



**1B.**

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

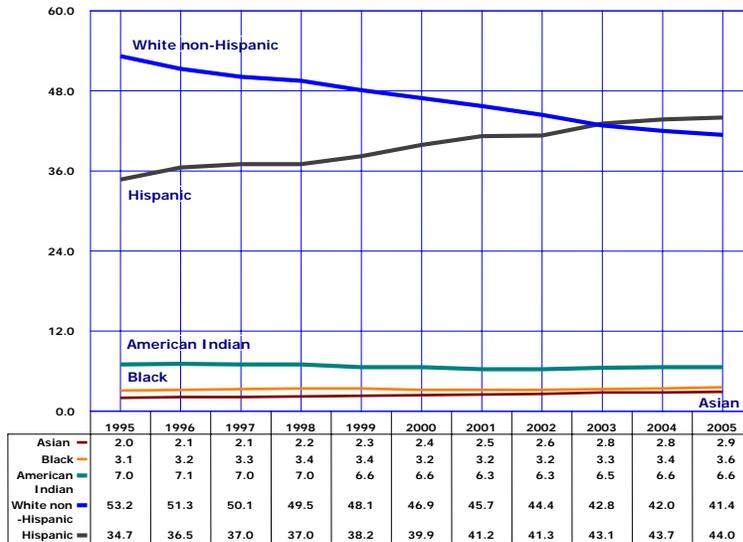
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In 2005 there were 95,798 live births to residents of Arizona, 23,412 more births than in 1995 (**Table 1B-2**). Births to Hispanic or Latino mothers accounted for 72.7 percent or 17,015 of the 23,412 more resident births in 2005 than in 1995. All 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 27.3 percent of the increase in the number of births to Arizona residents from 1995 to 2005.

Among the 95,798 resident births in 2005, the majority of them (42,156) were to Hispanic or Latino mothers, followed by White non-Hispanics (39,657), American Indian or Alaska Native (6,293), Black or African American (3,450) and Asian or Pacific Islander (2,805). In contrast, in 1995, White non-Hispanic accounted for the majority (53.2 percent) of resident live births followed by (a 34.7 percent) share of Hispanic births (**Table 1B-2, Table 1B-22**).

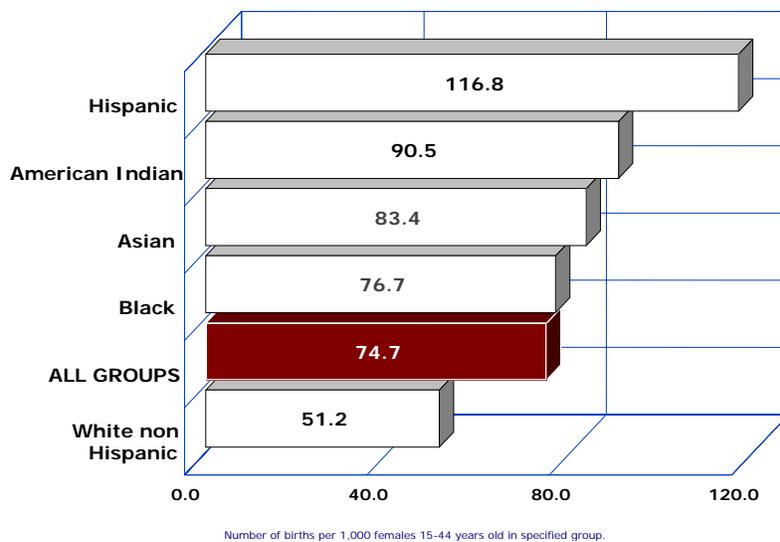
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**Figure 1B-1**  
Percent of Resident Live Births by Race/Ethnicity and Year, Arizona, 1995-2005



White non-Hispanic and American Indian mothers each experienced decreased shares of all resident births in 2005 compared to 1995 (Table 1B-2). Hispanic women accounted for the largest share of annual resident births among the race/ethnic groups in Arizona since 2003. Among every 100 babies born in Arizona in 2005, 44 were Hispanics (44.0 percent), 41 White non-Hispanics (41.4 percent), 7 American Indians (6.6 percent), 4 Blacks (3.6 percent), and 3 Asians or Pacific Islanders (2.9 percent). The remaining fraction of 1.5 percent of Arizona mothers giving birth in 2005 chose not to identify themselves with any of those race/ethnic groups.

**Figure 1B-2**  
General Fertility Rates by Race/Ethnicity, Arizona, 2005

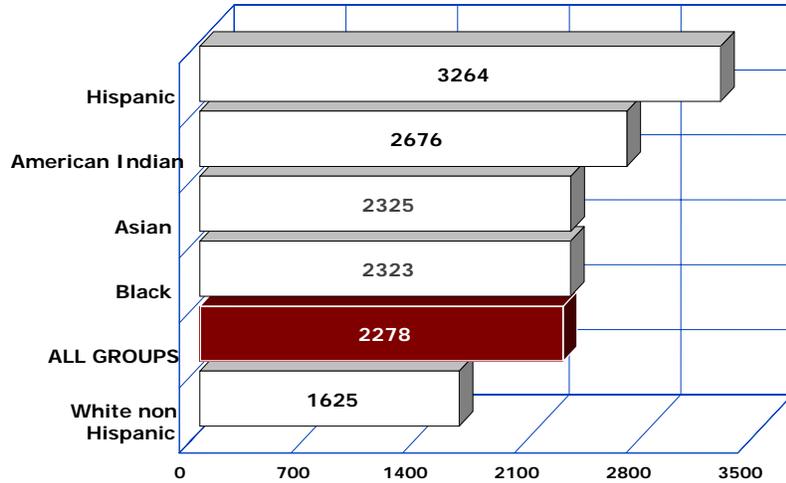


From among 1,283,153 women of childbearing age (15-44 years), 7.5 percent gave birth in 2005. The *general fertility rate* (the number of births per 1,000 women 15-44 years old) was the highest for Hispanic women (116.8 births per 1,000 or 11.7 percent) followed by rates for American Indian (90.5 births per 1,000), Asian (83.4 births per 1,000), and Black or African American women (76.7 per 1,000). Fertility rates for White non-Hispanic women were lower (51.2 per 1,000) than the average for all groups (Figure 1B-1, Table 1A-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 1995 to 2005, 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 2005, the total fertility rates differed substantially by race and Hispanic origin (**Figure 1B-3**). The 2005 total fertility rate of 1,625 for White non-Hispanics was the only one below “replacement” among the race/ethnic groups in Arizona.

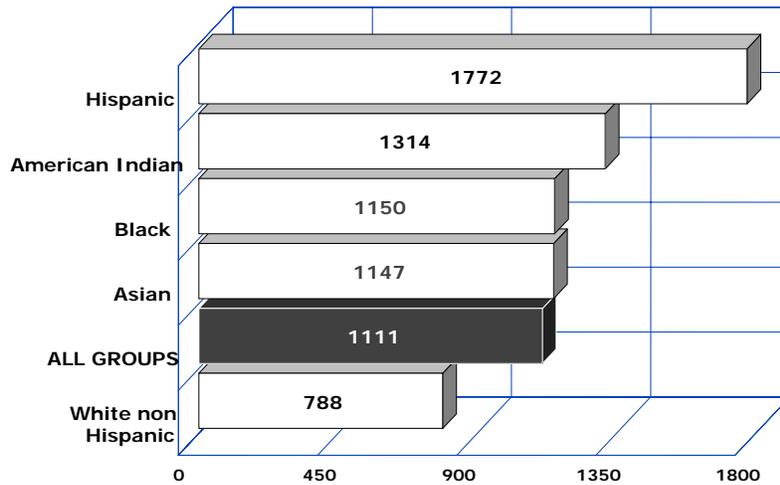
**Figure 1B-3**  
Total Fertility Rates by Race/Ethnicity, Arizona, 2005



The sum of age group-specific birth rates multiplied by five (the number of years in the age group). The rate of 2,278 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 2005, they would have a total of 2,278 children (or 2.3 children each) by the time they reached the end of the reproductive period (taken here as age 50), assuming that 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 2005 the gross reproduction rates in Arizona ranged from 788 for White non-Hispanic women to 1,772 for Hispanic women (**Figure 1B-4**, **Table 1B-1**).

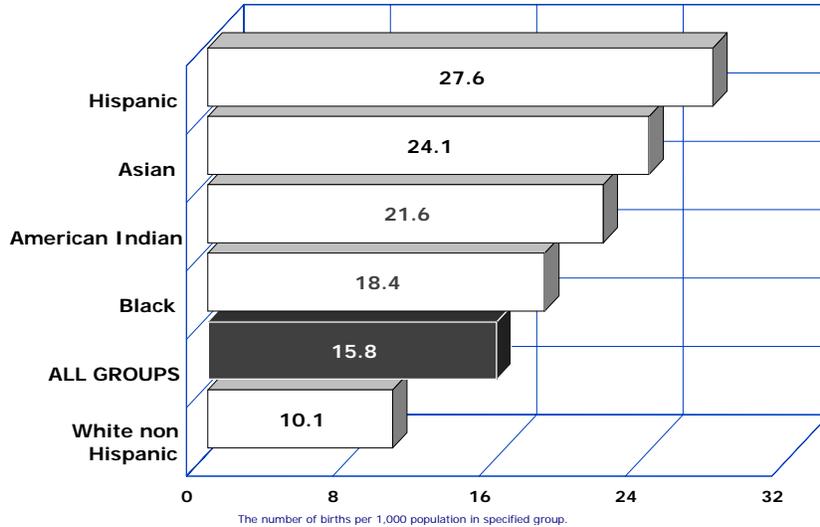
**Figure 1B-4**  
Gross Reproduction Rates by Race/Ethnicity, Arizona, 2005



The sum of birth rates by 5-year age groups multiplied by the proportion of births that was 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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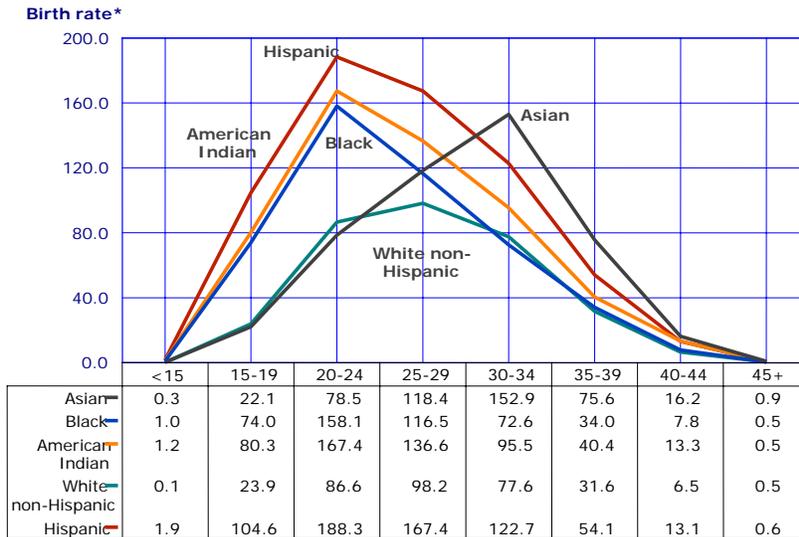
**Figure 1B-5**  
**Birth Rates per 1,000 Population by Race/Ethnicity,**  
**Arizona, 2005**



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 2005 the crude birth rates by mother's race/ethnicity ranged from 10.1 births per 1,000 White non-Hispanics to 27.6 per 1,000 Hispanic or Latino population (**Figure 1B-5**).

**Figure 1B-6**  
**Birth Rates by Mother's Age Group and Race/Ethnicity,**  
**Arizona, 2005**



\* 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**).

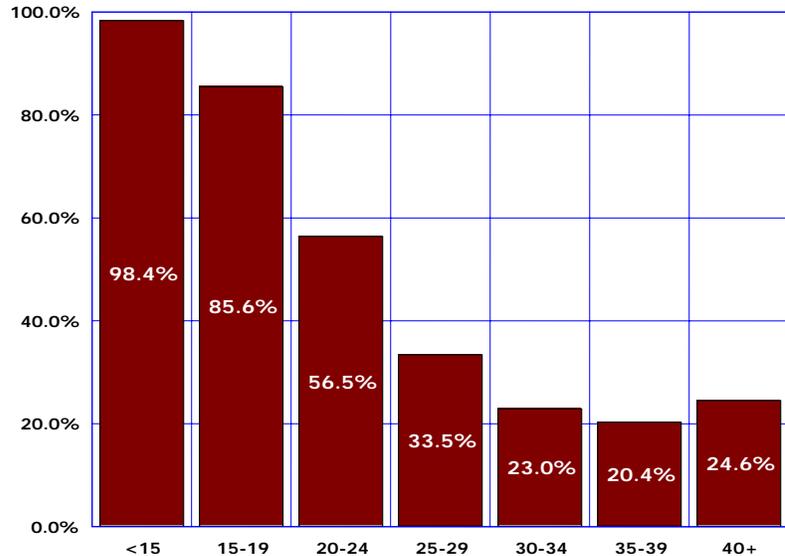
In 2005, Hispanic or Latino women had the highest birth rates for women in age groups up to 30 years. In contrast, the birth rates for women aged 30 years or older were the highest among Asian or Pacific Islander women.

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**Figure 1B-7**  
Percent Births to Unmarried Mothers by Age Group, Arizona, 2005

Unmarried mothers have accounted for an increasing annual proportion of births throughout the 1980s and 1990s, with 42.8 percent in 2005 marking a new historical high. Fewer than 14,500 infants were born to unmarried mothers in 1985 compared to 40,993 in 2005.

Two decades ago, the proportion of births among unmarried women aged 30-34 years was 11.0 percent. This proportion rose to 19.1 between 1985 and 1995. In 2005, twenty-three out of 100 mothers 30-34 years old were unmarried (**Figure 1B-7**).

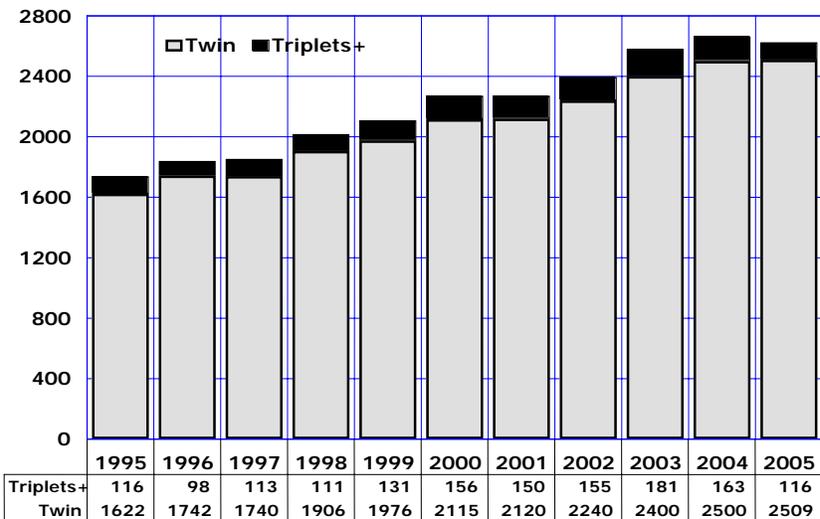


There were 2,625 multiple birth events in Arizona in 2005, the second highest number ever recorded in the State. (**Figure 1B-8**). The number of babies born in twin deliveries increased by 54.7 percent from 1,622 in 1995 to 2,509 in 2005 (**Figure 1B-8**). The number of triplet and higher order multiple birth events declined from a recent peak of 163 in 2004 to 116 in 2005. Identical number of 116 triplet and higher order multiple births was reported in 1995.

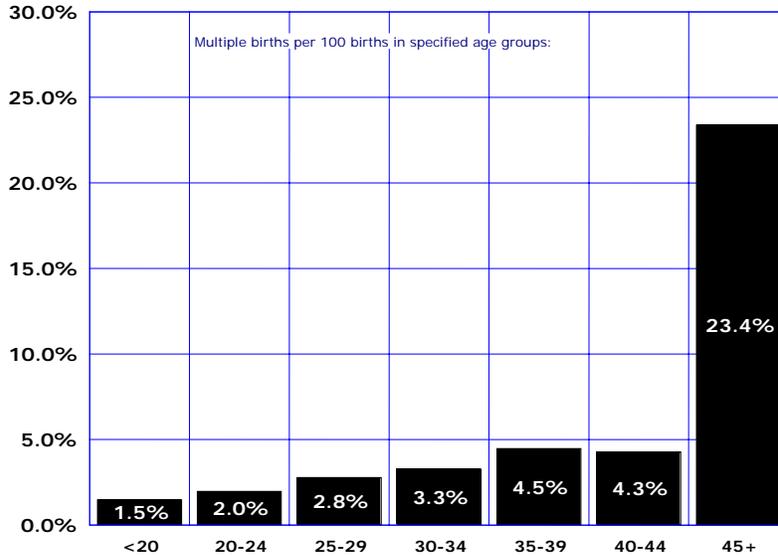
The number of singleton births increased by 33.2 percent over this period, from 69,925 in 1995 to 93,173 in 2005 (**Table 1B-16**).

The number of multiple birth events, as a proportion of total births, has increased from 1.8 percent in 1985, to 2.9 percent in 2004 and then it has declined to 2.7 percent in 2005 (**Table 1B-2**).

**Figure 1B-8**  
Number of Births in Twin and Triplet+ Deliveries by Year, Arizona, 1995-2005



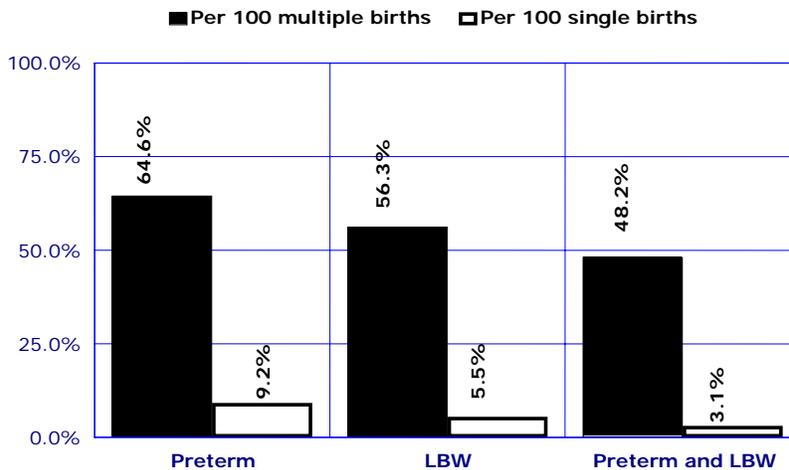
**Figure 1B-9**  
**Risk for Multiple Births by Mother's Age Group,**  
**Arizona, 2005**



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 2005, 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 23.4 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, 2005**



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

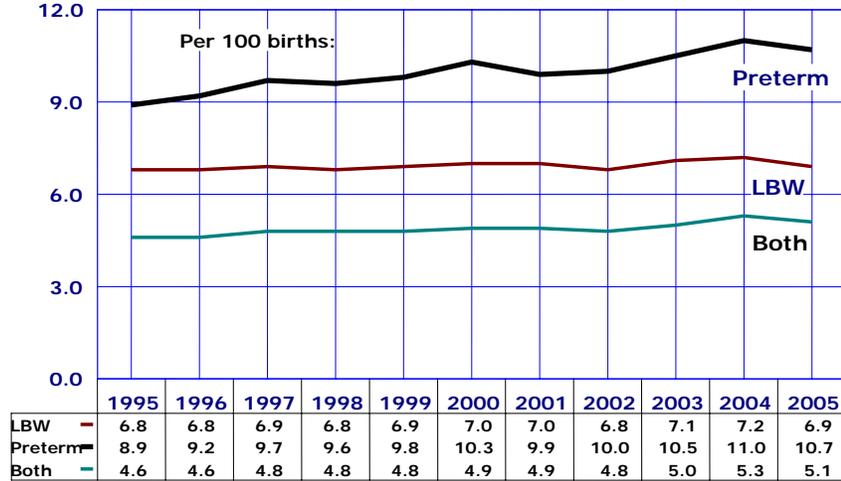
Infants born in multiple deliveries tend to be born at shorter gestations and smaller than those born in singleton deliveries (**Figure 1B-10**). In 2005, infants born in multiple deliveries were 15.5 times more likely (48.2 vs. 3.1 percent) to be born earlier than expected (at less than 37 completed weeks of gestation) and smaller (at less than 2,500 grams) than singleton births.

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**Figure 1B-11**  
Preterm and Low Birthweight (LBW) Births by Year, Arizona, 1995-2005

The proportion of preterm births slightly decreased from 11.0 percent in 2004 to 10.7 percent in 2005. The percent of preterm births (at less than 37 completed weeks of gestation) has risen fairly steadily over the last decade, from 8.9 percent in 1995.

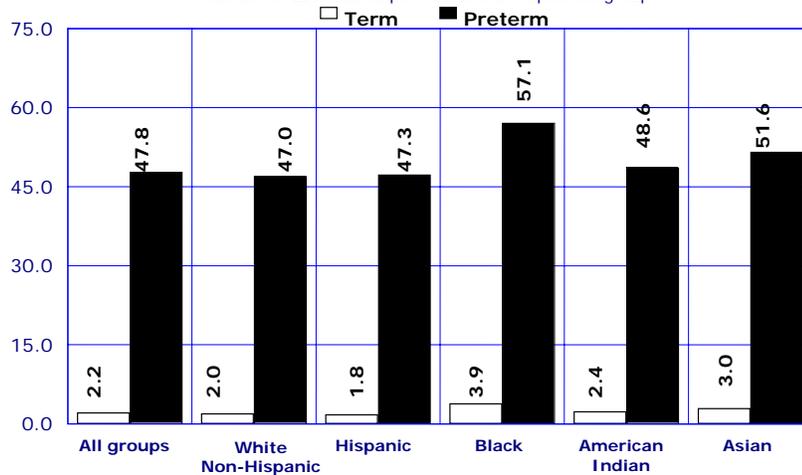
The proportion of infants born earlier than expected and smaller (at less than 2,500 grams) increased from 4.6 percent in 1995 to 5.3 percent in 2004 but it has declined to 5.1 percent in 2005 (**Figure 1B-11**).



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, 2005

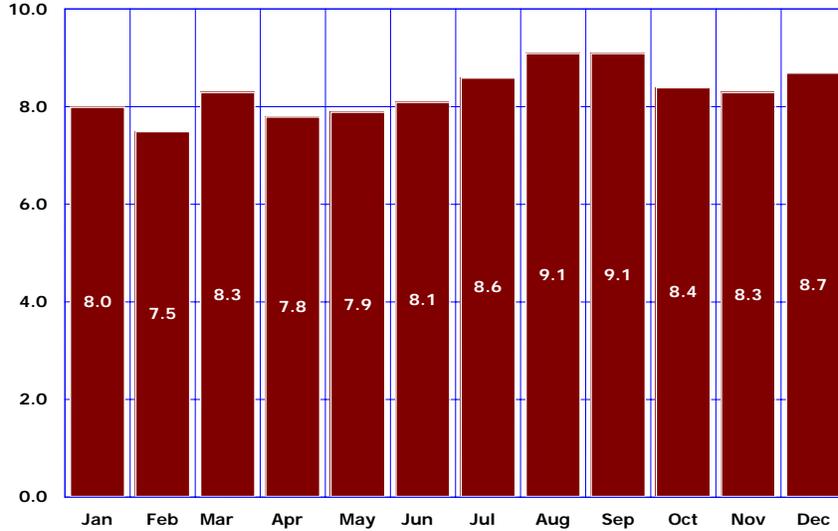
Number of LBW babies per 100 births in specified group:



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

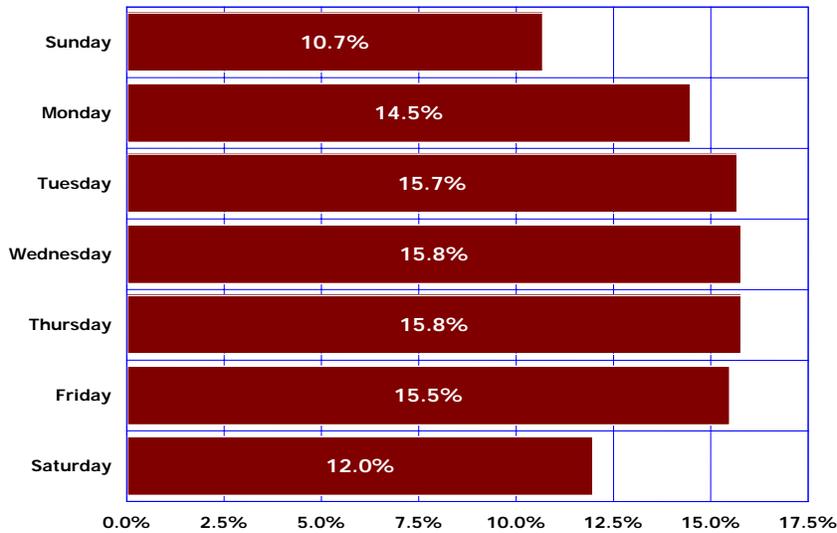
In 2005, 6.9 percent of all babies were born of low birthweight (LBW), or at less than 2,500 grams (5 pounds 8 ounces). Preterm delivery is the strongest risk factor for LBW. Infants born at less than 37 completed weeks of gestation are nearly 22 times (47.8 vs. 2.2 percent) more likely to be LBW than infants born at term (**Figure 1B-12**).

**Figure 1B-13**  
**Percent Resident Births by Month,**  
**Arizona, 2005**



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 August -September (**Figure 1B-13**).

**Figure 1B-14**  
**Percent Resident Births by Day of the Week,**  
**Arizona, 2005**

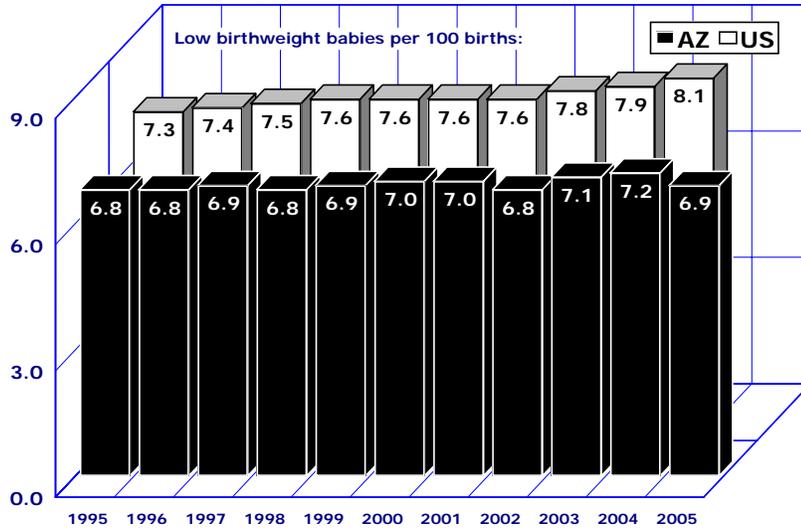


On average 262 infants were born per day in 2005 to Arizona residents. The daily average of resident live births in 2005 was substantially lower on weekends than on weekdays (**Figure 1B-14**). Many studies suggest that weekly, daily and hourly variations observed in hospitals and clinics are not due 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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**Figure 1B-15**  
**Percent Low Birthweight,\* Arizona and United States, 1995-2005**

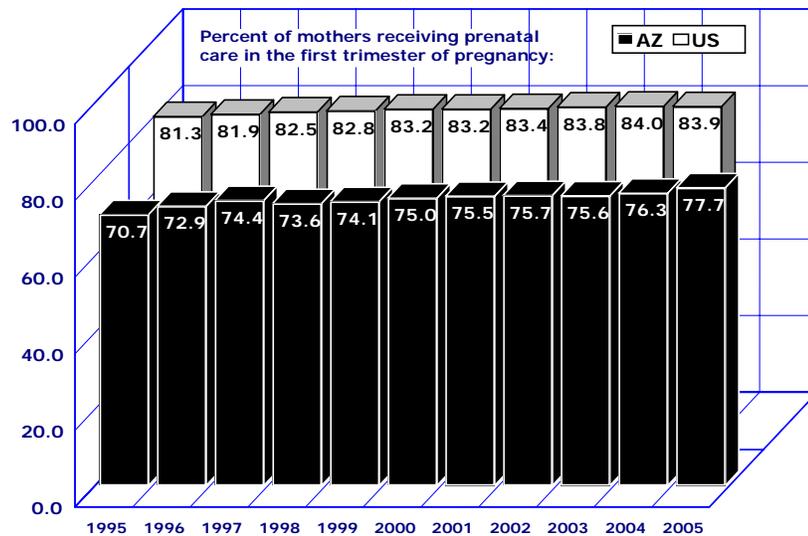
In 2005, 6.9 percent of all Arizona infants were born at a low birthweight (LBW), or at less than 2,500 grams (5 pounds 8 ounces), a decline from a recent peak of 7.2 percent in 2004. In each year from 1995 to 2004, the annual incidence of LBW infants was lower in Arizona compared to the nation (Figure 1B-15). The 2004 LBW ratio of 8.1 percent of all births nationally was the highest reported in more than three decades.



\*Low birthweight is less than 2,500 grams (less than 5 pounds 8 ounces).  
 Note: The latest available U.S. ratio is for 2004.

**Figure 1B-16**  
**First Trimester Prenatal Care, Arizona and United States, 1995-2005**

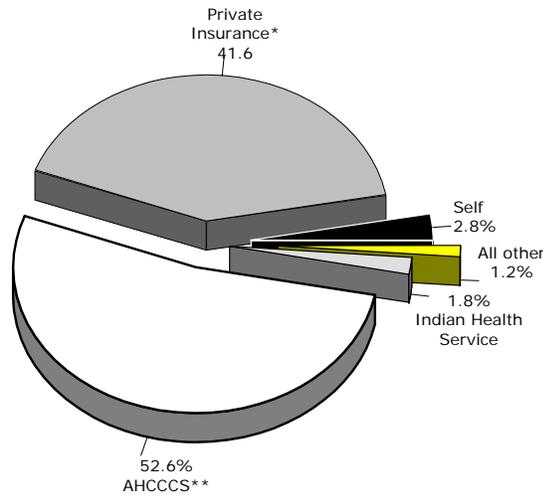
The percent of Arizona mothers giving birth who received early prenatal care (i.e., in the first trimester of pregnancy) increased from 69.8 percent in 1995 to 77.7 percent in 2005. In each year from 1995 to 2004, the percent of women giving birth who received prenatal care in the first trimester was lower in Arizona when compared to the nation (Figure 1B-16).



Note: The latest available U.S. ratio is for 2004.

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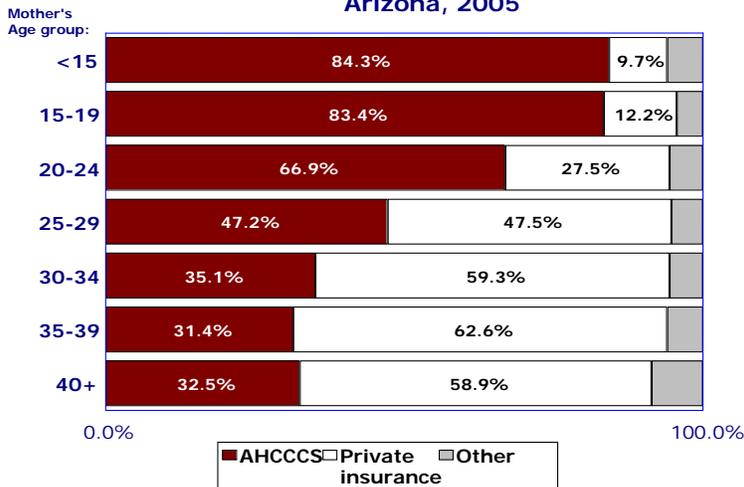
**Figure 1B-17**  
Births by Payer, Arizona Residents, 2005



\*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 sixth consecutive year from 41.5 percent of the total deliveries in 1999 to 52.6 percent in 2005. The share of private health insurance decreased from 50.5 percent of the total deliveries in 2000 to 41.6 percent in 2005. The payment source was the mothers themselves and/or their families (i.e., self-pay) in 2.8 percent of the deliveries (**Figure 1B-17**). The Indian Health Service paid for 1.8 percent of the births in 2005, with 95.8 percent of those births to American Indian mothers.

**Figure 1B-18**  
Payee for Delivery by Mother's Age Group, Arizona, 2005



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

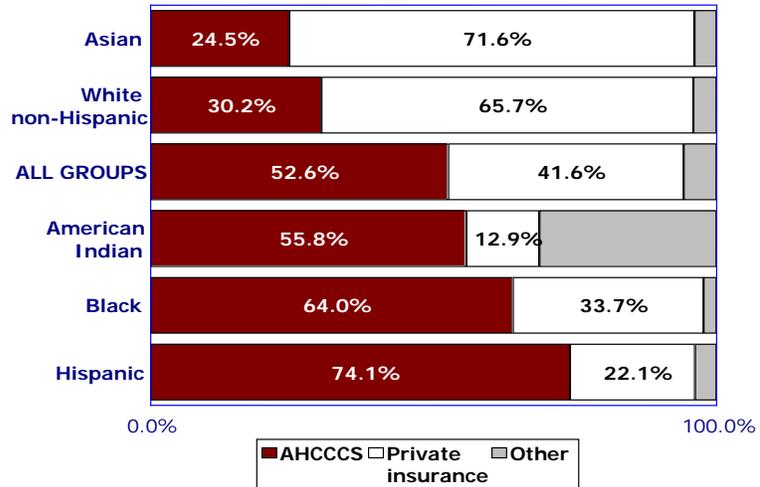
In 2005, the Arizona Health Care Cost Containment System paid for the absolute majority of the deliveries to mothers 24 years or younger (**Figure 1B-18**). In contrast, private insurance was the largest payer for the deliveries of women giving birth who were 25 years old or older in 2005 (based on data in **Table 1B-28**).

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In 2005, private insurance was the largest payer for deliveries of Asian (at 71.6 percent) and White non-Hispanic infants (at 65.7 percent). In contrast, the Arizona Health Care Cost Containment System (AHCCCS) was the largest payer for deliveries of Hispanic or Latino (74.1 percent), Black or African American (64.0 percent) and American Indian women (55.8 percent).

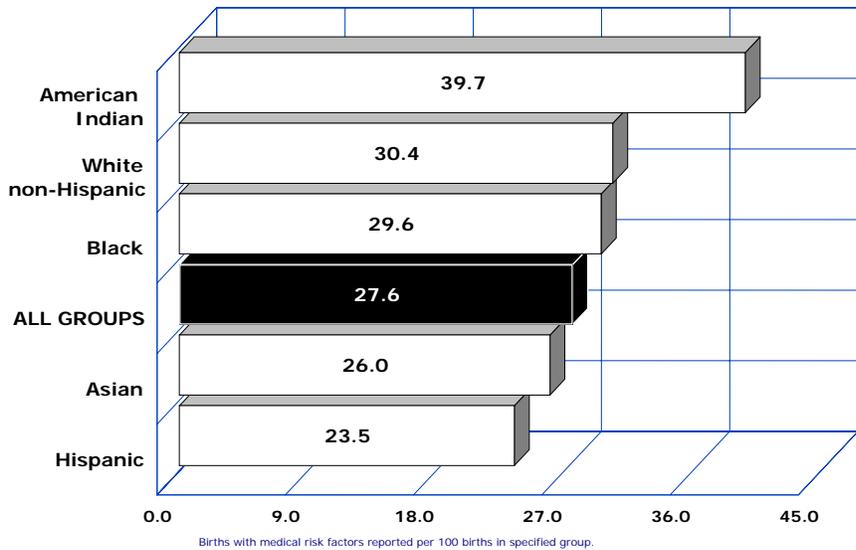
The Indian Health Service as a payer accounted for a 25.9 percent share of deliveries of American Indian or Alaska Native infants in the State (Figure 1B-19, based on data in Table 1B-28).

**Figure 1B-19**  
Payee for Delivery by Mother's Race/Ethnicity, Arizona, 2005



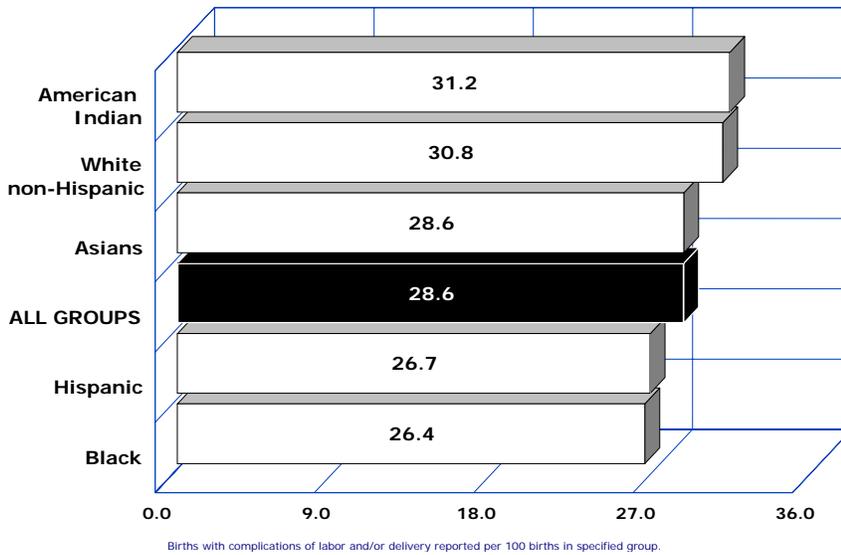
Note: The Arizona Health Care Cost Containment System (AHCCCS) is the State's Medicaid program. Other = Indian Health Service, self, or unknown.

**Figure 1B-20**  
Maternal Medical Risk Factors per 100 Births by Mother's Race/Ethnicity, Arizona, 2005



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 2005, American Indian or Alaska Native women giving birth had the highest proportion of medical risk factors (39.7 percent, Figure 1B-20), followed by White non-Hispanic and Black or African American women.

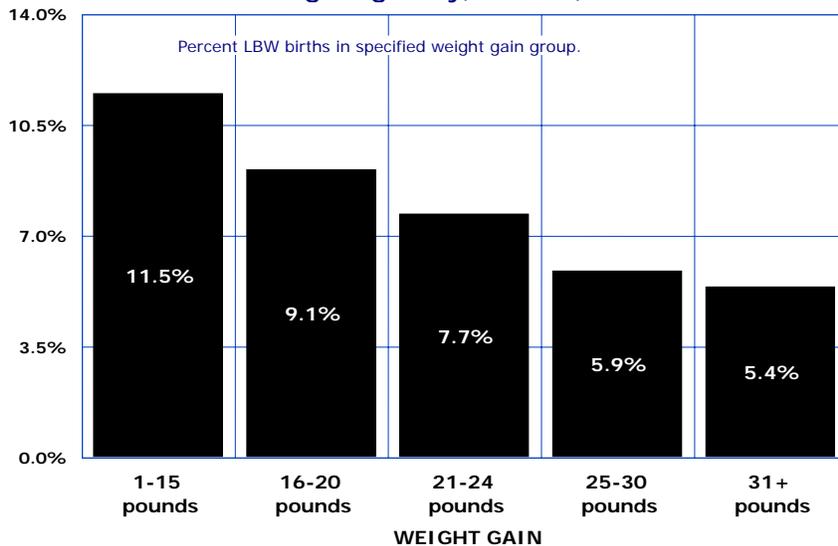
**Figure 1B-21**  
**Complications of Labor and/or Delivery per 100 Births**  
**By Race/Ethnicity, Arizona, 2005**



In 2005, of the 15 complications of labor and delivery reported on the birth certificate, the four most frequently reported were *meconium moderate/heavy* (3.9 percent), *breech malpresentation* (3.2 percent), *fetal distress* (3.0 percent) and *rupture of membranes* (1.8 percent).

Complication rates vary among racial/ethnic groups, with the highest rates reported in 2005 for American Indian and White non-Hispanic women (**Figure 1B-21**).

**Figure 1B-22**  
**Risk for Low-Birthweight by Maternal Weight Gain**  
**During Pregnancy, Arizona, 2005**



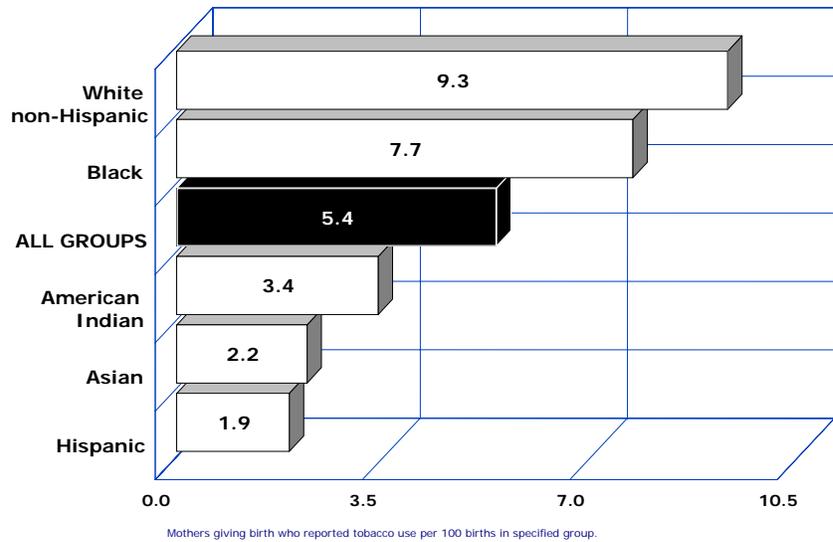
Maternal weight gain during pregnancy is an important determinant of both fetal growth and birthweight. Women who are of normal weight (average body mass index or BMI) should gain 21-35 pounds during a normal pregnancy. Women who are underweight should gain more (28-40 pounds), and women who are overweight 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 2005, as in previous years, the percent of infants with low birthweight decreased with increasing maternal weight gain (**Figure 1B-22**).

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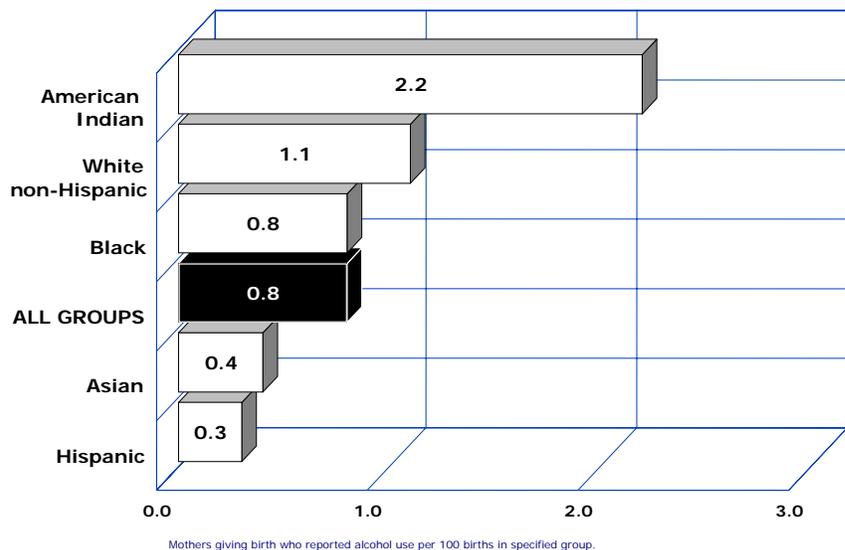
Cigarette smoking during pregnancy has been associated with reduced infant weight at birth, intrauterine growth retardation and preterm births. Smoking during pregnancy was reported by 5.4 percent of women giving birth both in 2003 and 2005 (Table 1B-26, Table 5B-30), compared to 10.5 percent in 1989, 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, 2005



In 2005, 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.

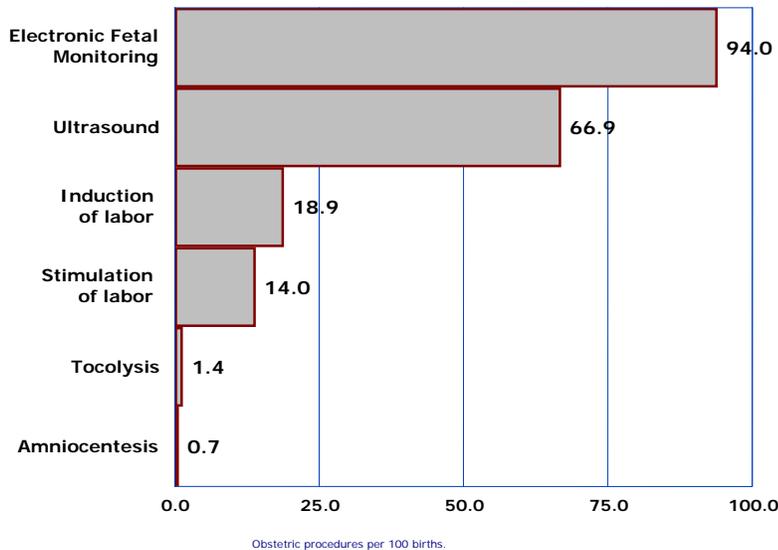
**Figure 1B-24**  
Self-reported Alcohol Use During Pregnancy  
by Race/Ethnicity, Arizona, 2005



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.

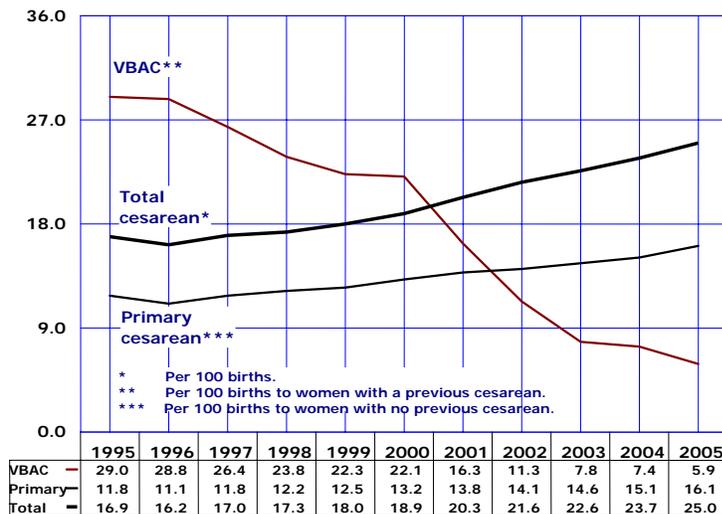
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**Figure 1B-25**  
**Obstetric Procedures Reported per 100 Births,**  
**Arizona, 2005**



Of the six specific obstetric procedures listed on the birth certificate, *electronic fetal monitoring* and *ultrasound* are most frequently reported (**Figure 1B-25**). In 2005, *electronic fetal monitoring* was the most prevalent procedure, reported for 94.0 percent of all births to Arizona residents. The overall rate of *amniocentesis* decreased to less than one percent of births in 2005, from 2.4 percent in 1995. *Ultrasound* and other less invasive screening may be replacing the use of *amniocentesis*.

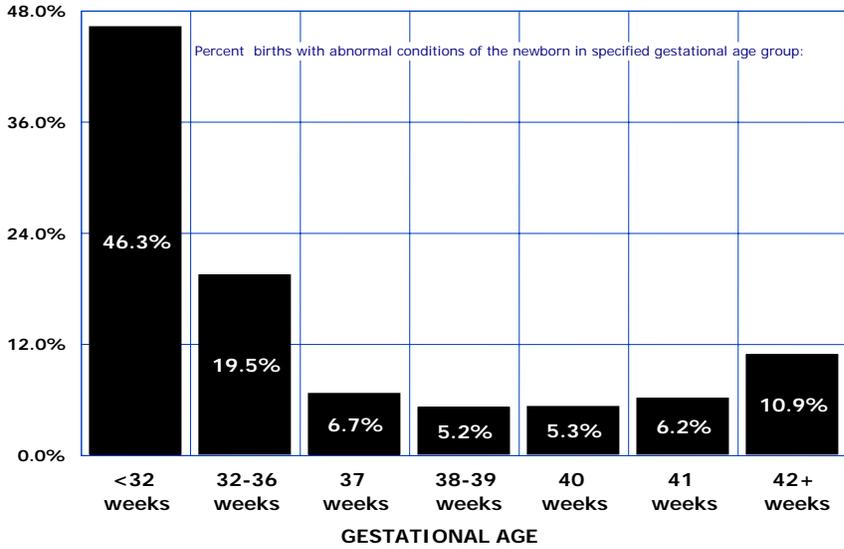
**Figure 1B-26**  
**Total and Primary Cesarean Deliveries and**  
**Vaginal Births After Previous Cesarean (VBAC),**  
**Arizona, 2005**



The rate of cesarean delivery increased to an all time high of 25 percent of all resident births in 2005 (**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 2005 (16.1 per 100 live births to women who had no previous cesarean) was 45.1 percent higher than in 1996 (11.1). The rate of vaginal birth after previous cesarean delivery (VBAC) declined 79.7 percent from a high of 29.0 in 1995 to 5.9 in 2005. This steep decline in the rate of VBAC implies a corresponding rise in the rate of repeat cesarean deliveries. The repeat rate increased from 71.0 to 94.1 percent among women with a previous cesarean between 1995 and 2005.

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), moderately preterm (32-36 weeks of gestation) and post-term (42+ weeks) infants (Figure 1B-27).

**Figure 1B-27**  
**Abnormal Conditions of the Newborn by Gestational Age, Arizona, 2005**



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 2005 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, 2005**

