

Racial/Ethnic Diversity among Nursing Home Residents: Impact of the Medicaid Expansion

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Abstract

The Affordable Care Act (ACA), enacted in 2010 is an essential milestone for improving the health care coverage of American citizens. This article explores the effects of the Medicaid expansion under the Affordable Care Act on the admissions of nursing home residents of racial/ethnic minorities in the US. To address this, I implement a difference-in-difference estimation methodology that accounts for multiple time periods and variations in treatment timing. The results, obtained by using aggregate data at the U.S. county level from 2000 to 2019, suggest that racial and ethnic disparities are not disappearing in nursing homes, on the contrary, are increasing. Moreover, it shows how the results differ after classifying Medicaid expansion/non-expansion states by income inequality and poverty rate levels. Lastly, potential mechanisms driving these results are discussed.

Keywords: Affordable Care Act, Racial Diversity, Nursing Home, Medicaid.

JEL Codes: H51 · I11 · I13 · I14 · I18 · I38.

1 Introduction

Long-term care is becoming an essential challenge to governments of developed countries as the population share of individuals aged 85 and older in the EU27 is expected to double over the next 30 years. The baby boomers are approaching retirement and there is the possibility that their long-term care needs will not be fully covered. A central issue regarding care needs for the elderly is that they are expensive and the majority of the population does not have the means to privately afford them. In the U.S., healthcare coverage is publicly and privately provided. However, this coverage is not universal and it is even more restricted when related to long-term care services. If indeed the number of people requiring such services increases due to the big population share that involves baby boomers, it is likely that unmet long-term care needs will increase too. This raises concerns about an exacerbation of current health and economic problems among the poor in the future. Previously, to address this issue of affordability and coverage for health care, programs such as Medicaid were implemented. Even though it provides support with healthcare-related expenses for people with limited resources, it still has several flaws. The Affordable Care Act (ACA), enacted in 2010 is an important milestone for improving the health care coverage of American citizens. Among others, the ACA expands Medicaid benefiting individuals in the lowest-income percentiles.

In this paper, I focus on understanding the effects of Medicaid expansion on the admission to nursing homes by different racial/ethnic groups. The motivation for this paper is twofold. First, it arises due to the raising concerns regarding racial economic inequality in the United States and the fact that Black and Hispanic populations are found in a bigger share in poverty. Second, affordability and accessibility challenges arise from current and future long-term care services. The central hypothesis of this research is that if the Medicaid expansion is aimed to increase healthcare coverage for individuals with low economic resources, then low-economic groups admitted to nursing homes will increase. It is important to consider that individuals from all races/ethnicities suffer similar long-term care needs but differ substantially in their affordability and accessibility.

According to projections of the Genworth Cost of Care Survey, the average annual cost of a semi-private and a private room in a nursing home in the U.S. will increase by 34% compared to 2020. On the contrary, according to the United States Census Bureau, the annual median household income was \$67,521 in 2020. This median income compared to the cost of a semi-private room in the same year show the difficulty that it represents to cover the costs of nursing home services. This suggests that far more than the bottom half of the population is not likely to afford a year of nursing home care in a basic setup. The high cost of nursing home services poses a significant challenge for many individuals, especially those from Black and Hispanic communities who have lower incomes. It can be noted that economic disparities among different racial/ethnic groups have been increasing in the United States [Kuhn

et al., 2020]. For instance, White individuals have higher incomes and wealth compared to Black and Hispanic individuals, who are more likely to live in poverty. This raises the research question in this paper. Is the Medicaid expansion reducing racial/ethnic disparities in the admissions of nursing home residents? To address this, I implement a new difference-in-difference (DiD) estimation methodology introduced by Callaway and Sant'Anna [2021] to obtain accurate causal effects arising from the policy enactment.

A growing literature examines the general effects of the Medicaid expansion and found positive effects on insurance coverage, health outcomes, and access and use of care services ([Simon et al., 2017], [Sommers et al., 2015], [Frean et al., 2017], [Kaestner et al., 2017], [Courtemanche et al., 2017] and [Dworsky and Eibner, 2016]), admission to mental health treatment [Ortega, 2022], reduction on mortality rates [Miller et al., 2021], foster care admissions [Beland et al., 2021], unpaid bills, and the amount of debt sent to third-party collection agencies [Hu et al., 2018]. Negative effects are also reported, for example, longer waiting times for appointments [Miller and Wherry, 2017], cost-related barriers for senior citizens, delaying care, paying drugs prescriptions, less access to specialist doctors, or lack of continuity of care for cost reasons [Galindo-Silva et al., 2018].

A smaller amount of research has been developed to understand the impact of Medicaid expansion on racial disparities. Reduction on uninsured rates were found by McMorrow et al. [2015], Lipton et al. [2019], Galindo-Silva et al. [2018] and Buchmueller et al. [2016]. However, Dworsky and Eibner [2016] found no significant evidence of a reduction of racial disparities in insurance coverage for adults below the poverty line and adults without children. Additionally, different studies found race-related effects regarding the quality of care [Sommers et al., 2017] and consistent source of care, unmet needs of care due to cost, or mental health [Lee and Porell, 2020]. In general, several authors indicate a reduction of racial disparities in health insurance coverage however many other areas still show high levels of disparity and a differential impact on coverage and services for different races or ethnicity.

The literature, regardless of racial differences, on long-term care services and Medicaid expansion, is even smaller. The first evidence according to Van Houtven et al. [2020] is that for newly eligible individuals there is an increase in any long-term care use suggesting that before the expansion, there were a high amount of long-term care unmet needs. In general, the literature suggests that historically racial segregation in health care services remains high ([Smith, 1993] [Smith et al., 2008]) including nursing homes [Smith et al., 2007]. According to Rahman and Foster [2015], distance and especially race-based preferences contribute to racial disparities in nursing homes. This means that Black individuals who live in predominantly White areas travel farther to go to nursing homes with a bigger share of Black residents regardless of the lower quality of care. In a detailed review of the vast literature on racial segregation in nursing homes, Mack et al. [2020] concludes this remains an extensive problem

for all the different measures of segregation.

The results of this research contribute to the literature on the benefits of Medicaid expansion but more specifically is a new contribution to the smaller area of racial or ethnic diversity in nursing homes. The results, obtained by using aggregate data at the U.S. county level from 2000 to 2019, suggest that racial disparities are not disappearing in nursing homes, on the contrary, are increasing. This is due to a reduction in the aggregate amount of Black residents and the increase of White residents in nursing homes after the expansion of Medicaid. This exacerbates the unevenness of racial/ethnic diversity in nursing homes. To further understand these results, the effects of the Medicaid expansion are also analyzed by classifying states by poverty rate, and income inequality. It is argued that a potential mechanism for explaining these results is the combination of a reduction in the total number of beds available for Medicaid patients and the increase of private ones in nursing home facilities.

The remainder of the paper is organized as follows. Section 2 presents the research's background. Section 3 details of the empirical strategy. Section 4 show the results of the analysis and potential the mechanisms driving these results. Section 6 provides conclusions.

2 Institutional Background

The Patient Protection and Affordable Care Act or currently known as the Affordable Care Act was signed into law in 2010, and its major provisions were implemented in 2014. However, the ACA was implemented initially only in twenty-seven states by the end of 2014. To date, additional states adopted the ACA increasing the number to thirty-nine states including the District of Columbia, and leaving outside twelve states but remaining still with federal funding. Medicaid is a federal and state program that provides support with healthcare-related expenses for people with limited resources. A provision of the Affordable Care Act is to expand Medicaid eligibility to increase coverage for the uninsured whose income is lower than 138% of the federal poverty line. Under the Medicaid expansion, states that chose to participate in the expansion would receive additional federal funding to cover the costs of providing coverage to individuals and families under this threshold. This funding covered the majority of the costs associated with the expansion, with states responsible for contributing a smaller portion of the costs over time.

Nursing homes are one of the most expensive healthcare services available. The affordability of these services is not included in the essential health benefits under public or most private health plans. This makes it difficult to afford for a big part of the American population with long-term care needs. The case of Medicaid payments for nursing home services is different from Medicare. It is one of the primary contributors to nursing home expenses across the U.S. covering around 45% to 65% of the total cost. Medicaid support is means-

tested, however, if an individual qualifies, is granted 100% coverage of the nursing home cost in an approved facility. The eligibility criteria for funding nursing home care vary depending on the applicant, state, and year. An important aspect of this support is that the beneficiaries of nursing home care must give up nearly all their income to Medicaid keeping a small personal needs allowance. Around 85% of nursing homes across the U.S. accept Medicaid and despite the attractiveness of the 100% coverage of Medicaid, there are serious problems with coverage. This emerges because there is a limited number of available “beds” for Medicaid-supported residents as nursing homes prefer privately out-of-pocket paid residents.

3 Empirical Strategy

This paper implements Difference-in-Differences (DiD) quasi-experimental research design to evaluate the impact of the Medicaid expansion on racial diversity in nursing homes. The main methodology implemented in this paper was proposed by Callaway and Sant’Anna [2021] (hence CS), and it is supported and verified by the two-way fixed effect (TWFE) regression. In both methodologies, I include counties that belong to never-treated (states that did not expand Medicaid before 2019), not-yet-treated (states who passed the law after 2014), and treated (states who passed the law in 2014) states. This means that different groups of counties are exposed to the policy at different times. To account for this multiple time periods analysis, a common method is the TWFE. Even though its implementation is extensive, it has been shown over the last years, that it is not the most appropriate method to identify the average treatment effects for the treated population (ATT) if the treatment effects are heterogeneous and the timing of the treatment varies across units (Borusyak and Jaravel [2017], De Chaisemartin and d’Haultfoeuille [2020], Athey and Imbens [2022], Sun and Abraham [2021] and Goodman-Bacon [2021]). One of the main advantages of CS methodology is the flexibility and a better understanding of the variation of treatment effects across groups. In this analysis, I use treated units versus never-treated units because of potential anticipation problems of the implementation of the Medicaid expansion arising from treated units vs not-yet-treated units. Interestingly, this setup allows for different forms to identify the *ATT* by restricting treatment anticipation behavior and imposing conditional parallel trends assumption. In this analysis, it is used the doubly robust (DR) estimands to recover the *ATT*. The DR approach provides robustness against model misspecification when compared to other approaches.

Lastly, to provide a summary, there are a variety of aggregation schemes introduced after the ATT such as calendar time, length of exposure, group time, and a simple weighted scheme. The reason for different aggregation schemes is to provide easier interpretation, increase statistical power and reduce estimation uncertainty. Calendar time involves com-

puting an average treatment effect for all individuals that are treated in period t and then averaging across all periods. Length of exposure to treatment is used to test whether there are dynamic treatment effects, similar to the event study. Group time combines with the group average treatment effect by the size of each group. In this setup “group” is defined by the time period when units are first treated. This allows us to understand the heterogeneous effect of participating in the treatment across groups. The last scheme presented here is a simple overall aggregation of participating in the treatment. In general, the aggregation schemes can be different weighting functions. These functions allow for different types of treatment effect heterogeneity. For this analysis, initially, all the different aggregation schemes are presented in order to provide a summary of the main results. If the results are similar, the majority of the analysis then will only report one of the aggregation schemes for brevity. This estimation method will provide reliable results under the heterogeneous years of Medicaid expansion implementation in different states. In addition to the CS estimation method, the TWFE is also implemented. The specification of the TWFE is:

$$Y_{ct} = \alpha_z + \gamma_t + \beta ME_{ct} + X_{ct} + \epsilon_{ct}, \quad (1)$$

where Y_{ct} is the admissions to nursing homes by race/ethnicity in a year t . ME_{ct} is an indicator variable that is equal to 1 if the Medicaid expansion is implemented in a county c (belonging to the state that expanded Medicaid.), X_{ct} is a matrix of control variables. We include geographic fixed effects that include county or state fixed effects. α_z and γ_t , to capture time-invariant geographical unobservables and time-fixed effects, and ϵ_{ct} , to account for unobserved confounders.

3.1 Data

This research uses panel data detailed at the county level from the year 2000 to 2019. The main variables are obtained from the LTCFocus database conducted at the Brown University Center for Gerontology and Healthcare Research and partially supported by the National Institute on Aging. The dependent variables will characterize the racial/ethnic diversity of residents admitted to nursing homes each year in a specific county. The components for diversity included information about each individual’s race/ethnicity was gathered from Minimum Data Set Section AA 4 (race/ethnicity). These include the proportion of individuals admitted during a calendar year in nursing homes who were ‘Black, not of Hispanic origin’, ‘Hispanic’, and ‘White, not of Hispanic origin’ at the county level. This variable provides the share and not the total number of each race/ethnic group admitted to nursing homes.

The same database provides some independent variables including “Occupancy Rate”, “N.H. Concentration”, and “For-Profit”. The occupancy rate shows the number of occupied

beds divided by the total number of beds. Nursing home concentration measures the competition in a county ranging from 0 to 1. A county with a concentration level close to 1 has a monopoly on nursing home beds. Lastly, the "For-Profit" variable provides information about the type of facility including whether it is for-profit or not. This variable shows the percentage of facilities in a particular county that are for-profit. Additional independent variables used in the analysis include income per capita obtained from the U.S. Department of Commerce and the total population and population by race obtained from the United States Census Bureau.

A detailed description of the year of the Medicaid expansion by states is provided in Table A1. As the panel data used in this analysis is from the year 2000 to 2019, states that expanded Medicaid after 2019 appear as non-expansion states. Additionally, the states of Alaska and the District of Columbia are not included in the data set. Figure A1 shows the number of states and counties by the year that they expanded Medicaid. In this figure, the first bar "0" show the number of states considered as "not-treated" i.e. states that never expanded Medicaid or states with the implementation after 2019. Interestingly, the majority of expansion states implemented the provisions in 2014.

To better understand the database and the main analysis, summary statistics are presented in Table A2. Among the most important thing to mention is that the composition of the nursing home residents by race/ethnicity is very unequal with 87% of them being White. This unevenness among nursing home residents can be observed also in Figure A2 which shows the composition of nursing home facilities for expansion and non-expansion states before and after the expansion of Medicaid in 2014. Interestingly, the increase (decrease) of admissions of Black (White) residents before and after the implementation of the policy, can be observed in both the expansion and non-expansion states. Another interesting insight obtained from this descriptive analysis is that the primary support for the biggest share of residents in nursing home facilities is Medicaid accounting for around 65% of the total. Conversely and even lower than private residents, Medicare account only for around 10% of the support.

4 Results

The main interest of this paper is to see the effects of Medicaid expansion on racial/ethnic diversity in nursing home admissions. The main methodology implemented in this paper is provided by Callaway and Sant'Anna [2021]. However, two-way fixed-effects estimates (TWFE) are also reported in column (1) of Table A1 to confirm the main results. These results show that the share of Black residents is negatively affected and that Hispanic and White residents are positively affected by the policy implementation with estimates of high

Table A1: Medicaid Expansion on Nursing Home Residents Race/Ethnic Diversity

	TWFE	CS		
	(1)	(2)	(3)	(4)
(A) Aggregate N.H. Residents: Black				
Medicaid Expansion	-0.33** (0.11)	-0.64*** (0.13)	-0.13* (0.06)	-0.12+ (0.07)
Adjusted R^2	0.96			
Observations	40400			
(B) Aggregate N.H. Residents: Hispanic				
Medicaid Expansion	0.24** (0.08)	0.12+ (0.07)	0.38* (0.19)	0.37* (0.16)
Adjusted R^2	0.96			
Observations	38855			
(C) Aggregate N.H. Residents: White				
Medicaid Expansion	0.64*** (0.19)	0.81*** (0.20)	0.66* (0.28)	0.49* (0.25)
Adjusted R^2	0.92			
Observations	44862			
Controls Variables	Yes	No	Yes	Yes
State-Fixed Effects	No	No	No	Yes

Note: Standard errors in parentheses. Significance is denoted as follows: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Control variables include: income per capita, population, occupancy rate, N.H. concentration, White population and For-Profit facilities. Control group: Never-treated. The results include year and county-fixed effects.

levels of statistical significance. The main results are presented in columns (2) to (4) of table A1 and report a simple overall aggregation scheme. The difference between these columns is the inclusion of control variables in column (3) and state-fixed effects in (4). As is expected, the impact of the Medicaid expansion is drastically reduced once control variables are included in columns (3) and (4) of table A1. Even though the coefficients are reduced, still they show a statistically significant effect for the three dependent variables. These results coincide with the ones obtained by the TWFE although with a smaller coefficient suggesting a milder impact of the policy. These results indicate that after the Medicaid expansion, there is a decrease in the share of Black residents in nursing homes and an increase in the share of White and Hispanic residents. It is important to clarify that based on this information, it is not possible to know whether these are private residents or supported by Medicare or Medicaid. This just reflects the share of residents by race/ethnicity regardless of any other characteristic.

Although these are not reported in Table A1, the control variables provided interesting

insights into the effects of residents in nursing homes. It is important to point out that these results can only be observed for the TWFE method and not for the proposed DiD method. This is the main reason why the coefficients of covariates are not reported in Table A1. Slightly different results are reported in column (4) by including state-fixed effects. However, these results suggest identical conclusions for the effects of the policy implementation. This can be attributed to the fact that state-fixed effects might be capturing many differences across states that are not related to the outcome variable of interest and potentially losing variability in the data. This might include variability in the outcome variables. In general, the effects of the implementation of the Medicaid expansion on nursing home residents' diversity obtained from the two estimation methods are strong and clear for the three different races/ethnicities. Furthermore, to exploit the flexibility of Callaway and Sant'Anna [2021], table A3 in the Appendix, provides additional results using different aggregation schemes. In addition to the simple aggregation scheme in column (1), these results include schemes such as calendar time in column (2), group time in column (3), and column (4) by the length of exposure. In these columns, the results include control variables, and year and county fixed effects.

The main assumption of the DiD methodology is based on the existence of parallel trends before the policy implementation. Figure A3 reports the event-study estimates for the unconditional and conditional parallel trends for each of the dependent variables. The unconditional parallel trends are presented in figures (a) for Black, (c) for Hispanic, and (e) for White residents. Similarly for the conditional parallel trends in figures (b), (d), and (f). It is easy to see that the assumption holds for the period before the Medicaid expansion and that the effects after are clear for Black and White residents. This means that there are no differences in the pre-treatment period. In the post-treatment, Black residents observe a decrease in the ATT, and White residents a clear increase in the ATT. Thus confirming previous results. However, for Hispanic residents, the parallel trend assumption is slightly affected by one period close to the Medicaid expansion. Additionally, the post-treatment effects are not as clear as for Black or White residents. Because of this, it is difficult to conclude that the share of Hispanic residents in nursing homes is affected by Medicaid expansion. It can be argued reasons why Hispanic residents might or not be affected by the expansion, but in this particular case, the conclusions will only refer to Black and White residents. Furthermore due to the high number of expansion states during the first wave in 2014, figure A4 reports conditional parallel trends for each dependent variable but only for 2014. Although the confidence intervals are bigger in this figure, similar results as in A3 are observed.

4.0.1 Mechanisms

To further understand the decrease in Black residents and the increase in White residents after the Medicaid expansion, it is important to explore potential mechanisms of action. Data availability is the main difficulty as it is necessary a county-level panel data for 20 years period or the implementation of individual-level and not aggregate data. As a theoretical framework, healthcare disparities highlight the importance of understanding how structural and systemic factors can shape health outcomes and access to healthcare for different population groups. Healthcare disparities refer to differences in health outcomes and healthcare access among different population groups. These disparities can occur along various dimensions, such as race and ethnicity, socioeconomic status, geographic location, and other factors. For example, racial and ethnic minorities may experience disparities in healthcare access and quality due to factors such as discrimination, poverty, and lack of insurance coverage. This might provide some help to understand why certain population groups may be more or less likely to access nursing home care after the Medicaid expansion. For example, if racial and ethnic minorities are more likely to experience disparities in healthcare access and quality, they may also be less likely to access nursing home care after the Medicaid expansion, even if they are eligible for Medicaid coverage.

Table A2: Medicaid Expansion on Nursing Home Residents: Mechanisms

	(1) P. Medicaid	(2) P. Medicare	(3) P. Private	(4) T. Beds
Medicaid Expansion	-0.42 ⁺ (0.25)	-0.06 (0.15)	0.48* (0.24)	-9.44** (3.20)
Observations	45479	45479	45479	45479

Note: Standard errors in parentheses. Significance is denoted as follows: +
 $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Control variables include income per capita, population, occupancy rate, N.H. concentration, White population and For-Profit facilities. Control group: Never-treated. The results include year and county-fixed effects.

Even though some of these theories will be discussed later in more detail, in this research, the mechanism which tries to explain the results explore a combination of preferences and cost considerations. These preferences might be driven by explicit or implicit bias, although these may also be driven by economic factors. It might be possible that nursing homes may be more likely to admit White residents over minority residents if they believe that White residents are more likely to have private insurance or other sources of income to pay for nursing home care. In this scenario, nursing homes may prioritize admitting White residents over minority residents due to financial considerations. Another way of looking at these mechanisms is that nursing homes are often financially dependent on reimbursements from

public insurance programs such as Medicaid, which typically have lower reimbursement rates than private insurance. This means that nursing homes may need to carefully manage their finances and prioritize admissions of residents who are more likely to have higher-paying insurance or private resources to cover their nursing home care costs without the necessity of insurance.

These ideas are discussed around the forms of payment, and the total number of beds available, and these variables are considered to examine the mechanisms driving the main results. A similar estimation procedure, as for the main results, is done. The results are provided in table A2. Initially, in the first two columns of this table, the mechanisms exploring the forms of payment are reported. The data regarding forms of payment can be divided into “Medicaid” and “Medicare”. These variables show the proportion of residents whose primary support is either Medicaid or Medicare. In figure A5, it can be appreciated the correlation between population by race/ethnicity and the shares of either primary support. This graph shows that shares of Medicaid-supported patients are highly affected by race/ethnicity. This is important background for the results of table A2. The results of this table suggest that after the policy implementation, only the share of residents supported by Medicaid was negatively affected with statistically significant effects. This means that the share of nursing home residents paid by Medicaid decreased after the expansion. On the contrary, residents supported by Medicare report non-significant results. This is not surprising as the Medicaid expansion should not affect Medicare beneficiaries. However, it is interesting to think about the final effect on nursing homes. This means that if the share of residents supported by Medicare is not affected and the share of Medicaid residents decreased, either the number of private residents increases or the number of total beds decreased, in order to compensate for these changes.

Due to data availability, it is easy to obtain the share of private residents in nursing homes. This is constructed by subtracting the shares of residents supported by Medicaid and Medicare from the total share of residents. This variable is important as it will show whether the theory of preferences and cost considerations is reasonable. Column (3) of table A2 reports the share of private residents. It can be observed that after the Medicaid expansion, there is an increase in the number of private residents in nursing homes. The estimate is statistically significant and even higher than in column (1). This increase might compensate for the decrease in the share of residents supported by Medicaid. However, it is still possible that the overall space dedicated to residents was affected. For this reason, column (4) of table A2 explores the role of the number of total beds in nursing home facilities. The results suggest that the expansion reduced the number of beds available with statistically significant estimates. It can be argued that the reduction in the share of residents supported by Medicaid and the reduction in the total number of beds in nursing home facilities are

connected. Additional arguments can be made about these beds i.e. the reduction of beds are the ones reserved for Medicaid-supported residents. It would be interesting to test this idea, however, there is no available data. This is considered, as was previously mentioned because before the Medicaid expansion each nursing home facility had a total number of beds and a total number of beds assigned to Medicaid patients.

After observing the effects of the Medicaid expansion on these variables, and in order to shed light on the role of these mechanisms in explaining the main results, the main specification might be modified by adding each of them to control for their effects on racial/ethnic diversity. These results are reported in table A3 by including TWFE and DiD estimators. The main reason for including TWFE in this table is due to the reporting of the covariates. It is not possible to obtain coefficients from covariates from the software package provided by Callaway and Sant'Anna [2021] even when these covariates are included.

Column (1) of table A3 suggests that with an increase in the share of residents whose primary support is Medicaid, the share of Black residents would increase and White residents would decrease. On the contrary, as shown in columns (2) and (3), if the share of residents supported by Medicare and privately paid increases, the number of Black residents would decrease. However, for White residents, the only significant effect found between these two columns is in column (3) suggesting their share of residents would increase if there is an increase in privately paid residents. Even though Hispanic residents do show not convincing results, the effects are still shown in table A3. In these columns, for Hispanic residents, there is no significant effect of increasing the share of residents supported by Medicaid or Medicare. However, increasing the share of private residents would decrease the share of Hispanic residents. In the last column of table A3 the effects of the total beds are reported. Even though the coefficient is minimal, it still finds statistically significant results that suggest that an increase in the total beds in nursing home facilities would increase only the share of White residents and decrease the share of Hispanic residents. Interestingly, there is no significant effect on Black residents. Nevertheless, for the three races/ethnicities included in the analysis, the coefficients presented in column (4) are zero, suggesting almost no effect. This would suggest that in general there is no evidence to support the idea that after the Medicaid expansion, the reduction of total beds observed in column (4) of table A2 would serve as a mechanism.

After the Medicaid expansion, technically the share of individuals entering nursing homes fully paid by Medicaid would increase. However, as discussed previously, nursing homes obtain higher profits from Medicare and even more from private residents. This might limit the number of beds assigned to Medicaid residents. Thus, reducing its amount of residents. This would align with the theory related to preferences and cost considerations of nursing homes to prioritize higher-paying insurance or private resources to cover their care costs.

Table A3: Medicaid Expansion on Nursing Home Residents Race/Ethnic Diversity

	P. Medicaid		P. Medicare		P. Private		Total Beds	
	(1)		(2)		(3)		(4)	
	TWFE	CS	TWFE	CS	TWFE	CS	TWFE	CS
(A) Aggregate N.H. Residents: Black								
Medicaid Expansion	-0.31** (0.11)	-0.13+ (0.07)	-0.33** (0.11)	-0.15* (0.07)	-0.32** (0.11)	-0.15* (0.07)	-0.33** (0.11)	-0.16* (0.07)
P. Medicaid	0.02*** (0.00)							
P. Medicare			-0.02*** (0.01)					
P. Private				-0.01** (0.00)				
Total Beds							-0.00 (0.00)	
Adjusted R^2	0.96		0.96		0.96		0.96	
Observations	40580		40580		40580		40580	
(B) Aggregate N.H. Residents: Hispanic								
Medicaid Expansion	0.23** (0.08)	0.26+ (0.15)	0.23** (0.08)	0.22+ (0.12)	0.24** (0.08)	0.27+ (0.16)	0.23** (0.08)	0.23+ (0.12)
P. Medicaid	0.00 (0.00)							
P. Medicare			0.00 (0.00)					
P. Private				-0.01+ (0.00)				
Total Beds							-0.00*** (0.00)	
Adjusted R^2	0.96		0.96		0.96		0.96	
Observations	39028		39028		39028		39028	
(C) Aggregate N.H. Residents: White								
Medicaid Expansion	0.61** (0.19)	0.41* (0.20)	0.63** (0.19)	0.45* (0.20)	0.62** (0.19)	0.45* (0.21)	0.63** (0.19)	0.48* (0.20)
P. Medicaid	-0.03*** (0.01)							
P. Medicare			0.01 (0.01)					
P. Private				0.03*** (0.01)				
Total Beds							0.00* (0.00)	
Adjusted R^2	0.92		0.92		0.92		0.92	
Observations	45042		45042		45042		45042	

Note: Standard errors in parentheses. Significance is denoted as follows: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Control variables include: income per capita, population, occupancy rate, N.H. concentration, White population and For-Profit facilities. Control group: Never-treated. The results include year and county-fixed effects.

Therefore, this reduction of beds assigned to Medicaid residents might result in extra available beds for private residents. This is less likely to affect White residents as they comprise the lowest share of Medicaid beneficiaries. As mentioned, an increase in private residents decreases the share of Black residents but it has the opposite effect on White residents. As was shown in table A2, the Medicaid expansion increased the number of private residents in nursing home facilities. It can be argued that the main beneficiaries of the Medicaid expansion in nursing homes are actually White privately paying residents.

4.1 Classifying by Poverty Rate and Income Inequality

To further understand these results, it seems appropriate to classify the states in several dimensions. This classification might allow us to understand what circumstances are affecting nursing home admissions and driving the results. This separation might provide valuable insights into potential underlying factors generating these disparities in admissions. For example, states with higher levels of inequality and poverty might have fewer amount of resources available for nursing homes compared to states with low inequality and poverty. Differences can also emerge from potentially higher barriers to access to professional care for low-income individuals from racial or ethnic minorities. Additionally, at the state level, states with more progressive policies aiming at equality might have different views on nursing home admissions and racial/ethnic equity. Overall, by separating states into categories of high/low inequality or high/low poverty, we can gain a more nuanced understanding of the factors contributing to racial disparities in nursing home admissions.

Table A4 separates the expansion and non-expansion states between high or low poverty rates and income inequality. The columns presented in the Table report the two-way fixed effect with state-specific trends and the simple aggregation scheme by Callaway and Sant'Anna [2021] with the former used to confirm the results of the latter. The Medicaid expansion is targeting individuals with low economic resources. Therefore, every state has individuals that qualify to obtain the benefits of this expansion. These states however have different levels of poverty rates and income inequality levels. These differences have the potential to provide insights into the main results presented previously.

The first four columns of table A4 report results for states classified by high and low poverty rates. States with low poverty rates, do not show a statistically significant effect for Black and Hispanic residents, but it shows a positive and significant coefficient for White residents. This might suggest that states with low poverty rates have less racial/ethnic diversity, therefore, leaving the coefficients of Black and Hispanic residents in these states unaffected. This idea might be observed in figure A6 which details the correlation between the state poverty rate and the population of different races/ethnicities. It can be appreciated that in states with a higher amount of White population, poverty rates decrease. The contrary

Table A4: Additional Regression Results

	Poverty Rate				Income Inequality			
	(1) TWFE		(2) CS		(1) TWFE		(2) CS	
	Low	High	Low	High	Low	High	Low	High
(A) Aggregate N.H. Residents: Black								
Medicaid Expansion	0.09 (0.08)	-0.72*** (0.20)	0.00 (0.09)	-0.49** (0.17)	-0.27* (0.12)	-0.43* (0.19)	-0.10 (0.08)	-0.37* (0.14)
Adjusted R^2	0.96	0.95	22341	19343	0.97	0.95	22341	17469
Observations	20941	19639			22791	17789		
(B) Aggregate N.H. Residents: Hispanic								
Medicaid Expansion	0.02 (0.04)	0.41** (0.14)	0.04 (0.04)	0.58+ (0.30)	0.02 (0.04)	0.44** (0.16)	0.00 (0.03)	0.25+ (0.14)
Adjusted R^2	0.90	0.96	19709	18291	0.94	0.96	21546	16509
Observations	20330	18698			22123	16905		
(C) Aggregate N.H. Residents: White								
Medicaid Expansion	0.42+ (0.25)	1.00** (0.33)	0.67* (0.30)	0.52 (0.33)	0.59* (0.24)	0.62+ (0.34)	0.44 (0.31)	0.49+ (0.30)
Adjusted R^2	0.84	0.92	23461	21519	0.91	0.91	25518	19462
Observations	23500	21542			25544	19498		
Controls	Yes		Yes		Yes		Yes	
Year FE	Yes		Yes		Yes		Yes	
County FE	Yes		Yes		Yes		Yes	
State-specific Tr.	Yes		No		Yes		No	

Note: Standard errors in parentheses. Significance is denoted: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Control variables include: income per capita, population, occupancy rate, N.H. concentration, White population and For-Profit facilities. The results include year and county-fixed effects.

happens if the Black population increases.

For states with a high poverty rate, the main statistically significant results provided are the reduction of Black nursing home residents and an increase in Hispanic residents. In these states, conversely, it is expected to have a bigger racial/ethnic diversity due to the high percentage of the Black and Hispanic populations in poverty. In high-poverty states, it is possible that the biggest shares of beneficiaries from the Medicaid expansion are from Black or Hispanic populations. The number of White population in poverty might be very minimal in these states, thus remaining unaffected. Interestingly, the policy implementation reduces Black residents. These results support the ones obtained in table A1 but further analysis is necessary to explain these results. It is interesting to see the difference in the level and the significance of the coefficients between high and low-poverty states, especially for Black and Hispanic residents. A middle value between these low and high poverty rate classification coefficients in table A4 might explain the lower effects obtained in table A1.

The last four columns in table A4 report the effects of the Medicaid expansion on nursing home residents by classifying the expansion and non-expansion states by income inequality. The measure used to obtain these results is the Gini coefficient and the classification separates high and low inequality states. Interestingly, in states with low-income inequality, the coefficients go in the same direction as the main results, however, these are not statistically significant. This suggests that in states with low inequality, the Medicaid expansion does not have any significant impact on any race/ethnicity in nursing homes. This might be due to lower levels of poverty thus not many people benefit from Medicaid expansion. On the contrary, for states with high-income inequality, the results are statistically significant. These results show that for Black residents there is a negative and strong effect after the Medicaid expansion. For White residents, it is reported a positive effect. This means that in high-inequality states, the share of White residents will increase after the Medicaid expansion. This might occur due to higher poverty rates in high-inequality states. These results are consistent and go in the same direction as the main results of this analysis. Similar to the previous table for poverty rates, the main results obtained in table A1 lay between the coefficients obtained from low and high inequality states. The classification of the states provides information about the behavior of the results according to the state's composition. However, is required further exploration to understand the reasons for these coefficients, especially in states with high poverty rates.

4.1.1 Mechanisms

Lastly, it is important to explore the effects of the mechanisms discussed in the previous section also after classifying the states by high or low poverty rates. In this case, the exploration of the mechanisms is only done by classifying states by poverty rate as it provides more insightful results and also due to their similarity. Table A4 initially reports the effects of the Medicaid expansion on the variables that try to explain the direction of the effects. This table is similar to table A2 previously presented.

Panel (1) reports the effects of the Medicaid expansion on the share of residents supported by Medicaid. In the previous table A2, there was a negative effect of the expansion on Medicaid-paying residents. After classifying by poverty rate, the policy implementation is only statistically significant in states with low poverty and also with a negative effect. For completeness, panel (2) explores the effects of the Medicaid expansion on Medicare residents. Similar to previous results, it does not show significant results because the Medicaid expansion does not affect Medicare residents. Nevertheless, it is important to report it as the composition of residents' support changes after the implementation of the Medicaid expansion. Panel (3) explores the effects of the Medicaid expansion on the share of private patients in nursing home facilities. As for panel (1), these results only find significant results

for states with low poverty rates and not for high poverty rates. Additionally, the coefficient is positive similar to the previous table A2. Panel (4) explores the effects of the policy implementation on the total number of beds in nursing homes. Surprisingly, the coefficients report statistically significant and negative results only for states with high poverty rates, also consistent with the previous section.

To discuss the mechanisms that might explain the results obtained in A4, it is important to separate them into pieces. As explained before, it can be argued that the non-significant effects of the Medicaid expansion on White residents in high-poverty states might be due to the higher racial/ethnic diversity. However, in low-poverty states, the significant increase of White residents found in table A4 might be attributed to an increase in private and the reduction of Medicaid-supported residents. As we saw in panels (1) and (3) of the table A2 private and Medicaid-supported residents are affected after the expansion. In table A5 these ideas are included in the main specification. This table shows in panel (C) that after the Medicaid expansion, an increase in Medicaid-supported residents in high-poverty states would decrease the share of White residents meanwhile and an increase in private residents would have the opposite effect. From the same table in panel (C) it can also be observed that total beds have a significant effect but only for low-poverty states. However, this is not relevant as according to table A2, the number of total beds was not affected by the Medicaid expansion in low-poverty states.

So far the analysis was dedicated to understanding the mechanisms driving the increase of White residents that was found in low-poverty states. However, for Black residents, the results were only found in high-poverty states. The Medicaid expansion effects discussed in table A2 suggest that only the total number of beds have a significant factor and negative factor in high-poverty states. This discards all the other potential mechanisms from driving the results. Still, it allows the total number of beds to explain the reduction of Black residents after the Medicaid expansion. However, panel (A) of table A5 did not find a significant effect of the total number of beds on Black residents. These results presented so far provide support for the theory that preferences and cost considerations of nursing homes indeed increase the number of privately-supported White residents. From this last subsection, it can also be argued that this is due to a transition in preference from Medicaid to privately paying residents. These explanations aligned with the main theory discussed previously. However, for Black residents, preferences and cost considerations of nursing homes might not explain why there is a reduction in their share of residents after the Medicaid expansion.

5 Discussion

In this research, the mechanism which tries to explain the results explore a combination of preferences and cost considerations. In this sense, a possibility is that the cost of nursing home care may have increased for minority populations after the Medicaid expansion, making it more difficult for them to afford nursing home care. This could be due to factors such as differences in Medicaid reimbursement rates or variations in the cost of living across different regions of the country. It is also possible that nursing homes or other healthcare providers may have preferences for white residents over minority residents, which could lead to higher disparities in nursing home admissions. Cost considerations may also play a role in provider preferences for white residents over minority residents in nursing home admissions.

In this context, nursing homes may prefer to admit white residents over minority residents due to perceptions that white residents are more likely to have private insurance or higher levels of financial resources. This preference may be driven by economic considerations rather than explicit or implicit biases. For example, nursing homes may prioritize admitting white residents if they believe that they are more likely to be able to pay for their care out-of-pocket or with higher-paying insurance than minority residents who may be more reliant on public insurance programs like Medicaid. Furthermore, nursing homes may also consider the costs of providing care to different racial and ethnic groups. This means that nursing homes may view minority residents as more costly to care for and may prefer to admit white residents who may require less intensive and costly care. It is important to note that these cost considerations may be intertwined with other factors such as implicit biases, economic factors, and provider preferences, and may contribute to disparities in nursing home admissions.

Even though the preferences and cost considerations theory might explain the increase of White residents after the Medicaid expansion, there are several unexplored theories that could potentially explain the decrease in the share of racial and ethnic minorities in nursing home admissions. Some of these theories are related to healthcare disparities in access and quality. One possibility is that the Medicaid expansion might have improved access to healthcare for low-income individuals, including racial and ethnic minorities [Buchmueller et al., 2016]. This increased access to healthcare may have reduced the need for nursing home care among minority populations, resulting in a decrease in the share of minority residents in nursing homes. Even though this theory is unexplored in this paper, it might be considered for future research. Another possibility after improving healthcare quality is that the Medicaid expansion might have improved the quality of healthcare for low-income individuals. If minority populations were previously receiving lower quality healthcare than white populations, the Medicaid expansion may have reduced disparities in healthcare quality, resulting in fewer minority residents in nursing homes. However, the evidence provided

by Sommers et al. [2017] shows the opposite effects of the Medicaid expansion on the quality of healthcare potentially discarding this as a mechanism.

Another unexplored potential theory that may help explain the results might be that individuals may have preferences for receiving care from either formal healthcare providers or informal caregivers. There are several ways in which the Medicaid expansion might impact preferences for formal or informal care. The potential indirect effects on informal caregiving might occur by altering the availability of potential caregivers. For example, if minority individuals who were previously uninsured or underinsured gained access to healthcare through the expansion, they may be less likely to rely on informal caregivers due to improved health outcomes. It can also be the case that the Medicaid expansion may have altered the perceived value or importance of informal care. For example, if the expansion led to improved access to formal care options, this may decrease the perceived importance of informal caregiving support. Alternatively, if the expansion led to long wait times or limited availability of formal care options, this may increase the perceived importance of informal caregiving support.

A potential unexplored explanation for the results obtained involves the quality of informal and formal care. For example, if minority residents have greater access to higher-quality informal care, they may be less likely to need or desire nursing home care. Conversely, if white residents have less access to high-quality informal care, they may be more likely to seek nursing home care. Cultural and linguistic barriers might play a role also at explaining the results. Minority residents may be more likely to have cultural or linguistic barriers that make it difficult for them to access or navigate the formal healthcare system. Another potential explanation is the costs associated with care. Informal care may be less expensive than nursing home care, particularly if the caregiver is an unpaid family member or friend. If minority residents have greater access to affordable informal care, they may be less likely to seek nursing home care. Conversely, if white residents have less access to affordable informal care, they may be more likely to seek nursing home care. Further theories might suggest that minority individuals may have lower levels of trust in the formal healthcare system due to past experiences of discrimination or mistreatment. This could lead to a preference for informal care or a reluctance to seek care in a nursing home setting. In contrast, white residents may have greater trust in the formal healthcare system and may be more willing to seek care in a nursing home.

6 Conclusions

The Affordable Care Act (ACA), enacted in 2010 is an important milestone for improving the health care coverage of American citizens. The focus of this paper is to understand

the effects of a provision of the ACA, the Medicaid expansion, on different racial/ethnic groups. The motivation for this paper is twofold. First, it arises due to the raising concerns regarding racial/ethnic economic inequality in the United States and the fact that Black and Hispanic populations are found in a bigger share of poverty. Second, affordability and accessibility challenges arise from current and future long-term care services. The central hypothesis of this research is that if the Medicaid expansion is aimed to increase healthcare coverage for individuals with low economic resources, then low-economic groups admitted to nursing homes will increase.

This research is developed by the implementation of a difference-in-difference estimation method provided by Callaway and Sant'Anna [2021] in a panel data set at the county level from 2000 to 2019 in the United States. The results suggest that racial/ethnic disparities are not disappearing in nursing homes, on the contrary, are increasing. This is detailed by a reduction in Black residents and an increase in White and Hispanic residents after the Medicaid expansion. The results obtained for Hispanic residents are less conclusive than for Black and White residents. These results might not be convincing due to the level of statistical significance and potential violations of parallel trend assumptions. Similar issues for Hispanic populations arise in the literature. It is suggested that language and cultural barriers complicate access to health care systems [Doty et al., 2014]. Additional results show that nursing homes had seen a significant decrease in Black residents in states with high poverty rates and income inequality. Meanwhile, there is a statistically significant effect in states with low poverty and inequality but only for White residents and not for other races/ethnicities. These results suggest that in states with low poverty, there is an increase in White residents in nursing homes.

Among the potential explanation for these results are preferences and cost considerations of nursing homes. It might be possible that nursing homes may be more likely to admit White residents over minority residents if they believe that White residents are more likely to have private insurance or other sources of income to pay for nursing home care. This theory is tested by including different forms of payment. Interestingly, this mechanism might explain the increase in the share of White residents in nursing homes after the Medicaid expansion, but not the decrease in Black residents. It is possible that there are several factors driving these results. Thus additional work is needed to further understand the decrease in Black residents after the expansion. The effects and mechanisms of the Medicaid expansion on nursing home racial/ethnic diversity might be clearer by using a richer database with micro-level data. Future research to further explore the effects of the Medicaid expansion on nursing home admissions should include the role of informal care, as opposed to nursing home care. Due to data unavailability, it is difficult to include informal care in this analysis.

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Appendix

Table A1: Year of Implementation of the Affordable Care Act

State	Year	State	Year	State	Year
Alaska	2015	Michigan	2014	Virginia	2019
Arizona	2014	Minnesota	2014	Washington	2014
Arkansas	2014	Missouri	2021	West Virginia	2014
California	2014	Montana	2016	Alabama	N.I
Colorado	2014	Nebraska	2020	Florida	N.I
Connecticut	2014	Nevada	2014	Georgia	N.I
Delaware	2014	New Hampshire	2014	Kansas	N.I
District of Columbia	2014	New Jersey	2014	Mississippi	N.I
Hawaii	2014	New Mexico	2014	North Carolina	N.I
Idaho	2020	New York	2014	South Carolina	N.I
Illinois	2014	North Dakota	2014	South Dakota	N.I
Indiana	2015	Ohio	2014	Tennessee	N.I
Iowa	2014	Oklahoma	2021	Texas	N.I
Kentucky	2014	Oregon	2014	Wisconsin	N.I
Louisiana	2016	Pennsylvania	2015	Wyoming	N.I
Maine	2018	Rhode Island	2014		
Maryland	2014	Utah	2020		
Massachusetts	2014	Vermont	2014		

Note: This table reports the year of implementation of the Affordable Care Act by state. District of Columbia and Alaska are not included in the main data. Additionally, states which implemented the expansion after 2019 are considered as "not-treated".

Table A2: Summary Statistics

	Observations	Mean	Min	Max	St.Dev.
Agg. Black	50088	8.40	0	100	13.64
Agg. Hispanic	47595	2.55	0	100	9.26
Agg. White	56734	87.46	0	100	15.97
Log Income p.c.	57381	10.39	9.24	12.35	0.29
Log Population	57381	10.40	6.04	16.13	1.37
Occupancy	48856	81.91	1.67	100	12.34
N.H. Concentration	48860	0.50	0	1	0.33
Log White Male Pop.	54014	9.59	5.38	15.10	1.32
For-Profit Facility	48863	62.94	0	100	36.06
Pay Medicaid	48864	65.92	0	100	12.74
Pay Medicare	48864	10.70	0	100	6.52
Intensity Care	57268	0.93	0.49	2.69	0.19
Total Beds	48864	580.55	8	40916	1495.72

Note: The construction of this data set and the definitions of the variables is discussed in section 3.1.

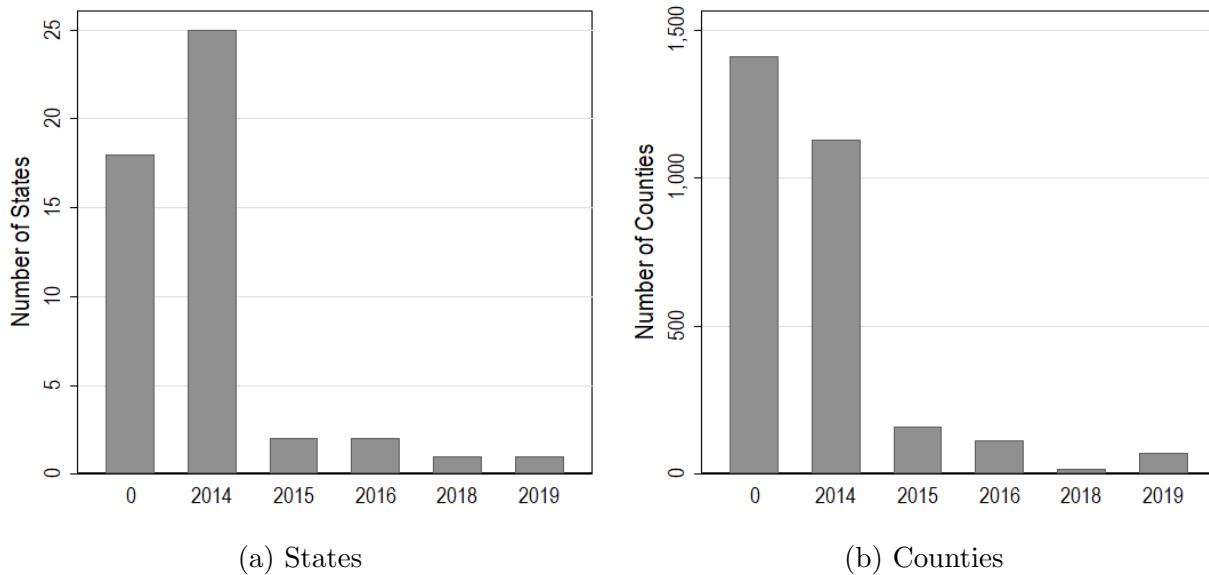


Figure A1: Number of States/Counties Implementing ACA by Year

Note: This graph shows the number of states in panel (a) and counties in panel (b) that implemented the ACA by year of implementation. Data sources are detailed in section 3.

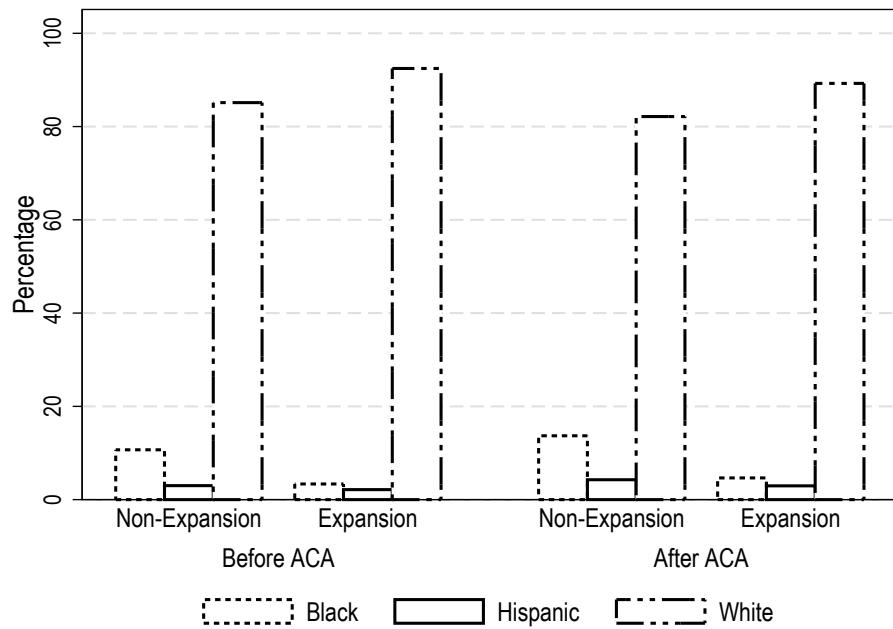


Figure A2: Race/Ethnicity Diversity in Nursing Homes around Medicaid Expansion

Note: This figure classifies the composition of nursing home facilities between expansion and non-expansion states by race/ethnicity before and after the Medicaid expansion. The data used is discussed in section 3.1.

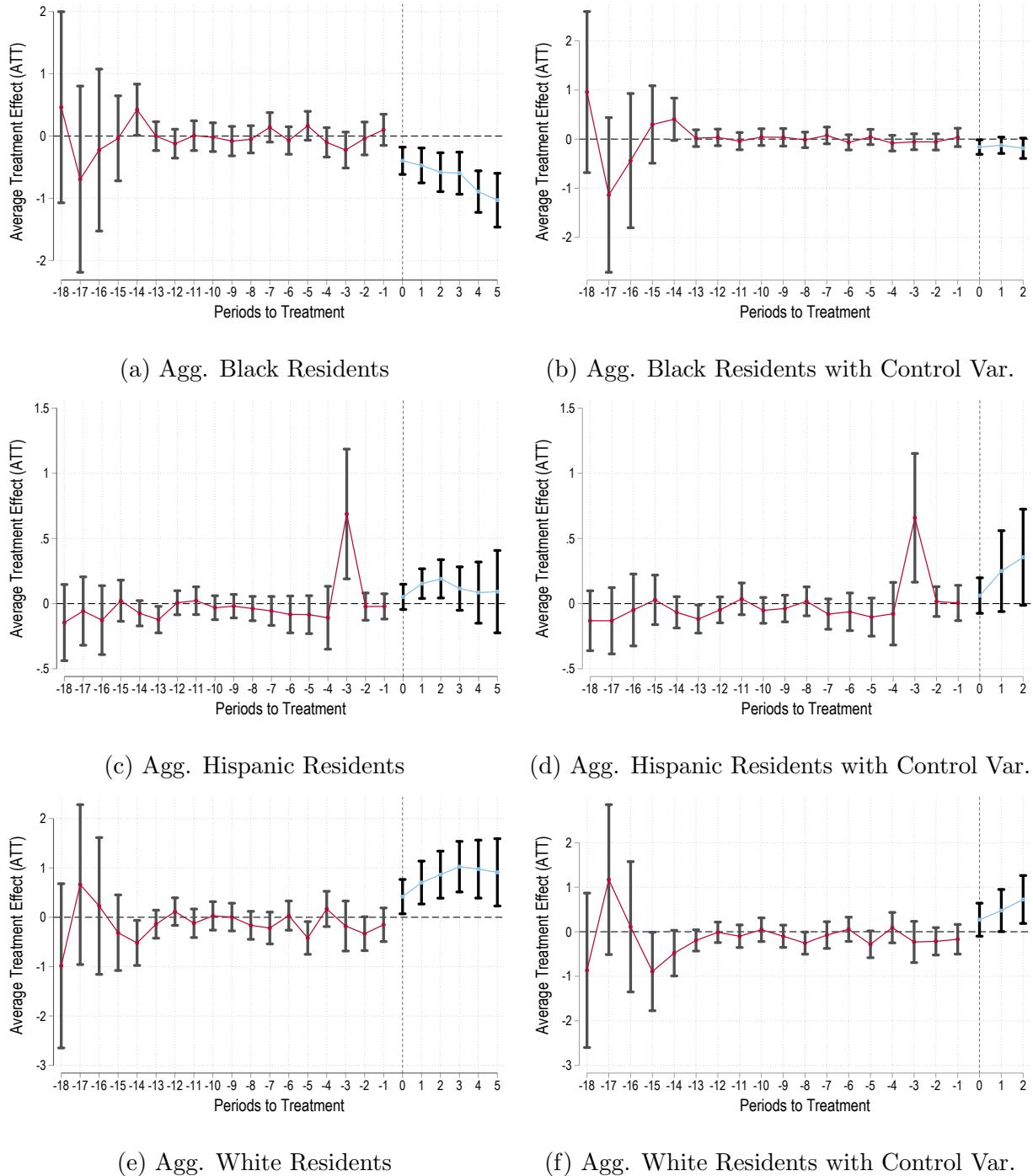


Figure A3: Medicaid Expansion on Nursing Home Residents Race/Ethnicity Diversity

Note: The graphs plot the estimates and 95% confidence intervals for the unconditional ((a), (c), (e)) and conditional ((b), (d), (f)) parallel trends for the average effect of the Medicaid expansion on Black, Hispanic and White nursing home residents. These results are based on the 'never-treated' group.

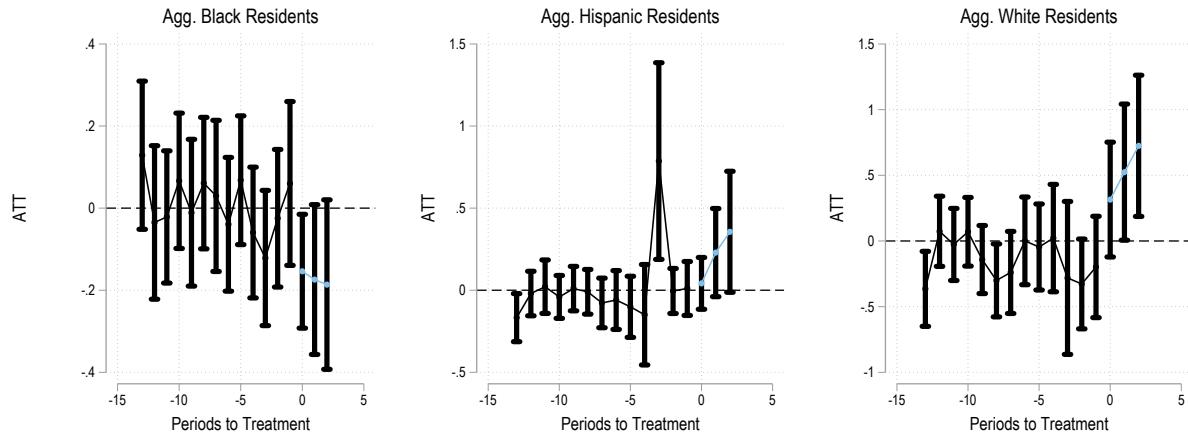


Figure A4: Event Study: Year 2014

Note: This figure reports the event study proposed by Callaway and Sant'Anna [2021] and considers only the year 2014. The data used is discussed in section 3.1.

Table A3: Additional CS Aggregation Schemes

	(1) Simple	(2) Calendar	(3) Group	(4) Length
(A) Aggregate N.H. Residents: Black				
Medicaid Expansion	-0.13* (0.06)	-0.13* (0.06)	-0.15+ (0.08)	-0.13* (0.07)
Observations	40400	40400	40400	40400
(B) Aggregate N.H. Residents: Hispanic				
Medicaid Expansion	0.38* (0.19)	0.37* (0.18)	0.37* (0.18)	0.41* (0.20)
Observations	38855	38855	38855	38855
(C) Aggregate N.H. Residents: White				
Medicaid Expansion	0.66* (0.28)	0.65* (0.28)	0.60* (0.26)	0.67* (0.29)
Observations	44862	44862	44862	44862
Controls	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
County FE	Yes	Yes	Yes	Yes

Note: Standard errors in parentheses. Significance is denoted as follows: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Control variables include: income per capita, population, occupancy rate, N.H. concentration, White population and For-Profit facilities. Control group: Never-treated. A simple aggregation scheme in column (1), calendar time (2), group time (3), and length of exposure (4). The results include year and county-fixed effects.

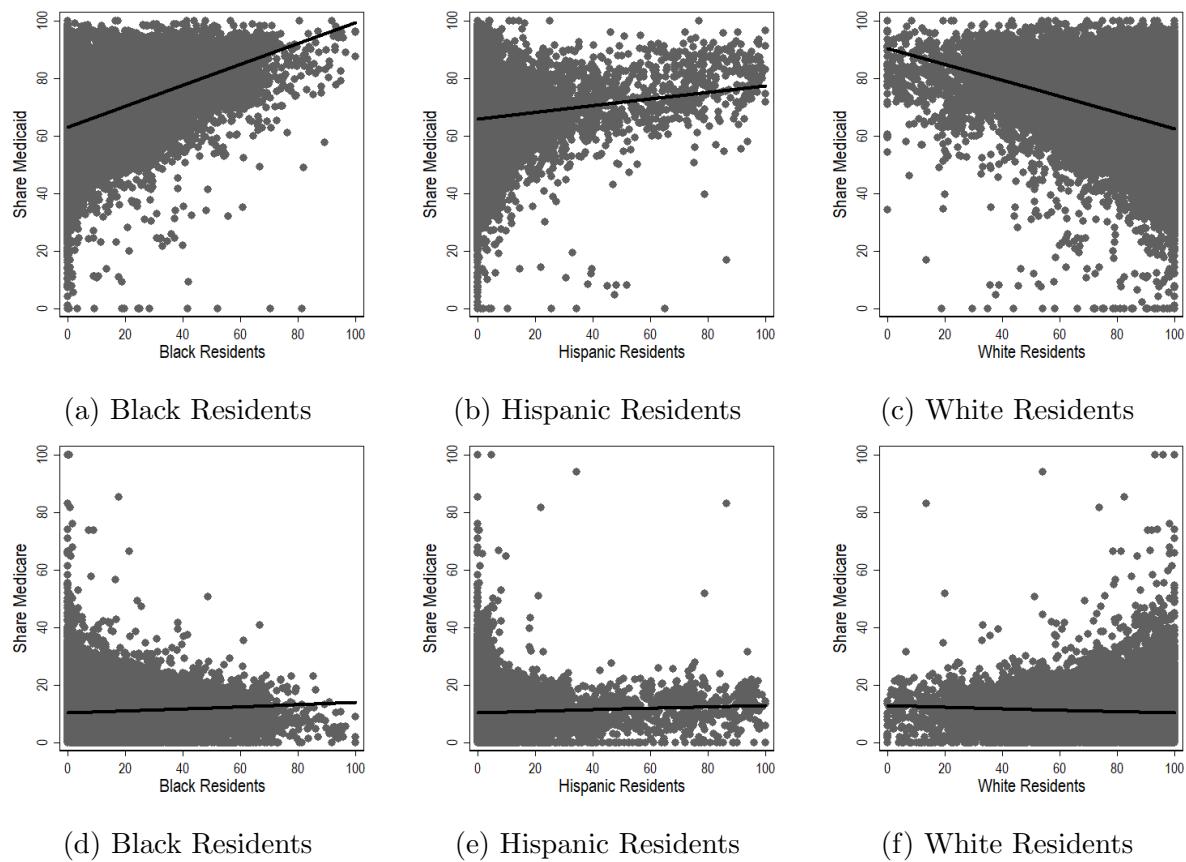


Figure A5: Correlation between Medicaid/Medicare and Nursing Home Residents

Note: This graph shows the correlation between the share of residents whose primary support is Medicaid/Medicare and the aggregate number of residents in a nursing home by race/ethnicity.

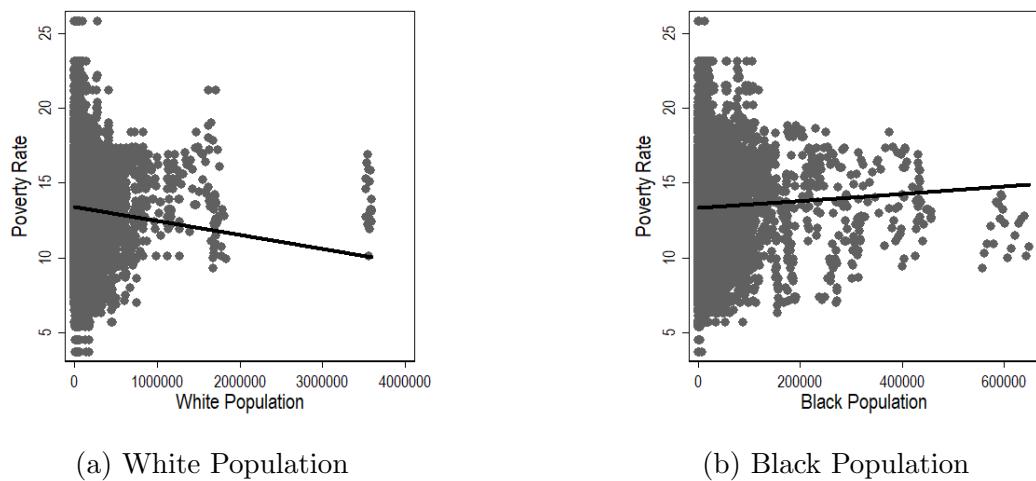


Figure A6: Correlation between Poverty Rate and Race

Note: This graph shows the correlation between poverty rates and population. It plots in panel (a) White and (b) Black populations. Data sources are detailed in section 3.

Table A4: Medicaid Expansion on Mechanisms: Classification by Poverty Rate

	(1) P. Medicaid				(2) P. Medicare			
	TWFE		CS		TWFE		CS	
	Low	High	Low	High	Low	High	Low	High
Medicaid Expansion	-0.67*	-0.33	-0.75*	-0.26	0.12	-0.02	-0.04	-0.04
	(0.34)	(0.45)	(0.34)	(0.44)	(0.20)	(0.23)	(0.19)	(0.24)
Adjusted R^2	0.69	0.62			0.65	0.57		
Observations	23758	21723			23758	21723		
(3) P. Private								
	TWFE		CS		TWFE		CS	
	Low	High	Low	High	Low	High	Low	High
	0.55 ⁺	0.36	0.79*	0.31	3.86	5.49	-7.50	-11.41 ⁺
Medicaid Expansion	(0.31)	(0.39)	(0.33)	(0.39)	(3.90)	(5.64)	(7.19)	(6.76)
Adjusted R^2	0.78	0.61			1.00	1.00		
Observations	23758	21723			23758	21723		

Note: Standard errors in parentheses. Significance is denoted: ⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Control variables include: income per capita, population, occupancy rate, N.H. concentration, White population and For-Profit facilities. The results include year and county-fixed effects.

Table A5: Effects on Nursing Home Residents Race/Ethnic Diversity with Mechanisms by Poverty

	P. Medicaid				P. Private				Total Beds			
	TWFE		CS		TWFE		CS		TWFE		CS	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
(A) Aggregate N.H. Residents: Black												
Medicaid Expansion	0.10 (0.08)	-0.70*** (0.20)	0.00 (0.08)	-0.38* (0.19)	0.10 (0.08)	-0.71*** (0.20)	0.00 (0.08)	-0.47** (0.18)	0.09 (0.08)	-0.72*** (0.20)	-0.02 (0.09)	-0.49** (0.16)
P. Medicaid	0.01** (0.00)	0.02*** (0.01)										
P. Private					-0.01** (0.00)	-0.01+ (0.01)						
Total Beds									-0.00** (0.00)	0.00 (0.00)		
Adjusted R^2	0.96	0.95			0.96	0.95			0.96	0.95		
Observations	20941	19639			20941	19639			20941	19639		
(B) Aggregate N.H. Residents: Hispanic												
Medicaid Expansion	0.03 (0.04)	0.41** (0.14)	0.04 (0.04)	0.71+ (0.37)	0.03 (0.04)	0.42** (0.14)	0.05 (0.04)	0.68+ (0.36)	0.02 (0.04)	0.41** (0.14)	0.05 (0.04)	0.72* (0.34)
P. Medicaid	0.00 (0.00)	0.00 (0.00)										
P. Private					-0.00 (0.00)	-0.01 (0.01)						
Total Beds									-0.00* (0.00)	-0.00* (0.00)		
Adjusted R^2	0.90	0.96			0.90	0.96			0.90	0.96		
Observations	20330	18698			20330	18698			20330	18698		
(C) Aggregate N.H. Residents: White												
Medicaid Expansion	0.40 (0.25)	0.99** (0.33)	0.62* (0.29)	0.24 (0.35)	0.41 (0.25)	0.99** (0.33)	0.62* (0.31)	0.37 (0.34)	0.41+ (0.25)	1.00** (0.33)	0.67* (0.29)	0.52 (0.34)
P. Medicaid	-0.03** (0.01)	-0.02** (0.01)										
P. Private					0.03** (0.01)	0.03** (0.01)						
Total Beds									0.00*** (0.00)	-0.00 (0.00)		
Adjusted R^2	0.84	0.92			0.84	0.92			0.84	0.92		
Observations	23500	21542			23500	21542			23500	21542		

Note: Standard errors in parentheses. Significance is denoted: + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Control variables include: income per capita, population, occupancy rate, N.H. concentration, White population and For-Profit facilities. The results include year and county-fixed effects.

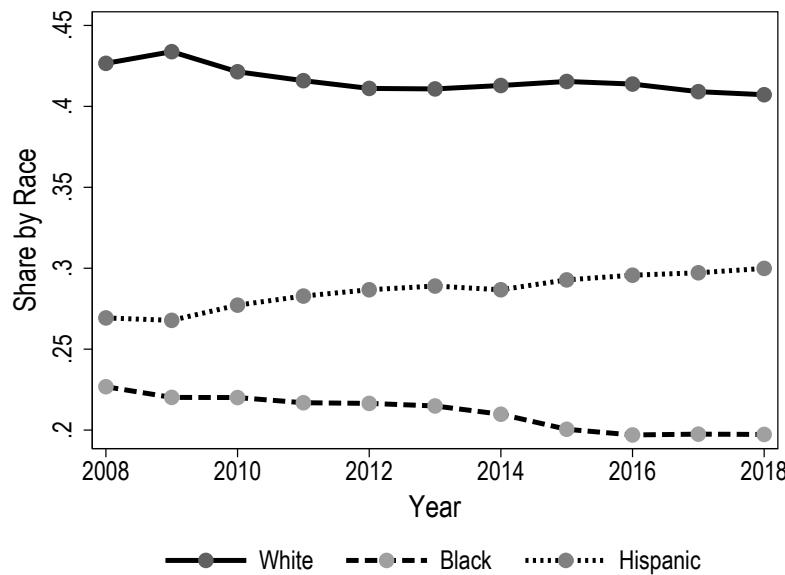


Figure A7: Medicaid Coverage Rates for Nonelderly by Race/Ethnicity

Note: This figure divides the Medicaid coverage rates by race/ethnicity from 2008 to 2018 for the U.S. average. The data used is obtained from KFF estimates based on the 2008-2019 American Community Survey.

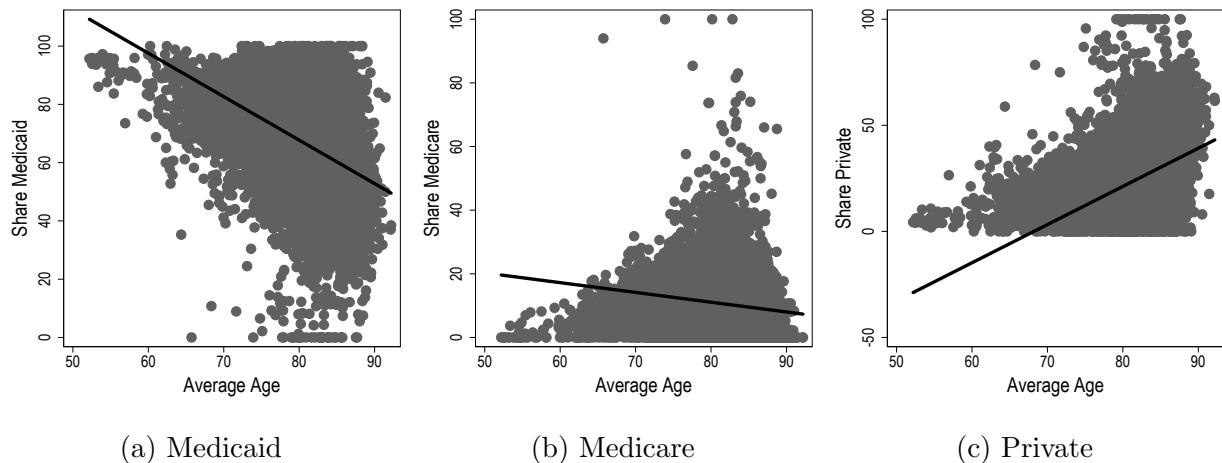


Figure A8: Correlation between Form of Payment and Average Age

Note: This graph shows the correlation of average age with the share of Medicaid (a), Medicare (b), and Private (c) forms of payment in the United States.