How to

Implement Street Transformations

A Focus on Pop-up and Interim Road Safety Projects

Global Designing Cities Initiative

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Bloomberg Philanthropies
INITIATIVE FOR GLOBAL ROAD SAFETY

Global Designing Cities Initiative

About GDCI

Global Designing Cities Initiative (GDCI)

The mission of the Global Designing Cities Initiative (GDCI) is to inspire a shift toward safe, sustainable, and healthy cities through transforming streets around the world. We are a team of designers, planners, and urban strategists committed to working in support of city practitioners to get projects on the ground. We focus on empowering local officials and communities to become changemakers, equipping them with the knowledge, tools, and tactics needed to improve urban mobility and fundamentally change the role of streets in our cities.
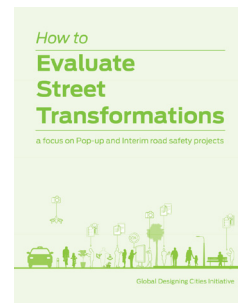
GDCI Publications Referenced

Global Street Design Guide

Designing Streets for Kids

How to Evaluate Street Transformations

Fortaleza, Brazil

Special Thanks

The genesis, ideas, and content of this handbook are rooted in the experiences and lessons learned in the various contexts that the GDCI team has been fortunate to work in over the last six years, particularly as a partner of the Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS) and the National Association of City Transportation Officials (NACTO), as well as Bloomberg Associates and the Streets for Kids program.

Special thanks to the city teams we've had the pleasure of working and learning with, including Addis Ababa, Bogotá, Cali, Fortaleza, Guayaquil, Istanbul, Milan, Mumbai, Quito, Recife, Salvador, São Paulo, Tirana, and more. We are honored to have learned so much from these experiences and look forward to continuing this important work together.

This handbook also builds on the work, research, studies, and publications of many individuals and organizations that, through the years, helped establish and consolidate the importance of transforming streets into safe and vibrant public spaces.

We would like to acknowledge the wonderful work of authors, scholars, and practitioners such as William H. Whyte, Donald Appleyard, Jan Gehl, Jane Jacobs, Christopher Alexander, Allan Jacobs, and the work of organizations such as Vital Strategies, Johns Hopkins University, the World Resources Institute (WRI) and all the partners of the Bloomberg Philanthropies Initiative for Global Road Safety (BIGRS), the Institute for Transportation and Development Policy (ITDP), Project for Public Spaces, Street Plans Collaborative, Gehl Architects, Better Block, and many others that directly or indirectly contributed to or inspired this work. We are truly grateful to our external reviewers and contributors who have amiably reviewed this handbook and shared their invaluable knowledge and insights with us. See page 138 for a list of these individuals in the Acknowledgements section.

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Legend

To facilitate the navigation of this handbook look for the buttons and boxes listed below.

Pro tips
These boxes indicate key tips and important things to keep in mind

Bookmark
These buttons refer to external resources or parts of this handbook with complementary guidance on specific subjects

Case studies
Inspiration from cities we've worked with, showing how they've applied the methods and tools covered in this handbook

Cali, Colombia

Defining street transformations

Short-term projects for long-term goals

Pop-up and interim street transformations, also frequently referred to as "tactical urbanism" projects, offer the opportunity to quickly and economically demonstrate possibilities with existing infrastructure and refine new designs before making capital investments. By partnering with local stakeholders throughout the process, this can inspire similar types of projects citywide and create stronger social bonding and acceptance from communities.

How to Implement Street Transformations is an approachable tool that provides a starting point for any reader interested in understanding the process, value, and impact of implementing pop-up and interim street transformation projects aiming for permanent changes. It is intended for a diverse audience of public sector leaders, practitioners, local NGOs, community members, advocacy groups, students, community groups, local business groups, and others interested in implementing temporary street transformations to catalyze change.

This handbook is designed to complement the *Global Street Design Guide*. It draws on the experience of the Global Designing Cities Initiative (GDCI) and our partner, the National Association of City Transportation Officials (NACTO), in implementing pop-up and interim street transformations to improve road safety and mobility choices, add quality public open spaces, support community-driven street designs, and increase accessibility and comfort for all ages and abilities.

Our hope is to build upon these experiences, best practices that have been emerging in the past decade, and especially the excellent work of cities, organizations, and people around the world to inform the approach, tools, and practices outlined in this handbook.

Pop-up and interim street transformations can help cities to:

- **Demonstrate bold or new ideas**
  and gather evidence of their success

- **Engage and empower stakeholders**
  to participate in changing their neighborhood streets

- **Implement changes quickly**
  with easily accessed, low-cost materials

- **Repurpose existing infrastructure**
  into safer and accessible spaces for pedestrians and cyclists

- **Trial and refine designs**
  prior to capital investments

- **Inspire new policies and practices**
  and build capacity to design in new ways citywide

What is possible

After some time, the original design and geometry of a street may no longer meet the needs of the community. Pop-up and interim designs can reimagine the urban space and repurpose existing infrastructure with new facilities, redistributing the space to prioritize different street users.

The following are some ideas that can be implemented to enhance the use of the street. They can be used in different combinations depending on project goals, local needs, risks, budget, and time.
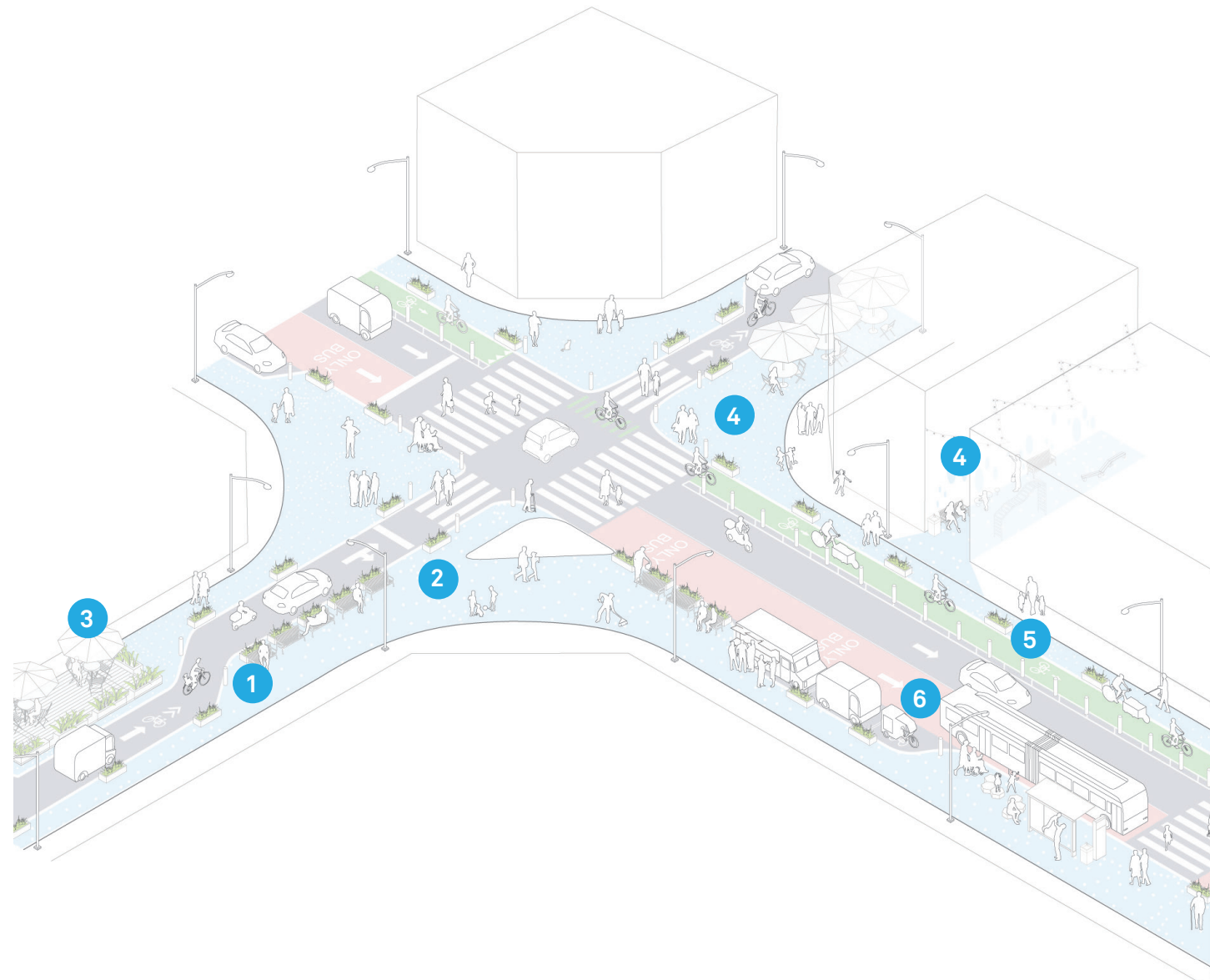
The diagram above shows an example interim project that improves pedestrian facilities and transit operation, adds cycle infrastructure, and manages vehicular speeds.

1 Traffic calming
→ Low speed limits
→ Vertical and horizontal deflection elements (e.g., chicanes, speed bumps, lane narrowing)
→ Reduced number of lanes
→ Modal filtering
→ Diverters
→ Signals and signs
→ Traffic enforcement

2 Intersection redesign
→ Compact intersection design
→ Visible crossings and reduced crossing distances
→ Reduced turning radii for lower vehicular speed
→ Signals and signs
→ Protected cycling intersections

3 Plazas and parklets
→ Reclaimed pedestrian spaces
→ Street furniture
→ Landscape elements
→ Programming (cultural and artistic activations)
→ Retail activation
→ Play elements and games
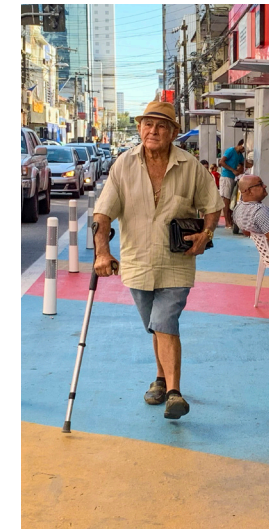
4 Pedestrian facilities
→ Clear and continuous walking paths
→ Curb extensions
→ Visible crossings and refuge islands
→ Accessibility elements
→ Wayfinding
→ Barrier elements
→ Protection from weather
→ Street closures around key destinations

5 Bicycle facilities
→ Dedicated bicycle lanes
→ Buffers
→ Protected lanes and intersections
→ Signals and wayfinding
→ Bicycle crossings
→ Racks and parking
→ Basic tools (tire inflators and multitools)
→ Water fountains
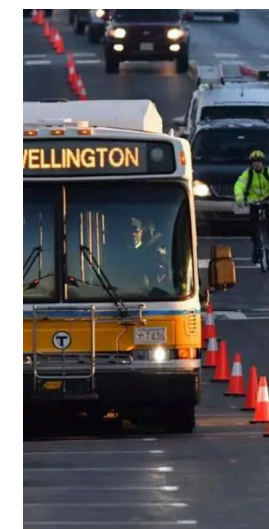
6 Transit facilities
→ Dedicated lanes
→ Transit stops and shelters
→ Accessible boarding areas with seating
→ Wayfinding and timetables
→ Signals and signs

Demonstrate short-term impact

Cities can benefit from implementing temporary street transformations, as it allows them to trial new ideas before committing to them. It also creates an opportunity to demonstrate alternative ways of experiencing the street to people who may be hesitant about changes.

Interventions might last for days, weeks, or months. Collecting data during such transformations is crucial for measuring the impact of the changes and supporting a shift in long-term practices.

EXAMPLE POP-UP TRANSFORMATION

Bogotá, Colombia - July 2017

PROJECT GOALS

→ Prioritizing vulnerable users

→ Ensuring safer access to schools for kids

→ Trialing speed reduction strategies

DESIGN STRATEGIES

1 Wider sidewalks / sidewalk extensions

2 Reduced corner radii

3 Reduced crossing distance

4 Chicane

5 Narrower lanes

Data outcomes were used to help advocate for the change to be permanent, to scale up to other sites, and to influence city codes and policies.

93% of people felt safer when crossing the street

26% decrease in average vehicular speeds

27% of people used the curb extensions

22% increase in people using safe pedestrian crossings

Types of street transformations

Depending on the project goals, available resources, and timeline, a pop-up, interim, or capital project may be most appealing. Quick-build materials or phased solutions provide opportunities to quickly demonstrate change at a lower cost, and therefore can be easier to approve and implement. *Refer to the chart on the following page to help inform your decision.*

Pop-up

Lasting a few hours up to a few days, a pop-up project is a quick way to generate excitement, demonstrate the immediate impacts of a design on a project site, and make the case for an interim or permanent project. Sometimes it happens weekly as a recurring event, like weekend play streets or bike lanes. A pop-up project uses temporary paint, cones, freestanding delineators, moveable street furniture, and/or barriers.

Interim

Lasting a few weeks to a few months, and sometimes years, an interim transformation provides instant benefits while advocating for scalable solutions. Interims generally use street markings, paint, signs, fixed delineators, moveable street furniture, and/or barriers. Interims give the opportunity to experience the project and collect data over a slightly longer timeframe: before, during, and after the project.

Capital

Often, **the ultimate goal of pop-up and interim transformations is to lead to capital construction** of the project. Although the methodology in this handbook focuses on planning, implementing, and scaling up pop-up and interim street transformations, these can also be powerful strategies to enable capital or permanent change.
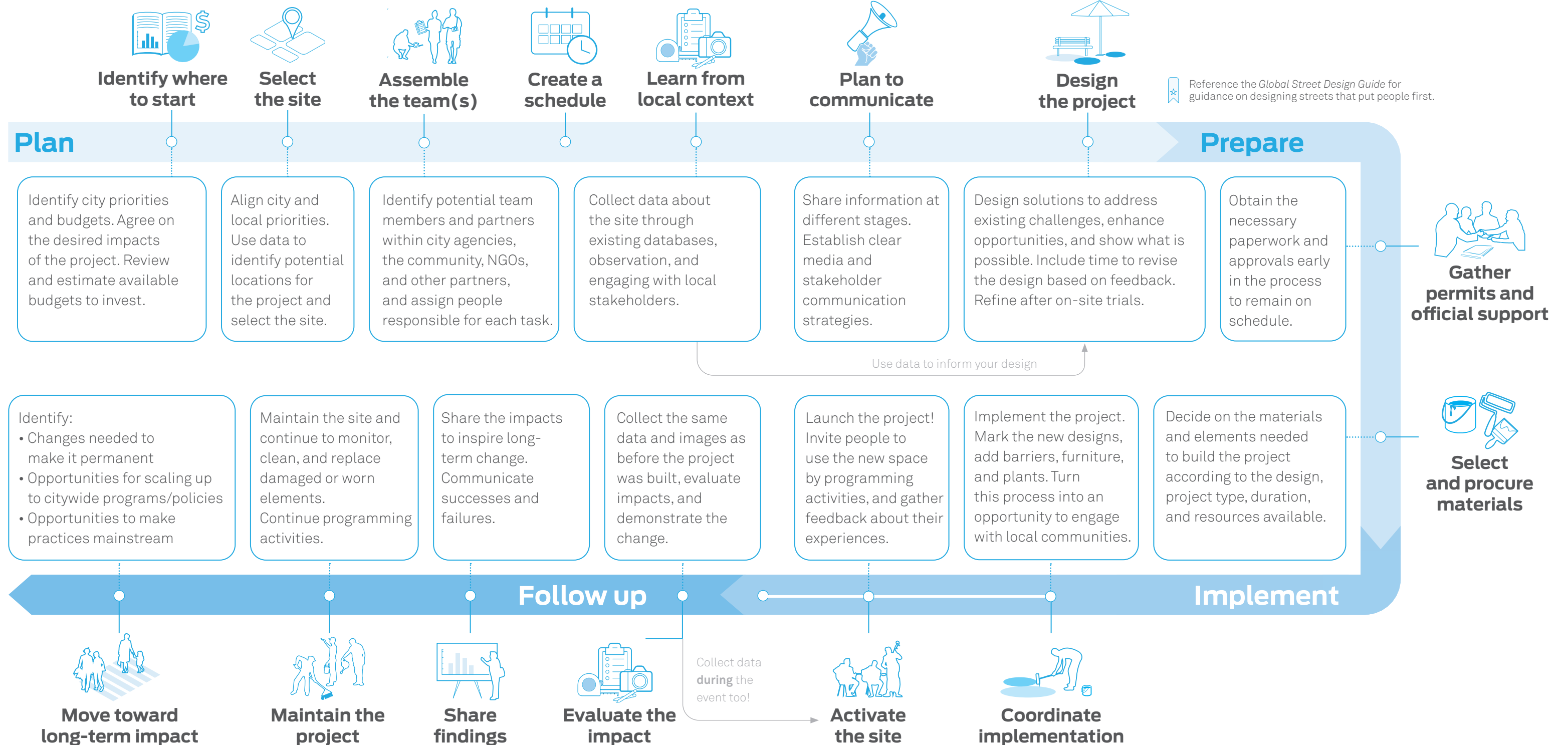
Considerations for each type of street transformation:

	Pop-up transformation	Interim transformation	Capital construction
Duration	Hours/Days	Weeks/Months/Years	Years/Permanent
Relative cost	$	$$	$$$$$
Main goals	A quick way to test a design, build capacity with local officials/technicians, get the community involved and informed, validate design decisions, or even to get the local authorities' attention	A relatively quick, cost-effective method that can create significant and immediate changes while still involving the community. It may stay until capital investments are possible.	The ultimate goal of the pop-up and interim interventions is often to lead up to capital construction of the project and scale up safer designs throughout a city to every street
Leadership	City or community groups like activists, business owners, neighborhood associations, parent/school organizations, etc.	Usually led by the city or an organization, with community participation	City-led. Community participation is highly recommended for better outcomes.
Partners	Partners will vary according to project goals and target audience, but the list might include school kids, local community groups, businesses, advocacy groups, etc.		
Materials Refer to the materials chart in Chapter B on page 50.	• Low cost • Low durability • Fast to implement (hours)	• Low to moderate cost • Semi-durable materials • Relatively fast to implement (days)	• High cost • Permanent materials • Design to last long periods of time with no adjustments
Maintenance	Expected to be removed or washed away and does not need maintenance	Requires some level of maintenance, depending on planned duration	Requires regular maintenance over time
Design flexibility	Design can be adjusted or easily removed	Design can be adjusted until capital construction is possible	Permanent implementation. Less flexible to adjustments.
Data collection	Basic counts, surveys, and speeds before and after implementation can help to build support, refine the design, and inform future implementation	Interims provide the opportunity to measure and collect data on the site and compare results over a slightly longer timeframe	This type of project allows for long-term data collection over multiple years

The process of reshaping streets

Map out your project process from start to finish and consider all the components that are part of a successful project as mapped out in the diagram below. Understanding each step, including the time and budget they require, will lead to more accurate and efficient planning.

For the purposes of this handbook, the process is broken down into steps and organized into four phases. Note that the activities outlined here can occur in many different sequences, not necessarily in this order, and often occur simultaneously. Each topic listed below will be explained in more depth in the following pages.

Identify where to start

Select the site

Assemble the team(s)

Create a schedule

Learn from local context

Plan to communicate

Design the project

Reference the *Global Street Design Guide* for guidance on designing streets that put people first.

Plan

Prepare

Identify city priorities and budgets. Agree on the desired impacts of the project. Review and estimate available budgets to invest.

Align city and local priorities. Use data to identify potential locations for the project and select the site.

Identify potential team members and partners within city agencies, the community, NGOs, and other partners, and assign people responsible for each task.

Collect data about the site through existing databases, observation, and engaging with local stakeholders.

Share information at different stages. Establish clear media and stakeholder communication strategies.

Design solutions to address existing challenges, enhance opportunities, and show what is possible. Include time to revise the design based on feedback. Refine after on-site trials.

Obtain the necessary paperwork and approvals early in the process to remain on schedule.

Gather permits and official support

Use data to inform your design

Identify:
• Changes needed to make it permanent
• Opportunities for scaling up to citywide programs/policies
• Opportunities to make practices mainstream

Maintain the site and continue to monitor, clean, and replace damaged or worn elements. Continue programming activities.

Share the impacts to inspire long-term change. Communicate successes and failures.

Collect the same data and images as before the project was built, evaluate impacts, and demonstrate the change.

Launch the project! Invite people to use the new space by programming activities, and gather feedback about their experiences.

Implement the project. Mark the new designs, add barriers, furniture, and plants. Turn this process into an opportunity to engage with local communities.

Decide on the materials and elements needed to build the project according to the design, project type, duration, and resources available.

Select and procure materials

Follow up

Implement

Move toward long-term impact

Maintain the project

Share findings

Evaluate the impact

Collect data **during** the event too!

Activate the site

Coordinate implementation

Istanbul, Turkey

A

Planning street transformations

A1 | Identify where to start

Although implementing pop-up and interim transformations may take only a few hours or days, the planning process should begin months in advance. In this section you will find recommendations on how to plan and exercise the necessary due diligence to set your project up for success.

Street transformation projects can have many starting points. Whether the project inspiration comes from community demand, or from city goals to address dangerous crash sites or underserved/neglected areas, the process is made up of similar components.

Identify city priorities: What impacts will the project generate and for whom?

Examples of city priorities:

→ Reduce the number of pedestrians killed and seriously injured by road traffic crashes

→ Make the city more bikeable and walkable

→ Increase equitable access to neighborhood public spaces

→ Make streets more comfortable and inviting to children and caregivers around schools

Estimate overall budget: How can cities allocate and source funds?

→ Consider all steps when budgeting: procurement of materials, time for design and implementation, communications, community engagement, compensation for consultants and volunteers, maintenance, storage, and removal/cleaning of areas

→ Identify citywide investment programs

→ Reach out to partner organizations with similar goals

Is a pop-up/interim project appropriate?

Understand if a pop-up or interim project is the best way to achieve your goals. Sometimes, strategies that achieve basic safety and accessibility, such as adding new pedestrian crossings or accessibility ramps, are best suited for capital construction and don't necessarily need to be trialed.

> 💡 While some projects undergo all three phases (pop-up, interim, and capital), others may go immediately to capital construction, skip the pop-up altogether, or remain in the interim stage for years. See the next page for an example.

Are there obstacles to making it a capital project?

→ Obstacles could include:
  ☐ A short timeline due to an upcoming administration change or the expiration of funds
  ☐ Limited budget
  ☐ Hesitance due to a lack of evidence about the impacts this design will have
  ☐ Resistance to change and a need to build general support

Yes

If you checked any of the boxes above, a pop-up or interim could be the right project type.

Remember: An advantage of a pop-up or interim street transformation is that it is temporary. It is expected to be observed, evaluated, and refined. Use this opportunity to trial new and bold ideas and collect evidence about how it functions. Garner support for the project by involving stakeholders along the journey.

No

If you didn't check any of the boxes above, then you might not need to go through a pop-up or interim phase and you can go straight to capital construction.

Remember: Even permanent projects benefit from a participatory process, data collection, and evaluation.

Refer to the case study below for an example of this decision-making process.

ALBERT SABIN LOW-SPEED ZONE
Fortaleza, Brazil - 2017

The GDCI team partnered with the City of Fortaleza to improve safety on the streets surrounding the Albert Sabin Children's Hospital. The goal was to reduce vehicle speeds, improve safety and accessibility to the children's hospital and its surroundings, and provide more public space to better serve hospital patients and workers.

Due to strong engagement both with the teams involved and the community, there was consensus from all stakeholders to go straight to capital construction, and it was deemed unnecessary to implement the design as a pop-up or interim project.

Select the site

After identifying city priorities, align them with localized goals to find the most suitable locations for the project. Reviewing existing databases, analyzing and visiting potential sites, and engaging with residents will help with the selection process.

Explore the following list to help delineate the project focus area.

Identifying site options

→ Analyze citywide data to find high-priority areas (for example, areas with high traffic crashes and fatalities, low public space allocation, or other indicators) that should be prioritized for investment. *Refer to the case study on page 17.*

→ Identify areas that have the potential to improve conditions. Add amenities and services for high volumes of pedestrians and active mobility users.

→ Identify existing visions, demand, or initiatives by local communities, universities, grassroots, or local governments to address issues in a certain area and assess possible alignments.

→ Study the existing site: often, the widest streets and intersections are also the least safe in terms of pedestrian exposure to speeding vehicles. These types of geometries offer plenty of room to add new sidewalks, protected bike lanes, plazas, and green spaces. *See images below.*

Existing plans

Aligning your project with existing maintenance and implementation plans or even citywide master plans can facilitate the approval process and share existing budgets.

Before — Salvador, Brazil

After — Salvador, Brazil

SELECTING SAN BARTOLO
Quito, Ecuador - 2021-22

The City of Quito in Ecuador had a goal of prioritizing investments in dangerous crash areas around the city. They identified 9 areas (highlighted in the map to the left) that covered the following criteria:

→ High road traffic crash rates
→ Medium-high pedestrian fatality and injury rates
→ High volumes of pedestrian and vehicular flows
→ Within close proximity to a school zone
→ Streets and intersections with wide travel lanes

After assessing the overall budget and resources available for the year, two of the sites (shown in yellow), including the San Bartolo neighborhood, were chosen to get interim street transformations in the short term. San Bartolo was selected due to its supportive community, and the desire to create safe pedestrian spaces around two highschools. The project will be implemented in the summer of 2022.

Types of sites to consider

When selecting your project site, consider prioritizing the following types of areas:

School zones

School zone projects can improve conditions and add play streets for a high percentage of children and caregivers.

Mixed-use streets

Mixed-use commercial street projects can improve conditions for multiple modes and high volumes of people.

Historically underserved neighborhoods

Invest in neighborhoods that have not been prioritized in the past to improve conditions for underserved communities.

Assemble the team(s)

Implementing a street transformation project requires people working on multiple pieces simultaneously, from project management to on-site implementation. The following roles can be led by separate teams or combined depending on resources and current methods. Identify the key team leaders and assign clear and specific roles and tasks to each team. It is important that each participant understand the goals of the street transformation project and be able to communicate them to stakeholders and across city agencies.

Some teams that can be involved...

City agencies

Reach out to other agencies that can collaborate or should make decisions on aspects of the project based on their specialties.

Community

Partner with grassroots initiatives, organizations, or individuals that share interest or expertise in the site or in the project goals.

NGOs, universities, etc.

Partner with NGOs, universities, or others that can support topics of interest that aren't part of the city's typical day-to-day focus.

Some roles to define might include:

Project coordination

A project coordinator should be appointed to follow the implementation process from beginning to end and coordinate teams. Frequently, their role involves the following:
→ Revise available resources (budget, materials, people)
→ Have a consistent overview of all moving pieces in the project
→ Coordinate planning, design, and support needed (from local authorities and/or local communities)
→ Obtain approvals and permits required (and keep on site)
→ Define, delegate, and assign tasks and schedules
→ Facilitate briefing sessions and team meetings
→ Coordinate data collection processes
→ Oversee relationships with stakeholders
→ Identify team leaders in different departments, agencies, organizations, or community groups
→ Coordinate procurement of materials with planning and design team
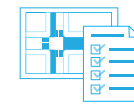
Planning and design

This team is responsible for producing a site-appropriate design, including but not limited to the following:
→ Coordinate with data collection team to develop a design that addresses existing challenges and opportunities on site
→ Verify site dimensions of any existing technical drawings
→ Produce plans and construction drawings
→ Develop effective graphics and diagrams to present the design to the community and non-technical audiences
→ Collaborate with local community groups, city agencies, and others to refine the design
→ Select and specify materials (considering climate and duration), and coordinate with vendors

Data collection and project evaluation

This project team should:
→ Collect data before, during, and after the project is implemented, including quantitative, qualitative, and observational data
→ Communicate consistently with the planning team to inform the design
→ Take photos and videos to capture the dynamics of the site and details observed during data collection
→ Aggregate data sets to evaluate impacts
→ Craft the data into compelling metrics and images to present achievements and lessons learned

Outreach and community engagement

This task can be led either by local community organizers who have established relationships with the community or a city agency. They should:

→ Act as the liaison between the project team and the community
→ Identify local leaders and a stakeholder map
→ Create an outreach strategy to build relationships
→ Determine the best methods to maintain transparency and invite participation
→ Maintain an on-site presence (in person as much as possible, with the support of other channels like flyers, posters, bulletin boards, social media, etc.)
→ Maintain dialogue with the community and relay feedback to other project teams, especially the data and planning teams
→ Be available to explain impacts, the importance of the street transformation, and next steps
→ Organize and host workshops with communities and other stakeholders at different stages of the project
→ During the implementation, inform local residents and passersby about the project and invite them to participate in/attend the launch event and the series of activities/activations planned. It helps to have people dedicated to answering questions during implementation so that people implementing a design can focus while others engage with the community.

Implementation

The implementation team is in charge of transforming the street and may do the following:
→ Coordinate with relevant city agencies, volunteers, traffic management, and contractors
→ Oversee delivery, storage, and installation of the materials on site
→ Install furniture, planters, and other amenities
→ Paint the new geometry and designs
→ Ensure safety and enough personal protective gear for all involved

Working with volunteers

Many cities work with volunteers to implement projects and it is a great way to involve interested individuals and groups.

They can be community members, activists, university students, and artists, and more.

Make sure to keep them informed about any project shifts and their roles, and to prioritize their safety.

Provide them with appropriate materials (gloves, safety vest, hats, coveralls, etc.), food, and water. Suggest using clothes and shoes that can get dirty.

Credit their work and, whenever possible, offer compensation for people's time.

Communications

If possible, assign a communications person from the city to disseminate key information through official channels. Hire a local champion who may be involved in communications in the community (school newspaper, community board bulletin, neighborhood text group, social media, etc.). They may be involved in the following:
→ Source and organize information from other teams to turn into publishing material (social media and blog posts, flyers, banners, etc.)
→ Prepare press kits and materials
→ Invite press and media to each important step of the transformation
→ Decide the best timing and communication channels for each stage of the project

Photo and video

The work of this team will support the communications, outreach, and data teams. They may:
→ Take before-and-after photos and videos, as well as document the implementation process
→ Record stakeholders' testimonials at different stages of the project
→ Record drone footage of the project site
→ Produce videos that summarize the project process, experience, and reactions from street users, which can be used to quickly and powerfully present the project

Programming

The programming team is in charge of activating the project site, especially on the project launch day and subsequent weekends and occasions. They can coordinate:
→ Games, sports, and other recreational activities
→ Food, drinks, local vendors, etc.
→ Educational events
→ Music and art performances and activities (e.g., dance, music, theatre, acting, opera, magic, circus, acrobatics)
→ Activities in partnership with the community and adjacent businesses
→ Special programming during holidays or festival days

Traffic management

Traffic agents are necessary at different stages of the project to help people adjust to the changes. Keep them informed of project goals and bring them into the discussion whenever relevant. They can help to:
→ Manage traffic and/or close off working areas to make the implementation process safe for workers and street users
→ Educate and guide street users on new operations as they move through the newly designed area
→ Identify behavior patterns in the neighborhood to consider in the redesign

Maintenance and management

This team is in charge of maintaining the different materials and elements of the intervention. Community representatives can also be appointed to communicate maintenance issues or requests. The responsibilities include:
→ Set cleaning schedule for pre-project implementation and regularly afterwards
→ Keep track of extra materials in storage to replace furniture, planters, etc. if they are broken or displaced, and repaint if necessary
→ Communicate to project teams how spaces are being used, issues with safety, cleanliness, and upkeep of the site
→ Coordinate trash bin placement and trash collection
→ Coordinate watering and caring for plants

Employ locally

Employing community members and local businesses to work on certain aspects of the project (e.g., outreach, communications, programming, etc.) can help build trust within the community and create a greater sense of belonging for people who will use the space every day. Be proactive in identifying people/groups that might be interested.

Create a schedule

Pop-up and interim projects can last from a few hours to months depending on available resources and project goals. Yet the planning begins many weeks or months in advance. *The schedule on the right is an example of an interim transformation schedule,* working towards making the case for a capital project.

Coordinate schedules that integrate the various moving pieces of the project, including these stages: planning and design, budget and procuring materials, community engagement, data collection, implementation, and programming.

Build in time to continuously revise and integrate input from the diverse range of stakeholders you will encounter. Include additional time to avoid/reduce delays due to weather, unforeseeable events, holidays and local events.

> ⚙ **Participation**
>
> To ensure a higher participation rate in the process, plan around the times that work best depending on the audience: city entities, local communities, or other stakeholders.

What your schedule could look like:

Activity	Month 1				Month 2				Month 3				Month 4				Month 5				Month 6			
Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
DESIGN DEVELOPMENT														Site preparations	Launch day									
Preliminary site visit and initial reflections		■																						
Finalize timeline for project				■																				
Overall design strategy recommendations					■	■																		
Design recommendations for selected sites							■	■																
Finalize interim transformation designs										■	■													
Weekly meetings with approving agencies									■	■	■	■												
BUDGET & MATERIALS														Site preparations	Launch day									
Identify budget for interim transformation					■																			
Identify available materials for interim transformation						■																		
Shortlist and finalize material selection							■																	
Procure materials and elements								■																
Notify teams helping with intervention and construction									■															
Receive/store materials on site or in a warehouse near it											■		■											
COMMUNITY ENGAGEMENT														Site preparations	Launch day									
Initial outreach with stakeholders (small groups)				■	■	■	■																	
Decide on dates for community engagement workshop						■																		
Send out notices for community engagement workshop								■																
Plan and prepare material for community engagement										■														
Community engagement workshop													■				■		■					
Collate results from the workshop to inform design													■					■		■				
Invite attendees to interim-intervention launch											■	■												
DATA COLLECTION														Site preparations	Launch day									
Identify sites for interim intervention and data collection		■	■																					
Contact team and collaborators for data collection					■																			
Internal work session on aligning methodology							■																	
Start preliminary round of data collection									■	■														
Conduct multiple rounds of data collection												■												
Collect post-implementation data																	■							
Develop materials to share results with partners													■					■			■	■		
Invite photographer and videographer to document process											■	■		■				■						
IMPLEMENTATION & PROGRAMMING														Site prep	Launch day									
Cleaning site and maintenance														■		■		■		■			■	
Request support from traffic agencies to close streets														■	■									
Plan for launch event											■	■												
Implement and launch event															■									
Invite media to promote and report on project													■	■										
Decide if the transformation will be removed or made permanent																								■

Note: This example is adapted from a real schedule. Activities can take up different durations of time depending on the context.

A2 | Learn from local context

This section presents two ways of getting to know the project site and context: site observation and community feedback. Observe your site and listen closely to local stakeholders and those who use the space every day to create a design that makes sense for the neighborhood.

This process will also benefit the city team and increase the likelihood that the project will be widely accepted. Obtaining buy-in from stakeholders and understanding the most suitable outcomes for each unique place adds legitimacy to the project and saves time and resources, making the process more efficient overall.

Reference the *How to Evaluate Street Transformations* handbook for complete guidance on how to select, collect, and analyze data, and how to communicate street transformation results.

Observe

Collecting **qualitative and quantitative data about all street users** sets a benchmark for analyzing the impacts of the project after its completion. This also allows fairer and more equitable conversations about who streets should serve and the functions they support, moving away from car-centric data collection processes.

Listen

A street that is truly designed for all users respects community narratives and history, and it centers their needs at the core of the project. Engage the community in the process by actively creating opportunities for conversation at various stages of the project and by taking the time to integrate lessons learned from these conversations.

Fortaleza, Brazil

Observe: Data collection

Mapping site details, counting users of different modes, measuring speeds, and understanding changes in activities, operations, and physical conditions can provide the foundation to begin designing and to learn from the design later.

⚑ Reference the *How to Evaluate Street Transformations* handbook, Section B, for further instructions on how to select and collect data about your site.

Site analysis and baseline data

Collecting data at the planning stage is fundamental to the success of the project. Mapping fluctuations of activities, transit routes, and pedestrian destinations throughout the day as well as the physical and operational obstacles will provide a stronger understanding of the site and what is possible.

The collected data can also serve as a baseline of the site conditions and community voices, which can be referred to as a benchmark after the implementation to measure success and to inform the planning and design processes. See below for some examples. For a full library of metrics to collect and guidance on when and how to collect them, please reference the *How to Evaluate Street Transformations* handbook.
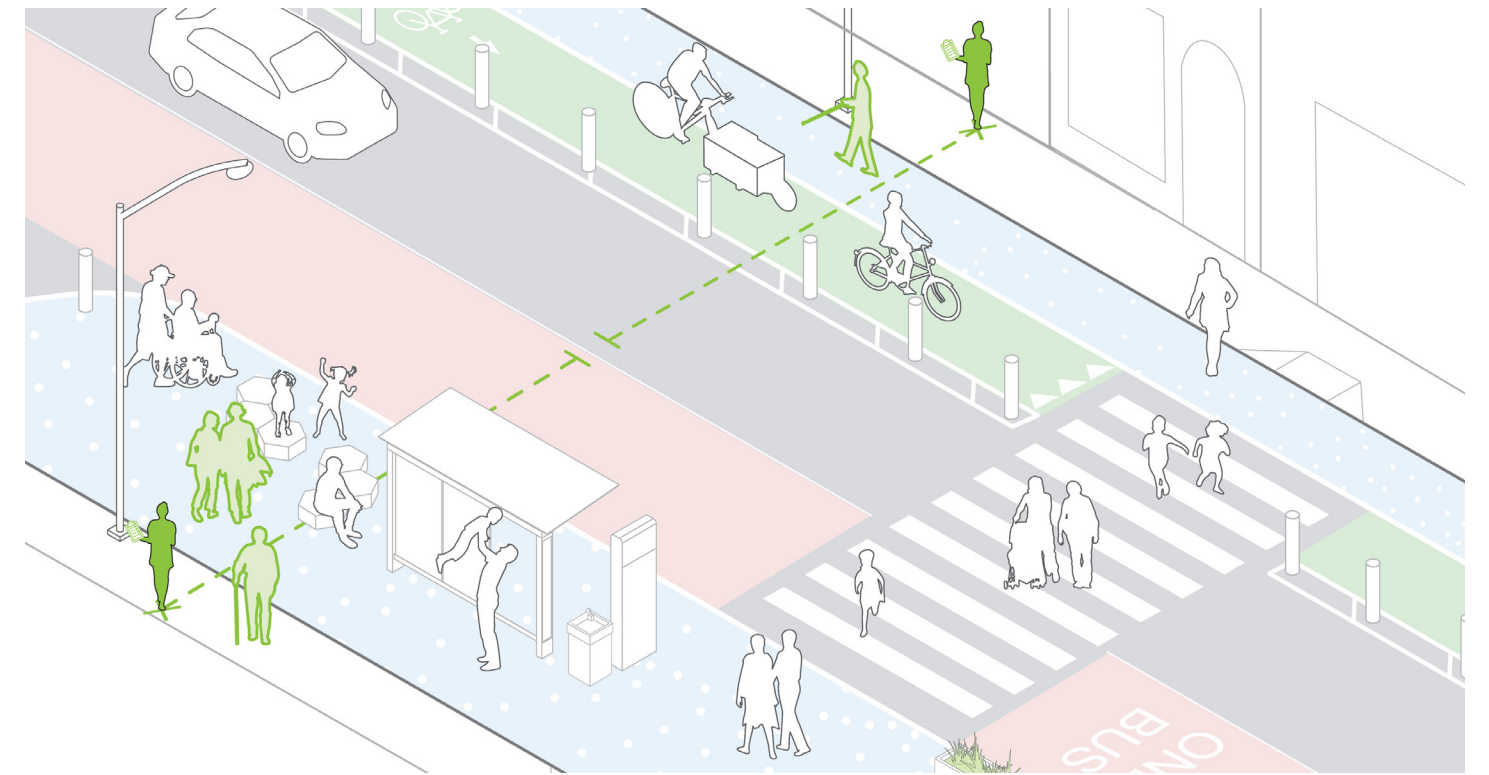
Gather existing data

If available, compile data from existing databases, archives, and online research about the project site and surrounding network, such as those listed below.

This will help determine what data gaps exist, potential impediments, and what still needs to be collected.

→ Land use data
→ Demographic information
→ Road traffic crash data
→ Pedestrian, cyclist, and vehicle counts and destinations
→ Existing projects and plans for the area/site
→ Cultural and historic background

Prepare accurate base maps

Improve existing base maps or create new ones to reflect the necessary details that can influence your design decisions and operational changes:

→ Confirm key dimensions such as lane and sidewalk widths so your base drawing is as close as possible to the reality
→ Check for accessibility
→ Map local businesses and street vendors
→ Map parking lots, entrances to garages, loading and unloading areas, boarding areas, etc.
→ Map transit routes and stops, and if possible the main routes used by passengers

Collect data on site

Once the goals of the project have been decided, more detailed data about the implementation site can be collected. These can, at the same time, inform design refinement and serve as the benchmark for future comparisons. Below are some examples of data that can be collected at this stage of the project:

→ Pedestrian, cyclist, and vehicle volumes and types (consider including details on gender, age, and abilities)
→ Pedestrian, cyclist, and driver behavior
→ Vehicular speeds
→ Users' perception of safety and comfort
→ Pedestrian desire lines
→ Signal timings
→ Stationary activities
→ Street lighting

→ Map operations and activities to understand how the site is used at different times of day by different people (e.g., hours and locations of school kids' gatherings, business deliveries, street markets, etc.)

Listen: Community involvement

Involving community members and other stakeholders as early as possible in the process is key to ensuring that public knowledge and concerns are heard and considered in the design of the project. While it is unlikely that every concern from every person will be able to be incorporated into designs, and conflicting opinions will often emerge, different needs and priorities should be discussed, evaluated, and prioritized to serve those most in need.

Guiding principles

Meaningful engagement should strive to go beyond getting approval to move forward with a project. The principles below encourage project teams to be intentional about equity in the project process and equipping communities with the necessary resources to be active partners in the design development.

Pedestrian being interviewed about the site — São Paulo, Brazil

Students presenting their ideas for the site — Fortaleza, Brazil

Community members supporting the implementation — Santiago, Chile

A plaza activated by local businesses owners — Fortaleza, Brazil

Inclusion

→ Make decisions with affected communities

→ Enable easy access to information and transparency about the process

→ Elevate different voices within a neighborhood so that projects are culturally competent

→ Intentionally seek out groups that are usually overlooked

Participation

→ Design with communities and not for communities

→ Citizens are not only informed about the project, they also have a role in shaping the design

→ Create space for participants to negotiate, compromise, and create consensus among themselves

→ Allocate dedicated staff, resources, and time within the process to learn from, analyze, and integrate community input

Agency

→ Redirect funding and resources to community organizers and local leaders who already have longstanding relationships with communities and can facilitate the process of advocating for and understanding their needs

→ Educate participants about how street design can create a better quality of life and achieve various goals, and how to initiate changes in their neighborhoods

→ Catalyze feelings of belonging, stewardship, and shared responsibility to achieve neighborhood goals

Long-term impact

→ After the interim street transformation is implemented, there is a long-term maintenance plan, activation plan, and ongoing partnership with community entities

→ Prioritize employment of local community members who would like to stay involved in upkeep, programming of activities, communications, and other ongoing efforts

Design with the community

Rather than simply informing the community about the project, work with them to transform the street together. Plan the appropriate type of community meeting depending on the phase of the project you are at: define the purpose, the desired outcomes, and methods to achieve the outcomes. See the table below for suggestions.

São Paulo, Brazil

Addis Ababa, Ethiopia

Different community meeting formats

Focus groups are guided discussions with a specific group of people to understand how they perceive various issues (women, business owners, children, etc.).

Round tables are more informal arrangements in which small groups discuss specific themes freely for multiple short rounds.

Structured interviews have a clear defined script to be followed and the questions are limited.

Semi-structured interviews also follow a structure but with more open-ended questions.

Workshops consist of didactic activities in which you can co-create with participants.

Hands-on activities like painting or planting together are a great way to make the community feel included in the process and an opportunity to understand more about their vision.

Meeting agendas – pt. 1/2:

Project phase	Site analysis	Project vision + priorities
Why? Why are we here?	→ To make local connections and create an opportunity for conversation → To understand who the stakeholders and potential partners are, and who is not present → To listen to community views and experiences → To share reasons why this site is being considered, and the desired outcome → To collaborate on a preliminary design goal	→ To explain why the site has been selected and introduce those involved in the project → To set expectations by sharing city goals, priorities, scope, and anticipated timeline → To share what has been learned/observed so far: challenges, observations, potential → To define community priorities → To build community buy-in
What? What information are we trying to learn?	→ What are the challenges related to the existing street design? → Do the project site boundaries include the critical areas of interest? → What is the history of this area? (Recurring issues, previous projects, places and activities that people value.)	→ What are the different community values and identities present in the area? → What are some high-level visions for the site? (More play space, more art and culture, safer walking areas, a place for outdoor dining, etc.?) → What are the top 3-5 priorities for: programming, activities, and features? → What are the top 3-5 challenges in this area?
How? Which tools and methods can help us achieve the meeting goals?	→ Presentations or boards containing information about the project and area → Surveys → Interactive boards → Group walks around the neighborhood → Participatory mapping: marking a photo or a map with stickers/markers to provide insights about the site	→ References through case study images → Interactive boards: "What do you wish for this place?" / "What activities would you like to see?" → Diagrams or maps of the area with general land uses: commercial areas, gathering areas, schools, etc. → "Mood board" images of elements/activities as conversation starters for visioning → Key data that has been collected so far
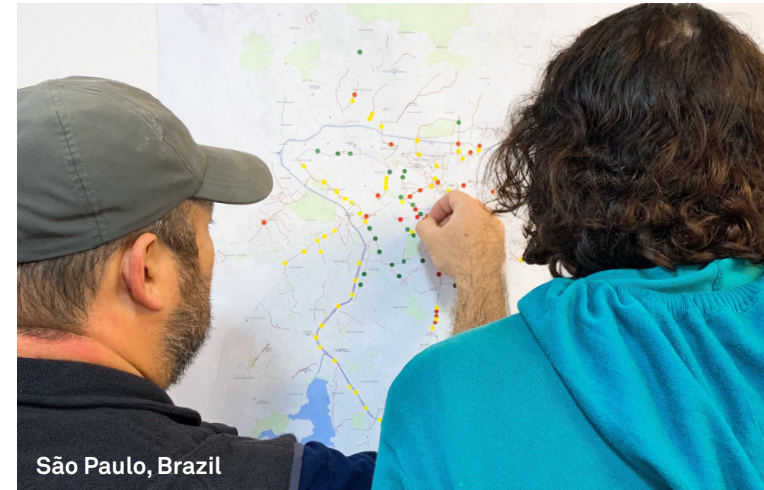
In every step of the planning, design, and implementation process, find a way to identify new and key stakeholders you might have initially overlooked.

Santiago, Chile

Cali, Colombia

Bogotá, Colombia

Meeting agendas – pt. 2/2:

Project phase	Planning + concept design	Implementation + launch	Post-implementation
Why? Why are we here?	→ To share priorities and challenges identified in previous meetings → To share high-level concept design(s) and how priorities were integrated → To get feedback on proposed changes and learn the nuances to improve them → To negotiate "conflicts" about the proposal → To invite shared responsibility (opportunity for volunteers and local service providers to get involved)	→ To create social interaction between community members by collectively participating in the street transformation → To create a feeling of connection with the space and sense of belonging, which may increase use and feelings of ownership → To present the overall process that led to the launch, show appreciation for everyone involved, and activate the space!	→ To share "before and after" data analysis results → To understand the impacts and people's experiences of the new design. → To assess the need to refine the design → To discuss next steps and set expectations → Continue long-term programming ideas and conversations → To build on momentum
What? What information are we trying to learn?	→ What are people's reactions to the changes? Will the changes enhance or deter existing functions of the street? → Which parts of the design may need to be rethought and which need to be explained in a different way? → Do certain stakeholders want to get more involved? Should we plan additional focus groups about contentious points?	→ How are people responding to the project? → Are they using the space as we expected? → Can we create more partnerships to keep the site activated? → What activities did people enjoy or ask for? → Would people like the project to remain in the long-term?	→ What is working about the design? → What isn't? Any unforeseen impacts? → Design review: do we need to move the furniture? Add more crossings? Remove something? Are there new desire lines or uses that were not apparent before? → Is the maintenance plan working as expected?
How? Which tools and methods can help us achieve the meeting goals?	→ Survey results and visual data to reinforce design decisions → Present design through renderings of the before and after conditions to show what it will feel like → Case studies of similar projects and their successes → Boards with concept design plans and critical diagrams of the upcoming changes → Explain value of design trade-offs	→ Presentation summarizing the project process and initial findings → Interactive boards: voting on whether they prefer the "before" or "after" photos of the site → Perception surveys → Conversations → Site observation	→ Evaluation surveys → Visual communication of data collected → Before and after photos/videos showing challenges vs. people using the spaces → Participatory mapping: marking a photo or a map with stickers/markers to provide insights about the site → Group walks through the site

Plan a community workshop

One method of engaging with local groups is by hosting community workshops. **Plan frequent workshops and meetings** to gain an understanding of local context, consult and collaborate on project goals and design ideas, and share how community feedback has been integrated at each step. These are also important to help avoid or resolve any unintended consequences of the project. Below are some general tips to keep in mind in order to reach the greatest number of people, encourage inclusive processes, and plan a productive meeting.

Participants using mood board cards in visioning exercise

Dates and times

When scheduling your community events:

→ Make sure they do not coincide with local holidays or events.

→ Check the availability of staff and partners. It is important that the project have consistent and familiar faces present at each meeting.

→ If possible, provide at least two different times (e.g., in the morning and after work hours) for the same content to cater to different family or work schedules, and travel modes to be able to attend.

→ Schedule enough time to cover the full meeting agenda so that participants can feel relaxed and heard.

→ Account for the time needed to print and prepare materials.

→ Make sure the feedback from previous meetings has been analyzed and that a response has been prepared before the next phase or meeting.

> 💡 The meetings could also be held on weekends and/or virtually at different times of the day so that the maximum number of participants can attend.

Venue

To encourage high attendance:

→ Choose venues that are near the project intervention area or host the event at the site itself.

→ Alternatively, select venues people visit frequently: schools, parks, neighborhood association meetings, local restaurants, etc.

→ Ensure entrances and paths to the meeting rooms are accessible.

→ Consider the equipment that will be available (tables, chairs, projector, screen, microphone, etc.), or plan to source them.

→ Post invitation flyers outside of the venue that are translated into appropriate languages, distributed throughout the site and adjacent areas, and mounted at a height that is accessible to pedestrians of all ages and abilities.

> 💡 Workshops last at least 3 hours plus the set-up times! Reserve the venue with enough time to set up and clean up.
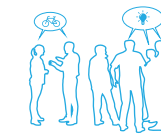
Participants

Identifying diverse demographic groups within a neighborhood needs to come from an informed cultural and historical perspective of the area. The team should be proactive in reaching out to a variety of stakeholders at least 2-3 weeks before the event.

→ People of different ages, genders, races, origins, ethnicities, and socioeconomic backgrounds

→ Residents, adjacent businesses, other project focus groups (e.g., students within a school project site), and those who might oppose the transformation (e.g., business owners who may oppose removal of parking spots)

→ Identify community leaders / champions to co-present and partner on the agenda.

→ Consider employing people from the neighborhood who are interested in helping run and lead the workshops.

> 💡 Collect participants' contact information and establish clear lines of communication through websites, email, phone, social media, or other methods.

Activity planning

Consider the goals at this stage of the project and the audience who will be attending:

→ Prepare and print all materials, including an agenda for the event to help stay on track.

→ Share project ideas before they are finalized in easily understood formats such as renderings, as technical plans can be difficult to read.

→ Confrontation of different ideas and points of view can generate great outcomes, but can also silence less powerful groups. Balance this dynamic by splitting into smaller groups, or planning more targeted sessions.

→ Tables should include no more than 6–8 people to ensure all participants remain involved and engaged.

→ Tables should be big enough for the drawings you wish to work with, and should be spaced out so that participants can stand up and move around freely.

> 💡 Send participants home with something (flyer, pamphlet, etc.) to encourage them to reflect on the project further or follow up with comments.

SAMPLE AGENDA FOR COMMUNITY WORKSHOP

This agenda is based on a real example of a participative design workshop at an early stage of the process, when the design was not yet finalized.

Event setup (40 min)

ARRIVAL, REGISTRATION, AND BOARDS (30 min)

Provide a welcoming table where participants can register with their contact information and receive name tags. Invite them to engage with two suggested types of poster boards:
→ **Informational boards** to provide general information about the project goals
→ **Interactive boards** for participants to fill in with background information about themselves and their perspectives about the project site

PRESENTATION (40 min)

Introduce the team and explain why you are there. Explain why rethinking the street space is so important, give an overview of the project and its scope, and explain the methodology of the upcoming hands-on activity and what people can expect from this gathering.
→ General introduction (5 min)
→ Presentation about observations on the site (5 min)
→ Overview of methodology of activity (20 min)
→ Comments and questions (5-10 min)

BREAK (10 min)

Snacks and time to mingle!

HANDS-ON ACTIVITY (80-90 min)

Assign participants to separate tables for group work
→ A. Discussion about perception of the project site (15 min)
→ B. What is possible: Tools and strategies for the project (20 min)
→ C. Applying strategies: Collaborative design (30-40 min)
→ D. Report back (15 min)

CLOSING DISCUSSION (15 min)

Thank people for their time and share next steps.
Announce the following meeting and hand out flyers with details.

Event clean up (20 min)

Follow the lead of communities

Communities can also support site selection. The following examples are projects that were driven by community responses to open calls and awarded resources to develop neighborhood projects.

PIAZZE APERTE PROGRAM
Milan, Italy - 2018/2019

A multiagency task force, including the mayor's office; the departments of mobility, planning, parks; and AMAT (the agency for mobility, environment, and territory) implemented a few interim plazas as a trial for a potential citywide public space regeneration program.
After a successful community response and data collection process, in November 2019 the City of Milan launched an open call that allowed local associations, community groups, and residents to submit their proposals for future street transformations. In less than a month, the city received 65 submissions from over 80 associations involving hundreds of residents from every city's borough.

PUBLIC SPACE TRANSFORMATION PROGRAM
São Paulo, Brazil - 2019

Working towards the citywide goal of having more inviting, vibrant, and safer streets for pedestrians and cyclists, and as part of the efforts to build internal capacity related to interim street transformation projects within city agencies, boroughs across São Paulo were invited to apply with design concepts for crash hotspots in their neighborhoods. The open call received 15 proposals and led to the transformation of the Dr. Campos Moura commercial corridor through a participative design process with the residents and business owners of the borough of Penha.

A3 | Plan to communicate

A clear media and communications strategy, paired with clear visual tools, is key to gaining the necessary support to transform streets into safe, inclusive, and inviting public spaces. Share the impacts and key information at different project stages, using different visual tools, as shown below.

Reference the *How to Evaluate Street Transformations* handbook, Section B5, for more information on how to use data and visuals to support your communications.

> 💡 **Create a visual identity**
> It is helpful to have a recognizable visual language for all the different articles, flyers, banners, videos, and other communications materials that you are releasing. Create a simple logo including the project's name, or use the same color palette to unify all of the materials and create an association with the project.

After the SITE ANALYSIS stage

Project Timeline — Transformation

Heatmap of crashes involving pedestrians
*Base map and data courtesy of the City of Fortaleza, 2018

Data visualization

75% of all street users are pedestrians

2/3 of the space — **1/3** of the space

Data visualization
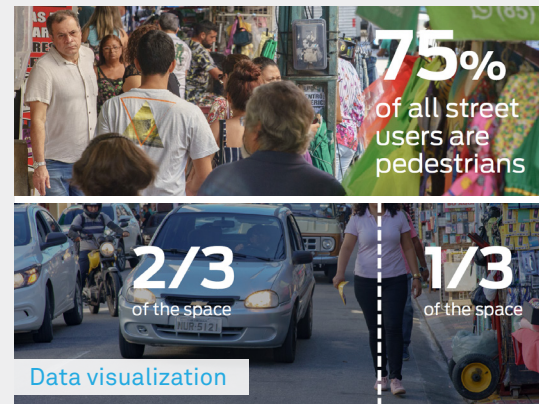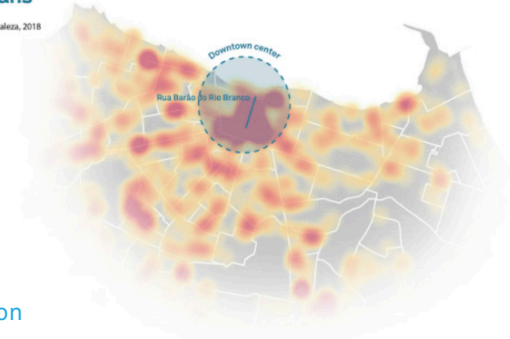
Frame the narrative

Key items to communicate:
Communicate "big picture" information extracted from your study of the existing site conditions and what you've heard from the community so far. Provide a history of the space, the way the community uses the space, and the cultural context. Provide a problem statement and raise awareness about why this type of project is important. Indicate who is involved in the project, who will benefit, and why the specific site was selected.

Audience:
Community and neighborhood stakeholders

This can be done through:
→ Social media posts
→ Blog posts or articles
→ Posters, flyers, and announcements

After the DESIGN stage

Project Timeline — Transformation

Design proposal

ÁREA CALMA DE SÃO MIGUEL

Project rendering
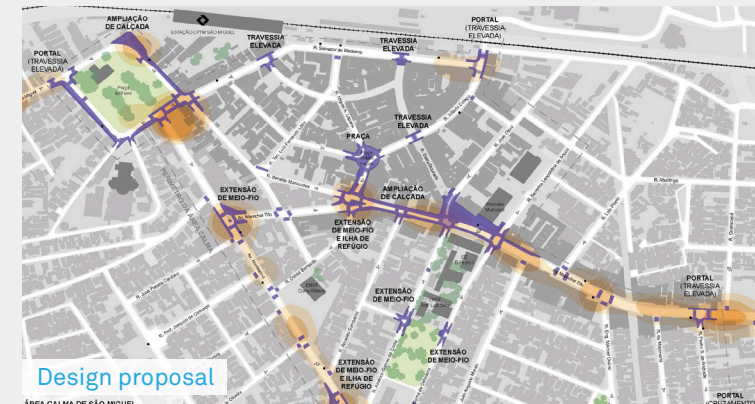
Explain the desired outcome

Key items to communicate:
Reiterate the project goals and process. Explain desired outcomes. Communicate how the project addresses existing challenges and the methods that will be used to achieve it. Share precedents of how other cities have achieved similar goals. Thank all the partners and stakeholders involved in the decisions and invite more participation.

Audience:
Community and neighborhood stakeholders, partners, and city agencies

This can be done through:
→ Posters, flyers, and announcements
→ Social media posts
→ Radio interviews and podcasts
→ Local press and op-eds
→ Videos

🔆 **Find advocates who can amplify the message**
Identify individuals or organizations who are interested in the project and can help spread the word. Provide them with social media "kits" to make it easier for them to do so. This could include images, key metrics about the project, an example social media page, and more.

🔆 **Enable easy access to information**
Strive to make city updates and resources easily accessible, including: how to initiate pop-up projects in your neighborhood, how to access funding, information about budgets, timelines, permits and definitions of language (technical and political), and more. Partner up with local media to help disseminate information widely.

Immediately after the
PROJECT IS BUILT

Project Timeline   Transformation

Survey results   Immediate impacts

Days/weeks/months after
PROJECT IS BUILT

Project Timeline   Transformation

Video   Report

Share initial impacts and reactions

Key items to communicate:
Share immediate impacts on or soon after the day the project launches to help demonstrate how sustainable change can be implemented in a short timeframe. Indicate how the design has addressed existing challenges, contributed to overall goals, and benefited the community. Provide contact information for any questions or ideas.

Audience:
Local/regional press, current and future partners and funders, academics, city agencies, community and other stakeholders

This can be done through:
→ Inviting the press to the site
→ Press release
→ Interactive posters/banners on site
→ Social media/blog posts or articles
→ Videos

Share long-term impacts and reactions

Key items to communicate:
Share reflections on how the project contributes to larger local and regional goals, principles of public health and safety, quality of life, environmental and economic sustainability, inclusion, and equity. Share lessons learned, challenges faced, and how the team has responded. In understanding the longer-term impacts and gathering evidence about different aspects of the project, you can advocate for scaling up, making the project permanent, and/or inspire future projects.

Audience:
Local / regional press, current and future partners and funders, academics, city agencies, community and other stakeholders

This can be done through:
→ Long-form blog posts or op-ed articles
→ Technical reports
→ Presentations
→ Videos

Communication tools

The following examples show important elements to include in the visual and written pieces of outreach. Be very clear and direct, and be consistent with color and graphic styles across the project's communications to help people identify it.

Websites and social media:

It is important to have an online page that is frequently updated so people can refer to this for project news and questions. This can be an entirely new webpage, made specifically for the project, or the information can be embedded in existing pages (e.g., the Department of Transportation's website, or the City's social media profile).

→ Make all the existing information about the project and its background available. Refer to previous posts that help build the narrative, link to resources and partners' websites, etc.

Press releases:

Once you start implementing the project, many questions will arise. Providing clear and detailed press releases will help journalists and other communications professionals disseminate the right information and prevent rumors.

→ The headline and content should catch the reader's attention and have enough information to make for a good story.

→ Be concise, clear, and focus on the facts

→ Include the most important information in the lead paragraph and dive deeper to explain things in more detail in the rest of the release.

→ Share press releases at key points of the project (e.g., entering a new phase, before an event, when implementation starts, etc.)

→ Consider the types of audiences you want to reach and target relevant organizations or individuals.

Social media post

Short text

Tag partners
This will make it easier for the audience to learn more and for your partners to share the post
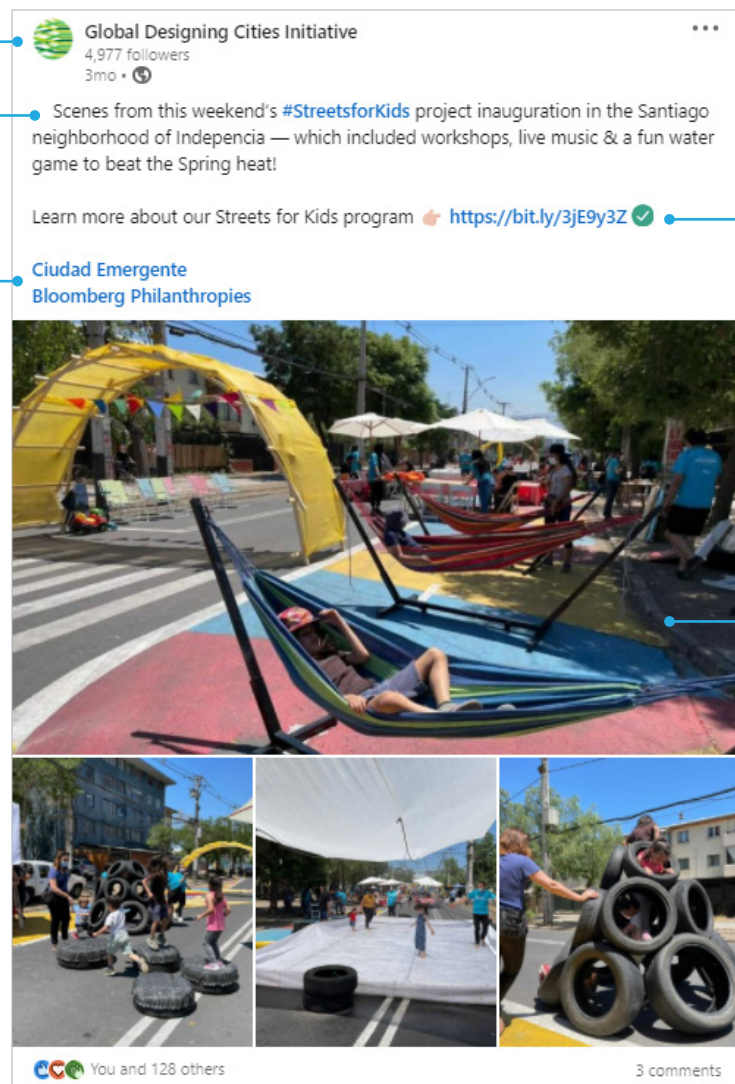
Link to more detailed information

Exciting photos!

Headline
Short, clear, and catchy

Lead paragraph
Summarize the information in the text; include statistics and contact information

Images
Include ones that can be reproduced in other channels

Essentials
Who, what, where, when, why

Quotes

Contact and boilerplate text

Posters and banners:

Prepare eye-catching visual posters and banners to relay key information to passersby and people who live / work near the project site.

→ Hang posters in strategic locations where they can be seen by lots of people, such as commercial areas, schools, institutional buildings, places of worship, transit stops / stations, etc.
→ Include links or QR codes that direct people to official communication channels

Flyers and invitations:

Hand out flyers in the neighborhood and use this occasion to talk to people and provide more information. Flyers can cover the project process or serve as an invitation for a specific event.

→ Flyers can be very visual or include more details about the project depending on what stage you are at
→ Provide partners with copies that they can distribute

Project history

Timeline of the project

Photos of previous stages

Goals, duration, and what to expect

Communicate the main objective of the project

Entities involved in the process

Date, time, and place of the event

Use site photos

Location of the site that is going to be transformed

Communicate main objective of the event

Entities involved in the process

Event organizer and contact information

B

Executing the project

Bogotá, Colombia

B1 | Prepare for implementation

Once the preliminary design has been completed, prepare to implement the project on the site! This section includes reminders of tasks to complete in the months and weeks leading up to implementation day to plan for a successful launch.

📖 Reference the *Global Street Design Guide* for guidance on designing streets that put people first.

💡 Refine the design

It is recommended to go on site and trial the proposed geometry with cones to observe how street users respond to it. This can be helpful for defining the correct turning radii, vehicle lane widths, and other critical dimensions.

📷 Don't forget to document existing conditions!

Demonstrate the existing challenges that will be addressed through photos and videos so that you can make before-and-after comparisons.

Have your proposed design in mind as you frame your photos, and the areas where you will be able to capture the best "after" photos of people using the new space.

Before   Fortaleza, Brazil

Proposed design

📖 Reference the *How to Evaluate Street Transformations* handbook, page 32, for detail on visual documentation.

Gather permits and official support

Work towards gaining approvals and relevant permits from all the appropriate city agencies as soon as the design concept is developed. These are some things to consider before implementing your project:

→ **Align the project with existing plans** that have already been approved by the city and community, and are expected to happen. This includes sidewalk maintenance plans, repaving of streets, and new master plans, among others.

→ **Involve approving agencies at the very beginning** of the process to help with roadblocks that could arise at a later stage.

→ **Bring support from higher levels** (e.g., the mayor) to relieve the pressure from individual city staff. Oftentimes, individual departments could be hesitant to participate, but support from higher levels can accelerate the process.

→ **Present case studies and examples from similar contexts** when methodologies and design strategies are new to a given context. Explaining how different cities integrate them into their regulatory framework can help build the confidence to implement new but tried concepts and demonstrate the potential benefit.

Different partners that may be included in the process for different tasks:

→ **Traffic, parking, transportation, and enforcement departments:** on-site management of new physical and operational changes

→ **Parks and recreation department:** urban furniture and landscaping

→ **Transit authorities and companies:** transit stops and routes

→ **Public works agency:** materials, construction, and lighting

→ **Citizen participation and inclusion entities, public relations department, community organizers, and grassroots organizations:** engagement support

→ **Office of communications and media, local media:** communications

→ **Education department:** school zones and/or routes

→ **Street operators and planning department:** parking management and street closures

→ **Consumer affairs organizations:** outdoor seating and commercial uses

→ **Department of sanitation**: cleaning, waste collection

Permits and documents you may need

For pop-up or interim transformations, consider bringing copies of the following on-site:

→ Insurance
→ Employee coverage
→ Equipment and property coverage
→ Special event permit
→ Photography and video consent forms
→ Drone license

→ Temporary liquor/food license
→ NOC (no-objection certificate) from the traffic enforcement agency and/or other city agencies
→ Signed project approval letter from city
→ Public liability insurance

Select and procure materials

Select materials and calculate quantities according to the design, transformation type, and timeframes. For pop-up transformations, select materials that can be easily removed after a few days, and for interim transformations use materials that will last for longer periods of time. Interim street transformations are a great opportunity to observe the way materials, road safety elements, and furniture perform for current and future projects and to potentially include them in procurement lists.

The following pages show a summary of materials, divided by function and application, to guide you through the process of selecting the most relevant materials for a given project.

Sourcing materials

Below are some tips on where and how to source materials and elements for a transformation:

Check the inventory
Pop-ups and interim transformations are all about using time and resources wisely. Begin by checking what materials you already have in storage and what can be done with them (be creative!).

Borrow from partners
Other agencies and organizations might have previously organized similar events and have materials and temporary furniture that you could borrow.

Procure extra elements
Make sure to start the process of ordering your materials in advance, as this can be a time-consuming, bureaucratic process. Procure extra materials for maintenance and in case of damage.

Use existing contracts
Using pre-approved materials and vendors can make the procurement process easier and faster.

Materials chart — pt. 1/4:

Refer to the Case Studies section to see the application of these materials in our projects.

	Material	Pop-up	Interim	How to estimate quantity
Mark the geometry	**Rope and string**	• Tie knots or use tape to mark key dimensions on your rope and use it as a ruler to mark the geometry on ground (e.g., lane widths and turning radii) • Use it as a placeholder prior to marking straight lines, curves, circles, and even zebra crossings		• Bring at least one bundle of rope/string for each team, if working on different areas of the site
	Chalk	• Mark the geometry of the design on the ground with chalk for quick installation and removal when needed • Thick sidewalk chalk and spray chalk are preferable	• It can also be used for interim markings if the painting will happen simultaneously or right after • If that's not the case, consider making dots with acrylic or spray paint so markings will stay for a few days until the team comes back to paint	• Bring a box of chalk for each team, if working on different areas of the site
Reclaim the space	**Tape**	• Use masking tape to delineate the filling patterns and help you draw straight lines		• Bring 2-3 rolls of tape for each team
	Stencils	• Stencils are largely used for traffic agencies to paint pictograms and words on the roads • They can also help with implementing filling patterns from simple shapes like circles and triangles, or more complex recurrent designs like hopscotch for example • Long rectangular stencils, with key widths, can work as rulers and help implement well-delineated lines, e.g., outlines and zebra crossings		• When painting patterns, it is recommended to have multiple stencils so more than one person can work simultaneously
	Gypsum or similar minerals	• Mix gypsum powder – or the available mineral – with water to make a temporary paint that can be easily removed • For different colors, just add your preferred coloring – natural food dyes are a good non-toxic option • Avoid using gypsum paint in rainy climates/seasons	• Not recommended	• This will vary a lot depending on the chosen mineral. Test different water quantities on small areas to estimate the ratio per square meter (Refer to page 75) • For gypsum, start with 3 parts of water to 1 part gypsum. Add more water if needed

On-site engagement materials

Besides the materials for implementing the new design, also plan on making project information available for anyone that might be interested in it, and for feedback collection. The following lists can help you prepare what you will need.

Information booth
Have at least one very visible information point that invites people to learn more.

→ Tent
→ Table
→ Chairs
→ Beverages/snacks
→ Informational flyers/banners

Feedback
Collecting feedback can be part of the activities within the information booth or a board can be posted on a nearby wall. What matters here is that people can share their thoughts about the project.

→ Boards
→ Pens and markers
→ Colored stickers
→ Printed surveys
→ Tablets for digital surveys
→ Business cards with contact information
→ Contact information sheets

Announcements
If permitted by local regulations, use audio/visual tools to broadcast information

→ Speakers
→ Microphone
→ Music
→ Megaphones
→ Video beams (during nighttime events)

Materials chart – pt. 2/4:

Material	Pop-up	Interim	How to estimate quantity
Paint	• For a more durable result that is still removable, use a watery mix of acrylic paint • Ensure high percentage coverage of paint on pedestrian areas so that the reallocation of street space is clear/visible for both pop-ups and interims.	• Use two-part epoxy paint for a bright and durable finish • Use gray/black paint to cover outdated road marking (e.g., parking spots, lane changes, etc.) • Use white and yellow traffic paint for the outlines and new road markings	• Follow the manufacturer's instructions to estimate liters of paint per square meter of area • For partial painting such as colorful stripes or patterns, estimate 60% • Purchase 20% extra for maintenance and contingency
Brushes and rollers	• Choosing between brushes and rollers depends a lot on the paint you are using and the surface you are painting. Generally speaking, large brushes and brooms work better for watery mixes and rough surfaces, and rollers for thicker and durable paints. Consider testing it before deciding. • Smaller brushes and rollers are good to paint details • Use long handles for large surfaces		• At least one set per person painting • If using multiple colors and/or access to water to wash tools is limited, estimate a few extra
Buckets and paint trays	• Use buckets to collect water, prepare your mix, and carry small portions of paint around the site • Make sure the rollers/brushes you are using fit inside your buckets/trays	• Trays may be more suitable, as they work well with rollers and durable paints • It can be helpful to have some buckets to support the process, like collecting water for example	
Cones	• Use cones as delineators to create visual barriers, enclosures, and to extend pedestrian/cycling areas into the roadbed • Cones often have to be used in conjunction with hazard tape and traffic signs in case of any rerouting	• Should only be used during the implementation stage to delineate working areas for painters and other staff, and manage traffic.	• Maintain permeability for people to pass through rather than move them, but keep elements close enough to prevent vehicles from driving through. • For pop-ups, distances can vary between 1 m and 4.5 m, and can alternate with plants

Reclaim the space (vertical label)

Install materials according to the street context

Example of barriers and planters positioning - denser at the intersection.
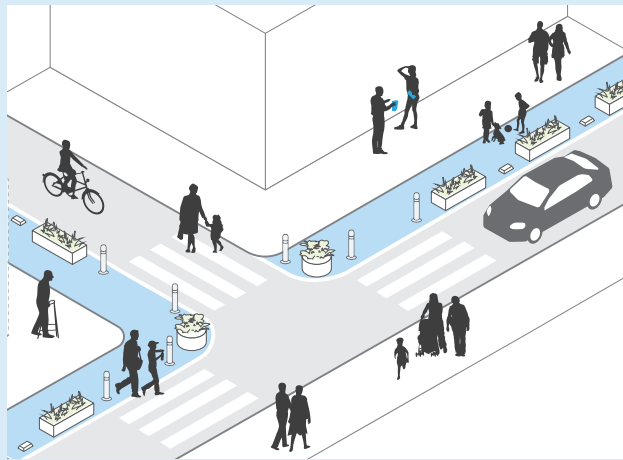
Tools checklist

These are basic tools that are helpful to have in almost any context to support the implementation process:

☐ Gloves
☐ Safety vests
☐ Sunscreen and caps/hats
☐ Measuring tape and laser
☐ Clipboards
☐ Printed design with dimensions marked
☐ Ladder
☐ Cleaning supplies (brooms, cloths, garbage bags)
☐ Hazard tape
☐ Scissors and cutting knives
☐ Zipties
☐ First aid kit

Refer to the Appendix here and in the *How to Evaluate Street Transformations* handbook for additional checklists.

Materials chart — pt. 3/4:

	Material	Pop-up	Interim	How to estimate quantity
Protect from traffic	**Fixed barriers**	• Not recommended	• Use flex posts, fixed posts, jersey barriers, concrete or plastic curbs • They should be used at gateways to the site, and for protecting sidewalk extensions, plazas, and bike lanes	• For safety purposes, maintain permeability for pedestrians to walk through them, but keep elements close enough to prevent vehicles from driving through • Ensure no blockage of pedestrian clearpaths, crossings, transit boarding areas, etc. • Distances can vary between 1 and 4.5 m depending on the land use around it • Densify elements at the intersections • Purchase 20% extra for maintenance and contingency • Purchase reflective tape/ stickers for each element to make them visible at night
Protect from traffic	**Plants and planters**	• Plants can be used as additional barriers between pedestrians, cyclists, and vehicles, and also to create ambiance in plaza-like contexts • Keep them in lightweight planters or bags so that they are low cost and easy to carry • At the end of the event, donate or distribute them among participants or return them if they have been loaned	• Fix planters made of durable materials to the ground, or fill with rocks/gravel • Planters with wide bases are less likely to tip over (if not fixed to the ground) • Use different kinds of planters for different spaces, e.g., avoid tall and dense plants/planters near intersections and pedestrian crossings to keep from obstructing visibility	
Make it inviting	**Seating**	• Stools, beach chairs, and other foldable furniture are easily moved and help create a welcoming environment • Other elements can be used for seating and are easy to assemble (e.g., cinderblocks and planks, wood crates)	• Use benches, fixed chairs, and picnic tables at strategic points to create both individual and social seating opportunities • You can play around a little with benches and tables and observe how people use them before fixing them to the ground	• Create layouts and plans for the placement of all furniture and amenities to help calculate the quantities required. Be flexible with placement if it doesn't make sense while on site. • Avoid placing objects very close to the traffic lane to keep a "buffer zone" from vehicles
Make it inviting	**Amenities**	• Bring beach umbrellas and tents to provide shade • Artificial grass mats are versatile and a quick way to create ambiance	• Consider fixed bicycle racks, trash bins, wayfinding totems, and other amenities compatible with your project • If using unfixed items, plan for evening storage	

Portable and removable elements

This photo shows a project in the neighborhood of La Magdalena, south of the historic center of Quito, Ecuador, using portable rubber speed bumps.
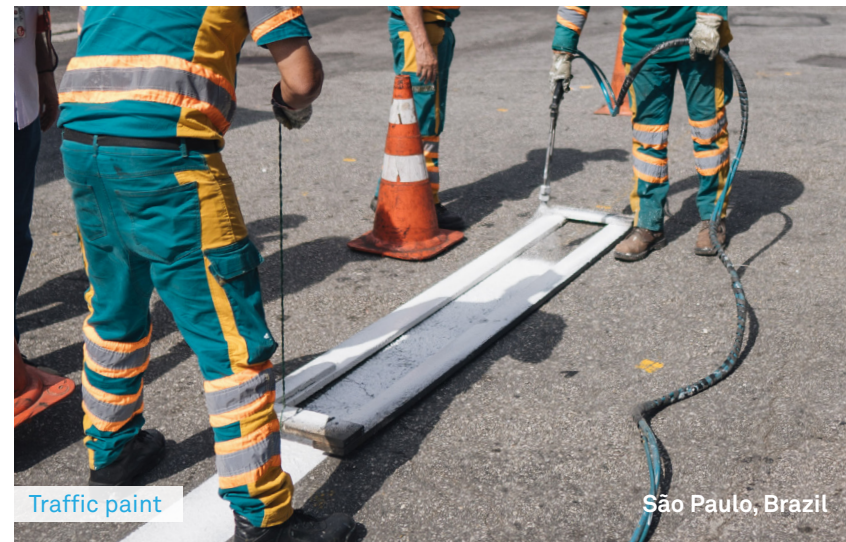

Quito, Ecuador

Plan for removal

When selecting materials, consider the time and resources necessary to remove them when the transformation is over, even if you end up not needing to. Some are very simple to remove and might even fade away over time, but others require machines and fixing the asphalt after removal.

Materials chart — pt. 4/4:

	Material	Pop-up	Interim	How to estimate quantity
Make it inviting	Games and play equipment	• Include hopscotch, bike circuits, and other games on your pavement treatment • Bring ropes, hula hoops, chalk, and any other elements that might inspire play	• Include painted games on walls and floor surfaces • Use durable and fixed play furniture like chess and ping-pong tables	• According to your design • Plan for all ages • Allow a "buffer zone" for safety and avoid the pedestrian clear paths
	Lighting	• Fairy lights/string lights can be hung to create a welcoming ambiance • Portable, battery, or solar-powered lighting fixtures to ensure safe walking at night		• According to your design; plan for lampposts to be integrated into your project
	Rubber accessibility ramps and boarding platforms	• Use them to make new pedestrian areas, transit boarding areas, and crossings accessible	• Use them to make new pedestrian areas, transit boarding areas, and crossings accessible • If possible, fix them to the ground	• According to your design: between curbs and crosswalks, transit boarding areas, etc.
Manage traffic	Signs and markings	• Print banners and visible signs to indicate new uses, pedestrian areas, no parking zones, etc.	• Coordinate with the relevant agency to install visible signs to indicate new uses, pedestrian areas, no parking zones, changes in the direction of streets, etc. • Paint horizontal markings on the street to indicate new parking, freight areas, etc.	• As needed to inform operational changes
	Removable traffic-calming elements	• Portable speed bumps made of rubber or other materials can be placed along streets to reduce the speed of vehicles • Consider the right shape and size for the street context and vehicle types or bicycles passing through the area		• According to your design • To achieve speeds of 30 km/hr, elements can be spaced approximately 40-80 m apart.
	Portable traffic lights	• Portable traffic lights help direct new traffic operations on the street		• As needed to inform operational changes

Sample materials: **Ground surface treatments**

Gypsum and food coloring — Bogotá, Colombia

Colored whitewash — São Paulo, Brazil

Acrylic paint — Bogotá, Colombia

Traffic paint — Addis Ababa, Ethiopia

Fabric — Fortaleza, Brazil

Traffic paint — São Paulo, Brazil

Water-based traffic paint — Fortaleza, Brazil

Stencil — Milan, Italy

Thermoplastic paint — Mumbai, India

Artificial grass — Milan, Italy

Sample materials: **Separation from traffic**

Traffic cones — Bogotá, Colombia

Plastic jersey barriers — Bogotá, Colombia

Flex posts/delineators — Fortaleza, Brazil

Plastic dividers — Bogotá, Colombia

Water-filled traffic barriers — Mumbai, India

Concrete cylinders filled with cement — Fortaleza, Brazil

Curb stones — Istanbul, Turkey

Plastic pots — São Paulo, Brazil

Furniture — Milan, Italy

Planters — Fortaleza, Brazil

Concrete dividers — Addis Ababa, Ethiopia

Sample materials: **Furniture and amenities**

Beach chairs and umbrellas — São Paulo, Brazil

Cinderblock benches — Fortaleza, Brazil

Picnic table — Fortaleza, Brazil

Shade structure — Fortaleza, Brazil

Seating + play furniture — Istanbul, Turkey

Refurbished tires — Santiago, Chile

Hammocks — Santiago, Chile

Shared bikes — Fortaleza, Brazil

Painted games — Tirana, Albania

Bike parking — Fortaleza, Brazil

Trees and seating — Milan, Italy

B2 | Implement the project

From getting the materials delivered to painting the ground and installing furniture, the implementation process involves many simultaneous on-site activities and therefore requires careful coordination in the days leading up to it.

In this section you will find an overview of these activities and practical tips for how to execute them.

Don't forget to document the process!

Set a timelapse camera on site before the implementation starts, and take photos and videos to document the teams working on the transformation process. This can also capture different activities and uses of the space, before and after the transformation.

This will be valuable to tell your story, learn and replicate what worked in the process, and remember to avoid things that were not successful.
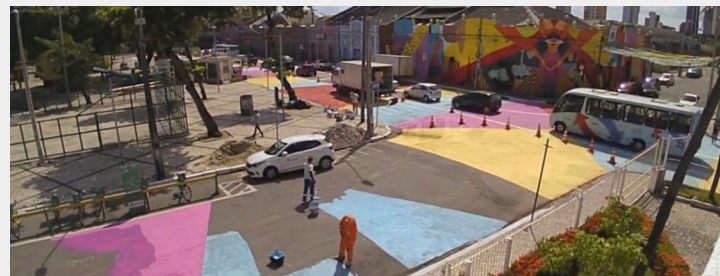
Reference the *How to Evaluate Street Transformations* handbook, page 32, for detail on visual documentation.

Fortaleza, Brazil

Quito, Ecuador

Coordinate the implementation

1. Review activities with the team

Inform the implementation and programming teams about the upcoming process, timeframes, materials, meeting points, methodology to implement the designs, and how to engage with the community as they experience the new project site. Walk through the site together.

Schedules	**Materials and furniture**	**Checklists and contact info**	**Community interaction**
Review timelines for deliveries, painting, furniture installation, activities, etc. with the key point people on the site.	Brief the team on the materials and elements that will be used in the implementation and how to prepare, apply, or place them, and where to store extras.	Assign specific team members to arrive prepared with printed forms and relevant materials. Collect and distribute contact information for everyone on the team.	Review the community activities to occur during implementation and launch day, provide talking points, distribute flyers, and conduct surveys.

2. Prepare the necessary materials

→ If dividing the site into smaller areas for implementation, separate the materials in a way that these areas can work independently.

→ Prepare enough copies of the design, clipboards, vests, cameras, and necessary tools for each staff member and volunteer on site.

→ Plan to meet the delivery trucks at an appropriate location on site and provide access to storage areas for extra materials.

→ Print all banners, drawings, informational flyers, and waivers.

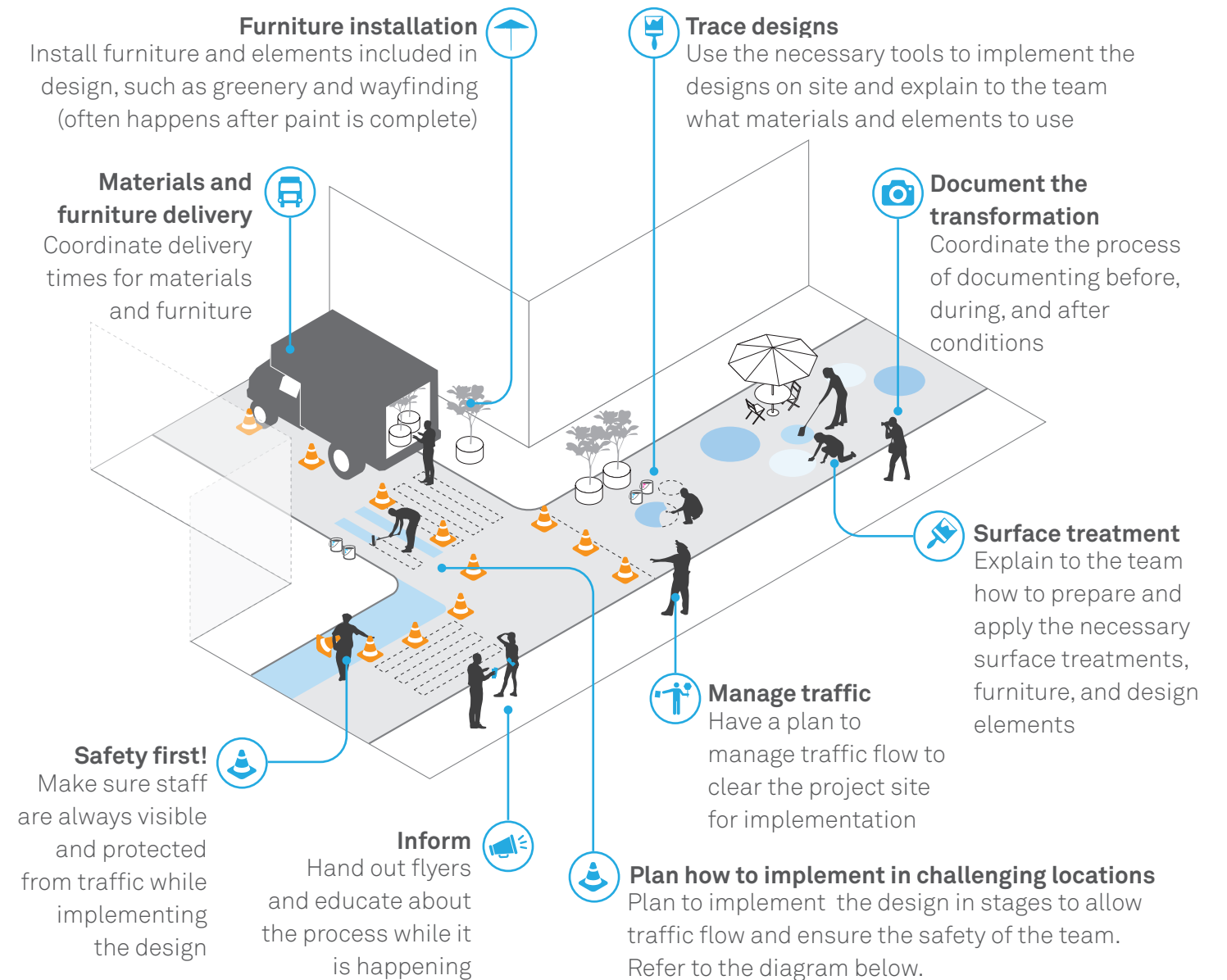→ Place or prepare cameras for photos, videos, and time-lapses.

Check whether there is a need to prepare the site before the implementation. For instance, if the asphalt needs repair, it would take a few days until the pavement is ready for painting.
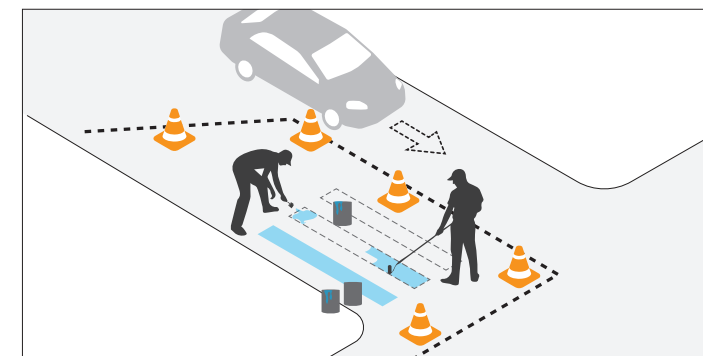
3. Clean and clear the area on site

→ Have a plan to manage traffic, clear parking, and clean the area the night before or morning of the implementation.

→ Use traffic cones and caution tape to delineate the area that is going to be painted. Walk through the site with traffic agents to familiarize them with new operations and where to redirect traffic away from the implementation area.

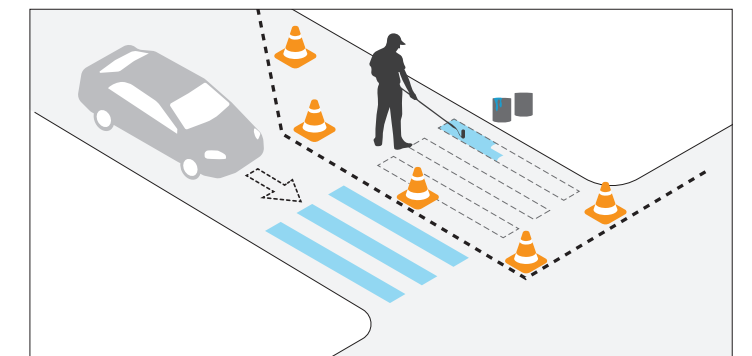→ Remove existing traffic signs and replace as needed.

4. Implement!

→ Trace the outlines of the design the night before or morning of to provide accurate areas for the people to paint.

→ Proceed to fill in the new areas with paint and allow it to dry.

→ Distribute the furniture and planters around the area.

→ Arrange for programmed events and games.

Furniture installation
Install furniture and elements included in design, such as greenery and wayfinding (often happens after paint is complete)

Trace designs
Use the necessary tools to implement the designs on site and explain to the team what materials and elements to use

Materials and furniture delivery
Coordinate delivery times for materials and furniture

Document the transformation
Coordinate the process of documenting before, during, and after conditions

Surface treatment
Explain to the team how to prepare and apply the necessary surface treatments, furniture, and design elements

Safety first!
Make sure staff are always visible and protected from traffic while implementing the design

Inform
Hand out flyers and educate about the process while it is happening

Manage traffic
Have a plan to manage traffic flow to clear the project site for implementation

Plan how to implement in challenging locations
Plan to implement the design in stages to allow traffic flow and ensure the safety of the team. Refer to the diagram below.

First half

Second half

When painting crossings, enclose and paint one half of the street at a time. Allow enough time for the surface treatment to dry before opening the painted lane to traffic and proceed to enclose and paint the other half.

Sample implementation schedules

The time it takes to implement the project can vary according to site size, design complexity, available team, weather, and traffic, among other reasons.

On the following pages we provide two examples of on-site schedules for pop-up and interim transformations to inspire your planning process. Adapt and adjust them to your context, and remember to build in time to accommodate unexpected things that might come up during the process.

Nighttime implementation

Sometimes implementation must happen overnight when traffic is lighter. It is important to be upfront about this with the team, and create shifts if possible. Provide them with water, snacks, safety vests, and bring light sources. Acknowledge them in project documentation and compensate, accordingly.

Fortaleza, Brazil

Addis Ababa, Ethiopia

Pop-up street transformation

São Paulo, Brazil

Time	Day 1	Launch day		
Hour 1	Review plan for implementation, define clear tasks and schedule	Enclose the area, clean, and prepare	Paint and place elements	Issue press release
Hour 2				
Hour 3	Check the site			
Hour 4				Clean and tidy up before launch event
Hour 5	Videography and photography of pre-transformation conditions	Document the process and collect data		Interviews with media on site
Hour 6			Opening event!	Announce next steps!
Hour 7	Optional: set the timelapse camera			
Hour 8		Remove implementation		

Note: Street transformation planning starts weeks/months before the implementation. Previous steps like design, procurement, engagement, etc. should all be completed before on-site implementation starts.

Interim street transformation

Addis Ababa, Ethiopia

Fortaleza, Brazil

Istanbul, Turkey

Fortaleza, Brazil

| Time	Day 1	Day 2	Day 3	Day 4
Hour 1	Meet staff and volunteers on site for walkthrough of meeting points, storage, implementation, and rest areas		Clean the site for implementation	Videographer and photographer arrive to document process
Hour 2		Enclose the implementation area		
Hour 3				Mark new designs where missing
Hour 4	Videography and photography of pre-project conditions	Delivery of materials	Mark new designs on-site	
Hour 5				
Hour 6		Remove existing signs and replace as needed		Paint!
Hour 7	Optional: set the timelapse camera			
Hour 8			Paint!	

Time	Day 5	Launch day		Day 7
Hour 1	Paint details	Data collection team, videographer, photographer arrive to document launch day conditions	Issue press release	
Hour 2				Maintenance team begins weekly clean-up schedule
Hour 3		Install games, community engagement posterboards	Interviews with media on site	
Hour 4	Place and install elements, including:

Furniture
Planters
Barriers
Lighting | | | |
Hour 5				Post short video and photos to share immediate changes
Hour 6		Opening event!		
Hour 7				Note: plan to collect "after" data in the following days or weeks
Hour 8		Cleanup and storage of unfixed furniture and games		

Note: Street transformation planning starts weeks/months before the implementation. Previous steps like design, procurement, engagement, etc. should all be completed before on-site implementation starts.

How to get the new design on the ground

Below are some helpful tips to measure and mark new geometries if the traffic agency or contractor is not available to outline the new street design for your transformation.

Prepare base maps with dimensions marked at multiple locations as reference points for plotting the new geometry.
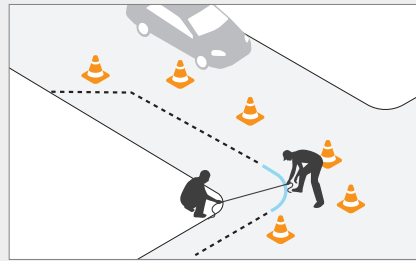

Turning radii
The best way to mark new turning radii is to use a string with the radius distance to trace the corner. To do it, fix or hold the string on one end to the desired location and with the other end mark the new radii with chalk or paint.
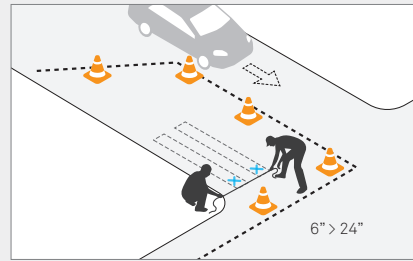

Pedestrian crossings
Define the dimensions of the crossings and mark them with chalk or broken gypsum. Use a string to help you trace straight lines and label every second space with an "X" at each end to know which blocks to fill with paint.
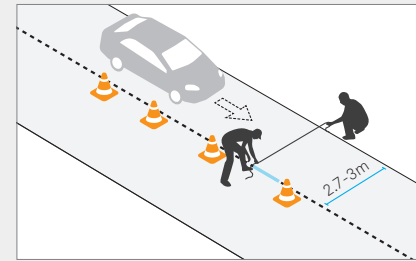
Sidewalk extension
First define the travel lane dimensions, then allocate the extra space to the sidewalk extension. Consider all vehicle types according to the context to define lane width. Mark multiple points along the corridor to ensure consistency.
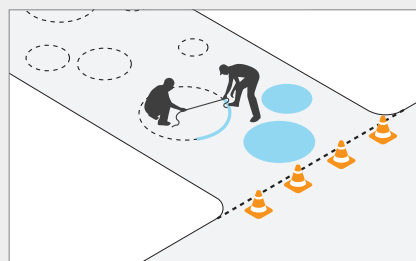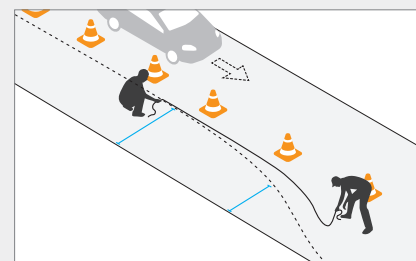

Circles
To draw big circles, use a string to trace the circumference on the ground with chalk or paint.

Note: other patterns are also encouraged.

Stencils
They are useful to replicate the same shape multiple times. Use cardboard wood cutouts, or metallic panels to trace or paint the shape around the site to create patterns and recurring elements.

Curves
To draw curved lines, mark the main dimensions and use a rope to connect the dots by holding it at one point and dragging it sideways until reaching the next point.

How to prepare washable paint

For street transformations that last only a few hours, use a mix of gypsum powder (or similar minerals) and water that can be washed immediately or disappear with rain. If the intervention is intended to last longer, you can use a watery mix of wall acrylic paint that will stay for a few days.

1 Fill the buckets with water
Look for a water source in the adjacent buildings or stores to fill the buckets with water for the paint mix.

2 Add gypsum to the mix
Use small shovels or pour the gypsum (or other) powder into the water while mixing it to get a watery consistency.

3 Add non-toxic coloring
Plant-based food coloring is a great source of color for the mix!
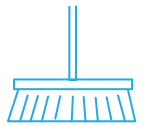
4 Use brushes and brooms
Big surfaces are easily covered with brooms. Details and borders can be made with smaller brushes.

Make sure to have a water source closeby to mix paint and wash tools.

Gypsum dries fast! Have designs marked on-site before mixing the gypsum paint to avoid it drying in the buckets.

Bogotá, Colombia

Cover the ground surfaces

Applying colors to the roadbed is a quick and easy way to repurpose it into public space and demarcate its new intended use. It is crucial that each of the different uses, such as pedestrian spaces, travel lanes, and other transformed spaces be legible for all users at the street level in order to guarantee everyone's safety.

See below for some important considerations to help inform the use of colors, density, and patterns in a street transformation.

Add local character

This is a great opportunity to highlight the unique cultural narrative and artists of the neighborhood. *Refer to page 78.*

New sidewalk easily distinguishable from roadbed

Pedestrianized street's gateway completely painted

Less dense pattern on more protected areas

Traffic markings following local legislation

Traffic markings easily distinguishable from patterns

High-density pattern close to intersections

Fortaleza, Brazil

Quito, Ecuador

Different and less dense pattern that goes over the roadbed to encourage safe speeds (should be implemented only if codes and regulations allow)

Why use colorful designs?

→ Vibrant and highly visible colors help differentiate reclaimed pedestrian space from other modes

→ The use of colors can help enhance the streetscape, invite pedestrians and activities, and create a sense of place

→ Color can also be used to highlight potential conflict areas between modes such as crosswalks, intersections, and shared spaces

Choosing colors and patterns:

→ Investigate whether there is local legislation on color and pattern requirements

→ Consider scale and context: designs should be legible at the street level and not only from an aerial view

→ Bright colors with high contrast compared to asphalt are preferable, as they increase visibility (plan for nighttime and low-light conditions)

→ Patterns, colors, and shapes should not be confused with traditional traffic markings

Budget constraints:

→ While it is generally recommended to fill the pedestrian ground surfaces with solid paint, patterns or stripes that cover at least 50% of the ground area can provide legibility while consuming less resources.

→ These patterns can be implemented with stencils to make them easier to apply.

B3 | Launch the project

After all the hard work of planning and implementing the project, it is time to invite people to experience the transformation! Hosting an opening event helps build momentum and showcases the benefits of the project.

This section presents guidance to plan an exciting kickoff event and what to keep in mind during the process.

Don't forget to document the "after" conditions!

Now is the time to go back on site and take photos from the same perspective, frame, and angle as you did before. Use existing street elements – like trees, poles, and building edges – to guide you.

While the "before" photos should highlight site challenges, the "after" shots should focus on key improvements and how people use the space, making it easier to see the changes.

Before   Fortaleza, Brazil

After   Fortaleza, Brazil

Reference the *How to Evaluate Street Transformations* handbook, page 32, for detail on visual documentation.

Milan, Italy

Activate the site

Involving the community and activating the space can begin even before the project launches and continue for weeks and months after the opening event. See some examples below and on the following pages.

Hire local groups and artists

Having the community participate not only in the conception of the intervention, but also in the making of it, will help build stewardship and encourage people to care for and use the space.

Hire local groups and artists to join the implementation team, commission art installations that can stay for the duration of the project (like sculptures or paintings), or even perform on weekends. This is a way of supporting the local economy while highlighting the neighborhood's unique character in the project.

Allow for spontaneous involvement

Make the new space inviting in ways that encourage people to come but also give them reasons to stay and spend time. Local food vendors, seating, shaded areas, and games can help create this environment. If installing a bike lane, for example, it's useful to have bikes at the launch event so that people can test out the new layout.

Invite kids and adults to get their hands dirty and paint portions of the project, pot plants, and more. Provide neon vests, cones, and other barriers to protect the area they will be painting in.

Remember that they are not staff; make sure the tasks are simple and fun!
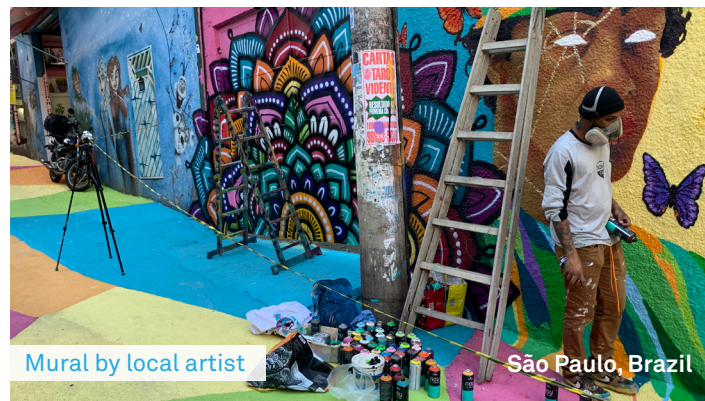
Mural by local artist — São Paulo, Brazil

Painting — Bogotá, Colombia

Planting — Milan, Italy

Open lines of communication

Invite business owners and residents to customize and take ownership of newly installed benches or planters adjacent to their stores and homes. They can also serve as "stewards" of the project and communicate with the City if materials need replacing or maintaining. *Refer to page 89 for an example model of this.*

Programming

When planning programmed activities, consider the duration of the intervention and plan participation by all ages and genders to engage a diverse audience.

For pop-ups, launch day programming is recommended. For interim street transformations, launch day events are suggested, followed by weekend activities, to be able to activate the project for longer periods of time.

Food vendors — Bogotá, Colombia

Activities — São Paulo, Brazil

Games — Fortaleza, Brazil

> Children learn in different ways and playing is an important part of the process, so it is important that our streets provide stimuli and opportunities. Activating a space with games and artwork can spark a variety of ways for people to learn and engage.
>
> Reference the *Designing Street for Kids* guide, page 120, for further guidance on playing and learning.

Sample programming

Outdoor classes — São Paulo, Brazil

Farmers' markets — Bogotá, Colombia

Storytelling — Santiago, Chile

Ping-pong tables — Milan, Italy

Outdoor movies — Milan, Italy

Performances — Fortaleza, Brazil

💡 If there are challenges with organizing one official launch event, consider programming multiple small events over several weeks to bring attention to your project site.

SAMPLE AGENDA FOR OPENING EVENT

This is an example of what your event programming could look like. The activities are organized based on the start time, and some of them may overlap. Having multiple options happening simultaneously is a good strategy for engaging a diverse audience.

Event starts

Open the site to the public. Have staff on-site, play some music, set up a refreshment station. Make it look like a party!

OFFICIAL LAUNCH (20 min)

Invite key stakeholders to kick off the event. Present an overview of the project, why this neighborhood was selected, and the activities for the day.
→ Opening speeches - mayor and local leader(s)
→ Cut ribbon - key stakeholders
→ Overview of the agenda - MC

LIVE MUSIC (40 min)

Invite local group(s) to perform

PAINTING WITH KIDS (1 hour)

Designated area for kids to paint

WALKING TOUR (40 min)

Give tours of the site to explain the elements used and discuss challenges and solutions with participants

DESIGN YOUR PLAZA (1 hour)

Hands-on workshop for participants to design the new plaza their own way using cutout pieces and boards

DANCE PERFORMANCE (15 min)

Invite local group to perform

CLOSING REMARKS (15 min)

Thank people for showing up and share project's next steps

Remove transformation (if pop-up)
Clean site (if interim)

Example of a pop-up launch

Programming
Concerts and announcements throughout the day

Traffic management
Cones, traffic signs, and local authorities

Local vendors
Snacks offered by food vendors and project sponsors

Public engagement
Materials for kids to paint and play

Temporary seating
Movable seating

Information points
Informational boards and staff explaining goals and next steps

Temporary paint
Gypsum + water as a surface treatment that can be easily removed

Greenery
Movable planters and plants

Plaza 80 Pop-up | Bogotá, Colombia 2016

Example of an interim launch

Programming
Opening event: mayor's speech, announcements, and live music

Bicycle infrastructure
Fixed bike racks

Greenery
Concrete planters and plants

Seating
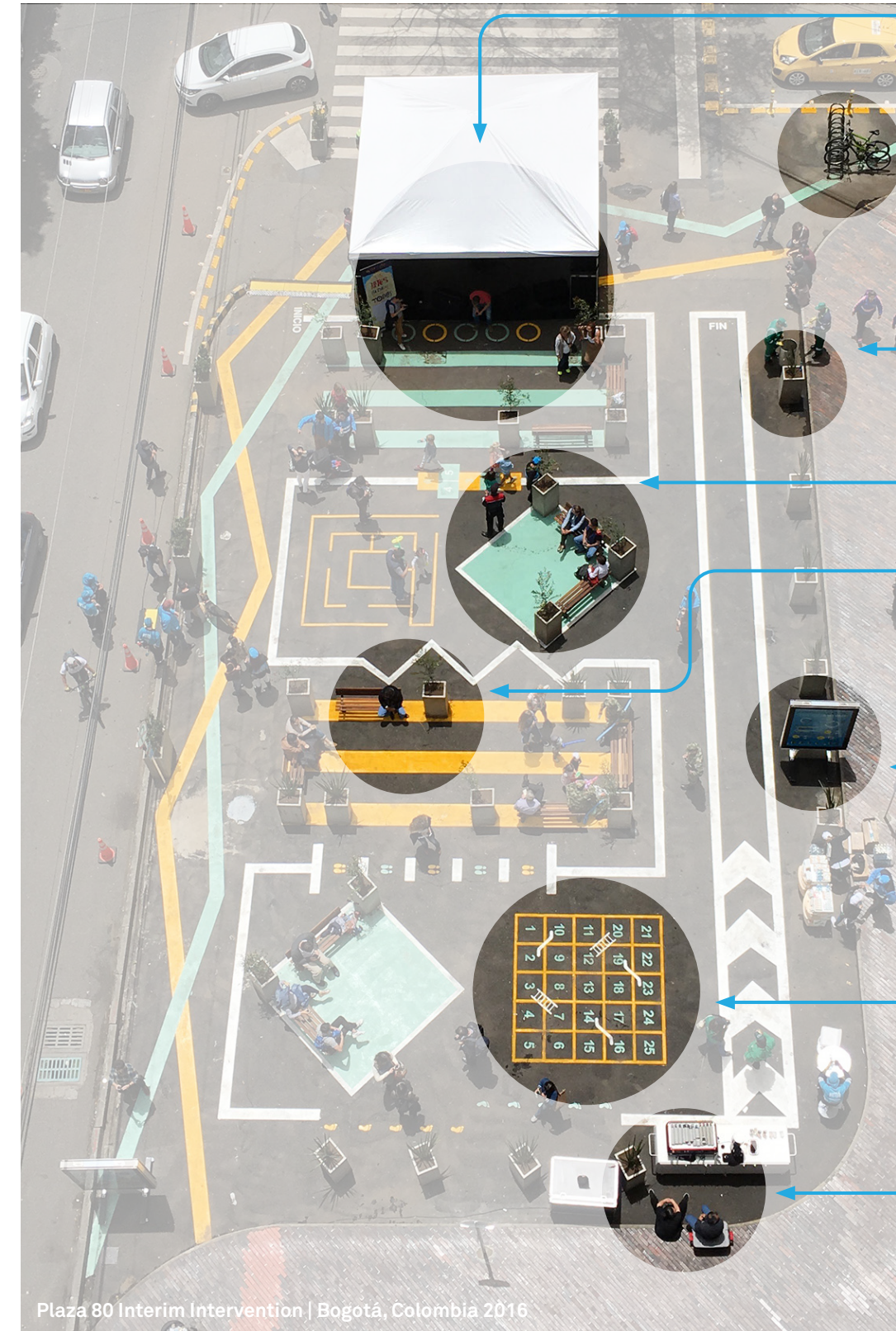Fixed benches

Surface treatment
Semi-permanent acrylic paint to implement designs

Information points
MUPI displaying findings and data about the project and next steps

Programming
Games included in the plaza design and surface treatments

Local vendors
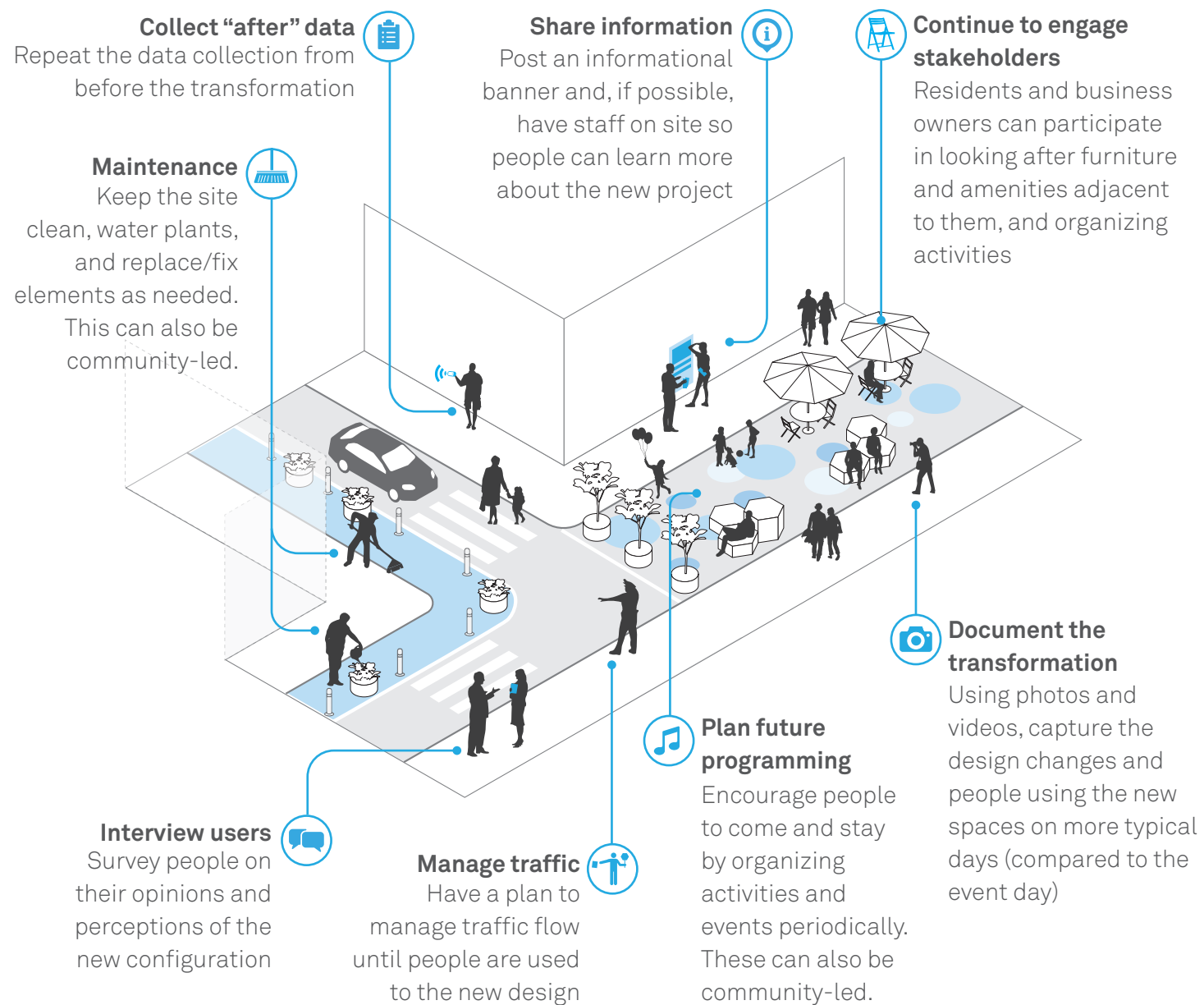Snacks and coffee offered by food vendors and project sponsors

Plaza 80 Interim Intervention | Bogotá, Colombia 2016

B4 | Follow up

The transformation process does not end on launch day. This section reviews post-launch steps towards permanent change and citywide impact, and provides examples of cities that succeeded in scaling up street transformations.

After the launch

Following the excitement of the opening event, it is important to carry on with on-site activities to keep engaging the community.

Collect "after" data
Repeat the data collection from before the transformation

Share information
Post an informational banner and, if possible, have staff on site so people can learn more about the new project

Continue to engage stakeholders
Residents and business owners can participate in looking after furniture and amenities adjacent to them, and organizing activities

Maintenance
Keep the site clean, water plants, and replace/fix elements as needed. This can also be community-led.

Document the transformation
Using photos and videos, capture the design changes and people using the new spaces on more typical days (compared to the event day)

Interview users
Survey people on their opinions and perceptions of the new configuration

Manage traffic
Have a plan to manage traffic flow until people are used to the new design

Plan future programming
Encourage people to come and stay by organizing activities and events periodically. These can also be community-led.

PLAN FUTURE PROGRAMMING

This is an example of programmed activities over a month, both before and after the launch event. Establish clear methods for the community, businesses, and project partners to suggest or sponsor future activities on the site. This may include assigning a specific point of contact within the appropriate city agency to respond and organize the events with those interested.

Mon	Tue	Wed	Thu	Fri	Sat	Sun
			Mural co-creation		Tree planting	Opening event!
School activities					Storytelling	Farmers' market / Available time slot
			Fitness classes for seniors	Movie night	Live music	Farmers' market / Dance show
				Ping-pong competition		Farmers' market / Available time slot
				Movie night	Available time slot / Live music	Farmers' market / Live music

When scheduling events, plan for their specific needs like access to power and water, cleaning, trash collection, portable restrooms, and others.

Encourage local stakeholders to set up a community social media group to exchange ideas and activities for the public space in order to boost sense of belonging.

Evaluate the impact

After implementation, return to the project site and collect the same data as before the transformation (collect it at the same time of day/week, and from the same locations). Organize the collected data into standardized formats to be able to compare before and after conditions and analyze results.

Reference the *How to Evaluate Street Transformations* handbook, page 62, for more guidance on standardizing and analyzing data.

Were goals achieved?

Yes

Celebrate!

And also try to understand what contributed to this. Can this project influence long-term change? This is, after all, the main goal of pop-up and interim street transformations.

Long-term change can mean making the project permanent, scaling tested and approved design solutions to other projects and programs to impact more people, and updating city policies to inform future practices. *See more on page 90.*

No

Embrace iteration!

Often, the design will not be perfect the first time around. The purpose of using temporary materials is to allow changes to the design according to feedback and observations. Adjust the design and continue collecting data and observing it:

→ If materials are not meeting the expectations, replace them.
→ Revise, add, or modify existing placement of the design and associated elements based on observations.

Sometimes, because of differing city priorities or community pushback, the design will not move forward at all, and that's okay! Every project is a learning opportunity:

→ If the data reveals a problematic or contentious area that may be holding back the continuity of the whole project, consider moving forward without intervening in this area.
→ If the negotiations reach a dead end, or resources run out, it may be time to consolidate the findings and move on to something else.

Share findings

Share preliminary findings and key metrics with the community, decision makers, and stakeholders, and hear what they have to say about both the results and their experiences on-site.

Reference the *How to Evaluate Street Transformations* handbook, page 68, for more guidance on communicating project impacts.

Feedback meetings

Hosting feedback sessions in the weeks following the launch will deepen your understanding of the strengths and weaknesses of the project. Make sure to contact everyone who participated at any stage of the process so they may participate in these sessions: community members, city agencies, and other partners.

These conversations are important for managing expectations and aligning on next steps. This is also an opportunity to share next steps related to the project and seek opportunities for partnership.

Consolidate learnings

Pop-up and interim street transformations are iterative; every transformation will teach us something new.
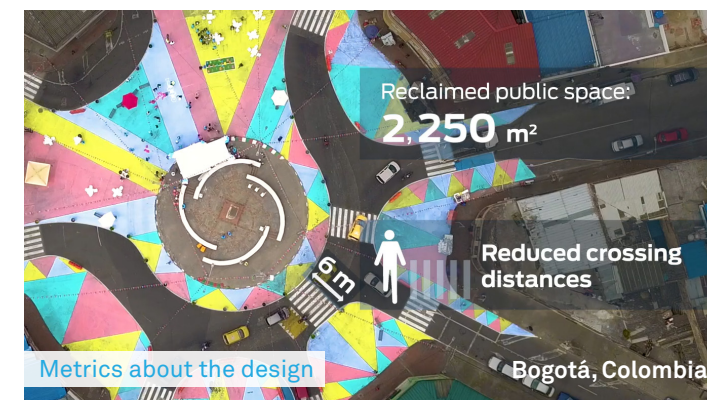
Take the time to register these learnings for future reference and for others to build upon your experience.

Share key metrics about people's perceptions, survey results, and approval of the project. Prepare a report, publish an article, put together a video about the process, etc. *See more on pages 40-41.*

Design review with community — Guayaquil, Ecuador

Metrics about the design — Bogotá, Colombia
Reclaimed public space: **2,250** m²
Reduced crossing distances
6 m

Strong visual metrics — Recife, Brazil
**68%** fewer people with **disabilities** walking on the roadbed

Maintain the project

Keeping the site clean and well maintained shows commitment and ensures there is no confusion between pedestrian, cycling, and vehicular spaces. Design elements may fade, wear off, or be damaged over time. Keep the project in its intended state by having a clear maintainance plan.

Daily care

Plan for regular sweeping and trash collection. This task can be added to the existing neighborhood cleaning schedule.

Remember to water plants, sweep dirt that falls out of planters, and trim foliage so that pedestrians remain visible. Ensure that all elements are in place and that no clear paths are blocked.
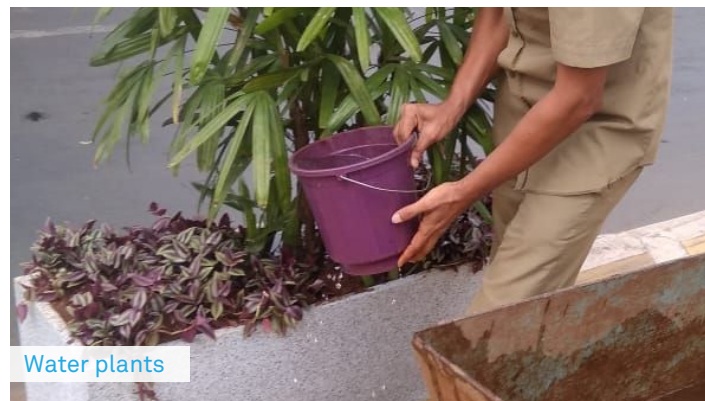
Paint and upkeep

Acrylic paint usually requires a touch-up within 2-3 months. Establish a regular schedule for retouching the paint over the lifespan of the project.

Materials and elements

Sometimes, planters, bollards, signs, and other elements can be damaged or go missing over time. Having a reserve of extra materials to replace missing elements immediately is important to preserve the intended function of the street, and to remain clear about which areas are intended for pedestrians versus vehicles.

Water plants

Repaint

Update signs

Who maintains the project?

While the project upkeep will usually be the responsibility of the municipality, optional agreements can be made with the community and partners. There are many ways of doing this. Below are three potential models.

City agencies
This is the most common model, in which the city itself takes responsibility for maintenance until permanent investments are possible. Project maintenance can be coordinated between different city agencies such as sanitations, parks, and public works departments.

Contractors
Contractors can be hired by the city specifically for project maintenance.

Partnerships and community stewardship
Local organized groups make strong partners with city agencies, especially if they were part of the design and implementation process. Look to shop owners, neighborhood associations, and business improvement districts. These groups can water plants adjacent to their homes or places of work, suggest and organize programming and activities in new public spaces, inform the relevant city agencies about any issues or concerns, and more.

Community partners, Quito stewardship program

Move towards long-term impact

Pop-up and interim street transformation projects can be very effective tools for gaining the support and evidence needed to influence citywide policies and programs. This ideally means that more communities would benefit from safer and sustainable streets through ongoing investments in street transformation projects, and that everyday practices can be updated to encourage more effective distribution of street space.

Make it permanent

Being bold through interim and pop-up projects can sometimes lead to permanent projects. Below, the City of Fortaleza implemented two projects permanently in two different ways.

CIDADE 2000 AND DRAGÃO DO MAR
Fortaleza, Brazil - 2019

Reclaiming more than 1,200 m² of underutilized parking space as a new plaza, *Cidade 2000* is a great example of how interim interventions can inspire permanent transformations. Residents expressed reluctance and fear about generating congestion, but after the transformation became the project's biggest advocate. A petition was organized for the project to become permanent. It was implemented in capital construction as seen in the image on the right.

Cidade 2000

Fortaleza took the lessons from this project and turned it into a citywide program called *Cidade da Gente* ("City for People"). *Dragão do Mar* was supposed to last only 15 days. However, this too was requested to become permanent. Instead of building it with concrete, the community requested that the colors of the interim transformation be maintained. The acrylic paint was replaced with more wear-resistant traffic paint, and the plastic planters with built-in tree pits and concrete bollards, creating a safe environment that is still fun and inviting.

Dragão do Mar

Update policies

Update design guidelines and procurement lists to include the successful components of the street transformation project. The Cities of São Paulo and Bogotá took action to incorporate road safety principles in ways that would impact many more projects.

SANTANA MINI ROUNDABOUT
São Paulo, Brazil - 2017

São Paulo had years of experience with roundabouts as a traffic-calming method when a new roundabout design was trialed during a pop-up street transformation. Data collected showed the new design was still very effective to slow down passing and turning vehicles, while considerably improving the pedestrian experience by making crossings safer and more direct.

The city then implemented the project permanently with durable interim materials and updated the municipal design guidelines for roundabout implementation.

ROAD SAFETY TOOLKIT
Bogotá, Colombia

Bogotá's experience with pop-up and interim street transformations helped show how the city's mobility department could do more for its vulnerable street users, going beyond the traditional zebra crossings.

After testing new materials and design solutions, the planters and bollards shown in the picture, among other materials, were incorporated into Bogota's procurement list, making it easier for new projects like this to be implemented.

Citywide programs

Below are a few cities that have taken the lessons from their street transformations and scaled them up into citywide initiatives and programs.

PLAZOLETAS BOGOTÁ PROGRAM
Bogotá, Colombia - 2016

The great response from the community to the Calle 80 pilot pop-up plaza encouraged the city to adopt the project as the first step towards a formal citywide program with the objective of improving pedestrian mobility, road safety, and public space quality by reclaiming underutilized areas and converting them into spaces for people.

In the process, communities were heard through citywide open calls that helped with selecting the sites and designing plazas for their neighborhoods.

SAFE ROUTES TO SCHOOL PROGRAM
São Paulo, Brazil - 2018

With the goal of ensuring kids were safe on their way to school, São Paulo piloted the Safe Routes to School program in the José Bonifácio neighborhood. The process, which also served as a hands-on training to build street transformation capacity within city agencies, included interviews with school kids, community workshops, a pop-up transformation, and metrics collection, followed by an interim implementation of the refined design.

The lessons learned in this pilot informed the guidelines for a citywide program.

SAFE INTERSECTIONS PROGRAM
Addis Ababa, Ethiopia - 2017

The program built off the successes and lessons learned through the LeGare transformation, which had both pop-up and interim phases before capital construction.

The goal was to reach targets identified in the city's Road Safety Strategy and Action Plan, catalyzing a dramatic improvement in road safety through redesigning the city's intersections to protect pedestrians and encourage safe driving.

URBAN 95 ISTANBUL
Istanbul, Turkey - 2019

The program's goal was to design streets from the perspective of children. Zümrütevler Square, the pilot site, was located in the neighborhood with the biggest population of children under the age of 4, and was selected because of its proximity to amenities, such as grocery stores, playgrounds, retail stores, etc.

After the interim transformation, the design was refined and a capital project was implemented. The district municipality incorporated tactical urbanism projects into its five-year master plan and dedicated budget.
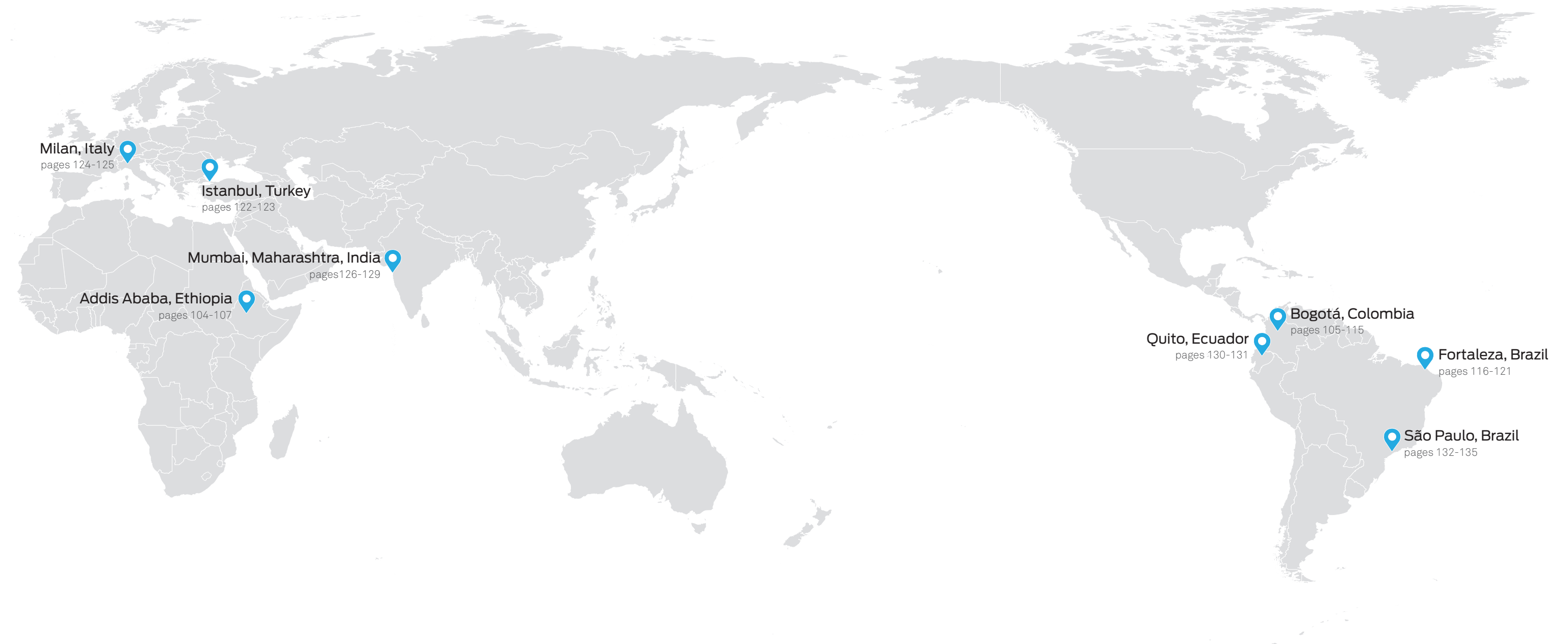
Fortaleza, Brazil

Case studies

Learning from experience

This section presents a diverse range of case studies from around the world to serve as inspiration and share lessons learned. Street transformation projects are a fantastic opportunity to trial new strategies, materials, and designs. With close observation, each and every project brings something new to light and can influence policies and long-term change.

Milan, Italy
pages 124-125

Istanbul, Turkey
pages 122-123

Mumbai, Maharashtra, India
pages126-129

Addis Ababa, Ethiopia
pages 104-107

Bogotá, Colombia
pages 105-115

Quito, Ecuador
pages 130-131

Fortaleza, Brazil
pages 116-121

São Paulo, Brazil
pages 132-135

The case studies shown in this section are located on the cities marked in the map above.

Case study topics

Use the keywords below to find different topics of interest within each case study.

Addis Ababa, Ethiopia

LeGare Intersection (2016-17)

- All phases (Pop-Up, Interim, Capital)
- Project kickstarted a program
- Street vendors

Lebu–Jemo Cycling Corridor (2020)

- Bike infrastructure
- Project kickstarted a program
- Design adjusted after evaluation

Bogotá, Colombia

Plazoleta Calle 80 (2016)

- Plaza
- Pilot informed the creation of a program
- Painted games

Bosa School Zone (2017)

- School zone
- Chicanes
- Design adjusted on site

Antonio José de Sucre (2019)

- Community engagement
- Plaza
- Cycling track for kids
- Parking removal

El Inglés Vision Zero Zone (2019-20)

- Plaza
- Cycling track for kids
- Painted games
- Intersection

Fortaleza, Brazil

Dragão do Mar Cultural District (2018)

- Pedestrian street
- Intersection
- Painted games

Barão do Rio Branco Corridor (2019)

- Commercial corridor
- Street vendors
- Accessibility

Cristo Redentor Paths to School (2019)

- Early childhood
- Play structure
- Plaza

Istanbul, Turkey

Zümrütevler Square (2019)

- Early childhood
- Play structure
- Plaza
- Parking removal

Milan, Italy

Piazza Spoleto (2019)

- Plaza
- School zone
- Project kickstarted a program
- Intersection

Mumbai, India

Mithchowki Intersection (2017)

- Intersection
- Design adjusted after evaluation
- Alignment with city plans

CSMT Junction (2019)

- Heritage site
- Traffic modeling
- Intersection

Quito, Ecuador

La Magdalena Corridor (2021)

- Intersection
- Plaza
- Design adjusted after evaluation
- Interim to permanent-interim

São Paulo, Brazil

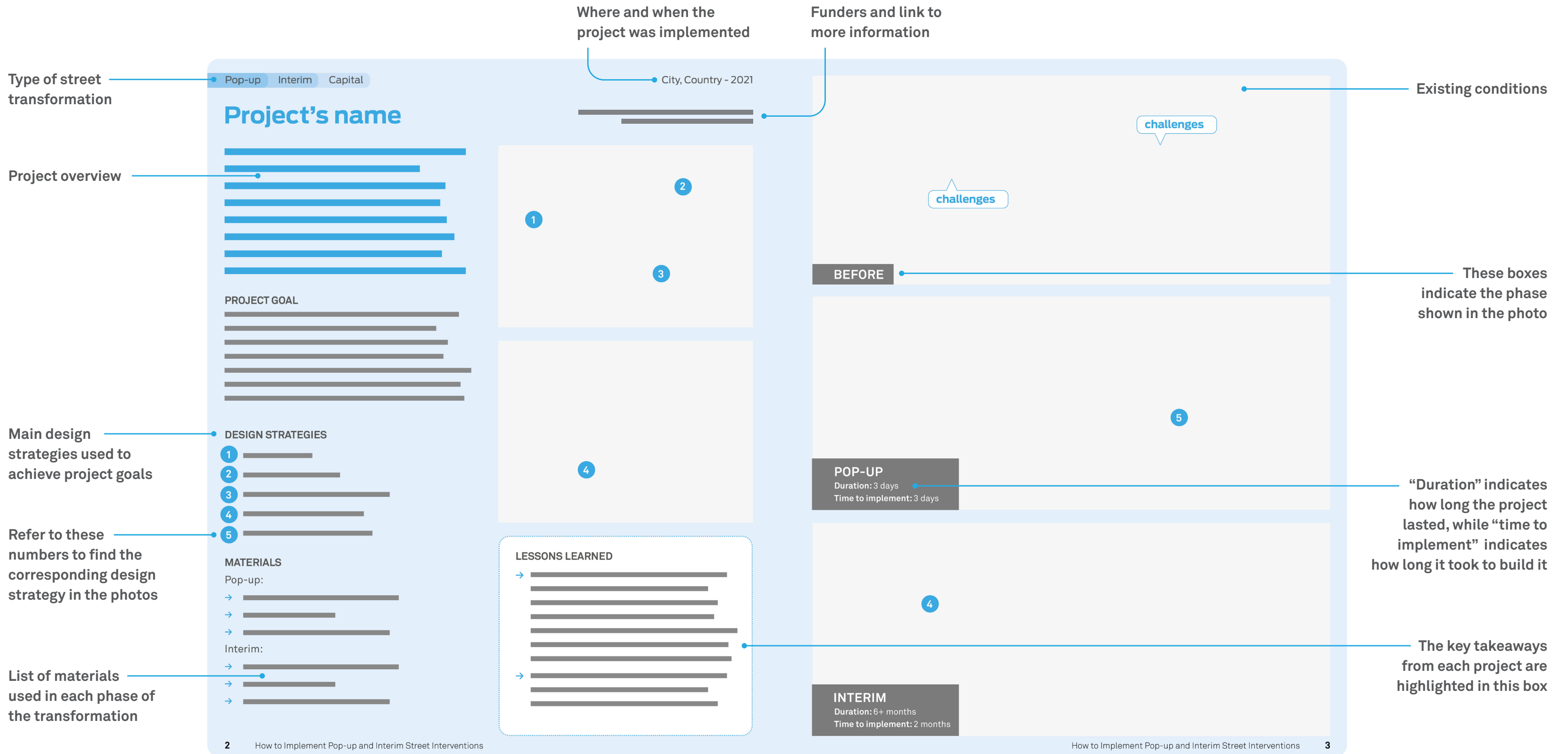#### José Bonifacio School Zone (2018)

- School zone
- Project kickstarted a program
- Painted games

Penha Borough Corridor (2019)

- Commercial corridor
- Plaza
- Design adjusted after evaluation

Navigating case studies

Each spread in this chapter is dedicated to presenting a project: the main goals, materials used, and lessons learned. Use the model below to understand how to read the following pages.

Where and when the project was implemented

Funders and link to more information

Type of street transformation

Pop-up Interim Capital

City, Country – 2021

Existing conditions

Project's name

challenges

Project overview

challenges

BEFORE

These boxes indicate the phase shown in the photo

PROJECT GOAL

Main design strategies used to achieve project goals

DESIGN STRATEGIES

1
2
3
4
5

POP-UP
Duration: 3 days
Time to implement: 3 days

"Duration" indicates how long the project lasted, while "time to implement" indicates how long it took to build it

Refer to these numbers to find the corresponding design strategy in the photos

MATERIALS
Pop-up:
→
→
→

LESSONS LEARNED
→

→

The key takeaways from each project are highlighted in this box

Interim:
→
→
→

List of materials used in each phase of the transformation

INTERIM
Duration: 6+ months
Time to implement: 2 months

2   How to Implement Pop-up and Interim Street Interventions

How to Implement Pop-up and Interim Street Interventions   3

Pop-up   Interim   Capital

LeGare Intersection

Addis Ababa, Ethiopia — 2016-17

In partnership with BIGRS, AACRA, and TPMO
Read more at: https://bit.ly/34RoJ5g

LeGare intersection, which began as a pop-up transformation in 2016 as part of a capacity-building workshop, soon grew into a six-month interim project and culminated in capital construction. This led to the creation of the Safe Intersections Program (SIP), replicating this methodology across the city.

PROJECT GOAL

This project aimed to prioritize pedestrians, slow vehicular speeds, encourage lane discipline, and promote safe driving practices.

DESIGN STRATEGIES

1. Alignment of existing travel lanes and reallocation of underutilized space
2. New pedestrian crossings respecting desire lines
3. Added curb extensions, shortened crossing distances, and reduced pedestrian exposure to risk
4. Designated areas for vendors on reclaimed roadbed space
5. Tightened right turn lane to slow traffic turning speeds and protect pedestrians

MATERIALS

Pop-up:
→ Gypsum
→ Traffic cones
→ Planters
→ Plastic bollards
→ Acrylic paint

LESSONS LEARNED

→ Involvement of all stakeholders, such as traffic management teams, from the beginning was critical.
→ It is important to push boundaries with bold designs for pop-ups, as the capital construction project may not.
→ It is important to align the project with long-term visions already approved by the city to ensure longevity of the projects.
→ Documenting the movement of all road users from the individual pedestrian to the largest trucks/buses made the case for the design.

INTERIM TRANSFORMATION MATERIALS

Over **100 people** from five city agencies and three academic institutions were involved in transforming the intersection
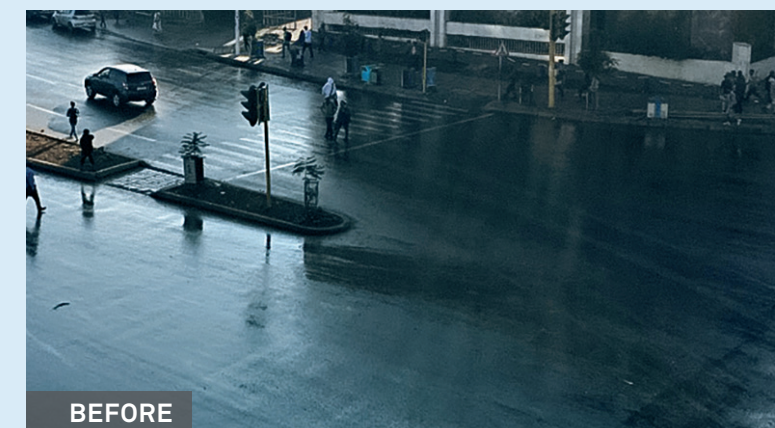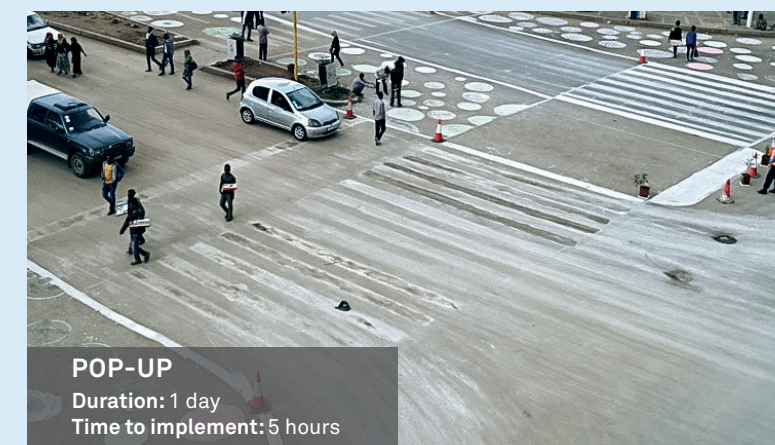
using **750 liters of acrylic paint**

and **120 concrete planters and plastic bollards** to reclaim over

2,000 m² of underutilized space for pedestrians

BEFORE

POP-UP
Duration: 1 day
Time to implement: 5 hours

INTERIM
Duration: 6 months
Time to implement: 5 days

CAPITAL
Duration: permanent
Time to implement: 6 months

Lebu-Jemo Cycling Corridor

Addis Ababa, Ethiopia – 2020

In partnership with BIGRS, TMA, and AACRA
Read more at: https://bit.ly/2ZU0sIF

The 3-km-long Lebu-Jemo Cycling Corridor was the inaugural first step in Addis Ababa's three-year commitment to a 100-km bicycle network. The project was implemented over the course of four days and nights by city engineers and ground staff.

PROJECT GOAL

The Lebu-Jemo Cycle Corridor was designed as a demonstration project to kick-start investments in safer and more sustainable transportation in Addis Ababa. The location of the corridor builds off the lessons from previous attempts in the city and connects many trip origins and destinations. This site selection process incentivized future investments in the cycling network, which will promote an even stronger cycling culture in Addis Ababa and enable this cycle lane to have a larger, safer impact on the city's cycling population.

DESIGN STRATEGIES

1 Curbside bidirectional cycle facility

2 On-street parking reduction

3 Thermoplastic lane markings

4 Green markings and curb cuts in conflict zones

5 On-ground and curbside signs

MATERIALS

→ White and yellow thermoplastic markings
→ Green paint
→ Plastic bollards
→ Concrete bollards
→ Signs and stencils

LESSONS LEARNED

→ The plastic posts turned out to be too flimsy and were reinforced with concrete bollards to protect cyclists from adjacent trucks (see photo above).

→ Additional plastic posts were placed at the center of each entry and exit point of the bike lane to ensure motor vehicles would not encroach.

→ It was critical to have traffic enforcement staff present alongside the new design for 3 months after launch and during peak hours after that.

on-street parking on both sides

no dedicated cycling facility

BEFORE

INTERIM
Duration: 6+ months
Time to implement: 3 days

Pop-up   Interim

Plazoleta Calle 80

The city of Bogotá converted a parking lot into a pop-up plaza in a matter of hours. The great response from the community encouraged the city to transform the space into an interim plaza, and then a permanent one. The project was the first step towards a formal citywide plaza program.

Bogotá, Colombia – 2016

In partnership with BIGRS, SDM, SDCRD, and SDP
Read more at: https://bit.ly/3H5U3tZ

PROJECT GOAL

Plazoleta Calle 80 was the first project in a citywide program that had the goal of reclaiming underutilized areas of the city. The launch event, complemented with music, performances, and activities for children, was an occasion for everyone to express their opinions about the possibility of creating a new public space and improving safety for pedestrians.

DESIGN STRATEGIES

1 Convert underutilized parking space into a plaza

2 Art, furniture, and play areas to activate the space

3 Traffic-calming elements

4 Pedestrian crosswalks

MATERIALS

Pop-up:
→ Water, gypsum, and food coloring
→ Planters and plants
→ Movable furniture and benches
→ Cones

Interim:
→ Acrylic paint for exterior finishes
→ Planters and plants
→ Fixed seating and benches

LESSONS LEARNED

→ The activation of the space through events, open-air activities, and games proved to be fundamental, not only during the launch event but also long term (with the creation of a weekly farmers' market).

→ Incorporating the project into an existing neighborhood-scale redesign project made funding available for the eventual capital construction of the project.

underutilized parking space

BEFORE

POP-UP
Duration: 3 days
Time to implement: 3 days

INTERIM
Duration: 6+ months
Time to implement: 2 months

Pop-up

Bogotá, Colombia — 2017

In partnership with BIGRS, SDM, and SED

Bosa School Zone

Developed as part of a larger neighborhood-scale project under the city's Vision Zero Zones program, this transformation helped raise awareness and engage the community, especially kids, to create safer and more inclusive streets.

PROJECT GOAL

This project sought to observe the effectiveness of bold design solutions, such as chicanes, for the first time. It also met the goal of including the community in the design process and having them experience the types of changes that were possible. The evaluation process contributed to refining the design for the longer-term transformation of this and other projects.

DESIGN STRATEGIES

1. Curb extensions
2. Reduced crossing distance
3. Visible pedestrian crossings
4. Reduced turning radii
5. Narrower vehicle lanes
6. Chicane
7. Surface and pavement markings

MATERIALS

→ Chalk
→ Gypsum + food coloring (paint)
→ Stencils
→ Cones

LESSONS LEARNED

→ Measuring dimensions, lane widths, and turning radii on-site allowed for the adjustment of the plans during the pop-up to test bolder solutions than had been implemented previously.

→ The way students used the public space informed the long-term design for the site, such as by widening the current sidewalk on the opposite side of the school entrance where the students prefer to stay, or by introducing a protected bike lane on a street adjacent to the school to give students going to school by bike a safe and comfortable facility.

wide lanes/high speeds

narrow sidewalks

high volumes of kids

long crossings/increased exposure

BEFORE

POP-UP
Duration: 3 days
Time to implement: 5 hours

Pop-up   Interim

Antonio José de Sucre

Bogotá, Colombia — 2019

In partnership with BIGRS, and SDM
Read more at: https://bit.ly/35gcz5K

Plazoleta Antonio José de Sucre, located in the Usme district, turned over 1,300 m² of space, primarily used informally as parking, into a public plaza. The public space enhanced the view of the mountains — an iconic feature of Bogotá — that was previously obstructed by the parked vehicles, to the benefit of the entire community.

PROJECT GOAL

This project aimed to protect vulnerable road users by reducing crossing distances and increasing the protected space to safely walk, bike, and ride public transit. The removal of parked cars allowed for activating a new usable public space connected to the stores on the other side of the street through shorter, safer, and more visible pedestrian crossings.

DESIGN STRATEGIES

1 Reduction of travel lane width
2 5 new crossings (none before)
3 Curb extensions
4 Slowing speeds by adding vertical control
5 Cycling track for kids to learn how to bike

MATERIALS

Pop-up:
→ Washable paint (gypsum + food coloring)
→ Movable tables and chairs
→ Fixed benches
→ Planters and traffic cones
→ Canopy tent
→ Games (for activation)

LESSONS LEARNED

→ The community engagement process informed the pattern painted on the ground, representing the mountains of Bogotá.
→ Working with a general contractor to oversee all implementation aspects simplified project management and was crucial to the success of this project.
→ By partnering with external funders, the city was able to trial new traffic-calming elements that were not part of the regular procurement list.

Interim:
→ Speed cushions and concrete speed humps
→ Traffic paint
→ Planters
→ Benches

speeding vehicles   no crosswalks   informal parking

BEFORE

INTERIM
Duration: 1+ year
Time to implement: 1.5 months

Bogotá, Colombia — 2019-20

El Inglés Vision Zero Zone

In partnership with BIGRS, and SDM
Read more at: https://bit.ly/3BGxQBM

The El Inglés Vision Zero Zone was launched in 2019 after the Mobility Secretariat of Bogotá counted 10 road traffic deaths and 123 injuries in the neighborhood over the previous eight years. At this intersection, vehicular speeds dropped from 60 km/h to 32 km/h after the transformation, and there are now 2,250 m² of reclaimed space for people to safely move, stay, and play.

PROJECT GOAL

Prior to the project, this roundabout intersection experienced high volumes of motorists and vehicles that traveled through the space at exceptionally unsafe speeds. The goal of this project was primarily to reduce deaths and serious injuries at this site by designing for speed reduction and protecting vulnerable road users with designated pedestrian infrastructure.

DESIGN STRATEGIES

1 Tightened turning radii to slow vehicular speeds

2 Added protected space for pedestrians and cyclists

3 Added 32 pedestrian crossings at 19 intersections

4 Shortened crossing distances

5 Areas to play and learn to bike!

MATERIALS

Pop-up:

→ Washable paint (20% acrylic paint and 80% water)

→ Movable tables, chairs, and bollards

→ Large planters and water-filled jersey barriers

→ Canopy tent

→ Games (for activation)

LESSONS LEARNED

→ Engaging the community from the outset with multiple surveys, community meetings in the neighborhood, and on site during the transformation was fundamental to the success of the project.

→ The scale of the interim required some creative thinking to maximize the impact while staying on budget. For example, choosing paint patterns that covered most but not all of the ground surface allowed some savings in time, resources, and costs.

Interim:

→ Acrylic and traffic paint

→ Concrete speed humps and cushions, and a movable speed table

→ Benches

→ Planters

BEFORE

speeding vehicles due to wide intersections

POP-UP
Duration: 3 days
Time to implement: 3 days

INTERIM
Duration: 1+ years
Time to implement: 2 months
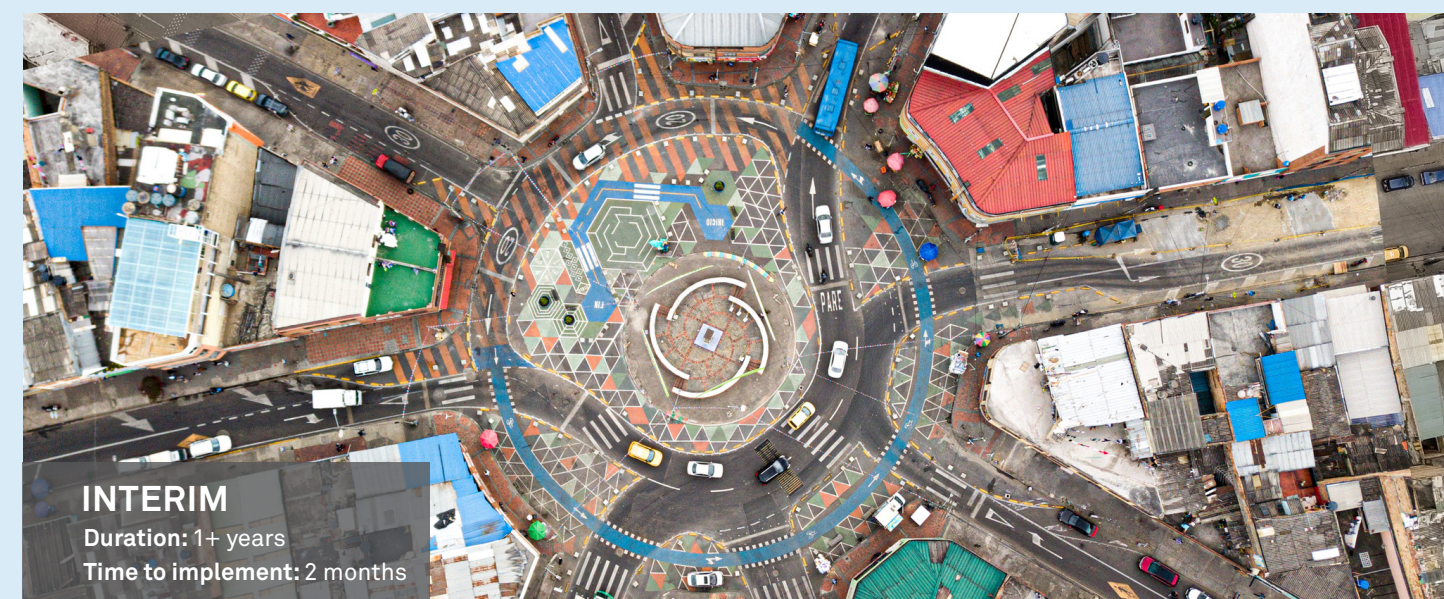
Interim

Dragão do Mar Cultural District

Fortaleza, Brazil — 2018

In partnership with Fortaleza City Hall, Porto Iracema das Artes, and BIGRS
Read more at: https://bit.ly/35dr76b

The projects under the Cidade da Gente (City of People) program aim to transform areas with high conflict density between motorized traffic and vulnerable road users into safer and more vibrant places for people. Using low-cost and quick-build materials such as paint and planters, city officials managed to adopt bold street designs and demonstrate their effectiveness.

PROJECT GOAL

This project sought to prioritize pedestrian safety and reduce vehicle speeds in the busy cultural district of Dragão do Mar. Originally the area functioned as a logistics district, linked to one of the city's harbors. Despite the change in land use over the years, the street design remained the same, including oversized travel lanes. The redesign aimed to update the spatial configuration to match the current uses and focus on pedestrians.

DESIGN STRATEGIES

1. Pedestrianization of underutilized roadbed
2. Lane narrowing
3. Sidewalk extensions
4. Compact intersection design
5. Spaces to stay and play!

MATERIALS

→ Acrylic paint (1,000 liters)
→ White traffic paint (spray paint)
→ Concrete planters and bollards
→ Wooden benches and tables
→ Beach chairs
→ Fairy lights

LESSONS LEARNED

→ Initially, the plan was to spray paint to fill in the colorful pattern, but that method proved to consume five times more paint than using paint rollers, so the team had to adapt to a larger number of volunteers to meet the deadline.

→ Getting the traffic agency on-board (even during implementation) proved to be more challenging than getting support from the public and local stakeholders.

→ Color was important to get the community's approval. So instead of building the capital version with pavers, the project retained its vibrancy using permanent traffic paint and fixed concrete bollards and planters.

narrow and inaccessible sidewalks
oversized travel lanes
redundant roadway segment
BEFORE

INTERIM
Duration: 4 months
Time to implement: 3 days

Interim

Fortaleza, Brazil – 2019

In partnership with Fortaleza
City Hall, CDL, and BIGRS
Read more at: https://bit.ly/3sWZDJX

Barão do Rio Branco Corridor

Pedestrians outnumber motor vehicles by four to one on Barão do Rio Branco St., a busy commercial street in downtown Fortaleza. However, before the city's intervention, cars had two-thirds of the available public space to move and park. To address this imbalance and improve pedestrian safety and walkability in the area, GDCI partnered with local officials to redistribute the street space in a fairer allocation between different users.

PROJECT GOAL

This project aimed to reduce crashes involving pedestrians in downtown Fortaleza and improve walkability in the area. Chances of pedestrians being struck by vehicles in this area were 70% higher than in the rest of the city.

DESIGN STRATEGIES

1. Curb and sidewalk extensions
2. Lane narrowing
3. Added pedestrian ramps
4. Standardized vendor kiosks
5. Raised crossing

MATERIALS

→ Cold marking paint
→ Flexible plastic bollards
→ Concrete planters inside decorative wood boxes
→ Concrete pedestrian ramps
→ Painted steel vendor kiosks
→ Concrete benches and trash bins
→ Drainage adjustments
→ Bike racks

LESSONS LEARNED

→ Partnering with the local borough was key for coordinating the implementation of the vendor kiosks, which brought more value to the project.
→ Extending the sidewalk on both sides with paint was not possible given the available space, as it would create two narrow sidewalks. The team decided to concentrate the extensions on only one side of the street to have a wide and accessible sidewalk.

speeding vehicles

narrow and overcrowded sidewalks

pedestrians walking on the roadbed

BEFORE

INTERIM
Duration: permanent
[with durable marking materials]
Time to implement: 1 month

Interim

Fortaleza, Brazil – 2019

Cristo Redentor Paths to School

In partnership with Fortaleza City Hall, ASPAS, and BIGRS
Read more at: https://bit.ly/3l7jyw9

This is the first street transformation under the Paths to School program, which aims to improve road safety for all road users in areas around schools. Cristo Redentor, a high-density, low-income neighborhood, was chosen for being an area that combined critical road safety conditions with high numbers of students enrolled in public schools.

PROJECT GOAL

The city decided to implement an interim project prior to capital construction for two main reasons. First, historically neglected communities like Cristo Redentor often lack trust in the local government, and the interim transformation had a goal of demonstrating new possibilities and creating connections and conversations. Second, the interim strategy sought to help the city study the best designs for informal neighborhoods, where irregularly shaped open spaces can require more creative solutions compared to gridded streets.

DESIGN STRATEGIES

1 Sidewalk extensions

2 Compact intersections

3 Shorter crossing distances

4 Creation of a public plaza

MATERIALS

→ Acrylic paint (colors) and white traffic paint

→ Wooden and concrete benches

→ Shade elements

→ Concrete planters

→ Sand and beach chairs

→ Recycled tires and wooden play furniture

LESSONS LEARNED

→ The collaboration with neighbors was key to refining the design and fostering ownership. Local residents mobilized to maintain the space after the launch.

→ The local borough team was key to engaging with local stakeholders, such as neighbors and school principals.

→ The beach-like area was an instant hit, but after a few weeks it also attracted some of the local pets, posing sanitary challenges. The sand was replaced with grass.

BEFORE — wide, underutilized intersection

INTERIM
Duration: 6+ months
Time to implement: 3 days

Interim   Capital

Istanbul, Turkey — 2019

Zümrütevler Square

In partnership with BVLF, Superpool, and Municipality of Maltepe
Read more at: https://bit.ly/3LOZzod

As part of the Urban95 program, Maltepe Municipality in Istanbul piloted an intervention to transform a busy intersection in the Zümrütevler neighborhood into a more attractive place for children and caregivers to spend time. Streets were painted to calm traffic, and the area that was used for parking and bin storage was transformed using artificial turf, seating, shade, and low-cost play furniture.

PROJECT GOAL

The project aimed to create a safe and vibrant neighborhood plaza while improving the way families with small children live, play, interact, and move through the city. The municipality also tested new engagement tools to bring more people into the process and gather data for the capital construction project.

After a year, the city refined the design and implemented it in capital construction

DESIGN STRATEGIES

1 Curb extensions with smaller turning radii to reduce turning speeds

2 Pedestrian crossing markings to improve visibility

3 Painted plaza with bollards, planters, and urban furniture for a new social space

4 Low-cost play elements for small children

MATERIALS

→ 90 liters of paint for 1,075 m²

→ 8 planters

→ 80 m² artificial turf

→ 10 benches

→ 8 bollards

→ 24 curb stones

LESSONS LEARNED

→ Curb stones were not fixed to the ground and were moved by drivers after a couple of months. They were replaced with mounted bollards.

→ Businesses around the plaza took an active role after the implementation and periodically informed the city about maintenance issues.

→ Programming (book reading with kids, pop-up playgrounds, etc.) succeeded in inviting people to experience the new public space.

on-street parking

wide lanes

underutilized areas

BEFORE
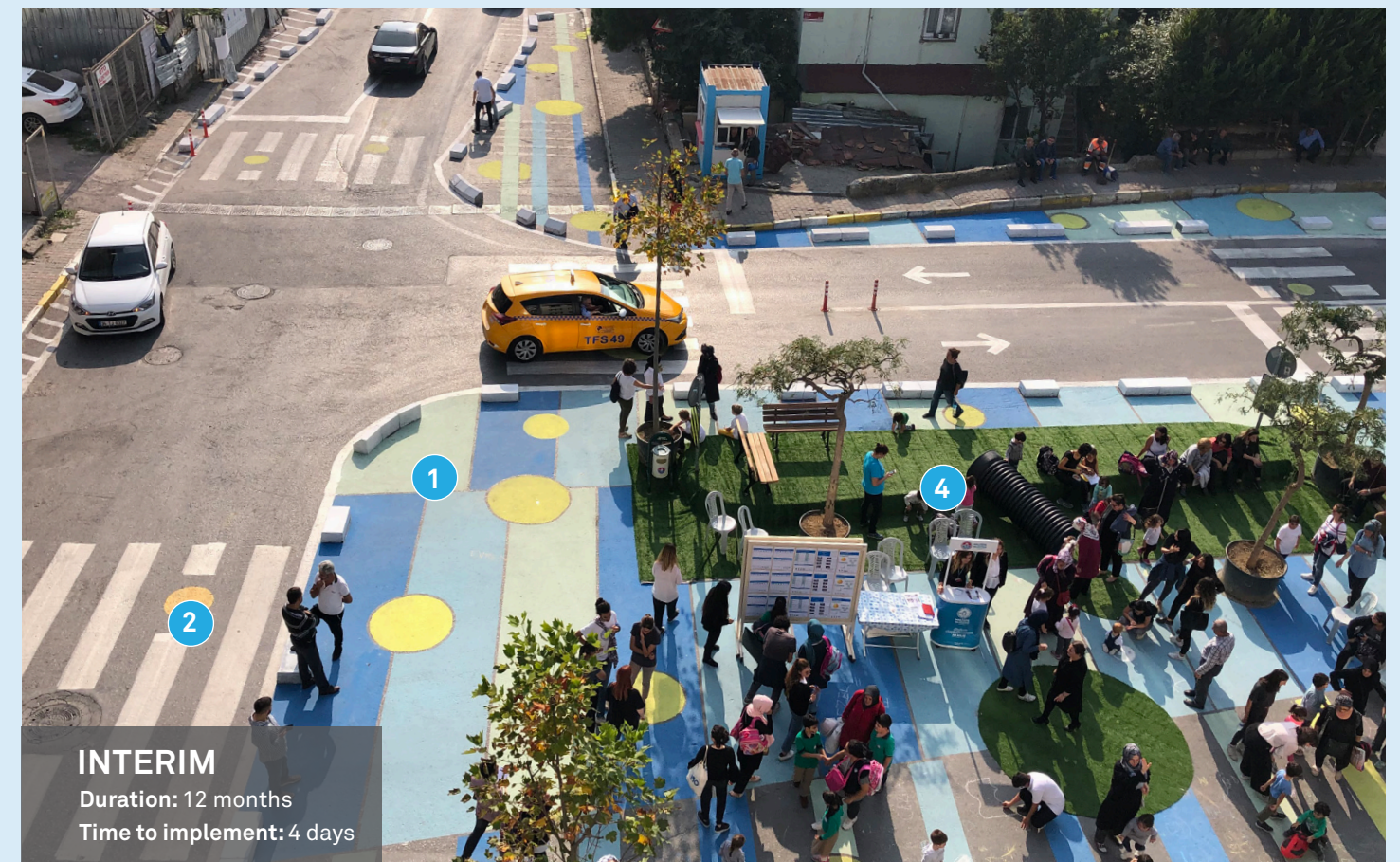
INTERIM
Duration: 12 months
Time to implement: 4 days

Milan, Italy — 2019

Piazza Spoleto

In partnership with Bloomberg Associates and Comune di Milano

The Piazze Aperte (Open Plazas) program was established by the City of Milan as a way to accelerate the creation of public spaces within the city. The Spoleto-Venini intersection and its adjacent streets were transformed as part of the program from a heavily car-dominated environment to a safe, kid-friendly space.

PROJECT GOAL

The area had previously been proposed to be part of the local participatory budget by a group of residents, parents, and a local association. The city decided to pilot this area as part of the Open Plazas program with the goal of addressing an unsafe area infront of an elementary school that had narrow sidewalks and a wide intersection.

DESIGN STRATEGIES

1. A new pedestrian plaza that serves as a traffic diverter to reduce vehicular speeds and cut-through traffic

2. Cycle facilities, including parking-protected cycle tracks, contraflow cycle lanes, and cycle racks

3. High-quality, colorful benches, tables and chairs, planters, and ping-pong tables for activation

4. New shortened pedestrian crossings to improve access and reduce crossing distances

MATERIALS

- → Water-based traffic paint in various colors
- → Aluminum bollards and bike racks
- → Concrete curbs to protect cycle facilities
- → Galvanized steel planters
- → Steel and pine wood benches, chairs, and tables
- → Concrete ping-pong table

LESSONS LEARNED

- → Community involvement (residents, shop owners, students, parents and caregivers, the school board, local nonprofits, and local elected officials) was fundamental for the success of the project.
- → Choosing a project that was already proposed and supported by the community helped with decision-making and quick implementation.
- → It is important to communicate changes in a clear and timely matter. The implementation reversed the direction of traffic for some streets, and some drivers in the first days were confused and surprised by the change.

narrow sidewalks

wide intersection

BEFORE
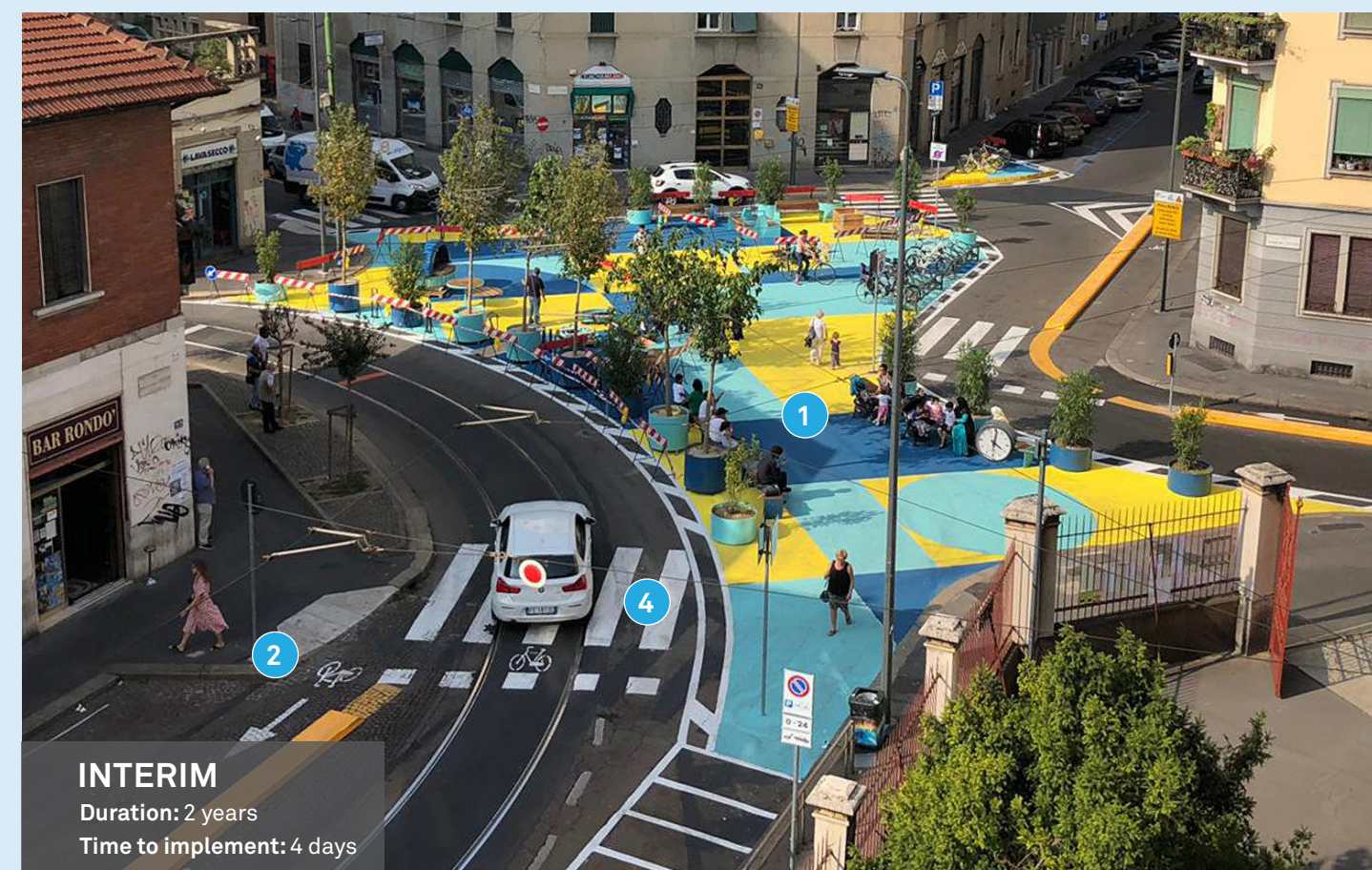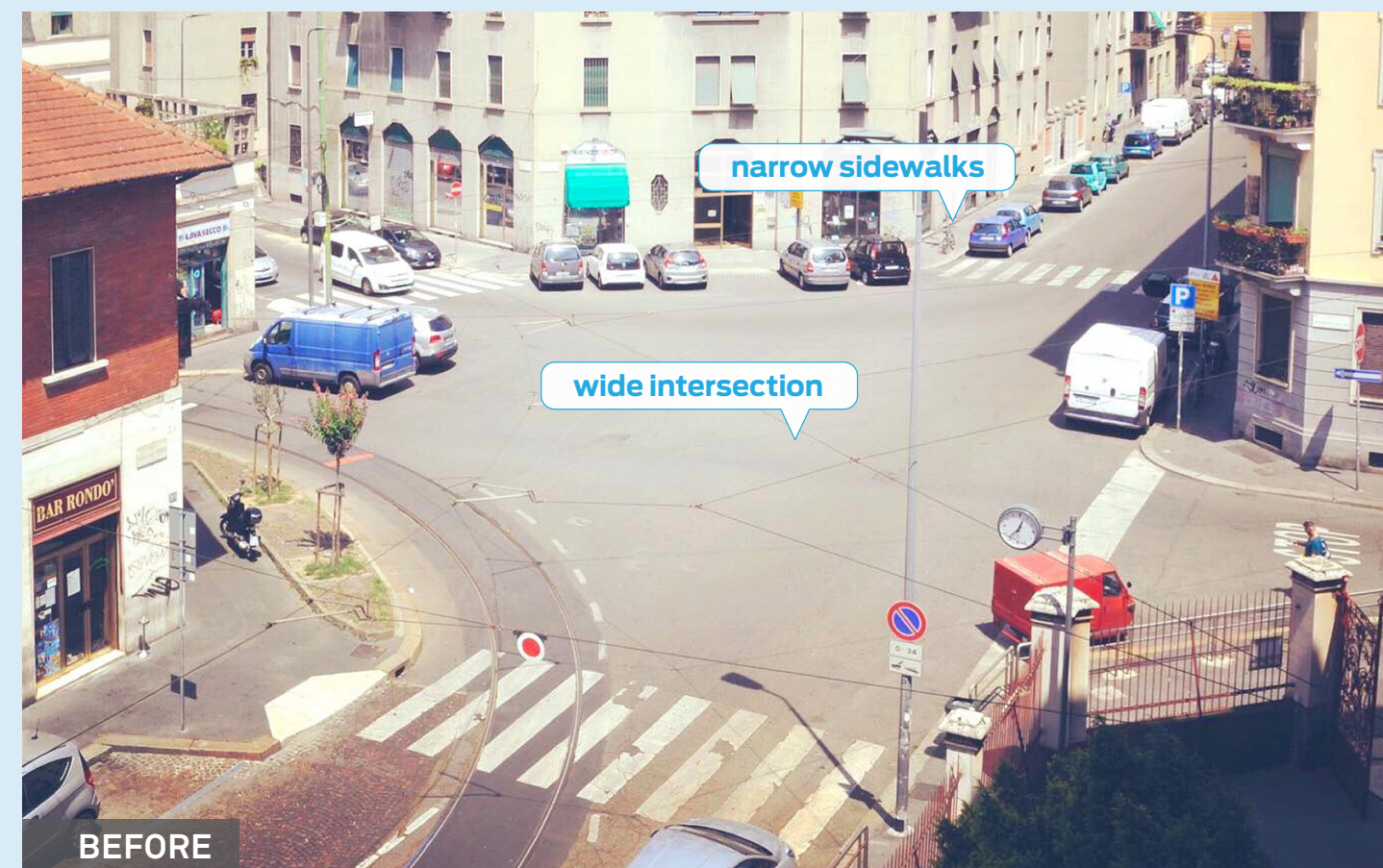
INTERIM

Duration: 2 years
Time to implement: 4 days

Pop-up

Mumbai, India — 2017

Mithchowki Intersection

In partnership with BIGRS, MCGM, and MTCB
Read more at: https://bit.ly/3I3aA34

This intersection transformation was the first project implemented with GDCI's support in Mumbai. Striking strokes of bright blue, green, and yellow filled in the new refuge islands; wide, direct crosswalks; and medians. These all contributed to a shorter, safer pedestrian crossing experience. 81% of surveyed road users felt safer after the pop-up intervention.

PROJECT GOAL

This project was a crucial pilot for the city to trial and evaluate design strategies that address road safety risks at major intersections in Mumbai. A new metro line was under development, and an increase in vehicular volumes and pedestrian movements was anticipated. The lessons learned from this pop-up have been used to refine longer-term design strategies at this intersection and inform future projects around Mumbai.

DESIGN STRATEGIES

1 Aligned travel lanes and reclaimed the underutilized roadbed as space for pedestrians

2 Reduced dedicated turn lanes to be single-lane only to ease the navigation of safe pedestrian crossing

3 Crossing distances, and pedestrians' exposure to vehicular traffic, were reduced

4 Added four wide refuge islands and medians

MATERIALS

→ Water-based paints
→ Water-filled traffic barriers

LESSONS LEARNED

→ It is essential to engage with the community and develop traffic management plans early on in the process to get their support and commitment.
→ It is important to plan transformations in alignment with activities such as metro construction and street widening.
→ Emphasizing the project objectives and overall design during trainings helps ensure that all teams are working towards a common outcome.

long crossings, not aligned with sidewalks

speeding vehicles due to wide intersections

BEFORE
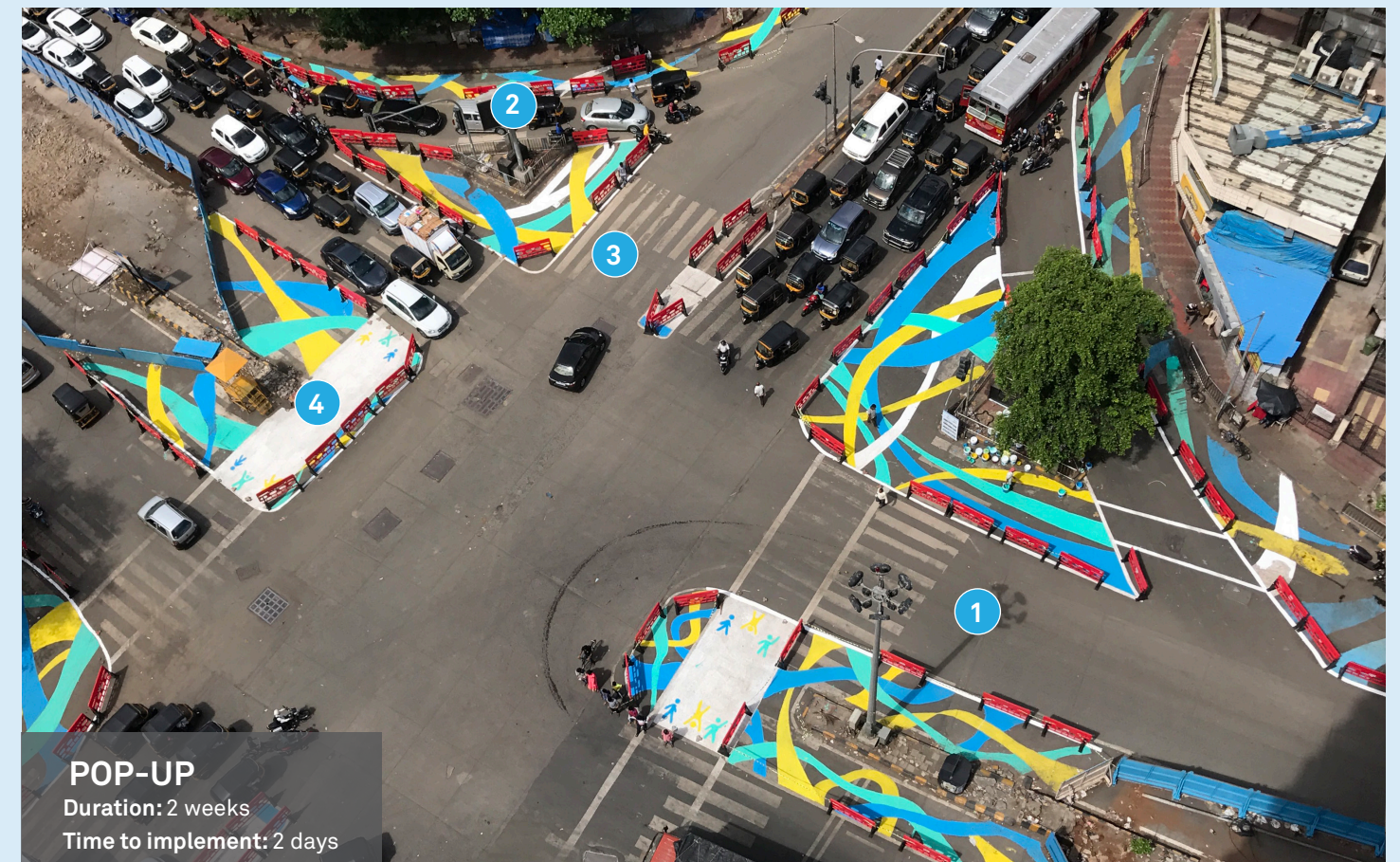
POP-UP
Duration: 2 weeks
Time to implement: 2 days

Mumbai, India – 2019

CSMT Junction

In partnership with BIGRS, MCGM, and MTCB

Through travel lane alignments and spacemaking, GDCI led the transformation of over 5,000 m² of pedestrian space at the intersection of a major north-south corridor in front of Chhatrapati Shivaji Maharaj Terminus (CMST), a UNESCO World Heritage Site.

PROJECT GOAL

With great interest from the media and the public, who voiced a 93% approval rating of the redesign, the project sought to reimagine the spatial distribution of streets in Mumbai to better address the needs of the masses who traverse the city on foot and public transit. However, protective materials were repeatedly displaced to allow for greater vehicular flow. Due to this challenge, the implementation was not completed and the trial period was cut short.

DESIGN STRATEGIES

1. Travel lane alignment
2. New, shorter, and direct pedestrian crossings
3. Adjustment of signal cycles for safe crossings
4. Curb extensions to delineate traffic movement
5. Creation of public spaces in alignment with local street vendors and food joints

MATERIALS

→ Painted concrete curb blocks as delineators
→ Various sizes of fiberglass planters filled with local plants
→ Wooden and metal benches
→ White thermoplastic road markings
→ Colored anti-skid thermoplastic blocks for the reclaimed spaces
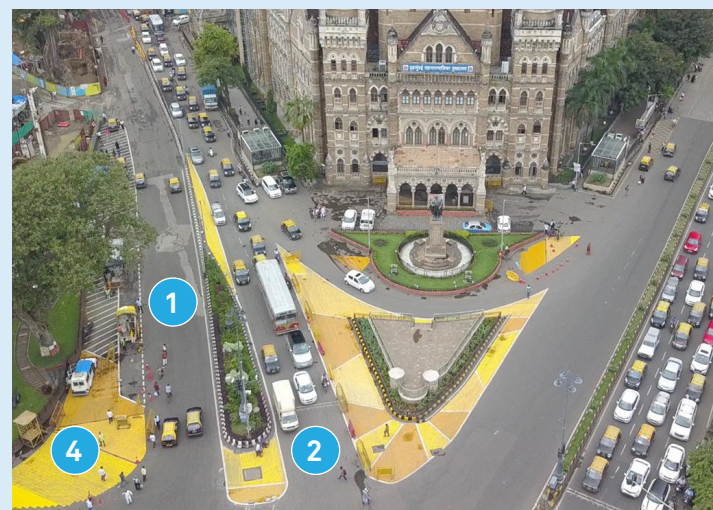
LESSONS LEARNED

→ Thermoplastic color application should be done on dry and smooth surfaces.
→ Engage with local community representatives throughout the process to build ownership and support.
→ Design transformations in accordance with local contexts such as UNESCO World Heritage Sites to avoid delays.
→ At high-visibility intersections, do cone trials before investing in interim materials.
→ A network-level data analysis and simulation for traffic modeling was key for this high-density location.

BEFORE

no pedestrian crossings

wide vehicle lanes

INTERIM
Duration: 6+ months
Time to implement: 2 weeks

Interim

Quito, Ecuador — 2021

La Magdalena Corridor

In partnership with EPMMOP, SM, AMT, and BIGRS
Read more at: https://bit.ly/3JFGGlV

The high-density, mixed-use La Magdalena neighborhood had 1.8 km of streets transformed with a focus on improving pedestrian safety. The project is part of the "Crash Spots" program, which seeks to implement quick-build street redesign projects in neighborhoods that are experiencing the highest levels of traffic-related injuries and fatalities in Quito.

PROJECT GOAL

This project sought to improve pedestrian and cyclist access on a corridor that was identified as featuring both inadequate facilities for pedestrians and high vehicle speeds. The process was led by the city's Public Works Agency (EPMMOP), which successfully enabled community participation during the design process despite the COVID-19 pandemic.

DESIGN STRATEGIES

1. Removed informal parking close to intersections
2. Added sidewalk extensions and crosswalks
3. Lane narrowing
4. Added rubber speed humps before crossings and midblock
5. Painted games and colorful patterns
6. Vertical posts and planters used as protective elements

MATERIALS

→ 1,200 liters of paint
→ 180+ planters
→ Modular speed humps
→ Plastic bollards

LESSONS LEARNED

→ Due to challenges posed by COVID-19, some site observations and data collection were not possible in person, so the team used drone video footage.
→ To guarantee extensive involvement of the community and key stakeholders, virtual town halls were hosted in which participants were able to vote on their preferred designs.
→ Initial designs and timelines were continually updated due to political challenges. The adaptability led to it becoming a permanent interim project.

long crossings

wide lanes

misaligned crossings

BEFORE

INTERIM
Duration: 6+ months
Time to implement: 4 weeks (phased)

Pop-up   Interim

São Paulo, Brazil — 2018

José Bonifacio School Zone

In partnership with BIGRS, and CET

This residential neighborhood on the outskirts of São Paulo was chosen to pilot the city's Safe Routes to School program due to its history of road fatalities involving children and its high concentration of schools. Based on a survey that revealed 70% of students in the area walk to school, the project transformed the most common routes into safe and vibrant streets, with vehicular speeds reduced by 22%.

PROJECT GOAL

This transformation gave the city the opportunity to test new and scalable solutions that put pedestrians first, while engaging the community in the process. Traffic-calming tools were used to increase pedestrian safety and comfort, improve access to transit, and add play opportunities near schools.

The final design was implemented with interim materials

DESIGN STRATEGIES

1. New pedestrian crossings
2. Chicane to slow down through traffic
3. Mini-roundabout at the school intersection
4. Two plazas in front of the school

MATERIALS

Pop-up:
- → 80 liters of paint for 1,250 m² of reclaimed space
- → 150 planters and cones

Interim:
- → Traffic paint
- → Fixed plastic bollards
- → Some capital changes at strategic points (refuge islands and accessibility ramps)

LESSONS LEARNED

- → The traffic agency team first spray painted the outlines, and volunteers filled in the colored areas using brooms and brushes, which worked well.
- → Considering the short time to implement, it was crucial to divide the team/volunteers into two groups and work on both intersections at the same time.
- → During the pop-up, the planters and cones were stored by nearby partners (a school and a retirement home) every night and brought back in the morning by traffic agents to avoid vandalism and theft.

wide lanes

unaddressed desire lines

BEFORE

POP-UP
Duration: 3 days
Time to implement: 1.5 days

Interim   Capital

São Paulo, Brazil — 2019

Penha Borough Corridor

In partnership with BIGRS, CET, the Borough of Penha, and ITDP
Read more at: https://bit.ly/35drIor

In early 2019, boroughs across São Paulo were invited to submit design concepts to transform a chosen crash hotspot site into a safe and vibrant space that encourages walking, bicycling, and use of public transportation. Out of 15 applications, Penha was awarded the technical support and funding to redesign this multi-modal commercial corridor with high volumes of pedestrians, buses, and vendors.

PROJECT GOAL

This project sought to create safer conditions for pedestrians and transit users in front of the busy Artur Alvim Station. Using quick-build materials and a participatory process, this corridor was transformed into a safer transit- and pedestrian-focused street for two months, and then a portion of the project was constructed permanently.

DESIGN STRATEGIES

1. Removed parking in order to expand pedestrian infrastructure
2. Consolidated drop-off and pick-up locations for freight, passengers, and taxis
3. Added sidewalk extensions, crosswalks, and a large public plaza to increase public space

MATERIALS

→ 1,000 liters of paint
→ 120 concrete planters
→ 12 concrete benches
→ Traffic barriers and signs

LESSONS LEARNED

→ Several concrete planters flipped, cracked, and were damaged easily; these were replaced with fiberglass planters with wider bases and filled with rocks at the bottom.
→ Additional sidewalk extensions and a crosswalk were included in the revised design based on observed demand.
→ As the entrance of the metro station is the busiest section of the corridor, rideshare apps agreed to shift pick-up/drop-off points to adjacent streets to reduce congestion.

wide intersection without crosswalks

speeding vehicles turning onto two-way local street

BEFORE

INTERIM
Duration: 6+ months
Time to implement: 3 days

Resources

Acknowledgments

Key terms and definitions

Clear path

The pedestrian clear path defines the primary, dedicated, and accessible pathway on the street. It is an unobstructed, level, and smooth surface that ensures that pedestrians have a safe and adequate place to walk. Clear paths must be wide enough to allow two people in wheelchairs to pass one another, and are recommended to have a minimum width of 1.8 m.

Exposure and risk

For the purposes of this guide, "exposure" is defined as the state of being exposed to risk. It is measured as the probability of a user being involved in a crash. "Risk" refers to any situation involving exposure to danger, injury, or loss. Mathematically, it is defined as injury rate calculated as the number of injuries or crashes over the amount of exposure, or over the population. Risk may apply to perception of risk or the tendency to take risk.

Facilities

Facilities, such as cycle facilities or transit facilities, are designated spaces within the street that are specifically designed for the movement of the given mode. Dedicated facilities ensure safe and efficient movement of the mode.

Metric

A simplified measurement of impact that may indicate the attainment of a goal or the result of a specific change over time. The methodology in this handbook uses metrics as a means of embodying the change in collected data before and after a street transformation, in comparable conditions, to enable understanding of overall project impact, indications of success, and areas of improvement.

Permanent or capital construction

Within this handbook, "permanent" street transformations are synonymous with capital construction projects; they are built with durable materials such as concrete and asphalt and may last for decades.

Pop-up and interim street transformations

Within this handbook, a temporary transformation of one to a few days is referred to as a "pop-up," while a longer-term transformation (lasting weeks to months) is called "interim." Refer to the table on page 13 for additional details.

Roadway or roadbed

Roadway, also known as roadbed, is the part of a street that is intended for vehicular movement, in contrast to a sidewalk or median. Often referred to as the curb-to-curb distance, it can be measured from one edge of the curb to the other.

Stakeholders

In the street transformation context, stakeholders are all those interested in the process of reshaping streets and its outcomes. For instance: the city and its agencies, the communities (residents, businesses, passersby) affected by the project, activists, etc.

Tactical urbanism, quick-build, DIY (do it yourself) urbanism, urban acupuncture, citizen urbanism

These and many other terms are used worldwide to describe the same strategy: rapidly implementing short-term projects that are cost-effective, scalable, and can catalyze change.

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Appendix

Implementation checklists

Below are some reminders demonstrated through checklists to help you coordinate different pieces of the implementation. Adjust the contents of the lists as necessary.

Team briefing
Addis Ababa, Ethiopia

Checklists to inspire you:

👥 People

Keep the teams updated and aligned. Cover the following with your teams before and on the implementation day.
- ☐ Send calendar invitations to staff and partners
- ☐ Provide methodology briefings
- ☐ Share the team's contact details, assign point people
- ☐ Share maps or addresses of meeting points
- ☐ Share implementation schedule
- ☐ Brief the team on materials and elements
- ☐ Provide talking points about the project and process

📢 Communications and outreach

In advance of the street transformation, use as many channels as possible to share information about the project launch and reach a large number of people.

- ☐ Create an online page with project info
- ☐ Hang posters on site weeks in advance
- ☐ Send letters or talk with the residents and business owners adjacent to the site
- ☐ Prepare a press release
- ☐ Post the event on social media
- ☐ Invite media groups to the launch event
- ☐ Check that all partners and participants are credited as part of the project

Printouts

Make a checklist of all the printouts you will need before and on the implementation day. Make enough copies for staff members that will be using them.

- ☐ Base map of the site with new designs
- ☐ Data collection forms and surveys
- ☐ Base map to mark surveyor locations (for data collection) and site photo locations (for before and after photos)
- ☐ List of staff with contact numbers
- ☐ Boards and flyers with project information
- ☐ Boards for community interaction/feedback
- ☐ Permits and authorization letters
- ☐ Image rights forms

🖌 Implementation

Implementation day requires coordinating various necessary steps with everyone involved:

- ☐ Enclose and clean the site
- ☐ Place or prepare cameras for photos, videos, and time-lapses
- ☐ Trace design outlines onto the ground
- ☐ Prepare surface treatment materials
- ☐ Paint the new areas
- ☐ Coordinate arrival and placement of furniture and greenery
- ☐ Invite the traffic enforcement team to walk through the site and brief them about new operations of the street
- ☐ Coordinate with performers or those involved in other programmed events
- ☐ Set up activities on the project site
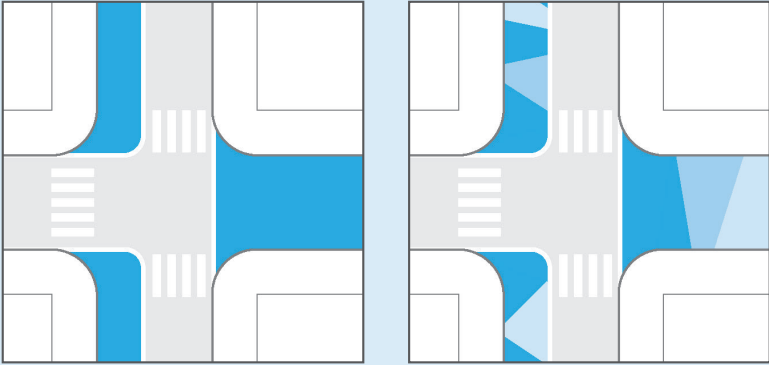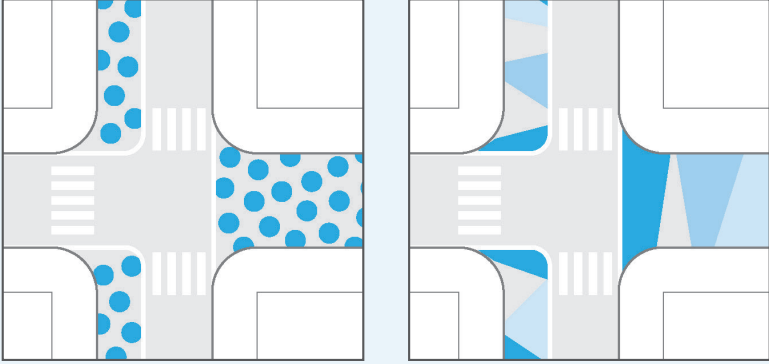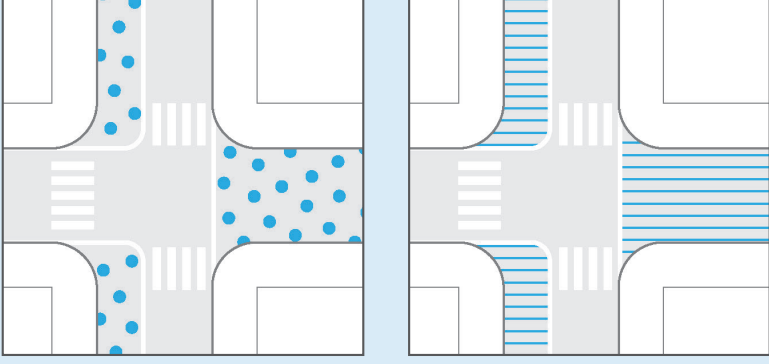- ☐ Collect data and surveys

🚧 Materials

Print the checklists beforehand to make sure everything is ready on the implementation day. Once on-site, check all the materials are ready to start implementation.

- ☐ Traffic cones
- ☐ Measuring tape
- ☐ Masking tape
- ☐ Chalk
- ☐ Caution tape for wet painted areas
- ☐ Paint or gypsum
- ☐ Food coloring (for colors if using gypsum)
- ☐ Buckets
- ☐ Brushes or brooms (ideal for large surfaces)
- ☐ Water (verify if there is access to water)
- ☐ Stirring paddle or paint mixers
- ☐ String or rope (to do straight lines or circles)
- ☐ Rags or towels (for wiping/cleaning, etc.)
- ☐ Personal safety (glove, safety vest, hat, etc.)
- ☐ Ladder
- ☐ Planters and plants
- ☐ Benches/seating
- ☐ Umbrellas
- ☐ Waterproof cover
- ☐ Dropcloths to place under paint buckets
- ☐ Pens, pencils, markers, etc.
- ☐ Camera, tripod, and microphone
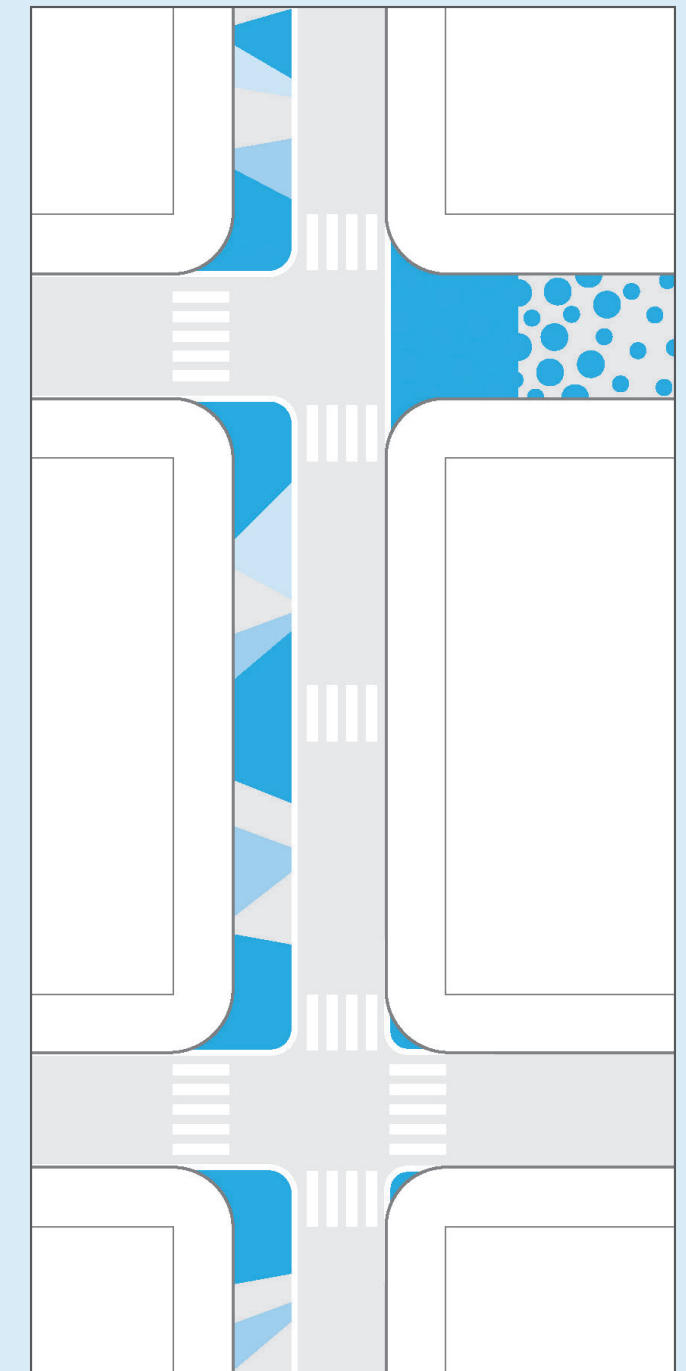- ☐ Cleaning materials

Ground coverage

Solid colors are recommended for almost every scenario, whenever budgets, timelines, and resources allow. However, when budgets are limited, patterns or stripes can be applied to provide legibility while consuming less resources.

💡 **Combine according to context**

Patterns can vary depending on the location within the street. High coverage is recommended near intersections, and patterns can be applied along the corridor.

% coverage	What your pattern could look like		Example
100% — High-density ground coverage will provide the greatest legibility to differentiate between vehicular and pedestrian spaces.			Santiago, Chile
50% — Dense patterns can save time and money as they consume less resources while still providing high visibility.			
20% — If resources are very limited, patterns can be even less dense, but it is not recommended that they cover less than 20% of the reclaimed surfaces. Ensure that protective elements are visible and redundant to clarify the boundaries of each area.			

Density

www. globaldesigningcities.org