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Cities in a Post-COVID World

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Abstract: This paper examines the effect of the COVID-19 pandemic and its related economic, fiscal, social and political fallout on cities and metropolitan regions. We assess the effect of the pandemic on urban economic geography at the intra- and inter-regional geographic scales in the context of four main forces: the social scarring instilled by the pandemic; the lockdown as a forced experiment; the need to secure the urban built environment against future risks; and changes in the urban form and system. At the macro-geographic scale, we argue the pandemic is unlikely to significantly alter the winner-take-all economic geography and spatial inequality of the global city system. At the micro-geographic scale, however, we suggest that it may bring about a series of short-term and some longer-running social changes in the structure and morphology of cities, suburbs, and metropolitan regions. The durability and extent of these changes will depend on the timeline and length of the pandemic.

Keywords: Cities, COVID-19, Pandemic, Urban Structure, Remote Work.

Introduction

COVID-19 is not the first virus to strike our cities, nor will it be the last. Over the course of history, cities have often been hotbeds of contagion. The Black Plagues of the fourteenth century killed a third of Europe and the Middle East. The Cholera outbreaks of the 19th century decimated London, Paris, Moscow, Hamburg, New York, Chicago, and Washington DC, among other large cities. The Great Flu – also known as the Spanish Flu – took the life of as many as 50 million people worldwide between 1918 and 1920. In the United States it killed more people than the two World Wars and the Korean and Vietnam wars combined and especially ravaged cities like Pittsburgh, Philadelphia, Louisville, and Nashville (Correia et al., 2020). Yet, the current pandemic is also leaving profound scars in many of our cities. In New York City, COVID-19 has provoked 35% more excess deaths than the 1918 Great Flu and resulted in more than 3.3 times the increase mortality of the 9/11 attacks on the city (McCann et al., 2020). In Bergamo, Italy, excess deaths in March 2020 were 6.67 times higher than in a normal March (McCann et al., 2020).

Past pandemics wreaked havoc in the moment, and influenced substantial cultural, political, and urban design changes, but none of them succeeded in denting the role large cities have in society. No pandemic, natural disaster, or war has ever managed to stifle their growth and pre-eminence over the long term. Claims abound that “this time is different,” because this is the first pandemic in history to occur when there is a widely available alternative to face-to-face work, and an alternative to doing one’s own shopping. But there is a long history of failed forecasts that “this time, distance is dead”; indeed, with every major improvement in transport and telecommunications capacity in the past two centuries, there has been an increase in urbanization (Leamer and Storper, 2001). It is therefore highly unlikely that COVID-19, despite its high levels of devastation in certain cities, will derail the long-standing process of urbanization and the economic role of cities. Innovation, creativity, and economic growth require the clustering of talent and economic assets, face-to-face interaction, buzz, diversity, and the critical mass that only cities can provide (Storper and Venables, 2004). Perhaps, paradoxically, the more efficient transportation and telecommunication technologies become in spreading out certain kinds of routine interactions, the more we invent creative new cutting-edge interactions that demand face-to-face interaction. This is fundamentally why, throughout history, large cities have rebounded from the devastation of epidemics and many other types of crises and catastrophes.

Nonetheless, even if cities will not shrink or die from the COVID pandemic, they will certainly change—in the short term, and even after a permanent solution to the pandemic, like a vaccine, is found. The current pandemic is producing four main forces that have the potential to lead to a relatively long-lasting transformation of cities and regions as we currently know them. These four forces are:

- **Social scarring:** The fear instilled by the pandemic may pull citizens apart and cause people to avoid crowded spaces for a certain period. This will influence residence choice, travel and commute patterns, and the economic viability of certain kinds of businesses and social gathering spaces.
- **The forced experiment for employment, shopping, workplace and residence choice, commuting of the lockdown:** The lengthy confinements triggered by the health

emergency have provided the conditions for a forced – or, as some will say, a ‘natural’– experiment. Workplaces and classrooms have transitioned to remote, shopping to delivery, and social life has become played out largely over social media. These changes – many of which were more seamless than expected – will leave a legacy on how we interact, work, shop, and, consequently, live. The lockdown is showing that there are radically different ways of living made possible by digital tools. However, the extent to which these alternatives will be complements or substitutes for traditional ways of interaction, once the immediate threat has passed, remains to be seen. There are strong signs that, for many types of work, socialization and leisure, distanced interaction is not a full substitute and that there is hunger to return to face-to-face.

- **The need to secure the urban built environment against this and future health and climate risks:** Public infrastructure, public-facing businesses, and all manner of spaces where lots of people gather will need to make immediate changes to facilitate social distancing and adequate hygiene standards. In the long-run, this crisis will prompt architects, designers, and planners to more seriously consider – as was the case in previous pandemics, such as the 19th century cholera outbreak – permanent interventions that respond to the threat of future pandemics and climate risks.
- **Changes to urban built form, real estate, design, and streetscapes:** Social distancing creates the immediate need for different configurations of indoor and outdoor spaces. At least some of these changes will likely be preserved after the immediate threat passes, whether for their public health benefits, or because people simply enjoy them. The outcome of the forced experiment could also lead to more permanent changes in how and where people live and work.

Ultimately, the extent of the pandemic’s effect on cities will depend on how long it lasts, considering potential new waves; how deadly it is; and how fast life returns to something resembling normal. A short pandemic could lead to a quicker return to business as usual, without extreme changes to cities. A lengthier pandemic with several peaks is more likely to bring about more durable and lasting changes in our cities, suburbs, and metro areas

This essay examines the potential immediate and long-term effects of the pandemic on cities and regions across two geographic scales. The first is concerned with the large-scale arrangement of humans and economic activity across the landscape, at the inter-regional scale or what we will call the “macrogeographic” scale. It seeks to understand the sorting of population and employment and activity into cities of different sizes and their different economic attributes. The second focuses on the arrangement of people and activity (and hence land use) within urban regions, between central and suburban areas, and at the finer granularity of neighborhoods and even streets and smaller districts. We examine these issues through the lens of urban and economic geography, by which we seek to contextualize limited evidence from short-term trends in a longer-term dynamic perspective.

Pandemic: geography what we know so far

SARS-CoV-2 is a novel coronavirus thought to have originated in bats in China. COVID-19 is the [disease](#) caused by the virus (Yong, 2020). It is poised to be the [deadliest](#) viral pandemic since the emergence of HIV in 1981 and the worst airborne virus since the Great Flu of 1918-1920. It is the first time an airborne pandemic has gone global in the age of widespread commercial air travel (Rosenwald, 2020).

Big cities, with a very high degree of air connectivity, lots of international travelers, and lots of people in close proximity, were the places hardest hit during the first wave of the pandemic in the Western world, in March and April 2020. At the time of writing New York City remains – with 27,200 excess deaths relative to the previous five years (FT, 2020) – the largest epicenter in the world in absolute terms, although cities like Lima and Mexico City are closing in on this grim statistic. Many other developed world global cities, such as Madrid, Milan, Paris, London, Barcelona, Chicago, or Stockholm have also experienced severe outbreaks. And the pandemic is also affecting a number of large cities in the emerging world, starting from Wuhan – widely considered to be as the source of the pandemic – but has reached far-flung cities, such as Guayaquil, Lima, Mexico City, Manaus, or Jakarta (FT, 2020). In the USA, so far the largest world center of COVID in absolute terms, the original regional focus of the virus in the Northeast, was replaced by severe outbreaks in Texas, Florida and Arizona by June, and a resurgence in California, which had a mild initial outbreak and strong public health measures, by July. We still do not have a definitive geography of the pandemic.

Most importantly, there is a great difference between the geography of the first-hit places, and the ultimate geography of infections. For the first-hit places, the severity of the outbreak appears less due to density and more a result of their greater connectivity to the world and initial interactions in highly interactive creative local economies. Early analyses tended to argue that the density of the first-hit places was the cause of infection there. Nathan (2020) contends, correctly in our view, that this is an ecological fallacy. There is a weakening relationship to density over time. Many small cities and rural regions have subsequently been hard-hit in per capita terms. Iowa, a notoriously low-density state with a population of about 3 million, recently surpassed South Korea, an extremely dense nation with a population of about 50 million, in number of coronavirus cases. In the first national COVID-19 study developed in Spain, Soria (with a population density of 9.2 hab./km²) was the hardest hit province, with the share of its population having developed antibodies after exposure to the virus standing at almost three times the Spanish average (Ministerio de Sanidad, 2020). Exposure to the illness in the region of Madrid (population density 830 inhab./km² and widely regarded as the epicenter of the pandemic in Spain) was, by contrast, 30% lower. Similarly, in the UK the highest case rates can be found outside London, with the Newcastle city-region becoming one of the main hotspots (Nathan, 2020). East Asian cities in general, including Hong Kong, Singapore, and Tokyo, stand as a [testament](#) to the fact that density does not equal destiny during this pandemic (Patino, 2020). San Francisco, the second densest city in the U.S. (Kahn and Marinucci, 2020), and dense cities throughout Germany and Northern Europe, [prove](#) the same point.

Aside from a swift, decisive response from local and national leaders and strong adherence to public health policies, a few specific factors stand out as potential determinants of which cities – and which communities within cities – experience the most severe outbreaks.

The first is connectivity. Cities that became early epicenters are global hubs for tourism and business, with some of the world's busiest airports. Many smaller communities that have experienced severe outbreaks are in fact highly cosmopolitan, like ski resorts in the [Alps](#) and [Rockies](#) that played host to "super spreader" events (Hoffower, 2020). Places that bring together people from all around the world have the potential to spread the virus both globally and locally. Thus, these places were hit before preventive strategies and better treatment became available, i.e. in the February-early March 2020 period. Less dense places generally got hit later, when control measures (of different levels) were already in place.

Subsequently, it has emerged that the type of density may matter more than the level. First is the issue of work density versus residential density. Work density appears to be a greater transmitter than residential density. And cities with high work density tend to combine both high creative density in office environments and high public-facing density in theatres, clubs, bars, restaurants, hotels, sports arenas, and other highly interactive and crowded venues. Research increasingly indicates that the virus is much more communicable [indoors \(Lewis, 2020\)](#). Initially, it was believed that public transit was a major factor in transmitting the virus, but it turns out that it depends on the type of transport and the length of trips. Most people are not enclosed in long enough to get the viral load that creates infection, although long commutes in local, rather than express, train or underground lines represent a serious risk (Harris, 2020). By contrast, interactions at work are of longer duration in more enclosed spaces. In short, the hardest-hit initial cities were mostly rather dense, but more importantly, the combination of connectivity and type of work, at a time when distancing measures were not in place, made them ideal targets for severe outbreaks (Glaeser, 2020; Hamidi et. Al, 2020).

The second-stage geography of the outbreak – for example to cities such as Houston and Miami in the United States – has many causes, among which were weak initial control strategies, due to a combination of politically influenced choices and low initial infection rates. But a paradox also emerged: as office-based workers could stay home, for the most part, the public-facing workers remained most exposed to risk at work. Little was done to limit interactions in risky high-contact spaces of contact between these workers and the public, or among the workers. And while many of these spaces bring people of different social classes into contact, the impact of the virus diverges according to geography and social class, with the least privileged people and places normally seeing the worst effects. One is more likely to catch the virus working all day in a restaurant than while going there briefly as a customer, though there is risk for all. White collar knowledge workers are much more likely to be able to work from home, to have access to a personal car for transportation, and to live in pleasant, uncrowded homes. The ability of so many workers to work from home could be a major reason why San Francisco and the rest of the Silicon Valley region have had such low overall infection rates. However, the differential impact of the spread of the virus is also conditional on availability and access to health services in different parts of a city and by different income groups.

Thus, from the beginning, in many of the hardest-hit places, the urban geography of infection is highly stratified by social group and neighborhood. In New York, wealthy Manhattan had infection and death rates far below of the Bronx or Brooklyn the peak period of April-May 2020. This is in part, because high-income people are generally at lesser risk of contagion due to their home, work, and commute environments. Many of them are able to leave cities altogether. About [5 percent](#) of New

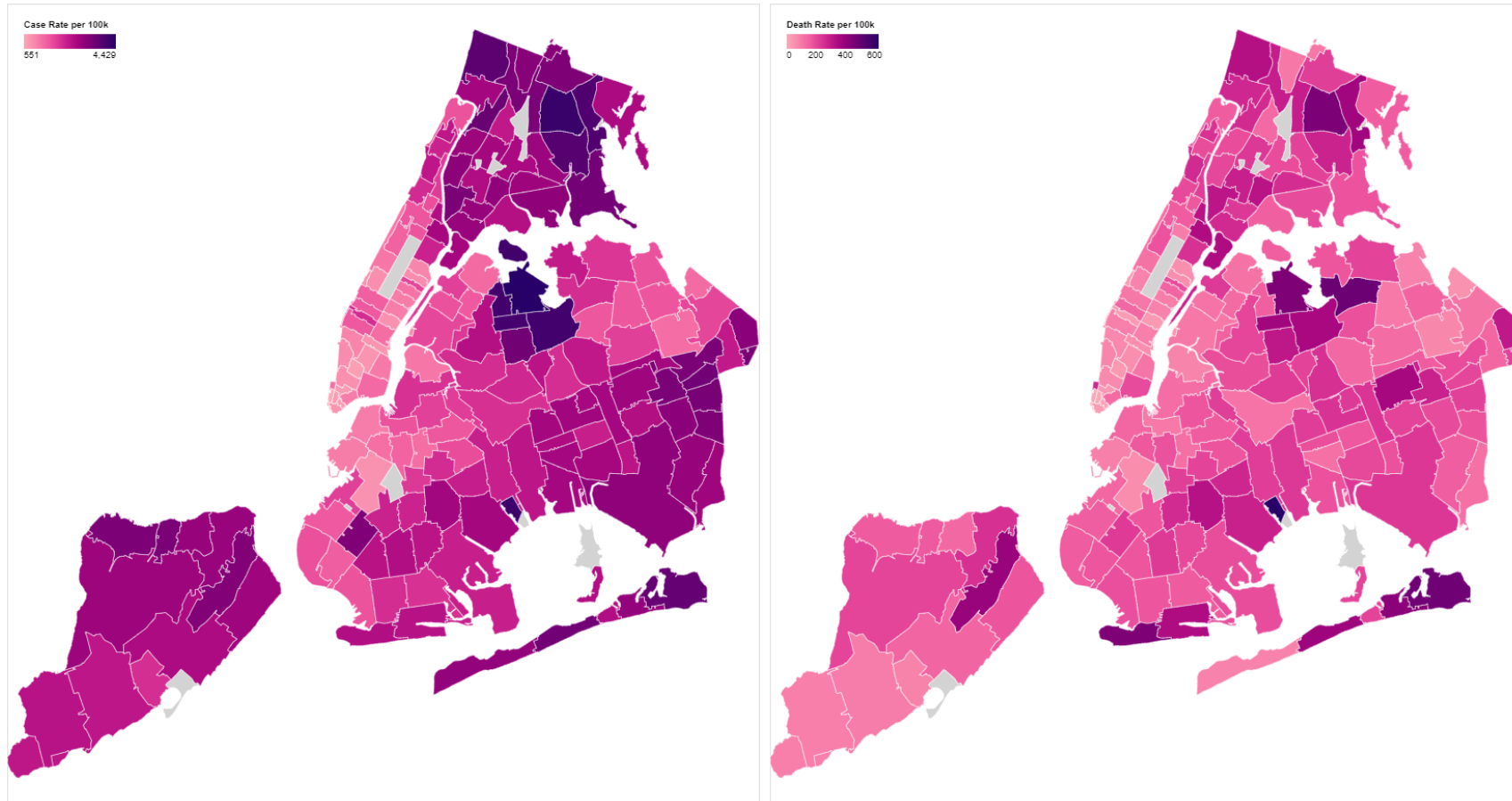
York City's population left the city in March or April, with well-off Manhattan neighborhoods, like the Upper East Side and Soho, shedding as much as 40 percent of their population (Quealy, 2020). While some of these individuals were students instructed to go home, a clear majority were second homeowners fleeing to small towns elsewhere in the Tri-State area or to South Florida (Quealy, 2020).

This pattern continues in the second wave of infections. Poorly-paid service workers are preyed upon by the virus on their often-lengthy public transit commutes and their essential, in-person jobs—stocking supermarkets, clerking pharmacies, cleaning, collecting rubbish, driving buses and trains, and, last but not least, performing all types of jobs in hospitals. Immigrants and women are disproportionately represented in these fields of work.

The high-risk settings that low wage workers are routinely exposed to are compounded in many cases by high-risk home environments, with many people living in over-crowded conditions where multiple members of the household routinely leave the home for work. Initial research indicates that [overcrowding](#), rather than density, is one of the best predictors of viral contagion (Furman Center, 2020). Pre-existing health conditions among low-income individuals, including higher rates of hypertension and obesity due to poor access to healthcare, healthy food, and recreational opportunities, further increase their susceptibility to the virus.

The geography of the infection in some cities illustrates the significance of these class-based factors as opposed to density itself. In many expensive cities, gentrification has pushed many low wage workers out of the most dense, central neighborhoods, indicating that outer neighborhoods are more at risk. In [New York City](#), for instance, the hardest-hit places are not the hyper-dense parts of Manhattan, but outer borough neighborhoods home to large proportions of essential service workers, and low-density parts of Staten Island with large numbers of nurses and first responders (Furman Center, 2020) (Figure 1). Similarly, the highest death rates are not to be found in central and southern Manhattan or in the highly gentrified Brooklyn Heights and Brooklyn Downtown, but in lower income areas, often with a large presence of migrants, in the outer fringes of the city. This is, for example, the case of places like Edgemere and Far Rockaway in Queens, with a large African-American population and a high share of Ethiopian migrants, or of East Elmhurst or Corona, also in Queens, home to a large Bengali population. Similar levels of contagion are found in Edenwald and Eastchester, in the Bronx, two areas notorious for their share of population living below the poverty line and high crime rates (Figure 1).

Figure 1. COVID-19 cases and death rates per 100,000 inhabitants by ZIP Code.

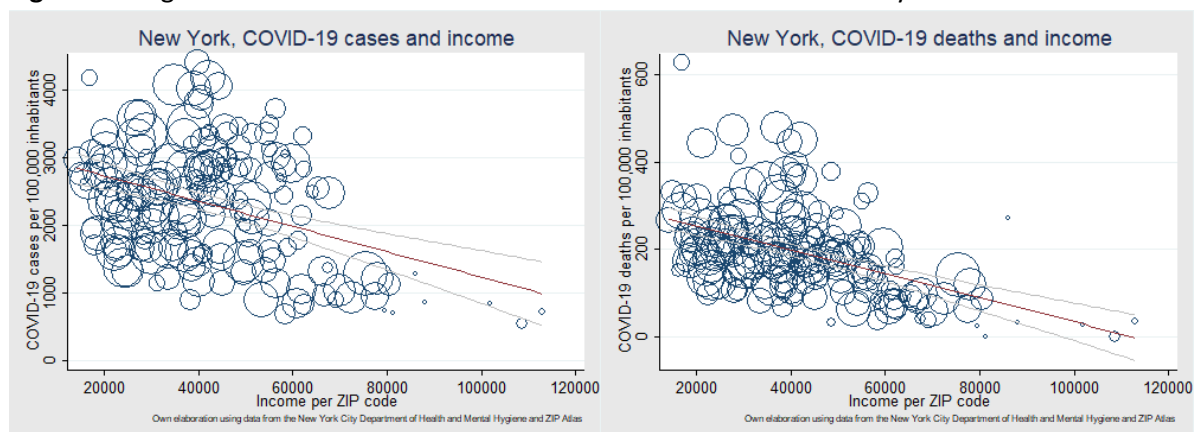


As of 13 June 2020.

Source: New York City Health Department. <https://www1.nyc.gov/site/doh/covid/covid-19-data.page#download>

The coronavirus crisis further reinforces and illuminates New York’s – and America’s – gaping socio-economic and racial disparities, as poorer and minority neighborhoods have experienced the worst outbreaks. As shown in Figure 2 and despite a huge variation around the mean, the New York ZIP Codes with the lowest income per capita saw the biggest incidence in both COVID-19-related cases and deaths in the three first months of the pandemic. The wealthy Mid- and South-Manhattan areas – with incomes per capita ranging between \$60,000 and \$80,000 – performed far better on both counts. By contrast, the number of cases varied enormously in those neighborhoods with income levels of around \$40,000. At that level, Little Italy in Manhattan or Greenpoint in Brooklyn were among the areas of the city least affected by the pandemic. East Elmhurst in Queens, also with an income per head of \$40,000, had, in contrast, the highest share of cases. Its proximity to JFK airport with the presence of a large number of airport workers may have played a non-negligible role in the expansion of the virus. Among areas with a similar income per capita, Corona in Queens, also close to LaGuardia airport, was also among the worst performing neighborhoods, as were Allerton, Co-op City, and Morris Park in the Bronx and Jackson Heights or Queens Village in Queens (Figure 2). Poorer areas of the city, on average, had a slightly lower incidence of COVID-19 cases than the worst-hit areas. However, Figure 2 also reveals that the rate of translation of COVID-19-related cases into deaths was far higher in the least well-off than in low-middle-income and middle-income neighborhoods. The top nine ZIP Codes with the lowest death rate from the pandemic were all in Manhattan.

Figure 2. Neighborhood wealth and incidence of COVID-19 in New York City.



In New York City people of color and other ethnic minorities are much more likely to die from the virus (van Dorn et al., 2020). Three-quarters of front-line workers in New York City are [minorities \(Mays and Newman, 2020\)](#): more than 60 percent of cleaners are Latino and more than 40 percent of transit employees are black. African-Americans [accounted](#) for some 40 percent of Michigan’s virus-related fatalities, while making up just 13 percent of the state’s population (Wong, 2020). In Chicago, African-Americans made up roughly [seven in ten Covid-19 deaths](#), while comprising just a third of its population (Law, 2020; McLaren, 2020).

Community-based interactions have also played a role in infection and death. Ross et al (2020) demonstrate that tightly-linked communities with high levels of social capital, expressed through frequent face-to-face interactions of family, ethnic group, or religious groups, have high levels of transmission. This is paradoxical, in that in many other areas of life, such strong communities have been shown to be beneficial for physical and mental health and economic achievement (Putnam,

2000). In the case of a pandemic, frequent meetings and large family gatherings make them more vulnerable than more atomized populations or nuclear families.

These dynamics may, however, be strongly affected by other dimensions of local context. One of the biggest early super-spreader events occurred in the orthodox Jewish community of New Rochelle, a suburb of New York. But it also enabled that local outbreak to be controlled successfully due to geographical concentration and strong cooperation networks within that community.

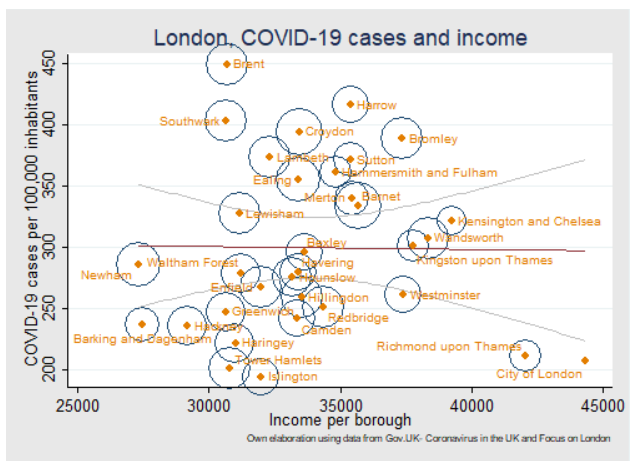
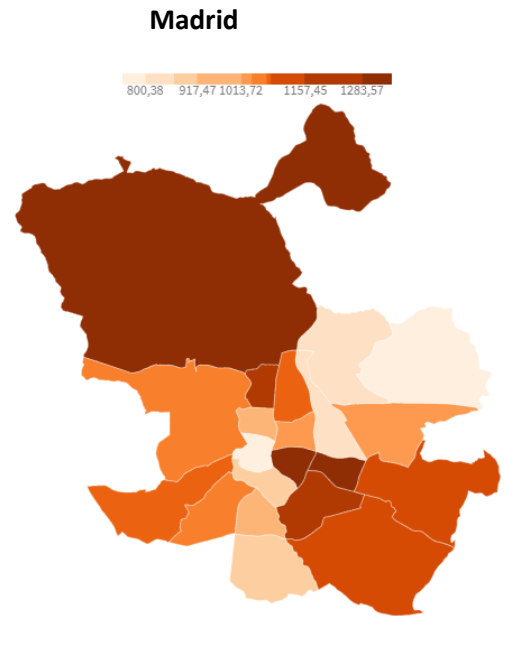
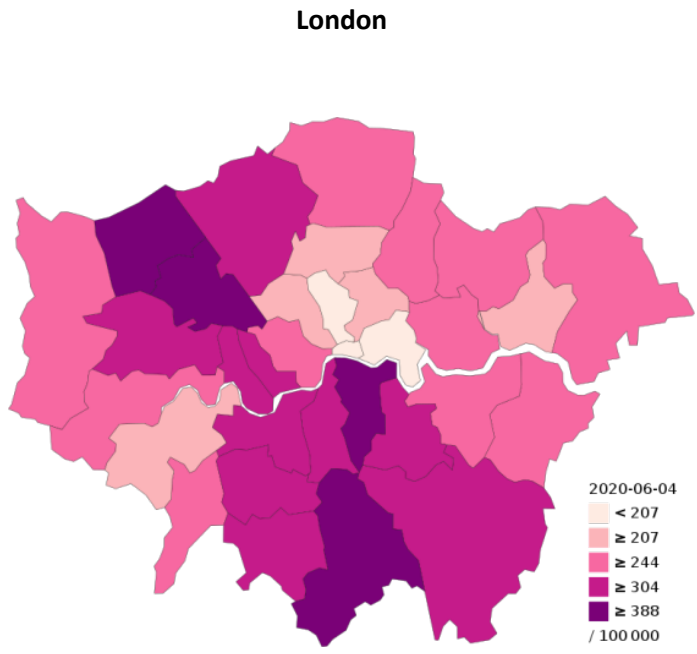
The wealth division is also shaped in part by local context. In some of the worst hit European cities the inequality dimension in terms of incidence of coronavirus, while present, is far less marked than in New York City. In two of the worst hit European cities, Madrid and London, although working class neighborhoods with large proportions of essential service workers, and large shares of over-crowded housing, have been stricken, so have many better-off areas of the city (Figure 3).

As can be seen in the scatterplots of Figure 3, in contrast to the situation in New York City, there is far more limited evidence that the impact of the pandemic has been larger in less affluent neighborhoods. Several reasons may be behind these cross-Atlantic differences. First, the spatial segregation between affluent and less affluent neighborhoods in London and Madrid is less pronounced than in the case of New York City. Second, a more developed welfare system may have shielded a greater share of more precarious workers from contagion, through furlough schemes and equivalent. But, perhaps more important is universal access to health care, which encouraged individuals presenting symptoms to go into hospital, in contrast to the uncertainty looming over many uninsured workers in New York City. On the more negative side, excess death rates in Paris, Madrid, and other cities with systems of universal health coverage were high enough that gaps in health system capacity and efficiency were revealed to all. The rates of death per hospital admission were much higher in France than in New York City in April-May 2020.

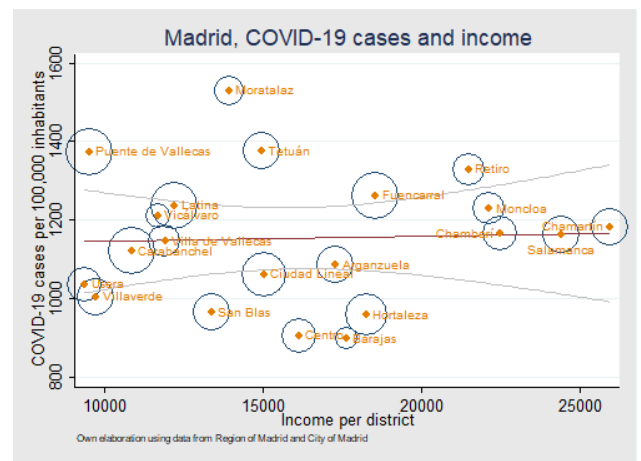
These differences may relate to the fact that US cities differ from cities in other parts of the advanced world. Overall, they have higher levels of inequality and segregation and exist in a country with a less developed and extensive safety net and lack universal health care access. They have locally funded schools which exacerbate inequality. And they have higher levels of crime, violence, and police presence, as illuminated by the Black Lives Matter Protests. In this regard, they are beset by and have never fully recovered from the old urban crisis of economic decay brought on by suburbanization and other economic trends. In effect, the recent urban revival may have papered over these fundamental issues even as it led to a new urban crisis of inequity, gentrification, and unaffordability in small number of superstar cities and tech hubs. The pandemic and its economic, social and political fallout bring this urban crisis or crises into sharp relief in US cities.

As can be seen in this analysis of a situation that is still unfolding, the pure urban physical structure – as measured by density or transit mode—may contribute somewhat to the pandemic, but it is the structure of interactions – from global to regional to neighborhood to family – that seem to determine its spread and underlying socio-economic conditions and public policies that shape its severity once spread. Socio-economic conditions and policies have strong geographical variation, as do underlying structures of interaction.

Figure 3. COVID-19 cases per 100,000 inhabitants by neighborhood in London and Madrid and connection to income per capita.



Source: Map: Wikipedia, situation as of 4 June 2020.
 Scatterplot: Own elaboration, Gov.uk, situation as of 10 June 2020.



Source: Map: DATADISTA, situation as of 8 May 2020
 Scatterplot: Own elaboration, Data from the Community and the City of Madrid, situation as of 10 June 2020.

Exploring the potential consequences of the pandemic on cities and regions

We now turn to the ways which the pandemic is likely to have important consequences on how we live and, therefore, on the structure and configuration of our cities, including their relationships with their hinterlands and with other areas in the territorial hierarchy. Below we focus on the effects of each of these four forces at the macro- (inter-regional) and micro- (neighborhood, district) level of urban geography. Both can potentially be affected by ways that people and economic activity move within an urban region or between regions, in response to the pandemic, with consequent spillover effects on population growth and composition, real estate and land use, and the qualities of public interactions within buildings and in urban public space.

1. Social scarring

Social scarring refers to the fears that humans – and, especially, residents of large cities – have acquired during this pandemic, the most pronounced of which is enochlophobia, or fear of crowds. Social scarring is likely to affect citizens as long as the risk of infection remains and, at least for some, for a considerable time afterwards.

Microgeographic impacts of social scarring

While risk of infection remains, city dwellers may look for more personal space and more private amenities. This could drive certain people out of downtowns and other crowded urban neighborhoods. At the beginning of the pandemic, speculation was rife that this would occur. For example, *The New York Times* [reported](#) significant increases in households moving from New York City to nearby suburbs in March and April (Hughes, 2020). A recent Harris Poll [found](#) that the pandemic has prompted nearly 40 percent of urban dwellers to consider moving to a less crowded place. If remote work remains the norm, many of these out-movers may not want to come back (see section on the forced experiment below) (Hart, 2020). And yet, as of late May 2020, more reliable data from real-estate search engines, such as Zillow, showed basically no overall movement away from central cities, where demand continues to be as strong as prior to the pandemic (Tucker, 2020).

There may be different dynamics underlying the more stable aggregate trend, however. As has been seen with re-opening in certain European and US cities, crowds surged back as soon as the reopening occurred. The crowds tend to be young. Unfortunately, this has led to a resurgence of infection in many US cities, where the underlying rate of infection had not been controlled, but with better results (as of this writing) in European countries that carried out a more comprehensive lockdown. For the moment, fear of crowds is not (perhaps not enough) in evidence for a significant segment of the population. We can surmise that this population continues to see the interactive and public city, with its gathering spots and buzz, as desirable, and will continue to want to house itself there.

But some parts of the population may have more enochlophobia than other groups. Perhaps, parents will want backyards and a lawn for their kids to play in a controlled environment, as opposed to exposing them to other children in urban parks and playgrounds. Streaming a movie with the family in a spacious living room will become more appealing than sitting in a movie theatre. Having a few trusted friends over for a backyard barbeque will feel much safer than going to a restaurant and being surrounded by strangers. This has always been the backbone of demand for suburban living. It

also interacts with other aspects of family life, such as school quality and other amenities. We cannot, at this point, tell whether the trend to suburban living will significantly increase and if it does, whether it will be temporary or durable (we return to this in section 3 below)

For a portion of the up-scale population – higher income, generally older, and highly-educated – we know that many decamped to their secondary residences or to family and friends with abundant space. In recent years, some of this population chose amenity-laden city living. But it is possible that some will now be too scared to come back, or else might find they are able to telecommute close to full time. Others will no longer be able to support two homes and choose to give up their urban apartments. The fear of being in enclosed, small apartments may take priority over the advantages of inner-city living. Similarly, the fear of enclosed subways, trains, and buses may exert even more centripetal pressure, and it is likely to linger for some time. (But less so if the number of commuters and, therefore, crowds in public transport decline). The longer the pandemic lasts, the greater this effect is likely to be, as older more settled populations seek safety and security over immediate urban buzz.

For the younger – single or parenting households – of highly-skilled households, still building their careers, will they decamp to suburbs? The highly skilled may adjust its residential pattern --- especially for households with children, retaining access to creative class work but recalibrating its access to amenities. Superstar city regions, such as New York, San Francisco, Boston, London or Paris, already offer abundant suburban and exurban peripheries that could beckon to some highly skilled creative class members who are younger than the gentry we discussed above. The quality of life in pastoral New York suburbs may not offer immediate street life, but it certainly offers for many a good combination of access to work, to other members of the creative class, and the occasional inner-city excursion for culture or recreation that is at least as good or better than in other types of city. Access to the social and work networks of these cities would be maintained, but with greater perceived safety.

But young, educated people are likely to continue to shift to cities and urban areas. This is part of a process urban geographers have described as *youthification* (Moos, 2016). Recent research (Cortright, 2020) finds that young people with college degrees ages 25-34 accounted for 50 percent of the population increase in close-in urban neighborhoods in the US since 2010. These trends will likely continue. Young people are drawn to cities for the combination of economic opportunity, thick labor markets, thick mating and friendship markets, and related amenities they provide. They are likely to continue to come to cities.

Often what we are seeing in response to the pandemic is an acceleration of previously existing trends. Families have long been forced to locate from urban centers to suburbs, because of the inequality in education. What the pandemic has done is basically accelerate or compress family formation and residential choices that would have unfolded over one, two, or three years into just a few months.

But nothing is certain about this scenario. There are already press accounts of this upper middle-class scrambling to find all manner of new service inputs, notably private or semi-private tutors and caregivers and entertainment providers. The pools of such relatively skilled service workers and the variety of services they can provide are bigger in the prosperous large metropolitan areas. While

being in a smaller metro with a bigger house might be appealing on one level, the access to this talent pool is lesser for this ambitious population. This is a type of amenity that has not yet received sustained consideration in research.

All in all, then, we identify a complex force field of pushes and pulls at the intra-metropolitan scale. New trade-off behaviors may emerge, more for certain groups than others.

Macroeconomic impacts of social scarring

Let us now consider the possibility of a more profound alteration of the urban system, one where a high-proportion of the highly educated workforce decides to reverse its trend toward concentration in those regions and live in other types of city-regions. In order to think this through, let's remind ourselves of the fundamentals of economic geography since the 1980s.

Since 1980, a distinctive macro-geography has been generated around the world. Cities generally have tended to prosper at the expense of rural areas. But certain cities have prospered much more than others. They are cities that generate, attract, and retain high proportions of the highly educated workers of the creative class (Florida, 2004). In the United States, there has been considerable turbulence in the ranks of high-income cities in the post-1980 period; certain cities that were stars of the mid-20th century have fallen well down the rankings, such as Detroit and St Louis, others have risen up the ranks, such as Houston, and still others that were formerly prosperous have persisted by regenerating their economies (New York, San Francisco). Overall, the level of inequality of incomes between regions is at its highest point in a century, and inter-regional migration is at its lowest point (Kemeny and Storper, 2020). Meanwhile, the geographical variance of wages for the highly educated is at a high point, meaning that for a similar level of education, it pays for the highly skilled to migrate to certain cities and leave other regions behind. But this is not the case for the less skilled, where wages in big cities are only marginally higher than in other places (Autor, 2020).

Behind these striking patterns of the geography of prosperity is the geography of the Fourth Industrial Revolution. The technology-based, creative class activities of this period are strongly concentrated in a necklace of superstar city-regions, generating the labor and income geography noted above. And as we noted previously, these regions are highly interactive, in the office and out of it, contributing to their high susceptibility to the initial wave of the pandemic.

Can social scarring be expected to undo these fundamentals of economic geography? For the advantages of these cities to decline, in favor of other regions – smaller, less educated, less technology-intensive – three scenarios might be in play. First, highly educated and skilled workers would be affected by such a high degree of fear of density and crowds that they would essentially prioritize privacy and distance at the expense of access to higher paid economic opportunities to the point that they would choose to live in cities with lesser concentrations of highly paid work and wage and experience and networking advantages of the cities they currently favor. A second scenario is that this trade-off between work opportunity and type of city will be voided by the large-scale substitution of telework for interactive work, which we discuss below.

2. Lockdown as a forced experiment in work and commerce

The lockdown has become a massive forced experiment in teleworking, remote shopping, dependency on home deliveries, and even in keeping and developing personal relationships. All forms of work and commerce have been affected, but for heuristic purposes, we have identified three different kinds of work in the COVID-19 era.

- Essential work that cannot be done remotely but is not high-touch or heavily public-facing, including infrastructure, construction, and maintenance.
- High-touch, public-facing work, providing essential and non-essential services, including grocery clerks and healthcare workers in the latter group, and waiters and shop clerks in the former.
- Knowledge work that can be done remotely or partly remotely: the highly skilled creative class.

The first of these categories will see relatively little change in work or its location, although there will be new health and safety measures on the job.

In the second category, essential workplaces, including healthcare facilities, grocery stores, auto and bike repair shops, agriculture and food processing facilities, manufacturers of essential products, logistics and delivery workers, and the like, will need to continue their labor, although facing increasing competition – at least in the case of grocery stores, most types of manufacturing, and even healthcare facilities – from online providers. And they will need to do so while proactively responding to the health shock and implementing as many safety precautions as possible. Logistics and delivery workers, at least in the short- and medium-terms, will likely see increases in hiring.

By contrast, non-essential workplaces in the second category, including restaurants, hair and nail parlors, clothing stores, concert halls, bars, sports venues, and so on, will suffer a major decline in demand for at least some time, with many businesses making significant adjustments based on the health shock described in the previous section. At this time, we are unable to know how long the depression in these activities will last, and in what form high-touch urban activities that generate this kind of public-facing work will return. The basic economics of these activities – involving distancing, bigger spaces, and new procedures – may alter the cost structure of providing them enough to induce demand elastic responses.

One of the principal challenges of the pandemic's effect on such high-touch, non-essential work is a potential increase in already-high levels of wage and income inequality. Many of the most at-risk, high-touch workers are those at the bottom of the wage scale. They may also be at the greatest risk of being eliminated due to automation, including shop clerks, cleaners, and taxi drivers. The massive move to online shopping is already accelerating the transformation of cashiers and shopping assistants into deliverers.

This is likely to exacerbate existing inequalities between an affluent and highly educated elite that can mostly telework and an army of service workers, whose duties are increasingly performed through deliveries. Mid-level managers who own or manage many High Street small businesses will have fewer opportunities, which will continue to shrink the middle class. And whereas widening

economic inequality previously affected large cities the most, now these changes will permeate small cities, towns, and rural areas as well.

The third occupational category is highly educated, knowledge workers, whose work consists mostly of abstract and cognitive tasks. During the pandemic a large percentage of them has largely shifted to telework. But will this create a fundamentally new geography of labor, a change that would have a massive effect on the fundamentals of economic geography and urban systems since 1980?

During the lockdown people have been forced to live and work using technologies they were previously unfamiliar with or unwilling or reluctant to use on a regular basis. Telecommunication platforms such as Zoom, Teams, Hangouts and the like have held up quite well during this pandemic, despite occasional glitches, and in the process have showcased a new way of interacting, living and working.

One can think of a range of transformations, running from a dramatic and permanent switch to all-online in certain lines of work; to a temporary online shift followed by a rebound to the pre-existing status quo; or the scenario we consider most likely, which is a new normal following the end of the acute phase of the health emergency, consisting of work that has a greater mix of remote-from-home than prior to the forced experiment.

If telework proves not to adversely affect productivity and work experience, the implications for office design, commercial real estate, and commuting could be considerable. Its long-term impact will depend on how companies and workers navigate the complex advantages and disadvantages of this new landscape.

For workers, distance working may increase their well-being by reducing commuting and providing more family time. Companies will see the savings that come from having to lease less space, and the efficiencies of having employees use less time in meetings and chit-chat by the coffee machine or the water cooler.

On the other hand, workers might find it more difficult to remain focused or be productive during long periods out of the office and employers might struggle to monitor employee productivity. Additionally, face-to-face contact retains significant advantages over digital contact. Communication is more seamless using facial expressions, body language, and physical presence. Face-to-face contact builds social networks, social capital, and reliable relationships based on trust that facilitate complex projects, especially those with high levels of uncertainty, as is the case for almost all creative work. Workers and students are also reporting [difficulty in concentrating](#) and less motivation, much of which comes from co-presence, membership, and identity that are key parts of physical workplaces (Valet, 2020).

The jury is still out on how the pandemic's shock to knowledge work will affect that work in the long run. But on the basis of what we know (as of this writing), we can consider different dimensions of knowledge-based work. First, consider a project already underway with colleagues that one already knows. If occurring in small groups or one-on-one, it appears that using telework platforms is a reasonably good substitute for certain meetings. In this case, telework becomes a complement to the face-to-face parts of one's job. In some professions, such as individual psychotherapy, it has been reported that the substitution effect is close to complete, while in project-oriented work –

whether within organizations or free-lance – it is partial. Psychotherapists also do not yet know whether they can successfully start therapy with patients they have never met. Second, consider large contact knowledge work environments, such as performance, in teaching, entertaining, networking, holding conventions: remoteness is a clearly poor substitute for presence, because the individual relationships are weaker and in-presence performance offers a wider band of communication than on-line (Storper and Venables, 2004). In teaching, moreover, it is one thing to switch to remote when student and instructor have already met and established relationships; it may be another when they expect never to meet in person. Third, consider the incorporation of new colleagues, organizing new projects and collaborations: telework is weakest here. There is little evidence that telework can successfully establish networks and socialize new participants and permit the evaluation of partners in creative work that depends on high levels of tacit knowledge and partner evaluation “between the lines.” Thus, there will likely be some substitution of telework for direct work in all three of these dimensions, but in different proportions. The use of telework is likely to be accelerated by the forced experiment of the pandemic. But the substitution effect will also hit its limits in the second and third dimensions, as time goes on, as existing activities wear down their stock of acquired networks and relationships and need to move on to new projects with new collaborators.

We are still in a process of social, organizational, and personal learning, as well as technology development. Therefore, the contours of the potential substitution effect may shift further. With this in mind, we now consider the consequences at two geographical scales of the shift, focusing more on the long-run post-COVID than the current emergency.

Microgeographic consequences of the forced lockdown experiment

Even a partial shift to remote work could have a significant impact on mobility, transport, and real estate. Those who can work remotely at least some of the time will avoid crowded public transport, especially at peak hours. Likewise, those with long drives to work will be able to avoid those drives more often and go at off-peak hours at other times. The convenience premium enjoyed by close-in city dwellers who have short, easy commutes is likely to evaporate for those who can always, or mostly, work from home. Some workers might tolerate even longer commutes from even more distant locations, if they only have to go in to work once or twice a week.

Fewer people coming to the office less often would depress demand for office space, especially in expensive downtown locations.

In the residential real estate market, the highly educated and affluent populations that have been re-urbanizing since the 1980s may start seeing the benefits of living outside, but close to major cities, fleeing gentrified neighborhoods for upscale suburbs and nearby small towns. A large share of professionals who live in cities are learning that remote work enables them to work effectively and, in many cases, increase their well-being by doing it from the comfort of their houses in nearby suburbs and towns. This might encourage an exodus to gentrified affluent suburbs and small towns near superstar cities — like the Hudson Valley, Oxfordshire, Surrey, and Normandy — where workers still have relatively easy access to a superstar central city. This would have a knock-on effect on residential house prices in city centers. The degree of this effect will greatly depend on the attitude of young professionals to inner-city living when being in the office every day is no longer necessary

and/or required. If many of them leave, then real estate prices could be significantly affected, though as we noted previously, it is still early for this effect to manifest itself in the data.

However, the long-term prospect of remote work is not the only factor many young professionals consider. Whether and to what degree urban amenities like restaurants, bars, clubs, museums, and concert venues reopen will also have a bearing on urban outmigration. For some, the need to avoid public transit could inspire them to live even closer to the urban core, in neighborhoods where they can rely exclusively on walking and biking for transportation, paradoxically generating the “live-work neighborhoods” that have been normatively promoted by urban planners for decades.

For some knowledge workers, occasional hotel nights might prove to be a better alternative to full-time urban living. Of course, this depends on whether hotels can overcome the stigma of being contaminated, risky spaces. Hotels might promote such arrangements by offering discounts and special offers until their traditional tourist business recovers.

For individuals working in jobs in which remote work is not possible, often in poorly remunerated positions, existing residential patterns will likely remain similar, continuing to exert demand for affordable housing that is convenient for regular commuting. However, transit-oriented housing may become less appealing, as transit agencies enforce crowding reduction strategies. Residences that are walking or biking distance from the workplace could see increased interest, in addition to residences accessible by an easy car commute. Whatever the effects of residence choice among in-person workers, these will likely be tempered by the economic downturn that is hitting service workers particularly hard.

Macrogeographic impacts of the forced lockdown experiment

However, the geography of where remote work can take place is highly uneven. The lion’s share of work tasks capable of being transformed relatively seamlessly into tele-jobs are in well-compensated knowledge and professional fields, concentrated in tech hubs like San Francisco, Washington, DC, and Austin (Dingel and Neiman, 2020). This has been confirmed by the OECD (2020) in an analysis of the regional capacity for remote working in the EU and associated countries and in the US. The study found that in 25 out of the 28 countries considered, the highest potential for remote working was concentrated in the capital city-region and its immediate surrounding areas. The three exceptions were Switzerland, with Zurich, Germany, with Hamburg, and Turkey, with Istanbul. The top region in terms of remote working capacity is Greater London, with more than 54% of all jobs in the city, with three other areas – Walloon Brabant, the region of Paris, and Stockholm – exceeding the 50% threshold (OECD, 2020) (Table 1). In the Californian case, the San Francisco region has a 50% remote work potential, while Los Angeles has only a 30% level. Some of this is due to the difference in high-/low-skill work; but some of it is due to the fact that the Los Angeles economy is more oriented toward the second dimension we explore above, i.e. performance-oriented, public-facing, creative work, as opposed to office-based high-skill work.

By contrast, in most Turkish and Spanish regions less than one quarter of the workforce could easily shift to teleworking during the pandemic. The same applied to the state of Mississippi in the US, the Basilicata region in Italy, or the Western area of Romania (OECD, 2020).

Table 1. Top 15 areas by capacity to remote work in Europe and the US.

Country	Region	Share (%)
GBR	Greater London	54.21
BEL	Walloon Brabant	50.93
FRA	Île-de-France	50.90
SWE	Stockholm	50.65
CZE	Prague	49.69
FIN	Helsinki-Uusimaa	48.82
LUX	Luxembourg	48.57
NOR	Oslo and Akershus	48.25
HUN	Budapest	47.87
CHE	Zurich	47.64
GBR	South East England	47.32
DNK	Capital City Region	46.91
USA	District of Columbia	46.65
LTU	Vilnius Region	45.05
BEL	Flemish Brabant	44.75

Source: OECD, 2020

Large cities will initially and partially suffer from these trends; San Francisco’s downtown office towers and hotels are almost empty as of this writing. But the mixed models of in-person/remote working that will come to apply to all three dimensions of creative work will mean that city center offices will still attract high earners. In addition, in the medium run, the young and ambitious will again flock to them as they pursue the professional and personal opportunities they offer. There is simply no replacing the advantages of agglomeration for establishing oneself in a knowledge or creative career and acquiring the reputation and networks to flourish there. Cultural and tourist hubs of high value, like Florence, Venice, and Barcelona, will also eventually recover due to their sheer uniqueness, and their place on so many “bucket lists.” Some firms will be more suitable for a longer-term transition to telework, including internet companies like Twitter, which recently [announced](#) some employees would be permitted to work from home “forever” (Kantrowitz, 2020). Other categories, by contrast, will still greatly benefit from frequent face-to-face interaction.

The impact outside large cities will also vary. Some intermediate cities, including smaller tech hubs and university towns, will certainly become more appealing thanks to their cosmopolitan cultures and their lack of crowding. Some individuals may choose to follow the template laid by the [Tulsa Remote](#) program, which attempts to lure remote knowledge workers to the Oklahoma city with its low cost of living (Holder, 2020).

But on the whole, most intermediate cities, towns, and rural areas, will be unable to benefit much from the advantages of remote work. First, only a limited amount of their existing workforce is able to telework, because they are not very specialized in knowledge and creative industries, which require agglomeration economies that they cannot offer. Most large knowledge-economy firms will still require at least occasional face-to-face meetings and value the social networks and cultural aspects of a workforce that knows one another in-person. Time zones are also a consideration. More collaborative occupational types, including executives, marketing professionals, and designers, are less likely to fully embrace remote work. More technical workers, in fields like data, software engineering, and customer support, might be better candidates.

On the whole, in contrast to the micro-geographical scale, where suburbs may become more attractive to some fraction of the workforce, notably families with children, at the macrogeographical scale, few declining and left-behind places will benefit from this. The economic downturn and the acceleration of automation and artificial intelligence prompted by distancing could exacerbate the existing vulnerabilities of declining places. This could add urgency to the ongoing debate about the need for greater public sector assistance, or strategic revitalization plans, for these places.

All in all, we foresee a continuation of the macro-geographical trends of the past 40 years, and this is a warning to those who are forecasting the revival of Left Behind Regions due to pandemic (Rodríguez-Pose, 2018). The problem of severe inter-regional inequality will be with us for the foreseeable future (Florida, 2017). This could mean the divides between prosperous cities and regions and struggling areas will remain, and possibly even widen (Florida, 2019).

3. Securing the urban environment from the health shock of coronavirus: impacts on consumption, leisure, and mobility.

The way we relate to each other, the way we work, and the way we shop have were all transformed in early 2020 in order to limit contagion. These measures will not only require greater social distancing, but also wellness checks and tests (often at the expense of individual liberties) and physical changes to the built environment. Most of the impacts in this area will be micro-geographic by nature.

Stores, restaurants, theaters, museums, and other gathering spaces will need to be redesigned to promote social distancing. In many cases, this will imply operating at reduced capacity. Restaurants and stores might be able to serve more people if they are permitted to do business in the street, as the Lithuanian capital, Vilnius, [announced in a pioneering move \(Henley, 2020\)](#). Santa Barbara, California closed its principal downtown street and turned it over entirely to restaurants. Other cities are [following suit \(Phillips, 2020\)](#).

Cities will need to pandemic-proof key infrastructure like airports, train and transit stations, convention centers, stadiums, arenas, shopping malls, business districts, office buildings, universities, and more. There will be a litany of design, technology, and procedural changes: Temperature checks will likely become routine as people enter public buildings. Wayfinding and floor markings will help avoid chokepoints and crowding. Capacity will need to be monitored as well. Touchless solutions for commercial transactions and in public spaces like elevators and bathrooms will become all the more important. Technological solutions like virtual fitting rooms and better video conferencing tools will help more people avoid close contact. Protective shields in offices, stores, and restaurants could help keep users separate even in relatively close proximity.

The need for temperature checks, virus testing, and contact tracing will lead to a massive increase in state and private surveillance, including infrared cameras that can detect body temperature and geo-location technologies tracing the movements of potentially infected individuals (Nathan, 2020). These kinds of interventions are already being used in many East Asian countries that had more experience than Western countries with coronavirus epidemics and were among the first to flatten

the curve. Perhaps test and trace surveillance technologies and electronic health passports – despite remaining hugely controversial issues – will become acceptable by the public if they enable a quicker return to normality.

Microgeographic impacts of the health shock

All of these public health interventions imply that the cost of daily activities will go up significantly, especially in those places where space costs are greater, i.e. the central city. The cost of going to a restaurant, a movie theatre, concert, or play, may rise as a result of socially (i.e. physically) distanced seating and fewer patrons overall. The cost of operating office space will rise as a consequence of companies no longer being able to cram workers into open offices. The cost of central-city shopping will increase because of the need for more space to sell fewer products. All manner of businesses and public-facing gathering spaces will need to spend more on cleaning, logistics, and safety precautions.

These higher costs will change habits. There will be a greater temptation and tendency to entertain at home, creating demand for larger homes and larger yards or terraces. Accelerating recent trends, online shopping will likely become less expensive and less arduous than shopping in person. Some people may choose to patronize suburban restaurants and stores that offer more (and often outside) space, instead of their central city counterparts. Many restaurants, stores, and cultural facilities will not survive the increased costs of doing business combined with reduced customer demand as people choose to stay home.

All of this disruption, and, for many, economic devastation, will create a handful of new opportunities. There will be new demand for technological and design innovations that monitor people's movement and health and encourage people to socially distance. There will be new employment opportunities for people to implement and maintain these innovations, especially people carrying out health checks and monitoring hygiene.

Macrogeographic impacts of the health shock

The pandemic may signal a return to industrial policy in many countries. Shortages of personal protective equipment (PPE) for essential workers, shortages medical devices, such as ventilators, together with the very often haphazard and inefficient efforts to produce these products may force nations to take a greater interest in their own production and distribution networks. They may be more protectionism, working to ensure PPE stays within their own borders.

This kind of geopolitical strategy may go beyond healthcare equipment and extend to other types of emergency supplies and preparations, including for war and natural disasters. This will benefit some of the industrial cities that make this kind of equipment, which are often intermediate cities, rather than large urban centers. The new French Prime Minister, Jean Castex, announced in July 2020 a new version of national industrial policy, in part based on re-shoring strategic supply chains, and in part based on sharing subsidies for industries hurt by the pandemic. It remains to be seen whether other such efforts will be announced, and the extent to which they are serious policies as opposed to political signaling at a time when elites are under pressure.

However, the benefits of this kind of industrial policy are likely to be limited, as automation and artificial intelligence that will be introduced in an aim to make these new industries competitive and avoid the risk of permanently subsidizing them, keep costs low and require fewer human workers. In other words, nations will not see the kind of broad, middle class, and geographically widespread prosperity that accompanied previous waves of strong industrial policy, like in the aftermath of the Second World War. The strong inter-regional economic polarization that is a fundamental of economic geography since 1980 is likely to continue, or to require much more drastic policies if it is to be tempered.

Thus, while large cities were the earliest regions to be hardest hit, many forces converge to promise them a relatively robust future. In addition to their fundamental ongoing strengths, their local [resources](#) will enable them to be in a strong position to recover and prevent future outbreaks. Philanthropy is concentrated in big cities, with their abundant high-income elites. New York City, for instance, benefited from a \$10.5 million grant from Michael Bloomberg for contact tracing and San Francisco has partnered with the healthcare startup, Color, to test all of its essential workers. Many intermediate cities and rural areas will, by contrast, not be in a position to create these kinds of programs, leaving them more at risk of future outbreaks (Owens, 2020). Only in countries with strong national redistributive policies will the playing field be evened in this respect.

4. Built environment: changes in urban form, streetscapes, construction/engineering, and design

The pandemic may generate significant impacts on city centers, principal urban arteries (High Streets or main commercial streets) and urban streetscapes more generally. The already-struggling urban retail economy has been dealt a heavy additional blow by lockdowns and the turn to delivery-based consumption, likely causing countless businesses to contract and fail. High Streets may lose their actual commercial role, instead becoming amenity centers and window-shopping destinations, enticing shoppers to buy online.

Declining demand for offices and co-working spaces will likely drive down commercial rents and prompt proposals for adaptive reuse, including residential conversion. This process could extend in time, especially if companies start shedding office space and gradually move to more flexible working systems. These kinds of conversions will depend on financial markets and urban political regimes that are open to these significant, and relatively unprecedented, investments.

Remote working and fewer enjoyable urban amenities may dampen demand and lower prices for residential apartments in downtowns and central urban neighborhoods. Real estate prices in some neighborhoods may fall far enough that artists and creatives may be able to come back to the very neighborhoods they were forced out of by gentrification. Although a counter force could be increased demand for walkability and bike-ability, rather than transit access, boosting the desirability of downtown neighborhoods.

All in all, the landscape of urban amenities – so important to the formation of urban neighborhoods, gentrification, and urban activity patterns – is likely to be very substantially altered in the short run, and possibly over a five to ten-year period of depressed economic activity and social scarring. Rebuilding the networks of people with all of the “new urban skills” (waiters, mixologists, artisans,

entertainers) may be a generation-long process, as individuals currently working in those fields are forced to find other jobs.

Should these changes endure, they could induce changes in future urban planning and building. The regulations for activities on major urban arteries might be modified to allow for more flexible uses of street-fronting space, including housing or live-work spaces. Buildings might be redesigned for health impacts and distancing in shared spaces. All new remodeling and building will have to take into account the need for much more vigorous and easy maintenance of high health standards, preparing for future pandemics and the growing effects of climate change. The mix of design, urban form, land use changes, and temporary health measures (discussed in an earlier section) will work itself out over a period of years and suggests a major rethinking of community and urban design ideas that have been dominant in the previous period.

A major concern in the transformation of urban streets and public spaces is whether such “new-new urbanism” will be inclusive and public-oriented, or whether it will be bunkered. Already, responses to climate change in places such as Miami have involved the construction of super-luxury towers that attempt to [isolate the rich](#) from the growing impacts of flooding, while diverting future floodwaters onto the less advantaged (Stewart and García-Navarro, 2019). The equity impacts of new ideas about designing-for-resilience should become the subject of a vigorous debate as new regulations and practices are developed (Rodríguez-Pose and Storper, 2020).

What could the future hold for the post-coronavirus city?

Many of the potential transformations we describe above will depend on the duration of the pandemic. If anti-viral treatments are developed and rolled out relatively quickly, if a vaccine becomes available fast, the changes will be relatively small, and cities may return to a new normal that is not very different from the previous normal. Some operational and regulatory changes will persist, but the overall structure of urban life will remain mostly as it was, just as in the Roaring 1920s following the Great Flu, or New York City after 9/11. A century from now, we may think of COVID-19 as yet another “[forgotten pandemic](#),” whose impact was horrific in the moment, but quickly washed away in the tide of history (Wiseman, 2020).

But if the pandemic is prolonged in time and has several peaks, the changes could be longer-lasting, and some may be permanent. Making predictions is difficult, but we can still attempt them in broad strokes.

○ Social scarring will ultimately disappear, but we know not yet over what time period

More than anything, cities provide a space for humans to interact, to feel they are alive, to mingle, laugh and love. Of course, for those who are victims of severe poverty and institutionalized racism, these qualities of cities also come combined with violence of many types. For all populations, these basic human needs have often been in short supply during confinement, especially in a society in which the share of people living alone continues to increase. Social scarring will, sooner or later, give way to the human need for togetherness and in-person relationships. That being said, it is possible certain scars will last lifetimes, prompting anxiety about massive crowds in places like football

stadiums, basketball arenas, rock concerts and music festivals, West End playhouses, and an increased awareness of hygiene.

- **The health induced transformations linked to the pandemic will change cities somewhat and possibly in a durable way.**

The need to implement social distancing and physical barriers in public spaces like restaurants and offices may only be temporary. But improved sanitation—like new security measures after 9/11—will likely become permanent. This will give rise to a large new sanitation/public health industry, with its own formal procedures, staffing patterns, and strategies for minimizing the effects of future pandemics and climate change effects on health. New technologies will emerge that could have knock-on effects by helping minimize future seasonal flu epidemics and other public health concerns. Urban design and architectural standards that promote distancing and limit shared touchpoints might become permanent if people appreciate their secondary benefits—particularly wider sidewalks and safer bike lanes. Underlying these transformations is the age-old question of their social and geographical distribution. Will they occur in an unequal way, reproducing existing hierarchies of class and race, or will they create a window of opportunity for urban transformations that are more socially just?

- **There will be long-lasting transformations of work and shopping**

The normalization of remote work will almost certainly lead to a longer-term shift, with fewer people commuting five days a week at peak hours. Without government intervention, the acceleration of online shopping will continue to be a threat to High Streets. And employment opportunities for mid-skill workers will be negatively affected, accelerating the balkanization of the workforce into highly paid knowledge workers and poorly paid delivery and service workers.

Moreover, there are likely to be consequences for urban real estate, including a possible long-term decline in commercial real estate values. This comes on the heels of an already-unfolding retail apocalypse. The new price gradients may open up a countertrend to commercial and residential gentrification, creating opportunities for new uses that have been excluded from hot spot cities. Streetscapes may be repurposed to promote social distancing.

- **While the pre-eminence of cities will be unaffected, their functions could change**

Under an extended, multi-year lockdown, cities and towns might increasingly become cultural and civic gathering places, rather than shopping destinations or office hubs. More events will take place outdoors, in city streets and plazas, as part of the transformation of city centers into pedestrian and bike havens. Some neighborhoods that lose wealthier residents to the suburbs might gain another character, as young people, artists, and creatives take advantage of lower housing costs. However, cities are likely to grow even more unequal than they are today, as both the disease and its economic fallout hit hardest at the least advantaged.

- **The winner-take-all economic geography of global cities will remain in force**

When the pandemic is over, New York and London will still be the world's great financial centers; the San Francisco Bay Area its hub of high technology; and Los Angeles its center for entertainment and film. Shanghai, Tokyo, Hong Kong, Singapore, Paris, Toronto, and Sydney will all continue to be great

global cities. Even if the downtowns of these cities lose out somewhat to their suburbs and nearby small towns, the general, winner-take-all geography of global cities is likely to persist. Most medium-sized cities and rural areas, especially those far from dynamic economic centers, will likely lose out even more.

- **Cities will have new local opportunities for reinvention**

The pandemic, despite its horrific toll, offers an opportunity to reinvent the way we see the city and, especially, city centers. It offers a [small window](#) of opportunity where cities can reset and reenergize; where old practices and policies can be called into question. As cities rebuild and recover, they will be forced to rethink its functions and how they can best be fulfilled. At the same time, they can pilot new efforts to confront the widening chasms between classes and neighborhoods and prepare for the many threats of climate change (Zipper, 2020).

The earliest and most obvious signs of reinvention are the efforts of some European cities to aggressively carve out street space for [bikes, scooters](#), and pedestrians (McAuley and Spolar, 2020). In California, activists and politicians are [exploring](#) new long term strategies for housing the homeless, potentially purchasing some of the hotels that have been used to thin the population of homeless shelters. These are likely just the beginning of many more such efforts that seek reinvent cities. As the pandemic continues, the creativity and innovation of humankind will remain most prominently displayed in big cities (Levin, 2020).

All of the forces we have described – behavioral, economic, engineering, design, societal – will play out and interact. We are entering a period of massive social experimentation, with households, business, the professions, and the public sector all in the game. Cities will become sites of experimentation in new ways to govern and shape and channel their futures. There may be considerable variety in the responses, according to differences in geography, wealth, and political and social preferences. This experimental period will be a long one before anything like best practices for the post-COVID city are identifiable. In this new open and experimental period, it is essential to keep our eye on the fundamental line of division, between unequal and bunkered urbanism, and a new urbanism that aims for inclusion and economic and social revival in a more just way; a truly resilient new post-COVID city.

An overriding concern for all of these changes is the extent to which they will address structural urban inequalities. We know from experience that many past rounds of urban planning and policymaking may have had good announced intentions for greater equity and inclusion, but that “great planning disasters” are frequent; ultimately many grand planning schemes merely reproduced structural economic and racial inequalities (Hall, 1982). These inequalities are deeply inscribed in the fundamental workings of urban property and housing markets, and inequalities at work have only been growing in the past few decades in spite of formal efforts at affirmative action and non-discrimination. The interaction of economic, social, racial, urban, and territorial inequalities is a powerful nexus. It would be naïve to believe that policies to address the unique conundrums of the pandemic will create greater urban justice without major and specific attention to systemic injustice.

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