

# Prenatal stressful life events associated with bed sharing in Hawai'i

Data from the Hawai'i Pregnancy Risk Assessment  
Monitoring System, 2009-2010



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# Mahalo to my Coauthor

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# Learning Objectives

1. Describe the prevalence of bed sharing and maternal stressors in Hawaii
2. Identify maternal stressor categories and other factors associated with bed sharing in Hawaii



# Presentation Outline

## I. Background

- I. PRAMS (brief)

- II. Safe sleep

- III. Prenatal stressful life events

## II. Methods

## III. Results

## IV. Implications

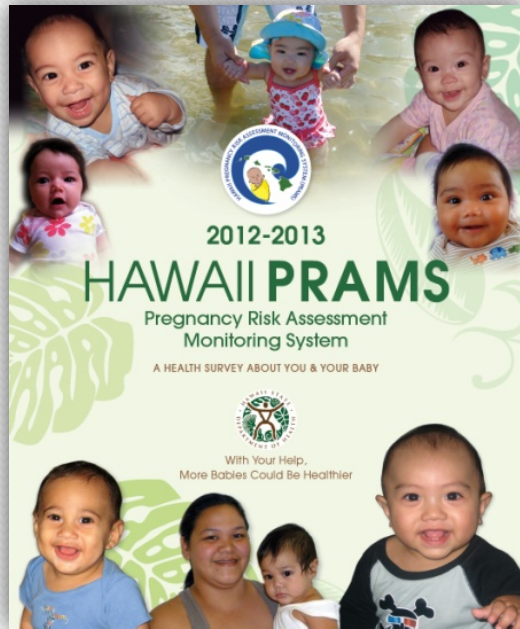
## V. Q&A



HAWAII STATE  
DEPARTMENT  
OF HEALTH



# Hawai'i Pregnancy Risk Assessment Monitoring System (PRAMS)



- Hawai'i Department of Health with CDC support since 2000
- Sample drawn from birth certificates of women having a recent live birth
- Mailed questionnaire (self-administered) with telephone follow-up
- Weighted response rate of ~73%

# Safe Sleep

- More than 4,500 infants die of Sudden Unexplained Infant Death (SUID) every year in the United States.
  - SUID not explained after thorough investigation is typically attributed to Sudden Infant Death Syndrome (SIDS).
- Safe sleep position and environment can reduce the risk of SUID/SIDS.
- Educational campaigns have dramatically increased the percentage of infants placed “back to sleep.”



# Safe Sleep

- For babies up to one year of age, the American Academy of Pediatrics (AAP) recommends caregivers to:
  - **Place baby on their back** for every sleep.
  - **Use a firm sleep surface**, such as a safety-approved crib with a mattress that fits the crib, covered with a tightly fitted sheet.
  - **Sleep in the same room, but not the same bed, as baby sleeps.**
  - **Keep soft objects and loose bedding out of baby's sleep area.** This includes pillows, blankets, bumper pads, and toys.



# Hawai'i PRAMS Safe Sleep Questions

62. In which *one* position do you most often lay your baby down to sleep now?

Check one answer

- ☐ On his or her side
- ☐ On his or her back
- ☐ On his or her stomach

63. How often does your new baby sleep in the same bed with you or anyone else?

- ☐ Always
- ☐ Often
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

64. Listed below are some things that describe how your new baby *usually* sleeps. For each item, circle **T** (True) if it usually applies to your baby or circle **F** (False) if it doesn't usually apply to your baby.

|                                                            | True | False |
|------------------------------------------------------------|------|-------|
| a. My new baby sleeps in a crib or portable crib . . . . . | T    | F     |
| b. My new baby sleeps on a firm or hard mattress . . . . . | T    | F     |
| c. My new baby sleeps with pillows . .                     | T    | F     |
| d. My new baby sleeps with bumper pads . . . . .           | T    | F     |
| e. My new baby sleeps with plush blankets . . . . .        | T    | F     |
| f. My new baby sleeps with stuffed toys . . . . .          | T    | F     |



# Stressful life events

- Prenatal stress and anxiety during pregnancy have been associated with immediate and long-term outcomes.
  - Perinatal outcomes (e.g., preterm birth, low birth weight)
  - Infant outcomes (e.g., temperamental problems)
  - Child outcomes (e.g., hyperactivity, emotional problems)
- Possible mechanisms:
  - Stress hormones
  - Fatigue and feeling overwhelmed may impact diet, sleep habits, consistency of prenatal care, etc.
- Few studies have examined the relationship between prenatal stress and bed sharing.

# Hawai'i PRAMS Stressor Questions

**41. This question is about things that may have happened during the 12 months before your new baby was born.** For each item, circle **Y** (Yes) if it happened to you or circle **N** (No) if it did not. (It may help to look at the calendar when you answer these questions.)

|                                                                                  | No | Yes |
|----------------------------------------------------------------------------------|----|-----|
| a. A close family member was very sick and had to go into the hospital . . . . . | N  | Y   |
| b. I got separated or divorced from my husband or partner . . . . .              | N  | Y   |
| c. I moved to a new address . . . . .                                            | N  | Y   |
| d. I was homeless . . . . .                                                      | N  | Y   |
| e. My husband or partner lost his job . . .                                      | N  | Y   |
| f. I lost my job even though I wanted to go on working . . . . .                 | N  | Y   |
| g. I argued with my husband or partner more than usual . . . . .                 | N  | Y   |
| h. My husband or partner said he didn't want me to be pregnant . . . . .         | N  | Y   |
| i. I had a lot of bills I couldn't pay . . . .                                   | N  | Y   |
| j. I was in a physical fight . . . . .                                           | N  | Y   |
| k. My husband or partner or I went to jail . . . . .                             | N  | Y   |
| l. Someone very close to me had a problem with drinking or drugs . . . . .       | N  | Y   |
| m. Someone very close to me died . . . . .                                       | N  | Y   |

**42. During the 12 months before you got pregnant with your new baby, did your husband or partner push, hit, slap, kick, choke, or physically hurt you in any other way?**

- ☐ No  
☐ Yes

**43. During the 12 months before you got pregnant with your new baby, did an ex-husband or ex-partner push, hit, slap, kick, choke, or physically hurt you in any other way?**

- ☐ No  
☐ Yes

**44. During your most recent pregnancy, did your husband or partner push, hit, slap, kick, choke, or physically hurt you in any other way?**

- ☐ No  
☐ Yes

**45. During your most recent pregnancy, did an ex-husband or ex-partner push, hit, slap, kick, choke, or physically hurt you in any other way?**

- ☐ No  
☐ Yes

**11. During the 3 months before you got pregnant with your new baby, did you have any of the following health problems?** For each one, circle **Y** (Yes) if you had the problem or circle **N** (No) if you did not.

|                                            | No | Yes |
|--------------------------------------------|----|-----|
| a. Asthma . . . . .                        | N  | Y   |
| b. High blood pressure (hypertension) . .  | N  | Y   |
| c. Anemia (poor blood, low iron) . . . . . | N  | Y   |
| d. Heart problems . . . . .                | N  | Y   |
| e. Epilepsy (seizures) . . . . .           | N  | Y   |
| f. Thyroid problems . . . . .              | N  | Y   |
| g. Depression . . . . .                    | N  | Y   |
| h. Anxiety . . . . .                       | N  | Y   |

# Categories/Number of stressors

| Category               | # | Questions                                                                                                                                                                                                                                                           | Scores                                                                                             |
|------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>Partner-related</b> | 3 | <ul style="list-style-type: none"><li>• I got separated or divorced from my husband or partner</li><li>• I argued with my husband or partner more than usual</li><li>• My husband or partner said he didn't want me to be pregnant</li></ul>                        | <ul style="list-style-type: none"><li>• None</li><li>• 1</li><li>• 2 or more</li></ul>             |
| <b>Traumatic</b>       | 5 | <ul style="list-style-type: none"><li>• I was homeless</li><li>• I was in a physical fight</li><li>• My husband or partner or I went to jail</li><li>• Someone very close to me had a problem with drinking or drugs</li><li>• Intimate partner violence*</li></ul> | <ul style="list-style-type: none"><li>• None</li><li>• 1</li><li>• 2</li><li>• 3 or more</li></ul> |
| <b>Financial</b>       | 4 | <ul style="list-style-type: none"><li>• I moved to a new address</li><li>• My husband or partner lost his job</li><li>• I lost my job even though I wanted to go on working</li><li>• I had a lot of bills I couldn't pay</li></ul>                                 | <ul style="list-style-type: none"><li>• None</li><li>• 1</li><li>• 2</li><li>• 3 or more</li></ul> |
| <b>Emotional</b>       | 3 | <ul style="list-style-type: none"><li>• A close family member was very sick and had to go into the hospital</li><li>• Someone very close to me died</li><li>• Anxiety or depression*</li></ul>                                                                      | <ul style="list-style-type: none"><li>• None</li><li>• 1</li><li>• 2 or more</li></ul>             |



# Methods

- Hawai'i PRAMS data from 3180 respondents were used to estimate prevalence of bed sharing.
  - Data were weighted to be representative of all pregnancies resulting in live birth in Hawai'i in 2009 and 2010.
- Analyses performed with SAS-callable SUDAAN 10.0.



# Methods

- Logistic regression was used to examine relationships among stressors and bed sharing, controlling for significant covariates.
- Dependent Variable: Bed sharing
  - Dichotomized: Always/Often vs. Sometimes/Rarely/Never
- Independent Variables: Stressor categories
  - Partner-related
  - Traumatic
  - Financial
  - Emotional
- Final model covariates:
  - Infant sleep position
  - Sleep environment risk
  - Race/ethnicity
  - Age
  - County
  - Breastfeeding duration
  - Type of insurance used for delivery



# Results: Safe Sleep in Hawai'i

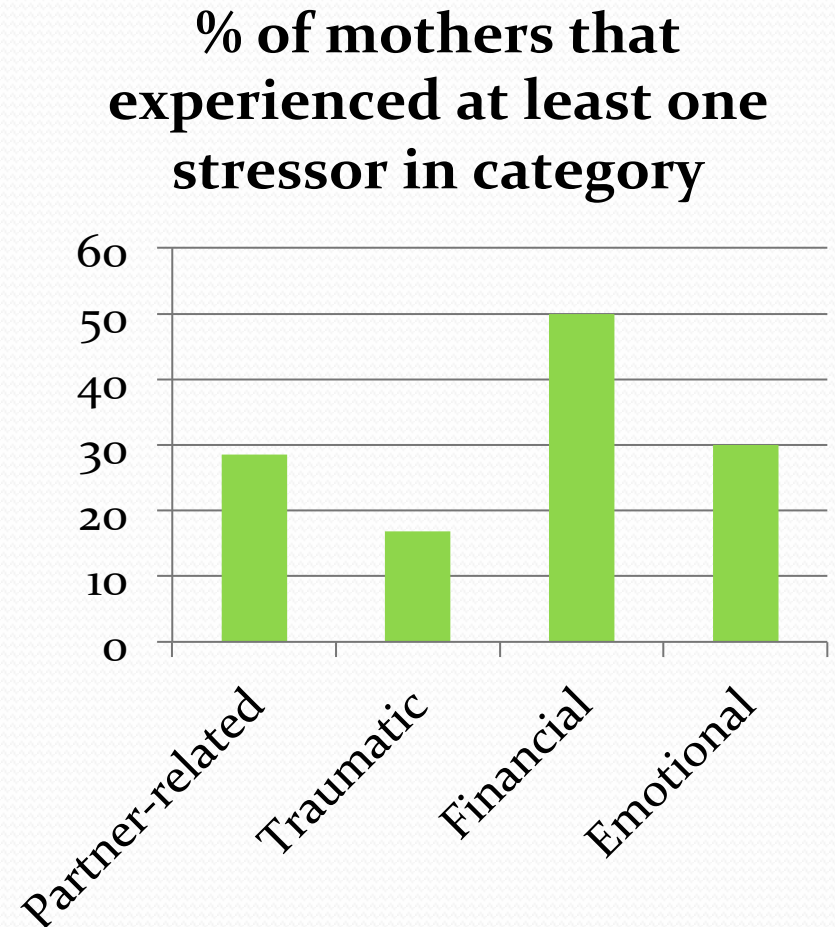
- “Hawai'i Safe Sleep Quick Facts”
  - Summary of state overall and by county
  - <http://hawaii.gov/health/family-child-health/mchb/prams-doc/SafeSleep2012>
- Sleep position
  - 24.3% of babies in Hawai'i are most often laid to sleep in high-risk sleep positions (on their stomach or side).
- Sleep environment
  - 65.8% of babies in Hawai'i usually sleep in an environment with one or more risk factor:
    - 19.6% sleep with pillows,
    - 31.3% sleep with bumper pads,
    - 19.6% sleep with plush blankets,
    - 4.3% sleep with stuffed toys,
    - 19.3% *do not* sleep in a crib or portable crib, and
    - 14.7% *do not* sleep on a firm or hard mattress.

# Results: Bed sharing

- Overall, **33.9%** (95%CI: 31.8-36.0) of infants in Hawai'i bed shared
  - Always 20.7% (95%CI: 19.0-22.6)
  - Often 13.2% (95%CI: 11.7-14.8)
- Bed sharing was most prevalent among mothers who were:
  - <20 years old 44.4% (95%CI: 36.6-52.5)
  - in Maui County 44.3% (95%CI: 41.0-47.7)
  - Filipino 43.3% (95%CI: 38.1-48.6)

# Results: Prenatal stressors

- Half (95%CI: 47.8-52.3) of recently-pregnant women experienced at least one financial stressor,
- 30.0% (95%CI: 27.9-32.1) experienced an emotional stressor,
- 28.6% (95%CI: 26.7-30.7) experienced a partner-related stressor, and
- 16.9% (95%CI: 15.3-18.6) experienced a traumatic stressor.



# Results: Regression

- Multivariate logistic regression found that partner-related ( $p=.005$ ) and financial ( $p=.017$ ) stressors were significantly related to bed sharing.
  - Traumatic ( $p=.068$ ) and emotional ( $p=.136$ ) stressors were not significantly related to bed sharing.
- For partner-related stressors (ref: no stressors):
  - 1 stressor                      aOR=1.49                      (95%CI: 1.13-1.96)
  - 2+ stressors                      aOR=1.66                      (95%CI: 1.07-2.55)
- For financial stressors (ref: no stressors):
  - 1 stressor                      aOR=1.45                      (95%CI: 1.12-1.87)
  - 2 stressors                      aOR=1.48                      (95%CI: 1.03-2.11)
  - 3+ stressors                      aOR=1.03                      (95%CI: 0.62-1.71) *not signif.*

# Results: Regression

- Other unsafe sleep variables were significantly associated with bed sharing.
- For high-risk (side/stomach) sleep position (ref: “back to sleep”):
  - aOR=1.42 (95%CI: 1.11-1.81)
- For at least one sleep environment risk (ref: no risk):
  - aOR=2.74 (95%CI: 2.11-3.55)



# Limitations

- Because stressors are categorized (none, 1, 2+) and not analyzed individually, we cannot tell exactly which stressors in a category may be affecting bed sharing.
- Self-reported data
  - Recall bias
    - 12 months before pregnancy/birth
  - Reporting bias
    - Stigma around some stressors (e.g., homelessness, IPV) and bed sharing may lead to non-reporting
- Selection bias
  - Non-response bias



# Implications

- Though not recommended, bed sharing is common in Hawai‘i.
  - This places many of Hawai‘i’s keiki at higher risk for SUID/SIDS.
- Improved understanding of which factors are associated with bed sharing should inform safe sleep education and interventions in Hawai‘i.
  - Partner-related and financial stressors
  - Unsafe sleep position and sleep environment



# Acknowledgements

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***Mahalo nui loa to all of the women who have filled out the Hawaii PRAMS Survey!***

# Mahalo!

## Questions?



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