The Economic Effects of Pedestrianized Downtowns in Mid-Sized American Cities

A Research Paper submitted to the Department of Engineering and Society

Presented to the Faculty of the School of Engineering and Applied Science

University of Virginia • Charlottesville, Virginia

In Partial Fulfillment of the Requirements for the Degree

Bachelor of Science, School of Engineering

John Daniel Emery

Spring 2023

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

Advisor

Rider W. Foley, Department of Engineering and Society

INTRODUCTION

Following WWII, the United States heavily subsidized and encouraged car infrastructure (Weingroff, 1996). This has not only changed how Americans get around, but also how cities are designed. This combined with the American dream of owning a house for middle- and upper-class whites spurred a rapid expansion of the suburbs and clearing out of the urban core (Mullen, 2007). The full economic effects of this are complex and difficult to fully measure. Cars improve point to point mobility, allow people to travel further distances, and can carry supplies (Doyle, 2023). On the other hand, cars require more space, cause quicker infrastructure degradation, and alienate alternate transportation users (Freemark, 2022).

In the 1960's and through the 1980's, over 200 American cities pedestrianized their downtown in order to revitalize their floundering city centers (Pojani, 2010). After a few decades, most of these cities had chosen to repave them into a roadway. Their revitalization efforts had only led to further decay. However, approximately 1/3 of the cities found major success (Amos, 2019).

How did these pedestrianized downtowns alter economic activity? It is clear that some pedestrianized areas are very popular and can promote retail activity. Meanwhile, some places greatly suffer from lack of street parking in front of their stores. Roads also deteriorate faster than sidewalks. Is the extra infrastructure cost to the cities offset by the economic production of the car? The center of sustainable systems at the University of Michigan found that 87% of trips in America involve the automobile. Even if non-car users require less infrastructure than those with a car, a large market segment is cut-off if they are unable to find parking at a retail outlet. People can and will choose other retail options if they cannot park and do not have a viable form of transportation to the retail location.

Additionally, the US federal government has recently passed a $1.2 trillion infrastructure bill. Much of this funding is apportioned for car infrastructure. This is because much of car infrastructure in the US has majorly deteriorated and is in poor condition (Schaper, 2021). Under Eisenhower, the federal government would match state dollars towards highway projects. However, maintenance is the responsibility of the state governments and local municipalities. So why does the federal government need to help out? Are local governments unable to maintain streets through their property tax base, which includes retail? In this paper, I will analyze how road design affects city profitability.

CASE CONTEXT

Before the 1930's, nearly every American city had pedestrianized downtowns because few people had cars. Following WWII, cars became much more affordable. As more Americans purchased cars, development in the city fringe was quickly sped up. Although streetcar suburbs were already commonplace, cars allowed new development outside of narrow rail corridors and into the entirety of the exurban hinterlands. This allowed more middle-class, white Americans to own a home in suburbia. These new housing opportunities quickly became cemented with the American dream and freedom.

Due to new ideals and car culture, the US federal government further sped up the development of car infrastructure. funding highways, enforcing Euclidean zoning measures, maintaining lenient safety standards, and providing sweeping tax credits for mortgages. This has resulted in entire regions of a city that are dependent on the car (Frederick, 2016). Importantly, many downtown roadways were expanded for traffic flow and surface parking. Downtown

buildings were also demolished in order to support the construction and expansion of urban highways.

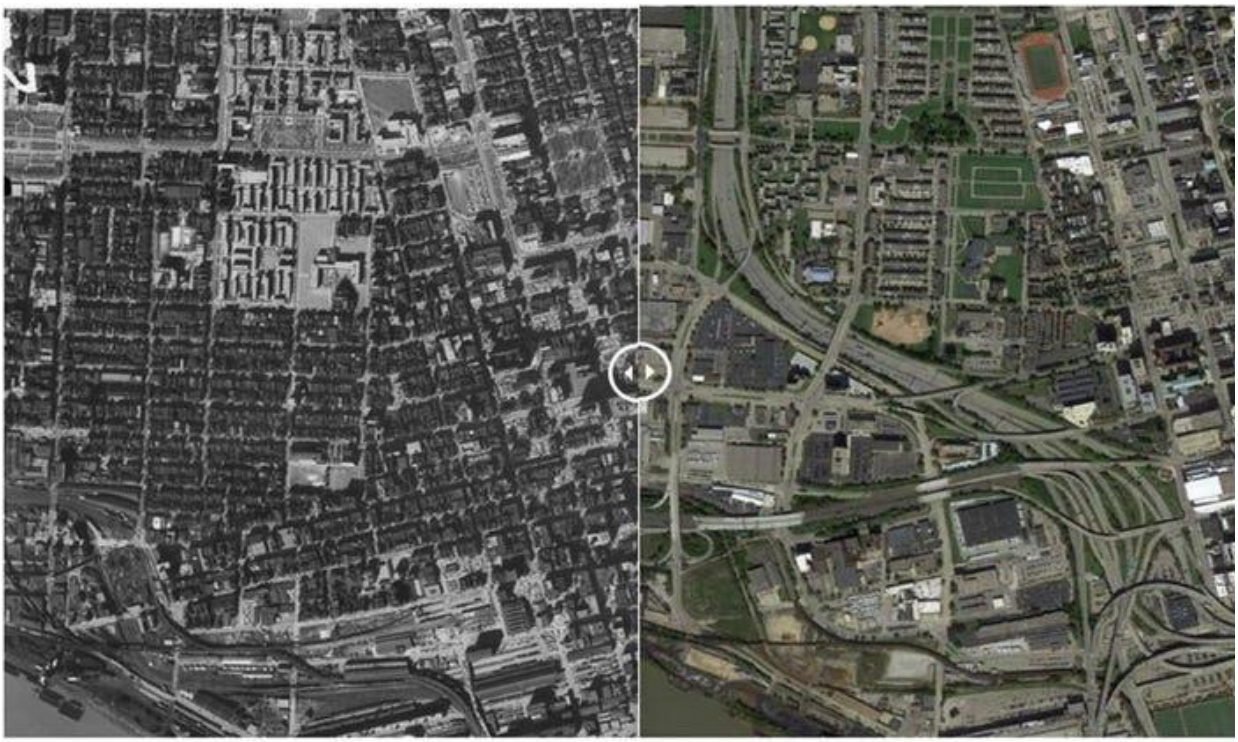

Figure 1. Downtown Cincinnati Before and After Freeway Expansion (Image source: Millsap, 2019).

Although most cities that re-pedestrianized their downtowns have now repaved them, it is important to look how car infrastructure impacts a city as whole. A good example of this is the city of Detroit. Detroit was a leading American car manufacturer and wholly embraced the era of the automobile. Roads were widened to solve congestion problems and the landscape was altered to suit the car (Smith, 2016). However, foreign car manufacturing competition and rising crime rates led to a drop in the city's population by the 1980's. The city was financially insolvent for years before filing for bankruptcy in 2013. Clearly, outside factors worsened the economic

conditions of Detroit. But why was the city particularly vulnerable to this collapse? The spread-out infrastructure of Detroit led to hire costs of city maintenance than the tax base could support.

More recently, American cities have been experiencing gentrification. Gentrification is "the conversion of socially marginal and working-class areas of the central city to middle-class residential use" (Zukin, 1987). Although gentrification carries many problematic implications, namely the displacement of minorities and lower income groups, it is undeniable that the economic conditions of the affected urban area are an improvement for the solvency of a city. This has happened in New York, Seattle, and San Francisco, to name a few. The economic success is in large part due to the higher wealth of the new residents. Gentrification also leads to and/or is a product of a change in a city's landscape. It typically happens in conjunction with walkability reclamation projects. A famous example of this is Boston's "big dig" (projectcostsolutions.com). The burying of an interstate led to an increase in walkability, neighborhood connectiveness, and economic prosperity. In fact, there is a correlation between walkability in the built environment and the economic vitality of an area (Adkins, 2017). In this paper, I hope to further explore the correlations between economic success from walkability.

ACTOR NETWORK THEORY

I will be using actor-network to analyze the connections between major groups and technologies at play such as local and federal government, consumers, car infrastructure, and retailers. In actor-network theory, social groups and technologies exist in intricate connections that form a complex web. Nobody is completely isolated from these other things. No object exists in a vacuum. The material world plays a part in these interactions as much a humans and organizations do (Latour, 1992). These technologies are pervasive in the world. Even seemingly

mundane objects such as doors carry important connotations and implications towards other actors within the network. For example, a lock on a door carries an implication of separation. Only users who own a key can successfully make use of the lock and access further actors beyond the entrance of the door. In a city, car infrastructure and landscape design carry similar implications. The repurposing of a street sparking space into a restaurant patio affects car users, restaurant patrons, and the restaurant owners in a sea of shifting and interconnected world. Clearly, nonhuman actors can also have a wide-ranging effect on human actors.

Human actors can also delegate to nonhuman actors. The car itself is a representation of this. Drivers are delegating their mobility to a 2-ton steel frame. This has consequences for the landscape of the surrounding environment. It must be altered to accommodate this popular method of transportation. Additionally, the car directly adds to the environment, whether it be horn noise or engine emissions. This is discriminating against the non-car actor. They in turn can respond to these changing conditions by avoiding the area because it is less welcoming to them. From there, retail is impacted by a reduction in pedestrians. The network is very complex and intricate and can greatly change due to seemingly mundane actors.

A key concept of delegation in actor-network theory is translation. This is the act of reducing the effort required to fulfill the same task. This will be a key concept to analyze within car use. Once licensed, it takes little effort to drive a car. By simply pushing a pedal, you can travel to speeds far faster than you could on your own. You are also shielded from the weather and can carry more things with you. However, this translation does not apply to every aspect of the car. In many ways, a greater effort is needed for the car than for walking. One must build roads, produce safety standards, and maintain the cars themselves. In my case, I am curious if the car is successful at translating retail commercial activity.

Actor-network theory is an important framework to use because human and nonhuman groups alter the actions of each other when it comes to transportation and retail activities. It is important to consider how the car and its surrounding infrastructure are just as influential as the thoughts and values of the people near it.

RESEARCH QUESTION AND METHODS

We are all familiar with the concept of a city's downtown. This is the part of the city that contains the central business district (Sohmer, 2001). Downtowns can hold a large portion of a city's population, but not everyone lives there. As a result, cities must decide on the most commercially friendly street design to maximize the economic productivity of those who go downtown, near or far. So how do pedestrianized downtowns alter economic activity in mid-sized American cites?

The first step to my research is to define some key terms. I defined "pedestrianized downtown" as a public section of the urban core that forbids private automobile use. This section of the city must be designed to connect with the rest of the city's fabric. This means that a shopping mall is not considered a pedestrian downtown, even if it is located in the heart of the city. A shopping mall makes no attempt to connect with surrounding businesses, and the floor in a mall is owned and regulated by a private business, not the local government. Second, I define "mid-sized" as between 10,000 and 750,000. This range is broader than most definitions, but I am only trying to exclude major metropolises and rural areas.

My research involved a literature review of the history and state of pedestrianized downtowns alongside a comparative study. I began my research through scholarly papers describing the rise and fall of the pedestrianized mall in the late 20th century. This history is

helpful because it reveals which cities succeeded with a pedestrianized mall and which cities did not. Additionally, this movement can be viewed collectively. Since we are able to see the economic results of American cities that pedestrianized their downtowns, it was possible to determine what factors impact the success of a pedestrianized downtown.

Additionally, this literature review helped with the selection of cities to choose in my comparative study. My city selection was Charlottesville, Virginia; Cumberland, Maryland; Boulder, Colorado; Eugene, Oregon; Fresno, California; Sacramento, California; Nashville, Tennessee; Richmond, Virginia; and Detroit, Michigan. These 9 cities fell in 3 categories: 3 that have a pedestrianized downtown, 3 that had a pedestrianized downtown but have since removed it, and 3 that have never had a pedestrianized downtown. I chose these 3 categories to clearly exemplify where pedestrianized malls have worked, failed, and have not been tried. Additionally, because my focus is on mid-sized cites, all of these places had a population between 10,000 and 750,000. Lastly, most of the cities I chose were selected because they a factor made them unique to their category. There are a few existing theories for what makes a pedestrianized downtown succeed, so choosing these unique cities allowed me to analyze what sets them apart. For example, I chose Eugene because it is a college-town that had a failed pedestrianized downtown, which is where their success is usually seen. I further discuss my selection reasonings in the literature review section of my results.

Once my cites were selected, I developed an excel spreadsheet to numerically compare these cities. I first used census data to determine the population size, population density, and collegiate presence of each city. These values are important because it gives a basis for the potential customer base to support the city's downtown. Next, I used censusreporter.org to find each city's per capita income. I then adjusted this value to the cost of living. Although many

factors beyond the street design impact this, it provides a general sense of the city's economic vitality. More importantly, I used economic reports to determine each city's retail vacancy rate. Downtowns have a larger commercial presence than the rest of the city, so this value gives a better perspective to the downtown's health. I also used censusreporter.org to look at the modal share of trips taken within the city. This shows the level of car-dependency each city has, which is useful to determine how a pedestrianized downtown will be used. Those who already walk will enjoy a car-free street while those who drive may deal with increased congestion and longer walks to the businesses from their parking spot. Lastly, I used each city's budget report to track its revenue to expense ratio in 2021. Although this can vary from year to year, it generally allowed me to see the local government's financial solvency. I used this spreadsheet data to generate the tables and figures in the results section.

RESULTS

Through my literature review, I was able to determine some of the key factors that determine a pedestrianized mall's success. According to Amos (2020), there were 140 pedestrianized downtowns built between 1959 and 1985. Of these, 46 continue to exist. This means that only ~38% of pedestrianized downtowns were not reopened to car traffic. Considering it can cost millions of dollars to not only change a street once, but twice, then it is clear that the pedestrianized downtown is an economic failure in most US cities. 86% of trips in the US are made by car, so they are the largest customer base, even in the urban core (Hu, 2005). Robertson (1994) backs this up by claiming that foot traffic is insufficient in most US cities due to low population density. Even pedestrian malls that did succeed often had a large supply of low-cost parking (Pojani, 2010).

My results indicate that a pedestrianized downtown's success is largely determined by its ability to generate traffic, either foot or auto. In most cases, it is due to the city's ability to maximize walking. Of the 46 remaining pedestrianized downtowns, 48% of them had a college campus within a mile (Amos, 2020). College students walk more than the average American. This is due to youth, higher income, and many institutions restricting available parking spots. This means that car usage is typically lower in college towns. Lastly, some cities have downtowns that are subject to blight regardless of their street design.

Cumberland, MD was specifically chosen as a successful pedestrianized downtown without a college campus (Figure 1). Conversely, Eugene, OR was chosen as a college town that removed their pedestrian mall (Figure 2). Sacramento was chosen because its downtown continues to suffer from blight despite returning to auto usage (Atkinson & Oleson, 1996). The results of my comparative study are represented in the tables below.

Figure 1. Cumberland's pedestrianized downtown (Cumberland, 2023).

Figure 2. The University of Oregon, located in Eugene (UO Student Orientation, 2023).

Table 1. Urban Makeup Data

City	Population (2022)	Population Density (ppl/sq mile)	Nearby College?
Remaining Mall			
Charlottesville, VA	45,672	4,315	Yes
Cumberland, MD	18,736	1,846	No
Boulder, CO	104,175	3,948	Yes
Removed Mall			
Eugene, Oregon	175,096	3,980	Yes
Fresno, CA	544,510	4,787	No
Sacramento, CA	5,250,491	5,275	No
No Mall			
Nashville, TN	692,587	1,385	No
Richmond, VA	226,604	3,779	Yes
Detroit, MI	632,464	4,478	No

Table 2. Modal Usage Data

City	Transportation Mode Share
Remaining Mall	
Charlottesville, VA	58% car
Cumberland, MD	77% car
Boulder, CO	37% car
Removed Mall	

Eugene, Oregon	64% car
Fresno, CA	73% car
Sacramento, CA	62% car
No Mall	
Nashville, TN	64% car
Richmond, VA	59% car
Detroit, MI	64% car

Table 3. Private Sector Economic Data

City	Per Capita Income	Cost of living adjusted to Charlottesville	Retail Vacancy Rate
Remaining Mall			
Charlottesville, VA	$42,474	$42,474	5.23%
Cumberland, MD	$28,059	$41,299	NA
Boulder, CO	$52,167	$33,398	6%
Removed Mall			
Eugene, Oregon	$38,298	$38,298	NA
Fresno, CA	$28,499	$29,603	NA
Sacramento, CA	$37,916	$33,457	5.80%
No Mall			
Nashville, TN	$42,268	$43,990	3.30%
Richmond, VA	$38,425	$42,903	2.60%
Detroit, MI	$22,122	$26,761	3.20%

Table 4: Local Government Financial Data

City	City Government Revenue (2022)	City Government Expenses (2022)	Revenue/Expense Ratio
Remaining Mall			
Charlottesville, VA	$176,017,308	$165,129,597	1.06593434
Cumberland, MD	$26,524,299	$28,122,304	0.943176597
Boulder, CO	$398,200,164	$397,807,514	1.000987035
Removed Mall			
Eugene, Oregon	$500,000,000	$500,000,000	1
Fresno, CA	$1,603,922,400	$1,012,244,600	1.584520579
Sacramento, CA	$1,450,000,000	$1,450,000,000	1
No Mall			
Nashville, TN	$2,958,539,000	$2,958,539,000	1
Richmond, VA	$820,444,667	$776,365,713	1.056776018
Detroit, MI	$2,226,400,000	$2,226,400,000	1

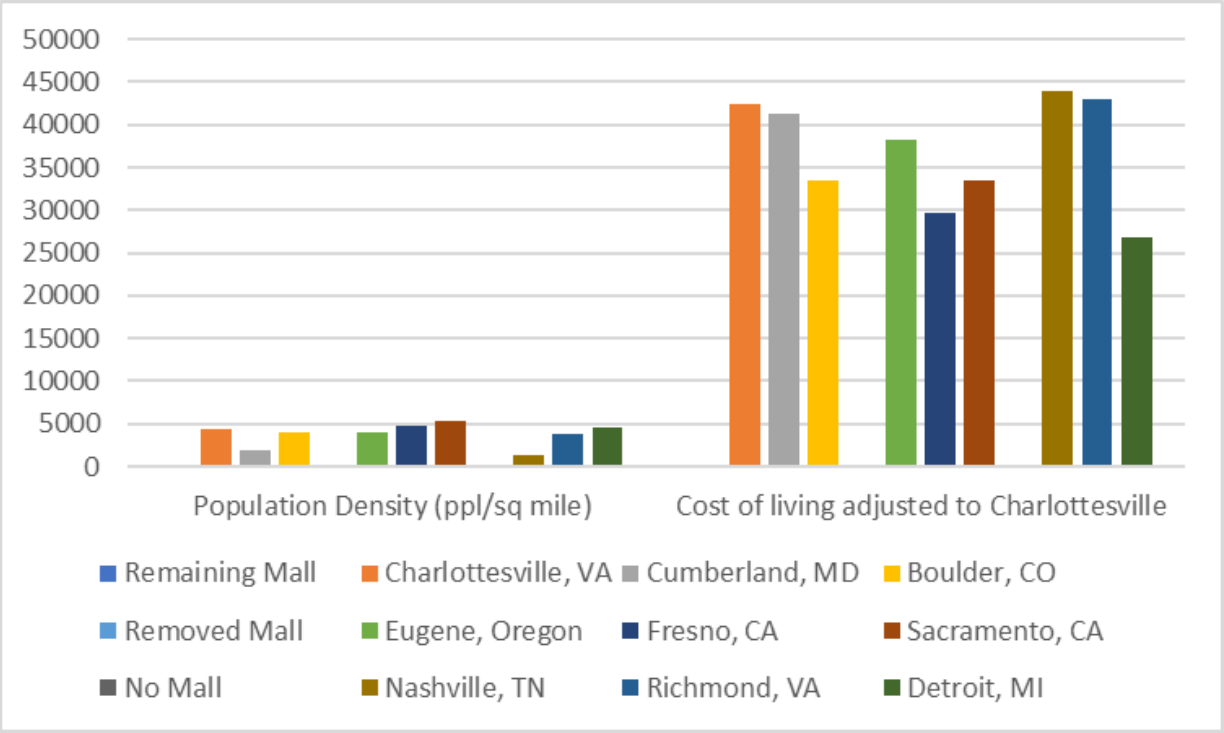

Figure 3. Population Density and Cost of Living Visualization

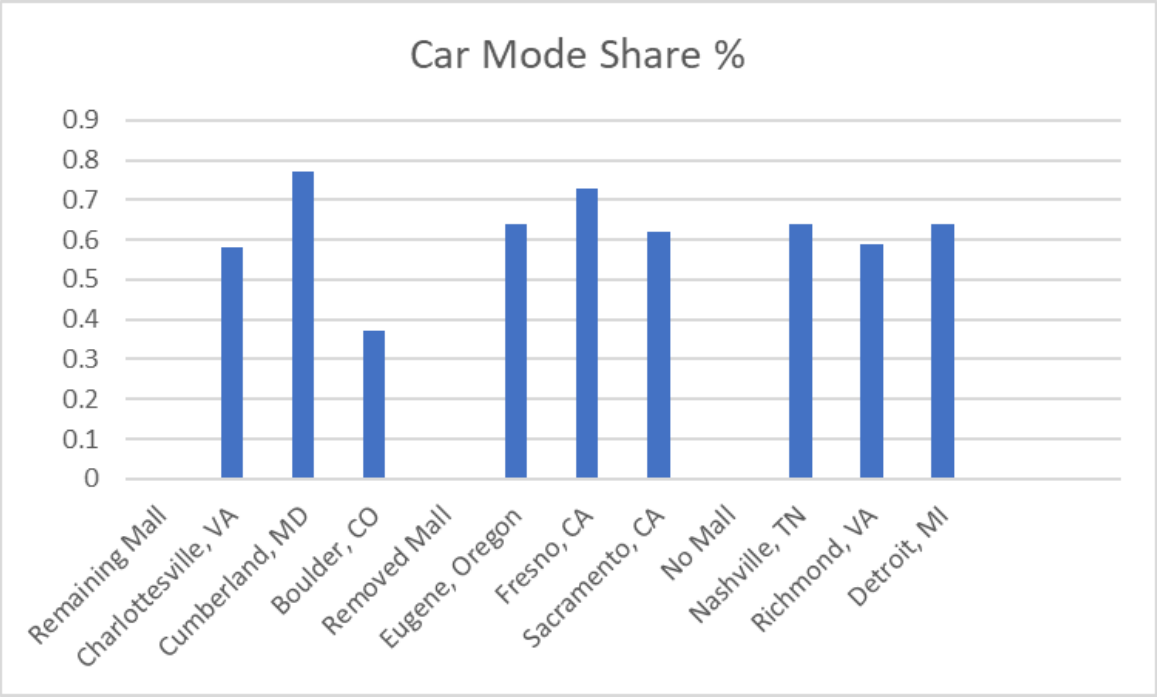

Figure 4. Automobile Mode Share Visualization

These tables and graphs show that although trends can generally be seen, every rule has an exception. Although I specifically chose Eugene as a college town that removed its pedestrianized downtown. It is not clear why it failed based on my basic economic analysis. Its population density is comparable, it has only a slightly higher car mode share, and is economically stable. Clearly, there are a multitude of reasons that determine a pedestrianized mall's success. Cumberland is another city that seems to defy general trends. It has a comparably low population density, has a high car mode share, and is the only city on this list that has expenditures exceeding revenue. The last significant observation of note is that retail vacancies are lower in cities without a pedestrianized downtown. Although a product of pedestrianized downtowns are intermodal buildings which will inherently have vacant time periods, one must consider that empty storefronts are a sign of blight, not economic vitality.

DISCUSSION

These results are applicable outside of the US. Europe has a far larger number of thriving pedestrianized downtowns when compared to America. This is in large part due to tourism and modal transportation choices. However, more auto-dependent cities in Europe have downtowns that are subject to blight. My findings are also supported by my actor-network framework. General trends can be seen, but they are not clear cut. This is to be expected because there is an intricated web of actors. Although my comparative study was able to focus on some of the larger players, it is impossible to account for everything.

However, one major conflict my findings have with actor-network theory is translation. It takes an extraordinary amount of financial and political capital to alter an entire section of a

city's urban core. Therefore, one would expect a city to stay resolved in its current street design. Under translation, it is easier to maintain the status quo. However, major city center redesigns can and do happen. Considering a downtown can succeed whether its pedestrianized or auto friendly, it is clear that further tweaking to our understanding of translation is needed under the scope of city design.

Although this research is aimed towards analyzing the impact of pedestrianized downtowns, it is important to note that cities are very complex. My research is only correlational, not causational. This means it is possible that this data has a confounding variable or is coincidental. Additionally, because every city is unique, there is no control. The study is comparative, but it is impossible to fully know the financial data of a city if they had instead decided to pedestrianize or not pedestrianize.

I recommend that cities outside of the US be studied for future work. American city design is different from other countries of the world. It has its unique culture, economics, and weather. This leads to differences in behavior when interacting with the public market of a city. Comparing the impact of pedestrianization in other cities would highlight the reasons for pedestrianization's success (or lack thereof) that I have provided. This research will continue to be influential in my life as an engineer. I will be working in failure analysis past graduation, and much of my work comes from the automotive industry. It is interesting to know that city design ultimately depends on transportation usage and demand.

CONCLUSION

I would suggest that more economic factors should be analyzed in order to gain a further understanding of how pedestrianized downtowns succeed or fail. There is no clear-cut way to

measure an economy, and under actor-network theory we can only expect that these unanalyzed factors are also playing a role. Additionally, I believe a deeper dive into reverse causality would also improve our knowledge. Although I found that cities with a higher car mode share tend to have less successful pedestrianized downtowns, a successful pedestrianized downtown will also lead to lower car mode share. This also follows actor-network theory, as the actor is also acted upon. Pedestrianized downtowns are not a one-stop solution to revitalize a city's downtown. If an American city is denser, has less drivers, and has a college nearby, a pedestrianized mall is likely to have a stronger economic output. However, the average American city is not conducive to a pedestrianized downtown unless its layout or consumer behaviors were to drastically change.

References

Amos, D. (2020). Understanding the legacy of pedestrian malls. *Journal of the American Planning Association*, *86*(1), 11-24.

Atkinson, G., & Oleson, T. (1996). Urban sprawl as a path dependent process. *Journal of economic issues*, *30*(2), 609-615.

Arlie Adkins, Carrie Makarewicz, Michele Scanze, Maia Ingram & Gretchen Luhr (2017) Contextualizing Walkability: Do Relationships Between Built Environments and Walking Vary by Socioeconomic Context?, Journal of the American Planning Association, 83:3, 296-314, DOI: 10.1080/01944363.2017.1322527

Budget | City of Boulder. (2023). Retrieved April 28, 2023, from https://bouldercolorado.gov/services/budget

Budget—City of Sacramento. (2023). Retrieved April 28, 2023, from https://www.cityofsacramento.org/finance/budget

Budget | Eugene, OR Website. (2023). Retrieved April 28, 2023, from https://www.eugeneor.gov/106/Budget

Budget Home | Richmond. (2023). Retrieved April 28, 2023, from https://www.rva.gov/budget-and-strategic-planning/budget-home

Bureau, U. S. C. (2023). Explore census data. Retrieved April 29, 2023, from https://data.census.gov/cedsci/

Census profile. (2021). Census Reporter. Retrieved April 29, 2023, from http://censusreporter.org/profiles/16000US2622000-detroit-mi/

CITY OF CHARLOTTESVILLE OPERATING & CAPITAL IMPROVEMENT ADOPTED BUDGET - Fiscal Year 2022/2023. (2023).

Cumberland, MD. (2023). Retrieved April 29, 2023, from https://www.ci.cumberland.md.us/31/Visitors

Detroit Market Reports. (2023). Newmark. Retrieved April 29, 2023, from https://www.nmrk.com/insights/market-report/detroit-market-reports

Downtown Boulder Retail & Office Market Update—The Colorado Group. (2023). Retrieved April 29, 2023, from https://www.coloradogroup.com/downtown-boulder-retail-office-market-update/

Doyle, K. (2023). *How the invention of the car changed the world*. Aceable. https://www.aceable.com/blog/how-the-invention-of-the-car-changed-the-world/

Finance | City Budget. (2023). Retrieved April 28, 2023, from https://www.fresno.gov/finance/budget/

Frederick, C. (2016). Constructing urban life: A study of automobile dependency in 148 mid-size U.S. cities. *Electronic Theses and Dissertations*. https://doi.org/10.18297/etd/2397

Freemark, Y. (2022, June 16). *In the US, could taxing heavy cars be a first step toward reducing pedestrian fatalities?*. Urban Institute. https://www.urban.org/urban-wire/us-could-taxing-heavy-cars-be-first-step-toward-reducing-pedestrian-fatalities

FY 2022 Approved Budget | Cumberland, MD. (2023). Retrieved April 28, 2023, from https://www.cumberlandmd.gov/642/FY-2022-Approved-Budget

Hu, P. (2005). *Summary of Travel Trends 2001 National Household Travel Survey* (ORNL/TM-2004/297, 885762; p. ORNL/TM-2004/297, 885762). https://doi.org/10.2172/885762

Latour, B. (1992) 'Where are the missing masses? The sociology of a few mundane artifacts', in Bijker, W. E. and Law, J. (eds) Shaping Technology/Building Society: Studies in Sociotechnical Change, Cambridge, MA, MIT Press, pp. 225-58.

Learn About the Metro Nashville Budget. (2023). Nashville.Gov. Retrieved April 28, 2023, from https://www.nashville.gov/departments/finance/management-and-budget/citizens-guide-budget/learn-about-budget

Mackett, R. L. (2002, March). Increasing car dependency of children: should we be worried?. In *Proceedings of the institution of civil engineers-municipal engineer* (Vol. 151, No. 1, pp. 29-38). Thomas Telford Ltd.

Millsap, A. A. (2019). *Is It Time To Take Highways Out Of Cities?* Forbes. Retrieved February 10, 2023, from https://www.forbes.com/sites/adammillsap/2019/11/21/is-it-time-to-take-highways-out-of-cities/

Mixed results for Boulder-area commercial real estate. (2023, February 8). Boulder Daily Camera. https://bizwest.com/2023/02/07/mixed-results-for-boulder-area-commercial-real-estate/

Nelson, J. (2023, March 6). Nashville's Retail Growth Underscores the City's Boomtown Status. REBusinessOnline. https://rebusinessonline.com/nashvilles-retail-growth-underscores-the-citys-boomtown-status/

Office of Budget. (2023, April 27). City of Detroit. https://detroitmi.gov/departments/office-chief-financial-officer/ocfo-divisions/office-budget

Plaza, M., Plaza, C., & Corridor, J. D. (2023). *KEY LEASE TRANSACTIONS Q1 2023*.

Pojani, D. (2010). American downtown pedestrian "malls": Rise, fall, and rebirth. *Territorio*.

Reports | Charlottesville, VA. (2023). Retrieved April 29, 2023, from https://www.charlottesville.gov/1110/Reports

Robertson, K. A. (1994). *Pedestrian malls and skywalks: Traffic separation strategies in American downtowns*. Avebury.

Sacramento Retail Figures Q4 2022. (2023). Retrieved April 29, 2023, from https://www.cbre.com/insights/figures/sacramento-retail-figures-q4-2022

Schaper, D. (2021, March 3). Potholes, Grid Failures, Aging Tunnels And Bridges: Infrastructure Gets A C-Minus. *NPR*. https://www.npr.org/2021/03/03/973054080/potholes-grid-failures-aging-tunnels-and-bridges-nations-infrastructure-gets-a-c

Seo, B., Kanematsu, H., Nakamoto, M., Miyabayashi, Y., & Tanaka, T. (2022). Copper Surface Treatment Method with Antibacterial Performance Using "Super-Spread Wetting" Properties. *Materials*, *15*(1), 392.

Smith, S. (2016). The Cracks in Detroit: Stories of Hopeful Bodies in Desolate Spaces. In *A Body Living and Not Measurable: How Bodies are Constructed, Scripted and Performed Through Time and Space* (pp. 167-180). Brill.

Sohmer, R. R., & Lang, R. E. (2001). Downtown rebound. *Redefining urban and suburban America: Evidence from census 2000*, *1*, 63-74.

UO Student Orientation | Student Orientation. (2023). Retrieved April 29, 2023, from https://orientation.uoregon.edu/

Weingroff, R. F. (1996). *Federal-Aid Highway Act of 1956: Creating the Interstate System*. Federal-Aid Highway Act of 1956: Creating The Interstate System | FHWA. https://highways.dot.gov/public-roads/summer-1996/federal-aid-highway-act-1956-creating-interstate-system

What lessons can be learned from the Boston Big Dig?. Project Cost Solutions. (2019, August 12). https://projectcostsolutions.com/lessons-learned-boston-big-dig/

Zukin, S. (1987). Gentrification: culture and capital in the urban core. *Annual review of sociology*, *13*(1), 129-147.