

# Utah *MCH Facts*

## Maternal Mortality: 1995-2002

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Utah Department of Health

### Introduction

Maternal mortality is an important health indicator reflecting a nation's health status. Though maternal mortality has decreased by 99% since the 1900s, maternal deaths currently remain significant events. This report outlines characteristics of maternal deaths in Utah from 1995-2002. Some results will be compared to a study done by the Utah Department of Health in 1995 looking at data from 1982-1994. Maternal deaths are analyzed by the Perinatal Mortality Review Committee (PMRC), a group of professionals who examine each individual case and provide recommendations for improving outcomes based on clinical findings.

### Maternal Mortality Rates

Maternal mortality rates were calculated by identifying the number of maternal deaths, then dividing by the total number of live births registered in the state of Utah during the time periods. From 1982-1994, there were 62 maternal deaths reviewed resulting in a mortality rate of 12.8 [Table 1]. From 1995-2002, 61 maternal deaths were reviewed resulting in a mortality rate of 16.9. The increase in maternal deaths from 1995-2002 was attributable to improvements in pregnancy mortality surveillance. In 1995, the Utah department of Health established the Perinatal Mortality Review Coordinator position to carry out this surveillance.

**Table 1:** Maternal Mortality Rates in Utah by Time Period

Classification	1982-1994	1995-2002
Maternal Deaths	62	61
Live Births	484,789	360,376
Maternal Mortality rate*	12.8	16.9

\* Maternal deaths per 100,000 live births

### Leading Causes of Death

Maternal deaths are classified by the PMRC as either pregnancy-associated (PA) or pregnancy-related (PR). A pregnancy-associated death is the death of any woman from any cause while pregnant or within one year of termination of pregnancy. A pregnancy-related death is defined as a subset of pregnancy-associated deaths resulting from 1) complications of the pregnancy, 2) the chain of events initiated by the pregnancy or 3) aggravation of an unrelated condition by the physiologic or pharmacologic effects of the pregnancy. Of the 61 maternal deaths from 1995-2002, 32 deaths were categorized as pregnancy-associated and 29 as pregnancy-related. Injury, embolism, and cardiac events were the three leading causes of maternal deaths during this time period. Injury was the leading cause of all pregnancy-associated deaths, while embolism was the leading cause of all pregnancy-related deaths. [Table 2] Similar results were obtained in the 1982-1994 time period.

**Table 2:** Leading Causes and Classification of Maternal Deaths Utah, 1995-2002

Cause	Total	PA ∞	PR ∞
<b>Injury</b>	<b>13</b>		
Suicide	5	5	
Accident	3	3	
Motor vehicle accident	3	3	
Homicide	2	2	
<b>Embolism</b>	<b>12</b>		
Pulmonary embolism	7	4	3
Amniotic fluid embolism	5		5
<b>Cardiac</b>	<b>11</b>		
Cardiomyopathy	4	1	3
Congenital	4	4	
Myocardial infarction	3	3	
<b>Adult respiratory distress syndrome</b>	<b>7</b>	3	4
<b>Preeclampsia/eclampsia</b>	<b>5</b>		
Intracranial hemorrhage	4		4
HELLP* syndrome	1		1
<b>Malignancy</b>	<b>5</b>		
<b>Hemorrhage</b>	<b>4</b>		
Disseminated intravascular coagulopathy	3		3
Placenta accreta	1		1
<b>Infection</b>	<b>3</b>		3
<b>Undetermined</b>	<b>1</b>	1	

∞ PA = Pregnancy associated, PR = Pregnancy related

\* HELLP = hemolysis, elevated liver enzymes, low platelets

## Maternal Age

The risk of maternal mortality increases with progressive maternal age from 20 years and above. The rate of mortality was lowest in women ages 20-24 years, and then increased with statistical significance ( $p < .05$ ) in all progressive age intervals thereafter [Figure 1]. The rate was highest in women aged 40 years and greater. The mortality rate more than doubled between age intervals 35-39 and 40 plus, from 33.6 to 71.7 respectively. For women ages 35-39 years, the mortality rate showed a pronounced increase from 27.1 in 1982-1994 to 33.6 in 1995-2002.

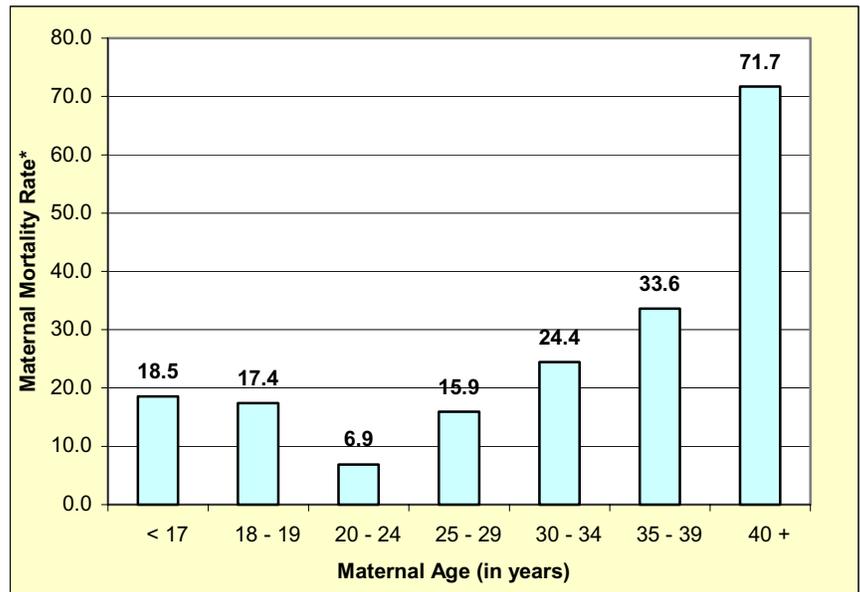
## Pre-Pregnancy Body Mass Index

Maternal mortality rates were highest among the underweight and obese. The rate of 18.6 for those categorized as underweight prior to pregnancy, though high, was not statistically significant. The mortality rate of 25.3 in those categorized as obese, however, was statistically significant ( $p < .05$ ). Maternal obesity rates are increasing in Utah as overall obesity rates continue to dramatically rise in the United States. Maternal obesity contributes to adverse pregnancy outcomes primarily through increased rates of hypertensive disease, diabetes, cesarean section, and infections. Of the 61 maternal deaths from 1995-2002, approximately one-third of women had a pre-pregnancy body mass index (BMI) categorized as overweight (BMI=25-29) or obese (BMI >29) [Figure 2].

## Conclusions

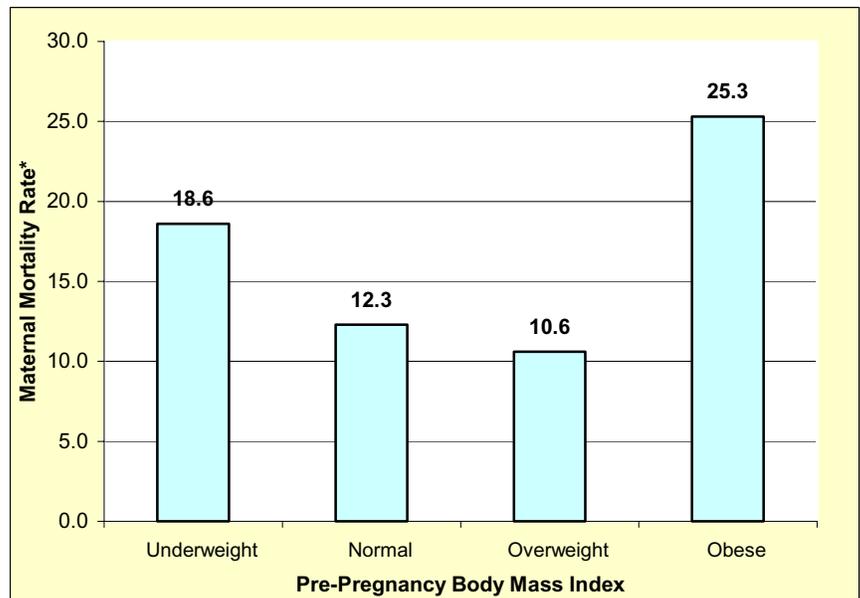
The Healthy People 2010 objective is to reduce maternal deaths to 3.3 deaths per 100,000 live births. Utah's rate was 16.9 from 1995-2002. Injury was the leading cause of maternal mortality in Utah with suicide as the primary reason in that category. Embolism and cardiac events ranked second and third respectively. The maternal mortality rate was highest in women 40 or more years old and among obese women. Leading causes of death, maternal age and pre-pregnancy BMI will continue to be reviewed by the PMRC to discover ways to reduce maternal deaths to Healthy People 2010 objectives.

Figure 1: Maternal Mortality Rate by Maternal Age, Utah, 1995-2002



\*Maternal deaths per 100,000 live births

Figure 2: Maternal Mortality Rate by Pre-Pregnancy Body Mass Index Utah, 1995-2002



\*Maternal deaths per 100,000 live births