



Disparities in Healthcare Coverage and Utilization after Expanded Dependent Coverage

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Disparities in Healthcare Coverage and Utilization after Expanded Dependent Coverage

Abstract

Background. A goal of expanding insurance coverage is reducing racial disparities in healthcare utilization, however the effects of such expansions under the affordable care act (ACA) on disparities remain unclear. The 2010 dependent coverage expansion provided an opportunity to evaluate disparities following a major coverage expansion.

Objectives. We sought to understand changes in emergency department (ED)utilization following a major insurance expansion, the 2010 dependent coverage expansion.

Research Design. We present changes in coverage and utilization among young adults (19-25 years old) before and after the dependent coverage expansion, compared to a control group (26-31 years old) unaffected by the provision using administrative records from four states (California, Florida, Massachusetts and New York) using a difference in difference methodology.

ResultsWe identified 9,089,116 adults aged 19-31 with at least one ED visit between 2008 and 2013. While rates of ED utilization continue to increase, we found dependent coverage expansion was associated with a reduced increase in adjusted ED utilization among Whites, Blacks, and Asians (p

Conclusions. Expansion of dependent insurance coverage was associated with significantly different ED healthcare utilization patterns among Hispanics than among other young adults. This suggests that eligibility or accessibility of dependent coverage remains a barrier to care for young Hispanics.

Keywords

insurance; affordable care act

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ABSTRACT

Background. A goal of expanding insurance coverage is reducing racial disparities in healthcare utilization, however the effects of such expansions under the affordable care act (ACA) on disparities remain unclear. The 2010 dependent coverage expansion provided an opportunity to evaluate disparities following a major coverage expansion.

Objectives. We sought to understand changes in emergency department (ED)utilization following a major insurance expansion, the 2010 dependent coverage expansion.

Methods. We present changes in coverage and utilization among young adults (19-25 years old) before and after the dependent coverage expansion, compared to a control group (26-31 years old) unaffected by the provision using administrative records from four states (California, Florida, Massachusetts and New York) using a difference in difference methodology.

Results We identified 9,089,116 adults aged 19-31 with at least one ED visit between 2008 and 2013. While rates of ED utilization continue to increase, we found dependent coverage expansion was associated with a reduced increase in adjusted ED utilization among Whites, Blacks, and Asians (p

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Keywords: Insurance, Affordable Care Act

INTRODUCTION

Disparities among race/ethnic groups in healthcare insurance coverage have been a key explanation for disparities in healthcare utilization in the United States.(Hargraves & Hadley, 2003) In 2009, prior to implementation of the Affordable Care Act (ACA), 12% of non-Hispanic Whites lacked

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healthcare insurance coverage, compared with 20% of non-Hispanic Blacks, 17% of Asians, and 32% of Hispanics.(U.S. Census Bureau, 2010) Whites also possessed the best metrics of outpatient healthcare access, followed by Blacks, Asians and, worst-off, Hispanics.(US Department of Health Human Services, 2011) To address un-insurance and associated poor healthcare access, one of the first provisions of the ACA was the expansion of private insurance coverage in 2010, which permitted adults 19-25 years old to be covered by their parents' insurance plans.(US Senate and House of Representatives, 2015) Among the eligible age group, uninsurance rates were 31% prior to passage of this dependent coverage provision, versus 18% among others under age 65.(U.S. Census Bureau, 2010) Much of the healthcare utilization among the age group eligible for expanded dependent coverage occurred in the emergency departments,(Gindi, Cohen, Kirzinger, & others, 2012) often for non-urgent care,(K & BD, 2014) presumably because uninsured adults could not gain access to outpatient care services.(Gindi et al.; B. D. Sommers, Buchmueller, Decker, Carey, & Kronick, 2013a) Prior studies reported that—at an aggregate level—the 2010 dependent coverage expansion produced significant declines in un-insurance (by ~7 percentage points),(Akosa Antwi, Moriya, & Simon, 2015; Barbaresco, Courtemanche, & Qi, 2015; Chua & Sommers, 2014; B. D. Sommers et al., 2013a) out-of-pocket expenditures,(Susan H. Busch, Ezra Golberstein, & Ellen Meara, 2014) and emergency department utilization,(Yaa Akosa Antwi, Asako S. Moriya, Kosali Simon, & Benjamin D. Sommers, 2015; T. Hernandez-Boussard, Burns, Wang, Baker, & Goldstein, 2014; T Hernandez-Boussard, Morrison, Goldstein, & Hsia, 2016) with possibly some increased rates of access and utilization of outpatient care (in preliminary assessments).(S. H. Busch, E. Golberstein, & E. Meara, 2014; Han, Yabroff, Robbins, Zheng, & Jamal, 2014; Wong, Ford, French, & Rubin, 2015)

How expanded dependent insurance coverage affected disparities among young adults remains unclear, but a matter of concern.(Abdus, Mistry, & Selden, 2015) Many Hispanic young adults have parents who lack private health insurance—either because the parents' employment lacks health insurance benefits, or because they are undocumented and thereby face increased barriers to obtaining coverage.(Benjamin D. Sommers, 2013) Assuming patients and children are the same race or ethnicity, Hispanic young adults would experience less benefits from the dependent coverage expansion than their peers among other race/ethnic groups, achieving less insurance coverage, less outpatient care utilization, and less change to emergency department utilization rates. We hypothesize that the dependent coverage would not likely reduce disparities in coverage and therefore emergency department utilization since more parent minorities lack private insurance and therefore their young adult dependents would be ineligible for coverage expansion under this policy.

METHODS

Study Design

We employed a difference-in-differences design in which we compared race/ethnic group-specific healthcare insurance and utilization outcomes before and after dependent coverage expansion among the eligible age group (19-25 years old) and among an older ineligible control group (26-31 years old). The control group was chosen based on previous literature examining the same policy.(Y. Akosa Antwi, A. S. Moriya, K. Simon, & B. D. Sommers, 2015; T. Hernandez-Boussard et al., 2014; Mulcahy et al., 2013; B. D. Sommers, Buchmueller, Decker, Carey, & Kronick, 2013b) A difference-in-differences analysis adjusts the observed change in outcomes among the eligible group by subtracting the observed changes among the ineligible reference group, estimating the effects of the policy net of confounding factors that affected both groups (e.g., macroeconomic fluctuations).(Dimick & Ryan, 2014) The study period included years 2008 through 2013 (the most recent data available), with the pre-policy period identified as points prior to the dependent coverage expansion implementation in 2010.

Outcomes and Data

The primary outcome was emergency department visits per 1,000 adults in each of the two age groups, stratified by race/ethnicity in four standard groupings (non-Hispanic White, hereafter White; Black; Asian; and Hispanic).

The data source was the Healthcare Cost and Utilization Project's State Emergency Department Database (which includes all visits to emergency departments that resulted in discharge directly from the department) and State Inpatient Database (which includes all visits to emergency departments that resulted in hospital admission). (Agency for Healthcare Research and Quality, 2015) These data allow one to track an individual's healthcare encounters over time within a state and were available from four states with large, diverse populations: California, Florida, Massachusetts, and New York. Of note, Massachusetts was included despite establishing a state coverage provision in 2007; the state provision only permitted coverage for dependents up to age 26, or for 2 years after they were no longer declared dependents on tax returns, whichever came first. Hence, we hypothesized the more comprehensive ACA dependent coverage provision would affect a subset of 19-25 year olds in Massachusetts who remained un-insured despite the state provision. HCUP data were available by quarter. We estimated emergency department visits per 1,000 persons per quarter by dividing total visits by age, sex, and race/ethnic group by annual Census Bureau estimates of the population size of the corresponding group (detailed in Appendix). (Waldman, 2010) Insurance status was identified in the HCUP dataset as *primary expected payer*: Medicare, Medicaid, Private Insurance, Self-Pay, and Other. For our analyses, we focus on private insurance and self-pay.

Statistical Analysis

For the primary outcome variable of emergency department visits per 1,000 population, difference-in-differences estimates were calculated by stratifying the study population into 32 strata by race/ethnicity (White, Black, Asian, Hispanic), sex (Male and Female) and state (California, Florida, Massachusetts and New York). We further grouped participants by age (in years) and calendar year and estimated the corresponding average ED visit rate within each stratum. A random effects model is used to combine the ED visit rates for all combinations of age and calendar year for estimating the average ED visit rate for young adults (19-25 years old) before policy implementation (μ_{y0}) and after implementation (μ_{y1}), as well as older adults (26-31 years old) before policy implementation (μ_{x0}), and after implementation (μ_{x1}). The difference-in-differences calculation, $(\mu_{y1} - \mu_{y0}) - (\mu_{x1} - \mu_{x0})$, estimates the policy effect among each stratum, net of confounders unrelated to the coverage expansion that affect both age groups. We used the number of person-years in each stratum as sample weights to estimate aggregate race/ethnic group, sex, and state-specific policy effects. Analyses were conducted among all visit types, and by diagnostic category for five common conditions among young adults ED utilization: injury and poisoning, ill-defined conditions, complications of pregnancy, respiratory system diseases, and mental illness. (T Hernandez-Boussard et al., 2016)

In all analyses, p-values for each stratum were adjusted for multiple testing (via Bonferroni adjustment), and robust standard error estimates in the random effects model were used to account for potential heteroskedasticity. Statistical analyses were performed in *R* (The R Foundation for Statistical Computing, Vienna).

RESULTS

We identified 6,276,121 adults pre-ACA and 2,812,995 adults post-ACA aged 19-31 with at least one ED visit between 2008 and 2013. The overall secular trend of the number of ED visits per thousand person-year among young adults ages 19 – 25 and control group ages 26 - 31 increased across all states and races between pre and post ACA; the highest utilization and increases were observed in Black, followed by White, Hispanic and the least increase was in Asian (Table 1). The absolute difference-in-

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difference decreased for Blacks (-24.8 per 1,000 person-years), whites (-11.6), Asians (-3.0) and increased for Hispanics (14.8).

Table 1: Number of Emergency Department Visits per 1,000 person-year among Young Adults (aged 19-25) and the Control Group (aged 26-31), stratified by Pre- and Post-ACA time period, 2008-2013.

	Young Adults			Control Group			Absolute DiD*
	Pre-ACA	Post-ACA	Difference	Pre-ACA	Post-ACA	Difference	
All States							
White	337.1	405.0	67.8	324.4	403.8	79.4	-11.6
Asian	65.0	83.4	18.4	72.6	93.9	21.4	-3.0
Black	593.1	735.2	142.1	572.8	739.6	166.9	-24.8
Hispanic	197.9	294.8	96.9	182.4	264.5	82.1	14.8
CA							
White	262.7	296.0	33.3	254.1	288.7	34.6	-1.3
Asian	49.9	56.2	6.3	56.9	63.8	7.0	-0.6
Black	424.9	499.3	74.4	430.6	509.0	78.4	-4.0
Hispanic	160.1	192.2	32.1	147.4	175.1	27.8	4.4
FL							
White	470.4	517.5	47.2	464.2	539.7	75.5	-28.3
Asian	69.7	69.8	0.1	70.9	79.8	8.9	-8.8
Black	670.7	802.5	131.8	627.9	795.1	167.2	-35.4
Hispanic	200.6	292.0	91.4	183.0	250.9	67.9	23.5
MA							
White	323.2	405.9	82.7	326.8	431.2	104.3	-21.6
Asian	66.0	81.3	15.3	67.6	91.4	23.8	-8.5

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Black	492.6	629.3	136.7	488.9	655.2	166.4	-29.7
Hispanic	443.5	576.6	133.1	437.9	562.9	125.0	8.1
NY							
White	328.5	358.5	30.1	308.1	338.7	30.6	-0.5
Asian	109.1	115.1	6.0	118.7	126.8	8.1	-2.0
Black	656.1	738.8	82.7	635.2	751.1	115.9	-33.2
Hispanic	329.0	394.7	65.7	301.2	354.7	53.5	12.2

Figure 1 and Figure 2 display the modeled relative change in the number of ED visits per 1000 person years among young adults compared to the control group pre- vs. post-ACA. After adjustment, female Whites, Asians, and Blacks had significant decreases in ED utilization per person year (-0.0039, -0.0016, and -0.0089 per person-year, respectively), while Hispanic females had an increase in ED utilization per person year (0.0003, $p=0.05748$). For males, Blacks had a significant increase in ED utilization per person year (0.0061, $p<.0001$) and Hispanics had a significant increase in ED utilization per person year (0.0022, $p<.0001$) (Figure 1). Figure 2 displays changes in ED utilization stratified by state. FL showed the highest changes across all races, White (a reduction by 21.6 per 1,000 person-years), Asian (an 8.8 per 1,000 reduction), Black (a 35.4 per 1,000 reduction) and Hispanic (a 23.5 per 1,000 increase). Results were robust with respect to alternative functional forms, including changes in the washout period (whether or not the quarter of policy implementation was included in the analysis), and alternative approaches to calculating standard errors. The washout period tested for the effect of measurement error due to differential dates on insurance contract renewals after the implementation of the policy. These disparate patterns of utilization were observed across the spectrum of common conditions for which young adults seek emergency department care (Figure S5). Among the ED visits, all race groups had a significant relative increase in the proportion of visits covered by private insurance and a significant decrease in the number of visits that were self-paid (Table 2).

Figure 1: Overall estimated changes in emergency department visits among young adults aged 19-25 compared to a control group aged 26-31 pre- versus post-ACA, stratified by race/ethnicity and gender. The red lines indicate a significant result when the $p < 0.05$ threshold is corrected for multiple testing.

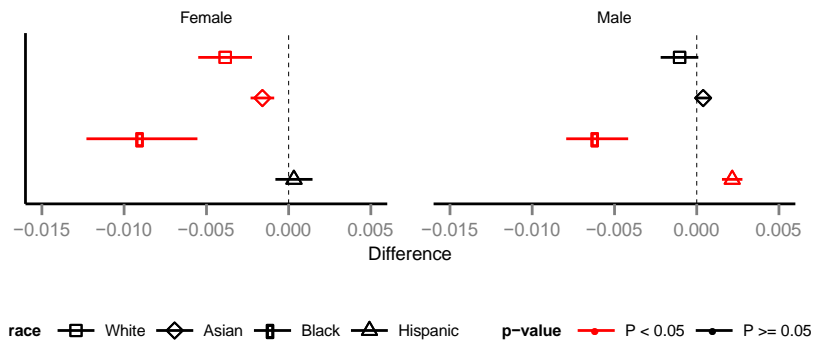


Figure 2: Estimated changes in emergency department visits among young adults aged 19-25 compared to a control group aged 26-31 pre- versus post-ACA, stratified by state, race/ethnicity, and gender. The red lines indicate a significant result when the $p < 0.05$ threshold is corrected for multiple testing.

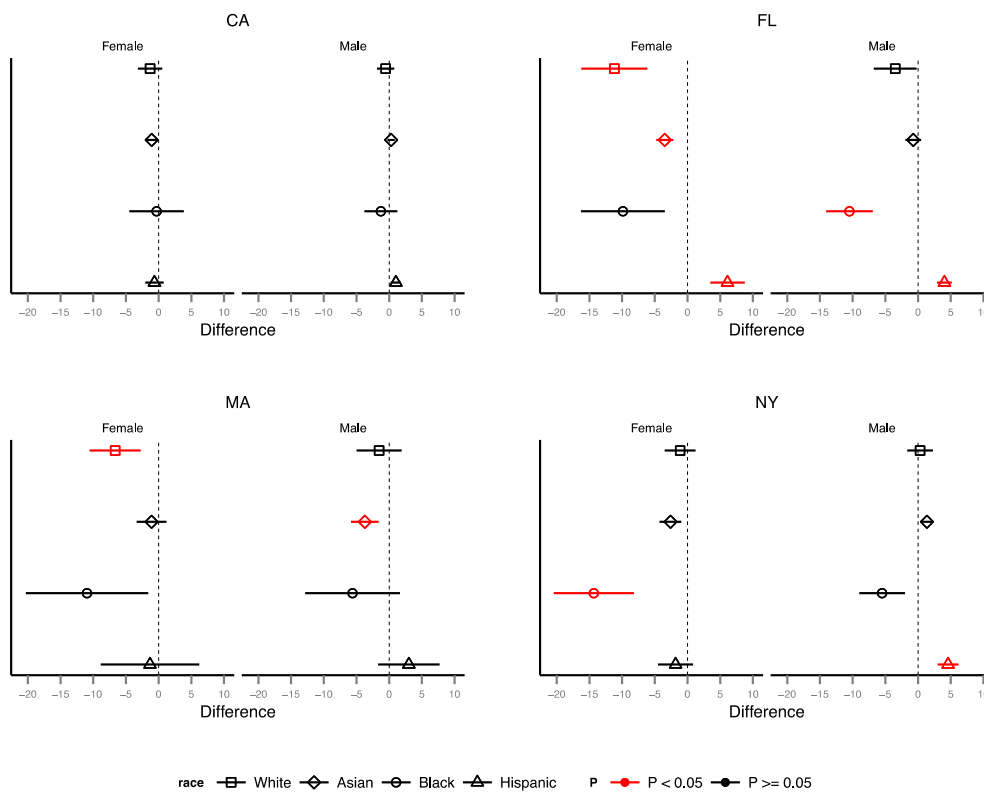


Table 2: Estimated Percent Change in Probabilities of Emergency Department Visits, According to Primary Expected Payer, Age Group, and Race, 2008-2013.

Race	Expected Primary Payer	19-25, Pre-ACA	19-25, Post-ACA	26-31, Pre-ACA	26-31, Post-ACA	Change in ED visits per person-year (% 95% CI)^{a, b}
White	Private	37.6%	37.7%	38.7%	31.2%	24.1 (23.7, 24.6)
	Self-Pay	28.5%	22.9%	26.1%	23.7%	-11.8 (-12.2, -11.4)
Asian	Private	49.3%	39.6%	55.8%	41.4%	8.2 (6.6, 9.9)
	Self-Pay	23.4%	20.5%	18.7%	17.5%	-6.0 (-8.2, -3.8)
Black	Private	27.2%	20.4%	31.1%	20.3%	14.6 (13.9, 15.3)
	Self-Pay	33.2%	29.2%	28.9%	26.9%	-5.7 (-6.2, -5.1)
Hispanic	Private	30.7%	23.4%	36.7%	25.2%	10.9 (10.2, 11.6)
	Self-Pay	28.7%	26.2%	24.9%	25.0%	-9.1 (-9.7, -8.5)

Sensitivity analyses

Post-hoc sensitivity analyses were performed on the emergency department utilization results by estimating what degree of error in the Census population size estimates would be necessary among the young adult Hispanic subgroup in post-policy years to account for the observed increase in emergency department utilization (i.e., underestimation of the denominator population size of Hispanic young adults in post-policy years, relative to pre-policy years, would inflate the estimated rate of ED visits per person). Such an error would have to differentially occur in post-policy over pre-policy years, and differentially occur more in the young adult population than in the older control population. We estimated that differential under-estimation of the 19-25 year old Hispanic population size in post-policy years would need to be in excess of 1,370,593 uncounted Hispanic young adults in California, 855,837 in Florida, 316,703 in Massachusetts, and 1,039,830 in New York to cause the increase in emergency room visits to be fully accounted for simply by Census Bureau population size estimate errors, which would constitute an error of at least 65% (see Appendix). Hence, it is unlikely that such differential under-counting of Hispanic young adults by the Census in post-policy but not pre-policy years, differentially among the younger as compared to the older control population, could account for our findings of disproportionate increased emergency department utilization rates.

DISCUSSION

While the ACA's dependent coverage provision was associated with reduced emergency department utilization among Whites, Blacks, and Asians, it was also associated with significant increases in emergency department utilization among Hispanics. These disparate patterns of utilization were observed across the spectrum of common conditions for which young adults seek emergency department

care, and were unlikely to be explained by immigration. In conjunction, we observed that the proportion of ED visits by Whites and Blacks in the targeted age group of 19 through 25 years old experienced significant increases in private healthcare insurance coverage, while the proportion of visits among Hispanics and Asians of the same age group experienced a significantly smaller increase in private insurance coverage of visits.

Our findings are particularly concerning from the perspective of avoiding excess emergency department utilization and preventing unnecessary healthcare costs. The 19 through 25 year age group was the most un-insured age bracket prior to the ACA,(U.S. Census Bureau, 2010) and Hispanics the most un-insured ethnic group(U.S. Census Bureau, 2010) as well as the group having the poorest metrics of primary healthcare access.(US Department of Health Human Services, 2011) Furthermore, the 19 through 25 year old age group has a considerable burden of healthcare needs related to injury, pregnancy, and mental health, such that emergency department utilization may present a major cost burden both to them and to society.(Fuda & Immekus, 2006; Benjamin D. Sommers, 2013) Previous studies of the ACA have brought welcome news of aggregate population-wide declines in un-insurance rates(Chua & Sommers, 2014; B. D. Sommers et al., 2013a) and emergency department utilization,(Yaa Akosa Antwi, Asako S. Moriya, Kosali Simon, et al., 2015; T. Hernandez-Boussard et al., 2014) in particular for specific conditions that can be cared for outside of the emergency department.(T Hernandez-Boussard et al., 2016) Additionally, some preliminary evidence exists for aggregate increases in primary care access and utilization(S. H. Busch et al., 2014; Han et al., 2014; Wong et al., 2015) among the 19 through 25 year age group. Far from having universal benefits, however, we found that the dependent coverage expansion appears to have had markedly heterogeneous effects by ethnicity.

The increase in ED use by Hispanics is surprising. The results of this study may be explained in part by the lack of parental health coverage among Hispanic young adults, in part due to the high proportion of parents who are undocumented immigrants(Passel & Cohn, 2009) who commonly lack private healthcare insurance.(Benjamin D. Sommers, 2013) About 18% of Hispanics in the United States are undocumented¹⁷—a figure believed to be stable since 2009 in both absolute numbers and as a proportion of the population.(Passel & Cohn, 2015) Due to limited sources of data among this population, we lack precise data on parental insurance and documentation status to fully investigate this hypothesized mechanism. Others have noted that Hispanics have low levels of awareness of the ACA, which could be associated with Hispanics being less likely to enroll in extended coverage under the ACA.(Garcia Mosqueira, Hua, & Sommers, 2015) Nevertheless, we did observe a blunted increase in disparities in Massachusetts as compared with other states; in Massachusetts, some young adults ages 19 through 25 were eligible for dependent coverage in 2007, including some young adults with undocumented parents. As the enrollment rules for the Massachusetts insurance program were highly complex (being dependent on duration of residence and other contingencies), exact numbers of persons enrolled by race/ethnicity or documentation status remain unavailable,(Waldman, 2010) and are not possible to directly link to the databases explored here. Additionally, we are not able to decipher what proportion of 19-25 year olds with private insurance coverage received coverage via the independent mandate. This is a limitation of our study.

A further limitation of our study is inherent to the statistical approach. Rather than conducting a simple pre- versus post-policy analysis, we used a differences-in-differences approach that additionally controls for unmeasured confounding that affected more than just the target group of the policy. By comparing the affected age group to a control group not experiencing dependent coverage expansion, we can filter-out confounding factors that affected both groups equally. However, the difference-in-differences estimates are subject to two key assumptions: that the affected and control populations experience parallel trends in emergency department utilization before the policy implementation, which we formally checked (see Supplementary Appendix), and the untestable assumption that other relevant events occurring during or after the policy change affected both age groups equally. Therefore, the difference-in-differences approach cannot control for unobserved confounders that differentially affected

the younger cohort. For example, the study period included the recovery period after a major economic recession, and the recovery may have differentially affected Hispanics as compared to other ethnic groups. Yet it remains unlikely that the large magnitude of the effects seen here would result from differential economic factors that affected only 19-25 year old Hispanics differently than older Hispanics and then younger or older adults among the other studied ethnic groups. In addition, since most ACA implementation differences among population were differences in state level policy implementation choices, e.g., Medicaid expansion, the conducted difference-in-differences analysis by state should yield valid result.

CONCLUSION

Our findings suggest that while dependent coverage expansion overall reduced emergency department utilization and increased insurance rates among the targeted age group, young adult Hispanics did not experience this same trend. As US healthcare reform is currently under review, these findings provide evidence for aspects of the Affordable Care Act that are in need of evaluation if the reduction of health disparities is a priority. Our finding implies that novel strategies are needed to incorporate young adult Hispanics into healthcare enrollment processes to avoid increasing existing disparities among ethnic groups in the United States.

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