

Sudden Unexpected Infant Death (SUID) in Minnesota

DATA BRIEF: 2010-2016 SUID TRENDS

Rates of Sudden Unexpected Infant Death, which include both Sudden Infant Death Syndrome (SIDS), and other sleep-related deaths, dropped drastically after the American Academy of Pediatrics (AAP) changed its safe sleep recommendations in 1992 and the National Institutes of Health (NIH) launched the Back to Sleep campaign in 1994.¹ However, after an initial decrease in the 1990s, the overall death rate attributable to sleep-related infant deaths has not declined in more recent years; nearly 3,500 infant deaths in the United States each year are sleep-related.² While significant progress has been made, there is still more work to be done. SUID is one of the leading causes of infant mortality in Minnesota, contributing to 50-60 deaths each year.¹

The reduction of SUID rates is one of the top priorities of the Minnesota Department of Health (MDH) Infant Mortality Reduction Plan.³ MDH is working with the Data Coordinating Center at the Michigan Public Health Institute (MPHI) to gather information about SUID through the Sudden Death in the Young Case Registry.

This data brief focuses on SUID cases identified in Minnesota, using vital records and the case registry, from 2010 through 2016.

Categorization and Trends

It is hard to tell between the types of SUID, because there is no standard manner of investigations or biological marker.⁴ As a result, SIDS was reported more frequently than other types of SUID, such as accidental sleep-related suffocations or strangulations.⁴ However, improved death investigation methods have helped medical examiners be more specific with their attribution.⁴ Such methods include doll scene reenactments, death scene investigations, and epidemiologic identification of modifiable risks factors such as soft bedding, bed-sharing and maternal cigarette smoking.

SUID cases are classified using a definition developed by the Centers for Disease Control and Prevention (CDC) for its SUID Case Registry. The CDC SUID Case Registry includes infant deaths that occur suddenly and unexpectedly, whose cause is not immediately known prior to investigation, and without an obvious cause of death. It generally includes coded causes of death (using ICD 10) of R95 for SIDS, W75 for accidental suffocation or strangulation in bed, and R99 for other ill-defined and unknown causes. Cases that are sleep-related, but outside of these codes, may also be included based on the CDC Case Registry definition.

Trends over Time

From 2010 through 2015, SIDS (R95) cases substantially dropped (31 cases in 2011 to 11 in 2015). Whereas, the number of cases categorized as cause Unknown (R99) varied throughout with a peak of 21 cases in 2014. The number of cases categorized as accidental suffocation/strangulation in bed (W75) have also varied, but have steadily increased from 2010 through 21 cases in 2016 (see figure 1).

SIDS Decreasing while Suffocation in Bed & Unknown Causes Increasing

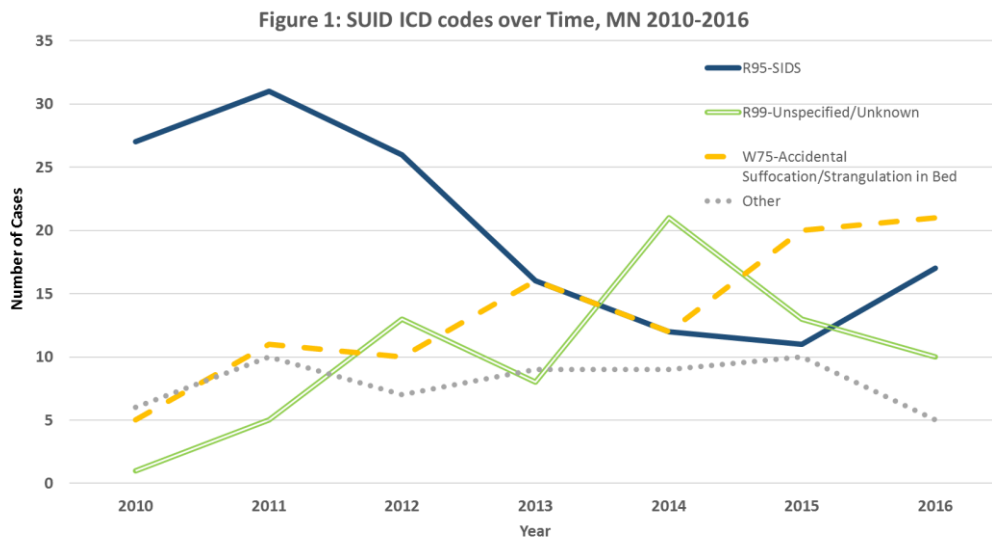


Figure 1: From 2010-2016, both ill-defined or unknown and accidental suffocation and strangulation in bed increased while other codes remained the same and SIDS seemed to decrease. (MN Vital Records).

SUID by Age

About 52% of SUID deaths in Minnesota from 2010 through 2016 occurred to infants between the ages of one and three months old, while 14% occurred to children less than one month of age and 34% occurred from ages of four through 11 months of age (see figure 2).

The Youngest Children Are At Highest Risk

Figure 2: SUID by Age in Months, MN 2010-2016

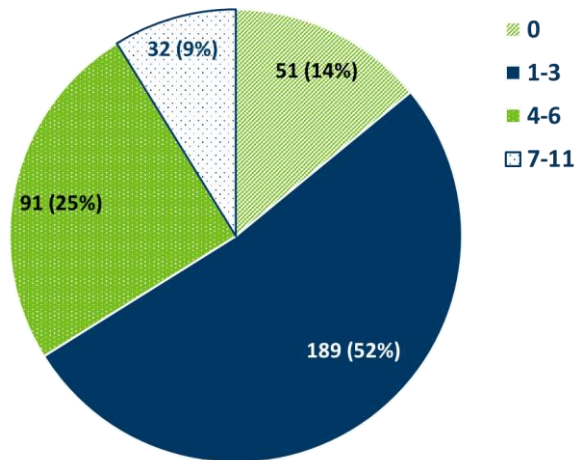


Figure 2: From 2010-2016, over 90% of cases occurred among infants 6 months old or younger. (MN Vital Records).

Racial Disparities

Although the state of Minnesota has the eighth lowest SUID rate in the nation,⁵ the disparities among races are notable. Infants born to American Indian mothers are twice as likely to die from SUID (28.3 per 10,000 births) than infants born to African American mothers (11.0), and four times as likely compared to those born to non-Hispanic whites (5.8). Infants born to African American mothers are nearly twice as likely to experience SUID compare to infants born to non-Hispanic white mothers. Infants born to Hispanic mothers (7.5 per 10,000 births) are also at increased risk of SUID compared to non-Hispanic whites.

The rates and disparities are more significant when contrasted with only U.S. born mothers, especially for African American and Hispanics, where the rates almost double. Yet, American Indian U.S. born mothers still have the highest SUID rate (33.8 per 10,000) followed by African American (26.5 per 10,000) and Hispanic U.S. born mothers (13.2 per 10,000). Non-Hispanic whites (6 per 10,000) and Asian (3.3 per 10,000) U.S. born mothers have the lowest SUID rates.

SUID Highest among American Indian Infants Lower Rates in Foreign-Born Mothers Hide Higher Rates in U.S.-born Mothers

Figure 3: SUID by Mother’s Race/Ethnicity and Origin, MN 2010-2016

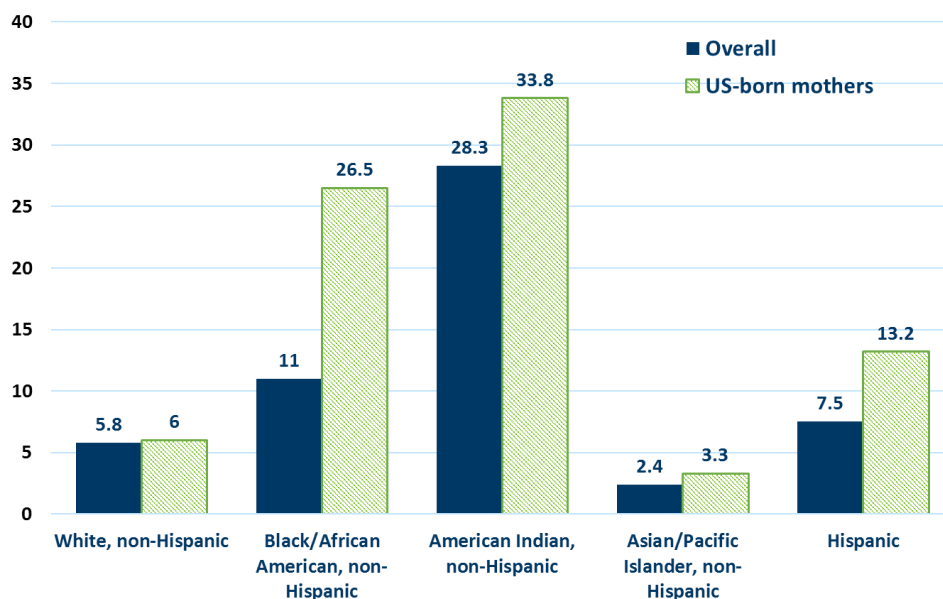


Figure 3: Infants born to American Indian mothers have the highest rate by far, but birthplace of mothers confounds the rate among African Americans with US-born mothers having a rate twice the overall rate among African Americans. (MN Vital Records).

Place of Incidence and Type of Residence

The American Academy of Pediatrics (AAP) Safe Sleep recommendations played a significant role in the decrease of SUID rates; however, a number of SUID deaths are happening in unsafe sleep environments.¹ From 2010-2016, 48% of SUID cases slept in an adult bed, while 14% slept on a couch. A number of SUID cases involve bed sharing, a practice that is more common among minority groups. Between 36% and 55% of SUID cases occurred among minority groups (American Indian, African American, Hispanics and Asians) from 2010-2016, compared to non-Hispanic whites (35%).

Only a Quarter of SUID Deaths Occurred in a Crib or Bassinet

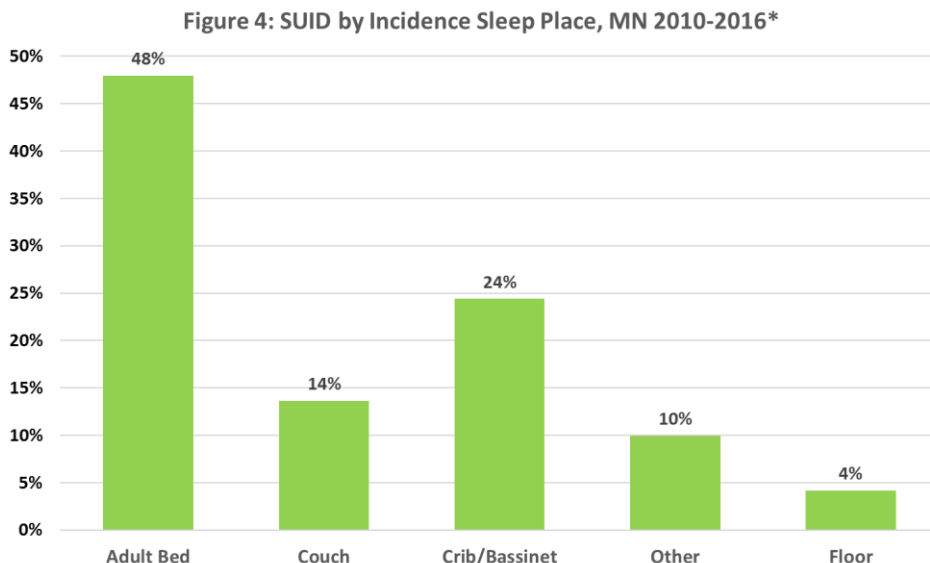


Figure 4: Among reviewed cases, only 24% of them occurred in a crib or bassinet. This does not account for other unsafe sleep factors among those cases. (MN-CDC Child Death Review Case Reporting System).

The child’s home and a relative’s home are the two places of residence where a number of SUID incidence have been observed. From 2010 through 2016, 76% of SUID incidence occurred at the child’s home. SUID incidence in licensed day care homes have decreased (8 in 2011 and 2 in 2016) throughout the years.

About a Quarter of SUID Deaths Occurred outside the Child’s home

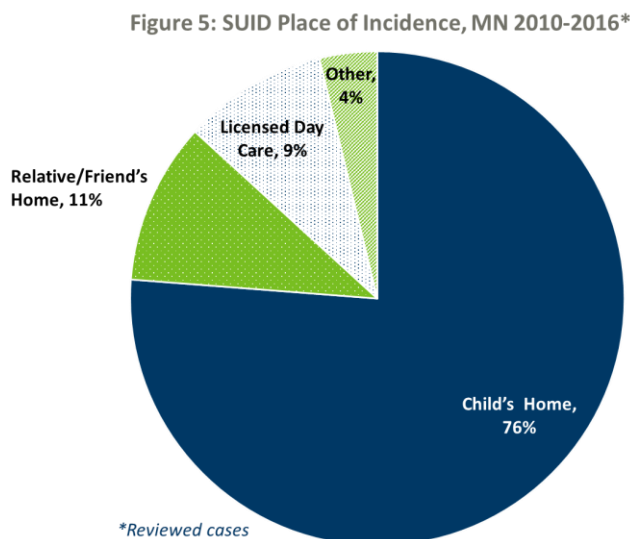


Figure 5: Among reviewed cases 24% Occurred outside the child’s home (MN-CDC Child Death Review Case Reporting System).

Additional Protective Factors

Several factors decrease the risk of SUID, including prenatal care, breastfeeding, and not smoking.

From 2010 through 2016 in Minnesota, among mothers who obtained prenatal care, those who started prenatal care during the 1st trimester experienced a lower rate of SUID (6.0) compared to mothers who started prenatal care in the 3rd trimester (13.1). A similar pattern is observed with the number of prenatal care visits. Those who had at least six prenatal care visits experienced a lower rate of SUID (6.5) compared to those who had no prenatal care visits (39.1). Also among those who breastfed, mothers who initiated breastfeeding at the hospital (6.2) experienced a lower rate of SUID (safe) compared to mothers who did not (15.4). Nonsmoking mothers experienced a lower rate of SUID (4.7) compared to mothers who smoked (23.4).

Figure 6: Protective Factors and SUID

Protective Factor	Yes Rate/10,000 births	No Rate/10,000 births
Prenatal Care	7.1	39.1
Nonsmoking During Pregnancy	4.7	23.4
Initiated Breastfeeding at Hospital	6.2	15.4

Figure 7: Prenatal Care and SUID

Prenatal Care Started	SUID Rate/10,000 births
1 st Trimester	6.0
2 nd Trimester	12.2
3 rd Trimester	13.1

Figure 8: Prenatal Care Visits and SUID

Prenatal Care Visits	SUID Rate/10,000 births
None	39.1
Less than 6 visits	18.3
At least 6 visits	6.5

Prevention

Reducing and preventing SUID deaths requires a public health approach that focuses on collaboration between entities and stakeholders, policy and education. The number one tactic is to bring awareness to health care organizations, partners and the community by promoting safe sleep practices and highlighting the factors that contribute to SUID deaths,⁸ such as those shown by the data in this brief. Collaboration will also encourage partners and stakeholders to share information and resources with each other; this will lead to culturally appropriate educational materials and well-rounded programs and services that are able to target and meet the need of different races and ethnic groups.

This collaboration will open the door for policies that reinforces and mandate certain practices that will help reduce and prevent SUID deaths. One such policy would be to reinforce and mandate safe sleep certification for health providers and provide educational material adapted for different language, cultural practices, economic capabilities and health beliefs.

MDH joined the SUID case registry program in 2010 in an effort to drive prevention and reduce the number of SUID deaths in Minnesota. The SUID case registry is a state-based surveillance system created by the CDC designed to supplement vital statistics-based surveillance methods.⁶ As a grantee to the registry, MDH receives resources and technical assistance to improve data quality on all SUID cases to facilitate analysis and direct effective prevention strategies.⁶

MDH identifies SUID cases from medical examiners, coroners and vital statistics office and information (autopsy, medical records, and death scene investigation, social service records). Each case is collected and reviewed by a team of experts.⁷ The review panel/team consists of medical experts (cardiologist, neurologists, pediatricians, etc.), medical examiners/pathologists, law enforcement, public health and social services. This team reviews all cases and provides recommendations that help improve current practices for maternal and child health programs or initiate new programs.

Furthermore, MDH has taken a more direct approach towards SUID by bringing awareness to the community through social media campaigns, highlighting some trends and bringing attention to resources available. MDH devotes one week between October and November of each year to be safe sleep week; this consists of media coverage on safe sleep and how this helps prevents SUID.

SUID TRENDS DATA BRIEF

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