



# Global Cities' Cycling Initiatives

Emerging & Progressive Practices from the Global South

NACTO-Global Designing Cities Initiative

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Velo-City, Dublin, Ireland

27 June 2019

@GlobalStreet

[www.globaldesigningcities.org](http://www.globaldesigningcities.org)

NACTO National Association of City Transportation Officials

GDCI Global Design Cities Initiative

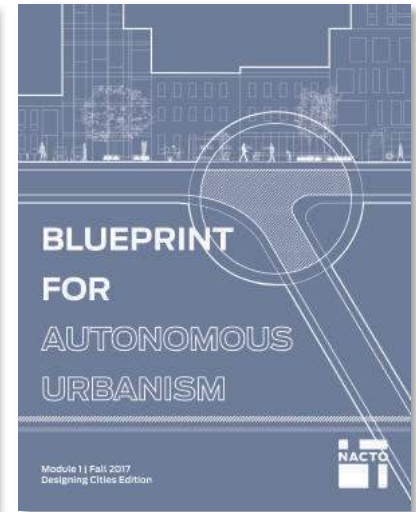
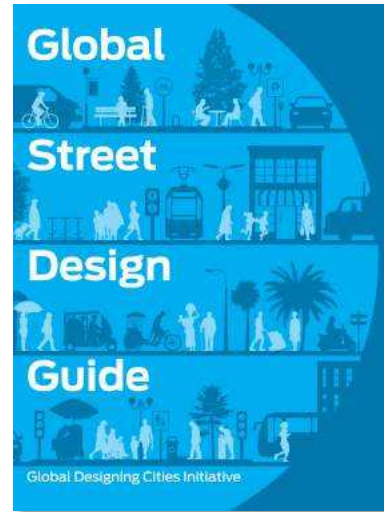
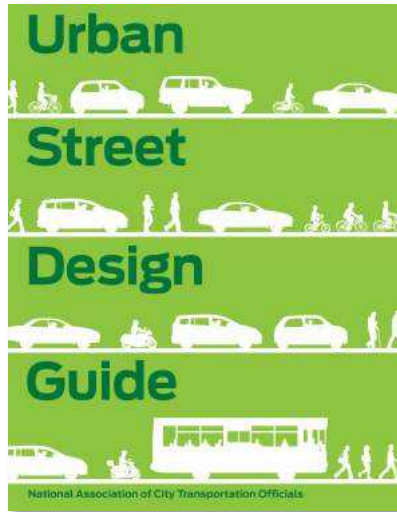
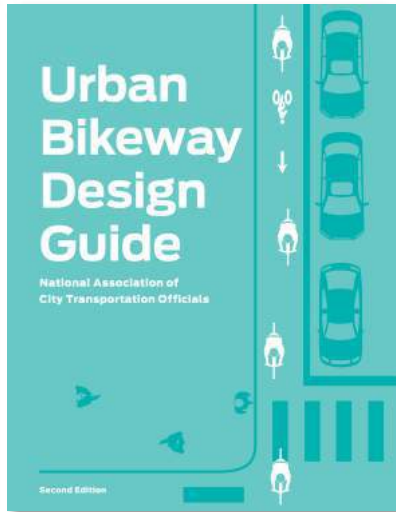


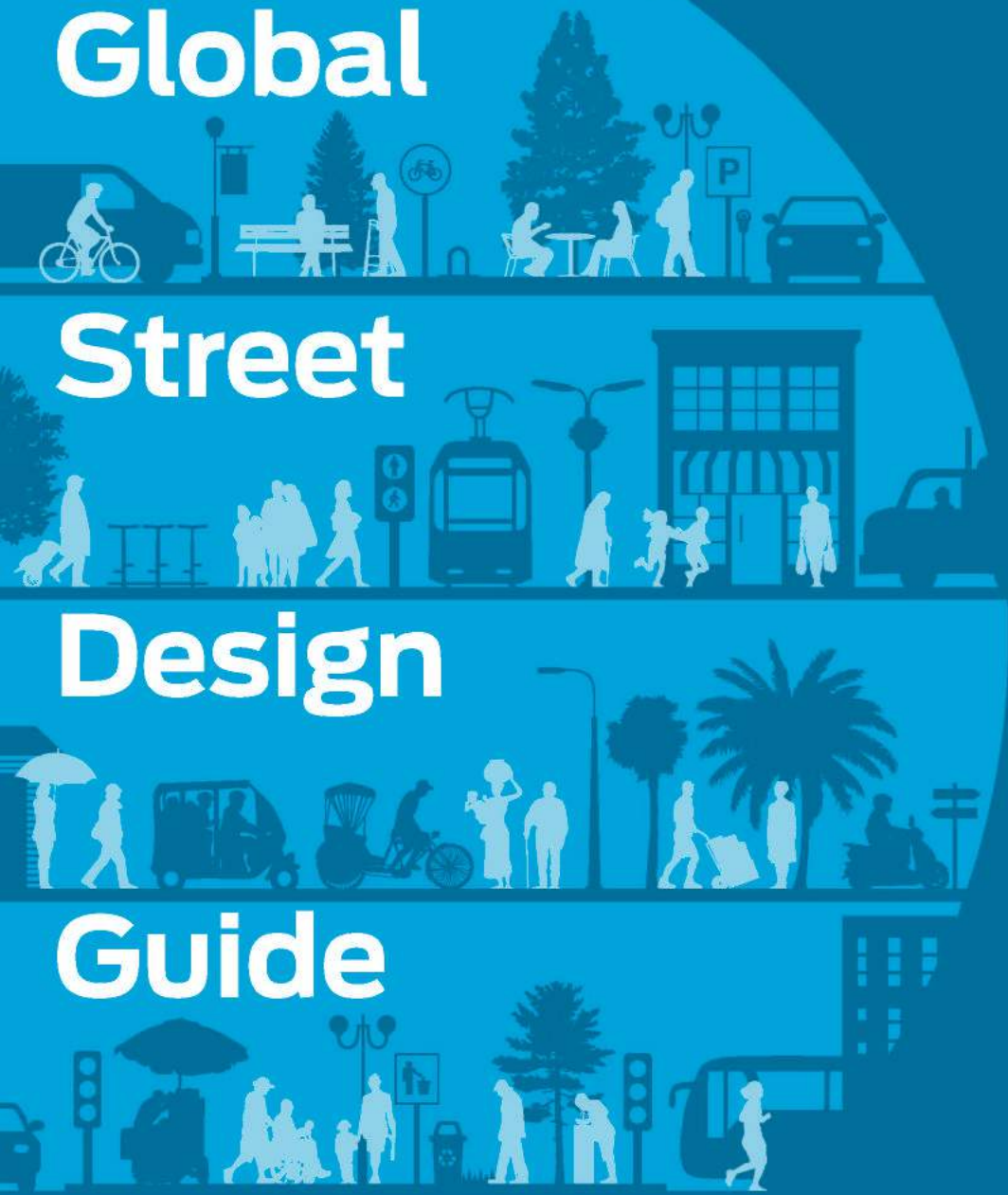
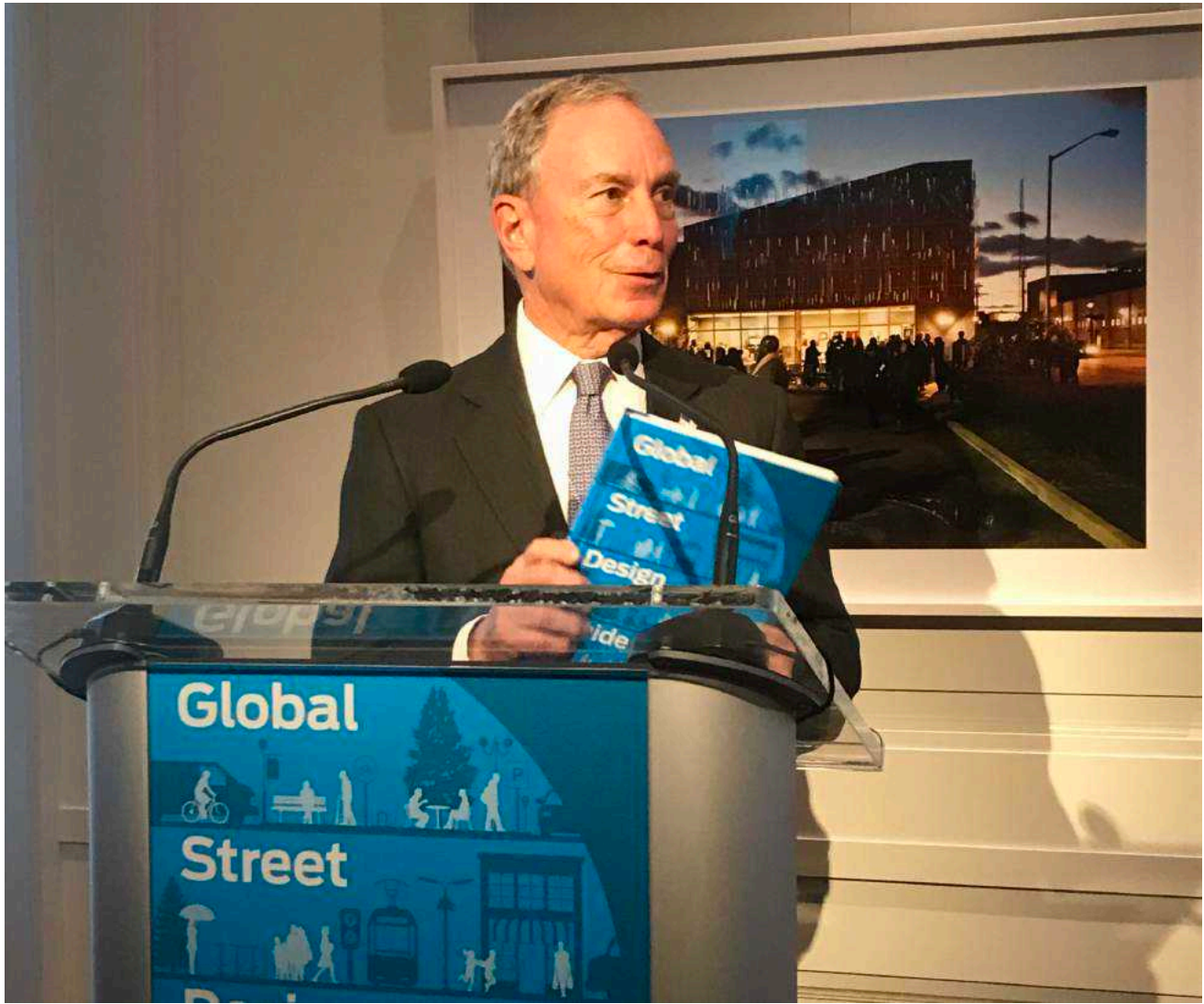
**Global  
Designing  
Cities  
Initiative**



**Janette  
Sadik-Khan**

# NACTO Design Guides





Global Designing Cities Initiative

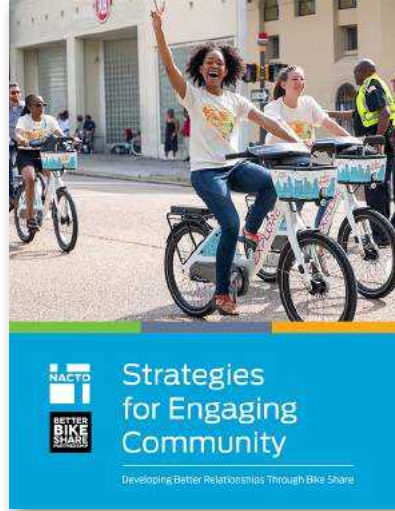


Bloomberg Philanthropies

INITIATIVE FOR GLOBAL ROAD SAFETY

Global Designing Cities Initiative

# NACTO Supplements



**Bloomberg  
Philanthropies**



*fondation*  
**BOTNAR**

# Designing Streets for Kids



Global Designing Cities Initiative

Coming in 2019

**GSDG Supplement**

# A New Approach to Street Design



# Design for ALL street users



**Pedestrians**



**Cyclists**



**Transit Riders**



**Motorists**



**Freight Operators  
and Service  
Providers**



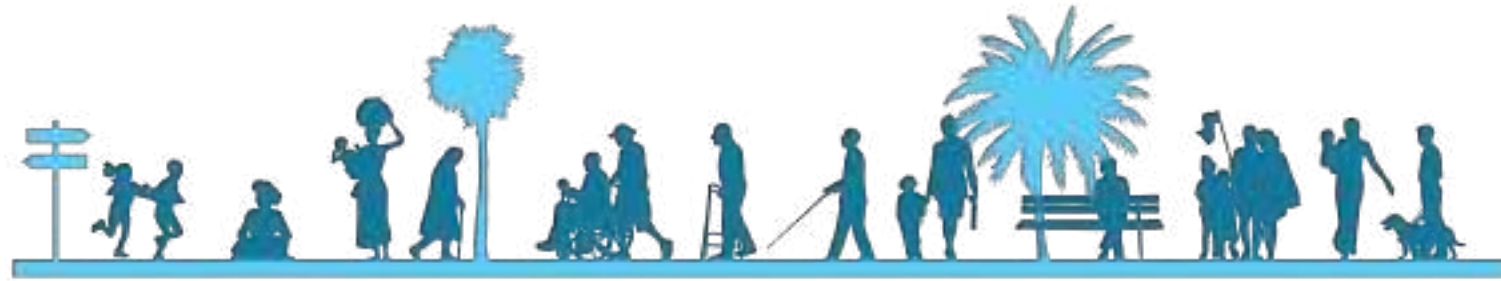
**People Doing  
Business**




# What is possible?



- Invite Street Activity
- Change Street Geometry
- Create Cycle Facilities
- Add Seating
- Add or Improve Pedestrian Crossings
- Add Energy-Efficient Lighting
- Improve Signals
- Enhance Enforcement
- Organize Transit
- Integrate Public Artwork
- Connect Walking Networks
- Upgrade Materials
- Reduce Speed Limits
- Add Green Infrastructure
- Provide Street Furniture
- Include Wayfinding
- Activate Ground Floors
- Provide Climate Protection

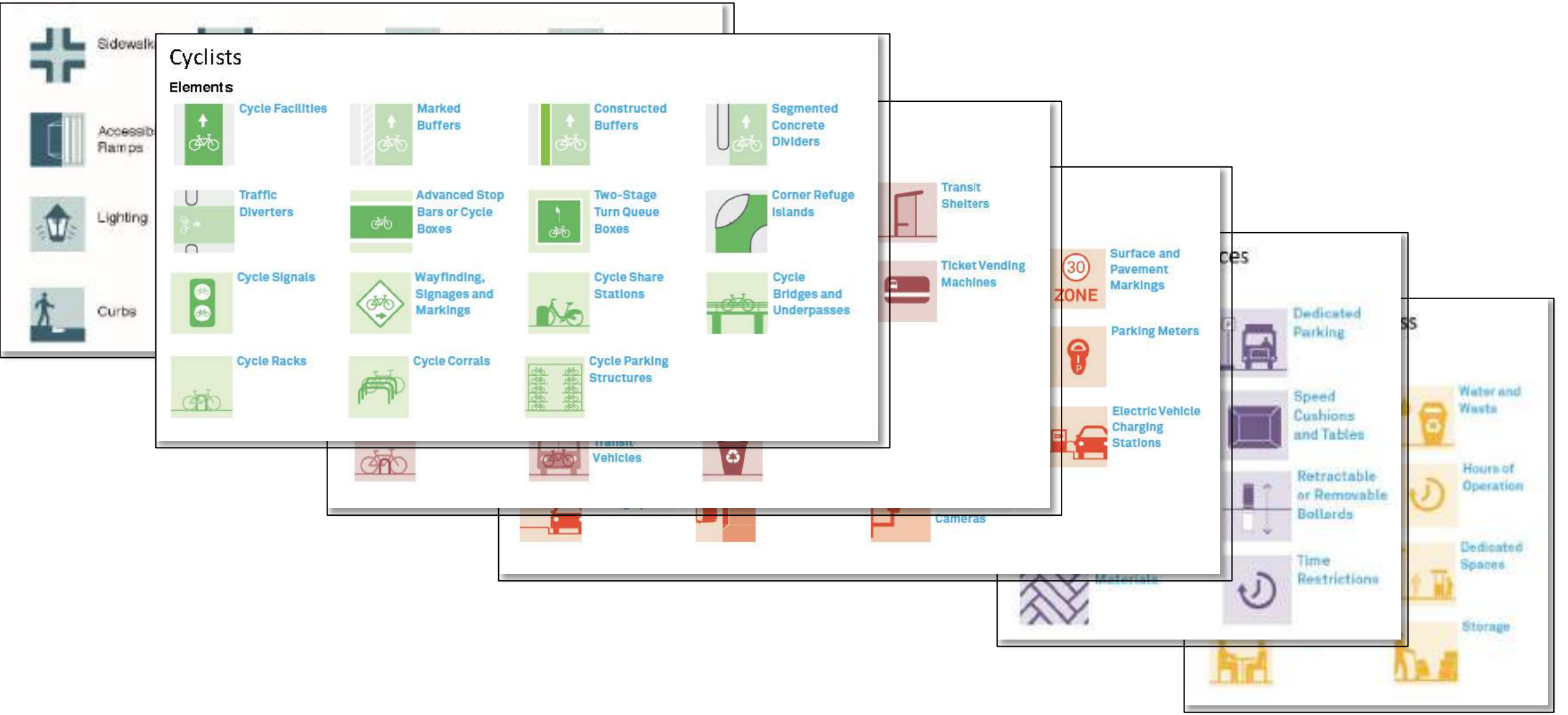


# Geometries and dimensions

 Pedestrians
  Cyclists
  Transit Riders
  Motorists
  Freight Operators and Service Providers
  People Doing Business



# Elements and features



**Cyclists**

**Elements**

- Cycle Facilities
- Marked Buffers
- Constructed Buffers
- Segmented Concrete Dividers
- Traffic Diverters
- Advanced Stop Bars or Cycle Boxes
- Two-Stage Turn Queue Boxes
- Corner Refuge Islands
- Cycle Signals
- Wayfinding, Signages and Markings
- Cycle Share Stations
- Cycle Bridges and Underpasses
- Cycle Racks
- Cycle Corrals
- Cycle Parking Structures




- Transit Shelters
- Ticket Vending Machines
- Transit Vehicles
- Cameras

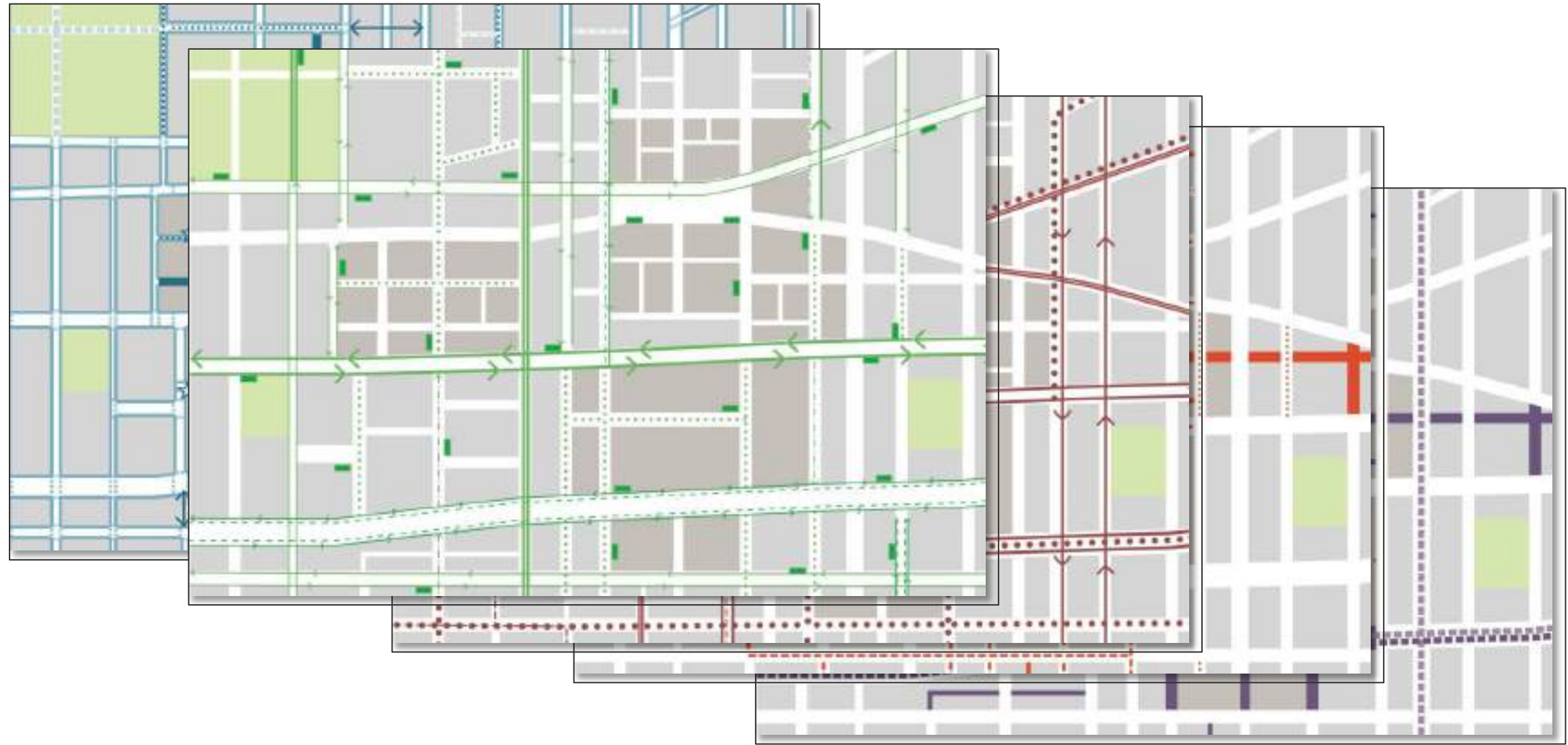
- Surface and Pavement Markings
- Parking Meters
- Electric Vehicle Charging Stations

- Dedicated Parking
- Speed Cushions and Tables
- Retractable or Removable Bollards
- Time Restrictions

- Water and Waste
- Hours of Operation
- Dedicated Spaces
- Storage

# How to approach at the network scale

-  Pedestrians
-  Cyclists
-  Transit Riders
-  Motorists
-  Freight Operators and Service Providers
-  People Doing Business



# Cyclists

Redefine the Cyclist



# Cyclists

## Designing for All Ages and Ability



# Cyclists

## Types: Speed, Variations and Dimensions

*Children and families*

*Commuter*

*Recreational cyclists*



0 km/h

10 km/h

20 km/h

> 30 km/h

*Interested but concerned*

**Confident**

**Fearless**



# Cycle Facilities



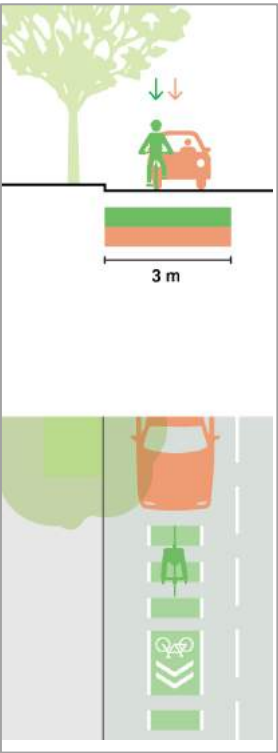
**Curb Zone**

**Cycle Lane**

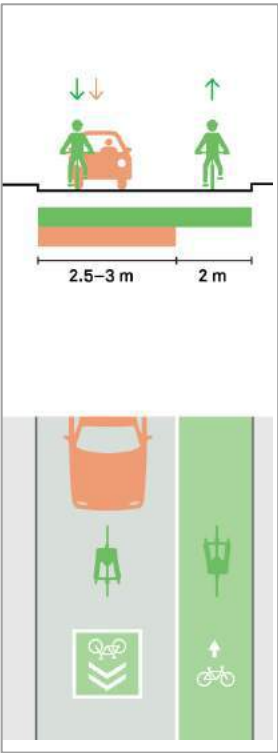
**Buffer Zone**

# Cycle Facilities

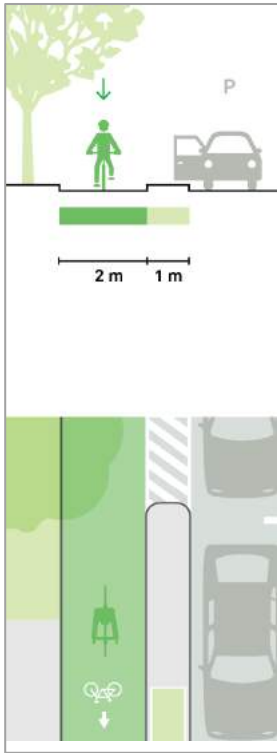
## Geometry



Cycle Street



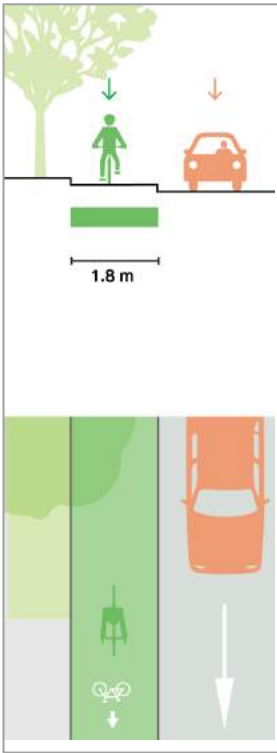
Contraflow Cycle Street



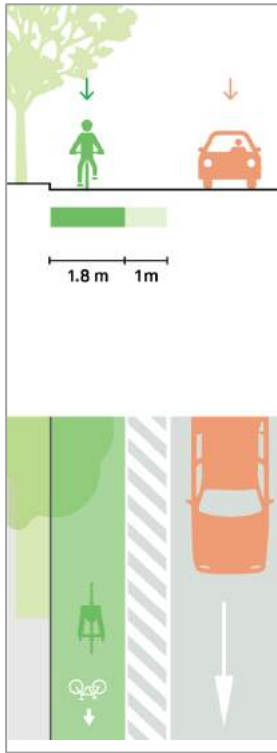
Protected Cycle Track



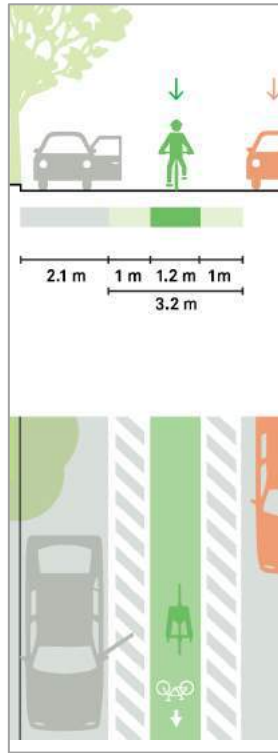
Bidirectional Cycle Track



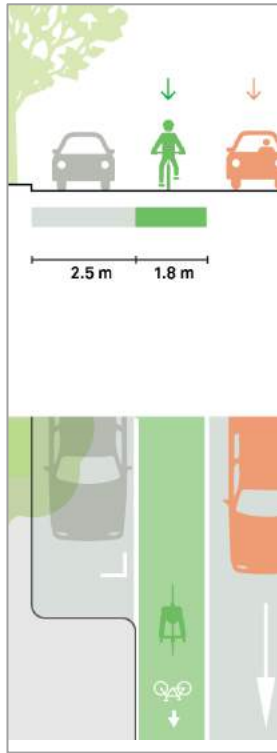
Raised Cycle Track



Curbside Buffered Cycle Lane



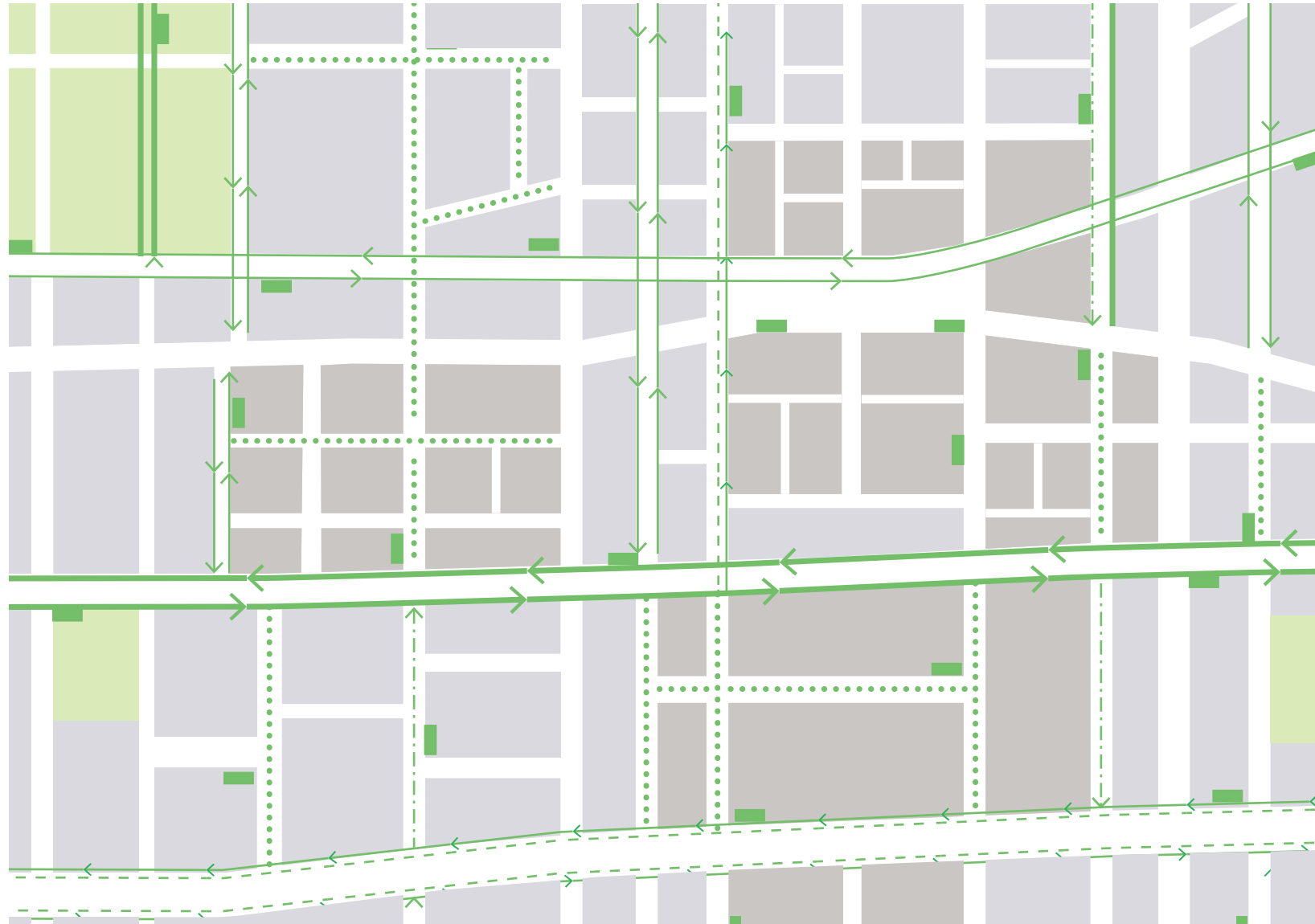
Buffered Cycle Lane



Conventional Cycle Lane

# Bicycle Networks

## Key Network Considerations



- Safe
- Connected
- Comfortable

- ..... Cycle street
- > Cycle lane
- - - -> Contraflow cycle lane
- - - ->> Buffered cycle track
- >> One-way cycle lane
- Two-way cycle track
- Cycle share station

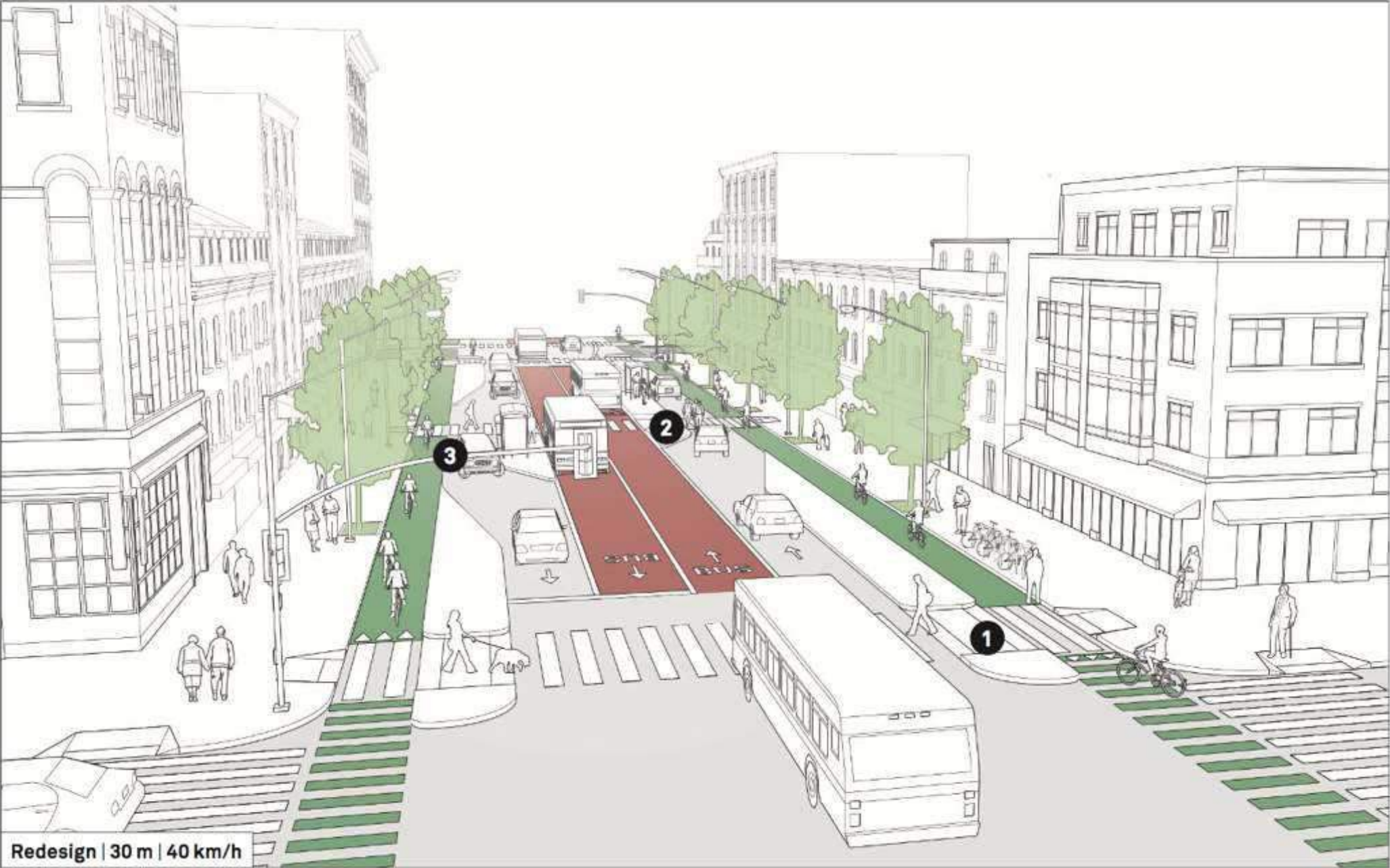
# Central Two-Way Streets



Existing | 30 m | 60 km/h

Before

# Central Two-Way Streets



Redesign | 30 m | 40 km/h

After

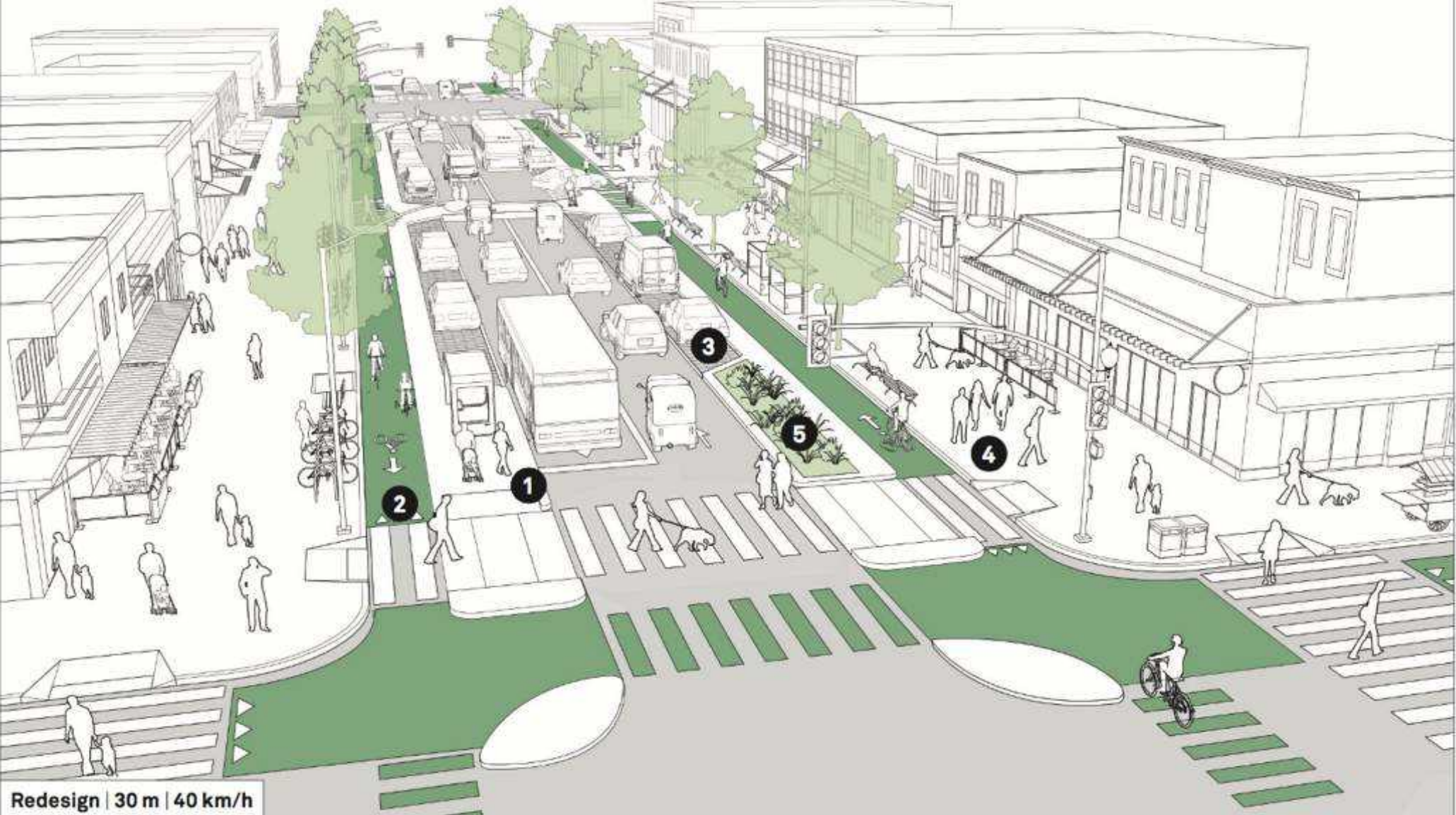
# Neighborhood Main Streets



Existing | 30 m | 60 km/h

Before

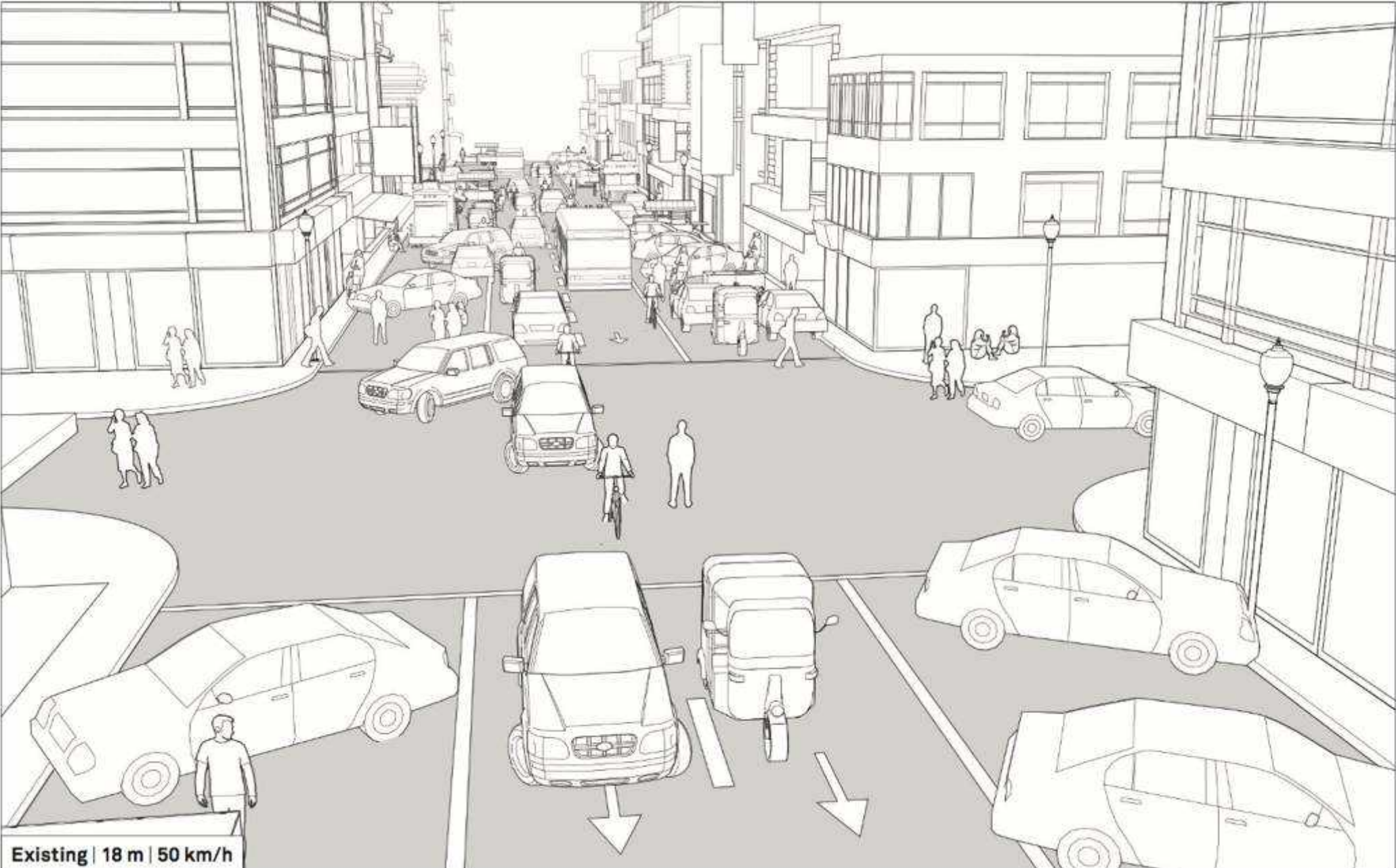
# Neighborhood Main Streets



Redesign | 30 m | 40 km/h

After

# Residential Streets



Before

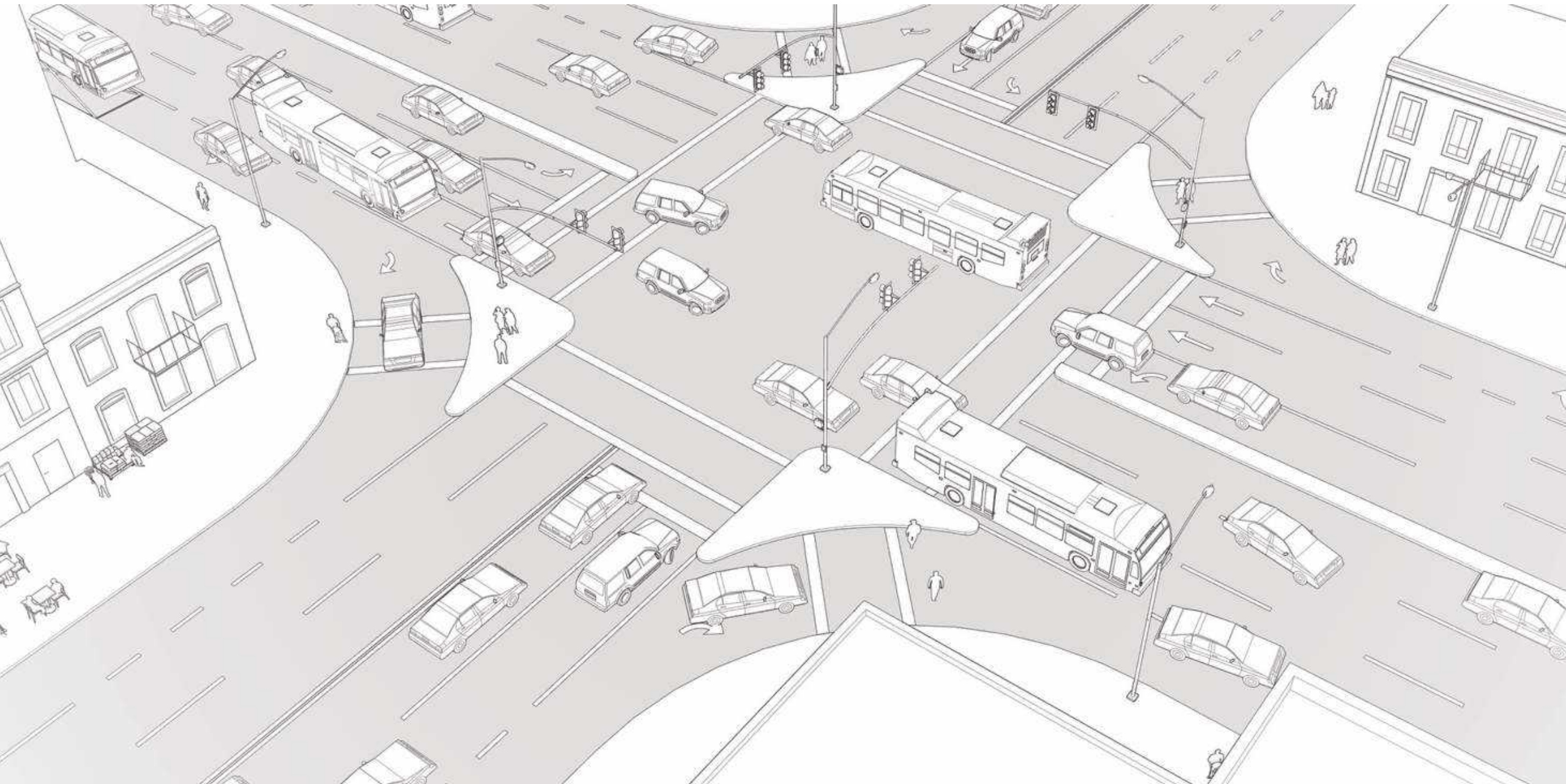


# Local Streets

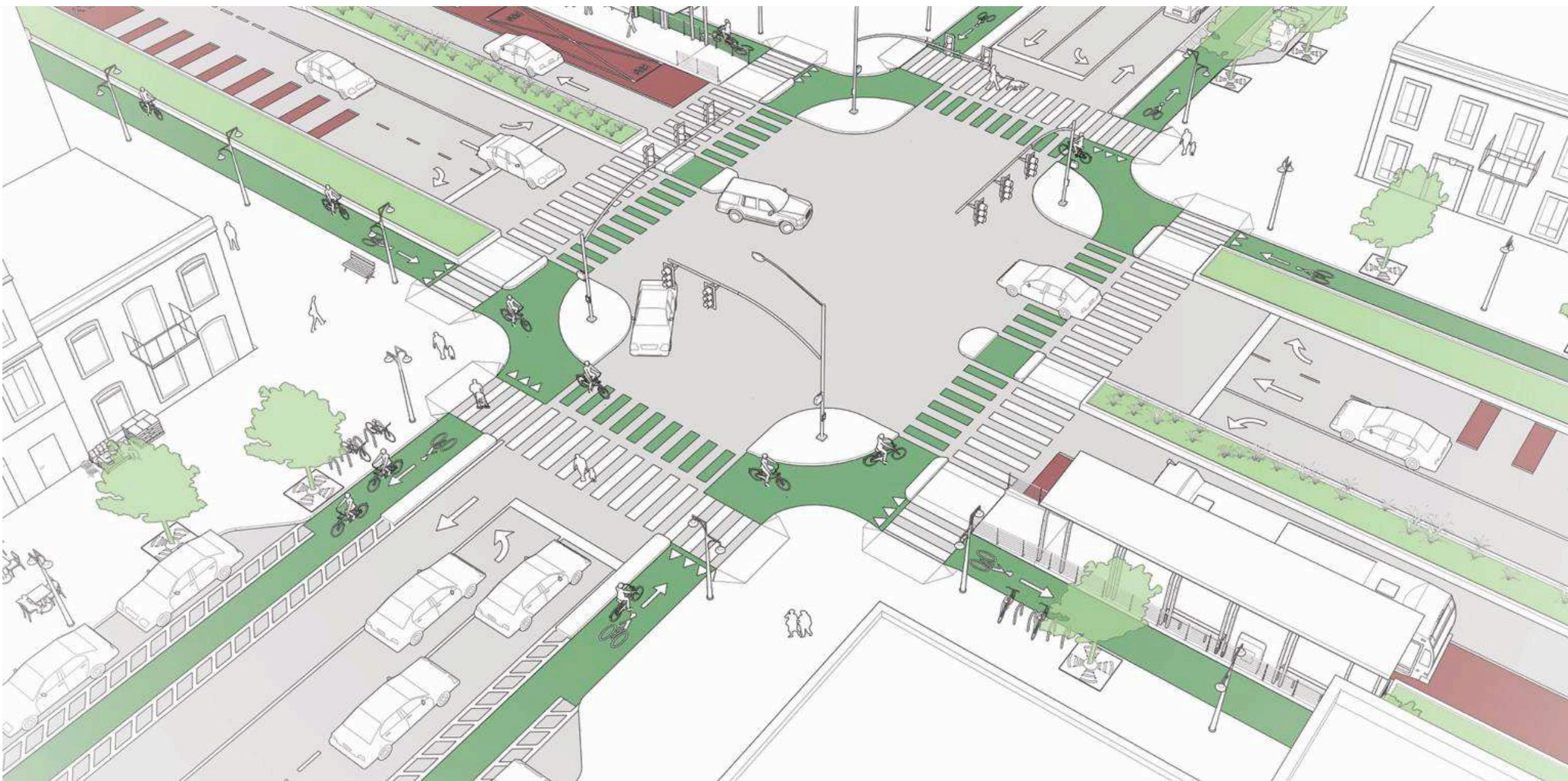


After

# Protected Intersections



# Protected Intersections



# Addis Ababa Ethiopia



# Fortaleza Brazil



# Bogotá Colombia



# São Paulo Brazil



# Mumbai India



Global  
Designing  
Cities  
Initiative



# Policy and Design Guidance



# Capacity Building and Community Engagement



# Interventions and Transformations



# Metric Collection and Evaluation

# Addis Ababa Ethiopia



# Fortaleza Brazil



# Bogotá Colombia



# Addis Ababa Ethiopia



# Fortaleza Brazil



# Bogotá Colombia



**Emerging  
Cycling  
Movement**

# Addis Ababa Ethiopia



# Fortaleza Brazil



# Bogotá Colombia



**Emerging  
Cycling  
Movement**

**Progressing  
Cycling  
Momentum**



# Addis Ababa Ethiopia



# Fortaleza Brazil



# Bogotá Colombia



**Emerging  
Cycling  
Movement**

**Progressing  
Cycling  
Momentum**

**Reinforcing  
Cycling  
Culture**

# Addis Ababa

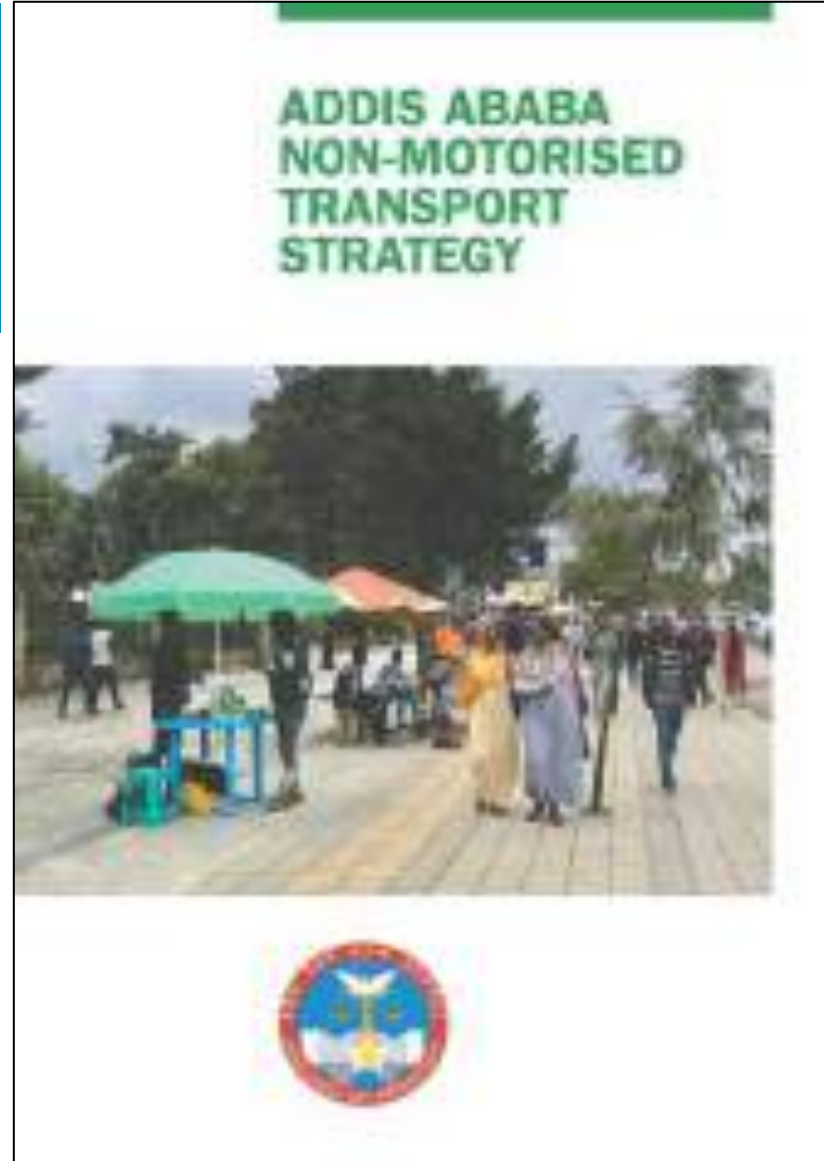
(Ethiopia)



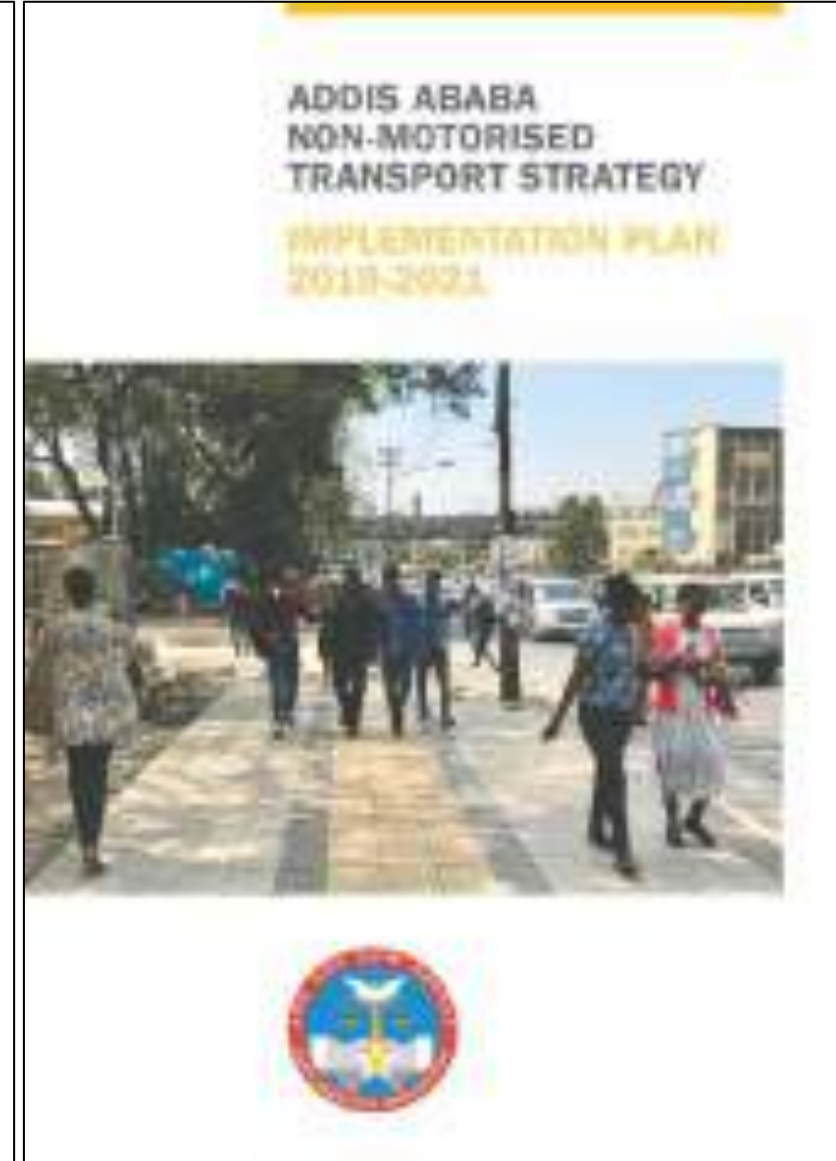
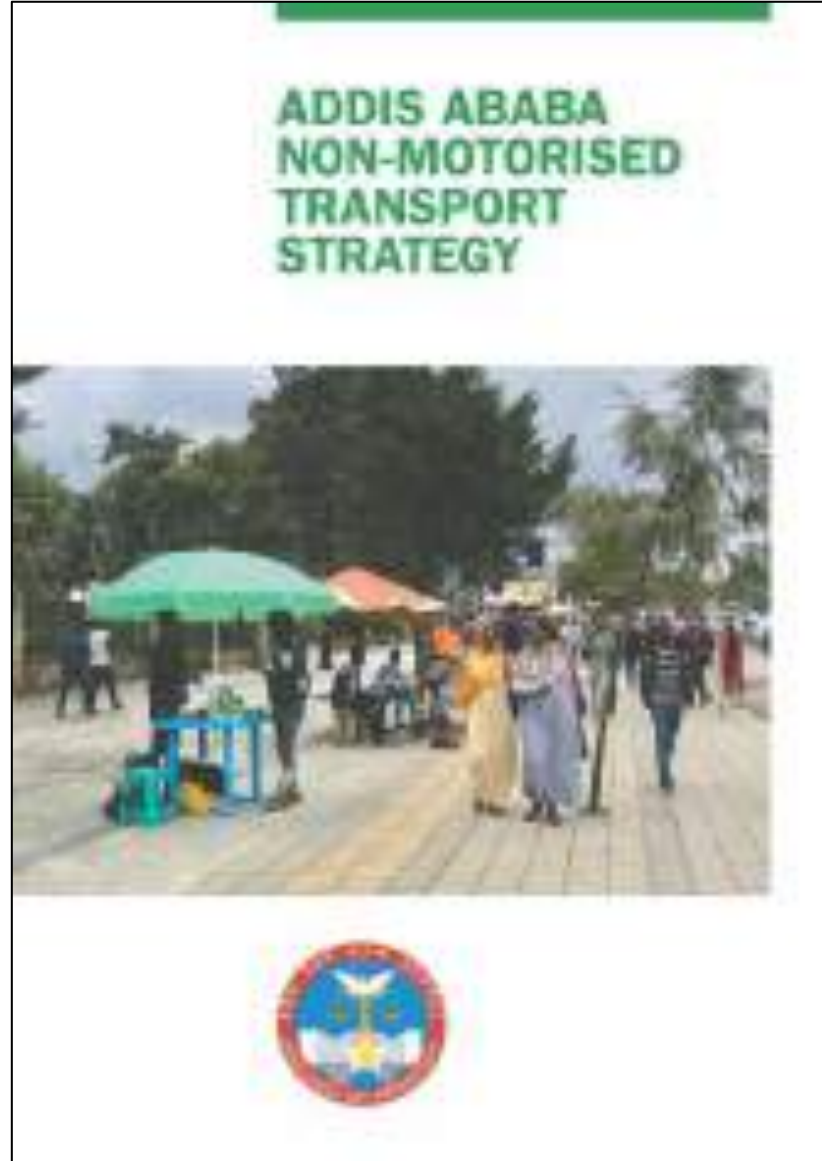
*Objective:*  
**60%** of total  
trips through  
NMT by **2021**

*Objective:*  
**200 kms** of  
cycling facilities  
by **2028**

# Visions and Goals



# Action Items and Strategies



# Addis Ababa | Ethiopia

## Open Streets Days as a Catalyst for Cycling

**መንገድ ለሰው!**

**ከተሽከርካሪ ነጻ ቀን**

**ግንቦት 4 ቀን 2011 ዓ.ም ለ6ኛ ጊዜ ይከበራል**

ከብሔራዊ ቲያትር - ሜክሲኮ አደባባይ -  
ልደታ ፍርድ ቤት ከተሽከርካሪ ነጻ ይሆናሉ  
ሰዓት: ከጠዋቱ 1:30 እስከ ከቀኑ 6:00

**በዚህ ዝግጅት**

- የአካል ብቃት እንቅስቃሴዎች ይደረጋሉ፤
- የእግር ጉዞ ይከናወናል፤
- የብስክሌት ውድድር ይደረጋል፤
- የሰርከሰና የባህል ትርጉሞች ይቀርባሉ፤
- የእግር ኳስ ውድድር ይከናወናል፤
- የስኬቲንግ ውድድር ይደረጋል፤
- በፍላጎት ላይ የተመሰረተ የጤና ምርመራዎች ይደረጋሉ፤

**በዚህ ዝግጅት ላይ ተሳታፊ እንዲሆኑ ተገልግዎ**



የአዲስ አበባ ከተማ መንገድ ትራፊክ ማኔጅመንት ኤጀንሲ  
Addis Ababa City Road Traffic Management Agency

**መንገድ ከሰው!**

ከመኪና ነጻ  
በሆነ  
መንገድ  
እንንቀሳቀስ!

**ግንቦት 4/2011  
12 ሰዓት - 7 ሰዓት**

ከልደታ ፍርድ ቤት - ሜክሲኮ  
ከሜክሲኮ - ብሔራዊ  
ከቤቴል - ኪዳነ ምኅረት  
ከሳፍሬ - ፊን  
ከለቡ መብራት - ጀም 1  
ከምኒልክ ሆስፒታል - 6 ኪሎ



WORLD  
RESOURCES  
INSTITUTE

# Addis Ababa | Ethiopia

Open Streets Day – Bike Training for Kids





# Addis Ababa | Ethiopia

Open Streets Day – Cycle Safety for All Ages



# Addis Ababa | Ethiopia

## Development of Policies and Framework

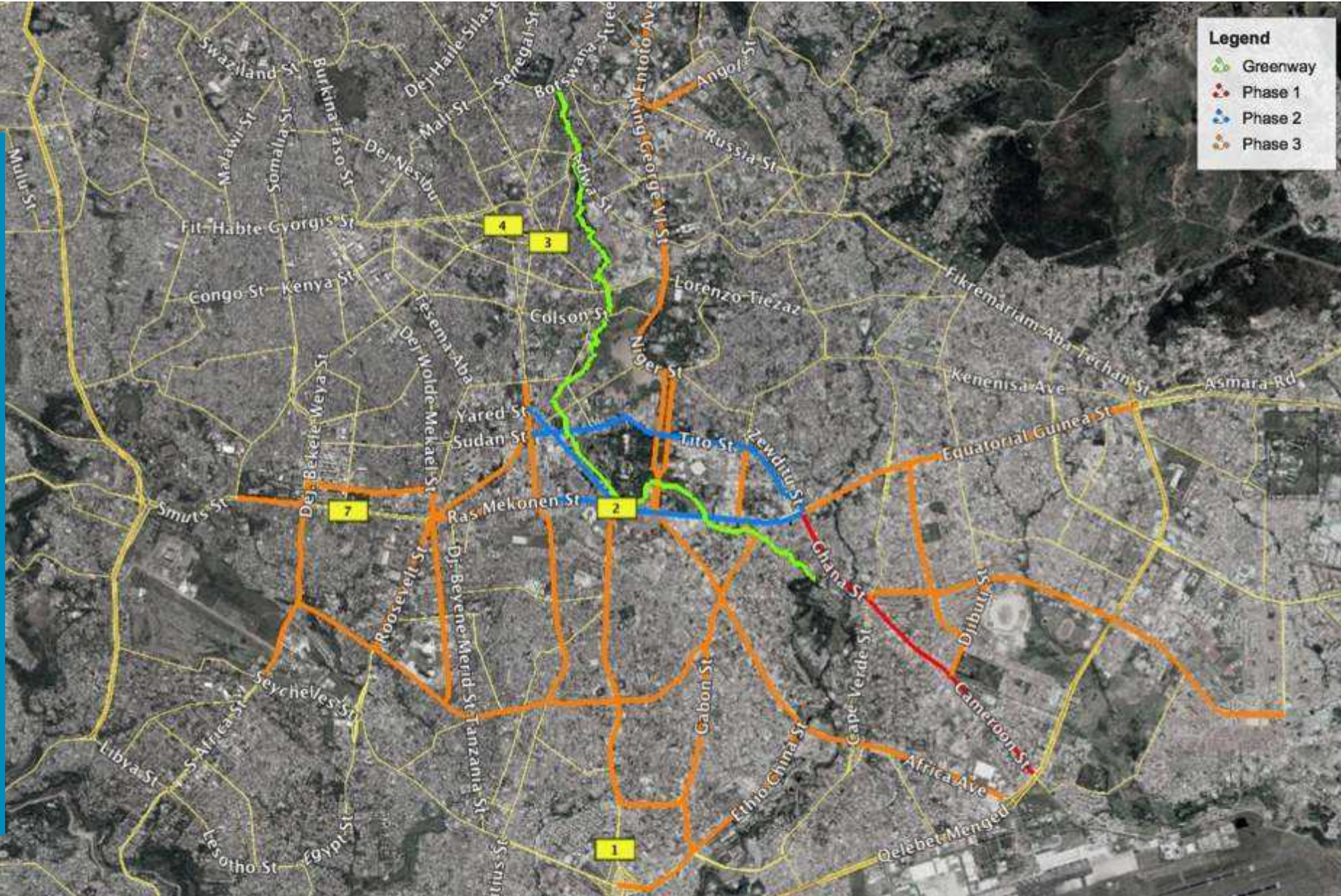
# Phasing

2020: 10km

2021: 20km

2022: 30km

2028: 200km



**Legend**

- Greenway
- Phase 1
- Phase 2
- Phase 3

# Addis Ababa | Ethiopia

## Cycling Infrastructure vs. Complete Street Transformations

Difficult to fit in a successful bike lane on many of Addis Ababa's streets, since all-round improvements to sidewalks, road surface, and parking are needed.

Implementation of a cycle network requires complete street transformations on many roads or sections thereof.



# Addis Ababa | Ethiopia

## Identified Street Typologies

### 1. THROUGH ROAD

- Separation of traffic modes
- Reduce conflicts
- Safe provisions at intersections



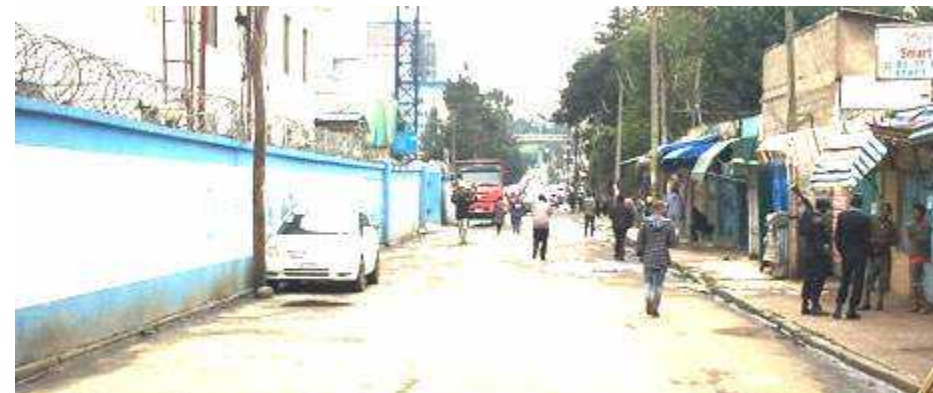
### 2. CONNECTOR ROAD

- Some separation of traffic modes
- Traffic calming at intersections
- Lower speed limits



### 3. LOCAL STREET

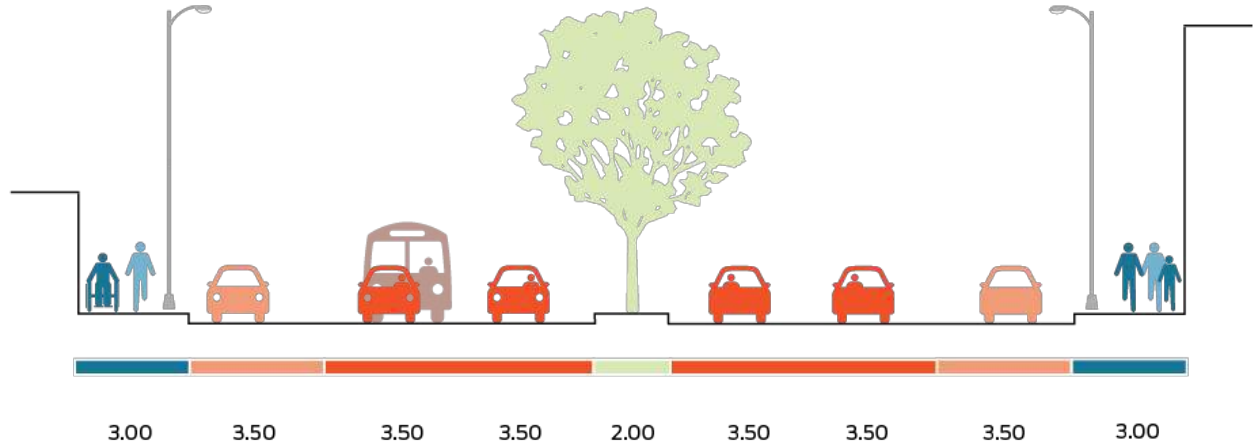
- Mixing of traffic modes
- Traffic calming
- On-street parking
- Very low speed limits



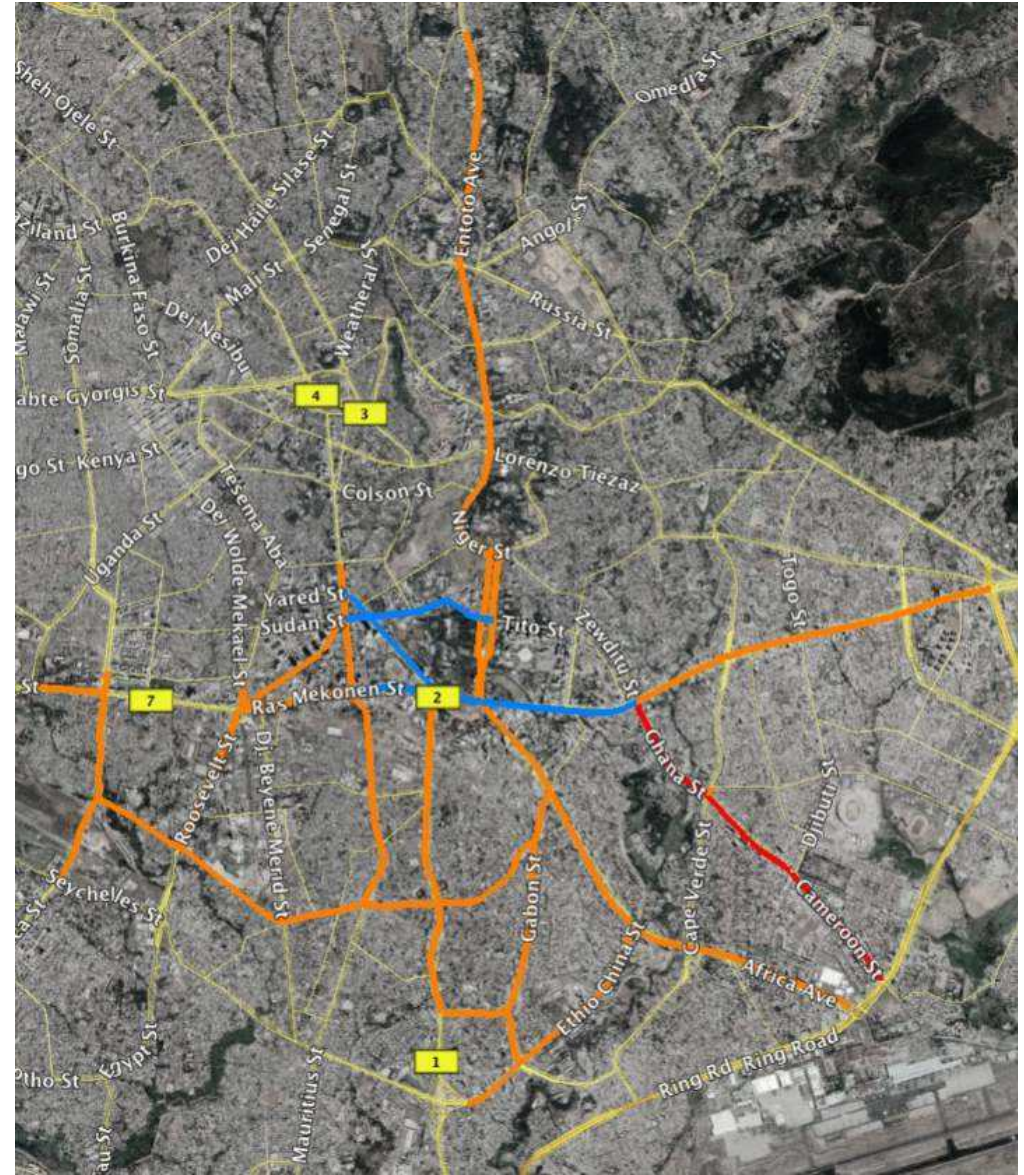
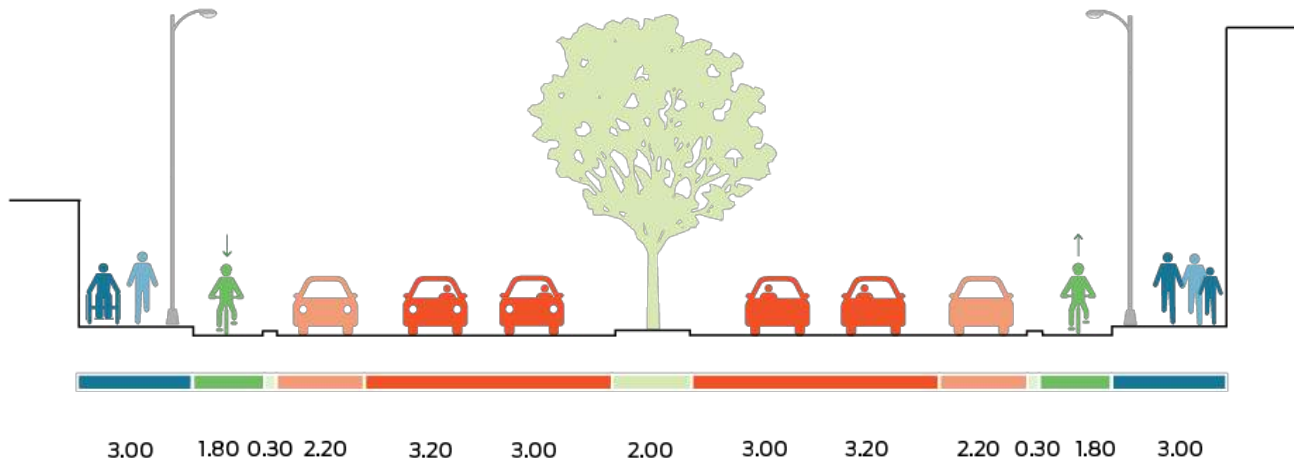
# Addis Ababa | Ethiopia

Cycle corridors on Through Roads (~30-40m)

EXISTING:



PROPOSED:





**Through Road | Vision | Before**

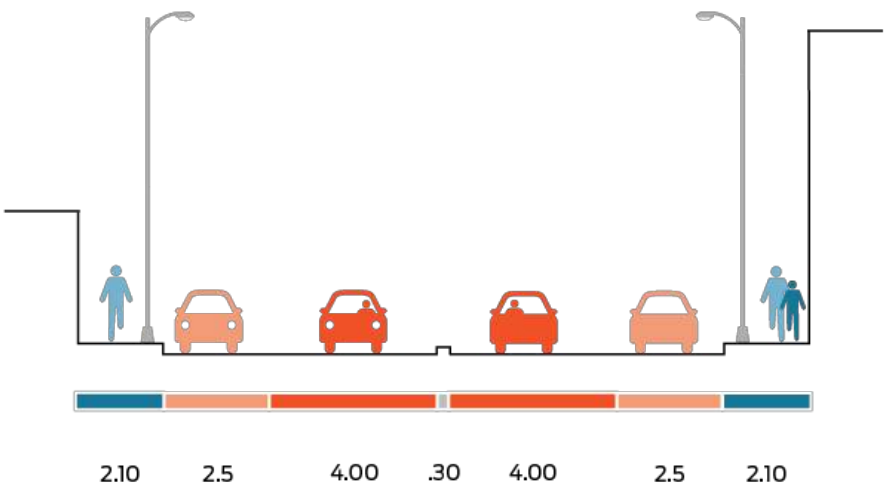


Through Road | Vision | After

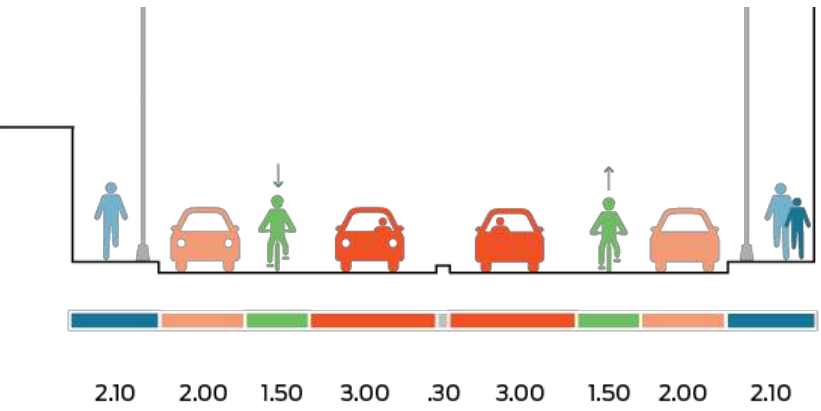
# Addis Ababa | Ethiopia

## Cycle corridors on Connector Streets (~18-30m)

EXISTING:



PROPOSED:







**Connector Street | Vision | Before**

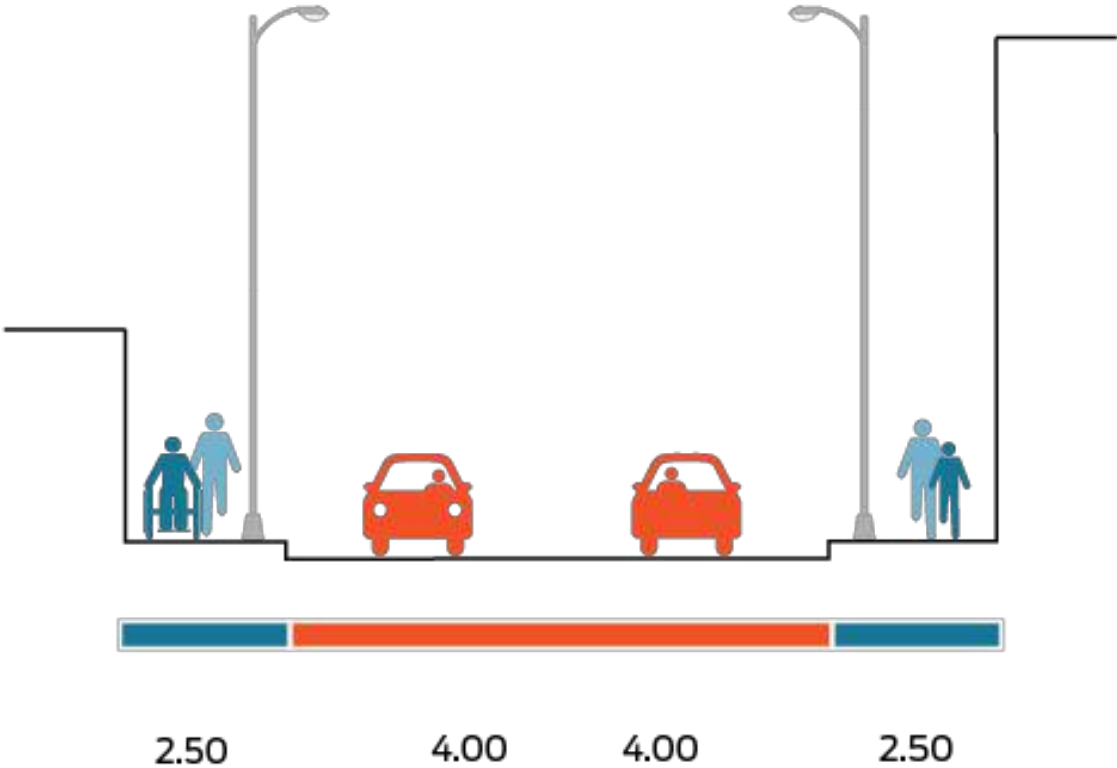


Connector Streets| Vision | After

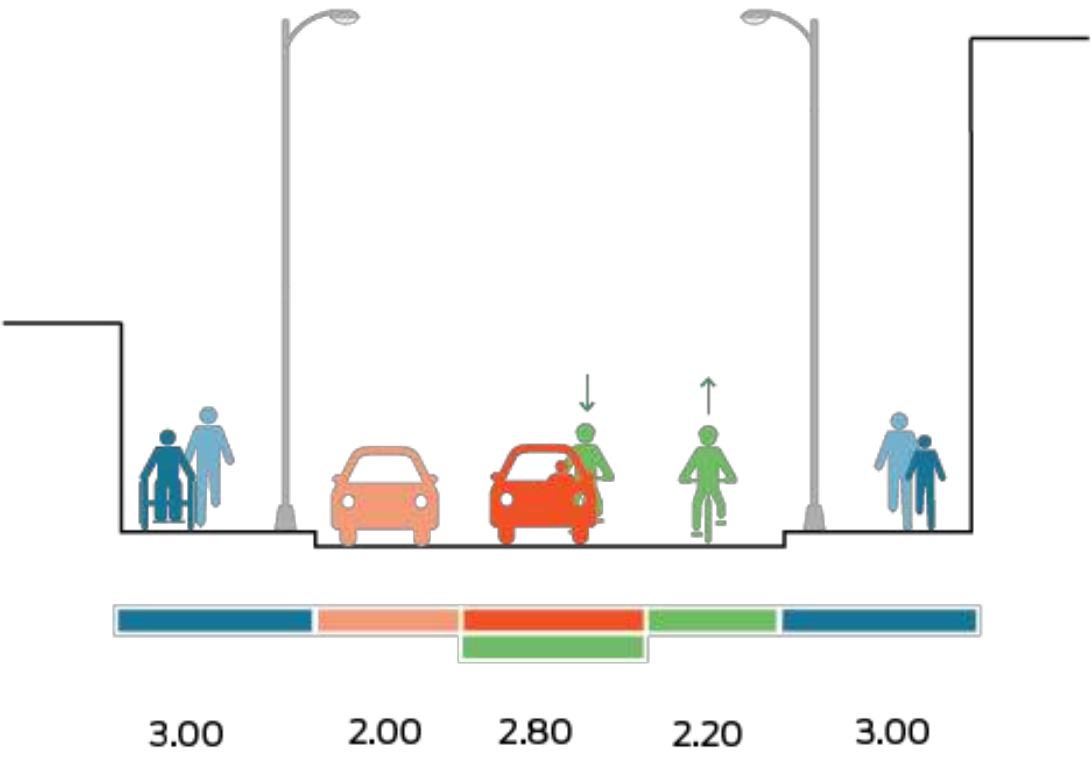
# Addis Ababa | Ethiopia

## Cycle corridors on Local Streets (<18m)

EXISTING:



PROPOSED:





Local Street | Vision | Before



Local Street | Vision | After

# Addis Ababa | Ethiopia

## Additional Considerations



Construction quality and maintenance



Curbside management and enforcement



Adequate pedestrian facilities to ensure safety for all



**Vision:**

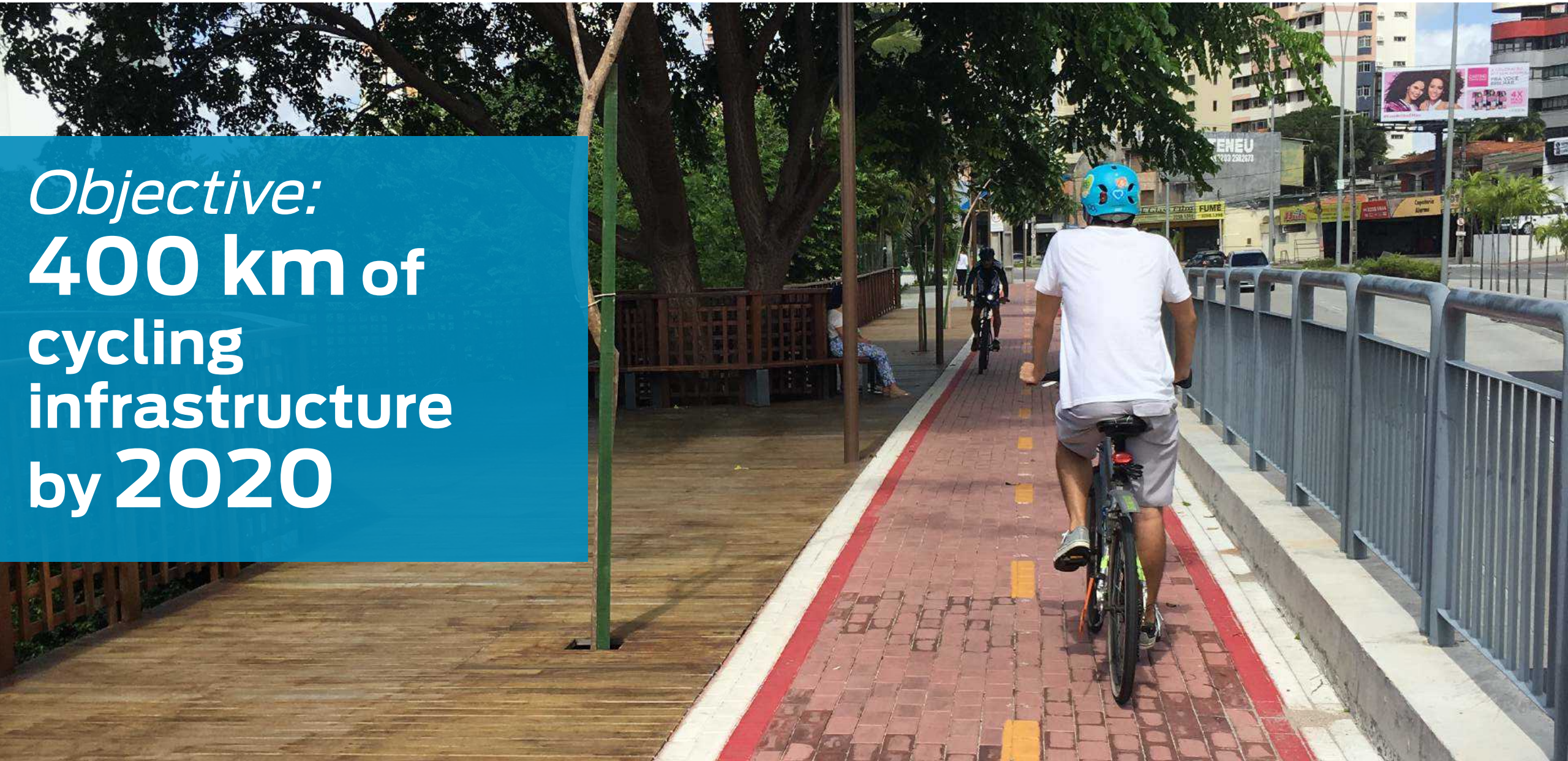
**By 2028**

**5% mode share  
by cycling**

# Fortaleza

(Brazil)





*Objective:*  
**400 km of  
cycling  
infrastructure  
by 2020**

# Fortaleza | Brazil

Comprehensive approach



**INSTITUTIONAL  
AND POLITICAL  
WILL**



**INFRASTRUCTURE**



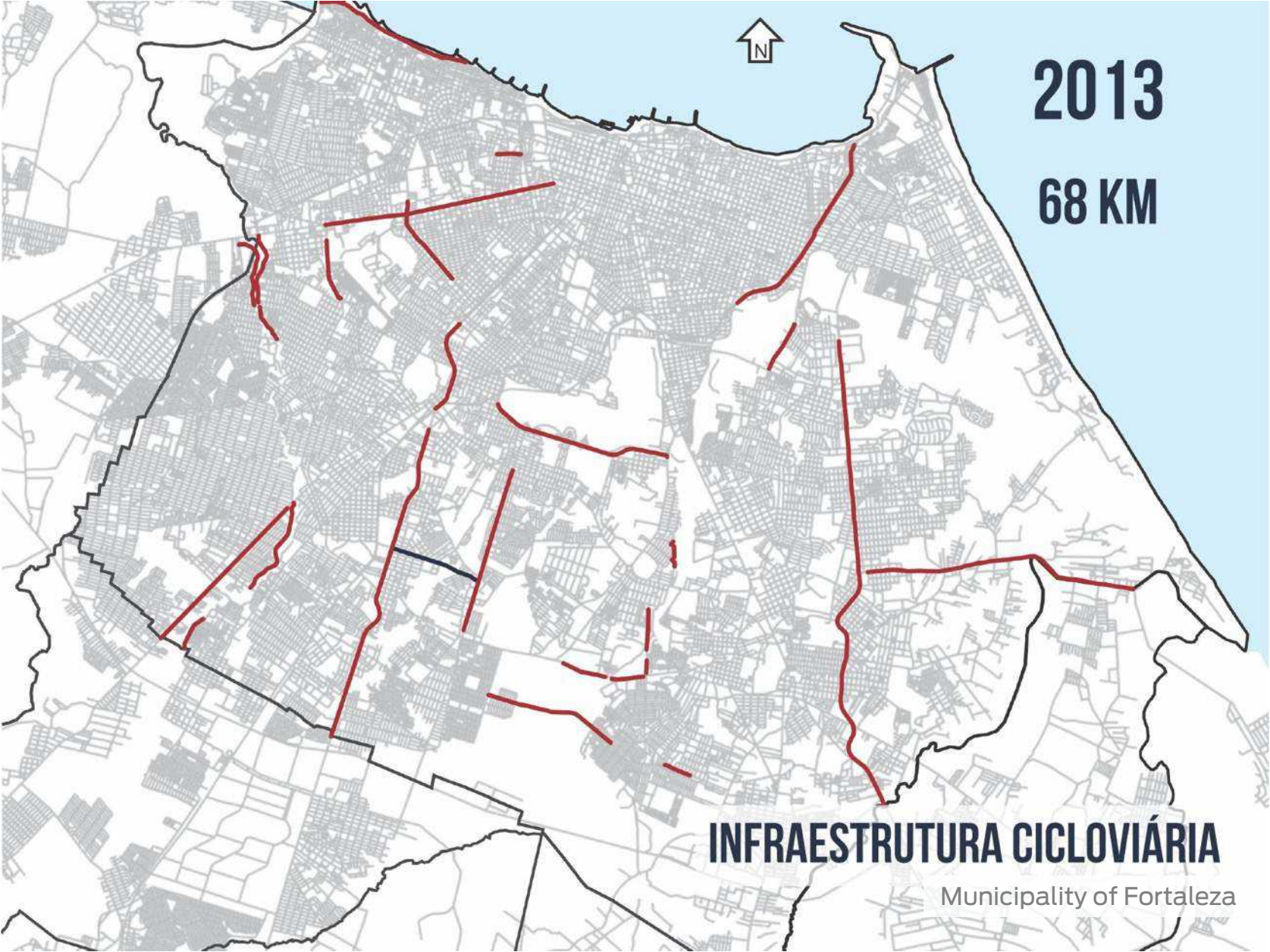
**BIKE SHARING**



**EDUCATION,  
COMMUNICATION,  
AND DATA**

# Fortaleza | Brazil

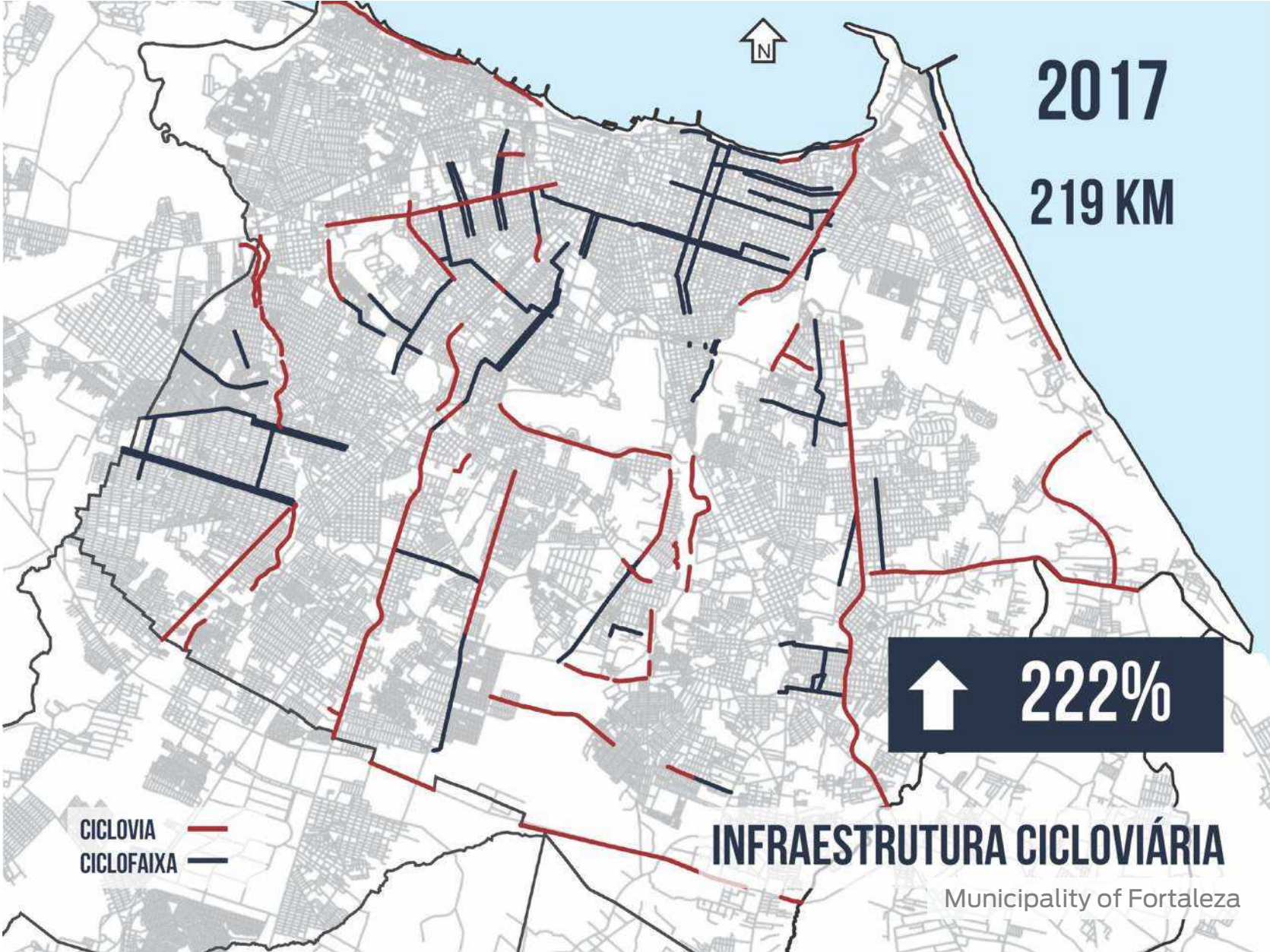
Bike infrastructure



# Fortaleza | Brazil

Bike infrastructure

Increase of  
**222%**  
in 4 years



# Fortaleza | Brazil

Bike infrastructure



# Fortaleza | Brazil

## Bike infrastructure



# Fortaleza | Brazil

## Bike infrastructure



NARROWING TRAFFIC LANES HAS THE  
POTENCIAL TO REDUCE UP TO

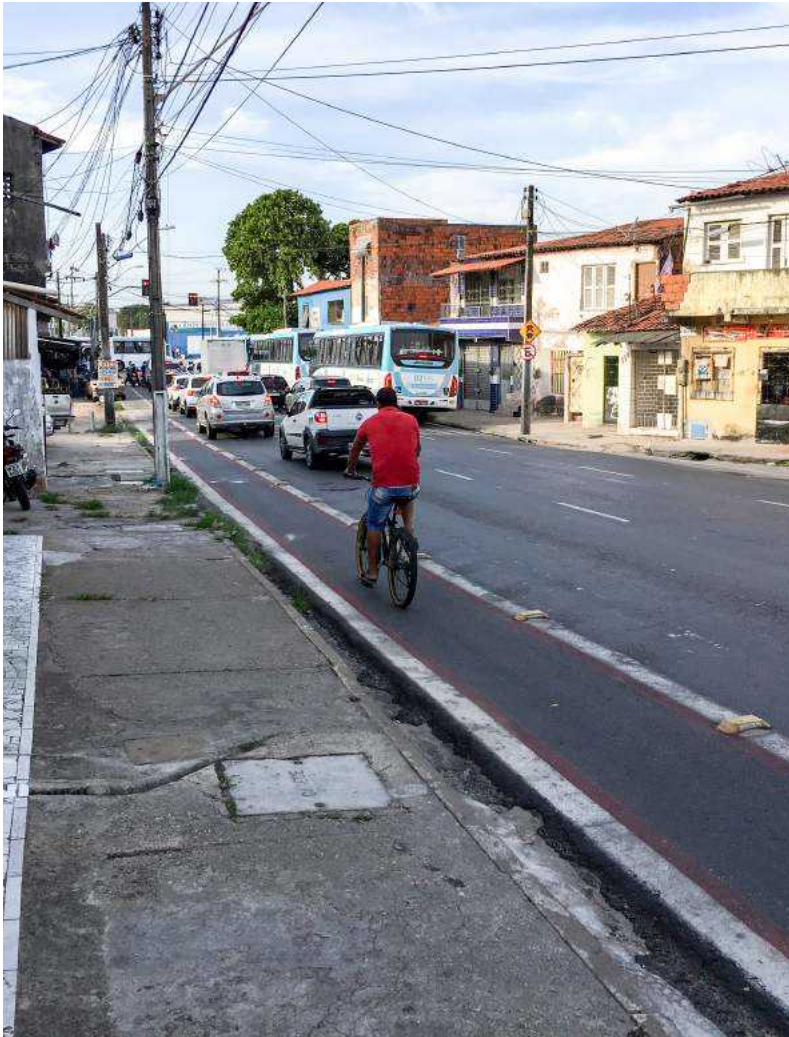
**30%**

ROAD CRASHES  
WITH VICTIMS

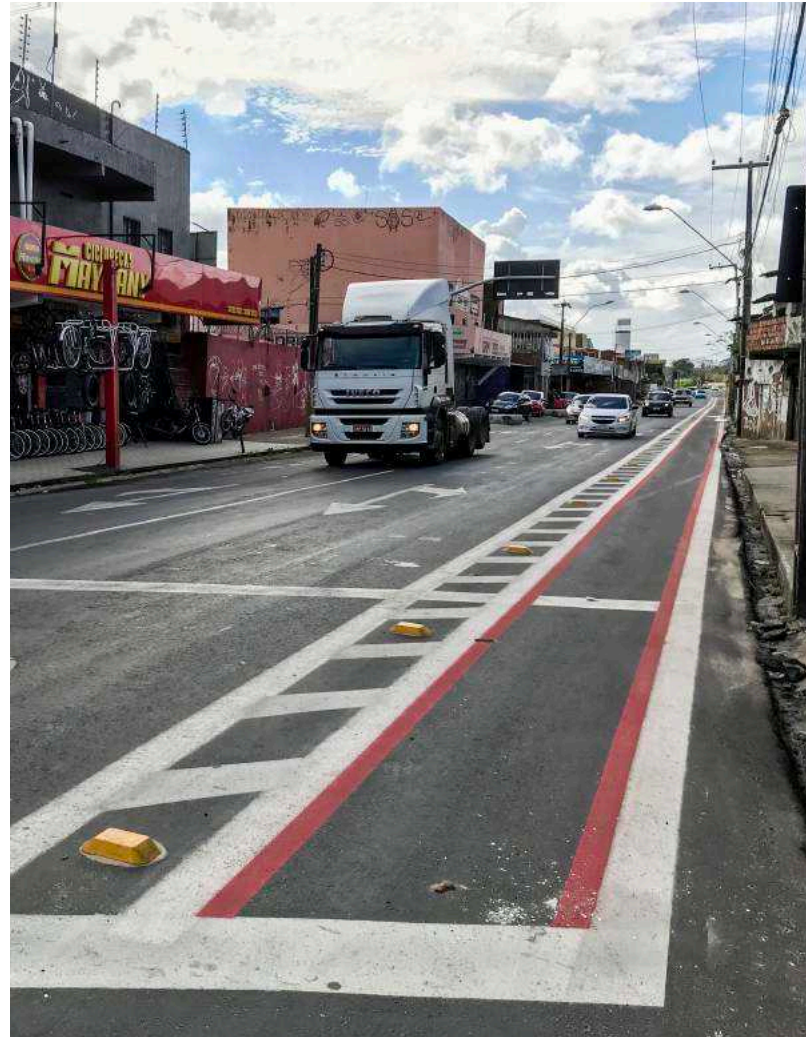


# Safety Perception

## Comparison - Three Scenarios



**Unprotected Cycle Lane**



**Buffered Cycle Lane**



**Buffered Cycle Lane + Flex Posts**

# Intercept Surveys with Cyclists

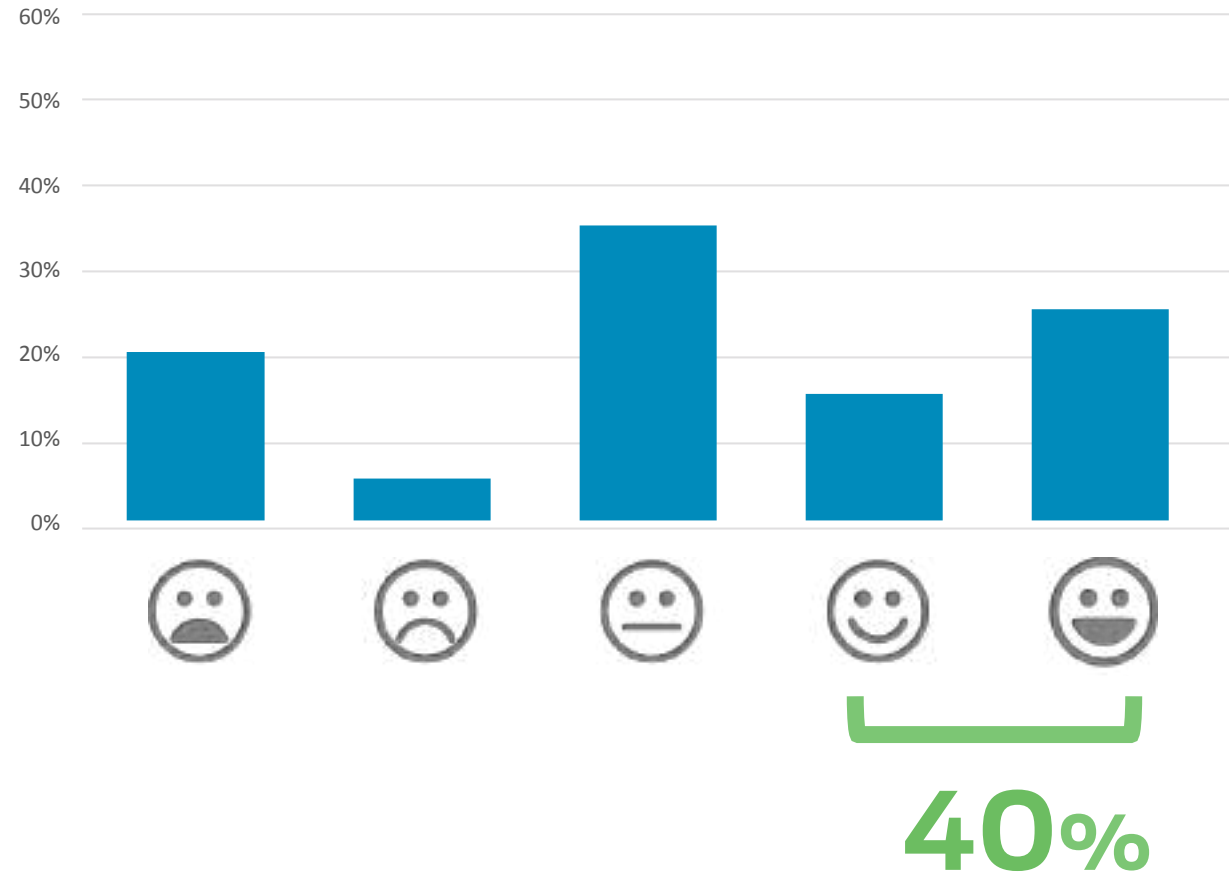


# Conventional Cycle Lane

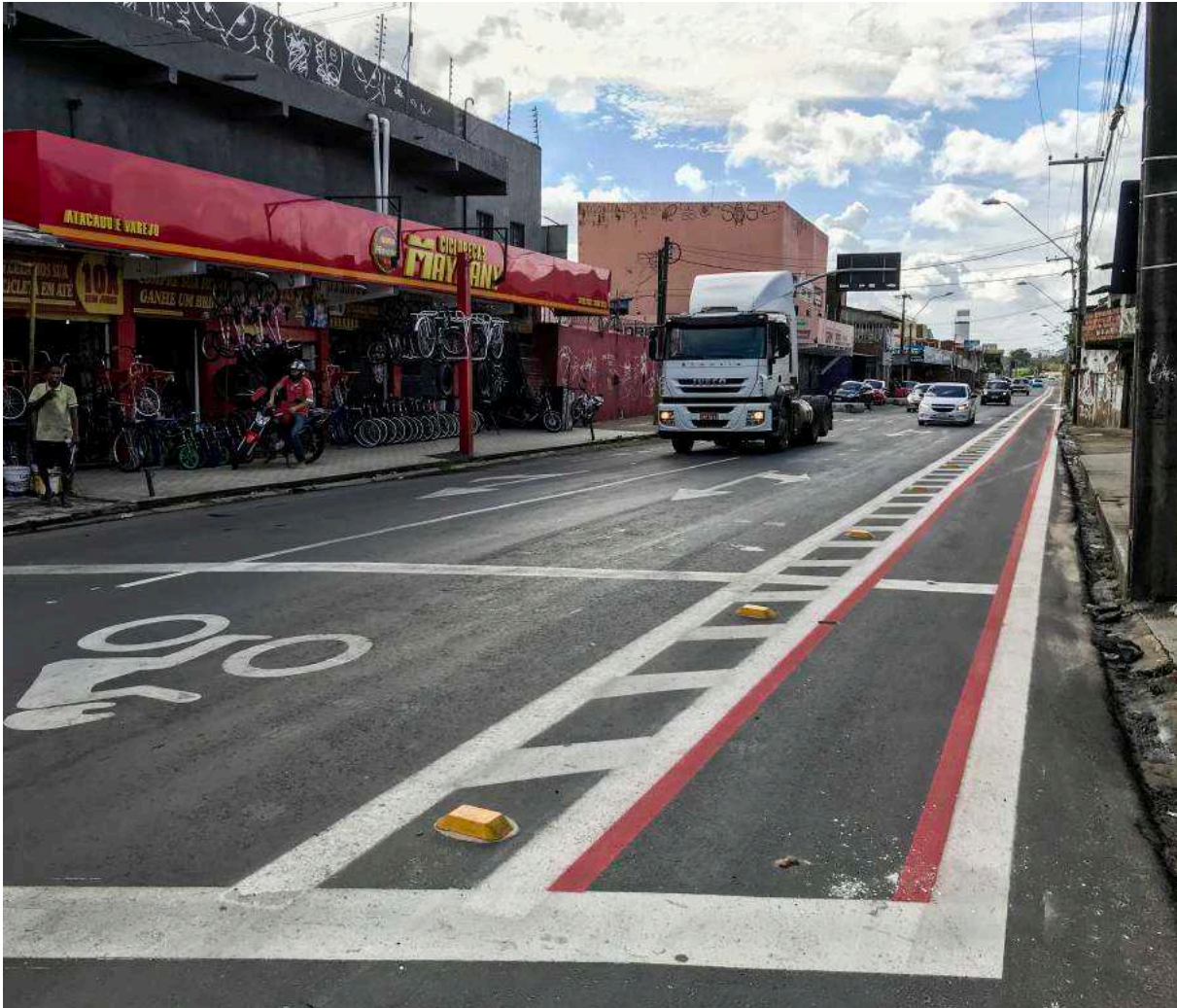


Raimundo Neri St.

*How safe did you feel riding within the last block?*

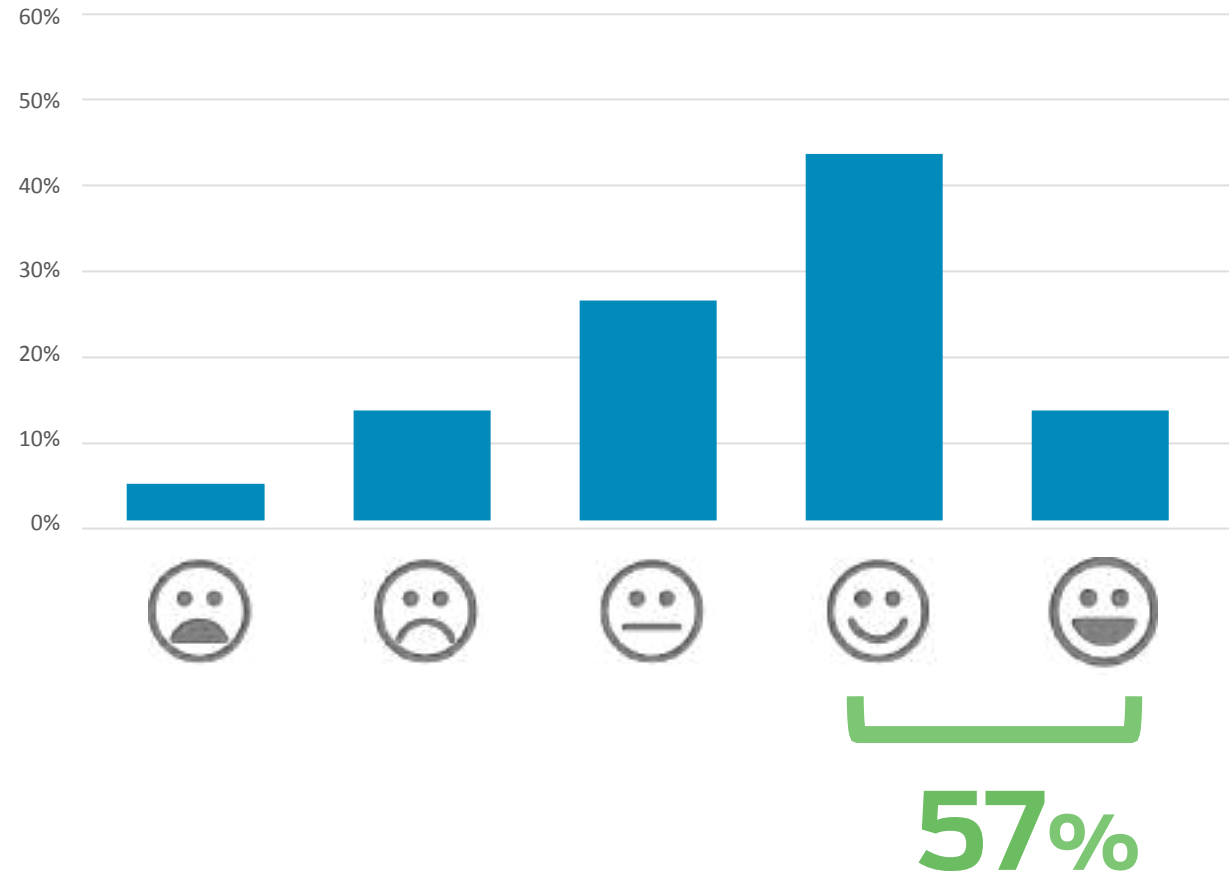


# Buffered Cycle Lane



Luiz Vieira Ave.

*How safe did you feel riding within the last block?*



# Buffered Cycle Lane + Flex Posts



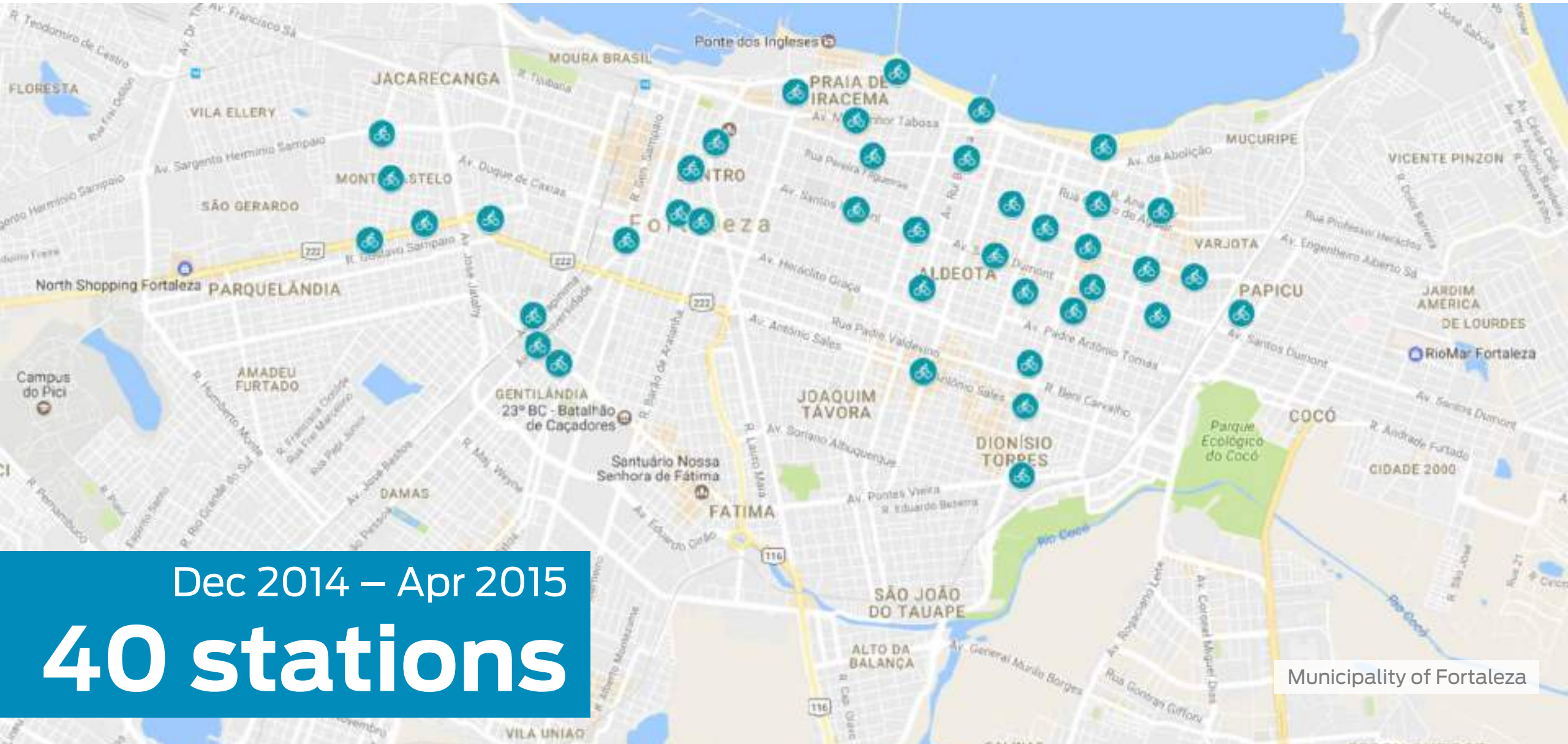
Av. Luiz Vieira

*How safe did you feel riding within the last block?*



# Fortaleza | Brazil

Bike sharing | Bicicletar

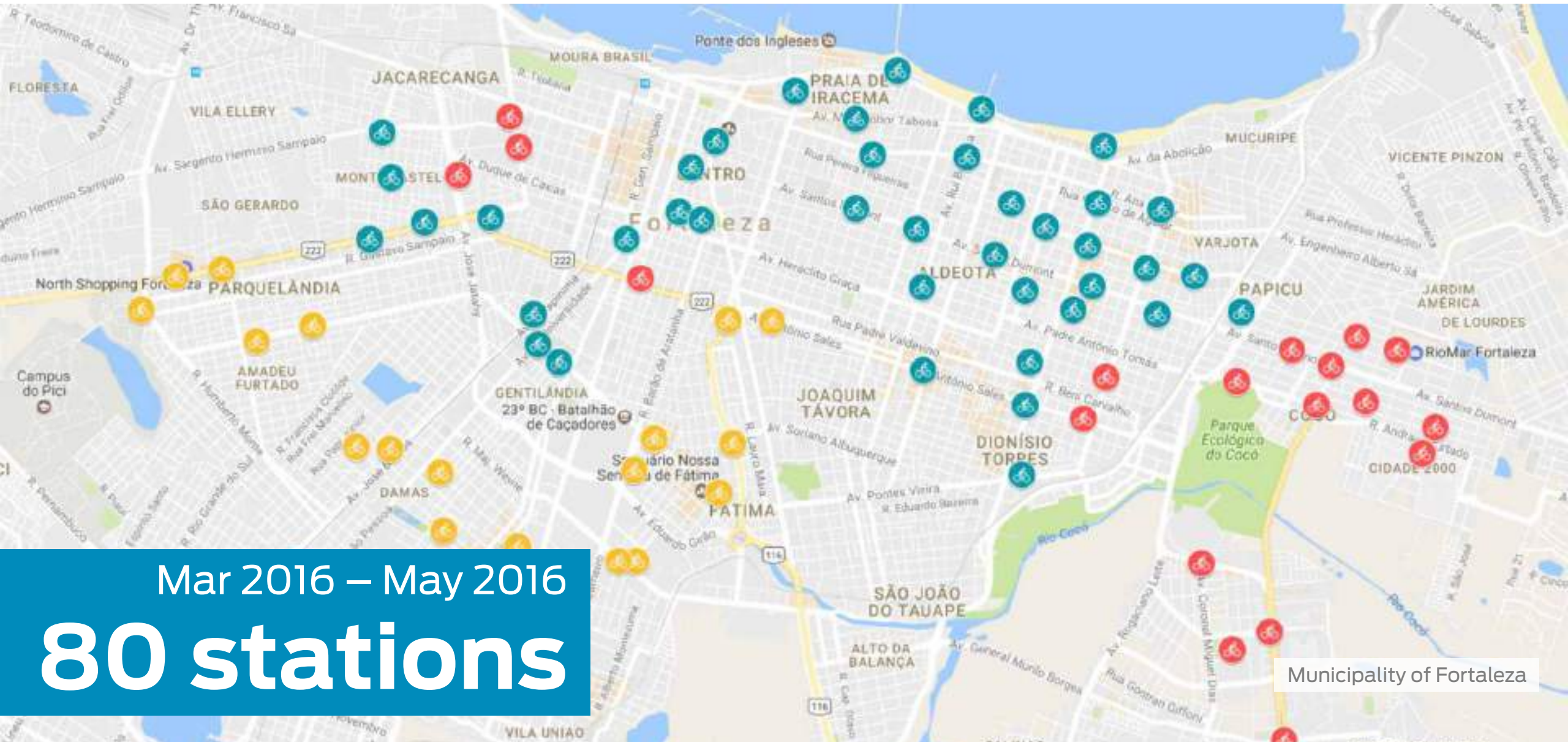


Dec 2014 – Apr 2015  
**40 stations**

Municipality of Fortaleza

# Fortaleza | Brazil

Bike sharing | Bicicletar



Mar 2016 – May 2016  
**80 stations**





# Integrated bike system



# Fortaleza | Brazil

Bike sharing | Bicicleta integrada

14 hours



Integrated public transit ticket

Register

Pick a bike

Drop the bike

# Fortaleza | Brazil

Bike sharing + Education | Mini biciletar



In 2017, more than  
**6,000 trips**



From 2011 to 2016

# 39.5%

# reduction

of crashes involving

# cyclists



# Vision:

The most  
**cyclable**  
city in Brazil

# Bogotá

(Colombia)



*Objective:*  
**10%** of total  
trips by bicycle  
by **2020**



# Bogotá | Colombia

## Evolution of the cycling network



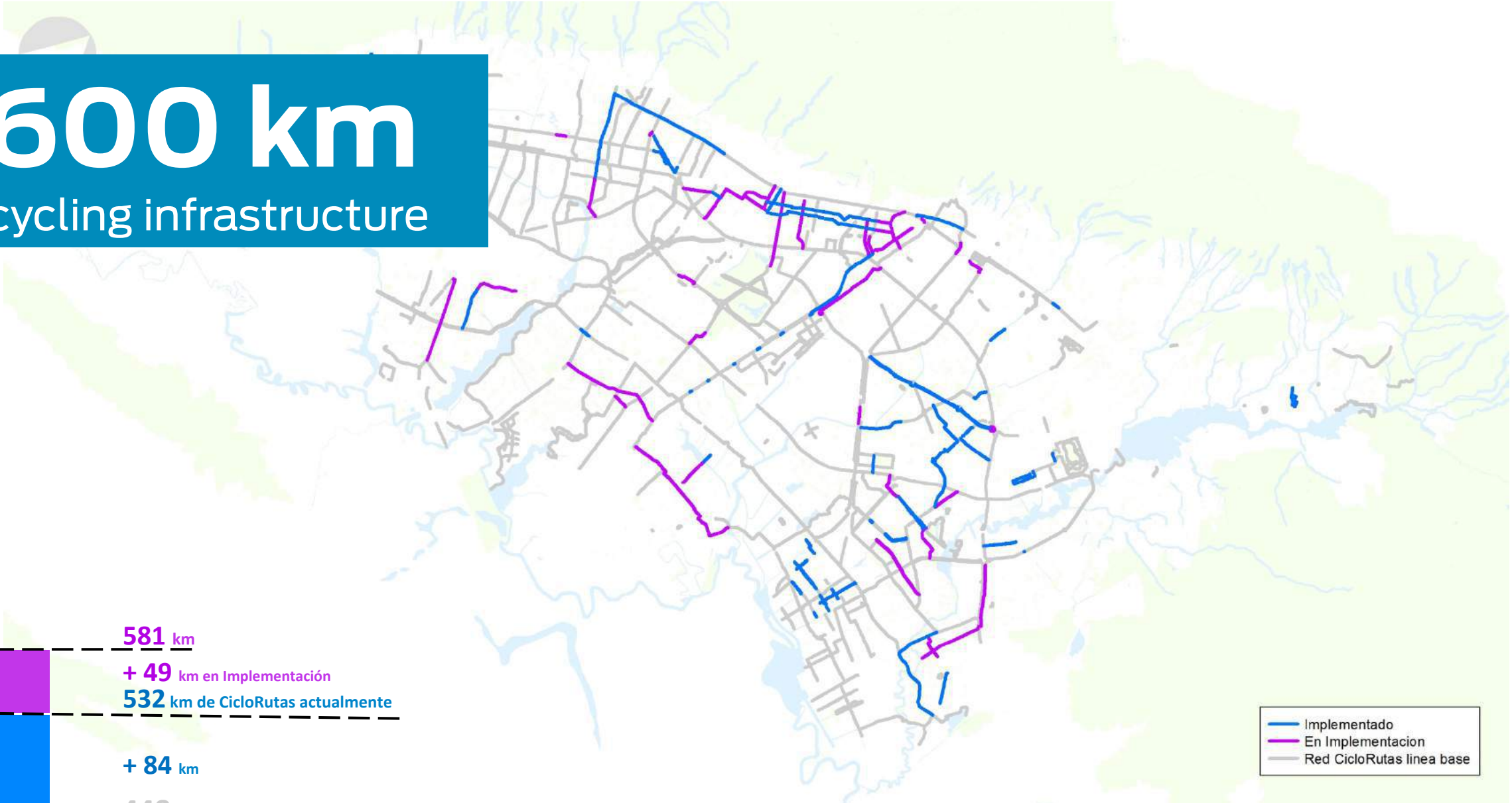
**448 km**  
of cycling infrastructure

— Red Ciclorutas línea base

# Bogotá | Colombia

Evolution of the cycling network

**~600 km**  
of cycling infrastructure



2019

**581 km**  
**+ 49 km en Implementación**  
**532 km de CicloRutas actualmente**

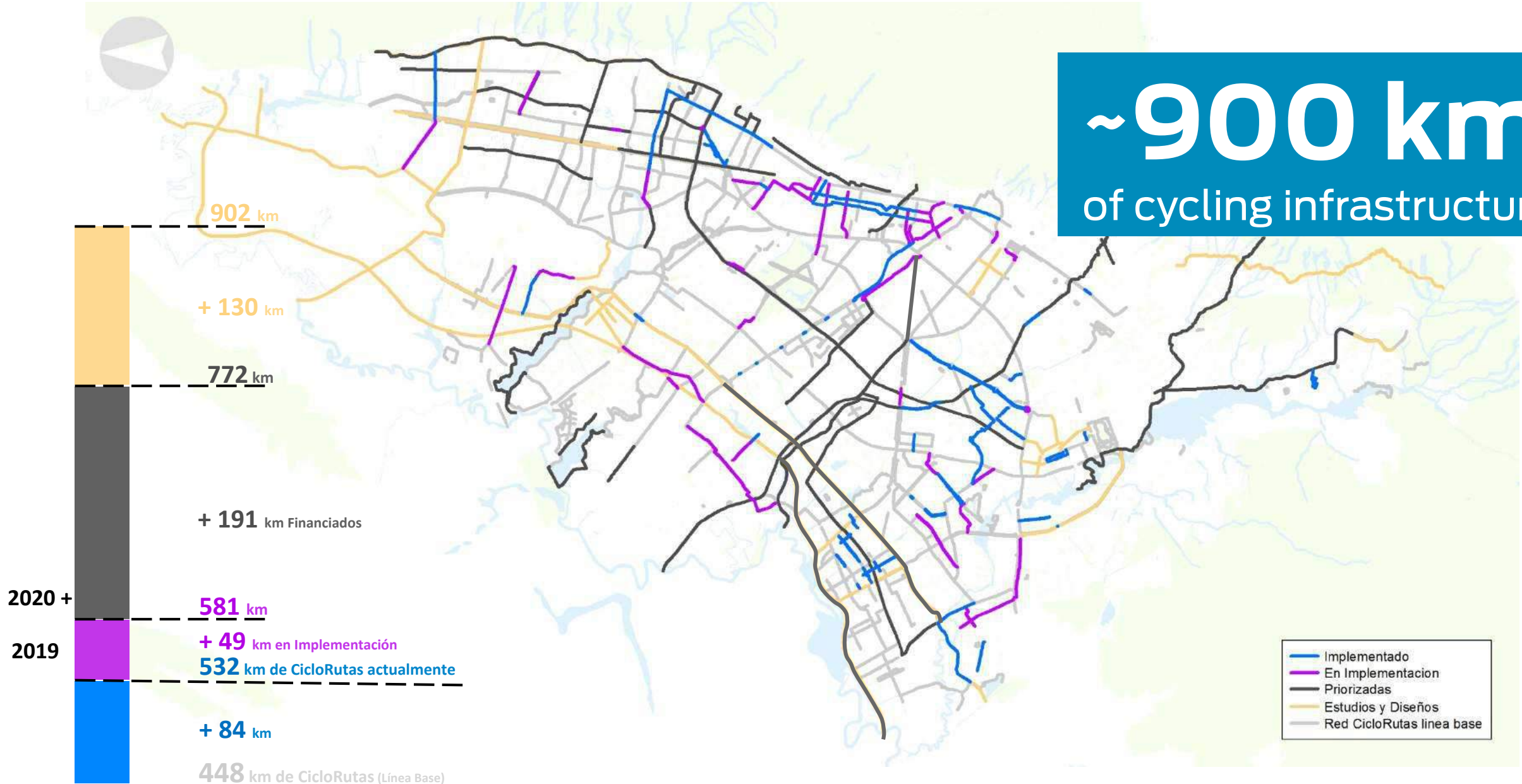
**+ 84 km**  
**448 km de CicloRutas (Línea Base)**

— Implementado  
— En Implementación  
— Red CicloRutas línea base

# Bogotá | Colombia

## Evolution of the cycling network

**~900 km**  
of cycling infrastructure



# Bogotá | Colombia

## Evolution of the cycling network



# Ciclovía

up to 2 million people  
125 km of open streets



# Bike-to-school

4,000 children  
90 schools  
70+ routes



# Cyclist manual

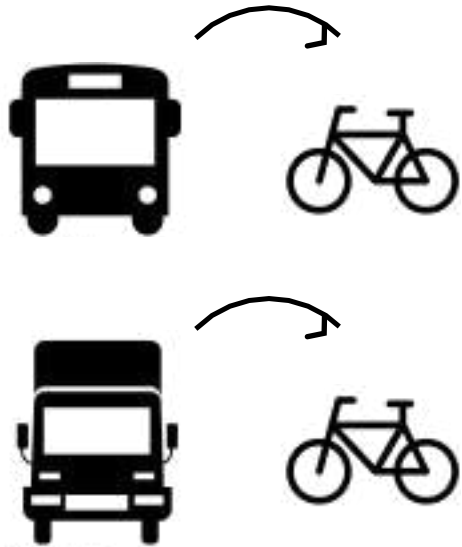


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Education and awareness | “Juego de rol”



# Role playing







# Bike nursery





# Bike week

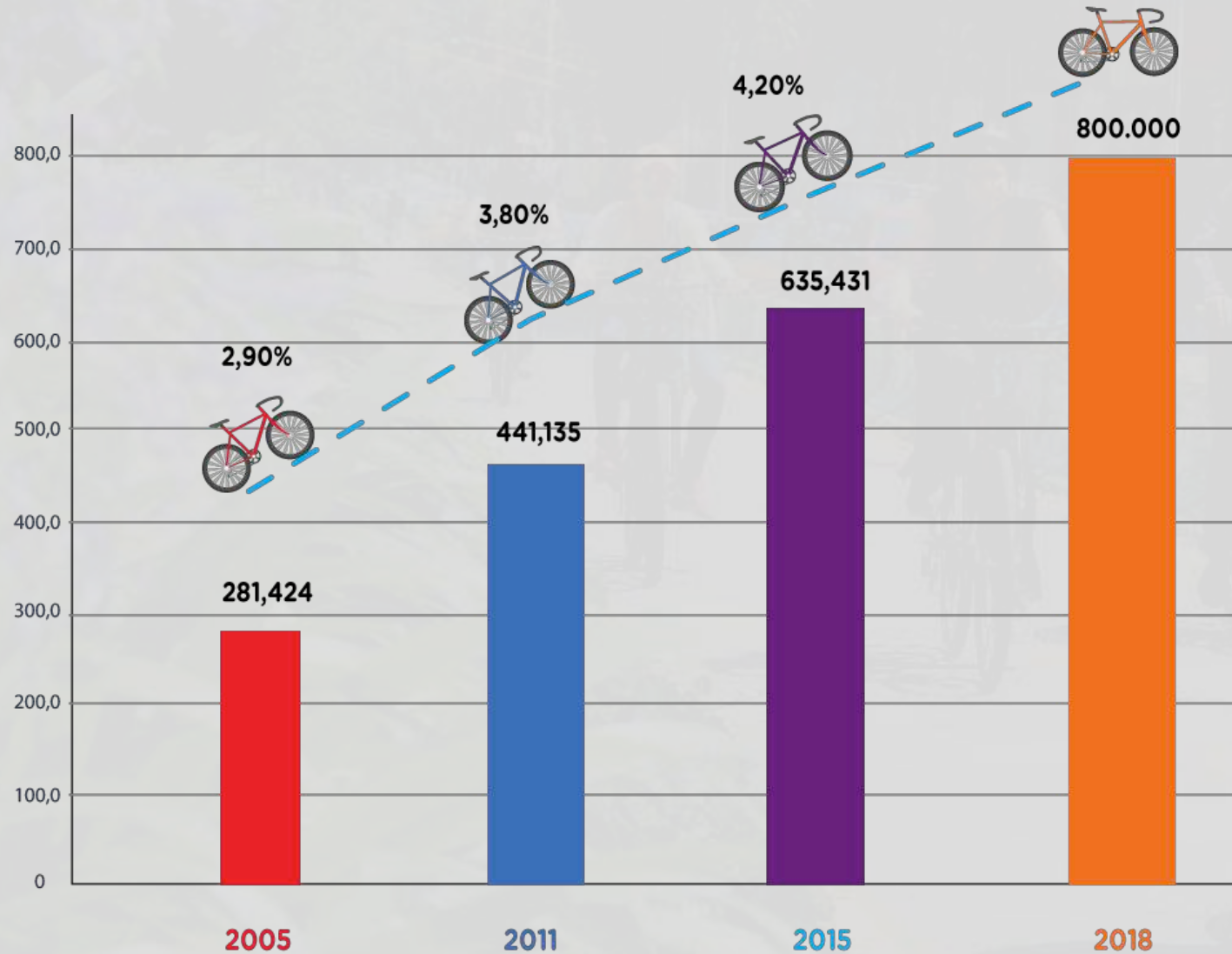
26,000 attendees

59 events

69 organizations involved

# Bogotá | Colombia

## Increase of number of trips by bike



**800,000**  
trips a day  
6% of total ridership

In 2019

900,000

Trips per day by bike



# Bogotá | Colombia

Increase of number of trips by bike

Long term  
vision:



**Bogotá**  
**Capital Mundial**  
**de la Bici**

# Addis Ababa Ethiopia



# Fortaleza Brazil



# Bogotá Colombia



**Emerging  
Cycling  
Movement**

**Progressing  
Cycling  
Momentum**

**Reinforcing  
Cycling  
Culture**

# THANK YOU!

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