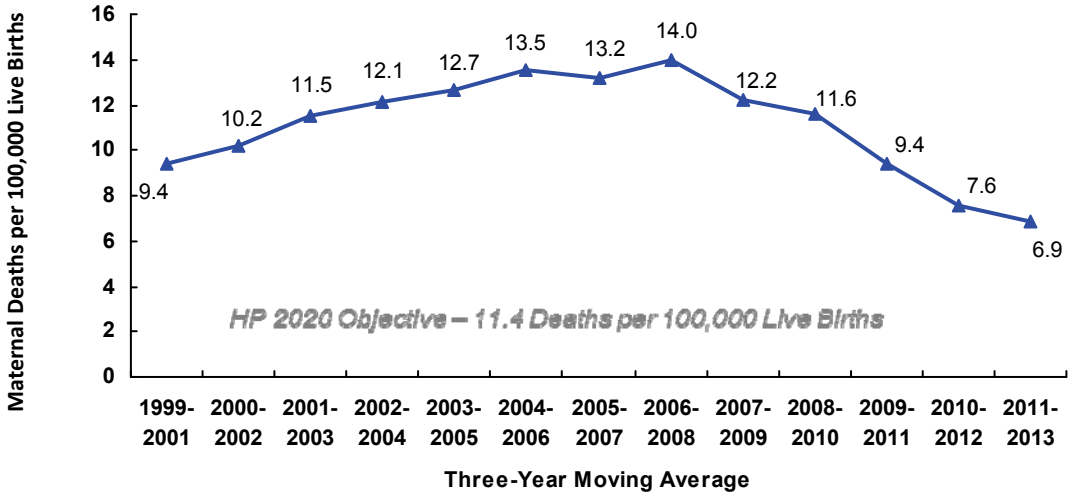
California Maternal Mortality Rates

A sustained decline in maternal mortality since 2008

This Bulletin updates surveillance data last published through 2010 and provides additional information on maternal mortality through 2013.

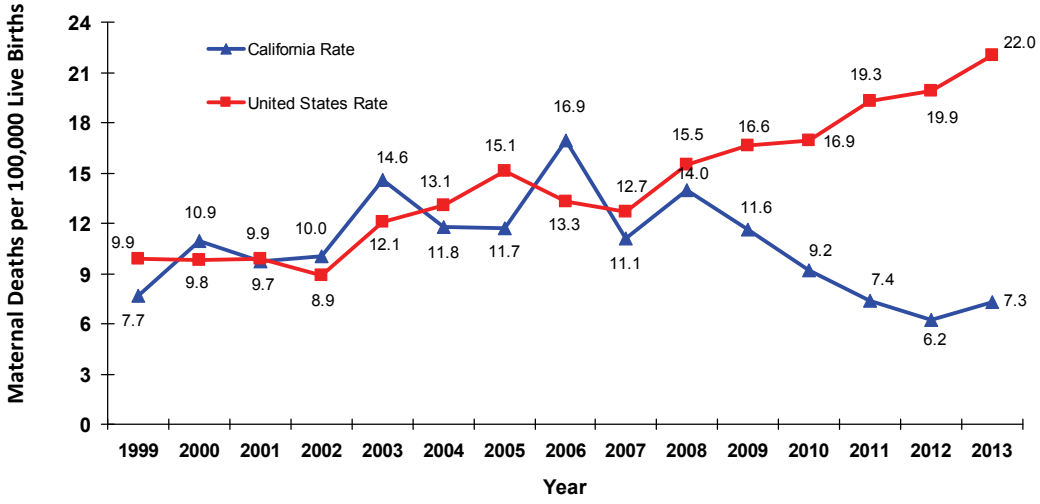
Reversal of increasing trends, 1999-2013

After a steady rise in maternal mortality from 1999-2006, rates of maternal deaths in California have dropped to a low three-year moving average of 6.9 deaths per 100,000 live births in 2011-2013. This represents a sustained and statistically significant decline in maternal mortality since 2008.



- With this decline, California has achieved and surpassed the Healthy People 2020 objective for maternal mortality of 11.4 deaths per 100,000 live births.
- The decline in maternal mortality even continued during 2009 and 2010 when pregnant women were disproportionally impacted by the H1N1 influenza epidemic.

California maternal mortality rates decline while U.S. rates rise



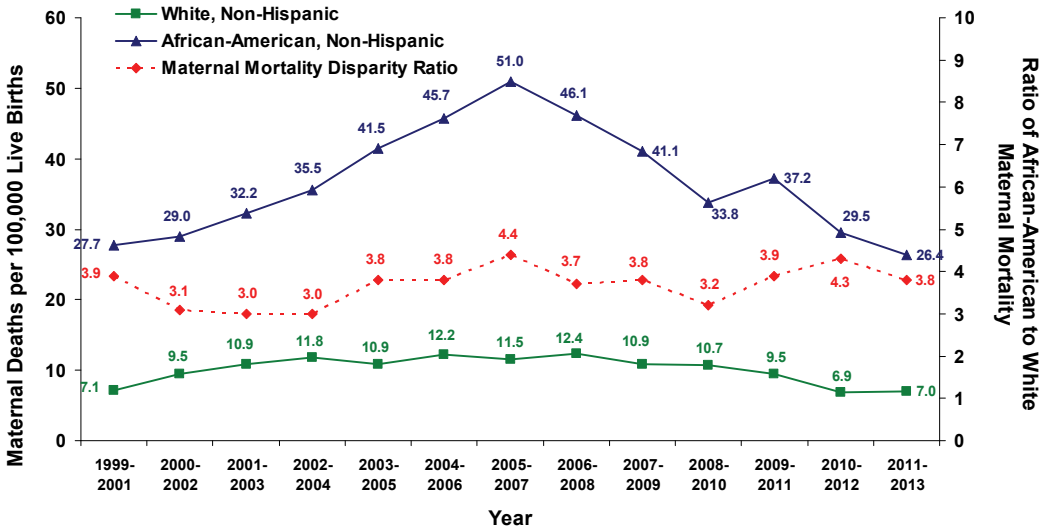
- In 2013, the U.S. rates are projected to be nearly three times California's rates.
- California's maternal mortality rates declined while U.S. maternal mortality rates increased, even though California accounts for one in eight births nationally.

SOURCE for all data presented: State of California, Department of Public Health, California Birth and Death Statistical Master Files, 1999-2013. Maternal mortality for California (deaths while pregnant or ≤ 42 days postpartum) is calculated using the ICD-10 cause of death classification (codes A34, O00-O95,O98-O99). May 2015.

Racial/ethnic disparities persist: African-American woman at 3-4-fold higher risk

Mortality rates for African-American women are the lowest they have been since 1999. In 2011-2013, there were 26.4 deaths among African-American women per 100,000 live births, half of what they were at the peak in 2005-2007. Still, African-American women continue to have a three- to four-fold higher risk of maternal mortality compared to White women. Some possible reasons for this persistent disparity include:

- African-Americans are disproportionately impacted by negative social determinants of health such as lower wages, access to housing, unsafe environments and racism.
- African-American women may have higher rates of underlying health conditions such as hypertension, obesity, and cardiovascular disease that complicate their pregnancies.



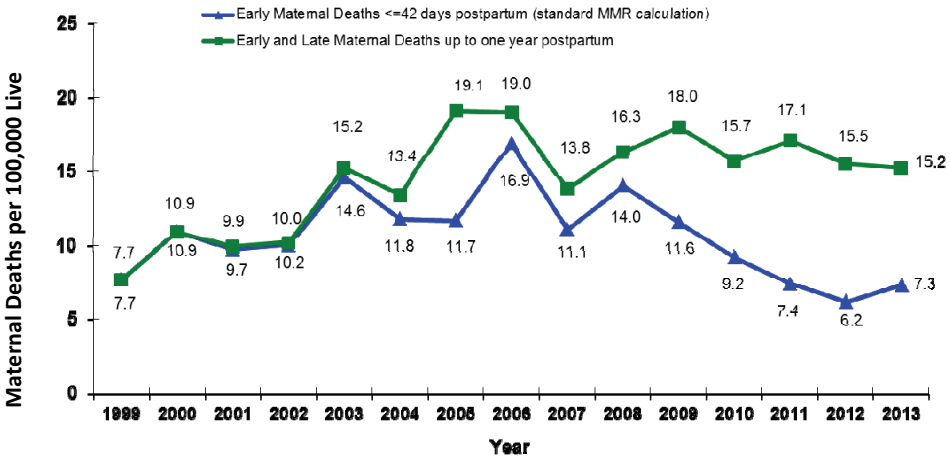
- The disparities may also reflect a disparity in health care that can be attributed to differences in health insurance, entry to prenatal care, and access or quality of care.
- Finally, the persistent disparity indicates that maternal mortality rates are decreasing proportionally among both African-American and White women. One group is not showing a greater increase or decline, thus the ratio remains steady.

Late maternal deaths did not decline as dramatically

When both early (<42 days postpartum) and late (43-365 days postpartum) maternal deaths are included, there were 15.2 deaths per 100,000 live births.

- This represents a decline from the peak rate in 2005 of 19.1 deaths per 100,000 live births, however it is not as strong as that observed among the early maternal deaths.

- Maternal mortality may be shifting to late postpartum deaths as chronic diseases, like cardiovascular disease, play a prominent role in maternal deaths. This is especially true for peripartum cardiomyopathy, a type of cardiovascular disease unique to pregnancy which typically occurs in the last month of pregnancy through the fifth month postpartum and is consistent with recent data published by the California Pregnancy-Associated Mortality Review (CA-PAMR)[1, 2] and by the Centers for Disease Control[3].



What is causing the decline in maternal mortality in California?

We do not fully know what caused the rise in maternal mortality and cannot fully explain what has caused its decline. Some hypotheses for the recent decline include:

- ◊ Improved attention to the issue of maternal mortality and morbidity by public health officials and maternity care providers through the following activities.
  - ◊ CDPH MCAH began an investigation of maternal deaths known as the California Pregnancy-Associated Mortality Review (CA-PAMR) in 2006[4]. CA-PAMR identified cardiovascular disease, preeclampsia and obstetric hemorrhage as the leading causes of pregnancy-related deaths and initial findings of CA-PAMR are published in a statewide report (Spring 2011) and peer-reviewed manuscripts[1,2,4].
  - ◊ Hospital quality improvement strategies have been developed by Stanford University's California Maternal Quality Care Collaborative (CMQCC) with funding from CDPH MCAH. To date, CMQCC has developed quality improvement toolkits and sponsored learning collaboratives for the maternity care community to improve the recognition and response to obstetric hemorrhage[5] and preeclampsia[6]. A third toolkit addressing cardiovascular disease among pregnant women is in development.
- ◊ The impact of the economic downturn in 2008 can be seen in a reduction of the overall California birth rate. It may be that the population of women who gave birth in the last six years were healthier and had lower risk pregnancies. This may be because of emigration from California due to job loss, cost-of-living, or housing issues which may have affected who gave birth during those years. Additionally, some California women may have delayed having children until more economically certain times.
- ◊ Maternal mortality may be shifting to late postpartum deaths as chronic diseases, like cardiovascular disease, play a prominent role in maternal deaths. CA-PAMR found cardiovascular disease to be the leading cause of death in California from 2002-2007 and similar trends have been reported by the Centers for Disease Control through 2010.
- ◊ Vital statistics data reporting may be contributing to the apparent decline, either through improvements in identification of pregnancy prior to death or in the coding for causes or timing of death.

For more information

To see additional California maternal mortality data or to learn more about CA-PAMR, please visit: http://www.cdph.ca.gov/data/statistics/Pages/CaliforniaPregnancy-AssociatedMortalityReview

References

1 Main E, McCain C, Morton C, Holtby S, Lawton E. Pregnancy-Related Mortality in California: Causes, Characteristics, and Improvement Opportunities. Obstetrics and Gynecology. 2015. http://dx.doi.org/10.1097/AOG.0000000000000746

2 Hameed AB, Lawton E, McCain, C, Morton C, Mitchell C, Main E, Foster E. Pregnancy-Related Cardiovascular Deaths in California: Beyond Peripartum Cardiomyopathy. American Journal of Obstetrics and Gynecology. 2015 (in press) http://dx.doi.org/10.1016/j.ajog.2015.05.008

3 Creanga AA, Berg CJ, Syverson C, Seed K, Bruce FC, Callaghan WM. Pregnancy-related mortality in the United States, 2006-2010. Obstetrics and Gynecology. 2015;125:5-12.

4 Mitchell C, Lawton E, Morton C, McCain C, Holtby S, Main E. California pregnancy-associated mortality review: Mixed methods approach for improved case identification, cause of death analysis and translation of findings. Maternal Child Health Journal. (2014) 18:518-526.

5 Improving Health Care Response to Obstetric Hemorrhage: A California Quality Improvement Toolkit. Version 1 published July, 2010; version 2 published March 2015. Available at: https://www.cmqcc.org/ob_hemorrhage

6 Improving Health Care Response to Preeclampsia: A California Quality Improvement Toolkit. Published November, 2013. Available at: https://www.cmqcc.org/preeclampsia_toolkit

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