
California Asthma Control Strategies

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California Breathing

September 14, 2021



California Breathing

California Breathing focuses on asthma surveillance and developing interventions that improve asthma self-management and environmental conditions that cause or exacerbate asthma in the most vulnerable populations.



California Asthma Control Strategies

Series Overview:

- 1) Burden of Asthma in California
 - TODAY, September 14, 2021, 10:30am-12pm PST
- 2) Asthma Management Academy and Evaluation Results
 - October 19, 2021, 10:30am-12pm PST
- 3) Assessment of Asthma Control Strategies
 - November 16, 2021, 10:30am-12pm PST

The Burden of Asthma in California

California Breathing
Environmental Health Investigations Branch
California Department of Public Health





Webinar Objectives

- 1) Describe burden of asthma
- 2) Describe how California Breathing uses data to guide program activities
- 3) Answer questions
- 4) Gather participant feedback on use of asthma surveillance data

California Breathing Asthma Surveillance

Data sources:



california
health
interview
survey



Asthma indicators:

- Prevalence
- Missed work and school days
- Management practices

- Emergency Department Visits
- Hospital Discharges

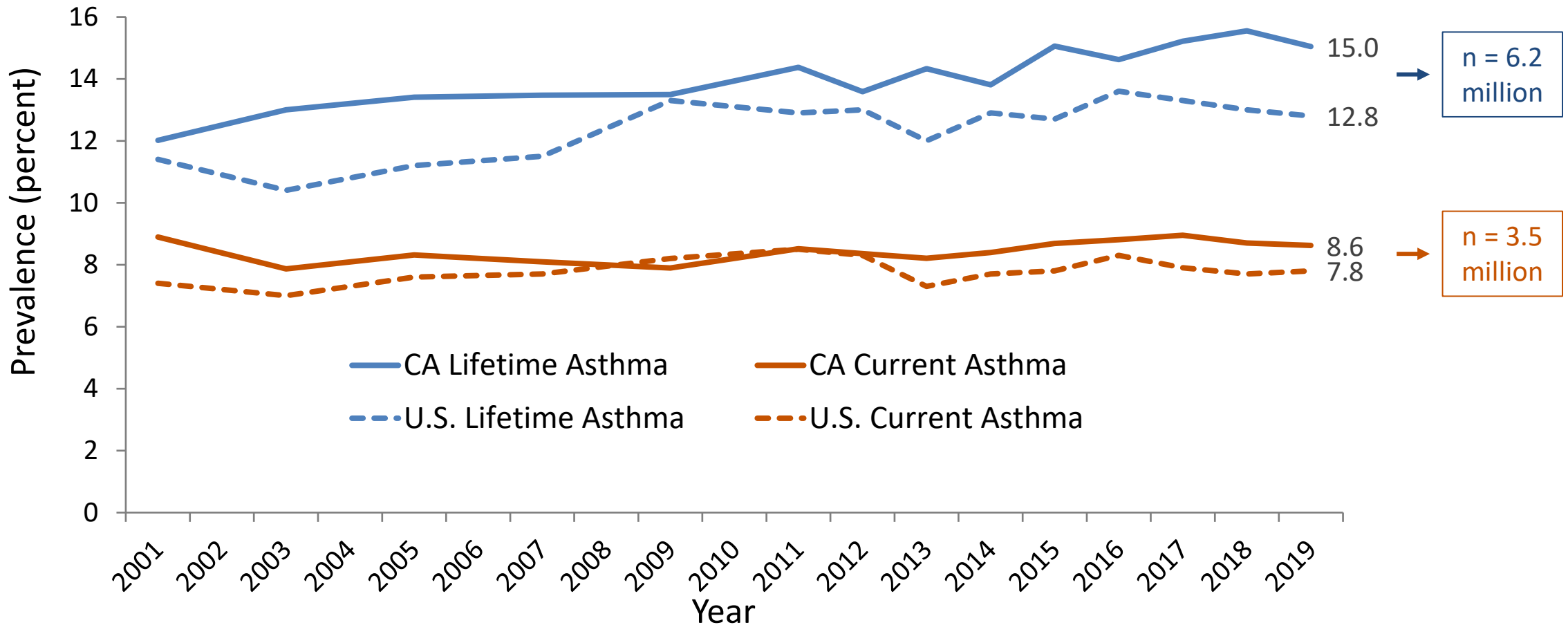
- Deaths

Costs



Asthma Prevalence

Lifetime and Current Asthma Prevalence California and the U.S., 2001–2019

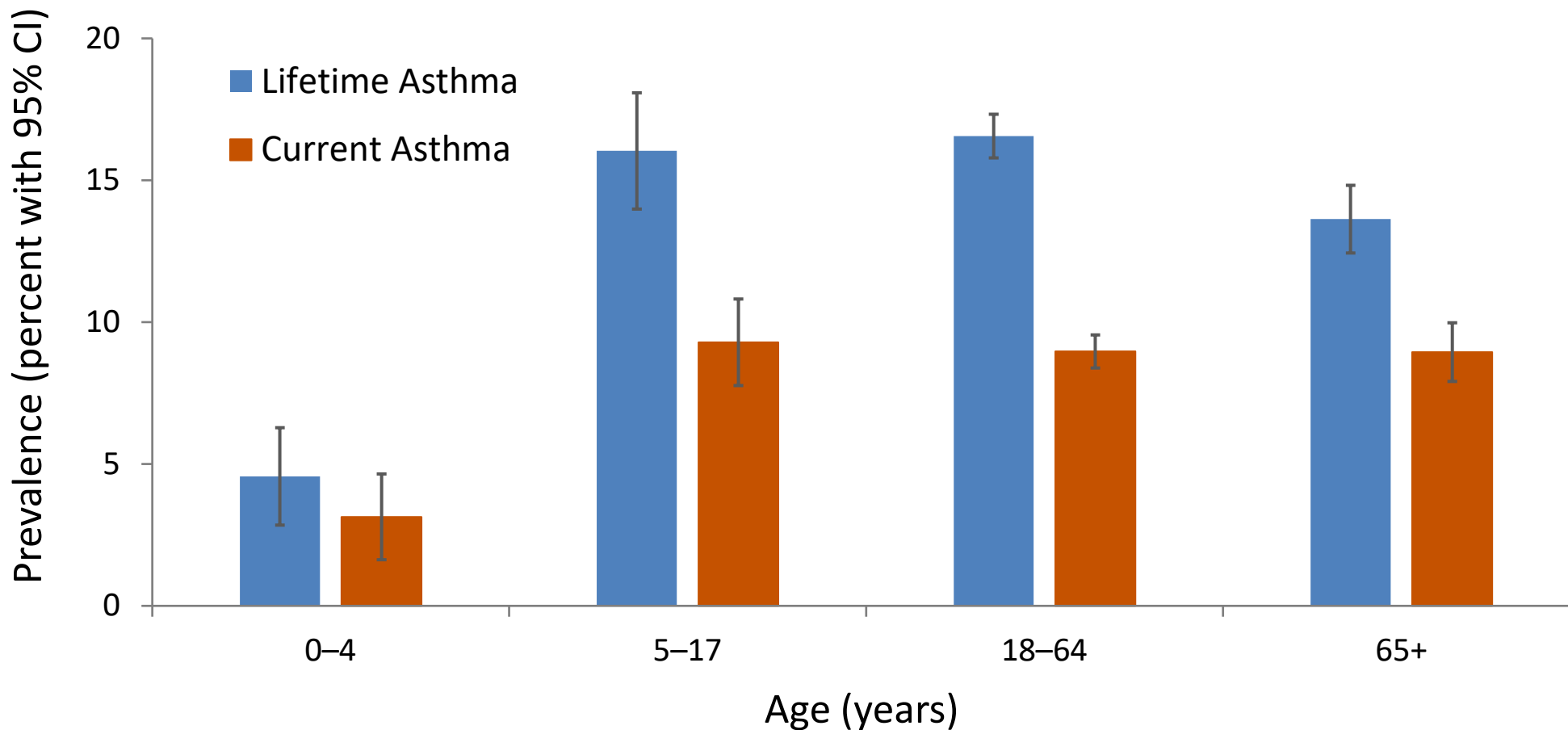


Data sources: CA data from CHIS, 2001–2019

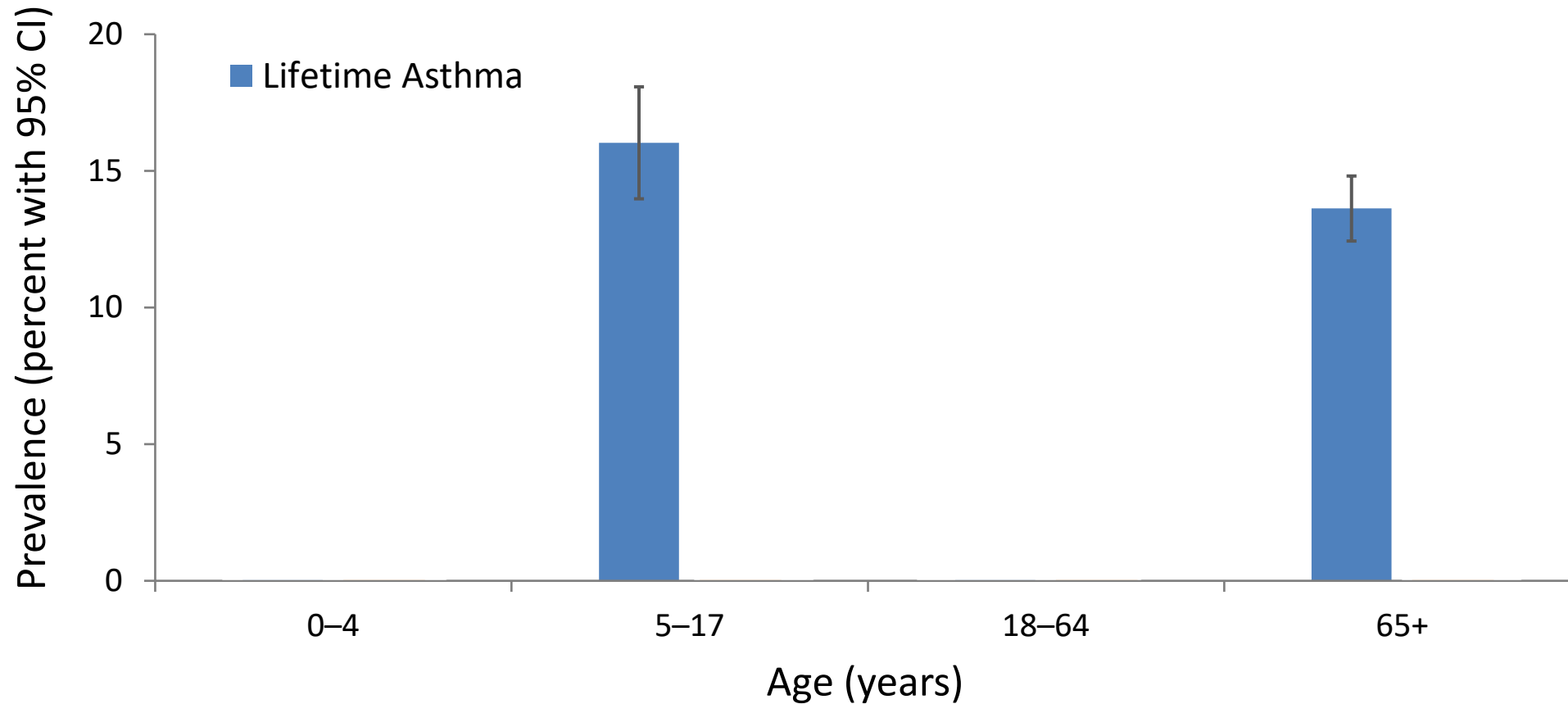
U.S. data from the National Health Interview Survey, 2001–2019



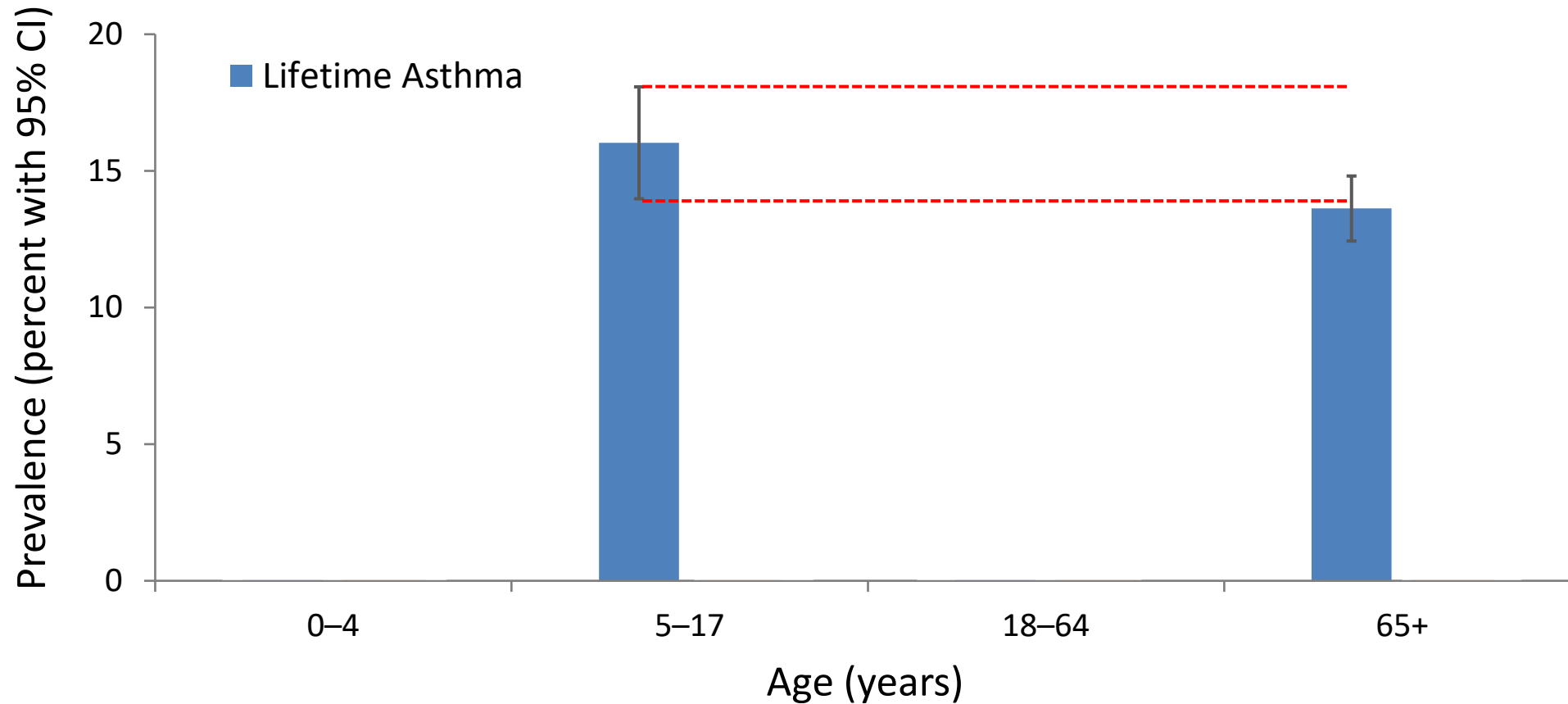
Lifetime and Current Asthma Prevalence by Age California, 2018–2019



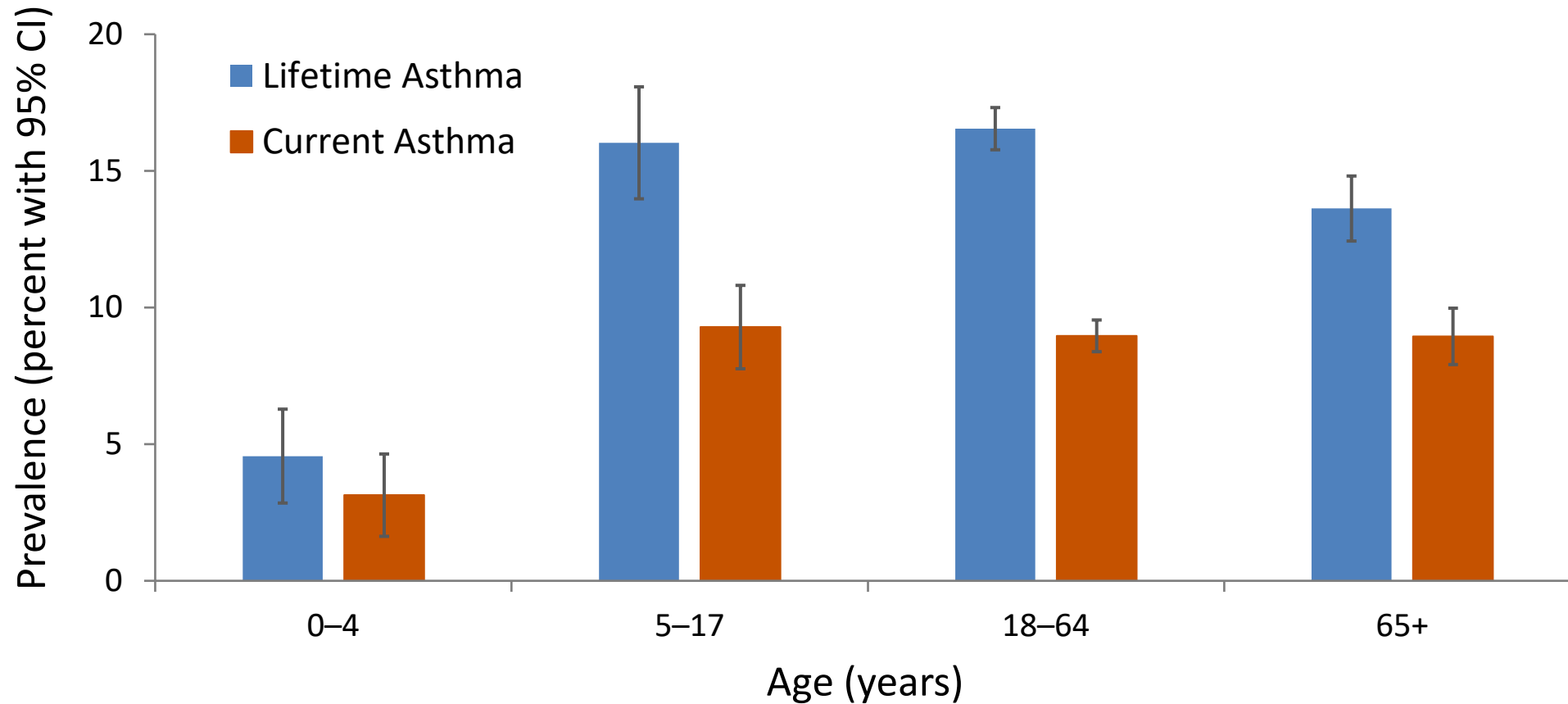
Lifetime and Current Asthma Prevalence by Age California, 2018–2019



Lifetime and Current Asthma Prevalence by Age California, 2018–2019

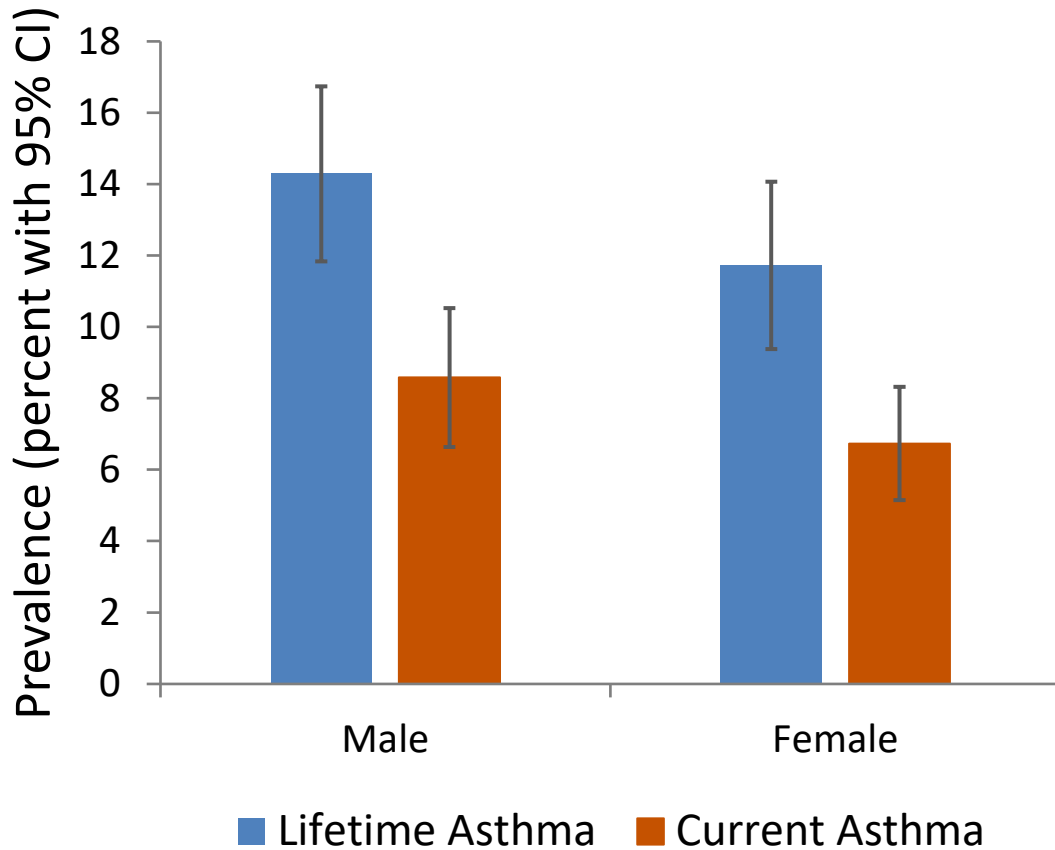


Lifetime and Current Asthma Prevalence by Age California, 2018–2019

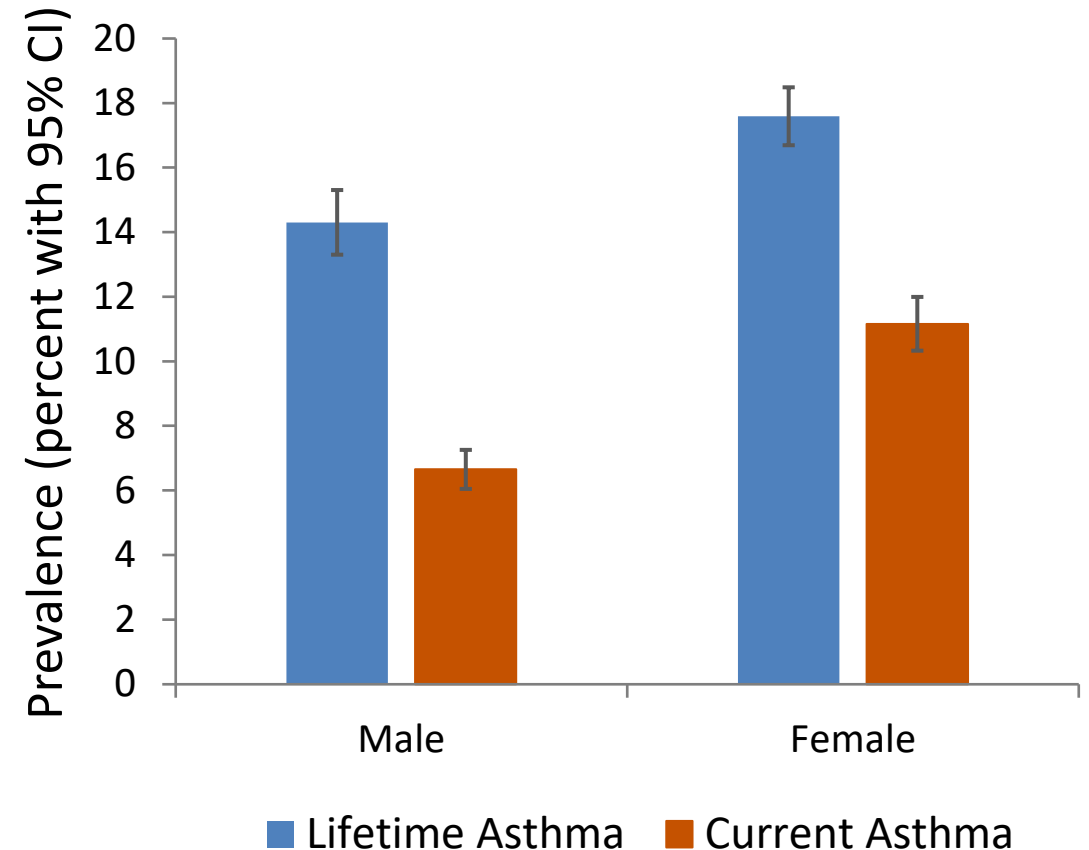


Lifetime and Current Asthma Prevalence by Gender and Age California, 2018–2019

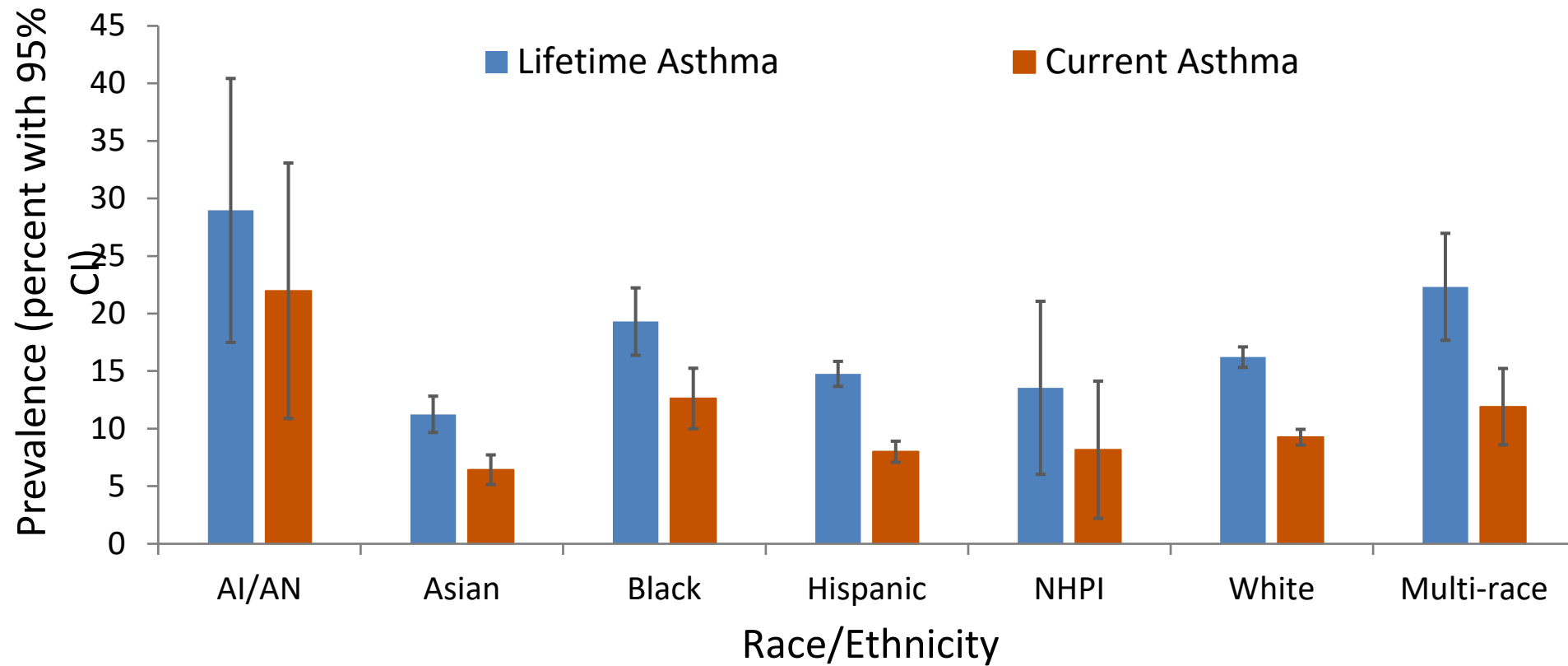
Children (0–17 years)



Adults (18+ years)



Lifetime and Current Asthma Prevalence by Race/Ethnicity California, 2018–2019

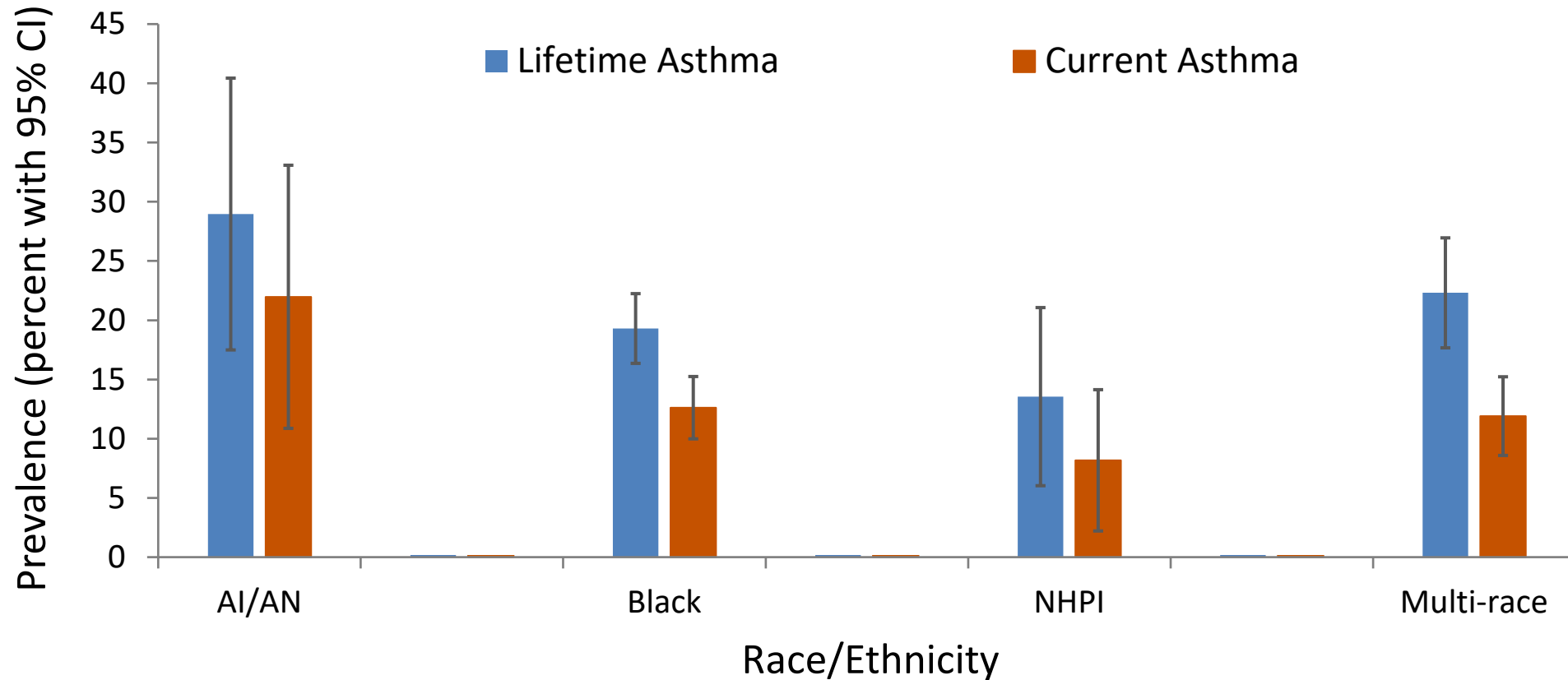


Data source: CHIS, 2018–2019

Abbreviations: AI/AN = American Indian or Alaskan Native, NHPI = Native Hawaiian or Pacific Islander



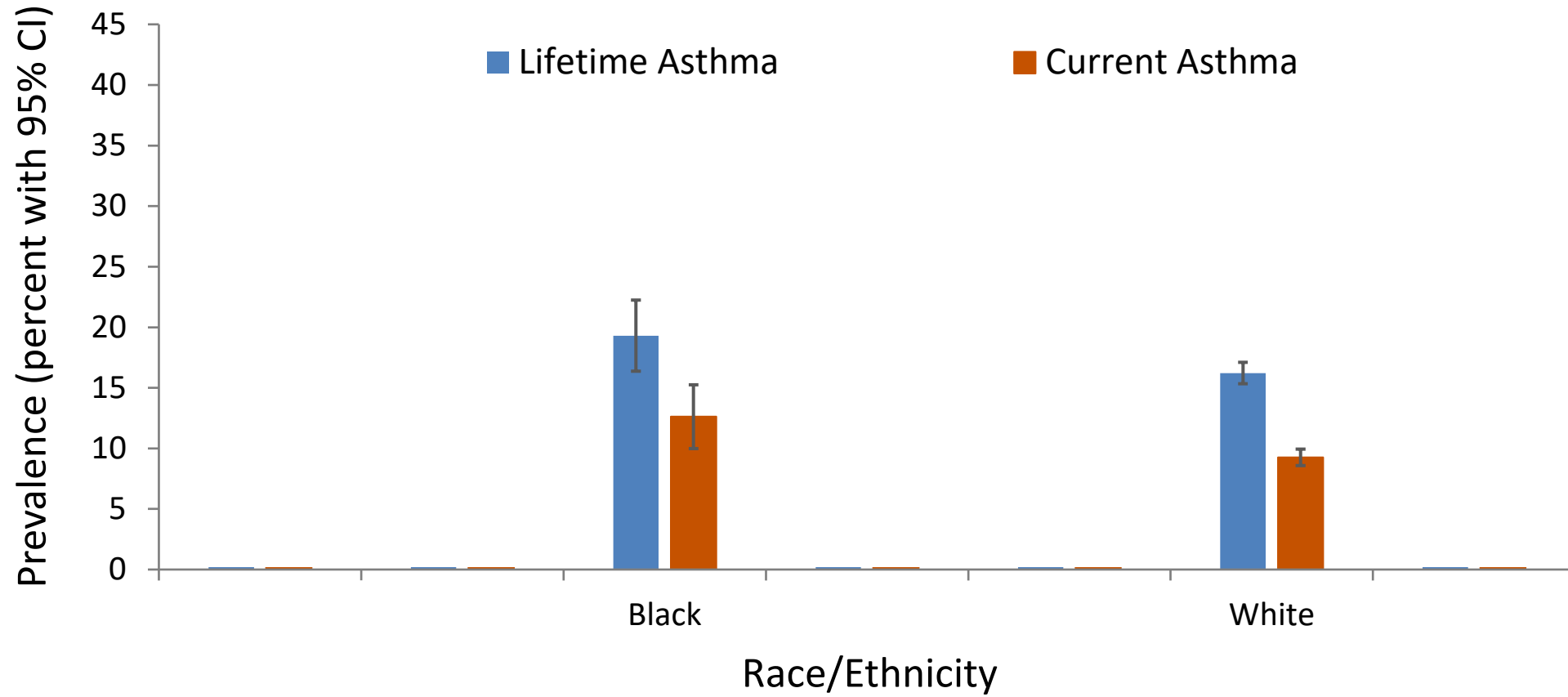
Lifetime and Current Asthma Prevalence by Race/Ethnicity California, 2018–2019



Data source: CHIS, 2018–2019

Abbreviations: AI/AN = American Indian or Alaskan Native, NHPI = Native Hawaiian or Pacific Islander

Lifetime and Current Asthma Prevalence by Race/Ethnicity California, 2018–2019

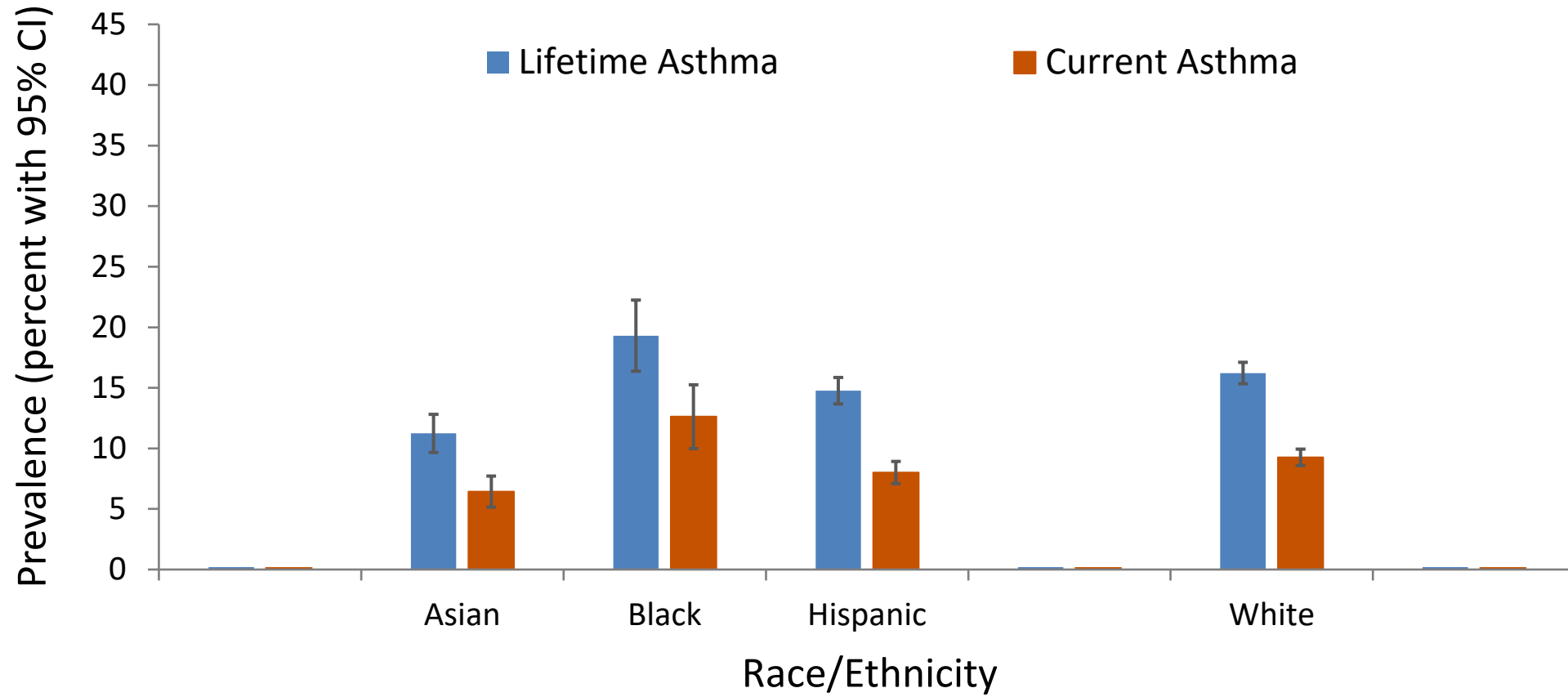


Data source: CHIS, 2018–2019

Abbreviations: AI/AN = American Indian or Alaskan Native, NHPI = Native Hawaiian or Pacific Islander



Lifetime and Current Asthma Prevalence by Race/Ethnicity California, 2018–2019

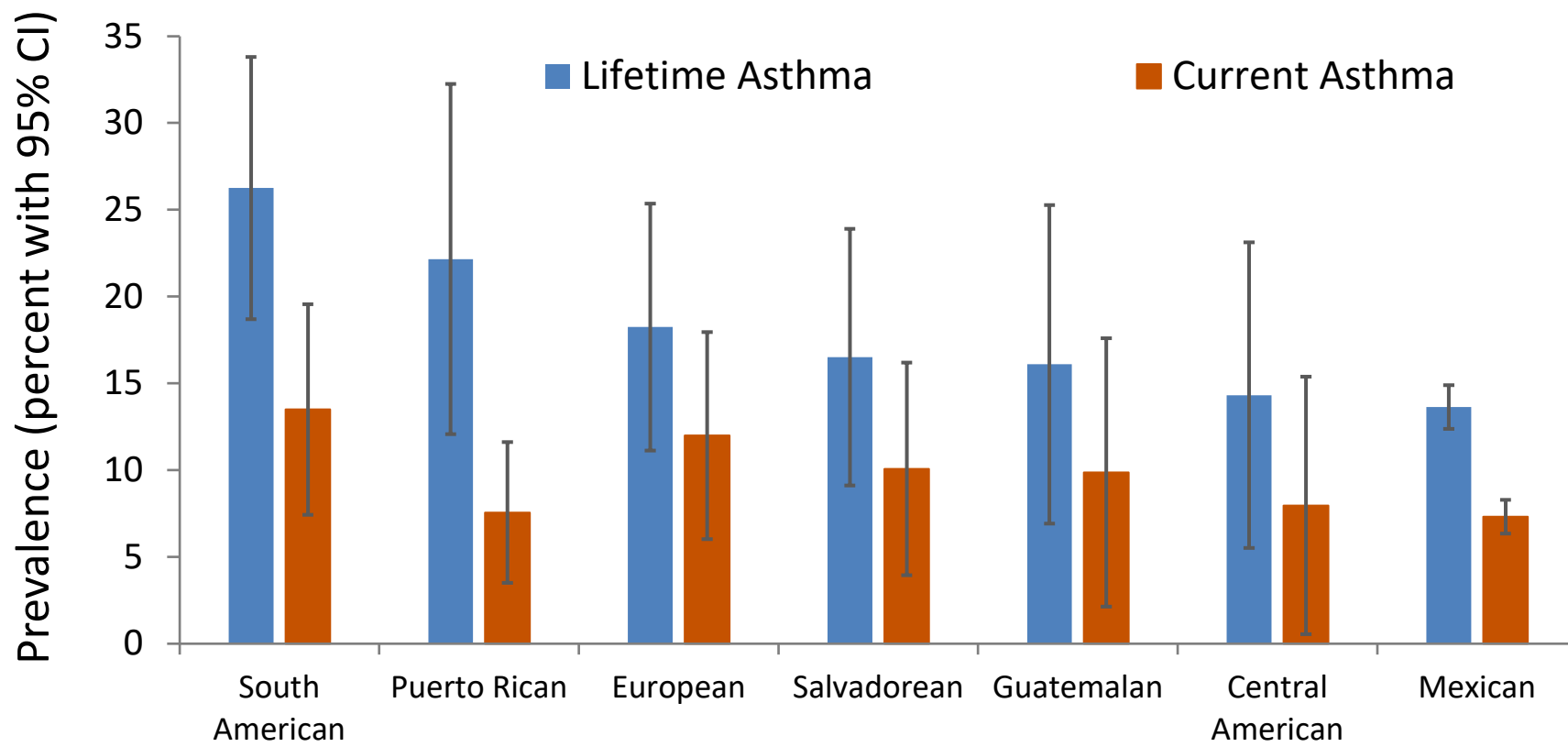


Data source: CHIS, 2018–2019

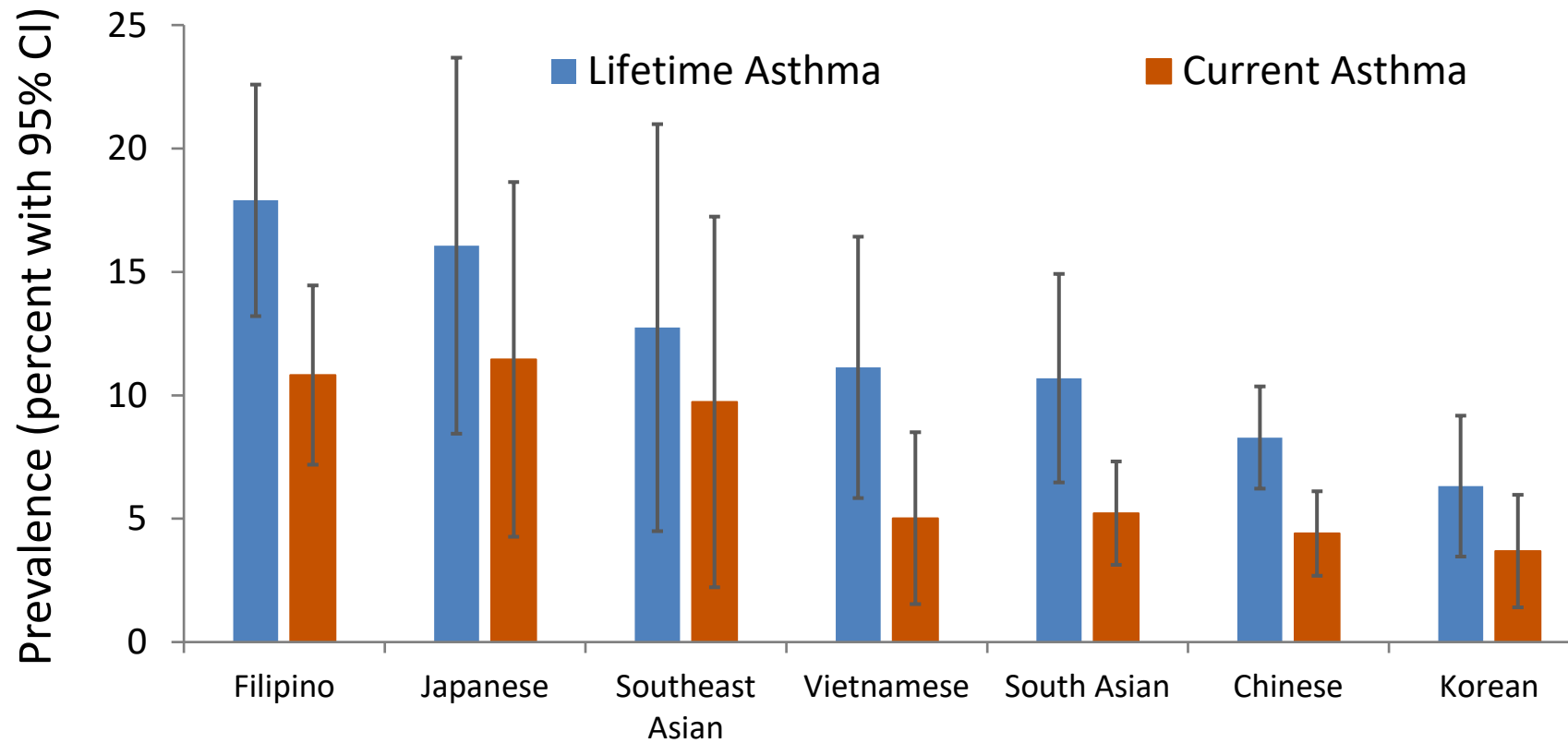
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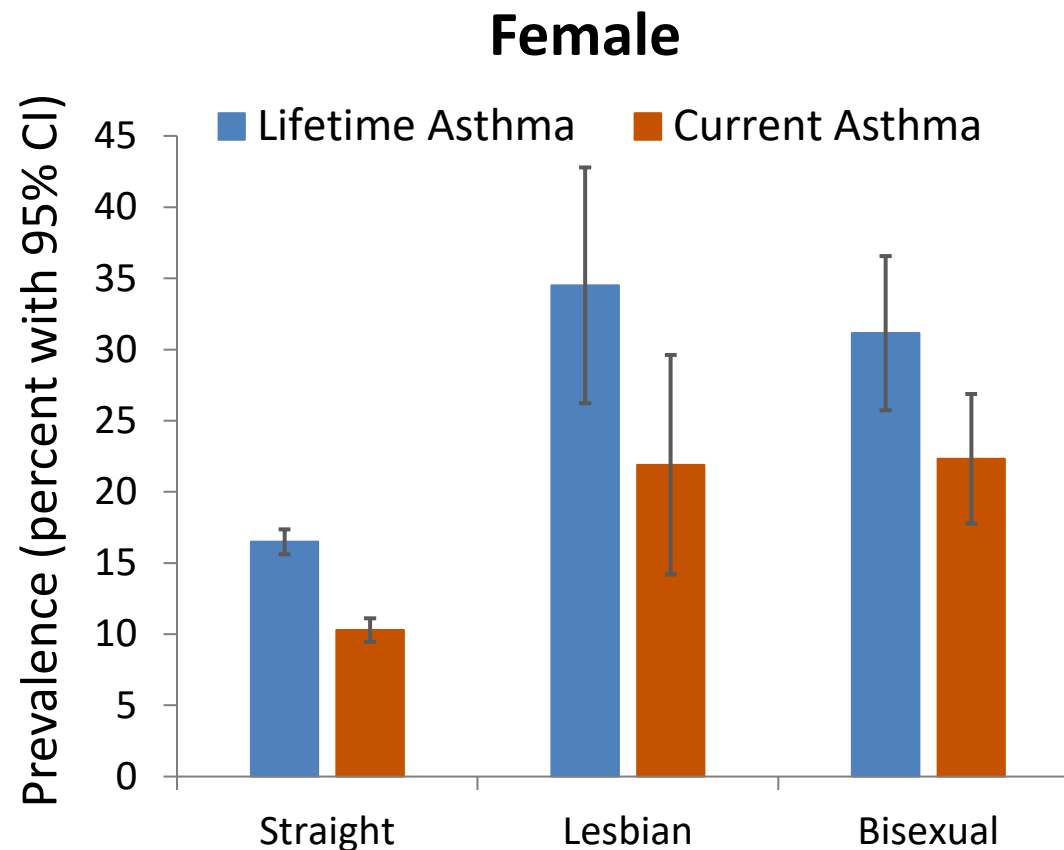
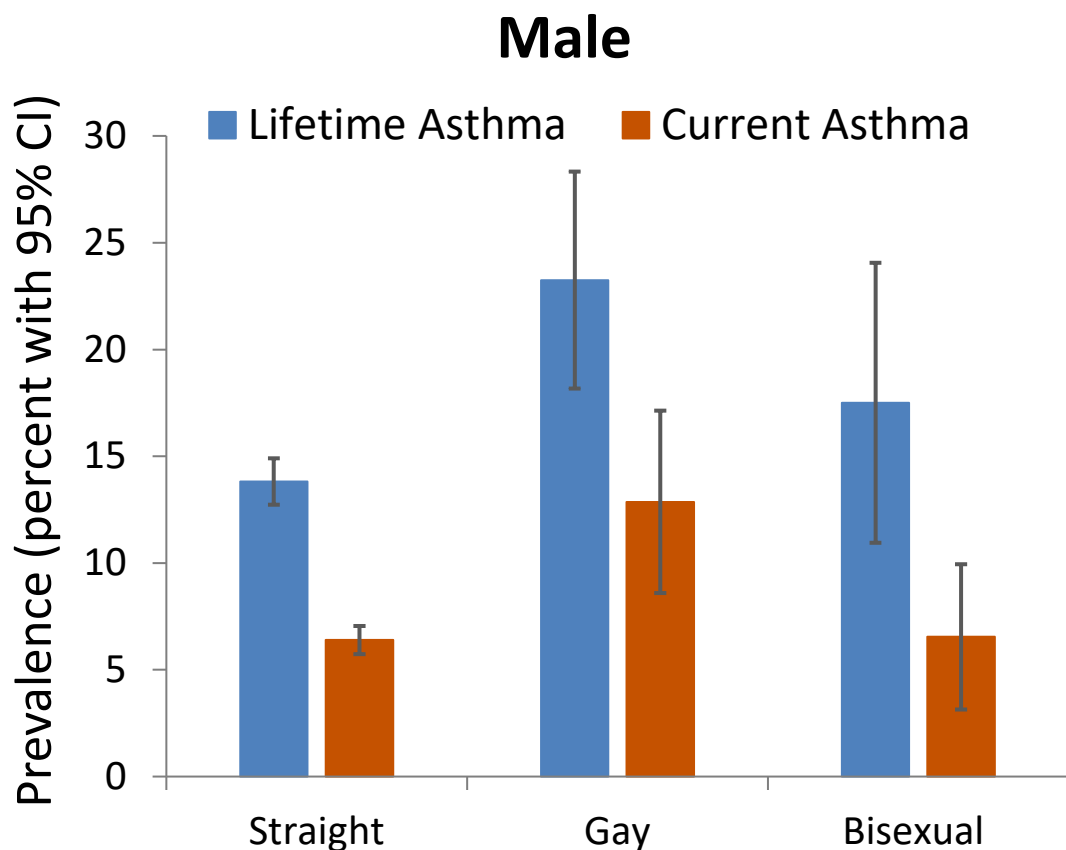
Lifetime and Current Asthma Prevalence among Hispanics and Latinos by Subgroup, California, 2018–2019



Lifetime and Current Asthma Prevalence among Asians by Subgroup California, 2018–2019



Lifetime and Current Asthma Prevalence by Sexual Orientation California, 2018–2019



Factors Not Associated with Asthma Prevalence California, 2018–2019

- Household Income Level
 - Low (0–199% of poverty threshold)
 - Higher ($\geq 200\%$ of poverty threshold)
- Urban/Rural Residence



Work and School Days Missed Due to Asthma

Workdays Missed Due to Asthma California, 2017–2018

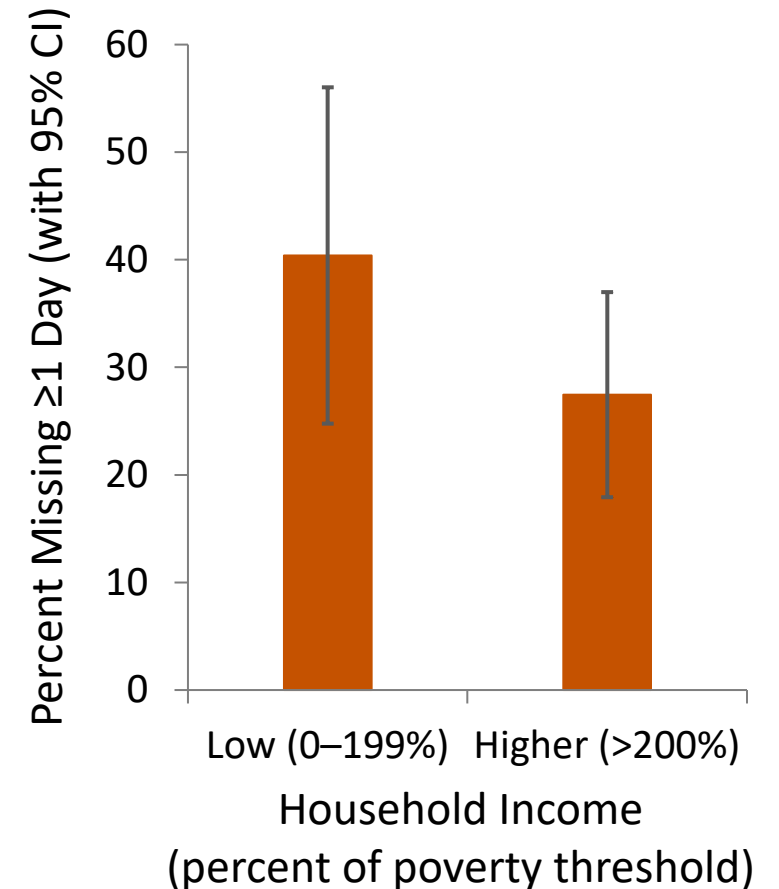
Among working-age adults (18–69 years) with current asthma

- 11.6% (n=280,000) unable to work in past year
- Average of 1.2 days missed/person/year
- Total of 2.9 million days missed
- No association between missing work and household income level

School or Daycare Days Missed Due to Asthma California, 2018–2019

Among children (0–17 years) with current asthma

- 32.3% (n=230,000) unable to attend school or daycare in past year
- Average of 2.0 days missed/person/year
- Total of 1.4 million days missed
- Low household income may increase likelihood of missing school or daycare





Asthma Management Practices



Use of Daily Controller Medication by Age California, 2018–2019

Among those with current asthma

- 50.4% of children
- 44.7% of adults

take daily controller medication

Development of Asthma Action Plan by Age California, 2018–2019

Among those with current asthma

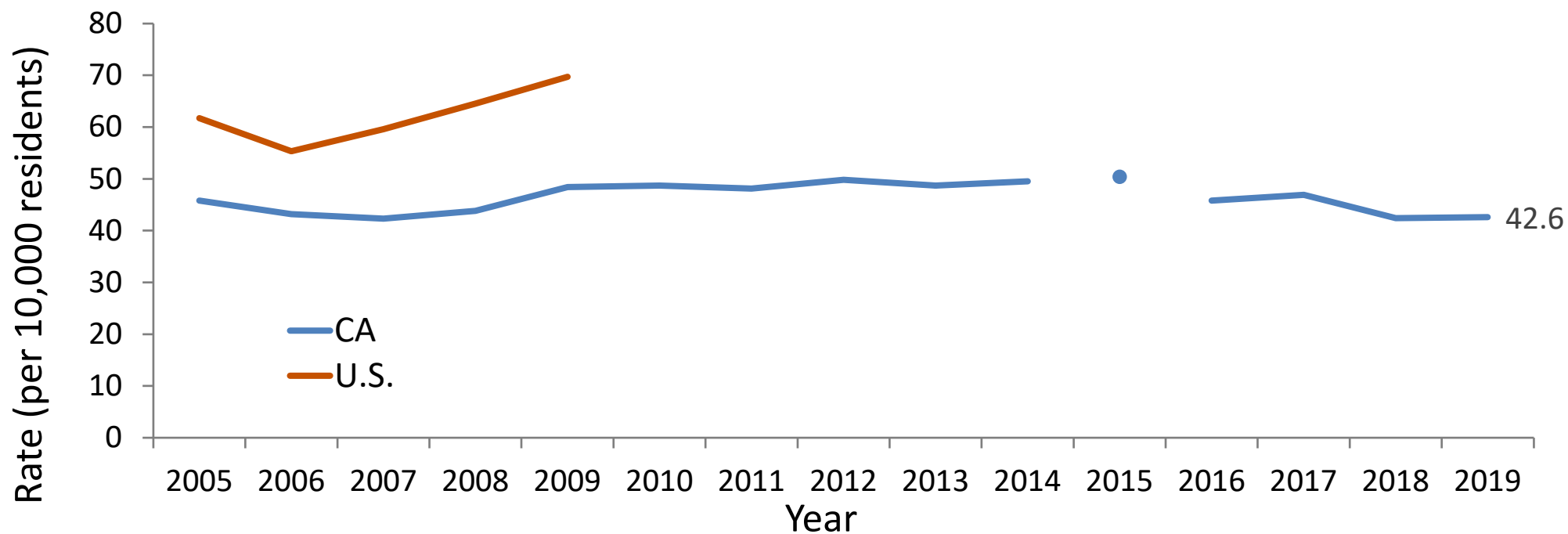
- 70.2% of children
- 72.3% of adults

developed an asthma action plan with health care providers



Asthma-related Emergency Department (ED) Visits

Age-Adjusted Asthma ED Visits per 10,000 Residents California and the U.S., 2005–2019



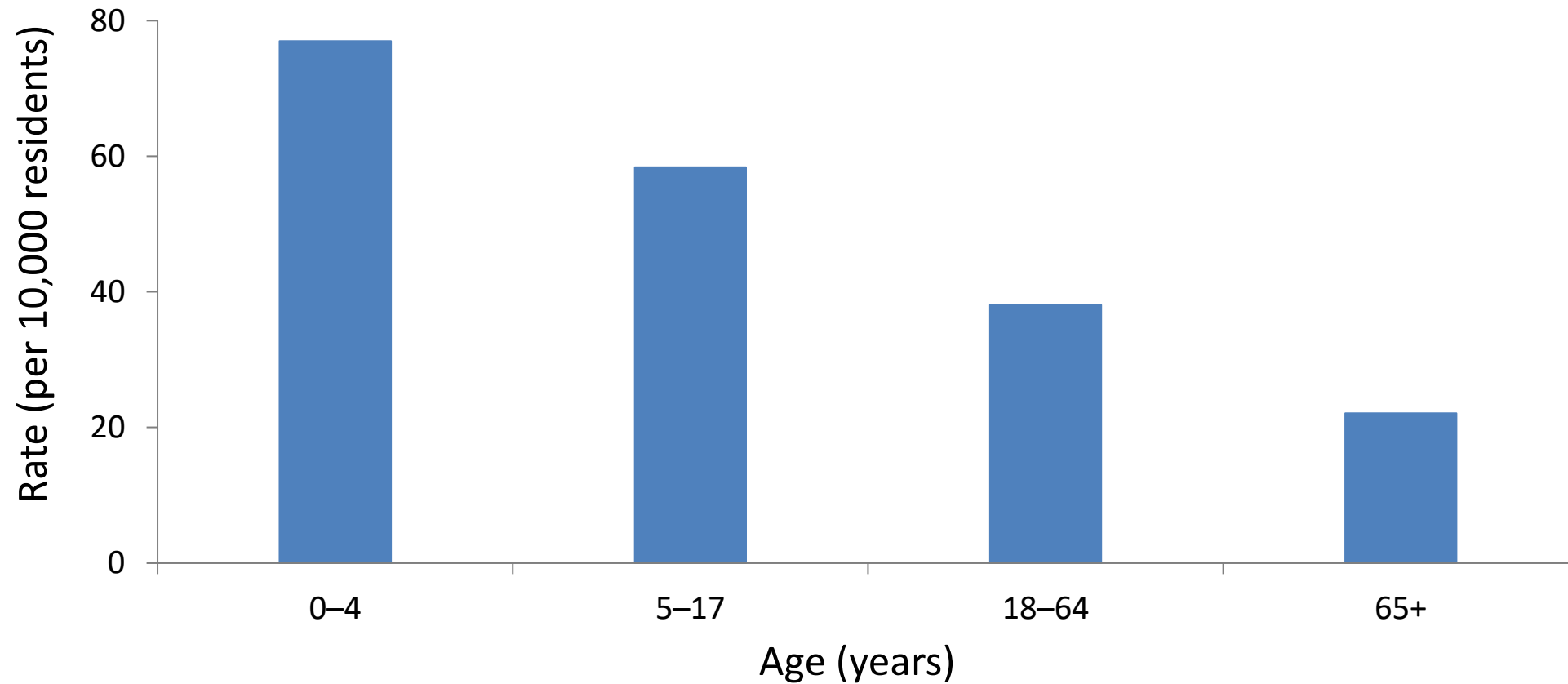
n =
165,449

Data sources: CA data from the Office of Statewide Health Planning and Development (OSHPD), 2005–2019

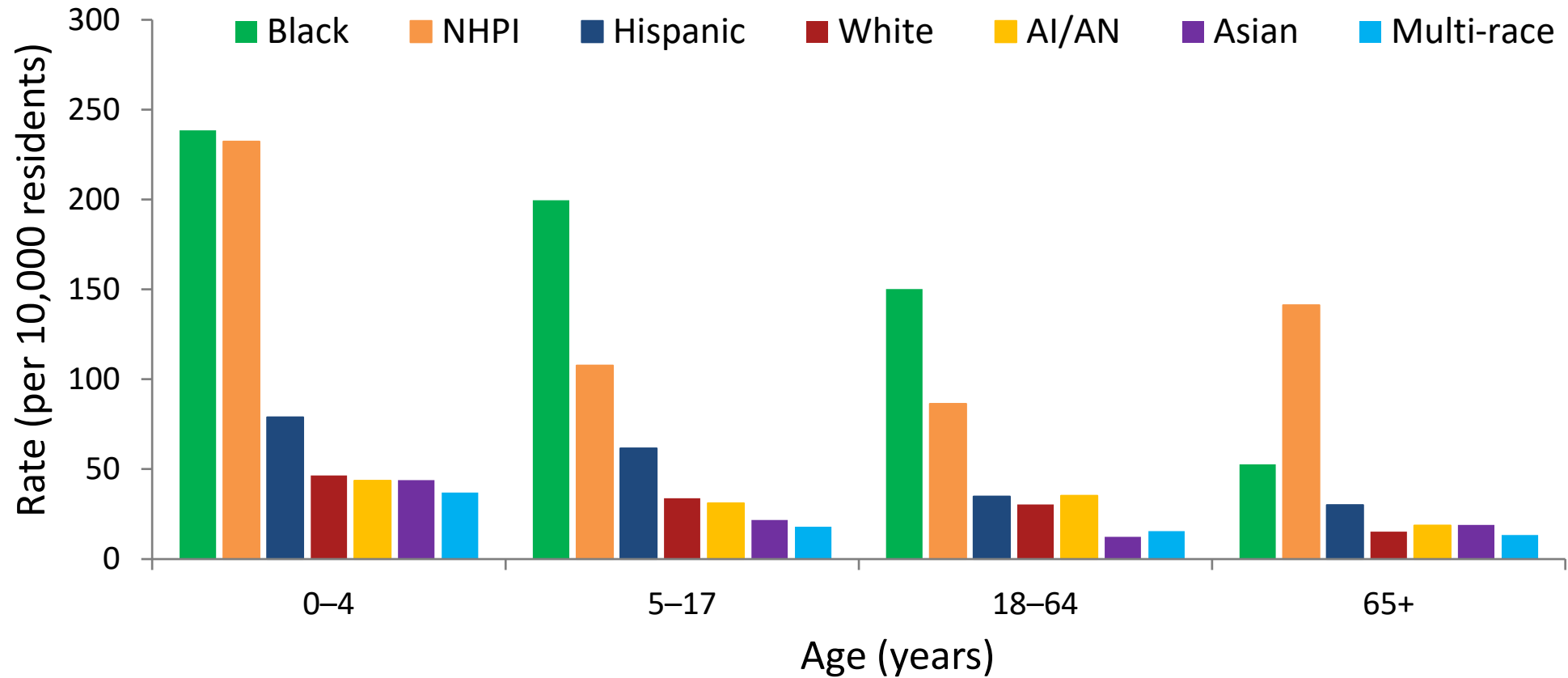
U.S. data from the National Ambulatory Medical Care Survey, 2005–2009

Note: Diagnosis codes changed from ICD-CM-9 to ICD-CM-10 on October 1, 2015. Direct comparisons should not be made between data collected prior to and after this change.

Age-Adjusted Asthma ED Visits per 10,000 Residents by Age California, 2019



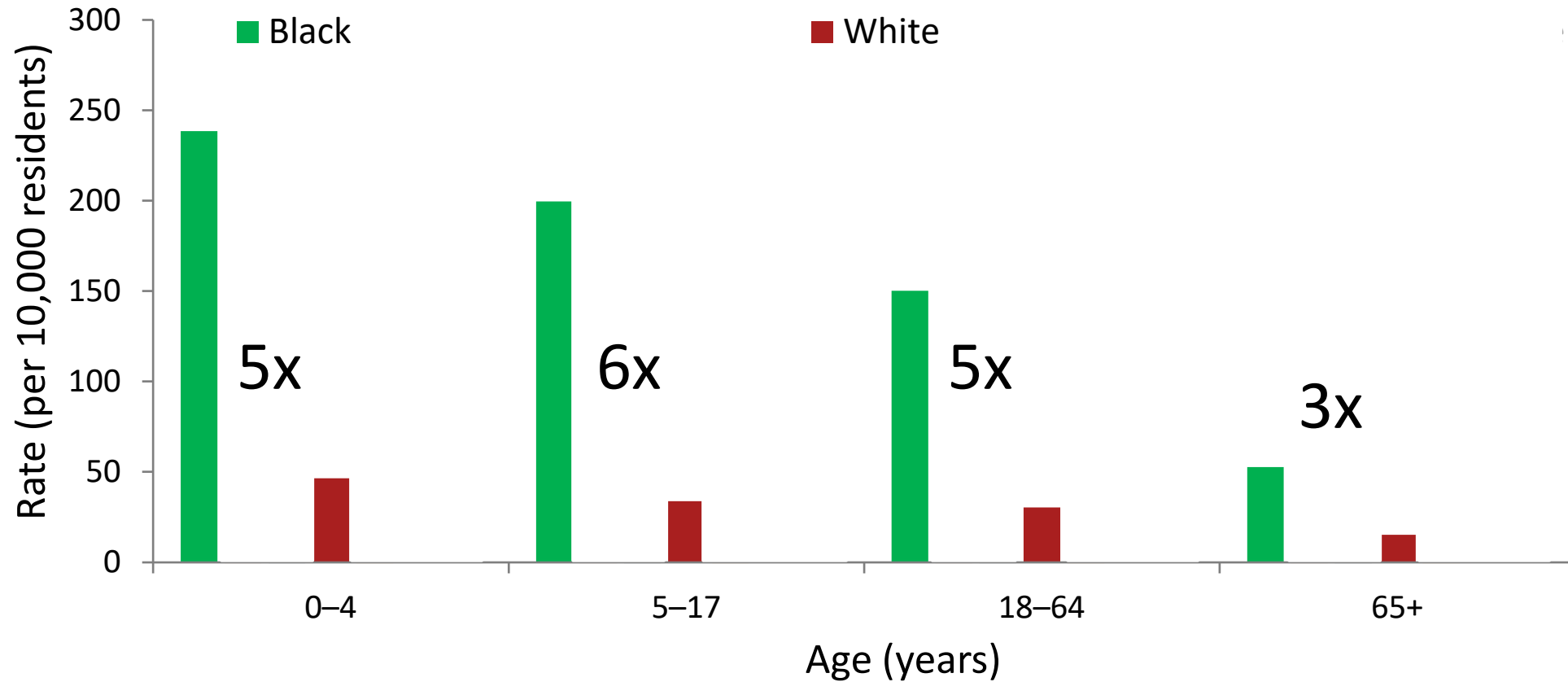
Age-Adjusted Asthma ED Visits per 10,000 Residents by Race/Ethnicity and Age, California, 2019



Data source: OSHPD, 2019

Abbreviations: NHPI = Native Hawaiian or Pacific Islander, AI/AN = American Indian or Alaskan Native

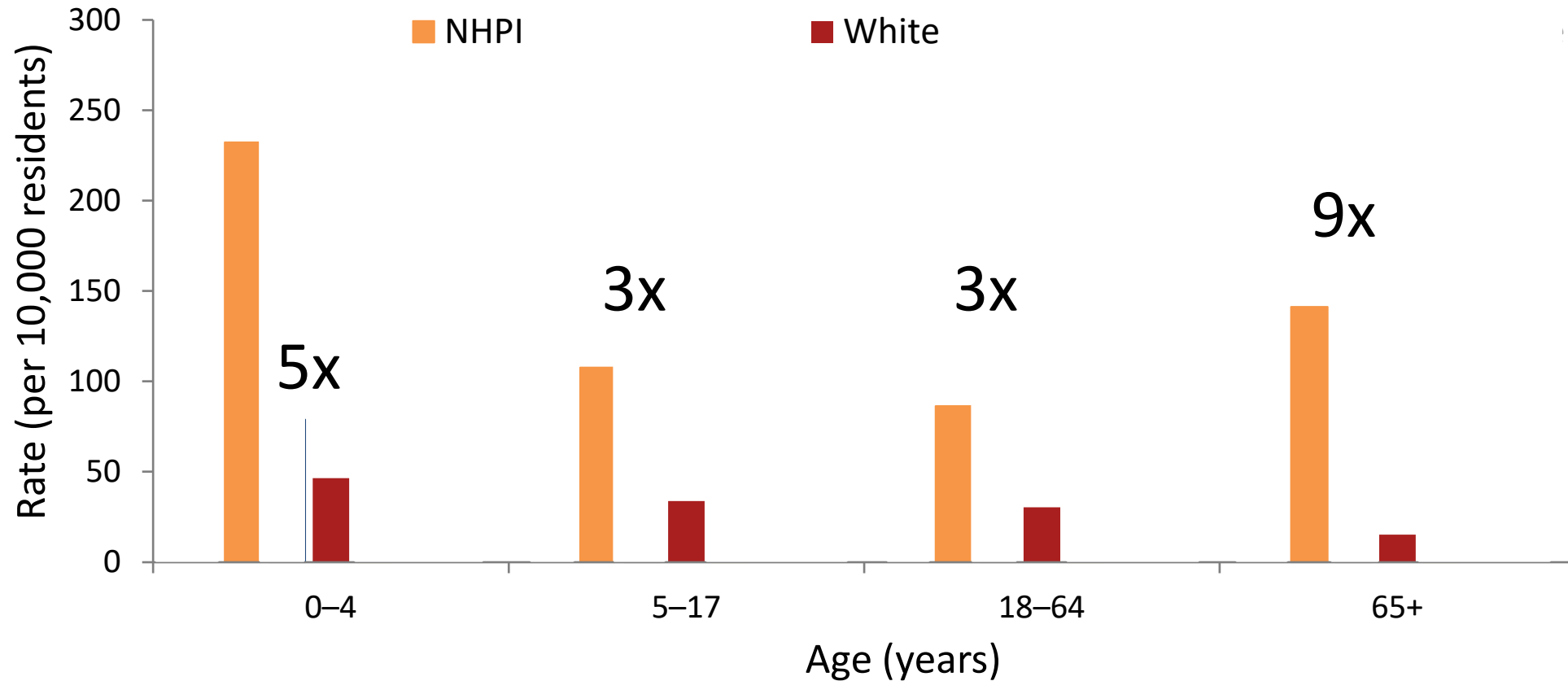
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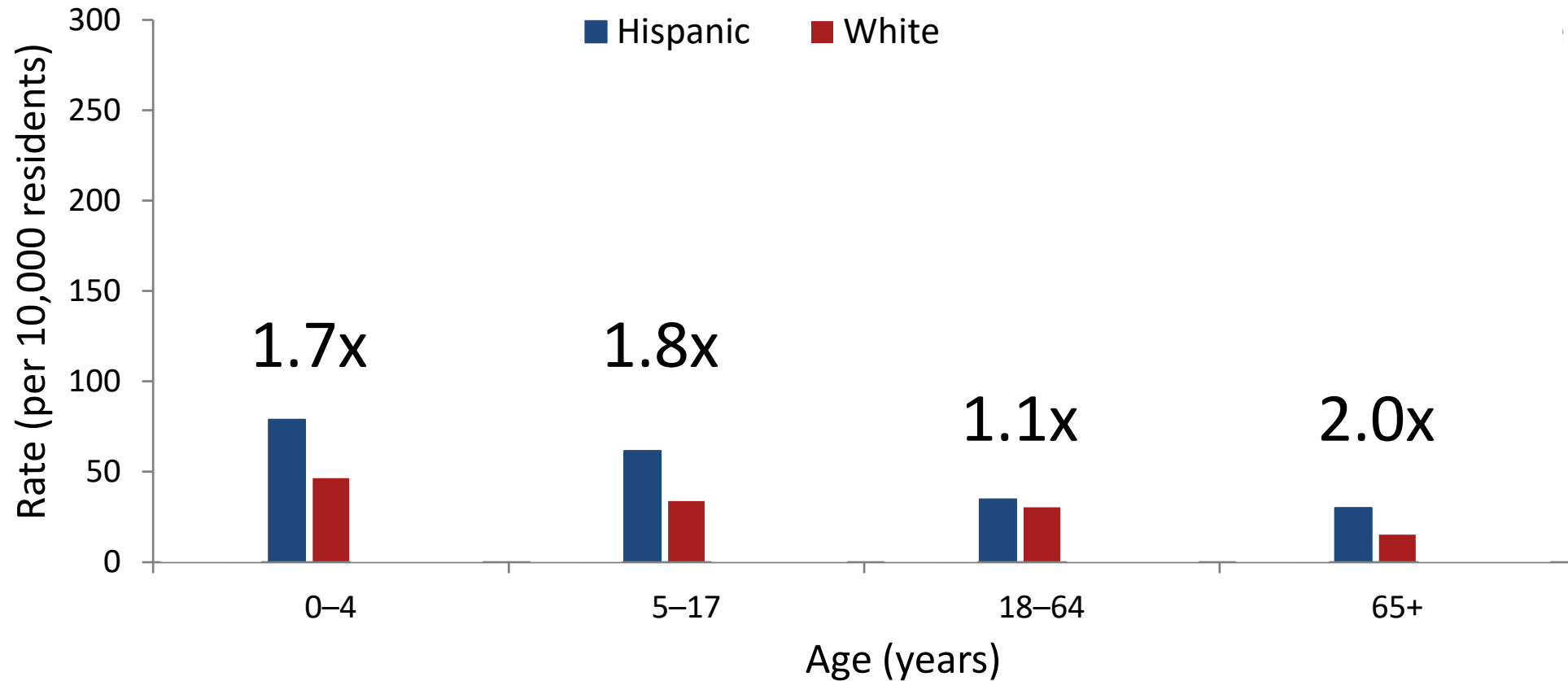
Age-Adjusted Asthma ED Visits per 10,000 Residents by Race/Ethnicity and Age, California, 2019



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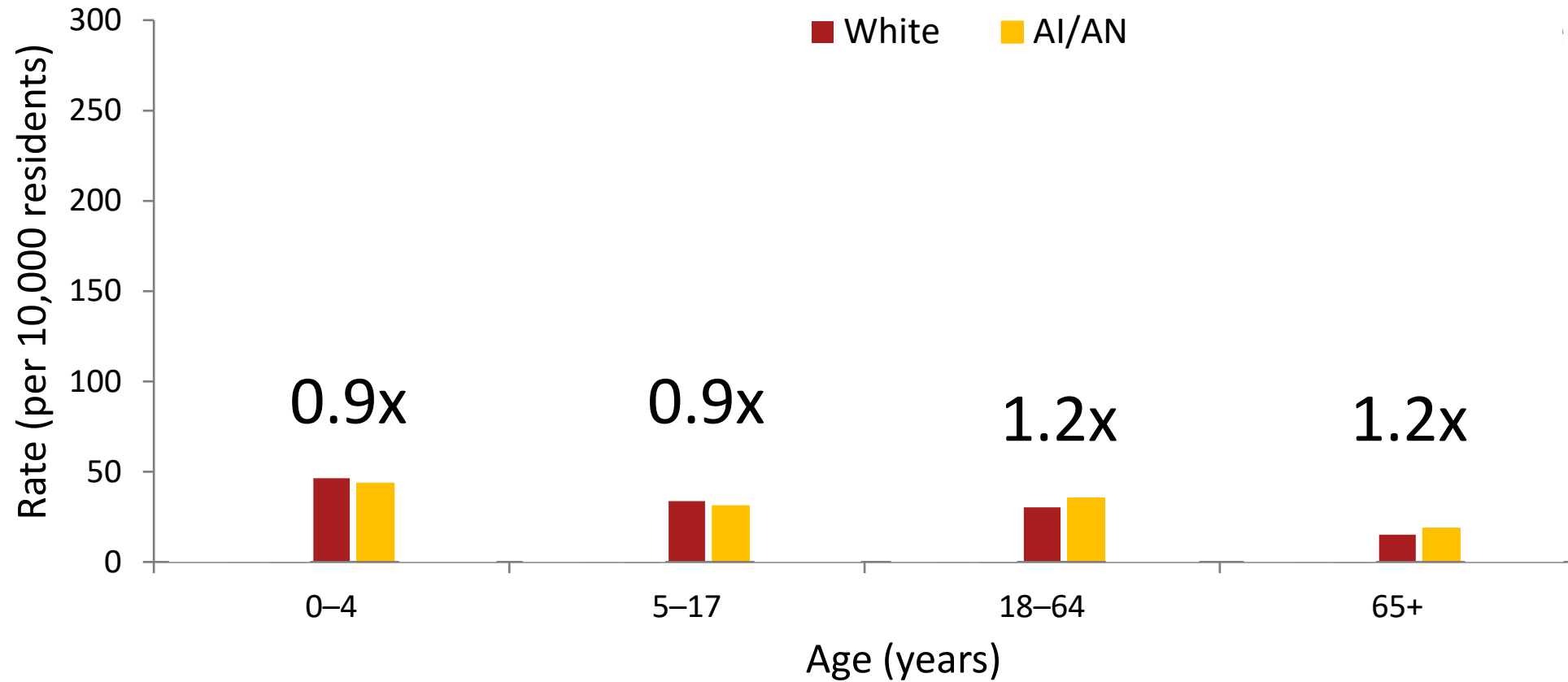
Age-Adjusted Asthma ED Visits per 10,000 Residents by Race/Ethnicity and Age, California, 2019



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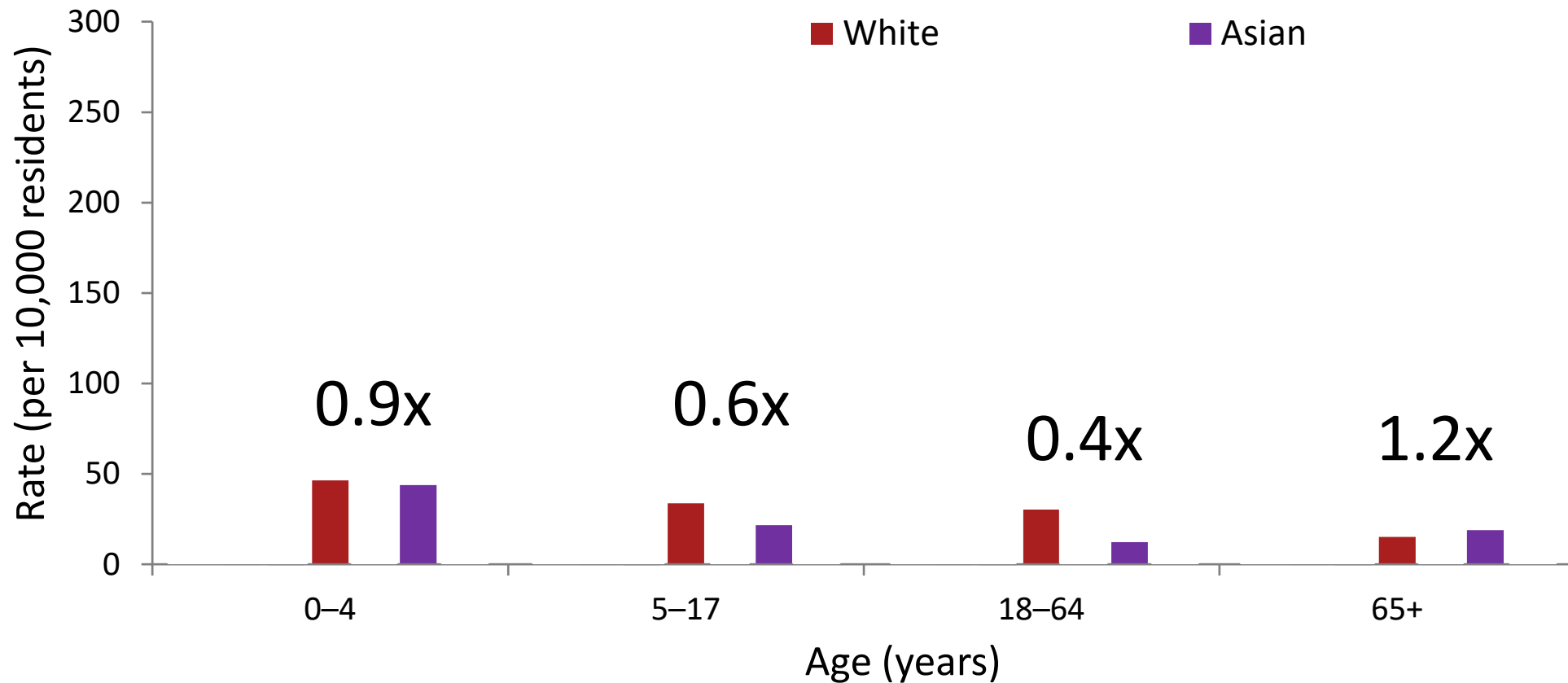
Age-Adjusted Asthma ED Visits per 10,000 Residents by Race/Ethnicity and Age, California, 2019



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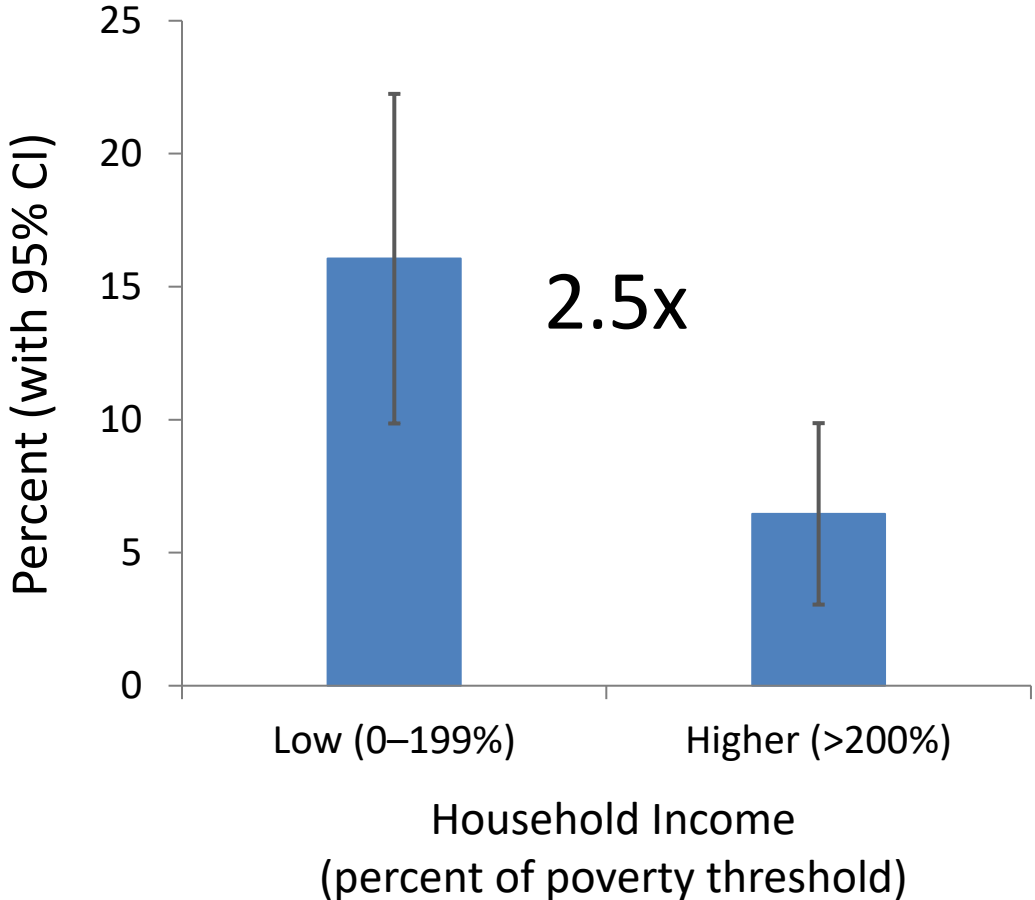
Age-Adjusted Asthma ED Visits per 10,000 Residents by Race/Ethnicity and Age, California, 2019



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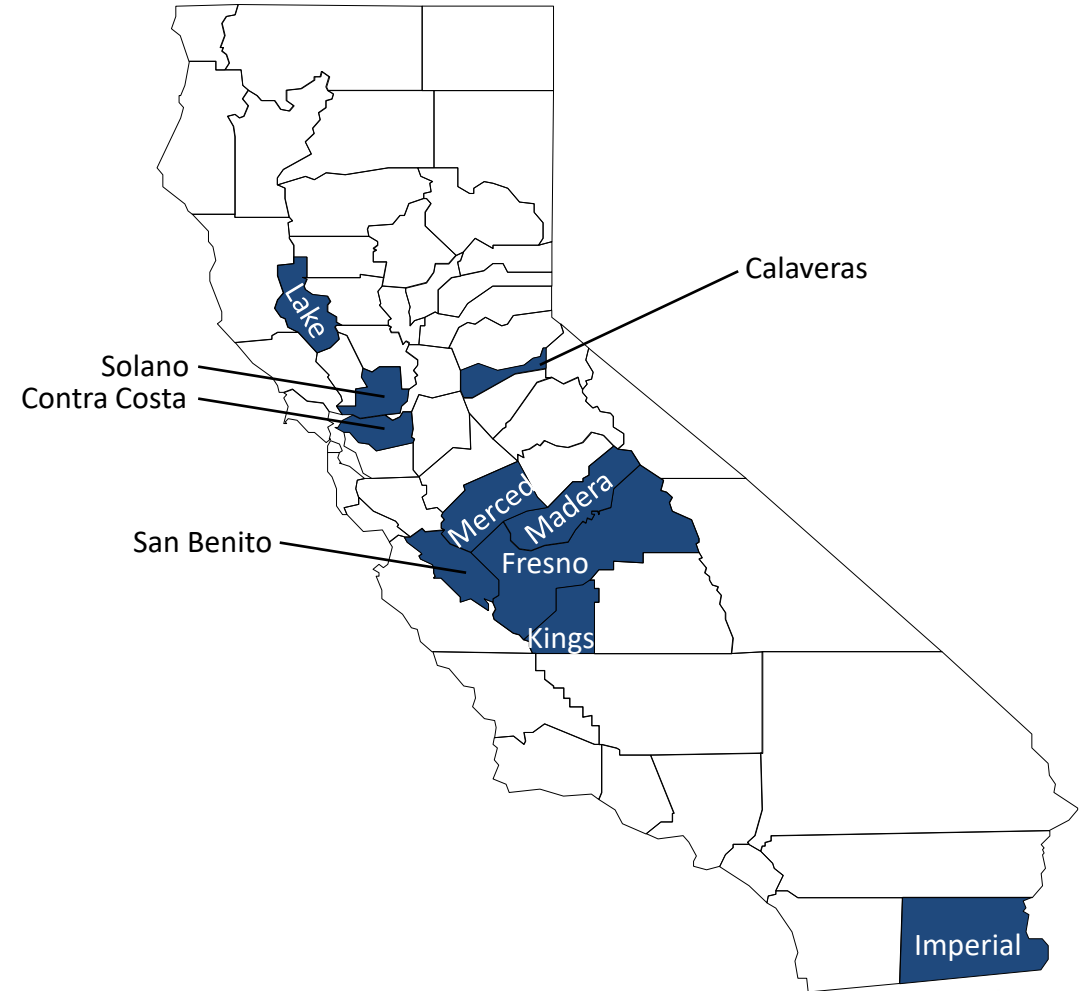
Percent of Californians with Current Asthma Reporting an Asthma ED Visit in the Past 12 Months, by Household Income Level, 2017–2018



Data source: CHIS, 2017–2018

California Counties with Highest Age-Adjusted Asthma ED Visits per 10,000 Children (0–17 years), 2019

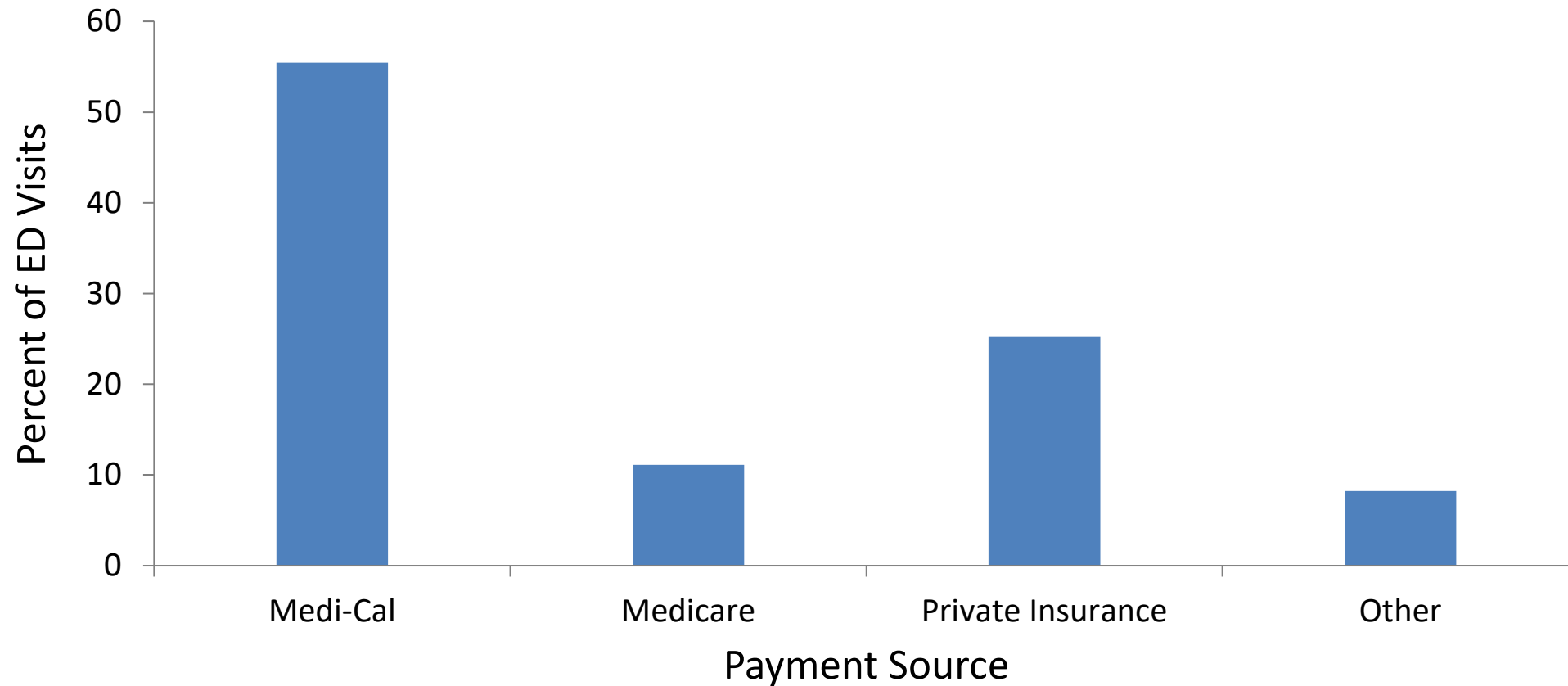
Rank*	County	Number of Events	Age-adjusted Rate (per 10,000)
1	Fresno	3,586	125.9
2	Imperial	621	111.7
3	Madera	441	105.1
4	Solano	931	93.5
5	Calaveras	64	92.4
6	Merced	728	91.6
7	Lake	125	90.8
8	San Benito	116	83.5
9	Kings	376	82.2
10	Contra Costa	1,960	79.7



Data source: OSHPD, 2019

* Among counties reporting ≥ 50 asthma ED visits in children

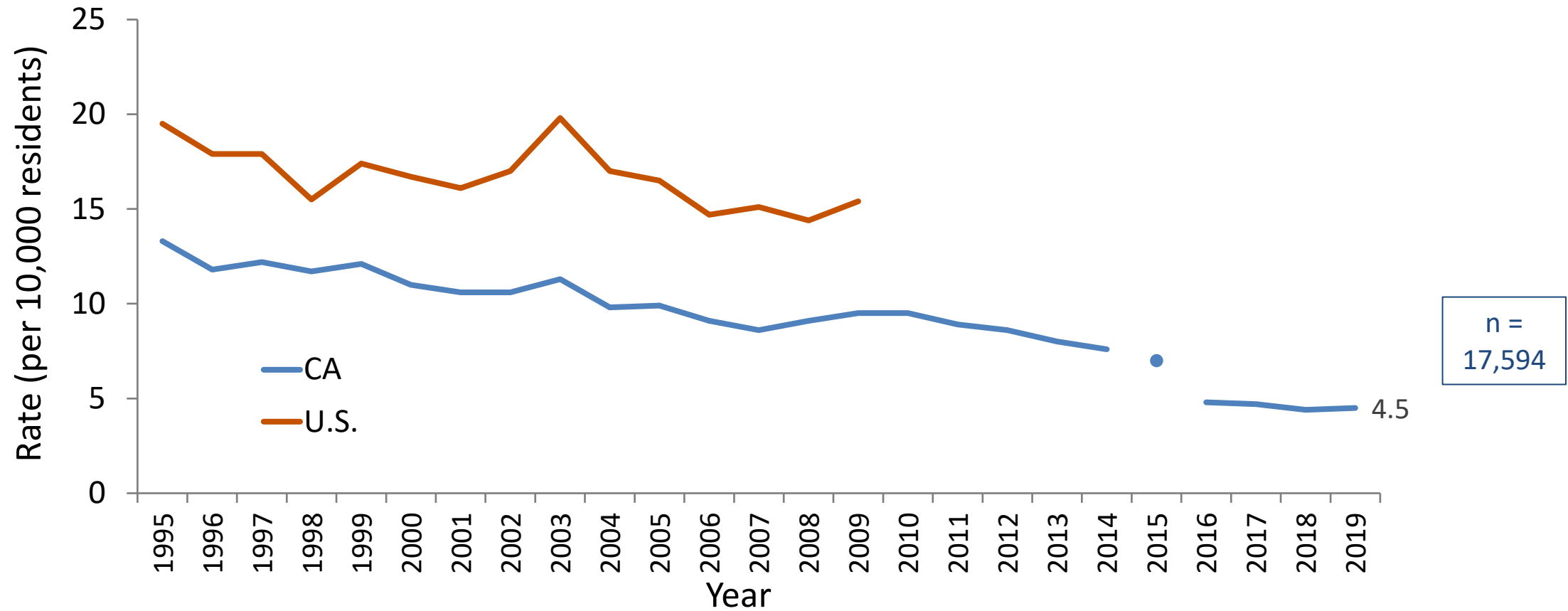
Expected Source of Payment for Asthma ED Visits California, 2019





Asthma-related Hospitalizations

Age-Adjusted Asthma Hospitalizations per 10,000 Residents California and the U.S., 1995–2019

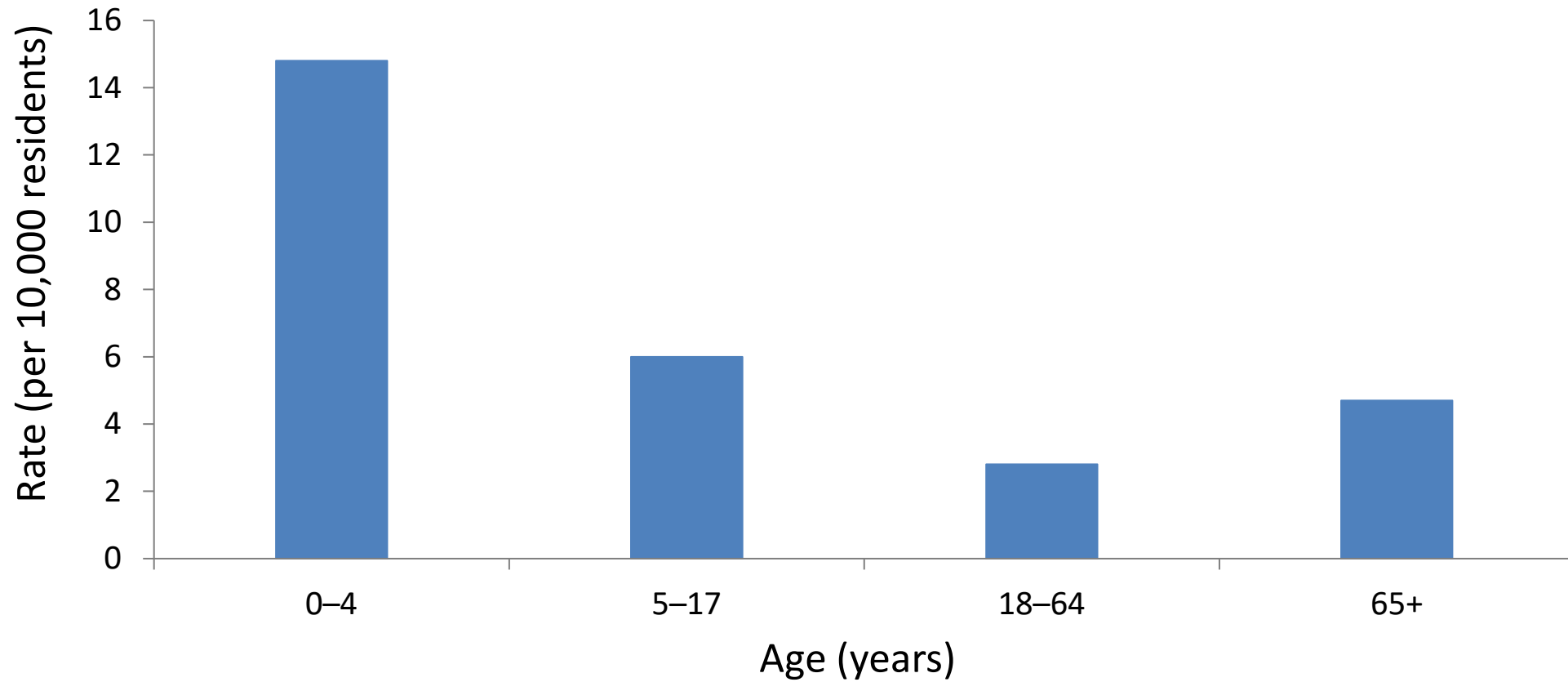


Data sources: CA data from OSHPD, 1995–2019

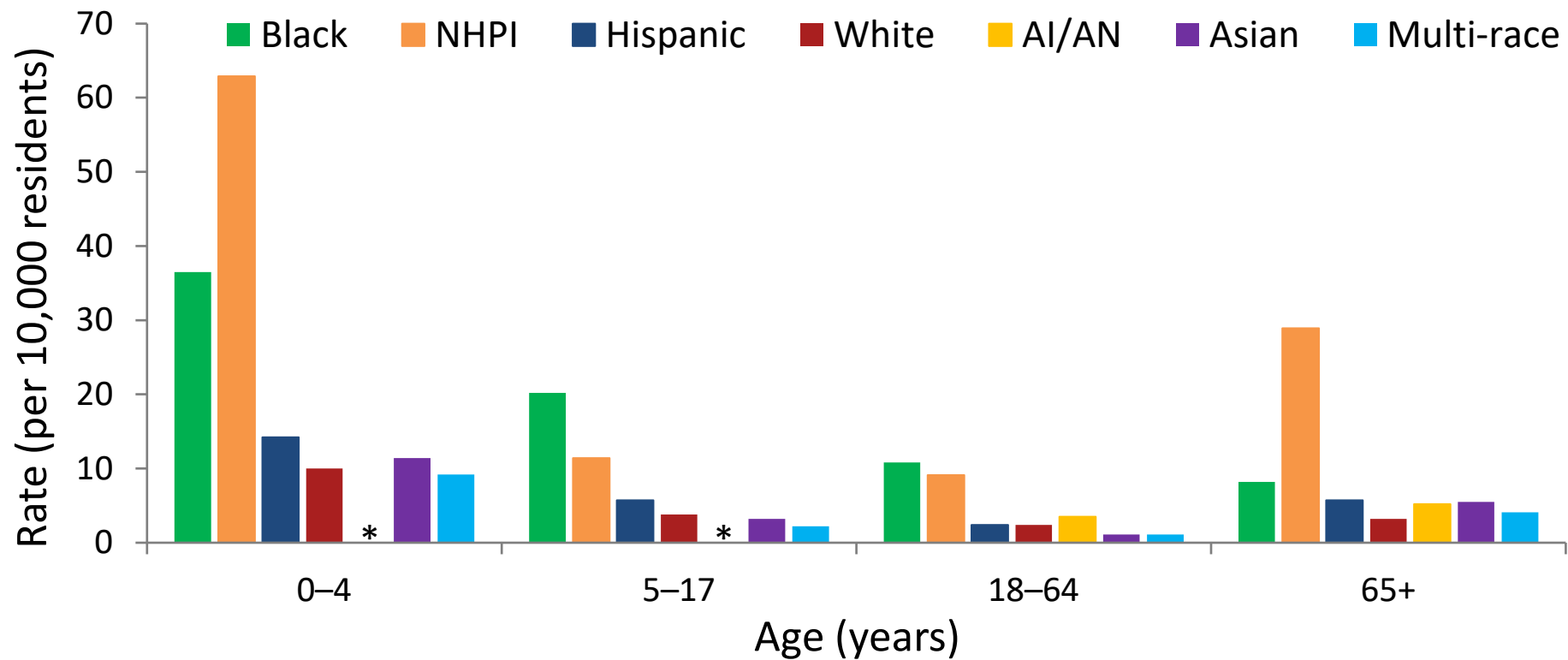
U.S. data from the National Hospital Discharge Survey, 1995–2009

Note: Diagnosis codes changed from ICD-CM-9 to ICD-CM-10 on October 1, 2015. Direct comparisons should not be made between data collected prior to and after this change.

Age-Adjusted Asthma Hospitalizations per 10,000 Residents by Age, California, 2019



Age-Adjusted Asthma Hospitalizations per 10,000 Residents by Race/Ethnicity and Age, California, 2019

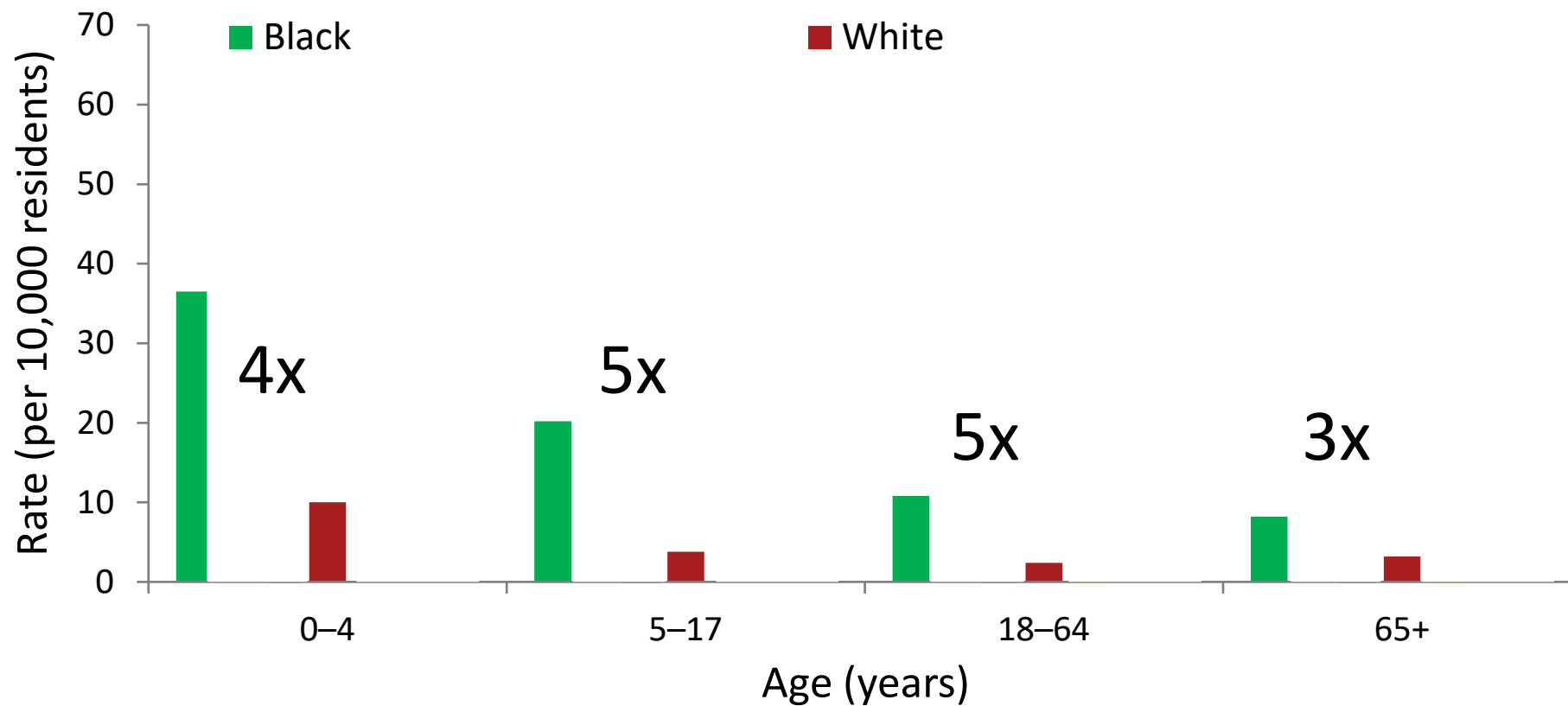


Data source: OSHPD, 2019

Abbreviations: NHPI = Native Hawaiian or Pacific Islander, AI/AN = American Indian or Alaskan Native

* Estimate not available due to small sample size

Age-Adjusted Asthma Hospitalizations per 10,000 Residents by Race/Ethnicity and Age, California, 2019

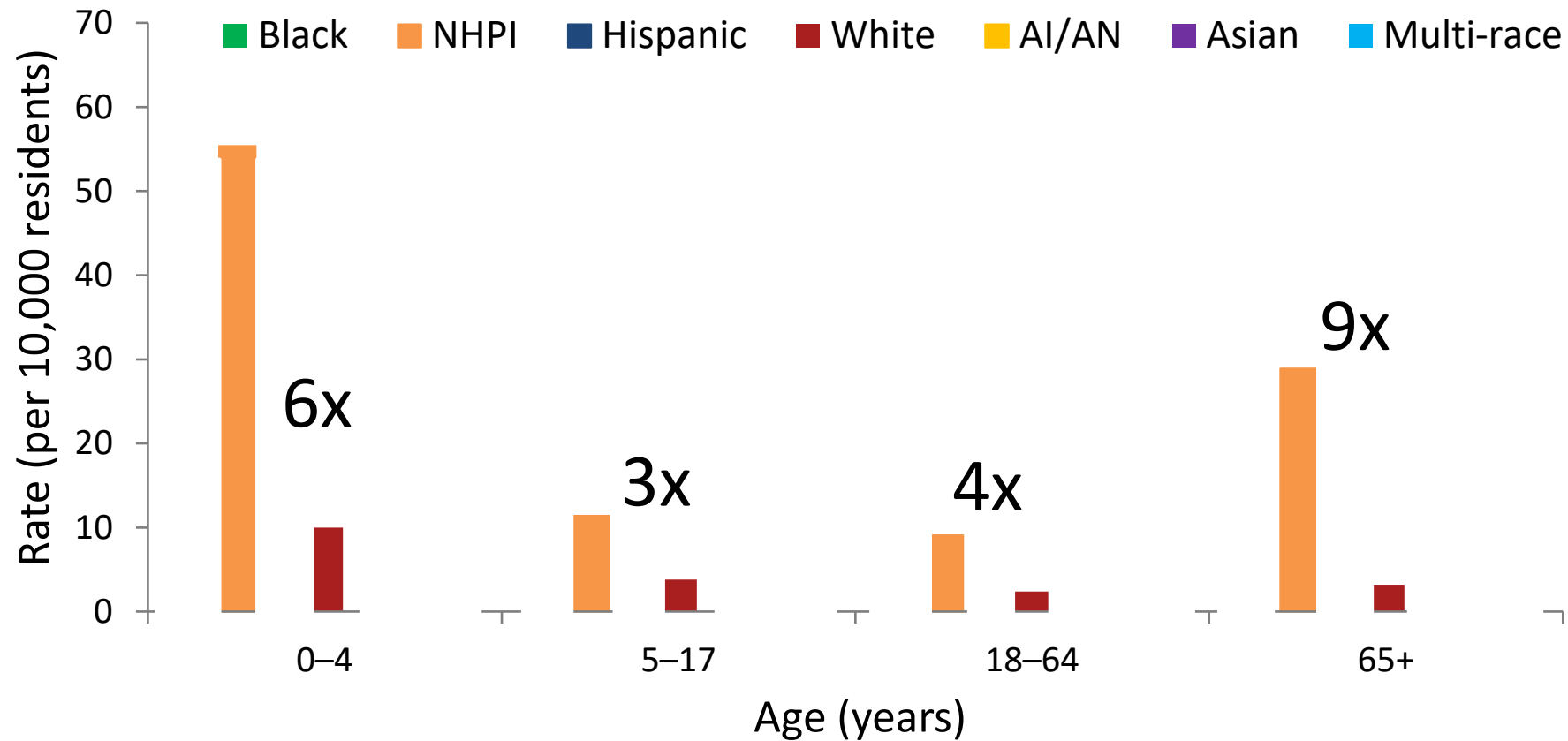


Data source: OSHPD, 2019

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Age-Adjusted Asthma Hospitalizations per 10,000 Residents by Race/Ethnicity and Age, California, 2019

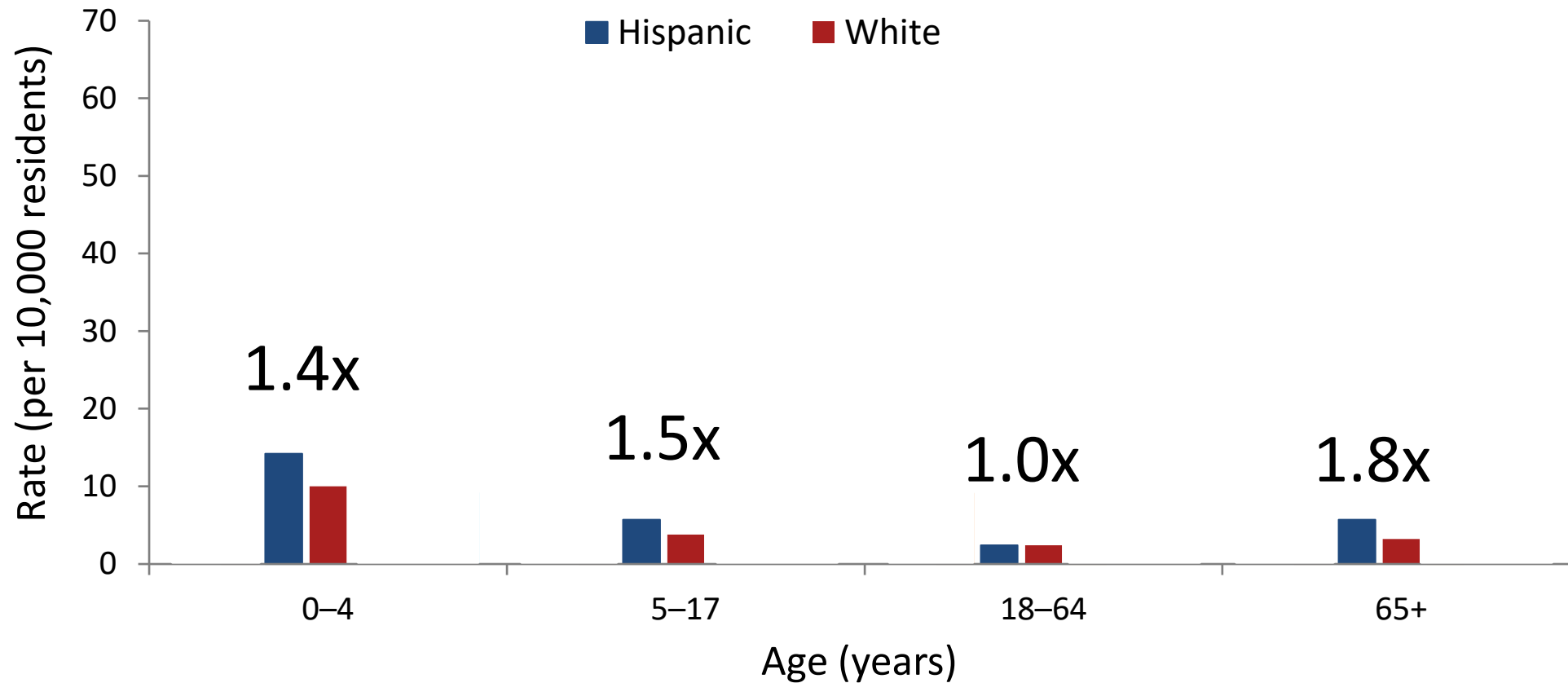


Data source: OSHPD, 2019

Abbreviations: NHPI = Native Hawaiian or Pacific Islander, AI/AN = American Indian or Alaskan Native

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Age-Adjusted Asthma Hospitalizations per 10,000 Residents by Race/Ethnicity and Age, California, 2019

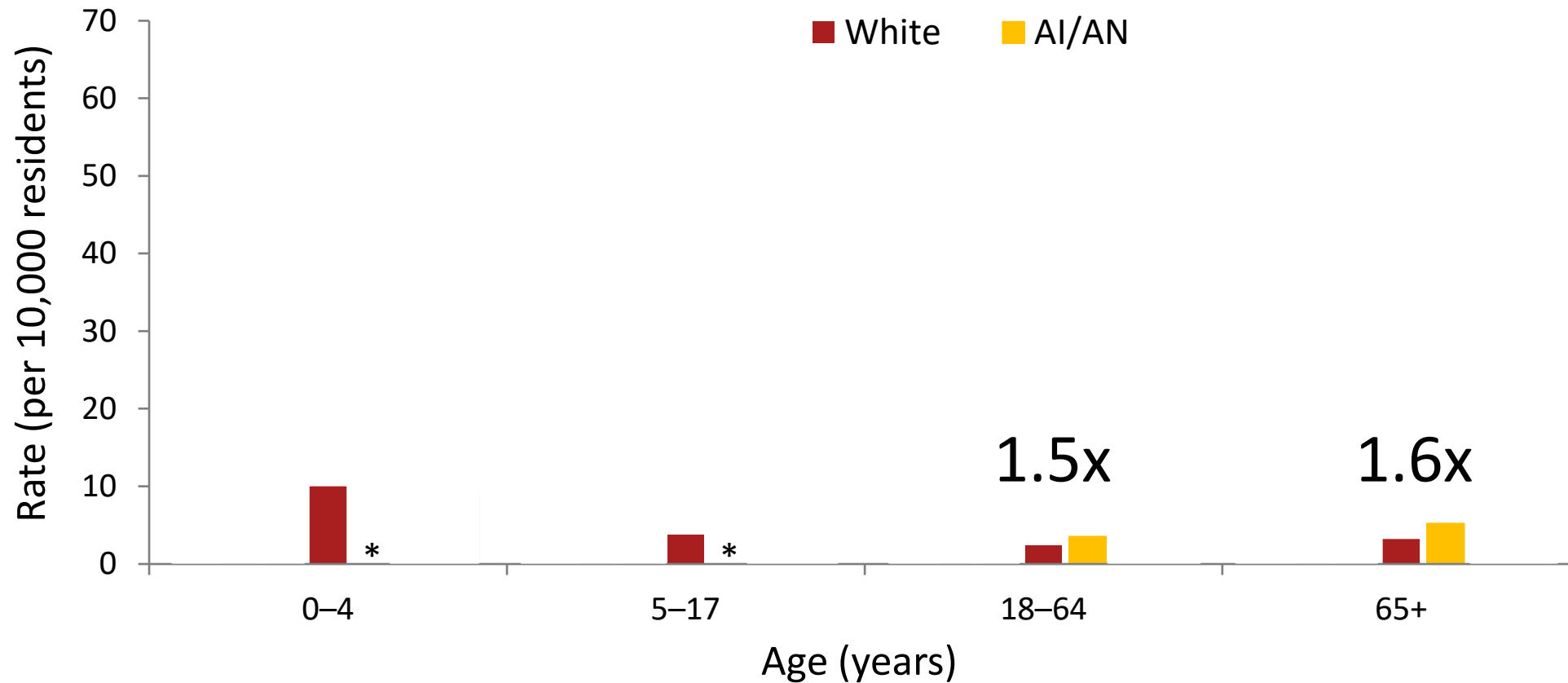


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Age-Adjusted Asthma Hospitalizations per 10,000 Residents by Race/Ethnicity and Age, California, 2019

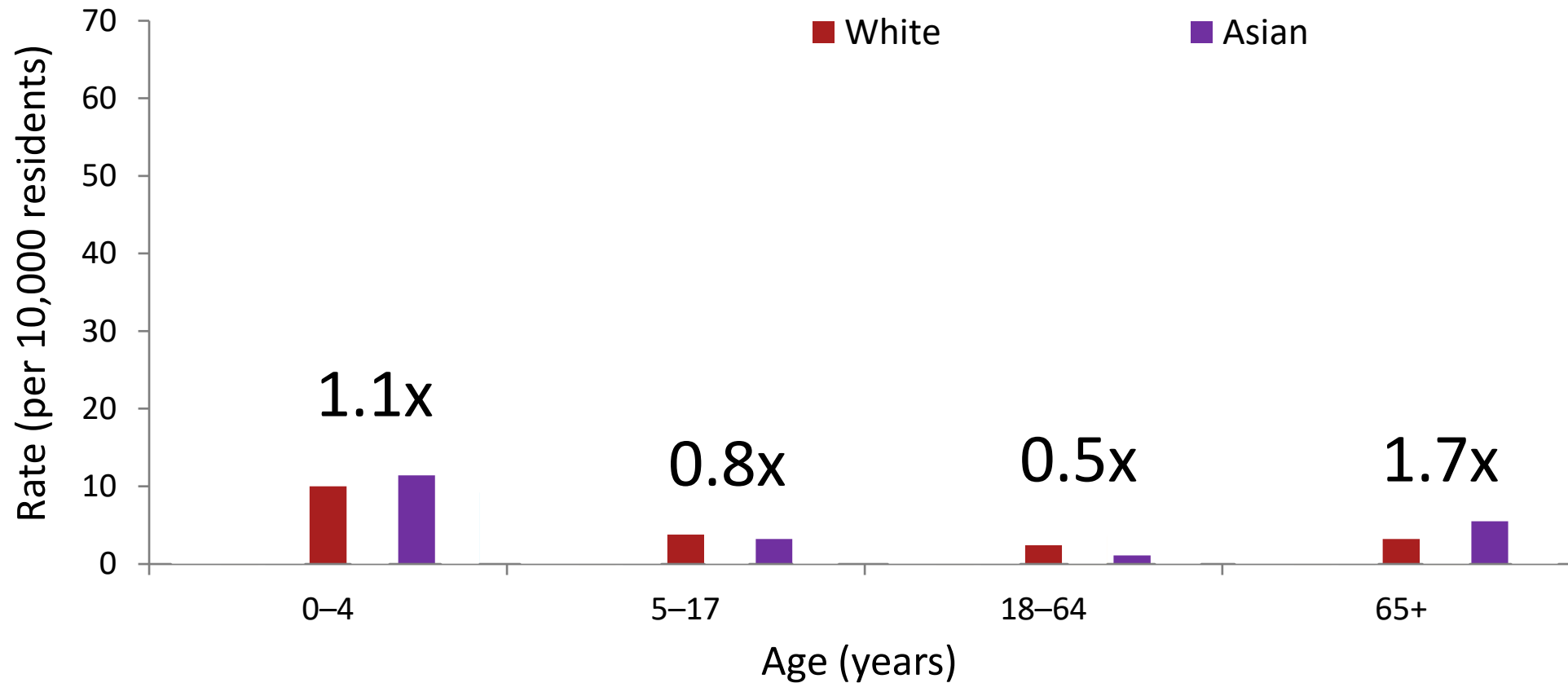


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Age-Adjusted Asthma Hospitalizations per 10,000 Residents by Race/Ethnicity and Age, California, 2019



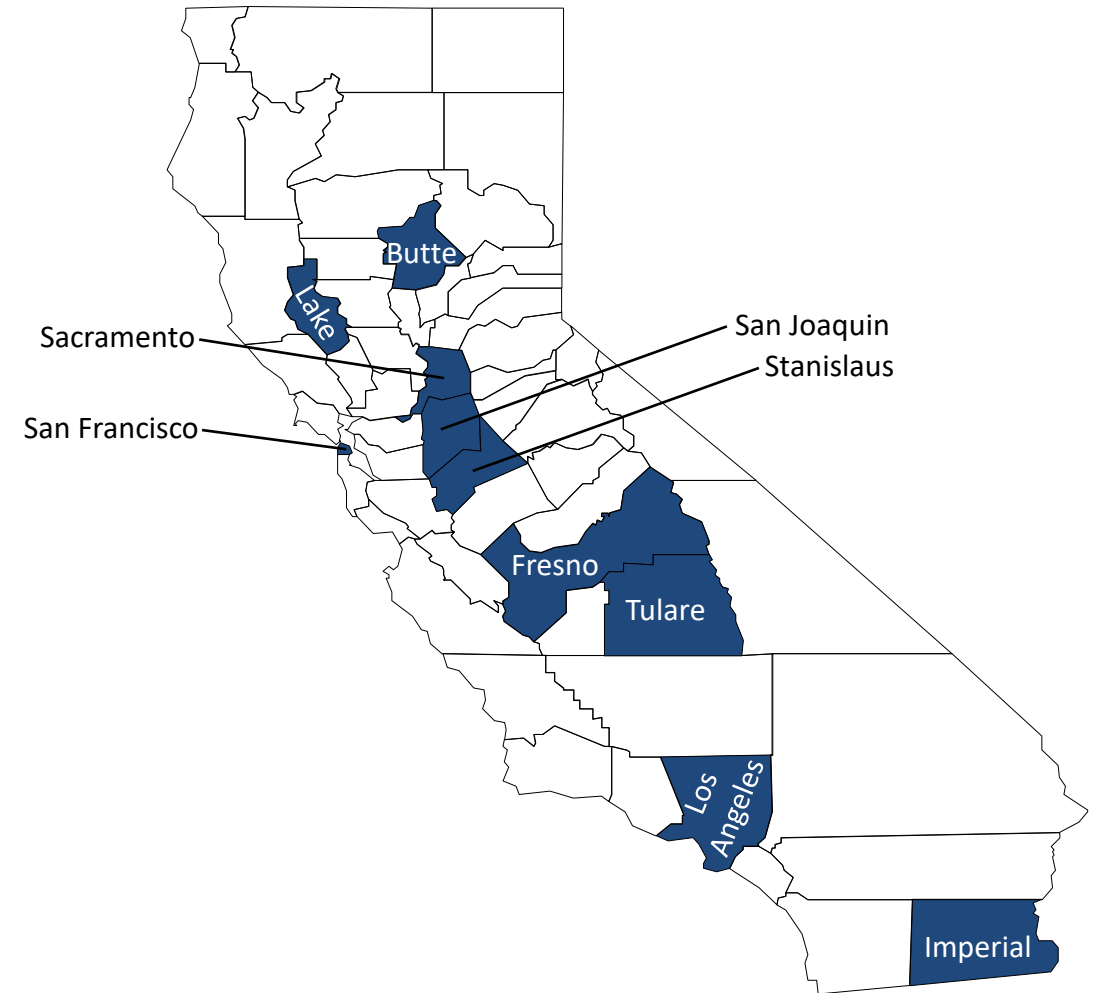
Data source: OSHPD, 2019

Abbreviations: NHPI = Native Hawaiian or Pacific Islander, AI/AN = American Indian or Alaskan Native

* Estimate not available due to small sample size

California Counties with Highest Age-Adjusted Asthma Hospitalizations per 10,000 Children (0–17 years), 2019

Rank*	County	Number of Events	Age-adjusted Rate (per 10,000)
1	Lake	23	16.8
2	Imperial	89	15.7
3	Fresno	356	12.5
4	San Francisco	163	11.3
5	Sacramento	394	10.9
6	Los Angeles	2,285	10.0
7	San Joaquin	188	9.5
8	Stanislaus	135	9.2
9	Butte	41	9.0
10	Tulare	126	8.9



Data source: OSHPD, 2019

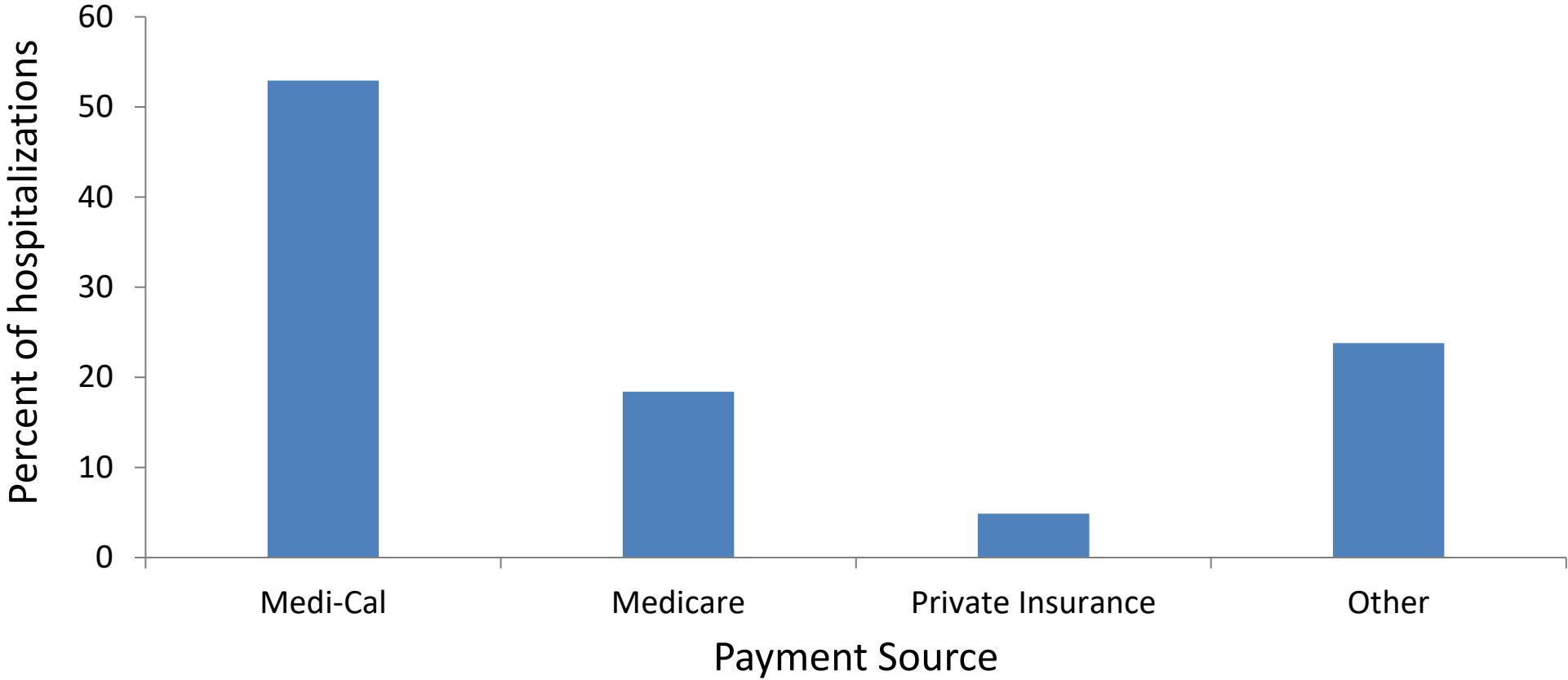
* Among counties reporting ≥ 20 asthma hospitalizations in children

Average Length of Stay and Charges for Asthma Hospitalizations California, 2019

	Age (years)	Average Length of Stay (days)	Average Charges per Hospitalization	Average Charges per Day
Children	0–4	1.8	\$28,186	\$15,876
	5–17	2.1	\$34,808	\$16,647
Adults	18–64	2.8	\$50,705	\$20,215
	65+	3.4	\$59,470	\$20,373
Total	0–17	2.0	\$31,664	\$16,281
	18+	3.0	\$53,189	\$20,260
	All ages	2.5	\$43,805	\$18,525

Total charges = \$770 million

Expected Source of Payment for Asthma Hospitalizations California, 2019

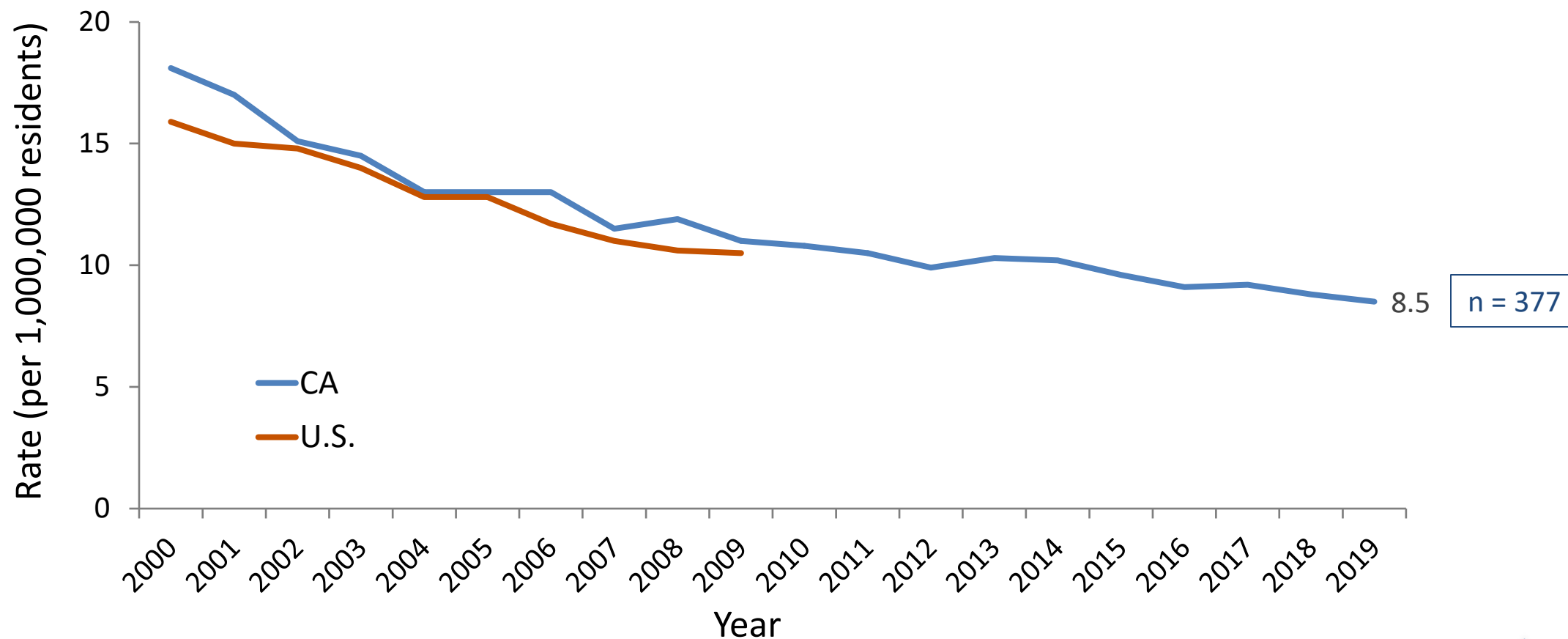


Data source: OSHPD, 2019



Asthma-related Deaths

Age-Adjusted Asthma Deaths per 1,000,000 Residents California and the U.S., 2000–2019

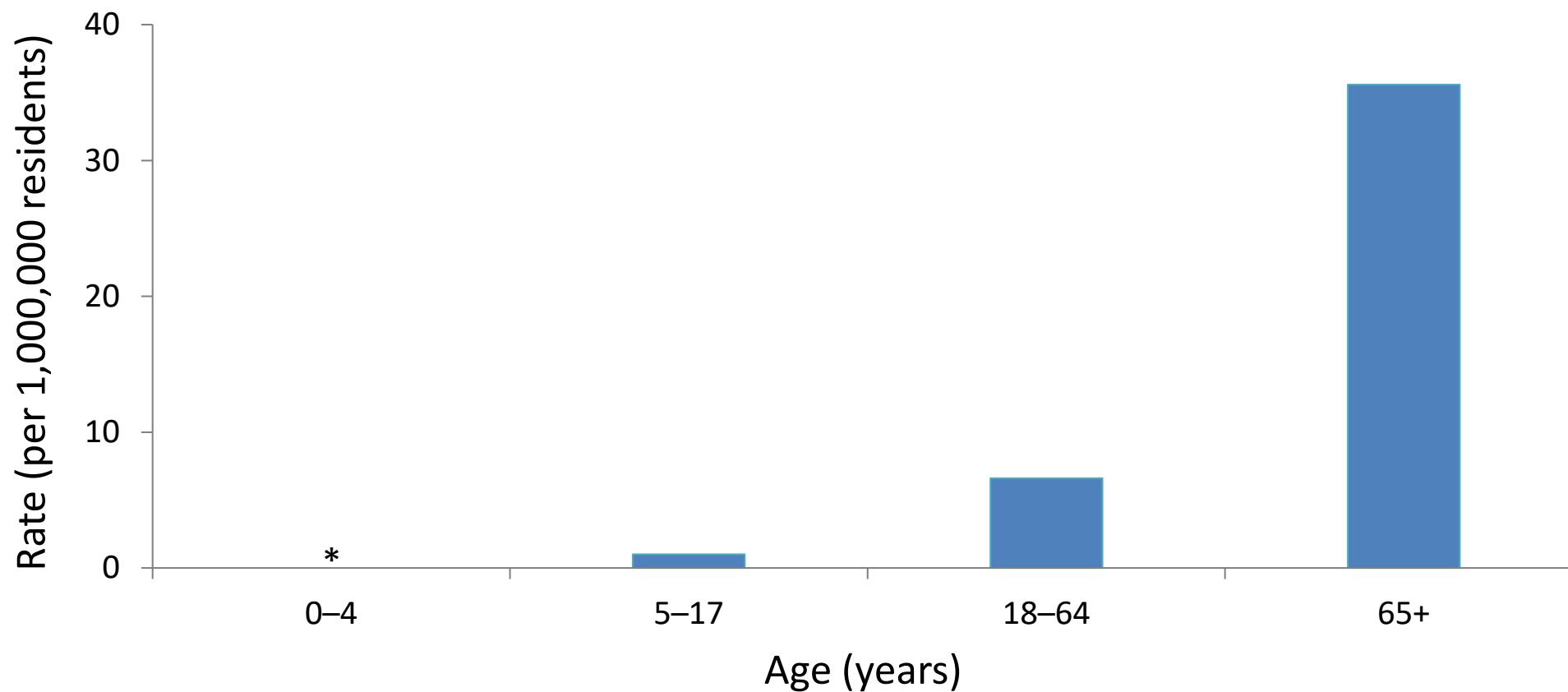


Data sources: CA data from CDPH Vital Records, 2000–2019

U.S. data from CDC National Center for Health Statistics, 2000–2009



Age-Adjusted Asthma Deaths per 1,000,000 Residents by Age California, 2017–2019

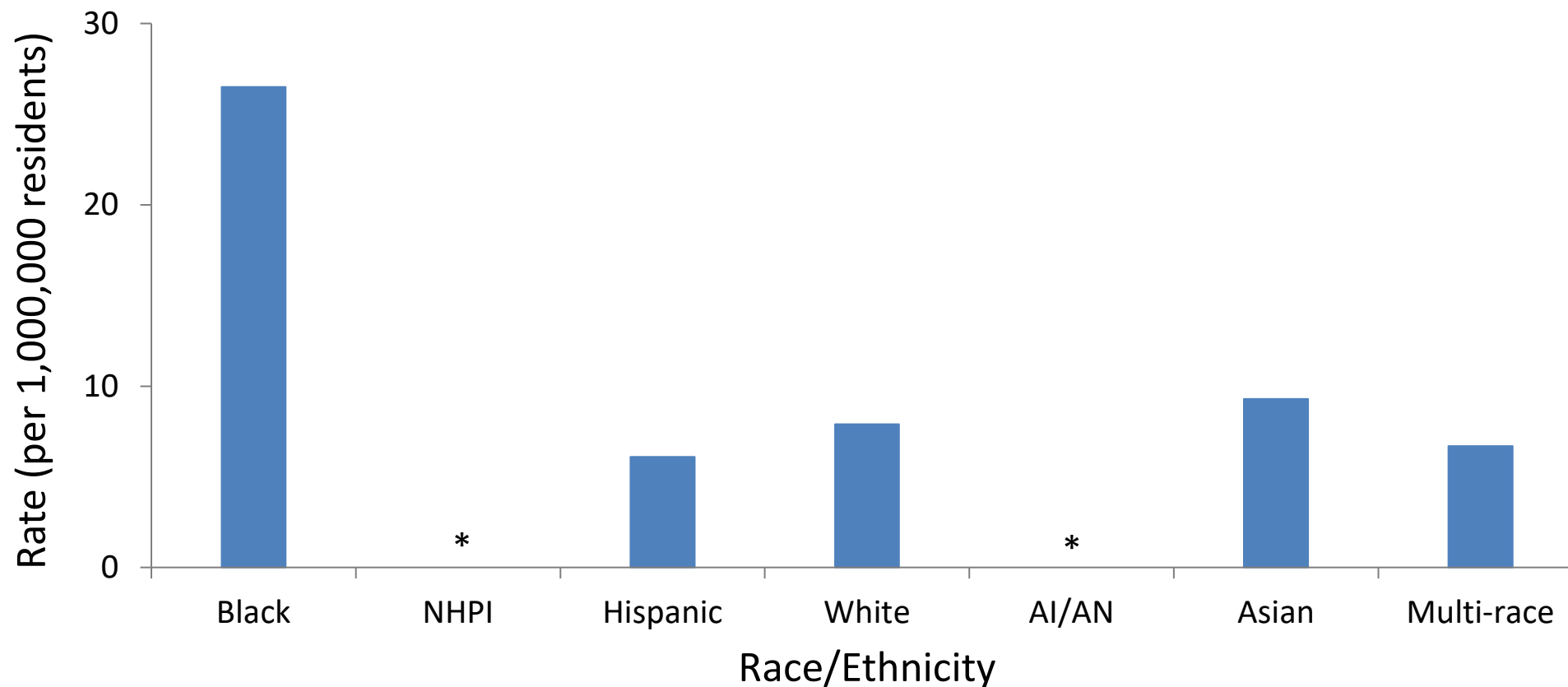


Data source: CDPH Vital Records, 2017–2019

* Estimate not available due to small sample size



Age-Adjusted Asthma Deaths per 1,000,000 Residents by Race/Ethnicity, California, 2017–2019



Data source: CDPH Vital Records, 2017–2019

Abbreviations: NHPI = Native Hawaiian or Pacific Islander, AI/AN = American Indian or Alaskan Native

* Estimate not available due to small sample size

California Counties with Highest Age-Adjusted Asthma Deaths per 1,000,000 Residents, 2017–2019

Rank*	County	Number of Events	Age-adjusted Rate (per 10,000)
1	Merced	15	19.8
2	Fresno	57	19.5
3	Solano	20	15.2
4	Stanislaus	25	14.2
5	Sacramento	69	14.1
6	Alameda	67	12.0
7	Tulare	16	11.5
8	Sonoma	24	11.3
9	Contra Costa	47	11.0
10	San Joaquin	25	10.6



Data source: CDPH Vital Records, 2017–2019

* Among counties reporting ≥ 12 asthma deaths



Costs Due to Asthma

Annual Costs Associated with Asthma, California, 2017–2018

Costs	Type of Costs	Estimated Annual Cost in Millions
Direct Costs (Medical Care)	Hospital outpatient visits	\$658
	Emergency department visits	\$392
	Inpatient admissions	\$1,977
	Office-based visits	\$2,391
	Prescription medications	\$6,838
Indirect Costs (Lost Productivity)	Missed workdays	\$637
	Missed school days	\$161
	Premature deaths	\$256
Total		\$13,310

Data sources: CA current asthma prevalence, missed workdays, and missed school days from CHIS, 2017–2018
CA asthma deaths from CDPH Vital Records, 2017–2018
National cost estimates from Nurmagambetov et al., 2018; Barnett and Nurmagambetov, 2011



Asthma Inequities



Asthma Inequities and Social Determinants of Health

Social determinants of health are the conditions in which people live, work, and play.

Asthma Inequities and Social Determinants of Health

Social determinants of health are the conditions in which people live, work, and play.

What causes health inequities in asthma?



Racism, classism, and discrimination in policies that disadvantage certain groups of people



Pollution in the environment that makes asthma symptoms worse

And poor access to:



healthy and affordable housing



quality health care

Asthma Inequities by Race/Ethnicity

Compared to White Californians:

- **Black Californians** are more likely to suffer from severe asthma and die from asthma

5x
higher



emergency
department
visits

4x
higher



hospital
stays

3x
higher



deaths from
asthma

Asthma Inequities by Race/Ethnicity

Compared to White Californians:

- **Black Californians** are more likely to suffer from severe asthma and die from asthma

5x
higher



emergency
department
visits

4x
higher



hospital
stays

3x
higher



deaths from
asthma

Compared to White children:

- **Black children** are more likely to have asthma and suffer from severe asthma

2x



more likely to
have asthma

6x
higher



emergency
department
visits

5x
higher



hospital
stays

Asthma Inequities by Race/Ethnicity

Compared to White Californians:

- **Native Hawaiian/Pacific Islander Californians** are more likely to suffer from severe asthma


4x
higher  emergency
department
visits

5x
higher  hospital
stays

Asthma Inequities by Race/Ethnicity

Compared to White Californians:

- **Hispanic or Latino Californians** are less likely to have asthma than White Californians, but are more likely to suffer from severe asthma

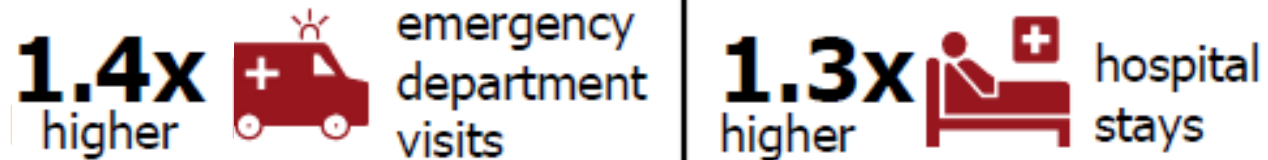
1.4x
higher  emergency
department
visits

1.3x
higher  hospital
stays

Asthma Inequities by Race/Ethnicity

Compared to White Californians:

- **Hispanic or Latino Californians** are less likely to have asthma than White Californians, but are more likely to suffer from severe asthma



Compared to White children:

- **Hispanic or Latino children** are more likely to have asthma and suffer from severe asthma



Making Asthma Data Available to the Public

Asthma Infographics

Plain language infographics that provide a snapshot of asthma data in California

- [Asthma in California \(PDF\)](#)
- [Asthma Inequities in California Children \(PDF\)](#)
- [Asthma Racial Inequities in California \(PDF\)](#)

Asthma in California Reports

- [Asthma in California: A Surveillance Report \(2017\) \(PDF\)](#) - asthma prevalence in California
- For a copy of [Asthma in California: A Surveillance Report \(2013\)](#) - a comprehensive picture of asthma in California - or [Asthma in California: A Surveillance Report Slide Show \(2013\)](#) or [Asthma's Impact on California: Fact Sheet \(2012\)](#), please email California.Breathing@cdph.ca.gov.

Custom Data Request

If you want data that are unavailable on our website or any material here in an alternate format, please send your request to California.Breathing@cdph.ca.gov and we will contact you regarding the possibility of creating a customized data set. It is not always possible to fulfil custom requests, but each will be considered.

Additional Data Resources

- [California Environmental Health Tracking Program's Asthma Data Query](#)
- [CHHS Open Data Portal](#)
- [AskCHHS](#)
- [AskCHIS Neighborhood Edition](#)
- [CalEnviroScreen](#)

Prioritizing Populations Disproportionately Affected by Asthma

California Breathing Focus Areas

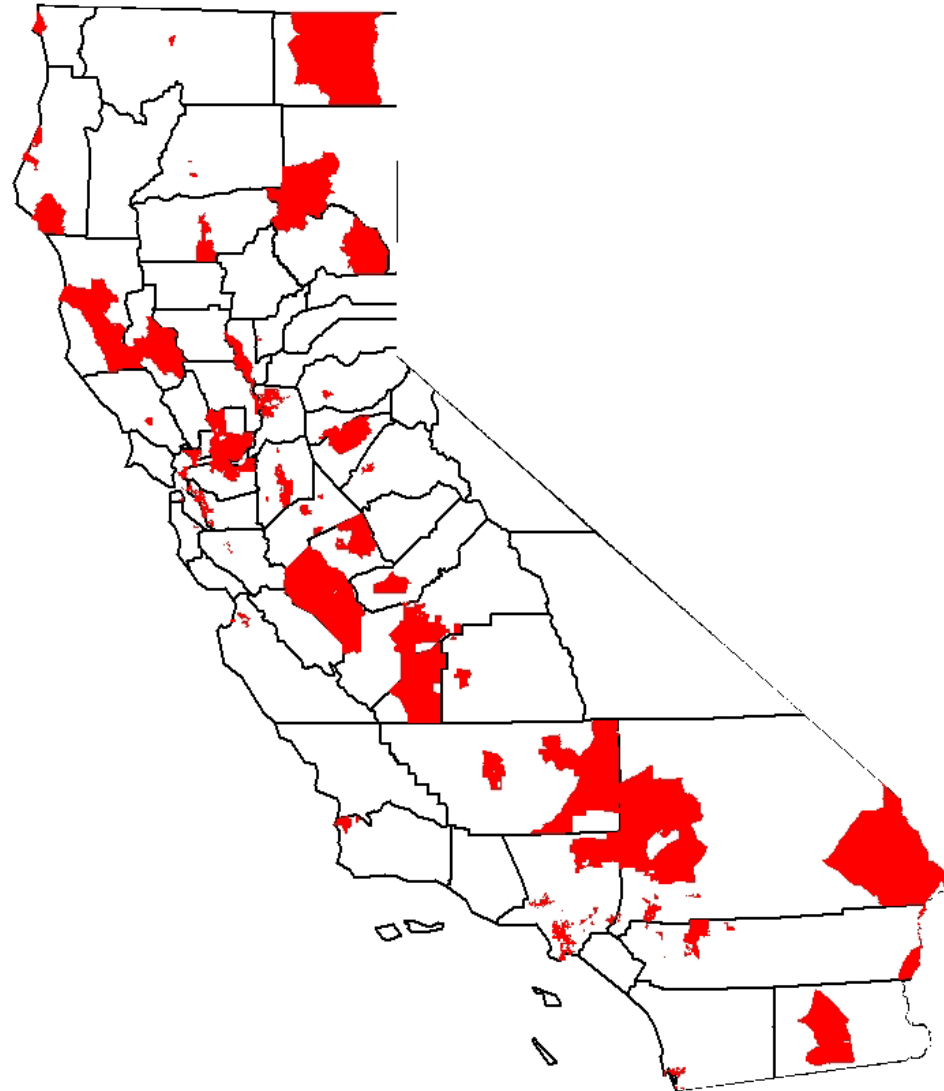
- Areas of California with high asthma burden
- Children
- Racial/ethnic groups with documented asthma disparities



Pinterest

High Burden Asthma Areas

- Focus program efforts to census tracts in the 75th percentile or higher for asthma ED visit rates



Children

- **Create partnerships with asthma programs serving children**



GlobeNewswire



Centers for Disease Control and Prevention



Salud America!

Racial/Ethnic Groups

- **Expand partnerships with organizations serving Black and NHPI communities**
- **Obtain data from Indian Health Services to better understand burden of asthma in AIAN communities**



National Institutes of Health

Questions?



Feedback

- **Do you use California Breathing's County Asthma Data Tool?**
- **What are your preferred methods for accessing asthma surveillance data?**
- **What additional asthma indicators would you like California Breathing to provide?**

Contact Information

- California.Breathing@cdph.ca.gov
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Next Webinar

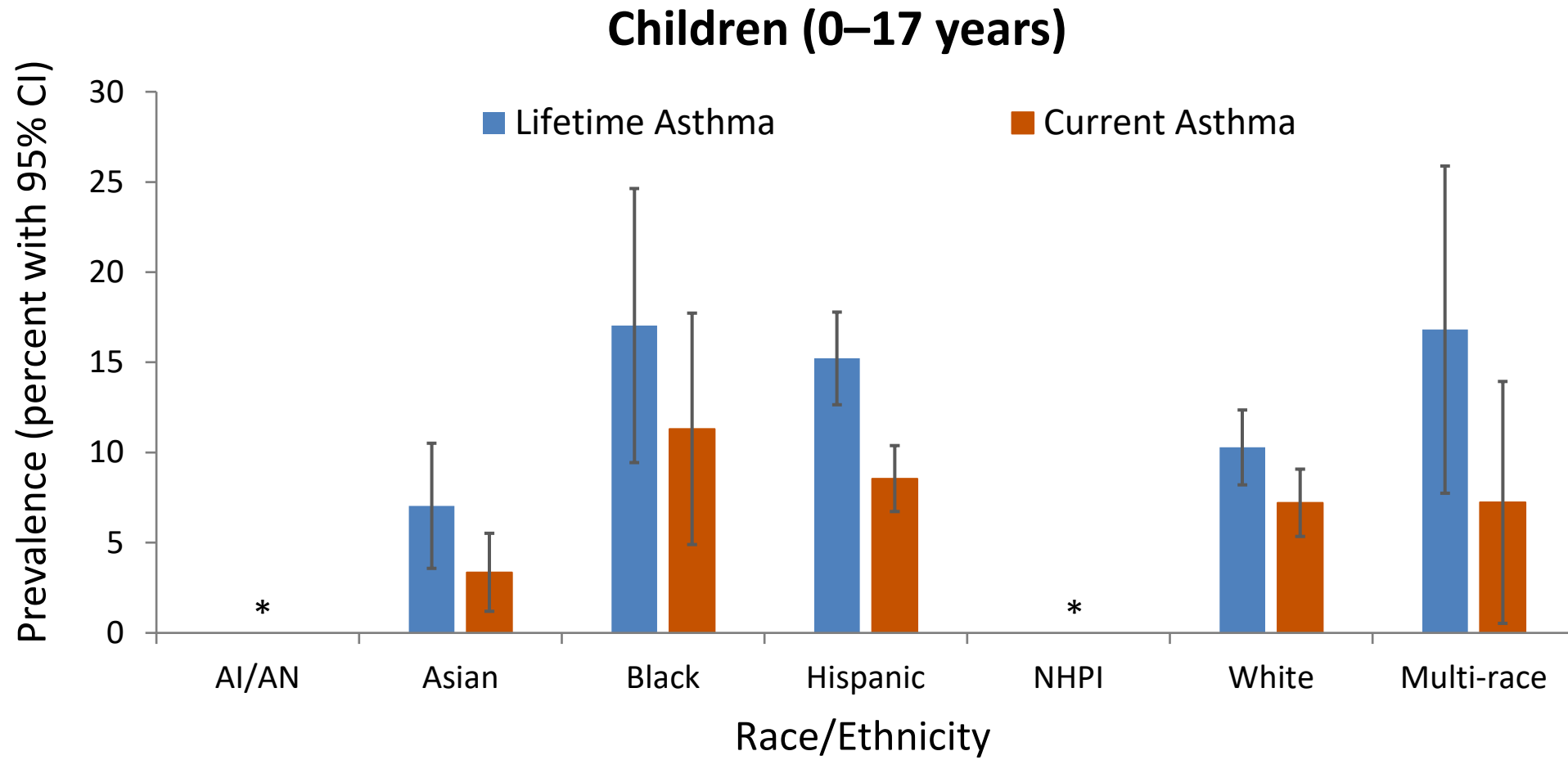
- Asthma Management Academy and Evaluation
 - October 19, 2021, 10:30am-12pm PST

- Registration link:

<https://us02web.zoom.us/meeting/register/tZYtd-2srT0vG9LgXxi--Tp3fGQB-Gmub25g>

Extra Slides

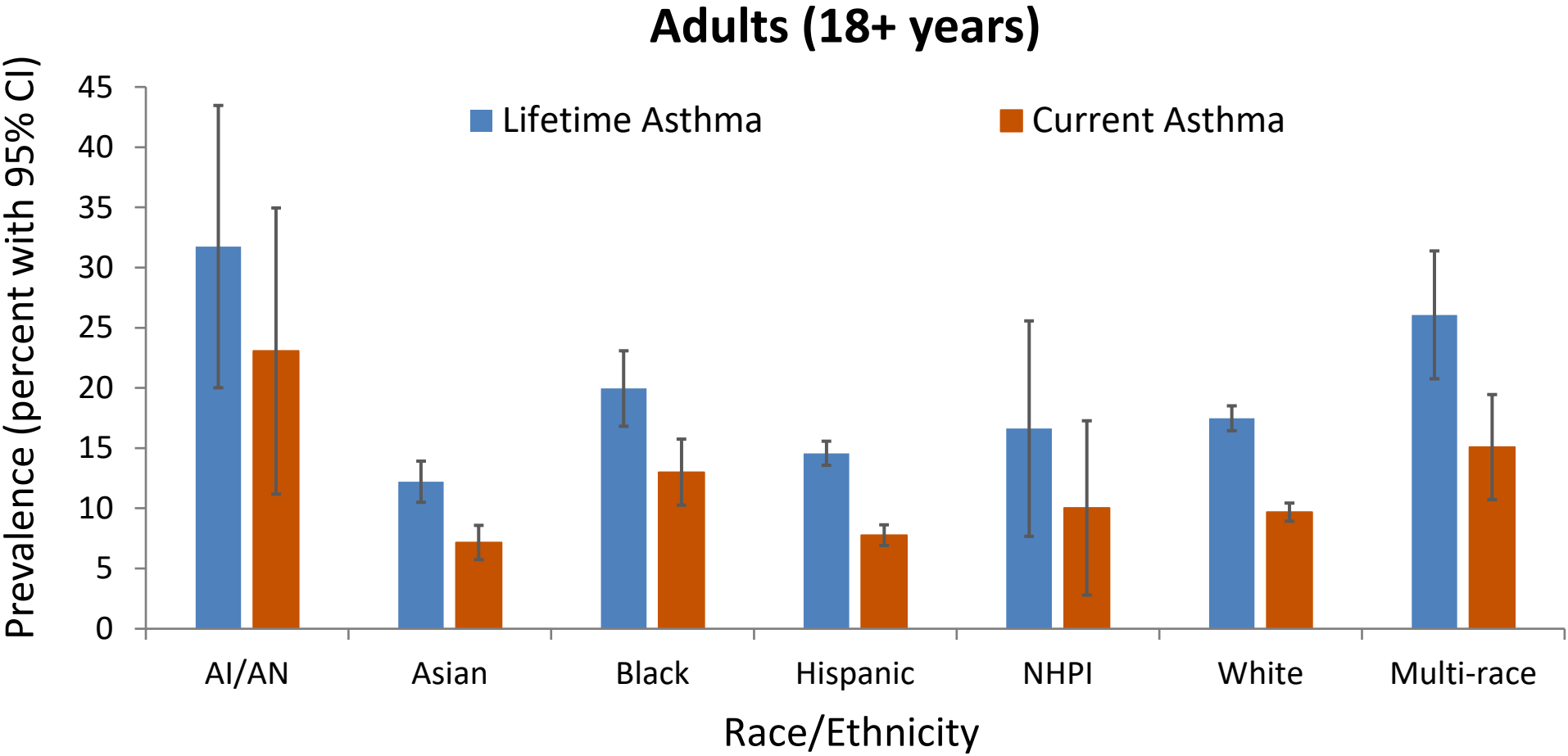
Lifetime and Current Asthma Prevalence by Race/Ethnicity and Age California, 2018–2019



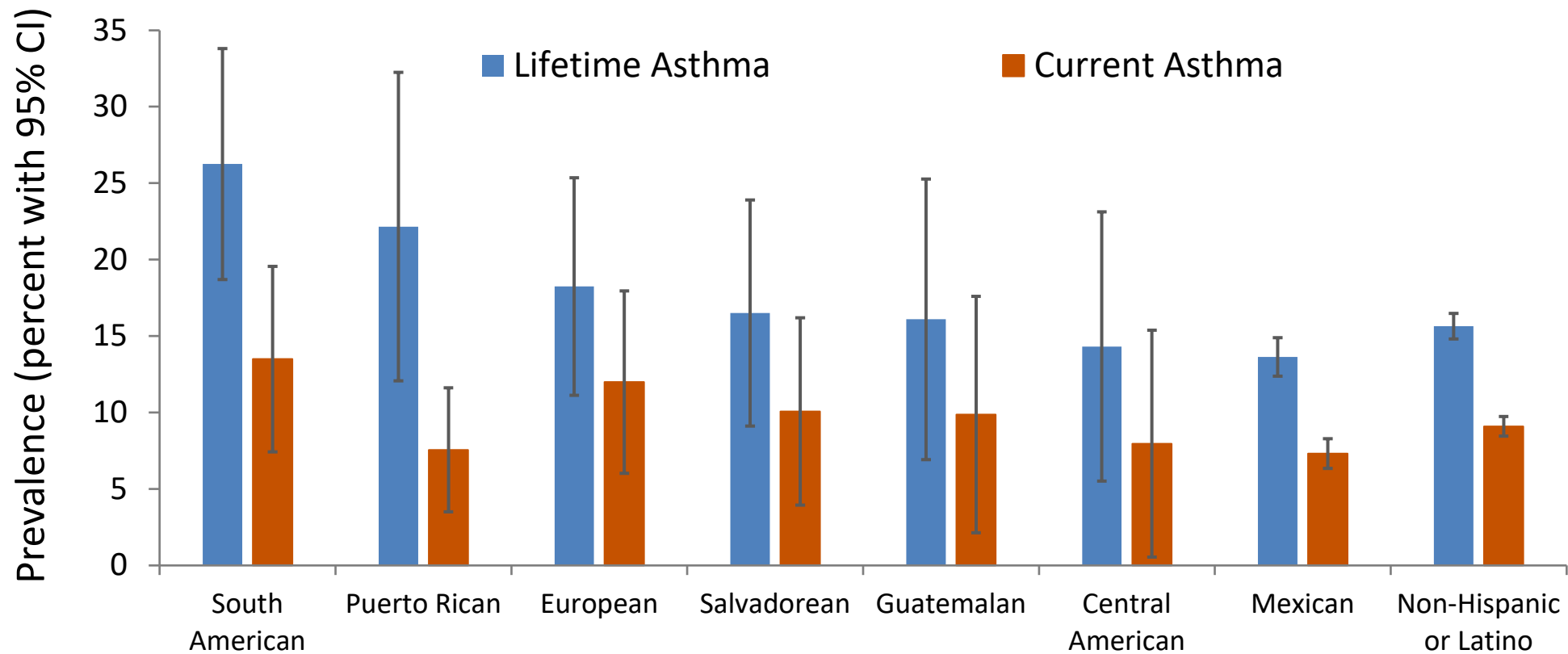
Data source: CHIS 2018–2019

* Estimate not available due to small sample size

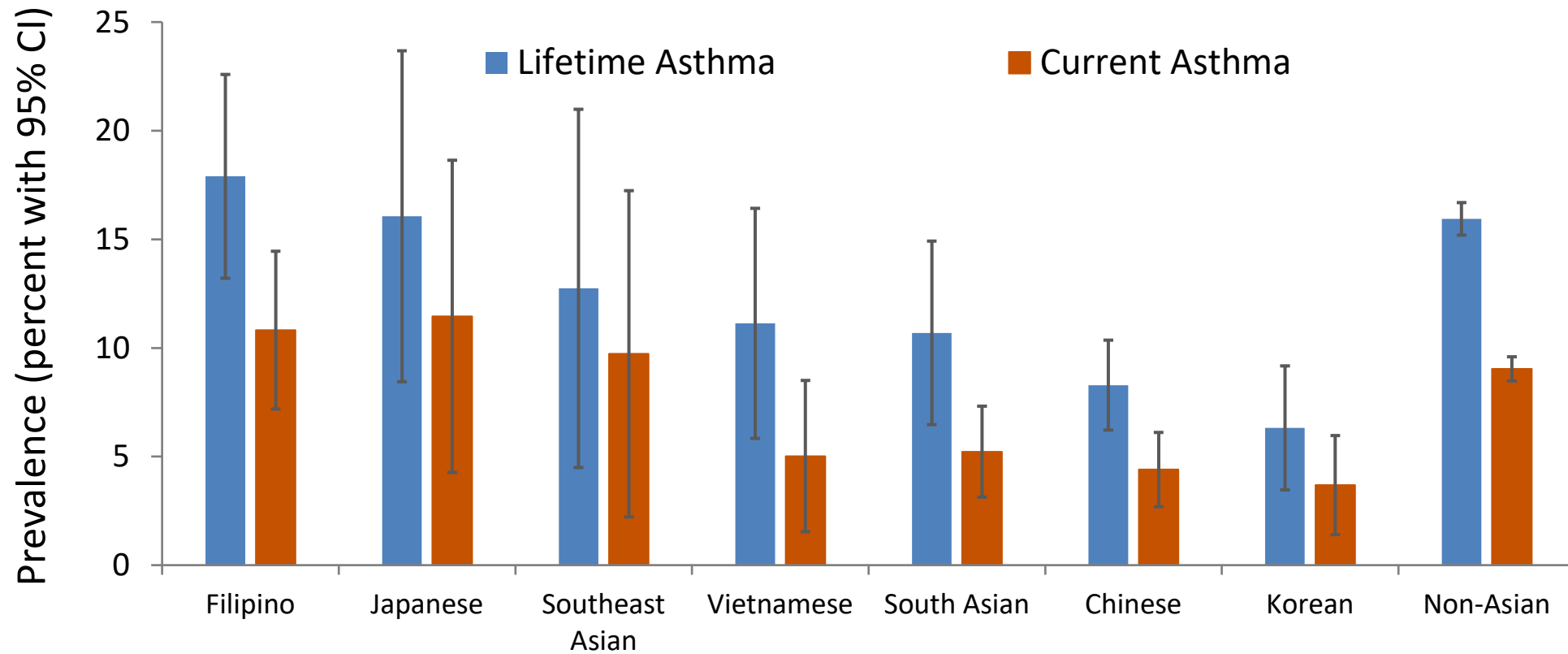
Lifetime and Current Asthma Prevalence by Race/Ethnicity and Age California, 2018–2019



Lifetime and Current Asthma Prevalence among Hispanics and Latinos by Subgroup, California, 2018–2019

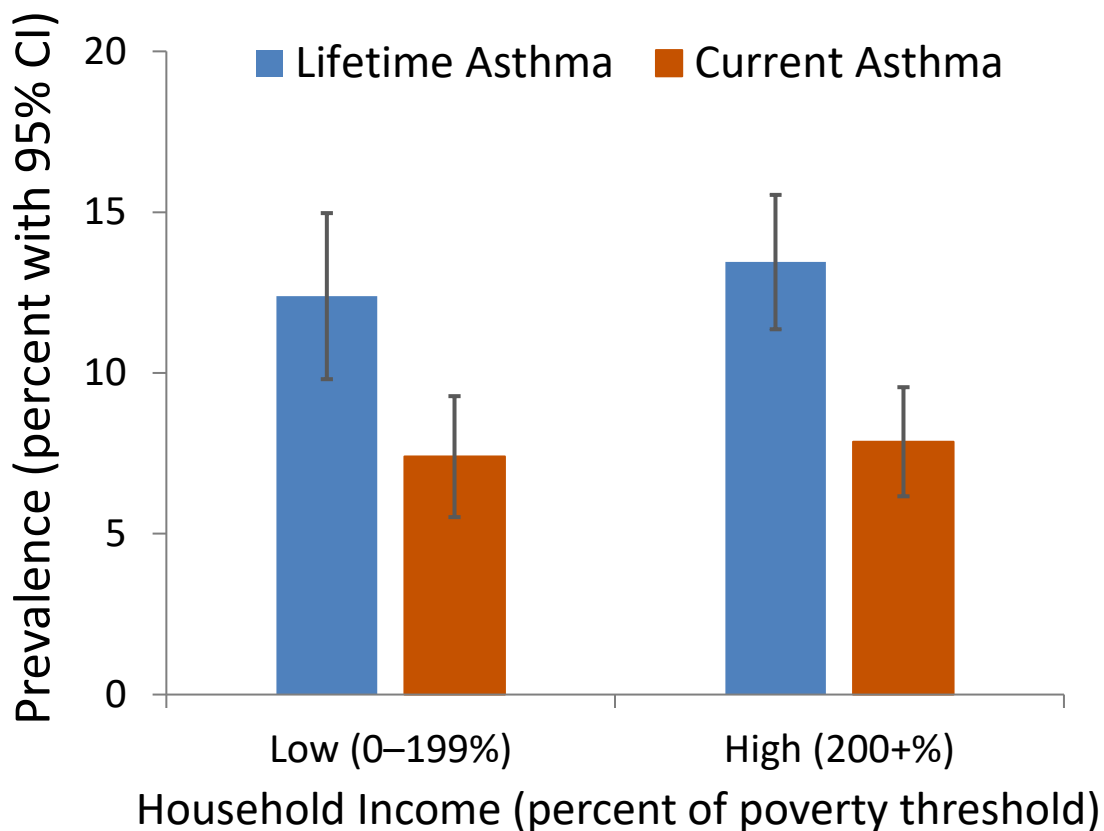


Lifetime and Current Asthma Prevalence among Asians by Subgroup California, 2018–2019

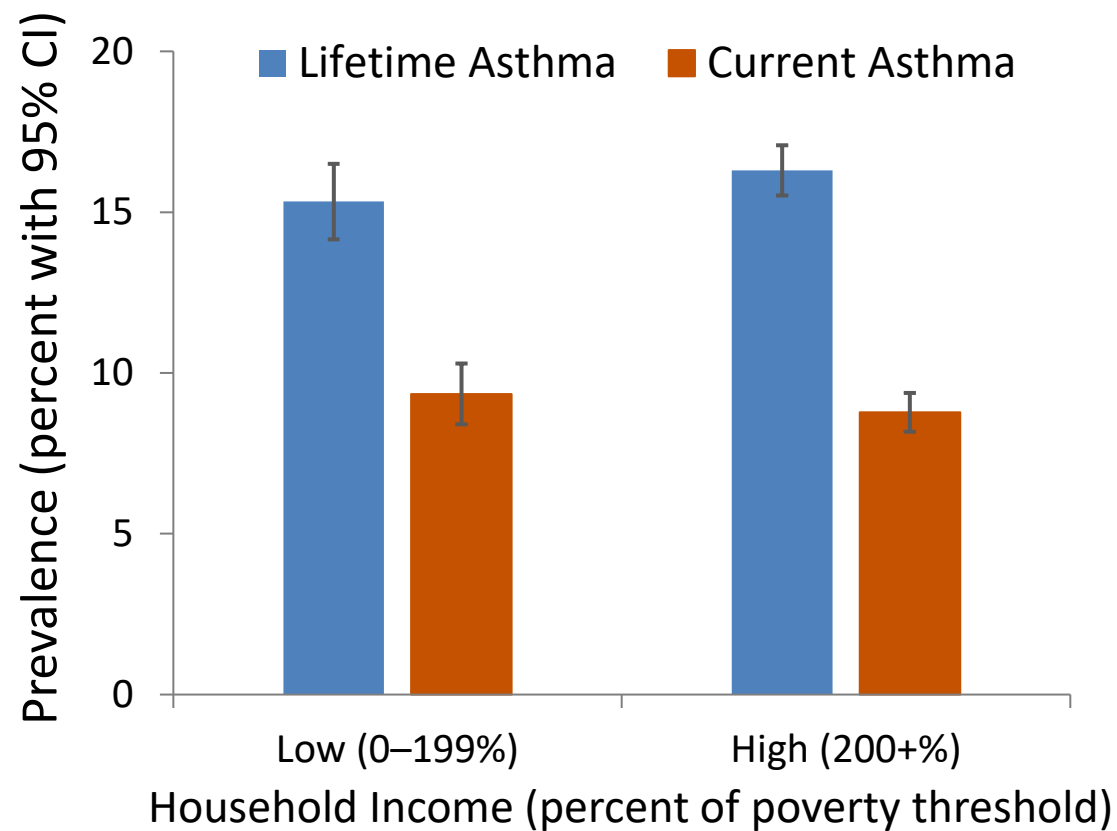


Lifetime and Current Asthma Prevalence by Poverty Level and Age California, 2018–2019

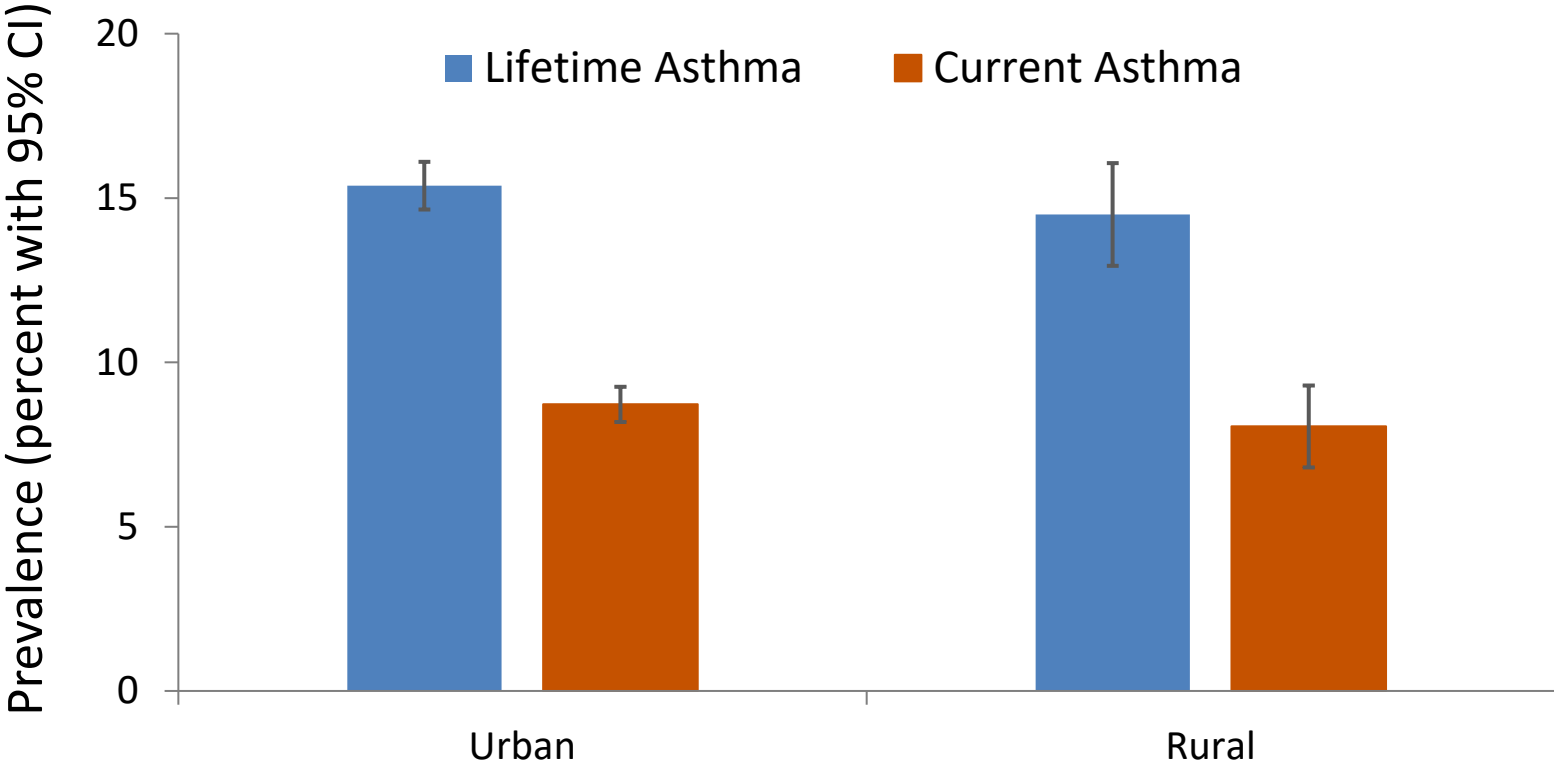
Children (0–17 years)



Adults (18+ years)



Lifetime and Current Asthma Prevalence by Urban/Rural Residence California, 2018–2019



Workdays Missed Due to Asthma California, 2017–2018

Among working-age adults (18–69 years) with current asthma

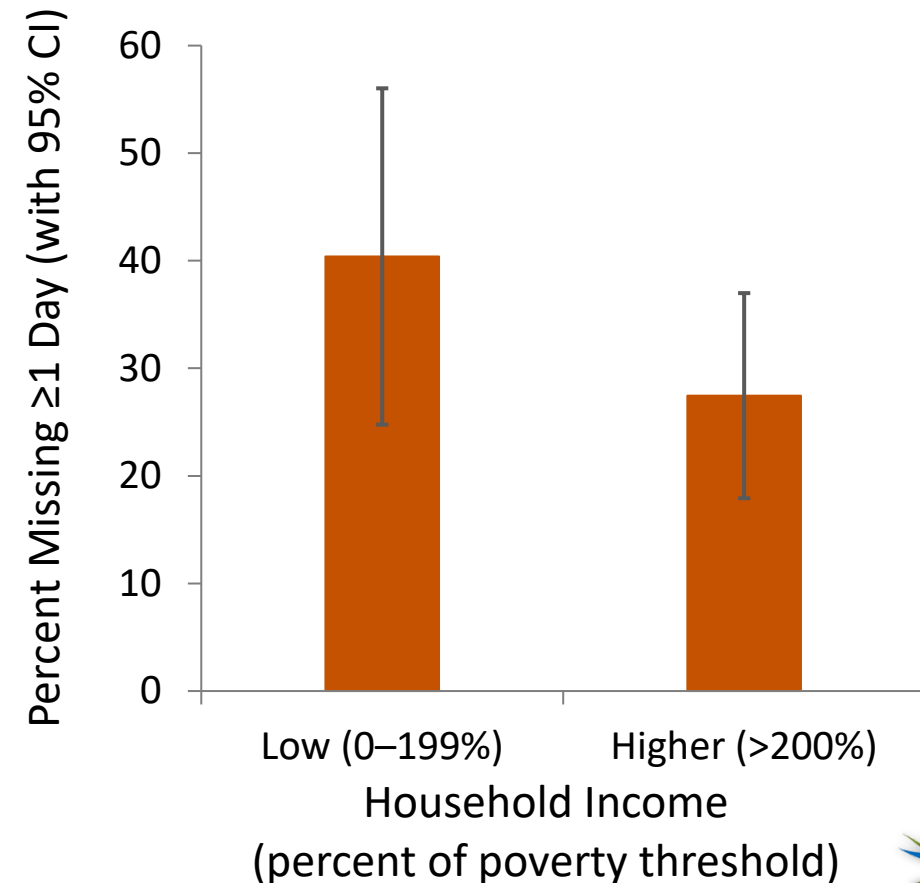
Number of days missed	%	95% CI
0	88.4	(85.4–91.4)
1–2	5.6	(3.7–7.6)
3–5	3.2	(1.7–4.7)
6–10	1.2	(0.4–2.0)
11+	1.5	(0.4–2.6)
	Mean	95% CI
	1.2	(0.5–2.0)

No association with
household income level

School or Daycare Days Missed Due to Asthma California, 2018–2019

Among children (0–17 years) with current asthma

Number of days missed	%	95% CI
0	67.7	(59.5–76.0)
1–2	11.4	(5.9–16.9)
3–5	12.4	(6.5–18.3)
6–10	4.7	(1.3–8.2)
11+	N/A	N/A
	Mean	95% CI
	2.0	(0.3–3.7)



Change in Asthma Diagnostic Coding: ICD-9 to ICD-10

ICD-9 Code	Description
493.0x	Extrinsic Asthma
493.1x	Intrinsic Asthma
493.2x	Chronic Obstructive Asthma
	x=0 unspecified x=1 with status asthmaticus x=2 with acute exacerbation
493.81	Exercise induced bronchospasm
493.82	Cough variant asthma
493.9x	Asthma, Unspecified

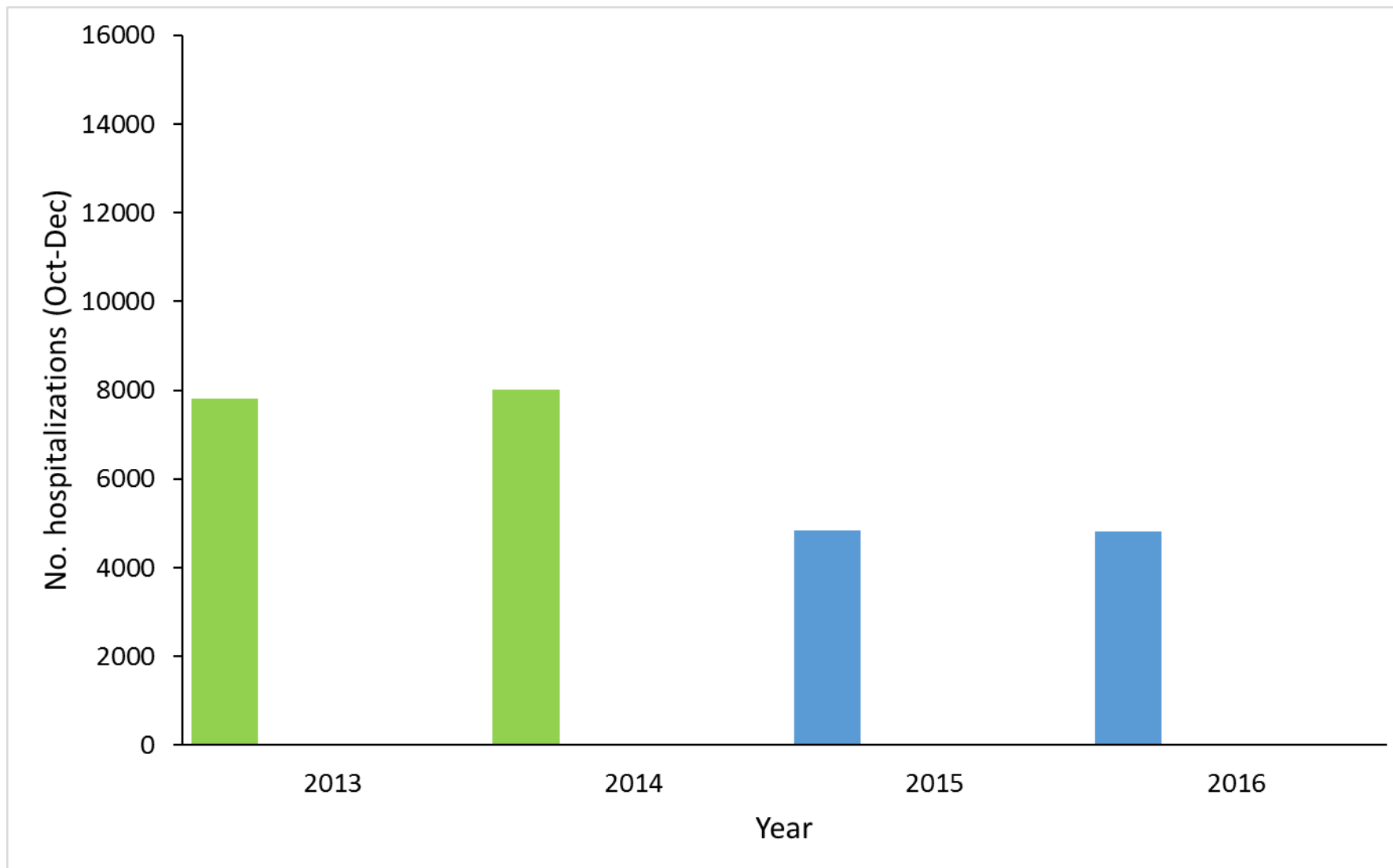
ICD-10 Code	Description
J45.2x	Mild intermittent
J45.3x	Mild persistent
J45.4x	Moderate persistent
J45.5x	Severe persistent
J45.9x	Unspecified
	x=0 uncomplicated x=1 with acute exacerbation x=2 with status asthmaticus
J45.990	Exercise induced bronchospasm
J45.991	Cough variant asthma
J45.998	Other asthma

Change in Asthma Diagnostic Coding: ICD-9 to ICD-10

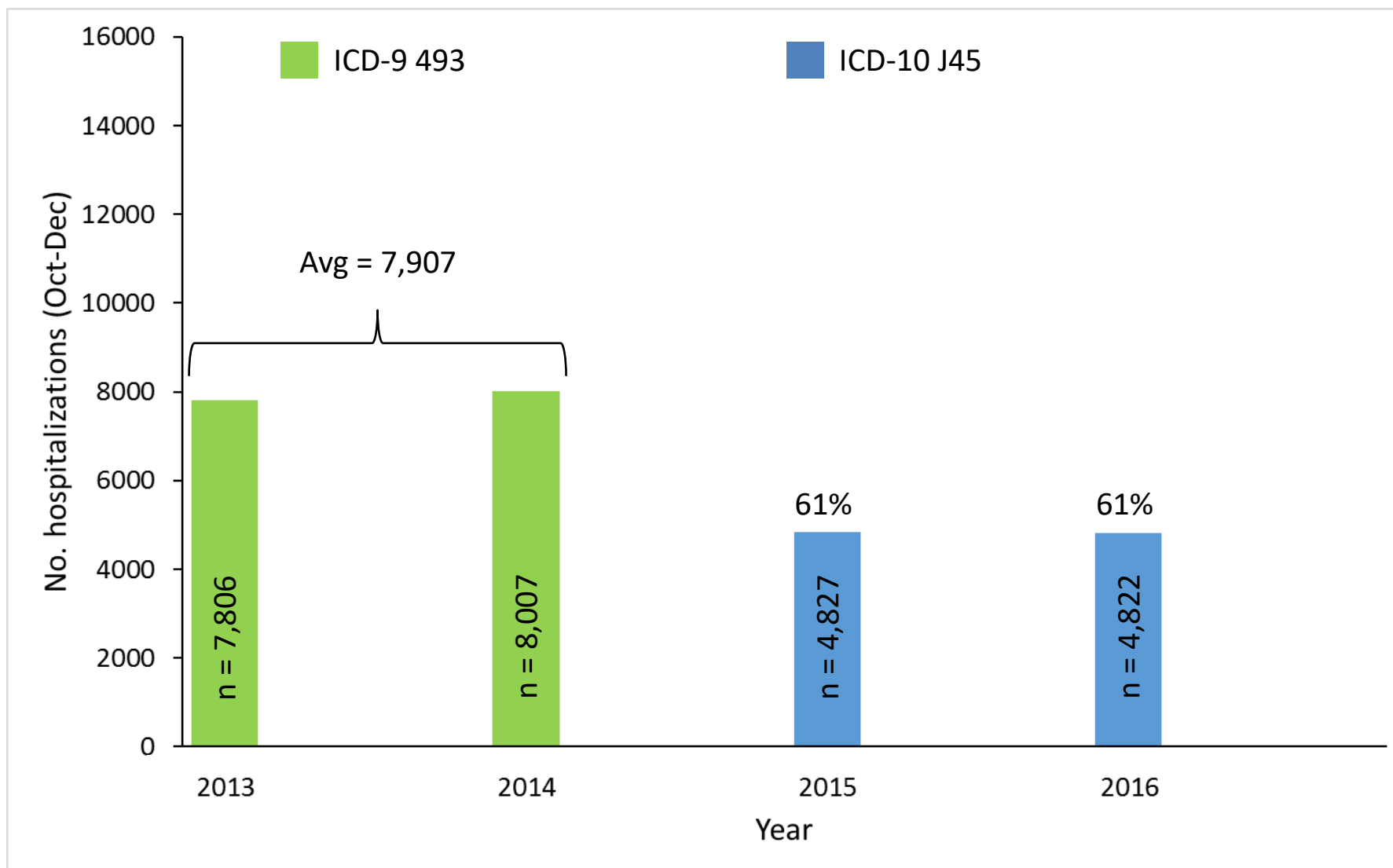
ICD-9 Code	Description
493.0x	Extrinsic Asthma
493.1x	Intrinsic Asthma
493.2x	Chronic Obstructive Asthma
	Chronic Obstructive Asthma codes (493.2) now included in COPD ICD-10 codes (J44*)
493.81	Exercise induced bronchospasm
493.82	Cough variant asthma
493.9x	Asthma, Unspecified

ICD-10 Code	Description
J45.2x	Mild intermittent
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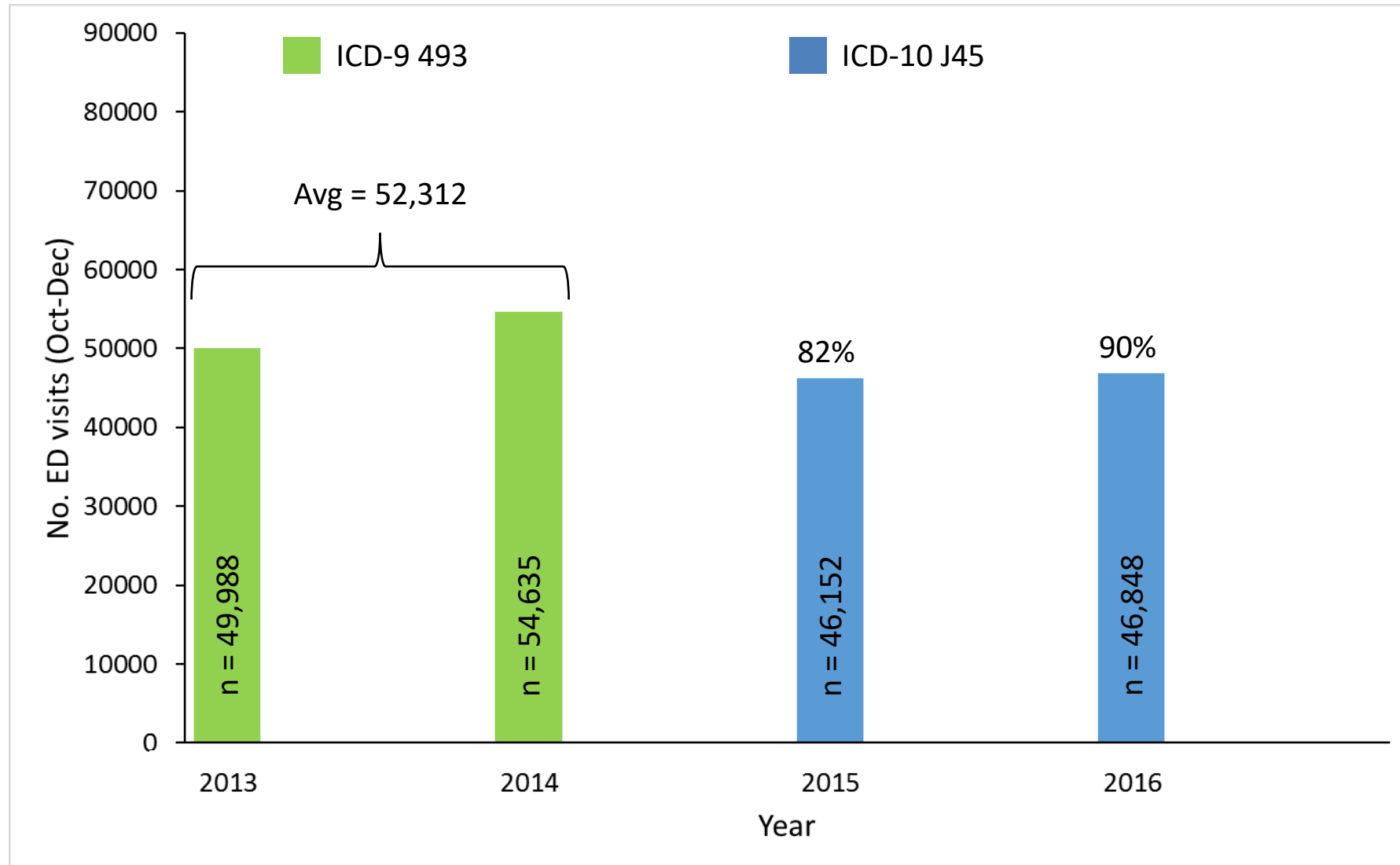
Impact of Coding Change on California Asthma Hospitalizations Quarter 4 , 2013–2016



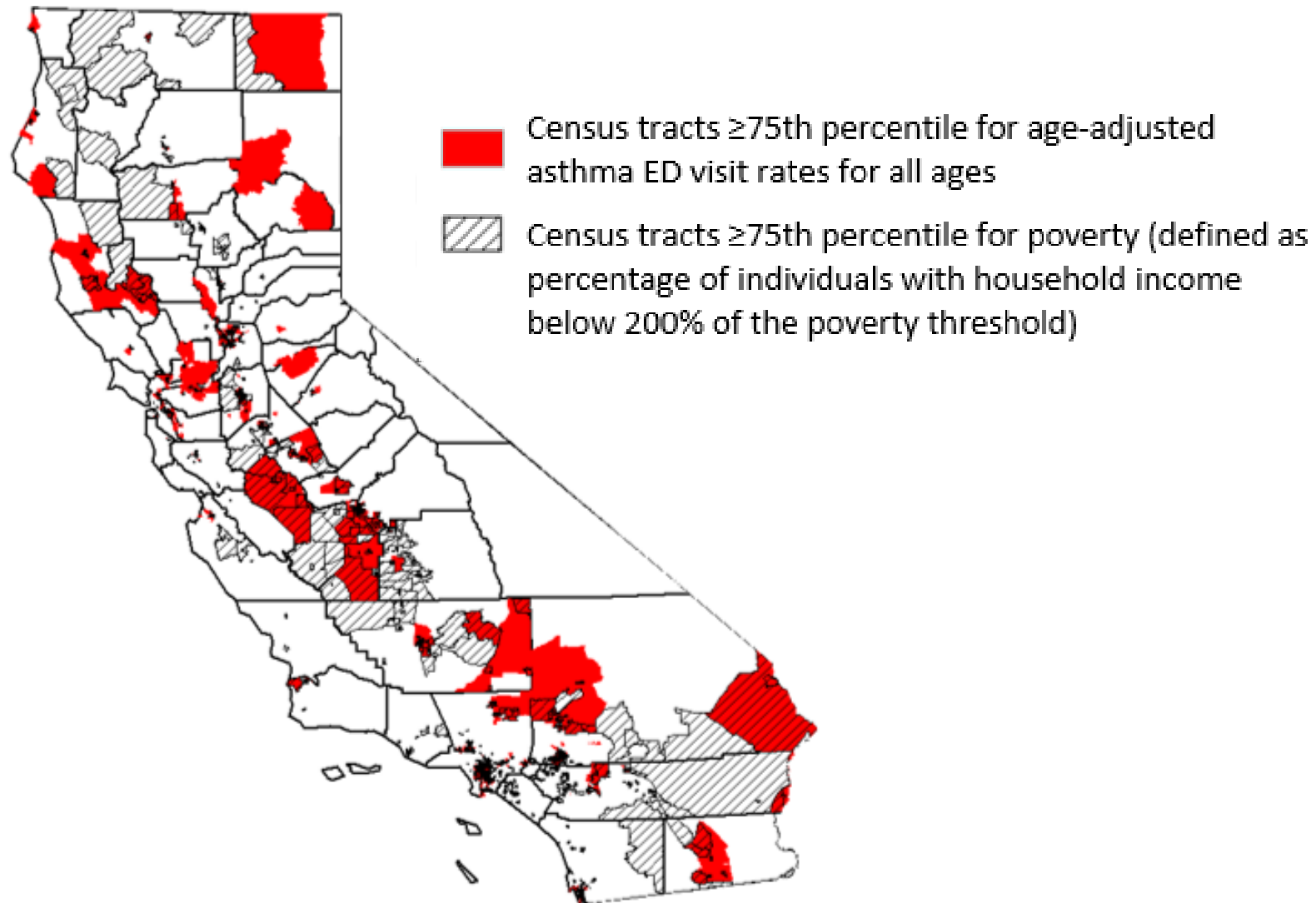
Impact of Coding Change on California Asthma Hospitalizations Quarter 4 , 2013–2016



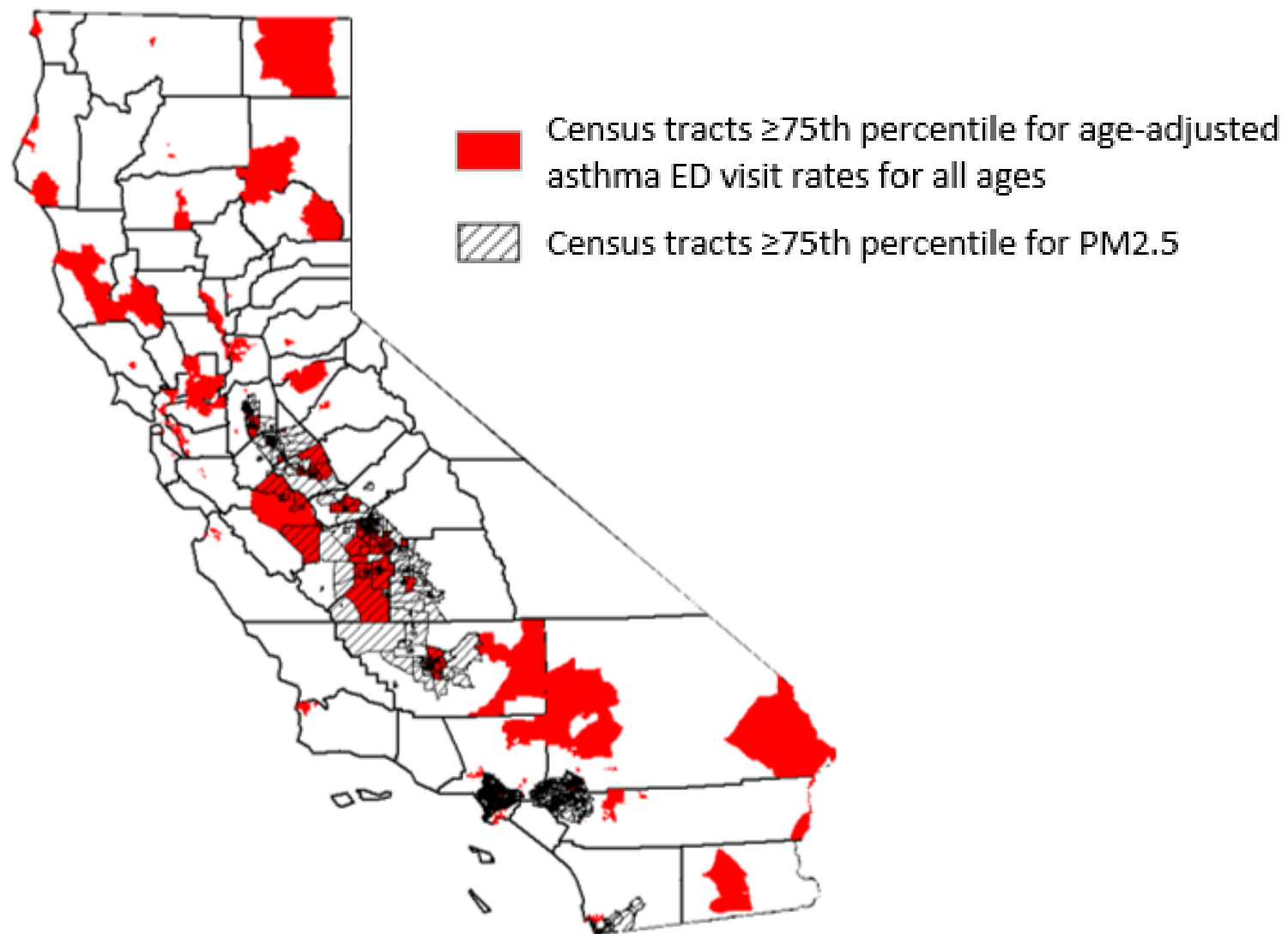
Impact of Coding Change on California Asthma ED Visits Quarter 4 , 2013–2016



Asthma and Poverty



Asthma and PM2.5 Air Pollution



Asthma and California Healthy Places Index (HPI) Score

