



Background

- Craniosynostosis: **premature fusion** of calvarial suture
- Incidence of **1 in 2,000** live births
- Surgical intervention typically occurs between **three and nine months of age**
- Delays in craniosynostosis care have been described in both **Hispanic and Black** communities
- Associated with **higher rates of open interventions** and **longer operative times**
- **Purpose:** To investigate **demographic and socioeconomic factors** contributing to **delayed craniosynostosis surgical consultation**

Methods

- Retrospective cohort study of **California-based** patients who underwent surgical intervention for craniosynostosis from 2006-2023
- Patient characteristics, syndromic diagnosis, suture type, primary language
- **Area Deprivation Index (ADI)** is a composite measure designed to assess the level of **socioeconomic disadvantage** within specific geographic areas, often defined by postal codes or ZIP codes.
- Primary Outcome: Timing of initial **surgical consultation**
- **Multivariate linear and logistic regressions** considered race, insurance type, syndromic status, suture type, and ZIP code-based socioeconomic factors.

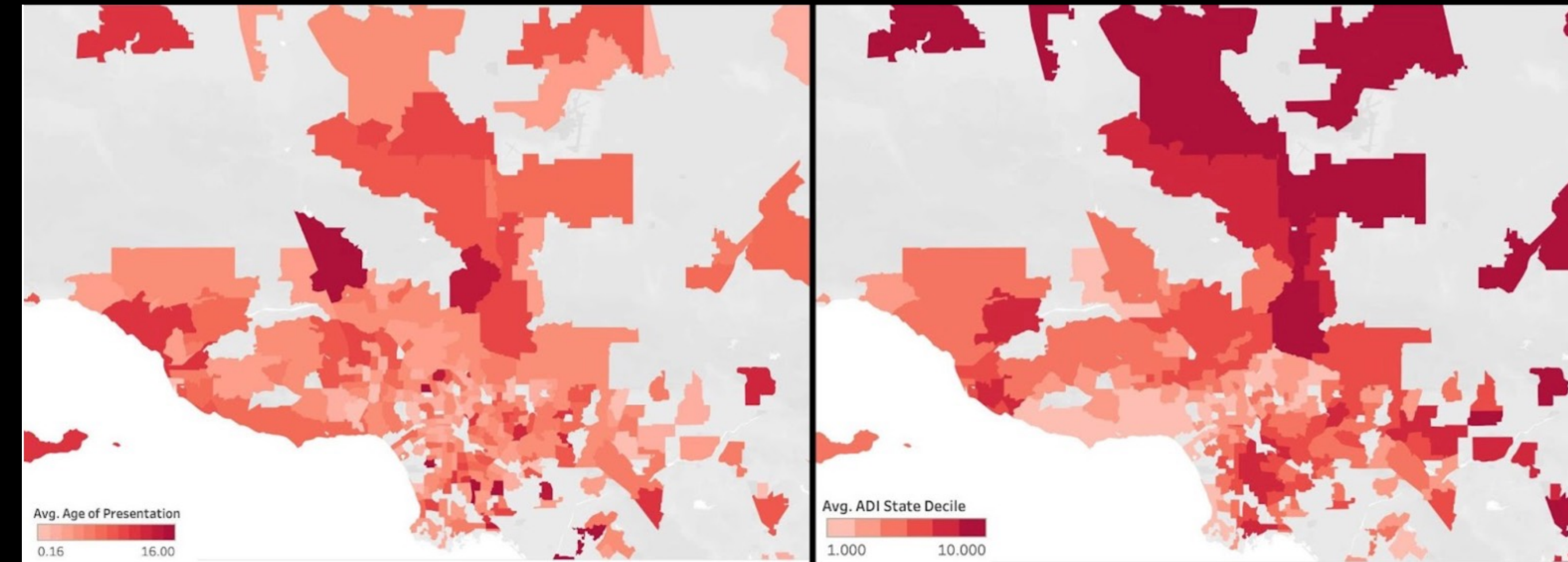


Figure 1: Heat map showing (A) age of presentation based on ZIP code, (B) area deprivation index based on ZIP code

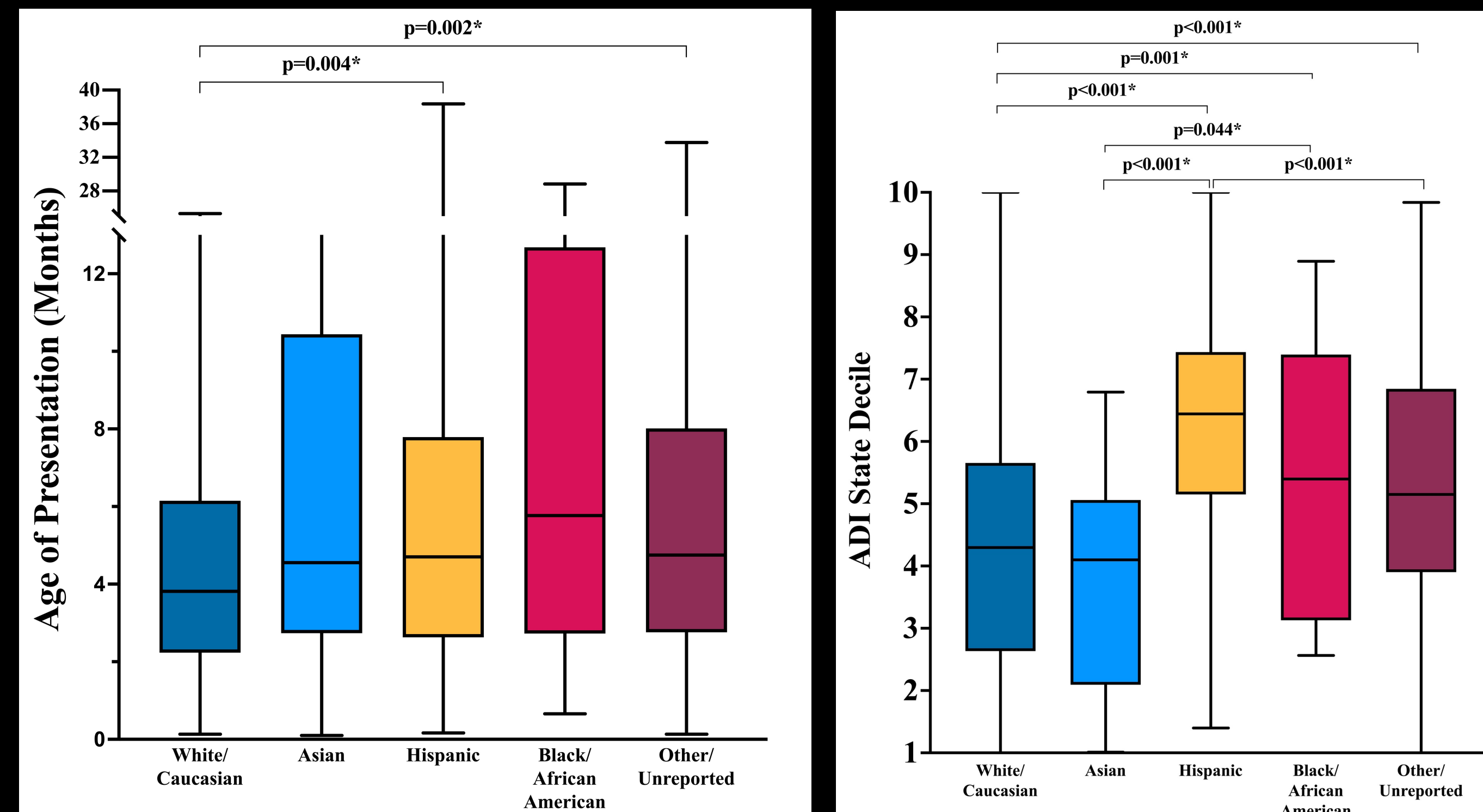
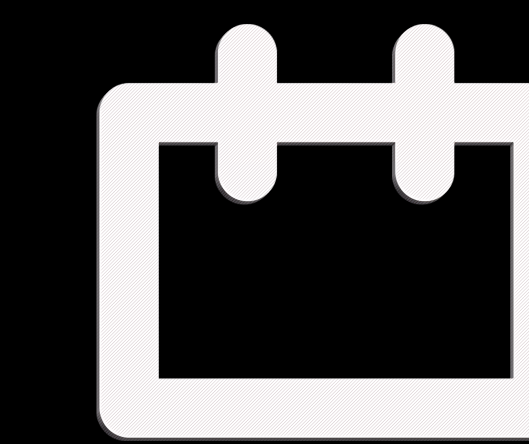


Figure 2: Box plots showing the median age at presentation (A) Box plots showing the median area deprivation index (ADI) by race

	Beta Coeff.	95% Confidence Interval	p-value
Male Sex	-0.515	[-1.286 - 0.255]	0.19
Race			
White		Reference	
Asian	1.642	[-0.269 - 3.552]	0.092
Black/African American	3.143	[0.638 - 5.647]	0.014*
Hispanic/Latinx	-0.331	[-1.365 - 0.703]	0.53
Other/Unreported	0.888	[-0.073 - 1.849]	0.070
Diagnosed Syndrome	0.167	[-1.373 - 1.706]	0.831
Public Insurance	1.172	[0.316 - 2.029]	0.007*
English Speaking	-0.135	[-0.899 - 0.628]	0.728
Distance from the Hospital (km)	-0.001	[-0.007 - 0.006]	0.837
Median Household Income	9.54 x 10 ⁻⁶	[8.74x10 ⁻⁶ - 2.78x10 ⁻⁵]	0.306
State Specific ADI Decile	0.351	[0.104 - 0.597]	0.005*

*Multivariate linear regression assessing age at presentation adjusting for sex, race, syndromic status, suture type, insurance type, primary language, distance from the hospital, median household income, and state-specific ADI decile.

Results



Median (IQR)

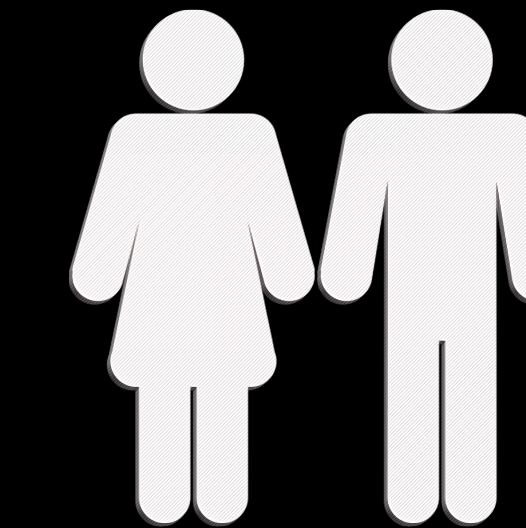
Age at Consult (m)= 4.5(3,8)

Age at Surgery (m)= 8(6,10)



Median (IQR)

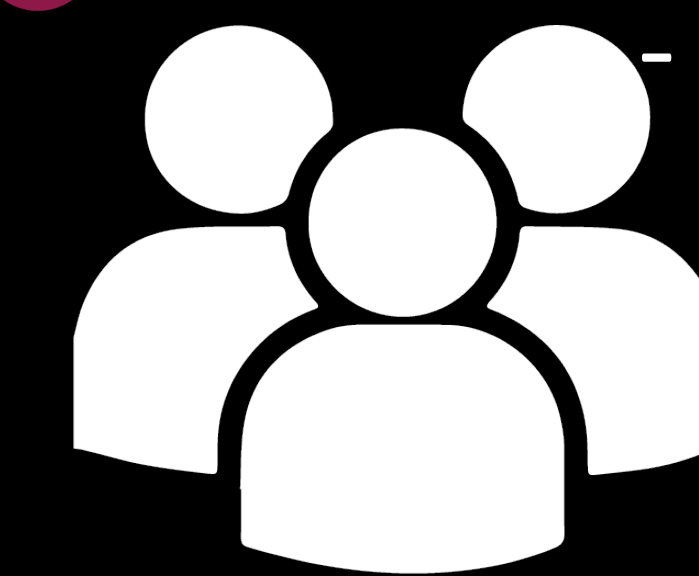
Distance (km)= 28(17,56)



65% Male
35% Female



- Hispanic/Latinx: 41%
- White: 24%
- Asian: 4%
- Black/African-American: 2%
- Other/Unreported: 30%



- English Speaking: 59%
- Public Insurance: 58%
- ADI (median): 5.4 ± 2.2
- Household income (median): 81,658±28,900

Conclusion

- Patients who are **Black/African American**, have **public insurance**, or are from areas of **more significant disadvantage (i.e., Higher ADI score)** presented later for initial surgical consultation
- In underserved populations, **awareness and access** to specialized reconstructive care may help mitigate poor postoperative outcomes.
- Initiatives should address these barriers to allow **equitable access** to all surgical options to improve patient outcomes.