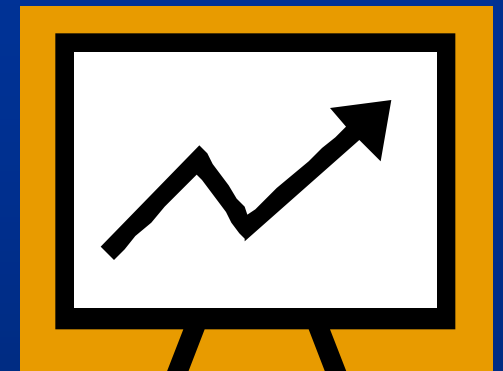


Environment Contaminants and Adverse
Birth Outcomes
Synthesizing the Science
Assessing the Trends

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Issues

- ▶ Why focus on trends in children's health?
 - Birth outcomes?
- ▶ What do we know about environmental contaminants?
- ▶ What are the key metrics?
- ▶ What has changed over time?

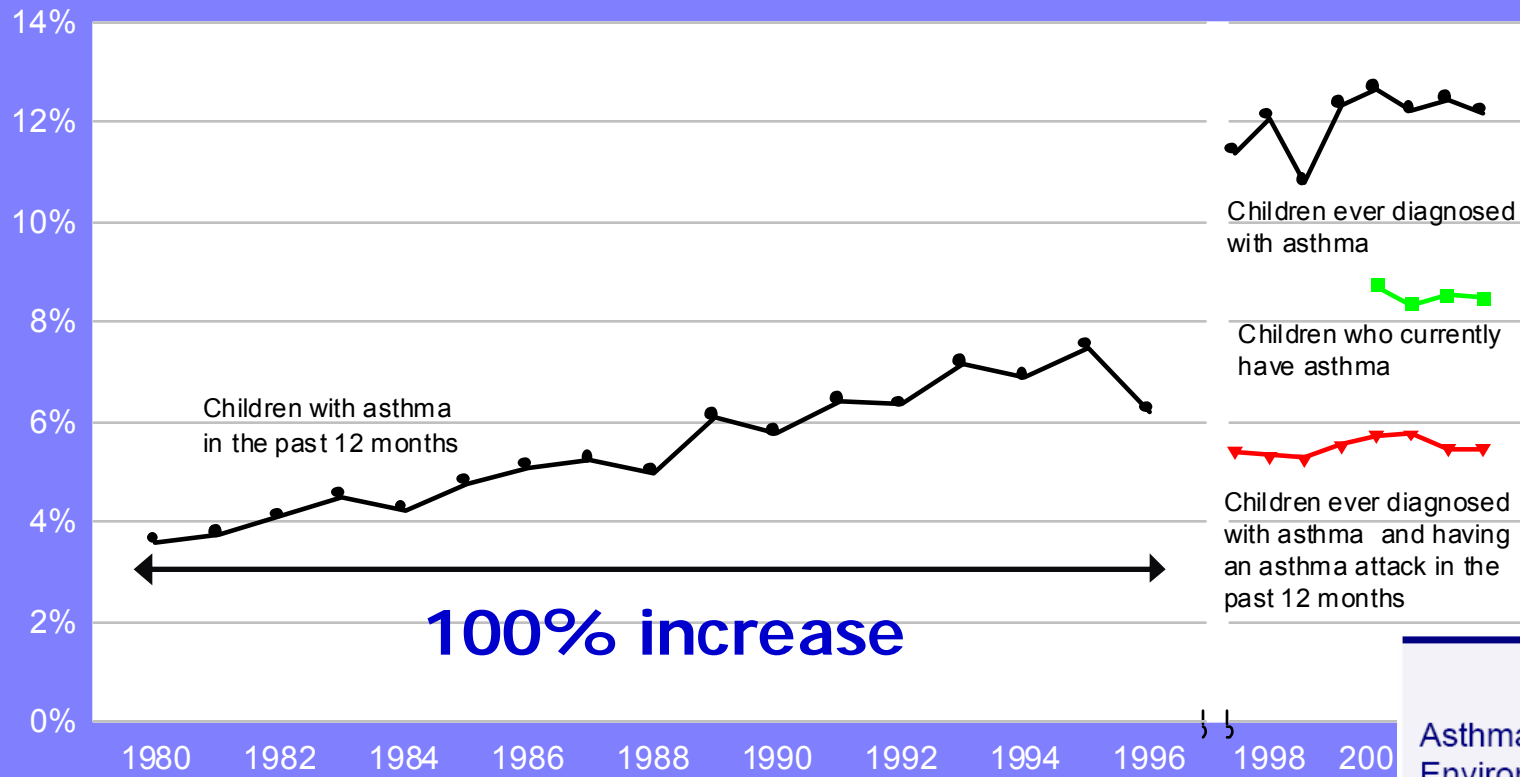


Why track children's environmental health?

- ▶ To know what is going on
- ▶ To inform policymakers, public, stakeholders
- ▶ To monitor progress (or lack of)
- ▶ To guide policy

Children's Environmental Health Indicators:
Quantitative Measures of Factors Important to
Children's Environmental Health

Percentage of children with asthma



100% increase

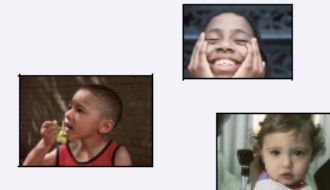
SOURCE: U.S. EPA. America's Children and the Environment. www.epa.gov/envirohealth/children

DATA: Centers for Disease Control and Prevention, National Center for Health Statistics, National Health Interview Survey

ASTHMA

Asthma and the Environment:

A Strategy to Protect Children



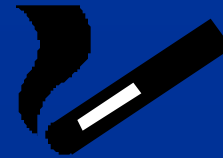
President's Task Force on Environmental Health Risks and Safety Risks to Children
 January 28, 1999
 Revised: May 2000

Adverse birth outcomes

- ▶ Low birthweight
 - Preterm delivery
 - Growth retardation (small for gestational age)
- ▶ The concern
 - Short term – increased risk of complications and infant mortality
 - Long term – increased risk of heart disease, diabetes

What do we know from the epidemiologic literature?

- ▶ Environmental tobacco smoke
 - Causally related to preterm/LBW



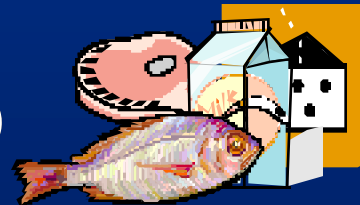
- ▶ Outdoor air pollution
 - Suggestive with some uncertainty



- ▶ Other pollutants
 - Disinfection byproducts (drinking water)
 - ▶ Primarily SGA/IUGR



- Organochlorines (DDT/PCBs)
 - ▶ Some evidence



- PFOS (Perfluorooctanesulfonic Acid)

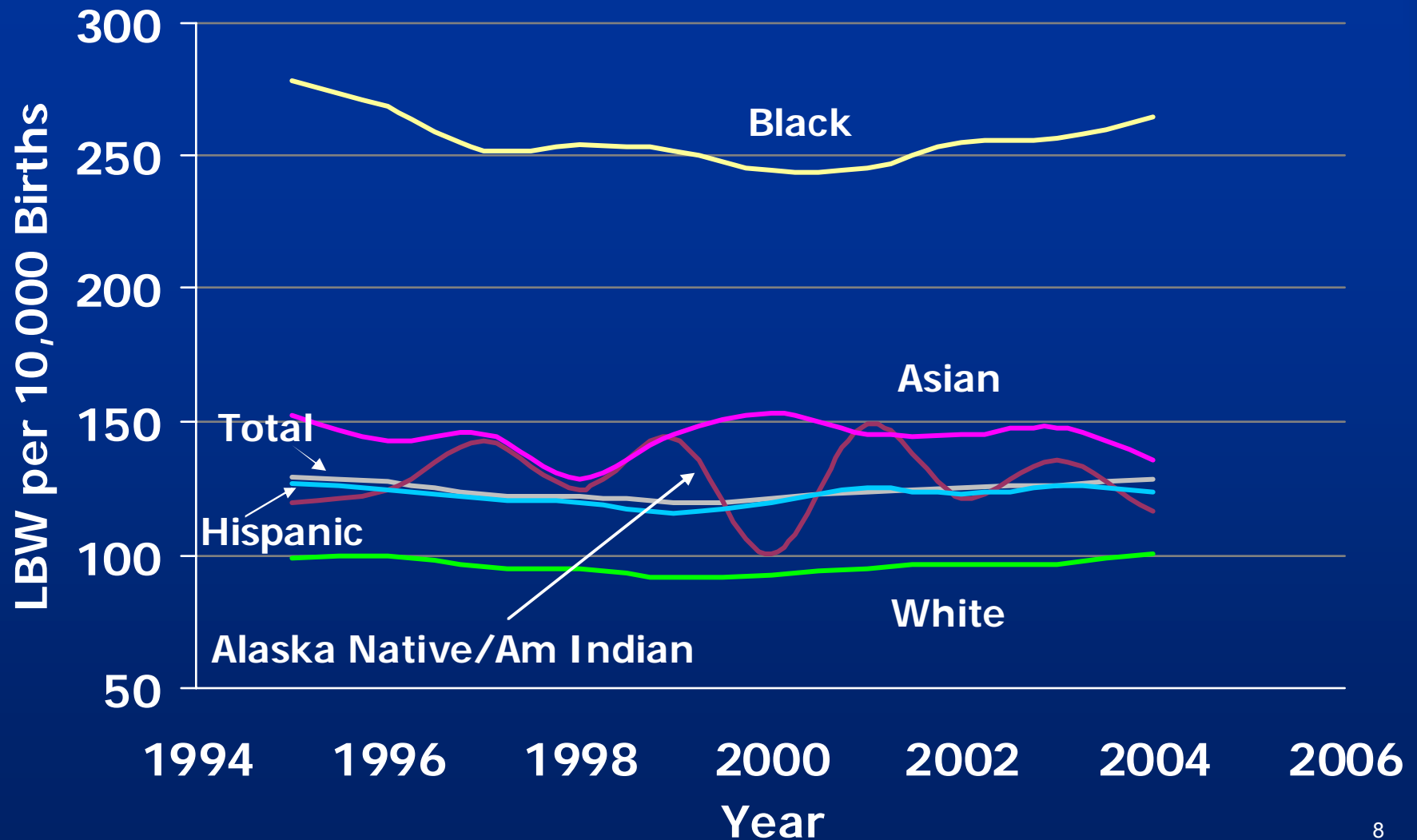


- ▶ Further analysis needed of animal literature

Approach

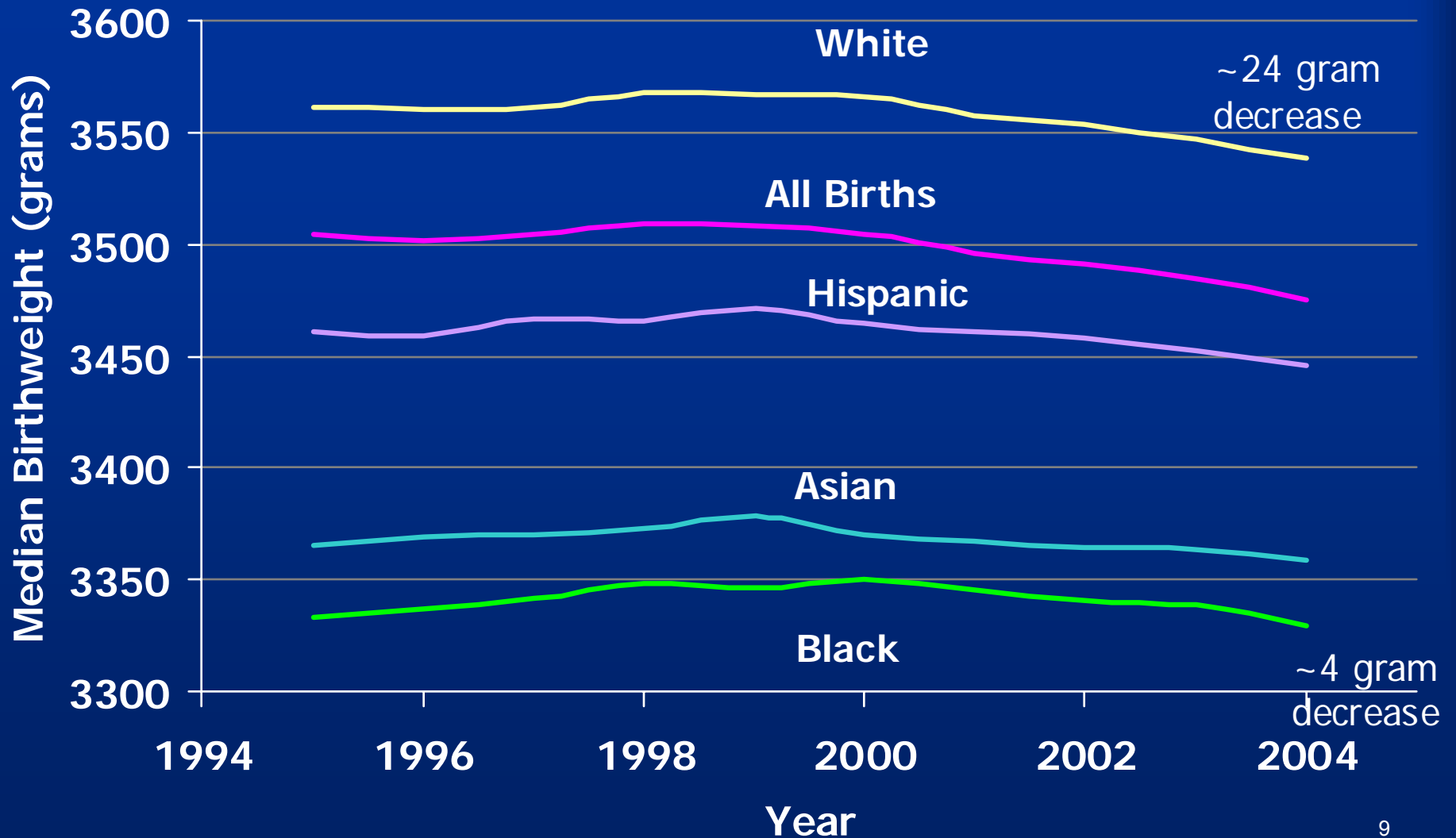
- ▶ Evaluate outcomes by
 - Mostly likely influenced by environment
 - Account for maternal factors which may influence trends
 - ▶ Trends in multiple births => smaller babies
- ▶ Singleton births
- ▶ Growth retardation/Low birthweight
 - Births at 40 weeks
 - ▶ <2,500 grams
 - ▶ Median birthweight
 - Captures shifts in birthweight (8 lb baby now 7 lbs)
- ▶ Preterm delivery
 - Total (< 37 weeks)
 - ▶ Near term (36 weeks)
 - ▶ Late preterm (32-35 weeks)
 - ▶ Early preterm (<32 weeks)

LBW 40 Weeks Singleton Births



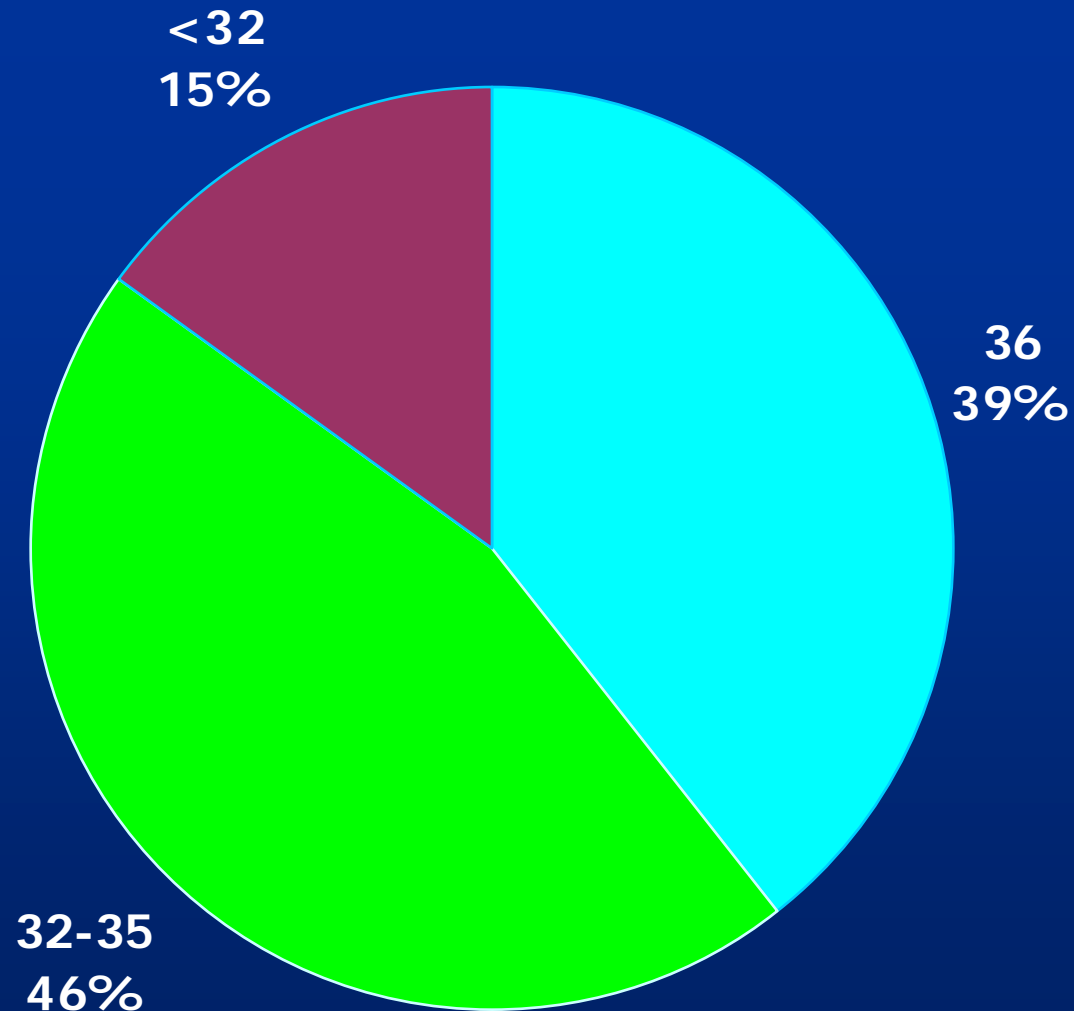
* All Racial Groups are NonHispanic

Median Birthweight – 40 Weeks

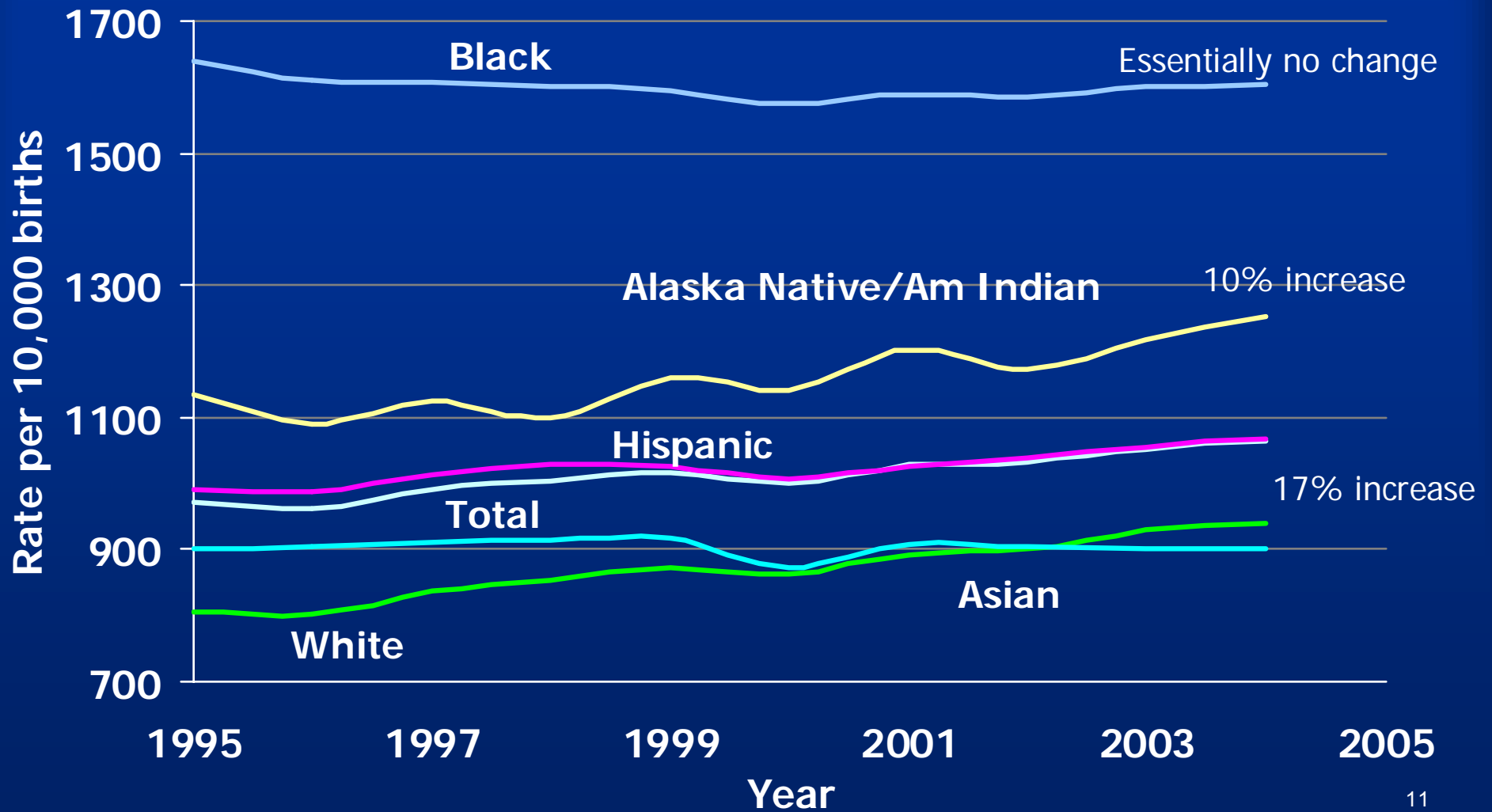


* All Racial Groups are NonHispanic

Preterm Delivery by Week - 2004

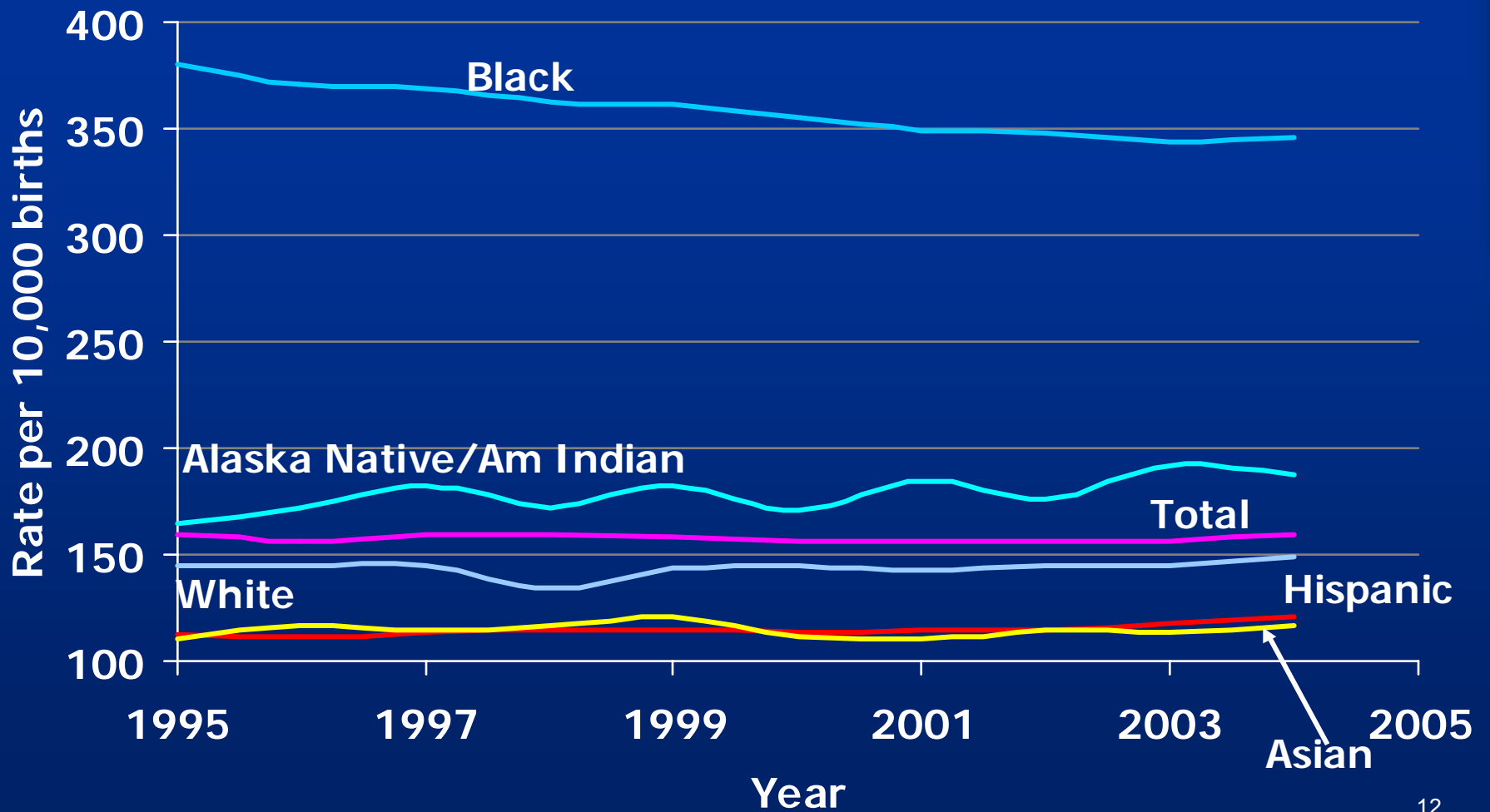


All Preterm Births (<37 Weeks)



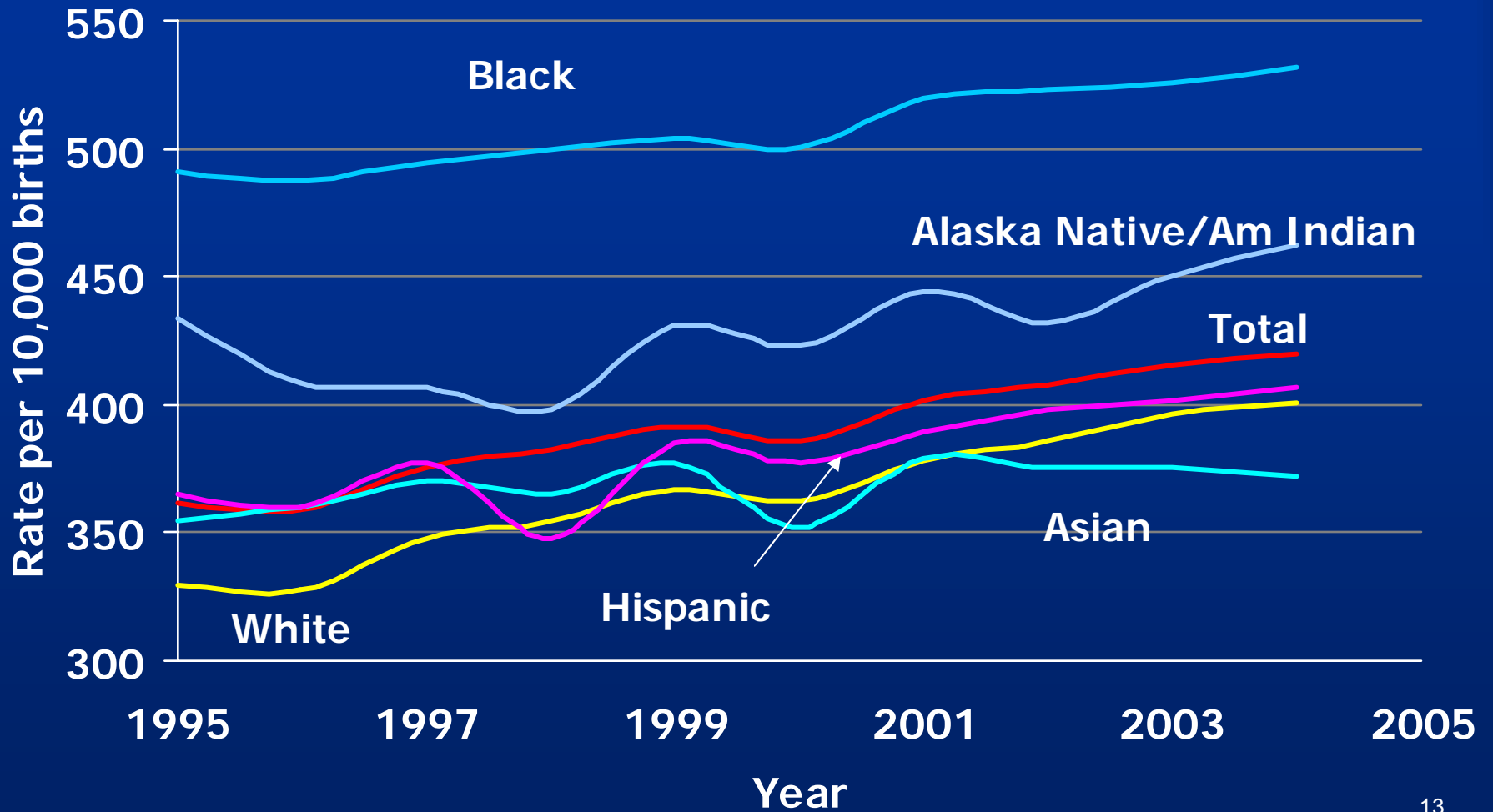
* All Racial Groups are NonHispanic

Preterm <32 Weeks



* All Racial Groups are NonHispanic

Preterm 36 Weeks



* All Racial Groups are NonHispanic

Shift in distribution of preterm birth - from 40 to 39 week most common gestation

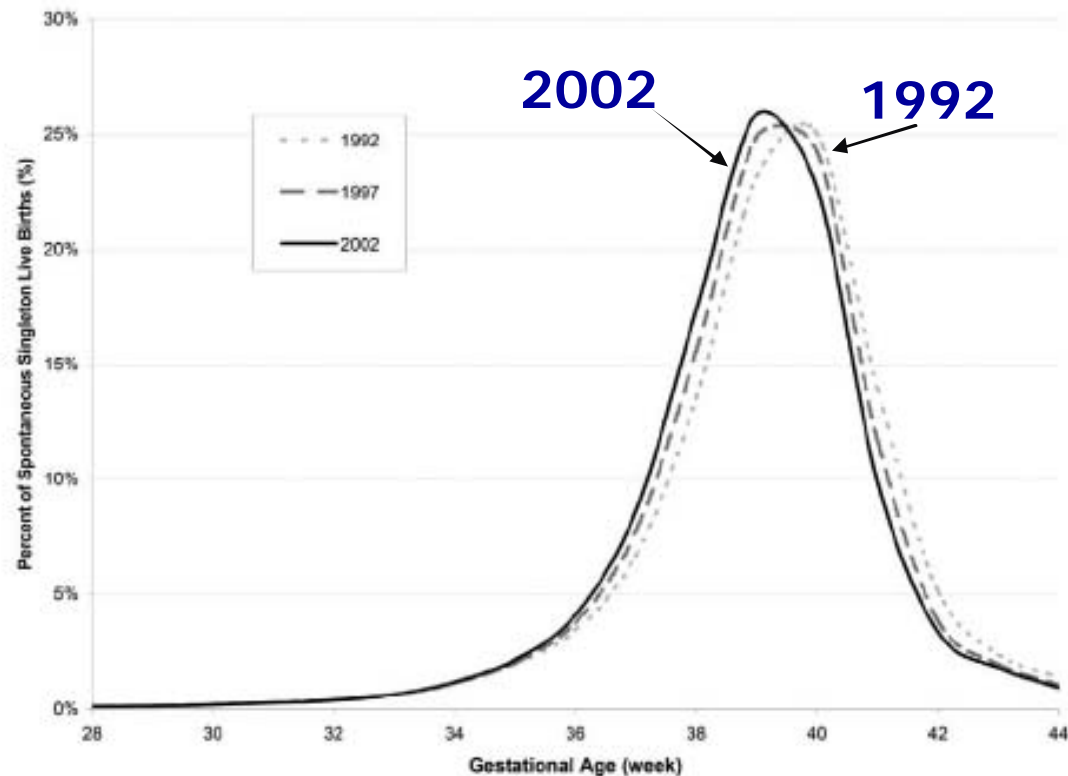
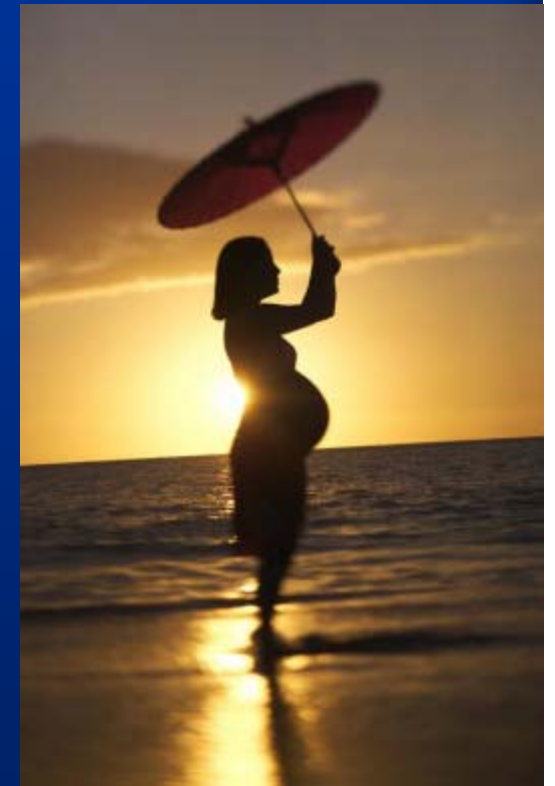


Figure 2 Shifting distribution of gestational age among spontaneous singleton live births, United States 1992, 1997, and 2002.

Implications

- ▶ Shift in preterm delivery, trend toward earlier delivery
- ▶ LBW appears stable –
 - Median birthweight shifting down
- ▶ Implications for long term health



Acknowledgements

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- ▶ Office of Children's Health Protection, USEPA

U.S. Chemical Production, 1947-2007



Federal Reserve G.17

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