THE DELAWARE VITAL STATISTICS SYSTEM

Statewide vital registration began in Delaware during 1861 as the result of a statute enacted in 1860 by the Delaware General Assembly. This statute authorized the Recorder of Deeds to record births and deaths in the three counties. However, the vital record registration statute was repealed in 1863 and not re-enacted until 1881. When re-enacted, vital records were once again filed with the Recorder of Deeds. This changed on July 1, 1913 with the establishment of the Bureau of Vital Statistics. Since 1913, birth, death, and marriage records have been filed with the Bureau of Vital Statistics (now the Office of Vital Statistics). In 1928, stillbirth records (fetal deaths) were added to the Delaware system and divorce records were added in 1936. Most recently, reports of induced termination of pregnancy were added to the system on January 1, 1997. The information contained on vital records and in this report serves as an important tool for health professionals by providing a picture of the general health of Delaware's population.

The current Delaware vital statistics system includes six types of vital events: births, deaths, marriages, divorces, fetal deaths, and induced terminations of pregnancy. Each type of record follows a different path before being filed with the State.

When a birth occurs, the physician, midwife, or other birth attendant is required to complete a birth certificate and file it with the central Vital Statistics office in Dover within 10 days, where it is registered, permanently filed and prepared for data entry. For hospital births, the medical records staff generally completes the birth certificate. The physician, attendant at birth, or hospital administrator signs the completed form before it is forwarded to the Vital Statistics office.

Although the physician is responsible for completing the cause of death section on the death certificate, the funeral director completes the remaining sections. It is the funeral director's responsibility to file the certificate with one of the county Vital Statistics offices within 72 hours of the death.

Fetal death certificates are required to be filed for any fetus which weighs at least 350 grams or, if the weight is unknown, reached at least 20 weeks of gestation. These certificates are handled in much the same way as death certificates, with the physician completing the cause of death section and the funeral director completing the remaining sections. These certificates are then filed with one of the county Vital Statistics offices.

When a couple decides to marry in Delaware, they provide one of the three county Clerks of Peace with the information needed to complete a marriage license. The couple then takes the license to an officiant. After performing the marriage, the officiant signs and dates the license and returns it to the Clerk of the Peace who forwards a copy to the Vital Statistics office.

The Family Court handles divorce and annulment certificates in Delaware. The Office of Vital Statistics in Dover receives copies of these certificates that are used for statistical purposes only. Copies of divorce decrees must be obtained from the Family Court in the county where the divorce was granted.

When an induced termination of pregnancy is performed in Delaware, a report is filed directly to the Delaware Health Statistics Center. Unlike most vital records, these reports contain no personal identifiers. The Center then codes the records and creates an electronic data file. The reports are filed for statistical purposes only and are shredded and discarded when all reports for the data year have been coded.

Copies of all vital records (except reports of induced terminations of pregnancy) are sent to the College of Urban Affairs and Public Policy at the University of Delaware for coding and entry in electronic format. Records with unknown or unlikely data are verified when possible by querying the original data provider. Querying is conducted by the Office of Vital Statistics and the Health Statistics Center. Computer files containing statistical data are sent to the Vital Statistics office in Dover for use by the Health Statistics Center to produce reports such as this one. Copies of these files are also sent to the National Center for Health Statistics to become part of a national database.

Since most analyses of vital events are based upon place of residence, rather than place of occurrence, the Office of Vital Statistics also receives copies of certificates for all Delaware resident births and deaths occurring in other states.

BASIC DEFINITIONS

The following definitions apply throughout this report:

AGE-ADJUSTED MORTALITY RATE (Direct Method) is a method used to eliminate differences caused by variations in age composition, to allow comparisons between populations and over time. More specifically, age-adjustment involves weighting age-specific death rates by standard population weights. The standard population used in this report is the 2000 U.S. population.

AGE-SPECIFIC MORTALITY RATE is the number of deaths for a specified age group per 100,000 population in the same age group.

AGE-SPECIFIC FERTILITY RATE is the number of resident live births to women in a specific age group (e.g., 20-24 years) per 1,000 women in the same age group.

ANNULMENT is the invalidation or voiding of a marriage that confers on the parties the status of never having been married to each other.

BIRTH COHORT consists of all children born during a specific period of time.

BIRTH WEIGHT is the first weight of the fetus or newborn obtained after birth. This weight should be measured within the first hour of life before significant postnatal weight loss has occurred.

CAUSE OF DEATH refers to deaths classified by cause according to the International Classification of Diseases, Ninth & Tenth Revisions, of the World Health Organization.

CRUDE BIRTH RATE is the total number of resident live births per 1,000 total population. It is generally used as a measure of population growth due to childbirth. Crude birth rates are not measures of fertility. When fertility is the topic of interest, general or age-specific fertility rates are more appropriate.

CRUDE MORTALITY RATE is expressed as the total number of deaths per 100,000 population. The crude rate is misleading if one wants to make comparisons between different populations when the age-race-sex distributions of the populations are not similar.

DEATH is the permanent disappearance of any evidence of life at any time after live birth.

DIVORCE is the final legal dissolution of a marriage.

EDUCATION is the highest level of formal education completed.

FETAL DEATH is a death prior to the complete expulsion or extraction from the mother of a product of conception, which weighs at least 350 grams or if weight is unknown, reached at least 20 weeks of gestation; 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.

FIVE-YEAR AVERAGE RATE is the number of vital events (births, infant deaths, etc.) that took place during a particular five-year period per 1,000 or 100,000 population (or other appropriate denominator).

GENERAL FERTILITY RATE is the total number of resident live births per 1,000 women of childbearing age (i.e., 15-44 years).

INTERNATIONAL CLASSIFICATION OF DISEASES, TENTH REVISION (IDC-10) is an internationally recognized system of processing, classifying, and presenting mortality statistics, implemented in 1999.

INDUCED TERMINATION OF PREGNANCY means the purposeful interruption of an intrauterine pregnancy with the intention other than to produce a live-born infant, and which does not result in a live birth. This definition excludes management of prolonged retention of products of conception following fetal death.

INFANT DEATH is the death of a live-born infant occurring during the first year of life.

INFANT MORTALITY RATE measures the risk of death during the first year of life. It relates the number of deaths under one year of age to the number of live births during the same time period. It is expressed as the number of infant deaths per 1,000 live births. Since it is not dependent on a population census or estimate, it can be computed for any area and time period for which the numbers of infant deaths and live births are available.

LIVE BIRTH is the complete expulsion or extraction from the 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 the 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.

LIVE BIRTH ORDER indicates the numeric relationship of a newborn child to other children born alive to the mother during previous deliveries.

LIVE BIRTH ORDER FERTILITY RATE is the number of resident live births of a specific live birth order (i.e., first born, second born, etc.) per 1,000 women 15-44 years of age.

LOW BIRTH WEIGHT BIRTH refers to a newborn weighing less than 2,500 grams (5 pounds, 8 ounces).

MARRIAGE is the legal union of persons of opposite sex.

MEAN is one of three statistics commonly used to describe the average score in a large data set (the other two are the median and mode). The mean is obtained by summing the scores in a data set and dividing the result by the total number of scores. It is the statistic typically chosen when scores tend to cluster toward the middle of a distribution of scores ranked in order from low to high.

MEDIAN is one of three statistics commonly used to describe the average score in a large data set (the other two are the mean and mode). It is the score that falls exactly in the middle of the entire distribution of scores ranked in order from low to high such that 50 percent of the scores fall above it and 50 percent of the scores fall below it. If the number of scores is even, a value halfway between the two scores nearest the middle is used. It is the statistic typically chosen when scores tend to cluster toward one end of the ranked distribution. For example, median age at death is often reported because there tends to be clustering in the older age groups in mortality data.

MODE is one of three statistics commonly used to describe the average score in a large data set (the other two are the median and mean). It is the most frequently occurring score or category in a data set. It is the statistic typically chosen when scores tend to cluster in more than one part of a distribution of scores ranked in order from low to high. It is also used for nominal variables (i.e., variables with categories that have no numerical meaning or specific logical order) such as cause-of-death. For example, the most frequent cause-of-death (i.e., the mode for the cause-of-death) is heart disease.

NEONATAL DEATH is the death of a live-born infant before the infant becomes 28 days old (up to and including 27 days, 23 hours, 59 minutes from the moment of birth).

NEONATAL MORTALITY RATE measures the risk of death before reaching 28 days of life. This rate relates the number of deaths to infants less than 28 days of age to the total number of live births. It is expressed as the number of neonatal deaths per 1,000 live births.

OCCURRENCE DATA refer to vital events reported by the place where the event actually occurred. When occurrence data are reported for Delaware, the numbers include only those events that took place in Delaware, regardless of the place of residence of the individuals involved. Marriages, divorces, and annulments are reported as occurrence data.

PLURALITY represents the number of siblings born as the result of a single pregnancy.

POSTNEONATAL DEATH is the death of a live-born infant of 28 days to 364 days of age.

POSTNEONATAL MORTALITY RATE measures the risk of death during the period from 28 to 364 days of age. It is expressed as the number of postneonatal deaths per 1,000 live births.

REPORTED PREGNANCY is a live birth, fetal death, or induced termination of pregnancy reported via the vital statistics system.

REPORTED PREGNANCY RATE is the total reported pregnancies (live births, fetal deaths, and induced terminations of pregnancy) per 1,000 women in a particular age group.

RESIDENCE DATA refer to vital events reported by the usual place of residence for the persons to whom the events took place. When residence data are reported for Delaware, the numbers include events taking place to Delaware residents in and outside of Delaware. For births and fetal deaths, residence is defined as the mother's usual place of residence. For deaths, residence is defined as the decedent's usual place of residence. Unless otherwise noted, the numbers in all tables and figures provided in this report are residence data.

TEENAGE FERTILITY RATE is the number of resident live births to women 15-19 years of age per 1,000 women 15-19 years of age.

UNDERLYING CAUSE OF DEATH is either the disease or injury that initiated a chain of events leading directly to death or the circumstances of an accident or violence, which produced a fatal injury.

VERY LOW BIRTH WEIGHT BIRTH refers to a newborn weighing less than 1,500 grams (3 pounds, 5 ounces).

WEEKS OF GESTATION are the number of weeks elapsed between the first day of the last normal menstrual period (LMP) and the date of birth. When the date of the LMP is incompletely reported or the length of gestation as computed from the LMP is inconsistent with the reported birth weight, the "clinical estimate of gestation" is used. Gestations of fewer than 17 weeks or more than 47 weeks are coded as unknown. For more information, see the Technical Notes section of this report.

YEARS OF POTENTIAL LIFE LOST (YPLL) is a measure of the number of years of life lost in a population when persons in that population die prematurely. See Appendix E for details.

RATES

The simplest method of making comparisons among groups of people is to compute relative figures such as rates. A rate is obtained by a process of division, in which the numerator represents the number of times an event has occurred within a particular time period and the denominator enumerates the total number of individuals exposed to the risk of that event during the same time period. The ratio of these two numbers is generally multiplied by 100, 1,000 or 100,000 to avoid decimal numbers beginning with zeros (see following two pages).

In computing rates, it is necessary that the numerator (i.e., the number of events) be defined according to (a) the nature of the event in question, (b) the geographical area and/or social group to which the event belongs, and (c) the time period when the event occurred. The denominator (i.e., the "population at risk") should correspond to the numerator in all the above respects. The more specifically one can define the "population at risk", the more meaningful the rate will be. For example, the crude birth rate, which compares the number of births to the total population, is not nearly as informative as the general fertility rate. This second rate uses only the number of women of childbearing age (15-44) for comparative purposes and therefore more specifically defines the "population at risk."

In general, rates will not be presented for events which have numerators less than 20, or in cases where the population estimates are not produced by the Delaware Population Consortium (DPC). For example, Hispanic mortality has not normally been reported in terms of rates due to the following reasons: Hispanics experience a relatively small number of deaths and the only available population estimates, produced by the U.S Census Bureau, have been subject to questions regarding their accuracy, both of which contribute to high variability in rates. Though there are a few exceptions to this rule, the Hispanic rates generated are more for illustrative purposes and should be interpreted with caution.

Formulas and calculations for the most common rates used in this report are provided on the following two pages.

CALCULATION OF RATES
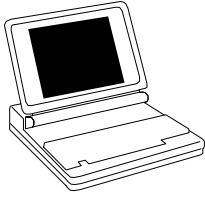
$$\text{Crude Birth Rate} = \frac{\text{Number of Live Births}}{\text{Total Population}} \times 1,000$$

$$\text{General Fertility Rate} = \frac{\text{Number of Live Births}}{\text{Female Population Ages 15-44}} \times 1,000$$

$$\text{Teenage Fertility Rate} = \frac{\text{Number of Live Births to Women Ages 15-19}}{\text{Female Population Ages 15-19}} \times 1,000$$

$$\text{Live Birth Order Fertility Rate} = \frac{\text{Number of Live Births of a Specific Live Birth Order}}{\text{Female Population Ages 15-44}} \times 1,000$$

$$\text{Age-Specific Fertility Rate} = \frac{\text{Number of Live Births in a Specific Age Group}}{\text{Female Population in the Same Specific Age Group}} \times 1,000$$

$$\text{Reported Pregnancy Rate} = \frac{\text{Number of Reported Pregnancies in a Specific Age Group}}{\text{Female Population in the Same Specific Age Group}} \times 1,000$$

$$\text{Crude Mortality Rate} = \frac{\text{Number of Deaths}}{\text{Total Population}} \times 100,000$$

$$\text{Age-Specific Mortality Rate} = \frac{\text{Number of Deaths in a Specific Age Group}}{\text{Population in the Same Specific Age Group}} \times 100,000$$

$$\text{Age} - \text{adjusted Death Rate} = \sum_i W_i \bullet \left(\frac{\#\text{Deaths}_i}{\text{Pop}_i} \times 100,000 \right)$$

$$\text{where } W_i = \frac{\text{Standard Population}_i}{\text{Total Standard Population}}$$

$$\text{and }_i = \text{agegroup}$$

$$\text{Marriage Rate} = \frac{\text{Number of Marriages}}{\text{Total Population}} \times 1,000$$

$$\text{Divorce Rate} = \frac{\text{Number of Divorces and Annulments}}{\text{Total Population}} \times 1,000$$

$$\text{Infant Mortality Rate} = \frac{\text{Number of Infant Deaths}}{\text{Total Live Births}} \times 1,000$$

$$\text{Neonatal Mortality Rate} = \frac{\text{Number of Neonatal Deaths}}{\text{Total Live Births}} \times 1,000$$

$$\text{Postneonatal Mortality Rate} = \frac{\text{Number of Postneonatal Deaths}}{\text{Total Live Births}} \times 1,000$$