

Disparities in Youth Firearm Injury ED Visits: Trends by Age, Demographics, and Community Vulnerability

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Background

- Firearm injuries are the leading cause of death among U.S. children and teens, representing a critical public health issue.¹
- Post-COVID-19 data show that firearm-related Emergency Department (ED) visits among children more than doubled, with the highest increases seen in females, ages 10-14, Hispanic, and Black youth.²

Objective

- To describe trends and differences in firearm injuries among youth ED discharges by age, demographics, and vulnerability, measured using the Vizient Vulnerability Index™, in the Vizient® Clinical Data Base (CDB).³

Study Design and Methods

Data Source

- Vizient CDB: >1,300 U.S. hospitals, 98% of AMCs, 750+ community hospitals
- Treat-and-release ED visits (ages 0–19), 2019–2024
- Excluded visits resulting in inpatient admission

Firearm Injury Identification

- 33.3M ED visits from 531 continuously reporting hospitals
- 21,806 firearm injuries (ICD-10-CM codes)
- Included comorbid mental health and social risk codes

Vulnerability Assessment

- Vizient Vulnerability Index™ (patient ZIP-code level social needs metric – for more info scan QR code)⁴
- Categories: Low (<-1), Average (-1 to 1), High (>1)
- High vulnerability >1 represents neighborhoods that experience specific obstacles to care greater than one standard deviation above the national mean
- Low vulnerability <-1 represents neighborhoods that experience fewer obstacles to care at least one standard deviation below the national mean

Statistical Analysis

- Multivariable logistic regression
- Outcome: ED discharge for firearm injury vs. not
- Predictors: age group, race/ethnicity, sex, payer, vulnerability
- Additional covariates: substance use, mental health disorders, Child Access Prevention (CAP) laws
- Adjusted ORs and 95% CIs reported



Results

Figure 1. Demographics of all patients 0-19 discharged from the ED compared to those with firearm injury, 2019-2024. Source: Vizient CDB

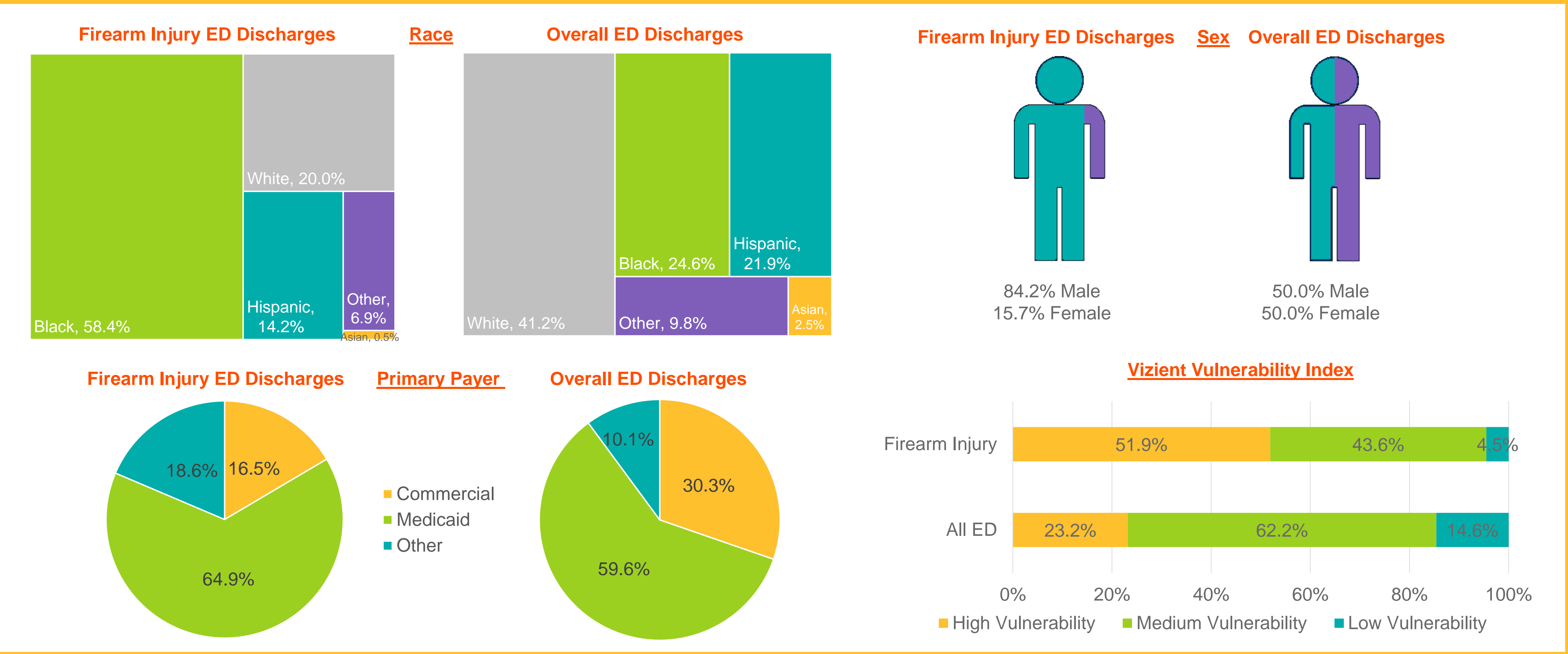


Figure 2. Trends of firearm injury ED discharge rate per 100,000 ED encounters by age group, 2019-2024. Source: Vizient CDB

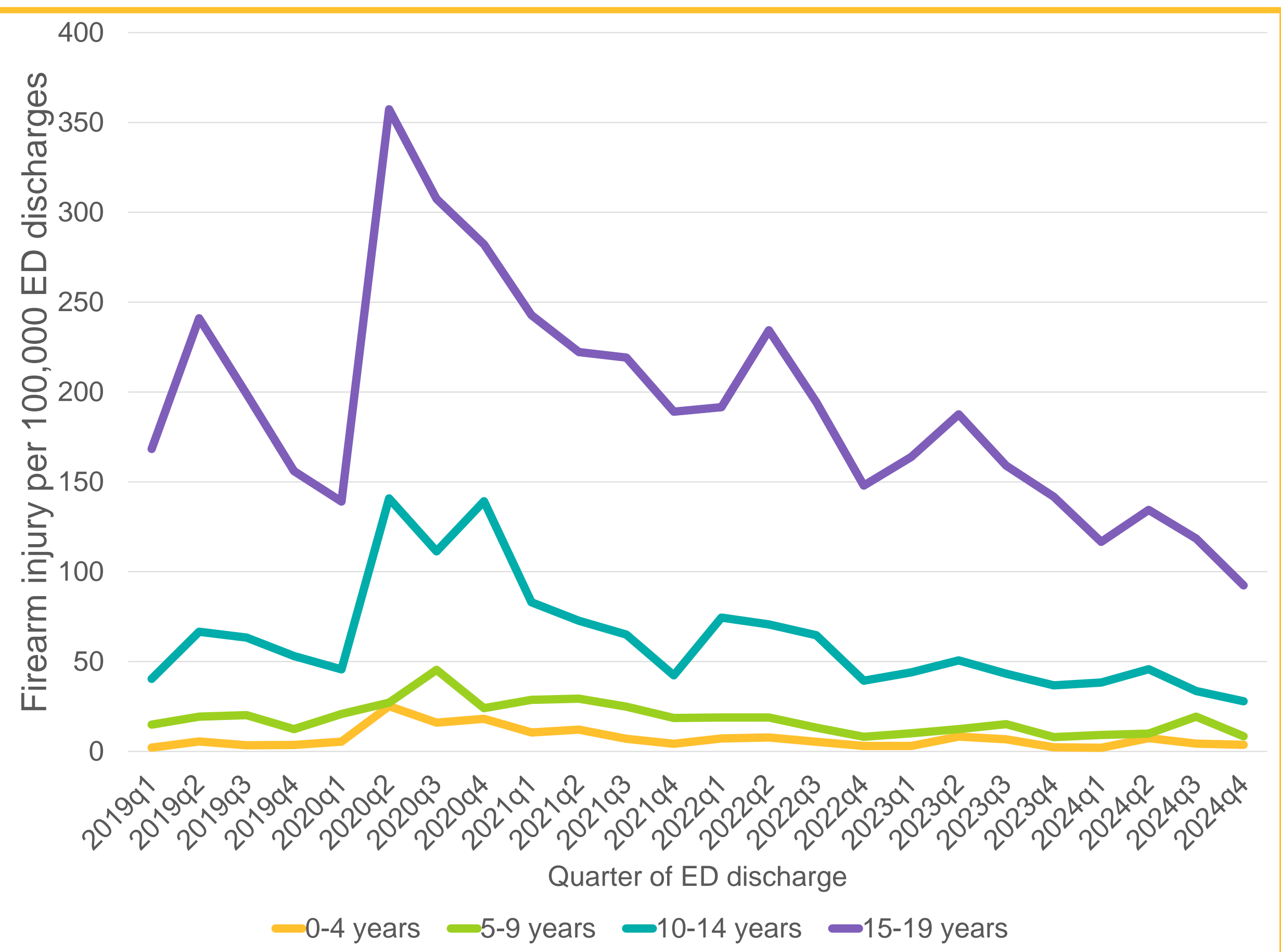
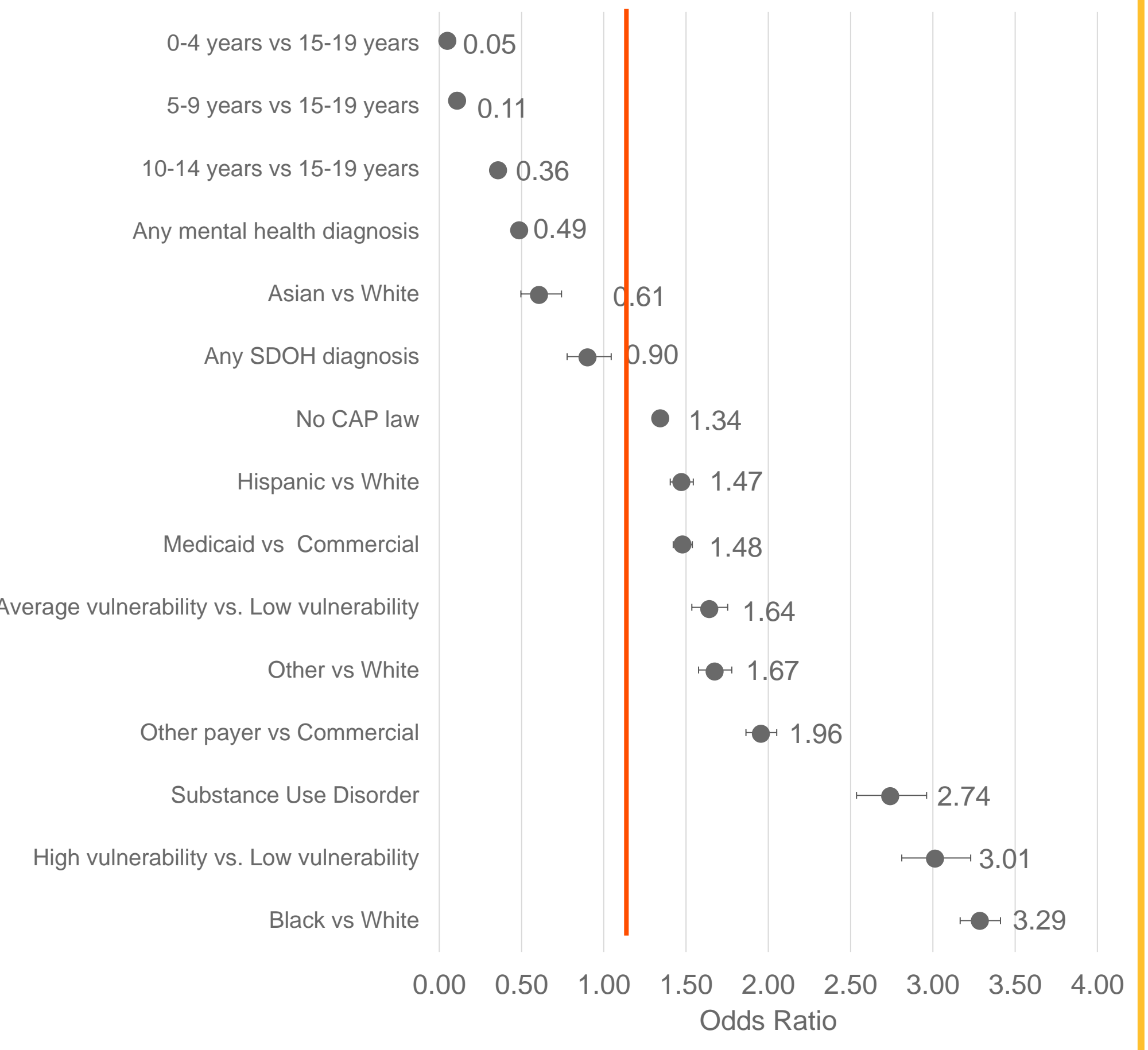


Figure 3. Forest plot of odds of firearm injury among all ED discharges for 0-19 years, 2019-2024. Source: Vizient CDB



Key Findings

Compared to overall ED discharges for 0–19-year-olds, patients with a primary encounter for firearm injury were:

- ↑ **34.2% more** Male
- ↑ **33.9% more** Black
- ↑ **5.3% more** Medicaid and ↓ **13.8% less** Commercial
- ↑ **28.7% more** High Vulnerability patients
- ↑ **7.0 years older**

Firearm injury rates **peaked in Q2-2020 at 357.3 per 100,000 for 15-19-year-olds**, coinciding with the start of the COVID-19 pandemic.

A predictive model found increased odds of firearm injury ED visits for:

- Black youth (**329% higher odds** compared to white)
- Hispanic youth (**47% higher odds** compared to white)
- Youth with substance use disorders (**274% higher odds**)
- Residents of high-vulnerability neighborhoods (**301% higher odds** than low-vulnerability neighborhoods)
- EDs in states without CAP laws (**34% higher odds** of firearm injury)

Conclusions

This study highlights disparities in youth firearm injury encounters for individuals 0-19 treated and released from the ED, most prevalent among Black youth, Medicaid recipients, and those in high-vulnerability areas. Factors like substance use disorders and the lack of child access prevention laws further compound this risk. Addressing these differences requires interventions, such as socioeconomic supports, violence prevention programs, and policy changes, including child access prevention laws. Future research should explore how social determinants intersect with firearm injury risk to inform public health strategies.

References

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