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The Cost of Car Dependency: Analysis into Urban America

I. Overview

I'll emit over 210 kilograms of carbon dioxide into the atmosphere this semester during my 13-mile commute. I'll spend over 350 dollars on gas and parking. Had it not been paid off already, you could add another 1600 dollars in car payments, which is already less than the national average for a used car. Given its age, costs for repairs aren't infrequent either. It'll take me a combined four days just to travel this distance, nearly 6% of my entire waking life dedicated to transportation. But why would the cost of transportation inside of America's most urbanized cities be just as, if not higher than mine as a rural Delawarean?

It's because of car dependency–that is, a system of transportation "in which high levels of car use have become a key satisfier of human needs, largely displacing less carbon-intensive alternatives" (Mattioli, et al. np). Is this necessarily a bad thing, though? The steady march of technological progression would indicate that the personal automobile is the best mode of transportation. It has certainly changed the planning of urban centers astronomically. Newer models of urban growth reflect a shift from the idea of a "central business district" to what's referred to as "suburban sprawl", as noted by the International Encyclopedia of Human Geography ("Transportation and Land Use" np). Suburban sprawl is the tendency towards living on the rural outskirts of an urban center and commuting inward, almost always via automobile. Initially, suburbanites were relegated to corridors along highways traveling directly to and from

the central business district. However, the creation of ring roads–highways circling urban centers–by the 1956 Federal Highway Bill has allowed suburbs to expand radially in all directions. Cheap land encouraged the movement of people, retail, and industry to these rural-adjacent areas, resulting in a reliance on car transportation to and from any points of interest like jobs, grocery stores, or parks (Fishman 202). In the present day, one can observe a continuing exodus from many American cities to their suburbs. Car dependency has most definitely affected urban America, but for better or for worse? Due to historical factors surrounding the automobile's inception, car dependency unfairly discriminates against minority communities and ultimately makes it difficult for safer, cheaper, and more environmentally friendly transportation solutions to be implemented.

II. Historical Context

Surprisingly, cars' long history is intertwined with racism and redlining. Segregation by Design is a media campaign created by New York architect Adam Susaneck, designed to highlight the ramifications of the 1956 Federal Highway Act. This bill allowed for the construction of interstate highways, thousands of miles of asphalt being laid down over 10 years. Critics like Susaneck argue its intent–and certainly its effects–were to, "[take] the red lines off the map and [build] them in the physical world" (Susaneck np). The Interstate Highway System promoted redlining: the refusal of bank loans to residents of particular neighborhoods, denoted by red ink on maps, with the goal of preventing minority communities from buying houses, cars, and other expensive purchases. Furthermore, suburban sprawl from the newly developed ring roads facilitated white flight from inner-city neighborhoods into a renewed suburban sprawl, racial prejudice preventing minority communities from doing the same. Infographics of historical aerial photography combined with digital markup compare dense neighborhoods before and after

the Federal Highway Act, depicting the gutting of whole swaths of neighborhoods, diminishing land prices and quality of life for nearby residents. Take the construction of I-95 in Miami, Florida. This project alone displaced 12,000 residents, almost 100% of them black. Despite "a strong black middle class" with purported "hundreds of locally-owned businesses," the US government bulldozed it in favor of sprawling asphalt (Susaneck np). And this is only one such instance, a story replicated in all major US cities. From its very inception, the 1956 Federal Highway Act was designed to benefit the privileged upper middle class at the expense of countless inner-city residents, the effects of which are still being felt today.

III. Present-Day Effects

In Los Angeles, California, nearly four million people commute to work every day. Of those, over 85% traveled by a personal vehicle, the vast majority driving alone. Over half of commuters need to travel 30 minutes or more, and 500,000 people drive longer than an hour one way ("Means of Transportation" np). With so much car travel, it's not hard to believe Los Angeles has the worst air pollution out of the entire United States. Counterintuitively, those drivers experience less pollution compared to other Angelenos. Castleman reports on a recently published study in his Los Angeles Times article, explaining how, "residents of wealthier, whiter areas [export] air pollution to the neighborhoods around their commutes" (Castleman np). Geoff Boeing, co-author of this study conducted by the Sol Price School of Public Policy, notes the "consistent injustice in air pollution exposure," being repeatable and consistent across the entire study region. "Residents [who] drive less are exposed to more air pollution, as are [residents from regions] with a less-White population" (Boeing, et al. np). The study concludes that richer neighborhoods of LA both generate more air pollution and receive less of it due to the proximity of neighborhoods with higher poverty rates or non-White populations with highways. This is

unsurprising given the Interstate Highway System's historical context. Highways run along poorer neighborhoods due to their inability to organize resistance against industry, seen time and time again throughout America. Author and environmentalist Steve Lerner explores this topic in his book *Sacrifice Zones*. His research shows this trend isn't just for highways–it's systematic and found across the nation. A "sacrifice zone" is deemed as any location where residents are exposed to heightened levels of dangerous chemicals as a result of industry, nearly always affecting poorer or minority populations (Lerner 2). He argues this is a result of historical economic discrimination, aligning with the case of the interstate highway. Industry settles in locations where backlash would be minimal, such as those where residents live in poverty with too little time or money to counter. Lerner consistently finds this to be true; low-income Massachusetts residents have as much as four times the exposure rate to environmentally hazardous industry than other communities, and "the average fine imposed on polluters in white areas [is] 506 percent higher than the average fine imposed in minority communities" (Lerner 5). Such discrimination results in generational poverty, residents unable to escape the environmental hazards and prosper. While Lerner examines this for sites of oil refinement, waste dumping, and landfills, it perfectly matches the historical context of the Interstate Highway System described thus. Redlining and other forms of economic prejudice are still seen today through the streams of asphalt flowing throughout our cities. Reducing car dependency is the primary way to stimulate economic growth, revitalize commercial centers of the past, and cut down on all forms of pollution.

IV. Motives for Automotives

To remedy this, better transportation solutions have been developed, and indeed were commonplace in American cities before World War I, but reliance on cars prevents wide-scale adoption. A team of researchers across four different universities compiled much of the research into the urban effects of automobiles in "The political economy of car dependence: A systems of provision approach." By analyzing car dependency through the lens of production and consumption interrelation, they have identified several key contributing factors to car lock-in.

The automotive industry itself is worth trillions of dollars and feeds into many other industries like steel, rubber, and the budding field of automotive electronics. This incentivizes governments to invest within the industry through subsidies, which it gladly takes. Car companies routinely overproduce because it is difficult to scale research that can take years-long to rapidly changing demand; this leads to low profit margins, again incentivizing money from the government as well as the increasing generality of cars (Mattioli, et al. np). Over the past dozen years, car manufacturers have been reducing the variety of cars produced to scale back on production costs, resulting in nearly all cars being "five-seat vehicles with maximum speeds of over [100 mph] and a fuel range of approximately [250 miles]." Vehicles that may be better suited for individuals like the humble moped or two-seater "smart cars" are difficult to find, drivers instead opting for larger, pricier, and more polluting cars. In this way, the automobile industry acts as a positive-feedback mechanism, continually growing larger while demanding more.

Car infrastructure should also be noted as a major contributor. As Mattioli, et al. puts it, the "socialization of the costs of car infrastructure" allows the government to more easily invest in already existing transportation rather than fund other methods and potentially raise anger. Car

travel benefits from so-called “hidden subsidies” like free parking and mandatory parking requirements, promoting car travel over all other modes of transportation. Lobbying in favor of the automotive industry is easy to do since most infrastructure is planned at a local level (Mattioli, et al. np). Car travel promotes suburban sprawl, increasing transportation costs, then prompting the government to invest in car transportation, only furthering the increase in suburban sprawl. This other positive-feedback mechanism is known as “induced demand,” where justified improvements, commonly adding more lanes to a highway, results in more traffic and longer commute times (Dunkerley, et al. 2, 9). The cost of time spent driving decreases, resulting in increased demand, causing the cost to then increase, roadway congestion worsening and environmental impacts being higher than before. Dunkerley, et al. of research institute RAND Europe has found that induced demand is higher for urban areas and already highly congested routes, advising the United Kingdom government and other European nations to avoid construction of unsustainable transportation like the automobile (Dunkerley, et al. 24). With growing awareness of the topic, commuters may become more aware in the coming years as well.

V. Car Lifestyle and Alternatives

Generally, the average American supports the personal automobile. One cannot deny how owning a car greatly improves the quality of life for an individual. Arguably the best personal freedom granted by the car–transportation anytime, anywhere–is very important to well-being and needs satisfaction. However, nearly all benefits of the automobile can come from sources better for residents and the environment. In rural areas, public transportation isn’t necessarily feasible as population density cannot justify the costs, but a common misconception is that regions afflicted with suburban sprawl cannot maintain cheap, reliable public transportation. This

notion comes from the tendency for monopolization of public transport to occur in rural areas, resulting in higher fares, a decline in ridership, and worse service (Mattioli, et al. np). Paul Mees in his book "Transport for Suburbia" argues that, as opposed to deregulation, the government must instead intervene and force a "network planning approach." Under this model, several private companies operate transportation in an urban center but are forced to work cooperatively by a single agency–typically a government-run department of transportation–all to the benefit of the consumer (Mees 84). This is what allows the most successful European transportation networks to provide "high-quality urban service [and extensions] to suburban and even ex-urban hinterlands." The network planning approach also appeals to the American ideals of private business. Government-funded transportation projects are associated with large, upfront costs, typically disliked in favor of continual, incremental costs over time; American culture disincentivizes robust transportation infrastructure in favor of roadways that need constant repair. Under planned transportation networks, private companies still maintain the capitalistic competition American culture encourages while maintaining benefits of government-planned networks. Timetables will lengthen the further a commuter lives from their workplace, but even low-density suburban commuters can have large-scale, timely service, allowing them the personal freedom to travel wherever, whenever.

Additionally, the easiest transportation solutions in urban centers–walking and bicycling–are outright dangerous to do in many locations around the country, including urban centers (Mattioli, et al. np). Cars prevent pedestrians from simply walking to the other side of the street, so crosswalks are built; except oftentimes crosswalks aren't present at every intersection, making all transportation except cars dangerous and difficult. In some suburban zones, crosswalks aren't built at all. Cars prevent cyclists from cycling safely on main roads, so

dedicated cycling lanes are built. But how does a cycler safely turn left at an intersection without a purpose-built green arrow? And what does one do when a bike lane isn't separated by a median or simply doesn't exist? Any improvement to car infrastructure forces concessions to the most accessible forms of transportation, greatly limiting the accessibility for Americans without a car. Expanding pedestrian and cycling infrastructure grants residents the same personal freedoms of transportation as car owners at the cost of those same commuters, or rather in conjunction with suburban transit access.

VI. Summary

The solution to car congestion, constant road work, and rising fuel prices exist: getting rid of the car. Though systemic issues exist in the American transportation system, cities like New York and Chicago have been able to break through and implement well-executed transportation networks. There are flaws inherent to the automobile that adding another lane of highway or introducing electric variants can't fix. Public transportation is cheaper than owning a private vehicle, is better for the environment and air pollution, and allows American cities to be more walkable, livable, and beautiful. There are many obstacles to overcome before powerful public transportation can be implemented across the country, the majority of which come from the universality of cars. Fortunately, this means that progress, while difficult at first, will come easier and easier given foundational work. The only thing that needs to change is public perception of what public transportation can look like.

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