

Using Actor Network Theory to Understand Covid-19's Effect on the Impact and Spread  
of Gentrification within Poor and At Risk Communities

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On my honor as a University student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments.

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## **Introduction:**

Changes in demographics within cities are nothing new. However, when these changes start to displace current residents and cultures, that's when this wave of change can be classified as gentrification. (Maciag, 2015) Gentrification has a lot of reasons why it can happen, but oftentimes cities want more tax revenue to fund their public goals, which causes them to invest/give tax credits to big developers and retailers to come. This so-called revitalization brings new residents and visitors to places where people seldom went before. As nicer shops and buildings begin to pop up, the cost of living increases. (Olito, 2019) This forces older and lower income residents out, tending to disproportionately affect people of color. (Atkinson, 2004)

Gentrification has been a well documented process occurring in certain cities and areas for quite some time now (Richardson et. al, 2019). When looking at these communities, it becomes increasingly clear that they lack investment in infrastructure and development. (Richardson et. al, 2019) In such places where there is not much support for businesses and people, it is a given that the residents will struggle to survive. (Richardson et. al, 2020) The problem is, when these people are displaced by gentrification, they are often forced into areas that struggle from similar lack of investment, trapping them within a cycle of poverty (“The Process of Poverty Destabilization”, 2014). However, with the global pandemic Covid-19 affecting both human migration patterns (Bowman, 2021) and the economy (Klein et. al, 2021), it became clear that how communities change would also be impacted. As the housing market soared on a “run unlike any other” (Olick, 2021), minority and lower income communities saw “an increase of displaced working-class Black, Brown, and queer people, as well as the loss of small businesses that are community beacons.” (Biakolo 2020).

The goal of this paper is to analyze the data that has come out after the first year of a global pandemic to understand the effect that Covid-19 has had on gentrification in large urban centers. In this paper, I will argue that the global pandemic has exacerbated gentrification through expanding it to new areas while furthering it in areas where gentrification was already occurring, and that an Actor Network Theory based approach will help us begin to understand how future approaches should act in respect to vulnerable communities.

### **Defining the Problem: Issues Caused by Pre and Post Pandemic Gentrification**

In general, when the prices of houses begin increasing in areas it is an indication that particular neighborhood is “gentrifying”, (Olito, 2019) meaning that the area is changed economically through real estate investment and new higher-income residents moving in. This usually means a change in the demographic level - as low-income minority residents with little education are displaced and replaced with higher income residents who can afford the rising cost of living. (Maciag, 2015) While gentrification is hailed by some as key to “revitalizing” cities and impoverished areas through an influx of money and new real estate developments(Buntin, 2015), there are several key problems that it causes. These include cultural displacement, homelessness, and increased crime. (Atkinson, 2004 Chong, 2017 Murdie, 2011)

Upon first glance, gentrification may “succeed” in that it systematically removes poverty from a specific area within a city. However, that poverty does not simply disappear; it expands into the suburbs. (Vock 2015) In fact, due to gentrification and general migration patterns (Wilson 2020), poverty is expanding outwards, while also leaving areas of extreme poverty. Suburban areas such as these have less public relief efforts compared to cities so displaced residents have significantly decreased quality of life (Johnson et. al 2019). Since poverty is becoming more spread out than before in metropolitan areas with vulnerable communities,

resources that are easier to find in urban centers such as health clinics, subsidized housing, and food pantries are increasingly hard to find. (Vock, 2015) Staying and struggling to survive wouldn't be much better. In cities where gentrification has already been documented to happen such as New York City, comparisons between gentrified and non-gentrified boroughs showed that the gentrified boroughs had overcrowded schools, and worse education systems as a whole. ("The Process of Poverty Destabilization", 2014) To make matters worse, these boroughs also showed significantly increased rates of homelessness from families who could no longer afford the area as well as an increased wealth gap between affluent new residents compared to the displaced.

As the cost of living rises and communities are displaced, they often have to relocate to poorer areas. (Vock, 2015) Research shows that in these low or moderate income areas - also known as LMI areas (LearnCRA, 2020) - there is disproportionately less black and minority owned small businesses than in non-LMI areas. (Toussaint-Comeau et. al, 2019) In addition, LMI area small businesses see far less profit, due greatly in part to the lack of opportunities for businesses to get funding/loans from local banks. This critical lack of investment is made worse by the loosening of restrictions on the 1977 Community Reinvestment Act (CRA), which previously required banks to invest in LMI areas where they take deposits. (Johnson et. al, 2020) Worse still, loan data shows that even when banks make CRA loans, as long as the area they make it in qualifies as an LMI tract, they can get away with giving these loans to high income clients, which both hurts small businesses *and* allows would be gentrifiers to move in. (Zuluaga, 2020) The cycle of poverty that gentrification creates for cities and surrounding suburban areas is horrifying, but there are still more negative consequences.

As gentrification continues, it eventually results in the area changing into a place that not even the middle class can afford. (Twig, 20) The final stage of gentrification is one where places stop being somewhere to live and moreso places of luxury, which defeats the original purpose of “revitalizing” the city.

While it is indisputable that gentrification is dangerous for communities, research shows that for the greater part of the 21st century, it has actually been contained to 7 major cities/areas. (Johnson et. al, 2019) These cities (New York City, Los Angeles, Washington, D.C., Philadelphia, Baltimore, San Diego and Chicago) accounted for over 50% of all gentrification in the United States from a period of 2000-2013. In addition, research on general human migration patterns over the last 20 years shows a shift from large populations moving into crowded cities, and rather moving out towards suburban areas farther away. (Wilson, 2020) However, in 2020, the global pandemic Covid-19 changed how society functioned and interacted. (Stillman, 2020) I wanted to see if this change had an impact on the displacement of vulnerable communities.

In terms of everyday life, Covid-19 impacted the way that people could work by forcing them to move to virtual environments. (Stillman, 2020) Since most everything was virtual and many businesses were closed during the height of quarantine, city dwellers found that the increased cost of living without any of the social amenities was no longer worth it. (Roper, 2021) In the first 6 months of quarantine, United States Post Office data shows an increase of 27% in people who moved out of major urban areas into more rural places. (Bowman, 2021) And even after the period of that study, further research shows an almost 10% increase between 2018 and 2020 in city dwellers who said they wished to move out of their city apartments into suburban towns. (Saad, 2021) Overall, the research that has been conducted shows a willingness among

people - who have the financial means - to move somewhere where they can experience a better sense of community. (*“Where’s Everyone Moving To?”*, 2020)



**Figure 1:** Diagram showing moves from 4 major cities. (Bowman, 2021) The size of arrow is proportional to the number of movers so the wider the arrow, the more movers.

That being said, these people are not necessarily moving very far away. An analysis of 4 major cities in the US (New York, San Francisco, Los Angeles, Chicago) revealed that although people wanted a more suburban style of living, they still wanted to live close to the recreation and energy of a major city. (Bowman, 2021) From Figure 1, we can see that for the cities in

question, a majority of people moved within 40 miles. This is where the idea of “first suburbs” come in. A first suburb is an area adjacent to a city and thus has good access to jobs, public transit, and nightlife. (Gallaher, 2020) Usually, residents of first suburbs are those that could not afford to live inside the city. These residents are also predominantly working class. In first suburbs, it is not uncommon for properties to fall into disrepair due to neglect and lack of investment. (Gallaher, 2020) Both the data showing people moving into these first suburbs as well as the large amount of property that can be redeveloped are signs that gentrification could be expanding outwards. For residents who may have already been displaced, this would be a tough reality to face.

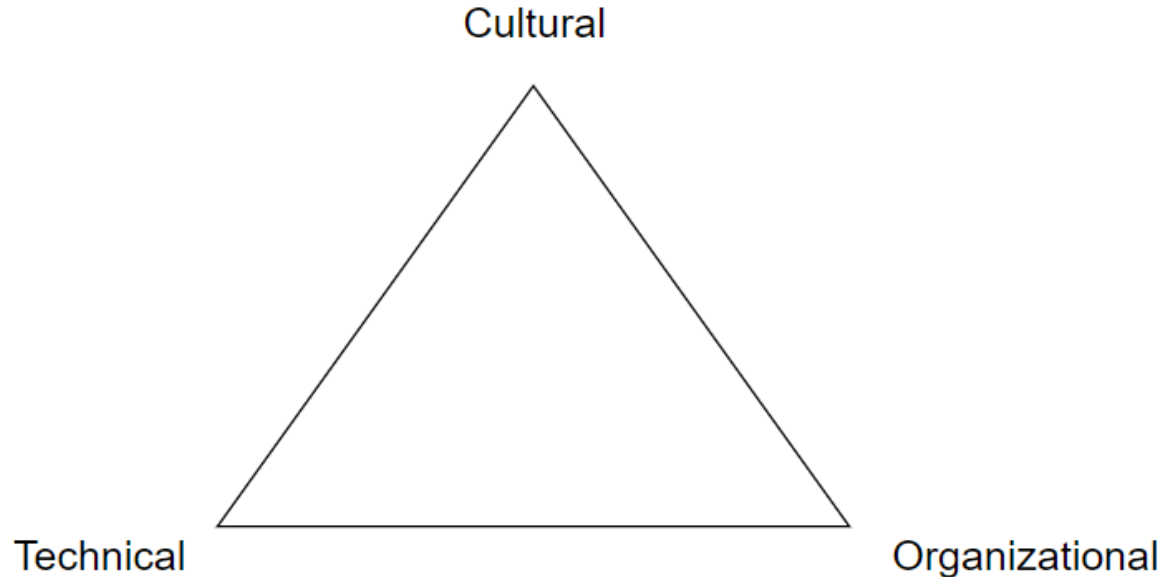
Interestingly, the data which showed people moving out of cities (Bowman, 2021) also showed that for all 7 of the aforementioned cities where gentrification was most prevalent, there was a net negative population flow, meaning more people were leaving than were moving in. However, this does not mean that gentrification was stopped here. A key emphasis is that those who were *able to move* left. Economic data from major cities shows that in areas with large minority populations involved in the leisure and hospitality industries, there was a large increase in unemployment. (Klein & Smith, 2021) Notably, industries such as technology and government actually experienced increases in hiring to account for the demand that the pandemic provided. Having jobs in these benefited industries would certainly allow for more mobility among the socio-marginalized, however these are sectors which require advanced schooling - a resource that is hard to come by for an individual living in an LMI area with no investment. (Vock 2015) One year after the pandemic began, unemployment rates for minorities are still up to 20% higher than their white counterparts. (Klein & Smith, 2021)

This struggle to survive for minorities has been well documented. Throughout the pandemic, multiple stimulus checks were issued, and multiple moratoriums were ordered across several states to prevent evictions. (Brown, 2020) Unfortunately, evidence points to this not being enough. Unemployment rates are still low (Klein & Smith, 2021), but rent in major cities such as New York has actually risen since the beginning of the pandemic. (Biakolo, 2020) Furthermore, a report from the Federal Reserve Bank of New York stated that by April of 2020, nearly half of all black-owned small businesses in the city had closed down. (Costa 2020) More data from 2 months later in the summer revealed shocking disparities in the likelihood of missing rent payments based on race and income. (Greene & McCargo, 2020) As of now, many of the moratoriums have expired, and landlords, who must also pay rent, are eager to collect. (Biakolo, 2020) Life is returning to normal for many of the young professionals in cities, however for those who remain unemployed, or had their business go bankrupt, it is hard to pick up the pieces.

### **Creating a Framework: Analyzing Technical, Cultural, Organizational Factors and Comparing Public Goods vs. Private Services**

With the information and research considered thus far, it is evident that there are a great number of actors involved in the process of gentrification, on both sides. Each party has their own motivations and beliefs. In addition, there are things to consider that go beyond the typical definition of an “actor” in the form of regulations and cultural/societal beliefs. In order to fully understand this complex sociotechnical system, I had to combine two applications of Actor Network Theory to gain a more holistic view.





**Figure 2:** Framework for the TOC approach I took to analyze Actor Networks (Neeley, p.42)

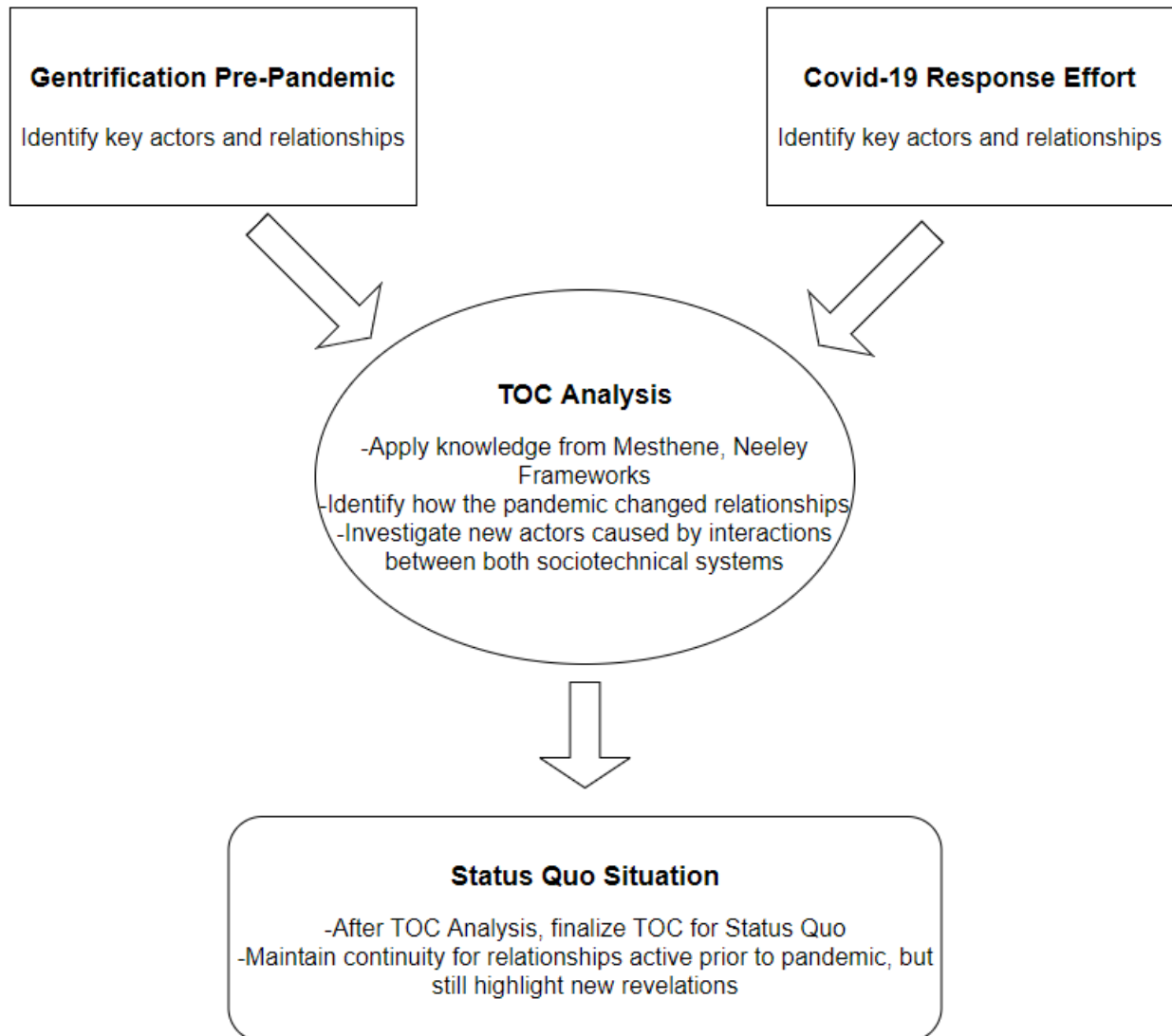
The goal is that using this map will help me connect the 3 sociotechnical systems I examined.

The first application of Actor Network Theory I use will be from Neeley's integrated view of technology. (Neeley, p. 37-45) In her paper, Neeley describes the complex interactions of many influences on the atomic bomb, namely the political and cultural factors influencing its development and the organizational progress made to facilitate its creation. She writes, "the atomic bomb appears not as a single technological artifact, nor even as an amalgam of scientific knowledge and technical skill, but as one of the most significant elements in a complex and dynamic web of human knowledge, ability activity, and belief." (Neeley, p. 42) I saw a deep similarity between this system and that of gentrification, in that the system is so interconnected and wide that such an approach is one of the only ways to truly understand it.

First, I realized what I initially thought was one system was actually actually composed of three, at different points in time. These systems are gentrification in the United States before

Covid-19, the response to Covid-19 over the past year, and gentrification in the status quo. This distinction is critical to the entire analysis, because it's important to realize that the global pandemic changed the very fabric of society. Organizations had to adapt in response, and cultural responses to external stimuli changed as priorities shifted. As these two aspects changed, it caused new technical challenges to arise as well.

Since two of the identified systems are from the past (gentrification pre-pandemic and general Covid response), I will begin by examining these systems, before using that information to create an accurate depiction of the status quo. As these two systems are actually about two completely different topics, the first step is to identify actors and determine how their relationships and motivations fit into the broader TOC framework. In the case of pre-pandemic gentrification, the actor analysis focused more on personal motivations from each actor on the cause and continuation of gentrification. For the Covid-19 response, the actor analysis focused primarily on the disruption within society that was caused, before discussing individual actor needs. In both cases, institutional mechanisms that hinder progress are both crucial to understanding relationships, so a large emphasis needed to be placed here. Once these two TOC frameworks were completed, I compared the two of them, before moving onto Mesthene's application of Actor Network Theory. Mesthene's writings in "Economic and Political Organization" explores how organizations must change in response to the trend of growing sociotechnical systems, focusing on the separation of public goods vs. private services/rights. I believe that this focus on institutions and their interactions with the private sphere will be instrumental in helping to understand the relationship between actors in my 3 sociotechnical systems. My method is detailed below:

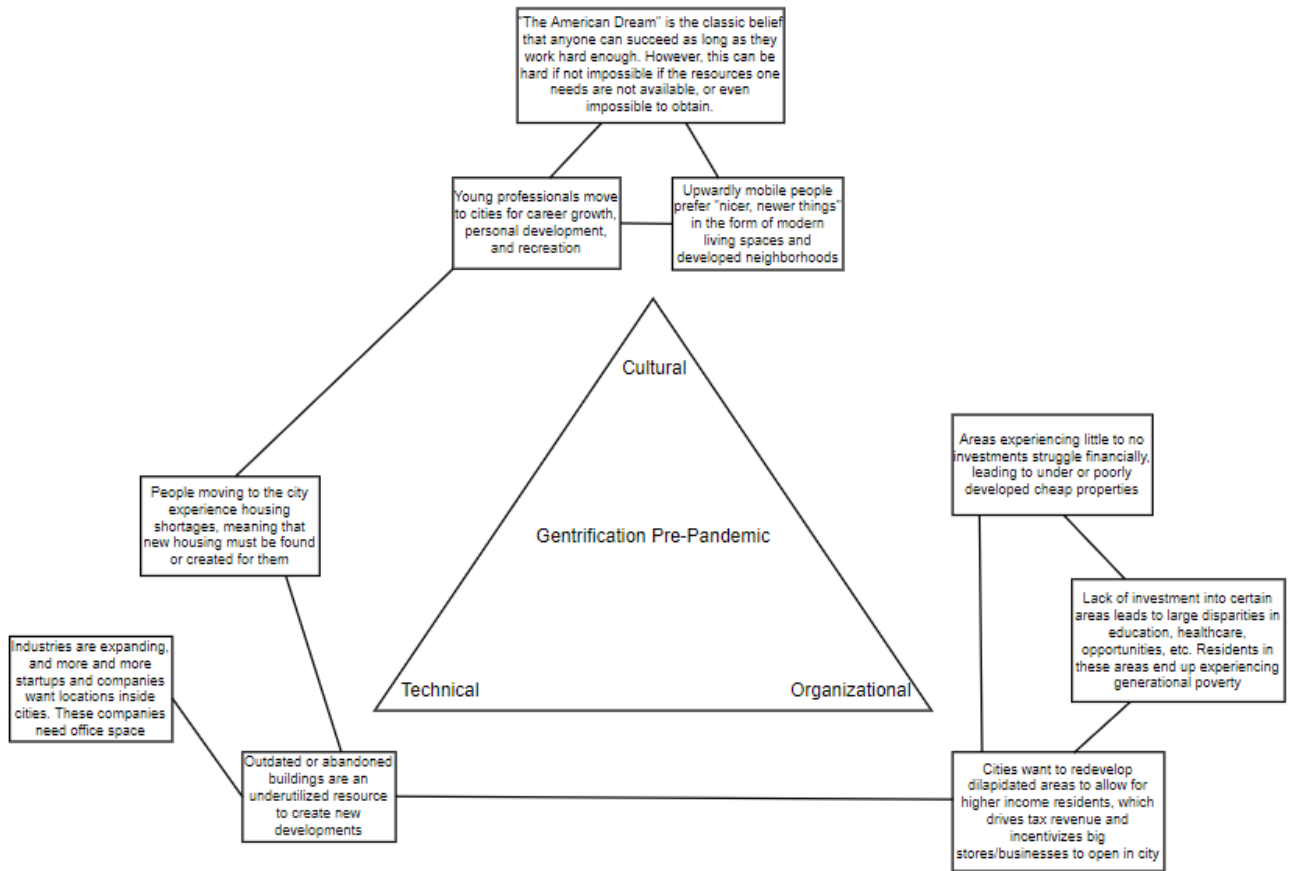


**Figure 3:** Process diagram for the method I have developed to analyze the actor networks of the three sociotechnical systems I have chosen to observe and analyze

### **Gaining Insight: Drawing Connections in a Complex Sociotechnical System**

Upon construction of the TOC maps, I analyzed the key relationships and takeaways from each as detailed in the process diagram above. After creating the map for the status quo, I

explored how relationships changed due to Covid-19, then assessed how these maps can provide insight into future actions in relation to minorities and vulnerable communities.



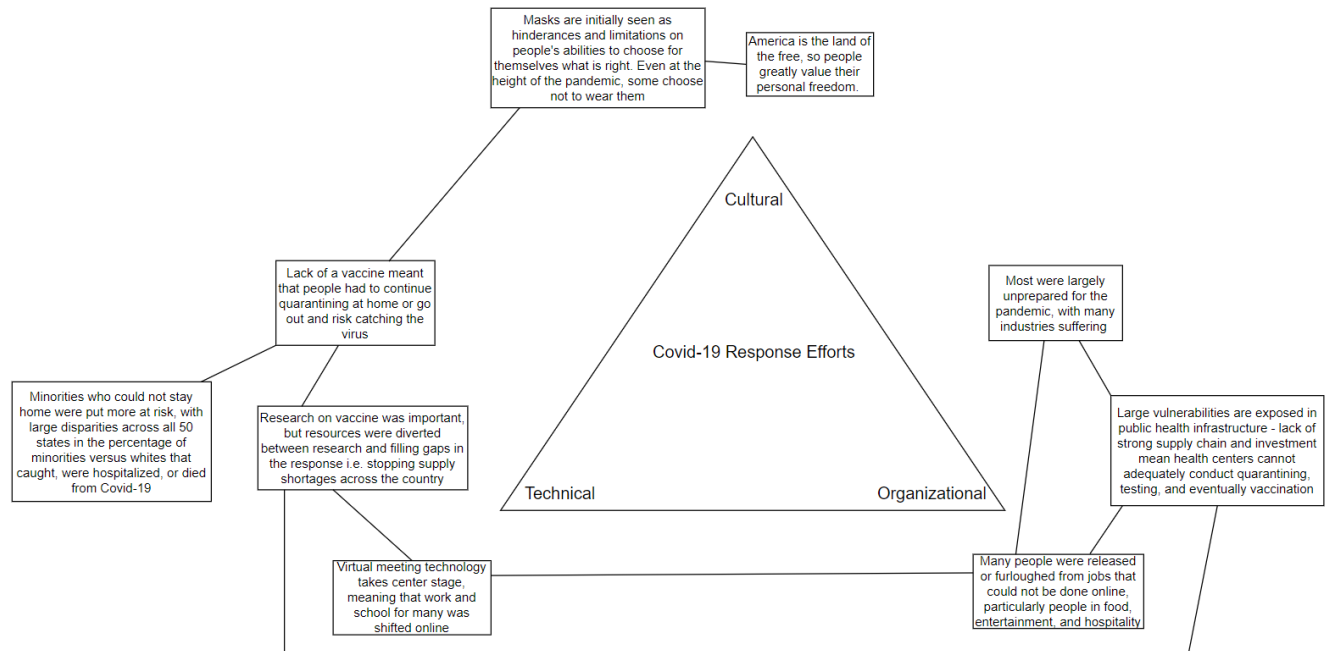
**Figure 4:** Actor Network for Gentrification in the US before Covid-19. Gentrification has been happening in the US since the 1970's. Upon investigation, there are several significant roadblocks in all 3 analysis categories which hindered attempts to prevent gentrification.

A prevailing theme over the past century for this country has been the American Dream - that is, an individual can achieve success in life regardless of family history or social status as long as they work hard enough. In addition to inspiring countless people to work harder every day, the American Dream also provides the expectation that as you become more upwardly mobile, the goods and services you receive will also increase in quality (Barone, 2021). For young millennial professionals entering the workforce or people who have worked hard to get to

where they are, these expectations hold true when they move to urban centers. They want nice places to live, upscale shopping centers, fine dining, and rich nightlife. The problem is, cities cannot always handle the influx of people. Naturally, they must expand out from the city center for new development projects for office spaces and housing. Since cities want to maximize their profits and minimize their costs, they look towards areas lacking investment/upkeep for their redevelopment efforts (Richardson et. al, 2020), offering large companies tax credits and other financial incentives to come.

As areas gradually become more posh, the cost of living rises, forcing the original residents out. Prior to this displacement however, there were key systemic challenges to minorities living in these areas which hindered their ability to improve their social situation (“The Process of Poverty Destabilization”, 2014 Chong, 2017 Maciag, 2015). Lack of access to education and healthcare, a shortage of investment into minority owned small businesses, and environmental racism stand out among these. Within this context, the displacement of vulnerable communities is seen as more of a means to an end to complete redevelopment of an area, with the negative consequences being an afterthought.

The Covid-19 response took the forefront of national attention over the past year, necessitating a separate sociotechnical system analysis. Although the forces in play were completely different, the same actors involved in gentrification appear and are impacted differently as shown below.



**Figure 5:** Actor Network for the Covid-19 Response. Significant lack of investment in public health infrastructure severely hindered the response effort.

Another aspect of American culture heavily stressed is that the United States is the “land of the free, home of the brave”. What this translates to is that people here experience a greater degree of self governance and freedom than other parts of the world. This idea of personal freedom has caused issues before on the topics of gun control or abortion, and manifested again in the form of an anti-mask/quarantine movement that was extremely detrimental to containing the spread of the virus. But even when it was clear that trusting the CDC was the right move, it was evident that a significant lack of investment in public health infrastructure was hindering the response effort. Research efforts towards a vaccine were diverted by the lack of masks, gloves, and sanitary equipment nationwide (Holmes, 2020). Many stores were out of soap, hand sanitizer, and tissues for months, and the places that did have them marked them up. Data shows that the cost of living actually increased during the pandemic (“The Cost of Living in the U.S. – During a Pandemic”, 2020). However, many industries that minorities worked in such as

entertainment, food, and hospitality suffered greatly, releasing or furloughing millions of employees (Klein & Smith, 2021). Those who did keep their jobs were on the front lines during the height of infections, with data showing large disparities in infection, hospitalization, and death rates in minorities who were unable to transition to work virtually. Notably, the increased virtual environment of everyday life made people in urban areas want to move somewhere with more room - the suburbs (“Where’s Everyone Moving To?”, 2020) . Lastly, as quarantine was imposed more harshly, people began to feel isolated from the people around them, lessening the value of a close knit community in society (“Coronavirus Will Change the World Permanently. Here’s How”, 2020).

Next, I used Mesthene’s framework as a lens to view my TOC maps. As Mesthene’s piece was first published in 1969, one might expect it to be slightly outdated in the context of modern times. On the contrary, however, it reveals many insights for the challenges organizations face in the 21st century, especially after the Covid-19 pandemic. For example, Mesthene highlights institutional responses to national crises, saying “institutional mechanisms tend to perform reasonably well in response to national crises or when the derivative personal benefit is clear, as in the provision of public health.” This holds mostly true in terms of the national response to Covid-19, with many government institutions switching focus onto containing the pandemic, as well as a significant increase in investment into research to find a vaccine. However, Mesthene also recognizes the necessity in response to other important issues: “[institutional mechanisms] have not been effective by and large, however, in guarding against the more general social costs of technology or in meeting needs - such as for adequate housing or environmental betterment - the satisfaction of which involves institutional rivalry and political conflict.” The two examples given here for where the institution fails still hold true today - with

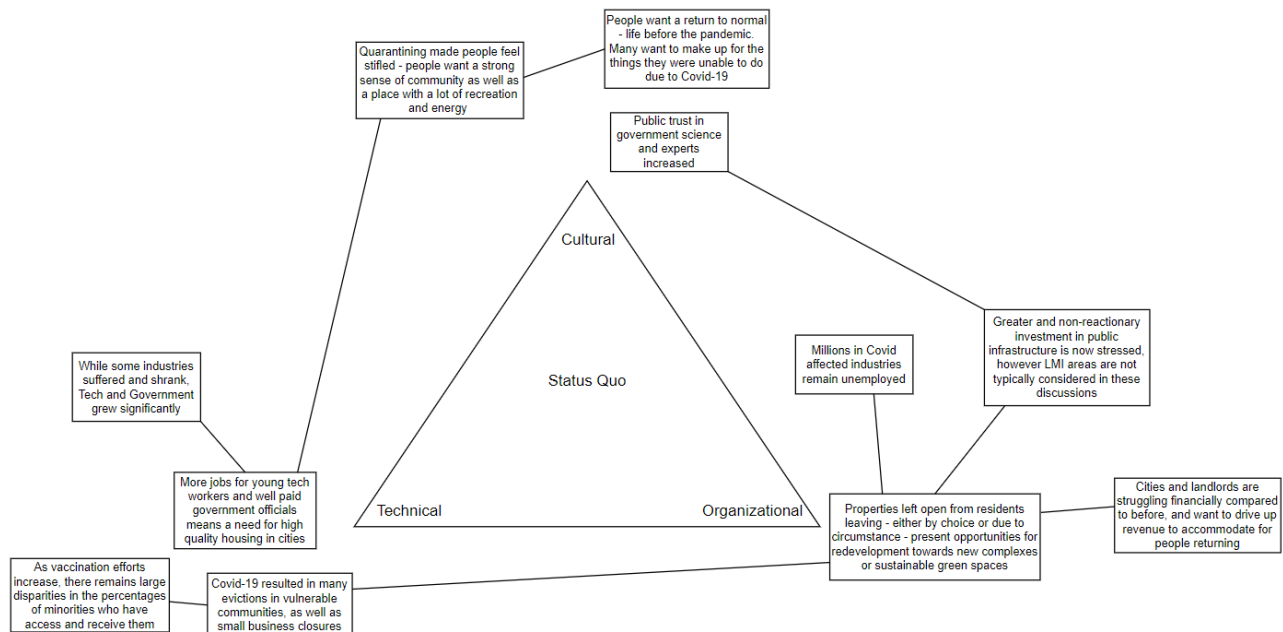
the aforementioned eviction crisis (Brown, 2020) or rising concerns with global warming. While these may be important national or even international problems, they are seen as less pressing because for many people, it does not personally affect them. Mesthene accounts for this too, postulating that there is a bias in favor of dealing with private needs first, even if it is to the neglect of public needs. Lastly, Mesthene believed that as the need for public goods increased, institutional sociotechnical systems would grow larger and larger, until they began to encroach on the private rights of people. Looking at the pandemic response, government at all levels grew, with new regulations restricting what some considered to be their personal freedom, such as the choice to wear a mask in public. Using Mesthene to view the whole picture, it quickly becomes clear that a large roadblock to organizations in the status quo is the inability to find a balance between public goods and private services. If a solution were to be found for solving gentrification in the modern day, it would have to be one which posits gentrification as an ethically important issue that affects everyone. In addition, past efforts indicate that forceful actions by institutions do not work; the culture of freedom that has only grown stronger after Covid-19 requires flexibility.

When investigating the relations between the two previously analyzed sociotechnical systems, it's clear that the current state of the system has grown far more complex. For starters, there are now more actors involved, and more layers. Minorities in LMI areas are still struggling financially, but now there are some that are facing an eviction crisis (Brown, 2020), while others lost their job/business due to the pandemic (Costa, 2020 Klein & Smith, 2021). There are also minorities facing a hunger crisis due to not there not being enough money for food provision programs. Displaced peoples are still a large problem, but the newly displaced due to first suburb gentrification poses a new issue. Notably, the pandemic had an adverse effect on most everyone's



mental health. People want a return to “normal”: life before the pandemic. This means being able to socialize in and have a strong community once more. Within cities, people from all tax brackets have been affected. Cities faced with negative flow of people and a decrease in visitors to boost the economy wish to drive revenue through redeveloping land to make it more appealing. Landlords, unable to forcibly collect rent during the moratoriums, now need the money to pay their own bills (Biakolo, 2020).

But it’s not all bad. While certain industries suffered greatly due to a move to a virtual environment for most things, industries such as government and technology showed significant growth in hiring and revenue (Klein & Smith, 2020). These expanding industries allowed for more job creation and their growth was crucial to aiding the Covid-19 response. As quarantine is ending and restrictions are slowly being lifted, these young tech professionals and well paid government workers want to live somewhere with a lot of energy - the city. This movement back to urban centers gives reason for cities to create new, sustainable green spaces as well as new complexes. These findings have been summarized in the TOC map shown below.



**Figure 6:** Actor Network for the Status Quo Situation. Covid-19 exacerbated inequality issues while the impact it had on migration patterns allowed for gentrification to expand.

Something important to note is that the 3 sociotechnical systems analyzed above are not separate from each other; rather, they are the same sociotechnical system at 3 different points in time. Through my approach, I have demonstrated that it is possible to view a system linearly in order to understand how relationships between 2 seemingly different systems intertwine and evolve. Using my analysis, I was able to identify and understand key relationships and actors which will aid further understanding of this complex topic.

## **Conclusion**

Although it is clear that Covid-19 had an extreme effect on many actors in the complex gentrification sociotechnical system, the future remains unclear. It is too soon to tell how severe gentrification will be in the future due to these changes, however the Actor Network Theory analysis presented in this paper provides a baseline for how to approach such problems. To this end, I have demonstrated its effectiveness by taking a holistic, objective approach to analyze the system in the past and present, and highlight how quickly relationships can change based on society and the needs of actors.

By examining the negative effects of gentrification pre-pandemic on the vulnerable communities that it affects, as well as eventually making luxury areas that become too expensive for the intended residents, I demonstrate that arguments against gentrification being harmful carry no weight. From the research and data analyzed, one thing is clear: systemic inequality results in health, economic, and social inequality. These inequalities existed long before Covid-19. However, the pandemic exacerbated not only these issues, but also the underlying causes. The food shortages, rising homelessness, and poor health conditions of minorities in

LMI and at risk areas is indicative of a disconnect between actors making institutional changes and the actors who those decisions affect. Analyzing human migration patterns and moving data, I was able to see that Covid-19 has caused people to move to smaller cities or first suburbs, expanding the reach of gentrification.

From all this, it is clear that Actor Network Theory is a powerful and necessary tool by which to understand how policy and institutional decisions should be made to best balance the needs of all relevant parties. Key considerations should be made as to how it affects the already existing disparities between at risk and not at risk communities, as well as industries where the workers are predominantly minorities. In order to stress the importance of such issues, they must be put as ethical priorities for the more fortunate to understand. On the other hand, key considerations must also be made for growing industries and the young professionals eager to begin a new life in cities. Lastly, since individuals value their perceived personal freedom, large decisions must also make sure to not to infringe on these rights. To that end, a delicate balance must be forged, where any imbalance would create unfair inequalities and gridlock. While there is still much to be analyzed and understood about this complex system, this paper lays the groundwork for future research into how gentrification continues to evolve in the 21st century through an application of Latour's Actor Network Theory alongside Neeley & Luegenbiehl and Mesthene's frameworks.

## References

- Atkinson, Rowland (2004) The evidence on the impact of gentrification: new lessons for the urban renaissance?, *European Journal of Housing Policy*, 4:1, 107-131, DOI: 10.1080/1461671042000215479
- Barone, A. (2021, March 7). What Is the American Dream? Investopedia.  
<https://www.investopedia.com/terms/a/american-dream.asp#:~:text=The%20American%20dream%20is%20the,mobility%20is%20possible%20for%20everyone.>
- Biakolo, K. (2020, September 17). *The Cities Where Gentrification and Covid-19 Collide*. Medium.  
<https://zora.medium.com/the-cities-where-gentrification-and-covid-19-collide-f672f44f0a9b>
- Bowman, C. (2021, February 17). *Coronavirus Moving Study Shows More Than 15.9 Million People Moved During COVID-19*. MYMOVE.  
<https://www.mymove.com/moving/covid-19/coronavirus-moving-trends/>
- Buntin, J. (2015, January 15). Gentrification Is a Myth. Retrieved November 01, 2020, from <https://slate.com/news-and-politics/2015/01/the-gentrification-myth-its-rare-and-not-as-bad-for-the-poor-as-people-think.html>
- Brown, C. (2020, June 12). *Fears grow of an eviction apocalypse*. Axios.  
<https://www.axios.com/eviction-crisis-coronavirus-351bb693-a04f-4ea1-a27d-dceb5163af14.html>

Chong, Emily. "Examining the Negative Impacts of Gentrification." *Georgetown Law*, 17 Sept. 2017,  
[www.law.georgetown.edu/poverty-journal/blog/examining-the-negative-impacts-of-gentrification/](http://www.law.georgetown.edu/poverty-journal/blog/examining-the-negative-impacts-of-gentrification/).

Coronavirus Will Change the World Permanently. Here's How. (2020, April 15). POLITICO.  
<https://www.politico.com/news/magazine/2020/03/19/coronavirus-effect-economy-life-society-analysis-covid-135579>

Costa, P. N. (2020, August 28). *The Covid-19 Crisis Has Wiped Out Nearly Half Of Black Small Businesses*. Forbes.  
<https://www.forbes.com/sites/pedrodacosta/2020/08/10/the-covid-19-crisis-has-wiped-out-nearly-half-of-black-small-businesses/?sh=178f16564310>

Gallaher, C. (2020, December 30). *Langley Park was already ripe for gentrification. Here's why COVID-19 could speed up the process*. Greater Greater Washington.  
<https://gqwash.org/view/79851/langley-park-was-already-ripe-for-gentrification-why-covid-19-could-speed-up-the-process>

Greene, S., & McCargo, A. (2020, May 29). *New Data Suggest COVID-19 is Widening Housing Disparities by Race and Income*. Urban Institute.  
<https://www.urban.org/urban-wire/new-data-suggest-covid-19-widening-housing-disparities-race-and-income>

Holmes, B. K. M. (2020, July 2). Why Does It Take So Long to Develop a Vaccine? *The Wire Science*. <https://science.thewire.in/health/coronavirus-vaccines-clinical-trials/>

Klein, A., & Smith, E. (2021, February 4). *Explaining the economic impact of COVID-19: Core industries and the Hispanic workforce*. Brookings.

<https://www.brookings.edu/research/explaining-the-economic-impact-of-covid-19-core-industries-and-the-hispanic-workforce/#cancel>

LearnCRA. (2020, September 9). *What is considered low- or moderate-income or LMI?*

FindCRA Learning Center.

<https://www.learnkra.com/knowledge-base/what-is-considered-low-or-moderate-income-or-lmi/#:~:text=An%20individual's%20income%20is%20considered,or%20area%20where%20they%20reside.>

Maciag, M. (2015, February). *Gentrification in America Report*. Retrieved November 01, 2020, from

<https://www.governing.com/gov-data/census/gentrification-in-cities-governing-report.html>

Murdie, R., & Teixeira, C. (2011). *The Impact of Gentrification on Ethnic Neighbourhoods in Toronto: A Case Study of Little Portugal*. *Urban Studies*, 48(1), 61–83.

<https://doi.org/10.1177/0042098009360227>

Neeley, K. *Toward an Integrated View of Technology*. In *Beyond Thintelligence: Toward an Integrated View of Technology* (pp. 37 - 45).

Olick, D. (2021, March 12). *The housing market stands at a tipping point after a stunningly successful year during the pandemic*. CNBC.

<https://www.cnbc.com/2021/03/12/housing-market-covid-one-year-anniversary.html>

Olito, F. (2019, September 04). 7 signs your neighborhood is gentrifying. Retrieved November 01, 2020, from <https://www.businessinsider.com/signs-your-neighborhood-is-gentrifying>

Richardson, J, Mitchell, B., & Franco, J. (2019, March 19). *Shifting Neighborhoods: Gentrification and Cultural Displacement in American Cities* ». NCRC.  
<https://ncrc.org/gentrification/>

Richardson, J., Mitchell, B., & Edlebi, J. (2020, June). *Gentrification and Disinvestment 2020* ». NCRC. <https://ncrc.org/gentrification20/>

Roper, W. (2021, January 19). *COVID-19: Americans want to swap city for rural areas*. World Economic Forum.  
<https://www.weforum.org/agenda/2021/01/rural-life-cities-countryside-covid-coronavirus-united-states-us-usa-america/>

Saad, B. L. (2021, January 14). *Country Living Enjoys Renewed Appeal in U.S.* Gallup.Com.  
<https://news.gallup.com/poll/328268/country-living-enjoys-renewed-appeal.aspx>

Stillman, J. (2020, November 18). *Bill Gates Just Predicted the Pandemic Will Change the World in These 7 Dramatic Ways*. Inc.Com.  
<https://www.inc.com/jessica-stillman/bill-gates-anthony-fauci-pandemic-changes.html>

*The Cost of Living in the U.S. – During a Pandemic*. (2020, August 31). GoinGlobal Blog.  
<http://blog.goinglobal.com/the-cost-of-living-in-the-u-s-during-a-pandemic/>

*The Process of Poverty Destabilization: How Gentrification is Reshaping Upper Manhattan and the Bronx and Increasing Homelessness in New York City* –. (2014, February). Institute

for Children, Poverty & Homelessness.

<https://www.icphusa.org/reports/the-process-of-poverty-destabilization/>

Toussaint-Comeau, M., Newberger, R., & O'Dell, M. (2019). *Small Business Performance in Industries in LMI Neighborhoods After the Great Recession: Atlanta, Baltimore, Chicago, Houston, and Los Angeles - Federal Reserve Bank of Chicago*. Federal Reserve Bank of Chicago.

<https://www.chicagofed.org/publications/profitwise-news-and-views/2019/small-business-performance-in-industries-in-lmi-neighborhoods-after-the-great-recession>

Twigg, M. (2020, August 11). Revitalization or displacement: What is gentrification really?

Retrieved November 02, 2020, from

<https://www.matternews.org/developus/gentrification-explained>

Vock, D. (2015, February). Suburbs Struggle to Aid the Sprawling Poor. Retrieved November 02, 2020, from

<https://www.governing.com/topics/health-human-services/gov-suburban-poverty-gentrification-series.html>

*Where's Everyone Moving To?* (2020, October 8). NPR.

<https://choice.npr.org/index.html?origin=https://www.npr.org/transcripts/921769579>

Wilson, R. (2020, December 16). *Americans move less, but those doing so are leaving urban centers*. TheHill.

<https://thehill.com/homenews/state-watch/530515-americans-move-less-but-those-doing-so-are-leaving-urban-centers?rl=1>



Zuluaga, D. (2021, January 22). *More Evidence that the CRA Doesn't Always Help Low-Income Communities. But Proposed Changes Will Improve It*. Cato Institute.

<https://www.cato.org/blog/more-evidence-cra-doesnt-always-help-low-income-communities-proposed-changes-will-improve-it>