

# INTRODUCTION

## ORGANIZATION OF THE REPORT

This publication by the Arizona Department of Health Services, *Arizona Health Status and Vital Statistics 2009*, 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 2009 report consists of 258 tables, 135 graphs, and accompanying text. It highlights both the statewide trends and patterns in the general population, as well as inequalities in the health status among ethnic groups and Arizona's counties. When possible, the data for 2009 are placed in a temporal context by comparison with the data for the preceding years.

The updated *Index to Tables* in this report contains more than 600 entries referring to specific health conditions, risk factors, disease categories, diagnostic groupings, procedures performed on hospital inpatients and causes of death. The year 2009 report for the first time provides the mortality data for *morbid obesity* and enterocolitis due to *Clostridium difficile*; the latter a disease often acquired in hospitals and other health care institutions with long-term patients and residents.

The information in this volume consists of frequencies and rates of vital events for the State's residents (except as noted). The report contains approximately 4,900 age-adjusted and 6,200 age-specific mortality rates, and more than 15,000 other rates and ratios (fertility rates, pregnancy rates, crude death rates, rates of natural increase, etc.).

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, *Part III* is focused on **community-level** data.

The first two parts are further divided into sections on reproductive and perinatal health, utilization of hospital care, mortality and the status on year 2010 health objectives.

Not all health statistics are available on a sub-county level. Hence, information about pregnancies, stillbirths, induced terminations of pregnancy (abortions), inpatient discharges,

emergency room visits, reportable diseases, marriages and marriage dissolutions is given only for the State and by county.

Part I, *THE STATE*, of the report 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 1999 to 2009. The natality section of this report is concerned with fertility and birth rates, the general health of newborns as indexed by birthweight and 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 1999 to 2009. Urban/rural and 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 (i.e. Maricopa, Pima, Pinal and Yuma counties) and rural (all other counties) regions and between genders by year from 1999 to 2009. 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*, 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.

Chapter 4 is focused on *inpatient hospital care*, as well as *emergency room care* in Arizona in 2009. An inpatient discharge occurs when a person who was admitted to a hospital leaves that hospital. A person who has been hospitalized more than once in a given calendar year will be counted multiple times as a discharge and included more than once in the hospital inpatient discharge data set; thus, the statistics in this report are for discharges, not persons.

The available data are for State-licensed hospitals. 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. Diagnostic groupings and code numbers are based on the International Classification of Diseases, Ninth Revision, Clinical Modification (ICD-9-CM).

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 one 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 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.

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 progress toward Arizona and national year 2010 objectives (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 substance abuse*; Hospital inpatient and emergency room statistics by disease category, diagnosis group and all-listed procedures by patient's county of residence in the State (Chapter 7), and 3) Selected historical vital events (births, deaths, infant deaths, marriages and dissolutions of marriage) by year and county in the State for 1950-1998 (Chapter 8).

Part III, **THE COMMUNITIES**, provides readers with selected community-level data on live births and deaths in Arizona in 2009 (Chapter 9).

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 2009** effectively, the reader should become familiar with *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 bound form, the **Arizona Health Status and Vital Statistics 2009**, as well as previously published reports for 2000-2008 also are available online at:

<http://www.azdhs.gov/plan/report/ahs/>

In order to be of maximum usefulness, the public health data must be timely. It is our pleasure to release **Arizona Health Status and Vital Statistics 2009** within nine months after the end of the data calendar year. Below are some highlights from the report.

#### **UNDERSTANDING HEALTH STATUS OF ARIZONANS: HOW THE RECESSION AND CHANGES IN THE LAW IMPACTED THE FREQUENCY COUNTS OF VITAL EVENTS SINCE 2007**

The users of this annually updated publication most likely do not expect to see dramatic changes from a year earlier. The changes tend to be gradual and the rates of vital events are quite predictable over time. The 2008 and 2009 data calendar years were not only very different from 2007 but, in many ways, unprecedented.

It is important to view the vital events of 2009 within a broader context of economic and legal factors, which were previously absent. The most severe economic recession in 80 years obviously is one of these factors. The high rate of foreclosures, many built but vacant houses, high unemployment, the collapse of the home construction business, etc. have impacted not only vital events (such as the number of resident births) but also in-and-out migration. Implementation of the employer-sanction law on January 1<sup>st</sup>, 2008 (a penalty on employers hiring illegal immigrants), and a widespread practice of e-verify (checking the legal-residence status of those seeking employment) affected Hispanics or Latinos, the second largest group of State's residents.

### **DECLINE IN THE NUMBER OF RESIDENT BIRTHS**

In 2009, there were 92,616 resident births, 10,071 fewer than the 102,687 in 2007. Hispanics or Latinos, who experienced the largest annual decline in the number of births by 16.1 percent, accounted for 7 out of 10 fewer births in 2009 compared to 2007. Compared to Hispanics (who unlike any other race/ethnic group in the State faced in 2008-2009 not only the economic recession, shared by all, but also additional legal challenges), the number of births among Non-Hispanics declined by 4.7 percent signifying the "recession effect".

### **DECLINE IN THE AGE-SPECIFIC MORTALITY**

Among Non-Hispanic residents of Arizona aged 15-34 years, the number of deaths declined by 2 percent from 2007 to 2009. In contrast, the number of deaths among Hispanic or Latinos in this age group declined by 29.3 percent. In fact, Hispanics or Latinos accounted for 9 out of every 10 fewer deaths of Arizonans 15-34 years old in 2009 compared to 2007.

### **RELATIVE FREQUENCIES OR RATES OF VITAL EVENTS**

Changes in the absolute frequency counts of events such as births or deaths may mean two different things. First, the likelihood of an event may have changed (for example the risk of death among Hispanics aged 15-34 years declined from 2007 to 2009 and their survival chances improved quite substantially). Second, the size of the population or population sub-group changed (for example, there were fewer deaths among Hispanics aged 15-34 years because there were fewer Hispanics in this age group residing in Arizona in 2009 than there were in 2007).

A year ago, in Section 1B of the *Arizona Health Status and Vital Status 2008* report we proposed the latter line of reasoning trying to make sense out of an unprecedented decline in the number of births among Hispanics or Latinos. This decline only accelerated from 2008 to 2009. The decrease of 6.8 percent among Hispanic or Latino births from 2007 to 2008 was followed by an additional 10 percent decrease from 2008 to 2009.

Under the circumstances, it is important to treat the 2008 and 2009 fertility, birth rates, and other rates of vital events (particularly for Hispanics) with caution. Perhaps, these rates have not declined; rather, the population denominators used to calculate them, did.

Unlike the numerators – the frequency counts of pregnancies, births, deaths, etc. – which reflect the true occurrence of registered vital events; the population denominators for 2001-2009 are

not exact enumerations of the State's residents in different race/ethnic, gender, or age group categories. These denominators are extrapolations, which use past experience, and are not adjusted for the impact of current events. Unfortunately, the population denominators for 2008 and 2009 are overinflated and all rates of vital events based on them are artificially underestimated.

We won't know whether the birth or pregnancy rates actually declined from 2007 to 2009 until an updated series of population estimates is available, consistent with both the 2000 and the 2010 Census.

### **SELECTED FINDINGS**

Among women who gave birth in Arizona in 2009:

- 54,670 had no private insurance to pay for birth,
- 41,860 were unmarried (which may signify absence of emotional, social and financial resources)
- 30,990 had a serious medical condition such as hypertension, anemia or diabetes
- 25,710 experienced complications during labor and/or delivery
- 18,280 received late or no prenatal care
- 10,950 were teenagers 19 years old or younger
- 4,740 smoked and/or used alcohol during pregnancy (all numbers are rounded to the nearest ten).

### **BIRTHS BY PAYER**

From 1999 to 2009 the number of births paid for by the AHCCCS (the State's Medicaid program) increased by 48.3 percent. The number of births paid for by private insurance declined by 6.2 percent during that time. In 2009, the Arizona Health Care Cost Containment System was the payment source in 53.5 percent of the deliveries.

### **TEEN PREGNANCIES**

In 2009, both the number of teen pregnancies and the pregnancy rate were lower than they were in 2007 or 2008. From 2007 to 2009 the number of teen pregnancies decreased (quite unrealistically) by 16.6 percent and the pregnancy rate by 18.6 percent.

The magnitude of the decrease in the number of teen pregnancies was the most pronounced among Hispanic or Latino teens: from 8,545 pregnancies in 2007 to 6,896 in 2009. The decline of 1,649 in the number of pregnancies among Hispanic or Latino teens accounted for 65.9 percent of the overall decrease of 2,501 in teen pregnancies from 2007 to 2009 ((1,649/2,501)\*100=65.9).

Interestingly, the populations estimated previously from the 1990 Census underestimated the growth of the Hispanic population during the 1990s. According to the 2000 Census, there were 118,490 Hispanic females 19 years of age and younger in Arizona, 37.5 percent more than the estimated number of 86,203 in 1999. For both 2008 and 2009 we seem to be facing the opposite and the 2010 Census is likely to show a decline in the Hispanic or Latino residents of Arizona.

#### **TOTAL MORTALITY**

During 2009, 45,056 Arizona residents died, 63 fewer than in 2008. The 2009 age-adjusted mortality fell to 653.2, hitting a record low. However, the median age at death slightly decreased from 77 years in 2008 to 76 years in 2009.

#### **INFANT MORTALITY**

In 2009, 547 infants died before reaching their first birthday, a decrease by 22.0 percent from 2007. The infant mortality rate (IMR) decreased from 6.8 infant deaths per 1,000 live births in 2007 to 5.9/1,000 in 2009, the lowest IMR in the State's history. Since there were 10,000 fewer resident births in 2009 than there were in 2007 this decline alone contributed to 68 fewer infant deaths in 2009 (at the 2007 IMR of 6.8 infant deaths per 1,000 live births).

Birthweight is one of the most important predictors of an infant's survival chances. Together, births of infants weighing less than 1,000 grams accounted for 0.6 percent of births, and 44.1 percent of all infant deaths. Infants weighing less than 500 grams in 2009 had a very high mortality rate of 93.2 percent.

#### **CAUSE-SPECIFIC MORTALITY**

In the 2008 edition of this report we have reported that the number of *drug-induced deaths* declined by an unprecedented 44.4 percent from 2007 to 2008. This decline never happened. The underlying causes of death were misclassified on thousands of records in 2008. One out of three miscoded deaths was related to misuse of, abuse of or dependence on drugs (mostly unintentional overdoses but also suicides). In reality the number of drug-induced deaths increased by 16.3 percent from 940 in 2007 to 1,093 in 2009.

Published in the 1990 edition of the **Arizona Health Status and Vital Statistics** report was a prediction "in the early 21<sup>st</sup> century *cancer will displace heart disease as the leading cause of death*". In 2009, *cancer was the number one cause of death* (based on the age-adjusted mortality rate), followed by *diseases of the heart*.

In 2009, 84 Arizonans died from *morbid obesity* as the underlying cause of death, compared to 28 in 1999. In addition, another 280 deaths in 2009 had morbid obesity assigned as a contributing factor rather than the underlying cause.

The number of completed *suicides* in 2009 (1,060) was the highest ever recorded in Arizona's history. In 2009, males accounted for 75 percent of suicides. The suicide rate among elderly Arizonans 65 years or older increased by 26.4 percent from 19.3 suicides per 100,000 in 2007 to 24.4/100,000 in 2009.

#### **HOSPITAL CARE**

In 2009, there were 672,807 inpatients discharged, excluding newborn infants, from non-Federal short stay hospitals in Arizona. Among those admitted as inpatients, 2,496 Arizonans were hospitalized with the diagnosis of enterocolitis due to *Clostridium difficile*, a bacterial inflammation of the intestines. The disease is of growing public health concern because it is often acquired in hospitals and other health care institutions with long-term patients as residents.

In 2009, 161 Arizonans died from enterocolitis due to *Clostridium difficile*. Elderly 65 years or older accounted for 90.1 percent of these deaths.

#### **EMERGENCY ROOM CARE**

During 2009, more than 1.8 million visits were made by Arizona residents to hospital emergency rooms. In 2009, *abdominal pain, acute upper respiratory infection, chest pain, contusion with intact skin surface, mental disorders, and spinal disorders* were the leading diagnostic categories, accounting for approximately one-fourth (23.9 percent) of all visits.

In 2009 there were 7,979 suicide attempt-related ER visits, 71.5 percent more than in 2007.

More than thirteen hundred Arizonans were treated in an emergency room with the diagnosis of *exposure to excessive natural heat*. In addition, 338 were hospitalized as inpatients with this diagnosis.

A comparison of some of the basic findings for the State for 1999, 2004, and 2009 is presented on the following page.