INTRODUCTION

ORGANIZATION OF THE REPORT

This publication by the Arizona Department of Health Services, ***Arizona Health Status and Vital Statistics 2015***, is the annual update of information on vital statistics and the health status of Arizona residents. It provides population-wide data on *pregnancies*, *births*, *abortions*, *stillbirths*, *reportable diseases*, *deaths*, *marriages*, *divorces, hospital inpatient discharges, emergency department visits,* and the *population* of the state.

The year 2015 report highlights both statewide trends as well as inequalities in health by subgroups including race/ethnicity, gender, and county. When possible, the data for 2015 are placed in a temporal context by comparison with the data for preceding years. The information in this volume consists of frequencies and rates of vital events for the state's residents (except as noted).

The updated *Index to Tables* in this report contains entries referring to specific health conditions, risk factors, disease categories, diagnostic groupings, procedures performed on hospital inpatients, and causes of death. The report provides information to monitor a number of the "Winnable Battles" identified in the Arizona Department of Health Services' Strategic Map including mortality data on obesity, enterocolitis due to *Clostridium difficile* (an infection associated with healthcare settings), and suicide, as well as information on births, fetal deaths, and abortions used to measure teenage pregnancy.

Since 1992, the report has been organized into three major parts, reflecting differences in geographic coverage:

Part I is concerned with ***statewide*** *statistics,*
Part II presents ***county-level*** *information,* and
Part III is focused on ***community-level*** *data.*

The first two parts are further divided into sections on reproductive and perinatal health, mortality, utilization of hospital care, and the status on year 2020 health objectives.

Not all health statistics are available or effectively reported at the community level. Hence, information about pregnancies, stillbirths, abortions, inpatient discharges, emergency room visits, reportable diseases, marriages, and marriage dissolutions is given only for the state and by county.

Part I of the report, ***THE STATE,*** has four chapters. The first chapter deals with *reproductive and perinatal health*, i.e., characteristics of women who became pregnant, factors related to the course of their pregnancies, and the status of pregnancy outcomes. Much of these data are given for each year from 2005 to 2015. The natality section of this report is concerned with fertility and birth rates, the general health of newborns as indexed by birthweight, prematurity, and selected demographic and prenatal care characteristics of the women giving birth.

The second chapter is focused on *trends and patterns in mortality*. It compares the annual age-adjusted profile of leading causes of death by gender from 2005 to 2015. Urban/rural and racial/ethnic differences in cause-specific mortality are also examined for Arizona residents. The five leading causes of death are discussed for infants (<1 year), children (1-14 years), adolescents (15-19 years), young adults (20-44 years), middle-aged adults (45-64 years), and the elderly (65 or more years). For each age group, cause-specific mortality is compared between urban (Maricopa, Pima, Pinal, and Yuma counties) and rural (Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Santa Cruz, and Yavapai) regions and between genders by year from 2005 to 2015. Urban and rural regions are compared in gender-specific total mortality. The chapter on mortality concludes with an examination of patterns of premature mortality by gender and race/ethnicity.

Morbidity, or the levels of disease in the population, is the topic of the third chapter. The presentation is limited to data on diseases reported for the entire population of the State by statutory mandate. Separate sections focus on non-sexually transmitted diseases, sexually transmitted diseases, and human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS).

Chapter 4 is focused on *inpatient hospital care*, as well as *emergency room care* in Arizona in 2015. An inpatient discharge occurs when a person who was admitted to a hospital leaves that hospital. A person who has been admitted to the emergency room or as a hospital inpatient more than once in a given calendar year will be counted multiple times as a discharge and included more than once in the hospital discharge data set; thus, the statistics on inpatient hospital care and emergency room care in this report are for discharges, not persons.

The available data are for state-licensed hospitals including psychiatric facilities. Federal, military, and the Department of Veteran Affairs hospitals are not included. All discharges are for the residents of Arizona. Discharges of out-of-state residents are not included in this report.

Beginning in 2008, up to twenty-five diagnoses are coded for each discharge. In sections 4A and 7A, discharges are presented by first-listed (or principal) diagnosis, which is the first listed on the discharge summary of the medical record. The number of first-listed diagnoses is the same as the number of discharges.

The data on the number of procedures in sections 4B and 7B are for inpatients only. Procedures include surgical and non-surgical operations, diagnostic procedures, and special treatments reported on the medical record. Up to six procedures were included for each discharge. These all-listed procedures include all occurrences of the procedure regardless of the order on the medical record.

Beginning in 2015, all Arizona hospitals transitioned from the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) to the International Classification of Diseases, 10th Revision, Clinical Modification/ Procedure Coding System (ICD-10-CM/PCS) for coding morbidity causes. The 2015 report includes diagnostic groupings and code numbers based on ICD-9-CM for the first three quarters of the year, and ICD-10-CM for the last quarter (October to December).

Preceding the tabulated data in the first four chapters is a narrative description of the findings. This description is not meant to be exhaustive but rather is a presentation of the major highlights to be gleaned from the data.

Part II and Part III contain information with no accompanying narrative.

Part II, ***THE COUNTIES***, presents the tabulated data on 1) trends and patterns in health status and vital statistics by county of residence in Chapter 5, and 2) county profiles and statewide trends on indicators for assessing health status and monitoring Arizona's progress toward Healthy People 2020 objectives in Chapter 6. The health indicators are organized around ten subject areas: *maternal, infant, and child health*, *responsible sexual behavior*, *vaccine preventable diseases*, *injury and violence*, *cancer*, *diabetes*, *heart disease and stroke*, *respiratory diseases*, *human immunodeficiency virus (HIV) disease*, and s*ubstance abuse*; 3) hospital inpatient and emergency room statistics by disease category, diagnosis group, and all-listed procedures by patient's county of residence in Chapter 7 and; 4) selected historical vital events including births, deaths, infant deaths, marriages, and dissolutions of marriage by year and county in the State for 1960-2003 in Chapter 8.

Part III, ***THE COMMUNITIES***, provides readers with selected community-level data by Primary Care Areas on live births and deaths in Arizona in 2015 (Chapter 9). In addition to the community-level data provided herein, a wealth of health and health-related information is now available at the Arizona Department of Health Services Bureau of Public Health Statistics Community Profiles Dashboard: http://www.azdhs.gov/phs/phstats/profiles/index.php.

Chapter 10 presents population denominators for Arizona by gender, age groups, county of residence, and race/ethnicity.

To use ***Arizona Health Status and Vital Statistics 2015*** effectively, the reader should become familiar with the *Technical Notes* at the end of the report. They provide definitions of terms used in the report, as well as information about the sources of data. *Technical Notes* also provide a link to detailed comparability ratios used to make comparisons between cause-of-death data classified by the Ninth and Tenth Revisions of the International Classification of Diseases.

In addition to the bound form, the ***Arizona Health Status and Vital Statistics 2015*** report, as well as previously published reports for 2000-2013, are available online at: http://www.azdhs.gov/plan/report/ahs/index.php.

FEATURES OF 2015 REPORT

THE 2003 REVISED BIRTH CERTIFICATE

On January 1, 2014, The Arizona State Vital records implemented the 2003 U.S. Certificate of live birth, a revised version of the 1989 Standard Certificate of birth. The 2015 Health Status report covered the second year of data collected using the 2003 Standard Certificate of birth.
The revised birth certificate introduced new items, and significant changes in content and format of pre-existing fields. Due these amendments, items such as, mother's education, month prenatal began, pregnancy weight gain, and tobacco use during pregnancy, while in the 1998 certificate are not comparable between versions.

Mother's educational attainment as collected on the revised birth certificate captures the highest degree or level of education completed by the mother based on a collapsed set of eight

categories, consistent with the Census classifications. This represents a change from the 1998 certificate in which mother's education was categorized in 17 response categories according to the number of years of school attended.

Month of prenatal care began is no longer directly reported using date of first prenatal visit but rather computed from the date of the last menstrual period and the date of first prenatal care visit. Due to significant changes in the month prenatal care began is calculated, the percent of births to mother who received first trimester prenatal care is not comparable to previous years.

Pregnancy weight gain is no longer collected using total pregnancy weight gain. The 2003 birth certificate provides more detailed information to allow measurement of gestational weight gain specific to a woman's pre-pregnancy body mass index (BMI). Mother's height, pre-pregnancy weight, and weight at delivery are new items included in the revised birth certificate, making the assessment of prescribed gestational weight gain in relation to pre-pregnancy BMI possible.

Smoking during pregnancy as collected on the 2003 birth certificate captures the level of smoking before and during pregnancy. Smoking status is derived from the average number of cigarettes the mother reported smoking in the first, second and last trimester of the pregnancy. Mothers who reported smoking any number of cigarettes during pregnancy are considered smokers.

The 2003 revision of the birth certificate has also introduced some major changes on the following reported items: *medical risk factors in the pregnancy*, *obstetric procedures*, *characteristics of labor and delivery*, *method of delivery*, *abnormal conditions of the newborn*, and *congenital anomalies*. Several checkboxes included in these categories were revised or are completely new to the 2003 form, for more information see http://www.cdc.gov/nchs/nvss/vital_certificate_revisions.htm.

Due to changes on the selected items, the data prior 2014 may not be comparable to the 2014 data and onward. Hence, trend analysis is compromised by the revisions made to 2003 U.S. Certificate of live birth.

CELL SUPPRESSION

The 2015 *Arizona Health Status and Vital Statistics* report is the third report in this series to include cell suppression. Using suppression rules similar to those used by the National Center for Health Statistics (NCHS), this report now attempts to maintain the anonymity of the individuals whose vital records are summarized herein.

Cell suppression is a method of removing potentially identifiable information from tables. In cell suppression, the first tasks is *primary suppression*, or removing non-zero counts in the body of a table that fall below a certain number. Primary cells that were less than six but greater than zero were suppressed and identified with an asterisk (*). Next, *secondary suppression* is used to obfuscate the totals or sums with components, or *addends* that fall below the threshold for primary suppression. These totals are typically reported in the margins of table rows and columns. Column or row totals that contained a non-zero addend less than 6 were rounded to the nearest tens-unit and identified with a dagger (†). Rates, ratios, and percentages that were based on a non-zero numerator less than six were suppressed and identified with a double asterisk (**). In certain cases where these rules would have dictated the rounding of a row or column total, or suppression of an overall rate/ratio/percentage, but the value of the information contained in the total was identified as important or attainable from other sources, these rules were relaxed and the original value was reported.

BRIDGING RACE/ETHNICITY

To calculate the rates used in this report, it was necessary to standardize race and ethnicity for both the vital events (in the birth, death, and fetal death data) and the population denominators. In these data sources, information on race and ethnicity is collected and categorized in a number of different ways, requiring a standard method of classifying race and ethnicity.

To create frequency counts of race and ethnicity that were adequate to compute statistically reliable rates, race was "bridged," or essentially collapsed into 5 categories; White non-Hispanic, Hispanic or Latino, Black or African American, Native American or Alaska Native, and Asian or Pacific Islander. When an individual was identified as both Hispanic and any other race, that person was included in the racial/ethnic group with the lowest population. For example, a person identified as both White and Hispanic would be coded as Hispanic, whereas a person identified as American Indian and Hispanic would be coded as American Indian. Please refer to the technical appendix for further explanation of the racial bridging used in this report.

THE IMPLEMENTATION OF THE INTERNATIONAL CLASSIFICATION OF DISEASE, TENTH REVISION

On October 1, 2015, a new revision of the International Classification of Diseases, Tenth

Revision, Clinical Modification/Procedure Coding Systems (ICD-10-CM/PCS) was implemented in replacement of the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM) for reporting medical diagnoses and inpatient procedures in healthcare settings. ICD-10-CM represents an expansion of ICD-9-CM both in content and structure of the codes used to describe the severity and complexity of various diseases and injuries. Disease classification has been revised and some conditions have been reclassified into new chapters. For example, ICD-9-CM category *diseases of the nervous system and sense organs* has been restructured into three ICD-10-CM chapters: *diseases of the nervous system, diseases of the eye and adnexa*, and d*iseases of the ear and mastoid*. Several codes have been added in ICD-10-CM to provide a comprehensive description of the etiology, anatomic site, and severity of a heath condition/ injury, and some terminology has changed to reflect latest technology, current medical terms, and diseases discovered since the implementation of ICD-9-CM. In some cases, some codes have been combined to report the disease and common manifestations in a single code. For example, ICD-9-CM codes 415.11 (*Iatrogenic pulmonary embolism and infraction*) and 415.12 (*Septic pulmonary embolism*) have been merged into I26.90 (*Septic pulmonary embolism without acute cor pulmonale*) in ICD-10-CM.

Furthermore, the format of codes sets has changed from mostly numeric in ICD-9 to alphanumeric in ICD-10. ICD-9 codes are almost entirely limited to three or four digits while ICD-10 codes can have up to seventh characters. The seventh character code can be used to classify an initial encounter, subsequent encounter, or late effect (sequelae) and is predominantly used in the *injury* codes but can also be found in *musculoskeletal* and *obstetrics* sections.

Another new feature in ICD-10 is laterality, a dimension identifying right, left or bilateral anatomy sites. Similar to the diagnostic codes (ICD-10-CM), the procedure codes (ICD-10-PCS) have been expanded in greater detail to incorporate the complexity of inpatient procedures. All these changes in ICD coding system lead to a substantial increase in number of diagnostic codes in ICD-10-CM, with more than 69,000 codes compared with 14,025 in ICD-9CM and about 71,000 procedure codes in ICD-10-PCS versus 3,824 in ICD-9-CM.

In the current report, the diagnostic and procedures codes for inpatient and Emergency Room (ER) visits data are based both on ICD-9-CM, which was in effect up until September 30, 2015, and ICD-10-CM/PCS implemented on October 1, 2015. The transition to ICD-10-CM/PCS has some impact on comparability of hospital discharges data and continuity of statistical trends. Any comparison of hospital discharge events between 2015 and previous years should take into account the differences between the classification systems.

KEY FINDINGS

Stability in Number of Resident Births

In 2015 there were 85,024 resident births, a decrease from last year's 86,648 births. Compared to 2014, the number of births decreased for all racial/ethnic groups excluding Asians or Pacific Islanders who had a 2.1 percent increase and Hispanics who had a 1.6 percent increase.

Selected Characteristics of Newborns and Mothers in 2015

Among women who gave birth in Arizona in 2015:

- 44,261 births (52.1 percent) were paid for by the Arizona Health Care Cost Containment System (AHCCCS).
- 38,479 (45.2 percent) of births were to unmarried mothers, which may signify absence of emotional, social, and financial resources.
- 17,322 (20.4 percent) of births were to women who had a serious medical condition such as hypertension, diabetes, and sexually transmissible diseases.
- 20,763 (24.4 percent) of births were to women who experienced complications during labor and/or delivery.
- 21,520 (25.3 percent) of births occurred to women who received late or no prenatal care.
- 5,884 (6.9 percent) of births were to teenagers 19 years old or younger.
- 4,396 (5.2 percent) of births were to women who smoked during pregnancy.

Teen Pregnancies

In 2015, both the number of teen pregnancies (n = 7,121) and the teen pregnancy rate (15.9) were the lowest they have been since at least 1983 (the most recent information that could be found). From 2007 to 2015 the number of teen pregnancies decreased by 52.6 percent and the pregnancy rate by 53.7 percent. The number of teenage pregnancies decreased for all race/ethnic groups between 2007 and 2015. The decline has been most marked among Hispanic or Latino (53.7 percent) and to lesser extent among Asian females (44.9 percent).

Teenage females also received fewer abortions in 2015 (n = 1,189) than in 2014 (n =1,249) and 2013 (n =1,441).

About 6 percent of abortion records for teenage females reported either multiple race/ethnicities or was missing information on race/ethnicity, making the calculation of percent change in teenage abortions by race/ethnicity ineffective.

TOTAL MORTALITY

During 2015, 54,152 Arizona residents died, 3.078 more than in 2014. The 2015 age-adjusted mortality rate increased from 676.0 per 100,000 residents in 2014 to 691.3 per 100,000 residents in 2015. The median age at death in 2015 was 76.0 years.

INFANT MORTALITY

In 2015, 473 infants died before reaching their first birthday, 228 fewer than the latest peak of 701 infant deaths in 2007. The infant mortality rate (IMR) decreased from 6.2/1,000 in 2014 to 5.6 infant deaths per 1,000 live births in 2015.

Newborn weight at birth is one of the most important predictors of an infant's survival chances. In 2015, the mortality rate among babies weighing less than 500 grams at birth was 84.3 per 100 newborns. Together, births of infants weighing less than 1,500 grams accounted for 1.1 percent of births and 43.9 percent of all infant deaths.

CAUSE-SPECIFIC MORTALITY

In 2015, the number of deaths due to homicides increased 23.8 percent to 364 deaths, the lowest annual number of deaths in Arizona's record. Similarly, the number of Arizonians who died from accidental drug poisoning has increased from 1,214 deaths in 2014 to 1,328 deaths in 2015, a 9.4 percent increase. In 2015, 177 Arizonans died from ***obesity*** as the underlying cause of death, a 9.3 percent increase from 2014. The number of completed ***suicides*** has increased from 1,124 in 2014 to 1,233 in 2015. Males accounted for 76.3 percent of suicides. In 2015, suicide was the 8th leading cause of death among males. It ranked as the 11th leading cause of mortality for females. The age-adjusted suicide rate increased from 16.5 suicides per 100,000 in 2014 to 17.8/100,000 in 2015.

From 2010 to 2015 the number of deaths from ***diabetes*** increased by 49.4 percent, 1,372 deaths in 2010, to 2,050 deaths in 2015. In addition to 2,050 deaths that had diabetes assigned as the underlying cause, another 3,028 deaths had diabetes assigned as a contributing factor. The diabetes-related death rate of 63.5/100,000 was 2.5 times greater than the rate for diabetes as underlying cause (25.7/100,000). The diabetes-related death rate includes all mentions of diabetes on the death certificate as the underlying cause or other than underlying cause.

HOSPITAL CARE

In 2015 there were 630,524 inpatients discharge, excluding newborn infants, from non-Federal short stay hospitals in Arizona. Among those admitted as inpatients, 2,777 hospitalizations were primarily (i.e. listed as the first diagnosis) due to ***enterocolitis***, a bacterial inflammation of the intestines. ***Enterocolitis due to Clostridium difficile*** is a disease of growing public health concern because it is often acquired in hospitals and other health care institutions with long-term patients as residents. **Manic-depressive disorders** resulted in 22,648 hospitalizations while 3,091 inpatient discharges were recorded for **depression**.
In 2015, 15,834 hospitalizations were due to **pneumonia** while 6,890 inpatient discharges were recorded for **asthma**.

EMERGENCY ROOM CARE

During 2015, about 2.2 million visits were made by Arizona residents to hospital emergency rooms (ER), representing approximately 34 visits per 100 persons. In 2015, ***abdominal pain***, ***chest pain***, ***acute upper respiratory infection***, ***mental disorders***, ***spinal disorders*** ***contusion with intact skin surfaces***, and ***urinary tract infection*** were the leading diagnostic categories, accounting for approximately one-fourth (27.0 percent) of all the ER visits.

Approximately seven-hundred Arizonans were treated in an emergency room with the diagnosis of ***exposure to excessive natural heat*****.**

A comparison of some of the basic findings for the state for 2005, 2010, and 2015 is presented on the following page.