PREGNANCY ASSOCIATED MORTALITY REVIEW (PAMR), MISSOURI, 1999-2008

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Definitions

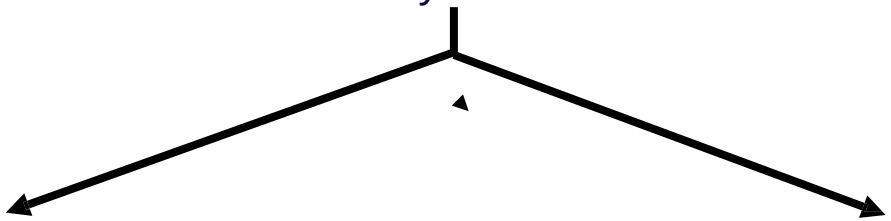
Maternal Mortality Rate

Number of women who die from pregnancy-related causes within 42 days postpartum / the number of live births in that year multiplied by 100,000.

(sometimes referred to as the Maternal Mortality Ratio)

Pregnancy-Associated Deaths

Death of a woman within one year postpartum from any cause



Pregnancy-Related Deaths

Death of a woman within one year postpartum related to pregnancy or aggravated by the pregnancy or its management

Not-Pregnancy-Related Deaths

Death of a woman within one year postpartum unrelated to pregnancy or its management

SOURCE: The California Pregnancy-Associated Mortality Review. Report from 2002 and 2003 Maternal Death Reviews, April 2011; page 3. http://www.cdph.ca.gov/data/statistics/Documents/MO-CA-PAMR-MaternalDeathReview-2002-03.pdf

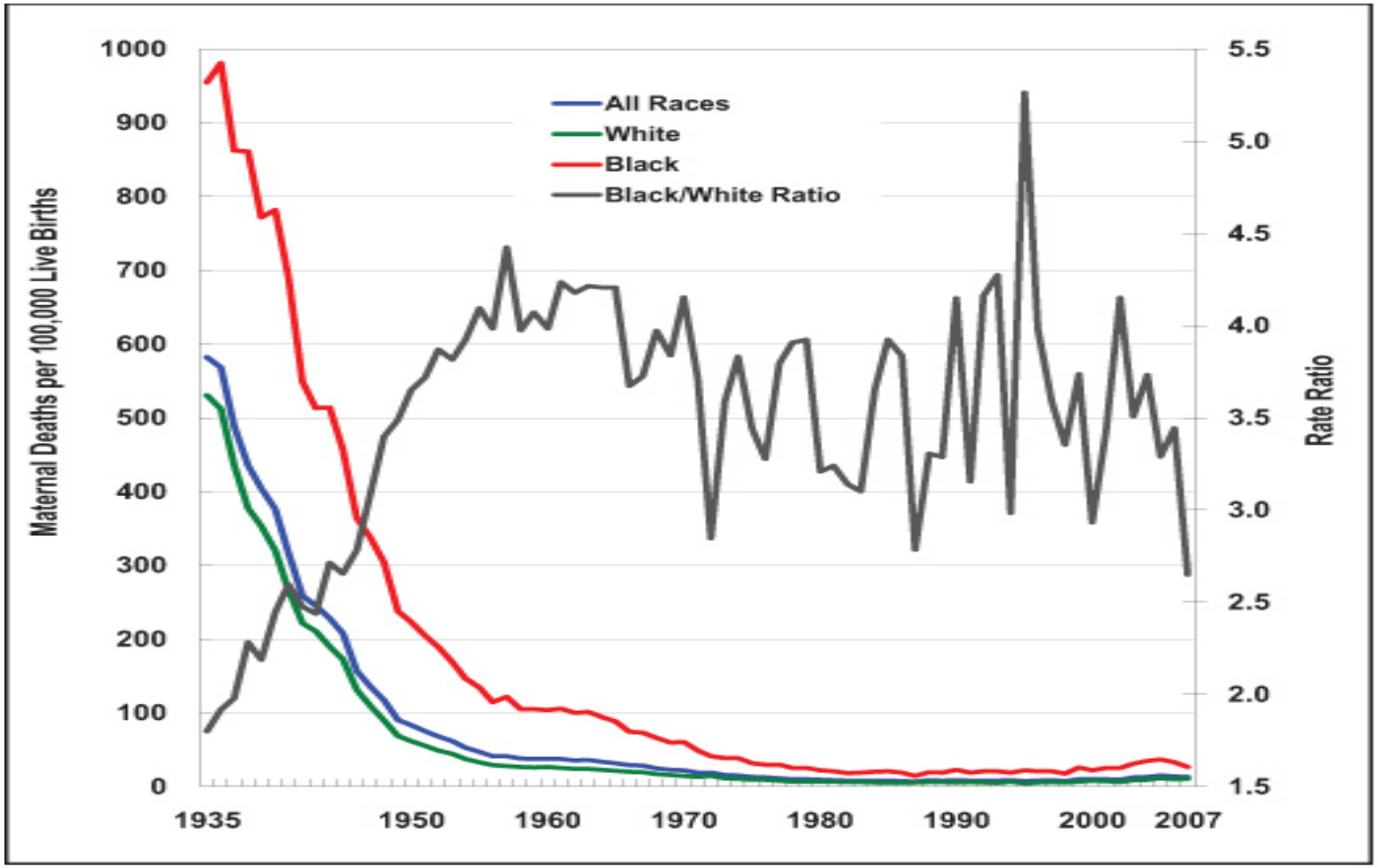
Introduction

- Maternal mortality – rare event in US
- Each year 1,000 American women die of pregnancy-related complications
- U.S. maternal mortality ratio has not decreased in more than 20 years
- Maternal mortality ratio for African American women has been three to four times higher than the ratio for whites since 1940
- CDC's Safe Motherhood Partnership - 2001

Safe Motherhood Initiative

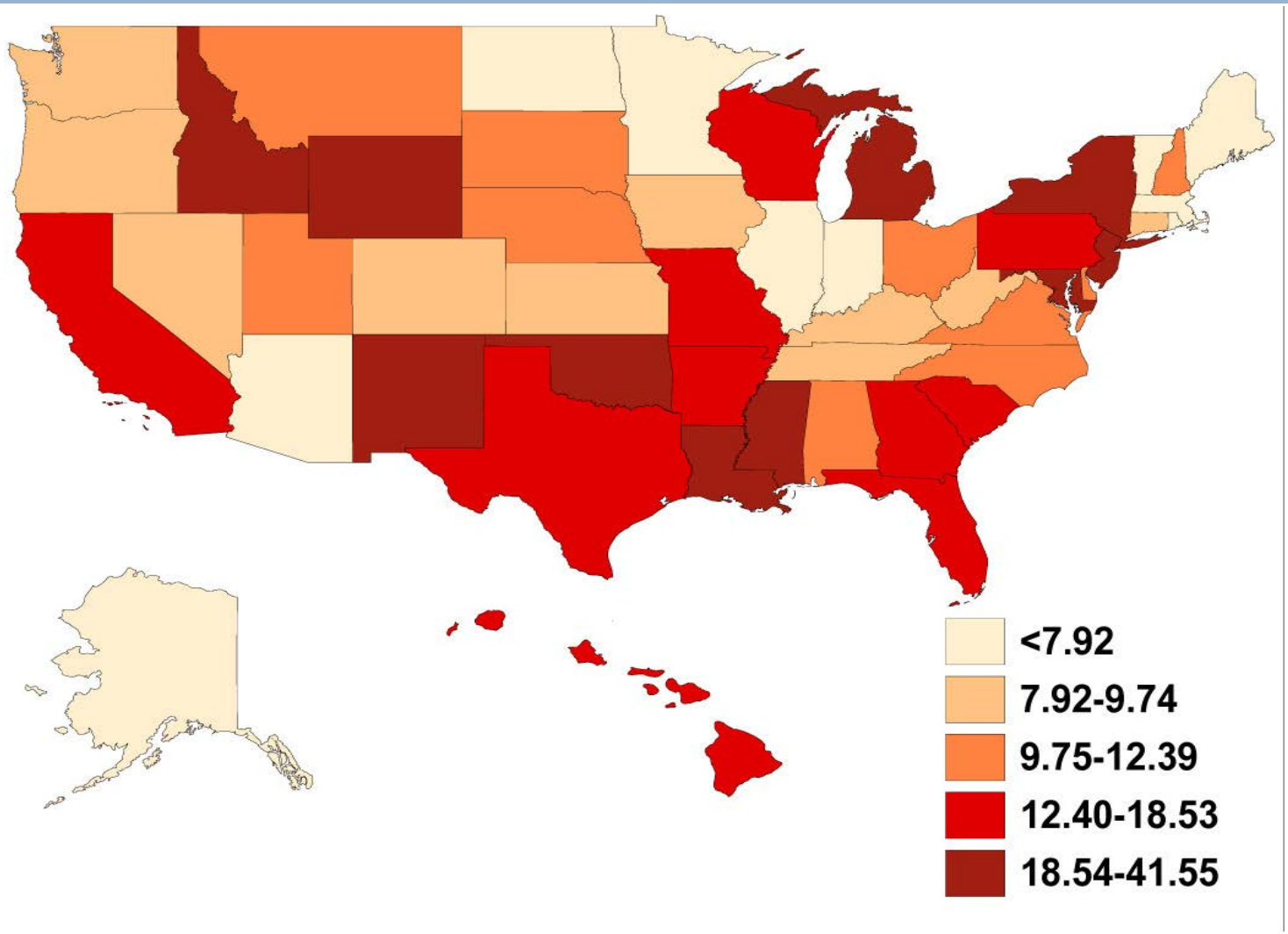
- In 2001, CDC and its partners published *Strategies to Reduce Pregnancy-Related Death: From Identification and Review to Action*
- *2003 – Safe Motherhood Partnership Meeting for nine states with active Maternal Mortality Review (MMR)Boards - State Maternal Mortality Review: Accomplishments of Nine States.*
- MMR purpose - examine the circumstances of women's deaths that occur during or around the time of pregnancy and to identify gaps in services and systems that should be improved to prevent future deaths

Maternal Mortality by race, US, 1935-2007



Source: 75th Title V Anniversary Celebration, Maternal Mortality in the US, 1935-2007

Maternal Mortality Rates, US, 2003-07



DEADLY DELIVERY

THE MATERNAL HEALTH CARE CRISIS IN THE USA

"Mothers die not because the United States can't provide good care, but because it lacks the political will to make sure good care is available to all women" - Larry Cox, executive director of Amnesty International USA.

HEALTH IS A HUMAN RIGHT

AMNESTY INTERNATIONAL

MO PAMR OPERATING DEFINITIONS

- **Pregnancy- Associated Mortality-** a death of a woman, from any cause, while she is pregnant or within 1 year of termination of pregnancy
- Further Classified As:
  - **Pregnancy- Related**
  - **Possibly Pregnancy- Related**
  - **Not Related**

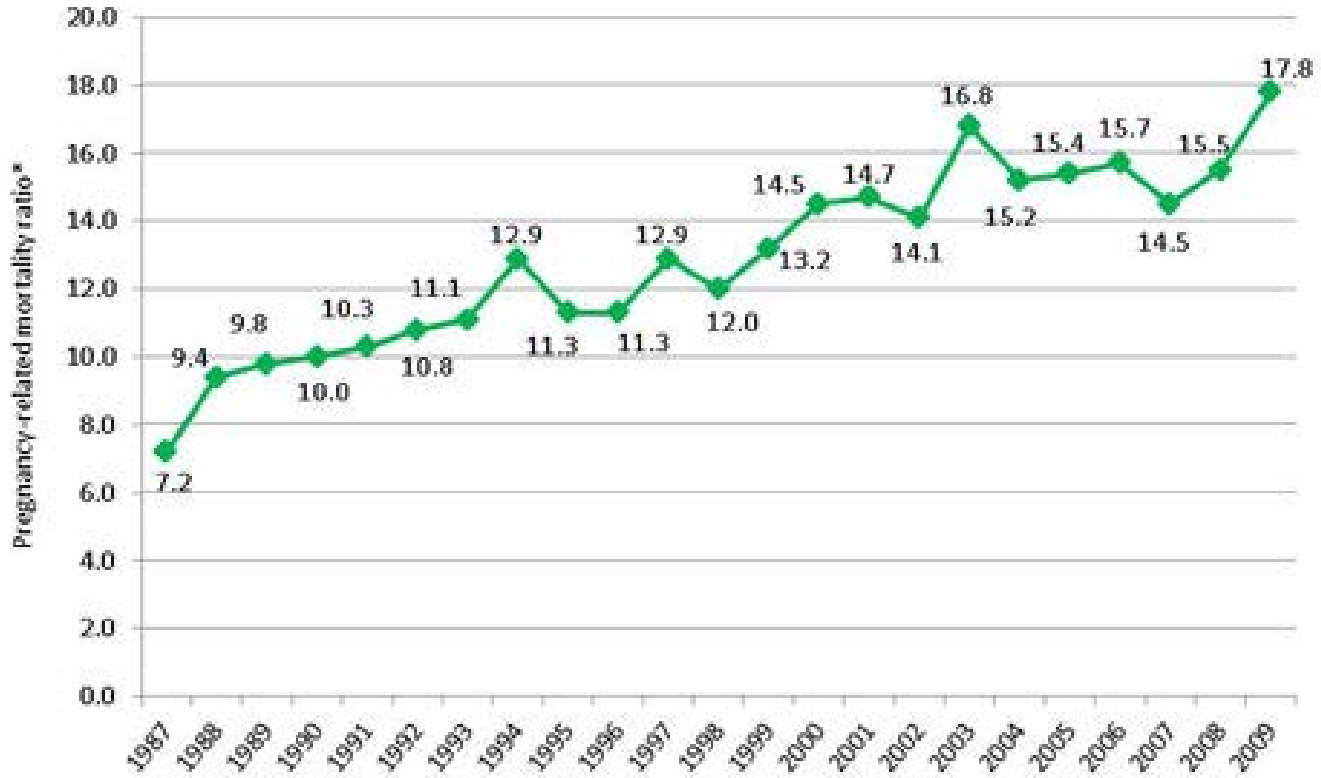
PREGNANCY RELATED MORTALITY RATIO (PRMR)

$$\frac{\text{NUMBER OF PREGNANCY RELATED DEATHS}}{\text{NUMBER OF RESIDENT LIVE BIRTHS}} \times 100{,}000$$

EXAMPLE:

91 pregnancy-related deaths in 2008 among state residents
130,000 live births in 2008 to state residents
91/130,000 x 100,000 = 70.0 pregnancy-related deaths per 100,000 live births in 2008

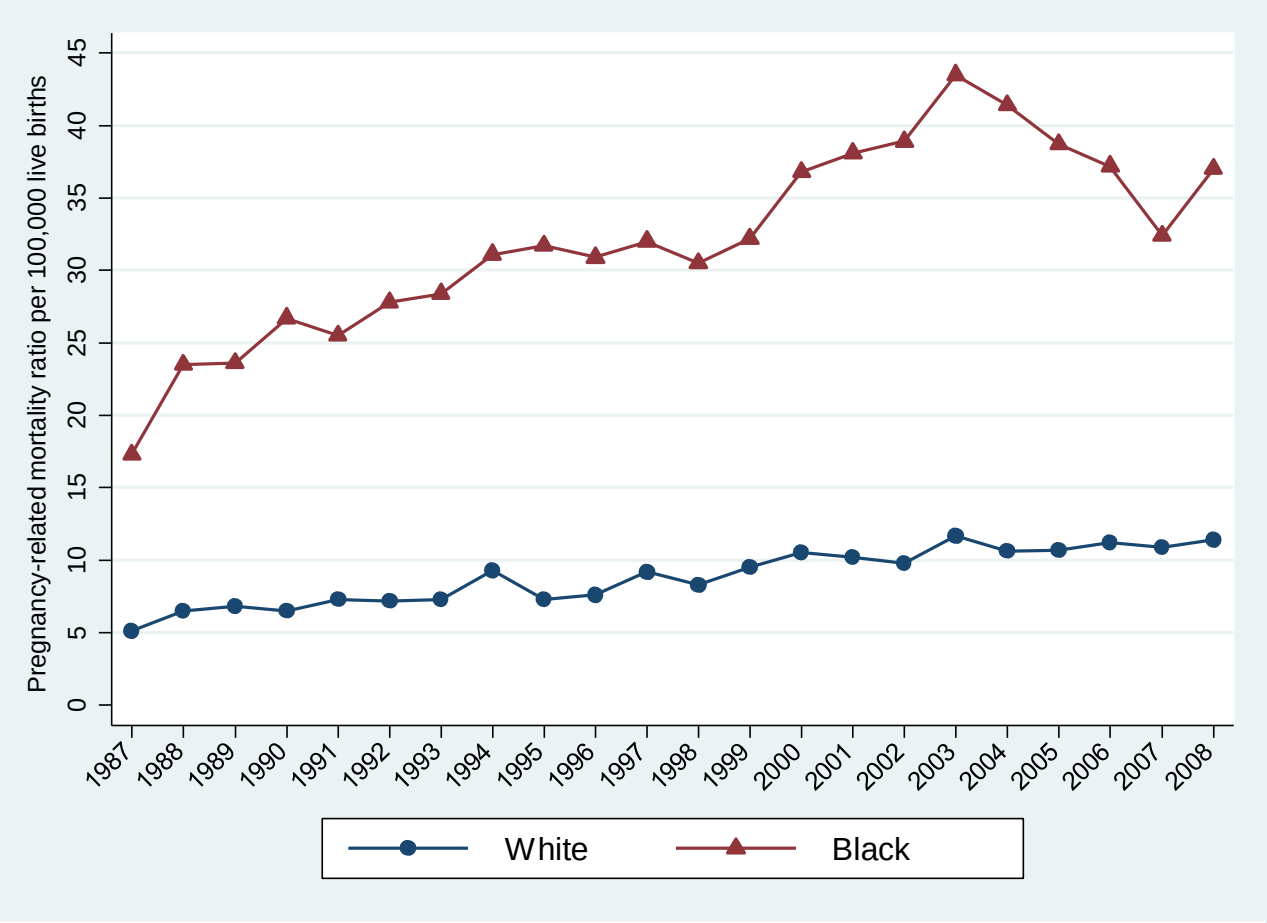
Trends in Pregnancy–Related Mortality in the United States, 1987–2009



*Note: Number of pregnancy-related deaths per 100,000 live births per year.

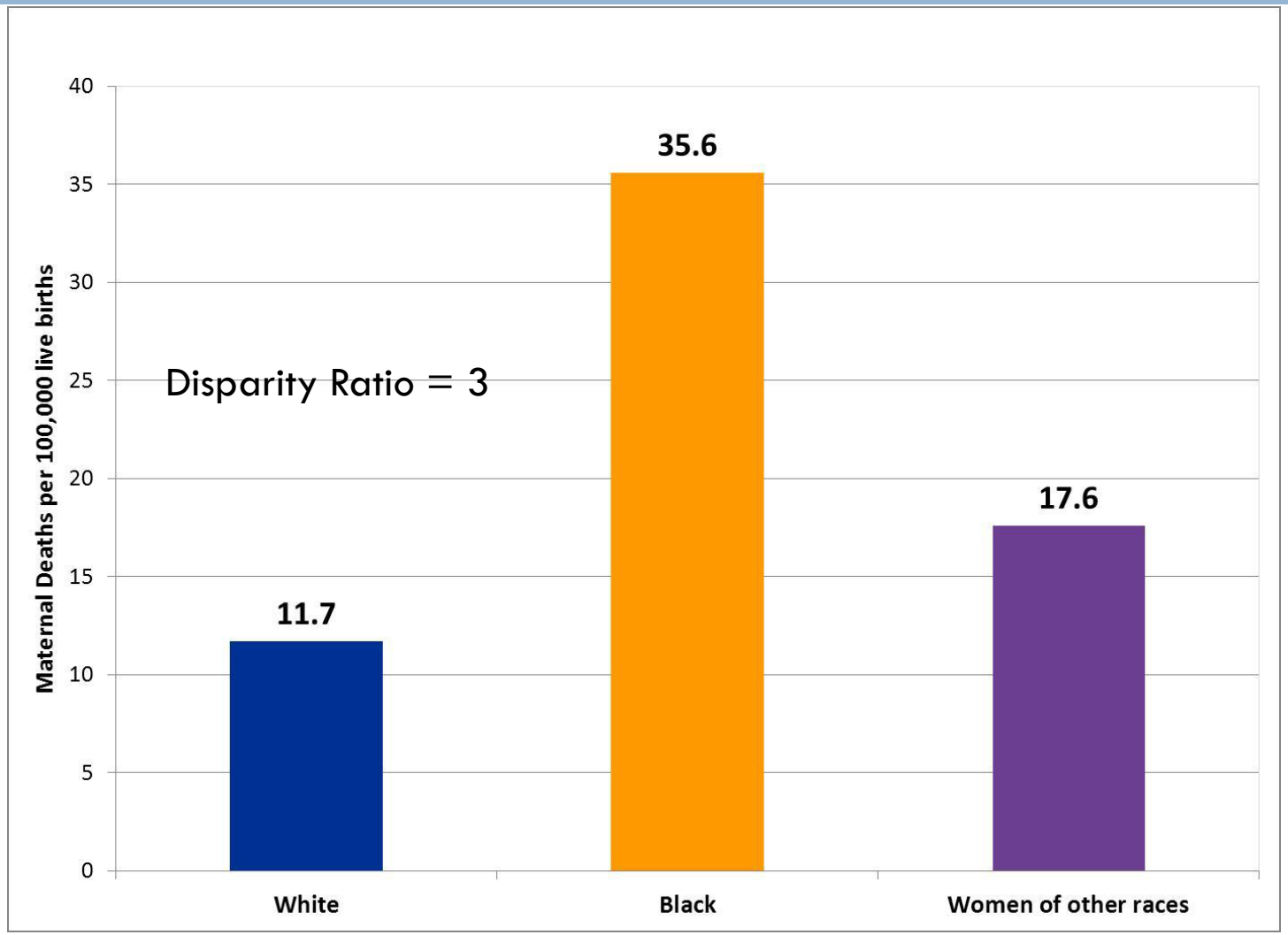
Source: http://www.cdc.gov/reproductivehealth/maternalinfanthealth/pmss.html

Black :White Gap in Pregnancy-related Mortality in the United States, 1999-2008



Source: CDC, PMSS data 1987-2008

Pregnancy Related Mortality Ratios, US, 2006-09



Data //Source: http://www.cdc.gov/reproductivehealth/MaternalInfantHealth/PMSS.html#5

Key Steps of CA-PAMR Methodology

STEP 1: Hospital discharge data linked to birth, death certificates

Identifies women who died within one year postpartum from any cause (*Pregnancy-Associated Cohort*)

STEP 2: Additional data gathered for each death

Coroner Reports, Autopsy Results, and additional information from the Death Certificate (e.g., multiple causes of death, recent surgeries, etc.) are obtained and abstracted.

STEP 3: Cases selected for PAMR Committee review

Documented (ICD-10 obstetric ("O") code) and suspected pregnancy-related deaths are prioritized for review.

STEP 4: Medical records abstracted and summarized

All available labor and delivery, prenatal, hospitalization, transport, and outpatient and emergency department records are obtained and summarized.

STEP 5: Cases reviewed by PAMR Committee

Committee determines whether the death was pregnancy-related, the cause of death, contributing factors and quality improvement opportunities

SOURCE: The California Pregnancy-Associated Mortality Review. Report from 2002 and 2003 Maternal Death Reviews, April 2011; page 13. http://www.cdph.ca.gov/data/statistics/Documents/MO-CA-PAMR-MaternalDeathReview-2002-03.pdf

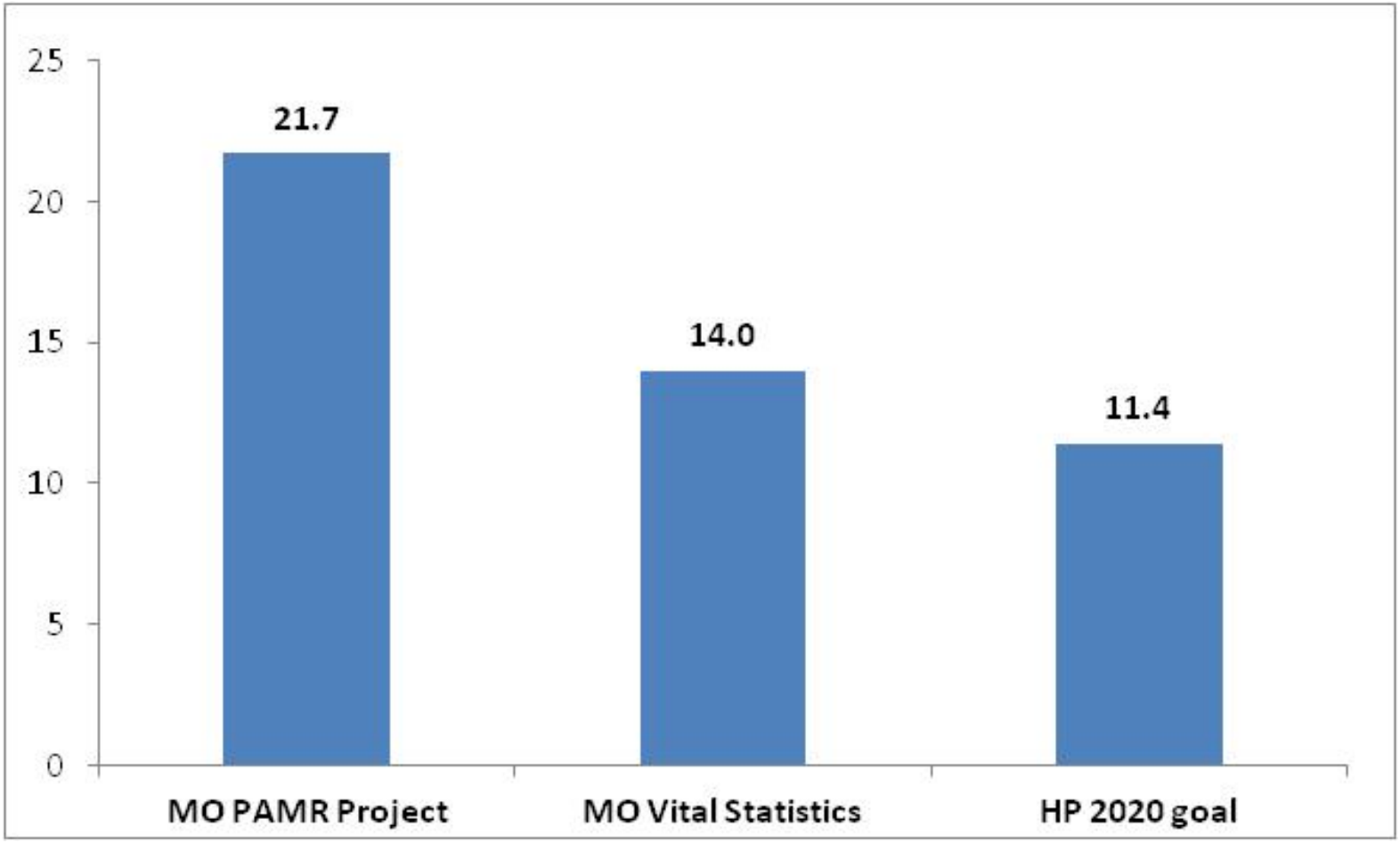
MO PAMR Case Review 1999-2008

- Total # of deaths within one year of termination of pregnancy = **468**
- Eliminated Records = **18**
- # of deaths that met criteria for PAMR **= 450**

MO-PAMR CASE REVIEW, 1999-2008

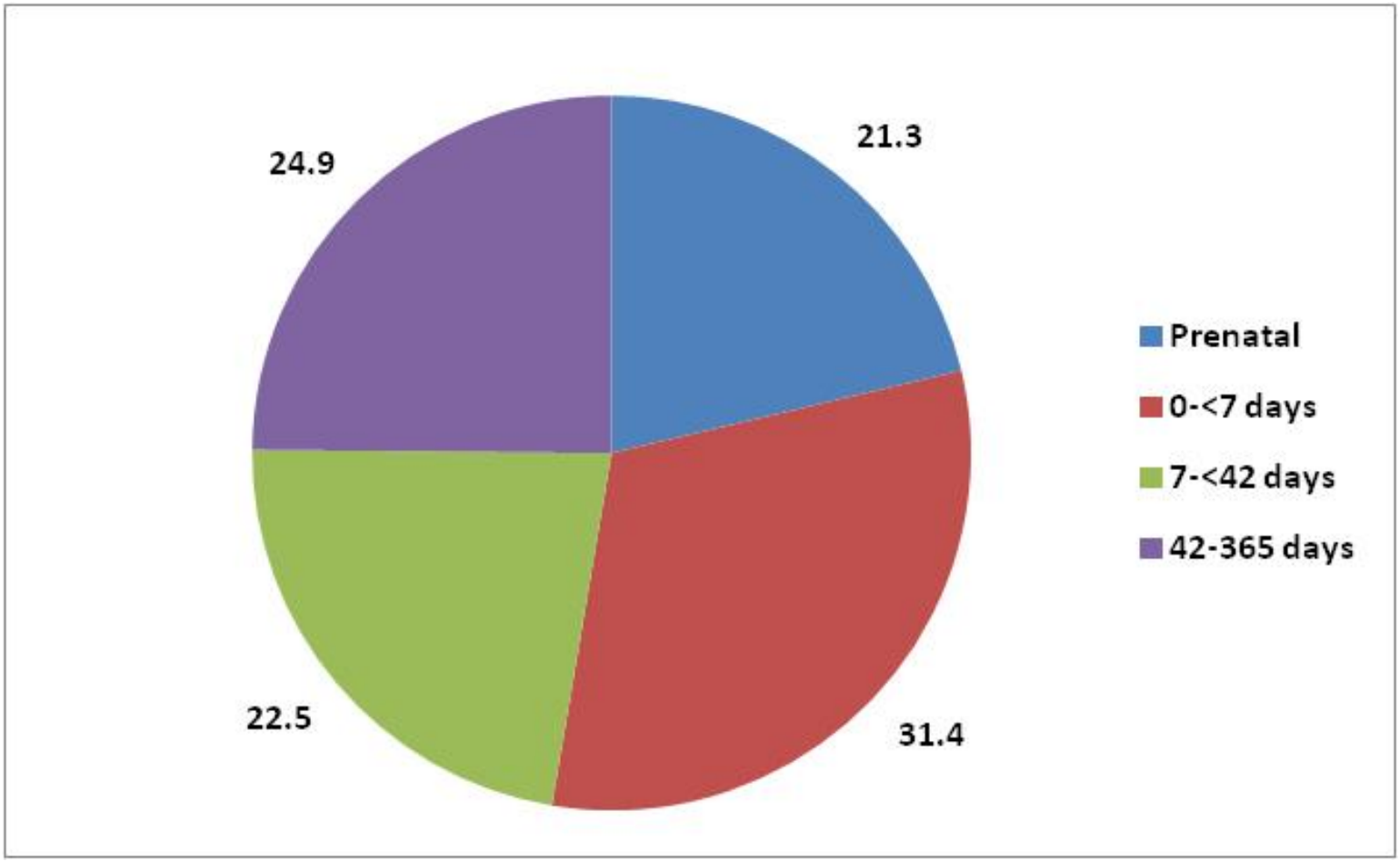
Category of Death	Count	% of total deaths
PR - pregnancy related	108	24.0
PPR - possibly pregnancy related	61	13.6
NPR - not pregnancy related	240	53.0
Undetermined	41	9.1
Overall	450	100.0

PRMR by data source, 1999-2008



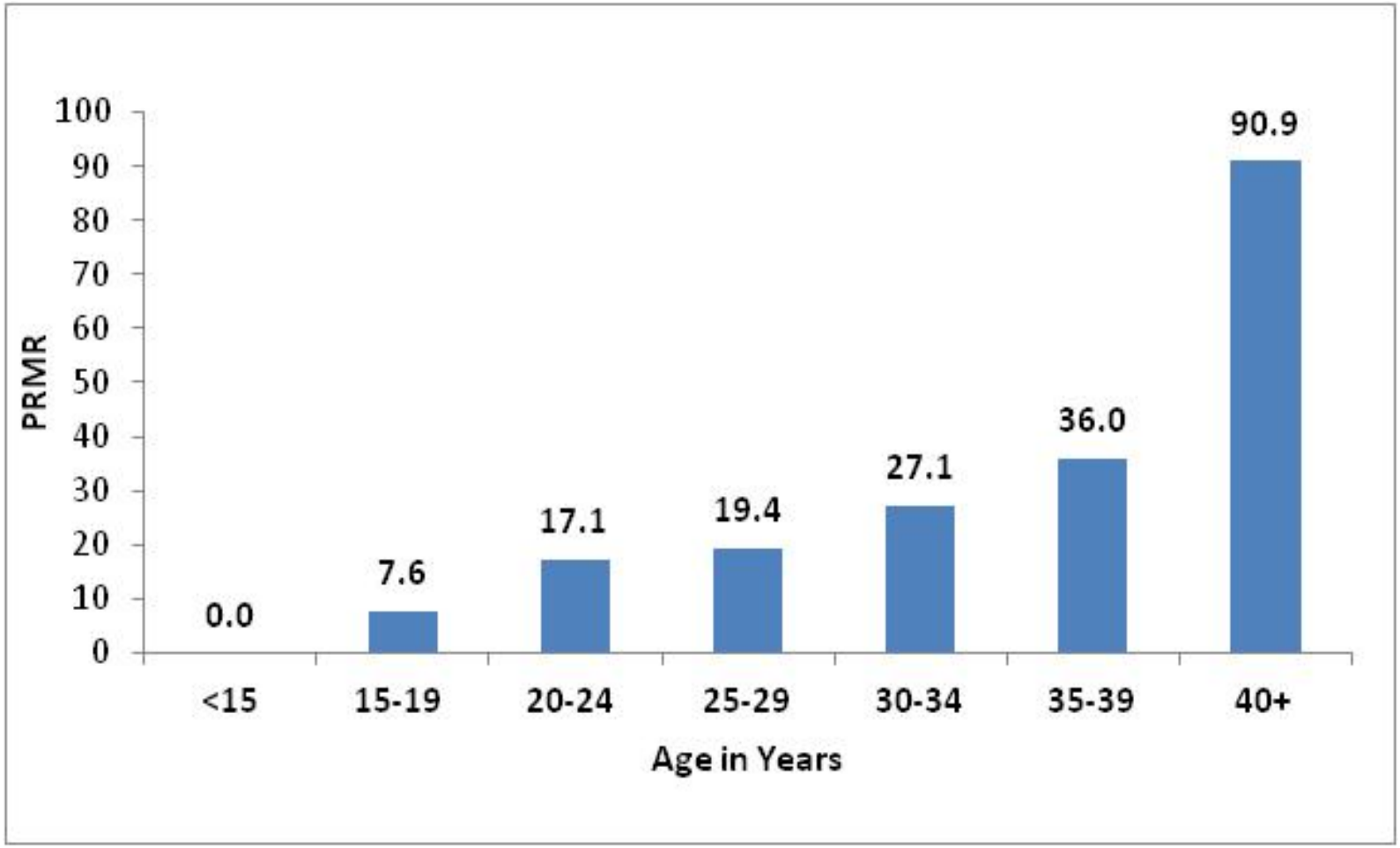
Source: MO Vital statistics Death and Birth files

Timing of maternal deaths, 1999-2008



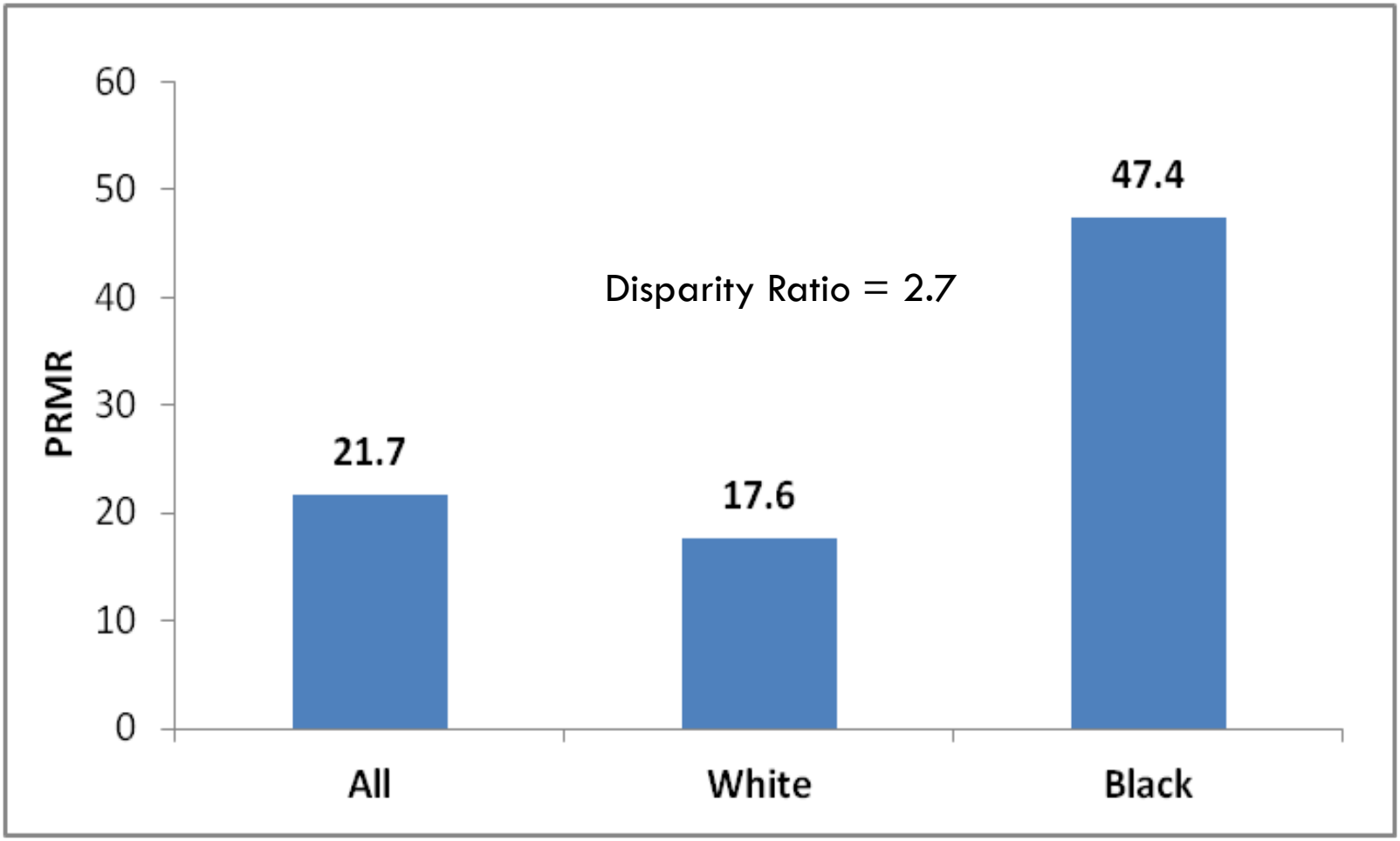
Source: MO PAMR

Age specific PRMR, 1999-2008



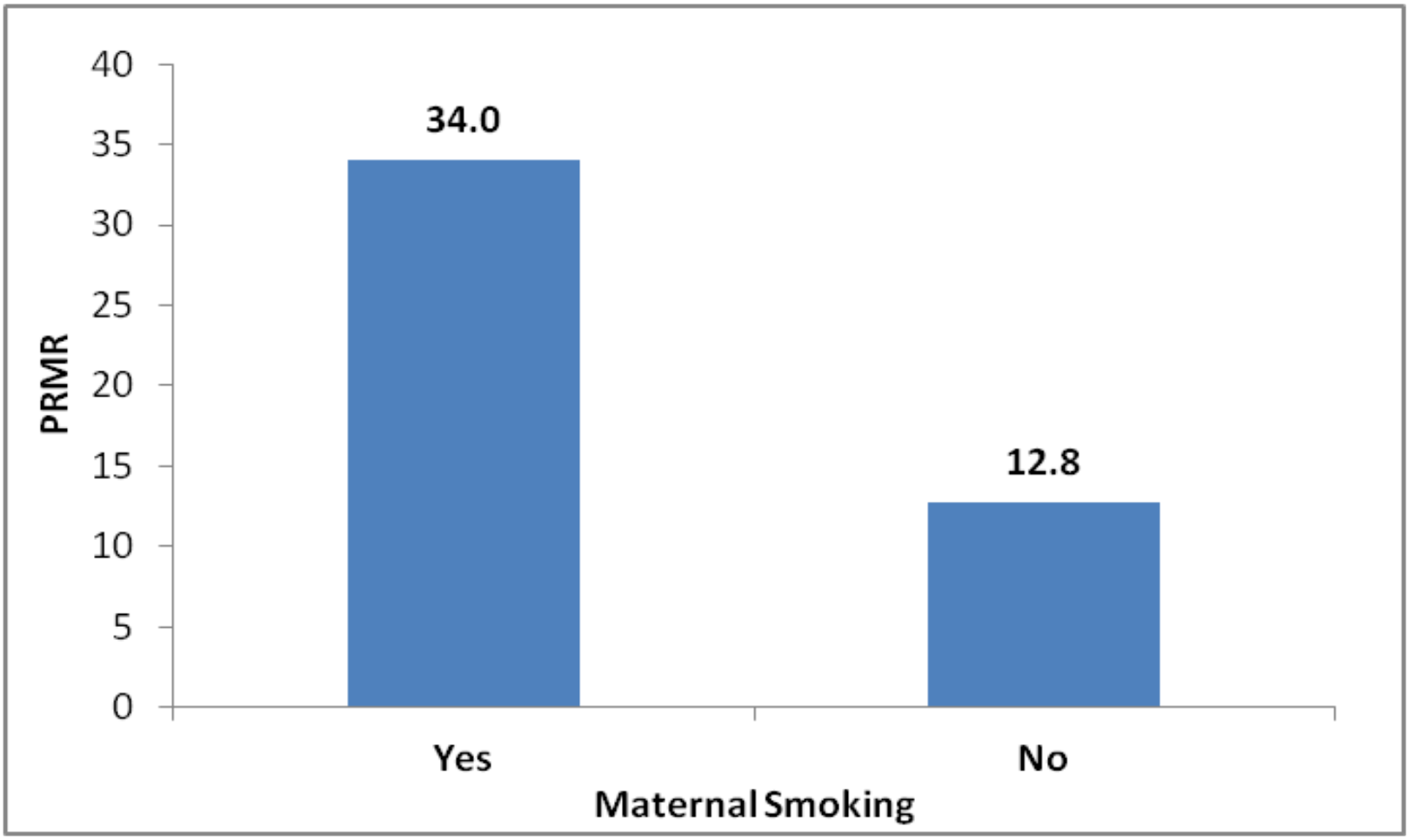
Source: MO PAMR

Racial distribution of MO-PAMR deaths,1999-2008



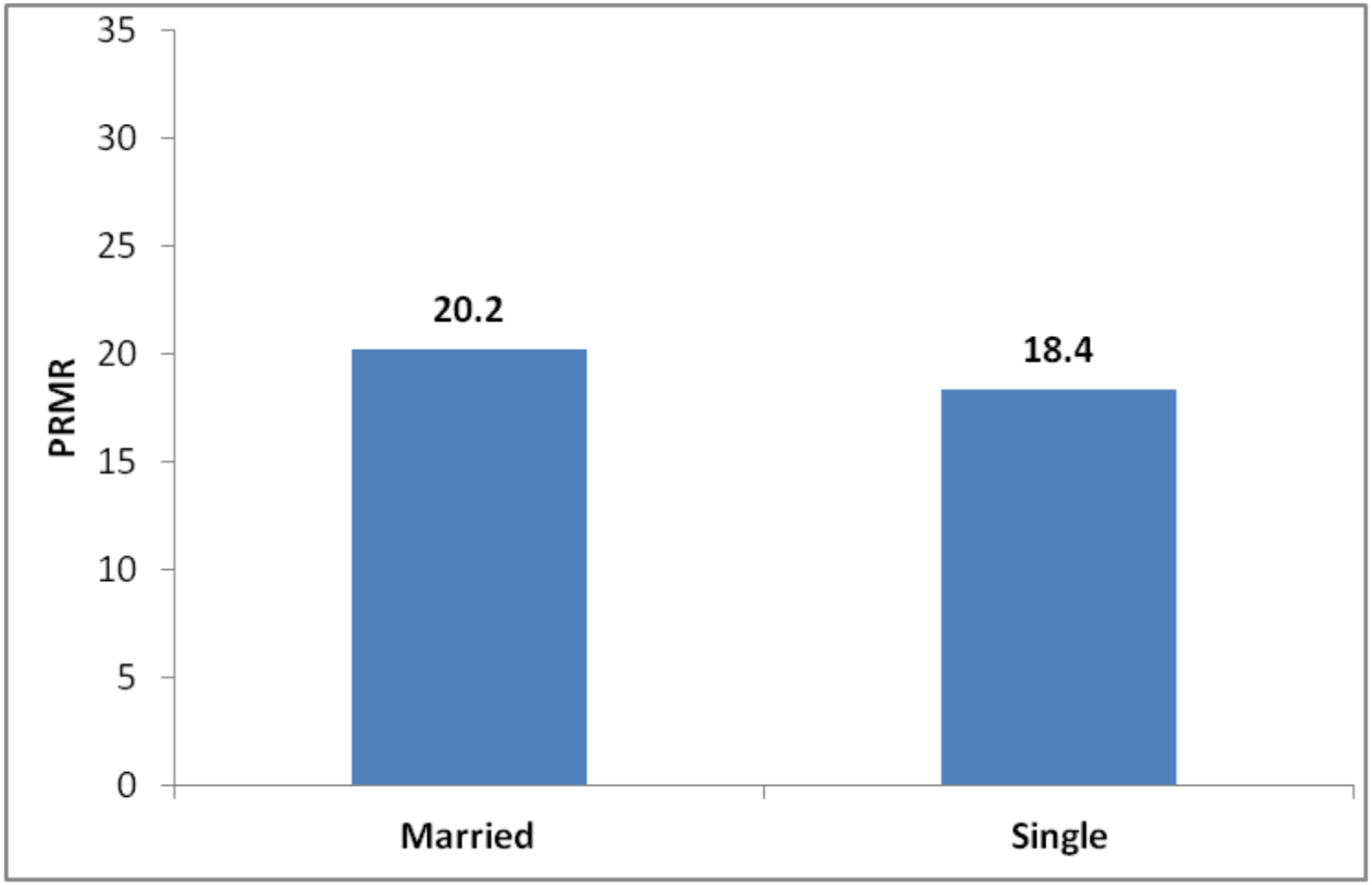
Source: MO PAMR

Smoking status among PAMR deaths in MO, 1999-2008



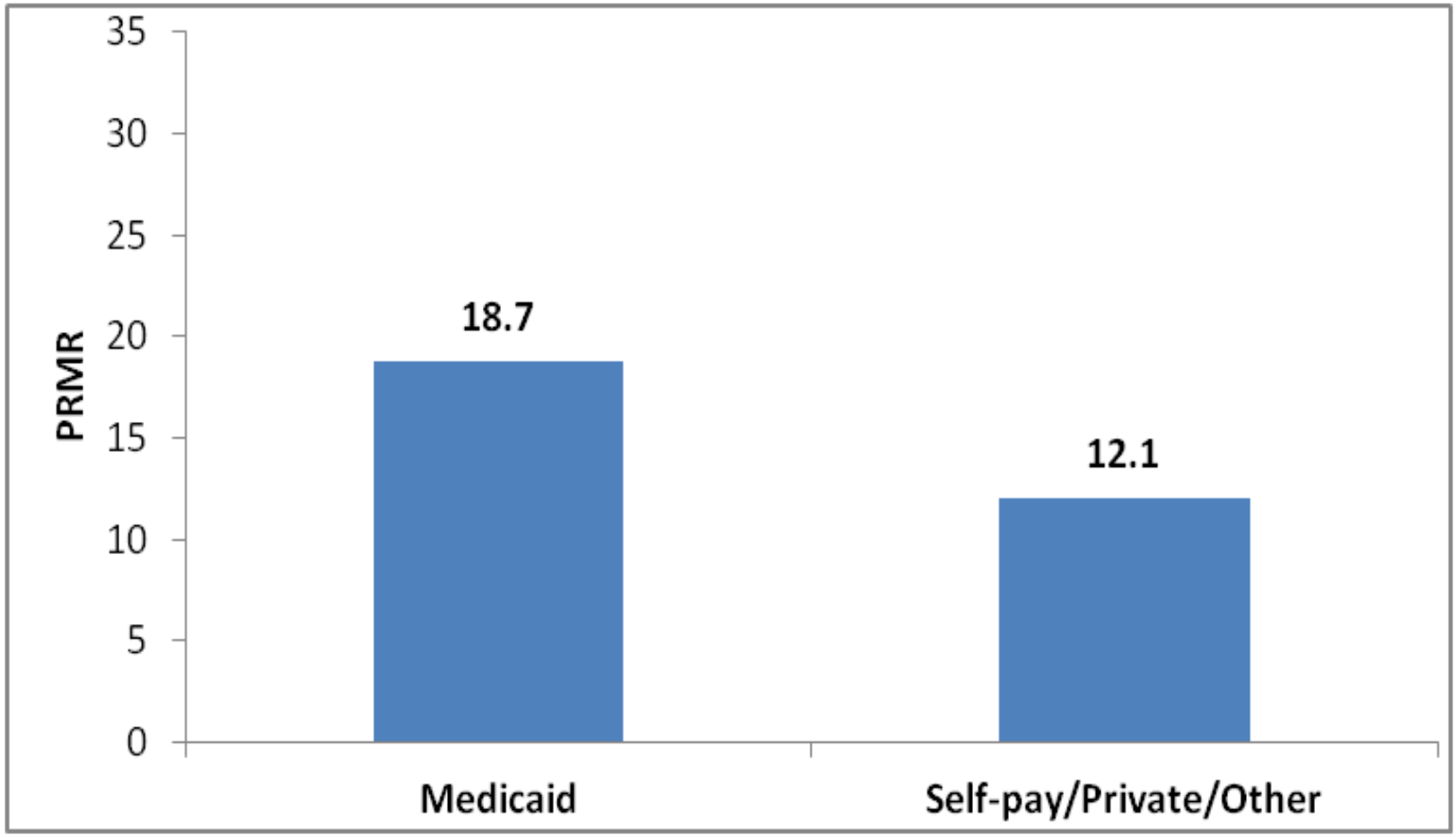
Source: MO PAMR

Marital status among MO-PAMR deaths, 1999-2008



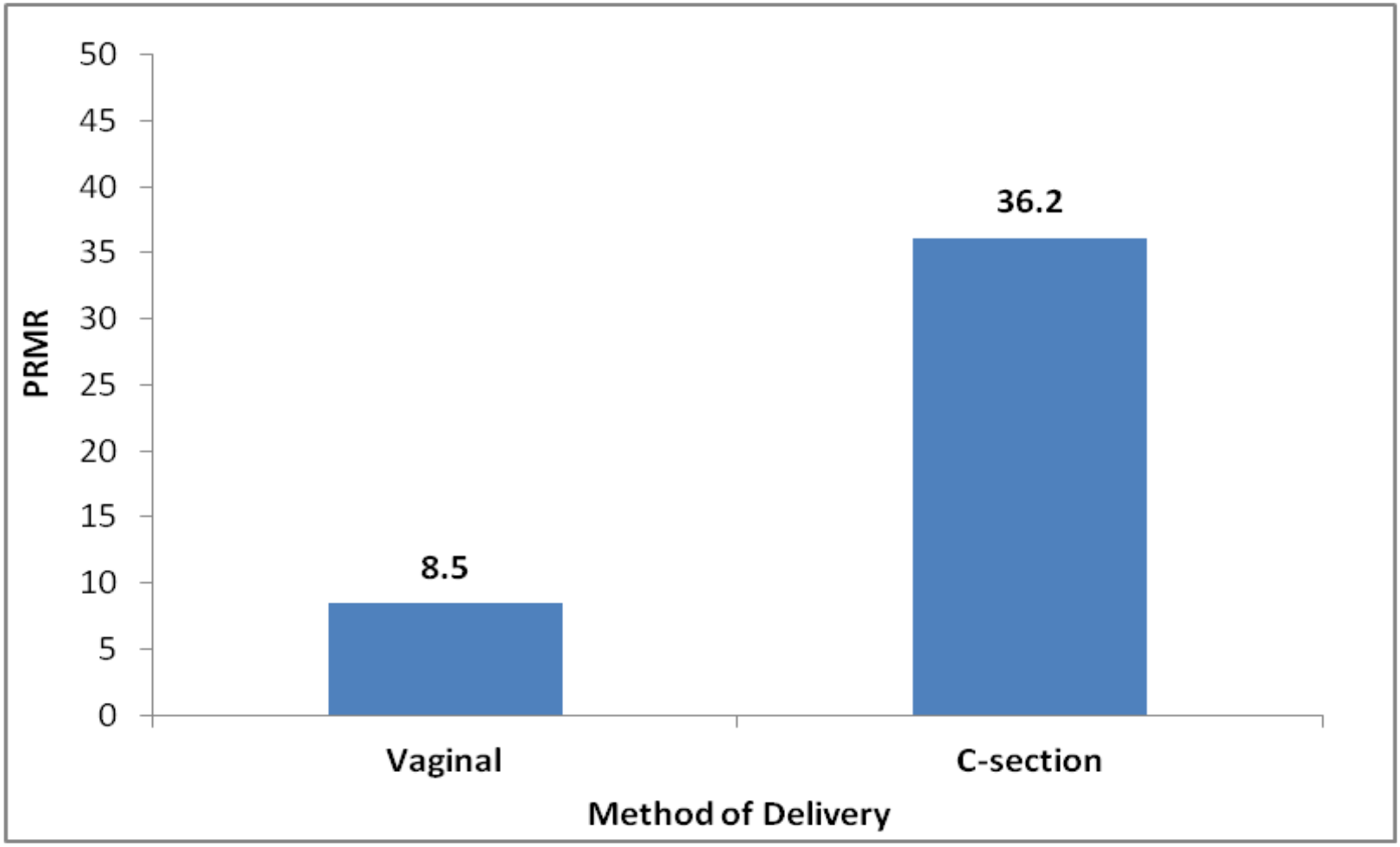
Source: MO Vital statistics Death and Birth files.

Payer Source among MO-PAMR deaths, 1999-2008



Source: MO Vital statistics Death and Birth files.

Method of Delivery among MO-PAMR deaths, 1999-2008



Source: MO Vital statistics Death and Birth files

Causes of pregnancy related deaths, 1999-2008

Causes of deaths	Number	Percent
Embolism	40	23.7
Other Cardiac Conditions	20	11.8
Cardiomyopathy	17	10.1
Hemorrhage	17	10.1
Hypertension	17	10.1
Malignancy	13	7.7
Infection	7	4.1
Cerebro-Vascular Accident(CVA)	8	4.7
Suicide	7	4.1
Other: causes	23	13.6
Unknown	0	0.0
Total	169	100.0

Cardiovascular Diseases (21.9%)

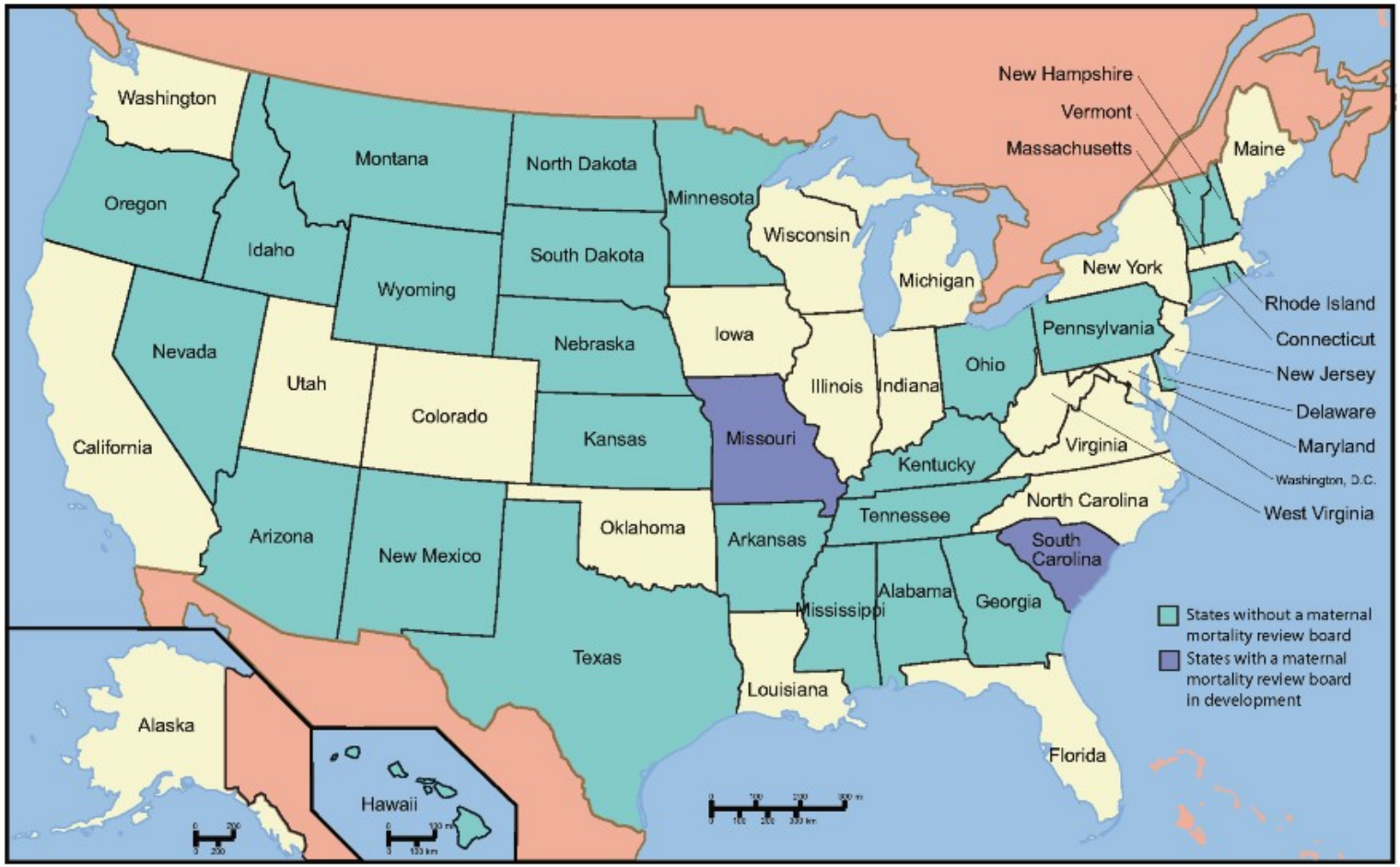
Source: MO PAMR

Summary

- First ever comprehensive review of maternal deaths in Missouri
- PRMR using the PAMR process are higher than those reported by vital statistics – enhanced surveillance
- African- Americans have significantly higher PRMR than whites across all demographics - similar to national observations
- Embolism and cardiovascular diseases are the leading causes of death

Maternal Mortality and Morbidity Review Boards

States without a maternal mortality review board



Source: Deadly Delivery, Amnesty International, 2010

National Steps to address maternal mortality

- Federal bill HR 894 Maternal Health Accountability Bill of 2011

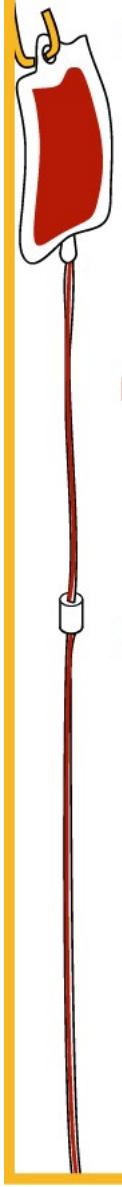
Poster for Labor and Delivery and Operating Rooms

managing maternal hemorrhage

NYC Health — New York City Department of Health and Mental Hygiene

Important phone numbers:

The American College of Obstetricians and Gynecologists/District II (ACOG)



Vital Signs
Normal vitals don't guarantee patient stability

- **Airway—intubate**
  If inadequate ventilation or to assist airway protection
- **Breathing**
  Supplemental O2, 5-7 L/min by tight face mask to assist O2 carrying capacity
- **Circulation**
  Pallor, delayed capillary refill and decreased urine output can indicate compromised blood volume without change in BP or HR.

  Late signs of compromise are: decreased urine output, low BP and tachycardia.

Infusions

- **Start 2nd large bore (16 gauge or larger)**
- **RL or NS replaces blood loss at 3:1**
- **Volume expanders 1:1 (albumin, hetastarch, dextran)**
- **Transfusion (PRBC, Coagulation factors)**
- **Warm blood products and infusions to prevent hypothermia, coagulopathy and arrhythmias**

Medication for uterine atony

- **Oxytocin**
  10-40* units in 1 liter NS or RL IV rapid infusion
  *30-40 units/liter most commonly used dose for hemorrhage
- **Methylergonovine (Methergine)**
  0.2 milligrams intramuscular q 2-4 hrs maximum 5 doses; avoid with hypertension
- **Prostaglandin F2 Alpha (Hemabate)**
  250 micrograms intramuscular, intramyometrial, repeat q 15-90 minutes, maximum 8 doses; avoid with asthma or hypertension
- **Prostaglandin E2 suppositories (Dinoprostone, Prostin E2)**
  20 milligrams per rectum q 2 hrs; avoid with hypotension
- **Misoprostol (Cytotec)**
  1000 micrograms per rectum or sublingual (ten 100 microgram tabs or five 200 microgram tabs)

- **Surgical interventions**
  May be a life-saving measure and should not be delayed

TAKE CARE NEW YORK

www.nyc.gov/health/maternity

NYC Health

ILLINOIS

- Problem: Hemorrhage
- Intervention: hemorrhage education program.
- Mandated participation
- Ambulances directed to hospitals with obstetric care.

What we did in Texas!

- Legislative Advocacy
- Public Awareness
- Quality of Care/Service Delivery
- Resource Enrollment

Why Texas Needs an MMRB?

- Identify reasons for maternal mortality and morbidity

  (Preventable deaths range from 40 - 75 %)
- Determine plan of action to improve the death rate, and eventually the morbidity
- Implement the plan
- Evaluate for positive outcomes.
- Continue to track and trend (CQI)

Texas 2011: HB1133 MMMR Taskforce

- Legislation proposed by RepWalle and coauthored by Rep Farrar
- Heard in Public Health Committee – failed to received required votes.
- Went to special Study status from the Senate
- HealthyTexas Babies Expert Panel
  - Maternal Mortality Review Committee

Texas 2013 Legislative Session

- HB 1085 - RepWalle sponsor and co-sponsored by Rep Davis, Rep Collier

- SB 495 – Senator Huffman and co-sponsored SenatorWest

Resources

Women Deliver http://www.womendeliver.org

World Health Organization (WHO)

http://www.who.int/reproductivehealth/publications/en/

http://www.who.int/maternal_child_adolescent/en/

Every mother counts http://www.everymothercounts.org/

Center for Disease Control (CDC)

http://wonder.cdc.gov/ http://www.cdc.gov/reproductivehealth/

The California Maternal Quality of Care Collaborative

http://www.cmqcc.org/

United Nations Population Fund UNFPA

http://www.unfpa.org/public/mothers/

United Nations Development Program (UNDP)

http://www.undp.org/content/undp/en/home/mdgoverview.html

Next Steps

- Do we continue PAMR in MO?
- Staffing / funding / MMR Board composition
- Data Dissemination / in-depth analyses of issues/ Missing data
- Coroner's / ME's/ Professional Organizations – Annual Meetings to showcase PAMR results
- Collaborate with other agencies within the state (OMH, OWH, MHA, DSS, DMH), MMR boards form other states for guidance (Illinois, Florida, California)
- Utilize existing resources / toolkits– www.cmmqcc.org

THANK YOU!

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