Sudden Unexpected Infant Death Report

Wisconsin data from 2015-2018

P-02498 (05/2021)

Keeping Kids Alive IN WISCONSIN
Children's Health Alliance of Wisconsin

WISCONSIN DEPARTMENT of HEALTH SERVICES

SUDDEN UNEXPECTED INFANT DEATH IN WISCONSIN

Sudden unexpected infant death (SUID) is a term used to describe the death of an infant less than 365 days of age in which the cause of death is not clear before investigation (Centers for Disease Control and Prevention [CDC], 2020a). These deaths often occur in the infant's sleep environment. Although the number of SUIDs increased from 2015 to 2017 in Wisconsin, there was a slight decrease in deaths from 2017 to 2018. While the number has decreased, disparities still exist which necessitates further action and prevention.

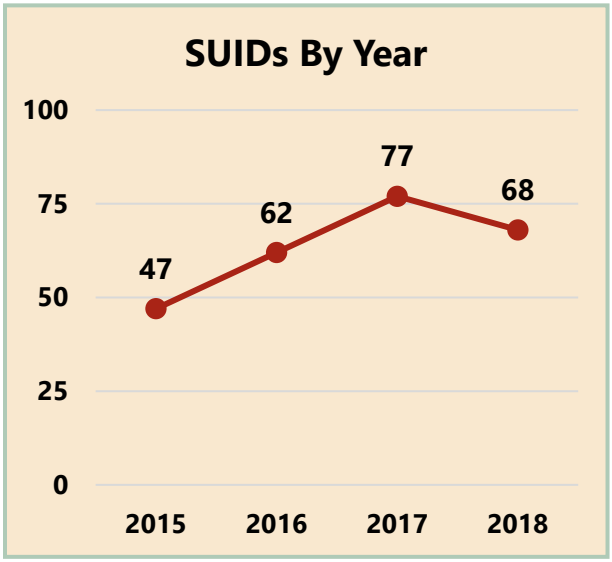

Figure 1: This graph represents Wisconsin's total number of SUIDs per year from 2015-2018.

Overall, the most common causes of infant death in Wisconsin are birth defects and complications due to preterm birth or low birth weight (Wisconsin Department of Health Services, 2019). SUIDs comprised 16% of infant deaths from 2015 to 2018.

In 2018, nearly all SUIDs occurred in the sleep environment. After investigation, SUIDs fell into three categories in Wisconsin:

- **Undetermined (62%)** These deaths were certified as either Sudden Infant Death Syndrome (SIDS), SUID or undetermined. In these cases, the autopsy did not reveal any specific cause of death. However, the majority of these deaths occurred in an unsafe sleep environment.
- **Asphyxia (34%)** Deaths in this category were the result of one or more factors in the sleep environment, including soft bedding, overlay, or wedging.
- **Medical cause with unsafe sleep factors indicated on death certificate (4%)** Unsafe sleep factors were indicated as a condition contributing to these deaths, but not the immediate cause of death.

This report provides information on SUIDs occurring in 2018, as well as information on SUIDs across the last four years from 2015 to 2018. The report will first highlight basic demographic information and then take an in-depth look at the social and economic inequities that exist among SUIDs. Next, the sleep environment circumstances of SUIDs will be compared to the American Academy of Pediatrics recommendation for a safe sleep environment among infants. Information from a population-based sample of mothers across the state, the Pregnancy Risk Assessment Monitoring System (PRAMS), will be presented in order to provide a perspective on sleep habits among Wisconsin infants born in 2018. Lastly, the report will outline Wisconsin's participation in the Centers for Disease Control and Prevention's SUID Case Registry.

Children's Health Alliance of Wisconsin (the Alliance) carries out their mission of ensuring Wisconsin children are healthy, safe and able to thrive through six key initiatives focusing on different aspects of children's health. Through the Keeping Kids Alive initiative, Wisconsin is able to conduct statewide surveillance on SUIDs through the work of local child death review (CDR) teams and the Wisconsin Child Death Review State Advisory Council. The Alliance thanks local teams and council members for their dedication to reviewing SUIDs, for gathering data to help us better understand the risk factors and circumstances leading to SUIDs, and to inform prevention efforts focused on reducing the incidence of SUIDs. For more information on the Keeping Kids Alive initiative, see page 15 of this report.

WISCONSIN COUNTIES WITH A SUID, 2015-2018

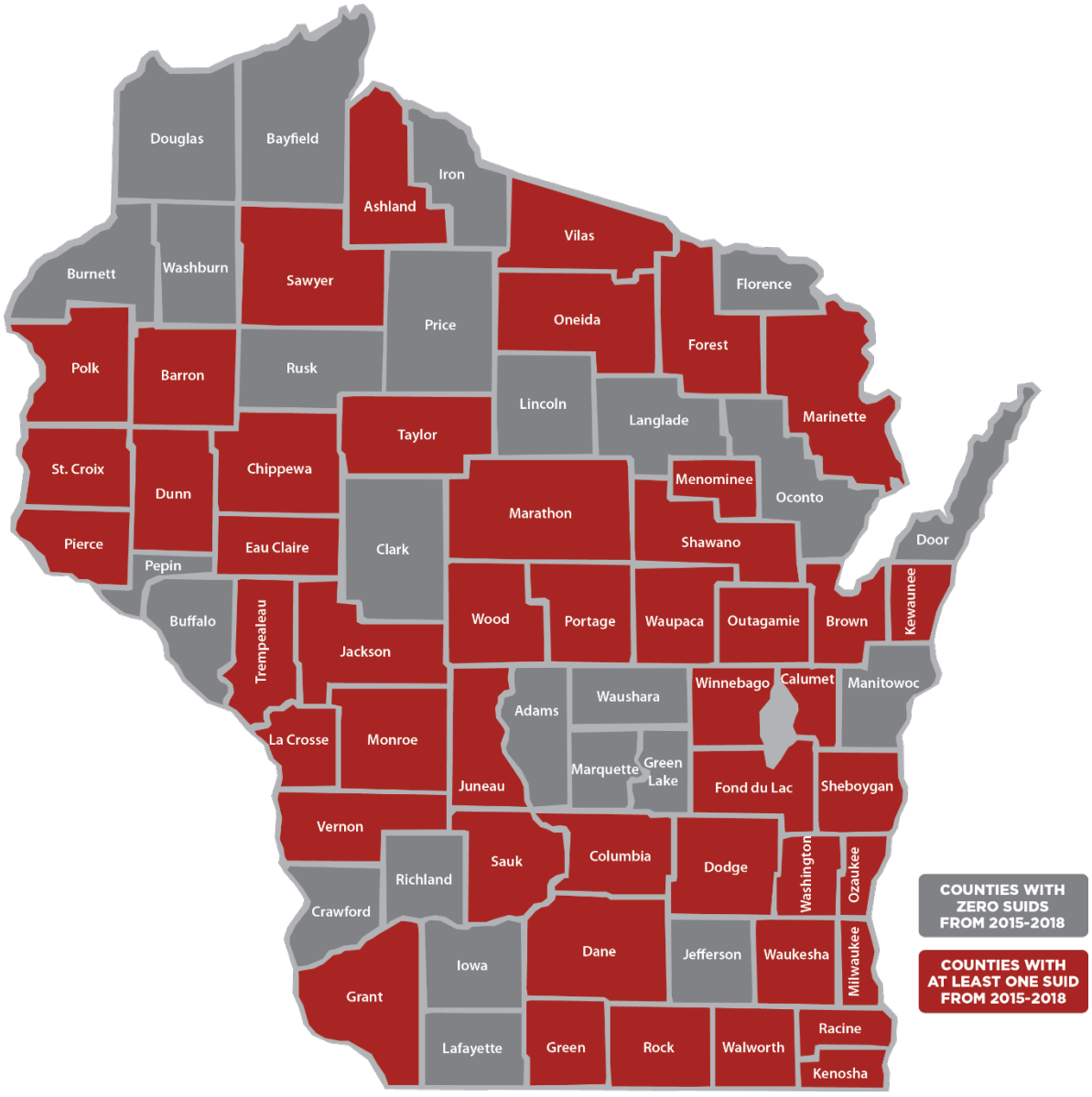

Figure 2: This map shows counties in Wisconsin that have experienced at least one SUID from 2015-2018. Out of Wisconsin's 72 counties, 47 experienced a SUID in this time frame.

Infant and Maternal Demographics in Wisconsin (WI)				
Characteristic	**SUIDs in WI, 2018 (N=68)**	**SUIDs in WI, 2015-2018 (N=254)**	**All infant deaths in WI, 2018 (N=389)**	**All births in WI, 2018 (N=64143)**
Sex, %				
Female	49%	45%	41%	49%
Male	51%	55%	59%	51%
Missing	0%	0%	<1%	<1%
Gestational age, %				
Preterm (less than 37 weeks)	24%	24%	62%	10%
Term (37 weeks or greater)	76%	74%	36%	90%
Missing	0%	1%	2%	<1%
Birth weight (BW), %				
Very low BW (less than 1500 grams)	3%	3%	48%	1%
Low BW (1500 to 2499 grams)	21%	18%	15%	6%
Normal BW (2500 grams or greater)	76%	78%	36%	92%
Missing	0%	<1%	2%	<1%
Infant age in months at death, %				
Younger than 1 month	16%	9%	65%	---
1 to 2 months	35%	39%	16%	---
3 to 4 months	26%	33%	8%	---
5 to 6 months	13%	11%	6%	---
7 to 12 months	9%	7%	5%	---
Maternal age, %				
Under 20 years	9%	8%	7%	4%
20-24 years of age	29%	30%	22%	17%
25-29 years of age	24%	29%	26%	31%
30-34 years of age	28%	22%	26%	32%
35-39 years of age	7%	9%	14%	14%
Age 40 or older	3%	2%	4%	3%
Missing	0%	<1%	0%	0%

Table 1: This table describes the characteristics of SUIDs in 2018 compared to all 2018 infant deaths and births in Wisconsin. It also compares characteristics among all SUIDs occurring between 2015 and 2018.

SUID DEMOGRAPHICS

Sex: Sex is defined here as an infant's biological sex at birth, and is stated on the birth certificate. Among SUIDs in 2018, 51% were male, and males also comprised 51% of all infants born in 2018. In comparison, among all infant deaths in 2018, approximately 59% were male.

Gestational age and birth weight: Preterm birth and low birth weight are among the top five leading causes of infant mortality (CDC, 2019). An infant is considered preterm if they are born at less than 37 weeks gestation. Table 1 shows that nearly two-thirds of all infants that died in Wisconsin in 2018 were born prematurely, and the rate of SUID was nearly three times greater among preterm infants compared to term infants. Low birth weight is defined as a birth weight of 1,500 to 2,500 grams, while very low birth weight is less than 1,500 grams. Approximately 63% of SUIDs were very low or low birth weight, and the rate of SUID was nearly four times greater among low birth weight infants compared to normal birth weight infants in 2018.

While the majority of SUIDs did not occur to infants born prematurely or with low birth weight, these characteristics were more common among SUIDs than among all infants born in 2018. In 2018, infants with low birth weight represented 21% of SUIDs in Wisconsin, but only 6% of the birth cohort. Among 2018 SUIDs, 24% of infants were born before 37 weeks gestation while only 10% of all infants born in Wisconsin in 2018 were preterm births.

Infant age at death: In 2018, 77% of all SUIDs occurred in the first four months of life, with the greatest percentage of SUIDs occurring among infants one to two months of age. Only 16% of SUIDs occurred among infants less than one month of age, while 65% of all infant deaths occurred among those less than one month of age in Wisconsin in 2018.

In 2018, nearly 8 in 10 SUIDs occurred to infants less than 5 months of age.

Maternal age: The most common maternal age category among SUIDs in 2018 was 20 to 24 years. While women ages 20 to 24 years birthed 17% of the birth cohort, they comprised 29% of the women experiencing a SUID in 2018. Among all infant deaths by comparison, 22% were experienced by women ages 20 to 24.

When considering the number of infants born to women in each category, the rate of SUID was more than two times greater among women ages 20 to 24 years compared to women ages 25 to 29 years.

Social and Economic Factors Influencing Maternal and Child Health				
Characteristic	**SUIDs in WI, 2018 (N=68)**		**SUIDs in WI, 2015-2018 (N=254)**	
	Percentage	Rate per 1,000 live births	Percentage	Rate per 1,000 live births
Highest level of education completed among mothers age 20 and older				
Less than high school	29%	3.3	22%	2.2
High school or GED	59%	1.4	61%	1.3
College degree	11%	0.3	9%	0.2
Post graduate degree	2%	0.1	2%	0.2
Missing	0%	---	6%	---
Highest level of education completed among mothers age 25 and older				
Less than high school	28%	2.7	20%	2.0
High school or GED	50%	1.0	56%	1.1
College degree	19%	0.3	14%	0.2
Post graduate degree	3%	0.1	3%	0.2
Missing	0%	---	6%	---
Maternal race and ethnicity combined				
Hispanic	9%	0.9	8%	0.8
Multi-racial, non-Hispanic	4%	2.1	3%	1.4
Non-Hispanic Black	29%	3.0	33%	3.1
Non-Hispanic white	53%	0.8	48%	0.6
Other categories combined	4%	0.7	2%	0.3
Missing	0%	---	6%	---
Insurance (infant)				
Private	16%	0.3	16%	0.3
Public	81%	2.4	76%	2.0
Other	1%	0.9	2%	0.8
None	1%	0.5	2%	0.7
Missing	0%	---	4%	---

Table 2: This table compares social and economic factors among SUIDs occurring in 2018 and SUIDs occurring between 2015 and 2018. For each factor, the percentage of SUIDs in each category is given. A rate is also provided.

SOCIAL AND ECONOMIC FACTORS

Social and economic factors influence the health of infants and their families, both directly and indirectly. Often described as the social determinants of health, these factors are outside of an individual's control but affect the environment in which the individual lives (CDC, 2020b).

Examples of these factors include employment, housing instability and quality, poverty, education, discrimination and access to health care. Social determinants influence health inequities, which can be defined as systematic differences in health outcomes that are both unfair and avoidable. Health inequities can be reflected in differences in length and quality of life, rates of disease and disability, and access to treatment (World Health Organization, 2020).

Among 2018 SUIDs, 8 in 10 infants were publicly insured, compared with 4 in 10 of all infants born in 2018.

Understanding SUID inequities helps determine where monetary resources and time need to be directed in order to eliminate the unjust differences in SUID rates. Health equity is achieved when every person has an opportunity to attain their highest standard of health, and social determinants of health do not disadvantage one from achieving this standard.

SUID data collected by child death review teams includes birth certificate information on maternal education, maternal race and Hispanic ethnicity, and the infant's insurance.

Educational attainment: The rate of SUID differs by maternal educational attainment. Among mothers age 25 and older, mothers with less than a high school education experienced the loss of an infant to SUID at a rate more than eight times greater than mothers with a college degree in 2018. In the same time period, mothers age 25 and older with a high school degree as their highest level of educational attainment experienced the loss of an infant to SUID at a rate three times greater than mothers with a college degree.

Maternal race and Hispanic ethnicity: An inequity in SUID due to maternal race and ethnicity also exists. Racial categories are reflected by social definitions in the United States. Race affects the social determinants of health through differences in how resources such as housing, transportation, and income are distributed, as well as through experiences of racism, which can result in chronic stress. Chronic stress from these repeated negative experiences can result in health inequities. In 2018, Black mothers experienced the loss of an infant to SUID at a rate nearly four times greater than white mothers in Wisconsin.

Insurance: An infant's insurance is used as an approximation of socioeconomic position. SUID data reveal an inequity in SUID rate by insurance status as well. Infants with public insurance experienced SUID at a rate almost eight times greater than infants with private insurance in 2018.

Sleep Environment Factors Among SUIDs in Wisconsin		
Recommendation	**2018 SUIDs (N=66*) with recommendation met**	**2015-2018 SUIDs (N=251) with recommendation met**
Back-to-sleep for every sleep	73%	64%
Use a firm sleep surface	30%	27%
Breastfeeding is recommended (measured as ever breastfed)	45%	51%
Sleep infant in parents' room but on a separate surface designed for infants, ideally for the first year of life, but at least for the first six months	17%	15%
Keep soft objects and loose bedding away from infant's sleep area to reduce the risk of SIDS, suffocation, entrapment and strangulation	9%	14%
Consider offering a pacifier at naptime and bedtime (excluding infants less than 28 days of age)	9%	15%
Avoid smoke exposure during pregnancy and after birth	29%	30%
Avoid alcohol and illicit drug use during pregnancy and after birth	48%	67%
Avoid overheating and head covering in infants	86%**	83%***
Pregnant women should obtain regular prenatal care	52%	67%

*N=66 SUIDs confirmed to have occurred in the sleep environment.

**Information unknown in approximately 13% of cases.

***Information unknown in approximately 16% of cases.

Table 3: Each AAP safe sleep recommendation is listed along with the percentage of SUIDs from 2018 and from 2015 to 2018 in which the recommendation *was* being followed.

SUIDS AND THE SLEEP ENVIRONMENT

Nearly all 2018 SUIDs occurred while the infant was confirmed to be in the sleep environment. The American Academy of Pediatrics (AAP) provides a policy statement on recommendations for a safe infant sleeping environment (AAP, 2016). Information gathered by CDR teams allows for a comparison of the sleep environment factors among SUIDs to 10 of the AAP safe sleep recommendations (Table 3). These comparisons are provided in order to illuminate which recommendations need the greatest improvement in order to progress in the prevention of SUIDs.

The percentage of SUIDs with missing data is reported when 10% or more cases are missing the data point.

Sleep position and surface: Infants should be placed on their backs on a firm, flat surface designed for infants, such as crib, bassinet, portable crib or play yard, without soft objects or loose bedding. Among 2018 SUIDs, 12% of infants were placed on their stomachs. An additional 8% were placed on their sides. In regards to surface, 41% of infants were placed on an adult bed and 15% of infants were placed on a couch. An additional 6% of infants were placed in a car seat.

In 2018, the majority (91%) of SUID sleep environments contained soft bedding. The most common bedding items were a thin blankets or sheets (64%), pillows (39%) and comforters or quilts (29%). There were two or more bedding items present in nearly half of the cases.

In 2018, nearly half of all infants were sleeping on an adult bed when the SUID occurred.

Availability of safe sleep surface: A safe sleep surface should be available at each location an infant will sleep and utilized by each individual that cares for the infant. The majority (77%) of the incidents leading to a SUID occurred at the infant's home. Among these cases, 84% had a safe sleep surface available. The second most common incident location was at a relative's home (11%). Among these cases, 71% of infants had safe sleep surfaces available.

Nine infants in 2018 were under the supervision of someone other than their biological parent at the time of the incident. A safe sleep surface was present in 89% of these cases.

Breastfeeding: It is recommended that infants be breastfed or fed expressed breast milk exclusively for the first six months of life and continue breastfeeding as complementary foods are introduced for one year or more (Section on Breastfeeding, 2012). Breastfeeding provides a protective effect against sudden death in infants. While any breastfeeding is more protective than no breastfeeding, the degree of protection for the infant increases when breastfeeding is done exclusively and without supplementation from non-human milk (Hauck et al, 2011).

Among 2018 SUIDs, 45% of infants were breastfed at some point since delivery. However, among these infants, 47% received something other than breast milk at their last meals prior to being placed to sleep, indicating breastfeeding was not exclusive.

Bed sharing: Infants should sleep on a separate surface designed for infants. Among 2018 SUIDs, 48% of infants were sharing a sleep surface with one or more adults or children. In 8% of cases, the infant was on a surface with an adult who fell asleep while feeding the infant, 60% of whom were breastfeeding and 40% were bottle feeding.

Smoke exposure, alcohol use, and illicit drug use: Infants should not be exposed to smoking during pregnancy or following birth. Among 2018 SUIDs, prenatal and postnatal smoke exposure was confirmed in 38% of infants. Postnatal smoke exposure was missing or unknown in 12% of cases.

Additionally, maternal alcohol and illicit drug use during pregnancy, and caregiver substance use after birth, should be avoided, particularly when combined with bed sharing. Caregiver substance use while sharing a sleep surface with the infant was confirmed in 18% of 2018 cases.

Prenatal care: Pregnant women should obtain regular prenatal care. Although the frequency of visits is determined by the need of the individual and her prenatal risk factors, prenatal care should generally be initiated in the first trimester (AAP & ACOG, 2012). Among 2018 SUIDs, 52% of infants received prenatal care beginning in the first trimester. Both the mean and median number of overall prenatal visits was nine, with the visit number missing for 17% of cases.

In 2018, 9 in 10 infant sleep environments contained soft bedding when the SUID occurred.

Pacifier use: Pacifiers have been demonstrated to have a protective effect against sudden death in infants. Introducing a pacifier is recommended once breastfeeding is established, which typically occurs after the first four weeks following birth. Among 2018 SUIDs older than 28 days, pacifier use was confirmed in 9% of cases. Pacifier use did not differ by breastfeeding status. Pacifier use was unknown in 12% of all cases.

SLEEP BABY SAFE TRAININGS AND PROFESSIONAL RESOURCES

Children's Health Alliance of Wisconsin has partnered with the Wisconsin Department of Health Services Maternal and Child Health Title V program to support tribal and local health departments in addressing infant safe sleep.

Sleep Baby Safe is a suite of trainings and resources designed for professionals working with families to take safe sleep messaging from a campaign to a conversation. These resources are available to enhance local efforts to promote a consistent, clear, and concise message on infant safe sleep.

Using a train-the-trainer format, Alliance staff can help local health departments and tribal agencies plan safe sleep trainings for professionals such as home visitors, medical professionals, and child care providers.

The Sleep Baby Safe trainings provide research-based information about the importance of safe sleep messaging, share the American Academy of Pediatrics (AAP) recommendations, and provide a framework for having conversations on the topic. In addition to in-person trainings, online training modules are available on the Alliance website and can be used for refresher trainings.

The Alliance has developed a toolkit to support hospitals, clinics, and health professionals in implementing safe sleep policies and trainings. The toolkit also provides resources for staff and the families they serve.

The Alliance also manages Newborn Nest, a baby box program developed from Sleep Baby Safe and funded through Children's Wisconsin Foundation. Baby boxes can be used as temporary resources for families who need an immediate or additional sleep environment for their newborn. The program emphasizes the importance of securing a long-term safe sleep area such as a crib or Pack n' Play. The Newborn Nest program includes comprehensive training, follow-up, and evaluation for agencies that choose to participate.

Find these and other resources on the Sleep Baby Safe page of the Alliance website:

- Safe sleep video for families
- Sleep Baby Safe table talk handouts
- Sleep Baby Safe notebook for professionals
- Sleep Baby Safe conversation guide
- Sleep Baby Safe hospital resource toolkit

Pregnancy Risk Assessment Monitoring System – Wisconsin 2018		
Survey Question	**Weighted Percentage**	**95% Confidence Interval (%)**
Maternal protective factors against SUID		
Initiated prenatal care in the first trimester	86%	83.3, 89.3
Breastfed at some time since birth	88%	85.5, 90.7
No exposure to maternal smoking in third trimester	90%	87.2, 92.6
Mother does not currently smoke	88%	84.8, 90.6
No illicit drug use during pregnancy	95%	93.4, 96.8
Sleep practices in the past two weeks		
Infant positioned on back most often when laid to sleep	85%	82.1, 88.2
Infant always sleeps alone in his or her own bed	62%	57.6, 66.1
Crib in the same room as mother when infant sleeps alone	77%	72.8, 80.8
Infant usually sleeps in a crib, bassinet or Pack n' Play	90%	87.0, 92.4
Infant usually does not have any additional items in the sleep environment	54%	49.2, 58.0
Safe sleep education from doctor, nurse or other health care worker		
Place the infant on his or her back to sleep	97%	94.8, 98.3
Place the infant to sleep in a crib, bassinet, or pack and play	92%	89.8, 94.9
Place the infant's crib or bed in mother's room	58%	53.4, 62.3
What things should and should not go in bed with the infant	89%	85.9, 91.8

Table 4: This table shows 2018 PRAMS data related to the AAP recommendations for a safe infant sleep environment. In addition to the weighted percentage, a 95% confidence interval is also provided.

PRAMS DATA

Each year, a sample of new mothers in Wisconsin are surveyed using the Pregnancy Risk Assessment Monitoring System (PRAMS), coordinated by the Wisconsin Department of Health Services and the Centers for Disease Control and Prevention. Survey questions are related to safe pregnancy and healthy infancy. The survey responses are weighted so mothers sampled are representative of all new Wisconsin mothers in a given year.

Direct comparisons to SUID data are often difficult because the PRAMS and SUID case report questions are not identical. For example, new mothers are surveyed about the position they most often lay the baby down to sleep. By contrast, among SUIDs, information is gathered on the infant's position at the time of the incident rather than the position most often placed to sleep.

Maternal protective factors against SUID: The majority of new mothers reported they initiated prenatal care in the first trimester (86%), did not use illicit substances during pregnancy (95%), and breastfed their infants some time since delivery (88%). In regards to smoke exposure, 90% of new mothers did not smoke in the third trimester of their pregnancies and 88% were not smoking at the time of the survey.

Sleep practices and provider guidance on safe sleep: New mothers are asked a series of questions about current sleep habits with their infants. Additionally, new mothers are asked about components of safe sleep education received from their health care providers.

The majority of new mothers position the infant on his or her back most often when laid to sleep (85%) and nearly all (97%) of new mothers were told by a health care provider to place the infant on his or her back to sleep.

Approximately 62% of new mothers reported the infant always sleeps alone in his or her own crib or bed. By contrast, 90% of new mothers reported the infant usually sleeps in a crib, bassinet or Pack n' Play, indicating that infants were often sleeping on a recommended surface, but not for every sleep. The majority (92%) of new mothers reported they were advised to place their infants to sleep in a crib, bassinet, or Pack n' Play by a health care provider.

New mothers were asked whether the infant's crib or bed was placed in the mother's room when the infant sleeps alone. Among new mothers, 77% place the infant's crib or bed in the mother's bedroom when the infant sleeps alone. A little over half of new mothers (58%) reported a health care provider guided them to place the infant's crib or bed in the mother's room.

Lastly, only 54% of new mothers reported the infant does not usually have any additional items such as blankets, pillows, toys, cushions, and bumper pads in the sleep area. By contrast, 89% of new mothers indicated receiving health care provider guidance on what things should and should not go in the bed with the infant.

SUID CATEGORIZATION

Wisconsin has participated in the Sudden Unexpected Infant Death Case Registry (the Registry) through the Centers for Disease Control and Prevention since 2013. Along with teams in 21 other states and jurisdictions, Wisconsin collects information on the circumstances and risk factors of SUIDs through local CDR teams.

The Registry aims to monitor SUID rates, identify trends and risk factors throughout the United States, improve the quality and consistency of SUID investigations, and use SUID data to inform prevention efforts at both the program and policy levels (CDC, 2020c).

In the case of a SUID, the death certificate may be completed by a coroner, medical examiner, or forensic pathologist. When a death certificate indicates an infant's cause of death as unknown, undetermined, SIDS, SUID, unintentional sleep-related asphyxia, suffocation, or strangulation, cardiac or respirator arrest without other well-defined causes, or unspecified causes with potentially unsafe sleep factors, the case is included in the SUID Case Registry.

Regional differences in how SUIDs are certified lead to challenges in monitoring trends among SUIDs in the United States (Shapiro-Mendoza et al., 2018). The Registry utilizes an algorithm to categorize SUID cases in order to standardize how SUIDs are classified. The algorithm is based on components of the investigation and the conditions in the infant's sleep environment.

Possible SUID categories include:

- **No autopsy or death scene investigation:** Cases in which an autopsy was not performed or a death investigation was not completed. A death investigation is defined here as any agency obtaining information about the circumstances of the death and does not necessarily need to include a visit to the scene of the incident.
- **Incomplete case information:** Cases in which the autopsy did not include toxicology, any imaging, or pathology. This category also includes cases in which the location and position in which the infant was found is not known.
- **No unsafe sleep factors:** Cases in which the infant was placed alone on his or her back on a sleep surface recommended for an infant without any soft or loose objects in the sleep area.
- **Unsafe sleep factors:** Cases in which the infant's sleep environment had one or more unsafe sleep factors present, but evidence of any airway obstruction was not present. If there was evidence of an airway obstruction, cases are also classified in this category if evidence of what object obstructed the airway is not known.
- **Possible suffocation with unsafe sleep factors:** Cases in which unsafe sleep factors were present and there is known evidence of what caused at least a partial obstruction of the airway, but does not meet the criteria of the next category (explained suffocation).
- **Explained suffocation with unsafe sleep factors:** Cases with non-conflicting accounts of the infant's placed and found position, with no other potentially fatal findings or conditions discovered during the autopsy, at an age and developmental stage that made a suffocation event possible, had evidence to visualize how the airway obstruction occurred, and had strong evidence of a full external obstruction of the airway.

SUID Categorization, 2018

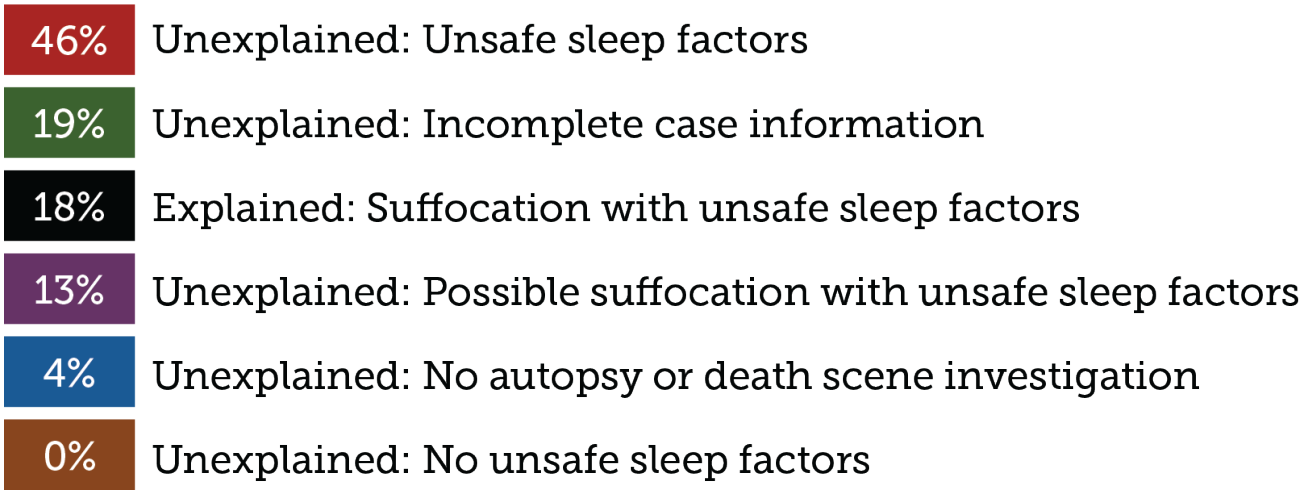

Figure 3: Each SUID case is categorized into a SUID category at the time of review according to the CDC's SUID Case Registry SUID Categorization Algorithm. This chart represents the percentage of SUID Cases assigned into each category in 2018.

The percentage of 2018 SUID cases in each category is indicated in Figure 3. The majority of SUIDs were confirmed to have occurred in an unsafe sleep environment. SUIDs categorized as "unsafe sleep factors," "possible suffocation" and "explained suffocation" comprised 77% of SUIDs in 2018. By contrast, no cases were confirmed to not have any unsafe sleep factors, meaning the infant was alone on his or her back on a safe sleep surface designed for an infant without soft bedding or loose objects.

Importantly, the remaining 23% categorized as "incomplete case information" or "no autopsy or death scene investigation" may have involved unsafe sleep factors but were lacking the investigation components required to categorize them further. For example, among 2018 SUIDs categorized as "incomplete case information," 69% of autopsies did not include imaging, and nearly a quarter of cases did not have information on the position in which the infant was found.

CONCLUSION: PREVENTING SUIDS

A multi-pronged approach is essential when developing SUID prevention recommendations and initiatives. The following factors should be considered in all SUID prevention work:

1. The social and economic conditions in which families and infants live matter. These conditions lead to inequities in the rate of SUIDs and should be considered in prevention recommendations.
2. The adoption of safe sleep practices requires a conversation, not simply education, to understand beliefs and barriers related to safe sleep conditions for infants.
3. SUID investigations should be standardized to ensure circumstances and risk factors are understood, regardless of where the SUID occurs. The Wisconsin Child Death Review State Advisory Council adopted autopsy guidelines in 2018 to improve child death investigations. These guidelines are published by the Wisconsin Department of Health Services.

KEEPING KIDS ALIVE IN WISCONSIN

Keeping Kids Alive in Wisconsin is a program comprised of local child death review teams and fetal infant mortality (FIMR) teams. Wisconsin has local review teams in more than 50 counties as indicated on the map below. These teams are multidisciplinary and prevention focused, and teams work continuously to improve the health and safety of children in their communities. Our understanding of the risk factors and circumstances surrounding SUIDs comes from the child death reviews conducted by local teams. For more information on starting a team in your county, please contact Karen Nash.

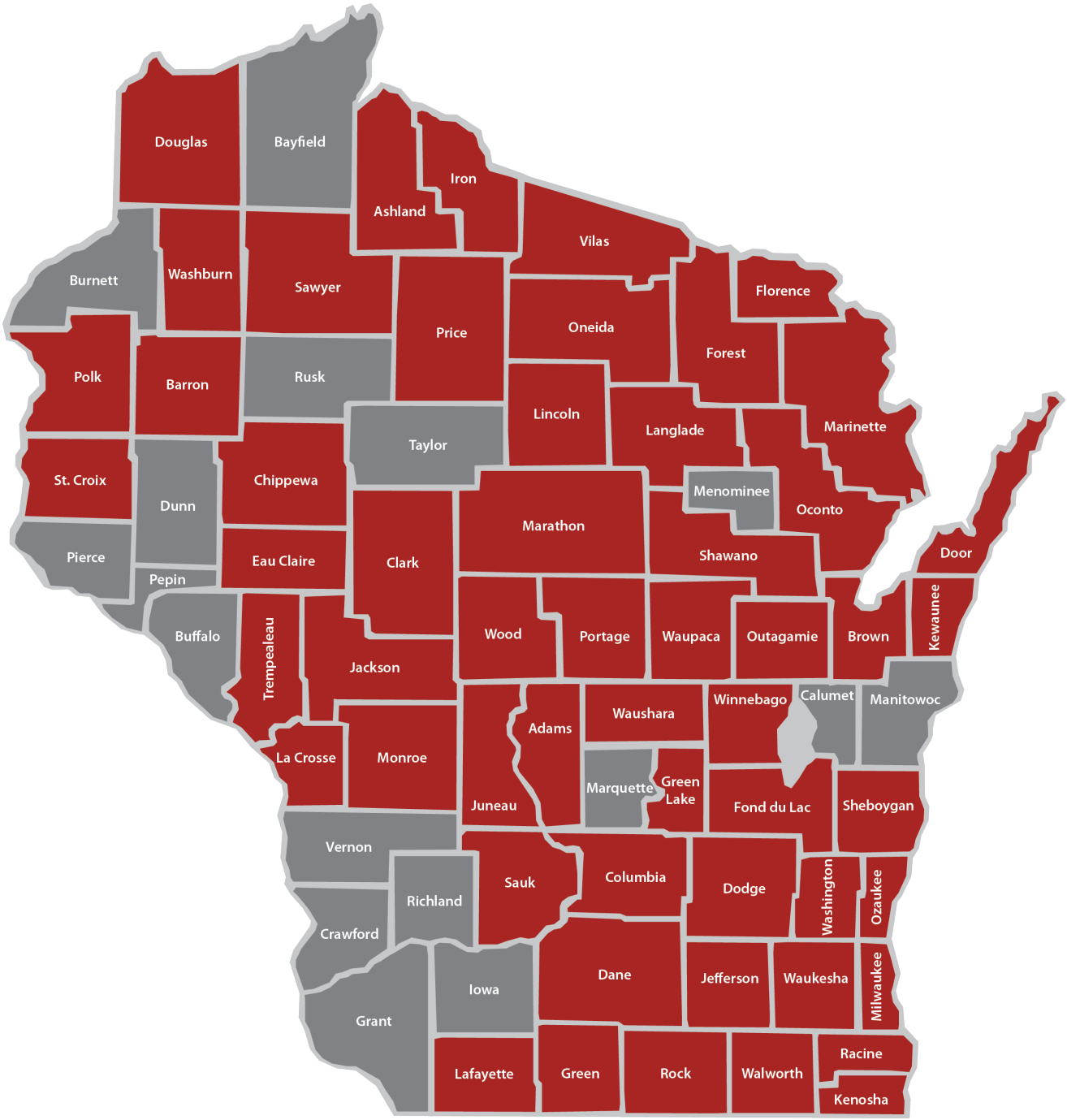

Figure 4: The red counties represent counties which have a local CDR team. For questions concerning your CDR team, contact your designated technical assistance staff member.

TECHNICAL NOTES

SUID is a broad term that encompasses all sudden infant deaths, including SIDS. Medical examiners and coroners may classify a death as SUID if they are unable to determine if the death was due to SIDS or suffocation. Many times, SUIDs are also ruled as undetermined causes of death.

Overlay occurs when another person is sleeping with an infant and rolls on top of the infant, blocking their airway. Wedging occurs when an infant gets trapped between two objects, such as a mattress and a wall.

Maternal age: Included SUID cases where the biological mother was one of the primary caregivers of the infant. N = 58 for SUIDs in 2018; N = 240 for SUIDs from 2015 to 2018.

Insurance status: Rates were calculated using the principal source of payment at delivery, which may not represent the infant's insurance at the time of death.

Regular prenatal care: Extensive prenatal care history is not collected for SUID cases. For this report, "regular prenatal care" is defined as initiating prenatal care in the first trimester.

Head covering: Data is not collected on head covering when an infant is placed to sleep. The data on overheating and head covering in table 3 only represents the percentage of cases that avoided overheating at the time of the incident.

Wisconsin PRAMS data are weighted by the CDC to approximate representation of the entire state population of women who recently gave birth. All percentages are based on weighted survey responses. The confidence intervals given reflect the probable range of the true population percentages.

TECHNICAL ASSISTANCE

This report was prepared by Natasha Tynczuk, MPH, Data Project Manager at Children's Health Alliance of Wisconsin, with contribution from Stephanie West, PhD, Angela Kempf Rohan, PhD, and Fiona Weeks, MSPH at the Wisconsin Department of Health Services. The Alliance Injury Prevention and Death Review technical assistance team listed below also contributed to this report.

Karen Nash, MBA
Program Leader – Injury Prevention and Death Review
(414) 337-4567
knash@chw.org

Joanna O'Donnell
Project Manager – Infant Death Center
(414) 337-4571
jodonnell@chw.org

Marilyn Noll, MA
Project Manager – Injury Prevention and Death Review
414-337-4565
mnoll@chw.org

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NOTES

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