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Streets, Sidewalks and COVID-19: Reimagining New York City's Public Realm as a Tool for Crisis Management

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ABSTRACT: The 2020 COVID-19 outbreak has caused significant disruption to economic and social systems. New York City, as the United States' largest city and among the nation's most densely populated, was an early epicenter of the crisis. Modifications to the design, planning and operations of the city's public realm have been important components of the city's overall response to mitigate the effects of the pandemic while also facilitating economic recovery and providing social, educational, and recreational opportunities for city residents. This commentary provides an overview of New York City's urban design responses to COVID-19, highlighting some of the successes and limitations of the city's programs. We conclude by arguing that, in order to be effective, short-term crisis response efforts such as these must eventually be turned into government policies that not only address immediate urgent crises but also begin to facilitate durable long-term recovery and address longstanding systemic inequalities and vulnerabilities.

Keywords: COVID-19; coronavirus; economic development; New York city; urban design; public space; disaster recovery.

1. COVID-19 as an Urban Design and Planning Challenge

The COVID-19 outbreak presents unique challenges to urban planners and designers, whose role in disaster mitigation and recovery is typically more pertinent after events such as hurricanes, tsunamis, typhoons, wildfires, mudslides, earthquakes, terror attacks, and industrial accidents. While these types of disasters cause extensive and debilitating damage to urban assets like homes, businesses, schools, roads, and power systems, pandemics are different because they do not cause physical destruction, even if they do take human lives and disrupt economic and social networks. Nonetheless, efforts to prevent the spread of the virus, mitigate its associated societal impacts, and facilitate economic and social recovery will have important urban planning and urban design components as cities re-evaluate how public space is designed and used. Lessons from previous physical disasters, therefore, can still inform planners' ongoing responses to COVID-19, while these current efforts will also contribute to an ever-evolving understanding of effective disaster recovery strategies for future events. This commentary examines New York City's reimagining of its public realm in response to COVID-19 and provides some preliminary observations about these efforts.

According to New York City’s online COVID-19 tracker, the city of 8.3 million residents had 495,588 confirmed cases (plus 79,510 probable cases) and 21,699 confirmed deaths (plus 4,949 probable deaths) from COVID-19 between the first reported case on February 29, 2020 and January 25, 2021. Over this chaotic 11 months, the city’s physical landscape was drastically transformed in response to the pandemic. Streets, sidewalks, parks, plazas, and schoolyards now serve a host of new functions that were relatively rare, if not non-existent, before the pandemic. These rapid and widespread changes offer valuable opportunities for critical reflection and analysis about the way that design and management of public spaces can be used as tools for crisis management.

New York City is only one among thousands of cities across the world that has responded to the COVID-19 pandemic by reimagining its public realm. London (UK), Paris (France), Milan (Italy), Melbourne (Australia), Budapest (Hungary), Houston (TX, USA), Oakland (CA, USA), and many others have also used public space as a mechanism for adaptation to a “new normal” defined by social distancing on the one hand, and on the other, the critical need to provide safe space for recreation and commerce (Newman 2020; Honey-Rosés et al. 2020; Dunning and Nurse 2021; Glaser and Krizek 2020; Bereitschaft and Scheller 2020). The city has created new initiatives within its Department of Transportation (DOT) and Department of Education (DOE) focused on creatively utilizing public space to facilitate safe economic activity, schooling, and recreation. These include DOT’s Open Streets, Open Restaurants, Open Storefronts, Play Streets, and Cool Streets programs, as well as the DOE’s Outdoor Learning Initiative. While the city’s efforts have been ambitious, due to the nature of the pandemic, they have also been constantly evolving, often confusing, and sometimes contradictory, as the following examples will illustrate.

The challenges of creating effective COVID-19 mitigation and recovery efforts are due in part to the city’s physical landscape. New York City is the densest large city in the US, with 27,016 residents per square mile (10,431 per km²). New Yorkers live and work in smaller and more tightly packed spaces than most other Americans.¹ Pre-pandemic lives revolved heavily around public spaces in what Jacobs (1961: 54) called the “sidewalk ballet” of “animated city streets” as well as parks, museums, restaurants, theaters, and cafes. Social distancing is exceedingly difficult in a city built on human interaction. New York has also had to balance other conflicting priorities such as the safety of residents versus the needs of the entrepreneurs who operate the city’s 220,000 businesses (City of New York 2015), and the health of school children versus the needs of working parents. These priorities do not always align, and conflicts sometimes arise. This preliminary commentary cannot fully capture the complex and dynamic nature of the city’s response to COVID-19, which is still ongoing. But it can provide context for making some critical

¹ While no definitive data on housing sizes exist, recent studies suggest that the average size of attached units in New York City (91.3% of the city’s housing stock) is 866 ft² (Plitt 2016). Single-family homes, which comprise 61.3% of the housing in the rest of the US, average about 1,600–1,655 ft² and also contain backyards, basements, garages, and other amenities rare in New York City (Pinsker 2019).

observations about how the crisis has affected the city's physical landscape and what urban planners and designers elsewhere can learn from the city's experience.

2. New York City's Open Streets Program

Even before the COVID-19 pandemic, New York City had been slowly rethinking the function of its streets, parks, and sidewalks, starting with the administration of former Mayor Michael Bloomberg beginning in 2002. In 1997 the city had 119 miles of bicycle paths of any kind (New York City Department of City Planning 1997) but had installed an additional 1,100 miles by 2018 (New York City Department of Transportation 2019). The DOT Plaza Program has created 74 new public plazas on 30 acres of converted streets since its creation in 2007. Beginning in 2008, the Weekend Walks and Summer Streets programs employed temporary street closures to enhance pedestrian and recreational use. The Street Seats initiative, launched in 2015, allowed applicants to build seating areas in on-street parking spaces to serve as restaurant seating, "pocket parks," and other uses. It was from this base of programs and experiences that the city was able to expand its efforts once the COVID-19 crisis exposed the need for additional ways to facilitate social distancing in public spaces.

The city's first confirmed case of COVID-19 was reported on February 29, 2020 although evidence suggests that the virus was already widespread in the city before that date (Carey and Glanz 2020). By March 7, the city had 12 confirmed cases and New York Governor Andrew Cuomo declared a statewide state of emergency. New York City Mayor Bill de Blasio moved the city's public school system to fully remote instruction on March 15. On Friday, March 20, Governor Cuomo issued the New York PAUSE order beginning at 8 pm on March 22 (eventually rescinded on May 28), forcing all non-essential businesses and public facilities in the state to close, mandating social distancing, and limiting outdoor activities². New York City was transformed overnight, with affluent residents fleeing for second homes and rural rentals, while those residents who remained largely stayed indoors and avoided streets, sidewalks, parks, and transit systems.

Vehicular traffic on the city's 6,000 miles of roadways dropped to an unprecedented low (Plitt 2020) and residents soon began seeking creative ways to exercise and spend time outdoors safely. This led both Governor Cuomo and the Speaker of the New York City Council to publicly request that Mayor de Blasio repurpose underutilized streets for recreational purposes. In response, the mayor announced a Safe Streets pilot program for the weekend of March 27th–30th, closing 1.6 miles of city streets from 10 am to 7 pm each day to provide car-free recreational space in communities lacking adequate park space. Under continued pressure from the governor and council speaker, the mayor later extended these street closures to April 5. But this initial Safe Streets experiment was short lived. The mayor declined to extend the program after April 5 citing underutilization by the public and the cost of New York City Police Department (NYPD) oversight. The City Council subsequently introduced a bill on April 22 requiring the DOT to identify and implement 75 miles of car-free streets across the city.

² <https://www.governor.ny.gov/news/governor-cuomo-signs-new-york-state-pause-executive-order>

Five days later, the mayor unveiled a new Open Streets initiative to prioritize bicycling and pedestrian access on 100 miles of city streets and sidewalks through street closures, sidewalk widening, and new bike lanes. An initial 7.2 miles of pedestrian streets were implemented with temporary barricades and signage on May 4, and 1.9 additional miles on May 7. The DOT partnered with Businesses Improvement Districts, civic groups, and city agencies including NYPD and NYC Parks to facilitate daily 8 am to 8pm closures. Community-based organizations were also invited to propose additional Open Street locations and new locations were added to the program throughout May and June. An overlapping Cool Streets program also provided shade structures, fire hydrant spray caps, and other outdoor cooling tactics on Open Streets in neighborhoods with high heat vulnerability risks. In July, ten Open Streets comprising slightly less than 2 miles were also designated Play Streets offering outdoor recreation opportunities and programming from partnering non-profit organizations including the Fresh Air Fund, the Police Athletic League, and Street Lab.

3. Open Restaurants, Open Storefronts and Outdoor Learning

New York City's bars and restaurants provide 15% of the city's sales tax base and supply 317,800 jobs (Office of the New York State Comptroller 2020). The industry quickly seized on the success of the Open Streets program as a potential economic lifeline for restaurants. In mid-May, a group of City Council members and the Manhattan Borough President formally requested that the city develop a plan to facilitate expanded outdoor dining³. While the city has long allowed sidewalk dining in limited locations and created the Street Seats program in 2015, these options had always been expensive and heavily regulated, constraining most restaurants' ability to provide outdoor dining. On June 18, the city formally launched the Open Restaurants program, providing expedited permits for sidewalk and parking space seating, as well as on streets closed through the Open Streets program and pre-existing DOT-managed public plazas. Originally in effect until October 31st, Open Restaurants was later made permanent and year-round; as of December 31, 2020, the program had 10,854 enrollees citywide, slightly more than one-third of the city's 28,896 bars and restaurants [see Table 1]. Within days of the program's launch, some restaurants had already received permits to commandeer adjacent parking areas for seating with simple preliminary interventions becoming more sophisticated over the course of the year [see Figures 1 and 2].

³ <https://benkallos.com/press-release/letter-open-sidewalks-and-streets-restaurants-social-distanced-service-kallos-brewer>.

	Bronx	Brooklyn	Manhattan	Queens	Staten Island	NYC Total
Total number of licensed restaurants as of February, 2020	2,559	7,322	11,408	6,560	1,047	28,896
Total Open Restaurants program participants	615	2,658	5,275	2,273	178	10,999
Open Restaurants program participants as percentage of total pre-pandemic establishments	24.0%	36.3%	46.2%	34.6%	17.0%	38.1%
Open Restaurants program roadway Seating	24	233	582	170	9	1,018
Open Restaurants program sidewalk Seating	295	1,068	1,772	882	87	4,104
Open Restaurants program roadway and sidewalk Seating	284	1,261	2,722	1,173	78	5,518
Open Restaurants program Open Streets seating	12	96	199	48	4	359

Table 1. New York City Open Restaurants Program Enrollees by Borough as of February 15, 2020. Courtesy of NYC Open Restaurants Dashboard and NYC Department of Health and Mental Hygiene.



Figure 1. Within days of the launch of the Open Restaurants program, simple outdoor seating areas like the one above began appearing on city streets. Photo by the author.

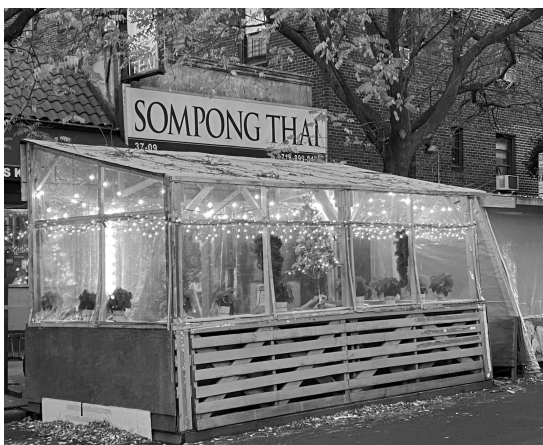


Figure 2. By December, many restaurants had invested in more ambitious outdoor structures to entice customers during less hospitable weather. Photo by the author.

To support retail and service businesses, the city also created the Open Storefronts program at the end of October, allowing businesses to use sidewalks for displaying retail goods, seating, and queuing. Shops adjacent to an Open Street were also allowed to use the street space in front of their business. Focused on the holiday shopping season, the program originally operated from October 30 to December 31, and unlike the Open Restaurants program, did not allow retailers to apply for use of adjacent parking spaces or build outdoor structures over 5 ft tall. Later extended to September 30, 2021, the program has nonetheless proved less popular than the Open Restaurants program, with only 687 participants citywide as of February 15, 2021.

After moving to online instruction in March, the mayor committed to reopening the city's 1,606 public schools for in-person instruction by September of 2020. But the DOE initially appeared to ignore advocates' calls for the use of outdoor classrooms, only unveiling its Outdoor Learning Initiative less than a month before the start of the school year. Despite the short application window, more than 1,100 public, private, and charter schools applied to use schoolyards, city parks, and closed streets for educational space. Almost all applicants were ultimately approved including at least 85 that requested closing an adjacent street and more than 200 requesting to use city park space (Elsen-Rooney 2020).

4. The 34th Avenue Open Street in Jackson Heights

While the Open Streets program was originally designed as a temporary emergency program, some neighborhoods quickly began to advocate for the city to make Open Streets segments permanent (Colon 2020). 34th Avenue, which bisects the Jackson Heights neighborhood in the northern part of the Borough of Queens, illustrates how the Open Streets program evolved from a weekend pilot program in March to calls for permanent street redesigns in some neighborhoods a few months later.⁴ Jackson Heights and surrounding neighborhoods were the epicenter of the city's COVID-19 crisis in the spring of 2020 (Correal and Jacobs 2020) and are located in one of the most park-starved corners of the city (New Yorkers for Parks 2010). Only eight blocks of 34th Avenue were first designated as a pedestrian priority street in April, but owing to advocacy by the neighborhood's elected officials and local community groups, a 26 block (1.3 mile) stretch of the avenue was ultimately closed through traffic from 8 am to 8 pm, with parking and 5 mph local access allowed. The 50-foot-wide two-way street and its planted median quickly became a popular neighborhood resource for walking, jogging, bicycling, outdoor exercise classes, and even passive relaxation [Knoll 2020; see Figure 3].

In early September, citing widespread community support, the neighborhood's City Council member issued a formal request to the DOT to make 34th Avenue a permanent car-free or limited access street. A subsequent petition drive gathered over 1,500 signatures and hundreds of local residents were joined by elected officials from across the city for a rally on October 24th

⁴ The author is a resident of Jackson Heights.

demanding that the mayor designate 34th Avenue as a permanent Open Street [see Figure 4]. Within days, the

DOT committed to making long-term changes to 34th Avenue through a community-based design process. The first of these events, an online “Information and Listening Session” hosted by the DOT on December 2nd had more than 550 virtual attendees expressing strong and varied opinions about the concept of redesigning 34th Avenue as a permanently automobile-limited thoroughfare. Simultaneously, other neighborhoods were making similar demands and on January 28, 2021 Mayor de Blasio announced in his final State of the City speech that the Open Streets program, along with a number of other pandemic streetscape programs, would be made permanent although no specific details were provided (City of New York 2021). An Open Culture program, created by the City Council, also went into effect in January 2021, providing a legal mechanism for local arts and non-profit groups to use Open Streets for artistic and cultural events (New York City Council 2020).



Figure 3. The 34th Avenue Open Street in Jackson Heights, Queens has become a well-used multi-use open space for local residents. Photo by the author.



Figure 4. Jackson Heights residents organized a rally on October 24, 2020 to advocate for making 34th Avenue a permanent Open Street. Photo by the author.

5. How can Lessons from Previous Disasters Help Inform Ongoing COVID-19 Responses?

The COVID-19 pandemic has been a singularly calamitous event. After 11 months, the virus and its associated economic and social repercussions continue to spread. Preventing COVID-19 replication while supporting local businesses and facilitating safe social interactions continue to be critical goals, and the city's responses continue to evolve. This section summarizes four broad lessons from the study of previous disasters that are pertinent for helping city planners and urban designers continue to effectively respond to this crisis.

5.1. Lesson 1: There is always opportunity in chaos

New York City's experience with COVID-19 confirms one of the most longstanding lessons of disaster recovery: chaos and destruction, paradoxically, always provide opportunities for positive change. Among the earliest scholarly analyses of disasters, sociologist Prince's (1920: 144) book *Catastrophe and Social Change* examined the December 6, 1917 munitions ship explosion in Halifax, Nova Scotia that killed almost 2,000 people and injured 9,000 more. Making an observation that has since become commonplace, Prince offered that the Halifax explosion was both a tragedy and "preparation of the ground for an inrush of the spirit of progress". Plainly stated, while disasters can cause horrific pain and destruction, they can also generate opportunities for creative recovery that will make communities better off in the long run. When weather-related or geophysical hazards cause physical destruction, damaged buildings and infrastructure can be replaced with more resilient structures, while citizens and local officials are willing to consider changes that address newfound risks the disaster has exposed (Rubin et al. 1985). While COVID-19 lacks the physical destruction of an earthquake or tornado, the willingness to accept a "new normal" — even if temporarily — has provided a window of opportunity for urban design and planning approaches that might have never been politically feasible without the urgency of the pandemic and the need to balance hazard mitigation with other urban development goals (Berke et al. 1993). Over one-third of city restaurants are currently participating in the Open Restaurants program, and while this is insufficient to support restaurants indefinitely, the program has been popular with the public. Despite some challenges, Open Streets projects such as 34th Avenue have also been locally popular, and now both programs have been made permanent by the mayor. In a city that has often struggled with bureaucratic inertia in its efforts to make the public realm more pedestrian and bicycle friendly, the pandemic has facilitated actions that might have taken decades or never happened otherwise.

5.2. Lesson 2: Understanding system complexity is central to effective disaster response

To effectively address the urgent, interconnected, and cascading elements of disaster response and mitigation of future hazards, cities have to think strategically, act proactively, and embrace complexity as opposed to relying only on discrete tactics that are ad hoc, reactive, and piecemeal (Dynes et al. 1972; Rubin et al. 1985; Alesch and Siembieda 2012). New York's urban design responses to COVID-19 illustrate this challenge of operating with a context of extreme complexity while still moving quickly to address urgent challenges.

For example, the Open Restaurants program continues to face new challenges as the city attempts to integrate the program into its existing regulatory apparatus. Some restaurant owners have spent tens of thousands of dollars upgrading outdoor dining structures, many of which are now fully enclosed with heat and electricity. But this raises new questions that the existing programs and attendant bureaucracy are poorly equipped to deal with: Are these structures still under the purview of the DOT because they sit on streets and sidewalks? Or have they in fact become “buildings” under the jurisdiction of the Department of Buildings? When “indoor” dining is restricted because of increasing COVID-19 caseloads in the city, are these structures allowed to remain in operation even though they may lack the efficient air-handling mechanisms available inside some restaurants? Is it more important to prioritize outdoor dining or transportation on public thoroughfares (e.g., Ricciulli 2020)? When a December snowstorm dropped six inches of snow on the city, the mayor temporarily suspended the Open Streets program and suggested that restaurants remove their dining structures from the streets to facilitate snow plowing, even though many such structures are essentially small buildings that cannot be easily moved (Gold 2020). In addition to this shifting landscape of evolving and sometimes contradictory rules and regulations, inconsistencies between state and city policies have also been a source of consternation for business owners. Finding a balance across the city’s various regulatory, economic and infrastructure systems, while facilitating economic activity and enforcing public safety, will be ongoing challenges as the city struggles to create a lifeline for small businesses and avoid overly punitive enforcement of sometimes confusing regulations.

5.3. Lesson 3: Effective response demands a balance between planning and acting

Every disaster is unique and recovery programs must always be developed anew in the midst of a crisis while responding to evolving needs in real time (Finn and Marshall 2018), resembling the process of “building the plane while it is in flight” (Leicht 2017). Most of the programs reported here had to be designed and scaled up in a short timeframe with no opportunity to test them first, leading to sometimes chaotic implementation. This highlights a central paradox of disaster management, the need to “slow down to speed up” (Chandrasekhar et al. 2014: 381) and find a balance between quick action and deliberative decision-making (Olshansky 2006; Olshansky and Johnson 2010). In normal times, new policies are carefully planned, thoroughly analyzed, and implemented slowly in order to identify potential problems. Spending valuable time to refine and perfect new strategies after a disaster means foregoing opportunities to address pressing needs, but finding this balance is important. While New York moved slowly in comparison to cities like Oakland, CA and Paris, France, it is also clear that the city’s efforts could have nonetheless benefitted from even a brief period of strategic engagement with restaurant owners, Safe Streets advocates, educators, and other stakeholders during the planning stages. This approach might have helped identify some of the key challenges that the programs would ultimately face. Instead, the city was relatively slow to take action in comparison to many peer communities, and yet still failed to use that extra time to engage in robust stakeholder engagement.

5.4. Lesson 4: Effective post-disaster governance mostly happens before the disaster

A final lesson of the COVID-19 pandemic that is consistent with previous disasters relates to the role of bureaucracies in the recovery process. Governments, because of the inherent characteristics of bureaucracies, often serve as barriers to effective recovery even as they attempt to empower it. In many cases new organizations or systems are created to facilitate recovery because there is a need to circumvent existing ponderous bureaucratic systems (Johnson and Olshansky 2017). In order to be most effective, New York City realized early in the pandemic that heavy-handed, top-down approaches would be ineffectual in the COVID context, and additionally, were beyond the financial means of a city in economic freefall. Instead, city officials recognized quickly that the city could serve its constituents best by providing information, flexible recovery programs, and technical support, empowering local residents to innovate, move quickly, and thus facilitate their own recovery. For the most part, New York City achieved this by looking to existing programs like the DOT Public Plaza and Street Seats programs, which provided frameworks that could be scaled up quickly and effectively with simplified permitting processes, limited government oversight, and wide latitude, with the expectation that problematic implementation challenges could be addressed only when and if they arose. After that, the city mostly got out of the way and allowed neighborhood groups, restaurant owners, Business Improvement Districts, and other stakeholders to innovate as their resources allowed and location conditions dictated. Thus, one important lesson for cities is that pre-disaster preparation strategies should in part emphasize empowering residents and entrepreneurs by building civic and economic capacity at the local level, so that they are better equipped to act as agents of their own recovery when the need arises (Campanella 2006).

6. How do New York City's Experiences Contribute to Better Disaster Response in the Future?

Lessons learned by New York and other cities will undoubtedly contribute to the ongoing evolution of disaster management in the future. But it will be important to monitor how effective these efforts are at supporting local businesses and addressing other goals over the longer term. Further analysis of the city's COVID-19 response should focus on three important topics.

The first issue relates to the social equity considerations of these programs. While the city has created systems for creatively using public space that were almost unimaginable before COVID-19 emerged, they nonetheless shift much of the burden for costs and administration onto community members, local non-profit groups, and small business owners. Many of New York's most densely populated neighborhoods — which need social distancing and outdoor recreation opportunities the most — are also low-income communities of color that may lack the kinds of formal social capital necessary to help operate an Open Street in partnership with the city. In Jackson Heights, for example, advocacy for creating and expanding the 34th Avenue Open Street was only successful because it harnessed the human capital built from more than a decade of concerted neighborhood organizing around street safety and open space access (e.g., Kazis 2010). Likewise, schools that were able to purchase equipment to participate in the DOE's Outdoor Learning Initiative often did so through donations from affluent parents while schools

without such resources were unable to avail themselves of these opportunities. Other equity issues also deserve ongoing scrutiny. For instance, people with disabilities, bicyclists, young parents pushing strollers, and other groups may be negatively impacted by a more cluttered and complex streetscape. The use of public streets by for-profit businesses has also been a subject of debate, though the general consensus among city residents seems to suggest that the vitality of each neighborhood is so dependent on its local businesses that the inherent tradeoffs are worth making. It will be important to monitor the implications of this as the immediate crisis recedes.

The second issue relates to economic equity. Allowing restaurants and stores to utilize public space for commercial purposes is creative, but it is only a partial solution for many businesses, and no solution at all for others. Many shops and restaurants — especially small businesses in lower income neighborhoods — lack the resources to purchase the infrastructure necessary to support a shift to outdoor dining or retail sales. Businesses located in narrow storefronts, upper floors, next to a bus stop or fire hydrant, or along narrow streets and sidewalks will likewise be left out. Some restaurants have also reported being aggressively ticketed by the NYPD and the New York State Liquor Authority for minor infractions. Unless logistical and operational challenges, financial limitations, and enforcement inequities are addressed alongside the more technical urban design issues, these well-meaning programs will fail to help many of the most vulnerable businesses by creating new sets of challenges that cancel out any potential benefits. Finally, safety must continue to be a paramount concern. The city has not yet allocated any capital funds for permanent design changes that would enhance the safety of these programs. Though they are experimental solutions developed during a crisis, these efforts will require further refinement in order to be sustainable and safe. For instance, the city will need to balance the economic imperative for allowing outdoor dining and recreation with public safety. Open Streets and Open Restaurants locations create automobile crash risks for pedestrians and diners, and in some locations drivers have begun to ignore the ad hoc signage and protective devices delineating Open Streets locations. Many Open Restaurants participants have built ambitious outdoor seating facilities but limited oversight from the DOT and DOB — as well as sparse inspections and enforcement — also means that some structures may present a safety risk during a hurricane or when loaded with a foot of wet snow. Evolving more ambitious design standards for Open Streets and Open Restaurants locations, allocating capital funding to create permanent safety improvements, as well as prioritizing traffic and code enforcement, will be important to maintain public safety going forward.



Figure 5. Confusing regulations and uneven enforcement have occasionally resulted in Open Restaurants designs that cause public safety and public access concerns. Photo by the author.

7. Conclusion

Creative reimagining of the public realm has been a small but important piece of New York City's COVID-19 mitigation and recovery strategy. In less than a year, the city's streetscape has been drastically altered to allow for both social distancing and economic activity. Creating the policies and programs to support these changes has been uneven and imperfect, but this is expected in rapidly evolving, resource-and-information constrained crisis situations. The qualified successes, nevertheless, illustrate what is possible when a crisis empowers action. The programs that have allowed the city to muddle through the first year of the pandemic have been improvisational and experimental and were not designed to be permanent. But as the pandemic stretches into 2021 and its associated economic crisis continues unabated, it appears increasingly likely that many of these emergency measures have proved successful and have public support. When COVID-19 risks finally begin to recede, these temporary response strategies will need to be rethought as permanent policies and structural changes to the cityscape. That will require a systematic review of what has worked well and what has failed, in addition to overcoming some of the key operational and social equity challenges identified above.

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