

Safe and Sustainable Street Design

A workshop for the City of Ljubljana, Slovenia

Abhimanyu Prakash, Associate Director Renata Carvalho, Program Manager Marina Visic, Program Associate

Global Designing Cities Initiative

29th January, 2025







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Ljubljana, Slovenia 29th January, 2025

@GlobalStreets globaldesigningcities.org















GDCI & the Global Street Design Guide

Bloomberg Philanthropies









Global Designing Cities Initiative



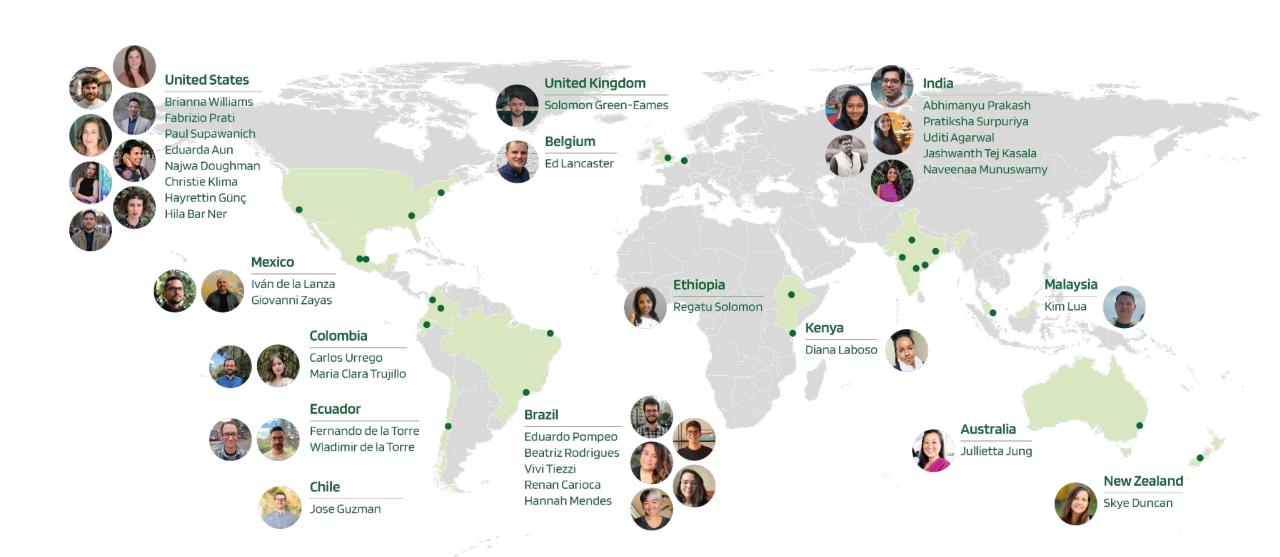




Janette Sadik-Khan,
Former Commissioner of Transportation in New York City
Launched GDCI in 2014

Global Team



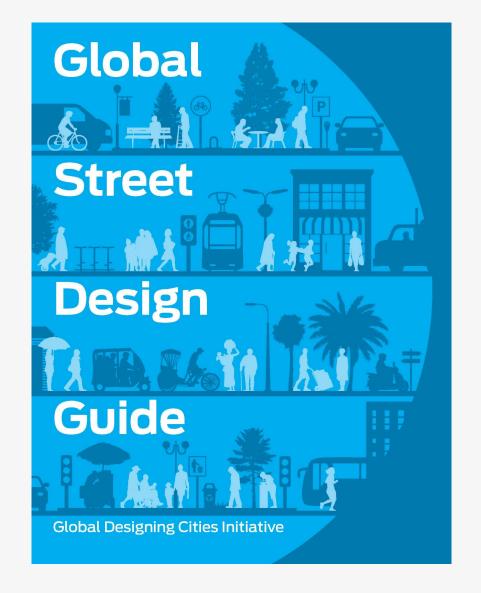


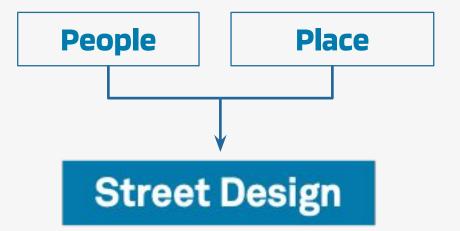


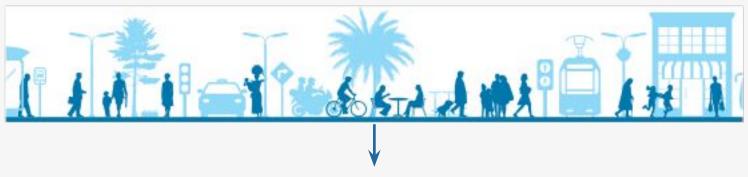
Our mission is to transform streets around the world, inspiring leaders, informing practitioners, and inviting communities to imagine what's possible when we design streets that put people first.



Global Street Design Guide







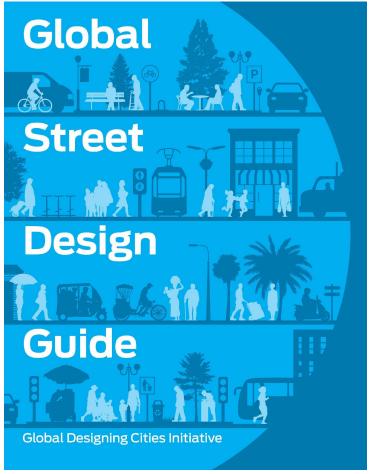
Desired Outcomes

- Health and Safety
- Livability and Quality of Life
 - Multi-modal Access
- Environmental Sustainability
 - Economic Sustainability
 - Equity

150+ contributors to GSDG

CONTRIBUTORS

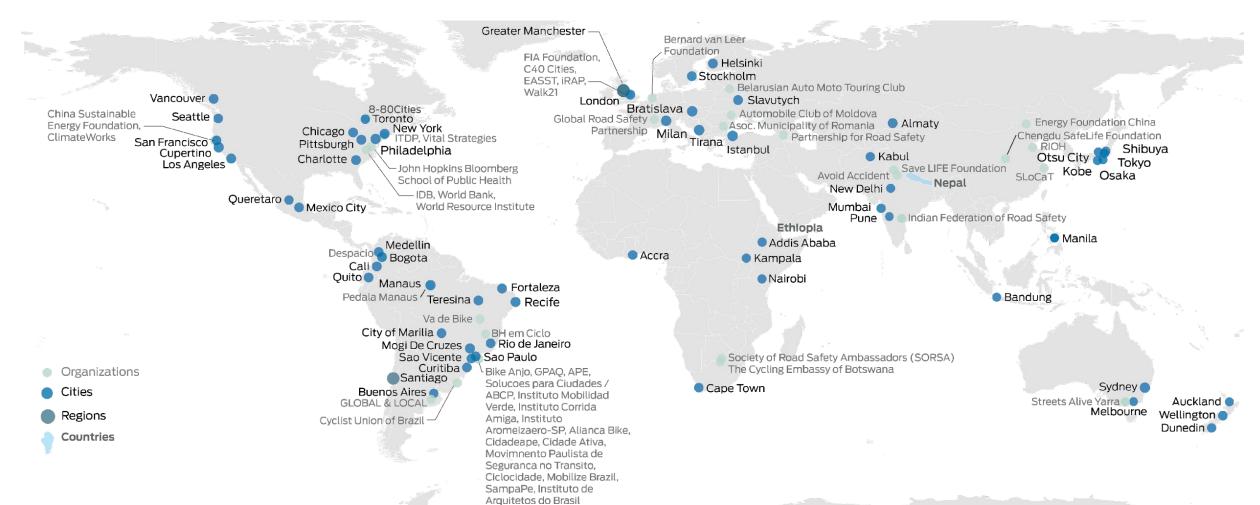
Argentina- Soledad Aguirre Sors/Guillo Dietrich/Juanjo Mendez/Sol Mountford. Australia- Judy Jaeger/Rob Adams/Steven Burgess/Leanne Hodyl/Rob Moore/Stuart Niven/Bart Sbeghen/Ros Rymer/Sandy Burgoyn/Kerry Gallagher/Simon Lowe/ Emily Scott/Victoria State/Kristie Howes/Giles Michaux / Daniel Przychodzki/Lorrae Wild. Azerbaijan - Vusal Rajabli. Brazil - Ezeguiel Dantas/Diego França/Tony Lindau/Marta Obelheiro/Priscila Coli Rocha/Clarisse Cunha Linke/Mauricio Duarte Pereira/ Washington Fajardo/André Lopes Pacheco Ormond/Ciro Biderman/Adriano Borges Costa/Gabi Callejas/Danielle Hoppe/ Fernando Mello Franco/Gustavo Partezani Rodrigues/Luis Eduardo Surian Brettas. Canada-Mark Van Elsberg/Anders Swanson. China- Karl Fjellstrom/Greg Smith/Sybren Boomsma/Xuesong Wang. Colombia- Leidy Constanza Lopez Mateus/William Mauricio V. Caicedo/Carlos Felipe Pardo/Diana Wiesner/Margarita Maria/Angel Bernal/Carlos Cadena Gaitan. Denmark- Sofie Kvist/Jeff Risom. Ecuador- Ana Maria Duran Calisto/Jaime Izurieta Varea. England- Toby Howe/Emma Maclennan/Philip Jones/Esther Kurland/Lilli Matson/Ben Plowden. Ethiopia- Mulugeta Abeje. Finland-Reeta Keisanen/Reeta Putkonen. Georgia-Gela Kvashilava. Germany-Burkhard Horn/Joerg Ortlepp/Maria Pohle/Andre Munch. Ghana- Nabe Kanfiegue/Michael Konadu/Magnus Lincoln Quarshie/Korama Ocran. Greece-Stelios Efstathiadis. Haiti-Louino Robillard. India-Anuj Malhotra/Swati Ramanathan/Raj Cherubal/Shreya Gadepalli/Advait Jani/Madonna Thomas/Samarth Das /Binoy Mascerenhas/Piyush Tewari. Indonesia-Nunun Yanuati. Israel-Ofer Manor. Kenya-Cecilia Andersson/Christopher Kost/Hilary Murphy/Laura Petrella/Robyn Watson. Korea-Keong Gu Hong/YongJin Cho/Noh Soo Hong, Kosovo-Bekim Ramku, Kyrgyzstan-Chinara Kasmambetova, Laos-Bradley D Schroeder, Mexico-Salvador Herrera/Alejandro Larios Morales/Dhyana Quintanar Solares/Gabriel E. Todd/Adán Domínguez/Giovanni Zayas Franzoni. Moldova- Tatiana Mihailova. New Zealand-Ludo Campbell-Reid/Hayley Fitchett/Simon Harrison/Don Mckenzie/Lennart Nout/Melizza Morales Hoyos/Hugh Nicholson/Megan Wraight. Peru-Mariana Alegre Escorza. Russia-Artur Shakhbazyan. Scotland-Gillian Black. Singapore-Andrew David Fassam/Yi Ling Pang. South Africa-Katherine Ewing/Rashiq Fataar/Barbara Southworth. Sweden-Goethenburg/Suzanne Andersson/Daniel Firth/Svante Guterstam/Alexander Stahle. Switzerland-Sandra Piritz. The Netherlands-Dick Van Deen/Koen De Boo. Turkey-Merve Aki /Cigdem Corek. United States-Adnan Hyder/Andres Ignacio Vecino Ortiz/Michael Murphy/Jeffrey L. Rosenblum/Norman Garrick/Jason Vargo/David Vega-Barachowitz/Philippa Brashear/Oscar Correa/David Grahame Shane/Eric Jaffe/Ethan Kent/Lee Jung Kim/Michael King/Michael Kodransky/Karen Lee/Geeta Mehta/Justin Garrett Moore/Richard Plunz/Andrew Rudd/Jeffrey Shumaker/Morana Stipisic/Gary Toth/Nans Voron/Nick Falbo/Peter Koonce/Illaria Salvadori/Paul Supawanich/Robin Abad Ocubillo/Nathan Polanski/Julie Babinard/Soames Job/Ben Welle. Vietnam-Tra Vu. Zambia-Carl Johan Collet.



40+ countries 70+ cities

Endorsed by over 100+ cities and organizations













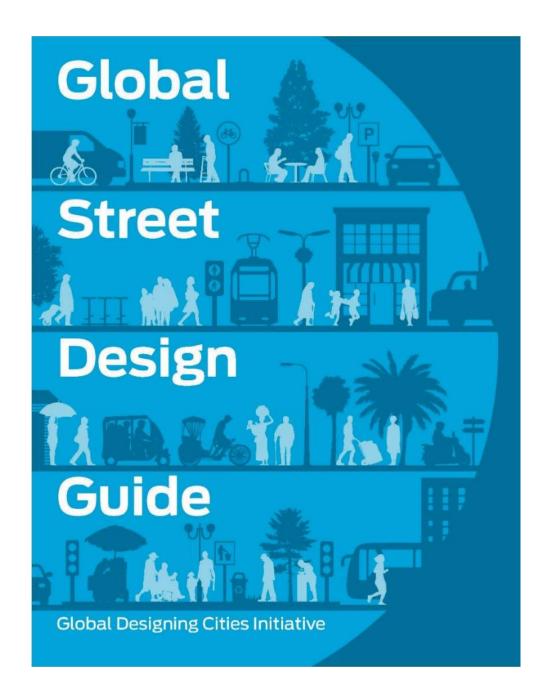








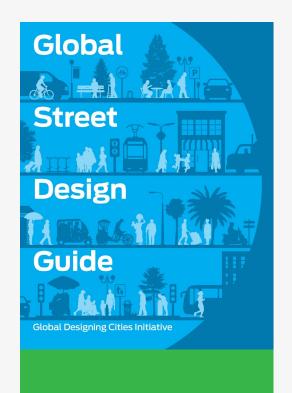




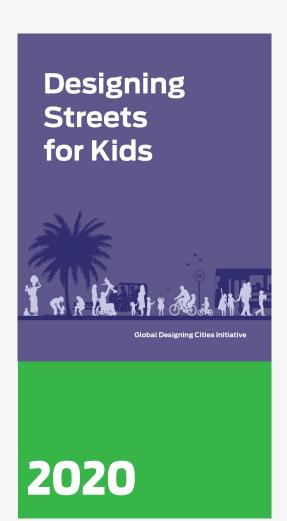
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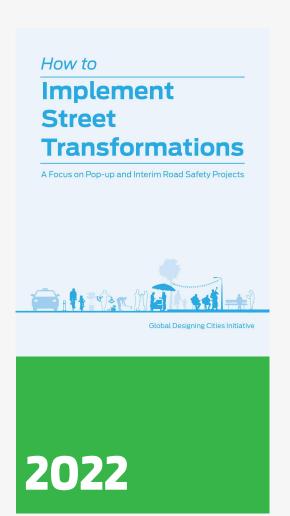
Global Designing Cities Initiative

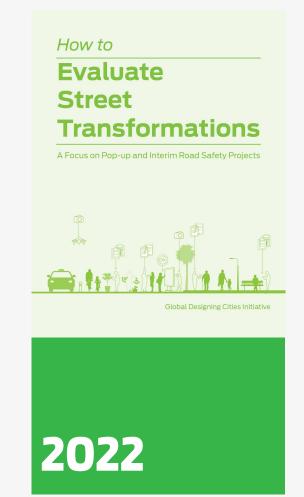
Publications



2016







Designing Streets for Kids



Streets for Kids

Improved & Independent mobility

Places to pause, sit, and play





Global Designin Cities Initiativ

Streets for Kids should be...







Safe & Healthy

Comfortable & Convenient

Inspirational & Educational

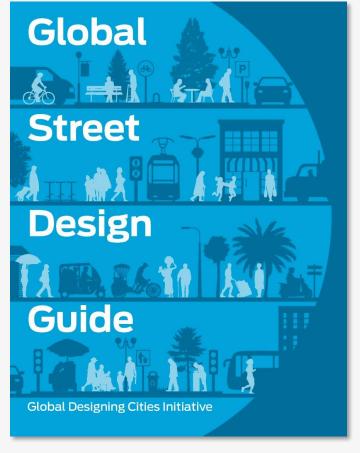


Ten actions to improve streets for kids

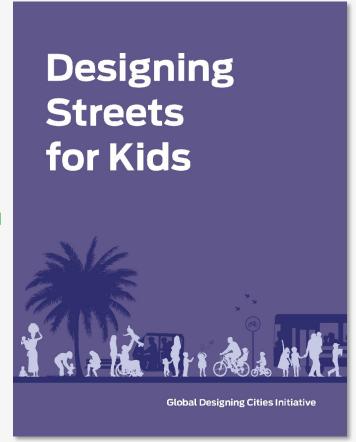




Provide the tools to reimagine, reinvent, and redesign safer, more sustainable streets!







How to

Implement Street Transformations

A Focus on Pop-up and Interim Road Safety Projects



Global Designing Cities Initiative

How to

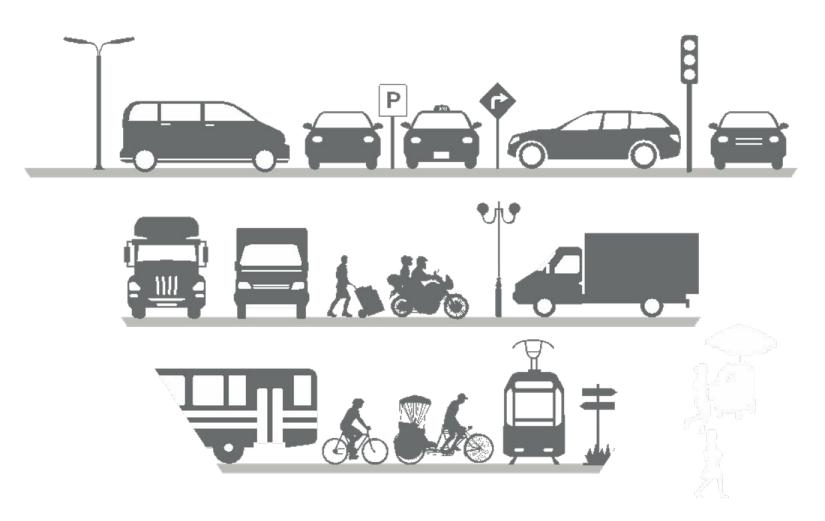
Evaluate Street Transformations

A Focus on Pop-up and Interim Road Safety Projects



Global Designing Cities Initiative













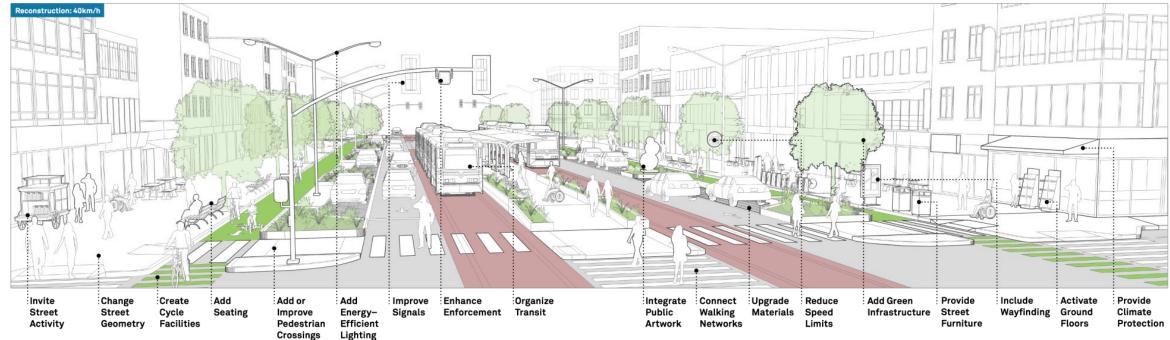




What is Possible?

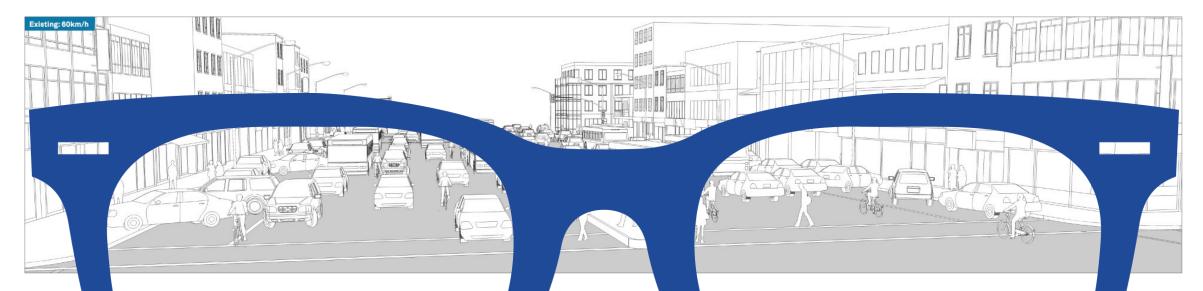


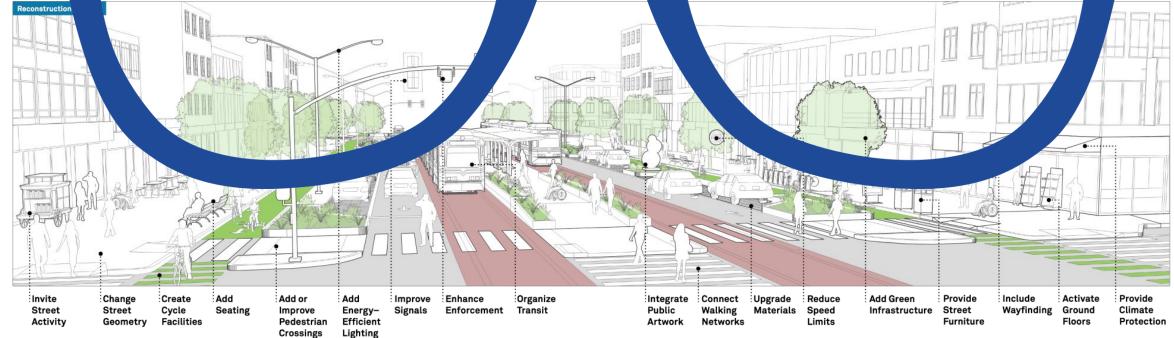




What is Possible?



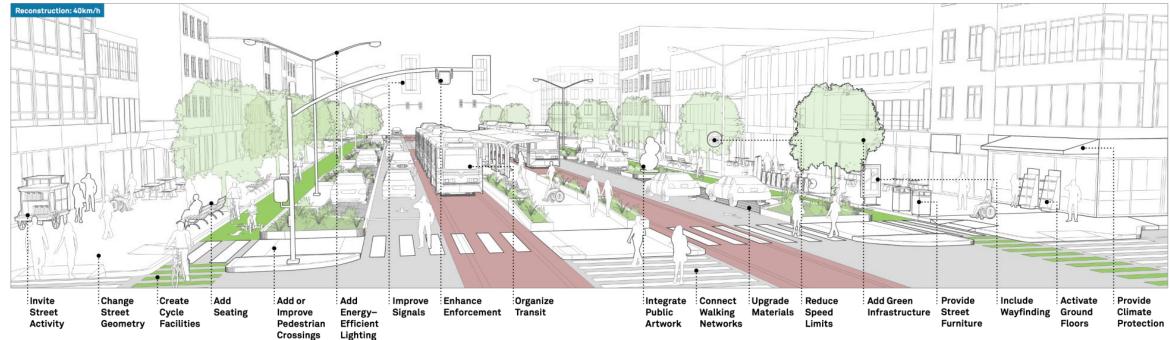




What is Possible?

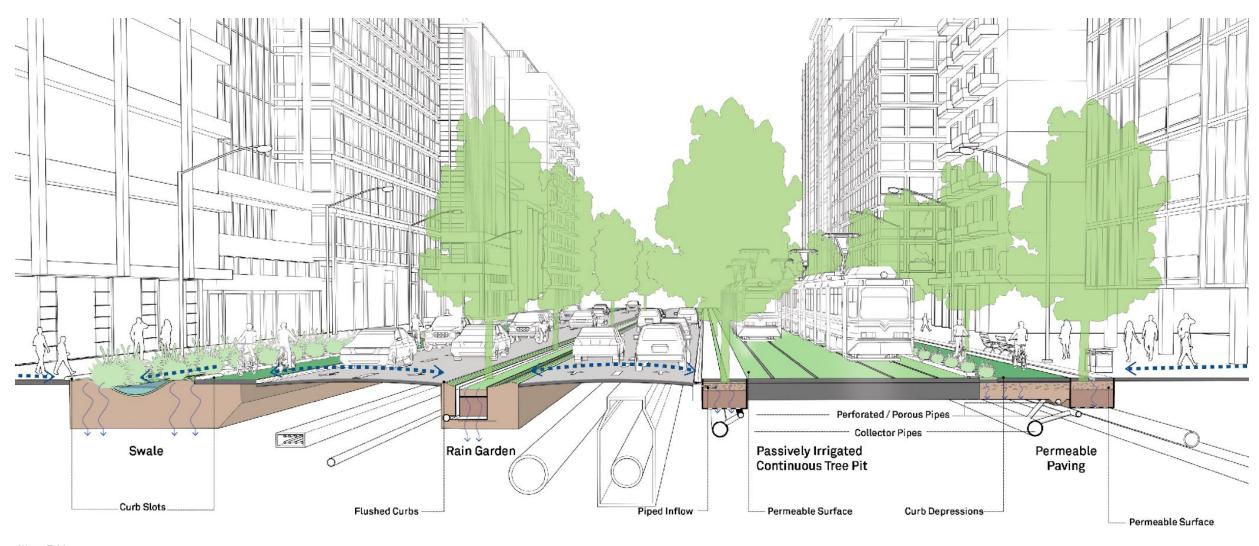






Design for more functions





Water Table

Design for more people











Cyclists



Transit Riders



Motorists



Freight Operators and Service Providers



People Doing Business



from PAPER

to PRACTICE



Programs



BIGRS

Bloomberg Philanthropies Initiative for Global Road Safety

Collaboration with

Bloomberg Associates

Street for Kids

BICI

Bloomberg Initiative for Cycling Infrastructure



Bloomberg Associates











Global Reach - 30+ cities





- OBloomberg Philanthropies Initiative for Global Road Safety (BIGRS)
- O Collaborations with Bloomberg Associates
- Street for Kids Program
- Early Childhood Development
- BICI



Policy and Design Guidance



Interventions and Transformations

Metric Collection and Evaluation



Policy and Design Guidance

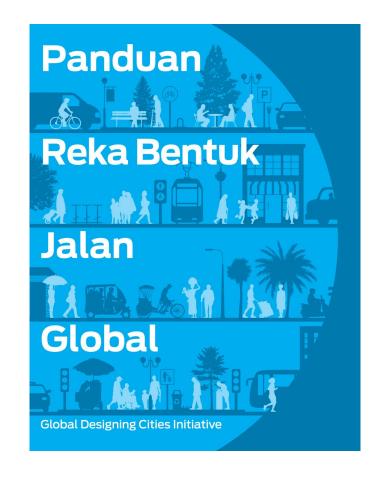
Capacity Building and Community Engagement

Interventions and Transformations

Metric Collection and Evaluation

Policy and Guidance

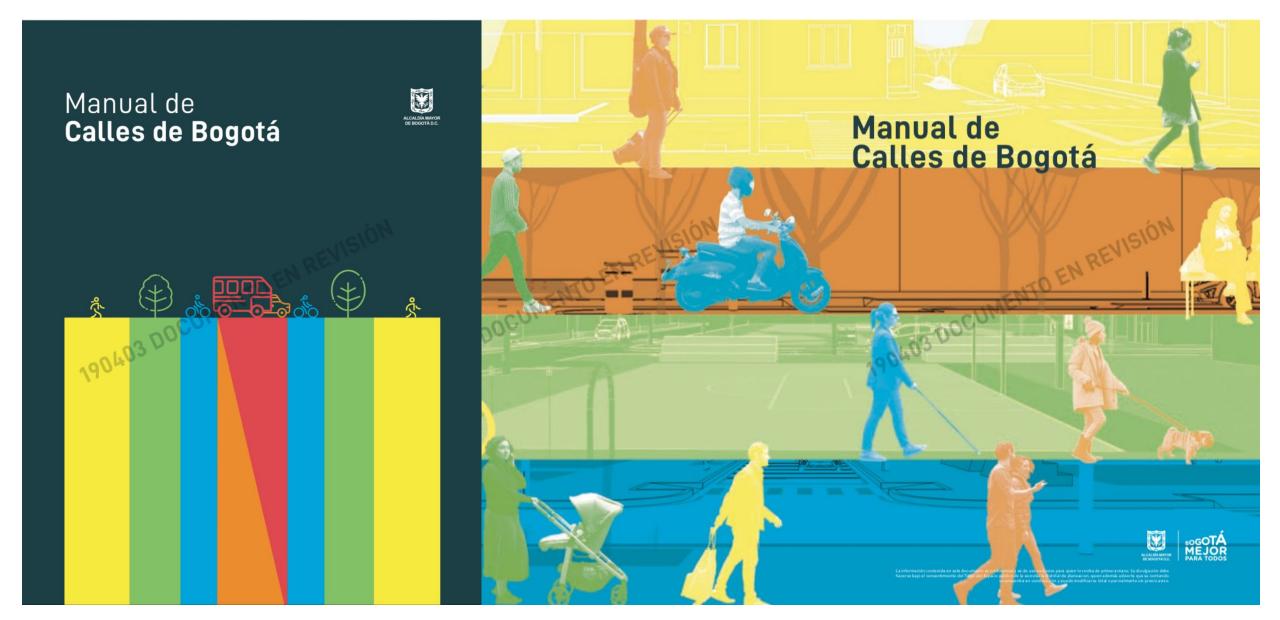






Bogotá, Colombia

Street Design Manual





Policy and Design Guidance

Capacity Building and Community Engagement

Interventions and Transformations

Metric Collection and Evaluation

Who's involved in Shaping Safe Streets + Sustainable Transportation Options?





Engineers Trainings





- Existing Condit

 Local main streets me
 busy east-west street

 Non-orthogonal inter
- Local bus traffic and
- Large turning radii is
- pedestrian crossings.

 Narrow sidewalks and pinchpoints force pedestrians to walk on
- roadbed putting themat

 Illegal parking and obsti-block sidewalk clear pat

Fundamentals of Safer Street Design

10th July 2024 SDG Center

Workshop conducted by:

- **Global Designing** Cities Initiative
- Bloomberg Initiative for Global **Road Safety**

Participants:

- **KKR**
- **JKR**
- **PDRM**
- **DBKL**
 - JPB 0
 - **JPIF**
 - **JKAWS**
 - **JPPPB**
- **MIROS**



Engineers Trainings





Capacity Building - City agencies







Capacity Building and Trainings - Online



[WIP] Tài liệu đào tạo Hướng dẫn Thiết kế Đường phố Toàn câu



Khóa đào tạo trực tuyến Hướng dẫn Thiết kế Đường phố Toàn cầu là khóa đào tạo tự học đầu tiên dựa trên thiết kế đã đạt giải thưởng của Quỹ Sáng kiến Thiết kế Thành phố Toàn cầu.

Bộ tài liệu Hướng dẫn Thiết kế Đường phố Toàn cầu được thiết kế để định nghĩa lại vai trò của đường phố tại các đô thị trên thế giới. Hướng dẫn được hình thành dựa trên thông tin của các chuyên gia từ 72 thành phố tại 42 quốc gia, đưa ra những chỉ dẫn mới về thiết kế đường phố dành ưu tiên hơn cho con người.

Khóa học tương tác sẽ hướng dẫn cho bạn những nguyên tắc cơ bản về thiết kế đường phố đô thị cho mọi đối tượng ở mọi lứa tuổi và khả năng.

Chào mừng bạn đến với Khóa đào tạo trực tuyến Hướng dẫn Thiết kế Đường phố Toàn cầu!

Sau khi hoàn thành khóa học này, bạn sẽ học được các nguyên tắc thiết kế đường phố bền vững và an toàn cho mọi đối tượng.



Police Training



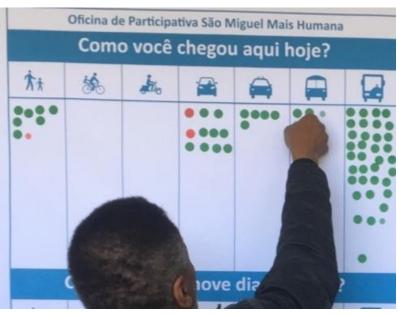
Journalist Training



Community Engagement









Community Engagement









*SK Danau Kota 2 Student Engagement Workshop

Community Engagement







Policy and Design Guidance

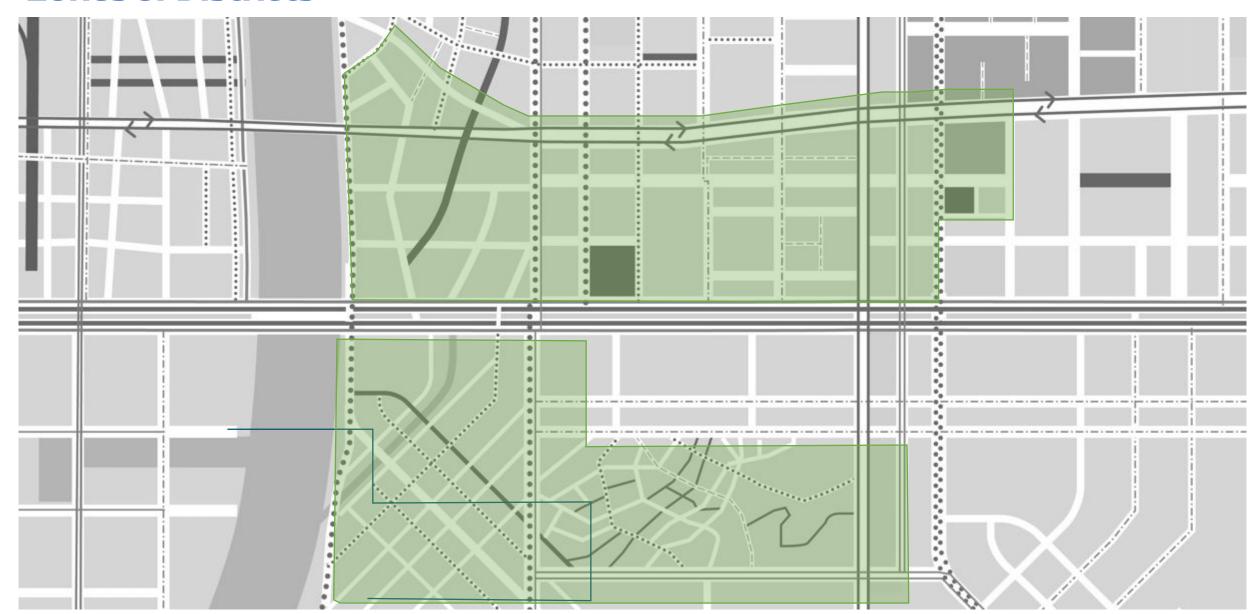
Capacity Building and Community Engagement



Metric Collection and Evaluation

Global Designin Cities Initiative

Zones or Districts



Low speeds and school zones

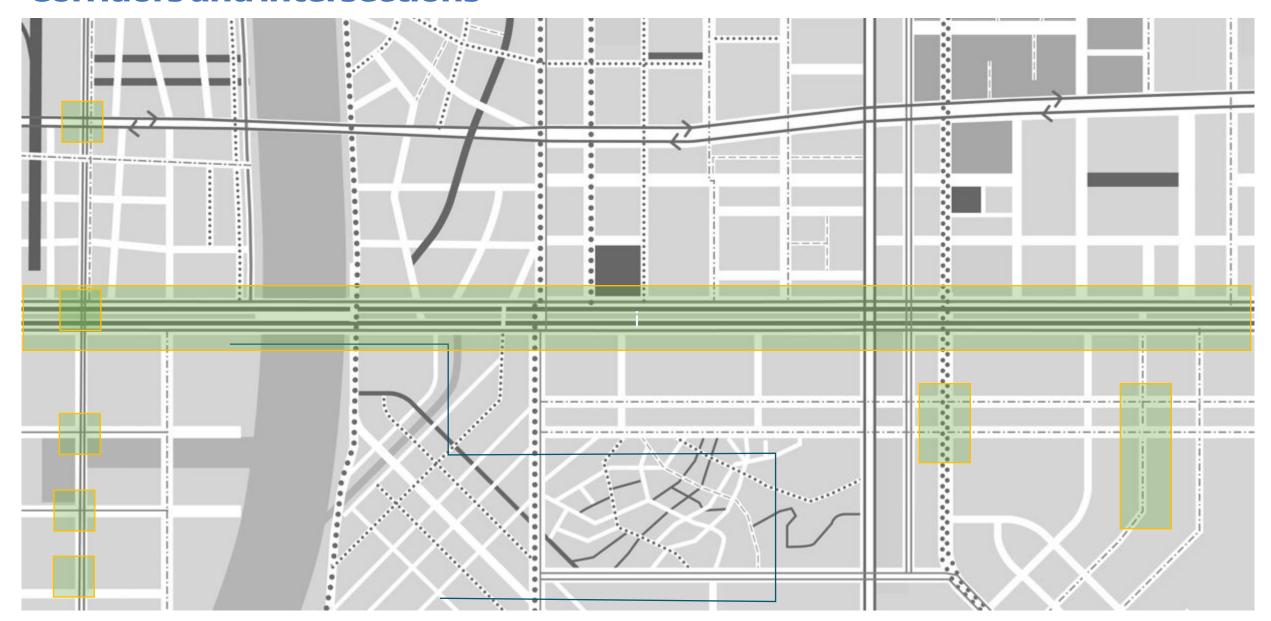








Corridors and intersections



Corridor redesign + Reducing speed



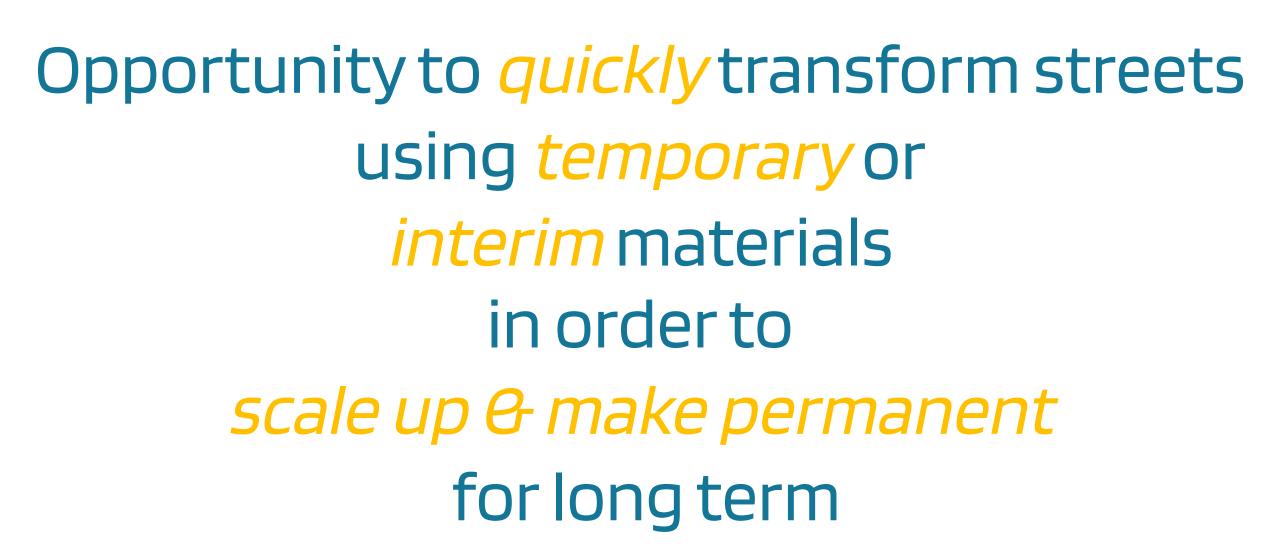














El Ingés Vision Zero Zone. Before



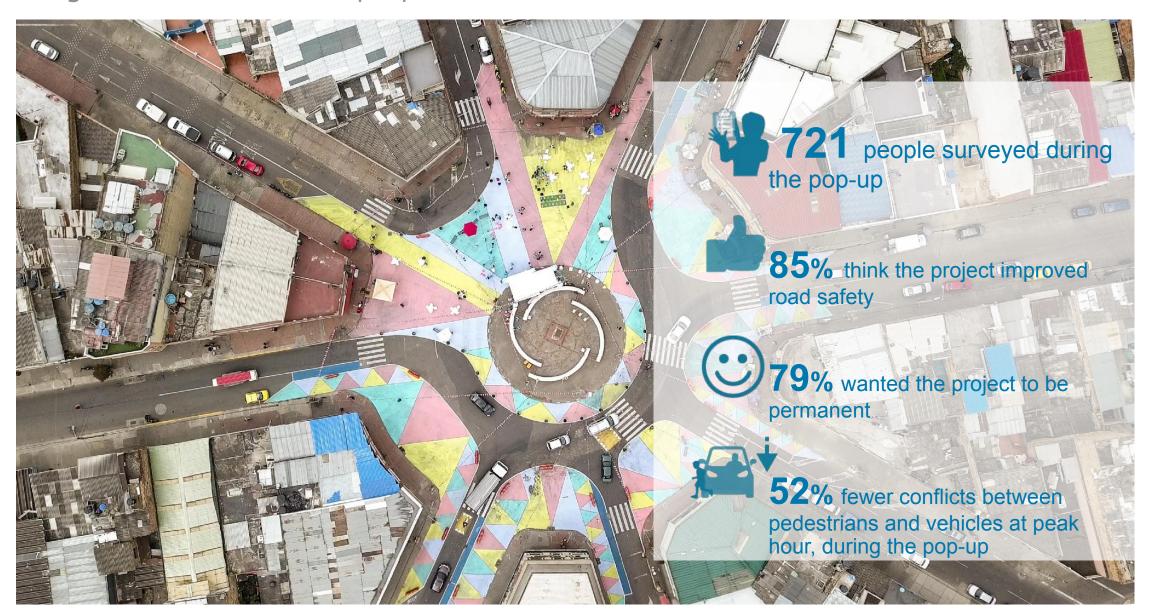


El Ingés Vision Zero Zone. Pop-up



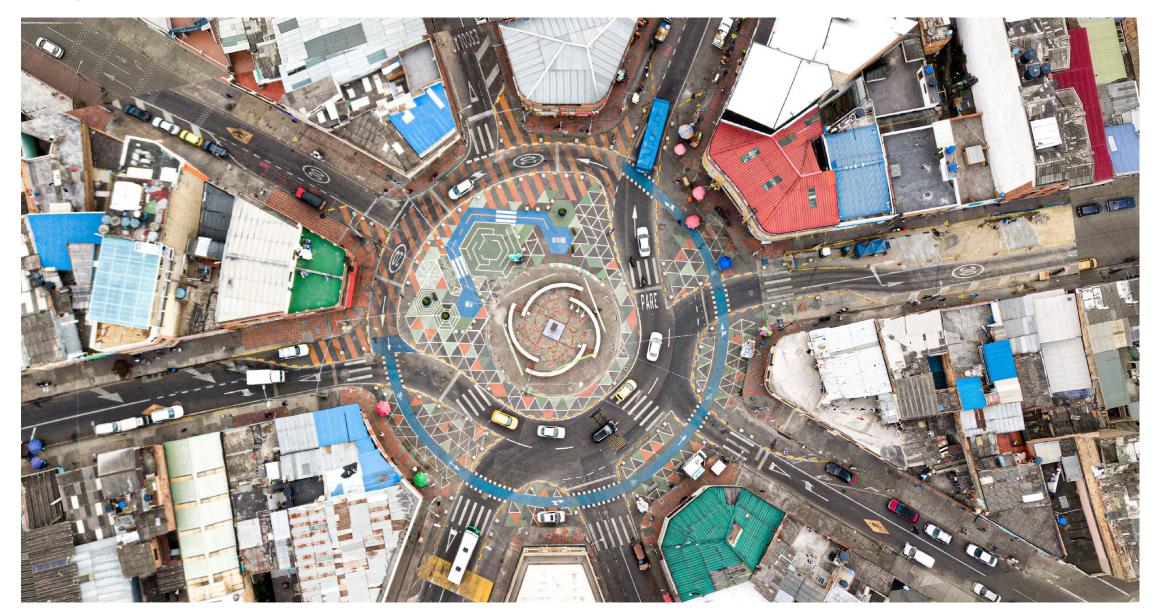


El Ingés Vision Zero Zone. Pop-up





El Ingés Vision Zero Zone. Interim





El Ingés Vision Zero Zone. Interim

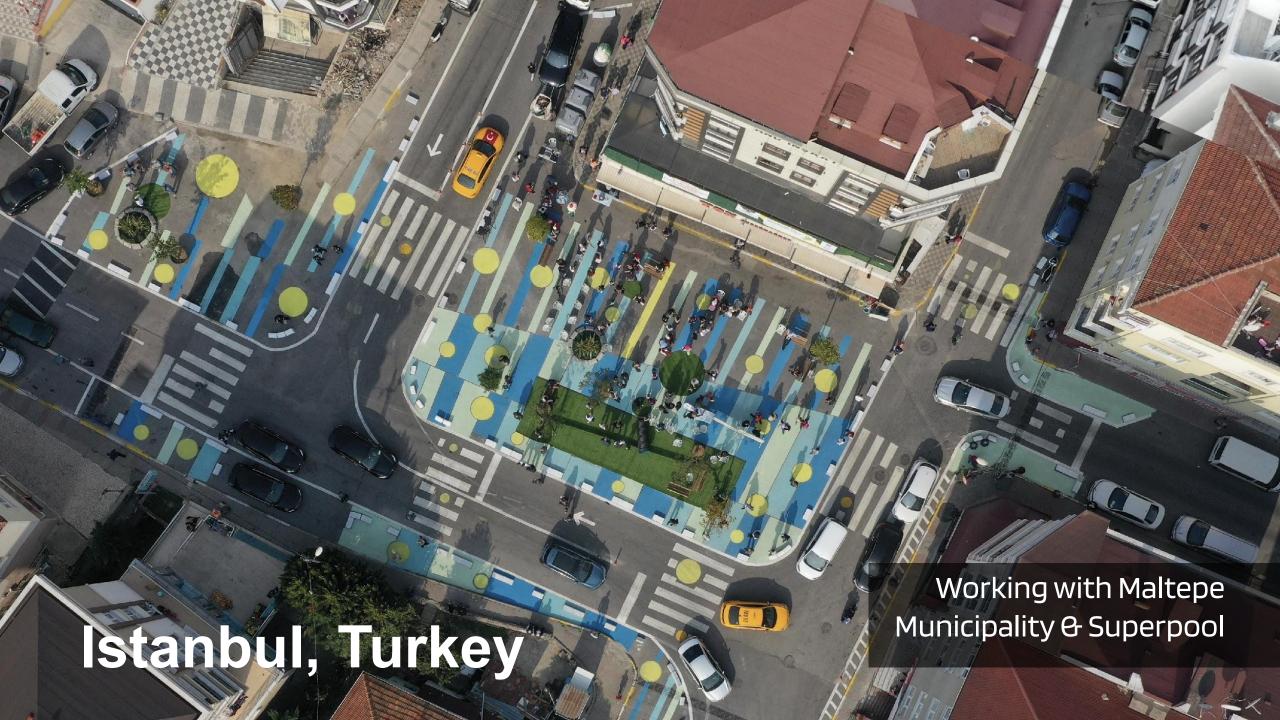
















Before

Zümrütevler Plaza

Municipality & Superpool





























Policy and Design Guidance

Capacity Building and Community Engagement

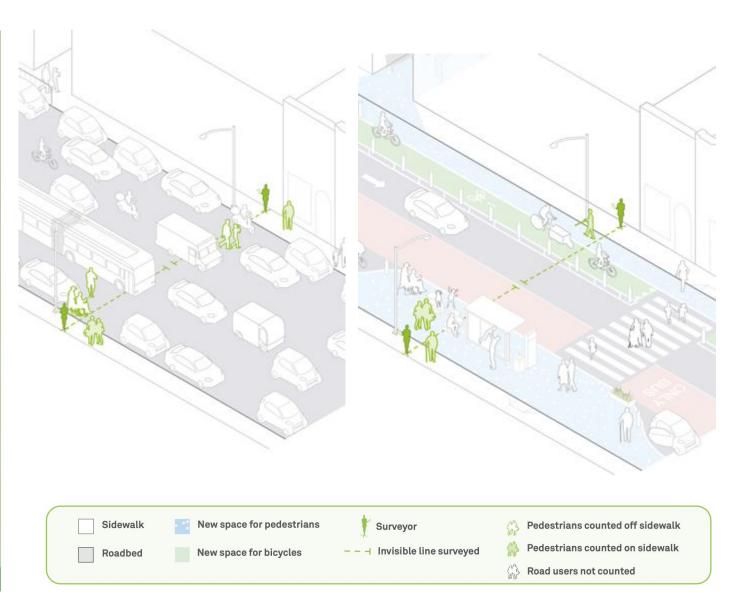
Interventions and Transformations

Metric Collection and Evaluation

Corridor Redesign + Speed Limit Reduction



Pedestria	n Count	s: On/Off S	dewalks		Project name:		
Surveyor name				Basemap			
Date/time							
Day of the week							
Weather							
Notes							
Tally nedestrians h	ane nenderan	d ability that are wal	king on the sideu	alk and on the ro	arlhed congrately 5	onarato sidowalk	counts by
side of the street if	appropriate Cou	int for a period of at					
information is colle	cted.						
Symbol (optional)	Perceived gender.	X Female /	Male				
			À	g.	8	À	
Pedestrian type	* *	1	T	Person in	17)	Na.	Total
	0-5	Child/Teen	Adult	wheelchair	Older adult (75+)	Deliveries/cart	(all type
On sidewalk							
(side A)							
Total on					1		
sidewalk A							
Roadbed							
Total on the roadbed							
100000				-			
On sidewalk (side B -							
optional)							
Total on		1					
sidewalk B							



Rediseño de corredores + reducción del límite de velocidad

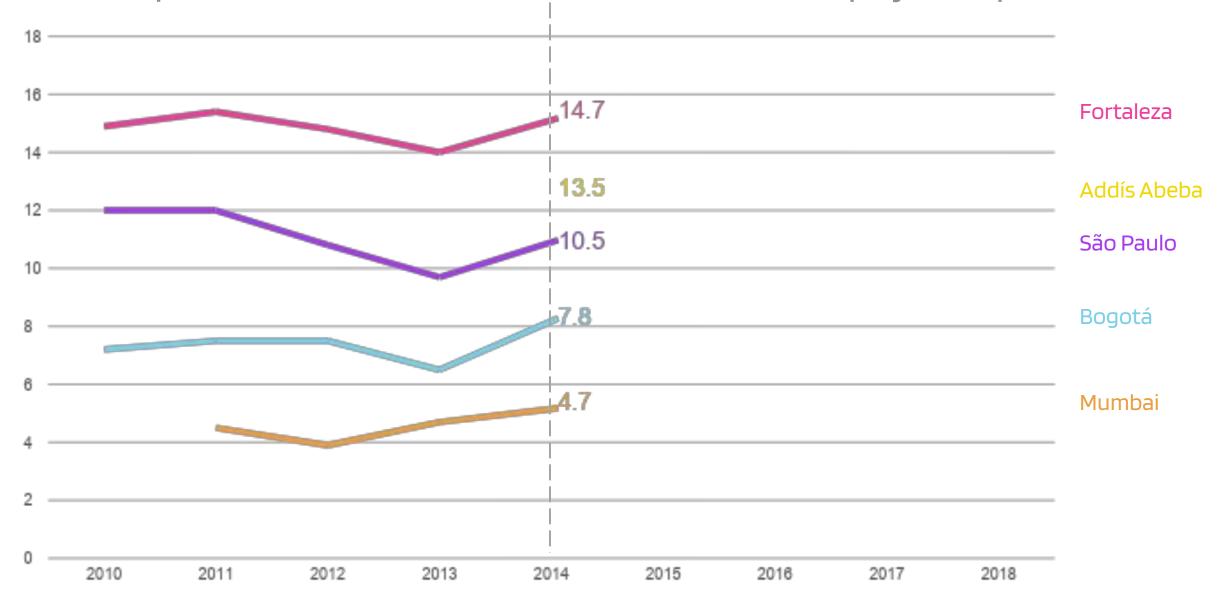




Mortalidad vial reportada | 2010 - 2018



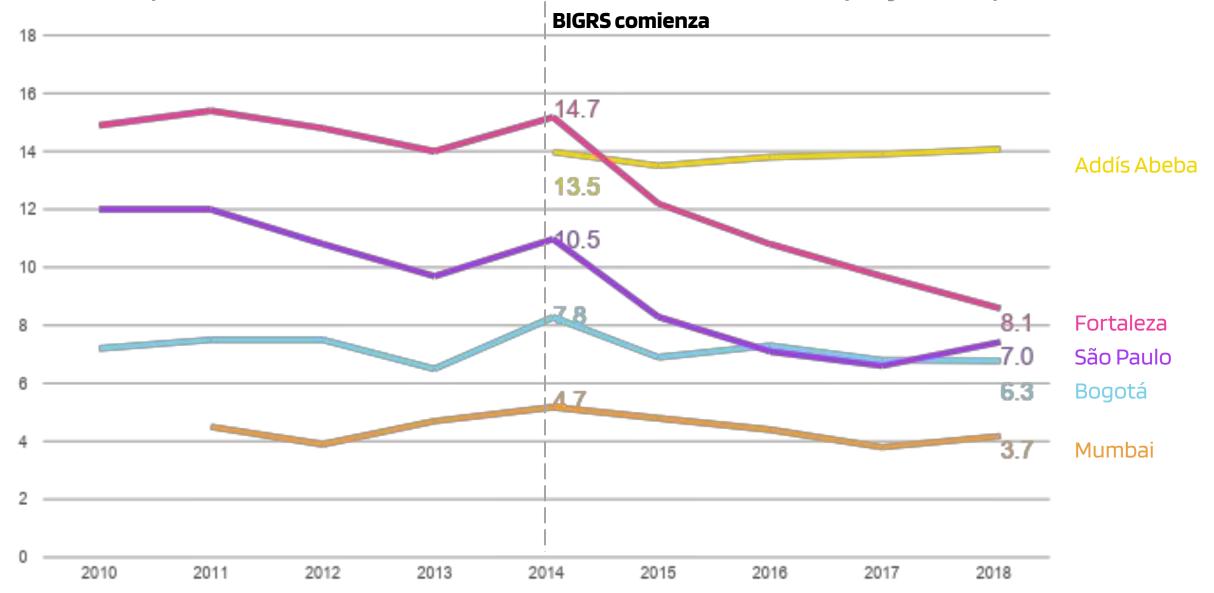
Muertes por 100.000 habitantes en las 5 ciudades apoyadas por BIGRS



Mortalidad vial reportada | 2010 - 2018



Muertes por 100.000 habitantes en las 5 ciudades apoyadas por BIGRS





Thank You

@GlobalStreets









globaldesigningcities.org







Safe and Sustainable Street Design: Role of Street Design

A workshop for the City of Ljubljana, Slovenia

Abhimanyu Prakash, Associate Director Renata Carvalho, Program Manager Marina Visic, Program Associate

Global Designing Cities Initiative

29th January, 2025

















Role of Street Design

January 2025, Ljubljana, Slovenia

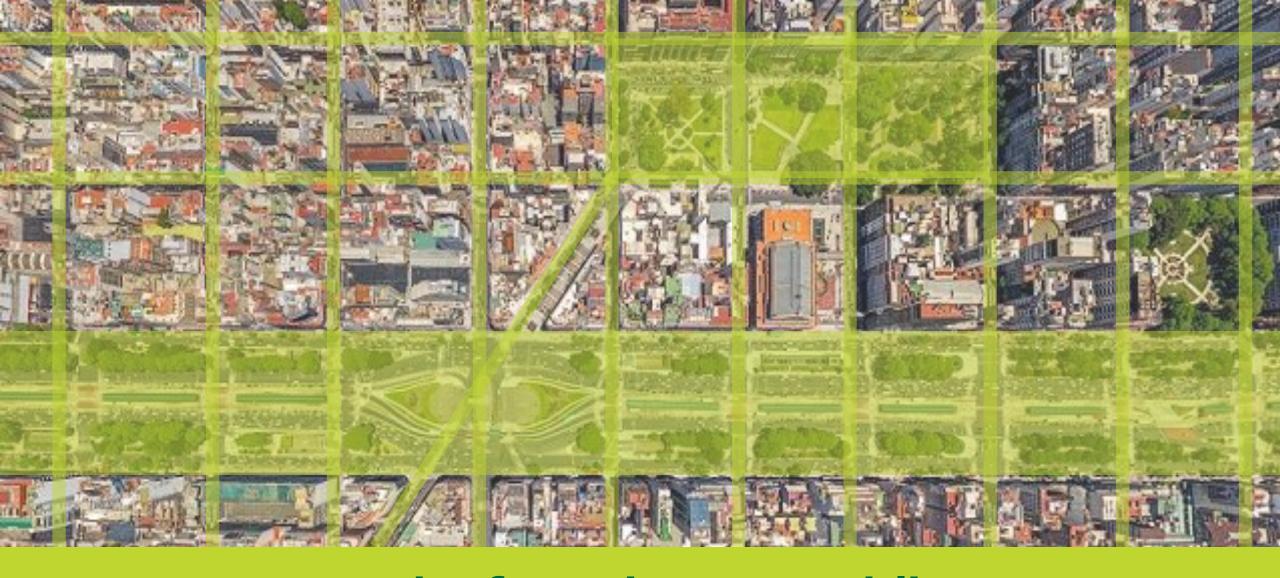
Bloomberg Philanthropies







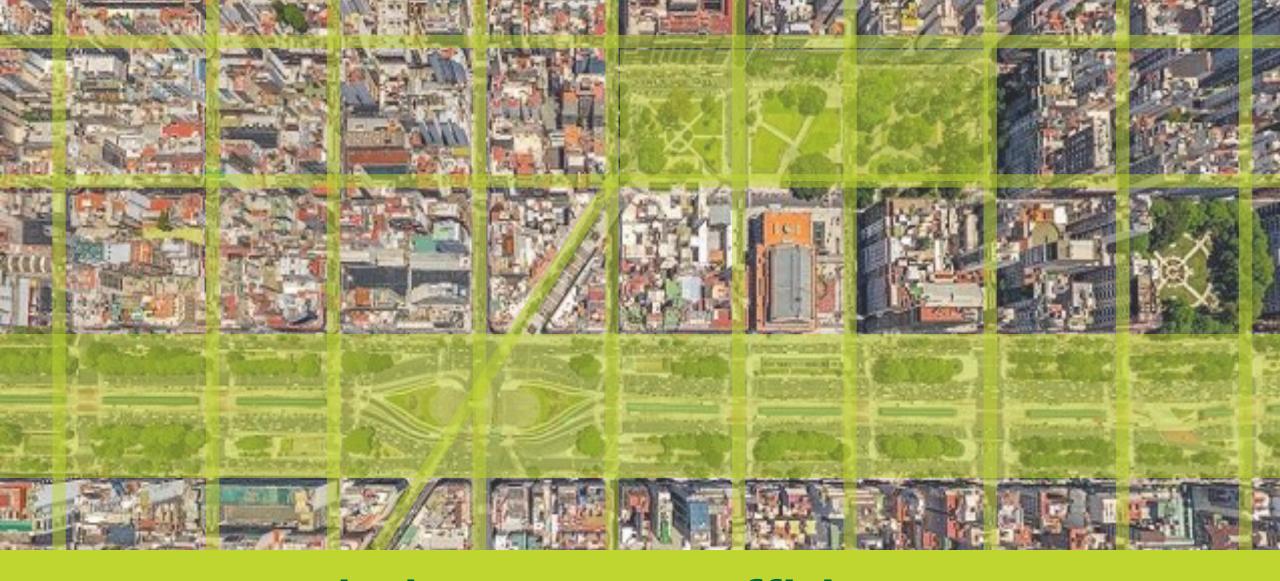
Streets



Largest network of continuous public space



Largest network of continuous public space One of our biggest assets in cities!



We must make better, more efficient use of this valuable space



Streets

are the platform to...



Play



Learn to ride



Dine



Celebrate



Have fun



Perform



Dance



Places to make money...



...and spend it! 😂





To spend time with old friends...



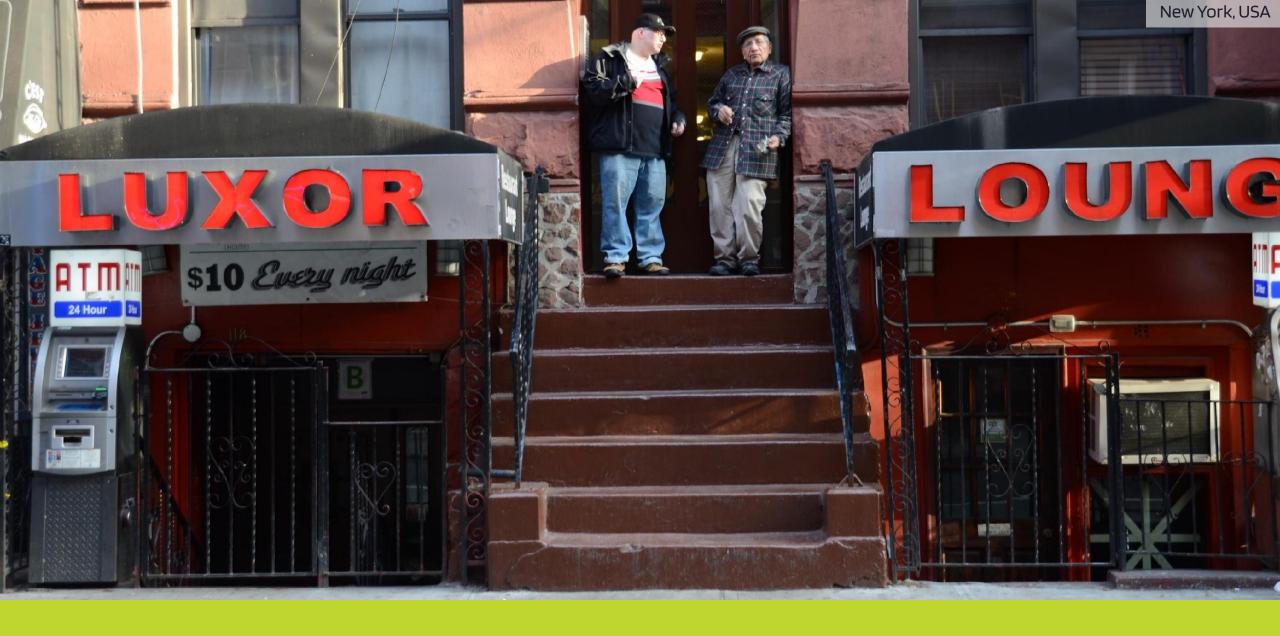
...or meet new ones



Enjoy some nature



Spaces to relax



The front door to our homes and businesses!

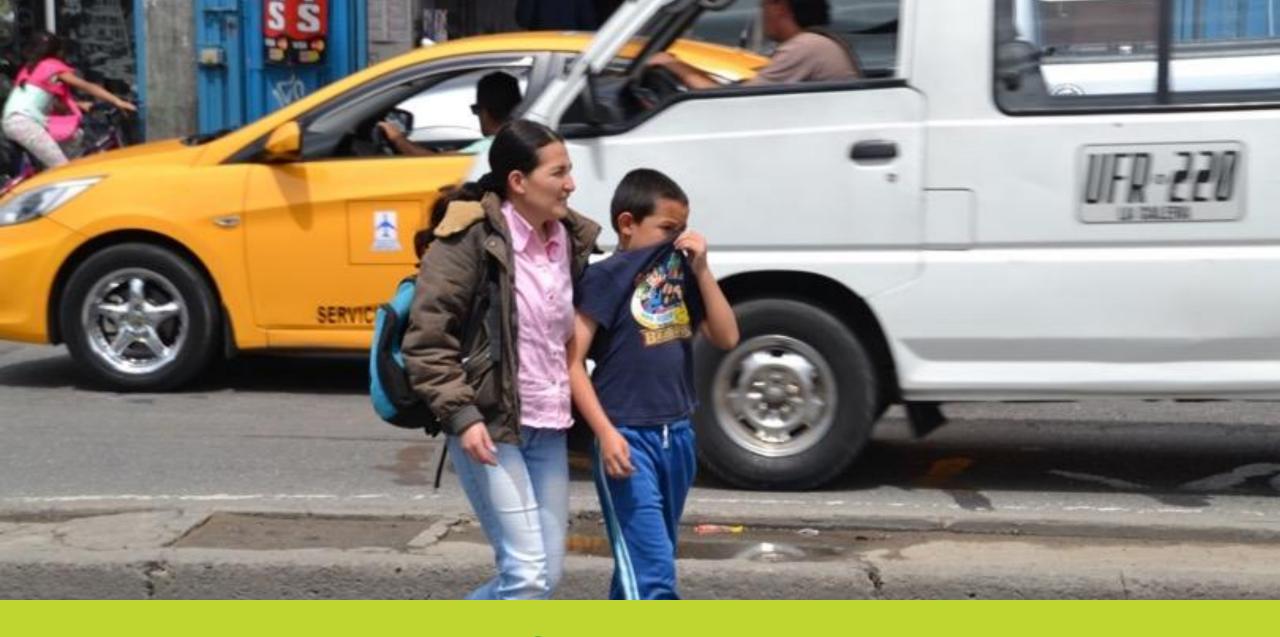


Streets

serve many functions...



- Mobility and Access
- Environmental Sustainability
- Economic Sustainability
- Livability and Quality of Life
- Public Health and Safety

























Innovative **street designs** that reduce speed

+

Strategic enforcement against traffic violations,

+

Legislative ordinances that lower speed limits,

+

Public awareness campaigns

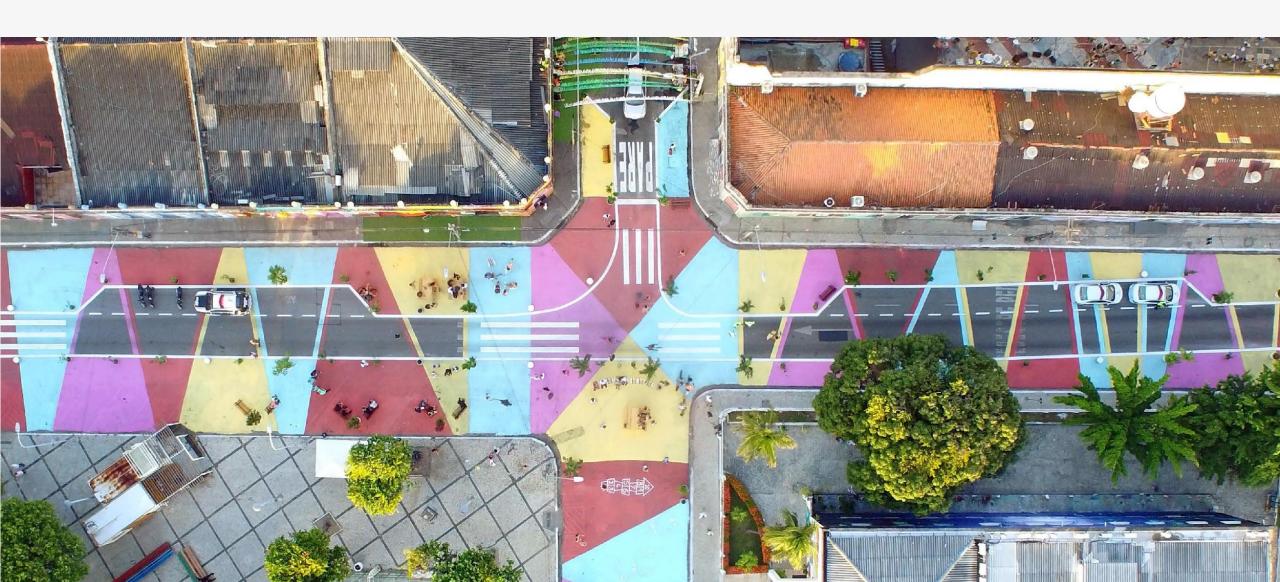
Proven to be impactful strategies adopted by these programs to save lives.



Innovative **street designs** that reduce speed



Innovative Street Designs





Innovative street designs that reduce speed

+

Strategic enforcement against traffic violations,



Support Through Enforcement







Innovative street designs that reduce speed

+

Strategic enforcement against traffic violations,

+

Legislative ordinances that **lower** speed limits,



Lowering Speed Limits







Innovative street designs that reduce speed

+

Strategic enforcement against traffic violations,

+

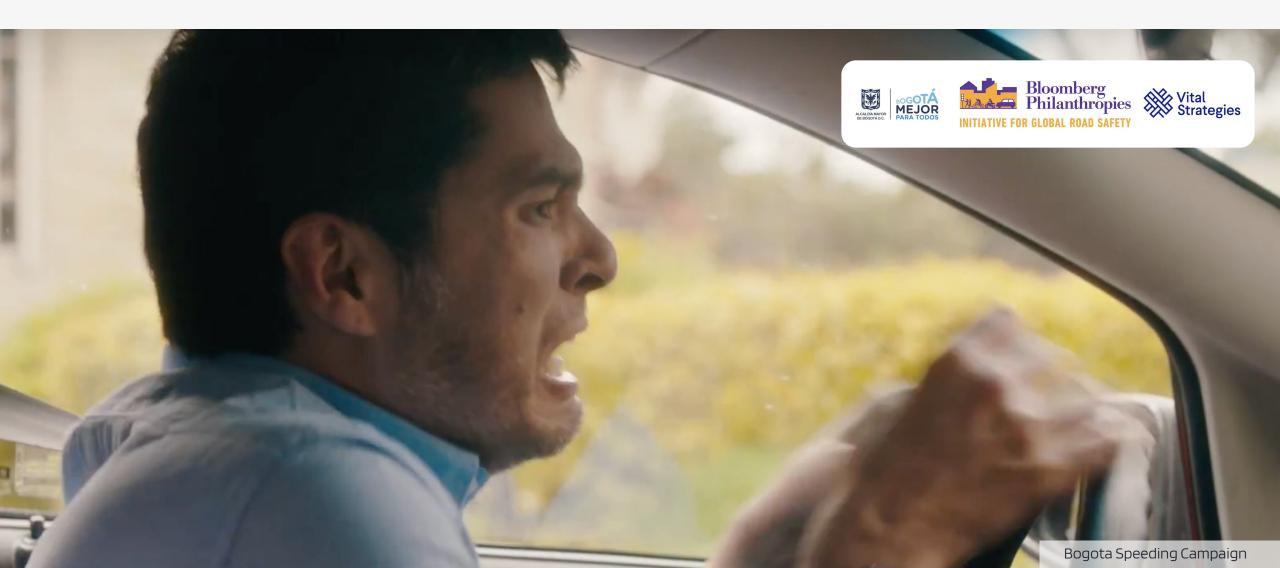
Legislative ordinances that lower speed limits,

+

Public awareness campaigns



Support through Improved Communication Campaigns





Innovative **street designs** that reduce speed

+

Strategic enforcement against traffic violations,

+

Legislative ordinances that lower speed limits,

+

Public awareness campaigns

Proven to be impactful strategies adopted by these programs to save lives.

Taking Action

Taking Action

- 1. Lower speeds
- 2. Design streets that prioritize people
- 3. Prioritizing sustainable mobility choices
- 4. Working together



We know that speed kills!



Taking Action

1. Lower speeds





UN flies the flag for 20mph limits worldwide

Chris Ames 24 September 2020











The United Nations has backed the use of 30km/h (approx 20mph) limits as part of a worldwide drive to cut road deaths and injuries by half.

Stockholm Declaration
Third Global Ministerial Conference on Road Safety: Achieving Global Goals 2030
Stockholm, 19–20 February 2020

Stockholm Declaration (2020)

Seventy-fourth session Agenda item 12 Improving global road safety

Resolution adopted by the General Assembly on 31 August 2020

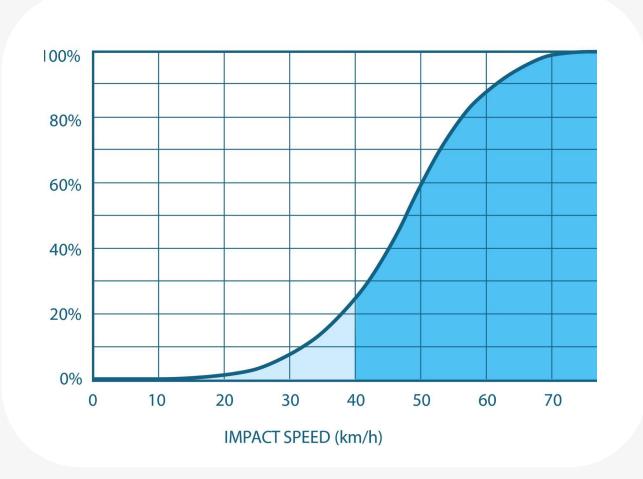
[without reference to a Main Committee (A/74/L.86 and A/74/L.86/Add.1)]

74/299. Improving global road safety

UN's declaration of the second Decade of Action for Road Safety

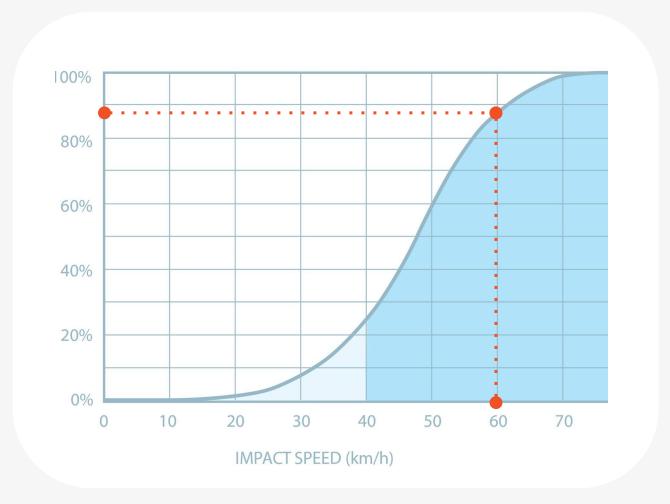


Risk of Pedestrian Death and Impact Speed





Risk of Pedestrian Death and Impact Speed

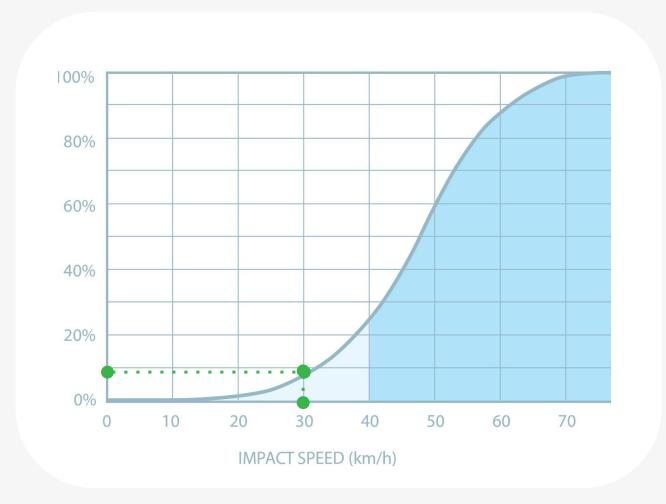


60 km/h

= 90% chance of **DEATH**



Risk of Pedestrian Death and Impact Speed



30 km/h

= 90% chance of SURVIVAL



The faster one drives... the less they see



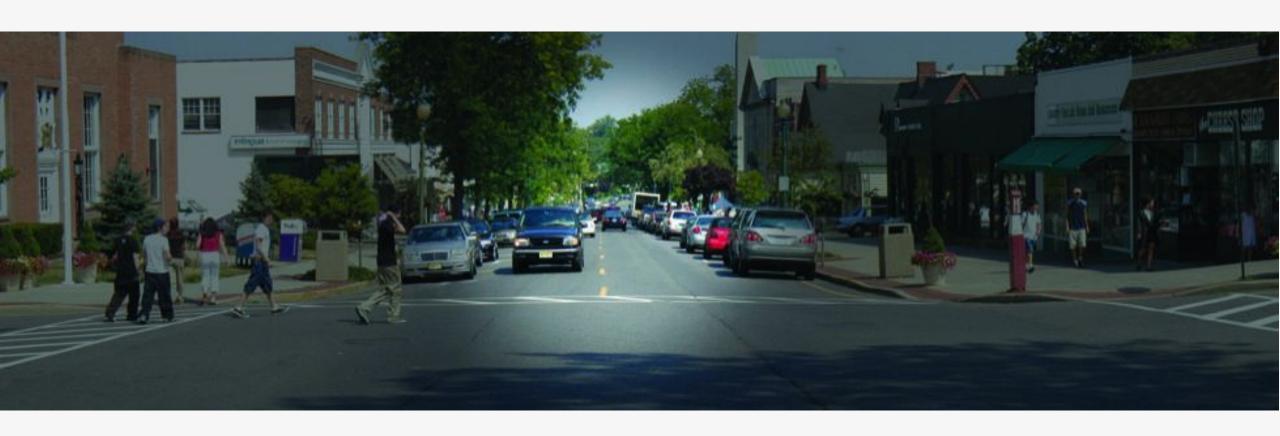


The faster one drives... the less they see





The faster one drives... the less they see





The faster one drives... the higher the risk of a crash

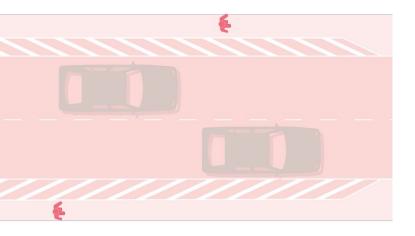


A shift in design approach

From passive to proactive

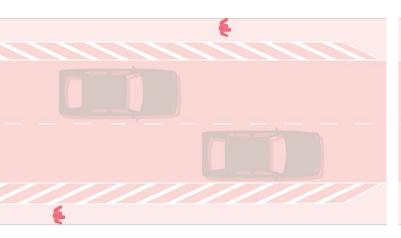


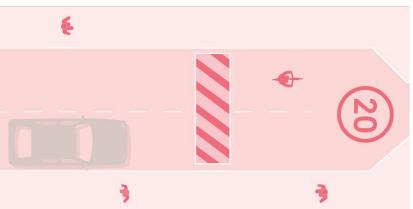




Passive Approach



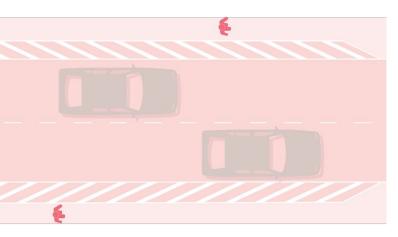


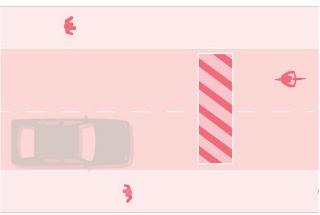


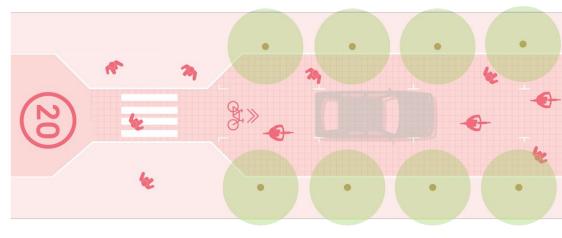
Passive Approach

Reactive Approach









Passive Approach

Reactive Approach

Proactive Approach



Which street design factors contribute to speeding?

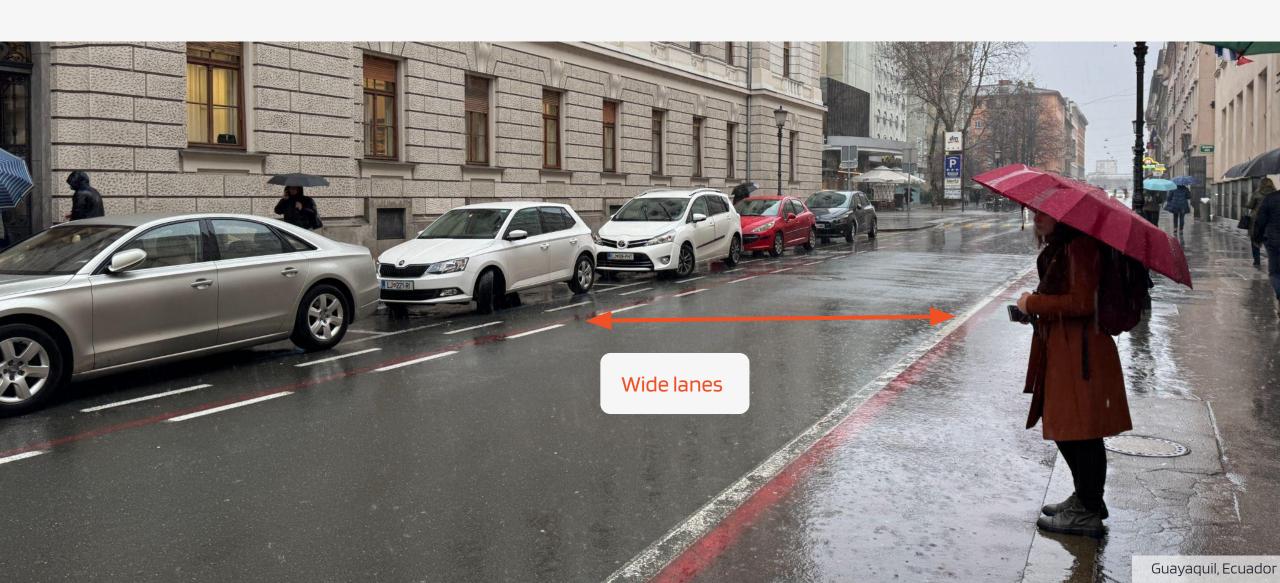


Wide travel lanes/lack of markings



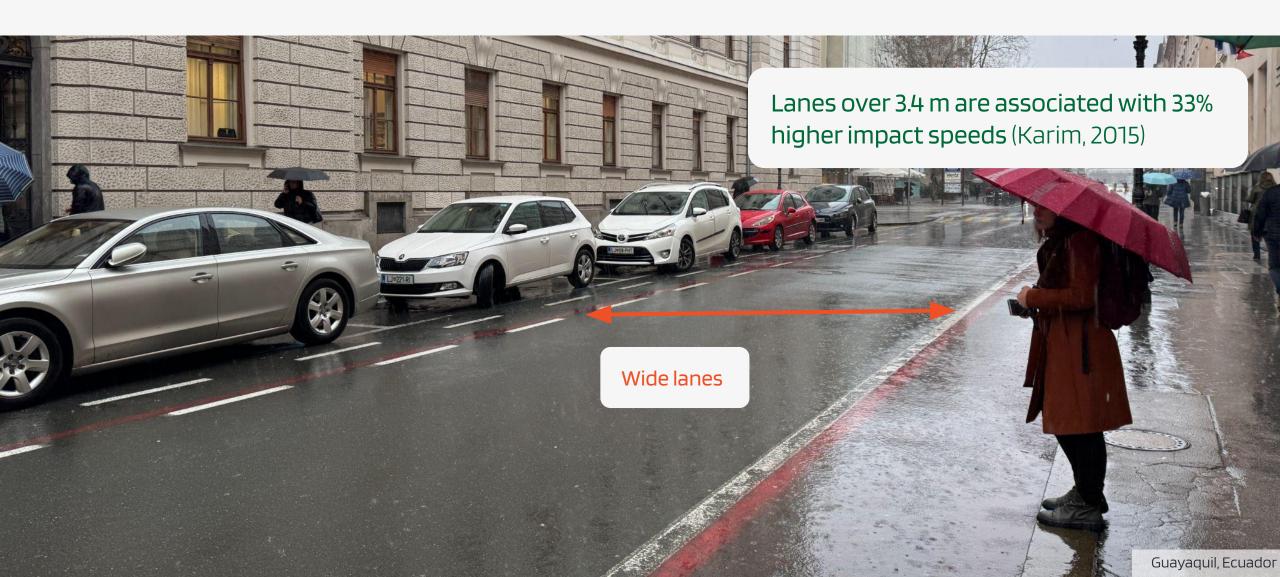


Wide travel lanes/lack of markings



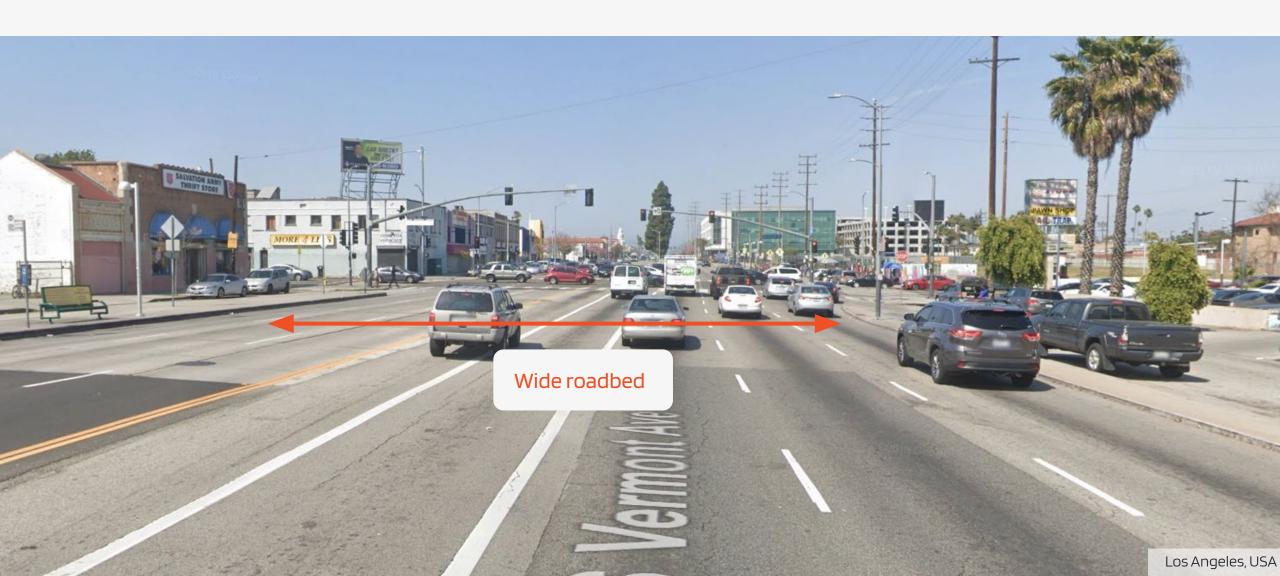


Wide travel lanes/lack of markings





Wide travel lanes/lack of markings





Wide turning radii





Turn Radius x Speeds

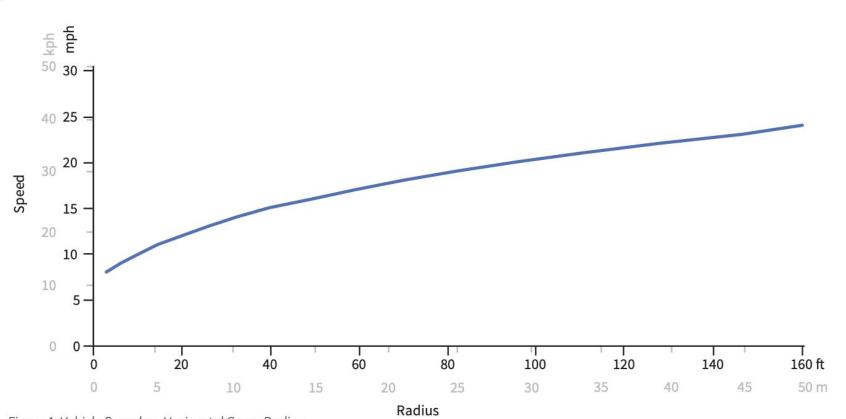


Figure 1: Vehicle Speed vs. Horizontal Curve Radius

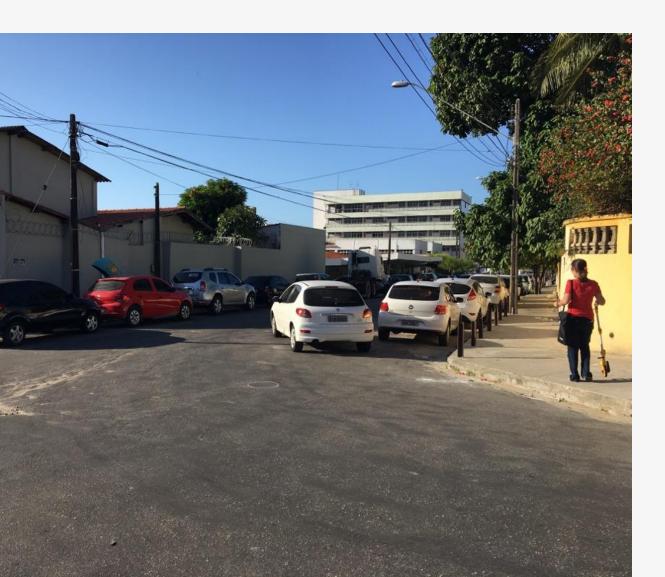


Taking Action

2. Design streets that prioritize people



Can design help reduce speeds?





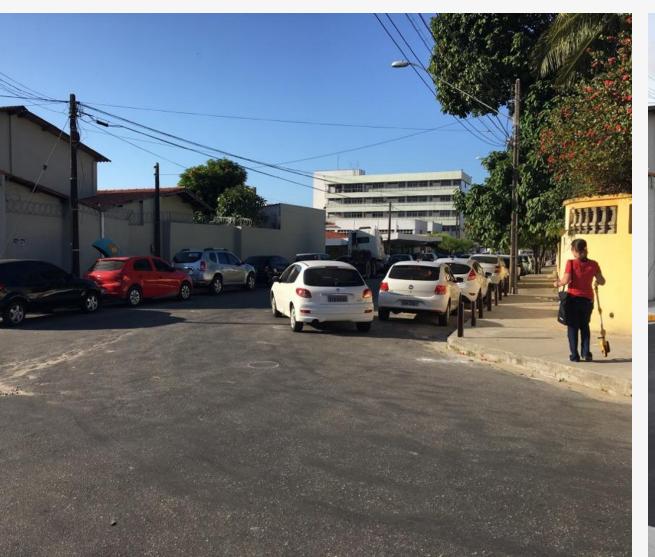
Yes, the way streets are designed impact how they are used!







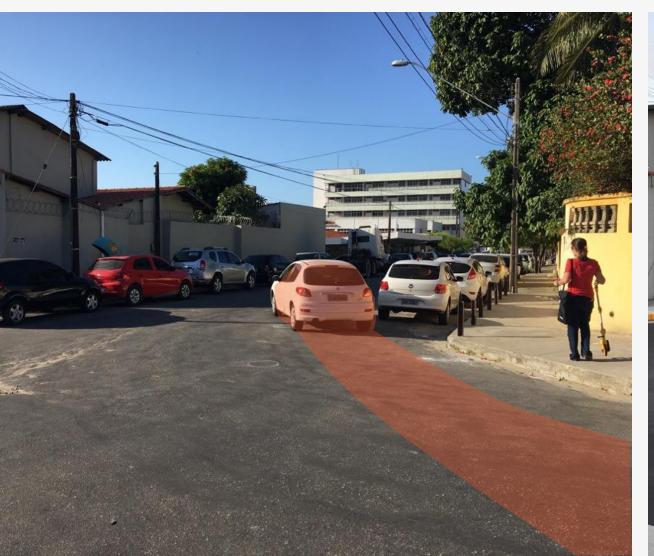
Yes, the way streets are designed impact how they are used!







Yes, the way streets are designed impact how they are used!







At what speed would you drive?



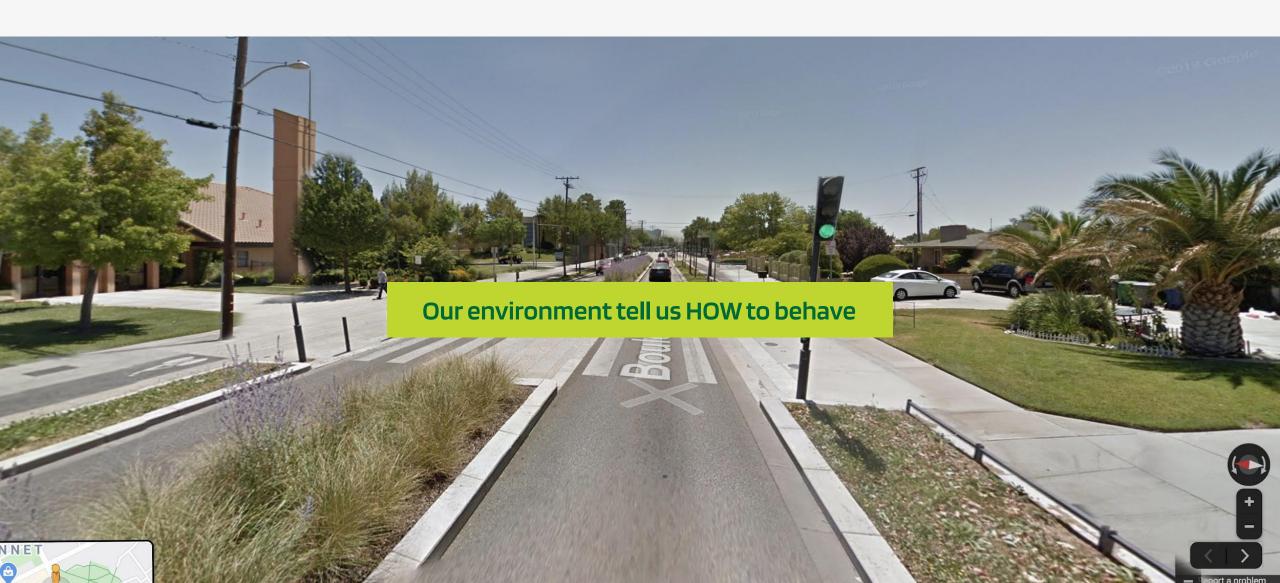


At what speed would you drive?



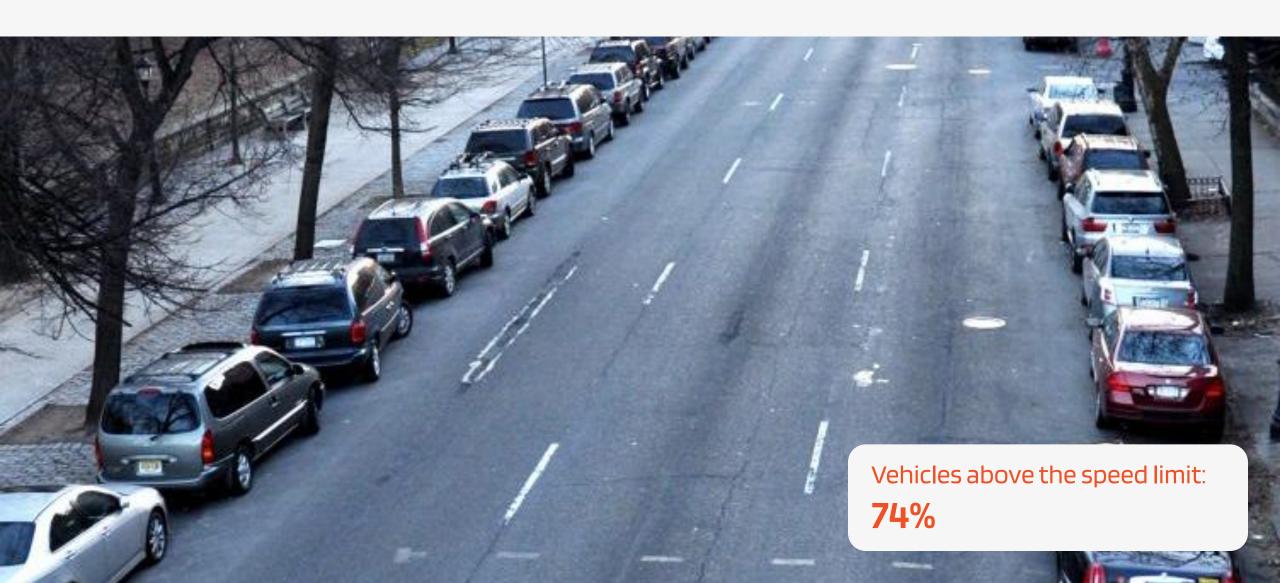


At what speed would you drive?





Prospect Park West Ave, NYC





Prospect Park West Ave, NYC









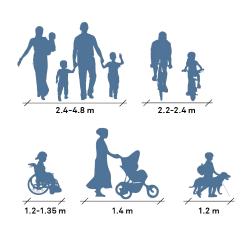
Children's Needs from Streets



Reliable mobility choices



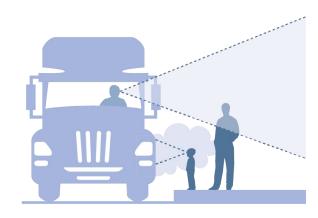
Places to pause and stay



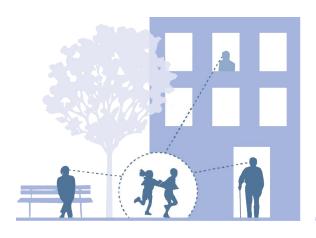
Space



Social interaction



Visibility



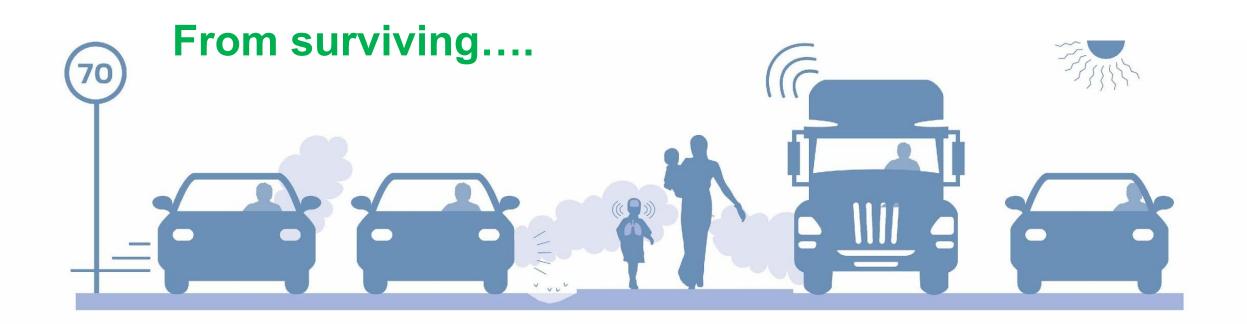
Security



Play and learning



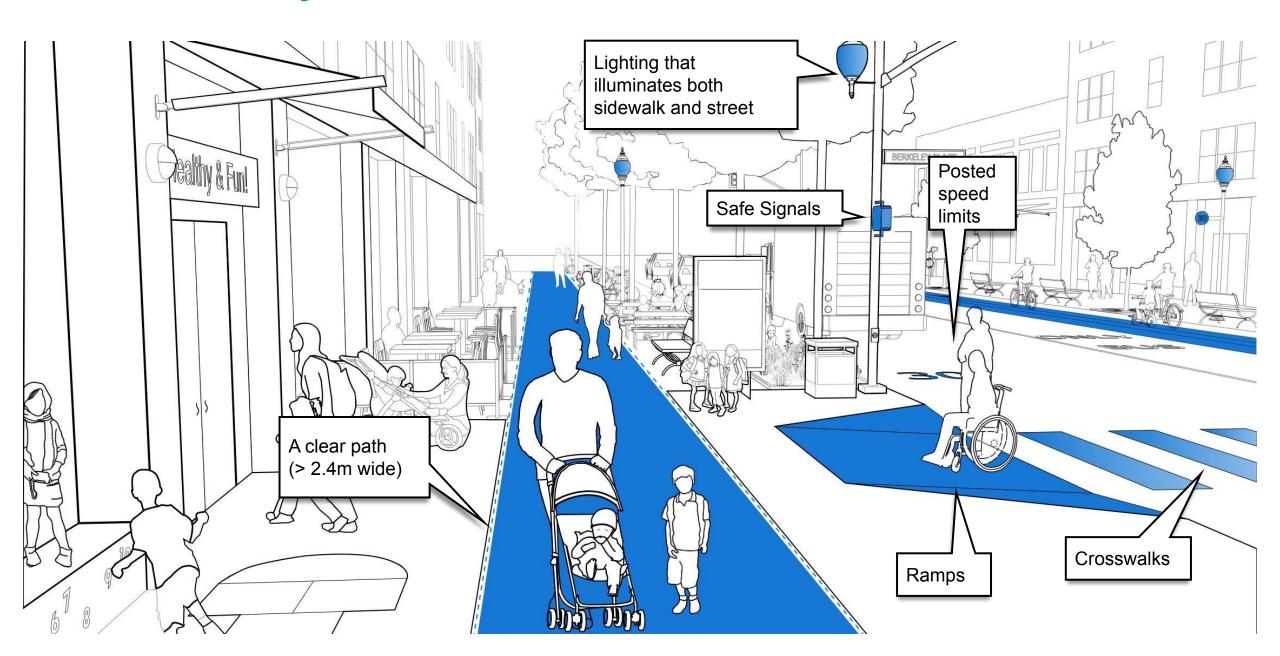
A safe environment





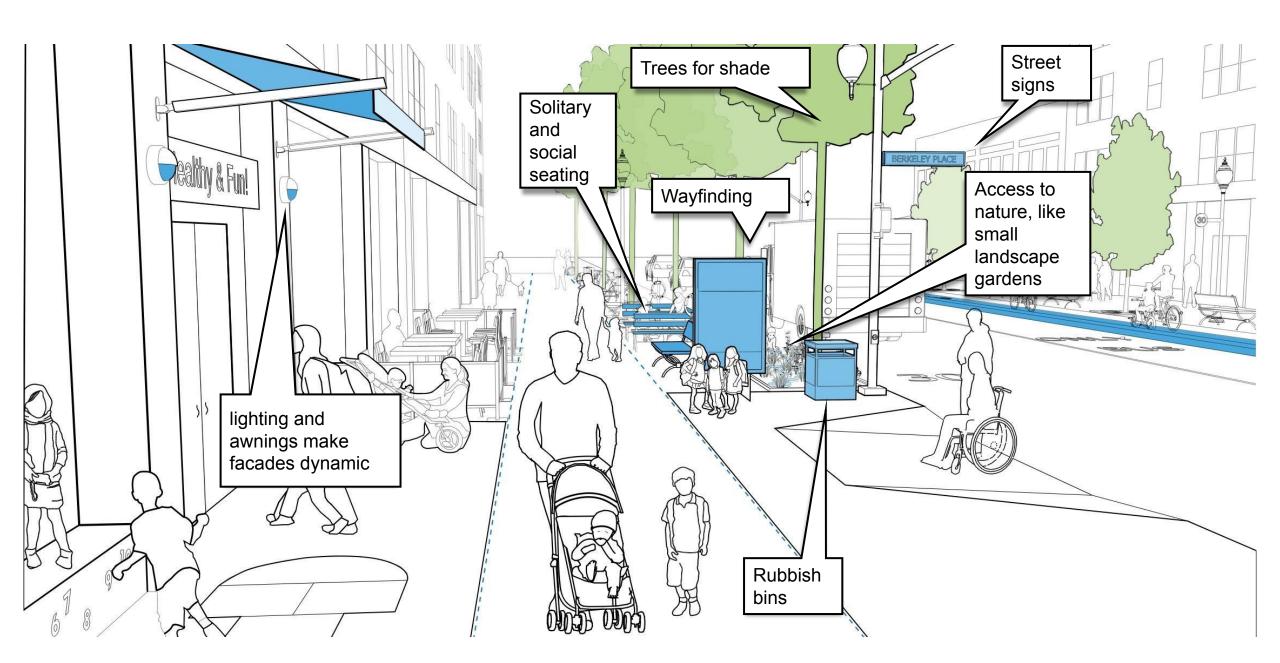
Safe and healthy





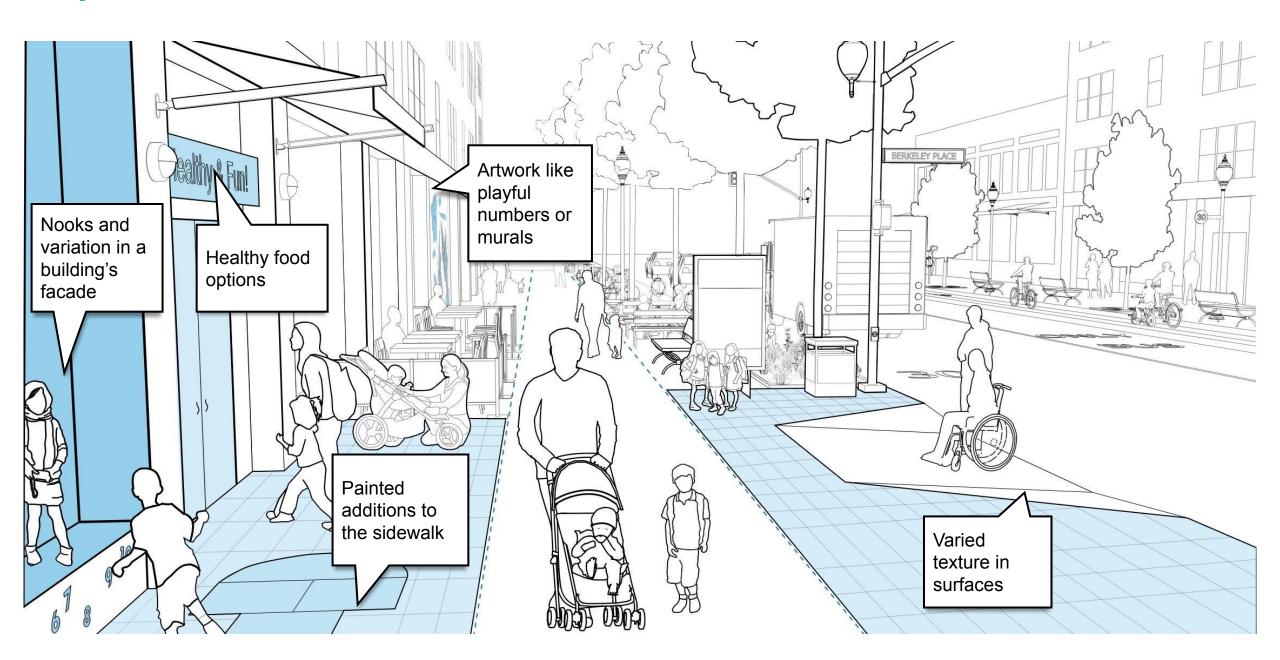
Comfortable and convenient





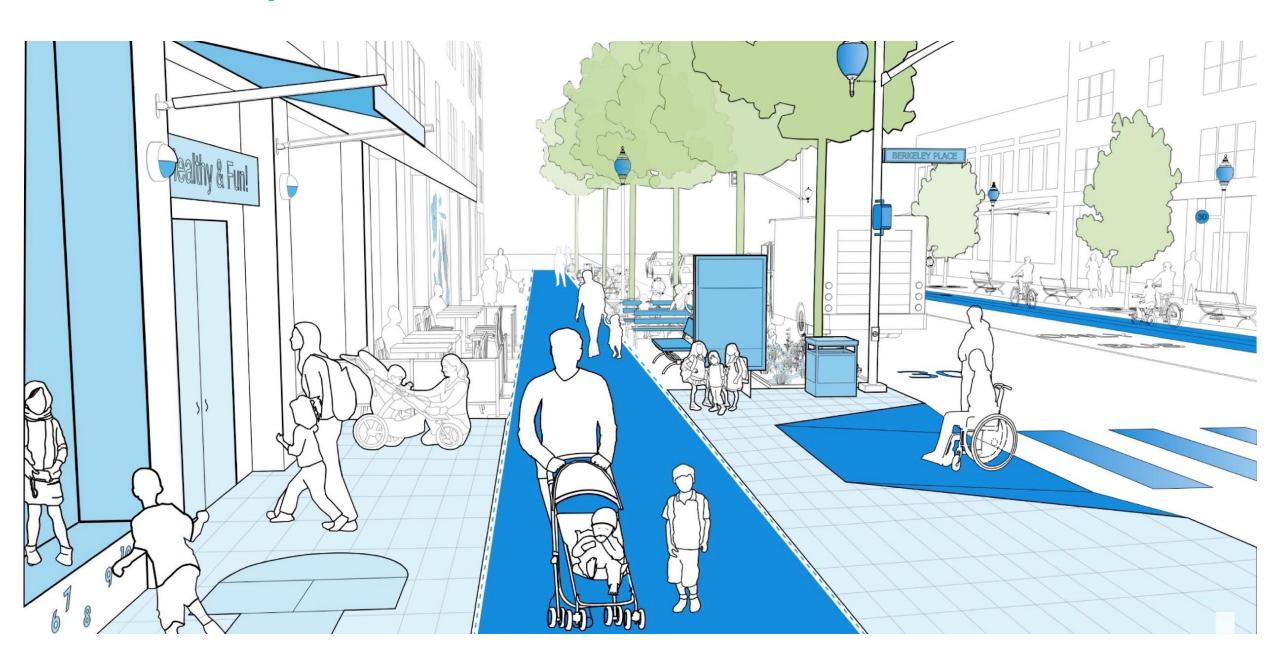
Inspirational and educational





Pedestrian experience







Bad 'Design' can self-enforce unsafe behaviors

Good 'Design' can self-enforce safe behaviors

Taking Action

3. Prioritize sustainable mobility choices

Stop prioritizing and subsidizing individual motorized vehicles



Stop prioritizing and subsidizing individual motorized vehicles





Stop prioritizing and subsidizing individual motorized vehicles





Make it easier NOT TO DRIVE

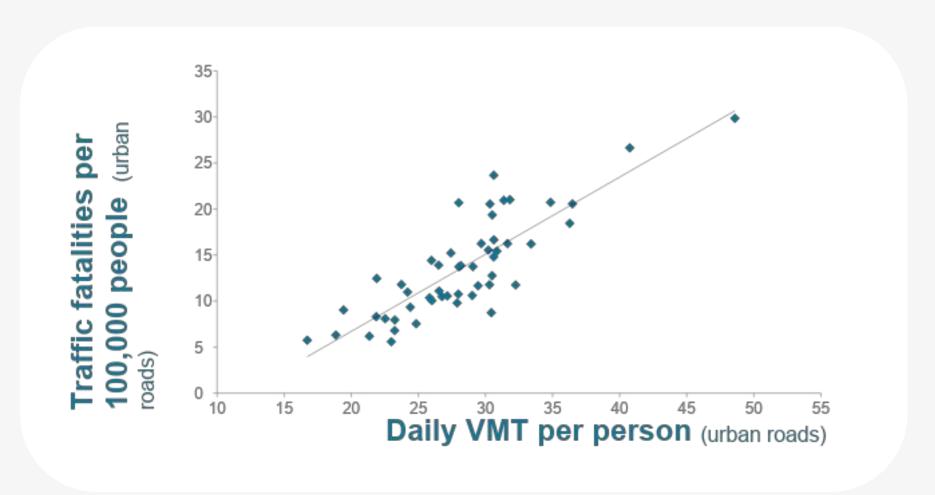




Sustainable transportation options are safer

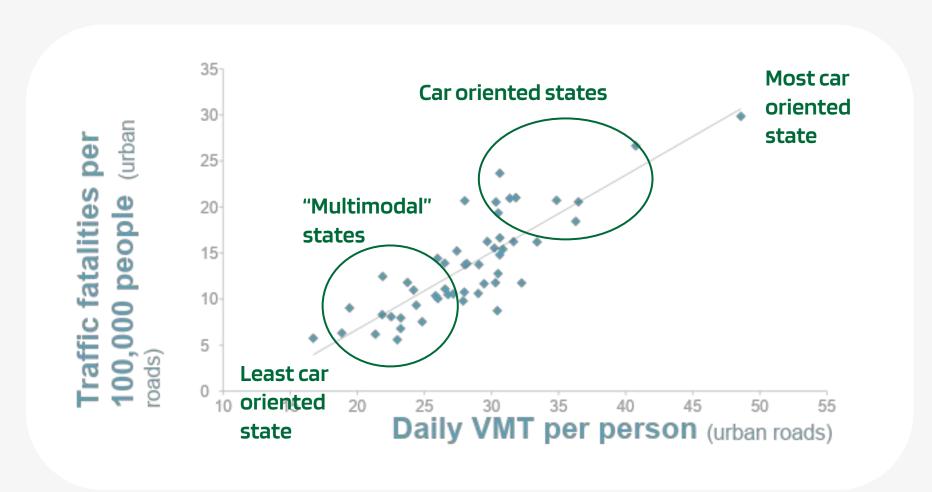


More personal driving is associated with more traffic fatalities



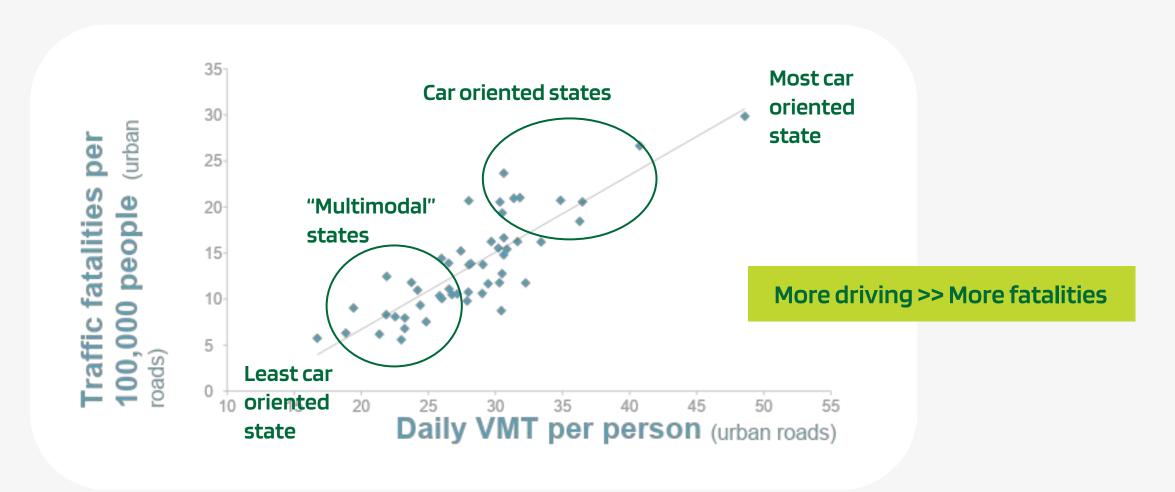


More personal driving is associated with more traffic fatalities



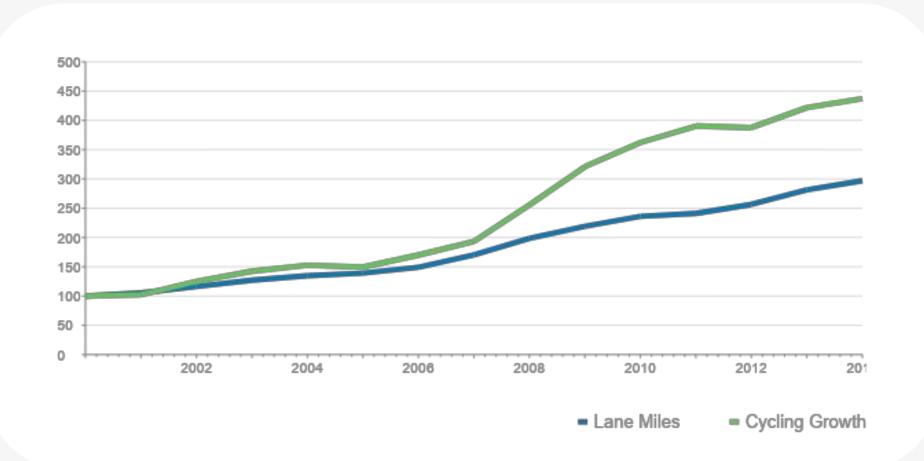


More personal driving is associated with more traffic fatalities



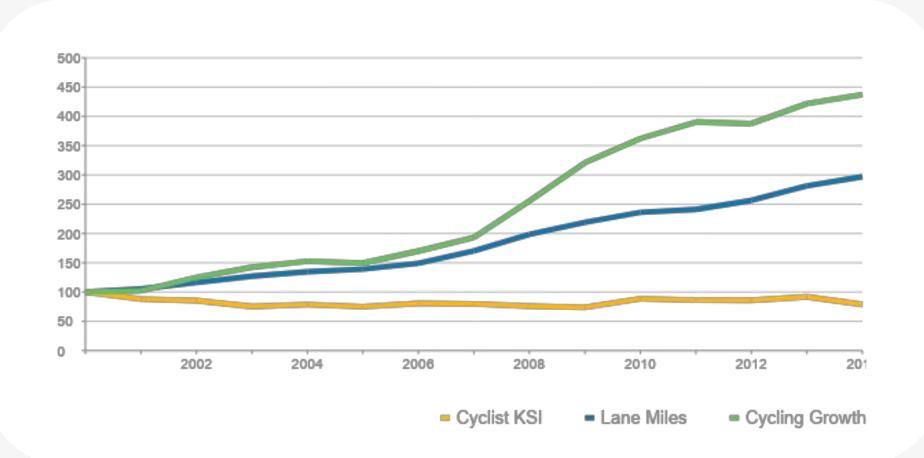


More Lanes = More Cyclists





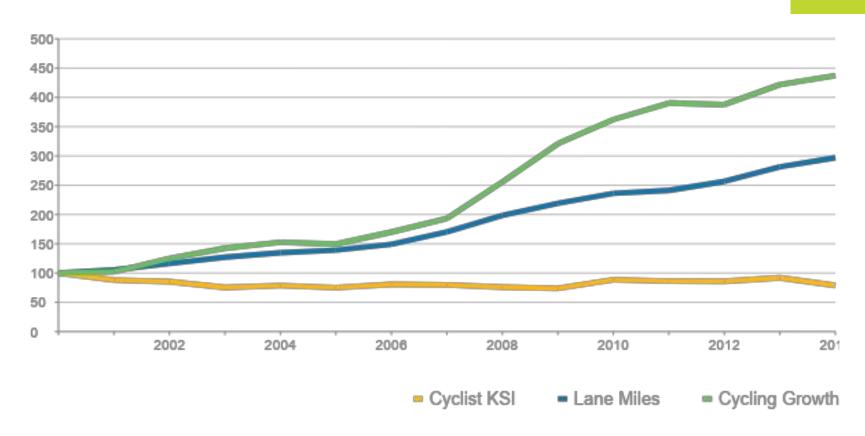
More Lanes = More Cyclists = Reduced Risk (for all users)





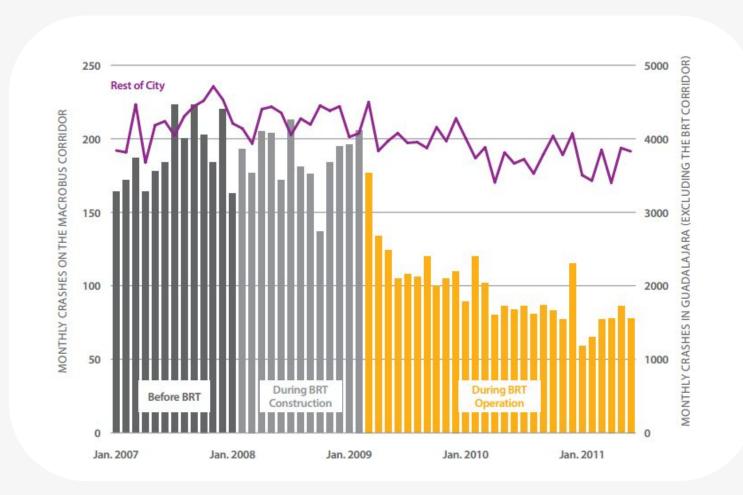
More Lanes = More Cyclists = Reduced Risk (for all users)

More cycling >> Fewer fatalities





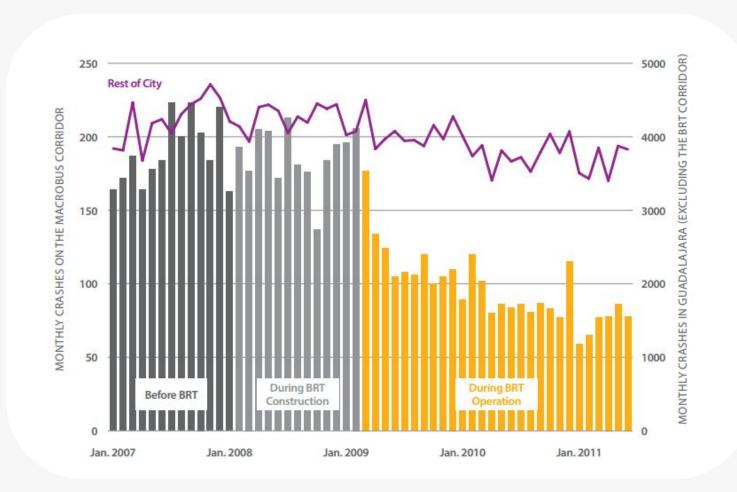
Guadalajara, Mexico



Crashes before and after the implementation of the Macrobús BRT in Guadalajara



Guadalajara, Mexico



More transit >> Fewer fatalities

Crashes before and after the implementation of the Macrobús BRT in Guadalajara



Sustainable transportation options are more efficient



We have been stuck in a self-fulfilling prophecy:





loosening your belt to cure obesity."(Lewis Mumford)

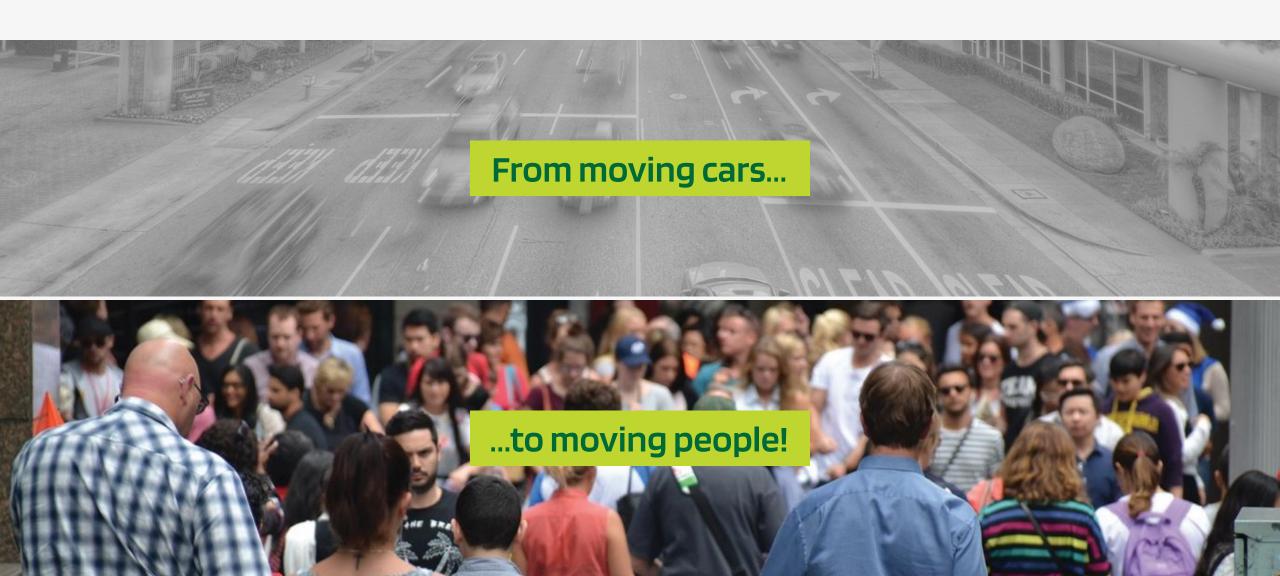


It's time to solve a different problem...



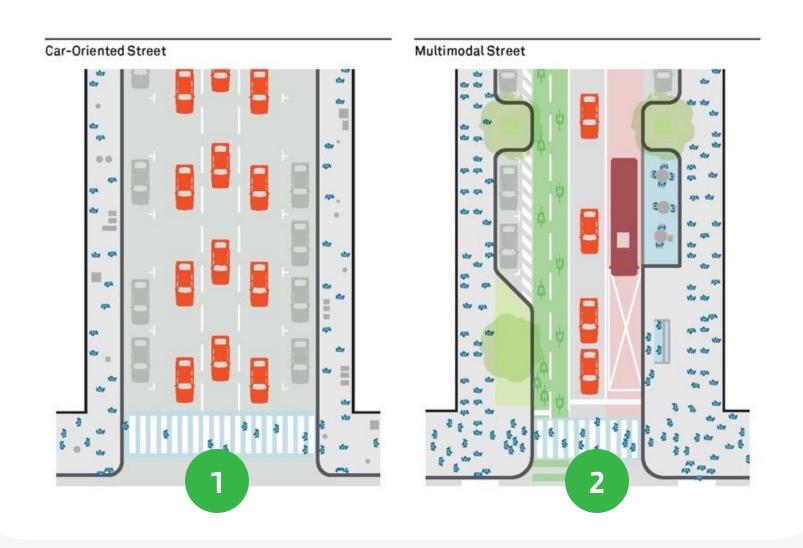


It's time to solve a different problem...



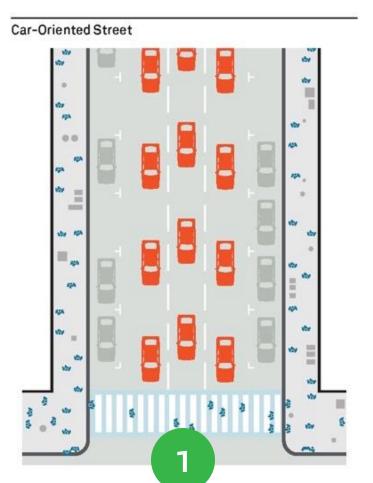


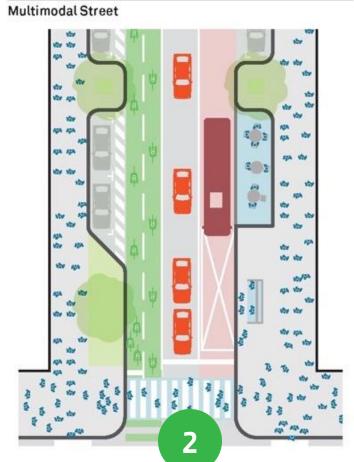
Which street has the highest capacity?





Which street has the highest capacity?

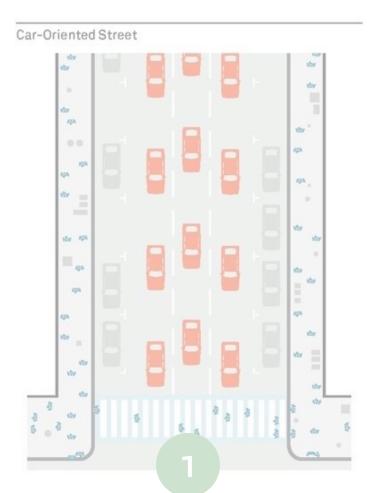


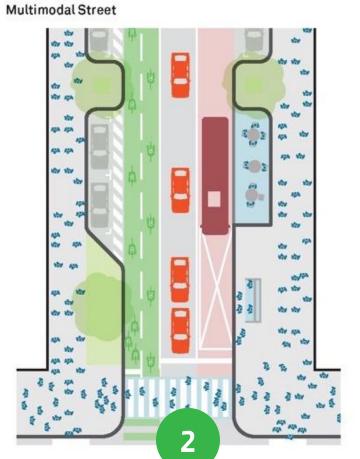






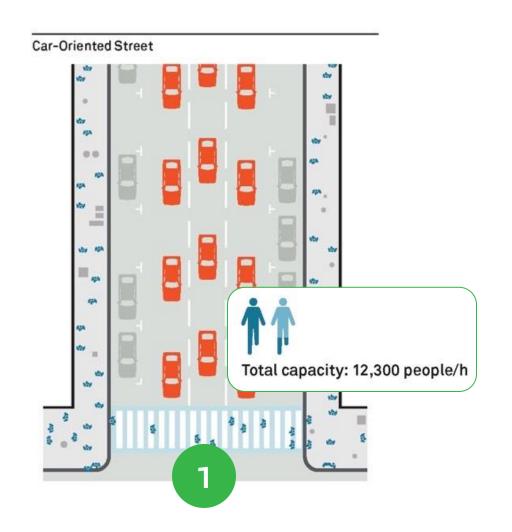
Which street has the highest capacity?

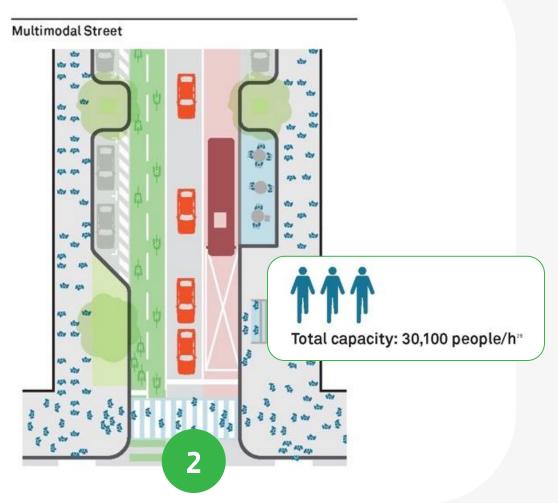












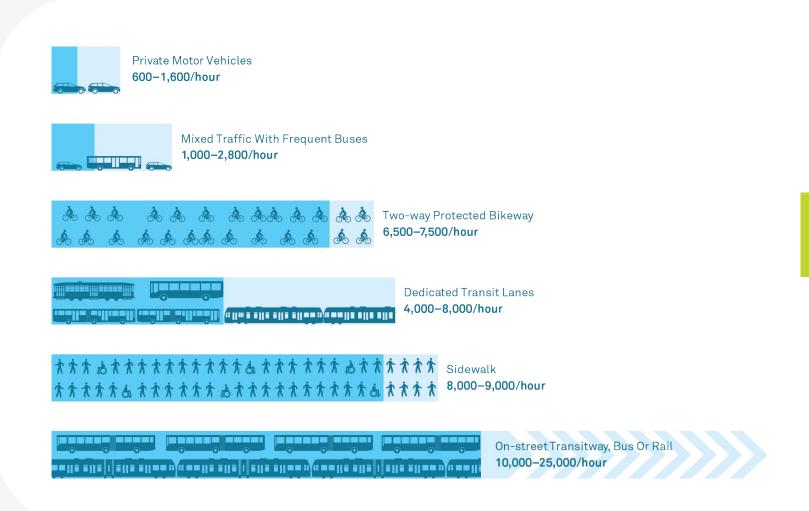






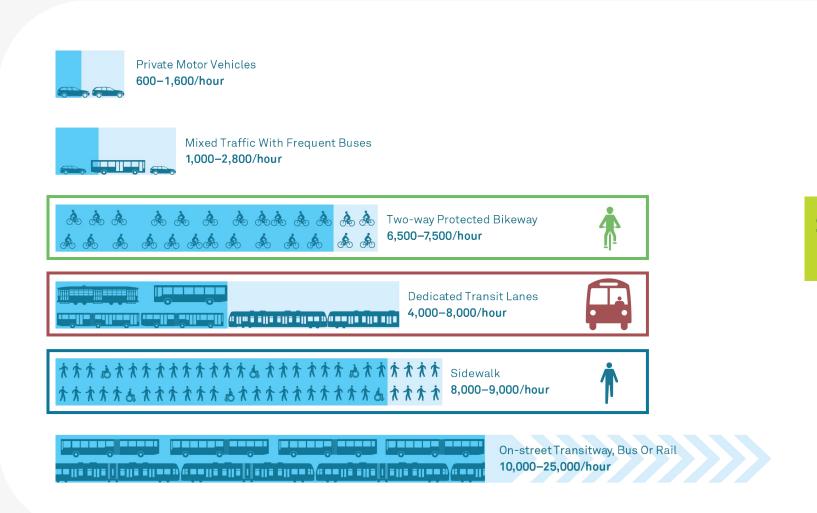
Mixed Traffic With Frequent Buses 1,000–2,800/hour





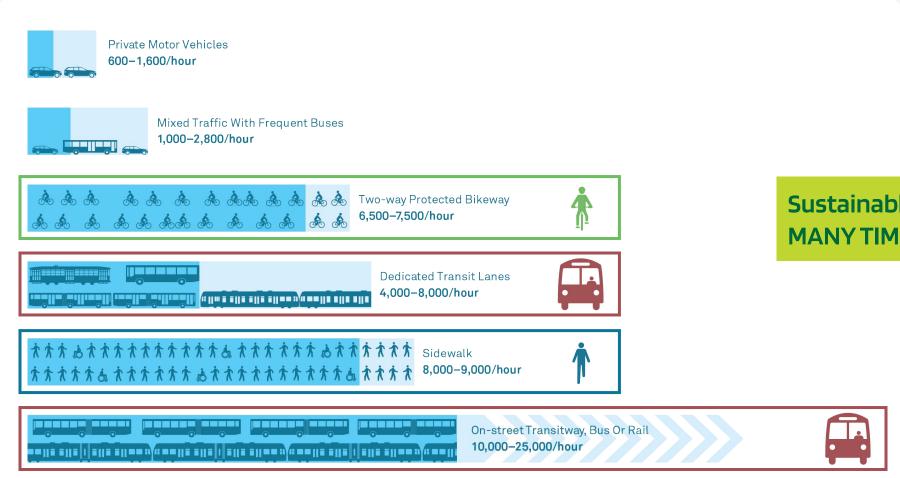
Sustainable modes
MANY TIMES more efficient





Sustainable modes
MANY TIMES more efficient

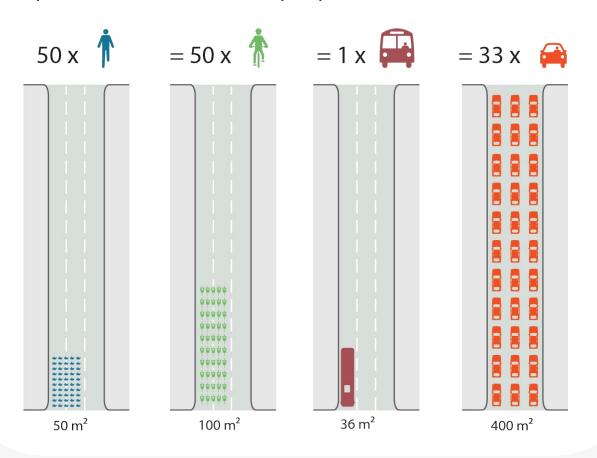




Sustainable modes
MANY TIMES more efficient

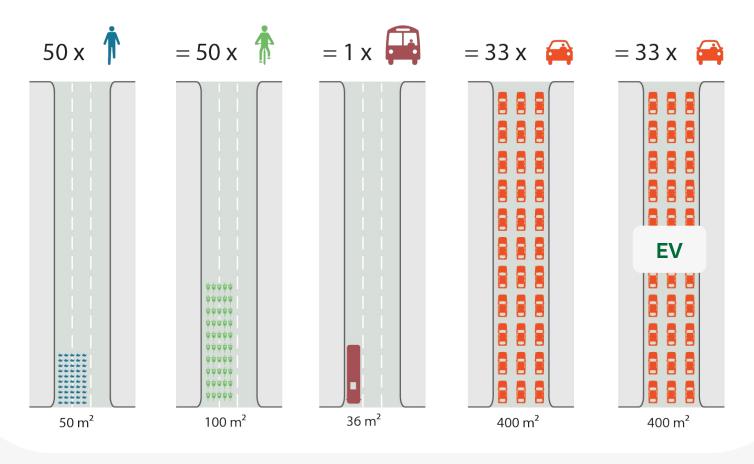


Space needed to move 50 people



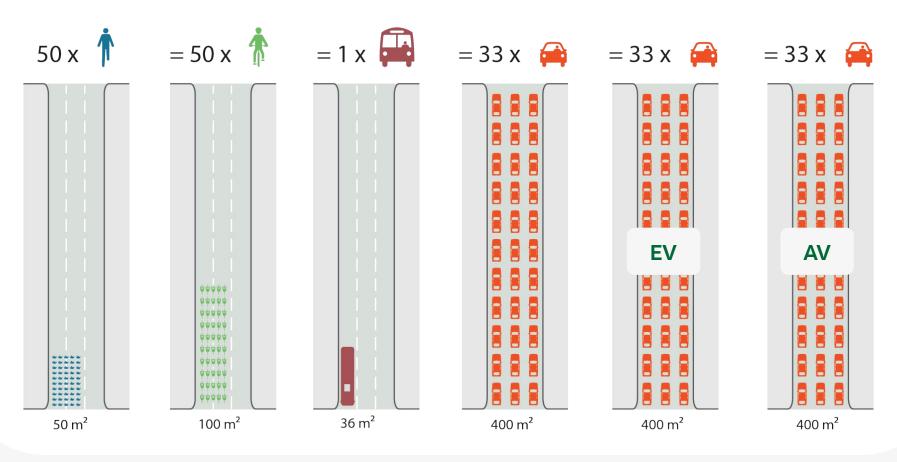


Space needed to move 50 people





Space needed to move 50 people

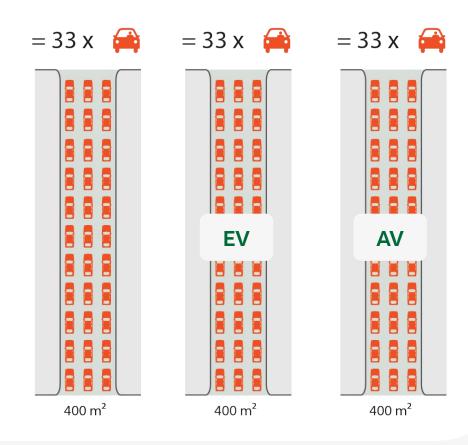




Space needed to move 50 people

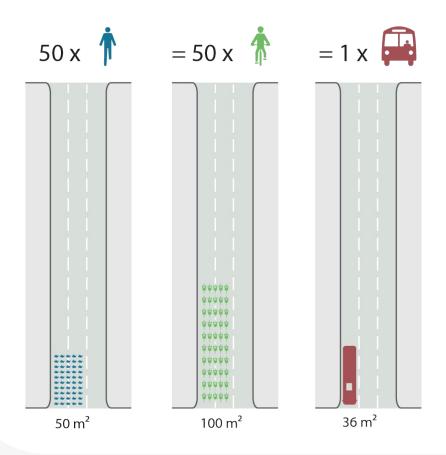
As our cities grow...

...Do we want to continue moving people like this?





Space needed to move 50 people



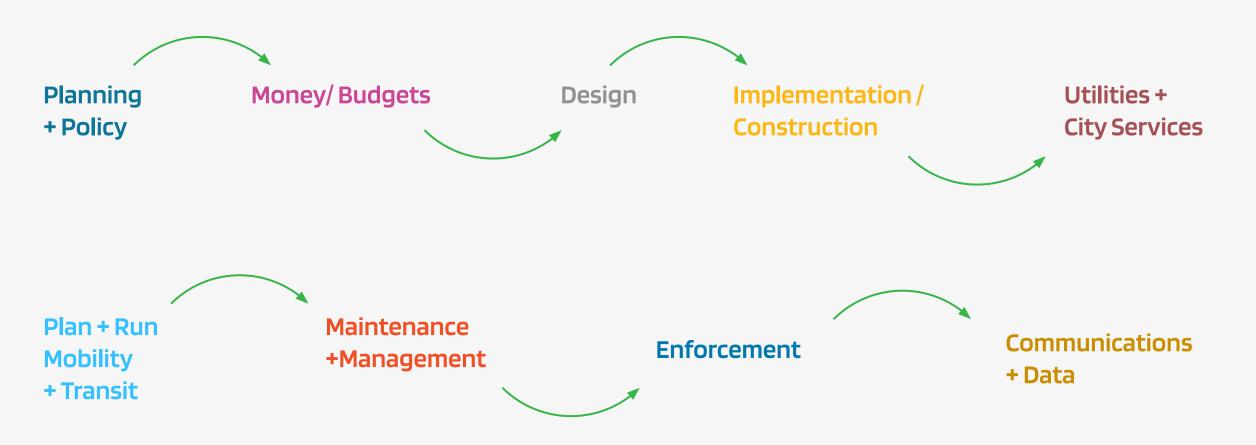
...Or rather like this?

Taking Action

4. Work together



Identify who's involved in Shaping Safe Streets + Sustainable Transportation Options?





Who's involved in changing a street?





- Transportation departments and engineers
- Consumer affairs organizations
- Transit authorities and operators
- Park departments
- Construction and public works
- Sanitation and waste management
- Environmental protection
- Departments and organizations supporting people with disabilities
- Planning departments
- Building departments
- Utility companies
- Urban designers, landscape architects, and architects
- Health professionals
- Historic preservation organizations
- Advocacy groups and neighborhood associations
- Private property owners and tenants
- Local businesses, vendors, and kiosk owners
- Street operators
- Local media
- Developers and development banks
- Academic institutions
- Enforcement entities



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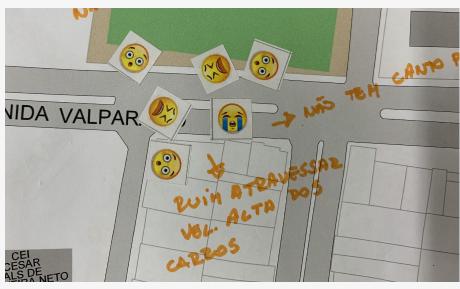
Process for Shaping Streets

A TYPICAL PROCESS FOR SHAPING STREETS While local processes vary in each context, use the typical steps in the diagram below to define and guide the process for each project before it begins. Street design is an iterative process. Processes should remain flexible and relevant, evolving and adapting over time as best practices, specific challenges, and contexts change. Use the following steps to guide the process of shaping streets. **Project Planning Post Completion Process Step** Analyze the Site **Engage All Stakeholders** entation **Develop a Project Vision** plem Planning and Design **Build the Project** Maintain and Manage the Project Proje Evaluate the Impacts **Update Policy**

Global Designin Cities Initiative

Community engagement









Media trainings





Workshops with traffic police



Help them enforce Safe movement for all vs Traffic management



Broaden how we communicate about the importance and vulnerability of pedestrians





Broaden how we communicate about the importance and vulnerability of pedestrians





























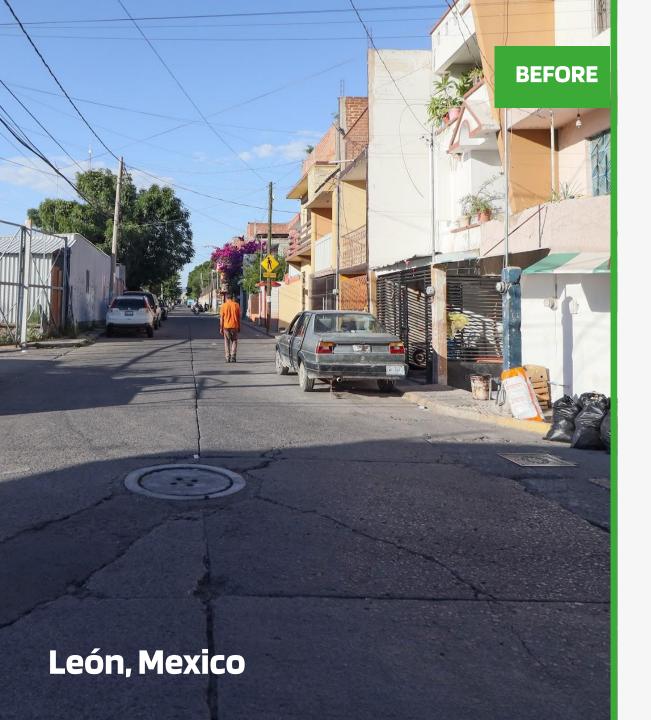












In a survey before the transformation, only 1% of caregivers felt it was safe for their child to ride or play on the street.





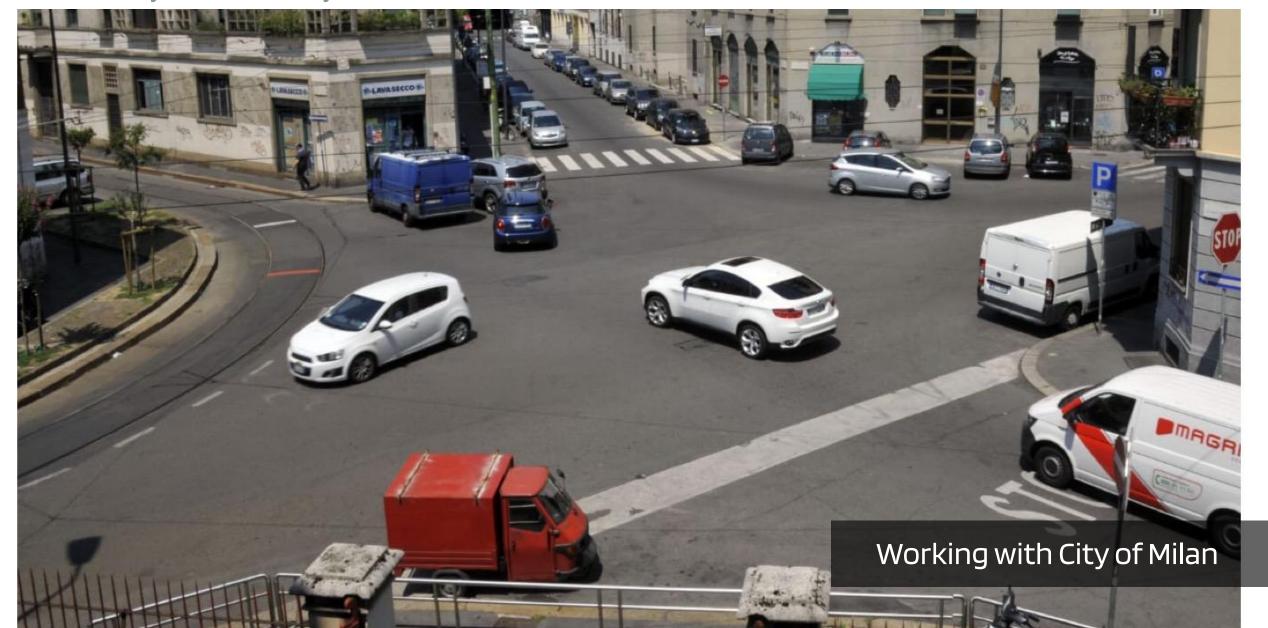
After the transformation, 75% of caregivers felt it was safe for their child to ride or play on the street.



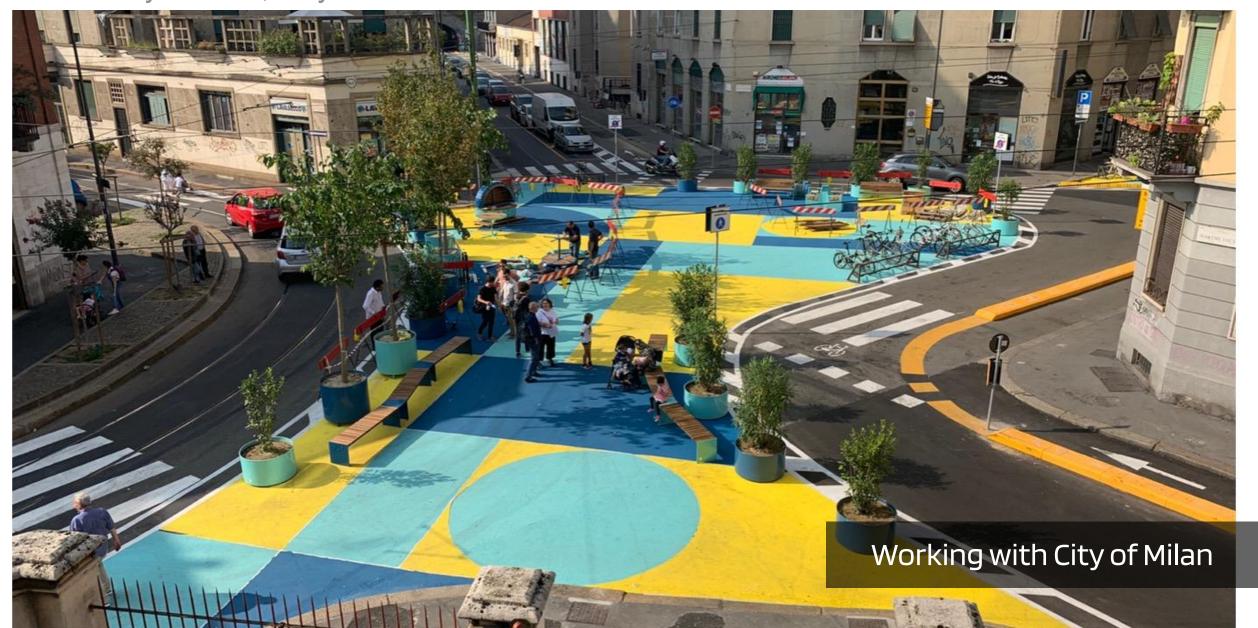




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200 fewer vehicles

passing in the area in the peak periods (7AM-9AM and 5PM-7PM) during weekdays.



In terms of emissions, this is equivalent to eliminating 35 trucks passing by that street in that time window.

less traffic in the street

less pollution near children



Global Designing Cities Initiative







How do we ever make these changes (or MORE of these changes) in MY city?



- + Road Safety Plans....
- + New Bike Facilities...
- + Investing in Public Transport....
- + Improved Enforcement....
- + Reducing Speed limits....
- + Media campaigns....
- +





What are 1-3 immediate actions you can take?

write them down & tell the person sitting next to you





Safe and Sustainable Street Design: Designing for All Street Users

A workshop for the City of Ljubljana, Slovenia

Abhimanyu Prakash, Associate Director Renata Carvalho, Program Manager Marina Visic, Program Associate

Global Designing Cities Initiative

29th January, 2025





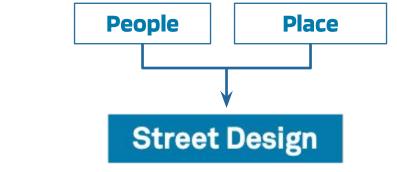
Designing for All Street Users

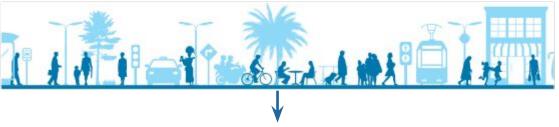




A new approach to street design







Desired Outcomes

- Health and Safety
- · Livability and Quality of Life
 - Multi-modal Access
- Environmental Sustainability
 - Economic Sustainability
 - Equity

Designing for place



Designing for place







Socia





Built environment

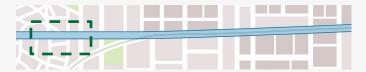
Natural environment

Social & cultural environment

Economical environment



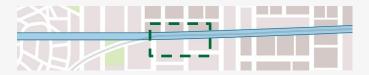
Context 1: Neighborhood Main Street







Context 2: Central Two-way Street

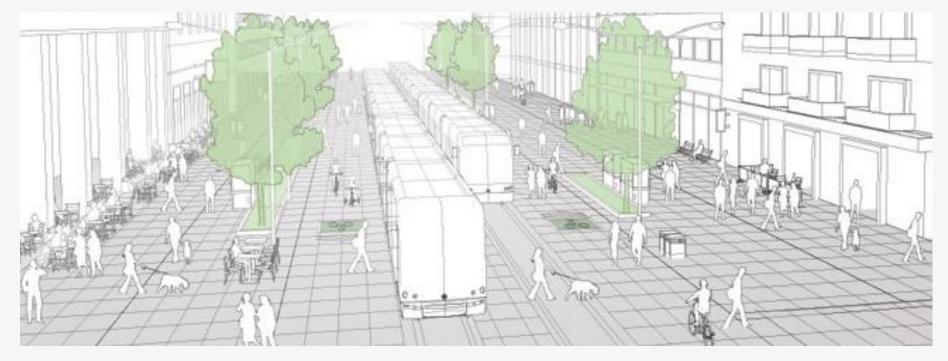






Context 3: Transit Mall











Designing for people





Pedestrians







Cyclists





Pedestrians





Transit Users









Cyclists





Motorists









Cyclists



Transit Riders





Freight Operators and Service Providers



















People Doing Business









Cyclists



Transit Riders





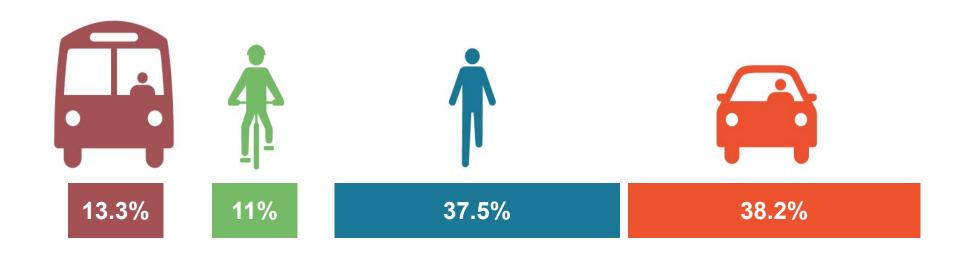


Freight Operators and Service Providers



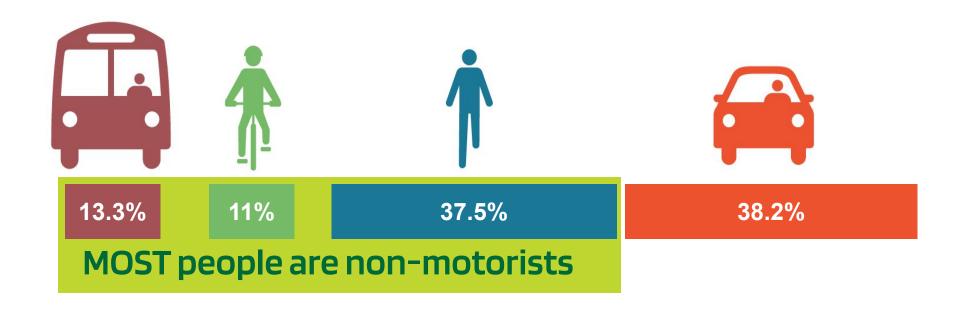


How people get around in Ljubljana





How people get around in Ljubljana



Designing for pedestrians

Designing for pedestrians

(we are all pedestrians!)

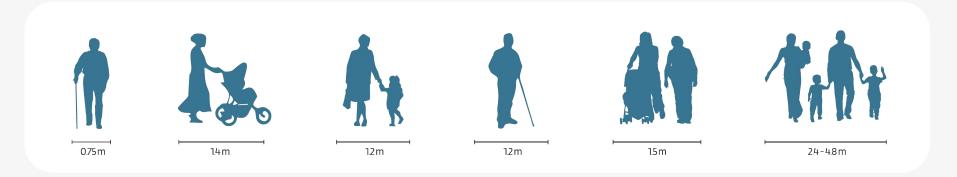


Pedestrian vulnerability and speed

Pedestrians cannot be made safe, at unsafe speeds or without facilities that serve them well.



Types and dimensions

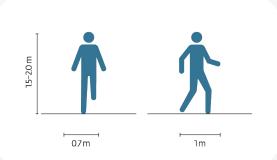




Types and dimensions



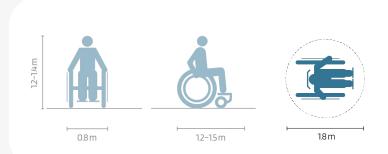


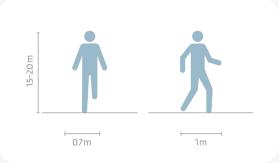




Types and dimensions









Elements



Sidewalks



Pedestrian Crossings



Pedestrian Refuge Islands



Curb Extensions



Accessibility Ramps



Vision-Impaired Guidance



Signage and Wayfinding



Pedestrian Countdown Signals + Clocks



Lighting



Seating



Water Fountains



Weather Protection



Curbs



Waste Receptacles



Active Building Edges



Trees and Landscaping



Elements



Sidewalks



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Lighting



Seating



Water Fountains



Weather Protection



Curbs



Waste Receptacles



Active Building Edges



Trees and Landscaping



Sidewalks zones



Frontage Zone

1m - 3.5

Clear Path

1.8 – 2.4 + (Residential) 2.4 – 4.5 + (Commercial) Street Furniture Zone

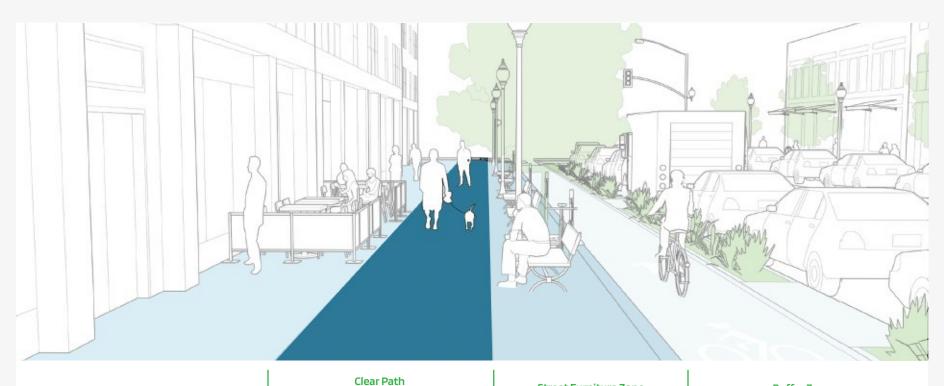
1.5m – 2 m

Buffer Zone

Approx. 2 m - 2.5 m



Sidewalks zones



Frontage Zone 1m - 3.5

1.8 – 2.4 + (Residential) 2.4 – 4.5 + (Commercial) Street Furniture Zone 1.5m – 2 m **Buffer Zone** Approx. 2 m – 2.5 m



Clear path

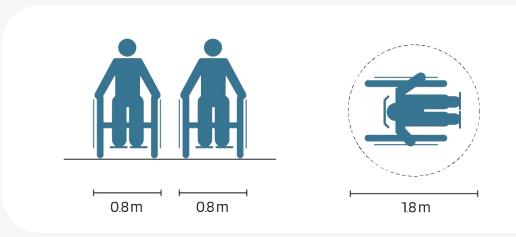
The clear path should be at least 1.8–2.4 wide in residential settings and 2.4–4.5 wide in downtowns, school zones, or commercial areas with heavy pedestrian volumes



Clear path

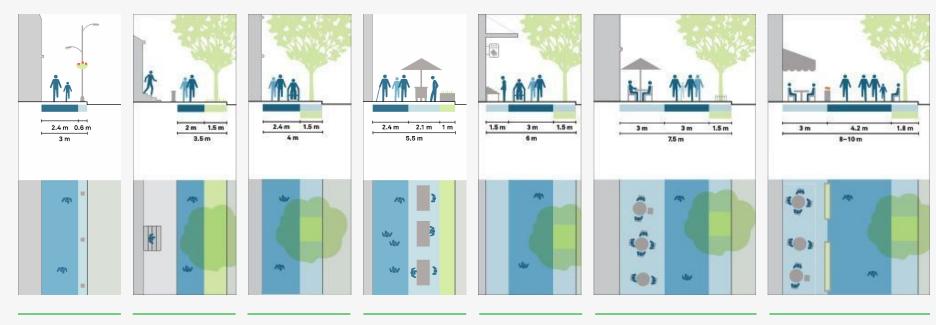
Why 1.8 m absolute minimum?

To ensure that every sidewalk even in low volume residential areas is accessible to all types of users (and all types of wheelchairs)





Sidewalks types

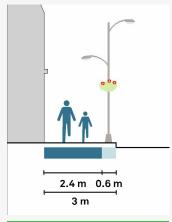


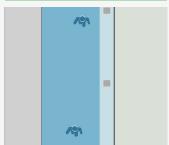
Residential Sidewalk Residential Ribbon Sidewalks Residential Sidewalk with Trees Neighborhood Main Street 1 Neighborhood Main Street 2 Medium Commercial Sidewalks Large Commercial Sidewalks



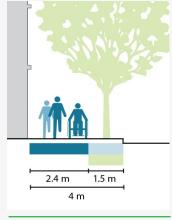
Residential

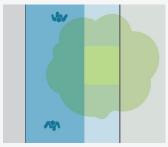
Residential Sidewalk





Residential Sidewalk with Trees







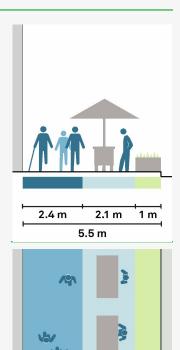
Residential



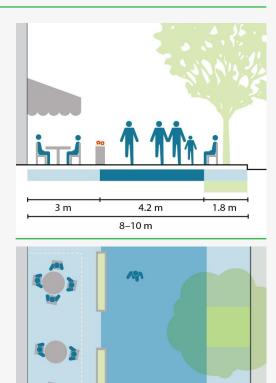


Commercial

Neighborhood Street



Large Commercial Sidewalks





Commercial





Commercial





Elements



Sidewalks



Pedestrian Crossings



Pedestrian Refuge Islands



Curb Extensions



Accessibility Ramps



Vision-Impaired Guidance



Signage and Wayfinding



Pedestrian Countdown Signals + Clocks



Lighting



Seating



Water Fountains



Weather Protection



Curbs



Waste Receptacles



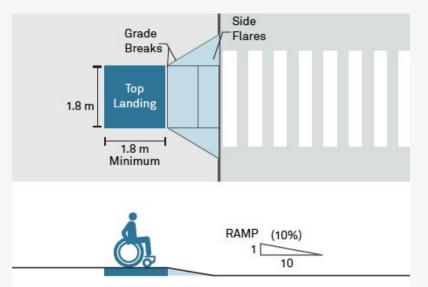
Active Building Edges

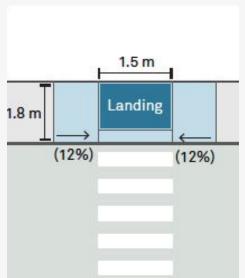


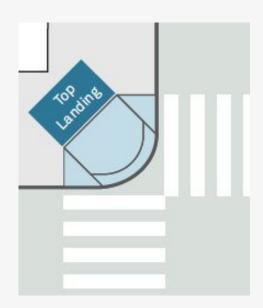
Trees and Landscaping



Accessibility Ramps







Can be designed in different ways according to the context. Ramp slopes should not be 8-12%



Elements



Sidewalks



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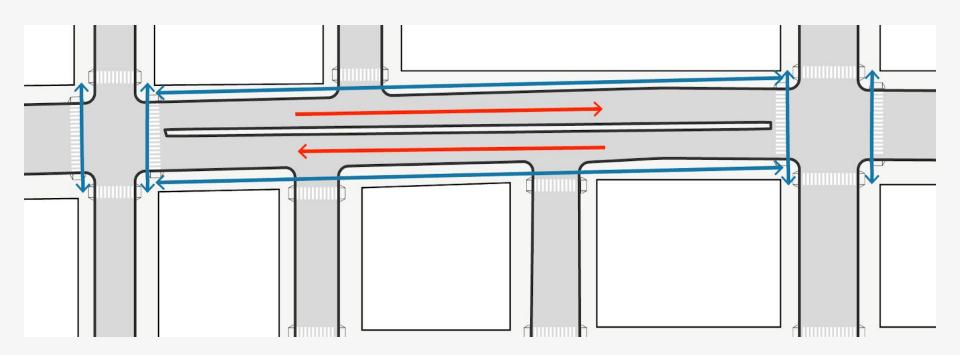
Active Building Edges



Trees and Landscaping

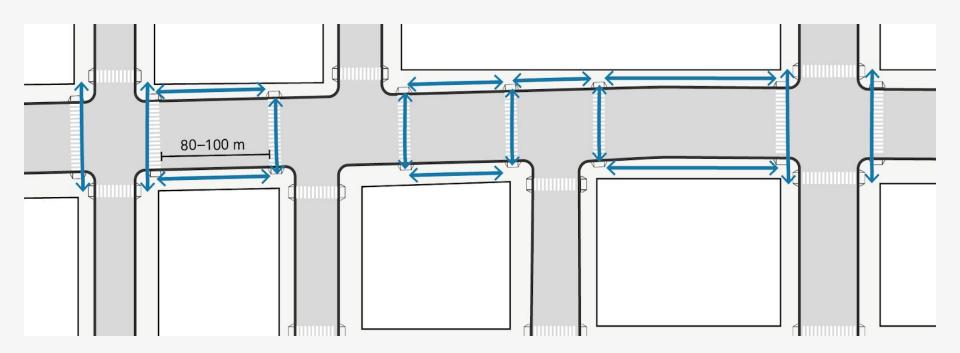


Spacing





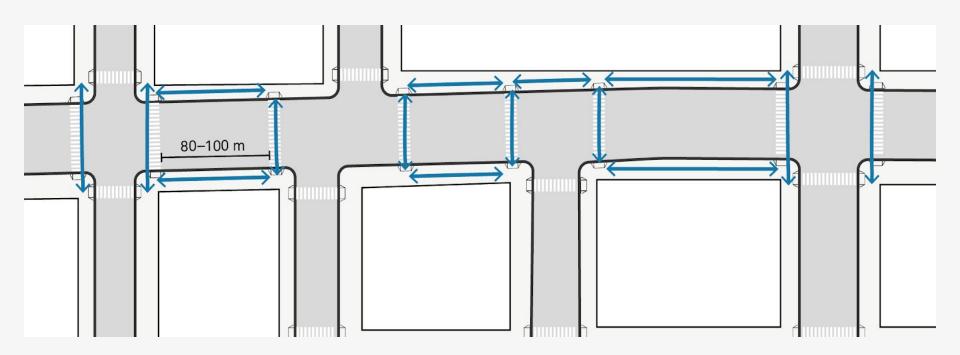
Spacing



Safe, accessible crossings should be provided every 80–100 m, and at all legs of an intersection, to ensure a connected walkable network.



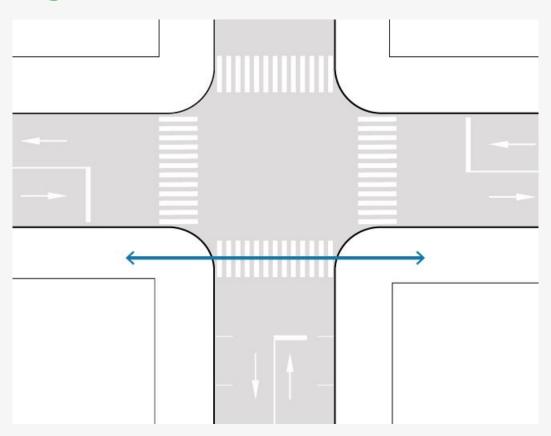
Spacing



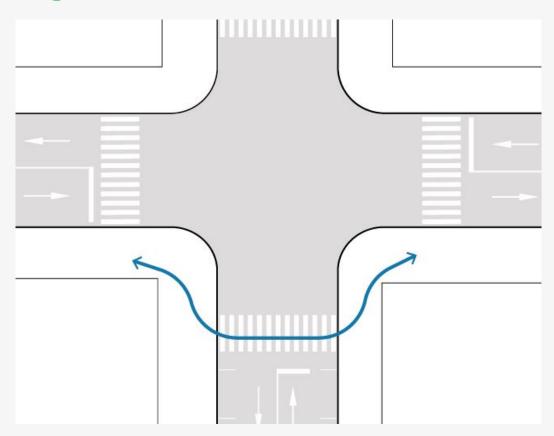
Safe, accessible crossings should be provided every 80–100 m, and at all legs of an intersection, to ensure a connected walkable network.

Crossings **over 200 m apart** must be **avoided** in urban contexts.

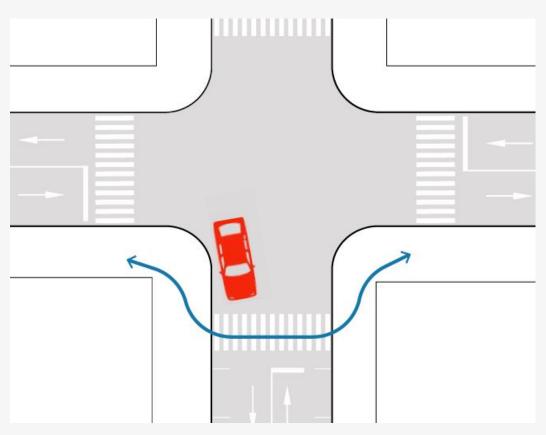




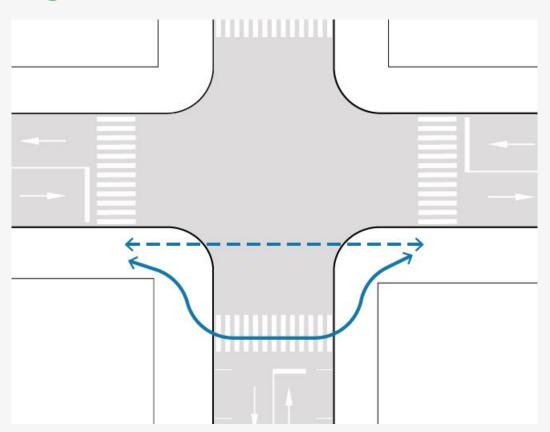




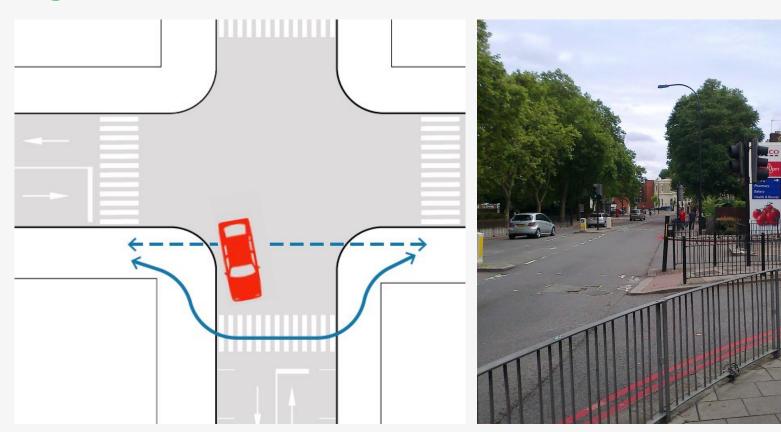








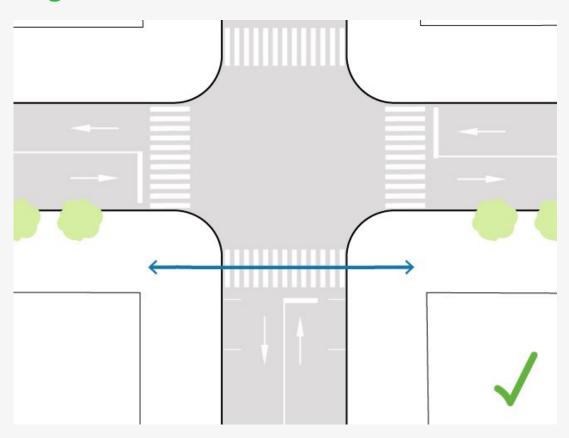




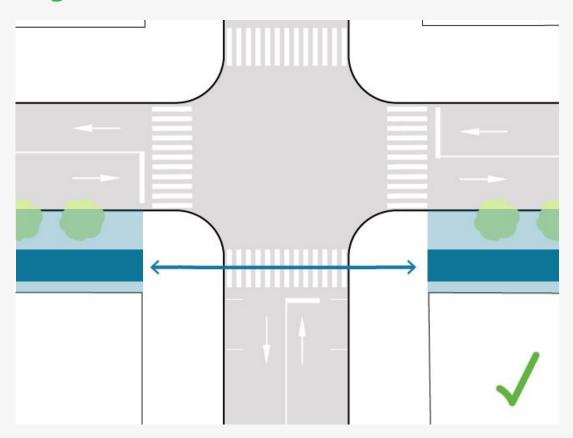






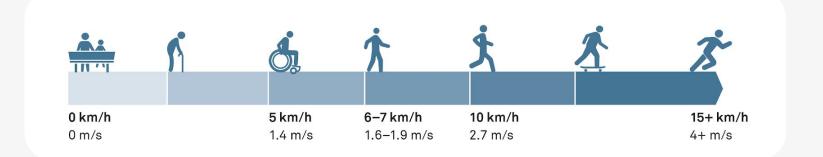








Speed

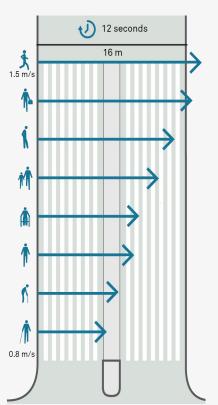




Walking speed





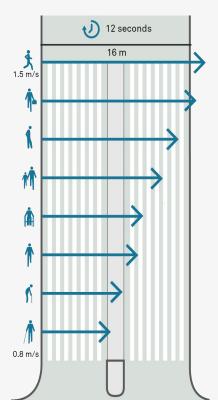




Walking speed







So we can give pedestrians **MORE TIME** to cross, or...

We can give them **LESS DISTANCE** to cross...



Elements



Sidewalks



Pedestrian Crossings



Pedestrian Refuge Islands



Curb Extensions



Accessibility Ramps



Vision-Impaired Guidance



Signage and Wayfinding



Pedestrian Countdown Signals + Clocks



Lighting



Seating



Water Fountains



Weather Protection



Curbs



Waste Receptacles



Active Building Edges



Trees and Landscaping



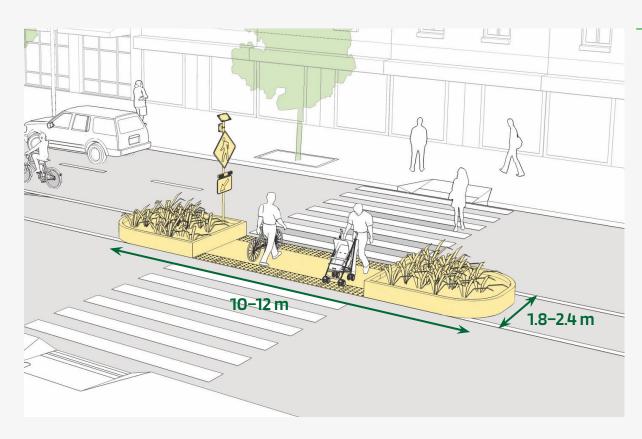
Refuge islands



- Allow two-stage crossing
- To be installed when pedestrian has to cross 3+ lanes



Refuge islands



- Pedestrian refuge island should be at least 1.8 m deep (preferred 2.4 m)
- A pedestrian refuge island is ideally 10-12 m long, providing enough protection at each end of the waiting space



Median tips



 This protects people waiting on the median from moving vehicles and slows turning motorists



Median cut-troughs



Provided where there is a significant pedestrian desire line in front of transit stops and key destinations, or when the distance to the closest safe pedestrian crossing is more than 80-100 m



Elements



Sidewalks



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Trees and Landscaping

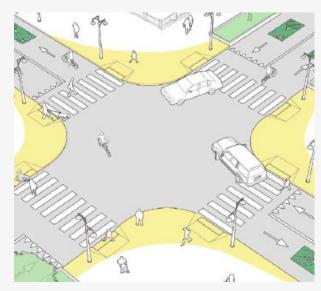


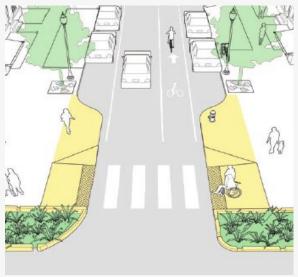
Curb extensions





Types







Corner Alignments

Bulb-Outs

Slip Lane Removal





Provide wide and continuous clear paths



✔ Provide wide and continuous clear paths



✔ Provide wide and continuous clear paths

Reduce overall length of crossing



- ✔ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing



- ✓ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing

Provide frequent opportunity to cross (100m)



- ✓ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing
- ✔ Provide frequent opportunity to cross (100m)



- ✓ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing
- ✔ Provide frequent opportunity to cross (100m)

We like direct paths (to walk and cross!)



- ✓ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing
- ✔ Provide frequent opportunity to cross (100m)
- ✓ We like direct paths (to walk and cross!)



- ✔ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing
- ✔ Provide frequent opportunity to cross (100m)
- ✓ We like direct paths (to walk and cross!)

Grade separated crossings



- ✔ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing
- ✔ Provide frequent opportunity to cross (100m)
- ✓ We like direct paths (to walk and cross!)
- ✗ Grade separated crossings



- ✔ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing
- ✔ Provide frequent opportunity to cross (100m)
- ✓ We like direct paths (to walk and cross!)
- Grade separated crossings

Obstructions

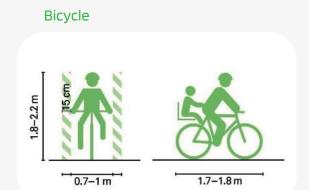


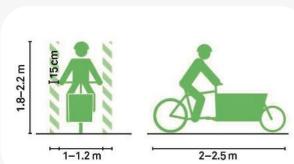
- ✔ Provide wide and continuous clear paths
- ✓ Reduce overall length of crossing
- ✔ Provide frequent opportunity to cross (100m)
- ✓ We like direct paths (to walk and cross!)
- **X** Grade separated crossings
- **X** Obstructions

Designing for cyclists



Types and dimensions





Cargo bike





Redefining "the cyclist"





Redefining "the cyclist"





Redefining "the cyclist"





Designing for All Ages and Abilities









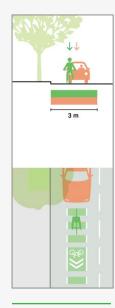
Designing for All Ages and Abilities



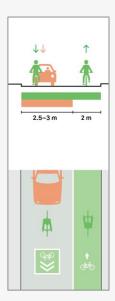








Cycle Street



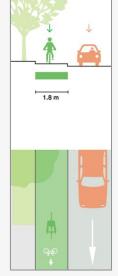
Contraflow Cycle Street



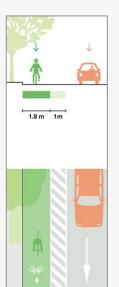
Protected Cycle Track



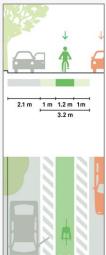
Bidirectional Cycle Track



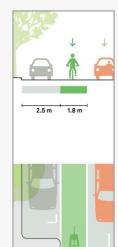
Raised Cycle Track



Curbside Buffered Cycle Lane

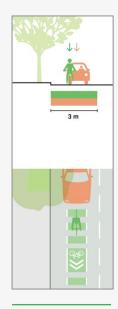


Buffered Cycle Lane

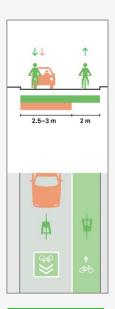


Unprotected Cycle Lane

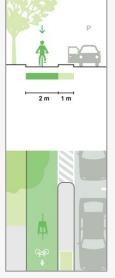




Cycle Street



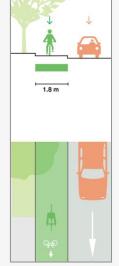
Contraflow Cycle Street



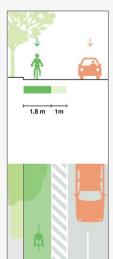
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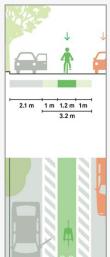
Bidirectional Cycle Track



Raised Cycle Track



Curbside Buffered Cycle Lane



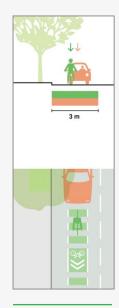
Buffered Cycle Lane



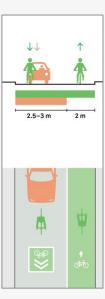
Unprotected Cycle Lane

<30 km/h **Share**

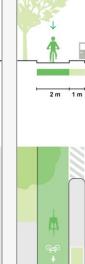




Cycle Street



Contraflow Cycle Street



Protected Cycle Track

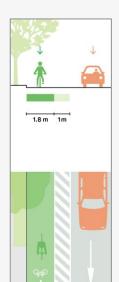


Bidirectional Cycle Track

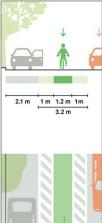
> 30 km/h



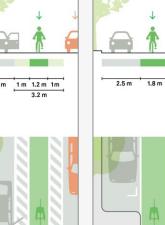
Raised Cycle Track



Curbside



Buffered Cycle Lane

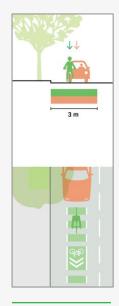


Buffered Unprotected Cycle Lane Cycle Lane

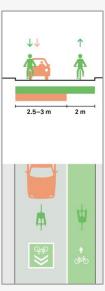
< 30 km/h Share

Protect

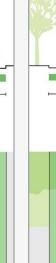




Cycle Street



Contraflow Cycle Street

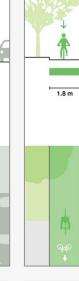


2 m 1 m

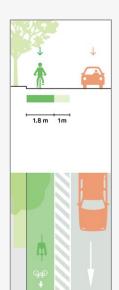
Protected Cycle Track



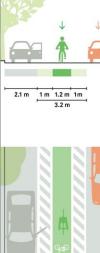
Bidirectional Cycle Track



Raised Cycle Track



Curbside Buffered Cycle Lane



Buffered Cycle Lane



Unprotected



<30 km/h
Share

> 30 km/h
Protect

30-40 km/h **Contextualize**









Protected Bidirectional Cycle Track Cycle Track



Raised Cycle Track



Curbside Buffered Cycle Lane

Buffered Cycle Lane Unprotected Cycle Lane

< 30 km/h

Share

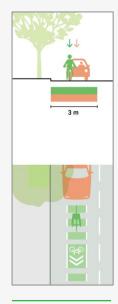
> 30 km/h

Protect

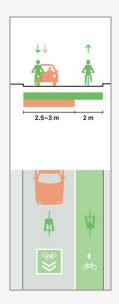
30-40 km/h

Contextualize

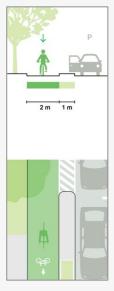




Cycle Street



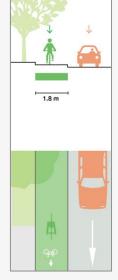
Contraflow Cycle Street



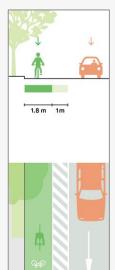
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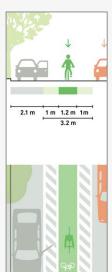
Bidirectional Cycle Track



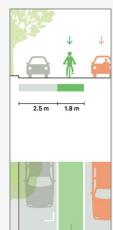
Raised Cycle Track



Curbside Buffered Cycle Lane



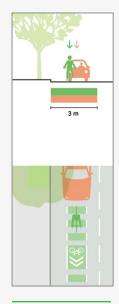
Buffered Cycle Lane



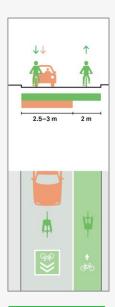
Conventional Cycle Lane







Cycle Street



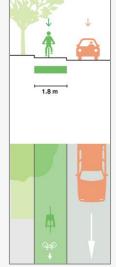
Contraflow Cycle Street



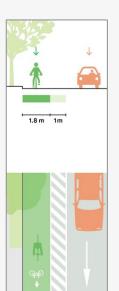
Protected Cycle Track



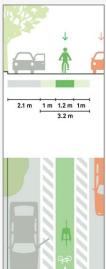
Bidirectional Cycle Track



Raised Cycle Track



Curbside Buffered Cycle Lane



Buffered Cycle Lane

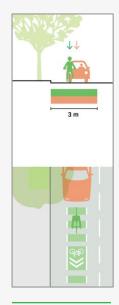


Conventional Cycle Lane

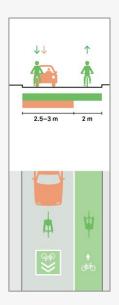
Safer

Safe?

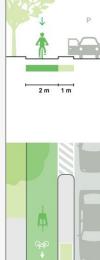




Cycle Street



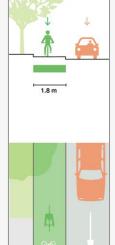
Contraflow Cycle Street



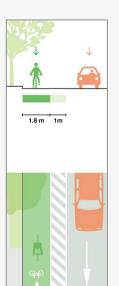
Protected Cycle Track



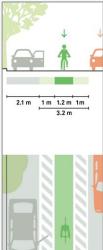
Bidirectional Cycle Track



Raised Cycle Track



Curbside Buffered Cycle Lane



Buffered Cycle Lane



Conventional Cycle Lane

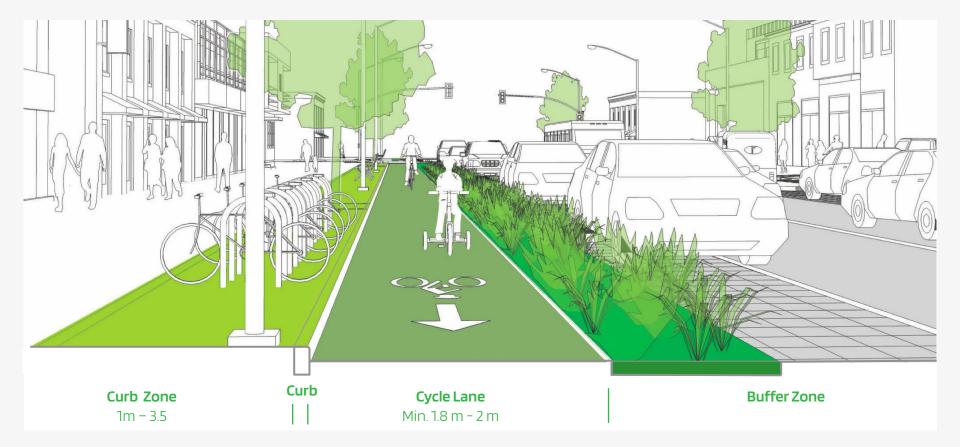
Safest

Safer

Safe?

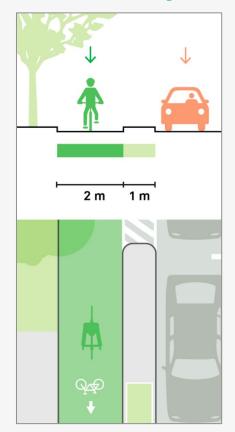


Basic geometry





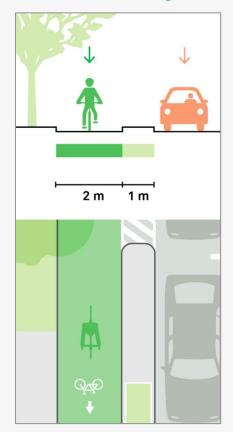
Protected Cycle Track







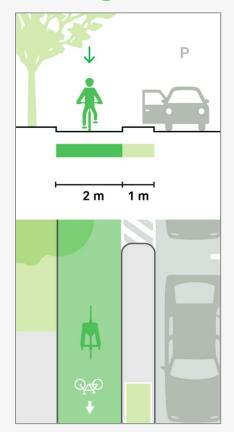
Protected Cycle Track







Parking Protected Cycle Track

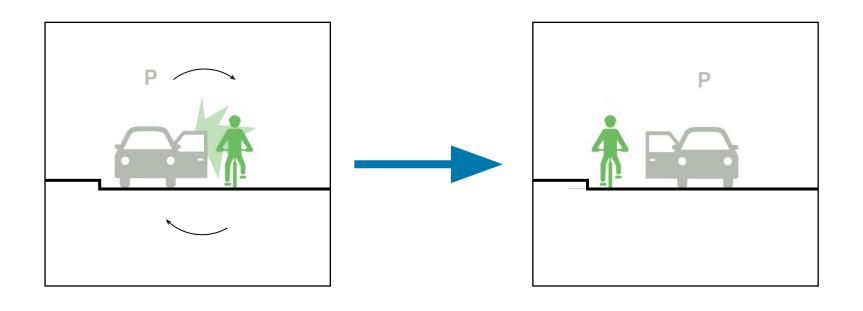




Cycle Facilities

Protected Cycle Track







Parking Protected Cycle Track



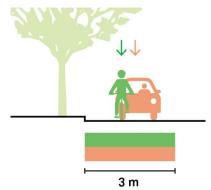


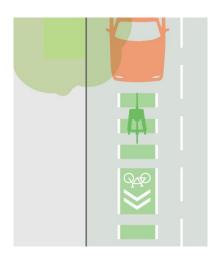
2nd Avenue New York, USA

- 58% in injuries to all users
- **67**% in pedestrian crashes
- 29% in speeding
- + 49% in retail sales

Cycle Facilities

Cycle Streets





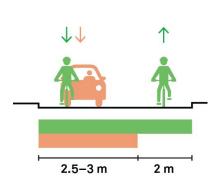


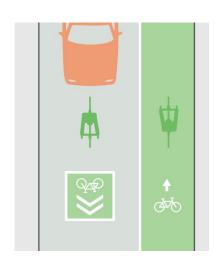


Cycle Facilities

Global Designin Cities Initiative

Contraflow Cycle Lanes

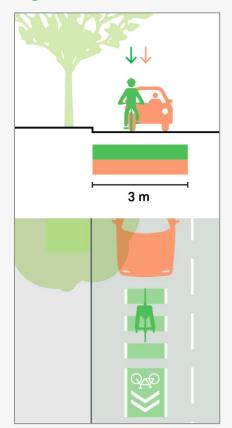








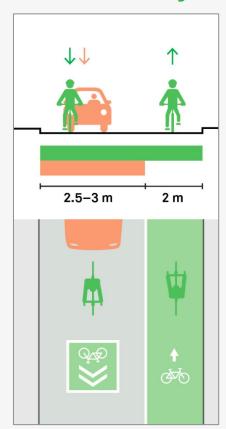
Cycle Streets







Contraflow Cycle Lanes

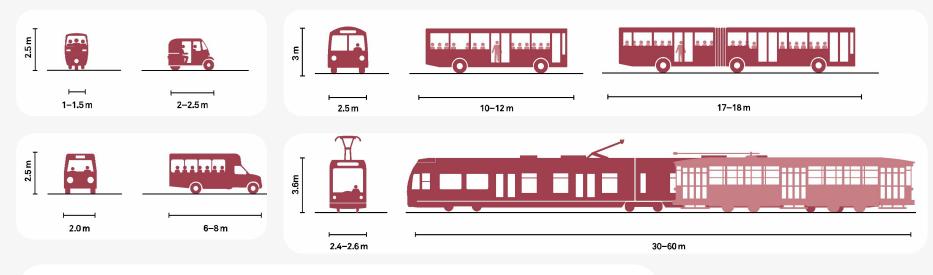


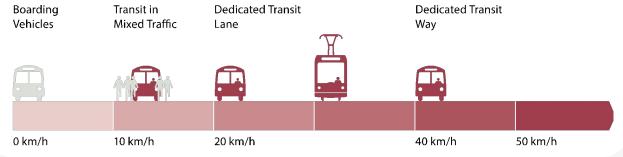


Designing for transit users



Speed, variations and dimensions





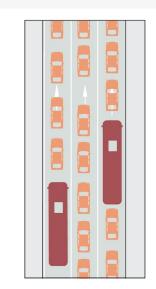


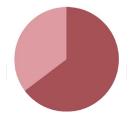
Transit facilities

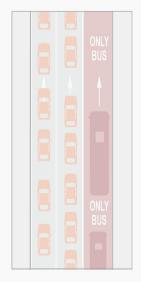


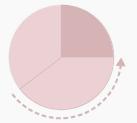


Safe travel time with dedicated transit facilities









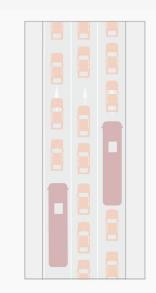
Transit given dedicated space

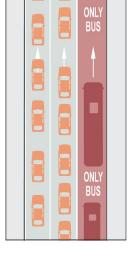
4000-8000 people/ hour

Transit stuck in congestion
1000-2800
people/ hour

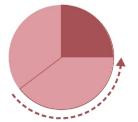


Safe travel time with dedicated transit facilities









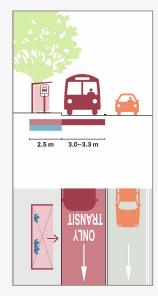
Transit given dedicated space 4000-8000 people/ hour

Transit stuck in congestion 1000–2800

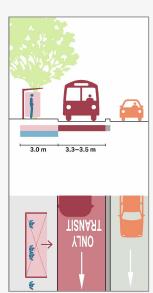
people/hour



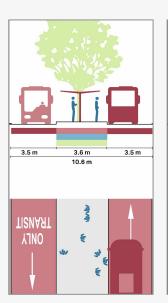
Geometry



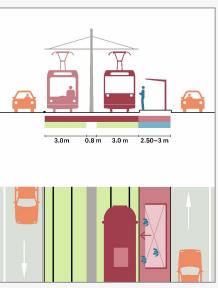
Side-Running Dedicated Transit Lane



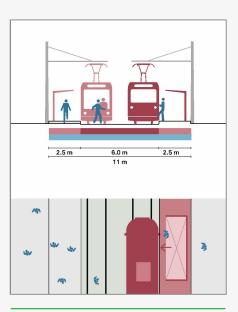
Side-Running Transitway



Center-Running Transitway with Center Boarding



Center-Running Transitway with Center Boarding



Transit Malls



Side-Running Dedicated Transit Lane





Side-Running Transitway



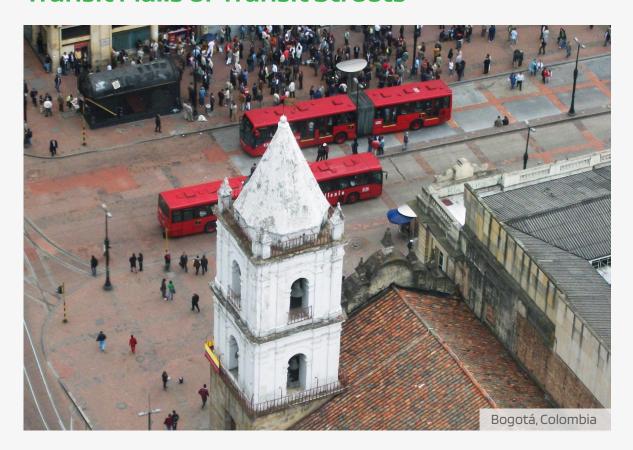


Center-Running Transitway with Side Boarding



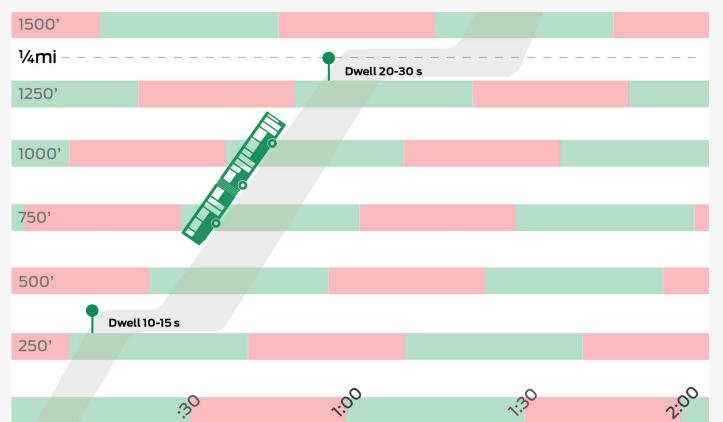


Transit Malls or Transit Streets





Signal Progression



https://nacto.org/publication/transitstreet-design-guide/intersections/sig nals-operations/transit-signal-progr ession/



Signal Progression

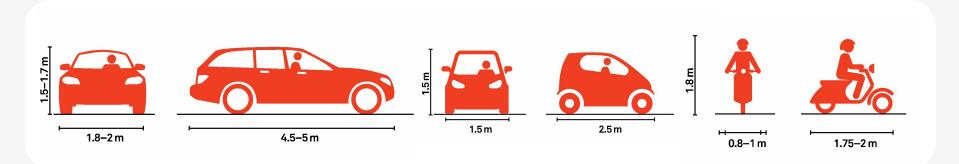


https://nacto.org/publication/transitstreet-design-guide/intersections/sig nals-operations/transit-signal-progr ession/

Designing for motorists



Speed, variations and dimensions





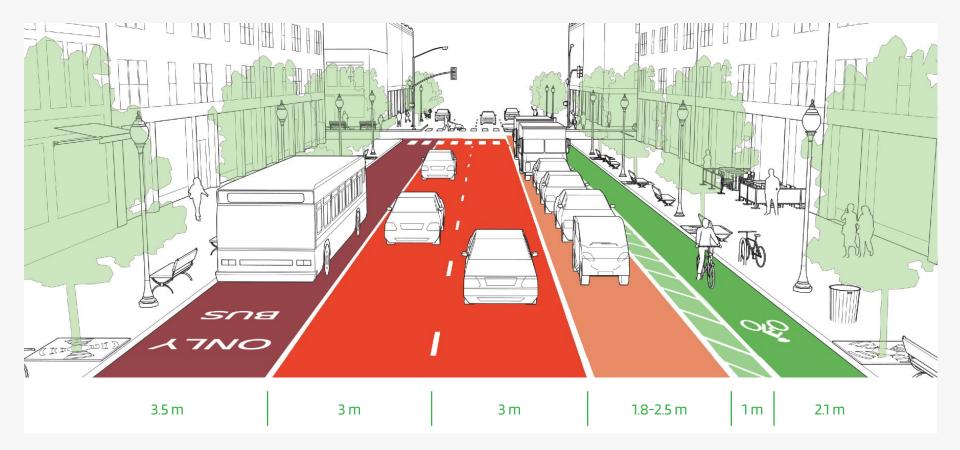
Motorists





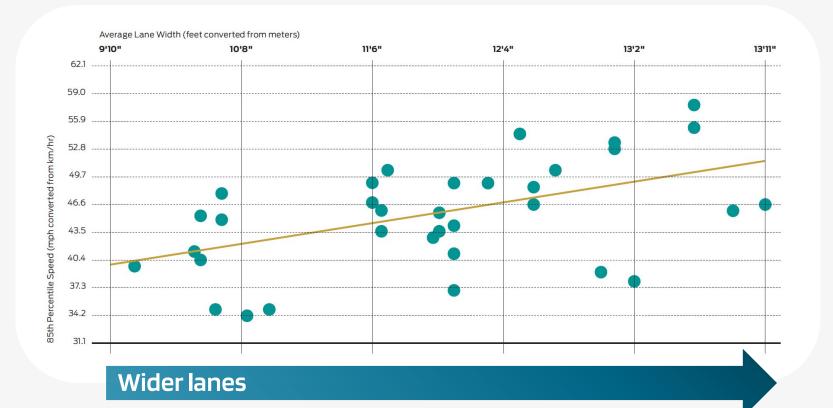
Motorists





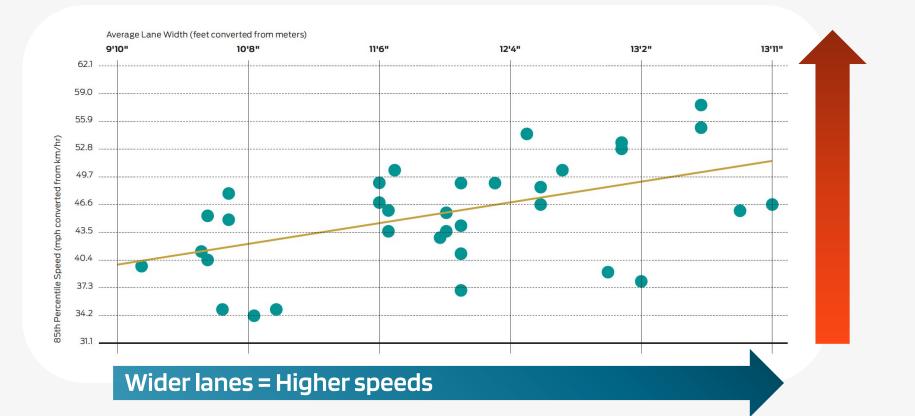


Wider travel lanes are correlated with higher vehicle speeds





Wider travel lanes are correlated with higher vehicle speeds





Traffic calming measures - Lane narrowing

Why narrowing lanes?

Narrower lanes (3 m-wide)

- Are safer
- Encourage slow speeds
- Carry more vehicles (...or at least as much as wider lanes)







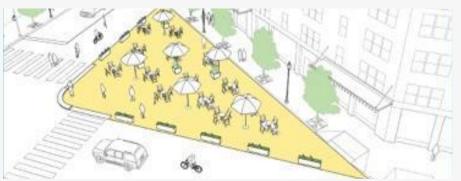


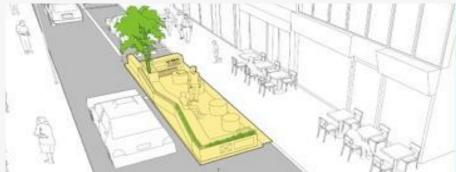


Pedestrian crossings

Refuge islands











Pedestrian plazas

Parklets







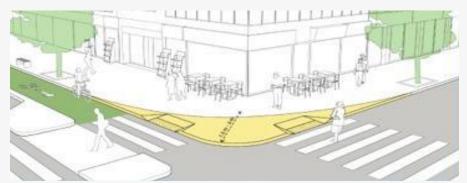


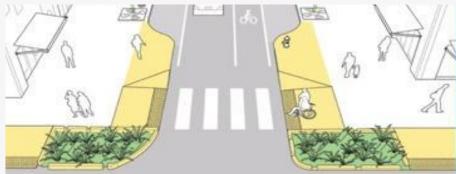


Mini-Round Abouts

Chicane







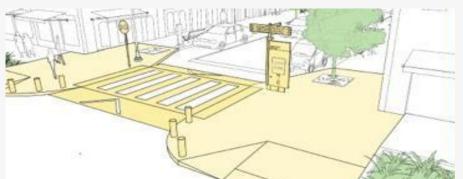


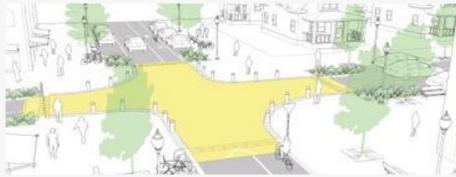


Tighter Turning Radii

Curb Extensions











Neighborhood Gateways

Raised Intersections



Recap

- ✓ Narrow lanes are safer and efficient lanes
- Manage speed through design!

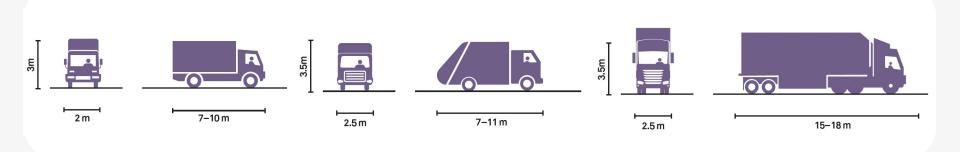
(Make speeding uncomfortable)

- Give priority to vulnerable users
- X Avoid highway design in urban context!!

Designing for Freight and Service Providers

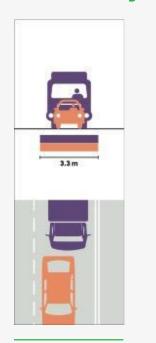


Speed, variations and dimensions

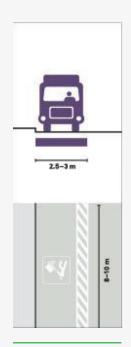




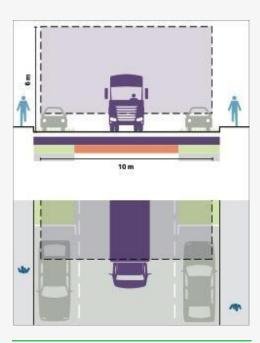
Geometry







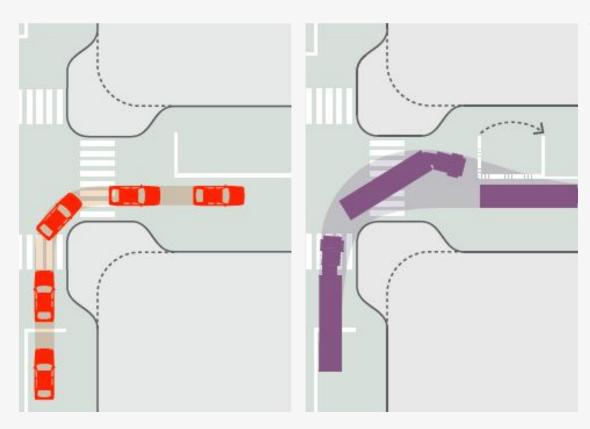
Loading Bays



Oversized Travel Lanes



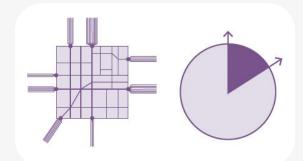
Corner Radii



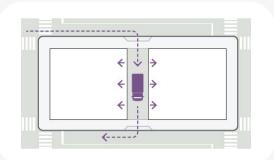
Geometric techniques such as a recessed stop bar can be used, without increasing the turn radius and allow larger vehicles to turn.



Managing space and time



Network and time management



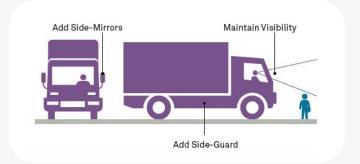
Hand Carts

Cargo Cycles

Mini-Vehicles

Small Trucks

Consolidation and distribution centers

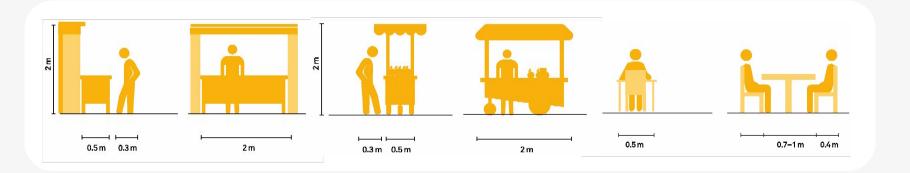


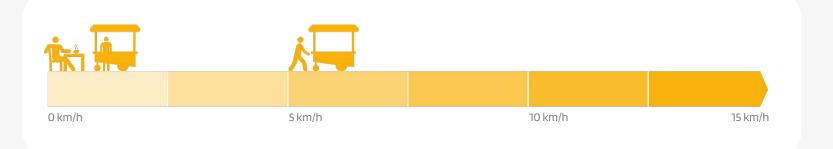
Safe freight vehicles

Designing for people doing business



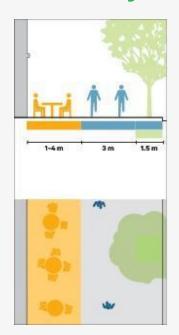
Speed, variations and dimensions



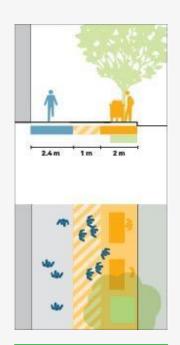




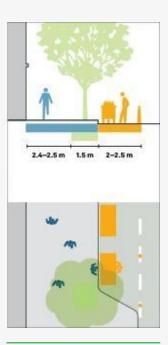
Geometry



Commercial use extensions



Vendors on sidewalks



Vendors in enhancement zone



Elements



Power



Water and Waste



Lighting



Hours of operation



Sitting Guidance



Dedicated Spaces



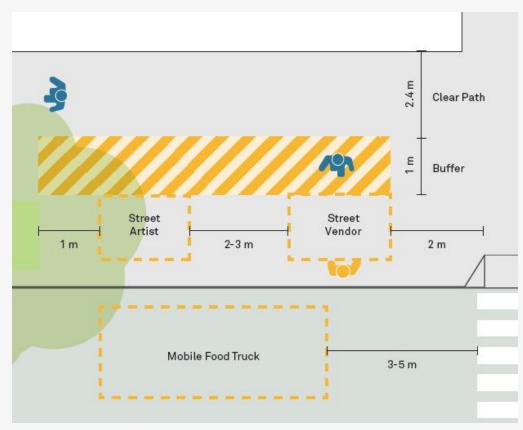
Seating



Storage



Siting Guidance





Siting Guidance







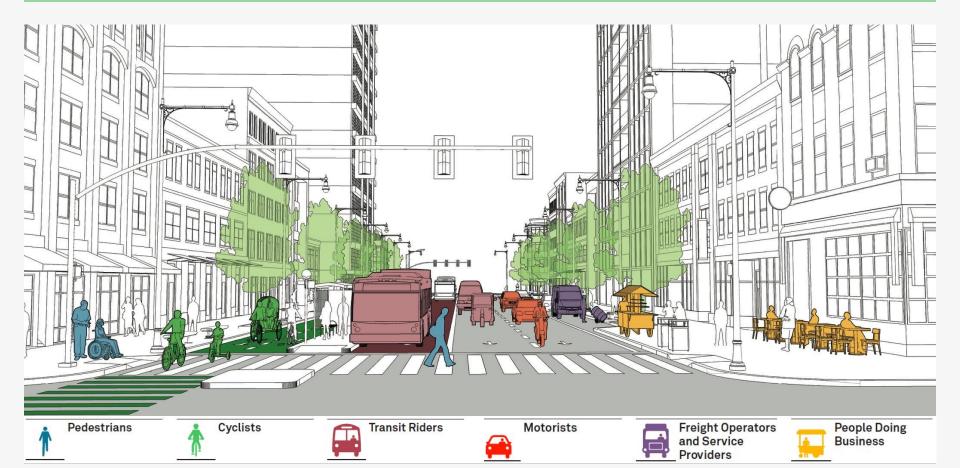


Recap

- ✓ People doing business make our cities thrive!
- ✓ Include them in your designs
- Anticipate their needs!

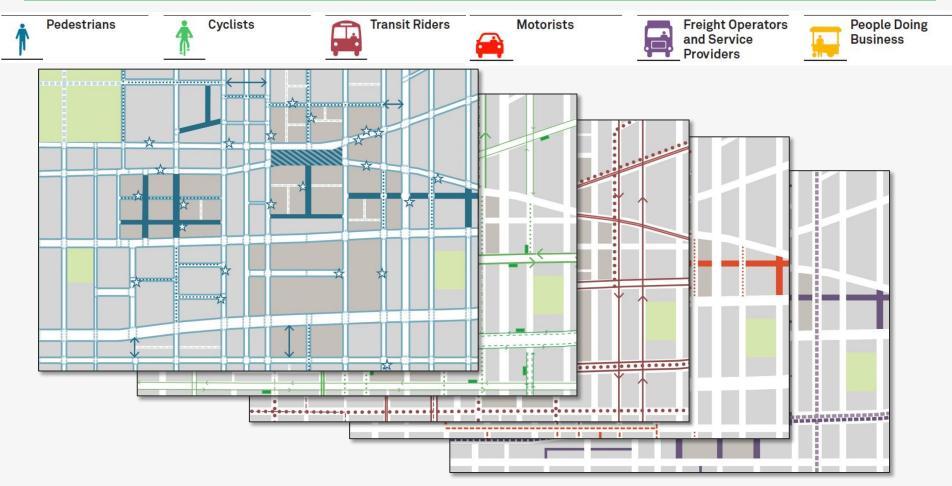
Design for all street users!





Design networks for all street users!









Safe and Sustainable Street Design: Street Transformations

A workshop for the City of Ljubljana, Slovenia

Abhimanyu Prakash, Associate Director Renata Carvalho, Program Manager Marina Visic, Program Associate

Global Designing Cities Initiative

29th January, 2025





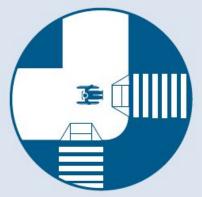
Street Transformations and Intersections







Street Design Strategies



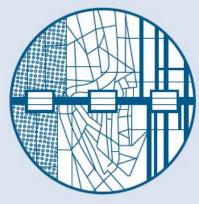
Ensure Universal Accessibility



Accommodate Diverse Uses



Design for Safe Speeds



Develop Context-Driven Solutions



Reconfigure the Space



Act Now—
Start Somewhere!

Street Typologies











Pedestrian
Priority
Streets

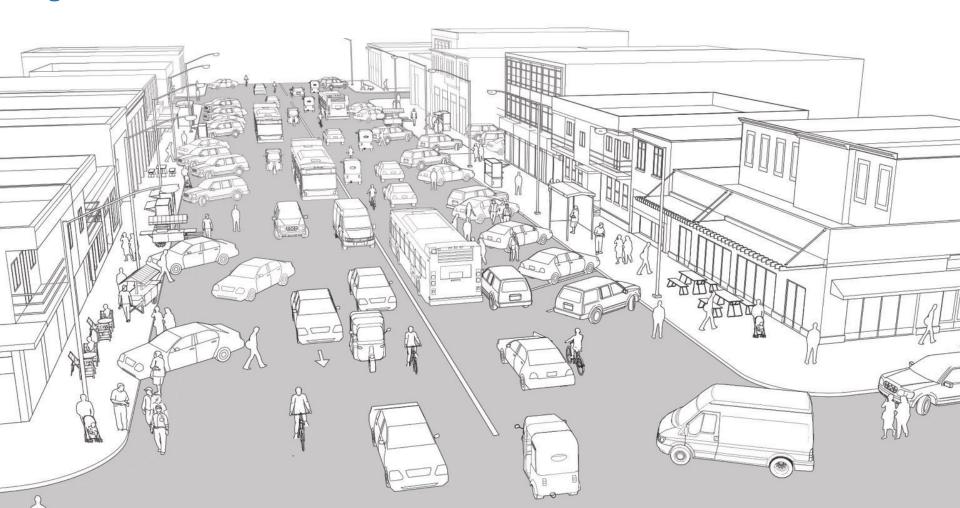
Shared Streets

Neighborhood Streets

Large Streets

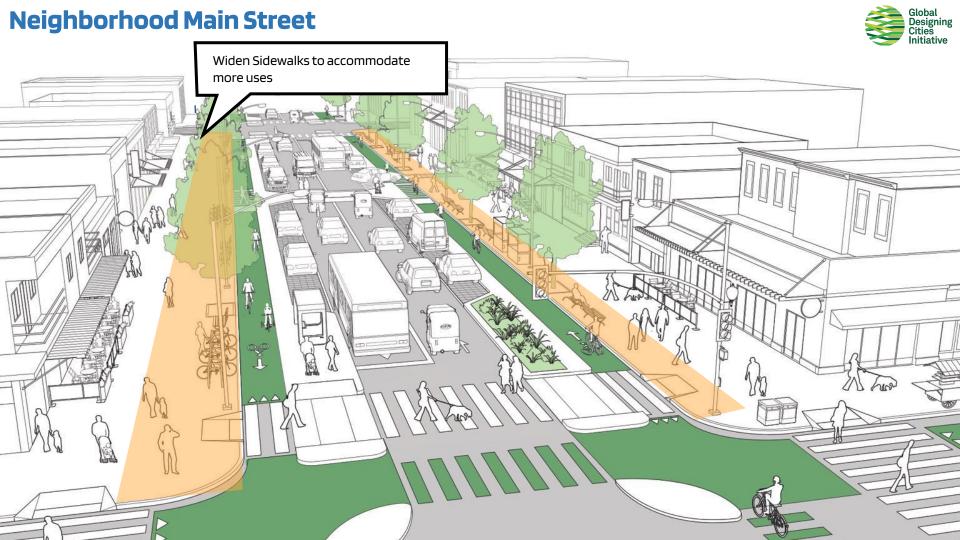
Special Conditions

Neighborhood Main Street



Global Designing Cities Initiative **Neighborhood Main Street**



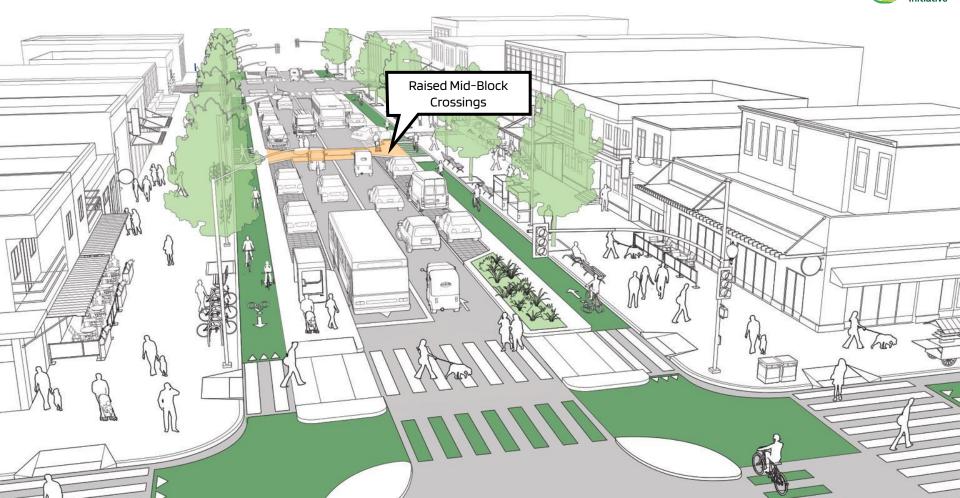


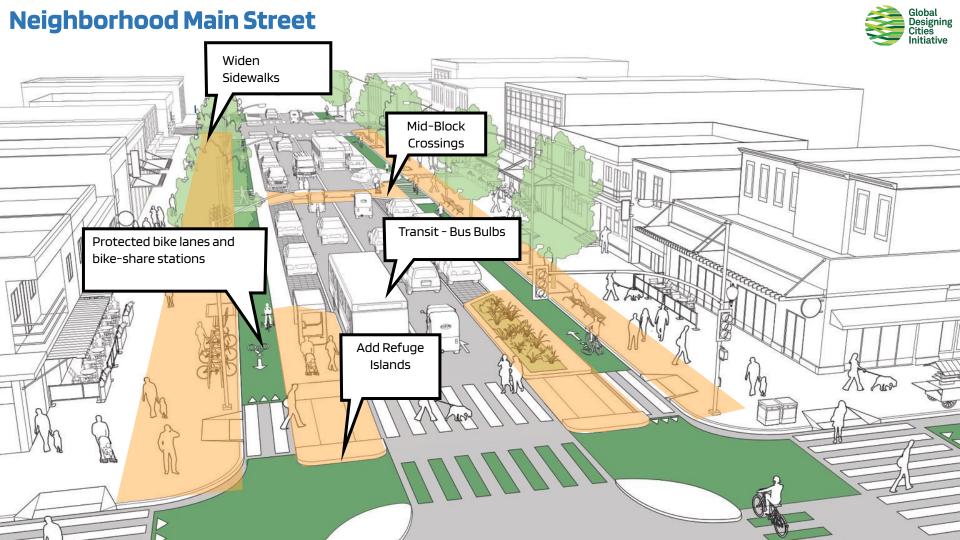
Global Designing Cities Initiative **Neighborhood Main Street** Protected bike lanes and Transit - Bus Bulbs bike-share stations

Global Designing Cities Initiative **Neighborhood Main Street** Add Refuge Islands

Neighborhood Main Street







Global Designing Cities Initiative **Neighborhood Main Street**

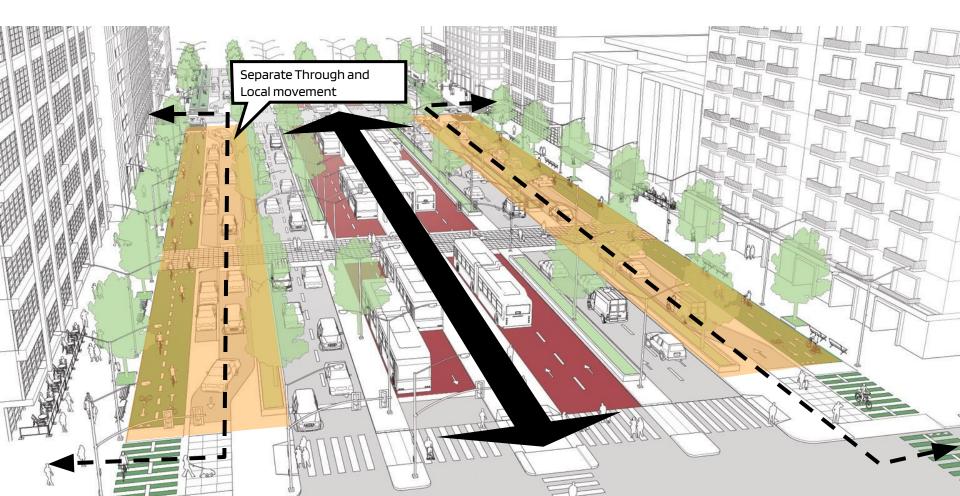








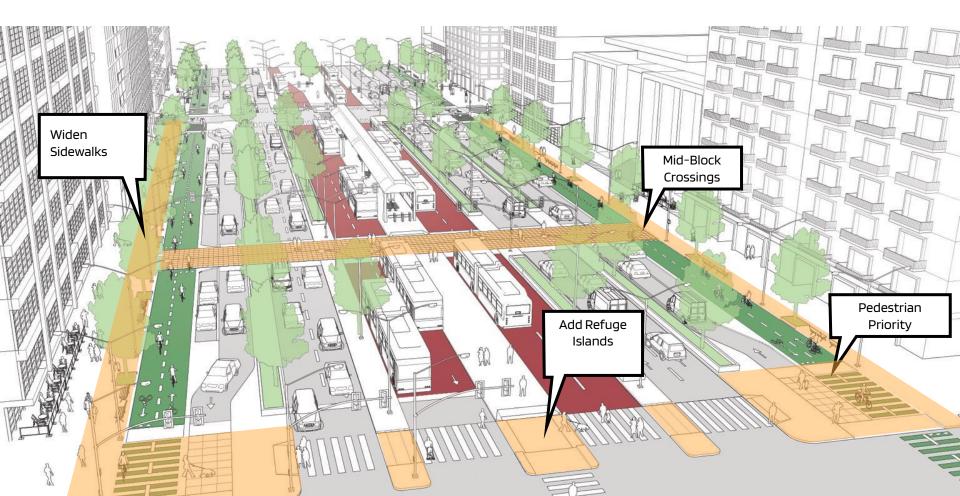




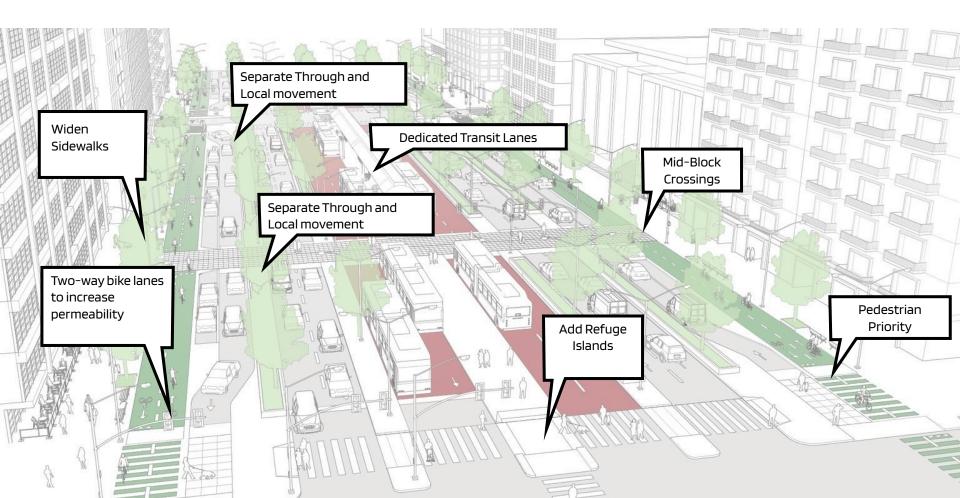








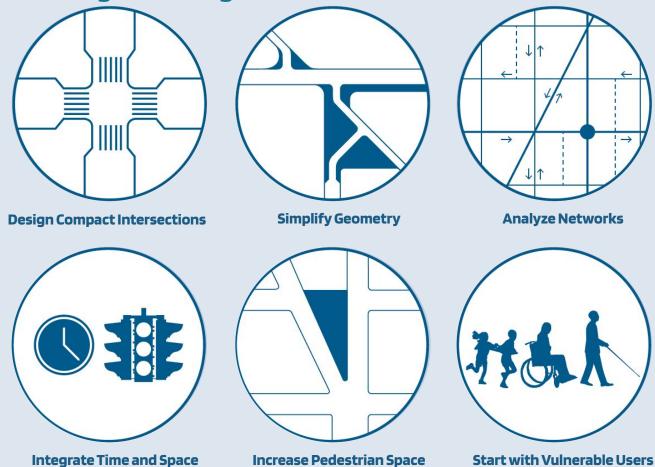


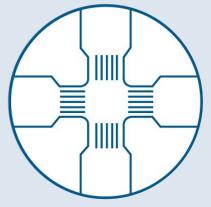




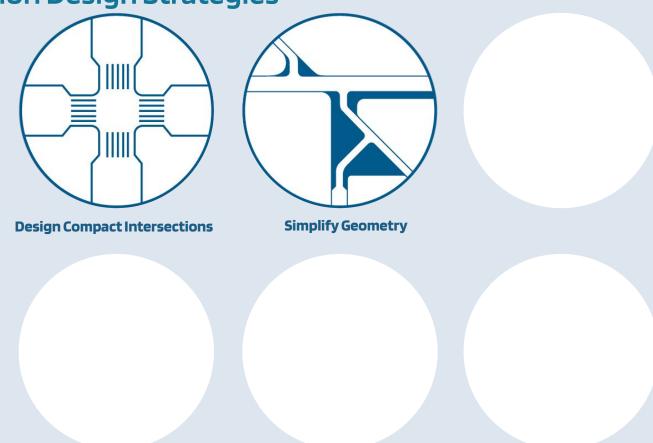


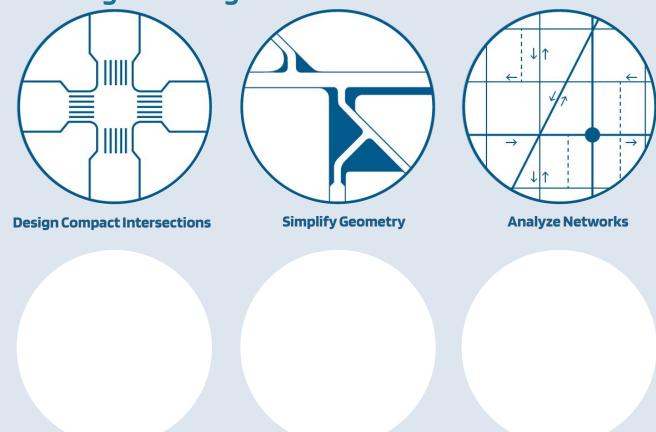


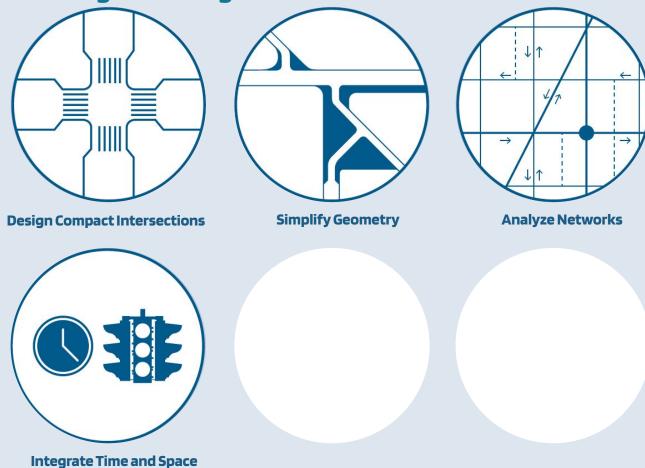


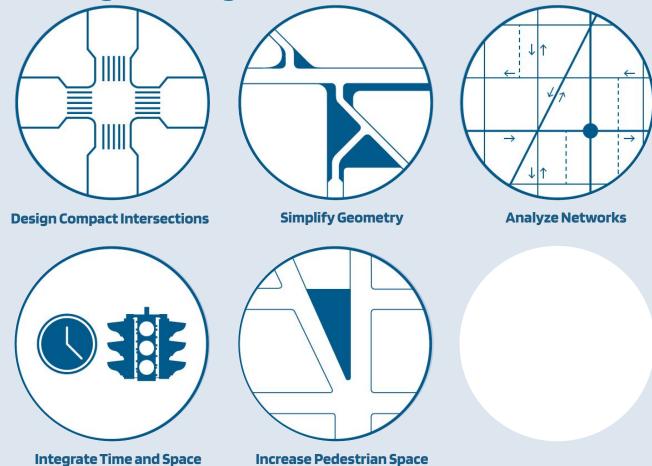


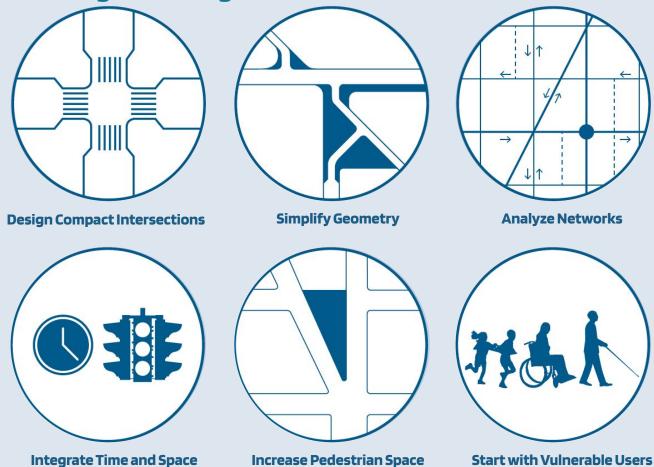
Design Compact Intersections









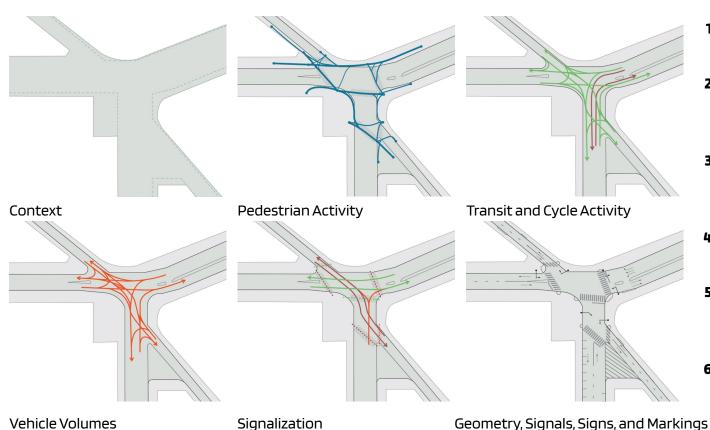




How to analyze

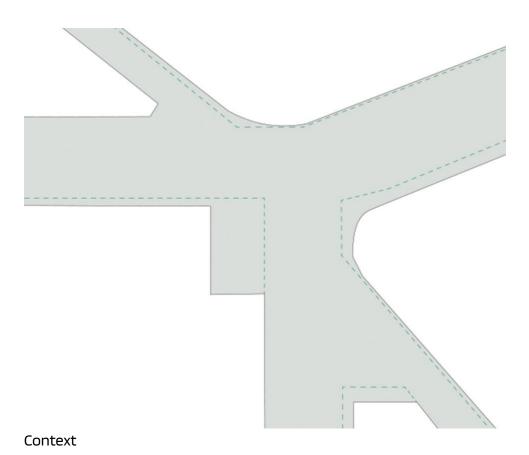
Intersections





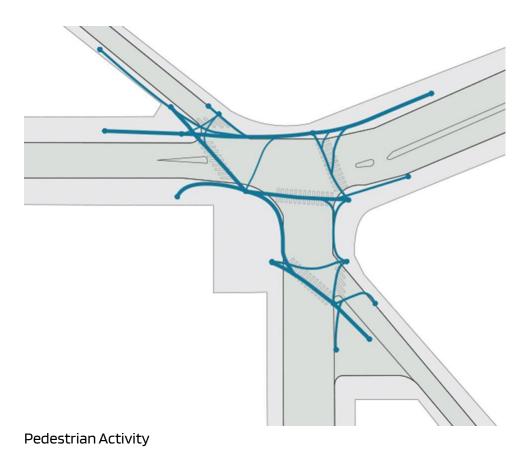
- **1.** Understand the context and urban design qualities
- **2.** Document how pedestrians use and activate the intersection
- **3.** Assess the volume and movement of cyclists and transit
- **4.** Map vehicle movements and turns
- 5. Plot the signal phases to show how the intersection flows
- **6.** Survey how people move based on the existing markings and geometry





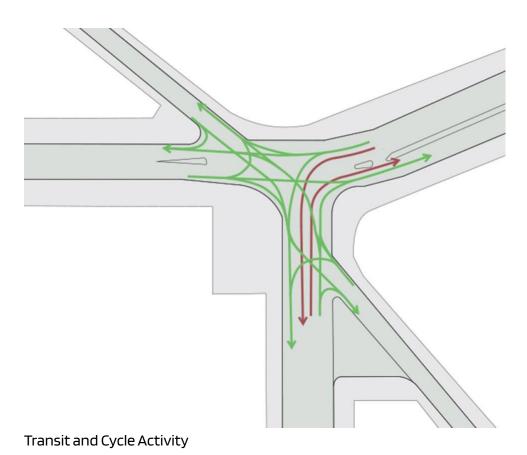
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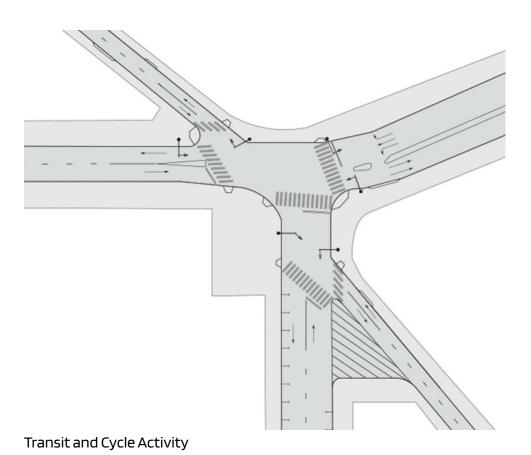
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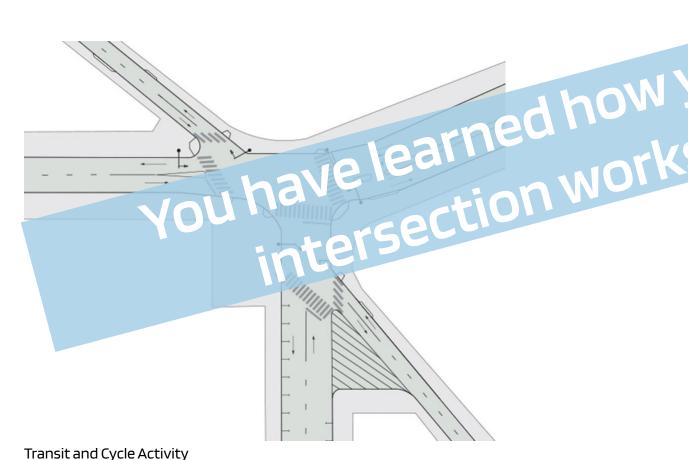
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Transit and Cycle Activity



Check the cross-sections!

Why right-sizing lanes?

Right-size (3 m-wide max) lanes:

- 1. Are **safer**
- 2. Encourage slow speeds
 - Carry more vehicles...or at least as much as wider lanes.



Right-sizing travel lanes





Right-sizing travel lanes

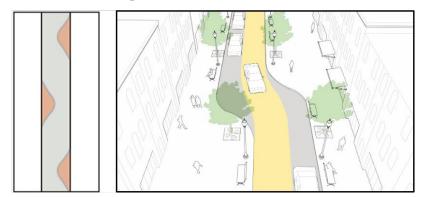




Motorists

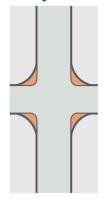


Lane Narrowing



Chicanes and Lane Shifts

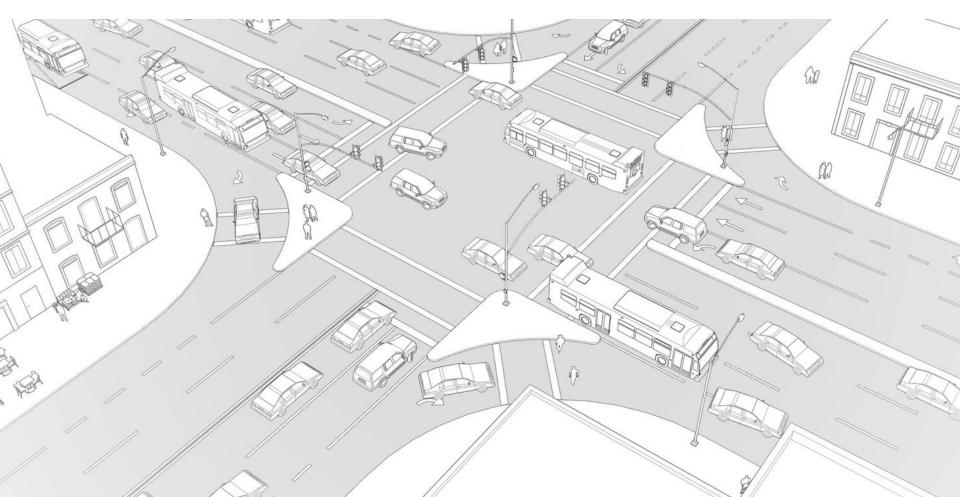




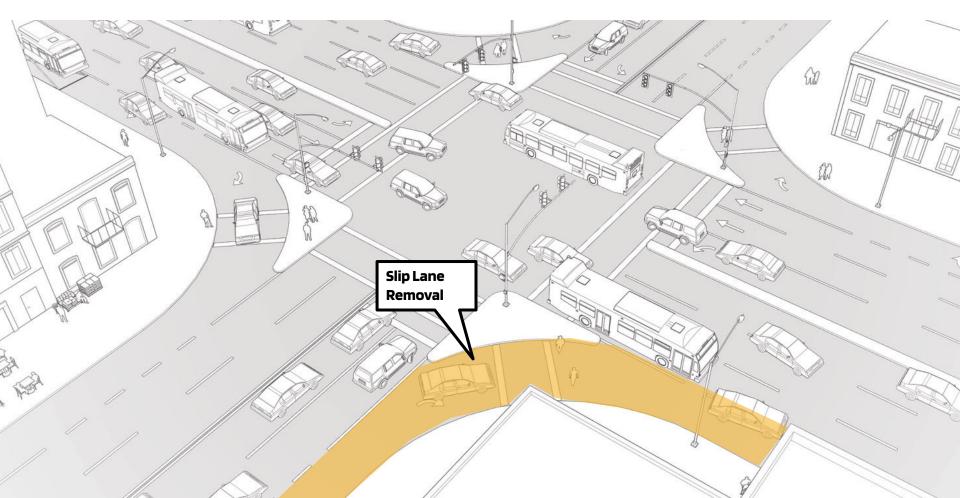


Corner Radii

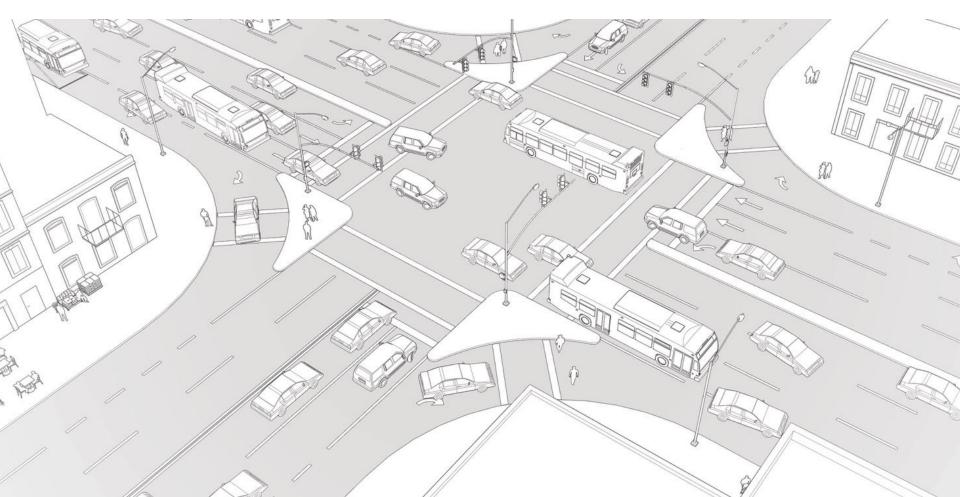




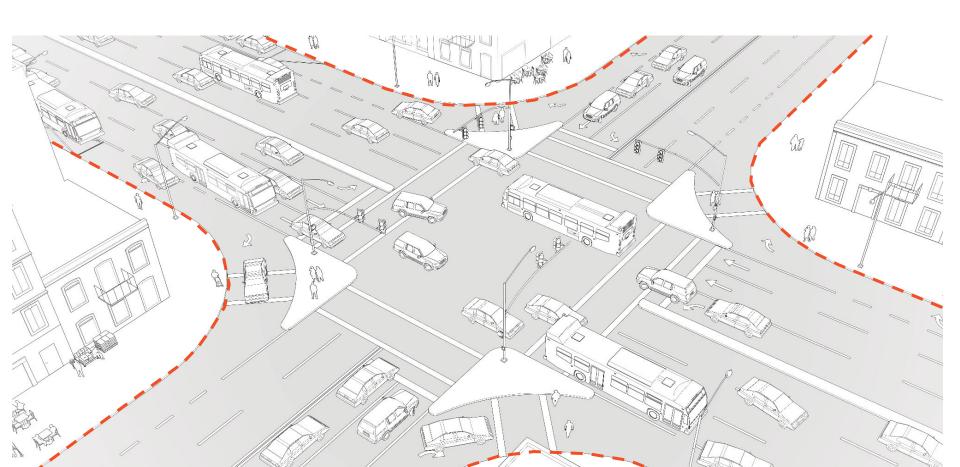




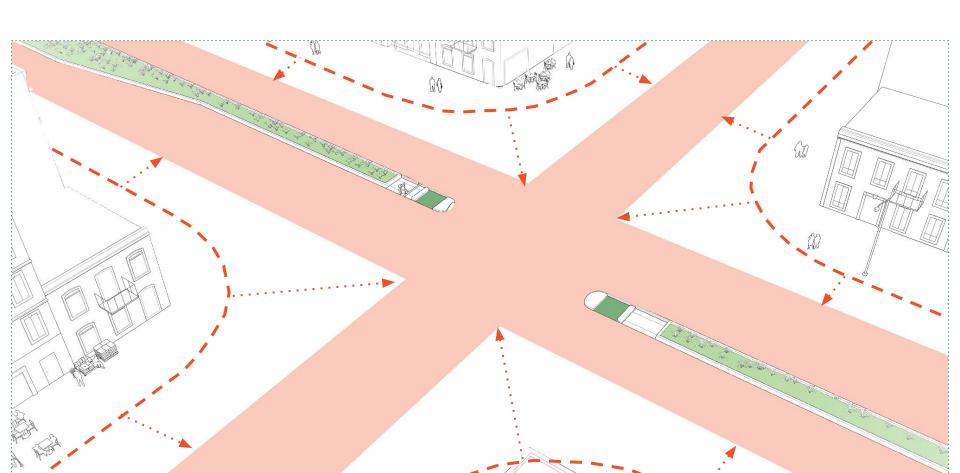




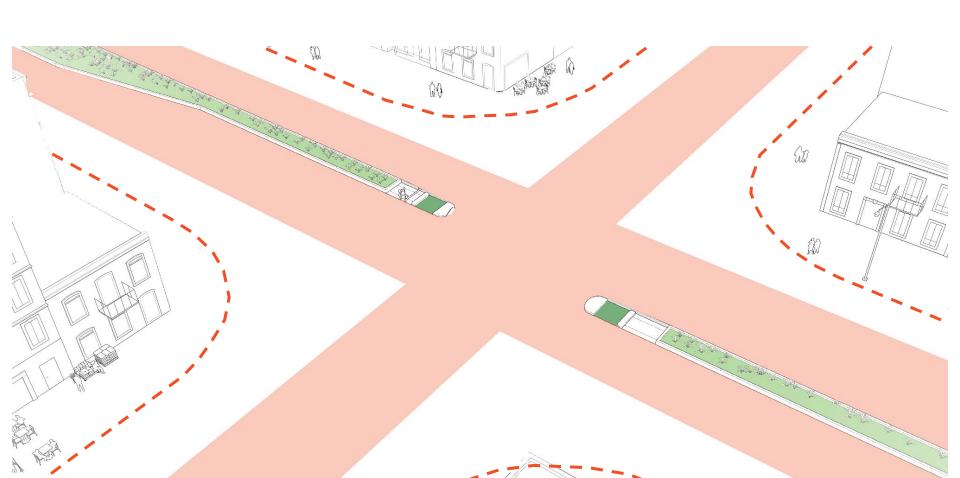




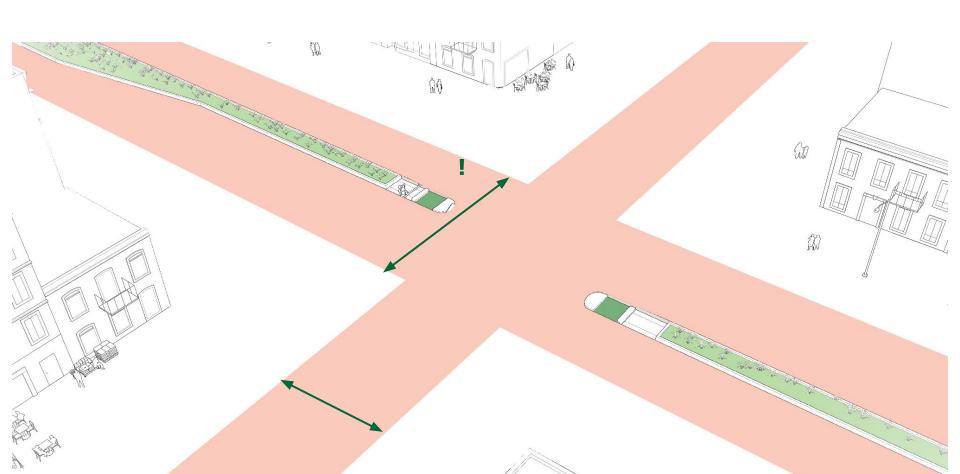




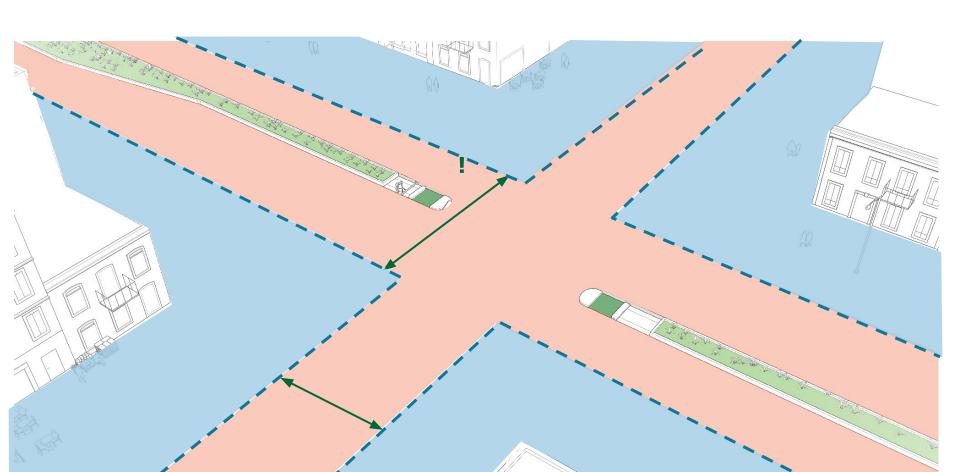




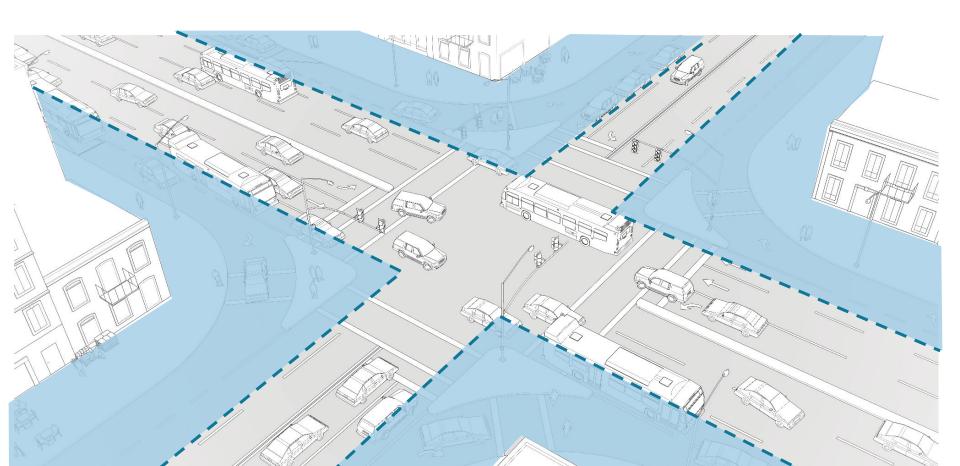




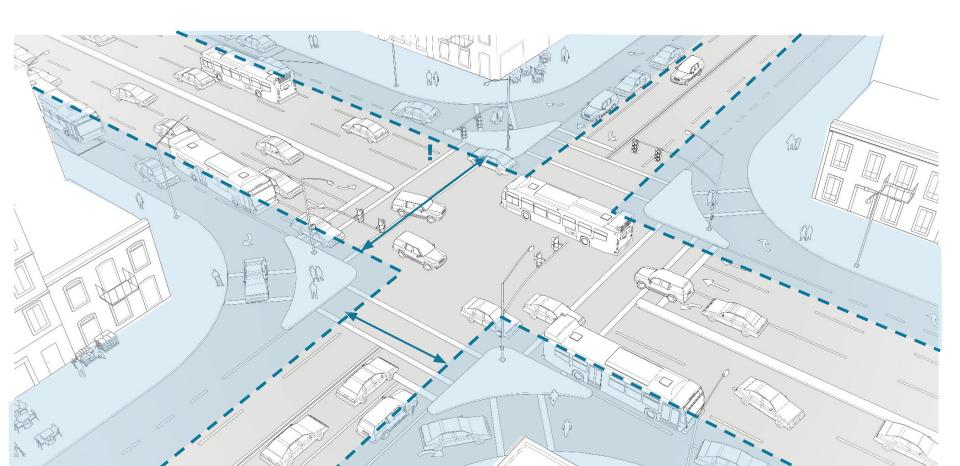




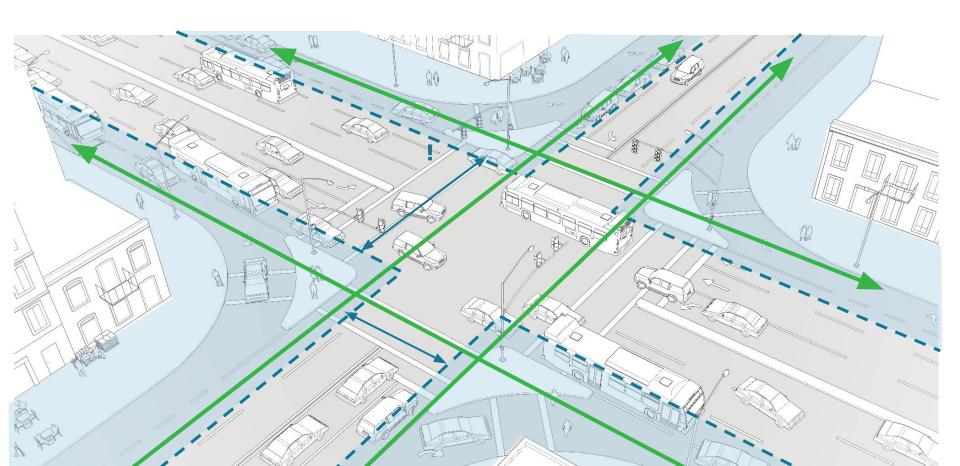








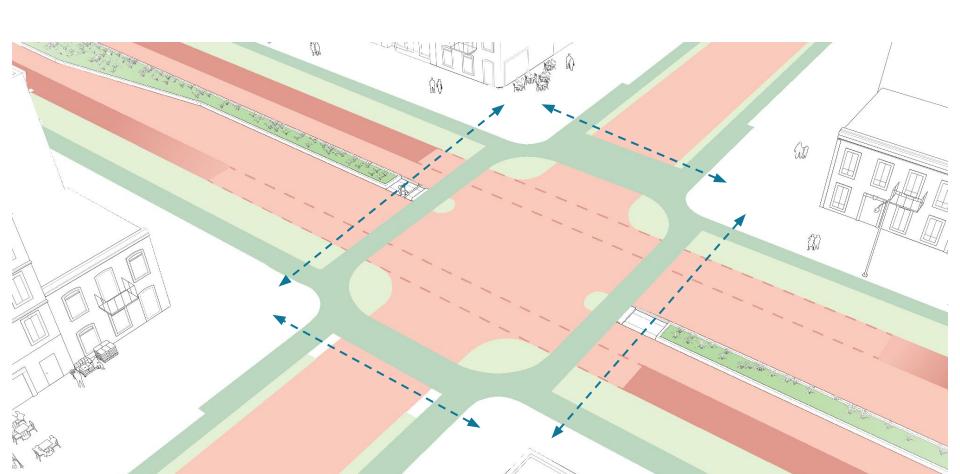












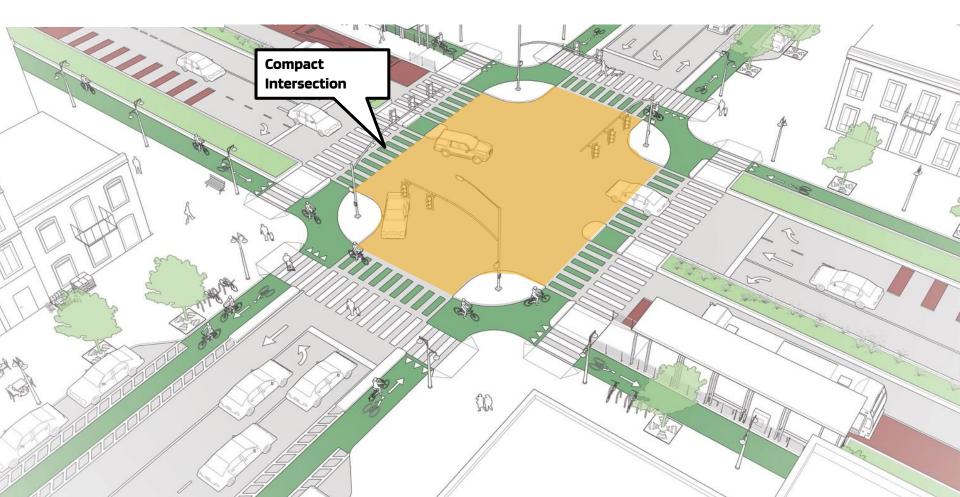




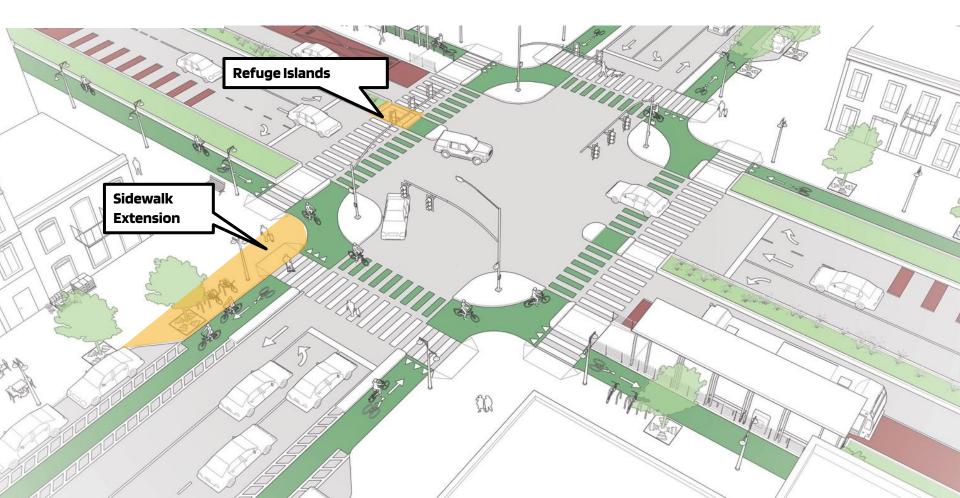




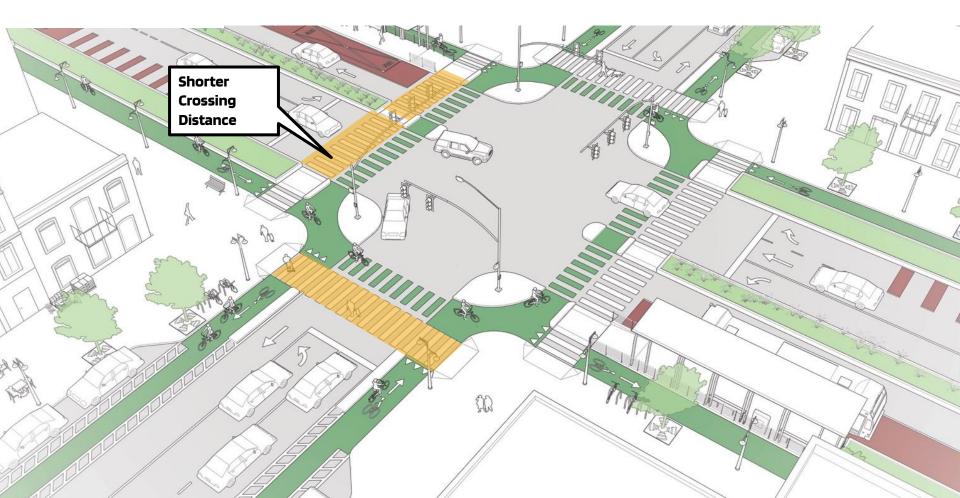




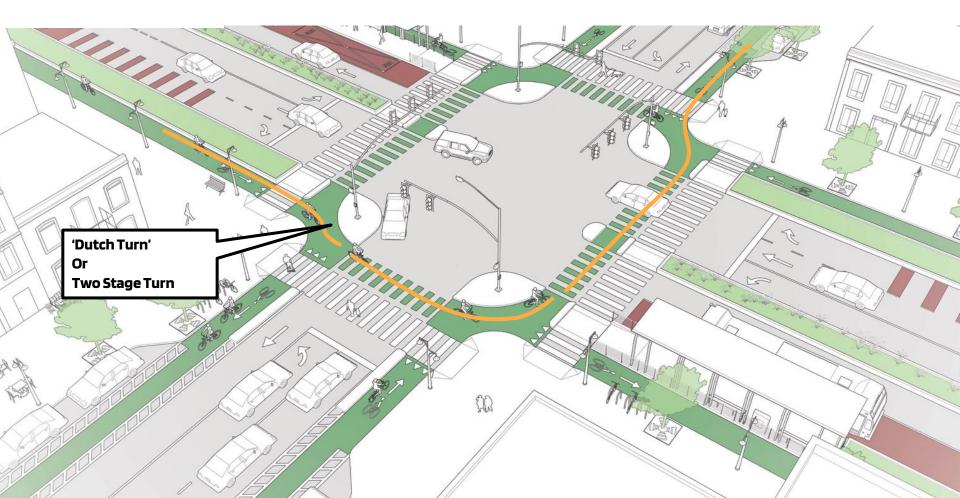




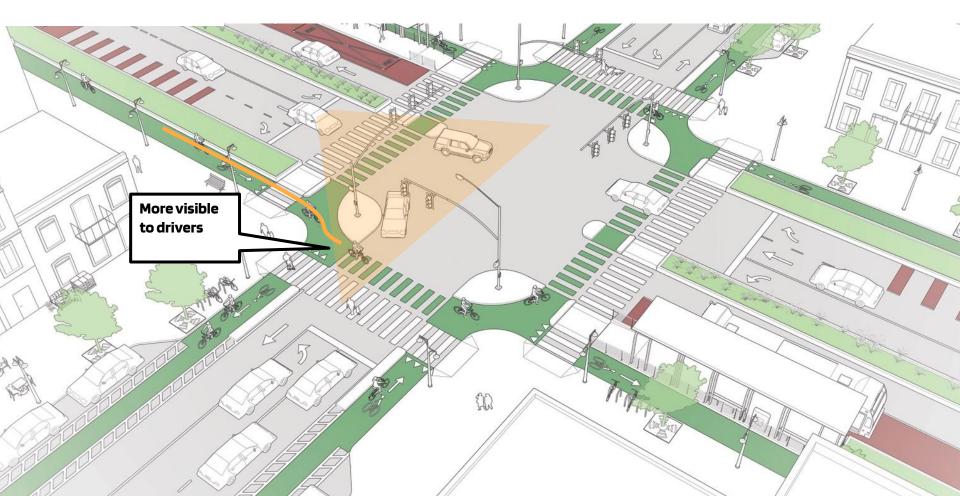




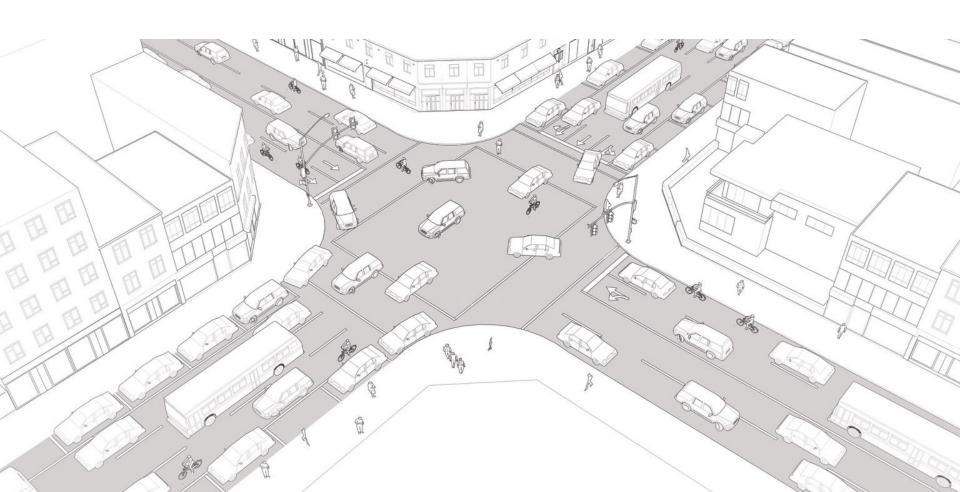




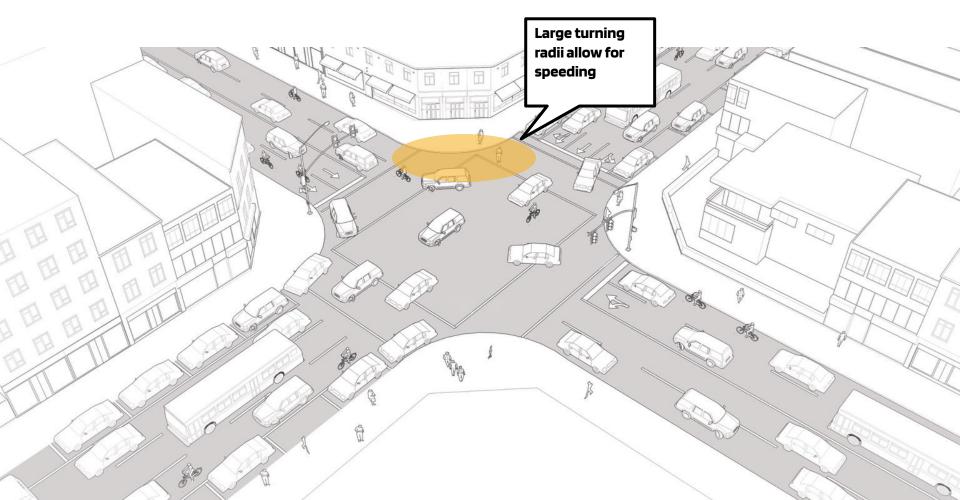




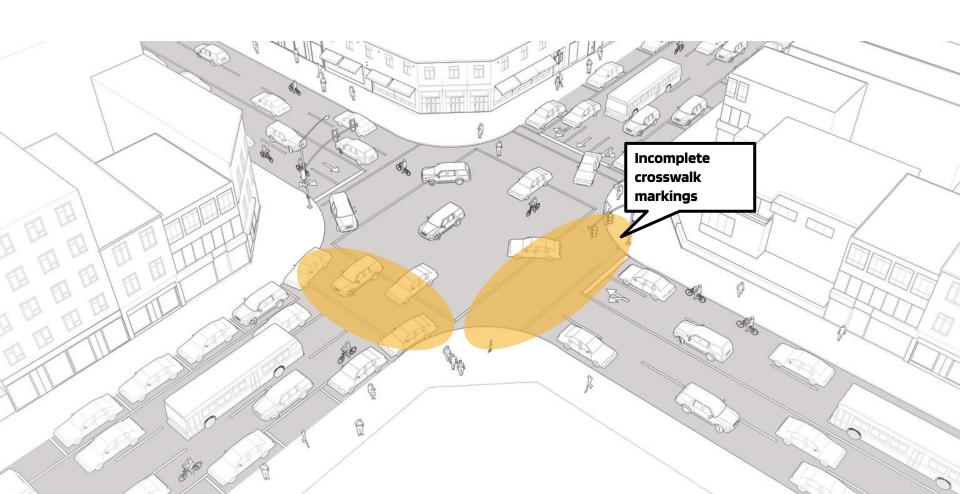




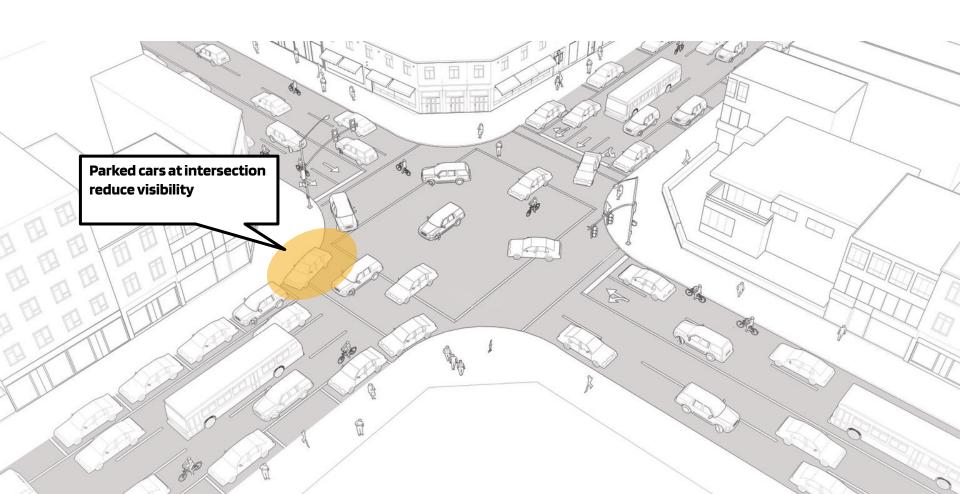




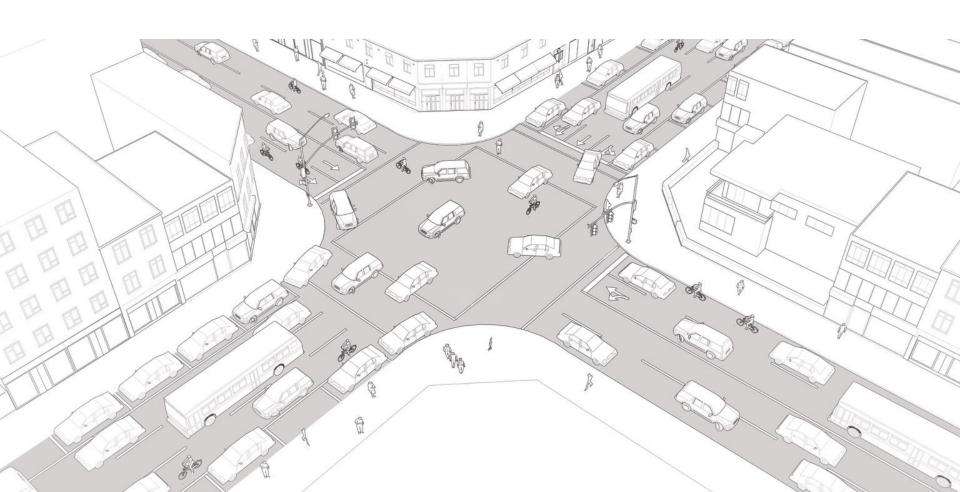




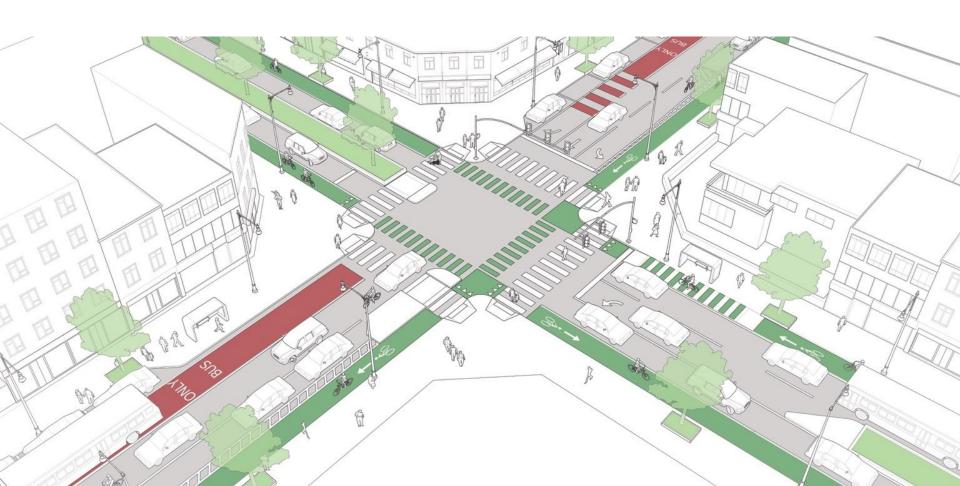




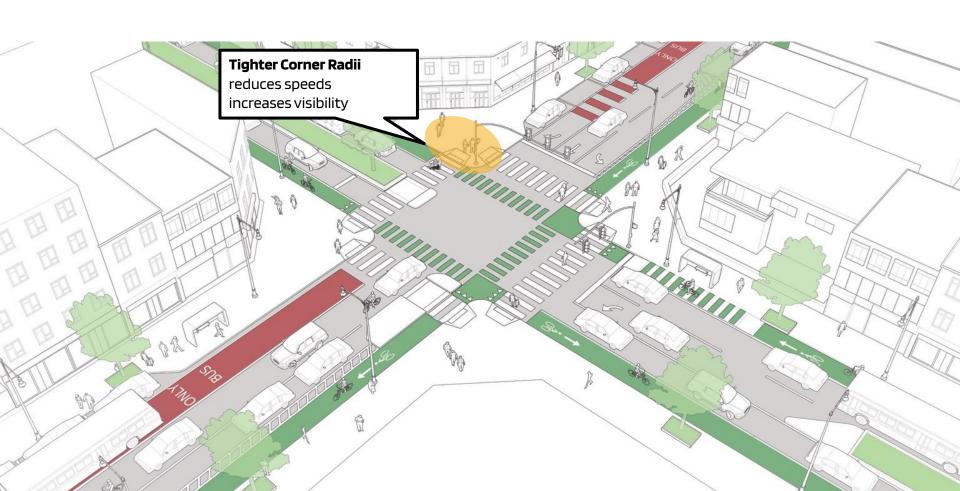




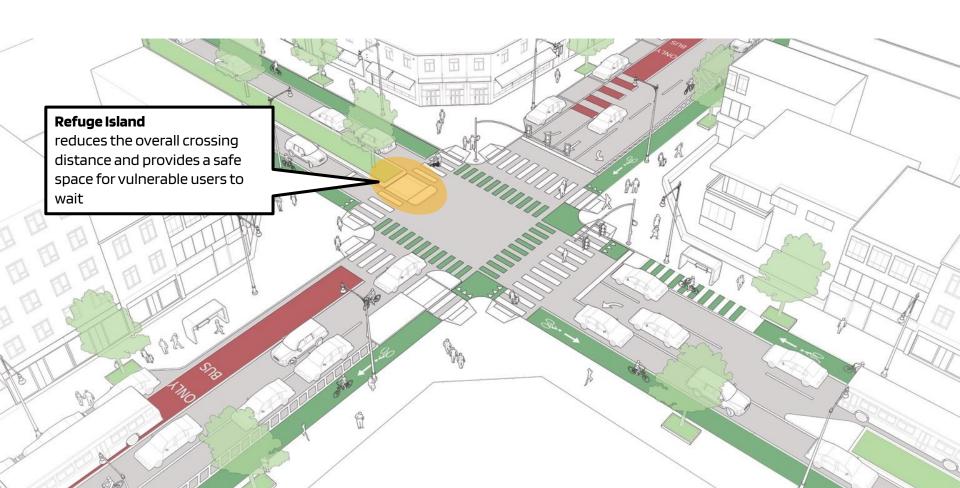




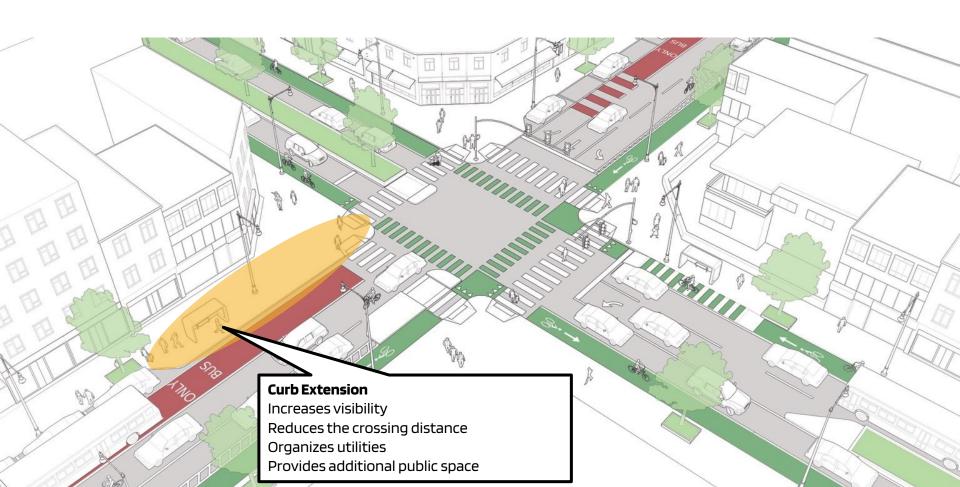




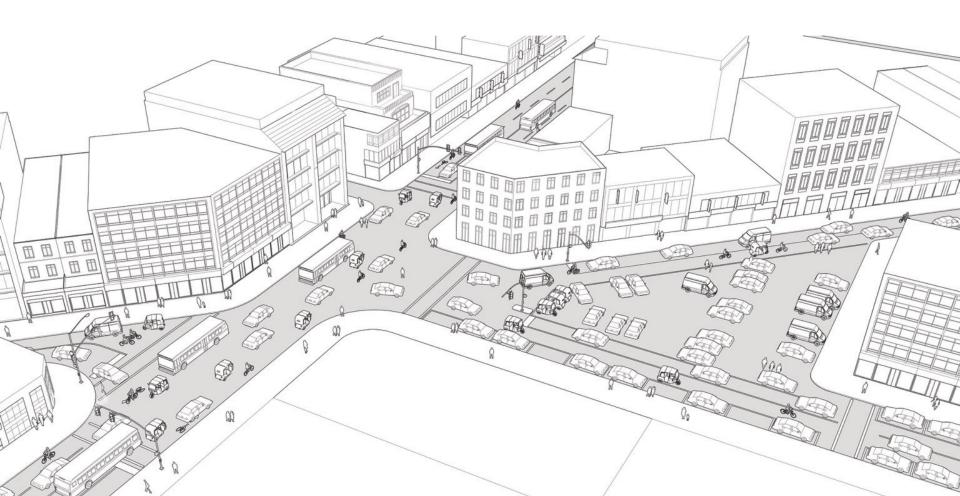




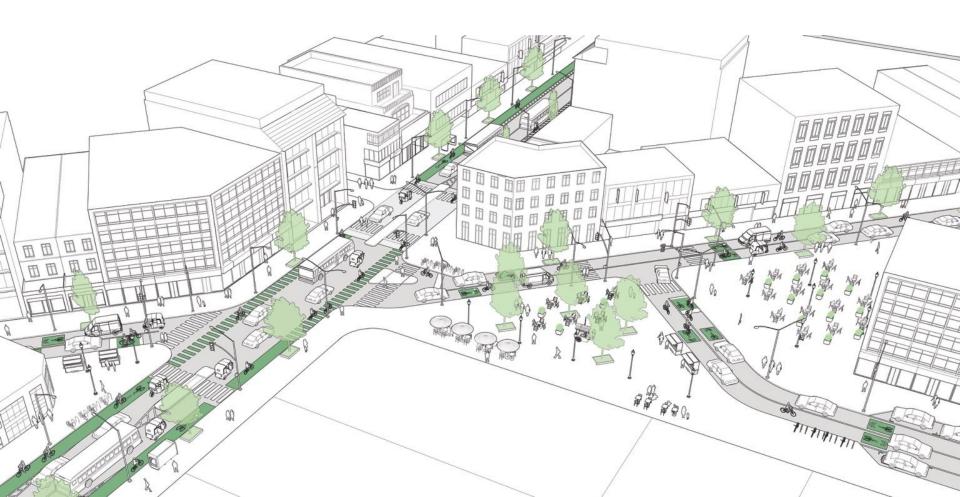




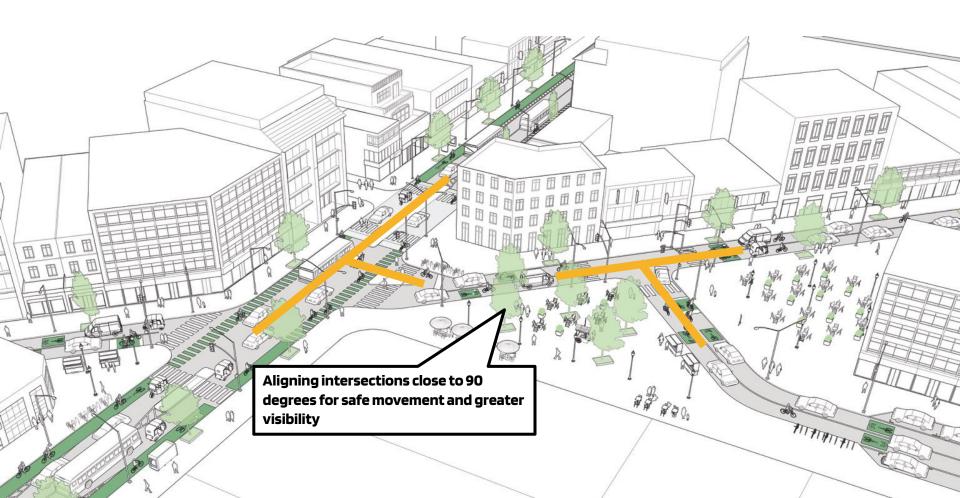














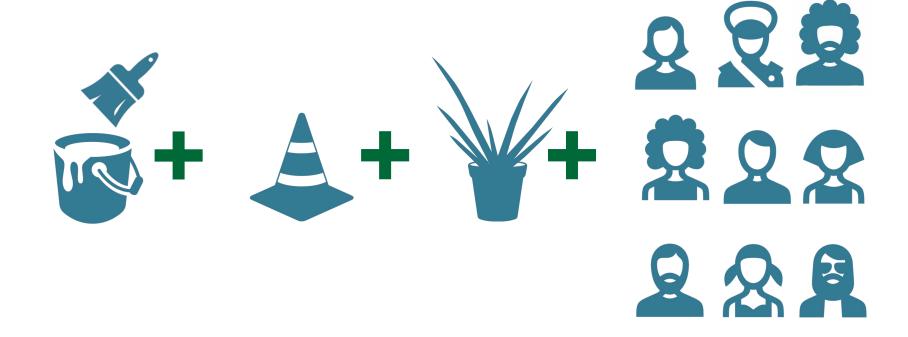




Short-Term Interim Transformations

Global Designing Cities Initiative

Simple Toolkit

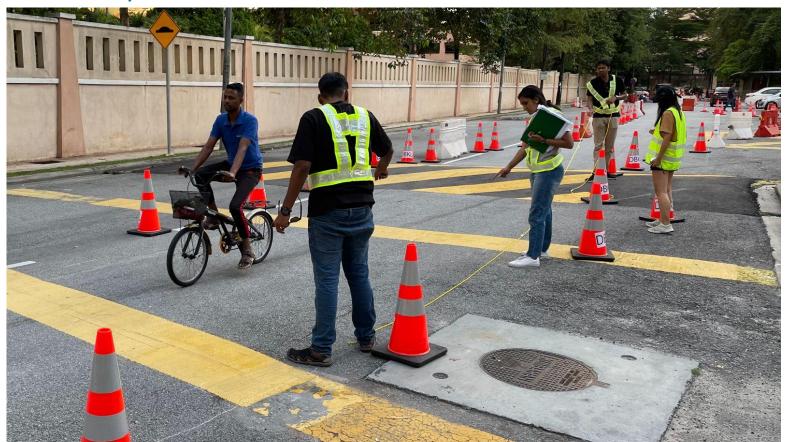




Short-term Transformations

Global Designing Cities Initiative

Process of Implementation



Short-term Transformations

Global Designing Cities Initiative

Process of Implementation





 Test and Trials that help measure change

2. Show 'What's Possible?' to build support

3. Interim Measures for immediate action

Short-Term Interim Transformations

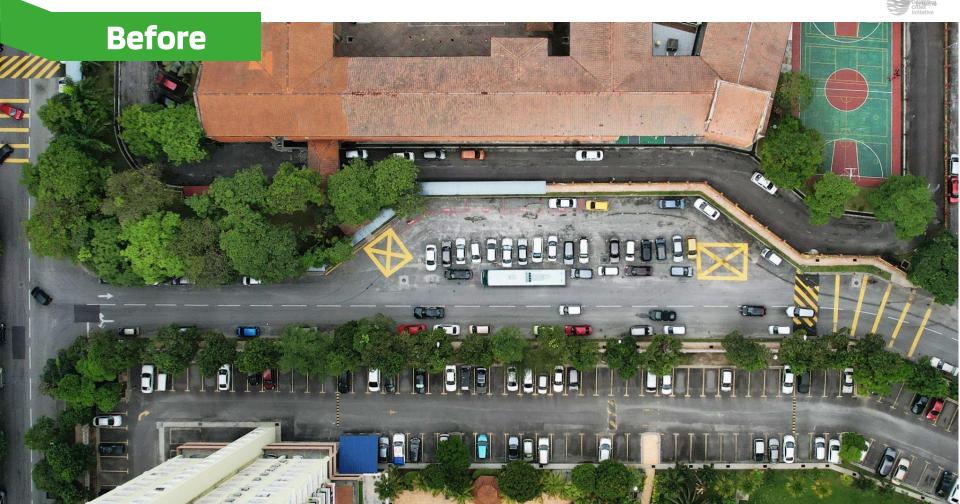


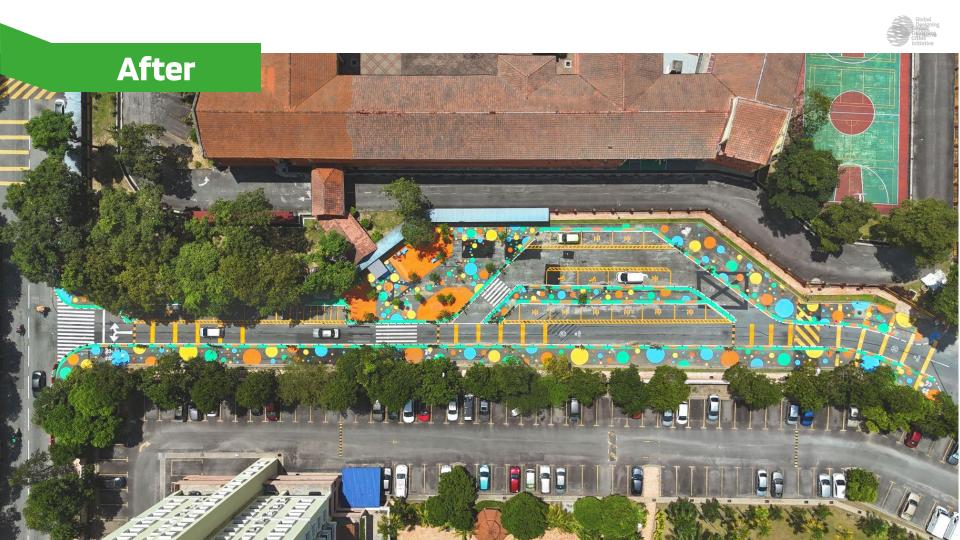
New York City

























Vehicle Speed - Highest Speeds

Before intervention





40

km

km/h



Pop Up



*

29

km

Interim





23

26

km/h



Interim: Street Users











Interim: Street Users





Interim: Street Users







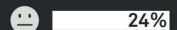






















AFTER





How safe did pedestrians feel on the sidewalk?







How safe did pedestrians feel on the crosswalk?







930 Vehicles per hour



987 Vehicles per hour

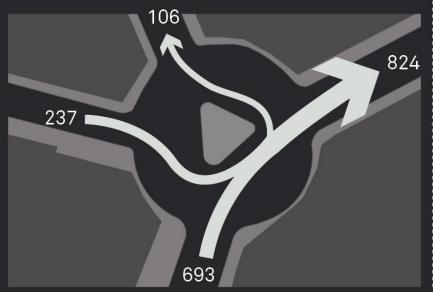


33 km/h Average Speed



21 km/h Average Speed

Throughput was higher, in spite of safer speeds







Provide the tools to **reimagine, reinvent**, and **redesign safer**, more **sustainable streets**!







Safe and Sustainable Street Design: Data Collection & Evaluation

A workshop for the City of Ljubljana, Slovenia

Abhimanyu Prakash, Associate Director Renata Carvalho, Program Manager Marina Visic, Program Associate

Global Designing Cities Initiative

29th January, 2025













Data collection & Evaluation

Ljubljana, Slovenia Global Designing Cities Initiative January 29th, 2025

@GlobalStreets

How we work at GDCI









Training & Public Consultation



Interventions & Transformations



Data collection & Assessment



Scaling impact across citywide programs.

How we work at GDCI







Interventions & Transformations

Data collection & Assessment



01 Introduction









Download it for free:

https://globaldesigningcities.org/publication/how-to-evaluate-street-transformations-english/

How to evaluate street transformations?



Type of data



Existing databases and archival research



Technical drawing information



Online research



Interviews, focus groups and intercept surveys



Observational data

How to evaluate street transformations?

Type of data





Interviews, focus groups and intercept surveys

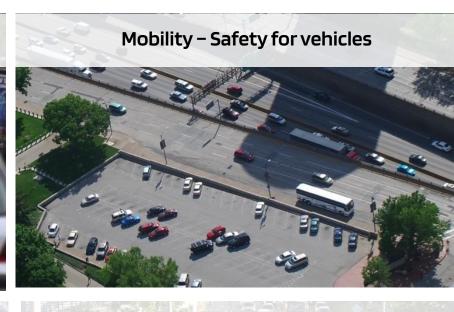


Observational data

SHIFT HOW WE MEASURE SUCCESS



Mobility – Safety for vehicles



Mobility – Safety for vehicles





SHIFT HOW WE MEASURE SUCCESS









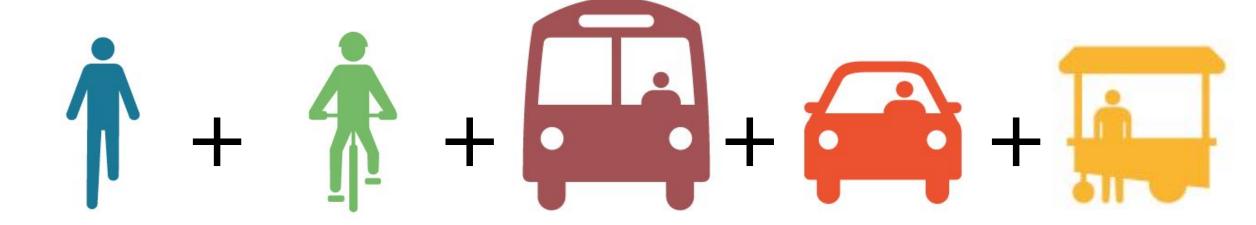




From considering just one user.....



...to considering them all!





Meaningful metrics can help cities to...

Expand upon data collection practices



to focus on more types of street users, mobility, and place functions



Measure the impact



of project designs



Analyze the performance



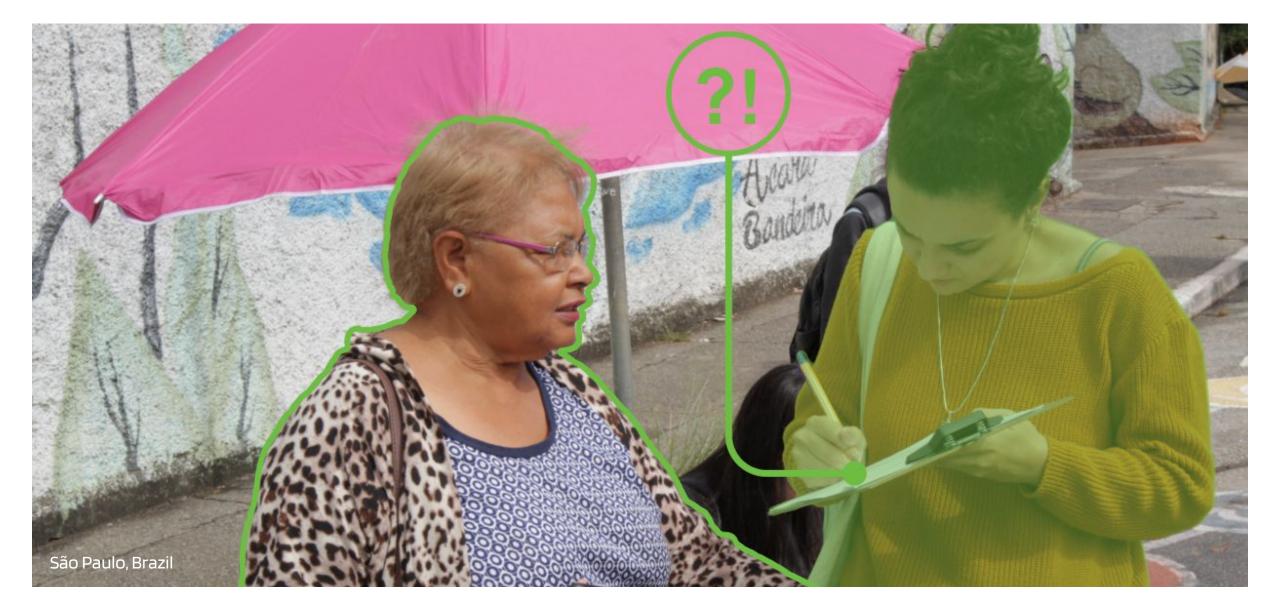
of new materials and ideas



Encourage fairer conversations



focused on equitable design strategies



Build evidence



on the importance and impact of safe, healthy, and sustainable streets



Strengthen community and political support



for projects through engagement





What we measure depends on what the project objectives are.



Improve pedestrian safety





Determine metrics to collect

Improve pedestrian safety

Number of pedestrians crossing safely



Determine metrics to collect

Tell the story

Improve pedestrian safety

Number of pedestrians crossing safely

By designing with pedestrians as the primary consideration, we create a safer, more economically productive place for everyone.



Determine metrics to collect

Tell the story

Improve pedestrian safety

Number of pedestrians crossing safely

By designing with pedestrians as the primary consideration, we create a safer, more economically productive place for everyone.



What is the story that we want to tell?

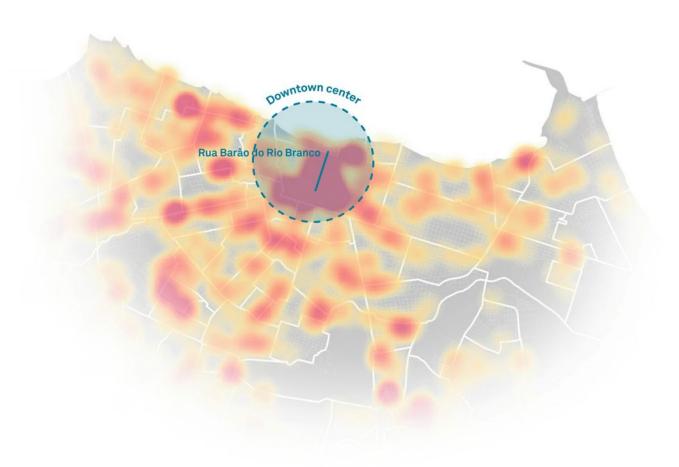




Crash history



Crashes involving pedestrians

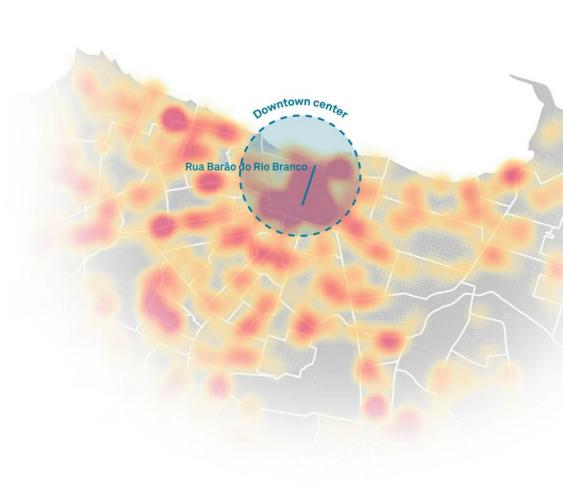


Pedestrians were killed in Fortaleza in 2019

Crash history



Crashes involving pedestrians



Crashes involving pedestrians are

70%

more prevalent in Downtown Fortaleza than the rest of the city









Choice of indicators



What metrics can we collect to show the impact of the project?

What metrics can we collect?



% of space allocated to each



% compliance with speed limits



Number of pedestrians crossing the street



Number of pedestrians crossing inside or outside the crosswalk



Activities on the street



% of users who feel safe



Percentage of users



Number of people walking



% of pedestrians walking on the road



Crossing distance



Pedestrian demographics



Number of cyclists



% of cyclists who feel safe



Reliability of public transportation



Use of loading zones



noise levels



Parking use

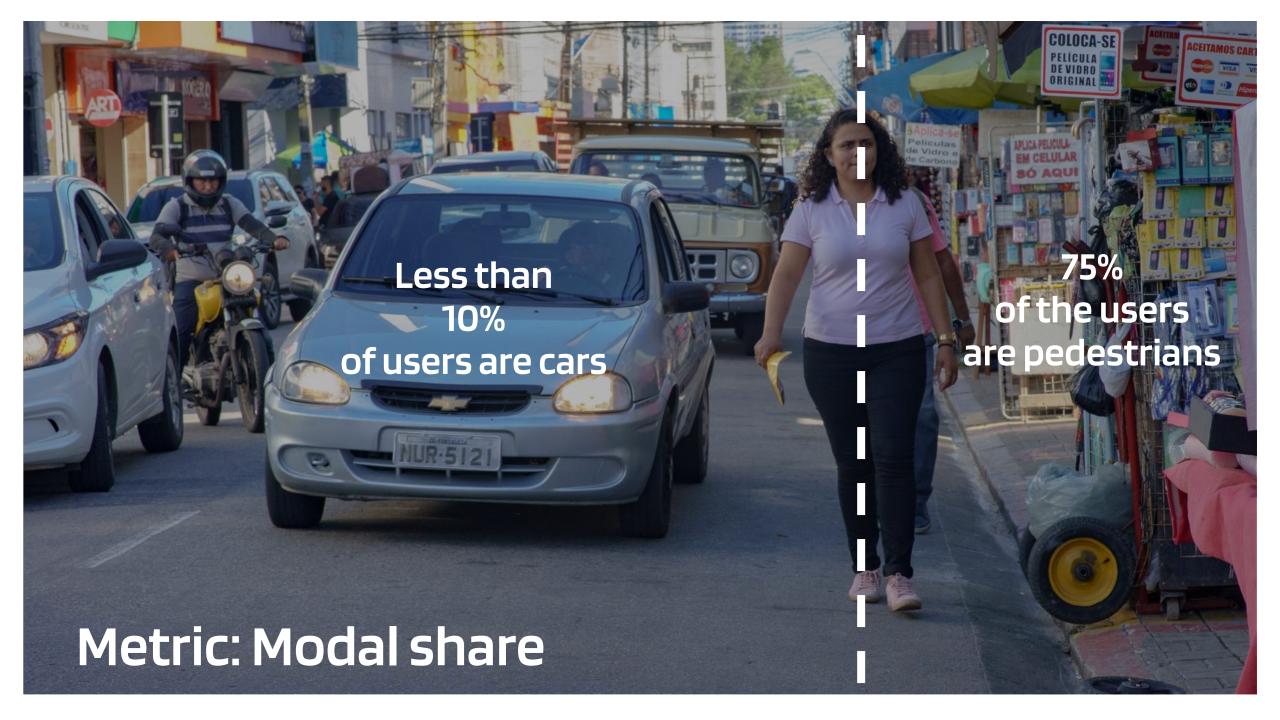


Number of street vendors















Before and after

Designing Cities Initiative

Barão do Rio Branco





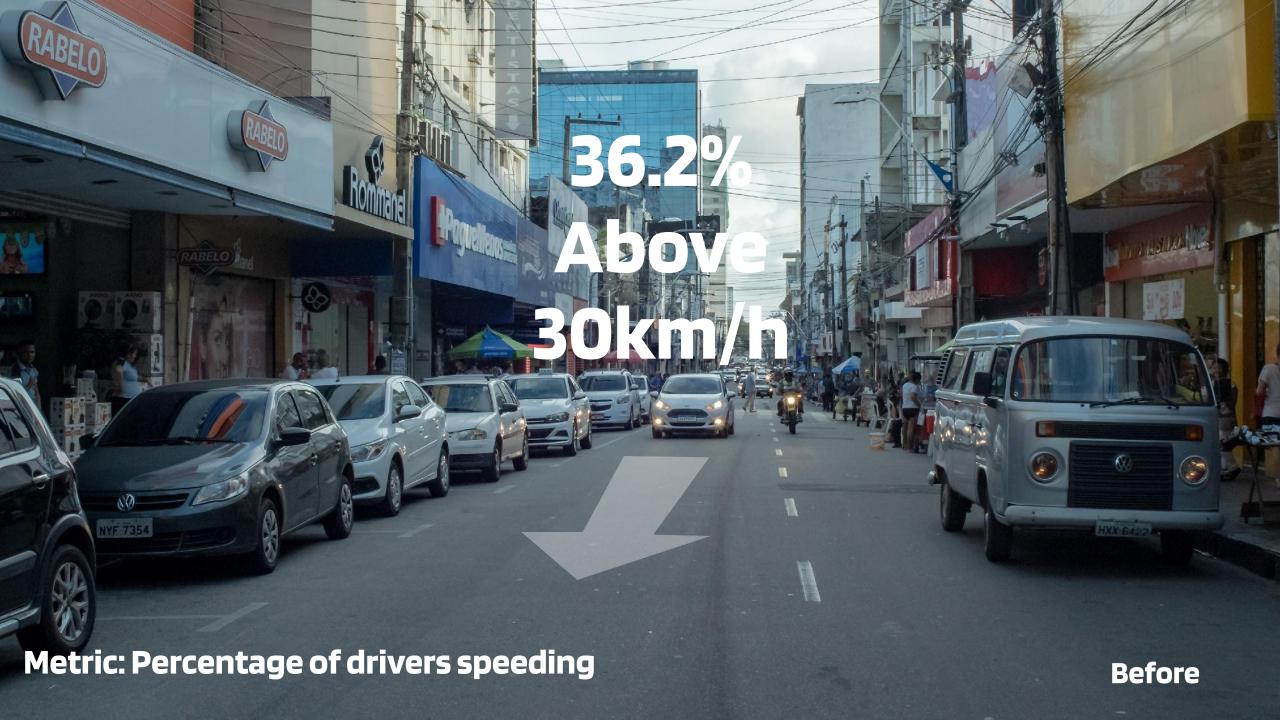


33% pedestrian facilities



60% pedestrian facilities

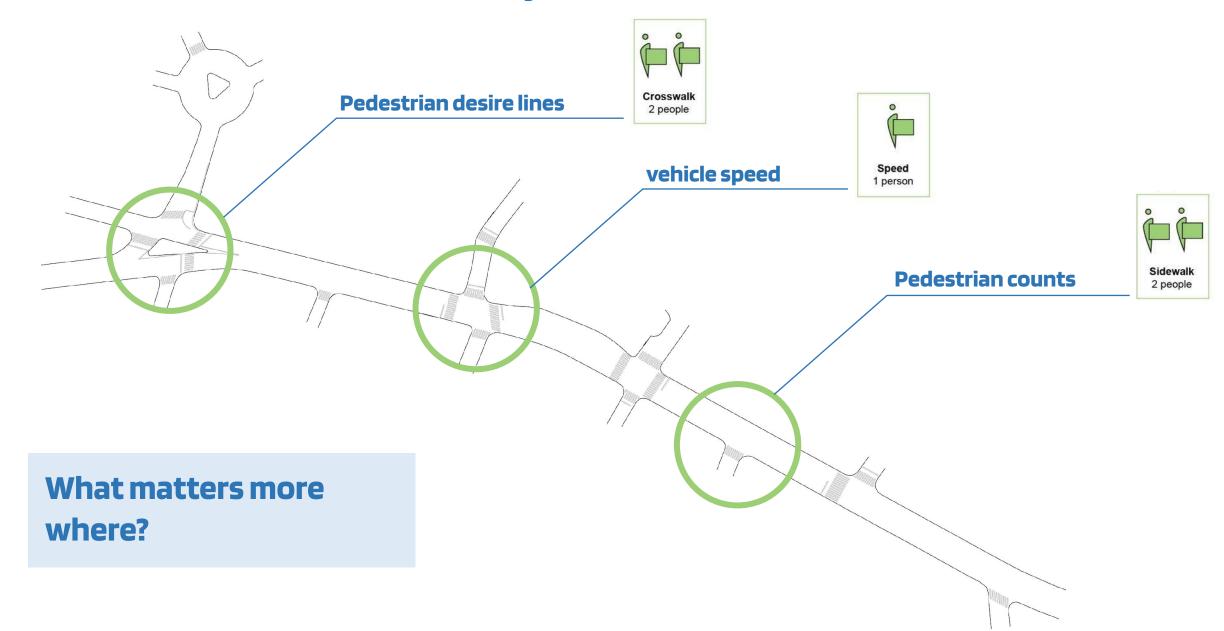






Use limited resources wisely





Be selective



% of space allocated to each



% compliance with speed limits



Number of pedestrians crossing the street



Number of pedestrians crossing inside or outside the crosswalk



Activities on the street



% of users who feel safe



Percentage of users



Number of people walking



% of pedestrians walking on the road



Crossing distance



Pedestrian demographics



Number of cyclists



% of cyclists who feel safe



Reliability of public transportation



Use of loading zones



noise levels



Parking use



Number of street vendors

...and prioritize



% of space allocated to each



% compliance with speed limits



Number of pedestrians crossing the street



Number of pedestrians crossing inside or outside the crosswalk



Activities on the street



% of users who feel safe



Percentage of users



Number of people walking



% of pedestrians walking on the road



Crossing distance



Pedestrian demographics



Number of cyclists



% of cyclists who feel safe



Reliability of public transportation



Use of loading zones



noise levels



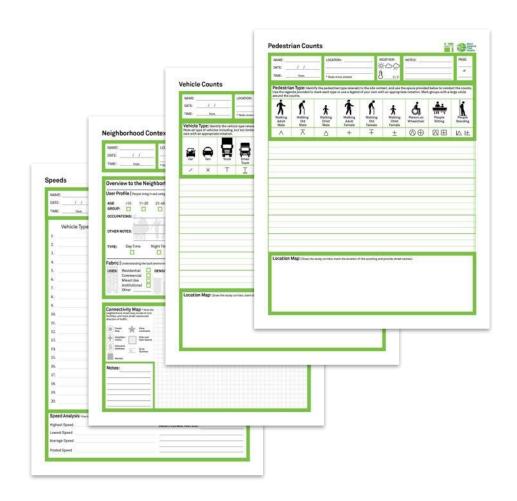
Parking use



Number of street vendors



Define a methodology



GDCI data formats (available on our website)











Determine when to collect the data

When to collect data



Before implementing the project





- Understand the site and define a vision
- Have baseline data to compare with future data.
- Document and understand the needs, interests and knowledge of community members and other interested parties
- Locate activities, obstacles, and opportunities for implementing specific design elements, and take plenty
 of "before" photos to show the change.

When to collect data



Before implementing the project





Weeks, months or years after implementation

- Maintain momentum and transparency by communicating short-term results and initial community reactions
- Document immediate physical and operational changes
- Refine design based on new observations
- Begin preparing the arguments in favor of a more permanent project.

When to collect data



Before implementing the project





Weeks, months or years after implementation

- Assess long-term changes in site use, function, and perception
- Support new policies and future designs for similar projects
- Assess the impact on the frequency and severity of injuries caused by traffic accidents, air quality, etc.
- Argue for a more permanent project.



How often and for how long should data be collected?

- Take a measurement at various times of the day: peak and off-peak hours for vehicles, pedestrians, micromobility, and transit
- Take a measurement several days of the week (weekdays and weekends)
- Divide daily tasks into 2-4 hour shifts
- Make sure breaks are scheduled between shifts



Can the team save time and resources when calculating certain counts?



Can the team save time and resources when calculating certain counts?







Communicate goals

Review schedules and materials to bring on site

Review data collection forms and tools

- Start by explaining the goals and scope of the project.
- Explain the context of the site using maps and photos: show activities, operations and conditions that the team needs to consider.



1 Communicate goals

Review schedules and materials to bring on site

- Review the schedule and times each surveyor will collect data.
- Distribute contact information for everyone who will be on site.
- Provide checklists indicating what materials, safety equipment, and documentation each surveyor is responsible for, and what the team leader will bring to the site.

Review data collection forms and tools



1 Communicate goals

Review schedules and materials to bring on site

Review data collection forms and tools

- Review how to collect data on specific forms and provide instruction sheets.
- Perform test counts and use each of the tools; review surveyors' results and make corrections as necessary.
- Remind participants how each of the data points contributes to the broader goal of the project. For example: Collecting data on pedestrian desire lines will help define where to implement the new crossings





5 End of day

- Set a meeting time and location, and tour the site with all surveyors before beginning counts.
- Provide an overview of site conditions, operations, and functions in each data collection area.
- Be clear about how surveyors can communicate project goals to bystanders when they are not conducting counts, and follow up with potential local supporters of the project.





• When returning data collection forms, the staff should review the results and clarify any discrepancies as soon as possible.



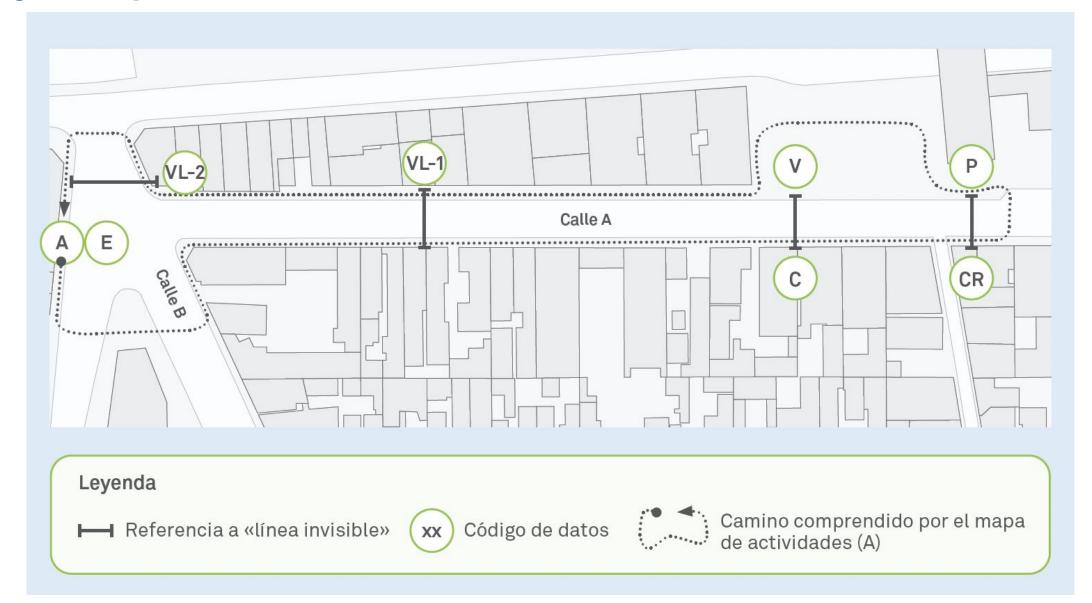
Surveyor schedule for data collection

Metrics Chart

No.	Aim	Metrics	Location takes	Staff	Take time	Take Frequency	Inputs take
1	Reduce the turning speed of buses at the intersection with the cycling infrastructure on Av. Revolución	% compliance with rotation speed	Point No. 1	1_Radar operator 2_Data annotation	12:30 pm to 3:30 pm (3 hours)	Periods of 15 minutes for 3 hours. Include a 15-minute break at the end of each hour	Radar Data annotation format Pen Table to support Sunscreen Cap hat
2	Improve and create safe pedestrian crossing points within the intersection	Number of pedestrians crossing inside or outside the crosswalk	Point No. 2	1_Occ-Ori Capacity 2_Ori-Occ Capacity	12:30 pm to 3:30 pm (3 hours)		Data annotation format Pen Table to support Sunscreen Cap hat
3		Number of pedestrians crossing inside or outside the crosswalk	Point No. 3	1_Occ-Ori Capacity 2_Ori-Occ Capacity	12:30 pm to 3:30 pm (3 hours)		
4		Number of pedestrians crossing inside or outside the crosswalk	Point No. 4	1_Occ-Ori Capacity 2_Ori-Occ Capacity	12:30 pm to 3:30 pm (3 hours)		
5	Capture multiple intersection operational dynamics	Top-down drone shot where the entire intersection can be observed	Point No. 5		12:30 pm to 3:30 pm (3 hours)	30 min during HDM	drone

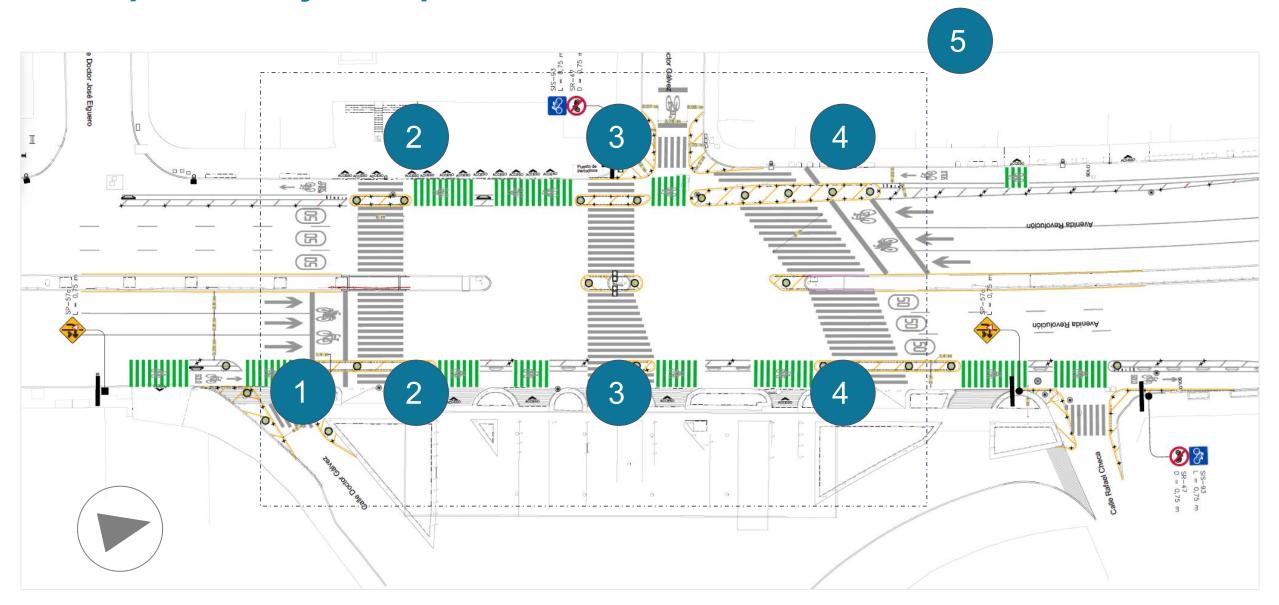


Surveyor Map





Example: Surveyor map





COMMUNICATING

SUCCESS

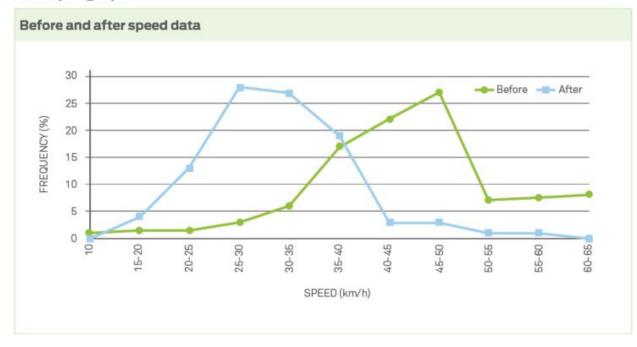


Communicate results in appropriate formats

Example table

Speeds	50th Percentile	85th Percentile	40+ MPH Speeders	
Before	25.6 MPH	31.2 MPH	1119	
After	23.1 MPH	29.0 MPH	513	
% Change	-9.8%	-7.1%	-54.2%	

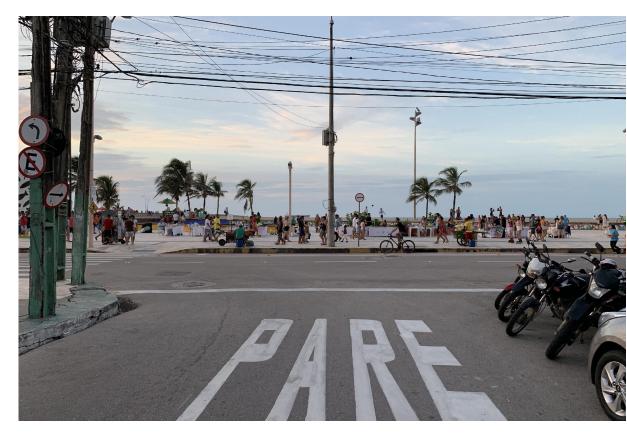
Example graph





Find relevant elements in Before & Afters







Before After

Metrics collected during site visits:

Global Designing Cities Initiative

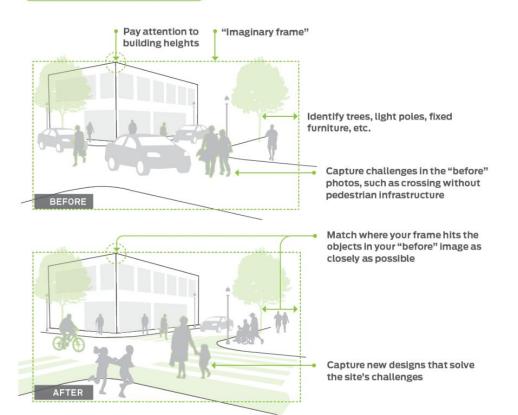
Before - After Photographs

Before-and-after photos taken at street level are very effective in demonstrating the process, appreciating the exact changes that were made in the geometry and the operations of the street. To plan for effective before-and-after images, determine an imaginary frame that includes trees, signs, and/or identifiable

street elements that will guide you to take the same image on different days and at different times. Mark this on a site map in case the same photographer cannot return for the "after" shot. It is also helpful to take "during" shots of the implementation process.

Tools you'll need:





Model photographs

Ideally, the "before" photo should show some key challenges on site, and the "after" photo should show some key improvements. When placed together, the photos match almost exactly. The perspective, frame, angle, and elements all have the same position in both photos, making it easier to see the changes. Small differences are to be expected, but the main features of the image should align (e.g., a light pole or building edge in the same location).





Photographs that could be improved

The images are not aligned.

- Different perspective: it helps to have the camera perpendicular to the ground plane
- Different location (farther away)
- > Different elements show up in the photos

Images that don't align can sometimes be adjusted or cropped with computer software, but alterations may affect the quality of the images.







Tips when taking before-and-afters

- Capture many different angles and locations, and crop for an exact match
- Photos must not only show the design improvement, but also people using it! Pick active times to document the project and wait until you get people within the frame.
- Capture moments without large shadows cast over the site, and at the same time of day.

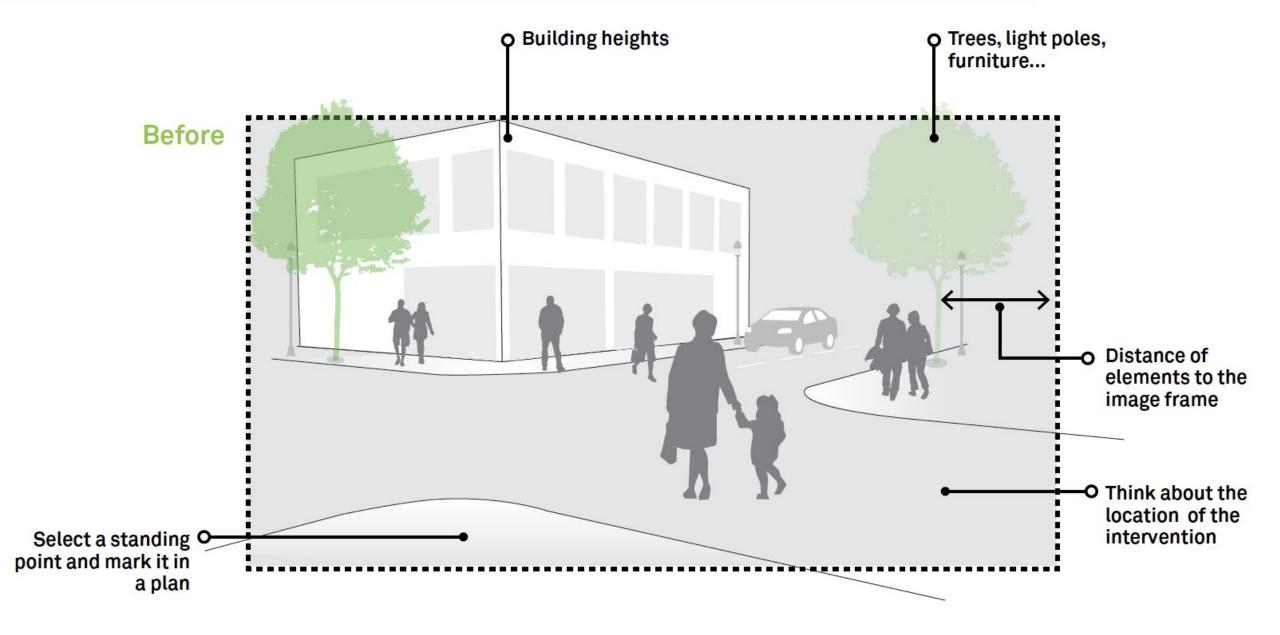


If a smartphone is the only camera

- Smartphones are great for taking illustrative pictures "on the fly" of how people use the street.
- Take a time-lapse video moving through the site or record the change over time from one spot.
- Take aerial photos and videos by using a bucket truck, ladder, nearby rooftops, or second-story retail/ office windows.
- → Check resolution of photos.

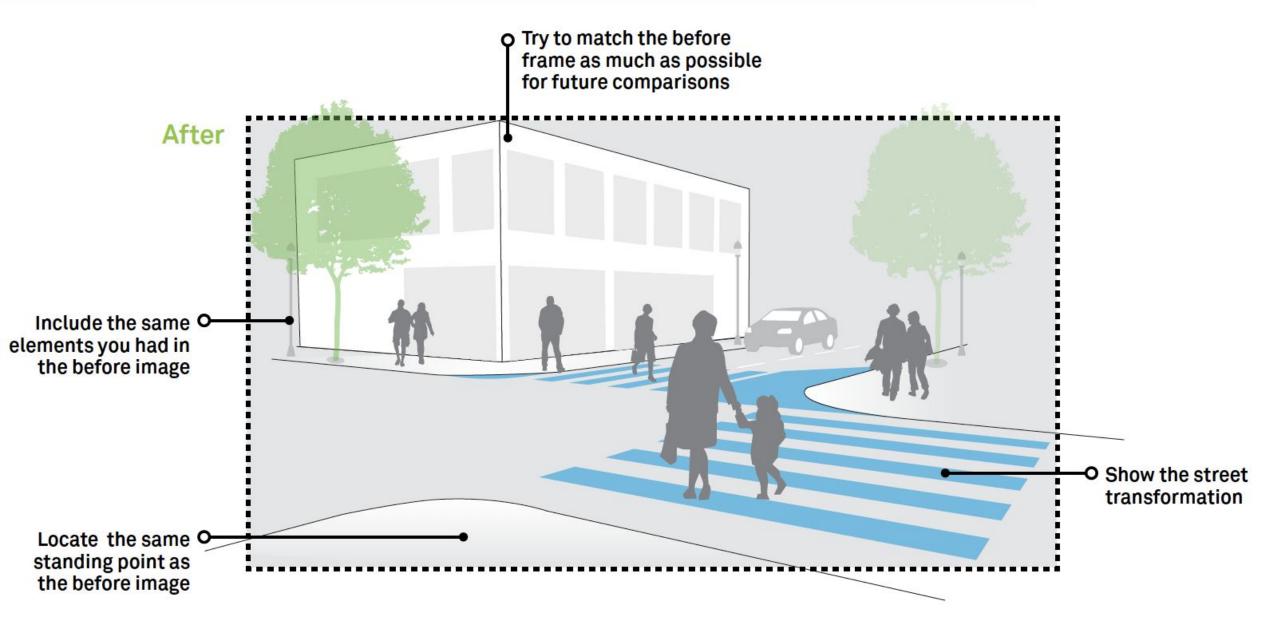
Document the Project - Before & After



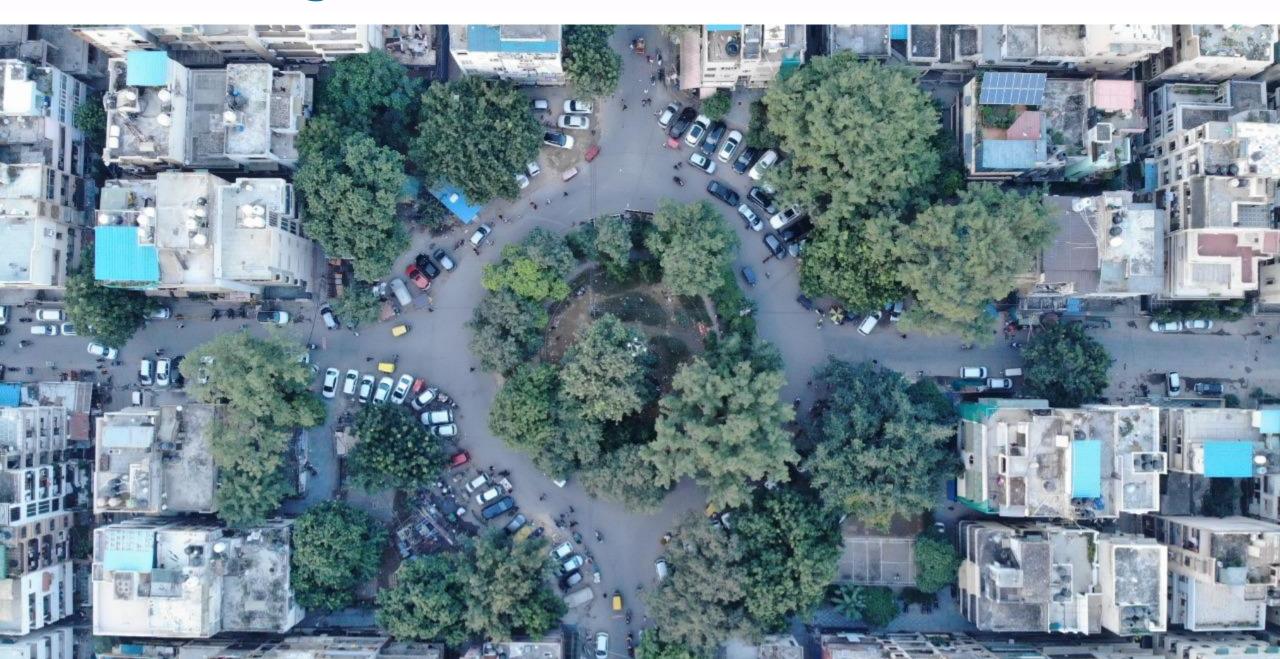


Document the Project - Before & After





Use drone images



Use drone images



Show people!



Document the process



Collect testimonials and videos













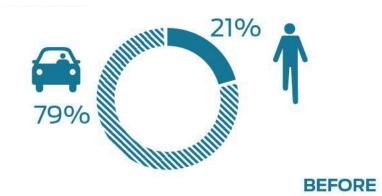


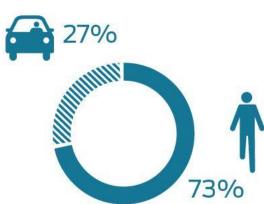


109% more pedestrians in the area

Fortaleza

Space allocation











AFTER

Fortaleza

User satisfaction and experience







97% Believe Pedestrians should be prioritized over motorized traffic





Thank you!



www.globaldesigningcities.org @globalstreets e: info@gdci.global





Safe and Sustainable Street Design: Network Planning & Discussion

A workshop for the City of Ljubljana, Slovenia

Abhimanyu Prakash, Associate Director Renata Carvalho, Program Manager Marina Visic, Program Associate

Global Designing Cities Initiative

29th January, 2025





Network Planning









Copenhagen, Denmark





Copenhagen, Denmark





Amsterdam, Netherlands





Amsterdam, Netherlands



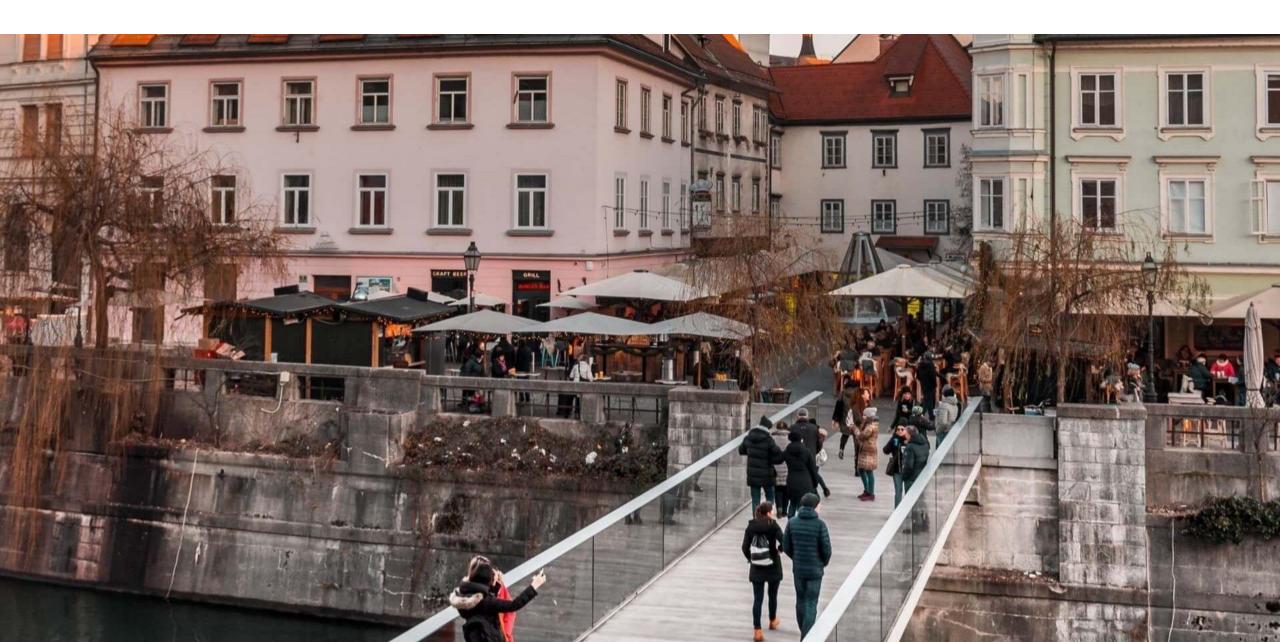
The city of Ljubljana is on track to deliver that!

Ljubljana's Vision



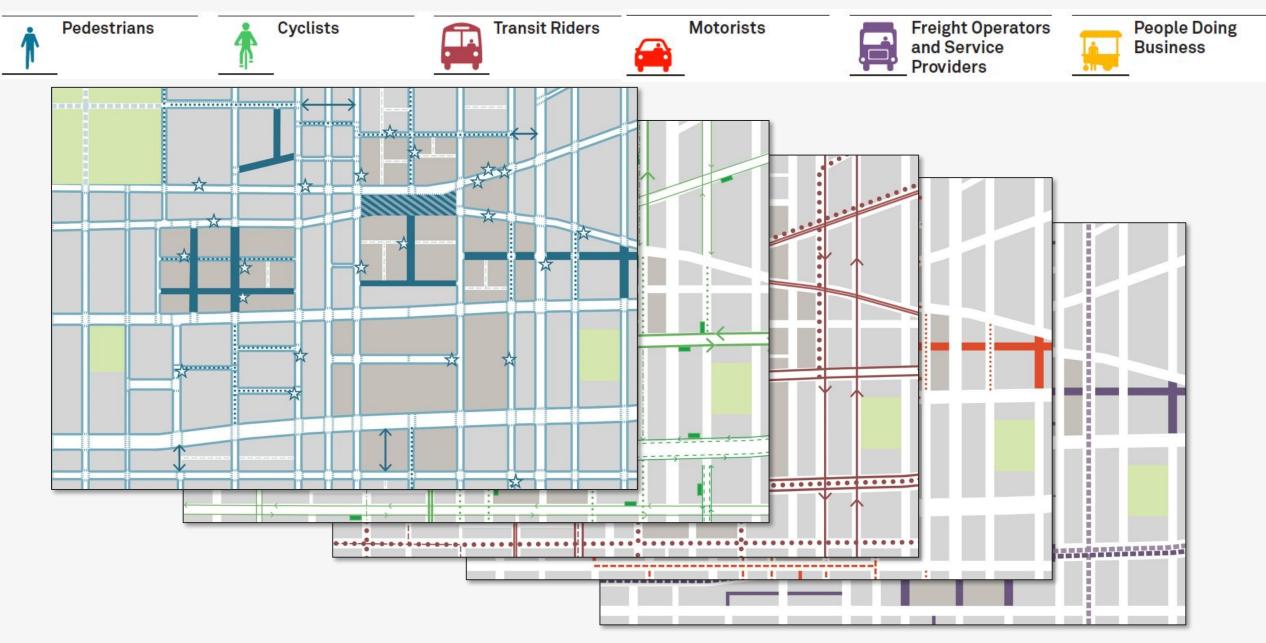




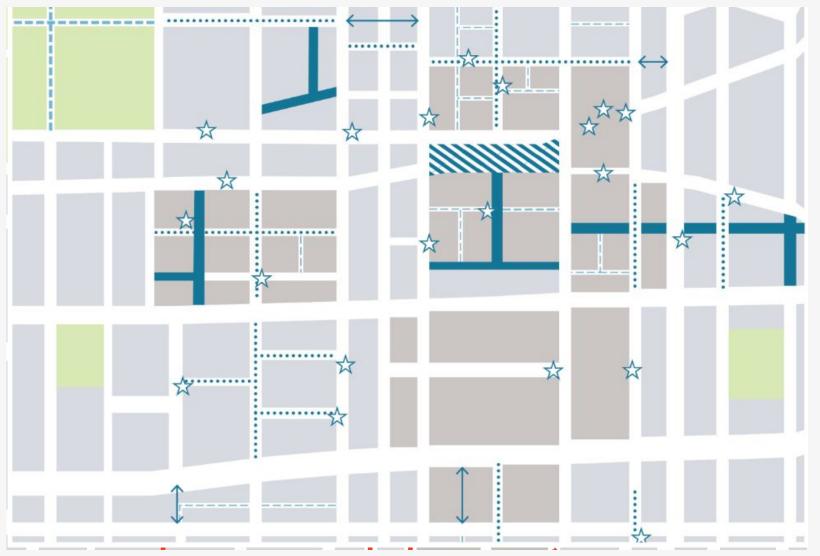


Design networks for all street users!





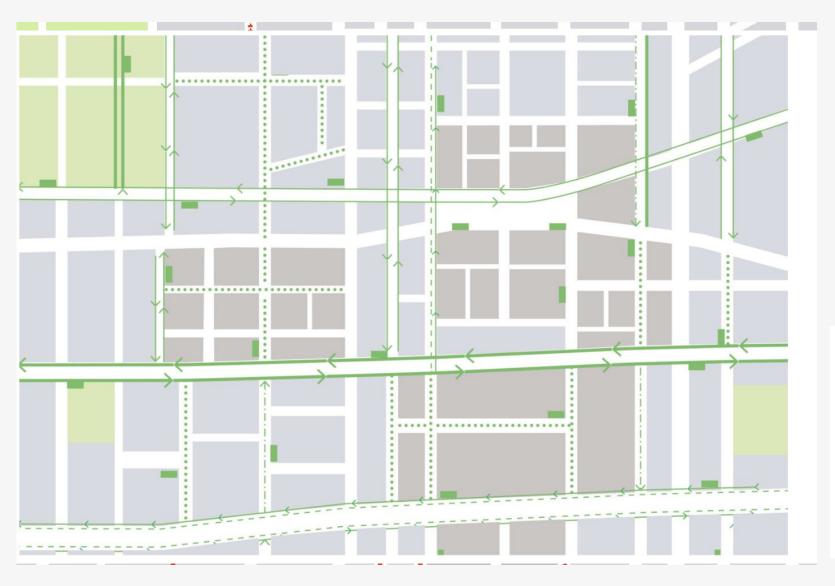




- Connectivity
- Safety
- Human Scale
- Key Destinations
- Accessibility
- Continuous







- Connectivity
- Safety
- Human Scale
- Key Destinations
- Directionality
- Intersections
- Parking
- Continuity









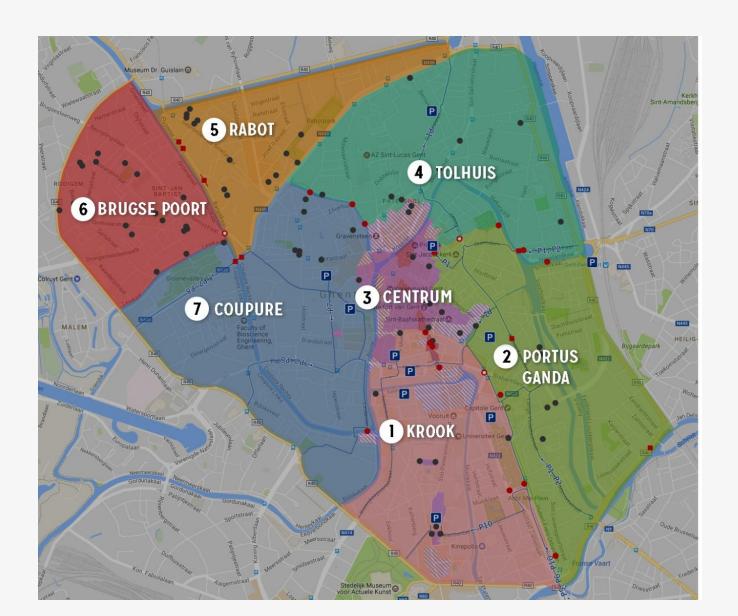






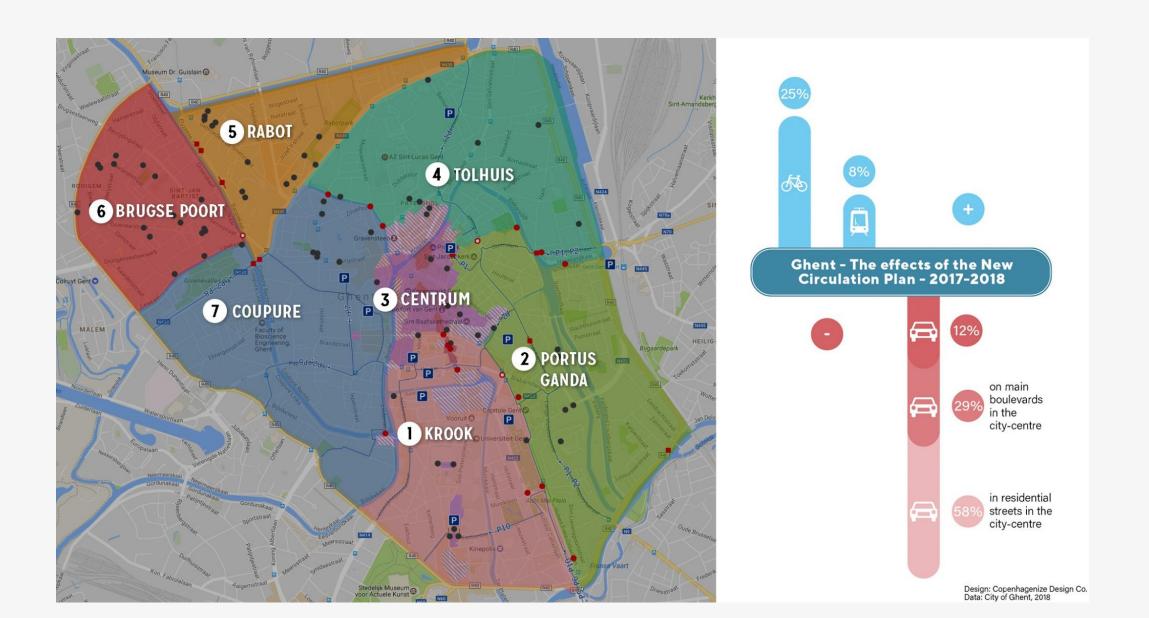
What solutions are there at the network level?



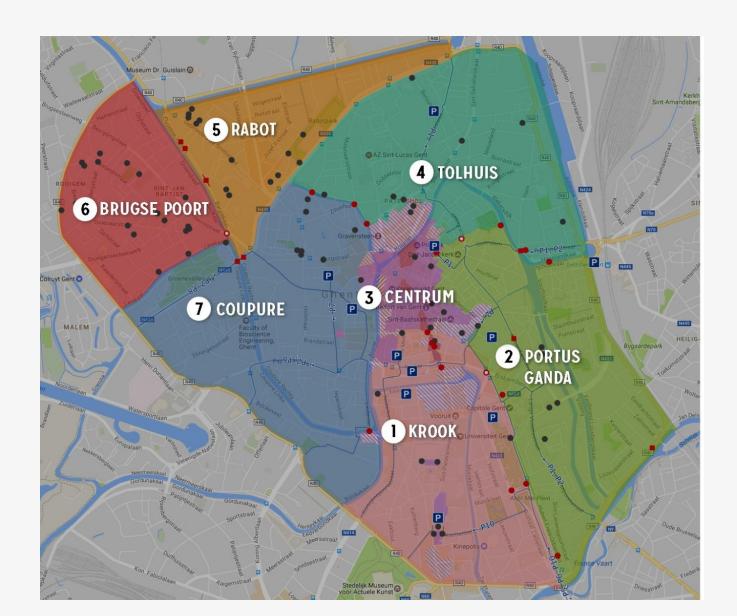


- Part of the Mobility Plan Ghent
 2030
- enhancing the sustainability and accessibility of the city
- reducing vehicular traffic in the historic center, increasingly congested
- promoting safer, more livable streets that prioritize pedestrians, cyclists, and public transport



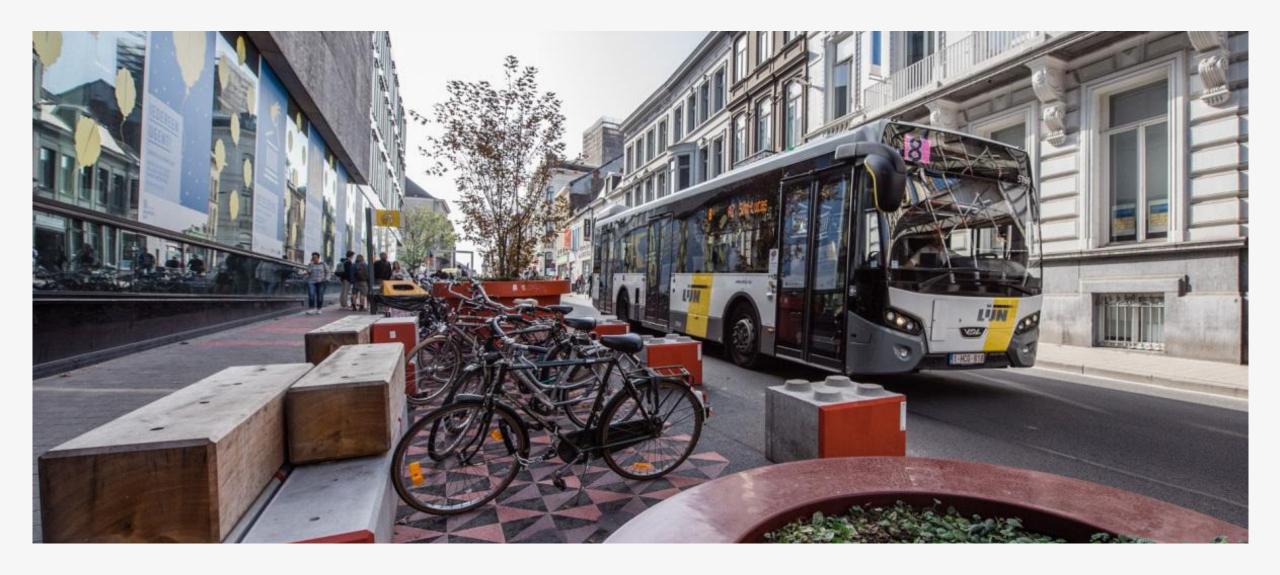






- Reallocating Street Space: converting roadways into pedestrian-friendly zones.
- Shared Streets: coexistence between cyclists, pedestrians, and vehicles.
- Filtering: Modal filters and bus gates
- Changing Street Directionality:
 Several two-way to one-way
 streets

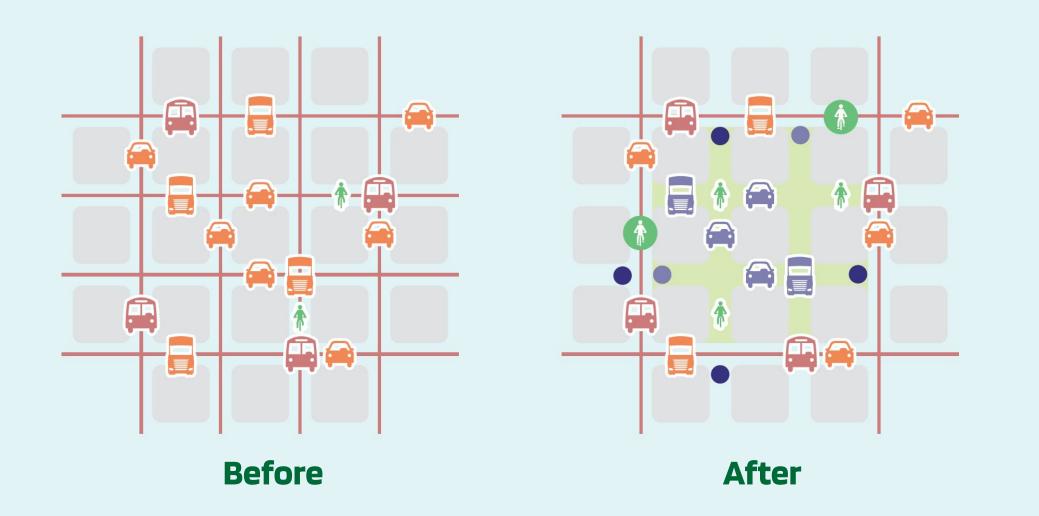










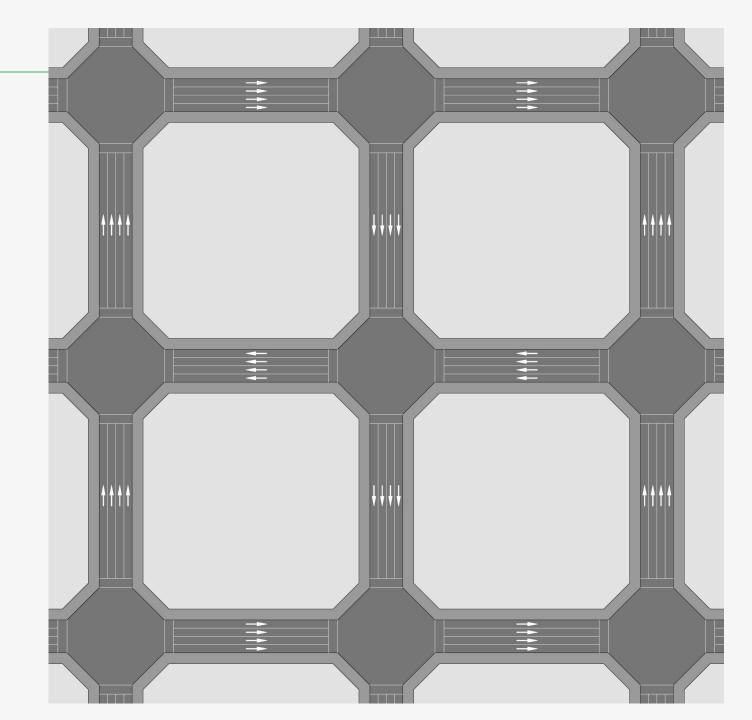


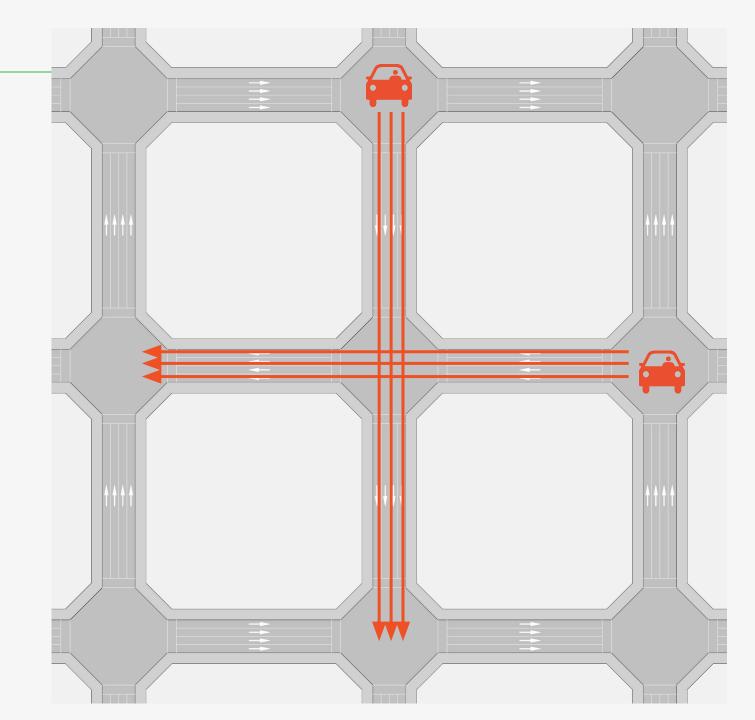


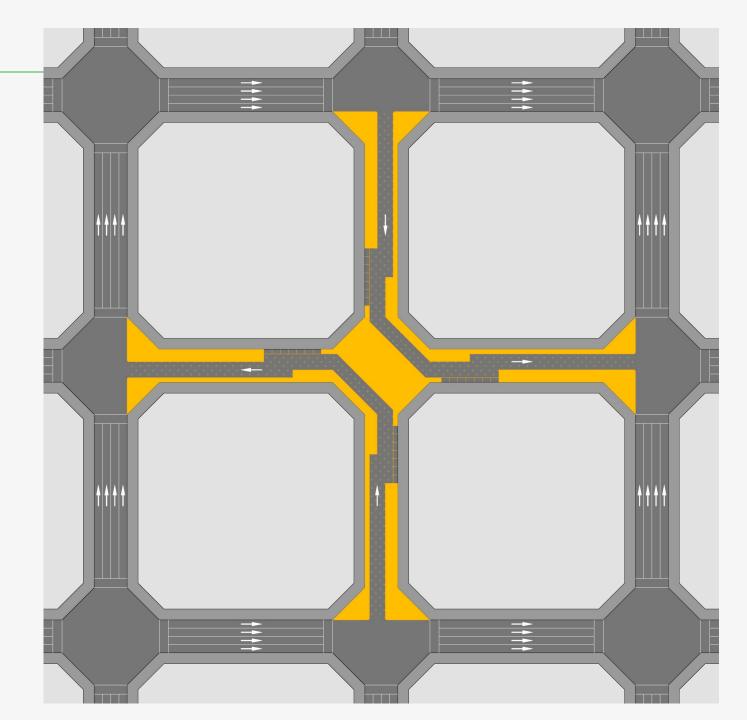


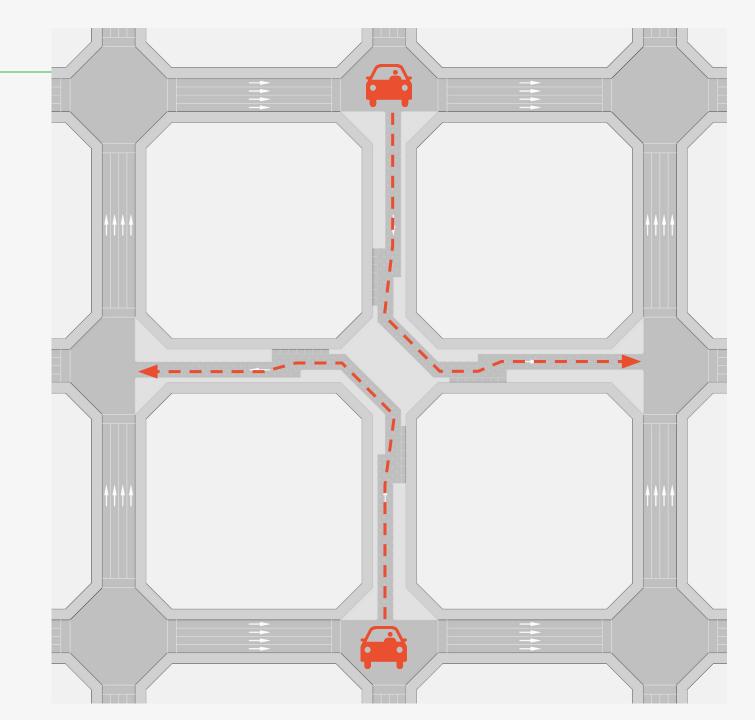


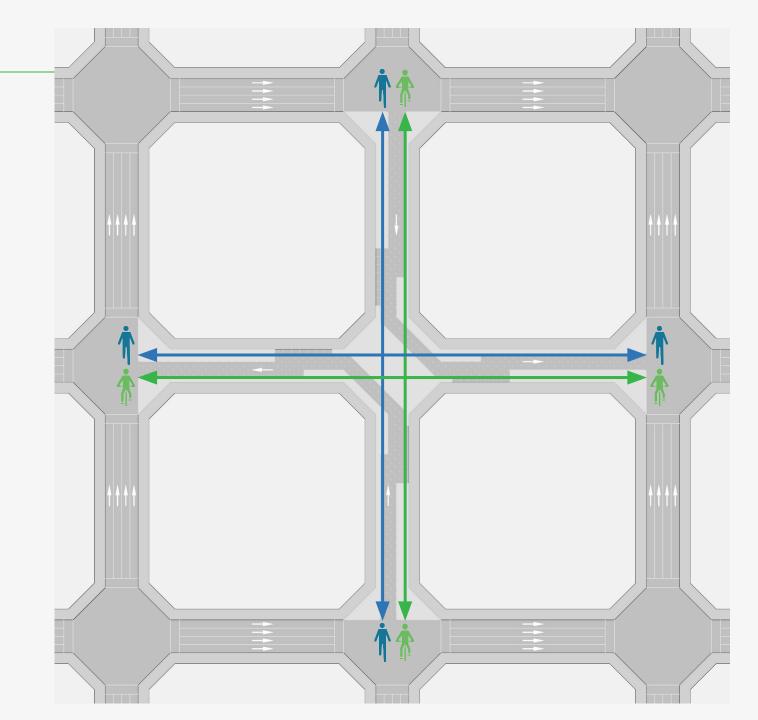
Before After

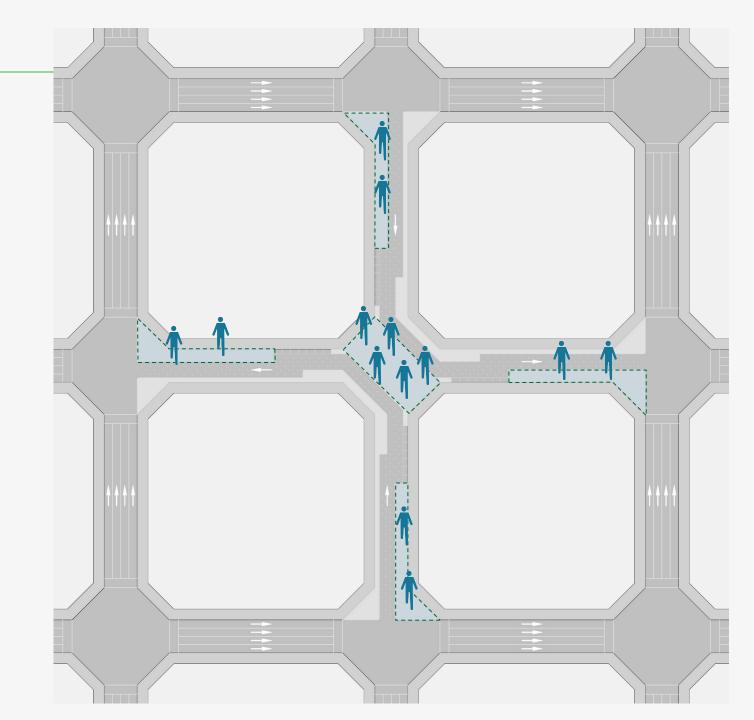








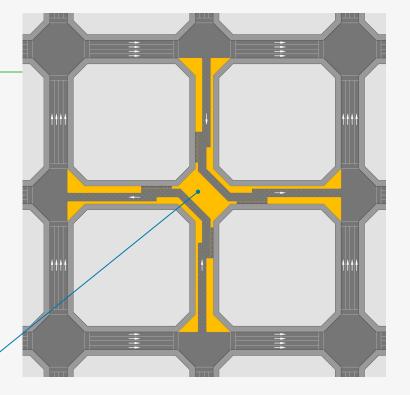


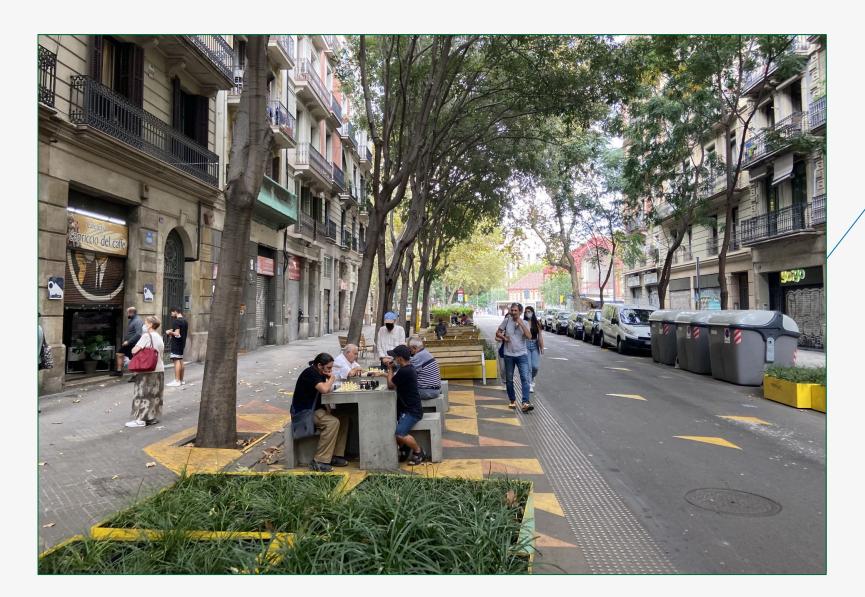


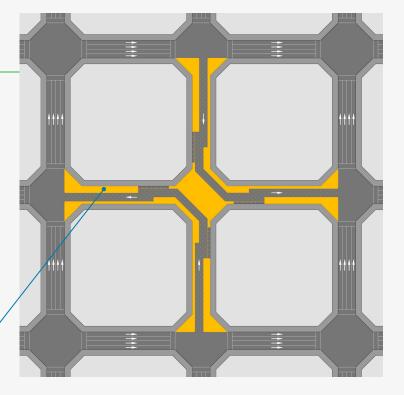


Public spaces













The street networks of tomorrow

Design for all street users





Design for all street users







Peatones



Ciclistas



Usuarios de transporte público



Conductores



Operadores de carga



Personas realizando actividades comerciales

Ljubljana's concrete targets

- 1 walking journeys by 20%
- 1 cycling journeys by 40 %
- 1 bus journeys by 50 %
- **↓** car journeys by 20 %

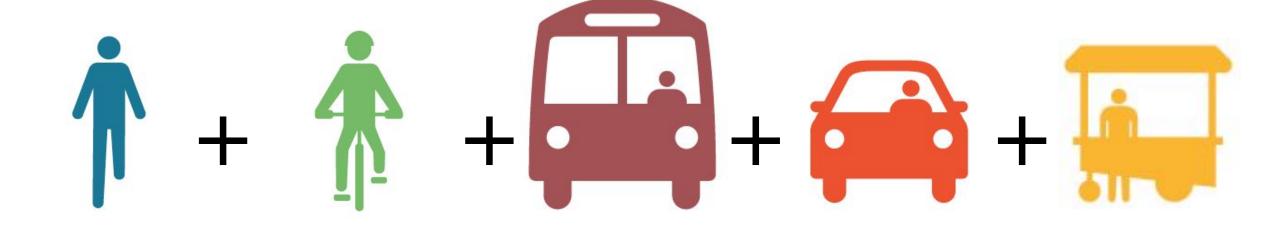
From considering one user...





...to consider all users!





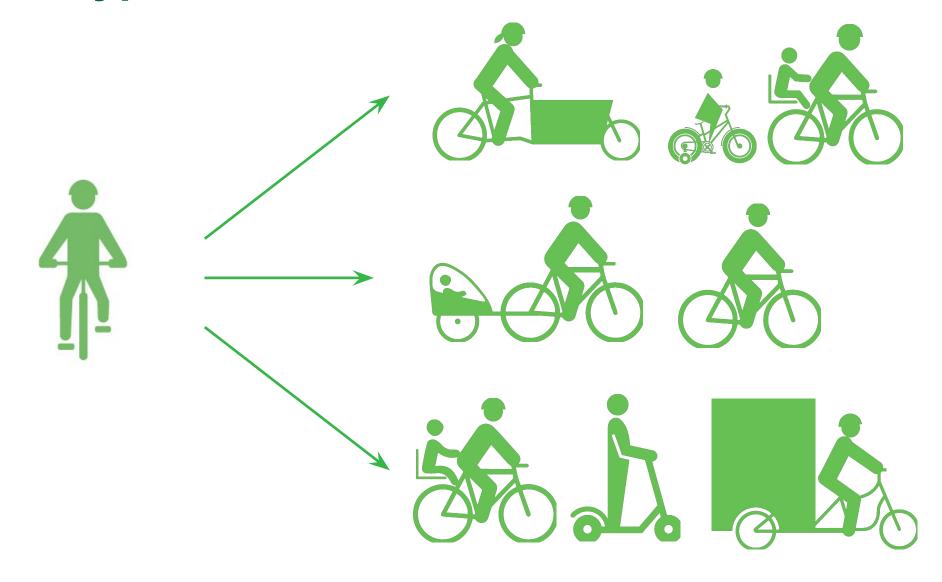
...to consider all users!





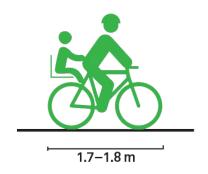
...to consider all types of vehicles!

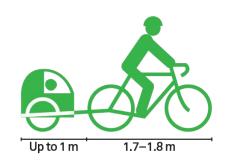


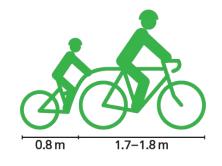


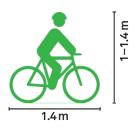
Diverse vehicles









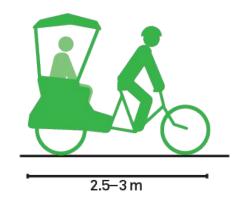


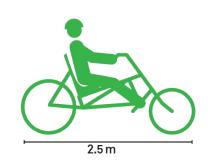
Bicycle + child sit

Bicycle + wagon

Double bicycle (with child)









Cycle rickshaw

Hand steering bicycle

Bicycle + front facing sit

Cargo bicycle

Let's choose a starting point: How does a specific user experience our street network?



Diverse cyclists



Isabel, 14Adolescent



Delivery Cyclist



Service Worker



Priya, 32Caregiver



Zohra, 45Shop Owner



Erion, 68Older Adult



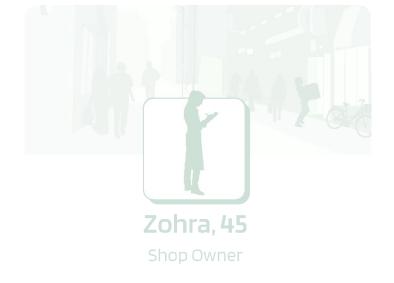
Specific needs













How do we interact with our largest continuous network of public space?



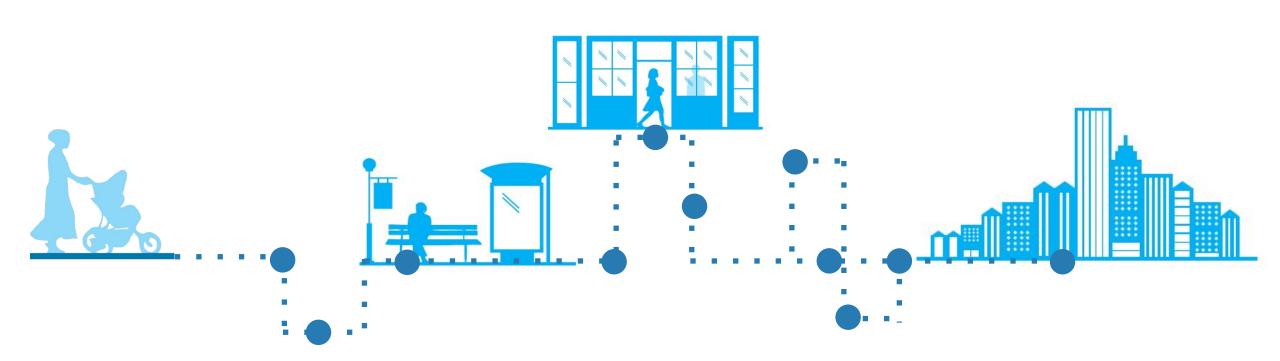




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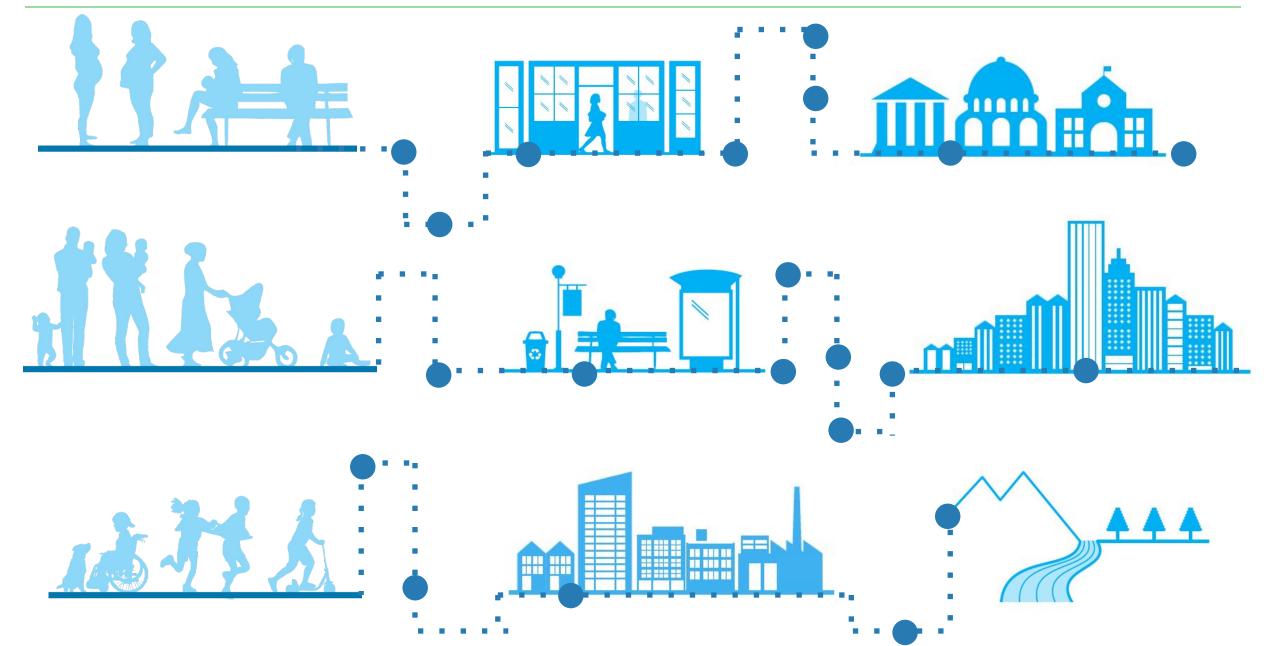
How do we interact with our largest continuous network of public space?





How do we interact with our largest continuous network of public space?



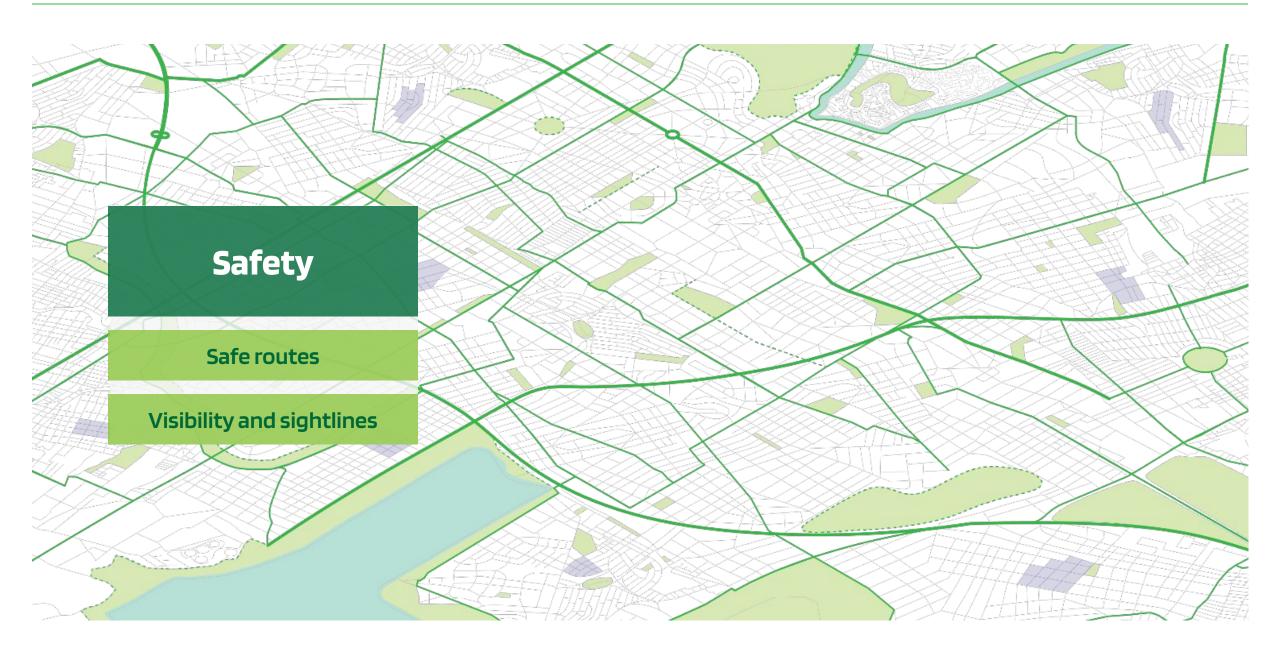




















Designing with all cyclists in mind









Delivery Cyclist



Alex, 28Service Worker



Priya, 32Caregiver



Shop Owner



Erion, 68
Older Adult











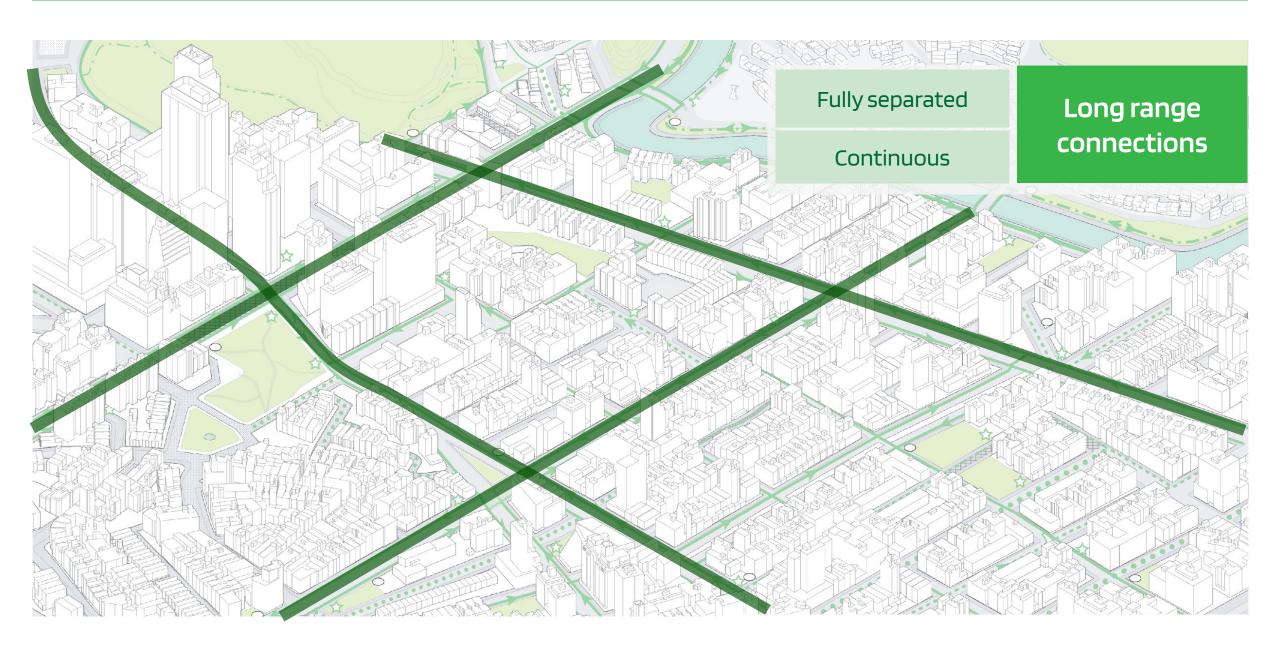


How do we achieve this?

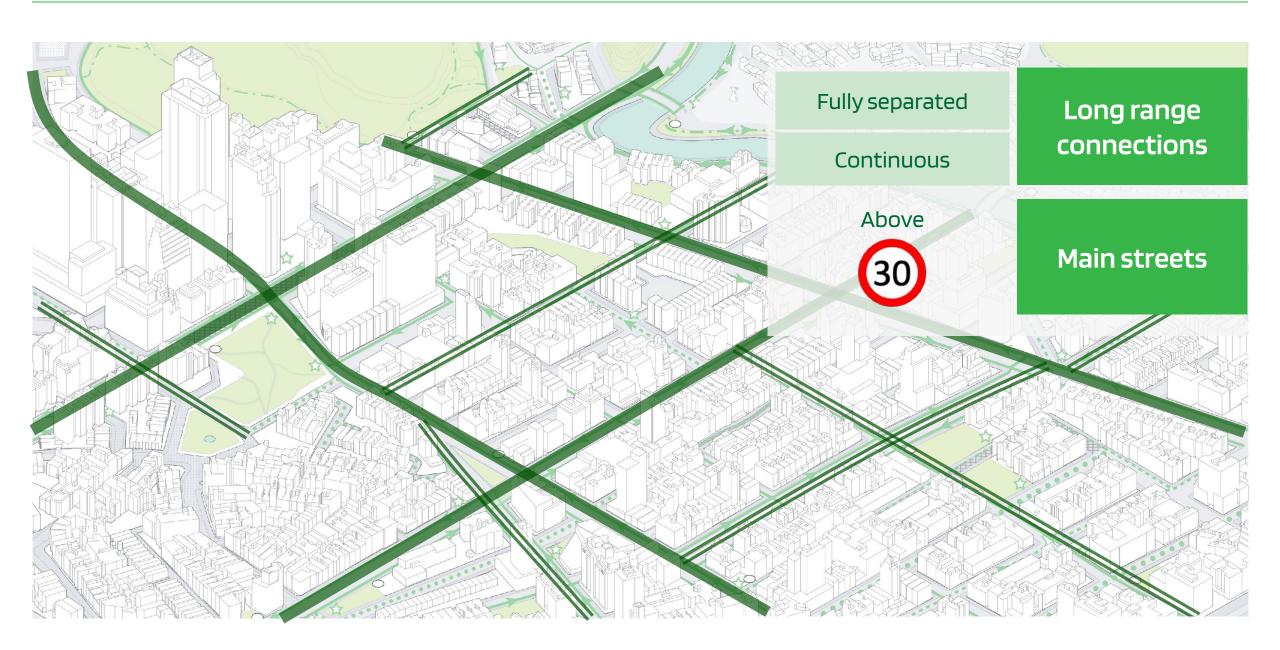








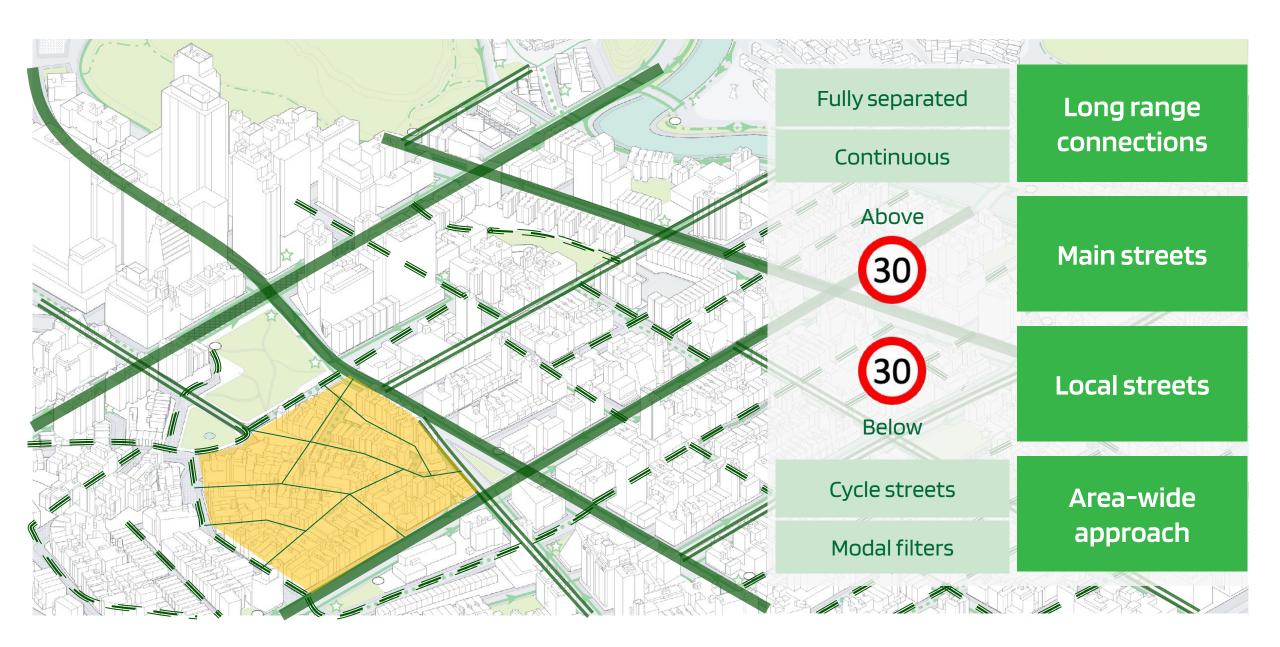








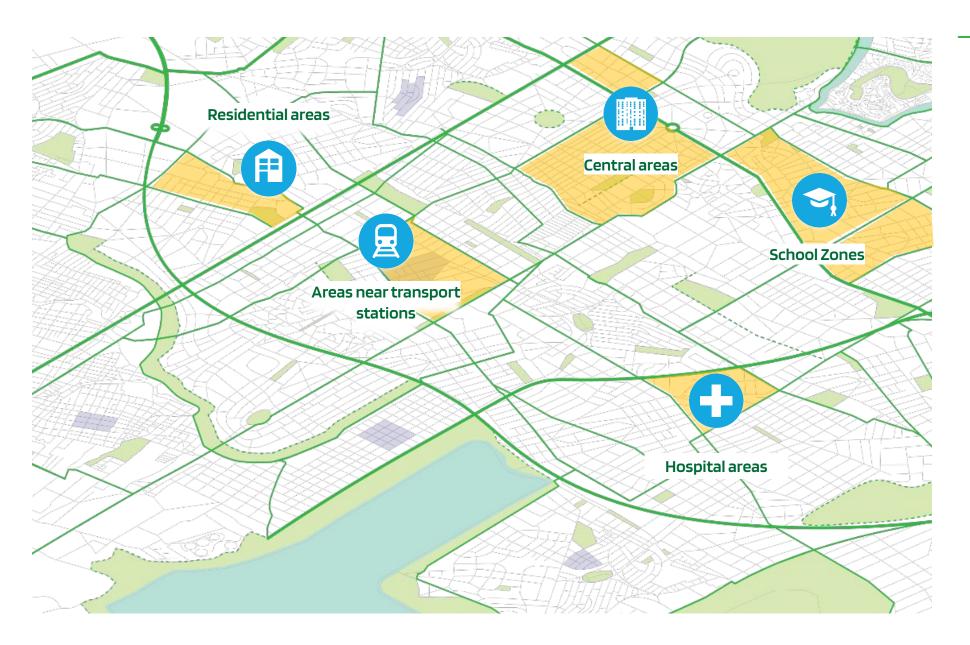




From corridors and intersections to an area-wide approach

Type of areas





Type of areas: Schools





School zones

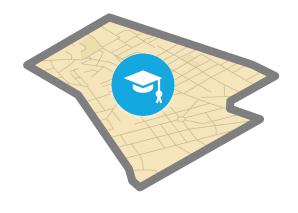


Traffic calmed street in school zone





School zones



Brussels, Belgium

Open street - Street closures for vehicles





School zones



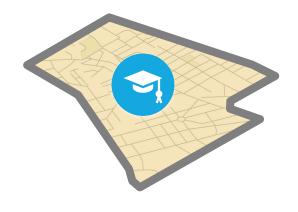
Paris, France

Open street - Street closures for vehicles





School zones



Fortaleza, Brazil

Open street - Street closures for vehicles





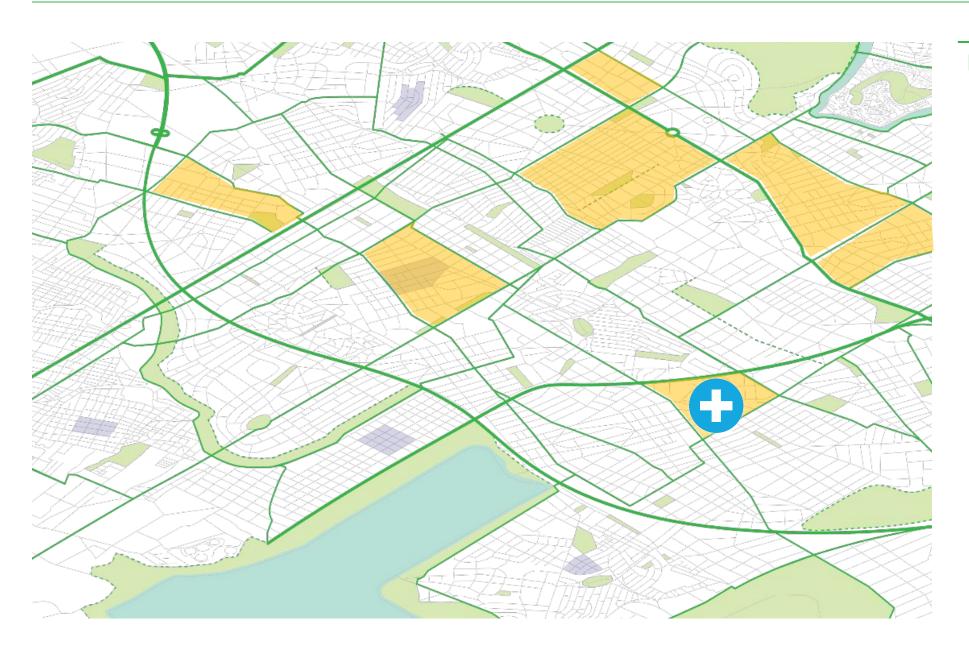
School zones



Fortaleza, Brazil

Type of areas: Hospitals





Hospital zones

Type of areas: Hospitals





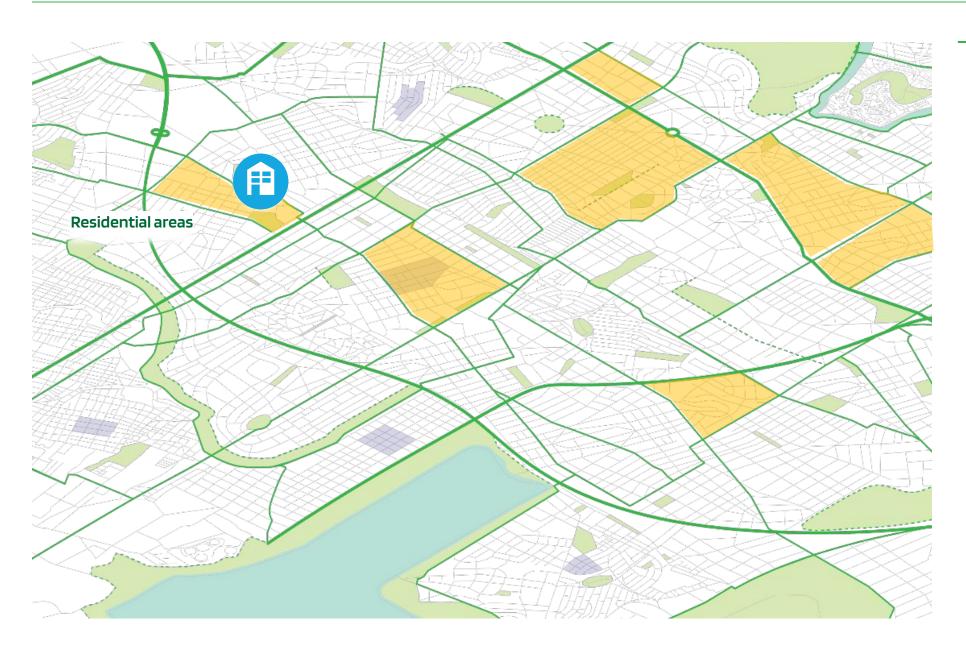
Hospital zones



Fortaleza, Brazil

Type of areas: Residential





Residential areas



Type of areas: Residential





Residential area



Quito, Ecuador

Type of areas: Residential





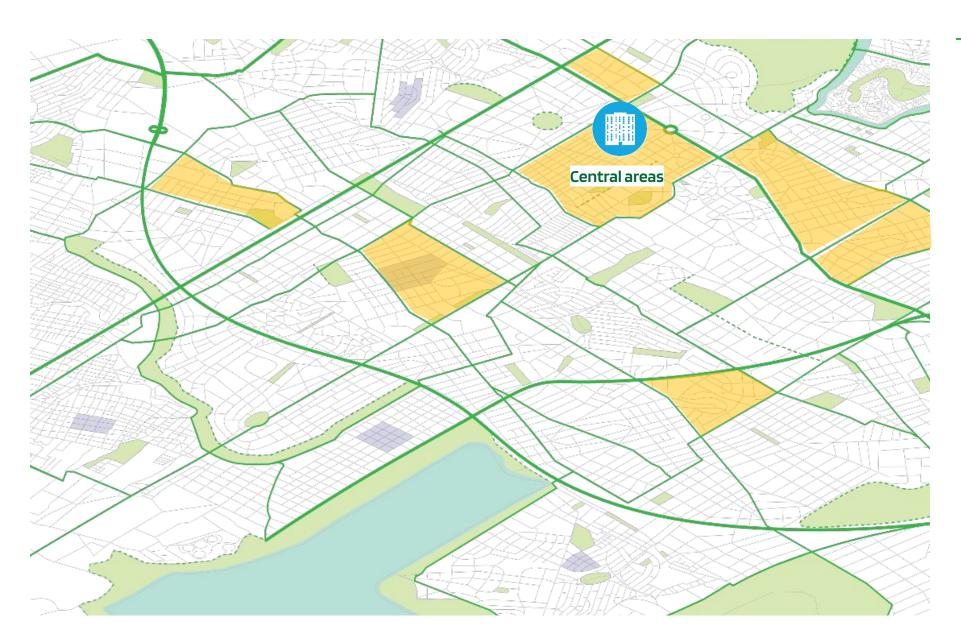
Residential area



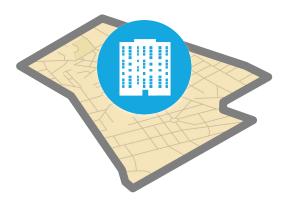
London, UK

Type of areas: city centers and commercial areas





City center and commercial areas

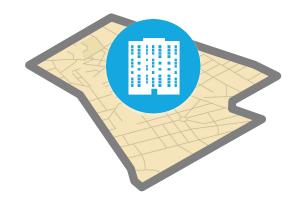


Type of areas: city centers and commercial areas





City center and commercial areas



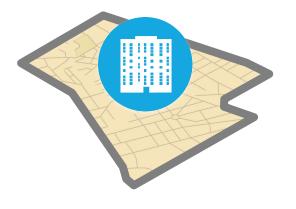
Buenos Aires, Argentina

Type of areas: city centers and commercial areas





City center and commercial areas



Ghent, Belgium



How can we redesign the area to improve all local trips?

Three principles for area-wide interventions:

Speed management

Access and volume management

Network management

Three principles for area-wide interventions:

Speed management

Access and volume management

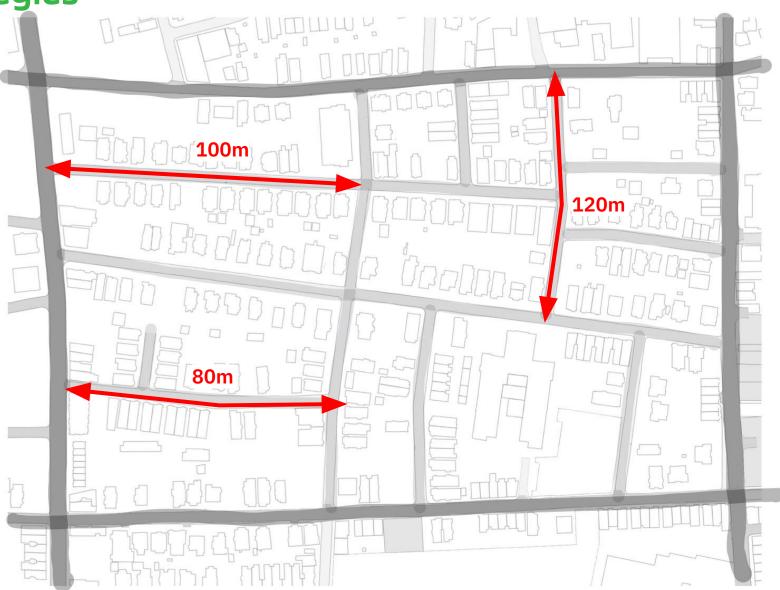
Network management



What factors contribute to speeding?

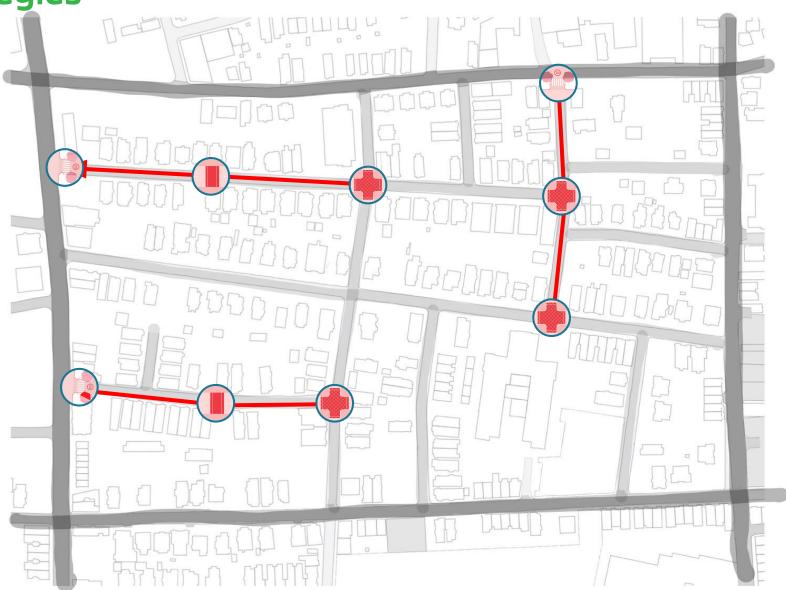


Design Strategies

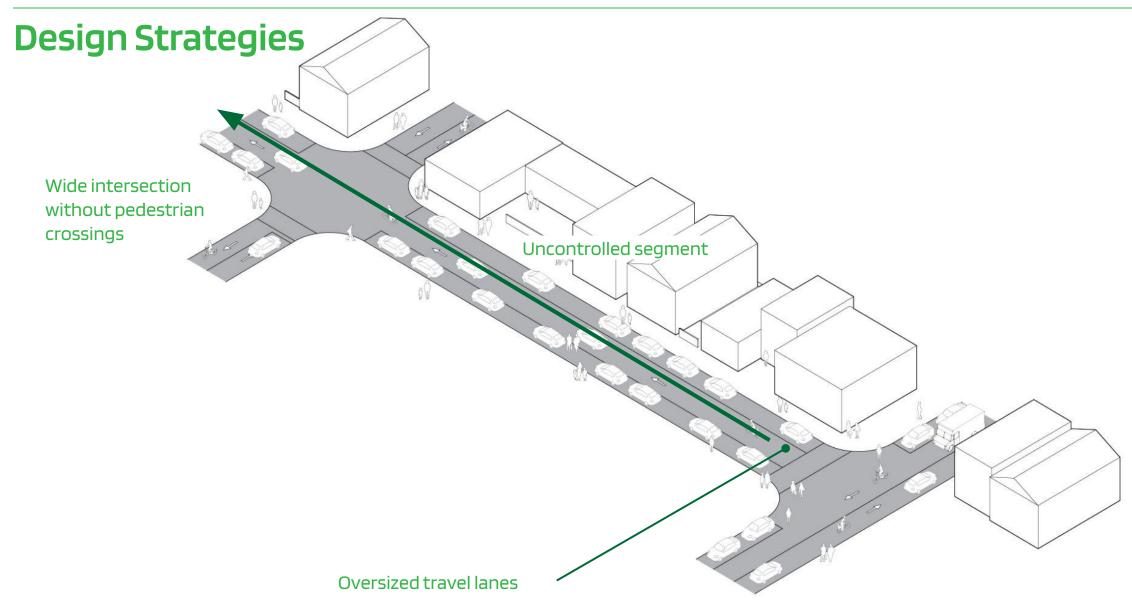




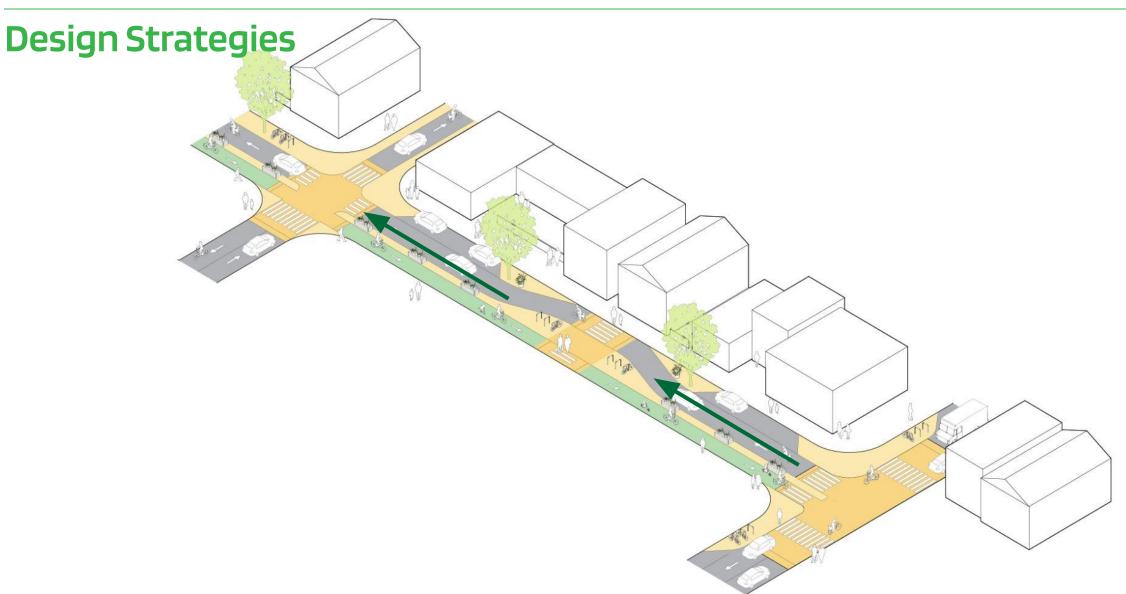
Design Strategies















Three principles for area-wide interventions:

Speed management

Access and volume management

Network management

Access and volume management





Access and volume management

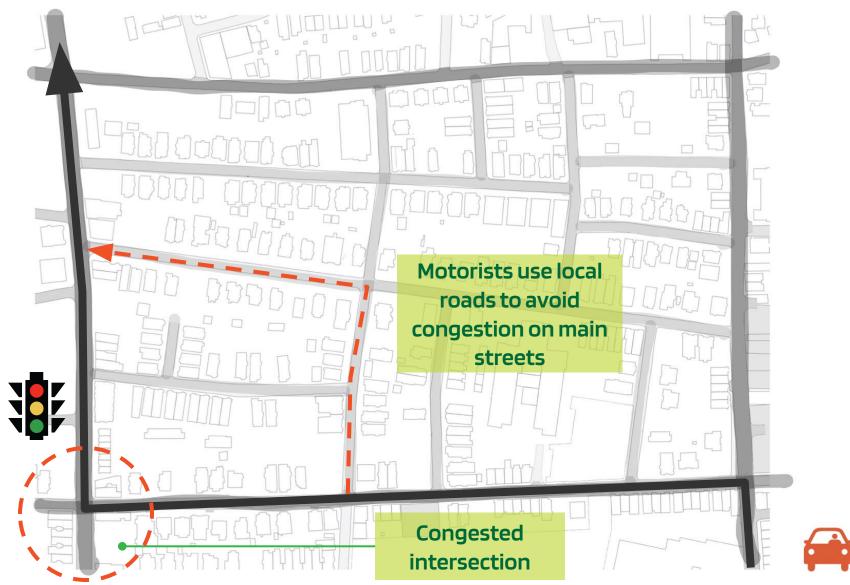






Access and volume management









What can we do about it?



"Filtered Permeability"



Manage vehicle volumes on certain streets to...



"Filtered Permeability"



Manage vehicle volumes on certain streets to...





...to create a safer and more attractive environment for **walking and cycling** ...



"Filtered Permeability"



Manage vehicle volumes on certain streets to...



...to create a safer and more attractive environment for walking and cycling ...



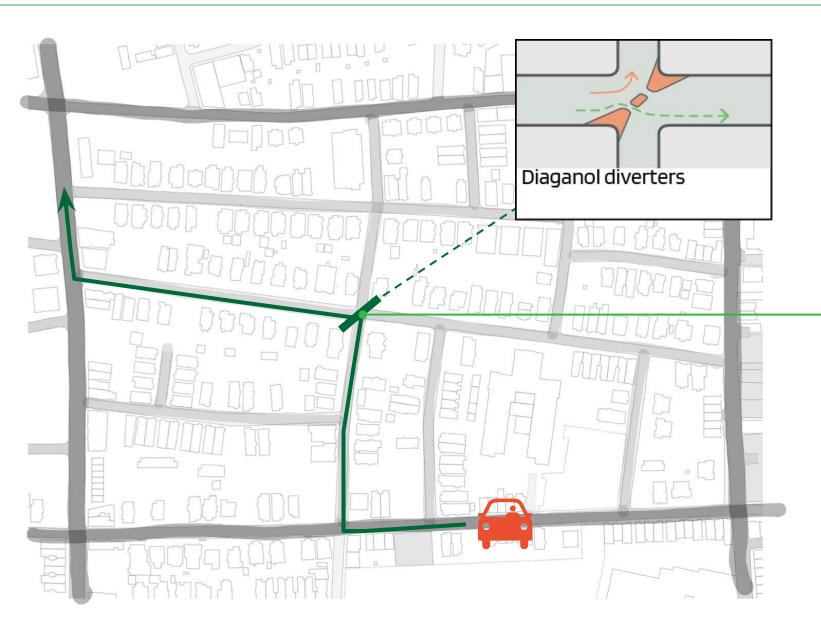
... while **maintaining local access** for residents, deliveries or emergencies.





Motorists use local roads **to avoid congestion** on main streets

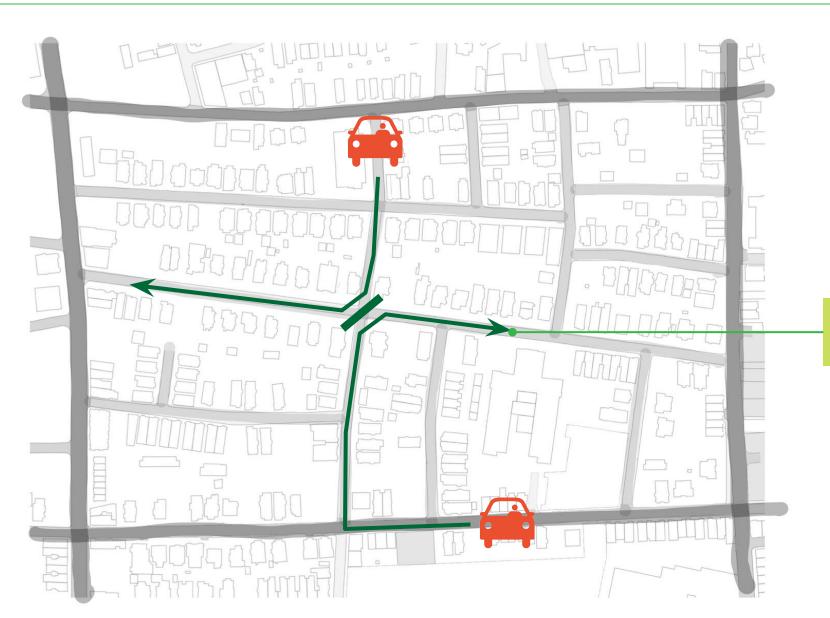




Modal filters

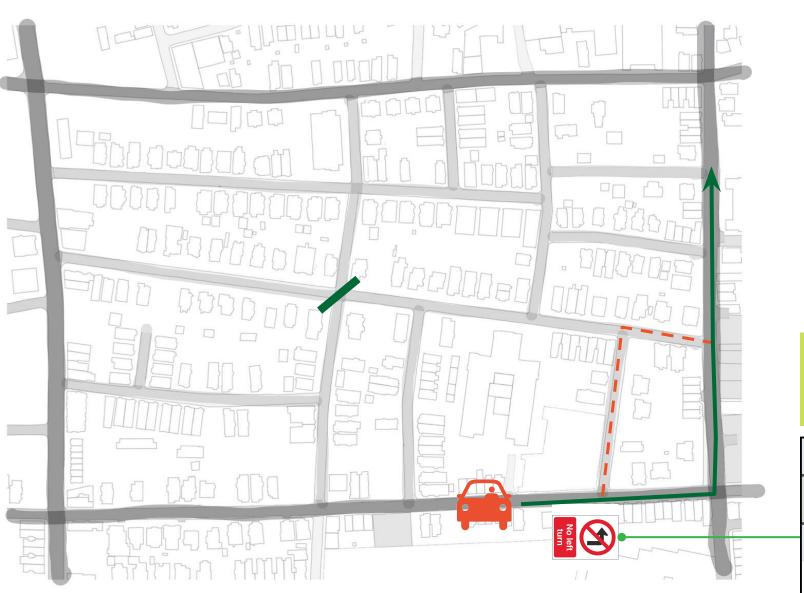
The diverter prevents motorists from using the local street in order to avoid congestion



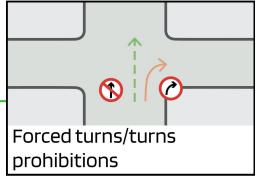


Cut-through traffic is now impossible

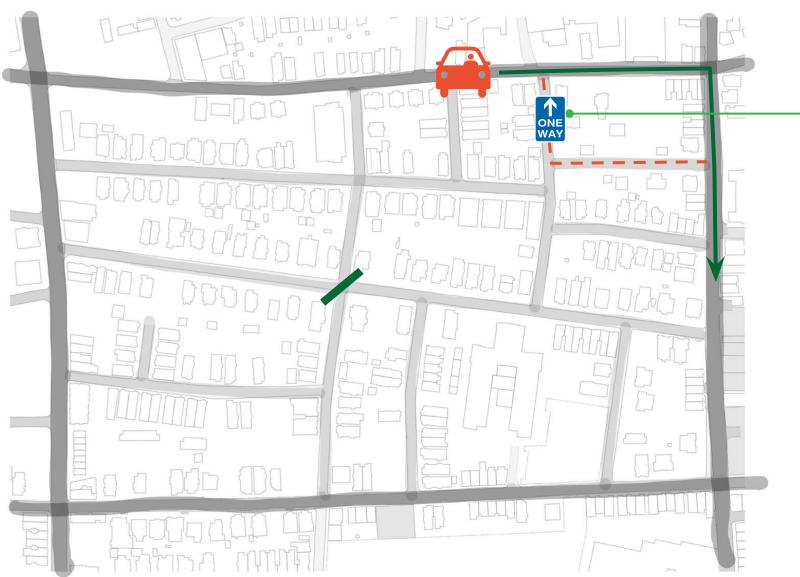


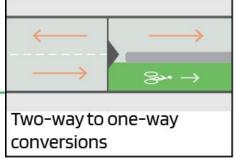


In some cases, shortcut routes can be avoided by prohibiting left turns from the main street









In other cases, the change in direction of traffic flow may prevent through traffic

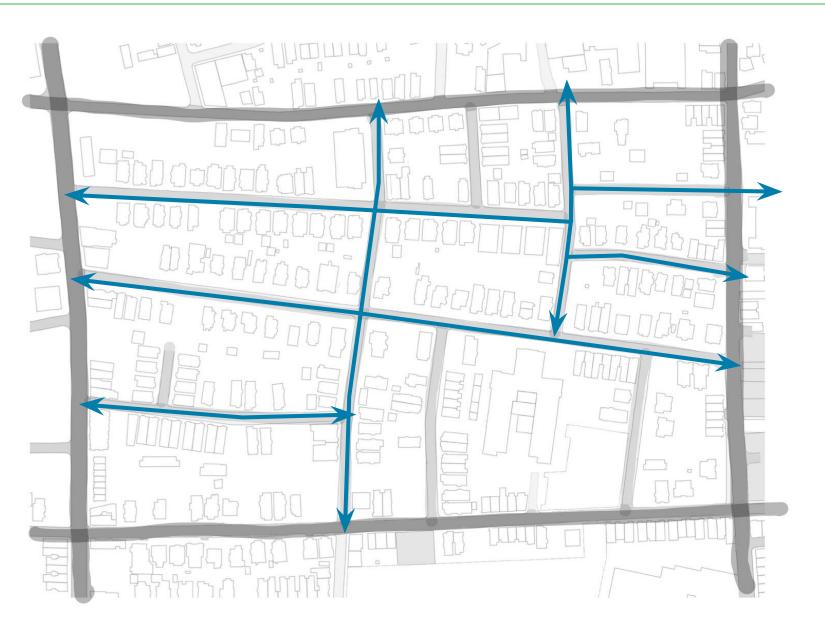




Through a combination of modal filters and operational tools, we can make the area safer and more accessible for pedestrians and cyclists

Motorists **access** is still maintained. Only their permeability is affected







Permeability for pedestrians is maintained and improved

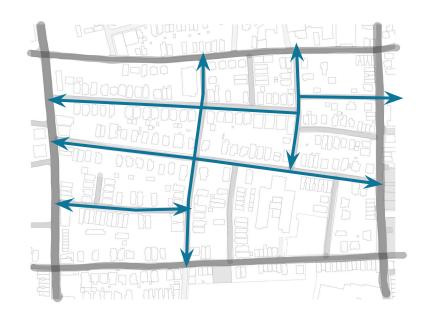


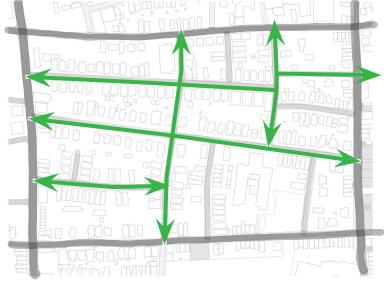


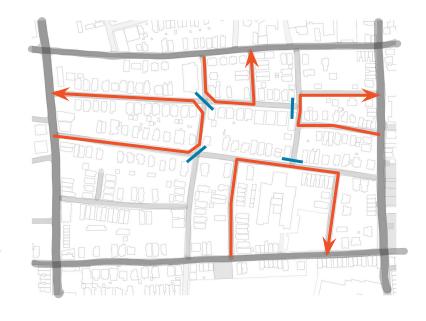


Same for cyclists!













Total permeability



Only local access

Three principles for area-wide interventions:

Speed management

Access and volume management

Network management

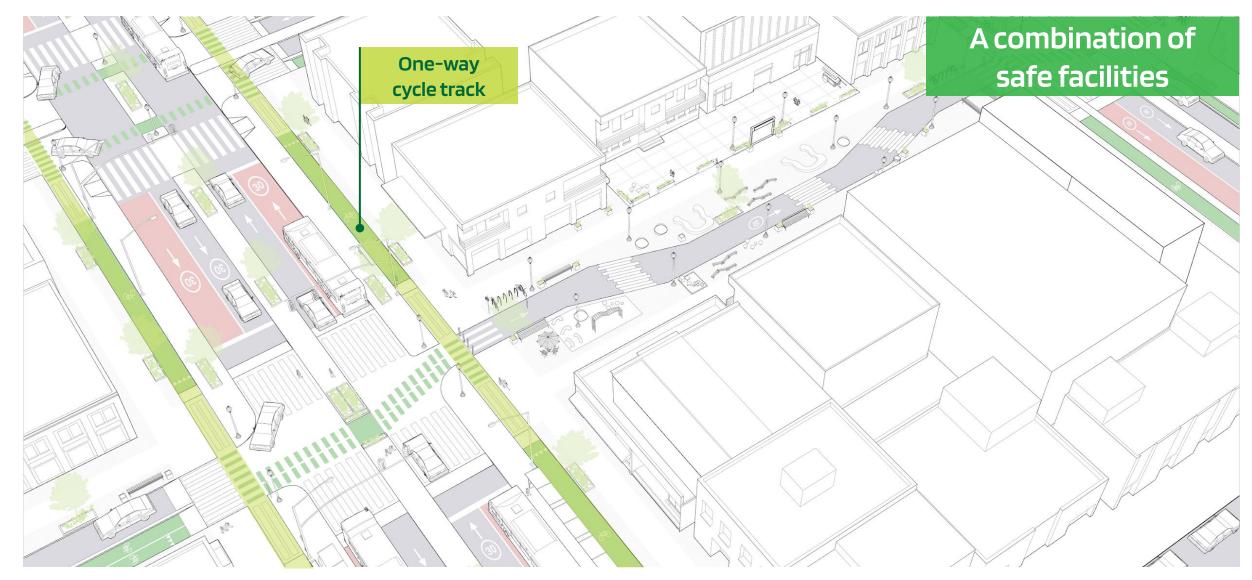


Shaping the Cycling Network

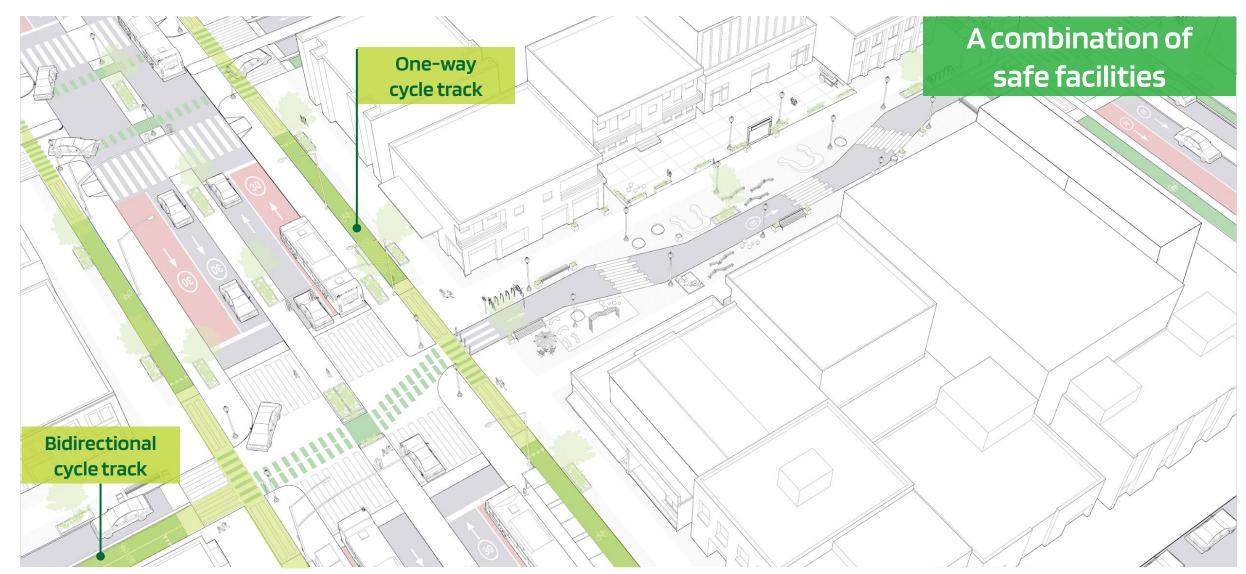




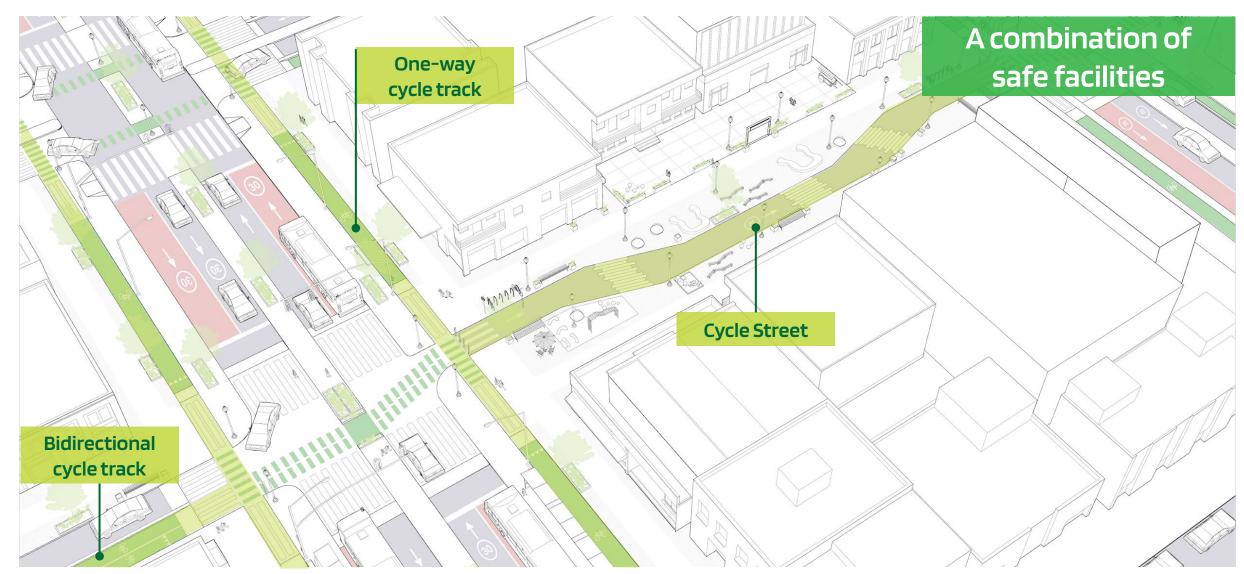
Planning cycle-friendly networks



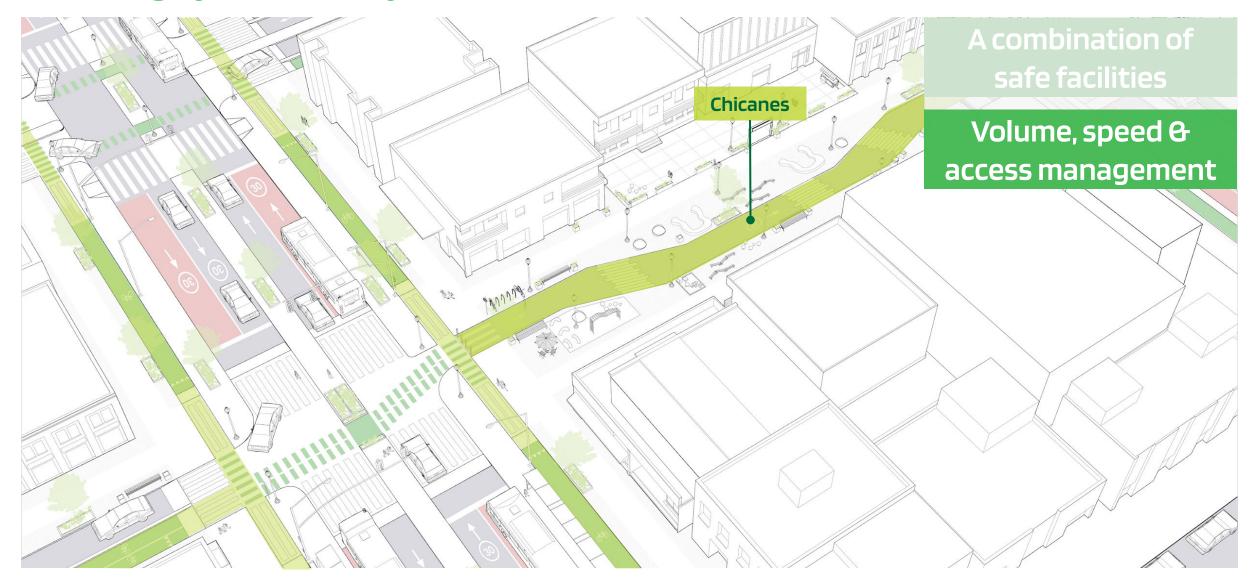




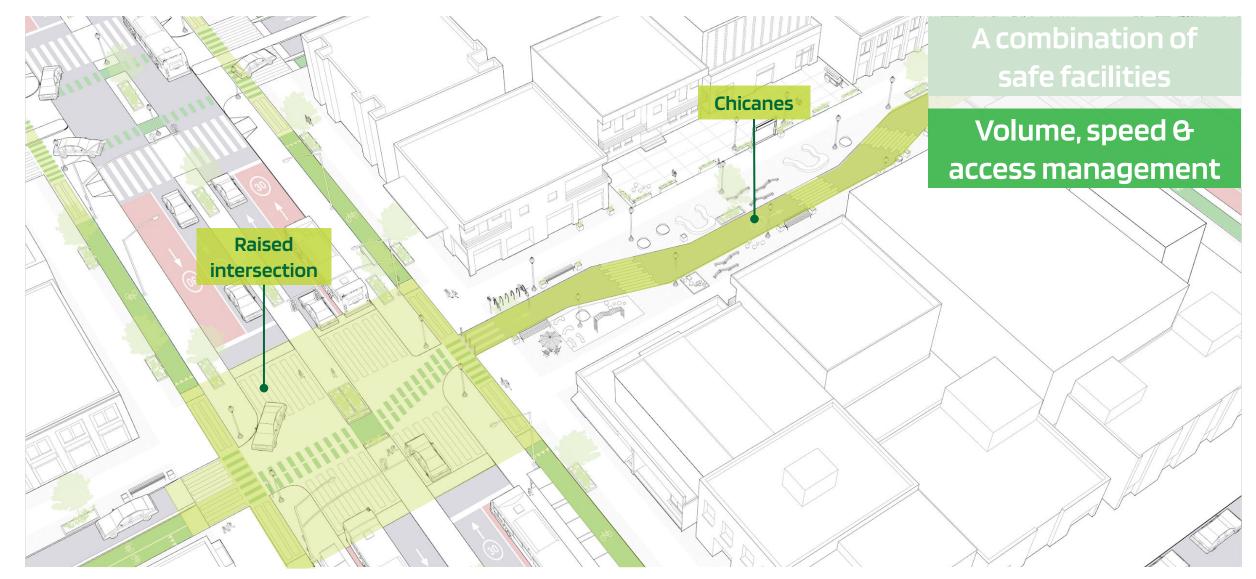




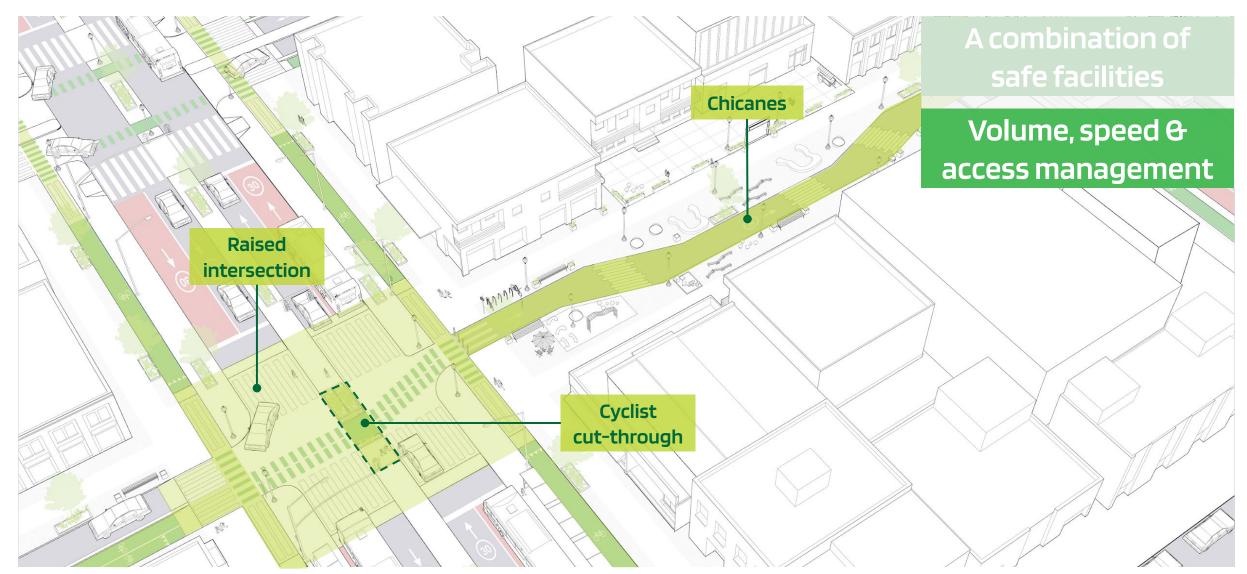




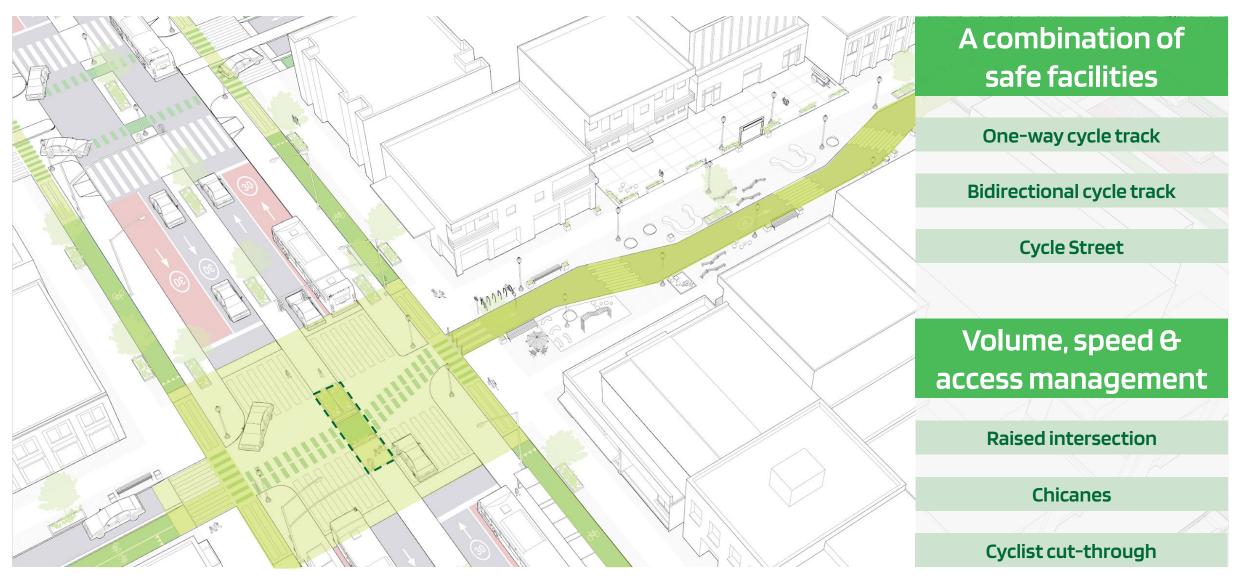
















Cycle streets Ghent, Belgium





Contraflow cycle streets Copenhagen, Denmark





Cyclist cut-through London, UK





Modal filter Bordeaux, France





Modal filter Barcelona, Spain



Shaping the Cycling Network





Shaping the Street Network





Design cities for all ages, abilities, and genders!

Hands-on exercise Part 1



It is time for you to redesign the street network of Ljubljana...

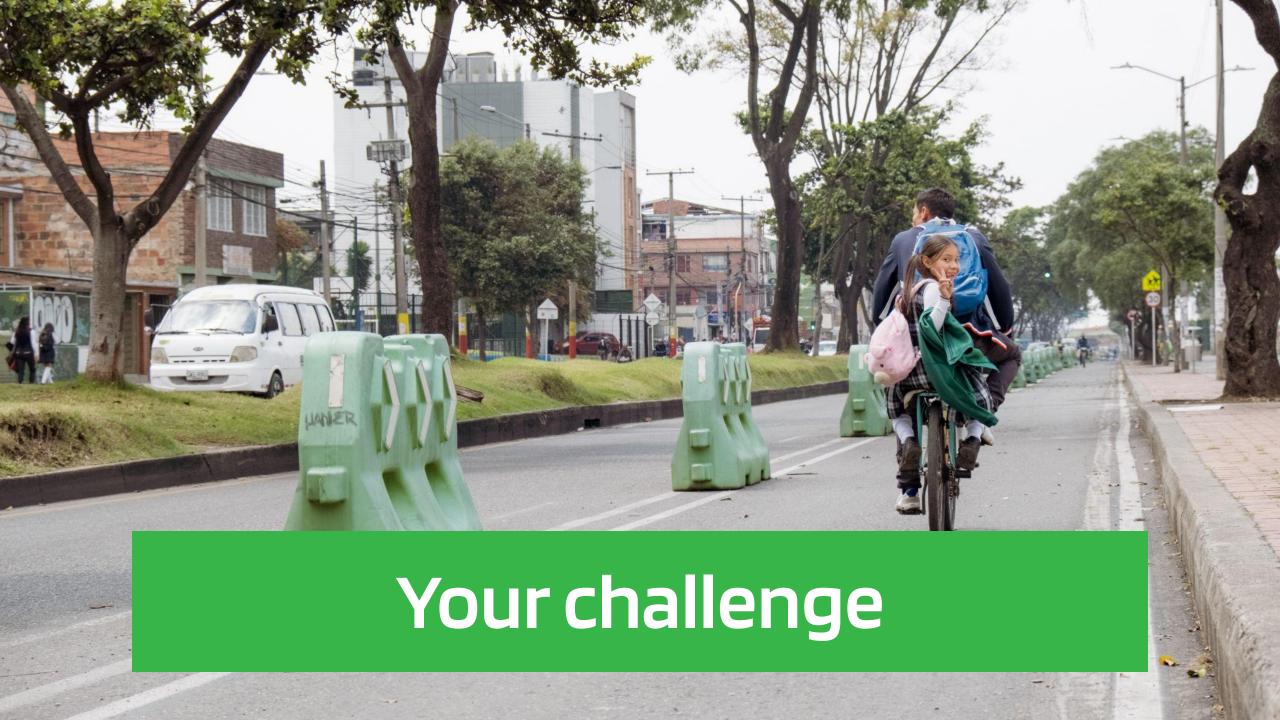


...and step into someone else's shoes



Today's exercise

- 1. Team up: Join one of four groups with up to 15 participants.
- 2. Understand the challenge: Create a safe, inclusive cycling network and intersection that prioritizes your cyclist's needs while benefiting the whole community.
- 3. Analyse the corridor: Address thow the street is currently used for walking, cycling, access to collective modes of transport and vehicles. Understand street activity and circulation needs.
- 4. Dive In: Use the tools, maps, and materials provided to brainstorm and plan your redesign.
- 5. Work Together: Collaborate as a team, combining perspectives to create a cohesive design. Be sure to assign one person to present your vision.
- **6. Share Your Ideas:** Present your redesigned neighborhood to the entire group, highlighting your decisions and how they address your character's needs.





Your challenge is to design a safe, comfortable, and enjoyable street network to support your cyclist's daily journeys.

Using the tools at your disposal, plan and adapt the neighborhood streets at a network level, considering the street user needs.

Think about how to make this experience safe and fun for their community!





Tools and materials

On your table you will find some tools and maps

- A reference map for the Ljubljana general area
- A neighborhood map for locating challenges and design interventions centered on Miklosiceva street
- Maps that include more information about context, land use, crash spots, volumes, transit and cycling networks, and right-of-way.
- An individual worksheet to analyze Miklosiceva street



Exploring the Context

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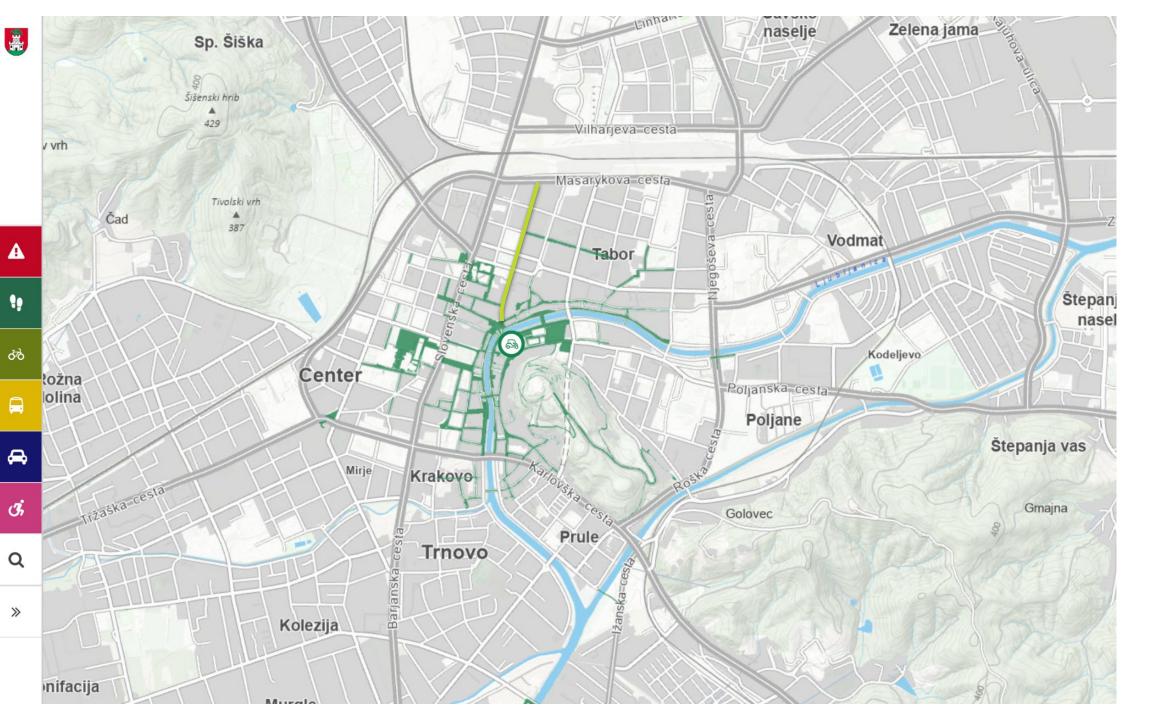
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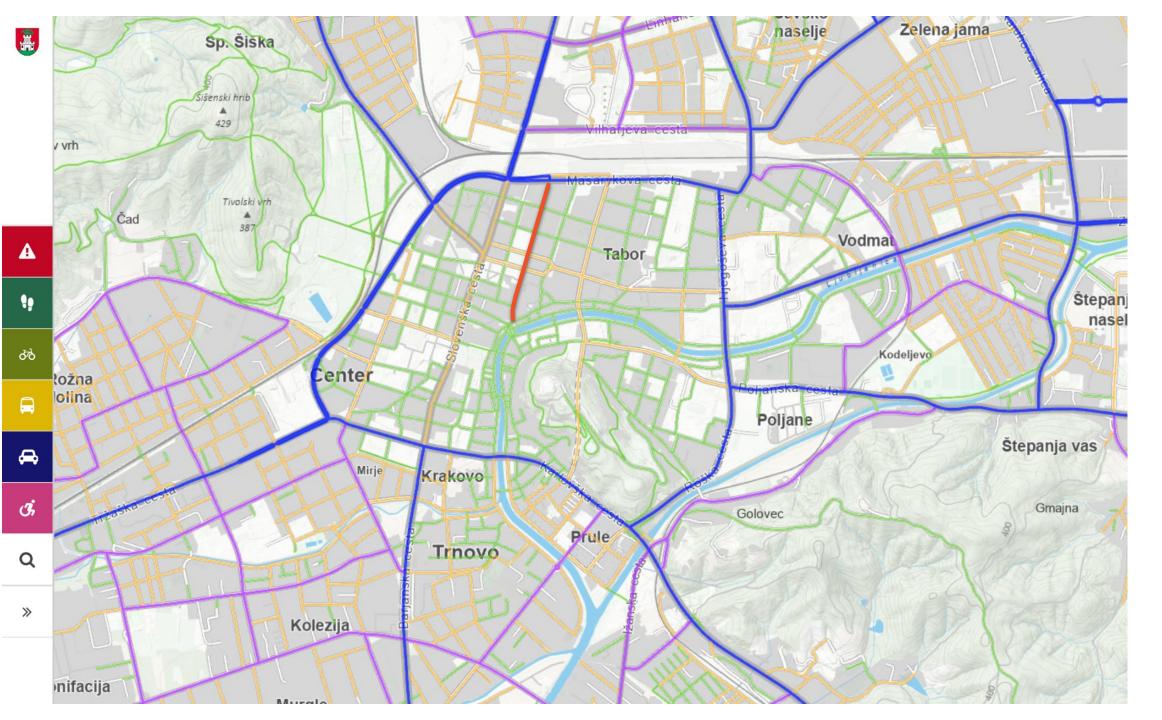






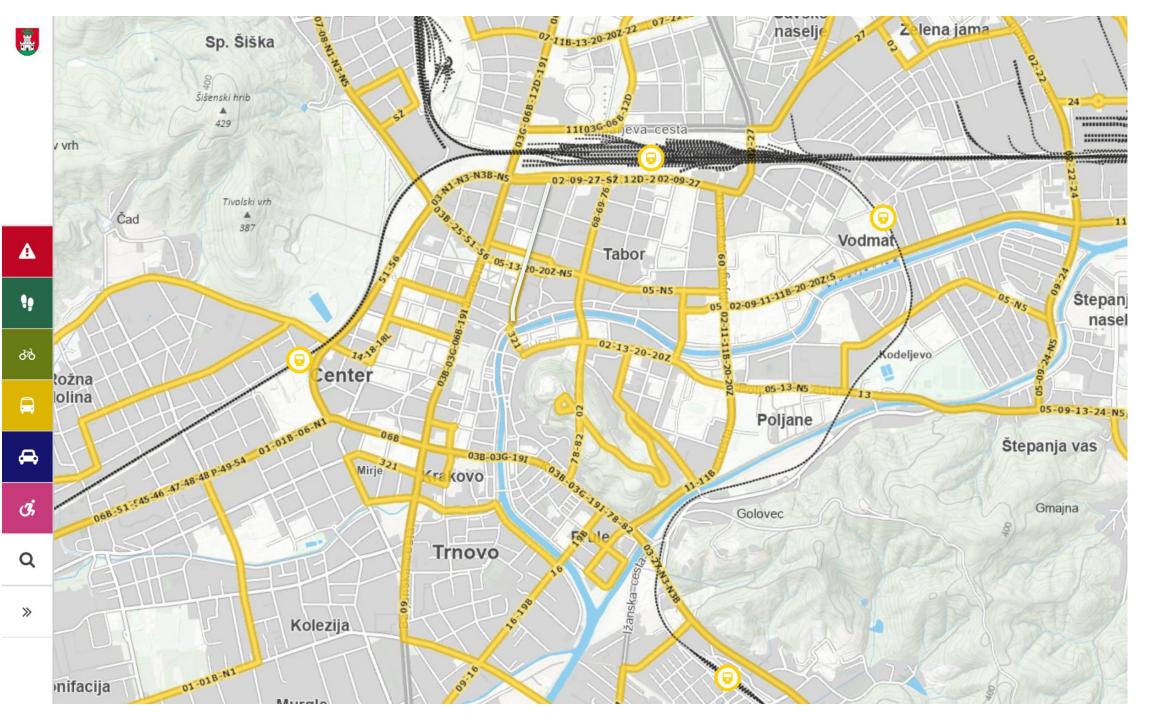






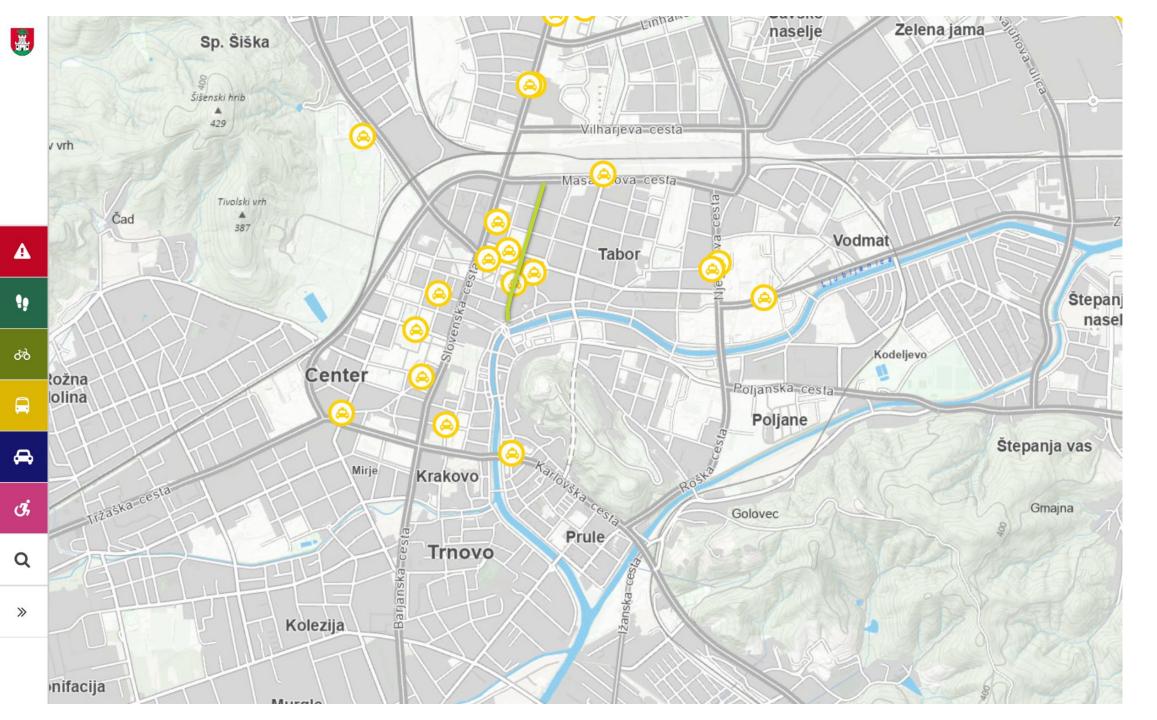






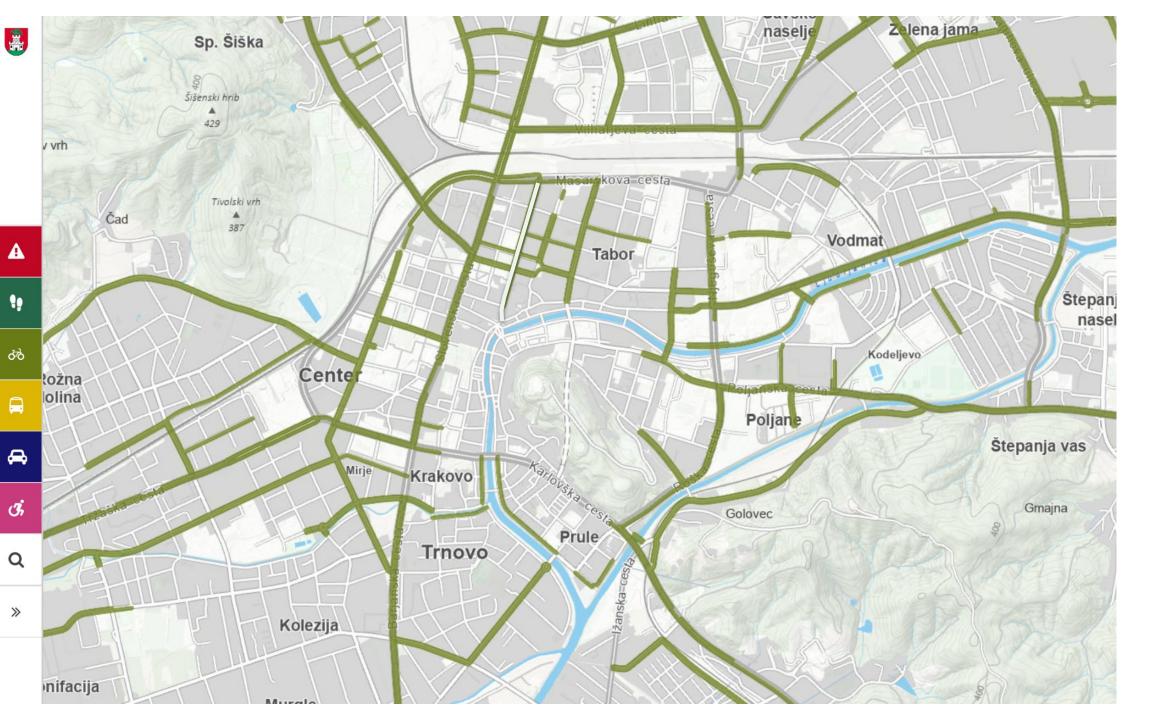






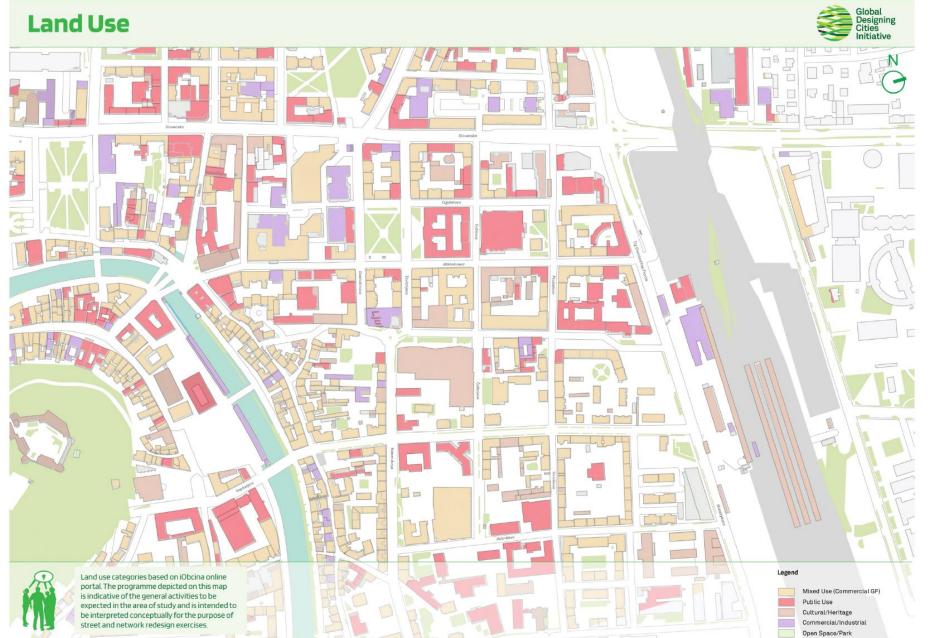


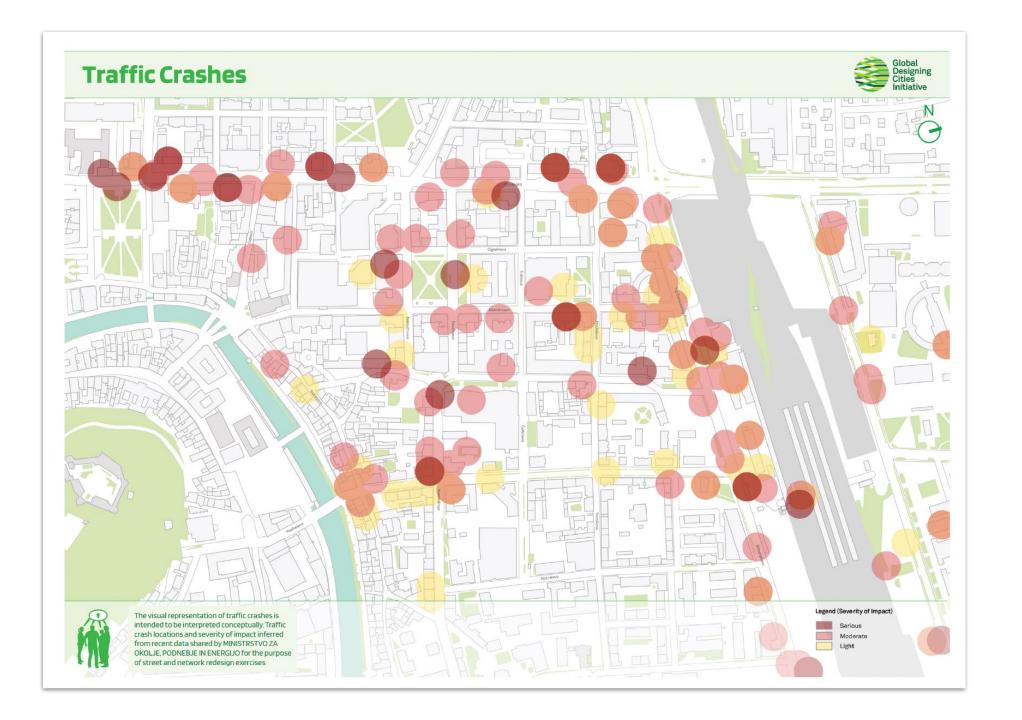




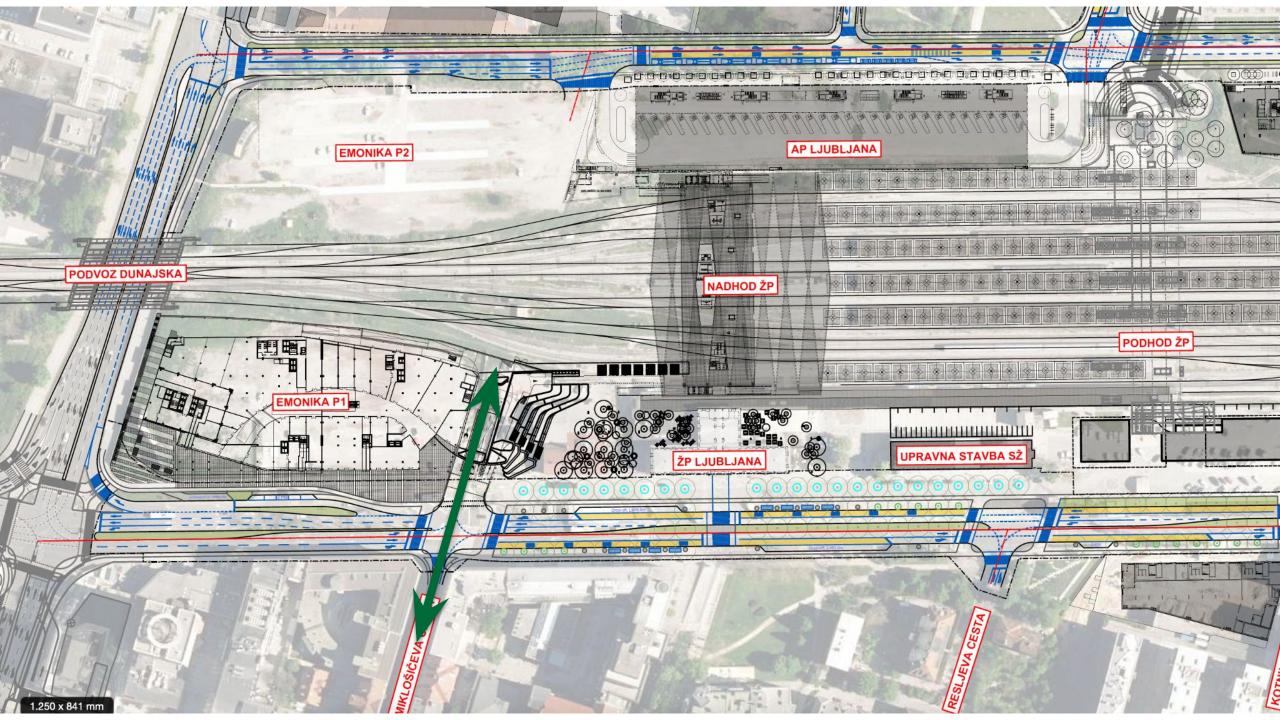








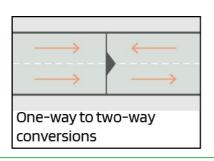


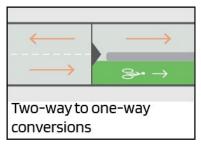


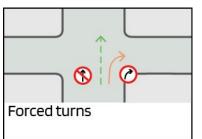


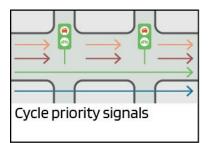


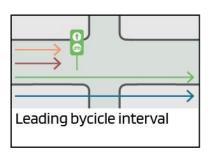
Access management







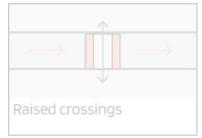


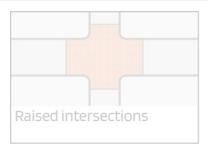


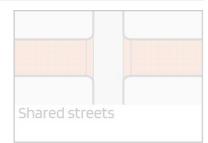
Speed management









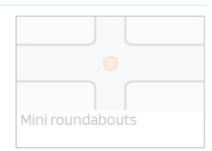


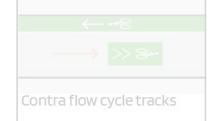




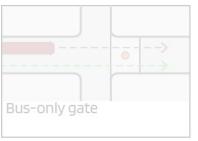








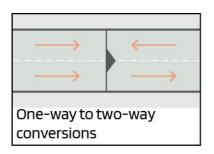


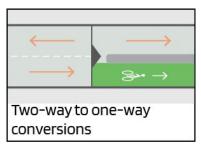


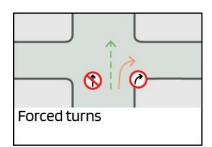
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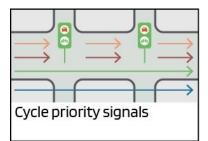


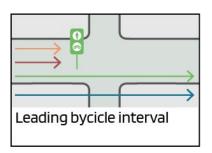
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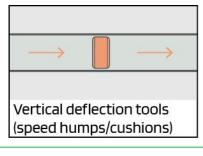


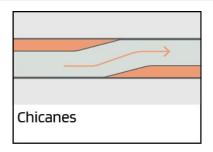


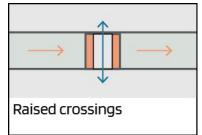


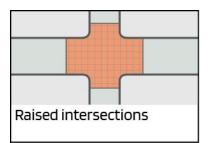


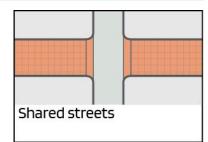
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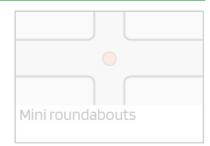


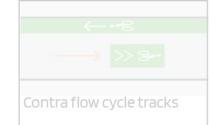












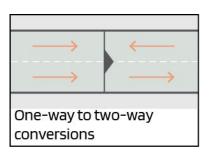


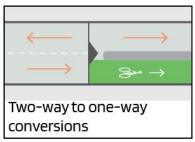


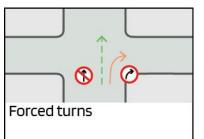
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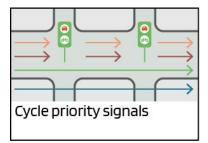


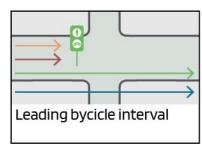
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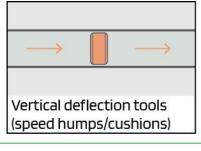


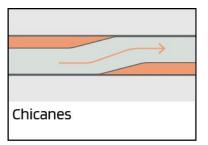


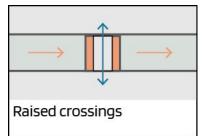


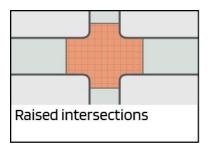


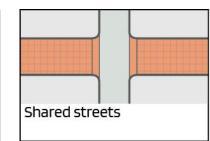
Speed management

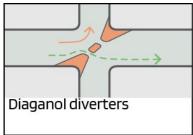


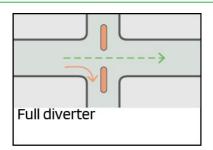


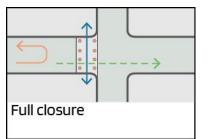


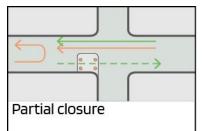




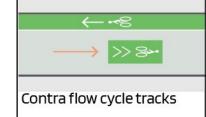


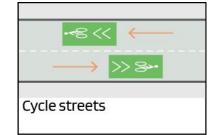


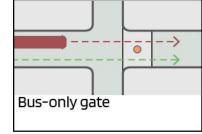










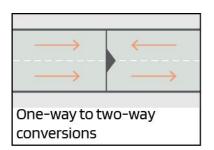


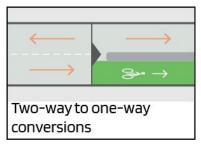
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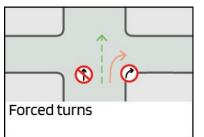
Design tools

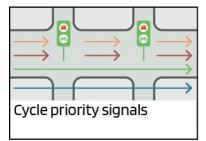


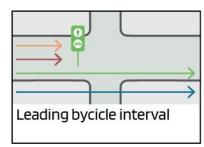
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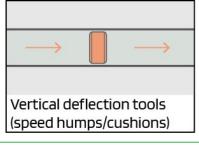


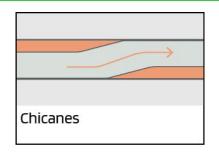


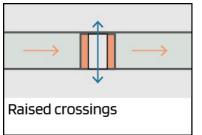


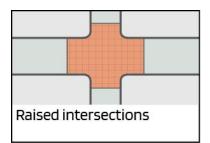


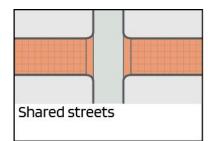
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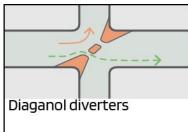


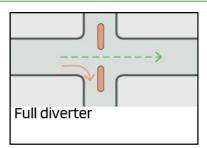


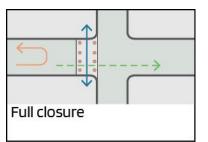


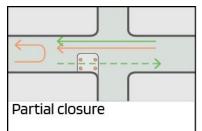




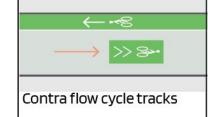


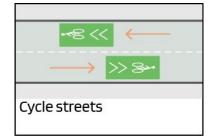


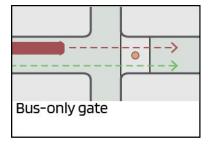






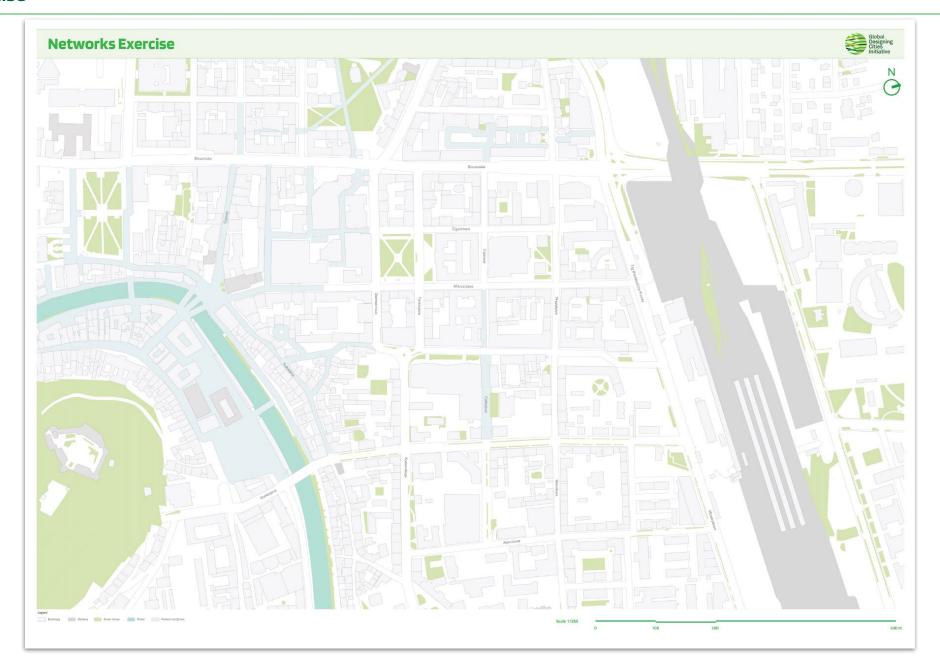






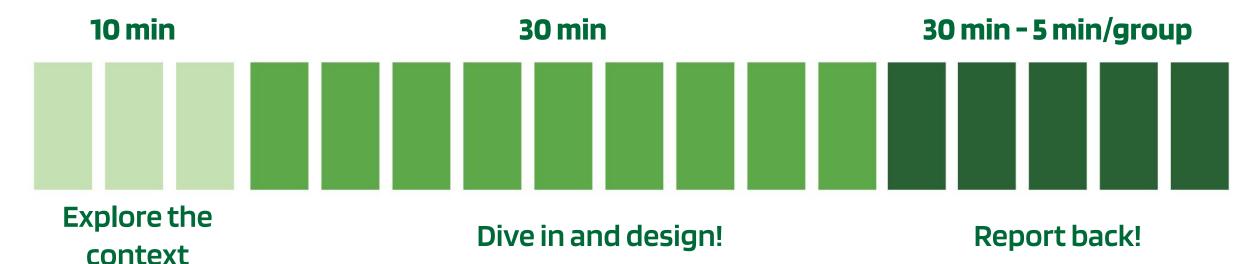
Volume management







Instructions



- Introduce yourselves
- Learn more about the area, the possible journeys, needs and the challenges they encounter
- Pick a representative

- Your challenge is to design a safe, comfortable, and enjoyable cycling network to support your character's daily journeys.
- Using the tools at your disposal, plan and adapt the neighborhood streets at a network level, considering her needs and those of her siblings.
- Think about how to make this experience safe and fun for all street users!



Some prompts for today's exercise

- Think Big! Be imaginative!
- No budget restrictions
- Plan for the next 10–20 years
- Vision and strategy
- Phasing
- All ages, abilities, and genders

And remember....





Report back

- 1. What was the biggest challenge your group faced?
- 2. How did you approach this challenge through the network redesign? What specific strategies or solutions did you implement?
- **3.** What were the main points of contention or areas of debate during the process? How did you navigate or resolve these discussions?



Design streets for all street users and put people first!

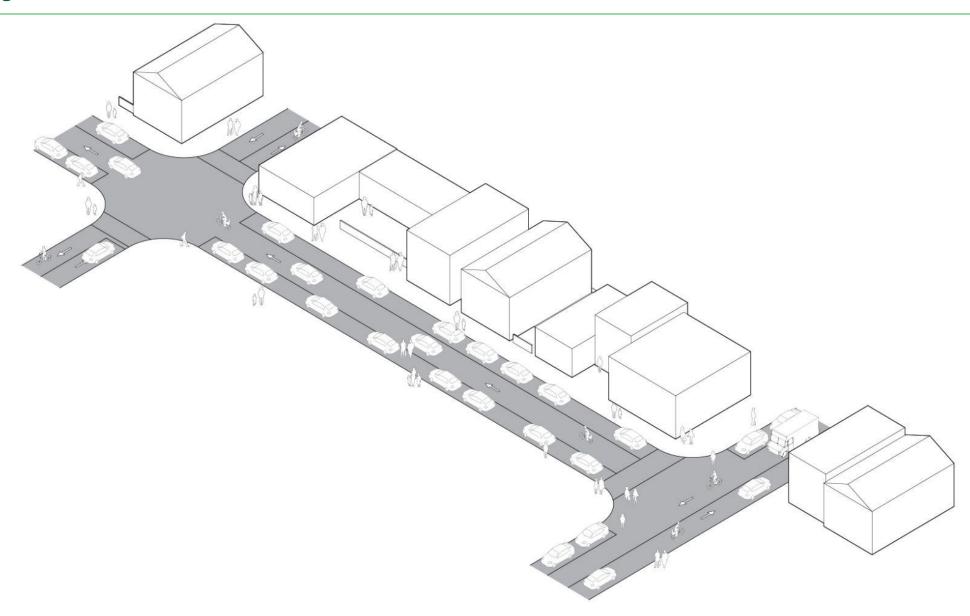
Hands-on exercise Part 2



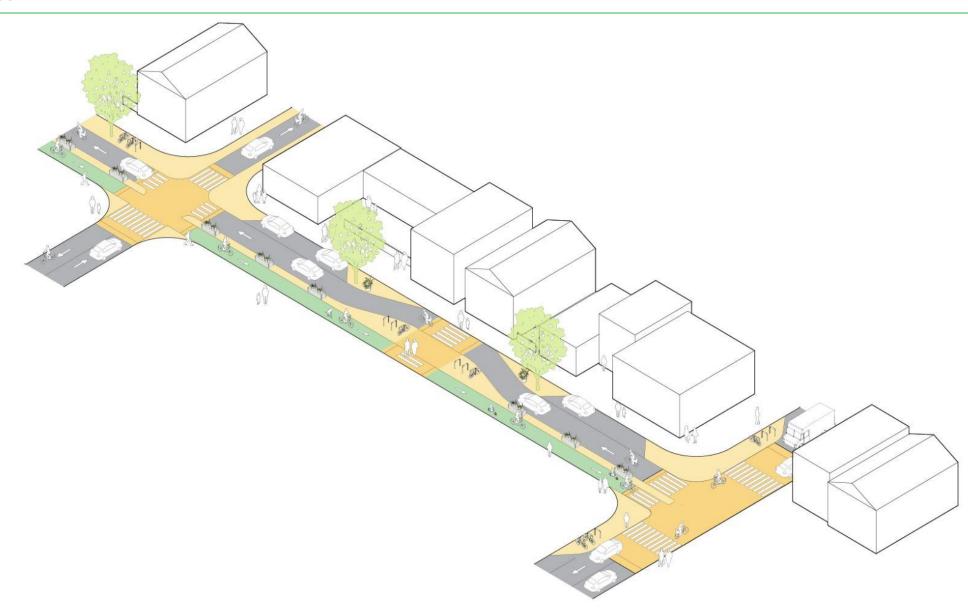


Now it's your time to transform a street!











Some prompts for today's exercise

- Think Big!
- No budget restrictions
- Plan for the next 10–20 years
- Vision and strategy
- Phasing
- All ages, abilities, and genders

And remember....

Design streets for all street users and put people first!



Instructions

- Split into groups 10 people at each table
- At your table there will be:
 - Tracing paper and pens
 - Maps context maps, land use, network maps
- Pick a person, to report back
- Analyse the corridor by yourself following the given prompts
- Work in your group to redesign the street!
- Report back (5 minutes per group)





Corridor Analysis



1. Pedestrians

Where are pedestrians lacking circulation space?
Where are the people gathering, sitting and talking?
What activities are they engaged in?
Which building uses spill over to the street?
Which public spaces attract people and which do not?
Where do people actually cross the streets?

2. Cyclists and Transit

What are the cyclist movements?
Where do cyclists prefer to park?
What are the transit or collective modes' routes?
Where are the bus, taxi stops?
What other modes of collective transport use the corridor?

3. Motor Vehicles

Which vehicle turns are more frequent?
Which vehicle turns happen rarely?
Are there changes to the vehicle circulation along the corridor?
What could the traffic volumes look like at each section of the corridor?
Which movements are more frequent (higher volumes)?
Where does informal parking happen?





Understand the function, analyze the movements, and identify the opportunities before redesigning the corridor.



Materials

- Corridor Base Map
- Context Maps
- Workshop tools:
 - Markers
 - Tracing paper
 - Rulers
- Workshop Tools Handbook





Instructions



- Introduce yourselves
- Analyse the corridor following the given prompts
- Pick a representative
- Your task is to redesign a corridor into safe, comfortable, and welcoming for users of all ages, abilities, and genders.
- Use the tools and methods discussed today to plan and adapt a section of Miklošičeva Street.



Put People First!









Thank you!

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