JOURNAL OF POLITICS
INTERNATIONAL
&AFFAIRS

THE JOURNAL OF POLITICS & INTERNATIONAL AFFAIRS

THE JOURNAL OF & INTERNATIONAL POLITICS AFFAIRS

FALL 2018 • VOLUME XXIII

THE JOURNAL OF POLITICS & INTERNATIONAL AFFAIRS

FALL 2018 • VOLUME XXIII

STATEMENT OF PURPOSE

The Journal of Politics & International Affairs at New York University is a student-run publication that provides a forum for outstanding student work on relevant, thought-provoking topics in the domestic and international landscape, including research in political science, economics, history, and regional studies.

We believe that the student theses published biannually in the Journal—chosen and edited rigorously by our editorial staff—are legitimate and valuable examples of the intellectual growth of politically-minded students and writers at New York University.

NOTES

Articles published in the Journal of Politics & International Affairs do not represent an agreement of beliefs or methodology, and readers are not expected to concur with all the opinions and research expressed in these pages. Instead, we hope that these pieces are able to inform and inspire dialogue in the NYU community by addressing a wide variety of topics and opinions.

Archival volumes of the journal may be found online at

JPIANYU.ORG

A Note From The Editors

Once a semester, our Journal publishes a handful of excellent submissions from student writers across the University. The selected pieces consistently reflect the unique viewpoints of and strong scholarship from the NYU community on defining global issues. We are proud to promote and disseminate our fellow students' voices on the most salient events of our times.

This edition of the Journal turns its attention to a number of pressing domestic affairs. The 2018 midterms ushered in a record number of women to the United States Congress. Americans now await this election's influence on their jobs and healthcare, whose statuses often seem in flux amidst the turbulent political climate. Meanwhile, major cities across the country face public transportation crises as outdated systems cripple under rapidly-modernizing beliefs and trends. Concurrently, we are publishing analyses of female participation in political office, Medicaid's effects on the labor force, and the issue of inequity in public transit. In keeping with the theme of transportation, Professor Eric Goldwyn outlines his re-imagining of the Brooklyn bus network in an original article. This semester's Journal also features an examination of Chinese environmental expenditure. We hope you enjoy reading these brilliant pieces as much as we enjoyed choosing, discussing, and editing them.

To keep up with the Journal or get involved, we hope you will follow us on our website (jpianyu.org), Twitter, Facebook, and Instagram. As always, we encourage you to send us your incredible research, papers, and theses. We will be waiting to see what you write next.

Isa Spoerry, Editor-in-Chief
Cynthia Tong, Print Managing Editor

Want to Write for the Journal?

Our editorial staff accepts submissions for consideration throughout the year. To submit your work, or to inquire about being published on our website, email jpia.club@nyu.edu.

Pitch the print Journal with your original essay or thesis:

Works that are published by the print Journal tend to be longer than 5,000 words or 20 pages, double spaced. Submissions are vetted based on their originality, academic strength, and syntax. Works that are chosen are then polished by several staff editors. The Journal is published every December and May. Submissions from NYU students of any school are welcome.

Pitch JPIA's online editorial forum:

Our website publishes short blogs that are often around 500 words and feature unique, and creative insights into political issues, current events, and international affairs. We also welcome long-form, reported pieces. These are typically 1,000-2,000 words, allowing writers to explore more complex topics with a heavier research component than the blogs. When pitching please keep your idea to a general abstract, and offer us an example of your written work.

NOTES ON CONTRIBUTORS

PROFESSOR ERIC GOLDWYN

Eric is a Research Scholar at New York University's Marron Institute and an affiliated member of the faculty at NYU. He received his PhD in Urban Planning from Columbia University. His writing on cities and transportation technology has been published in academic journals and popular press outlets.

ERICA HOBBY

Erica Hobby is a 2018 graduate of New York University's College of Arts and Science, where she majored in Economics and Public Policy. Her personal undergraduate research focused on the intersection between labor force participation rates and the Medicaid expansion, which drew connections between both fields of study. Additionally, she worked as a Research Assistant in the Sociology Department, working on a quantitative research project that focused on birth rates and birth outcomes. Originally from Ohio, Erica continues to live and work in New York City.

MATTHEW BERNSTEIN

Matthew is a junior studying Business & Political Economy at NYU Stern. He has spent the past year studying at NYU's locations in New York, London, and Shanghai. He is particularly interested in geopolitical affairs, strategic decision making, and the physical sciences. He is happiest when he finds himself in unfamiliar situations and learning new information—ideally on his bicycle. Chances are you can find Matthew outside playing and watching soccer (Arsenal), biking, rock climbing, or with his dog and cat, Ruby and Lucy. Matthew hopes to learn how to ride a motorcycle and attend graduate school after receiving his degree from NYU.

JESSICA SAAB

Jessica Leyre Saab graduated in May 2018 from the Metropolitan Studies program at NYU's College of Arts and Science, and received a joint-minor in Public Policy and Management from NYU Stern and Wagner. She is now the inaugural Research & Policy Fellow for Great Parks at New Yorkers for Parks, where she continues to research urban policy's effects on equity and planning. She is passionate about public resources like open space and transportation, and strives to build a career dedicated to bettering their conditions and accessibility. Born to parents of Venezuelan, Lebanese, and Spanish origin, she grew up moving every three years due to her father's 24-year career in the U.S. Air Force, spending time in the U.S., Europe, and the Middle East. This upbringing imbued her with appreciation and love for culture and public service. She loves to learn and spends her free time practicing bread making, crochet, GIS, and Adobe Suite.

MANPREET KAUR

Manpreet Kaur, a New York native, is a 2018 graduate of the College of Arts & Science at New York University. She majored in politics and minored in economics and Spanish. During her time at NYU, she gained work experience in government and in the nonprofit sector. In her free time she enjoys meditating, weightlifting, and cooking.

Figuring Out Who Governs When Trying to Improve Transportation

Eric Goldwyn

Eric Goldwyn is a Research Scholar at NYU's Marron Institute and an affiliated faculty member at NYU. He specializes in cities and transportation technology. In an original piece for the Journal of Politics & International Affairs, Professor Goldwyn advocates for an increased focus on governance when examining public transit before proposing his own plan for a re-designed Brooklyn bus network.

2018 marks the 50th Anniversary of the Metropolitan Transportation Authority (MTA) in New York City. While this Golden Anniversary should be cause for celebration, the MTA is spiraling toward institutional collapse as public transportation becomes more tedious and uncertain because of congestion and failing infrastructure. When we think about how to improve transit in New York, we need to answer the age-old question: "Who governs?"

In theory, transit should be a top priority for elected officials in New York City. With nearly eight million trips a day on buses and subways, it is easy to imagine that transit riders are a potent constituency who regularly deliver politicians to office (MTA n.d.). In New York and much of the country, however, this does not happen. Transit operations and planning have been handed over to public authorities who are not directly accountable to voters, leaving little incentive for elected officials to fight for better transit until a crisis emerges.

In New York, this issue of who governs has resulted in a genuine transit crisis that has seen millions of riders flee the system. In Brooklyn alone, the bus network has lost more than 50 million riders in the last 10 years. As dire as this data point is, it is even more alarming when one considers that these trips have not reappeared on subways, taxis, or private vehicles. Furthermore, bus riders' annual median income is $10,000 less than the citywide median income (New York City Comptroller 2017). This discrepancy means that Brooklyn's bus riders have less access to the promise of the city today than they did just a decade ago.

In response to this transit crisis, NYU Marron Institute Fellow Alon Levy and I considered how we could help govern. Specifically, we wanted to develop a radically specific plan to overhaul the bus network in Brooklyn and inspire public discourse. We selected Brooklyn because its decline in bus ridership

is the largest in absolute terms and, unlike Manhattan, it does not have a ubiquitous subway network to absorb lost bus trips.

Our first task was to design a bus network that would get people back on the bus. After reading the literature on bus network redesign and examining a number of cases, specifically Barcelona's Nova Xarxa, we decided to focus our proposal around four principles: 1) speed up the bus, 2) improve reliability, 3) add more service, and 4) enhance connectivity between buses within the network. Again, based on the existing evidence, we believe these principles will bring Brooklynites back to the bus. To keep our proposal grounded in reality, we decided to stick to the existing service-hours budget that governs the Brooklyn buses (fig.1).
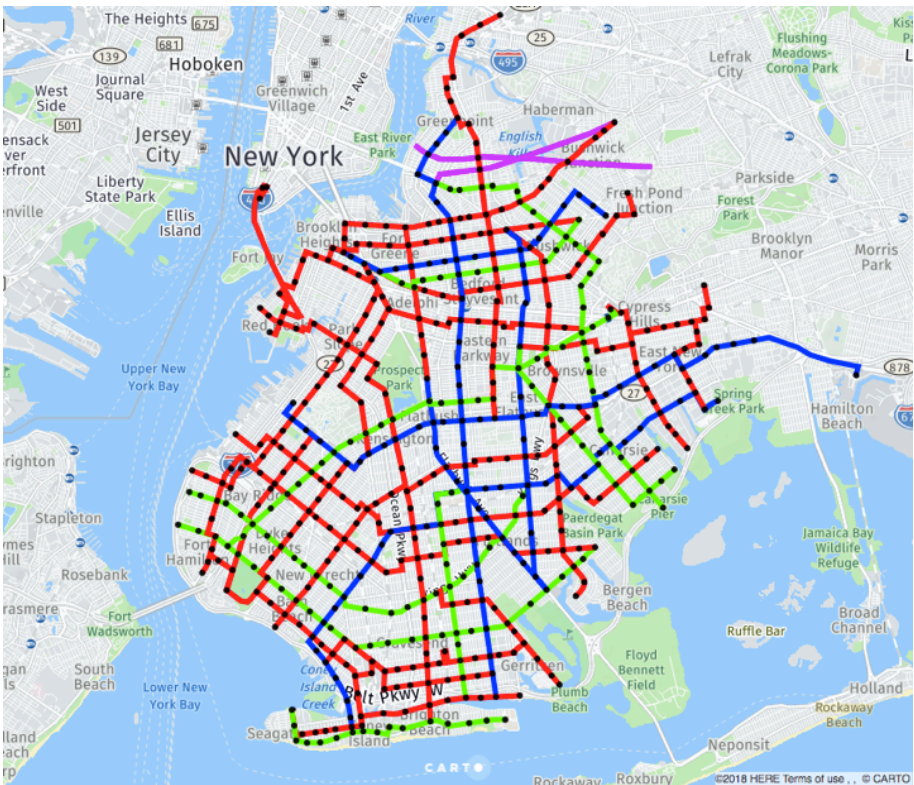
Broooklyn Bus Network Redesign Proposal

Our proposal provides more buses by cutting the total number of routes in the existing network and redeploying that service along the new routes. This plan delivers a bus every six minutes (red routes) or sooner (green and blue) every day between 6:00 AM and 10:00 PM. We have also called for new street designs that get right to the question of who governs.

In order to speed up the bus, one key intervention is to free the bus from congestion. In some

portions of the Brooklyn bus network, buses travel at a sluggish three and a half miles per hour (NYC DOT 2016). In order to attract people back to the bus, we need to fix this. The best solution—one that other cities around the world have already adopted—is to install center-running-protected bus lanes that keep buses moving freely even if traffic overwhelms adjacent travel lanes (fig.2).

Boulevard du Montparnasse in Paris: example of a center-running-protected bus lane

As obvious as this solution is, it requires politicians and high-level decision makers to commit to the bus, even at the cost of road space for cars. Historically, these kinds of fights—the repurposing of travel and parking lanes for buses or bicycles—have been fraught with drama (Sadik-Khan and Solomonow 2016). In August 2018, the Department of Transportation capitulated to disgruntled motorists who objected to a new bus lane to accompany the rollout of Select Bus Service in Brooklyn, which would have taken fewer than 200 parking spaces (Katinas 2018). While it is true those parking spaces would have disappeared, they would have been sacrificed in the service of a bus route that serves more than eight million riders per year.

Our second task was to engage in the political process and disseminate our plan through writing, giving talks, and meeting with elected officials and decision-makers to explain our thinking and justify the changes we have advocated for in our design. We understand that our plan is politically challenging, but how else do we avert this decade-long crisis? If we fail to change the way that elected officials, Brooklynites, and decision-makers think about the bus, we run the risk of putting forth a plan that lives only in cyberspace. Even if our plan is not adopted in its totality, we believe we can help shape the debate and eventual redesign of the Brooklyn bus network to incorporate many of the critical principles for getting Brooklynites back on the bus.

As ridership dwindles and travel speeds slow, the bus has turned into an option of last resort.

Until Brooklynites can rely on the bus to get to school, work, shops, and appointments, there is little hope that ridership will stabilize or grow. Before we can get the bus going again, we need to determine who governs and figure out how to convince them that acting in the interest of Brooklyn's bus riders will leave everyone better off in the long run.

Works Cited

Introduction to Subway Ridership. (n.d.). Retrieved from http://web.mta.info/nyct/facts/ridership/

Katinas, P. (2018, August 31). Parking spaces restored in B82 bus plan, Brooklyn pol says. Brooklyn Daily Eagle. Retrieved from https://brooklyneagle.com/articles/2018/08/31/parking-spaces-restored-in-b82-bus-plan-brooklyn-pol-says/

New York City Mobility Report 2016 (Rep.). (2016, October). Retrieved http://www.nyc.gov/html/dot/downloads/pdf/mobility-report-2016-print.pdf

Office of the New York City Comptroller. (2017, November 27). Comptroller Stringer Report: MTA Buses, Already Slowest in the Nation, Lost 100 Million Passenger Trips Since 2008 [Press release]. Retrieved from https://comptroller.nyc.gov/newsroom/press-releases/comptroller-stringer-report-mta-buses-already-slowest-in-the-nation-lost-100-million-passenger-trips-since-2008/

Sadik-Khan, J., & Solomonow, S. (2017). Streetfight: Handbook for an Urban Revolution. New York: Penguin Books.

THE INTERSECTION OF LABOR FORCE PARTICIPATION AND MEDICAID ELIGIBILITY: A DIFFERENCE-IN-DIFFERENCE APPROACH

ERICA HOBBY

My research project seeks to answer the following question: to what extent does the Medicaid expansion provision under the Affordable Care Act impact labor force participation for those affected by the law? There are conflicting views on the impact of government funded insurance programs on low income households, and specifically their labor behavior. Often times the rhetoric indicates providing government insurance to this group of people decreases their labor force participation, and thus produces a negative impact on our nation's economy. This paper seeks to evaluate the validity of these claims based on the actual labor response of this group following the expansion of Medicaid. This project utilizes a difference-in-difference analysis, comparing the labor force participation in Minnesota to that of Wisconsin's from 2012 to 2016, as Minnesota expanded its Medicaid program in 2014 and Wisconsin did not. This natural experiment created by the Medicaid expansion allows us to compare labor behavior across both space and time to evaluate the behavior following the change in law. Data for this project comes from the American Community Survey for the years 2012 to 2016 and only includes individuals that live along the border of each state in Public Use Microdata Areas (PUMAs), to allow for the most direct comparison of individuals. The results indicate a small but significant increase in labor force participation from individuals both between 100 and 225 percent of the federal poverty level in the years following the Medicaid expansion and those under 225 percent of the federal poverty level more generally.

Introduction

My thesis seeks to answer the following question: to what extent does the Medicaid expansion provision under the Affordable Care Act impact labor force participation by those affected by the law? The Medicaid provision of the law gives states the option to expand their Medicaid program, with the financial assistance of the Federal government, to households earning up to 138 percent of the Federal Poverty Level (FPL), including childless adults ("Medicaid Eligibility for Adults" 2013). Because not all states chose to participate in this expansion, I employ a difference-in-difference design to research this question by comparing two states: Minnesota, which chose to expand its program under the ACA, and Wisconsin, which chose to not expand. These neighboring states possess similar demographic and economic characteristics, making them a valuable match to account for endogenous differences between expansion and non-expansion states in this quasi-experiment. Through this design, I endeavor to understand how expansion of health insurance to low-income individuals in our country impacts their decision to participate in our labor force.

There are many advocates for and against Medicaid and other government subsidized insurance programs. Those that are against Medicaid seek to limits its availability to low income Americans and attach hurdles to those seeking to acquire the insurance, such as work requirements. These attempts are intended to combat the position, commonly supported by conservative legislatures, that making more people eligible for Medicaid in turn diminishes labor force participation. This ongoing debate regarding healthcare, and the value of Medicaid specifically, was brought to the forefront during the passage of the Affordable Care Act in 2009. The Republican sentiment at the time of the ACA's passage has persisted into today's politics and policy with multiple Republican governors seeking to attached work requirements to their states' Medicaid programs (Bernstein & Katch 2018). The intention of the Medicaid program is to provide health insurance coverage to low income Americans otherwise ineligible, whether that be because their employers do not offer insurance or others. However, arguing that Medicaid results in a decline of labor force participation makes the program vulnerable, particularly if this claim in not based in reality, but rather partisan bias. By seeking to determine the validity, or lack thereof, of this claim, we can better understand the true relationship between the Medicaid expansion and labor force participation. This paper will evaluate this idea by examining the actual labor force participation change in the years following the Medicaid expansion in Minnesota when compared to Wisconsin.

Background

The Patient Protection And Affordable Care Act: An Overview

In 2010, President Barack Obama signed The Patient Protection and Affordable Care Act into law. Commonly known as the Affordable Care Act, or the ACA for short, this prominent piece of legislation set out to reform the health insurance market in the United States. Reforming the insurance market in the United States depended on both tackling issues with private and public insurance by providing subsidies for low-income individuals to purchase health insurance, and expanding Medicaid coverage for households with incomes below 138 percent of the Federal Poverty Level (FPL). Additionally, the individual mandate

requires all individuals to purchase health insurance, while also eliminating "discrimination" based on pre-existing conditions, with the hope of ensuring coverage for all individuals (Frean, Gruber & Sommers 2016).

The "three-legged stool" approach, which was designed to decrease the number of individuals without insurance, while also managing affordability, is paramount to understand the framework of the ACA (Gruber 2010). These three primary components of the law are: "new rules that prevent insurers from denying coverage or raising premiums based on pre-existing conditions, requirements that everyone buy insurance, and subsidies to make that insurance affordable" (Gruber 2010). Income-based tax credits subsidize insurance premiums for individuals with incomes between 100-400 percent of FPL (Frean, Gruber & Sommers 2016). The three pieces work together to maintain the stability of the insurance market and attempt to capture as many individuals as possible under a type of health insurance program, whether that be public or private insurance.

More specifically, each component relies on the others in order to maintain a stable insurance marketplace. By mandating all individuals to purchase health insurance, the law eliminates the potential "death spiral" that would result from preventing insurers from discriminating against those with pre-existing conditions, whether that be through larger premiums or restricted plan options. Because insurance companies are unable to charge higher prices for less healthy, and therefore riskier, people compared to those that are healthier, companies charge a higher price to all people to insure themselves against these riskier individuals. Without the mandate, healthy people might decide against purchasing this more expensive insurance and leave the market. This reaction means those sick and risky individuals make up the pool of people that purchase insurance at the highest prices—the "death spiral." The subsidies for those between 100-400 percent of FPL enable those who might be unable to participate in this market because they cannot afford insurance to enter the market and further increase stability. The three-legged stool works to maintain a stable private insurance market, which significantly impacts millions of Americans. However, it is the Medicaid expansion that targets the lowest-income individuals in our country (Gruber 2010).

Medicaid Expansion Under the ACA

The Medicaid program consists of public insurance that targets low-income Americans by covering insurance premiums and the cost of comprehensive care (Harris & Mok 2015). The ACA expanded Medicaid eligibility to all non-elderly adults with incomes up to 138 percent of the FPL with the intention of covering a larger group of low-income individuals. Prior to the ACA, the Medicaid program within many states limited coverage to low-income groups such as children, parents, pregnant women, and those with disabilities who have incomes well below the FPL. Often, low-income adults with no children were completely excluded completely from receiving Medicaid ("Medicaid Pocket Primer" 2017). The law intended to rectify the gap between these groups and insure many more low-income adults.

Nonetheless, a 2012 Supreme Court decision stated that the federal government could not mandate all states expand their Medicaid programs and required that this expansion be optional for all states. This decision left some states with the new eligibility level of 138 percent of FPL and other states

with varying requirements. The Kaiser Family Foundation notes that a coverage gap exists for adults that are ineligible for both Medicaid and the subsidies for private coverage; this gap exists for adults with incomes below 100 percent of the FPL in states that have either a lower threshold or do not cover childless adults ("Medicaid Pocket Primer" 2017). While a group of states chose not to accept the federal funding for Medicaid expansion, as of November 8, 2017, 33 states, including Washington, D.C., expanded their Medicaid programs in accordance to the ACA, leaving 18 states without the expansion ("Status of State Action" 2018).

According to Frean, Guber & Sommers (2016), the Medicaid expansion had the largest impact on coverage changes due to the ACA. Expanding Medicaid, even without adoption by all states, resulted in a 60 percent coverage change across the country. The increase in coverage can be broken down into three categories: newly-eligible individuals, the early expansions of Medicaid by 6 states, and the "woodwork effect" that simultaneously took place. More specifically, newly-eligible individuals had a 14 percent increase in coverage in 2015, approximately 20 percent of the change in uninsured rate due to the ACA. A 10 percent increase in coverage stemmed from the early expansion by states prior to the official implementation of the Affordable Care Act.1 Finally, 30 percent of the increase resulted from individuals previously eligible for Medicaid that enrolled after the ACA—the "woodwork effect." The authors make a point to note that the woodwork effect occurred in all states, regardless of their decision to expand Medicaid or not.[1]

The Healthcare Debate: Medicaid's Impact on the Labor Force

In the debate about the Affordable Care Act, there are multiple explanations that attempt to explain the consequence on labor force participation and employment when Medicaid access is increased. The two conflicting explanations at play are: the Medicaid expansion will decrease labor force participation versus the Medicaid expansion not impacting labor force or increasing participation.

The conservative explanation often takes the perspective that an increase in Medicaid eligibility decreases labor force participation. During both the fight over the ACA and the more recent healthcare debates, implementing a Medicaid work incentive was, and still is, a common Republican position. This policy position stems from the view maintained by conservatives that government assistance in many forms is a disincentive for individuals to work because they may receive their program assistance regardless (Goodnough 2017). Traditionally, Republicans are opposed to policies that expand the power and role of the federal government; the ACA does just this in numerous ways, including implanting taxes and fees that pay for the program, particularly Medicaid. During the debate over the ACA, Republicans did not support the program partially for this reason—they felt as though "new taxes and fees in the bill [...] could have 'a dampening effect on job creation and job preservation'" (Pear 2009). The argument that free government insurance and higher taxes to pay for said insurance diminishes the job market and decisions to participate in the labor force encapsulates the large majority of Republican qualms with the ACA at the time of its

---

1 These states, (CA, CT, DC, MN, NJ, and WA) began their "early expansion" as a way to prepare their state for the large expansion beginning in 2014. (https://www.kff.org/health-reform/issue-brief/states-getting-a-jump-start-on-health/)

implementation and the subsequent years of trying to tie in work requirements to the Medicaid program.

Medicaid work requirements have made an appearance since the passage of the ACA. Multiple Republican governors, those that make decisions about Medicaid, have reintroduced the idea recently with the support of the Trump administration. Early January 2018, four years after the Medicaid expansion went into effect, "the administration's new approach—one that no administration before it has taken—is to provide waivers to states that allow them to impose work requirements for Medicaid benefits" with ten states submitting waiver requests to achieve these requirements (Bernstein & Katch 2018). Jessica Schubel, a Senior Policy Analyst at the Center on Budget and Policy Priorities, notes that under new criteria, the Centers for Medicare and Medicaid Services (CMS) would support proposals to change a state's Medicaid program based on the notion that it could "promote upward mobility" or "promote responsible decision-making," goals that contradict the primary intention of Medicaid: providing low-income individuals with health insurance (Schubel 2017). These intentions demonstrate that the Republican sentiments present during the ACA debate continue into our current discussions as well. An important point on this explanation of the conservative view of Medicaid expansion: some data do show that the Medicaid expansion can lead to an overall decrease in labor force participation (Harris & Mok 2015). However, I contend that a salient difference exists when noting a small decrease in participation (less than 1 percent) and the arguments being made by Republicans that workers simply decide not to work once they receive their government benefits, which ultimately connote recipients of these programs as unmotivated and seeking reasons to cease work.

The counterarguments propose that Medicaid does not actually influence labor force participation to the extent that some argue, but in fact has negligible effects on participation. Ku (2017) counters the conservative critique that many Americans on Medicaid can work but choose not to. Specifically, "the great majority of adults covered by the Medicaid expansion are in in health or are already working, in school, or looking for work." Of the 13 percent of "able-bodied" adults not working while covered under the Medicaid expansion, three-fourths do not work for viable reasons, such as acting as caretakers for their family members. Expanding Medicaid coverage also captures low-skilled adults that are unlikely to receive health insurance through their employer. Other perspectives countering the conservative view emphasize that the Medicaid expansion "[makes] it easier to work and to seek work," according to a study performed in Ohio on Medicaid recipients (The Ohio Department of Medicaid 2016).

Literature Review

The debate surrounding the role of health insurance on various outcomes, ranging from health to labor supply, began well before the implementation of the ACA and has continued well past the law's enactment. The United States relies primarily on employers providing health insurance to cover the majority of Americans, with 55.7 percent of the population covered by employer-based health insurance in 2016. The second largest method of health insurance coverage, however, is Medicaid, at 19.4 percent in 2016 (Barnett & Berchick 2017). We can better understand both why the health insurance debate has a heavy focus on the role of public health insurance and why the direction of the relationship matters. Review of the following literature serves to demonstrate the existing research on the topic of Medicaid

and labor supply, as well as to describe the theory of labor force participation in the context of Medicaid recipients in an attempt to delve deeper into these conflicting arguments described above.

While the traditional "conservative" versus "liberal" debate on labor force decision is ongoing, the underlying economic theory behind these decisions reveal that both sides are correct—but only to a certain degree. Income and substitution effect are the foundation of decisions around work, employment, and labor force participation. These effects apply theory to changes in our incentives to work as our wages and prices of goods change. Substitution effect occurs when the price of a good increases, which causes an individual to purchase less of that good. Income effect comes from the relative rise in a price, which translates into an individual being relatively "poorer" and choosing to consume less of all goods (Gruber 2016). Applied to labor, wages are used as the price of leisure—an hour spent on leisure activities sacrifices one hour's wage, making the price of that activity equal to lost wages.

When we apply this framework to individuals with Medicaid, the behavior differs depending on initial income levels and the related change in threshold. A newly-eligible individual, someone previously above the FPL threshold and not eligible to receive Medicaid, that becomes eligible after the expansion, needs to use less out-of-pocket income for healthcare costs, which decreases her incentive to work through the income effect. She is able to consume more goods at the same income level. Furthermore, increasing income above the threshold, typically the 138 percent of FPL for most states, places an "implicit tax" on individuals when their earnings cross that level. This implicit tax works to decrease labor supply through income and substitution effects for newly-eligible individuals as well, supporting the view that public health insurance has a negatively-correlated relationship with labor supply (Harris & Mok 2015; Baicker et al, 2013; Garthwaite et al, 2013).

For individuals previously eligible for Medicaid prior to the expansion, the theory indicates they will increase their labor supply. Because they can maintain the eligibility they had prior to the ACA, but at a higher income level, they are able to supply more labor without losing their benefits (Harris & Mok 2013). Pohl (2014) and Hamersma (2013) support the perspective that individuals increase their labor supply, in particular single mothers, when they receive increased eligibility levels for Medicaid. Baicker et al (2013) offers another explanation for this positive causal relationship regarding whether or not access to Medicaid improves health or reduces out-of-pocket spending on healthcare risks. A higher threshold that allows an individual to maintain eligibility and decreased costs related to health support the positive causal model between Medicaid and labor supply.

The third group of individuals impacted by the Medicaid expansion are those that earn income just above the new threshold. This group faces incentives to decrease their labor supply enough so that they qualify for Medicaid as a result of their subsequently decreased household earnings. Harris & Mok (2013) points out that "they would be more likely to [decrease labor supply] if they were ineligible for exchange subsidies, so CBO expects that most of them would be secondary workers who had employment-based health insurance and were therefore barred from getting such subsidies" (13-14). The theoretical behavior of this groups provides an addition explanation for a negative causal relationship.

Table 1: Theoretical Labor Response to Medicaid Expansion by Category[2]

	Income Effect	Substitution Effect	Total Effect
Newly Eligible	(—)	(—)	(—)
Previously Eligible	N/A	(+)	(+)
Just Above Threshold	N/A	(—)	(—)

Empirical Appraoch

Minnesota And Wisconsin: A Quasi-Experiment

I employ a difference-in-difference analysis between two states, one that expanded its Medicaid program and one that did not under the ACA, in order to analyze the impact of this more generous threshold for insurance coverage for low-income individuals on their decision to participate in the labor force. The two states I chose to compare are Minnesota and Wisconsin, as the treated state and control state respectively. This geographic discontinuity design goes one step further, as I compare these states' border Public Use Microdata Areas (PUMAs), with the intention that this will compare two groups that are similar to one another ex ante. Similar treatment and control groups makes this natural experiment closer to the research goal of randomly assigning subjects to individual and treatment groups. Frean, Gruber & Sommers (2016) utilize PUMAs in their design to compare expansion and non-expansion states as well, in a similar difference-in-difference model. This section will explain the Medicaid landscape in both states prior to and following the ACA to clearly demonstrate benefits and drawbacks of comparing these two states. The Kaiser Family Foundation's Program on Medicaid and the Uninsured provides numerous resources on the Medicaid program and low-income population's health care and insurance status. The following information comes from the facts compiled by this program, as they do state-by-state explanations of changes in the Medicaid program.

Minnesota

Prior to the Medicaid expansion, Minnesota already had a more generous eligibility threshold for its Medicaid program, which allowed both parents with higher than typical incomes levels and non-elderly adults without children to receive insurance through Medicaid. This more comprehensive eligibility plan further increased with the passing of the ACA. According to KFF, "As of January 2014, Medicaid eligibility in Minnesota covers almost all non-elderly adults up to 205% of [FPL]." In addition to the higher level for non-elderly adults, "children with family incomes up to 288% of [FPL] (about $67,800 for a family of four) will be eligible for Medicaid or [the Children's Health Insurance Program] (CHIP)." When considering these thresholds in conjunction with the subsidies provided by the ACA, the effective

---

2 Source of table: Wind (2016) page 5

lower limit for subsidy eligibility shifts from 100 percent FPL to 205 percent FPL for non-elderly adults and 288 percent FPL for children, with 400% FPL remaining as the upper limit for subsidy eligibility. These expanded rules allow approximately 57 percent of uninsured non-elderly people, adults and children, to be eligible for Medicaid or CHIP in Minnesota ("How Will the Uninsured in Minnesota Fair" 2014).
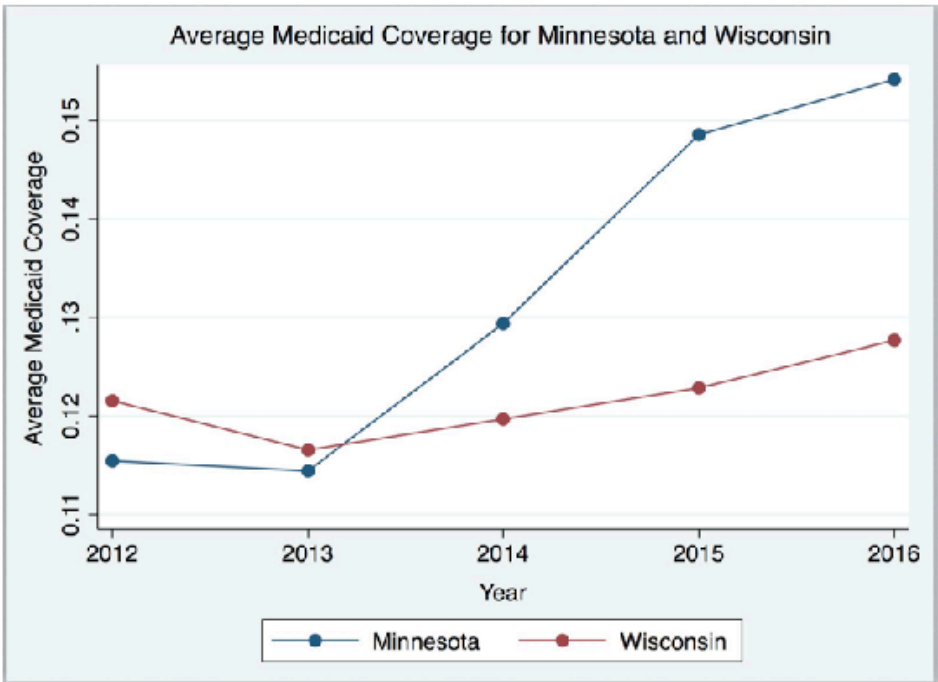
Wisconsin

Wisconsin chose to not participate in the Medicaid expansion under the Affordable Care Act. However, prior to the ACA, Wisconsin had multiple mechanisms in place that made access to Medicaid for low-income individuals, particularly children and parents, more feasible. Gates & Rudowitz (2014) provide a detailed explanation of the evolution of Wisconsin's Medicaid program. The year 2008 in Wisconsin saw the creation of "BadgerCare Plus," a compliment to its other program, "BadgerCare, which provides a health coverage safety-net for low-income families transitioning from welfare to work." (Gates & Rudowitz 2014). The changes in BadgerCare Plus were: "to expand Medicaid coverage to all uninsured children (through age 18), pregnant women with incomes below 300% FPL, and parents and caretaker relatives with incomes below 200% FPL" (Gates & Rudowitz 2014). Additionally, a limit number of childless adults became eligible in 2009, but the capped program necessitated a more limited version called BadgerCare Plus Core Plan. In 2012, parents and caretakers with incomes above 133% FPL faced monthly premiums for their Medicaid insurance, when those on Medicaid typically paid no premiums.

Following the ACA, Wisconsin altered its Medicaid program, rather than following the ACA Medicaid expansion. More specifically, the state changed the eligibility threshold to 100% FPL for parents and childless adults, while also removing the cap on enrollment for childless adults. A coverage gap does not necessarily exist between those eligible for Wisconsin's Medicaid program and those eligible for federal subsidies, but it is important to note that subsidies still require out-of-pocket expense for participating in the Marketplace, as compared to coverage under Medicaid.

A normative look at this comparison draws out a primary similarity: both states began with more generous Medicaid programs before the ACA. While Wisconsin decreased its threshold following the ACA from 200% FPL to 100% FPL, it expanded the number of people that are able to participate in the program—a tradeoff in coverage eligibility. Because of the demographic and economic similarities between the states, they are compatible comparisons to one another. This similarity in generosity prior to the ACA also adds another similar characteristic to support the analysis via comparing Minnesota and Wisconsin when evaluating how Medicaid expansion impacts labor force participation. Figure 1 below captures each state's Medicaid take-up rates for the years 2012-2016. The graph shows that around the time of the ACA, Minnesota's coverage became more generous than Wisconsin's, as the average number of people covered increased in 2014 and remained at higher levels than Wisconsin's.

Figure 1: Average Medicaid Coverage for Minnesota and Wisconsin for the Years 2012-2016

Note: Figure 1 compares the Medicaid coverage rates for the two states dealt with in this analysis—Wisconsin and Minnesota. The figure demonstrates that following the expansion of Medicaid in 2014, Minnesota's rate increases as compared to its neighbor. This result is consistent with our expectation that expanding eligibility will result in more people covered under the program.

*Source: The American Community Survey

Data Source

The American Community Survey (ACS) is an annual nationwide survey that asks respondents from 3.5 million households a wide-range of questions. ACS covers topics such as occupation, work force status, household composition, annual income, and much more. The survey is designed to "[collect and produce] information on social, economic, housing, and demographic characteristics about our nation's population every year" (U.S. Census Bureau). I accessed the ACS data from the Integrated Public Use Microdata Series (IPUMS), which provides a variety of census and survey data.

Variable Coding

The treatment variable in the difference-in-difference analysis is used to denote states where

Medicaid expansion occurred under the Affordable Care Act (ACA). Minnesota expanded its Medicaid program under the ACA and all respondents received the treatment variable equal to one. Wisconsin respondents are denoted with the treatment variable equal to zero. For most states that chose to participate in the Medicaid expansion, their program's implementation began January 1, 2014. The time variable in the analysis is equal to zero for the years prior to this date (2012 and 2013) and is equal to one for the years following this date (2014, 2015, and 2016). The difference-in-difference estimator is found by multiplying time and treated together.

An important note: Minnesota was one of six states to adopt early expansion of Medicaid, meaning it expanded its program in 2013, rather than January 1, 2014. However, I chose to code the time variable according to when the program officially went into place. This is because implementation and its effects take time to be felt.

Variable	Description
LabForce	The mean of a dummy variable equal to zero if not in labor force and equal to one if in labor force
Time	A dummy variable set equal to zero from years prior to expansion (2012 & 2013) and set equal to one for years post expansion (2014, 2015, & 2016)
Treated	A dummy variable set equal to zero for non-expansion state (WI) and set equal to one if expanded Medicaid (MN)
DID	Interaction term between time and treated

Narrowing of Data

The Medicaid program and its expansion do not directly affect all Americans. Prior to the expansion, states had different mechanisms for establishing Medicaid recipients' eligibility, Post-expansion states simplified the threshold to 138 percent of the Federal Poverty Level (FPL), and included non-elderly without children and disabilities, a group previously disadvantaged by the Medicaid system (Harris & Mok 2015). This new threshold impacts newly eligible individuals, the previously eligible, and adults above yet near the cut-off level (Harris & Mok 2015). In order to best capture these groups, I chose to only look at adults ages 18 to 64 whose household incomes are 225 percent of FPL and below in Minnesota and Wisconsin. This cutoff captures each state's Medicaid threshold range with an additional buffer to observe

people's behavior directly and indirectly affected by the law.[3] By focusing on as many people as possible that potentially interact with Medicaid, this measure of the change in labor-force participation reflects a more valuable analysis by including only those whose behavior we expect to change as a result of the expansion in Minnesota and the corresponding group of individuals in Wisconsin.

The final step to narrowing the dataset before analysis was limiting it to the Public Use Microdata Areas (PUMAs) along the border of each state. PUMAs are geographic areas that are used for the Public Use Microdata Sample data. They are populated areas of 100,000 residents or more within states (Frean, Gruber & Sommers 2016). The PUMAs I chose to limit the data to include only those in Minnesota and the Wisconsin border, in order to best match the comparison of outcomes.

Ideally, the treatment would be coded at the individual or household level; for example, each person eligible for Medicaid each year in both states would receive the treated variable equal to one, and all other individuals would receive the treated variable equal to zero. This other method of coding more directly compares Wisconsin to Minnesota and captures more accurate results and would not require narrowing the data. However, Medicaid eligibility prior to the ACA expansion is convoluted and difficult to translate with the data from the ACS. State rules to establish eligibility varied widely and often depended on having children in the household. Choosing to assign the treated variable at the state level instead of the household level resulted from the complicated nature of eligibility prior to the expansion.

Results

Using A Difference-In-Difference With A Geographic Regression Discontinuity Design With Border Pumas

A difference-in-difference analysis makes the assumption that the intervention explored causes the diverging behaviors between the treatment and control groups; in other words, without the intervention the two groups would move parallel to one another (Angrist & Pischke 2015). In addition to the difference-in-difference approach, I utilize a geographic regression discontinuity design by comparing only the border PUMAs for each state. The goal of this is to limit the analysis to groups most similar to one another; here the assumption is that living in Minnesota is just as likely as living in Wisconsin by individuals, as though the selection is "random," and the difference between people is negligible, making the natural experiment a more valuable approach (Keele & Titiunik 2015). A map of the PUMAs for both states is shown in Figure 2 below.

Figure 3 below shows the labor force participation rate for both Minnesota and Wisconsin for years 2012-2016. The rates for each state parallel one another consistently during this time frame; however, Wisconsin's participation rate becomes more negative than Minnesota's after 2015. Both of these observations can support the underlying assumption of the difference-in-difference model that the

---

3 MN has a more generous program than the ACA's 138 percent threshold. As noted in the above section, MN covers
    individuals up to ~200 percent of FPL, hence my decision to expand the range to 250 percent of FPL
    when observing those impacted by the law. ("How Will the Uninsured in Minnesota Fair" 2014)

participation rates parallel one another.

Figure 4 below shows the labor force participation rate for Minnesota and Wisconsin among the border PUMAs for individuals under 225 percent of FPL. I analyze this group of interest in my difference-in-difference model. We see that the participation rates for each state are closely aligned across this time frame, though not as clearly as it could, had it been comparing the states as a whole. Minnesota experiences a slight jump in its rate in 2014, the year the optional Medicaid expansion went into effect for the country, but from then on more closely matches Wisconsin's rate. Table 4 compares the sample size of each state's border PUMAs and other demographic summary statistics to demonstrate the similar demographic composition of these states, particularly along the bordering PUMAs.

Figure 2: Map of PUMAs in Minnesota and Wisconsin
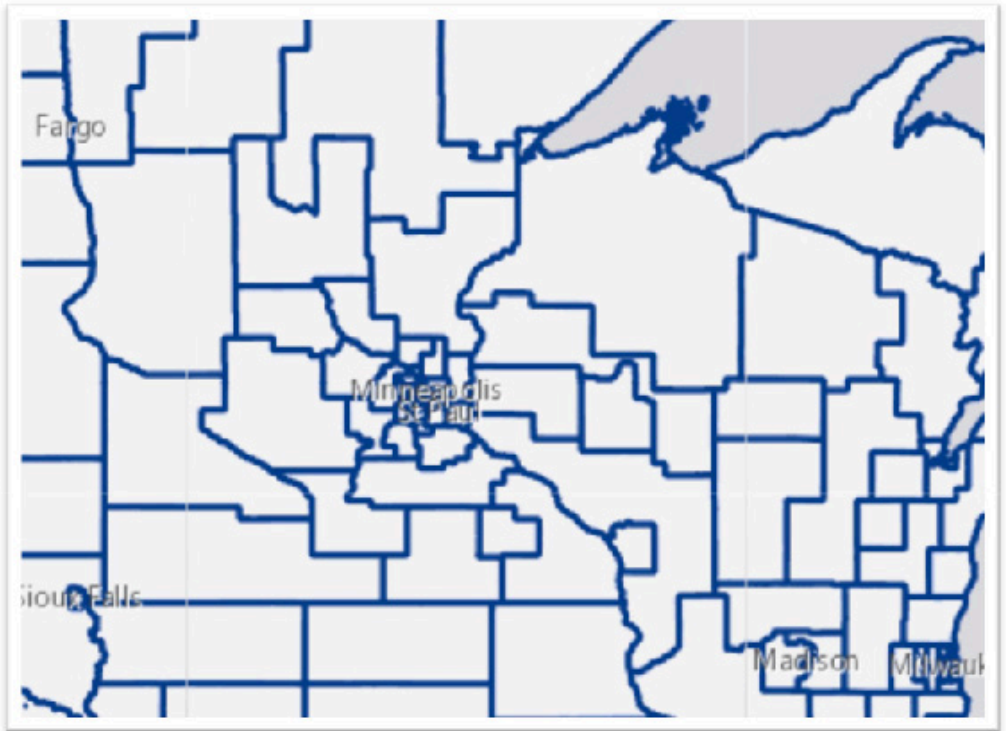
Note: Wisconsin's border PUMAs are 100, 700, 900, 55101, and 55102; Minnesota's boarder PUMAs are 300, 500, 600, 1201, 1202, 1502, 2300, and 2600

Figure 3: Average Labor Force Participation Rate for MN and WI for Years 2012-2016
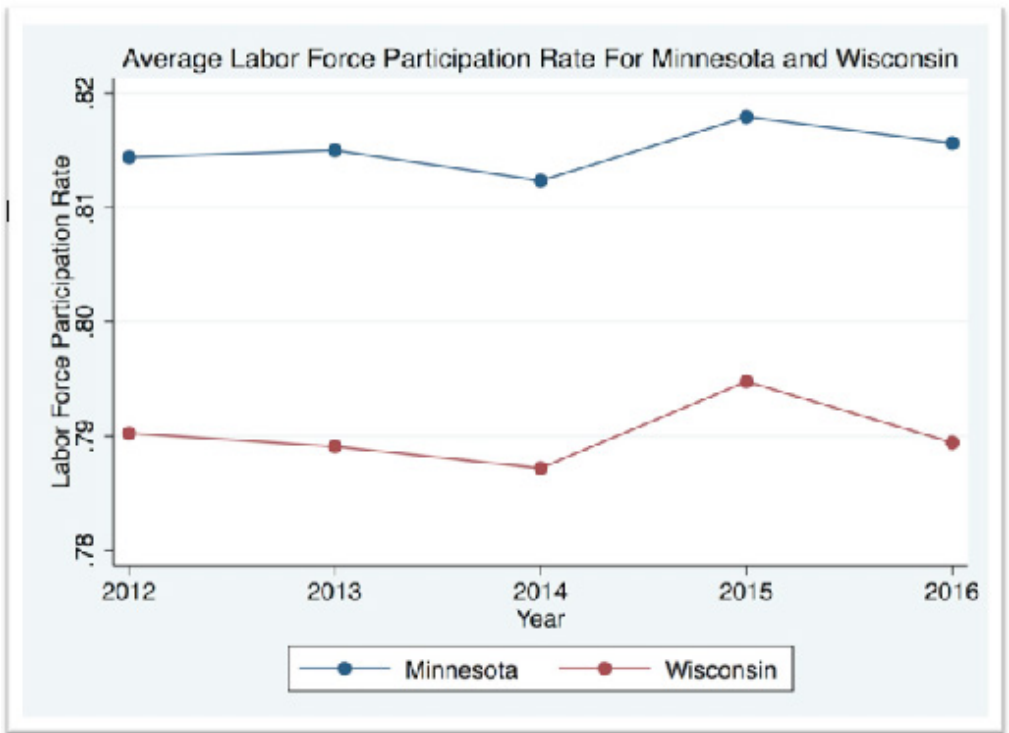
Table 3: Labor Force Participation Rate for States' Border PUMAs

Labor Force Participation		2012	2013	2014	2015	2016
	Wisconsin	78.6%	78.6%	78.7%	78.6%	78.5%
	Minnesota	79.2%	79.8%	80.3%	79.9%	79.9%

*Source for both Figure 3 and Table 2: The American Community Survey

Figure 4: Average Labor Force Participation Rate for MN and WI for Years 2012-2016 for Individuals under 225 percent FPL

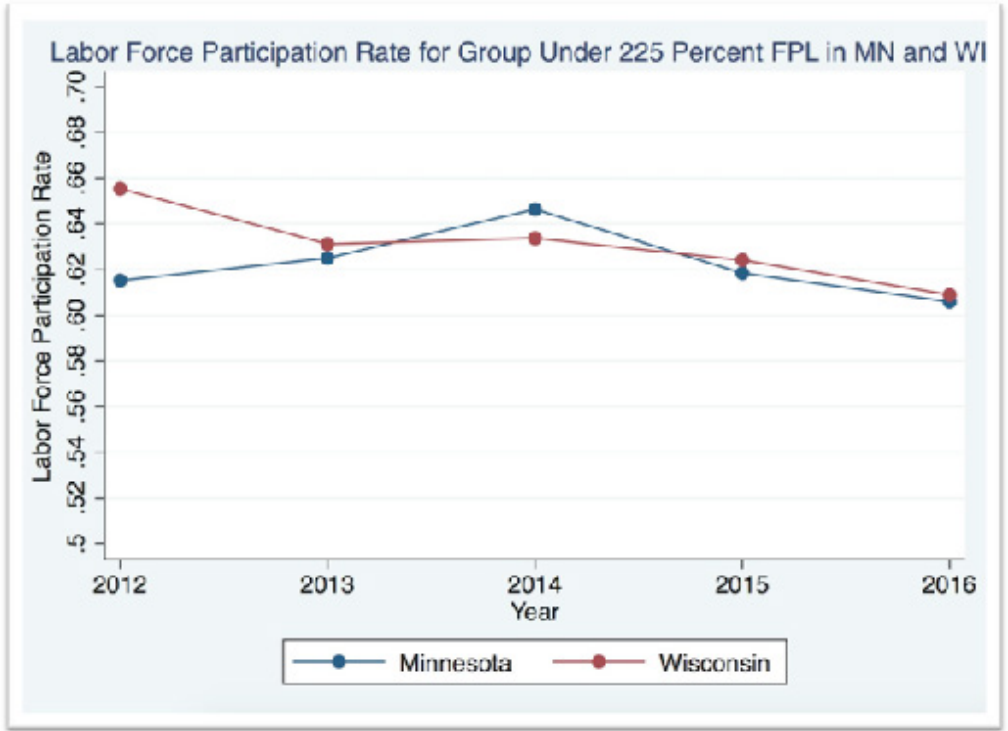Table 4: Labor Force Participation Rate for States' Border PUMAs (FPL under 225%)

Labor Force Participation (FPL under 225%)	2012	2013	2014	2015	2016
Wisconsin	65.5%	63.1%	63.4%	62.4%	60.9%
Minnesota	61.5%	62.5%	64.6%	61.9%	60.6%

*Source for both Figure 4 and Table 3: The American Community Survey

Table 5: Summary Statistics for Boarder PUMAs in Wisconsin and Minnesota

Sample Size		2012	2013	2014	2015	2016
	Wisconsin	7,633	7,625	7,589	7,542	7,274
	Minnesota	7,017	7,225	6,994	6,972	6,880
Sex		2012	2013	2014	2015	2016
Male	Wisconsin	3,885	3,878	3,835	3,814	3,717
	Minnesota	3,594	3,720	3,555	3,541	3,548
Female	Wisconsin	3,748	3,747	3,754	3,728	3,557
	Minnesota	3,423	3,505	3,439	3,431	3,332
Race		2012	2013	2014	2015	2016
White	Wisconsin	96.0%	95.6%	95.8%	95.5%	95.0%
	Minnesota	94.0%	94.3%	93.8%	93.2%	93.2%
Black/African American	Wisconsin	0.6%	0.6%	0.6%	0.5%	0.8%
	Minnesota	1.3%	1.4%	1.5%	1.4%	1.8%
American Indian or Alaskan Native	Wisconsin	1.8%	1.7%	1.5%	1.6%	1.8%
	Minnesota	1.9%	1.6%	1.7%	1.6%	1.8%
Other Asian or Pacific Islander	Wisconsin	0.5%	0.8%	0.7%	0.7%	0.8%
	Minnesota	0.8%	1.0%	1.1%	1.4%	1.1%
Educational Attainment		2012	2013	2014	2015	2016
Grade 12	Wisconsin	45.7%	45.3%	45.9%	44.2%	43.3%
	Minnesota	40.8%	38.7%	39.5%	39.2%	37.8%
1 year of college	Wisconsin	16.1%	16.1%	15.4%	15.8%	16.5%
	Minnesota	19.1%	18.1%	18.5%	17.6%	18.7%
2 years of college	Wisconsin	12.1%	13.2%	13.5%	13.7%	13.4%
	Minnesota	11.2%	12.4%	13.0%	12.8%	13.3%
4 years of college	Wisconsin	14.2%	13.5%	13.6%	14.2%	14.6%
	Minnesota	16.8%	18.6%	17.4%	18.3%	17.5%
5 or more years of college	Wisconsin	5.5%	5.4%	5.5%	5.7%	5.8%
	Minnesota	7.1%	7.1%	6.7%	7.5%	8.0%

*Source for Table 5: The American Community Survey

Regression

I utilize the following regression for my difference-in-difference analysis:

$$= \quad , + . \quad + \quad 2 \quad + \quad 4$$

  This regression is run on three distinct income groups: individuals below 225 percent of FPL, between 100 and 225 percent FPL, and those below 100 percent FPL. The first regression, using a population of those in both states with household incomes below 225 percent of FPL, is used to capture the changing law's effect on a wide-ranging group of individuals who are impacted by the change in Medicaid eligibility. The narrow range for the second regression captures the effect on those most directly impacted by the policy change. The final regression is run on those under 100 percent FPL to act as a placebo; this group's behavior should be mostly unchanged by the Medicaid expansion. There is a small, yet significant, increase in labor force participation for those under 225 percent FPL and those between 100 and 225 percent FPL. The regression clusters the PUMA level observations because this paper does not use individual level covariates within the analysis—for example, education level or race.

Table 6: Regression Results on Group (1) Between 100 and 225 percent FPL, (2) Under 225 percent FPL and (3) Under 100 percent FPL for Wisconsin and Minnesota's Boarder PUMAs, Aggregated by PUMAs

VARIABLES	(1) 100-225% FPL labforce	(2) Under 225% FPL labforce	(3) Under 100% FPL labforce
TIME	-0.016*	-0.018**	-0.020*
	(0.009)	(0.007)	(0.010)
TREATED	-0.019	-0.034	-0.019
	(0.021)	(0.021)	(0.033)
DID	0.045**	0.039**	0.007
	(0.017)	(0.017)	(0.023)
Constant	0.753***	0.643***	0.502***
	(0.018)	(0.010)	(0.012)
Observations	65	65	65
R-squared	0.07	0.04	0.01

Robust standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

The above regression in column (1) uses a narrow section of the population to conduct a more focused analysis; by limiting the population of interest to people with household incomes between 100 and 225 percent of the FPL, the model captures the group's behavior changes most affected by changes in Medicaid eligibility requirements. Wisconsin's eligibility maximum changed to 100 percent of FPL, with those above this level accessing the federal subsidies. Minnesota's maximum FPL for eligibility falls at 205 percent. By including individuals between 205 and 225 percent of FPL, the model captures the behavior effects of those above the cutoff, as this group is the most likely to decrease their participation to decrease their household income level enough to become eligible for Medicaid. The results of the analysis on this subset show another positive relationship between the Medicaid expansion and labor force participation. The interaction term denotes the difference in labor force participation in Minnesota is 4.5 percent higher than in Wisconsin, post treatment. This positive relationship is significant at the 95 percent significance level.

The second regression in column (2) gives an estimation of the relationship between this range of low-income adults' labor force participation choices and Medicaid. The difference between the changes in labor force participation for adults post-2014 is 3.9 percent higher in Minnesota compared to Wisconsin. This result is significant at the 95-percent significance level and supports the casual explanation that expanded Medicaid eligibility can increase participation in the labor force. Nonetheless, this model is a simple bivariate difference-in-difference that uses fairly limited controls in the analysis.

The population of interest in the subsequent regression is narrowed to those in Minnesota and Wisconsin below 100 percent of FPL. We expect those below 100 percent FPL to act as a placebo test for our results—there should be little to no change in the labor force participation decisions of individuals in this group. Their Medicaid eligibility was fairly unaffected in both states by the change in law, and thus have limited incentive from Medicaid eligibility to alter their behavior. We confirm the placebo test based on the results in column (3). For those with poverty levels below 100 percent of FPL (3), there is an insignificant change in labor force participation of only an increase of 0.07 percent. These results are consistent with expectations, as this group's behavior experienced insignificant differences across the two states.

Conclusion And Discussion

The results suggest that the expansion of Medicaid under the Affordable Care Act played a small role in changing labor force participation behavior. Using the American Community Survey from years 2012 to 2016, this paper evaluated the relationship between Medicaid and labor force participation for individuals under 225 percent of the FPL through a difference-in-difference design. Comparing Minnesota and Wisconsin's border Public Use Microdata Areas (PUMAs) over this time period provided a sufficient treatment and control group. The control state is Wisconsin, whose governor chose not to expand its Medicaid program under the ACA's optional provision. The treatment group is Minnesota, which expanded its program at the beginning of 2014. This natural experiment produced a pre and post treatment period for Minnesota, utilizing the assumption that the two states are similar in composition, excluding the treatment. This paper found a 3.9 percent increase in labor force participation for those

living in Minnesota under 225 percent of the FPL in the period following the implementation of the ACA's Medicaid provision. A 4.5 percent increase in participation for Minnesotans livings between 100 and 225 percent of the FPL was found during this same post-expansion period as well. Both of these results are significant at the 95 percent confidence interval level.

Economic theory suggests that decisions about labor supply depend on both income and substitution effects. The theory behind this behavior can be viewed as traditional cost-benefit analysis: does working reward more than not working? The role of the Medicaid expansion can both encourage work, by allowing households to add additional income while receiving the same benefits or discouraging that additional income in order to qualify for the program. I propose, however, that these lenses do not capture the full picture. People work for numerous reasons, financial and personal, which can limit the extent that the theory applies. As a result, an evaluation of actual changes in behavior, as conducted by this paper, offers a different perspective to this paramount discussion.

As of December 2017, over 68 million Americans were enrolled in Medicaid. Since the passage of the ACA, this country has seen approximately 16.6 million people enroll in this program, providing insurance to the lowest-income individuals in our society, which is a 29 percent increase from 2013 ("December 2017 Medicaid and CHIP Enrollment Data Highlights" 2017). I took on this question in order to not only evaluate how this program impacts the common benchmark of success in this country— employment—but also explore a program that is vital to success and health of millions of Americans.

Republican attempts (that is attempts, plural) to cut the Medicaid program in 2017 were met with massive protests and opposition by countless groups. Our country saw disability rights' activists, the Association of American Medical Colleges, the AARP, hospitals, doctors, and more advocate strongly and effectively on behalf of Medicaid on our country (Pear & Kaplan 2017). When faced with the possibility of this program's destruction, those impacted by the decision, and beyond, rose up to demonstrate its paramount role in the lives of tens of millions of people. Facing the new possibility of adding work requirements to the program under the current Trump Administration, 44 percent of Americans believe that "the main reason for introducing work requirements to Medicaid is to cut spending on the program" (Scott 2018). Many Americans understand how supporting Medicaid recipients needs to remain a priority for our country. We cannot make these decisions in a vacuum—for example, evaluating the utility of Medicaid by solely calculating the contribution or reduction it makes to our labor force. Who does this program help? What does it mean to have insurance? Can you spend more time and energy focusing on your family, paying your rent, helping your kids stay healthy, knowing that the government has decided you deserve health insurance?

The results of this paper demonstrate there is a small, positive effect on labor force participation in a state that chose to expand following 2014. Therefore, this paper finds no evidence supporting the argument against Medicaid on the grounds that it has significant negative impacts on labor force. The lack of evidence that it lowers labor force participation rate, and rather maintains a positive effect, illustrates that policy makers and legislators cannot use this argument to oppose the program. The relationship between large policy changes, such as the Medicaid expansion, and the labor force is integral to understanding how policies play out over time and across the country. Providing Medicaid to low-income families should

be examined through numerous policy and moral lenses, in addition to economic lenses. Thus, denying healthcare to low-income families solely on the basis of economic implications implies that policies are implemented in a vacuum; the moral foundation for ensuring that struggling families receive appropriate coverage cannot be ignored, while also acknowledging the false foundation of the opposition to the program.

References

Angrist, Joshua D., and Jörn-Steffen Pischke. (2015).Mastering 'Metrics: the Path from Cause to Effect. Princeton University Press.

Baicker, K.; Finkelstein, A.; Song, J.; Taubman, S. (2013). The Impact of Medicaid on Labor Force Activity and Program Participation: Evidence from the Oregon Health Insurance Experiment.

Barnett, J., & Berchick, E. (2017). Health Insurance Coverage in the United States: 2016. Retrieved March 2, 2018, from https://www.census.gov/library/publications/2017/demo/p60-260.html

Bernstein, J., & Katch, H. (2018, January 11). Opinion | Trump's Medicaid Work Requirement Will Backfire. The New York Times. Retrieved from https://www.nytimes.com/2018/01/11/opinion/trumps-medicaid-backfire.html

December 2017 Medicaid and CHIP Enrollment Data Highlights. (n.d.). Retrieved March 2, 2018, from https://www.medicaid.gov/medicaid/program-information/medicaid-and-chip-enrollment-data/report-highlights/index.html

Frean, M., Gruber, J., & Sommers, B.D. (2016). Premium subsidies, the mandate, and Medicaid expansion: Coverage effects of the Affordable Care Act. National Bureau of Economic Research Working Paper No. 22213. Cambridge, MA: National Bureau of Economic Research.

Gates, A., & Rudowitz, R. (2014, February 25). Wisconsin's BadgerCare Program and the ACA. Retrieved March 2, 2018, from https://www.kff.org/medicaid/fact-sheet/wisconsins-badgercare-program-and-the-aca/

Goodnough, A. (2017, February 25). The Adults a Medicaid Work Requirement Would Leave Behind. The New York Times. Retrieved from https://www.nytimes.com/2017/02/25/health/medicaid-work-requirement.html

Gruber, J. (2010). Health Care Reform Is a "Three-Legged Stool." Retrieved from https://www.americanprogress.org/issues/healthcare/reports/2010/08/05/8226/health-care-reform-is-a-three-legged-stool/

Gruber, Johnathan. (2016). Public Finance and Public Policy. 5th Edition. New York: Worth Publishers. Harris, Edward; Mok, Shannon. 2015. "How CBO Estimates the Effects of the Affordable Care Act on the Labor Market." Congressional Budget Office Working Paper Series 2015. Hamersma Sarah, 2013. "The Effects of Medicaid Earnings Limits on Earnings Growth among Poor Workers," The B.E. Journal of Economic Analysis & Policy, De Gruyter, vol. 13(2), pages 887-919, August.

"How Will the Uninsured in Minnesota Fare Under the Affordable Care Act?" (Jan 2014), The Henry J. Kaiser Family Foundation, Retrieved from https://www.kff.org/health-reform/fact-sheet/state-profiles-uninsured-under-aca-minnesota/

Keele, L., & Titiunik, R. (2015). Geographic Boundaries as Regression Discontinuities. Political Analysis, 23(1), 127-155. doi:10.1093/pan/mpu014

Ku, Leighton & Brantley, Erin (2017) "Myths About the Medicaid Expansion and the 'Able-Bodied.'" Health Affairs. Retrieved from https://www.healthaffairs.org/do/10.1377/hblog20170306.059021/full/

"Medicaid Pocket Primer" (Jun 2017), The Henry J. Kaiser Family Foundation, Retrieved from https://www.kff.org/medicaid/fact-sheet/medicaid-pocket-primer/

The Ohio Department of Medicaid (2016). Group VIII Assessment. Retrieved from http://medicaid.
         ohio.gov/Portals/0/Resources/Reports/Annual/Group-VIII-Assessment.pdf=

Pear, R. (2009, December 24). Senate Passes Health Care Overhaul on Party-Line Vote. The New York
         Times. Retrieved from https://www.nytimes.com/2009/12/25/health/policy/25health.html

Pohl, Vincent. 2014. "Medicaid and the Labor Supply of Single Mothers: Implications for Health Care
         Reform." Upjohn Institute Working Paper 15-222. Kalamazoo, MI: W.E. Upjohn Institute for
         Employment Research. https://doi.org/10.17848/wp15-222

Schubel, J. (2017, November 10). Medicaid Criteria Changes Don't Ensure Waivers Will Further Program
         Objectives. Retrieved March 2, 2018, from https://www.cbpp.org/blog/medicaid-criteria-
         changes-dont-ensure-waivers-will-further-program-objectives

Scott, D. (2018, March 1). Poll: Medicaid is overwhelmingly popular, even as Trump looks to cut it.
         RetrievedMarch2,2018,fromhttps://www.vox.com/policy-and-politics/2018/3/1/17066578/
         medicaid-work-requirements-poll-kff

"Status of State Action on the Medicaid Expansion Decision" (Jan 2018), The Henry J. Kaiser Family
         Foundation, Retrieved from https://www.kff.org/health-reform/state-
         indicator/state-activity-around-expanding-medicaid-under-the-affordable-care-act/?currentTi
         meframe=0&sortModel=%7B%22colId%22:%22Location%22,%22sort%2
         2:%22asc%22%7D

US Census Bureau, C. H. S. American Community Survey - History - U.S. Census Bureau. Retrieved
         February 11, 2018, fromhttps://www.census.gov/history/www/programs/demographic/
         american_community_survey.html

Wind, Tomas. (2016). The Effect of Medicaid Expansion on Labor Force Participation of Childless Adults.
         A Thesis submitted to the Faculty of the Graduate School of Arts and Sciences of Georgetown
         University.

Determinants of Chinese Central Government Allocation of Environmental Expenditure to Chinese Provincial-Level Divisions

Matthew E. H. Bernstein

In an effort to address Chinese environmental concerns, Beijing allocated over ¥440 billion (2015) in Environmental Expenditure to various Chinese provincial-level divisions. This study will analyze factors that determine the quantity of environmental expenditure individual divisions receive from the Central Government. Factors analyzed include Per Capita Disposable Income per Division (PCDI), Internationality (Number of Overseas Visitor Arrivals), and Politburo Standing Committee and Minister of Ecology and Environment Personal Ties to Divisions. This study finds that PCDI is a clear determinant of environmental expenditure received, with wealthier divisions receiving more funding from the Central Government. Evidence also suggests that the more significant a division in determining Chinese world reputation (i.e. Beijing), the more environmental expenditure the division receives in order to improve Chinese international status. No such correlation or statistical significance is found with Personal Ties. Lastly, using evidence found in this study, relevant extensions of research are proposed to broaden the knowledge on subjects such as the extent of Personal Ties in Chinese resource allocation.

Introduction

China's monumental economic growth over the past three decades is in large part due to the colossal manufacturing industry that has blossomed through globalization. China's GDP per capita is now over twenty-five times the same value in 1990 (World Bank). Based on this statistic, life for the average Chinese has improved considerably in the past thirty years. While this massive development of wealth has indisputable welfare benefits, the associated drastic environmental and sustainability concerns are equally apparent. Day-to-day activities like schooling or commuting to work are disturbed due to thick smog. Water and land pollution from industrial manufacturing contaminants complicate finding drinkable water and habitable land. To lessen pollution output, entire industries are forced to close at times.

The Chinese government recognizes the severity of the country's environmental and health situation. General Secretary Xi Jinping and the Chinese government are attempting to balance economic growth, which involves pollution, and maintain certain environmental standards that promote Chinese quality of life. In an attempt to prevent and clean up some contaminants, the Central Government allocates a

significant portion of the General Public Expenditure budget for Expenditure for Environmental Protection to the Ministry of Ecology and Environment of the People's Republic of China (MEE), distributed across the various regions of China. The allocated funds boost individual regions because these regions rely on the resources for critical cleanup efforts. In provinces such as Guangdong, provincial environmental expenditure budgets can range upwards of thirty billion Chinese Renminbi and, in provinces such as Ningxia, provincial environmental expenditure budgets are under five billion Renminbi (China Statistical Yearbook 7-6). Thus, the main research question of this study and a particularly significant component of Chinese budgeting is: what underlying factors determine the quantity of environmental expenditure funds individual provincial-level divisions[1] receive from the Chinese Central Government and MEE?

This paper regards factors such as provincial wealth, internationality, and Politburo and MEE personal ties which will be explained in the following section. I will also detail the importance of controlling for population in all aspects of the study.

Literature Review, Methodlogy, and Hypotheses

Wen-Hsuan Tsai in her research paper, Enabling China's Voice to be Heard by the World, Ideas and Operations of the Chinese Communist Party's [CCP] External Propaganda System, describes the extensive efforts of Chinese gonggong waijiao (public diplomacy). The study details how under the leadership of Xi and Hu Jintao, the Chinese Central Government has been engaging in tremendous publicity efforts directed towards Western eyes in an effort to build the country's world reputation. The main purpose of building this international rapport is to "...form a broad united front in the international arena to strengthen the CCP in its competition with anti-China forces for ideological leadership." (Tsai). Anything that can establish or decrease Chinese soft-power and international reputations is significant to the CCP. I predict that a crucial component of these soft-power elements is international media scrutiny over environmentalism: recent news coverage such as that of Beijing, closing schools and industries to deal with engulfing smog This damages Chinese world perception and potential for international leadership. Extrapolating Tsai's conclusions, I hypothesize that the higher the "internationality" or significance of the region on a global scale, the more environmental expenditure it will receive from the Central Government to counteract potential reputation-harming factors. I operationalize internationality in this study by using the statistic Number of Overseas Visitor Arrivals per Region (NOVAR) as an independent variable.

Border regions are important to the Chinese Central Government because border regions are territorially vast, act as a buffer for any potential Chinese security issues, and are comprised of large ethnic populations. The border regionsare often far poorer and less developed than their eastern Chinese counterparts. In an effort to maintain its paramount goal of political stability, the Central Government has enacted preferential policies such as the ones Wang Tiezhi notes in his study, Preferential Policies for Ethnic Minority Students in China's College/University Admission: minorities and Han from border regions

---

1 The China Statistical Yearbook assigns "Region" as a general term with equal status to province-level administrative
        divisions. "Region" hereafter will refer to these divisions.

have lower cutoffs for university admissions. As Wang describes, "the policy of 'lowering the admission line' indeed ensures educational equality", leading to more equal opportunities for the border and poorer regions' ethnic minorities and Han people (Wang). Wang's arguments are part of the basis of my theory in this study. Just as Wang emphasizes the necessity for preferential educational policies, I hypothesize that this need can actually be further extrapolated to environmentalism. For the same objectives of maintaining political stability, I hypothesize that Beijing allocates more environmental expenditure to poorer regions in a preferential effort to placate the population over wealth inequality, and reduce any possibility of political instability. Thus, it may appear to these poorer regions that the Central Government is directing clear efforts to better the quality of life in local communities. In summary, I predict a negative relationship between wealth of a region and allocated environmental expenditure: in summary, the poorer the region, the more environmental expenditure allocated to it. In this study, I quantify poorer regions from wealthier ones by using the statistic Per Capita Disposable Income as an independent variable.

Lastly, Zeng Qingjie and Yang Yujeong's research paper, Informal Networks as Safety Nets: The Role of Personal Ties in China's Anti-corruption Campaign, offers unique insights into relationships with the Politburo Standing Committee. The study analyzes a pool of provincial government officials, and concludes that, "those tied to incumbent members of the Politburo Standing Committee were less likely to be investigated for corruption than those without such ties." (Zeng and Yang). While Zeng and Yang highlight the value of Standing Committee[2] personal ties to corruption investigations, I predict that Committee ties, and powerful relationships in China in general, are far more significant than protection from internal investigation. Rather, protection from corruption investigations is a visible "drop in the bucket" in comparison to dealings enabled by the opaque Chinese political economic institutions. I hypothesize that Zeng and Yang's argument extends to the allocation of environmental expenditure to individual regions: if a Politburo Standing Committee member, or Li Ganjie (Minister of the MEE) has a personal tie (defined by (a) holding a high-level position(s), or (b) birth-region) to a region, that region will disproportionately be allocated more environmental expenditure to reduce and clean-up contaminants than another region without any Standing Committee[2] personal ties. Notably, I am including Li Ganjie in the Personal Ties variable. As leader of the MEE, his unique relationships with individual regions can also be significant in funding allocation.

There are a plethora of additional factors instrumental in environmental expenditure budgetary allocation. The most significant alternative explanation to the three independent variables I will be testing is the populations of the regions. Population factors into nearly all Chinese Government considerations, including environmental expenditure allocation. Regions with a higher population, for example, could be allocated more expenditure simply because certain environmental conditions would therefore affect a higher number of people. This is directly relevant to the paramount Chinese concern of political instability. A situation with a clustered or highly populated region incensed over a uniting concern (such as environmental contaminants) has a high degree of instability associated with it, providing one explanation why highly populated regions might receive more funding than others. One method to take population into account is to transform the variables into a per Capita standing. However, when analyzing potential

---

2 Hereafter, Li Ganjie is included in all references to the Politburo Standing Committee.

regressions, it becomes mathematically clear that adding per Capita variables hinders the overall mobility and flexibility of the model. Rather, it is more accurate to add Population of Regions as an independent control variable, flexible on its own.

The effects of the independent variables of NOVAR, Per Capita Disposable Income, and Standing Committee Personal Ties, along with the control variable of Population per Region, on the dependent variable of Environmental Expenditure Allocation per Region, will be analyzed in a set of 6 regression models/boxplots. Models 1, 2, and 3, depicted in Figures 4, 5, and 6, will test the three individual independent variables on the dependent variable. These models will ensure that the three independent variables are statistically significant and the theory behind the variables is sound. Model 4 will involve the statistically significant independent variables and the effects on the dependent variable. And lastly, Models 5 and 6 will test the statistically significant independent variables with the population control variable on the dependent variable. I will then highlight the most accurate regression model and discuss the theory and significance behind the results.

Data

As outlined previously, my dependent variable, independent variables, and control variable are as followed, along with their sources of data:

1. Environmental Expenditure Allocation per Region (Chinese Renminbi): China Statistical Yearbook 2016, see section 7-6

2. Number of Overseas Visitor Arrivals by Region (# of people), China Statistical Yearbook 2016, see section 17-15

3. Per Capita Disposable Income per Region (Chinese Renminbi): China Statistical Yearbook 2016, see section 6-17

4. Politburo Standing Committee Personal Ties (Binary; yes=1 , no=0): Xi Jinping's top team: China's new Politburo Standing Committee, Financial Times and Li Ganjie Personal Profile by MEE

5. Population per Region (# of people), China Statistical Yearbook 2016, see section 2-6

Notably, four of the five data sets are obtained from the China Statistical Yearbook 2016. The Federal Reserve Bank of St. Louis in the United States has referred to Chinese economic statistics as, "unreliable" (Owyang and Shell). While this may initially be disconcerting, many of the individual points of the data sets do not need to be perfectly precise for the study to obtain accurate results (although it would undoubtedly be preferred). The data in this study is concerned more with the relativity between regions' economic data, rather than the precision of individual data points. In this sense, despite some individual data points' inaccuracy, the overall trend of economic statistics among the data sets should be relatively unscathed as inaccuracy should generally affect an entire data set. Of course, though, one must take this

into account in terms of margin of error of analysis.

Figure 2 depicts the distribution of NOVAR values. Due to the large right hand skew of the distribution, I transformed the variable into the Log of Number of Overseas Visitor Arrivals by Region (LogNOVAR), as shown in Figure 3. This shows a closer resemblance to a normal distribution, but still remains somewhat skewed. All other variables had some degree of skewness to their distribution, yet they were all normally distributed enough not to warrant a logarithmic transformation. Their histograms can be found in the Appendix as Figures A, B, and C.

Figure 1: Descriptive Statistics Summary Table, 2015 Data

	Minimum	Maximum	Mean	S.D.
Environmental Expenditure (¥)	3,540,000,000	32,233,000,000	14,201,548,387	7,601,187,196
LogNOVAR (log # of people)	9.820106	15.87421	13.68834	1.448142
PCDI (¥)	23,767.1	52,961.9	29,900.27	7,563.35
Personal Ties (Binary)	0	1	.5161	.5080
Population (# of people)	3,240,000	108,490,000	44,221,935	28,172,323

Figure 2: Histogram of Number of Overseas Visitor Arrivals by Region

FALL 2018
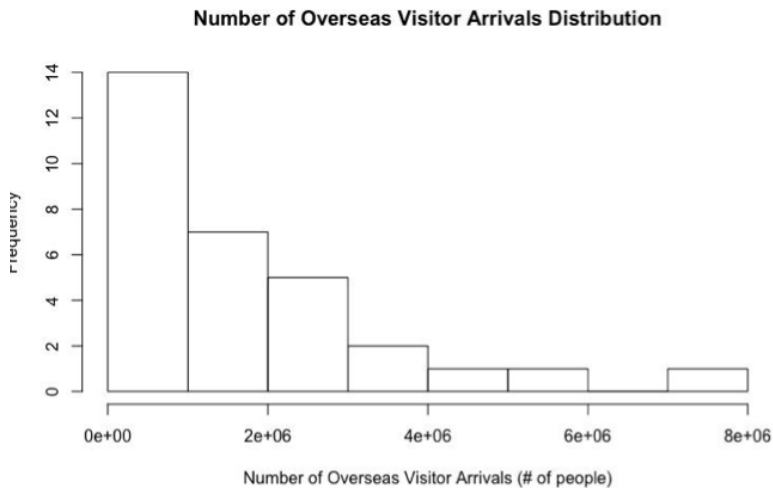
Figure 3: Histogram of Log(Number of Overseas Visitor Arrivals by Region)
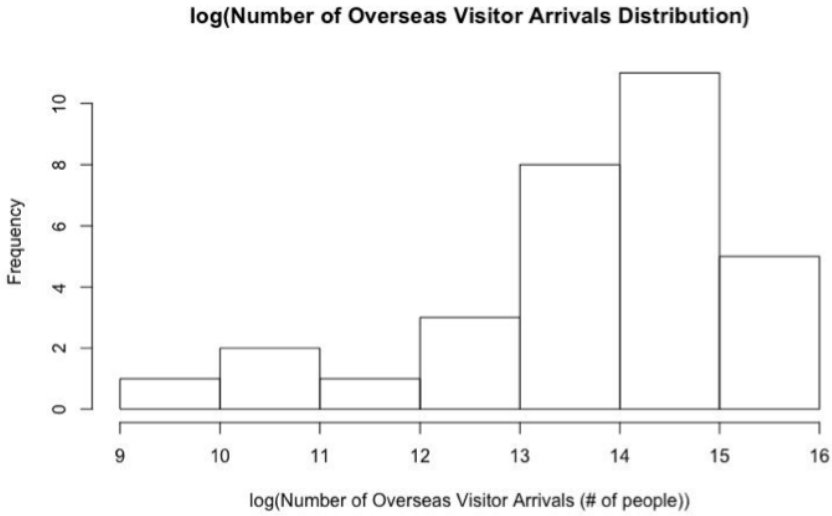
Analysis

Figure 4: Linear Regression of Environmental Expenditure per Region vs. PCDI per Region
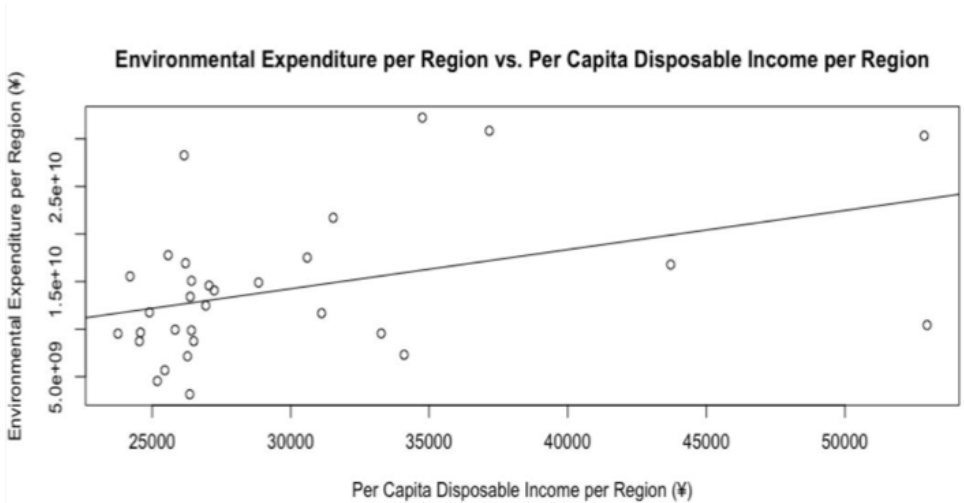
Figure 5: Environmental Expenditure vs. LogNOVAR

Environmental Expenditure per Region vs. Log(Number of Overseas Visitor Arrivals per Region

Figure 6: Boxplot of Environmental Expenditure per Region vs. Personal Ties of Politburo Standing Committee and Li Ganjie
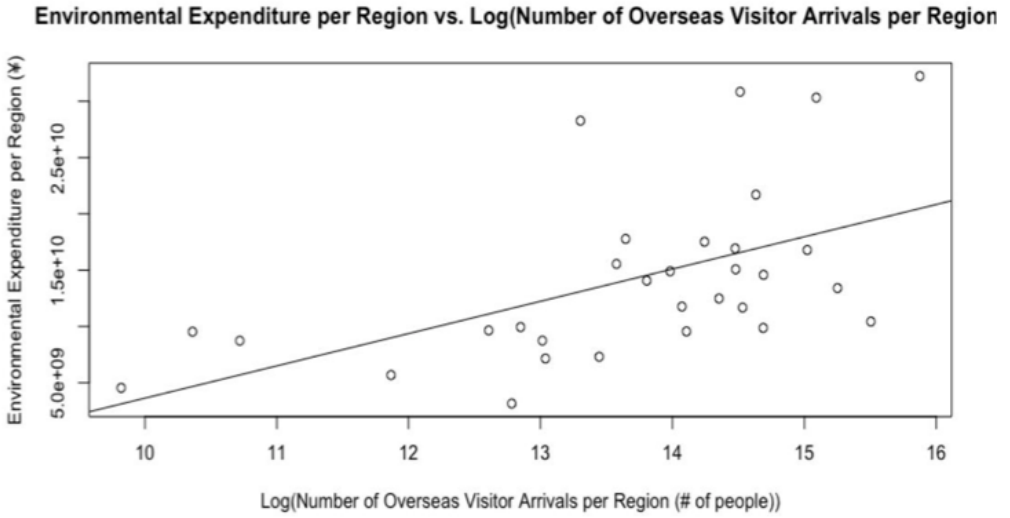
Environmental Expenditure per Region vs. Personal Ties of Politburo Standing Committee and Li Ganjie
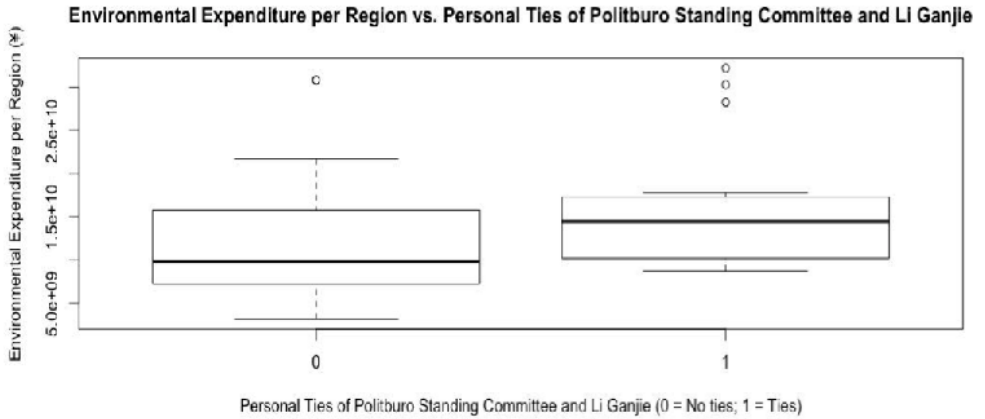
Figure 7: Summary Table of Linear Regression of Environmental Expenditure Allocation, by region-level unit; 2015 data

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
PCDI Coefficient	4.110e05 ** (.0223)	N/A	N/A	1.700e05 ‾ .3637	3.906e05 *** (.00257)	N/A
LogNOVAR Coefficient	N/A	2.866e09 *** (.00149)	N/A	2.400e09 ** (.0187)	N/A	1.320e09 ‾ (.12150)
Personal Ties Coefficient	N/A	N/A	3.908e09 ‾ (.156)	N/A	N/A	N/A
Population Coefficient	N/A	N/A	N/A	N/A	1.806e02 *** (4.1e-06)	1.471e02 *** (.00174)
Y-Intercept	1.912e09	-2.503e10	1.218e10	-2.373e10	-5.461e09	-1.037e10
Adjusted R^2	.1385	.2739	.0361	.2702	.5871	.4734
N-terms	31	31	31	31	31	31

P-Values: *** , $P < .01$; ** , $P < .05$; * , $P \leq .10$; ___ , $P > .10$ (Values Displayed in parenthesis)

I will outline the results in the step-by-step procedure by which I conducted the regression analysis. Figures 4 and 5 show the scatterplots of the PCDI and LogNOVAR variables versus Environmental Expenditure by Region, respectively, along with their regression lines. Model 1, shown in Figure 4, is the regression of Per Capita Disposable Income (PCDI). As seen in Figure 7, the coefficient of the term was 4.110E05, and the P-value was .0223. A coefficient of 4.110E05 signifies that for every one Per Capita Disposable Income unit increase, the Environmental Expenditure of the individual region is estimated to increase by ¥411,000; in summary, this denotes a positive correlation between PCDI by Region and Environmental Expenditure by Region. Equally important to the correlation and coefficient data is the P-value. Model 1's low P-value of .0223 shows that PCDI by Region as a variable is very statistically significant in predicting Environmental Expenditure by Region. With over 95% confidence, we can affirm the positive relationship between PCDI by Region and Environmental Expenditure by Region.

In a similar procedure, Models 2 and 3 depict the relationships between LogNOVAR and the dependent variable, and Personal Ties and the dependent variable, respectively. Figure 5 denotes the

scatterplot and regression line of Model 2, resembling another positive correlation. For every increase in one LogNOVAR (log(population)), Environmental Expenditure per Region increased by ¥2,866,000,000. The Model 2 P-value was a mere .00149, denoting extreme statistical significance and predictor power. Model 3, however, did not produce the same results as Models 1 and 2. As seen in Figure 6 and noted in Figure D of the Appendix, Model 3 is a binary predictor, with regions holding Personal Ties marked with a "1," and without as a "0." The coefficient of 3.908E09 listed in Figure 7 therefore denotes a unique relationship to a categorical term. It signifies that a region containing a Personal Tie relationship is predicted to receive ¥3.908E09 more than a region without a Personal Tie relationship. However, Figure 7 also denotes a high P-value of .156. Thus, I cannot confirm with 95% confidence that this independent variable has a definite relationship with the dependent variable. In some circumstances, a P-value of .156 is worthy of consideration for future regressions, but given two very statistically significant independent variables, and in search of the most accurate regression model given my selected independent variables, I ruled out Personal Ties from all remaining regression models in the study.

After concluding bivariate regression analysis, the study moves forward by analyzing the relationships between the two statistically significant variables and the dependent variable: Model 4 involves the independent variables of PCDI by Region and LogNOVAR, and Environmental Expenditure by Region. Surprisingly, running this regression model I found that while the P-value of LogNOVAR remains low at .0187, the P-value of PCDI by Region jumped to .3637, signifying that the variable is definitively not statistically significant to 95% confidence. Situations like this where a variable is statistically significant on its own and not in a multivariate model suggests statistical multicollinearity. The independent variables of PCDI by Region and LogNOVAR show a degree of redundancy as each predicts much of the same change in the dependent variable. Thus, the two independent variables have too strong of a relationship themselves to be involved together in a regression model. This can be easily seen by comparing the Adjusted 2 values from Models 2 and 4. Adjusted 2 values depict the proportion of data points that can be explained by the independent variables (differs from 2 by factoring out insignificant variables). By itself, LogNOVAR has an Adjusted 2 value of .2739. Comparably, Model 4 with two independently statistically significant variables has an Adjusted 2 of .2702. There are obvious predictive flaws with Model 4.

Proceeding on with the knowledge that the two independent variables cannot be involved in the same model, the study now introduces Population by Region as an important control variable. Model 5 consists of PCDI by Region and Population by Region on the dependent variable, and Model 6 of LogNOVAR and Population by Region on the dependent variable. As seen in Figure 7, Model 6 depicts the multicollinearity between the LogNOVAR and Population by Region, with LogNOVAR becoming statistically insignificant; moreover, the Adjusted 2 value is .4734: an increase, but still not necessarily an optimally large value.

Model 5, however, in all aspects, is the study's most predictive model of Environmental Expenditure Allocation by Region. As seen in Figure 7, both variables, PCDI by Region and Population by Region, are highly statistically significant to over 95% confidence with P-values of .00257 and .0000041, respectively. In addition, the Adjusted 2 value of Model 5 is far larger than Model 6's at .5871, depicting that Model 5's variables account for more of the variation in data points than Model 6. Furthermore,

the variable coefficient of PCDI by Region in Model 5 is 390,600. Thus, for every one unit increase of PCDI by Region, Model 5 predicts a ¥390,600 increase in Environmental Expenditure allocated to that specific region. Similarly, the coefficient of the Population by Region variable of 180.6 signifies that for every additional person registered as living in a region, that region receives ¥180.6 more Environmental Expenditure budget allocation. Again, the positive coefficients of both variables denote positive correlations to the dependent variable. Model 5 is able to partially explain why a province like Guangdong, with a very high PCDI value and the highest population in China, would also receive the highest amount of Environmental Expenditure of any Region in the country. I will now discuss the implications of Model 5 on my initial hypotheses.

Discussion

2 of my initial 3 hypotheses were incorrect. I will outline them in order, and pose alternate reasoning to why some evidence disproved my initial thoughts.

Extrapolating off prior research regarding the importance of Chinese world status and leadership, I hypothesized that the importance of world status manifests itself in Chinese environmentalism issues. I predicted that regions with more international importance, such as Shanghai, would receive more environmental expenditure than those less known and less travelled by foreigners. My hypothesis happened to be spot on. The variable LogNOVAR independently was extremely statistically significant with a positive correlation to the dependent variable. Thus, the more Overseas Visitor Arrivals to a region (operational variable for internationality), the more Environmental Expenditure that region was allocated to that region.

My second hypothesis requires a deeper level of theoretical thought. Based on previous research denoting Chinese efforts to give preferential treatment to poorer regions' populations through education to maintain political stability, I hypothesized that disproportionately more environmental expenditure would be allocated to these regions for the same reasons. Upon reviewing the data trends, I can see that my hypothesis was definitely incorrect. While the variable was statistically significant, the data depicted a positive correlation—that is, when PCDI increased, so did the Environmental Expenditure allocated to the region. I, however, predicted that the poorer the region (lower the PCDI), the more Environmental Expenditure allocated—a negative correlation. While looking at data resembling the low allocation regions like Ningxia and Gansu receive, I discovered a different theoretical framework of which to analyze the relationship of PCDI and allocated Environmental Expenditure: the importance of wealth. Wherever wealth exists, including socialist China, it denotes power. Wealthy provinces, like Shanghai and Guangdong, and their concerns, must hold far more influence in Beijing than, say, Guizhou. After analyzing the PCDI data, I strongly believe that there is such a positive correlation between PCDI and Environmental Expenditure because wealthy provinces have the ability to sway the Central Government into allocating more environmental funds to certain places, and thus, systematically improve the quality of life of inhabitants in the wealthy regions.

Lastly, my third hypothesis was also somewhat inaccurate. The Personal Ties variable

independently had a P-value of .156, and thus, was not statistically significant to 95% confidence. There were, however, some merits to extrapolate from the Personal Ties variable. There was, as predicted, a positive trend between Personal Ties and Environmental Expenditure allocation among the regions. Moreover, after reviewing the Personal Ties data trends, I strongly believe that a larger, more in-depth study related to Personal Ties to high-level provincial officials, rather than to locations of birthplace or positions held, on Chinese expenditure allocation as a whole would produce fascinating results. The evidence and prior studies suggest that there does seem to be some sort of relationship between the Politburo Standing Committee and regions with Personal Ties, and I personally believe it spans well beyond provincial officials' protection from corruption investigations.

Conclusion

Initially, I argued that the poorer a region, the more international significance a region holds, and the presence of Politburo and MEE Personal Ties to a region, the more Environmental Expenditure that Region would be allocated by the Central Government. My arguments had both validities and shortcomings. As discussed in the prior section, 2 of my 3 hypotheses were at some point incorrect. Yet, we can extrapolate from many of the validities of the study to draw conclusions on the Chinese Central Government's way of thought.

Firstly, it is readily apparent that Beijing cares about its outward image—this is not a new phenomenon. In 1989, Beijing felt intense international backlash stemming from the Tiananmen Massacre. In a similar manner, China recognizes the detriments of visibly poor environmentalism, and has taken initiative to improve this concern. Notably, China has signed onto the Paris Agreement, while the United States is conspicuously absent. Environmentalism is an open door without American contention for world leadership. China must first correct its own environmental image, and then strive for world leadership in this realm.

Finally, as I outlined earlier, the relationship between Politburo Personal Ties and environmental expenditure was not statistically significant in this study given the confidence level parameters I imposed. However, I am certain that given the uniqueness of the Chinese political economic model, there is more than meets the eye to resource allocation by the Standing Committee. Zeng and Yang's research scratches the surface of Personal Tie involvement to lower officials and preferential treatment. Again, I strongly support a specific study analyzing Politburo and high-level MEE individual relationships to lower officials on allocation of resources, rather than using Standing Committee-specific information (such as birth-place) as a variable. Overall, though, the lack of transparency in the Chinese political system makes research difficult at times, especially in regards to unquantifiable personal ties from official to official.

As a final note, my theory on PCDI was definitely incorrect. The evidence gathered strongly suggests that the Chinese Central Government allocates more environmental funds to wealthier regions in China, and not to poorer regions for the sake of political stability.

However, branching off of this resulting theory, it is interesting to consider the extent of which PCDI-Environmental Expenditure positive correlation holds. Instability such as wealth inequality-driven

political unrest could force the Central Government's hand to act in the short-term differently from long-term plans, and possibly test the PCDI-Environmental Expenditure positive relationship. Overall, while this study answered numerous questions, it also posed just as many new and relevant studies to consider for the future.

Annotated Bibliography

"China Statistical Yearbook 2016." National Bureau of Statistics of China, China Statistics Press,

www.stats.gov.cn/tjsj/ndsj/2016/indexeh.htm.

—The China Statistical Yearbook is an annual publication provided by the China Statistics Press based on statistics compiled by the National Bureau of Statistics of China. It offers a wide range of government-provided data to the public.

I used the China Statistical Yearbook for statistics on four of my variables. The raw data of Environmental Expenditure by Region, PCDI by Region, Number of Overseas Visitors, and Population by Region are all found in the China Statistical Yearbook 2016. I was able to further analyze this raw data and produce the results listed in this study.

"Li Ganjie." Ministry of Ecology and Environment The People's Republic of China, english.sepa.gov.cn/About_SEPA/leaders_of_mep/liganjie/.

—This is a profile of the Minister of Ecology and Environment of the PRC, Li Ganjie. It details his birthplace, along with various positions he has held throughout his career.

I used this source in addition to the Financial Times article to compile my data for the Personal Ties variable as it includes the Politburo Standing Committee and Li Ganjie.

Owyang, Michael T., and Hannah Shell. "China's Official Economic Data: Is It Accurate? | St. Louis Fed." Federal Reserve Bank of St. Louis, Federal Reserve Bank of St. Louis, 21 Aug. 2017, www.stlouisfed.org/publications/regional-economist/second-quarter-2017/chinas-economic-data-an-accurate-reflection-or-just-smoke-and-mirrors.

—Owyang and Shell's St. Louis Federal Reserve Bank article depicts the accuracy of Chinese statistics. The two authors note the obvious flaws and discrepancies in data for a variety of reasons. They also pose alternatives for accurate data.

I use Owyang and Shell's article in my study to highlight the potential unreliability of the China Statistical Yearbook, and its potential implications on the study's conclusions.

Tiezhi, Wang. "Preferential Policies for Ethnic Minority Students in China's College/University Admission." Asian Ethnicity, vol. 8, no. 2, 2007, pp. 149–163,. doi:10.1080/14631360701406288.

—In his journal article, Wang Tiezhi describes the importance behind preferential policies for ethnic minority students, and Han people, from poorer regions of China. These policies are intended to give equal opportunity to the people of poorer, and often Western or in-land Chinese areas.

Wang's article served as a point of literature review in my study. I detailed his findings, and created a hypothesis using his results as a background theory. My hypothesis, albeit incorrect, was based off of Wang's arguments.

Tsai, Wen-Hsuan. "Enabling China's Voice to Be Heard by the World: Ideas
        and Operations of the Chinese Communist Party's External Propaganda System." Problems of
        Post-Communism, vol. 64, no. 3-4, 2016, pp. 203–213., doi:10.1080/10758216.2016.1236667.

        —In her journal article, Tsai describes the issues of importance behind Chinese world
        recognition and reputation. She notes how the Chinese government is striving to make friends
        internationally using soft-power on a long-play to shift world leadership to Beijing.

        I use Tsai's study in the form of literature review, and I build upon her theory in forming my
        hypothesis regarding internationality of Regions and Environmental Expenditure. As she says,
        outward appearance of China matters to its international leadership, and conflicts such as the
        3-14 Tibet Riots hurt its reputation. Comparably, I hypothesize that environmental concerns
        also harm Chinese reputation, especially in highly international locations.

"Xi Jinping's Top Team: China's New Politburo Standing Committee." Financial Times, Financial
        Times, 25 Oct. 2017, www.ft.com/content/b5441a6a-b7d1-11e7-8c12-5661783e5589.

        —This Financial Times article describes many important aspects of the Politburo Standing
        Committee, such as members' birth-place, education, and important positions held.

        I used this source for my categorical Personal Ties variable. The details regarding the
        Committee allowed me to compile a binary list of regions with Personal Ties, and those without.

Zeng, Qingjie & Yang, Yujeong. "Informal Networks as Safety Nets: The Role of
        Personal Ties in China's Anti-corruption Campaign." China: An International Journal, vol. 15
        no. 3, 2017, pp. 26-57. Project MUSE, muse.jhu.edu/article/668693.

        —Zeng and Yang describe the recent corruption crackdown under Xi Jinping. Zeng and Yang,
        however, conclude that provincial-level officials with connections to the Standing Committee
        were less likely to be investigated for anything corruption related.

        I use Zeng and Yang's study as a basis of theory for my third hypothesis regarding Politburo
        Personal Ties. Essentially, Zeng and Yang find that these officials are given a preferential
        safety net. I hypothesized off this basis that preferential treatment from the Politburo extends
        past protection of officials to disproportionate allocation of funding from Beijing (looking
        specifically at environmental expenditure allocation).

"GDP per Capita (Current US$) China." GDP Growth (Annual %) | Data, data.worldbank.org/
        indicator/NY.GDP.PCAP.CD?locations=CN.

        —This source is purely for GDP data. I compared Chinese GDP from 1990 to today to
        juxtapose the difference in living conditions between the two time periods.

Appendix

Figure A: Histogram of Politburo Standing Committee Personal Ties Distribution
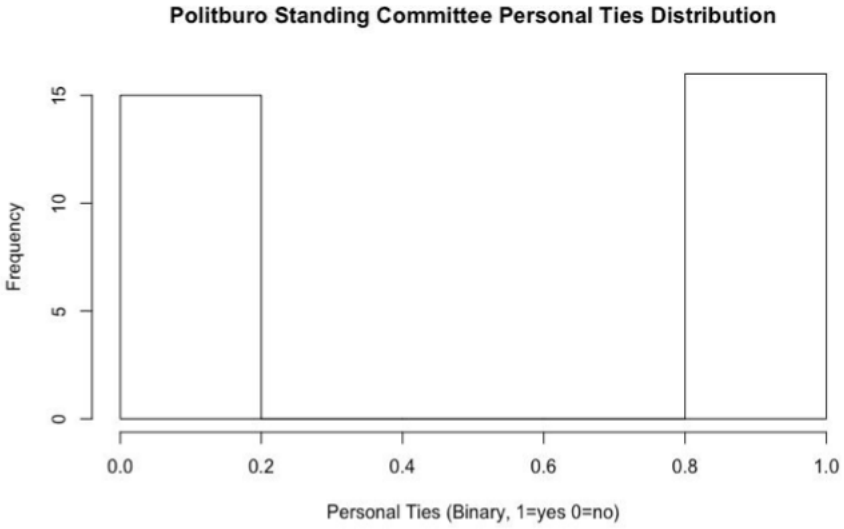

Figure B: Histogram of Per Capita Disposable Income Distribution per Region

Figure C: Histogram of Environmental Expenditure Allocation per Region
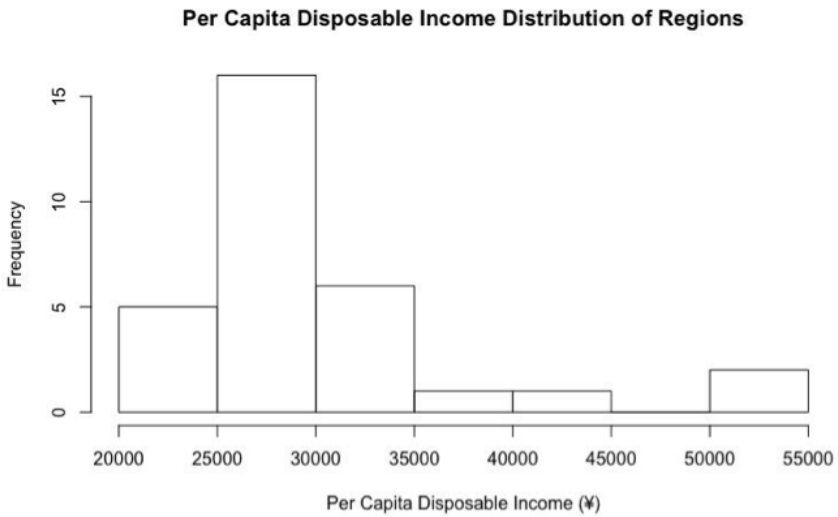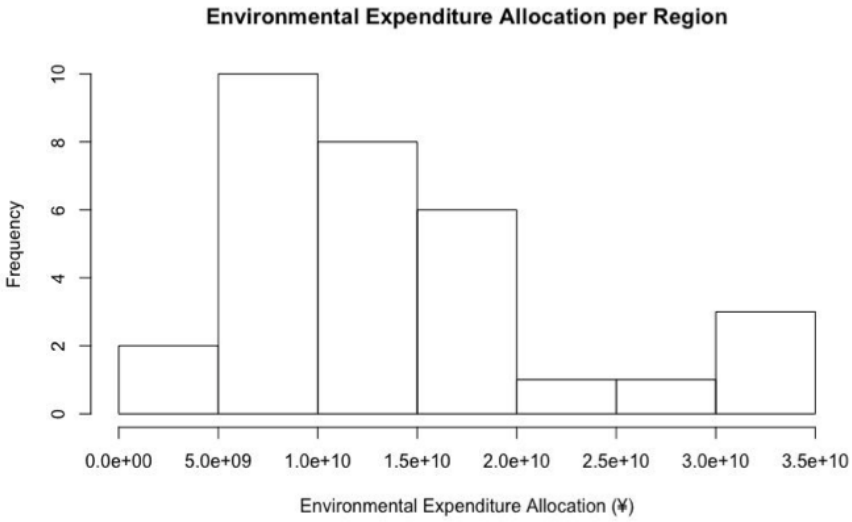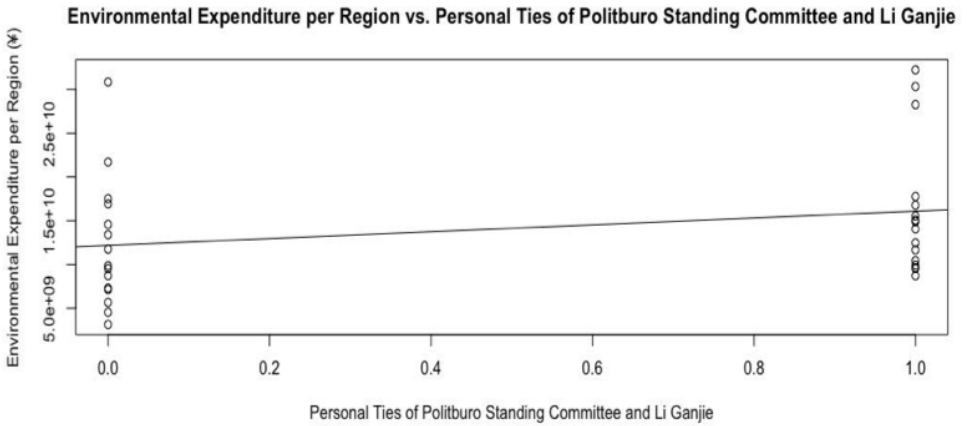
Environmental Expenditure Allocation per Region

Figure D: Scatterplot Regression of Personal Ties vs. Environmental Expenditure

Environmental Expenditure per Region vs. Personal Ties of Politburo Standing Committee and Li Ganjie

LOCAL TRANSPORTATION SALES TAXES: OPPORTUNITIES FOR TRANSIT EQUITY IN LOS ANGELES AND ATLANTA

JESSICA SAAB

This research seeks to analyze the equity of a recent trend in transportation funding: voter-approved local transportation sales taxes (LTSTs) with a dedicated transit component. As transportation agencies struggle to find permanent and lucrative funding sources, the LTST has emerged as a politically expedient and publicly popular funding method, capable of great returns at a marginal increase. However, for the tax increases to be approved, transit agencies must tweak their priorities to convince voters, transit riders and car drivers alike, and the changes made can have long-term effects on equitable access to transportation. This research involves two case studies of recent large-scale transit development plans funded by LTSTs in two American cities that have had historically distinct responses to previous transit development efforts: Atlanta, Georgia, and Los Angeles, California. Through analysis of the measures, the routes and systems proposed, and the response from the public, the transportation agencies' strategies are assessed, and recommendations are made for how LTST plans can be made more equitable.

Introduction

Many cities across the United States are enjoying urban revitalization in the form of economic and population gains. As they develop and spread over their regions, concerns about increasing traffic congestion and a lack of urban public transit have arisen. Some local governments have responded by proposing to build transit systems through locally sourced taxes, such as the sales or property tax, to address traffic and ensure future economic and equitable growth patterns. The power to levy taxes with public approval for a specific purpose like transportation is a relatively new tool for fiscal relief that 38 state governments have devolved to the county and local level since the 1960s and '70s.[1] This ability has created profound changes in transportation financing, and increasingly, local governments are favoring transportation-specific sales taxes for their broad base, exponential returns, and political expedience. While these voter-approved sales taxes seem like a fair and sensible way to determine public priorities, the political

---

1 Shon, "State-local sales tax, spillover, and economic activity," 430.

process required for their approval subjects transportation agencies to political volatility, unreliable funding, and most importantly, the priorities of non-riders. Public transit's users are often low-income minorities who do not or cannot drive,[2] and who rely on transit for mobility and connectivity. If transit funding relies on the majority of non-riders' approval, transportation agencies must win support by pushing projects non-riders find attractive and perceive benefits from, which can cause a costly shift in strategy. Sales taxes do not incentivize transit adoption, and are regressive and burdensome on those of least-income.[3] While these sales tax measures provide public insight and increase accountability, to what extent do they change agency priorities and affect equitable distribution of transit for those who actually rely on it?

While plenty of research has focused on why counties seek sales tax measures,[4] what effect the regressive tax has on the public,[5] or what factors denote success or failure,[6] few have evaluated how local transportation tax measures change agency priorities and affect transportation access for those reliant on transit. This thesis investigates how two transportation agencies in the U.S. prioritized transit projects to win regional and county support for local transportation sales tax (LTST) measures, and what effects these changes then produced for the transit-riding urban dwellers that financed them. By understanding the historic effects of transportation development on urban residents' equitable access to opportunity, LTST financing can be better employed as a tool to increase effectiveness of transit projects and redress the regressive nature of the sales tax, to the end of ensuring more transit returns on ridership and increased access to opportunities and services for transit-riding urban dwellers. I find that LTST measures can both enhance and diminish equitable access for transit riders, because while they force transportation agencies to internalize the non-riding public's political whims and preferences, they can lead to more accountability, which rectify skewed priorities and grant more resources to existing transit riders.

While the available literature explains many aspects of these measures, the following unanswered questions motivated my research: How does the need for majority approval in LTST measures change transit project prioritization? What effects do long-term reliance on sales tax produce on those who ride transit? How do these measures enhance or diminish transportation equity, or the distribution of access to opportunity for the most disadvantaged? By conducting a thorough review of two case cities' LTST measures, their accompanying campaigns, local concerns, and realized projects, I assessed how equity has been enhanced or diminished by the LTST process.

The case cities are Los Angeles, California, and Atlanta, Georgia; two metropolises on opposite coasts of the U.S. that are similar in constituency and history, but different in their LTST approach and acceptance. Both are typified by suburban sprawl, traffic congestion, and auto dependency. Both have inner city majorities of people of color with surrounding suburbs of majority-white commuters, and regional disparities in health, wealth, and economic status. And both have proposed contentious LTST plans that

---

2 Taylor and Morris "Public Transportation Objectives and Rider Demographics," 351.

3 Ibid.; Pucher and Hirschman, "Distribution of the Transit Tax Burden."

4 Green, "County Governments and Democratic Decision Making."

5 Pucher and Hirschman, "Distribution of the Transit Tax Burden."

6 Haas and Estrada, "Revisiting Factors;" Manville and Cummins, "Why do voters support public transportation?"

caused much public and political debate.

LA County has had four LTSTs approved by voters. To pass last two, the transportation agency needed to secure a supermajority, or two-thirds voter approval, due to California law. The most recent measure extended the share of sales tax indefinitely, reversible only by voter referendum. LA's agency has focused on building a region-wide rail system since its first LTST despite the exorbitant costs and the county's decentralized low-density layout. Throughout the early years of rail building, LA's bus network was given lesser priority, until a civil rights lawsuit rectified the fiscal imbalance and forced subsequent LTST plans to be more diversified and engaging of the public. Despite the regional investment, driving is still the dominant way people move, though this is subject to change as time passes and more rail and bus lines are implemented. LA's transportation agency's use of LTSTs made it pursue an inequitable rail-centric strategy that favored outer commuters and other non-riders, until it was forced to change its priorities by bus advocates to secure more funding. Equitable transit access to low-income communities has thus been enhanced due to organized opposition.

In contrast to LA, whose county encompasses 88 different cities, metropolitan Atlanta is composed of multiple counties with the City of Atlanta at its core. Its transit agency's LTSTs are voted on in each county of the metropolitan area, and most have been defeated. Only three central counties contribute to Atlanta's transit development through LTSTs, some of which will end in 2021, and some in 2057. The agency began by building a sparse rail network of four lines, and though more were envisioned, operational deficits caused fare raises and service cuts to the area's comprehensive bus network, which caused community advocates to call for an end to the rail campaign. The agency has tried to pass LTSTs in surrounding suburban counties to increase the scope and potential of the system, but they have all failed. These failures have limited transit development to the inner city, which has enhanced equity for the paying residents because the agency's plans were truncated and adapted to inner city concerns, leading to investments in buses, pedestrian improvements, and bike trails. However, equitable transit access across the metropolitan area is fragmented and the LTST process in Atlanta has not been able to bridge the gap for residents who travel in or out of the city for work, to the general detriment of the region.

Access to reliable transit is important for urban quality of life, and its financing is a complex intergovernmental process that is now subject to more public and political influence when done through local option tax ballots. Researchers like Taylor and Morris have found that these referenda lead to general goal obfuscation and political influence,[7] which can diminish benefits for transit dependent populations who rely on the services in flux. Policymakers often comment on the importance of equity in public transit. For example, Kramer and Goldstein attest that having access to fast, reliable, and frequent public transit is "crucial for equity and social cohesion," by diversifying the mobility options for people within urban areas, and by "connecting at-risk, vulnerable, and disadvantaged communities to jobs, social services, and health care facilities, which can improve people's lives."[8] However, the goal of equitable access has not been the driving goal of most transit systems. Instead, the goal for transit since the latter half of the twentieth

---

7 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 348.

8 Kramer and Goldstein, "Meeting the Public's Need for Transit Options," 25-26.

century has been to diversify transportation options with the aim of reducing general traffic congestion, serving both those who do and do not drive.[9] Increasing equitable access to jobs and services for those of least-income is a secondary goal to be accomplished in tandem.[10] The former goal shapes transit to serve the suburban commuter with access to a city's central business district (CBD) to reduce commutes by car, instead of creating a comprehensive network that serves all inner and outer city residents with access to every job center. Many transit systems have been designed to attract middle- and high-income commuters despite their general aversion to taking transit.[11] The goal of transportation equity, however, is becoming increasingly important to residents voting in local tax referenda to fund transit. As a public good now contingent on public approval, residents can exercise more power over transportation agencies to design projects that reach into areas with the most need.

Designing transit to serve transit riders first and driving commuters second can capture the highest amount of regular ridership, which leads to greater returns in revenue and to some reduction in traffic congestion. Increasing patronage is often a measure of success for transportation systems as steady revenue is essential to their operation and expansion, and indicative of more use and improved perception. Successfully fulfilling transportation needs can create equitable and sustainable cities with better future economic prospects.

The thesis is organized as follows. The first chapter reviews public transit, its role in the U.S., the historic effects of transportation on equity, and outlines previous research on sales tax, voter preferences, and policy outcomes. The second chapter explains the methodology of the case studies. The third chapter introduces LA, its transportation authority, its LTST measures, and the issues surrounding its transportation development. The fourth chapter introduces Atlanta, its transportation authority, its LTST measures, and the issues surrounding its transportation development. The fifth chapter compares the two cities, their transit, their riders' preferences and struggles, and the funding mechanisms they use. The final chapter summarizes research findings and addresses policy implications.

Chapter I: Transit Funding and Equity

"We are a nation of travelers. You cannot write our history without devoting many chapters to the pony express, the stagecoach, the railroad, the automobile, the airplane... Yet, until 1964, the Federal Government did little or nothing to help the urban commuter."

— President Lyndon B. Johnson, at the signing of the Urban Mass Transportation Act of 1964[12]

This chapter reviews the available transportation and transit literature about U.S. transportation, and its development, funding, equity, and LTST measures, followed by an overview of how equitable access across urban areas has been affected by the planning and financing of transportation since the

---

9 Verbit, "The Urban Transportation Problem," 402.

10 Ibid., 422.

11 Ibid., 421.

12 Federal Transportation Authority, "A Brief History of Mass Transit."

1960s. Prior research is outlined to situate the two case studies conducted of Los Angeles and Atlanta.

Overview of American Public Transit

Public transit systems are large-scale networks of interconnected transportation routes through cities and counties (herein used interchangeably). Buses, trains, or some combination of modes typically provide service. There are multiple types of rail (commuter, light, mono, heavy), bus (bus rapid transit (BRT), commuter, cable car, jitney), and other transit modes like tramway, ferry, and demand-responsive transport by vehicle (paratransit, rideshare). All produce a variety of social, economic, and environmental benefits, though they can also cause negative externalities, such as noise and air pollution. Their fares are typically low in cost; in 2014, the national average cost for an unlinked transit ride was $1.44.[13] Designed to serve many customers at once, the cheap fare serves as an incentive for ridership, while enhancing equity.[14] The benefits of transit multiply as more users adopt them, which makes continuous ridership an overarching goal for transit systems.

Access to transportation is categorized as a primary social good, similar to education and health care, and thus an important indicator of quality of life, especially for minority and marginalized groups living in poverty.[15]   Kramer and Goldstein, "Meeting the Public's Need for Transit Options," 25. The "transit dependent" are urban dwellers that do not drive either by choice, or "because of low-income (the inability to afford the purchase or maintenance of a car or cars for one's family), age (either too young or old to drive), or disability."[16] A substantial percentage of transit riders are less wealthy than car owners; in 2009, bus riders across the U.S. had a median household income of $22,500, which was "$40,000 less than that of private vehicle travelers."[17] Research has shown that economic and racial disparities exist across transit modes as well; in the United Kingdom, bus riders have gotten poorer over time, whereas rail riders have become wealthier.[18] In the U.S., there are "significant differences in income and race/ethnicity by mode, with poor and minority riders traveling on buses in much greater proportions than whites."[19] Provision of public transit is linked positively to equity for the transit dependent, and transit service providers often offer discounted fares to students, the elderly, and the disabled to increase access and affordability. However, these fares do not address the racial disparities across transit modes.

Recent transit plans tend to favor wealthier suburban populations to curb traffic congestion instead of improving access for the less wealthy transit dependent. This pattern has persisted historically. Before public transit was the transportation mode of the transit dependent, it was a private enterprise focused on cutting costs, maximizing profits, and serving an upper-class clientele.[20] A cost benefit analysis

---

13 Neff and Dickens, 2016 Public Transportation Fact Book, 9.

14 Kramer and Goldstein, "Meeting the Public's Need for Transit Options," 25.

15 Lucas, van Wee, and Maat, "A Method to Evaluate Equitable Accessibility," 477.

16 Mann, Ramsey, Lott-Holland, and Ray, An Environmental Justice Strategy, 2.

17 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 353.

18 Ibid., 352.

19 Ibid., 351.

20 Ibid., 348.

was and still is the typical formula employed, in which all inputs and outputs are assigned a monetary value and added to reveal potential gains and losses.[21] Private owners advanced transit technology in their quest for profit: horse-drawn omnibuses and stagecoaches gave way to electrified and steam-powered trolleys and streetcars, which gave way to motorized bus and high-speed rail systems. Commercial districts grew in their wake. However, the post-World War II swell of suburbanization, the phenomena of mostly white people moving from urban centers to outlying car-oriented residential areas characterized by stand-alone homes, pushed many private operators out of business. Their demise was furthered by the federal government-sponsored highway expansion that favored car travel. Local governments across the U.S. took over transit operations, and rider demographics shifted to those minorities not privy to suburban expansion because of discrimination, namely black and Latino

people.[22]

During the suburbanization and highway construction boom, transit planning and operations fell to an all-time low priority level until the Kennedy Administration recognized the need for federal intervention. Following an urgent 1961 report from the Institute of Public Administration, Kennedy created subsequent legislation that tied highway and transit funding together.[23] The Federal-Aid Highway Act of 1962 forced counties to consider their whole metropolitan region as their "area of development" to qualify for needed funding, which created an important change in planning.[24]

Continuing the effort past Kennedy's death, the 1964 Urban Mass Transportation Act created the Urban Mass Transportation Administration, the federal agency responsible for providing guidance, research, and financial assistance to U.S. transit systems. Today, it is called the Federal Transit Administration (FTA), renamed to reflect the need for transit in non-urban areas. The 1964 Act ordered the inclusion of state and local input into transportation matters and authorized $375 million in capital assistance to transit projects over three years. Although it was slow to take off ($50.7 million granted in 1965 and $106.1 million in 1966), this launched cities across the nation into a flurry of transit building, eager to capitalize on the federal dollars and revitalize their city centers.[25]

At first, the clear preference of the federal government was towards rail projects, but as each successive renewal of the Federal Aid-Highway Act passed, the amount earmarked for capital rail projects decreased. It began at 90 percent in 1962, became 88 percent in '66, 70 percent in '69, and then 75 percent in '74.[26] By '73, over two thirds of approved capital grants had gone to rail projects, and legislation that year further upped the federal matching share from two thirds to 80 percent and made $6.1 billion available for capital projects.[27] However, subsequent rapid changes in policy and a planned phasing out of operations

21 Lucas, van Wee, and Maat, "A Method to Evaluate Equitable Accessibility," 475.

22 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 348.

23 Weiner, Urban Transportation Planning, 32.

24 Ibid., 32.

25 Ibid., 40; Verbit, "The Urban Transportation Problem," 408.

26 Verbit, "The Urban Transportation Problem," 412n181.

27 Ibid.

assistance led to increasingly indebted transit systems in the 1980s.[28] Deficits were growing with no end in sight, and riding transit had become extremely undesirable as the perception of suburbia, open space, and less dense living became the marketed package of comfort and upward mobility.[29] Federal policies eventually stabilized, but by then state and local governments had enacted different funding strategies to mitigate capital and operating budget shortfalls, like the implementation of LTSTs.
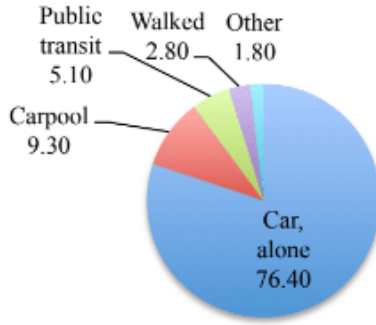
FIGURE 1. Commute mode of U.S. population by percentage in 2016. From the U.S. Census Bureau.

Leading into the twenty-first century, renewed interest in central city living has caused urban populations to grow and transit ridership to increase, reversing suburbanization patterns. In 1965, there were 224 urbanized areas under the FTA jurisdiction.[30] These ballooned to 498 in 2010, 42 of which have populations over one million.[31] In that same year, urbanized areas covered just 2.5 percent of U.S. land area but contained 71.5 percent of the nation's population.[32] Today, the FTA invests $12 billion annually into transit development, research, and improvements through formulas, grants, and loan programs to competing transportation agencies nationwide.[33] However, in 2016, transit infrastructure was so inadequate across urbanized areas that only 5.1 percent of the overall American population rode transit to work, whereas 76.4 percent commuted in cars alone (Figure 1).[34] Though public transit plays a small national roll, more than half of all transit trips are to or from places of employment or on behalf of work, reflecting the

---

28 Weiner, Urban Transportation Planning, 131.

29 Ibid., 42.

30 Ibid., 31.

31 National Transit Database, 2016 National Transit Summary and Trends, 10.

32 Ibid.

33 Federal Transit Administration, "About FTA."

34 Neff and Dickens, 2016 Public Transportation Fact Book, 14; U.S. Census Bureau, 2012-2016 American
        Community Survey 5-Year Estimates.

necessity of access for those who are transit dependent.[35] The fact that so few urban dwellers use transit to commute is a problem that has exacerbated traffic congestion, and that will persist if cities continue to grow without thoughtful investment into cost-effective and comprehensive transit systems.

To move past automobile reliance and propel quality of life, public transit construction is underway in many U.S. metropolises, often coupled with plans for transit-oriented development

(TOD), a strategy that clusters mixed-use buildings by transit stops to incentivize ridership, density, and to spur economic and pedestrian activity. The FTA requires new rail plans receiving federal dollars to include "local supportive actions to enhance the project's cost effectiveness and patronage."[36] If LTST-funded transit systems are embedded along with TOD, more tax revenue can be captured from taxable goods sold nearby, which benefits both the transit system and its adjacent businesses. In total, there are about 6,800 transit systems in the U.S.,[37] and those in urbanized areas covered 98 percent of all transit passenger trips in 2014, with service provided by 820 different transit operators.[38]

Today, transit is not only a potential panacea to many issues such as traffic congestion, environmental quality, "energy insecurity, climate change, and suburban sprawl," but also a cultivator of "economic development, access to jobs, the revitalization of distressed neighborhoods, urban aesthetics, livability, and mobility for those unable or unwilling to drive."[39] Denser cities have smaller carbon footprints because less energy is needed to reach destinations. Density makes walking, biking, and transit riding more viable and capable of increased capacity and returns.[40] Transit use can make riders healthier because they must walk between stations and stops, exerting more physical effort than they would when using a personal vehicle.[41] Reliable and accessible transit can also attract companies and industries. When Amazon issued a request for proposals to find a host city for its second headquarters in 2017, it sent U.S. cities into a fervor of competition, but those unable to fulfill the core preference listed of transit access at the site by "rail, train, subway/metro, [or] bus routes," were left out of the final 20 selected competitors.[42] A functioning transit system creates a competitive advantage for urbanized areas while reducing congestion and increasing quality of life. All in all, transit that is safe, reliable, and affordable can impart many benefits on riders, non-riders, and the cities they connect.[43]

While not all systems capture these returns, these potential outcomes make transit supporters very vocal. However, transit construction and operations are expensive and complicated, and if ridership does not manifest, the deficits are staggering. In general, public entities such as transportation commissions,

---

35 Neff and Dickens, 2016 Public Transportation Fact Book, 14.

36 Weiner, Urban Transportation Planning, 117-18.

37 Neff and Dickens, 2016 Public Transportation Fact Book, 8.

38 Ibid.

39 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 348.

40 Brown, Southworth, and Sarzynski, Shrinking the Carbon Footprint, 6.

41 Robb, "Supporting Healthy Communities," 22.

42 Amazon, "Amazon HQ2 RFP," 2.

43 Manville and Cummins, "Why do voters support public transportation?," 307-308.

agencies, or departments manage transit with either elected or publicly appointed officials at their helm. As Taylor and Morris outline in their research, the shift to public ownership has broadened the goals for transit, which are now lofty, ambiguous, and multifaceted, therefore skewing resources that affect equitable access for the transit dependent in ways that echo inequities of the past.[44]

Equity in Planning and Financing

As outlined, state and local transit planning decisions have been shaped by federal assistance and policies. Some scholars have used ethical frameworks to analyze the equity of different transportation systems, finding that minority and marginalized communities are the disproportionate receivers of transportation infrastructure that harms their environmental surroundings.[45] The systemic government deprivation of public assistance and subsidies to majority-minority neighborhoods limited their access to property ownership, capital, and transportation. As a result, today, many communities of color experience lower wealth, lower educational attainment, lower professional development, and higher rates of illness than whites do.[46]

The overwhelming story here is one of racial tension stemming from white supremacy, the white-American feeling of superiority that has permeated all levels of government for most of the country's existence. This preference for whites and their economic empowerment curbed federal policies in their favor in almost all areas, and transportation was no different; land uses and transportation systems serve whites primarily, especially those in the outlying residential suburbs. In urban areas, the lack of access to affordable and convenient transportation options and other basic goods contributes to significant inequities between racial and socioeconomic groups.

The economic boom in the U.S. following World War II caused the middle class to burgeon to rates not surpassed since. Almost two thirds of Americans had earned or borrowed enough to buy property and cars, which were increasingly available in suburban areas of great value and growth potential. But this opportunity was limited to whites through home loan practices that excluded minorities from buying homes in white neighborhoods. Maps of urban areas were color-coded by quality, with green meaning an area was ripe for investment because of its majority white status, and red indicating a prevalence of others, or mostly black residents.[47] Financial officers refused to grant loans to homes in red areas because they were deemed an investment risk. This unfair practice, known as redlining, created disinvested communities and urban areas where residents missed out on the opportunity to improve their property, raise its value, and attain more wealth. On the other side of the spectrum, the white middle and upper class cashed in on suburban property ownership and created quality schools and municipal services funded by their tax revenue, while still having access to CBDs via highways and commuter bus and rail routes that were built to enhance their suburban connectivity.

---

44 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 348.

45 Robb, "Supporting Healthy Communities," 22; Ávila, The Folklore of the Freeway.

46 Partnership for Southern Equity, Growing the Future, 10.

47 Ávila, The Folklore of the Freeway, 41.

Radial Highway Design to Serve the Commuter

FIGURE 2. Above, Detroit's Hastings Street in the mid-1950s. Below, the I-75/I-375 superhighway under construction in 1962. From Historical Detroit Society.

The era of highway construction began with the 1956 Federal Aid-Highway Act, which designated a 41,000-mile system of highways to be built with $25 billion over a 13-year period.[48] States only had to put up one tenth of the cost, and the federal government subsidized the rest. State officials worked in accordance with federal legislation to carve out highways from urban and suburban fabric that emphasized speed and bypassed metropolitan areas. Even though route designation was stipulated at the local level, many cities had to give up their preferred plans and cede to state highway officials to receive the necessary funding for construction.[49] As Taylor found in his research, "the major planning decisions—the design, routing, and size of the system—were either specified in advance or delegated to

48 Partnership for Southern Equity, Opportunity Deferred, 11.
49 Taylor, "When Finance Leads Planning," 197.

state highway departments."[50] The preferred federal design was usually radial "highways converging on the city center surrounded by a beltway"[51] that encircled the urban area. Some cities chose to dismantle their existing transit systems to make way for the emerging auto industry. This coincided with the urban renewal movement, in which large swaths of urban neighborhoods were destroyed to make way for public works like highways, public housing, or parks, amongst other things. While in theory positive endeavors, the top-down planning and application of design and construction reflected a simplistic understanding of urban needs and mobility, and resulted in the destruction of many majority-minority neighborhoods, leading to pervasive economic and health disparities.

With "tacit intent," highways became "instruments of white supremacy."[52] Targeted construction wiped out the centers of vibrant and historically marginalized neighborhoods, like Hastings Street in Detroit (Figure 2). These neighborhoods, bisected and disconnected from the rest of the city, spiraled into worse shape. In many Southern cities, black people were excluded from public hearings, and thus had no negotiating power to stop or change proposed highways.[53] Communities fought against highways proposed through their neighborhoods, but most failed with few notable exceptions. Those who did succeed were often enfranchised communities with political power. Ávila puts it best in his book, *The Folklore of the Freeway: Race and Revolt in the Modernist City*:

> While white affluent communities tapped into local political networks to fight the freeway and its place in the city, urban black and brown Americans found themselves trapped within the parameters of a new highway infrastructure. As the modern ghetto and barrio took shape, freeways added insult to injury, ravaging neighborhoods that were already bearing the brunt of disinvestment, deindustrialization, and decline.[54]

In Los Angeles, the divergent fates of Beverly Hills and Boyle Heights provide another example. The wealthy residents of Beverly Hills were able to sponsor four in-depth engineering studies that dissuaded a highway proposal through their neighborhood.[55] About ten miles away in majority-Latino Boyle Heights, seven freeways were built over the span of a decade, with a designated freight route running along the side of one of the community's only parks.[56] Those who could, moved away before the neighborhood was subjected to the grit and grime that accompanied freeway construction, and the remaining community changed forever; it is now permeated with the constant rush of traffic, debris highways inevitably spout off, and the toxic air environment that science has now come to pinpoint as extremely harmful.[57]

Today, having a car is essential in suburban and rural areas that lack transit, and in some

---

50 Ibid., 203.

51 Ibid., 202.

52 Ávila, The Folklore of the Freeway, 43.

53 Ibid.

54 Ávila, The Folklore of the Freeway, 39.

55 Ibid., 32.

56 Ibid., 138.

57 Robb, "Supporting Healthy Communities," 22.

sprawling, low-density urban areas. Driving is convenient, reliable, can improve quality of life, and serves as a symbol of status within culture. The federal government dedicates two percent of its overall $3.6 trillion budget towards the nation's transportation needs, and most (1.12 percent) goes to the Federal Highway Administration, the agency responsible for the upkeep of the national highway network.[58]The FTA receives three-tenths percent, a total of $11.4 billion, which is proportionate to the low use of transit across the country.[59] Minimizing environmental impacts, transportation-related fuel consumption, and reliance on foreign oil have been enduring goals of the FTA,[60] but as long as automobile transportation continues to be prioritized by federal and state policy, car-related emissions and oil needs will continue unabated. Though highway construction has subsided now in the twenty-first century, its residual effects on land use and neighborhoods are still negatively impacting those of lower socioeconomic status.

Rail as the Superior Transit Mode

Since the 1960s, rail projects built with federal grants generally followed the design of highways, laid in radial patterns that granted suburban access to the urban CBD. Rail is often considered the superior form of public transit compared to buses because of its increased speed, comfort, permanence, perceived cost savings from more customer capacity, and amenities like Wi-Fi and charging ports.[61] Within city limits, urban dwellers made do with "feeder" bus routes that connected to rail stations and crisscrossed urban areas in alternative routes. This led to increasing "spatial mismatch," the condition where employment opportunities are increasingly located further away from the CBD in suburban industrial parks, commercial strips, and shopping centers, out of reach of low-income workers who do not drive or who cannot access those areas by transit. CBD job concentration has declined in many cities, meaning more commuters travel from suburb to suburb or from the inner city out—travel patterns that radial designs fail to account for. More minorities are settling in the once all-white suburbs, and as economic disparities grow across the nation, suburban poverty is on the rise as well.[62]

As previously noted, rail riders tend to be more white and wealthy than bus riders,[63] which explains the perception of rail as a first rate transit mode, and the bus as the inferior option. Rail routes are less cost-effective and receive more subsidies than buses do, as they are more expensive to operate, and capture fewer returns from fares. Before construction, costs are often under-projected deliberately. An international study looked at 58 rail projects, and found that on average, they cost 45 percent more than predicted, which the researchers attributed "not to error but to misrepresentation aimed at attracting funding."[64]However, rail projects capture the imagination of voters with conspicuous infrastructure

---

58 National Transit Database, 2016 National Transit Summary and Trends, 19.

59 Ibid.

60 Federal Transit Administration, "About FTA."

61 Taylor and Morris "Public Transportation Objectives and Rider Demographics," 352.

62 Florida, The New Urban Crisis, 156.

63 Taylor and Morris "Public Transportation Objectives and Rider Demographics," 351.

64 Ibid., 369.

like stations and tracks, and promote CBD revitalization with their permanence.[65] Importantly, transit supporters are more likely to be liberal-leaning, white, wealthy, homeowners, and college-educated,[66]which Hannay and Wachs found to stem from the perception that little of their income will be sacrificed if they contribute taxes to transit development.6[67] A rail system can become a city symbol recognized worldwide, like New York City's subway, but simplistic suburb-to-CBD rail is just another vehicle for middle and upper class mobility with negative consequences for transportation equity.

Fiscal decisions based on superficial rather than empirical reasons can worsen a transportation agency's financial standing, which can affect other policy decisions such as fare setting. Often, fares are raised or service is cut to cover budget gaps, which creates volatility for the transit dependent. Flat fares across systems lead bus riders to cross-subsidize rail riders by paying more in general for shorter and more frequent trips.[68] Subsidies towards low-income bus riders help keep fares low but do not improve service, and emphasis on rail construction rather than bus expansion prolongs poor service. The FTA estimates that 40 percent of the nation's buses and 25 percent of rail assets are in marginal or poor condition, which reflect issues with larger aging bus fleets and newer rail systems.[69]

The first public transit system to take the locally funded path was the Bay Area Rapid Transit (BART) system in San Francisco, and it provides a perfect example of the commuter-oriented design. The $1.6 billion project was paid almost entirely through local revenue by a bond measure approved by three counties.[70] BART reaches far into its counties, with stops spaced an average of 2.3 miles apart.[71] 23 of the total 34 stations had parking lots. One major flaw in the BART's design was the planners' assumption that no passenger would ever ride standing. On the contrary, many passengers spent the majority of their half hour or longer trip standing, holding a handrail. Another flaw was that the radial design left outer areas disconnected and abandoned, especially at night when service was terminated. These deliberate choices depict the target ridership: commuting drivers who could leave their cars parked, ride into the city sitting in comfort, and return after work. Low-wage workers without cars and with sporadic hours or night shifts were not part of the calculation. Following in BART's tracks, many other cities proposed local option funding mechanisms to their constituents to build transit, often with rail components to capture federal rail funds.

Emergence of the LTST

Taxation is the fiscal tool used to create revenue to fund all governmental services and operations, and the traditional broad-based taxes in the U.S. are: the federal income, the state sales, and the local

---

65 Ibid., 352.

66 Manville and Cummins, "Why do voters support public transportation?," 329.

67 Hannay and Wachs, "Factors influencing support," 33.

68 Pucher and Hirschman, "Distribution of the Transit Tax Burden."

69 Federal Transit Administration, National State of Good Repair Assessment, 10.

70 Weiner, Urban Transportation Planning, 114.

71 Verbit, "The Urban Transportation Problem," 415.

property.[72] Today, local governments have strayed from the traditional property tax, able now to levy other local option taxes for projects and services they deem necessary, which has increased local ability to control development and pursue improvements without excessive federal or state oversight. Local transportation tax referenda present a momentous opportunity for "promoting the integration of transportation with social, economic, and environmental objectives," because of their combination of fiscal and legislative powers.[73] On the rise since the late 1960s, their use is a relatively new puzzle piece of government finance. Between 2013 and 2017, 187 transit-specific referenda were held, 70 percent of which were successful.[74]Considering only 35 percent of local ballot measures overall succeed, it is clear the public is amenable to increased taxes for transportation improvements.[75]

The sales tax emerged as the most popular for transportation at the state and local level. Considered the most palatable and easy to pass, LTST measures have succeeded at higher rates than others.[76] Scholars have attempted to understand their popularity through surveys, analysis of regional census data, and case studies of successes and failures.

Reasons for LTST measure support have been multifaceted and contingent upon many other circumstances. Some of them are: broad concern for environmental issues,[77] perception of traffic congestion,[78] distribution of benefits, participation in planning, well-funded campaign multimedia, sponsorship by business communities and key elected officials, multimodality, and unorganized and poorly funded opposition.[79]

Opposition to LTST measures stem from their legislated inflexibility and the perception that the sales tax is inappropriate, as it bears no relation to transportation use and is thus not an incentive for transit ridership.[80]Conservative counties also more readily reject LTSTs than liberal counties.[81] Accompanying sentiments are often that governments are too inefficient to complete projects on time, experience cost overruns, and will not deliver the promised reduction in traffic congestion well enough to be worth increased taxes.

Studies about why county governments decide to pursue LTSTs reveal why they have become so popular. First of all, the American public agrees that the government should invest in transit systems.[82]

------

72 Cervero, "Views on Transit Tax Financing," 22.

73 Goldman and Wachs, "A Quiet Revolution," 30.

74 Center for Transportation Excellence, "Transportation Ballot Measures."

75 Manville and Cummins, "Why do voters support public transportation?," 304.

76 Center for Transportation Excellence, "Transportation Ballot Measures."

77 Manville and Cummins, "Why do voters support public transportation?," 331.

78 Haas and Estrada, "Revisiting Factors," 84.

79 Ibid., 83-85.

80 Brown, "Paying for Transit," 16.

81 Green, "County Governments and Democratic Decision Making," 54.

82 Agrawal and Nixon, Federal Tax Options, 37; Manville and Cummins, "Why do voters support public transportation?," 310.

Second, Green determined that the incremental cost of increased sales tax leads to fiscal illusion, where "voters [are not] able to truly gauge what their tax burden is and make choices accordingly"[83]—unlike other taxes like the property tax, which arrive annually at once. Third, though state fuel and vehicle registration taxes were by far the preferred financing tools in Cervero's 1982 survey of transportation officials, their contested status left them out of local option tax measures.[84] The same applied to tolls on roads because "access to the existing system of roads and streets has been a 'free' good for too long."[85]

Despite the recent wave of LTSTs and the capital programs that have been financed as a result, national ridership still remains low at 5.1 percent across the nation, though it has been increasing steadily.[86] Manville and Cummins charge that this is indicative of a "collective action problem" facing policymakers, where driver behavior is not incentivized enough to change.[87] Raising taxes on fuel, limiting parking and road use, charging a fee on vehicle miles travelled, and other such measures would force changes in transportation behavior.[88]

LTSTs enhance democracy and equity in some ways. One is that transportation agencies designing LTST measures preemptively consider their public, their preferences, their antitax sentiments, and individual tax burdens, which make plans adhere to local concerns.[89] Another is that they increase accountability with transportation agencies. Because LTSTs often have sunset provisions or legislated end dates the public can determine whether to renew a tax based on project deliverance. Lastly, LTST decision-making represents a change from prior state top-down planning and financing, and empowers individuals to have more political power to rally their fellow county members into voting one way or another.

LTSTs can diminish democracy and equity in some ways, as well. While they create an opportunity for democracy to occur, they are not inherently fair, because they are products of a political process that involves high-level stakeholders and transportation agencies with different priorities and goals. The local rallying of groups in support or opposition requires energy, organization, and capital, and often low-income communities that may be negatively affected by LTST plans do not have the necessary resources. Other organizations and interests with more capital can exude more influence over a vote by producing more advertisements and drumming up more support.

The two following case studies will contribute to the existing literature by evaluating the effects the LTST process have wrought upon transportation project prioritization and ensuing equitable access for transit dependent people in two different cities. By focusing on two distinct locations and examining residents' transportation needs, the strengths and weaknesses of the LTST funding method are revealed,

---

83 Green, "Life in the Fast Lane," 93.

84 Cervero, "Views on transit tax financing in the US," 29.

85 Verbit, "The Urban Transportation Problem," 435.

86 Neff and Dickens, 2016 Public Transportation Fact Book, 14.

87 Manville and Cummins, "Why do voters support public transportation?," 331.

88 Verbit, "The Urban Transportation Problem," 431; Manville and Cummins, "Why do voters support public
        transportation?," 318.

89 Green, "County Governments and Democratic Decision Making," 52.

and subsequent measures can avoid the pitfalls that increase regional transportation inequity.

Chapter II: Methodology

Two case studies have been conducted of comparable urbanized areas that have had their own distinct histories with transit development and financing. The two case cities, Los Angeles in California and Atlanta in Georgia, have passed LTST measures in their past, and have built public transportation systems with the provided funds.

To examine the differences in their transportation agencies' strategic decision-making, I reviewed numerous journal articles, newspaper articles, reports, and websites on their agencies' transportation plans. Included were advocacy group reports, community organization reports, and comments on online forums, articles, and agency platforms. To determine the effects of the sales tax-funded transit plans on equity, I reviewed approved projects, their ridership (if constructed already), and agency relations with their existing customers. I also reviewed how LTSTs are presented and campaigned, and the burden they produce on those of least-income. Determining the enhancement or diminishment of equity involved a combination of information that I attempted to keep consistent across both case studies. My observations are at best considered judgments and not hard measures.

Chapter III: Los Angeles and its Indefinite Sales Tax

The City of Los Angeles (LA) is a sprawling metropolis on the west coast of the U.S. characterized as much by its low-density development and automobile dependence as by its palm trees and pleasant climate. Since the nineteenth century, its region has grown into an important economic and cultural center home to many diverse groups and businesses. LA County covers 4,084 square miles that encompass 88 cities and almost 140 unincorporated areas.[90] The LA County Metropolitan Transportation Authority (Metro) is the agency responsible for connecting these far-flung places via multiple-lane freeways, interconnecting roads, and public transit.

As LA's population has grown, traffic congestion has increased to an unbearable point. In 2016, the average Angeleno spent an estimated 81 hours stuck in traffic[91]—time that caused environmental, mental, and physical detriment. Not only that, but as Metro's Deputy CEO Stephanie Wiggins pointed out, it "is a paycheck for some," encompassing two 40-hour workweeks.[92] This issue has persisted, and since 1980, Metro has tried to reduce traffic congestion by creating a regional network of transit financed by four voter-approved LTSTs, which have increased the sales tax by two whole percentage points.[93] Metro's LTSTs, which follow the Californian tradition of initiative ballot referenda for special and general

90 County of Los Angeles, "About LA County"
91 Metro, "Measure M: Metro's Plan To Transform Transportation In LA."
92 USC Urban Growth Seminars, "Measure M: Yes or No," 1:15:40
93 Metro, *2017 Funding Sources Guide, 2.*

purposes,[94] grant the agency with exponential funds; their projected annual revenue is slotted at $13.9 billion, 82.9 percent of which ($11.5 billion) will be derived from local sources.[95]

The most unusual development in LA's experiment with LTST financing is that its latest measure secured permanent financing for the regional transportation agency, extending its share of sales tax indefinitely. The measure, dubbed Measure M and passed during the 2016 General Election, will decrease only when "voters decide to end it," as stated on the ballot.[96] Measure M alone is expected to generate $860 million annually and $120 billion over four decades.[97] Metro's astronomical own-source revenue will enable it to grow, maintain, and operate its services far into the future, in pursuit of their stated goal of "an efficient and effective transportation system."[98] So how did Metro convince LA County residents to approve its permanent funding with sales taxes, and what effects on equity did their strategy produce?

Why Sales Tax? The Equity and Implications of Metro's LTSTs

Metro's use of sales tax for transportation stems from political volatility in California. Following the 1970s oil embargo that induced nationwide panic about rising fuel prices, voters struck down an attempt to increase the gas tax in the 1980s,[99] then-Governor George Deukmejian refused to even "countenance" raising the gas tax, believing it to be an absolute last resort.[100] The Senate Transportation Committee testified that a one percent increase to the state sales tax could only be matched by a more-than-double increase to the gas tax, adding 20 cents per gallon and resulting in a more visible and perceivably inequitable tax hike.[101] The other main local revenue generators had been property, toll, and income taxes—all regressive except for the income, which was used primarily by the federal and state governments.[102] In 1978, Californian voters unhappy with property tax burdens passed a citizen-proposed amendment to the Constitution of California that limited property tax increases to one percent of a property and restricted annual increases to two percent. State politicians became cautious about increasing statewide taxes. Republicans in the state legislature, determined to appease constituents, used supermajority as leverage to thwart Democrat-led attempts to impose statewide plans for transportation.[103]

In search for a transportation-deficits-and-needs solution, the state legislature passed the Local Transportation Authority and Improvement Act, or S.B. 142, in 1987 allowing counties to tax themselves for transportation-specific purposes if approved by the voting public. This effectively transferred transportation financing responsibilities from the state to the local level. Though many state legislators felt

---

94 USC Urban Growth Seminars, "Measure M: Yes or No," 8:45

95 Metro, *2017 Funding Sources Guide, 2.*

96 Los Angeles County Registrar-Recorder/County Clerk, "General Election November 8, 2016," 2.

97 Metro, "Measure M: Metro's Plan To Transform Transportation In LA."

98 Zhao and Hou, "Local Option Sales Taxes and Fiscal Disparity," 40; Metro, "About Metro."

99 Green, "Life in the Fast Lane," 95.

100 Ibid.

101 Ibid., 96.

102 Pucher and Hirschman, "Distribution of the Transit Tax Burden."

103 Green, "Life in the Fast Lane," 98.

sales taxes were not the most appropriate to fund transportation at the time, they felt they had no other choice than to approve the devolvement to move past the political stalemate.[104]

Sales tax thus became the preeminent political choice for increased transportation taxation in California.[105] Ballot measures are proposed by regional planning boards, chambers of commerce, transportation authorities, or other governmental bodies; submitted for approval to the County Board of Supervisors; and then presented to the public for a vote.[106] Fortunate for the state and local legislatures, voters are willing to accept incremental increases to sales tax more readily than to any other tax, especially in California, where sales tax is applicable to about one third of all goods.[107]

Metro's Propositions A and C

Three sales tax referenda for rapid rail transit had failed in LA County in 1968, 1974, and 1976.[108] These failures were attributed to the lack of provisions towards bus services and the perception that extensive and costly rail plans (ranging from 62 miles at $2.5 billion to 281 miles at $7.5 billion) would not be right for the automotive county.

By 1980, perceptions had changed, and voters approved a half-cent LTST called Proposition A by a slim but decisive majority (Table 1). Metro's first two half-cent LTSTs required simple majorities because they were "intended to support the general [purpose] of an agency established for a specific purpose,"[109]—specifically, transportation. Proposition A dedicated 35 percent of revenue to a capital rail program and 40 percent towards discretionary funds,[110] which Metro used constantly and mainly for rail construction. Metro had established a "'rail at any cost' strategy" that the state pursued with vigor.[111]

To sell bus constituents on the LTST, Metro promised to subsidize bus fares down from 85 cents to 50 cents from 1982 to 1985, along with a $20 basic monthly transit pass, and a $4 monthly transit pass for students, the elderly, and the disabled.[112] The result was a 40 percent increase in ridership, but after the subsidies ended and fares rose back to 85 cents and later to $1.10, ridership dropped by 20 percent, and continued to fall until it bottomed out in the mid-1990s.[113] During the period of increased ridership, there were no additional buses nor other additional measures taken to better service. In the years afterwards, Metro chose to continue to raise fares and cut service, instead of using discretionary funds to cover budget shortfalls in bus operations. In 1990, Metro succeeded in passing a second half-cent LTST, Proposition

---

104 Ibid., 96.

105 Ibid., 92.

106 Ibid., 97.

107 Freeman, Sidhu and Poghosyan, "Sources of Sales Tax Revenue," 3.

108 Barrett, "New Mass Transit Plans," 11.

109 California Debt Advisory Commission, Summary of General Election Results, 7.

110 Metro, 2017 Funding Sources Guide, 8.

111 Snyder, "The Bus Riders Union Transit Model," ii.

112 Metro, "Proposition A."

113 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 365.

C, which passed with a razor thin margin (Table 1). In 1992, Metro purchased 400 miles of previously-streetcar rail for $980 million, which then became the commuter rail system, Metrolink.[114]

TABLE 1. Los Angeles County local transportation sales tax measures.

	Result			Transit Ridership	Sales Tax Rate with Increase
Proposition A November 1980	Pass	Yes	54.32%	7.50%	7.75%
		No	45.67%		
Proposition C November 1990	Pass	Yes	50.43%	6.50%	8.25%
		No	49.56%		
Measure R November 2008	Pass	Yes	67.93%	7%	8.75%
		No	32.07%		
Measure J November 2012	Fail	Yes	33.89%	7%	9.25%
		No	66.11%		
Measure M November 2016	Pass	Yes	71.15%	7%	9.25%
		No	28.85%		

Sources: County of Los Angeles Office of the Registrar-Recorder, California Board of Equalization, and Manville and Cummins, "Why do voters support public transportation? Public choices and private behavior," 304.

In the last decade of the twentieth century, bus riders in LA were suffering from overcrowding, lack of air conditioning, volatile fares, and reduced service. As riders would wait for long intervals at stops without pedestrian accommodations, worries about vehicle exhaust began to circulate, and an environmental justice movement sprang up around creating cleaner neighborhoods and transit systems through clean fuel buses.[115] When Metro was considering raising bus fares once again and nixing the monthly pass in 1994, a community strategy group leaped into action, and sued for discrimination. With legal representation by the NAACP (National Association for the Advancement of Colored People), the Bus Riders Union succeeded in proving that discrimination towards bus riders of color was happening to the gain of white rail riders.[116] The very publicized civil rights lawsuit forced Metro to settle with the community group, and to sign a ten-year Consent Decree to reduce crowding on buses, improve service, and reduce the monthly pass to $42, and add a new $11 weekly pass. They replaced 2,500 buses from their fleet with clean compressed natural gas models that cost $2.7 billion, to the direct benefit of 500,000 daily

---

114 Barrett, "New Mass Transit Plans," 16.

115 Mann, Ramsey, Lott-Holland, and Ray, An Environmental Justice Strategy, 2.

116 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 364.

bus riders.[117] Trouble for Metro's rail campaign did not end there. In 1998, an initiative referendum to prohibit subway building passed in LA County after excessive cost overruns on the Red Line exasperated the public, effectively ending plans for Metro subways.[118] This, however, would be overturned with another LTST in the future.

Metro's priorities in this early period are exemplified by its investment in the Metrolink commuter rail system, its disregard for bus riders, and by its $300 million headquarters in downtown LA that was completed in 1995 amidst the civil rights legal battle, "garbed in Italianate granite and English brick, replete with a $300,000 aquarium."[119] Metro's priorities would need to shift significantly for its next LTST measures. Considered special rather than general, subsequent measures triggered the supermajority approval requirement.[120]

Metro's Measures R and M

In 2008, Measure R passed by a slim margin (Table 1). It prioritized South and West LA, and would begin construction on new rail lines before pursuing other line extensions.[121] Northeast San Gabriel Valley and predominantly low-income East LA were promised $30 million and top priority in the long-range plan for improved pedestrian, bicycle, and automobile access to the Gold Line, but those would only begin after completion of the new Exposition Boulevard (Expo) light rail line from downtown LA to wealthy Santa Monica, which was completed in 2015.

Measure R did pacify bus-riding constituents by dedicating a substantial 20 percent proportion of revenue to bus operations. However, in 2006, the "average per passenger subsidy (including both capital and operating costs) for [Metro] buses [was] $1.93, while the average per passenger subsidy for [Metro] rail lines [was] $12.90."[122] This inefficient subsidizing of the less-used rail lines prompted much criticism, with some contending that Metro's priorities were "based on political calculations, with elected officials seeking dramatic 'ribbon cuttings,'"[123] at expensive but visible rail stations. Other inadequacies draw criticism, too. For example, the Expo light rail line, now operational, does not make use of signal preemption in downtown LA, and instead waits in traffic along with cars, defeating the purpose of transit's collective priority.[124]

In 2012, Metro supplicated with voters again, but Measure J failed by a very slim margin (Table 1). Nonplussed, the agency proposed another LTST four years later, and Measure M secured a tremendous

---

117 Snyder, "The Bus Riders Union Transit Model," ii.

118 Rabin, "Anti-Subway Funding Measure Wins Easily."

119 Ávila, The Folklore of the Freeway, 134.

120 California Debt Advisory Commission, Summary of General Election Results, 6.

121 Haas and Estrada, "Revisiting Factors," 52.

122 Snyder, "The Bus Riders Union Transit Model," 17.

123 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 364.

124 Cavanaugh, "Has the new Expo Line been doomed."

win (Table 1).[125] Metro CEO Phillip Johnson explained during a keynote address that the people of LA approved the permanent measure because they had recognized transportation to be an "ongoing need."[126] However, not every Angeleno was on board with a permanent increase to the sales tax. While in the minority, those who opposed Measure M's permanence cited the regressive nature of sales tax, and stressed that an enormous political effort at the grassroots level would be required to achieve the supermajority necessary to reverse the tax. LA County is composed mostly of people of color, at 73 percent, and transit riders are too, at 87.5 percent (Figure 3).[127] Residents are facing increasing economic uncertainty, increased taxes, and experiencing stagnant wages in the fast-gentrifying city.[128] Damien Goodmon, Director of the Crenshaw Subway Coalition and lead organizer of "No on Measure M," put Metro's continuous LTST measures like this:

> The reason they keep coming back asking for more money is because the cost projections are always under, and the benefits of these projects are always overstated. So, the people who are back in 2040, 2050, or yes, in 2060, all know that it's a joke. They're going to be taxed and never see a project in their district.[129]

An alternative to the regressive sales tax has not been pursued in earnest. Suggestions from transit activists like Goodmon emphasize passing tax burden onto new developments close to transit lines, but these possibilities are yet to be explored and counter Metro's intent of incentivizing TOD. Increases to vehicle license fees, carbon taxes, and gas taxes were unpopular options in surveys conducted prior to Measure R.[130]

Agencies can also "try to increase their directly-generated funds, such as money paid for advertising on vehicles or for special contracted services," but these are generally not as lucrative as tax increases are.[131] In a 2016 panel discussion, Metro Deputy CEO Wiggins explained that Metro contemplated the use of property tax but that if imposed, they would fail to capture revenue from the non-LA County residents who come into LA every day for work, shopping, and other activities.[132] To her point, the county attracted a record-breaking 43.7 million visitors in 2016,[133] and all of them unwittingly helped fund the county's transportation when buying taxed goods. However, visitors' purchases make up a small portion of revenue compared to residents' and businesses'. In 2006, the total value of sales-taxable transactions in LA County was $136.2 billion, which produced $11.2 billion in sales tax revenue.[134] Visitors brought in 3.6 percent

---

125 Los Angeles County Registrar-Recorder, "Los Angeles County Election Results."

126 MARTA, "2018 State of MARTA Address," 43:52.

127 Metro, How is Metro Measuring Up?, 31.

128 Ibid.; Ibid., 59.

129 USC Urban Growth Seminars, "Measure M: Yes or No," 40:35.

130 Haas and Estrada, "Revisiting Factors," 51.

131 Brown, "Paying for Transit," 10.

132 USC Urban Growth Seminars, "Measure M: Yes or No," 52:24.

133 Martin, "Los Angeles County brings in a record-high number of tourists in 2016."

134 Freeman, Sidhu and Poghosyan, "Sources of Sales Tax Revenue," 2.

of that, amounting to $400 million.[135] If implementing LTSTs over any other tax is to simply capture this marginal increase in revenue, Metro may be sticking to a regressive model for little substantial reason.
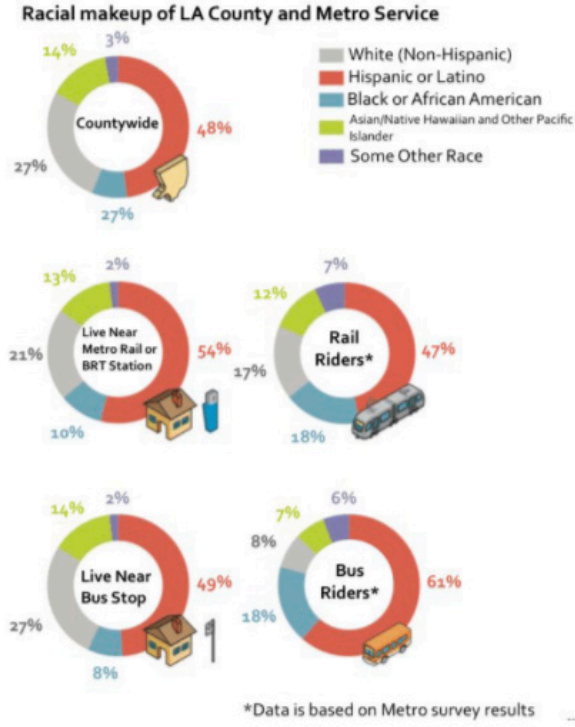
FIGURE 3. Racial Makeup of LA County and Metro Service. From How is Metro Measuring Up? 2008-2015 Quality of Life Report The Full Study, 31.

To date, Metro has built 105 miles of rail track serviced by six lines, improved street and highway conditions, upgraded the bus fleet that runs 170 routes, and connected 24 municipal transit systems with a universal fare card (Figure 4).[136] Among many other projects still in development and planned for the future, these improvements are meant to curb traffic congestion and improve county access for all residents. In 2016, LA was ranked as the fifth most transit accessible metropolitan area in the U.S.[137] Transit accessibility is important for equity, the fair distribution of access to opportunity but despite the public's investments, most of LA County's 10.4 million residents drive to work (73 percent), while less than

---

135 Ibid., 5.

136 Metro, "Facts at a Glance."

137 Owen, Murphy, and Levinson, Access Across America, 3.

seven percent take transit.[138] In 2017, fares generated a mere $540 million, which is roughly equal to the revenue from six months of a half-cent LTST.[139] LA residents are buying more cars than they did two decades ago, and there is evidence that those previously transit dependent have bought cars and moved out of the areas they used to take transit from, which may indicate displacement, a negative outcome for low-income communities.[140] The unfortunate fact is that Metro's transit service is failing to compete with the convenience of the personal vehicle and ride-sharing apps, and its sales taxes do nothing to incentivize transit use.
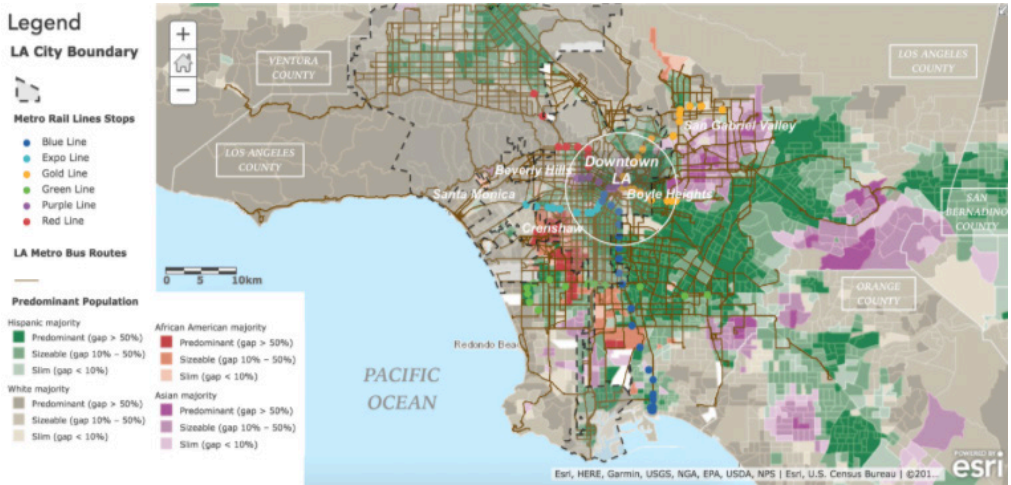
FIGURE 4. LA racial distribution and Metro rail and bus lines. From ArcGIS with edits by author.

Effects on Equity

Metro's approach to transit changed significantly between its first two LTSTs and its last two, in a way that addressed inequities in LTSTs' funding priorities and redressed disinvestment in the bus network. During the early years of rail building, Metro was flippant and disregarded the needs of bus rider, who made up the majority of Metro ridership. Because its first two LTSTs only required a simple majority, the agency took liberties with its funds and pursued the politically salient rail projects it cared to see built. Bus riders were only given priority when they took their claims to court, a testament to the judicial system's role in ensuring equitable distribution of locally sourced funds. After this check into its rail campaign, Metro took its position back up with less vigor and more nuance. Its subsequent LTST measures provided plenty of funding for bus operations and maintenance, and reflected the still predominant bus ridership on Metro as well as the new need to capture supermajority support.

---

138 U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

139 Metro, 2017 Funding Sources Guide, 15.

140 Nelson, "Southern Californians are on a car-buying spree."

In terms of enhancing equity, Metro's LTSTs have created more transit routes that reach into transit dependent communities, and the agency's plans reflect more customer values. However, the imposition of a permanent sales tax has negative effects on long-term equity: it potentially exacerbates the stark inequities that already exist across the LA region, such as the 12-year life expectancy difference between the most affluent and most poor.[141] Increased costs of living may cause gradual displacement of the most poor, a community who may move to further areas not accessible by transit.

Metro's continuing preference of rail over bus perpetuates the perception of rail as superior and bus inferior. In 2016, 80 percent of Metro's customers were still primarily riding the bus.[142] The racial groups more represented by a margin on rail are whites and Asians (nine and five percent more, respectively). Latinos are the only racial group that is less represented on rail than bus, making up 61 percent of bus riders and 47 percent of rail (14 percentage point difference). These difference correspond to transit routes and racial patterns across the region (Figure 4), but the predominance of minorities on buses and whites on rail is in line with national patterns, and highlights inequity in transit mode distribution.[143]

Metro's rail lines cater to more affluent areas to incentivize non-riders to ditch their cars, since so many middle-class people refuse to take a bus. This rail strategy leads Metro to prioritize potential riders over existing ones, and thus creates a painfully ironic situation "where transit service priorities are largely designed to appeal to people who rarely or never actually consume the product."[144] To illustrate this further, in 2016, Metro Board Member Jacquelyn Dupont-Walker described Metro's long-range development as part of their effort to redefine "transit dependent" in a way that emulates the systems of New York City and Chicago, where former drivers choose transit because of efficiency and ease, rather than the traditional saying that riders have no other choice.[145] Also, the high-density, centralized layouts of the two metropolises make high-capacity, heavy rail viable and the expensive CBD parking makes driving undesirable. The emphasis on future rail riders leads Metro to dedicate more resources to costly rail projects that service non-rider areas, instead of low-income transit-dependent communities. It is also worth reiterating that 2,500 clean fuel buses cost Metro $2.7 billion (in the early 2000s) while the Expo light rail line cost $2.4 billion.[146] Granted, that Expo is the most expensive rail line to date, but its construction was prioritized over accessibility enhancements to the Gold Line, which serves the predominant low-income East LA.

Finally, the sales tax is inappropriate for multiple reasons. First, sales tax does not incentivize transit adoption. Though California did recently pass an increase to the diesel fuel sales tax, and add a "transportation impact" vehicle license fee as well as a zero emission vehicle license fee,[147] Metro is still

---

141 Los Angeles Department of City Planning, Mobility Plan 2035, 33.

142 USC Urban Growth Seminars, "Measure M: Yes or No," 34:13.

143 Taylor and Morris, "Public Transportation Objectives and Rider Demographics," 363.

144 Ibid.

145 Ibid., 348; USC Urban Growth Seminars, "Measure M: Yes or No," 33:50.

146 Metro, "Facts at a Glance."

147 Metro, 2017 Funding Sources Guide, 4.

funded mostly by its LTST revenue. Analysts have surmised as far back as 1982 that increased ridership may occur "if attraction is abandoned for a strategy of strong persuasion and mild coercion,"[148] which is possible through vehicle user fees and taxes. Second, the use of sales tax creates a substantial burden on the transit dependent riders who already pay the $1.75 transit fare multiple times a day or purchase weekly and monthly passes.[149] In 2006, it was estimated that individuals paid $462 a year in sales tax revenue; after Measure R in 2008, the expense went up to $487.[150] This gave Metro roughly $100 from each LA County resident, and Measure M increased that amount further. Pucher and Hirschman found that transit subsidies based on sales taxes make low-income households pay two to three times more than high-income households, although revenue from high-income households covered a larger percentage of transit funding due to spending pattern differences.[151] High-income people contribute more in general because they buy more goods, but the taxed revenue forms a lesser amount of their overall individual income. That is, those who can afford to pay more in effect pay less, and those who cannot afford to keep paying Metro are forced pay more.

Surveys of LA County voters have revealed that even if some of them do not and have never ridden public transit, they vote to approve Metro's LTST measures because they believe it will benefit greater society, and reduce congestion and environmental harm from vehicles.[152] Notably, many of those "transit voters" are more likely to be white, wealthy, homeowners, and college-educated,[153] in contrast to those who actually do ride transit. Despite enthusiasm at the ballot, transit voters may have to be pried from their cars before they step onto transit, especially as gas prices fall ever lower.

I posit that the political process proceeding Metro's LTST measures have enhanced equity and equitable access for low-income transit dependent people because the organized opposition forcibly shifted Metro's budgetary priorities. Metro's capital devotion to rail for its perceived superiority has prolonged traffic reduction and ridership gains. Instead of perpetuating two separate modes of transit with different demographics, Metro should change the perception of bus travel by continuing to modernize its fleet, and institute protected guide ways able to provide frequent and reliable service and to serve cars if routes ever change. To boost equity through fare policy, fares can reflect distance travelled through a zone system so that bus riders no longer cross-subsidize rail riders. Though Metro's LTST measures provide much-needed long-term funding, the regressive burden should be mitigated by a different combination of progressive taxes, and the long-range strategy should prioritize the existing transit dependent customers over potential future riders to further enhance equity.[154]

---

148 Verbit, "The Urban Transportation Problem," 430.

149 Metro, "Metro Fares as of September 15, 2014."

150 Freeman, Sidhu and Poghosyan, "Sources of Sales Tax Revenue," 1.

151 Pucher and Hirschman, "Distribution of the Transit Tax Burden."

152 Manville and Cummins, "Why do voters support public transportation?," 331.

153 Ibid., 329.

154 Shon, "State-local sales tax, spillover, and economic activity," 431; Zhao and Hou, "Local Option Sales Taxes and Fiscal Disparity," 40.

Chapter IV: Atlanta and its fragmented region

Since the mid-twentieth century, Atlanta has grown as a cultural and economic center, and attracted families and students for its affordability, economic opportunity, proximity to renowned educational institutions, government offices, and corporate headquarters. Home to about 450,000 residents, Atlanta is a relatively small city,[155] but 4.48 million people populate its 10-county metropolitan area.[156] Transportation has historically been a convoluted issue in the Southern city. No regional authority has metropolitan jurisdiction, and attempts at creating such an entity have failed for over 50 years. Metropolitan Atlanta Rapid Transit Authority (MARTA) is the transit authority that serves the urban center, established by referendum in 1965 and funded by LTSTs paid in three of the five core counties. In Georgia, LTSTs are officially called T-SPLOSTs, transportation special purpose local option sales taxes. For consistency within this research, I will refer to them as LTSTs.

Despite continuous investment since the first one-cent LTST passed in 1971, the MARTA transit system is woefully limited to the inner city, confined by paying counties' borders. MARTA's small scope is further diminished by the city's decentralized development from 1960s to this day. During that decade, Atlanta's suburban population grew by 68.7 percent, while the urban center grew by a minimal 1.8 percent.[157] Due to this continuing pattern of suburban growth, vehicle commuting and traffic congestion multiplied. Today, traffic is a constant stressor for Atlantans, who consistently answer "transportation" when asked what the region's most pressing issue is.[158] Commuters drive an estimated average of 35 miles to work each day, 260 hours (almost 11 full days) per year of en-route time in total.[159] The sprawling layout of Atlanta's suburban neighborhoods and job centers makes getting around without a car almost impossible, and yet MARTA's attempts to pass LTSTs in suburban counties have failed every time.

MARTA combats auto domination within its counties where a transit system consists of four passenger rail lines that travel on 42 miles of track in each cardinal direction, a 2.7 mile downtown-loop light rail streetcar, and 101 bus routes (Figure 5).[160] The rail lines stretch to the edges of Fulton and DeKalb Counties, and, due to their radial design, serve outside commuters with access to the CBD better than the inner city residents with access to suburban job centers. For many years, MARTA struggled with fiscal deficits and a dismal reputation, and these issues were complicated further by racial tension between the inner city majority-black population and the outer suburban majority-white population. Even the City of Atlanta itself is segregated distinctly on a North-South boundary. This regional segregation has caused inequities to persist amongst various groups where blacks retain less employment, wealth, and

---

155 U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates

156 Atlanta Regional Commission Research, "Regional Snapshot: 2017 Population Estimates."

157 Office of Technology Assessment, Atlanta Case Study, 4.

158 Atlanta Regional Commission Research, "Regional Snapshot: What is the Biggest Problem Facing Metro Atlanta?"

159 Hatfield, "A Well-Tied Knot."

160 MARTA, FY18 Adopted Budget Book, ii; Atlanta Streetcar, "About."

property ownership than whites.[161] Blacks form the majority of the transit dependent population, and only majority-black counties pay regressive sales taxes for the transit system. How did MARTA convince its mixed audience to approve its LTSTs, and what effects on equity did their strategy produce?

Since the 1960s and the federal roll out of capital grants for transit, Atlanta's elected leaders and business elites were looking to create a rail system that would secure the booming downtown growth and create permanent access for the region. Even before the establishment of MARTA agency, politicians had to navigate the bureaucratic Georgia process of receiving approval to hold the referendum on whether or not the agency should be established. In 1964, the Metropolitan Atlanta Rapid Transit Authority Act provided the option to establish, but not yet to fund MARTA in Atlanta's five core counties: Fulton, DeKalb, Cobb, Clayton, and Gwinnett.[162] To drum up support for approving MARTA, the civic and business leaders emphasized that its approval would not mean a long-term investment, and that the MARTA charter required a public referendum for levying taxes. In the 1965 vote, all but Cobb voters approved MARTA's establishment.[163] Desperate to cash in on federal grants for rail, the CBD boosters hastily commissioned regional plans to propose to the public, favoring rail for its direct access, commuter appeal, and permanence.[164]

In 1966, Georgia voters approved a constitutional amendment that would allow the state to fund up to 10 percent of the cost of the system. Then in 1968, voters from the four participating counties were asked to approve a property tax to fund a MARTA rail plan. The measure failed across the board for many reasons. First, property taxes were unpopular with lower-income and suburban homeowners who complained they were unfair and burdensome. Second, the majority-black communities of Fulton and DeKalb disliked the prioritization of CBD-to-downtown projects, and cited that only 4.3 miles of the proposed 36 were going to serve black areas, and that they had not been included in the planning process.[165] Third, the majority-white counties cited government inefficiency, the few benefits to their areas, and racial fears of crime. Last, an opposing report about low-cost BRT possibilities from the city's private bus service provider, Atlanta Transit System, complicated public perception about MARTA's expensive proposal for rail, and that report was influential in the defeat.[166] To rectify these mistakes, MARTA appointed three black community leaders to its board to increase their negotiating power, and included several other provisions voiced.[167]

Why Sales Tax? MARTA's Only Successful Measure

MARTA's funding plan evolved into a proposal for countywide three-quarter percent sales taxes with 10 percent state financial assistance. Then-Governor Jimmy Carter redacted the state funds, offering

---

161 Partnership for Southern Equity, Growing the Future, 10.

162 Office of Technology Assessment, Atlanta Case Study, 13..

163 Ibid., 16.

164 Partnership for Southern Equity, Opportunity Deferred, 14.

165 Ibid., 15.

166 Office of Technology Assessment, Atlanta Case Study, 17-18.

167 Ibid., 18.

MARTA the chance to instead up its sales tax measure to a full one-cent increase.[168] MARTA accepted this and filed for permission to host the referendum vote. In the state Congress, the MARTA bill emerged alive but with stipulations: MARTA would have to split the LTST revenue generated evenly between its capital and operating budgets, if approved.[169] While some at the time considered this a sound method of voter investment protection, the requirement would cause dire fiscal handicaps for MARTA's operating budget in the future.

Content with the opportunity for funding, MARTA proposed the one-cent sales tax plan in 1971 to the four counties, and this time, Fulton and DeKalb narrowly approved the measure, while Clayton and Gwinnett handily rejected it. The success of the measure was primarily attributed to the short-range bus improvement plan, which involved MARTA purchasing Atlanta Transit System for $12.8 million,[170] in addition to the long-range plans for 14.4 miles of dual lane busways and 56.2 miles of rail. One other key provision made "to get black support for the system despite the regressive character of the sales tax," was to drop bus fares to 15 cents for 7 years.[171] The CBD elites were the main boosters for the rail system. Though they pushed for construction to begin immediately on the North-South line that would connect Northern Fulton County, which was then and is now majority-white, with the CBD and airport, black community leaders succeeded in forcing MARTA to instead first build the East-West line to serve black neighborhoods and connect to a prominent public housing site.[172]

CBD elites hastily rejected BRT proposals based on the perception that buses were "'second rate,'" reportedly noting that they "lacked 'social status.'"[173] Some studies suggested that BRT could better serve the East-West corridor, but MARTA leadership decided to misconstrue those calculations to avoid the political dilemma associated with providing a second-rate transit mode to the majority-black corridor, while dedicating rail to the majority-white corridor. To rid Atlanta of the BRT idea, MARTA claimed that BRT busways would need a third emergency lane, inflating their projected costs to a level comparable to rail.[174] This strategic choice reflected the new liberal Atlanta leadership: the new mayor and vicemayor were Jewish and black, respectively, whereas the previous mayor was a white businessman who cared little about inclusion. The 1971 transit plans were "tailored to benefit lower-income communities as well as suburban commuters and shoppers,"[175] a departure from their previous strategy. Because rail was the preferred transit mode of whites, business elites, and suburban families, MARTA leadership decided to capitalize on that perception and extend it across demographics.

MARTA continued to expand service but suffered from increasing budget shortfalls. At first,

---

168 Monroe, "Where It All Went Wrong."

169 Ibid.

170 Office of Technology Assessment, Atlanta Case Study, 25.

171 Ibid., 19.

172 Partnership for Southern Equity, Opportunity Deferred, 16.

173 Ibid., 14.

174 Office of Technology Assessment, Atlanta Case Study, 34.

175 Ibid., 19.

the LTST revenue was not as lucrative as projected, growing by an annual one percent during the 1970s recession instead of by the projected ten percent.[176] Construction costs ballooned from the planned $1.2 billion to $2 billion, and crucial FTA grants were slow to arrive. Rail service did eventually begin in 1979, and black people immediately dominated its ridership, an association that would make white suburban passengers reluctant to use it even after the North-South line opened,[177] and to rebrand it with a racist joke, calling it "MARTA—Moving Africans Rapidly Through Atlanta."[178]

LTST referenda were held again in Gwinnett in the 1980s and '90s, but failed under a cloud of antitax and racist sentiments.[179] Some suburban communities believed crime would increase if transit were built to their area, imagining inner city residents would ride to the suburbs, steal from homes, and then ride back.[180] A case study of Atlanta crime by Ihlanfeldt in 2003 found this fear to be unfounded, and determined the presence of transit in white suburban neighborhoods actually reduced crime.[181] In black suburban areas, crime was unchanged, and near in-town transit stations, crime increased, which led the report to conclude that more security resources should be dedicated to central stations if TOD is to happen.[182] However, this evidence did not exist during MARTA's expansion efforts, and even if it had, outlying counties were adamant in not allowing MARTA to extend into their cities.

Compounding MARTA's financial issues were its restrictions on LTST revenue and a complete absence of state assistance throughout its existence. When sales tax proceeds and fares failed to recover costs, MARTA had to either implement bus service cuts or fare increases. Some charged its cuts to be discriminatory since they often affected majority-black suburban neighborhoods, while inner city lines close to convention centers, hotels, and the airport kept regular service,[183] though often central city routes have more ridership and are thus given higher priority during fiscal duress. Bus riders also face a lack of amenities and information at stops, which are often just single poles topped with a MARTA sign. The MARTA Army, a community organization that encourages volunteers to "adopt" bus stops by printing and posting laminated schedule information, was created to rectify this issue.[184] Because of the signs' low visibility, pedestrian deaths from auto collisions often occur within 100 to 300 feet of a MARTA train or bus

---

176 Ibid., 20.

177 Partnership for Southern Equity, Opportunity Deferred, 15.

178 Henderson, "Secessionist Automobility," 298.

179 Wickert and Estep, "28 years after Gwinnett's last MARTA vote."

180 Henderson, "Secessionist Automobility," 299-300.

181 Ihlanfeldt, "Rail transit and neighborhood crime," 274.

182 Ibid.

183 Rankin, Johnson, Dejanes, Grant, and Triplett, "MARTA Service Cuts in Hotlanta" 67.

184 MARTA Army, "Adopt-A-Stop."

Hatfield, "A Well-Tied Knot."

stop.[185] Atlanta's inhospitable road infrastructure was built with little care for the transit riders who traverse them by foot. In 2012, MARTA's financial situation was dire: it was using the diminishing $120 million in its reserves to bail out its budget every year, and was on track to be insolvent within five years.[186]

Another Defeat for Atlanta's Transportation

In pursuit of a solution, another LTST was proposed in 2012, this time to the twelve-county region around Atlanta. It failed overwhelmingly, despite heavy investment by CBD headquarters and campaigning by multiple key officials, like Mayor Kasim Reed. The measure failed even in Fulton and DeKalb. The sales tax was the problem: it was regarded as regressive, as it would be levied on essentials like groceries and medicine, while gas would be "inexplicably exempted."[187] Instead of MARTA, the bulk of the earnings would have gone to the Georgia Department of Transportation, which has a dominant history of favoring white contractors over minority ones. MARTA would have recieved $600 million, but the funds would be only for capital improvements, a counterintuitive and prohibitive requirement considering the agency's operational shortfalls. $225 million would have gone to South DeKalb, which the county considered an insult considering the long-time investment into MARTA, also since Northern Cobb County would receive $690 million for a BRT line to downtown Atlanta.[188] The Georgia NAACP described the tax as "unfair, short-sighted, racist, and deceitful," and indeed, the measure failed.[189]

A Newcomer Brings Hope for Regional Expansion

With a new savvy CEO, MARTA's finances began to turn around. Shifting regional demographics were changing transit perceptions; newcomers to the area balked at the state of disinvestment and traffic congestion. Clayton County, at one time more than 95 percent white, had turned two-thirds non-white by 2014. In that same year, its voters overwhelmingly approved a one-cent LTST of their own to join MARTA. The county had abandoned its municipal bus service in 2010 for lack of funding, and its workers were in desperate need of transportation. By spring in 2015, MARTA buses were providing residents with access to downtown Atlanta. This marked MARTA's first expansion outside of Fulton and DeKalb, and was celebrated by transit supporters across the region. Other counties are experiencing similar demographic shifts, as more minorities move to suburbs and perceive the need for transit differently from the older populations.

A Turning Point in MARTA's Funding

Leading up to the 2016 General Election, MARTA's leadership strategized carefully before placing more referenda on the ballot. A Georgia Senate bill actually split Fulton County into two to allow for a special LTST that appeared on ballots in the city of Atlanta and in DeKalb County. The special LTST was a half-cent forty-year sales tax increase for MARTA transit expansion. DeKalb voters were also

---

185 McBurney, Toolkits for Safe Crossings in Metro Atlanta, 3.

186 Vock, "The Driver Behind Public Transit's Transformation in Atlanta."

187 Hatfield, "A Well-Tied Knot."

188 Hatfield, "A Well-Tied Knot."

189 Ibid.

presented with a five-year four-tenths percent LTST for certain outlined projects. Fulton County was also presented with two referenda: the same five-year four-tenths percent LTST, and a separate Fulton-specific three-quarter percent LTST for non-transit transportation improvements. All of these referenda passed, varying from narrow wins in Fulton to overwhelming wins in Atlanta and DeKalb.[190]

The four-tenths percent LTST adopted by the two counties will generate $300 million over its five years. Its big-ticket projects center on pedestrian walkability and connectivity, with a whopping $75.4 million dedicated to 16 Complete Streets projects, and $69.6 million for 17 streetscape and sidewalk improvements.[191] $65.9 million will finalize land acquisition for the Atlanta BeltLine project, an exciting new streetcar route that will change regional connectivity immensely once completed.[192] Abandoned circumferential freight rail tracks that encircle the city of Atlanta along a similar loop to the I-285 are being repurposed for a streetcar that will run in continuous loops, connecting all four existing heavy rail lines and multiple bus routes. Bike trails, already present in some areas, will link to follow the BeltLine loop, granting Atlantans access to parks, exercise, and mobility separate from dangerous roads. The four-tenths LTST will also fund the second phase of Atlanta's bike share program with $3 million, as well as other smaller improvements.

The other half-cent LTST approved by the City of Atlanta and DeKalb will fund MARTA transit expansion, at long last. It is projected to generate $2.5 billion over four decades, and will fund the construction of the BeltLine streetcar, a one-stop extension of the Blue Line towards the West side, a light rail line into DeKalb to Emory University, the purchase of new rail cars, and new BRT and ART routes (Arterial Rapid Transit, MARTA bus service between main corridors).[193] The high capacity improvements of rail and BRT will cost $6.2 billion, and the bus plans will cost $65 million.

MARTA was able to rally support for the LTSTs by building on years of rejection and neglect. While 68.6 percent of Atlantans drive alone to work, MARTA transports ten percent of commuters.[194] An interesting development between the 1971 and 2016 LTSTs is the tabulation of Fulton County. In the failed 1968 property tax measure, the city of Atlanta had been tabulated as a separate area from the rest of Fulton and DeKalb.[195] In the 1971 LTST, votes were tabulated across county lines, and the votes of Atlanta carried Fulton County into the margin of majority approval by a very narrow 400 votes.[196] In 2016, the City and the County were split again, though this time by specific design; longtime North and South Fulton County anger at the lack of adequate transit to their corners was heard by MARTA leadership and accounted for.[197] This strategic shift in planning reflects years of polling and research

---

190 Martin, "Voters overwhelmingly pass MARTA."

191 City of Atlanta, "City of Atlanta Proposed TSPLOST Purposes," 1

192 Ibid., 1.

193 MARTA, "More MARTA Fact Sheet."

194 U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates.

195 Office of Technology Assessment, Atlanta Case Study, 19.

196 Ibid.

197 Center for Transportation Excellence, "Transportation Ballot Measures."
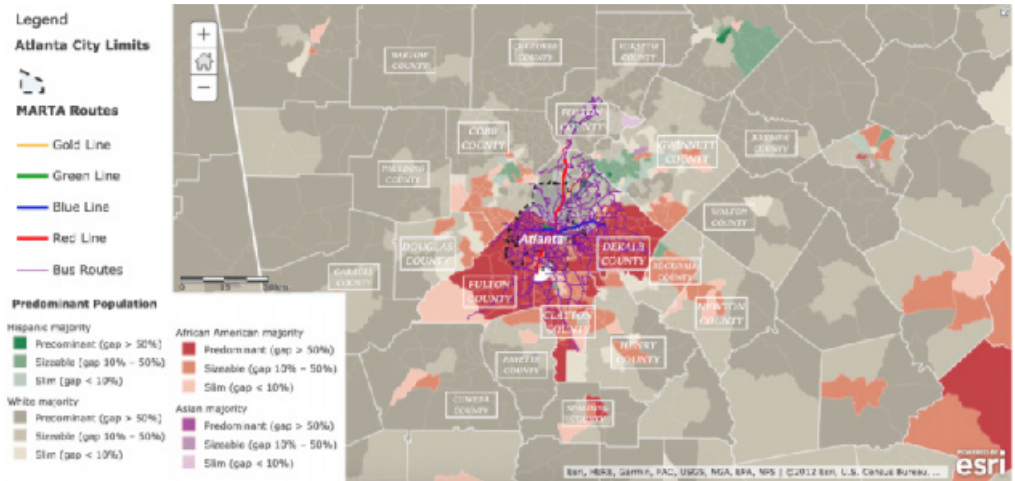
undertaken by MARTA.

FIGURE 5. Atlanta racial distribution and MARTA rail and bus lines. From ArcGIS with edits by author.

Effects on Equity

MARTA's strategy to win support for its 1971 LTST aligned itself with the transit dependent and marginalized community members who had been excluded from prior plans. Its provision to drop fares to 15 cents for seven years was key to obfuscating the regressive nature of the sales tax. After many failed attempts by MARTA and other regional agencies to create a comprehensive regional transit system, MARTA finally secured a second LTST from Clayton County in 2014, allowing for its first expansion and implementing commuter bus service immediately to fulfill the dire need. Strategic planning and the splitting of Fulton County led to more MARTA LTST victories, with almost a full cent added to the sales tax for MARTA projects that emphasize walkability, pedestrian safety, and transit expansion. The BeltLine loop will be the answer to many Atlantan prayers, having contended with a somewhat silly cross-shaped rail network where transfers between lines are only possible at one central station, and where more than half of their routes overlap; the North-South Red and Gold lines share 14 stops, then split to serve nine others, and the East-West Green and Blue lines share eight stops, then split to serve eight others. MARTA's project lists in the 2016 referenda have been developing since the turn of the century, with multiple community planning meetings, public input, and much time to make corrections for shifting needs.

In terms of equitable access, the people of Fulton and DeKalb have enjoyed adequate transit service since the '70s, though MARTA's fiscal issues often caused unreliability and fare volatility. MARTA's lines did, however, serve localized needs, traveling across the paying counties' landscapes in meaningful ways for some. In North and South Fulton and much of DeKalb, residents complain their commute would require two or three transfers between buses and rail (double the time of driving), which indicates a lack of

comprehensiveness for 50 outer areas within the counties. The shortage of funds for operations and capital projects truncated MARTA's early vision of rail development, enabling them to only build 42 miles of the original. In lieu of rail expansion, the agency shifted to an increased bus service strategy. While many taxpayers would prefer rail service for its faster times and general appeal, bus service was the only sensible choice with the limited funding available.

Equitable access for the region, however, has not improved. In fact, it has diminished due to regressive shifts in population and the use of LTST referenda as the main funding source for transit. In 2014, MARTA served just under six percent of Atlanta's 8,376 square mile metropolitan area, at 496 square miles.[198] MARTA's original rejection by outer counties highlights important implications for democratic collective choice and for transportation equity in local county measures. Henderson has proposed that "secessionist automobility"—the effort to create physical barriers in space—enabled "travel through spaces inhabited by blacks or other minorities without having to interact with them."[199] Suburban whites chose to move away from the inner city to get away from minorities and create white enclaves, and by choosing to not fund MARTA, they created costly commuting patterns and transit connectivity issues for their own counties: commuting by car costs about $360 every month,[200] whereas a monthly MARTA pass is $95.[201] While most commuters drive, those who need transit are left stranded. Many suburban counties now operate their own municipal commuter bus lines, which stop near MARTA once in Fulton or DeKalb. Outer county residents also use MARTA after driving into the city, parking in the free lots by rail stations: cars with tags from Cobb and Douglas Counties are frequently seen at Blue Line stops. Recently, more black, Latino, and Asian families are making their homes in the suburbs, and more affluent whites are moving back into the central city, taking residence in the North side or in direct proximity to the airport. This reverse in migration leaves minorities locked out of transit connectivity. Gwinnett was 90 percent white when they rejected MARTA referenda, but today, about 60 percent of the county's residents are black, Latino, or Asian, and a quarter are foreign born.[202] What's more, some employers in Gwinnett County are taking vans to MARTA stops to pick up workers.[203]

Without a regional authority that could levy a tax on the whole metropolitan area, MARTA had to account for the political whims of the segregated counties, and was rejected time and time again for reasons that were largely racial, superficial, and spurned by tax conservatism. Today, MARTA has achieved financial solvency, with over $250 million in reserves in 2017, and a balanced budget for 2018.[204] The agency still worries about long-term operating capabilities without steady support from either federal or state sources.[205] However, in a surprise landmark shift in policy, the Georgia General Assembly voted to

198 MARTA, MARTA Annual Report 2013-2014, 9.

199 Henderson, "Secessionist Automobility," 300.

200 Hatfield, "A Well-Tied Knot."

201 Hatfield, "A Well-Tied Knot."

202 202   Wickert and Estep, "28 years after Gwinnett's last MARTA vote."

203 Schmidt, "Racial Roadblock Seen in Atlanta Transit System."

204 MARTA, FY18 Adopted Budget Book, i.

205 Rankin, Johnson, Dejanes, Grant, and Triplett, "MARTA Service Cuts in Hotlanta," 66.

create a new regional transit agency that will link all of Atlanta's different transit systems (the CobbLinc, Gwinnett County Transit, and GRTA's Xpress service) under a 13-county planning jurisdiction on March 30, 2018. The new agency will rebrand the whole system with a new name: the "ATL."[206] This development in the Atlanta transit story highlights the negative connotation of the MARTA name, and how even state legislators believe rebranding the system will be the only way to get outer suburban communities to invest in and understand the need for regional transit expansion and coordination.

Although the lack of LTST adoption from suburban counties has led to a fragmented region still seated with traffic congestion and inequitable transit choices, I posit that MARTA's LTSTs localized the agency's focus towards the paying counties' needs, which lead to enhanced public engagement and understanding and thus more equity for the transit dependent. MARTA's prioritized projects are dedicated to improving walkability, access to biking and walking trails, improving transit stop safety, and expanding circumferential transit that will make trips faster and more direct. These improvements enhance equitable access. Their use of the sales tax, while regressive, has proved less lucrative than in LA. They also have an end date, which means the people of Fulton, DeKalb, and Clayton will have an opportunity to assess whether MARTA, or the ATL, has done a job worthy of reinvestment, though it is admittedly far into the future.

Chapter V: Discussion

These case studies illustrate some major differences in strategy between the Metro and MARTA transportation agencies in LA and Atlanta, as well as some of the pitfalls of fulfilling transportation needs with LTST funding. While the LTST method forced the agencies to cater to non-transit riders at first, they increased accountability for their riders and became more responsive to transit dependent needs in general.

There are several significant differences between the transportation agencies' responsibilities, budgets, and jurisdictions for LTST referenda. In LA, the whole metropolitan area encompasses one county, which means Metro must plan for and cater to all 88 cities and unincorporated areas. Metro's responsibilities are not limited to transit like MARTA's are, as it also must plan and implement freeway and road improvements, manage pedestrian and bicyclist safety, and undergo transit building and operations. Its LTST measures require a staggering two-thirds approval, a built-in democratic check that requires resources, time, and energy for which to contend. Its budget is much larger, as is its service area.

Atlanta's 10-county metropolitan area is disjointed in transportation matters, with multiple regional governments, transportation agencies, and no overarching authority that brings them together through transit or through LTST referenda. For this reason, the agency covers a much smaller service area than Metro, and operates less transit in general. MARTA's LTSTs require simple majorities, and while that increases chances of adoption, its LTSTs have consistently received less than 50 percent in certain counties. MARTA's financials are healthy now, but were not for most of its existence.

In their initial propositions, both Metro and MARTA used fixed bus fares as an incentive for passing the LTSTs, though LA's period of fare reduction was shorter and set at a higher price. This

---

206 Green, "Georgia passes landmark legislation."

prolonged subsidy convinced the low-income bus-riding residents to "save now, pay later" for the regressive tax and the transit improvements it would build. They also both proposed rail plans meant to capture commuter and inner city resident imaginations, as well as FTA grant dollars. At first, the influences of business communities and politicians held much sway over project decisions for both agencies. While both agencies progressively listened more to their riders, MARTA did so more expediently than Metro, mostly due to its much smaller scope and pool of riders. The rail programs in both cities received considerable backlash from constituents who sensed the unfair prioritization of outside residents over inner city ones. The agencies heard the concerns raised and rectified their mistakes in subsequent LTST measures, signifying more accountability to minority and marginalized communities.

The persistent stigma of buses and rail

A common problem for both cities is the negative perception of public transit that clings to their systems. In LA, buses are seen as inferior to rail, and their delays in service, overcrowding, and lack of transfer connectivity create negative experiences for occasional and daily riders. However, LA's rail system is also perceived negatively, as stories of crime are frequent and riders have reported feeling less safe. In Atlanta, the same characterizations for busing exist, and its inefficient rail layout makes non-riders reluctant to use it because of the need to transfer at the central station to backtrack in a different direction.

Unique to Atlanta is that MARTA is steeped in racial prejudice, which complicates its general acceptance as the transit agency of the Atlanta region and has a negative effect on its sales tax referenda. The merits of the agency and its work providing service to the transit dependent of the region are lost on suburban people who harbor racially rooted fears of crime and desire to live in segregated neighborhoods. In general, suburban commuters dislike being in close proximity with urban residents on transit, which stems from "occasional, but sensational, reports of criminal activity on public transit vehicles."[207] To fight the stigma beleaguering transit, ridership must increase. To increase ridership, safety measures must improve and more financial incentives must force shifts in driver behavior.

Regressive sales taxes

The fiscal deficits that typically plague transportation agencies pose challenges that cannot be solved simply by fare revenue, as political opponents of transit systems often contend. The subsidization of transit is necessary at the various levels of government.

LA receives funds from both the federal and state government, while Atlanta only receives federal assistance (though that may change soon). MARTA was seriously fiscally handicapped until budgetary cuts and fare raises brought the budget back into the black. Both LA and Atlanta almost have equal rates of LTSTs, with LA's four measures adding up to two percentage points and Atlanta's three LTSTs adding up to one and nine tenths percentage points. LA's percentage is now permanent, while Atlanta's will end in about 40 years. The permanence of the Metro LTSTs increases the general cost of living in LA County, which may lead to the displacement of low-income people in the long run. Atlanta, also subject to increasing living costs and gentrification in the central city, will allow for more referenda after the current taxes expire. While

---

207 Verbit, "The Urban Transportation Problem," 429.

regressive in nature, the LTST funds are lucrative and create exponential returns that have created transit developments that enhance connectivity for many.

The regional inequities across demographic groups in both LA and Atlanta highlight why transportation agencies should redress the impact of the regressive sales tax through sustained reduced fares, and through prioritization of projects that directly connect areas of most need to job centers and opportunities. Latinos in LA and blacks in Atlanta both form majorities in their respective populations, but are the groups with least income, least employment, least wealth, and thus least prospects for future prosperity. Both LA and Atlanta have many high-paying jobs, lucrative industries, and attract outside talent, but the Latinos of LA and the blacks of Atlanta overwhelmingly work in service industries or in laboring positions, not privy to the high-level employment of those high-grossing industries. Better transit access improves the chances of escaping poverty. Children and parents need reliable service to get to school and work without worry, and to allow for autonomy in their search of opportunity. The effects of decades of redlining practices, disinvestment, and growing poverty in minority urban neighborhoods are still widespread. Some neighborhoods, like Boyle Heights in East LA, are being taken over by gentrification as newcomers seek low rent. This practice begins a systemic uptick in the costs of living, leading to displacement of low-income longtime community members. Other neighborhoods are still not receiving investments from local governments or employers, which instead settle out in suburban areas, closer to more affluent and vehicle-accessible areas Many car-accessible jobs are out of transit reach;; thus, transit dependent people cannot even apply for them. For these reasons, both LA and Atlanta should address these longtime disinvestments into marginalized neighborhoods, and should do so before shifting to serving commuter needs.

While MARTA's failure in suburban counties has prevented it from becoming the regional solution it envisioned itself as, it has become a more localized and in-tune agency that responds to its riders' needs. Metro is the opposite. As a huge agency in charge of many different corridors between cities, riders' needs are not heard until dramatic action is taken, and even then, the agency makes choices against its transit dependent riders' desires, knowing that those will lead to benefits for other non-riding county residents. LTST measures can lead to investments in inequitable transit modes, with rail often prevailing over buses for its superior reputation. Rail investments divert resources to unchangeable routes that may not even be necessary or heavily commuted, which could lead to increasing wastes in long-term operational costs and subsidies for rail fares.

In LA and in Atlanta, LTST funding produced transportation systems that work well today, and enhance general transit accessibility, but were costly and under deliver on economic impact and ridership. The political and business influences on the agencies made their plans favor rail projects over bus improvements, and while those would be sensible in densely populated and developed urban areas, both LA and Atlanta's sprawling configurations make bus infrastructure the more flexible and cost-effective investment. The majority of transit dependent residents in these cities already ride the bus most frequently, so if their transportation agencies wanted to commit to achieving transportation equity for their regions, they would prioritize modernizing the bus systems and improving their appearance, service, perception, safety, and timeliness.

Chapter VI: Conclusion

LTSTs have been proposed by transportation agencies and approved by voters across the U.S. in states that allow local-option tax referenda. These have enabled large-scale changes in transportation environments, ranging from road and highway improvements to rail construction and operation. Their democratic nature provides a profound opportunity for local control, democracy, and equity enhancement, but two of LTST measures' pitfalls cripple their effectiveness and fairness: their need to be popular with a wider regional audience of non-transit riders, and the reliance on the inequitable sales tax.

The need to appeal to wider county constituencies leads transportation agencies to promote less efficient and less equitable transit modes, such as rail, over more cost-effective, flexible, and equitable modes, such as bus systems, or can outright prevent transit development, which can further entrench socioeconomic disparities. Sales taxes create unfair burdens on those of least income, transit's main riders and fare contributors. LTSTs for transit development are lucrative and politically expedient, but can hinder the enhancement of equity unless inclusive of special provisions that specifically address their inequities.

Despite these pitfalls, the case studies in this research show that LTST measures can both enhance and diminish equitable access for transit riders. While they force transportation agencies to internalize the non-riding public's political whims and preferences, they can lead to more accountability, which rectify skewed priorities and grant more resources to existing transit riders. Transportation agencies proposing LTSTs can redress their inequities by considering the distributional effects of the regressive tax and by delivering projects to areas of most need first. This strategy will help the agencies capture more returns in fare revenue and ridership sooner, which will enhance agency reputation and transit viability.

To make transit financing more progressive, agencies can diversify tax revenues by including more progressive taxes in their measures. Pucher and Hirschman showed that metropolitan areas that included progressive taxes like payroll taxes, corporation and business taxes, insurance premiums, and inheritances could help lessen the regressive burden on those of least income.[208] Other changes, such as raising taxes on fuel, limiting parking and road use, charging a fee on vehicle miles travelled, and taxes on carbon could force changes in transportation behavior.[209] Some of these, like the fuel tax, are viewed as inequitable as well, because many low-income people rely on personal vehicles for their livelihoods. However, if transit connectivity exists in low-income neighborhoods, fuel taxes would produce less of a burden for those low-income people using transit. Fuel taxes have also not increased with inflation, and they should to reflect their true cost and grant more funding towards transit's share of the gas and diesel tax. If the sales tax is the only legislated option for transportation agencies, then different rates should be assigned to different goods, with exemptions on essentials and higher rates on luxury purchases.

Future research should focus on other combinations of taxes for transit to determine those that incentivize the most transit adoption. Case studies of cities with other regressive or progressives taxes for

---

208 Pucher and Hirschman, "Distribution of the Transit Tax Burden."

209 Verbit, "The Urban Transportation Problem," 431; Manville and Cummins, "Why do voters support public
    transportation?," 318.

transportation should be conducted to see whether the same effects were produced upon equitable access, and to see what model is the best to follow. More studies on bus viability in low-density cities could also boost the case for their flexibility and for protected bus guideways.

Bibliography

Agrawal, Asha W., and Hilary Nixon. What Do Americans Think About Federal Tax Options to Support Public Transit, Highways, and Local Streets and Roads? Results from Year Five of a National Survey. (San José, CA: Mineta Transportation Institute, 2014). http://transweb.sjsu.edu/PDFs/research/1228-American-tax-poll-2013-public-transit-highways-streets-roads.pdf

Amazon. "Amazon HQ2 RFP." Accessed March 21, 2018. https://images-na.ssl-images-amazon.com/images/G/01/Anything/test/images/usa/RFP_3._V516043504_.pdf

Atlanta Regional Commission Research. "Regional Snapshot: 2017 Population Estimates." 33°N, August 10, 2017. https://33n.atlantaregional.com/regional-snapshot/regional-snapshot-2017 population-estimates

Atlanta Regional Commission Research. "Regional Snapshot: What is the Biggest Problem Facing Metro Atlanta?" 33°N, December14, 2015. https://33n.atlantaregional.com/regional-snapshot/regional-snapshot-what-is-the-biggest-problem-facing-metro-atlanta

Atlanta Streetcar. "About." Accessed March 8, 2018. http://streetcar.atlantaga.gov/about/

Ávila, Eric. The Folklore of the Freeway: Race and Revolt in the Modernist City. Minneapolis: University of Minnesota Press, 2014.

Ávila, Eric. Popular Culture in the Age of White Flight: Fear and Fantasy in Suburban Los Angeles. Berkeley: University of California Press, 2006.

Axelrod, Jeremiah B. C. " 'Keep the 'L' out of Los Angeles': Race, Discourse, and Urban Modernity in 1920s Southern California." Journal of Urban History 34, no. 1 (2007): 3-37. https://doi.org/10.1177/0096144207306614

Bermudez, Esmeralda. "Why These Southeast L.A. Cities Are Banding Together to Fight Measure M, the Transportation Tax." Los Angeles Times, 5 Nov. 2016, beta.latimes.com/local/california/la-me-ln-measure-m-southeast-20161101-story.html.

Berry, Frances Stokes, and William D. Berry. "Tax Innovation in the States: Capitalizing on Political Opportunity." American Journal of Political Science 36, no. 3 (1992): 715-742. www.jstor.org/stable/2111588.

Blumenberg, Evelyn. "Why Low- Income Women in the US Still Need Automobiles." Town Planning Review 87, no. 5 (2016): 525-545. doi:10.3828/tpr.2016.34.

Brown, Jeffrey. "Paying for Transit in an Era of Federal Policy Change." Journal of Public Transportation 8, no. 3 (2005): 1-32. https://www.nctr.usf.edu/jpt/pdf/JPT%208-3%20Brown.pdf

Brown, Marilyn A., Frank Southworth, and Andrea Sarzynski. Shrinking the Carbon Footprint of Metropolitan America. (Washington DC: Brookings, May 2008).

California Debt Advisory Commission, State And Local Tax And Bond Ballot Measures Summary Of General Election Results November 6, 1990. (Sacramento, CA: California Debt Advisory Commission, February 1991). http://www.treasurer.ca.gov/cdiac/reports/elections/111990.pdf

California State Board of Equalization. "California City & County Sales & Use Tax Rates." Last modified October 1, 2017. http://www.boe.ca.gov/app/rates.aspx.

Cavanaugh, Kerry. "Has The New Expo Line Been Doomed To Slow, Mediocre Service Before It Even Opens?" Los Angeles Times, May 17, 2016. http://beta.latimes.com/opinion/livable-city/laol-

expo-line-faster-20160513-snap-story.html

Cervero, Robert. "Views on transit tax financing in the US." Transportation (Pre-1986) 12, no. 1 (1983): 21-43. https://search.proquest.com/docview/211198806?accountid=12768.

Center for Transportation Excellence. "Transportation Ballot Measures: Past Elections." Accessed January 8, 2018. http://www.cfte.org/elections/past

Chass, Robert L. "Air Pollution Control: The Case of Los Angeles County." California Management Review (Pre-1986) 14, no. 3 (1972): 92-103. https://search-proquest-com.proxy.library.nyu.edu/docview/206295868?accountid=12768.

City of Atlanta. "City of Atlanta Proposed TSPLOST Purposes and Recommended Projects." Accessed March 8, 2018. https://www.atlantaga.gov/home/showdocument?id=22900

County of Los Angeles. "About LA County." Accessed November 12, 2017. https://www.lacounty.gov/government/about-la-county

Crabbe, Amber E., et al. "Local Transportation Sales Taxes: California's Experiment in Transportation Finance." Public Budgeting & Finance 25, no. 3 (2005): 91-121. https://search.proquest.com/docview/212087049?accountid=12768.

Dajani, Jarir, M. Michael Egan, and Marjorie B. McElroy. "The Redistributive Impact Of The Atlanta Mass Transit System." Southern Economic Journal (pre-1986) 42, no. 1 (July 1975):49-60. https://search-proquest-com.proxy.library.nyu.edu/docview/217166841?accountid=12768.

Elkind, Ethan. "How to boost L.A.'s sinking transit ridership." Los Angeles Times, February 1, 2016. http://www.latimes.com/opinion/livable-city/la-oe-0201-elkind-transit-ridership-decline-20160201-story.html

Elkind, Ethan. "Provincial Feuding Over Measure M Will Make Traffic And Mobility Worse For Everyone." Los Angeles Times, October 5, 2016. http://beta.latimes.com/opinion/op-ed/la-oe-elkind-measure-m-parochial-opposition-20161025-snap-story.html

Federal Transit Administration. "A Brief History of Mass Transit." About FTA. Last modified December 19, 2017. https://www.transit.dot.gov/about/brief-history-mass-transit

Federal Transit Administration. "About FTA." Accessed November 23, 2017. https://www.transit.dot.gov/about-fta

Federal Transit Administration. "FAST Act." Last modified February 22, 2017. https://www.transit.dot.gov/FAST

Federal Transit Administration. "Grant Programs." Accessed November 24, 2017. https://www.transit.dot.gov/grants

Federal Transit Administration. National State of Good Repair Assessment 2010. (Washington, DC: Federal Transit Administration, 2010). https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/National_SGR_Study_072010%282%29_1.pdf

Florida, Richard. The New Urban Crisis: How Our Cities are Increasing Inequality, Deepening Segregation, and Failing the Middle Class—And What We Can Do About It. New York: Basic Books, 2017.

Freeman, Gregory, Nancy D. Sidhu, and Myasnik Poghosyan. Sources of Sales Tax Revenue Collected in LA County. (Los Angeles: Los Angeles Economic Development Corporation, 2008). http://media.metro.net/measureR/documents/tax_sales.pdf

Goldman, Todd, and Martin Wachs. "A Quiet Revolution in Transportation Finance: The Rise of Local Option Transportation Taxes" Transportation Quarterly 57, no.1, (Winter 2003): 19-32. http://www.farkel.net/todd/QuietRev-TQ.pdf

Green, Andrew D. "Life in the Fast Lane: Transportation Finance and the Local Option Sales Tax." State & Local Government Review 38, no. 2 (2006): 92-103. www.jstor.org/stable/4355422.

Green, Andrew D. "County Governments and Democratic Decision Making: Explaining Why Counties Seek Approval of Local Option Sales Taxes." State Politics & Policy Quarterly 14, no. 1 (2014): 50-71. https://search.proquest.com/docview/1511817874?accountid=12768.

Green, Josh. "Georgia passes landmark legislation for regional transit; prepare for 'The ATL.'" Curbed Atlanta, March 30, 2018. https://atlanta.curbed.com/2018/3/30/17180118/georgia-marta-transit-atl-legislation-regional-network

Grengs, Joe, Jonathan Levine, and Qingyun Shen. Evaluating Transportation Equity: An Intermetropolitan Comparison of Regional Accessibility and Urban Form. (Ann Arbor: University of Michigan, June 2013). https://www.transit.dot.gov/sites/fta.dot.gov/files/FTA_Report_No._0066.pdf

Haas, Peter J., and Katherine Estrada. Revisiting Factors Associated with the Success of Ballot Initiatives with a Substantial Rail Transit Component. (San José: Mineta Transportation Institute, 2011). http://transweb.sjsu.edu/PDFs/research/2911-Ballot-Initiatives-Rail-Transit.pdf

Hannay, Robert, and Martin Wachs. "Factors Influencing Support for Local Transportation Sales Tax Measures." Transportation 34, no. 1 (2007): 17-35. http://dx.doi.org/10.1007/s11116-006-0006-4.

Henderson, Jason. "Secessionist Automobility: Racism, Anti-Urbanism, and the Politics of Automobility in Atlanta, Georgia." International Journal of Urban and Regional Research 30, no. 2 (June 2006): 293-307. http://online.sfsu.edu/jhenders/Writings/ijur_final.pdf

Hymon, Steve. "How We Roll: is it really the dream of every bus rider to have a car?" The Source, last modified January 27, 2016. https://thesource.metro.net/2016/01/27/how-we-roll-is-it-really-the-dream-of-every-bus-rider-to-have-a-car/

Ihlanfeldt, Keith R. "Rail transit and neighborhood crime: The case of Atlanta, Georgia." Southern Economic Journal 70, no. 2 (October 2003): 273-294. https://search.proquest.com/docview/212132170?accountid=12768

Kramer, Anna, and Alexandra Goldstein. "Meeting the Public's Need for Transit Options: Characteristics of Socially Equitable Transit Networks." Institute of Transportation Engineers Journal 85, no. 9 (September 2015): 23-30. https://search.proquest.com/docview/1714094266?accountid=12768

Los Angeles County Metropolitan Transportation Authority. 2017 Funding Sources Guide. (Los Angeles: Strategic Financial Planning and Programming, 2017). https://media.metro.net/about_us/finance/images/2017_funding_sources_guide.pdf

Los Angeles County Metropolitan Transportation Authority. "About Metro." Accessed February 15, 2018. https://www.metro.net/about/about-metro/

Los Angeles County Metropolitan Transportation Authority. "Facts at a Glance." Last modified on November 18, 2016. https://www.metro.net/news/facts-glance/

Los Angeles County Metropolitan Transportation Authority. How is Metro Measuring Up? 2008-2015

Quality of Life Report The Full Study. (Los Angeles, CA: Metro, 2017). http://media.metro. net/docs/report_qualityoflife.pdf

Los Angeles County Metropolitan Transportation Authority. "Measure M: Metro's Plan To Transform Transportation In LA." Last modified November 2016. http://theplan.metro.net/.

Los Angeles County Metropolitan Transportation Authority. "Measure M: Metro's Plan To Transform Transportation In LA." Accessed February 1, 2018. http://theplan.metro.net/

Los Angeles County Metropolitan Transportation Authority. "Metro Fares as of September 15, 2014." Accessed November 28, 2017. http://media.metro.net/riding_metro/fares/fares_English.pdf

Los Angeles County Metropolitan Transportation Authority. "Proposition A." Accessed December 20, 2017. https://www.metro.net/projects/measurer/proposition_a/

Los Angeles County Registrar-Recorder/County Clerk. "Los Angeles County Election Results General Election." Last modified December 2, 2016. https://www.lavote.net/ElectionResults/ Text/3496

Los Angeles County Registrar-Recorder/County Clerk. "Revised General Election November 8, 2016: Measures Appearing On The Ballot." Accessed February 10, 2018. https://www.lavote.net/ Documents/Election_Info/11082016-Measures-Appearing-on-Ballot.pdf

Los Angeles Department of City Planning. Mobility Plan 2035. (Los Angeles, CA: City Council, 2017). https://planning.lacity.org/documents/policy/mobilityplnmemo.pdf

Lucas, Karen, Bert van Wee, and Kees Maat. "A Method to Evaluate Equitable Accessibility: Combining Ethical Theories and Accessibility-Based Approaches." Transportation 43, no. 3 (2016): 473- 490. https://search-proquest-com.proxy.library.nyu.edu/docview/1787037578?accountid=12 768,doi:http://dx.doi.org.proxy.library.nyu.edu/10.1007/s11116-015-9585-2.

Lund, Hollie, Richard W. Willson, and Robert Cervero. "A RE-EVALUATION OF TRAVEL BEHAVIOR IN CALIFORNIA TODS." Journal of Architectural and Planning Research 23, no. 3 (2006): 247–263. www.jstor.org/stable/43030775.

Mann, Eric. A New Vision For Urban Transportation: The Bus Riders Union Makes History at the Intersection of Mass Transit, Civil Rights, and the Environment. (Los Angeles: Strategy Center Publications, 1996). http://thestrategycenter.org/wp-content/uploads/2017/07/new- vision-for-urban-transportation.pdf

Mann, Eric, Kikanza Ramsey, Barbara Lott-Holland, and Geoff Ray. An Environmental Justice Strategy for Urban Transportation in Atlanta: Lessons and Observations from Los Angeles. (Los Angeles: Labor/Community Strategy Center, March 2001). http://thestrategycenter.org/wp- content/uploads/2017/07/an-ej-strategy-for-atlanta.pdf

Manville, Michael, and Benjamin Cummins. "Why do voters support public transportation? Public choices and private behavior." Transportation 42, no. 2 (2015): 303-332. http://dx.doi.org/10.1007/ s11116-014-9545-2.

MARTA Army. "Adopt-A-Stop." Accessed March 4, 2018. http://www.martaarmy.org/joinanarmy

Martin, Hugo. "Los Angeles County brings in a record-high number of tourists in 2016." Los Angeles Times, January 11, 2017. http://www.latimes.com/business/la-fi-tourism-numbers-20170111- story.html

Martin, Mariann. "Voters overwhelmingly pass MARTA, T-SPLOST transportation funding referenda."

Atlanta Loop, November 9, 2016. http://www.atlantaloop.com/699-2/

McBurney, Andrew. Toolkits for Safe Crossings in Metro Atlanta. (Atlanta, GA: Pedestrians Educating Drivers on Safety, 2014). http://peds.org/wp-content/uploads/2014/06/4729-SR2T-toolkits_Final.pdf

Metropolitan Atlanta Rapid Transit Authority. "2018 State of MARTA Address." Filmed January 5, 2018 at W Hotel Midtown, Atlanta, GA. Video, 1:10:43. In conjunction with Council for Quality Growth. https://www.youtube.com/watch?v=qewmK3gS1oE

Metropolitan Atlanta Rapid Transit Authority. "City of Atlanta More MARTA Fact Sheet." Accessed March 4, 2018. http://www.itsmarta.com/uploadedFiles/MARTA_101/Why_MARTA/More%20MARTA%20Fact%20Sheet%202017-%20WEB%20VERSION.pdf

Metropolitan Atlanta Rapid Transit Authority. "Fare Programs." Accessed March 5, 2018. http://www.itsmarta.com/fare-programs.aspx

Metropolitan Atlanta Rapid Transit Authority. FY18 Adopted Budget Book. (Atlanta, GA: Department of Finance, October 2017). http://www.itsmarta.com/pdfs/BUDGET_2018_1-4-18.pdf

Metropolitan Atlanta Rapid Transit Authority. MARTA Annual Report 2013-2014. (Atlanta, GA: Metropolitan Atlanta Rapid Transit Authority, 2014). https://www.itsmarta.com/pdfs/MARTA-Annual-Report2014.pdf

Monroe, Doug. "Where It All Went Wrong." Atlanta Magazine, August 1, 2012. http://www.atlantamagazine.com/great-reads/marta-tsplost-transportation/

National Transit Database. 2015 National Transit Summary and Trends. (Washington DC: U.S. Department of Transportation Federal Transit Administration, 2015). https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/2015%20NTST.pdf

National Transit Database. 2016 National Transit Summary and Trends. (Washington DC: U.S. Department of Transportation Federal Transit Administration, 2016). https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/ntd/66011/2016-ntst.pdf

Neff, John, and Matthew Dickens. 2016 Public Transportation Fact Book. (Washington DC: American Public Transportation Association, February 2017). http://www.apta.com/resources/statistics/Documents/FactBook/2016-APTA-Fact-Book.pdf

Nelson, Laura J. "A Tax Hike to Fund a Major Expansion of the Metro System Is Leading in Early Returns." Los Angeles Times, November 9, 2016. www.latimes.com/local/lanow/la-me-ln-metro-sales-tax-20161108-story.html.

Office of Technology Assessment. An Assessment of Community Planning for Mass Transit: Volume 2—Atlanta Case Study. (Washington, DC: United States Congress, February 1976). https://www.princeton.edu/~ota/disk3/1976/7602/7602.PDF

Owen, Andrew, Brendan Murphy, and David Levinson. Access Across America: Transit 2016. (Minneapolis, MN: Center for Transportation Studies, 2017). http://access.umn.edu/research/america/transit/2016/index.html

Partnership for Southern Equity. Growing the Future: The Case for Economic Inclusion in Metro Atlanta. (Atlanta, GA: Partnership for Southern Equity, 2016). http://eventpse.org/wp-content/uploads/2016/08/Growing-the-Future-Full-Report-2016.pdf

Partnership for Southern Equity. Opportunity Deferred: Race, Transportation, and the Future of

Metropolitan Atlanta. (Atlanta, GA: Partnership for Southern Equity, 2017). http://45tkhs2ch4042kf51f1akcju.wpengine.netdna-cdn.com/wp-content/uploads/2017/02/2017-PSE-Opportunity-Deferred4.pdf

Pendall, Rolf, Juliet Gainsborough, Kate Lowe, and Mai Nguyen. "Bringing Equity to Transit-Oriented Development: Stations, Systems, and Regional Resilience." Urban and Regional Policy and Its Effects: Building Resilient Regions. Brookings Institution Press, 2012, pp. 148–192. www.jstor.org/stable/10.7864/j.ctt12632t.8.

Pucher, John and Ira Hirschman. "Distribution of the Transit Tax Burden in Five U.S. Metropolitan Areas." Transportation (Pre-1986) 11, no. 1 (March 1982): 3-24. https://search-proquest-com.proxy.library.nyu.edu/docview/211306501?accountid=12768.

Rabin, Jeffrey L. "Anti-Subway Funding Measure Wins Easily." Los Angeles Times, 4 Nov. 1998, http://articles.latimes.com/1998/nov/04/news/mn-39290/2

Rall, Jaime, Alice Wheet, Nicholas J. Farber, and James B. Reed. Transportation Governance and Finance: A 50-State Review of State Legislatures and Departments of Transportation. (Washington, DC: American Association of State Highway and Transportation Officials, 2016). http://www.financingtransportation.org/pdf/50_state_review_nov16.pdf

Rankin, Nicolas R., Glenn S. Johnson, Robert B. Dejanes, Howard W. Grant, and Kimberly L. Triplett. "MARTA Service Cuts in Hotlanta: Using the Regime Theory and the Environmental Justice Framework to Analyze Transportation Racism in Hotlanta." Race, Gender & Class 22, no. 3 (2015): 55-82. https://search-proquest-com.proxy.library.nyu.edu/docview/1842827806?accountid=12768.

Rea & Parker Research. Los Angeles County Metropolitan Transportation Authority FY 2002 On-Board Bus Survey Regional Weekday Travel Patterns Report. (San Diego, CA: Rea & Parker Research, May 2003). http://media.metro.net/projects_studies/research/images/reports/mta_bus_regional_weekday_travel_patterns.pdf

Robb, Kate. "Supporting Healthy Communities through Transportation." Institute of Transportation Engineers Journal 87, no. 4 (April 2017): 21-24. http://proxy.library.nyu.edu/login?url=https://search-proquest-com.proxy.library.nyu.edu/docview/1896812309?accountid=12768.

Santos, A., N. McGuckin, H. Y. Nakamoto, D. Gray, and S. Liss. "Summary of Travel Trends: 2009 National Household Travel Survey." (Washington DC: U.S. Department of Transportation Federal Highway Administration, 2011).

Saporta, Maria. "A Transit Tale of Two Counties – Clayton looks to MARTA, Cobb looks away." Saporta Report, June 16, 2014. https://saportareport.com/a-tale-of-two-counties-and-transit-clayton-looks-to-marta-cobb-looks-away/

Schroeder, Larry D., and David L. Sjoquist. "The Rational Voter: An Analysis of Two Atlanta Referenda on Rapid Transit." Public Choice (Pre-1986) 33, no. 3 (1978): 27. https://search-proquest-com.proxy.library.nyu.edu/docview/236989408?accountid=12768.

Shon, Jongmin. "State-local sales tax, spillover, and economic activity: examining county governments in the US." Local Government Studies 43, no. 3 (2017): 429-450. https://doi.org/10.1080/03003930.2017.1300148

Snyder, Ryan. "The Bus Riders Union Transit Model: Why a Bus-Centered System Will Best Serve U.S.

Cities." (Los Angeles, CA: Labor/Community Strategy Center, April 2009). http://thestrategycenter.org/wp-content/uploads/2017/07/lcsc_bru_transit_model_2009-04.pdf

Taylor, Brian D., and Eric A. Morris. "Public Transportation Objectives and Rider Demographics: Are Transit's Priorities Poor Public Policy?" Transportation 42, no. 2 (2015): 347-367. http://dx.doi.org/10.1007/s11116-014-9547-0.

Taylor, Brian D. "When Finance Leads Planning: Urban Planning, Highway Planning, and Metropolitan Freeways in California." Journal of Planning Education and Research 20 (2000): 196-214. http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1012.5041&rep=rep1&type=pdf

Tolbert, Caroline J., John A. Grummel, and Daniel A. Smith. "The Effects of Ballot Initiatives on Voter Turnout in the American States." American Politics Research 29, no. 6 (2001): 625-648. https://search-proquest-com.proxy.library.nyu.edu/docview/220959587?accountid=12768.

United States Census Bureau. 2011-2015 American Community Survey 5-Year Estimates. https://factfinder.census.gov/

United States Census Bureau. 2012 Census of Governments, Individual State Descriptions: 2012. (Washington, DC: Government Printing Office, September 2013). https://www2.census.gov/govs/cog/2012isd.pdf

United States Census Bureau. "Growth In Urban Population Outpaces Rest Of Nation." Census Bureau Reports. Last modified March 26, 2012. https://www.census.gov/newsroom/releases/archives/2010_census/cb12-50.html

United States Department of Transportation Federal Highway Administration. "Fixing America's Surface Transportation Act or 'FAST Act.'" Last modified February 14, 2017. https://www.fhwa.dot.gov/fastact/

United States Office of Management and Budget. Budget of the United States Government, Fiscal Year 2018. (Washington, DC: Government Printing Office, 2017). https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/budget/fy2018/budget.pdf

Verbit, Gilbert Paul. "The Urban Transportation Problem." University of Pennsylvania Law Review 124, no. 2 (1975): 368-489. doi:10.2307/3311512.

Vock, Daniel C. "The Driver Behind Public Transit's Transformation in Atlanta." Government Technology Magazine, October 7, 2014. http://www.govtech.com/transportation/GT-The-Driver-Behind-Public-Transits-Transformation-in-Atlanta.html

USC Urban Growth Seminars. "Measure M: Yes or No on Sales Tax Measure for LA Transit?" Filmed October 18, 2016 at University of Southern California Sol Price School of Public Policy, Los Angeles, CA. Video, 1:20:06. Moderated by Lisa Schweitzer, in conjunction with METRANS Transportation Center. https://www.youtube.com/watch?v=LHC8yQFxPZY

Wachs, Martin. "Autos, Transit, and the Sprawl of Los Angeles: The 1920s." Journal of the American Planning Association 50 (Summer 1984): 297-310. https://doi.org/10.1080/01944368408976597

Weiner, Edward. Urban Transportation Planning in the United States: History, Policy, and Practice. New York: Springer Science & Business Media, 2008. https://doi.org/10.1007/978-0-387-77152-6

Wheeler, Stephen M. "A Carbon-Neutral California: Social Ecology and Prospects for 2050 GHG Reduction." Urban Planning 2, no. 4 (2017) 5-18. http://dx.doi.org.proxy.library.nyu.edu/10.17645/up.v2i4.1077.

Wickert, David, and Tyler Estep. "28 years after Gwinnett's last MARTA vote, is another coming? And soon?" The Atlanta Journal-Constitution, February 23, 2018. https://www.myajc.com/news/local-govt--politics/years-after-gwinnett-last-marta-vote-another-coming-and-soon/XIyzAcfp7dryZ5U89axZXK/

Zhao, Zhirong J., and Yilin Hou. "Local Option Sales Taxes and Fiscal Disparity: The Case of Georgia Counties." Public Budgeting & Finance 28, no. 1 (Spring 2008): 39-57. http://onlinelibrary.wiley.com/doi/10.1111/j.1540-5850.2008.00896.x/abstract

DO FEMALE POLITICAL LEADERS ENCOURAGE WOMEN TO RUN FOR OFFICE? EVIDENCE FROM U.S. STATE LEGISLATURES

MANPREET KAUR

My research project aims to answer if the successful election of female state legislators during the 1970s to the 1990s empowered more female citizens to run in the proximate election. I use regression discontinuity to look at competitive electoral races between a female and male candidate where the victor won with a margin of less than five percent. I then compare the magnitude of two coefficients from two separate regression formulas. One regression observes the effect of successfully electing a female state legislator on the number of female candidates in the proximate election and the other formula observes the effect of successfully electing a male state legislator on the number of male candidates in the proximate election. Since both formulas account for the incumbency effect, I compare the magnitude of the two coefficients to observe if female state legislators empower more women to run in the proximate election. Although the female coefficient is larger than the male coefficient in every regression and these results are statistically significant at the one percent level, a t-test proves that the effect is small enough to be considered negligible. Thus, female state legislators from the seventies to the nineties did not empower other women to run for office.

Statement of Research Question

There has been considerable research on the benefits of having more women in government, the reasons for the lack of women running, and the characteristics that lead some districts to elect more women than others. However, there has not been as much research on the significance of symbolic representation or the impact female elected officials have had on the public. The symbolic component of descriptive representation indicates that successful female politicians change perceptions of the role of women in politics. According to the minority empowerment theory, minority representation can encourage political participation and cultivate more positive attitudes toward government (Banducci et al. 2004). Increased representation of disadvantaged groups such as women not only proves that women are capable of governing, but also can make other women feel more connected to the polity (Mansbridge 1999).

My research project aims to answer: does the successful election of a female state legislator lead to more women running in the proximate state house race in that district? I hypothesize that successfully electing females will lead more female citizens in that district to run for future state legislatures. Although

this increased number of women running in the proximate election includes the possibility that the elected female state legislator runs for re-election, I hypothesize that the number of nonincumbent females running will also increase. Female citizens will either look up to these female legislators as role models and be inspired to run for office, or form a belief that running for office is viable for women, which will empower them to run. Though such an idea has been previously researched, no previous works have used data from state legislative races from 1970 to 1999 in the United States. I use two regression formulas and compare the magnitude of the two lambda coefficients. One formula predicts how many women run in the proximate election after a female state legislator wins a close race, and the other formula estimates how many men run in the proximate election after a male state legislator wins a close race. I find that the coefficient in the female regression is larger than the one in the male regression. However, the difference is negligible, meaning there is no empowerment effect that leads more women to run for office after a woman state legislator wins. I also use fixed effects for state and year, which increases the difference in the magnitude of the coefficients, although the difference is still negligible.

The paper is organized as follows. First, I provide a literature review. Second, I further explain my causal model and research design. Then, I discuss my dataset and methodology. Lastly, I examine my findings and discuss the implications.

Literature Review

According to the Center for American Women and Politics (CAWP), women held only 19.6 percent of the seats in the 2017 United States Congress. That same year, the Inter-Parliamentary Union reported the United States ranked 101 out of 194 countries for women's representation in government. Although there is an apparent lack of female representation in the U.S. government, scholars agree there are many benefits to having more female elected officials. For instance, it is well known that the priorities and preferences of male and female legislators differ. Evidence suggests that having more females in elite-level politics leads to a more cooperative leadership style. One study focuses on differences between how male and female state legislature committee chairs act during hearings. Women are more likely to operate as facilitators while men use their power to control the direction of the hearings (Kathlene 1994). Furthermore, having more females in elected office reduces the chance that politicians overlook gender-salient issues. Studies of state legislative behavior have uncovered that female legislators are more likely to champion women's interests (Thomas 1994). Bratton (2005) analyzes data from three state legislatures over four years to discover that increasing gender diversity in a state legislature is connected to a higher overall focus on women's issues. Additionally, electing more women bolsters the legitimacy of democratic institutions, as increased female representation in government leads to increased levels of political efficacy among women (Atkeson and Carrillo 2007).

Scholars also agree that "when women run, they win," or in other words, "a candidate's sex does not affect his or her chances of winning an election" (Seltzer, Newman, Leighton 1997). Since women are equally as competitive as men, the question then becomes: why aren't more women running for office? One study on candidate emergence discovered that women are less likely than men to consider running for office, to run for elective office, and be interested in running for office in the future (Fox and Lawless 2005).

The survey experiment draws from a sample of potential political candidates, which included over 3,700 men and women that worked in the fields of law, business, education, and politics. The study concludes women are less likely than men to think of themselves as qualified to seek elective office, as well as receive encouragement from party leaders, elected officials, and political activists (Fox and Lawless 2005). Fox and Lawless (2011) also examined women from both parties with similar credentials, professional backgrounds, and political experiences, and found that they were less likely than similarly situated men to regard themselves as qualified to run for office. This phenomenon might explain why nonincumbent female candidates running for the U.S. House of Representatives tend to be more qualified than their male counterparts (McGhee and Pearson 2013). In particular, women from both parties are more likely than their male counterparts to have held elective office before running for Congress. Another study aims to explain the origins of the gender gap in political ambition. Fox and Lawless (2014) ran a survey experiment with over 4,000 randomly selected high school and college students across the nation. The study concludes that the gender gap in political ambition is present before men and women enter the workplace. The gender gap among college students is as large as the one among professionals in the candidate eligibility pool (Fox and Lawless 2014). In other words, the gender gap in political ambition is present before a girl becomes a young adult. The study also reveals "parental encouragement, politicized educational and peer experiences, participation in competitive activities, and a sense of self-confidence" foster a young person's interest in running for elective office (Fox and Lawless 2014). This study confirms that concerns about symbolic representation will continue to exist until there are systemic changes that diminish the gender gap in political ambition at an earlier age.

As stated earlier, research is in its early stage of studying the effects of symbolic representation. One study uses gubernatorial and U.S. Senate races from 1990 to 1998 and discovers that women who lived in states with competitive and visible female candidates, running in intergender races, were more likely to increase their political engagement (an intergender race is described as a race between a man and a woman and a competitive race is one where the margin of victory was ten percent or lower). Given this electoral environment, women are more likely to discuss politics, be internally efficacious, convince others to support a candidate, comment on political parties, and be less likely to respond "don't know" when asked about political issues (Atkeson 2003). Another study uses three cross-national datasets from over twenty countries and discovers women of all ages are more likely to discuss and participate in politics when there are more female members of parliament. This effect is especially significant among adolescent girls who are more likely to discuss politics with friends and have the intention to be politically active in the future (Campbell and Wolbrecht 2007). These findings further the role model effect, where female politicians in democratic countries inspire women of all ages to be more politically active. Another study discovers that higher levels of female representation in the state house or in executive positions lead women to feel better about government responsiveness, which goes on to improve their democratic society (Atkeson and Carillo 2007). When citizens have higher values of external efficacy, they are more likely to become politically active. Women who are more politically active are more likely to run for office themselves.

These studies observe that women are more likely to increase their political participation in areas where they see newly elected female state legislators or higher levels of descriptive representation. Electing female state legislators in the 1970s was not as common as it is today; thus, I hypothesize that these elected

women in the 1970s had a greater empowerment effect on female citizens than elected women do in the present day. Female state legislators elected during these decades served as role models that encouraged other women to vote, discuss politics, and run for office. These female political leaders signaled that politics was not just a man's game.

In particular, there have been three studies that are most similar to the one I am conducting. The first, Broockman (2014), uses a regression discontinuity (RD) design to test whether women are more likely to vote in subsequent elections when a woman has just won the previous election. He also tests whether women are more likely to run for office in districts close to where a woman has just won the previous election. He discovers that when a female candidate wins a competitive race, a woman is twice as likely to be a candidate in the proximate election in the same district. However, his results included the increased likelihood that the female incumbent will re-contest. Broockman also (2014) observes that a woman's victory in one district does not affect the likelihood that other women run for or win office in nearby districts in subsequent elections, meaning there is no spillover effect. Additionally, he discovers that successfully electing a female or having a female on the ballot does not increase women's voter turnout in subsequent elections. In particular, there is one study that could explain why Broockman (2014) does not find a spillover effect in his research.

Gilardi (2013) examines over 1,700 municipal elections in Switzerland from 1970 to 2010 in the Swiss canton of Zurich to study the effect of role models, successfully elected female politicians, on the number of female candidates. From the first 1970 election in which women could vote, the election of a woman in a municipality was associated in the proximate election with an additional female candidate in ten percent of its neighboring municipalities. This relationship is driven by new female candidates having a desire to run in areas where there are no female incumbents running for reelection. This relationship weakens over time and disappears after 16 years of elections. Female incumbents running for reelection do not prompt more female candidates. In fact, the number of female incumbents is negatively correlated to the number of new candidates. As years passed, more municipalities had female incumbents running for reelection and this increase discouraged new female candidates. Such a study explains why role models play a more significant function when a particular minority is still gaining representation in the political arena. When electing women becomes more widespread, the idea of successful female politicians serving as role models or empowering other women becomes less relevant. The effect of role models changes over time. This study also explains why Broockman (2014) did not find spillover effects in his studies of 2002 to 2008 since it was more common to elect a woman by the 21st century.

According to the Center for American Women and Politics (CAWP), the number of women that held state legislative seats between 2002 and 2008 was estimated to be around 22.4 percent and 24 percent respectively. From 2002 to 2008, the election years that Broockman (2014) studied, there was a 1.6 percentage point increase in the number of women that held state legislative seats. I will be looking at data before the 2000s because there is a larger increase in the percentage of women in state legislatures from 1970 to 1999. According to the CAWP, in 1971, less than five percent of state legislators (344 women) in the United States were women. In 1999, around 22.4 percent of state legislators (1,664 women) in the United States were women. This approximately 15-percent increase in thirty years marks a significant

change in the makeup of state legislatures around the country.

Second, Bhalotra et al. (2016) uses a regression discontinuity approach to see if the election of a female state legislator encourages political participation of women and leads to more women running in subsequent elections. This study uses data on state legislative assembly elections in 3,473 constituencies in India taking place from 1980 to 2007, in which the district boundaries remain fixed. The study limits its observations to electoral races wherein both women and men ran and wherein the victor won by a narrow margin. They discover that the victory of a female candidate leads to an increase in the number of female candidates from major parties in the subsequent election. This is mainly because female incumbents are more likely to run for re-election. This is significant in India because incumbents often do not run for re-election, and also because female incumbents are less likely to re-run than male incumbents are. There is also no increase or decrease in the entry of new female candidates, although this varies by state due to levels of gender bias. In states with equal gender ratios, female and male voter turnout is significantly greater in constituencies where a woman won the previous election. Overall, the election of female state legislators in India decreases biases against female candidates, leads to more females in elective office, and expands the cultural role of women.

However, state elections in the United States differ from those in India because there are primaries that decide the party candidates, unlike in India where the leaders of political parties decide the candidates. There are also other differences between the United States' and India's government. According to the Inter-Parliamentary Union, India ranks 149 in female representation in government, with women holding roughly 11.8 percent of seats in the lower parliamentary house and 11.1 percent of seats in the upper parliamentary house. Since not as many women have been elected in India, it is possible that the effects Bhalotra et al. (2016) observe in political participation and office holding were similar to the large effects created by the first women to hold office in the United States. This is similar to the diminishing effect of role models we observe in Gilardi (2013). Since electing women in India, in the present, is not as common as it is it is in the United States, it is likely that successful female politicians are more likely to serve as role models and prompt more women to run for office in the future.

Third, Ferreira and Gyourko (2011) research the impact of women in the executive branch of local government, using a regression discontinuity approach. The study uses 5,500 elections that took place in 575 cities between 1950 and 2005. Ferreira and Gyourko (2011) observe that successfully electing a female mayor does not change the political success of future female mayoral candidates in that same city. Almost all of the future increases in female success are a result of the woman who initially won. Successfully electing a female mayor also does not produce spillover effects or alter female success in local congressional elections. This study solely looks at the local level, but I will be looking at the state-level with a similar approach.

For the most part, existing literature on the United States concludes there is no empowerment effect at the state legislative level in the 2000's or at the mayoral level since the 1950s. Studies from other countries had found a role model effect and spillover effects when women were still gaining representation in the political arena, and the election of women was not as widespread. Literature thus far has not addressed the role model effect that female state legislators in the United States have had from the 1970s

to the 1990s, a period where electing female state legislators was not as common.

Causal Model

Literature suggests that the successful election of a female candidate may empower other women to seek office. Wängnerud (2009) investigates this relationship by modeling the parliamentary recruitment process, in which candidates are recruited to seek office, in Western democracies. Importantly, Wängnerud (2009) finds that the process of recruitment involves a feedback effect: if women are infrequently elected, it might signal that politics is a man's game, and women may then be less inclined to run for office. However, if women are regularly elected, the idea of women in political roles becomes more accepted. Indeed, the increased acceptance leads more women to develop political ambitions. Drawing on this, Fox and Lawless (2004) show that the degree to which a woman is perceived as qualified by other women is one of the biggest predictors of whether she will consider running for office. Moreover, perceived qualifications in politics affect women more than they affect men (Fox and Lawless 2004). When comparing men and women with similar credentials, the latter are less likely to think of themselves as qualified for elected office (Fox and Lawless 2005). Fox and Lawless investigate the corollary of this and find that the gap narrows as women consider themselves increasingly qualified (Fox and Lawless 2004). Perhaps, then, successful female candidates—that is, females who win seats in government—can alter the perception that women are inherently less qualified. In turn, potential female candidates may have different perceptions of their how qualified they are after observing successful female candidates (Fox and Lawless 2010). Alexander (2012) conducts a study of over 25 countries where she observes that an increase of female representation in parliament improves women's beliefs in a woman's ability to govern. This is important because if women believe that politics is not just a man's game, they will be more likely to consider a candidacy (Fox and Lawless 2010).

Problems with Causal Inference

The election of female candidates is not randomly assigned. Existing literature has outlined why females are more likely to be elected in certain districts over others, or why certain districts have had multiple female politicians while others have not had one. However, political scientists have still not confirmed the exact factors in an election district that lead to more women being elected. Thus, it is difficult to isolate the effect of the election of a woman on female candidacy from the effects of these district-specific factors.

Ondercin and Welch (2009) use election data from 1992 to 2000 for the House of Representatives to study three common explanations that predict why certain districts elect women more often: "women friendliness" of a district, opportunity structures in a district, and the propensity of voters to innovate by electing women. Then, they study the impact of these explanations on women's success in the election process, which includes running for office, running in a primary, and running in a general election.

One explanation for why certain districts elect more women than others is that certain districts

have characteristics that make them more "women friendly" (Palmer and Simon 2006). These districts are likely to be located in the North, smaller in geographic size, more Democratic, and urbanized. These districts also tend to have a population that is filled with more minorities, immigrants, and older people that are more likely to be more educated, higher income, and less likely to be blue-collar workers (Palmer and Simon 2006). To discover the impact that characteristics had on a district's ability to elect women, Palmer and Simon's study (2006) controlled for the partisan character of the district and the districts' ability to elect African Americans.

Another reason why certain districts elect more women than others is that certain districts have opportunity structures that are more conducive to female candidates, such as open seats or partisan circumstances that align with the female candidate. Opportunity structures refer to whether a candidate is running as an incumbent, a challenger, or for an open seat, and the partisan circumstances of a race (Ondercin and Welch 2009). Since U.S. House incumbents are rarely defeated, women mainly obtain a Congressional seat by winning an open seat (Palmer and Simon 2006). Gertzog (2002) determines that women legislators are as strategic as men regarding political ambition and in calculating whether to re-run or run for a higher office. Gertzog (2002) defines a strategic candidate as someone that is running for an open seat and has held office previously. He finds that a growing proportion of female candidates for Congress can be classified as strategic candidates. Since state legislators also win reelection at the same rate as members of Congress, strategic female candidates would be more likely to run for open seats (Garand 1991). It is also true that efforts to recruit women candidates have surrounded open seats because the chances of winning in an open seat are much great than for defeating an incumbent (Darcy et al. 1994). This idea leads me to ask whether the successful election of a female state legislator leads to more women running in the next open seat race in that district.

Another reason some districts elect more women than others is because certain voters or states have a greater inclination to innovate by electing women. Voting for female Congressional candidates for the first time is seen as "innovative political behavior", as electing females into Congress has become common only recently (Ondercin and Welch 2005). Districts represented by women in the past will be more likely to have women hold public office in the future because such innovations are likely to be institutionalized (Ondercin and Welch 2005). It is also likely that diffusion will occur, where successful innovations are copied by other areas or by other levels of government (Ondercin and Welch 2005). Districts that have elected women in the past provide an "encouraging context" for women thinking about running for office. Ondercin and Welch (2009) predict that districts with large numbers of female state legislators will be more likely to elect women to Congress. Although one interpretation for this is successful diffusion, there are many other possible reasons for this phenomenon. One alternative explanation is that state legislature is seen as a stepping-stone for politicians to run for Congress. Thus, the more female state legislators there are in a district, the larger the pool of viable female candidates that can run for Congress (Darcy et al., 1994). Another explanation is that since voters in these districts have elected female state legislators, they are more willing to support women candidates for Congress (Ondercin and Welch 2009).

Ondercin and Welch (2009) discover that women candidates were more likely to run and win their primaries in districts where more women held a congressional seat and in states where there were

more women state legislators a decade ago. Additionally, women were more likely to run, win the primaries, and win the general election in districts where the percentage of time a woman held the seat previously was large. This idea held up for all races, except open seat races. The study also showed that more women were likely to run, win their primaries, and win the general election in open seat races. In other words, female candidates were cognizant of opportunity structures before they chose to run.

However, even with all these possible explanations for why women are more likely to run in some districts than others, there might still be some variables that are unaccounted for. To eliminate this I will use a regression discontinuity design so that the districts I compare will be similar in almost all aspects, other than the fact that one district elected a female and the other district elected a male.

Research Design

I will be using a regression discontinuity design (RD) to address problems of causal inference. I will eliminate all the districts in my data that always elect women and ones that rarely elect women. I will focus on competitive races where a man and a woman received the two largest vote shares, and where the victor was decided by a margin of five percent. In these close races, the female candidate could just have easily won as she could have lost—meaning the victory or loss by a small margin was due to luck or chance. Thus, this eliminates selection bias, because these districts are selected as if random. By comparing these types of elections, we are looking at districts that should be characteristically the same. Any change that I notice between the two types of districts at that discontinuity should be due to the independent variable of a female winning an election district. Specifically, I will observe competitive races where a woman won, and look to see if this prompted more female candidates in the proximate race. I will also analyze competitive races where a man won and observe the number of male candidates that ran in the proximate race. I will then compare the magnitudes of the lambda coefficients to see if a female candidate empowers more women to run in the proximate election.

I am comparing two regression equations because both of these formulas account for incumbency advantage and allow me to measure the number of non-incumbent candidates that decide to run in the proximate election. If I were to have only one regression equation that observed if a successfully elected female prompted more women to run, I might see an increased number of females on the ballot in the proximate election, but it would probably be because the initial woman that won decided to re-run for office. Both of these regressions account for incumbency advantage or the idea that an incumbent is more likely to get reelected than a challenger. In other words, both formulas account for the fact that the original man or woman that gets elected might run again in the proximate election as an incumbent. Ansolabehere and Snyder (2002) observe state legislative races from 1942 to 2000 and conclude that there is an incumbency advantage for state legislators, and it has been steadily increasing since 1942. There has been conflicting literature on whether the incumbency effect is the same for male and female politicians. Descriptive statistics from the U.S. Senate show that reelection rates for men and women are the same (Ostermeier 2012). According to Ferreira and Gyourko (2011), female mayors have higher unobserved political skills and are more likely to be re-elected than the average mayor by six percentage points. They

theorize that since women face barriers to entering the political area, only the highest skilled women are likely to run for office and win an election. Since these women are more highly skilled, they are more likely to get reelected than their male counterparts (Ferreira and Gyourko 2011). I was unable to find a study that elaborated on the incumbency advantage for state legislators. For this study, I will assume that the incumbency advantage for male and females state legislators is the same.

Since both of these regressions have an incumbency advantage built into them, if the magnitude of the female regression is greater, then it will be due to the empowerment effect in which the successful election of a female state legislator empowers more women to seek office in the proximate election. The male regression equation does not have an empowerment effect, since electing men is a societal norm.

I will also be using fixed effects for year and state to allow for a more robust analysis. Fixed effects allow me to compare observations that are alike so that I can compare all the observations in a single year or a single state with one another. Electing females in the seventies is different from electing females in the nineties, and fixed effects allow me to account for this. The same idea goes for electing women in different states, and fixed effects at the state level will allow me to account for this.

Testable Hypothesis

Hypothesis: Just electing a female state legislator will lead to more female candidates in the proximate election in that district.

After a district just elects a female state legislator, I expect more women to run in the proximate election. Although this includes the possibility that the newly elected female legislator will run for reelection in the proximate election, I hypothesize that there will be an increase in the total number of women running in the proximate election. The successful election of a woman in the earlier years will serve as an innovation that will be institutionalized. I expect to see more female candidates after the election of a female state legislator in the 1970s in comparison to the 1990s. It was less common for women to be state legislators in the 1970s, so the role model effect during this decade will be stronger than the role model effect later on, where female state legislators become more common.

Description of Data

I will be using the State Legislative Election Returns Data (1967-2010) from Klarner to determine the vote share and the margin by which the winning candidate won in the state legislative race. This dataset provides information for elections in both the lower house and the upper house of state legislatures.

I will use a gender package in R authored by Lincoln Mullen to identify the genders of the candidates in the Klarner dataset. The details of the coding process are located in the appendix. In my analysis I use the most stringent standard where I am 70 percent certain of the candidate's gender. Furthermore, my observations only include single-member districts and general elections.

TABLE 1: SUMMARY STATISTICS (Confidence in Gender at 70%)

Variable	Observation	Mean	Standard Deviation	Min	Max
Number of Female Candidates	1,115	.7309417	.6193198	0	3
Number of Male Candidates	1,115	1.217.937	.6871749	0	4
Margin Victory Female Candidate	1,115	-.0579872	2.903.455	-4.989.861	4.986.038
Margin Victory Male Candidate	1,115	.0579872	2.903.455	-4.986.038	4.989.861
Winning Vote Share	1,115	10319.54	12421.03	281	136515
Losing Vote Share	1,115	9.825.708	11877.02	274	132616
Female Winner	1,115	.5067265	.5001791	0	1
Female Loser	1,115	.4932735	.5001791	0	1
Winning Incumbent	1,115	.3668161	.482152	0	1
Losing Incumbent	1,115	.2529148	.4348776	0	1
Female Candidate Win	1,115	.5067265	.5001791	0	1
Male Candidate Win	1,115	.4932735	.5001791	0	1

Empirical Method

In order to study the effect of successfully electing a female state legislator on the number of women that run in the proximate election I use a regression discontinuity design. In my main specification, I estimate a local linear regression using the model below.

EQUATION 1:

$$Number\ of\ Female\ Candidates_{it+1}$$

$$= \alpha + \lambda\ Female\ Candidate\ Win_{it}$$

$$+ \beta\ Margin\ Victory\ Female\ Candidate_{it}$$

$$+ \rho\ (Margin\ Victory\ Female\ Candidate \times Female\ Candidate\ Win\ )_{it} + \varepsilon_{it}$$

The left-hand side of the equation describes the number of female candidates in district i at t+1 which represents the proximate election. On the right side, α represents a constant; λ represents the coefficient of the female candidate win in district i during time t which represents the time the election took place. "Female Candidate Win" is a dummy variable taking value one if the female candidate wins against the male candidate in district i during the election taking place at time t+1. β represents the coefficient of the margin of victory that the female candidate has in district i during the election. This variable can hold many values, but in my equation it was restricted between positive and negative five percent because I was looking at electoral races with close victories of margin. ρ represents the coefficient that accounts for the

interaction between the two variables in district i during time t and ε represents the error present in the equation.

My dependent variable is the number of female candidates running in the proximate election after a female state legislator is elected to office. I will be comparing the magnitude of the lambda coefficient in equation 1 to the lambda coefficient in equation 2 to the formula below.

EQUATION 2:

$$Number\ of\ Male\ Candidates_{it+1}$$

$$= \alpha + \lambda\ Male\ Candidate\ Win_{it} + \beta\ Margin\ Victory\ Male\ Candidate_{it}$$

$$+ \rho\ (Margin\ Victory\ Male\ Candidate \times Male\ Candidate\ Win)_{it} + \varepsilon_{it}$$

The left-hand side of the equation, similar to the one above, describes the number of male candidates in district i at t+1 which represents the proximate election. On the right side, α represents a constant; λ represents the coefficient of the male candidate win in district i during time t or the election. "Male Candidate Win" is a dummy variable taking value one if the male candidate wins against the female candidate in district i during the election taking place at time t+1. β represents the coefficient of the margin of victory that the male candidate has in district i during the election. This variable is restricted between positive and negative five so that the observations are electoral races with close victories of margin. ρ represents the coefficient that accounts for the interaction between the two variables in district i during time t and ε represents the error value.

I will be comparing the magnitude of λ *Female Candidate Win*$_{it}$ and λ *Male Candidate Win*$_{it}$. Both of these equations account for the incumbency effect, so if "Female Candidate Win" has a larger magnitude, then it means that it is due to the empowerment effect of successfully electing female legislators. If "Male Candidate Win" has a larger magnitude on number of male candidates in the proximate election, then that means there is no empowerment effect and that female state legislators do not necessarily prompt more female citizens to run in the proximate election.

Results

For my analysis I use the most stringent confidence in gender. In other words, I am 70 percent certain that the candidate has been assigned the correct gender. In this regression I have 1,115 observations. Without fixed effects, the coefficient for the female equation is .551 units and the coefficient for the male equation is .524 units. These units represent an increase in the number of candidates of a specific gender that run in the proximate election. In other words, when "Female Candidate Win", the independent unit, increases by one unit, the number of females running in the proximate election increases by .551 units. In the second regression formula for males, when "Male Candidate Win" increases by one unit, the number of males running in the proximate race increases by .524 units. Thus, when a man wins with a close margin

of victory, the number of men running in the proximate race increases. However, the number of men running, after a man wins, does not increase as much as the number of women increases, after a woman wins. Although these figures are significant at the one percent level, it is important to note that since the unit of analysis is number of candidates, the difference of .027 candidate does not seem too large.

Table 2.1: The Effect of a Female State Legislator on the Number of Female Candidates
(Confidence in Gender at 70%)

VARIABLES	(1) Number of Female Candidates	(2) Number of Female Candidates	(3) Number of Female Candidates	(4) Number of Female Candidates
Female Candidate Win	0.551***	0.576***	0.563***	0.587***
	(0.072)	(0.072)	(0.070)	(0.070)
Margin Victory Female Candidate	-0.022	-0.024	-0.023	-0.025
	(0.017)	(0.018)	(0.017)	(0.017)
Margin Victory Female Candidate x Female Candidate Win	0.037*	0.034	0.032	0.031
	(0.022)	(0.023)	(0.022)	(0.023)
Constant	0.405***	-0.001	0.574***	0.106
	(0.053)	(0.095)	(0.051)	(0.117)
Observations	1,115	1,115	1,115	1,115
R-squared	0.183			
Number of unique		893	893	893
State Fixed Effects	N	N	Y	Y
Year Fixed Effects	N	Y	N	Y

Notes. Standard errors clustered at the state level are shown in parenthesis.
*** p<0.01, ** p<0.05, * p<0.1

Table 2.2: The Effect of a Male State Legislator on the Number of Male Candidates
(Confidence in Gender at 70%)

VARIABLES	(1) Number of Male Candidates	(2) Number of Male Candidates	(3) Number of Male Candidates	(4) Number of Male Candidates
Male Candidate Win	0.524***	0.549***	0.513***	0.531***
	(0.073)	(0.072)	(0.076)	(0.075)
Margin Victory Male Candidate	0.027	0.021	0.023	0.018
	(0.017)	(0.017)	(0.016)	(0.017)
Margin Victory Male Candidate x Male Candidate Win	-0.064**	-0.058**	-0.052**	-0.045*
	(0.026)	(0.025)	(0.025)	(0.024)
Constant	1.040***	1.342***	0.608***	0.821***
	(0.054)	(0.086)	(0.051)	(0.094)
Observations	1,115	1,115	1,115	1,115
R-squared	0.133			
Number of unique		893	893	893
State Fixed Effects	N	N	Y	Y
Year Fixed Effects	N	Y	N	Y

Notes. Standard errors clustered at the state level are shown in parenthesis.
*** p<0.01, ** p<0.05, * p<0.1

units and the male coefficient is .531 units. All of these figures are significant at the one percent level, but the difference between the two coefficients is not that large. With further investigation, I conducted a t-test to see if the difference between the two coefficients is significant. I discovered that the difference was not significant, and thus I could not reject the null hypothesis. In other words, I do not find an empowerment effect or role model effect where a female state legislator inspires other women to run in the proximate election.

Conclusion

Although I discovered there is no empowerment effect from the 1970s to the 1990s, further research could be conducted in different ways to observe spillover effects in neighboring districts. Recreating state legislative boundaries from the 1970s to the 1990s would allow for the observation of whether the successful election of a female state legislator in a district leads to more women running in neighboring districts.

My results align with those of Broockman (2014) and Ferreira and Gyourko (2011), as they also do not find spillover effects or empowerment effect. This is interesting, as much of the literature emphasizes an empowerment or role model effect and this effect is also found in other countries, but not in the United States. It would also be interesting to see why certain countries like Switzerland and India have an empowerment effect, while other countries like the United States do not. Another research project could also conduct a similar study closer to the decade that women in the United States gained the right to vote. Maybe, the empowerment effect female politicians had disappeared over time like it did in Switzerland. Either way, it is important to continue conducting studies to discover what empowers women to run for office, as the United States and many other countries around the world do not have legislative bodies with equal female representation.

References

Alexander, Amy C. "Change in Women's Descriptive Representation and the Belief in Women's Ability to Govern: A Virtuous Cycle." Politics & Gender 8 (2012): 437-464.

Ansolabehere, Stephen and James Snyder. "The Incumbency Advantage in U.S. Elections: An Analysis of State and Federal Offices, 1942–2000." Election Law Journal 1.3 (2002): 315-338.

Atkeson, Lonna Rae. "Not all cues are created equal: The conditional impact of female candidates on political engagement." Journal of Politics 65.4 (2003): 1040-1061.

Banducci, Susan A., Todd Donovan, and Jeffrey A. Karp. "Minority representation, empowerment, and participation." Journal of Politics 66.2 (2004): 534-556.

Bhalotra, Sonia, Irma Clots-Figueras, and Lakshmi Iyer. "Pathbreakers? Women's Electoral Success and Future Political Participation." The Economic Journal (2017).

Bratton, Kathleen A. "Critical mass theory revisited: The behavior and success of token women in state legislatures." Politics & Gender 1.1 (2005): 97-125.

Broockman, David E. "Do female politicians empower women to vote or run for office? A regression discontinuity approach." Electoral Studies 34 (2014): 190-204.

Darcy, Robert. Women, elections, & representation. Vol. 1. U of Nebraska Press, 1994.

Ferreira, Fernando, and Joseph Gyourko. "Does gender matter for political leadership? The case of US mayors." Journal of Public Economics 112 (2014): 24-39.

Flammang, Janet A. "Signs." Signs, vol. 25, no. 3, 2000, pp. 926–931. JSTOR, JSTOR, www.jstor.org/stable/3175428.

Fox, Richard L., and Jennifer L. Lawless. "Why don't women run for office." Taubman Center for Public Policy, Providence: Brown University Press (2004). https://annieslist.com/wp-content/uploads/2013/03/WhyDontWomenRun.pdf.

Fox, Richard L., and Jennifer L. Lawless. "To run or not to run for office: Explaining nascent political ambition." American Journal of Political Science 49.3 (2005): 642-659.

Fox, Richard L., and Jennifer L. Lawless. It still takes a candidate: Why women don't run for office. Cambridge University Press, 2010.

Fox, Richard L., and Jennifer L. Lawless. "Gendered perceptions and political candidacies: A central barrier to women's equality in electoral politics." American Journal of Political Science 55.1 (2011): 59-73.

Fox, Richard L., and Jennifer L. Lawless. "Uncovering the origins of the gender gap in political ambition." American Political Science Review 108.3 (2014): 499-519.

Garand, James C. "Electoral Marginality in State Legislative Elections, 1968-86." Legislative Studies Quarterly (1991): 7-28.

Gertzog, Irwin N. "Women's Changing Pathways to the US House of Representatives." Women transforming congress. Vol. 4. University of Oklahoma Press, 2002.

Gilardi, Fabrizio. "The temporary importance of role models for women's political representation." American Journal of Political Science 59.4 (2015): 957-970.

Kathlene, Lyn. "Power and Influence in State Legislative Policymaking: The Interaction of Gender and Position in Committee Hearing Debates." The American Political Science Review, vol. 88, no. 3, 1994, pp. 560–576. JSTOR, JSTOR, www.jstor.org/stable/2944795.

Mansbridge, Jane. "Should blacks represent blacks and women represent women? A contingent" yes"."
       The Journal of politics 61.3 (1999): 628-657.

Ondercin, Heather, and Susan Welch. "Women candidates for Congress." Women and elective office: Past,
       present, and future (2005): 60-80.

Ondercin, Heather L., and Susan Welch. "Comparing Predictors of Women's Congressional Election
       Success: Candidates, Primaries, and the General Election." American Politics Research 37.4
       (2009): 593-613.

Ostermeier, Eric. "Women Reelected to US Senate at Same Rate as Men." Smart Politics, 6 Dec. 2012,
       editions.lib.umn.edu/smartpolitics/2012/12/06/women-reelected-to-us-senate-a/.

Palmer, Barbara, and Dennis Simon. Breaking the political glass ceiling: Women and congressional
       elections. Routledge, 2010.

Pearson, Kathryn, and Eric McGhee. "What It Takes to Win: Questioning "Gender Neutral" Outcomes
       in US House Elections." Politics & Gender 9.4 (2013): 439-462.

Thomas, Sue. How Women Legislate Sue Thomas. New York: Oxford University Press, 1994.

Wängnerud, Lena. "Women in Parliaments: Descriptive and Substantive Representation." Annual Review
       of Political Science 12 (2009): 51-69.

Wolbrecht, Christina, and David E. Campbell. "Leading by example: Female members of parliament as
       political role models." American Journal of Political Science 51.4 (2007): 921-939.

"Women in Parliaments: World Classification." Women in Parliaments: World Classification, 1 Oct. 2017,
       archive.ipu.org/wmn-e/classif.htm.

"Women in State Legislatures 2017." Center for American Women and Politics, www.cawp.rutgers.edu/
       women-state-legislature-2017.

Appendix A: Details on Gender Classification

The R code authored by Lincoln Mullen requires you to specify a window of years in which the person in question was born. The code then looks at common name assignments for boys and girls during the given period of years and states the probability of the name in question being a female's name or a male's name. If a name has a 51 percent chance of being a female's name, then that means that the same name has a 49 percent chance of being a male's name. I took the election year and estimated the minimum age, twenty, and the oldest age, eighty, a candidate could be and run for elective office. Thus, I subtracted twenty and eighty from the election year to get a range of sixty years in which the candidate could have been born.

Some names were traditionally popular and associated with one sex, and thus the code was more certain when it came to predicting the gender of those names. For other names that were more gender neutral, the package had a more difficult time determining the gender. Thus, I created three dummy variables, which all have different probability values and certainty levels. My first dummy variable "female1" encoded a candidate as a female, giving the candidate a value of one, if there was more than a 55 percent chance that her name made her female. The names that had a 45 to 55 percent chance of being female were removed. The names that had lower than a 45 percent chance of being a female or more than a 55 percent chance of being a male were coded as zero. My second dummy variable "female2" only assigned a candidate as a female if there was more than a 60 percent chance that her name was predicted to be female. Thus, all candidates whose names gave them a probability of 50 to 60 percent chance of being either a female or a male were taken out. The only male candidates that remained were those who had more than a 60 percent chance of their name being identified as male and under the "female2" dummy they were encoded as a zero. My third dummy variable "female3" only kept candidates that had more than a 70 percent chance of being identified as his or her specific gender. All males and females that had less than a 70 percent chance of being their respective gender were removed from the dataset. Thus, as I went from my first variable to my third variable, more candidates got eliminated from the dataset, but my certainty in the candidate's gender increased because the probability that their name predicted their gender got increasingly higher. Additionally, I created three dummy variables for the male gender that correspond to the same percentages as the female dummies, but in respect to the probability of having a male name. For example, "male1" encodes all candidates that have greater than a 55 percent chance of being a male as one and encodes all candidates that have less than a 55 percent chance of being a male as zero.

Appendix B: Supplementary Tables
TABLE 3: SUMMARY STATISTICS (Confidence in Gender at 55%)

Variable	Observation	Mean	Standard Deviation	Min	Max
Number of Female Candidates	1,157	.7389801	.6261128	0	3
Number of Male Candidates	1,157	1.223.855	.6866382	0	4
Margin Victory Female Candidate	1,157	-.0388197	2.914.871	-4.989.861	4.986.038
Margin Victory Male Candidate	1,157	.0388197	2.914.871	-4.986.038	4.989.861
Winning Vote Share	1,157	10302.01	12344.11	281	136515
Losing Vote Share	1,157	9.807.324	11808.02	274	132616
Female Winner	1,157	.5082109	.5001488	0	1
Female Loser	1,157	.4917891	.5001488	0	1
Winning Incumbent	1,157	.3604149	.4803284	0	1
Losing Incumbent	1,157	.2558341	.4365177	0	1
Female Candidate Win	1,157	.5082109	.5001488	0	1
Male Candidate Win	1,157	.4917891	.5001488	0	1

TABLE 4: SUMMARY STATISTICS (Confidence in Gender at 60%)

Variable	Observation	Mean	Standard Deviation	Min	Max
Number of Female Candidates	1,144	.7368881	.6259225	0	3
Number of Male Candidates	1,144	1.222.902	.6887167	0	4
Margin Victory Female Candidate	1,144	-.0603383	2.906.498	-4.989.861	4.986.038
Margin Victory Male Candidate	1,144	.0603383	2.906.498	-4.986.038	4.989.861
Winning Vote Share	1,144	10313.23	12384.33	281	136515
Losing Vote Share	1,144	9.820.364	11848.89	274	132616
Female Winner	1,144	.5052448	.5001912	0	1
Female Loser	1,144	.4947552	.5001912	0	1
Winning Incumbent	1,144	.3627622	.4810073	0	1
Losing Incumbent	1,144	.2543706	.4356973	0	1
Female Candidate Win	1,144	.5052448	.5001912	0	1
Male Candidate Win	1,144	.4947552	.5001912	0	1

Table 5.1: The Effect of a Female State Legislator on the Number of Female Candidates
(Confidence in Gender at 55%)

VARIABLES	(1) Number of Female Candidates	(2) Number of Female Candidates	(3) Number of Female Candidates	(4) Number of Female Candidates
Female Candidate Win	0.571***	0.593***	0.579***	0.600***
	(0.072)	(0.071)	(0.070)	(0.069)
Margin Victory Female Candidate	-0.024	-0.025	-0.023	-0.025
	(0.017)	(0.017)	(0.017)	(0.017)
Margin Victory Female Candidate x Female Candidate Win	0.035*	0.031	0.030	0.028
	(0.021)	(0.021)	(0.021)	(0.022)
Constant	0.404***	-0.033	0.586***	0.114
	(0.053)	(0.095)	(0.054)	(0.116)
Observations	1,157	1,157	1,157	1,157
R-squared	0.184			
Number of unique		923	923	923
State Fixed Effects	N	N	Y	Y
Year Fixed Effects	N	Y	N	Y

Notes. Standard errors clustered at the state level are shown in parenthesis.
*** p<0.01, ** p<0.05, *p<0.1

Table 5.2: The Effect of a Male State Legislator on the Number of Male Candidates
(Confidence in Gender at 55%)

VARIABLES	(1) Number of Male Candidates	(2) Number of Male Candidates	(3) Number of Male Candidates	(4) Number of Male Candidates
Male Candidate Win	0.512***	0.536***	0.499***	0.514***
	(0.073)	(0.072)	(0.076)	(0.076)
Margin Victory Male Candidate	0.029*	0.023	0.025*	0.021
	(0.016)	(0.016)	(0.015)	(0.016)
Margin Victory Male Candidate x Male Candidate Win	-0.062**	-0.055**	-0.051**	-0.043*
	(0.025)	(0.024)	(0.024)	(0.023)
Constant	1.050***	1.330***	0.736***	0.917***
	(0.053)	(0.082)	(0.048)	(0.088)
Observations	1,157	1,157	1,157	1,157
R-squared	0.135			
Number of unique		923	923	923
State Fixed Effects	N	N	Y	Y
Year Fixed Effects	N	Y	N	Y

Notes. Standard errors clustered at the state level are shown in parenthesis.
*** p<0.01, ** p<0.05, *p<0.1

Table 6.1: The Effect of a Female State Legislator on the Number of Female Candidates
(Confidence in Gender at 60%)

VARIABLES	(1) Number of Female Candidates	(2) Number of Female Candidates	(3) Number of Female Candidates	(4) Number of Female Candidates
Female Candidate Win	0.560***	0.580***	0.565***	0.586***
	(0.073)	(0.073)	(0.072)	(0.071)
Margin Victory Female				
Candidate	-0.022	-0.023	-0.022	-0.024
	(0.018)	(0.018)	(0.018)	(0.018)
Margin Victory Female				
Candidate x Female				
Candidate Win	0.036	0.033	0.031	0.030
	(0.022)	(0.022)	(0.022)	(0.023)
Constant	0.408***	-0.027	0.591***	0.114
	(0.054)	(0.097)	(0.056)	(0.115)
Observations	1,144	1,144	1,144	1,144
R-squared	0.185			
Number of unique		915	915	915
State Fixed Effects	N	N	Y	Y
Year Fixed Effects	N	Y	N	Y

Notes. Standard errors clustered at the state level are shown in parenthesis.
*** p<0.01, ** p<0.05, * p<0.1

Table 6.2: The Effect of a Male State Legislator on the Number of Male Candidates
(Confidence in Gender at 60%)

VARIABLES	(1) Number of Male Candidates	(2) Number of Male Candidates	(3) Number of Male Candidates	(4) Number of Male Candidates
Male Candidate Win	0.514***	0.536***	0.500***	0.514***
	(0.073)	(0.073)	(0.076)	(0.077)
Margin Victory Male				
Candidate	0.032*	0.026	0.028*	0.024
	(0.017)	(0.017)	(0.016)	(0.017)
Margin Victory Male				
Candidate x Male				
Candidate Win	-0.066**	-0.059**	-0.054**	-0.047**
	(0.025)	(0.025)	(0.024)	(0.023)
Constant	1.052***	1.337***	0.741***	0.923***
	(0.054)	(0.082)	(0.050)	(0.087)
Observations	1,144	1,144	1,144	1,144
R-squared	0.138			
Number of unique		915	915	915
State Fixed Effects	N	N	Y	Y
Year Fixed Effects	N	Y	N	Y

Notes. Standard errors clustered at the state level are shown in parenthesis.
*** p<0.01, ** p<0.05, * p<0.1