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Minimum Wage as a Tool for Combatting Renter Burdens

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Intro

There is a severe shortage of affordable housing in the United States. In 2011, the number of low-cost rental units (units renting for $800 or less per month) stood around 23.5 million, but by 2017, this number dropped to 19.5 million, roughly a 17% decrease (Joint Center for Housing Studies, 2020). The result is that in 2020, only 37 affordable units exist for every 100 of the nation's 10.8 million extremely low-income renters (those earning 30% or less of the area median income) (National Low Income Housing Coalition, 2021). One contributing factor is that higher-income households[1] are beginning to rent more. The number of households with a real income of greater than $75,000 was 7.3 million but rose to almost 12 million in 2018. Developers have noticed the growing demand for this population and are building units for them because they are more profitable than affordable housing units. In addition to fewer affordable housing units being built, the existing affordable housing stock is also being bought up by wealthier households, further shrinking the options for low-income households. Another factor that affects the supply in some regions is the increased frequency of natural disasters due to climate change. Between 2000 and 2009, the average annual damage from natural disasters in the US was around $45 billion. In 2018, this number more than doubled to $105 billion (Joint Center for Housing Studies, 2020). Low-

[1] The term "households" throughout this paper refers to a person or a group of persons who occupy the same rental unit.

rent housing is usually structurally weaker compared to high-end units, so when there is a disaster (hurricanes, wildfires, etc.) these units make up much of that damage.

The federal government has deprioritized funding for housing assistance over the past decade. The Budget Control Act of 2011 signed by the Obama administration decreased funding for non-defense discretionary spending, which includes housing assistance. By 2017, funding for public housing fell by $1.8 billion, or 22%. This was part of an overall cut in non-discretionary spending, which decreased HUD program funding by $4.2 billion (9%) over the same time period (Center on Budget and Policy Priorities, 2017).

The central question addressed in this paper is whether or not an increased minimum wage could alleviate some of this affordability crisis. The Fair Labor Standards Act of 1938 was the first federal law mandating a minimum wage and was designed to eliminate labor conditions that were "detrimental to the maintenance of the minimum standard of living necessary for health, efficiency, and general well-being of workers" (Ruckelshaus, 2018). Since its inception, the federal minimum wage has been increased 22 times, the latest being in 2009 when it was raised to $7.25 per hour. As of this writing, the minimum wage has not increased in 12 years - the longest period without an increase in the history of the Act. Of course, rental prices have not stopped increasing, leaving minimum wage workers with significantly less purchasing power than they had in 2009. Due to this, many progressive politicians such as Bernie Sanders (I, VT), Elizabeth Warren (D, MA) and Alexandria Ocasio-Cortez (D, NY) have called for an increase to $15 per hour. This is not a fringe view, either - a Pew research poll conducted in 2019 found that two-thirds of Americans favor a $15 minimum wage (Pew Research Center, 2019).

The federal minimum wage, however, only sets the floor and allows states/municipalities to raise it. Currently there are 29 states with a higher minimum wage than the federal requirement,

with Washington state having the highest at $13.50 per hour. There are also around 40 municipalities that have raised their minimum wage past the state's minimum, notably Los Angeles and New York City, which are both at $15 per hour. The large range of minimum wage levels across the US allows us to evaluate its effect. This paper uses household-level data from the annual American Community Survey from 2015 to 2019 to analyze the effect of minimum wage increases on the number of "burdened households", defined by the Department of Housing and Urban Development (HUD) as households that spend 30% or more of their income on rent. Minimum wage increases could, by virtue of increasing a person's income, reduce the number of burdened households. The issue, though, is that landlords may increase the price of rent in response to the tenants' higher incomes. This, the income elasticity of rental prices, is the dynamic that must be analyzed in order to answer the central question of this paper.

I find that, when controlling for selected demographic and apartment characteristics, a $1 increase in the minimum wage leads to 1.04% of all renter households to become unburdened, and this effect is slightly stronger for single-person households, with up to 1.41% becoming unburdened. The effect is larger non-white renters relative to white renters, and neither the region in the US nor whether the county is urban or rural seem to have much effect. These results are alternatively specified using the Kaitz index instead of the minimum wage. The Kaitz index considers the differences in local incomes by dividing the minimum wage by the area median wage to account for the relative effectiveness or "bite" of the minimum wage level. The estimates for both the minimum wage and Kaitz index are sensitive to the income cutoff of the sample - if the median income cutoff is too low then increases in the minimum wage may not be enough to push them past the burdened threshold. Too high of an income cutoff for the sample would lead to

inclusion of non-treated individuals, biasing the result downwards (Bertrand, Duflo, and Mullainathan, 2004).

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While there is a large amount of literature on the separate topics of housing affordability[2] and the effects of minimum wage,[3] empirical analyses synthesizing the two are less common. Agarwal et. al. (2019) analyze the impact of minimum wage on default incidences on leases for renters and find that a 1% increase in the minimum wage causes a 2.6% decrease in defaults, but this benefit peaks around two months and after that, landlords react to the change by increasing rental prices. Yamagishi (2020) studies the effect of minimum wage on rental prices in low-quality housing in Japan and finds that a 10% increase in the minimum wage will increase rent by only 2.5% - 4.5%, making the residents' budgets relatively less constrained. In addition, this increase in rent also translates to a 0.75% - 1.35% transfer of wealth to those that own the rental units. Hughes (2020), similarly to this paper, looks at how the minimum wage affects the rent-to-income ratio of low-wage households. These results suggest that a 10% increase in the minimum wage decreased the rent-to-income ratio by about 1.4%, which also translates to a 0.5% increase in consumption.

While previous papers on the subject of minimum wage and housing affordability have used the rent-to-income ratio as the dependent variable, this paper uniquely contributes to the literature by observing the change in burdened households. The focus on burdened households is important as this is a standard metric for assessing the affordability crisis and is used as a guideline for programs such as the Low Income Housing Tax Credit (LIHTC) and Section 8 housing

[2] Publications from Harvard's Joint Center for Housing Studies (https://www.jchs.harvard.edu/research) and the National Low Income Housing Coalition (https://reports.nlihc.org/oor/) are good places to begin.
[3] For a survey of the effects of minimum wage on employment see Schmitt (2013), and for a survey of its effect on prices see Lemos (2008).

(Williamson, 2011). This measurement is also indicative of financial hardships: along with having less money to spend on other necessities like food and clothing, cost-burdened renters are likely to have a low amount of savings and liquid assets and are less likely to transition from renting to owning.

Theory

The theoretical framework of this paper treats a minimum wage increase as a permanent shock to a household's income similar to Argrawal et. al. (2019), but in this instance it applies to the ratio of rent to income instead of solely looking at income. This ratio indicates how much of a household's income is spent on rent, and if it is over 0.3 the household is considered "burdened". However, the issue is not this simple because rent is not static. Landlords may increase rent at a higher rate if their tenants have higher incomes which would reduce or possibly nullify the positive effects of the minimum wage increase. This begs the question of the income elasticity of rent. A review of the literature done by Mayo (1981) finds that most estimates show rent as inelastic, and this has been backed up as well by more recent studies (Albouy et. al., 2106; Hughes, 2020). This is in line with the aforementioned decreases in rent-to-income ratios.

Data

This paper uses the American Community Survey (ACS) 1-year Public Use Microdata Sample (PUMS) from 2015 to 2019 to estimate the ability of minimum wage to alleviate cost-burdened renters. The ACS reports gross monthly rent costs, so a metric for monthly income was

created[4] and if the ratio of rent to income was greater than 0.3, the household was considered burdened. Initially, the ACS contains data on 4,005,219 renters over the period of 2015 to 2019. The number of observations drops to 1,711,293 once the following restrictions are put in place: *1) Age.* Age is below 64 and at or above 18 years old. Individuals 65 and older may be receiving passive income in the form of Social Security or retirement plans, and individuals under the age of 18 are likely to be in school and not earning any significant income. In addition, there are certain restrictions for employment for minors included in the Fair Labor Standards Act, which are alleviated at the age of 18. *2) Education.* The education level is restricted to those with an educational attainment of a bachelor's degree or less. People with advanced degrees are unlikely to be working a minimum wage job and including non-affected individuals would bias the results downward (Bertrand, Duflo, and Mullainathan, 2004). *3) Type of living quarters*. Only those living in one-family houses (detached or attached) and apartments are included. Those living in vans, RVs, mobile homes, and other non-traditional living spaces are removed from the sample, as rental prices are set differently than apartments and houses. *4) Military status.* Active-duty service members may be living in group quarters or overseas, and veteran status may affect the cost of housing through programs like the HUD Veterans Affairs Supportive Housing or Supportive Service for Veteran Families. *5)* Finally, only households with an income above $0 are considered, as negative incomes cannot be accurately factored into the calculation for burdened households.

In 2015, the percentage of burdened households was 48.2%. Over the past years, however, this has been decreasing - by 2019 this number has fallen to 44.2%, a decrease of about 8.3% over five years (Figure 1). When analyzing the minimum wage's effect on burdened households, it is

[4] The ACS reports income on a yearly basis but rent on a monthly basis, so monthly income was calculated by adjusting for the weeks worked. Prior to 2019, however, the ACS coded weeks worked as a categorical variable (50 to 52 weeks, 48 to 50 weeks, etc.) so in order to make these numerical, the midpoint of each category was used.

essential to consider the possibility of legislative endogeneity. Governments may increase the minimum wage in response to higher costs of living. Figure 2 shows that the percentage of burdened renters is about 7.9% higher over all years in areas where the minimum wage is above the federal minimum of $7.25 per hour. In both cases, though, the decreasing trend of burdened households seen in the overall data still holds.

As previously mentioned, states and even municipalities can require a minimum wage higher than the federal minimum. In 2015, 28 states (including Washington D.C.) had a higher minimum wage than the federal, with the highest in Washington D.C. at $10.50. When averaging the minimum wage level across all states in 2015, it was $7.89 per hour. By 2019 only one extra state increased its minimum wage above the federal, but the average minimum wage level across had increased to $9.03 per hour and Washington D.C. still had the highest, but at $14 per hour. Figure 3 shows a map of the US with each state's minimum wage level in 2015 and 2019 (respectively). While only Washington D.C. had a minimum wage at or above $10 per hour in 2015, 15 more states had minimum wages at or above $10 per hour by 2019. Over these years, more cities and counties have taken it upon themselves to enact even more minimum wage legislation. In 2015, only 8 cities and counties had higher minimum wage ordinances, but by 2019 that number increased to 34.

Empirical Specification

To gauge the effect of a higher minimum wage on cost-burdened renters, this paper will employ a linear probability model with the dependent variable being whether or not the household is rent-burdened. Specifically, I estimate the following equation:

$$burdened_{ijt} = \beta_0 + \beta_1 MinWage_{jt} + \beta_2 X_i + \beta_3 Z_{jt} + \beta_4 K_i + \alpha_j + \gamma_t + \varepsilon_{ijt}$$

where *i* is the head of the household, *j* is the county, *t* is the year, X is a vector of individual characteristics of the head of the household including sex; age; race/ethnicity; education; and level of schooling, and β_2 is a vector of coefficients. K_i is a vector of apartment characteristics including decade built, number of bedrooms, and type of unit.[5] α_j accounts for county fixed-effects in order to control for county characteristics that do not change over time. Similarly, γ_t accounts for year fixed-effects to control for events that are common to all counties in a specific year. Standard errors are clustered at the state level, as the vast majority of counties (over 99%) follow the state minimum wage, and county fixed-effects are already included in the model.

The main coefficient we are interested in is β_1 which captures the likelihood of being a cost-burdened renter. It is expected that the sign of this coefficient would be negative, as higher wages would bring greater income and lessen the ratio of rent-to-income, ceteris paribus. In addition to age, education, and living quarters mentioned earlier and common demographic controls (race, sex), there are two other important controls included. 1) *County population growth.* A higher population growth would likely translate to higher housing prices due to increasing demand (Gevorgyan, 2019; Miles, 2012). 2) *Apartment characteristics*. Newer buildings are likely to have more/better amenities (better insulation, air conditioning, etc.) and would likely fetch a higher price, therefore increasing the probability that the occupant is housing burdened. The size of the apartment (measured by the number of bedrooms) and the size of the structure (single home, multi-unit building, etc.) would also affect the price. It has the added effect of keeping the quality of the apartment constant – some may, as a result of increased income, move into a more expensive apartment and their rent-to-income ratio could actually increase.

[5] Types include one-family house detached, one-family house detached, and multi-unit building split into the following categories: 2 units, 3-4 units, 5-9 units, 10-19 units, 20-49 units, and 50 or more units. Mobile homes, vans, RVs, and other non-traditional units are excluded from the sample, as rental pricing is not determined in the same way as houses and apartments.

While this paper uses a linear probability model to estimate the effects of minimum wage, it also lends itself easily to a difference-in-difference (DD) model[6] because there are clear pre- and post-effects for treated and non-treated states (or municipalities). One reason for not using DD is that it would work best with discrete jumps, whereas this is not always the case. For example, since 2016 Alaska has pegged its minimum wage to the cost of living, and the minimum wage has increased by an average of nine cents per hour each year. Despite not using DD, the issue of parallel trends still needs to be addressed. The parallel trends assumption requires that, in absence of treatment, the difference between the treated units (areas that enacted a minimum wage) and non-treated units stays constant over time. In the overall data the percentage of burdened renters is decreasing (recall Figure 1) which alleviates some concern, but it has been decreasing at a slower rate in areas that have the federal minimum wage of $7.25. Future literature on this topic may want to consider doing case studies in order to better control for parallel trends, or also consider a synthetic control method.[7]

In addition to the minimum wage, this paper also alternatively uses the Kaitz index as the independent variable. The Kaitz index measures the "bite" that the minimum wage has in an area by taking the minimum wage and dividing it by an area's median hourly wage. In 2019 the average county-level Kaitz index was about 0.48, meaning that the median area income was on average approximately double what minimum wage earners made. This is up from 2015, where the Kaitz index was 0.41, showing that over these five years the minimum wage has been increasing relative to area median incomes (Figure 4 shows the Kaitz index over all five years). In counties with high minimum wages the Kaitz index tends to be larger (Dube and Lindner, 2020) due to higher minimum wages.

[6] For a good example of this, see Card and Krueger (1993).
[7] See Abadie et. al. (2010) for an introduction to synthetic control method.

Results

First, we test two assumptions: that a minimum wage increase will increase the income of the sample population, and that the income elasticity of rent is inelastic. Table 1 shows logged annual income regressed on logged minimum wage. A 10% increase in the minimum wage translates to a 1.50% increase in personal income, significant at the 1% level. This demonstrates that the identified sample is affected by the minimum wage and, as we expect, income increases with a minimum wage increase. Table 2 estimates the elasticity of rent for an increase in the minimum wage, given demographic and selected apartment characteristics. A 10% increase in the minimum wage translates only to a 0.7% increase in rent (significant at the 5% level), which is consistent with prior estimates in the literature.

Table 3a shows that when considering the full sample, a $1 increase in the minimum wage would decrease the number of burdened renters by 0.46 percentage points, significant at the 5% level. Using the 2019 average of 44.2%, the percent of burdened renters would decrease by an estimated 1.04%. This is similar to the estimate from Hughes (2020) that the rent-to-income ratio would fall by about 1.4%. There is also a negative relationship between being burdened and education level. This is probably due to the fact that those with higher education levels are likely to have a higher wage rate, putting them closer to the point where the minimum wage increase would cause them to become unburdened.

Alternatively, we can use the Kaitz index[8] instead of the minimum wage level as the regressor to capture the effect of the minimum wage increase relative to the area's median wage. When this alternative is applied to all households (Table 3b), a one standard deviation increase in

[8] This is standardized in the regressions for more meaningful interpretation.

the Kaitz index decreases the number of burdened households by 0.84 percentage points. While the magnitude of the change may not have a straightforward interpretation, it is significant at the 5% level and still negative, showing that the previous results are robust given the surrounding area's income level.

Table 4a shows the results when we restrict the sample to only households with 1 person, with a maximum income of $31,200 (the pre-tax income of someone working full time at $15 per hour, an oft-proposed level). From this, we see that the magnitude of the change in burdened population is higher than the previous estimate with all households (and is significant at the 5% level). A $1 increase in the minimum wage translates to a 0.78 percentage point decrease in burdened households. Using the 2019 mean of 55.9% of single-person households being burdened, this is a decrease of about 1.41%. While not too much higher, there is a plausible explanation for the minimum wage affecting single-person households more than the rest of the sample. Households with more people may have dependents, which would require more bedrooms, but there is no extra income coming from the dependent(s).

The same substitution of the Kaitz index for minimum wage is done with the regression in table 4a (results shown in Table 4b). The results show the coefficient of the Kaitz index to still be negative and significant, and in addition the magnitude of the coefficient for the Kaitz index in Table 4b is larger than that in Table 3b, which is consistent with the magnitude of the coefficient for minimum wage in Table 4a being larger than that in Table 3a.

These decreases in the burdened population are, however, somewhat sensitive to the income threshold used to identify the sample. Table 5a shows the effect of a minimum wage hike on "very low-income households,"[9] which make up about 9% of the sample. While the magnitude

[9] Defined by HUD as households making less than half the area median income.

of the minimum wage coefficient is similar to that of the initial regression with all households (0.40 compared to 0.46, respectively) and significant at the 1% level, the percentage of burdened households is higher for very low-income renters: in 2019 it was 60.2%, meaning a 0.40 percentage point decrease in burdened households translates to only a 0.66% decrease in burdened households compared to the 1.04% decrease from the full sample. When using the Kaitz index, the effect of a minimum wage increase fails to gain significance (Table 5b).

Another specification to include is the distinction between rural and urban areas, as they have different costs of living.[10] This manifests itself as a difference in the number of burdened households - the average percentage of burdened households between 2015 and 2019 is 47.1% for urban areas and 40.1% for rural areas (see Figure 5). To test if rural and urban counties are affected differently by minimum wage increases, an interaction term between the minimum wage level and the urban indicator. Table 6a shows that minimum wage increases have a higher effect on rural counties (the interaction term between urban and the minimum wage level is negative), however the effect seems weak. Table 6b provides the marginal effects, showing the larger coefficient for rural counties. This discrepancy could be because a minimum wage increase has a relatively larger effect in rural areas which have lower costs of living. This, in fact, can be verified by the fact that rural counties have consistently had a higher Kaitz index than urban counties (Figure 6).

Race is another significant factor to be explored, as non-white renters are more likely to be housing burdened. Figure 7 shows the difference in the percentage of burdened households for white versus non-white renters, and the number of non-white renters is consistently about 15.7% higher relative to white renters. Table 7a reports the results when interacting race with the

[10] Urban is defined as small, medium, and large metropolitan areas, and rural is defined as micropolitan and noncore areas. For specification of these groups, see https://www.cdc.gov/nchs/data/series/sr_02/sr02_166.pdf

minimum wage level. We can see that white renters are affected to a lesser degree relative to non-white renters, and this is significant at the 1% level. This can alternatively be shown by looking at the marginal effects shown in Table 7b - the magnitude of the coefficient for non-white renters is higher than that for white renters, although the coefficient for white renters fails to gain significance.

There may also be regional differences in the effectiveness of the minimum wage to alleviate renter burdens. I use the four main regions set out by the Census Bureau for this analysis: Northeast, Midwest, South, and West. This is because states in the western region (like California and Washington) and the eastern region (like New York and Massachusetts) tend to have higher minimum wages.[11] Table 8a shows the results of interacting region and minimum wage using Northeast as the base region. From this, the evidence for regional differences in unburdening households seems weak. Table 8b reports the margins for each region. The coefficient more the Midwest is higher relative to the other regions (0.0167) and significant at the 1% level, and the coefficient for the West is relatively lower than the other regions (0.0081) and significant at the 5% level, while the results for the other regions are insignificant. These results seem to correspond more with the urban/rural results, as counties in the West region tend to be more populous than those in the Midwest, and from the urban/rural results we saw that minimum wage increases in rural counties have a bigger effect on reducing the burdened population than in urban counties.

Conclusion

This paper identifies the effect of a minimum wage increase on the number of burdened households in the face of an increasingly prevalent affordability crisis. I find that, when controlling

[11] For the specific states that make up each region, see https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf

for selected demographic and apartment characteristics, a $1 increase in the minimum wage leads to 1.04% of all renter households to become unburdened, and this effect is slightly stronger for single-person households with up to 1.41% becoming unburdened. The effect is bigger for non-white relative to white renters, and geographic region and the county's urban/rural designation do not strongly influence the effect either way. These results hold when compared to the differences in local incomes and minimum wage levels by using the Kaitz index as an alternative to the minimum wage. As minimum wage legislation gains speed, future literature could benefit from further case studies on this topic.

Figures and Tables

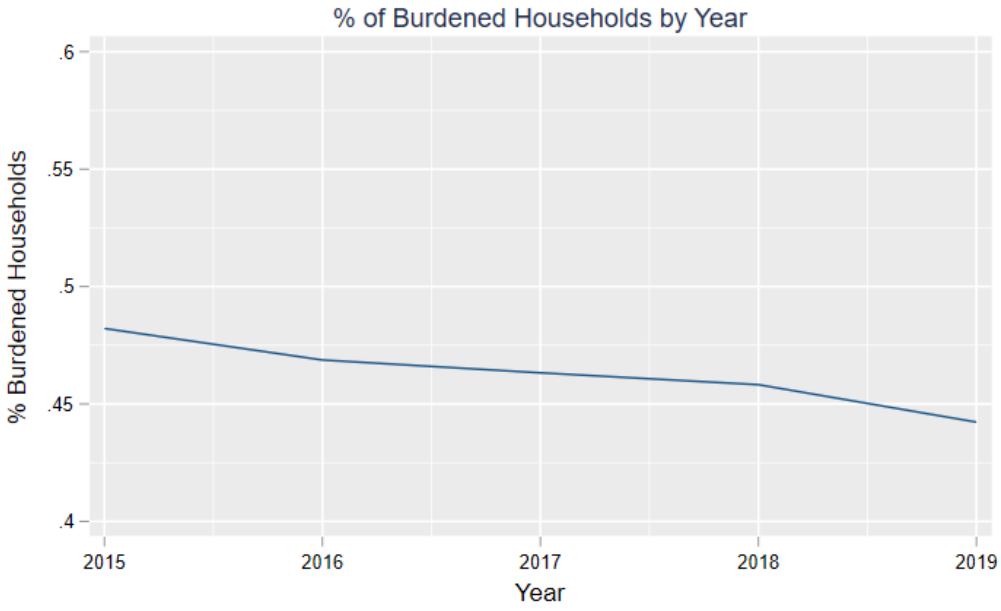

Figure 1

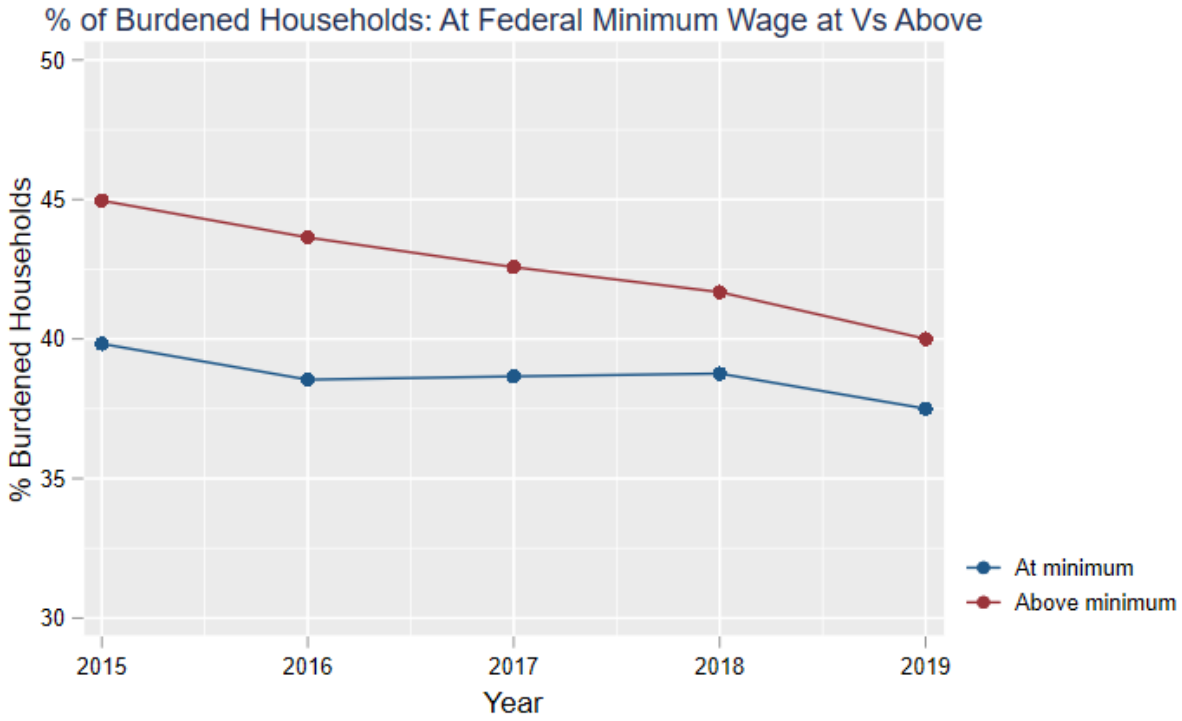

Figure 2

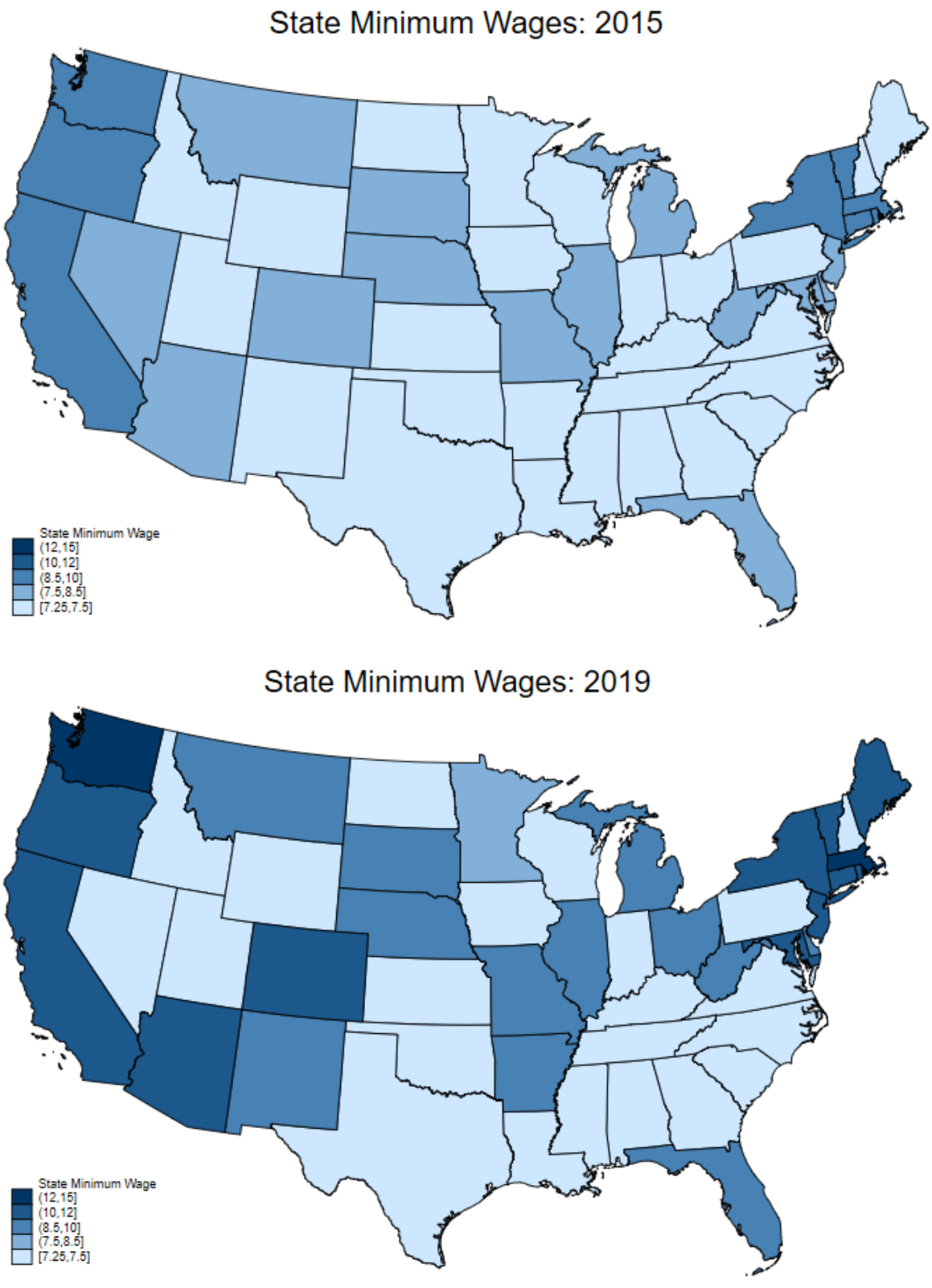
State Minimum Wages: 2015
State Minimum Wage
(12,15]
(10,12]
(8.5,10]
(7.5,8.5]
[7.25,7.5]
State Minimum Wages: 2019
State Minimum Wage
(12,15]
(10,12]
(8.5,10]
(7.5,8.5]
[7.25,7.5]

Figure 3

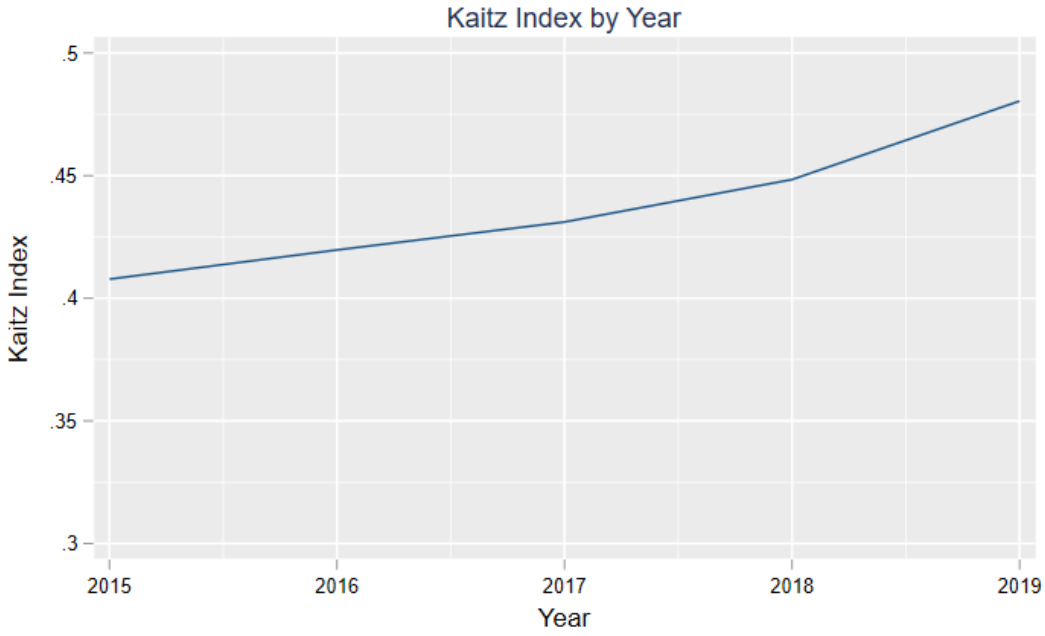

Figure 4

* Note: This is the average for all counties in the dataset (N = 1,075)

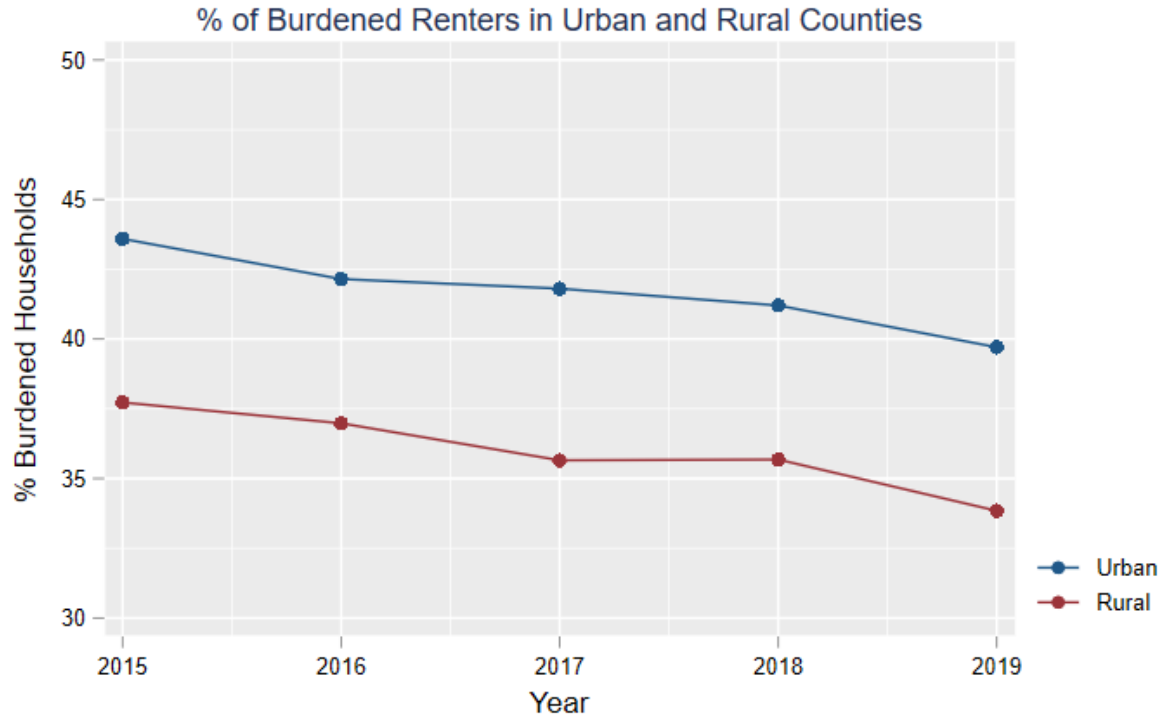

Figure 5

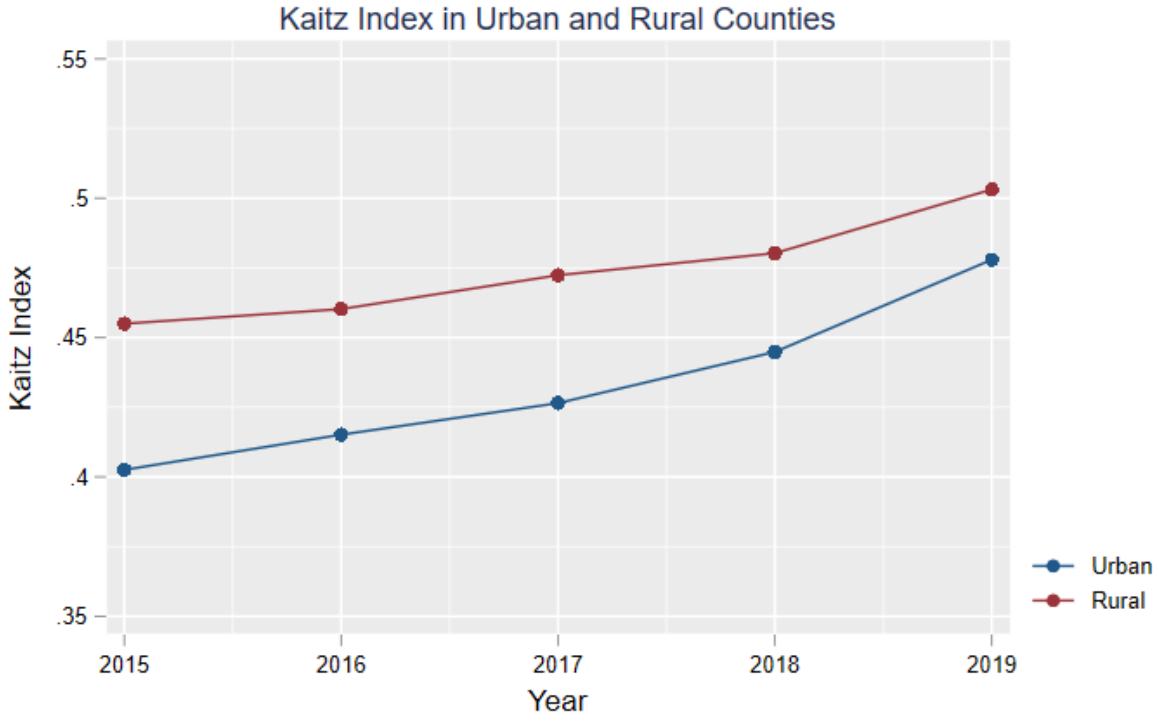

Figure 6

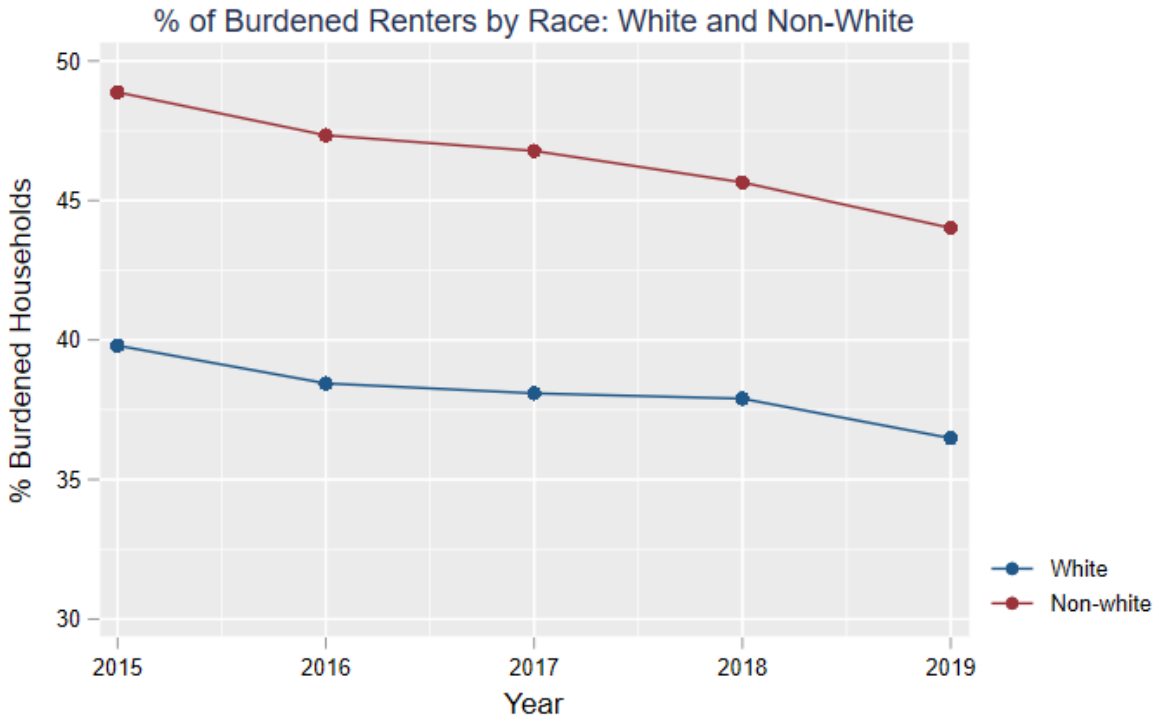

Figure 7

Table 1: Log annual income regressed on log minimum wage using the full sample.

Log Minimum Wage	0.150***
	(0.0267)
Age	0.000394
	(0.000450)
Population growth	-0.00580
	(0.00551)
White	0.185***
	(0.0155)
Male	0.196***
	(0.00684)
Number of Persons	0.139***
	(0.00503)
Education Level	
High School Diploma	0.286***
	(0.00776)
GED or Alternative	0.202***
	(0.0101)
Some College, No Degree	0.382***
	(0.00936)
Associate's Degree	0.529***
	(0.0140)
Bachelor's Degree	0.836***
	(0.0267)
Constant	9.396***
	(0.0555)
Observations	1,711,293
R-squared	0.211

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

Table 2: Log gross rent (including utilities) regressed on log minimum wage using the full sample.

Log Minimum Wage	0.0821**
	(0.0340)
Age	-0.00188***
	(0.000252)
Population growth	-0.0131**
	(0.00416)
White	0.0821***
	(0.00924)
Male	0.0321***
	(0.00204)
Number of Persons	0.0253***
	(0.00386)
Constant	6.762***
	(0.0681)
Observations	1,711,293
R-squared	0.457

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

Table 3: Share of burdened households regressed on minimum wage (a) and Kaitz index (b) using the full sample.

	(a)	(b)
Minimum Wage	-0.00462**	
	(0.001117)	
Kaitz Index		-0.00845**
		(0.00277)
Age	-0.000571**	-0.000571**
	(0.000126)	(0.000125)
Population growth	-0.00660**	-0.00603**
	(0.00207)	(0.00211)
White	-0.0499***	-0.0499***
	(0.00601)	(0.00602)
Male	-0.0939***	-0.0939***
	(0.00409)	(0.00411)
Number of Persons	-0.0348***	-0.0348***
	(0.00185)	(0.00186)
Education Level		
High School Diploma	-0.106***	-0.106***
	(0.00384)	(0.00388)
GED or Alternative	-0.0807***	-0.0807***
	(0.00518)	(0.00522)
Some College, No Degree	-0.131***	-0.131***
	(0.00362)	(0.00363)
Associate's Degree	-0.190***	-0.190***
	(0.00649)	(0.00658)
Bachelor's Degree	-0.296***	-0.296***
	(0.00793)	(0.00796)
Constant	0.785***	0.741***
	(0.0153)	(0.0110)
Observations	1,711,293	1,711,293
R-squared	0.066	0.066

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

Table 4: Share of burdened households regressed on minimum wage (a) and Kaitz index (b) using only households with one person.

	(a)	(b)
Minimum Wage	-0.00782**	
	(0.00192)	
Kaitz Index		-0.0110**
		(0.00384)
Age	-0.00126***	-0.00126***
	(0.000172)	(0.000173)
Population growth	-0.000546	0.000196
	(0.00319)	(0.00341)
White	0.00788***	0.00787***
	(0.00164)	(0.00171)
Male	-0.0263***	-0.0263***
	(0.00421)	(0.00419)
Constant	0.940***	0.872***
	(0.0212)	(0.0204)
Observations	145,513	145,513
R-squared	0.088	0.088

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

* Note: Education level is still accounted for but not reported going forward, as the values are still significant and similar magnitude to Table 3.

Table 5: Share of burdened households regressed on minimum wage (a) and Kaitz index (b) using only households that are "very low income" (less than 50% of area median income)

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	(1) a	(2) b
Minimum Wage	-0.00401***	
	(0.000818)	
Kaitz Index		-0.00769
		(0.00408)
Age	0.00214***	0.00213***
	(0.000130)	(0.000131)
Population growth	-0.00401	-0.00340
	(0.00293)	(0.00311)
White	-0.0273***	-0.0272***
	(0.00504)	(0.00509)
Male	-0.00855	-0.00857
	(0.00528)	(0.00535)
Number of Persons	-0.0591***	-0.0591***
	(0.00283)	(0.00283)
Constant	0.721***	0.662***
	(0.0145)	(0.0192)
Observations	269,354	269,354
R-squared	0.074	0.073

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

Table 6a: Share of burdened households regressed on minimum wage using the full sample, with an interaction between urban and minimum wage.

Minimum Wage	0.0173*
	(0.00748)
Urban = 1	0.0988*
	(0.0453)
Urban # Minimum Wage	-0.00480
	(0.00508)
Age	-0.000470**
	(0.000152)
Population growth	-0.00140
	(0.00491)
White	-0.0551***
	(0.00778)
Male	-0.0927***
	(0.00404)
Number of Persons	-0.0307***
	(0.00196)
Constant	0.374***
	(0.0660)
Observations	1,711,293
R-squared	0.051

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

Table 6b: Marginal effects

Urban	0.0173**
Rural	0.0125***

*** p < 0.01, ** p < 0.05, * p < 0.1

Table 7a: Share of burdened households regressed on minimum wage using the full sample, with an interaction between race and minimum wage.

VARIABLES	(1) Burdened
Minimum Wage	-0.00846***
	(0.000845)
White = 1	-0.115***
	(0.0113)
White # Minimum Wage	0.00728***
	(0.00138)
Age	-0.000571**
	(0.000129)
Population growth	-0.00718**
	(0.00217)
Male	-0.0938***
	(0.00418)
Number of Persons	-0.0347***
	(0.00185)
Constant	0.685***
	(0.0154)
Observations	1,711,293
R-squared	0.066

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

Table 7b: Marginal effects

Non-White	-0.00846***
White	0.00119

*** p < 0.01, ** p < 0.05, * p < 0.1

Table 8a: Share of burdened households regressed on minimum wage using the full sample, with an interaction between region (Northeast, Midwest, South, and West) and minimum wage.

Minimum Wage	0.00897
	(0.00615)
Region	
Midwest	-0.0946
	(0.0570)
South	-0.0515
	(0.118)
West	0.0418
	(0.0692)
Northeast # Minimum Wage	0
	(0)
Midwest # Minimum Wage	0.00524
	(0.00547)
South # Minimum Wage	0.00782
	(0.0160)
West # Minimum Wage	-0.00175
	(0.00575)
Age	-0.000496**
	(0.000144)
Population growth	-0.00658
	(0.00565)
Male	-0.0926***
	(0.00395)
White	-0.0560***
	(0.00781)
Number of Persons	-0.0312***
	(0.00191)
Constant	0.522***
	(0.0610)
Observations	1,711,293
R-squared	0.048

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

Table 8b: Marginal effects

Northeast	0.00897
Midwest	0.0142***
South	0.168
West	0.00722*

*** p < 0.01, ** p < 0.05, * p < 0.1

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