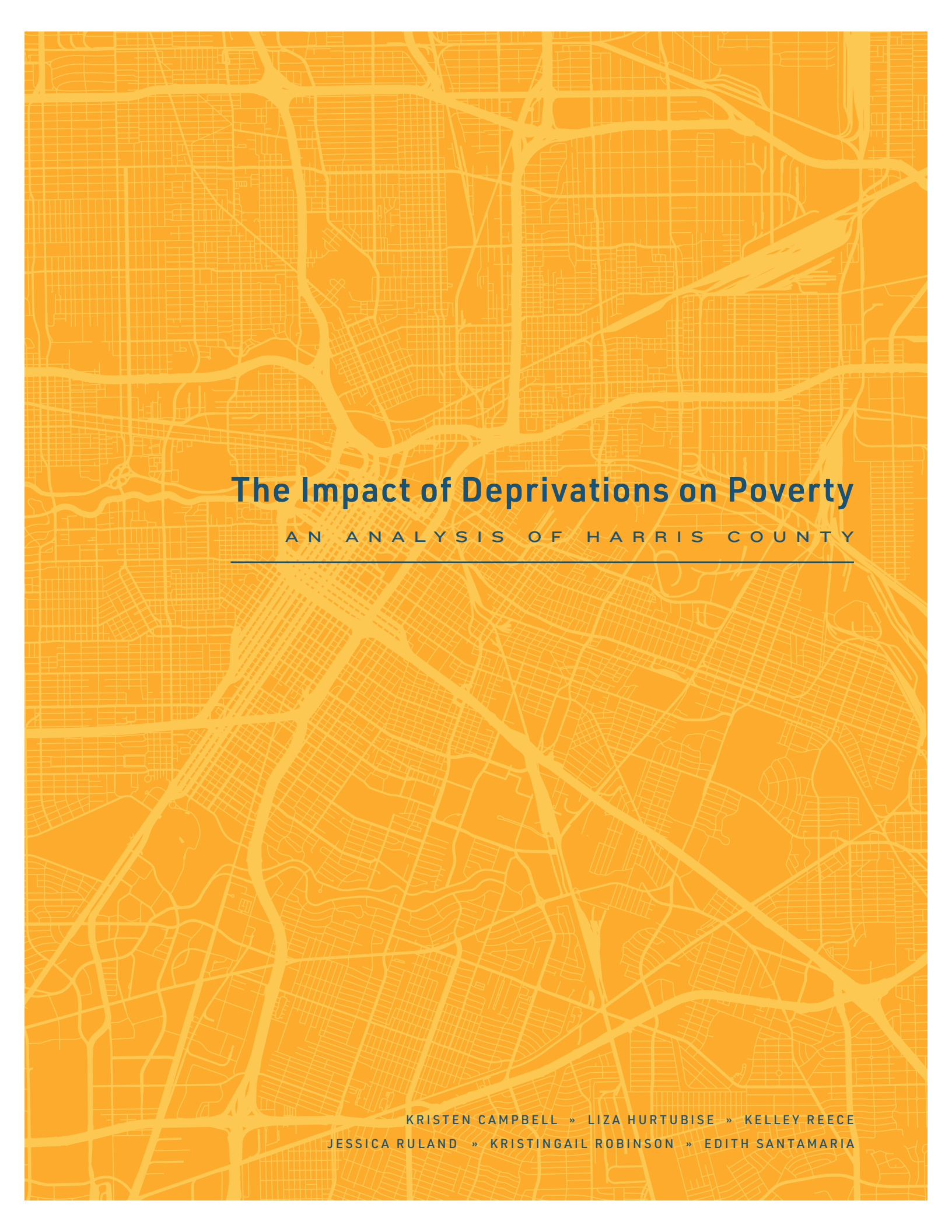




The Impact of Deprivations on Poverty

AN ANALYSIS OF HARRIS COUNTY

KRISTEN CAMPBELL » LIZA HURTUBISE » KELLEY REECE
JESSICA RULAND » KRISTINGAIL ROBINSON » EDITH SANTAMARIA

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 (Holeywell, 2016). This paper analyzes the deprivation of a set of social conditions as indicators of poverty 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.

KEY FINDINGS

- Deprivation of healthcare as a social condition of poverty
Being uninsured increase the likelihood of poverty by .2% increase
- Deprivation of education as a social condition of poverty
No high school diploma increase in the likelihood of poverty by .7%
- Deprivation of housing as a social condition of poverty
Owning a home shows a decrease in the likelihood of poverty by .3%.
- Deprivation of internet as a social condition of poverty
Internet access did not yield significant results within our primary empirical model but demonstrated significance in secondary models.
- Contact with the criminal justice system as a social condition of poverty
Court system interaction increased likelihood of poverty by 4.85%. The most significant contributor to poverty observed.

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 (Gould, 2019). 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.

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.

FIG 01 • ALICE HOUSEHOLD SURVIVAL BUDGET

	Single Adult	Married Couple	1 Adult 1 School Aged Child	2 Adult 1 School Aged Child
Housing	\$684	\$773	\$773	\$948
Child Care	–	–	\$192	\$1,201
Food	\$158	\$360	\$299	\$525
Transportation	\$386	\$521	\$521	\$771
Health Care	\$191	\$381	\$474	\$704
Misc.	\$172	\$243	\$252	\$464
Technology	\$55	\$75	\$55	\$75
Taxes	\$244	\$323	\$209	\$428
Monthly Total	\$1,890	\$2,676	\$2,775	\$5,117
Annual Total	\$22,680	\$32,112	\$33,300	\$61,404
Hourly Wage Required	\$11.34	\$16.06	\$16.65	\$30.70
Texas Minimum Wage	\$7.25/HR			

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 panel data 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) and (Suppa, 2017). 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 that can be used as a coefficient to regress against explanatory variables and a set of control variables (U.S. Census Bureau, 2020). The findings show signs of a moderate negative relationship between government spending and poverty (Anderson et al., 2017). 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 (Anderson et al., 2017). 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 (Dollar and Kraay, 2002).

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). 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

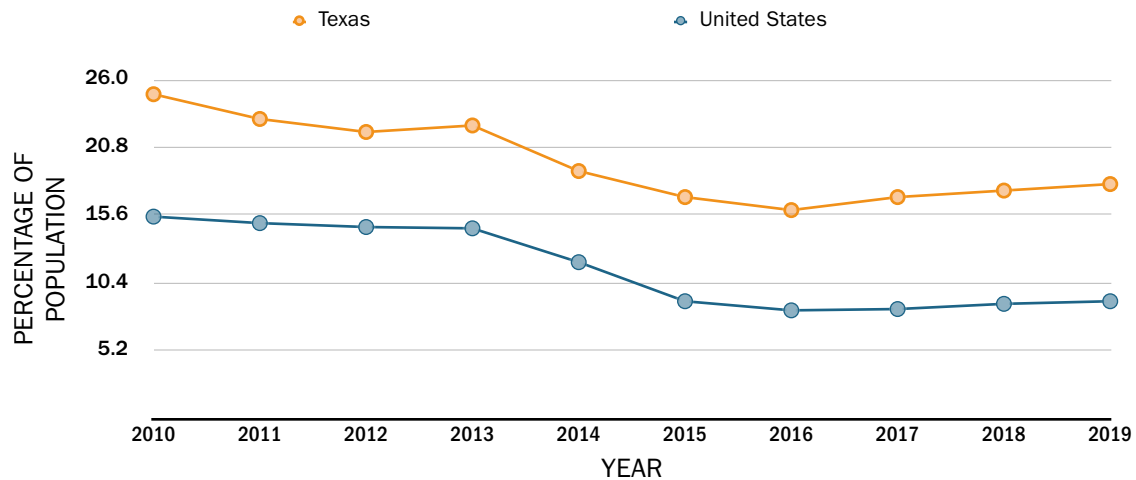
Harris County houses the largest medical complex in the world, also known as the Texas Medical Center. Although there are an abundance of great resources, a significant number of residents don't have health insurance coverage and therefore, it becomes difficult for them to access the necessary health 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.

FIG 02 • 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 percentile point increase in parental income results in around a three percent increase in their children's income potential (Chetty 2014). 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).

Schools with a higher proportion of low socioeconomic and those considered economically disadvantaged have a tendency to experience varying degrees of high absentee rates, lower state test scores, little or no parental involvement and less teacher retention that results in long stretches of under educated teachers (Null 2012). Eli Broad, businessman and philanthropist, puts it best when he says that the health of our democracy is contingent upon public education bridging the gap between the poor and the middle class (Null 2012). The message is dire, without an education system that prepares students to tackle the opportunities of a better life, then life for the poor will become cyclical and repetitive, with no hope for reprieve.

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 unaware of funding sources needed 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).

FIG 03 • HOUSING AFFORDABILITY PERCENTAGES IN 2019

TABLE 01

LESS THAN 20% SPENT ON HOUSING COSTS			
Household Income	Occupied Units	Owner-Occupied Units	Renter-Occupied Units
< \$20K	0.7%	1.1%	0.4%
\$20 - 34.9K	1.8%	3.9%	0.3%
\$35 - 49.9K	2.3%	4.4%	0.8%
\$50 - 75K	6.3%	8.7%	4.7%
\$75K <	6.1%	4.3%	16.6%

TABLE 02

20%-29% SPENT ON HOUSING COSTS			
Household Income	Occupied Units	Owner-Occupied Units	Renter-Occupied Units
< \$20K	0.8%	1.3%	0.5%
\$20 - 34.9K	1.6%	1.6%	1.6%
\$35 - 49.9K	4.7%	1.8%	6.7%
\$50 - 75K	7.4%	4.4%	9.4%
\$75K <	1.6%	7.6%	5.0%

TABLE 03

30% OR MORE SPENT ON HOUSING COSTS			
Household Income	Occupied Units	Owner-Occupied Units	Renter-Occupied Units
< \$20K	13.0%	6.1%	17.0%
\$20 - 34.9K	12.6%	5.0%	17.7%
\$35 - 49.9K	6.2%	3.6%	8.0%
\$50 - 75K	3.8%	3.0%	4.3%
\$75K <	2.3%	3.0%	0.6%

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 1st 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 of “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.

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.

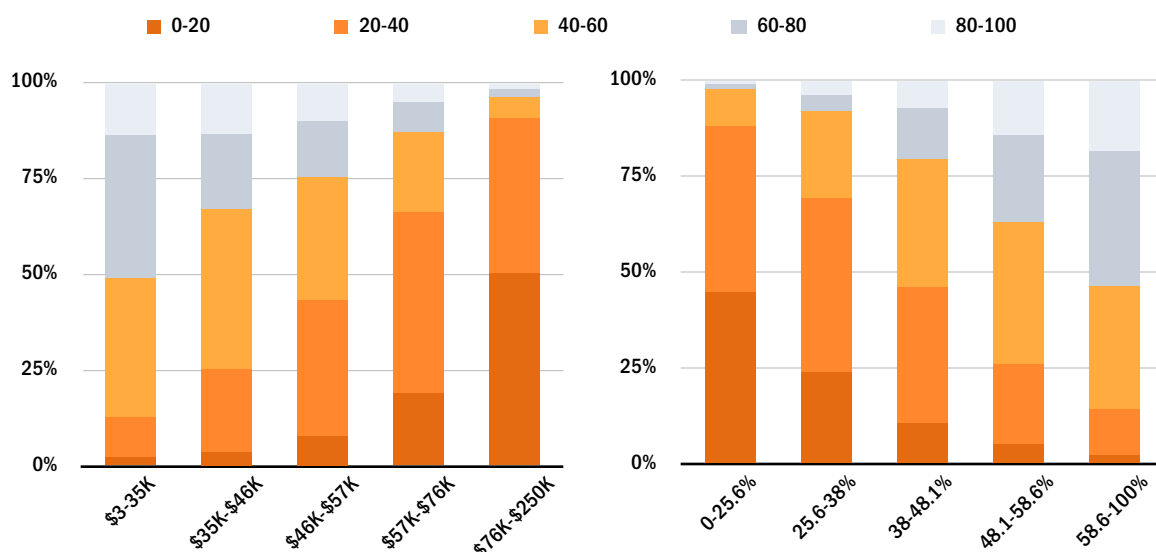
INTERNET ACCESS AND THE "HOMEWORK DIVIDE"

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).

FIG 04 • SHARE OF POPULATION BY NEIGHBORHOOD BROADBAND SUBSCRIPTION RATE



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 prevent transitioning out of 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 prevent their ability to transition out of a life of poverty; 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 particular Public Use Microdata Areas (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 and that can also afford to pay for health insurance coverage.

Also, 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.

DATA, VARIABLES, AND MODEL SPECIFICATION

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 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 geographics 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.

INTERSECTIONALITY

HEALTH CARE AND HOUSING

Research shows a positive correlation between housing and being able to afford better quality health care (Roche & Lindblad). Additionally, homeownership has the expected benefit of improved psychological and mental health (Ibid), and according to Mehidpanah, et al., homeownership can even improve mortality rates for the children who live within owner-occupied homes.

EDUCATION, HOUSING, AND HEALTHCARE

Recent studies have shown that there is a positive correlation between low socioeconomic status, fragile housing status, and health. Poverty, homelessness and the toxic stress associated with these major life events were directly connected to poor health and cognitive development and resulted in high healthcare usage (Park 2011). From this we can assert that high housing turnover has a direct correlation to children's health as well as educational limitations that we see in schools that have a high economic disadvantaged population.

EDUCATION AND TECH

Researchers describe the “homework gap” or “homework divide” as the intersection of education and barriers to the internet. Over 12 million U.S. Students function within the “homework divide” today and disadvantages their academic performance when they have poor or no home internet connection (Senate Joint Economic Committee Report, 2017). At its most extreme, the homework divide means that students without a home internet connection are relegated to complete assignments on their mobile phones or simply unable to finish their homework assignments at all (Anderson & Perrin, 2018). Between the shortcomings of the education system and the digital divide, already vulnerable populations are hurt in the long term through self-perpetuating cycles of further socioeconomic and social alienation (Tomer, Kneebone, & Shivaram, 2018).

EDUCATION AND CRIMINAL JUSTICE

Much research has been done into the intersection between education and the criminal justice system, especially the school-to-prison pipeline. For many, school is the setting where their first interaction with law enforcement occurs, which can trigger the beginning of a vicious cycle through suspensions, expulsions, and other sanctions. Young people who get caught up in the school-to-prison pipeline are at a much higher risk of further criminal justice system involvement (Scott 2017).

EDUCATION AND CRIMINAL JUSTICE

Overall, neighborhoods homeowners and two-parent households will have lower crimes rates, which could be due to homeowners being able to afford and employ home security systems and neighborhood watch groups (Rohe, 2013; Galster, 1987). Some researchers even argue that there is a correlation between reduced childhood delinquency for those whose parents own their home and better social and financial capital gains are also made with homeowners because they have higher “levels of life satisfaction” (Rohe, 2013).

Over 30 percent of jail inmates cannot afford to post bail. Racial/ethnic minorities are much more likely to be held on bail than white individuals, and those who cannot afford bail are also 40% more likely to commit another offense upon release, causing a criminogenic cycle for these populations (Matthews & Curiel). However, although precarious and not highly recommended, homeowners are able to use the equity in their home to help pay for bail costs. This is problematic because whites own homes at disproportionately higher rates than all other racial/ethnic groups. Because the bail bond system places a greater emphasis on releasing wealth rather than trustworthiness, poor renters, especially minorities, have a greater risk of continual economic devastation because of criminal justice interactions and the lack of bail bonds reform, which makes it harder to escape poverty and, eventually, build wealth through homeownership (McLoed & Stephens).

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.

$$\text{Ratio of Poverty}_{it} = \beta_0 + \beta_1 \text{uninsured}_{it} + \beta_2 \text{edu}_{it} + \beta_3 \text{house}_{it} + \beta_4 \text{nointernet}_{it} + \beta_5 \text{incar}_{it} + \epsilon_{it}$$

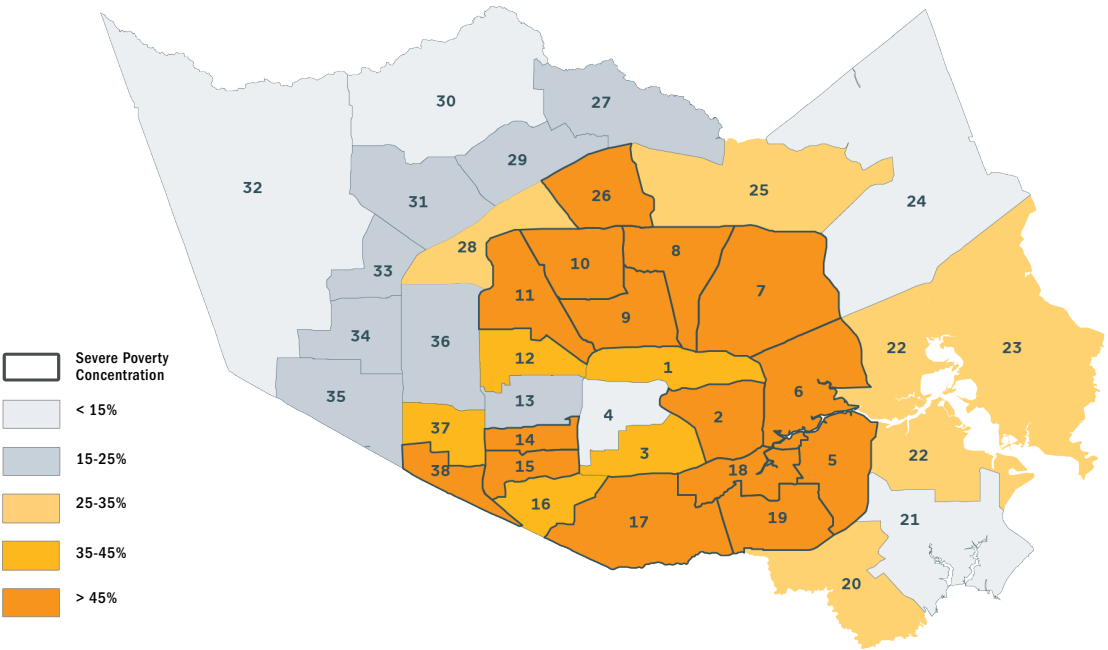
Where Ratio of Poverty denotes poverty at PUMA level i at time t , β_1 denotes the population of uninsured at PUMA level i at time t , β_2 denotes the population of over 25 without a highschool diploma at PUMA level i at time t , β_3 denotes population without internet access at PUMA level i at time 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 , ϵ_{it} is a set of control variables, such as race, age and sex. ϵ_{it} is the error term.

RATIO OF INCOME TO POVERTY

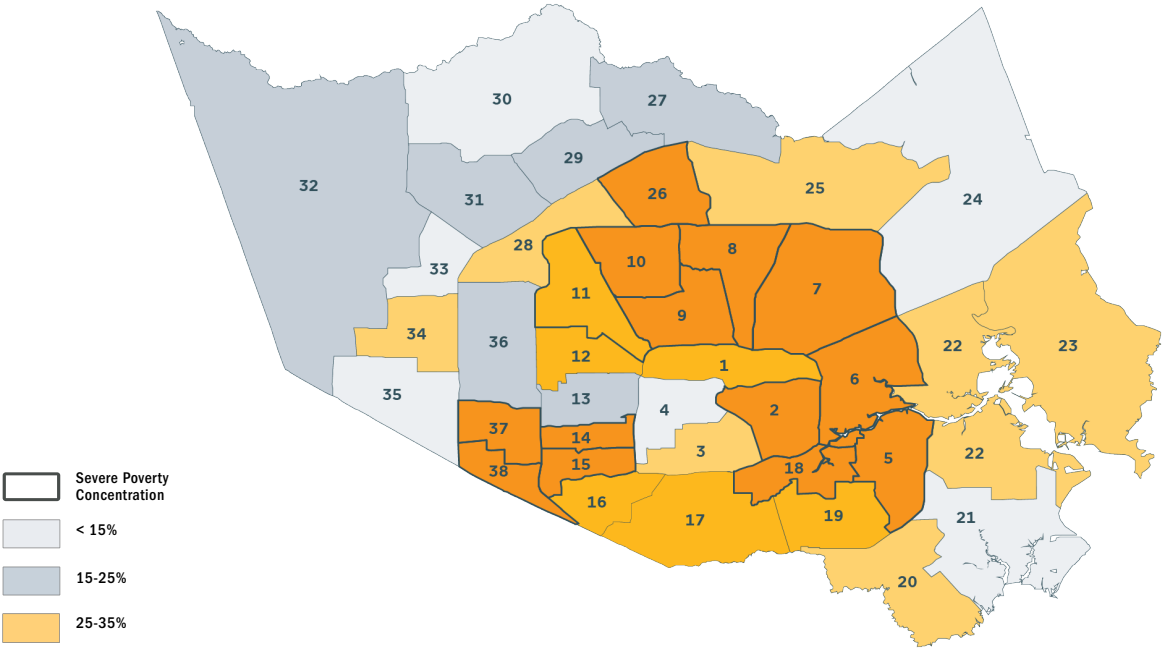
To further analyze the relationship between poverty and the deprivation of social conditions, we constructed a model that uses the ratio of income to poverty as our dependent variable to measure poverty levels. The U.S. Census measures poverty by using a baseline poverty threshold and comparing it against 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.

MAP 01 • HARRIS COUNTY POPULATION IN POVERTY 0-200% OF POVERTY RATE
(PERCENTAGE OF TOTAL POPULATION BY PUMA)



2015



2019

PERCENT OF POPULATION WITHOUT HEALTH INSURANCE

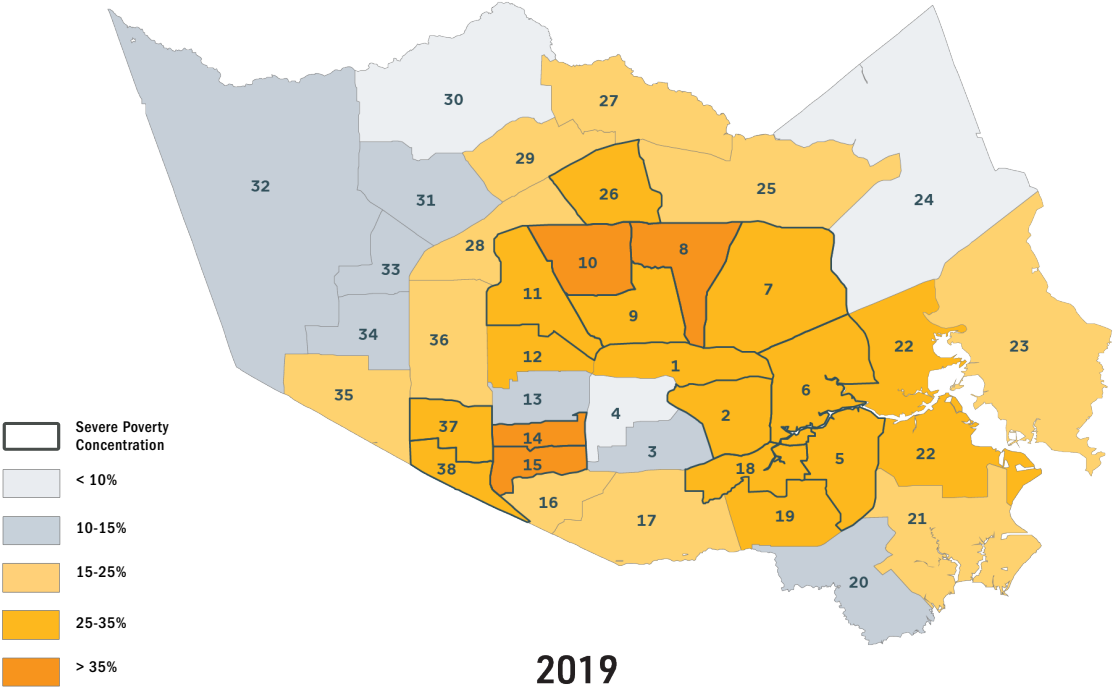
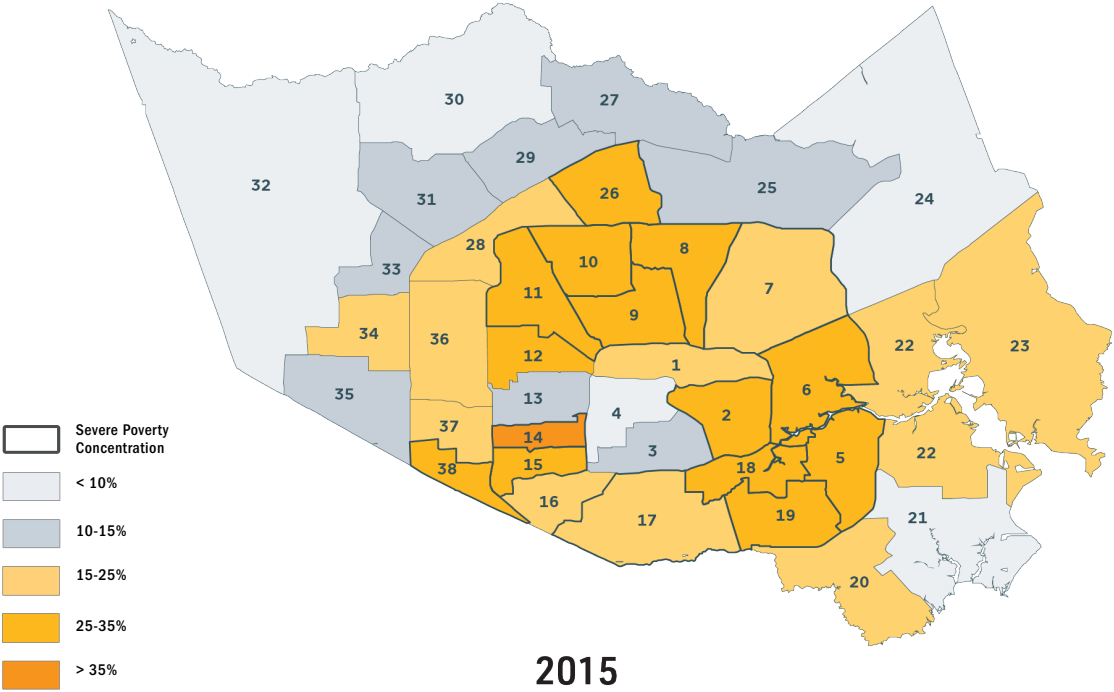
The American Community Survey (ACS) asked respondents about the type of health insurance coverage that they had. The question allowed for respondents to select between several types of private or public health insurance coverage (U.S. Census Bureau). Those who responded as “no” to all types were logged 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.

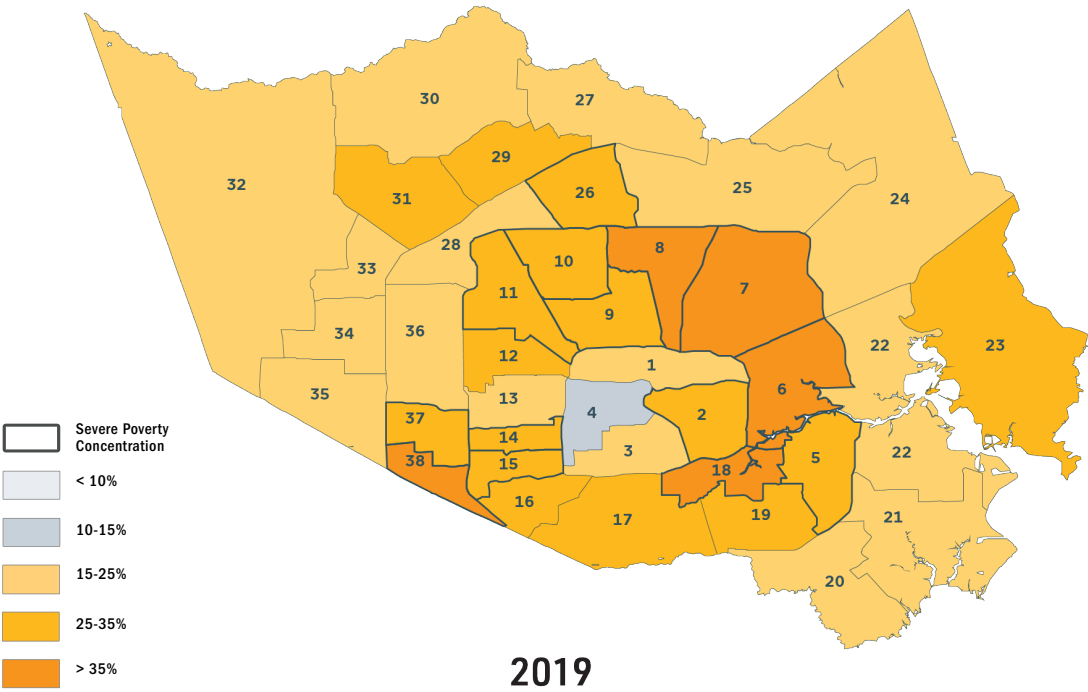
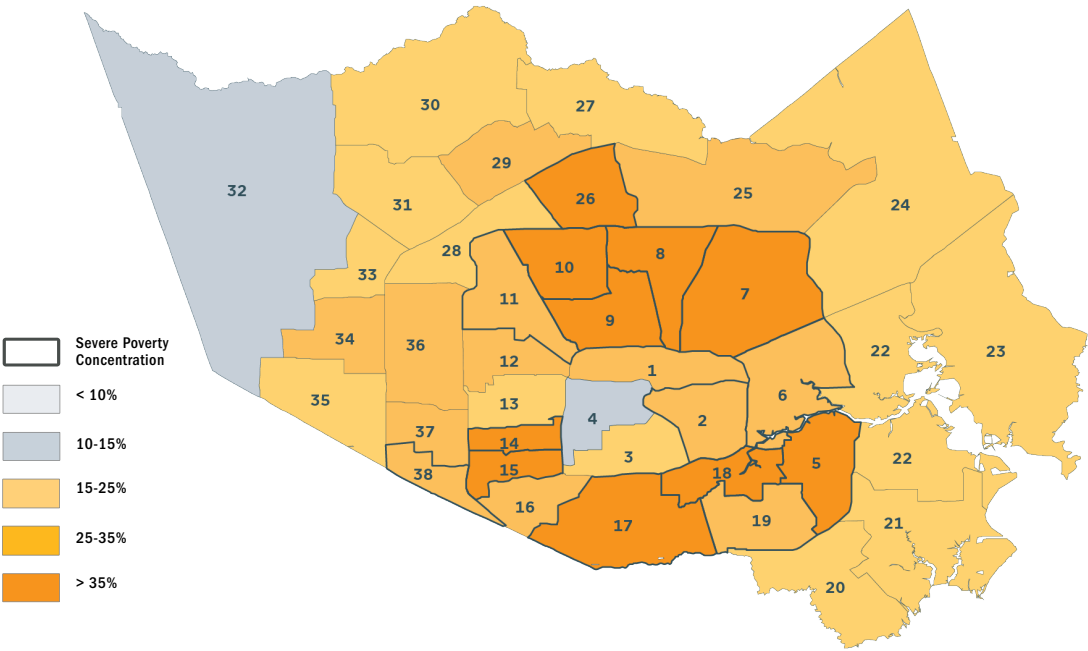
Additional PUMAs that have the second-highest percentage (between 25% and 35% of the PUMA's population) of people without health insurance are also in a PUMA with severe poverty concentration, or they are immediately adjacent to a PUMA with severe poverty concentration.

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.

MAP 02 • HARRIS COUNTY POPULATION WITHOUT HEALTH INSURANCE
(PERCENTAGE OF TOTAL POPULATION BY PUMA)



MAP 03 • HARRIS COUNTY POPULATION WITH PUBLIC HEALTH INSURANCE
(PERCENTAGE OF TOTAL POPULATION BY PUMA)

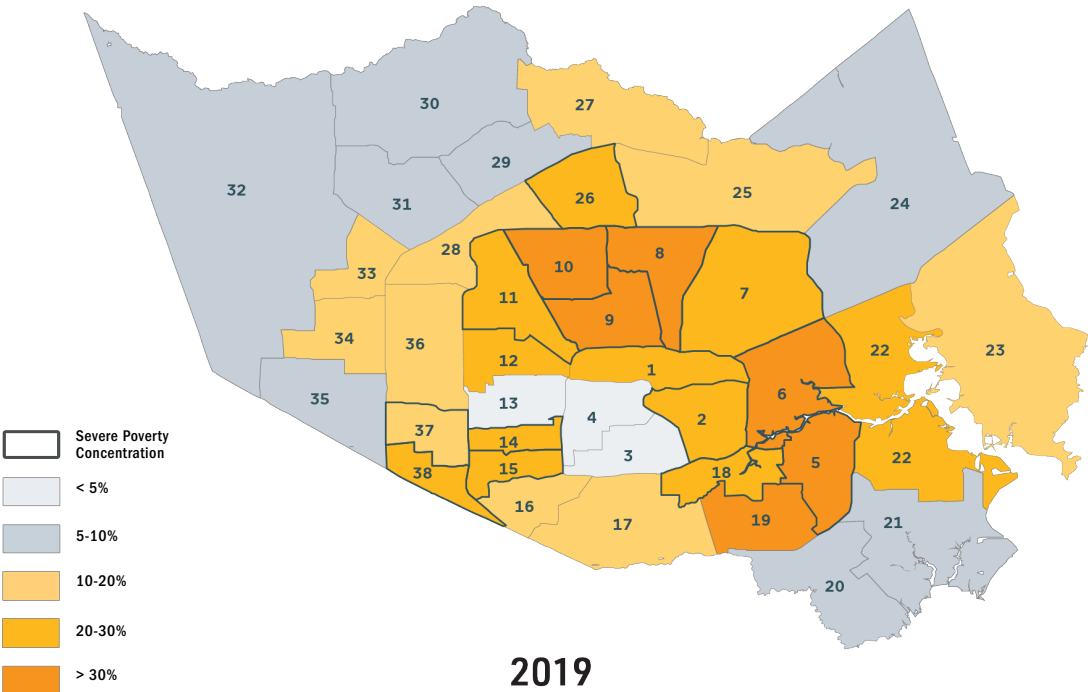
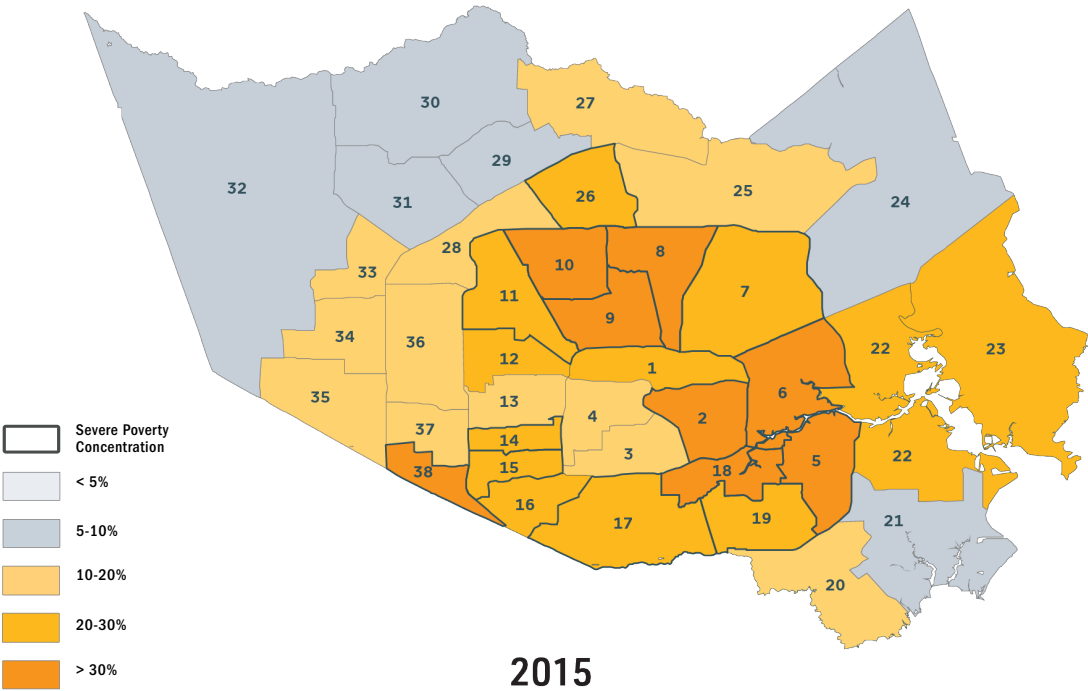


PERCENT OF POPULATION OVER AGE 25 WITHOUT A HIGH SCHOOL DIPLOMA

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.

MAP 04 • HARRIS COUNTY POPULATION WITHOUT HIGH SCHOOL DIPLOMA
(PERCENTAGE OF TOTAL POPULATION BY PUMA)

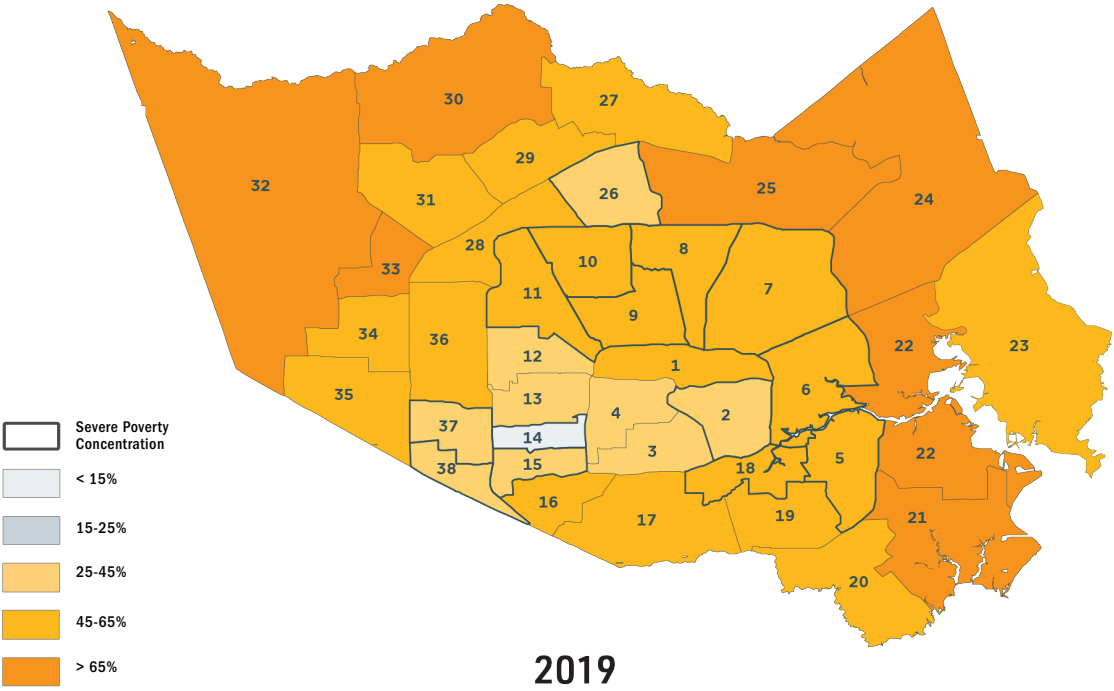
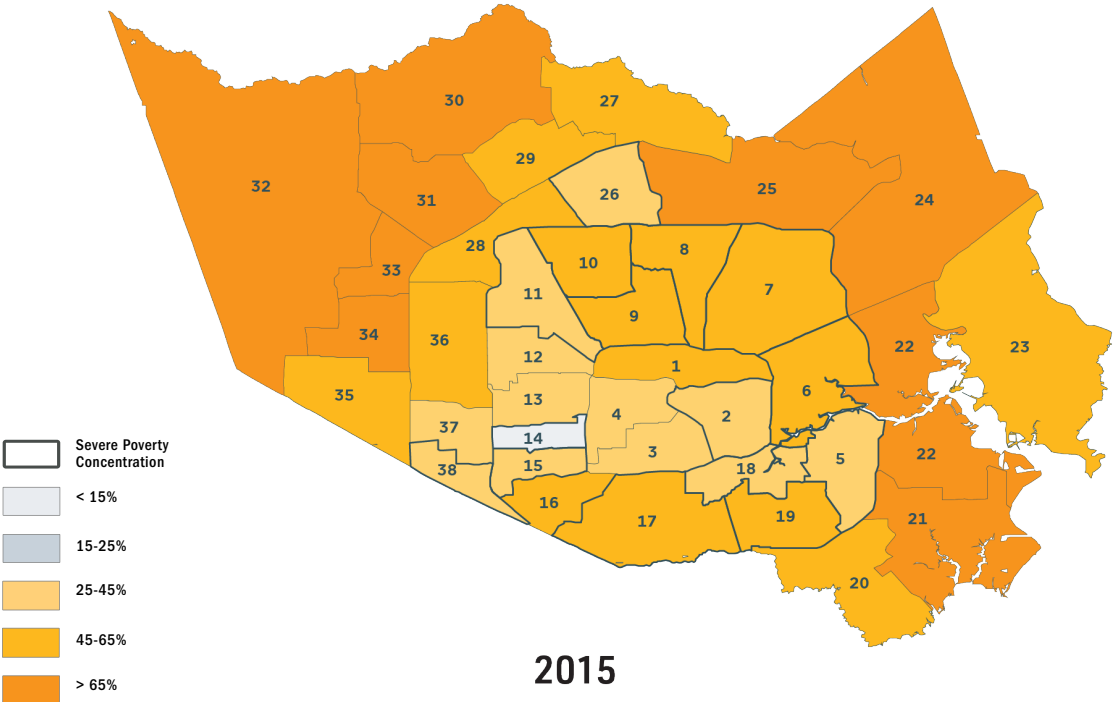


PERCENT OF HOMEOWNERS OF ALL OCCUPIED UNITS

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.

MAP 05 • HARRIS COUNTY HOMEOWNERS
(PERCENTAGE OF TOTAL POPULATION BY PUMA)

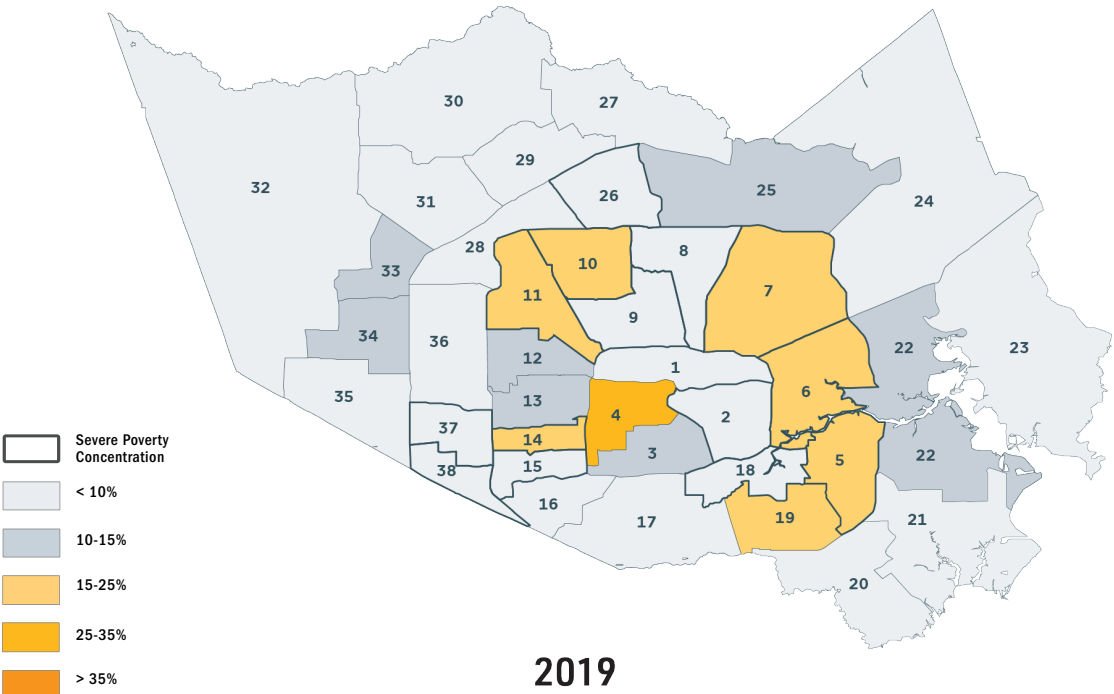
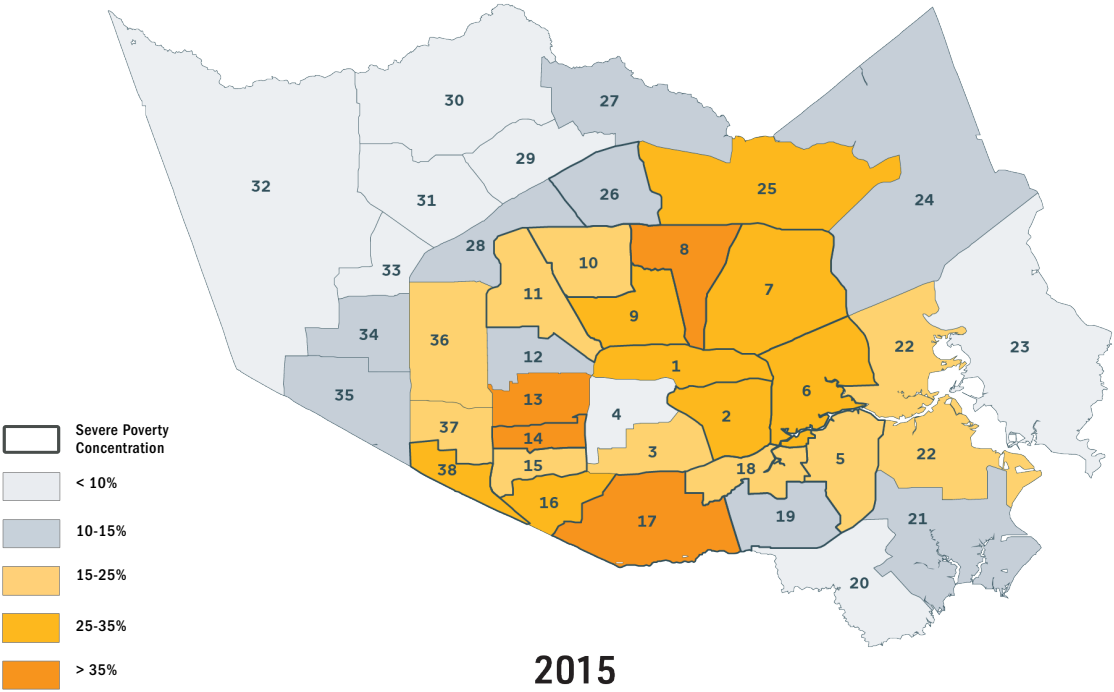


PERCENT OF POPULATION WITHOUT INTERNET ACCESS

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.

MAP 06 • HARRIS COUNTY POPULATION WITHOUT INTERNET ACCESS
(PERCENTAGE OF TOTAL POPULATION BY PUMA)

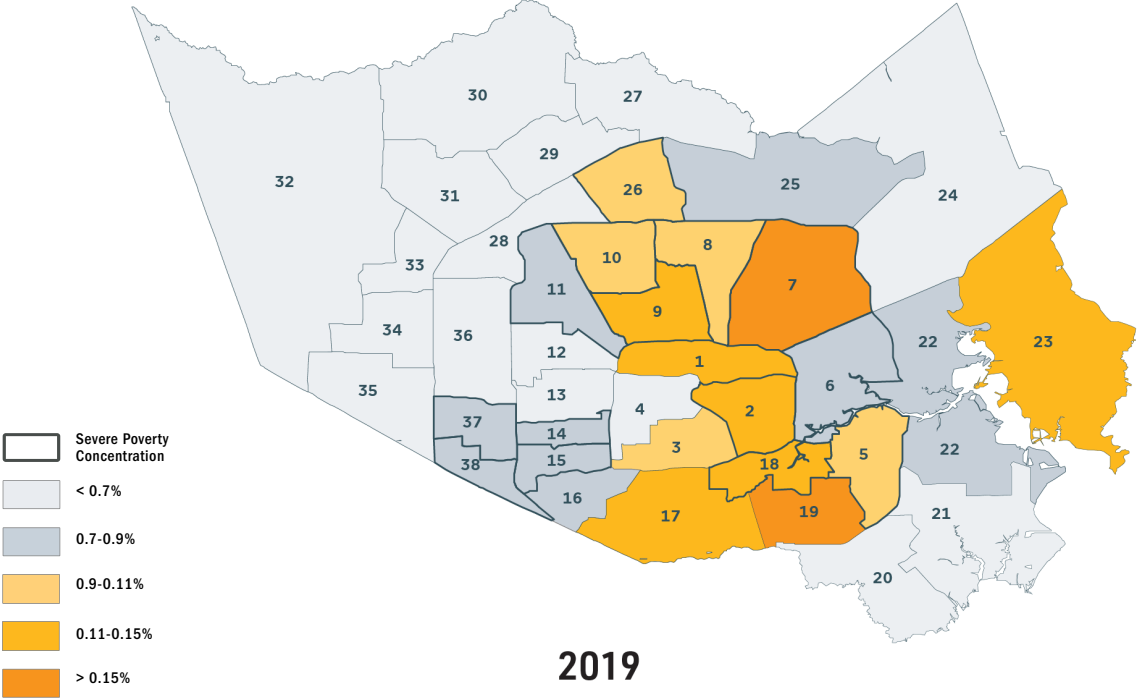
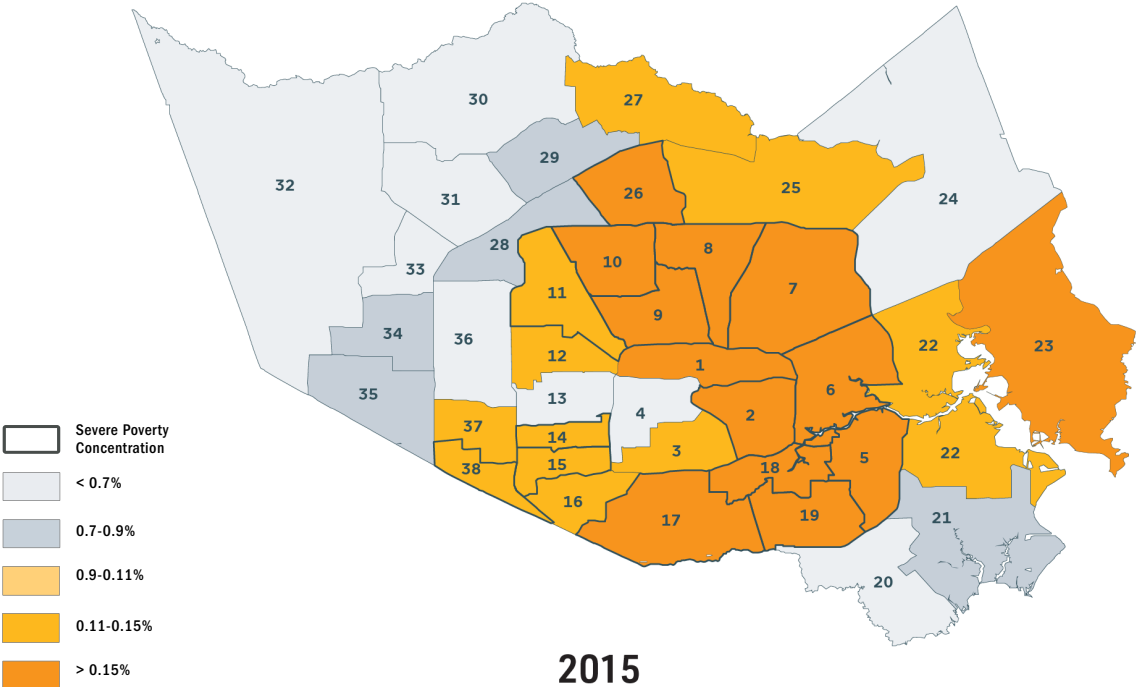


PERCENT OF POPULATION WITH COURT CASE

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.

MAP 07 • HARRIS COUNTY POPULATION WITH COURT CASES
(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 01 • SUMMARY STATISTICS

	Observations	Mean	Std. Deviation	Min	Max
Ratio of Poverty 200%	184	0.3556	0.1566	0.0904	0.7000
No Internet	184	0.1410	0.0932	0.0199	0.4768
Public Health Insurance	184	0.2867	0.0693	0.1396	0.4316
No Health Insurance	184	0.2055	0.0859	0.0456	0.4376
Contact with Criminal Justice System	184	0.0108	0.0046	0.0035	0.0279
Home Ownership	184	0.5456	0.1500	0.1237	0.8689
No Diploma	184	0.1949	0.1130	0.0112	0.5140
Unemployed	184	0.0785	0.0617	0.0137	0.3741
Female	184	0.5026	0.0192	0.4360	0.5558
Age 18-64	184	0.6309	0.0381	0.5570	0.7631
African American	184	0.1871	0.1201	0.0173	0.6035
Asian	184	0.0690	0.0500	0.0050	0.2370
Other Race	184	0.1166	0.0815	0.0310	0.5047

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 02 • 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*** (1.3770)	3.713** (1.8300)	4.852*** (1.5080)
Owns Home	-0.304*** (0.0352)	-0.186 (0.1160)	-0.325*** (0.0418)
No Diploma	0.743*** (0.0651)	0.971 (0.1180)	0.700*** (0.0700)
Unemployed	0.156*** (0.0571)	0.124** (0.0494)	0.137** (0.0532)
Female	0.0995 (0.1920)	0.330* (0.1940)	0.172 (0.1920)
Age 18-64	-0.455*** (0.1180)	-0.515*** (0.1660)	-0.538*** (0.1310)
African American	0.170*** (0.0354)	0.0432 (0.1140)	0.156*** (0.0430)
Asian	0.167* (0.0919)	0.177 (0.2150)	0.162 (0.1090)
Other Race	0.0848* (0.0431)	-0.00977 (0.0599)	0.0867* (0.0477)
Constant	0.454*** (0.1420)	0.509*** (0.1640)	0.490*** (0.1470)
Observations	184	184	184
Adjusted R2	0.9280	(0.0580)	0.9271

Standard Errors in Parentheses

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

	(b) Linear Regression	(B) Fixed Effects	(sqrt(diag(V_b-V_B)) S.E.
No Internet	0.049	0.018	0.015
Uninsured	0.061	0.211	0.014
Court Interaction	3.713	4.852	1.036
Owns Home	-0.186	-0.325	0.108
No Diploma	0.097	0.700	0.095
Unemployed	0.124	0.137	.
Female	0.331	0.172	0.023
Age 18-64	-0.515	-0.538	0.102
African American	0.043	0.156	0.105
Asian	0.177	0.162	0.185
Other Race	-0.010	0.087	0.036

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(11) = (b-B)' [(V_b-V_B)^{-1}] (b-B)$$

$$= 63.04$$

$$\text{prob} > \chi^2 = 0.0000$$

(V_b-V_B is not positive definite)

TABLE 03A • HAUSMAN TEST

$$\text{ROP_0_2}[\text{puma_code}, t] = Xb + u[\text{puma_code}] + e[\text{puma_code}, t]$$

Estimated Results:	Var	sd = sqrt(Var)
ROP_0_2	-0.515	0.157
e	0.043	0.034
u	-0.010	0.017

$$\text{Test: Var}(u) = 0$$

$$\text{chibar2}(01) = 4.42$$

$$\text{prob} > \chi^2 = 0.0178$$

TABLE 03B • BREUSCH-PAGAN MULTIPLIER TEST

We are using the panel regression with random effects as specified by the Hausman and Breusch-Pagan testing results. 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 PUMA 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. Another 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 04 • 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)	0.002 (0.028)	0.018 (0.040)
Uninsured	0.145** 0.0600	0.121*** (0.043)	0.211*** (0.063)
Court Interaction	4.324*** (1.3880)	1.071 (1.072)	4.852*** (1.508)
Owns Home	-0.253*** (0.0376)	-0.0480 (0.031)	-0.325*** (0.042)
No Diploma	0.333*** (0.0645)	0.373*** (0.050)	0.700*** (0.070)
Unemployed	-0.812*** (0.0506)	0.0606* (0.036)	0.137** (0.053)
Female	0.1920 (0.1800)	0.0387* (0.133)	0.172 (0.192)
Age 18-64	-0.262** (0.1200)	-0.283*** (0.094)	-0.538*** (0.131)
African American	0.0734* (0.0384)	0.108*** (0.032)	0.156*** (0.043)
Asian	-0.0615* (0.0984)	0.219*** (0.081)	0.162 (0.109)
Other Race	-0.0159 (0.0438)	0.0815** (0.034)	0.0867* (0.048)
Constant	0.248* (0.1370)	0.233** (0.103)	0.490*** (0.147)
Observations	184	184	184
Adjusted R2	0.8052	0.8324	0.9281

Standard Errors in Parentheses
* p < 0.10, ** < 0.05, *** p < 0.01

Table 4 represents the different possible dependent variables. 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 Table 3, in the last column, all of the variables are very significant to the .01 level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Uninsured	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*** (0.1100)	1.369*** (0.1090)	1.194*** (0.1210)	.9060 (0.1260)	0.612*** (0.1200)	0.607*** (0.1200)	0.612*** (0.1200)
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 (0.2210)	0.1200 (0.2160)	0.1470 (0.2110)	0.1900 (0.1970)	0.2380 (0.1800)	0.2410 (0.1810)	0.2280 (0.1800)
Age 18-64	0.504*** (0.1560)	0.435*** (0.1540)	0.287* (0.1590)	-0.1940 (0.1740)	-0.0735 (0.1500)	-0.0815 (0.1510)	-0.0889 (0.1490)
African American	0.0679 (0.0591)	0.0850 (0.0586)	0.0444 (0.0594)	0.0083 (0.0551)	0.109** (0.0430)	0.1** (0.0426)	0.0981** (0.0420)
Other Race	0.118** (0.0576)	0.129** (0.0586)	0.156*** (0.0561)	0.116 (0.0528)	0.0847* (0.0455)	0.0771* (0.0406)	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*** (1.5740)	6.295 (1.4940)	1.7970 (1.4902)	1.9750 (1.4230)	2.1500 (1.3580)
Home Ownership				-0.28 (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)
Fixed Broadband						-0.0302 (0.0527)	-- --
Mobile or Dial Up							-0.0683 (0.0521)
Constant	-0.529*** (0.1720)	-0.511*** (0.1680)	-0.420** (0.1670)	0.1190 (0.1860)	0.0347 (0.1660)	0.0759 (0.1670)	0.0700 (0.1640)
Observations	184	184	184	184	184	184	
Adjusted R2	0.8811	0.8861	0.8882	0.9021	0.9336	0.8811	0.8811

Standard Errors in Parentheses
* p < 0.10, ** < 0.05, *** p < 0.01

TABLE 05 • SOCIAL CONDITIONS INTERACTIONS

In Table 5, 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.).

SECONDARY MODELS - INTERNET ACCESS

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 6 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 06 • EFFECT OF NO INTERNET ACCESS

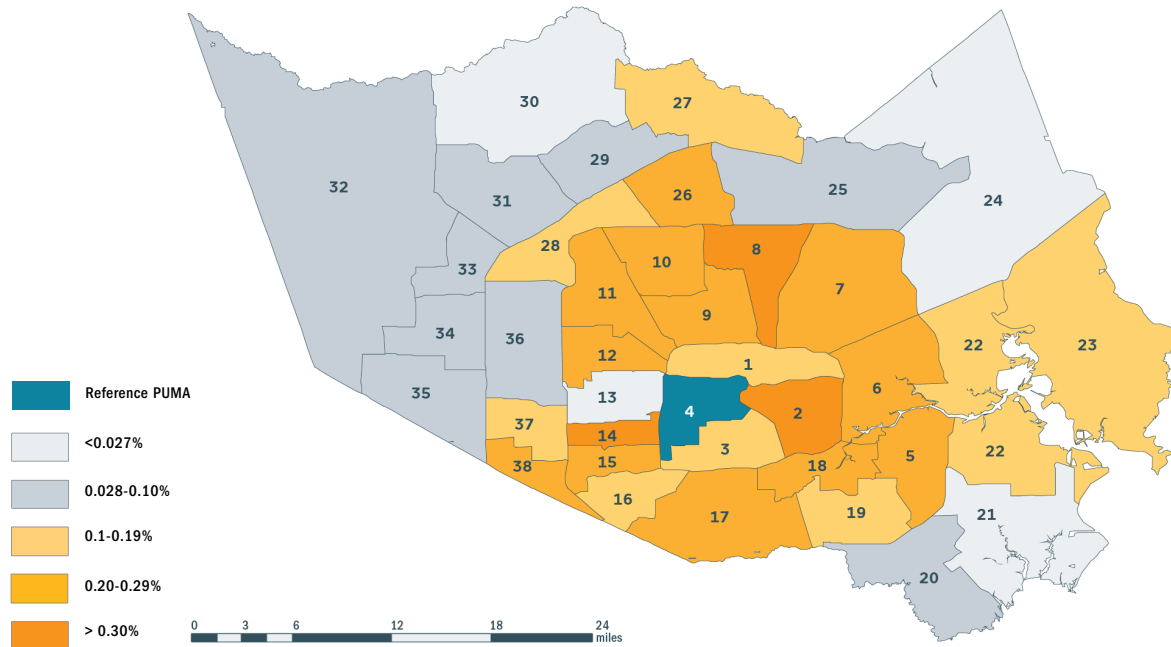
	(1)	(2)	(3)	(4)	(5)	(6)
No Internet	0.160*** (0.0551)	0.217*** (0.0584)	0.0610 (0.0545)	0.321*** (0.0593)	0.196*** (0.0591)	0.0459 (0.0396)
Unemployed	0.247*** (0.0669)	0.302*** (0.0736)	0.135** (0.0656)	.9060*** (0.1260)	0.612*** (0.1200)	0.183*** (0.0527)
Female	-0.153** (0.2720)	-0.2410 (0.2930)	-0.0481 (0.2540)	0.0886 (0.0522)	0.114** (0.0492)	0.1700 (0.1970)
Age 18-64	-0.559*** (0.1960)	-0.453** (0.1890)	-0.713*** (0.1840)	0.1900 (0.1970)	0.2380 (0.1800)	-0.392*** (0.1250)
African American	0.326*** (0.0928)	0.362*** (0.0752)	0.174* (0.0906)	-0.1940 (0.1740)	-0.0735 (0.1500)	0.225*** (0.0374)
Other Race	0.0116 (0.0759)	0.163** (0.0775)	0.179** (0.0715)	0.0083 (0.0551)	0.109** (0.0430)	0.0579 (0.0477)
Uninsured		0.665*** (0.0803)			0.0847* (0.0455)	0.191*** (0.0645)
Court Interaction			10.41*** (1.9150)		0.0422 (0.0375)	-- --
Home Ownership				-0.587** (0.0708)	1.7970 (1.4902)	-0.321*** (0.0397)
No Diploma					0.985*** (0.0638)	0.813*** (0.0550)
Constant	0.671*** (0.1910)	0.486** (0.2030)	0.647*** (0.1780)	1.193*** (0.1790)	0.0862 (0.1620)	0.425*** (0.1490)
Observations	184	184	184	184	184	184
Adjusted R2	0.4878	0.7671	0.6405	0.6856	0.8699	0.9249

Standard Errors in Parentheses
*p < 0.10, **<0.05, ***p<0.01

When we were running the regressions we were surprised that the effect of not having the internet was not significant when we ran it with all of the variables, so we decided to see what was making it insignificant. 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.

POVERTY RANKING OF HARRIS COUNTY PUMAS

In Table 7, we have used the PUMA with the least poverty susceptibility, PUMA 4 which is inside the 610 loop and south of IH-10 as our zero and the other PUMAs are in comparison to it. In this way the other PUMAs show that the greatest level of poverty probability is in the highest rankings between 27 - 37. These locations show that there is between a 25% and 37% chance of a person living in these PUMAs will experience a portion of their income below the poverty line. Looking at the map these coincide with the locations that we found had the greatest incidence of no insurance or public insurance, lower home ownership, economically disadvantaged students and a higher incidence of no diploma, interaction with court cases and no internet.

TABLE 07 • PUMA POVERTY RANKING

Rank	PUMA	Description	PUMA Dif.	SE	Rank	PUMA	Description	PUMA Dif.	SE
1	13	W. Hunters Creek Village 610 & TX-8	0.010	-0.029	21	1	Houston N Central N I-10 & 610	0.186***	-0.045
2	24	Houston City Far Northeast	0.011	-0.057	22	19	Houston SE & S Houston inside TX-8	0.196***	-0.053
3	30	Tomball & The Woodlands	0.013	-0.054	23	12	Houston W Spring Valley Village City	0.203***	-0.050
4	21	Houston SE	0.027	-0.040	24	5	Pasadena inside TX-8	0.209***	-0.052
5	32	Far NW Katy City	0.028	-0.054	25	17	Houston S, 610 & TX-8	0.211***	-0.079
6	36	E of Hwy 6 & West of TX-8	0.035	-0.040	26	7	Houston NE 610 & TX-8	0.228***	-0.076
7	29	N of FM 1960	0.036	-0.041	27	6	Houston E	0.247***	-0.055
8	31	N of US 290 and FM 1960	0.039	-0.047	28	11	Houston NW 610 & TX-8	0.251***	-0.049
9	35	S of I-10 & West of Hwy 6	0.052	-0.042	29	15	Houston SW & Bellaire 610 & TX-8	0.260***	-0.052
10	25	Houston N	0.061	-0.056	30	18	Houston SE W of Pasadena	0.264***	-0.066
11	33	S of 290 & W of Hwy 6	0.070	-0.055	31	26	Houston City N I-45	0.267***	-0.061
12	34	Houston City W, N US-90, W Hwy 6	0.079	-0.048	32	9	Houston N S Aldine & Inside TX-8	0.279***	-0.059
13	20	Houston SE & Webster	0.084**	-0.039	33	10	Houston N W Aldine & Inside TX-8	0.285***	-0.064
14	27	Spring	0.100**	-0.048	34	38	Houston SW E of Hwy 6 & W TX-8	0.294***	-0.053
15	22	Deer Park	0.125**	-0.055	35	2	Houston E Central E I-45 & Inside 610	0.304***	-0.056
16	28	Jersey Village City TX-8 & FM 1960	0.129***	-0.041	36	14	Houston City W Westpark Tollway	0.356***	-0.059
17	3	Houston City S Central	0.135***	-0.044	37	8	Houston City N Aldine B/T 610 & TX-8	0.370***	-0.071
18	23	Baytown	0.136**	-0.052	21	1	Houston N Central N I-10 & 610	0.186***	-0.045
19	37	Westpark Tollway	0.160***	-0.041	22	19	Houston SE & S Houston inside TX-8	0.196***	-0.053
20	16	Houston SW B/T 610 & TX-8	0.173***	-0.053	23	12	Houston W Spring Valley Village City	0.203***	-0.050

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.

POLICY IMPLICATIONS

HEALTH INSURANCE

With Texas consecutively leading the nation in the numbers of uninsured persons, Medicaid expansion should be a priority issue to help play a role in reducing poverty among Harris County residents. Expanding Medicaid can exponentially narrow the large uninsured gap by paving a pathway to access to care, especially preventative care and other medical needs. Expanding access of care to those who need it most could potentially lower chronic

illnesses/disease and increase life expectancy thereby creating more potential for higher earnings over time.

Additionally, expanding Medicaid to more individuals may help also lower unreasonably high out of pocket costs for those needing to seek care.

EDUCATION

With the pandemic looming large over the lives of the people and especially the children in Harris County it is hard not to see how creating a system that rises to meet the students where they are when they begin school, rather than requiring them to come prepared seems more important than ever. As previously noted there are five districts in Harris County that have an above 80% incidence of economically disadvantaged children, and while those five are seemingly small in number, consider that in the largest district, the one that covers most of Harris County, Houston ISD has a population that is 77% economically disadvantaged (FRC 2017). In almost all of the districts that have a significant economically disadvantaged population there is also a significant Hispanic population that is not addressed accurately in the Census for the county in terms of race or ethnicity (see Limitations).

Making sure that the children in Harris County are having their needs met will boil down to meeting the needs of their parents. When the Census does not have an accurate counting of the Hispanic and Latino population that live in Harris County, but their children make up more than half of the students in most school districts it is difficult to know if their needs are being met, if no one is counting that they are there. If their needs are not being met then there will be an uptake in children without diplomas which leads to a cycle of poverty and increases an area's chances of not being able to get health insurance or only receiving public funding, loss of home ownership and a higher incidence of incarceration. All of which cost more than educating the child in the first place

HOUSING

The reduction of poverty might also be achieved by government investment in homeownership programs and the development of homes for owner occupancy. In particular, governments can examine varied forms of homeownership e.g. townhomes, condos, ADUs, tiny homes, etc. The kinds of homeownership developments are more affordable and can provide lifelong stability – thereby, reducing poverty and improving quality of life for the residents throughout generations.

INTERNET ACCESS

Despite the empirical evidence revealed by this research, studies show that fixed broadband internet access is required to participate in today's economy (Weiner & Puniello, 2014; FCC, 2010; Sallet, 2020). Yet, almost half of the survey respondents cited the high cost of fixed broadband internet as the main reason they do not have one in their home (Anderson, 2019). Policy reforms need to address the affordability issue in two ways: market competition and affordability.

In 2015, the FCC issued revisions to their 1985 Lifeline program, which subsidizes telephone companies to provide low-cost internet subscriptions to low-income households (FCC, 2015). Since the policy emerged from an era of landlines and telephone companies, the program only awards funding to established telephone companies (Ibid). Despite the attempts to update the policy, the FCC failed to expand its definition of "eligible carriers" to include fixed broadband providers.

Failure to broaden the definition of "eligible carriers" resulted in: a) suppressed competition in the ISP market and b) large swathes of the population strictly relying on their smartphones for internet access. The suppressed market competition has driven subscription costs higher and higher due to data cap policies and misleading pricing that tricks consumers into "premium tier packages" (Thomas & Rizzo, 2020). In cities like Houston, where over 62% of households only have access to two different providers, choices are limited (Reichman, 2018). Meanwhile, strictly relying on wireless internet access via smartphones makes the day-to-day work of writing term papers, filling out job applications, or filling out unemployment paperwork on a small screen much more difficult. Since telephone companies are the only "eligible carriers" under the Lifeline policy, 90% of Lifeline participants can only access affordable internet through their smartphones (Wheeler, 2020).

Simple language revisions could significantly close the digital divide. Expanding the definition of "eligible carriers" to encompass broadband providers, larger shares of the population can benefit from the program, making internet access more affordable. In addition, future revisions to the Lifeline program should alter the eligibility requirements for ISPs to receive subsidies. Under the current regime, "eligible carriers" can receive federal funding by building out infrastructure in disconnected regions. Reforms should require ISPs to offer service packages for low-income households as a contingency to receiving federal subsidies.

Since job market effects can be particularly consequential for an individual's poverty status, the state could greatly alleviate some of these strains by addressing licensing restrictions for certain occupations, moving away from cash bail systems, and reducing the reliance on fees and fines. The state would greatly benefit by providing additional resources to those with criminal justice system interactions to prevent future system involvement.

Reducing poverty in Harris County will require investing in infrastructure that supports the social conditions that are imperative to an individual's ability to thrive in an urban society. Investing in policies that support access to healthcare, education, housing and technology are likely to narrow income inequality and improve upward social mobility by allowing a greater percentage of the population to harness the economic opportunities available in this region.

CRIMINAL JUSTICE SYSTEM INTERACTION

Since job market effects can be particularly consequential for an individual's poverty status, the state could greatly alleviate some of these strains by addressing licensing restrictions for certain occupations, moving away from cash bail systems, and reducing the reliance on fees and fines. The state would greatly benefit by providing additional resources to those with criminal justice system interactions to prevent future system involvement.

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.

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.

REFERENCES

- Access to Health Care in Houston. (2018). Understanding Houston. <https://www.understandinghouston.org/topic/health/access-to-healthcare/#overview>.
- American journal of public health. American Public Health Association, March 2018. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5803800/>.
- Anderson, Edward, Maria Ana Jalles D'Orey, Maren Duvendack, and Lucio Esposito. "Does Government Spending Affect Income Inequality? A Meta-Regression Analysis", *Journal of Economic Surveys* 31, no. 4 (2017): 961–87. <https://doi.org/10.1111/joes.12173>.
- Anderson, Monica. "Mobile Technology and Home Broadband 2019." Pew Research Center: Internet, Science & Tech. Pew Research Center, June 23, 2020. <https://www.pewresearch.org/internet/2019/06/13/mobile-technology-and-home-broadband-2019/>.
- Anderson, Monica, and Andrew Perrin. 2020. "Nearly One-in-Five Teens Can't Always Finish Their Homework Because of the Digital Divide." Pew Research Center. Pew Research Center. May 30. <https://www.pewresearch.org/fact-tank/2018/10/26/nearly-one-in-five-teens-cant-always-finish-their-homework-because-of-the-digital-divide/>.
- Bach, A, and T Wolfson. 2011. "Poverty, Inequality, and the Social and Political Effects of the Digital Divide." Unpublished Manuscript, Department of Journalism and Media Studies, Rutgers.
- Berg, Gary A. *Low Income and the Perpetuation of Inequality Higher Education in America*. Farnham, Surrey, England:: Ashgate Pub., 2010. <https://tea.texas.gov/texas-schools/accountability/academic-accountability/performance-reporting/federal-report-cards>.
- Bor, J., Cohen, G., & Galea, S. (2017, April 8). Population health in an era of rising income inequality: USA, 1980–2015. ScienceDirect. <https://www.sciencedirect.com/science/article/abs/pii/S0140673617305718>.
- Brown, Phillip. "Education, Opportunity and the Prospects for Social Mobility: Education and Social Mobility." *British Journal of Sociology of Education* 34, no. 5-6 (2013): 678–700.
- Bureau, US Census. "Why We Ask About...Health Insurance Coverage." Why We Ask About... Health Insurance Coverage | American Community Survey | US Census Bureau. Accessed March 25, 2021. <https://www.census.gov/acs/www/about/why-we-ask-each-question/health/>.
- Business and Commerce Code Chapter 20. "Regulation of Consumer Credit Reporting Agencies". (n.d.). Retrieved April 15, 2021, from <https://statutes.capitol.texas.gov/Docs/BC/htm/BC.20.htm>.
- Center for Houston's Future. 2020. "Houston's Economic Future: Healthcare", p. 8, 11. https://static1.squarespace.com/static/5bd0cda394d71a3556faeb6c/t/5f996628e5da215b553984da/1603888744630/Houstons+Economic+Future+Health+Care+2020_full_Optimized.pdf.
- Chetty, Raj, László Sándor, and Adam Szeidl. September 2016. "The Effect of Housing on Portfolio Choice", http://www.raichetty.com/chettyfiles/housing_portchoice_old.pdf.
- Chetty, R., Stepner, M., & Abraham, S. (2016, April 26). The Association Between Income and Life Expectancy in the United States, 2001–2014. *Health Disparities | JAMA | JAMA Network*. <https://jamanetwork.com/journals/jama/article-abstract/2513561>.
- Chetty, Raj, Nathaniel Hendren, Patrick Kline, and Emmanuel Saez. "Where Is the Land of Opportunity? The Geography of Intergenerational Mobility in the United States." *The Quarterly Journal of Economics* 129, no. 4 (2014): 1553–1623. <https://doi.org/10.1093/qje/qju022>.
- Christopher, Andrea S, David U Himmelstein, Steffie Woolhandler, and Danny McCormick. "The Effects of Household Medical Expenditures on Income Inequality in the United States."
- Coleman, B. W. (2013, March 16). Online jobs hunt: 'Let them eat cake'? [Letter to the editor]. *The Trenton Times*. Retrieved from <http://www.nj.com/times-opinion/index.ssf/2013/03/times%5fof%5ftrenton%5fletters%5fto%5fth%5f643.html>.
- Craigie, Terry-Ann, Ames Grawert, Cameron Kimble, and Joseph E. Stiglitz. "Conviction, Imprisonment, and Lost Earnings: How Involvement with the Criminal Justice System Deepens Inequality." *Brennan Center for Justice*, 2020. Accessed April 8, 2021. <http://www.jstor.org/stable/resrep28428>.
- DATAUSA, "Harris County, TX" DATAUSA (2021). <https://datausa.io/profile/geo/harris-county-tx>.
- Dimaggio, Paul, Coral Celeste, and Steven Shafer. 2004. "Digital Inequality: From Unequal Access to Differentiated Use." Edited by E Hargittai. *The Inequality Reader: Contemporary and Foundational Readings in Race, Class and Gender*, 355–400.
- Dolan, Karen, and Jodi Carr (2015). *The Poor Get Prison: The Alarming Spread of the Criminalization of Poverty*. <https://ips-dc.org/wp-content/uploads/2015/03/IPS-The-Poor-Get-Prison-Final.pdf>.
- Dollar, D., & Kraay, A. (2002). Growth Is Good for the Poor. *Journal of Economic Growth*, 7(3), 195-225. Retrieved May 2, 2021, from <http://www.jstor.org/stable/40216063>.
- Easterlin, R.A. (1974) Does economic growth improve the human lot? Some empirical evidence. In R. David and R., Reder (eds.), *Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz* (pp. 89 – 125). New York : Academic Press.

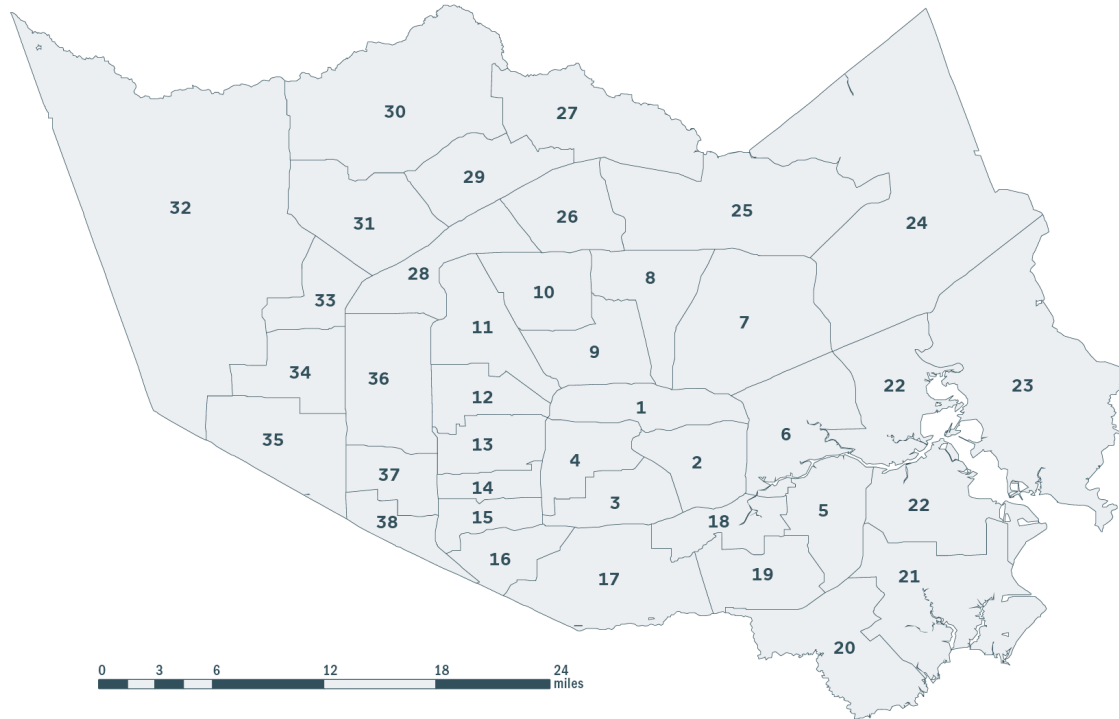
- Federal Communications Commission. 2015. "National Broadband Plan." Federal Communications Commission. December 28. <http://www.broadband.gov/plan/>.
- Friedman, Brittany, and Mary Pattillo. "Statutory Inequality: The Logics of Monetary Sanctions in State Law." *RSF: The Russell Sage Foundation Journal of the Social Sciences* 5, no. 1 (2019): 173-96. Accessed April 8, 2021. doi:10.7758/rsf.2019.5.1.08.
- Gant, J., N Turner-Lee, Y Li, and J Miller. 2010. *National Minority Broadband Adoption: Comparative Trends in Adoption, Acceptance and Use*. Washington, DC: Joint Center for Political and Economic Studies.
- Garfield, R., Orgera, K., & Damico, A. (2021, January 21). *The Coverage Gap: Uninsured Poor Adults in States that Do Not Expand Medicaid*. Kaiser Family Foundation. <https://www.kff.org/medicaid/issue-brief/the-coverage-gap-uninsured-poor-adults-in-states-that-do-not-expand-medicaid/>.
- Gould, Elise. (2019). *Decades of rising economic inequality in the U.S.: Testimony before the U.S. House of Representatives Ways and Means Committee*. Economic Policy Institute. <https://www.epi.org/publication/decades-of-rising-economic-inequality-in-the-u-s-testimony-before-the-u-s-house-of-representatives-ways-and-means-committee/>.
- Gunja, Munira, and Sara Collins. "Who Are the Remaining Uninsured, and Why Do They Lack Coverage?" *Commonwealth Fund*. The Commonwealth Fund, 28 Aug. 2019, <https://www.commonwealthfund.org/publications/issue-briefs/2019/aug/who-are-remaining-uninsured-and-why-do-they-lack-coverage>.
- Hart, Kim. 2018. "The Homework Divide: 12 Million Schoolchildren Lack Internet." *Axios*. December 1. <https://www.axios.com/the-homework-gap-kids-without-home-broadband-access-3ad5909f-e2fb-4208-b4d0-574c45ff4fe7.html>.
- Heflin CM, Pattillo M. 2006. Poverty in the family: Race, siblings, and socioeconomic heterogeneity. *Social Science Research*. 35: 804-822.
- Himmelstein, David, et al. "Medical Bankruptcy in the United States, 2007: Results of a National Study." *The American Journal of Medicine*, 5 June 2009, pubmed.ncbi.nlm.nih.gov/19501347/.
- Holeywell, Ryan. (2016, November 14). *These Charts Show Poverty's Startling Spread Across Houston*. The Kinder Institute for Urban Research. <https://kinder.rice.edu/2016/11/14/these-charts-show-how-povertys-startling-spread-across-houston>.
- Hutto, Nathan, Jane Waldfogel, Neeraj Kaushal, and Irwin Garfinkel. March 2011. Improving the Measurement of Poverty. *Social Service Review* 85(1): 39-74. doi: 10.1086/659129
- Khullar, D., & Chokshi, D. (2018, October). *Health, Income and Poverty: Where Are We and What Could Help*. *Health Affairs*. https://www.healthaffairs.org/doi/10.1377/hpb20180817.901935/full/HPB_2017_RWJF_05_W.pdf.
- Liebig, Stefan. "Richard Wilkinson and Kate Pickett (2009): *The Spirit Level. Why More Equal Societies Almost Always Do Better*. Allen Lane, London." *Social Justice Research* 25, no. 1 (2012): 102-7. <https://doi.org/10.1007/s11211-012-0148-9>.
- McLeod, Lynne M. and Gene Stephens. 1978. "Editorial: Bail Bond Reform". *3 Criminal Justice Review* [vii].
- Mathews II, John and Felipe Curiel. November 30, 2019. "Criminal Justice Debt Problems". *American Bar Association. Human Rights Magazine*. Vol. 44, No. 3: Economic Justice. https://www.americanbar.org/groups/crsj/publications/human_rights_magazine_home/economic-justice/criminal-justice-debt-problems/.
- Mathews, J., Curiel, F. (2019). *Criminal Justice Debt Problems*. American Bar Association. https://www.americanbar.org/groups/crsj/publications/human_rights_magazine_home/economic-justice/criminal-justice-debt-problems/.
- Mehidipannah, Roshanak, Amy J. Schulz, Barbara A. Israel, et al. August 2017. "Neighborhood Context, Homeownership and Home Value: An Ecological Analysis of Implications for Health". *International Journal of Environmental Research and Public Health*. Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5664599/>.
- Miltko, Caelin Moriarty. 2007. "What Shall I Give My Children": Installment Land Contracts, Homeownership, and the Unexamined Costs of the American Dream. *The Chicago Law Review* 87:2274, 2275.
- National Center for Education Statistics. 2019. "The Condition of Education", https://nces.ed.gov/programs/coe/indicator_cch.asp.
- National Telecommunications and Information Administration, and U.S. Department of Commerce . 2011. "Digital Nation: Expanding Internet Use." National Telecommunications and Information Administration. https://www.ntia.doc.gov/files/ntia/publications/ntia_internet_use_report_february_2011.pdf.
- National Telecommunications and Information Administration. November 2019. "Internet Use", <https://www.ntia.doc.gov/data/digital-nation-data-explorer#sel=internetUser&disp=map>.
- Null, Curtis F. "The Impact of an Economically Disadvantaged Student Population on School Climate." ProQuest Dissertations Publishing, 2012.
- Pager, Devah. "The Mark of a Criminal Record." *American Journal of Sociology* 108, no. 5 (2003): 937-75. Accessed April 8, 2021. doi:10.1086/374403.

- PARK, Jung Min, Angela R FERTIG, and Paul D ALLISON. "Physical and Mental Health, Cognitive Development, and Health Care Use by Housing Status of Low-Income Young Children in 20 American Cities: A Prospective Cohort Study." *American Journal of Public Health* (1971) 101, no. 12 (2011): S255–S261. <https://doi.org/10.2105/AJPH.2010.300098>.
- Rabuy, Bernadette, and Daniel Kopf. "Detaining the Poor: How Money Bail Perpetuates an Endless Cycle of Poverty and Jail Time." Prison Policy Initiative, 2016. Accessed April 8, 2021. <http://www.jstor.org/stable/resrep27303>.
- Region 4 Education Service Center: <https://www.esc4.net/>.
- Reichman, Jeff. "Reichman: City Should Do More to Promote Broadband." *Houston Chronicle*. Houston Chronicle, January 3, 2018. https://www.houstonchronicle.com/opinion/outlook/article/Reichman-City-should-do-more-to-promote-broadband-12469229.php?utm_campaign=twitter-premium&utm_source=CMS%2520Sharing%2520Button&utm_medium=social.
- Rep. 2017. America's Digital Divide. Washington, D.C.: United States Senate Joint Economic Committee.
- Roche, William, and Mark Linbald. August 2013. "Reexamining the Social Benefits of Homeownership after the Housing Crisis". Joint Center for Housing Studies (Harvard University). Available at <https://www.jchs.harvard.edu/sites/default/files/hbti-04.pdf>.
- Saez, Emmanuel. "Striking It Richer: The Evolution of Top Incomes in the United States," February 2020. <https://eml.berkeley.edu/~saez/saez-UStopincomes-2018.pdf>.
- Sallet, Jon. "Our Broadband Moment—Acting Now and Looking Forward." Benton Foundation, March 20, 2020. <https://www.benton.org/blog/our-broadband-moment%E2%80%93acting-now-and-looking-forward>
- Scott, D. (2017). Developing the Prison-to-School Pipeline: A Paradigmatic Shift in Educational Possibilities During an Age of Mass Incarceration. *Journal of Correctional Education* (1974-), 68(3), 41-52. Retrieved April 29, 2021, from <https://www.jstor.org/stable/26508032>.
- Shade, Leslie. 2002. "Department of Canadian Heritage P3: Policy and Program Forum." In *The Digital Divide: From Definitional Stances to Policy Initiatives*. Ottawa.
- Sharp, Gregory, Ellen Whitehead, and Matthew Hall. 2020. Tapped Out? Racial Disparities in Extra Household Kin Resources and the Loss of Homeownership. *Demography* (Springer Nature) 57 (5): 1903–28. doi:10.1007/s13524-020-00913-4.
- Stelitano, Laura, Sy Doan, Ashley Woo, Melissa Kay Diliberti, Julia H. Kaufman, and Daniella Henry. 2020. "The Digital Divide and COVID-19." RAND Corporation. September 24. https://www.rand.org/pubs/research_reports/RRA134-3.html.
- Suppa, N. (2018). Transitions in poverty and its deprivations. *Social Choice and Welfare*, <https://www-proquest-com.ezproxy.lib.uh.edu/docview/1993350044?OpenUrlRefId=info:xri/sid:primo&accountid=7107>.
- FRC, Federal Report Cards 2015 - 2019 for Harris County school districts: Aldine, Alief, Channelview, Cypress-Fairbanks, Deer Park, Galena Park, Goose Creek, Houston, Huffman, Humble, Katy, Klein, La Porte, Pasadena, Sheldon, Spring, Spring Branch and Tomball. <https://tea.texas.gov/texas-schools/accountability/academic-accountability/performance-reporting/federal-report-cards>.
- Texas Department of Public Safety. "Failure to appear and failure to Pay (FTA/FTP)". (n.d.). <https://www.dps.texas.gov/section/driver-license/faq/section-8-failure-appear-and-failure-pay-ftaftp>.
- Thomas, Patrick, and Lillian Rizzo. "You Got a 'Free' Internet Speed Upgrade. Then Your Bill Went Up." *The Wall Street Journal*. Dow Jones & Company, August 21, 2019. <https://www.wsj.com/articles/you-got-a-free-internet-speed-upgrade-then-your-bill-went-up-11566400429>.
- TMB, Texas Medicaid Benefits. (n.d.). <https://www.benefits.gov/benefit/1640>.
- Times of Trenton Letters to the Editor. 2013. "Times of Trenton Letters to the Editor - March 16." *Trenton Times*. March 16. <http://www.nj.com/times-opinion/index.ssf/2013/03/times%5fof%5ftrenton%5fletters%5fto%5fh%5f643.html>.
- Tomer, Adie, Elizabeth Kneebone, and Ranjitha Shivaram. 2018. "Signs of Digital Distress: Mapping Broadband Availability and Subscription in American Neighborhoods." *Brookings*. Brookings. May 7. <https://www.brookings.edu/research/signs-of-digital-distress-mapping-broadband-availability/>.
- United States Census Bureau. 2015-2019. "American Community Survey, 1-Year Estimates", www.census.gov/programs-surveys/acs/.
- United Way of Texas, "ALICE Budgets by County" United Way of Texas (2018) https://www.uwtexas.org/sites/uwtexas.org/files/18UW_ALICE_Report_TX_Budgets_8.27.18%20%281%29.pdf.
- U.S. Census Bureau. (2020, August 27). How the Census Bureau Measures Poverty. The United States Census Bureau. [https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html#:~:text=The%20total%20family%20income%20divided,Ratio%20of%20Income%20to%20Poverty.&text=The%20difference%20in%20dollars%20between,\(for%20families%20above%20poverty\)](https://www.census.gov/topics/income-poverty/poverty/guidance/poverty-measures.html#:~:text=The%20total%20family%20income%20divided,Ratio%20of%20Income%20to%20Poverty.&text=The%20difference%20in%20dollars%20between,(for%20families%20above%20poverty)).
- U.S. Dept. of Education. 2021. "Busing in WiFi." Office of Educational Technology. <https://tech.ed.gov/stories/busing-in-wifi>.
- U.S. Department of Housing and Urban Development. 2020. "Comprehensive Housing Affordability Strategy data (CHAS Data)." Office of Policy Development and Research. Available at <https://www.huduser.gov/portal/datasets/cp.html>.

- Weiner, Marc D., and Orin T. Puniello. 2014. "The Effect of Poverty on the Propensity to Adopt Broadband: Household-Level Evidence from the Broadband Technology Opportunities Program." *Journal of Poverty* 18 (4): 427–52. doi:10.1080/10875549.2014.951983.
- Wheeler, Tom. "5 Steps to Get the Internet to All Americans." Brookings. Brookings, May 27, 2020. <https://www.brookings.edu/research/5-steps-to-get-the-internet-to-all-americans/>.
- Whiting, Cathleen. 2004. Income Inequality, the Income Cost of Housing, and the Myth of Market Efficiency. *American Journal of Economics & Sociology* 63 (4): 851–79. doi:10.1111/j.1536-7150.2004.00319.x.
- World Economic Forum. 2020. "Global Social Mobility Index 2020." World Economic Forum. <https://www.weforum.org/reports/global-social-mobility-index-2020-why-economies-benefit-from-fixing-inequality>
- Zhang, Chuanchuan, Shen Jia, and Rudai Yang. September 2016. Housing Affordability and Housing Vacancy in China: The Role of Income Inequality. *Journal of Housing Economics* 33 : 4–14. doi:10.1016/j.jhe.2016.05.005.

APPENDIX A: MAPS

PUMA IDENTIFICATION

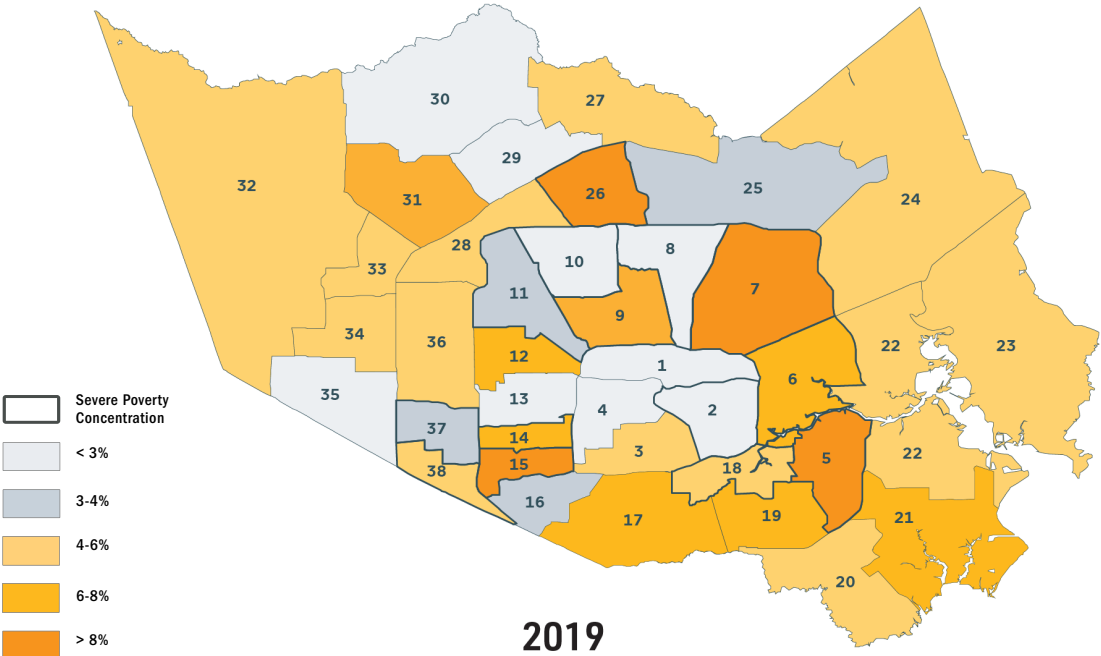
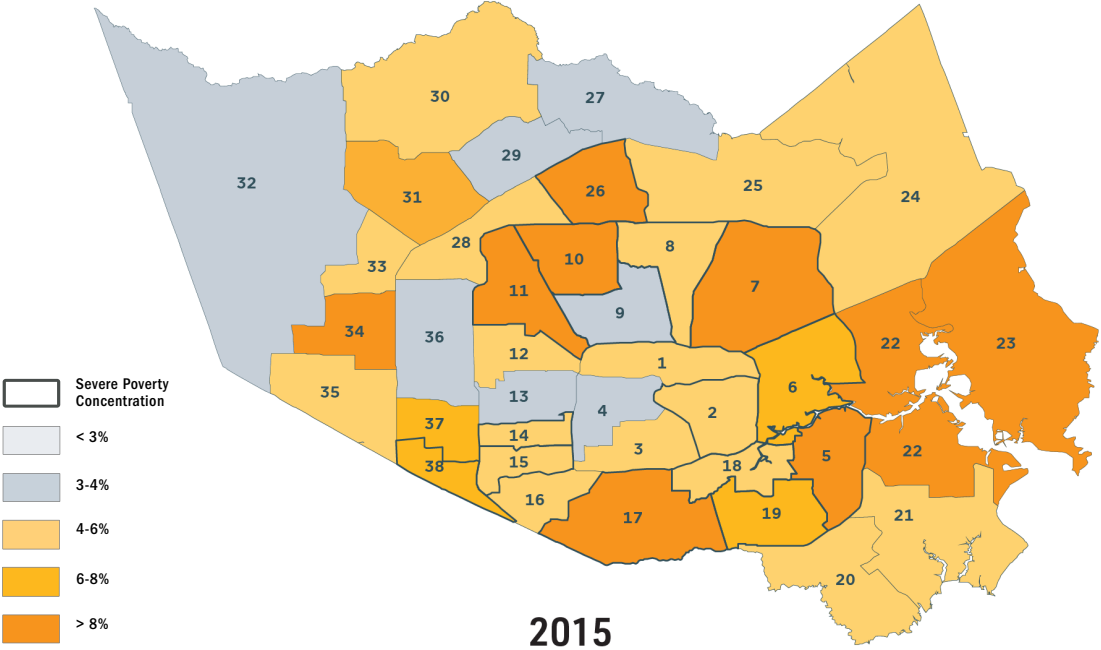


PUMA	Description
1	Houston N Central N I-10 & 610
2	Houston E Central E I-45 & Inside 610
3	Houston City South Central
5	Pasadena inside TX-8
6	Houston East
7	Houston NE 610 & TX-8
8	Houston City N Aldine B/T 610 & TX-8
9	Houston N S Aldine & Inside TX-8
10	Houston N W Aldine & Inside TX-8
11	Houston NW 610 & TX-8
12	Houston West Spring Valley Village City
13	West Hunters Creek Village between 610 & TX-8
14	Houston City West Westpark Tollway
15	Houston SW & Bellaire 610 & TX-8
16	Houston SW B/T 610 and TX-8
17	Houston S, 610 & TX-8
18	Houston SE West of Pasadena outside 610
19	Houston SE & S Houston inside TX-8
20	Houston SE and Webster

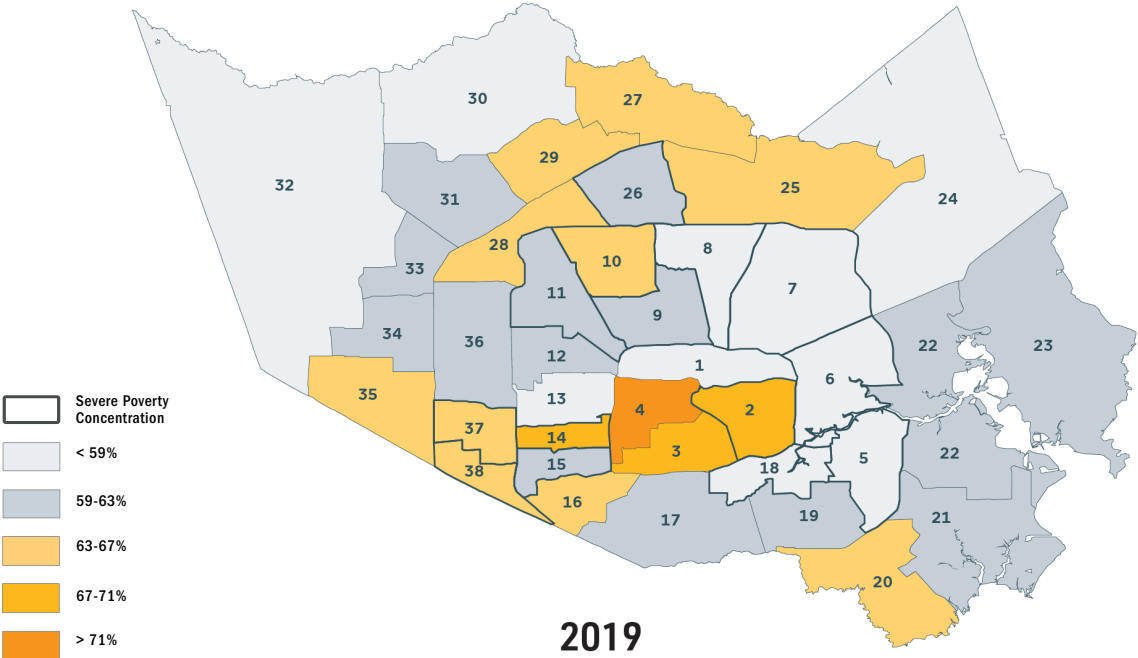
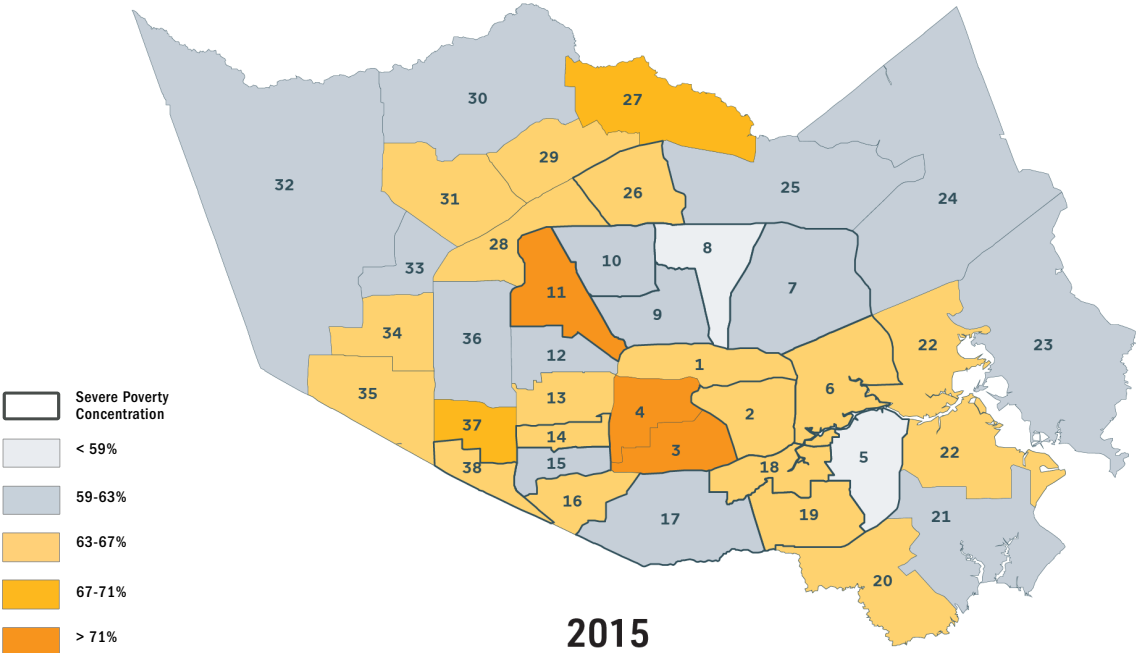
PUMA	Description
21	Houston Southeast
22	Deer Park
23	Baytown
24	Houston City Far Northeast
25	Houston North
26	Houston City N I-45
27	Spring
28	Jersey Village City TX-8 and FM 1960
29	North of FM 1960
30	Tomball and The Woodlands
31	North of US 290 and FM 1960
32	Far Northwest Katy City
33	South of 290 and West of Hwy 6
34	Houston City W, N of US-90, W Hwy 6
35	South of I-10 & West of Hwy 6
36	East of Hwy 6 and West of TX-8
37	West Park Tollway
38	Houston SW E of Hwy 6 and W TX-8

MAPS OF CONTROL VARIABLES

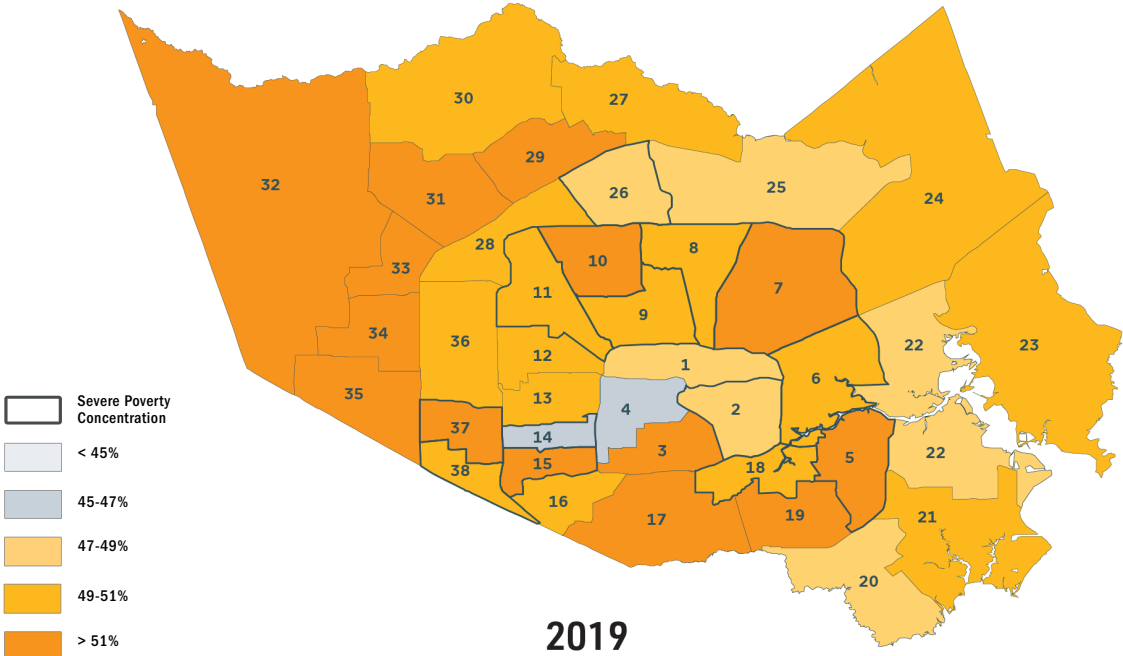
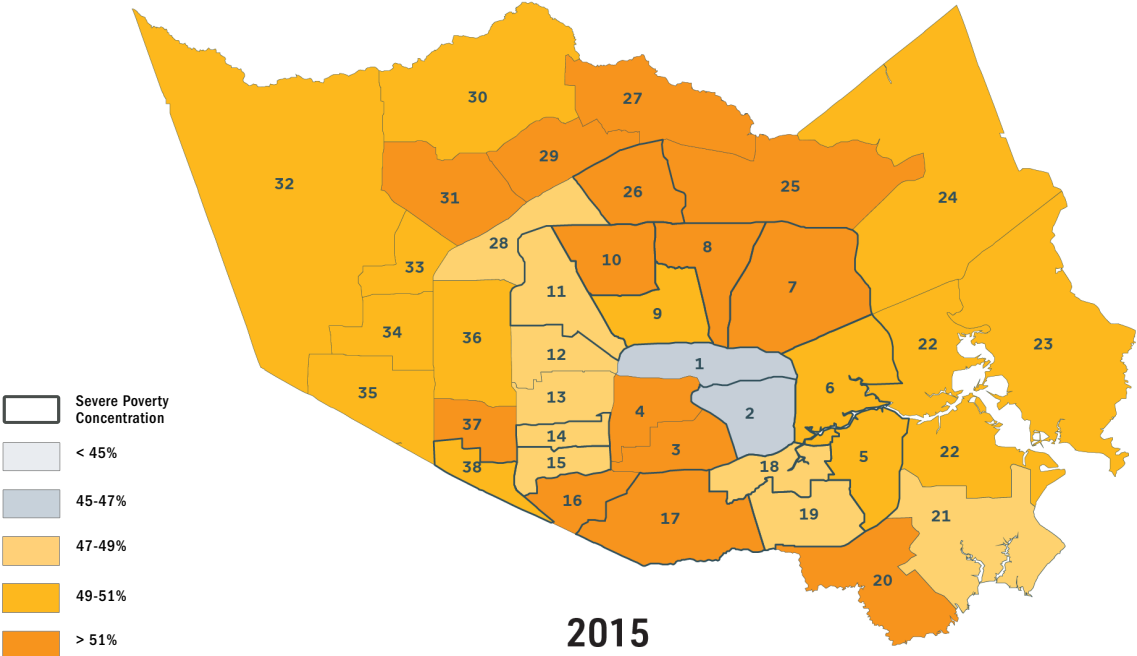
APPENDIX 01 • HARRIS COUNTY UNEMPLOYMENT RATE
(PERCENTAGE OF TOTAL POPULATION BY PUMA)



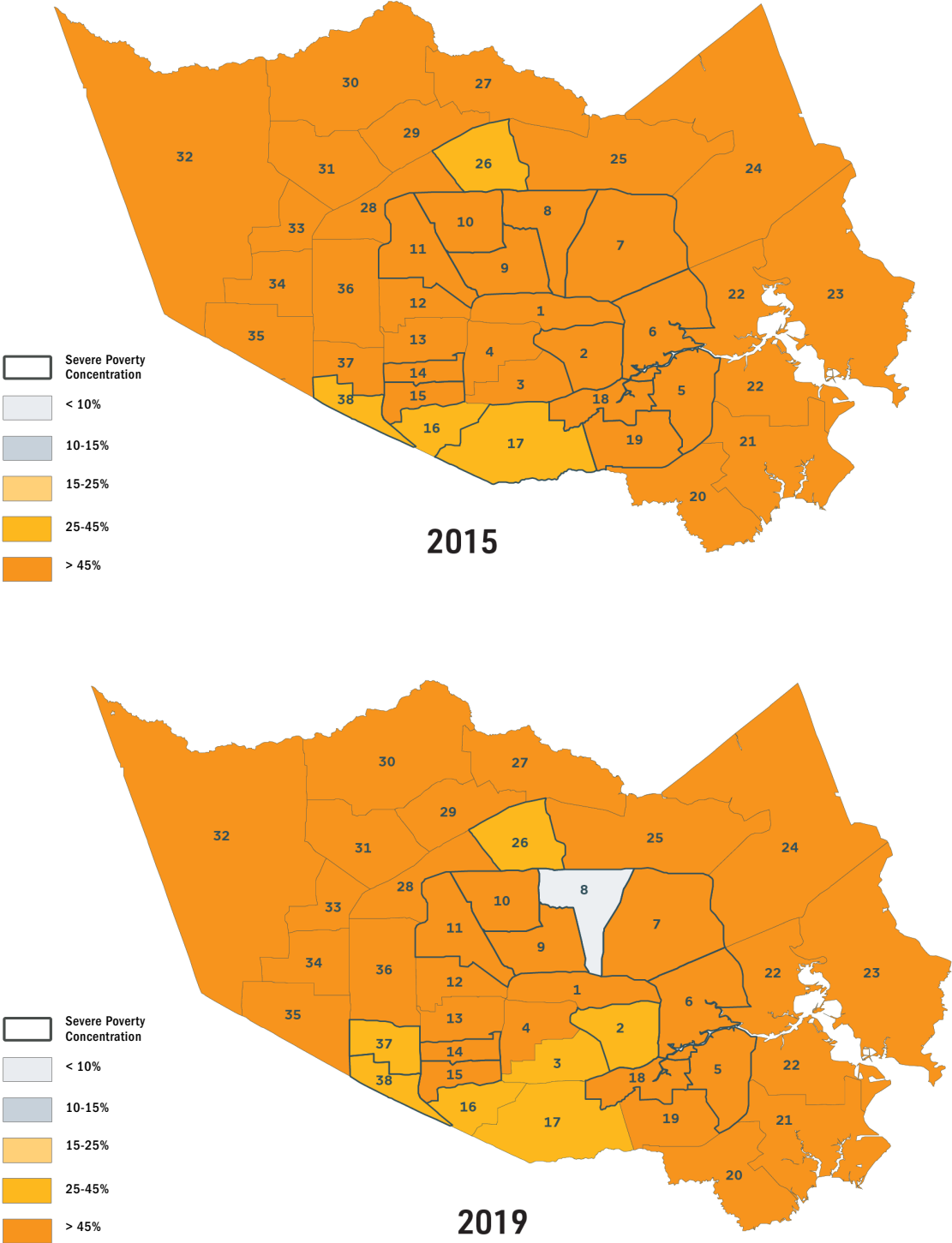
APPENDIX 02 • HARRIS COUNTY POPULATION AGE 18-64
(PERCENTAGE OF TOTAL POPULATION BY PUMA)



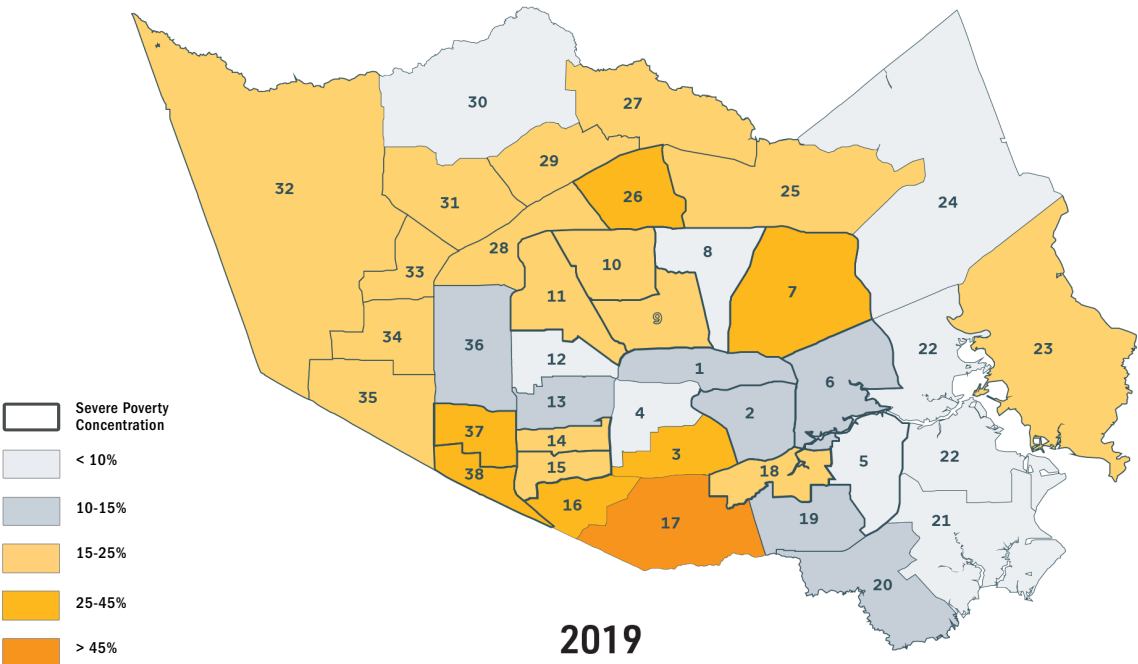
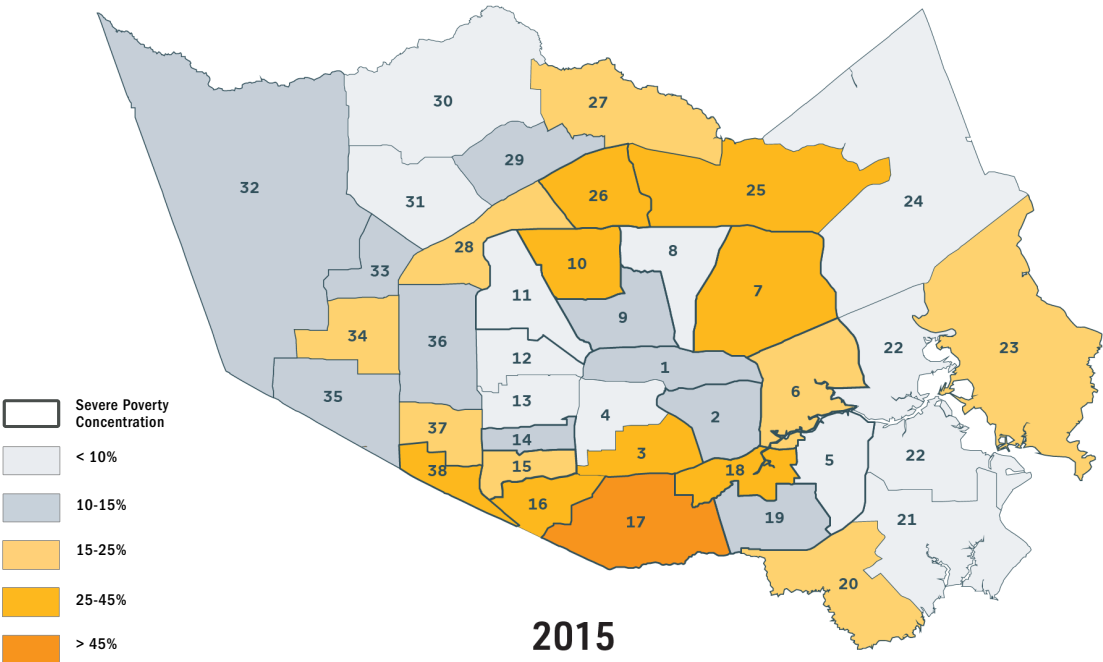
APPENDIX 03 • HARRIS COUNTY POPULATION IDENTIFIES AS FEMALE
(PERCENTAGE OF TOTAL POPULATION BY PUMA)



APPENDIX 04 • HARRIS COUNTY POPULATION IDENTIFIES AS WHITE
(PERCENTAGE OF TOTAL POPULATION BY PUMA)



APPENDIX 05 • HARRIS COUNTY POPULATION IDENTIFIES AS BLACK
(PERCENTAGE OF TOTAL POPULATION BY PUMA)



APPENDIX 05 • HARRIS COUNTY POPULATION IDENTIFIES AS OTHER
(PERCENTAGE OF TOTAL POPULATION BY PUMA)

