Medicaid Expansion And Coverage Heterogeneity Among Disaggregated AANHPI And AIAN Adults

Structured abstract

Objective. To estimate whether Affordable Care Act Medicaid expansion was associated with differential health insurance coverage changes among disaggregated Asian American, Native Hawaiian and Pacific Islander, West Asian/Middle Eastern or North African proxy, and American Indian and Alaska Native adults.

Data Sources and Study Setting. IPUMS USA harmonized American Community Survey 1-year microdata for 2008-2019, covering adults ages 19-64 in the 50 states and the District of Columbia.

Study Design. State-year-subgroup cell analysis using pairwise triple-difference models comparing each target subgroup with non-Hispanic White adults. Models absorbed state-year, state-subgroup, and year-subgroup fixed effects, weighted cells by ACS person weights aggregated to the subgroup-state-year level, and clustered standard errors by state.

Data Collection/Extraction Methods. ACS records were restricted to nonelderly adults and aggregated into subgroup-state-year cells. Detailed target groups were defined using race, Hispanic origin, ancestry, and birthplace. West Asian/MENA is an ancestry/birthplace proxy.

Principal Findings. Medicaid expansion was associated with a 2.63 percentage point larger uninsurance reduction (95% CI, -4.50 to -0.77) and a 2.88 percentage point larger Medicaid increase (95% CI, 1.60 to 4.16) for AIAN adults relative to non-Hispanic White adults. NHPI adults had a 3.68 percentage point larger uninsurance reduction (95% CI, -7.33 to -0.04), while their Medicaid estimate was imprecise. West Asian/MENA proxy adults had a 3.51 percentage point larger Medicaid increase (95% CI, 2.23 to 4.78). Vietnamese adults had both a positive Medicaid differential and a positive uninsurance differential.

Conclusions. Medicaid expansion coverage changes were heterogeneous across disaggregated groups. The most coherent expansion-associated gains were among AIAN adults; pooled AANHPI categories would obscure important subgroup differences.

Keywords: Medicaid expansion; Affordable Care Act; health insurance; AANHPI; American Indian and Alaska Native; disparities; difference-in-differences.

Callout box

What is known on this topic

- ACA Medicaid expansion reduced uninsurance nationally and narrowed some racial and ethnic coverage gaps.
- AANHPI adults are often pooled in coverage research, despite large differences in immigration, employment, language, and baseline insurance patterns.
- AIAN coverage is shaped by Medicaid, Indian Health Service coverage, and tribal health-system financing.

What this study adds

- AIAN adults had larger expansion-associated coverage gains than non-Hispanic White adults.
- West Asian/MENA proxy adults had larger Medicaid gains, and NHPI adults had larger uninsurance reductions.
- Detailed Asian subgroup estimates were mixed, showing why pooled AANHPI estimates can mislead policy interpretation.

1. Introduction

The Affordable Care Act (ACA) substantially reduced uninsurance in the United States, with Medicaid expansion playing a central role for low-income adults in expansion states [@courtemanche2017early; @frean2017coverageeffects; @courtemanche2019threeyear; @buchmueller2020disparities]. Prior work has also shown that coverage gains were uneven across income, race, ethnicity, citizenship, and state policy environments. Yet many national policy evaluations use racial and ethnic categories that are too broad for Asian American, Native Hawaiian and Pacific Islander (AANHPI), West Asian, and American Indian and Alaska Native (AIAN) populations.

The aggregation problem is not cosmetic. A pooled "Asian" coefficient can combine groups with different baseline uninsurance, employer-sponsored insurance, direct-purchase coverage, citizenship eligibility, language access, refugee histories, and state geography. Native Hawaiian and Pacific Islander adults are often pooled with Asian adults or omitted because of sample-size constraints. AIAN adults have a distinct institutional relationship to Medicaid and Indian Health Service (IHS) coverage, so their coverage response may not resemble pooled Asian or conventional race-category estimates [@frean2016nativeamericans; @frerichs2019regional; @frerichs2022aiancoverage].

The AANHPI-specific ACA literature shows that coverage improved after ACA implementation, and that low-income AANHPI adults in expansion states experienced larger Medicaid gains than those in non-expansion states [@park2018healthinsurance; @park2019medicaidprivate]. California evidence further suggests that access and utilization changes varied across Asian subgroups [@park2019asianaccessutilization; @nguyen2019asianaccess].

The data-disaggregation literature explains why such heterogeneity is expected: pooled categories can hide disadvantage and blur policy-relevant differences [@holland2012asianhealthdata; @islam2010methodological; @shimkhada2021capturing; @nguyen2022federalsurveys].

This paper reconstructs and modernizes a recovered ACS-based ACA coverage project. The contribution is not to show again that the ACA reduced uninsurance. Rather, we estimate whether Medicaid expansion changed coverage differently across disaggregated groups that are often pooled or omitted in national analyses. We use ACS/IPUMS microdata from 2008-2019, define detailed target groups, and estimate high-dimensional triple-difference models comparing each target group with non-Hispanic White adults while absorbing state-year, state-subgroup, and year-subgroup fixed effects.

2. Data

The analysis uses IPUMS USA harmonized ACS 1-year person-level microdata from 2008 through 2019. The raw extract covers 2008-2024, but the main ACA panel ends in 2019 to avoid mixing the standard pre-pandemic ACS series with the experimental 2020 ACS and pandemic-era coverage policies. The clean main panel contains 30.8 million observations for people ages 0-64. The primary analysis uses adults ages 19-64.

Coverage outcomes are constructed from ACS/IPUMS insurance variables. The primary outcomes are uninsurance and Medicaid or other means-tested public coverage. Secondary outcomes include any insurance, direct-purchase private coverage, employer-sponsored insurance, any private coverage, any public coverage, and IHS coverage. Direct-purchase coverage is the ACS proxy for nongroup and Marketplace coverage.

Race and subgroup measures use ACS detailed race, Hispanic origin, multiple-race flags, ancestry, and birthplace variables. The main detailed target-group scheme includes non-Hispanic White adults as the reference group and nine target groups: AIAN, NHPI, West Asian/MENA proxy, Asian Indian, Chinese, Filipino, Japanese, Korean, and Vietnamese. West Asian/MENA is explicitly an ancestry/birthplace proxy, not a Census race category.

State Medicaid expansion timing is merged from a project policy file. The main treatment variable equals one when expansion was active for the full calendar year. Wisconsin is flagged separately because it covered childless adults up to 100 percent of the federal poverty level outside ACA expansion authority; the primary analysis sample excludes Wisconsin from the main expansion-versus-nonexpansion contrast.

Baseline coverage varied substantially across groups before 2014 (Table 1). Uninsurance was 15.1 percent among non-Hispanic White adults, 32.1 percent among AIAN adults, 29.9 percent among Korean adults, 25.4 percent among Vietnamese adults, 21.9 percent among NHPI adults, and 21.6 percent among the

West Asian/MENA proxy group. Medicaid coverage ranged from 3.0 percent among Japanese adults and 4.7 percent among Korean adults to 18.1 percent among AIAN adults.

3. Methods

Person-level ACS records were aggregated to state-year-subgroup cells. Each cell records the unweighted count, person-weighted population count, and person-weighted coverage rates. The primary model is estimated separately for each target subgroup relative to non-Hispanic White adults:

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Y_sgt = alpha_st + gamma_sg + lambda_gt + beta(Target_g x Expan-
sion_st) + epsilon_sgt
```

where `Y_sgt` is the weighted coverage rate for subgroup `g` in state `s` and year `t`; `alpha_st` absorbs state-year shocks; `gamma_sg` absorbs time-invariant state-subgroup differences; and `lambda_gt` absorbs national subgroup-specific time shocks. The coefficient `beta` is the differential coverage change for the target subgroup relative to non-Hispanic White adults in full-year expansion state-years. Models are weighted by the cell's ACS-weighted population count and use state-clustered standard errors.

This is a subgroup-focused triple-difference design. The state-year fixed effects absorb policy and economic changes common to groups within a state-year, including the main effect of Medicaid expansion. The year-subgroup fixed effects absorb national subgroup trends. The state-subgroup fixed effects absorb persistent geographic sorting and subgroup composition differences. Identification comes from whether a target subgroup's within-state change after full-year expansion differs from the corresponding change for non-Hispanic White adults, net of national subgroup trends and persistent state-subgroup differences.

We also estimate event-study versions of the pairwise models, with event time relative to Medicaid expansion and event times binned at less than or equal to -5 and greater than or equal to 5. Event studies are used diagnostically. The modern DiD literature has shown that conventional two-way fixed-effect event studies can be difficult to interpret with staggered treatment timing and heterogeneous effects [@goodmanbacon2021timing; @sun2021eventstudies; @callaway2021did; @borusyak2024eventstudy]. We therefore use event studies, placebo checks, and leave-one-state-out analyses to discipline interpretation rather than to replace the primary high-dimensional DDD estimand.

Robustness checks include a pre-2014 placebo that assigns eventual expansion states a pseudo post period in 2012-2013, leave-one-state-out checks for the strongest or most policy-relevant estimates, and a second-implementation cross-check using `pyfixest` for selected high-dimensional coefficients. The selected `pyfixest` coefficients matched the `AbsorbingLS` estimates to machine precision; clustered standard errors differed slightly because of package-specific small-sample corrections.

4. Results

The primary estimates show a selective pattern rather than a uniform AANHPI coverage gain (Table 2).

AIAN adults show the clearest expansion-associated coverage gains. Medicaid expansion was associated with a 2.63 percentage point larger reduction in uninsurance for AIAN adults relative to non-Hispanic White adults (95 percent CI: -4.50 to -0.77; p=0.006). Medicaid coverage increased by 2.88 percentage points more for AIAN adults than for non-Hispanic White adults (95 percent CI: 1.60 to 4.16; p<0.001). Direct-purchase and employer-sponsored coverage estimates were small and imprecise.

NHPI adults show a different pattern. The uninsurance estimate was -3.68 percentage points (95 percent CI: -7.33 to -0.04; p=0.047), indicating a larger reduction in uninsurance relative to non-Hispanic White adults. The Medicaid estimate was 0.34 percentage points and imprecise. Direct-purchase coverage was positive at 2.30 percentage points but only marginally precise. Thus, the NHPI result looks like an uninsurance reduction without a clean Medicaid-only mechanism in this model.

The West Asian/MENA proxy group had a strong Medicaid signal. Medicaid coverage increased by 3.51 percentage points more than for non-Hispanic White adults (95 percent CI: 2.23 to 4.78; p<0.001). The uninsurance estimate was -1.53 percentage points, with a confidence interval that crossed zero (95 percent CI: -3.33 to 0.28; p=0.098). Direct-purchase coverage declined by 2.47 percentage points. This pattern suggests a public-coverage substitution margin, with the important caveat that the group definition is an ancestry/birthplace proxy.

Detailed Asian subgroup estimates were heterogeneous. Asian Indian adults had a positive uninsurance differential of 2.28 percentage points and a negative Medicaid differential of -0.64 percentage points. Chinese adults had a positive uninsurance differential of 2.05 percentage points and a large negative direct-purchase estimate. Filipino adults did not show a statistically clear uninsurance reduction; their employer-sponsored insurance estimate was positive. Japanese adults had little uninsurance change and a negative Medicaid differential. Korean estimates were imprecise for uninsurance and Medicaid but showed higher employer-sponsored coverage and lower direct-purchase coverage. Vietnamese adults had both a 1.77 percentage point Medicaid increase and a 5.72 percentage point positive uninsurance differential, paired with a large negative direct-purchase estimate.

The robustness checks support the AIAN and West Asian/MENA Medicaid interpretations most strongly (Table 3). In the pre-2014 placebo check, the AIAN uninsurance placebo estimate was small and statistically imprecise, and the Medicaid placebo estimate was near zero. Leave-one-state-out estimates for AIAN uninsurance remained negative in every omission, ranging from -2.99 to -1.95 percentage points, and AIAN Medicaid estimates remained positive,

ranging from 2.52 to 3.10 percentage points.

For the West Asian/MENA proxy group, placebo estimates were small and imprecise for both uninsurance and Medicaid. Leave-one-state-out estimates remained negative for uninsurance and positive for Medicaid. NHPI uninsurance was sign-stable in leave-one-state-out checks, but the placebo estimate was also negative and imprecise. Filipino and Vietnamese Medicaid placebo estimates were nonzero and statistically significant, weakening causal interpretation of Medicaid-specific estimates for those groups. Vietnamese uninsurance remained positive and sign-stable, so it should be treated as an important offsetting or adverse pattern rather than ignored.

Figures 1 and 2 present high-dimensional Medicaid and uninsurance event-study diagnostics for selected detailed groups. Figure 3 reports raw adult uninsurance trends by expansion status for the key groups. These figures support the main use of event studies and trends as diagnostics: patterns are informative, but the manuscript's strongest claims should rely on the primary DDD table plus placebo and influence checks.

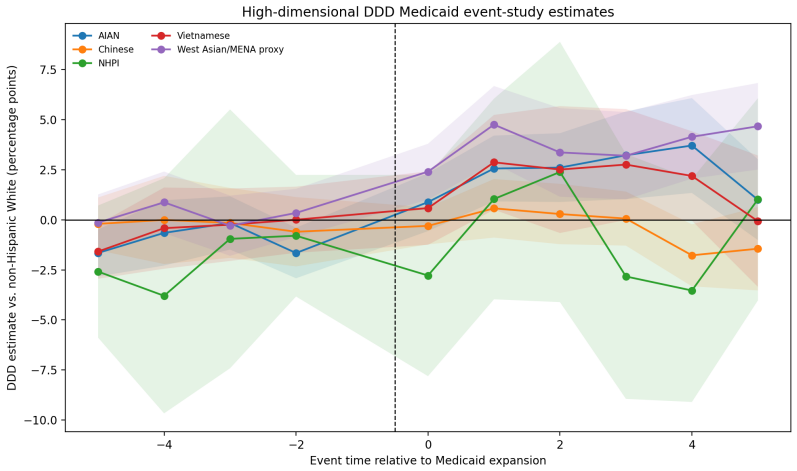

Figure 1: Figure 1. High-dimensional Medicaid event-study diagnostics

Note: This figure plots event-time estimates for the 1. High-dimensional Medicaid event-study diagnostics. Points show period-specific effects relative to the omitted reference period, with uncertainty intervals where reported.

5. Discussion

The main finding is that Medicaid expansion did not map cleanly onto a single pooled AANHPI coverage response. Disaggregation reveals several distinct patterns. AIAN adults experienced the most coherent expansion-associated coverage gains, with lower uninsurance and higher Medicaid coverage relative to non-Hispanic White adults. The West Asian/MENA proxy group had a

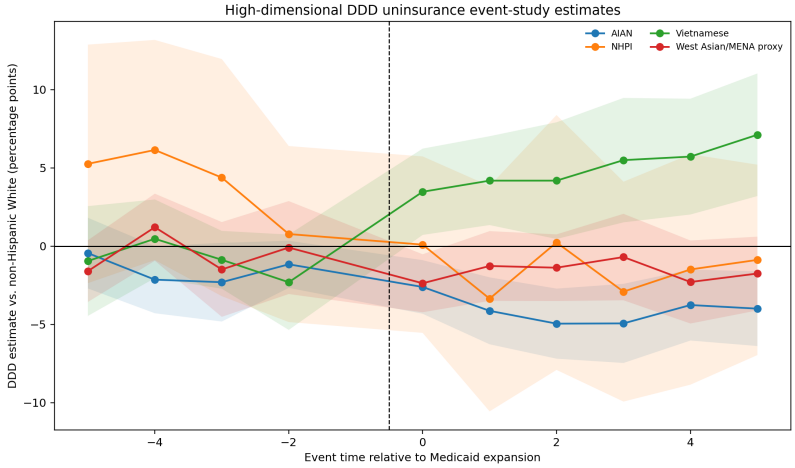

Figure 2: Figure 2. High-dimensional uninsurance event-study diagnostics

Note: This figure plots event-time estimates for the 2. High-dimensional uninsurance event-study diagnostics. Points show period-specific effects relative to the omitted reference period, with uncertainty intervals where reported.

large Medicaid gain and reduced direct-purchase coverage, suggesting a public-coverage substitution margin. NHPI adults had lower uninsurance, but not a clear Medicaid increase. Several detailed Asian subgroups showed offsetting patterns that would be hidden in a pooled estimate.

This interpretation extends prior AANHPI ACA evidence. Park and colleagues showed that low-income AANHPI adults gained Medicaid coverage in expansion states and had different private coverage patterns [@park2019medicaidprivate]. This paper suggests that even pooled AANHPI expansion estimates may mask subgroup-specific pathways. It also aligns with the data-disaggregation literature, which argues that aggregation can hide disadvantage and create misleading averages [@holland2012asianhealthdata; @islam2010methodological; @shimkhada2021capturing; @nguyen2022federalsurveys].

The AIAN result deserves emphasis and careful institutional framing. AIAN adults had high baseline uninsurance and high IHS coverage. Medicaid expansion can matter for AIAN adults by reducing uninsurance and by increasing third-party coverage that supports tribal and IHS-connected systems. The current ACS design measures Medicaid and IHS coverage indicators, but it cannot fully observe tribal health system use or reservation-area exposure. An AIAN/IHS-focused companion paper could deepen that institutional analysis.

The West Asian/MENA proxy result is also important. ACS race categories do not directly identify West Asian or Middle Eastern/North African origin, so this project uses ancestry and birthplace to approximate the group. That proxy status limits interpretation, but it also illustrates why official race categories

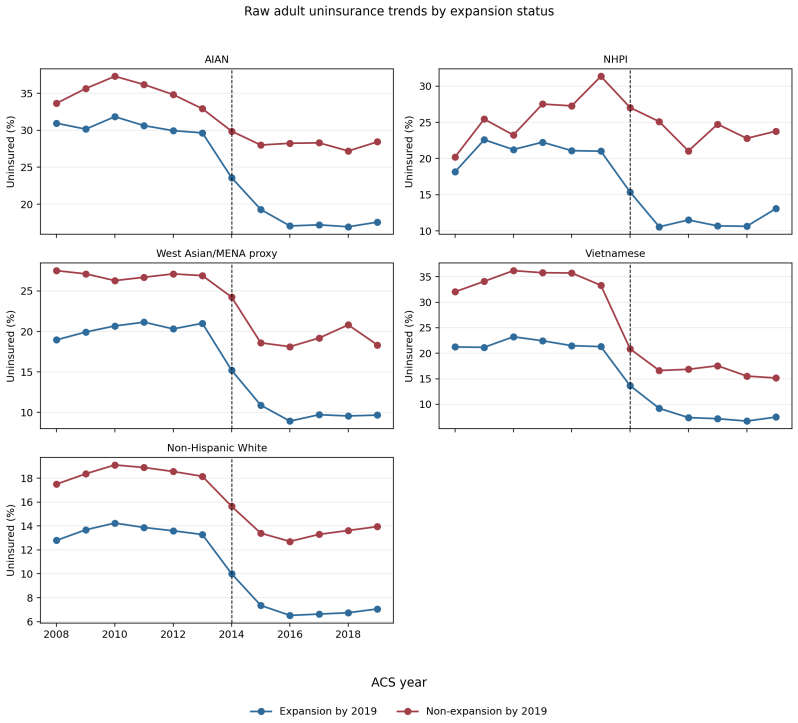

Figure 3: Figure 3. Raw adult uninsurance trends by expansion status

Note: This figure shows raw trends for the 3. Raw adult uninsurance trends by expansion status. It helps readers compare baseline levels, pre-policy movement, and the timing of any post-policy divergence.

are incomplete for coverage-equity research. The Medicaid gain for this group is large enough to report, with the proxy label retained throughout.

The Vietnamese result is a caution against over-aggregation. A positive Medicaid estimate paired with a positive uninsurance estimate and a large negative direct-purchase estimate suggests that the expansion-state coverage response is not a simple movement from uninsurance to Medicaid. This could reflect compositional changes, eligibility and citizenship pathways, local labor-market differences, Marketplace shifts, or subgroup-specific trends not fully removed by the fixed effects. The correct interpretation is heterogeneity requiring explanation, not a simple coverage-gain story.

6. Limitations

This study has limitations. First, the supplied ACS/IPUMS extract does not include person replicate weights, so the current draft uses ACS person weights for point estimates and state-clustered standard errors for cell-level models, but cannot compute ACS replicate-weight descriptive standard errors. A follow-up extract with `REPWTP1` through `REPWTP80` would strengthen final descriptive inference.

Second, subgroup coding depends on ACS measurement. Detailed Asian and NHPI categories are more directly supported than West Asian/MENA, which is an ancestry/birthplace proxy. Some small subgroup-state-year cells have limited support, so NHPI and smaller detailed Asian subgroup estimates should be interpreted with wider uncertainty and influence diagnostics.

Third, the main estimator is a high-dimensional subgroup-gap DDD rather than a full group-time ATT estimator. It absorbs rich fixed effects and avoids pooled Asian categories, but it remains a cell-level regression design. Event-study diagnostics, placebo checks, and leave-one-state-out analyses are therefore essential to interpretation.

Fourth, the analysis focuses on coverage, not access, affordability, utilization, or health outcomes. Prior work suggests that coverage gains do not automatically eliminate access disparities [@park2019asianaccessutilization; @nguyen2019asianaccess]. The policy interpretation should therefore be limited to insurance coverage.

7. Conclusion

ACA Medicaid expansion was associated with heterogeneous coverage changes across disaggregated AANHPI, West Asian/MENA proxy, NHPI, and AIAN adults. The most defensible main claim is that AIAN adults experienced larger expansion-associated coverage gains than non-Hispanic White adults, with additional evidence of West Asian/MENA Medicaid gains and NHPI uninsurance reductions. Detailed Asian subgroup estimates were mixed. For health services

researchers and policymakers, the lesson is direct: pooled AANHPI estimates can hide both coverage gains and offsetting subgroup-specific patterns.

Main tables

Table 1

See `tables/table1.md`.

Table 2

See `tables/table2.md`.

Table 3

See `tables/table3.md`.