



Fort Worth Active Transportation Plan Data Driven Analysis

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Transportation and Public Works



Presentation Overview

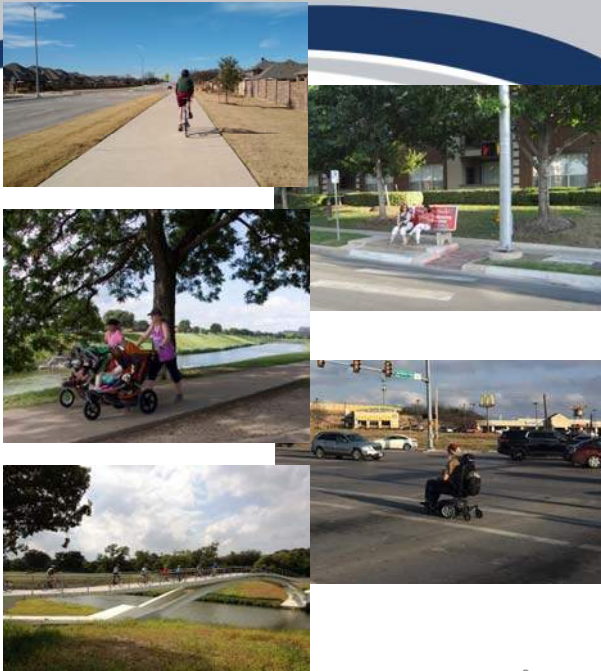
- Overview of Active Transportation Plan
- Review data driven approach to measuring pedestrian and bicycle comfort
- Overview of prioritization criteria and outputs

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What is Active Transportation?

People who **walk (including persons with disabilities)**, use **transit**, and **bicycle** creating a citywide seamless network of on- and off-street bicycle and pedestrian ways suitable for people of **all ages and abilities**

- Update: Walk Fort Worth plan
- Update: Bike Fort Worth plan
- **New:** Trail Master Plan
- Coordination: Master Thoroughfare Plan, Transit Moves Fort Worth, Complete Streets, Race and Culture Task Force




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Project funding

- **Partnership** with NCTCOG
 - Authorized Interlocal Agreement June 6, 2017
 - M&C C-28249
- Total project cost: \$500,000
 - NCTCOG \$250,000
 - Fort Worth \$215,000 cash match plus \$35,000 in-kind staff time



Support provided by:



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Project Stakeholder Committee

- Stakeholders representing 53 groups guided project progress, including:
 - Methodology and approach
 - Policy and prioritization
 - Plan recommendations
- Committee met five times with project staff


AARP
 Area Agency on Aging/United Way
 Bike Friendly Fort Worth
 Blue Zones Project
 Central City Committee
 Clear Fork Bicycle Club
 Cultural District Alliance
 Development Advisory Committee
 Downtown Fort Worth Inc
 FitWorth
 Fort Worth Bike Share
 Fort Worth Safe Communities Coalition
 Fort Worth League of Neighborhoods
 Greater Fort Worth Association of Realtors
 Greater Fort Worth Builders Association
 Independent School Districts
 Mayor's Cmte. On Persons With Disabilities
 MedStar
 Mental Health Mental Retardation
 Near South Side, Inc.
 North Fort Worth Alliance

Oncor
 Park & Recreation Advisory Board
 Pedestrian and Bicycle Advisory Commission
 Real Estate Council
 Sixty and Better
 SteerFW
 Streams and Valleys, Inc.
 Tarrant County
 Tarrant County Community College
 Tarrant County Public Health
 Tarrant Regional Water District
 Tarrant Transit Alliance
 Texas Christian University
 Texas Wesleyan University
 Trinity Metro
 Trinity River Vision Authority
 TxDOT
 UNT Health Science Center
 YMCA

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Existing Conditions






Existing Plans and Conditions

- **Bike Fort Worth plan adoption (2010)**
- Safe Passing Ordinance (2011)
- **Walk Fort Worth plan adopted (2014)**
- **Blue Zones Project kicks off (2014)**
- Pedestrian & Bicycle Advisory Commission (2015)
- City of Fort Worth received Bicycle Friendly Community Designation, League of American Bicyclists (2016)
- **Complete Streets Policy adopted (2016)**
- **Master Thoroughfare Plan update adopted (2016)**

 341 <small>Fort Worth Total Square Miles (And 302 Extra-Territorial Jurisdiction Square Miles)</small>	 4,374 <small>Linear Road Miles (And 812 Extra-Territorial Jurisdiction Linear Road Miles)</small>	 89 <small>Paved Trail Miles</small>	 30 <small>Natural Trail Miles</small>	 55 <small>Linear Miles of On-Street Bicycle Lanes</small>
 2,499 <small>Sidewalk Miles</small>	 1,970 <small>Bus Stops</small>	 6 <small>Rail Stations</small>	 53.5% <small>Percent of majority-minority communities with 1/2 mile access to existing bike lanes or trails</small>	 6% <small>Percent of majority-minority communities with 1/2 mile access to existing bike share or trails</small>

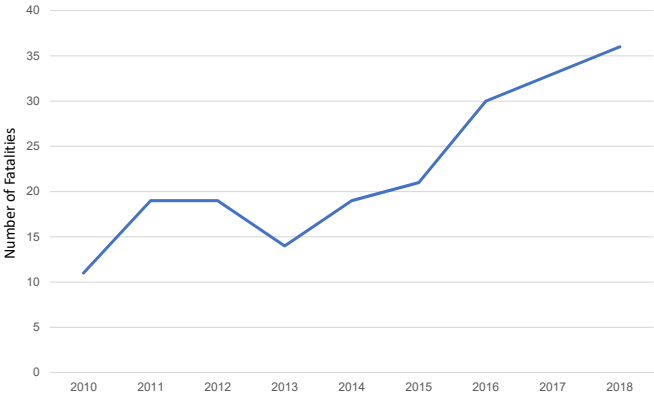
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Existing Conditions

- Fort Worth Commute Rates
 - 1.2% walk, 1.4% use transit and .01% commute by bike
- Pedestrian Crashes
 - **Deaths increased** from 11 in 2010 to 36 fatalities in 2018
 - Since 2010, pedestrians accounted for 15.5% of all road deaths
- Bicycle Crashes
 - Top crash causes were driver inattention, failure to yield

Pedestrian Fatalities by Year



Year	Number of Fatalities
2010	11
2011	19
2012	19
2013	14
2014	19
2015	21
2016	30
2017	33
2018	36

Source: Fort Worth Police Department

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Designing for Comfort and Safety

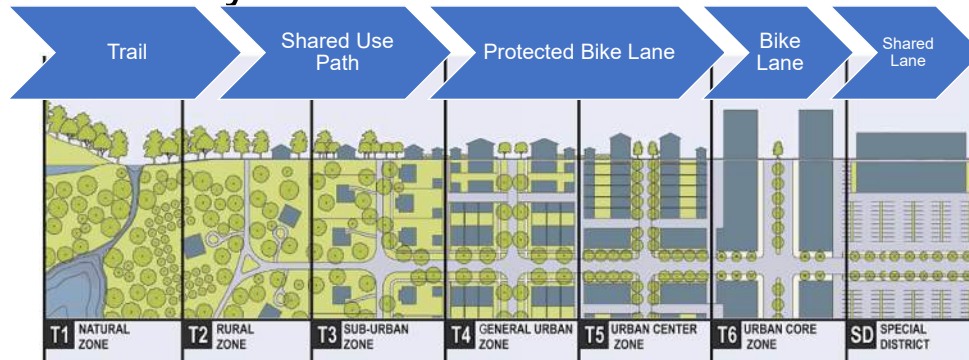
Sidewalk, trail, and bike design should meet the needs of all users, of all ages and abilities:

- Appropriately designed for **land use context**
- ADA **accessible** curb ramps and signals
- Appropriately **wide sidewalks** with buffers from traffic
- Separated sidepaths along busy roadways
- Buffered and separated bike lanes



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Complete Streets and Context Sensitivity



Complete Street (**Policy**): Provide transportation options for all users, process – not product
 Context Sensitive (**Implementation**): As the land use context changes, so does the infrastructure 10

Pedestrian Comfort Analysis (Pedestrian Experience Index)



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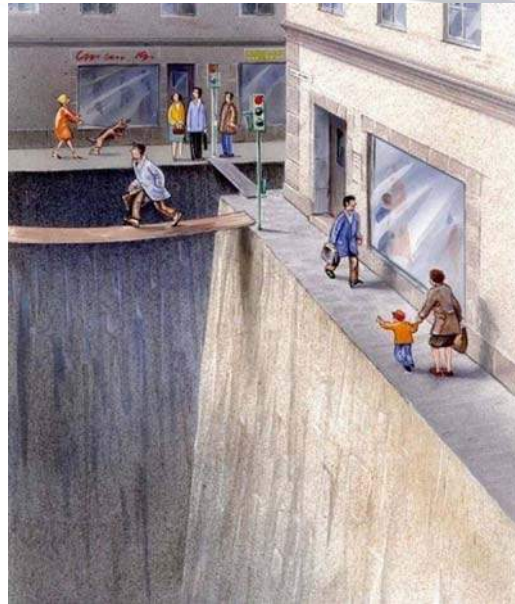




Design Considerations: People walking

What a street prioritized for motor vehicles looks like from the pedestrian realm.

Karl Jilg/Swedish Road Administration



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Design Considerations: People walking

What a street prioritized for motor vehicles looks like from the pedestrian realm.

Karl Jilg/Swedish Road Administration



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What makes a good pedestrian experience?



Intersections

- Fewer lanes to cross
- Lower traffic speeds
- ADA curb ramps present
- Traffic lights/stop signs present

Infrastructure

- A sidewalk is present and good condition
- Posted traffic speeds are lower and there are fewer traffic lanes
- Car parking or bike lane provides a buffer

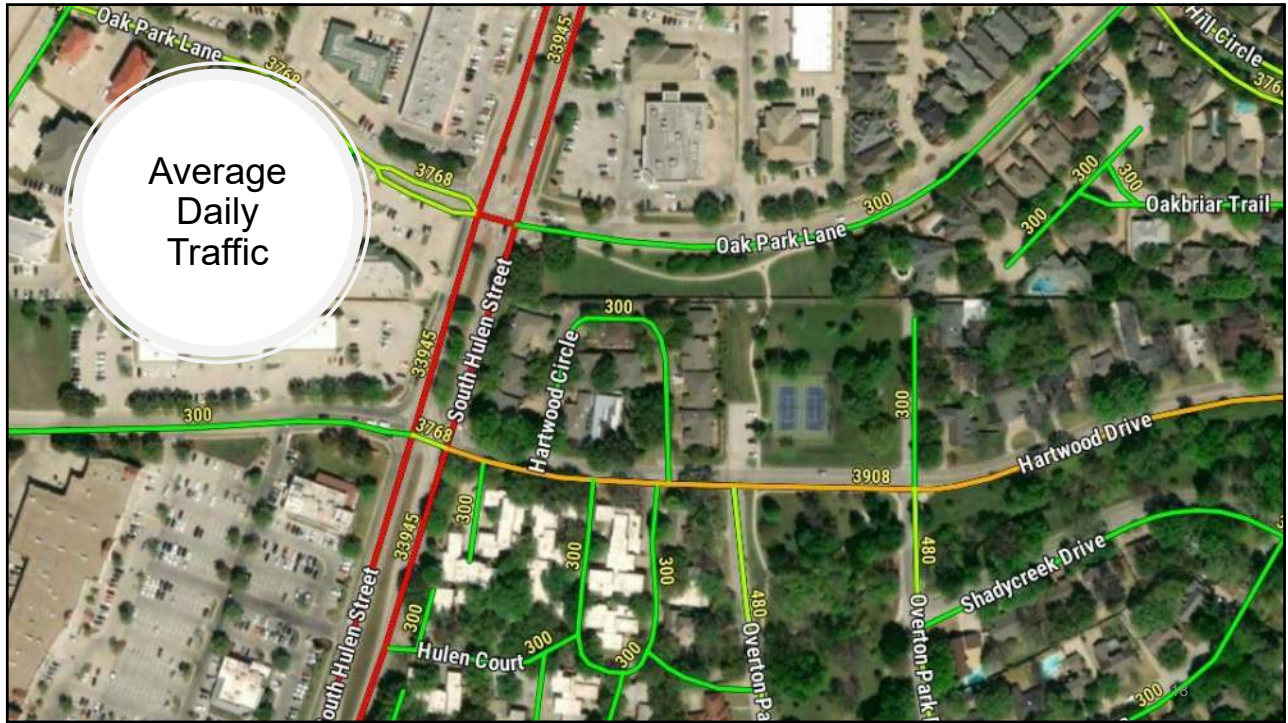
Building and Land (in high density)

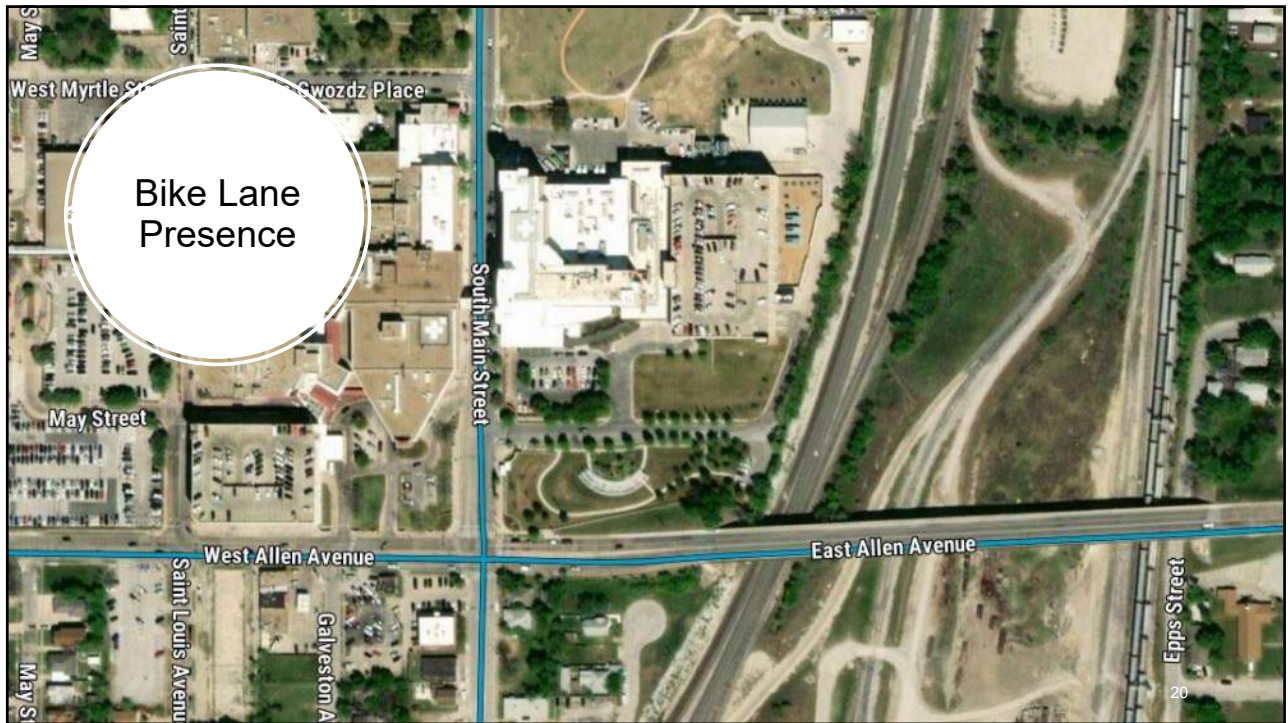
- Blocks are relatively short
- Mid-block crossings on long blocks
- Buildings are close to the sidewalk, not setback too far
- Fewer driveways to cross
- More address (destinations) on the block

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Intersection Scoring

Scored on 1 - 4

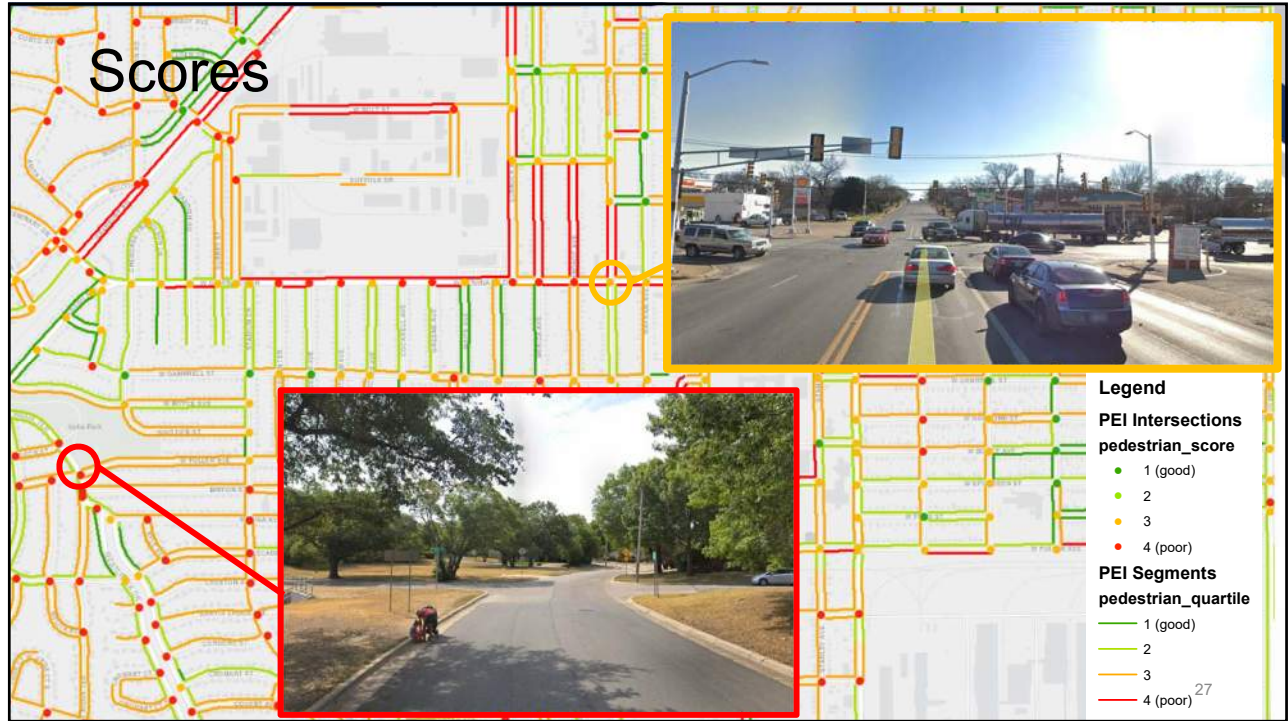
- Number of Lanes: **1:** 2 lanes **4:** ≥ 5 lanes
- Posted Speed Limit: **1:** 30mph **4:** ≥ 40 mph
- Average Daily Traffic: **1:** $\leq 1,200$ **4:** $\geq 18,000$
- ADA Curb Ramps: **1:** 4 corners **4:** 0 ramps

Score Improved By:

- Traffic Signal
- Crosswalk across major road

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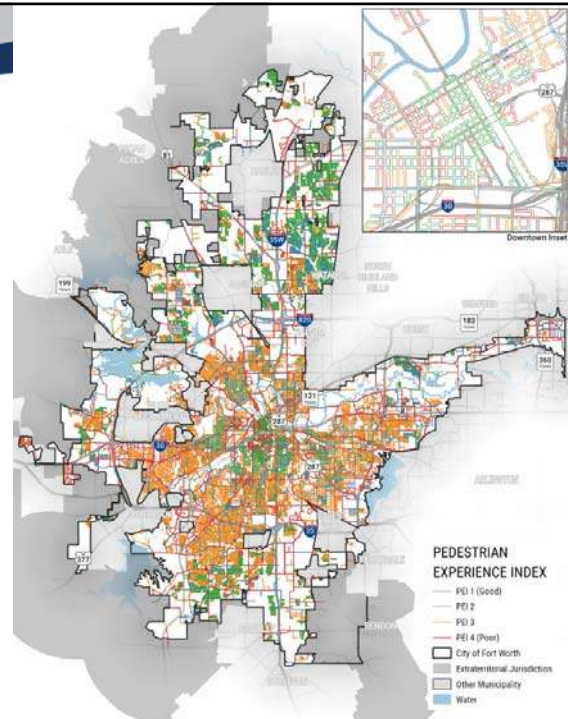






Existing Conditions – Walking Level of Comfort

- Streets without sidewalks are less comfortable
- High speed and volume roadways and intersections are barriers
- Curb ramps are required for travel for persons with disabilities



Bicycle Stress Analysis (Bicycle Level of Traffic Stress)



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WHEN THE INFRASTRUCTURE IS ONLY COMFORTABLE FOR A SMALL GROUP OF PEOPLE...

THIS ISN'T SO BAD.

NOPE. NOT A CHANCE!

ONLY A FEW WILL USE IT.

WITH INFRASTRUCTURE THAT IS COMFORTABLE AND SAFE FOR MOST PEOPLE...

HMM, THIS ISN'T SO BAD, EITHER

AHH, MUCH BETTER...

FEWER PEOPLE ARE EXCLUDED FROM USING IT.

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Basis of Analysis

Types of Bicyclists in North Central Texas Council of Governments Region

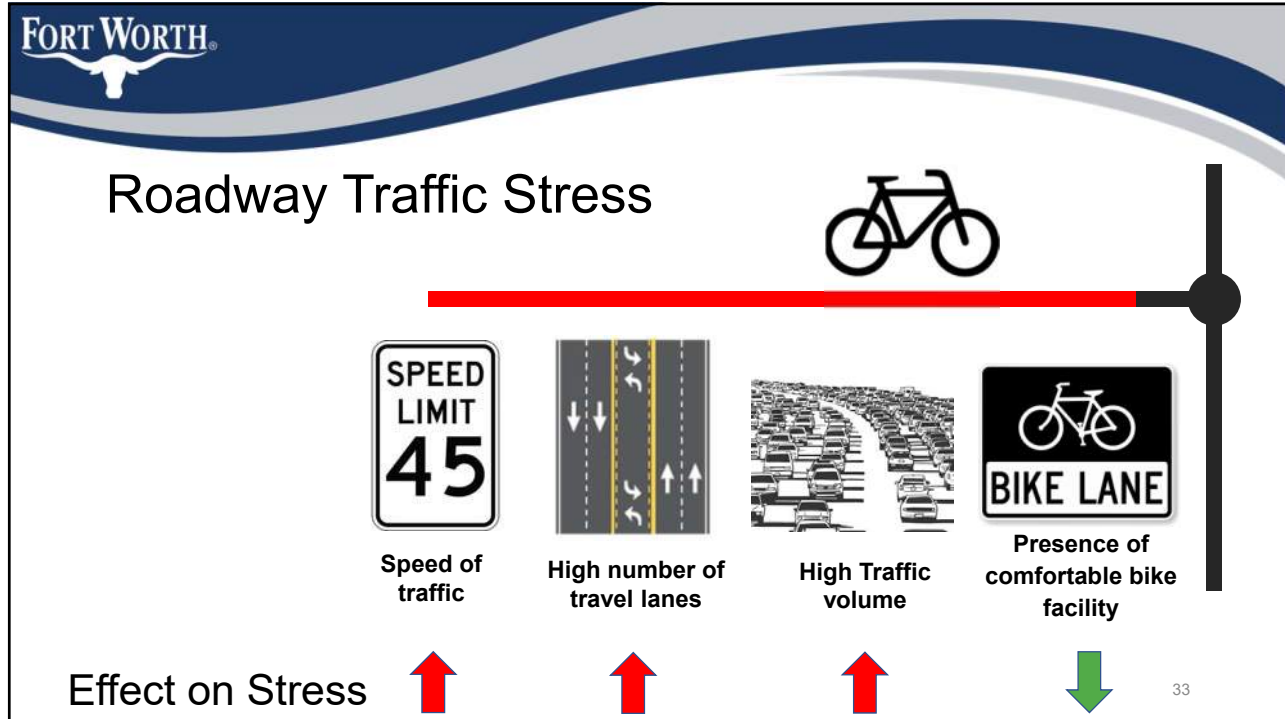
<p>Interested But Concerned</p> <p>37% of the population</p> <p>Prefer trails, sidepaths, separated bike lanes, or quiet or traffic calmed residential streets. May not bike at all if bicycle facilities do not meet needs for perceived comfort.</p>	<p>Enthusied & Confident</p> <p>14% of the population</p> <p>Prefer more separated bicycle facilities, but will ride in bicycle lanes or paved shoulders if need be.</p>	<p>Strong & Fearless</p> <p>2% of the population</p> <p>Comfortable riding with traffic and will use roads without bike facilities.</p>
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Lower Stress Tolerance | Higher Stress Tolerance

Remaining share of the population is considered "No Way, No How" bicyclists and are unlikely to bicycle in any conditions.
Source: NCTCOG 2017 Bicycle Opinion Survey, Report of Results

Level of Traffic Stress	Description	Example
1	Safe for children to use; Usually completely separated from auto traffic	
2	Tolerated by most mainstream adult populations of cyclists; Roads with low volume and low speed auto traffic	
3	Tolerated by riders who are enthused and confident; Heavy traffic with separated bike facility	
4	Only tolerated by strong and fearless riders; cyclists must interact with high volumes or speeds of auto traffic.	

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Bicycle Facility Selection

- Applies to roadways not assigned a cross-section in the Master Thoroughfare Plan
- Assists in planning **appropriate bicycle facility** based on roadway and land use context
- Eliminates improper facility selection (e.g., bike lane on high speed roadway)

Facility Selection Table

Roadway Type/ Characteristics	Posted Speed	Lanes Per Direction	Presence of Parking	Traffic Volume (ADT)	Traffic	Separately Separated Bike Lanes	Refined Bike Lanes (5'-6' Buffer Dist)	Conventional Bike Lanes (5'-6')	Signs and Shared Lane Markings (for roadways with no treatment)	Bike's Backwards with Traffic Calming
Independent Right of Way	n/a	n/a	n/a	n/a	1	n/a	n/a	n/a	n/a	n/a
Thoroughfares										
System Link	45	3	No	All Volumes	n/a	1	4	4	4	n/a
Commercial or Neighborhood Connector	35	3	No	All Volumes	n/a	1	3	4	4	n/a
Commercial or Neighborhood Connector	35	2	No	20,001+	n/a	1	3	4	4	n/a
Commercial or Neighborhood Connector	35	2	No	8,001 - 20,000	n/a	1	3	3	4	n/a
Commercial or Neighborhood Connector	35	2	No	<8,000	n/a	1	2	3	3	n/a
Commercial or Neighborhood Connector	35	1	No	150+	n/a	1	2	2/3*	4	n/a
Commercial or Neighborhood Connector	35	1	No	751-1500	n/a	1	2	2	3	n/a
Commercial or Neighborhood Connector	35	1	No	<750	n/a	1	2	2	2	n/a
Commerce/Mixed Use or Activity Street	35	2	Yes	<8,000	n/a	1	3	3	4	n/a
Commerce/Mixed Use or Activity Street	35	2	Yes	<8,000	n/a	1	2	3	3	n/a

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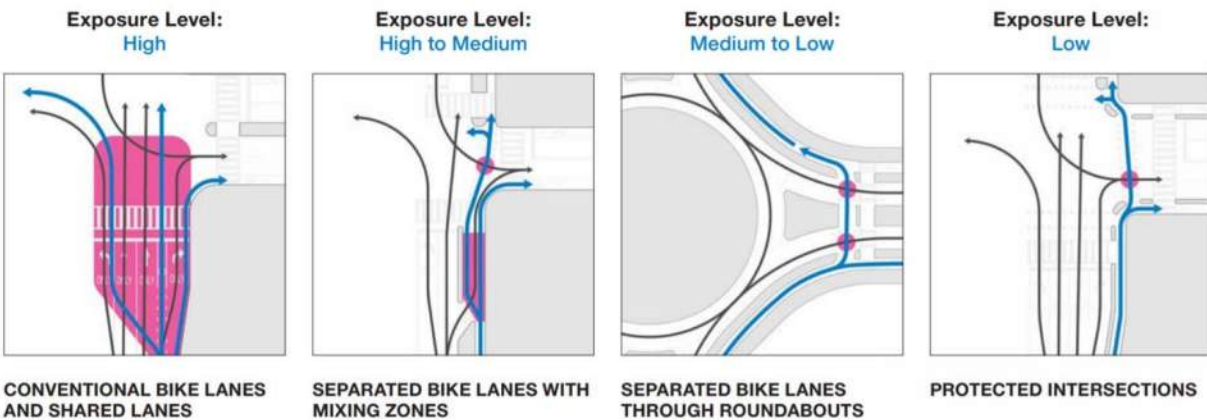


Case Study: Forest Park

- ADT ~15,000/day
- Residential land use
- Posted speed limit: 35
- No on-street parking
- Original configuration: 4-lane undivided
- New configuration: 2-lane/direction; TWLTL; 5' bike lanes
- **Level of Traffic Stress: 3**
- Most common complaint: "I never see anyone biking"
- LTS 1 would suggest a separated bike lane or sidepath



Intersection Bicycle Crash Exposure



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Intersection Traffic Stress

SPEED LIMIT 45

Speed of cross traffic

Number of lanes to cross

Conflict Type	Count
Collision	18
Minor	8
Major	8
Total	32 Conflicts

Intersection control

Effect on Stress

↑ ↑ ↓

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Common Bicycle Intersection Design

PENNSYLVANIA AVE

STALL CROSS HATCH
8" (WHITE) - 90 LF

INSTALL BIKE LANE SYMBOL AND ARROW

INSTALL BIKE SHARROW SYMBOL

INSTALL BIKE SHARROW SYMBOL

INSTALL EDGE LINE
4" (WHITE) - 210 LF

INSTALL CROSS HATCH
8" (WHITE) - 40 LF

INSTALL STRIPES - 4" (WHITE)
10' STRIPES W/ 30 SPACING - 30'

INSTALL BIKE SHARROW SYMBOL

INSTALL DOTS - 4" (WHITE)
2 STRIPES W/ 4' SPACING

INSTALL BIKE SHARROW SYMBOL

INSTALL EDGE LINE
8" (WHITE) - 100 LF

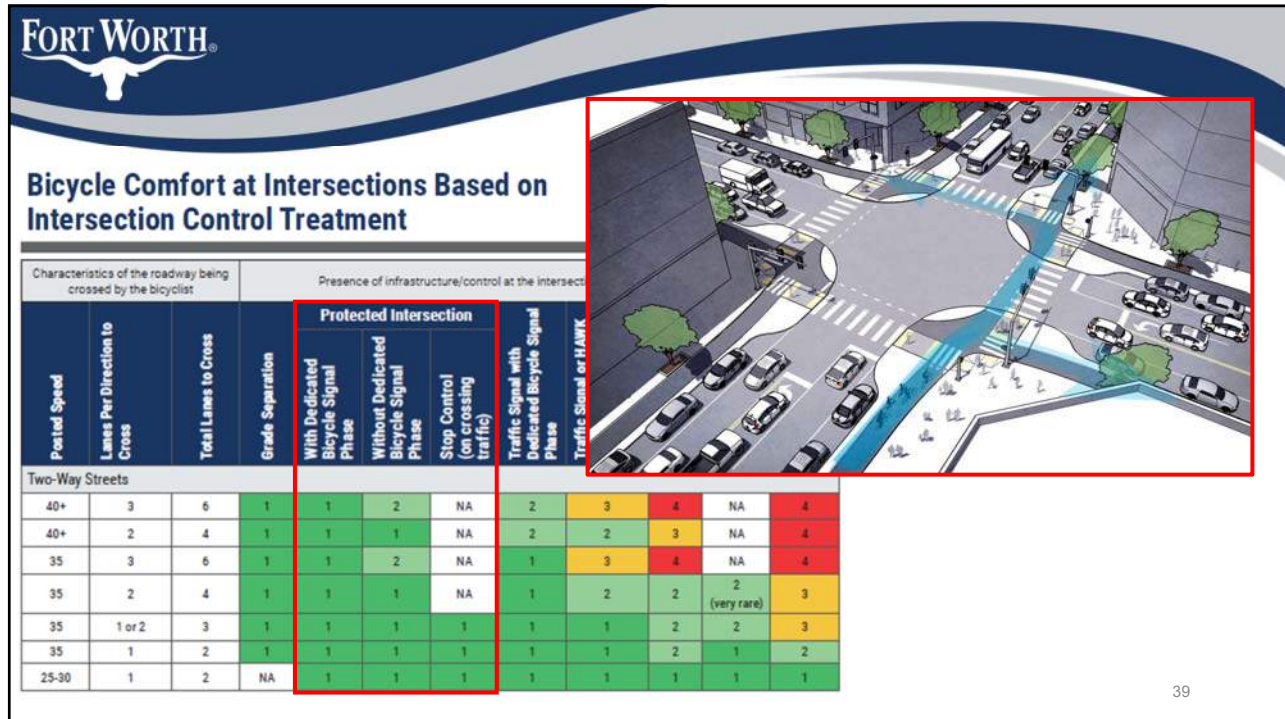
INSTALL STOPBAR
24" (WHITE) - 30 LF

INSTALL CROSSWALK
12" (WHITE) - 130 LF

28'5" TAPER

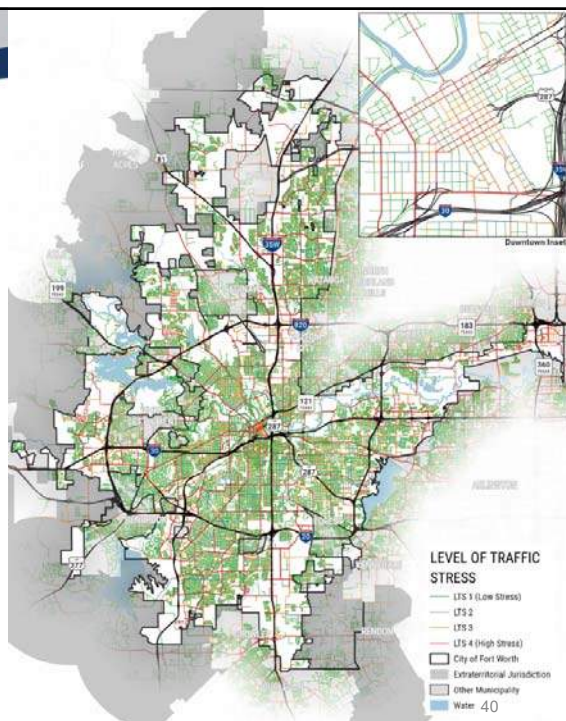
45'

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Existing Conditions – Bicycling Level of Comfort

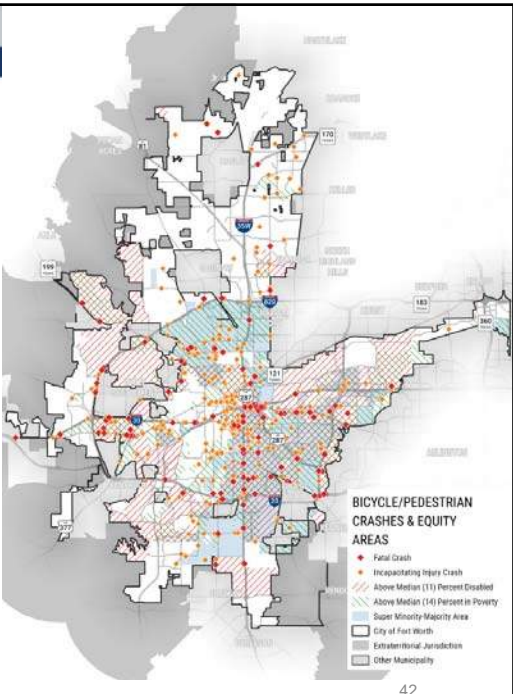
- Residential streets are inherently more comfortable
- Intersections provide a barrier for travel
- High speed and volume roadways and intersections are barriers
- Bike lanes on **high-speed thoroughfares are not comfortable** for a majority of people bicycling





Prioritization Criteria

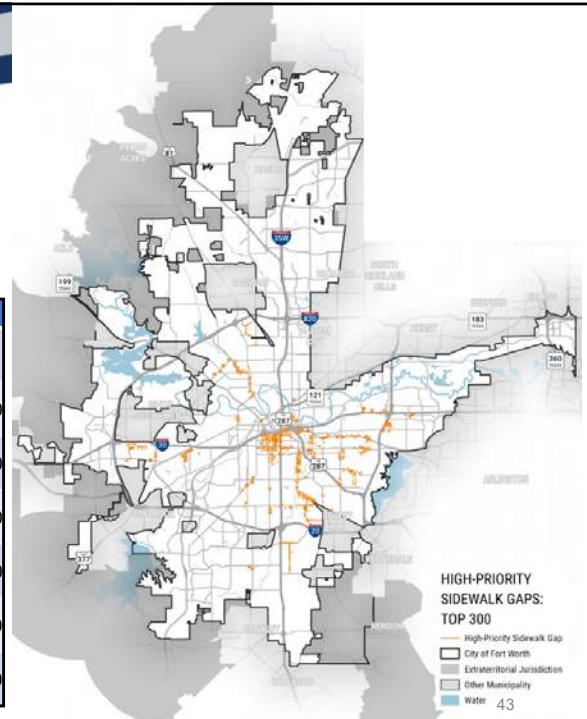
Prioritization Factor	Weight		
	Sidewalks	Bikeways	Trails
Equity	40%	30%	30%
Veloweb/Spine			30%
Connectivity		25%	30%
Demand	30%	20%	
Crash History	20%	10%	
Comfort	5%	10%	
Stakeholder Input	5%	5%	10%
Funding			10% bonus
Feasibility			10% bonus





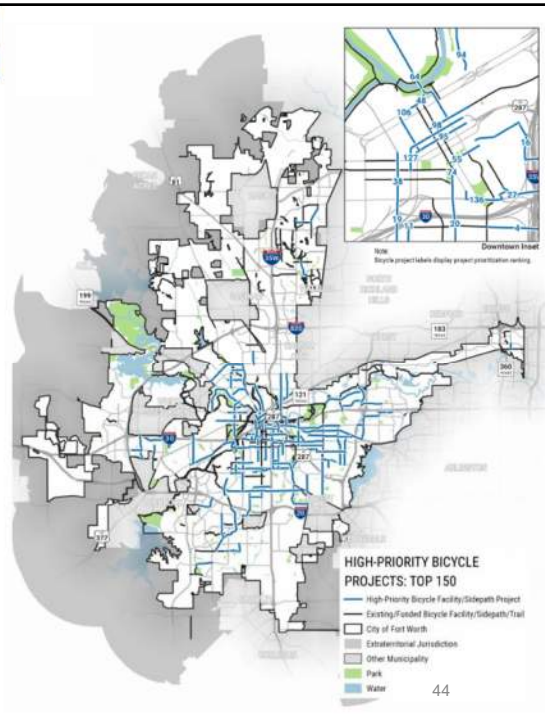
Sidewalk Gap Costs

Sidewalk Gap Areas	All		Priority (Top 300)	
	Mileage	Cost Opinion	Mileage	Cost Opinion
Citywide	3,740	\$3,612,900,000	151	\$145,900,000
Super Majority-Minority Areas	1,530	\$1,478,000,000	140	\$135,300,000
Near Transit	1,319	\$1,274,200,000	104	\$100,500,000
In High Disability Areas	1,127	\$1,088,700,000	112	\$108,200,000
Near Schools	939	\$907,100,000	51	\$49,300,000
Near Higher Education	160	\$154,600,000	16	\$15,500,000



Bicycle Network Costs

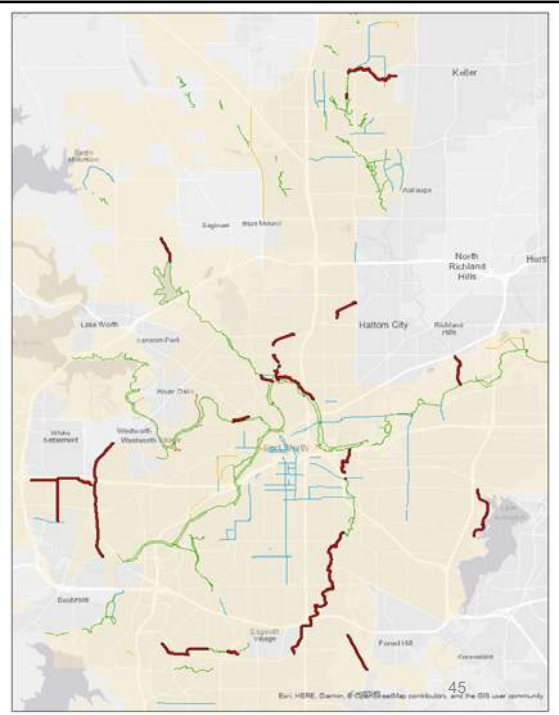
Facility Type	Mileage	Cost Opinion
On-street bicycle facilities	442	\$40,500,000
Top 150 Projects	120	\$21,300,000



Trail Network Costs

Facility Type	Mileage	Cost Opinion
Total Trails	240	\$ 714,500,000
Top 20 Trails	30	\$ 168,200,000

— Top 20 Sidewalk Projects



Next Steps

- Vision Zero Policy
- Comprehensive Sidewalk Policy
- Coordination of prioritized projects
- Process improvements – Complete Streets

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Additional Resources

Fort Worth Active Transportation Plan
BICYCLE FACILITY SELECTION GUIDE AND DESIGN TOOLBOX
April 2019

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Appendix: Pedestrian Experience Index (PEI) Methodology Memorandum

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Appendix 4: Level of Traffic Stress (LTS) Analysis Methodology Memorandum

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Project website: www.fortworthtexas.gov/atp

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Questions?

