Infant Safe Sleep Practices – 2015 Health Survey of Montana's Mothers and Babies

Introduction

Sudden Unexpected Infant Death (SUID) is a universal term used to categorize any sudden or unexpected deaths of an infant under the age of one. Causes include Sudden Infant Death Syndrome (SIDS) or other sleep-related causes of death. A death is properly categorized as SIDS only after three investigations are conducted and no issue is identified, the sleep environment is pristine and the autopsy and review of medical records are unremarkable.[1]

In the US in 2015, there were 1,600 deaths due to SIDS and 900 deaths due to accidental suffocation and strangulation in bed.[1] In 2016, the American Academy of Pediatrics (AAP) published updated recommendations for infant safe sleep practices. The evidence-based recommendations are founded on epidemiologic studies and are intended as a guide for parents and caregivers.

The purpose of this report is to: (1) Provide an overview of which safe sleep practices are being practiced in Montana; (2) Determine which areas need further improvement; and (3) Provide a guide for public education.

Methodology

The 2015 *Health Survey of Montana's Mothers and Babies* (HSMB) was a one-time survey of women who recently had an infant. It was conducted by the Montana Department of Public Health and Human Services (DPHHS) with the support of the Montana Healthcare Foundation. HSMB was modeled after the Centers for Disease Control and Prevention (CDC) Pregnancy Risk Assessment Monitoring System (PRAMS) and included questions on safe sleep practices.

Women who were current residents and delivered a live infant in Montana in 2015 were eligible for inclusion. A random sample of women was drawn on a monthly basis from recent birth certificates. Selected women were mailed a self-administered survey and non-respondents received a follow-up phone call with the option to take the survey over the phone. Of the 2,820 women selected to participate, 1,119 women answered the survey (40% response rate). Survey limitations include recall bias, reporting bias, and misunderstanding of questions.

This report also includes data on sleep-related deaths provided by the county-level Fetal, Infant, Child, and Maternal Mortality Review (FICMMR) teams. FICMMR teams are a collaborative group consisting of individuals from multiple disciplines who are brought together to share and discuss: (1) the circumstances leading to an individual's death; (2) determine preventability; and (3) work to mobilize resources to reduce preventable deaths. After conducting a mortality review, the team's findings are entered into The National Center for the Review & Prevention of Child Deaths: Child Death Review (CDR) Case Reporting System.

For the purpose of this report, the definition of infant safe sleep is using all nine safe sleep techniques that were asked about on the survey (see Figure 1). The sleep environment is operationally defined as unsafe if the mother answered "No" to "infant sleeps in a crib or on a hard mattress" or answered "Yes" to "infant sleeps with pillows, bumper pads, blankets, stuffed toys, or an infant positioner."

Results

Infant Safe Sleep

Only 28.6% of women reported using all nine safe sleep techniques listed on the survey, but 100% of women reported practicing at least one (Figure 1). The three safe sleep techniques used the *least* were: infant sleeping alone; no use of bumper pads; and no blankets. Usage of safe sleep practices increased significantly as mother's age ($p<.01$), education ($p<.01$), and income ($p<.01$) increased (Figures 2-4). In comparing race, white mothers reported practicing safe sleep techniques significantly more often than American Indian/Alaska Native (AI/AN) mothers ($p<.01$) (Figure 5).

Figure 1. Percentage of mothers practicing safe sleep techniques, Montana, 2015.

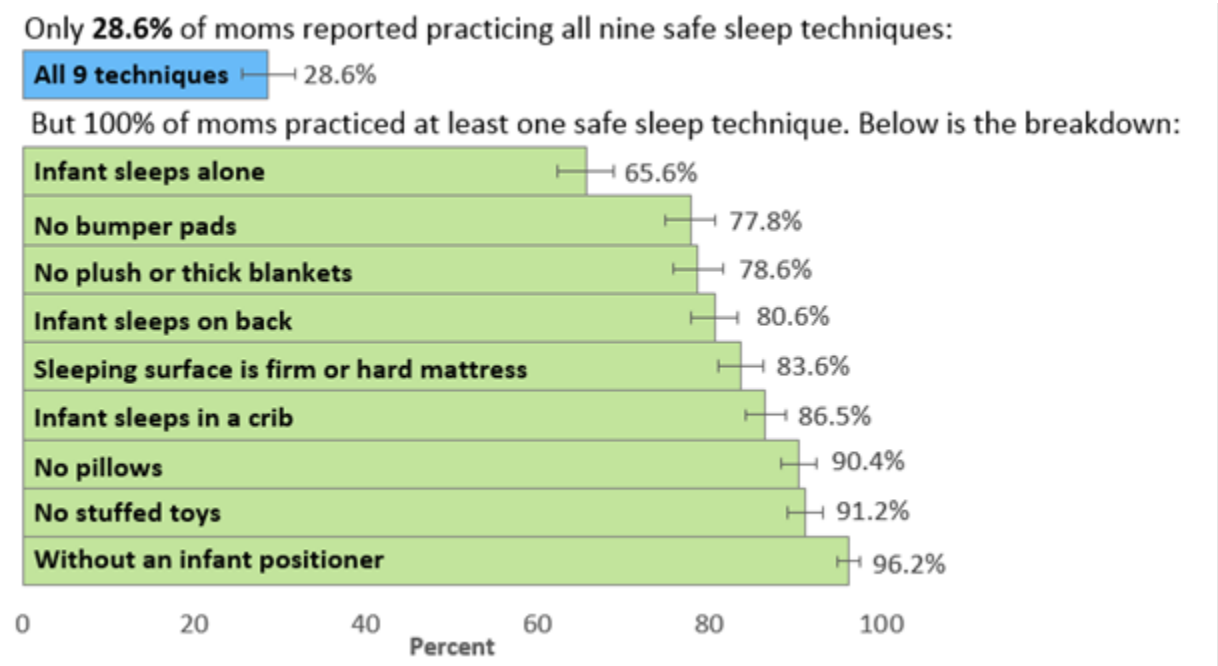


Figure 2. Percentage of mothers practicing safe sleep techniques by age group, Montana, 2015.

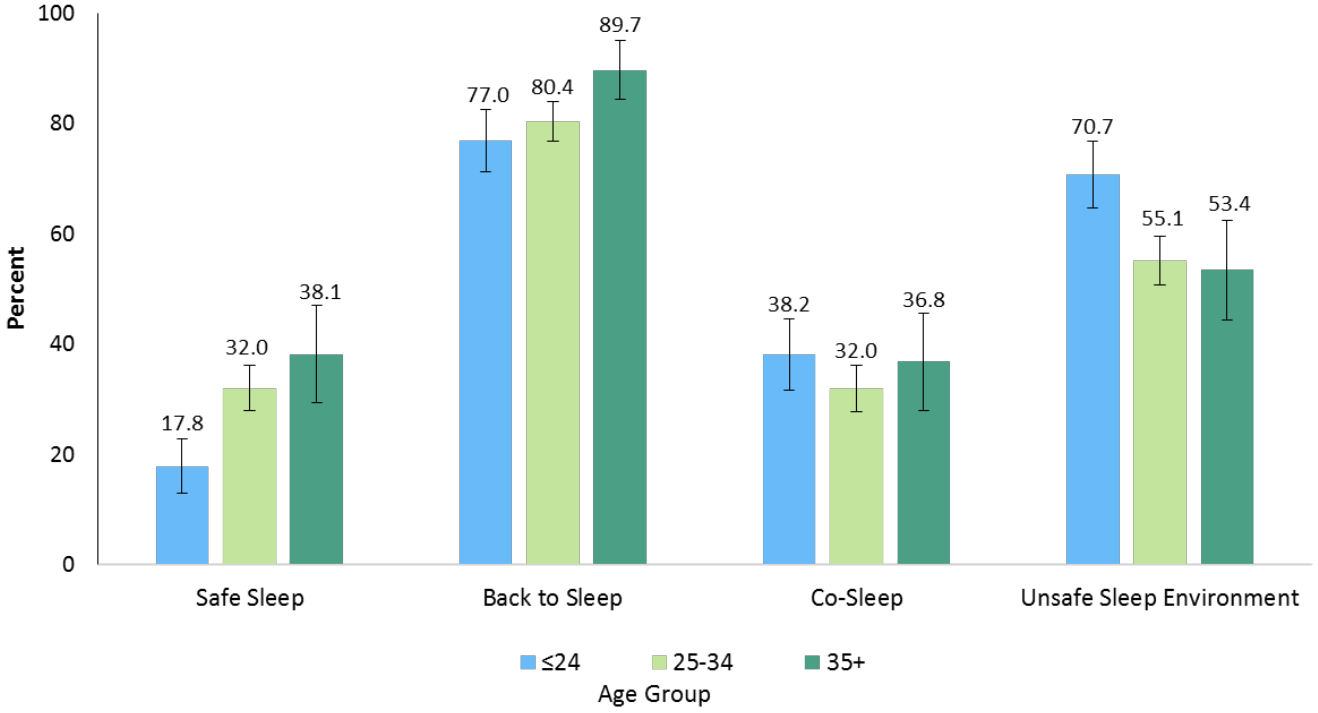


Figure 3. Percentage of mothers practicing safe sleep techniques by educational attainment, Montana, 2015.

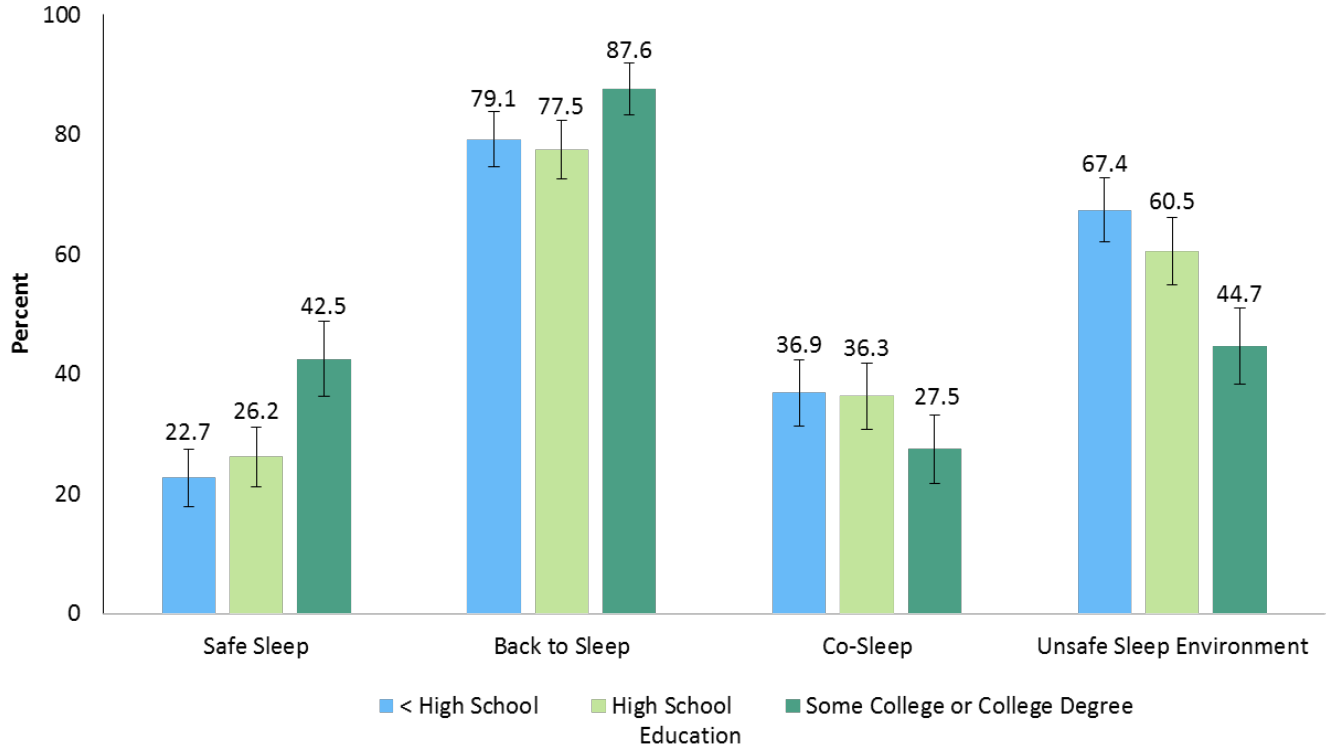


Figure 4. Percentage of mothers practicing safe sleep techniques by yearly household income, Montana, 2015.

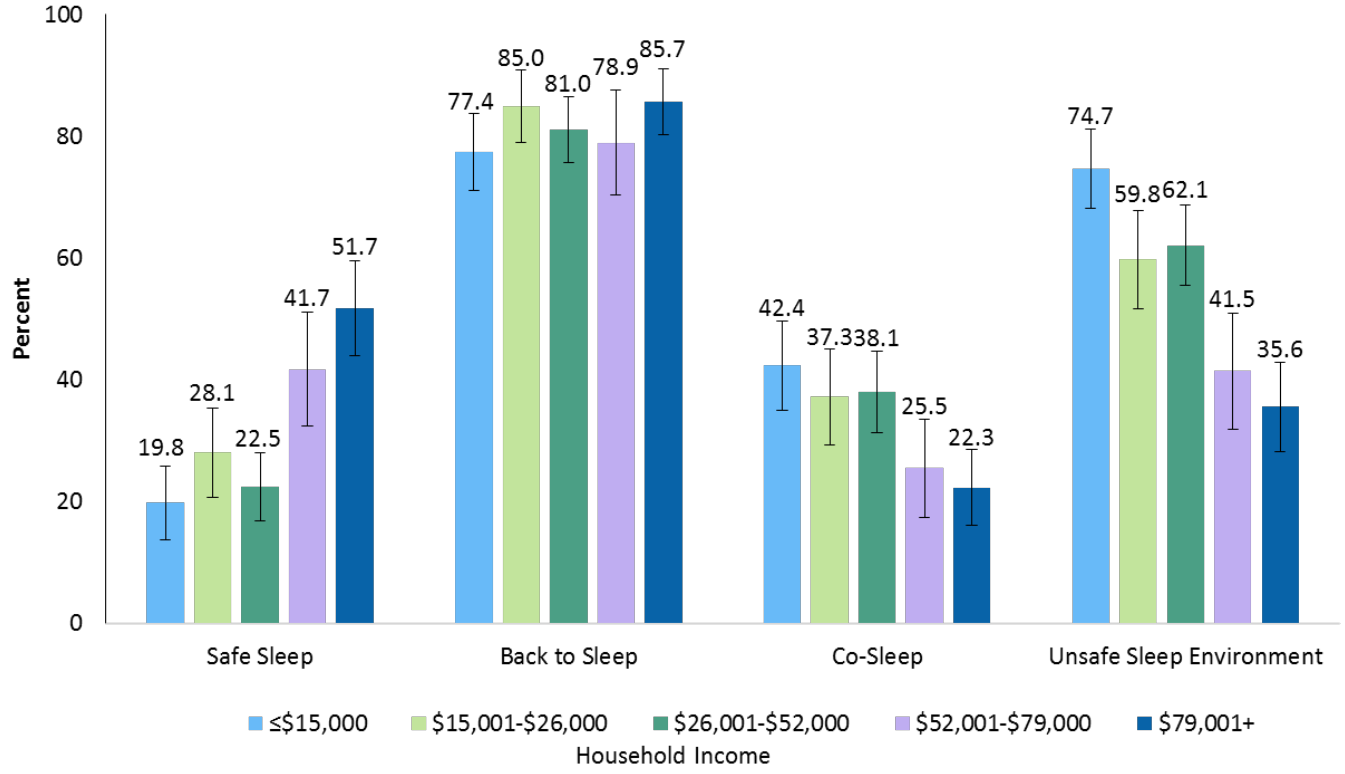
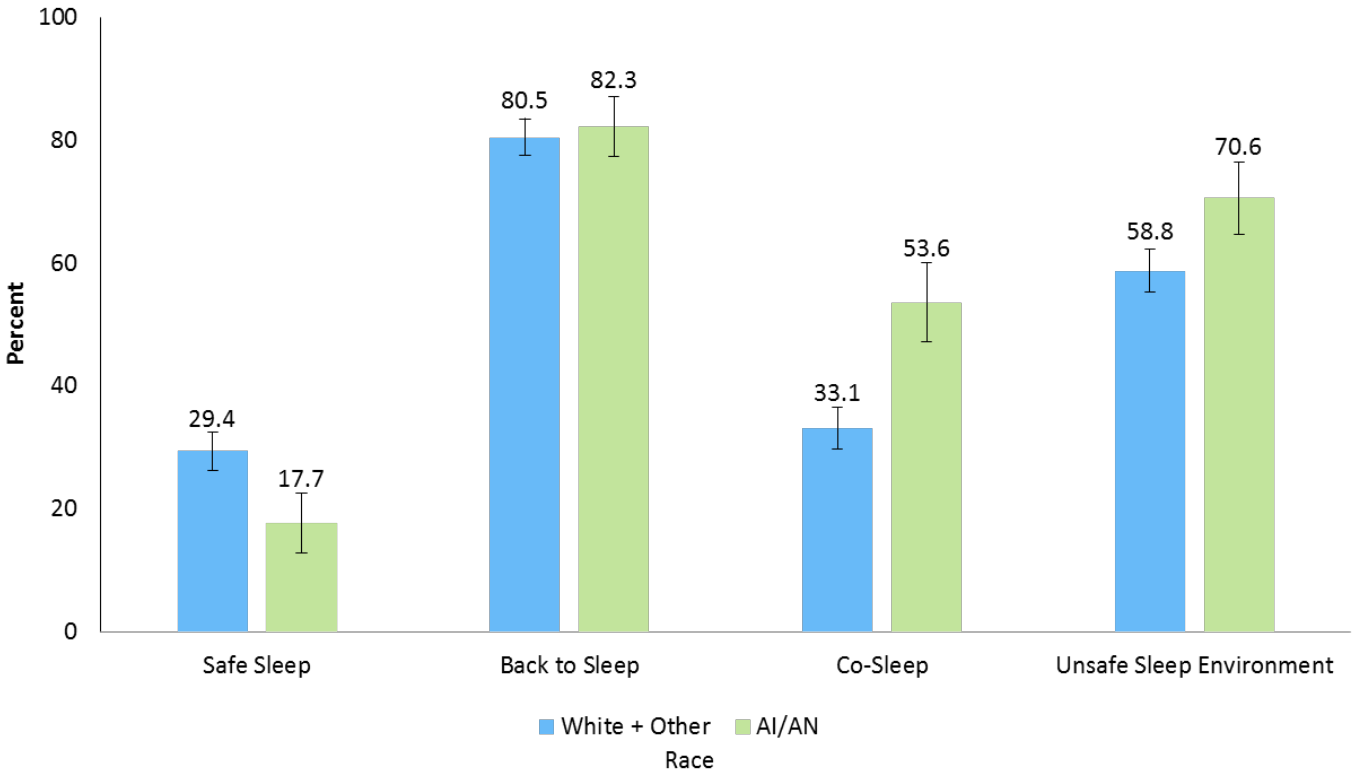


Figure 5. Percentage of mothers practicing safe sleep techniques by race, Montana, 2015.



Sleep Position

Almost a fifth (19.4%) of mothers reported not always placing their infant to sleep on his or her back. The prevalence of mothers placing their infant to sleep on their side or stomach significantly decreased as mother's age and educational level increased. There was no significant decrease as income increased nor was there any significant difference between white and AI/AN mothers.

Co-Sleeping

Over one-third (34.4%) of mothers reported their infant did not sleep in a separate crib. AI/AN mothers reported co-sleeping more often than white mothers. Co-sleeping prevalence significantly decreased as mother's education ($p<.05$) and income ($p<.01$) increased. There was no significant change in co-sleeping prevalence as mother's age increased.

Unsafe Sleep Environment

Three out of five mothers (59.5%) reported putting their infant to sleep in an unsafe sleep environment. The prevalence of the infant sleeping in an unsafe sleep environment was significantly ($p<.01$) higher amongst AI/AN mothers than white mothers. Unsafe sleep environment significantly ($p<.01$) decreased as age, income, and education increased.

Other Factors

There was no significant difference in overall safe sleep practice between mothers of intended versus unintended pregnancies (31.7% and 26.2%, respectively); however the prevalence of co-sleeping was significantly ($p<.01$) higher among mothers who reported their pregnancy was unintended (Figure 6). Mothers who received prenatal care in the first trimester reported no significant differences between safe sleep, sleep position, co-sleeping, and sleep environment compared to mothers who received prenatal care in the second or third trimester or received no prenatal care at all (Figure 7).

Figure 6. Percentage of mothers practicing safe sleep techniques by pregnancy intention, Montana, 2015.

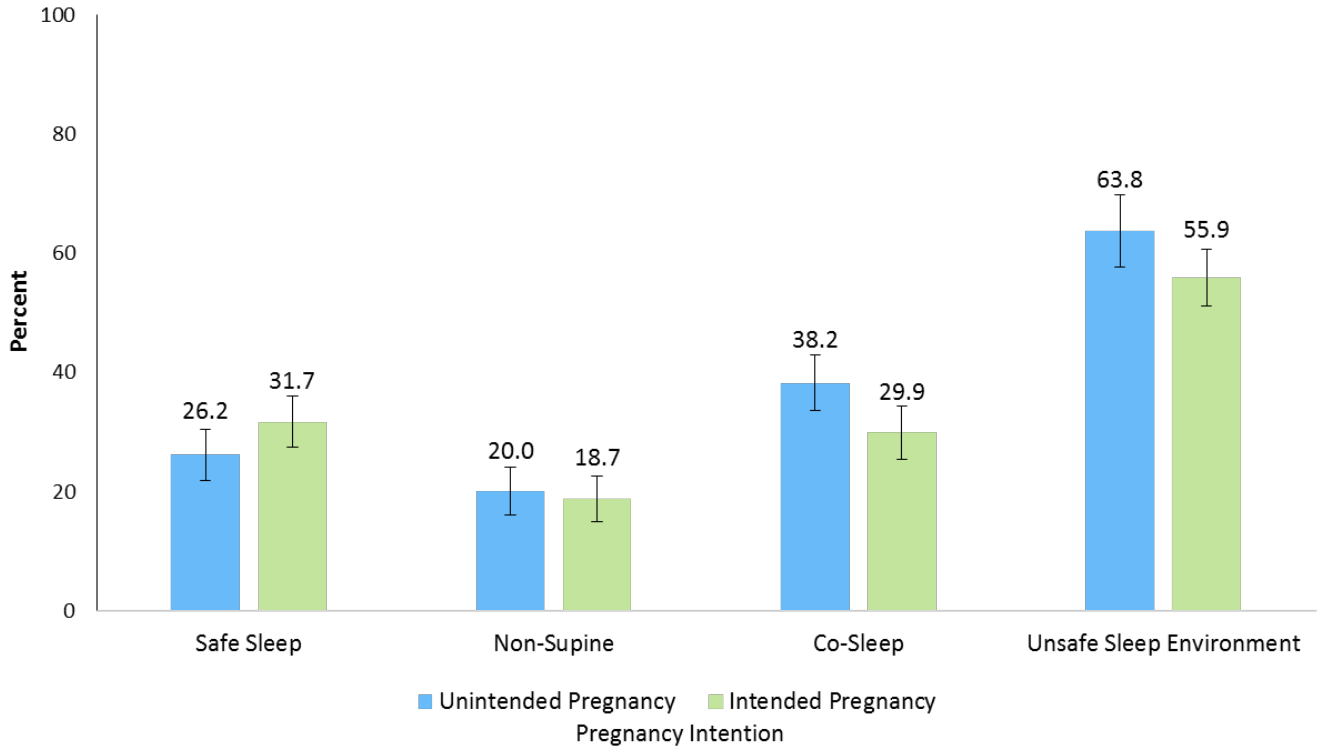
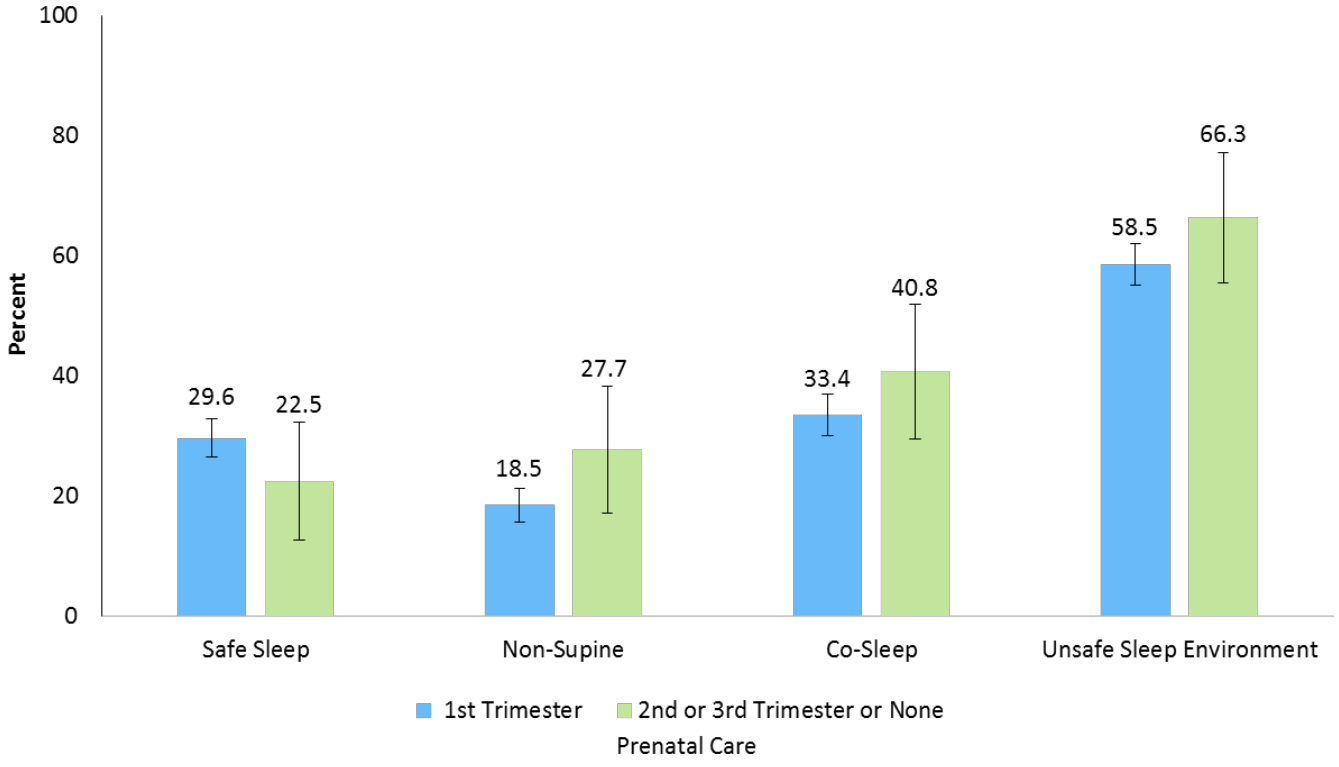


Figure 7. Percentage of mothers practicing safe sleep techniques by prenatal care, Montana, 2015.



SIDS and Other Sleep Related Death Risk Factors

The AAP recommends that mothers breastfeed exclusively for at least six months to reduce the risk of SIDS, however any breastfeeding at all has been shown to decrease the risk of SIDS.[2] Mothers who "ever breastfed," even for a short period of time, reported practicing all safe sleep techniques significantly ($p<.05$) more than mothers who "never breastfed" (Figure 8). Unsafe sleep environment was significantly ($p<.01$) higher among women who "never breastfed." There was no significant difference between sleep position and co-sleeping prevalence by breastfeeding status.

Almost half (47.1%) of the mothers who smoked in the three months before pregnancy reported they quit and did not smoke during the last three months of pregnancy. However, of those who reported quitting, 38.2% reported smoking again after giving birth. The AAP recommends avoiding smoke exposure during pregnancy and after birth to reduce the risk of SIDS.[2] There was no significant difference between sleep position and co-sleeping between women who reported smoking after pregnancy and non-smokers, but there was a significant difference in unsafe sleep environment ($p<.01$) and overall safe sleep ($p<.05$) by smoking status (Figure 9).

Figure 8. Percentage of mothers practicing safe sleep techniques by ever breastfed, Montana, 2015.

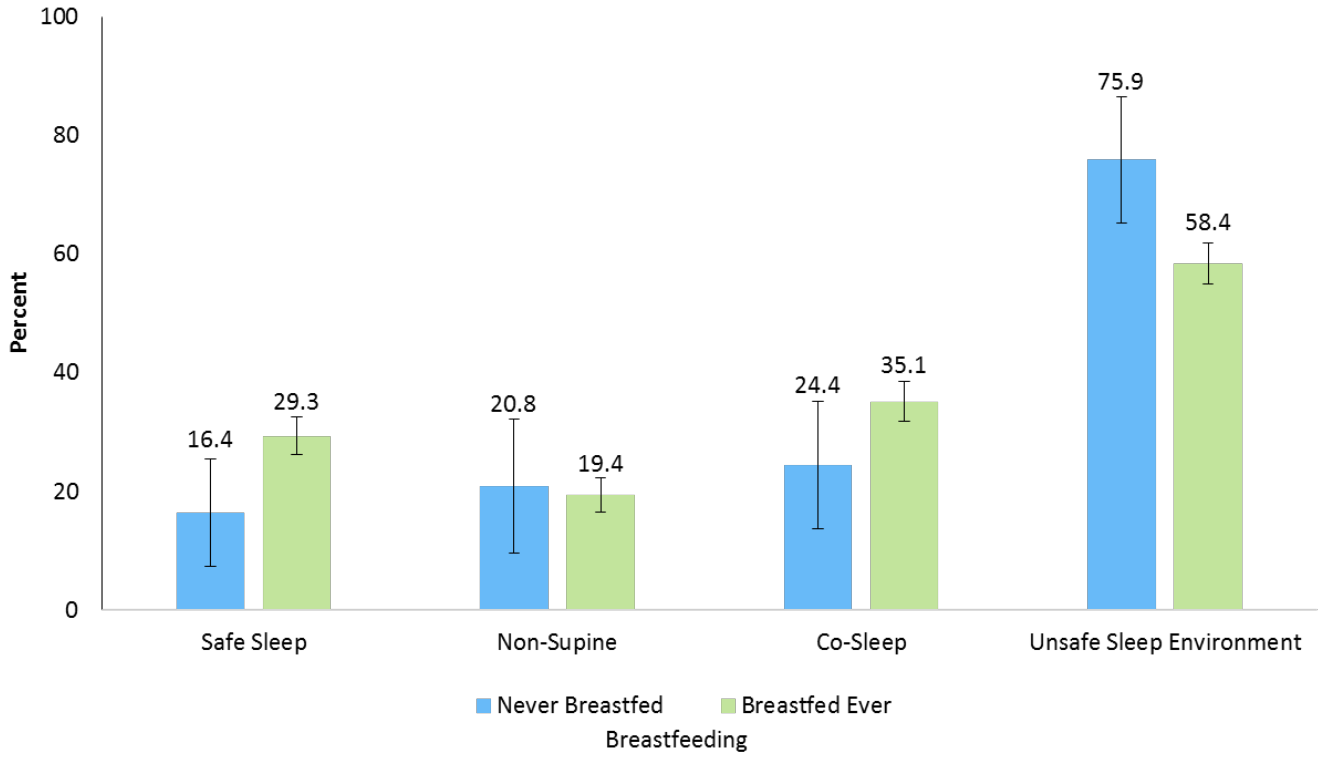
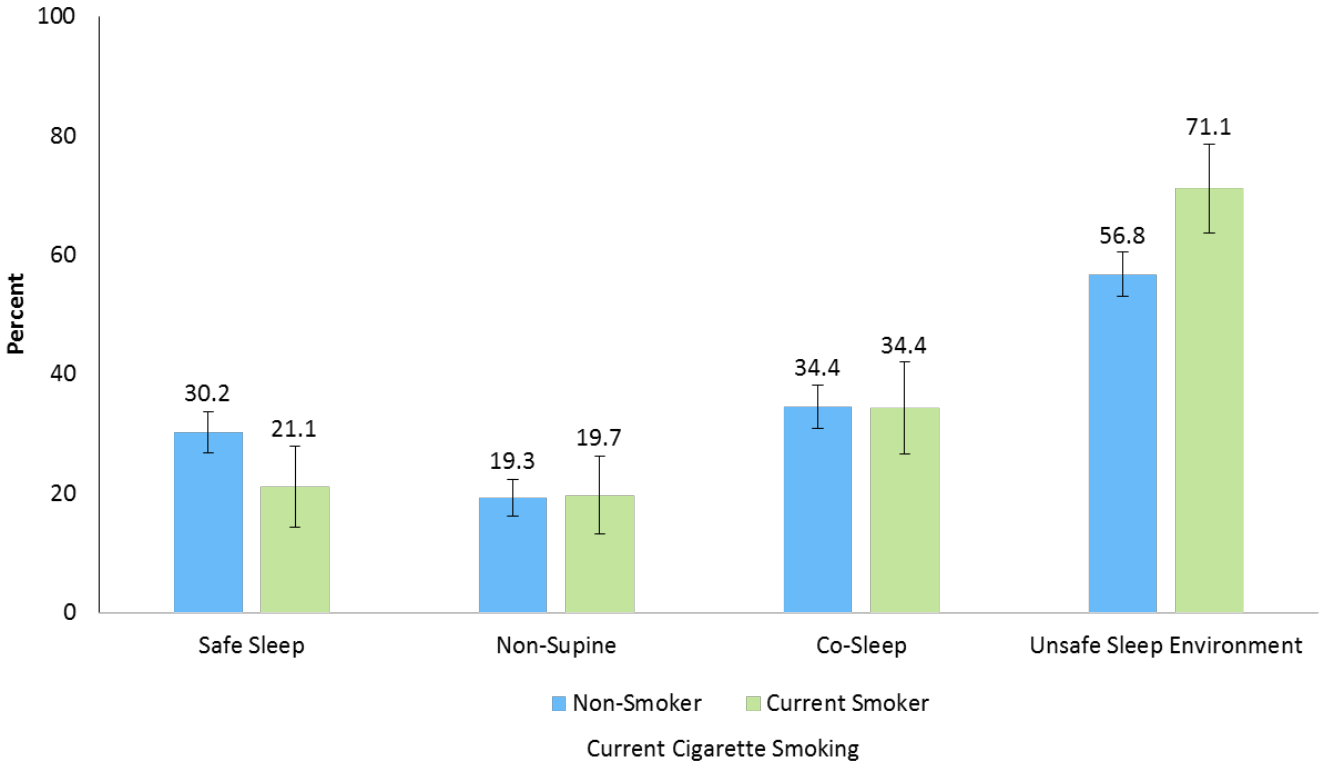


Figure 9. Percentage of mothers practicing safe sleep techniques by current cigarette smoking status, Montana, 2015.



Sleep Related Deaths in Montana

Approximately 25% (47) of the infant deaths reviewed by the FICMMR teams between 2013 and 2015 were identified as SUID deaths related to sleeping or the sleep environment. Ten of the 47 cases met the SIDS criteria. The FICMMR teams identified the following factors as possible correlates of the sleep related deaths: 78.7% (37) of infants were not in a crib or bassinette; 70.2% (33) of infants were sleeping with unsafe bedding or toys; 57.4% (27) of infants were co-sleeping; and 34.0% (16) of infants were not sleeping on their backs. For many of these deaths, two or more of the safe sleep practices were not followed.

Discussion

The HSMB is the first time Montana has collected data on safe sleep practices and the results were surprising. While 100% of moms reported practicing at least one component of safe sleep, only 28.6% reported practicing all of the components of safe sleep. We are meeting Montana's National Performance Measure target (50%) and the Healthy People 2020 target (75.8%) for percent of infants being placed on their backs to sleep, however an infant's sleep position is only one component of overall safe sleep.[3, 4]

Review of sleep related infant deaths by the FICMMR teams found that there was overlap and multiple factors played a role in the infant's death, indicating the need to teach parents and caregivers that it is

important to follow as many of the AAP safe sleep guidelines as possible in order to reduce the risk of SUID.

Data from the HSMB survey will be used to create targeted messaging campaigns about practicing all safe sleep techniques and its importance. Other state programs including Women, Infants, and Children (WIC) and Healthy Montana Families Home Visiting Program can create policies and encourage participants to practice safe sleep recommendations. Possible collaborative opportunities include partnering with the Baby-Friendly Hospital Initiative and the state health insurance Star Baby program to include safe sleep education in their policies and programs.

In 2016, Montana received a five-year grant to participate in the CDC PRAMS survey. The Montana PRAMS survey began in April 2017 and will continue through 2020, with the possibility of receiving future funding to continue the program. Montana PRAMS will provide necessary trend data to analyze the effectiveness of the measures implemented to increase safe sleep practices and reduce the number of sleep related infant deaths.

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[1] Centers for Disease Control and Prevention. Sudden Unexpected Infant Death and Sudden Infant Death Syndrome Data and Statistics. 2017. Available at: https://www.cdc.gov/sids/data.htm.
[2] AAP Task Force on Sudden Infant Death Syndrome. SIDS and Other Sleep-Related Infant Deaths: Updated 2016 Recommendations for a Safe Infant Sleeping Environment. *Pediatrics*. 2016; 138(5):e20162938.
[3] MCHBG – National Performance Measure 5
[4] Healthy People 2020. Washington, DC: U.S. Department of Health and Human Services, Office of Disease Prevention and Health Promotion. Accessed 8/23/17. Available at: https://www.healthypeople.gov/node/4857/data_details.