

Safe Sleep from the National Perspective



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Disclosures

I have documented that I have no financial relationships to disclose or Conflicts of Interest (COIs) to resolve.

I have documented that my presentation will not involve discussion of unapproved or off-label, experimental use of a product, drug or device



Objectives

- Explain the public health impact of infant sleep safety and sleep-related deaths.
- Discuss the American Academy of Pediatrics' safe sleep policies and recommendations.
- Identify recent articles and controversies regarding sleep safety.
- Understand health disparities regarding infant sleep safety.

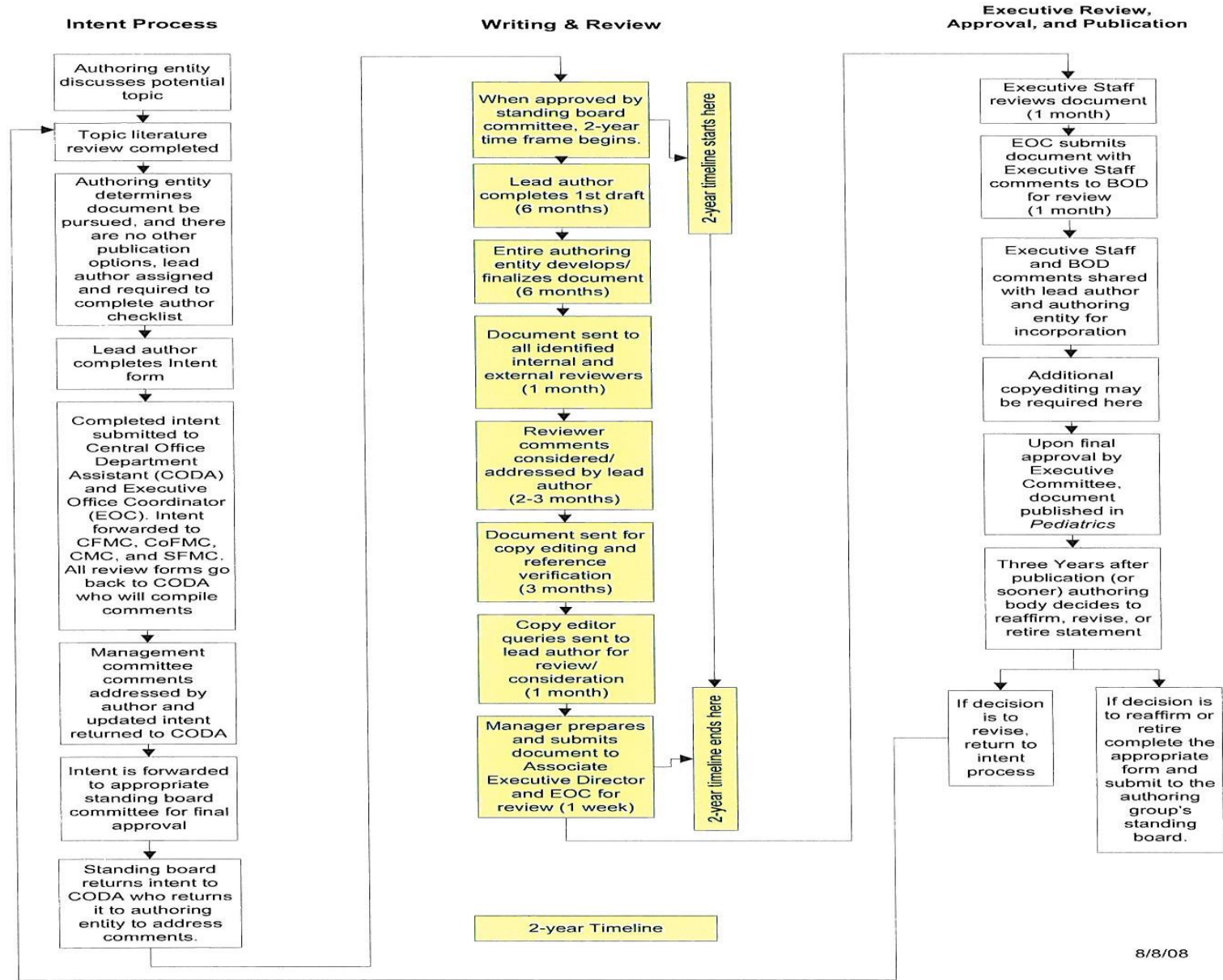


AAP Task Force on SIDS

- Convened in 1992 because of initial data noting association between sleep position and SIDS
- Mission was to review the evidence and make recommendations about sleep position
- Comprised of experts in the field
 - Selected and approved by AAP Executive Board



Policy Development and Review Process Flow Sheet



Birth of a policy statement

- Create list of important topics
- Extensive literature review
 - Strength of quantitative data (randomized controlled trials > case control > observational studies)
 - Qualitative data: helps to inform quantitative data and to provide context and understanding
- Recommendations are based on epidemiological studies that include infants up to 1 year.
- 2016: 63 new studies were included in review of evidence.

Birth of a policy statement

- Development of draft
- Approval by all relevant AAP sections and committees
 - Section on Breastfeeding
 - Committee on Fetus and Newborn
 - Committee on Hospital Care
- Approval by Executive Committee of AAP
- Entire process takes 2 years
- All policy statements have to be reviewed every 3 years
 - reaffirmed, retired, or revised
 - If not, then automatically expire after 5 years



Why do the recommendations change?

- Recommendations are not static
- 1992: AAP recommends side or back to reduce the risk of SIDS
- 2000: Back preferred, but side better than prone
- 2005: Back only

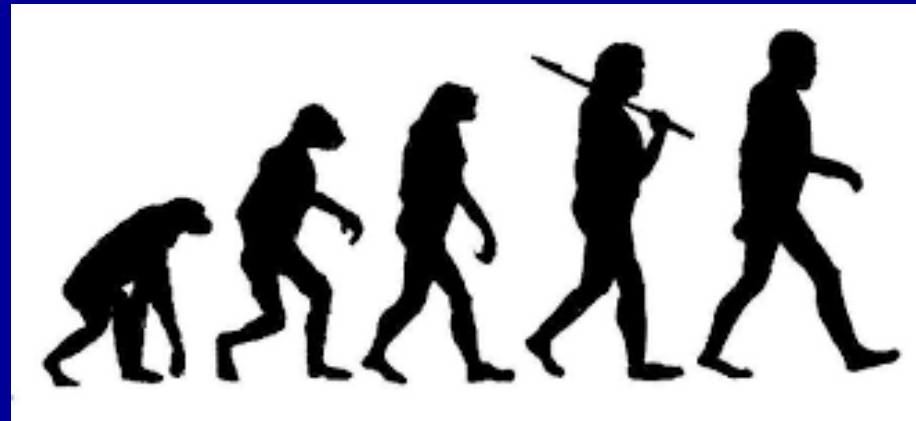


The recommendations change as the evidence evolves

- Statistics and risk factors may change
 - New risks emerge (e.g.: side positioning)
 - Different levels of risk?
- Policies and procedures may change
 - Better death scene investigations
 - Diagnostic shift
- Unintended consequences
 - Plagiocephaly, development
 - New tummy time recommendations

We are all learning and evolving TOGETHER!

- Feedback from “the field” is critical!
 - Unintended consequences
 - Wording of recommendations may be
 - Misinterpreted
 - No bedsharing = sofa sharing is ok
 - Translated poorly into other languages, cultures



Safe Sleep: What's New Current Articles and Controversies

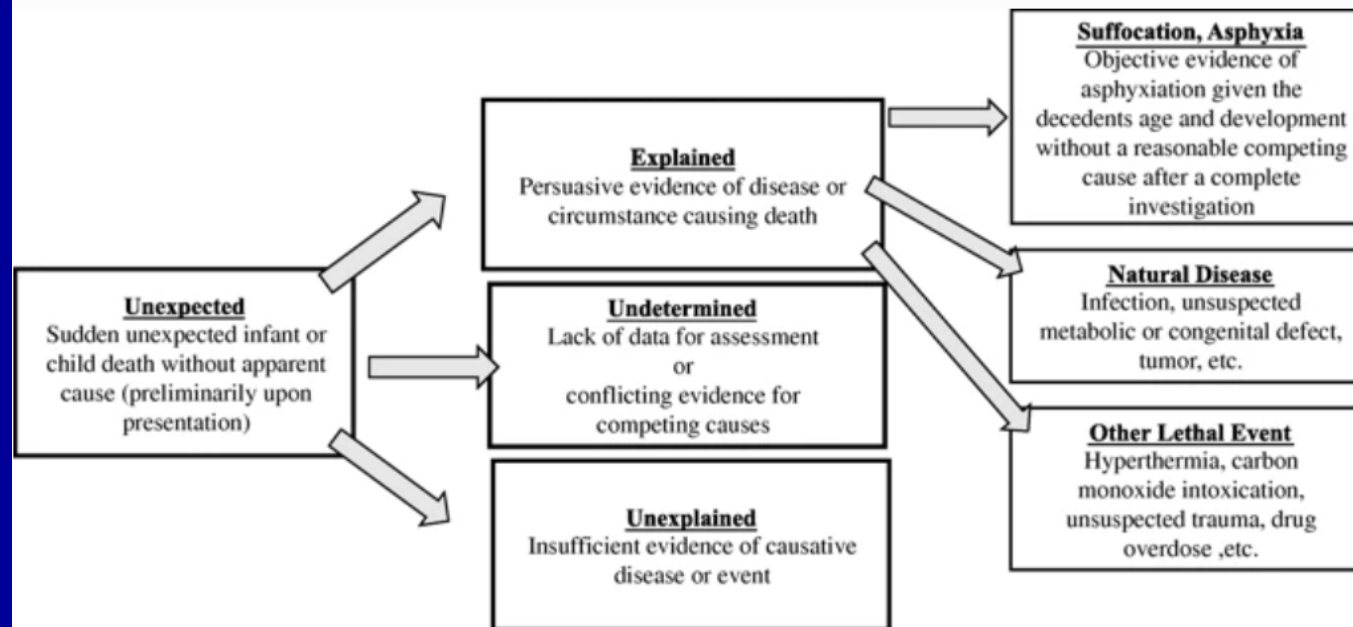


Goldstein: Nomenclature Update

- Issues with classification of SUID
- 3rd International Congress on Sudden Infant and Child Death
- Four ICD-11 categories:
 - MH11, MH12, MH14, PB00-PB0Z
 - SIDS reframed as unexplained sudden death in infancy or SIDS/MH11 to emphasize that either term signifies the lack of explanation following a rigorous investigation.
 - Distinct category for children over the age of 1 was recommended (MH12).

The 3rd International Congress on Sudden Infant and Child Death

Fig. 2



Consensus for recommended use of the terms unexpected, unexplained, undetermined, and explained subsets. The Congress reviewed, clarified and recommended terminology relative to the process of case determination

Maternal smoking before and during pregnancy and the risk of sudden unexpected infant death

- 1 to 20 cigarettes per day: the probability of SUID increased linearly, with each additional cigarette smoked/day
- SUID risk more than doubled (aOR = 2.44) with ANY maternal smoking during pregnancy
- Risk increased twofold between no smoking and smoking 1 cigarette daily throughout pregnancy

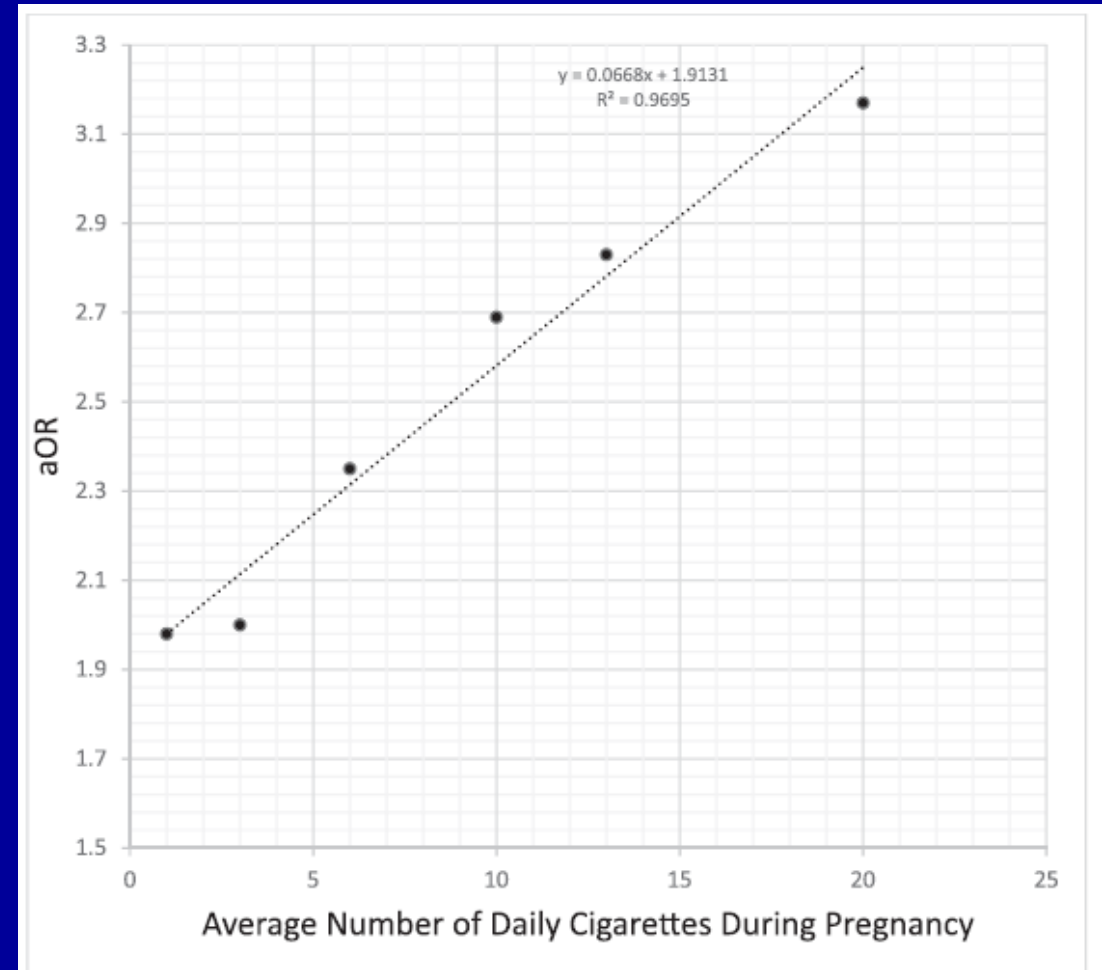


FIGURE 1

aORs of SUID given the average number of cigarettes (between 1 and 20) smoked daily by the mother per trimester.

Maternal smoking before and during pregnancy and the risk of sudden unexpected infant death

- Mothers who quit or reduced their smoking decreased their odds compared with those who continued smoking
- 22% of SUIDs in the United States can be **directly attributed to maternal smoking during pregnancy**



ABM Protocol # 6 Update 2019

- Consensus statement
- Areas of agreement:
 - Open and non-judgmental conversations
 - Situations that make bed-sharing more hazardous
 - Bed-sharing facilitates breastfeeding initiation, duration and exclusivity
 - Breastfeeding is associated with a reduced risk of SUID/SIDS
 - Many opportunities exist to decrease risks of SUID/SIDS

ABM Protocol # 6 Update 2019

- Areas of disagreement:
 - Benefit of increased breastfeeding while bed-sharing outweighs increased risk of sleep-related deaths while bed-sharing
 - ABM states “safe” bed-sharing is possible in the absence of known hazards
 - AAP states increased risk of SIDS without known hazards
 - Under 4 months age

Independent Review



- Very small numbers of low-risk babies
 - 24 in Blair's study
 - 12 in Carpenter's study
- Does not believe that data support definitive differences in 2 studies
- Some evidence of increased risk in this group, but cannot say how large the increased risk is
- Cannot conclude that bed sharing in this group is safe

2016 AAP Policy Statement: Reconciling the Data

- Room sharing
 - Shared sleep environment up to 1 year, at least 6 months (50% reduction in risk)
- Breastfeeding in bed is acceptable
 - Do not breastfeed on couch or arm chair
- **Recognize that parents may fall asleep in bed after or during feeding their infant.**
 - **remove pillows, loose blankets, sheets and move the bed away from walls to prevent entrapment**
 - **Return infant back to separate sleep surface as soon as parent awakens**

Safe Sleep and Skin-to-Skin Care in the Neonatal Period for Healthy Term Newborns



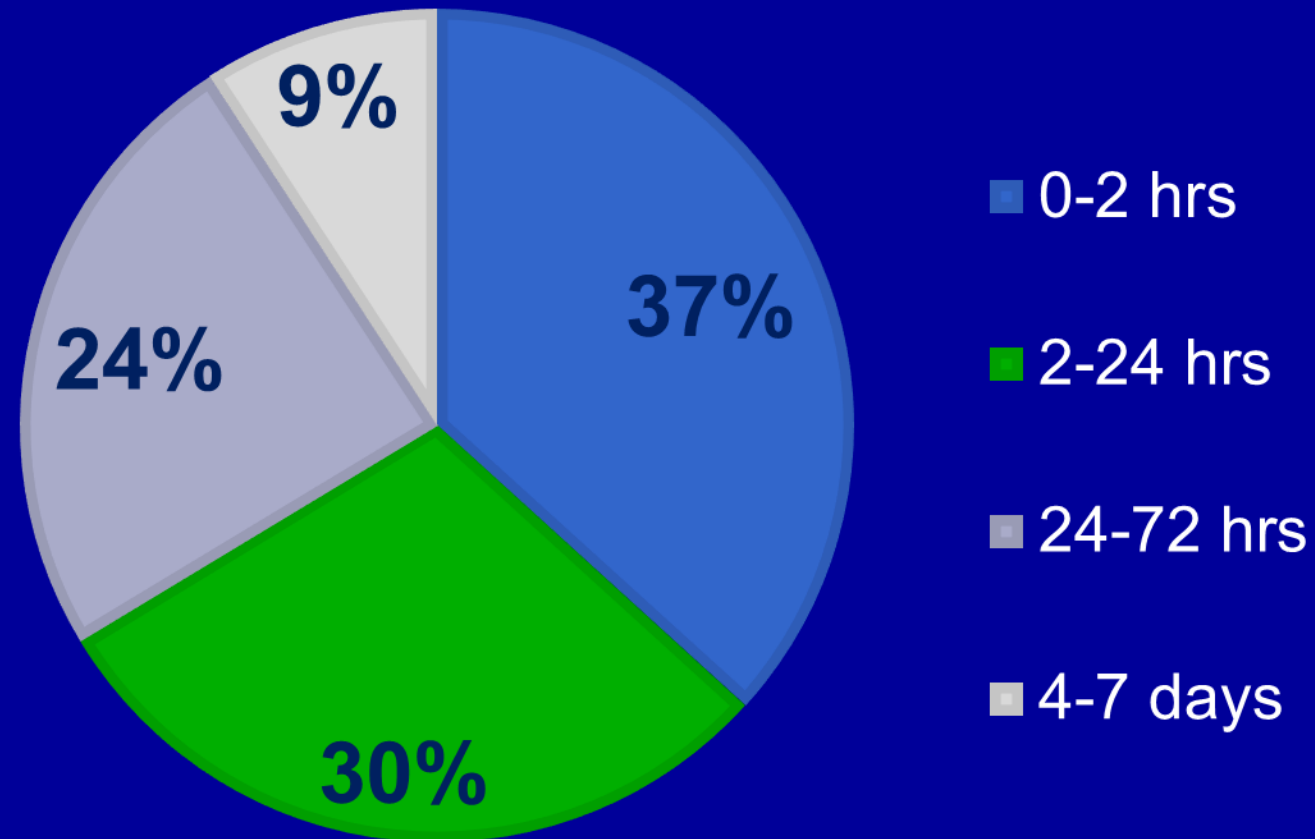
Sudden Unexpected Postnatal Collapse

- An apparent life threatening event (ALTE) or a sudden, unexpected death of a healthy, term infant during the first week of life
- Incidence between 0.026 and 1.33 cases per 1000 births

Sudden Unexpected Postnatal Collapse

- A rare event. BUT...
 - carries a high risk for mortality
 - 66% of infants who die have no identified cause postmortem
 - Survivors at high risk for significant neurologic disability at 1 year

SUPC: Age Range of Occurrence (n = 398)



Trends in Breastfeeding Interventions, Skin-to-Skin Care, and Sudden Infant Death in the First 6 Days after Birth

- Is there a relationship between SSC and SUPC?
- Survey of BFHI and SUID < 7 days age
- MA and US, 2004-2016
- Births in baby friendly hospitals increased and SSC increased (2-18%, 40-83%)
- SUPC decreased 0.033 to 0.028/1000 (OR 0.85)
- Bass:
 - SUID increased from 9% to 10% in 1995 to 11% to 13% by 2014
- Studies do not address cases without death...

Development of a Single Center Quality Bundle to Prevent Sudden Unexpected Postnatal Collapse

- Christiana Hospital, DE
- 5 cases over 17 months (incidence 0.54/1000)
- QI Bundled Intervention:
 - Nurse present during skin to skin
 - Pulse-oximetry
 - RAPP assessment tool
 - Respiratory, activity, perfusion, position/tone
- No events over 14,000 deliveries ($p = 0.011$)

SUPC QI Bundle

- “Some have suggested continuous pulse oximetry; however there is no evidence that this practice would improve safety and may be impractical.”
- Majority of mothers:
 - Understood purpose of monitoring
 - Did not interfere with bonding or feeding
 - Felt safer
- Nurses:
 - Important safety intervention, but...
 - Interfered with mother-child contact
 - Competed with other patient care responsibilities.

SAFE: Factors Associated With Choice of Infant Sleep Location

- Study of Attitudes and Factors Effecting Infant Care
- 32 birth hospitals: 3260 mothers
- Ajzen's theory of planned behavior:
 - Intentions lead to behavior
 - Attitudes, subjective social norms, perceptions of control over behavior
- Survey between 2-6 months
- Focus on sleep location

SAFE: Factors Associated With Intended Bed-sharing

- African American race
- Exclusive breastfeeding
- Perceived social norm favoring bed-sharing (aOR 5.84)
- Positive attitudes towards bed-sharing (aOR 1.90)
- Women given advice by a doctor to room-share without bed-sharing were less likely to bed-share (aOR 0.56)

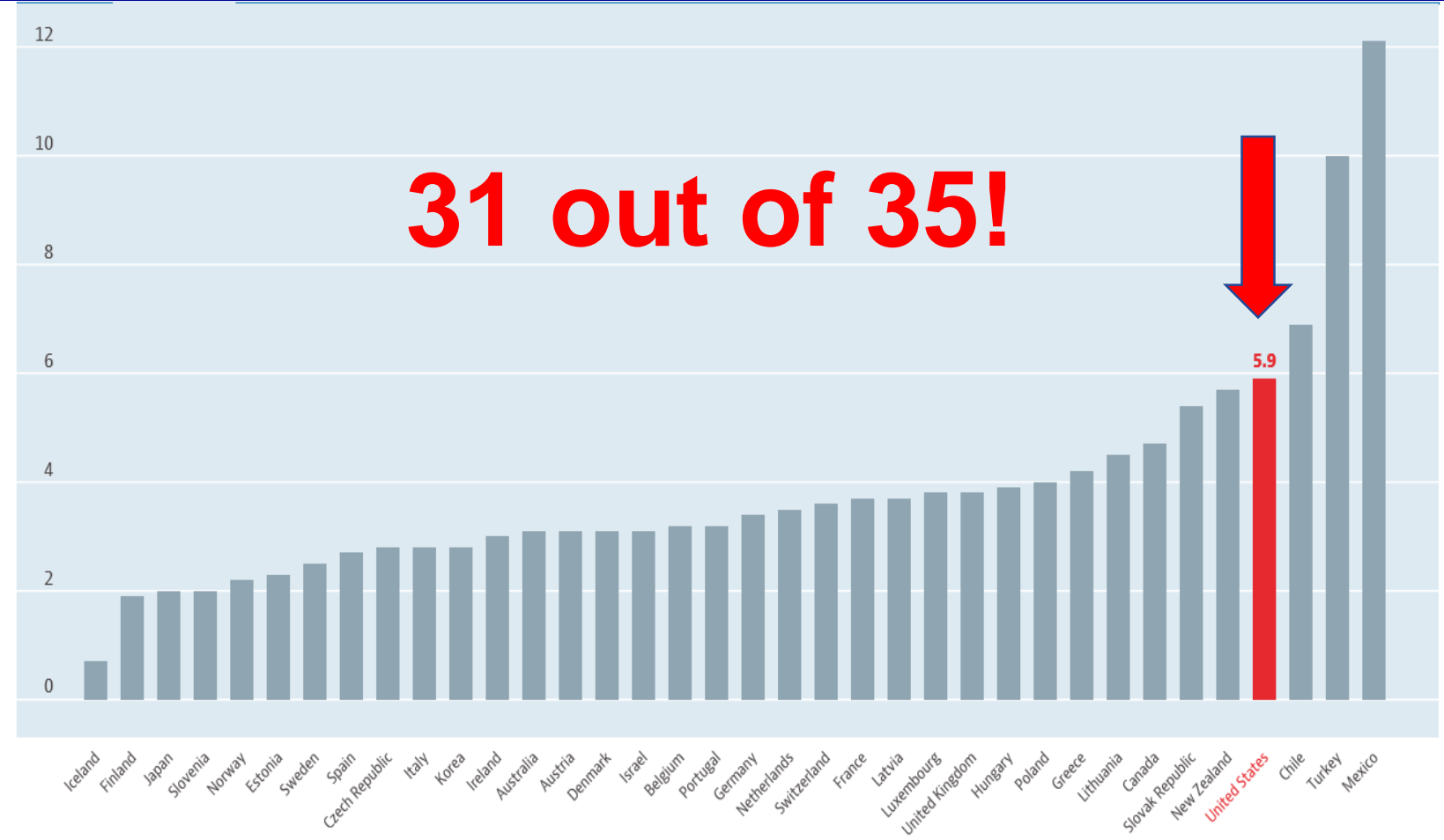
Moon: Implications of Mothers' Social Networks for Risky Infant Sleep Practices

- Social networks influence decision-making
 - Family members, friends, colleagues, others = alters
 - Network size
 - Network density
 - Relationship duration
 - Contact frequency
 - Racial heterogeneity
 - Sex composition
 - Kin composition
 - Proportion of alters > 15 years older than ego

Moon: Social Networks

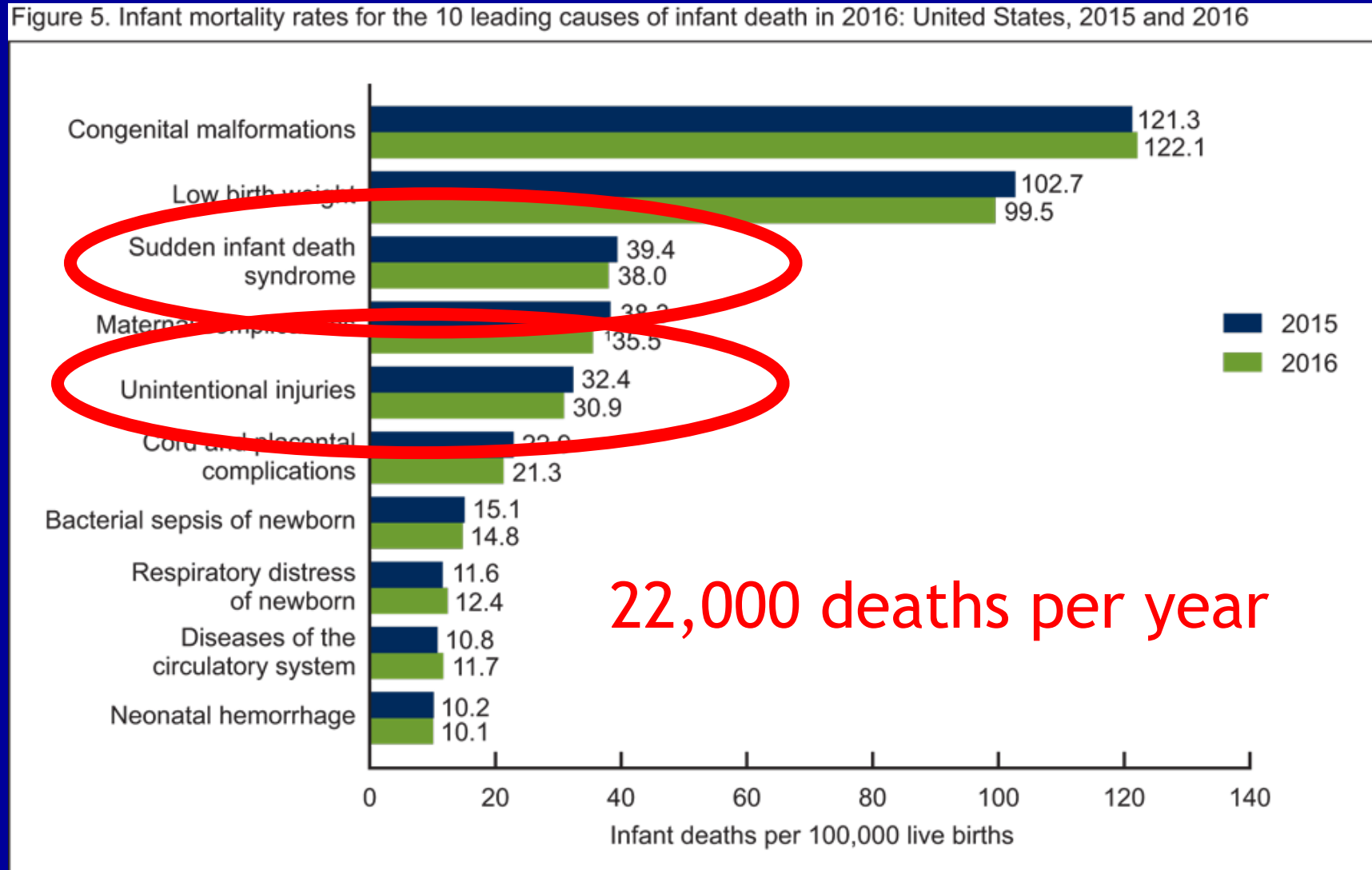
- Norms for both networks:
 - Supine sleep
 - Not to bed-share
 - Not to use soft bedding
- Race: black mothers more exposed to norm of unsafe sleep position and soft bedding, but not sleep location
- Norms or perceived beliefs of the alters significantly associated with mother's sleep practices

2016 IMR: Organization of Economic Cooperation and Development

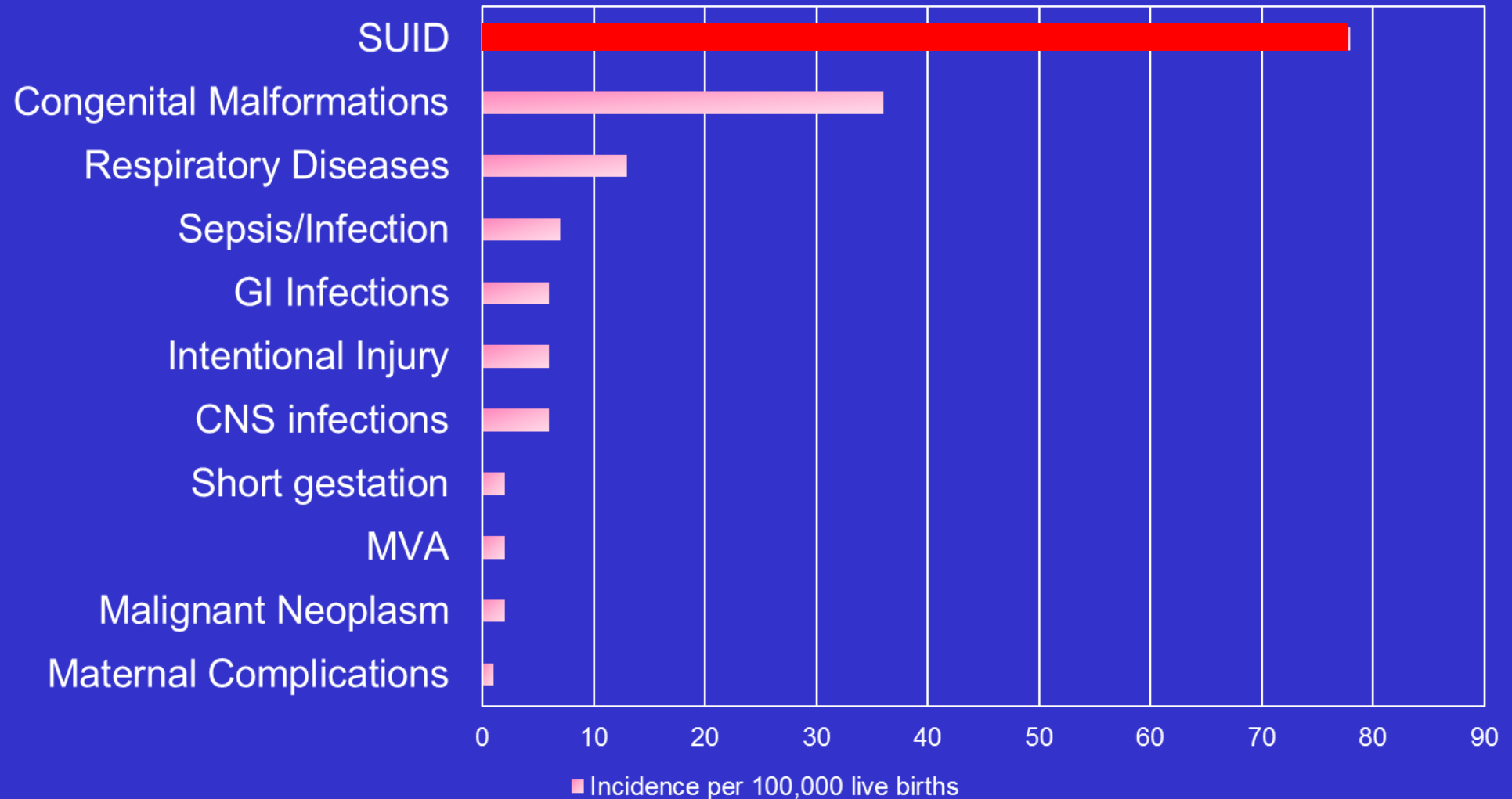


Infant Mortality per 1,000 live births

Infant mortality rates for the leading causes of infant death in the US: 2015 and 2016



U.S Post-Neonatal Mortality 2015

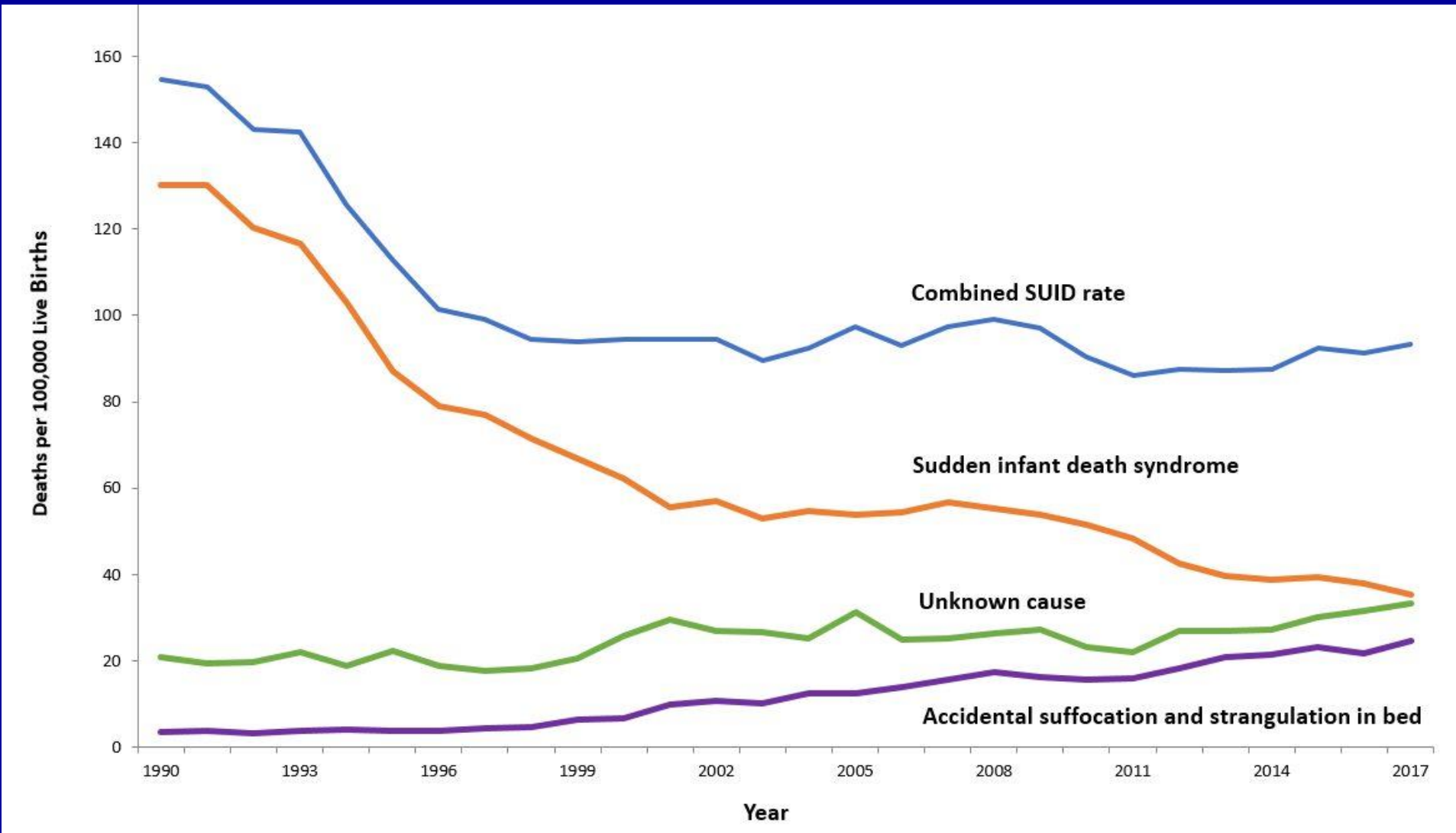


Fact:

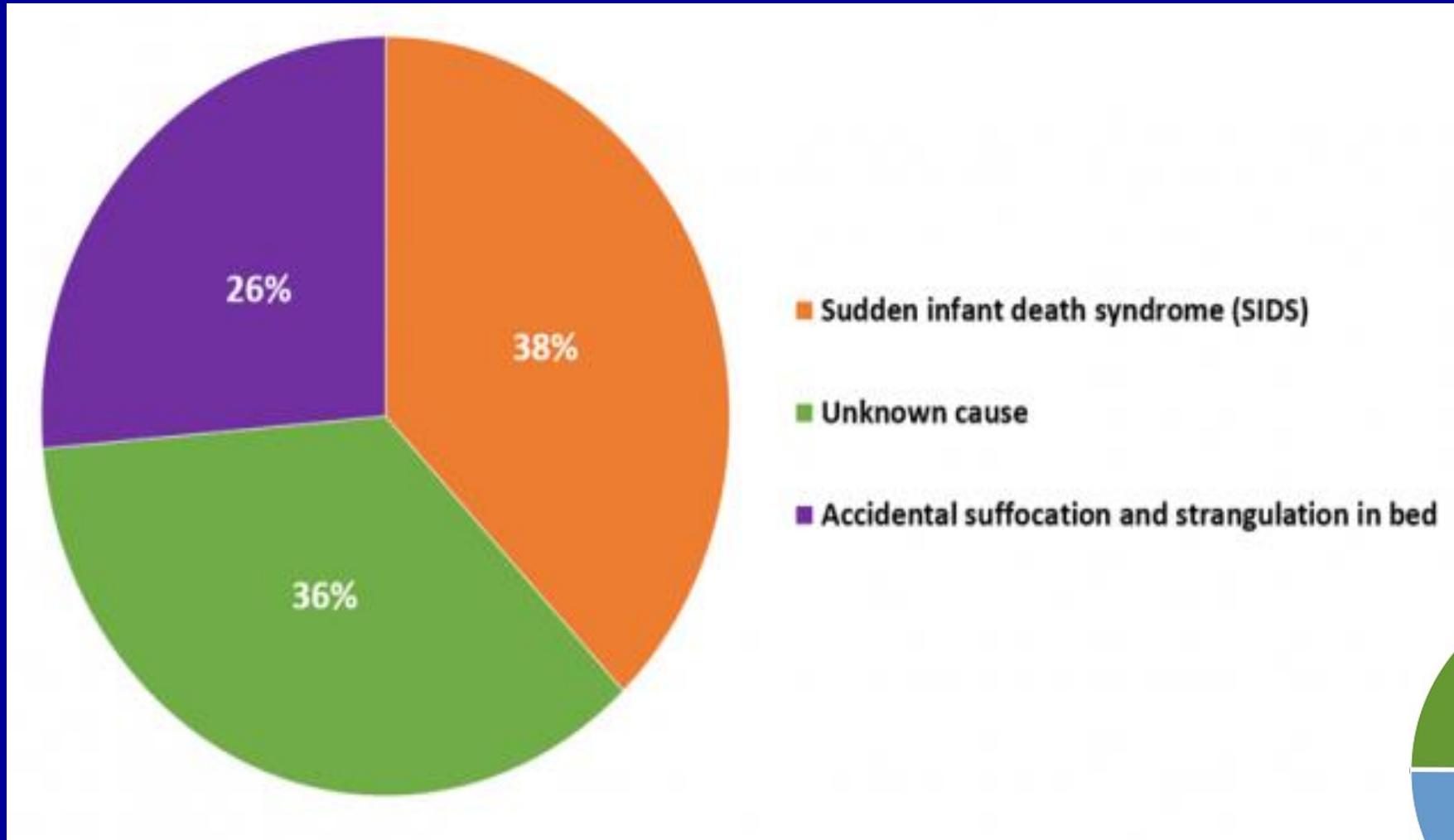
3,600 babies in the US die suddenly and unexpectedly each year!



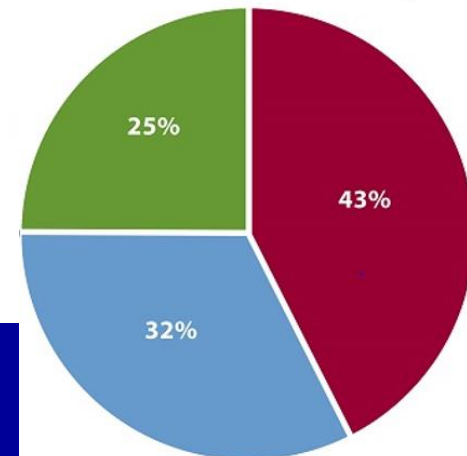
U.S. SUID Rate 1990-2017



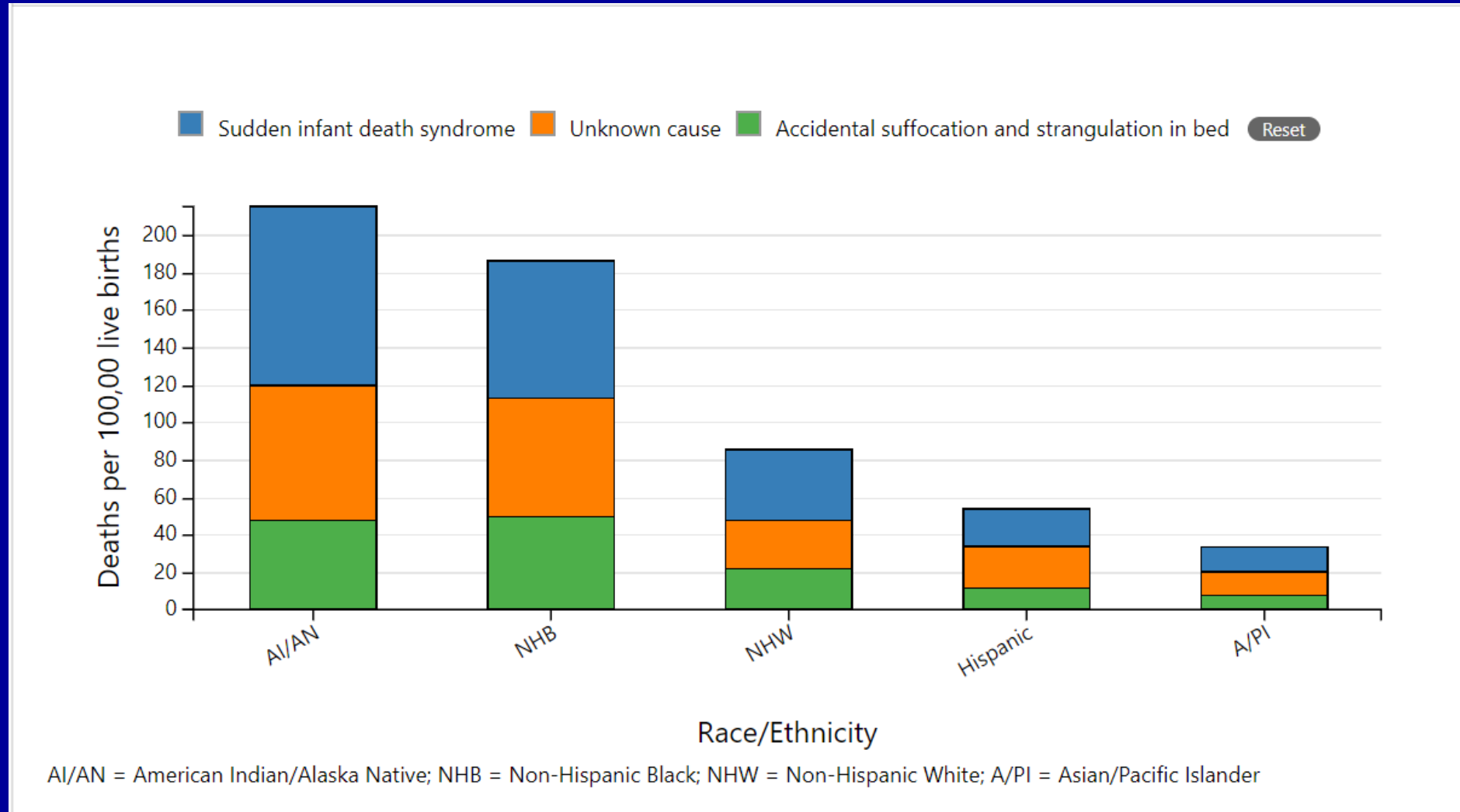
U.S. SUID by Cause: 2017



2015

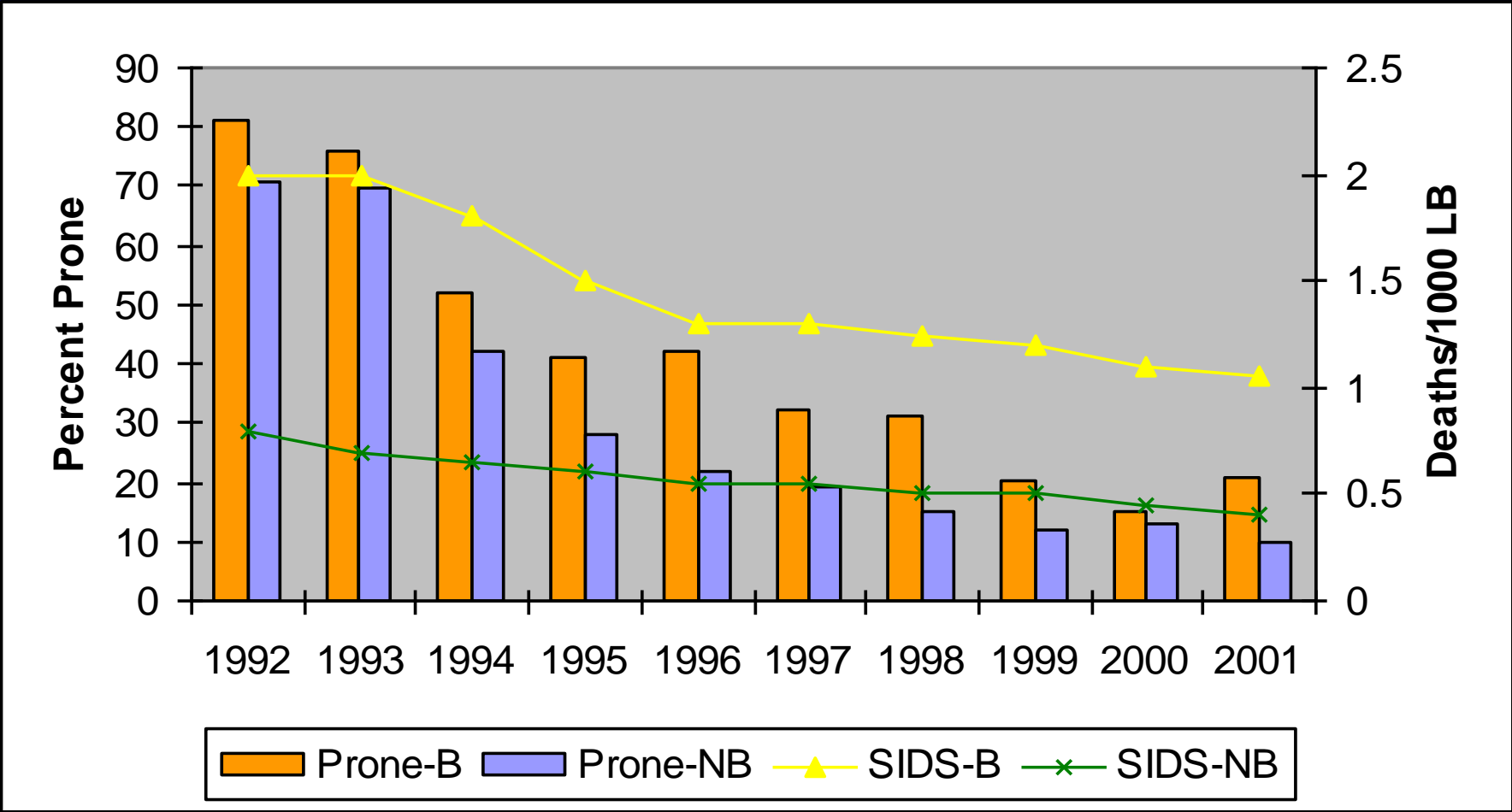


SUID Rates by Race/Ethnicity: 2014-2017



SOURCE: CDC/NCHS, National Vital Statistics System, Period Linked Birth/Infant Death Data.

Black vs Non-Black Prone Prevalence and SIDS Rates

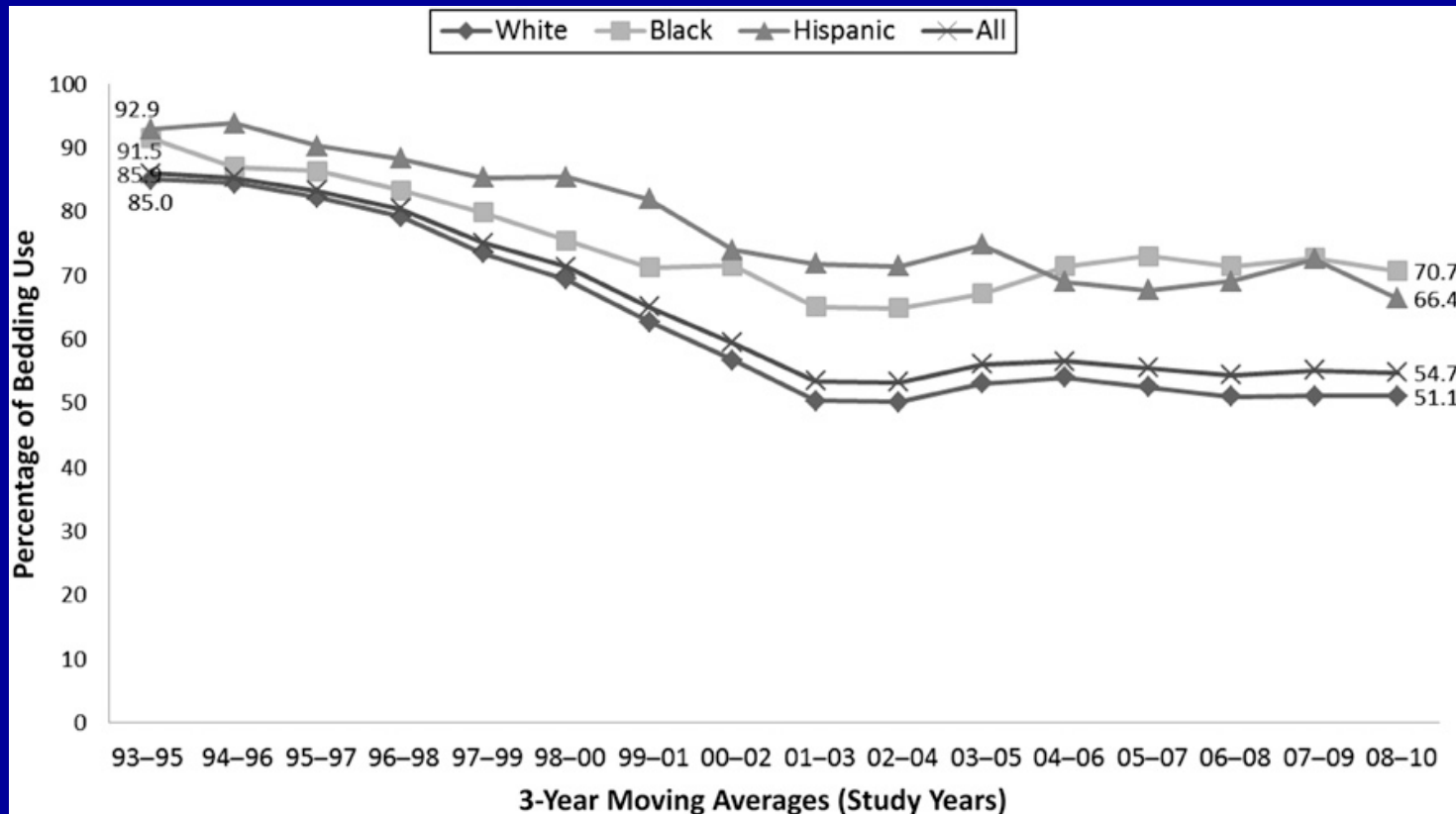


Sources: National Center for Health Statistics, National Infant Sleep Position study

Factors Associated With Choice of Infant Sleep Position

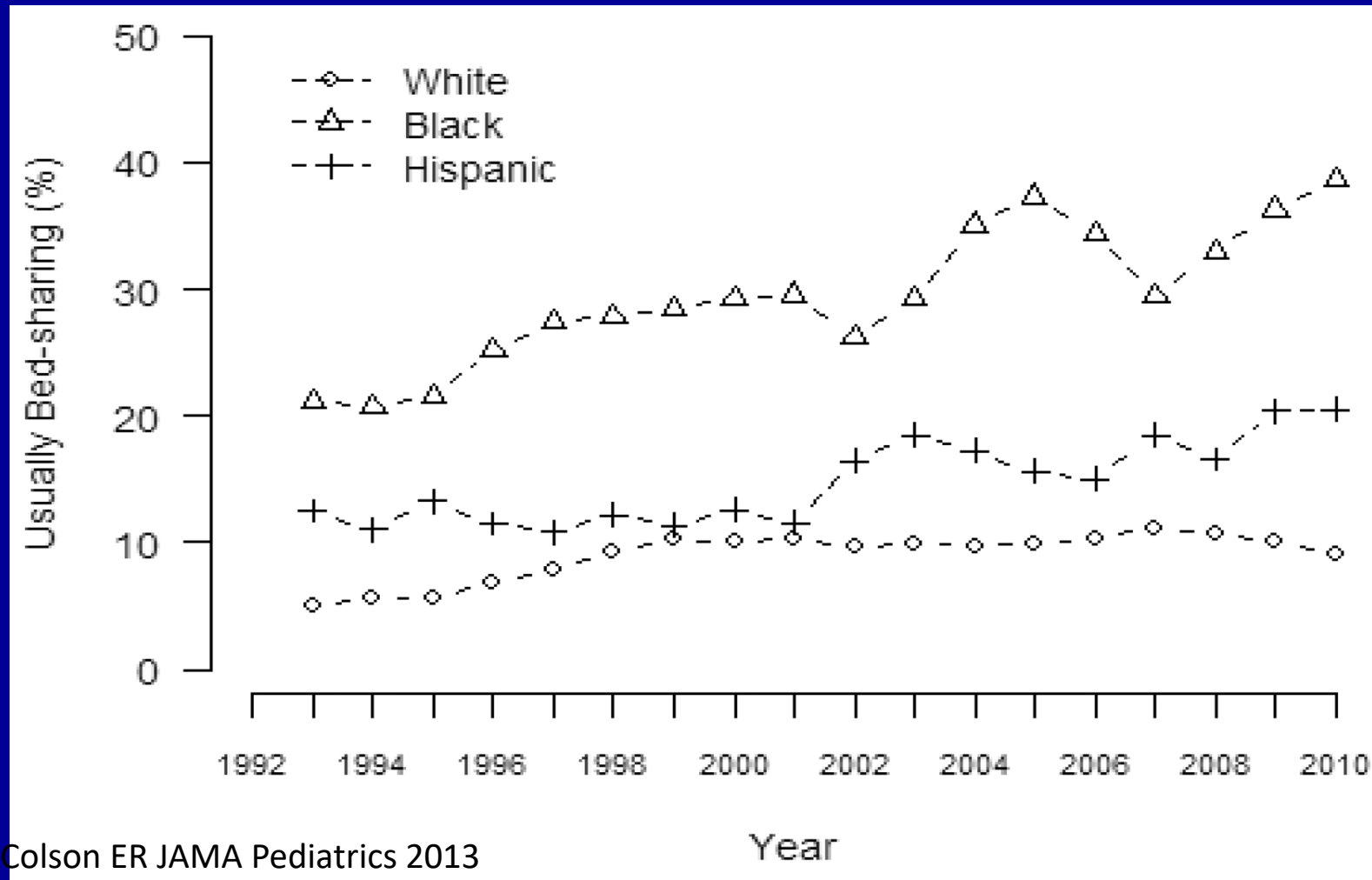
- 3300 mothers from 32 hospitals
- 77% usually use supine position
- 49% exclusive use supine position!
- Most likely to use prone:
 - African-American mothers
 - Mothers with < high school education
 - Lack of perceived control
 - **Personal attitude/societal norms**

Unsafe Bedding: NISP Trends 2012

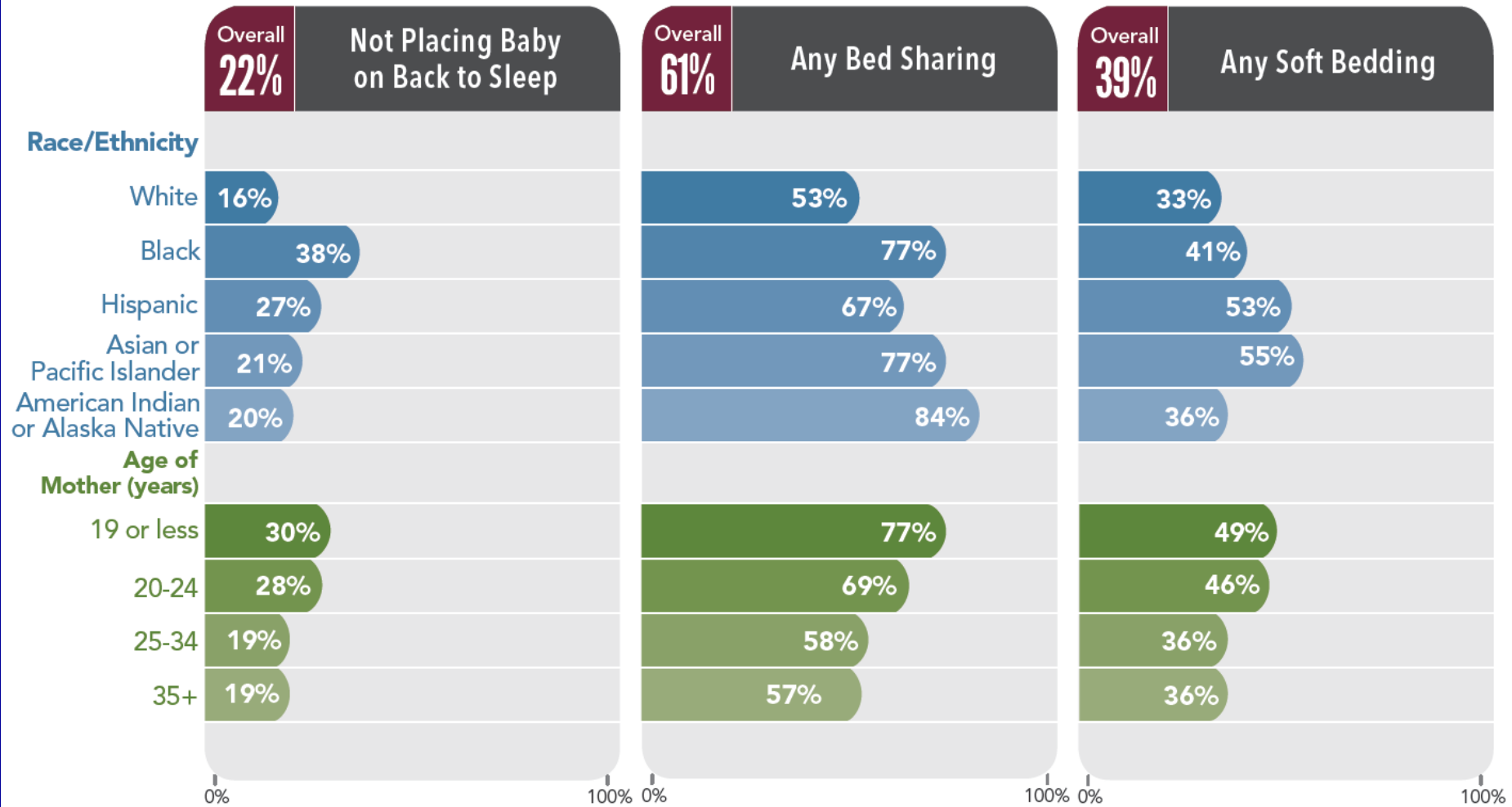


- Decrease from 86% to 55%
- Rate of decline decreases 2001-10
- 83.5% for teen mothers
- Predictors of adjusted OR > 1.5
 - Young mothers
 - Non-white race, ethnicity
 - Less than college education

Trends and Factors Associated with Infant Bedsharing: 1993-2010

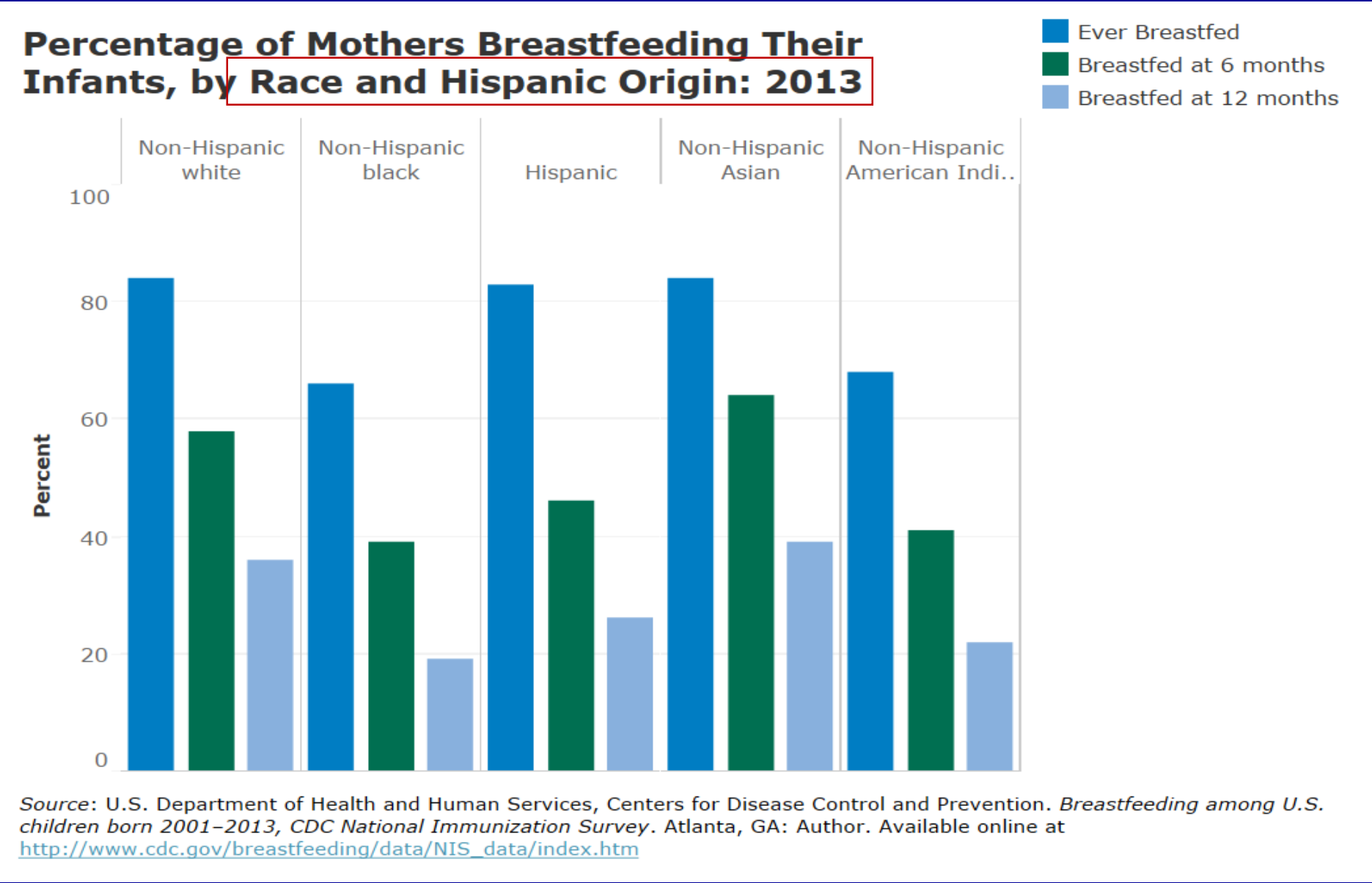


UNSAFE SLEEP PRACTICES WITH BABIES ARE COMMON.

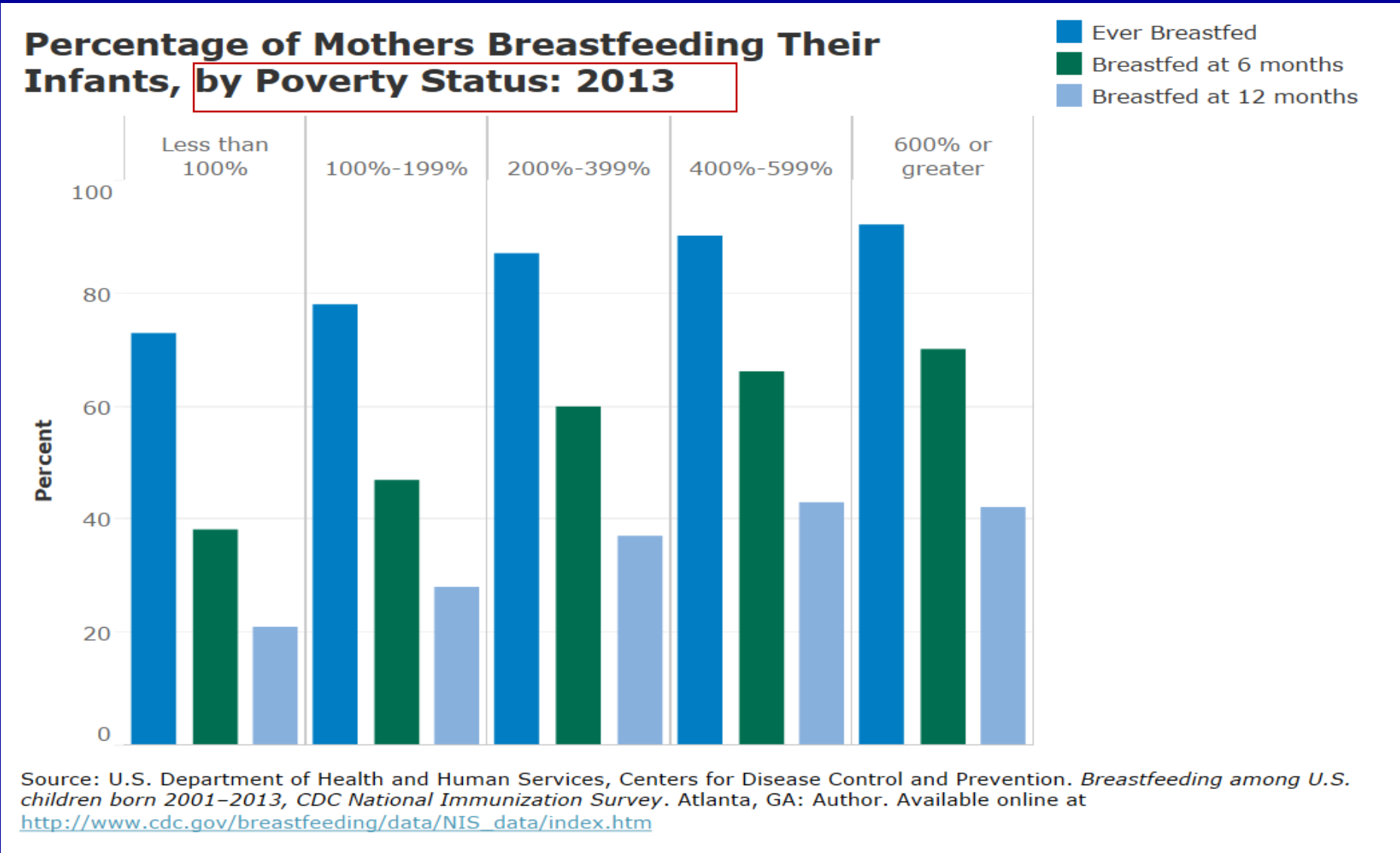


SOURCE: Pregnancy Risk Assessment Monitoring System (PRAMS), 2015.

Breastfeeding Disparities Continue to Exist



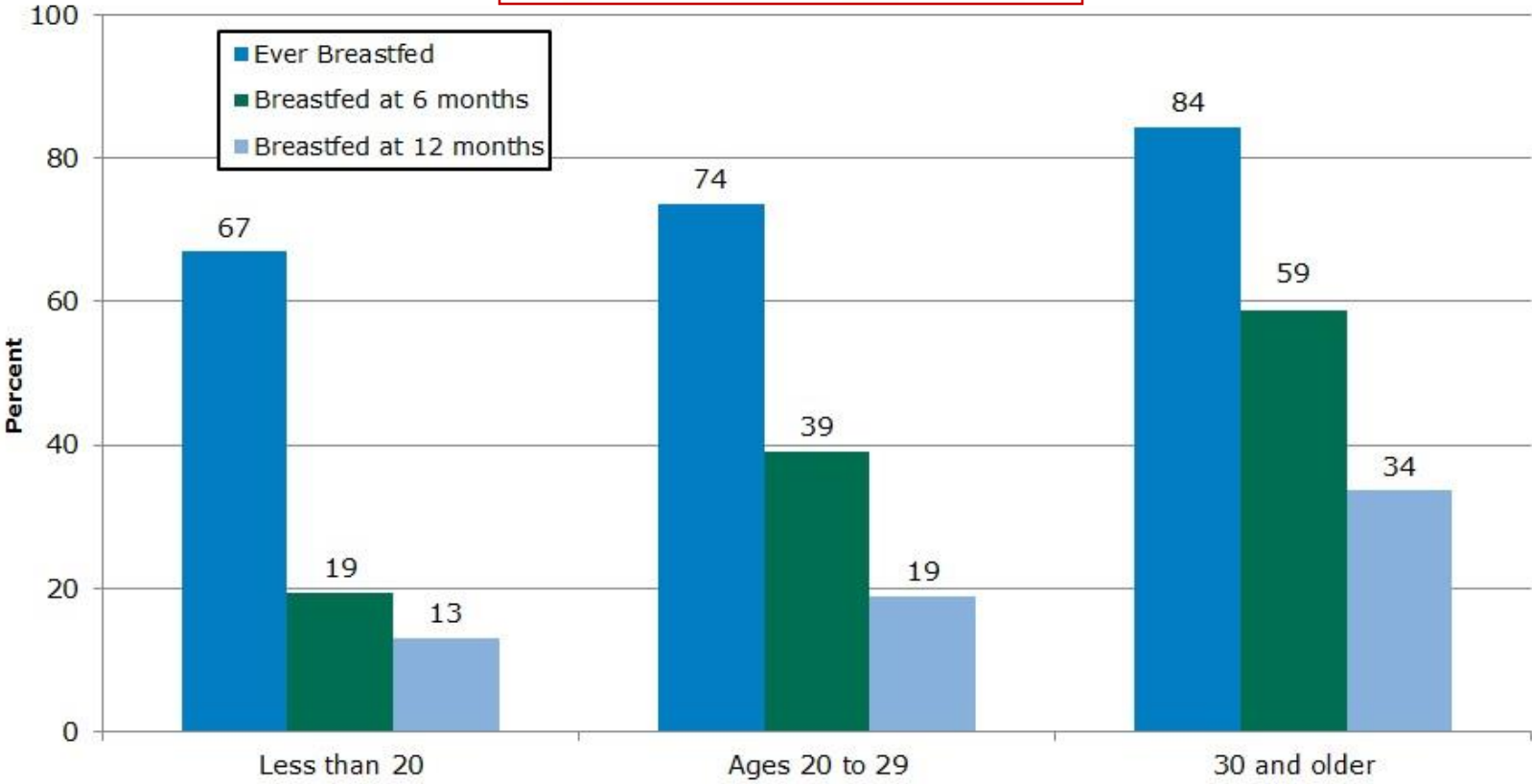
Breastfeeding Disparities Continue to Exist



Breastfeeding Disparities Continue to Exist

Figure 4

Percentage of Mothers Breastfeeding Their Infants, By Maternal Age, 2011

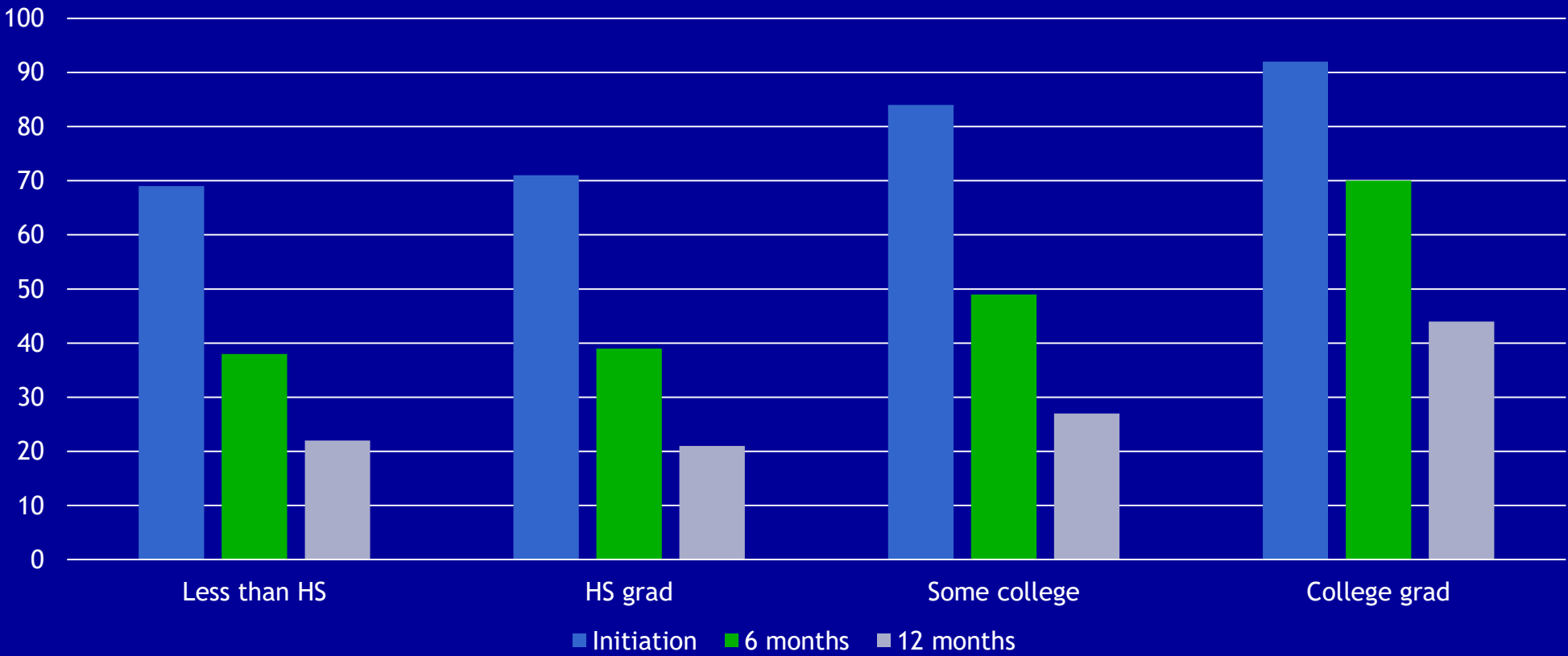


Source: U.S. Department of Health and Human Services Centers for Disease Control and Prevention. Breastfeeding among U.S. children born 2001–2011, CDC National Immunization Survey. Available online at http://www.cdc.gov/breastfeeding/data/NIS_data/index.htm



Breastfeeding Disparities Continue to Exist

Percent of Mothers Breastfeeding their Infants, by Education, 2013 CDC NIS Survey



Duration of Breastfeeding and Risk of SIDS

- Individual level data from 8 case control studies
- 2267 SIDS cases and 6837 control

	Pooled Adjusted Model ANY Breastfeeding	Pooled Adjusted Model Exclusive Breastfeeding
Never	1.0	1.0
0-2 months	0.91 (0.68-1.22)	0.82 (0.59-1.14)
2-4 months	0.60 (0.44-0.82)	0.61 (0.42-0.87)
4-6 months	0.40 (0.26-0.63)	0.46 (0.29-0.74)
> 6 months	0.36 (0.22-0.61)	

Healthcare Providers: Opportunities for Improvement



Safe Sleep Nurse Modeling

- People trust nurses.
- Whatever the nurse does must be correct and it will be imitated in the home.
- Fact: supine positioning in the nursery can almost DOUBLE its use in the home!

model behavior Parents tend to copy practices that they observe in hospital settings. As a nurse, you play a vital role in ensuring an infant's health and survival after they leave the hospital. This is the most important modeling job of your life.

All term infants should be placed to sleep on their backs from the start.

During rooming in, it must be made clear that the infant is to sleep in a crib or bassinet. Bedsharing should not take place in the mother's room.

Keep soft materials such as pillows, blankets, comforters, bumper pads, sheepskins, stuffed toys and other soft objects out of the infant's sleeping environment.

Pacifier use should be encouraged after breastfeeding has been established for one month.

Blankets used for swaddling should come no higher than the infant's chest.

Parents/caregivers need to be made aware of the dangers of anyone smoking around the infant.

For more information on the Model Behavior Program, please call 1.800.221.7437 or visit www.firstcandle.org

First Candle
NSIDPSC
June 2006

Washington, DC



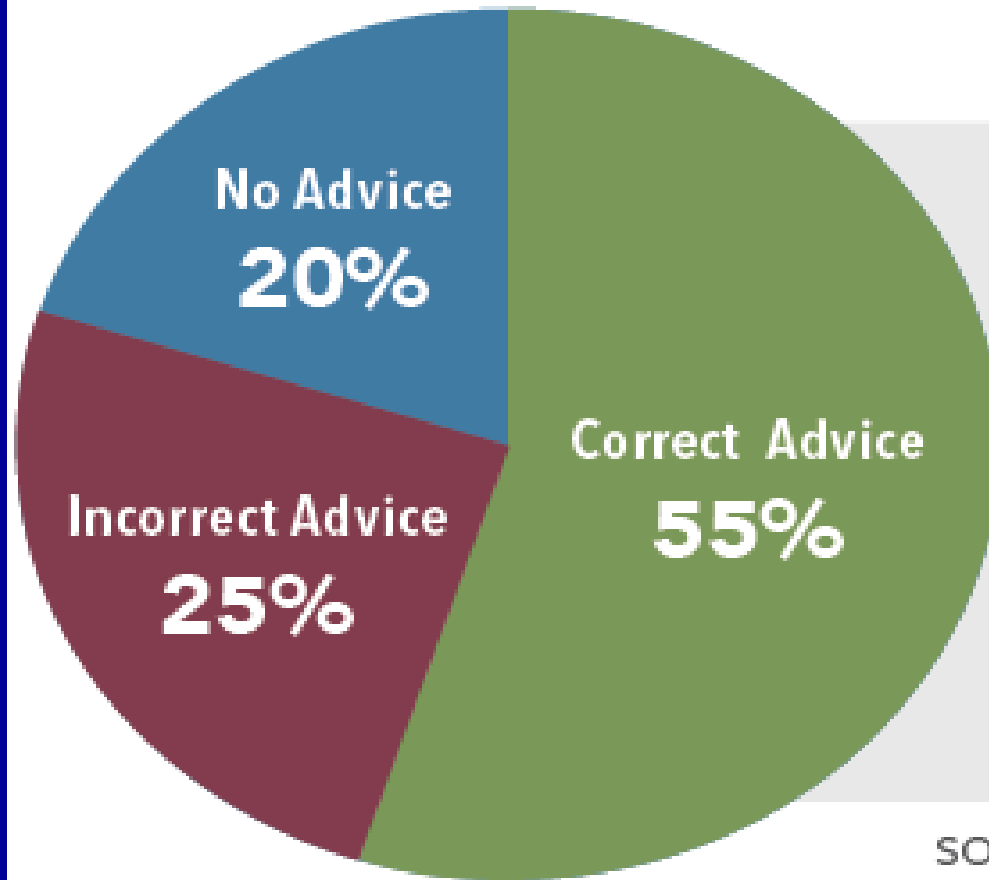
- 2 urban DC nurseries
- 26% did not believe or unsure that infant positioning was associated with SIDS.
- Top 3 factors influencing sleep position:
 - 56% PERSONAL PREFERENCE!
- Why non-supine? Clinical experience: (25%)
 - Increase risk aspiration
 - Decrease sleep and comfort

Prenatal Education

- 835 MDs in NC and DC
- Routinely discuss SIDS:
 - Pediatricians: 79%
 - Family Practice: 56%
 - OB/GYN: 18%



Missed Opportunities



Nearly half of caregivers did not receive correct advice on safe sleep practices from healthcare providers. Caregivers who received correct advice were less likely to place their babies to sleep on their stomach or side.

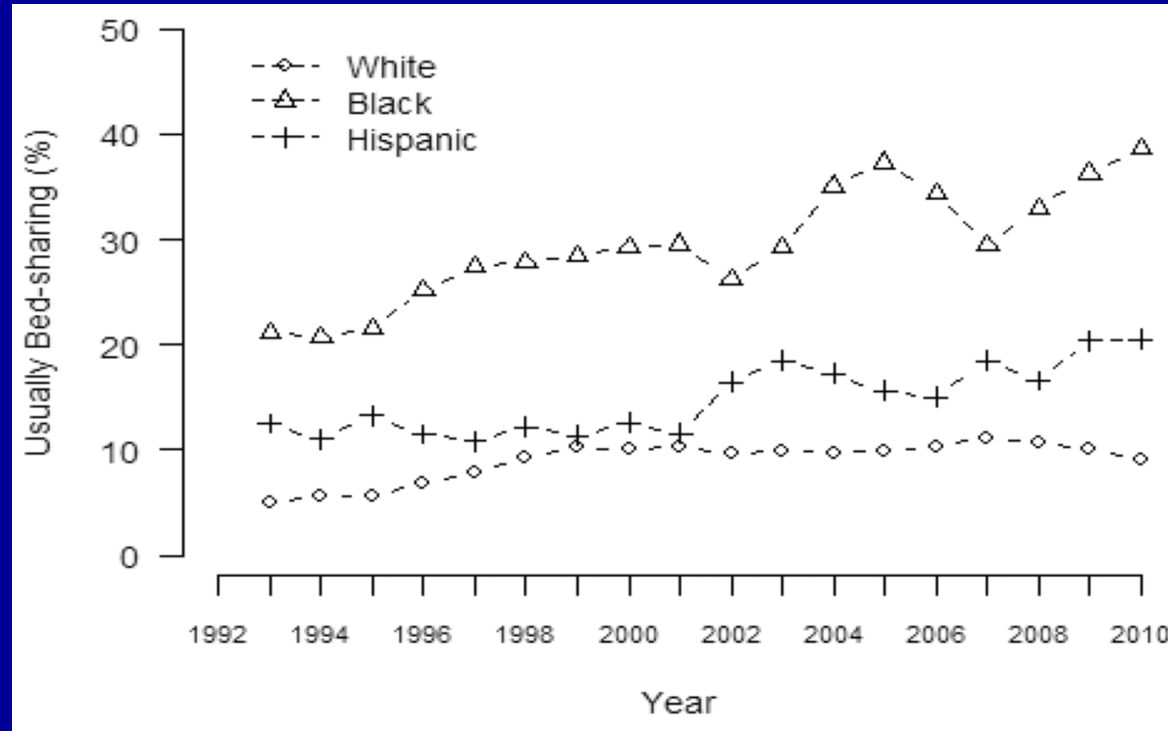
SOURCE: Pediatrics, September 2017.

Physician Advocacy

- Srivatsa 1997: HCP education to new families...34% reduction in prone sleeping
- Eron 2009: Study of Central NY state physicians...30% identified incorrect safest sleep position...30% do not discuss with families
- Colson 2009: Only 1/3 mothers advised by MD to use supine position...**3 times more likely to position the baby properly**



Prevalence and Factors Related to Bed-sharing



- Advice against bed-sharing by pediatrician associated with decreased bed sharing 0.66 [0.53-0.82])
- A neutral attitude was associated with increased bed sharing (1.38 [1.05-1.80])

McMullin: SIDS Prevention

A model program for NICUs

- Bundled intervention:
 - Nursing education, crib cards, written instructions reviewed with nurse, sleep sacks for modeling
- 98% babies supine in open crib
- 93% in sleep sacks
- 88% crib cards visible



Today'sBaby QI: Safe Sleep Teaching

- QI intervention median = 160 days
- Mothers reported receiving information 72% to 95%
 - increase of 24%-57%
- 94% babies observed supine (plus 24%)
- 88% infants in safe sleep environment
 - Increase of 33%
- Gains maintained up to 12 months

Kellams A, Parker MG, Geller NL, et al. Today'sBaby quality improvement: safe sleep teaching and role modeling in 8 US maternity units. *Pediatrics*. 2017;140(5):e20171816

Coordinated Education Efforts Work!

- Baltimore- 2009 to 2015:
 - 38% decrease in infant mortality
 - SUID decreased > 50%
- SD—Over 7,915 Pack ‘n Plays distributed since 2012. Infant mortality rate decreased from 8.6 (2012) to 4.8 (2016)



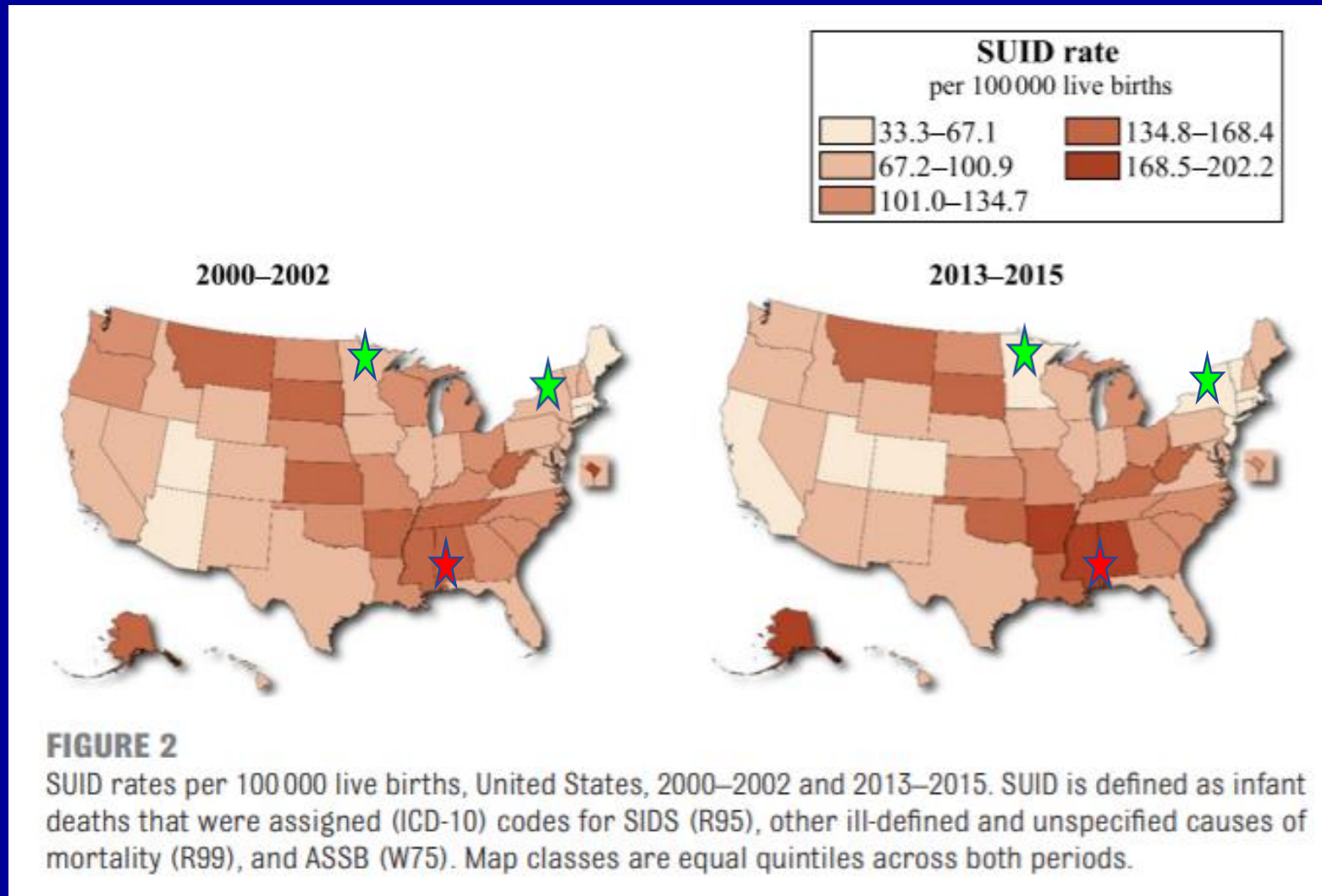
Health Disparities

- Black Infants More Likely Than White Infants To Receive Care In A Lower-Scoring NICU, Research Suggests.
 - [Reuters](#) (3/25) reports, “In a large national study that included nearly 90 percent of all preterm and low-birth-weight babies born in the U.S. in a recent three-year period,” investigators “found that black infants were more likely than white infants to receive care in a lower-scoring neonatal intensive care unit (NICU).”

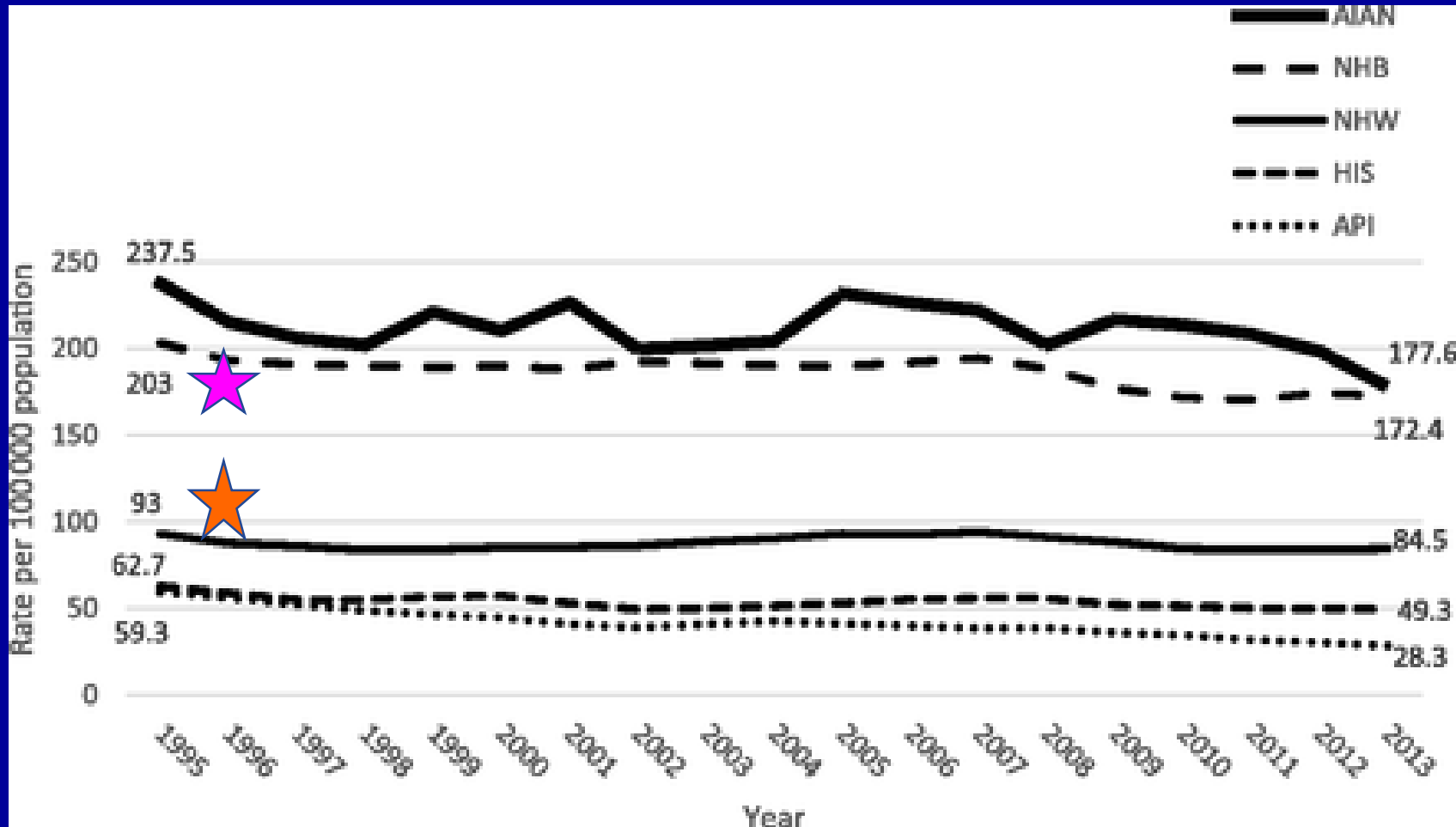
State-Level Progress in Reducing the Black-White Infant Mortality Gap United States, 1999-2013

- State-level variations:
 - Black IMRs (range = 6.6-13.8)
 - Black-White rate ratios (1.5-2.7)
 - Percentage relative improvement in IMR (range = 2.7% to 36.5% improvement)
 - Black-White rate ratios (from 11.7% relative worsening to 24.0% improvement).
 - 13 states: statistically significant reductions in Black-White IMR disparities.

SUID Rates: State Variations



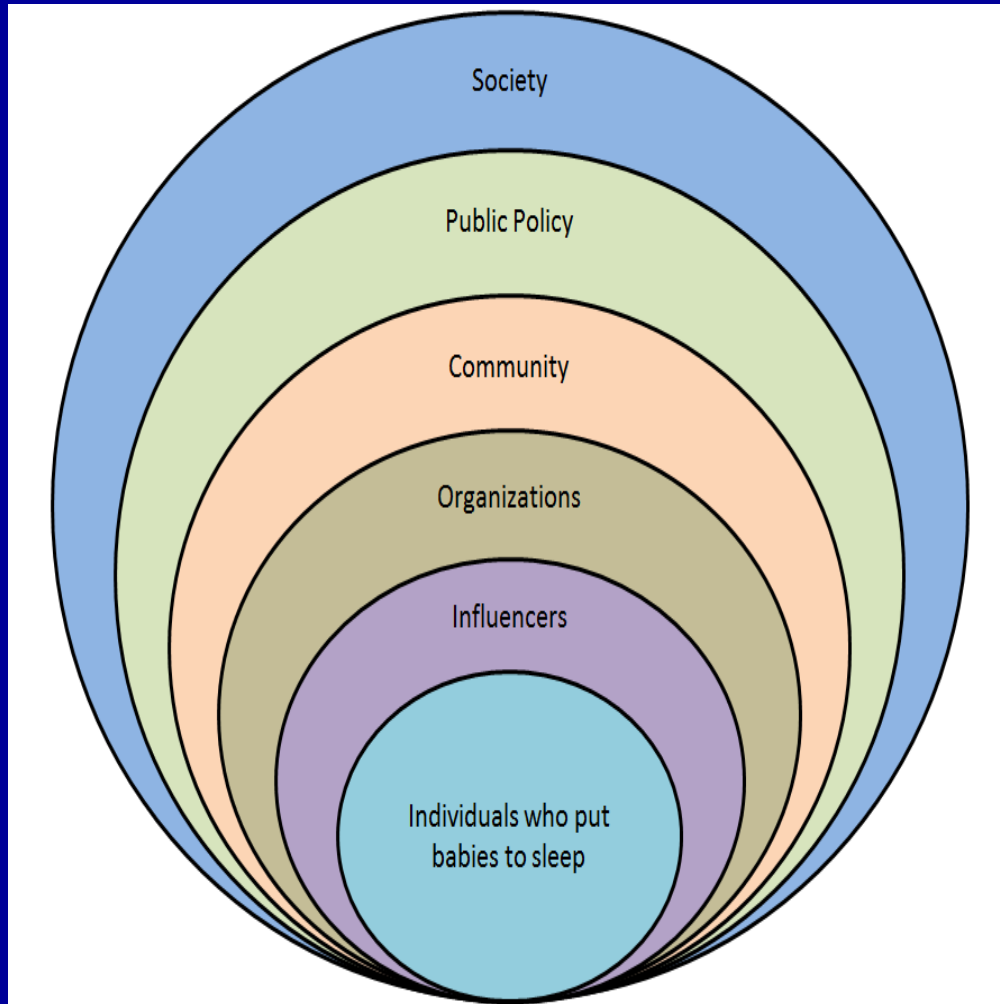
Racial and Ethnic Trends in Sudden Unexpected Infant Deaths: United States, 1995-2013



At this rate of change it will take 51 years for the black population to reach the current rate of SUID for white infants.....



Social-Ecological Model for Infant Safe Sleep



- Structural/Systemic Factors:
 - segregation
 - Education opportunities
 - Structural racism
 - Intergenerational poverty
- Lu: life course approach
 - Epigenetic changes
 - In utero effects
 - multigenerational
- Holistic approach
 - Social, economic disparities
 - Healthcare
 - Communities and families
 - Improve pre-pregnancy and prenatal care
 - HOME VISITATION PROGRAMS

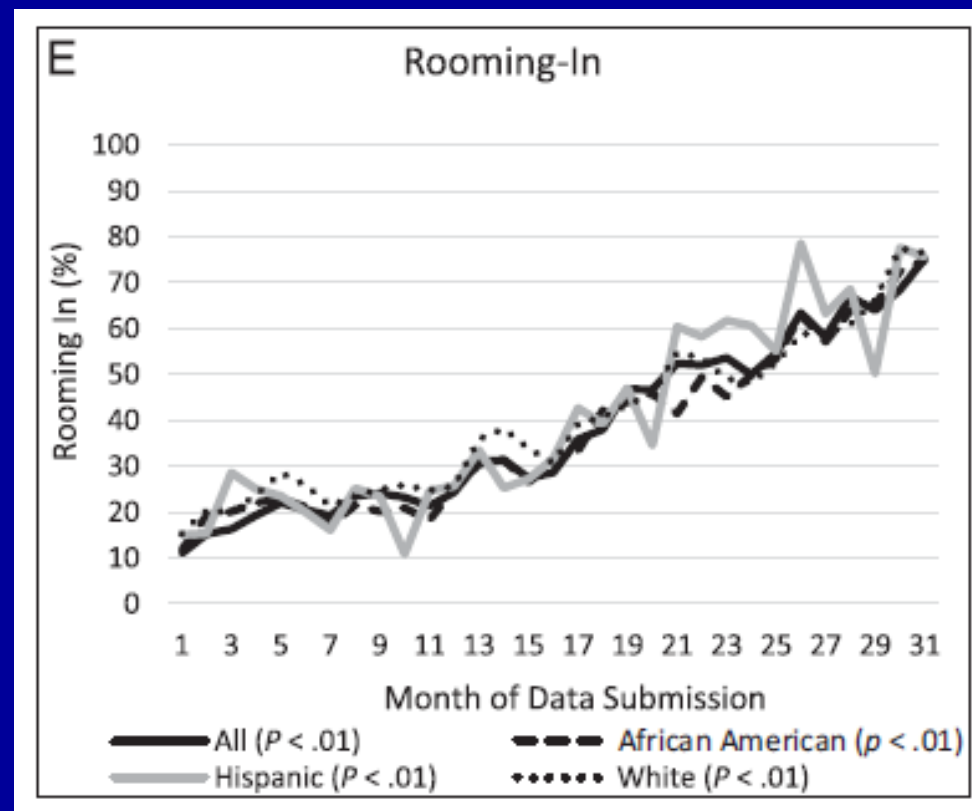
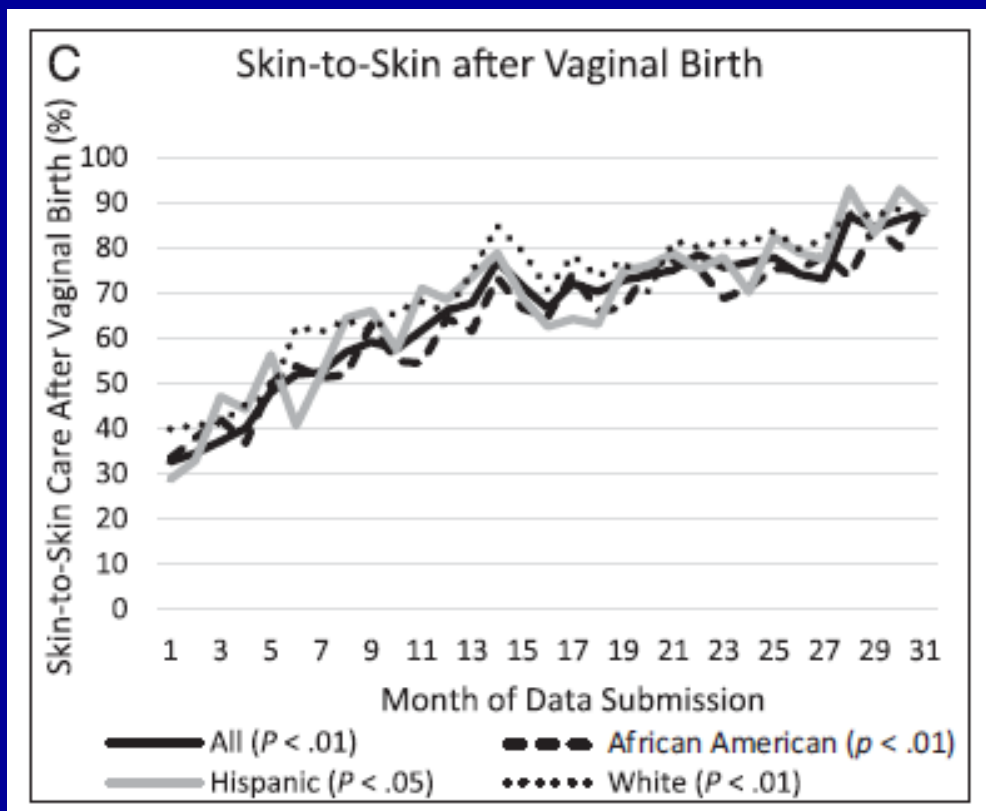
Issues with Health Equity

- Black mothers are more likely to:
 - Not use supine positioning
 - Formula feed
 - Bed share
 - Place soft bedding in sleep area

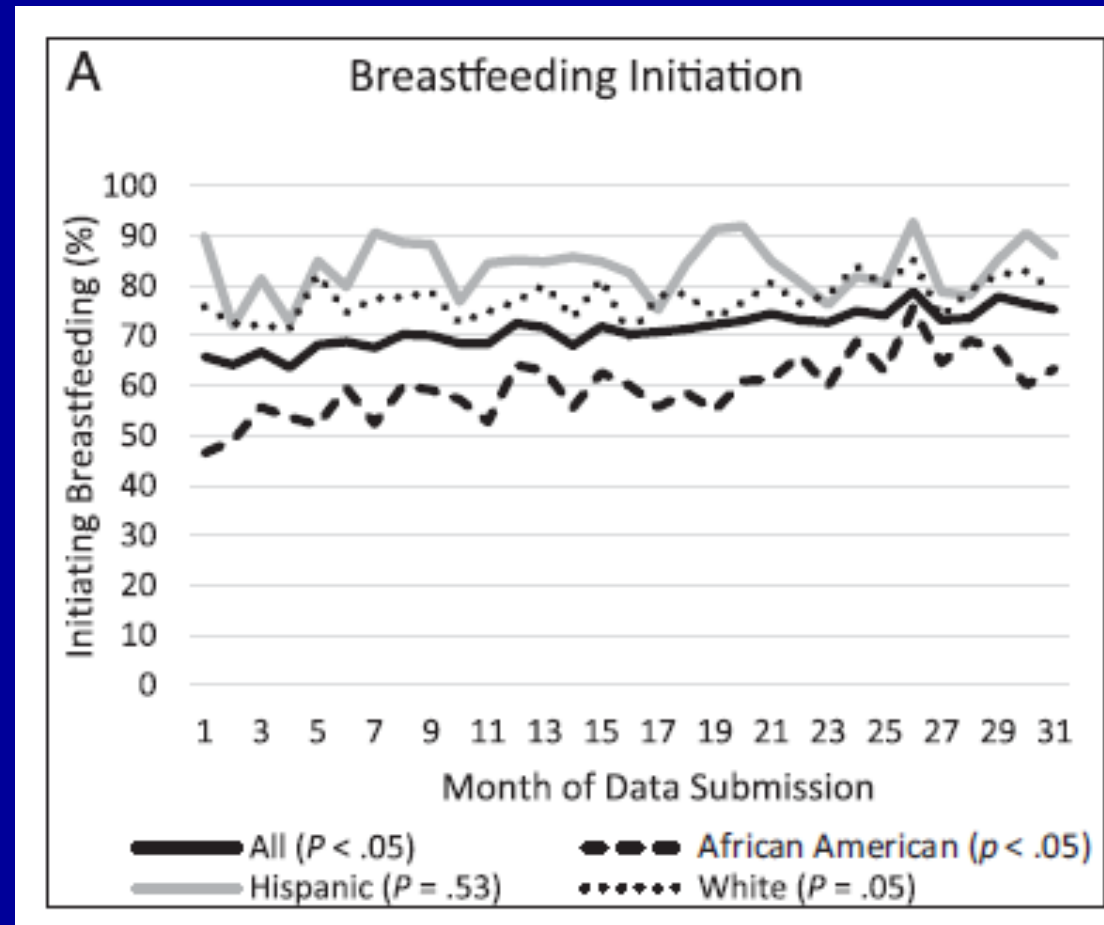
Addressing Racial Inequities in Breastfeeding in the Southern US

- Intensive QI intervention to improve compliance with the Ten Steps
- CHAMPS: MS, TN, TX, LA
- BF initiation increased:
 - All: 66% to 75%
 - AA: 46% to 63%
- Exclusive BF increased:
 - All: 34% to 39%
 - AA: 19% to 31%

Merewood, et al.



Reducing Racial Disparities



Disparity fell by 9.6% (95% CI, 1.6–19.5)!

Decreasing Racial Disparities: Stacy Scott

- helping families understand the existing recommendations and why they matter.
- ...means having conversation built on mutual trust
- ...isn't something that just exists naturally
- “There is underlying tension, which stems from historic trauma and implicit bias.”

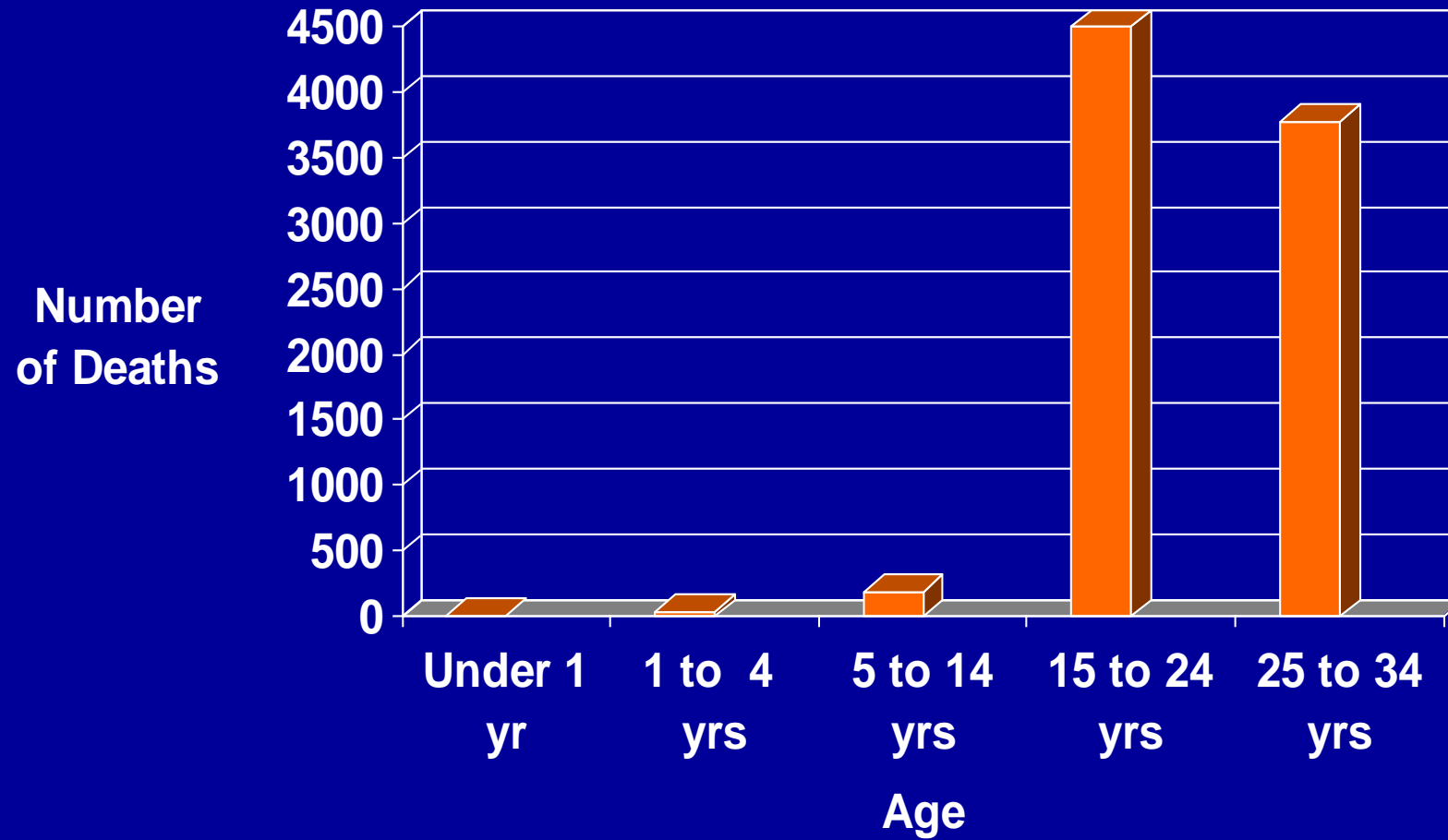
Shifting the Power

- Advice of family and fellow community members
 - those that share and understand their lived experience.
 - Familiar voices with shared experience = TRUST
 - Community health workers
 - Home visitors
 - doulas

Sensitivity to Existing Barriers

- Unique experiences
 - Gun violence
 - Animal and bug bites
 - Can't afford a crib or PNP
 - Non-traditional relationships

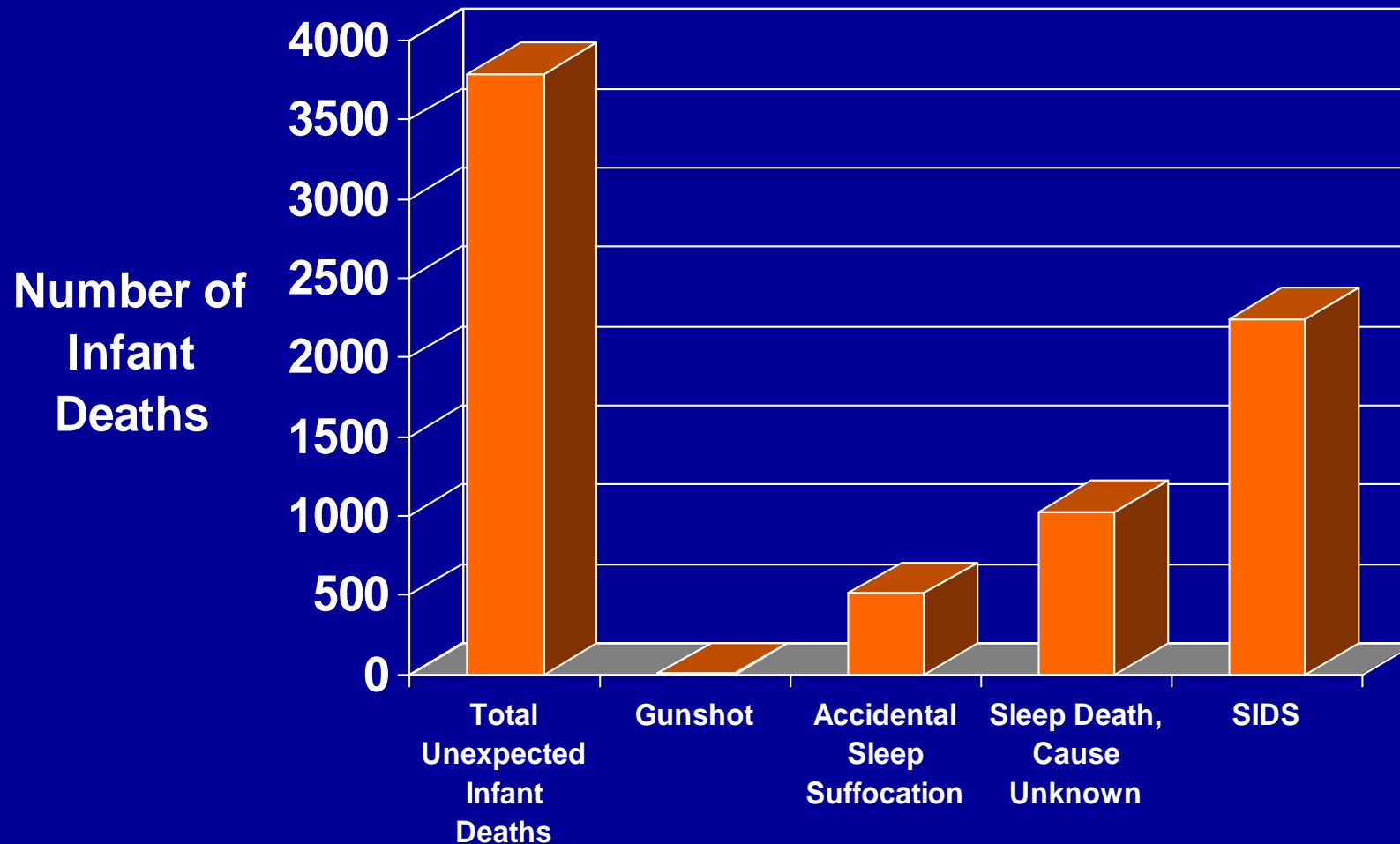
Q. How many babies die of gunshot wounds each year?



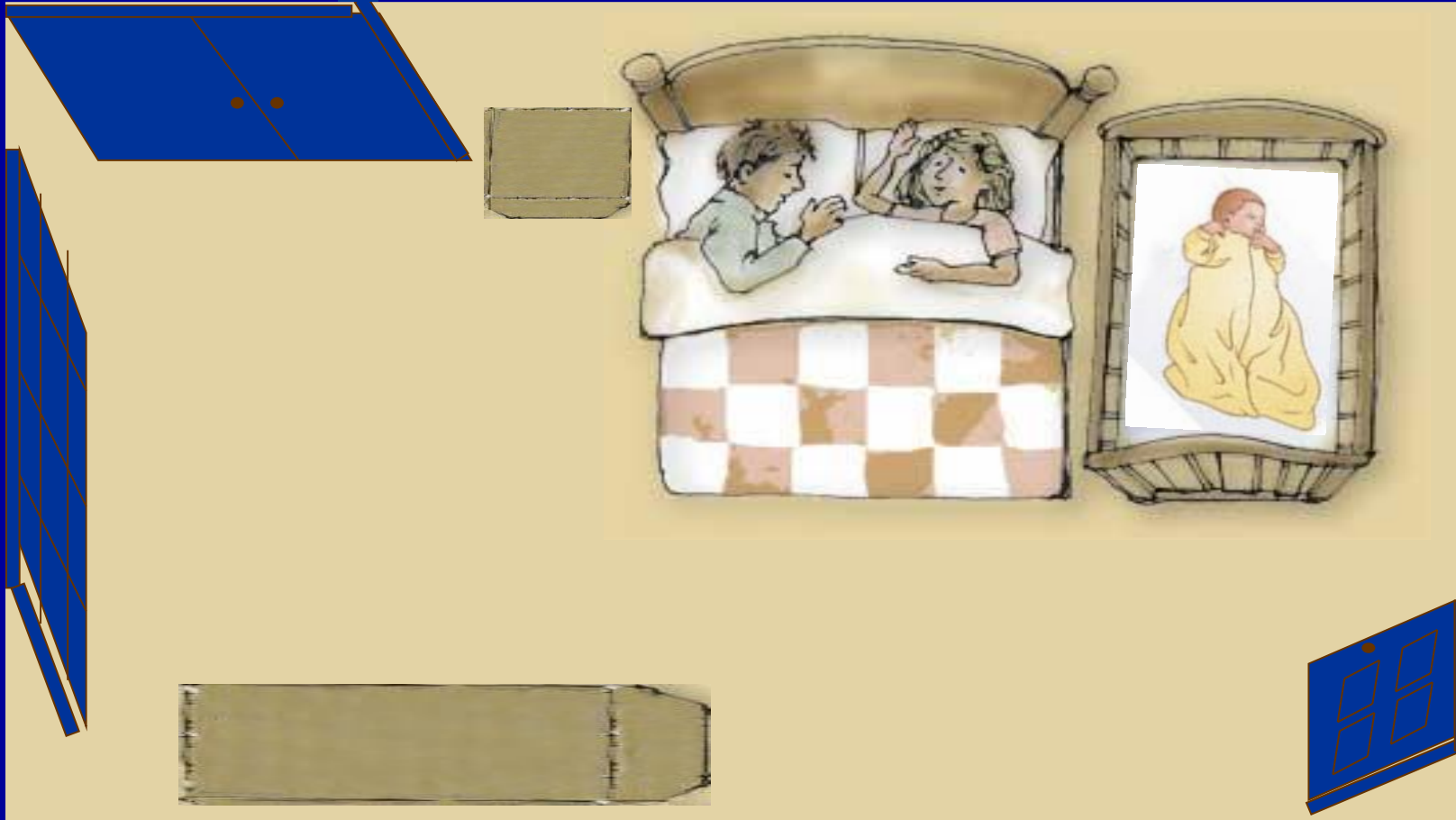
Answer: **ALMOST NONE!!**

Q: Why are our babies dying?

A: Sleep-related deaths!



Q. How can I arrange the room for safety?



Communication

- “Health care providers are encouraged to have open and non-judgmental conversations with families”
- Recommendations taken into consideration based on relative risks and benefits of individual circumstances
- Motivational Interviewing
- Listen. Observe. Validate. Educate



Encouraging parents to take action!

According to the *Social Learning Theory* parents are more likely to recall and comply with instructions when the health care provider:

- Uses a positive tone.
- Provides adequate information.
- Allows the parent to ask most of the questions.

Motivational Interviewing

“a collaborative, goal-oriented style of communication with particular attention to the language of change”

- Strengthen personal motivation and commitment to a specific goal
- Explore one's reasons for change (barriers)
- Patient generates own solutions
 - More likely to feel realistic
 - Planting seeds of change

Counseling Strategies

Follow the Recommendations

- “Red Rules”
- Car seats: sometimes?
- Accepting deviations undermines the rules
- Better for establishing policies

Risk Reduction

- Some is better than none
- Decreasing barriers
- More reality based: parent-focused
- Partnership
- Better at individual level

Can a SIDS Calculator Improve Compliance???

SUID Risk Factors

- Maternal age
- Parity
- Ethnicity of infant
- Gender
- Infant age
- Birthweight
- Twin/multiple
- Breastfeeding
- Maternal smoking
- Father/partner smoking
- Alcohol use
- Illicit drug use
- Sleep room
- Sleep position
- Sharing sleep surface (bed-sharing)

Risk factors		Multivariate Odds Ratio	95% Confidence Intervals
Maternal and paternal smoking	Mother	1.5	1.2-2.1
	Father	1.1	0.8-1.4
	Both	2.9	2.3-3.6
Bed-sharing* < 3 months' age		2.7	1.4-5.3
Not breastfeeding		1.5	1.2-1.8
Sleep position	Side	1.5	1.2-2.1
	Prone	10.5	7.5-14.6
Maternal drug and or alcohol use	Alcohol (> 2 units in last 24 hours)	4.8	2.6-8.9
	Illegal drugs since baby born	11.5	2.2-59.5
Male gender	Matched studies	0.8	0.6-1.1
	Unmatched studies	1.6	1.3-1.9
Ethnicity 'non-white'		1.5	1.1-1.9
Low birth weight	2500-3499g	1.7	1.4-2.0
	2000-2499	4.2	2.9-6.0
	< 2000g	9.6	6.2-14.7
Younger maternal age	26-30 years	1.9	1.5-2.3
	21-25	3.0	2.4-3.8
	19-20	7.7	5.2-11.4
	18 and under	9.1	5.9-14.1
Higher birth order	2	2.3	1.9-2.9
	5 or more	7.7	5.3-11.3
Pacifier use		0.4	0.3-0.5
Mothers marital status	Single	1.9	1.5-2.4
Not sleeping in same room as parent		2.4	2.0-2.9

Combined data from 5 case control studies: ECAS , Scottish, New Zealand, Irish, GeSID

Risk factors multiply and some interact

Safe Sleep Calculator



Login

You must login before you can use this form

NHI:

Child's date of birth:

Gender:

Male Female

Birth weight:

 gms lbs oz

Is a twin:

No Yes

Baby's ethnicity:

NZ/European NZ Maori Pacific
 Asian Other Unknown

Mother's age:

Relationship status:

Living with partner Single

Number of previous live births:

Modifiable risk factors:

Feeding method:

Breast Formula Mixed

Where baby sleeps:

Parents bedroom Own bedroom

Sleeping position:

On back On side On front

Mother smokes:

No Yes

Father smokes:

No Yes

Number of days per week mother drinks
2+ units of alcohol:

Mother uses recreational drugs:

No Yes

Calculate Risk

This is real data and can be submitted to the research database  

HealthPathways (Auckland)

HealthPathways (3D)

Implicit Bias Testing

- Implicit stereotype
 - one that is relatively inaccessible to conscious awareness and/or control.
- Project Implicit
- Implicit Association Test (IAT)
- <https://implicit.harvard.edu/implicit/takeatest.html>

Thank You!



Finnish Baby Box

Developed in Finland in 1938 to encourage prenatal care, it is a cardboard box, which is filled with baby supplies and can double as a baby bed



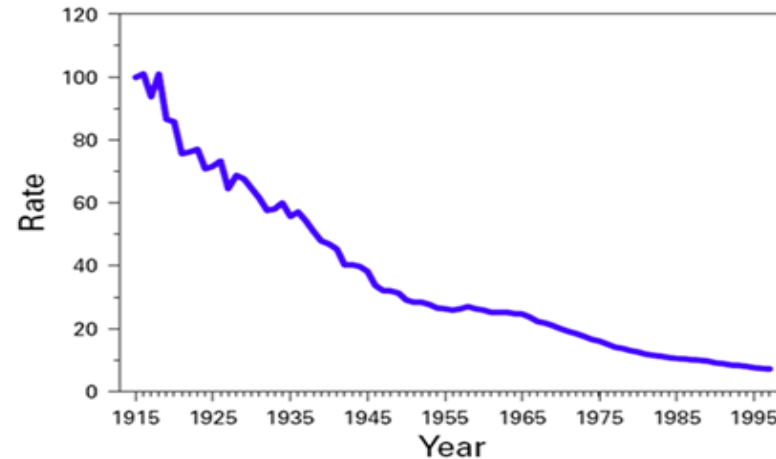
Finnish Baby Box

- These graphs show similar decreases in infant mortality rates in Finland vs US
- There are **NO STUDIES** to support the claim that the box reduces SIDS!



Source: Statistics Finland

FIGURE 1. Infant mortality rate,* by year — United States, 1915–1997



*Per 1000 live births.