

The Effects of Medicaid Expansion on the Racial/Ethnic Composition within Nursing Home Residents

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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, indicate that the racial and ethnic composition of nursing home residents is not showing improved representation of minorities; instead, it is becoming more homogeneous. This means a decline in Black residents coupled with a rise in White residents in nursing homes after the Medicaid expansion. Additionally, the study reveals variations in these trends when categorizing states by Medicaid expansion status, income inequality, and poverty rate levels. Lastly, potential mechanisms driving these results are explored and discussed.

Keywords: Medicaid Expansion, Affordable Care Act, Race, Nursing Home.

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

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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 most of the population does not have the means to 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, unmet long-term care needs will likely 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 ACA, signed into law in 2010 and majorly implemented in 2014, represents a significant policy aimed at addressing these challenges. As of now, thirty-nine states and the District of Columbia have adopted the ACA, which includes a provision for Medicaid expansion (ME). This expansion aims to extend coverage to individuals earning less than 138% of the federal poverty line, with the federal government bearing most costs and states contributing incrementally over time. However, the high costs of nursing home care—a service not typically covered under essential health benefits—exacerbate long-term care challenges. Medicaid, though a primary contributor to nursing home expenses, is means-tested and has limitations, such as the small personal needs allowance for beneficiaries. Despite Medicaid's 100% coverage for eligible individuals in approved facilities, coverage issues persist due to a preference for privately paying residents in nursing homes.

In this study, I delve into the impact of ME on nursing home admissions across various racial and ethnic groups. The motivation for this exploration is twofold. Firstly, there's an escalating concern about the economic racial differences in the U.S., particularly as Black and Hispanic communities represent a disproportionate share of the impoverished population as shown in figure A1 in the Appendix. Secondly, there's a looming challenge regarding the affordability and accessibility of long-term care services, both presently and in the foreseeable future. The core hypothesis underpinning this research posits that if ME is designed to enhance healthcare coverage for the poor, we should witness a surge in admissions from these impoverished communities into nursing homes. While it's important to recognize that people from all racial and ethnic backgrounds share comparable long-term care requirements, their ability to afford and access these services can vary dramatically.

Employing Andersen's Behavioral Model of Health Services Use as a theoretical backdrop (Andersen et al. [1968], Andersen and Newman [1973]), the expansion of Medicaid, by altering individual characteristics (increased eligibility), external conditions (service availability), and perceptions of care as a viable option, may influence the racial and ethnic composition of nursing home admissions. Under Andersen's Behavioral Model, it would seem likely that the ME would increase the proportion of individuals from under-served groups admitted to nursing homes.

There might be several pathways through which ME is anticipated to affect the racial/ethnic composition of nursing home admissions. Besides the direct path that is increasing access for previously under-insured impoverished groups, there are two alternatives discussed here. ME may result in shifts in the geographic distribution of nursing home admissions. Areas with higher concentrations of racial and ethnic minorities, which may also correspond with regions of higher poverty levels, could experience more substantial increases in admissions post-expansion. Another possibility is that changes in healthcare providers might alter their admission practices in response to ME, potentially affecting the racial/ethnic composition of their nursing home resident populations.

Projections from the Genworth Cost of Care Survey indicate that the average annual cost for a semi-private nursing home room in the U.S. was \$94,900 in 2020. Meanwhile, the U.S. Census Bureau reported a median household income of \$67,521 in 2020, highlighting the affordability gap in nursing home care, particularly for over half of the population, and even more for Black and Hispanic communities with typically lower incomes. This economic stratification by race/ethnicity, with White individuals generally having higher incomes [Kuhn et al., 2020], underscores the paper's research question: based on the high costs of nursing home services and the different poverty rates by race/ethnicity in the U.S., how has ME influenced the racial/ethnic composition of nursing home admissions? 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 ME 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 drug 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 by race. 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 differences 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 differences 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 ethnicities.

The literature, regardless of racial differences, on long-term care services and ME, 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 an unequal racial composition 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 ME but more specifically is a new contribution to the smaller area of racial or ethnic composition of nursing home residents. The results, obtained by using aggregate data at the U.S. County level from 2000 to 2019, indicate that the racial and ethnic composition of nursing home residents is not showing improved representation for minorities; instead, it is becoming more homogeneous. This is due to a reduction in the aggregate number of Black residents and the increase of White residents in nursing homes after the expansion of Medicaid. This exacerbates the unevenness of the racial/ethnic composition of the residents of nursing homes. To further understand these results, the effects of the ME 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 details of the empirical strategy and data. Section 3 shows the results of the analysis and potential the mechanisms driving these results. Section 4 discusses the findings and Section 5 concludes.

2 Empirical Strategy

This paper uses a Difference-in-Differences (DiD) approach as outlined by Callaway and Sant'Anna [2021], combined with two-way fixed effect (TWFE) regression, to analyze the impact of Medicaid Expansion on the racial and ethnic composition of nursing home admissions. I include counties that belong to never-treated (states that did not expand Medicaid before 2019), not-yet-treated (states that passed the law after 2014), and treated (states that passed the law in 2014) states. This means that different groups of counties are exposed to the policy at different times. The Callaway and Sant'Anna method offers advantages in understanding treatment effects across different groups, overcoming limitations identified in other methodologies when dealing with heterogeneous treatment effects and varying treatment timing (Borusyak and Jaravel [2017], De Chaisemartin and d'Haultfoeuille [2020], Athey and Imbens [2022], Sun and Abraham [2021] and Goodman-Bacon [2021]).

To refine the analysis, this study employs doubly robust (DR) estimators for more accurate average treatment effects on the treated (ATT) and uses various aggregation schemes for interpreting results. These schemes consider factors such as treatment duration and timing, enhancing the interpretation of dynamic treatment effects and reducing estimation uncertainty. For brevity, while multiple aggregation schemes will initially be presented to summarize the main results, the focus will mostly be on one scheme if the results align. This approach, alongside the TWFE regression, aims to provide reliable insights into how different years of ME implementation in various states affect nursing home admissions by race/ethnicity. In addition to the CS estimation method, the TWFE is also implemented. The specification of the TWFE is:

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

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 county fixed effects α_z and γ_t , to capture time-invariant geographical unobservables. Additionally, ε_{ct} , to account for unobserved confounders.

This study analyzes county-level panel data from 2000 to 2019, focusing on the racial and ethnic composition of nursing home admissions in the U.S., using data from LTCFocus at Brown University and the National Institute on Aging. The dependent variables will characterize the racial/ethnic composition of residents admitted to nursing homes during a calendar year in a specific county. This composition provides the share of individuals who are 'Black, not of Hispanic origin', 'Hispanic', and 'White, not of Hispanic origin' at the county level. Additional control variables are also introduced. 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.

The year of the ME by state 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. Figure A2 shows the number of states and counties by the year that they expanded Medicaid. In this figure, the first bar "0" shows the number of states considered as "not-treated" i.e., states that never expanded Medicaid or states with the implementation after 2019. Interestingly, most expansion states implemented the provisions in 2014. Summary statistics are presented in Table A2 in the Appendix. Among the most important things 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 A3 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 accounts only for around 10% of the support.

3 Results

This paper examines the impact of ME on the racial and ethnic composition in nursing home admissions. Using the methodology developed by Callaway and Sant'Anna [2021], alongside two-way fixed-effects (TWFE) for confirmation, the findings indicate significant policy effects: a decline in the proportion of Black residents and an increase for Hispanic and White residents. These results, shown in Table 1, maintain statistical significance even when controlling for additional variables, which slightly mitigates the impact but confirms the policy's influence. The analysis, however, does not distinguish between private payers and those covered by Medicare or Medicaid, focusing solely on the racial and ethnic composition of nursing home residents. Additional insights from the Callaway and Sant'Anna [2021] method, with various aggregation schemes, are presented in Table A3 in the Appendix, accounting for factors like calendar time and exposure length, alongside control variables and fixed effects.

The DiD analysis hinges on the parallel trends assumption, validated by the event-study esti-

Table 1: Medicaid Expansion on Nursing Home Residents Race/Ethnic Composition

	TWFE	CS	
	(1)	(2)	(3)
(A) Aggregate N.H. Residents: Black			
Medicaid Expansion	-0.33** (0.11)	-0.64*** (0.13)	-0.13* (0.06)
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)
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)
Adjusted R^2	0.92		
Observations	44862		
Controls Variables	Yes	No	Yes

Note: Standard errors are 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.

mates for Black and White residents, confirming consistent pre-policy trends and significant post-policy effects, as shown in Figure A4. However, the trend for Hispanic residents is less definitive, leading to inconclusive results for this group post-expansion. Complementary analyses, including a focused 2014 study and a shortened pre-expansion period study from 2006 to 2019. Focusing only on 2014 allows us to capture the initial effects of the ME. The unconditional parallel trends are provided in Figure A5. Including only 2014 is critical in understanding how quickly the policy change began its influence on nursing home admissions. Table A4 and Figure A5 show the results with shorter periods from 2006 to 2019. A shorter period more accurately reflects the healthcare landscape immediately preceding the expansion, thereby ensuring that the data is more directly applicable to the conditions and challenges the ME intended to address. Furthermore, this adjustment reduces the influence of unrelated historical events and economic fluctuations that occurred in the early 2000s, which could otherwise introduce noise and confound the analysis. These results reinforce the main findings, highlighting the immediate effects of the policy and enhancing the relevance and accuracy of the results.

Table 2: 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 are 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.

To explain the observed decrease in Black residents and increase in White residents following ME, this study considers the influence of nursing home admission preferences and financial incentives. It is hypothesized that nursing homes may prefer residents who are perceived to have private insurance or more personal funds, potentially due to biases or economic incentives, as these residents might offer higher reimbursement rates. The research further investigates this by examining payment sources and bed availability, with findings detailed in Table 2.

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 A6, 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 an important background for the results of Table 2. Post-policy implementation findings indicate a statistically significant decrease in the proportion of Medicaid-supported residents, aligning with the policy’s expected impact. In contrast, the Medicare-supported resident share remains largely unchanged, a predictable outcome considering that the ME does not directly target Medicare beneficiaries. This shift suggests two potential compensatory responses by nursing homes: an increase in privately funded residents or a reduction in total bed availability. These responses, in turn, could have significant implications for the racial and ethnic composition of nursing home residents, as reflected in the evolving dynamics post-ME.

The variable for private-pay nursing home residents is calculated by subtracting the proportions of Medicaid and Medicare residents from the total. This is key for assessing if homes prefer privately funded residents. Column (3) of Table 2 shows a significant increase in private residents after ME, supporting the theory of shifting preferences. Additionally, column (4) shows a statistically significant drop in total nursing home beds post-expansion, suggesting a link between reduced Medicaid resident shares and facility capacity. However, the specific impact on beds designated for Medicaid remains unclear due to data limitations on post-expansion allocations. This leaves the exact relationship between bed reductions and Medicaid changes open to future research.

Table 3: Medicaid Expansion on Nursing Home Residents Race/Ethnic Composition

	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 <i>R</i> 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 <i>R</i> 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 <i>R</i> ²	0.92		0.92		0.92		0.92	
Observations	45042		45042		45042		45042	

Note: Standard errors are 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.

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 composition on nursing home admissions. These results are reported in Table 3 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.

Table 3 indicates that an increase in the share of residents whose primary support is Medicaid would increase Black residents and a decrease in White residents. In contrast, a rise in the share of residents whose primary support is Medicare and private payments leads to fewer Black residents, while an increase in private pay only boosts the share of White residents. For Hispanic residents, neither Medicaid nor Medicare support shows significant effects, but more private pay correlates with their decreased share. A marginal but statistically significant result suggests that more nursing home beds would only benefit White residents, with no impact on Black residents. The zero coefficients for all races/ethnicities in column (4) question the hypothesis that bed reductions impact demographics. Post-expansion, nursing homes' preference for higher-profit Medicare or private-pay residents may limit Medicaid resident beds, potentially leading to a shift towards more private-pay residents. This shift appears to benefit White residents the most, as they typically have the lowest share of Medicaid coverage. The increase in private-pay residents post-expansion suggests that White residents are the main beneficiaries in nursing homes following ME.

3.1 Classifying by Poverty Rate and Income Inequality

To obtain deeper insights from the results, states are categorized by poverty rate and income inequality. This stratification helps determine how these factors influence nursing home admissions and the resulting disparities. States with greater inequality and poverty may have fewer resources for nursing homes, potentially heightening access barriers for low-income, minority groups. Moreover, states with progressive policies may approach nursing home admissions and racial equity differently. Categorizing states into high/low inequality and poverty groups reveals a more detailed picture of the drivers behind racial variations in nursing home admissions.

Table 4 categorizes expansion and non-expansion states by their poverty and income inequality levels, using the Callaway and Sant'Anna [2021] simple aggregation scheme and two-way fixed effects to validate findings. The ME's intent to assist economically disadvantaged individuals allows for analysis of its impact in states with diverse economic profiles. States vary in Medicaid eligibility and economic disparities, which could affect the demographic makeup of nursing home residents and shed light on observed impacts from the ME. These economic factors at the state level are critical for understanding how the expansion might influence nursing home demographics.

The first four columns of Table 4 analyze states categorized by poverty rates. In states with low poverty, there's no significant impact on Black and Hispanic nursing home residents, but a positive

Table 4: Medicaid Expansion by Poverty Rate and Income Inequality

	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		

Note: Standard errors are 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.

effect on White residents. This could imply less racial diversity in these states, as suggested by Figure A7, which shows lower poverty rates correlating with higher White populations and higher poverty with larger Black populations.

Conversely, high-poverty states exhibit a decrease in Black and an increase in Hispanic nursing home residents, reflecting their greater racial diversity and possibly a larger share of Black and Hispanic populations in poverty. The ME's effects might be more pronounced in these groups. Interestingly, despite the higher racial diversity in high-poverty states, the policy reduces Black residents. This finding aligns with Table 1 but it requires further investigation. 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 coefficients in Table 4 might explain the lower effects obtained in Table 1.

In the last columns of Table 4, states are grouped by income inequality, using the Gini coefficient for classification, to assess ME's effects on nursing home demographics. In low-income inequality states, the results, aligning with the main findings, aren't statistically significant, suggesting ME doesn't notably impact any racial or ethnic group in nursing homes, possibly due to lower poverty levels and fewer Medicaid beneficiaries.

Table 5: Effects on Nursing Home Race/Ethnic Composition 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 <i>R</i> 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 <i>R</i> 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 <i>R</i> ²	0.84	0.92			0.84	0.92			0.84	0.92		
Observations	23500	21542			23500	21542			23500	21542		

Note: Standard errors are 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.

Conversely, in high-income inequality states, significant effects are observed. Black residents experience a negative impact, while White residents see an increase post-expansion, likely linked to higher poverty rates in these states. These trends are consistent with the main results. Like the previous poverty rate analysis, the findings in Table 1 fall between the results for low and high-inequality states, indicating that state-specific factors significantly influence outcomes. Further investigation is needed to understand these variances, particularly in high-poverty states.

The study further examines the mechanisms behind ME's effects, focusing on state classifications by poverty rates, as detailed in Table A5. This approach is chosen for its greater insight and similarity to previous findings. This table mirrors Table 2, exploring the expansion's impact on various variables. Panel (1) looks at the share of Medicaid-supported residents. As seen in Table 2, the expansion negatively affects Medicaid payers, but this is only significant in low-poverty states. Panel (2) assesses Medicare residents, showing no significant changes, as expected since ME doesn't target Medicare. However, this is still reported to understand the shift in resident support composition post-expansion. Panel (3) investigates private patient shares in nursing homes. Here, significant findings appear only in low-poverty states, with a positive coefficient, aligning with Table 2's results. Lastly, Panel (4) examines total bed numbers in nursing homes. Notably, there's a significant and negative impact in high-poverty states, echoing earlier sections' findings. This analysis suggests ME's varied impacts in states with different poverty levels, especially on nursing home resident composition and facility capacity.

To understand the mechanisms behind the results in Table 4, it's helpful to dissect them. The lack of significant ME effects on White residents in high-poverty states may be due to greater racial diversity. Conversely, in low-poverty states, the notable increase in White residents, as seen in Table 4, could be attributed to more private pay and fewer Medicaid-supported residents, as indicated in Table 2's panels (1) and (3). The panel (C) of table 5 further illustrates these dynamics. After ME, an increase in Medicaid-supported residents in high-poverty states correlates with a decrease in White residents, while more private-pay residents have the opposite effect. Interestingly, total beds show a significant impact only in low-poverty states, but this is not deemed relevant since Table 2 indicates no significant change in total beds in these states post-expansion.

The analysis primarily focuses on the rise of White residents in low-poverty states. In contrast, significant findings for Black residents appear only in high-poverty states, with Table 2 suggesting the total number of beds as a significant, negative factor. This seems to dismiss other mechanisms for driving these results but points to bed availability as a potential explanation for the reduced share of Black residents post-expansion. However, panel (A) of Table 5 shows no significant impact of bed numbers on Black residents. These findings lend support to the theory that nursing homes' preferences and cost considerations are shifting towards privately-supported White residents, possibly due to a preference change from Medicaid to private-pay residents. This aligns with the main hypothesis discussed earlier. However, it remains unclear why there is a reduction

in the share of Black residents post-expansion, as these factors might not fully explain this trend.

4 Discussion

The study examines how preferences and cost concerns might drive the post-ME admission changes in nursing homes. It considers that increased costs could discourage minority admissions, possibly due to varying Medicaid reimbursements or local cost differences. Nursing homes might prefer White residents, anticipating better financial returns from private insurance or resources. This trend may not reflect racial prejudice alone but economic strategy, with homes possibly perceiving care for minority groups as costlier and more resource-intensive Wang et al. [2018]. Such economic motives may intersect with implicit biases, thus influencing admission patterns and highlighting the complex dynamics at play in nursing home decisions.

While preferences and economic factors elucidate the rise in White nursing home admissions, the decline in minority admissions is less clear. Various theories could illuminate this, such as improved healthcare access for low-income individuals, including minorities, as a result of ME Buchmueller et al. [2016]. This enhanced access may lessen reliance on nursing home care, thereby reducing admission rates among these groups. Additionally, if the quality of healthcare for low-income populations has risen, the need for such care among minorities may decline, though the impact on healthcare quality varies Sommers et al. [2017].

The expansion might also affect choices between formal healthcare and informal caregiving [Bradley et al., 2004]. Better healthcare access could decrease minority populations' dependence on informal caregivers. Quality differences in care types matter too—if minorities have better informal care, they may be less likely to choose nursing homes, whereas White residents might favor formal care due to lesser quality informal care options [Willert and Minnotte, 2021]. Cultural and language barriers could further complicate minorities' use of formal care systems. Cost is a significant consideration; if informal care is more accessible for minorities [Peek et al., 2000], it may be preferred over more expensive nursing homes. Conversely, White residents might turn to formal care if affordable informal care is scarce [Cohen et al., 2019]. Finally, historical discrimination in healthcare may affect trust levels; minorities with lower trust may opt for informal care, while higher trust among White populations could lead to more nursing home utilization [Musa et al., 2009].

5 Conclusions

The Affordable Care Act (ACA), enacted in 2010 is an important milestone for improving the health care coverage of American citizens. This paper analyzes the ME—a key ACA provision—and its impact on the racial and ethnic composition of nursing home admissions. The study

is driven by increasing concerns over racial and economic inequality, especially given the disproportionate poverty among Black and Hispanic communities, and the challenges in long-term care affordability and access. It hypothesizes that ME should lead to an increase in nursing home admissions among these economically disadvantaged minorities.

This study employs the Callaway and Sant'Anna [2021] difference-in-differences estimation method on U.S. county-level panel data from 2000 to 2019. Findings indicate that the ME has not diversified nursing home demographics but rather has led to a more uniform racial composition, with fewer Black residents and an increase in White and Hispanic residents. However, the data for Hispanic residents are less definitive, possibly due to lower statistical significance and challenges meeting parallel trend assumptions, echoing broader issues identified in the literature such as language and cultural barriers in healthcare access [Doty et al., 2014]. Further, the research notes a significant decline in Black residents in high-poverty and inequality states, whereas in low-poverty states, a significant increase is observed only in White nursing home residents.

Potential reasons for the observed changes in nursing home racial demographics include the preferences and cost strategies of nursing homes, which may favor admitting White residents based on assumptions about private insurance or personal wealth. This hypothesis is investigated by examining different payment methods. While it could account for the rise in White residents post-ME, it doesn't clearly explain the decline in Black residents, indicating the need for further research to understand these trends. A more detailed database could provide clearer insights into the ME's effects on nursing home demographics. Additionally, future studies should consider the impact of informal care on nursing home admissions, an aspect not covered in this analysis due to data constraints.

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Electronic Supplementary Material

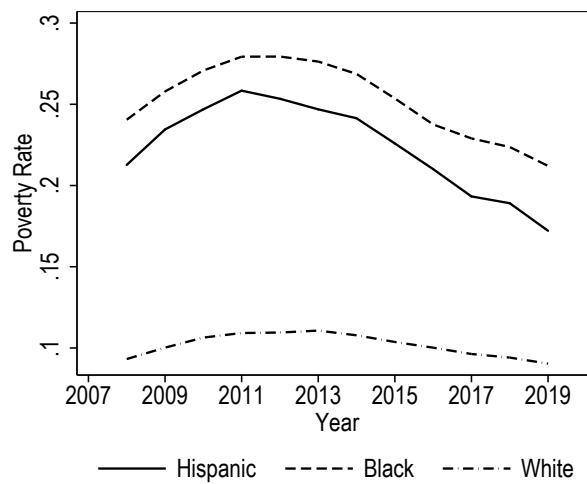


Figure A1: Poverty Rate by Race/Ethnicity

Note: This figure plots the poverty rates by race/ethnicity in the U.S. from 2008 to 2019. Source: KFF estimates based on the American Community Survey.

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 are discussed in section 2.

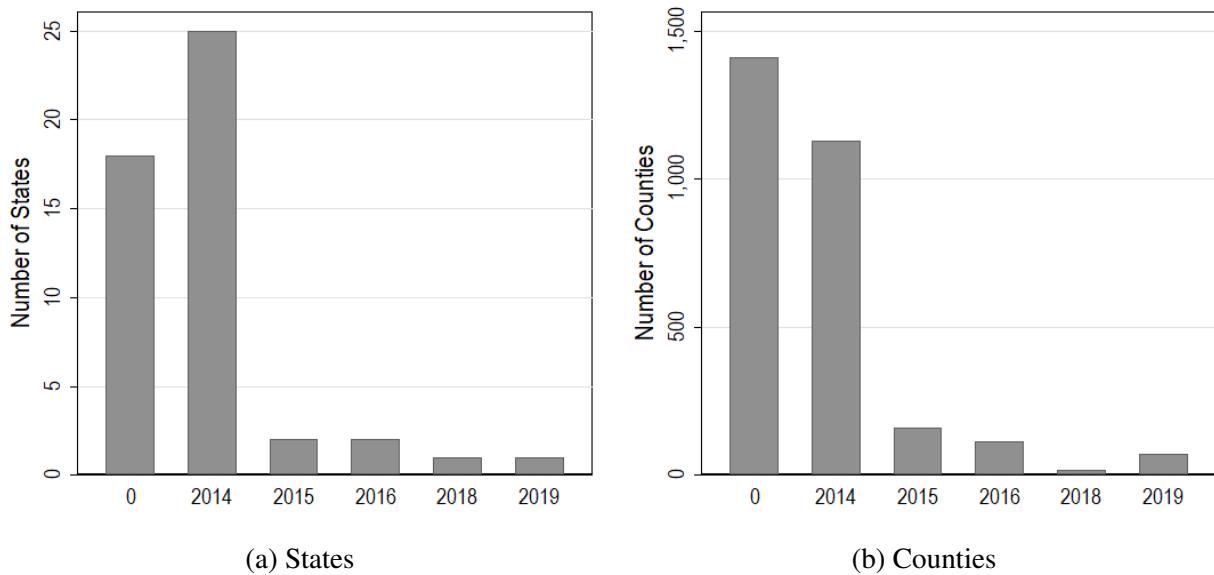


Figure A2: Number of States/Counties Implementing ACA by Year

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 2.

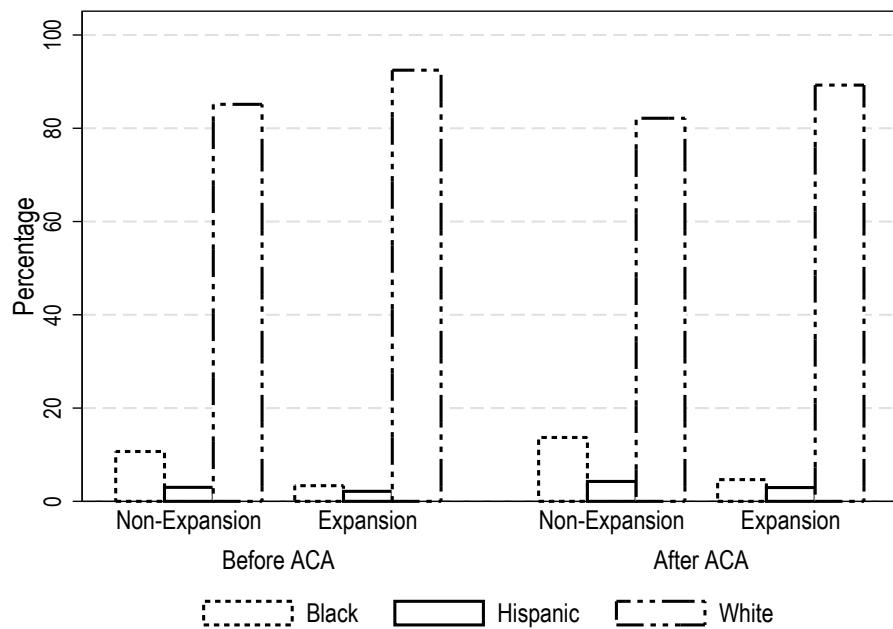


Figure A3: Race/Ethnicity Composition in Nursing Homes around Medicaid Expansion

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 2.

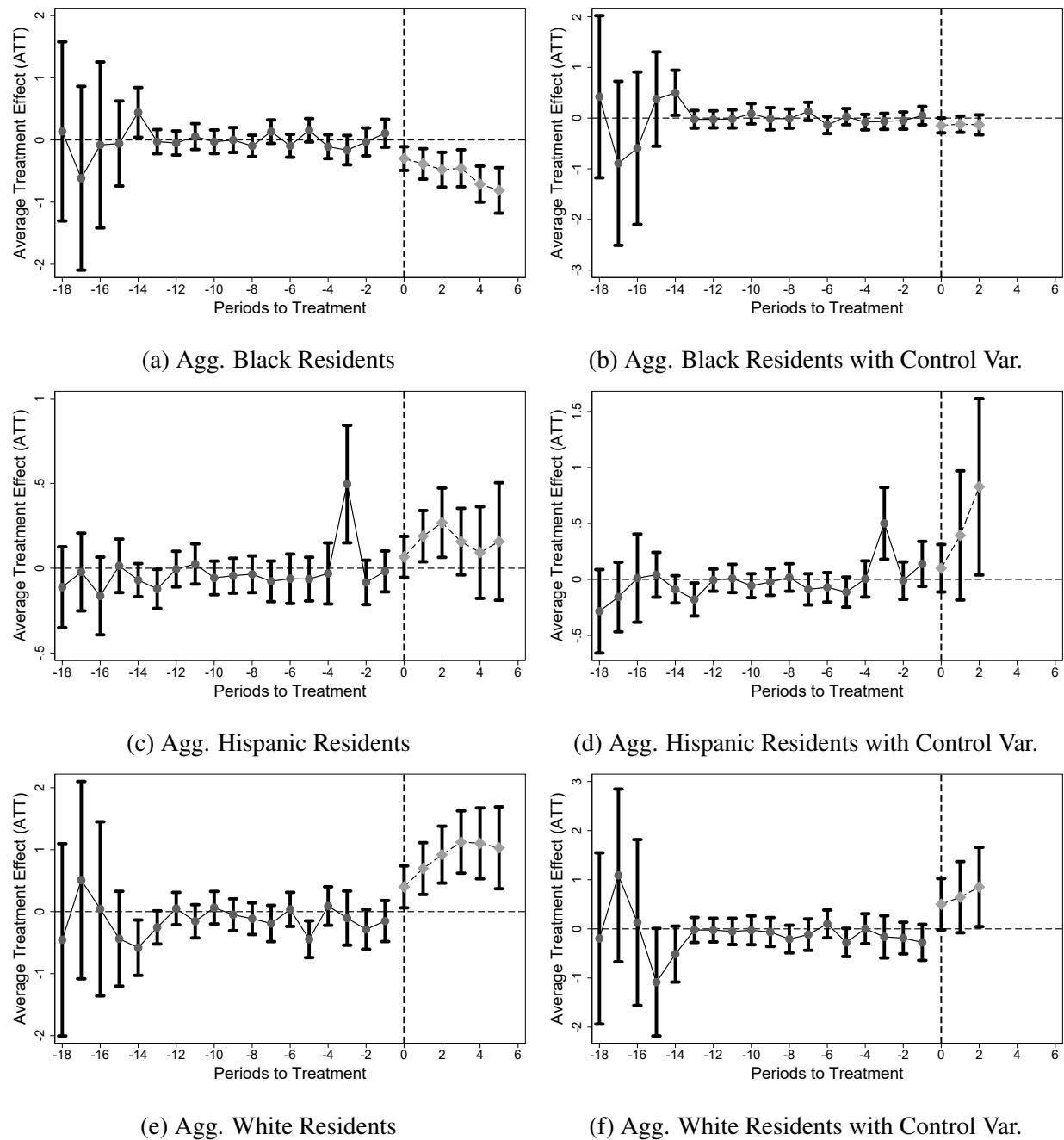


Figure A4: Medicaid Expansion on Nursing Home Residents Race/Ethnicity Composition

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 from the year 2000 to 2019.

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

Note: Standard errors are 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. Calendar time involves computing 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 period when units are first treated. The first scheme presented here is a simple overall aggregation of participating in the treatment.

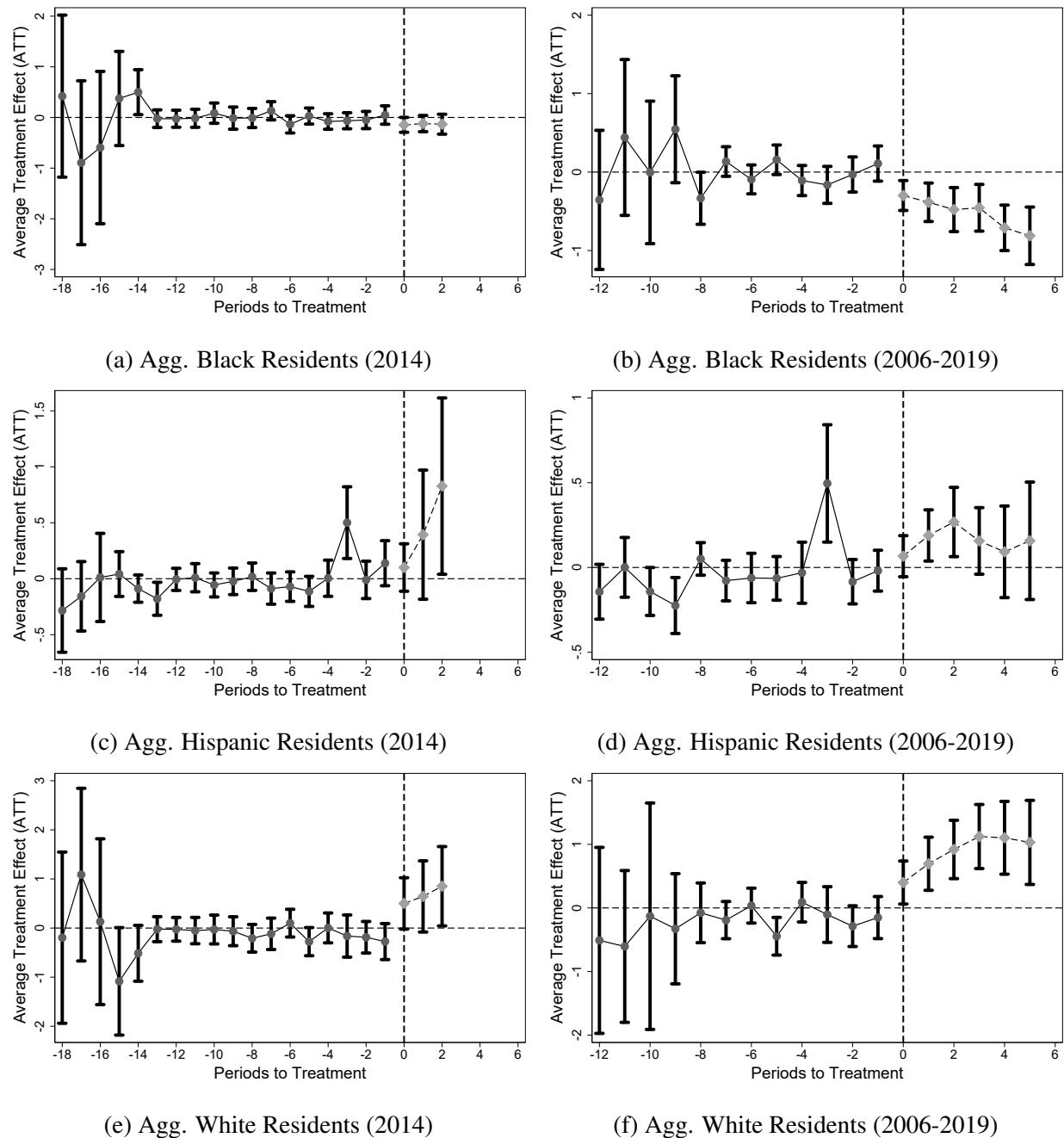


Figure A5: Medicaid Expansion on Nursing Home Residents Race/Ethnicity Composition

Note: The graphs plot the estimates and 95% confidence intervals for the unconditional 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. Panels ((a), (c), (e)) report results for the 2014 group, and panels ((b), (d), (f)) for the years 2006-2019.

Table A4: Medicaid Expansion on Nursing Home Residents Composition (2006-219)

	TWFE (1)	CS (2)
(A) Aggregate N.H. Residents: Black		
Medicaid Expansion	-0.34** (0.11)	-0.13* (0.07)
Adjusted R^2	0.97	
Observations	25277	
(B) Aggregate N.H. Residents: Hispanic		
Medicaid Expansion	0.09 (0.07)	0.42 ⁺ (0.23)
Adjusted R^2	0.96	
Observations	23732	
(C) Aggregate N.H. Residents: White		
Medicaid Expansion	0.73*** (0.20)	0.65* (0.31)
Adjusted R^2	0.91	
Observations	29739	

Note: Standard errors are 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. Period: from 2006 to 2019.

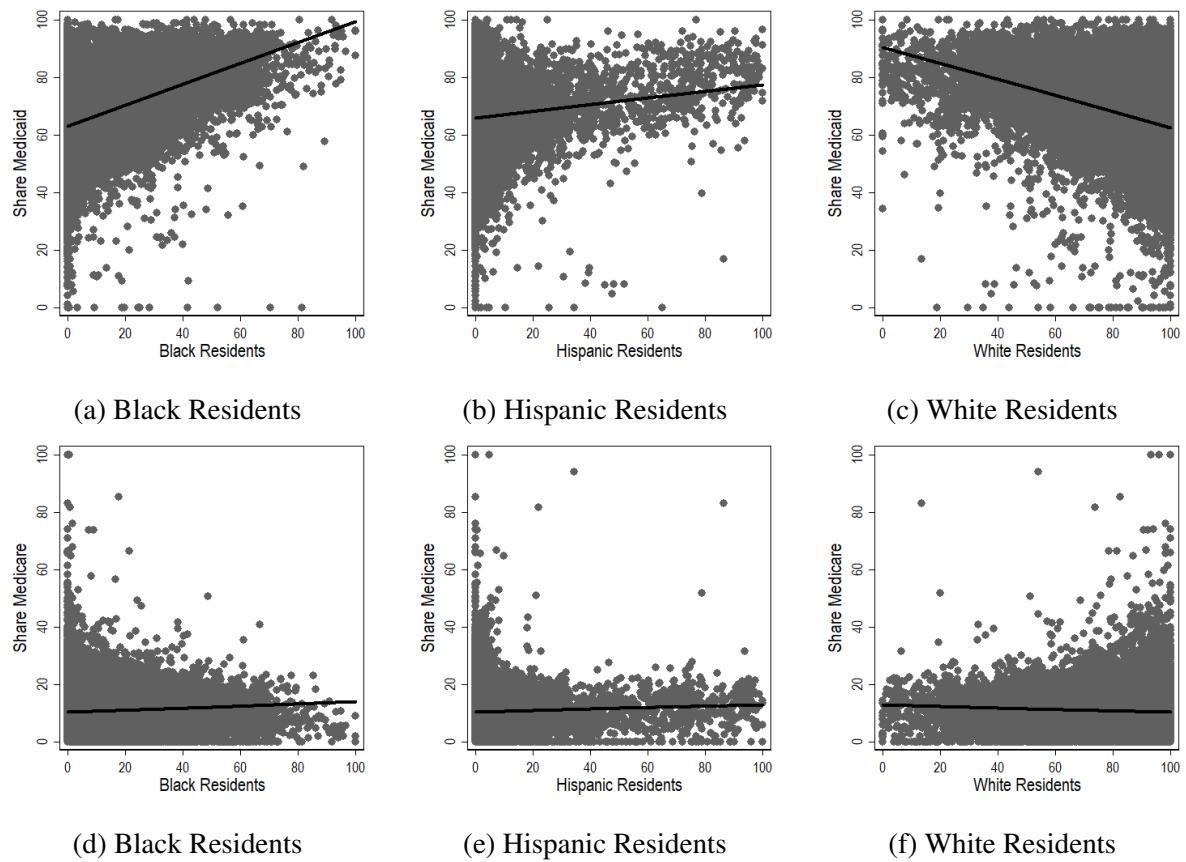


Figure A6: Correlation between Medicaid/Medicare and Nursing Home Residents

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.

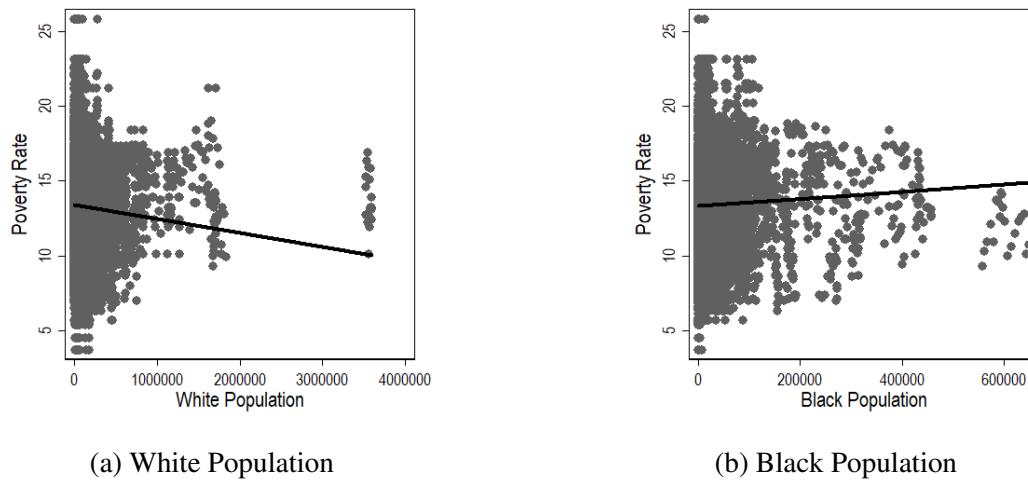


Figure A7: Correlation between Poverty Rate and Race

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 2.

Table A5: 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 are 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.

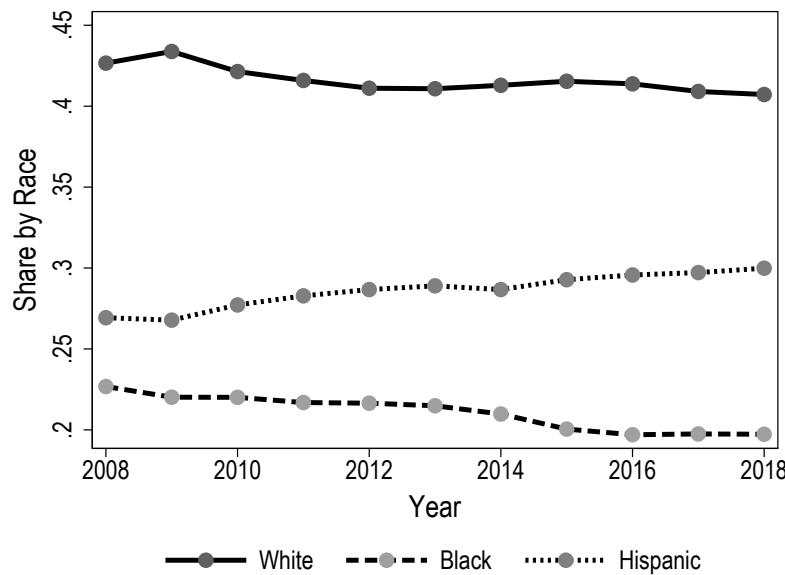


Figure A8: Medicaid Coverage Rates for Nonelderly by Race/Ethnicity

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.

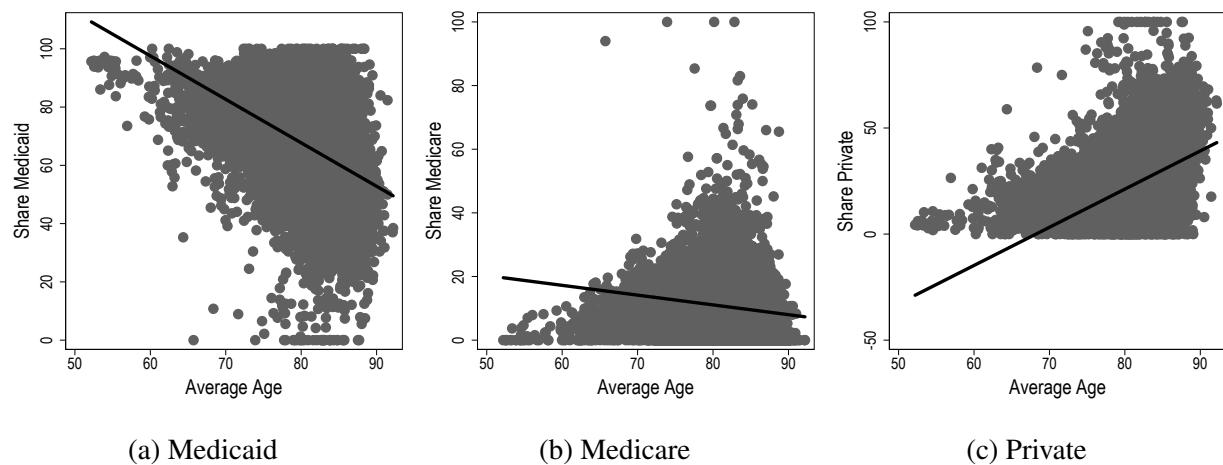


Figure A9: Correlation between Form of Payment and Average Age

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.