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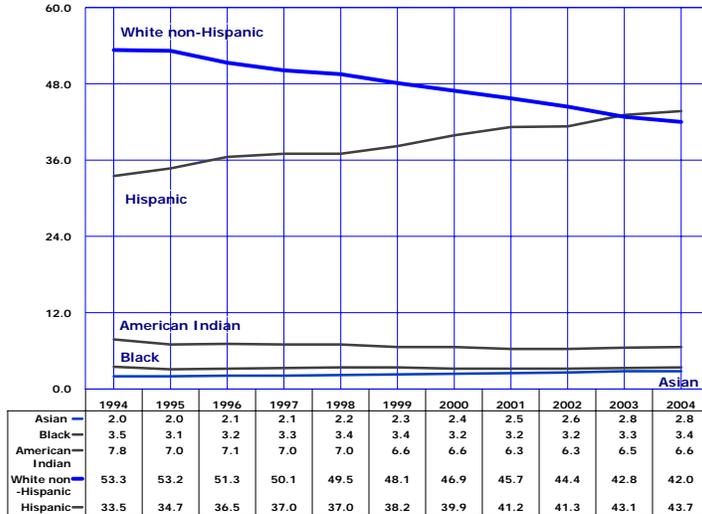
**NATALITY:
MATERNAL CHARACTERISTICS AND NEWBORN'S HEALTH**

In 2004 there were 93,396 resident live births registered in Arizona, 22,500 more births than in 1994 (**Table 1B-2**). Births to Hispanic or Latino mothers accounted for 76 percent or 17,098 of the 22,500 more resident births in 2004 than in 1994. All other racial/ethnic groups combined – White non-Hispanic, Black or African American, American Indian or Alaska Native and Asian or Pacific Islander - accounted for a mere 24 percent of the increase in the number of births to Arizona residents from 1994 to 2004.

Among the 93,396 resident births in 2004, the majority of them (40,822) were to Hispanic or Latino mothers, followed by White non-Hispanics (39,271), American Indian or Alaska Native (6,120), Black or African American (3,216) and Asian or Pacific Islander (2,614). In contrast, in 1994, White non-Hispanic accounted for the majority (53.3 percent) of resident live births followed by (a 33.5 percent share of) Hispanic births (**Table 1B-2, Table 1B-22**).

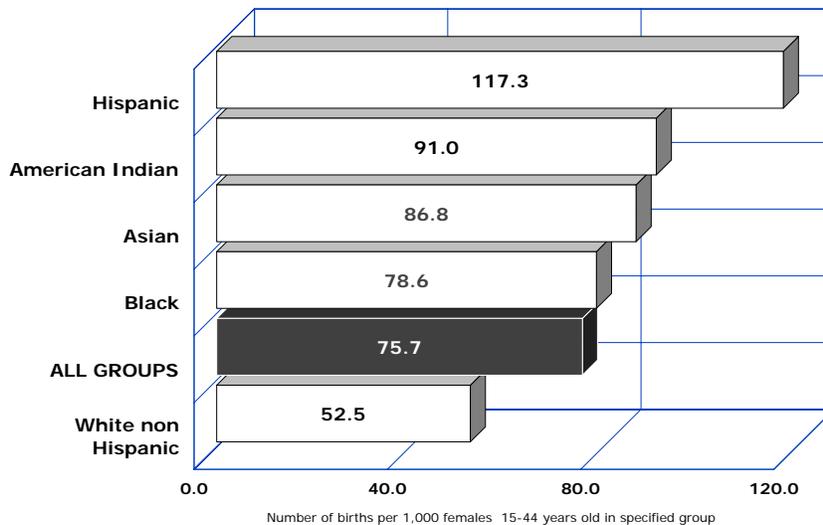
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Figure 1B-1
Percent of Resident Live Births by Race/Ethnicity
and Year, Arizona, 1994-2004



White non-Hispanic, Black and American Indian mothers each experienced decreased shares of all resident births in 2004 compared to 1994 (**Table 1B-2**). Hispanic women accounted for the largest share of resident births among the race/ethnic groups in Arizona both in 2003 and 2004. Among every 100 babies born in Arizona in 2004, 44 were Hispanics (43.7 percent), 42 White non-Hispanics (42.0 percent), 7 American Indians (6.6 percent), 3 Blacks (3.4 percent), and 3 Asians or Pacific Islanders (2.8 percent). The remaining fraction of 1.5 percent of Arizona mothers giving birth in 2004 chose not to identify themselves with any of those race/ethnic groups.

Figure 1B-2
General Fertility Rates by Race/Ethnic Group Among
Females of All Ages, Arizona, 2004

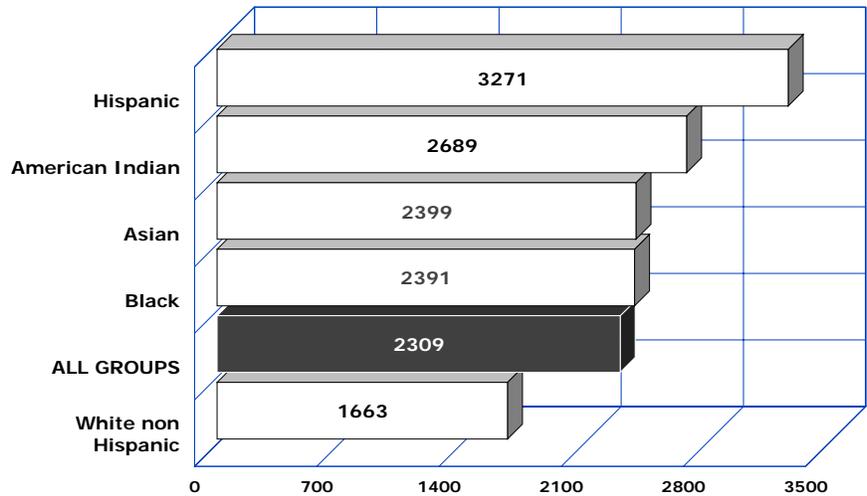


From among 1,234,019 women of childbearing age (15-44 years), 7.6 percent gave birth in 2004. The *general fertility rate* (the number of births per 1,000 women 15-44 years old) was the highest for Hispanic women (117.3 births per 1,000 or 11.7 percent) followed by rates for American Indian (91.0 births per 1,000), Asian (86.8 births per 1,000), and Black or African American women (78.6 per 1,000). Fertility rates for White non-Hispanic women were lower (52.5 per 1,000) than the average for all groups (**Figure 1B-1**).

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The *total fertility rate* indicates the average number of births to a hypothetical cohort of 1,000 women, if they experienced throughout their childbearing years the age-specific birth rates observed in a given year. From 1994 to 2004, the Arizona total fertility rates always exceeded the rate of "replacement" (2,100 births per 1,000 women, **Table 1B-1**). The "replacement" rate is considered the value at which a given generation can exactly replace itself. In 2004, the total fertility rates differed substantially by race and Hispanic origin (**Figure 1B-3**). The 2004 total fertility rate of 1,663 for White non-Hispanics was the only one below "replacement" among the race/ethnic groups in Arizona.

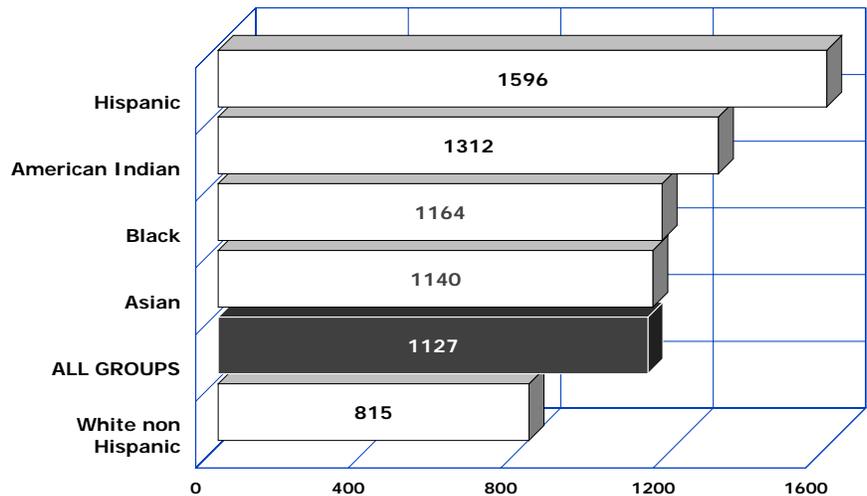
Figure 1B-3
Total Fertility Rates by Race/Ethnicity, Arizona, 2004



The sum of age group-specific birth rates multiplied by five (the number of years in the age group). The rate of 2309 above for example, means that if a hypothetical group of 1,000 women were to have the same birth rates in each age group that were observed in the actual childbearing population in 2004, they would have a total of 2,309 children by the time they reached the end of the reproductive period (taken here as age 50), assuming that all of the women survived to that age.

Another measure used to summarize reproduction patterns is the *gross reproduction rate*. It represents the average number of daughters born to a hypothetical cohort of 1,000 women if they experienced the age-specific birth rates observed in a given year throughout their childbearing years. This measure is similar to the total fertility rate except that it measures only female births, since reproduction is largely dependent on the number of females in a given population. In 2004 the gross reproduction rates in Arizona ranged from 815 for White non-Hispanic women to 1,596 for Hispanic women (**Figure 1B-4, Table 1B-1**).

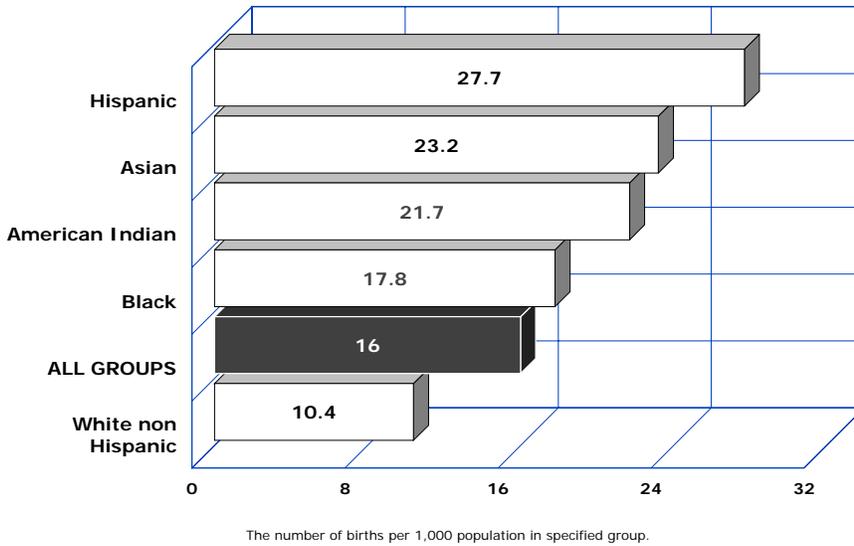
Figure 1B-4
Gross Reproduction Rates by Race/Ethnicity, Arizona, 2004



The sum of birth rates by 5-year age groups multiplied by the proportion of births that were female. The gross reproduction rate represents the average number of daughters born to a hypothetical cohort of 1,000 women if they experienced the age-specific birth rates observed in a given year throughout their childbearing years, and if none of the cohort was to die during her childbearing years.

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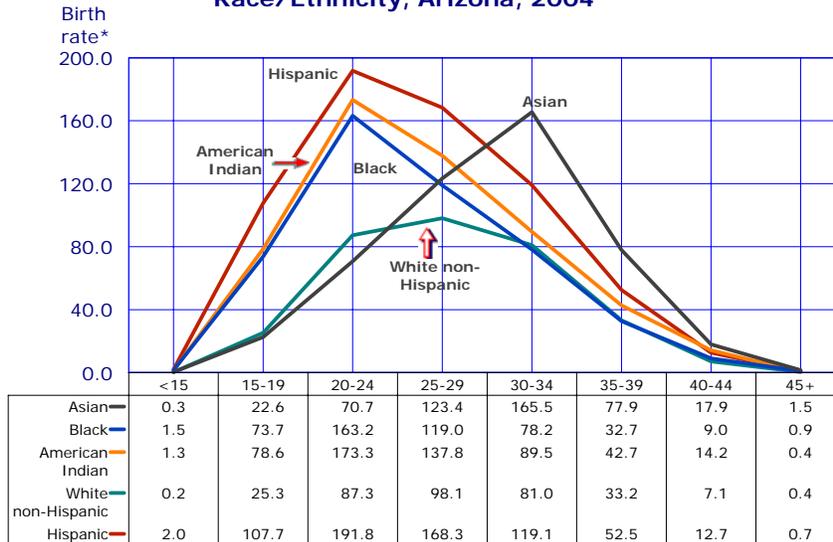
Figure 1B-5
Birth Rates per 1,000 Population by Race/Ethnicity,
Arizona, 2004



The crude birth rate, often simply called the birth rate, relates the number of births to the total population in a specified group. The birth rate is expressed as the total number of births per 1,000 persons, without regard to the age or sex distribution of the population.

In 2004 the crude birth rates by mother's race/ethnicity ranged from 10.4 births per 1,000 White non-Hispanics to 27.7 per 1,000 Hispanic or Latino population (**Figure 1B-5**).

Figure 1B-6
Birth Rates by Mother's Age Group and
Race/Ethnicity, Arizona, 2004



* Number of births per 1,000 females in specified group.

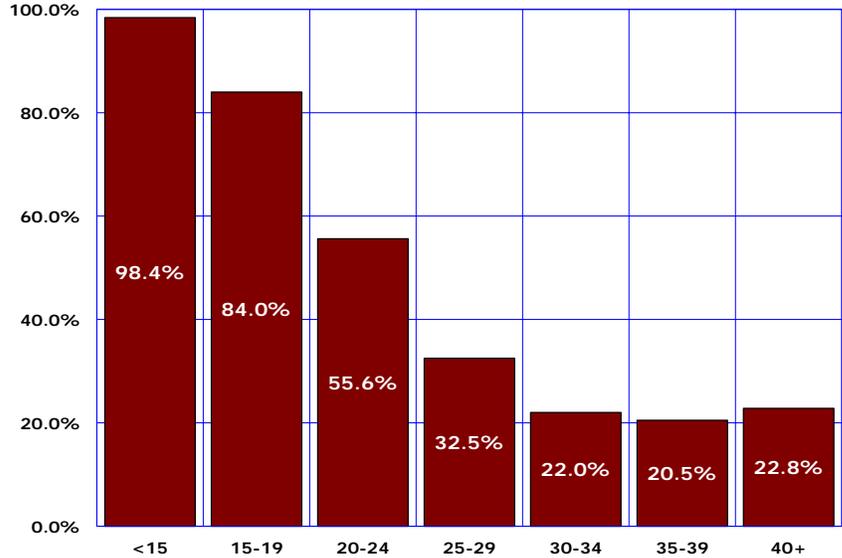
The age-specific birth rates (the number of births to mothers in a particular age group per 1,000 women in that age group) differed substantially by race/ethnicity (**Figure 1B-6**).

In 2004, Hispanic or Latino women had the highest birth rates for women in age groups up to 30 years. In contrast, the birth rates for women aged 30 years or older were the highest among Asian or Pacific Islander women.

Figure 1B-7
Percent Births to Unmarried Mothers by Age Group, Arizona, 2004

Unmarried mothers have accounted for an increasing annual proportion of births throughout the 1980s and 1990s, with 41.9 percent in 2004 marking a new historical high. Fewer than 13,000 infants were born to unmarried mothers in 1984 compared to 39,145 in 2004.

Two decades ago, the proportion of births among unmarried women aged 30-34 years was 7.3 percent. This proportion rose to 18.7 between 1984 and 1994. In 2004, twenty-two out of 100 mothers 30-34 years old were unmarried (**Figure 1B-7**).



There were 2,663 multiple birth events in Arizona in 2004, the highest number ever recorded in the State. (**Figure 1B-8**). The number of babies born in twin deliveries increased by 59.4 percent from 1,568 in 1994 to 2,500 in 2004 (**Figure 1B-8**). More profound was the 2 times (or 94.1 percent) increase in the number of triplet and higher order multiple birth events from 84 in 1994 to 163 in 2004.

In contrast, the number of singleton births increased by 32.6 percent over this period, from 68,413 in 1994 to 90,732 in 2004 (**Table 1B-16**).

The number of multiple birth events, as a proportion of total births, has increased from 1.8 percent in 1984, to 2.3 percent in 1994 and to 2.9 percent in 2004 (**Table 1B-2**).

Figure 1B-8
Number of Births in Twin and Triplet+ Deliveries by Year, Arizona, 1994-2004

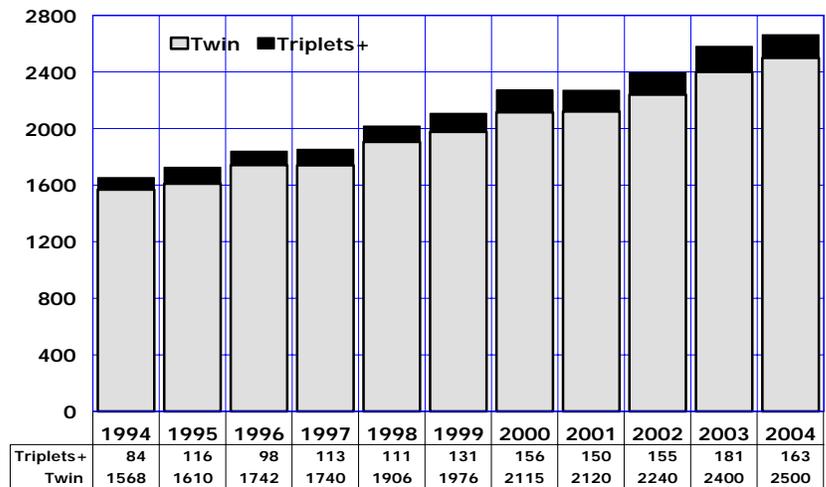
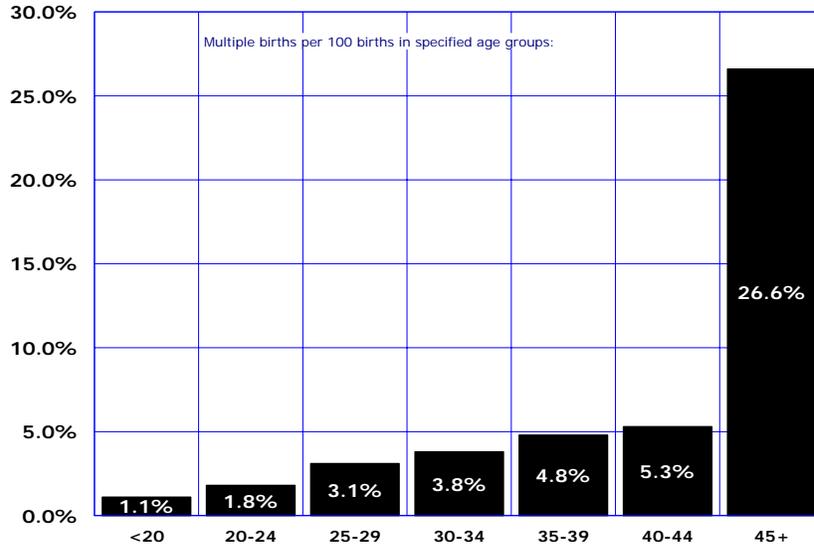


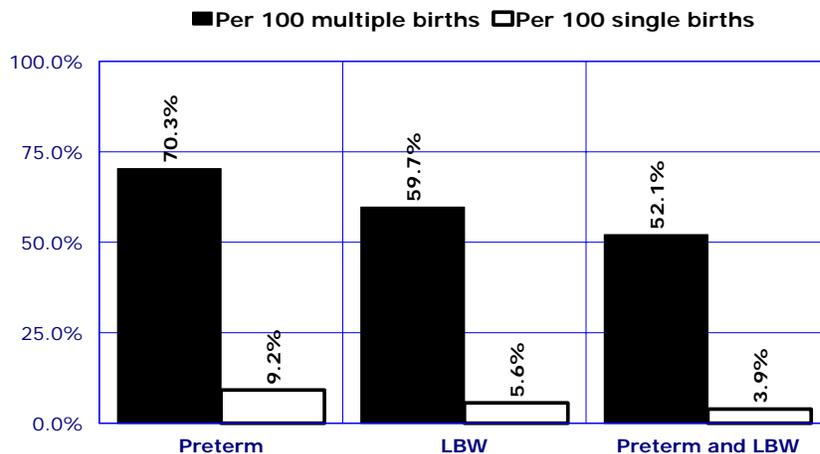
Figure 1B-9
Risk for Multiple Births by Mother's Age Group,
Arizona, 2004



The rise in multiple births has been associated with two related trends: 1) advances in, and greater access to, assisted reproductive technology, and 2) the older age of childbearing (women in their thirties and forties are more likely to have a multiple birth than younger women even without the use of fertility therapies).

In 2004, the proportion of multiple births increased with maternal age, with a precipitous rise at age 45 years and over. Among women aged 45 years and over 26.6 percent of all births were twins, triplets or quadruplets (**Figure 1B-9**).

Figure 1B-10
Infants Born Too Early (Preterm) and Infants Born Too Small (LBW) Among Multiple and Single Births,
Arizona, 2004



Preterm = < 37 weeks of gestation;
 LBW = low birthweight (less than 2,500 grams or 5 pounds 8 ounces)

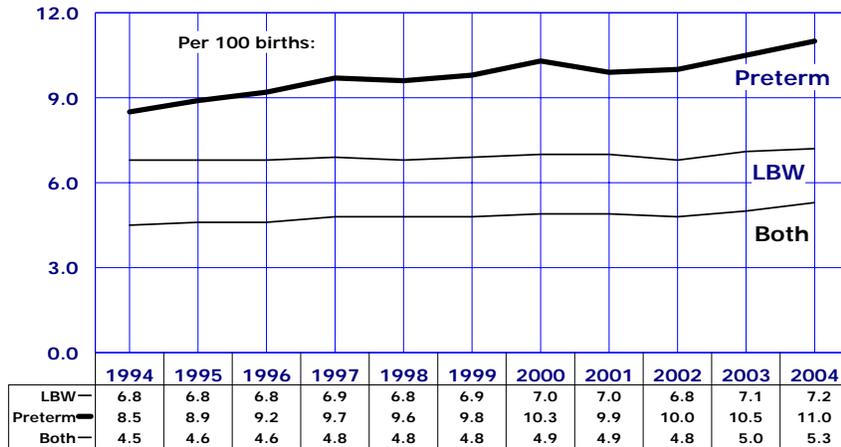
Infants born in multiple deliveries tend to be born at shorter gestations and smaller than those born in singleton deliveries (**Figure 1B-10**). In 2004, infants born in multiple deliveries were 13.4 times more likely (52.1 vs. 3.9 percent) to be born earlier than expected (at less than 37 completed weeks of gestation) and smaller (at less than 2,500 grams) than singleton births.

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The proportion of preterm births increased for the third consecutive year from 9.9 percent in 2001 to 11 percent in 2004. The percent of preterm births (at less than 37 completed weeks of gestation) has risen fairly steadily over the last decade, from 8.5 percent in 1994.

The proportion of infants born earlier than expected and smaller (at less than 2,500 grams) increased from 4.8 percent in 2002 to 5.0 percent in 2003 and 5.3 percent in 2004 (Figure 1B-11).

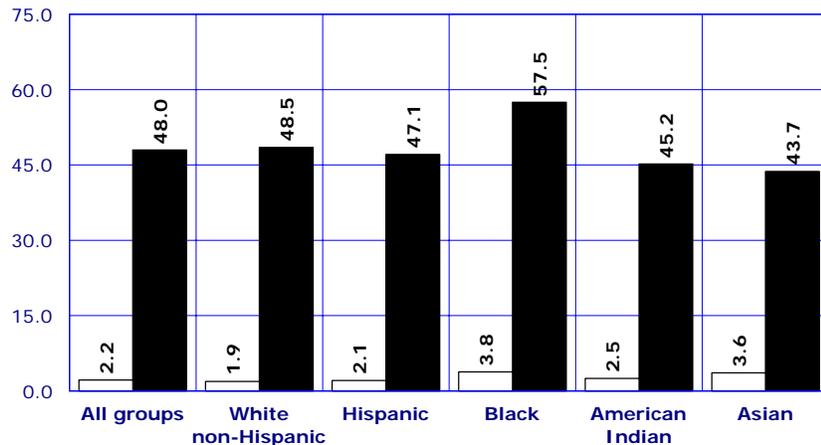
Figure 1B-11
Preterm and Low Birthweight (LBW) Births by Year, Arizona, 1994-2004



Preterm is less than 37 weeks of gestation;
Low birthweight (LBW) is less than 2,500 grams (less than 5 pounds 8 ounces).

Figure 1B-12
Low-Birthweight (LBW) Births by Length of Gestation and Mother's Race/Ethnicity, Arizona, 2004

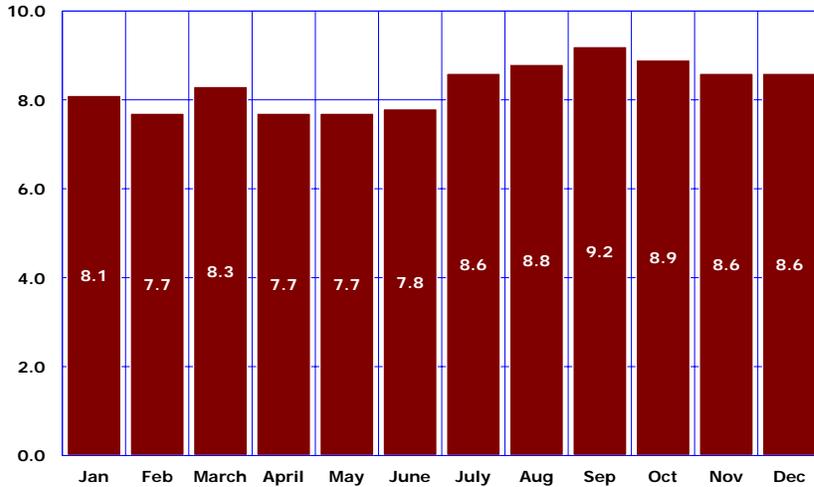
Number of LBW babies per 100 births in specified group:
□ Term ■ Preterm



Preterm is less than 37 weeks of gestation;
Low birthweight (LBW) is less than 2,500 grams (less than 5 pounds 8 ounces).

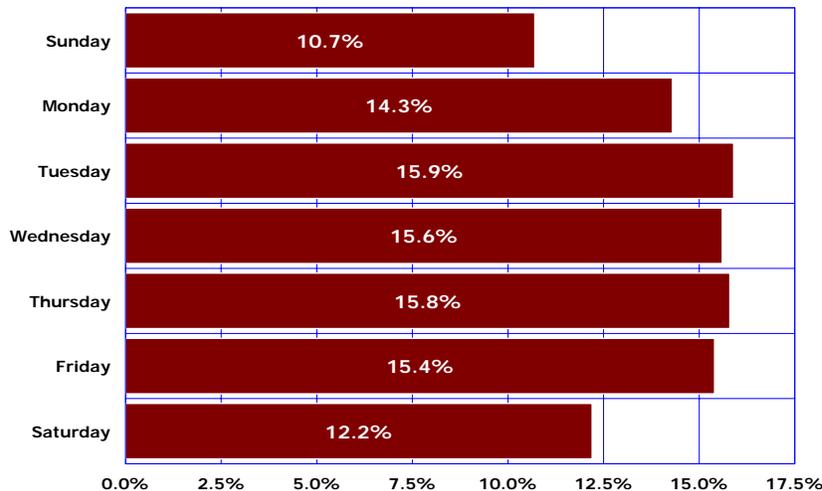
In 2004, 7.2 percent of all babies were born of low birthweight (LBW), or at less than 2,500 grams (5 pounds 8 ounces). Preterm delivery is the strongest risk factor for LBW. Infants born at less than 37 completed weeks of gestation are nearly 22 times (48.0 vs. 2.2 percent) more likely to be LBW than infants born at term (Figure 1B-12).

Figure 1B-13
Percent Resident Births by Month,
Arizona, 2004



Seasonal fluctuations in births have been observed in virtually all historical and contemporary human populations. In modern societies, the European pattern is characterized by an excess of births during spring and summer, followed by a secondary peak in September. In contrast, the American pattern is characterized by a trough in April-May, and a peak in September (**Figure 1B-13**).

Figure 1B-14
Percent Resident Births by Day of the Week,
Arizona, 2004

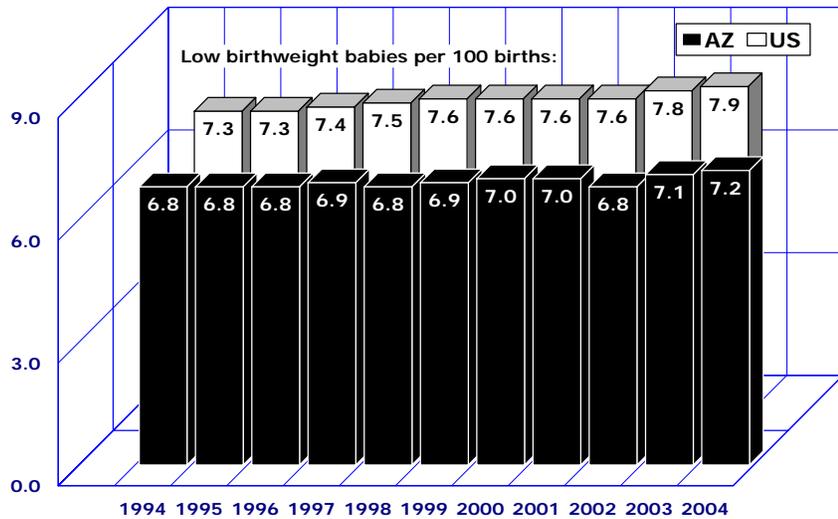


The daily average of resident live births in 2004 was substantially lower on weekends than on weekdays (**Figure 1B-14**). Many studies suggest that weekly, daily and hourly variations observed in hospitals and clinics are not due to a biological rhythm of labor, but to increased frequency of obstetric interventions in the timing of delivery (induced labors, elective cesarean deliveries), making it more aligned with the work week schedule.

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In 2004, 7.2 percent of all Arizona infants were born at a low birthweight (LBW), or at less than 2,500 grams (5 pounds 8 ounces), the second annual increase from 6.8 percent in 2002. In each year from 1994 to 2003, the annual incidence of LBW infants was lower in Arizona compared to the nation (Figure 1B-15). The 2003 LBW ratio of 7.9 percent of all births nationally was the highest reported in more than three decades.

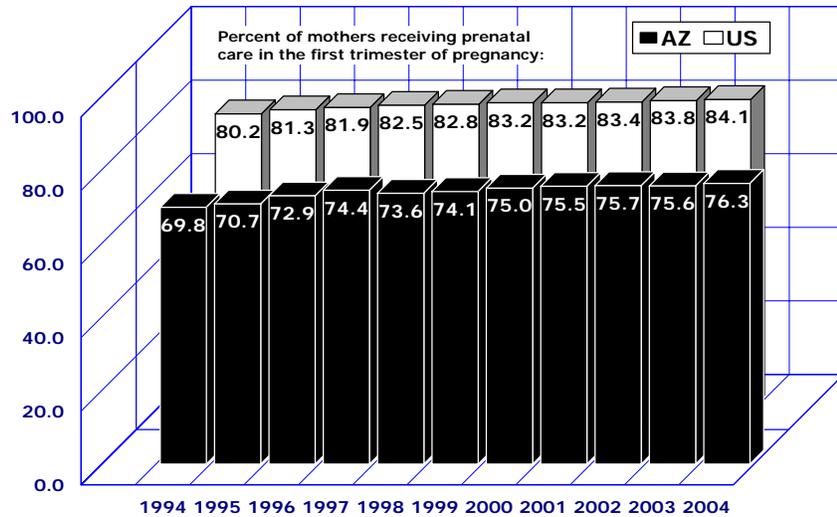
Figure 1B-15
Percent Low Birthweight,* Arizona and United States, 1994-2004



*Low birthweight is less than 2,500 grams (less than 5 pounds 8 ounces).
Note: The latest available U.S. ratio is for 2003.

The percent of Arizona mothers giving birth who received early prenatal care (i.e., in the first trimester of pregnancy) increased from 69.8 percent in 1994 to 76.3 percent in 2004. In each year from 1994 to 2003, the percent of women giving birth who received prenatal care in the first trimester was lower in Arizona when compared to the nation (Figure 1B-16).

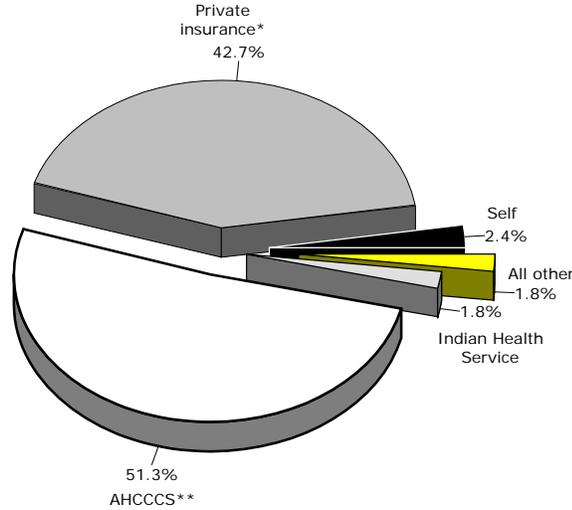
Figure 1B-16
First Trimester Prenatal Care, Arizona and United States, 1994-2004



Note: The latest available U.S. ratio is for 2003.

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Figure 1B-17
Births by Payer, Arizona Residents, 2004

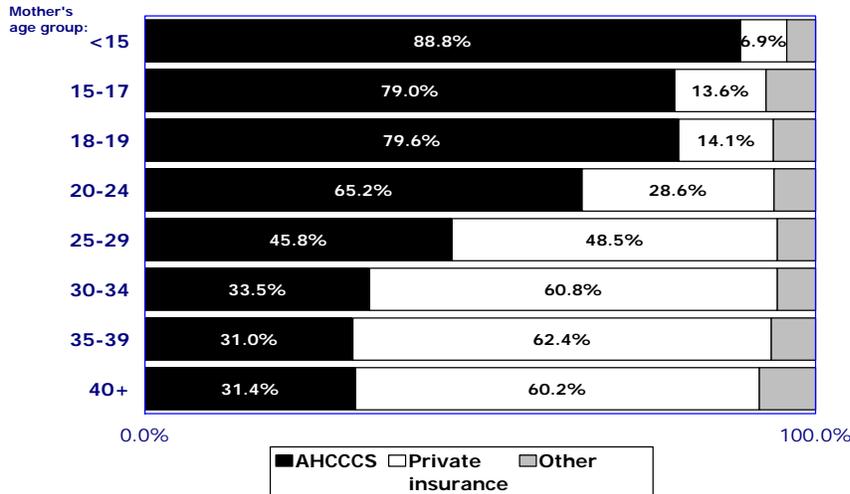


*Indemnity, HMO, PPO.

**The Arizona Health Care Cost Containment System is the State's Medicaid Program.

The share of resident births paid for by the Arizona Health Care Cost Containment System (the State's Medicaid Program) increased for the fifth consecutive year from 41.5 percent of the total deliveries in 1999 to 51.3 percent in 2004. The share of private health insurance decreased from 50.5 percent of the total deliveries in 2000 to 42.7 percent in 2004. The payment source was the mothers themselves and/or their families (i.e., self-pay) in 2.4 percent of the deliveries (**Figure 1B-17**). The Indian Health Services paid for 1.8 percent of the births in 2004, with 95.5 percent of those births to American Indian mothers.

Figure 1B-18
Payee for Delivery by Mother's Age Group, Arizona, 2004



Note: The Arizona Health Care Cost Containment System (AHCCCS) is the State's Medicaid program.

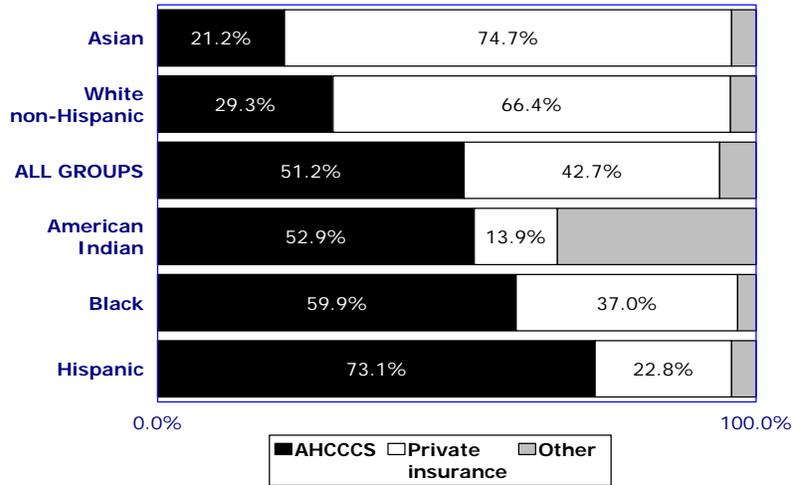
In 2004, the Arizona Health Care Cost Containment System paid for the absolute majority of the deliveries to mothers 24 years or younger (**Figure 1B-18**). In contrast, private insurance was the largest payer for the deliveries of women giving birth who were 25 years old or older in 2004 (based on data in **Table 1B-28**).

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In 2004, private insurance was the largest payer for deliveries of Asian (at 74.5 percent) and White non-Hispanic infants (at 66.4 percent). In contrast, the Arizona Health Care Cost Containment System (AHCCCS) was the largest payer for deliveries of Hispanic or Latino (73.1 percent), Black or African American (59.9 percent) and American Indian women (52.9 percent).

The Indian Health Service as a payer accounted for a 26.6 percent share of deliveries of American Indian or Alaska Native infants in the State (Figure 1B-19, based on data in Table 1B-28).

Figure 1B-19
Payee for Delivery by Mother's Race/Ethnicity, Arizona, 2004



Note: The Arizona Health Care Cost Containment System (AHCCCS) is the State's Medicaid program. Other = Indian Health Service, self, or unknown.

Figure 1B-20
Maternal Medical Risk Factors per 100 Births by Mother's Race/Ethnicity, Arizona, 2004

Maternal medical risk factors (such as anemia, diabetes, hypertension or kidney disease) can contribute to serious pregnancy complications and infant deaths, particularly if not treated properly. In 2004, American Indian or Alaska Native women giving birth had the highest proportion of medical risk factors (39.4 percent, Figure 1B-20), followed by White non-Hispanic and Black or African American women.

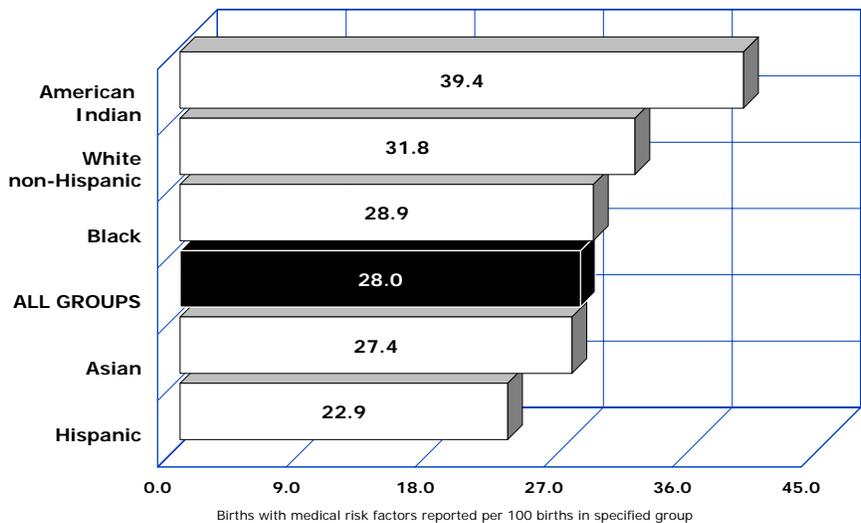
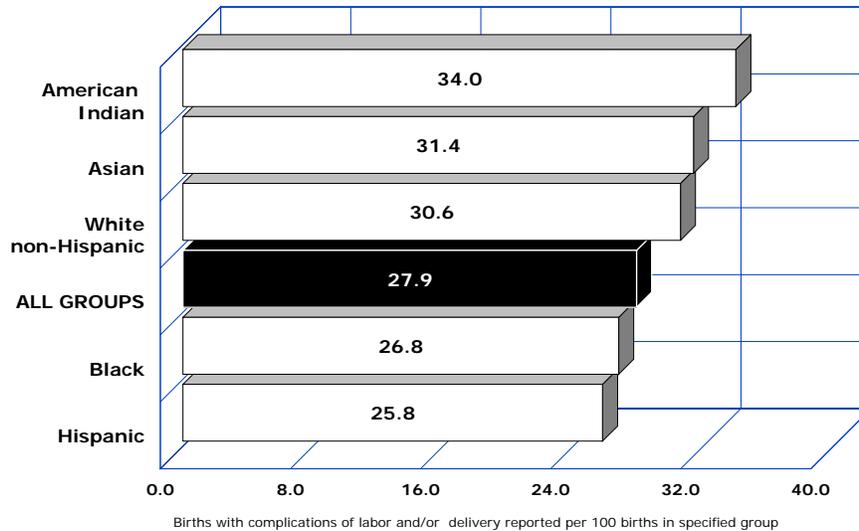


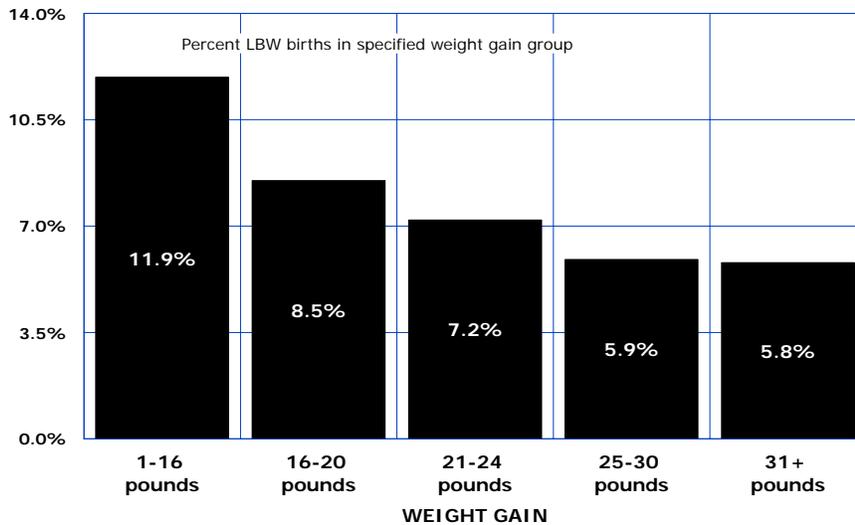
Figure 1B-21
Complications of Labor and/or Delivery per 100 Births
by Race/Ethnicity, Arizona, 2004



In 2004, of the 15 complications of labor and delivery reported on the birth certificate, the four most frequently reported were *meconium moderate/heavy* (3.6 percent), *breech malpresentation* (3.3 percent), *fetal distress* (2.1 percent) and *rupture of membranes* (1.8 percent).

Complication rates vary among racial/ethnic groups, with the highest rates reported for Asian, White non-Hispanic, and American Indian women (**Figure 1B-21**).

Figure 1B-22
Risk for Low-Birthweight by Maternal Weight Gain
During Pregnancy, Arizona, 2004



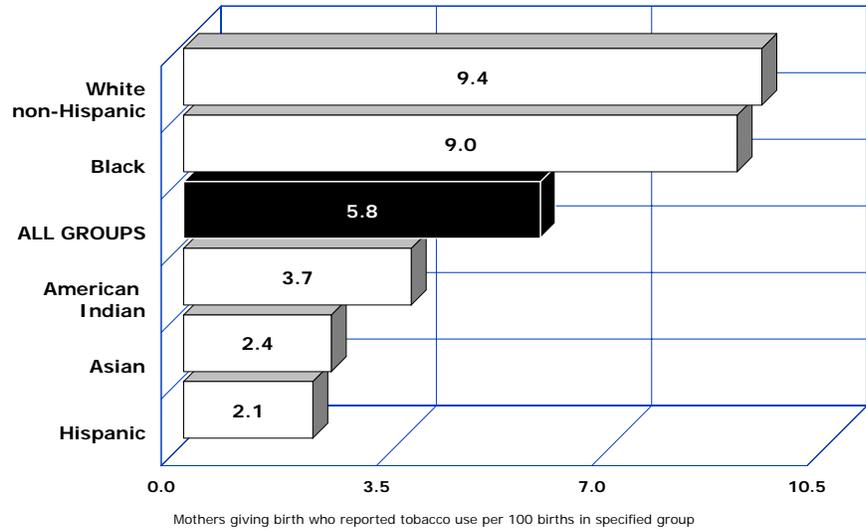
Maternal weight gain during pregnancy is an important determinant of both fetal growth and birthweight. Women who are of normal weight (average body mass index or BMI) should gain 21-35 pounds during a normal pregnancy. Women who are underweight should gain more (28-40 pounds), and women who are overweight should gain less (15 to 25 pounds). Unfortunately, it is not possible to determine whether the weight gain was within the recommendations for the mother's BMI, because information of the mother's pre-pregnancy weight and height is not collected on the birth certificate.

Maternal weight gain has been shown to have a positive correlation with infant birthweight. In 2004, as in previous years, the percent of infants with low birthweight decreased with increasing maternal weight gain (**Figure 1B-22**).

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Cigarette smoking during pregnancy has been associated with reduced infant weight at birth, intrauterine growth retardation and preterm births. Smoking during pregnancy was reported by 5.8 percent of women giving birth both in 2003 and 2004 (Table 1B-26, Table 5B-30), compared to 10.5 percent in 1989, when this information was first reported on Arizona birth certificates. As in the past, it is unclear, whether this decline means that women giving birth in Arizona are less likely to use tobacco during pregnancy or, perhaps, less likely to report it when they use. White non-Hispanic and Black mothers were more likely to report smoking than American Indian, Asian and Hispanic (Figure 1B-23).

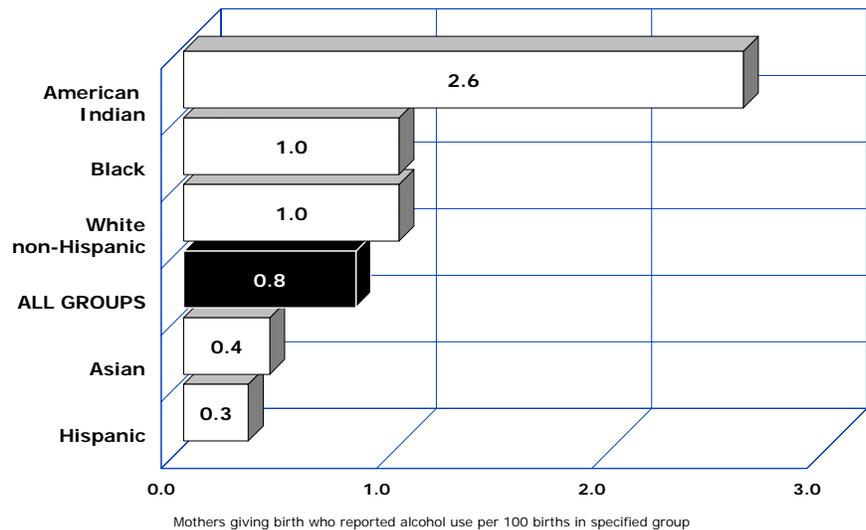
Figure 1B-23
Self-reported Tobacco Use During Pregnancy
by Race/Ethnicity, Arizona, 2004



In 2004, 0.8 percent of all live births were to mothers who reported alcohol use (Figure 1B-24, Table 1B-26, Table 5B-30). American Indian, Black, and White non-Hispanic mothers were more likely than Hispanic and Asian mothers to report the use of alcohol.

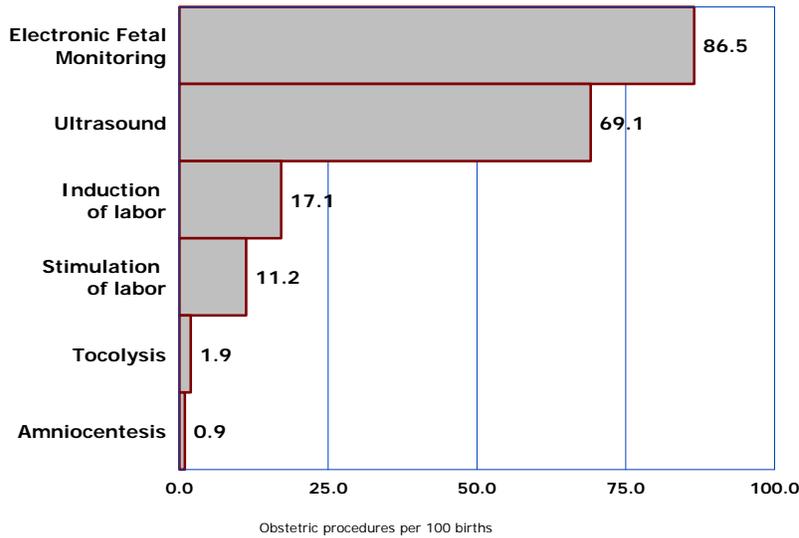
The stigma of maternal alcohol use likely contributes to the underreporting of this behavior. There is little chance improvement and self-reported information about maternal alcohol use won't be collected on the proposed Arizona and national birth certificates.

Figure 1B-24
Self-reported Alcohol Use During Pregnancy
by Race/Ethnicity, Arizona, 2004



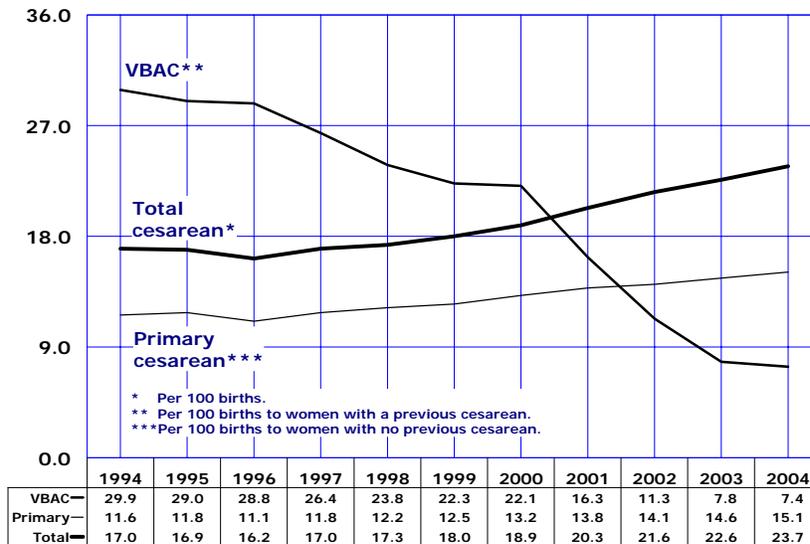
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Figure 1B-25
Obstetric Procedures Reported per 100 Births,
Arizona, 2004



Of the six specific obstetric procedures listed on the birth certificate, *electronic fetal monitoring* and *ultrasound* are most frequently reported (**Figure 1B-25**). In 2004, *electronic fetal monitoring* was the most prevalent procedure, reported for 81.2 percent of all births to Arizona residents. The overall rate of *amniocentesis* decreased to less than one percent of births in 2004, from 2.7 percent in 1994. *Ultrasound* and other less invasive screening may be replacing the use of *amniocentesis*.

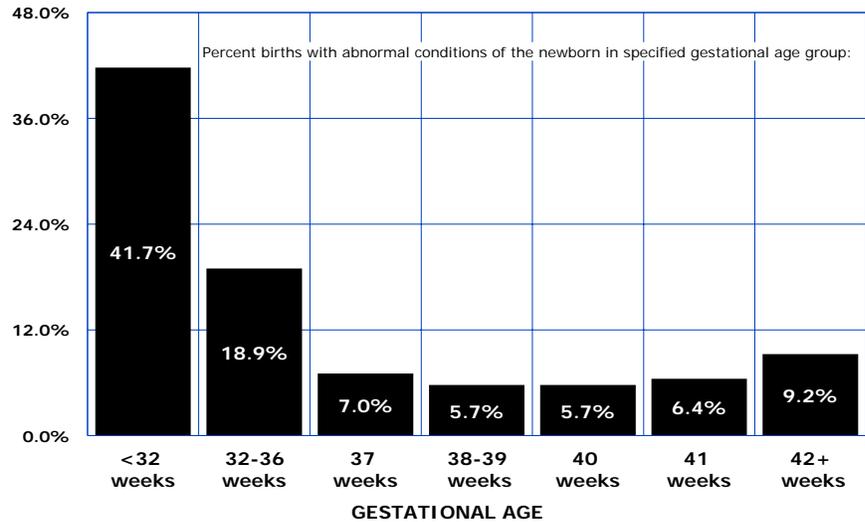
Figure 1B-26
Total and Primary Cesarean Deliveries and
Vaginal Births After Previous Cesarean (VBAC),
Arizona, 1994-2004



The rate of cesarean delivery increased to an all time high of 23.7 percent of all resident births in 2004 (**Figure 1B-26, Table 1B-2**). The rise in the total rate is due to both an increase in the primary cesarean rate and a decrease in the rate of vaginal birth after cesarean delivery (VBAC). The primary cesarean rate in 2004 (15.1 per 100 live births to women who had no previous cesarean) was 30.2 percent higher than in 1994 (11.6). The rate of vaginal birth after previous cesarean delivery (VBAC) declined 75.3 percent from a high of 29.9 in 1994 to 7.4 in 2004.

Figure 1B-27
Abnormal Conditions of the Newborn by Gestational Age, Arizona, 2004

Since the first year these data were collected, three of the eight specific abnormal conditions listed on the birth certificate have been reported most frequently: *assisted ventilation less than 30 minutes*, *assisted ventilation of 30 minutes or longer*, and *hyaline membrane disease/respiratory distress syndrome (RDS)*. *Hyaline membrane disease/RDS* is a common cause of morbidity in preterm infants. The rates of abnormal conditions are the highest among very preterm (less than 32 weeks of gestation) and moderately preterm (32-36 weeks of gestation) infants (**Figure 1B-27**).



Congenital anomalies (birth defects) are the leading cause of infant deaths in Arizona and nationally. They are also cause of physical defects and metabolic diseases. Many of the congenital anomalies tracked on birth certificates occur rarely and are not very well reported.

For various anomalies, rates vary widely with maternal age. For example, in 2004 as in prior years, the rate of Down's syndrome, the most frequently recognized cause of mental retardation, was substantially higher for births to mothers aged 40 years and over.

Figure 1B-28
The Incidence of Down's Syndrome by Mother's Age Group, Arizona, 2004

