Safer Design for All Ages & Abilities

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Executive Director
NACTO

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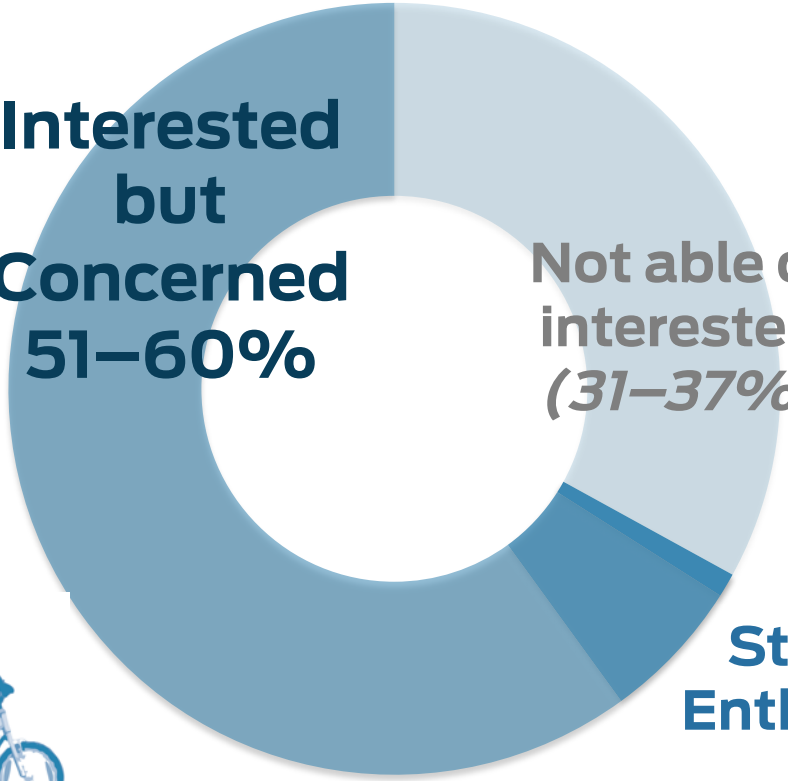
Who are we designing for?

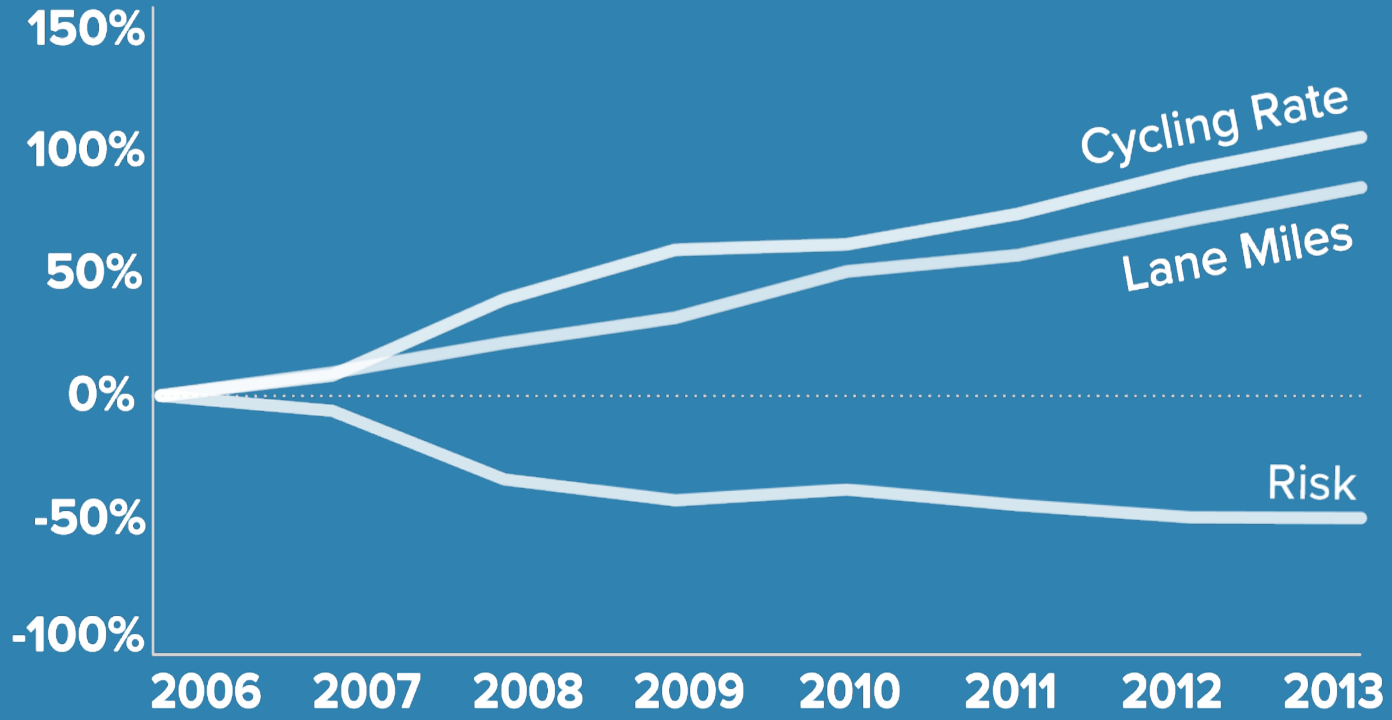
Biking is … ?

Who are we forgetting?



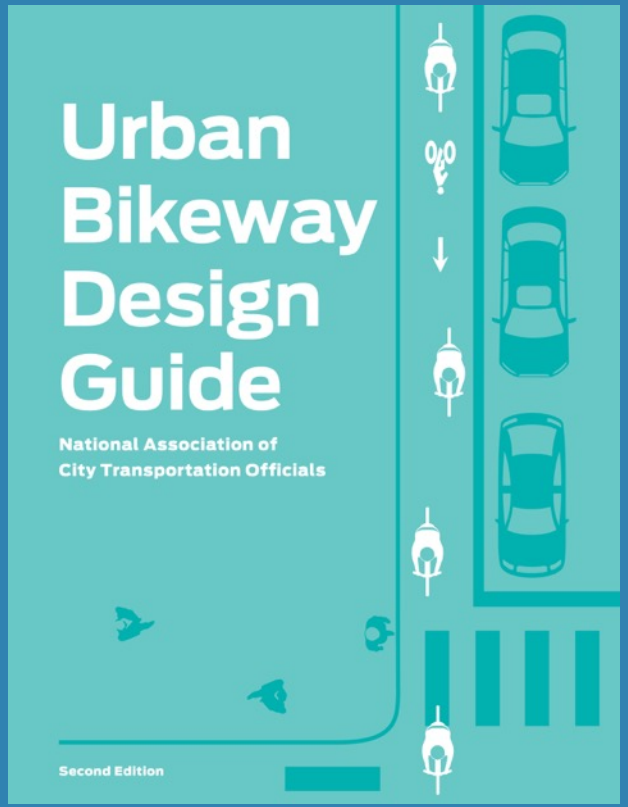
Strong *(1%)*
Enthused *(6%)*

Safe Bikeways attract more riders

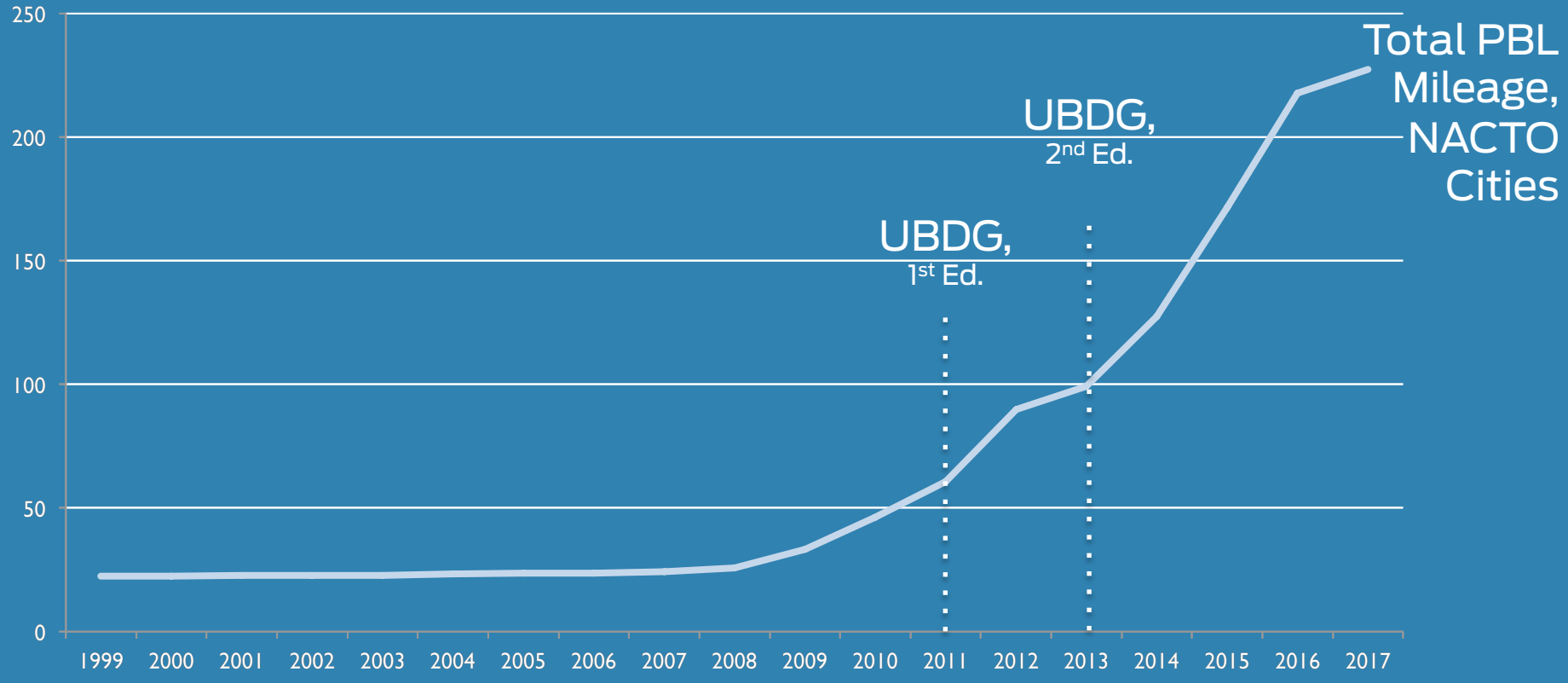


Aggregate data from Portland, New York City, Chicago, San Francisco, and Philadelphia

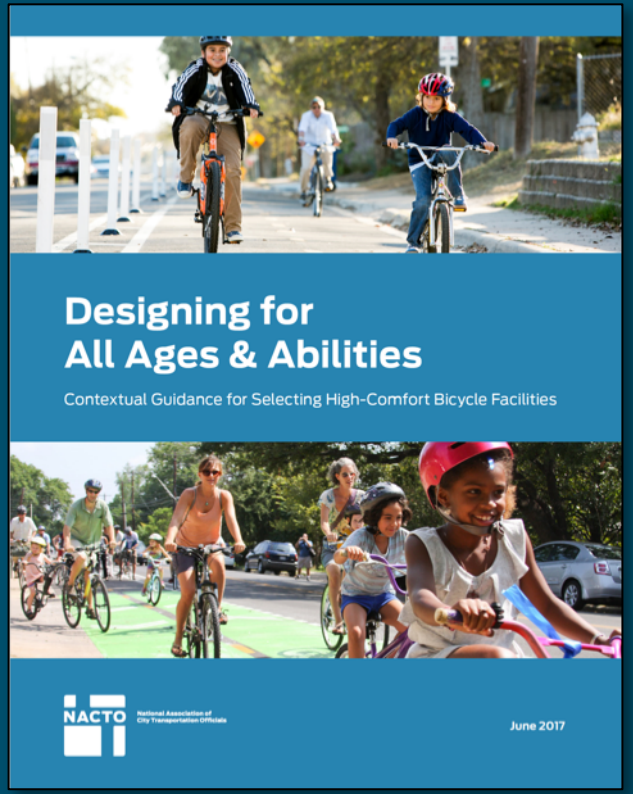
Urban Bikeway Design Guide, 2011



Since the *Urban Bikeway Design Guide*



NACTO's *Designing for All Ages & Abilities*



Who are our design users?

Photo: People for Bikes

All Ages & Abilities means …

Safe

Photo: City of Austin

Attractive

Photo: City of Vancouver

Equitable

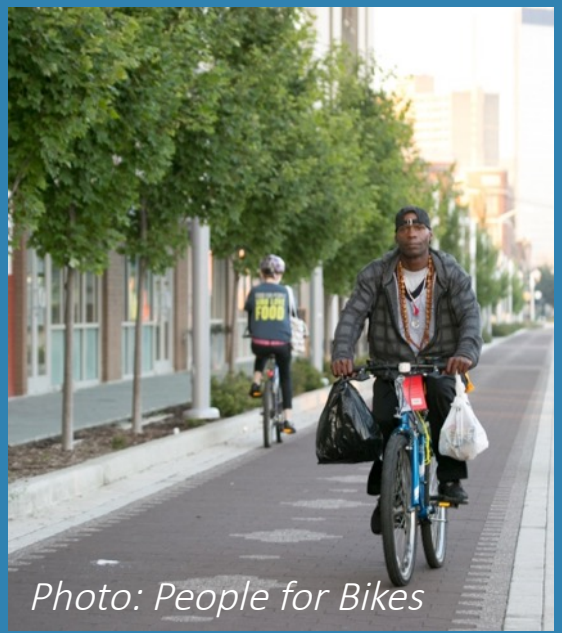
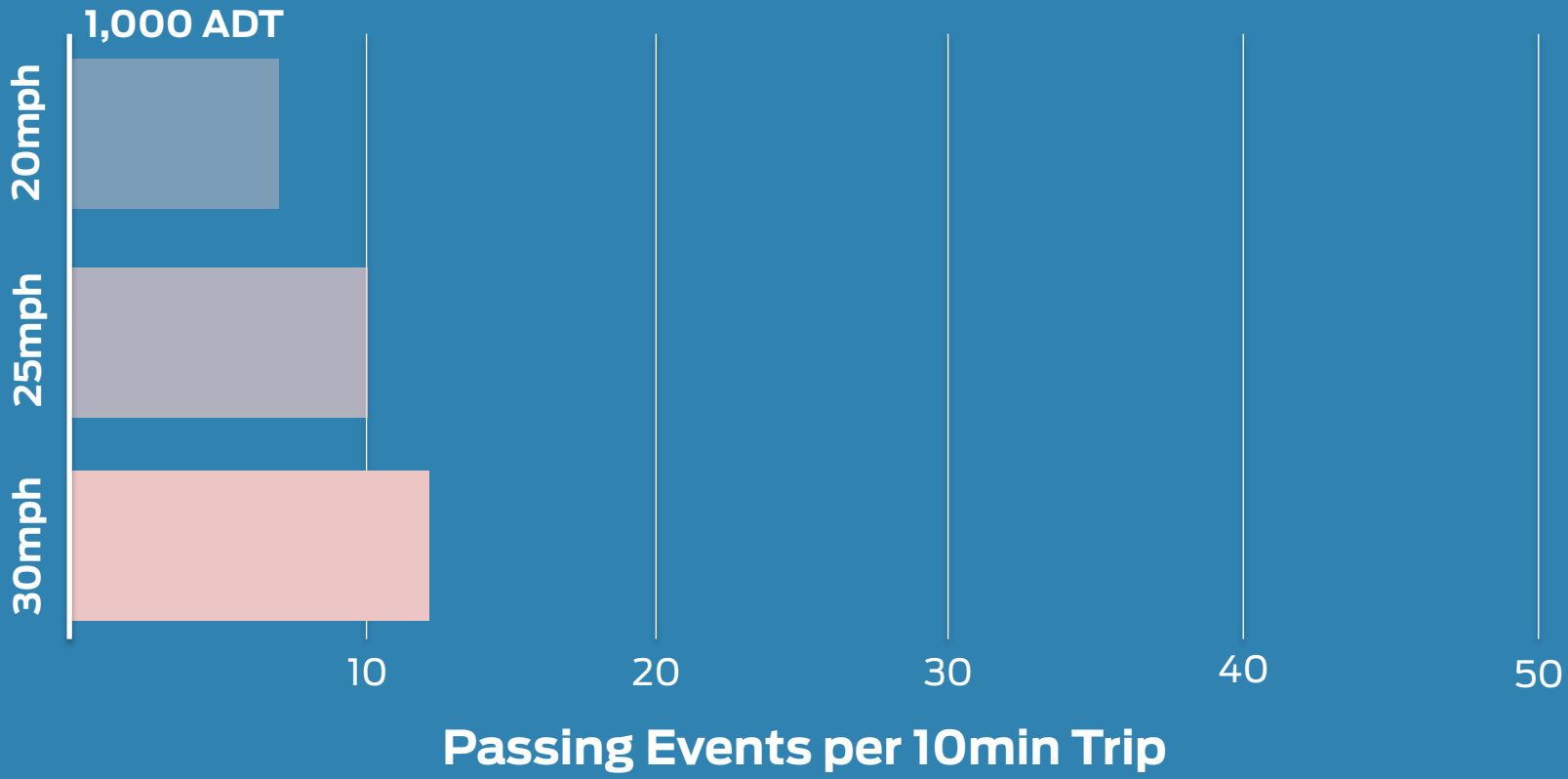
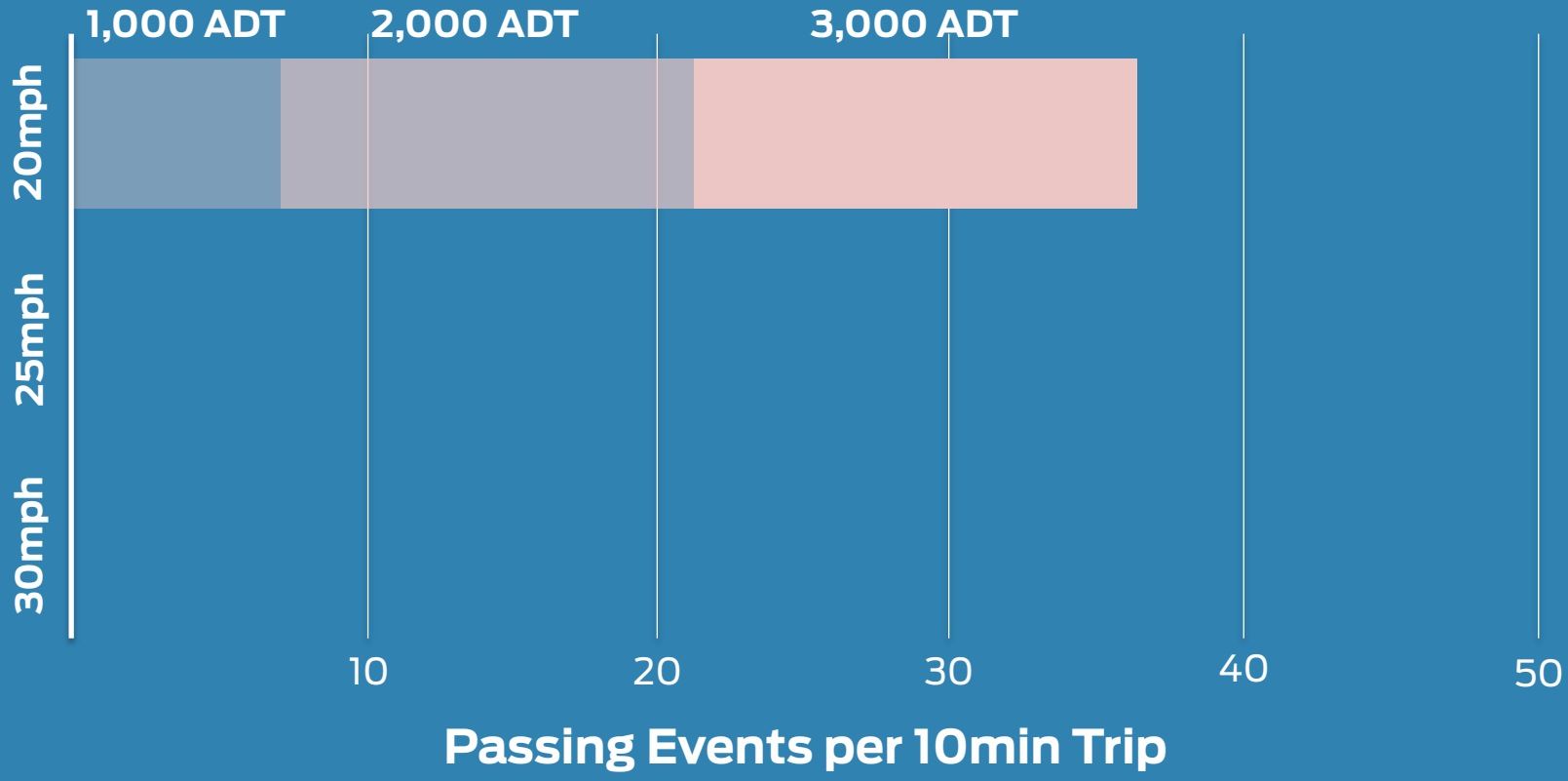


Photo: People for Bikes

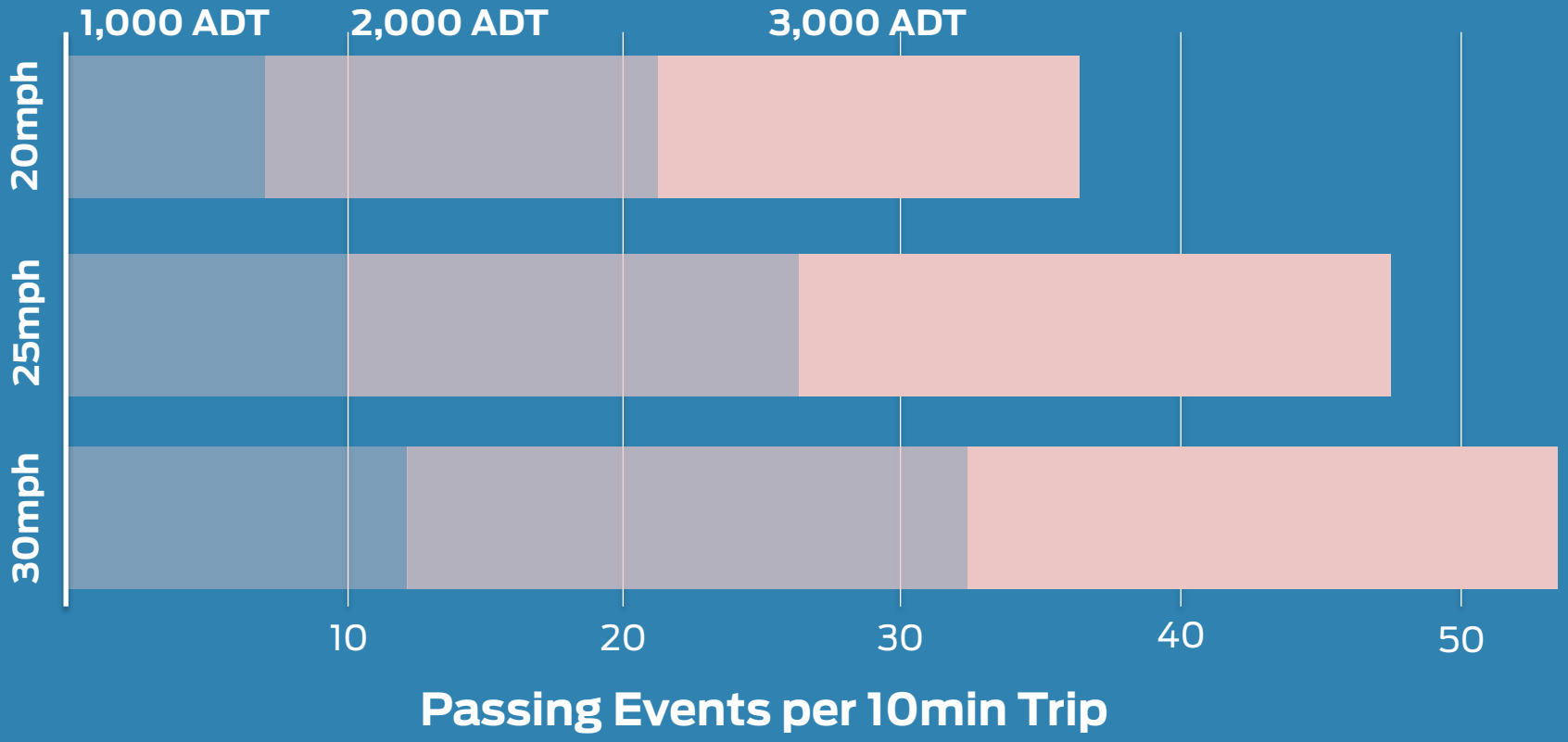
Speed Increases Stress



Volume Increases Stress



Speed & Volume Amplify Stress



Selecting an AA&A Bike Facility

Contextual Guidance for Selecting All Ages & Abilities Bikeways

Roadway Context				All Ages & Abilities Bicycle Facility
Target Motor Vehicle Speed*	Target Max. Motor Vehicle Volume (ADT)	Motor Vehicle Lanes	Key Operational Considerations	
Any		*Any*	*Any of the following:* high curbside activity, frequent buses, motor vehicle congestion, or turning conflicts‡	**Protected Bicycle Lane**
< 10 mph	Less relevant	No centerline, or single lane one-way	Pedestrians share the roadway	**Shared Street**
≤ 20 mph	≤ 1,000 – 2,000		< 50 motor vehicles per hour in the peak direction at peak hour	**Bicycle Boulevard**
≤ 25 mph	≤ 500 – 1,500			
	≤ 1,500 – 3,000	Single lane each direction, or single lane one-way	Low curbside activity, or low congestion pressure	**Conventional or Buffered Bicycle Lane, or Protected Bicycle Lane**
	≤ 3,000 – 6,000			**Buffered or Protected Bicycle Lane**
	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		
Greater than 26 mph†	≤ 6,000	Single lane each direction	Low curbside activity, or low congestion pressure	**Protected Bicycle Lane, or Reduce Speed**
		Multiple lanes per direction		**Protected Bicycle Lane, or Reduce to Single Lane & Reduce Speed**
	Greater than 6,000	*Any*	*Any*	**Protected Bicycle Lane, or Bicycle Path**
High-speed limited access roadways, natural corridors, or geographic edge conditions with limited conflicts		*Any*	High pedestrian volume	**Bike Path with Separate Walkway or Protected Bicycle Lane**
			Low pedestrian volume	**Shared-Use Path or Protected Bicycle Lane**

Contextual Guidance

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	Greater than 6,000			**Protected Bicycle Lane**
	Any	Multiple lanes per direction		

Low-Speed, Low-Volume Roadways Can Be Shared

Photo: NACTO

- Use both Peak Volume & Off-Peak Speed
- 20-25mph max Target Speed
- Manage high-end Speeds
- Reduce / Filter Volume
- Use Time of Day analyses for deliveries & stressors

Contextual Guidance

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Conventional & Buffered Lanes Organize

- Set 95th Percentile below 25mph
- Reduce Motor Vehicle Volume
- Reduce Curbside Conflicts
- Address Intersection Conflicts
- Adjacent Traffic Decreases Comfort

Photo: City of Cambridge

Contextual Guidance

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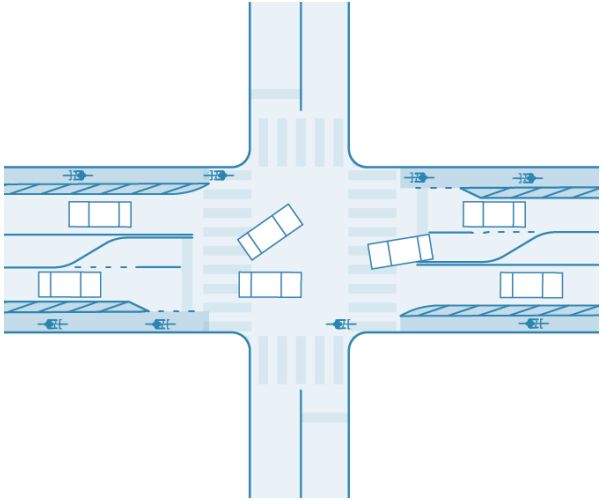
Separated Bikeways are Transformative

Photo: Adam Coppola for People for Bikes

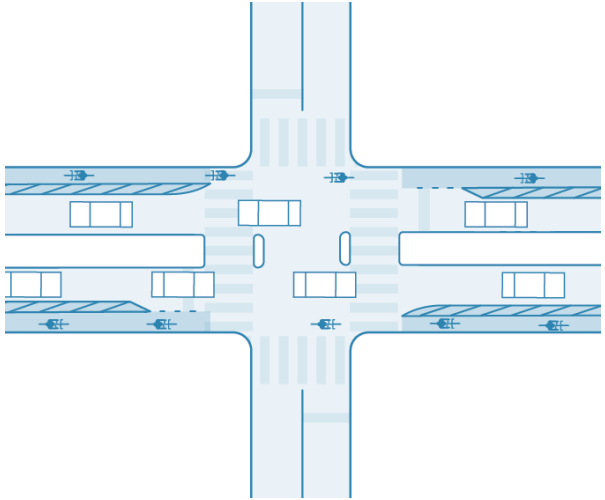
- Protect where 95th Percentile exceeds 25mph
- Carry protection through Intersections
- Reduce Curbside Conflicts
- Upgrade Separation as Stress Increases
- Minimize the number of travel lanes

Three Levers to Change the Street

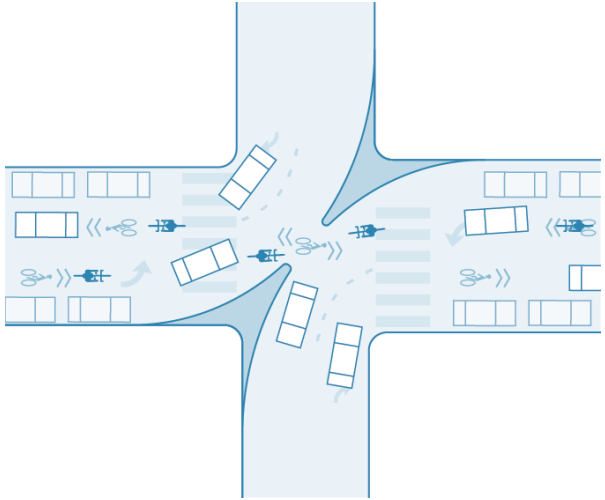
Design

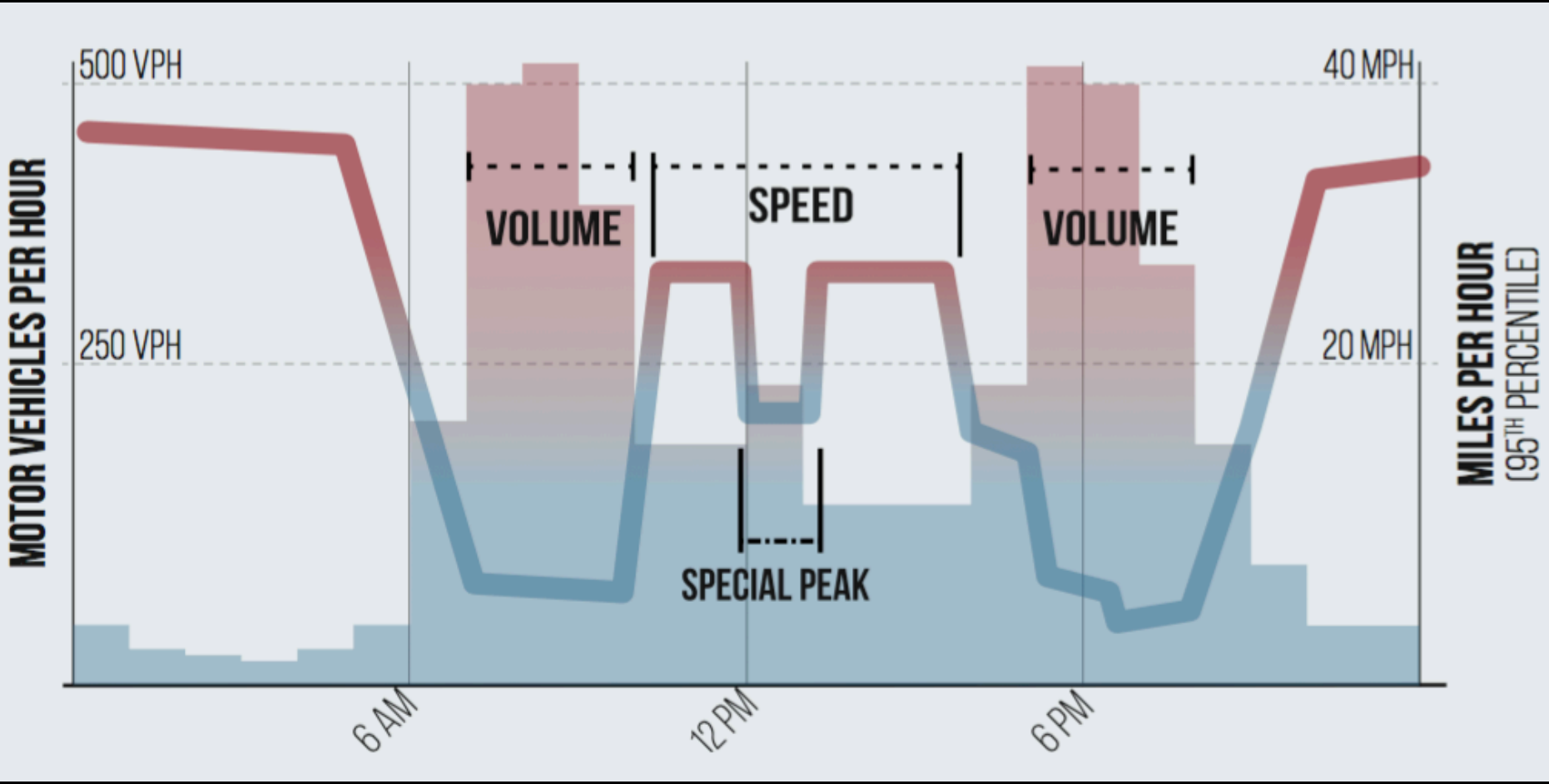


Operation

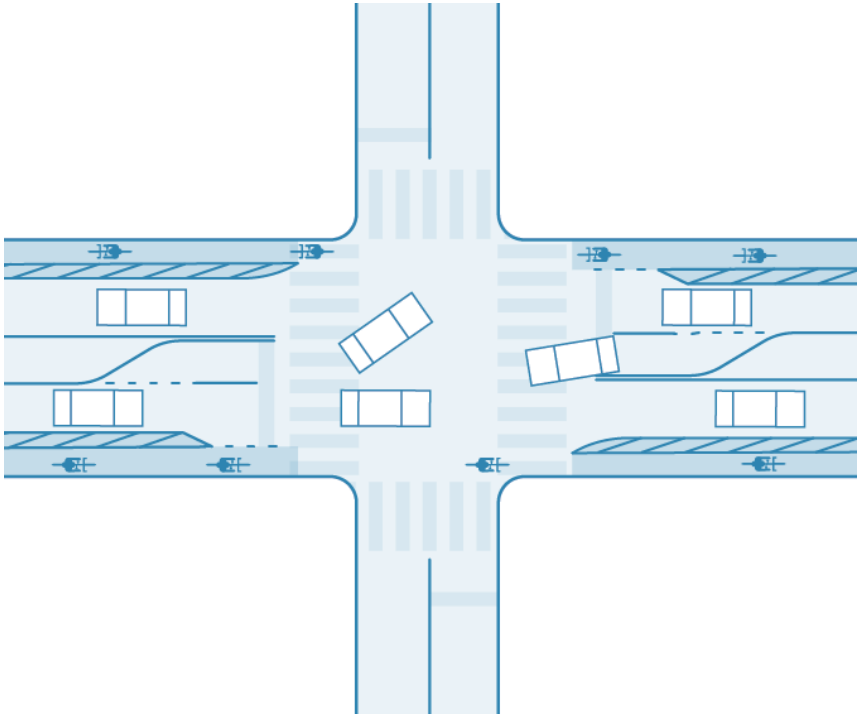


Network




500 VPH
250 VPH
40 MPH
20 MPH
MOTOR VEHICLES PER HOUR
MILES PER HOUR
(95TH PERCENTILE)
VOLUME
SPEED
VOLUME
SPECIAL PEAK
6 AM
12 PM
6 PM

Design



- Flip the Bike Lane & Parking Lane
- 4-to-3 Road Diet / Repurpose Motor Vehicle Lane

Make incremental improvements

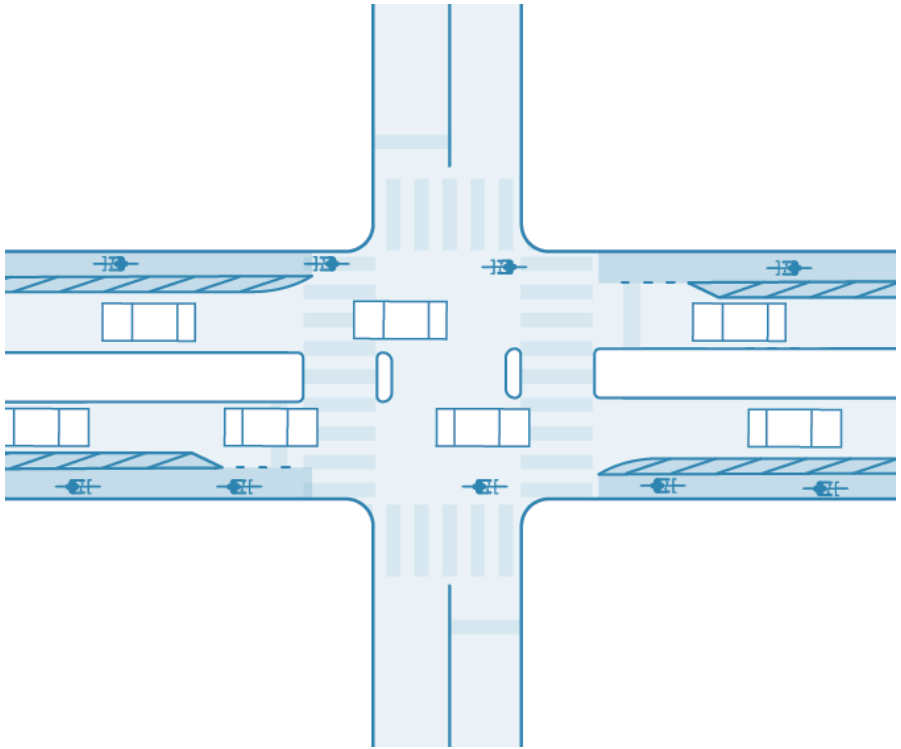
Photo: NYC DOT

Make incremental improvements

Photo: NYC DOT

Operation

- Low-Speed Signal Progression
- Turn Prohibition
- Phase Separation

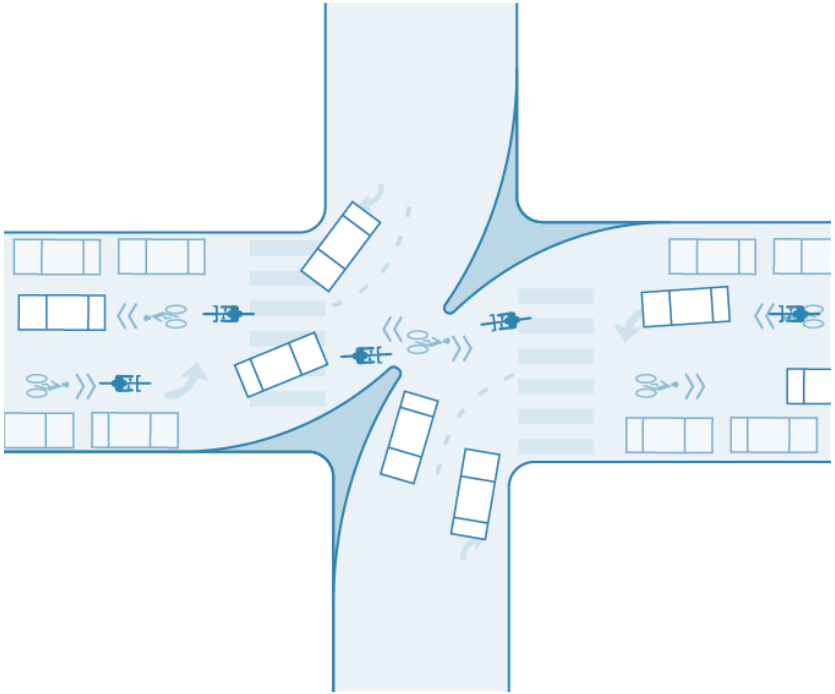


Operate for Comfort

Photo: Seattle DOT

Network

- Forced turns / Diversion
- Time-of-Day Regulations
- Large Vehicle Prohibitions

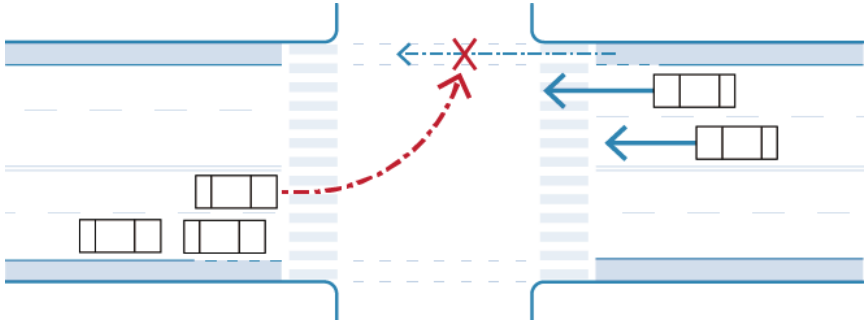


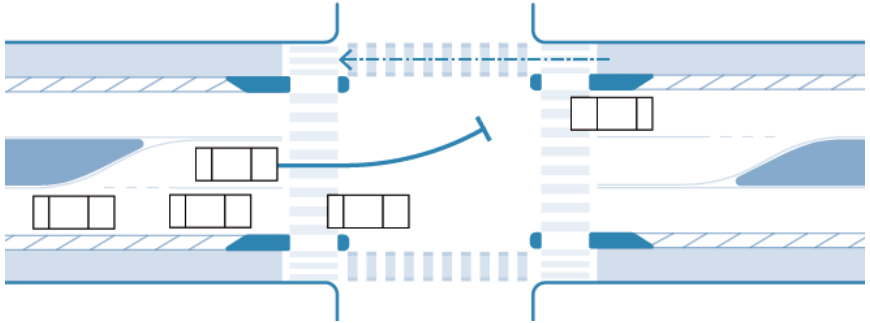
Change Network Role

Reduce Stress, Improve Comfort

Address Common Sources of Stress

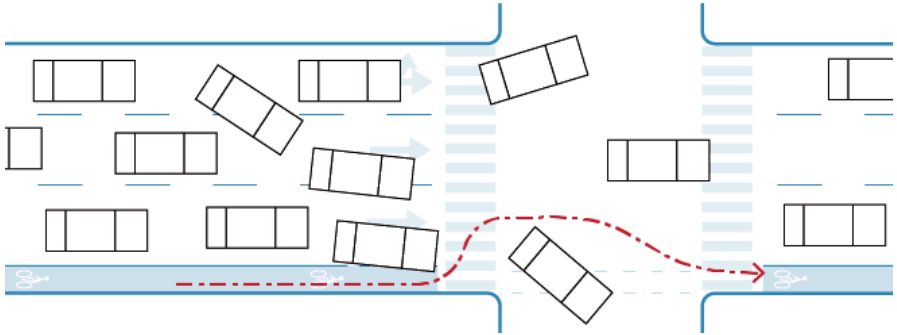
Multiple Motor Vehicle Lanes: 4-to-3 road diet

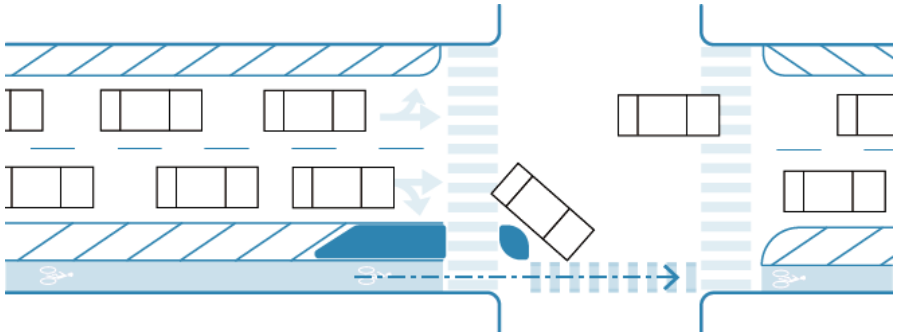




Address Common Sources of Stress

Motor Vehicle Congestion





For more see: www.nacto.org

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