

Have Your Cake and Eat It Too:

THE UTILITY OF A PREPAID SAMPLE COMPONENT
IN BOLSTERING THE REPRESENTATIVENESS
OF AN ADDRESS-BASED SAMPLE DESIGN

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The Trouble with Address-based Sample

- Address-based sampling (ABS) with push-to web designs have helped combat the decline in response rates and the resulting sharp rise in costs associated with random digit dialing (RDD).
- However, they do not provide a panacea for improving response from certain key harder-to reach-subgroups.
- ABS respondents tend to be:
 - White,
 - English Speakers,
 - Higher income,
 - Better educated



Potential Solution

Adding a **supplemental** phone component targeted to **sample prepaid (PPD) cellphone users** may help bolster response from key subgroups while reaping the benefits of an ABS design.



What is a PPD phone?

- 'Pay-as-you-Go' phone
- Cell phone without a long-term contract (and thus a credit check)
- Often have limited minutes
 - Some high-end providers offer smartphones with unlimited internet, text and roaming capabilities
- Fast and easy to buy
- Cheaper
 - Cost is sometimes less than half that of a traditional billed service
- Not portable
- Deactivated by not using or buying minutes within the prescribed time



Who uses PPD phones?

- No long-term contract or credit check, so people without a credit history or a less-than-perfect credit record can get a phone easily
- Previous research (McGeeney, 2015; Berzofsky et al., 2018) has shown that compared with other cellphone users PPD phone users are more likely to be:
 - Non-white,
 - Lower income,
 - Less educated,
 - Live in urban areas
- These are key demographics that tend to be underrepresented in typical ABS studies.

Research Question

Can the addition of a prepaid sample frame help compensate for demographic biases in ABS samples?



The current research explores the utility of adding a PPD Cell sample component to 2 major state-level health care studies fielded in 2021:

Massachusetts Health Insurance Survey
(MHIS)

California Health Interview Survey
(CHIS)

CHIA

UCLA-CHPR



CHIS and MHIS Overview

Large State-level Health Surveys and Some of the Largest Health Surveys in the Nation

Mixed-Mode and Hybrid Dual Frame Design

- ABS sample (based on USPS Computerized Delivery Sequence File)
 - Modeled to target subgroups of interest
 - Phase 1: Push to Web (4 mailings)
 - Phase 2: Telephone Nonresponse follow up
- PPD Cell Sample (Simple random sample)

Fielded in 2021



Analysis Strategy

- Compare the incidence of key subgroups between PPD cell and ABS samples
- Pairwise comparisons of unweighted key demographics
 - MHIS
 - CHIS

Analysis Strategy

CAVEAT FOR CHIS:

- In CHIS, we screened the PPD cell sample for the following key groups:
 - Hispanics
 - AA
 - In-Language
 - Young Adult (18-24)
- So, one could argue that the incidence we see is a function of screening and does not indicate anything about the sample.

QUESTION:

- What role does the screening play in the observed incidences? Or rather...
- Would we see a difference between the PPD and ABS samples if we control for screening?



Analysis Strategy

COMPARE THE INCIDENCE OF KEY SUBGROUPS BETWEEN PPD AND ABS SAMPLES BY RUNNING PAIRWISE COMPARISONS:

- CHIS
 - Control for screening by applying the PPD screening criteria to ABS and compare the incidence of key subgroups:
 - ABS (actual) vs. PPD (screened)
 - ~~ABS (actual) vs. PPD (screened)~~
 - ABS (screened) vs. PPD (screened)

- MHIS
 - ABS (actual) vs. PPD (actual)

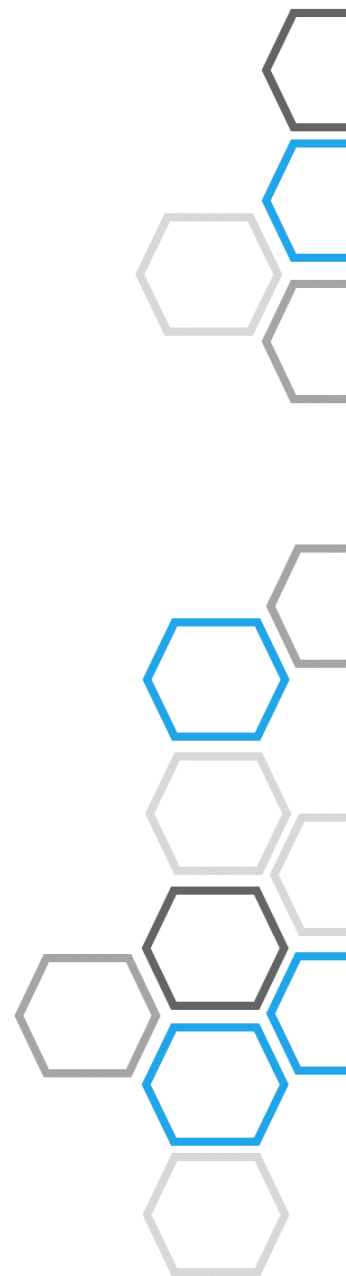
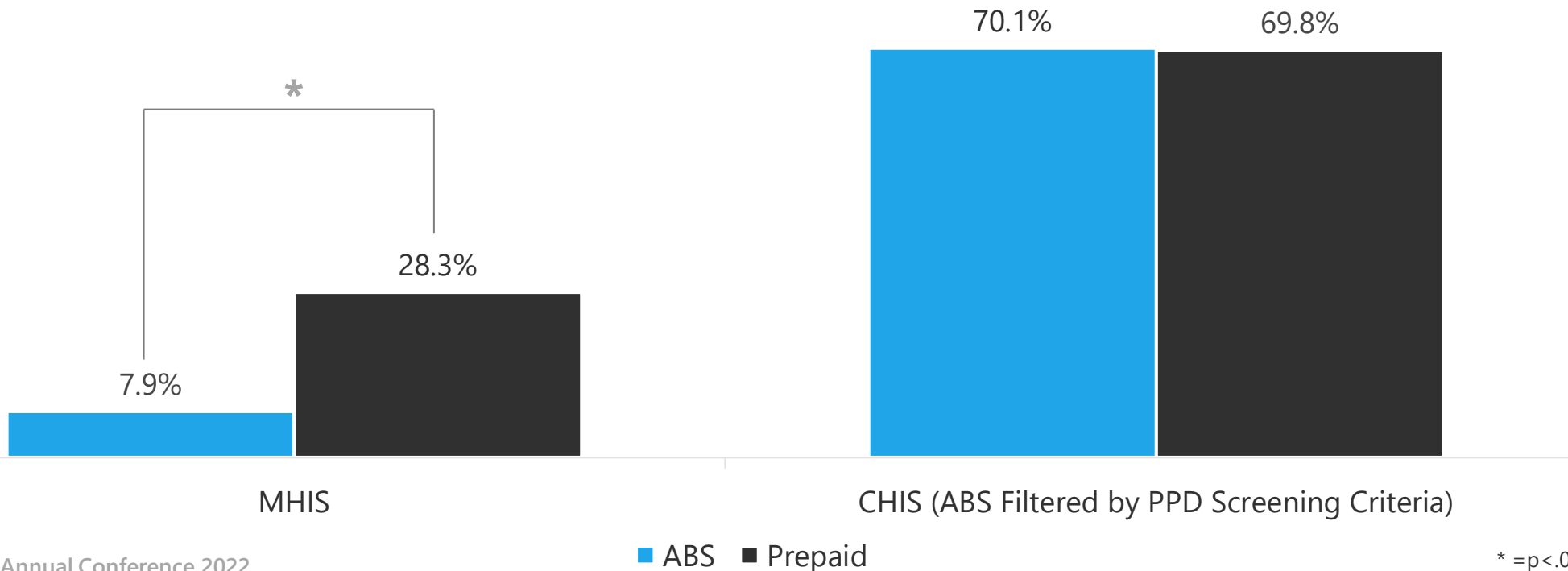




RESULTS:
Race/Ethnicity and Language

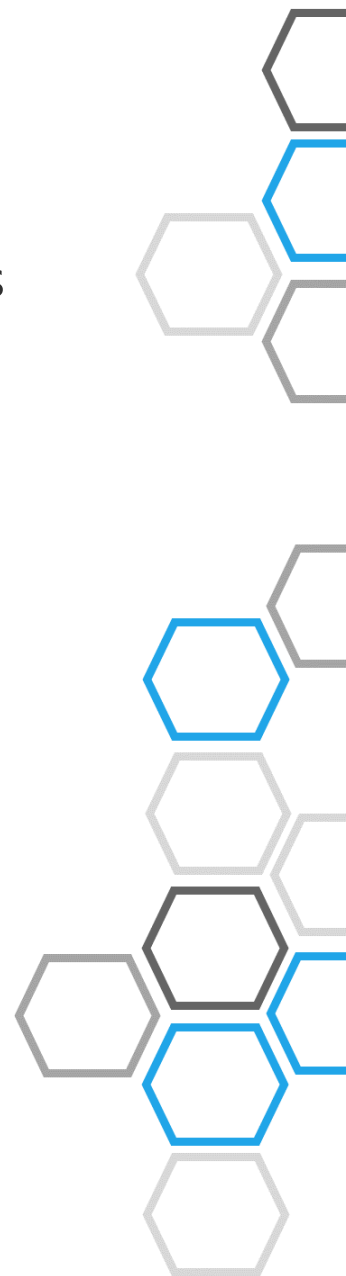
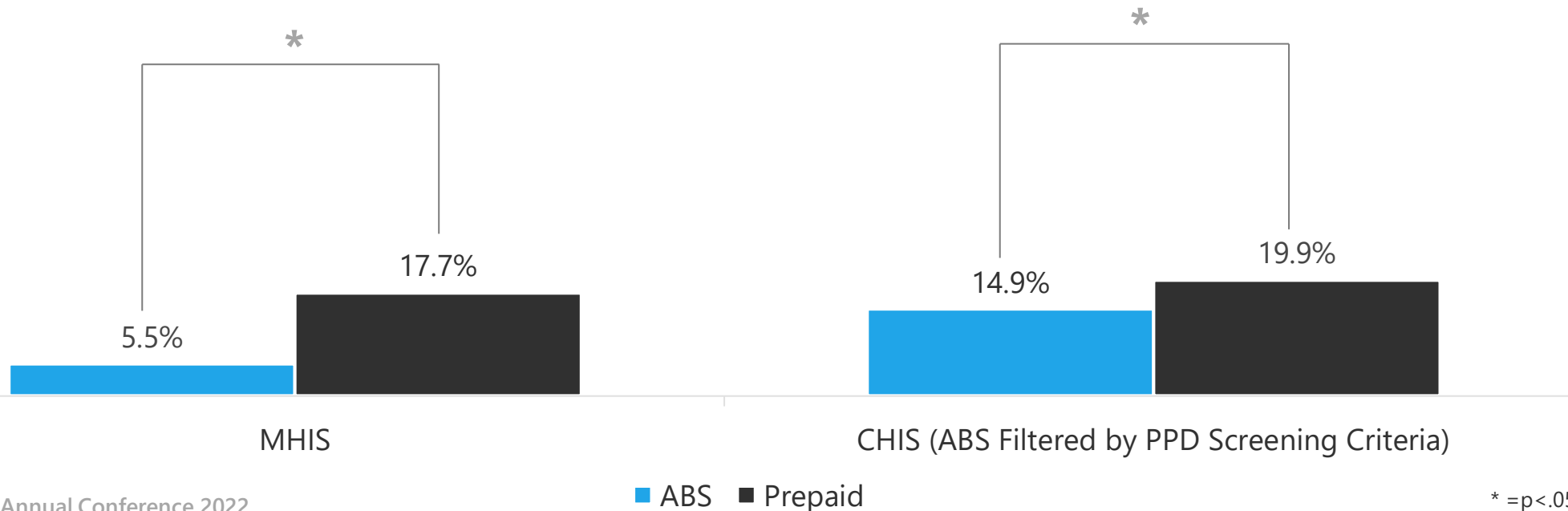
Results: Incidence for Hispanics

Compared with the ABS samples, PPD sample in MHIS had a higher incidence of Hispanics.



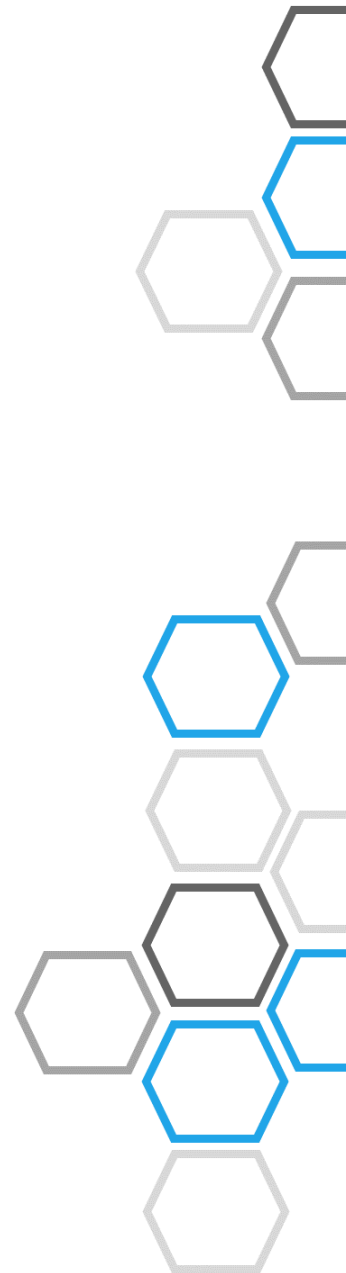
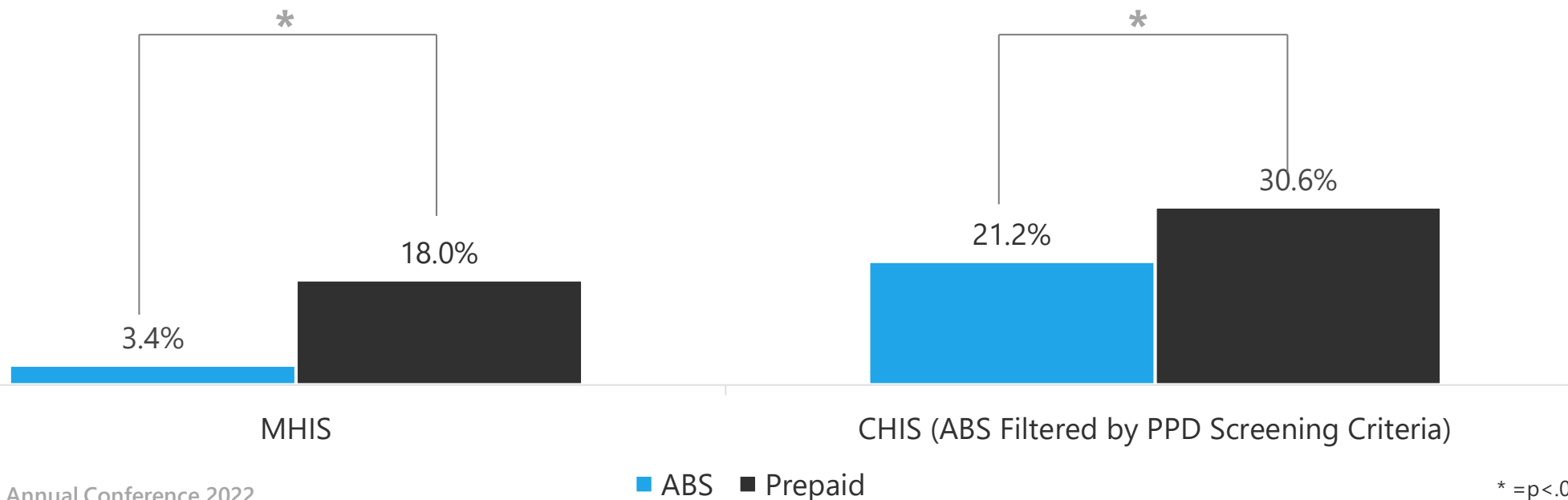
Results: Incidence for African Americans

Compared with the ABS samples, PPD samples had a higher incidence of African Americans in both surveys.



Results: Incidence for In-Language Interviews

Compared with the ABS samples, PPD samples had a higher incidence of in-language interviews in both surveys.

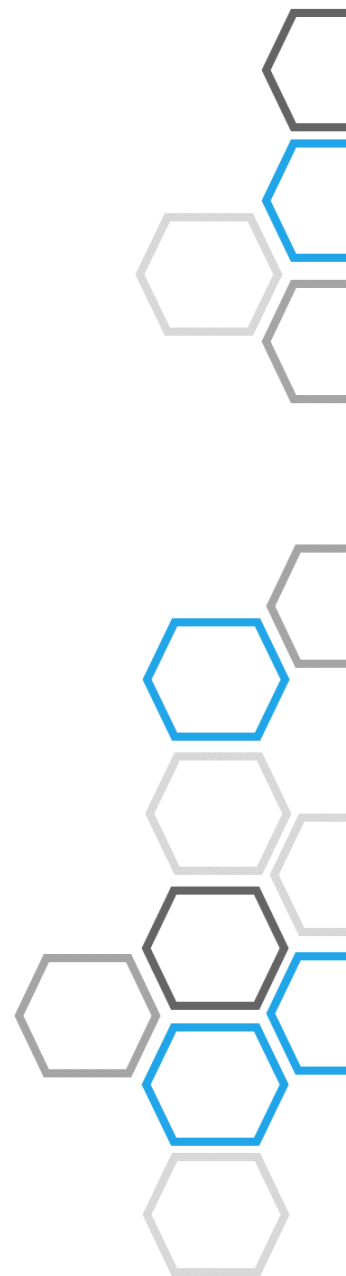
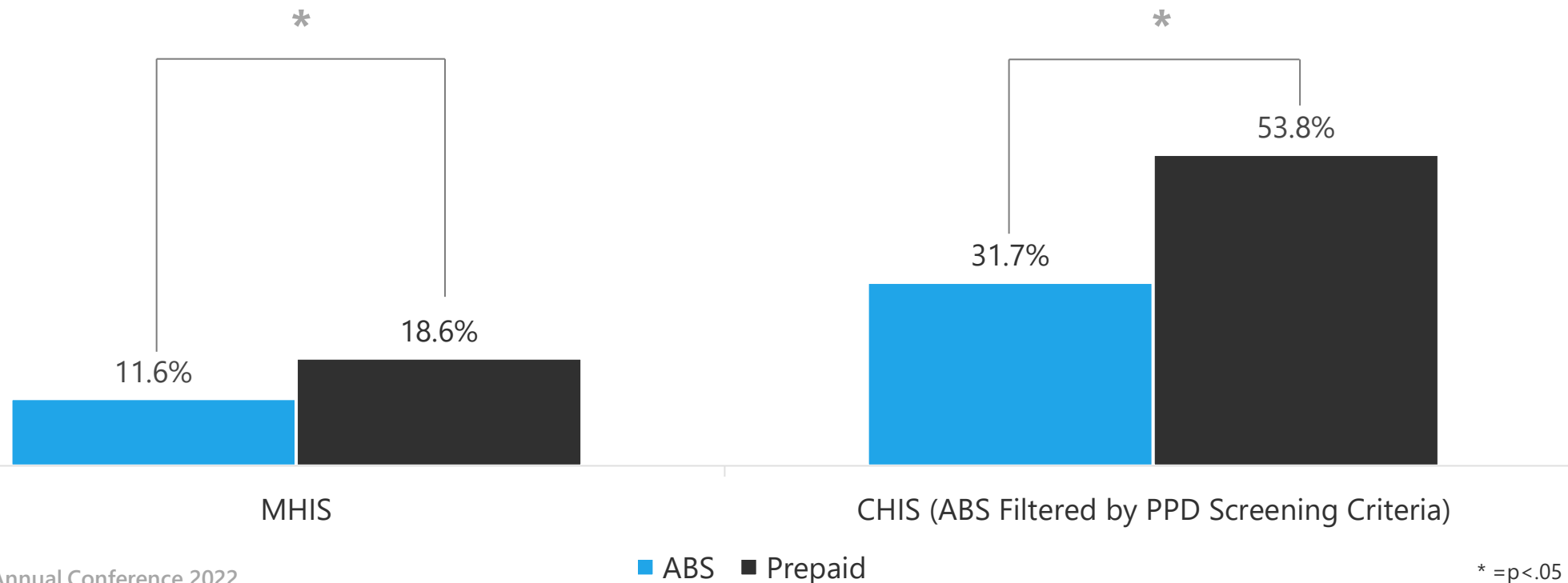




RESULTS:
Socio-economic Status

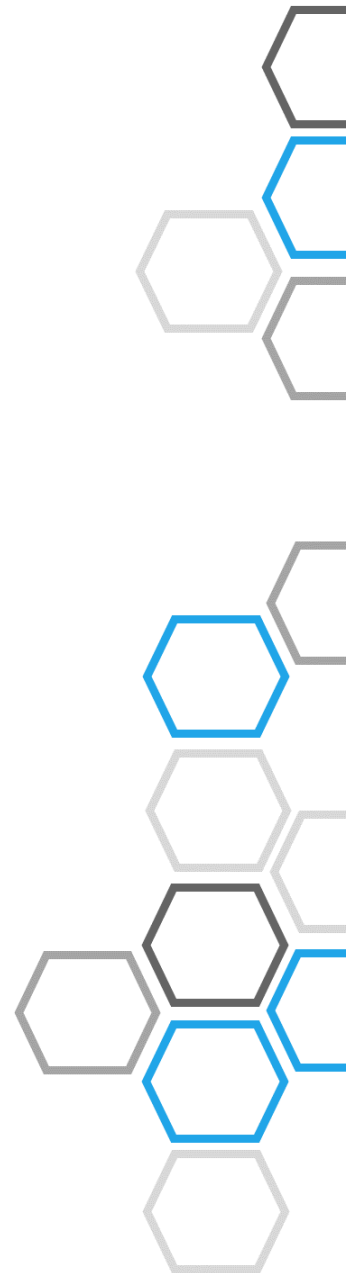
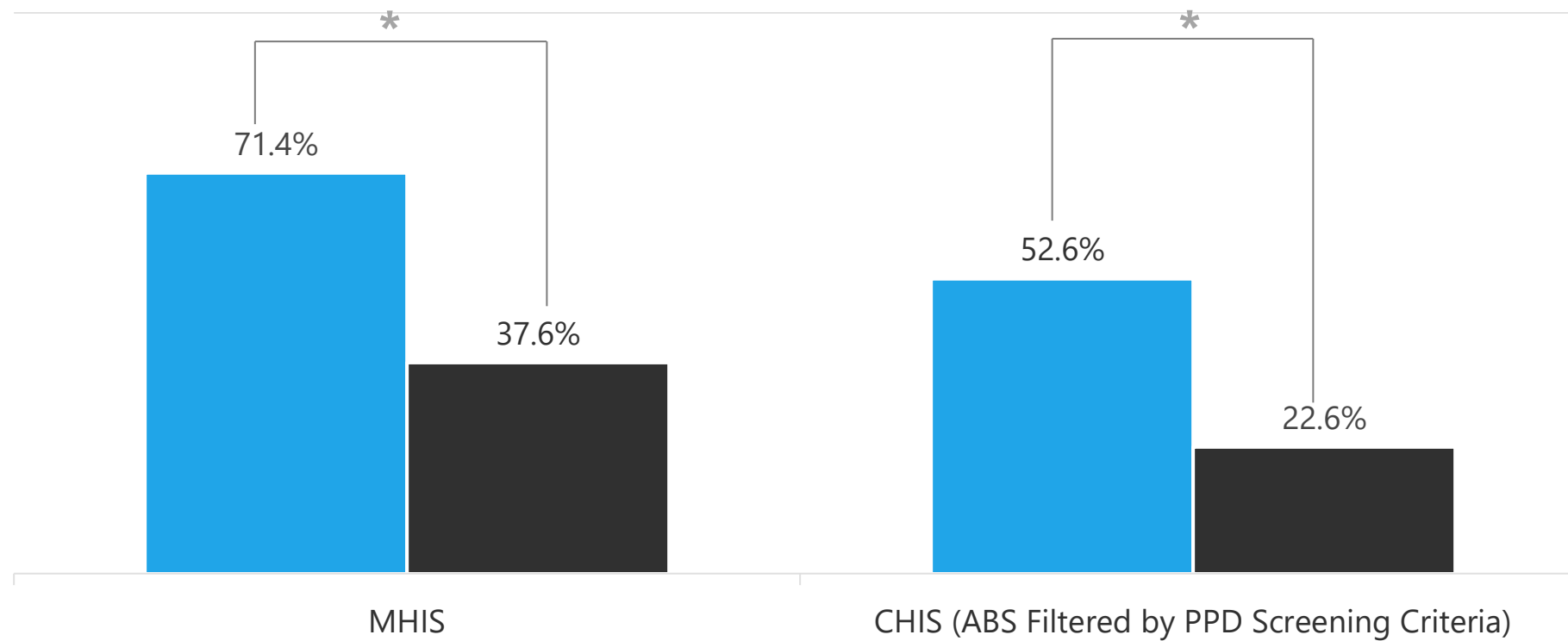
Results: Incidence by Poverty Level

Compared with the ABS samples, PPD samples had a higher incidence of low income (<200% FPL) respondents in both surveys.



Results: Incidence for Homeowners

Compared with the ABS samples, PPD samples had a lower incidence of homeowners in both surveys.

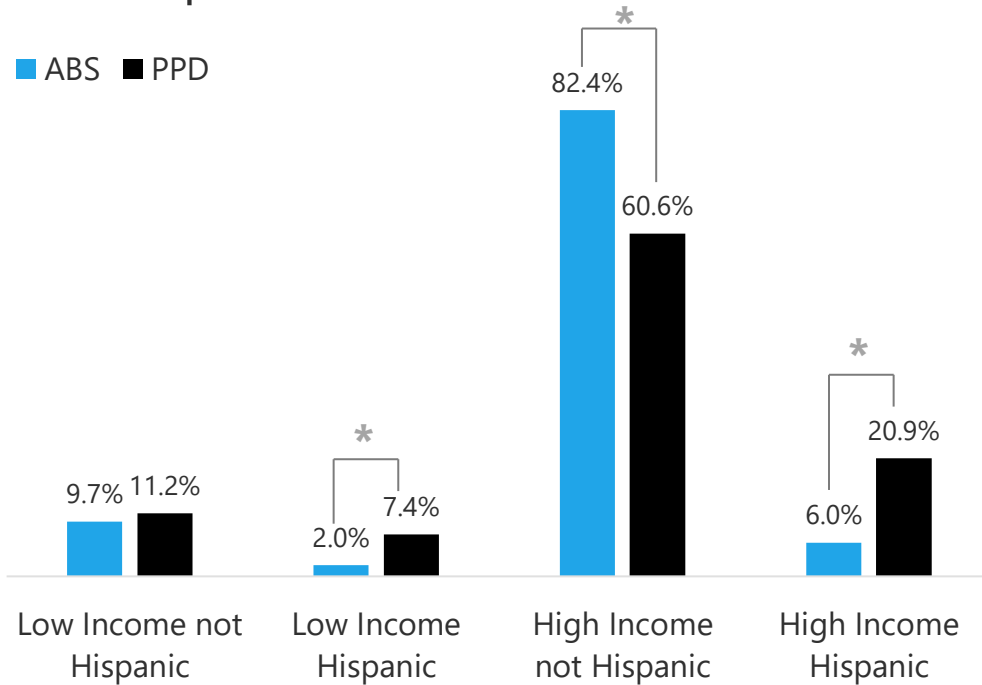




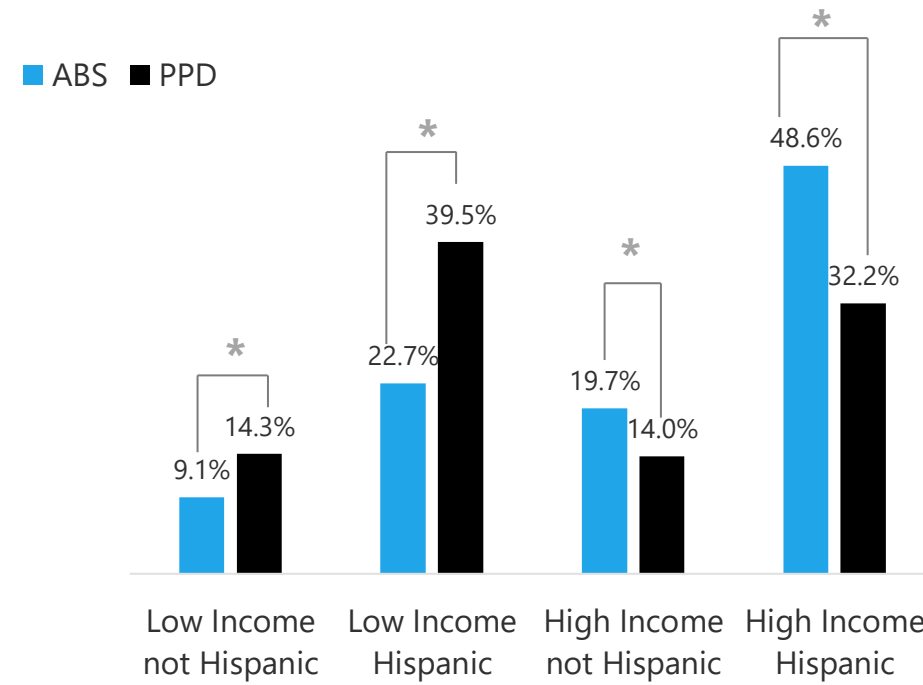
RESULTS:
Race/Ethnicity by Socio-economic
Status

Results: Hispanic by Poverty Level

Compared with the ABS samples, the PPD Cell sample had a higher incidence of low-income Hispanics in both surveys. MHIS PPD Cell also had a higher incidence of high-income Hispanics.

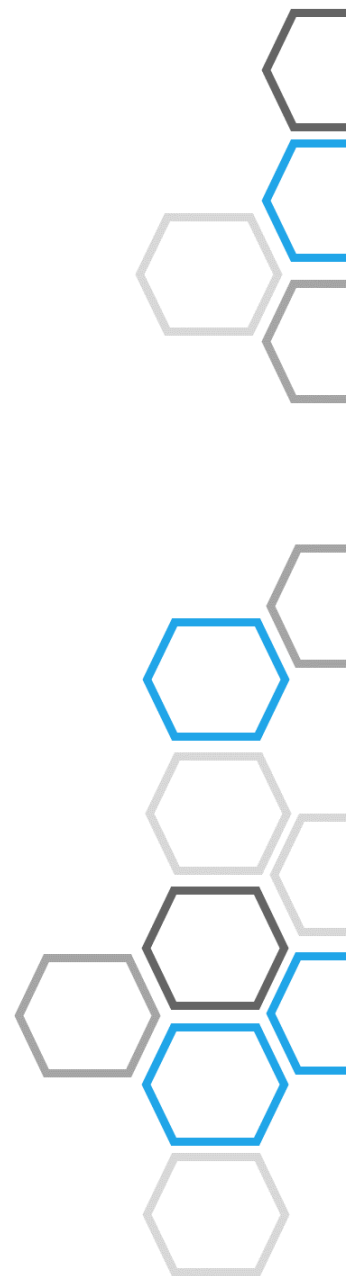


MHIS



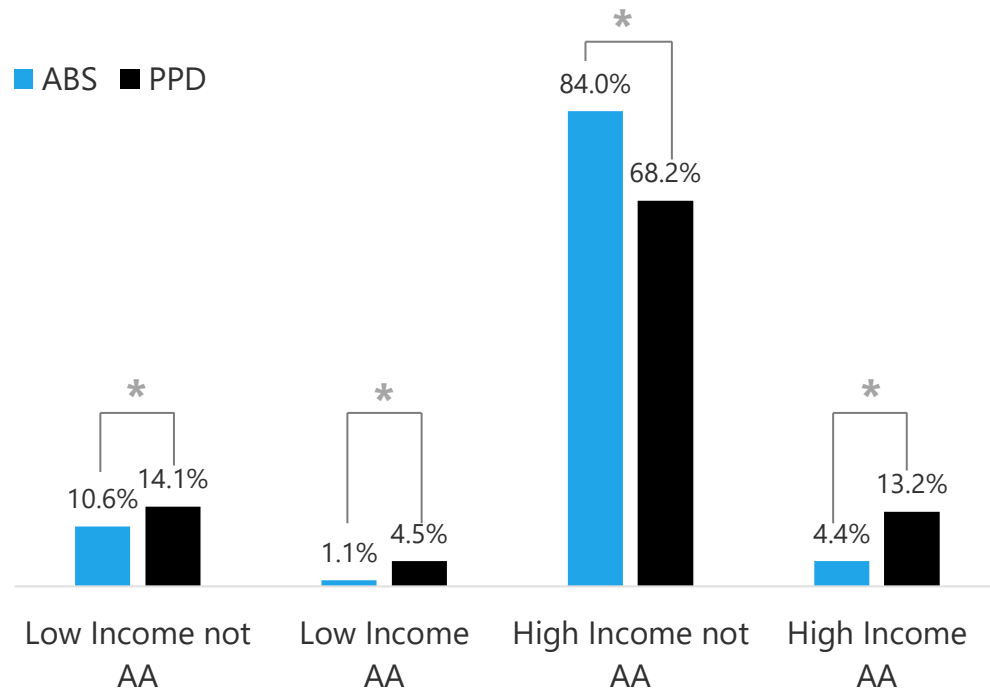
CHIS (ABS Filtered by PPD Screening Criteria)

* = p < .05

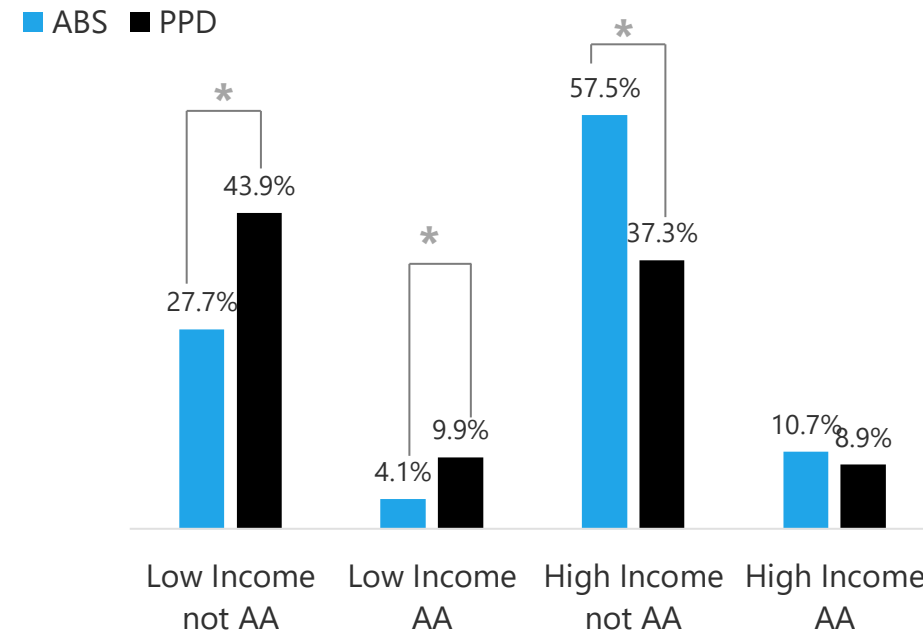


Results: African American by Poverty Level

Compared with the ABS samples, the PPD Cell sample had a higher incidence of low-income AA in both surveys. MHIS PPD Cell also had a higher incidence of high-income AA.

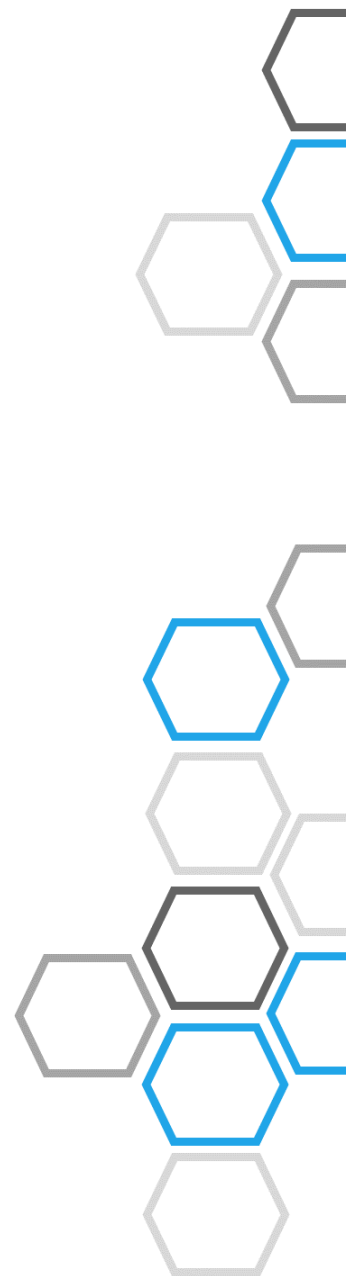


MHIS



CHIS (ABS Filtered by PPD Screening Criteria)

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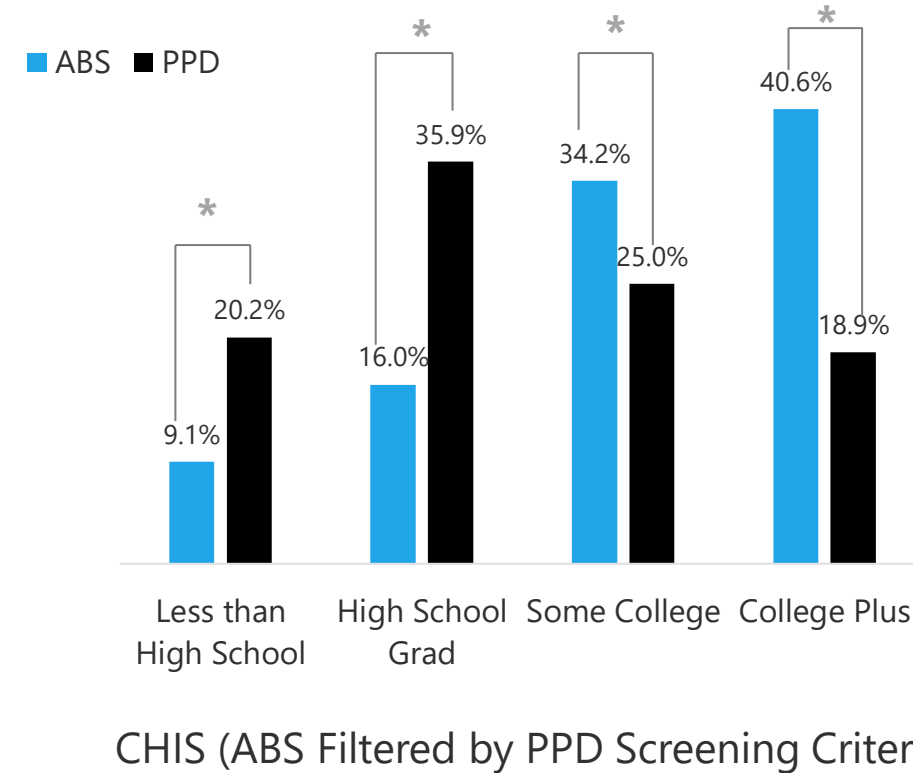
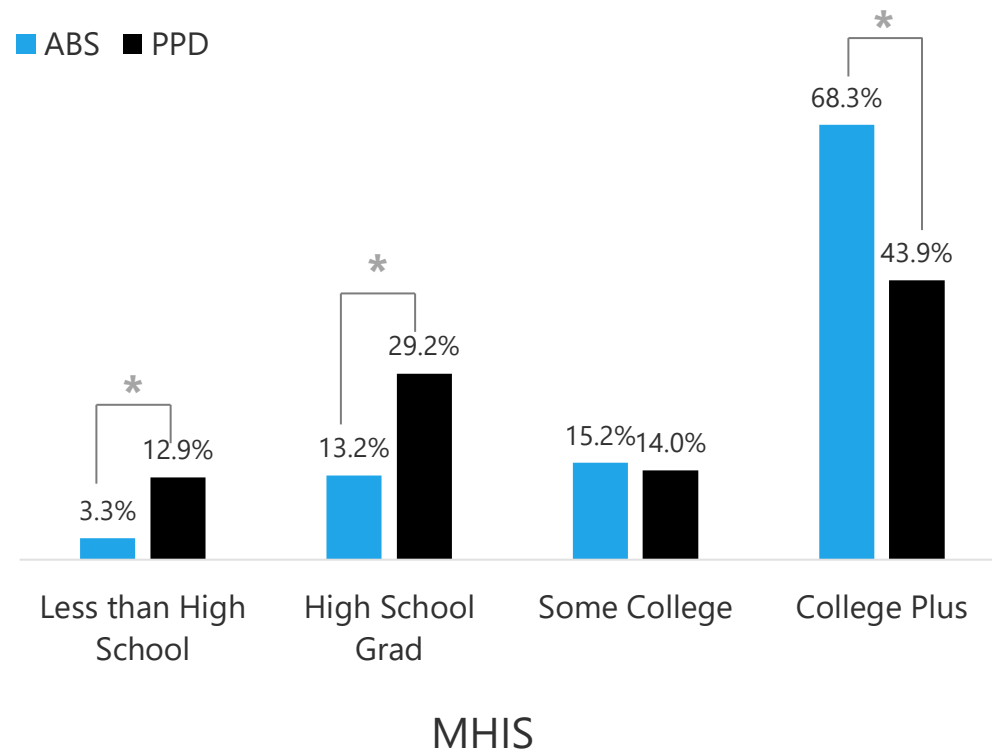




RESULTS:
Educational Achievement and Age

Results: Incidence by Educational Achievement

Compared with the ABS samples, the PPD Cell samples had a higher incidence of respondents with lower education levels (HS Grad or less) in both surveys.

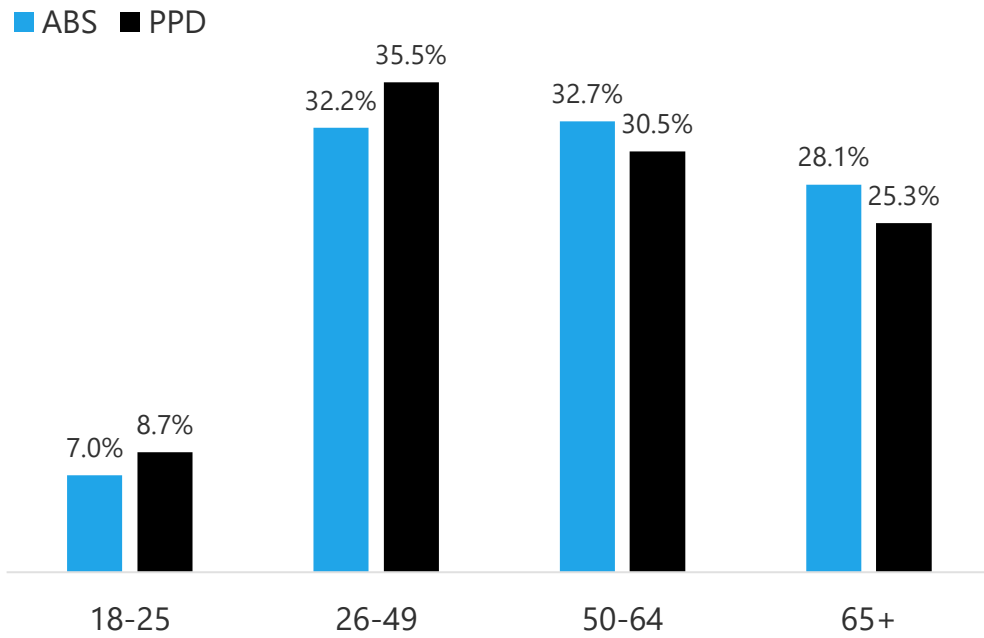


* = p < .05

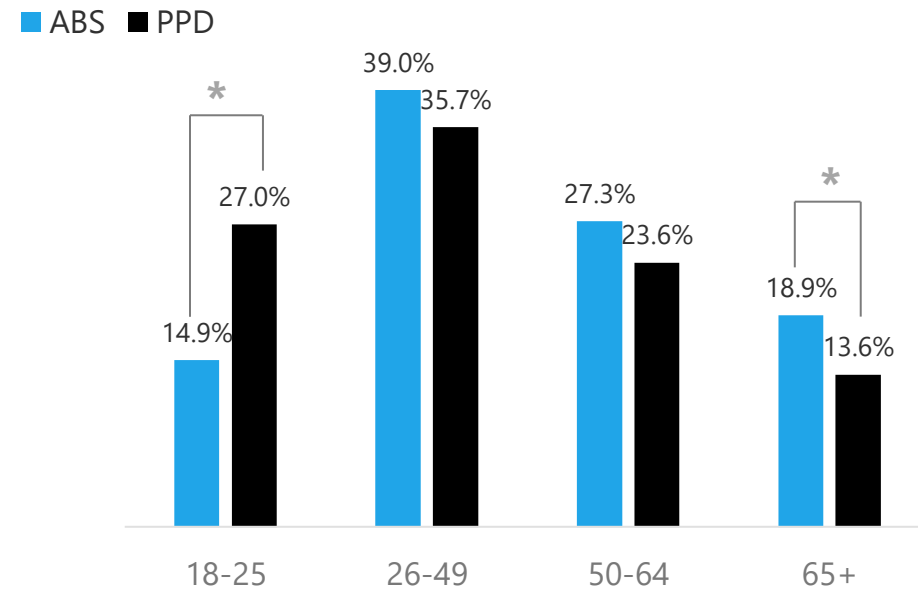


Results: Incidence by Age

Compared with the ABS samples, the CHIS PPD sample had a higher incidence of younger adults, and a lower incidence of 65+ respondents.

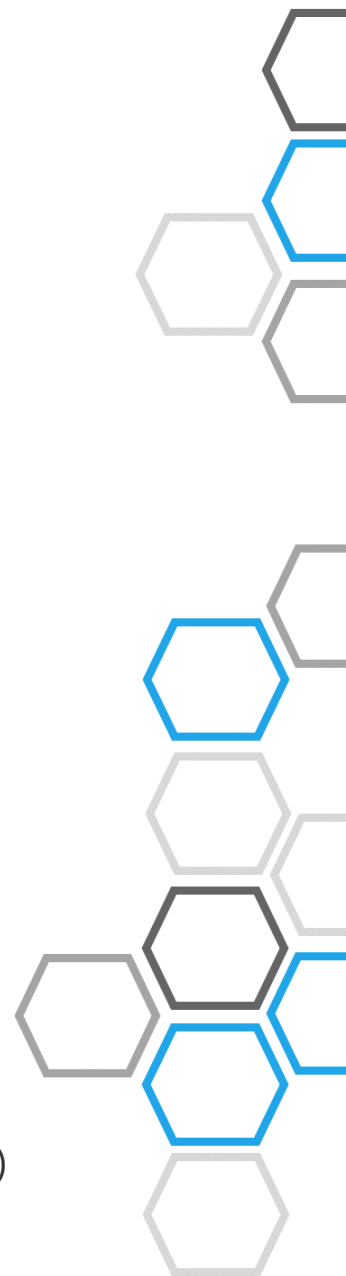


MHIS



CHIS (ABS Filtered by PPD Screening Criteria)

* = p < .05



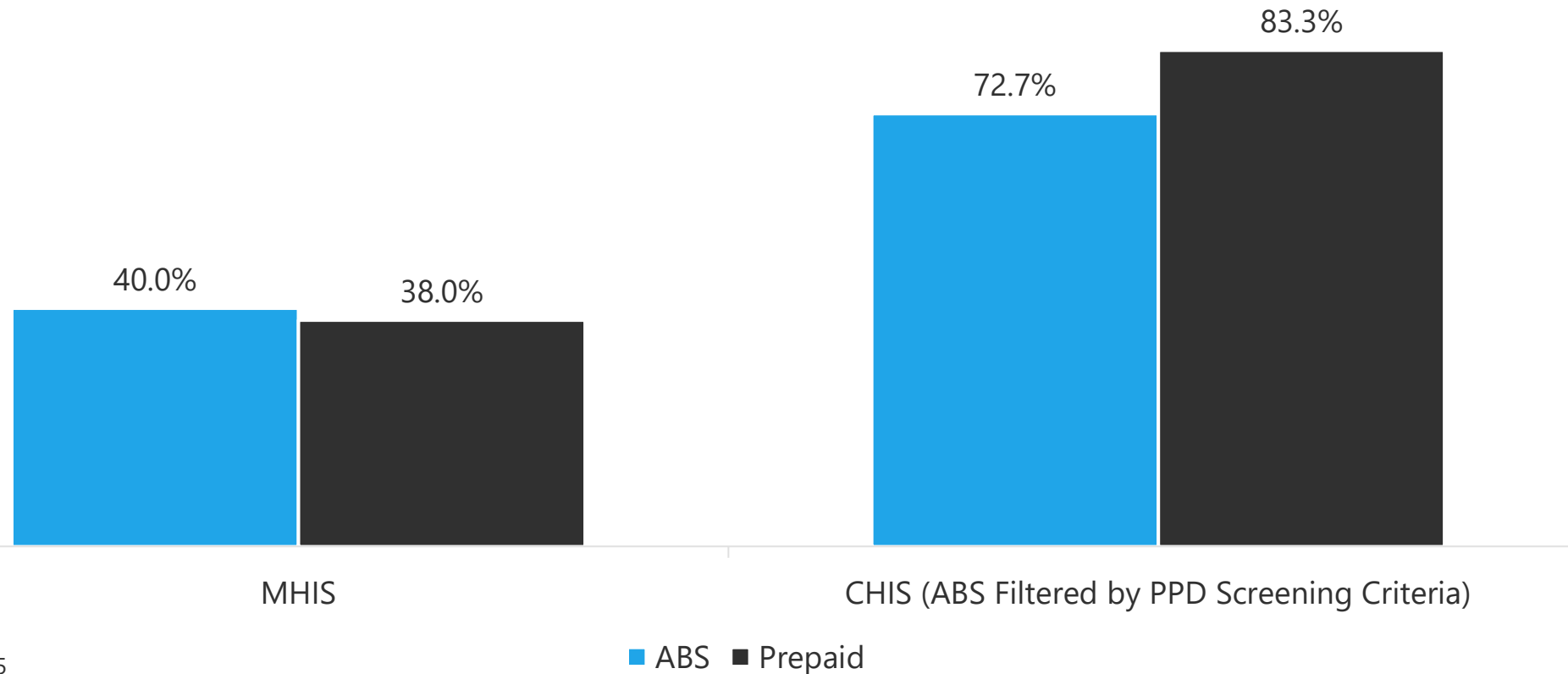


RESULTS:

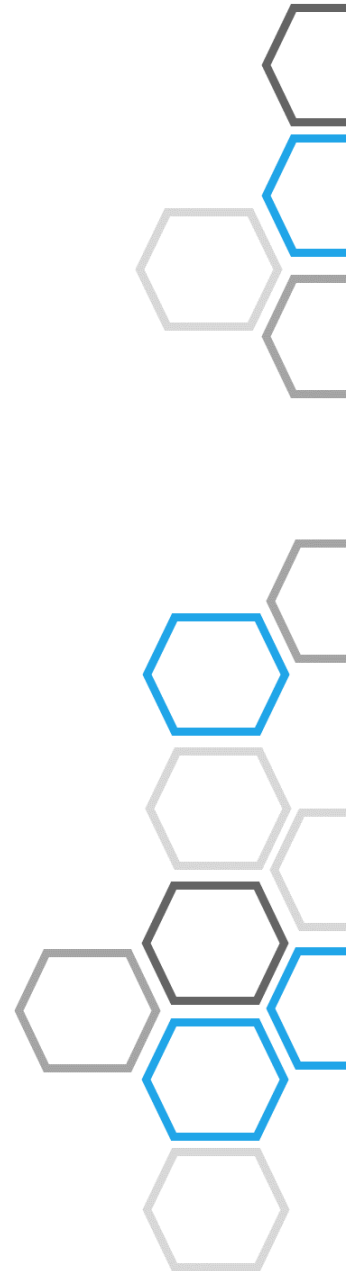
Urbanicity

Results: Incidence by Urbanicity

There was no significant difference in Urbanicity by the different sample types.



* =p<.05



PPD Cell Respondents had a Higher Incidence of:



Non-white:
Hispanics
African
Americans



Less than
200% FPL



Renters



HS graduate
or Less



Young
Adults –
18 to 24



In-Language

PPD Samples in CHIS vs. MHIS

FOR 2 LARGE HEALTH SURVEYS CONDUCTED IN DIFFERENT STATES, CA AND MA, WE SAW THAT THE INCIDENCES FOR PPD CELL RESPONDENTS TRENDED SIMILARLY.

SIMILARITIES

PPD in both states had a higher incidence of:

- Low socio-economic status
- Renters
- Lower Levels of Education
- African Americans

DIFFERENCES

Hispanics

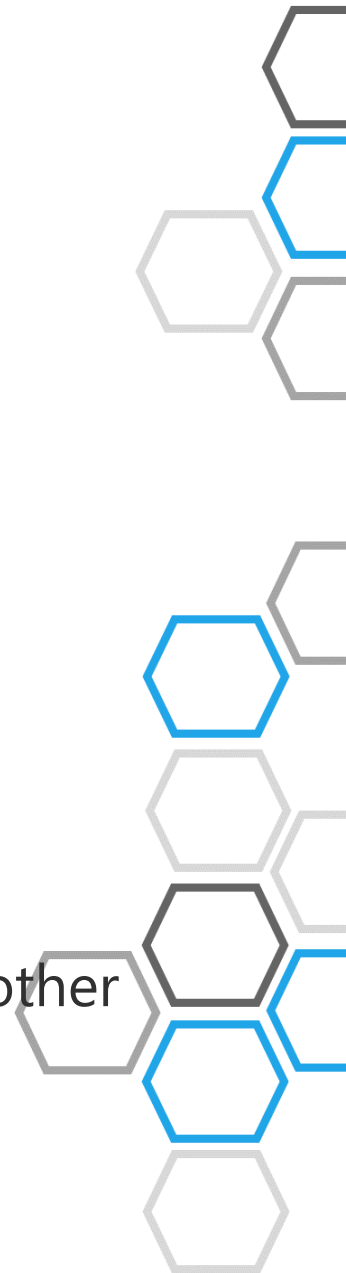
- PPD sample in MHIS had a higher levels of Hispanics but CHIS (after controlling for screening) did not.
- But both state surveys did show higher levels of low-income Hispanics in the PPD sample

Age

- MHIS survey has proxy reporting for adult targets, but CHIS does not
- Differences might also be due to differential regional compositions or differential regional penetration of the PPD cell market

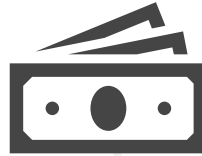
The Utility of Screening

- Not surprisingly, screening helps us get more of the demographics we screen for.
- In the CHIS PPD sample, we screened for and thus saw a higher incidence of:
 - Hispanics
 - AA
 - In-Language
 - Young Adults
 - It also impacted socio-economic and educational demographics
- However, as we see from our results, we can get a higher incidence of these characteristics without screening. Though screening helps filter out some of the other respondents, e.g., 65+ respondents and gets more of what we are targeting
 - Cost considerations





Barriers to the Inclusion of PPD Cell Sample



COST

- Expensive Phone Costs
 - Interviewers
 - Low response rates
- Non-working numbers



COMPLEXITY

- Mode Modalities
- Weighting

References

- Kiley McGeeney. (2015). Appending a Prepaid Phone Flag to the Cellphone Sample. *Survey Practice*, Vol 8, No. 3.
- Berzofsky, M.E., Scruggs, C.B., Lu, B., Speizer, H., and Sahr, T. (2019). Improving representation in telephone-based health care access surveys requires purposeful efforts to include prepaid cell phone users. *Journal of Clinical Epidemiology*. Vol 1098, 143-144.

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