Bryant University

HONORS THESIS

A Place to Call Home, At What Cost? An Empirical Model of Cost-Burdened Housing in the U.S. at the Metropolitan Unit of Analysis

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Table of Contents

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ABSTRACT

The affordable housing crisis has plagued the United States for decades. This thesis analyzes the predictors of cost-burdened housing at the metropolitan level of analysis, as well as how a lack of affordable housing and cost-burdened housing impacts the socioeconomic status and well-being of households in those areas. The study uses a variety of statistical analyses, including regression analysis. This topic is important because cost-burdened households tend to spend significantly less on food, healthcare, transportation, and retirement savings because their income is ultimately consumed by the cost of housing. Inadequate housing has also been found to be the strongest predictor of emotional behavioral problems in children from low-income households. Key findings include that percentage Hispanic is the key predictor of percentage of cost-burdened households, and the percentage of cost-burdened households is the key predictor of the homelessness rate in a metropolitan area. Suggestions for further research include the importance of analyzing cost-burdened housing at a more focused level than the metropolitan unit of analysis, and the collection of additional, more in-depth data regarding the social problems and outcomes of cost-burdened housing.

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MOTIVATION & SCOPE

Research Problem

The affordable housing crisis is a global pandemic. This research investigates the selected predictors and consequences of the affordable housing crisis at the metropolitan level of analysis. Increased prices for shelter force families to make difficult financial decisions that ultimately impact their health and well-being. This introduction develops a heuristic model reviewing which variables show strong predictive value of cost-burdened housing in metropolitan areas across the United States.
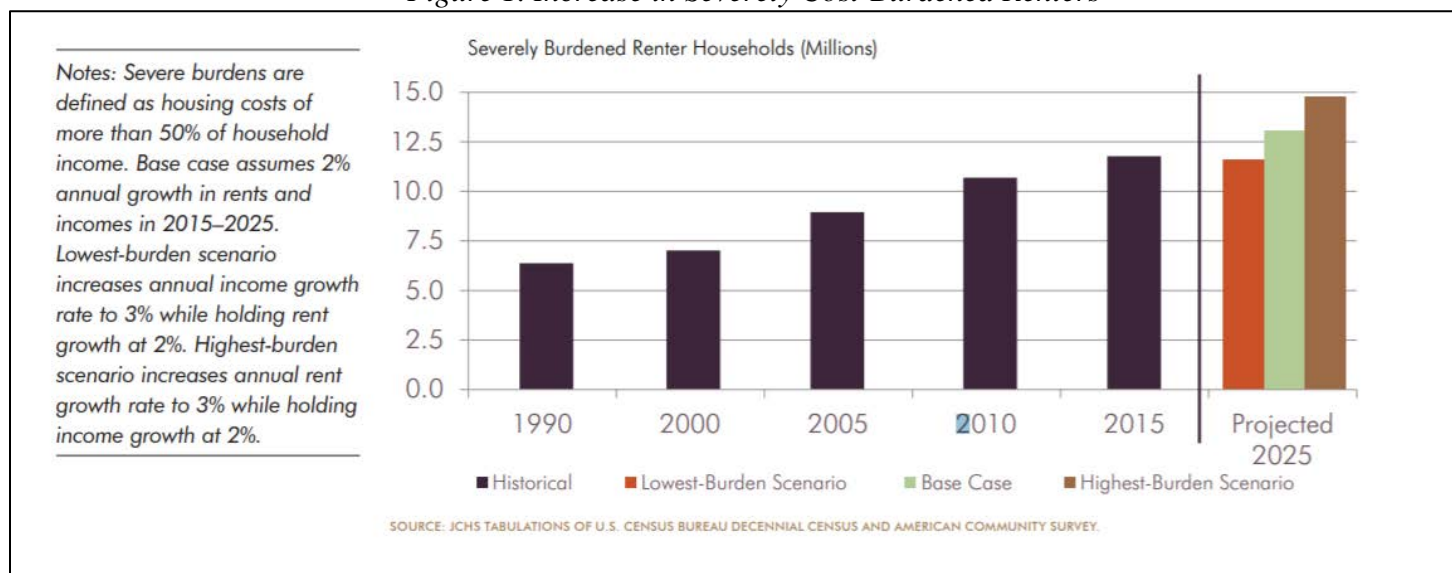
The research builds on previous studies analyzing the financial insecurity that households face as a result of paying 30% or more of their income on housing. The concept of cost-burdened housing combines renter and homeowner data from the Joint Center for Housing Studies (JCHS) of Harvard University (2019). The twin research questions are: *what are the predictors of cost-burdened housing at the metropolitan level of analysis, and what are impacts of cost-burdened housing for these areas?*

The abundance of cost-burdened households and a lack of affordable housing is not a new issue within the United States and across the world. In 1988, the National Housing Task Force was formed at the request of Congress to reexamine America's housing policy (Pelletiere, 2008). At that time, the Task Force recommended a more flexible definition of reasonable rent-burden by saying the application of a "single rent-to-income standard across the board to poverty-level households can produce serious inequities" (Pelletiere, 2008, p. 5). The Task Force went on to state: "A single person living alone, with an income toward the upper end of the eligible range, clearly can afford to pay a higher proportion of income for rent than a large family with children and an income at the lower end of the scale. Current law recognizes this by providing adjustments for minor children, but more should be done" (Pelletiere, 2008, p. 5).

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The JCHS is a leading research institution that is often cited for their in-depth analysis on the statistics of cost-burdened households. One of its recent publications, *Projected Trends in Severely Cost-Burdened Renters: 2015-2025*, highlights the severity of cost-burdened homeowners and renters across the country. The number of cost-burdened renters and homeowners is predicted to rise, seeing as the number of severely burdened renters is projected to increase from 11.8 million to 13.1 million households by the year 2025, as seen in Figure 1. Furthermore, there is a shortage of about 3.9 million necessary affordable housing units for families in need. Therefore, nearly 11.2 million extremely low-income households are competing for only 7.3 million affordable units, that means that only 65% of these families are able to secure a unit that is affordable for them. As a result, the other 3.9 million, or 35%, of these families are faced with their only option of getting an unaffordable unit which then causes them to make financial sacrifices for the needs of their families (Charette, 2015). According to the JCHS' *State of the Nation's Housing 2020 Report*, the number of cost-burdened households still exceeded 37 million in 2019, as seen in Figure 2.

Figure 1. Increase in Severely Cost-Burdened Renters

Notes: Severe burdens are defined as housing costs of more than 50% of household income. Base case assumes 2% annual growth in rents and incomes in 2015–2025. Lowest-burden scenario increases annual income growth rate to 3% while holding rent growth at 2%. Highest-burden scenario increases annual rent growth rate to 3% while holding income growth at 2%.

Severely Burdened Renter Households (Millions)

■ Historical ■ Lowest-Burden Scenario ■ Base Case ■ Highest-Burden Scenario

SOURCE: JCHS TABULATIONS OF U.S. CENSUS BUREAU DECENNIAL CENSUS AND AMERICAN COMMUNITY SURVEY.

Figure 2. Number of Cost-Burdened Households Still Exceeded 37 Million in 2019
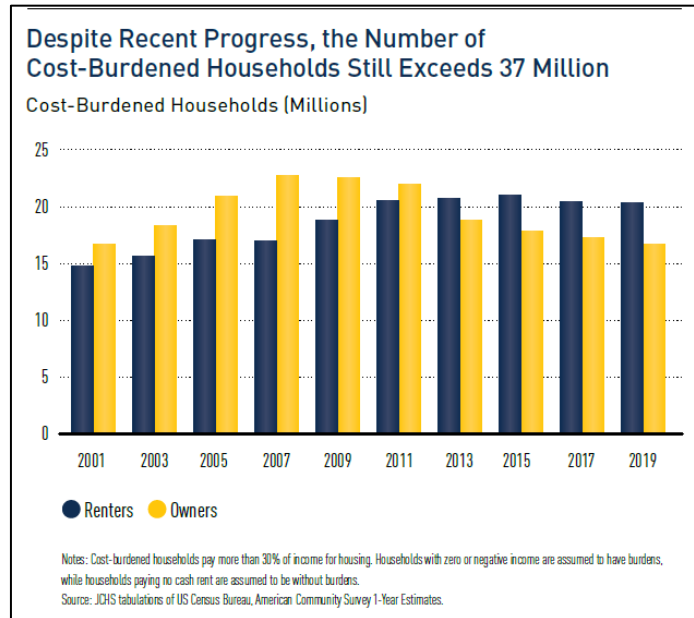
LITERATURE REVIEW: SELECTED CORRELATES OF BURDENED HOUSING

Sacrifices to Afford Housing

Tough decisions on where to allocate income are all too common for low-income individuals and families and for those suffering from the effects of cost-burdened housing. Disposable income, access to jobs, health status, and general inclusion into society can all be affected by the burden of paying for high housing costs. For example, Luffman (2006) conducted a study of cost-burdened housing using the Canadian Survey of Household Spending (SHS). This survey continues to collect detailed information about household spending in Canada over each previous calendar year. Overall, the SHS reveals many people are paying too much of their income on the cost of housing, forcing lower income families to make severe sacrifices in their daily lives. Historical data reveal that the effects of being cost-burdened touch both

renters and homeowners; that said, on average homeowners have at least twice the income of renters and are generally substantially wealthier. Therefore, renters are more likely to experience housing affordability problems (Luffman, 2006).

The effects of cost-burdened housing include many tough decisions, such as deciding between monthly housing costs or purchasing a sufficient amount of food. Furthermore, cost-burdened renters and homeowners "in the bottom quartile [of income level] spend significantly less on food, healthcare, transportation, and retirement savings" simply because they do not have the necessary income to cover these expenses after housing costs are paid (Hickey, 2019, n.p.). The JCHS collects years of data from the US Census Bureau's American Community Survey. These data are then summarized into periodic reports for the general public to better understand the severity of the affordable housing crisis. Like the Canadian studies of the SHS, the JCHS reported, in its *State of the Nation's Housing 2020* report, that even before the 2020-2021 COVID-19 pandemic "housing affordability was at crisis levels, especially among low-income renters of color" (JCHS, 2020, p. 34). Not only has cost-burdened housing been an ongoing crisis in the United States, but the 2020-2021 pandemic and subsequent economic turmoil have further illuminated the problem showing how anyone can "be one rent payment away from eviction and homelessness" (JCHS, 2020, p. 34).

Finally, cost-burdened housing is not solely an issue for homeowners and renters but is also one for many college students in a variety of metropolitan areas, who are struggling to find affordable places to live. For example, student surveys at the University of California (2020) have shown that both undergraduate and graduate college students face housing-related economic and social barriers to completing their degrees at this institution (University of California Office of the President, 2020).

Effects on Children

The stress that parents feel from living in poor quality and unstable homes can take a severe toll on a child's well-being. Often times, families are spending their money on dwellings that are inadequate settings to raise a family, which negatively affects the families' well-being. For

example, Coley (2013) studied a population of 2,400 children, teens, and young adults, ages 2 to 21, living in neighborhoods of concentrated poverty in Boston, Chicago, and San Antonio. This sample of youth participants was followed for six years and researchers noted changes in three areas: central academic skills in reading and math, emotional problems, and behavioral problems. The analysis concluded that poor housing quality was the strongest predictor of emotional and behavioral problems in low-income children. It is not known what financial decisions these specific families were forced to make over this six-year span, but the research significantly shows that a lack of affordable housing is harming the development of youth in America (Coley, 2013).

Coley's research is confirmed by a number of other studies. For example, Stewart and Rhoden (2006) find that children living in areas with more affordable housing are better off emotionally than their peers having access only to less affordable options; especially seeing as "decent housing lies at the heart of health for all" (Stewart, 2006, n.p.). In short, the continuous rise of housing prices and a lack of affordable housing options causes families to sacrifice their health when attempting to find adequate shelter for their families.

Effects on Health

Stuart Butler's "Housing as a Step to Better Health" article, in the Journal of American Medical Association (JAMA) (2018), argues that there is a lot more to achieving good health than simply having access to excellent medical care. Affordable and safe housing plays an enormous role in the health and well-being of human beings. Butler contends that some of the financial burden on low-income families and individuals can be lifted with the help of government intervention to provide more affordable housing options. Actually, such intervention might turn out to be a cost saving approach for society because unsafe housing is a leading factor in the number of yearly hospitalizations, especially for the elderly (Butler, 2018). Similarly, Koh and Restuccia (2018) further this argument for government intervention by suggesting that the United Sates Department of Housing and Urban Development (HUD) use funds to address the health equity and affordability challenges presently seen in this country. Data show that two-thirds of households receiving HUD affordable housing support

represent racial or ethnic minority groups (Koh and Restuccia, 2018). Indeed, it might well be argued that the federal government has a duty to particularly advocate for and support these individuals since their policies of "redlining", in the 1930s, put these minority groups at a severe disadvantage in the housing market.

METROPOLITAN-LEVEL PREDICTORS OF AFFORDABLE HOUSING

Unemployment Rate

It is hypothesized that the unemployment rate would be a significant predictor of cost-burdened housing at the metropolitan level of analysis. According to the JCHS, when the unemployment rate falls below six percent, "there may be growing pressure on wages that could help boost household incomes in coming years" (Charette, 2015, p. 9).

Race

It is hypothesized that percentage Black would also be a significant predictor of cost-burdened housing at the metropolitan level of analysis. This is predicted because historically a majority of the Black community has suffered from housing inequity in the forms of oppression, discrimination, and segregation (Rothstein, 2018).

Ethnicity

It is hypothesized that percentage Hispanic would also be a significant predictor of cost-burdened housing. Like the Black population, the Hispanic population in the United States is another group of color that is marginalized and put at a severe disadvantage when it comes to the affordability of housing (Castaneda, Klassen, and Smith, 2014). For example, the Hispanic rate of poverty is 15.7% compared to an average rate in the United States of 10.5%, showing that the Hispanic population is at a higher risk of being cost-burdened by housing than the remainder of the population (Creamer, 2020). \

METROPOLITAN-LEVEL CONSEQUENCES OF AFFORDABLE HOUSING

Psychological Distress

It is hypothesized that the percentage of cost-burdened households in metropolitan areas would be predictive of the rate of psychological distress, including the rate at which individuals are seeking mental health counseling. According to a fifteen-year longitudinal study of a large national probability sample of Australian adults, when housing is insufficient or unaffordable mental health deteriorates (Baker, 2020).

Deleterious Effects on Health: COVID-19

It is hypothesized that the percentage of cost-burdened households would be a predictor of higher rates of poor physical health. Such an example, for the contemporary era, would be COVID-19 infections. According to a Centers for Disease Control and Prevention report published in July 2020, "During March-May 2020, among 2,729 COVID-19 patients treated at an urban safety-net hospital…hospitalized patients were more likely to be … experiencing homelessness" (Hsu et al., 2020, p. 864). Thus, it is hypothesized that higher rates of cost-burdened housing will lead to increased rates of COVID-19 in metropolitan areas.

Crime

It is hypothesized that the percentage of cost-burdened households would be a predictor of crime, both property and violent. Goetz, Lam, and Heitlinger (1996) found that when affordable housing options are increased in a neighborhood, crime decreases. Thus, it is hypothesized that higher rates of cost-burdened housing will lead to increased rates of property and violent crime in metropolitan areas.

Homelessness

It is hypothesized that the percentage of cost-burdened households would be a predictor of homelessness. For example, the JCHS data link increases in cost-burdened housing with increases in homelessness (e.g., see JCHS, 2016). Thus, it is hypothesized that higher rates of cost-burdened housing will lead to increased rates of homelessness.

Summarizing the Predictors and Consequences of Cost-Burdened Housing at the Metropolitan

Unit of Analysis: A Heuristic Model

Figure 4 displays selected predictors and consequences of Cost-Burdened Housing at the

metropolitan level of analysis. Per this figure, the expectation is that *% Unemployed, % Black,*

and *% Hispanic* would all be positively related to *% Cost-Burdened Households*. In turn, it is

expected that *% Cost-Burdened Households* will then be positively related to all

consequential variables, *Psychotherapy Rate, Violent Crime, Property Crime, COVID-19*

Death Rate, and *Homeless Rate.*

Figure 4. Heuristic Model Summarizing the Predictors and Consequences of Cost-Burdened
Housing at the Metropolitan Unit of Analysis
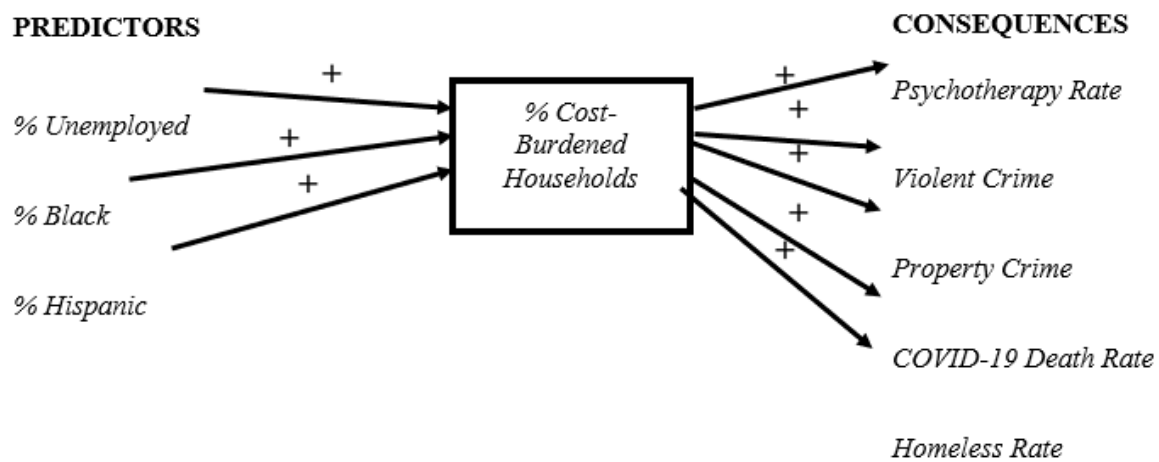
DATA & MEASUREMENTS

Unit of Analysis: Core-Based Statistical Areas

Data were collected at the metropolitan level of analysis. The consolidated dataset for this thesis consists of one hundred metropolitan areas throughout the United States. The specific unit of analysis for this study is the Core-Based Statistical Areas (CBSA) metric. The United States Census Bureau (2016) states that Metropolitan and Micropolitan Statistical Areas are collectively referred to as Core-Based Statistical Areas. They go on to say that "Metropolitan statistical areas have at least one urbanized area of 50,000 or more population, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties" (2016).

Data Sources

The consolidated dataset for this thesis draws data from: (1) the JCHS (2020), which in turn draws its data from the US Census Bureau, the American Community Survey 1-Year Estimates, and the Missouri Census Data Center; the variables referenced from this data source are *Cost-Burdened Housing*, *Percent Black, and Percent Hispanic*. (2) the U.S. Department of Labor, Bureau of Labor Statistics (2020), for unemployment data *(% Unemployed 2019)*. (3) the Health Market Saturation and Utilization CBSA Dataset compiled by the Centers for Medicare and Medicaid Services (2021), for the *Psychotherapy Rate*. (4) the Bureau of Justice Statistics (2020) for *Property Crime Rate* and *Violent Crime Rate*. (5) the *New York Times* COVID Tracking Project (2020) for *COVID-19 Death Rate*.

VARIABLE DEFINITIONS

Cost-Burdened Housing

Cost-burdened housing is operationally defined as "the percentage of households facing housing costs of more than 30% and up to or more than 50% of household income" (JCHS, 2020a, p. 36).

Unemployment

The unemployment rate is operationally defined as the percentage of the labor force who "do not have a job, have actively looked for work in the prior four weeks, and are currently available for work" in December of 2019 (Bureau for Labor Statistics, 2020).

Percent Black

Percentage Black is defined as the percentage of the metropolitan population that self identifies as Black or African American alone (JCHS, 2020a).

Percent Hispanic

Percentage Hispanic is defined as the percentage of the metropolitan population that self identifies their ethnicity as Hispanic or Latino (JCHS, 2020a).

Psychotherapy Rate

Psychotherapy Rate is operationally defined as the number of Medicare and Medicaid beneficiaries seeking psychological therapy per 1,000 population in a metropolitan area (Centers for Medicare & Medicaid Services, 2018).

Property Crime

Property Crime is operationally defined as the rate per 100,000 population of self-reported experience of having been a victim of property crime, including theft from one's home or vehicle (Bureau of Justice Statistics, 2020).

Violent Crime

Violent Crime is operationally defined as the rate per 100,000 population of self-reported experience of having been a victim of violent crime, including physical attack, sexual assault, or attempted attack or assault (Bureau of Justice Statistics, 2020).

COVID-19 Death Rate

The COVID-19 Death Rate is operationally defined as the official rate of COVID-19 deaths per 100,000 population according to "state and territory public health authorities or official statements from state officials" as of December 2020 (*The New York Times*, 2021).

Rate of Homelessness

The Rate of Homelessness is operationally defined as the rate per 10,000 population of those experiencing homelessness on a given night in 2016 according to the sum of the annual Point-in-Time counts reported by Continuums of Care (CoCs) within the metropolitan statistical area (National Alliance to End Homelessness, 2017).

FINDINGS

Univariate Analysis for Predictors and Consequences of Cost-Burdened Housing

Table 1 displays the univariate analysis for all key predictors and consequences used in the heuristic model displayed in Figure 4. It is important to note that while the total frequency of metropolitan areas is equal to one hundred, some of the variables seen in this table have lower frequencies; these are *Violent Crime, Property Crime, COVID Death Rate,* and *Homeless Rate.* The discrepancy in the frequency for these variables is due to an inability to collect data for all one hundred metropolitan areas analyzed in the model. As seen in Table 1, there is a good amount of variance for each of these variables, which means they have potential to be quality predictors and consequences of cost-burdened housing.

Table 1. Univariate Analysis for Predictors and Consequences of Cost-Burdened Housing

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean	Std. Deviation
% Burdened	100	22.0	22.1	44.1	30.0	4.8
% Unemployed 2019	100	4.8	1.9	6.7	3.3	.9
% Black	100	68.0	0	68	21.1	15.0
% Hispanic	100	89.0	2	91	18.7	16.4
Violent Crime Rate	88	1088.5	79.8	1168.3	424.5	192.1
Property Crime Rate	83	4190.4	1308.5	5498.9	2516.4	784.5
Psychotherapy Rate	100	200.5	.6	201.1	105.8	36.5
COVID Death Rate	98	230.5	22.9	253.4	90.3	43.8
Homeless Rate	25	36.0	7	43	18.7	10.3

Bivariate Correlation Analysis for Predictors of Cost-Burdened Housing

Table 2 shows the correlations for those variables hypothesized as predictors of cost-burdened housing at the metropolitan level. As seen in this table, *Percent Burdened* and *Percent Unemployed 2019* has a correlation coefficient of .199 and is statistically significant (sig = .047) – as predicted in the literature, and as displayed in Figure 4.

The correlation between *Percent Hispanic and Percent Burdened* is even stronger, .604, and is also statistically significant (sig = .000).

Finally, an unexpected finding is that *Percent Black* is significantly negatively correlated with *Percent Burdened* (r = -.217; sig = .030), meaning as the percentage of Black or African American people in a metropolitan area increases, the percent of cost-burdened homeowners decreases. This finding is surprising because it was predicted that *Percent Black* would have a positive correlation with *Percent Burdened* as a result of ongoing effects of red-lining, discrimination, and housing inequality, as supported by the literature.

Percent Hispanic and *Percent Black* reveal a strong negative and statistically significant correlation (r = -0.500; sig = .000), meaning when a metropolitan area has a high percentage

of its population identifying their ethnicity as Hispanic or Latino, there is a strong chance this area has a small percentage of its population identifying their race as Black or African American. For example, McAllen-Edinburg-Mission, TX is 91% Hispanic and 0% Black; El Paso, TX is 76% Hispanic and only 6% Black; and Bakersfield, CA is 56% Hispanic and only 8% Black. Conversely, Jackson, MS is 68% Black and only 2% Hispanic; Memphis, TN is 63% Black and only 5% Hispanic; and Baton Rouge, LA is 53% Black and only 5% Hispanic.

Table 2. Bivariate Correlation for Predictors of Cost-Burdened Housing

Correlations

		Perburdened	PerUnem19	PerBlk	PerHisp
Perburdened	Pearson Correlation	1	.199[*]	-.217[*]	.604[**]
	Sig. (2-tailed)		.047	.030	.000
	N	100	100	100	100
PerUnem19	Pearson Correlation	.199[*]	1	-.040	.375[**]
	Sig. (2-tailed)	.047		.693	.000
	N	100	100	100	100
PerBlk	Pearson Correlation	-.217[*]	-.040	1	-.500[**]
	Sig. (2-tailed)	.030	.693		.000
	N	100	100	100	100
PerHisp	Pearson Correlation	.604[**]	.375[**]	-.500[**]	1
	Sig. (2-tailed)	.000	.000	.000	
	N	100	100	100	100

[*]. Correlation is significant at the 0.05 level (2-tailed).

[**]. Correlation is significant at the 0.01 level (2-tailed).

Multivariable Analysis for Predictors of Cost-Burdened Housing

Table 3 presents a multiple regression equation predicting cost-burdened housing using the predictor variables in Table 2, and as displayed in Figure 4: % *Unemployed 2019, % Black, % Hispanic.* The bivariate standardized regression coefficients (Betas) are of course identical to the bivariate correlation coefficients presented in Table 1. Of great interest here is Equation 4, the multiple regression, which reveals that *% Hispanic* is the overwhelmingly strong predictor

in both the bivariate and multivariable models – with *% Unemployed 2019* and *% Black* essentially dropping out of the predictor variable equation.

Table 3. Regression Analysis Results for Cost-Burdened Housing (PerBurdened; N=100)

Equation	R	Adj. R^2	F	(sig.)	PerUnemploy19	PerBlk	PerHisp
1	.199	.030	4.0	(.047)			
Beta					0.199		
(t-value)					(2.01)		
(t-sig.)					(0.47)		
2	.217	.037	4.8	(.030)			
Beta						-0.217	
(t-value)						(2.19)	
(t-sig.)						0.03	
3	.604	.358	56.2	(.000)			
Beta							0.604
(t-value)							7.49
(t-sig.)							(.000)
4	.614	.357	19.3	(.000)			
Beta					(0.053)	0.124	0.685
(t-value)					(0.59)	1.31	6.72
(t-sig.)					0.553	0.194	.000

Bivariate Correlation Analysis for Consequent Variables of Cost-Burdened Housing

Table 4 shows the correlation coefficients for those variables hypothesized as consequences of cost-burdened housing at the metropolitan level. As seen in this table, *Homeless Rate* and *Percent Burdened* are significantly and strongly positively correlated (r = .452; sig = .023), as predicted in the literature, and as displayed in Figure 4. This correlation confirms the prediction that is central to this thesis – that homeless rates would tend to be higher in more cost-burdened areas.

On the other hand, *Percent Burdened* is not significantly correlated with any of the other consequent variables; these findings are surprising as it was predicted that a higher percentage of cost-burdened homeowners and renters would lead to negative effects on health, well-

being, and crime rates at the metropolitan level. In fact, *Violent Crime, Property Crime, Psychotherapy Rate,* and *COVID Death Rate* all have insignificant correlations with *Percent Burdened.* At this point, no *post-factum* interpretations are given for these nonconfirmatory correlations; however, they will be briefly discussed in the next section, Part IV (Summary & Suggestions for Future Research).

Table 4. Bivariate Correlation of Consequent Variables of Cost-Burdened Housing

Correlations

		HomelessRate	ViolCrime	PropCrime	PsychTherRate	CovidDeathRate	Perburdened
HomelessRate	Pearson Correlation	1	-.331	-.687[**]	.103	-.147	.452[*]
	Sig. (2-tailed)		.122	.002	.625	.482	.023
	N	25	23	18	25	25	25
ViolCrime	Pearson Correlation	-.331	1	.657[**]	.124	.083	.037
	Sig. (2-tailed)	.122		.000	.251	.446	.729
	N	23	88	77	88	86	88
PropCrime	Pearson Correlation	-.687[**]	.657[**]	1	-.021	-.178	-.072
	Sig. (2-tailed)	.002	.000		.850	.113	.520
	N	18	77	83	83	81	83
PsychTherRate	Pearson Correlation	.103	.124	-.021	1	.125	-.162
	Sig. (2-tailed)	.625	.251	.850		.220	.107
	N	25	88	83	100	98	100
CovidDeathRate	Pearson Correlation	-.147	.083	-.178	.125	1	.077
	Sig. (2-tailed)	.482	.446	.113	.220		.453
	N	25	86	81	98	98	98
Perburdened	Pearson Correlation	.452[*]	.037	-.072	-.162	.077	1
	Sig. (2-tailed)	.023	.729	.520	.107	.453	
	N	25	88	83	100	98	100

[**]. Correlation is significant at the 0.01 level (2-tailed).

[*]. Correlation is significant at the 0.05 level (2-tailed).

Multivariable Analysis of Cost-Burdened Housing on the Consequent Variable of the

Homelessness Rate

Table 5 focuses on the durability of the one confirmatory correlation displayed in Table 4 – that is, between percent cost-burdened households (*Perburdened*) and the homeless rate (*HomelessRate*). Equation 1 shows the bivariate effect of cost-burdened housing on the homeless rate, which of course is identical to the correlation given in Table 4. Equation 2 does the assessment of the durability of this relationship by putting cost-burdened housing in competition with other possible predictor variables of the *HomelessRate*; here, *% Black, % Hispanic,* and *% Unemployed*. Importantly, this regression analysis reveals the strong durability of cost-burdened housing predicting the rate of homelessness at the metropolitan level of analysis – its effect remains strongly positive and statistically significant even in the presence of the control variables at hand.

Table 5. Regression Analysis Results for Homeless Rate (HomelessRate; N=25)

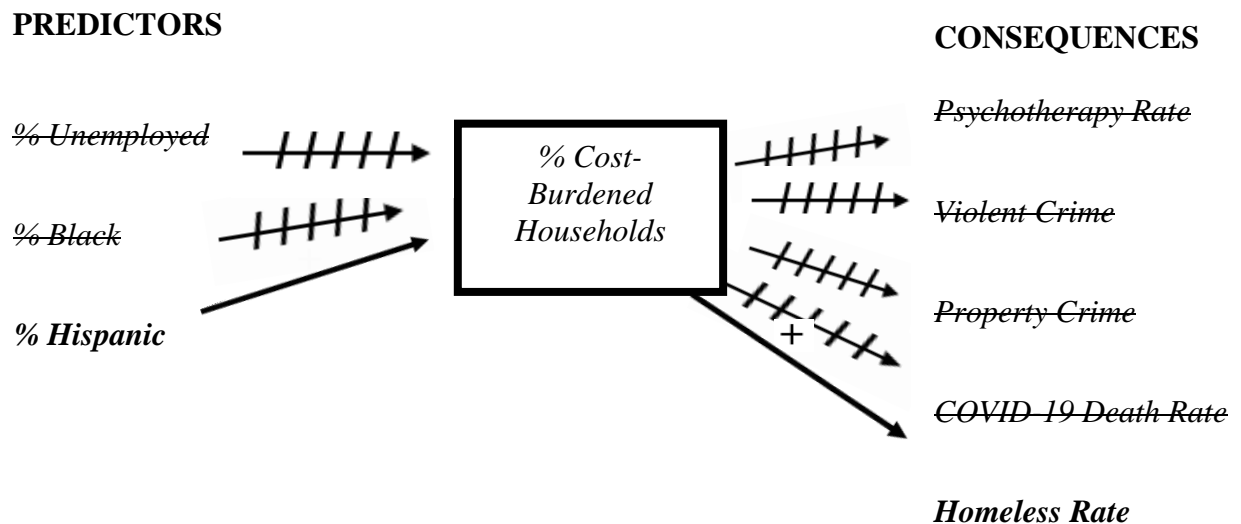| Equation	R	Adj. R^2	F	(sig.)	Perburdened	PerBlk	PerHisp	PerUnemploy19
1	.452	.169	5.9	(.023)				
Beta					0.452			
(t-value)					2.42			
(t-sig.)					0.02			
2	.786	.542	8.1	(.000)				
Beta					.805	-0.537	-0.863	0.033
(t-value)					4.15	(3.16)	-4.19	0.231
(t-sig.)					.000	.005	.000	.819

Summary of Confirmatory and Nonconfirmatory Findings

Figure 6 serves as a visual representation of the findings of this thesis by displaying the variable relationships that were found to be statistically significant and those found to be insignificant. Per Figure 6, in a multivariable regression analysis the only predictor variable that was statistically significantly related to cost-burdened housing was percent Hispanic. The insignificant relationships are displayed via crosshatched arrows thus, here *% Black* and *%*

Unemployed are not significantly related to cost-burdened housing once *% Hispanic* is put into the same regression equation with them.

On the right side of the model, the only bivariate relationship that was confirmed was the statistically significant correlation between *% Cost-Burdened Households* and *Homeless* Rate. When this relationship is tested for durability, it is found that it holds up well in a multivariable regression equation with competitor predictor variables (*% Unemployed, % Black, % Hispanic*).

Figure 6. Heuristic Model of Empirical Predictors and Consequences of Cost-Burdened Housing at the Metropolitan Level of Analysis

PREDICTORS

CONSEQUENCES

% Unemployed

% Black

% Hispanic

% Cost-Burdened Households

Psychotherapy Rate

Violent Crime

Property Crime

COVID-19 Death Rate

Homeless Rate

SUMMARY & SUGGESTIONS FOR FUTURE RESEARCH

Summary & Conclusions

According to the heuristic model developed and displayed in Figure 4, it can be concluded that a metropolitan area with a higher percentage of Hispanic people is more likely to have a higher percentage of cost-burdened households. The Hispanic rate of poverty is 15.7% compared to an average rate in the United States of 10.5%, showing that the Hispanic population should be, and is, at a higher risk of being cost-burdened by housing than the remainder of the population. Then further, the hypothesis that an increase in % Cost-Burdened Households would increase the Homeless Rate is also supported by both bivariate and multivariable analyses. This was expected because as the cost of housing increases, families and individuals are forced to choose between housing costs and other necessities, which can eventually lead to losing almost everything – including shelter. These findings lead to the conclusion that % Hispanic and Homeless Rate are key predictor and consequence variables, respectively, of % Cost-Burdened Households.

It is surprising to find that the majority of chosen predictors and consequences for cost-burdened households were demonstrated as statistically insignificant and unusable for the final heuristic model. Ultimately, these consequent variables are likely to be found statistically significantly related to cost-burdened housing in future research that employs a smaller unit of analysis (e.g. the neighborhood or household level). In short, from the findings of this thesis, it can only be concluded that the growing affordable housing crisis will be worse in areas where there is a higher percentage of Hispanic people, and that in turn a rising percentage of cost-burdened households will produce a higher rate of homelessness. It is important that communities take action to combat the growing consequences of cost-burdened housing to slow the homeless rate that plagues the United States and negatively affects the health and well-being of families, forced to make financial sacrifices to afford decent housing.

<u>Suggestions for Future Research</u>

It may well be that the many nonconfirmatory findings in this thesis would not be recreated if a smaller unit of analysis were used. The metropolitan level of analysis is likely too broad of a scope for researching the problem of cost-burdened housing. Furthermore, if a smaller unit of analysis were used, say the neighborhood level of analysis, additional predictor and consequent variables could be included, e.g., suicide rates, drug use statistics, and graduation rates along with school performance. Finally, it would be recommended that a deep dive go beyond the research problem of this thesis to investigate government policies currently in place within the United States and other countries that the United States could adopt to help combat the affordable housing crisis and lower the rate of cost-burdened households for our communities.

APPENDICES

Appendix A – (% Cost-Burdened by % Unemployed)

% Cost-Burdened by % Unemployed

N = 100 here

Bottom Third = 1.9 through 2.8 (unemployment rate)

Middle Third = 2.9 through 3.3

Top Third = 3.4 through 6.7

Perburdened

PerUnem19_2	Mean	N	Std. Deviation
<2.9	29.7844	34	4.69717
2.9-3.3	29.3069	32	4.19778
>3.3	30.8385	34	5.28435
Total	29.9900	100	4.75321
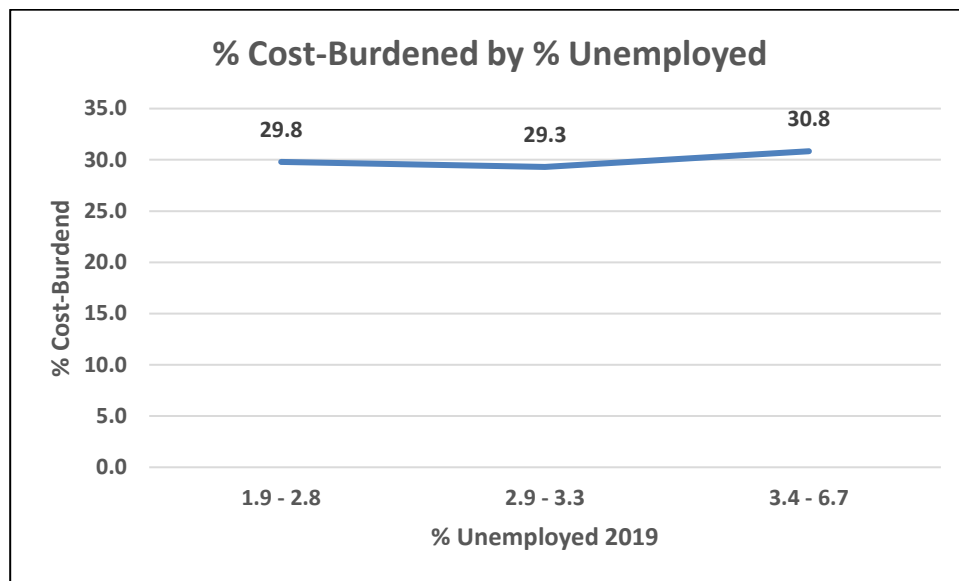
Appendix B – (% Cost-Burdened by % Hispanic)

% Cost-Burdened by % Hispanic

N = 100 here

Bottom Third = < 9% Hispanic

Middle Third = 9% through 20%

Top Third = >20%

Perburdened

PerHisp_2	Mean	N	Std. Deviation
Bottom 1/3	26.8333	33	2.59576
Middle 1/3	28.8094	33	3.52594
Top 1/3	34.1997	34	4.42410
Total	29.9900	100	4.75321
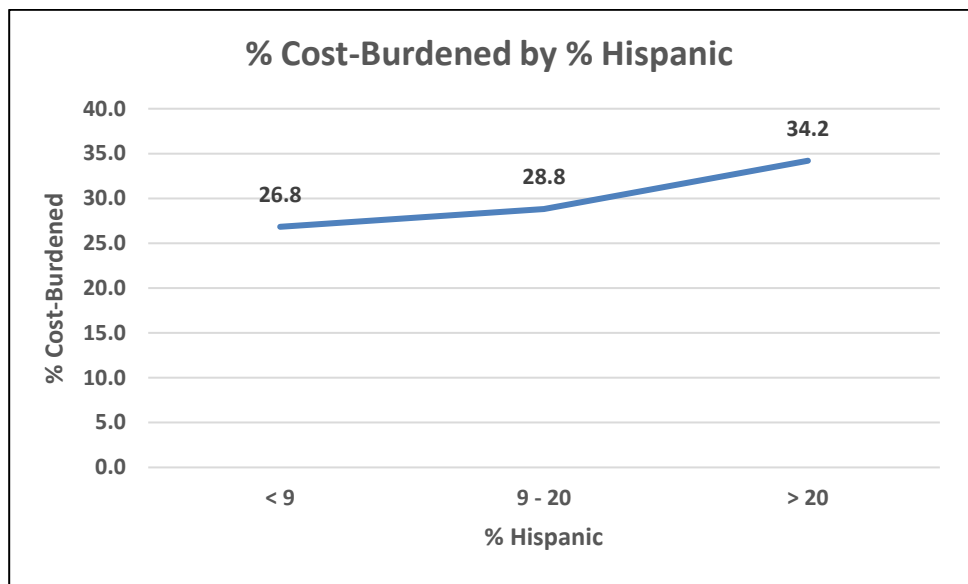
Appendix C – (% Cost-Burdened by % Black)

% Cost-Burdened by %-Black

N = 100 here

Bottom Third = < 12% Black

Middle Third = 13% through 25%

Top Third = > 25%

Perburdened

PerBlk_2	Mean	N	Std. Deviation
<12%	32.1720	30	5.12208
13%-25%	29.6192	36	5.45190
>25%	28.4574	34	2.51005
Total	29.9900	100	4.75321
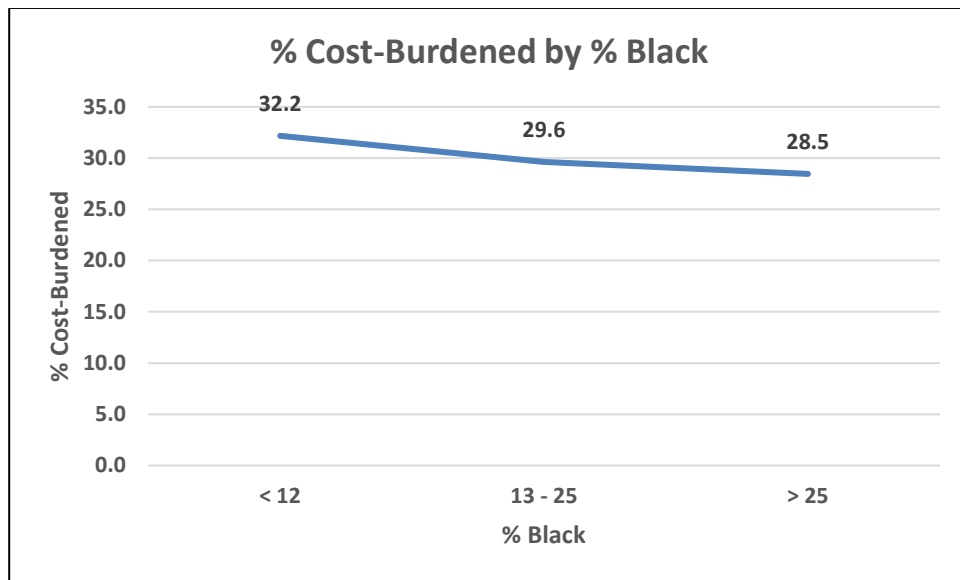
Appendix D – (Homeless Rate by % Cost-Burdened)

Homeless Rate by % Cost-Burdened

N = 25 here

Bottom Third = 22% to 27.27% Burdened

Middle Third = 27.28% through 31.5%

Top Third = 31.6% through 45%

HomelessRate

PerBurdened_2	Mean	N	Std. Deviation
22%-27.27%	12.67	3	2.082
22.28%-31.5%	13.00	8	4.408
31.6%-45.0%	23.21	14	11.544
Total	18.68	25	10.270

Homeless Rate by % Cost-Burdened

<u>ACKNOWLEDGEMENTS</u>

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