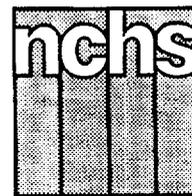


# Monthly Vital Statistics Report



Final Data From the CENTERS FOR DISEASE CONTROL AND PREVENTION/National Center for Health Statistics

## Advance Report of Maternal and Infant Health Data from the Birth Certificate, 1991

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procedures performed, complications of labor and/or delivery, method of delivery, and abnormal conditions and congenital anomalies of the newborn. This major enhancement of medical and health data available on an annual basis for mothers and babies greatly expands the scope of information on pregnancy outcome in the United States (1,2). This is the third report focusing on these new data. Similar information for 1989 and 1990 has been presented in earlier reports (3,4). Demographic information for 1991 births, as well as 1991 data on topics such as prenatal care, low birthweight, and preterm births, were presented in a recent report (5).

The data available for 1989-91 reflect a significant departure from prior years in birth certificate content and format. Checkboxes are used extensively to obtain detailed medical and health data requested. Uniform reporting and a specific focus on the requested data are facilitated by the new format.

As of 1991, all States and the District of Columbia had implemented the new

birth certificate. Although most States adopted the revision in its entirety, there are some exceptions. Some States did not include every item in their revisions: Tobacco and alcohol use, weight gain, and congenital anomalies were not reported or were not in the requested format by some States. In addition, for checkbox items reported by all States, some States did not include each checkbox for a particular item. As a consequence, the total number of births in the areas reporting each factor or condition and the number of births for which the information is not stated will vary to reflect the differing number of States reporting the specific factor or condition. These variations are indicated in the tables.

Over the 3-year period, 1989-91, there have been improvements in the completeness of reporting of the new items, as physicians, midwives, medical records personnel, and others become familiar with the birth certificate form. The proportion of records with missing information did not exceed 5 percent for

### Introduction

Since the 1989 data year, information has been available on a wide variety of important maternal and infant health factors affecting birth outcome. These include medical and life-style risk factors of pregnancy and birth, obstetric

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any item, except maternal weight gain (13 percent).

Rates for medical and health information reported in the checkboxes for medical risk factors, obstetric procedures, complications of labor and/or delivery, and abnormal conditions of the newborn are expressed as the number of births with the specific factor per 1,000 total live births in the specified group. Rates for congenital anomalies are expressed per 100,000 total live births in the specified group. Brief medical definitions for each of the factors as well as definitions of the rates by method of delivery are presented in the "Technical notes."

All data are shown by race of mother. For ease and clarity of writing, the terms "mothers" and "women" are used interchangeably for "births" or "infants," for example, "births to black mothers" or "black infants." Although data are shown by race and Hispanic origin of the mother in the tables, this does not imply that differences shown are racial or genetic per se. Differences between white and black women or between Hispanic and non-Hispanic women, for example, are often due to the lower income and educational levels of minority women, their limited access to health care and health insurance, the neighborhoods in which they live, and other factors.

In addition to the tables included in this report, the analysis that follows draws on more detailed tabulations not shown in the report. These additional tabulations are available on request from the Division of Vital Statistics, by writing to the address on the back of this report.

### Medical risk factors

Women for whom certain medical risk factors are present during pregnancy face an increased risk of poor birth outcome. In particular, the incidence of low birthweight (less than 2,500 grams or 5 lb 8 oz) may be elevated and some birth defects may be more likely (6). Low birthweight in turn is closely linked with infant morbidity and mortality (7) and developmental delays in childhood. Obstetric and delivery procedures can be affected when certain medical risk factors are present (6,8). For example, diabetes, hypertension, and genital herpes are associated with elevated cesarean delivery

rates. Pregnant women with diabetes and/or anemia may also require other specific prenatal care interventions. Information on the presence or absence of medical risk factors was not reported for 4 percent of U.S. births in 1991, about the same level as in 1990.

In 1991 as in 1989 and 1990, the most frequently reported risk factors were anemia, diabetes, and pregnancy-associated hypertension, with rates of 18.8 to 27.3 per 1,000 live births (table 1). The 1991 rates for anemia and diabetes were 3 and 10 percent higher, respectively, than the 1990 rates. Rates for cardiac disease, acute or chronic lung disease, herpes, and hydramnios/oligohydramnios were higher in 1991 than in 1990, while rates for eclampsia, incompetent cervix, previous infant of 4,000 grams (8 lb 14 oz) or more, previous preterm or small-for-gestational-age (SGA) infant, and uterine bleeding declined. The rates for other factors were essentially unchanged.

Teenage mothers have substantially elevated rates for anemia (27.9 per 1,000) and pregnancy-associated hypertension (32.4), a pattern that has been observed previously (3,4). The rates for anemia generally dropped with increasing maternal age, to a low of 14.4 for mothers ages 30–34 years, and then rose thereafter to 16.2 for mothers in their forties. This U-shaped pattern of occurrence was also observed for hydramnios/oligohydramnios, pregnancy-associated hypertension, eclampsia, and acute or chronic lung disease.

Rates for other medical risk factors increased fairly steadily as age of mother advanced. The most notable of these is diabetes, with rates increasing from 7.9 for teen mothers to 65.8 for mothers in their forties. Other factors with this pattern of occurrence are cardiac disease, genital herpes, chronic hypertension, incompetent cervix, previous infant of 4,000 grams or more, previous preterm or SGA infant, and uterine bleeding.

The patterns of rates for most risk factors by age for white and black women were fairly similar, but substantial racial disparities were noted in the rates of occurrence for certain factors. For example, rates for black women for three factors—*anemia, chronic hypertension, and eclampsia*—were 52–116 percent

greater than comparable rates for white women. In contrast, the rates for previous infant of 4,000 grams or more were much higher for white women. Although the overall rates for pregnancy-associated hypertension were similar for white and black women, the rates for older black women were considerably higher than for older white women.

Mothers with certain selected medical risk factors face a sharply elevated risk (17–30 percent) of giving birth to a low-birthweight infant. These factors include hydramnios/oligohydramnios, chronic and pregnancy-associated hypertension, eclampsia, incompetent cervix, previous preterm or SGA infant, and uterine bleeding. Diabetes, in contrast, is linked with an increased risk of macrosomia or unusually high birthweight. For example, of babies born to diabetic mothers in 1991, 16.9 percent weighed 4,000 grams or more compared with 10.6 percent of all births. Similarly, mothers who have previously had a heavier-than-average baby are at greater risk of repeating that pattern. Most of the same risk factors associated with high levels of low birthweight are also associated with greater risk of preterm delivery (prior to 37 completed weeks of gestation). These include hydramnios/oligohydramnios, chronic hypertension, eclampsia, incompetent cervix, previous preterm or SGA infant, and uterine bleeding, with preterm rates of 20 percent or more compared with 11 percent of all births.

### Tobacco use during pregnancy

It has been long acknowledged that cigarette smoking during pregnancy is strongly associated with reduced infant birthweight, premature delivery, and intrauterine growth retardation (9–11). Low birthweight in turn is among the major predictors of infant mortality and infant and childhood morbidity. Maternal smoking has been associated in numerous studies with elevated rates of sudden infant death syndrome (SIDS) even after controlling for other risk factors (12–14). SIDS itself is closely linked with low birthweight.

Tobacco adversely affects pregnancy outcome through several mechanisms. One of the most important of these is that

carbon monoxide from tobacco smoke is carried into the fetal blood supply and deprives the growing infant of oxygen (11,15).

In 1991, 46 States and the District of Columbia (accounting for 76 percent of births in the United States) reported tobacco use on the birth certificate. Data were not provided at all, or were not in the necessary format by California, Indiana, New York, and South Dakota. Information was reported for all but 4 percent of the records in the reporting States.

Smoking during pregnancy was reported by 17.8 percent of women giving birth in 1991, a decline from 18.4 percent reported in 1990 and 19.5 percent reported in 1989 (table 2 for 1991 data) (3,4). These levels are comparable to those reported in the 1988 National Maternal and Infant Health Survey (16).

White mothers were more likely to smoke than black mothers, a pattern reported in 1989 and 1990 as well. In 1991, 18.8 percent of white mothers were smokers compared with 14.6 percent of black mothers, both lower than the 1990 levels (19.4 percent of white mothers and 15.9 percent of black mothers). Smoking is generally uncommon among Asian women, with rates of 2–8 percent reported for Chinese, Japanese, Filipino, and other Asian mothers. Only Hawaiian women have a relatively high smoking rate, 19.4 percent. The smoking rate for American Indian mothers is also high, 22.6 percent (17) (tabular data not shown). Caution should be exercised in interpreting the data on smoking for Asian mothers (except Hawaiians). Maternal tobacco use was not reported on the birth certificates of California and New York, which together accounted for 43–66 percent of the births in each Asian subgroup (except Hawaiian). However, the data are believed to be generally reliable because other studies have also found that the smoking rates for Asian mothers are low (18).

Tobacco use during pregnancy declined for mothers in most age groups in 1991. The patterns by age however were unchanged. Mothers aged 18–19 and 20–24 years had the highest smoking rates, 21.5 percent and 21.2 percent,

respectively. Mothers under 15 (7.6 percent) and 40 years of age and older (11.9 percent) had the lowest smoking rates.

Of mothers who smoked, a majority (61 percent) smoked half a pack daily or less (10 cigarettes or fewer) and 21 percent smoked 5 cigarettes or fewer per day. However, one-third of mothers were reported as heavy smokers, that is, 16–20 cigarettes or more per day.

The number of cigarettes smoked increased as age of mother advanced. Of teens who smoked, 7 in 10 smoked half a pack of cigarettes or less per day, and just 3 percent smoked more than a pack daily. Conversely, 54–57 percent of women in their thirties smoked less than half a pack of cigarettes per day and 7–10 percent smoked more than a pack per day.

Not only were white mothers more likely than black mothers to smoke during pregnancy, those who smoked were heavier smokers. Among white mothers, 57 percent smoked half a pack or less and 6 percent smoked more than a pack daily. In contrast, among black smokers, 77 percent smoked half a pack or less and just 3 percent smoked more than a pack.

The patterns of smoking by age differ considerably for white and black mothers. Smoking levels for white mothers were highest for women in age groups 15–24 years. The rate for older white teens was especially high, 27 percent, but even among white teens 15–17 years, nearly one-fourth were reported as smokers in 1991. Conversely, smoking rates among black mothers increased steadily with age, from 2 percent of teens under 15 years to 22 percent of women aged 30–34, and then declined.

Hispanic mothers have been shown repeatedly to have very low smoking rates (17–21). Data from the 1991 birth certificate confirm this, although as noted above for Asian women, the data on tobacco use by Hispanic mothers are affected by the lack of data for New York and California, both States with large Hispanic populations. In 1991, 6 percent of Hispanic mothers as a group were smokers compared with 21 percent of white non-Hispanic and 15 percent of black non-Hispanic mothers. Among the Hispanic subgroups, Mexican and Central

and South American mothers had the lowest smoking rates, 5 and 3 percent, respectively, followed by 6–13 percent of Cuban, Puerto Rican, and “other” and unknown Hispanic mothers (table 3). Not only do Hispanic women have generally low smoking rates, the rates are even lower for foreign-born than for U.S.-born Hispanic women (22).

Smoking rates by maternal age varied little for mothers with low overall smoking rates. Thus, 4–6 percent of Mexican mothers, 2–4 percent of Central and South American mothers, and 6–7 percent of Cuban mothers were smokers. The rates by age were more varied for Puerto Rican (9–14 percent) and other and unknown Hispanic women (7–12 percent).

Smoking rates by maternal age varied more substantially by race for non-Hispanic mothers. The rates for all black women and black non-Hispanic women were essentially the same at each age group because very few black women are Hispanic.

In contrast, the smoking rates for all white women were somewhat lower than the rates for white non-Hispanic women at each age. This reflects the substantial proportion of white births that are to Hispanic mothers (19 percent) whose smoking rates are very low. Among white non-Hispanic mothers, the proportion who smoked ranged from 12 percent for mothers in their forties to 32 percent for mothers aged 18–19 years, the highest age-specific smoking rate for any racial or ethnic group.

Smoking rates vary in a distinctive pattern by maternal education (table 4). The highest rates are consistently observed for mothers with 9–11 years of formal schooling, 32 percent in 1991. High school graduates and women with a grade school education had similar smoking rates, 18–21 percent. The lowest rate was for college graduates, 4 percent. Among women with the highest smoking rates, those with 9–11 years of schooling, the proportion who smoked is higher than 40 percent for women aged 25–34 years (tabular data not shown).

The disparity in smoking rates by education is observed for white and black mothers. White mothers are much more likely than black mothers in each

education category (except college graduates) to have smoked. Among mothers with 9–11 years of school, for whom the racial differential is largest, white mothers were 86 percent more likely than black mothers to have smoked. White and black mothers with at least 1 year of college had very similar smoking rates.

Mothers with the lowest smoking rates also smoked the fewest cigarettes. Thus, nearly three-quarters of college graduates smoked half a pack of cigarettes or less compared with 59 percent of mothers with 9–11 years of schooling. Conversely, women with 9–11 years of schooling were much more likely than college graduates to smoke more than half a pack a day (41 percent compared with 28 percent).

Maternal smoking has been linked in many studies to a sharply elevated rate of low birthweight (10,11). Birth certificate data available now for 3 years have corroborated this finding. In 1991, 11.4 percent of births to smokers compared with 6.4 percent of births to nonsmokers were of low birthweight (less than 2,500 grams or 5 lb 8 oz) (table 5). These levels have been essentially the same since 1989. When the rates are examined by maternal age, it is apparent that the disparity worsens for each older age group. Even among teen mothers, whose risk of bearing a low-birthweight infant is relatively high, the low-birthweight rate was 10–21 percent higher for smokers than for nonsmokers. For women in their early twenties, the differential was 52 percent. At older ages, births to mothers who smoked were at more than double the risk of low birthweight.

These patterns were observed for both white and black infants. For white births, the proportions low birthweight by smoking status were 9.6 percent for smokers and 5.0 percent for nonsmokers. The proportions were much higher for black births (21.8 percent for smokers compared with 12.1 percent for nonsmokers), but the disparity by smoking status was still evident. The severely adverse impact of smoking on low-birthweight levels was observed for white and black mothers in each age group and worsened with advancing maternal age.

The number of cigarettes smoked daily can exacerbate the effect of

smoking on birthweight (10,17). The percent low birthweight for even the lightest smokers (five cigarettes or fewer) was substantially higher than the percent for nonsmokers (10.6 percent compared with 6.4 percent). However, the effect of smoking is worsened when the mother is a heavy smoker. In 1991 the proportion low birthweight increased to 16.9 percent for births to mothers smoking more than two packs of cigarettes daily (tabular data not shown). The proportion for white births rose from 8.0 percent for the lightest smokers to 14.5 percent for the heaviest smokers. For black births the increase was from 19.0 percent for the lightest smokers to 32.7 percent for the heaviest smokers. There is clearly no low-smoking level that is advantageous for infant birthweight.

The overall impact of maternal smoking on low birthweight in the United States can be estimated by assuming that no pregnant women smoked during pregnancy and that the low-birthweight rate for nonsmokers by age and race applied to all women. In 1991 low birthweight would have been about 13 percent lower than the actual levels if no pregnant women smoked; the incidence of low birthweight would have been about 6.2 percent rather than 7.1 percent.

### Alcohol use during pregnancy

Alcohol use during pregnancy is also a risk factor for poor pregnancy outcome. Studies have shown that heavy alcohol use causes a variety of adverse effects. The most severe of these is fetal alcohol syndrome, which is characterized by growth retardation; facial malformations; and dysfunctions of the central nervous system, including mental retardation and behavioral disorders (23). Alcohol consumption has also been shown to affect infant birthweight independently of tobacco use and other maternal and infant characteristics (17,24).

Alcohol use was reported on the birth certificates of 47 States and the District of Columbia in 1991. This information was not available for California, New York, and South Dakota. The items on the birth certificate asked if the mother used alcohol during pregnancy and, if so, the average number of drinks per week;

this information was not provided on 4 percent of the birth certificates in the reporting area.

Reported alcohol use declined for mothers in all racial and Hispanic-origin groups from 1990 to 1991. In 1991, 2.9 percent of births were to mothers who reported alcohol use (table 6). Black mothers were slightly more likely than white mothers to report alcohol use, 3.4 percent compared with 2.7 percent. Asian mothers generally reported low rates of alcohol use, ranging from 0.9 percent (Filipino and other Asian/Pacific Islander women) to 3.0 percent (Hawaiian mothers). The highest reported rate was for American Indian women, 7.3 percent (tabular data not shown).

Hispanic mothers also have low reported rates of alcohol use, 1.4 percent overall. Central and South American mothers and Cuban mothers had the lowest reported rates of alcohol use, 0.8–0.9 percent, and Puerto Rican mothers, the highest, 2.6 percent (table 7). Because data on alcohol use were not reported for California and New York, where 40–66 percent of mothers in Asian and Hispanic subgroups reside (except Hawaiians and Cubans), the rates for alcohol use for these groups should be interpreted cautiously.

Alcohol use during pregnancy is clearly substantially underreported. Other studies that utilized personal interviews and written questionnaires found levels of alcohol use during pregnancy of 20 percent or more (25,26). It is believed that the underreporting results partly from the wording of the question on the birth certificate. The focus is on the number of drinks per week, which probably discourages the reporting of alcohol use by women who have perhaps one or two drinks per month. Another factor causing underreporting is probably the possible stigma associated with drinking, especially during pregnancy.

The proportion of mothers for whom alcohol use is reported increased steadily with advancing maternal age, from 0.9 percent of teens under 15 to about 4 percent of mothers aged 35 and older. The pattern is similar for white women; for black women, reported alcohol use increased to a peak of 5.6–5.7 percent for

women aged 30–39 years, and then declined thereafter.

Among women who drank during pregnancy, 62 percent reported one drink per week or less, 16 percent reported two drinks, 10 percent reported three to four drinks, and 12 percent reported five drinks or more. Black women were not only more likely than white women to report alcohol use, they also had more drinks per week. For example, 41 percent of black mothers reported three drinks or more weekly compared with 17 percent of white mothers.

The relationship of alcohol use with mother's educational attainment is not consistent. The highest reported drinking rate is for mothers with 9–11 years of schooling, 3.5 percent, but mothers who are college graduates had only a slightly lower rate of 3.1 percent (tabular data not shown).

Other data from 1991 birth certificates show that maternal alcohol use, even though underreported, has a detrimental effect on pregnancy outcome. The proportion low birthweight for babies born to drinkers was 12.1 percent compared with 7.1 percent of births to non-drinkers. The detrimental effect of drinking is increased with heavier drinking. The percent low birthweight increased from 8.6 percent for births to women having one drink per week or less to 23.2 percent for births to women having five drinks or more. Furthermore, studies have shown that when tobacco use is combined with alcohol use, there is an additional adverse impact on infant birthweight (17).

## Maternal weight gain

Maternal weight gain during pregnancy is strongly related to infant birthweight (27,28), length of gestation (29), and fetal growth (30), which in turn are important determinants of infant morbidity and mortality. Since 1989 information on maternal weight gain has been available from certificates of live birth. In 1991 the District of Columbia and all States except California (representing 85 percent of all births) included this item on their birth certificate. For these reporting areas, information on weight gain was missing from 13 percent of the birth certificates.

In 1990 the Institute of Medicine (IOM) of the National Academy of Sciences issued guidelines for maternal weight gain, which were substantially higher than those previously recommended by the medical community. The new guidelines were geared to the mother's weight and height and recommended that a mother of average size gain 25–35 pounds for optimum pregnancy outcome (31). In 1991, 35.1 percent, or about one in three mothers, gained 26–35 pounds (table 8), a slightly reduced percent than in 1990 and 1989 (35.6 percent). Concomitantly, mothers were more likely in 1991 than in 1990 to gain at least 36 pounds (28.8 percent compared with 28.4 percent), or to gain less than 21 pounds (20.7 percent compared with 20.3 percent). A shift in weight gain from 26–35 pounds to higher gains and an increase in weight gains of less than 21 pounds is evident for all periods of gestation. Because of this compensating shift in the weight gain distribution, the median weight gain in 1991 was the same as in 1990, 30.4 pounds.

In 1991, as in previous years, a far higher proportion of black than white mothers gained less than 21 pounds (30.9 percent compared with 18.3 percent). This low a weight gain is associated with a greatly increased likelihood of a low-birthweight outcome (less than 2,500 grams, or 5 lb 8 oz). Consistent with these lower weight gains, black mothers were less likely than white mothers to gain at least 36 pounds (25.1 percent compared with 29.8 percent). The median weight gain of black mothers was about 2½ pounds less than that of white mothers (28.0 pounds versus 30.6 pounds).

One of the reasons for the lower weight gains of black mothers is that period of gestation is substantially shorter for black infants, and weight gain is reduced for shortened gestational periods. But in addition, as indicated in table 8, regardless of period of gestation, black mothers have a lower median weight gain than white mothers and are far more likely to gain less than 21 pounds. For gestations of 40 weeks and longer, more than one in four black mothers had this minimum weight gain compared with one in six white mothers. A recent study found that medical advice about weight

gain differed substantially for white and black mothers, with black mothers significantly more likely to report advice below the then-current medical community recommendations (32).

There are also substantial differentials in weight gain among other racial, national origin, and Hispanic-origin groups. About one in four American Indian, Japanese, and "Other" Asian and Pacific Islander mothers (a group which includes Cambodian, Asian Indian, and Vietnamese mothers) compared with one in five Chinese, Filipino, and Hawaiian mothers gained less than 21 pounds. Among Hispanic-origin groups, Mexican, Puerto Rican, and Central and South American mothers were more likely to have a minimal weight gain (22–27 percent) than Cuban mothers (17 percent) (tabular data not shown). However, when interpreting data on weight gain for Hispanic-origin and Asian mothers, it should be kept in mind that California, where 41 percent of Hispanic mothers and 40 percent of Asian mothers resided in 1991, does not request weight gain on birth certificates.

Weight gain also differs substantially by maternal age. Mothers in the youngest and oldest years of childbearing are at highest risk of a low weight gain, and women in their mid- to late twenties and early thirties are at lowest risk; 23 percent of teenage mothers and 26 percent of women 40–49 years of age gained less than 21 pounds compared with 19 percent of women in their mid-twenties to early thirties.

An additional factor strongly affecting weight gain is the mother's educational attainment, with weight gain increasing noticeably with additional years of schooling. Twice the proportion of mothers with less than 12 years of schooling (28 percent) gained less than 21 pounds than mothers with 16 years of education or more (14 percent).

As noted earlier, weight gain has a profound effect on birthweight. In 1991 the percent low birthweight declined steadily with increased weight gain, from 15.6 percent for weight gains of less than 16 pounds to 4.0 percent for weight gains of 41–45 pounds, and then increased slightly to 4.4 percent for weight gains of 46 pounds or more (table 9). A very similar pattern is evident for gestations of

under 37 weeks, 37–39 weeks, and 40 weeks and over for both white and black mothers. However, for each weight-gain category, black babies are more likely than white babies to have a low birthweight, and the racial differential increases markedly as period of gestation lengthens (table 9). Because of this racial differential, which was noted in previous studies (27,33), the IOM recommended that black women should strive for weight gains toward the upper end of the ranges recommended for white women with similar prepregnancy weight for height (31). A recent study found that the infants of black women showed a consistent increase in birthweight as weight gain met or exceeded the 1990 IOM guidelines for their weight and height, supporting the IOM suggestion that black women gain at the upper end of the recommended range (30).

With added weight gain, the decline in low birthweight is as substantial for black as for white babies. For example, for white births low birthweight declined from 12.6 percent for weight gains of less than 16 pounds to 3.8 percent for weight gains of 41 pounds or more, or a 70-percent decline; for black births the comparable decline with increased weight gain was from 23.3 percent to 6.5 percent, a decline of 72 percent.

A similar pattern of a reduced incidence in low birthweight with increased maternal weight gain is evident for all Hispanic-origin groups (table 10). In 1991 information on maternal weight gain for Hispanic-origin births was available from the District of Columbia and from all States except New Hampshire and California (85 percent of all births in the United States).

Low birthweight was three to four times as prevalent for Hispanic mothers who gained less than 16 pounds as for those who gained 46 pounds or more (table 10). For all Hispanic-origin groups combined the decline in low birthweight was from 12.1 percent for gains of less than 16 pounds to 4 percent for gains of at least 41 pounds. The decline in low birthweight with added weight gain was especially striking for Puerto Rican births. Overall, the percent low birthweight for Puerto Rican babies was 9.5, or 40 percent higher than the average

for all Hispanic births (6.8 percent). When the weight gain of Puerto Rican mothers reached 41 pounds or greater, low birthweight dropped to 5.1 percent, or just 24 percent higher than the average for Hispanic-origin mothers (4.1 percent).

### Obstetric procedures

In 1991 information on obstetric procedures was not reported for 3 percent of the births. The rates for these procedures can be examined by maternal and infant characteristics and measurements of birth outcome.

The most prevalent procedure reported in 1991 was electronic fetal monitoring (EFM), which was developed to detect early signs of fetal distress during labor and has been associated with lowered perinatal mortality and increased surgical intervention (34). EFM was used for 76 percent of all live births in 1991 (table 11) compared with 73 percent in 1990 and 68 percent in 1989. Data from two surveys conducted by the National Center for Health Statistics (NCHS) demonstrate that EFM usage rose substantially during the 1980's, from 45 percent in 1980 to 62 percent in 1988 (35). In 1991 the difference in EFM usage between low-birthweight births (less than 2,500 grams or 5 lb 8 oz) and births of 2,500 grams or more was only 1 percent (tabular data not shown). The rates by age of mother range from 72 to 76 percent for this procedure, with the highest level (76 percent) for the youngest age group (less than 20 years of age). All age groups experienced increases of 3 to 4 percent in EFM compared with 1990; EFM also showed an increase between 1989 and 1990. Increases in EFM were observed for both white and black mothers for all ages.

In 1991, 24 percent of all live births did not receive EFM, and according to the American College of Obstetricians and Gynecologists, "Currently available data support the conclusion that, within specified intervals, intermittent auscultation (listening to sounds within the body with or without a stethoscope) is equivalent to continuous electronic fetal monitoring in detecting fetal compromise" (36). Thus, these births did not necessarily run an additional risk of

undetected fetal compromise.

Ultrasound usage can improve the dating of gestational age (37) and is helpful in confirming conditions such as unclear vaginal bleeding (38). According to data from the birth certificate, 56 percent of mothers who had live births in 1991 received ultrasound compared with 52 percent in 1990 and 48 percent in 1989. Results from the 1988 National Maternal and Infant Health Survey show ultrasound usage at 63 percent (16). This suggests that there may be underreporting of ultrasound on the birth certificate. Increases from 1990 by age ranged from 5 to 8 percent. For mothers in all age groups at least 54 percent had ultrasound. The variation in the receipt of ultrasound by age for white mothers was small (56–58 percent). For black mothers the levels were slightly lower than for white mothers and also showed a small range by age (51–52 percent).

The overall rates of stimulation of labor and induction of labor in 1991 were 121 and 105 per 1,000 live births, respectively. Mothers 25–29 years of age had the highest rate of stimulation of labor (124 per 1,000) and mothers 40–49 years of age had the lowest rate (117 per 1,000). Induction of labor rates had a slightly larger range by age, from 90 for the youngest mothers to 114 for the oldest mothers. For both black and white mothers, rates for induction of labor were lowest for the youngest mothers and highest for the oldest mothers, with rates by age up to 36 percent lower for black mothers as compared with white mothers. The rates of both of these procedures increased from 1990 for both black and white mothers in all age groups.

Both of these procedures were more likely to occur for births where infant birthweight was higher. The range in rates between infants weighing less than 2,500 grams (low birthweight) and those over 4,000 grams (macrosomia) for stimulation of labor was from 81 to 130 per 1,000 live births and for induction, from 84 to 148. These differences by birthweight were most pronounced for mothers whose weight gain during pregnancy was more than 36 pounds for stimulation and for mothers gaining less than 20 pounds for induction (tabular data not shown).

Amniocentesis, an invasive prenatal diagnostic procedure performed between the 15th and 16th week of gestation to detect genetic disorders, was reported for 32 of every 1,000 live births in 1991, a decrease of 6 percent from 1990. The rate of amniocentesis for the oldest age group (40–49 years of age) was 16 times the rate for the youngest mothers (188 compared with 12 per 1,000). Similar differences by age were observed for white mothers. For black mothers the difference between the oldest and youngest age groups was twelvefold (106 compared with 9 per 1,000). White mothers were nearly twice as likely as black mothers to have had amniocentesis (34 compared with 18 per 1,000). The percent difference between the rates for white and black mothers was smallest for mothers 20–29 years of age and largest for mothers 35–39 years of age.

Tocolysis, which is used to avoid preterm births, was the least prevalent of procedures identified on the birth certificate and for the second consecutive year showed no change from the previous year (16 per 1,000 live births). White mothers were more likely than black mothers to have received tocolysis, a reversal from 1990. This was caused by an increase in the rate for white mothers (5 percent) and a decline for black mothers (18 percent). By age, the highest rates in 1991 were for black and white mothers under 20 years of age (16 and 19 per 1,000).

Rates for the six selected procedures vary by the education of mother, birthweight and gestational age of the infant, and month prenatal care began (tabular data not shown). All of these procedures had higher rates for mothers with 13 years of education or more compared with mothers who had less schooling. The rates for amniocentesis showed the greatest percent difference between mothers with 13 years of education or more and mothers with less education (47 and 20 per 1,000 live births). The same pattern is observed for black and white mothers. Mothers giving birth to low-birthweight infants or preterm (less than 37 completed weeks of gestation) infants were much more likely than normal birthweight and term births to have had amniocentesis (1.8 and 1.7 times) or tocolysis (5.9 and 5.3 times). However,

these mothers were less likely to have had labor induced or stimulated. The rates for all six of these procedures were higher for mothers who began prenatal care in the first trimester of pregnancy compared with mothers who began prenatal care later.

### Complications of labor and/or delivery

In 1991 information on complications of labor and/or delivery was not reported on less than 4 percent of the birth certificates. Six complications were reported at a rate greater than or equal to 30 per 1,000 live births: Meconium, moderate/heavy (61 per 1,000), fetal distress (43 per 1,000), breech/malpresentation (38 per 1,000), cephalopelvic disproportion (35 per 1,000), premature rupture of membrane (33 per 1,000), and dysfunctional labor (30 per 1,000). The least common complications were anesthetic complications and seizures during labor, which occurred less than once per 1,000 live births (table 12).

Febrile, precipitous labor, and other excessive bleeding were the only complications in 1991 with increases in rates at least 2 percent over the previous year. There were little or no changes in the rates for fetal distress; dysfunctional labor; breech/malpresentation; seizures during labor; and meconium, moderate/heavy. The remaining seven complications had lower rates in 1991. For white mothers the increases and decreases showed the same pattern as for all races except fetal distress (no change) and seizures during labor (decrease). For black mothers 11 complications had lower rates in 1991; febrile, other excessive bleeding, precipitous labor, and fetal distress were higher than in 1990.

Distinctions by age of mother were observed in the rates of three of the six most prevalent complications. Meconium and fetal distress had the highest rates for the youngest (under 20 years of age) and oldest (40–49 years of age) mothers and the lowest rates for mothers 25–34 years of age. Breech/malpresentation had the highest rates for the oldest mothers and the lowest rates for the youngest mothers. Although not a frequent complication, placenta previa had the greatest percent

difference between older and younger mothers (8 and 1 per 1,000 live births).

Of the six most prevalent complications, four occurred most often to mothers with 13 years of education or more and two, meconium and fetal distress, occurred most often to mothers with less than 12 years of education (tabular data not shown). The same pattern is observed for white mothers. For black mothers meconium and premature rupture were the only complications of the six most prevalent with the highest rates for mothers with less than 12 years of education. And, in direct contrast to white mothers, the highest rates for fetal distress occurred to mothers with the most education.

Only four complications (meconium, prolonged labor, dysfunctional labor, and cephalopelvic disproportion) had lower rates for low-birthweight infants (less than 2,500 grams) than for infants weighing 2,500 grams or more. Of these four, prolonged labor, dysfunctional labor, and particularly cephalopelvic disproportion had higher rates for mothers who gained more weight during pregnancy in spite of the weight of the infant (tabular data not shown). Of the remaining 11 complications, which had higher complication rates for low-birthweight infants, four (premature rupture of membrane, abruptio placenta, placenta previa, and seizures during labor) had rates at least four times those of infants weighing 2,500 grams or more. These same four complications with considerable differences by birthweight also had large differences (three to eight times) in rates for those born preterm (less than 37 completed weeks of gestation) when compared with term births.

### Method of delivery

Information on method of delivery has been available from live birth certificates since 1989. In 1991 only 2.6 percent of all certificates lacked this information. Although data on method of delivery are only recently available from birth certificates, national and regional information has been available since 1965 from the National Hospital Discharge Survey (NHDS), conducted annually by NCHS. From this source, it has

been determined that the national cesarean rate rose fairly steadily in the last few decades, from 4.5 percent in 1965 until the 1986–91 period, when it reached a plateau of approximately 24 percent (39).

In 1991, 905,077 births, or 22.6 percent of the 4,110,907 live births in the United States, were delivered by cesarean (table 13), almost no change from the 1990 cesarean rate of 22.7 percent, or the 1989 rate of 22.8 percent. More than one-third (37 percent) of all cesarean births were repeat cesareans and slightly less than two-thirds (63 percent) were first cesareans (table 13). The 1991 primary cesarean rate (first cesareans per 100 live births) to women who had no previous cesarean) derived from live birth certificates was 15.9, again nearly unchanged from the 1990 rate of 16.0 or the 1989 rate of 16.1.

Among the national objectives for health promotion and disease prevention for the year 2000 are reductions of the overall cesarean rate to no more than 15, and of the primary cesarean rate to no more than 12 (40). In 1991, 18 States had an overall cesarean rate of 20 or less, but no State had a cesarean rate as low as 15; only 6 States had a primary cesarean rate of 12 or less (tabular data not shown in this report).

Both overall and primary cesarean rates increase substantially with advancing maternal age. Rates are particularly high for women 35 years and older (table 13). In 1991 the total cesarean rate increased from 16.4 percent for teenagers to 29.0 percent for women in their late thirties and to 32.1 percent for women in their forties; the primary cesarean rate rose from 14.6 percent for women under 20 years of age to 18.9 percent for women in their late thirties and to 22.9 percent for women in their forties. Advanced maternal age appears to be one of the most critical risk factors determining whether a woman has a cesarean delivery. Older mothers are more likely to deliver by cesarean regardless of race, Hispanic origin, parity, marital status, educational attainment (41), pregnancy complications (42), or physician's practice organization (43). A recent study postulated that the increased risk of cesarean delivery for older women was

due to altered uterine contractions, decreased pelvic compliance, and diminished maternal expulsive efforts (44).

Vaginal birth after a previous cesarean delivery (VBAC) is not as common in the United States as in other developed countries (45). However, information from the NHDS indicates that the VBAC rate in the United States has risen sharply in the last few decades and was 12 times as high in 1991 as in the 1970's (39). The 1991 VBAC rate as reported on live birth certificates was 21.3 percent (table 13), up from 19.9 percent in 1990 and 18.9 percent in 1989. Thus, in 1991 of the women who had a previous cesarean, 21.3 percent delivered vaginally and 78.7 percent had a repeat cesarean. Older mothers are less likely to have a VBAC than younger mothers; the VBAC rate declined from 25.1 percent for mothers under 20 years of age to 15.8 percent for mothers in their forties.

A number of medical studies have validated the safety of VBAC: Perinatal death rates are similar for VBAC and repeat cesarean deliveries (46,47), and women having a VBAC delivery have lower morbidity than those having a repeat cesarean (47).

The year 2000 objective pertaining to VBAC is for the rate to rise to 35 (40). In 1991 only five States reported VBAC rates of 35 or higher. However, even if this goal is met, the year 2000 goal for a decline in the total cesarean rate to 15 will not be reached without a substantial reduction in the primary rate as well (39).

There are no major differences in the overall, primary, and VBAC rates between white and black mothers. White mothers were slightly more likely to be delivered by cesarean than black mothers (22.9 percent compared with 21.9 percent), and the white primary cesarean rate was also only slightly higher than the black rate (16.1 percent compared with 15.5 percent). The VBAC rate was nearly identical for white and black mothers (21.1 percent and 21.2 percent, respectively). However, there are very substantial differences among other racial and Hispanic-origin groups in cesarean rates, even when differences in the age distribution of mothers are taken into account (41). In 1991 Filipino mothers had the highest cesarean delivery rate (25.1) and

American Indian mothers the lowest (18.2). Cuban mothers had the highest cesarean rate of any Hispanic-origin group (33.4), with rates for other Hispanic groups ranging from 21.1 for Mexican mothers to 22.6 for "Other" and unknown Hispanic origin.

Since 1989 certificates of live birth have included questions on a number of medical risk factors of pregnancy, complications of labor and/or delivery, and obstetric procedures. In 1991 information on rates of cesarean delivery for these items was available for all States and the District of Columbia. Medical definitions for the conditions and procedures analyzed in this report can be found in the "Technical notes."

Cesarean rates for many of the medical risk factors of pregnancy for which information is available from birth certificates are well above average (table 14). In 1991 cesarean rates were over 40 for chronic hypertension (41 percent), hydramnios/oligohydramnios (43 percent), genital herpes (44 percent), and eclampsia (52 percent).

Even higher cesarean rates are evident for a number of complications of labor and delivery, with rates of 50 or more for anesthetic complications (54 percent), abruptio placenta (58 percent), cord prolapse (61 percent), fetal distress (61 percent), dysfunctional labor (67 percent), placenta previa (83 percent), breech and other malpresentation (85 percent), and cephalopelvic disproportion (98 percent)(table 14).

Dystocia, a diagnosis referring to such conditions as failure to progress, dysfunctional labor, prolonged labor, and cephalopelvic disproportion was, after repeat cesarean delivery, the largest contributor to both the recent rise in cesarean deliveries (48) and to the 1991 overall cesarean rate (49). Of all cesareans performed in 1991, 35 percent were associated with a previous cesarean, 30 percent with dystocia, 12 percent with breech presentation, 9 percent with fetal distress, and 14 percent with all other specified complications. Recognizing the importance of dystocia as an indication for the rising rate of cesarean delivery, the American College of Obstetricians and Gynecologists has called for a reassessment of the management of dystocia and

the use of a more definitive diagnosis for this condition (50).

Of the five obstetric procedures shown in table 14, only tocolysis and ultrasound had higher than average associated cesarean rates (32 percent for tocolysis and 25 percent for ultrasound).

The 1991 cesarean rates for the selected medical risk factors, complications, and obstetric procedures shown in this report are very similar to rates in 1990 and 1989, generally within 1 percentage point. For all years, rates are generally quite similar for white and black mothers (41).

Information on the day of the week that births occurred first became available in 1980. Since that time there has been a growing deficit of births on weekends, concomitant with an increase in births on Tuesdays through Fridays. The increasing concentration of births on weekdays is associated with both the increase in the number of cesarean deliveries through the mid-1980's and an increase in the induction of labor for vaginal births. In 1991, 10.7 percent of vaginal births were induced and 9.1 percent were induced in 1989, an 18-percent increase. Induction of vaginal births is much less likely on weekends than on most weekdays; 5.5 percent of vaginal births were induced on Sundays and 8.1 percent were induced on Saturdays compared with 12 to 13 percent of the births on Tuesdays through Fridays (tabular data not shown).

An index of occurrence is used to assess differences in the daily number of births. The index relates the average number of births for each day of the week to the average daily number of births for the year. In 1991 the index for all births occurring on Sundays was 78.2. This means that there were approximately 22 percent fewer births on Sundays than the average for all days of the week combined. There was also a large deficit of births (15 percent) on Saturdays. The highest indices were for Tuesdays (111.3) and Fridays (108.6).

Even larger weekend deficits are apparent for cesarean deliveries, particularly repeat cesareans which are often scheduled. For repeat cesareans the Sunday deficit was 61 percent and the Saturday deficit was 54 percent; for primary cesareans the Sunday deficit was 31 percent and the Saturday deficit was

20 percent. A very similar pattern in the daily occurrence of births is evident for white and black births (table 15).

Information from the NHDS indicates that, concomitant with the rise in cesarean delivery, there was a sharp decline in the use of forceps in the 1980's (51), and that by 1991 this use was still declining (49). Since 1989 information on forceps deliveries has been available from live birth certificates. In that year forceps were used for 5.5 percent of all births; by 1991 this method of delivery declined to 4.6 percent. White mothers are more likely to have a forceps delivery than black mothers (4.9 percent compared with 3.0 percent). For both races the use of forceps increases with added birthweight and is five times as frequent for birthweights of 3,500 grams or more (7 lb 12 oz or more) as for birthweights of less than 1,500 grams (3 lb 4 oz), 5.0 percent of births compared with 1.0 percent (tabular data not shown).

Unlike the declining trend in forceps deliveries, there has been a steady increase in the use of vacuum extraction since 1980, according to information from the NHDS (49,51). Data from live birth certificates confirm the increase into the early 1990's. In 1989, 3.5 percent of live births were by vacuum extraction; in 1990, 3.9 percent; and in 1991, 4.4 percent. In 1991, as in previous years, this mode of delivery was more frequent for white than for black births (4.7 percent compared with 2.6 percent). As noted for forceps delivery, the rate of vacuum extraction increases sharply with added birthweight and is 12 times as high for birthweights of 3,500 grams or more as for birthweights of less than 1,500 grams (4.8 percent compared with 0.4 percent).

### **Abnormal conditions of the newborn**

Information on abnormal conditions of the newborn was not provided for 4 to 5 percent of the births.

The abnormal conditions with the highest rates per 1,000 live births were assisted ventilation less than 30 minutes (14 per 1,000), assisted ventilation 30 minutes or longer (8 per 1,000), and hyaline membrane disease/respiratory distress syndrome (RDS) (6 per 1,000).

A comparison of different data sources for 1989-91 suggests substantial underreporting on the birth certificate for birth injuries and fetal alcohol syndrome (FAS). From over 11.4 million live births in these 3 years, there were only 1,652 reported cases of FAS, a rate of 0.14 cases per 1,000 live births. The Centers for Disease Control and Prevention's Birth Defects Monitoring Program estimated rates for FAS to be more than twice that derived from the birth certificate for this same 3-year period. FAS can be difficult to recognize because of the subtlety of facial stigmata, the difficulty in detecting some types of central nervous system deficits, and because some of these infants are of normal birthweight (52). The identification of fetal alcohol syndrome can often occur after the birth certificate has been filed. Some physicians who suspect fetal alcohol syndrome do not make the diagnosis (53) because of the stigma associated with it. The related annual costs for FAS are estimated to be 250 million dollars, of which nearly 60 percent is attributed to mental retardation (54).

The rates for abnormal conditions in 1991, as in 1989 and 1990, were higher for black births than for white births for all conditions except assisted ventilation less than 30 minutes and birth injuries. The highest rates by age for anemia, hyaline membrane disease/RDS, assisted ventilation less than 30 minutes and 30 minutes or longer were observed for the youngest mothers (under 20 years of age).

Meconium aspiration syndrome (MAS), which is associated with increased neonatal morbidity and mortality (55), had the highest rates for the oldest mothers (40-49 years of age) (table 16). Of the 11,051 reported cases of meconium aspiration syndrome, 60 percent also reported meconium moderate/heavy under complications of labor and/or delivery (tabular data not shown). There is some debate about whether the pathology of MAS is more closely related to perinatal asphyxia than to meconium itself (56,57).

Only two abnormal conditions—birth injury and meconium aspiration syndrome—were less frequent among low-birthweight infants (less than 2,500 grams) compared with infants weighing 2,500

grams or more. There were very large differences between low-birthweight infants and those of higher weight in the rates of hyaline membrane disease/RDS (55 and 2 per 1,000 live births) and assisted ventilation 30 minutes or longer (62 and 3 per 1,000 live births). Although less pronounced, the rates of the same two conditions that had the largest differences by birthweight also had the largest differences between preterm births (less than 37 completed weeks gestation) and term births (37 completed weeks gestation or more) (tabular data not shown).

## Congenital anomalies

Congenital anomalies are a major cause of neonatal mortality and morbidity and of shortened life expectancy (58,59). Before 1989 information on congenital anomalies of the newborn was reported on birth certificates in the form of an open-ended question. Because of the inadequacies of collecting data in this format, a checkbox item for reporting congenital anomalies was included in the 1989 revised U.S. Standard Certificate of Live Birth to encourage more complete and uniform reporting. In 1991, 48 States and the District of Columbia, representing 92 percent of births in the United States, reported this item; information was not available for births in New Mexico and New York. The item was not completed for only 5 percent of the birth certificates in the reporting area.

Data presented in this report do not reflect the entire incidence of congenital anomalies. Completeness of reporting depends to a great extent on how readily an anomaly is recognized within the short period after the birth and before the filing of the birth certificate. Other reasons for incomplete reporting include the desire to confirm a diagnosis before entry on an official record, the entry of only the most severe anomaly when a child is born with multiple defects, and the use of indefinite terminology.

Small yearly changes in anomaly rates should be interpreted with caution. For any one year the number of births with a specific anomaly may be relatively small. Additionally, reporting practices in some areas can vary from year to year. Because of the low frequency of

occurrence of many of the anomalies included on birth certificates, congenital anomaly rates in this report are calculated per 100,000 live births.

For many anomalies maternal age is an important predictive characteristic. As indicated in table 17, rates decline sharply with advancing age for anencephalus, spina bifida/meningocele, microcephalus, rectal atresia/stenosis, and omphalocele/gastroschisis. By contrast, rates increase substantially with age for heart malformations, "other" circulatory/respiratory anomalies, "other" gastrointestinal anomalies, malformed genitalia, cleft lip/palate, and particularly for Down's syndrome and "other" chromosomal anomalies. In 1991 the rate for Down's syndrome was 13 times as high for mothers aged 40-49 (375 per 100,000) as for mothers under 20 years of age (30 per 100,000); for "other" chromosomal anomalies the rate was three times as high for the oldest compared with the youngest mothers (129 compared with 46).

Congenital anomaly rates are generally higher for white than for black mothers. Rates for white births are at least double those for black births for tracheo-esophageal fistula/esophageal atresia, cleft lip/palate, and Down's syndrome and at least 50 percent higher for white births for 6 of the remaining 18 anomalies identified on birth certificates (table 17). Only one class of anomalies—polydactyly/syndactyly/adactyly—had a substantially higher frequency of occurrence among black than among white births. In 1991 these anomalies were reported for 229 of every 100,000 black births compared with 60 per 100,000 white births.

Sex of the child is also strongly associated with the incidence of some anomalies (tabular data not shown in this report). For example, rates for certain urogenital anomalies were far higher for male than for female births. For malformed genitalia, the rate in 1991 was 138 per 100,000 male births compared with 16 per 100,000 female births. Eighty-five percent of the births with urogenital anomalies were male and only 15 percent were female.

Weight at birth and gestational age are also associated with the incidence of

many congenital anomalies. Rates are generally highest for babies weighing less than 1,500 grams (3 lb 4 oz), decline rapidly with added birthweight to 3,500-3,999 grams (7 lb 12 oz to 8 lbs 13 oz), and then increase slightly for birthweights of 4,000 grams (8 lb 14 oz) or more. A decline in the incidence for higher birthweights is particularly noticeable for all central nervous system (CNS) anomalies (anencephalus, spina bifida/meningocele, microcephalus, and other CNS anomalies).

According to information from birth certificates, anencephalus and spina bifida/meningocele (two of a class of neural tube defects or NTD's) occur relatively infrequently in the United States (18 per 100,000 births for anencephalus and 25 per 100,000 births for spina bifida/meningocele in 1991), but the actual incidence of NTD's is probably higher. Other sources estimate that about 2,500 infants are born with spina bifida or anencephaly each year, or about 60 per 100,000 births (60) compared with 43 per 100,000 from birth certificate data. Although the underlying causes of NTD's are for the most part unknown (61), several studies indicate that folic acid supplementation can reduce the number of NTD's by 50 percent (60). The U.S. Food and Drug Administration recently proposed that bread and grain products be fortified with folic acid to help women of childbearing age ingest sufficient folic acid, to prevent NTD's (62).

Consistent with the highest occurrence of congenital anomalies for very low-birthweight babies (less than 3 lbs 4 oz), babies born prematurely (less than 37 completed weeks of gestation) have much higher rates of all the anomalies specified on birth certificates than babies with longer gestational periods (tabular data not shown in this report).

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**Symbols**

- Quantity zero
  - \* Figure does not meet standards of reliability or precision (see Technical notes)
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**Table 1. Live births with selected medical risk factors and rates for selected medical risk factors, by age and race of mother: United States, 1991**

[Rates are number of live births with specified medical risk factor per 1,000 live births in specified group]

Medical risk factor and race of mother	All births <sup>1</sup>	Medical risk factor reported	All ages	Age of mother						Not stated
				Under 20 years	20-24 years	25-29 years	30-34 years	35-39 years	40-49 years	
All races <sup>2</sup>		Number		Rate						Number
Anemia . . . . .	4,110,907	73,970	18.8	27.9	22.5	15.7	14.4	15.1	16.2	168,710
Cardiac disease . . . . .	4,110,907	14,421	3.7	2.3	2.8	3.7	4.6	5.5	6.3	168,710
Acute or chronic lung disease . . . . .	4,110,907	14,465	3.7	4.4	3.5	3.2	3.7	4.5	4.8	168,710
Diabetes . . . . .	4,110,907	92,345	23.4	7.9	14.9	23.3	32.1	46.9	65.8	168,710
Genital herpes <sup>3,4</sup> . . . . .	3,634,317	28,356	8.0	5.6	6.9	7.7	9.8	11.3	11.0	95,935
Hydramnios/Oligohydramnios <sup>3</sup> . . . . .	3,952,063	25,531	6.7	6.8	6.8	6.3	6.6	7.7	10.1	161,657
Hemoglobinopathy <sup>3</sup> . . . . .	3,952,063	1,945	0.5	0.7	0.5	0.4	0.5	0.5	0.6	161,657
Hypertension, chronic . . . . .	4,110,907	25,703	6.5	2.7	4.0	5.9	8.7	14.3	26.7	168,710
Hypertension, pregnancy-associated . . . . .	4,110,907	107,692	27.3	32.4	27.6	25.5	25.1	29.5	35.6	168,710
Eclampsia . . . . .	4,110,907	14,063	3.6	5.6	3.7	3.0	2.9	3.6	4.3	168,710
Incompetent cervix <sup>3</sup> . . . . .	3,952,063	9,055	2.4	1.1	1.7	2.4	3.3	4.2	4.0	161,657
Previous infant 4,000+ grams <sup>3</sup> . . . . .	3,952,063	38,430	10.1	1.6	6.4	10.9	15.1	18.6	22.6	161,657
Previous preterm or small-for-gestational-age infant <sup>3</sup> . . . . .	3,952,063	44,245	11.7	5.9	11.3	11.7	13.7	15.9	17.5	161,657
Renal disease . . . . .	4,110,907	8,705	2.2	3.0	2.6	1.9	1.8	2.0	1.8	168,710
Rh sensitization <sup>5</sup> . . . . .	4,073,068	23,568	6.0	4.6	5.6	6.3	6.7	6.8	6.3	169,849
Uterine bleeding <sup>4</sup> . . . . .	3,793,161	29,303	7.9	6.0	7.0	8.1	9.2	9.7	10.5	103,002
White										
Anemia . . . . .	3,241,273	47,796	15.4	22.5	18.3	13.2	12.4	13.2	13.7	132,805
Cardiac disease . . . . .	3,241,273	11,977	3.9	2.3	2.8	3.9	4.9	5.7	6.5	132,805
Acute or chronic lung disease . . . . .	3,241,273	10,695	3.4	3.9	3.2	3.1	3.5	4.5	4.5	132,805
Diabetes . . . . .	3,241,273	73,752	23.7	8.9	15.6	23.1	31.0	44.3	62.1	132,805
Genital herpes <sup>3,4</sup> . . . . .	2,835,494	23,023	8.3	4.5	6.5	8.0	10.7	12.8	12.5	71,197
Hydramnios/Oligohydramnios <sup>3</sup> . . . . .	3,102,783	19,320	6.5	6.5	6.6	6.1	6.4	7.3	9.5	127,153
Hemoglobinopathy <sup>3</sup> . . . . .	3,102,783	711	0.2	0.2	0.2	0.2	0.3	0.3	*	127,153
Hypertension, chronic . . . . .	3,241,273	17,966	5.8	2.3	3.7	5.2	7.4	11.8	21.9	132,805
Hypertension, pregnancy-associated . . . . .	3,241,273	86,603	27.9	33.2	28.9	26.2	25.2	29.7	34.5	132,805
Eclampsia . . . . .	3,241,273	10,287	3.3	5.1	3.6	2.8	2.8	3.3	4.0	132,805
Incompetent cervix <sup>3</sup> . . . . .	3,102,783	6,953	2.3	1.2	1.6	2.2	3.1	4.2	4.1	127,153
Previous infant 4,000+ grams <sup>3</sup> . . . . .	3,102,783	34,462	11.6	1.8	7.2	12.1	16.6	20.5	25.4	127,153
Previous preterm or small-for-gestational-age infant <sup>3</sup> . . . . .	3,102,783	33,288	11.2	5.2	10.5	11.1	13.1	15.6	17.3	127,153
Renal disease . . . . .	3,241,273	7,017	2.3	3.3	2.7	1.9	1.8	2.0	1.8	132,805
Rh sensitization <sup>5</sup> . . . . .	3,207,599	21,173	6.9	5.5	6.4	7.1	7.5	7.7	7.2	133,845
Uterine bleeding <sup>4</sup> . . . . .	2,973,984	24,049	8.3	6.3	7.3	8.4	9.4	10.0	10.9	76,863
Black										
Anemia . . . . .	682,602	21,713	33.3	38.2	36.5	29.5	27.2	27.4	29.8	30,624
Cardiac disease . . . . .	682,602	2,030	3.1	2.6	2.8	3.1	3.9	5.1	5.7	30,624
Acute or chronic lung disease . . . . .	682,602	3,273	5.0	5.6	4.8	4.3	5.4	5.6	7.0	30,624
Diabetes . . . . .	682,602	12,776	19.6	5.5	11.9	23.0	35.8	55.6	81.0	30,624
Genital herpes <sup>3,4</sup> . . . . .	622,615	4,584	7.6	8.0	8.8	7.4	6.1	4.7	5.4	21,053
Hydramnios/Oligohydramnios <sup>3</sup> . . . . .	665,705	5,065	8.0	7.5	7.4	7.8	8.6	10.5	14.9	29,363
Hemoglobinopathy <sup>3</sup> . . . . .	665,705	1,104	1.7	1.9	1.8	1.6	1.8	1.5	*	29,363
Hypertension, chronic . . . . .	682,602	6,882	10.6	3.7	5.6	10.6	19.4	35.5	67.1	30,624
Hypertension, pregnancy-associated . . . . .	682,602	17,468	26.8	30.8	23.7	24.3	27.7	32.8	47.5	30,624
Eclampsia . . . . .	682,602	3,251	5.0	6.7	4.3	4.2	4.5	6.2	7.4	30,624
Incompetent cervix <sup>3</sup> . . . . .	665,705	1,829	2.9	1.0	2.2	3.7	4.8	5.6	5.2	29,363
Previous infant 4,000+ grams <sup>3</sup> . . . . .	665,705	2,508	3.9	1.0	3.1	4.7	6.7	9.2	11.2	29,363
Previous preterm or small-for-gestational-age infant <sup>3</sup> . . . . .	665,705	9,078	14.3	7.4	14.5	16.3	19.3	18.7	19.2	29,363
Renal disease . . . . .	682,602	1,379	2.1	2.4	2.1	2.1	1.9	1.9	*	30,624
Rh sensitization <sup>5</sup> . . . . .	679,440	1,961	3.0	2.6	3.1	3.1	3.5	2.9	3.4	30,707
Uterine bleeding <sup>4</sup> . . . . .	639,512	4,162	6.7	5.7	6.3	6.9	8.3	8.7	8.9	22,314

<sup>1</sup>Total number of births to residents of areas reporting specified medical risk factor.<sup>2</sup>Includes races other than white and black.<sup>3</sup>New York City (but not New York State) reports this risk factor.<sup>4</sup>Texas does not report this risk factor.<sup>5</sup>Kansas does not report this risk factor.

**Table 2. Number of live births by smoking status of mother, percent smokers, and percent distribution by average number of cigarettes smoked by mothers per day, according to age and race of mother: Total of 46 reporting States and the District of Columbia, 1991**

Smoking status, smoking measure, and race of mother	Age of mother									
	All ages	Under 15 years	15-19 years							
			Total	15-17 years	18-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-49 years
Number										
<b>All races<sup>1</sup></b>										
Total . . . . .	3,111,544	9,720	409,564	148,200	261,364	837,451	921,862	658,395	238,127	36,425
Smoker . . . . .	531,683	705	77,869	23,641	54,228	170,870	152,176	95,538	30,368	4,157
Nonsmoker . . . . .	2,461,074	8,619	316,911	119,070	197,841	636,607	734,930	535,885	197,438	30,684
Not stated . . . . .	118,787	396	14,784	5,489	9,295	29,974	34,756	26,972	10,321	1,584
<b>White</b>										
Total . . . . .	2,439,406	3,718	267,183	88,880	178,303	626,992	758,240	554,765	198,936	29,572
Smoker . . . . .	441,529	557	67,471	20,354	47,117	143,914	124,703	77,396	24,204	3,284
Nonsmoker . . . . .	1,905,945	2,982	189,974	65,147	124,827	461,149	605,622	455,041	166,159	25,018
Not stated . . . . .	91,932	179	9,738	3,379	6,359	21,929	27,915	22,328	8,573	1,270
<b>Black</b>										
Total . . . . .	563,205	5,739	130,715	55,100	75,615	184,569	130,874	78,026	28,589	4,693
Smoker . . . . .	79,143	119	8,431	2,593	5,838	23,434	24,636	16,346	5,434	743
Nonsmoker . . . . .	462,165	5,411	117,724	50,578	67,146	154,145	100,858	58,331	21,951	3,745
Not stated . . . . .	21,897	209	4,560	1,929	2,631	6,990	5,380	3,349	1,204	205
Percent										
Smoker <sup>1</sup> . . . . .	17.8	7.6	19.7	16.6	21.5	21.2	17.2	15.1	13.3	11.9
White . . . . .	18.8	15.7	26.2	23.8	27.4	23.8	17.1	14.5	12.7	11.6
Black . . . . .	14.6	2.2	6.7	4.9	8.0	13.2	19.6	21.9	19.8	16.6
Percent distribution										
<b>All races<sup>1</sup></b>										
Smoker . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1-5 cigarettes . . . . .	20.7	36.7	26.2	30.1	24.5	20.8	19.5	18.7	18.0	17.7
6-10 cigarettes . . . . .	39.8	42.6	43.0	43.5	42.8	40.9	39.1	37.9	36.2	34.8
11-15 cigarettes . . . . .	6.4	*	5.0	4.4	5.3	6.2	7.0	7.0	6.2	6.2
16-20 cigarettes . . . . .	27.4	16.2	22.4	19.2	23.8	27.1	28.5	29.1	30.1	30.6
21-30 cigarettes . . . . .	4.0	*	2.4	2.0	2.6	3.5	4.2	5.0	6.0	6.7
31-40 cigarettes . . . . .	1.5	*	0.8	0.7	0.8	1.2	1.5	2.1	3.1	3.4
41 cigarettes or more . . . . .	0.2	*	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.6
<b>White</b>										
Smoker . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1-5 cigarettes . . . . .	18.0	30.3	23.3	27.0	21.7	17.8	16.9	16.5	16.0	15.5
6-10 cigarettes . . . . .	39.2	47.3	43.6	44.6	43.1	40.5	38.0	36.6	34.5	33.6
11-15 cigarettes . . . . .	7.0	*	5.5	4.8	5.7	6.9	7.7	7.7	6.8	6.5
16-20 cigarettes . . . . .	29.5	17.6	24.1	20.6	25.6	29.4	30.9	31.1	32.0	32.4
21-30 cigarettes . . . . .	4.4	*	2.6	2.2	2.8	3.9	4.7	5.6	6.9	7.3
31-40 cigarettes . . . . .	1.6	*	0.8	0.7	0.9	1.3	1.7	2.2	3.5	3.9
41 cigarettes or more . . . . .	0.2	*	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.6
<b>Black</b>										
Smoker . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1-5 cigarettes . . . . .	33.8	63.2	46.4	51.8	44.0	37.4	31.6	28.4	25.9	26.2
6-10 cigarettes . . . . .	43.0	25.5	39.2	35.7	40.8	43.3	44.1	43.4	42.9	38.6
11-15 cigarettes . . . . .	3.2	*	2.0	1.9	2.1	2.7	3.4	3.9	3.8	4.7
16-20 cigarettes . . . . .	16.8	*	10.7	9.1	11.4	14.2	17.6	20.4	22.8	24.1
21-30 cigarettes . . . . .	1.9	*	0.9	*	1.0	1.5	1.9	2.4	2.5	4.4
31-40 cigarettes . . . . .	1.0	*	0.6	*	0.6	0.7	1.1	1.3	1.7	*
41 cigarettes or more . . . . .	0.2	*	*	*	*	0.2	0.2	0.2	*	*

<sup>1</sup> Includes races other than white and black.

NOTE: Excludes data for California, Indiana, New York, and South Dakota, which did not require reporting of tobacco use during pregnancy.

Table 3. Number of live births by smoking status of mother and percent smokers, by age and Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: Total of 45 reporting States and the District of Columbia, 1991

Smoking status and origin of mother	Age of mother									
	All ages	Under 15 years	15-19 years							
			Total	15-17 years	18-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-49 years
All origins <sup>1</sup>										
Total . . . . .	3,095,203	9,712	408,408	147,865	260,543	833,958	916,353	653,963	236,605	36,204
Smoker . . . . .	528,313	703	77,457	23,521	53,936	169,785	151,143	94,917	30,177	4,131
Nonsmoker . . . . .	2,448,132	8,613	316,167	118,855	197,312	634,203	730,463	532,081	196,115	30,490
Not stated . . . . .	118,758	396	14,784	5,489	9,295	29,970	34,747	26,965	10,313	1,583
Hispanic										
Total . . . . .	309,448	1,417	56,193	22,277	33,916	99,668	82,880	48,140	17,804	3,346
Smoker . . . . .	18,516	58	3,430	1,285	2,145	6,170	4,781	2,899	1,002	176
Nonsmoker . . . . .	273,779	1,268	49,434	19,668	29,766	87,988	73,545	42,689	15,864	2,991
Not stated . . . . .	17,153	91	3,329	1,324	2,005	5,510	4,554	2,552	938	179
Mexican . . . . .	191,101	947	36,555	14,430	22,125	64,111	49,481	27,712	10,317	1,978
Smoker . . . . .	8,572	34	1,613	637	976	2,830	2,176	1,339	477	103
Nonsmoker . . . . .	170,477	851	32,647	12,878	19,769	57,385	44,100	24,560	9,191	1,743
Not stated . . . . .	12,052	62	2,295	915	1,380	3,896	3,205	1,813	649	132
Puerto Rican . . . . .	35,467	197	7,953	3,334	4,619	12,329	8,756	4,501	1,483	248
Smoker . . . . .	4,395	12	894	312	582	1,623	1,112	563	170	21
Nonsmoker . . . . .	28,921	172	6,475	2,777	3,698	9,939	7,154	3,726	1,236	219
Not stated . . . . .	2,151	13	584	245	339	767	490	212	77	8
Cuban . . . . .	9,530	8	689	242	447	1,794	3,603	2,456	862	118
Smoker . . . . .	579	1	43	12	31	112	204	162	50	7
Nonsmoker . . . . .	8,829	7	642	230	412	1,663	3,358	2,255	794	110
Not stated . . . . .	122	-	4	-	4	19	41	39	18	1
Central and South American . . . . .	33,698	70	2,998	1,027	1,971	8,723	10,814	7,510	3,003	580
Smoker . . . . .	902	1	80	25	55	185	274	256	90	16
Nonsmoker . . . . .	31,547	66	2,798	956	1,842	8,247	10,109	6,976	2,807	544
Not stated . . . . .	1,249	3	120	46	74	291	431	278	106	20
Other and unknown Hispanic . . . . .	39,652	195	7,998	3,244	4,754	12,711	10,226	5,961	2,139	422
Smoker . . . . .	4,068	10	800	299	501	1,420	1,015	579	215	29
Nonsmoker . . . . .	34,005	172	6,872	2,827	4,045	10,754	8,824	5,172	1,836	375
Not stated . . . . .	1,579	13	326	118	208	537	387	210	88	18
Non-Hispanic										
Total <sup>2</sup> . . . . .	2,761,368	8,225	349,027	124,418	224,609	727,854	826,535	600,437	216,757	32,533
Smoker . . . . .	505,108	641	73,236	21,974	51,262	161,972	145,095	91,282	28,954	3,928
Nonsmoker . . . . .	2,158,824	7,297	264,862	98,486	166,376	542,465	652,339	485,728	178,842	27,291
Not stated . . . . .	97,436	287	10,929	3,958	6,971	23,417	29,101	23,427	8,961	1,314
White . . . . .	2,105,900	2,298	209,473	66,244	143,229	522,327	667,496	499,696	178,724	25,886
Smoker . . . . .	416,710	497	63,110	18,787	44,323	135,573	118,125	73,417	22,915	3,073
Nonsmoker . . . . .	1,616,972	1,719	140,173	45,476	94,697	370,918	526,693	407,188	148,487	21,794
Not stated . . . . .	72,218	82	6,190	1,981	4,209	15,836	22,678	19,091	7,322	1,019
Black . . . . .	553,509	5,683	128,948	54,364	74,584	181,719	128,226	76,377	27,957	4,599
Smoker . . . . .	78,017	116	8,285	2,536	5,749	23,095	24,290	16,153	5,343	735
Nonsmoker . . . . .	454,837	5,367	116,353	50,009	66,344	152,003	98,868	57,098	21,476	3,672
Not stated . . . . .	20,655	200	4,310	1,819	2,491	6,621	5,068	3,126	1,138	192
Smokers										
Percent										
All origins <sup>1</sup> . . . . .	17.7	7.5	19.7	16.5	21.5	21.1	17.1	15.1	13.3	11.9
Hispanic . . . . .	6.3	4.4	6.5	6.1	6.7	6.6	6.1	6.4	5.9	5.6
Mexican . . . . .	4.8	3.8	4.7	4.7	4.7	4.7	4.7	5.2	4.9	5.6
Puerto Rican . . . . .	13.2	*	12.1	10.1	13.6	14.0	13.5	13.1	12.1	8.8
Cuban . . . . .	6.2	*	6.3	*	7.0	6.3	5.7	6.7	5.9	*
Central and South . . . . .	2.8	*	2.8	2.5	2.9	2.2	2.6	3.5	3.1	*
Other and unknown Hispanic . . . . .	10.7	*	10.4	9.6	11.0	11.7	10.3	10.1	10.5	7.2
Non-Hispanic <sup>2</sup> . . . . .	19.0	8.1	21.7	18.2	23.6	23.0	18.2	15.8	13.9	12.6
White . . . . .	20.5	22.4	31.0	29.2	31.9	26.8	18.3	15.3	13.4	12.4
Black . . . . .	14.6	2.1	6.6	4.8	8.0	13.2	19.7	22.1	19.9	16.7

<sup>1</sup>Includes origin not stated.<sup>2</sup>Includes races other than white and black.

NOTE: Excludes data for California, Indiana, New Hampshire, New York, and South Dakota, which did not require reporting of either Hispanic origin of mother or tobacco use during pregnancy.

**Table 4. Number of live births, percent of mothers who smoked cigarettes during pregnancy, and percent distribution of average number of cigarettes smoked by mothers per day, according to educational attainment and race of mother: Total of 45 reporting States and the District of Columbia, 1991**

Smoking measure and race of mother	Total	Years of school completed by mother					
		0-8 years	9-11 years	12 years	13-15 years	16 years or more	Not stated
All births							
All races <sup>1</sup>	3,031,833	138,435	522,705	1,156,115	622,388	550,802	41,388
White	2,368,796	110,811	353,621	886,101	502,083	487,932	28,248
Black	560,122	19,902	152,742	235,811	102,608	39,009	10,050
Percent							
Smoker <sup>1</sup>	17.7	18.3	31.9	20.6	12.4	4.2	16.2
White	18.8	20.2	37.4	22.6	12.8	4.2	16.3
Black	14.6	12.0	20.1	14.2	11.0	5.2	19.5
Percent distribution							
All races <sup>1</sup>	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Smoker	60.4	54.7	59.0	59.9	63.4	72.4	60.5
10 cigarettes or less	33.8	36.4	34.6	34.7	31.6	24.0	33.6
11-20 cigarettes	5.8	9.0	6.4	5.4	5.0	3.6	5.9
21 cigarettes or more							
White							
Smoker	100.0	100.0	100.0	100.0	100.0	100.0	100.0
10 cigarettes or less	57.1	52.3	54.6	56.6	60.7	71.7	55.5
11-20 cigarettes	36.6	38.2	38.2	37.4	33.9	24.6	37.5
21 cigarettes or more	6.3	9.5	7.1	5.9	5.4	3.7	7.0
Black							
Smoker	100.0	100.0	100.0	100.0	100.0	100.0	100.0
10 cigarettes or less	76.8	72.7	76.1	77.6	77.7	78.5	71.9
11-20 cigarettes	20.1	22.1	20.3	19.7	19.6	19.7	24.6
21 cigarettes or more	3.1	5.2	3.7	2.6	2.7	1.8	3.5

<sup>1</sup>Includes races other than white and black.

NOTE: Excludes data for California, Indiana, New York, South Dakota, and Washington, which did not require reporting of either tobacco use during pregnancy or educational attainment of mother.

**Table 5. Percent low birthweight by smoking status, age, and race of mother: Total of 46 reporting States and the District of Columbia, 1991**

[Low birthweight is defined as weight of less than 2,500 grams (5 lb 8 oz)]

Smoking status and race of mother	All ages	Under 15 years	Age of mother							
			15-19 years							
			Total	15-17 years	18-19 years	20-24 years	25-29 years	30-34 years	35-39 years	40-49 years
All races <sup>1</sup>	7.3	14.3	9.7	10.6	9.2	7.5	6.4	6.6	7.7	8.7
Smoker	11.4	15.5	10.8	11.6	10.5	10.2	11.3	12.8	15.1	17.1
Nonsmoker	6.4	14.1	9.3	10.4	8.7	6.7	5.3	5.5	6.5	7.4
Not stated	8.9	16.5	11.2	12.3	10.6	9.4	7.8	8.2	9.3	10.6
White										
Smoker	9.6	14.1	10.2	11.2	9.8	8.9	9.2	10.0	12.5	14.7
Nonsmoker	5.0	11.3	7.0	7.9	6.5	5.0	4.3	4.6	5.6	6.3
Not stated	7.1	*	9.3	10.5	8.6	7.4	6.2	6.8	7.7	9.4
Black										
Smoker	21.8	22.7	16.9	15.6	17.5	18.9	22.3	25.9	27.2	27.5
Nonsmoker	12.1	15.8	13.3	13.7	12.9	11.7	11.0	11.9	12.9	14.8
Not stated	16.6	22.2	15.5	15.6	15.5	15.7	16.5	18.3	20.7	19.3

<sup>1</sup>Includes races other than white and black.

NOTE: Excludes data for California, Indiana, New York, and South Dakota, which did not require reporting of tobacco use during pregnancy.

Table 6. Number of live births by drinking status of mother, percent drinkers, and percent distribution by average numbers of drinks per week, according to age and race of mother: Total of 47 reporting States and the District of Columbia, 1991

Drinking status, drinking measure, and race of mother	Age of mother										
	All ages	Under 15 years	15-19 years							35-39 years	40-49 years
			Total	15-17 years	18-19 years	20-24 years	25-29 years	30-34 years			
Number											
Total . . . . .	3,197,251	9,934	421,712	152,295	269,417	862,959	947,856	674,423	243,253	37,114	
Drinker . . . . .	88,411	82	6,542	2,050	4,492	19,274	27,006	24,257	9,789	1,461	
Nondrinker . . . . .	2,979,981	9,419	398,983	144,276	254,707	810,923	883,339	621,011	222,350	33,956	
Not stated . . . . .	128,859	433	16,187	5,969	10,218	32,762	37,511	29,155	11,114	1,697	
White											
Total . . . . .	2,514,797	3,827	276,715	91,862	184,853	649,078	781,941	569,463	203,578	30,195	
Drinker . . . . .	66,388	47	4,604	1,438	3,166	13,340	19,895	19,337	7,964	1,201	
Nondrinker . . . . .	2,348,377	3,580	261,290	86,701	174,589	611,582	731,901	526,009	186,383	27,632	
Not stated . . . . .	100,032	200	10,821	3,723	7,098	24,156	30,145	24,117	9,231	1,362	
Black											
Total . . . . .	572,715	5,844	133,280	56,200	77,080	187,836	132,886	79,139	28,985	4,745	
Drinker . . . . .	18,842	26	1,486	449	1,037	5,034	6,230	4,295	1,561	210	
Nondrinker . . . . .	530,395	5,592	126,959	53,704	73,255	175,340	120,855	71,209	26,124	4,316	
Not stated . . . . .	23,478	226	4,835	2,047	2,788	7,462	5,801	3,635	1,300	219	
Percent											
Drinker <sup>1</sup> . . . . .	2.9	0.9	1.6	1.4	1.7	2.3	3.0	3.8	4.2	4.1	
White . . . . .	2.7	1.3	1.7	1.6	1.8	2.1	2.6	3.5	4.1	4.2	
Black . . . . .	3.4	0.5	1.2	0.8	1.4	2.8	4.9	5.7	5.6	4.6	
Percent distribution											
Drinker . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1 drink or less . . . . .	61.8	51.1	62.8	61.3	63.5	59.5	61.5	63.7	61.5	59.6	
2 drinks . . . . .	15.7	*	13.5	14.7	12.9	15.5	15.8	15.6	17.2	17.7	
3-4 drinks . . . . .	10.3	*	11.2	10.6	11.5	11.3	10.2	9.6	10.2	9.1	
5 drinks or more . . . . .	12.2	*	12.5	13.3	12.1	13.7	12.6	11.2	11.1	13.5	
White											
Drinker . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1 drink or less . . . . .	68.4	*	66.6	64.7	67.5	66.3	69.5	70.0	66.7	63.8	
2 drinks . . . . .	14.5	*	12.3	12.8	12.1	13.4	14.1	14.9	16.7	17.8	
3-4 drinks . . . . .	8.6	*	9.8	10.3	9.6	9.9	8.1	8.0	8.8	7.8	
5 drinks or more . . . . .	8.5	*	11.2	12.2	10.8	10.3	8.3	7.2	7.8	10.6	
Black											
Drinker . . . . .	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
1 drink or less . . . . .	38.5	*	52.4	52.6	52.3	42.6	36.4	34.6	33.6	34.9	
2 drinks . . . . .	20.6	*	17.3	21.5	15.6	21.3	21.7	19.2	20.4	19.2	
3-4 drinks . . . . .	16.2	*	15.0	10.9	16.6	14.8	16.8	16.8	17.3	15.8	
5 drinks or more . . . . .	24.8	*	15.3	15.0	15.5	21.4	25.1	29.3	28.8	30.1	

<sup>1</sup>Includes races other than white and black.

NOTE: Excludes data for California, New York, and South Dakota, which did not require reporting of alcohol use during pregnancy.

**Table 7. Number of live births by drinking status of mother and percent drinkers, by Hispanic origin of mother and by race of mother for mothers of non-Hispanic origin: Total of 46 reporting States and the District of Columbia, 1991**

Drinking status of mother	Origin of mother									
	All origins <sup>1</sup>	Hispanic						Non-Hispanic		
		Total	Mexican	Puerto Rican	Cuban	Central and South American	Other and unknown Hispanic	Total <sup>2</sup>	White	Black
		Number								
Total . . . . .	3,180,910	311,289	192,465	35,689	9,539	33,745	39,851	2,845,097	2,179,428	562,962
Drinker . . . . .	87,764	4,020	1,916	855	84	274	891	82,719	61,199	18,491
Nondrinker . . . . .	2,964,327	288,152	176,852	32,584	9,323	32,169	37,224	2,657,466	2,040,301	522,404
Not stated . . . . .	128,819	19,117	13,697	2,250	132	1,302	1,736	104,912	77,928	22,067
		Percent								
Drinker . . . . .	2.9	1.4	1.1	2.6	0.9	0.8	2.3	3.0	2.9	3.4

<sup>1</sup>Includes origin not stated.

<sup>2</sup>Includes races other than white and black.

NOTE: Excludes data for California, New Hampshire, New York, and South Dakota, which did not require reporting of either alcohol use during pregnancy or Hispanic origin of mother.

**Table 8. Number of live births and percent distribution by weight gain during pregnancy and median weight gain, according to period of gestation and race of mother: Total of 49 reporting States and the District of Columbia, 1991**

Period of gestation <sup>1</sup> and race of mother	All births	Weight gain during pregnancy									Median weight gain
		Total	Less than 16 pounds	16–20 pounds	21–25 pounds	26–30 pounds	31–35 pounds	36–40 pounds	41–45 pounds	46 pounds or more	
All races <sup>2</sup>		Number		Percent distribution							Pounds
All gestational periods <sup>3</sup> . . . . .	3,500,830	100.0	9.6	11.1	15.4	20.4	14.7	12.6	6.3	9.9	30.4
Under 37 weeks . . . . .	382,305	100.0	17.6	15.5	16.2	17.9	11.1	9.4	4.5	7.8	26.4
37–39 weeks . . . . .	1,464,293	100.0	9.3	11.4	16.1	21.0	14.9	12.3	6.0	9.0	30.3
40 weeks and over . . . . .	1,634,083	100.0	8.1	9.8	14.6	20.3	15.4	13.6	7.0	11.1	30.8
White											
All gestational periods <sup>3</sup> . . . . .	2,740,621	100.0	8.1	10.2	15.3	20.9	15.6	13.2	6.6	10.0	30.6
Under 37 weeks . . . . .	248,831	100.0	14.3	14.2	16.6	18.9	12.4	10.2	5.1	8.4	28.0
37–39 weeks . . . . .	1,139,757	100.0	8.0	10.6	16.1	21.6	15.7	12.8	6.3	9.0	30.5
40 weeks and over . . . . .	1,338,545	100.0	7.1	9.2	14.5	20.7	16.1	14.0	7.3	11.1	30.9
Black											
All gestational periods <sup>3</sup> . . . . .	634,933	100.0	16.1	14.7	15.3	17.7	11.0	10.4	5.0	9.7	28.0
Under 37 weeks . . . . .	120,241	100.0	24.9	18.0	15.4	15.6	8.4	7.7	3.5	6.6	24.4
37–39 weeks . . . . .	267,346	100.0	14.9	14.6	15.8	18.4	11.4	10.6	5.0	9.3	28.2
40 weeks and over . . . . .	241,666	100.0	13.3	13.3	14.7	18.0	11.8	11.6	5.8	11.6	30.2

<sup>1</sup>Expressed in completed weeks.

<sup>2</sup>Includes races other than white and black.

<sup>3</sup>Includes births with period of gestation not stated.

NOTE: Excludes data for California, which did not require reporting of weight gain during pregnancy.

**Table 9. Percent low birthweight by weight gain during pregnancy, period of gestation, and race of mother: Total of 49 reporting States and the District of Columbia, 1991**

[Low birthweight is defined as weight of less than 2,500 grams (5 lb 8 oz)]

Period of gestation <sup>1</sup> and race of mother	Total	Weight gain during pregnancy								
		Less than 16 pounds	16–20 pounds	21–25 pounds	26–30 pounds	31–35 pounds	36–40 pounds	41–45 pounds	46 pounds or more	Not stated
All gestational periods <sup>2</sup>										
All races <sup>3</sup> . . . . .	7.3	15.6	10.8	7.2	5.4	4.4	4.3	4.0	4.4	11.0
White . . . . .	5.9	12.6	9.1	6.2	4.6	3.9	3.7	3.6	4.0	8.5
Black . . . . .	13.6	23.3	16.8	12.3	10.0	8.1	7.7	6.7	6.3	18.4
Under 37 weeks										
All races <sup>3</sup> . . . . .	42.0	57.5	47.5	39.1	34.5	31.7	31.3	31.3	31.5	49.9
White . . . . .	40.3	56.9	47.5	38.5	33.7	31.3	31.0	31.3	32.9	47.2
Black . . . . .	46.4	59.3	48.9	41.2	37.3	34.1	32.7	31.5	28.5	54.8
37–39 weeks										
All races <sup>3</sup> . . . . .	4.6	8.0	6.4	4.7	3.8	3.2	3.2	3.1	3.4	6.1
White . . . . .	3.9	6.6	5.5	4.2	3.3	2.9	2.8	2.8	3.1	4.8
Black . . . . .	7.8	11.6	9.7	7.5	6.4	5.4	5.4	4.6	4.7	9.8
40 weeks and over										
All races <sup>3</sup> . . . . .	1.7	3.5	2.7	1.8	1.3	1.1	1.0	0.9	0.9	2.4
White . . . . .	1.3	2.7	2.1	1.5	1.1	0.9	0.8	0.7	0.8	1.8
Black . . . . .	3.7	6.5	5.0	3.8	3.0	2.3	2.3	1.9	1.8	4.7

<sup>1</sup>Expressed in completed weeks.<sup>2</sup>Includes births with period of gestation not stated.<sup>3</sup>Includes races other than white and black.

NOTE: Excludes data for California, which did not require reporting of weight gain during pregnancy.

**Table 10. Percent low birthweight by weight gain during pregnancy, Hispanic origin of mother, and by race of mother for mothers of non-Hispanic origin: Total of 48 reporting States and the District of Columbia, 1991**

[Low birthweight is defined as weight of less than 2,500 grams (5 lb 8 oz)]

Origin of mother	Total	Weight gain during pregnancy								
		Less than 16 pounds	16–20 pounds	21–25 pounds	26–30 pounds	31–35 pounds	36–40 pounds	41–45 pounds	46 pounds or more	Not stated
All origins <sup>1</sup> . . . . .	7.4	15.7	10.8	7.2	5.4	4.4	4.3	4.0	4.4	11.0
Hispanic . . . . .	6.8	12.1	8.2	6.2	5.1	4.5	4.3	3.9	4.3	8.7
Mexican . . . . .	6.2	10.5	7.1	5.5	4.7	4.0	4.2	3.5	3.8	7.7
Puerto Rican . . . . .	9.5	17.3	12.0	8.1	6.7	6.4	5.4	5.1	5.1	12.7
Cuban . . . . .	5.5	14.4	8.2	6.0	4.2	3.4	3.7	4.1	3.6	9.3
Central and South American . . . . .	6.0	11.1	7.2	6.2	4.4	4.0	3.7	3.1	3.8	7.5
Other and unknown Hispanic . . . . .	7.6	13.7	10.4	7.2	5.9	4.8	4.4	4.9	5.3	9.9
Non-Hispanic <sup>2</sup> . . . . .	7.4	16.1	11.1	7.3	5.5	4.4	4.3	4.0	4.4	11.6
White . . . . .	5.8	12.7	9.2	6.2	4.6	3.8	3.6	3.6	4.0	8.3
Black . . . . .	13.7	23.4	16.8	12.4	10.0	8.2	7.8	6.7	6.3	18.6

<sup>1</sup>Includes origin not stated.<sup>2</sup>Includes races other than white and black.

NOTE: Excludes data for California and New Hampshire, which did not require reporting of either weight gain during pregnancy or Hispanic origin of mother.

**Table 11. Live births with selected obstetric procedures and rates for selected obstetric procedures, by age and race of mother: United States, 1991**

[Rates are number of live births with specified procedure per 1,000 live births in specified group]

Obstetric procedure and race of mother	All births <sup>1</sup>	Obstetric procedure reported	Age of mother							Not stated
			All ages	Under 20 years	20-24 years	25-29 years	30-34 years	35-39 years	40-49 years	
<b>All races<sup>2</sup></b>	<b>Number</b>		<b>Rate</b>							<b>Number</b>
Amniocentesis . . . . .	4,110,907	125,879	31.5	11.5	13.9	17.1	30.2	152.5	188.3	111,556
Electronic fetal monitoring . . . . .	4,110,907	3,020,280	755.2	762.1	758.1	758.9	751.2	736.8	722.4	111,556
Induction of labor . . . . .	4,110,907	418,346	104.6	89.5	100.9	109.5	108.7	110.7	114.4	111,556
Stimulation of labor . . . . .	4,110,907	483,025	120.8	118.6	119.1	123.5	121.8	117.6	116.6	111,556
Tocolysis . . . . .	4,110,907	64,121	16.0	18.2	16.6	15.2	15.3	15.8	14.8	111,556
Ultrasound <sup>3</sup> . . . . .	3,916,676	2,135,842	561.0	544.0	556.8	567.0	566.7	566.1	552.8	109,264
<b>White</b>										
Amniocentesis . . . . .	3,241,273	107,455	34.1	12.5	14.4	17.5	31.8	162.9	204.3	85,832
Electronic fetal monitoring . . . . .	3,241,273	2,402,250	761.3	768.7	764.3	765.7	757.4	742.1	729.8	85,832
Induction of labor . . . . .	3,241,273	356,571	113.0	99.6	110.2	117.0	115.3	116.7	121.7	85,832
Stimulation of labor . . . . .	3,241,273	393,030	124.6	123.8	123.6	126.7	124.9	120.3	121.0	85,832
Tocolysis . . . . .	3,241,273	51,888	16.4	19.3	17.1	15.6	15.6	16.1	15.5	85,832
Ultrasound <sup>3</sup> . . . . .	3,095,821	1,730,040	574.4	560.2	570.7	579.8	577.9	577.4	565.4	84,135
<b>Black</b>										
Amniocentesis . . . . .	682,602	11,730	17.7	9.2	12.0	14.7	19.6	81.3	106.0	21,522
Electronic fetal monitoring . . . . .	682,602	490,605	742.1	753.2	744.9	736.6	733.9	728.9	720.3	21,522
Induction of labor . . . . .	682,602	48,026	72.6	67.9	70.1	74.4	76.8	85.5	94.1	21,522
Stimulation of labor . . . . .	682,602	69,440	105.0	107.6	103.7	106.3	103.5	101.8	97.7	21,522
Tocolysis . . . . .	682,602	10,038	15.2	15.9	15.3	14.6	15.1	14.9	12.8	21,522
Ultrasound <sup>3</sup> . . . . .	639,357	317,591	513.6	508.5	513.1	512.9	521.3	520.2	517.2	21,026

<sup>1</sup>Total number of births to residents of areas reporting specified obstetric procedure.  
<sup>2</sup>Includes races other than white and black.  
<sup>3</sup>Illinois does not report this procedure.

Table 12. Live births with selected complications of labor and/or delivery and rates for selected complications, by age and race of mother: United States, 1991

[Rates are number of live births with specified complication per 1,000 live births in specified group]

Complication and race of mother	All births <sup>1</sup>	Complication reported	All ages	Age of mother						Not stated
				Under 20 years	20-24 years	25-29 years	30-34 years	35-39 years	40-49 years	
				Rate						
All races <sup>2</sup>		Number								
Febrile . . . . .	4,110,907	51,488	13.0	16.4	13.4	12.8	11.5	11.2	11.2	148,049
Meconium, moderate/heavy . . . . .	4,110,907	240,881	60.8	66.3	61.2	58.8	58.7	62.1	68.9	148,049
Premature rupture of membrane . . . . .	4,110,907	129,088	32.6	32.4	30.7	32.2	33.6	36.5	39.8	148,049
Abruptio placenta . . . . .	4,110,907	23,810	6.0	5.9	5.7	5.7	6.3	7.3	8.2	148,049
Placenta previa . . . . .	4,110,907	13,864	3.5	1.3	2.2	3.4	4.9	7.1	8.3	148,049
Other excessive bleeding . . . . .	4,110,907	21,343	5.4	4.8	5.0	5.2	5.7	6.6	8.3	148,049
Seizures during labor . . . . .	4,110,907	1,503	0.4	0.8	0.4	0.3	0.2	0.3	0.4	148,049
Precipitous labor . . . . .	4,110,907	74,036	18.7	14.5	18.0	18.7	20.6	21.9	21.9	148,049
Prolonged labor . . . . .	4,110,907	41,003	10.3	11.5	10.8	10.2	9.5	9.9	10.8	148,049
Dysfunctional labor . . . . .	4,110,907	116,883	29.5	28.8	29.1	30.5	28.7	29.8	32.4	148,049
Breech/Malpresentation . . . . .	4,110,907	150,937	38.1	30.2	32.9	39.1	43.3	48.0	53.8	148,049
Cephalopelvic disproportion <sup>3,4</sup> . . . . .	3,634,317	124,785	35.2	34.1	34.5	37.3	34.4	34.2	33.9	91,806
Cord prolapse <sup>5</sup> . . . . .	4,042,798	10,618	2.7	2.4	2.6	2.7	2.9	3.2	3.8	148,570
Anesthetic complication <sup>4</sup> . . . . .	3,793,161	1,550	0.4	0.3	0.4	0.4	0.5	0.6	0.6	96,498
Fetal distress <sup>4</sup> . . . . .	3,793,161	158,608	42.9	49.5	43.5	40.6	39.9	44.9	55.7	96,498
White										
Febrile . . . . .	3,241,273	38,209	12.2	15.0	12.6	12.3	11.0	10.8	10.3	116,816
Meconium, moderate/heavy . . . . .	3,241,273	175,479	56.2	59.9	56.1	54.6	55.0	58.9	65.6	116,816
Premature rupture of membrane . . . . .	3,241,273	98,403	31.5	30.6	29.7	31.1	32.5	36.0	38.9	116,816
Abruptio placenta . . . . .	3,241,273	18,298	5.9	5.9	5.5	5.6	6.0	7.1	8.3	116,816
Placenta previa . . . . .	3,241,273	10,822	3.5	1.2	2.1	3.4	4.7	6.9	8.0	116,816
Other excessive bleeding . . . . .	3,241,273	16,529	5.3	5.0	5.0	5.1	5.5	6.4	8.0	116,816
Seizures during labor . . . . .	3,241,273	1,082	0.3	0.7	0.4	0.3	0.2	0.3	*	116,816
Precipitous labor . . . . .	3,241,273	55,760	17.8	12.9	16.3	17.9	20.3	21.8	21.6	116,816
Prolonged labor . . . . .	3,241,273	33,440	10.7	12.4	11.3	10.5	9.6	10.0	11.2	116,816
Dysfunctional labor . . . . .	3,241,273	95,953	30.7	31.1	30.9	31.4	29.3	30.5	34.1	116,816
Breech/Malpresentation . . . . .	3,241,273	125,420	40.1	33.9	35.0	40.6	44.2	49.2	54.1	116,816
Cephalopelvic disproportion <sup>3,4</sup> . . . . .	2,835,494	102,222	36.9	36.7	37.2	38.8	35.1	34.9	34.4	68,877
Cord prolapse <sup>5</sup> . . . . .	3,182,762	8,355	2.7	2.3	2.6	2.7	2.9	3.2	3.8	117,082
Anesthetic complication <sup>4</sup> . . . . .	2,973,984	1,241	0.4	0.4	0.4	0.4	0.5	0.6	0.7	72,685
Fetal distress <sup>4</sup> . . . . .	2,973,984	118,222	40.7	47.9	42.1	38.7	37.4	42.3	53.7	72,685
Black										
Febrile . . . . .	682,602	10,481	16.0	19.5	15.8	14.8	14.2	12.1	14.0	26,202
Meconium, moderate/heavy . . . . .	682,602	55,193	84.1	81.7	81.0	86.1	88.3	90.4	95.0	26,202
Premature rupture of membrane . . . . .	682,602	25,164	38.3	36.3	34.5	39.8	44.7	44.2	49.5	26,202
Abruptio placenta . . . . .	682,602	4,625	7.0	6.1	6.8	6.9	8.4	9.5	8.7	26,202
Placenta previa . . . . .	682,602	2,217	3.4	1.4	2.4	3.9	5.9	7.8	7.5	26,202
Other excessive bleeding . . . . .	682,602	3,041	4.6	3.8	4.3	4.8	5.6	6.2	7.7	26,202
Seizures during labor . . . . .	682,602	356	0.5	1.0	0.5	0.4	0.3	*	*	26,202
Precipitous labor . . . . .	682,602	14,166	21.6	17.8	22.8	22.9	22.6	22.5	21.2	26,202
Prolonged labor . . . . .	682,602	5,211	7.9	8.7	8.0	7.5	7.3	7.9	8.2	26,202
Dysfunctional labor . . . . .	682,602	16,391	25.0	24.3	23.7	26.3	25.7	27.0	26.0	26,202
Breech/Malpresentation . . . . .	682,602	19,171	29.2	22.0	25.5	31.3	38.5	43.4	52.8	26,202
Cephalopelvic disproportion <sup>3,4</sup> . . . . .	622,615	16,480	27.3	29.2	25.7	28.3	27.2	25.3	24.5	19,152
Cord prolapse <sup>5</sup> . . . . .	680,081	1,862	2.8	2.4	2.5	3.0	3.5	3.7	3.8	26,229
Anesthetic complication <sup>4</sup> . . . . .	639,512	241	0.4	0.4	0.3	0.4	0.4	*	*	19,935
Fetal distress <sup>4</sup> . . . . .	639,512	33,985	54.9	54.5	50.6	54.4	59.8	66.3	75.3	19,935

<sup>1</sup>Total number of births to residents of areas reporting specified complication.<sup>2</sup>Includes races other than white and black.<sup>3</sup>New York City (but not New York State) reports this complication.<sup>4</sup>Texas does not report this complication.<sup>5</sup>Figures for this complication do not include Arizona: see Technical notes.

Table 13. Live births by method of delivery and rates of cesarean delivery and vaginal birth after previous cesarean, by age and race of mother: United States, 1991

Age and race of mother	Births by method of delivery						Cesarean delivery rate		Rate of vaginal birth after previous cesarean <sup>3</sup>	
	All births	Vaginal		Cesarean			Total <sup>1</sup>	Primary <sup>2</sup>		
		Total	After previous cesarean	Total	Primary	Repeat				Not stated
All races <sup>4</sup> . . . . .	4,110,907	3,100,891	90,690	905,077	569,195	335,882	104,939	22.6	15.9	21.3
Under 20 years . . . . .	531,591	432,546	4,015	84,966	72,988	11,978	14,079	16.4	14.6	25.1
20-24 years . . . . .	1,089,692	850,344	19,756	211,872	144,346	67,526	27,476	19.9	14.8	22.6
25-29 years . . . . .	1,219,965	912,659	29,694	276,526	168,853	107,673	30,780	23.3	16.1	21.6
30-34 years . . . . .	884,862	640,596	26,275	221,320	121,617	99,703	22,946	25.7	16.5	20.9
35-39 years . . . . .	330,993	229,064	9,707	93,543	51,164	42,379	8,386	29.0	18.9	18.6
40-49 years . . . . .	53,804	35,682	1,243	16,850	10,227	6,623	1,272	32.1	22.9	15.8
White . . . . .	3,241,273	2,434,900	72,564	723,088	452,534	270,554	83,285	22.9	16.1	21.1
Under 20 years . . . . .	357,548	289,865	2,169	57,912	50,736	7,176	9,771	16.7	15.0	23.2
20-24 years . . . . .	831,233	646,432	14,181	163,950	113,595	50,355	20,851	20.2	15.2	22.0
25-29 years . . . . .	1,000,138	746,892	24,290	227,977	139,192	88,785	25,269	23.4	16.2	21.5
30-34 years . . . . .	736,816	534,121	22,526	183,401	99,595	83,806	19,294	25.6	16.3	21.2
35-39 years . . . . .	272,511	188,936	8,347	76,503	41,398	35,105	7,072	28.8	18.6	19.2
40-49 years . . . . .	43,027	28,654	1,051	13,345	8,018	5,327	1,028	31.8	22.5	16.5
Black . . . . .	682,602	519,047	14,213	145,583	92,645	52,938	17,972	21.9	15.5	21.2
Under 20 years . . . . .	157,375	128,270	1,730	25,101	20,539	4,562	4,004	16.4	14.0	27.5
20-24 years . . . . .	218,918	170,784	4,856	42,275	26,633	15,642	5,859	19.8	13.8	23.7
25-29 years . . . . .	163,052	120,550	4,207	38,154	22,358	15,796	4,348	24.0	16.1	21.0
30-34 years . . . . .	99,637	70,148	2,486	26,819	15,251	11,568	2,670	27.7	18.4	17.7
35-39 years . . . . .	37,362	25,302	822	11,136	6,519	4,617	924	30.6	21.0	15.1
40-49 years . . . . .	6,258	3,993	112	2,098	1,345	753	167	34.4	25.7	12.9

<sup>1</sup>Percent of all live births that are by cesarean delivery.  
<sup>2</sup>Number of primary cesareans per 100 live births to women who have not had a previous cesarean.  
<sup>3</sup>Number of vaginal births after previous cesarean delivery per 100 live births to women with a previous cesarean delivery.  
<sup>4</sup>Includes races other than white and black.

Table 14. Rates of cesarean delivery and vaginal birth after previous cesarean, by selected medical risk factors, complications of labor and/or delivery, and obstetric procedures: United States, 1991

Medical risk factor, complication, and obstetric procedure	All births with specified condition and/or procedure	Cesarean delivery rate		Rate of vaginal birth after previous cesarean <sup>3</sup>
		Total <sup>1</sup>	Primary <sup>2</sup>	
<b>Medical risk factors</b>				
Anemia . . . . .	73,970	24.7	17.4	22.8
Cardiac disease . . . . .	14,421	27.0	19.9	23.0
Acute or chronic lung disease . . . . .	14,465	27.4	19.6	22.7
Diabetes . . . . .	92,345	36.8	27.0	15.3
Genital herpes <sup>4,5</sup> . . . . .	28,356	44.0	38.3	23.3
Hydramnios/Oligohydramnios <sup>4</sup> . . . . .	25,531	43.1	37.8	18.3
Hemoglobinopathy <sup>4</sup> . . . . .	1,945	26.9	20.0	23.3
Hypertension, chronic . . . . .	25,703	41.1	32.1	14.5
Eclampsia . . . . .	14,063	51.7	47.5	11.1
Incompetent cervix <sup>4</sup> . . . . .	9,055	30.3	22.4	21.9
Renal disease . . . . .	8,705	27.2	20.3	25.2
Rh sensitization <sup>6</sup> . . . . .	23,568	24.0	17.0	24.1
Uterine bleeding <sup>5</sup> . . . . .	29,303	33.2	26.1	21.3
<b>Complications of labor and/or delivery</b>				
Febrile . . . . .	51,488	35.1	32.9	39.9
Premature rupture of membrane . . . . .	129,088	28.7	25.2	31.6
Abruptio placenta . . . . .	23,810	57.8	53.7	15.7
Placenta previa . . . . .	13,864	82.5	78.5	3.4
Other excessive bleeding . . . . .	21,343	34.0	26.4	21.6
Seizures during labor . . . . .	1,503	49.3	46.7	22.8
Precipitous labor (less than 3 hours) . . . . .	74,036	1.8	1.3	83.0
Prolonged labor (more than 20 hours) . . . . .	41,003	39.6	38.2	40.1
Dysfunctional labor . . . . .	116,883	66.5	64.7	16.4
Breech/Malpresentation . . . . .	150,937	85.2	83.8	4.7
Cephalopelvic disproportion <sup>7,8</sup> . . . . .	124,785	97.8	97.6	1.0
Cord prolapse <sup>9</sup> . . . . .	10,618	60.9	58.7	17.5
Anesthetic complications <sup>8</sup> . . . . .	1,550	53.6	44.3	12.6
Fetal distress <sup>8</sup> . . . . .	158,608	61.4	59.4	18.2
<b>Obstetric procedures</b>				
Electronic fetal monitoring . . . . .	3,020,280	21.7	16.0	26.1
Induction of labor . . . . .	418,346	21.3	19.6	51.6
Stimulation of labor . . . . .	483,025	17.0	15.6	60.1
Tocolysis . . . . .	64,121	31.5	25.6	22.2
Ultrasound <sup>10</sup> . . . . .	2,135,842	25.3	17.9	21.0

<sup>1</sup>Percent of all live births by cesarean delivery.

<sup>2</sup>Number of primary cesareans per 100 live births to women who have not had a previous cesarean.

<sup>3</sup>Number of vaginal births after previous cesarean delivery per 100 live births to women with a previous cesarean.

<sup>4</sup>New York City (but not New York State) reports this risk factor.

<sup>5</sup>Texas does not report this risk factor.

<sup>6</sup>Kansas does not report this risk factor.

<sup>7</sup>New York City (but not New York State) reports this complication.

<sup>8</sup>Texas does not report this complication.

<sup>9</sup>Figures for this complication do not include Arizona; see Technical notes.

<sup>10</sup>Illinois does not report this procedure.

Table 15. Live births by day of week and index of occurrence by method of delivery, day of occurrence, and race of mother: United States, 1991

Day of week and race of mother	All births	Index of occurrence <sup>1</sup>				
		Total <sup>2</sup>	Vaginal	Method of delivery		
				Total	Cesarean	
					Primary	Repeat
All races <sup>3</sup>	4,110,907	100.0	100.0	100.0	100.0	100.0
Sunday	466,706	78.2	84.3	57.6	68.9	38.5
Monday	601,244	102.7	101.2	108.0	99.6	122.1
Tuesday	651,952	111.3	108.8	119.7	115.9	126.2
Wednesday	626,733	107.0	105.2	113.2	111.1	116.8
Thursday	628,656	107.3	105.3	114.0	110.8	119.4
Friday	635,814	108.6	104.9	120.8	113.9	132.5
Saturday	499,802	85.3	90.6	67.5	80.4	45.7
White	3,241,273	100.0	100.0	100.0	100.0	100.0
Sunday	359,720	76.4	82.8	55.5	67.4	35.6
Monday	476,320	103.2	101.6	108.8	100.0	123.7
Tuesday	518,801	112.4	109.8	120.7	117.0	127.0
Wednesday	497,220	107.7	105.9	113.6	111.4	117.1
Thursday	498,314	107.9	105.9	114.6	111.2	120.3
Friday	504,768	109.3	105.3	122.4	114.9	134.9
Saturday	386,130	83.6	89.1	65.3	78.7	42.7
Black	682,602	100.0	100.0	100.0	100.0	100.0
Sunday	83,981	84.7	89.8	66.9	75.7	51.5
Monday	97,628	100.4	99.5	104.1	98.2	114.4
Tuesday	104,616	107.6	105.0	116.5	112.2	123.9
Wednesday	101,854	104.7	102.9	111.9	109.8	115.6
Thursday	102,163	105.1	103.3	111.0	108.2	115.9
Friday	102,787	105.7	103.3	113.3	109.1	120.7
Saturday	89,573	92.1	96.4	77.0	87.3	58.8

<sup>1</sup>Index is the ratio of the average number of births by a specified method of delivery on a given day of the week to the average daily number of births by a specified method of delivery for the year, multiplied by 100.

<sup>2</sup>Includes method of delivery not stated.

<sup>3</sup>Includes races other than white and black.

Table 16. Live births with selected abnormal conditions of newborn and rates for selected abnormal conditions by age and race of mother: United States, 1991

[Rates are number of live births with specified abnormal condition per 1,000 live births in specified group]

Abnormal condition and race of mother	All births <sup>1</sup>	Abnormal condition reported	All ages	Age of mother						Not stated
				Under 20 years	20-24 years	25-29 years	30-34 years	35-39 years	40-49 years	
All races <sup>2</sup>	Number			Rate						Number
Anemia . . . . .	4,110,907	4,866	1.2	1.5	1.3	1.2	1.1	1.1	1.2	194,998
Birth injury <sup>3</sup> . . . . .	3,680,939	7,192	2.0	1.9	2.1	2.1	2.0	2.0	1.7	135,215
Fetal alcohol syndrome <sup>4,5</sup> . . . . .	3,879,992	517	0.1	0.1	0.1	0.2	0.2	0.1	*	191,262
Hyaline membrane disease/RDS . . . . .	4,110,907	23,916	6.1	7.7	6.3	5.7	5.5	6.1	6.4	194,998
Meconium aspiration syndrome <sup>5</sup> . . . . .	3,952,063	11,051	2.9	3.1	2.9	2.9	2.9	3.2	4.0	190,119
Assisted ventilation less than 30 minutes <sup>6</sup> . . . . .	3,818,274	51,113	14.1	15.4	14.4	13.6	13.4	14.0	14.9	188,679
Assisted ventilation 30 minutes or longer <sup>6</sup> . . . . .	3,818,274	27,143	7.5	9.2	7.4	6.9	7.0	8.2	9.1	188,679
Seizures . . . . .	4,110,907	3,108	0.8	0.8	0.8	0.8	0.8	0.8	0.8	194,998
White										
Anemia . . . . .	3,241,273	3,515	1.1	1.3	1.2	1.1	1.1	1.1	1.1	155,965
Birth injury <sup>3</sup> . . . . .	2,876,019	6,233	2.2	2.2	2.4	2.3	2.1	2.1	1.9	104,796
Fetal alcohol syndrome <sup>4,5</sup> . . . . .	3,040,519	316	0.1	0.1	0.1	0.1	0.1	0.1	*	153,023
Hyaline membrane disease/RDS . . . . .	3,241,273	18,902	6.1	7.9	6.4	5.7	5.4	6.2	6.3	155,965
Meconium aspiration syndrome <sup>5</sup> . . . . .	3,102,783	8,113	2.7	3.0	2.7	2.7	2.7	2.9	3.8	151,920
Assisted ventilation less than 30 minutes <sup>6</sup> . . . . .	3,024,566	40,946	14.3	16.0	14.8	13.8	13.4	14.2	14.8	151,811
Assisted ventilation 30 minutes or longer <sup>6</sup> . . . . .	3,024,566	20,544	7.2	9.2	7.0	6.6	6.6	8.0	8.6	151,811
Seizures . . . . .	3,241,273	2,312	0.7	0.8	0.7	0.8	0.7	0.7	0.9	155,965
Black										
Anemia . . . . .	682,602	1,165	1.8	1.9	1.9	1.8	1.5	1.5	*	32,026
Birth injury <sup>3</sup> . . . . .	629,490	677	1.1	1.2	1.1	1.1	1.1	1.4	*	24,782
Fetal alcohol syndrome <sup>4,5</sup> . . . . .	658,481	152	0.2	*	0.1	0.3	0.4	*	*	31,308
Hyaline membrane disease/RDS . . . . .	682,602	4,446	6.8	7.5	6.6	6.2	6.9	7.2	8.9	32,026
Meconium aspiration syndrome <sup>5</sup> . . . . .	665,705	2,395	3.8	3.3	3.6	3.9	4.3	4.6	5.4	31,278
Assisted ventilation less than 30 minutes <sup>6</sup> . . . . .	620,440	8,060	13.6	13.7	13.2	13.5	14.6	14.2	17.0	29,875
Assisted ventilation 30 minutes or longer <sup>6</sup> . . . . .	620,440	5,651	9.6	9.5	9.1	9.2	10.6	11.3	14.4	29,875
Seizures . . . . .	682,602	691	1.1	1.0	1.1	1.0	1.0	1.3	*	32,026

<sup>1</sup>Total number of births to residents of areas reporting specified condition.<sup>2</sup>Includes races other than white and black.<sup>3</sup>Massachusetts, Nebraska, and Texas do not report this condition.<sup>4</sup>Wisconsin does not report this condition.<sup>5</sup>New York City (but not New York State) reports this condition.<sup>6</sup>New York State and New York City do not report this condition.

**Table 17. Live births with selected congenital anomalies and rates for selected congenital anomalies, by age and race of mother: Total of 48 reporting States and the District of Columbia, 1991**

[Rates are number of live births with specified congenital anomaly per 100,000 live births in specified group]

Congenital anomaly and race of mother	All births <sup>1</sup>	Congenital anomaly reported	All ages	Age of mother							Not stated	
				All races <sup>2</sup>	Rate							Number
					Number	Under 20 years	20-24 years	25-29 years	30-34 years	35-39 years		
Anencephalus . . . . .	3,790,474	665	18.4	21.8	18.9	18.7	16.8	14.8	*	181,570		
Spina bifida/Meningocele . . . . .	3,790,474	901	25.0	31.4	26.3	22.1	23.2	22.9	*	181,570		
Hydrocephalus . . . . .	3,790,474	973	27.0	33.1	27.5	25.1	22.5	32.1	*	181,570		
Microcephalus . . . . .	3,790,474	311	8.6	11.3	9.6	7.4	6.4	8.1	*	181,570		
Other central nervous system anomalies . . . . .	3,790,474	859	23.8	23.7	23.8	21.6	24.9	27.2	*	181,570		
Heart malformations . . . . .	3,790,474	4,533	125.6	117.1	122.9	118.1	130.8	148.1	221.2	181,570		
Other circulatory/respiratory anomalies . . . . .	3,790,474	4,765	132.0	138.9	129.9	127.4	129.6	142.1	192.7	181,570		
Rectal atresia/stenosis . . . . .	3,790,474	360	10.0	11.1	9.3	10.2	10.3	8.5	*	181,570		
Tracheo-esophageal fistula/Esophageal atresia . . . . .	3,790,474	561	15.5	16.1	14.1	14.4	17.3	18.3	*	181,570		
Omphalocele/Gastroschisis . . . . .	3,790,474	872	24.2	40.9	31.4	17.2	14.7	21.2	*	181,570		
Other gastrointestinal anomalies . . . . .	3,790,474	1,078	29.9	31.2	31.1	27.1	30.0	30.3	50.4	181,570		
Malformed genitalia . . . . .	3,790,474	2,814	78.0	76.1	75.6	75.2	84.7	79.0	94.2	181,570		
Renal agenesis . . . . .	3,790,474	334	9.3	9.6	9.8	8.2	11.1	*	*	181,570		
Other urogenital anomalies . . . . .	3,790,474	4,243	117.6	108.3	111.2	123.9	122.6	119.9	102.9	181,570		
Cleft lip/palate . . . . .	3,790,474	3,140	87.0	86.7	86.1	87.0	84.3	91.7	124.8	181,570		
Polydactyly/Syndactyly/Adactyly . . . . .	3,790,474	3,123	86.5	117.3	94.4	79.4	70.8	75.1	96.4	181,570		
Club foot . . . . .	3,790,474	2,084	57.7	61.2	58.1	57.0	56.6	57.8	50.4	181,570		
Diaphragmatic hernia . . . . .	3,790,474	427	11.8	12.6	11.4	11.8	13.0	9.5	*	181,570		
Other musculoskeletal/integumental anomalies . . . . .	3,790,474	7,076	196.1	199.7	189.3	192.0	200.7	214.0	208.1	181,570		
Down's syndrome . . . . .	3,790,474	1,788	49.5	29.8	30.7	37.0	56.8	122.7	374.5	181,570		
Other chromosomal anomalies . . . . .	3,790,474	1,734	48.0	45.9	48.2	41.3	45.4	70.5	129.2	181,570		
<b>White</b>												
Anencephalus . . . . .	3,001,528	565	19.8	26.1	21.0	19.3	18.0	15.3	*	145,359		
Spina bifida/Meningocele . . . . .	3,001,528	775	27.1	37.7	29.9	24.0	23.3	24.3	*	145,359		
Hydrocephalus . . . . .	3,001,528	813	28.5	38.0	29.4	26.9	23.3	31.1	*	145,359		
Microcephalus . . . . .	3,001,528	240	8.4	11.2	10.4	7.2	5.5	*	*	145,359		
Other central nervous system anomalies . . . . .	3,001,528	678	23.7	24.3	24.6	21.2	24.1	25.6	*	145,359		
Heart malformations . . . . .	3,001,528	3,648	127.7	118.3	123.4	117.8	134.5	154.7	245.6	145,359		
Other circulatory/respiratory anomalies . . . . .	3,001,528	3,861	135.2	153.1	135.1	129.1	128.9	142.3	188.3	145,359		
Rectal atresia/stenosis . . . . .	3,001,528	297	10.4	12.4	10.1	10.6	10.3	8.9	*	145,359		
Tracheo-esophageal fistula/Esophageal atresia . . . . .	3,001,528	490	17.2	18.4	16.1	15.6	18.5	21.3	*	145,359		
Omphalocele/Gastroschisis . . . . .	3,001,528	687	24.1	48.9	32.1	16.2	13.3	20.9	*	145,359		
Other gastrointestinal anomalies . . . . .	3,001,528	865	30.3	32.1	32.3	26.5	30.5	32.0	*	145,359		
Malformed genitalia . . . . .	3,001,528	2,387	83.6	82.8	82.7	80.0	91.2	78.4	95.5	145,359		
Renal agenesis . . . . .	3,001,528	273	9.6	10.0	10.8	8.3	11.3	*	*	145,359		
Other urogenital anomalies . . . . .	3,001,528	3,703	129.6	122.9	122.0	135.4	135.3	130.0	106.4	145,359		
Cleft lip/palate . . . . .	3,001,528	2,717	95.1	104.9	97.2	93.5	87.9	94.2	139.2	145,359		
Polydactyly/Syndactyly/Adactyly . . . . .	3,001,528	1,712	59.9	70.6	61.9	57.0	55.2	59.2	84.6	145,359		
Club foot . . . . .	3,001,528	1,833	64.2	72.2	64.8	63.8	61.2	61.8	57.3	145,359		
Diaphragmatic hernia . . . . .	3,001,528	361	12.6	12.4	12.4	12.7	14.1	9.8	*	145,359		
Other musculoskeletal/integumental anomalies . . . . .	3,001,528	5,742	201.0	207.9	193.1	198.2	203.5	219.5	210.2	145,359		
Down's syndrome . . . . .	3,001,528	1,576	55.2	35.2	33.9	40.0	62.6	130.8	414.9	145,359		
Other chromosomal anomalies . . . . .	3,001,528	1,347	47.2	43.9	47.1	40.2	44.9	70.3	136.5	145,359		

See footnotes at end of table.

**Table 17. Live births with selected congenital anomalies and rates for selected congenital anomalies, by age and race of mother: Total of 48 reporting States and the District of Columbia, 1991—Con.**

[Rates are number of live births with specified congenital anomaly per 100,000 live births in specified group]

Congenital anomaly and race of mother	All births <sup>1</sup>	Congenital anomaly reported	All ages	Age of mother						Not stated
				Under 20 years	20–24 years	25–29 years	30–34 years	35–39 years	40–49 years	
Black	Number			Rate						Number
Anencephalus . . . . .	619,865	73	12.4	*	12.0	15.2	*	*	*	29,594
Spina bifida/Meningocele . . . . .	619,865	107	18.1	18.4	14.5	15.9	28.9	*	*	29,594
Hydrocephalus . . . . .	619,865	135	22.9	23.4	21.8	18.1	*	*	*	29,594
Microcephalus . . . . .	619,865	55	9.3	*	*	*	*	*	*	29,594
Other central nervous system anomalies . . . . .	619,865	138	23.4	19.9	20.3	27.5	31.4	*	*	29,594
Heart malformations . . . . .	619,865	726	123.0	117.8	121.6	125.7	123.0	144.3	*	29,594
Other circulatory/respiratory anomalies . . . . .	619,865	667	113.0	104.3	105.0	111.3	135.1	131.1	*	29,594
Rectal atresia/stenosis . . . . .	619,865	46	7.8	*	*	*	*	*	*	29,594
Tracheo-esophageal fistula/Esophageal atresia . . . . .	619,865	51	8.6	*	*	*	*	*	*	29,594
Omphalocele/Gastroschisis . . . . .	619,865	158	26.8	23.4	30.1	25.3	26.5	*	*	29,594
Other gastrointestinal anomalies . . . . .	619,865	178	30.2	29.1	28.6	34.0	32.6	*	*	29,594
Malformed genitalia . . . . .	619,865	333	56.4	63.1	49.9	47.7	55.5	108.2	*	29,594
Renal agenesis . . . . .	619,865	48	8.1	*	*	*	*	*	*	29,594
Other urogenital anomalies . . . . .	619,865	412	69.8	75.9	69.1	67.2	59.1	85.2	*	29,594
Cleft lip/palate . . . . .	619,865	244	41.3	44.0	37.9	37.6	49.4	*	*	29,594
Polydactyly/Syndactyly/Adactyly . . . . .	619,865	1,350	228.7	227.7	230.7	237.7	213.5	219.7	*	29,594
Club foot . . . . .	619,865	205	34.7	38.3	35.9	28.9	35.0	*	*	29,594
Diaphragmatic hernia . . . . .	619,865	48	8.1	*	*	*	*	*	*	29,594
Other musculoskeletal/integumental . . . . .	619,865	992	168.1	168.1	168.9	162.5	178.5	170.5	*	29,594
Down's syndrome . . . . .	619,865	151	25.6	18.4	21.8	20.2	24.1	82.0	*	29,594
Other chromosomal anomalies . . . . .	619,865	231	39.1	36.2	36.9	36.8	39.8	*	*	29,594

<sup>1</sup>Total number of births to residents of areas reporting specified congenital anomaly.<sup>2</sup>Includes races other than white and black.

NOTE: Excludes data for New Mexico and New York, which did not require reporting of congenital anomalies.

## Technical notes

### Source of data

Data shown in this report are based on 100 percent of the birth certificates in all States and the District of Columbia. The data are provided to the National Center for Health Statistics through the Vital Statistics Cooperative Program. Information in this report on selected maternal and infant health characteristics was derived from items on the 1989 revision of the U.S. Standard Certificate of Live Birth, shown in figure 1.

### Race of mother

Birth data are tabulated by the race of the mother as reported directly on the birth certificate. If race of mother was not stated, it was imputed as that of the father, if known. If neither race was stated, race of mother was imputed as the race of the mother on the preceding record with known race.

## Definitions of medical terms

The following definitions are adapted and abbreviated from a set of definitions compiled by a committee of Federal and State health statistics officials for the Association for Vital Records and Health Statistics (63).

### Medical risk factors for this pregnancy

**Anemia**—Hemoglobin level of less than 10.0 g/dL during pregnancy, or a hematocrit of less than 30 percent during pregnancy.

**Cardiac disease**—Disease of the heart.

**Acute or chronic lung disease**—Disease of the lungs during pregnancy.

**Diabetes**—Metabolic disorder characterized by excessive discharge of urine and persistent thirst; includes juvenile onset, adult onset, and gestational diabetes during pregnancy.

**Genital herpes**—Infection of the skin of the genital area by herpes simplex virus.

**Hydramnios/Oligohydramnios**—Any noticeable excess (hydramnios) or lack (oligohydramnios) of amniotic fluid.

**Hemoglobinopathy**—A blood disorder caused by alteration in the genetically determined molecular structure of hemoglobin (for example, sickle cell anemia).

**Hypertension, chronic**—Blood pressure persistently greater than 140/90, diagnosed prior to onset of pregnancy or before the 20th week of gestation.

**Hypertension, pregnancy-associated**—An increase in blood pressure of at least 30 mm Hg systolic or 15 mm Hg diastolic on two measurements taken 6 hours apart after the 20th week of gestation.

**Eclampsia**—The occurrence of convulsions and/or coma unrelated to other cerebral conditions in women with signs and symptoms of preeclampsia.

<p><b>38a. MEDICAL RISK FACTORS FOR THIS PREGNANCY</b> (Check all that apply)</p> <p>Anemia (Hct. &lt;30/Hgb. &lt;10) ..... 01 <input type="checkbox"/></p> <p>Cardiac disease ..... 02 <input type="checkbox"/></p> <p>Acute or chronic lung disease ..... 03 <input type="checkbox"/></p> <p>Diabetes ..... 04 <input type="checkbox"/></p> <p>Genital herpes ..... 05 <input type="checkbox"/></p> <p>Hydramnios/Oligohydramnios ..... 06 <input type="checkbox"/></p> <p>Hemoglobinopathy ..... 07 <input type="checkbox"/></p> <p>Hypertension, chronic ..... 08 <input type="checkbox"/></p> <p>Hypertension, pregnancy-associated ..... 09 <input type="checkbox"/></p> <p>Eclampsia ..... 10 <input type="checkbox"/></p> <p>Incompetent cervix ..... 11 <input type="checkbox"/></p> <p>Previous infant 4000+ grams ..... 12 <input type="checkbox"/></p> <p>Previous preterm or small-for-gestational-age infant ..... 13 <input type="checkbox"/></p> <p>Renal disease ..... 14 <input type="checkbox"/></p> <p>Rh sensitization ..... 15 <input type="checkbox"/></p> <p>Uterine bleeding ..... 16 <input type="checkbox"/></p> <p>None ..... 00 <input type="checkbox"/></p> <p>Other ..... 17 <input type="checkbox"/></p> <p>(Specify)</p>	<p><b>40. COMPLICATIONS OF LABOR AND/OR DELIVERY</b> (Check all that apply)</p> <p>Ferrie (&gt;100°F. or 38°C.) ..... 01 <input type="checkbox"/></p> <p>Meconium, moderate/heavy ..... 02 <input type="checkbox"/></p> <p>Premature rupture of membrane (&gt;12 hours) ..... 03 <input type="checkbox"/></p> <p>Abruptio placenta ..... 04 <input type="checkbox"/></p> <p>Placenta previa ..... 05 <input type="checkbox"/></p> <p>Other excessive bleeding ..... 06 <input type="checkbox"/></p> <p>Seizures during labor ..... 07 <input type="checkbox"/></p> <p>Precipitous labor (&lt;3 hours) ..... 08 <input type="checkbox"/></p> <p>Prolonged labor (&gt;20 hours) ..... 09 <input type="checkbox"/></p> <p>Dysfunctional labor ..... 10 <input type="checkbox"/></p> <p>Breech/Malpresentation ..... 11 <input type="checkbox"/></p> <p>Cephalopelvic disproportion ..... 12 <input type="checkbox"/></p> <p>Cord prolapse ..... 13 <input type="checkbox"/></p> <p>Anesthetic complications ..... 14 <input type="checkbox"/></p> <p>Fetal distress ..... 15 <input type="checkbox"/></p> <p>None ..... 00 <input type="checkbox"/></p> <p>Other ..... 16 <input type="checkbox"/></p> <p>(Specify)</p>	<p><b>43. CONGENITAL ANOMALIES OF CHILD</b> (Check all that apply)</p> <p>Anencephalus ..... 01 <input type="checkbox"/></p> <p>Spina bifida/Meningocele ..... 02 <input type="checkbox"/></p> <p>Hydrocephalus ..... 03 <input type="checkbox"/></p> <p>Microcephalus ..... 04 <input type="checkbox"/></p> <p>Other central nervous system anomalies (Specify) ..... 05 <input type="checkbox"/></p> <p>Heart malformations ..... 06 <input type="checkbox"/></p> <p>Other circulatory/respiratory anomalies (Specify) ..... 07 <input type="checkbox"/></p> <p>Rectal atresia/stenosis ..... 08 <input type="checkbox"/></p> <p>Tracheo-esophageal fistula/Esophageal atresia ..... 09 <input type="checkbox"/></p> <p>Omphalocele/Gastroschisis ..... 10 <input type="checkbox"/></p> <p>Other gastrointestinal anomalies (Specify) ..... 11 <input type="checkbox"/></p> <p>Malformed genitalia ..... 12 <input type="checkbox"/></p> <p>Renal agenesis ..... 13 <input type="checkbox"/></p> <p>Other urogenital anomalies (Specify) ..... 14 <input type="checkbox"/></p> <p>Cleft lip/palate ..... 15 <input type="checkbox"/></p> <p>Polydactyly/Syndactyly/Adactyly ..... 16 <input type="checkbox"/></p> <p>Club foot ..... 17 <input type="checkbox"/></p> <p>Diaphragmatic hernia ..... 18 <input type="checkbox"/></p> <p>Other musculoskeletal/integumental anomalies (Specify) ..... 19 <input type="checkbox"/></p> <p>Down's syndrome ..... 20 <input type="checkbox"/></p> <p>Other chromosomal anomalies (Specify) ..... 21 <input type="checkbox"/></p> <p>None ..... 00 <input type="checkbox"/></p> <p>Other ..... 22 <input type="checkbox"/></p> <p>(Specify)</p>
<p><b>38b. OTHER RISK FACTORS FOR THIS PREGNANCY</b> (Complete all items)</p> <p>Tobacco use during pregnancy ..... Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Average number cigarettes per day _____</p> <p>Alcohol use during pregnancy ..... Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p>Average number drinks per week _____</p> <p>Weight gained during pregnancy _____ lbs.</p>	<p><b>41. METHOD OF DELIVERY</b> (Check all that apply)</p> <p>Vaginal ..... 01 <input type="checkbox"/></p> <p>Vaginal birth after previous C-section ..... 02 <input type="checkbox"/></p> <p>Primary C-section ..... 03 <input type="checkbox"/></p> <p>Repeat C-section ..... 04 <input type="checkbox"/></p> <p>Forceps ..... 05 <input type="checkbox"/></p> <p>Vacuum ..... 06 <input type="checkbox"/></p>	<p><b>42. ABNORMAL CONDITIONS OF THE NEWBORN</b> (Check all that apply)</p> <p>Anemia (Hct. &lt;39/Hgb. &lt;13) ..... 01 <input type="checkbox"/></p> <p>Birth injury ..... 02 <input type="checkbox"/></p> <p>Fetal alcohol syndrome ..... 03 <input type="checkbox"/></p> <p>Hyaline membrane disease/RDS ..... 04 <input type="checkbox"/></p> <p>Meconium aspiration syndrome ..... 05 <input type="checkbox"/></p> <p>Assisted ventilation &lt;30 min ..... 06 <input type="checkbox"/></p> <p>Assisted ventilation ≥30 min ..... 07 <input type="checkbox"/></p> <p>Seizures ..... 08 <input type="checkbox"/></p> <p>None ..... 00 <input type="checkbox"/></p> <p>Other ..... 09 <input type="checkbox"/></p> <p>(Specify)</p>
<p><b>39. OBSTETRIC PROCEDURES</b> (Check all that apply)</p> <p>Amniocentesis ..... 01 <input type="checkbox"/></p> <p>Electronic fetal monitoring ..... 02 <input type="checkbox"/></p> <p>Induction of labor ..... 03 <input type="checkbox"/></p> <p>Stimulation of labor ..... 04 <input type="checkbox"/></p> <p>Tocolysis ..... 05 <input type="checkbox"/></p> <p>Ultrasound ..... 06 <input type="checkbox"/></p> <p>None ..... 00 <input type="checkbox"/></p> <p>Other ..... 07 <input type="checkbox"/></p> <p>(Specify)</p>		

Figure 1. New maternal and infant health items from the 1989 revision of the U.S. Standard Certificate of Live Birth

*Incompetent cervix*—Characterized by painless dilation of the cervix in the second trimester or early in the third trimester of pregnancy, with premature expulsion of membranes through the cervix and ballooning of the membranes into the vagina, followed by rupture of the membranes and subsequent expulsion of the fetus.

*Previous infant 4,000+ grams*—The birthweight of a previous live-born child was over 4,000 grams (8 pounds 14 ounces).

*Previous preterm or small-for-gestational-age infant*—Previous birth of an infant prior to term (before 37 completed weeks of gestation), or of an infant weighing less than the 10th percentile for gestational age using a standard weight-for-age chart.

*Renal disease*—Kidney disease.

*Rh Sensitization*—The process or state of becoming sensitized to the Rh factor as when an Rh-negative woman is pregnant with an Rh-positive fetus.

*Uterine bleeding*—Any clinically significant bleeding during the pregnancy, taking into consideration the stage of pregnancy; any second or third trimester bleeding of the uterus prior to the onset of labor.

### Obstetric procedures

*Amniocentesis*—Surgical transabdominal perforation of the uterus to obtain amniotic fluid to be used in the detection of genetic disorders, fetal abnormalities, and fetal lung maturity.

*Electronic fetal monitoring*—Monitoring with external devices applied to the maternal abdomen or with internal devices with an electrode attached to the fetal scalp and a catheter through the cervix into the uterus, to detect and record fetal heart tones and uterine contractions.

*Induction of labor*—The initiation of uterine contractions before the spontaneous onset of labor by medical and/or surgical means for the purpose of delivery.

*Stimulation of labor*—Augmentation of previously established labor by use of oxytocin.

*Tocolysis*—Use of medications to inhibit preterm uterine contractions to extend the length of pregnancy and, therefore, avoid a preterm birth.

*Ultrasound*—Visualization of the fetus and the placenta by means of sound waves.

### Complications of labor and/or delivery

*Febrile*—A fever greater than 100 degrees F or 38 C occurring during labor and/or delivery.

*Meconium, moderate/heavy*—Meconium consists of undigested debris from swallowed amniotic fluid, various products of secretion, and excretion and shedding by the gastrointestinal tract; moderate to heavy amounts of meconium in the amniotic fluid noted during labor and/or delivery.

*Premature rupture of membranes (more than 12 hours)*—Rupture of the membranes at any time during pregnancy and more than 12 hours before the onset of labor.

*Abruptio placenta*—Premature separation of a normally implanted placenta from the uterus.

*Placenta previa*—Implantation of the placenta over or near the internal opening of the cervix.

*Other excessive bleeding*—The loss of a significant amount of blood from conditions other than abruptio placenta or placenta previa.

*Seizures during labor*—Maternal seizures occurring during labor from any cause.

*Precipitous labor (less than 3 hours)*—Extremely rapid labor and delivery lasting less than 3 hours.

*Prolonged labor (more than 20 hours)*—Abnormally slow progress of labor lasting more than 20 hours.

*Dysfunctional labor*—Failure to progress in a normal pattern of labor.

*Breech/Malpresentation*—At birth, the presentation of the fetal buttocks rather than the head, or other malpresentation.

*Cephalopelvic disproportion*—The relationship of the size, presentation, and position of the fetal head to the maternal pelvis, which prevents dilation of the cervix and/or descent of the fetal head.

*Cord prolapse*—Premature expulsion of the umbilical cord in labor before the fetus is delivered.

*Anesthetic complications*—Any complication during labor and/or delivery brought on by an anesthetic agent or agents.

*Fetal distress*—Signs indicating fetal hypoxia (deficiency in amount of oxygen reaching fetal tissues).

### Abnormal conditions of the newborn

*Anemia*—Hemoglobin level of less than 13.0 g/dL, or a hematocrit of less than 39 percent.

*Birth injury*—Impairment of the infant's body function or structure due to adverse influences that occurred at birth.

*Fetal alcohol syndrome*—A syndrome of altered prenatal growth and development occurring in infants born of women who consumed excessive amounts of alcohol during pregnancy.

*Hyaline membrane disease/RDS*—A disorder primarily of prematurity, manifested clinically by respiratory distress and pathologically by pulmonary hyaline membranes and incomplete expansion of the lungs at birth.

*Meconium aspiration syndrome*—Aspiration of meconium by the fetus or newborn, affecting the lower respiratory system.

*Assisted ventilation (less than 30 minutes)*—A mechanical method of assisting respiration for newborns with respiratory failure.

*Assisted ventilation (30 minutes or more)*—Newborn placed on assisted ventilation for 30 minutes or longer.

*Seizures*—A seizure of any etiology.

### Congenital anomalies of child

*Anencephalus*—Absence of the cerebral hemispheres.

*Spina bifida/Meningocele*—Developmental anomaly characterized by defective closure of the bony encasement of the spinal cord, through which the cord and meninges may or may not protrude.

*Hydrocephalus*—Excessive accumulation of cerebrospinal fluid within the ventricles of the brain with consequent enlargement of the cranium.

*Microcephalus*—A significantly small head.

*Other central nervous system anomalies*—Other specified anomalies of the brain, spinal cord, and nervous system.

*Heart malformations*—Congenital anomalies of the heart.

**Other circulatory/respiratory anomalies**—Other specified anomalies of the circulatory and respiratory systems.

**Rectal atresia/stenosis**—Congenital absence, closure, or narrowing of the rectum.

**Tracheo-esophageal fistula/Esophageal atresia**—An abnormal passage between the trachea and the esophagus; esophageal atresia is the congenital absence or closure of the esophagus.

**Omphalocele/Gastroschisis**—An omphalocele is a protrusion of variable amounts of abdominal viscera from a midline defect at the base of the umbilicus. In gastroschisis, the abdominal viscera protrude through an abdominal wall defect, usually on the right side of the umbilical cord insertion.

**Other gastrointestinal anomalies**—Other specified congenital anomalies of the gastrointestinal system.

**Malformed genitalia**—Congenital anomalies of the reproductive organs.

**Renal agenesis**—One or both kidneys are completely absent.

**Other urogenital anomalies**—Other specified congenital anomalies of the organs concerned in the production and excretion of urine, together with organs of reproduction.

**Cleft lip/palate**—Cleft lip is a fissure or elongated opening of the lip; cleft palate is a fissure in the roof of the mouth. These are failures of embryonic development.

**Polydactyly/Syndactyly/Adactyly**—Polydactyly is the presence of more than

five digits on hands and/or feet; syndactyly is having fused or webbed fingers and/or toes; adactyly is the absence of fingers and/or toes.

**Club foot**—Deformities of the foot, which is twisted out of shape or position.

**Diaphragmatic hernia**—Herniation of the abdominal contents through the diaphragm into the thoracic cavity usually resulting in respiratory distress.

**Other musculoskeletal/integumental anomalies**—Other specified congenital anomalies of the muscles, skeleton, or skin.

**Down's syndrome**—The most common chromosomal defect with most cases resulting from an extra chromosome (trisomy 21).

**Other chromosomal anomalies**—All other chromosomal aberrations.

### Method of delivery

Several rates are computed for method of delivery. The overall cesarean section rate or *total cesarean* rate is computed as the percent of all births that were delivered by cesarean section. The *primary cesarean* rate is a measure that relates the number of women having a primary cesarean delivery to all women giving birth who have never had a cesarean delivery. The denominator for this rate includes all births less those with method of delivery classified as repeat cesarean, *vaginal birth after previous cesarean*, or method not stated. The rate

for vaginal birth after previous cesarean (VBAC) delivery is computed by relating all VBAC deliveries to the sum of VBAC and repeat cesarean deliveries, that is, to women with a previous cesarean section.

### Computation of percents, percent distributions, and medians

Births with unknown medical and life-style risk factors of pregnancy and birth, obstetric procedures, abnormal conditions and congenital anomalies of infant, and method of delivery were subtracted from the figures for total births that were used as denominators before percents, percent distributions, and medians were computed. Computations of median weight gain were based on ungrouped data. An asterisk is shown in place of any derived statistic based on fewer than 20 births in the numerator or denominator.

### Random variation

Although the birth data in this report are not subject to sampling error, they may be affected by random variation in the number of births involved. Many of the checkbox items on the birth certificate refer to extremely rare events. When the number of events is small, perhaps less than 100, and the probability of such an event is small, considerable caution must be observed in interpreting the data.

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