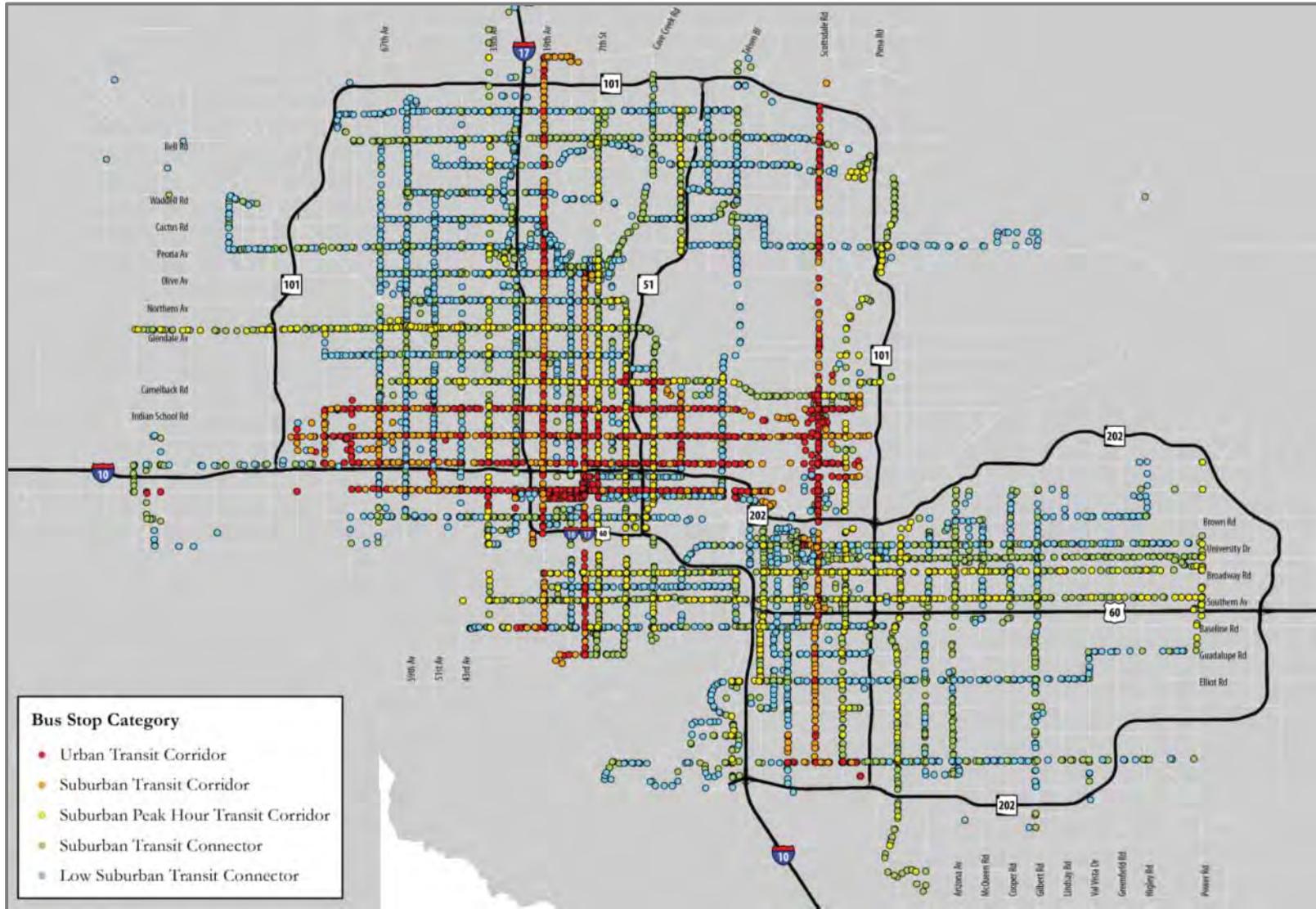
- Final report
- Compile study record

Fall  
2012

Progress Point



# Overview of Bus Stop Categories



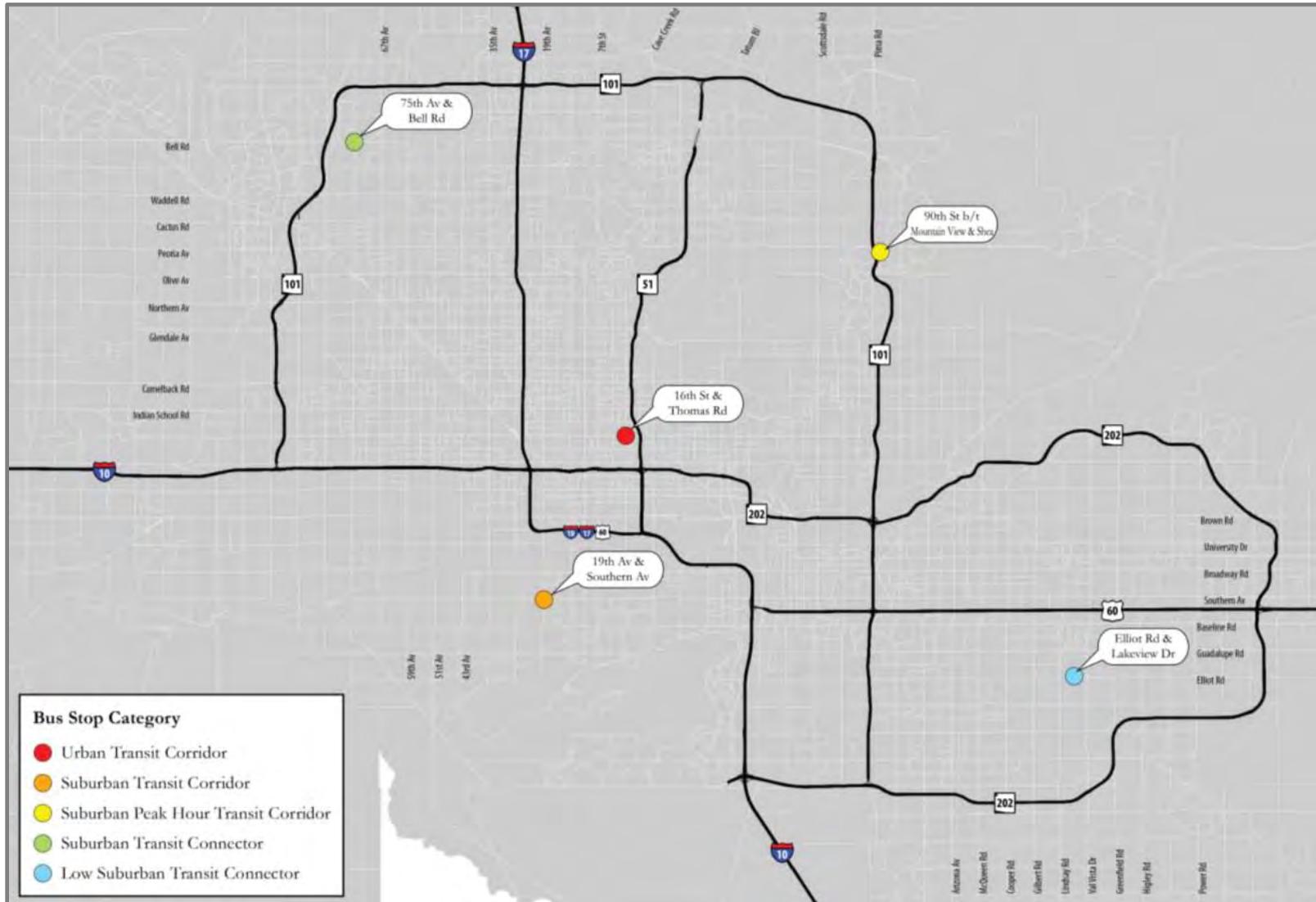


# Overview of Bus Stop Categories

Category Ranking	Category Name	Defining Characteristics	Number of Stops	Percent of Total Bus Stops
1	Urban Transit Corridor	<ul style="list-style-type: none"> <li>• Some Retail</li> <li>• Very High Employment Density</li> <li>• Average Population Density</li> <li>• Multiple High Frequency Transit Routes</li> </ul>	898	15.4%
2	Suburban Transit Corridor	<ul style="list-style-type: none"> <li>• No Retail</li> <li>• High Employment Density</li> <li>• Average Population Density</li> <li>• A Single High Frequency Transit Route</li> </ul>	460	8.7%
3	Suburban Peak Hour Transit Corridor	<ul style="list-style-type: none"> <li>• Retail</li> <li>• High Employment Density</li> <li>• Average Population Density</li> <li>• High Frequency Only During Peak Period</li> </ul>	865	14.9%
4	Suburban Transit Connector	<ul style="list-style-type: none"> <li>• Retail</li> <li>• High Employment Density</li> <li>• Average Population Density</li> <li>• Majority of Stops without High Frequency Transit Service</li> </ul>	1,955	33.6%
5	Low Suburban Transit Connector	<ul style="list-style-type: none"> <li>• No Retail</li> <li>• Low Employment Density</li> <li>• Low Population Density</li> <li>• No High Frequency Transit Service</li> </ul>	1,648	28.3%



# Overview of Case Study Locations





# Case Study Methods

- Stakeholder Input
- Review of Demographic and Built Environment Data in GIS
- Intercept Surveying of Bus Riders
- Field Reviews



# Surveys Collected

*(April 2012)*

Case Study Location	Number of "Arriving To" Surveys	Number of "Departing From" Surveys	Total Surveys
16 <sup>th</sup> Street & Thomas Road	101	8	109
19 <sup>th</sup> Avenue & Southern Avenue	45	10	55
90 <sup>th</sup> Street, between Mountain View Road and Shea Boulevard	9	6	15
75 <sup>th</sup> Avenue & Bell Road	26	8	34
Elliot Road & Lakeview Drive <i>(alternative locations at 46<sup>th</sup> &amp; Broadway and 67<sup>th</sup> &amp; Baywood)</i>	7	1	8
<b>TOTAL SURVEYS</b>	<b>188</b>	<b>33</b>	<b>221</b>





# Toolbox Discussion



# Toolbox: Shading

# Orient Buildings to Sidewalk



Issue Addressed

Shading



Waiting Areas



Safety & Security



Access



Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Sidewalk Buffer Zone



Issue Addressed

Shading ✓

Waiting Areas ✓

Safety & Security ✓

Access ✓

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓	✓	✓

# Shade Trees (Tree Wells)



Issue Addressed

Shading	✓
Waiting Areas	✓
Safety & Security	✓
Access	

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Shade Trees (Landscape Zone)



Issue Addressed

Shading



Waiting Areas



Safety & Security



Access

## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



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# Shelters/Benches at Stops



Issue Addressed

Shading	✓
Waiting Areas	✓
Safety & Security	✓
Access	

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Shade Structures (Arcade)



Issue Addressed

Shading



Waiting Areas



Safety & Security

Access

## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



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# Shade Structures (Canopies)



Issue Addressed

Shading	✓
Waiting Areas	✓
Safety & Security	
Access	

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Shade Structures (Green Screen)



Issue Addressed

Shading	✓
Waiting Areas	✓
Safety & Security	
Access	

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Misting Systems



Issue Addressed

Shading



Waiting Areas



Safety & Security

Access

## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector





# Toolbox: Waiting Areas

# Trash Receptacles



Issue Addressed

Shading

Waiting Areas



Safety & Security

Access

## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



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# Signage at Bus Stops



Issue Addressed

Shading

Waiting Areas



Safety & Security

Access

## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Information at Bus Stops



Shading

Waiting Areas



Safety & Security

Access

Issue Addressed

## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



✓	✓	✓		
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# Toolbox: Safety & Security

# Pedestrian Scale Lighting



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Speed Feedback



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Protected Left-Turn Signals



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



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# Speed Lumps



Issue Addressed

- Shading
- Waiting Areas
- Safety & Security
- Access

Shading	
Waiting Areas	
Safety & Security	✓
Access	

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓	✓	

# On-Street Parking



Issue Addressed

- Shading
- Waiting Areas
- Safety & Security ✓
- Access ✓

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Lane Narrowing/Road Diet



Issue Addressed

- Shading
- Waiting Areas
- Safety & Security
- Access

✓	
✓	

Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓	✓	

# Small Intersections



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Mini Traffic Circles



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Curb Extensions/Bulbouts



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Directional Curb Ramps



Issue Addressed

Shading	
Waiting Areas	
Safety & Security	✓
Access	✓

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Pedestrian Refuge



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# High-Visibility Crosswalks



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Crosswalks on All Legs



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Mid-Block Crossings



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



Applicability to Transit Corridor Type

Urban

Suburban

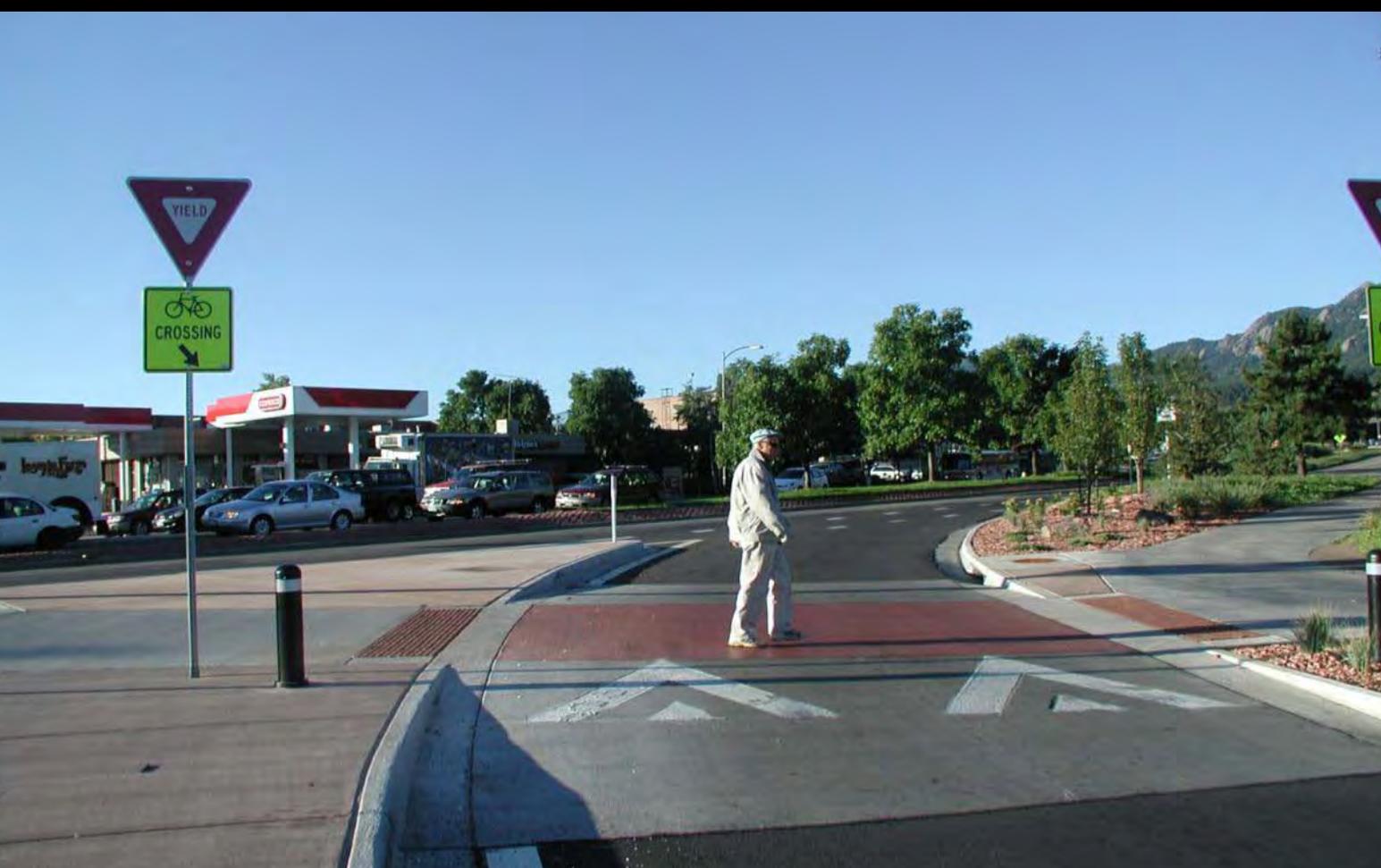
Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Raised Crosswalk



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Countdown Signals/Timing



Issue Addressed

Shading	
Waiting Areas	
Safety & Security	✓
Access	✓

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Shared Use Paths



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector





# Toolbox: Bicycling

# Bike Lanes



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Bike Friendly Streets



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Shared Roadway Markings (Sharrows)



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Bike Parking-Inverted "U" Racks



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Bike Lockers



Issue Addressed

- Shading
- Waiting Areas
- Safety & Security ✓
- Access ✓

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Bike Transit Centers



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector





# Toolbox: Access

# Pedestrian Clear Zone



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access

✓

## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓	✓	✓

# Wayfinding Signage

**NEIGHBORHOOD OF THE ARTS**  
is only  
**22 MINUTES** by   
**4 MINUTES** by  



ROCCITY 2.0

612001



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Pedestrian Path Across Parking Lot



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban	Suburban	Suburban Peak Hour	Low Suburban Peak Hour	Low Suburban Transit Connector
✓	✓	✓		

# Bicycle Detection



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



# Bikes on Transit



Issue Addressed

Shading

Waiting Areas

Safety & Security

Access



## Applicability to Transit Corridor Type

Urban

Suburban

Suburban  
Peak Hour

Low Suburban  
Peak Hour

Low Suburban  
Transit Connector



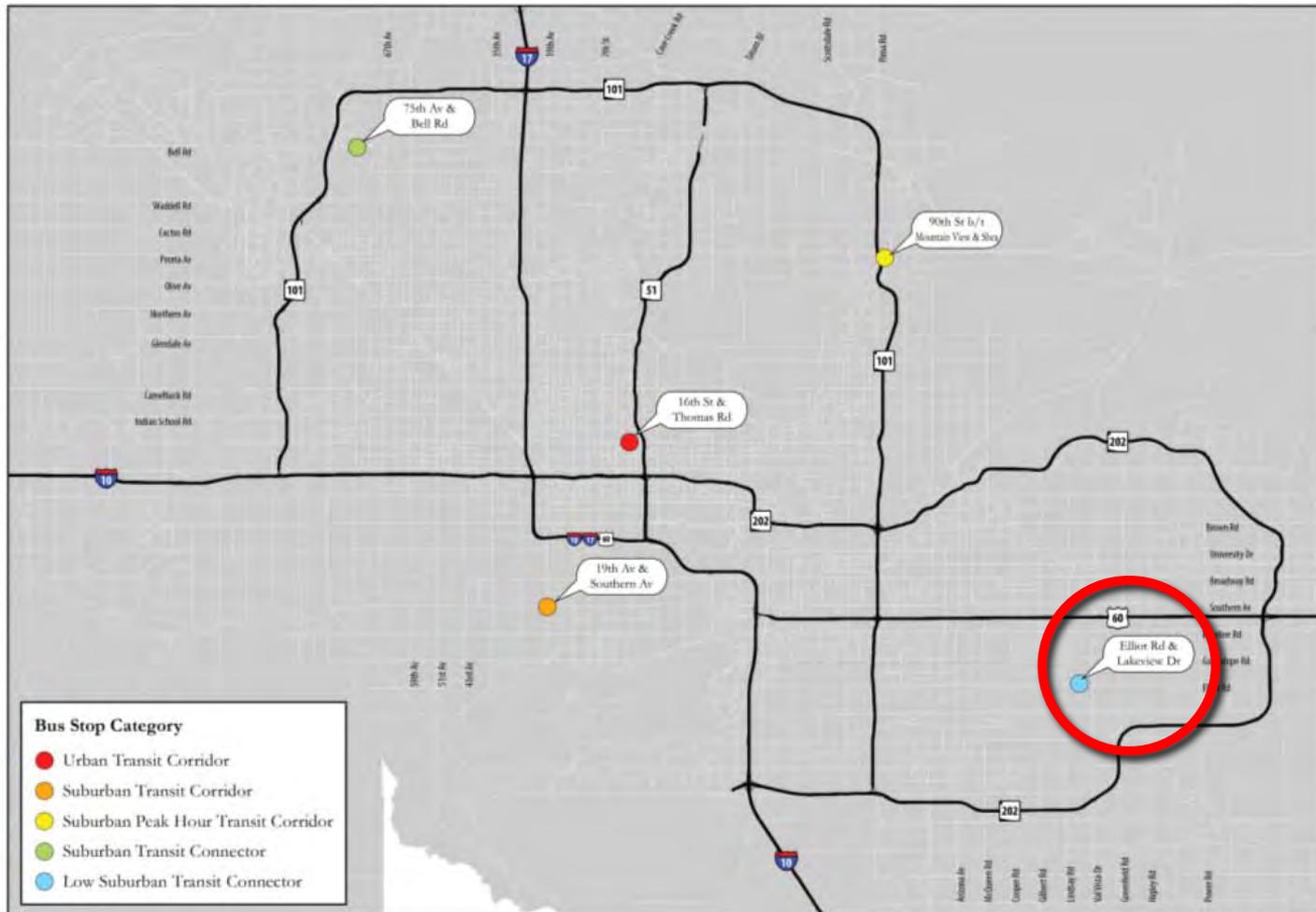


# Case Studies Discussion



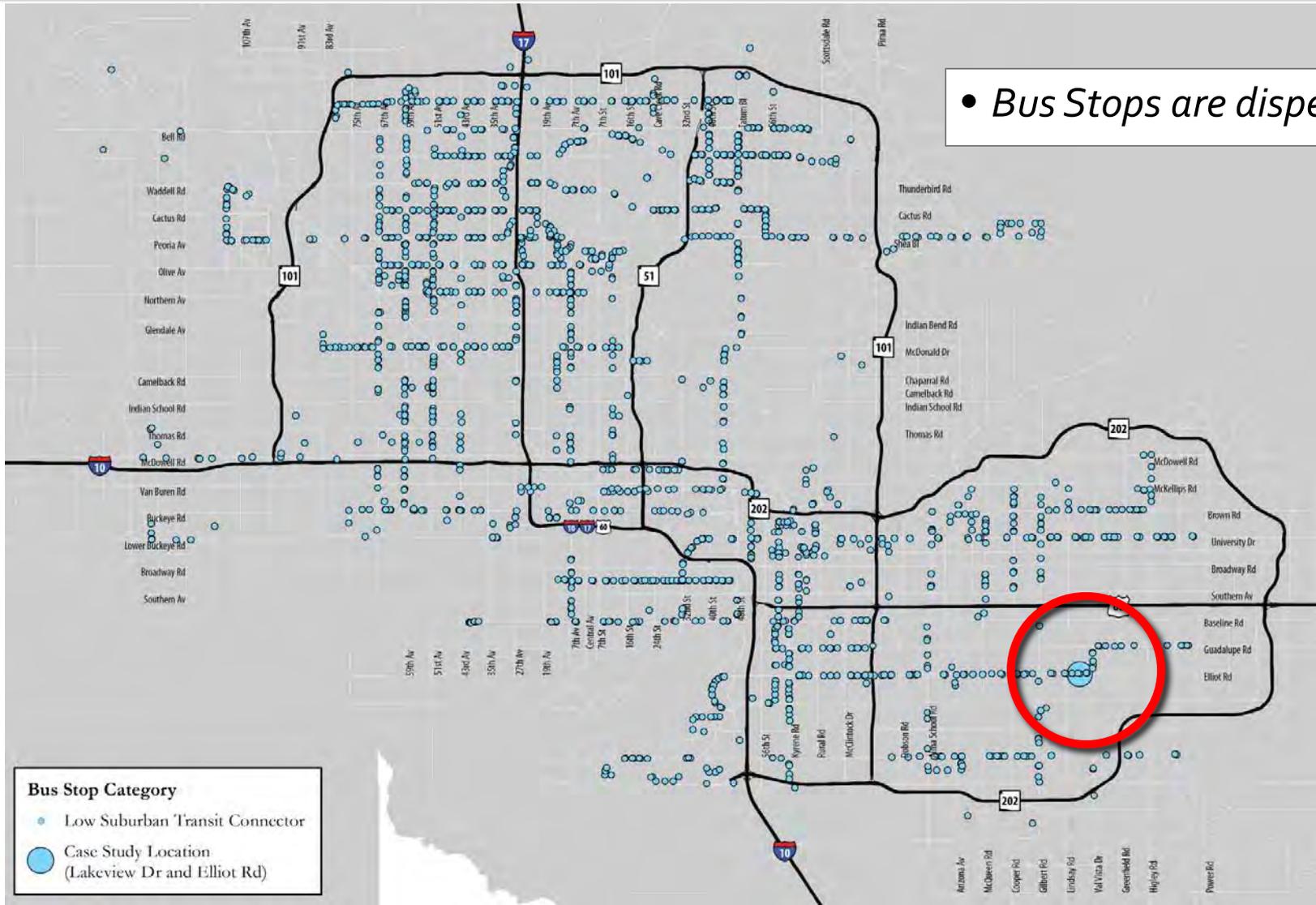
# Elliot Road & Lakeview Drive, Gilbert

## Low Suburban Transit Connector





# Low Suburban Transit Connector



• *Bus Stops are dispersed*

**Bus Stop Category**

- Low Suburban Transit Connector
- Case Study Location (Lakeview Dr and Elliot Rd)



# Low Suburban Transit Connector

## Population, Employment & Ridership

<i>Characteristic</i>	<i>Range (by quarter-mile buffer)</i>	<i>Mean (by quarter-mile buffer)</i>	<i>Countywide Mean (by Census Block Group)</i>
Population Density	0.01 to 30.0 persons/acre	7.5 persons/acre	8.1 persons/acre
Employment Density	0.001 to 32.9 jobs/acre	3.3 jobs/acre	1.6 jobs/acre
Number of o-Vehicle Households (HH) per acre	0 to 2.8 HH with no cars/acre	0.23 HH with no car/acre	0.3 HH with no car/acre
Average Weekday Bus Boardings	0 to 438 Boardings per day	12 Boardings per day	32 Boardings per day



# Low Suburban Transit Connector

## Transit Service Characteristics

Bus Frequencies	Bus Stop Count	Percent of Total
Very High Frequency Service <i>(multiple high frequency routes)</i>	0	0%
High Frequency Service <i>(1 high frequency route)</i>	0	0%
Peak Period-Only High Frequency Service	0	0%
No High Frequency Service	1,648	100%
Total	1,648	100%

Number of Routes per Stop	Bus Stop Count	Percent of Total
1 Bus Route per Stop	1465	88.9%
2 to 5 Bus Routes per Stop	183	11.1%
6 to 12 Bus Routes per Stop	0	0%
Total	1,648	100%



# Pedestrian Case Study Area

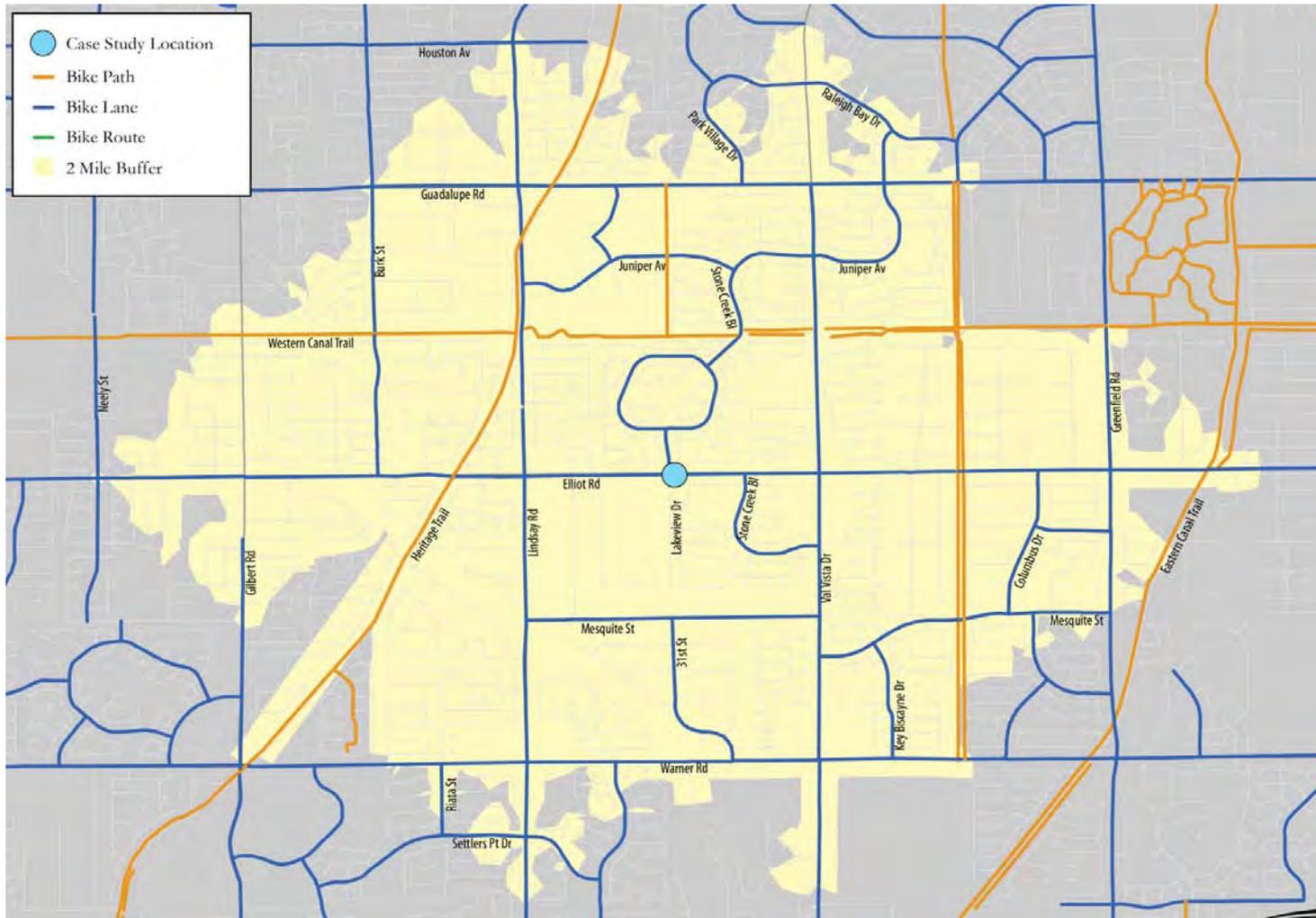
## *Low Suburban Transit Connector*





# Bicycle Case Study Area

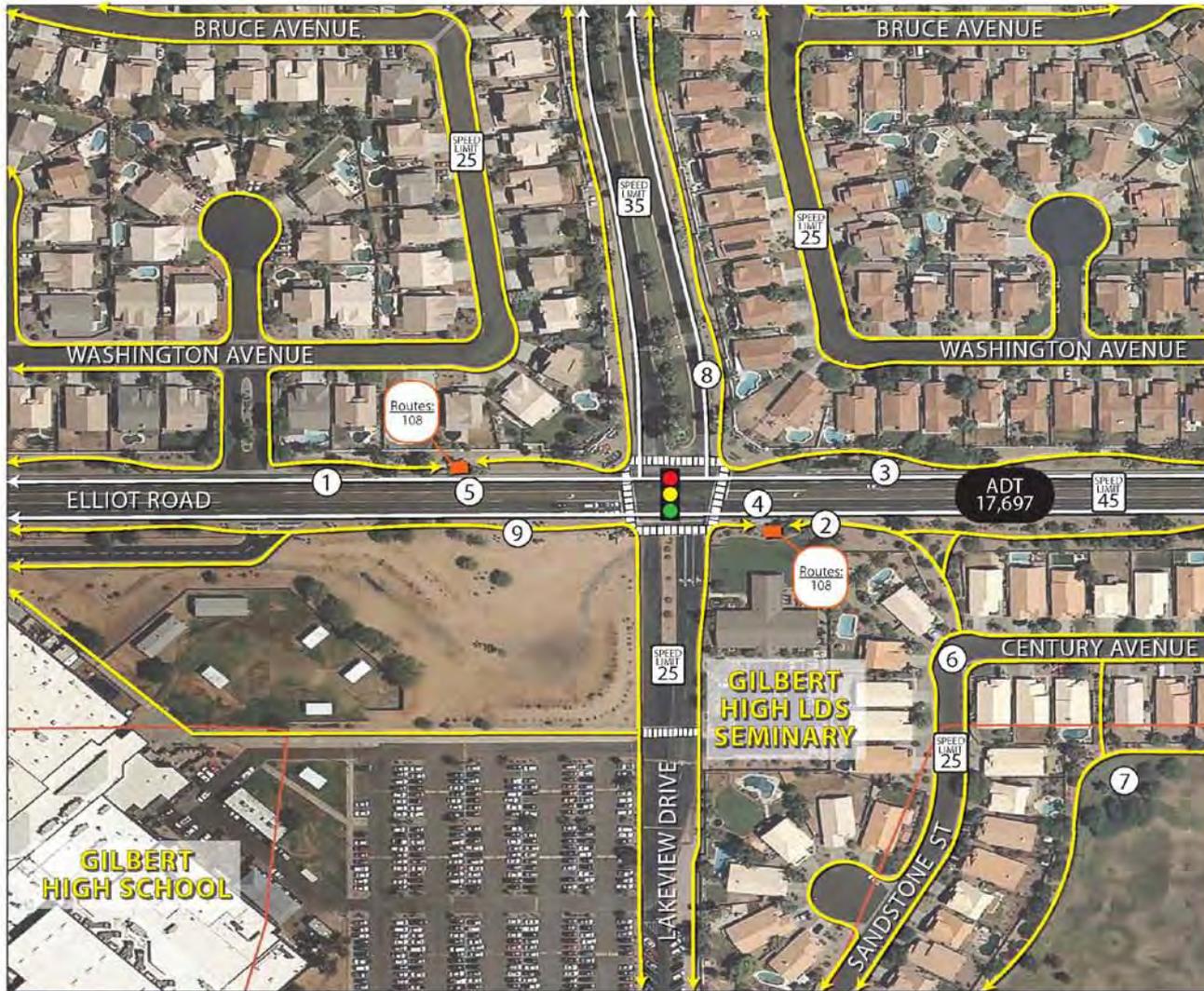
## Low Suburban Transit Connector





# ELLIOT ROAD & LAKEVIEW DRIVE

## DESIGNING TRANSIT ACCESSIBLE COMMUNITIES STUDY



① Bike Lane Adjacent to WB Bus Stop  
 ② Bike Lane Adjacent to EB Bus Stop  
 ③ Sidewalk on North Side of Elliot



④ EB Bus Stop  
 ⑤ WB Bus Stop



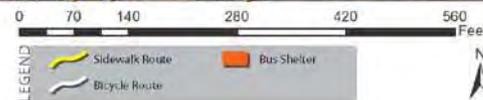
⑥ Pedestrian Access East of EB Bus Stop  
 ⑦ Pedestrian Access to Val Vista Place Park



⑧ Lakeview Drive  
 ⑨ Jogger on Elliot Road

## Elliot Lakeview

Date: 7/2/2012





## + Favorable Conditions

### Bus Stop Furnishings & Landscaping Shading



### Bike Lanes



### Wide, Detached Sidewalk



### Pedestrian Connections



### Textured Paving at Crosswalk



— Deficiencies

Minimal Landscaping



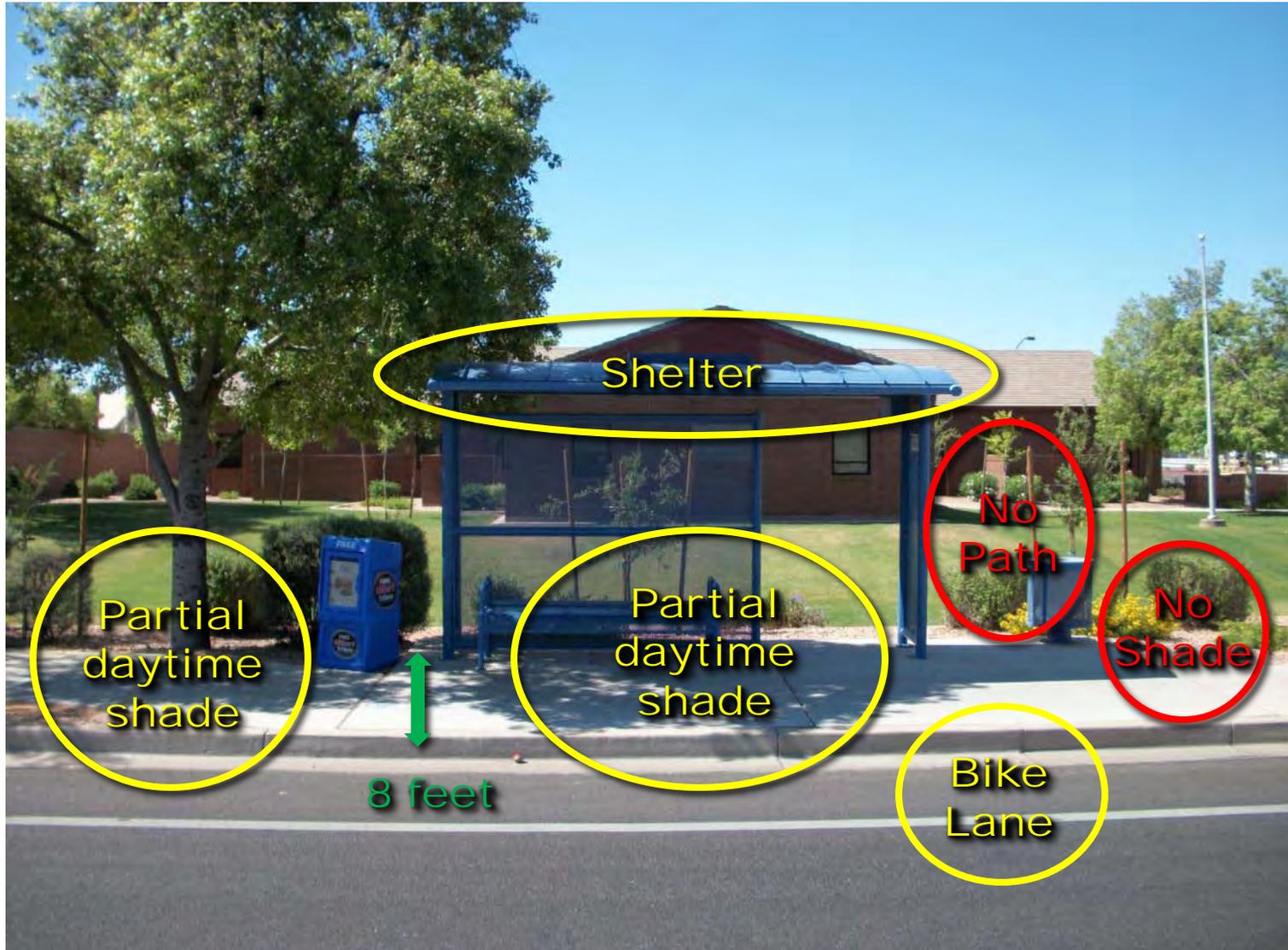
Large Intersections

No Shade





East Bound Stop





Century Avenue





Near West Bound Stop



Landscape  
Shade

Detached  
Sidewalk

Bike  
Lane

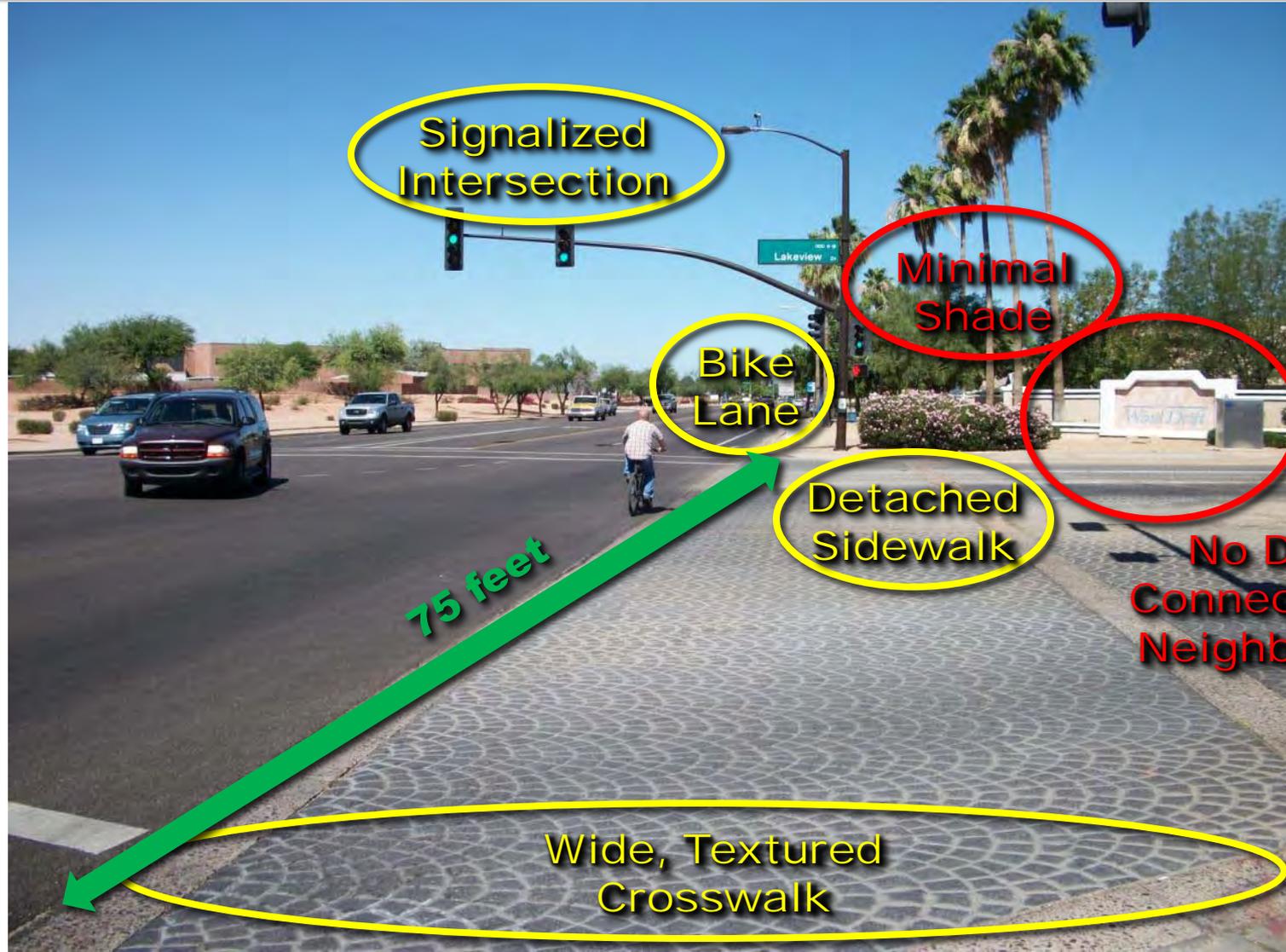


## Sidewalk on Elliot Road





# Elliot Road at Lakeview Drive



Signalized Intersection

Minimal Shade

Bike Lane

Detached Sidewalk

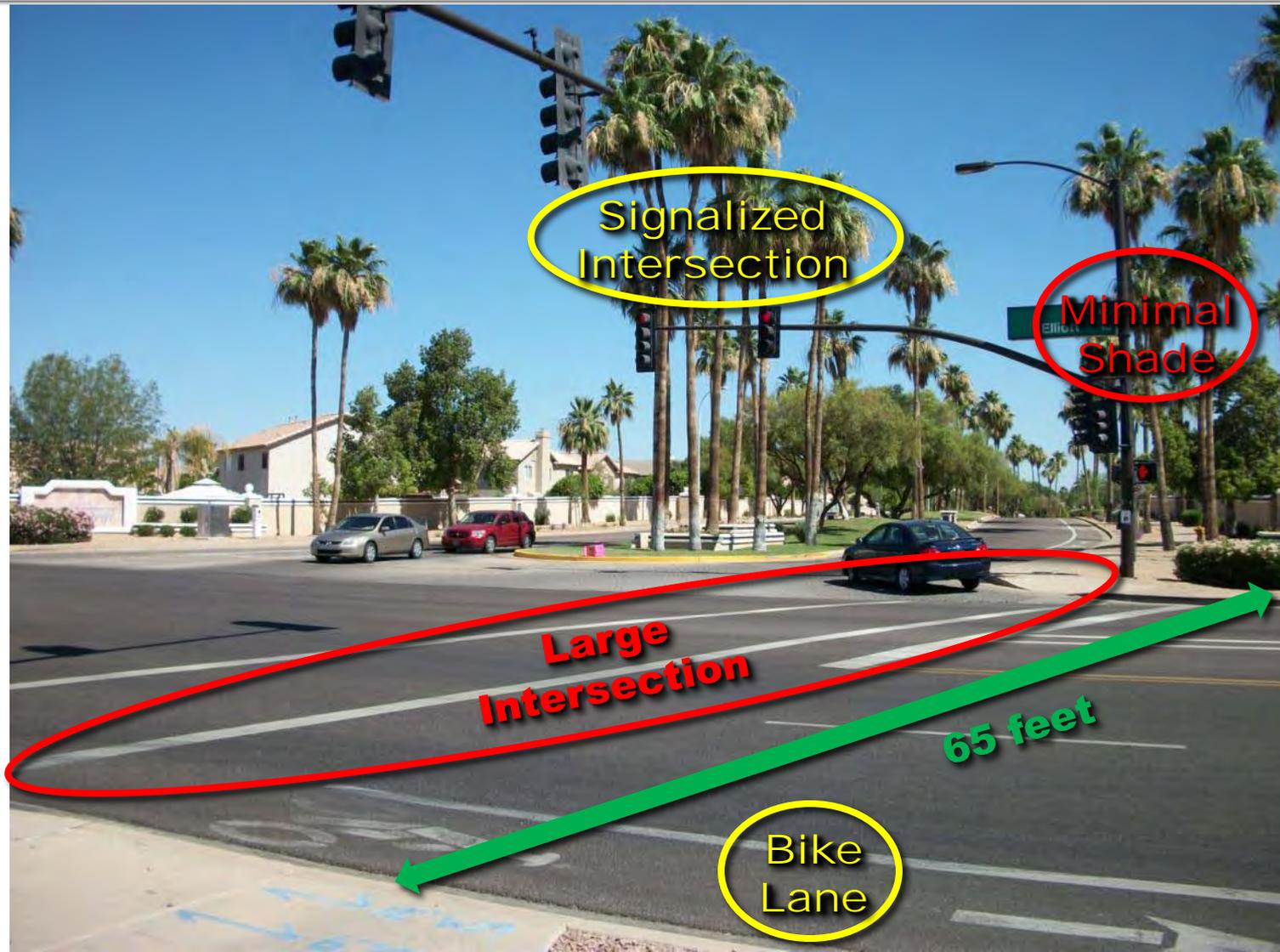
No Direct Connection to Neighborhood

75 feet

Wide, Textured Crosswalk

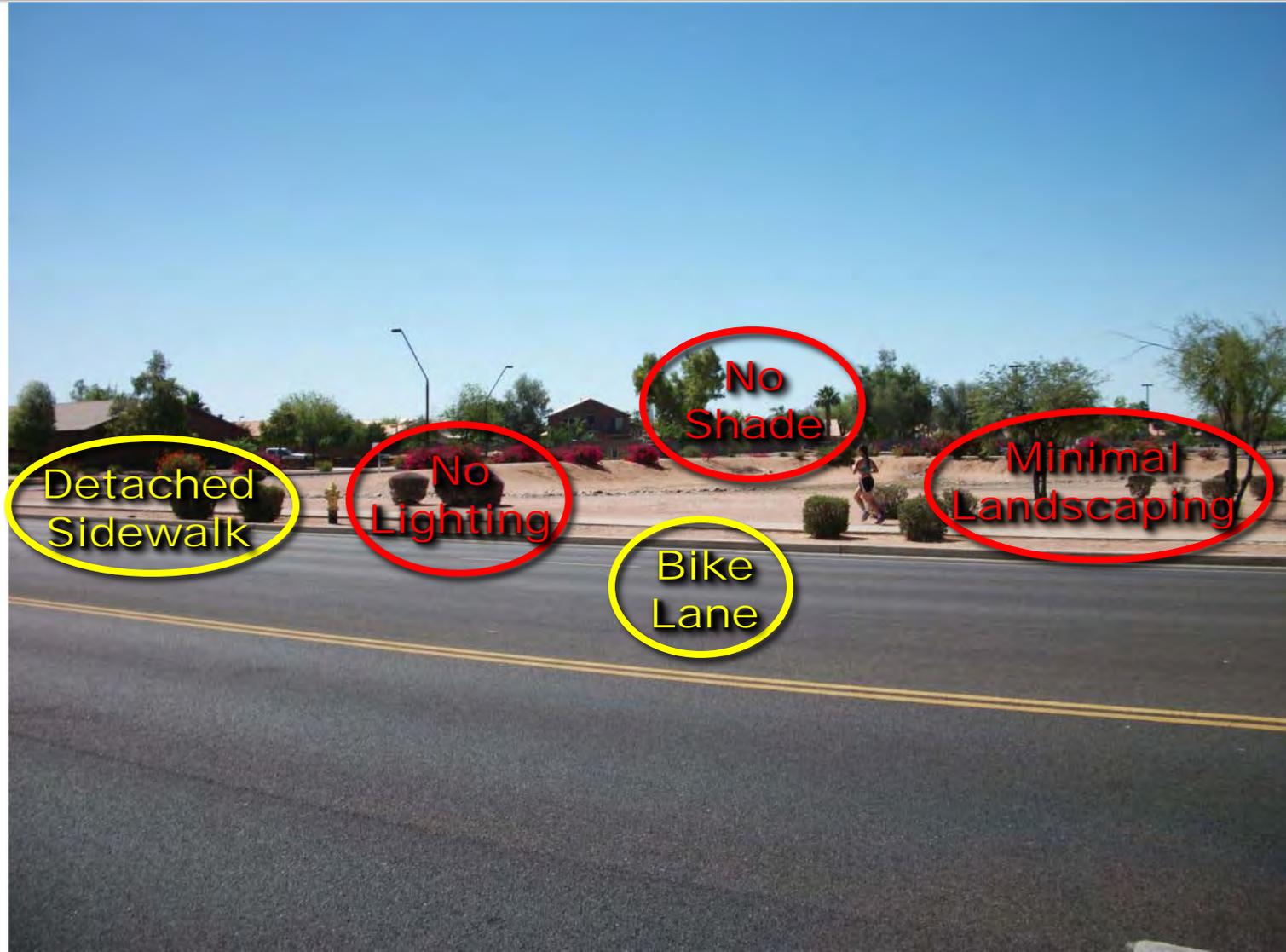


# Lakeview Drive at Elliot Road





Elliot Road



Detached Sidewalk

No Lighting

No Shade

Bike Lane

Minimal Landscaping



SW Corner of Lakeview & Elliot



Signalized Crosswalk

No Lighting

No Shade

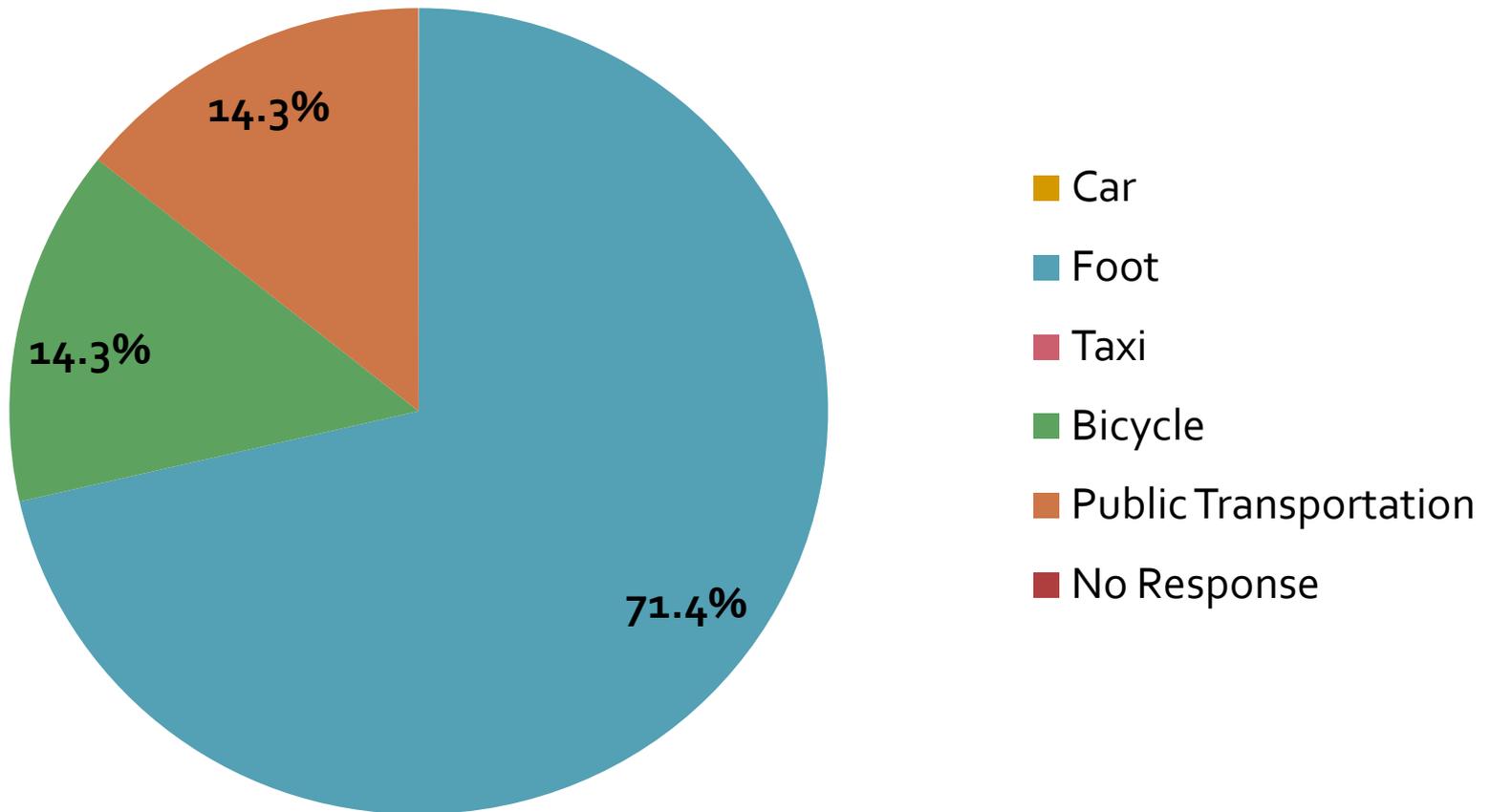
No Connection

No Landscaping

No Seating



# Mode of Access?

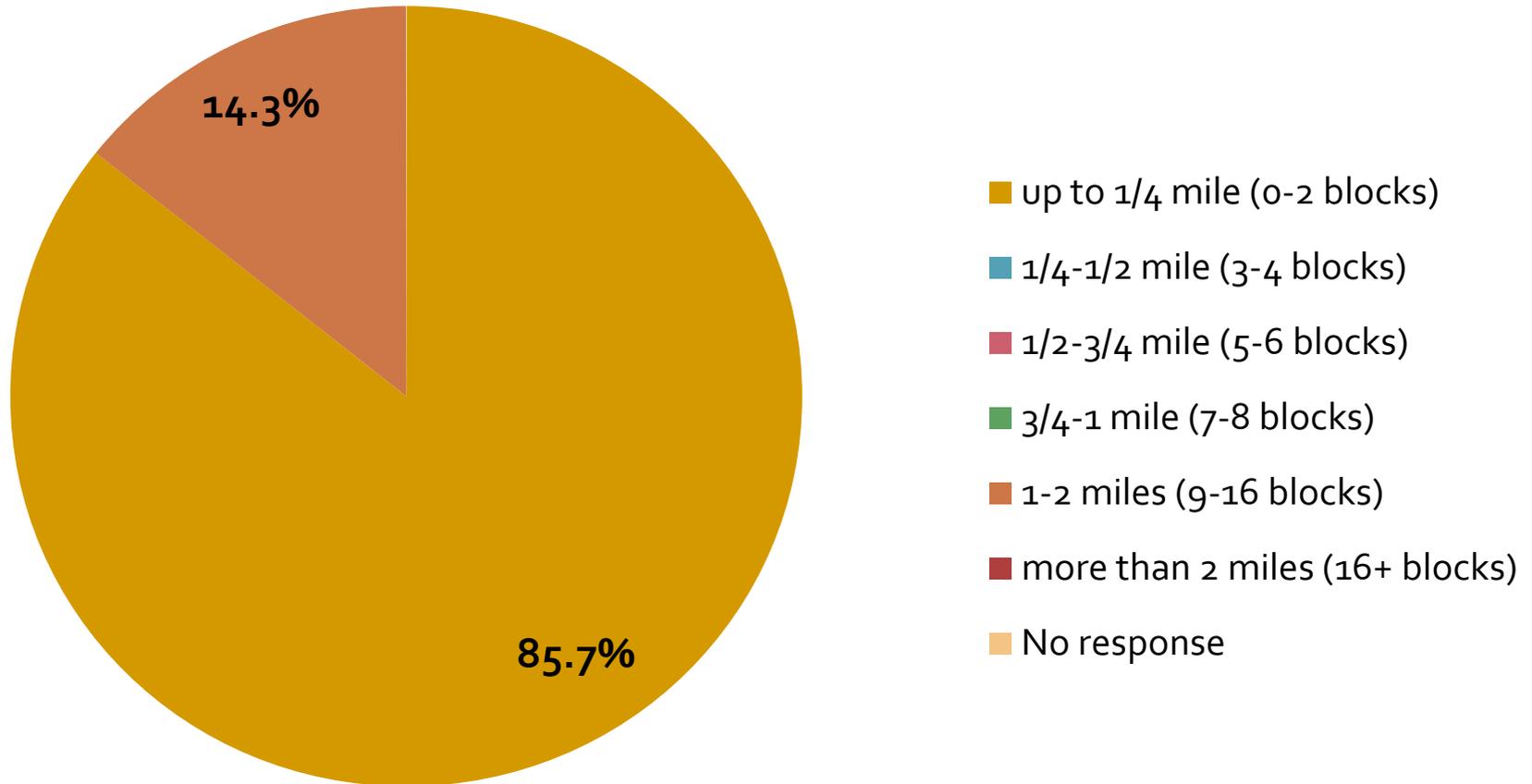


*2007 National Survey by APTA:*

*59.6% walk; 17.2% transfer; 21.2% car; less than 2% bike and other*



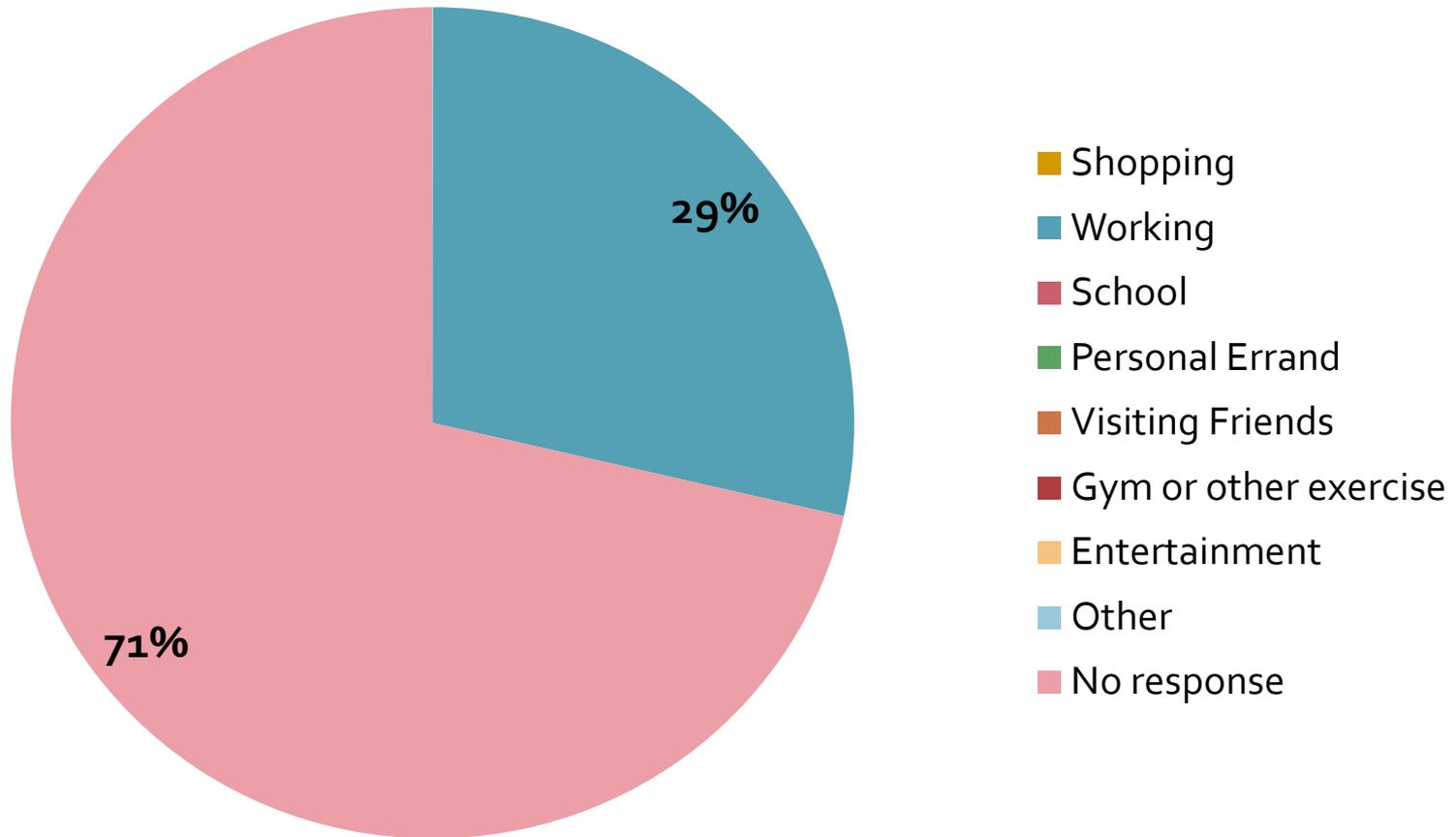
# Distance Traveled?



*Quarter-mile "rule-of-thumb" for walking access*



# Trip Purpose?

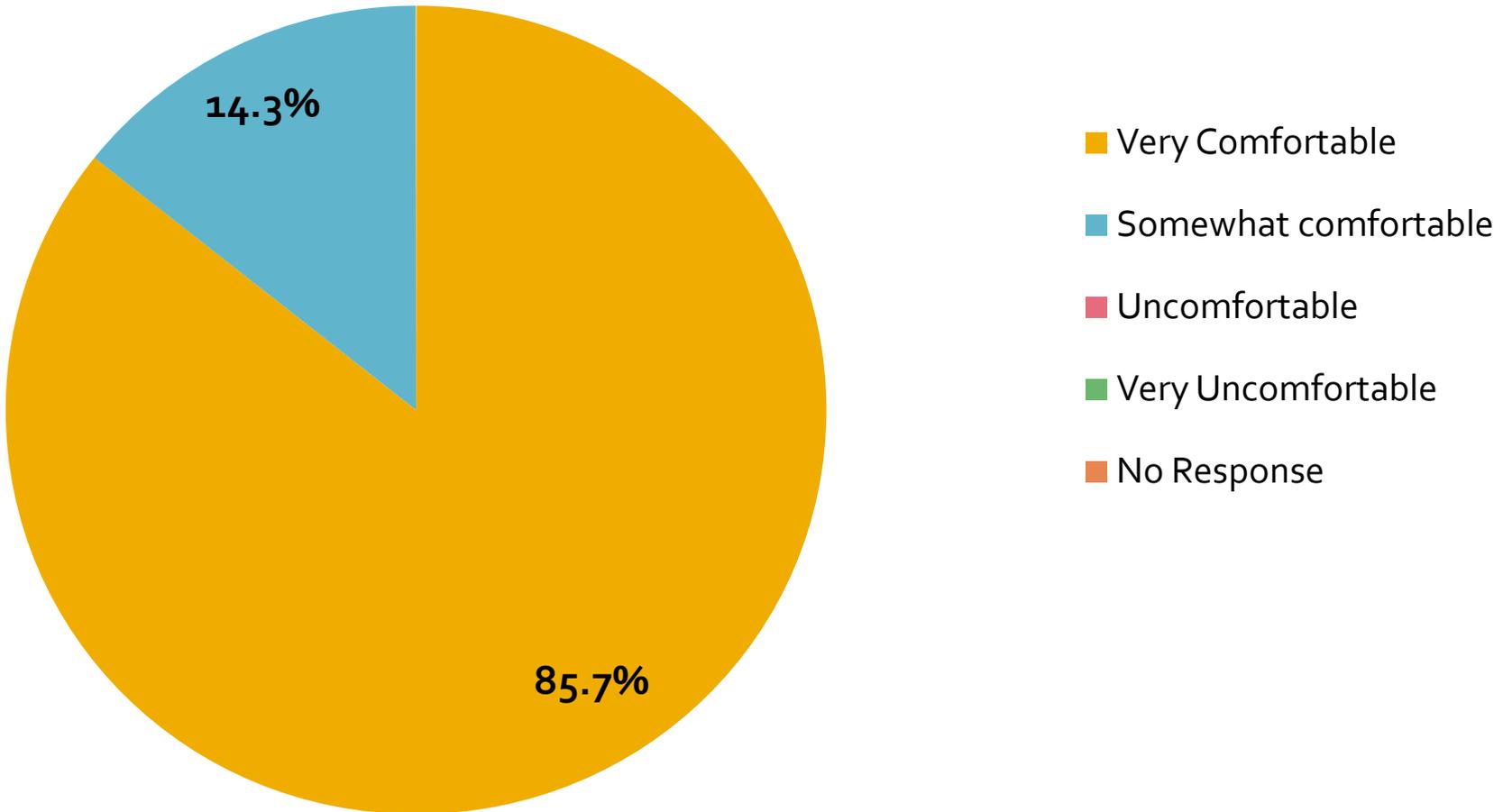


*2007 National Survey by APTA:*

*60% work; 11% school; 9% shopping; 6% personal; 3% medical*

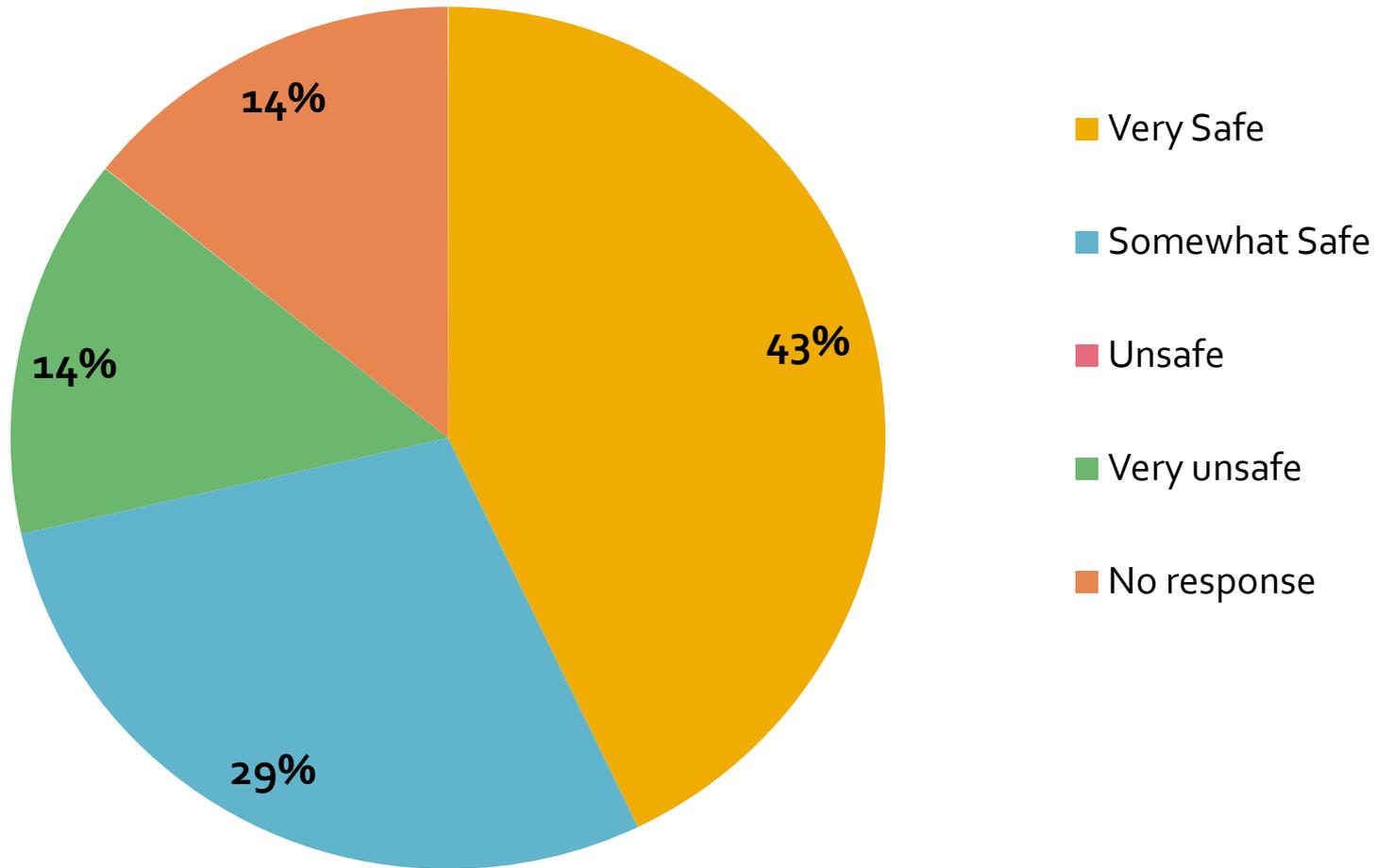


# Level of Comfort Traveling to Stop?





# Level of Safety Traveling to Stop?





# What will make you walk/ride more often?

## *Ranking of Features*

Shade Trees	72%
Bus Schedule Information	72%
Streetlights	57%
Landscaping	43%
Curb Extensions	43%
Art	43%
Bicycle Parking	29%
Bicycle Lanes	29%
Colored Pavement	29%
Medians	29%

*(Percent who said **Very Likely** or **Likely**)*



# How do you feel about your trip to the bus stop?

## *Ranking of Level of Agreement*

Bus stop close to home/work/shopping	29%
Easy to make connections	29%
Good sidewalks	29%
Bus stop is safe	29%
Well maintained	29%
Good lighting	14%
Interesting things to see	14%
Light traffic	14%
Good bike paths	14%
Lots of trees and plants	14%
Easy to park and ride	0%

*(Percent of respondents who **agree** with statement)*



# Near Misses?

Almost been hit by a car when crossing the street to/from bus stop? 0%

Vehicle come too close while crossing the street to/from bus stop? 29%

“Doored” by a car while riding a bike 29%



# Key Responses by Bus Stop Category

Bus Stop Category	Percent Walk Access	Percent Bike Access	Percent Car Access	Feel Comfortable Traveling to Stop	Feel Safe Traveling to Stop	Traveling More than 1 Mile	Almost Hit by Car Crossing Street
Urban Transit Corridor	63.3%	25.7%	1.0%	75.2%	81.1%	20.8%	31.0%
Suburban Transit Corridor	60.1%	20.0%	11.1%	91.1%	86.7%	28.9%	16.0%
Suburban Peak Hour Transit Corridor	55.6%	0%	11.1%	88.9%	89%	44.4%	22.0%
Suburban Transit Connector	55.6%	18.5%	14.8%	66.6%	78%	51.8%	15.0%
Low Suburban Transit Connector	71.4%	14.3%	0%	14.3%	72%	14.3%	100%



# ELLIOT ROAD & LAKEVIEW DRIVE

## DESIGNING TRANSIT ACCESSIBLE COMMUNITIES STUDY

### ISSUES

### STOP

### SURROUNDING AREA

### CATCHMENT AREA

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

### SHADING LANDSCAPING WEATHER PROTECTION



- Structure provides shade
- Additional shade from nearby trees

No Notable Deficiencies



- Adjacent landscaping provides some shade



- No shade for sidewalk



- Safe pedestrian walkway
- Available shade



- Minimal shade along sidewalk

### AMENITIES BUS SHELTERS SHELTER PAD STOP LOCATION



- Seating
- Trash receptacles
- Newspaper rack



- Waiting patron stands in area lit by street light



- Pedestrian connections to Century Avenue and Sandstone Street



- Not all subdivisions have pedestrian connections to the bus stop



- Proximity to school and park



- Long connection distances to subdivisions
- No land use interactions

### SAFETY AND SECURITY STREET CROSSINGS LIGHTING SIDEWALKS BIKE LANES



- Signalized intersection with well-marked crosswalk
- Available bike lane
- Street lighting



- No direct lighting of the shelter



- Shaded sidewalks provide access to the stop along Elliot Road
- Enhanced crosswalks
- Bike lanes



- Large intersections



- Bike lanes
- Sidewalks on all roads



- Large intersections
- Lighting spaced too far for pedestrians
- No street-facing properties

### AFTER THE STOP ADJACENT LAND USE ACCESS PEDESTRIAN/BICYCLE EASEMENTS TRANSFERS PASSENGER INFORMATION



- Connection to adjacent land uses



- Minimal transportation system signage
- No route or schedule information



- Large, detached sidewalks
- Enhanced crosswalks



- Long connection distances to subdivisions
- No transfer opportunities
- Poor access to school



- ADA-compliant curbing in nearby residential area



- Significant traffic activity associated with nearby land uses

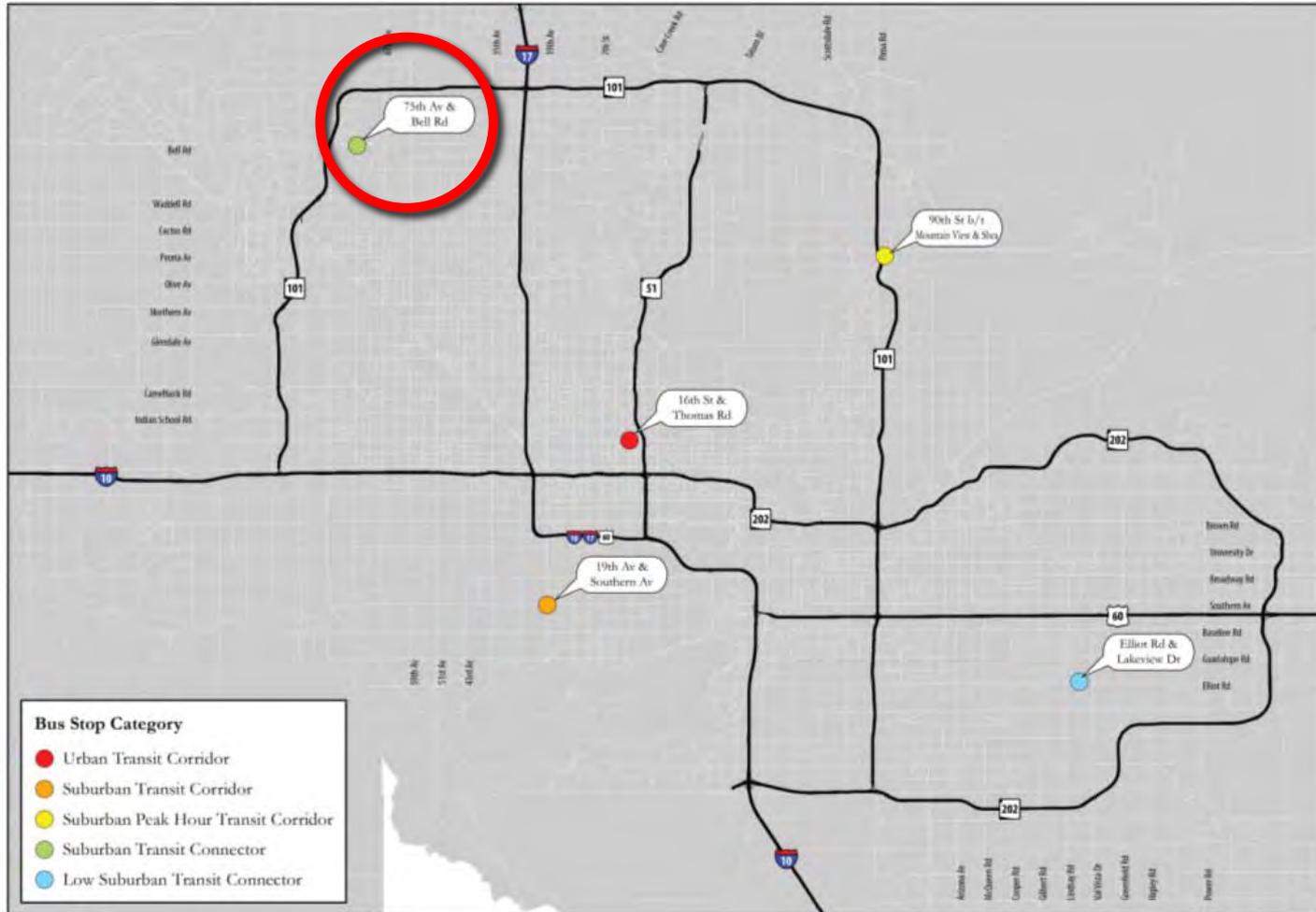






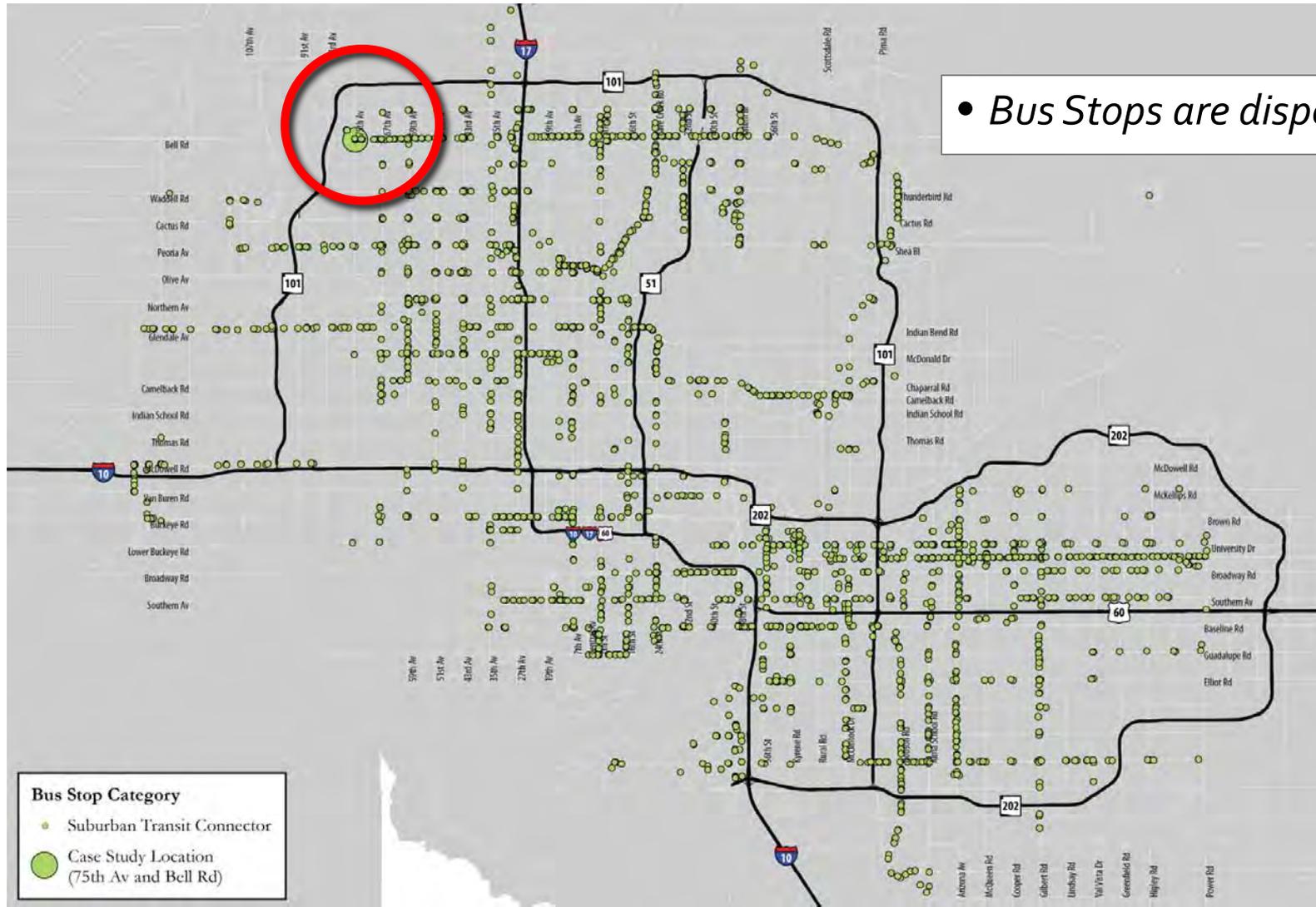
# 75<sup>th</sup> Avenue & Bell Road, Glendale

## Suburban Transit Connector





# Suburban Transit Connector



• *Bus Stops are dispersed*

**Bus Stop Category**

- Suburban Transit Connector
- Case Study Location (75th Av and Bell Rd)



# Suburban Transit Connector

## Population, Employment & Ridership

<i>Characteristic</i>	<i>Range (by quarter-mile buffer)</i>	<i>Mean (by quarter-mile buffer)</i>	<i>Countywide Mean (by Census Block Group)</i>
Population Density	0.15 to 32.1 persons/acre	7.6 persons/acre	8.1 persons/acre
Employment Density	0 to 39.3 jobs/acre	4.2 jobs/acre	1.6 jobs/acre
Number of o-Vehicle Households (HH) per acre	0 to 3.4 HH with no cars/acre	0.29 HH with no car/acre	0.3 HH with no car/acre
Average Weekday Bus Boardings	0 to 377 Boardings per day	24 Boardings per day	32 Boardings per day



# Suburban Transit Connector

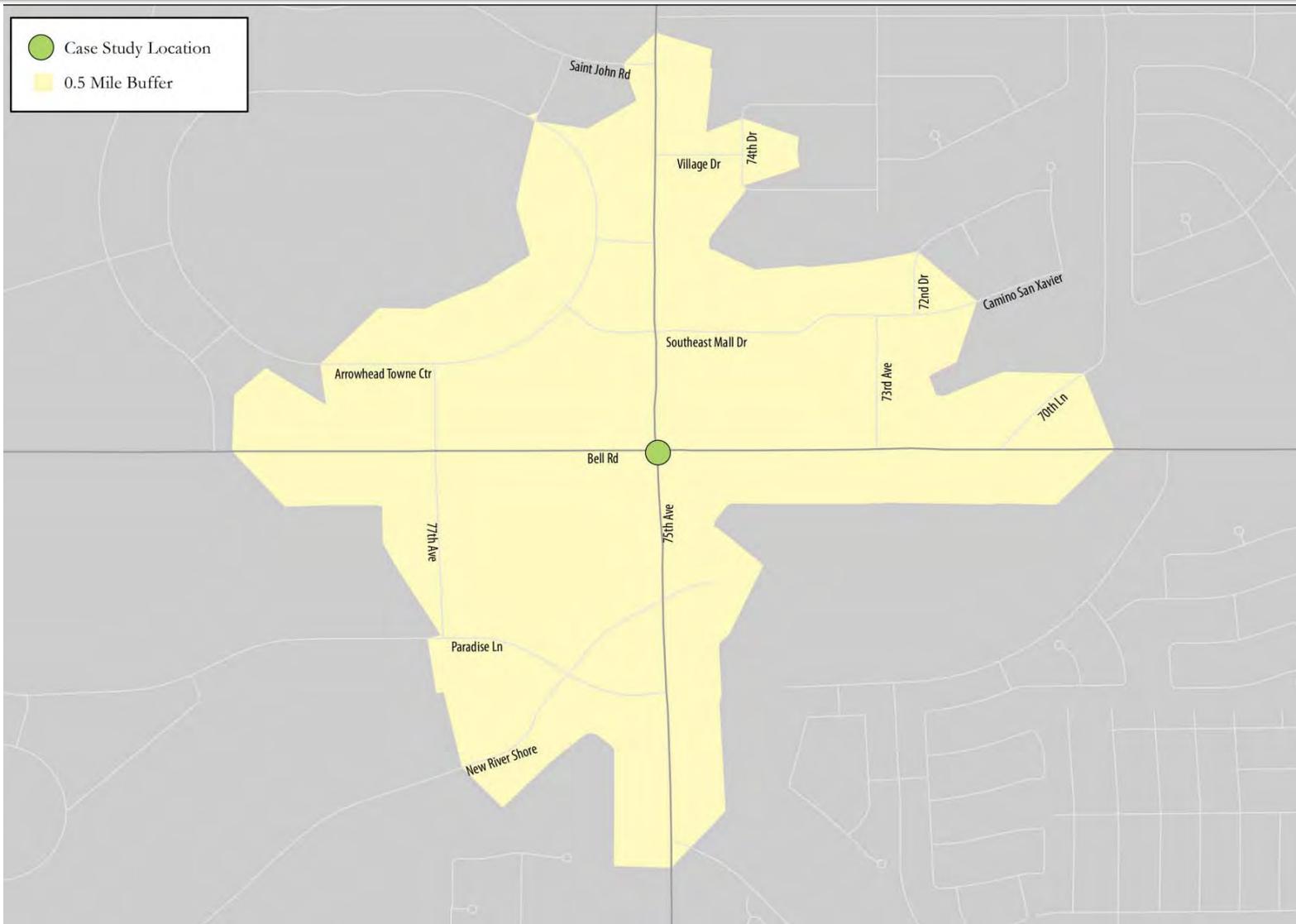
## Transit Service Characteristics

Bus Frequencies	Bus Stop Count	Percent of Total
Very High Frequency Service <i>(multiple high frequency routes)</i>	0	0%
High Frequency Service <i>(1 high frequency route)</i>	0	0%
Peak Period-Only High Frequency Service	653	33.4%
No High Frequency Service	1,302	66.6%
<b>Total</b>	<b>1,955</b>	<b>100%</b>

Number of Routes per Stop	Bus Stop Count	Percent of Total
1 Bus Route per Stop	1651	84.4%
2 to 5 Bus Routes per Stop	301	15.4%
6 to 12 Bus Routes per Stop	3	0.2%
<b>Total</b>	<b>1,955</b>	<b>100%</b>



# Pedestrian Case Study Area



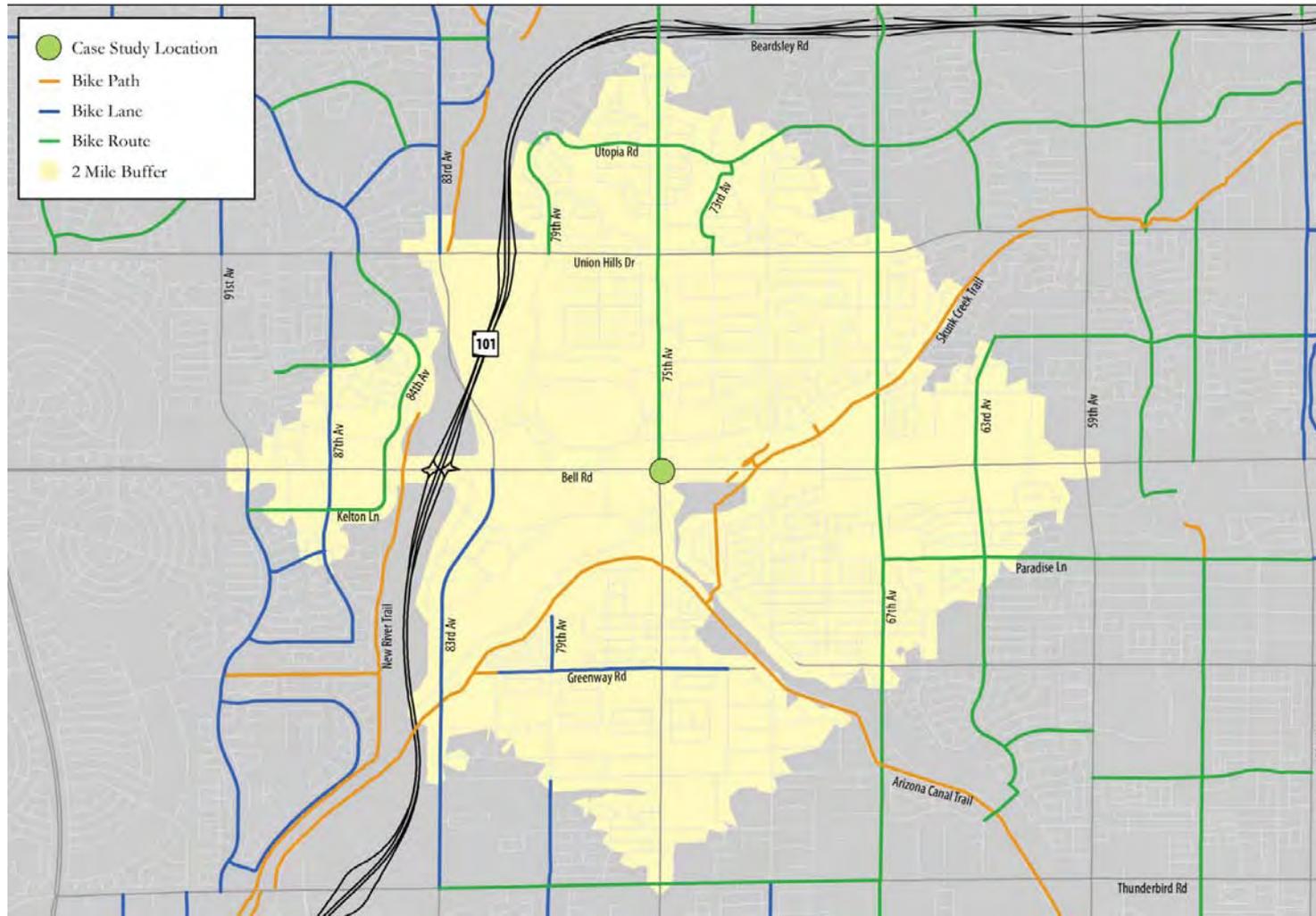
● Case Study Location

■ 0.5 Mile Buffer



# Bicycle Case Study Area

## 75<sup>th</sup> Street & Bell Road





# 75TH AVENUE & BELL ROAD

## DESIGNING TRANSIT ACCESSIBLE COMMUNITIES STUDY



① Connections to Adjacent Land Use



② Pedestrian Refuge



③ Bus Bay



④ Unused Bus Stop



⑤ NB Bus Stop



⑥ Pedestrian Passageway



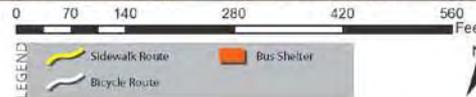
⑦ Pedestrian Crosswalk



⑧ Detached Sidewalk

### 75th/Bell

Date: 7/10/2012





**+ Favorable Conditions**

**Bus Bay and Detached Sidewalk**



**Bus Shelter with Landscaping**



**Crosswalk with Pedestrian Refuge**



**Connections to Development**



Deficiencies

Unused Bus Bay



Unused Shelter Pad



Litter



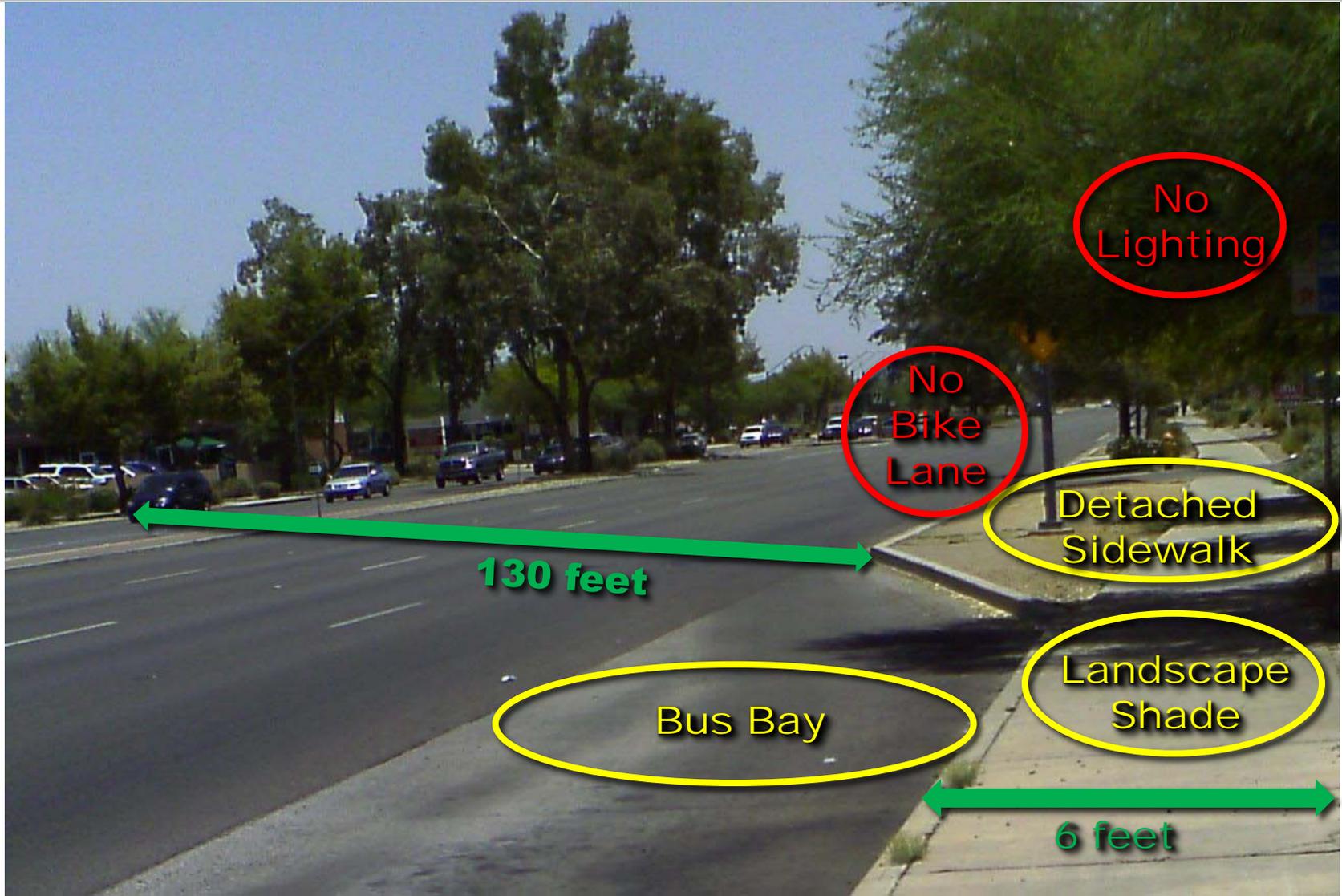
Attached Sidewalk

No Shelter





# Eastbound Bus Bay



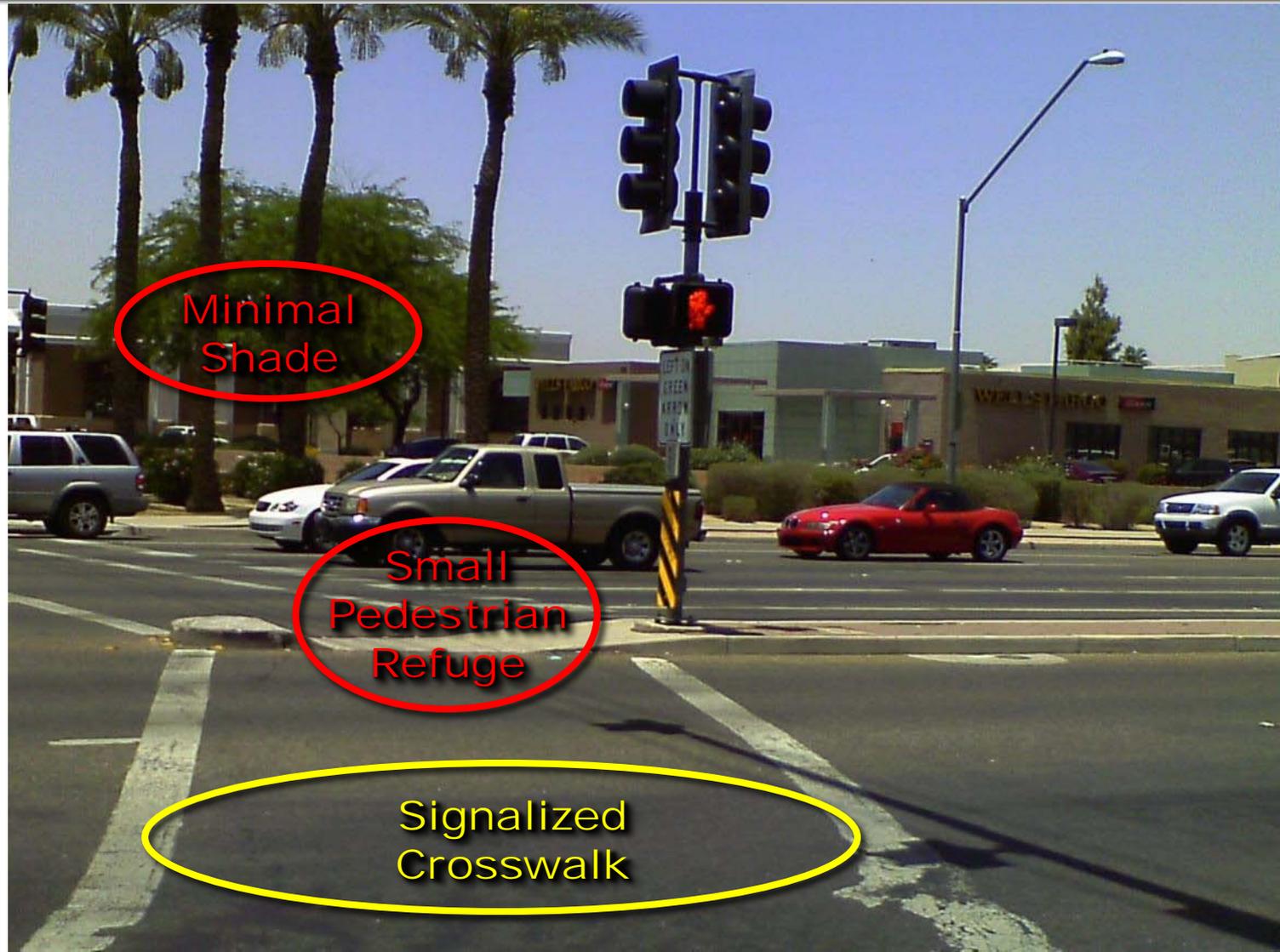


# Eastbound Bus Stop





# 75<sup>th</sup> & Bell Intersection



Minimal Shade

Small Pedestrian Refuge

Signalized Crosswalk

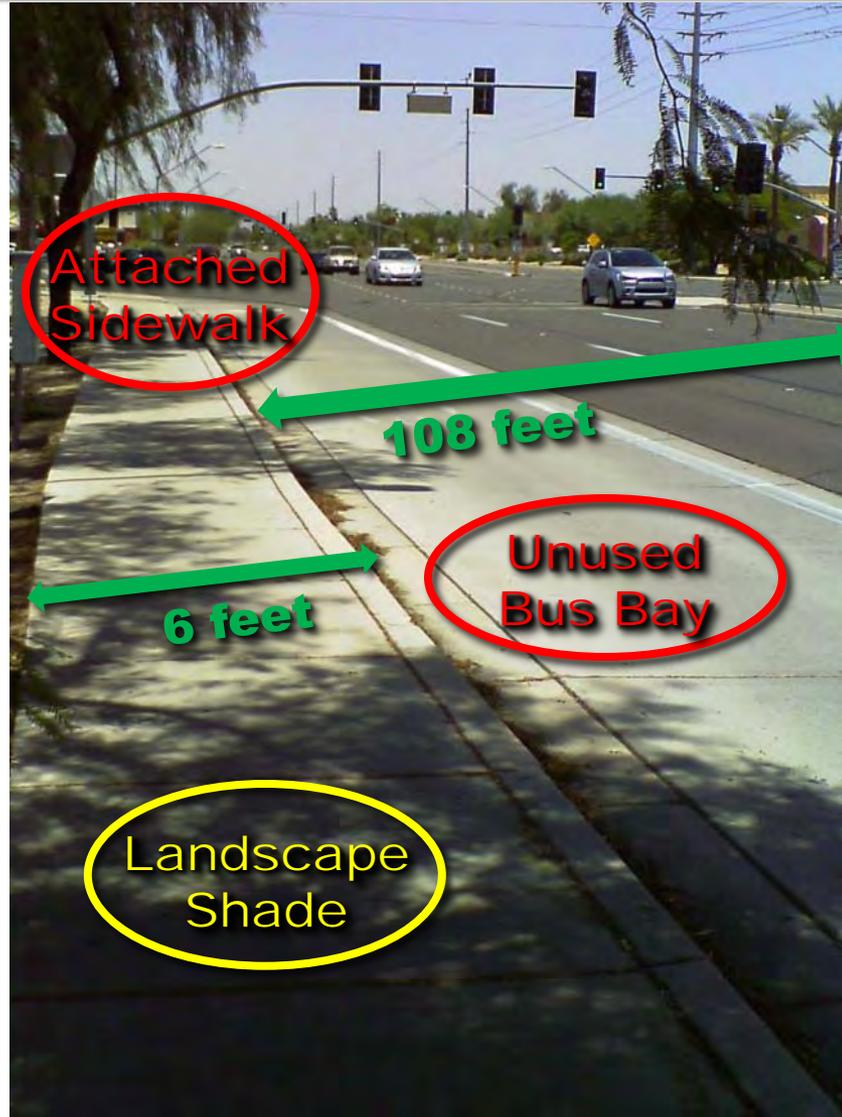


Bell Road, Westbound





75<sup>th</sup> Street, Southbound





# 75TH AVENUE & BELL ROAD

## 75th & Bell, Southwest Corner





# Northbound Bus Stop



System Signage

Detached Sidewalk

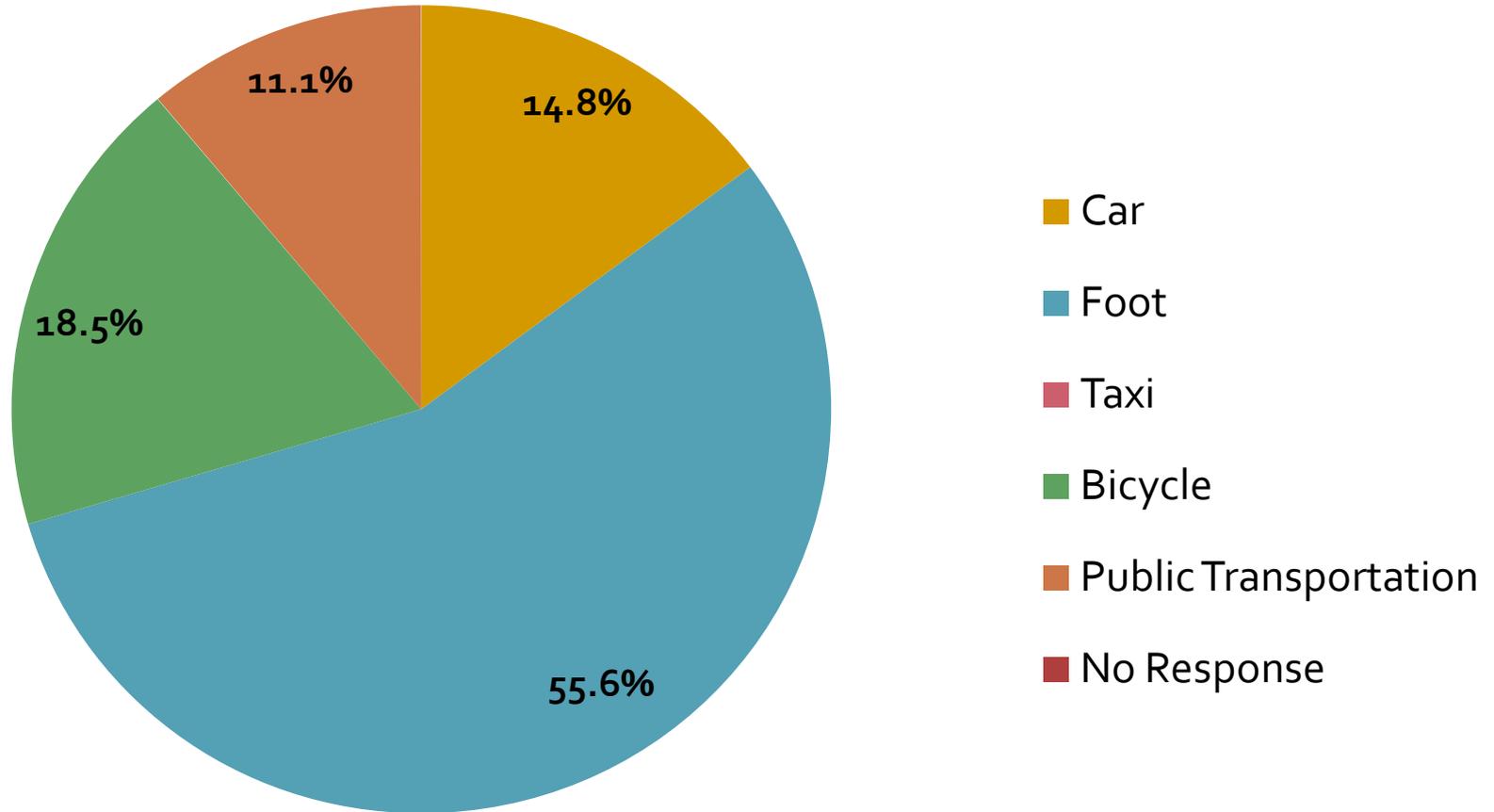
6 feet

Landscape Shade

No Shelter



# Mode of Access?

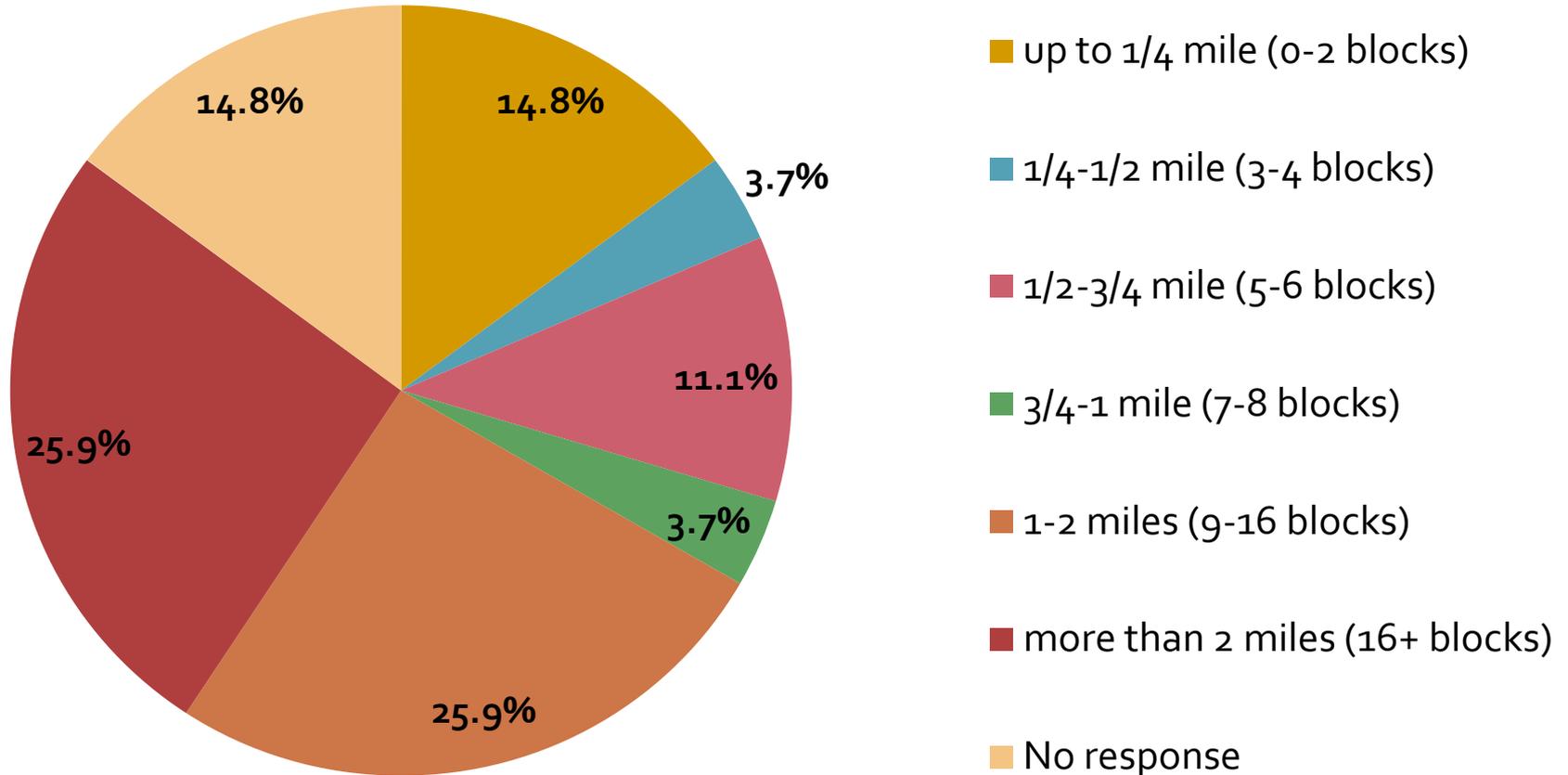


*2007 National Survey by APTA:*

*59.6% walk; 17.2% transfer; 21.2% car; less than 2% bike and other*



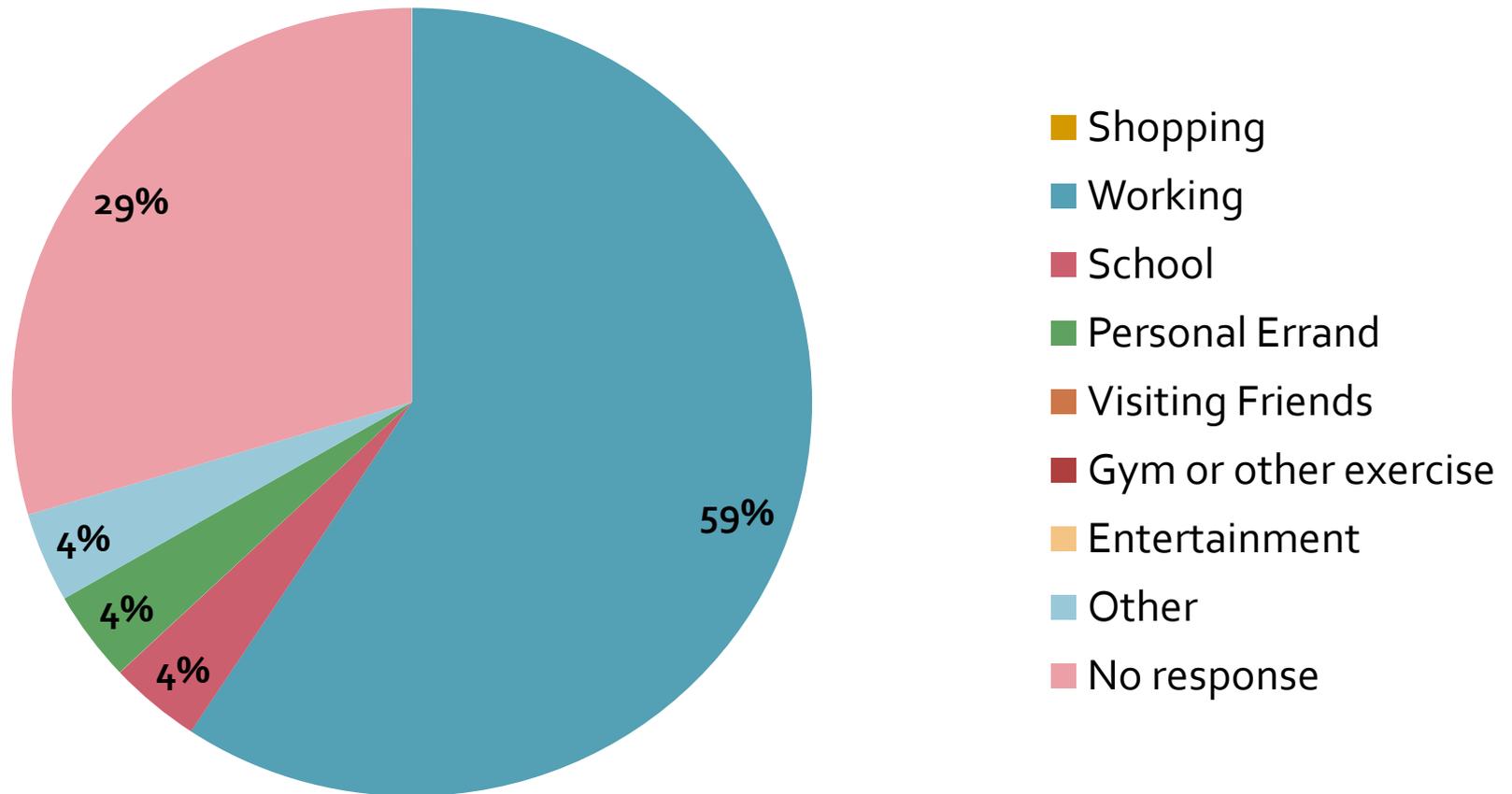
# Distance Traveled?



*Quarter-mile "rule-of-thumb" for walking access*



# Trip Purpose?

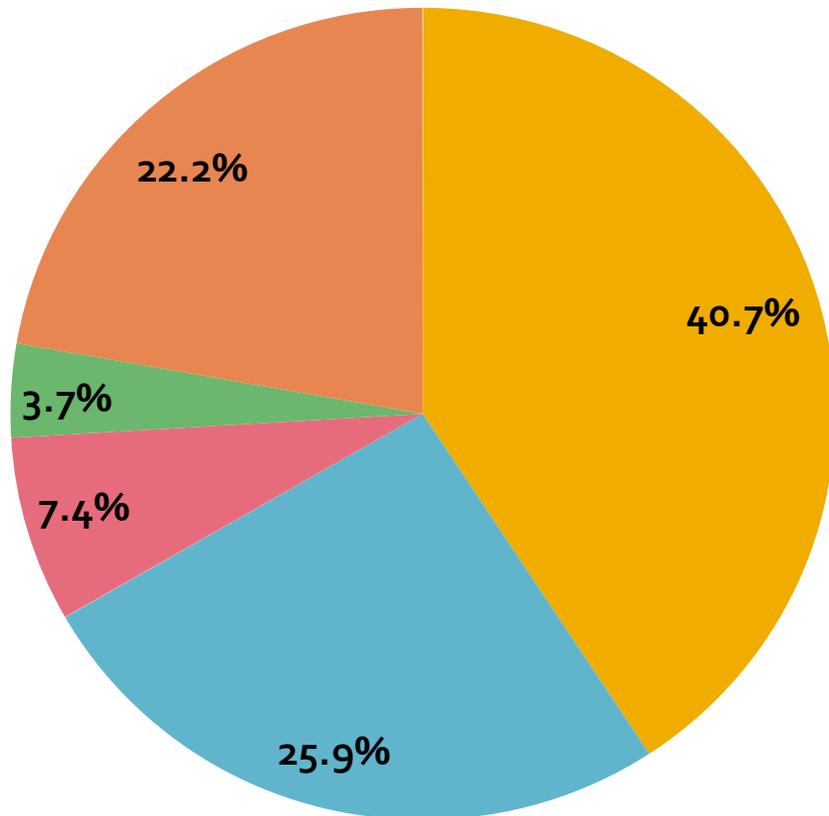


*2007 National Survey by APTA:*

*60% work; 11% school; 9% shopping; 6% personal; 3% medical*



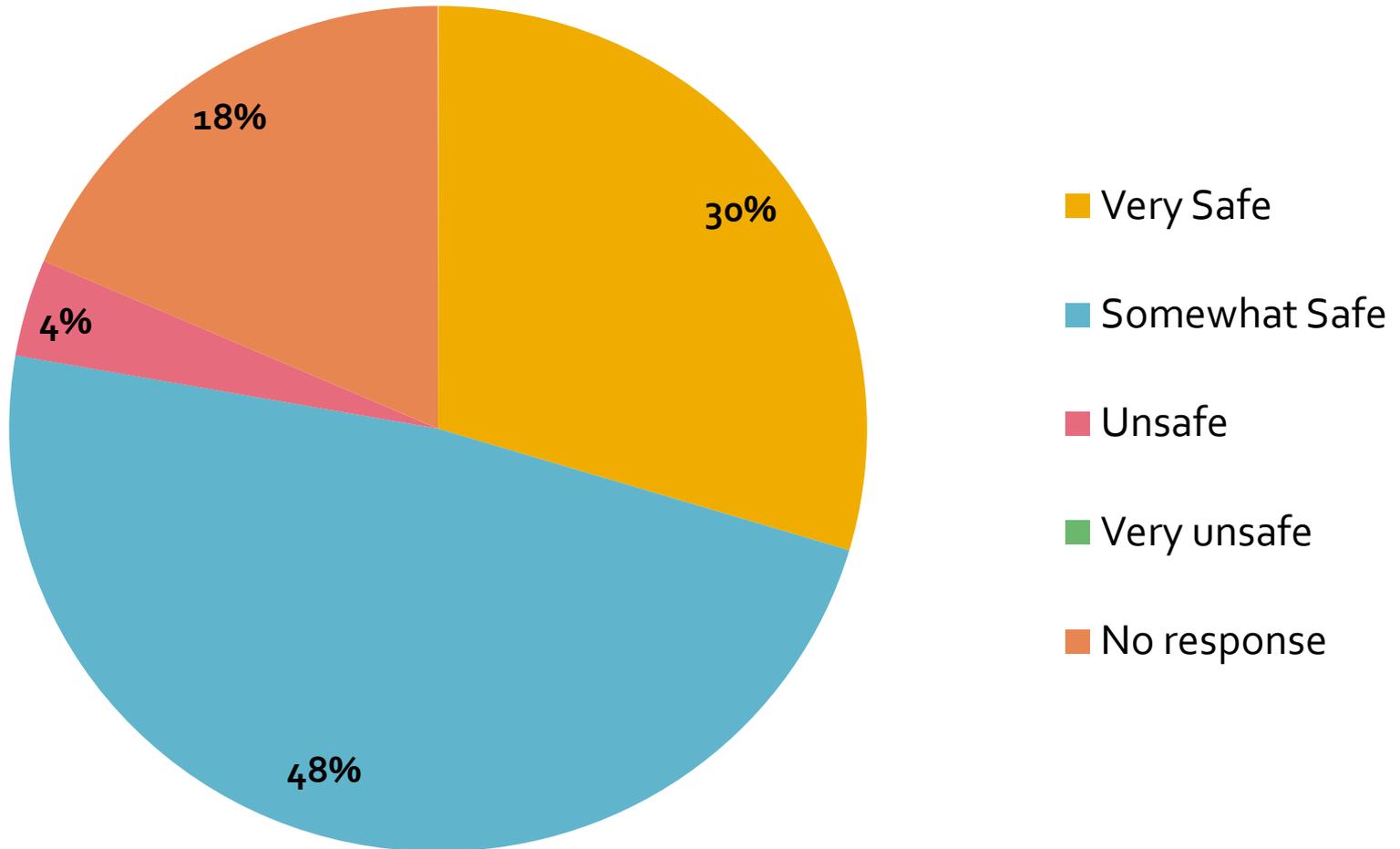
# Level of Comfort Traveling to Stop?



- Very Comfortable
- Somewhat comfortable
- Uncomfortable
- Very Uncomfortable
- No Response



# Level of Safety Traveling to Stop?





# What will make you walk/ride more often?

## *Ranking of Features*

Bus Schedule Information	41%
Shade Trees	37%
Bicycle Lanes	34%
Bicycle Parking	30%
Curb Extensions	26%
Streetlights	19%
Landscaping	19%
Art	15%
Colored Pavement	11%
Medians	7%

*(Percent who said **Very Likely** or **Likely**)*



# How do you feel about your trip to the bus stop?

## Ranking of Level of Agreement

Good sidewalks	44%
Bus stop is safe	44%
Well maintained	44%
Easy to make connections	41%
Bus stop close to home/work/shopping	33%
Good lighting	30%
Easy to park and ride	26%
Good bike paths	26%
Lots of trees and plants	26%
Interesting things to see	22%
Light traffic	19%

*(Percent of respondents who agree with statement)*



# Near Misses?

Almost been hit by a car when crossing the street to/from bus stop? 15%

Vehicle come too close while crossing the street to/from bus stop? 22%

“Doored” by a car while riding a bike 0%



# Key Responses by Bus Stop Category

Bus Stop Category	Percent Walk Access	Percent Bike Access	Percent Car Access	Feel Comfortable Traveling to Stop	Feel Safe Traveling to Stop	Traveling More than 1 Mile	Almost Hit by Car Crossing Street
Urban Transit Corridor	63.3%	25.7%	1.0%	75.2%	81.1%	20.8%	31.0%
Suburban Transit Corridor	60.1%	20.0%	11.1%	91.1%	86.7%	28.9%	16.0%
Suburban Peak Hour Transit Corridor	55.6%	0%	11.1%	88.9%	89%	44.4%	22.0%
Suburban Transit Connector	55.6%	18.5%	14.8%	66.6%	78%	51.8%	15.0%
Low Suburban Transit Connector	71.4%	14.3%	0%	14.3%	72%	14.3%	100%



# 75TH AVENUE & BELL ROAD

## DESIGNING TRANSIT ACCESSIBLE COMMUNITIES STUDY

### ISSUES

### STOP

### SURROUNDING AREA

### CATCHMENT AREA

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

### SHADING LANDSCAPING WEATHER PROTECTION



- Landscaping near stop
- Additional shade from nearby trees



- No shelter
- Few trees



- Adjacent landscaping provides some shade



- Unused bus bay and shelter pad
- Little to no shade on sidewalks



- Shade and weather protection nearby, if needed



- Little to no shade on sidewalks

### AMENITIES BUS SHELTERS SHELTER PAD STOP LOCATION



- Seating at shelter
- Route information visible



- Overflowing trash bin at shelter



- Pedestrian crosswalk within nearby shopping center



- Few pedestrian connections to adjacent development
- Development pattern less conducive to bicycle/pedestrian activity



- Proximity to commercial activity center
- Bike racks in surrounding shopping centers



- Few pedestrian connections to adjacent development
- Development pattern less conducive to bicycle/pedestrian activity

### SAFETY AND SECURITY STREET CROSSINGS LIGHTING SIDEWALKS BIKE LANES



- Signalized intersection with safety island for pedestrian crossing of wide thoroughfare



- High traffic area
- Multiple traffic zones
- Multiple traffic directions
- No bike lanes



- Wide sidewalks
- Landscaped buffer separates sidewalks from street and traffic



- Unmarked pedestrian crossing
- Lack of lighting at intersection
- Attached sidewalks
- No bike lanes
- Small pedestrian refuges



- Protected crossing of Skunk Creek on 75th Avenue south of stop (Note: Similar pedestrian facility does not exist on Bell Road east of stop)



- Eight-lane roadway
- No bike lanes
- Attached sidewalks

### AFTER THE STOP ADJACENT LAND USE ACCESS PEDESTRIAN/BICYCLE EASEMENTS TRANSFERS PASSENGER INFORMATION



- Direct connection with adjacent land uses
- Food and shops accessible



- Lack of schedule information
- Technology-based information not available to all patrons



- Wide sidewalk connections with stop



- No bike lanes
- Few transfer opportunities



- Retail and commercial land uses nearby



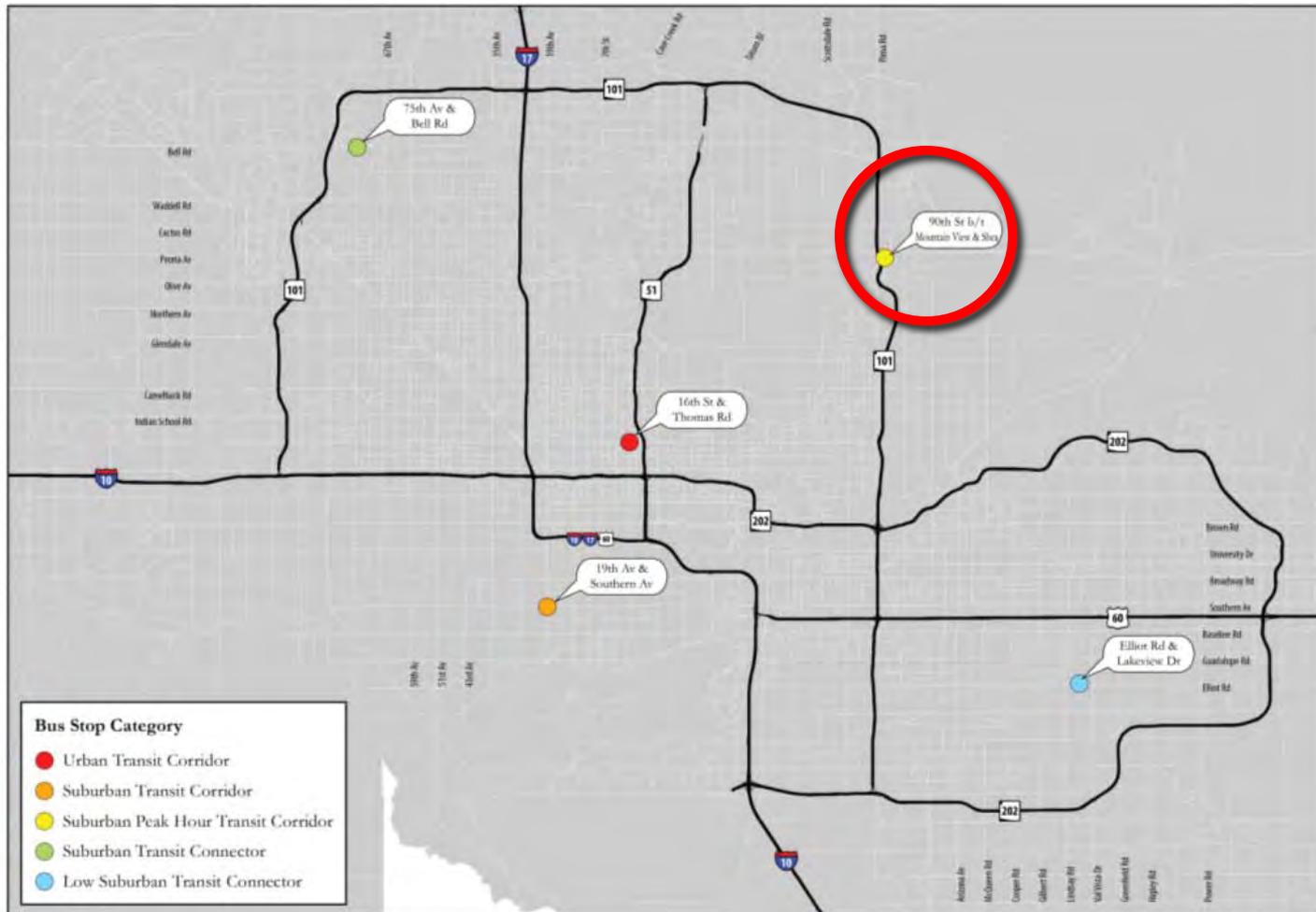
- No bike lanes
- Sidewalks with no connections
- Wide setbacks and parking lots





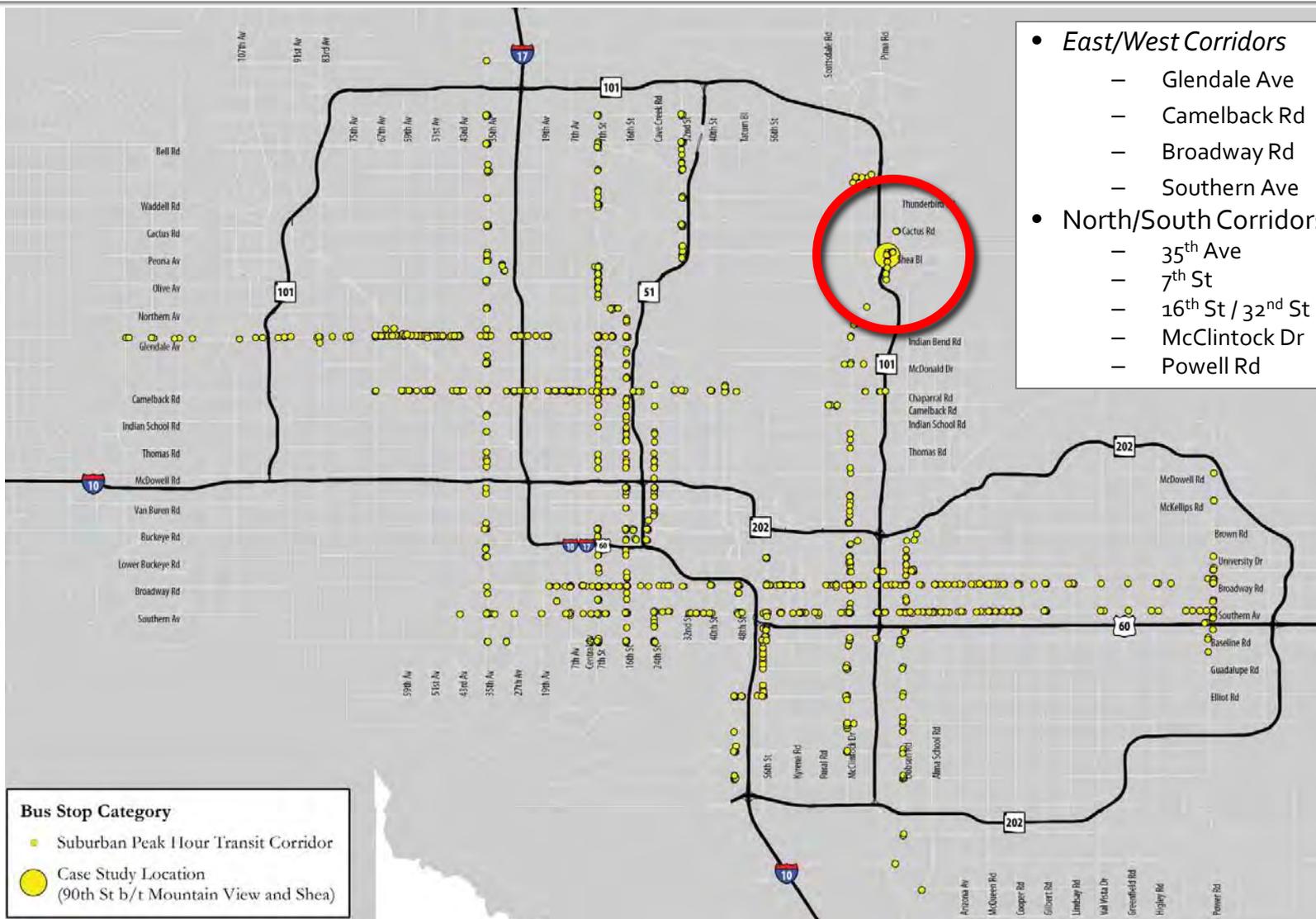
# 90<sup>th</sup> Street South of Shea Blvd, Scottsdale

## Suburban Peak Hour Transit Corridor





# Suburban Peak Hour Transit Corridors



- *East/West Corridors*
  - Glendale Ave
  - Camelback Rd
  - Broadway Rd
  - Southern Ave
- *North/South Corridors*
  - 35<sup>th</sup> Ave
  - 7<sup>th</sup> St
  - 16<sup>th</sup> St / 32<sup>nd</sup> St
  - McClintock Dr
  - Powell Rd



# Suburban Peak Hour Transit Corridor

## Population, Employment & Ridership

<b>Characteristic</b>	<b>Range (by quarter-mile buffer)</b>	<b>Mean (by quarter-mile buffer)</b>	<b>Countywide Mean (by Census Block Group)</b>
<b>Population Density</b>	0.4 to 22.6 persons/acre	7.9 persons/acre	8.1 persons/acre
<b>Employment Density</b>	0.01 to 33.9 jobs/acre	4.8 jobs/acre	1.6 jobs/acre
<b>Number of o-Vehicle Households (HH) per acre</b>	0 to 2.5 HH with no cars/acre	0.37 HH with no car/acre	0.3 HH with no car/acre
<b>Average Weekday Bus Boardings</b>	0 to 1,588 Boardings per day	50 Boardings per day	32 Boardings per day



# Suburban Peak Hour Transit Corridor

## Transit Service Characteristics

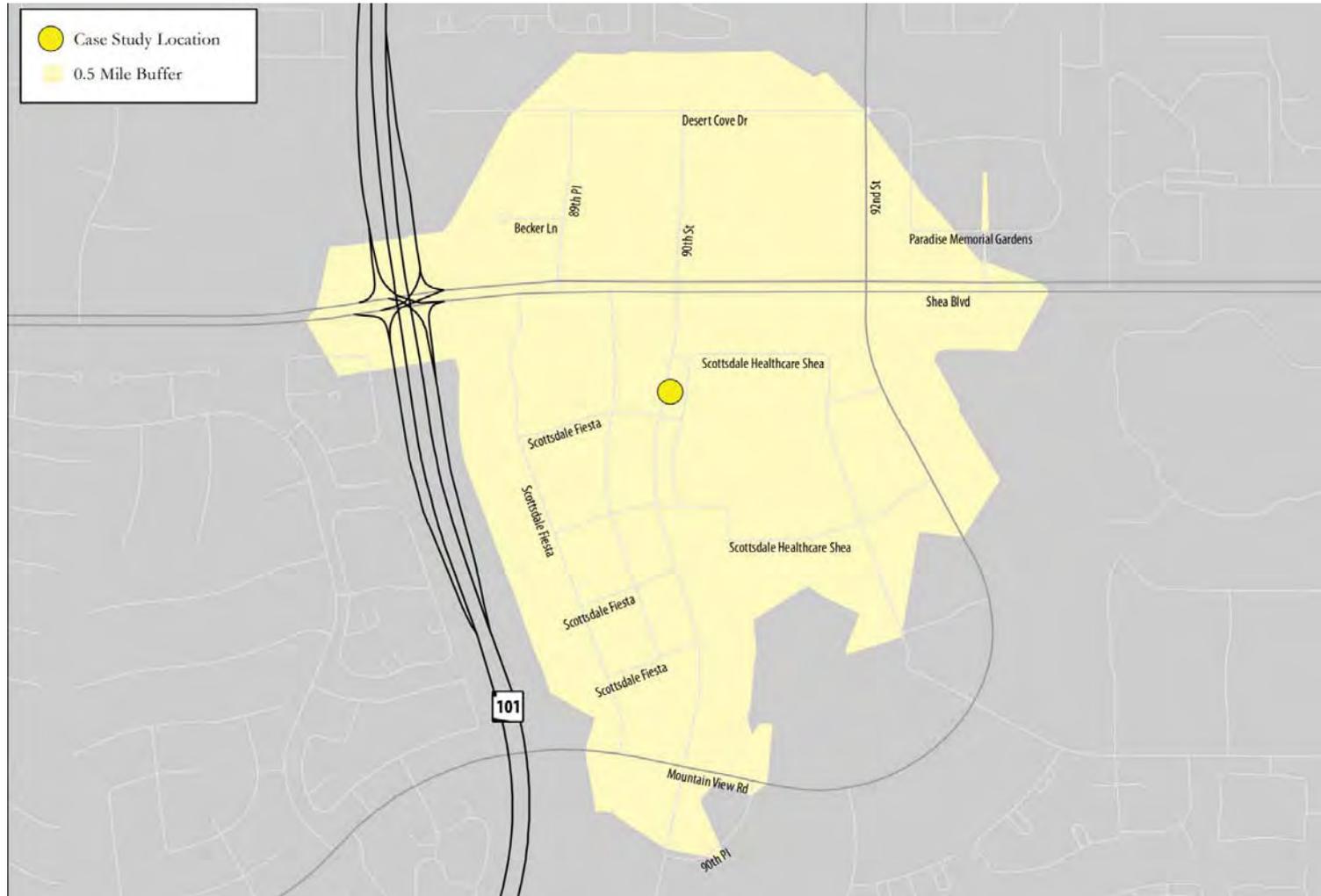
Bus Frequencies	Bus Stop Count	Percent of Total
Very High Frequency Service <i>(multiple high frequency routes)</i>	0	0%
High Frequency Service <i>(1 high frequency route)</i>	0	0%
Peak Period-Only High Frequency Service	865	100%
No High Frequency Service	0	0%
<b>Total</b>	<b>865</b>	<b>100%</b>

Number of Routes per Stop	Bus Stop Count	Percent of Total
1 Bus Route per Stop	675	78%
2 to 5 Bus Routes per Stop	190	22%
6 to 12 Bus Routes per Stop	0	0%
<b>Total</b>	<b>865</b>	<b>100%</b>



# Pedestrian Case Study Area

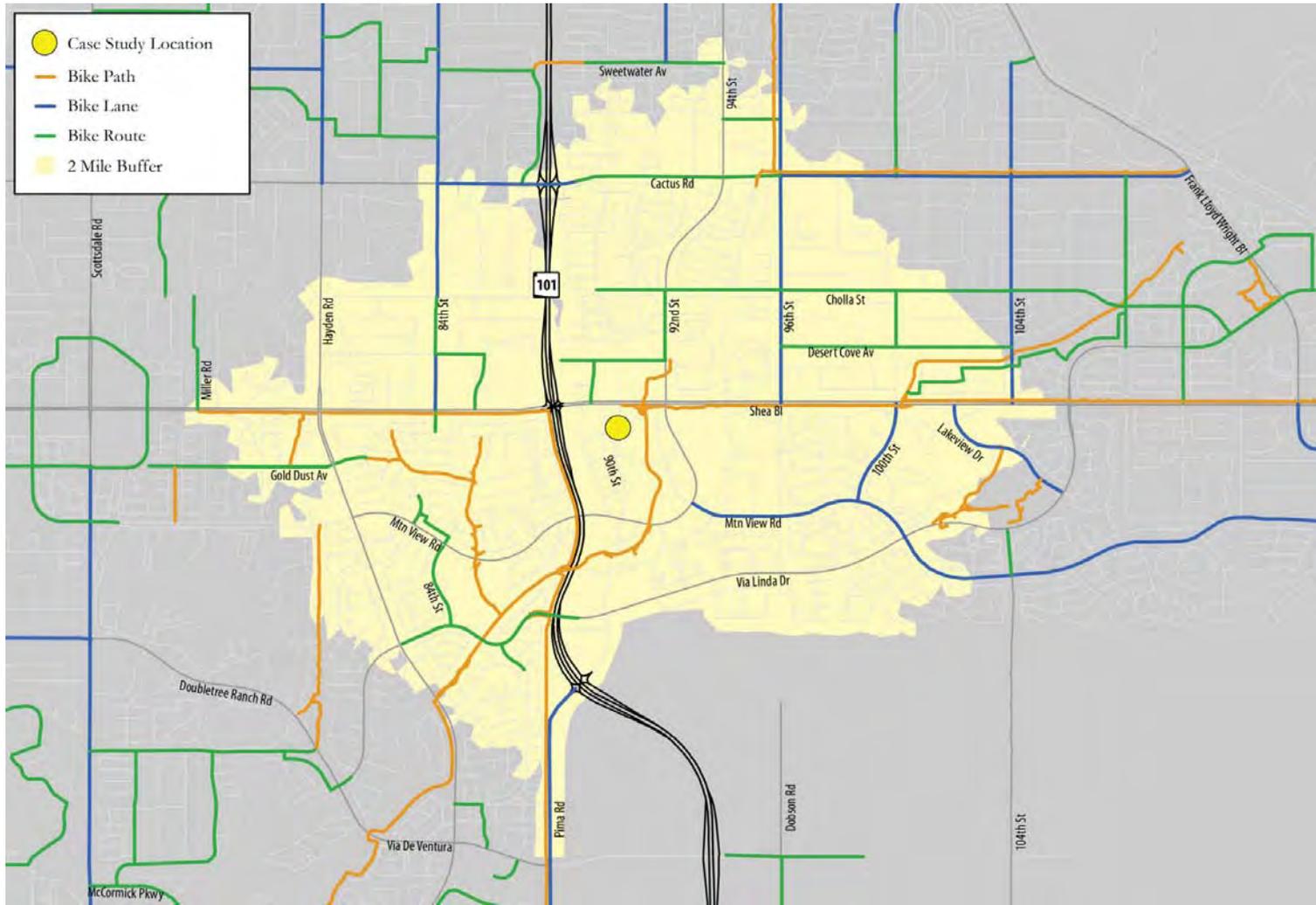
*90<sup>th</sup> Street, between Mountain View and Shea*





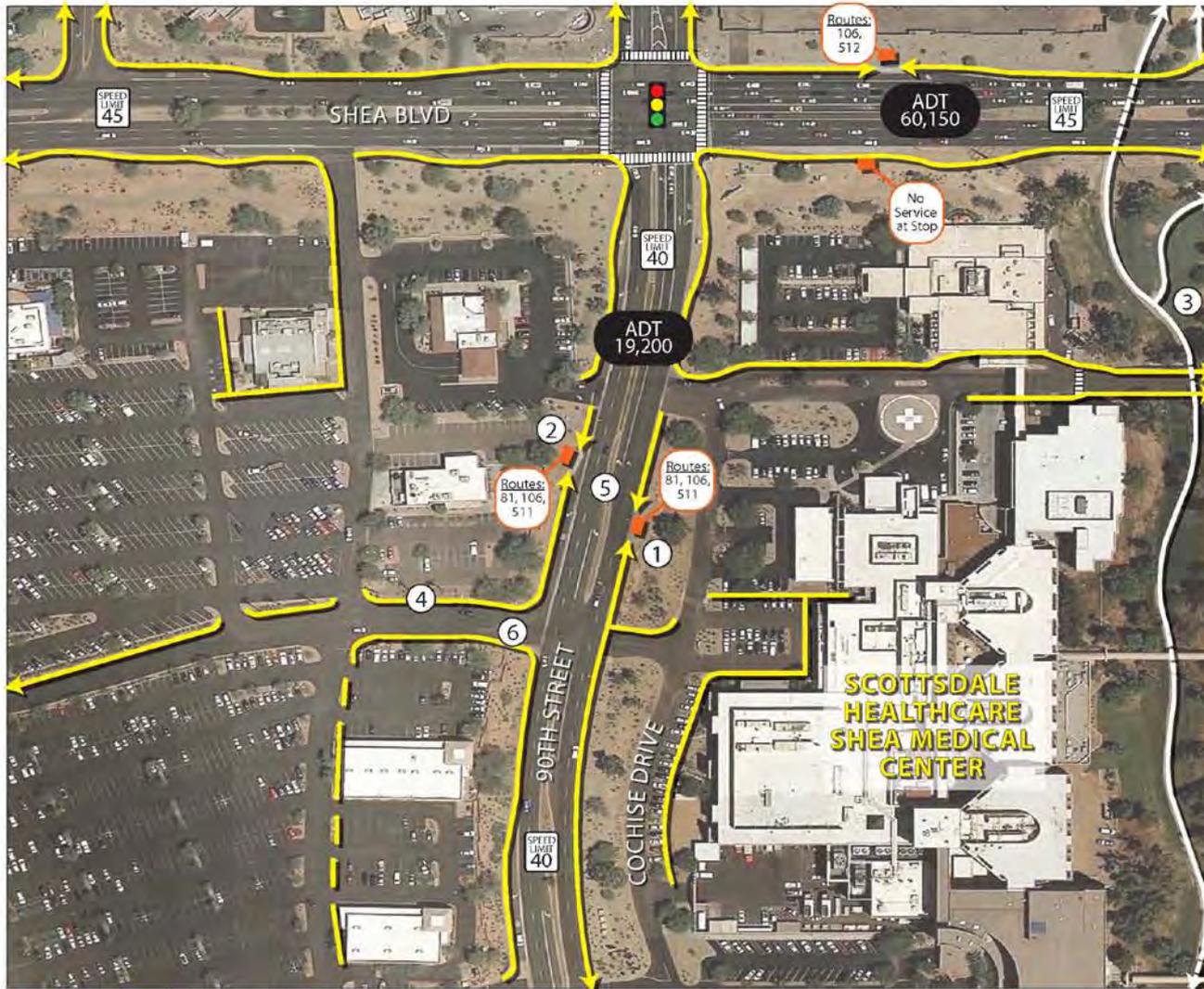
# Bicycle Case Study Area

## 90<sup>th</sup> Street, between Mountain View and Shea





# 90TH STREET & SCOTTSDALE FIESTA



① NB Bus Stop



② SB Bus Stop



③ Bike Path



④ Sidewalk Access to Scottsdale Fiesta



⑤ Jay Walking Between Stops



⑤ Jay Walking Between Stops



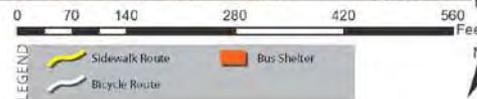
⑥ Unmarked Crosswalks



⑥ Unmarked Crosswalks

## 90th/Scottsdale Fiesta

Date: 7/2/2012





+ Favorable Conditions

Bike Path with Separated Grade Crossing



System Signage





### Deficiencies

### Unmarked Mid-block Crossings



### Few Pedestrian Connections



### Multiple Travel Lanes to Cross



### Minimal Shade



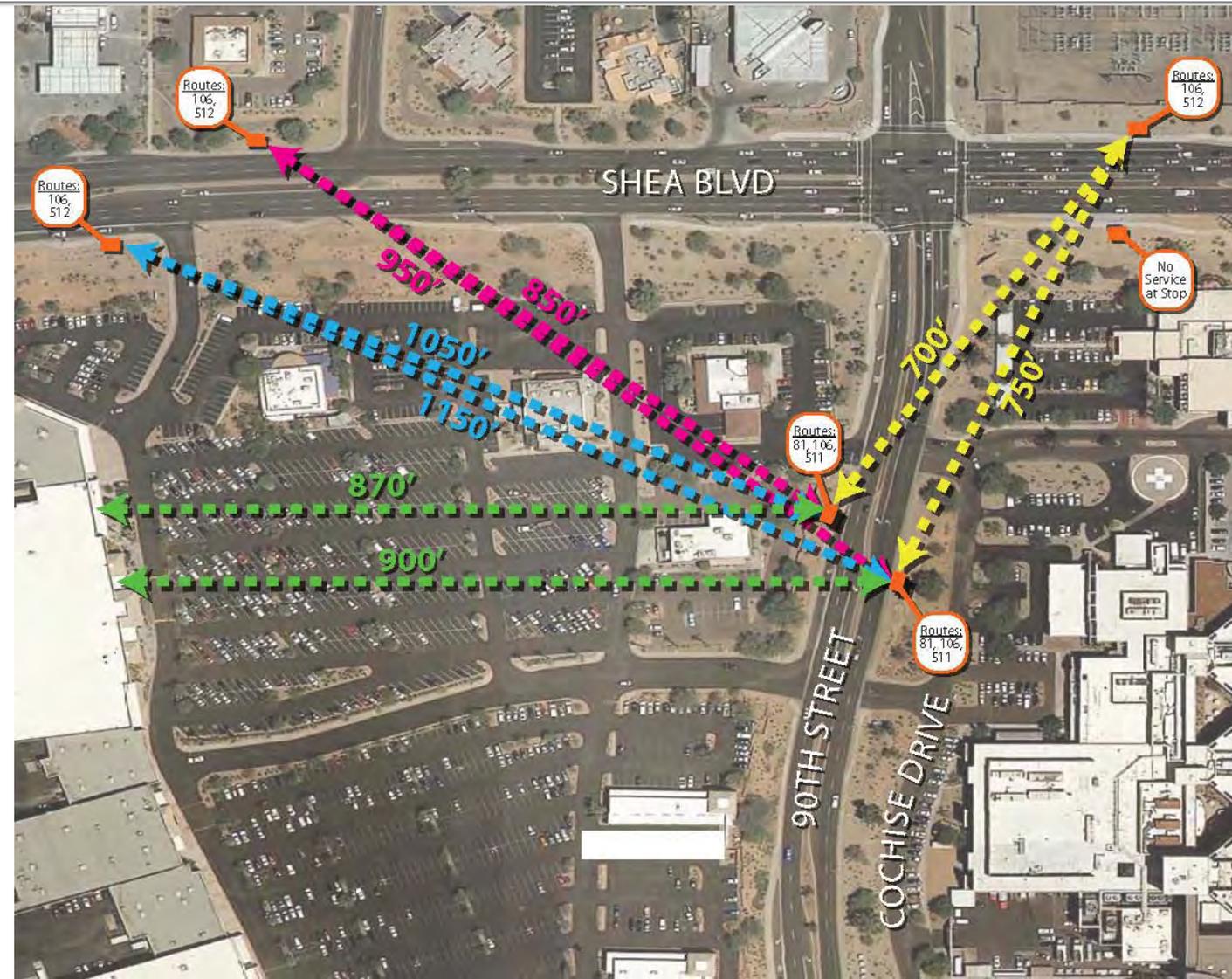
### Unused Shelter





### Deficiencies

Large transfer distances





## Bike Path at Shea Boulevard



Minimal  
Landscaping

Grade  
Separated  
Crossing

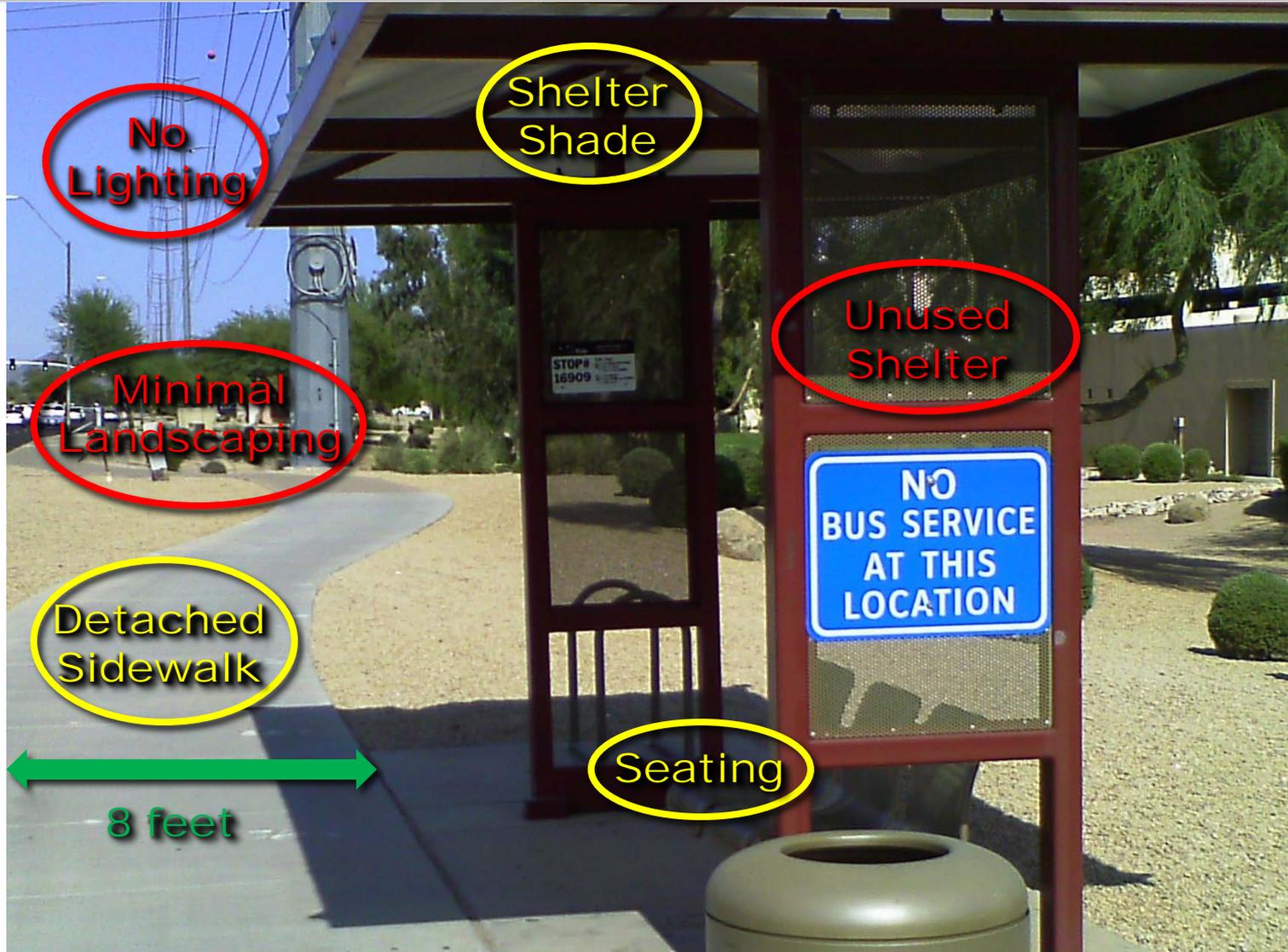
ADA  
Access

No  
Lighting

No  
Shade



Eastbound Bus Stop



No Lighting

Shelter Shade

Unused Shelter

Minimal Landscaping

Detached Sidewalk

8 feet

Seating

NO BUS SERVICE AT THIS LOCATION



# 90<sup>th</sup> Street near Shea Medical Center



No  
Connection





# 90TH STREET & SCOTTSDALE FIESTA

## 90<sup>th</sup> Street



No Lighting

Attached Sidewalk

Unmarked Crossing

STOP# 15121  
Call 4827 263-5000  
1. Call 4827 263-5000  
2. Say "HiHo"  
3. Say or enter STOP#  
1. Text 64274  
2. Enter #6280 and STOP#  
3. Press send



# Southbound Bus Stop



System Signage

No Lighting

Attached Sidewalk

Seating

Shelter Shade

Minimal Landscaping

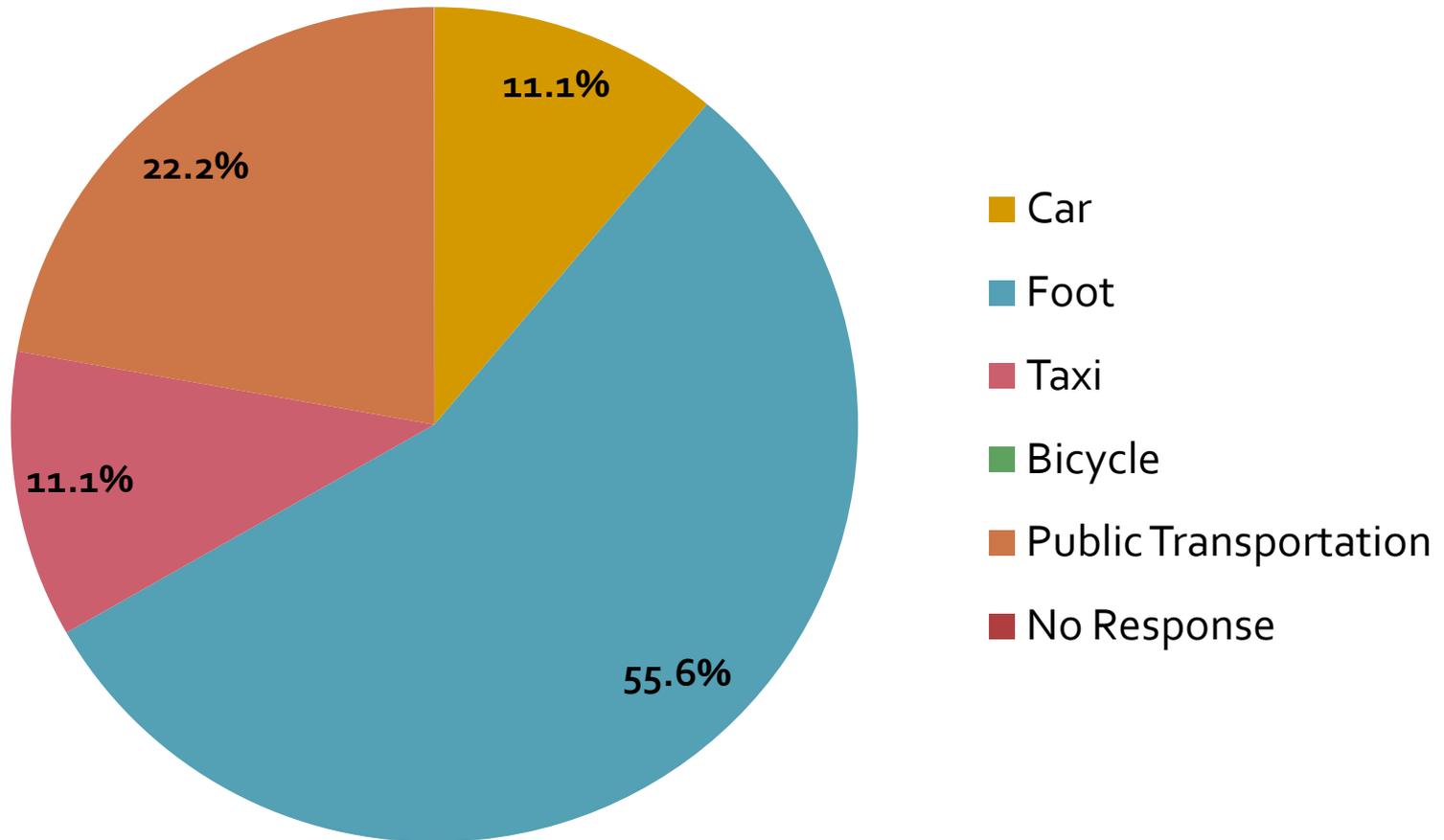


# Northbound Bus Stop





# Mode of Access?

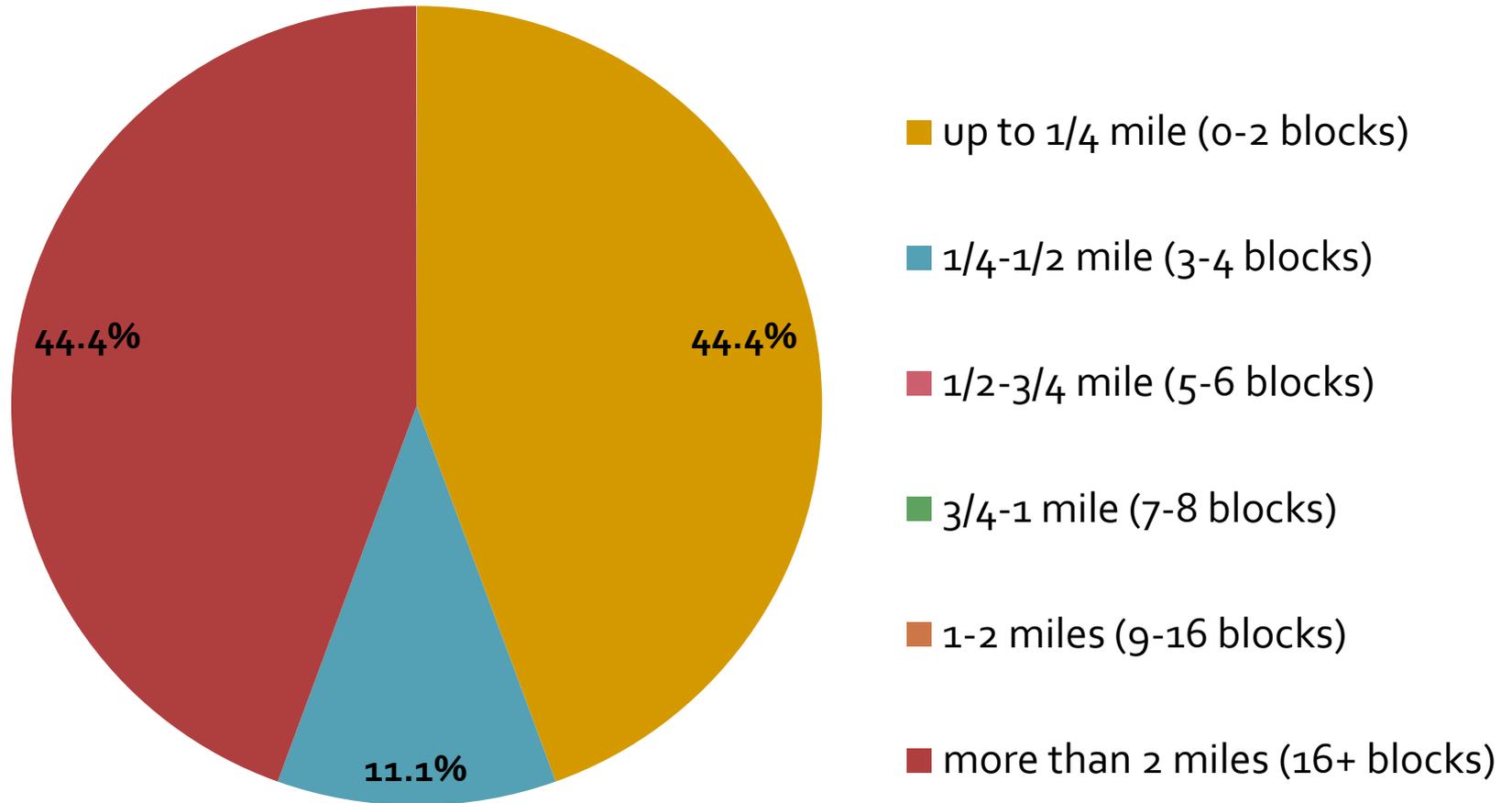


*2007 National Survey by APTA:*

*59.6% walk; 17.2% transfer; 21.2% car; less than 2% bike and other*



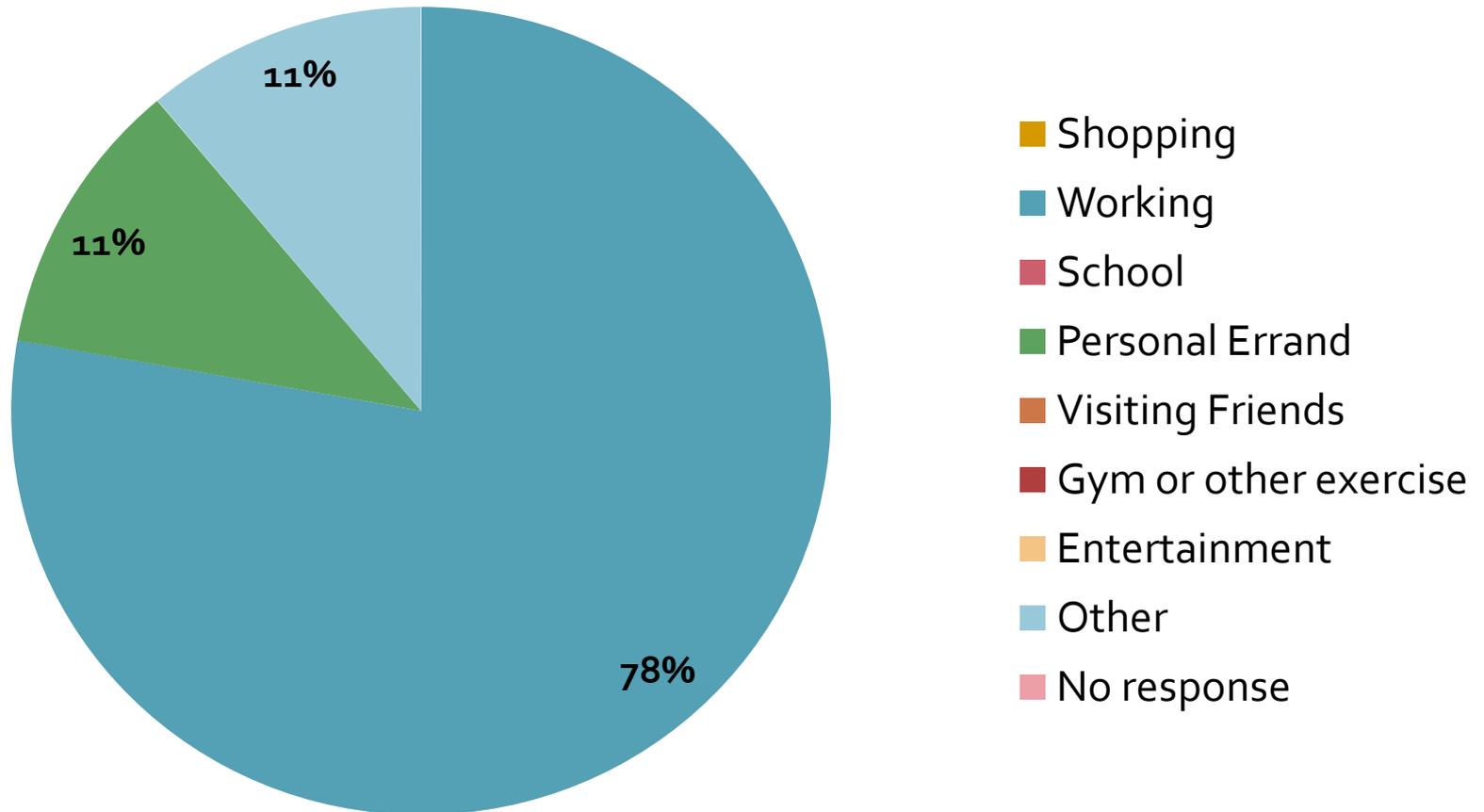
# Distance Traveled?



*Quarter-mile "rule-of-thumb" for walking access*



# Trip Purpose?

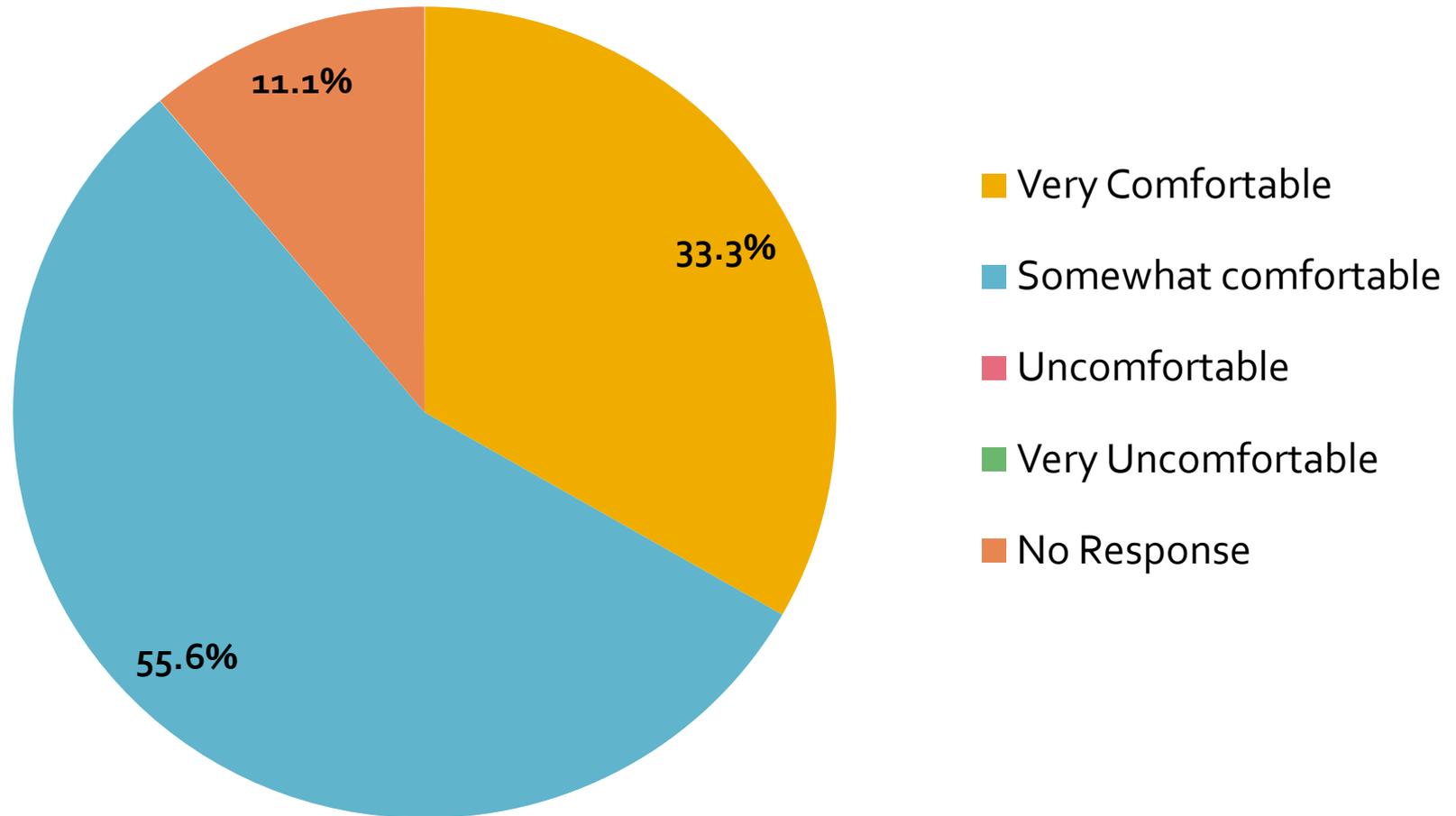


*2007 National Survey by APTA:*

*60% work; 11% school; 9% shopping; 6% personal; 3% medical*

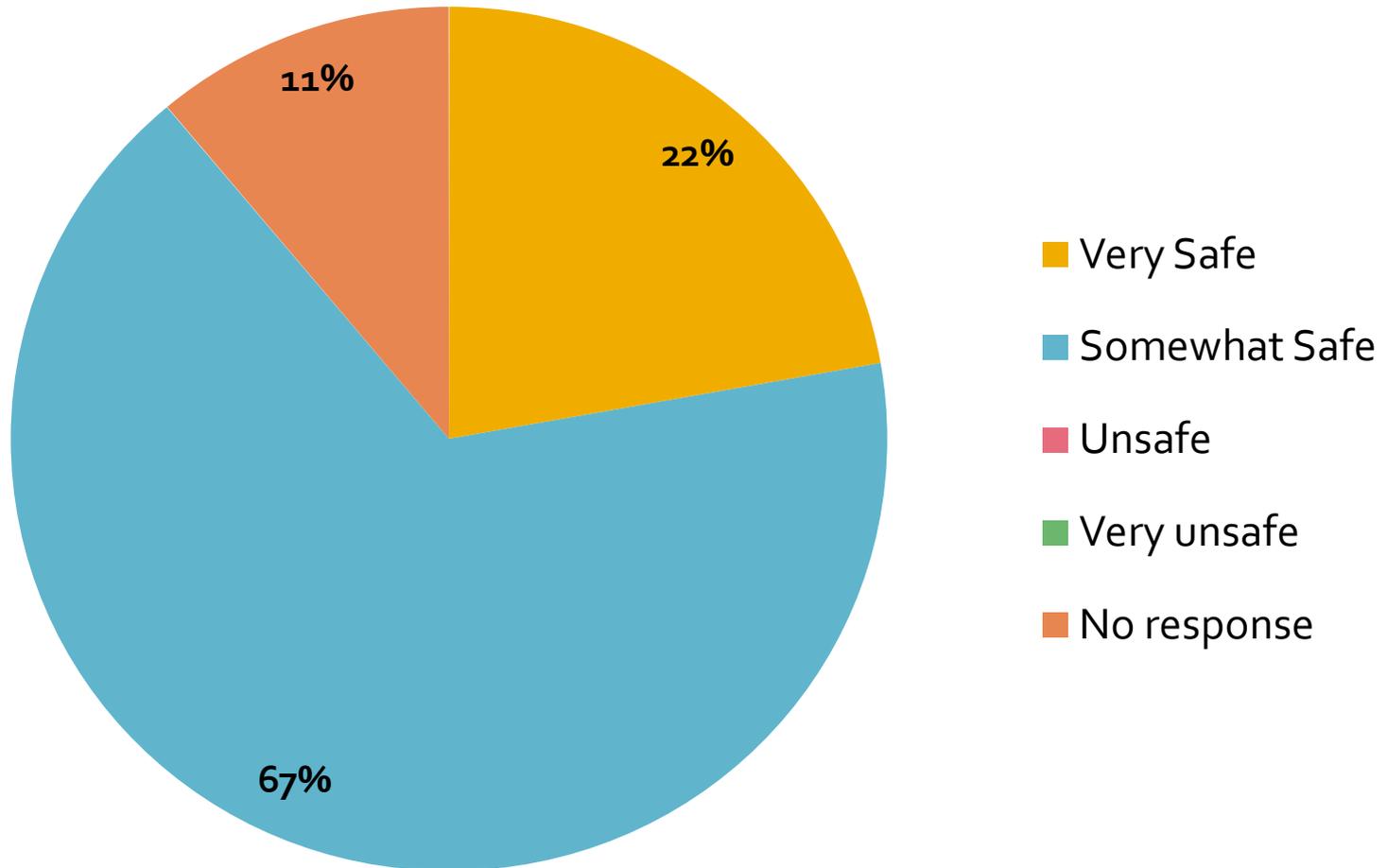


# Level of Comfort Traveling to Stop?





# Level of Safety Traveling to Stop?





# What will make you walk/ride more often?

## *Ranking of Features*

Shade Trees	89%
Streetlights	78%
Bus Schedule Information	56%
Medians	56%
Bicycle Lanes	56%
Bicycle Parking	56%
Landscaping	44%
Colored Pavement	33%
Curb Extensions	22%
Art	11%

*(Percent who said **Very Likely** or **Likely**)*



# How do you feel about your trip to the bus stop?

## Ranking of Level of Agreement

Well maintained	78%
Good sidewalks	78%
Lots of trees and plants	67%
Easy to make connections	67%
Bus stop close to home/work/shopping	56%
Good lighting	56%
Interesting things to see	22%
Good bike paths	22%
Bus stop is safe	11%
Easy to park and ride	0%
Light traffic	0%

*(Percent of respondents who agree with statement)*



# Near Misses?

Almost been hit by a car when crossing the street to/from bus stop? 22%

Vehicle come too close while crossing the street to/from bus stop? 44%

“Doored” by a car while riding a bike 11%



# Key Responses by Bus Stop Category

Bus Stop Category	Percent Walk Access	Percent Bike Access	Percent Car Access	Feel Comfortable Traveling to Stop	Feel Safe Traveling to Stop	Traveling More than 1 Mile	Almost Hit by Car Crossing Street
Urban Transit Corridor	63.3%	25.7%	1.0%	75.2%	81.1%	20.8%	31.0%
Suburban Transit Corridor	60.1%	20.0%	11.1%	91.1%	86.7%	28.9%	16.0%
Suburban Peak Hour Transit Corridor	55.6%	0%	11.1%	88.9%	89%	44.4%	22.0%
Suburban Transit Connector	55.6%	18.5%	14.8%	66.6%	78%	51.8%	15.0%
Low Suburban Transit Connector	71.4%	14.3%	0%	14.3%	72%	14.3%	100%



# 90TH STREET & SCOTTSDALE FIESTA

## DESIGNING TRANSIT ACCESSIBLE COMMUNITIES STUDY

### ISSUES

### STOP

### SURROUNDING AREA

### CATCHMENT AREA

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### SHADING LANDSCAPING WEATHER PROTECTION



- Structure provides shade
- Additional shade from nearby trees



- No direct lighting of the shelter



- Adjacent landscaping provides some shade



- No shade for sidewalk



- Landscaping provides some shade
- Misters nearby



- Local street does not have bike lane

#### AMENITIES BUS SHELTERS SHELTER PAD STOP LOCATION



- Instructions visible at night
- Seating



- Waiting patron stands in dirt behind the shelter



- Bicycle racks at nearby hospital



- Development pattern less conducive to pedestrian/bicycle activity
- No destination or schedule information



- Proximity to commercial activity center
- Proximity to employment center



- Development pattern less conducive to pedestrian and bicycle activity

#### SAFETY AND SECURITY STREET CROSSINGS LIGHTING SIDEWALKS BIKE LANES



- Right-turn lane adapted to incorporate bus stop and pull out



- No bus stop pull out



- Wide sidewalks approaching the stop along both 90th Street and Shea Boulevard



- Poor lighting
- Some lighting from nearby land uses



- Signalized intersection with well marked crosswalks



- Mid-block street crossing practices are common

#### AFTER THE STOP ADJACENT LAND USE ACCESS PEDESTRIAN/BICYCLE EASEMENTS TRANSFERS PASSENGER INFORMATION



- Connection to adjacent land uses



- Minimal transit system information



- Some connections to bus stop
- Food and shops accessible



- No marked crosswalk
- No bike lanes
- Long transfer distances
- No destination or schedule information



- Citywide bike/pedestrian path close to stop



- No direct sidewalk access to/from adjoining land uses
- Long transfer distances
- Nearby bus stops closed

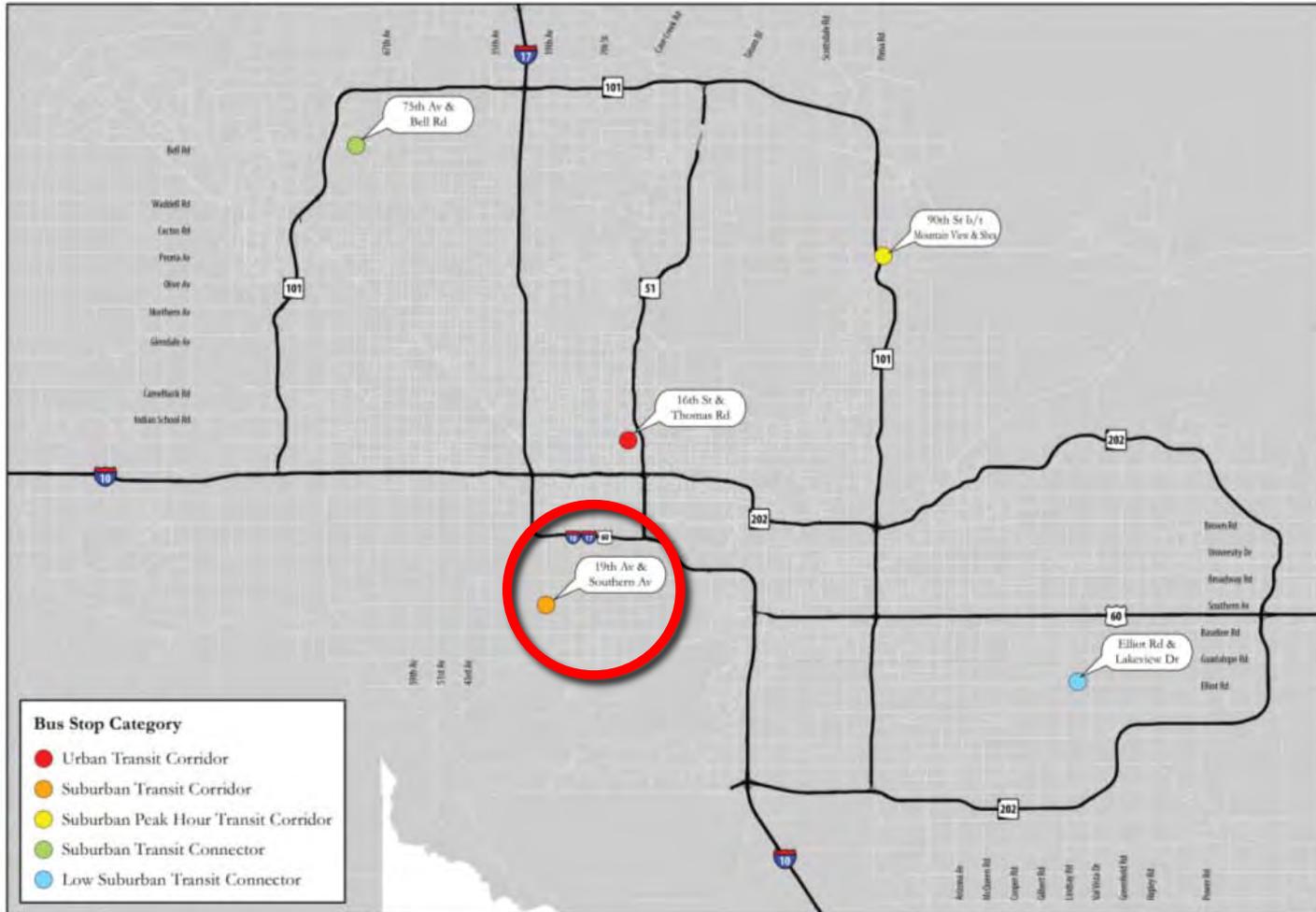






# 19<sup>th</sup> Avenue & Southern Avenue, Phoenix

## Suburban Transit Corridor







# Suburban Transit Corridor

## Population, Employment & Ridership

<i>Characteristic</i>	<i>Range (by quarter-mile buffer)</i>	<i>Mean (by quarter-mile buffer)</i>	<i>Countywide Mean (by Census Block Group)</i>
Population Density	0.08 to 30.5 persons/acre	7.9 persons/acre	8.1 persons/acre
Employment Density	0.01 to 31.0 jobs/acre	4.6 jobs/acre	1.6 jobs/acre
Number of o-Vehicle Households (HH) per acre	0 to 3.1 HH with no cars/acre	0.3 HH with no car/acre	0.3 HH with no car/acre
Average Weekday Bus Boardings	0 to 1,387 Boardings per day	27 Boardings per day	32 Boardings per day



# Suburban Transit Corridor

## Transit Service Characteristics

Bus Frequencies	Bus Stop Count	Percent of Total
Very High Frequency Service <i>(multiple high frequency routes)</i>	0	0%
High Frequency Service <i>(1 high frequency route)</i>	456	100%
Peak Period-Only High Frequency Service	0	0
No High Frequency Service	0	0
Total	456	100%

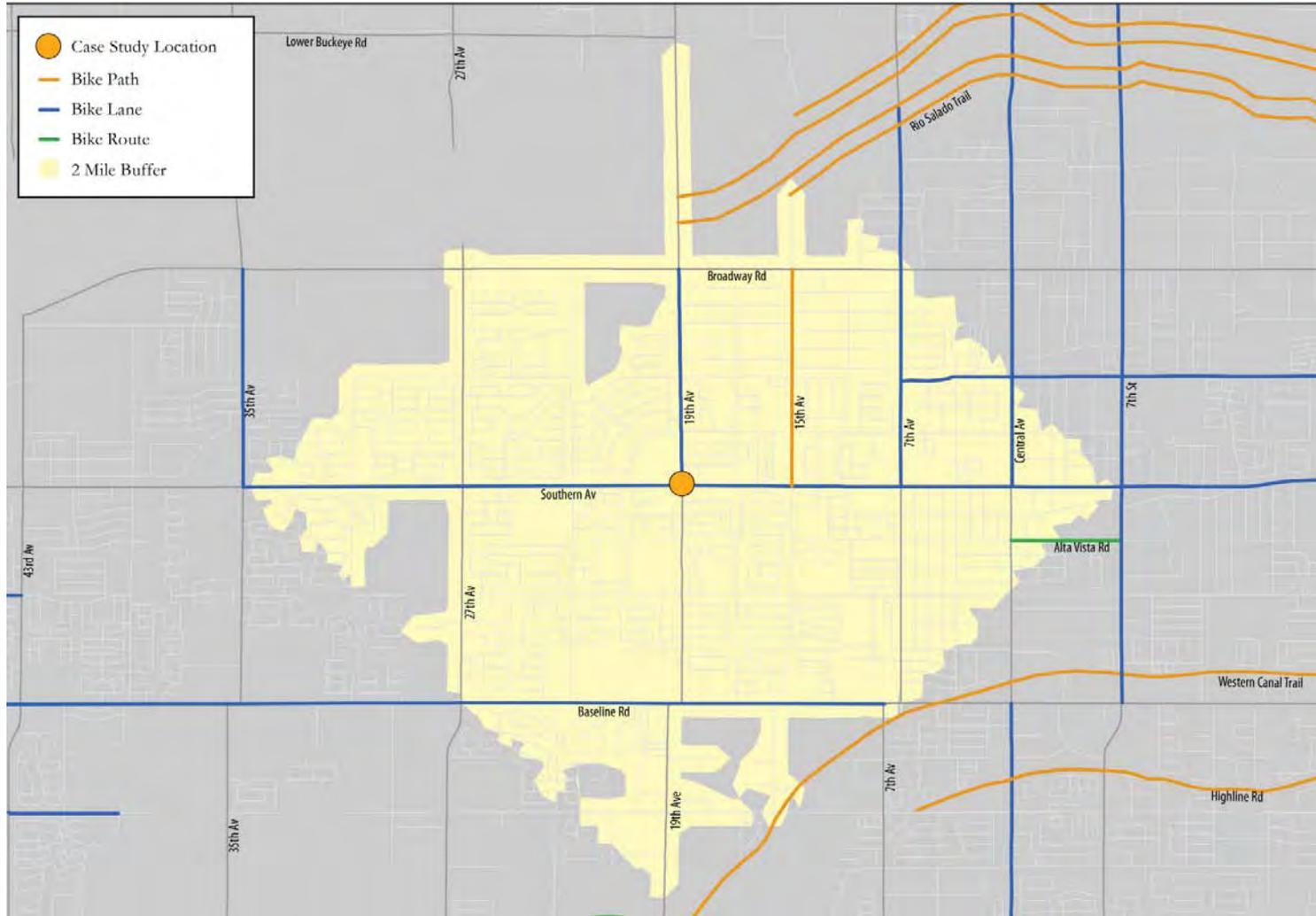
Number of Routes per Stop	Bus Stop Count	Percent of Total
1 Bus Route per Stop	355	77.8%
2 to 5 Bus Routes per Stop	97	21.2%
6 to 12 Bus Routes per Stop	4	1.0%
Total	456	100%





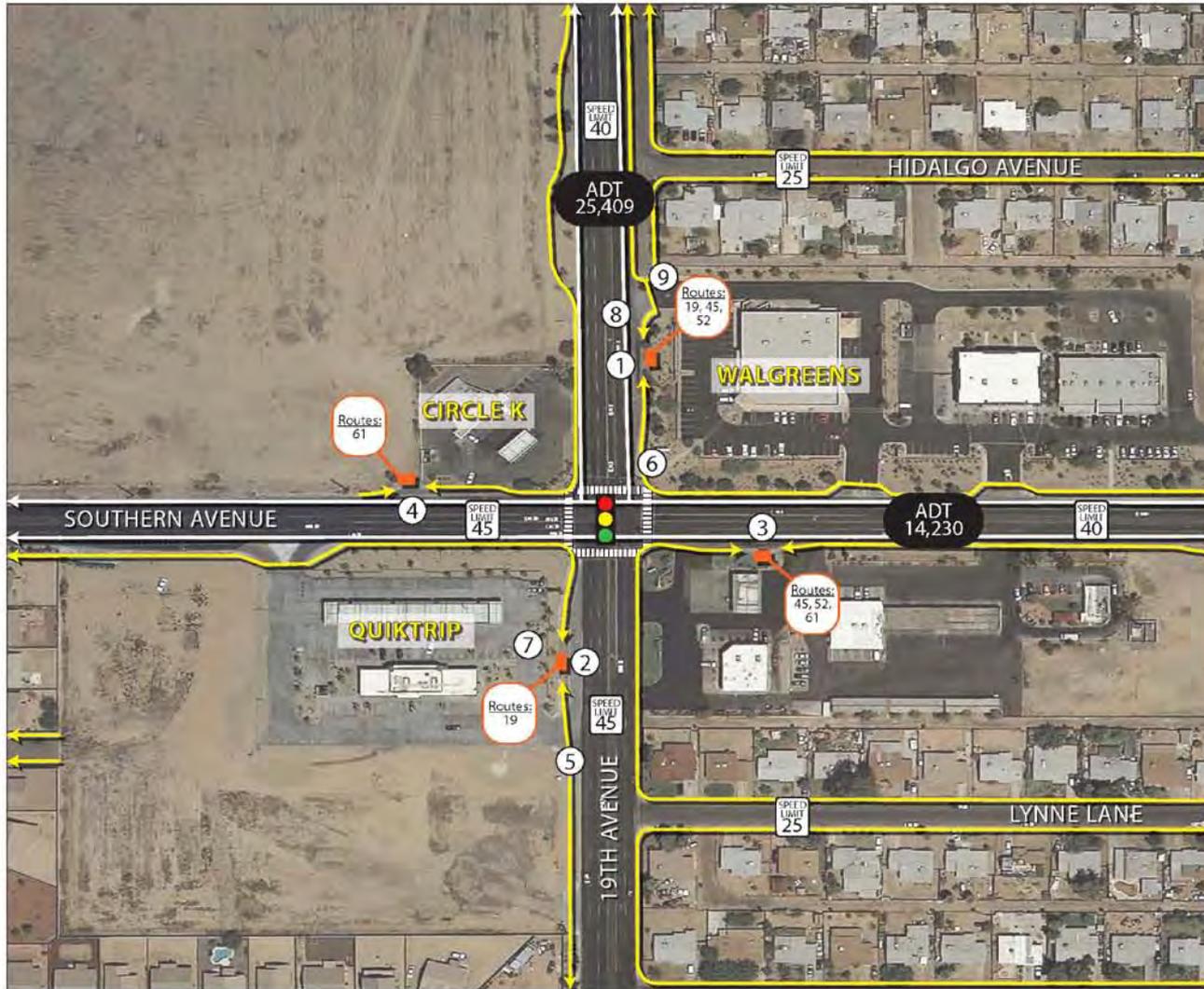
# Bicycle Case Study Area

## 19<sup>th</sup> & Southern





# 19TH AVENUE & SOUTHERN AVENUE



① NB Bus Stop



② SB Bus Stop



③ EB Bus Stop



④ WB Bus Stop



⑤ Bike Lane and Sign for Unmarked Crossing



⑥ Pedestrian Access of NE Corner



⑦ Pedestrian Access Near SB Bus Stop



⑧ Bike Boarding at NB Bus Stop



⑨ Crosswalk Across Driveway Near NB Stop

## 19th/Southern

Date: 7/2/2012





### + Favorable Conditions

#### Pedestrian Connection



#### Bike Lane



#### System Signage



#### Additional Seating

#### Upgraded Facility





Deficiencies

Facility Condition



No Landscaping



Attached Sidewalk





## Northeast Corner of 19th & Southern



Pedestrian  
Access

Minimal  
Landscaping



# 19TH AVENUE & SOUTHERN AVENUE

## 19<sup>th</sup> Avenue





# Transit System Signage

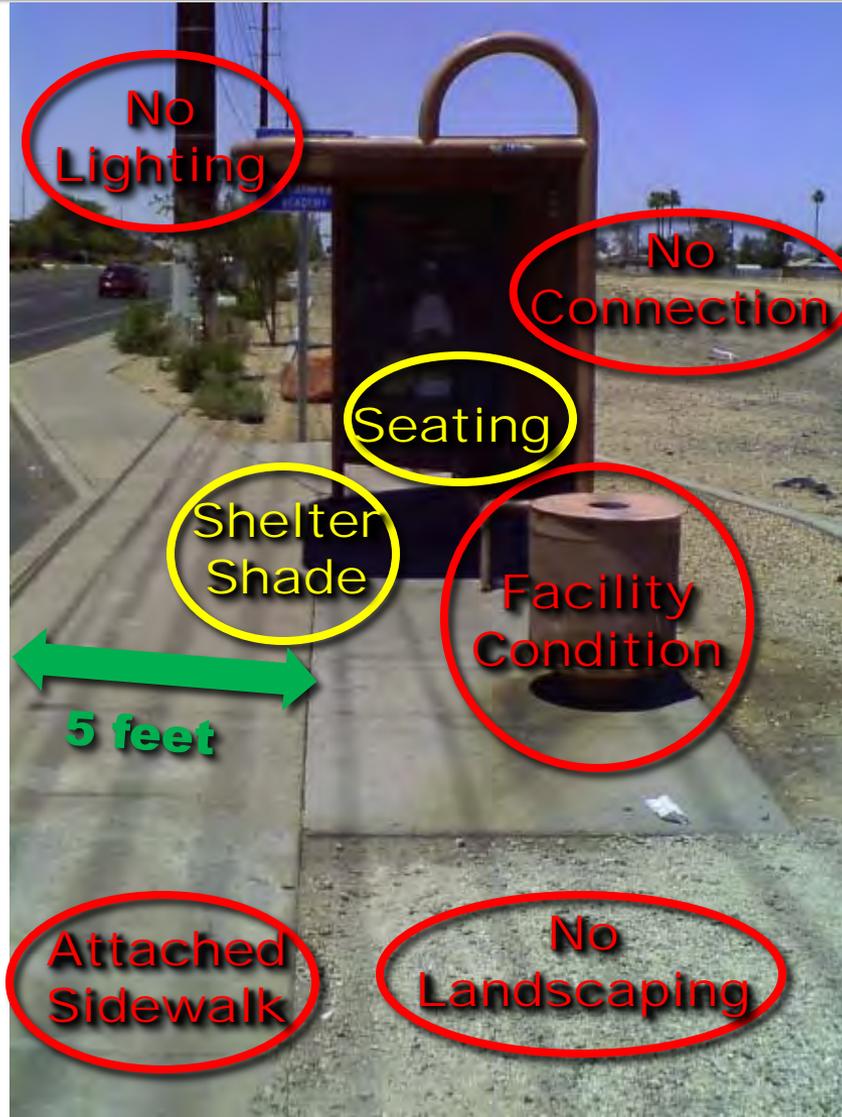


Bus Stop  
General  
Information





# Westbound Bus Stop





## Westbound Bus Stop



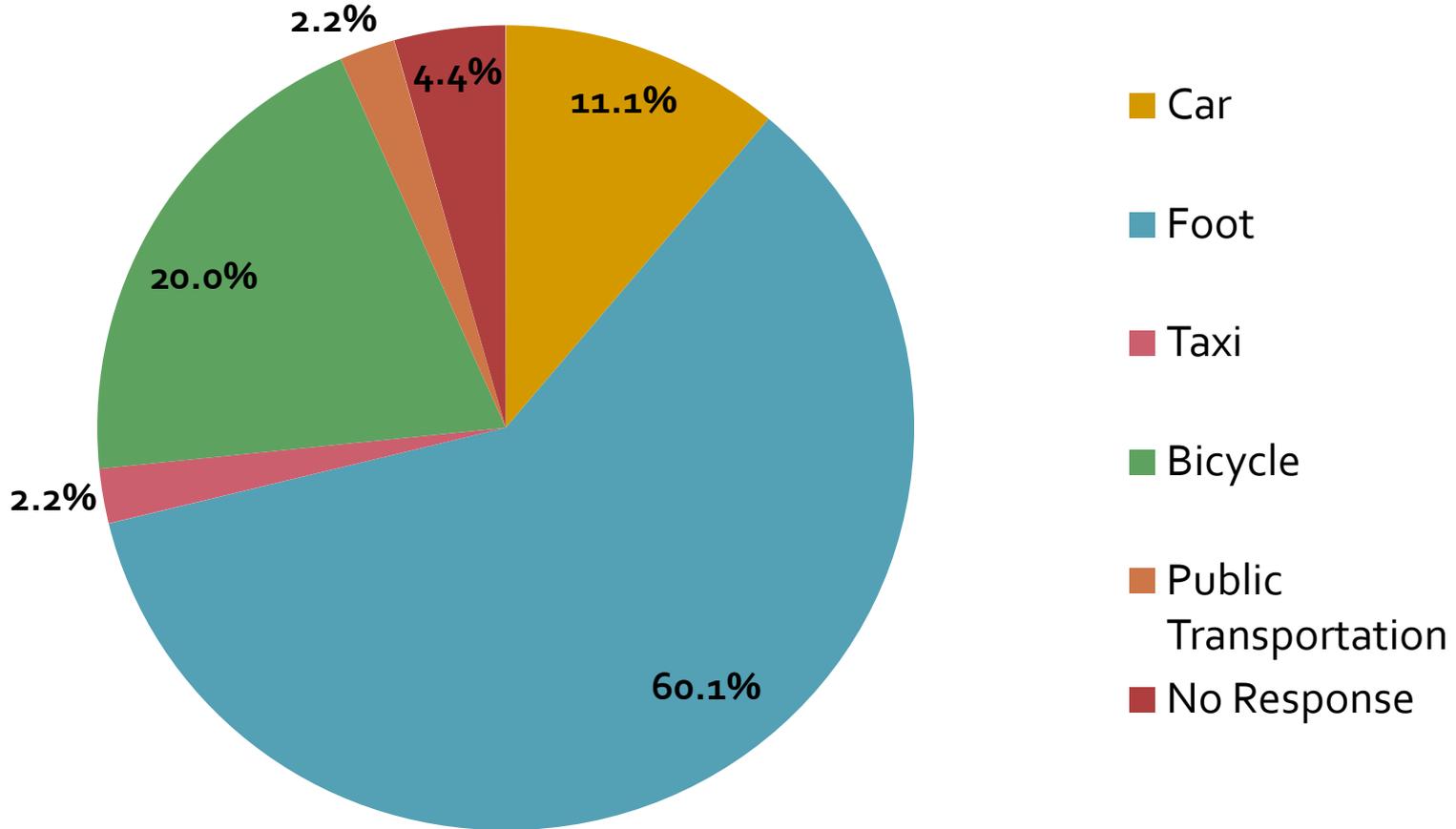


# Northbound Bus Stop





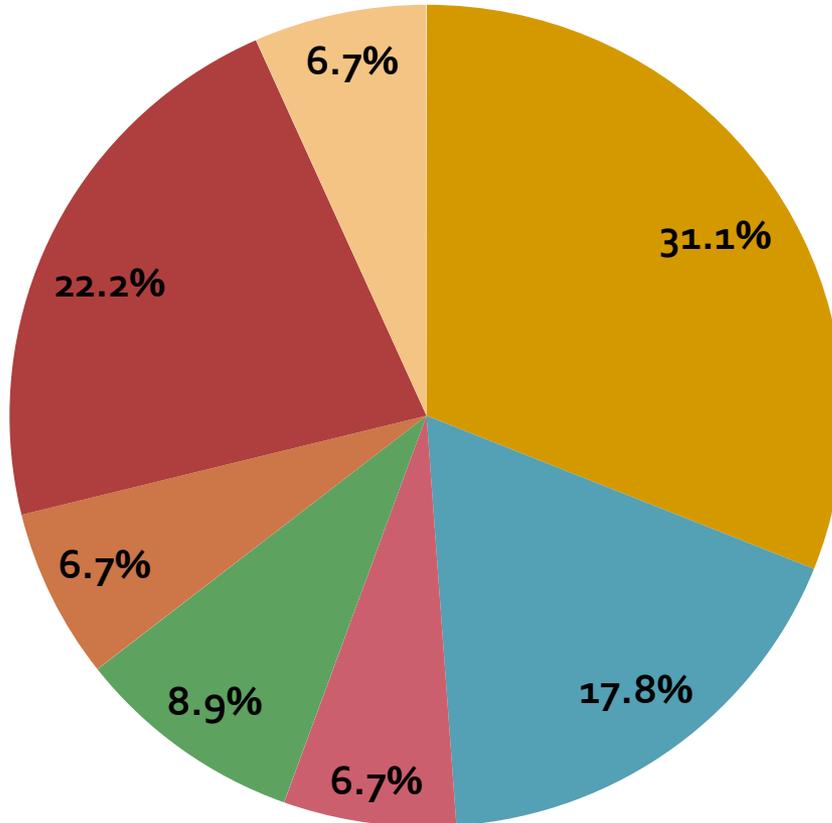
# Mode of Access?



*2007 National Survey by APTA:  
59.6% walk; 17.2% transfer; 21.2% car; less than 2% bike and other*



# Distance Traveled?

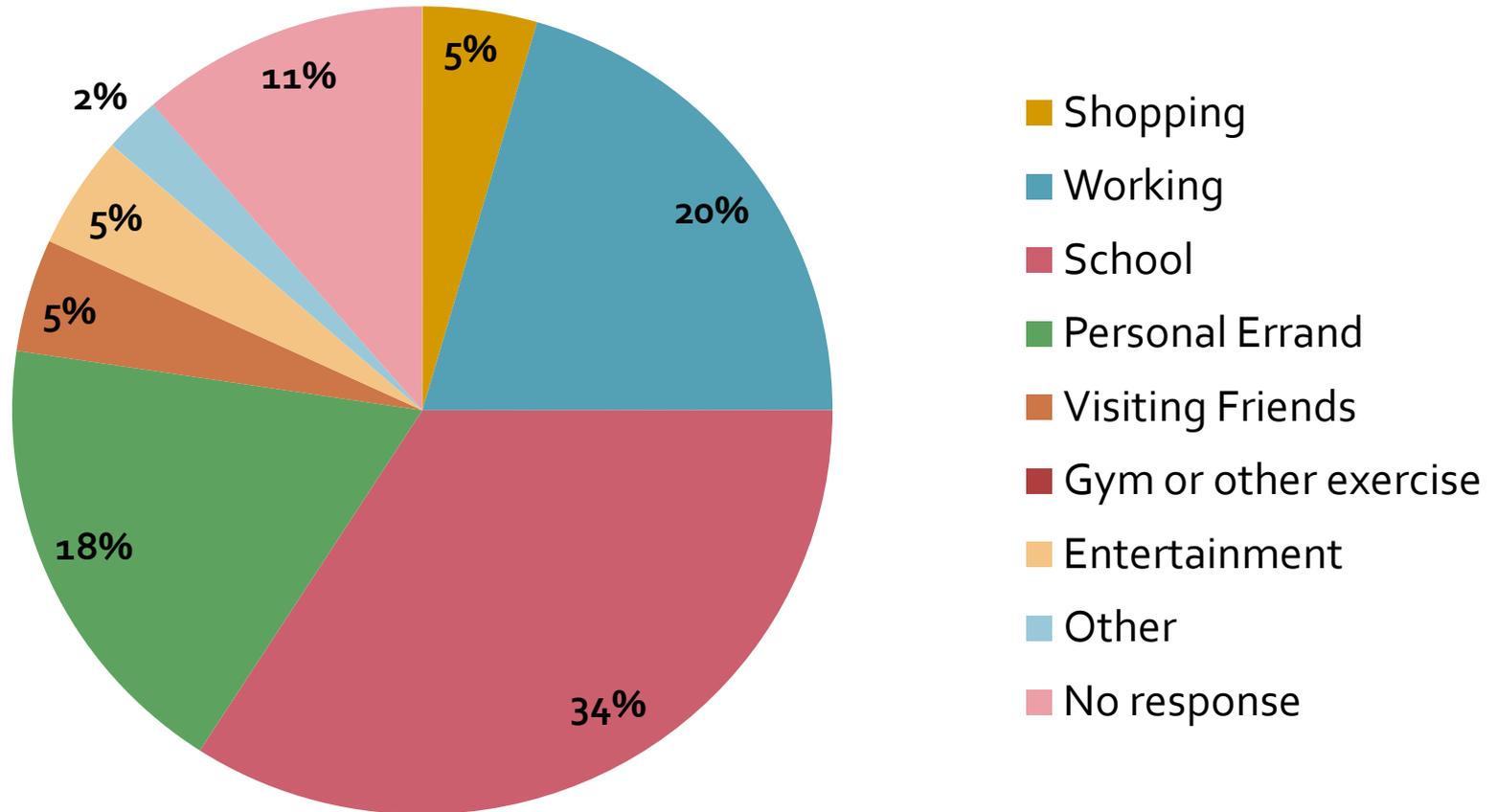


- up to 1/4 mile (0-2 blocks)
- 1/4-1/2 mile (3-4 blocks)
- 1/2-3/4 mile (5-6 blocks)
- 3/4-1 mile (7-8 blocks)
- 1-2 miles (9-16 blocks)
- more than 2 miles (16+ blocks)
- No response

*Quarter-mile "rule-of-thumb" for walking access*



# Trip Purpose?

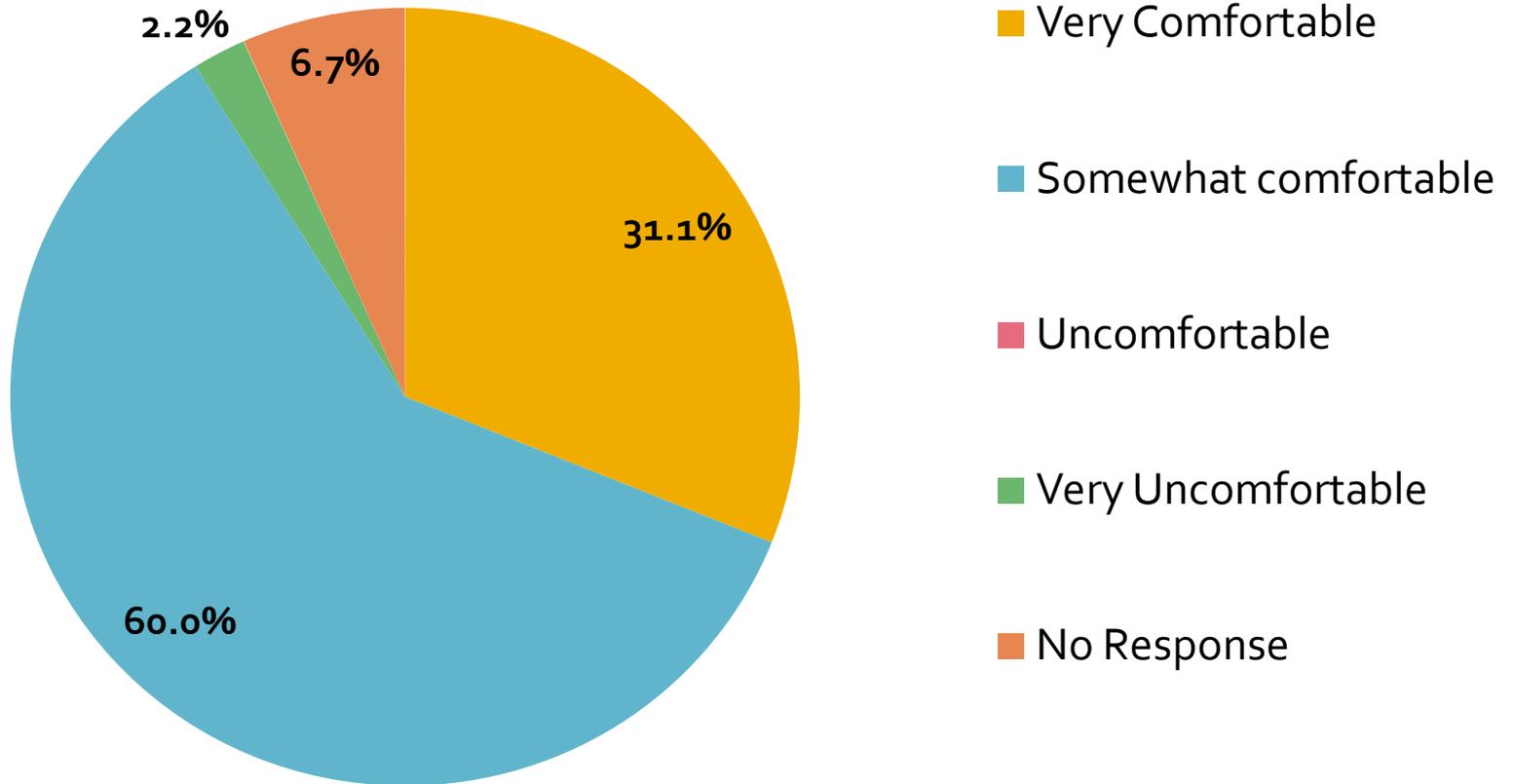


*2007 National Survey by APTA:*

*60% work; 11% school; 9% shopping; 6% personal; 3% medical*

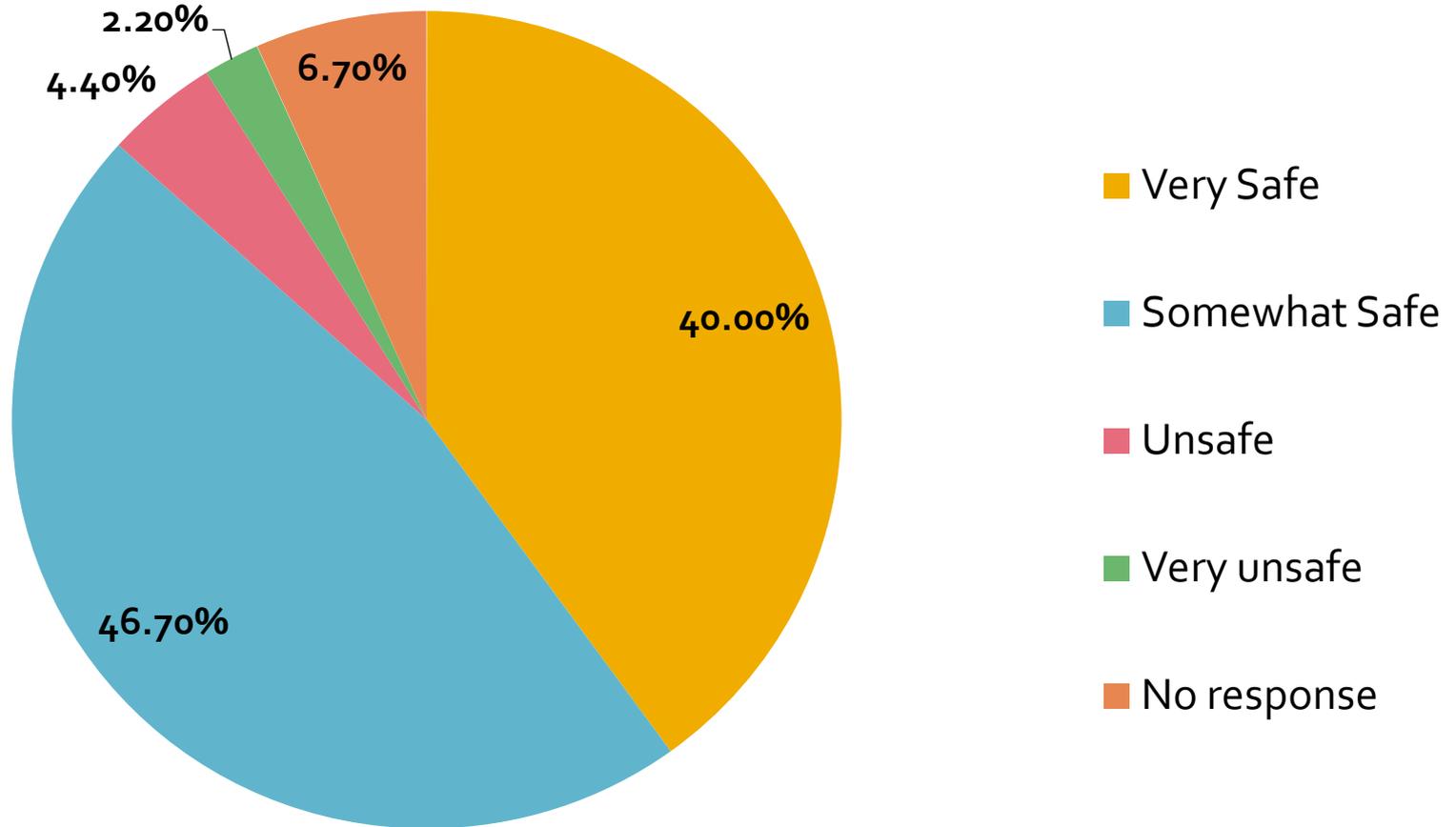


# Level of Comfort Traveling to Stop?





# Level of Safety Traveling to Stop?





# What will make you walk/ride more often?

## *Ranking of Features*

Streetlights	70%
Bus Schedule Information	69%
Shade Trees	65%
Bicycle Lanes	53%
Landscaping	49%
Curb Extensions	47%
Bicycle Parking	42%
Colored Pavement	40%
Art	31%
Medians	31%

*(Percent who said **Very Likely** or **Likely**)*



# How do you feel about your trip to the bus stop?

## Ranking of Level of Agreement

Good sidewalks	49%
Bus stop is safe	49%
Bus stop close to home/work/shopping	37%
Good lighting	36%
Easy to make connections	32%
Good bike paths	27%
Well maintained	22%
Interesting things to see	20%
Lots of trees and plants	20%
Light traffic	18%
Easy to park and ride	16%

*(Percent of respondents who agree with statement)*



# Near Misses?

Almost been hit by a car when crossing the street to/from bus stop? 16%

Vehicle come too close while crossing the street to/from bus stop? 36%

“Doored” by a car while riding a bike 3%



# Key Responses by Bus Stop Category

Bus Stop Category	Percent Walk Access	Percent Bike Access	Percent Car Access	Feel Comfortable Traveling to Stop	Feel Safe Traveling to Stop	Traveling More than 1 Mile	Almost Hit by Car Crossing Street
Urban Transit Corridor	63.3%	25.7%	1.0%	75.2%	81.1%	20.8%	31.0%
Suburban Transit Corridor	60.1%	20.0%	11.1%	91.1%	86.7%	28.9%	16.0%
Suburban Peak Hour Transit Corridor	55.6%	0%	11.1%	88.9%	89%	44.4%	22.0%
Suburban Transit Connector	55.6%	18.5%	14.8%	66.6%	78%	51.8%	15.0%
Low Suburban Transit Connector	71.4%	14.3%	0%	14.3%	72%	14.3%	100%



# 19TH AVENUE & SOUTHERN AVENUE

## DESIGNING TRANSIT ACCESSIBLE COMMUNITIES STUDY

### ISSUES

### STOP

### SURROUNDING AREA

### CATCHMENT AREA

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

### SHADING LANDSCAPING WEATHER PROTECTION



- Shaded bench



- Not good for all times of day
- No landscape shading



- Some arterial streets have partial shade



- Little to no shade for walk



- Some arterial streets have partial shade



- Residential streets have no shading
- Mostly empty lots
- Few trees provide little shade

### AMENITIES BUS SHELTERS SHELTER PAD STOP LOCATION



- Advertising
- Trash cans
- Complete transit system signage



- Not enough seating
- No real time bus information
- No newspapers



- Some landscaping
- Detached sidewalks
- Convenience stores



- Empty lots



- Alleys to the North provide connectivity and relocate trash barrels
- Detached sidewalks



- Empty lots
- No activity along streets
- No landscaping
- No bike lanes

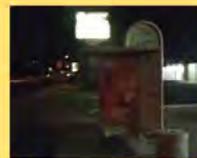
### SAFETY AND SECURITY STREET CROSSINGS LIGHTING SIDEWALKS BIKE LANES



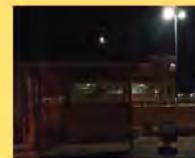
- Bus stop pull out
- Detached sidewalks



- No bike lanes or bike racks



- Adjacent stores provide good lighting
- Preferred land uses



- Poor lighting after store hours



- Pedestrian crosswalks
- Eastbound bike lanes
- Traffic calming devices in neighborhoods to the West



- Inactive streets

### AFTER THE STOP ADJACENT LAND USE ACCESS PEDESTRIAN/BICYCLE EASEMENTS TRANSFERS PASSENGER INFORMATION



- Network map provided



- Some locations with attached sidewalk



- Connection to adjacent land use
- Good crosswalks



- Crossing signage but no crosswalk



- Eastbound bike lanes
- Large tracts of vacant/undeveloped property



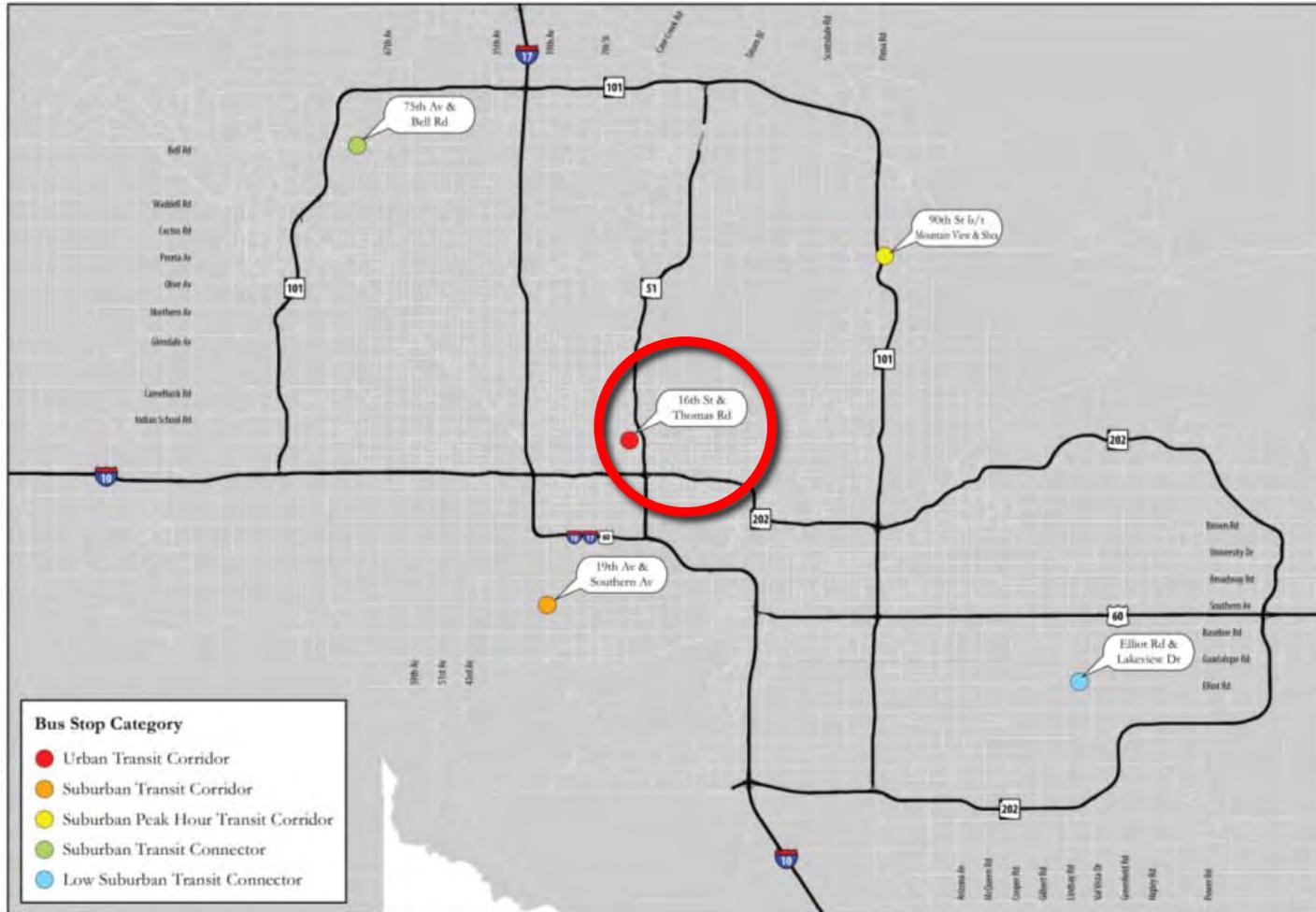
- Primarily used for transfers and not origins/destinations
- Neighborhood entrances not easily accessed





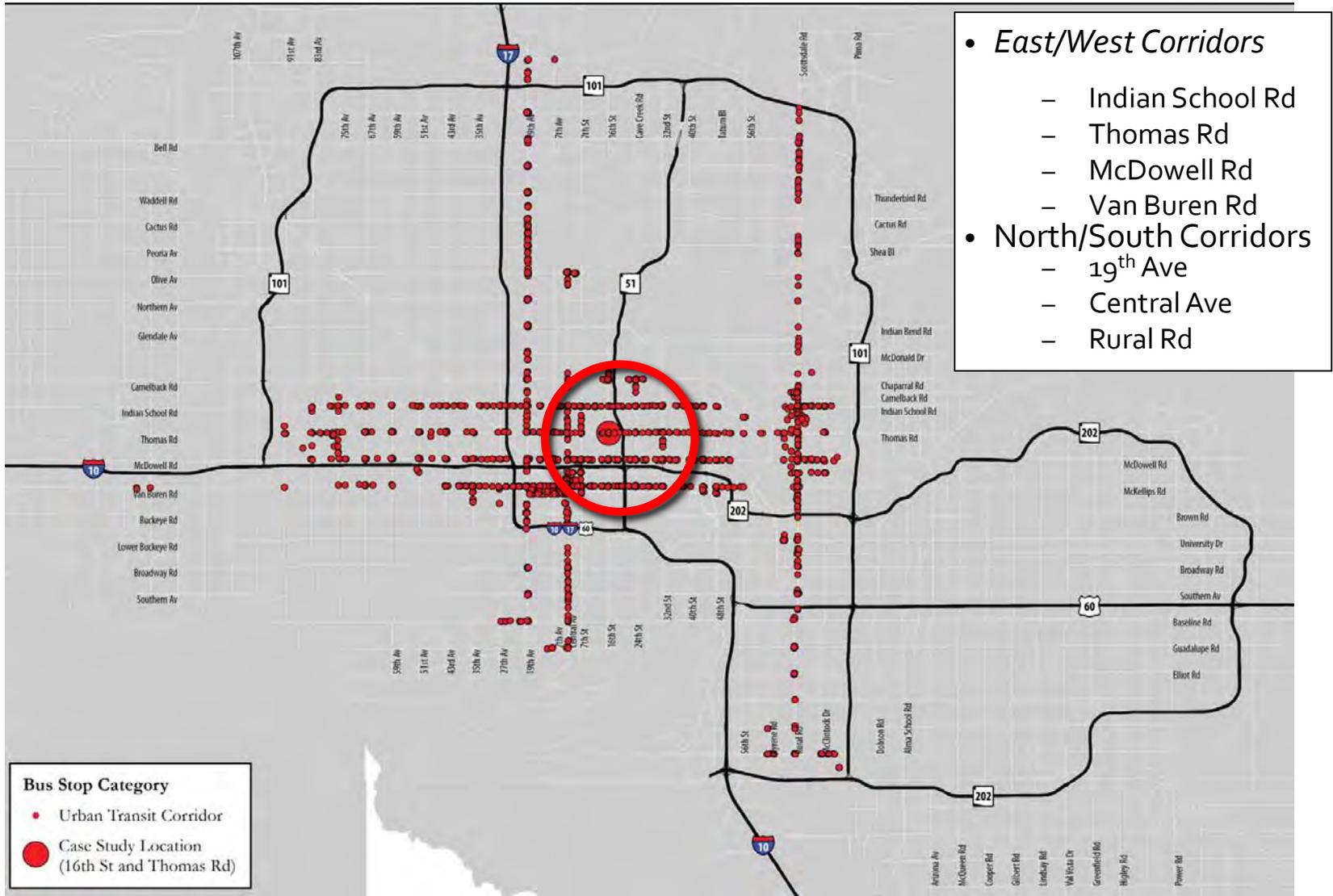
# 16<sup>th</sup> Street & Thomas Road, Phoenix

## Urban Transit Corridor





# Urban Transit Corridors





# Urban Transit Corridor

## Population, Employment & Ridership

<b>Characteristic</b>	<b>Range (by quarter-mile buffer)</b>	<b>Mean (by quarter-mile buffer)</b>	<b>Countywide Mean (by Census Block Group)</b>
<b>Population Density</b>	0.09 to 29.4 persons/acre	8.3 persons/acre	8.1 persons/acre
<b>Employment Density</b>	0.01 to 93.8 jobs/acre	14.7 jobs/acre	1.6 jobs/acre
<b>Number of o-Vehicle Households (HH) per acre</b>	0 to 4.1 HH with no cars/acre	0.5 HH with no car/acre	0.3 HH with no car/acre
<b>Average Weekday Bus Boardings</b>	1 to 3,756 Boardings per day	69 Boardings per day	32 Boardings per day



# Urban Transit Corridor

## Transit Service Characteristics

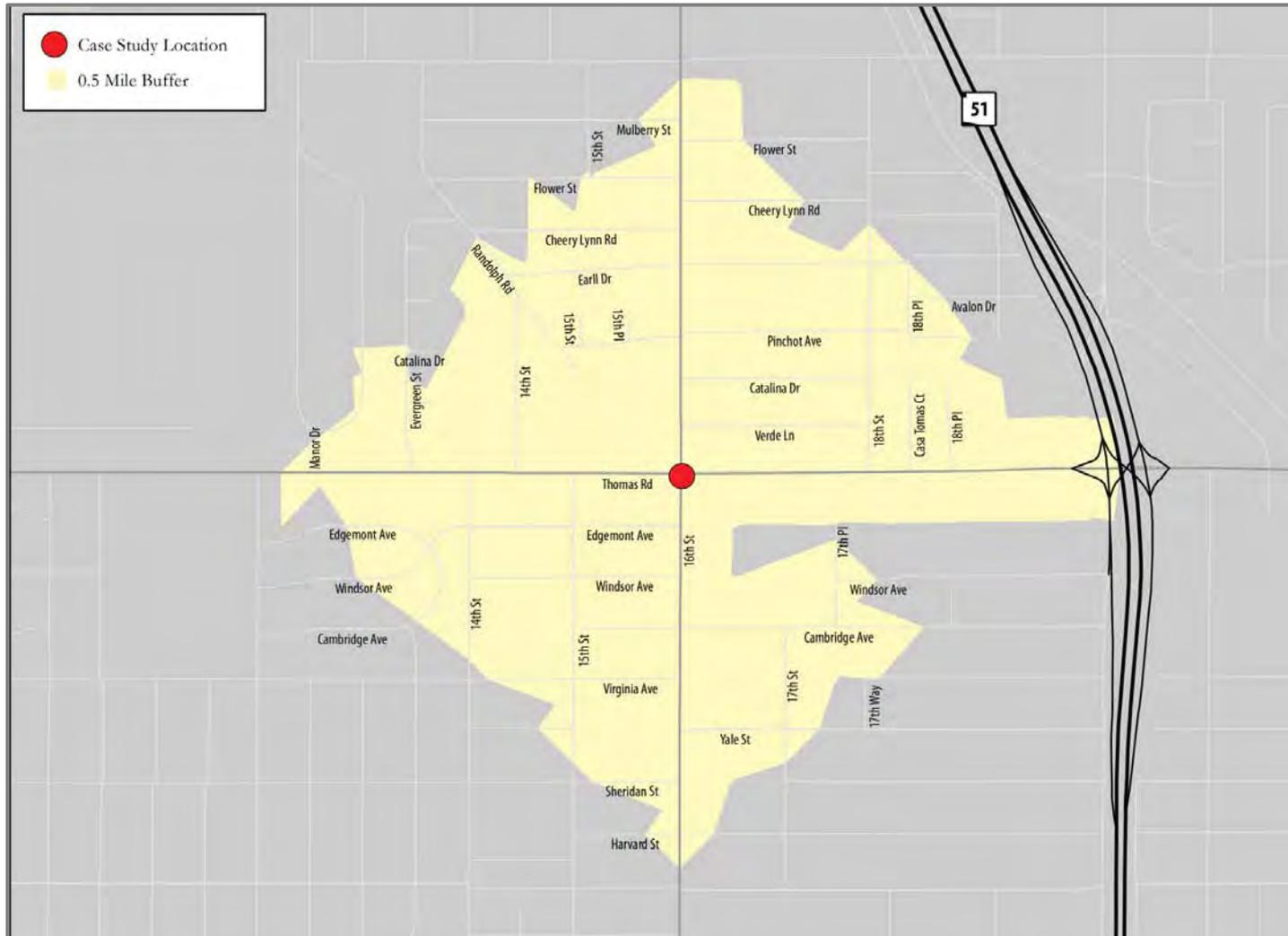
Bus Frequencies	Bus Stop Count	Percent of Total
Very High Frequency Service <i>(multiple high frequency routes)</i>	81	9.0%
High Frequency Service <i>(1 high frequency route)</i>	758	84.4%
Peak Period-Only High Frequency Service	41	4.6%
No High Frequency Service	18	2.0%
Total	898	100%

Number of Routes per Stop	Bus Stop Count	Percent of Total
1 Bus Route per Stop	644	71.7%
2 to 5 Bus Routes per Stop	246	27.4%
6 to 12 Bus Routes per Stop	8	0.08%
Total	898	100%



# Pedestrian Case Study Area

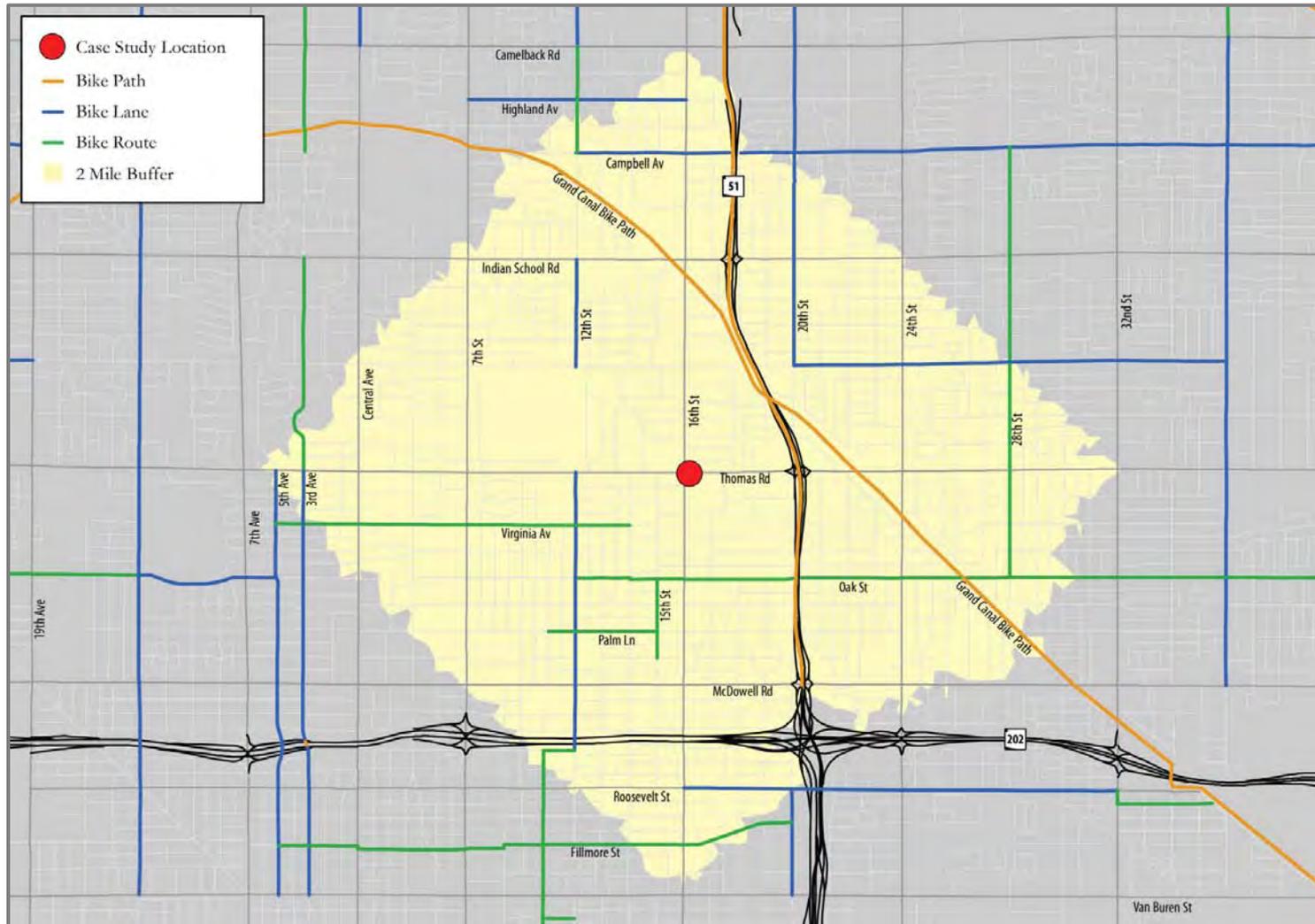
## 16<sup>th</sup> & Thomas





# Bicycle Case Study Area

## 16<sup>th</sup> & Thomas





# 16TH STREET & THOMAS ROAD



① SB Bus Stop



② EB Bus Stop



③ WB Bus Stop



④ NB Bus Stop



⑤ Pedestrians Crossing Thomas



⑥ Bus Patron Looking for Bus



⑦ Shade and Seating Near EB Bus Stop



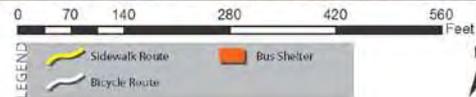
⑧ Bike on Sidewalk



⑨ Pedestrian Access to Adjacent Development

## 16th/Thomas

Date: 6/15/2012





### + Favorable Conditions



Direct Access to Adjacent Land Uses



Public Art Work



General Passenger Information



Deficiencies



Attached 4' Sidewalk & No Bike Lane

Lack of Bus Schedule Information at all Locations



System Information at Wrong Side of Shelter





## Deficiencies



Excessive Litter

Poor Sidewalk  
Conditions



Lack of Seating  
& Shade



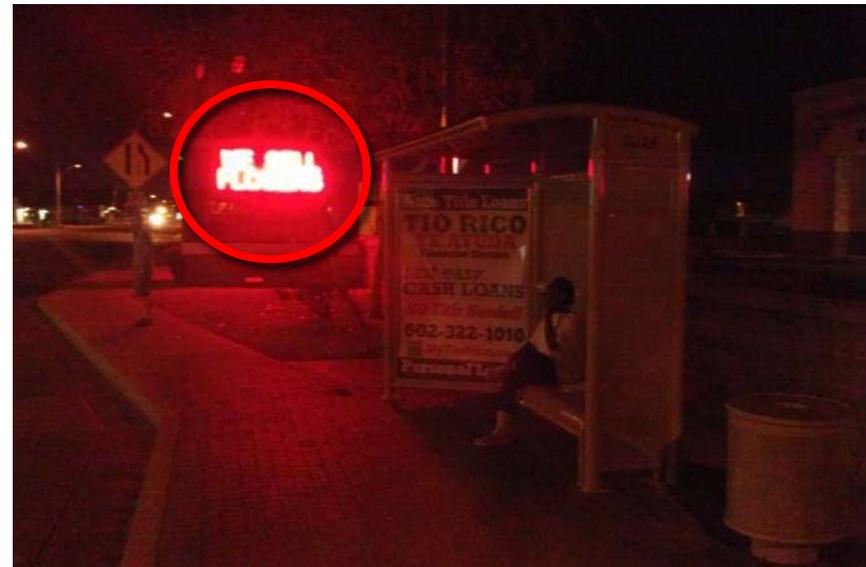


### Deficiencies



Street Lighting Out

Adjacent Lighting Only



Lack of Advertising Lighting



# Northbound Bus Stop



Bus Shelter

Litter

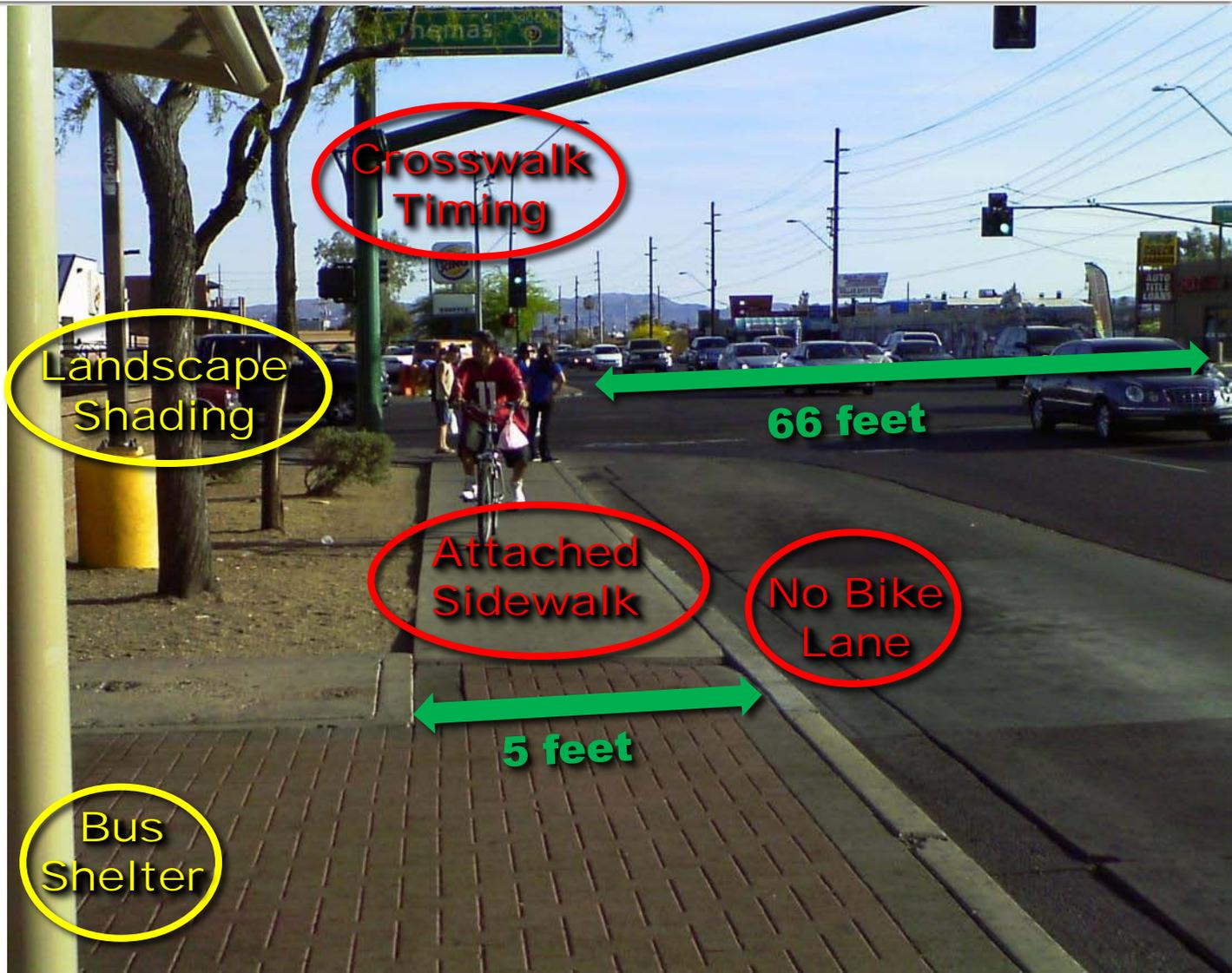
Connection to Adjacent Development



# Northbound Bus Stop



System Info on Wrong Side of Shelter



Crosswalk Timing

Landscape Shading

66 feet

Attached Sidewalk

No Bike Lane

5 feet

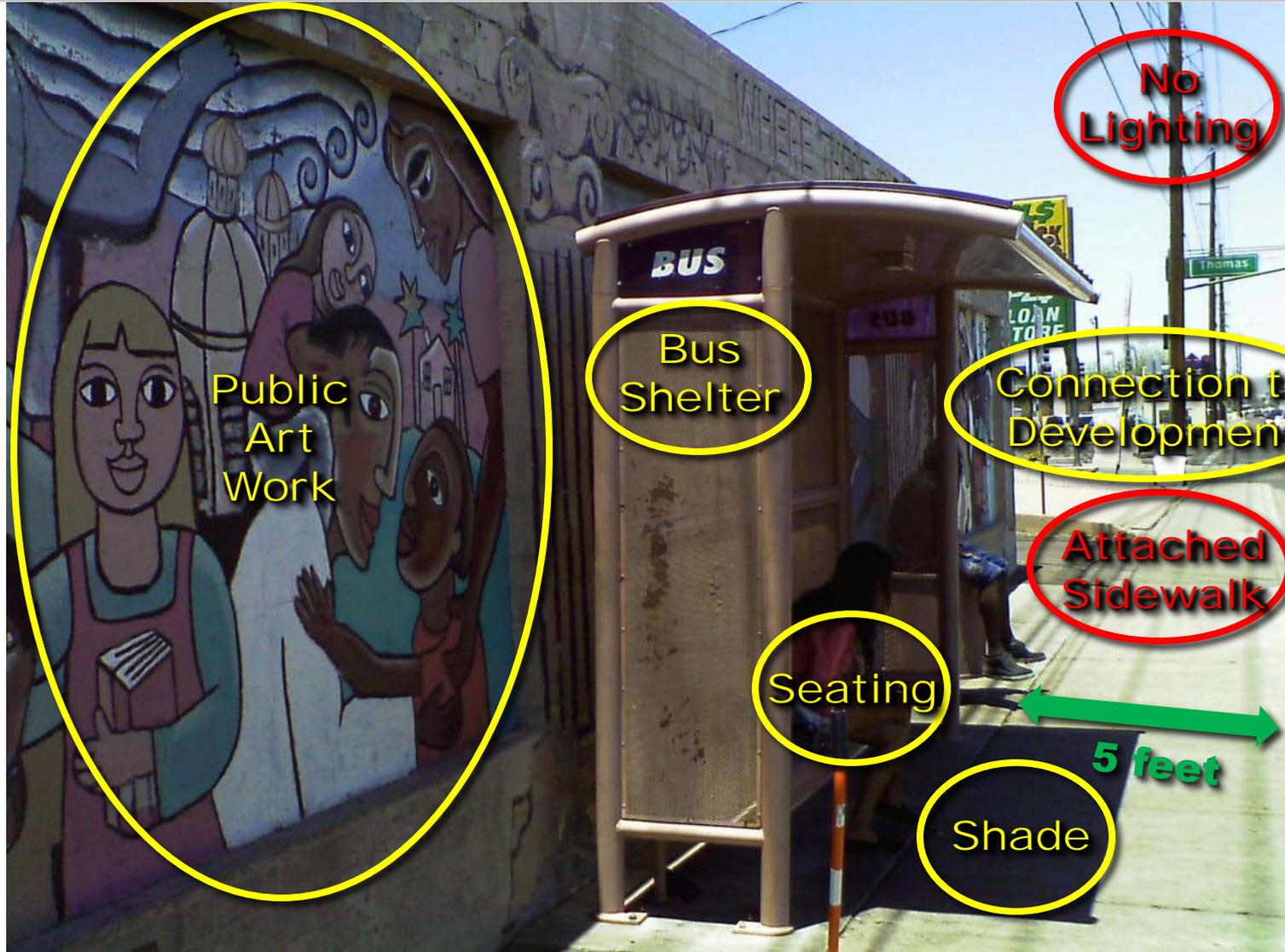
Bus Shelter



Bus Stop General Information



Southbound Bus Stop



Public Art Work

Bus Shelter

Seating

Shade

Connection to Development

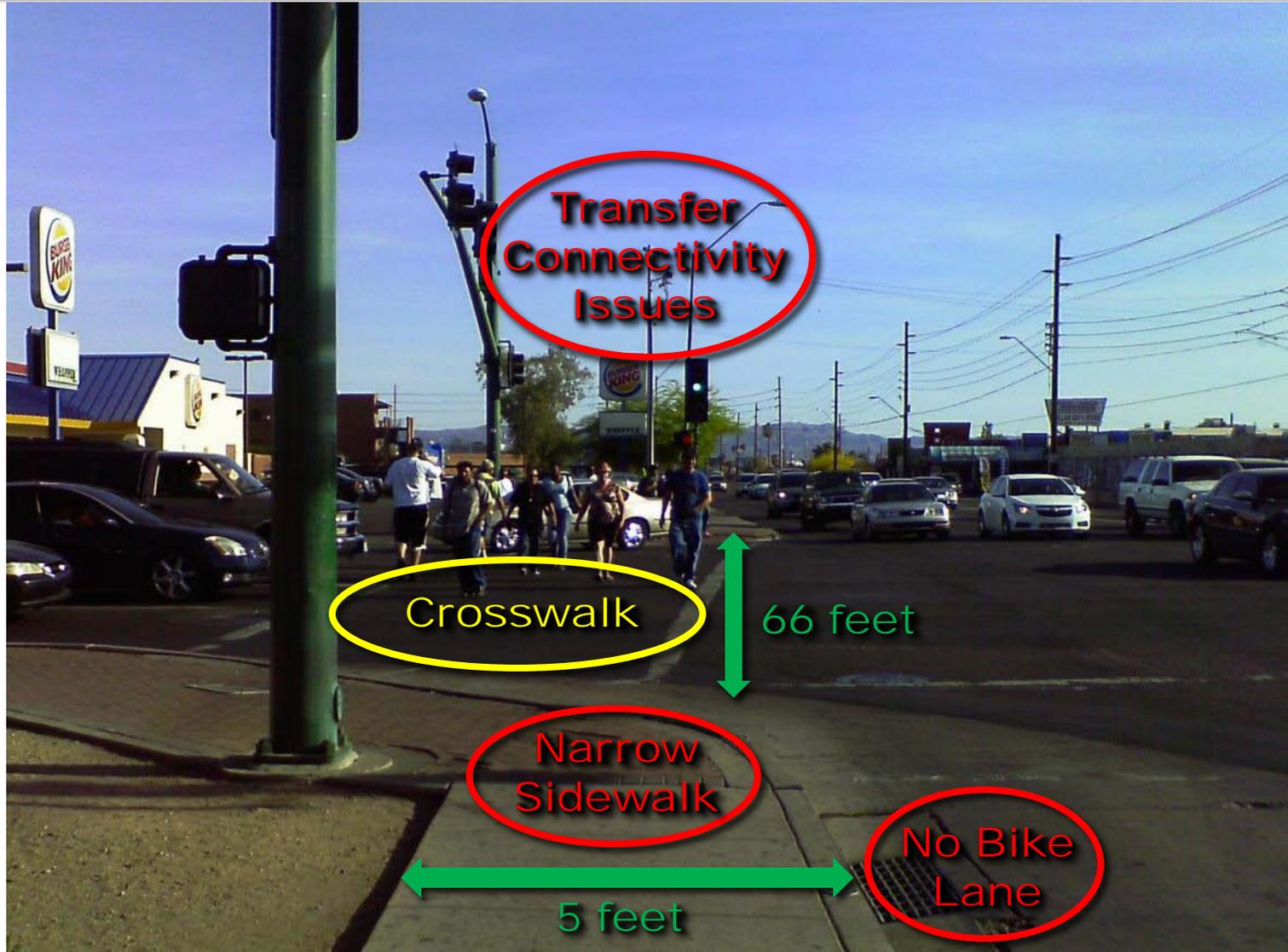
Attached Sidewalk

No Lighting

5 feet



Thomas Road





# Northbound Bus Stop



Bus Shelter

Landscape Shading

Some Seating

Lack of Seating



# Lighting Conditions



NB Stop  
Lighting Out



Street  
Lighting



Adjacent  
Lighting  
Only

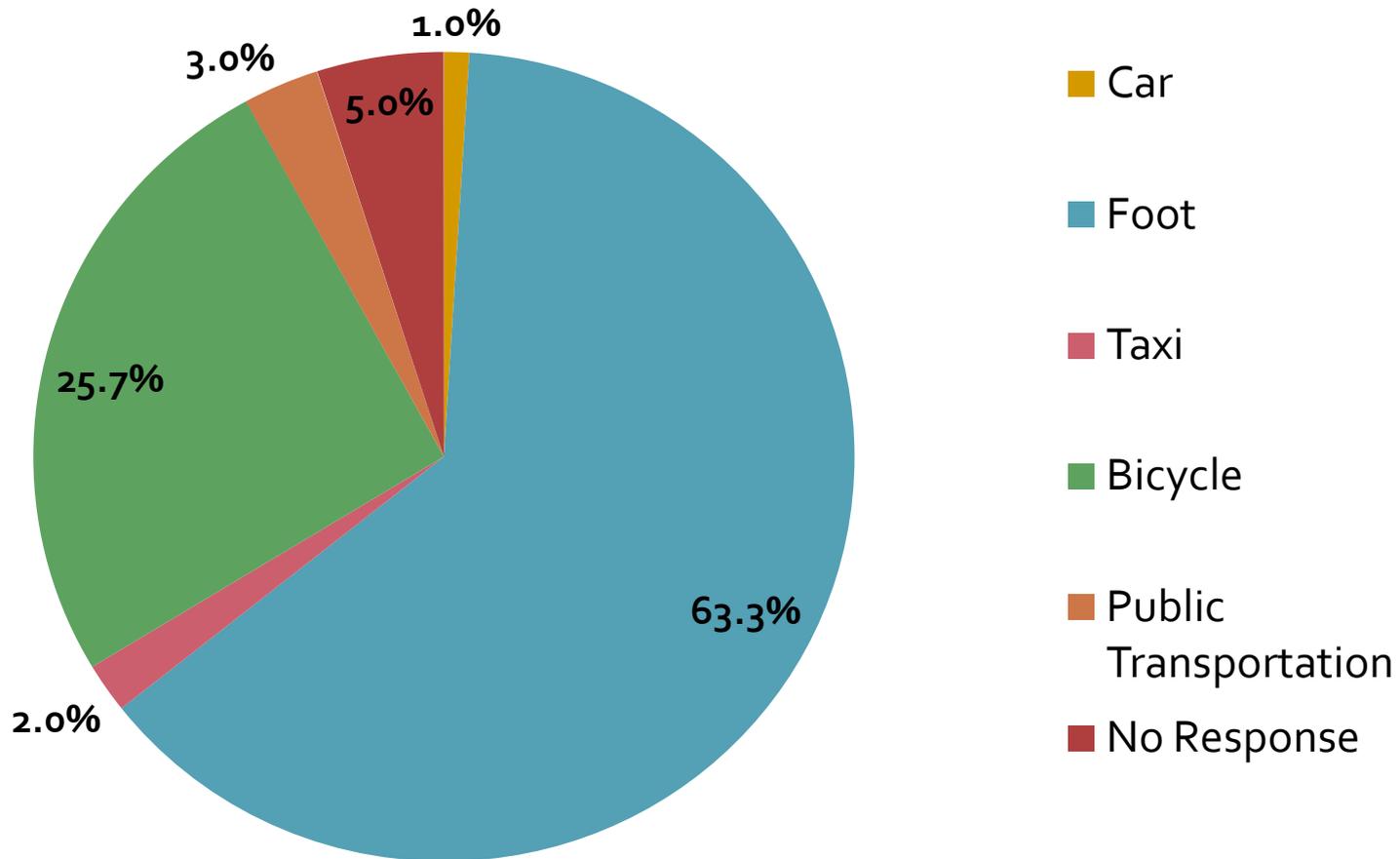
No  
Lighting



Shelter  
Lighting



# Mode of Access?

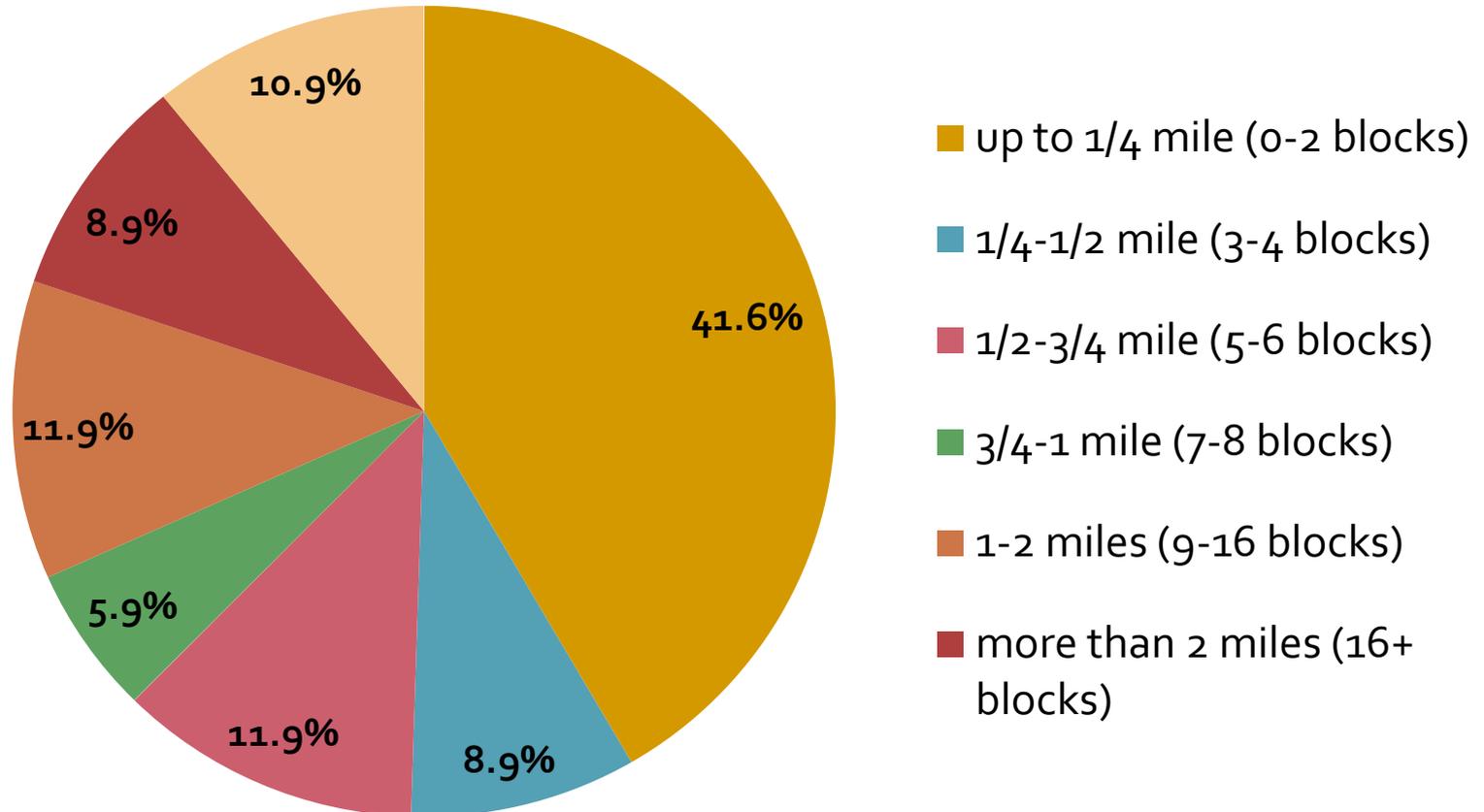


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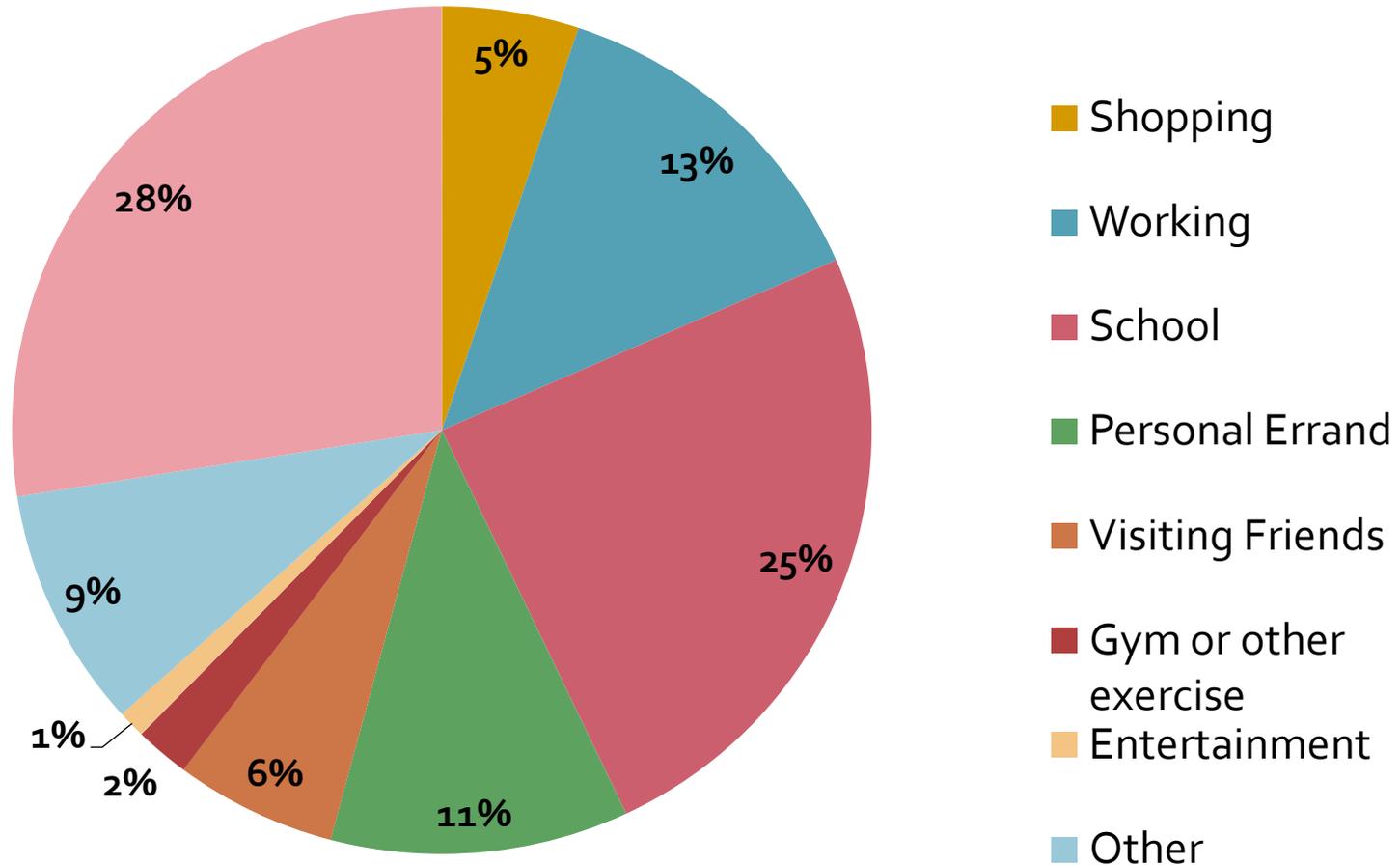
# Distance Traveled?



*Quarter-mile "rule-of-thumb" for walking access*



# Trip Purpose?

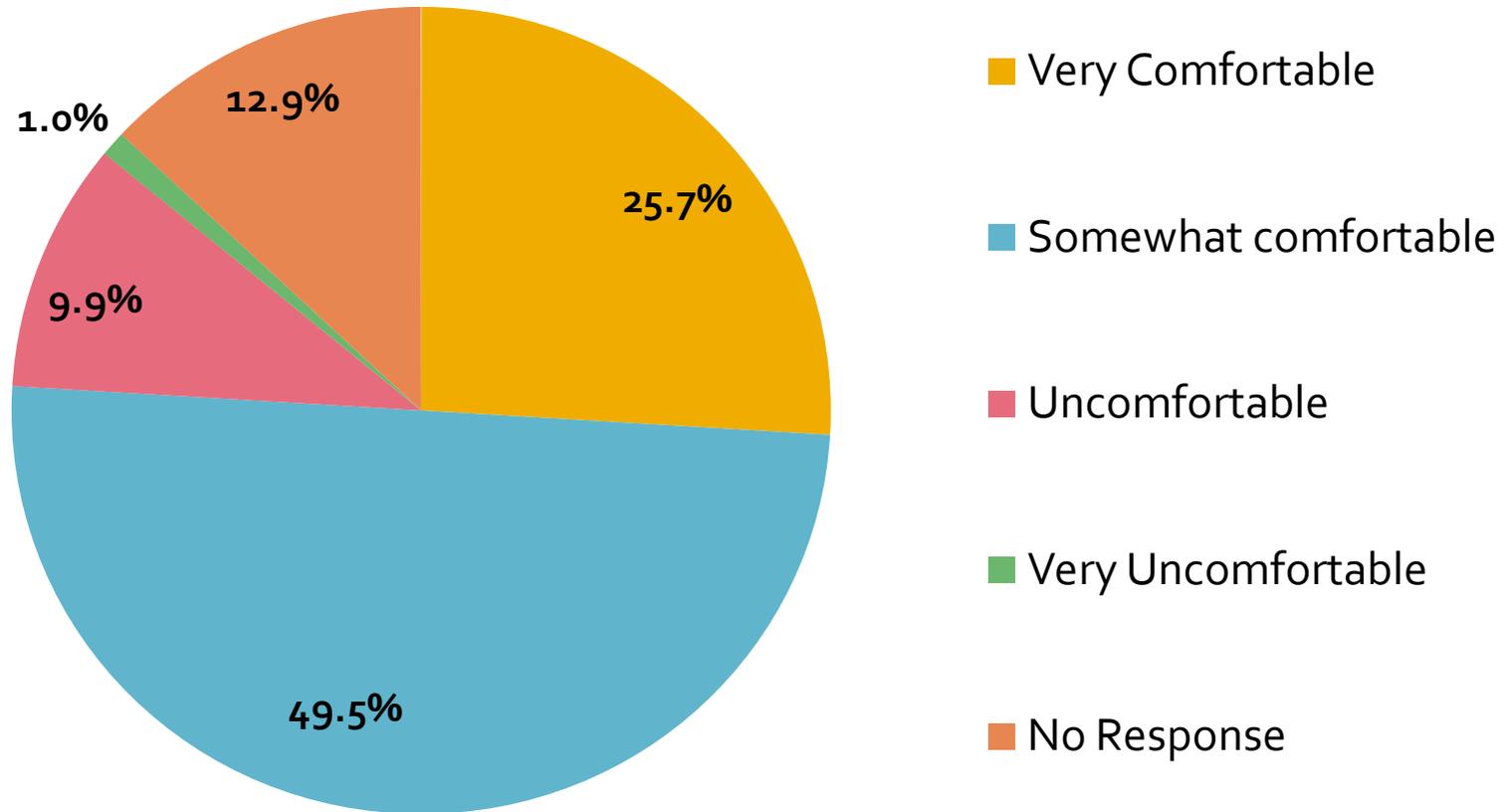


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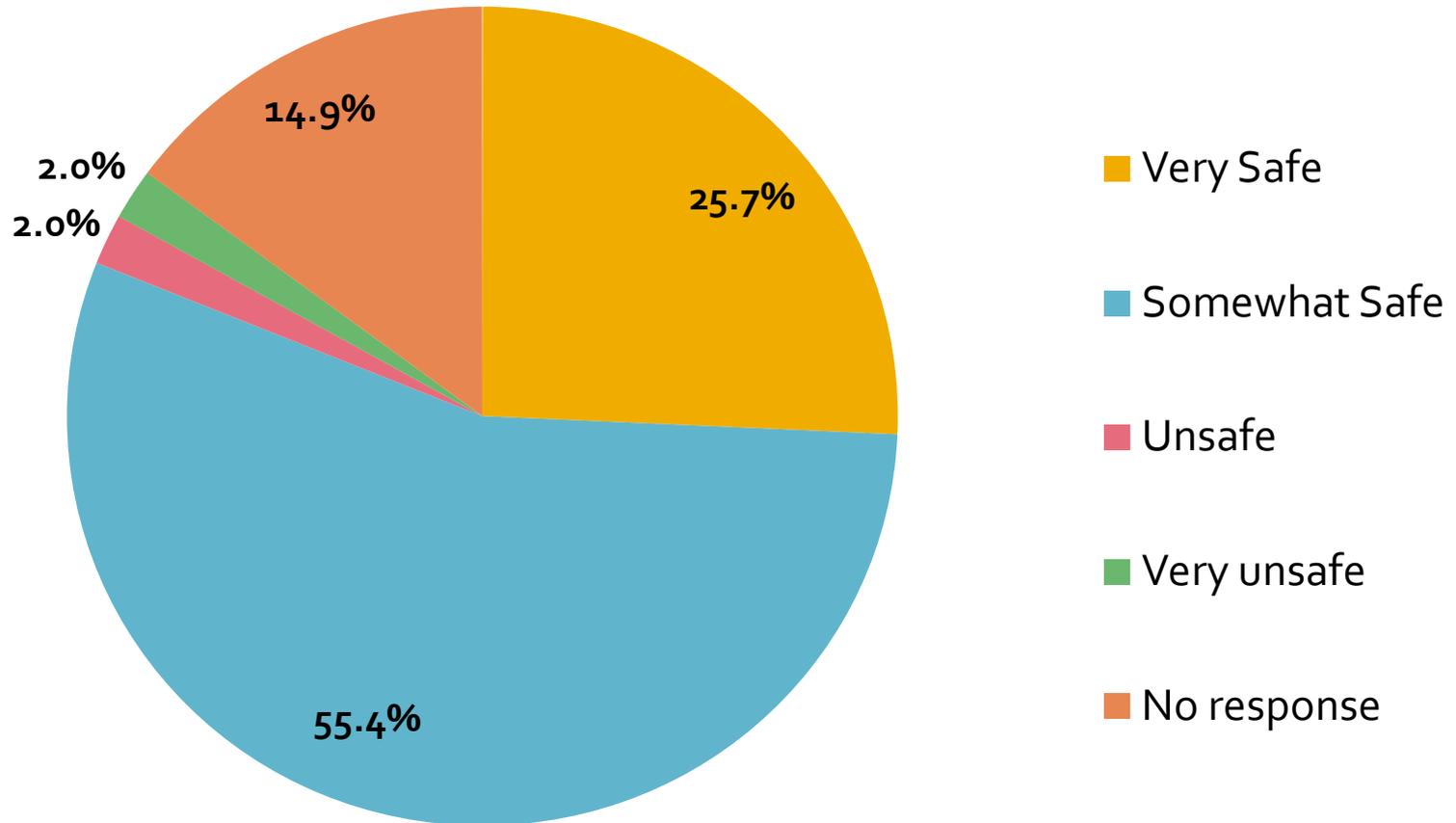


# Level of Comfort Traveling to Stop?





# Level of Safety Traveling to Stop?





# What will make you walk/ride more often?

## *Ranking of Features*

Shade Trees	57%
Bus Schedule Information	52%
Streetlights	42%
Bicycle Parking	39%
Bicycle Lanes	39%
Landscaping	38%
Curb Extensions	37%
Colored Pavement	29%
Art	28%
Medians	26%

*(Percent who said **Very Likely** or **Likely**)*



# How do you feel about your trip to the bus stop?

## Ranking of Level of Agreement

Bus stop close to home/work/shopping	37%
Easy to make connections	32%
Good sidewalks	31%
Bus stop is safe	31%
Good lighting	27%
Well maintained	22%
Interesting things to see	20%
Easy to park and ride	16%
Light traffic	13%
Good bike paths	12%
Lots of trees and plants	11%

*(Percent of respondents who **agree** with statement)*



# Near Misses?

Almost been hit by a car when crossing the street to/from bus stop? 31%

Vehicle come too close while crossing the street to/from bus stop? 36%

“Doored” by a car while riding a bike 7%



# Key Responses by Bus Stop Category

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# 16TH STREET & THOMAS ROAD

## DESIGNING TRANSIT ACCESSIBLE COMMUNITIES STUDY

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#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

#### FAVORABLE CONDITIONS

#### DEFICIENCIES

### SHADING LANDSCAPING WEATHER PROTECTION



- Structure provides shade
- Additional shade from walls, trees, or signs



- Requires people to stand in dirt
- Only provides shade at certain times of day



- Adjacent stores provide some shade



- No shade for walk



- Adjacent stores provide some shade



- Feeder streets have no shade

### AMENITIES BUS SHELTERS SHELTER PAD STOP LOCATION



- Seating
- Trash cans



- Not enough seating
- No destination or schedule information



- Newspaper racks near stops
- Cross walks and food locations



- No lighting



- Newspapers and trash cans along walks
- Few front facing parking lots to walk by (some shallow lots on 16th North of Thomas)



- Sparse and deserted store fronts
- No activity along residential streets

### SAFETY AND SECURITY STREET CROSSINGS LIGHTING SIDEWALKS BIKE LANES



- Bus stop pull out



- No bike lanes
- Poor lighting
- Looking out onto street to see next bus



- Well marked cross walks



- Poor lighting
- Unsafe land uses
- Alley connections
- No bike lanes



- Offset sidewalk on Edgemont and Windsor



- Poor midblock crossings on Thomas and 16th
- Abandoned stores on Thomas, walls on 16th, and apartment on Cambridge all lead to low pedestrian activity

### AFTER THE STOP ADJACENT LAND USE ACCESS PEDESTRIAN/BICYCLE EASEMENTS TRANSFERS PASSENGER INFORMATION



- Connection to adjacent land uses



- No connecting route information
- Difficult to cross street in time to catch next bus



- Well connected to bus stop
- Food and shops accessible



- Little activity on streets
- No bike lanes



- Stores, housing and apartments close by
- Connecting bus stops
- Alternate routes



- No express routes
- No bike lanes





# Next Steps



# Next Steps

- Workshop #2
- Finalize Working Paper #3 – Case Studies



# Project Contact

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**Maricopa Association of Governments**

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