Impact of Covid-19 on City Streets

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Impact of Covid-19 on City Streets

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Abstract

Covid-19 has had a severe impact on the urban fabric of many cities and caused disruption to the current way of living. This paper attempts to shed light on the impact that Covid-19 has had on the city streets and how city streets have adapted to the disruptions brought on by the virus. Furthermore the paper lays down recommendations that cities can use to make their streets healthier and safer.
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1. **Introduction**

Over the past twenty years cities have been recognizing the critical role that street plays in achieving their broader policy goals. Ambitious plans and policies have been laid out to help citizens move around more safely, efficiently and sustainably while also reimagining streets as their largest public space. Street stands at the heart of the many solutions to challenges that society faces, which makes the understanding of them and development of the streets a forefront effort that cities need to make.

Despite the ambitious goals of reforming streets, many cities prior to Covid 19 were only making halting progress towards achieving their stated goals. An example of this would be the vision zero project which was “adopted to eliminate traffic fatalities—a laudable objective—have only incrementally curbed traffic crashes and deaths” (Farhi et al., 2020). Many cities also wanted to bring about changes of city streets to reduce greenhouse gas emissions, yet most refrain from reaching these milestones due to lack of initiative by governments to bring about radical changes.

Dramatic widespread and fast change is needed in order to make alternative for personal automotive safer and more convenient, the incremental progress that cities have made over the progress cities have made in “creating bus lanes, bike lanes, and more public space represents significant progress, but when it comes to outcomes, cities need to be reaching for a higher standard of success at a much faster pace.” (Farhi et al., 2020)

Under the ideology of “never waste a good crisis” many cities have used the ongoing Covid 19 pandemic to begin large scale changes where bold and imaginative efforts to move towards a sustainable mode of transportation and healthy multi-modal options. For example, “Milan turned more than 35 kilometers of streets over to cyclists and pedestrians, including
an ambitious system of temporary bikeways.” (Farhi et al., 2020), with an eye towards making such changes permanent. This paper is an attempt at understanding the rapid actions that governments have taken in transforming the city streets and how these changes can become permanent.

2. Impact of Covid-19 on city street

The pandemic has not just had a direct effect on the human body but has also affected the functioning of society as a whole. These impacts can be broken down into four categories, namely, (1) environmental quality, (2) socio-economic impacts, (3) management and governance, and (4) transportation and urban design. These categories highlight how diverse the impact has been and the resource intensive research which needs to be undertaken to fully understand the impact.

Cities are home to most of the world population which makes them the center of economic growth and innovation. It also makes them to be places with high concentration of peoples and activities, this high density of people has made the spread of the virus accelerate in cities (Qiu et al., 2016) due to these cities have been seeing a rapid increase in cases and death rate due to the virus. In order to combat the increase in cases, government officials have taken to imposing strict lockdown measures as well as social distancing and other protective measures to keep the city population safe. Due to such measures and a general concern amongst the public to not be exposed to the virus, cities have become practical ghost towns with minimal use of the streets.

As the pandemic has progressed there was the growing concern of the impact of long-term quarantine on physical and mental well being of the population, governments and cities
around the world have been coming up with methods to safely allow the population in cities to use the streets, it has been a very challenging task to do as city streets use the ability to have higher density of people as a method to service the city population. City planners across the world have risen to the challenge of de-densifying streets and have come up with innovative solutions, for instance the city of New York Department of Transportations has closed down 100 miles of paved streets and converted them pedestrians and bicycles in order to de-densify the sidewalks.

Covid-19 has also had an impact on in store shopping and eateries as cities have practically banned indoor dining or put restrictions on the amount of people allowed to be inside, this has led to business significantly decreasing. In order to overcome the decrease in businesses, several cities have allowed restaurants to utilize the sidewalk for outdoor dining purposes, for instance the city of New York runs an outdoor dining program which allows restaurants to utilize the sidewalk as additional seating.

Cities are compact and the majority of the population uses mass transit systems to get around, these systems are known to be very heavily utilized and often see a high amount of ridership in very close quarters. “Such crowded spaces were found to have a very high rate of transmission” (Wu et al., 2019), thus cities took measures to reduce the capacity of their transit system. By reducing the capacity of the transit system city officials were concerned that it would make commuting for the residents challenging, but due to most work being shifted to remote work there was no significant effect on the ability of the transit system to service its members (Qui et al., 2019)

In the early 2020 Covid-19 ravaged many countries around the world. It impacted everyday life in many cities and threatened to destroy the urban fabric by causing urban
migration and a halt of society as it existed. Throughout the course of this pandemic there has been a gradual movement towards normalcy, experts have predicted that civilization will never go back to its pre pandemic ways of living (Wu et al., 2019), this will present itself as a challenge for urban designers to develop streets in cities which are suitable for what is considered the “new normal” and also develop a transportation system which can support these new streets.

3. Tactical Urbanism as a solution to deter impact of covid-19

3.1 Definition

As the pandemic has progressed, cities have been experimenting with various different concepts which can help promote social distancing and open up the space for pedestrians and other non motorized modes of transportation. One of the biggest challenges cities were facing was the lack of space on sidewalks to allow businesses to do outdoor dining and let pedestrians use the street too. In order to overcome this challenge the concept of tactical urbanism was the go to method for many cities.

Tactical urbanism includes low-cost, temporary changes to the built environment, usually in cities, intended to improve local neighborhoods and city gathering places. Tactical urbanism is also commonly referred to as guerrilla urbanism, pop-up urbanism, city repair, or D.I.Y. urbanism. It has been especially helpful during the pandemic as it has allowed cities to convert street parking spaces into outdoor dining places (New York City outdoor dining space initiative), it has also allowed for shutting down of motorized roads and converting them into walkways for pedestrians.
3.2 Methodology to make tactical urbanism a permanent fixture

Tactical urbanism has been an integral part of the initiative by sites to reclaim streets for the public. In most cases these initiatives are temporary, due to these reasons the street ends up going back to vehicular traffic which in turn leads to a less pedestrian friendly environment. By making pop up projects into permanent ones, city developers can start to make concrete steps towards reaching the goal of having streets which are pedestrian, biker and other non-automotive transportation friendly. In a recent NACTO - GDCI webinar (2015) Mike Lydon and Skye Duncan gave the below mentioned five step approach to make pop up urban design into permanent design:

1. Uncover value - Lydon points out that cities have a value to uncover in them, underutilized spaces are an excellent place to start the transformation into pedestrian friendly zones. By doing so not only is it increasing mobility but it is also benefiting the local community by drumming up business from people passing by, leads to community building by providing an open space for people to conglomerate. An example of this would be Biscayne green park in Miami, seeing an average footfall of 20,000 visitors in 23 days helped add value such increases in visitor numbers also helps communities get political commitment to make such pop up structures permanent and highlight the importance of tactical urbanism to city officials.

2. Tactical urbanism is only viable if the general population is receptive to the idea. In order to educate the population about what it is, designers should engage stakeholders from the beginning. Not only does it raise awareness about the project but it also helps generate new ideas, build community support, improve local understanding of urban issues. As Sky Duncan mentioned “Engaging the community before an interim intervention is critical to generating support for permanent change,” an example of which would be of
the Santana neighborhood in Sao Paulo, Brazil. Teams carried out surveys, tested out geometry and asked public feedback. By doing so they were able to design a space that fit the community well and thereby ensuring that it can be made into a permanent space.

3. Documentation and measurements are solid proof of the changes that have happened and the results of those changes. It is extremely important to collect data about the effects of a particular space and analyze this in order to determine if it is having the right impact or not. Before and after photos and metrics are a very good way to analyze the success a space is having “Capturing different angles—including several street-level photos from the height of an adult and the height of a child, in addition to aerial photos—can make this documentation even more compelling.”, it also allows to act as proof for the argument that a space should be made permanent or not. Planners should be careful and have a good sense about what needs to be measured based on the objective that the space is trying to fulfill

4. After the space has been built it is now time to attract the local community to engage with the space. Such engagement helps show planners and politicians that the space is an important part of the community fabric thus it should be made permanent. Live music concerts, pop up shops, pop up markets and workshops are some of the ways to draw local community to use the space

5. Tactical urbanism can be used to introduce new approaches that can transform policy or inspire new programs.

Tactical urbanism guide provides an innovative idea of having a material palette which can be deployed with relative ease and be used to test ideas in different cities.
According to the guide these palettes have material which can fulfill the functions of barrier elements, surface treatments, street furniture, landscaping elements, signs, programming.

1. Barrier Elements

Barrier elements are extremely important when reclaiming streets from motor vehicles for pedestrians. They not only act as demarcation and safety tools but are also responsible for creating a sense of space for users. The chart below provides a high level lost of criteria to consider when choosing a barrier:

![Barrier Selection Criteria Chart](image)

*Fig1 - Barrier selection criteria (Tactical Urbanist’s Guide, 2016)*
2. Surface Treatment

Surface treatment such as striping and pavement markings are extremely crucial elements for designing streets. Majority of projects have established standards but there are also projects where designers have room to add elements such as artistic crosswalks, painted intersections, murals, curb extensions etc. While such ideas seem like a good way to make streets more inviting to pedestrians, it also needs to be considered that such projects require maintenance which needs to be considered during design. The chart below provides lists of factors to consider when choosing surface treatments according to tactical urbanism guide.

![Surface Treatment Criteria](image)

**Fig. 2 - Surface treatment criteria (Tactical Urbanist’s Guide, 2016)**

3. Street Furniture

Street furniture plays an integral role in defining a public space and also giving it character, it provides opportunity for people to sit, relax, interact with each other and the environment. Types of furniture being used on a project are dependent on the timeline and budget of the project. They can be ready made or made to order, use recycled materials or
borrowed materials. It is advised that the demonstration and concept proving step should keep furniture to simple and relatively inexpensive without compromising on the utility aspect of it.

User comfort is one of the most important factors to consider when choosing street furniture, having moveable furniture increases mobility of the users and thus helps them be more interactive in allowing the formulation of groups.

While this idea of moveable furniture would be acceptable in a post pandemic situation, in the light of Covid-19 outbreak planners should focus on making furniture that allows for social distancing and discourage the formation of large groups. This approach makes it harder to get people to utilize public space but is a necessary tool in helping keep the public safe. Designers should also focus on adding elements such as hand sanitation stands near furniture, it is recommended that they refer to local government official guidelines and design public spaces which meet those guidelines.

Accessibility is also an integral part in the selection and design process, ADA standards must be followed and designers should always strive to provide high accessibility to the furniture in public spaces. Figure 3 below shows the important points to consider when choosing a public furniture.
4. Landscaping Elements

Plants and trees increase the aesthetics of the space and are highly recommended to be included in the design process. They reduce the carbon footprint of the area and are shown to have a traffic calming effect, reduce vehicle speed and noise, and give the space a sense of space. Designers should also consider the cost of maintenance of trees and plants, if a proper amount of maintenance is not done then they might die and act as an eyesore to the space. Below is a table showing the landscaping criteria which should be employed.
5. Signs

According to the Tactical Urbanist’s Guide (2016) these are the most important reasons as to why signs are required:

1. Required to meet safety standards - signs are required to meet with the set safety standards of the particular area, allow for traffic control, wayfinding and signs that state the governing rules of the public space

2. Allow for people to understand how to use public space - this comes especially helpful when it's a new type of space that they might have not seen before. They can
be used to help explain to the population what are the project goals and how they can interact with the space. By making the public more informed designers can increase the participation of the public

3. Can be used to create a cohesive “brand” for a public space program - signs have the ability to tie together different projects into one cohesive visual identity, this allows for cities to increase understanding of new ideas in public space planning

4. Ease of developing them makes them an ideal marking tool

5. Important tool for advocacy and gathering public input - can be used to raise awareness about an important public issue. Designer can also use this as an opportunity to highlight the importance of the space which in turn would drum up public support for the space and help lawmakers see the importance of it

6. Can be used to support large livability goals - for instance placing pedestrian wayfinding signs in an interim design plaza can help support the larger goal of making a neighborhood or city a more inviting place to walk.

6. Programming

According to the Tactical Urbanist’s Guide (2016) these are the most important as to why programming is critical as it allows developers to plan events which highlight the multiple uses for the area. Some examples of programming can include exercise, games, arts
3.3 Tactical urbanism and urban Political planning

The traditional power dynamic in terms of decision making has very little space for citizens to interact with the state, this leads to a scenario where plans being implemented are not in line with the wants of the general public at that given time. In an ideal scenario all different players should have equal weight in the and space which would lead to creation of a completely co-produced result (Lydon M., 2015). Tactical Urbanism does exactly this by creating a relationship between tacticians, the public, interest groups and the government.

Interest groups play an integral part in influencing the decisions of the local government and are a foundational power dynamic in politics. Interest groups are defined as “a group of people that seeks to influence public policy on the basis of a particular common interest or concern” (Garcia A., 2015) they are often characterized as being a source of competition in the back and forth power play between citizens and state. They have the ability to create an ideal environment and provide enough tension and back and forth to allow for conversion between all parties to surpass normal transactional politics.

One of the characteristics that Tactical urbanism has which gives it an easier entry to the public sector is that it is individual driven rather than policy driven. Government is known to avoid risk as much as possible, which means doing things in tried and tested ways. If they are to bring drastic changes and these changes don’t satisfy the public then that would lead to government officials being questioned for the waste in funding. Tactical urbanism eliminates this risk as if the individual intervention is a success then it can be transformed into a permanent fixture and in case of a failure the individuals take the blame for its failure rather than the government. This leads to a scenario where the government has almost no risk in allowing such projects to happen and all the benefits. Using this low risk - high reward
methodology in influencing local officials is an excellent way to gather support for turning Tactical urbanism into a mainstream idea.

Tactical urbanism is seen as “self help” activism, this practice arises due to the short fallings of the planning process in the United States. This leads it to share traits with disruptive innovation, which is defined as “A disruptive innovation is an innovation that helps create a new market and value network, and eventually goes on to disrupt an existing market and value network... displacing an earlier technology” (“Disruptive Innovation”, 2021). Rather than forcing the public works department into obsolescence it is trying to make grassroots level changes which would encourage planners to make designs suited for the needs of the city rather than what is tried and tested before.

As stated in Tactical Urbanism How To (Lydon M., 2015) in his “Tactical urbanism works in the gray areas where the government does not outright declare it as illegal but it will also not accept it and bring it into policymaking”. Part of the reason for it being so is that it acts as an effective way to prove a concept, most tactical urbanism designs are temporary and aim to make the community aware about how the space can be used. If there is a positive response from the community lawmakers will try and make it into a permanent addition to the community.
3.4 Case Studies

1. NYC Plaza program is an initiative by the NYC DOT to create neighborhood plaza throughout the city by transforming underused streets into social public spaces. The goal of this program is to meet the city's much broader objective of ensuring that “all New Yorkers live within a 10-minute walk of quality open space.”

   The plaza can be either one day, interim or permanent as shown in the pictures below

Fig 6 - NYC Plaza example (Source: Tactical Urbanist’s Guide, 2016)

Eligibility:

The plaza is an open program which allows all organizations to participate as long as the organization is operating in NYC, Incorporated in New York State and compliant with annual State and Federal filing requirements, Located near or have a mission that serves or relates to the geographical target area of the proposed plaza.

Examples of program:

(1) 1475 Broadway (Times Square)
The most iconic tourist attraction in NYC has one of the biggest plaza in the city, this plaza was made possible through this very program. Times square provides users with outdoor seating which is combined with various different eateries and small pop up shops all along the street. It also has several big brand retailer stores all along the street which makes it a very attractive place for not only tourists but also many locals.

Fig 7 - 1475 Broadway plaza (Source: “Broadway (Manhattan)”, 2019)

(2) Penrith, Australia

The Penrith council and local business saw a need for building a community public park which is to be evaluated over the course of a year. The firm hired to design and build it
was Street Plans, they gathered information by using behavior mapping, business owner interviews, traffic studies in order to get an idea of how the park was succeeding after the trial period of one year. The success of the park and the positive feedback obtained from the locals made the park a permanent fixture.

Fig 8 - Penrith, Australia plaza/park intervention (Source: Tactical Urbanist’s Guide, 2016)

(3) Bradley Avenue Plaza

The Bradley plaza is an interim public plaza in the Pacoima neighborhood of Los Angeles. The project was able to transform an underutilized dead end street into a pedestrian plaza which provided much needed public space and improved the connectivity between a
low income neighborhood and the rest of the area around it. The plaza was developed under the Los Angeles DOT People St Program.

LADOT People St Program allows eligible community participants to apply for and get approval to create projects that enhance the public realm. It allows the LADOT to work with community partners to quickly create interim public spaces, with evaluation of the space being done on a yearly basis.

In this particular project low-cost interim design material was used in order to build the plaza. The plaza contains lounge, seating, workout equipment, pin-wheel stripped paint, planteres, delineators and wayfinding signs. Due to the flexibility of the design it can be readapted to meet community needs, for instance trash cans were added to the plaza after observing the amount of children using the plaza to play in or hang out with their friends. The plaza has acted as a catalyst in promoting conversion of other dead end streets into a more useful public space.

Fig 9 - Bradley Avenue Plaza (Source: Tactical Urbanist’s Guide, 2016)
(4) New Haven Outdoor Seating

Due to social distancing regulations set by the State of Connecticut, indoor dining capacity has severely reduced which has forced most businesses to utilize curbside space as an alternative location to set up tables. An example of a city which is doing so is the city of New Haven, expanded dining on curbsides and parking spaces is allowing several restaurants to reclaim some of the indoor seating they have lost. In order to facilitate its restaurants the city has closed several lanes such a college street and has also prohibited parking on the street in order to free up space for restaurants to put up chairs.

Closure of streets not only benefits local businesses but it also allows users to take advantage of the closed road by utilizing it for recreational purposes, closed down streets also encourages non motorized traffic to use the new space.

Fig 10 - File photo of College Street in New Haven (Source: Hartford Courant, 2020)
4. Covid-19 and increased multimodality of cities

With the onset of the crisis cities have the perfect opportunity to put in place ambitious projects which would increase the multimodality of the city. As seen before there has been a decrease in the amount of private automobiles on road and the public is more open to look at more alternative methods of transportation, this provides a perfect environment to bring about ambitious changes in the way city residents commute. This would mean establishing “establishing priority networks for transit, biking, walking, public space, and freight”(Wu et al.,2019), this can only be achieved through a change in current city block design.

Cities need to have a clear vision of the interconnected overall system that they are aiming for in the future, this will help them and the community stay focused on the options that help achieve the citywide vision and also be able to support each neighborhood’s local needs.

In the paper titled Post Pandemic Streets (Farhi et al., 2020), the authors lay down the goals that these plans should be able to fulfill they state “plans should be "blue sky" in the sense of creating the best (e.g., safest, most direct, most convenient and comfortable) routes, and in the sense of not treating today's street design (number of driving lanes, the existence of parking) as the starting point. Most importantly, these plans must be ambitious enough to actually achieve the goals that cities have set around climate action, traffic safety, equity, public health, and sustainability." Using this as a jumping off point, city planners can introduce various different changes to a street in order to make a smooth interconnected public transportation system.
One such way to increase the cities multimodality is the idea of super blocking, these superblocks ban the use of all vehicles except for essential vehicles in the area and have their own multimodal transportation systems. The figure below gives us a clear idea of what such a model will look like, it was made using a typical Manhattan block and then super blocked with adjacent blocks to create a no vehicle access superblock.

Fig 12 - Ideal network Topology (Source: The post Pandemic Street, 2020)

The idea of creating superblocks works very well in drastically increasing the multimodality of cities, it requires relatively little investment or change to the existing roadways and city plans as all existing roads are just simply converted. It also acts as a sub city within larger cities, such sub cities are a great way for fostering a close knit community which prides itself on their local traditions and cultures. By doing so you also motivate local
community members to play an active role in managing the needs of the community and take care of it.

Superblocks have an advantage that they can be increased in size by simply making a change to zoning, thus if it is successful in one area the city planners can easily increase its size. This allows for an easy transition to a more multimodal city.
5. Case studies of different cities and the work they have been doing to adapt city street

In order to better understand the rationale behind proposing the changes that have been talked about in the paper let us take a look at different case studies from which these recommendations were drawn from or have implemented the recommendations.

5.1. Boston, United States

After the first lockdown that was imposed in the city, Boston has been actively taking efforts to increase the multimodality of the city and use the public transportation and city assets to deter the impact on small businesses. The government of Boston has launched the healthy streets initiative under which it has expanded sidewalks in business districts and pop up bike lanes, closing of city roads to traffic and allowing pedestrians and cyclists on them in order to reduce traffic speed and increase distancing ( “Healthy Streets”,2020).

5.2. New York City, United States

New York City has seen major changes take place from permanent closure of city streets such as Broadway street to allowing businesses to set up shop on its sidewalk. This is being done under the cities NYC Open Restaurants program

The city has Closed down streets, 100 miles of them, converted for pedestrians and bicycles. Most streets closed were near parks so criticism for that as cars still speed and accessibility for pedestrians and bicycles has not really increased. It has also started the Open restaurants program which allows businesses to have restaurants on either the curb or on sidewalks given they meet all specifications set by NYDOT. As well as reallocated public
space like the Space under A train line being repurposed to allow for more public areas which can be used for various purposes like testing, increased accessibility to hospitals, community space etc.

![NYC Open Restaurants](image)

Fig 13 - NYC open restaurant criteria (Source: Open Restaurants, 2020)

5.3. Minneapolis, United States

In an effort to boost multimodality the city of Minneapolis has been using the lack of private transportation to set up Mobility Hubs in an effort to make public transportation more appealing to commutess once offices open up again. These hubs provide connectivity between different modes of transportation.
Fig. 14 - mobility hub depiction (Source: Mobility Hubs, 2019)

The City of Minneapolis is making updates to streets in response to COVID-19, including:

- Pick-up only zones to support local business
- Fewer pedestrian push buttons to reduce the need to touch surfaces

The City also previously installed 16 miles of Stay Healthy Streets to support comfortable walking, rolling and biking while social distancing. Those have been removed as the State of Minnesota guidance evolves for the Stay Safe Minnesota COVID-19 response. The City is taking lessons learned from these emergency installations to inform future investments to support traffic calming, walking and biking on routes prioritized based on safety and community input.
5.4. Detroit, United States

The City of Detroit is developing Streets for People, a transportation plan with a singular focus — to make it easier and safer for all Detroiter to move around the city. The plan seeks to knit together diverse neighborhoods, prioritize safety of the most vulnerable road users, and identify clear implementation and design strategies for roadways improvement.

UNI opened up southwest as a way to introduce bikes to the public and make them engage with it. They also have programs where they teach kids to fix bikes and then let them keep the bike they fixed. ‘Earn a bike program’

The figure below states the goals that the city has set itself in order to make streets more accessible.
5.5. Berlin, Germany

Since the onset of lockdown Berlin has invested in developing dedicated cycling lanes by reassigning paved lanes which were meant for vehicle traffic to now be dedicated bike lanes. This is a very innovative approach as it only requires repainting the lanes and marking them as bike lanes in order to make it a reality. Such low cost innovations have allowed for the city to drastically improve the streets and make them more multimodal.
Fig. 16 - Pop-up protected Bike lane (Source: Fabien Deter, 2020)

6. Conclusion

Covid-19 has changed the way humans interact with each other and how they interact with the places around them. As the way of interaction changes it is imperative that cities also transform themselves to make it easy for people to live and interact with them. This paper has looked at the challenges that Covid-19 has brought to cities and has recommended several solutions and policies that cities can implement, with emphasis on the policy of tactical urbanism and making those changes a permanent fixture in cities.
The pandemic calls for drastic changes in policy and asks for government authorities to come up with radical and innovative solutions in order to preserve the urban fabric a way to preserve the urban fabric and make sure that cities function with the same ease as they did pre pandemic.
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Access Date - 02/23/2021


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