

THE IMPACT OF DEPRIVATIONS ON POVERTY:

AN ANALYSIS OF HARRIS COUNTY

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EXECUTIVE SUMMARY

Harris County is the largest county in the state of Texas and the third largest in the country, with a population of 4.7 million (DataUSA, 2021). It is one of the most diverse regions, with over 25% being foreign-born and no one ethnic group comprising a majority of the population (DataUSA, 2021). Located near the Gulf of Mexico, Its geographical location has positioned the region to thrive economically with one of the world's largest and most active ports. Despite these characteristics, poverty has become more widespread in the Houston/Harris County region, and over the years, its poverty levels have risen well above the national average. This paper analyzes a set of indicators and their deprivations to help better understand the potential causes of chronic and transient poverty in the Harris County region using regression analysis and spatial distributions to help visualize these effects.

INTRODUCTION

It is widely accepted among scholars and policymakers that social conditions can influence an individual's income level and ultimately, on a macro level, can widen or narrow the gap between wealth and poverty. Throughout the years, disparities among income distribution in the U.S. have grown to concerning disproportionate levels as levels of people who live in poverty continue to increase. Today, American's who belong to the top 10% average nearly ten times as much income as those who belong to the bottom 90% -- according to UC Berkley Economist, Emmanuel Saez who analyzed U.S. average income data from 2018 (Saez, 2020). This social phenomenon and interest in ending poverty have motivated researchers to study this disparity using a diverse set of indicators across various social conditions that impact human life and well-being.

Chronic and transient poverty outcomes can be attributed to the deprivation of resources and social conditions, as findings have consistently shown a negative correlation between social conditions and poverty levels (Suppa, 2017). Deprivations not only induce poverty but hinder upward social mobility.

In 2019, United Way of Greater Houston's ALICE Report revealed that over 40% of households in Harris County struggle to meet basic needs. ALICE, which stands for Asset Limited, Income Constrained, Employed accounts for households who don't fall below the Federal Poverty Level (FPL) but are still financially challenged and are unable to afford essential items such as food, housing, healthcare, general technology, among other basic needs. According to this report, nearly 30% of households in Harris County are ALICE. Meanwhile, 15 percent of households fall under the FPL (DataUSA, 2020). This means that nearly half of households in Harris County struggle to afford the most basic necessities. Figure 1 shows the ALICE household budget for different family sizes and the cost to cover each family size's basic needs.

Figure 1: Alice Household Survival Budget for Harris County in 2016

HARRIS COUNTY, TX, 2016

ALICE HOUSEHOLD SURVIVAL BUDGET

	Single Adult	Married Couple	1 Adult, 1 School-Age Child	1 Adult, 1 Infant	2 Adult, 2 School-Age Children	2 Adults, 1 Infant, 1 Preschooler
Housing	\$684	\$773	\$773	\$773	\$948	\$948
Child Care	\$—	\$—	\$192	\$630	\$384	\$1,201
Food	\$158	\$360	\$299	\$250	\$602	\$525
Transportation	\$386	\$521	\$521	\$521	\$771	\$771
Health Care	\$191	\$381	\$474	\$358	\$704	\$704
Miscellaneous	\$172	\$243	\$252	\$303	\$368	\$465
Technology	\$55	\$75	\$55	\$55	\$75	\$75
Taxes	\$244	\$323	\$209	\$328	\$193	\$428
Monthly Total	\$1,890	\$2,676	\$2,775	\$3,218	\$4,045	\$5,117
Annual Total	\$22,680	\$32,112	\$33,300	\$38,616	\$48,540	\$61,404
Hourly Wage	\$11.34	\$16.06	\$16.65	\$19.31	\$24.27	\$30.70

Note: The budgets reflect different costs based on the age of children in the household; full-day care for infants and preschoolers (4-year-old) and after school care for school-age children. To create budgets for additional family types: For an additional infant, increase the total budget by 15 percent; for an additional 4-year-old, by 13 percent; and for a school-age child, by 5 percent.

Source: U.S. Department of Housing and Urban Development; U.S. Department of Agriculture; Bureau of Labor Statistics; Internal Revenue Service; Tax Foundation; and Texas Workforce Commission, 2016.

In our research, we analyze how social conditions impact poverty levels in Harris County. To contribute to existing literature, we identify five social indicators that can be directly linked to the causes of poverty. These social indicators include access to healthcare, education, broadband internet services, and adequate housing. While also analyzing the effect of poverty on contact with the criminal justice system. In this study, we conduct a Pooled OLS regression model using random effects to examine the relationship between the deprivation of social conditions and poverty.

LITERATURE REVIEW

POVERTY

Income inequality has plagued communities throughout the U.S. for decades and continues to worsen as we see increased poverty levels. Growing inequality levels which can translate to increased poverty have perplexed researchers enough to study this issue through rigorous methods using various indicators of individual well-being and social welfare such as education, health, crime, social cohesion, and others (Easterlin, 1974). Such studies have helped conceptualize the causes and consequences of this issue, drawing a distinct link between income inequality and social inequality (Liebig, 2012). Researchers have also studied the relationship between government action through spending and income inequality as a means to bridge this gap by reducing poverty levels using meta-regression analysis (Anderson et al., 2017).

A common measure for poverty includes using the income to ratio poverty as a coefficient to regress against explanatory variables and a set of control variables. The findings show signs of a moderate negative relationship between government spending and poverty. More specifically, the correlation can be observed when analyzing the relationship between government spending in areas such as social welfare, education, and health showing a negative statistically significant effect on income inequality. This suggests that when the government spends in certain areas that directly impact a particular population (focusing on lower-income populations) education, health, and other areas there is a decrease in income inequality. However, many econometric studies have remained inconclusive in their findings, with little to no evidence of a statistically significant relationship between government spending on such redistributive efforts and a decrease in poverty.

This issue remains complex for researchers who have offered potential explanations for this variance. A possible explanation is the extent to which the social transfers analyzed are aimed at lower-income populations. For example, if middle-income populations that are capturing government spending diminishes the impact on inequality (Anderson, 2017). Another possible explanation is the issue of reverse causality. Unless reverse causality is addressed and controlled for, estimation results can prove to be biased when analyzing the impact of redistributive efforts on income inequality and poverty (Anderson, 2017).

One researcher presents a correlation between growing income inequality --which includes increased poverty -- and nine social problems across different countries with diverse socioeconomic statuses and identifies such social problems as "the cost of inequality" (Liebig, 2012). Liebig concludes that his findings suggest that decreasing differences in income in a society could solve most if not all social problems today. Countries with lower levels of income inequality show lower levels of the social problems identified. Meanwhile, countries with higher income inequality levels showed an increase in the same social welfare problems analyzed (Liebig, 2012). In

conclusion, there is enough evidence to indicate that supporting societal ills of lower-income populations can, in turn, lead to decreased income inequality and can be used as a redistributive policy instrument to lower poverty levels and improve social conditions for all.

HEALTHCARE AND THE UNINSURED

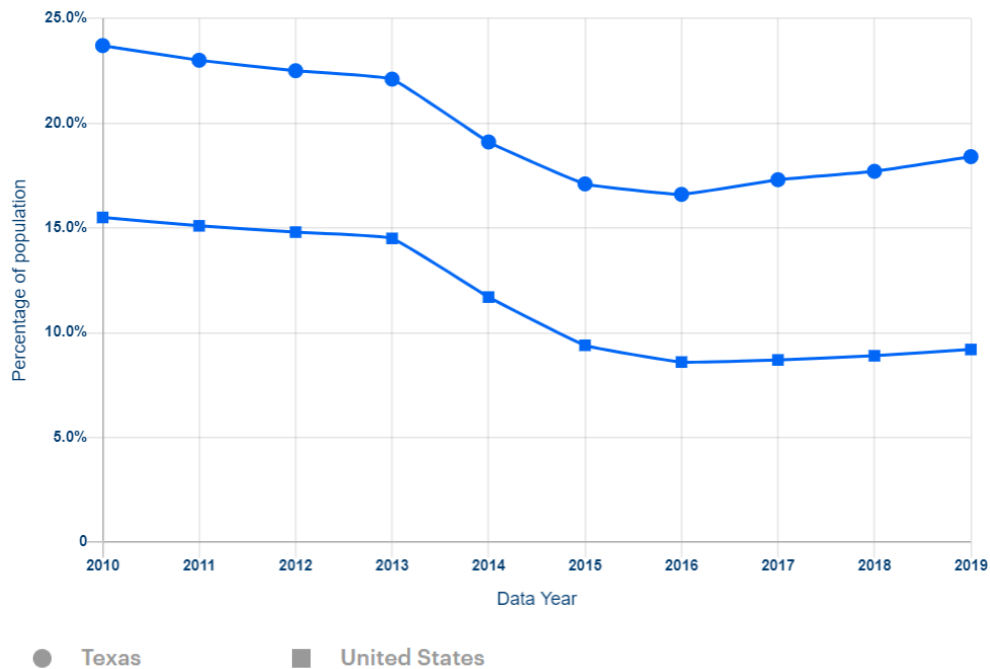
Harris County houses the largest medical complex in the world, also known as the Texas Medical Center. Although there are an abundance of great resources, a significant number of residents don't have health insurance coverage and therefore, it becomes difficult for them to access the necessary health care they need ("Access to Health Care in Houston", 2018). Those who are uninsured and don't have access to health care needs are more at risk of developing serious health problems or illnesses that otherwise may have been preventable ("Access to Health Care in Houston", 2018). Because without coverage, access to quality health care is abysmal at best. Furthermore, medical care is expensive. "The costs of medical care and insurance are now out of reach for many households, pushing some into bankruptcy" (Braveman & Egerter, 2013, p. 28). A research study conducted in 2007 found that a little over 62% of all bankruptcies were due to medical bills (Himmelstein et al., 2009). Expenditures on medical care, such as out-of-pocket expenses, also play a significant role in pushing individuals into poverty. These high costs place a financial burden on lower-income deciles (Christopher et al., 2018). The presence of poverty further drives a wedge between a person's access to health care and health care needs if an individual does not have health insurance coverage.

A significant reason that keeps Americans from obtaining health insurance is due to lack of affordability (Gunja & Collins, 2019). Therefore, if an individual lives in poverty, they are more than likely to be uninsured because they are unable to afford coverage. Lack of healthcare coverage then leaves the most vulnerable the most exposed to otherwise preventable diseases, chronic illnesses, and other medical problems. The literature suggests that these preventable health outcomes that indicate poor health contribute to lower-income levels, thereby creating a "negative feedback loop sometimes referred to as the health-poverty trap" (Khullar & Chokshi, 2018). Research further shows that life expectancy rates vary significantly related to income levels. Those with higher levels of income were associated with greater life expectancy rates when compared to those with lower levels of income (Chetty et al., 2016). Shorter life expectancy rates among those with low-income levels perpetuate the existence of poverty. Shorter life spans, due to lack of accessible and quality health care and to the absence of coverage, means lower earnings over time. Studies have also shown that "growing survival gaps across income percentiles since 2001 reflect falling real incomes among poor Americans as well as an increasingly strong association between low income and poor health (Bor et al., 2017).

The state of Texas is one of the remaining twelve states that has yet to expand Medicaid coverage, causing a large gap of adults not covered by health insurance. This coverage gap includes adults that "have incomes above their state's eligibility for Medicaid but below poverty, the minimum income eligibility for tax credits through the ACA marketplace" (Garfield, Orgera & Damico, 2021). Texas makes up 35%, which is more than one third, of the total 2.2 million people

who fall within this coverage gap (Garfield, Orgera & Damico, 2021). This exacerbates the already high numbers of the uninsured population in Texas among low-income adults. Figure 2 furthermore shows the stark comparison of the uninsured rates both in Texas and nationally. Texas not only leads the nation in uninsured rates but is also about double the national average.

Figure 2: Uninsured Rate Comparison between Texas and the United States



SOURCE: U.S. CENSUS BUREAU, AMERICAN COMMUNITY SURVEY, AMERICA'S HEALTH RATINGS EDUCATION

In the beginning, there should be a willingness to look at ability and drive rather than birth, social class, and income. The United States marked itself as such a place where men of lowly birth could rise through attainment through hard work, education, and determination to leadership levels. Andrew Carnegie, a Scottish immigrant who worked as a child on the floor of a Pennsylvania factory, eventually rose to run Carnegie Steel which employed millions, made millions, and was a cornerstone of American industrialization at the turn of the nineteenth century. In one generation in the late 1800's he moved from poverty to extreme wealth, a feat touted by many as the cornerstone for a free market and unregulated business practices. However, while this may have been acceptable for growth in the early years of the country, currently, in the United States, it would take five generations for someone born into poverty to approach even average income levels (World Economic Forum, 2020).

The prevailing thought process today is that a child's educational attainment leads to increased income, however that educational attainment has a caveat correlated to parental income.

A ten-point increase in parental income results in around a three percent increase in their children's income potential. More importantly, this same increase will lead to an almost seven percent increase in college attendance (Chetty, 2014). Given this information, it would seem that income and status primarily drive youth in academic attainment, as was the argument for much of the twentieth century. There is an inherent difference in low socioeconomic status determination of educational attainment compared with their counterparts in higher socioeconomic groups, in large part because those avenues for advancement are not always available or communicated to the lower groups, thus blocking their paths, intentionally or unintentionally. The central tenet of the functionalist theory of industrialism is that education should be an arbiter of class positions, and university attendance offers a chief component in preparing the youth of today for the jobs of tomorrow; in doing so, this should eventually give rise to a society run by the most talented rather than most positioned by birth (Brown, 2013). However, through the segregation of class, race, and income, school districts across the country are producing students with decidedly different potentials for academic achievement, social mobility, and equality.

There is a positive relationship between academic expenditures in public school districts and upward mobility. However, it is not strong enough to negate the correlation of inequality, discrimination, or, as is still found in some districts, segregation (Chetty, 2014).

In Houston, the probability that a child born in the lowest quintile of parental income will rise to the top quintile is more favorable at 9.3%, and the highest in Salt Lake City at 10.8% (Chetty, 2014). This makes the Houston area much more promising than some other cities in Texas and the south, but that does not mean that it is without its problems. Harris County is home to over nineteen school districts, and on the 2017 Federal Report Card, over half a million students attended public school in the county. Around 62% of them were considered economically disadvantaged. In five districts, over 80% of their students were disadvantaged, and only seven could boast less than 50% of their population were impacted by poverty (FRC, 2015-2019).

Most school districts in the Harris County area seem to be fulfilling their role by offering access. Still, children at the low end of socioeconomic means need more to put them on the same footing as their counterparts who benefit from a greater understanding of that access. Low-income students are not just unprepared for funding to go on to higher education, and they are also unprepared for navigating financial aid, class schedules, and time management issues between work and class. They walk a very fragile line between success and failure as they are more susceptible to fractures in work-life balance than other students from middle to upper-income brackets do not have to face. More recent studies have shown a marked difference in higher education access for students in low socioeconomic brackets and an even more significant impact of the degrees themselves following graduation (Berg, 2010). Most students opt for a more vocational route or community colleges to start. When they make it to four-year colleges, they often drop out because they are unprepared for the expense, work management, and rigor. Even students that can earn degrees find it more challenging to parlay them into higher income, often earning less than their more well-off counterparts (Berg, 2010).

HOUSING

The study of poverty requires a multi-faceted look at not only health and lack of access to resources, but also a look at financial asset deficiencies that are interconnected. Safe and functional housing is critical to the sustainability of a household. Homeownership, in particular, provides both stable housing and also serves “a long-term investment for wealth building” (Miltko, 2007).

The cost of housing also drives one’s ability to create or maintain wealth. Because housing is typically the greatest household cost, housing costs drive how households distribute income to meet other needs like food, clothes, transportation, etc. Hutto studied this as a means of improving poverty measurements. The study evaluates poverty thresholds based on household expenditures and concluded that poverty measures should accurately account for living costs and housing tenure (whether own owns or rents their home) because mortgage-free homeownership has “a sizeable effect on the estimated difference in regional poverty rates” (Hutto et al., 2011).

Data also shows that there is a significant difference between homeowners and renters. Almost 50% of renters in Harris County are housing cost-burdened, while only 20.5% of homeowners are cost-burdened (U.S. Department of Housing and Urban Development, 2020). This suggests that those who own homes would experience less poverty, given that they are expected to have more disposable income that could be expended on other items for the household or can be invested to create more wealth. The figure below shows that lower-income people (those who make less than \$35,000) who rent their home spend more money on their housing costs and have higher percentages of households who are housing cost burdens (ACS Data). Even more, 32% of African American renters in Harris County are housing-cost burdened, which is almost four times the amount of white renters in the same county (U.S. Department of Housing and Urban Development. 2020).

Figure 3: Housing Affordability Percentages in 2019

Household Income	Less than 20% Spent on Housing Costs			20-29% Spent on Housing Costs			30% or more Spent on Housing Costs (Cost Burdened)		
	Occupied Units	Owner- Occupied Units	Renter- Occupied Units	Occupied Units	Owner- Occupied Units	Renter- Occupied Units	Occupied Units	Owner- Occupied Units	Renter- Occupied Units
< \$20,000	0.7%	1.1%	0.4%	0.8%	1.3%	0.5%	13.0%	6.1%	17.0%
\$20,000 - \$34,999	1.8%	3.9%	0.3%	1.6%	1.6%	1.6%	12.6%	5.0%	17.7%
\$35,000 - \$49,999	2.3%	4.4%	0.8%	4.7%	1.8%	6.7%	6.2%	3.6%	8.0%
\$50,000 - \$75,000	6.3%	8.7%	4.7%	7.4%	4.4%	9.4%	3.8%	3.0%	4.3%
\$75,000 <	6.1%	4.3%	16.6%	1.6%	7.6%	5.0%	2.3%	3.0%	0.6%

Source: 2019 Census, 1-year estimates.

Additionally, Census data shows the disparities amongst homeowners of various racial groups. In Harris County, white homeownership at 68.5% nearly doubles African American homeownership of 37.8% (U.S. Department of Housing and Urban Development. 2020). This begs the question, “How does homeownership and race play a part in the persistence of poverty?” Heflin and Pattillo embrace the intersectionality of race, poverty, and homeownership in their 2006 study.

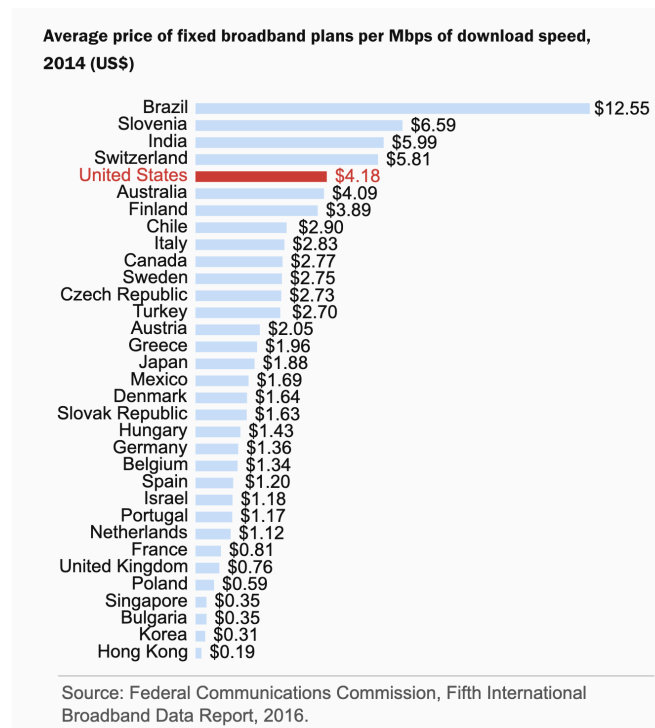
They determined that kin poverty, or the poverty of family members outside the household, has been linked to the transition from renter-ship to homeownership, and the intersectionality of race reveals that the likelihood of transitioning to homeownership as a minority American is much less than a white American (Heflin & Pattillo, 2006). The interconnectivity between poverty and homeownership is so strong that kin poverty also contributes to the loss of homeownership, especially for minorities (Sharp, Whitehead, & Hall, 2020).

According to Whiting, a home affordable to a white family with a median income would require a black median-income family to expend three times the income to purchase that home, five times more for a Hispanic family, and seven times the income for a female-lead household (Whiting, 2004). This means that a white, male-led household is far more likely to amass wealth compared to females and other racial/ethnic groups. In other words, white male-lead homeowners are less likely to experience poverty. This paper will review the intersectionality of race, gender, homeownership, and poverty.

INTERNET ACCESS

When internet researchers first coined the term “digital divide”, they used it to refer to the affordability of computers, routers, and software required to access the internet (Shade, 2002). However, over time the term began to become associated with digital literacy and the infrastructure necessary to effectively use the internet for school, work, or day-to-day life (Ibid). In recent years, the definition “digital divide” started to include a number of social and structural barriers to broadband internet access. Among these conditions, poverty and income inequality are cited most frequently (Federal Communications Commission, 2015). According to researchers Bach & Wolfson (2011, p. 2), the digital divide is intricately intertwined with forms of social and economic exclusion that are associated with unforeseen consequences of neo-liberal policies and practices. When compared to other developed countries with broadband infrastructure, the U.S. is one of the most expensive nations to retain an internet subscription (Tomer, Kneebone, & Shivaram, 2018). As the internet becomes more and more critical to seeking employment, acquiring an education, and securing public benefits, those without the means to afford a home internet subscription are consequently made more economically vulnerable.

Figure 4: Average price of fixed broadband plans per Mbps of download speed, 2014



INTERNET ACCESS AND GOVERNMENT BENEFITS

Rapid adoption and use of the internet in the U.S. has expanded dramatically over the last 25 years (National Telecommunications and Information Administration & U.S. Department of Commerce, 2011; Dimaggio, Hargittai, Celeste, & Shafer, 2004). The purposes for which the internet is used has also saturated all corners of society's commercial, cultural, and civic life (Gant, Turner-Lee, Li & Miller, 2010 p. 21) In fact, New Jersey Governor Chris Christie's administration became the subject of intense public scrutiny when he unveiled a new website intended to streamline unemployment benefits. The policy required unemployment beneficiaries to conduct job seeking activities through a state sponsored website called Jobs4Jersey.com to monitor applicants' behaviors (Coleman, 2013). Those with financial means can easily meet these demands, but those that most need unemployment benefits are also those that cannot afford to purchase a computer or pay for an internet subscription (Weiner & Puniello, 2014 p. 427).

INTERNET ACCESS AND EMPLOYMENT

Technology has played a polarizing role in the growth of economic inequality in the U.S. (Weiner & Puniello 2014). The growing number of "superstar" tech firms has only exacerbated this phenomenon by reducing demand for low-skilled workers and disproportionately rewarding highly skilled workers (ibid). The increasingly globalized and service-driven American economy has eliminated low-skilled jobs, requiring workers to engage in career retraining or "up-skilling" (World Economic Forum, 2020). In addition to being a resource for finding new employment, the internet

offers a host of avenues for workers to learn new skills via webinars, podcasts, and online classes. However, due to the high costs of internet subscriptions and growing income inequality, entire communities are excluded from these retraining resources and career opportunities.

INTERNET ACCESS AND THE "HOMEWORK DIVIDE"

When discussing the digital divide in the context of education, researchers often refer to the phenomenon as the "homework divide" or "homework gap," and its a struggle for over 12 million U.S. students (Senate Joint Economic Committee Report, 2017). While nearly 1 in 3 low-income households in the U.S. does not have a home broadband connection, almost 70% of U.S. School teachers assign homework that requires one (Hart, 2018).

Researchers found that home internet access can dramatically impact students' ability to compete academically as well. According to Anderson & Perrin (2018), the homework gap at its most extreme means that students without a home internet connection are unable to finish their homework assignments at all. Other students without a home internet connection are forced to complete assignments and write research papers on their cellphones using public wifi hotspots (Anderson & Perrin, 2018).

The "homework divide" places disconnected students at a steep academic performance disadvantage compared to their more connected peers. Former Federal Communications Commissioner Jessica Rosenworcel stated on the record that the homework gap is the "cruellest part of the digital divide" due to the long-lasting harms that children without internet access endure well into adulthood. "We're going to harm their ability to perform jobs, the majority of which now require digital skills". Rosenworcel and other researchers indicate that the digital divide traps already underserved and vulnerable populations in a self-perpetuating cycle of further socioeconomic and social alienation (Tomer, Kneebone, & Shivaram, 2018).

Figure 5: Share of population by neighborhood broadband subscription rate

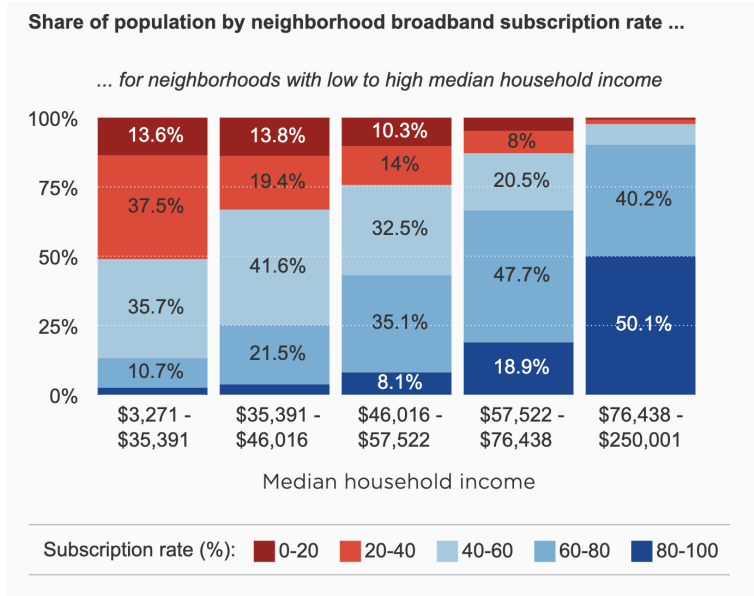
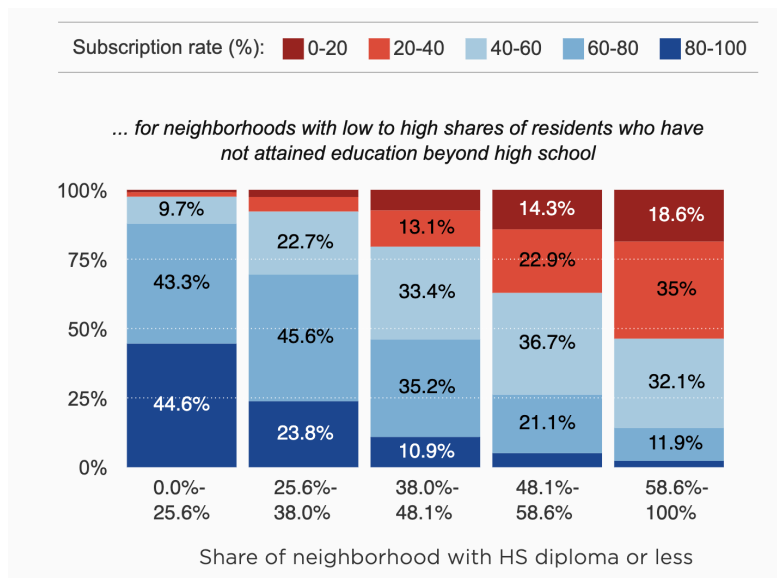


Figure 6: Share of population by neighborhood broadband subscription rate for neighborhoods with low to high shares of residents who have not attained education beyond high school



CRIMINAL JUSTICE SYSTEM INTERACTION

The relationship between poverty and criminal justice system interactions—which is a broader category than simply incarceration and includes arrests and detentions, among other things—is complex and multidirectional. Criminal justice system interactions can be both a cause and a consequence of poverty, depending on the context of each individual interaction. Those in poverty are more likely to live in areas with a larger law enforcement presence, which can increase an individual's chance of interaction. The relationship between poverty and criminal justice system interactions also goes in the opposite direction, where criminal justice system involvement is a primary cause and driver of poverty.

There are numerous ways that criminal justice system interaction drives poverty. Still, one of the most clear-cut ways is through job market discrimination—explicit by banning those with records from holding certain jobs through licensure regulations and implicit (or subconscious) discrimination by passing on job candidates with a criminal record (Pager, 2003). While some states have laws on the books to address this issue, Texas only has very limited protections for those who have been arrested or have a criminal record. In most cases, employers are entitled to access information—including about arrests and incarceration—on prospective employees that stretches back seven years (Business and Commerce Code Chapter 20, n.d.). Texas has one additional protection for job seekers with a criminal record, but it proves challenging for those in poverty to benefit from it. Texas allows those who have expunged their record through a court order to deny any criminal justice system involvement, but depending on the charge in question, it averages around \$1,000, which is a large sum of money to many people. In short, there is little protection available for Texans with a criminal record, which can both cause and further exacerbate poverty.

In addition to short-term ramifications, criminal justice system involvement can also negatively affect an individual's medium and long-term earnings, which could severely hinder chances of moving up the economic ladder and out of poverty. A report published by the Brennan Center for Justice found that the effects of incarceration and criminal justice system involvement compound over time and that “these losses are borne disproportionately by people already living in poverty, and they help perpetuate it” (Craigie et al., 2020).

Another significant contributor to poverty in criminal justice contexts is the reliance on fees and fines, particularly with less serious offenses, like misdemeanors (Friedman & Pattillo, 2019). These fines and fees can easily reach amounts that are unaffordable for those with limited economic means and may lead to further challenges as the state suspends driver licenses as part of its Failure to Appear/Failure to Pay program (Texas Department of Homeland Security, n.d.). The program, which is also known as the Omnibase system, seeks to penalize individuals who fail to pay their fees and fines, which disproportionately affects those in poverty. Those impacted by this program are prevented from license renewal or subject to automatic license suspension.

While an initial interaction with the criminal justice system can be financially devastating, it is only the first step in the criminal justice system process. Following the initial interaction, the accused is typically afforded the opportunity to bail or bond out, provided the crime they're accused of is eligible and they can afford the amount. It is at this pretrial stage that poverty becomes a determining factor in individual outcomes as those who cannot afford bail (or the

typical 10% bail-bondsman fee) will remain in detention until they can afford bail or their case is adjudicated through trial and conviction or plea deal (Rabuy & Kopf, 2016). Detention that lasts longer than a couple of days will likely result in job loss, which can lead to poverty or drastically worsen it.

THEORETICAL ARGUMENT AND HYPOTHESIS

Given that poverty can be a multidimensional measure, there are many factors that can contribute to individuals remaining in poverty or transitioning into poverty. In this paper, we theorize that healthcare, education, internet, and housing are all a part of a set of social conditions that directly impact an individual's ability to thrive; and hypothesize that a lack of access to the aforementioned social conditions increases the likelihood of being poor and having contact with the criminal justice system.

Regarding healthcare and insurance coverage, we suggest that depending on the rates of those that are uninsured, this factor will have a statistically significant effect on poverty levels in Harris County. More specifically, the higher that the uninsured rate is, the poverty levels will be higher within that PUMA, showing a positive relationship between both variables. This result is expected because we prescribe that poor health is a contributor to lower-income levels, thereby creating what is known as the health poverty trap. The health poverty trap confines individuals to poverty, restricting them from work opportunities. As the majority of people obtain their health insurance through their employers, this market is exclusive to those who are working but that can also afford to pay for health insurance coverage.

Education is a common equalizer, and it is purported that when an individual has access to educational resources, then this levels the playing field when it comes to success and escaping from poverty. However, it is becoming increasingly clear that without wealth and a clear understanding of how to use education in a positive way that individuals may receive the same resources without the same results. Thus, we hypothesize that PUMAs with higher rates of individuals without diplomas will exhibit a higher level of poverty.

We further hypothesize that PUMAs with higher rates of homeownership will show a reduced level of poverty. This is because it is understood that higher levels of poverty are associated with lower levels of wealth or income accumulation. Owning a home helps to build wealth so it also stands to reason that people who own homes will experience less poverty than those who are not homeowners.

Evidenced by President Biden's recent infrastructure initiative, access to high-speed broadband internet is critical to remaining competitive in the modern economy and securing a quality education, which then opens up more opportunities for upward mobility and higher levels of income. Therefore, we also hypothesize that the larger the population of individuals without internet access are likely to reside in PUMAs with higher levels of poverty.

Lastly, there are multiple ways that criminal justice interactions can drive poverty, including through employment discrimination and the imposition of fees and fines once contact with the criminal justice system has occurred, among other things. Our final hypothesis in this study is that areas with a higher concentration of criminal justice system interactions—measured by Harris County criminal court dispositions—will have higher levels of poverty.

CONTROL VARIABLES

To better understand the relationship between social conditions and poverty levels, we must control for other factors in this model. The several variables included in this model that we will be controlling for are those of working age-aged 16 and older, race, gender, and unemployment. In general, those of an older age are less likely to be in poverty, which can be partially attributed to social security programs that supplement incomes during older age. In fact, children comprise the largest chunk of those in poverty, with young adults following close behind. We hypothesize that there is a negative relationship between age and poverty, as one's likelihood of being in poverty decreases for older age groups.

The relationship between race and poverty is complex and multifaceted. African Americans and other minority groups have historically faced significant structural barriers, resulting in effects that can still be seen to this day in the poverty rate and similar statistics. This suggests that geographic areas with higher proportions of African Americans and other minority groups will likely have higher levels of poverty.

We also controlled for gender as women comprise a larger proportion of those in poverty compared to males. Much research has been done into the barriers faced by women that help to contribute to the wider feminization of poverty, including structural and social barriers. As such, we hypothesize that geographic areas with a greater female population will exhibit higher poverty levels.

Unemployment was also controlled for as it is among the strongest indicators of poverty status. Individuals who are unemployed and remain so for a protracted length are at a serious risk of either falling into poverty or further exacerbating it. For this reason, we hypothesize that PUMA's with a greater proportion of unemployed individuals will exhibit higher levels of poverty.

DATA, VARIABLES, AND MODEL SPECIFICATION

EMPIRICAL SPECIFICATION

The Data used to conduct the analysis in this paper derives from the American Community Survey collected by the U.S. Census Bureau. The American Community Survey (ACS) is an ongoing survey that collects data throughout the year from January to December. New ACS data is released every year in the form of estimates. For this analysis, we use panel data at the Public Use Microdata Areas (PUMA) level collected over four consecutive years using one-year estimates from 2015-2019 to create a data set that consists of 184 observations.

$$\text{Ratio of Poverty}_{it} = \beta_1 \text{uninsured}_{it} + \beta_2 \text{edu}_{it} - \beta_4 \text{house}_{it} + \beta_3 \text{nointernet}_{it} \\ + \beta_5 \text{incar}_{it} + \gamma Z_{it} + \delta_i + \gamma_t + \epsilon_{it}$$

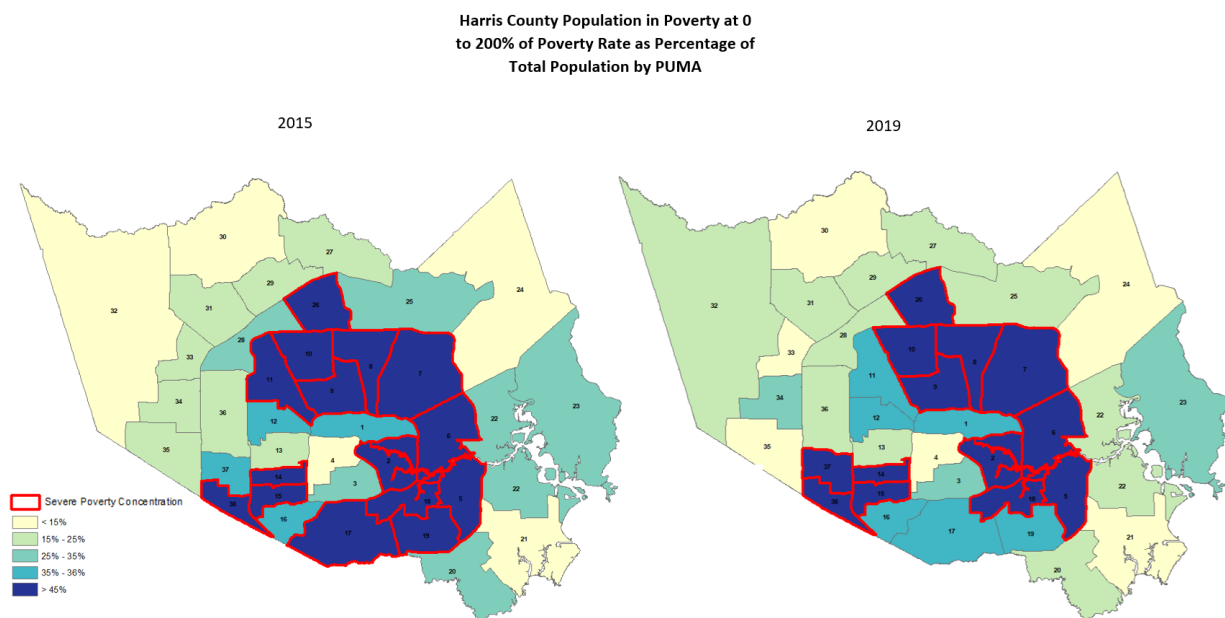
Where Ratio of Poverty denotes poverty at PUMA level i at time t , β_1 denotes the population of uninsured at PUMA level i at time t , β_2 denotes the population of over 25 without a highschool diploma at PUMA level i at time t , β_3 denotes population without internet access at PUMA level i at time t , β_4 denotes owner-occupied units at PUMA level i at time t , β_5 denotes population with court case at PUMA level i at time t , δ_i is the regional random effect, and γ_t is the time random effect. Z_{it} is a set of control variables, such as race, age and sex. ϵ_{it} is the error term.

RATIO OF INCOME TO POVERTY

To further analyze the relationship between poverty and the deprivation of social conditions, we constructed a model that uses the ratio of income to poverty as our dependent variable to measure poverty levels. The U.S. Census measures poverty by using a baseline poverty threshold and comparing it against a matrix of annual household income and the number of individuals per household under the age of 18. To account for inflation that occurs over time, the baseline threshold is multiplied by the average of the monthly inflation factors for the past 12 months. If the total annual household income for a person's family is below the poverty threshold, then they are considered to fall "below the poverty level." This is reported in increments of .25 through 1, representing 100% of the individual or family's income falls below the poverty line. The Census further reports when an individual's income is up to 200% of the federal poverty line as those households are still considered struggling and are eligible for help up to a certain percentage for different types of assistance. For the purposes of this paper, we used up to 200% as it made

almost all of our major variables significant in our regression and had the best correlation with the variables.

The maps below show the spatial distribution of the population in poverty (up to 200% of the poverty line) as a percentage of the total PUMA population across all Harris County PUMAs. The dark blue areas reflect the PUMAs that have at least 45% of PUMAs total population. These areas are considered to have a severe concentration of poverty for the purposes of this paper and are outlined in red for each map. Between 2015 and 2019, the number of PUMAs with severe poverty concentration lessened; however, some PUMAs' poverty populations like those in Northwest Harris County have increased overtime.

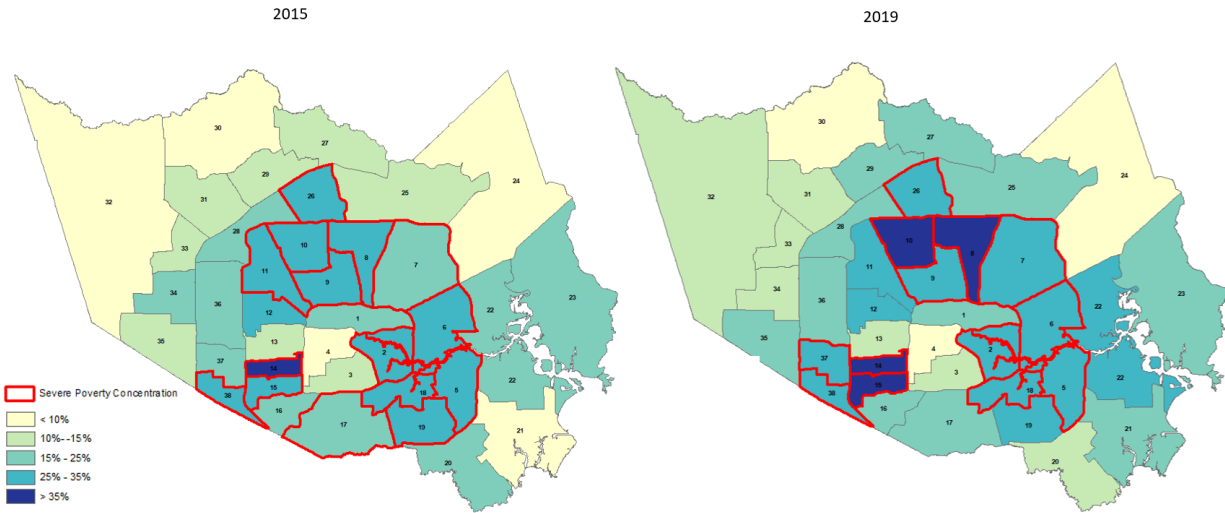


PERCENT OF POPULATION WITHOUT HEALTH INSURANCE

The American Community Survey (ACS) asked respondents about the type of health insurance coverage that they had. The question allowed for respondents to select between several types of private or public health insurance coverage (U.S. Census Bureau). Those who responded as “no” to all types were logged as respondents without health insurance coverage. The original data set only included the raw count of individuals without health insurance. For the purposes of this study, a new variable was generated to account for the “percentage of the population that were without health insurance” relative to each Public Use Microdata Area (PUMA).

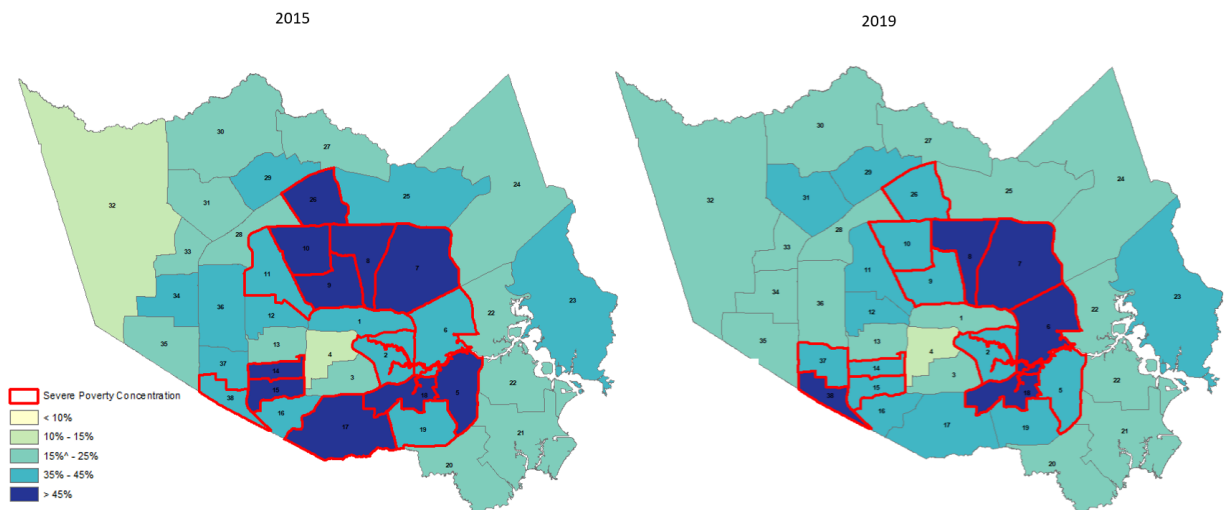
The spatial distribution of those who do not have health insurance is shown in the figure below. The PUMAs with the greatest percentage of people without health insurance (over 35% of the PUMA population) are also areas with severe poverty concentrations. Additional PUMAs that have the second-highest percentage (between 25% and 35% of the PUMA’s population) of people without health insurance are also in a PUMA with severe poverty concentration, or they are immediately adjacent to a PUMA with severe poverty concentration.

Harris County Population with No Health Insurance as Percentage of Total Population by PUMA



The spatial distribution of persons with public health insurance as a percentage of the PUMA's total population shows all of the areas with the highest percentage of persons with public health insurance (over 45% of the PUMA population) fall within PUMAs with severe poverty concentration. In 2015, all areas, except one, that have between 25% and 35% of the PUMA population using public health insurance also have severe poverty concentrations. By 2019, all of the PUMAs with severe poverty concentration exhibit increases in the percentage of persons with public health insurance.

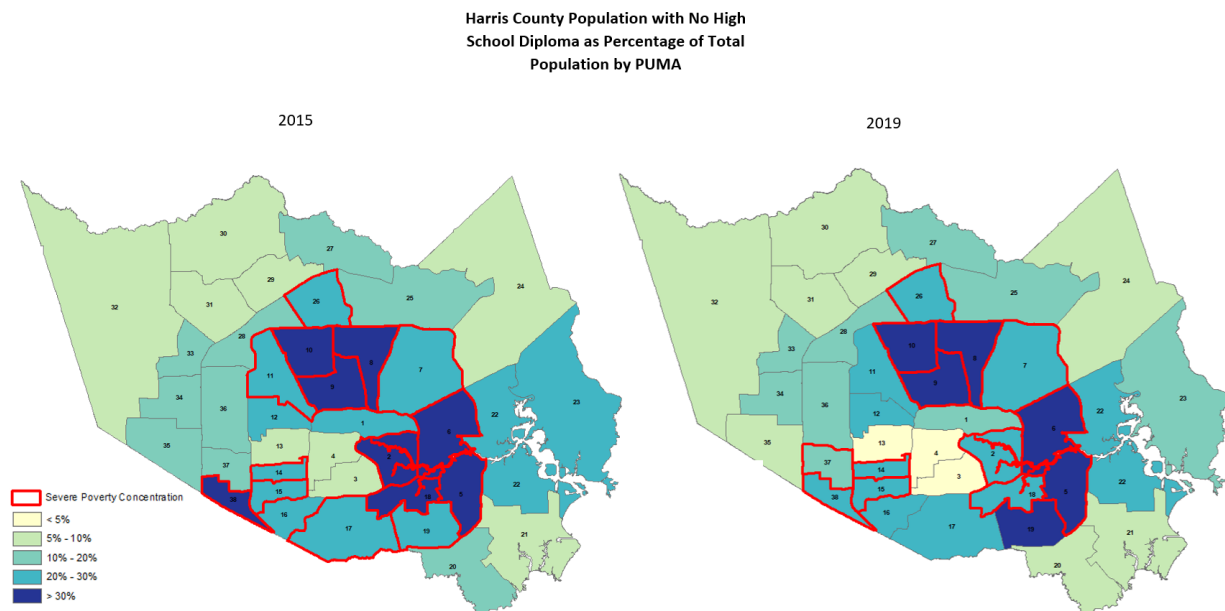
Harris County Population with Public Health Insurance as Percentage of Total Population by PUMA



PERCENT OF POPULATION OVER AGE 25 WITHOUT A HIGH SCHOOL DIPLOMA

The education variable is broken into several different sub-variables. However, for the purpose of this, we only focused on adults over 25 without a high school diploma. The variable is disaggregated across different PUMAs by creating a new variable that is a percentage by dividing the number of individuals in each PUMA by the number without a high school diploma.

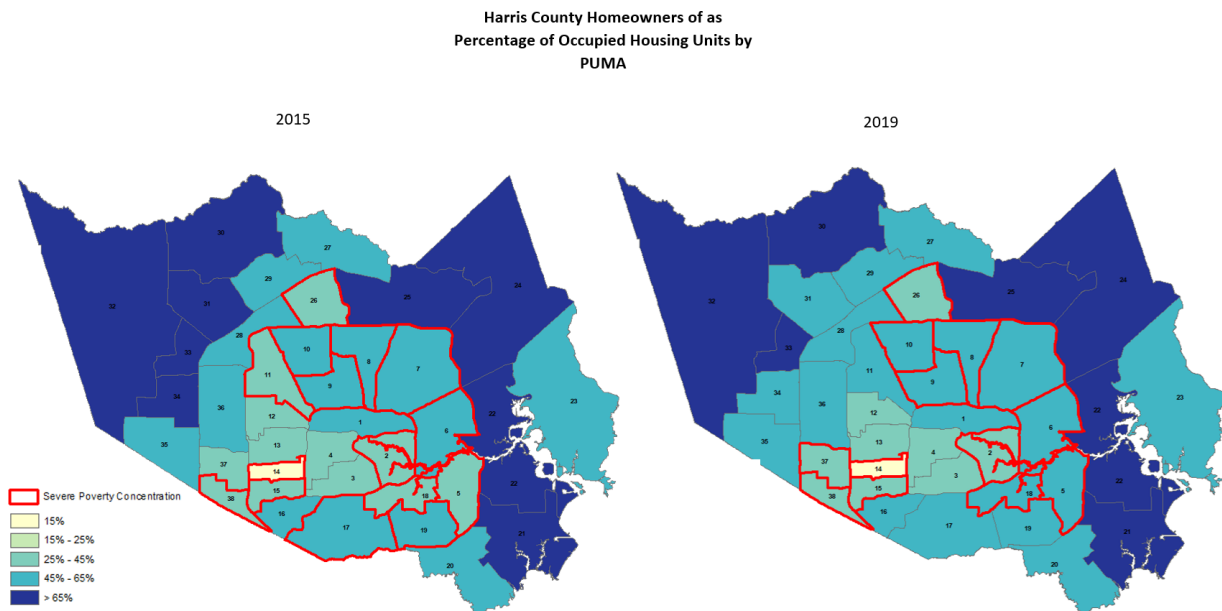
Like other maps in this section, the PUMAs with the high percentages (over 30% of the PUMA population) of persons having no high school diploma fall within PUMAs that have severe poverty concentration. In 2015, 8 of the 13 PUMAs with the second highest ranges of persons with no diploma also were stricken with severe poverty concentrations. Although, in 2019, less PUMAs had 30% or more of their population having no diploma, and yet, all of those PUMAs still fall within areas with severe poverty concentration.



PERCENT OF HOMEOWNERS OF ALL OCCUPIED UNITS

The Census and the American Community Survey have qualified the difference between owner-occupied units and renter-occupied units for many years. The 2019 ACS Questionnaire asked the respondent if the housing unit is owner with a mortgage, owned without a mortgage, rented, or occupied without payment of rent. To achieve this variable, the total was amalgamated from the first two responses, which would identify the number of all owner-occupied units for each PUMA. From this aggregated variable, we calculated the total owner-occupied units as a percentage of total occupied units for each PUMA.

Since poverty and homeownership are negatively correlated, it is no surprise that the maps below show that PUMAs with the highest homeownership rates do not fall within the areas that have severe poverty concentrations. Although some PUMA's homeownership rate increased and two PUMAs exhibited decreases between 2015 and 2019, not much changed in the concentration of homeownership across PUMAs.

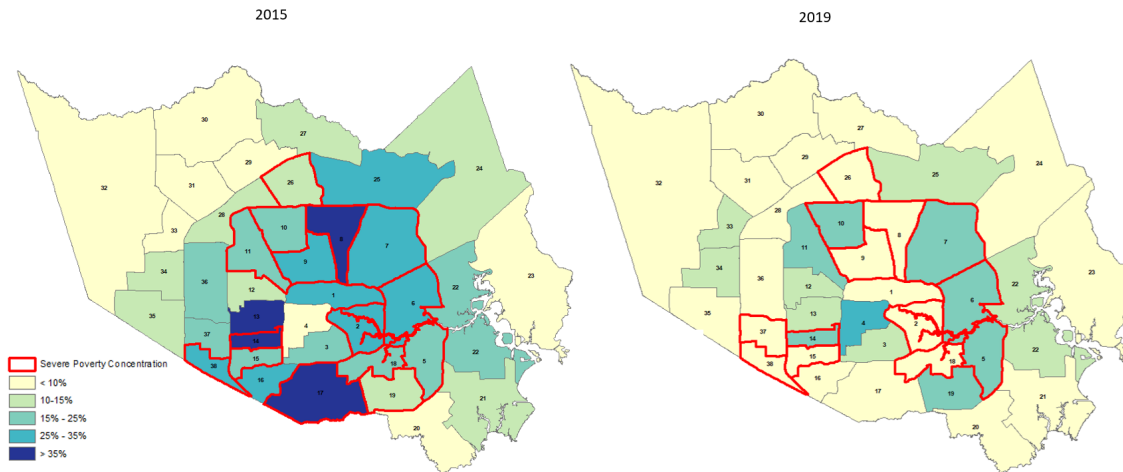


PERCENT OF POPULATION WITHOUT INTERNET ACCESS

Since 2015, the ACS included questions 9, 10, and 11, which asked households about the type of internet subscription they have and about what devices they use (US Census Bureau, 2018). The original data set only reports the raw count of households that elaborate on their tech and internet usage. The “percent of population without internet access” variable was derived from adding the number of households without internet access and the number of households without a computer and divided the sum by the total population of those surveyed multiplied by 100. A percentage was favored over a per capita or rate calculation due to the relatively small population size of each PUMA within Harris County.

Unlike other maps, the percentage of households with no internet access varies amongst the PUMAs who have severe poverty concentrations. However, the maps do indicate that the percentage of households without internet decreased between 2015 and 2019, and in 2019, only 5 of the 13 PUMAs that have severe poverty concentrations had between 15 to 25% of its population without internet.

Harris County Population with No Internet Access as Percentage of Total Population by PUMA

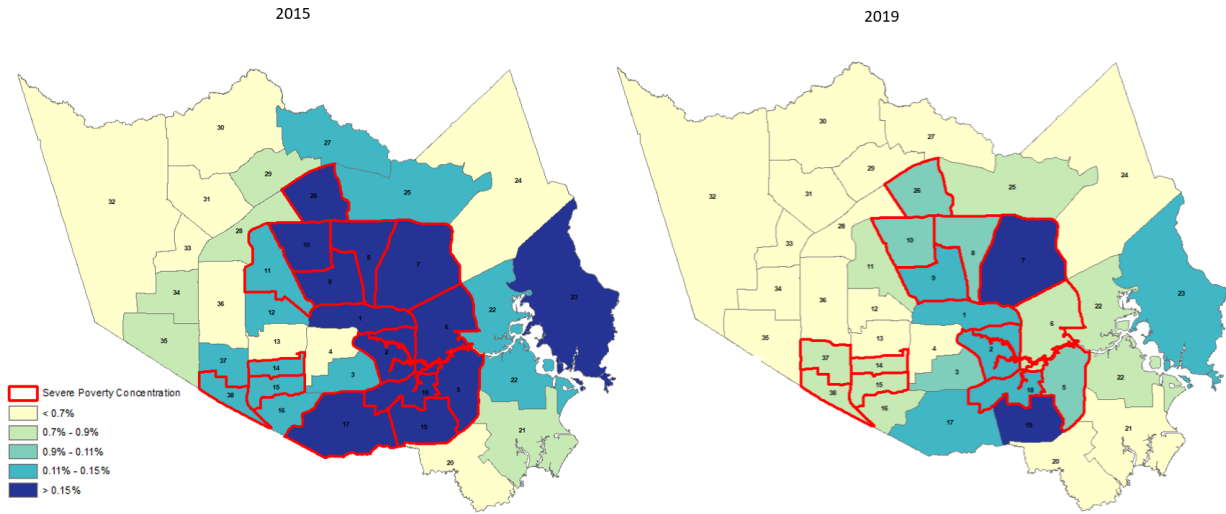


PERCENT OF POPULATION WITH COURT CASE

The data for the criminal justice section comes from the Texas Office of Court Administration and was compiled by the Texas Criminal Justice Coalition. The dataset contains extensive information about every Harris County court disposition, including but not limited to the charges filed, defendant address, the outcome of the case, bail information, and legal representation information. While the original dataset did contain addresses and latitudes/longitudes, it did not include Census tracts or any other type of geographic information. As a result, we had to link each address to its relevant Census tract, which we were then able to use to assign to its specific PUMA. Additionally, since this analysis is looking specifically at Public Use Microdata Areas (PUMA) in Harris County as the geographic unit of analysis, we excluded cases where the defendant's address fell outside of the Harris County boundary.

In 2015, the spatial distribution of the court interactions seems to correlate with PUMAs that are also severely poverty stricken. All but one of the PUMAs with the greatest percentage of court interactions likewise have severe poverty concentrations. The remainder of the PUMAs with a high concentration of poverty also have the second highest percentages of court interactions. However, in 2019, the court interactions are much more varied. Overall, the percentages of court interactions decreased, yet these PUMAs with severe poverty concentration have higher court interactions than those who do not have high poverty concentrations.

Harris County Population with Criminal
History as Percentage of Total Population
by PUMA



CONTROL VARIABLES

Literature suggests that there is intersectionality between race, gender, and age, so we used these to assess the correlation amongst the regressing variables. For race, we divided the racial populations (African American, Asian, and other races) by total population for each PUMA which yielded the racial distribution for each geographic area. Because gender is binary according to Census data, we controlled for gender by using the percentage of the females of the total population within each PUMA. Similarly to race and gender, we divided the population between the ages of 18 and 64 by the total population because this represented the most agile, adult population most likely contributing to the household's financial conditions. We also controlled for unemployment in each PUMA. This variable includes the percentage of 16-year-old or older civilians in the labor force. Appendix A: Maps captures the spatial distribution for all of the control variables, denoting the PUMAs with severe poverty concentration.

Table 1

Summary Statistics					
Variables	Observations	Mean	Standard Deviation	Minimum	Maximum
Ratio of Poverty 200%	184	.3556	.1566	.0904	.7
No Internet	184	.141	.0932	.0199	.4768
Public Health	184	.2867	.0693	.1396	.4316
No Health Insurance	184	.2055	.0859	.0456	.4376
Interaction with Court Cases	184	.0108	.0046	.0035	.0279
Home Ownership	184	.5456	.1500	.1237	.8689
No Diploma	184	.1949	.1130	.0112	.514
Unemployed	184	.0785	.0617	.0137	.3741
Female	184	.5026	.0192	.4360	.5558
Ages 18-64	184	.6309	.0381	.557	.7631
Black	184	.1871	.1201	.0173	.6035
Asian	184	.069	.05	.005	.237
Other	184	.1166	.0815	.0310	.5047

We also ran our statistics through Pearson's correlation and found that all of the variables were significant at the .05 level. Therefore we can conclude that each variable is correlated to the Ratio of Poverty. The strongest positive correlations were found with those without a diploma or health insurance. The interaction with court cases held a moderate positive correlation. Homeownership, as expected, was a moderate negative correlation. Access to the internet was a weak positive correlation, but it remains significant.

EMPIRICAL RESULTS

Table 2

Impact of Social Conditions on Poverty			
	(1) Linear Regression	(2) Fixed Effects	(3) Random Effects
No Internet	0.00399 (0.0382)	0.0489 (0.0425)	0.0178 (0.0398)
Uninsured	0.231*** (0.0658)	0.0612 (0.0650)	0.211*** (0.0634)
Court Interaction	4.250*** (1.377)	3.713** (1.830)	4.852*** (1.508)
Own Home	-0.304*** (0.0352)	-0.186 (0.116)	-0.325*** (0.0418)
No Diploma	0.743*** (0.0651)	0.0971 (0.118)	0.700*** (0.0700)
Unemployed	0.156*** (0.0571)	0.124** (0.0494)	0.137** (0.0532)
Female	0.0995 (0.192)	0.330* (0.194)	0.172 (0.192)
Age 18-64	-0.455*** (0.118)	-0.515*** (0.166)	-0.538*** (0.131)
African American	0.170*** (0.0354)	0.0432 (0.114)	0.156*** (0.0430)
Asian	0.167* (0.0919)	0.177 (0.215)	0.162 (0.109)
<u>Other</u> race	0.0848* (0.0431)	-0.00977 (0.0599)	0.0867* (0.0477)
Constant	0.454*** (0.142)	0.509*** (0.164)	0.490*** (0.147)
Observations	184	184	184
Adjusted R ²	0.928	-0.058	.9271

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

We are using the panel regression with random effects as specified by the Hausman and OLS testing results. The adjusted R² is the between outcome of the model. Since we are using percentages in our estimation, the results will be in relation to a percentage increase and that effect on the likelihood that an individual will be affected by poverty given each of the circumstances in the model as we anticipated when there is an increase in variables that have negative effects on life there is anticipated growth in the likelihood of poverty. For instance, for a person who is uninsured, there is a .2% increase for every 1% increase, and if an individual is without a diploma, there is a .7% increase in the likelihood of poverty when we hold all other variables constant. More interestingly, there is a much larger increase towards poverty when an individual has some kind of interaction with the court. As we know, arrests and convictions can decrease an

individual's ability to find employment, but in this scenario, simply interacting with the court created a much greater effect than expected with a 4.85% increase for every 1% increase, holding all other variables constant. One important factor is homeownership. Owning a home was able to cause a decrease in the tendency towards poverty by .3%. There was no supported significance with access to the internet. Still, we felt this may have to do with the preponderance of other significant variables that may have an unobserved collinearity effect.

Table 3

	Ratio of Poverty Differences		
	(1) Ratio of Poverty 0%-100%	(2) Ratio of Poverty 100%-200%	(3) Ratio of Poverty 0%-200%
No Internet	0.0283 (0.0370)	0.00226 (0.0278)	0.0178 (0.0398)
No Health Insurance	0.145** (0.0600)	0.121*** (0.0432)	0.211*** (0.0634)
Court Interaction	4.324*** (1.388)	1.071 (1.072)	4.852*** (1.508)
Home Ownership	-0.253*** (0.0376)	-0.0480 (0.0311)	-0.325*** (0.0418)
No Diploma	0.333*** (0.0645)	0.373*** (0.0500)	0.700*** (0.0700)
Unemployed	-0.812*** (0.0506)	0.0606* (0.0359)	0.137** (0.0532)
Female	0.192 (0.180)	0.0387 (0.133)	0.172 (0.192)
Ages 18-64	-0.262** (0.120)	-0.283*** (0.0936)	-0.538*** (0.131)
Black	0.0734* (0.0384)	0.108*** (0.0323)	0.156*** (0.0430)
Asian	-0.0615 (0.0984)	0.219*** (0.0813)	0.162 (0.109)
Other	-0.0159 (0.0438)	0.0815** (0.0341)	0.0867* (0.0477)
Constant	0.248* (0.137)	0.233** (0.103)	0.490*** (0.147)
Observations	184	184	184
Adjusted R ²	.8052	.8324	.9281

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

As mentioned previously, since the Census reports varying levels of individual income to poverty levels. We chose the 0 - 200% of ratio of income to poverty because it was able to encompass not only individuals who live below the poverty level but those who are struggling to stay above it. This is illuminated in the above regressions, as in the last column, all of the variables are very significant to the .01 level.

Table 4
Social Condition Interaction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Uninsured Health	0.399*** (0.0642)	0.397*** (0.0626)	0.400*** (0.0612)	0.321*** (0.0593)	0.196*** (0.0591)	0.194*** (0.0593)	0.185*** (0.0592)
Public Health	1.431*** (0.110)	1.369*** (0.109)	1.194*** (0.121)	0.906*** (0.126)	0.612*** (0.120)	0.607*** (0.120)	0.612*** (0.120)
Unemployed	0.126** (0.0574)	0.121** (0.0558)	0.0850 (0.0557)	0.0886* (0.0522)	0.114** (0.0492)	0.108** (0.0499)	0.124** (0.0498)
Female	0.0775 (0.221)	0.120 (0.216)	0.147 (0.211)	0.190 (0.197)	0.238 (0.180)	0.241 (0.181)	0.228 (0.180)
Age 18-64	0.504*** (0.156)	0.435*** (0.154)	0.287* (0.159)	-0.194 (0.174)	-0.0735 (0.150)	-0.0815 (0.151)	-0.0889 (0.149)
Black	0.0679 (0.0591)	0.0850 (0.0586)	0.0444 (0.0594)	0.00833 (0.0551)	0.109** (0.0430)	0.100** (0.0426)	0.0981** (0.0420)
Other Race	0.118** (0.0576)	0.129** (0.0565)	0.156*** (0.0561)	0.116** (0.0528)	0.0847* (0.0455)	0.0771* (0.0460)	0.0849* (0.0454)
No Internet		0.130 (0.0432)	0.0941** (0.0438)	0.0459 (0.0419)	0.0422 (0.0375)		
Court Case			4.677*** (1.574)	6.295*** (1.494)	1.797 (1.402)	1.975 (1.423)	2.150 (1.358)
Home Ownership				-0.289*** (0.0548)	-0.253*** (0.0433)	-0.260*** (0.0435)	-0.269*** (0.0415)
No Diploma					0.541*** (0.0710)	0.527*** (0.0748)	0.564*** (0.0724)
with Fixed Broadband						-0.0302 (0.0527)	
with Dial Up or Mobile							-0.0683 (0.0521)
Constant	-0.529*** (0.172)	-0.511*** (0.168)	-0.420** (0.167)	0.119 (0.186)	0.0347 (0.166)	0.0759 (0.167)	0.0700 (0.164)
Observations	184	184	184	184	184	184	184
Adjusted R ²	.8811	.8861	.8882	.9021	.9336	.9336	.9342

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

In Table 4, we ran multiple panel regressions, using the random effects model with and without some of the variables and as we expected, some of the main variables, namely no insurance, homeownership, no diploma, remained significant. It was interesting to note the fact that the public healthcare option was equally significant in all cases, no matter the variables. The literature supports this as many people who receive public assistance usually qualify for public healthcare in the United States. To be eligible for Medicaid in Texas, a family of 4 would need to make \$52,470, which is 199.9% of the poverty level for the state (TMB, n.d.).

Looking at the internet also proved interesting, and although not always significant, we decided to see if positive access was in any way more significant. Access to the internet is not significant except in the equations with minimal variables, namely only no insurance, public healthcare, and interaction with court cases. This was such an interesting find that we ran Table 5 in order to look at the no internet variable in greater depth. The finding that people with access

had a negative effect on poverty is also supported in the literature, but that it also made the interaction with court cases insignificant was equally surprising.

Table 5

	Effects of No Internet on Social Conditions					
	(1)	(2)	(3)	(4)	(5)	(6)
No Internet	0.160*** (0.0551)	0.217*** (0.0584)	0.0610 (0.0545)	0.108** (0.0502)	0.109** (0.0462)	0.0459 (0.0396)
Unemployed	0.247*** (0.0669)	0.302*** (0.0736)	0.135** (0.0656)	0.245*** (0.0606)	0.174*** (0.0585)	0.183*** (0.0527)
Female	-0.153 (0.272)	-0.241 (0.293)	-0.0481 (0.254)	-0.0199 (0.246)	0.0899 (0.230)	0.170 (0.197)
Ages 18-64	-0.559*** (0.196)	-0.453** (0.189)	-0.713*** (0.184)	-0.925*** (0.177)	-0.104 (0.149)	-0.392*** (0.125)
Black	0.326*** (0.0928)	0.362*** (0.0752)	0.174* (0.0906)	0.200** (0.0801)	0.286*** (0.0579)	0.225*** (0.0374)
Other	0.116 (0.0759)	0.163** (0.0775)	0.179** (0.0715)	0.0426 (0.0688)	0.133** (0.0600)	0.0579 (0.0477)
Health Uninsured		0.665*** (0.0803)				0.191*** (0.0645)
Court Interaction			10.41*** (1.915)			
Home Ownership				-0.587*** (0.0708)		-0.321*** (0.0397)
No Diploma					0.985*** (0.0638)	0.813*** (0.0550)
Constant	0.671*** (0.191)	0.486** (0.203)	0.647*** (0.178)	1.193*** (0.179)	0.0862 (0.162)	0.425*** (0.149)
Observations	184	184	184	184	184	184
Adjusted R ²	.4878	.7671	.6405	.6856	.8699	.9249

Standard errors in parentheses
 * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

As evidenced in Table 5, not having access to the internet is significant when it is the only variable, or when it is run with uninsured, homeownership, and not having a diploma. As seen in previous regressions, it is not when run with court interactions. Still, interestingly it is not significant when run with all of the same variables that it is significant with individually. Again this may possibly be due to multiple collinearity with the other variables or with the variable itself. We may need to look at how having access to the internet affects poverty and how that may be used in the growing technical age how this may become more or less significant.

LIMITATIONS

Our research presented several limitations. First and foremost, we must address the issue of reverse causality. Some researchers may question whether the conditions we highlight in this study affect poverty or if the effects are vice versa. In order to test for reverse causality, we would need a variable that is able to affect the outcome of the independent variables independently. These instrumental variables would need to have some sort of causal effect on individuals without healthcare insurance, diplomas, homeownership, interaction with court cases, and internet access. We were unable to identify such variables because many of the other variables in the Census database would in some way affect both. Therefore, we must assume that there is some level of reverse causality in as much as can be inferred, but that the reverse causality would not negate the importance of the access to the independent variables as paramount in combating poverty on a large scale as found in the literature as well as other data research.

Furthermore, the data available presented a few challenges as well. Our study was conducted at the PUMA level in order to gain a better understanding of social conditions in Harris County at a more micro level. Therefore, we were only able to access a smaller range of data available to meet the research needs for our study to be conducted. Ideally, with access to more data, the research could have included additional social conditions that have the potential to affect poverty levels in Harris County as well. Additionally, our data limited us to researching area levels over time instead of using data at the individual level, which was not available. Lastly, our control variable for race was unable to capture the full picture of the all racial categories in Harris County. Unfortunately, Hispanics were not clearly accounted for since the Census data does not accurately collect that information. Much of the research that includes race within their socioeconomic studies, shows how racial minorities play a significant role. Because this data was not fully available, the representation may appear incomplete.

FUTURE RESEARCH

When considering looking towards the future concerning what supplemental research should be conducted to gain a better understanding of what social conditions affect poverty levels at the PUMA level within county jurisdictions, further health care research should be completed that studies the health-poverty trap, not just within the United States, but how this affects residents at the local level. It would be helpful when considering policy initiatives to gather a clearer depiction of how lack of access to quality medical care and health insurance perpetuates the health-poverty trap. Also, minimal research has been completed that studies measurable outcomes which tracks student success at the PUMA level and how these outcomes correlate to driving poverty. Moreover, further research should be done to examine how housing market interventions, such as subsidized rental assistance, homebuyer assistance, and supply expansions, improve upon poverty conditions. Additional research could also review the effects of the Supplemental Poverty Measure (SPM), which accounts for government programs that are not included in the official poverty measure. Still, they target and assist low-income households in an effort to reduce the effects of poverty. With respect to criminal justice, further research could be conducted to more deeply investigate how the various barriers and penalties contribute to and exacerbate poverty. Some barriers may be more consequential for those in poverty, which could have important policy implications.

Finally, due to the timing of this study, critical data gathered from the 2020 Census may have added further depth and validity to the hypotheses within this body of work. The social and economic conditions presented by COVID-19 strained many of the social mobility indicators included in this paper. The pandemic placed many Americans and American infrastructure under significant stress through mass residential evictions, strain on the healthcare system and entire school systems forced to continue educating online. Furthermore, 2020 brought on increased police contact with the community due to national protests calling for police reform and increased incidences of domestic violence and child abuse as Americans struggled to cope with the stressors presented by the pandemic. Additionally, the current Biden administration's infrastructure-related investments may help reverse inequalities within these areas.

DISCUSSION AND CONCLUSION

In conclusion, poverty can be understood as an issue of multidimensional proportion in which not one but several social conditions are found to be closely correlated to this outcome and are even cyclical in nature with a high probability of reverse causality. The findings in this analysis serve to substantiate much of the literature on the effect of the deprivation of social conditions on poverty. Through the use of panel data manipulation, a pooled OLS with random effects regression analysis shows the increase in likelihood of remaining in poverty as an effect of chronic poverty or falling into poverty as an effect of transient poverty.

The spatial distribution tools used in this paper help visualize poverty concentrated areas and allow for the comparison of areas that are affected by higher levels of deprivations and those that show less deprivations. These spatial distribution tools show us the correlation between lack of access to healthcare, education, internet, and housing to poverty. Additionally, we're able to see how contact with the criminal justice system can perpetuate poverty.

The lack of access to healthcare increases the risk of susceptibility to poor health, hindering one's ability to participate in daily activities that could produce income and contribute to creating wealth. It's commonly known that education can be fundamental to increased opportunity. In this analysis, educational attainment shows to be one of the most significant factors in the outcome of poverty. Earning a high school diploma significantly increases one's opportunities and decreases the likelihood of being poor. Housing is an all-encompassing social condition in which without it, it's difficult to fulfill its counterparts in this analysis. A lack of housing increases risks of poor health, educational attainment, connectivity, and contact with the criminal justice system. The results show the inverse relationship between homeownership and poverty. As homeownership decreases, likelihood of poverty increases. Internet access in this day in age is essential to perform basic functions. Although the results show that internet access is not the most statistically significant factor in the causation of poverty, without connectivity, one inadvertently becomes economically disadvantaged as the ability to communicate, learn, seek job opportunities etc., is lost. Having contact with the criminal justice system shows to have the most significant impact on poverty. Fines and fees associated with pretrial can drive one into debt and deeper levels of poverty. Additionally, one of the most consequential impacts of this factor is job market discrimination that creates greater roadblocks in the ability to secure employment.

It is widely acknowledged that the consequences of poverty are exponential and become a threat to a healthy society in which everyone can thrive. The social conditions analyzed in this paper can be associated with the root causes of poverty. It is evident that policy measures are necessary to combat chronic poverty and help prevent transient poverty.

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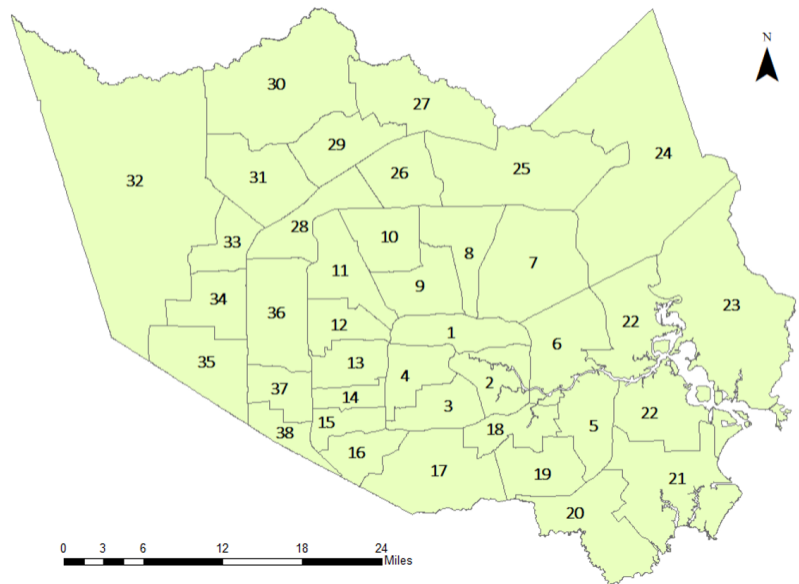
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APPENDIX A: MAPS

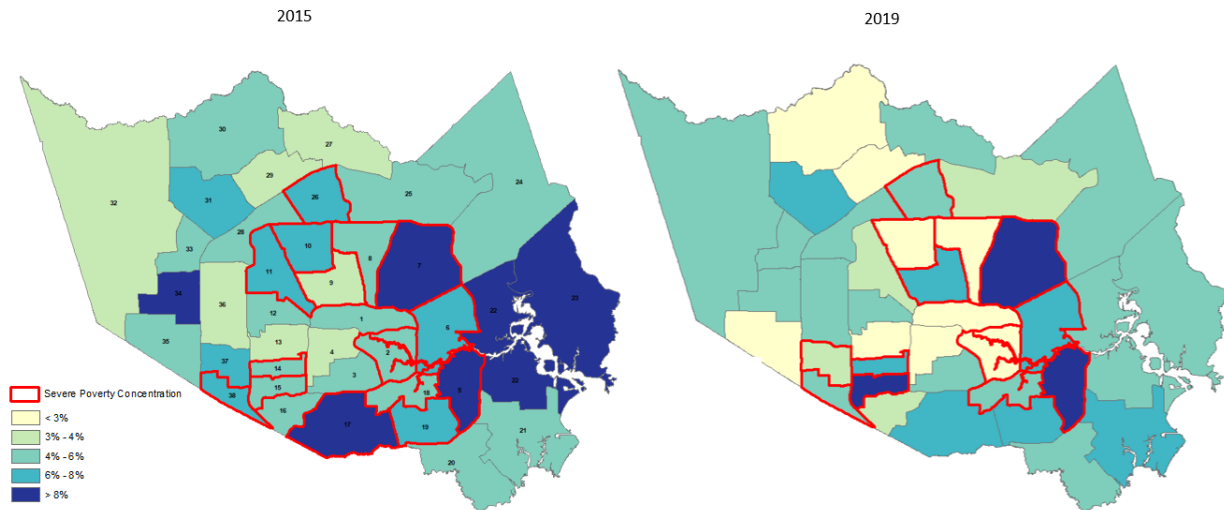
PUMA IDENTIFICATION

PUMA ID	Name of Public Use Micro Area
1	Houston City (North Central)—North of I-10 & Inside Loop I-610
2	Houston City (East Central)—East of I-45 & Inside Loop I-610
3	Houston City (South Central)—South of US-59
4	Houston City (West Central)—South of I-10 & Inside Loop I-610
5	Harris County (Southeast)—Pasadena City (North & Central)—Inside Beltway TX-8
6	Houston (East)
7	Houston City (Northeast)—Between Loop I-610 & Beltway TX-8
8	Houston City (North) & Aldine—Between Loop I-610 & Beltway TX-8
9	Houston City (North)—South of Aldine & Inside Beltway TX-8
10	Houston City (North)—West of Aldine & Inside Beltway TX-8
11	Houston City (Northwest)—Between Loop I-610 & Beltway TX-8
12	Houston (West) & Spring Valley Village Cities—Between Loop I-610 & Beltway TX-8
13	Houston (West) & Hunters Creek Village Cities—Between Loop I-610 & Beltway TX-8
14	Houston City (West)—Westpark Tollway
15	Houston (Southwest) & Bellaire (Southeast) Cities—Between Loop I-610 & Beltway TX-8
16	Houston City (Southwest)—Between Loop I-610 & Beltway TX-8
17	Houston City (South)—Between Loop I-610 & Beltway TX-8
18	Houston City (Southeast)—West of Pasadena City & Outside Loop I-610
19	Houston (Southeast) & South Houston Cities—Inside Beltway TX-8
20	Houston (Southeast) & Webster Cities
21	Houston (Southeast)
22	Harris County (East)—Deer Park
23	Harris County (East)—Baytown City
24	Harris County (Northeast)—Houston City (Far Northeast)
25	Harris County (North)—Houston (North)
26	Harris County (North)—Houston City (North)—I-45
27	Harris County (Far North)—Spring
28	Harris County (Northwest)—Jersey Village City—Between Beltway TX-8 & FM-1960
29	Harris County (North)—North of FM-1960
30	Harris County (Far North)—Tomball City & The Woodlands (Southwest)
31	Harris County (Northwest)—North of US-290 & North of FM-1960
32	Harris County (Far Northwest)—Katy City (Northeast)
33	Harris County (Northwest)—South of US-290 & West of TX-6
34	Harris County (West)—Houston City (West)—North of US-90 & West of TX-6
35	Houston City (West)—South of I-10 & West of TX-6
36	Houston City (West)—East of TX-6 & West of Beltway TX-8
37	Houston City (West)—Westpark Tollway
38	Houston City (Southwest)—East of TX-6 & West of Beltway TX-8

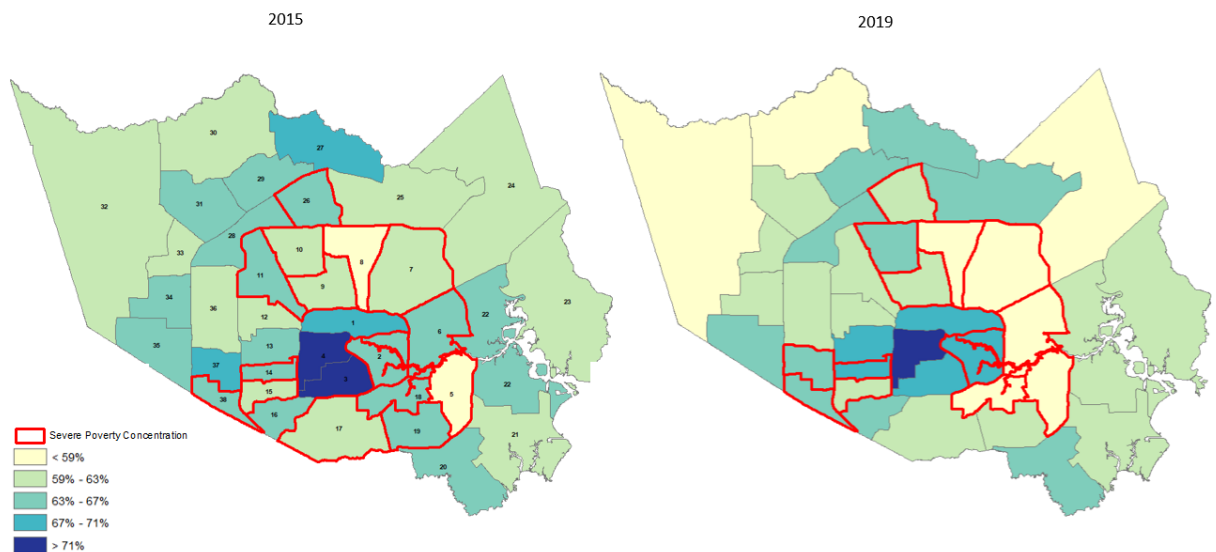


MAPS OF CONTROL VARIABLES

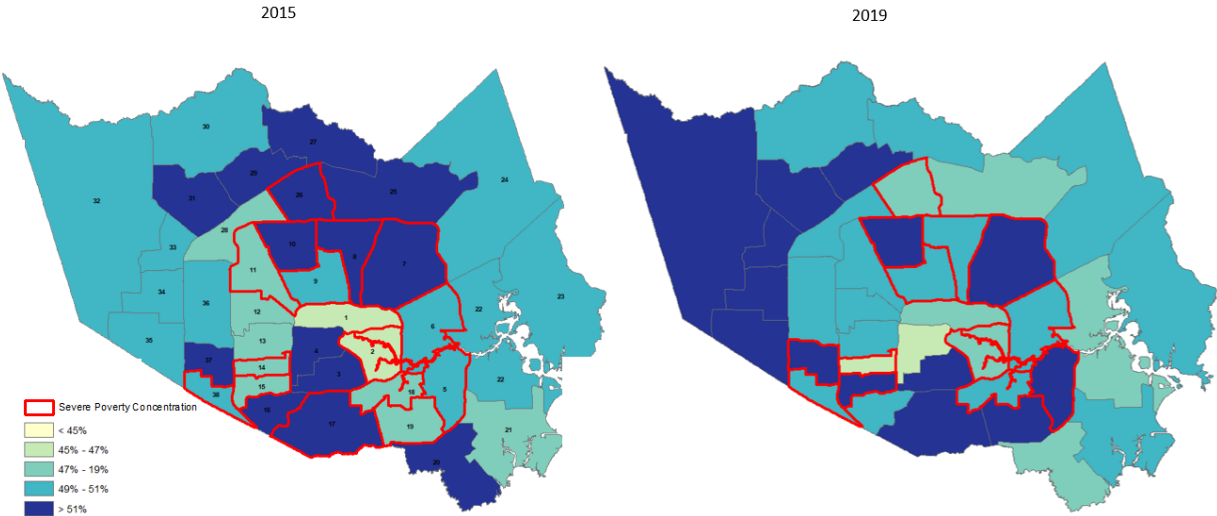
**Harris County Unemployment Rate as
Percentage of Total Population by PUMA**



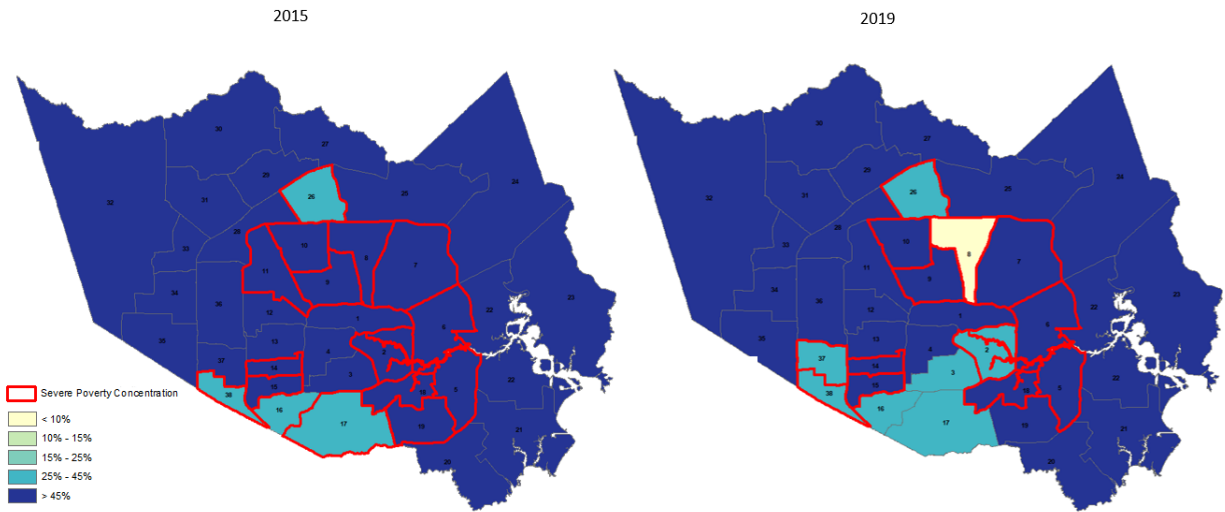
**Harris County Population 18-64 Years Old
as Percentage of Total Population**



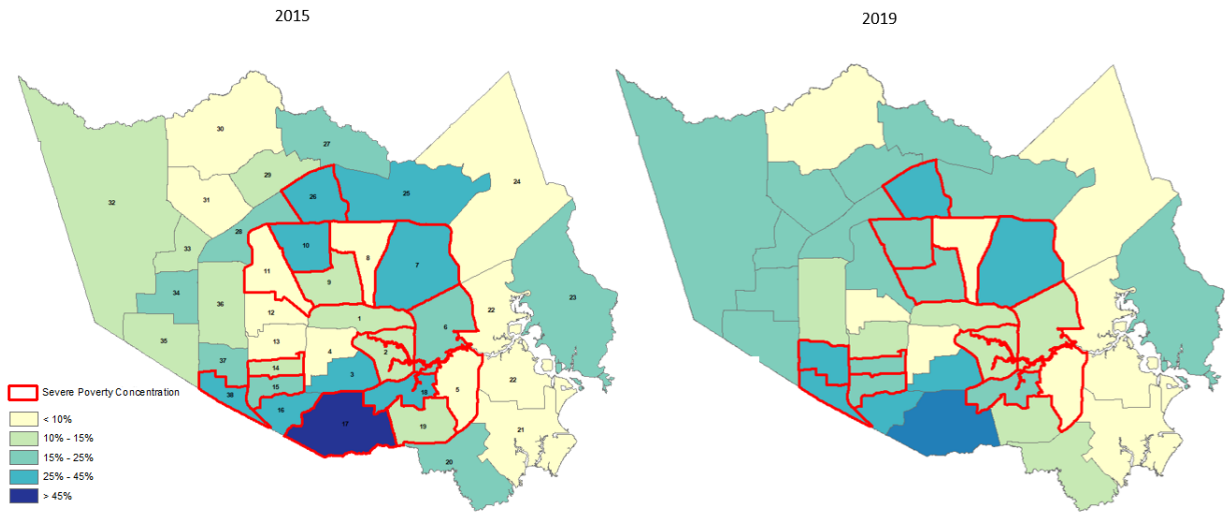
Harris County Female Population as
Percentage of Total Population



Harris County White Population as
Percentage of Total Population by PUMA



Harris County African American Population
as Percentage of Total Population



Harris County Other Racial Populations as
Percentage of Total Population by PUMA

