Health Departments do it better: Prenatal care site and prone infant sleep position.

Analysis of the 1998-1999 Oregon PRAMS Dataset

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National SIDS Rates (per 1000 live births) by Race/Ethnicity, 2001

Sources: Mathews TJ, et. al. Infant Mortality Statistics from the 2001 Period Linked Birth/Infant Death Data Set. Natl Vital Stat Rep 2003;52(2):21. Oregon Department of Human Services Center for Health Statistics. Oregon Vital Statistics Annual Report 2001, Volume 2. Table 7-2.

"Back to Sleep" Campaign

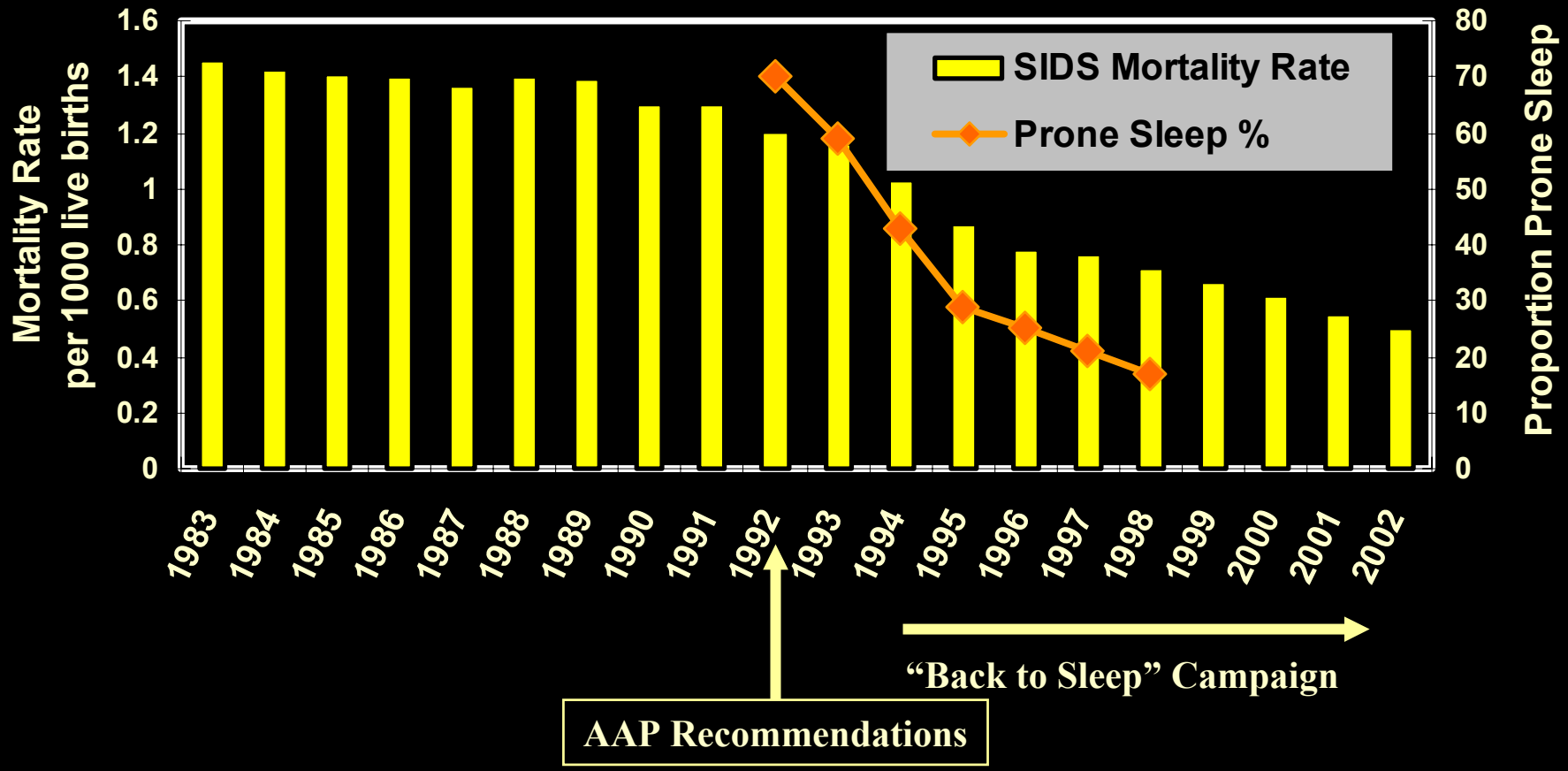
- **1992 – the American Academy of Pediatrics (AAP) recommends non-prone sleep position for all healthy infants**
- **1994 – "Back to Sleep" campaign, joint effort of the AAP, U.S. Public Health Services, SIDS Alliance and the Association of SIDS and Infant Mortality Programs**
- **1996 – AAP reaffirms recommendation, indicates side sleep position less desirable but acceptable**

Decline in prevalence of prone positioning, 1992-1998

- **U.S. 1992 70% (Blacks slightly > Non-Hispanic whites)**
- **U.S. 1994**
  - **Non-Hispanic whites 44%**
  - **Blacks 53%**
- **U.S. 1998**
  - **Non-Hispanic whites 17%**
  - **Blacks 32%**
- **Oregon PRAMS 1998-1999**
  - **Non-Hispanic whites 10%**
  - **Blacks 19%**

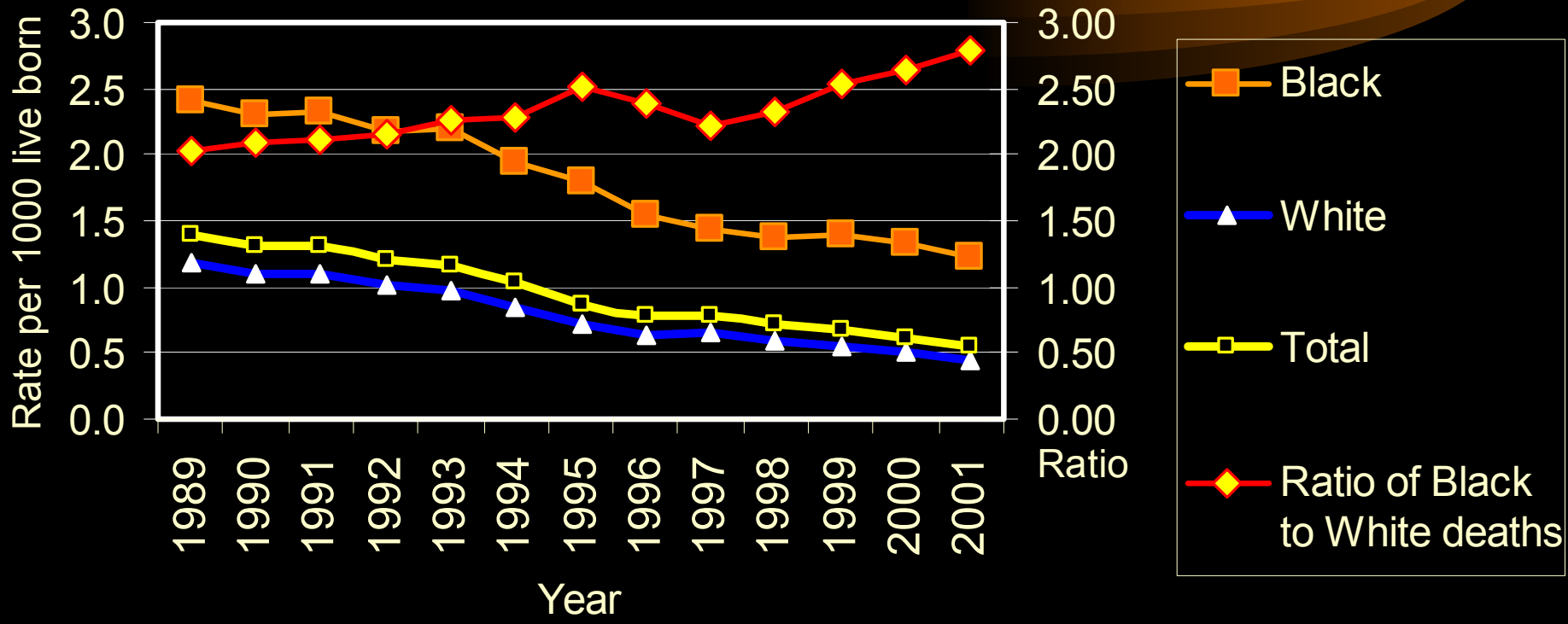
U.S. data: Willinger M, Ko C-W, Hoffman HJ, Kessler RC, Corwin MJ. Trends in infant bed sharing in the United States, 1993-2000. Arch Pediatr Adolesc Med 2003;157:43-49

SIDS Mortality and Prone Sleep Position 1983-2002



Sources: Mortality data from the CDC, National Center for Health Statistics, National Vital Statistics System, at http://www.cdc.gov/nchs/about/major/dvs/mortdata.htm. Prone sleep prevalence data from Task Force on Infant Sleep Position and Sudden Infant Death Syndrome, Pediatrics 2000;105:650-656

Racial disparities in SIDS mortality, 1989-2001



Mortality data from the CDC, National Center for Health Statistics, National Vital Statistics System, at http://www.cdc.gov/nchs/about/major/dvs/mortdata.htm.

Reported risk factors for prone infant sleep position

- **African-American race: OR 1.5 – 2.5**
- **Parity: OR 1.5 – 2.5**
- **Late/no initiation prenatal care: OR 1.5 – 3.5**
- **Infant age older than 2 months: OR 1.5**
- **Baby's grandmother in the home: OR 1.5 – 2.5**
- **Observation of nursery choice of position OR 2.5**
- **Postnatal health provider advice?**
- **Public clinics for pediatric care?**
- **Young, single mother?**
- **Maternal education?**
- **Normal birthweight infant?**

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Oregon PRAMS

"Oregon PRAMS, the Pregnancy Risk Assessment Monitoring System, is a project of the DHS Office of Family Health with support from the national Centers for Disease Control and Prevention (CDC). PRAMS collects data on maternal attitudes and experiences prior to, during, and immediately after pregnancy for a sample of Oregon women."

Oregon PRAMS

- **Monthly sample from birth certificates**
- **Nov. 1998-Oct. 1999**
- **Mixed mode:**
  - **1st mailing**
  - **2nd mailing**
  - **Computer-assisted telephone interview**

Oregon PRAMS

- **Stratified, random within strata, over-sampling of first five strata**
    1. **Hispanics**
    2. **Non-Hispanic (NH) blacks**
    3. **NH Asians & Pacific Islanders**
    4. **NH American Indians & Alaskan Natives**
    5. **NH whites with low birthweight babies**
    6. **NH whites with normal birthweight babies**
- **Weighted 1) to Oregon's population, 2) for non-response, and 3) for non-coverage**

PRAMS Response

- **2919 surveys mailed**
- **1867 surveys completed**
  - **1308 – first mailing**
  - **230 – second mailing**
  - **329 – telephone**
- **64.0% unweighted response**
- **73.5% strata-weighted response (appropriate given complex sampling design)**

PRAMS Response

- **1867 completed**
- **53 excluded**
  - **babies were no longer alive and/or no longer living with mother**
- **38 excluded**
  - **did not indicate whether or not their babies were alive and living with mother**
- **1776 eligible for analysis.**
- **44 did not answer sleep position question**
- **1732 (97.5% of those eligible) included in the analysis.**

PRAMS Question 61. Infant Sleep Position.

61. How do you put your new baby down to sleep *most* of the time?

Check one answer.

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

PRAMS Question 25. Prenatal Care Site.

25. Where did you go *most of the time* for your prenatal visits?

Don't include visits for WIC.

Check one answer.

- **Hospital Clinic**
- **Health Department Clinic**
- **Private doctor's office or HMO clinic**
- **Other • Please tell us:**

_____

"Change-in-point-estimate" method of binary logistic regression *

- ***Odds ratio of interest*** **adjusted for confounding**
- **Confounder not selected *a priori* or based on statistical significance – selected if it changed *odds ratio of interest* by at least 10%, in either direction**
- **Selection of confounders is specific to data set and *odds ratio of interest***
- **Analysis using SUDAAN 8.0.2**

*** S Greenland. Modeling and variable selection in epidemiologic analysis. Am J Public Health 1989;79:340-349.**

Potential confounders

- **Race/ethnicity**
- **Maternal education**
- **Maternal age**
- **Parity**
- **Marital status**
- **Urban vs. mixed density vs. rural county of residence**
- **Initiation of prenatal care**
- **Adequacy of prenatal care**
- **WIC enrollment**
- **Birthing hospitals by size**
- **Insurance - at labor & delivery and current**
- **Family income**
- **Infant gender**
- **Infant birthweight**
- **Bed-sharing status**
- **Breastfeeding duration**
- **Smoker before, during or after pregnancy**
- **PRAMS mode of administration**

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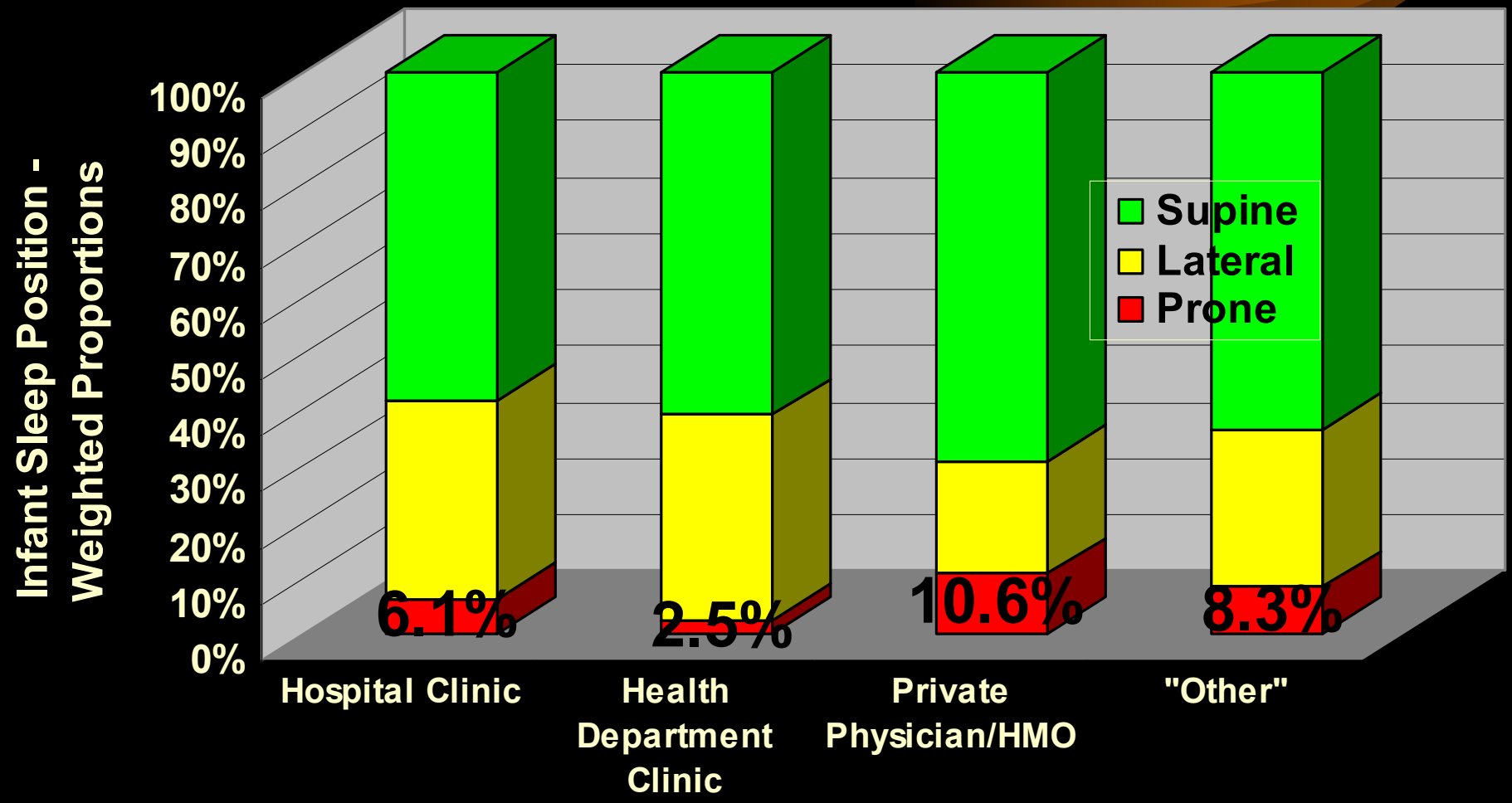
Prone sleep and PRAMS Q25 prenatal care site



Prenatal care site and prone sleep: crude odds ratio

Characteristic	n*	Prone sleep†	Univariable OR (95% CI)
Total	1763	9.2%	---
Private MD/HMO	1056	10.6%	4.62 (2.07–10.31)
Hospital Clinic	305	6.1%	2.55 (0.88 – 7.32)
Other type	119	8.3%	3.55 (1.02 –12.36)
Health Department Clinic	226	2.5%	Referent

* unweighted n † weighted proportion

Prenatal care site and sleep position: multivariable logistic regression

Characteristic	Multivariable OR (95% CI)
Private MD/HMO	4.24 (1.53 – 11.77)
Hospital Clinic	1.86 (0.56 – 6.23)
Other type	2.78 (0.66 – 11.79)
Health Department Clinic	Referent

Confounders: type of insurance at delivery, mother's education, breast-feeding duration, parity, co-sleeping status, family income, race & ethnicity, and smoking status before pregnancy.

Prenatal care site by race/ethnicity

	Health Dept.	Private	Hospital Clinic	Other	Total by race/ethnicity
Black ‡	11%	47%	37%	6%	100% (209)
Hispanic	38%	35%	17%	10%	100% (415)
White ‡	3%	80%	11%	6%	100% (678)
Asian ‡	11%	63%	24%	3%	100% (289)
American Indian ‡	9%	64%	13%	14%	100% (208)

‡ non-Hispanic

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Conclusion: prenatal care site and infant sleep position

Women who receive prenatal care from private providers and HMOs are at *four times the risk* of choosing prone infant sleep position than women who receive prenatal care from health departments, placing their infants at greater risk for SIDS.

Prenatal care site and race/ethnicity

- **61% of the Health Department prenatal patients in our study were Hispanic**
- **38% of Hispanics attended Health Department prenatal clinic – proportionately more than three times that of any other racial or ethnic group**
- **However, association was present even if Hispanics excluded from the analysis: adjusted odds ratio 10.44 (1.57 – 69.40)**

Multnomah County Health Department

- **Multnomah County: only urban county in Oregon, 19% of the state's population**
- **The largest health department clinic system in the state**
- **85 of 243 respondents (35%) seen at health department prenatal clinics: residents of Multnomah County**

Multnomah County Health Department

- **Most prenatal care is from nurse practitioners**
- **All physicians and nurse practitioners: non-Hispanic white**
- **Nearly all clinic nurses: non-Hispanic white**

Multnomah County Health Department

- **70% of the prenatal nurses are bilingual**
- **Nearly all prenatal clinic health assistants are bilingual and half are Hispanic**
- **Free childbirth classes in English and Spanish**
- **Referral to birthing hospital with English and Spanish discharge education**

Public Health Implications

- **Health Departments communicate the back-to-sleep message better than private prenatal care providers.**
- **Women receiving prenatal care from private providers were at significantly higher risk of choosing prone infant sleep positioning.**
- **These women should be targeted for enhanced culturally-competent efforts to promote supine infant sleep position.**

This work has been accepted for publication by the Maternal and Child Health Journal