

Impact of Sanctuary State Policies on Healthcare Utilization Among U.S. Agricultural Workers: A Causal Inference Approach

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Background & Motivation

Nearly three quarters of U.S. agricultural workers are immigrants. Among them, more than half are undocumented workers. This population represents an essential yet underserved segment of the U.S. workforce. Many of these workers face significant barriers to accessing healthcare, especially those without legal identity. State-level sanctuary jurisdictions and local policies, which limit cooperation with federal immigration enforcement, may influence healthcare-seeking behavior by reducing fear and increasing trust in public institutions. Understanding whether and how such policies affect healthcare access is critical for shaping equitable health and immigration policy.

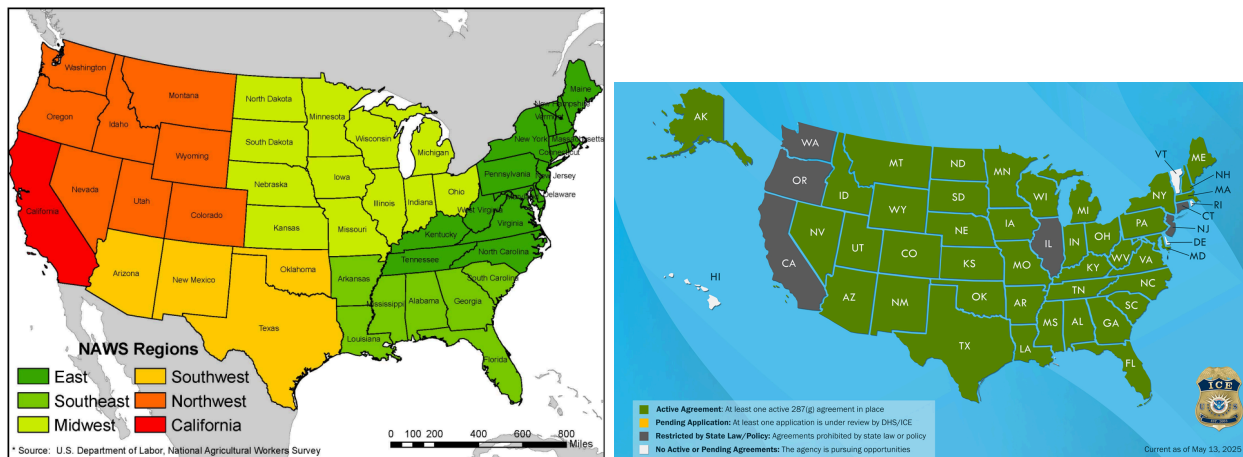


Figure 1(Left): Geographical regions in NAWS

Figure 2(Right): U.S. ICE 287(g) program map, gray-colored states: Act restricted by state law/policy

Research Questions

- How are health utilization rates impacted by sanctuary policies?
- Does residing in a sanctuary state improve healthcare utilization among U.S. agricultural workers, stratified by legal status?

Hypotheses

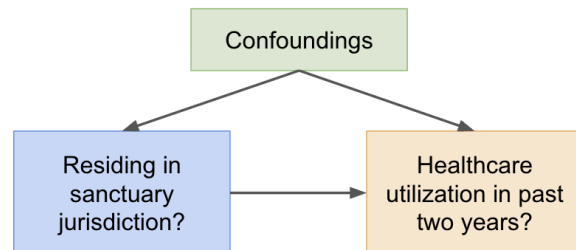
Sanctuary policies increase healthcare utilization, especially among undocumented workers, and decrease barriers commonly faced by U.S. agricultural workers.

Data Sources

- National agricultural workers survey (covariates, outcomes) [1]
 - Random survey responses from 1989-2022, providing demographic, employment, health, and legal status data

- Sanctuary policies (treatment) [2][3]
 - State-level restrictions of Act 287(g)

Study Design



We evaluate the effect of residing in a sanctuary jurisdiction on healthcare utilization among U.S. agricultural workers. The treatment variable is defined as residence in California at the time of the NAWS interview, based on California's restriction of 287(g) agreements. The 287(g) agreements allow state and local law enforcement to enforce federal immigration laws in collaboration with ICE. Jurisdictions that reject or limit these agreements are considered sanctuary areas. California, with its statewide sanctuary policies, serves as the treatment group.

The outcome is self-reported healthcare utilization within the past two years, based on whether the respondent received care from a doctor, nurse, dentist, clinic, or hospital.

To adjust for confounding, we include a range of pre-treatment covariates, including age, gender, education level, English reading proficiency, legal status (U.S.-citizen, permanent resident, or undocumented), family income, health insurance status (self- and employer-provided), and survey year.

This framework supports estimation of the average treatment effect (ATE) of sanctuary status using causal inference methods while accounting for demographic, legal, and socioeconomic differences across respondents.

Analytic Methods and Results

Barriers to Healthcare and Sanctuary Status

To evaluate whether residence in a sanctuary state is associated with fewer reported barriers to healthcare, we conducted a series of logistic regressions using data from the NAWS cohort. The following 12 barrier outcomes are analyzed, including distance to providers, language difficulties, feelings of being unwelcome, cost, and legal status-related fear. Each barrier was regressed separately on sanctuary residence (California vs. other regions by NAWS definition), adjusting for demographic and socioeconomic covariates: income, age, gender, legal status,

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survey year (fiscal and weighted), education level, English reading proficiency, and health insurance status (self and employer-provided at work).

Barrier	Estimate	p-value
Distance***	-0.82	1.00e-05
Location*	-0.62	3.61e-03
Closed	0.21	4.31e-02
Service	-0.060	8.37e-02
Language***	-0.61	1.50e-07
Unwelcome	0.27	2.92e-02
Misunderstanding	-0.27	3.08e-02
Job	0.17	5.56e-02
Cost***	0.15	7.41e-05
Other	0.12	4.67e-02
Undocumented***	-0.81	8.35e-06
Unneeded*	0.17	1.58e-03

Table 1. Different barriers to healthcare for California agricultural workers with multiple hypothesis correction. * indicates $p < 0.05/12 \sim 4.41\text{e-}03$, ** indicates $p < 0.01/12 \sim 8.33\text{e-}04$, and *** indicates $p < 0.01/12 \sim 8.33\text{e-}05$

California residency was significantly associated with lower odds of reporting several barriers to care, including distance, language barriers, and legal status-related fear(labeled “undocumented”). Conversely, “cost” being a barrier to healthcare was more commonly reported by workers in California.

These findings suggest that California being a state with sanctuary status may alleviate structural and psychological barriers tied to immigration enforcement, but financial access remains a major challenge even in more protective policy environments.

The Propensity Weighted Analysis

$$\hat{\tau}^{AIPW} := \frac{1}{n} \sum_{i=1}^n \hat{\mu}^{-i}(X_i, 1) - \hat{\mu}^{-i}(X_i, 0) + \frac{W_i}{\hat{e}^{-i}(X_i)} (Y_i - \hat{\mu}^{-i}(X_i, 1)) - \frac{1 - W_i}{1 - \hat{e}^{-i}(X_i)} (Y_i - \hat{\mu}^{-i}(X_i, 0))$$

Equation 1. Augmented inverse propensity weighted (AIPW) estimator.

To estimate the causal effect of residing in a sanctuary jurisdiction on healthcare utilization among U.S. agricultural workers, we apply Inverse Propensity Weighted (IPW) and Augmented Inverse Propensity Weighting (AIPW) estimators. IPW weights the individual treatment effects based on each individual's probability of residing in a sanctuary region (propensity score) using a logistic regression with pre-selected covariates. Alternatively, AIPW uses causal trees to directly estimate the treatment effect and corrects for bias (see Equation 1). We extracted the average treatment effect on the overlapping region of the covariate distribution.

To assess regional heterogeneity, we conduct pairwise comparisons with participants in California to participants in each of the five non-Californian regions. We also conduct a comparison between participants residing in California and all regions in the NAWS data. IPW (Figure 3) and AIPW (Figure 4) average treatment estimates were calculated for each comparison.

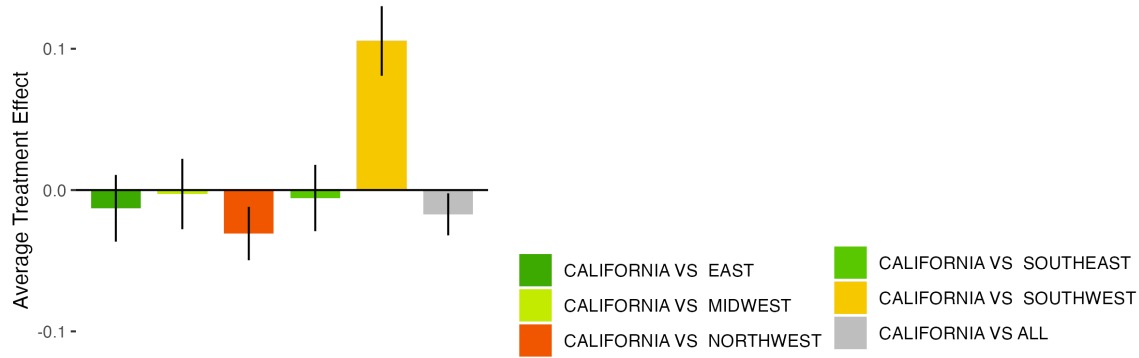


Figure 3. Inverse propensity weighted (IPW) average treatment effect estimates.

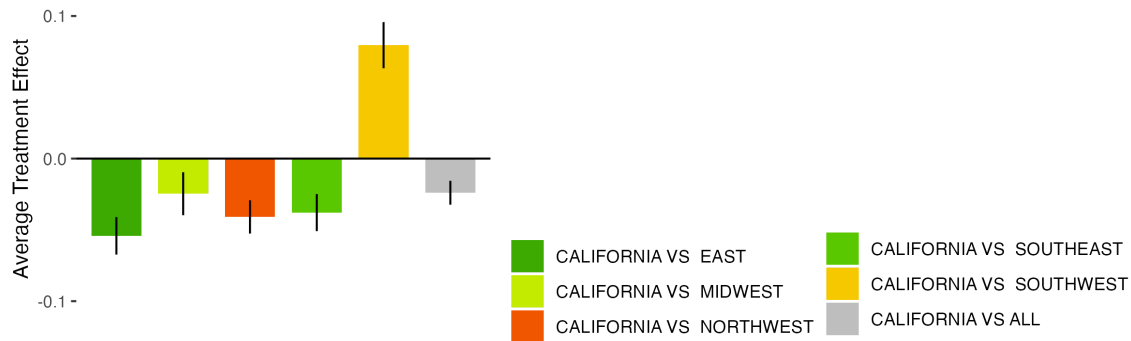


Figure 4. AIPW average treatment effect estimates.

We find that agricultural workers residing in California are more likely to report recent healthcare utilization than comparable workers in the Southwest. This supports our hypothesis that sanctuary policies and a more inclusive policy environment may reduce barriers to care, especially for vulnerable subgroups.

Discussion

Our findings suggest that residing in a sanctuary jurisdiction, exemplified by California, is associated with increased healthcare utilization and reduced structural and psychological barriers among U.S. agricultural workers, particularly those who are undocumented. Using doubly robust AIPW estimators, we found consistent evidence that California residents were more likely to report healthcare use compared to those in non-sanctuary regions, especially the Southwest. Additionally, regression analysis of specific barriers revealed significantly lower odds of reporting distance, language, and legal status-related fears in California, though financial barriers such as cost remained prevalent.

Study limitations

Several limitations should be noted. First, all NAWS data come from face-to-face interviews, which may introduce social desirability or recall bias, particularly on sensitive topics like legal status and healthcare access. Second, the definition of “sanctuary status” is simplified by treating California as a single treatment group, even though sanctuary policies vary widely in content and enforcement across counties and municipalities within the state. This may lead to measurement error in treatment assignment.

Future plans

To address these limitations, future work will use restricted NAWS data with more granular geographic resolution, allowing more precise matching of respondents to local policy contexts. We also plan to explore interactions between legal status, sanctuary policy, and access to Federally Qualified Health Centers (FQHCs).

Sources

- [1] Employment and Training Administration (2022). National Agricultural Workers Survey [Data set]. ETA. Accessed April 28, 2025.
- [2] Vaughan, J.M. & Griffith, B. (2025). Map: Sanctuary Cities, Counties, and States. <https://cis.org/Map-Sanctuary-Cities-Counties-and-States>
- [3] U.S. Immigration and Customs Enforcement, Delegation of Immigration Authority Section 287(g) Immigration and Nationality Act. <https://www.ice.gov/identify-and-arrest/287g>
- [4] Golub Capital Social Impact Lab (2023). Machine Learning-based Causal Inference Tutorial. <https://bookdown.org/stanfordgsbsilab/ml-ci-tutorial/>