

Trends and Risk Factors for Sudden Unexpected Infant Deaths in Florida

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OBJECTIVES

- 1) To assess trends in sudden unexpected infant deaths in Florida overall and by race and ethnicity for 2005-2015 and
- 2) To identify risk/protective factors for sudden unexpected infant deaths in Florida among infants born alive during 2010-2014

BACKGROUND

- ~ 3,500 sudden unexpected infant death (SUID) cases in the United States in 2014
- ~ 500 SUID cases in Florida in 2014.
- SUID rate has declined considerably since 1994 with the exception of accidental suffocation and strangulation rates.
 - Rate highest among American Indian/Alaska Native(AI/AN) and non-Hispanic Black infants
 - Rate lowest among Hispanic and Asian/Pacific Islander infants
- Risk factors for Sudden Infant Death (SIDS): Male gender, prematurity, low birth weight, maternal age <20 years, smoking during pregnancy, passive smoking, substance abuse, short inter-pregnancy interval, and multiparity.
- Risk factors for sleep-related death: Being African American, parent - infant bed sharing, prone sleeping position
- Protective factors for SIDS: Breastfeeding, pacifier use

METHODS

- Included all live births in Florida from
 - ❖ 2005 -2015 for trend analysis
 - ❖ 2010 - 2014 for risk/protective factors analysis
- Data sources: Florida Vital Statistics birth and infant death records
- Rates for ethnicity were obtained from Florida CHARTS website.
- Joinpoint regression was used for overall trend analysis
- MS-Excel was used for plotting SUID trends by race and ethnicity
- Crude and multivariable poisson regression analyses were conducted to examine the potential risk/protective factors for SUIDs
- Software: SAS 9.4, Joinpoint Trend Analysis Software of the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute

RESULTS

The sample consisted of 795,170 infants. SUID rate was **0.67 per 1,000** live births for the state of Florida during 2010-2014.

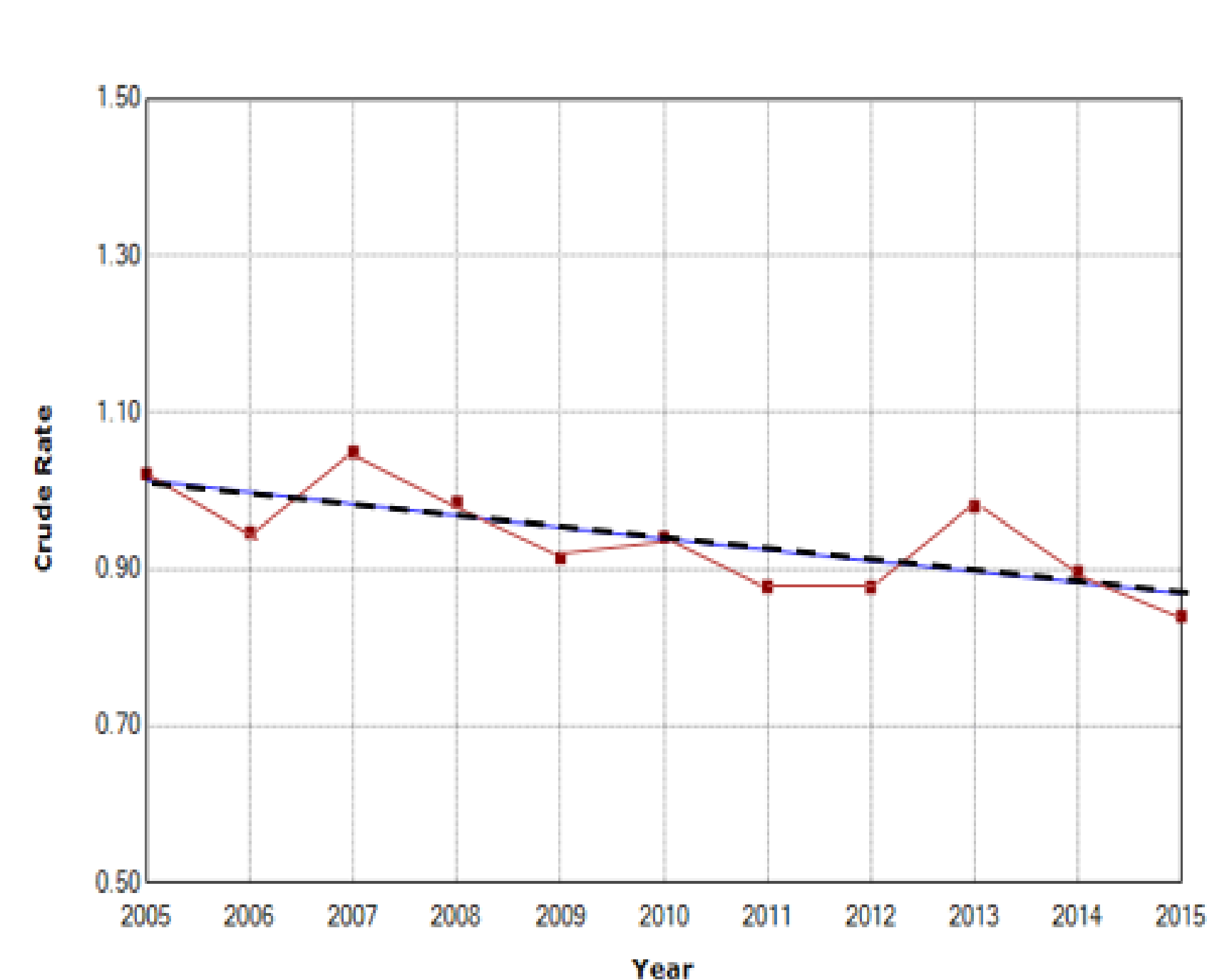


Figure 1. Trend for Sudden Unexpected Infant Death Rates (per 1,000 Live Births) in Florida: 2005 -2015

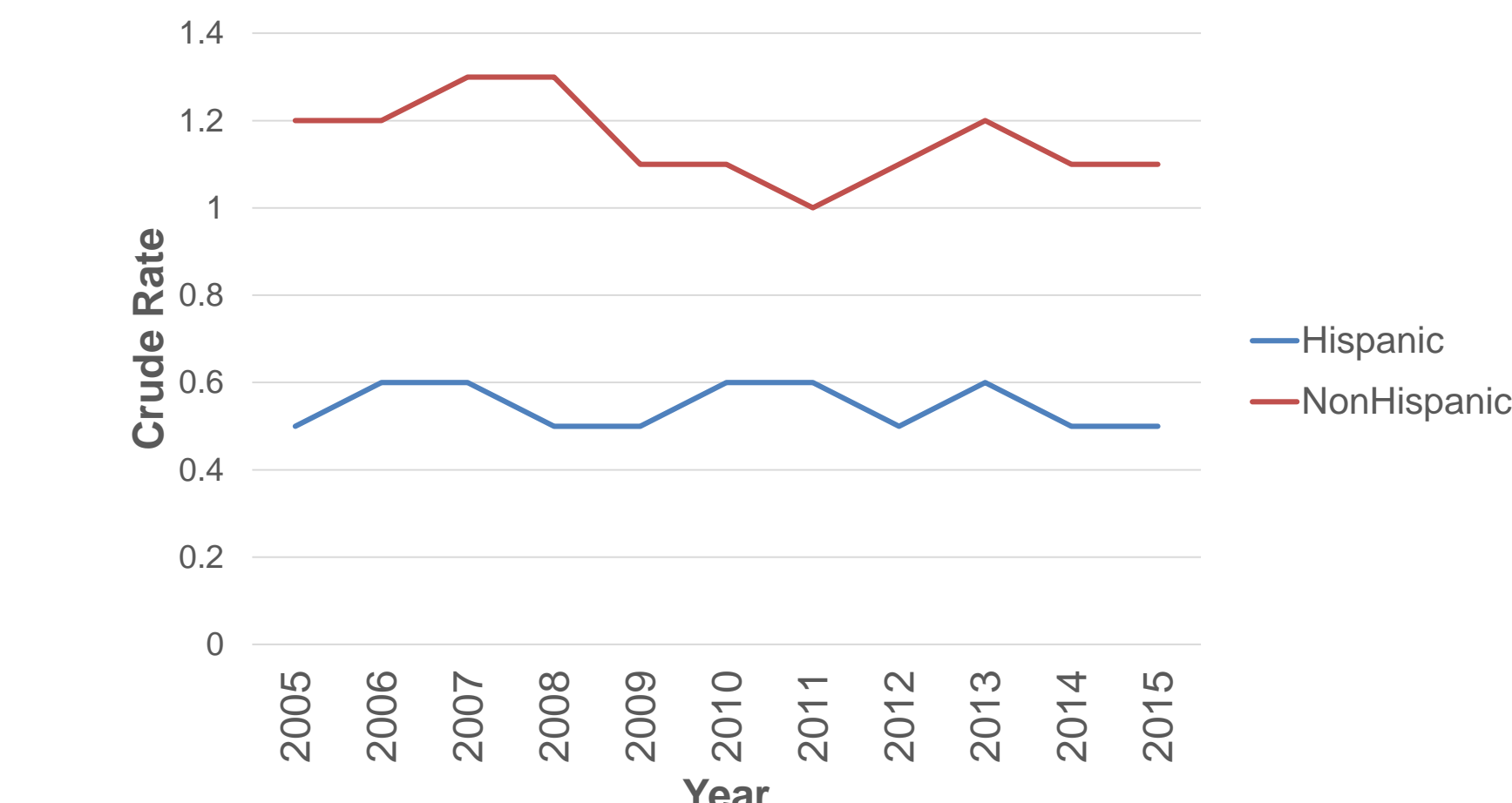


Figure 2. Trends in Sudden Unexpected Infant Death Rates (per 1,000 Live Births) In Florida by Maternal Hispanic Ethnicity: 2005 -2015

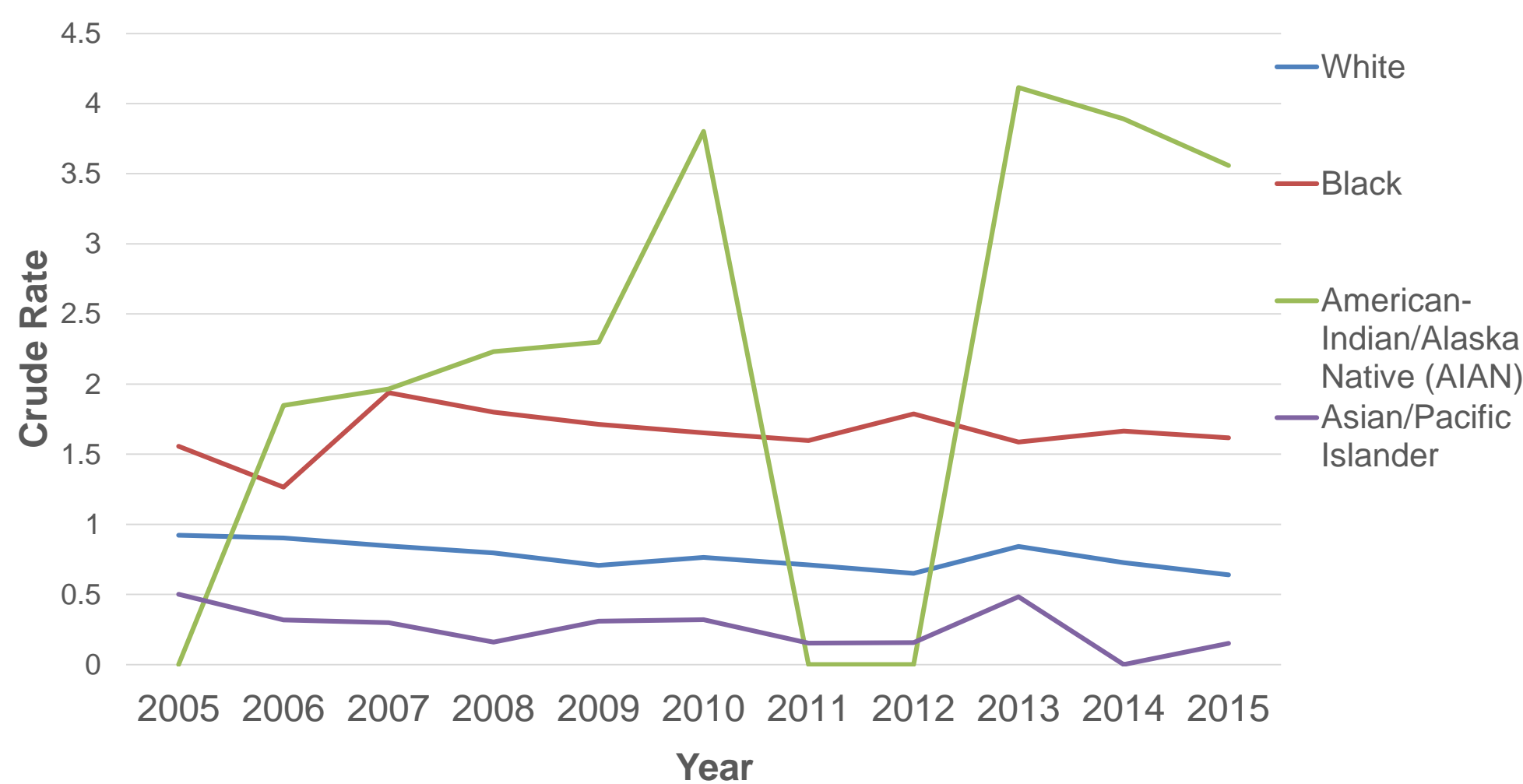


Figure 3. Trends in Sudden Unexpected Infant Death Rates (per 1,000 Live Births) in Florida by Maternal Race: 2005 - 2015

Table 1. Significant Risk/Protective Factors for Sudden and Unexpected Infant Deaths, 2010 - 2014 Florida Birth Cohort

| | Total Live Births | Cases | Crude Risk Ratio (95% CI) | ^a Adjusted Risk Ratio (95% CI) |
|---|-------------------|-------|---------------------------|---|
| Maternal age (years) | | | | |
| <20 | 44,311 | 66 | 1.82 (1.38, 2.39) | 1.13 (0.84, 1.51) |
| 20-24 | 27,258 | 29 | 1.30 (0.88, 1.91) | 0.83 (0.56, 1.23) |
| 25-29 | 184,789 | 220 | Reference | Reference |
| 30-34 | 241,545 | 144 | 0.73 (0.59, 0.89) | 0.91 (0.74, 1.12) |
| 35-50 | 194,143 | 60 | 0.38 (0.28, 0.50) | 0.62 (0.47, 0.83) |
| Paternal Race | | | | |
| White | 586,184 | 316 | Reference | Reference |
| Black | 164,804 | 203 | 2.28 (1.92, 2.73) | 1.36 (0.99, 1.86) |
| American Indian/Alaska Native | 1,044 | 1 | 1.78 (0.25, 12.65) | 1.30 (0.18, 9.30) |
| Asian/Pacific Islander | 19,416 | 13 | 1.24 (0.71, 2.16) | 1.14 (0.63, 2.10) |
| Other race | 23,722 | 2 | 0.16 (0.04, 0.63) | 0.19 (0.04, 0.90) |
| Maternal Ethnicity | | | | |
| Non-Hispanic | 534,681 | 450 | Reference | Reference |
| Hispanic | 257,190 | 83 | 0.38 (0.30, 0.48) | 0.53 (0.38, 0.73) |
| Paternal Ethnicity | | | | |
| Non-Hispanic | 535,268 | 442 | Reference | Reference |
| Hispanic | 255,946 | 91 | 0.43 (0.34, 0.54) | 0.69 (0.50, 0.94) |
| Maternal Education | | | | |
| Less than High School | 97,098 | 124 | Reference | Reference |
| High School/GED/Some College | 383,004 | 330 | 0.68 (0.55, 0.83) | 0.79 (0.64, 0.99) |
| Associate/Bachelor's Degree | 238,152 | 66 | 0.22 (0.16, 0.29) | 0.43 (0.31, 0.61) |
| Graduate Degree | 73,787 | 12 | 0.13 (0.07, 0.23) | 0.31 (0.17, 0.58) |
| Marital Status | | | | |
| Not Married | 307,035 | 369 | Reference | Reference |
| Married | 488,125 | 166 | 0.28 (0.24, 0.34) | 0.48 (0.39, 0.60) |
| Maternal Smoking during Pregnancy | | | | |
| No | 751,422 | 434 | Reference | Reference |
| Yes | 41,552 | 99 | 4.12 (3.32, 5.13) | 1.96 (1.54, 2.50) |
| Interpregnancy Interval < 18 Months | | | | |
| No | 628,330 | 351 | Reference | Reference |
| Yes | 166,840 | 184 | 1.97 (1.65, 2.36) | 1.81 (1.51, 2.17) |
| Infant Sex | | | | |
| Male | 407,796 | 319 | Reference | Reference |
| Female | 387,373 | 216 | 0.71 (0.60, 0.85) | 0.69 (0.58, 0.82) |
| Low Birth Weight | | | | |
| No | 735,803 | 444 | Reference | Reference |
| Yes | 59,356 | 91 | 2.54 (2.03, 3.18) | 2.04 (1.49, 2.78) |
| Ever Breastfed | | | | |
| No | 114,438 | 174 | Reference | Reference |
| Yes | 678,137 | 359 | 0.35 (0.29, 0.42) | 0.69 (0.57, 0.83) |

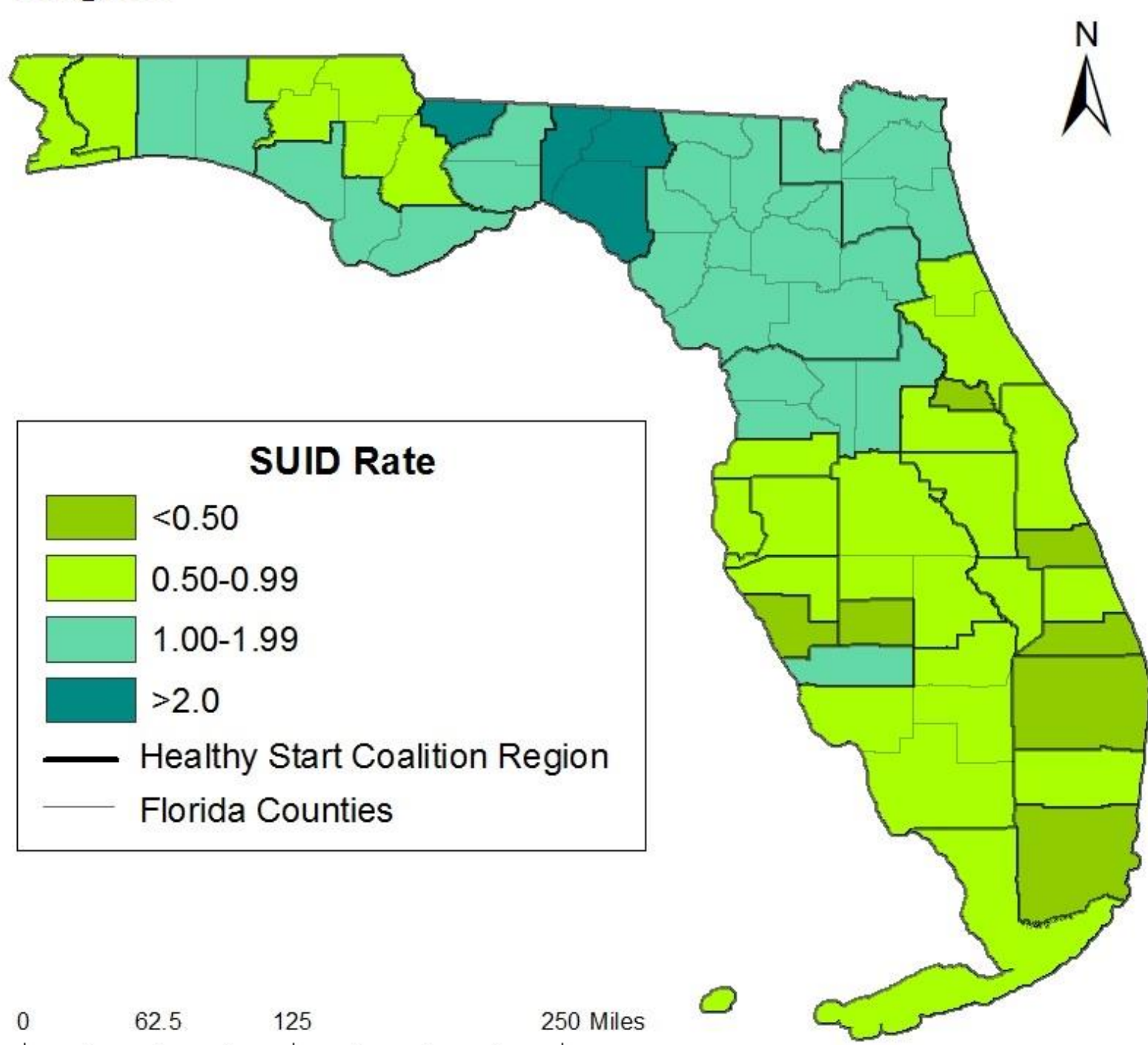
CI = confidence interval

Frequencies may not add to the total and percentages may not add to 100% due to missing data

^aAdjusted all other variables listed in the table and maternal race, prepregnancy body mass index, maternal consumption of alcohol during pregnancy, prenatal care, infant born in hospital, cesarean section, plurality, and prematurity.

BOLD indicate statistically significant findings in the adjusted model

Figure 4. SUID Rate by Healthy Start Coalition Region



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STUDY STRENGTHS & LIMITATIONS

- **Strengths**
 - ❖ Large sample size, thereby sufficient statistical power to detect an association
 - ❖ Sample consisted of all live births in Florida, therefore results are generalizable to the infants born in Florida
- **Limitations**
 - ❖ No data on safe sleep practices or pacifier use, important predictors of SUIDs

CONCLUSIONS

- Despite the overall decrease in trends during the study period, the state must remain vigilant about SUID prevention.
- State interventions should focus on
 - ❖ Improving modifiable risk factors like maternal smoking during pregnancy and interpregnancy interval,
 - ❖ Promoting breastfeeding
 - ❖ Tailoring interventions to high-risk groups such as non-Hispanic mothers and fathers, younger parents, and single mothers