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Reinventing Social Infrastructure: The impact of COVID-19 on streetscapes of today's cities

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Report **Reinventing Social Infrastructure:**
The impact of COVID-19 on streetscapes of today's cities

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Acknowledgements

Our Authors

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Report **Reinventing Social Infrastructure:**
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Summary

Observations The COVID-19 pandemic has impacted social infrastructure in cities and towns around the world. This research project was inspired by the changes made to local streets in order to keep residents safe while moving from place to place and enjoying outdoor space - such as pop-up bike lanes, open streets, and outdoor dining. The use, planning, and design of social infrastructure has changed throughout the different phases of the pandemic.

Questions We ask: What is the impact of COVID-19 on streetscapes of today's cities? With studying social infrastructure during the pandemic comes the responsibility of not only exploring what is changing, but also questioning by whom and for whom: Who decides what changes are being made to the streets and who benefits from these changes? After describing a variety of measures that cities and towns have implemented in response to COVID-19, we question to what extent cities have the capacity and opportunity to reinvent social infrastructure.

Focus We focus on the changes to city and towns' streets due to the COVID-19 pandemic: 1) around the world, 2) in the United States, and 3) in a variety of U.S. Legacy Cities and Gateway Cities of Massachusetts. We see the street as a public space and are specifically interested in accessibility and use of streets by pedestrians and cyclists/bikers.

Real Time We have collected real-time examples of how the pandemic impacts the use, planning, and design of streetscapes in cities and towns during the Spring and Summer of 2020.

Key Definitions

Legacy City and Gateway City Legacy Cities are the former "industrial powerhouses" of the United States, functioning as "hubs" of business, retail, and services across New England, the Mid-Atlantic, and the Midwest (Mallach and Brachman 2013, 2). Gateway Cities are the mid-sized and smaller urban centers within Massachusetts (MassINC 2020). Both Legacy and Gateway Cities are now older industrial centers that have experienced job and population loss over the past few decades.

Social Infrastructure Social infrastructure can be defined as "a whole range of physical and institutional infrastructures (that) are crucial for the development and maintenance of social connections" (Klinenberg 2018 by Latham and Layton 2019, 2). Spaces of social infrastructure can be or are related to public institutions, commerce, recreational activities, religion, and transit (Latham and Layton 2019).

Streetscape "Streetscape is a term used to describe the natural and built fabric of the street, and defined as the design quality of the street and its visual effect, particularly how the paved area is laid out and treated. It includes buildings, the street surface, and also the fixtures and fittings that facilitate its use – from bus shelters and signage to planting schemes" (C. Charlwood, Torbay Streetscape Guidelines, Torbay Council, Torques 2004, 11–13 by Rehan 2013).

Ten Ways Every City Should Respond to COVID-19 On Its Streets, Compiled by NACTO

The novel coronavirus has rapidly changed the way we use our roads. Cities must respond to the emergency — but they have to do it right.

The Pandemic Has Pushed Aside City Planning Rules. But to Whose Benefit?

As bike lanes and cafes sprout on streets, marginalized residents wonder when their priorities will get attention.

THE RECOVERY WILL HAPPEN IN PUBLIC SPACE

PHIL MYRICK | MAY 16, 2020

EQUITY & INCLUSION   LIGHTER QUICKER CHEAPER   STREETS AS PLACES

f 2.9K   y   💬

CITYLAB

'Safe Streets' Are Not Safe for Black Lives

A transportation planner warns pedestrian-friendly street redesigns that happen without diverse public input can end up harming the communities they serve.

"Ten Ways Every City Should Respond…". Source: StreetsBlogUSA/Kea Wilson, March 31, 2020
"The Pandemic Has Pushed Aside City Planning Rules", source: New York Times/Emily Badger, July 20, 2020
"The Recovery Will Happen in Public Spaces", source: Project for Public Spaces/Phil Myrick, May 16, 2020
"'Safe Streets' Are Not Safe for Black Lives", source: CityLab/Destiny Thomas, June 8, 2020

Social Infrastructure and COVID-19

Never before were there so many streets of today's cities so rapidly reconstructed as in the months of Spring and Summer 2020. The streetscapes of our cities not only exist as built infrastructure for movement and mobility, getting people from one place to another. Streets serve as neighborhood destinations for exercise, play, eating, meeting people, and just enjoying being outside. Streets are **social infrastructure** - spaces of lively community activity where social capital and neighborly relations can grow - and social infrastructure is vital for every neighborhood, in every community.

The unique circumstances of the COVID-19 pandemic offered the opportunity to study social infrastructure from a new perspective. In times of lockdowns and quarantine, the street became more visibly important than ever before: as a public space, as a place to safely move around, and to enjoy some fresh air. The revaluation of today's streetscapes has provided many opportunities for cities and towns around the world to reinvent their social infrastructure. However, COVID-19 has shown to magnify existing challenges and to create new challenges on top of that. This is especially true for the U.S. Legacy Cities and Massachusetts Gateway Cities which already experienced a complexity of challenges before the outbreak of the pandemic. Thus, with studying social infrastructure during the pandemic comes the responsibility of not only exploring what is changing, but also questioning by whom and for whom? Who decides what changes are being made to the streets and who benefits from these changes?

Inspired by the changes made to municipal streets in cities and towns around the world, we ask: What is the impact of COVID-19 on streetscapes of today's cities? After describing a variety of measures that cities and towns have implemented in response to COVID-19, we question to what extent cities have the capacity and opportunity to reinvent social infrastructure. We critically analyze the examples in our database to explore if the pandemic could permanently change the way cities and towns think about the future planning and design of social infrastructure. Could tomorrow's streetscapes look different, healthier, and more accessible for all?

An example from our database: Macon, Georgia

"Macon joins 9 other US cities in national effort to radically reimagine public spaces"
By Rachel Gambill | May 29, 2020 Macon has joined a national initiative to advance ambitious social, economic and environmental goals through public spaces. Macon leaders note **the important role that public spaces have played during the COVID-19 pandemic**, and that joining Reimagining the Civic Commons will help them develop strategies to rebuild social capital and foster more equitable and healthy neighborhoods.

"We are hardwired as humans to be happier with more social interaction. When we were in grammar school we instinctively sought out the playground to reenergize our spirits during our work-day," Chris Sheridan, Chair of the Macon Bibb County Urban Development Authority said. "We can bring the experience of the Ocmulgee Heritage Trail to the urban core by **re-imagining our streets and sidewalks as a playground that enriches our souls**. We are not isolated in our cars speeding on the same routes from home, to work, to shopping or the same group of friends. **Let us re-imagine a place where we want to go just to see who we might meet."** Reimagining the Civic Commons is a collaborative effort of national foundations and local partners working to transform public spaces in ways that advance engagement, equity, environmental sustainability and economic development. **"Months of quarantine has brought home to all of us just how much we need great public spaces."** said Sam Gill, Knight's senior vice president and chief program officer. **"These spaces will be key to supporting socially connected, healthy communities as we emerge from this pandemic."**

Introduction

Real-Time Research

We performed our research in the period of May-September 2020, during the COVID-19 pandemic. The unique circumstances during these months provided us with the opportunity to study the impact of COVID-19 on the streetscapes of today's cities in real time. During the month of July 2020 we collected our data: real-time examples of how the pandemic impacts the use, planning, and design of streetscapes in cities and towns around the world.

As such, the data as recorded in our database and presented in this report is a reflection of the situation and information provided to us by the sources for the particular month of July 2020. Essentially the database provides a snapshot of the situation in July 2020, we have not kept track of any changes made to the examples as described in our database after July 2020. Things might have changed after the publication of our database and report.

While the pandemic provided us with the opportunity to study social infrastructure from a new perspective, we were also challenged by limitations due to COVID-19. We could only work remotely, and had to rely on virtual explorations, using the internet, spatial data, and literature. By no means have we created a complete or representative database; cities and towns might have implemented more and different measures than the ones recorded in our database. Just as the towns and cities which were the subjects of our study, we had to learn things along the way. Therefore we aim to provide full transparency about our data collection and analysis, including sharing our **Case Study Database: Examples of the Impact of COVID-19 on Streetscapes.**
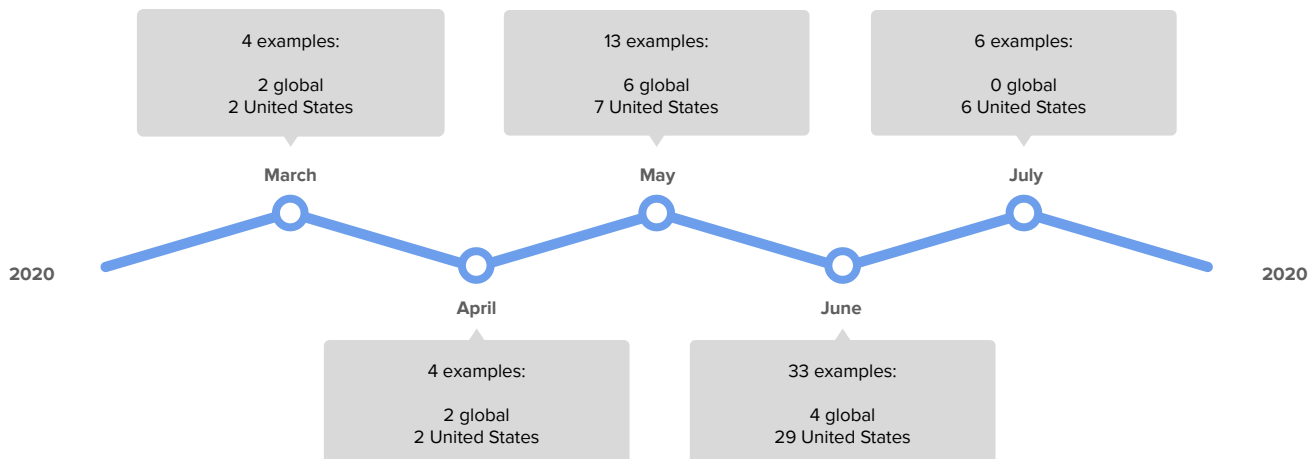

Figure 1: Timeline of examples in our database* (differentiating global and United States examples)

***Examples:** based on 60 examples, only including examples motivated by COVID-19 and with a date.

Data Collection

Our Database

The research team has created a database with examples of measures implemented by cities and towns in response to the COVID-19 pandemic and the related guidelines, changes, and ambitions. Every example represents a specific measure implemented by a city or town. As a result, some cities or towns appear more than once in our database, covering several measures implemented in that particular city or town. Examples from three types of cities were selected (see **Maps 1**, **2**, and **3**):

1. **Global**; first, we identified a small number of examples from cities within every continent.
2. **United States**; second, we selected cases for cities across the different regions of the U.S.
3. **Legacy and Gateway Cities**; third, we added a number of U.S. Legacy Cities and Massachusetts Gateway Cities to the database and searched for implemented measures within these cities.

Methods

We used different selection and search methods for the different types of cities:

1. **Existing databases**; Several open-source databases keep track of COVID-19 related responses in cities and towns around the world. Most of our global and U.S. examples were selected from existing databases created by the following organizations/authors: Pedestrian and Bicycle Information Center's database, Mike Lydon's map and spreadsheet, and NACTO's (National Association of City Transportation Officials) action trackers. Although our final database includes examples originally identified by these organizations/authors, we expand on the original examples by annotating more details of the projects and qualitatively evaluating recurring themes. Before inclusion into our database we determined the accuracy of the original sources. We added official or additional sources and new updates or adaptations where possible or appropriate.
2. **Snowball sampling**; Some examples were identified by the research team based on snowball sampling from a variety of professional or media sources mentioning street-based COVID-19 responses. In this situation we also determined the accuracy of the sources before adding these examples to our database.
3. **Existing lists**; Knowing that there is no "official" list of Legacy Cities in the United States, we added a number of U.S. Legacy Cities to our database based on sources by the Lincoln Institute of Land Policy, Brookings, and JMBC and The City College of New York. A list of Gateway Cities as defined by the Legislature in the Commonwealth of Massachusetts was provided by MassINC. In contrast with the examples from existing databases or professional and media sources, we had to find street-based COVID-19 responses for the Legacy Cities and Gateway Cities ourselves, if applicable. We performed an internet search to find examples of measures from these cities and towns.

N.B.

The final list of **60 examples** is not intended to be exhaustive or representative of any one place or population - it is essentially a snapshot of projects from different parts of the world and across the United States to identify and analyze design opportunities and related challenges for street-based COVID-19 responses.

Data Collection

Data Collection

Inspired by the many changes to municipal streets - such as pop-up bike lanes, open streets, and outdoor dining - the research team created a database for data collection. Development of the data collection categories (see **Table 1**) was influenced by the wide variety of sources reporting on the changes due to COVID-19 and the implications for future planning, design, and community engagement. An overview of these resources and recommendations can be found in another **Report** of this series: **Resources and Recommendations: Planning for Social Infrastructure during and after COVID-19**. The review of professional and media sources critically analyzing the impact of the pandemic on today's streetscapes helped us to further develop our data collection categories and questions for analysis.

An overview of our data collection categories is given in Table 1. For every example in our database, we first recorded the country of the project, the city, and (U.S.) state (if applicable) where the project is located, and checked if the particular city is a U.S. Legacy City or not. By including hyperlinks we refer to original sources and confirmed with official sources from government webpages. The date refers to either the institution of the measure or the government announcement publication. We developed several categories to accurately describe the implemented measure of a city or town and the related process, see the categories under "Measure" and "Details". Reporting information on "Who", "By Whom", and "Community Engagement" and data analysis based on the identification of "Overall Theme(s)" in the communication of cities and towns, allows us to critically explore the question of to what extent social infrastructure is reinvented during the pandemic.

Table 1: Data collection categories for every example in our database

EXAMPLE	Location: **Country, City, State, U.S. Legacy City?**
	Meta-data: **Source, Official Source, Date?**
	Measure: **Design Treatment, Temporary or Permanent, Motivated by COVID-19, What, Why, Where?**
	Details: **Who, By Whom, Community Engagement, Project Status, Process, Outcome**
	Analysis: **Overall Theme(s)**
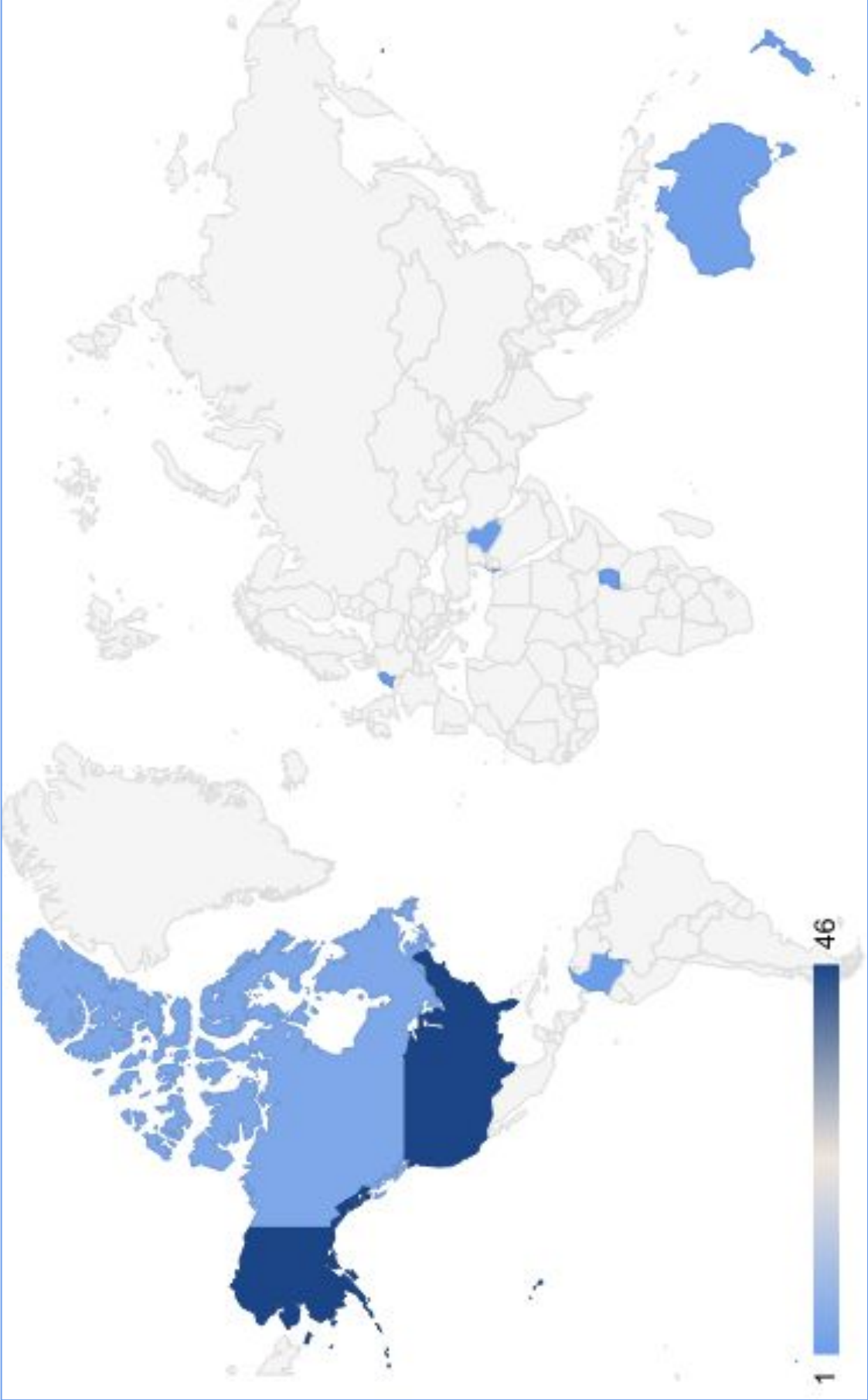
Map 1: Global examples (60 examples in total, across 6 continents and 11 countries)
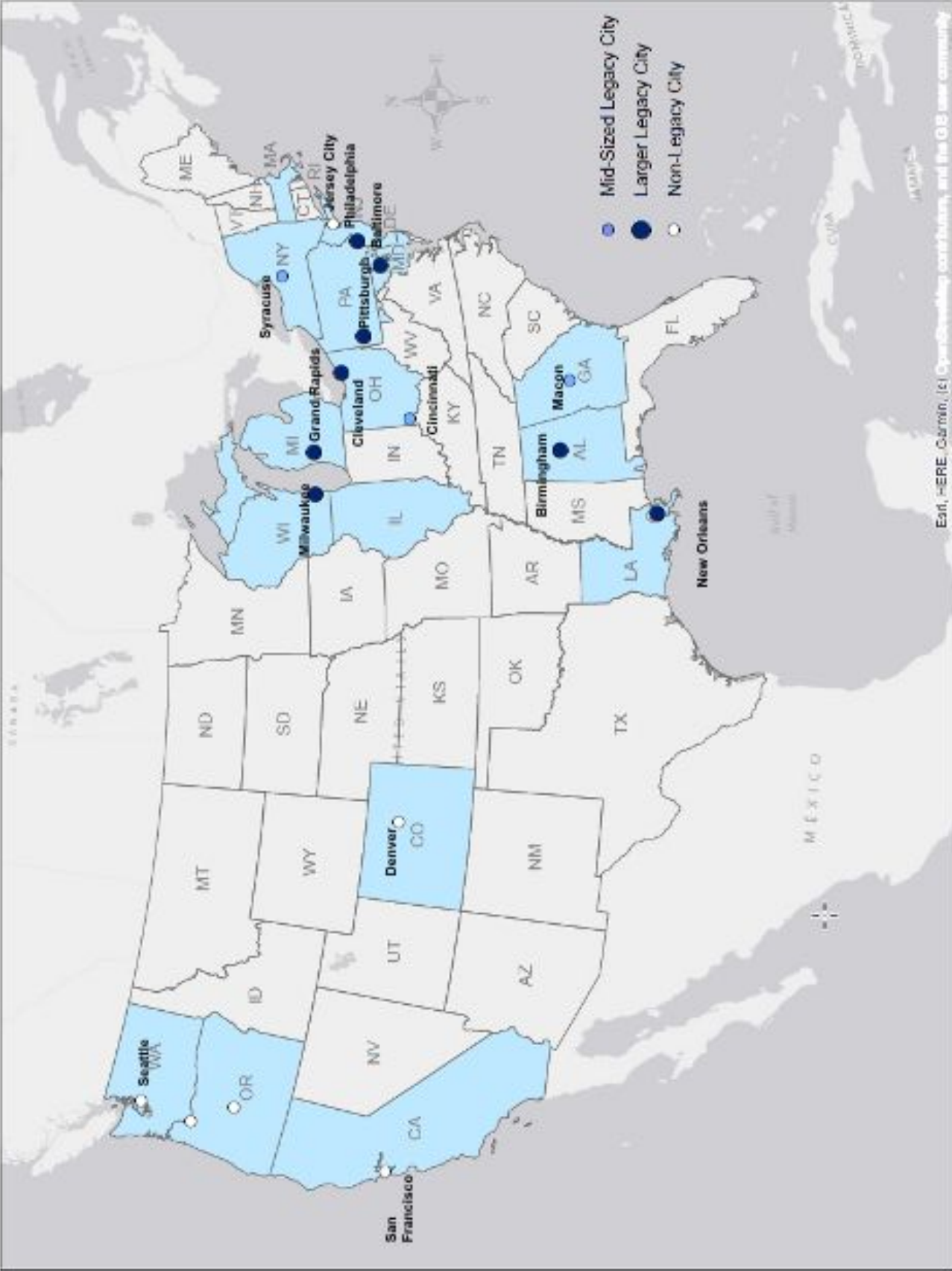
Map 2: U.S. examples (46 examples in total, across 15 states and 39 cities)
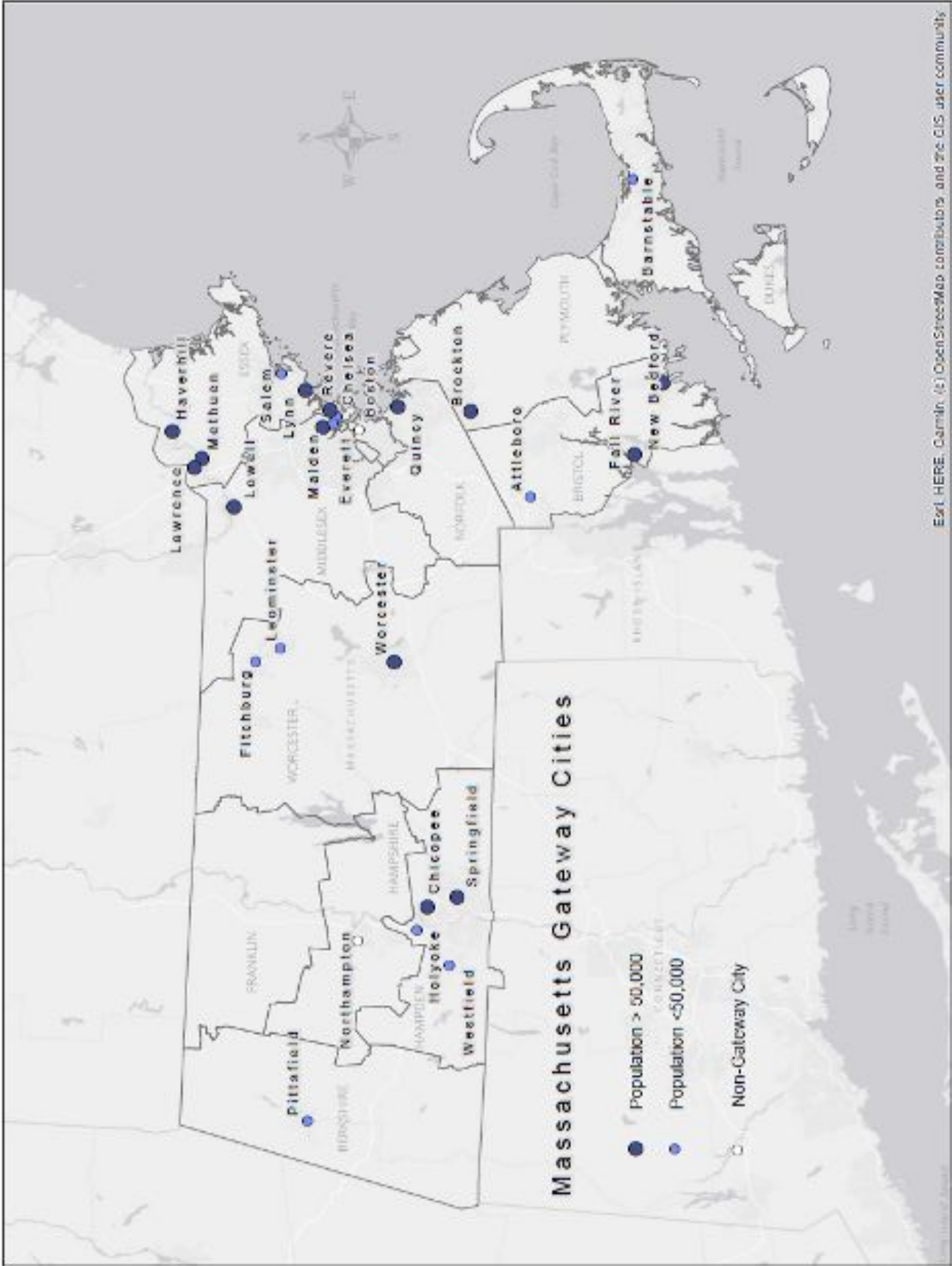
Map 3: Massachusetts examples (27 examples in total, across 22 cities/towns)

The Impact of COVID-19

The Impact of COVID-19 on Streetscapes of Today's Cities
Our database contains **60 examples** of measures implemented by cities and towns around the world in response to COVID-19. In this part of the report we describe these examples. Together, the examples provide a snapshot of the impact of COVID-19 on the streetscapes of today's cities.

Type of Measures
The examples in our database can roughly be divided in three different groups:
1. Measures to reduce vehicle volumes and create space to walk and cycle while remaining physically distant.
2. Measures to facilitate businesses reopening, including restaurants and bars.
3. A variety of measures, ranging from outdoor city hall services to redesigned vacant spaces.

Next, we discuss the different types of measures while referring to examples from our database.

1. Measures to Reduce Vehicle Volumes
The first group of examples in our database represents measures implemented by cities and towns to reduce vehicle volumes and create space to walk and cycle (run, roll, etc.) while remaining physically distant. The cities in our database used four different approaches to give residents, (essential) workers, pedestrians, cyclists, and bikers more space:
- Open Curb - Travel or Parking Lane Conversion; extends the public domain onto the street or parking space, often protected from adjacent traffic.
- Open Streets - Residential Neighborhoods; the street is partially or fully closed to vehicle traffic in residential areas.
- Shared Streets - Limited Vehicle Access; the street is partially closed to allow the walking/biking public to circulate alongside vehicle traffic.
- Other - Bike Lanes; creating new bike lanes for cyclists and bikers.

Reducing risk of transmission, facilitating physically distancing, and improving safe and accessible outdoor space were some of the main reasons why cities implemented these measures. Cities indicated the need to encourage other modalities, such as walking and cycling, to provide more options for transportation for essential workers to travel to work in times that public transport is too crowded or reduced in service. The measures also come in response to increased biking in cities, tight sidewalks, and crowded trails.

This type of measures were implemented as early as the month of March, throughout April, June, and July - often in a phased approach with adjustments, extensions or scaling back over time. Examples of this type of measures were found both in global and U.S. cities.

STAY HEALTHY STREETS
Keep it Moving!

" Our family loves the 25th Ave Stay Healthy Street. I've been surprised by how much it's impacted our neighborhood's quality of life. What has been a wonderful unexpected aspect is seeing how the whole neighborhood uses the space. "

– M. Mainland, Central District

Pictured: Father and son enjoying the Stay Healthy Street.

Seattle Department of Transportation

COVID-19 QUIET STREET — TORONTO

SHARED SPACE

Active Streets are for walking, biking, and running with people who live in the same house as you.

You can drive or park on an Active Street if you live there or if you're delivering to a house on the street.

Stay at least 6 feet from people who don't live in the same house as you and wear a cloth face covering if you can.

THIS IS A NEW ORLEANS SLOW STREET

For **SAFE & HEALTHY** essential travel & exercise during Covid-19

Tenderloin COVID-19 Response
- TL Neighborhood Assessment
- Existing parking lane closures
- Existing block closure

Physical distancing lane
TL Traffic Safety Task Force
- Approved
- Planned

Play Streets
TLCBD + Livable City
- Application submitted
- Identified

Shared Spaces
TL Merchants Association
- Application submitted

Temporary Emergency Transit Lanes
- Approved
- Proposed

Stay Healthy and Keep it Moving Streets in Seattle, Washington, source: Seattle.gov, updated August 14, 2020
Quiet Streets in Toronto, Canada, source: City of Toronto, updated September 2, 2020
Active Streets in Milwaukee, Wisconsin, source: Milwaukee Active Streets, accessed September 3, 2020
Slow Streets in New Orleans, Louisiana, source: City of New Orleans, update July 7, 2020
Play Streets and Shared Spaces in San Francisco, California, source: SFMTA, accessed September 3, 2020

2. Measures to Facilitate Businesses Reopening

While similar to the previous type of measures in the effort to reduce vehicle traffic, the purpose of this second group of measures is different: to facilitate businesses (restaurants, bars, retail, commercial) reopening. The examples in our database can be divided into three different groups:

- Open Curb - Travel or Parking Lane Conversion; extends the public domain onto the street or parking space, often protected from adjacent traffic.
- Open Streets - Dining/Restaurants/Retail/Commercial; the street is partially or fully closed to vehicle traffic to permit outdoor dining or to offer retail services.
- Other - Outdoor Table Service; a combination of the above options in which restaurants, bars, or stores expand their footprint in (either adjacent or non-adjacent) public or private space, parking lots, roads or sidewalks.

This type of measures is implemented mainly to support restaurants and bars and to a lesser extent retail and commercial services to reopen their businesses after a period of lockdown earlier in 2020. Due to travel or parking lane conversions, open streets, and other changes to the streetscapes, businesses could expand their outdoor footprint allowing customers to come back while physically distancing. Cities and towns indicated that their main priority was for businesses to reopen and recover from the economic effects of not being able to provide normal service. Cities hope to boost their local economies by implementing the above-mentioned measures.

Although countries and U.S. states work with different lockdown and reopening approaches, most of our, both global and U.S., examples in this category were implemented in the months of May, June, and July.

An example from our database: Jersey City, New Jersey

Jersey City, New Jersey, source: City of Jersey City, accessed September 4, 2020

Concrete barriers in Grand Rapids, Michigan, source: WOOD, updated June 19, 2020
Outdoor dining in Boston, Massachusetts, source: Boston Globe, June 11, 2020
Outdoor dining in Portland, Oregon, source: KOMOnews, June 21, 2020
Curbside pick-up in Birmingham, Alabama, source: AL.com/Joe Songer, March 26, 2020
Outdoor dining in Northampton, Massachusetts, source: Daily Hampshire Gazette, August, 12, 2020

The Impact of COVID-19

3. A Variety of Measures

In addition to the two previous categories, we identified a variety of measures implemented by cities and towns in response to COVID-19. Examples from our database are:

- Vacant Space - Redesigned Off-Street Parcel
- Other -
  - City Hall Outdoor Services
  - ParkMobile
  - Reimagine Public Spaces
  - Street Sign Campaign

This category represents a variety of rather specific measures implemented by some cities in response to the strict guidelines and impact on both residents and businesses by COVID-19. The City of Lynn (MA) provided outdoor services to pay taxes and fees. The City of Birmingham (AL) decided to team up with ParkMobile to facilitate contactless parking payments downtown. In contrast with other cities and towns, the City of Lowell (MA) decided to open splash pads for the season. The City of Worcester (MA) started the "Give Me a Sign" project to create public art. As described on page 5, Macon (GA) joined a national effort to expand a trail network.

The efforts are focused on the cities and its residents and were initiated in the months of May, June, and July of 2020. Our database only consists of U.S. examples in this category.

An example from our database: Worcester, Massachusetts

"Call To Artists: Give Me A Sign"
For Immediate Release: 5/19/2020 3:16 PM

The City of Worcester Cultural Development Division, in partnership with the Worcester Cultural Coalition and the Greater Worcester Community Foundation, is accepting proposals from artists and designers for the Give Me A Sign project.

"The 'Give Me A Sign' project highlights the relationship between creative expression and mental health, which is especially relevant during COVID-19," said Deputy Cultural Development Officer Che Anderson. "Artistic and creative outlets contribute positively to our community's well-being and have proven valuable in treating conditions such as depression, anxiety, and PTSD."

To provide the community with moments of inspiration, education, and optimism, the Give Me A Sign project will provide visual encouragement throughout Worcester on 12" x 18" metal signs. **The Request For Qualifications lists various inspirations for messaging including "call your grandparents," "you can and you will," and "tomalo con calma."**

"With the adoption of the Cultural Plan in 2019, the City aims to share Worcester's story through embedding art into our everyday lives," said Erin Williams, Cultural Officer for the City of Worcester. **"Worcester is committed and excited to offer 19 paid creative opportunities to artists, especially in these uncertain times."**

Worcester, Massachusetts, source: City of Worcester, July 1, 2020

Reinventing Social Infrastructure?

Now that we have described a variety of measures that cities and towns have implemented in response to COVID-19, we question: To what extent do cities reinvent social infrastructure? A critical analysis of the examples in our database allows us to explore if the pandemic could permanently change the way cities and towns think about the future planning and design of social infrastructure.

In this part of the report we identify a number of themes we think are important to consider when implementing street-based responses to COVID-19 and thinking about the future of social infrastructure. Our guiding question in this review is: Could tomorrow's streetscapes look different, healthier, and more accessible for all?

Temporary or Permanent?

Based on our snapshot of examples, we conclude that most cities (53 out 58 with information) take temporary measures in response to COVID-19. Only 3 cities implemented permanent changes and 1 city might make some parts of its measure permanent:

- The conversion of city center streets into pedestrian zones in Tel Aviv (Israel).
- The implementation of contactless payment for parking in the City of Birmingham (AL).
- The expansion of a trail network in Macon (GA).
- Seattle (WA) might make Stay Healthy Streets permanent.

The cities that are making permanent changes to their streetscapes all have in common that their response was already underway in some form before COVID or are part of a larger effort. The question for the other cities is: Is there a discussion, like in Seattle (WA), to make changes permanent?

While we know that a number of cities, such as Seattle (WA), Toronto (Canada), Halifax (Canada), New Orleans (LA), and San Francisco (CA), is actively seeking input and feedback to monitor and evaluate the response to changes in the streets, not every city seems to have such a mechanism in place to fuel a discussion about the need or desire to make changes more permanent.

LET'S TALK!
An example from our database: Seattle, Washington

Stay Healthy Streets can only be an asset with input and support from the people who live along and use them. Over the next few weeks, we'll launch outreach to gather input on making them permanent. Our efforts will center race and equity, discuss how to respect the cultural significance of neighborhoods to those that live there and how to evolve the streets into the neighborhood fabric, share the type of treatments we could use to replace the current Street Closed signs, and collect potential locations for expansion. We'll also discuss creating a possible ambassador program, similar to adopting a traffic circle.

We are currently designing the engagement plan and expect to start conversations in the next couple of weeks. We'll look to the Seattle Department of Neighborhoods and community leaders to identify good forums for talking to you, as well as providing online opportunities. In the meantime, you can express your interest by emailing StayHealthyStreets@Seattle.gov ☑.

Seattle, Washington, source: Seattle.gov, updated August 14, 2020

Reinventing Social Infrastructure?

Community Engagement; Who's Included?

For 21 out of the total of 60 examples we found some form of community engagement. In addition to the surveys mentioned on page 18, the examples show a range of possible ways to include local residents and businesses:

- Grass-roots:
  - Soho Summer Street Festival initiated by a local campaign and petitions in London (United Kingdom).
  - Bicycle Coalition of Greater Philadelphia gathered signatures to close a part of MLK drive in Philadelphia (PA).
- Early engagement:
  - A City Council meeting open to the public prior to decisions being made in Boston (MA).
  - A survey to get feedback on how to best open outdoor dining in New Bedford (MA).
  - Consult with the public and advocacy groups to identify needs, locations, and solutions in Halifax (Canada).
- Communication:
  - Facebook Live to answer questions by City of Revere (MA).
  - Interactive map displaying the locations where streets have changed in Toronto (Canada).
  - A FAQ section and e-mail list in New Orleans (LA).
- Learning by doing:
  - Starting with a few streets to see how the community reacts and receive feedback in Jersey City (NJ).
  - Outreach to concerned local residents to come up with mutual beneficial solutions in Baltimore (MD).

London, United Kingdom, source: SaveOurSoho, accessed September 3, 2020

Reinventing Social Infrastructure?

Community Engagement; Who's Excluded?

For 39 out of the total of 60 examples we could not find information indicating community engagement as part of the process and implementation effort. In the Introduction of this report, we have written how with studying social infrastructure during the pandemic comes the responsibility of not only exploring what is changing, but also questioning by whom and for whom? Although this question requires more research, we hope our database provides some initial information to reflect on this question.

Our "Where" category identifies the target location of the examples in our database. While some cities provided no specific information other than "throughout the city" or "within the city", it becomes clear that cities target specific places with their measures. A majority of the measures were implemented in the downtown district of the cities in our database. A number of safety measures were implemented in already popular parks or neighborhoods with already low volumes in traffic and lower speed limits. With these choices come the questions of accessibility and equity. While some measures might expand accessibility to outdoor space and safe streets, other measures might have reinforced current patterns of inaccessibility and inequity. The **Resources and Recommendations Report** reflects more on these matters.

In the same line of reasoning, we included the categories of "Who", "By Whom", and "Process" in our database to identify the benefitting population or sector, lead actors and institutions, and procedural implementation for every example. Again, these categories raise questions on accessibility and equity, especially knowing that the majority of examples did not mention a process of community engagement. While some examples explicitly mention their efforts to be inclusive, these seem to be the exceptions in our database. The combination of the temporary character of the implemented measures, the quick turnaround time of some of the processes, and the exceptional conditions during the pandemic, makes it especially important to pay attention to questions of inclusivity when planning and designing street-based responses. The **Resources and Recommendations Report** provides more input on these issues.

An example from our database: Halifax, Canada

Halifax, Canda, source: Halifax Regional Municipality, updated July 28, 2020

Reinventing Social Infrastructure?

Framing; Why?

A final aspect is framing, how do cities and towns frame their street-based responses to COVID-19? Based on the different sources we explored for every example, we identified an overall theme. Although not mentioned as a separate category in **Chart 1**, the main category is safety. The main concern of every city and town is to provide a safe environment within the new reality of COVID-19. In addition to safety, the chart below provides an overview of the main themes mentioned in our examples.

Most of our examples were motivated by the objective to reopen businesses and thus promote economic development. Other reasons mentioned in the communication by cities and towns were creating a pedestrian- and/or bicycle-friendly environment, and facilitate outdoor recreation. To a lesser extent the measures were about specific pedestrian- or bicycle-related measures, parking or providing public service.

When combining these insights with the previous considerations on temporary or permanent changes and inclusivity, it is worth critically exploring every category of motivations and asking whether it would be possible and desired to permanently implement these changes. How do the cities, towns, and its residents experiences these changes? Are these examples of how tomorrow's streetscapes could look different, healthier, and more accessible for all?

To Conclude

To conclude, although our database and report only provide a snapshot and an initial opening to a much wider discussion and set of future research questions, we do hope that our snapshot will provide lasting lessons on the promise of social infrastructure.

Chart 1: Proportion of main themes from examples in our database

Overall Themes
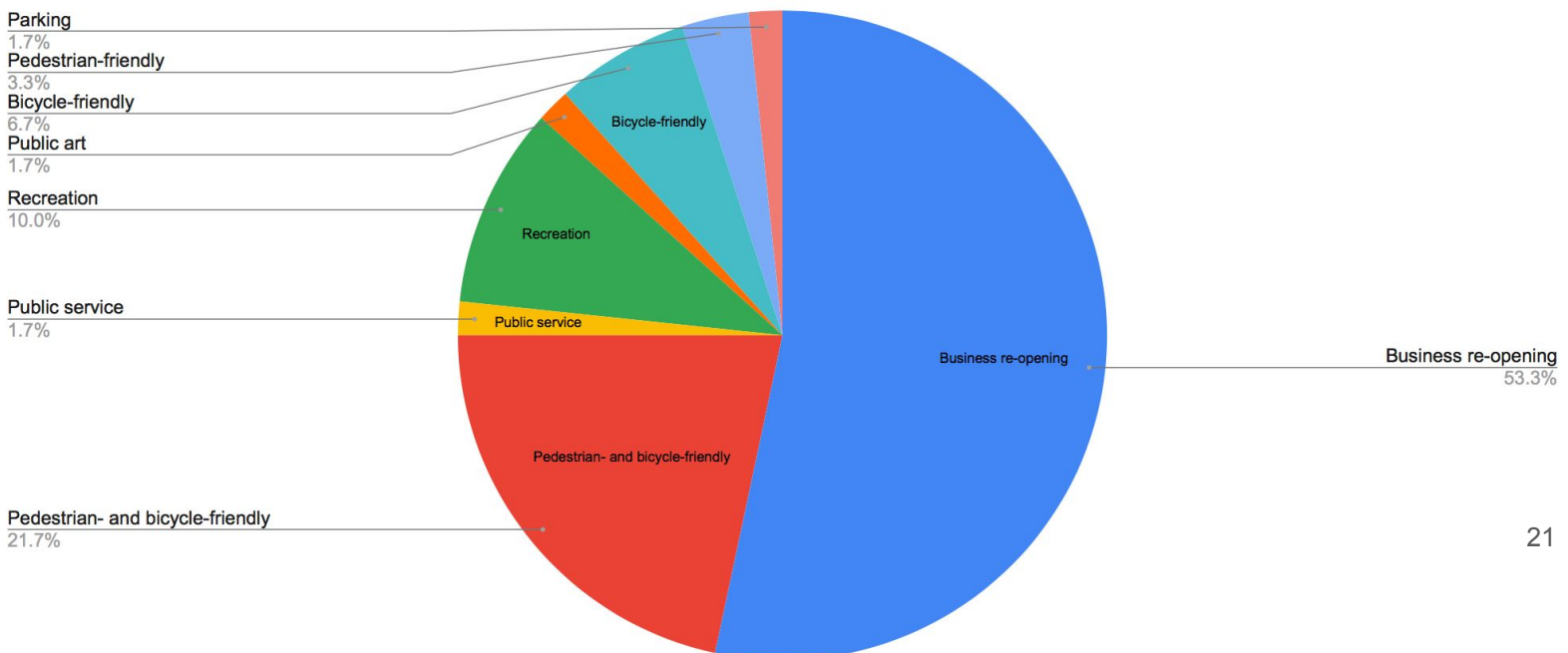
Parking
1.7%
Pedestrian-friendly
3.3%
Bicycle-friendly
6.7%
Public art
1.7%
Recreation
10.0%
Public service
1.7%
Bicycle-friendly
Recreation
Public service
Business re-opening
Pedestrian- and bicycle-friendly
Pedestrian- and bicycle-friendly
21.7%
Business re-opening
53.3%

The impact of COVID-19 on streetscapes of today's cities

References

This list excludes the hyperlinked references in the report. The hyperlinks refer to the original sources.

References of sources not hyperlinked in the report are:

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Appendix

Appendix

Total Number of Examples

Our database consists of **60 examples**, each example represents a measure taken by a city or town in response to the COVID-19 pandemic and its related guidelines, changes, and ambitions. Additional information is provided by **10 examples** in our database which represent interesting design opportunities but were not initially motivated by the pandemic and/or it was unclear whether or not the measure was undertaken in response to the COVID-19 pandemic. For **6 cities** the research team could not find a COVID-19 related response or an non-COVID-related design opportunity at the time of our data collection. There is no data in our database for these 6 cities.

Our main analysis in this report is based on the **60 examples** of measures taken by cities and towns in response to COVID-19. If in any case we refer to measures not motivated by COVID-19 (from the **10 examples**) we will explicitly say so.

Overview of Continents, Countries, Cities, and Examples Motivated by COVID-19

The database contains **global examples** and **examples from across the United States**, including examples from **U.S. Legacy Cities** and **Massachusetts Gateway Cities**.

Table 1: Selection of Global Examples (**60 examples**, motivated by COVID-19)

Continent	Country	City	Number of Examples*
Africa	Uganda	Kampala	1
Asia	Israel Iraq Philippines	Tel Aviv Erbil Pasig City	1 1 1
Europe	England Netherlands	London Utrecht	1 1
Oceania	Australia New Zealand	Adelaide, Melbourne Country-wide (no specific city indicated)	2 1
North America	Canada United States	Halifax, Toronto 39 cities/towns - *see next page*	4 46
South America	Colombia	Bogota	1
Continents: 6	**Countries: 11**	**Global cities: 11** **Country-wide example: 1 (New Zealand)** **U.S. cities/towns: 39** **Total: 50 cities/towns + 1 country-wide**	**Global examples: 13** **Country-wide example: 1** **U.S. examples: 46** **Total: 60 examples**

*Example: Every example represents a specific street-based measure implemented by a city or town in response to the COVID-19 pandemic.
As a result, some cities or towns appear more than once in our database, covering several measures implemented in that particular city or town.

Appendix

U.S. cities/towns, including Legacy Cities and Gateway Cities

When considering only the examples motivated by COVID-19, the database contains **39 U.S. cities and/or towns**, representing a total number of **46 unique examples** (meaning that for some cities or towns multiple COVID-responses were recorded in the database). A list of these cities and/or towns, including an overview of the U.S. Legacy Cities and Massachusetts Gateway Cities in the database can be found on the next pages.

Appendix

Table 2: Selection of U.S. Examples (**46 examples**, motivated by COVID-19)

State	City	U.S. Legacy City Classification*	Number of Examples**
Alabama	Birmingham	Larger	2
California	San Francisco	*not a Legacy City*	1
Colorado	Denver	*not a Legacy City*	1
Georgia	Macon	Mid-Sized	1
Louisiana	New Orleans	Larger	1
Maryland	Baltimore	Larger	1
Massachusetts	22 cities/towns - *see next page*	20 Gateway Cities - *see next page* 2 not a Gateway City	27
Michigan	Grand Rapids	Larger	1
New Jersey	Jersey City	Larger	2
New York	Syracuse	Mid-Sized	1
Ohio	Cincinnati Cleveland	Larger Larger	1 1
Oregon	Bend Portland	*not a Legacy City* *not a Legacy City*	1 1
Pennsylvania	Philadelphia Pittsburgh	Larger Larger	1 1
Washington	Seattle	*not a Legacy City*	1
Wisconsin	Milwaukee	Larger	1
States: 15	**Cities: 39**	**Mid-Sized Legacy Cities: 2** **Larger Legacy Cities: 10** **Gateway Cities: 20** **Non-Gateway Cities: 2** **Non-Legacy Cities: 5**	**46 examples**

*U.S. Legacy City Classification: small = population < 50,000; mid-sized = population 50,000 - 200,000; larger = population > 200,000.

**Example: Every example represents a specific street-based measure implemented by a city or town in response to the COVID-19 pandemic. As a result, some cities or towns appear more than once in our database, covering several measures implemented in that particular city or town.

Appendix

Table 3: Selection of Massachusetts Examples (**27 examples**, motivated by COVID-19)

Massachusetts City/Town	Massachusetts Gateway City	Gateway City Classification*	Number of Examples**
Attleboro	Yes	Small	1
Barnstable	Yes	Small	1
Boston	No	*not a Gateway City*	1
Brockton	Yes	Mid-Sized	1
Chelsea	Yes	Small	1
Chicopee	Yes	Mid-Sized	1
Everett	Yes	Small	1
Fall River	Yes	Mid-Sized	1
Haverhill	Yes	Mid-Sized	1
Lawrence	Yes	Mid-Sized	1
Leominster	Yes	Small	1
Lowell	Yes	Mid-Sized	2
Lynn	Yes	Mid-Sized	4
Methuen	Yes	Mid-Sized	1
New Bedford	Yes	Mid-Sized	1
Northampton	No	*not a Gateway City*	1
Quincy	Yes	Mid-Sized	1
Revere	Yes	Mid-Sized	1
Salem	Yes	Small	1
Springfield	Yes	Mid-Sized	1
Westfield	Yes	Small	1
Worcester	Yes	Mid-Sized	2
Cities/towns: 22 **(out of 39 U.S. cities)**	**Gateway Cities: 20** **(out of 26 Gateway Cities)** **Non-Gateway Cities: 2**	**Small Gateway Cities: 7** **Mid-Sized Gateway Cities: 13** **Non-Gateway Cities: 2**	**Examples: 27** **(out of 46 U.S. examples)**

*Gateway City Classification: small = population < 50.000; mid-sized = population > 50.000.

**Example: Every example represents a specific street-based measure implemented by a city or town in response to the COVID-19 pandemic.
As a result, some cities or towns appear more than once in our database, covering several measures implemented in that particular city or town.

Appendix

Overview of Cities and Examples Not Motivated by COVID-19 or No Data Available

10 examples in our database represent interesting design opportunities which were not initially motivated by the pandemic and/or it was unclear whether or not the measure was undertaken in response to the COVID-19 pandemic. For **6 cities** the research team could not find a COVID-19 related response or an non-COVID-related design opportunity. There is no data in our database for these 6 cities.

While our main analysis in this report is based on the **60 examples** of measures taken by cities and towns in response to COVID-19, we might refer to measures not motivated by COVID-19 (from the **10 examples**) As such, provide full transparency regarding our database (including **6 cities** with missing data).

Table 4: Examples Not Motivated by COVID-19 (**10 examples**, not motivated by COVID-19)

Country	State	City	U.S. Legacy/Gateway City Classification*	Number of Examples*
Mexico	*not applicable*	Mexico City	*not applicable*	1
United States	Delaware	Wilmington	Mid-Sized Legacy City	1
	Louisiana	New Orleans	Larger Legacy City	1
	Massachusetts	Fitchburg	Small Gateway City	1
		Holyoke	Small Gateway City	1
		Methuen	Mid-Sized Gateway City	1
	Michigan	Detroit	Larger Legacy City	1
		Flint	Mid-Sized Legacy City	1
	Missouri	St. Louis	Larger Legacy City	1
	New York	Buffalo	Larger Legacy City	1
Countries: 2	**U.S. states: 6**	**Global cities: 1** **U.S. cities/towns: 9** **Total: 10 cities/town**	**Mid-Sized Legacy Cities: 2** **Larger Legacy Cities: 4** **Small Gateway Cities: 2** **Mid-Sized Gateway Cities: 1**	**Global examples: 1** **U.S. examples: 9** **Total: 10 examples**

*U.S. Legacy City/Gateway City Classification: small = population < 50,000; mid-sized = population 50,000 - 200,000; larger = population > 200,000.

Appendix

Table 4: Cities with No Data (**6 cities**, no data available)

State	City	U.S. Legacy/Gateway City Classification*
Massachusetts	Malden	Mid-Sized Gateway City
	Peabody	Mid-Sized Gateway City
	Pittsfield	Small Gateway City
	Taunton	Mid-Sized Gateway City
New Jersey	Camden	Mid-Sized Legacy City
	Newark	Larger Legacy City
States: 2	**U.S. cities/towns: 6**	**Mid-Sized Legacy Cities: 1** **Larger Legacy Cities: 1** **Small Gateway Cities: 1** **Mid-Sized Gateway Cities: 3**

*U.S. Legacy City/Gateway City Classification: small = population < 50,000; mid-sized = population 50,000 - 200,000; larger = population > 200,000.