

## SOURCES OF DATA

Information on births, deaths, and fetal deaths is compiled from the original documents filed with the Arizona Department of Health Services' Office of Vital Records and from transcripts of original birth and death certificates filed in other states but affecting Arizona residents (copies of certificates for births, deaths, and fetal deaths occurring to Arizona residents outside the United States are not sent to Arizona).

Information on induced terminations of pregnancy (abortions) performed on Arizona women is compiled from reports sent to the Arizona Department of Health Services by facilities within but only rarely outside the state.

Pregnancies are the sum of live births, spontaneous terminations of pregnancy (fetal deaths or stillbirths), and abortions.

Arizona has no central registry for marriage and divorce records. Statistics are limited to counts of marriages and divorces reported monthly by the Clerk of the Superior Court in each county in which the marriage or divorce occurred. These reports contain no demographic data on the people marrying or divorcing.

Data on morbidity, levels of disease and disability in the population, are obtained for certain infectious diseases that must be reported by law. The ADHS Epidemiology and Disease Control Services conduct surveillance and monitoring of these reportable diseases and provided data for the morbidity sections in this report.

All State-licensed nonfederal hospitals in Arizona are required to submit uniform patient reports to the Arizona Department of Health Services every six months. Beginning in 2010 the psychiatric hospitals also are subject to reporting requirements. The Section of Cost Reporting and Discharge Data Review in the Bureau of Public Health Statistics collect the information about both hospital inpatient discharges and emergency room visits.

Population denominators for Arizona residents, used to calculate rates for 1980, 1990, 2000 and 2010, are census enumerations from the U.S. Census Bureau. Population denominators for the intercensal years utilize the best available data sources. They are described in detail at <http://www.azdhs.gov/plan/menu/info/pd.htm>

Our website at <http://www.azdhs.gov/plan/index.htm> provides additional reports and studies, as well as links to other sources of information on topics such as morbidity from certain diseases or population composition.

## DEFINITIONS

### Urban and Rural Areas

For the purpose of this report, the following are Arizona's **urban areas**: Phoenix-Scottsdale-Mesa Metropolitan Statistical Area (Maricopa and Pinal Counties), Tucson Metropolitan Statistical Area (Pima County), and Yuma Metropolitan Statistical Area (Yuma County). The remaining counties (Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Santa Cruz, and Yavapai) comprise Arizona's **rural areas**. The 1994

list of Metropolitan Statistical Areas and their component counties for the United States is available at:

<http://www.cdc.gov//data/dvs/mcd/qeog94msa.txt>

### Race/Ethnicity

Racial/ethnic designations used in this report are White non-Hispanic, Hispanic or Latino, Black or African-American, American Indian or Alaska Native (including Aleut and Eskimo), and Asian or Pacific Islander (including Hawaiian). In some of the trend tables the designation "Other" includes Asian and Pacific Islanders for years prior to 2012. Non-White Hispanics are included in their appropriate race groups.

The American Indian figures include those living both on and off the reservation.

The race/ethnicity of mother, father, or decedent is as stated on the certificate.

This year's report includes a new method of combining, or bridging, race/ethnicity for individuals identified as both Hispanic and one other race. This new method allows us to match the categories of race/ethnicity used by the Arizona Department of Administration to create the population projections used as denominators in this report, as well as to create more meaningful racial/ethnic categories by placing individuals identified with both race and ethnicity into the group representing a smaller proportion of Arizona's population. In previous reports, individuals who identified as both Hispanic and any other race were identified as Hispanic. This year, individuals identified as Hispanic plus another race are include in the racial/ethnic category with the lowest population in the state. This approach to bridging is defined as the smallest group deterministic whole method. In this method, individuals identified as both White and Hispanic are classified as Hispanic, where individuals identified as Hispanic and any other race (Black or African American, American Indian or Alaska Native, and Asian or Pacific Islander) are categorized by their racial identification. Race/ethnicity was bridged in the birth, death, and fetal death data, but was left un-bridged in the abortion and HDD data to allow comparison with other reports using differing racial/ethnic categorization.

### Rates

Rate is a measure of the frequency of some event in relation to a unit of population during a specified time period such as a year; events in the numerator of the year occur to individuals in the denominator. Rates express the likelihood (or risk) of the event in the specified population during a particular time and are generally expressed as units of population in the denominator (per 1,000, 10,000, 100,000 and so forth).

Many rates shown in this report are based on a small population, a small number of events, or both. Rates based on small numbers are unreliable and thus should be viewed with caution. Rates for many counties or Arizona's ethnic minorities also vary considerably from year to year due to small populations and few events. Finally, the difference in methods used to calculate population denominators can lead to variation in rates that do not accurately reflect changes in the number of events occurring in the population. We recommend

analyzing the underlying counts for each event before interpreting variation in rates from 2011 to 2012.

## Terms Related to Reproductive Health

**Abortion Rate** - Number of reported abortions to females of all ages during a calendar year per 1,000 females of childbearing age (15-44 years).

**Abortion Ratio** - Number of abortions reported during a period per 1,000 live births occurring during the same period.

**Birth or Live Birth** - The complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy which, after such expulsion or extraction, breathes or shows any other evidence of life such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles, whether or not the umbilical cord has been cut or the placenta is attached. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.

**Birth rate** - Number of live births during a calendar year per 1,000 population.

**Birth weight** - The weight of a neonate determined immediately after delivery or as soon thereafter as possible.

**Fetal death** - Death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy and which is not an induced termination of pregnancy. The death is indicated by the fact that, after such expulsion or extraction, the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord or definite movement of voluntary muscles. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.

**Fetal death rate** - Number of fetal deaths at 20 or more weeks of gestation per 1,000 live births + fetal deaths.

**Fertility rate (general)** - Total number of live births to women of all ages during a calendar year per 1,000 women of childbearing age (15-44 years old).

**Fertility rate (total)** - The sum of age-specific birth rates of women at each age group 10-14 through 45-49. Since five-year age groups are used, the sum is multiplied by five.

**Infant death** - Any death at any time from birth up to, but not including, the first year of age (364 days, 23 hours, 59 minutes from the moment of birth).

**Infant mortality rate** - Number of infant deaths per 1,000 live births.

**Low-birthweight** - Any neonate weighing less than 2,500 grams at birth (less than 5 pounds 8 ounces).

**Maternal mortality rate** - Number of deaths attributed to maternal conditions (i.e. related to or aggravated by pregnancy or its management) per 100,000 live births.

**Neonatal death** - Death of a live born neonate before the neonate becomes 28 days old (up to and including 27 days, 23 hours, 59 minutes from the moment of birth).

**Neonatal mortality rate** - Number of neonatal deaths per 1,000 live births.

**Perinatal mortality rate** - The sum of infant deaths of less than 7 days and fetal deaths with a stated or presumed period of gestation of 28 weeks or more per 1,000 live births + fetal deaths of 28 or more weeks of gestation.

**Postneonatal death** - Any death of a live born infant at least 28 days of age but less than one year of age.

**Postneonatal mortality rate** - Number of postneonatal deaths per 1,000 live births.

**Post term** - Any neonate whose birth occurs from the beginning of the first day (295<sup>th</sup> day) of the 43<sup>rd</sup> week following onset of the last menstrual period.

**Pregnancy rate** - The sum of live births, fetal deaths, and induced terminations of pregnancy per 1,000 women of childbearing age (15-44 years old).

**Preterm** - Any neonate whose birth occurs through the end of the last day of the 37<sup>th</sup> week (259<sup>th</sup> day), following onset of the last menstrual period.

**Term** - Any neonate whose birth occurs from the beginning of the first day (260<sup>th</sup> day) of the 38<sup>th</sup> week, through the end of the last of the 42<sup>nd</sup> week (294<sup>th</sup> day), following onset of the last menstrual period.

**Very Low-Birthweight** - Any neonate whose weight at birth is 1,500 grams or less (less than 3 pounds 5 ounces).

## Medical Terms Used on the Birth Certificate

### Medical risk factors for this pregnancy

**Anemia** - Hemoglobin level of less than 10.0 g/dL during pregnancy, or 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.

**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 though cervix and ballooning of the membranes into vagina, followed by rupture of the membrane and subsequent expulsion of the fetus.

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

**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 or third trimester bleeding of the uterus prior to the onset of labor.

### Complications of labor and/or delivery

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

**Meconium, moderate/heavy** - Meconium consists of undigested debris from swallowed amniotic fluid, various products of secretion 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 membranes at any time during pregnancy and more than 12 hours before the onset of labor.

**Abruptio placenta** - Premature separation of 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 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 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 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 the 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.

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

## Diagnosis and Procedure Codes Used to Analyze the Hospital Discharge Data

Diagnostic groupings and code numbers used in Chapter 4 and Chapter 7 are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM).

The tabulations of the hospital inpatient data by first-listed diagnosis and all-listed procedures utilize the diagnostic categories available respectively at <http://www.azdhs.gov/plan/hip/cat/icd9primary.xls> and <http://www.azdhs.gov/plan/hip/cat/icd9procedure.xls>.

The ICD-9-CM diagnostic categories used to identify specific mental disorders are available online at <http://www.azdhs.gov/plan/hip/for/mental/2007/mental107.xls>

### Terms Related to Mortality

The most common, and perhaps the most valuable, measure of the likelihood (or risk) of death in the specified population during a particular time is the **crude death rate**. It is computed as the number of deaths per 1,000 or 100,000 population.

**Age-adjusted mortality rates** - Because mortality from most causes of death occurs predominately among the elderly, a population group with a larger proportion of older persons would have a higher mortality rate. The "age-adjustment" removes the effect of the age differences among sub-populations (or in the same population over time) by placing them all in a population with a standard age distribution. All age-adjusted mortality rates in this report were computed by the direct method, that is by weighting the age-specific rates for a given year by the age distribution of a standard population. The weighted age-specific rates are then added to produce the summary rate for all ages combined. Beginning with the 2000 data year, a new population standard for the age adjustment of mortality rates has replaced the standard based on the 1940 population and used since 1943. The new standard uses the age composition of the 2000 U.S. projected population. The standard is expressed in terms of a "standard million": the relative distribution of the 2000 population of the United States totaling 1 million in 10-year age groups:

Age group	2012 population	2012 deaths	Age-specific rates in 2012	2000 standard	Age-adjusted rate for 2012
A	B	C	D (C/B)*100000	E	F D*E
<1	87,184	495	567.8	.013818	7.8
1-4	356,828	118	33.1	.055317	1.8
5-14	914,058	129	14.1	.145565	2.1
15-24	920,881	646	70.2	.138646	9.7
25-34	865,606	1,033	119.3	.135573	16.2
35-44	828,680	1,441	173.9	.162613	28.3
45-54	836,599	3,331	398.2	.134834	53.7
55-64	748,230	6,299	841.9	.087247	73.4
65-74	538,719	8,672	1609.7	.066037	106.3
75-84	293,328	12,100	4125.1	.044842	185.0
85+	108,457	14,186	13079.8	.015508	202.8
All ages	6,498,570	48,459		TOTAL	<b>Σ = 687.2</b>

The age-adjusted mortality rates should be viewed as relative indexes rather than as actual measures of mortality risk. It is also important to note that age-adjusted rates can only be compared to other age-adjusted rates that use the same population standard.

In this report, all age-adjusted mortality rates are based on the 2000 standard, and they CANNOT BE compared to rates using the 1940 standard population.

**Age-specific mortality** - Number of deaths in a specific age group during a calendar year.

**Alcohol-induced deaths** - This category was expanded in 2003. Causes of death attributable to alcohol mortality include mental and behavioral disorders due to alcohol use, degeneration of nervous system due to alcohol use, alcoholic polyneuropathy, alcoholic cardiomyopathy, alcoholic gastritis, alcoholic liver disease, finding of alcohol in blood, accidental poisoning by and exposure to alcohol, intentional self-poisoning by alcohol, poisoning by alcohol, undetermined intent.

**Cause of death** - For the purpose of national mortality statistics, every death is attributed to one underlying condition, based on information reported on the death certificate and utilizing the international rules for selecting the underlying cause of death from the reported conditions.

**Cause-specific mortality** - Number of deaths from a specified cause during a calendar year.

**Classification of causes of death** - The cause of death used in this report is the underlying cause classified according to the *International Classification of Diseases (ICD)*. Beginning with the 2000 data year in Arizona (1999 nationally), a new revision of the International Classification of Diseases was implemented. The Tenth Revision (ICD-10) has replaced the Ninth Revision (ICD-9), which was in effect since 1979.

**Comparability ratios** - Comparability ratios are measures of comparison between ICD-9 and ICD-10. Any comparison of causes of mortality in Arizona before and after the implementation of ICD-10 needs to take into account the changes in statistical trends that can be attributed to changes in the classification system alone. Comparability ratio of 1.0 indicates that the same number of deaths would be assigned to a cause-of-death when ICD-9 or ICD-10 was used. Comparability-modified number of deaths and mortality rates are shown for the four causes of death for which the discontinuity in trend is substantial (influenza and pneumonia, Alzheimer's disease, nephritis, or septicemia).

**Drug-induced deaths** - This category was expanded in 2003. Causes of death attributable to drug-related mortality include mental and behavioral disorders due to psychoactive substance use, accidental poisoning by and exposure to drugs, suicide by drugs, homicide by drugs and poisoning by drugs, undetermined intent

**Firearm mortality** - Causes of death attributable to firearm mortality include accidental discharge of firearms, suicide by firearms, homicide by firearms, legal intervention involving discharge of firearms, terrorism involving firearms and discharge of firearms, undetermined intent.