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Abstract:

In recent years TOD has been viewed by policymakers and various interest groups as a panacea to many problems ranging from obesity to increased transportation access for low-income households. But how likely is TOD to increase in the future? And given how past transportation policies like highway construction during the 20th century have harmed low-income communities, what would this mean for the poor? These prompts lead me to the overarching question of this paper: **given a likely increase in Transit-Oriented Development (TOD), how could policymakers approach these developments so that opportunities for low-income households are improved, rather than diminished?**

After analyzing and synthesizing a vast literature on transportation history, urban economics, and ethics, I find that: (1) TOD is likely to increase in the future; (2) TOD most likely cause gentrification which most likely harms low-income households primarily through displacement and higher cost of living; and (3) Society has a moral obligation to improve TOD to ensure equitable outcomes and improved opportunities for the poor. I then provide five broad policy guidelines for implementing TOD in the future.

Transit-Oriented Development: On Track or Off the Rails?

By George Park

"Transportation matters more than just as a way to get us places. Transportation, for good or ill, shapes places."
– Anthony Foxx, Former U.S. Secretary of Transportation

Introduction

At its core transportation is about getting from Point A to Point B in the quickest and safest way possible. With this in mind, investments in transportation infrastructure have always focused on accomplishing just that. Primarily through investment in building highways, this focus on efficiency has yielded massive economic benefits, as investments in infrastructure expand productivity and increase levels of employment and output. This is consistent with a series of case studies and regression analyses conducted by the Federal Highways Administration (FHWA). The FHWA estimates that a 10% increase in public investment can yield up to a 4% increase in national output.[1] The FHWA also found that a $1 billion federal-aid highway investment creates around 42,100 jobs.[2] This probably does not surprise most people. Anyone who has driven on the interstate system has witnessed first-hand the massive scale to which highways facilitate the movement of people, goods, and services.

Despite all the good that comes from highway-centric transportation policies and investments, a close look at the history of the United States' transportation infrastructure and at current trends suggest there has also been a lot of bad. After all, basic

[1] Keane, Thomas F. "The Economic Importance of the National Highway System." *Public Roads State Planning & Research Guide* 59, no. 4 (1996). The Economic Importance of the National Highway System.
[2] Keane, "The Economic Importance of the National Highway System."

economics principles suggest that there is a tradeoff between efficiency and equity. And in the case where even today more than 80 percent of state and federal surface transportation funding goes towards highways,[3] the United States transportation system has played a part in America's increasing inequality by displacing households, driving private investment away from communities, unevenly distributing public goods, and more.

Recent years have been marked by a noticeable shift in attitudes. More people have started to turn their attention towards issues with a highway-centric transportation system, such as growing congestion, pollution, obesity, and unequal access to transportation. More people have also demonstrated a higher preference for transit and drive considerably less, a reversal from decades of suburbanization and personal vehicle-oriented transportation. According to the U.S. Department of Transportation (US DOT), "Americans between the age of 18 and 34 drove 21 percent fewer miles than those in that age group did in 2001."[4] Nielson Company also reports that "62% of millennials prefer to live in mixed-use communities found in urban centers, closer to shops, restaurants, and the office."[5]

The confluence of individual preferences and societal problems has led to the rise of Transit-Oriented Development (TOD), which promotes "compact, mixed-use communities near transit where people enjoy easy access to jobs and services."[6] Often viewed as a panacea, such development should, in theory, reduce congestion, pollution,

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[3] *Beyond Traffic 20145,* report, Office of the Under Secretary for Policy, The Department of Transportation, https://www.transportation.gov/policy-initiatives/beyond-traffic-2045-final-report., 105.
[4] US DOT, *Beyond Traffic*, 11.
[5] Sam Frizell, "Americans Increasingly Want to Live in Cities, Not Suburbs," Time, April 25, 2014, accessed 2017, http://time.com/72281/american-housing/.
[6] "Transit-Oriented Development," FTA, December 14, 2015, , accessed March 2017, https://www.transit.dot.gov/TOD.

and obesity rates, while expanding affordable transportation to all members of society. However, there is some concern that as wealthier households and businesses are drawn to TOD, property values will rise and poor communities will be forced to relocate further from transportation, jobs, and social services.

As a relatively new trend, it is uncertain what kind of impact TOD has on poor communities. Furthermore, if TOD can hurt poor communities, it is uncertain what policy approaches are most effective in mitigating those harmful consequences. This research aims to add clarity to these uncertainties. After analyzing history, current trends, case studies, and various transportation policies, it seems likely that TOD will harm some disadvantaged communities. However, a more guided approach and some policy adjustments may help flip the paradigm and allow TOD to improve opportunities for the poor in the future.

What is Transit-Oriented Development?

Before fully engaging in this issue, it is important to understand exactly what transit-oriented development is. The ideal that Transit Oriented Development strives for is bringing people of various income levels into areas where they can live, work, and access their essential goods and services through use of transit instead of driving. Consequently, TODs are typically envisioned as dense neighborhoods with schools, stores, restaurants, office buildings, etc. Described as having a “virtuous circle between the ‘four D’s’- density, diversity, destination, and design,” an ideal TODs allows for people to get around more cheaply and efficiently, without driving as much. TODs should create environments not only where transit is more accessible, but also where

walking and biking are safe, efficient alternatives for meeting daily needs.[7] The beauty of Transit Oriented Developments, is that the influence of construction projects expands beyond concrete buildings and transit stops and creates districts of enhanced access because commuters are willing to walk between ¼ and ½ miles to and from bus and rail stations. This is depicted in the figure below.

All of this said, it is important to note that areas connected to transit systems should not be expected to be identical, or even similar. Instead, transit systems should connect different types of areas, whether they be main streets, colleges, suburban town centers, regional centers, or urban centers, all of which should have different types of districts emerge around them. The most successful instances of TODs are those in which "TOD is not an isolated occurrence, but a network of places and nodes."[8]

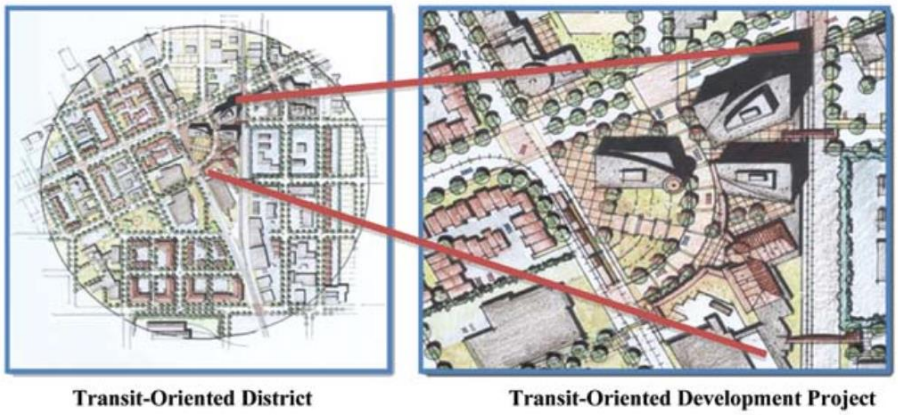

Figure 1: Transit-Oriented Districts; Belzer and Poticha, 5.

The Rise of Transit Oriented Development

Problems and Trends

[7]Dena Belzer and Shelley Poticha, "Understanding Transit-Oriented Development ," *Briefing Papers for a Convening on Transit-Oriented Development*, February 24, 2009, , accessed March 2017, www.hud.gov., 4.

[8] Belzer and Poticha, "Understanding Transit Oriented Development," 6.

The Rise and Fall of Suburbs

Thomas J. Nechyba and Randall P. Walsh write, “The central theme of urban development over the past century (1900-2000) is surely the increasing trend toward suburbanization, as central cities have struggled to hold onto households and jobs.”[9] Data related to suburbanization in the early 20th century is limited because it did not become widely available until 1950 when the U.S. Census went beyond looking at metropolitan statistical areas (MSAs) and defined “urbanized areas,” which comprised of central cities and their surrounding suburbs. In 1950, the breakdown of populations in urbanized areas in the United States was 65% residing in central cities and 35% residing in suburbs. By 1990, those roles had reversed and 65% of urbanized populations resided in suburbs, with the remaining 35% living in central cities.[10]

What prompted this shift? Urban economists frequently refer to a “monocentric city model” in understanding how and why cities form and change. Simply put, the model examines the trade-off between the cost of commuting and land rents. That is, when making a locational choice on whether or not to live in a suburb, a household must decide whether the reduced land rents associated with living in suburbs, which are traditionally cheaper, are worth the increase in commute time that comes from living in an area with less concentrated development. Using this model, much of the existing literature points towards decreasing automobile costs, highway and road expansion, and increases in income as primary explanatory variables for suburbanization. The urban economics literature also acknowledges other factors in locational choices such as amenities and other public policies.

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[9] Thomas J. Nechyba and Randall P. Walsh, "Urban Sprawl," *Journal of Economic Perspectives* 18, no. 4 (2004): , accessed March 2017, doi:10.1257/0895330042632681, 178.
[10] Ibid., 180.

Suburbanization continued into the 21st century. From 2000 to 2012, the number of low-income households living in the suburbs increased from 10 million to 16 million.[11] Moreover, suburbs not only held a larger percentage of urban populations compared to city centers, but also consistently experienced higher growth rates. However, from 2010 to 2013, city centers actually experienced greater growth rates than suburbs,[12] indicating a disruption in trend. As mentioned earlier, this is likely due to the fact that more millennials, empty nesters, and wealthier households have started to express interest in living closer to urban centers. Younger populations are also driving less and less and expressing greater preference for transit.

Changing Populations

Demographic changes play a critical role. The American population is expected to grow from 320 to 390 million by 2045, which will a corresponding increase in traffic volume that will heavily burden America's already weak infrastructure.[13] Not only will the population increase drastically, but the composition of the population will also transform. By 2045, there will be a 77% increase in the population of people older than 65, those most prone to face physical and cognitive driving limitations. In fact, half of Americans in that age group suffer from some disability.[14] Habits and patterns of the younger generations are also changing. Younger people are more likely to live alone and are waiting longer to buy a home, married and have kids. These facts suggest a future population that is not only less capable of driving, but also less interested in driving and suburban lifestyle.

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[11] US DOT, Beyond Traffic, 16.
[12] Ibid.
[13] US DOT, Beyond Traffic, 8.
[14] US DOT, Beyond Traffic, 13.

Crumbling Infrastructure

A large contributing factor to this phenomenon is the decay of our transportation infrastructure. It is pretty well established that America's transportation systems are severely underinvested in and that they are worsening. In the past presidential election, infrastructure investment played an important role in most candidates' platforms. The American Society of Civil Engineers (ASCE) releases an evaluation report on America's infrastructure system every four years. In its most recent report, 2017 Infrastructure Report Card, ASCE gave an overall D+ rating, with roads and transit receiving a D and D- respectively. More concerningly, the ASCE estimates a financing need of $3.32 trillion over the next decade to adequately address the current needs of our systems, but projects a $1.44 trillion funding gap if policies do not change. This is problematic because underinvestment in our infrastructure systems has serious economic repercussions. According to the Financial Times, it results in "lost business sales, rising costs, and dented incomes," which could total up to $4 trillion between 2016 and 2025.[15] Not only that, but it can have a real effect on human safety, with increased risk of injury or death as a result of vehicle accidents. When factoring in population growth projections, which would lead to higher traffic volume on roads and increase maintenance costs due to more wear and tear, an infrastructure system focused on driving on highways seems very unsustainable unless massive changes to funding structures occur.

[15] Sam Fleming, "US infrastructure decay forecast to cost trillions," Financial Times, May 10, 206, accessed March 2017, https://www.ft.com/content/6aa759f8-16c0-11e6-b197-a4af20d5575e.

Congestion

Regardless of funding to maintain roads, congestion concerns tie heavily into this equation. Estimates show that the average person spends over 42 hours stuck in traffic every year and that the associated cost in delays and lost fuel is $160 billion.[16] This is the product of decades of increased personal vehicle travel. Since the 1980's, longer commute times have become more and more normal as driving has become increasingly affordable and overall traffic has increased. The only real break in this trend came right before the financial crisis, when Americans drove less in 2006 than in previous years for the first time since the oil crisis in the 1970s.[17] Frustration with long commute times and the inconvenience of congestion, combined with technological advances and rising telework opportunities, may compel people to live closer to urban centers or near transit stations. These tendencies will only continue to grow as technology continues to improve the ability to work remotely. Moreover, as the population grows in the future, traffic volume will increase and in turn generate more congestion.

Potential Benefits

These issues set the stage for perfectly for TODs because proponents of TOD believe that, if implemented properly, it has a wide range of benefits that can help address all of these current and anticipated problems. Belzer and Poticha list the following potential benefits:

> *"1. The overall cost of living in these communities may be lower since households would have the option of spending less on transportation than*

[16] US DOT, Beyond Traffic, 10.
[17] Ibid., 11.

they do currently. This would significantly benefit low- and moderate- income households who are most burdened by high travel costs.

2. *Greenhouse gas emissions from the transportation sector would be lower as fewer households would use their cars for daily commuting and other activities.*
3. *Individuals who had the option of walking for a significant portion of daily activities would reduce their risk of obesity-related health problems.*
4. *Local governments would realize a "green dividend" from both the concentration of economic development in urban and suburban centers and from people spending money on local goods and services, rather than on gas and auto maintenance.*
5. *Businesses would be better positioned to retain employees as access to walkable urban environments has been noted as a key attractor for knowledge-talent.*
6. *Developers would be better able to "meet the market" profitably and efficiently.*
7. *Transit's operating deficit could be reduced as more people ride and steady sources of income are secured.*
8. *Urban and dense suburban living would become more desirable, as the types of amenities that currently make low density living attractive – parks, good schools, safe streets, affordable housing – are provided in location efficient places."*

Other Factors

The extent to which areas experiencing transit-oriented development yield these benefits is up to debate and also depends on a wide range of external and internal factors. That said, it is important to note that, regardless of effectiveness, there exists a political bias to favor TOD. Since TOD is seen as a solution to such a wide range of problems, it also appeals to wide range of support groups. Altshulter and Luberoff sum it up best when they claim, "It appeals to interests across the political spectrum:

downtown and construction-related businesses, construction and transit labor unions, environmentalists, good-government organizations, advocates for the poor, and a wide variety of others who perceive transit as a way of reconciling development, equity and amenity goals."[18] All of these factors have contributed to increased support for transit-oriented development. Dawkins and Moeckel state, "Transit-Oriented Development has been promoted by planners and policy advocates as a solution to a variety of urban problems, including automobile traffic congestion, air pollution, and urban poverty."[19]

The point of all of this information is not to say that to say that travel by cars and suburbs are dying, and that public transit and urban communities are taking over. According to US DOT, Americans have always and will continue to move to areas with lower density, cheaper housing, and more jobs. Suburbs typically fit that bill[20] and suburban living typically requires some personal vehicle access. Rather, this information is important in recognizing that transit oriented development will most likely continue to play an increasingly prominent role in society. The rise of TOD will influence how people make decisions about where to live and where to set up their businesses, and in how governments approach transportation and land-use policies.

Good Gone Bad? A lesson from history

History of Highways

TOD sounds great in theory. Referring back to the previously discussed list of its potential benefits, TOD can improve economic, social, political, and environmental

[18] Cited in Casey Dawkins and Rolf Moeckel, "Transit-Induced Gentrification: Who Will Stay, and Who Will Go?," *Housing Policy Debate* 26, no. 4-5 (2016): , accessed March 2017, doi:10.1080/10511482.2016.1138986, 3.
[19] Dawkins and Moeckel, " Who Will Stay, and Who Will Go?," 1.
[20] US DOT, Beyond Traffic, 16.

outcomes. That said, things that sound good in theory do not always turn out to be good in practice, and there is reason to suspect that TOD can yield unintended negative consequences. These suspicions are especially amplified when drawing parallels between TOD and the history of highway construction. Though the two may seem very different on the surface, they actually have a lot of overlap especially in the way that they impact the way people move and locate. As a result, the history of highway construction can provide a framework of comparison that can be applied in assessing whether or not TOD is as good as it is made out to be. Thus, this section will briefly discuss the history of highways in order to illuminate ways in which TOD might affect the lives of people today, especially those living in poverty.

For most of the 20th century, construction of a formal highway system was the sole focus of public infrastructure investments. Efforts to build a national road system began with the passage of the Federal Aid Road Act of 1916, and escalated from 1956 to 1969 with the passage of the Federal Aid Highway Act of 1956 under the Eisenhower administration. Often considered by historians to be one of President Dwight D. Eisenhower's greatest achievements as president, the $128.9 billion project resulted in the completion of our 48,676-mile interstate system.[21] This focus on investing in roads was motivated by many factors. Roads made the most sense because they were relatively easy and cost effective to make. Road-building aligned better with American

[21] Thomas F. Keane, "The Economic Importance of the National Highway System," *Public Roads State Planning & Research Guide* 59, no. 4 (1996): , The Economic Importance of the National Highway System.

values, as driving from place to place is much more individualistic than hopping on a shared, fixed route transit system.[22] American involvement in World War I and World War II also motivated highway investment. Indeed, President Eisenhower's big push for the interstate was heavily motivated by his experience at war in Germany, where he observed the German's modern autobahn system. Lastly, road projects that ran through cities were often seen as opportunities for urban renewal and the elimination of "urban blight."[23] At the time, focusing on highways made sense. So did the urgency to build as quickly as possible, as the U.S. was experiencing rapid economic growth and establishing itself as a global leader. However, despite all the benefits, highway projects created a host of problems, especially for poor, and often minority, communities.

Sprawl, Displacement, and Segregation

The negative impacts of highway construction are best explained through examples. Former U.S. Secretary of Transportation Anthony Foxx often spoke about his childhood in Charlotte where the design and construction of I-77 and I-85 cut off his "house and neighbors off from the rest of the city" and turned his neighborhood into a place "where no one wanted to live or open a business, and where not even the pizza-delivery guy would go."[24]

Charlotte is just one of many examples. Countless news and research articles have brought attention to the way in which road design disconnected poor communities from society. Drawing from analyses conducted by the University of Virginia Cooper

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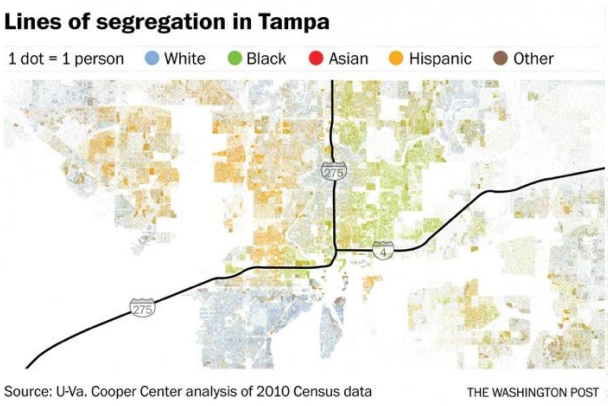
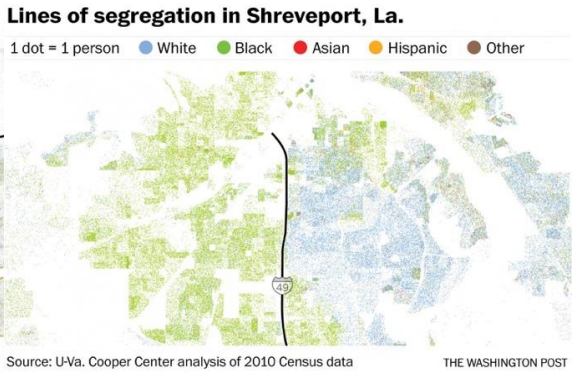
[22] Susan Handy, *History of federal transportation policy*, April 4, 2016, Lecture Power Point Slides for UC Davis' TTP 220.
[23] Raymond A. Mohl, *The Interstates and the Cities: Highways, Housing, and the Freeway Revolt*, report, Department of History, University of Alabama at Birmingham (Poverty and Race Research Action Council, 2002), accessed February 2017, http://www.prrac.org/pdf/mohl.pdf.
[24]"Alana Semuels, "A Departure From Decades of Highway Policy," The Atlantic, March 29, 2016, , accessed April 2017, https://www.theatlantic.com/business/archive/2016/03/the-transportation-secretary-speaks-out-against-highways/475749/.

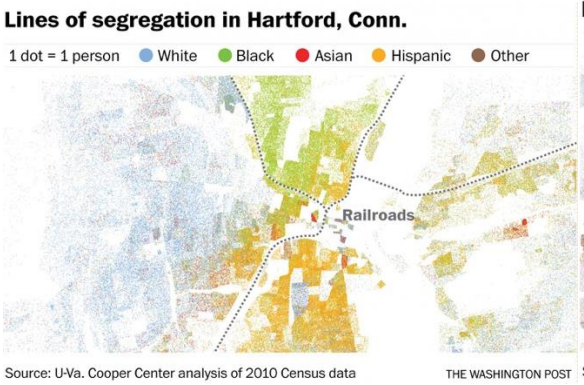
Center, a convincing case can be made for the divisive power of transportation infrastructure that Foxx often referred to and the long-term nature of the effects which have persisted over multiple decades into the present. In their analyses, the Cooper Center used 2010 Census data to generate geospatial maps,[25] like the ones below, that show the racial distribution in cities around the country with respect to the location of major interstates, railroads, and other forms of public land use. These maps are a visual depiction of how forms of public infrastructure investment can draw sharp lines of racial segregation that persist today. As shown below, I-275 and I-4 divide Whites, Blacks, and Hispanics into three distinct regions of Tampa, Florida. In Shreveport, Louisiana, I-49 marks a clear separation between White and Black communities, with Whites living on the west side and Blacks living on the east side. In Hartford, Connecticut railroad lines insulate white communities from blacks and Hispanics. The map of Washington, D.C. shows how even a public park can separate black and white communities.

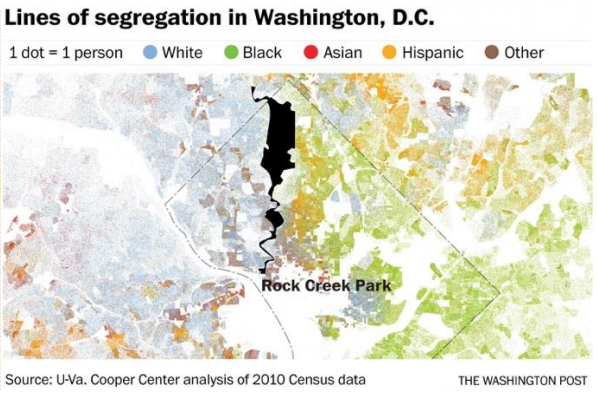
These manmade divisions didn't just trace tangible lines over pre-existing intangible lines of segregation. Instead, empirical evidence shows how these divisions increase segregation. Ananat, for instance, shows that "the extent to which track configurations physically subdivided cities strongly predicts the level of segregation that ensued after the great Migration of African-Americans to northern and western cities in the 20th century."[26]

[25] Dustin Cable, "The Racial Dot Map," Demographics Research Group, July 2013, , accessed February 2017, http://demographics.coopercenter.org/racial-dot-map/.
[26] "The Wrong Side's of the Tracks" by Ananat (2007?), p2; http://www.nber.org/papers/w13343.pdf









Additionally, infrastructure investments didn't just separate wealthy and poor communities; they often ran right through existing communities. This required the displacement of poor inner city residents who had minimal power to resist the government's exercise of eminent domain. Unsurprisingly, this posed a large economic burden on displaced property owners, especially those with sparser resources. The U.S. Department of Transportation estimates that over 475,000 households were displaced between 1957 and 1977, with the majority being in low-income, minority neighborhoods.[27]

[27] US DOT, *Beyond Traffic*, 95.

Dividing and displacing communities through the construction of federal-aid highways had massive ramifications. The U.S. Department of Transportation concedes, "many of the communities destroyed by urban renewal and the construction of urban highways were once densely populated, vibrant, affordable, and accessible neighborhoods."[28] In "Interstates and the Cities: Highways, Housing, and the Freeway Revolt," Raymond A. Mohl provides countless examples of poor, minority urban communities that were destroyed by highway construction. His list includes New Orleans, Louisiana; Camden, New Jersey; Columbia, South Carolina; St. Paul, Minnesota; Pasadena, California; and more. These examples serve as a testament to how widespread and consistent the destruction was.

The same highways that were disrupting life of poor communities were also giving middle- and upper-class families exactly what they wanted. Decreasing transportation costs from expanded roads played made it easy for the wealthy to flee to the suburbs. Access to suburbs combined with discriminatory policy practices like redlining, enabled affluent (and typically white) households to segregate themselves and exclude minorities and poor people.

While some of the poor households that were forced to move found themselves in high-rise public housing options like Pruitt-Igoe in St. Louis, most of them were forced to move to low-income suburban neighborhoods, as more housing was being destroyed than was being built. For instance, in Camden, New Jersey, where 85% of displaced households were minorities, only 100 low-income housing units were built from 1963-1967, despite 3000 low-income housing units being destroyed and cleared for road

[28] US DOT, *Beyond Traffic*, 94.

construction.[29] Poor minorities found themselves racially segregated into residential neighborhoods that became “much larger, more spatially isolated, and more intensely segregated second ghettos characteristic of the late twentieth century.”[30] The poor minorities who did not migrate out of the city centers and were “lucky” enough to find new public housing options, were not any better off. Public housing projects like Pruitt-Igoe suffered from a combination of negative peer effects, spatial mismatch, neighborhood restrictions, stigmatization in the media, and harmful policy provisions that exacerbated poverty and often led to their demise.[31]

Such income and racial segregation is extremely problematic because it leads to unequal distribution of public goods. When areas have higher concentrations of low-income households, the local governments have less tax revenue to invest into schools, infrastructure, and other public works, and local businesses have more incentive to leave for wealthier neighborhoods. This puts residents in poor neighborhoods at a huge disadvantage as they struggle to access job opportunities and to get the education needed to earn higher wages and lift themselves out of poverty. Even if the money is available to spend on providing public goods to low-income areas, inequality may persist because “the quality of public goods may rely less on public financing than on nonfinancial inputs that derive directly from the composition of local populations.”[32] For instance, family and peer effects are incredibly important for school quality and educational outcomes for youth. Ultimately, this kind of segregation results in poor neighborhoods experiencing reduced opportunity.

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[29] Mohl, *The Interstates and the Cities: Highways, Housing, and the Freeway Revolt*, 34.
[30] Ibid., 38
[31] Chad Friedrichs et al., "The Pruitt-Igoe Myth," September 27, 2015, accessed March 2017.
[32] Thomas J. Nechyba and Randall P. Walsh, "Urban Sprawl," 192.

Structures

A combination of political, social, cultural, and economic factors enabled and facilitated these negative outcomes through highway construction. For example, it is not by chance that poor communities were often the victims of forced relocation due to highway design. It is even less surprising that most of these communities were predominantly black. The Federal Aid Highway Act of 1956 was passed shortly after the Brown v. Board of Education decision in 1954 and eight years before the passage of the Civil Rights Act. Furthermore, the bulk of highway construction in the modern interstate system was completed between 1957-1969, the period in which the Federal Aid Highway Act of 1956 authorized funding. Given the timing of the legislation, highway construction took off during a time when racial attitudes were much more hostile and divisive and when blacks had less income and less political influence. And since highway design is a process that takes place through coordination on a state and local level, it is likely race that factored into the decision-making processes that allowed for highways to pass through poor neighborhoods in urban centers.

Race aside, it is important to keep in mind that the government was trying to expand the highway network as quickly and cheaply as possible. Given these pressures, low-income and minority communities were ideal targets for bearing the burden of infrastructure development because they were most vulnerable. According to the US DOT, “In many cases, interstate routes were chosen based on areas where land costs were the lowest or where political resistance was the weakest. In practice, this meant that urban interstates cut through low-income and minority communities more

often than not."[33] The lack of economic, social, and political influence that these communities had meant that even in cases where they strongly opposed highway designs, projects were able to continue with minimal conflict or delay. For instance, in Seattle, residents in blue collar neighborhoods like cascade adamantly opposed the building of the I-5 interstate early in the planning stages and advocated for investment in transit and a focus on neighborhood connectivity. Ultimately, they failed and the highway divided the city in half and destroyed thriving communities.[34]

Once households were forced to relocate, other structural shortcomings amplified their struggles. As mentioned earlier, inadequate investment in public housing left them with few affordable options. Not only did they have fewer option though, they also had little to no assistance. In some states, the displaced were often compensated. However, compensation was often insufficient, and most states neglected to offer assistance with relocation. The displaced were left to their own devices to find new housing in a market with fewer options. In their search for new housing, they found themselves limited to poor segregated neighborhoods due to discriminatory real estate practices, like minimum lot sizes.

The Takeaway

If there's anything we can learn from the history of American transportation policy and the construction of our modern interstate system, it's that transportation can divide people just as much as it can connect them. This is something that is affirmed in the economic and transportation literature. A Harvard study by Raj Chetty and Nathaniel Hendren shows how crucial transportation is to creating opportunity and mobility by

[33] US DOT, *Beyond Traffic*, 95.
[34] US DOT, *Beyond Traffic*, 96.

finding commute times to be the single strongest explanatory variable in determining the odds of rising out of poverty, even when compared to things like test scores, crime rates, and proportion of two-parent households in a community.[35] By contrast, a report by the New York University's Rudin Center for Transportation shows how lack of transportation policy can cause poverty, finding that "those with some, but insufficient, access to transportation had the highest rates of unemployment and the lowest income.

The extremely harmful effects of highway construction give us reason to be concerned about the way in which we implement and expand TOD. Highway construction displaced the poor, segregated them, and trapped them in low-resource environments where they had little opportunity to escape poverty. A lot of this had to do with careless and sometimes intentionally discriminatory design. A lot of this was also the product of a lack of structures in place to protect the poor from being marginalized. If we truly want to learn from our mistakes, this leads us to ask whether or not the likely increase in TOD will have similar effects on the poor today. And if so, it leads us to question ways in which we can provide the structural support and policy treatments needed to keep opportunities alive for the people who need it most.

The Impacts of Transit-Oriented Development

Overview

As more policymakers and urban planners have started to support transit oriented design, we have seen an increase in the number of transit stations around the country. From 2000 to 2011, 882 transit stations opened up. Promisingly, 28.6 % of

[35] Chetty, Raj, Nathaniel Hendren, and Lawrence F. Katz. "The effects of exposure to better neighborhoods on children: New evidence from the Moving to Opportunity experiment." *The American Economic Review* 106, no. 4 (2016): 855-902.

those stations opened within a quarter mile of Low-Income Housing Tax Credit developments and 53.2% opened up within half a mile, which in theory, means that more poor households should be gaining access to public transportation[36] These numbers are promising in terms of potentially increasing transportation accessibility for low-income communities. However, if we learned anything from the history of highways, these numbers should be cause for vigilance.

Similar to how highway construction played a role in urban sprawl and housing segregation, many experts fear that TOD has the potential to lead to more gentrification. Originating from the mid-1900s when "gentry" in London were moving into low-income neighborhoods, the term gentrification refers to the phenomenon in which poor, working class areas in city centers are transformed into either commercial or affluent residential areas.[37] It is worth noting that gentrification not only includes the community investment, but also the disinvestment of urban neighborhoods that made conditions prime for that investment.[38] While the gentrification and urban sprawl might seem like polar opposites, they share an underlying socioeconomic dynamic in which the wealthy are able to sort and relocate when and where they please, often at the expense of the poor. In the same way that highway construction and various displaced many poor households and essentially segregated them into traditional slums and newer suburban ghettos, many

[36] Miriam Zuk and Ian Carlton, *Equitable Transit Oriented Development: Examining the progress and continued challenges of developing affordable housing in opportunity and transit-rich neighborhoods,* technical paper, Civil Rights Research, Poverty Race and Research Council, 2015, , accessed March 2017, http://prrac.org/pdf/EquitableTOD.pdf., 9.
[37] Zuk, Miriam, Ariel H. Bierbaum, Karen Chapple, Karolina Gorska, Anastasia Loukaitou-Sideris, Paul Ong, and Trevor Thomas. *Gentrification, displacement and the role of public investment: a literature review*. No. 2015-55. Federal Reserve Bank of San Francisco, 2015, 12.
[38] Ibid., p.26

believe that TOD-induced gentrification forces the poor out of their communities, away from transportation access and into areas with less opportunity.

Simply put, there is an ongoing debate on 1) whether TOD will lead to gentrification and 2) whether that gentrification would disadvantage the poor. In order to answer these questions, this section will assess theories, facts, and empirical research.

Will TOD Lead to Gentrification?

From a theoretical standpoint, there is good reason to believe that TOD causes gentrification. Investments in TOD should make living near transit stops more appealing to all income groups. As infrastructure investment makes public transit a cheaper and more reliable source of transportation, the corresponding increase in demand should increase property values surrounding transit stops to rise. A famous paper by urban economist Jennifer Roback finds that the value of local amenities is reflected not only in land prices, but also in wages and rents.[39] Since lower-income households typically rent their homes, we would expect them to eventually be displaced once their low wages are no longer sufficient to meet increasing rents.

On the supply side of things, gentrification becomes much more likely when "when it appears that an actor (a state agency, financial institution or large land-owner) demonstrates a commitment to refurbish the physical environment at a scale capable of influencing the area's land or housing market."[40] If this is the case, then when a city decides to invest in building a new transit stop, it may be sending a signal to households and businesses to locate or move near the new station.

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[39] Roback, Jennifer. "Wages, Rents, and the Quality of Life." *Journal of political economy* 90, no. 6 (1982), 1275.
[40] Zuk et al., *Gentrification, displacement and the role of public investment,* 22.

These theories are backed by empirical evidence. In separate works, Immergluck[41] and Kahn[42] both find housing price increases in low income neighborhoods near newly planned transit stations, with Immergluck looking specifically at Atlanta and Kahn covering a number of metropolitan areas. Zuk and Carlton also found compelling evidence after looking at various gentrification measures to see how LIHTC neighborhoods with and without nearby transit experienced gentrification from 2000 to 2010. They show that "LIHTC neighborhoods that were within half a mile of a transit station were more likely to experience gentrification pressures as measured by changes in poverty, median household income, non- white population, median rent, educational attainment and housing values, all of which were found to be statistically significant."[43] Taken together, these works (and many more) suggest that when transit stations are built near LIHTC neighborhoods, the gentrification does occur.

[41] Immergluck 2009 cited in Who will stay p. 5
[42] Kahn 2007 cited in Who Will Stay? P. 5
[43] Miriam Zuk and Ian Carlton, *Equitable Transit Oriented Development: Examining the progress and continued challenges of developing affordable housing in opportunity and transit-rich neighborhoods,* technical paper, Civil Rights Research, Poverty Race and Research Council, 2015, , accessed March 2017, http://prrac.org/pdf/EquitableTOD.pdf., 9-10.

Gentrification indicators (average change 2000 - 2010)	LIHTC neighborhoods < ½ mile of transit station	LIHTC neighborhoods > ½ mile of transit station
Change in % poverty	- 1.3%	+ 3.4%
Change in % nonwhite	- 1.5%	+ 5.2%
Change in % of adults 25+ with bachelors	+ 7.6%	+ 2.3%
Change in median household income	+ 8.3%	- 7.3%
Change in median rent	+ 21.1%	+ 7.3%
Change in median home value	+ 84.2%	+31.6%

Figure 2: Gentrification Indicators; Zuk and Carlton; 10.

Is Gentrification That Bad?

When critics talk about the harmful effects of gentrification, they typically refer to displacement. While most agree that TOD contributes to gentrification, there is less agreement on whether that gentrification is responsible for the displacement. When the percentage of poor people in a neighborhood decreases following transit-oriented development, it could be argued that the poor are not leaving as much as they are rising out of poverty. It could also be argued that the increase in wealthy households moving in dilutes the number of poor households, but that the poor are not necessarily being forced out. If the number of housing units in the area increases, then poverty rates can decrease without any of the original poor residents ever leaving. Defenders of gentrification also benefit from studies by Vigdor (2000) and Freeman and Braconi

(2004), which claim that low income households in gentrified zones actually experience more housing stability than in non-gentrified zones.[44]

While these arguments have their merits, many of them are easily dismantled upon closer inspection. Chapple (2014) points out that these studies do not cover long enough timeframes to account for the lag in displacement that occurs from residents who try to stay in their neighborhoods despite rising prices.[45] After all, Becker (1965), Leroy and Sonstelie (1983) and Glaeser, et al. (2008) present the possibility that, regardless of whether monocentric model assumptions are met, low income households may value transit access more than high income households and outbid rich households for land and housing.[46] This may be due to the poor valuing leisure more than the rich, to the fact that the poor are less likely to own vehicles, or to the strong desire to maintain access to the new amenities gained from gentrification .[47] The point at which households can no longer make sacrifices to hold onto their homes might be a few years beyond the scope of Vigdor's and Freeman and Braconi's papers. These studies also fail to account for "chains of displacement" by ignoring the displacement from earlier periods of disinvestment that allowed for gentrification to occur.[48] The potential data and methodological shortcomings of quantitative studies defending gentrification are also highlighted by the fact that qualitative studies yielded far different results, much more in line with what theory would suggest. For instance, in a series of 33 interviews, Newman and Wyly discovered "tremendous displacement pressures

[44] Cited in Zuk et al. *Gentrification, displacement and the role of public investment*, 31.
[45] Cited in Zuk et al. *Gentrification, displacement and the role of public investment*, 34.
[46] Dawkins and Moeckel, "Who Will Stay, and Who Will Go?." 5-6.
[47] Cited by Dawkins and Moeckel p.6
[48] Zuk et al., *Gentrification, displacement and the role of public investment,* 31

resulting in crowding, homelessness or people moving out of the neighborhood or even city."[49]

Furthermore, there is a pretty substantial literature that supports the negative impacts of transit-induced gentrification on displacement. In Carlton et al.'s extensive literature review on gentrification and displacement, which included the previously mentioned works by Vigdor, Freeman and Braconi, the authors report, "one consistent finding across these studies is that in-movers to gentrifying neighborhoods are wealthier, whiter and of higher educational attainment and out-movers are more likely to be renters, poorer and people of color. The research also consistently shows that rent appreciation predicts displacement."[50] If poor renters, many of whom do not have cars, are displaced as a result of TOD; and if they have to move further away from transit and into poorer communities with fewer resources, lower median income levels and overall levels of educational attainment; then it is likely that they are going to have worse outcomes than if TOD had not happened. Even if some low-income households are able to remain in TODs after rents rise, it is still possible that they are suffering worse overall outcomes as they make financial sacrifices to meet the higher rent monthly rent payments. Even if this means sacrificing small things like stopping music lessons for a child, foregoing a doctor appointment, or eating fast food more regularly, the small things can add up to serious problems later down the road.

While the evidence presented does not point definitively to either side, the theory is sound enough and the evidence is strong enough to reasonably argue that

[49] Cited in Zuk et al. *Gentrification, displacement and the role of public investment* 32
[50] Zuk et al., *Gentrification, displacement and the role of public investment,* 34.

gentrification harms the poor. And if this is the case, then this conclusion raises some ethical questions.

Why Should We Care?

"Above all, do no harm"

The previous section provided evidence that there is at least some reason to suspect that transit-oriented development sometimes causes gentrification, and that this gentrification sometimes causes harm to disadvantaged communities. Drawing from the principle of non-maleficence, an ethical principle that people should "above all, do no harm," these circumstances morally obligate society to do something to address this. Even if a skeptic were not entirely convinced that TOD-induced gentrification has yielded negative outcomes, the mixed and uncertain evidence gives us enough reason to at least err on the side of caution in the way we implement TOD.

Rawls and Fair Equality of Opportunity

Beyond basic non-maleficence, arguments about the importance of equal opportunity support the necessity of reforming TOD. Most Americans will agree that it is important for our country to guarantee a somewhat level playing field (though not equality of outcomes), such that any individual has the opportunity to succeed through hard work and persistence, regardless of what race, gender, or class that person is born into. The AEI/Brookings Working Group on Poverty and Opportunity points out the universality of this belief when it says, "The concept of 'opportunity' drawn nearly universal support among Americans, and it's the core concept of the American Dream."[51] However, while most Americans would agree on the importance of

[51] AEI/Brookings Working Group on Poverty and Opportunity, *Opportunity, Responsibility, and Security: A consensus plan for reducing poverty and restoring the American Dream,* report, 2015, , accessed January 2017, https://www.brookings.edu/wp-content/uploads/2015/12/full-report.pdf., 11.

guaranteeing opportunity, the extent to which that obligation holds, especially in the context of transportation policy, is uncertain.

Rawlsian theories of justice provide some guidance. Rawls argues for the guarantee of fair equality of opportunity, which requires that all individuals, regardless of their endowed social position, have a fair chance to succeed.[52] This concept emphasizes individual freedom of choice and allows for inequalities to exist only when the worst off individuals are as well off as possible compared to other alternatives (often known as the "difference principle").[53] A common application of this theory is in justifying educational policies targeted towards closing attainment gaps between rich and poor individuals who exhibit similar talent and work ethic.[54] Pereira, Schwanen, and Bannister interpret Rawls' theory and apply it to transportation equity in the context of how institutions and policies try to reduce inequalities of opportunities. They claim that misinterpretations of Rawls' theory "may seem compatible with transport policies that aim to advance the common good by improving overall or average levels of accessibility,"[55] a description that aptly describes the Federal Aid Highways Act of 1956. They then assert that a proper application of Rawls' difference principle "entails that interventions such as infrastructure investments, subsidies and service provision can only be considered fair if they improve accessibility of the least advantaged groups." [56] Some might argue that TOD initiatives, unlike highway construction, are consistent with these guiding morals. After all, in theory, TOD should increase accessibility for poor

[52] "Fair Equality of Opportunity," Stanford University: Equality of Opportunity and Education, accessed April 2017, https://edeq.stanford.edu/sections/fair-equality-opportunity.
[53] Pereira, Rafael, Tim Schwanen, and David Banister. "Distributive justice and equity in transportation." *Transport Reviews* 37, no. 2 (2017), 8-9
[54] "Fair Equality of Opportunity," Stanford University: Equality of Opportunity and Education.
[55] Pereira, Schwanen, and Bannister, "Distributive justice and equity in transportation," 18.
[56] Ibid.

households by increasing transit options and transit-accessible destinations. However, given that poorly implemented TOD has sometimes reduced the accessibility of the least advantaged groups by pushing them away from transit, Pereira, Schwanen and Bannister's interpretation of Rawls' theory actually adds support to the argument for reconsidering approaches to TOD.

Capabilities

A capabilities approach (CA) to justice builds on these Rawlsian arguments. Unlike Rawls' theory which focuses on primary goods, the CA argues for the equilisandum of capabilities, the ability of an individual to pursue and develop a combination of functionings (actions and/or states of beings). Martha Nussbaum lists ten of these essential capabilities that are necessary for justice, with examples ranging from bodily healthy and integrity to things like play and affiliation.[57] However, her list falls short by failing to include address the importance of transportation. Schwanen and Bannister argue that accessibility should be considered a necessary capability because a minimum level of access to grocery stores, schools, hospitals, and jobs is needed to meet basic needs.[58] They add that accessibility as a capability can be broken into two components. First, the capability to access and use transportation, via car, bus, metro, or other technologies (ex: using a smart phone to call an Uber). Secondly, the way in which transport systems and land use patterns affect people's capabilities. This conception of access capabilities is highly applicable to TOD. Cases where transportation investment and housing policies interact in a way that forces the poor to move away from nearby transit violate essential capabilities by reducing ability to meet

[57] Martha Craven Nussbaum, *Creating capabilities: the human development approach* (Cambridge, Mass.: The Belknap Press of Harvard Univ. Press, 2013), 33-34.
[58] Pereira, Schwanen, and Bannister, "Distributive justice and equity in transportation," 19.

basic functionings. If we consider accessibility to be a necessary capability, then justice requires that changes be made so that poor households can gain more or, at minimum, maintain the same level of accessibility.

Policy Recommendations and Conclusion

(Note: Before reading this section, it might be useful to see the Appendix for a short section on transit and housing programs, the two types of policies that interact in the creation of TOD)

Starting from a basic principle of non-maleficence and expanding to concepts of FEO and the Capabilities Approach dictates that we have a moral obligation to reform transit-oriented development. But what exactly should we do? Do we accept these negative outcomes and keep TOD in place? Alternatively, do we abandon TOD efforts?

The point of this research is not to argue that TOD ought to be abandoned. In fact, embracing TOD, rather than rejecting it, is more important than ever not only because of the likelihood of its increase but also because of its potential to address serious problems for low-income households. Research shows that "nearly all zero-vehicle households live in neighborhoods with transit service, but those routes only connect them to 40 percent of jobs within 90 minutes."[59] Proper implementation has the potential to make a huge difference in expanding the opportunities for the poor who have zero-vehicles.

[59] Joseph Kane and Adie Tomer, "Cars Remain King and Barrier to Economic Opportunity | Brookings Institution," Brookings, July 28, 2016, accessed April 14, 2017, https://www.brookings.edu/blog/the-avenue/2014/10/23/cars-remain-king-and-barrier-to-economic-opportunity/.

Before getting ahead of ourselves, however, we must recognize the risks involved in this "panacea." As TOD becomes more and more common, evidence shows that there are equity concerns that require immediate attention. TOD may not only disproportionately help the wealthy, but it may also harm the wellbeing and opportunities of the poor through displacement in ways that are reminiscent of the harmful effects of 20th century highway construction. With all of this in mind, policy should be designed in such a way that TOD increases and protects accessibility for the poor so they can experience greater opportunity. To achieve this goal, I provide five policy guidelines.

Guideline 1: Expand and Improve TOD

Building low-income housing developments near transit stops, building transit stops near low-income housing, and generally improving conditions for non-vehicle transportation are all policy objectives that have the potential to both increase the number of people with transportation opportunities and improve the quality and accessibility of TOD transportation opportunities.

One major key to improving the quality of transportation opportunities in TOD is to improve the safety of non-vehicle travel, through measures like increasing the number of bike lanes and pedestrian walkways. This is especially important because having a transit stop near you is not helpful if it is extremely dangerous or inconvenient to get to the stop without driving a car.

Following all of these guidelines does not necessarily mean high cost investments. There are many small, relatively low-cost measures that can go a long way in expanding and improving TOD. For instance, requiring side guards on big trucks is a potential win-win policy that could easily be implemented. It can address "the deadliest

road crashes: those between large trucks and pedestrians or bicycles" by reducing cyclist fatalities and pedestrian fatalities from collisions with trucks by 61 and 20 percent respectively. Not only that, but it can improve fuel economy by 4 to 7 percent, making roads safer for pedestrians and travel cheaper for truck drivers. [60]

Guideline 2: Mitigate displacement

Ideally, policy makers could rest easy with just following Guideline 1. However, as covered in this paper, all of the efforts outlined in Guideline 1 might actually harm opportunities for the poor, primarily through displacement. To prevent this, a variety of measures can be taken. A few examples include (but are not limited to):

- Revision of New Starts guidelines:

  To address equity concerns associated with transit development, the Move Ahead for Progress in the 21st Century Act (MAP-21) was passed in 2012, which made affordable housing part of the consideration criteria for New Starts funding.[61] In the following year, the FTA published a policy guidance with affordable housing components built into the evaluation criteria. These components include "the presence the presence of local policies such as inclusionary zoning, density bonuses, rent control and condo conversion ordinances, as well as the number of existing deed-restricted units and local financing tools and strategies such as targeted property acquisition, local and state tax abatements, trust funds, and others."[62] These recent changes are big strides in the right direction, especially in terms of formally recognizing the equity impacts of TOD. While there is no way to

[60] "Truck Side Guards Resource Page," Volpe - The National Transportation Systems Center, April 15, 2015, accessed April 14, 2017, https://www.volpe.dot.gov/our-work/truck-side-guards-resource-page.
[61] Ibid.
[62] Ibid.

tangibly measure the effects of these updated guidelines due to the aforementioned lags associated with funding projects, there is reason to suspect that they may fall short of their intended impact. Zimmerman and Lukacs analyzed 2016 New Starts applications and ratings and note that "affordability factors do not appear to have had a substantial impact on the Overall Rating of a project for federal funding."[63] If the evaluation process can be made effective, then this process will not only serve to encourage more transit development near poor neighborhoods, but also prevent the harmful gentrification effects that might arise.

- Redesign and expansion of Low-Income Housing Tax Credits (LIHTC):

  Though Currie shows that low-income housing tax credits are more expensive than Section 8 Vouchers,[64] LIHTC might still be the best approach in making sure that TODs remain mixed-income. After all, it is possible that housing prices and rents appreciate in value to a point above what a low-income household could pay, even with a Section 8 voucher.

  As it currently stands, LIHTC is inadequate in meeting the needs of the poor. Even though the people under 30% median income are the ones who most severely experience shortage of housing, many LIHTC units are unaffordable for under 30% median income households.[65] LIHTC needs to be redesigned so that it does not exclude the group that needs it most.

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[63] Mariia Zimmerman and Kyle Lukacs, *Creating and Preserving Affordable Housing Through the Federal Transit Capital Investment Program An analysis of the FY2016 Federal Funding Recommendations,* report, March 9, 2015, accessed March 2017, www.mzstrategies.com, 2.
[64] Currie, *The Invisible Safety Net*, 95.
[65] Ibid.

Guideline 3: Protect the displaced

Mitigating displacement isn't enough. Unlike exercise of eminent domain during highway construction, TOD-induced gentrification is not exactly the direct result of action by the government or by the other various stakeholders involved in the process of pushing TOD forward. That said, since policymakers are still encouraging TOD while aware of the *possibility* of displacement of the poor, they should still take some responsibility for helping the displaced who are often not only moving to areas with less transportation access and worse employment opportunities, but also incurring economic and non-economic burdens (i.e. loss of community, psychological effects, etc.) as they search for new housing and adapt to new circumstances. Consequently, measures should be taken to minimize any negative impacts on their opportunities. Some suggestions include (but are not limited to):

- Increasing housing vouchers:

  Perhaps the most obvious approach is to ensure that the displaced are properly cared for by assisting them with finding affordable and adequate housing. One way to approach this would be to expand Section 8 vouchers, which are shown to be the most cost effective of our current affordable housing policies, and enable greater autonomy for recipients.[66] Autonomy is particularly important for displaced recipients because they are already being forced to move due to reasons beyond their control. Giving them the autonomy to choose their new homes is essential in respecting their dignity.

[66] Currie, *The Invisible Safety Net*, 92.

- Expanding and improving bus routes:

  Widespread complaints about bus systems show that they often fail to provide low-income passengers with safe, consistent, and reliable transportation. Buses often fail to complete routes (especially through low-income neighborhoods perceived to be “dangerous”), completely bypass stops with waiting people, and are very inconsistent in their ability to meet their scheduled arrival and departure times.[67] Buses stops are also frequently in poor condition, “providing inadequate shelter from precipitation or severe cold.”[68]

- Ride share subsidization:

  As discussed earlier, many low-income individuals living in dense urban areas do not have access to a car, and bus routes are not always the most reliable or convenient form of transportation. Therefore, being displaced by TOD-induced gentrification can significantly harm their capabilities across the board. While subsidizing car ownership might not be the most cost effective policy approach to help these groups, leveraging improvements in technology by partnering with rideshare programs like Uber and Lyft and subsidizing rides for low-income individuals living outside of the radius of a TOD can help protect the opportunities of the displaced.[69]

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[67] Gillian B. White, "Stranded: How America's Failing Public Transportation Increases Inequality," The Atlantic, May 16, 2015, accessed February 2017, https://www.theatlantic.com/business/archive/2015/05/stranded-how-americas-failing-public-transportation-increases-inequality/393419/.

[68] Ibid.

[69] Kevin DeGood and Ood and Andrew Schwartz, "Can New Transportation Technologies Improve Equity and Access to Opportunity?," Center for American Progress, April 27, 2016, , accessed April 14, 2017, https://www.americanprogress.org/issues/economy/reports/2016/04/27/135425/can-new-transportation-technologies-improve-equity-and-access-to-opportunity/.

Guideline 4: "Non Incautus Futuri" – Not Unmindful of the Future

Specific policies aside, foresight and vigilance are vital to successful TOD, especially because it is often much easier to prevent a problem than it is to reverse it. Looking at 20th century suburbanization, for instance, once affluent white households had escaped city centers and left minorities and low-income households behind in ghettos deplete of resources, it was nearly impossible for those disadvantaged groups to escape and move into the affluent suburbs. In a similar vein, once gentrification takes place in TOD neighborhoods and large numbers of low-income households are displaced, it may be difficult to help them move back into those high opportunity neighborhoods.

A specific example of how important foresight is can be found in Charlotte's South Oak Crossing TOD where, "with considerable foresight and some luck, CMHP (Charlotte Mecklenburg Housing Partnership) was able to secure a site (for low-income rental housing) at an affordable price. A short two years later. CMHP noted that the land had tripled in value since its purchase."[70] If CMHP had not looked years ahead in its decision to acquire land for housing development, land cost barriers would have made the project nearly impossible.[71]

The example provided is one where is one where short-term foresight paid off, but long-term foresight is also important. Brueckner and Rosenthal find that changes in housing patterns are part of city life cycles in which individuals move out of old housing and into newer development, with the most well-off often being the first who are able to

[70] Zuk and Carlton, *Equitable Transit Oriented Development,* 16.
[71] Ibid.

move.[72] If this is the case, then it is likely that affluent households who are currently moving closer to city centers in these new transit oriented development will eventually move back to the suburbs as these new developments deteriorate and newer ones form away from city centers. Policy makers will have to be mindful of this so that history does not repeat itself.

Guideline 5: Recognize heterogeneity

At the end of the day, perhaps the most important point to take into consideration is that these policy recommendations are not perfect, universal solutions. For instance, my recommendation of truck side guard mandates may not be worth enforcing if pedestrian-truck and cyclist-truck collisions occurrences are extremely low. Uber and Lyft subsidies may not be worth implementing in regions where discriminatory attitudes are more prevalent. One study by researchers at MIT found that in Seattle and Boston, two cities where one would not expect to experience high levels of discrimination (relative to other parts of the country), Uber drivers discriminated against passengers with names that sounded African American through longer wait times and higher levels of ride cancellations.[73]

A major takeaway from case studies of successful examples of TOD is that cities and neighborhoods are extremely heterogeneous. They experience different opportunities and threats to equitable TOD and, as a result, require unique solutions. They also require an alignment of stakeholder interests, which allows for flexible

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[72] Brueckner, Jan K., and Stuart S. Rosenthal. "Gentrification and neighborhood housing cycles: will America's future downtowns be rich?." *The Review of Economics and Statistics* 91, no. 4 (2009), 28.
[73] Ge, Yanbo, Christopher R. Knittel, Don MacKenzie, and Stephen Zoepf. *Racial and gender discrimination in transportation network companies*. No. w22776. National Bureau of Economic Research, 2016, 18-19.

responses to this heterogeneity. The collection of policy prescriptions provided above, therefore, can be seen as a toolbox, with each tool having its specific purpose.

Conclusion

This paper shows an increased likelihood of future TOD and gives us reason to be concerned about the effects of this TOD on the poor. That said, it also gives us reason to be optimistic about the future. A wise professor of mine once remarked at the of class that, despite all the conflict and wrong that exists in the world, all of humanity has an underlying desire to live in peace, love, and respect with one another.[74] It is my belief that if properly guided, TOD can bring us one step closer to accomplishing that by promoting a livelihood and culture in which people of all income levels can live together in harmony and lead cheaper, safer, healthier, and happier lives.

Appendix A: Transit and Housing Programs: a quick overview

There are two interacting forces related to transit oriented development implementation. The first is transportation policy, with the primary program involved being the Federal Transit Agency's (FTA) New Start's program. This program has funded almost all major transit projects in the U.S. since the 1970s. Today it continues to fund not only new transit facilities, but also extensions to existing ones.[75] However, for programs to receive funding, proposals go "through a multi-criteria evaluation process that allows for comparison to peer proposals."[76] Since funding from Congress is

[74] A paraphrased quote by Professor Howard Pickett (I'm sorry if I butchered something you said or if I completely imagined this from one of our final classes).
[75] Miriam Zuk and Ian Carlton, *Equitable Transit Oriented Development*, 5.
[76] Ibid.

limited to just $2 billion per year, not many projects receive funding annually. Additionally, the funding process typically takes around five to ten years,[77] which may create a lagging effect for observing immediate effects from any policy changes.

The second aspect is housing policy. Under the large umbrella of housing policy, two programs are of particular interest in achieving equitable outcomes. The larger and more quickly growing of these two programs is the Low Income Housing Tax Credit (LIHTC). LIHTC subsidizes builders through tax credits under the stipulation that the builders allow either 1) at least 20 percent of units to be rent restricted and occupied by households with incomes below 50 percent of the area's median income or 2) at least 40 percent of units to be rented restricted and occupied by households with incomes below 60 percent of the area's median income.[78] Responsible for the creation of roughly 100,000 new units since 1987, LIHTC gets funding of $5 billion that translates into roughly 100,000 new units every year.[79] This program is extremely popular amongst builders, raising concerns that the builders might be the primary benefactors of LIHTC rather than renters. There have also been some corruption issues with LIHTC, such as bribing and falsification of property, compliance, and tenant eligibility documentations.[80] The alternative to LIHTC, a project-based aid, is Section 8 vouchers which provide assistance to renters so long as their rent is under 30 percent of their income and the housing they find meet certain criteria. These include meeting housing standards and staying below maximum "fair market rent."[81]

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[77] Ibid
[78] Janet M. Currie, *The Invisible Safety Net: Protecting the Nation's Poor Children and Families* (Princeton, NJ: Princeton University Press, 2008).,92.
[79] Ibid.
[80] Currie, *The Invisible Safety Net,* 92-93.
[81] Ibid., p93

References

AEI/Brookings Working Group on Poverty and Opportunity. *Opportunity, Responsibility, and Security: A consensus plan for reducing poverty and restoring the American Dream.* Report. 2015. Accessed January 2017. https://www.brookings.edu/wp-content/uploads/2015/12/full-report.pdf.

Badger, Emily, and Darla Cameron. "How railroads, highways and other man-made lines racially divide America's cities." The Washington Post. July 16, 2015. Accessed February 2017. https://www.washingtonpost.com/news/wonk/wp/2015/07/16/how-railroads-highways-and-other-man-made-lines-racially-divide-americas-cities/?utm_term=.dd9813c1fb09.

Belzer, Dena, and Shelley Poticha. "Understanding Transit-Oriented Development ." *Briefing Papers for a Convening on Transit-Oriented Development*, February 24, 2009, 4-11. Accessed March 2017. www.hud.gov.

Belzer, Dena, and Shelley Poticha. "Understanding Transit-Oriented Development ." *Briefing Papers for a Convening on Transit-Oriented Development*, February 24, 2009, 4-11. Accessed March 2017. www.hud.gov.

Beyond Traffic 20145. Report. Office of the Under Secretary for Policy, The Department of Transportation. https://www.transportation.gov/policy-initiatives/beyond-traffic-2045-final-report.

Bouchard, Mikayla. "Transportation Emerges as Crucial to Escaping Poverty." The New York Times. May 07, 2015. Accessed March 2017. https://www.nytimes.com/2015/05/07/upshot/transportation-emerges-as-crucial-to-escaping-poverty.html.

Brueckner, Jan K., and Stuart S. Rosenthal. "Gentrification and neighborhood housing cycles: will America's future downtowns be rich?." *The Review of Economics and Statistics* 91, no. 4 (2009): 725-743.

Cable, Dustin. "The Racial Dot Map." Demographics Research Group. July 2013. Accessed February 2017. http://demographics.coopercenter.org/racial-dot-map/.

Chetty, Raj, Nathaniel Hendren, and Lawrence F. Katz. "The effects of exposure to better neighborhoods on children: New evidence from the Moving to Opportunity experiment." *The American Economic Review* 106, no. 4 (2016): 855-902.

"Community Impact Assessment." U.S. Department of Transportation/Federal Highway Administration. Accessed April 14, 2017. https://www.fhwa.dot.gov/livability/cia/index.cfm.

Smart City Memphis. "Creating A Transit Plan That Reduces Poverty." Smart City Memphis. December 28, 2016. Accessed April 14, 2017. http://www.smartcitymemphis.com/2016/12/creating-a-transit-plan-that-reduces-poverty/.

Currie, Janet M. *The Invisible Safety Net: Protecting the Nation's Poor Children and Families*. Princeton, NJ: Princeton University Press, 2008.

Dawkins, Casey, and Rolf Moeckel. "Transit-Induced Gentrification: Who Will Stay, and Who Will Go?" *Housing Policy Debate* 26, no. 4-5 (2016): 801-18. Accessed March 2017. doi:10.1080/10511482.2016.1138986.

DeGood, Kevin, and Ood and Andrew Schwartz. "Can New Transportation Technologies Improve Equity and Access to Opportunity?" Center for American Progress. April 27, 2016. Accessed April 14, 2017. https://www.americanprogress.org/issues/economy/reports/2016/04/27/135425/can-new-transportation-technologies-improve-equity-and-access-to-opportunity/.

"Environmental Justice Strategy." U.S. Department of Transportation. November 15, 2016. Accessed February 2017. https://www.transportation.gov/policy/transportation-policy/environmental-justice-strategy.

"Fair Equality of Opportunity." Equality of Opportunity and Education. Accessed April 2017. https://edeq.stanford.edu/sections/fair-equality-opportunity.

Fleming, Sam. "US infrastructure decay forecast to cost trillions." Financial Times. May 10, 206. Accessed March 2017. https://www.ft.com/content/6aa759f8-16c0-11e6-b197-a4af20d5575e.

Friedrichs, Chad, Paul Fehler, Chad Friedrichs, Jaime Friedrichs, Brian Woodman, Chad Friedrichs, and Jaime Friedrichs. "The Pruitt-Igoe Myth." September 27, 2015. Accessed March 2017. https://www.youtube.com/watch?v=xKgZM8y3hso.

Frizell, Sam. "Americans Increasingly Want to Live in Cities, Not Suburbs." Time. April 25, 2014. Accessed 2017. http://time.com/72281/american-housing/.

Ge, Yanbo, Christopher R. Knittel, Don MacKenzie, and Stephen Zoepf. *Racial and gender discrimination in transportation network companies*. No. w22776. National Bureau of Economic Research, 2016.

"How do neighborhoods affect economic opportunity?" The Equality of Opportunity Project. Accessed March 2017. http://www.equality-of-opportunity.org/neighborhoods/.

Kane, Joseph, and Adie Tomer. "Cars Remain King and Barrier to Economic

Opportunity | Brookings Institution." Brookings. July 28, 2016. Accessed April 14, 2017. https://www.brookings.edu/blog/the-avenue/2014/10/23/cars-remain-king-and-barrier-to-economic-opportunity/.

Keane, Thomas F. "The Economic Importance of the National Highway System." *Public Roads State Planning & Research Guide* 59, no. 4 (1996). The Economic Importance of the National Highway System.

Kodransky, Michael , and Gabriel Lewenstein. *Connecting Low-Income People to Opportunity with Shared Mobility.* Report. December 2014. Accessed April 14, 2017. https://www.itdp.org/wp-content/uploads/2014/10/Shared-Mobility_Full-Report.pdf.

Mohl, Raymond A. *The Interstates and the Cities: Highways, Housing, and the Freeway Revolt*. Report. Department of History, University of Alabama at Birmingham. Poverty and Race Research Action Council, 2002. 1-107. Accessed February 2017. http://www.prrac.org/pdf/mohl.pdf.

Nechyba, Thomas J., and Randall P. Walsh. "Urban Sprawl." *Journal of Economic Perspectives* 18, no. 4 (2004): 177-200. Accessed March 2017. doi:10.1257/0895330042632681.

Nussbaum, Martha Craven. *Creating capabilities: the human development approach*. Cambridge, Mass.: The Belknap Press of Harvard Univ. Press, 2013.

Pereira, Rafael HM, Tim Schwanen, and David Banister. "Distributive justice and equity in transportation." *Transport Reviews* 37, no. 2 (2017): 170-191.

Ramey, Corinne. "How America's Transportation System Discriminates Against the Most Vulnerable." Slate Magazine. February 26, 2015. Accessed March 2017. http://www.slate.com/articles/news_and_politics/politics/2015/02/america_s_transportation_system_discriminates_against_minorities_and_poor.html.

Roback, Jennifer. "Wages, rents, and the quality of life." *Journal of political economy* 90, no. 6 (1982): 1257-1278.

Semuels, Alana. "A Departure From Decades of Highway Policy." The Atlantic. March 29, 2016. Accessed April 2017. https://www.theatlantic.com/business/archive/2016/03/the-transportation-secretary-speaks-out-against-highways/475749/.

Susan Handy, *History of federal transportation policy*, April 4, 2016, Lecture Power Point Slides for UC Davis' TTP 220.

"Transit-Oriented Development." FTA. December 14, 2015. Accessed March 2017. https://www.transit.dot.gov/TOD.

"Truck Side Guards Resource Page." Volpe - The National Transportation Systems Center. April 15, 2015. Accessed April 14, 2017. https://www.volpe.dot.gov/our-work/truck-side-guards-resource-page.

Federal Emergency Management Agency . *URA Relocation Assistance for Tenants Fact Sheet*. Accessed February 2017. https://www.fema.gov/pdf/government/grant/resources/hbf_ii_3.pdf.

Weingroff, Richard F. "Moving The Goods: As The Interstate Era Begins." Highway History. Accessed February 2017. https://www.fhwa.dot.gov/infrastructure/freight.cfm.

White, Gillian B. "Stranded: How America's Failing Public Transportation Increases Inequality." The Atlantic. May 16, 2015. Accessed February 2017. https://www.theatlantic.com/business/archive/2015/05/stranded-how-americas-failing-public-transportation-increases-inequality/393419/.

Zimmerman, Mariia, and Kyle Lukacs. *Creating and Preserving Affordable Housing Through the Federal Transit Capital Investment Program An analysis of the FY2016 Federal Funding Recommendations.* Report. March 9, 2015. Accessed March 2017. www.mzstrategies.com.

Zuk, Miriam, Ariel H. Bierbaum, Karen Chapple, Karolina Gorska, Anastasia Loukaitou-Sideris, Paul Ong, and Trevor Thomas. *Gentrification, displacement and the role of public investment: a literature review*. No. 2015-55. Federal Reserve Bank of San Francisco, 2015.

Zuk, Miriam, and Ian Carlton. *Equitable Transit Oriented Development: Examining the progress and continued challenges of developing affordable housing in opportunity and transit-rich neighborhoods.* Technical paper. Civil Rights Research, Poverty Race and Research Council. 2015. Accessed March 2017. http://prrac.org/pdf/EquitableTOD.pdf.