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Deconstructing Urban Sprawl: Differing Perspectives on a Pervasive Problem

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Deconstructing Urban Sprawl: Differing Perspectives on a Pervasive Problem

“In essence, the parcelization of land is a relatively low transaction cost method of inducing people to "do the right thing" with the earth's surface” -Robert Ellickson (Ellickson 1993, 1327)

Abstract: Urban sprawl, broadly defined, describes the uncontrolled geographic expansion of cities and towns, oftentimes resulting in haphazard developments with relatively low-density land use and heavy dependence upon automobiles. This is, however, only one of many definitions, as urban sprawl, while an increasingly popular term in many disciplines, does not seem to have a standard definition. This poses numerous problems for those who wish to delve deeper into understanding it and its implications. Consequently, this project offers a discussion and analysis of the various conceptions of urban sprawl throughout an array of different academic disciplines with an emphasis on the environmental, public health, and most importantly, the economic. This project explores the role of the economist in regard to urban sprawl: how can they contribute to a meaningful definition and discussion of the issue at hand? By evaluating the positions of experts across disciplines, this paper will come to terms with urban sprawl in its various forms, ultimately offering a more comprehensive definition of urban sprawl to be used throughout the disciplines.

Urban sprawl currently lacks a clear definition. Instead there are several vague definitions across several disciplines. For example, in his University of Pennsylvania Law Review article, Timothy Dowling defines sprawl as: “low-density, land-consuming, automobile-dependent, haphazard, non-contiguous (or "leapfrog") development on the fringe of settled areas, often near a deteriorating central city or town, that intrudes into rural or other undeveloped areas,” (Dowling 2000, 874), while in his *Housing Policy Debate* article, Anthony Downs adds more to this, citing at least 10 components. He argues that in addition to those mentioned above, sprawl consists of: “fragmentation of powers over land use among many small localities... lack of centralized planning or control of land uses, (7) widespread strip commercial development, (8) great fiscal disparities among localities... and (10) reliance mainly on the trickle-down or filtering process to provide housing to low-income households” (Downs 1999, 956). While there are many other qualities that are often discussed regarding sprawl, there appear to be several key components that most experts agree on: 1) low-density, segregated land use, 2) leapfrog developments, and 3) automobile dependence. As Debnath Mookherjee writes in his *Focus on*

Geography article, a lack of “density appears to be the most frequently noted indicator in this multidimensional construct of the sprawl phenomenon” (Mookherjee et. al 2006, 29). Ultimately, the aim of this paper is to evaluate these different perspectives on urban sprawl and to put forth a more complete and usable definition. Economics is the field I will primarily consider, but I will also be analyzing sprawl from environmental, public health, and environmental/racial justice perspectives.

An Economics Perspective on Urban Sprawl

Economically, there is some debate about what urban sprawl is, and whether or not it constitutes a problem. Some economists are reluctant to call urban sprawl an issue, as they see the increase in suburbanization/spreading out of developments as an expression of consumer preferences and thus the functioning of the free market. For example, Charles Tiebout created the now-famous Tiebout model in the 1950s to describe housing market preferences. His theory revolved around the idea that consumers could choose between different communities by their various public service tax packages, thus improving allocative efficiency based on the idea that “you get what you pay for.” He wrote that “the consumer-voters will move to that community which exactly satisfies their preferences,” and that “movement will take place out of the communities of greater than optimal size into the communities of less than optimal size,” satisfying consumer preferences and thus creating the optimal outcome (Tiebout 1956, 420-1). Therefore, the continued spread of development was simply the migration of consumer-voters to their preferred communities. With this theory in mind, it’s easy to see how some economists classify sprawl as simply the spatial preferences of American consumers. However, just because sprawl might be the result of consumer preferences and the free market does not mean it is the socially optimal outcome.

In fact, many economists have come to see sprawl as a kind of market failure, defined by Jan Brueckner in his *International Regional Science Review* article (2000) as “aris[ing] when economic agents face incentives that are distorted because of institutional failings or some other reason, leading to economic outcomes that are bad from society’s point of view” (Brueckner 2000, 163). For example, several government policies have (perhaps unintentionally) encouraged and accelerated urban sprawl, including housing policies, mortgage programs, and highway construction. More specifically, the Housing Act of 1937 encouraged public housing to be built in cities, while the FHA mortgage insurance program only guaranteed home loans in low-risk suburban areas. Persky and Wiewel (2011) argue that these policies have distorted/affected the market: “to the extent sprawl has been shaped by federal highway construction and suburban zoning ordinances it has been anything but purely market driven” (Persky and Wiewel 2011, 153). These programs incentivized the more affluent and middle class to move away from cities and into suburbia. It’s clear that these policies have increased urban sprawl, but how is sprawl a problem?

Brueckner (2000) believes sprawl is an example of inefficient market behavior, as several different market failures contribute to sprawl, including the positive externality of open-space benefits. Because they are intangible, “the disappearance of these benefits does not show up as a dollar loss when the land is sold to a real estate developer” and so the “invisible hand [of the market] thus ignores open-space benefits, causing too much land to be converted to urban use and leading to excessive spatial growth of cities” (Brueckner 2000, 164). Another such market failure Brueckner (2000) identifies is congestion and traffic costs. While commuters pay for vehicle related costs and pay the “time cost” of the commute, they don’t account for the increased time of others’ commutes due to their presence on the road, which slightly increases

congestion. Brueckner (2000) contends that this, which he calls the congestion externality, has a significant impact “because many other commuters are affected,” as well as that “because these congestion costs are borne by others, the commuter himself has no incentive to take them into account,” thus perpetuating the market failure (Brueckner 2000, 165). Lastly, Brueckner (2000) argues that there are also significant infrastructure costs to creating new development, such as building new roads, sewers, facilities, etc., and while homeowners do pay into this via property taxes, “the infrastructure-related tax burden on new homeowners is typically less than the actual infrastructure costs they generate” (Brueckner 2000, 166). He adds that because new homeowners are paying less than their full infrastructure costs, they are able to buy a more expensive property than they’d be able to if a tax of the full infrastructure costs was imposed, further leading to open land being bought for higher prices by developers. Ultimately, Brueckner (2000) argues that “higher bids for agricultural land in turn mean more conversion of land to urban use, leading to too much development and excessive spatial sizes for cities. Thus, by undercharging new homeowners for the infrastructure costs they generate, the current system of public finance leads to urban sprawl” (Brueckner 2000, 166).

One problem related to (sub)urban sprawl is the economic degradation of cities. As the middle and upper classes leave urban centers, jobs tend to follow. A corresponding lack of investment in urban communities leads to further economic depression. Brueckner (2011) continues his argument discussed above, citing the same market failures as causing “urban blight” in addition to sprawl. He defines urban blight as “deficient reinvestment in older central-city properties,” and says “both sprawl and blight arise from the natural operation of the land market: the cost of suburban living is inefficiently low, which distorts the allocation of population, drawing residents away from the downtown. This population shift in turn depresses

housing prices in the center and undermines incentives to maintain or reinvest in existing structures” (Brueckner 2011, 2). Miriam Hortas-Rico’s research confirms this, finding that “the mean values obtained after clustering cities according to the existence of anti-sprawl policies (i.e., urban containment policies) show that, as expected, blight levels are higher in cities without those policies in place” supporting the idea of a connection between sprawl and blight (Hortas-Rico 2015, 302). Similarly, Nathaniel Baum-Snow writes that “innovations to the urban transportation infrastructure [I.E. highways] played a key role in influencing changes in the spatial distribution of the population in U. S. metropolitan areas between 1950 and 1990” (Baum-Snow 2007, 776).

Related to this is the holdout problem. The holdout problem is a frequent situation when developers are attempting to put together several parcels of land. A “holdout” is an individual property owner who “holds out” from selling their property in hopes of receiving a higher price. Hold-outs know they have bargaining power in this situation because developers have often already negotiated with the other property owners and need that one last property to complete their parcel. The holdout problem can exacerbate issues of urban sprawl because oftentimes, properties in urban areas are smaller, so developers need to negotiate with several smaller property owners. As Miceli and Sirmans write in their *Journal of Housing Economics* article, “because average lot sizes decrease closer to the city center... ownership becomes more fragmented,” which will then “push development outward compared to a fully efficient land market” (Miceli and Sirmans 2007, 312). As a result, developers often have a difficult time assembling enough land in urban areas. If developers can move their project elsewhere where land assembly is easier, they are apt to do so. This means that new developments are skewed outwards from urban areas as Miceli and Sirmans point out, since larger land parcels are

available in more rural areas. This essentially incentivizes sprawl as a cheaper, easier alternative to attempting new development in cities.

The holdout problem combined with sprawl, particularly worsened by the government policies discussed above, leads to disinvestment and the economic degradation of cities and urban centers. As Miceli and Sirmans describe, development moves outwards from the centers of urban areas, which becomes a problem for those who are left behind. Anthony Downs writes: “new housing is naturally concentrated on the outer edge of each metropolitan area, this means that very poor people are concentrated in older areas closer to the historic center,” and further argues that “fragmented control over land uses in many small outlying municipalities [combined] with their adoption of exclusionary zoning and other policies [were] designed to raise local housing costs and keep poor people out” (Downs 1999, 959-60).

Sprawl from an Environmental Perspective

Definitions of urban sprawl from an environmental perspective often revolve around low-density land use and automobile dependence. For example, Changyeon Lee writes in his *Journal of Environmental Management* article that sprawl “refers to the rapid expansion of metropolitan areas (MAs) that requires more vehicular travel because people must travel greater distances with the expansion of urban areas and separate land uses” (Lee 2019, 192). His article focuses on air pollution, so his definition of sprawl emphasizes the role of cars in creating/facilitating sprawl. In addition to air pollution, environmentalists agree that urban sprawl causes a number of other environmental issues. While economists still take the environment into consideration, for environmentalists, issues like open space preservation, biodiversity, etc. are of chief concern.

There is a general consensus among them that urban sprawl can cause:

loss of environmentally fragile lands, reduced regional open space, greater air pollution, higher energy consumption, decreased aesthetic appeal of landscape... loss of farmland, reduced diversity of species, increased runoff of stormwater, increased risk of flooding... excessive removal of native vegetation, monotonous (and regionally inappropriate) residential visual environment, absence of mountain views, presence of ecologically wasteful golf courses... ecosystem fragmentation. (Johnson 2000, 721-2)

Additionally, many agree that it can also increase “toxic and hazardous wastes from abandoned brownfields, toxic and hazardous wastes from landfills located in least-desirable areas, toxins such as lead and asbestos persisting in older buildings because of disinvestment in inner cities” (Johnson 2001, 722). Among these, the most important/talked about issues seem to be air pollution, greenhouse gas emissions, and the loss of habitat and biodiversity. However, one key thing to note is that “although environmental impacts of sprawl are seemingly numerous and in

many cases straightforward to observe they are much more difficult to measure” (Johnson 2001, 722).

Air pollution is a major problem in urban areas. With urban sprawl’s increase in outward development, air pollution is increased as developed areas spread outwards. The relevant pollutants being discussed, like NO_x and NO₂, are “mainly released by vehicular tailpipes” and also contribute to particulate matter (PM), another form of air pollution (Lee 2019, 193). Overall, Lee found that “metropolitan-level urban form influenced both NO_x and PM_{2.5} emissions on the road,” with lower-density, sprawling developments increasing pollution (Lee 2019, 193). Similarly, he found that “high population densities... reduced PM_{2.5} concentrations,” which he believes is due to the decrease in car use, the increase in public transit and walking, and higher street connectivity (Lee 2019, 200).

Another related concern regarding the increased car use caused by urban sprawl is greenhouse gas (GHG) emissions. Reid Ewing et al recognize this in their *Journal of Urbanism* article, writing that “the transportation sector accounts for 28% of total greenhouse gas emissions” in 2008, much of which comes from individual car use (Ewing et al 2008, 201). They further specify that “CO₂ emissions from the transportation sector are a function of vehicle fuel efficiency, fuel carbon content, and vehicle-miles traveled (VMT)” (Ewing et al 2008, 201). Most policies aimed at curbing the transportation sector’s GHG emissions target the first two aspects, but VMT has been the same or on the rise for decades, so it too must be addressed if GHG emissions are to be reduced. This increase in VMT is likely due to the increase in urban sprawl- as development expands outwards, people must travel farther to reach their destinations. Thomas Stoel Jr. confirms this, writing that “sprawl leads to higher fossil-fuel consumption in

motor vehicles and residences and adds to U.S. emissions of the greenhouse gases that may be warming the Earth's atmosphere" (Stoel 1999, 5).

Another potential environmental concern regarding urban sprawl is the relationship between density and climate change. Extreme heat events (EHEs) have been occurring with increasing frequency, and coupled with the heat island effect of urban areas, can be much worse in sprawling or metropolitan areas. The heat island effect is the idea that urban areas are often up to 6-8 degrees hotter than surrounding areas on hot days. This is usually attributed to the fact that urban areas have more dark materials, like roads and roofs, that absorb heat from sunlight and "reradiate it as thermal infrared radiation," often "reach[ing] temperatures of 50°–70° F higher than surrounding air" (Frumkin 2000, 206). Brian Stone et al studied the relationship between sprawl and EHEs, classifying an EHE as "any day in which the minimum, maximum, or average apparent temperature exceeds the 85th percentile of the base period (1961-1990)" (Stone et al 2010, 1426). Further, EHEs are associated with increased levels of heat-related mortality, so an increase in the number of EHEs also means an increased risk of more deaths via heat-related illnesses. Stone et al also found that "the average annual number of EHEs increased during this period across all cities, the most sprawling cities (top quartile) experienced a rate of increase in EHEs that was more than double that of the most compact cities (bottom quartile)" (Stone et al 2010, 1426). Not only are the number of EHEs increasing per year, cities that exhibit less dense land use experience disproportionately more EHEs compared to other cities.

Stone et al connect this back to the heat island effect, pointing to the low albedo (reflectivity) of dark urban surfaces, as well as "higher thermal loads... because of the concentrated presence of generators, air-conditioning units, motor vehicles, and other heat sources" (Stone et al 2010, 1427). Another potential reason behind the increased occurrence of

EHEs in high-sprawl areas is deforestation. Stone et al found that “the rate of deforestation in the most sprawling metropolitan regions is more than double the rate in the most compact metropolitan regions” and because “the rate of tree canopy loss [is] significantly associated with the rate of increase in EHEs over time,” it’s likely that “sprawling patterns of urban development may be influencing the frequency of EHEs through their effects on regional vegetative land cover” (Stone et al 2010, 1427).

As noted above, Loss of habitat and biodiversity are another major environmental concern regarding urban sprawl. According to V.C. Radeloff, “housing development causes habitat loss and fragmentation (Theobald et al.1997), threatens wildlife populations (Soule 1991), and results in biodiversity declines (McKinney 2002). It has been estimated that >50% of all federally listed threatened and endangered species in the United States are in peril due to urbanization” (Radeloff et al 2005, 799). Sprawl worsens these effects because the low-density development “affect[s] a larger area per housing unit when assuming a disturbance zone with a fixed radius around each house” (Radeloff et al 2005, 799). Radeloff mainly considers “WUIs” or Wildland-Urban Interfaces, which are areas where houses border or are interspersed with undeveloped land and vegetation. Sprawl in particular is one of his main areas of concern because of this- he writes that “housing development in or near wildland vegetation is widespread: about one-tenth of the area and one third of the housing units of the conterminous United States are located in the WUI” (Radeloff et al 2005, 802).

Urban Sprawl and Public Health

From a public health perspective, urban sprawl is said to cause (or worsen) a number of important health issues, Howard Frumkin analyzes a number of these issues, beginning with those caused by reliance on cars. As mentioned above, the air pollution that results from heavy car use can cause respiratory issues such as asthma. In his 2002 *Public Health Reports* article, Howard Frumkin argues that these pollutants can have negative health effects for those exposed to them: both ozone and PM are “associated with higher incidence and severity of respiratory symptoms, worse lung function, more emergency room visits and hospitalizations, more medication use, and more absenteeism from school and work” (Frumkin 2002, 202).

Another potential issue worsened by sprawl is fatality from car crashes. Frumkin explains that while safety measures such as seat belt and drunk driving laws have reduced crash fatalities, “crashes are the leading cause of death among people 1–24 years old, account for 3.4 million nonfatal injuries annually, and cost an estimated \$200 billion annually” (Frumkin 2002, 204). He adds that “at the simplest level, more driving means greater exposure to the dangers of the road, translating to a higher probability of a motor vehicle crash,” so one major way to reduce the likelihood of a crash is to drive less (Frumkin 2002, 204). Frumkin also finds that sprawl increases danger to pedestrians: “the most dangerous stretches of road were those built in the style that typifies sprawl: multiple lanes, high speeds, no sidewalks, long distances between intersections or crosswalks, and roadways lined with large commercial establishments and apartments blocks” (Frumkin 2002, 204). As the number of these roads increase, the likelihood of car crashes, injuries from these crashes, and pedestrian injuries/fatalities increases as well.

Frumkin points out potential issues linked more directly to land use as well. For example, he argues that the quantity and quality of water supply can be negatively impacted by sprawl,

because as previously wooded or soil areas are paved over, “rainfall is less effectively absorbed and returned to groundwater aquifers. Instead, relatively more stormwater flows to streams and rivers and is carried downstream” (Frumkin 2002, 205). This presents further issues because as the water flows across the built environment, it continues “picking up contaminants and depositing them into surface water (lakes, rivers, wetlands, and coastal waters) and groundwater” (Frumkin 2002, 206). Some of these pollutants include fertilizers, pesticides, oil, and toxic chemicals from construction, roadways, etc. Frumkin concludes that “suburban development is associated with high loading of these contaminants in nearby surface water” (Frumkin 2002, 206). Stoel confirms this, writing “waterways receive increased pollution and are more prone to flooding because a large proportion of the land... has been paved over, causing runoff instead of absorption. As larger numbers of lawns are fertilized and dosed with pesticides, more pollutants are washed into the region’s waterways” (Stoel 1999, 8).

Additionally, Frumkin argues that sprawl worsens the heat island effect, discussed briefly above. Urban areas are “relatively devoid of vegetation, especially trees, that would provide shade and cool the air through “evapo-transpiration,” on top of having a lot of dark materials like roofs and roads to absorb even more heat (Frumkin 2000, 206). Frumkin argues that these effects are worsened by sprawl because the more area covered by infrastructure like buildings and roads, the more heat absorption. He adds that it likely “involves a positive feedback loop” where “sprawling metropolitan areas, with greater travel distances, generate a large amount of automobile travel. This, in turn, results in more fuel combustion, with more production of carbon dioxide, and consequent contributions to global climate change” (Frumkin 2000, 206). As discussed above in the environmental section, extreme heat events can be worsened by sprawl.

Frumkin notes that “data from the last half century show a clear increasing trend in extreme heat events in U.S. cities,” which will also intensify the heat island effect (Frumkin 2000, 207).

Frumkin considers one last avenue of public health issues potentially caused by sprawl: a decline in mental health. First, he notes that nature and open spaces “offer benefits beyond the purely aesthetic; it may benefit both mental health and physical health” (Frumkin 2002, 207). Preserving these spaces not only benefits the wildlife who lives there, as Frumkin points out, it can also benefit people to go spend time there. However, Frumkin also points out that nature can be more accessible from the suburbs and that “the sense of escaping from the turmoil of urban life to the suburbs, the feeling of peaceful refuge, may be soothing and restorative to some people” (Frumkin 2002, 207). While recognizing some potential benefits of suburban life, Frumkin goes on to critique several other public health issues possibly caused by sprawl.

Another potential sprawl-related problem is road rage and the stress that comes from long commutes. Frumkin argues that commuting can be “a source of stress, stress-related health problems, and even physical ailments. Evidence links commuting to back pain, cardiovascular disease, and self-reported stress” (Frumkin 2002, 207). He also finds that “the two leading reasons cited for aggressive driving were (a) being rushed or being behind schedule (23% of respondents), and (b) increased traffic or congestion (22%)—common experiences on the crowded roadways of sprawling cities” (Frumkin 2002, 208).

Many studies have also argued that obesity is worsened by urban sprawl. For example, Zhengxiang Zhao and Robert Kaestner find “a negative association between the proportion of an MSA that lives in dense areas and obesity, and estimates are robust across a wide range of specifications” (Zhao 2010, 781). Similarly, they also find that “for each additional percentage point decrease in the proportion of population living in dense areas, obesity is approximately

0.1–0.2 percentage points higher” (Zhao 2010, 784-5). Both these findings together suggest that the less dense an area is, the higher prevalence of obesity there will likely be. Ewing et al (2013) also confirm this, finding that “after controlling for confounding influences, residents of more compact counties have lower BMIs and lower probabilities of obesity and chronic diseases” (Ewing et al 2013, 125). Frumkin also argues that “by contributing to physical inactivity and therefore to overweight and associated health problems, sprawl has negative health consequences” (Frumkin 2002, 205).

However, several studies object, arguing that while sprawl and rates of obesity may coincide, it is not necessarily the case that sprawl causes increased obesity levels. For example, Jean Eid et al argue that “we may observe more obesity in sprawling neighborhoods because individuals who have a propensity to be obese choose to live in these neighborhoods” because there are more accommodations for people who prefer to drive (Eid et al 2008, 386). Their results also suggest that “neither residential-sprawl nor a lack of mixed-use causes obesity in men or women, and that higher obesity rates in ‘sprawling’ areas are entirely due to the self-selection of people with a propensity for obesity into these neighborhoods” (Eid et al 2008, 387). Similarly, Wu et al write that they “could not conclusively report a scientifically credible consensus on the association between childhood/adolescent obesity and urban sprawl,” despite also acknowledging that “the physical environment [sprawl] creates discourages residents from walking since different functional zones are separated by distances that are not walkable from the standpoint of practical, daily activities, as well as that “children living in urban sprawl may be discouraged from outdoor physical activity (PA) due to safety concerns” (Wu et al 2020, 2,7). While these studies do not find that sprawl causes obesity, they also do not deny that there is a correlation between them, suggesting that further research is needed.

Another issue relevant to public health and urban sprawl is the increased prevalence of food deserts throughout urban areas. A food desert is “a low-income area where a significant number of residents live more than 1 mile (in urban areas) or more than 10 miles (in rural areas) from a supermarket, big-box supercenter... or other large grocery store” (Hamidi 2020, 1661). This problem has increased along with sprawl: as suburbanization occurred in the 1950s-1960s, many consumers left urban areas, and as Hamidi notes, “food retailers are likely to follow their wealthier customers to the suburbs, causing older neighbourhoods with lower socioeconomic status to become food deserts” (Hamidi 2020, 1670). She includes the statistic that “in 1961, more than 75% of the inner-city population lived within 1 km of a supermarket, giving them easy access to a variety of foods. By 2005, that number was less than 20%” (Hamidi 2020, 1663).

Hamidi argues that “low- income households and ethnic minorities face more significant geographic barriers to accessing grocers in the broader community and are often forced to rely chiefly on the food environment in their immediate neighbourhood” (Hamidi 2020, 1662). Coupled with the fact that “food deserts are most often located in older urban neighbourhoods with greater percentages of both low-income households and ethnic-minority households, leaving residents with poor access to vegetables, fruits and other healthy foods,” low-income and minority households are disproportionately subject to food deserts (Hamidi 2020, 1663). One reason that sprawl has worsened the food desert issue is that “high rates of automobile ownership and easy availability of peripheral land allowed wealthier households to move outward from central cities toward suburban areas. With them moved many supermarkets and grocery stores that once served central cities” (Hamidi 2020, 1663).

Environmental/Racial Justice and Urban Sprawl

Some of the biggest critics of urban sprawl are concerned with environmental justice. The Environmental Justice Movement (EJM) is primarily focused on environmental and public health outcomes of disadvantaged low-income and minority groups, often in urban areas. Supporters of the EJM would argue that almost all of the issues discussed above disproportionately affect these groups because they are the ones left behind by suburbanization and sprawl when more affluent people decide to move away from cities.

For example, in the economics section earlier in this paper, I discussed some government policies that likely increased and incentivized sprawl. The same FHA mortgage insurance policy discussed at the very beginning “would not underwrite insurance on private mortgages that would have desegregated neighborhoods,” according to Anthony Nardone et al’s article in *Environmental Health Perspectives* (Nardone et al 2021, 7). Another related policy, called redlining, impacted where minority households were located and arguably has had lasting environmental and economic impacts. Redlining is the systematic denial of loans in “high risk” areas, usually areas that had predominantly Black/minority residents. Nardone et al argue that the Home Owners’ Loan Corporation (HOLC), created by the New Deal in the 1930’s, created lending patterns that “reinforced preexisting segregation in many places and that security maps and redlining is associated with present-day levels of racial segregation, poverty, and income inequality” (Nardone et al 2021, 1). They further contend that there are “associations between historical redlining, decreased tree canopy coverage... increased coverage of land by impervious surfaces, and worsened air pollution in urban areas across the United States,” all of which were discussed in previous sections, but not in the context of environmental justice concerns (Nardone et al 2021, 2).

Another policy that has contributed to sprawl and environmental/racial justice concerns is highway construction. In her *Vanderbilt Law Review* article, Deborah Archer argues that the Interstate Highway Act, passed in 1956, destroyed many Black neighborhoods, both “poor, struggling communities as well as economically and socially vibrant ones” as well as by “maintaining segregation through the demarcation of Black from white neighborhoods during a time when the traditional tools of racial segregation were being struck down by federal courts” (Archer 2020, 1274). She argues that this building project “empowered local governments and private developers to use eminent domain to seize the homes of poor people of color with little payment and no relocation assistance” (Archer 2020, 1276). Many urban areas were destroyed to make way for highway construction. One of the people at the forefront of this movement was Robert Moses, infamous New York City official known for his racist beliefs. Moses is likely most known for instructing “highway engineers to build the bridges across the Southern State Parkway with one foot less clearance than [other] bridges,” making them “intentionally too low for buses coming from New York City to pass, as he believed Black and Puerto Rican New Yorkers would most likely use buses to access the beach” (Archer 2020, 1275). Clearly, Moses’s intentions were to limit the access of minorities to supposedly public amenities like the beach. Similarly, Archer argues that the Interstate Highway Act was intended to displace and disenfranchise minority groups.

Regardless of whether or not the Interstate Highway Act was intended to displace minority communities, it’s clear that by intentionally building highways in low-income or blighted areas, the side effect was the destruction of mostly low-income and minority households. Archer writes that “nearly “90 percent of low-income housing destroyed by urban renewal [and highway construction] was not replaced.”” (Archer 2020, 1276). Further,

connecting back to urban sprawl, the construction of these highways facilitated suburbanization, which combined with redlining, ensured low-income and minority residents were stuck in cities, while more affluent, typically white people, were able to relocate to suburbs.

One last related policy that encouraged both sprawl and racial/class segregation is exclusionary zoning. According to Sarah Schindler's *Yale Law Review* article, common requirements of exclusionary zoning include "large lot sizes, square-footage minimums for buildings, or occupancy restrictions that make property unaffordable to or impractical for use by poor people or those who live with large or extended families" (Schindler 2015, 1979). While these may have been intended to restrict low-income people from joining wealthier communities, it also had the effect of increasing lot size, and thus increasing sprawl (low-density land use).

Similarly, Schindler talks about a group of citizens in Ohio who "supported the repeal of a zoning ordinance allowing construction of a low-income housing project" because they were concerned that "the [low-income housing] development would cause crime and drug activity to escalate, that families with children would move in, and that the complex would attract a population similar to the one of Prange Drive, the City's only African-American neighborhood (Schindler 2015, 1980-1). Here, the exclusionary zoning had a clear racial and class element to it, but Schindler describes repeatedly how courts and judges had a difficult time overturning these types of zoning rules because they were not overtly racist enough. She goes on to say that these practices don't mandate exclusion, even though "its intent and effect certainly result in the exclusion of certain groups, exclusionary zoning does not inherently prohibit or forbid people of color, or even low-income individuals, from entering or living in the community. Rather, it just makes it exceedingly unlikely that those groups of individuals will be able to live in those areas" (Schindler 2015, 1986). This connects back to much earlier in the paper, where I first discussed

government policies- on top of these exclusionary policies being put into place in wealthier, suburban communities, government policies like the Housing Act of 1937 encouraged public and low-income housing to be built in cities. Both these policies worked together to facilitate sprawl and suburbanization while also keeping the poor located in urban areas.

Conclusion

Urban sprawl is an extremely complex and wide-ranging issue that affects many areas of life. This paper has looked at several different perspectives, including the economic, environmental, public health, and more topically, the environmental and racial justice perspective, in order to come to terms with urban sprawl as a concept and potentially offer some clarity on exactly what it and its effects mean for us today.

Regardless of whether urban sprawl is a market failure or simply an expression of consumer preferences, it presents a number of serious issues for both urban life and the country at large. Many of the problems discussed in this paper, whether they be categorized as environmental, public health, or racial, have implications for more than one area, and as such, ought to be taken seriously. Ultimately, this paper presents a number of ways to view urban sprawl, which I believe must be used collectively to both understand and begin to solve this pervasive issue.

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