



# Identifying Gaps in Child Passenger Safety Education Delivery

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# Geographic Patterns of Safe Kids Buckle Up Service Utilization in 2 States

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# Disclosures

- No relevant conflicts of interest or financial disclosures
- Source of Funding: Safe Kids Worldwide for staff and student research intern support



# Background

- There are socioeconomic, race/ethnicity, and place-based inequities in crash outcomes
  - **Highest fatality** rates for
    - States with **more permissive** child passenger safety laws
    - **Rural counties** compared with urban
    - Children who were **sub-optimally restrained**
    - Non-Hispanic Black and American Indian or Alaska Native Children and lowest for Asian or Pacific Islander Children

# Background

- Variation in use and availability of child passenger safety resources



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  - Use of **CPST/inspection station lowest among non-Hispanic Black families** and highest among non-Hispanic White families



ACCIDENT  
ANALYSIS  
&  
PREVENTION

Sartin EB, et al. Sociodemographic disparities in child restraint selection and variation in child passenger safety information sources. *Accident Analysis and Prevention*. 188 (2023) 107094

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  - Turning to **internet, doctor or nurse, and police officer or fire fighter** higher among **non-Hispanic White caregivers**



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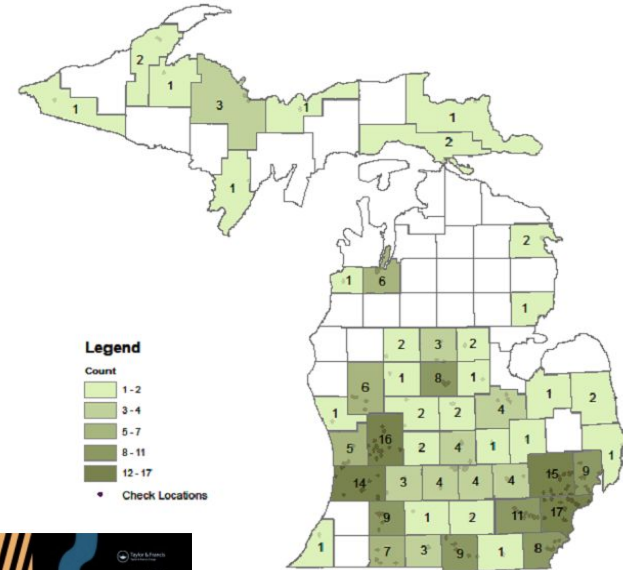


## PEDIATRICS

Macy ML, et al. Disparities in Age-Appropriate Child Passenger Restraint Use Among Children Aged 1 to 12 Years. *Pediatrics*. 2014 Feb;133(2):262-71.

# Background

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Locations (Inspection Stations and Events) by county in 2014

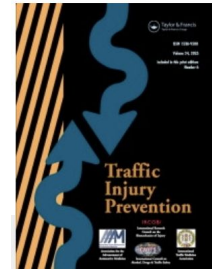
Macy ML, et al. An assessment of child passenger safety levels of service in Michigan. *Traffic Injury Prevention*. Vol 20, 2019 – Issue 3.



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# Objectives

- To provide Safe Kids Buckle Up! (SKBU) Seat Checklist data back to coalitions so that they can use results to guide programming
- To assess for geographic differences in utilization of SKBU seat checks relative to population-level characteristics of the ZIP codes and counties where seat check participants live



# Methods – Data Sources

- Safe Kids Buckle Up (SKBU) seat check checklists
- Geographic Characteristics of Populations from US Census
  - FIPS codes for Counties, ZIP Codes, and ZIP Code Tabulation Areas (ZCTA)
  - Child Opportunity Index 2.0

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data for a diverse and equitable future



# Methods – Inclusion/Exclusion

- 226,121 rows of seat check data provided
  - 224,268 from 1/2018 - 12/2022 and age <10yrs
    - No coalition ID ( Exclude 30,167)
    - No SKBU agreement (Exclude 1,069)
    - No restraint type on arrival AND no restraint type on departure (Exclude 9,321)
    - No seat location on arrival AND no seat location on departure (Exclude 4,862)
- 178,885 whole US analytic file

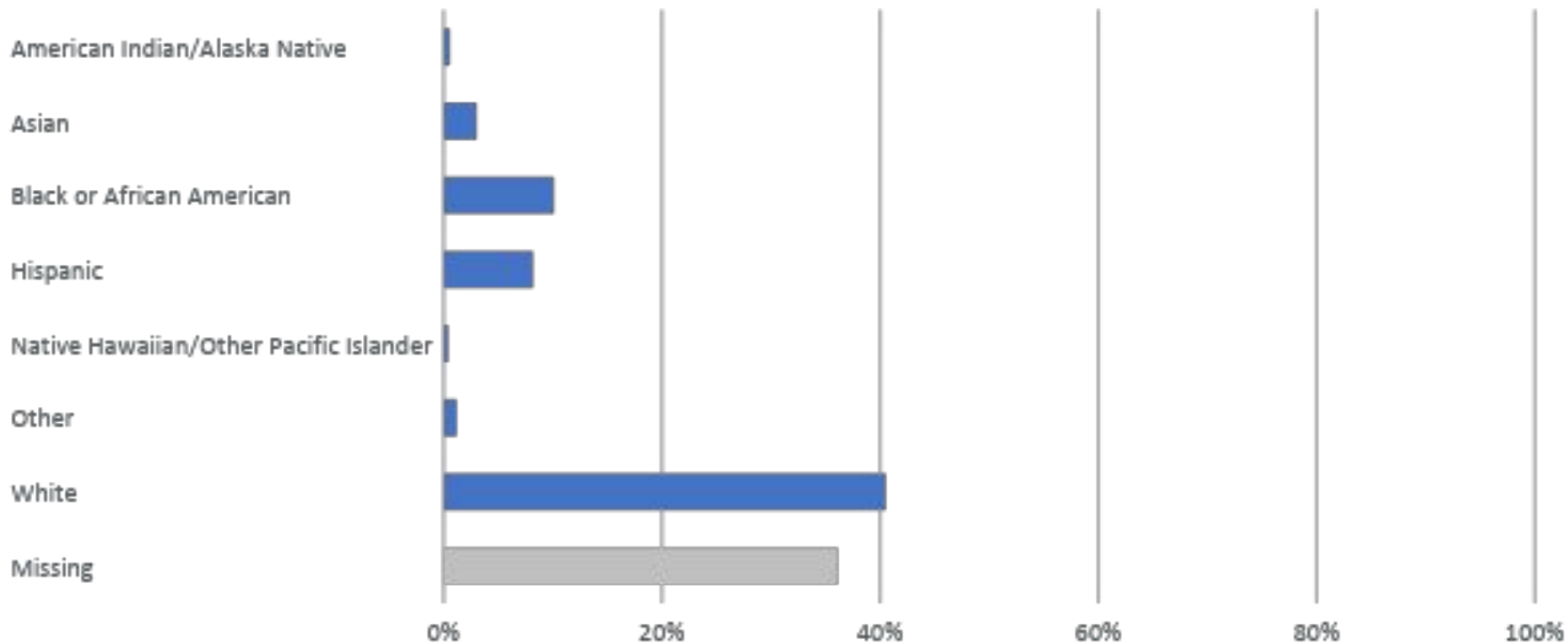


# Methods - Analysis

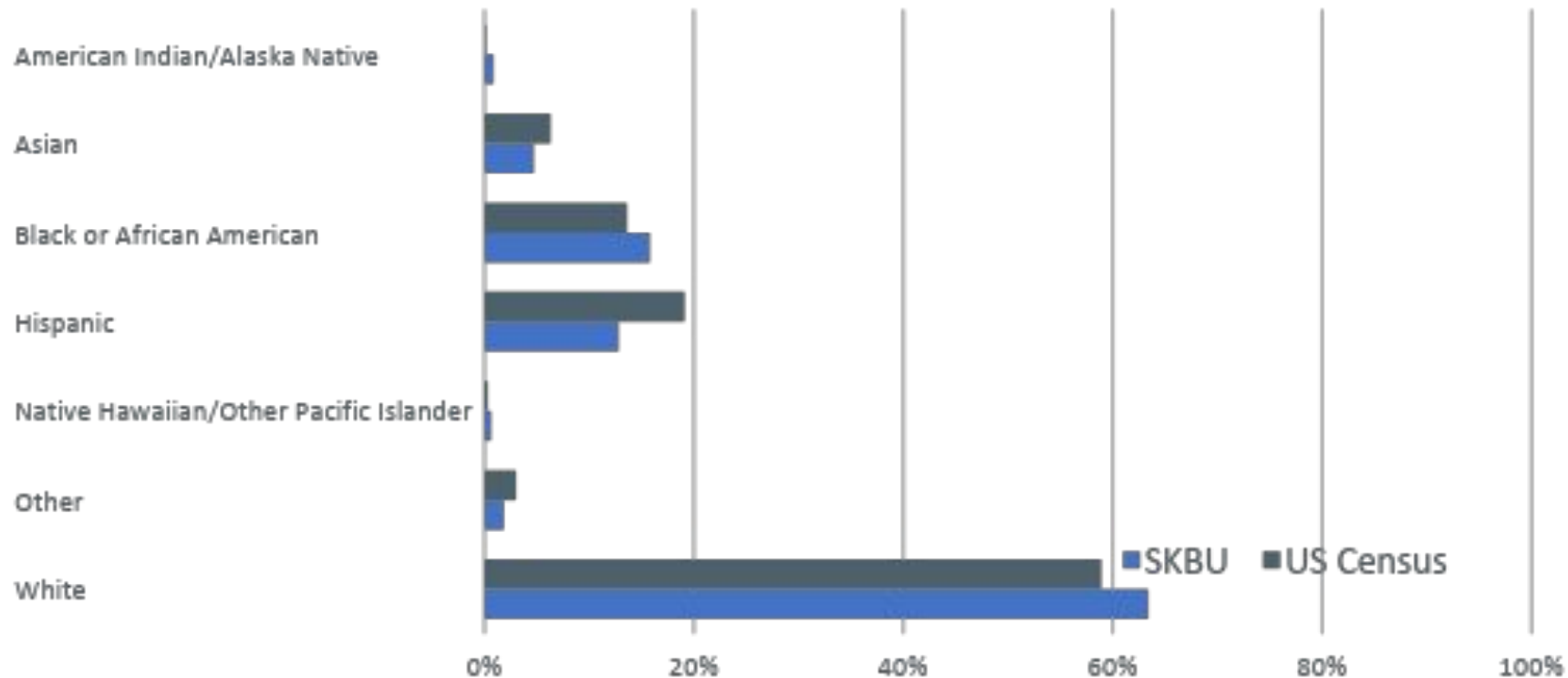
- Descriptive statistics, population adjusted SKBU seat check rates
- Geocoding and mapping of participant ZIP code and SKBU Coalition catchment areas
- Linkages between participant ZIP codes and COI levels



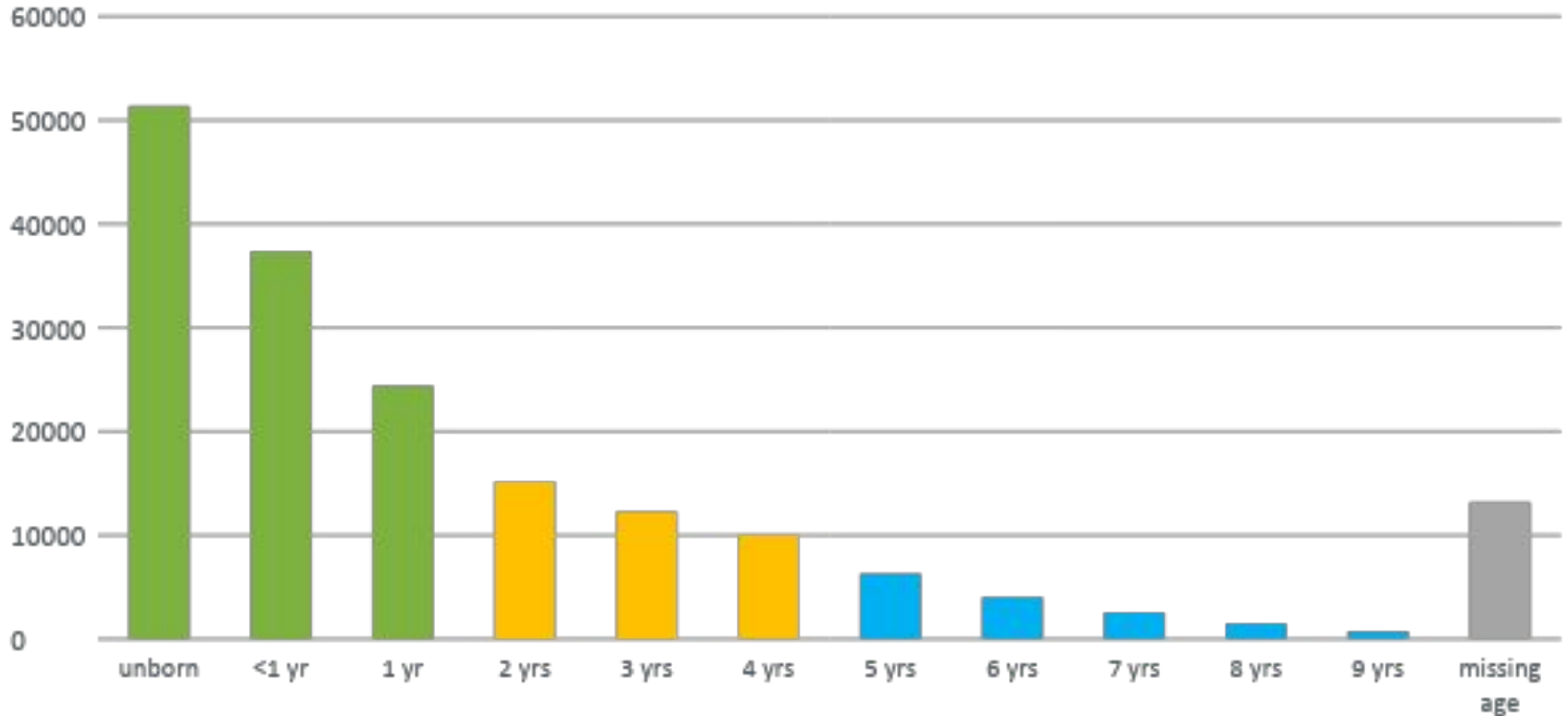
# Self-Reported Race/Ethnicity of Participants



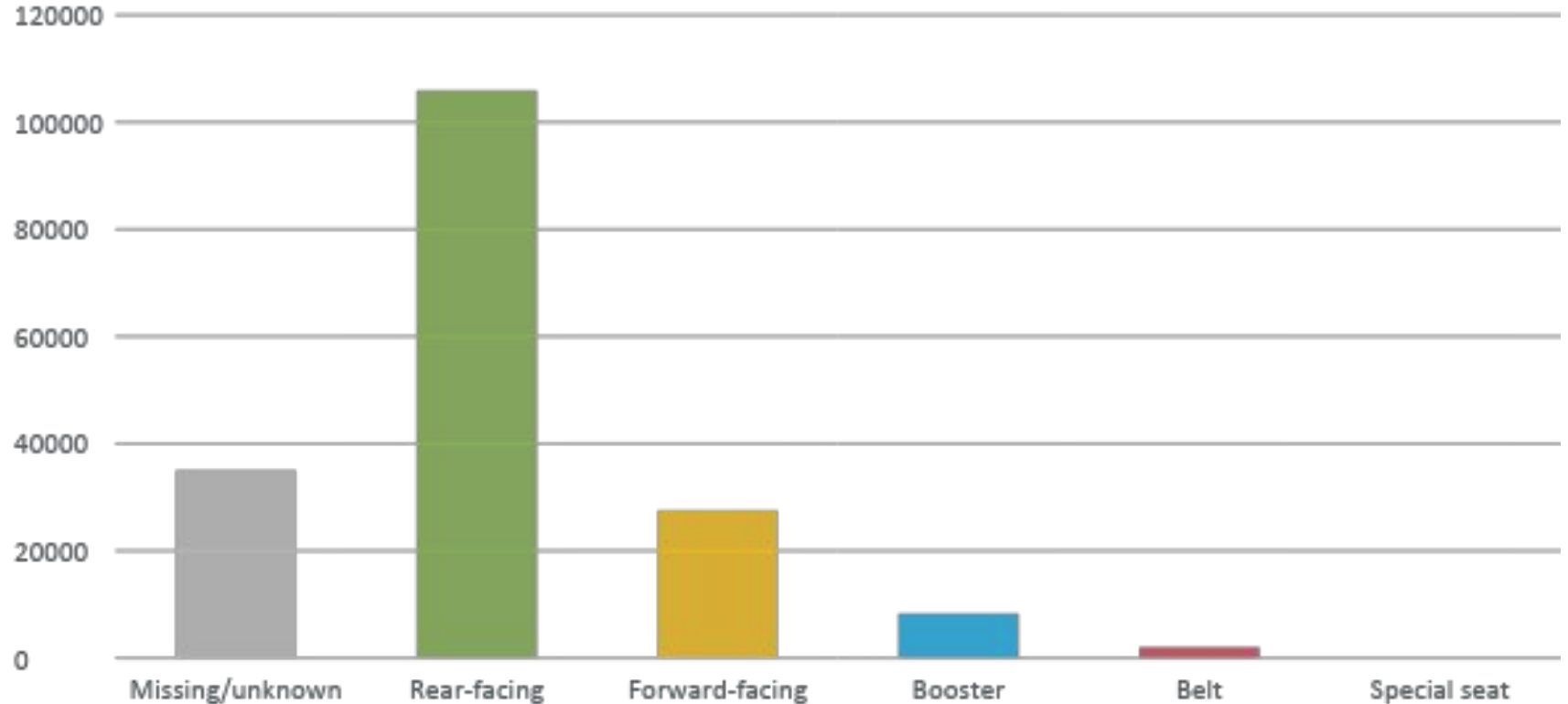
# SKBU Participants and US Census



# Age Distribution of Participant Children

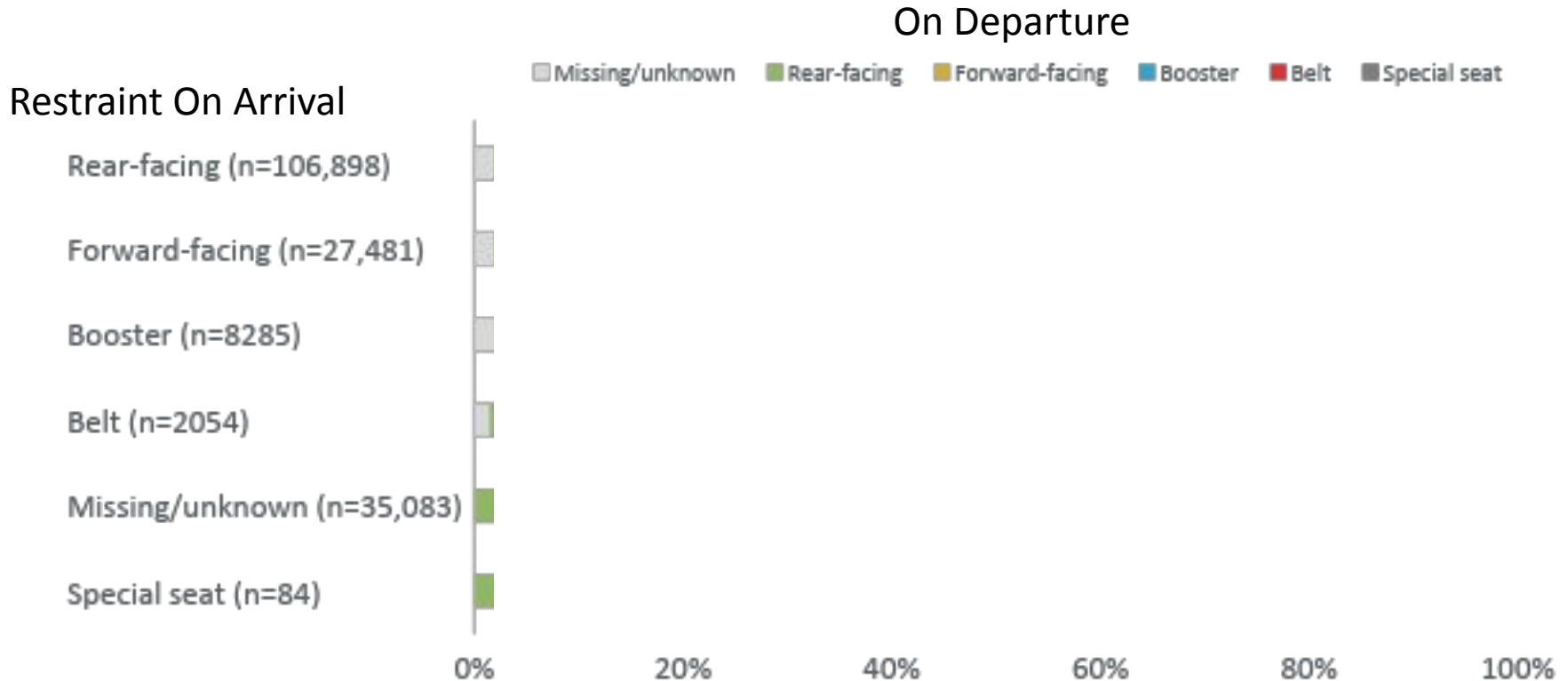


# Types of Restraints on Arrival at Seat Checks

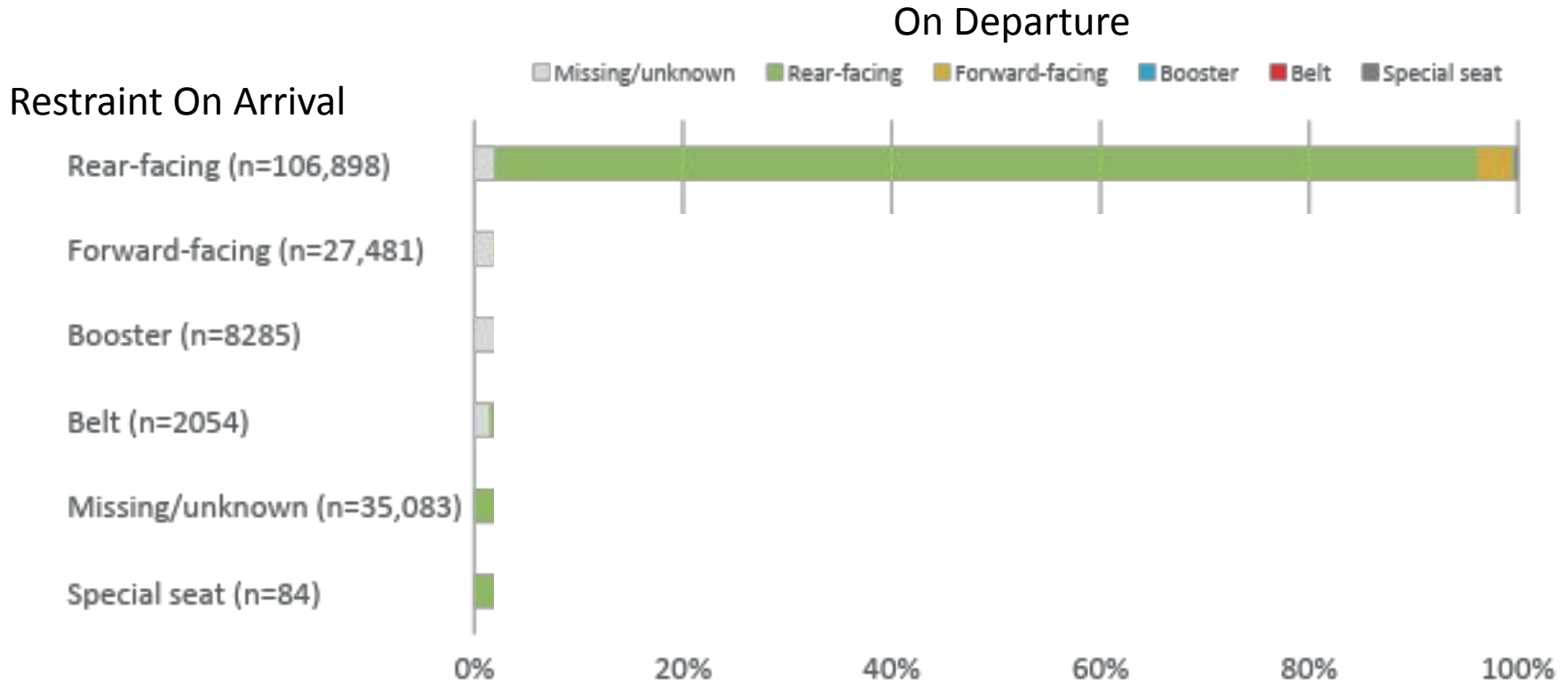




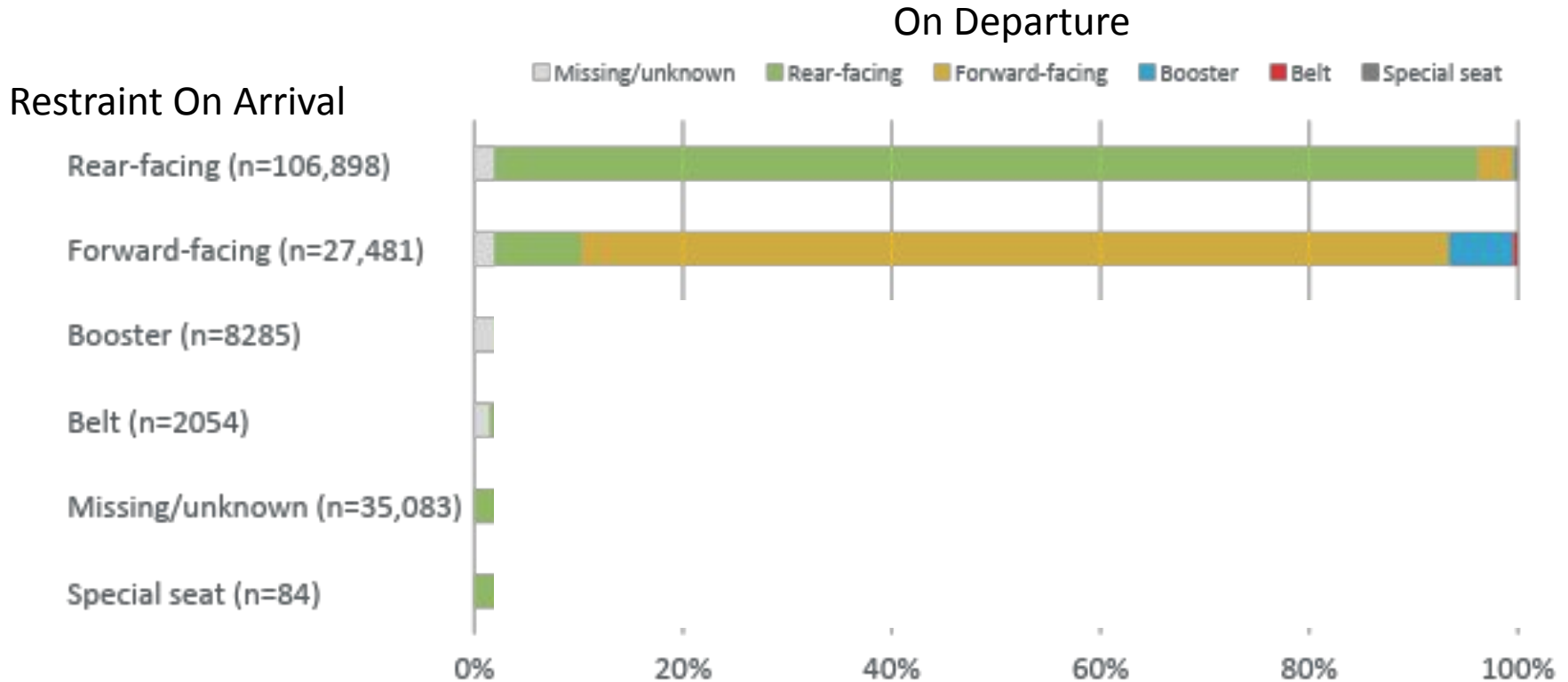
# Change in Restraint Types



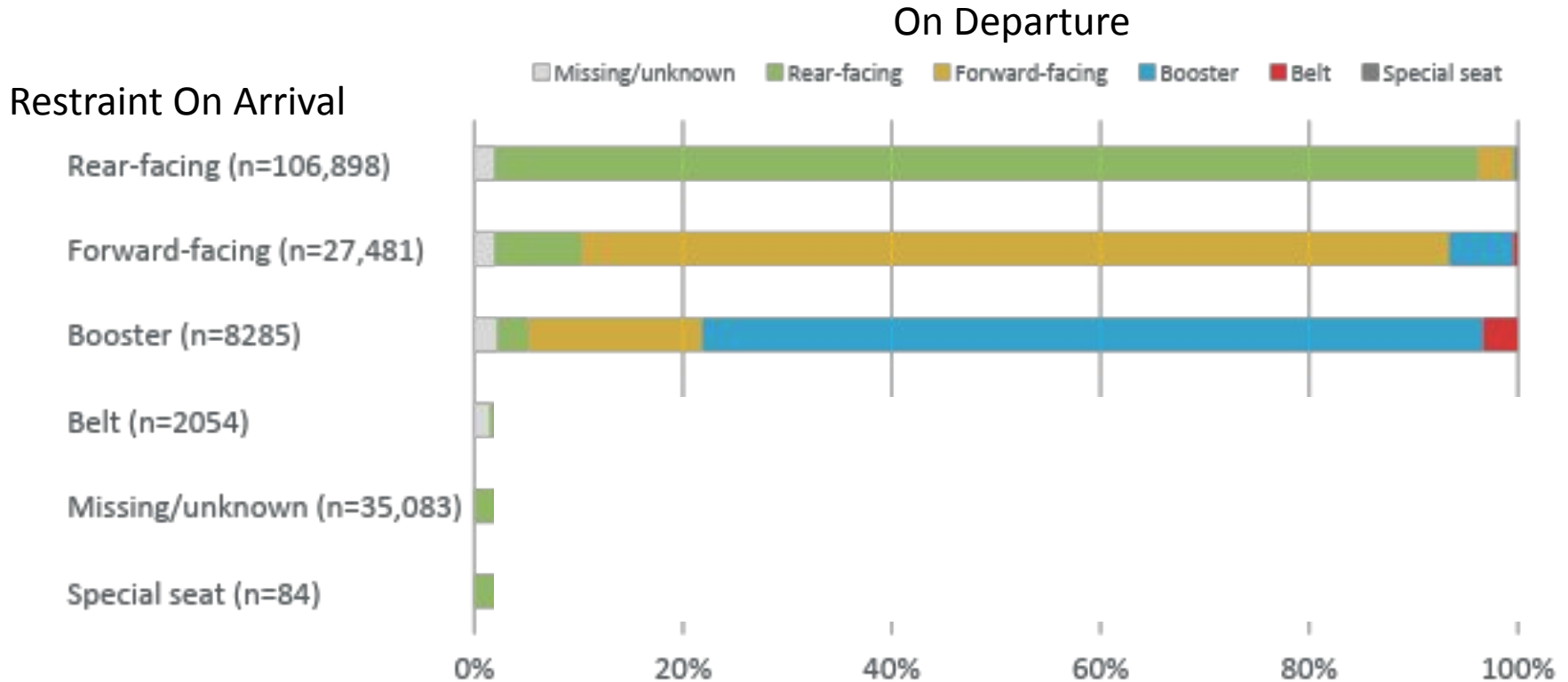
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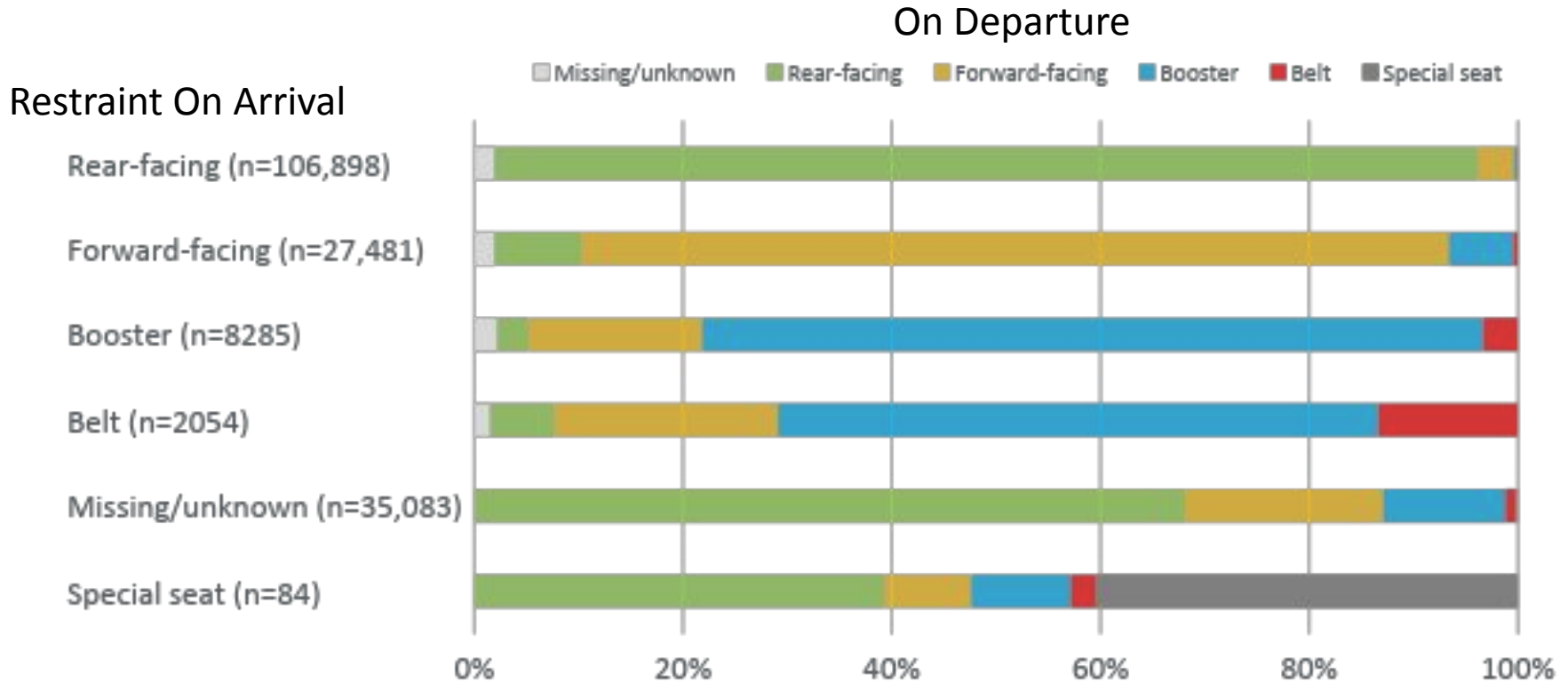
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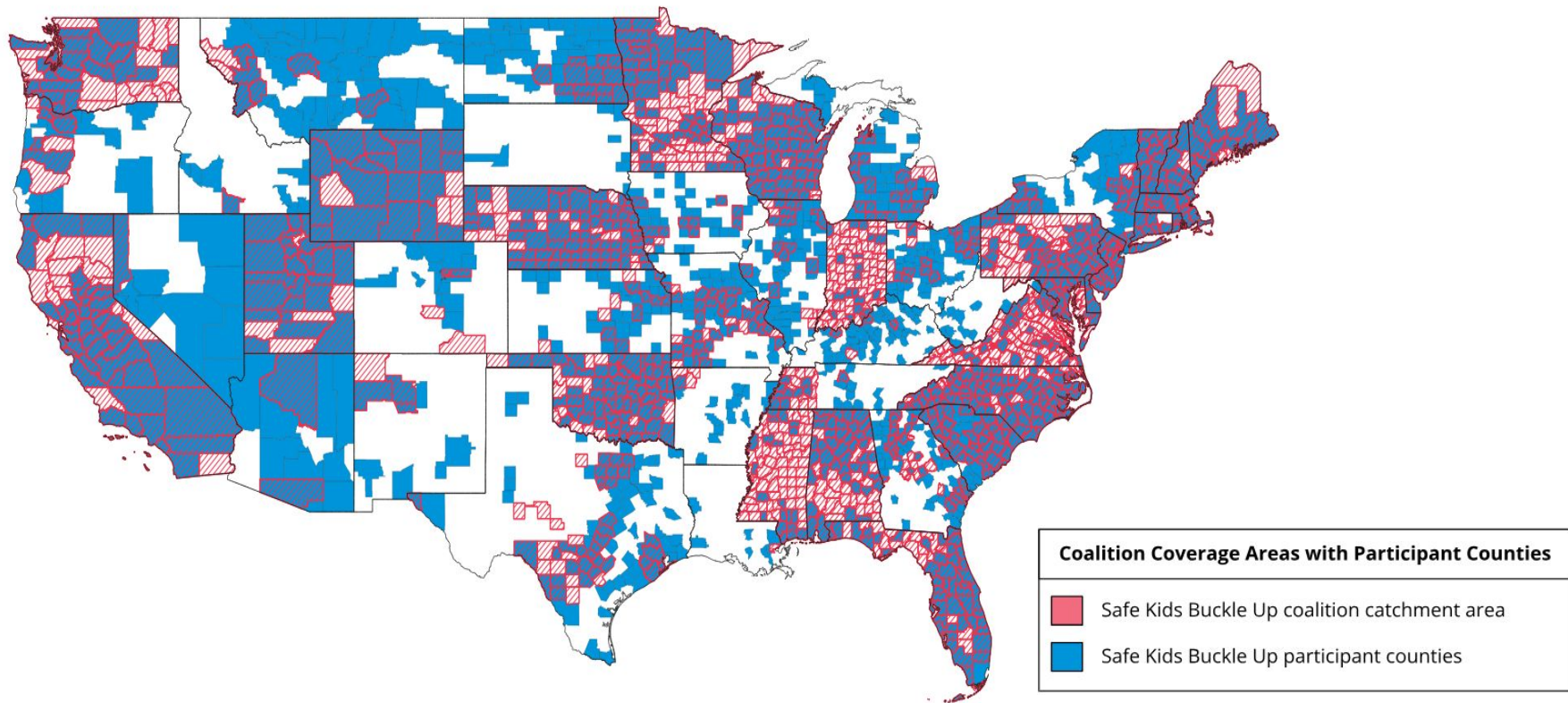
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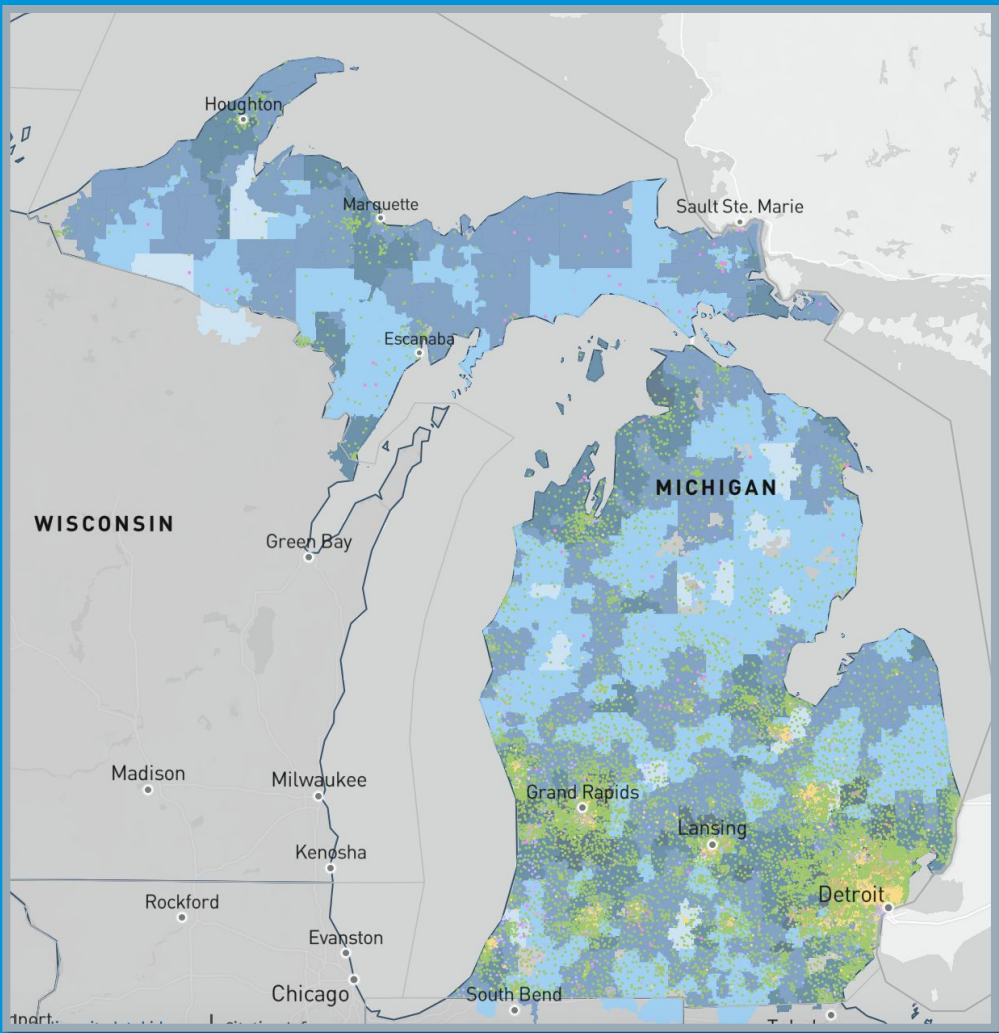


# Change in Restraint Types



# County-Level SKBU Coalition Catchment Areas and Seat Check Participation

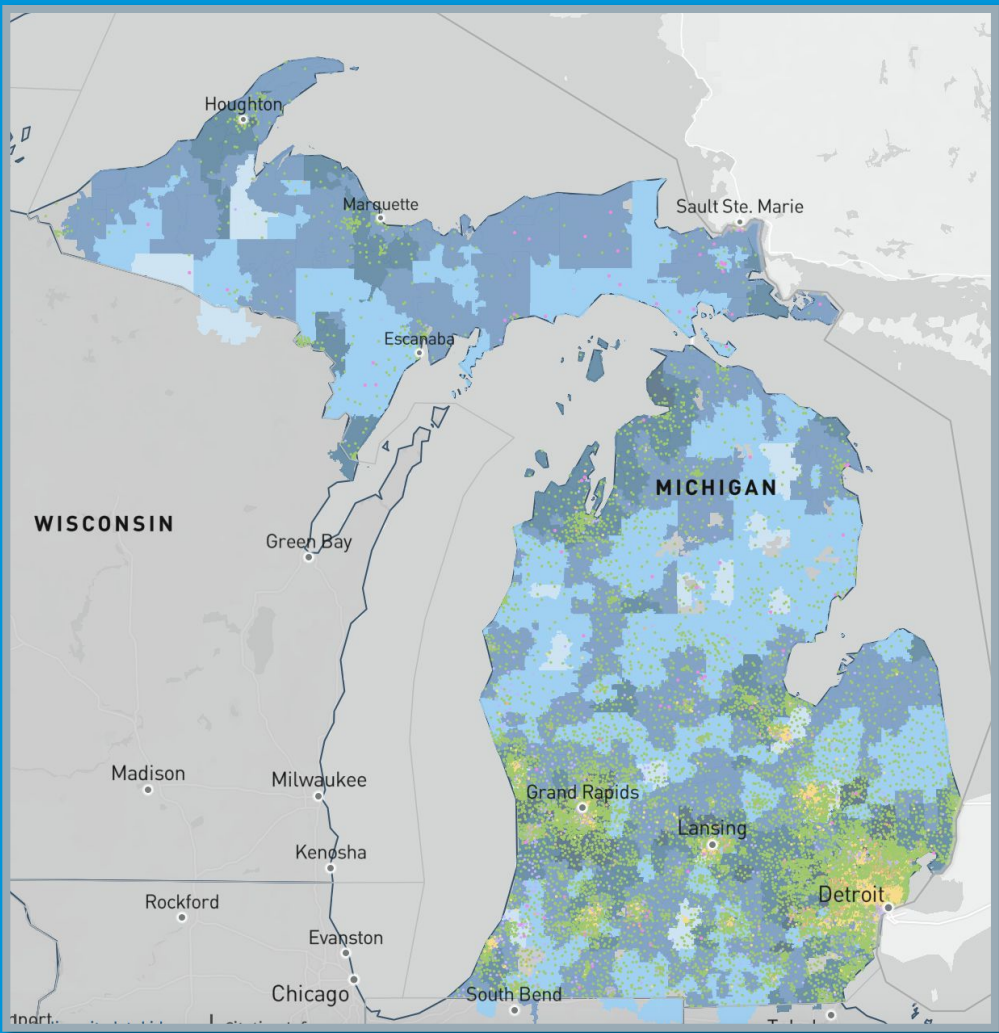




### Child Opportunity Levels

Overall COI by ZIP Code, state-normed for 2015





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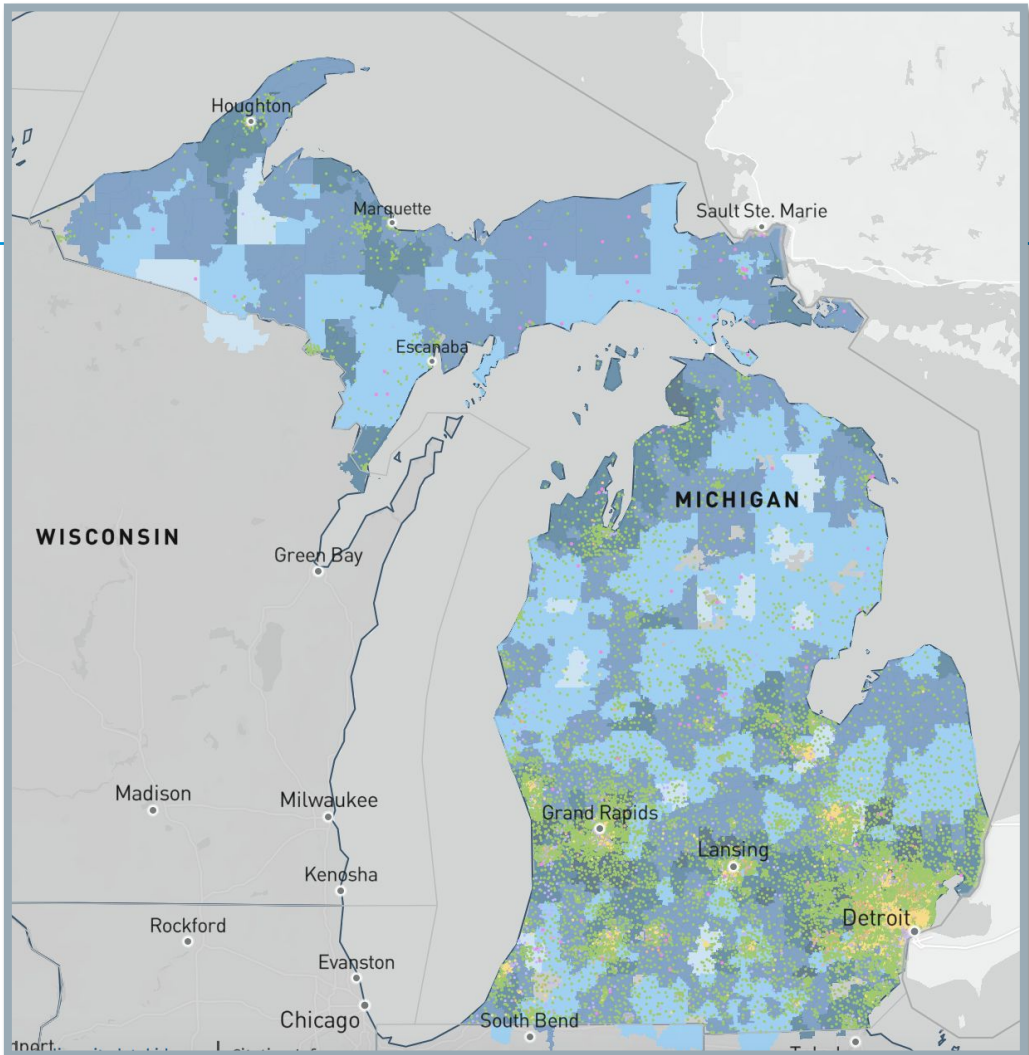


### Population Density Overlays

- White (green dot)
- Hispanic (purple dot)
- Black (yellow dot)
- Asian/Pacific Islander (orange dot)
- American Indian/Alaska Native (pink dot)







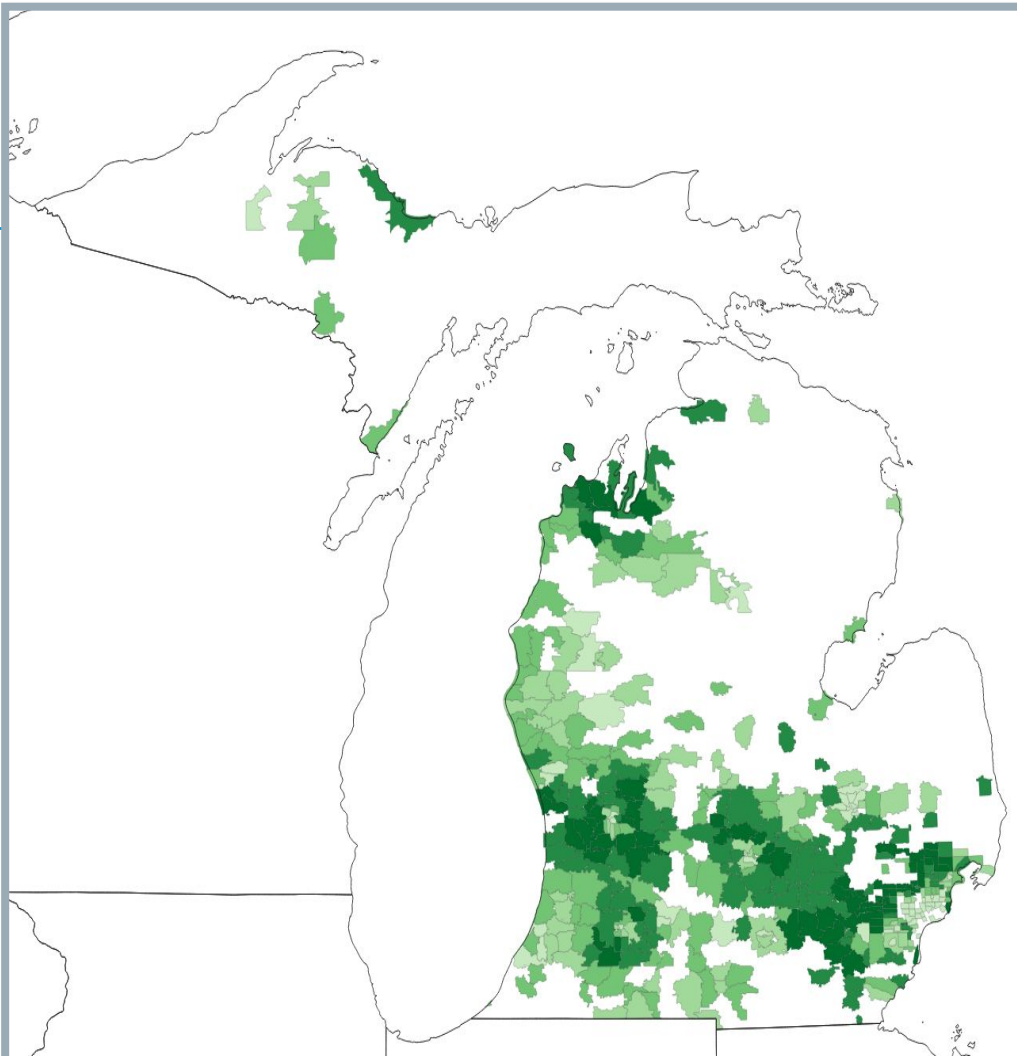
**Child Opportunity Levels**

**Overall COI by ZIP Code, state-normed for 2015**



**Population Density Overlays**

- White
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### COI Score Legend

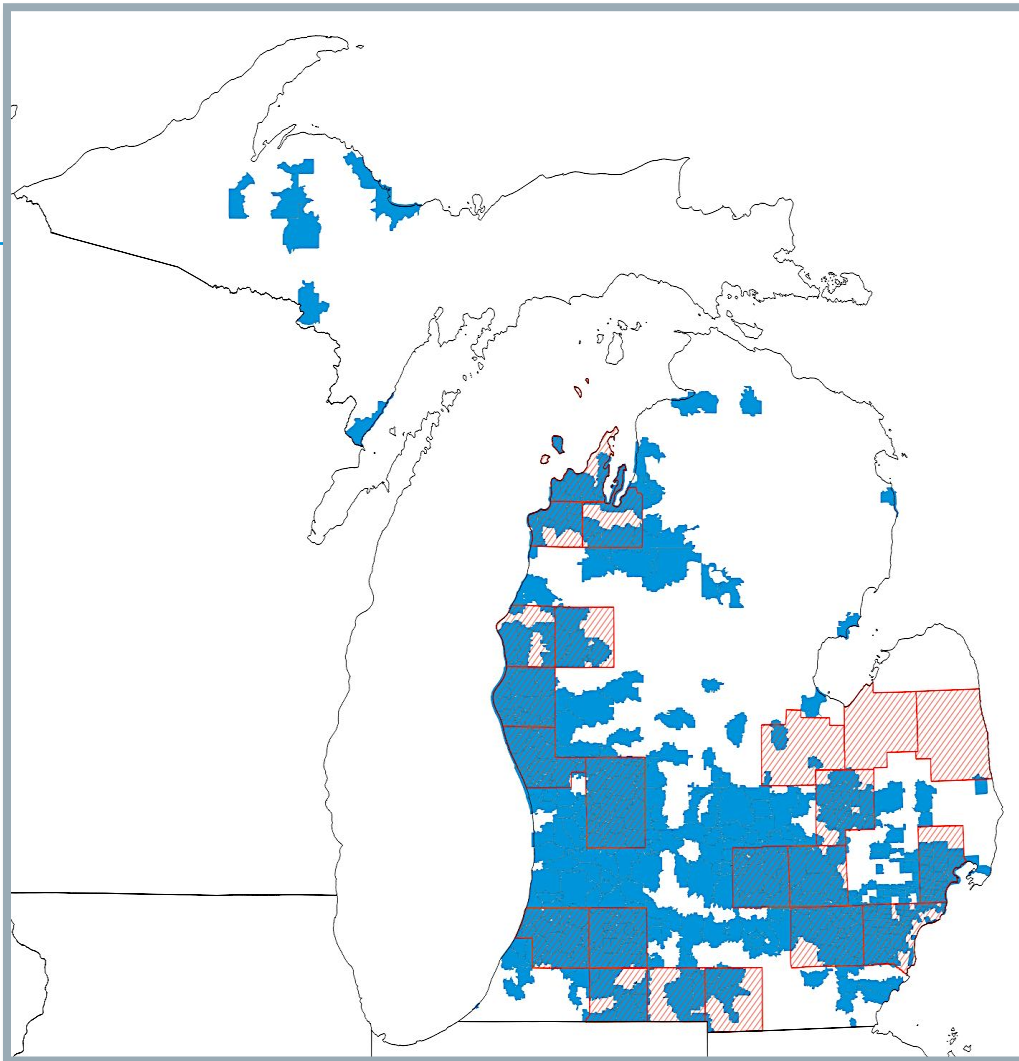
 Very Low

 Low

 Moderate

 High

 Very High





## Seat Check Rate:

5.5 per 1000 children <10yo

6,035 seat checks for  
1,088,470 children <10yo

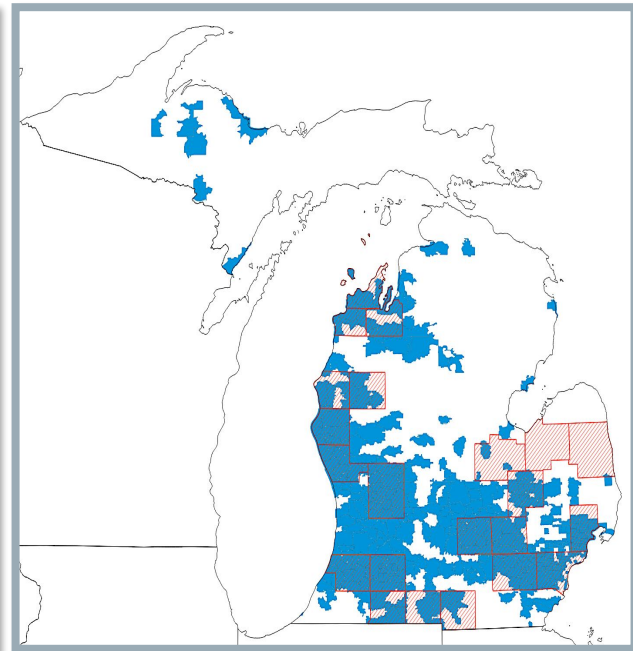
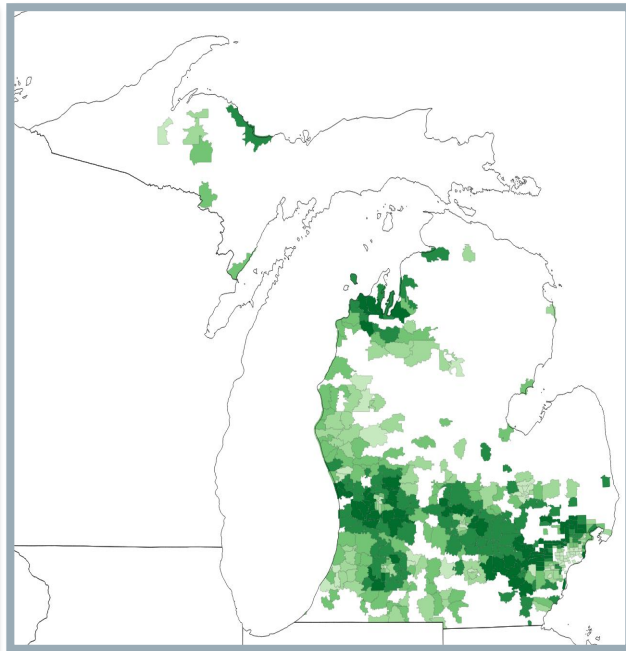
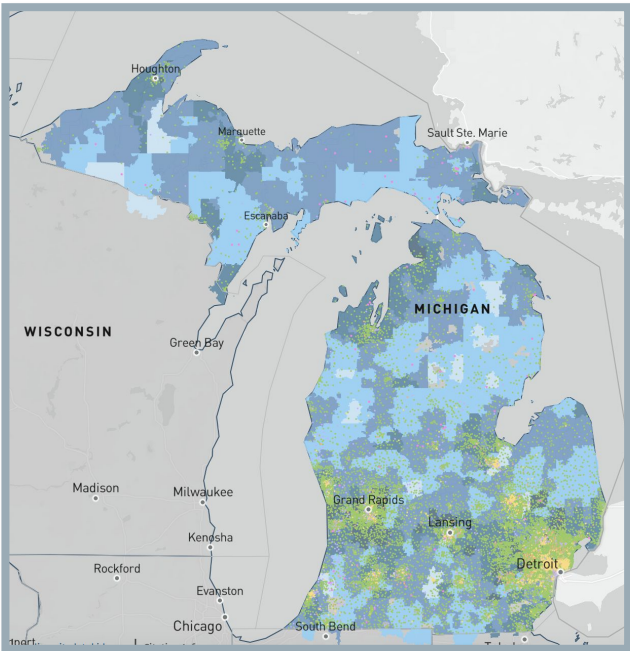
### Coalition Coverage Areas with Participant Counties

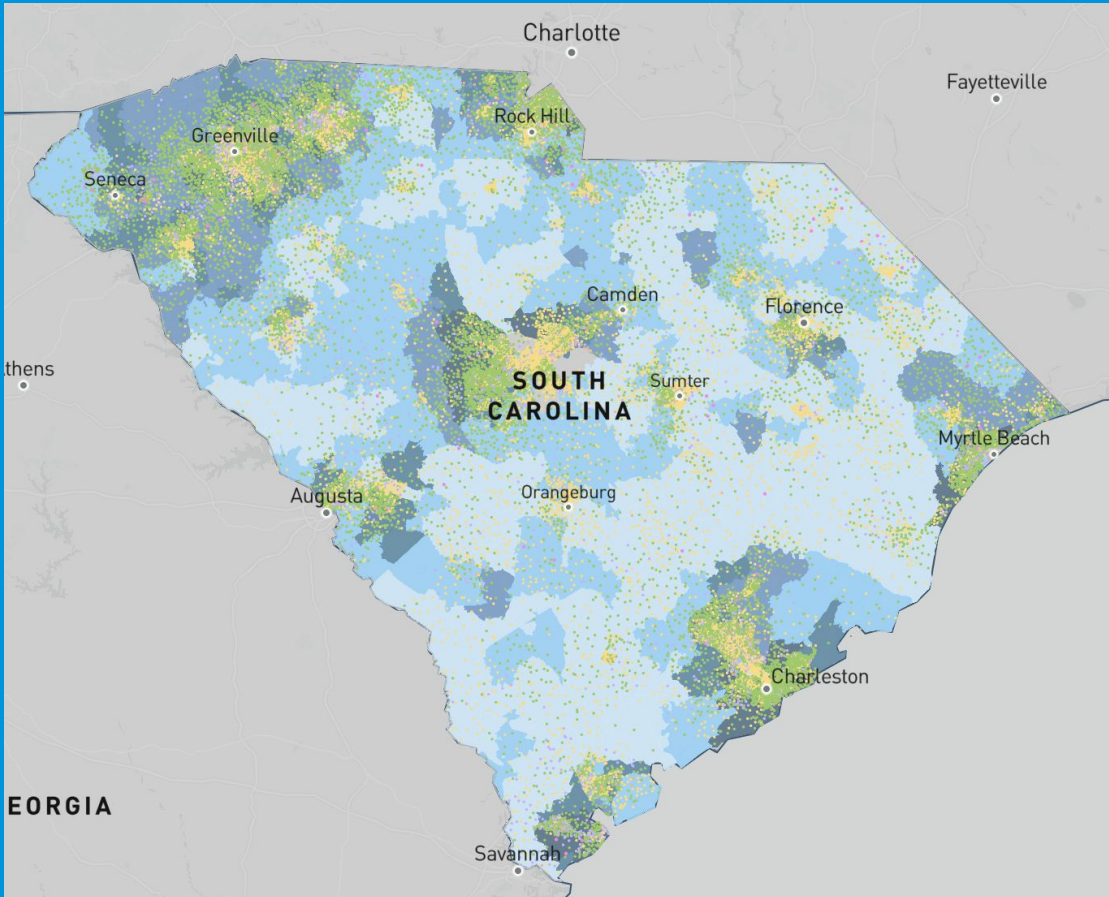
-  Safe Kids Buckle Up coalition catchment area
-  Safe Kids Buckle Up participant counties

# Michigan:

6,035 seat checks for 1,088,470 children <10 years old

**Seat Check Rate: 5.5 per 1000 children <10 years old**



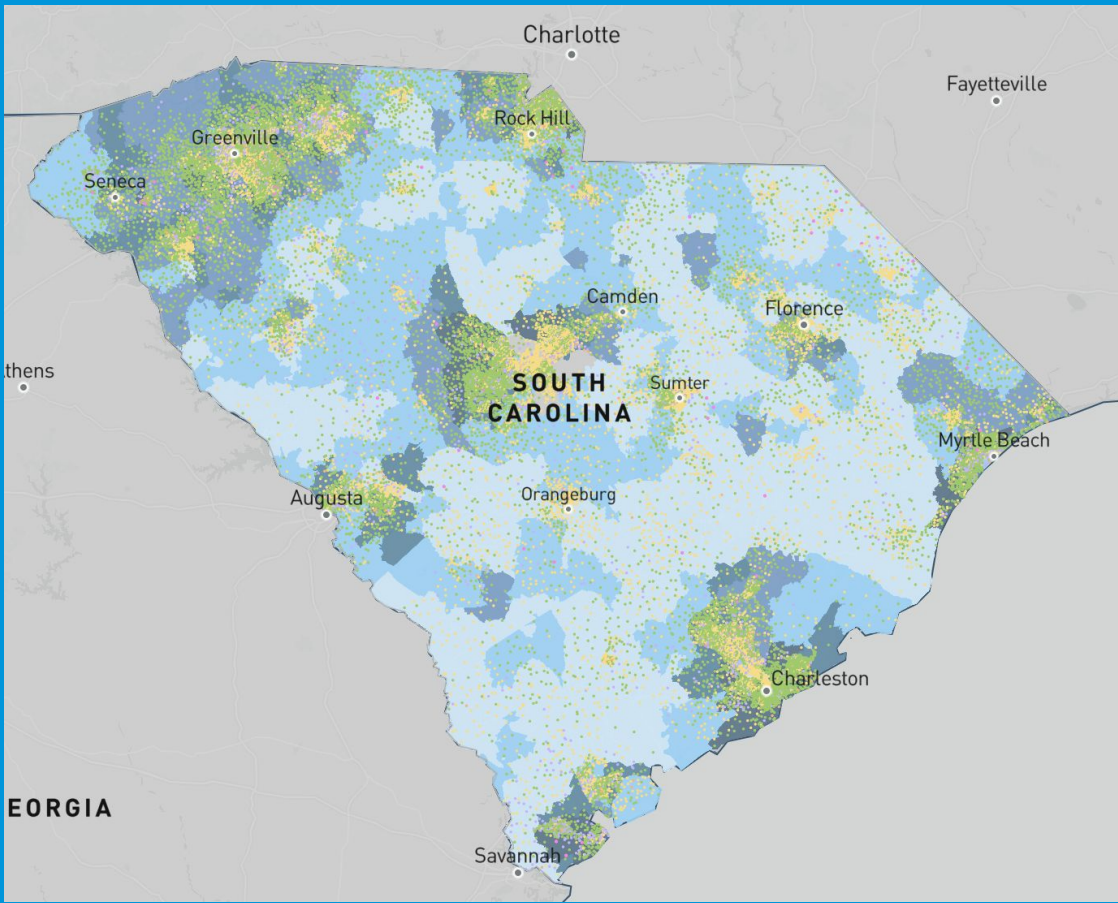


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Overall COI by ZIP Code, state-normed for 2015



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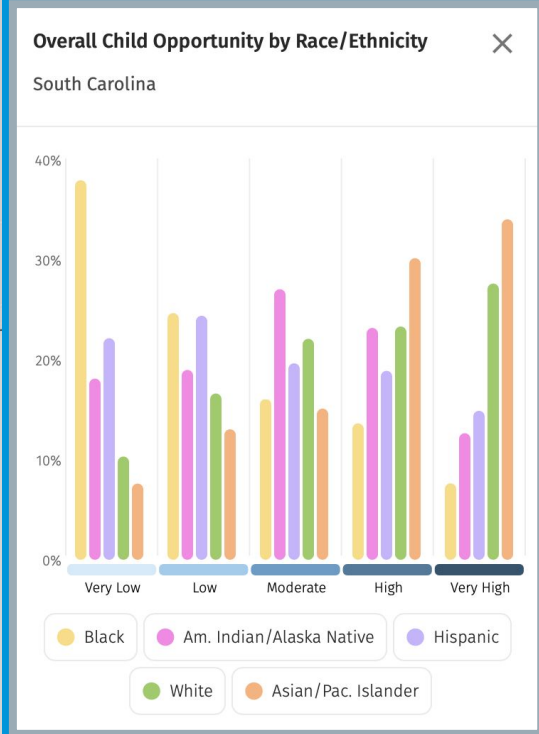
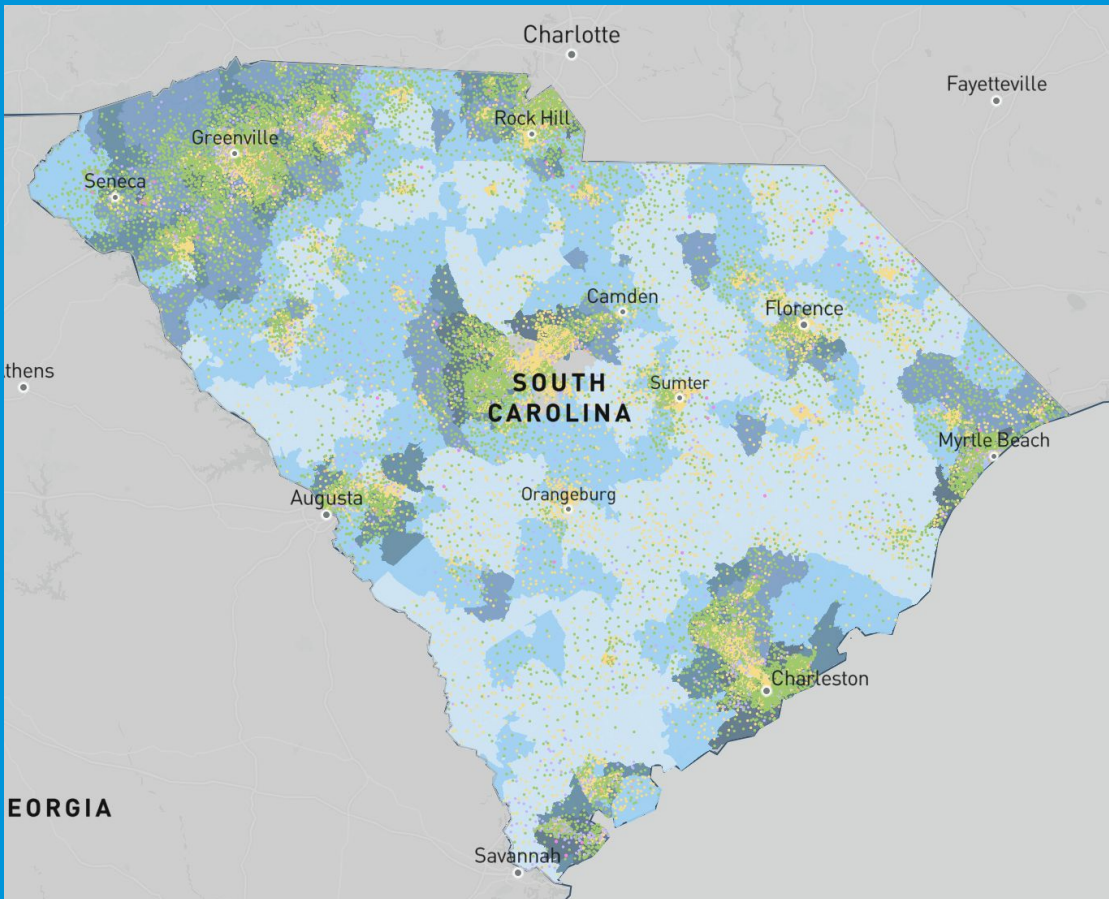
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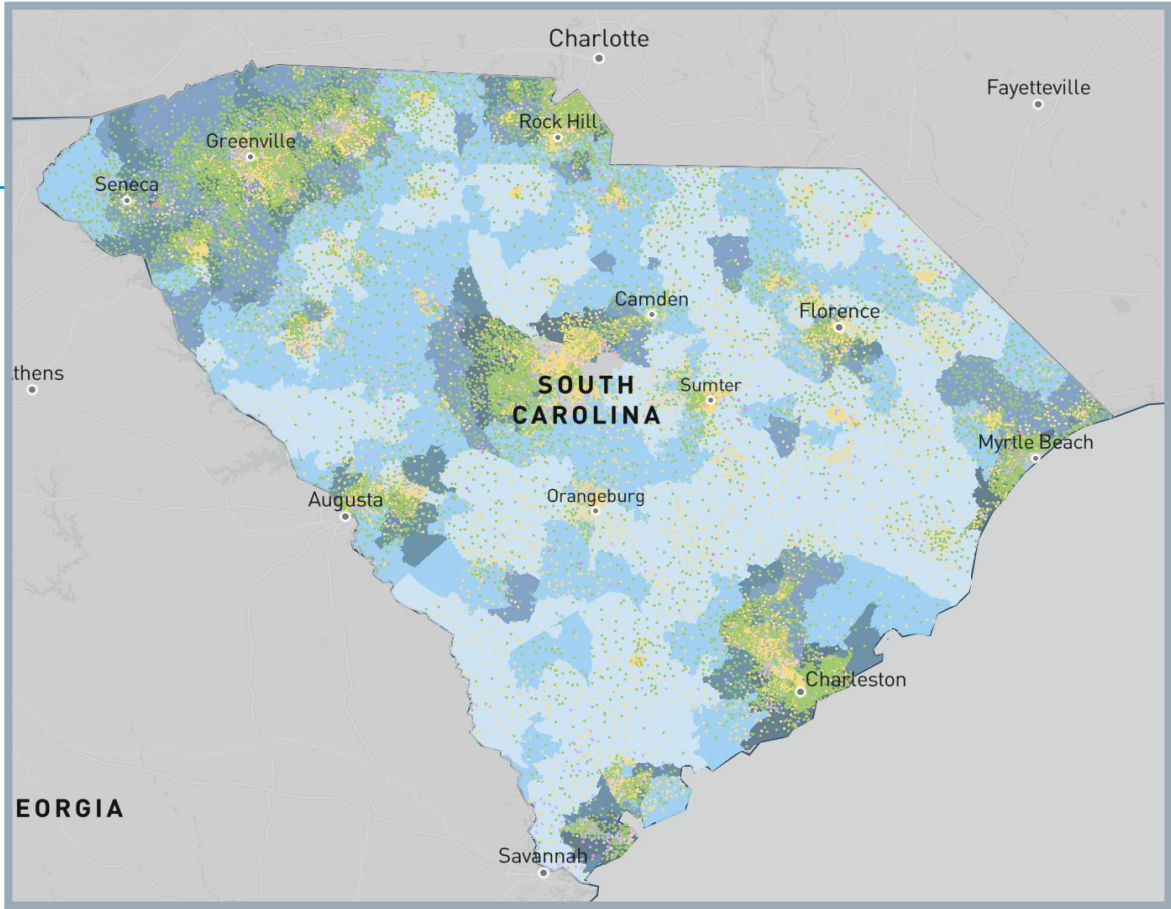
Very Low    Low    Moderate    High    Very High

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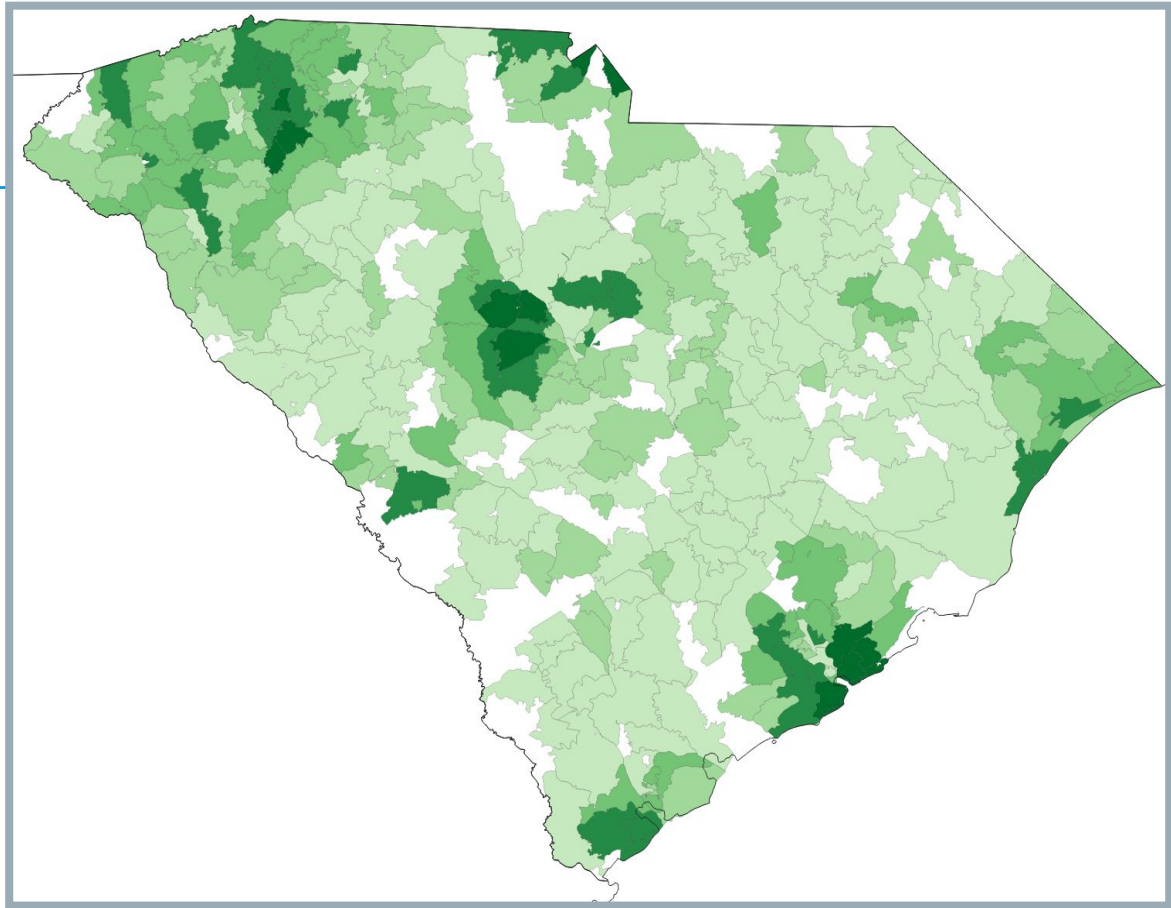
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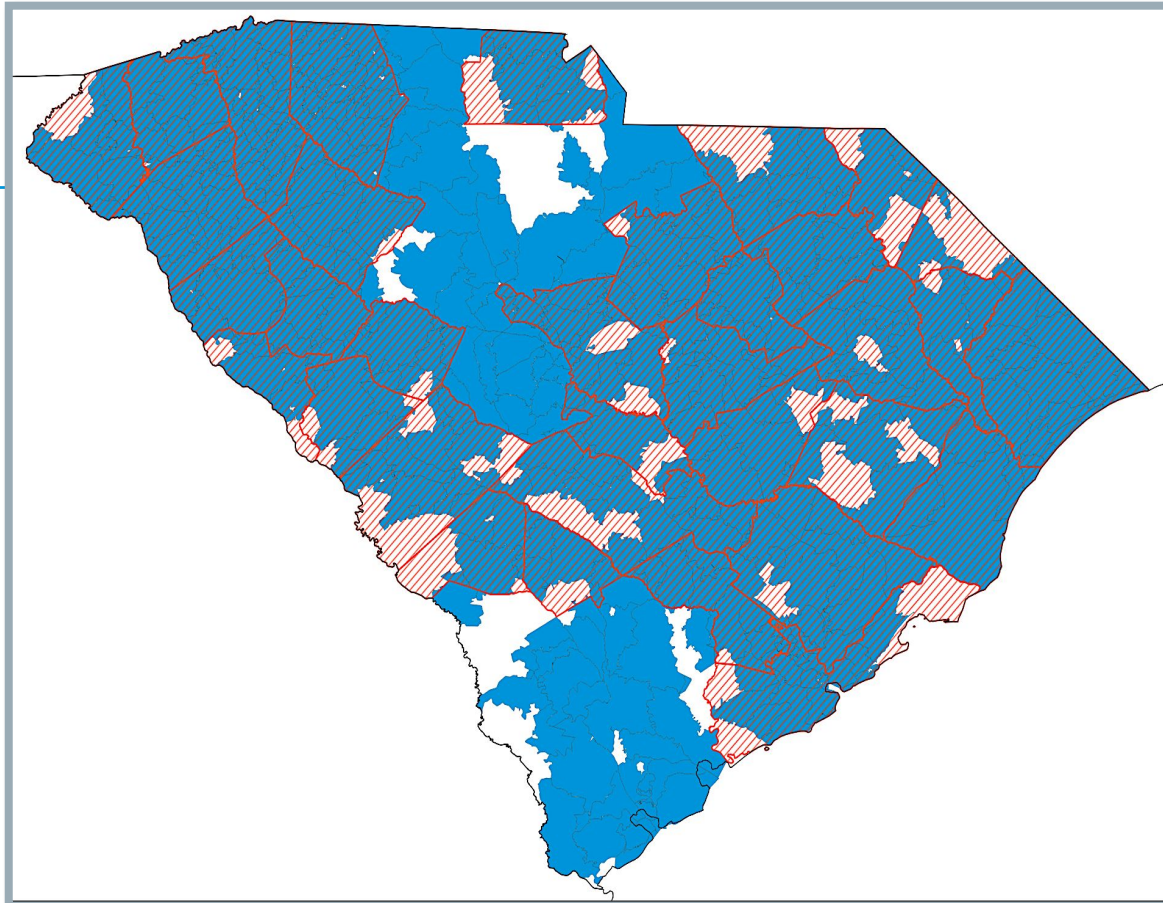
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## Seat Check Rate:

20.0 per 1000 children <10yo

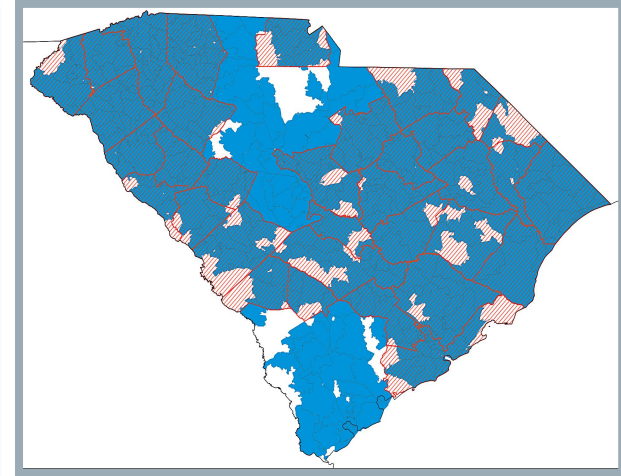
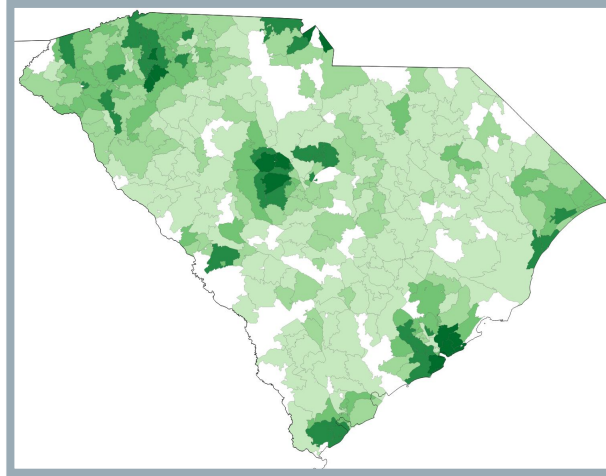
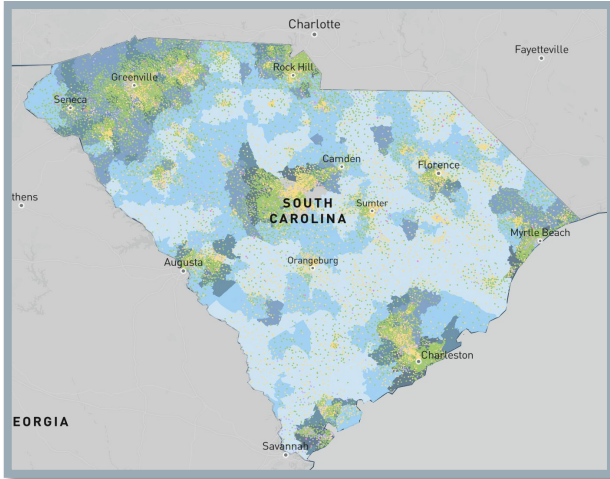
12,128 seat checks for  
605,512 children <10yo

### Coalition Coverage Areas with Participant Counties

-  Safe Kids Buckle Up coalition catchment area
-  Safe Kids Buckle Up participant counties

# South Carolina:

12,128 seat checks for 605,512 children <10 years old  
**Seat Check Rate: 20.0 per 1000 children <10 years old**



# Limitations



- Incomplete picture of seat checks
  - Missing checks from forms not submitted to Safe Kids and conducted outside of SKBU
  - 2022 seat check forms received after the dataset pull date are not included
- Degree of missingness
  - Especially for race/ethnicity
- Optical Character Recognition Software and potential for misclassification bias
  - 9 may look like 4; 6 may look like 8
- Form ID numbers are not unique identifiers when coalitions photocopy checklists
- Coalition catchment area data may be outdated

# Next Steps

- Refine process for determining states to include in analysis and use of **Child Safety Index** which has been specifically designed for safety
- Number of seats per geographic unit of analysis (ZIP Code or county) to assess for equitable access to car seat checks for areas with lower COI (as a proxy for race/ethnicity and SES)
- Examine selection and installation errors by geography
- COVID impact on seat check utilization



# Acknowledgements



Sadiqa A.I. Kendi, MD, MPH



Mark R. Zonfrillo, MD, MSCE



J. Morag MacKay, MSc



Tricia Whalen, MPH



Mark Chandler, MPH



And welcome to Edward Hughes!

# Contact

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- [mmackay@safekids.org](mailto:mmackay@safekids.org)

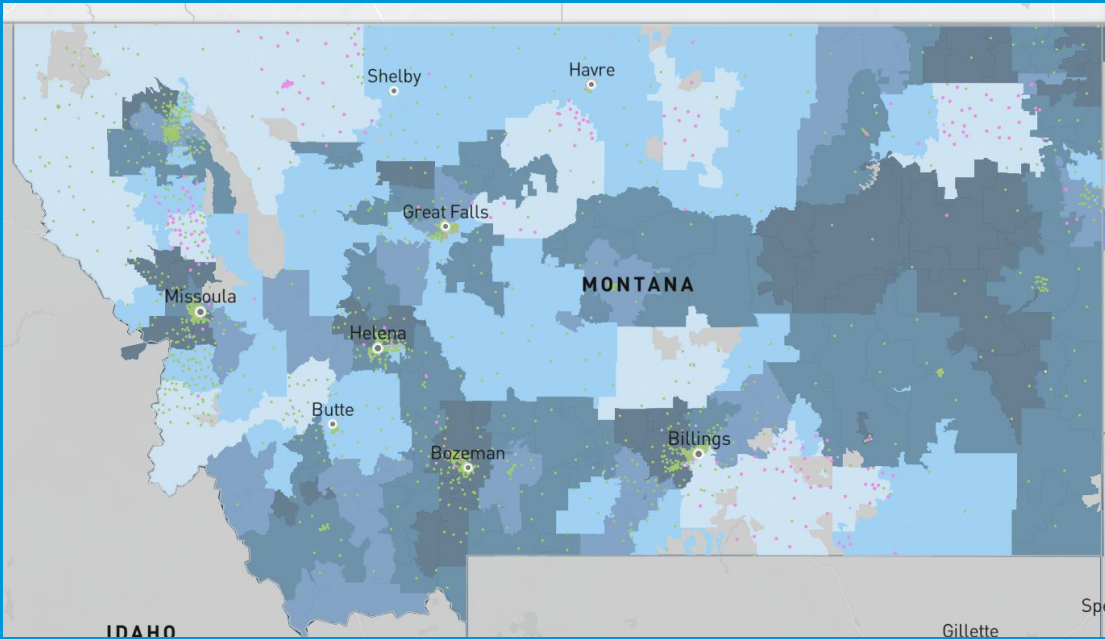






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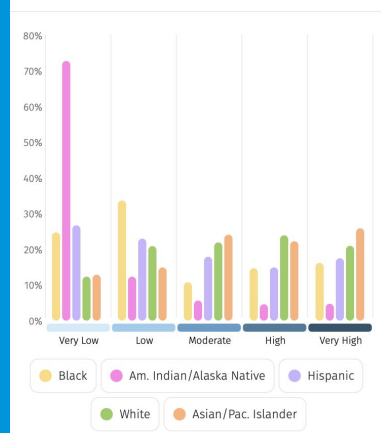


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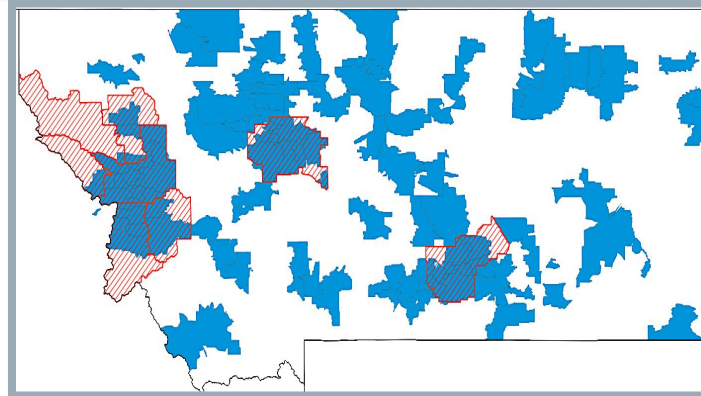
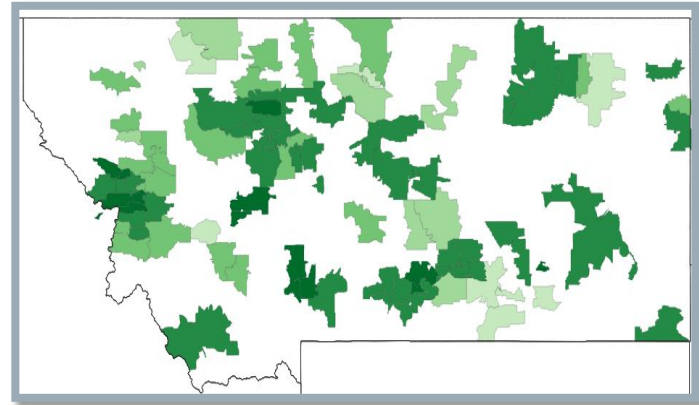
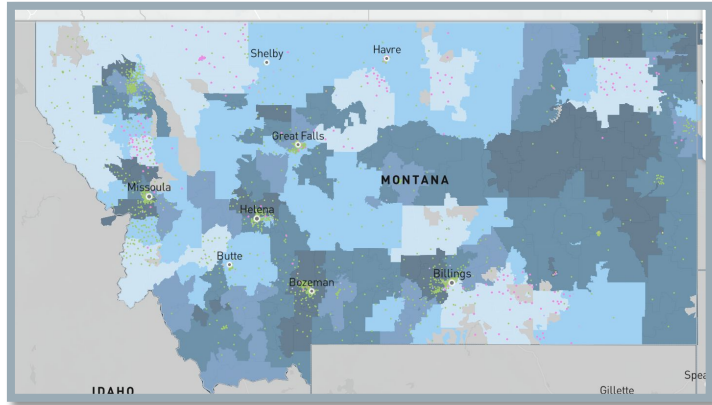
## Overall Child Opportunity by Race/Ethnicity

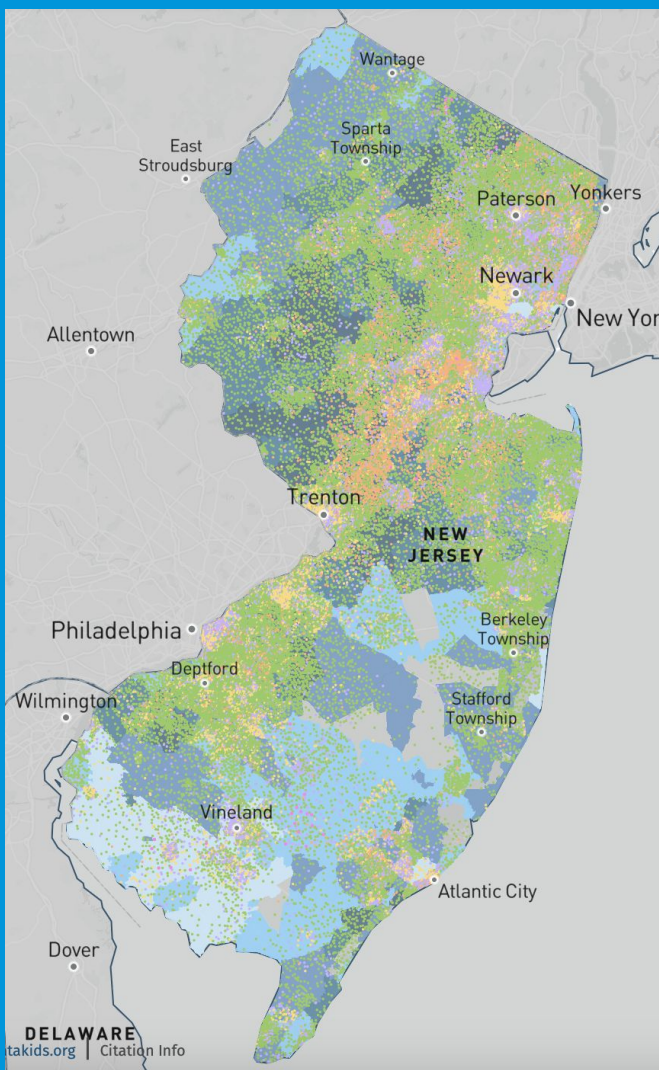
Montana



# Montana

2,477 seat checks for 114,659 children <10 years old  
**Seat Check Rate: 21.6 per 1,000 children <10 years old**





### Child Opportunity Levels

Overall COI by ZIP Code, state-normed for 2015

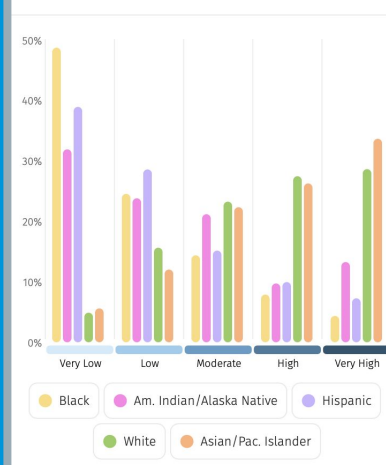


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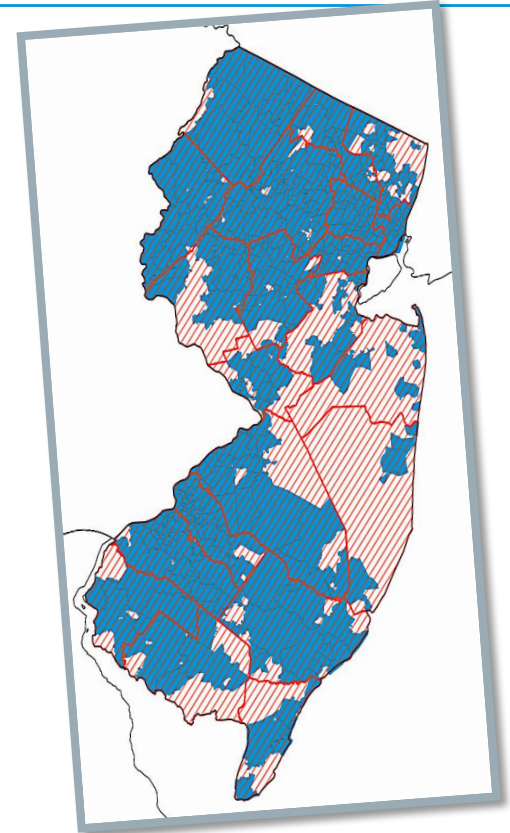
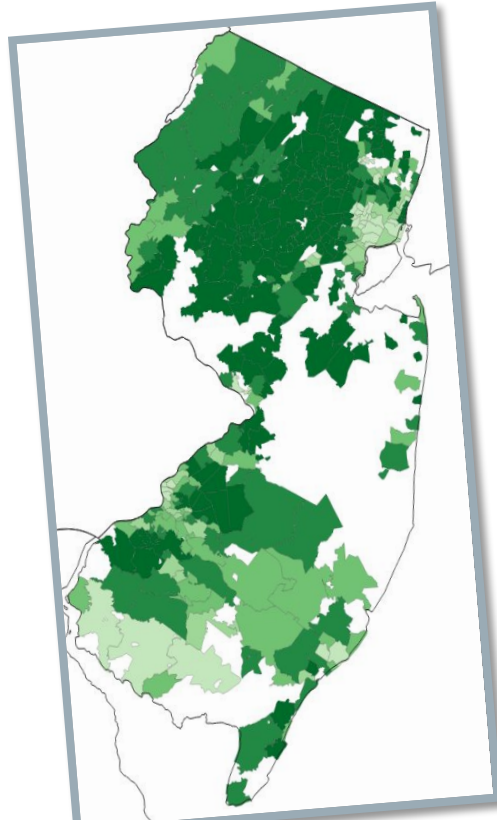
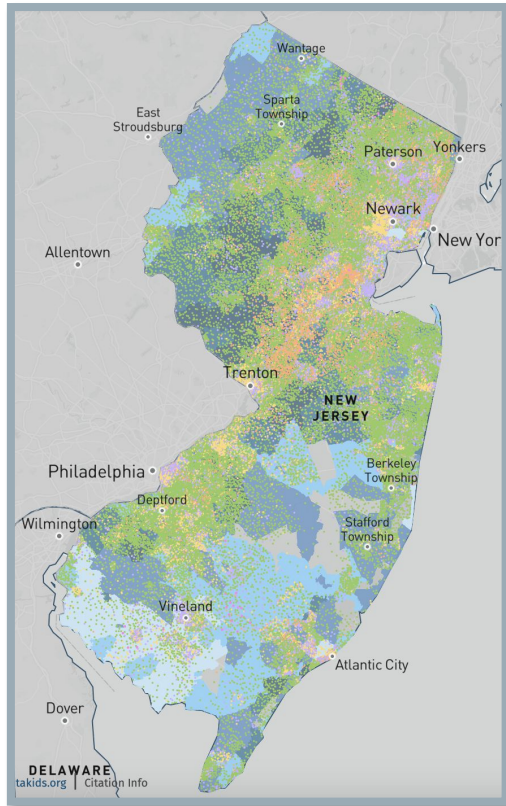
New Jersey



# New Jersey

11,246 seat checks for 1,049,754 children <10 years old

**Seat Check Rate: 10.7 per 1000 children <10 years old**



Thank you.

