



# **OBESITY IN ARIZONA:**

## **PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY**

### **Public Health Services**

Bureau of Public Health Statistics

Health Status and Vital Statistics Section

~ Leadership for a Healthy Arizona ~



**Janet Napolitano, Governor  
State of Arizona**

**January Contreras, Acting Director  
Arizona Department of Health Services**

**HEALTH STATUS AND VITAL STATISTICS SECTION  
BUREAU OF PUBLIC HEALTH STATISTICS  
ARIZONA DEPARTMENT OF HEALTH SERVICES  
150 N. 18<sup>th</sup> Avenue, Suite 550  
Phoenix, Arizona 85007-3248  
Phone: 602/542-7333; FAX: 602/542-2940  
[www.azdhs.gov/plan](http://www.azdhs.gov/plan)**

**This publication can be made available in alternative format.  
Please contact the Bureau of Public Health Statistics  
at 602/542-7333 (voice) or call 1-800-367-8939 (TDD)**

***The Arizona Department of Health Services is  
an Equal Employment Opportunity Agency.***

*Permission to quote from or reproduce materials from this  
publication is granted when due acknowledgment is made.*

# **OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY**

By

Brian A. Bender, MBA,  
*ARIZONA BRFSS COORDINATOR*

Christopher K. Mrela, Ph.D.,  
*ARIZONA VITAL STATISTICIAN*

**OCTOBER 2008**



# OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

## TABLE OF CONTENTS

<b>PURPOSE .....</b>	<b>1</b>
<b>METHODS AND SOURCES .....</b>	<b>1</b>
<b>EXECUTIVE SUMMARY .....</b>	<b>2</b>

### FINDINGS:

FIGURE 1 – Prevalence of Obesity by State, United States, 2007 .....	3
FIGURE 2 – Prevalence of Obesity by Year, Arizona, 1990-2007 .....	4
FIGURE 3 – Prevalence of Obesity by Year, Arizona and United States, 2001-2007 .....	5
FIGURE 4 – Average Annual Prevalence of Obesity by County of Residence, Arizona, 2001-2007 .....	6
FIGURE 5 – Prevalence of Obesity by Gender, Arizona and United States, 2007 .....	7
FIGURE 6 – Prevalence of Obesity by Age Group, Arizona and United States, 2007 .....	8
FIGURE 7 – Prevalence of Obesity by Education, Arizona and United States, 2007 .....	9
FIGURE 8 – Prevalence of Obesity by Income, Arizona and United States, 2007 .....	10
FIGURE 9 – Prevalence of Obesity by Race and Ethnicity, Arizona, 2007 .....	11
FIGURE 10 – Prevalence of Obesity by Self-Reported Health Status, Arizona, 2007 .....	12
FIGURE 11 – Prevalence of Obesity by Diabetes Status, Arizona, 2007 .....	13
FIGURE 12 - Inpatient Discharges with Morbid Obesity as First-Listed Diagnosis and Any Mention of Morbid Obesity on the Medical Record, Arizona Residents, 2000-2007 .....	14
FIGURE 13 - Types of Surgical Procedures Performed in Treatment of Morbid Obesity, Arizona Residents, 2007 .....	15
FIGURE 14 – Trends in Types of Procedures Performed in Treatment of Morbid Obesity, Arizona Residents, 2000-2007 .....	16
FIGURE 15 - Hospital Inpatient Discharges with Morbid Obesity as First-Listed Diagnosis by Payer, Arizona Residents 2007 .....	17
FIGURE 16 - Number of Emergency Department Visits Related to Morbid Obesity, Arizona Residents, 2007 .....	18
FIGURE 17 - Emergency Department Visits Related to Morbid Obesity by Payer. Arizona Residents, 2007 .....	19
FIGURE 18 - Morbid Obesity as the Underlying Cause of Death, Arizona Residents, 1990-2007 .....	20
FIGURE 19 - Morbid Obesity as the Underlying Cause of Death and Any Mention of Obesity on Death Certificates, Arizona Residents, 2000-2007 .....	21
FIGURE 20 - Obesity-related Deaths Based on Underlying Cause or Any Mention of Obesity on the Death Certificates of Arizona Residents, 2007 .....	22

## DATA TABLES

TABLE 1 - Emergency Department visits and Inpatient Hospitalizations with Diagnosis of Morbid Obesity (ICD-9CM code 278.01) by Gender, Age Group, and County of Residence among Arizona Residents, 2007 .....	23
TABLE 2 - Characteristics of Inpatient Discharges with Morbid Obesity, Arizona Residents, 2000-2007 .....	25
TABLE 3 - Morbid Obesity (ICD-9 code 278.0) as the Underlying Cause of Death, Arizona Residents, 2000-2007 .....	26
TABLE 4 - Morbid Obesity as the Underlying Cause of Death and Any Mention of Morbid Obesity on Death Certificates, Arizona Residents, 2000-2007 .....	28
TABLE 5 - Characteristics of Deaths from Morbid Obesity among Arizona Residents in 2007 .....	30

---

## Purpose

The purpose of this report is to provide information concerning the prevalence of obesity and associated statistics from the Behavioral Risk Factor Surveillance System, the mortality database and the hospital discharge database.

Nationally, on average, men and women are more than 24 pounds heavier than they were in the early 1960s. Whereas during the same time period, mean height increased about 1 inch. In 1999–2002 mean weight of men 20 years and over was almost 190 pounds while among women it was around 163 pounds. Mean height for men in 1999–2002 was about 69 inches and for women about 64 inches.<sup>1</sup>

Like no other common condition, obesity has been recently portrayed as a major cause of “morbidity and mortality in the United States”<sup>2</sup>, “the most important of the new health challenges”<sup>3</sup>, a factor “lessening life expectancy markedly”<sup>4</sup> and a contributor to “an increased incidence of cardiovascular disease, type 2 diabetes mellitus, hypertension, stroke, dyslipidemia, osteoarthritis, and some cancers”.<sup>5</sup>

## Methods and Sources

Three data sources were utilized in producing this report: Arizona Behavioral Risk Factor Surveillance System (BRFSS) telephone survey, the hospital discharge database and the mortality database.

The BRFSS is a random sample telephone survey that uses disproportionate stratified sampling, random digit dialing, and a Computer Assisted Telephone Interviewing (CATI) system. A sample size of 4,700 interviews over a 12-month period was selected to achieve an acceptable confidence interval on risk factor prevalence estimates of the Arizona adult population.

The collected data is compiled and weighted by the CDC. Weighted counts were based on the Arizona population to accurately reflect the population demographics. The weighting factor considered the number of adults and telephone lines in the household, cluster size, stratum size, and age/race/sex distribution of the general population.

All analyses presented are based on cell counts of at least eight cases. The demographic information that was collected and presented in these results includes sex, age, education, household income, race, and ethnicity.

The hospital discharge database contains two types of records: inpatient hospitalizations and emergency room visits. 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 numbers we report here are for discharges, not persons.

Up to nine diagnoses are coded for each discharge. Diagnostic groupings and code numbers are based on the International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM).

The emergency department (ED) and the inpatient hospitalization data are mutually exclusive. The ED data include only those who were not admitted as inpatients. All inpatient discharges and ED visits are those of the residents of Arizona.

Information on deaths is compiled from the original documents filed with the Arizona Department of Health Services', Office of Vital Records and from transcripts of original death certificates filed in other states but affecting Arizona residents.

For the purpose of mortality statistics, every death is attributed to one underlying condition or underlying cause of death. The underlying cause is defined as the disease or injury that initiated the chain of events leading directly to death. It is selected from up to 20 causes and conditions entered by the physician on the death certificate. The totality of all these conditions is known as multiple cause of death. Since 2000, the causes of death are classified by the Tenth Revision of the International Classification of Diseases (ICD-10), replacing the Ninth Revision used during 1979-1999. The multiple cause-of-death data for Arizona are not available prior to 2000.

### Executive Summary

#### Arizona Behavioral Risk Factor Survey

- In 2007, with the prevalence of obesity rate of 25.8 percent, Arizona ranked 31<sup>st</sup> among the states.
- Over the last 18 years the estimated prevalence of obesity in Arizona's adult population has more than doubled.
- In Arizona, respondents 25-34 years of age were most likely to be obese. Nationally, respondents who are 55-64 years of age were more likely to be obese than any other age group.
- From 2006 to 2007, the largest increase in prevalence of obesity occurred among those with a high school education (44.4 percent).
- Arizona respondents with incomes \$15,000 to \$24,999 were most likely to be obese.
- The prevalence of obesity was greater among Non-Whites than Whites. Hispanics were more likely to be obese than Non-Hispanics.
- Arizonans reporting poor health were 2.5 times more likely to be obese than those who reported their health to be excellent.
- People with diabetes were about 2 times more likely to be obese than those without the disease.

#### Arizona Hospital Inpatients

- In 2007 there were 1,807 inpatients with morbid obesity as the first listed diagnosis. Most of these were admitted for bariatric surgery.
- The number of *gastric bypass* surgeries, once the most common bariatric procedure, declined from a high of 2,123 in 2003 to only 3 in 2007.

- There were 13,633 hospital inpatients in 2007 who had morbid obesity listed as one of their diagnoses.
- The gross charges for all inpatients with a mention of morbid obesity in 2007 exceeded \$450 million.

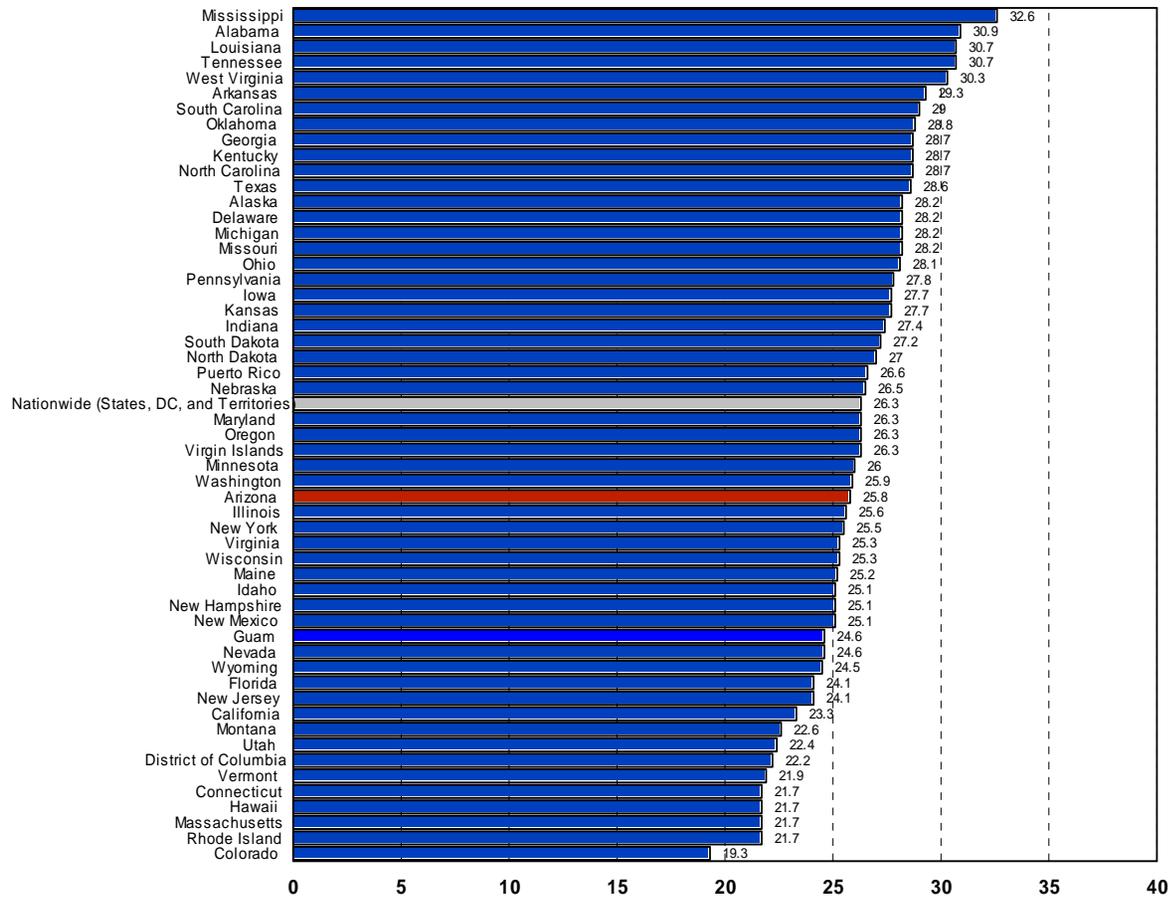
#### Emergency Department Visits

- In 2007, there were 2,659 visits to emergency departments in Arizona with a listed diagnosis of morbid obesity.
- Females made 2.5 times as many visits with a diagnosis of morbid obesity as males.
- AHCCCS was the primary payer for visits with morbid obesity as the diagnosis, 42.3% of the visits.
- The total gross charges for emergency department visits in Arizona with a listed diagnosis of morbid obesity was more than \$7 million in 2007.

#### Mortality

- There were 83 deaths in 2007 where morbid obesity was the underlying cause. This is compared to only 14 in 1990.
- In addition to 83 deaths in 2007 that had morbid obesity assigned as the underlying cause, another 255 deaths had morbid obesity assigned as the "other than" underlying cause.

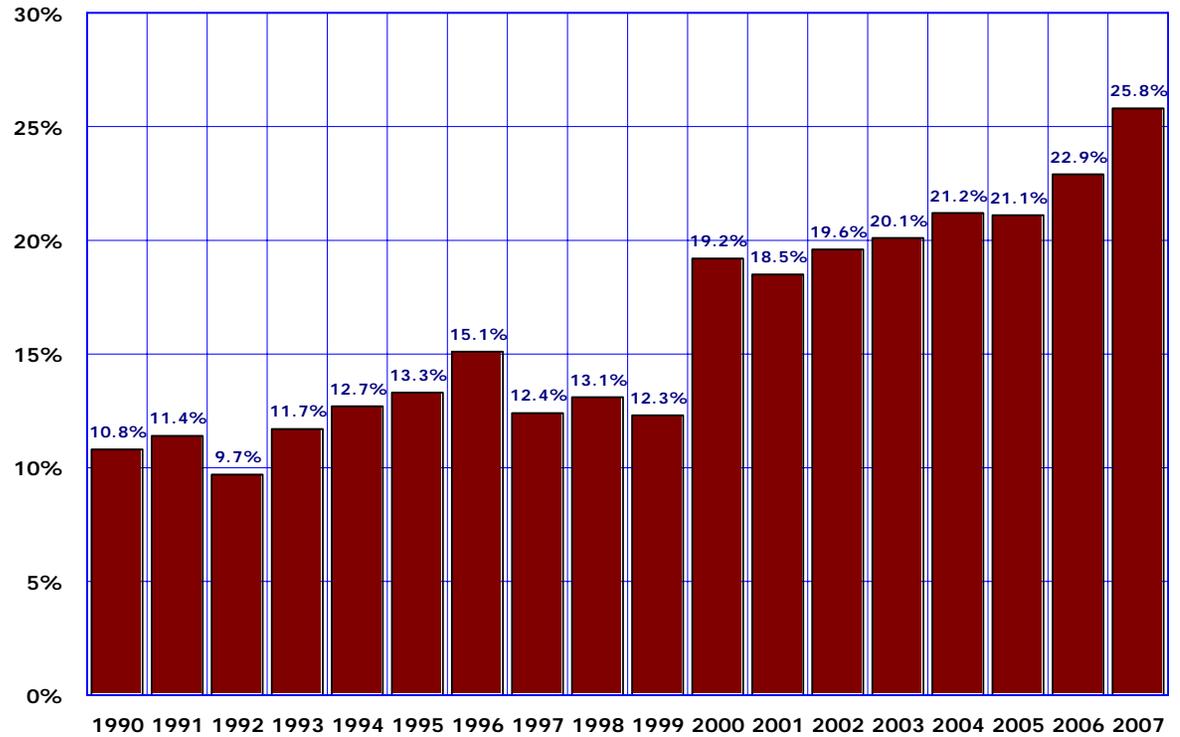
**Figure 1**  
**Prevalence of Obesity by State\*, United States, 2007**



In all states in 2007, the obesity prevalence was above the target of 15 percent (**Figure 21, Table 6**). In Mississippi, Alabama, Louisiana, Tennessee, and West Virginia, the prevalence of obesity among adults was 30 percent or greater. Arizona, Illinois, Maryland, Minnesota, New York, Oregon, and Washington all shared the prevalence rate of 26 percent. The prevalence of obesity was less than 20 percent in only one state, Colorado.

\*Including the District of Columbia and the Territories.

**Figure 2**  
**Prevalence of Obesity by Year, Arizona,**  
**1990-2007**

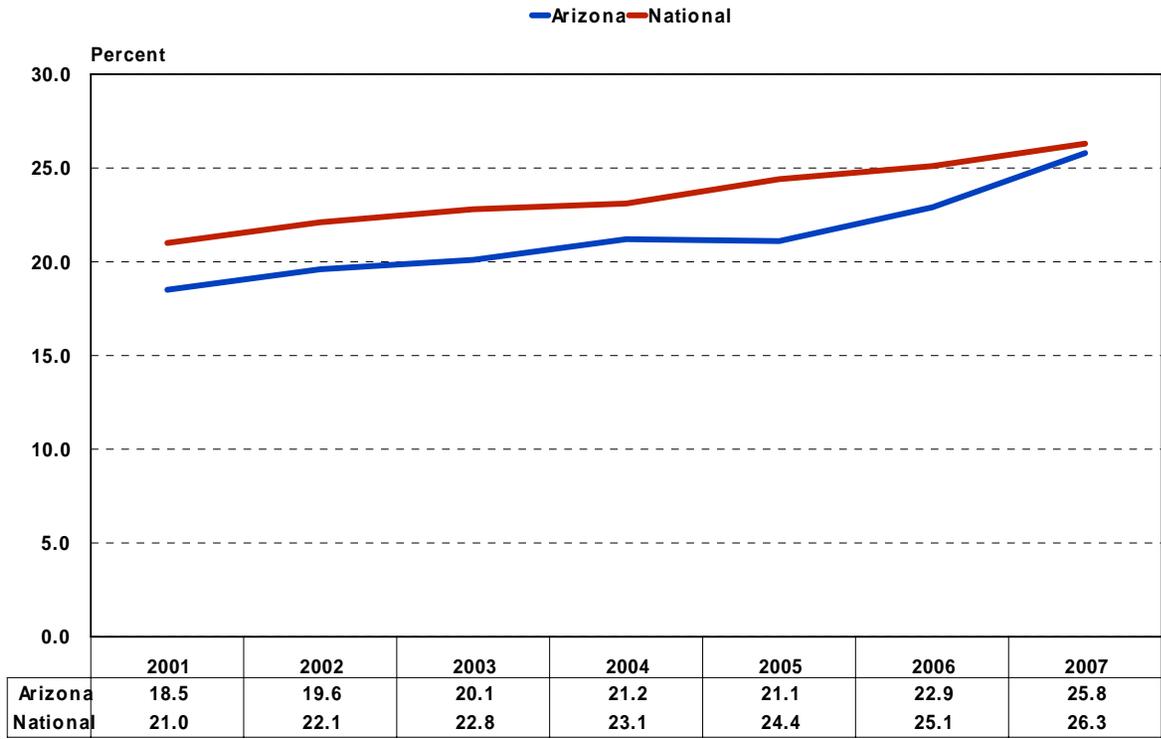


Note: weighted percentage. Obesity is defined as BMI of 30.0 or more.

The estimated prevalence of obesity in Arizona (based on BMI computed from self-reported weight and height) more than doubled from 10.8 percent in 1990 to 25.8 percent in 2007 (**Figure 2**).

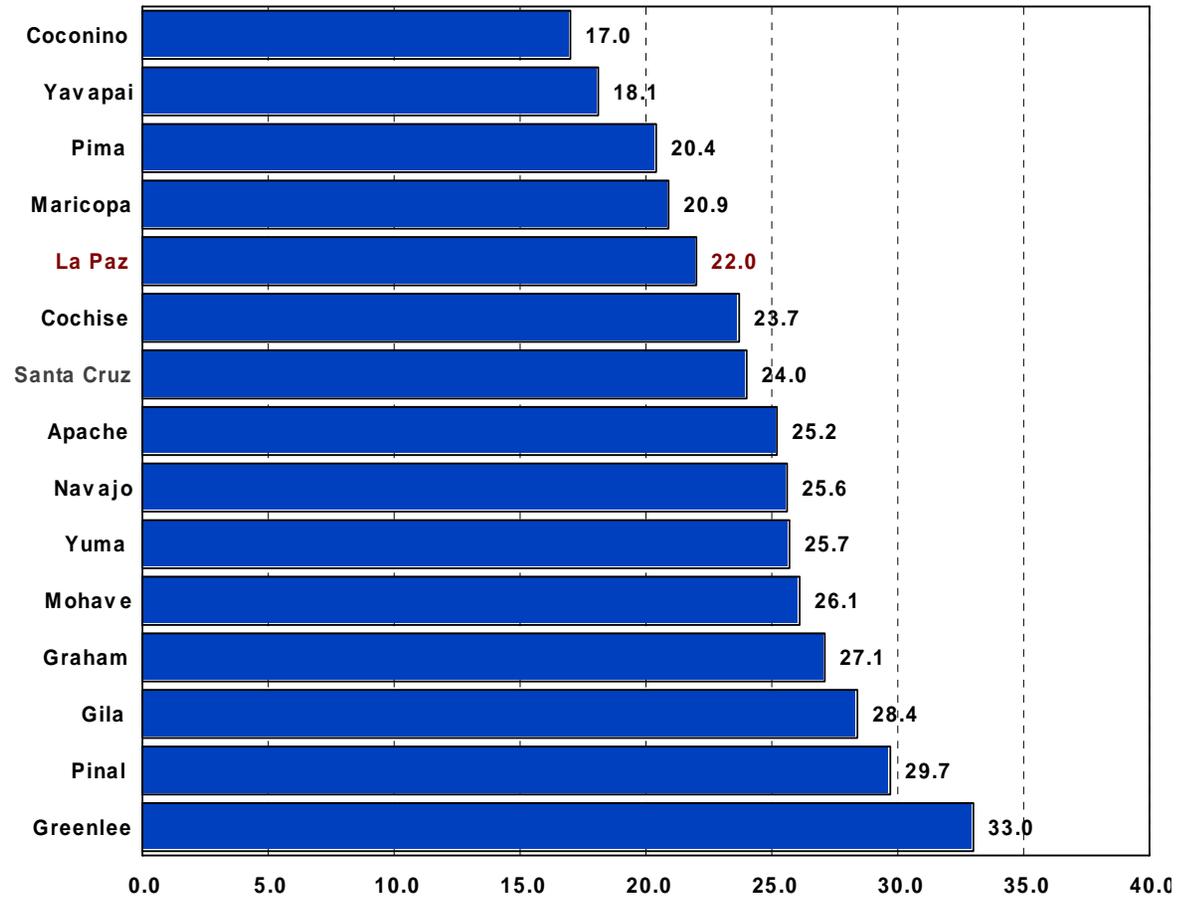
The target for Healthy People 2010 is to reduce the incidence of obesity of persons 20 years and older with health insurance to less than 15 percent.<sup>6</sup>

**Figure 3**  
**Prevalence of Obesity by Year, Arizona and United States, 2001-2007**



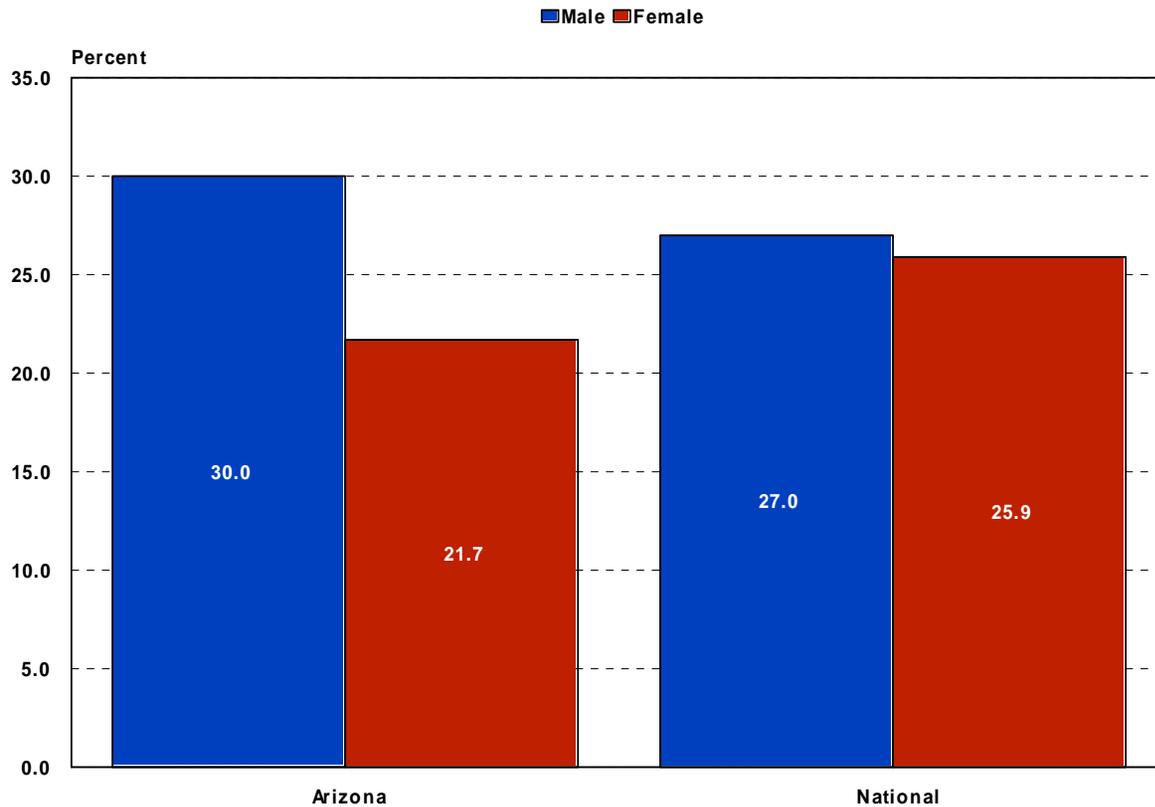
The rates of obesity for both Arizona and the nation have been increasing during the 2001 – 2007 period. In each year from 2001 to 2007, the prevalence rates of obesity were lower in Arizona compared to the nation (**Figure 3**).

**Figure 4**  
**Average Annual Prevalence of Obesity by County of Residence,**  
**Arizona, 2001-2007**



Prevalence of obesity varies considerably by the county of residence in Arizona (Figure 4). In 2001-2007, the obesity rates ranged from 17.0 percent in Coconino County to 33.0 percent in Greenlee County.

**Figure 5**  
**Prevalence of Obesity by Gender, Arizona and United States, 2007**



In 2007, as in prior years, the prevalence of obesity was greater among males (30.0 percent) than females (21.7 percent, **Figure 5**). Nationally, in 2007, the percentages for males and females were 27.0 percent and 25.9 percent respectively.

The following sociodemographic sub-groups were most likely to be obese:

**Males:**

- Age:** 25 – 34 years old, 38.3 percent.
- Marital Status:** Separated, 42.8 percent.
- Education:** High school, 39.8 percent.
- Income:** \$15,000 to \$24,999, 41.6 percent.
- Race:** Non-White, 36.7 percent.
- Ethnicity:** Hispanic, 46.0 percent.

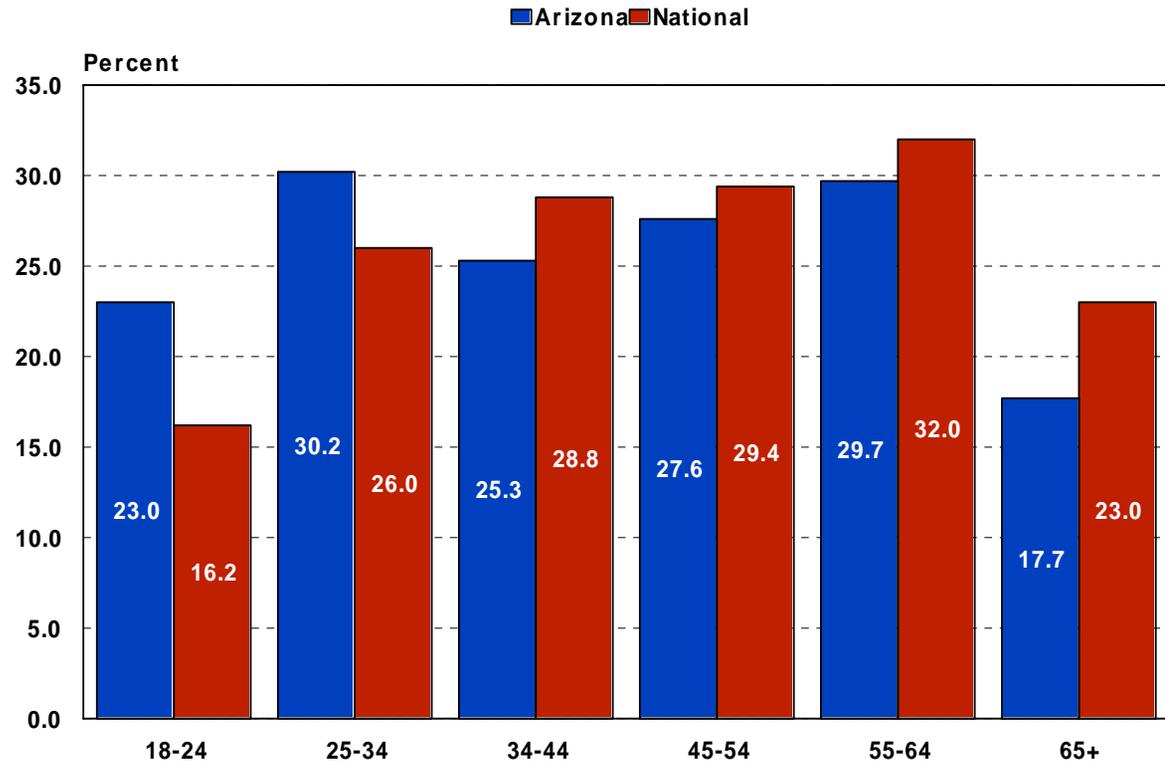
**Females:**

- Age:** 55 – 64 years old, 28.4 percent.
- Marital Status:** Separated, 28.2 percent.
- Education:** Less than a high school, 28.9 percent.
- Income:** Less than \$15,000, 29.7 percent.
- Race:** Non-White, 24.9 percent.
- Ethnicity:** Hispanic, 26.9 percent.

In Arizona, males experienced a significant increase in obesity prevalence from 23.0 percent in 2002 to 30.0 percent in 2007. The prevalence of obesity showed the first albeit slight decrease since 2002 for females from 22.0 percent in 2006 to 21.7 percent in 2007.

Arizona Obesity Prevalence By Gender 2002-2007						
	2002	2003	2004	2005	2006	2007
<b>Male</b>	23.0	22.1	22.2	21.6	23.8	30.0
<b>Female</b>	16.3	18.1	20.1	20.6	22.0	21.7

**Figure 6**  
**Prevalence of Obesity by Age Group, Arizona and United States, 2007**

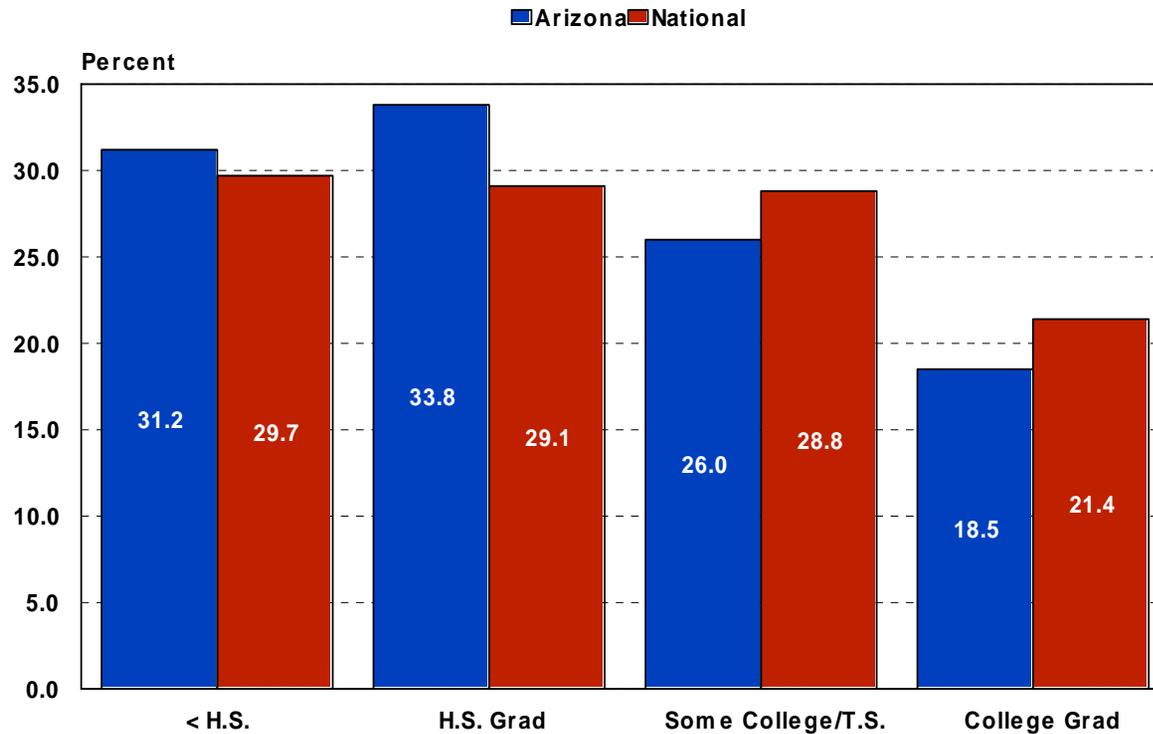


Those least likely to be obese are persons 65+ years of age. In Arizona, respondents 25-34 years of age were most likely to be obese. Nationally, respondents who are 55-64 years of age were more likely to be obese than any other age group (Figure 6). More than one-half of the age specific rates of obesity were higher nationally than in Arizona.

Between 2002 and 2007, changes in the age-specific prevalence of obesity in Arizona were not consistent. From 2006 to 2007, the rate of obesity decreased for the 35-44 and 55-64 age groups, but the prevalence rates increased for all other age groups.

	2002	2003	2004	2005	2006	2007
18-24	9.5	12.2	15.8	12.0	16.0	23.0
25-34	19.2	21.6	22.0	17.8	18.8	30.2
35-44	22.7	20.6	21.8	24.5	27.8	25.3
45-54	23.2	23.6	25.5	26.8	27.5	27.6
55-64	28.2	22.7	23.7	24.3	33.1	29.7
65+	14.7	18.6	17.8	20.0	15.1	17.7

**Figure 7**  
**Prevalence of Obesity by Education, Arizona and United States, 2007**

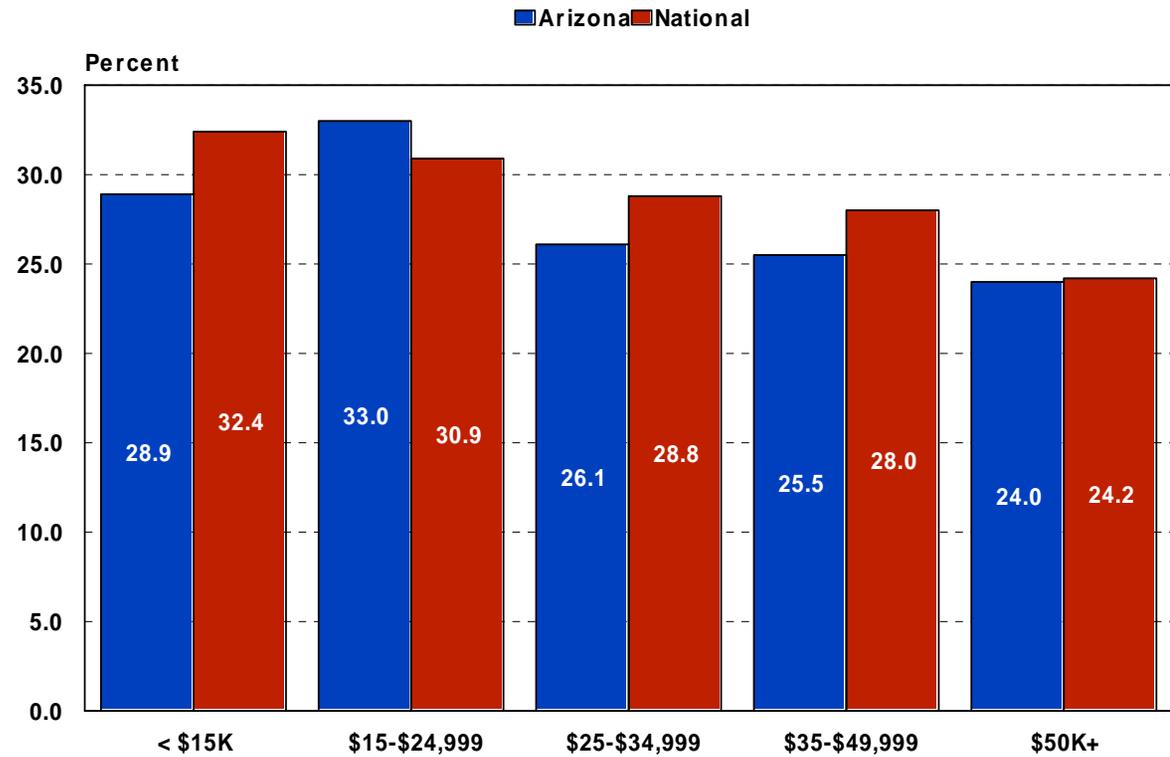


Arizonans with a high school education were most likely to be obese (33.8 percent), followed by those with less than a high school education (31.2 percent, **Figure 7**). Those with a college education had the lowest prevalence of obesity (18.5 percent). Nationally, obesity was inversely related to education and the prevalence of obesity was higher for one-half of the levels than in Arizona.

Obesity prevalence increased for all education levels except those who graduated from college. From 2006 to 2007, the largest increase in education-specific prevalence of obesity occurred among those with a high school education (44.4 percent).

	2002	2003	2004	2005	2006	2007
< H.S.	21.8	29.0	21.2	19.5	30.0	31.2
High School	20.2	23.7	23.5	21.5	23.4	33.8
Some College/Tech School	19.5	19.0	24.0	24.8	23.2	26.0
College Grad	18.7	15.8	16.7	17.7	20.1	18.5

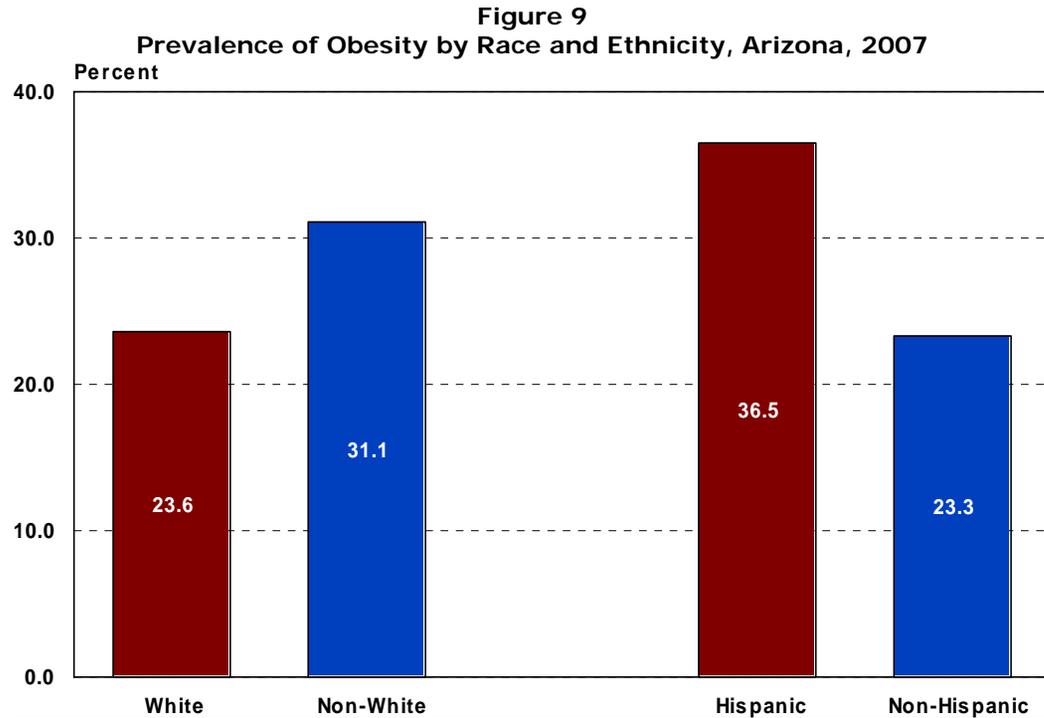
**Figure 8**  
**Prevalence of Obesity by Income, Arizona and United States, 2007**



Arizona respondents with incomes \$15,000 to \$24,999 were most likely to be obese (33.0 percent), followed by those earning less than \$15,000 (28.9 percent, **Figure 8**). Those with incomes of \$50,000 or more were least likely to be obese (24.0 percent). Nationally, obesity rates in every income level were greater than in Arizona except those earning \$15,000 to \$24,999.

From 2006 to 2007, the prevalence of obesity decreased for Arizonans with incomes of less than \$15,000, but it increased for the remaining income groups.

	2002	2003	2004	2005	2006	2007
<\$15K	21.7	26.0	19.4	19.9	29.9	28.9
\$15K-<\$25K	24.3	22.4	21.8	24.7	29.3	33.0
\$25K-<\$35K	22.8	17.6	21.7	21.7	21.3	26.1
\$35K-<\$50K	17.8	19.8	26.5	20.3	21.5	26.5
\$50K+	19.8	19.9	18.4	22.5	22.1	24.0

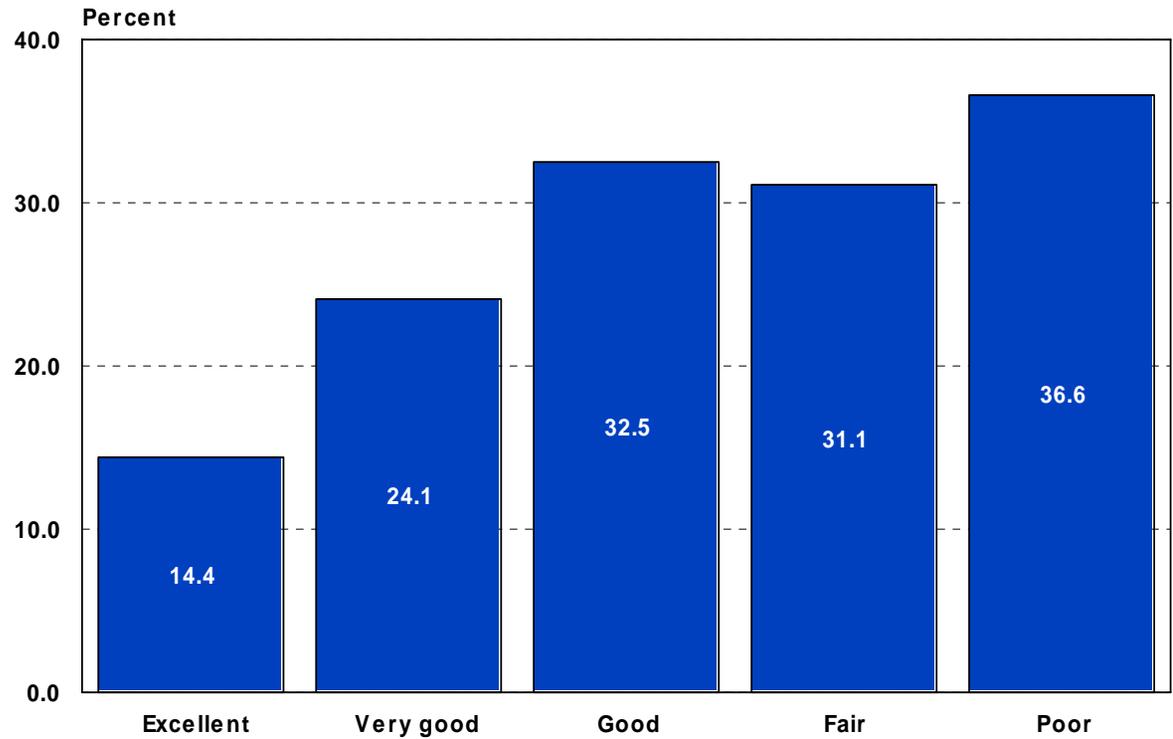


In 2007, the prevalence of obesity was greater among Non-Whites (31.1 percent) than Whites (23.6 percent). Hispanics (36.5 percent) were more likely to be obese than Non-Hispanics (23.3 percent, **Figure 9**).

Between 2002 and 2007, the rate of obesity increased by 26.2 percent among Whites. It has also increased by 87.2 percent among Hispanics. Among Whites the prevalence of obesity has increased for four consecutive years. It has increased for the third year in a row among Non-Hispanics, while Non-Whites and Hispanics experienced increases for two straight years.

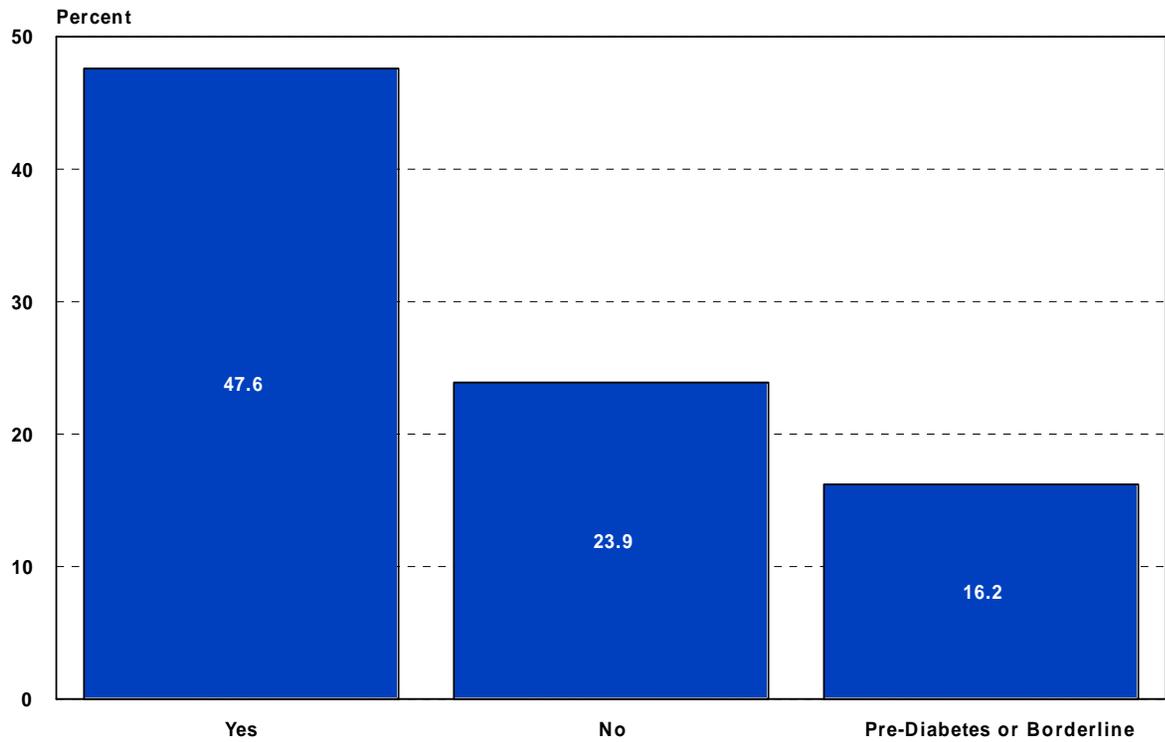
	2002	2003	2004	2005	2006	2007
<b>Race</b>						
White	18.7	18.6	18.9	19.6	20.0	23.6
Non-White	22.1	24.2	26.4	24.2	24.8	31.1
<b>Ethnicity</b>						
Hispanic	19.5	24.4	26.7	23.0	23.4	36.5
Non-Hispanic	19.5	19.2	19.7	20.5	20.9	23.3

**Figure 10**  
**Prevalence of Obesity by Self-Reported General Health Status, Arizona, 2007**



The self-assessed health status is mostly inversely related to the prevalence of obesity. For the most part, the higher the rate of obesity, the worse is the self-assessed health status. Arizonans reporting that their health was poor were 2.5 times more likely to be obese than those who reported their health status as excellent. (36.6 percent vs. 14.4 percent respectively, **Figure 10**).

**Figure 11**  
**Prevalence of Obesity by Diabetes Status, Arizona, 2007**



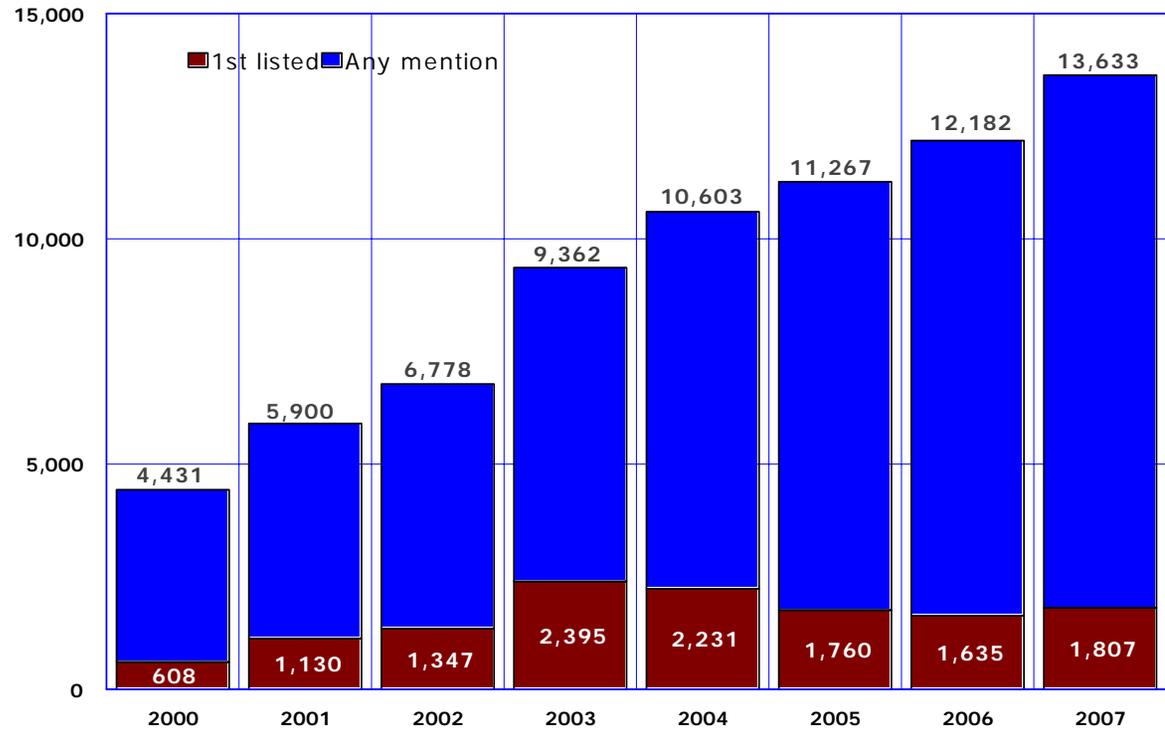
In 2007, 8.4 percent of all respondents reported having been told by a doctor that they had diabetes. Those with diabetes were about 2 times more likely to be obese (47.6 percent) than those without the disease (23.9 percent, **Figure 11**).

**Figure 12**  
**Inpatient Discharges with Morbid Obesity as First-Listed Diagnosis and Any Mention of Morbid Obesity on the Medical Record, Arizona Residents, 2000-2007**

In 2007, **morbid obesity** (ICD-9-CM code 278.01) was the first-listed diagnosis (the first one listed on the discharge summary of the medical record) for 1,807 inpatient hospitalizations (**Figure 12**), 3 times the number reported for 2000. After reaching the recent peak in 2003, the number of inpatient discharges with morbid obesity as first-listed diagnosis declined in 2004 – 2006, and then increased by 10.5 percent in 2007.

However, when we count all entries of the diagnostic code for morbid obesity within the nine diagnostic fields, there has been a continuous increase in the number of hospitalizations related to morbid obesity: from 4,431 in 2000 to 13,633 in 2007 (**Figure 12**).

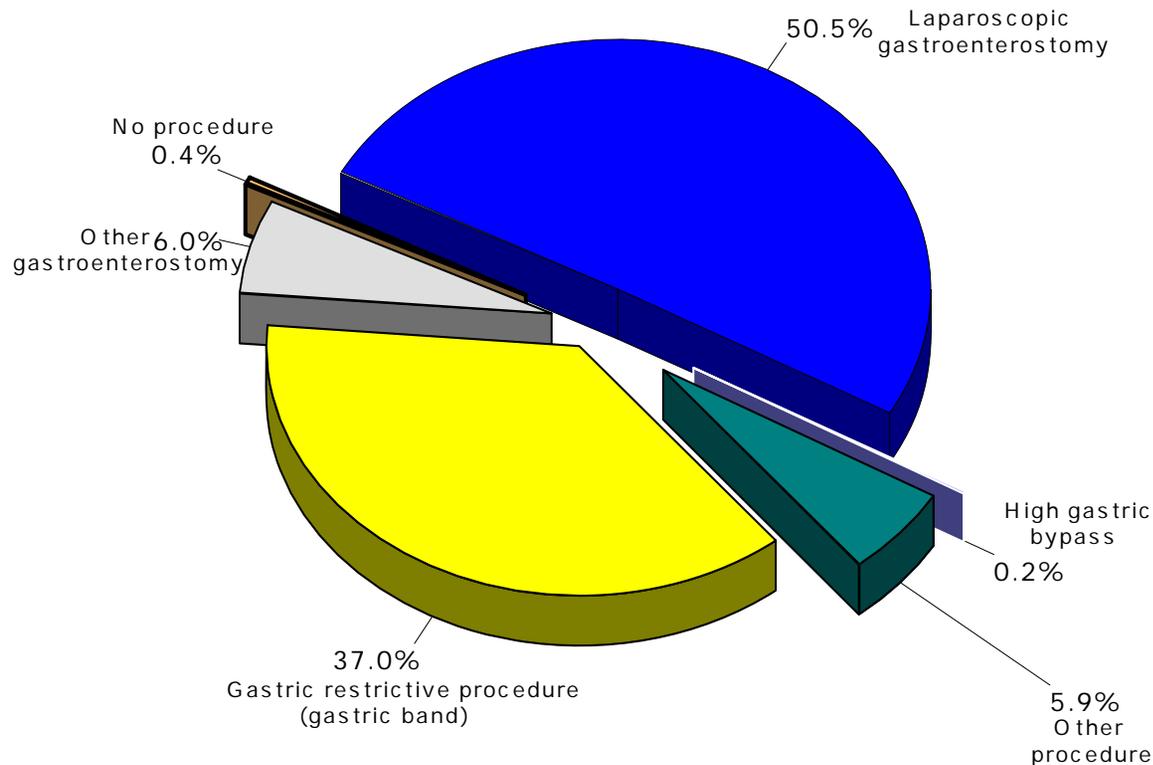
Females accounted for 1,385 (76.6 percent) of the 1,807 inpatient hospitalizations for morbid obesity as first-listed diagnosis (**Table 1**). In 2007, the majority of inpatient hospitalizations were middle-aged adults 45-64 years (50.5 percent) followed closely by young-adults 20-44 years old (44.5 percent). Children or adolescents younger than 20 years of age accounted for 0.4 percent (8 cases) of all inpatient discharges with first-listed morbid obesity diagnosis. In addition, there were 827 inpatient hospitalizations among senior Arizonans 65 years old or older in 2007.



Note: Up to nine diagnoses are coded for each hospital discharge. In 2007, morbid obesity was used as a diagnosis on 1,807 inpatient discharge records. However, when we count all entries of this code within all diagnostic fields, morbid obesity was mentioned on 13,633 inpatient discharge records.

**Figure 13**  
**Types of Surgical Procedures Performed in Treatment of**  
**Morbid Obesity, Arizona Residents, 2007**

N = 1,635 (ICD-9-CM code 278.01 for morbid obesity used as first-listed diagnosis)



Bariatrics is a branch of medicine that deals with the surgical treatment of obesity. Bariatric (or obesity) surgery has seen a rather dramatic increase in its popularity (**Table 2**).

A typical candidate for gastrointestinal surgery has a body mass index (BMI) of 40 or more – about 100 pounds overweight for men and 80 pounds for women. Bariatric surgery may also be considered for someone whose BMI is between 35 and 39.9 and who has a serious obesity-related health problem (such as type 2 diabetes, heart disease, or severe sleep apnea).

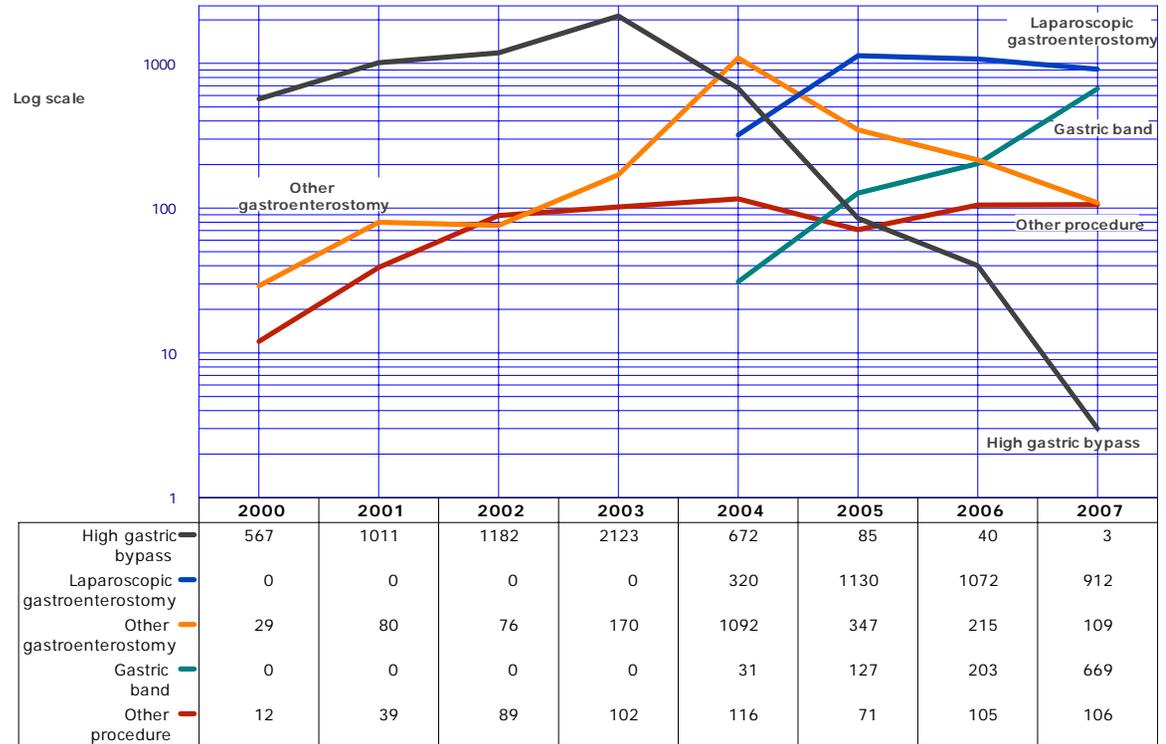
In 2007, *laparoscopic gastroenterostomy* accounted for 50.5 percent of all bariatric surgeries performed in Arizona (**Figure 13**). The surgeon makes one or more small incisions through which surgical instruments are passed, eliminating the need for a large incision.

*Gastric restrictive procedure* accounted for 37.0 percent of obesity surgeries in 2007, 3 times the 2006 proportion of 12.2 percent. In this procedure, a hollow band made of silicone rubber is placed around the stomach near its upper end. The band is then inflated with a salt solution. It can be tightened or loosened to change the size of the passage into the rest of the stomach.

*Gastric bypass surgery* accounted for 0.2 percent of obesity surgeries in 2007. In this procedure, the surgeon creates a small stomach pouch to restrict food intake. Next, a Y-shaped section of the small intestine is attached to the pouch to allow food to bypass the lower stomach.

In 2007, other gastroenterostomy and other gastrointestinal procedure accounted for less than 12 percent of all bariatric surgeries performed in Arizona hospitals. Seven patients who were admitted with morbid obesity diagnosis had no specific procedure reported on their discharge record. Two of the 1,800 patients died in 2007 following a gastrointestinal surgery.

**Figure 14**  
**Trends in Types of Procedures Performed in Treatment of Morbid Obesity\*,**  
**Arizona Residents, 2000-2007**

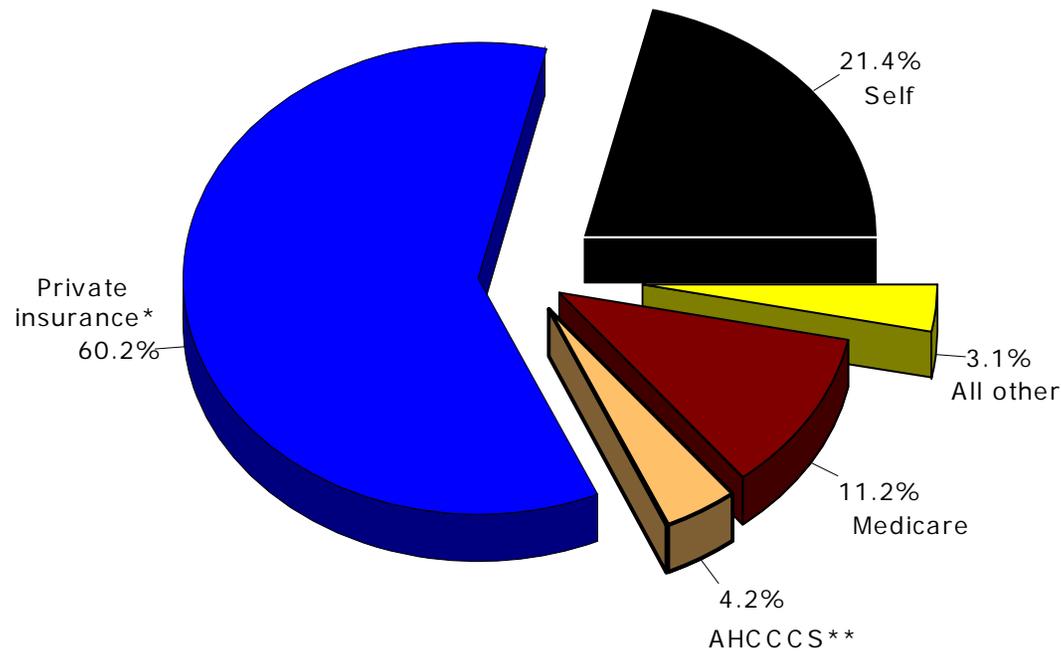


The number of *gastric bypass* surgeries, once the most common bariatric procedure, declined from a recent high of 2,123 in 2003 to only 3 in 2007 (**Figure 14**). Not a single *laparoscopic gastroenterostomy* was reported in Arizona prior to 2004. In 2005, there were 1,130 procedures performed, followed by 1,072 in 2006, and 912 in 2007. The number of *gastric restrictive (gastric band) procedures* was non-existent prior to 2004. The number of 669 *gastric band* procedures performed in 2007 was 21.6 times greater than the 31 procedures performed in 2004. Other gastroenterostomy declined from a recent peak of 1,092 procedures in 2004 to 109 procedures in 2007.

\*Among Arizonans who were admitted as inpatients with first-listed diagnosis of morbid obesity (ICD-9-CM code 278.01). In 2007, among the 1,807 who were admitted as inpatient, only 7 had no specific procedure reported on their discharge record

**Figure 15**  
**Hospital Inpatient Discharges with Morbid Obesity (ICD-9-CM 278.01) as First-Listed Diagnosis by Payer, Arizona Residents, 2007**

N = 1,635 discharges in 2006



\* Indemnity, HMO, PPO.

\*\*The Arizona Health Care Cost Containment System is the State's Medicaid Program.

Private insurance (traditional indemnity, HMO or PPO) was recorded for 60.2 percent of inpatient discharges with morbid obesity as first- listed diagnosis. Self-pay (21.4 percent) was the second expected source of payment for the charges associated with hospital stay. It was followed by Medicare (11.2 percent) and all other sources of payment combined (7.3 percent).

The total gross charges incurred in 2007 by the 1,807 inpatient hospitalizations for **morbid obesity as first-listed diagnosis** exceeded 69 million dollars (\$69,918,227 or \$38,693 per discharge).

In 2007, the highest per capita charges were those for AHCCCS discharges (\$63,135), followed by Medicare (\$44,257). Per capita hospital charges for inpatients who had private insurance coverage were around the average at \$37,493. The per capita charges for self-paying inpatients were below the average (\$34,172).

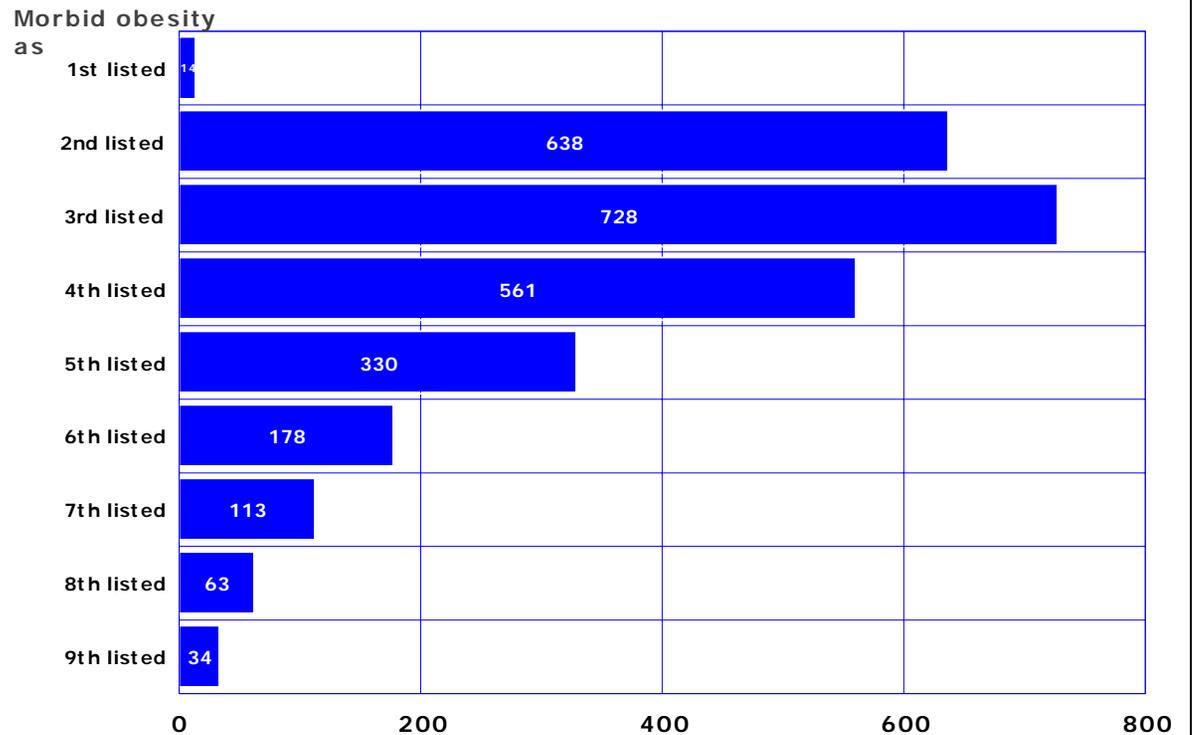
The total gross charges incurred in 2007 by the 13,633 inpatient discharges from Arizona short-stay hospitals with **any mention of morbid obesity** (including the 1,807 first listed diagnoses) exceeded 450 million dollars (\$450,094,988). It is important to note, that the above amounts do not tell us anything about the actual payments received by hospitals.

During 2007, 2,659 visits made by Arizona residents to hospital emergency rooms were related to morbid obesity. Only in 14 cases morbid obesity was recorded as a first-listed diagnosis. Morbid obesity diagnosis was substantially more frequently present as 2nd-9th listed on the medical record than it was first-listed (**Figure 16**). For 2,645 cases where morbid obesity was not reported as first-listed diagnosis, the chief complaints or reasons for a visit to the emergency room were unintentional injuries (275, incl. 114 fall injuries), chest pain (228), sprains and strains (162), back pain and other spinal/musculoskeletal disorders (158), all of which may be related to obesity. These five leading patient complaints accounted for 31.1 percent of all visits related to morbid obesity.

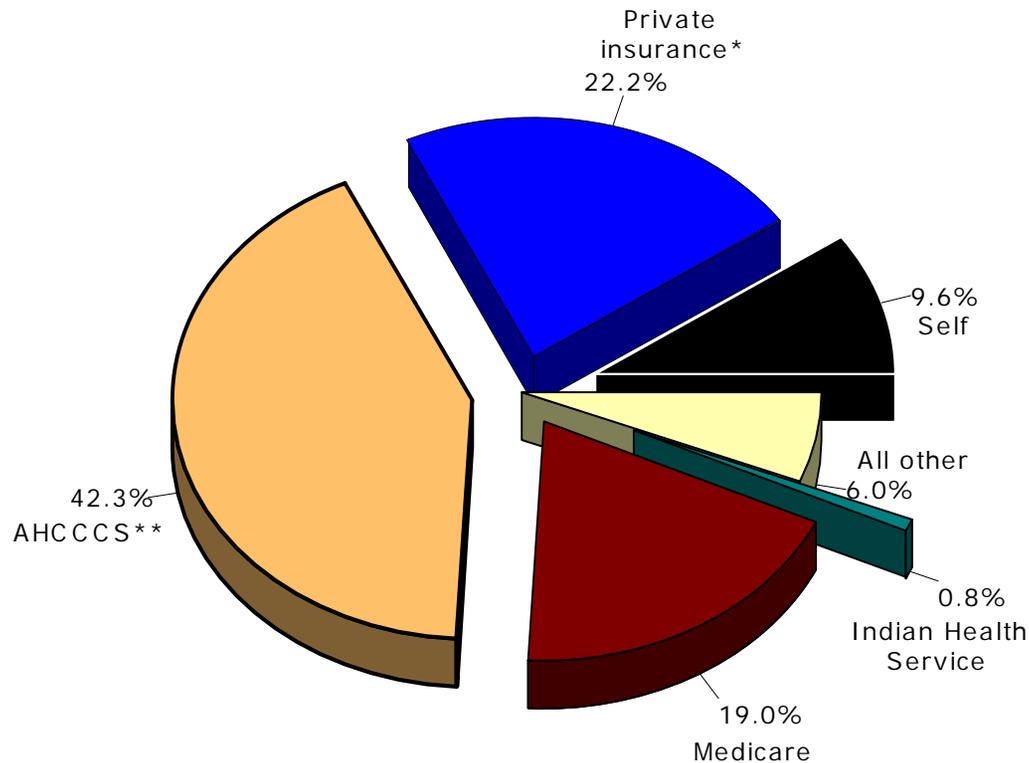
Females made 2.5 times as many emergency department visits related to morbid obesity than males (1,898 vs. 761, **Table 1**). The majority of morbid obesity-related emergency room visits were made by young adults 20-44 years old (1,526, or 57.4 percent of all visits) followed by middle-aged adults (825, 31.0 percent) and elderly 65 years or older (175 or 6.6 percent). There were 84 emergency room visits related to morbid obesity made by adolescents 15-19 years old, and 49 visits made by children 1-14 years of age.

**Figure 16**  
**Number of Emergency Department Visits Related to Morbid Obesity, Arizona Residents, 2007**

Total number of ER visits related to morbid obesity = 2,659



**Figure 17**  
**Emergency Department Visits Related to Morbid Obesity**  
**(ICD-9-CM 278.01) by Payer, Arizona Residents, 2007**



The Arizona Health Care Cost Containment System (AHCCCS) paid for 42.3 percent of emergency room visits related to morbid obesity. Private insurance was the second expected source of payment (22.2 percent). It was followed by Medicare (19.0 percent) and self-pay (9.6 percent; **Figure 17**).

The total gross charges incurred in 2006 by the 2,659 patients seen in the emergency departments in relation to **morbid obesity** amounted to more than 7 million dollars (\$7,269,808 or \$2,734 per visit).

The total gross charges incurred in 2007 by the 12,633 inpatient discharges from Arizona short-stay hospitals and 2,659 ED patients with **any mention of morbid obesity** were \$457,364,796. Again, this combined amount was charged by but not necessarily received by hospitals.

\*Indemnity, HMO, PPO.

\*\*The Arizona Health Care Cost Containment System is the State's Medicaid Program.

**Figure 18**  
**Morbid Obesity as the Underlying Cause of Death,**  
**Arizona Residents, 1990-2007**

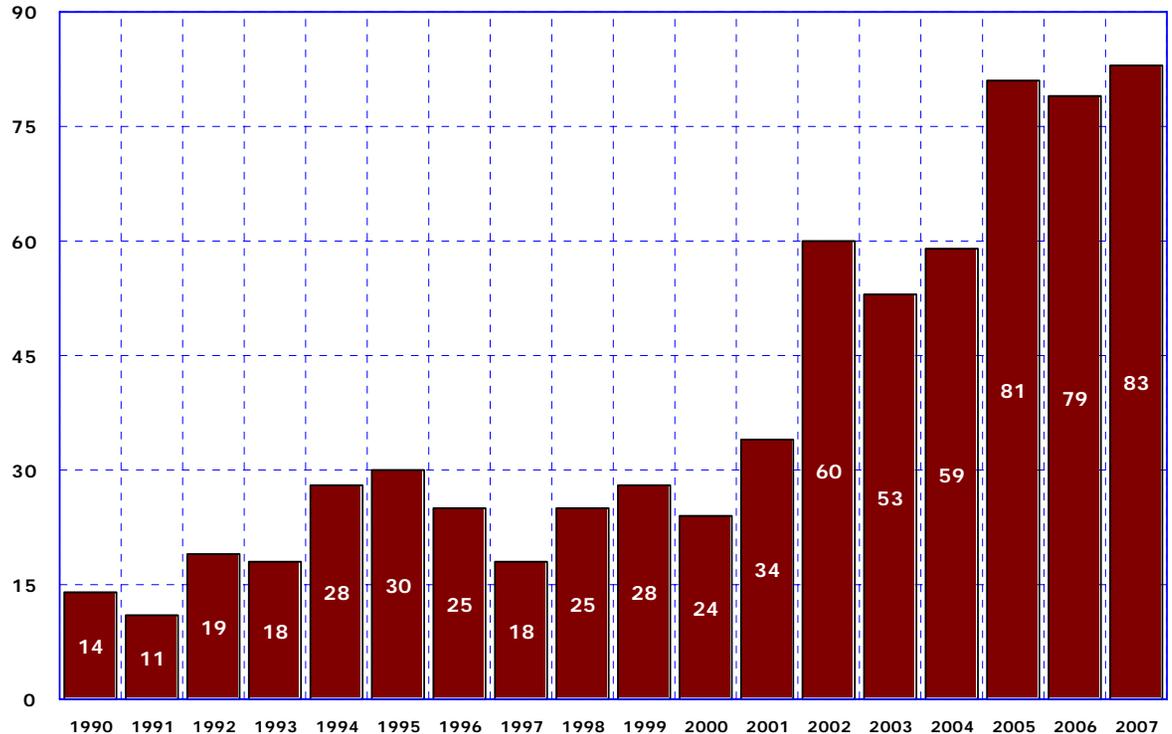
For the purpose of mortality statistics, every death is attributed to one underlying condition or underlying cause of death. The underlying cause is defined as the disease or injury that initiated the chain of events leading directly to death.

In 2007, among the 44,640 deaths of Arizona residents, 83 deaths (0.2 percent) had morbid obesity assigned as the underlying cause (**Figure 18**).

One out of two Arizonans who died from morbid obesity was younger than 50 years old. Compared to the median age at death from all causes among Arizonans in 2007 (76 years) those who died from morbid obesity were on average 26 years younger.

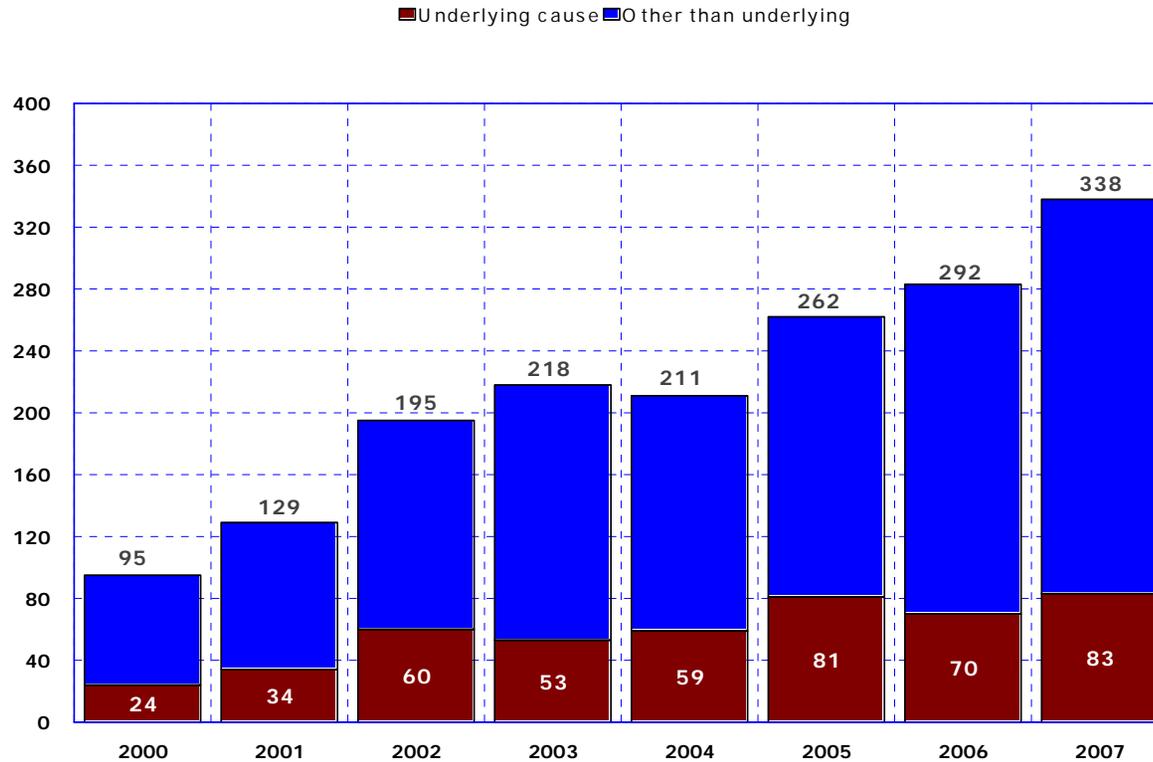
Among the 83 deaths, there were 46 males and 37 females (**Table 4**). Morbid obesity accounted for 61 deaths among White non-Hispanics, 10 deaths among Hispanics or Latinos, seven deaths among American Indian residents of Arizona, and five deaths among Blacks or African Americans. There were no deaths from morbid obesity among Asians or Pacific Islanders.

With the exception of one of the deceased who never worked in their lives, others have represented all walks of life: a homemaker, a manager, a cab driver, a realtor, an attorney, a computer technician, a bookkeeper, and a nurse (**Table 5**).



Note: The causes of death for 1990-1999 are classified by the Ninth Revision of the International Classification of Diseases (ICD-9). The ICD-9 code 278.0 identifies morbid obesity as the underlying cause of death. The causes of death for 2000-2007 are classified by the Tenth Revision (ICD-10). The ICD-10 codes E66.8 (morbid obesity) and E66.9 (obesity, unspecified) are used to identify the deaths from obesity in 2000-2007.

**Figure 19**  
**Morbid Obesity as the Underlying Cause of Death and Any Mention of Obesity on Death Certificates, Arizona Residents, 2000-2007**

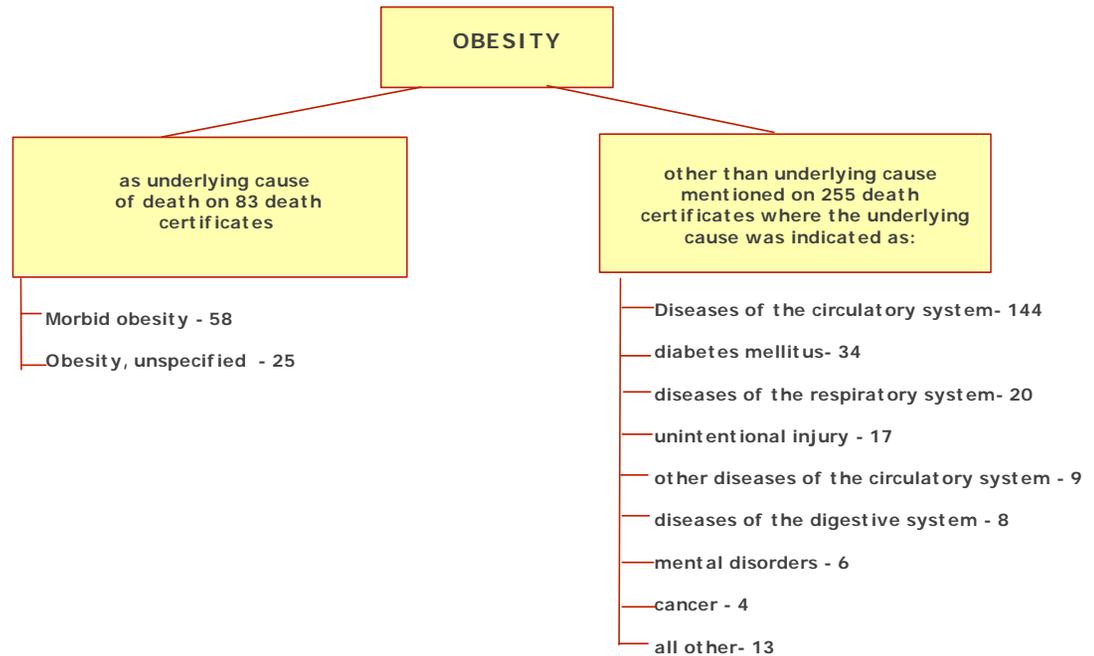


The underlying cause of death is selected from up to 20 causes and conditions entered by the physician on the death certificate. The totality of all these conditions is known as multiple cause of death.

In addition to 83 deaths in 2007 that had morbid obesity assigned as the underlying cause, another 255 deaths had morbid obesity assigned as the other than underlying cause. The sum of these two counts (338, **Figure 19, Table 4**) is the total number of deaths that had any mention of morbid obesity on the 2007 death certificates, 3.6 times as many as in 2000.

Note: For the purpose of mortality statistics, every death is attributed to one underlying condition. However, more medical information is reported on death certificates than is directly reflected in the underlying causes of death. Those conditions are known as multiple cause of death. In the above figure, morbid obesity was mentioned on 338 death certificates of Arizona residents in 2007, and it was selected as the underlying cause on 83 of them.

**Figure 20**  
**Obesity-related Deaths Based on Underlying Cause or Any Mention of Obesity on the Death Certificates of Arizona Residents, 2007**



Diseases of the circulatory system were recorded as the underlying cause of death in 144 (56.5 percent) of the 255 cases in which morbid obesity was a contributing factor (**Figure 20**). Diabetes mellitus was the second most frequently recorded as the underlying cause of death (34 cases or 13.3 percent), followed by diseases of the respiratory system (20 deaths).

**TABLE 1**  
**EMERGENCY DEPARTMENT VISITS AND INPATIENT HOSPITALIZATIONS WITH DIAGNOSIS OF MORBID OBESITY**  
**(ICD-9-CM CODE 278.01) BY GENDER, AGE GROUP AND COUNTY OF RESIDENCE AMONG ARIZONA RESIDENTS, 2007**

			Total		Inpatient discharge		Emergency room visit	
			Morbid obesity, all mentions	1st listed diagnosis	Morbid obesity, all mentions	1st listed diagnosis	Morbid obesity, all mentions	1st listed diagnosis
<b>Total</b>			16,292	1,821	13,633	1,807	2,659	14
<b>Gender</b>	<b>Female</b>		11,185	1,397	9,287	1,385	1,898	12
	<b>Male</b>		5,107	424	4,346	422	761	2
<b>Age group</b>	<b>Children &lt;15</b>	<b>Total</b>	88	1	39	1	49	0
		<b>Female</b>	36	0	14	0	22	0
		<b>Male</b>	52	1	25	1	27	0
	<b>Adolescents 15-19</b>	<b>Total</b>	237	7	153	7	84	0
		<b>Female</b>	181	6	113	6	68	0
		<b>Male</b>	56	1	40	1	16	0
	<b>Young adults 20-44</b>	<b>Total</b>	6,452	807	4,926	805	1,526	2
		<b>Female</b>	4,628	643	3,516	641	1,112	2
		<b>Male</b>	1,824	164	1,410	164	414	0
	<b>Middle-aged adults 45-64</b>	<b>Total</b>	7,101	922	6,276	912	825	10
		<b>Female</b>	4,729	693	4,167	685	562	8
		<b>Male</b>	2,372	229	2,109	227	263	2
	<b>Elderly 65+</b>	<b>Total</b>	2,414	84	2,239	82	175	2
		<b>Female</b>	1,611	55	1,477	53	134	2
<b>Male</b>		803	29	762	29	41	0	
<b>County of residence</b>	<b>Apache</b>	<b>Total</b>	52	8	49	8	3	0
		<b>Female</b>	29	5	28	5	1	0
		<b>Male</b>	23	3	21	3	2	0
	<b>Cochise</b>	<b>Total</b>	316	30	259	25	57	5
		<b>Female</b>	218	27	177	22	41	5
		<b>Male</b>	98	3	82	3	16	0
	<b>Coconino</b>	<b>Total</b>	188	19	157	19	31	0
		<b>Female</b>	139	18	119	18	20	0
		<b>Male</b>	49	1	38	1	11	0
	<b>Gila</b>	<b>Total</b>	142	14	110	13	32	1
		<b>Female</b>	96	13	73	13	23	0
		<b>Male</b>	46	1	37	0	9	1
	<b>Graham</b>	<b>Total</b>	130	25	112	25	18	0
		<b>Female</b>	83	20	72	20	11	0
		<b>Male</b>	47	5	40	5	7	0

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 1**  
**EMERGENCY DEPARTMENT VISITS AND INPATIENT HOSPITALIZATIONS WITH DIAGNOSIS OF MORBID OBESITY**  
**(ICD-9-CM CODE 278.01) BY GENDER, AGE GROUP AND COUNTY OF RESIDENCE AMONG ARIZONA RESIDENTS, 2007 (CONTINUED)**

			Total		Inpatient discharge		Emergency room visit	
			Morbid obesity, all mentions	1st listed diagnosis	Morbid obesity, all mentions	1st listed diagnosis	Morbid obesity, all mentions	1st listed diagnosis
	Greenlee	Total	27	11	25	11	2	0
		Female	16	4	14	4	2	0
		Male	11	7	11	7	0	0
	La Paz	Total	75	2	71	2	4	0
		Female	49	2	48	2	1	0
		Male	26	0	23	0	3	0
	Maricopa	Total	9,002	1,129	7,638	1,125	1,364	4
		Female	6,146	841	5,177	838	969	3
		Male	2,856	288	2,461	287	395	1
	Mohave	Total	529	37	515	37	14	0
		Female	328	28	317	28	11	0
		Male	201	9	198	9	3	0
	Navajo	Total	211	21	194	21	17	0
		Female	145	18	134	18	11	0
		Male	66	3	60	3	6	0
	Pima	Total	3,313	307	2,506	303	807	4
		Female	2,424	250	1,830	246	594	4
		Male	889	57	676	57	213	0
	Pinal	Total	1,133	116	1,018	116	115	0
		Female	749	83	666	83	83	0
		Male	384	33	352	33	32	0
	Santa Cruz	Total	66	4	60	4	6	0
		Female	44	4	40	4	4	0
		Male	22	0	20	0	2	0
	Yavapai	Total	584	50	481	50	103	0
		Female	384	44	315	44	69	0
		Male	200	6	166	6	34	0
Yuma	Total	349	11	286	11	63	0	
	Female	236	10	189	10	47	0	
	Male	113	1	97	1	16	0	
Unknown	Total	175	37	152	37	23	0	
	Female	99	30	88	30	11	0	
	Male	76	7	64	7	12	0	

\*Up to nine diagnoses are coded for each discharge. All mentions include all occurrences of the diagnosis regardless of the order on the medical record.

\*\*The first diagnosis listed on the medical record.

OBSESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 2**  
**CHARACTERISTICS OF INPATIENT DISCHARGES FOR MORBID OBESITY (ICD-9-CM 278.01), ARIZONA RESIDENTS, 2000-2007**

	2000	2001	2002	2003	2004	2006	2006	2007
Any mention of morbid obesity in one or more of the diagnostic fields on the medical record	4,431	5,900	6,778	9,362	10,603	11,267	12,182	13,633
Morbid obesity as first-listed diagnosis	608	1,130	1,347	2,395	2,231	1,760	1,635	1,807
<b>GENDER:</b>								
<b>FEMALE</b>	494	911	1,118	1,987	1,826	1,417	1,274	1,385
<b>MALE</b>	114	208	229	408	405	343	361	422
<b>AGE GROUP:</b>								
<b>19 years old or younger</b>	8	14	10	9	17	11	13	8
<b>20-44 years old</b>	371	691	774	1,277	1,157	892	787	805
<b>45-64 years old</b>	222	416	545	1,065	1,108	810	788	912
<b>65 years old or older</b>	7	9	18	44	39	47	47	82
<b>TYPE OF OBESITY SURGERY PERFORMED:</b>								
<b>High gastric bypass <sup>1</sup></b>	567	1,011	1,182	2,123	672	85	40	3
<b>Laparoscopic gastroenterostomy <sup>2</sup></b>	0	0	0	0	320	1,130	1,072	912
<b>Other gastroenterostomy <sup>3</sup></b>	29	80	76	170	1,092	347	215	109
<b>Gastric restrictive procedure (gastric band)<sup>4</sup></b>	0	0	0	0	31	127	203	669

Note: Based on hospital inpatient discharges from short-stay, non-federal hospitals in Arizona.

<sup>1</sup>First-listed ICD-9-CM procedure code 44.31.

<sup>2</sup>First-listed CD-9 CM procedure code 44.38.

<sup>3</sup>First listed ICD-9-CM procedure code 44.39.

<sup>4</sup>First-listed ICD-9-CM procedure code 44.95.

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 3**  
**MORBID OBESITY (ICD-9 CODE 278.0) AS THE UNDERLYING CAUSE OF DEATH,**  
**ARIZONA RESIDENTS, 1990-1999**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Obesity as the underlying cause of death:	14	11	19	18	28	30	25	18	25	28
<b>Gender:</b>										
Male	7	7	9	8	15	16	10	9	14	17
Female	7	4	10	10	13	14	15	9	11	11
<b>Age group:</b>										
Children 1-14 years old	0	0	0	0	0	0	0	0	0	0
Adolescents 15-19 years old	0	0	0	0	0	0	0	0	0	1
Young adults 20-44 years old	6	4	8	7	10	7	8	3	13	15
Middle-aged adults 45-64 years old	6	5	5	6	15	15	15	12	8	8
Elderly 65 years old or older	2	2	6	5	3	8	2	3	4	4
<b>Race/ethnicity:</b>										
White non-Hispanic	12	9	12	15	21	24	16	16	18	19
Hispanic or Latino	1	1	5	1	5	5	2	1	5	4
Black or African American	0	1	1	1	2	0	4	1	0	1
American Indian or Alaska Native	1	0	1	1	0	1	3	0	2	4
Asian or Pacific Islander	0	0	0	0	0	0	0	0	0	0

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 3**  
**MORBID OBESITY (ICD-9 CODE 278.0) AS THE UNDERLYING CAUSE OF DEATH ,**  
**ARIZONA RESIDENTS, 1990-1999 (CONTINUED)**

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
<b>County of residence:</b>										
Apache	0	0	0	0	0	0	0	0	1	2
Cochise	0	0	1	0	0	2	2	0	0	1
Coconino	0	0	0	0	0	1	1	0	0	0
Gila	1	0	0	0	1	0	0	0	0	0
Graham	1	0	0	0	0	1	0	0	0	0
Greenlee	0	0	0	0	0	1	0	0	0	0
Maricopa	6	8	14	12	15	12	14	12	16	16
Mohave	0	0	0	2	2	0	0	0	1	0
Navajo	1	0	0	0	3	1	1	0	0	0
Pima	3	1	1	0	5	5	4	1	4	5
Pinal	0	2	1	2	0	4	0	2	1	0
Santa Cruz	0	0	0	0	0	0	1	0	0	0
Yavapai	1	0	0	0	1	0	0	2	0	3
Yuma	1	0	1	2	0	2	0	0	1	1
La Paz	0	0	1	0	1	1	2	1	1	0
Unknown	0	0	0	0	0	0	0	0	1	2

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 4**  
**MORBID OBESITY (ICD-10 CODES E66.8 AND E66.9) AS THE UNDERLYING CAUSE OF DEATH AND ANY MENTION OF OBESITY ON DEATH CERTIFICATES, ARIZONA RESIDENTS, 2000-2007**

	2000	2001	2002	2003	2004	2006	2006	2007
Any mention of morbid obesity on death certificates	95	129	195	218	211	262	292	338
Obesity as the underlying cause of death:	<b>24</b>	<b>34</b>	<b>60</b>	<b>53</b>	<b>59</b>	<b>81</b>	<b>79</b>	<b>83</b>
<b>MORBID OBESITY (ICD-10 CODE E66.8)</b>	21	23	40	35	38	62	57	58
<b>OBESITY, UNSPECIFIED (ICD-10 CODE E66.9)</b>	5	11	20	18	21	19	22	25
<b>GENDER:</b>								
<b>MALE</b>	16	22	34	27	34	46	43	46
<b>Female</b>	8	12	26	26	25	35	36	37
<b>AGE GROUP:</b>								
<b>Children 1-14 years old</b>	0	0	1	0	0	0	0	0
<b>Adolescents 15-19 years old</b>	0	0	0	0	1	0	2	0
<b>Young adults 20-44 years old</b>	8	13	26	18	21	28	28	19
<b>Middle-aged adults 45-64 years old</b>	13	13	25	26	25	34	32	44
<b>Elderly 65 years old or older</b>	3	8	8	9	12	19	17	20
<b>RACE/ETHNICITY:</b>								
<b>White non-Hispanic</b>	17	25	42	40	46	60	56	61
<b>Hispanic or Latino</b>	4	3	9	6	5	8	15	10
<b>Black or African American</b>	0	2	2	3	5	5	4	5
<b>American Indian or Alaska Native</b>	3	4	7	4	3	7	4	7
<b>Asian or Pacific Islander</b>	0	0	0	0	0	1	0	0

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 4**  
**MORBID OBESITY (ICD-10 CODES E66.8 AND E66.9) AS THE UNDERLYING CAUSE OF DEATH AND ANY MENTION OF OBESITY ON DEATH CERTIFICATES,**  
**ARIZONA RESIDENTS, 2000-2007 (CONTINUED)**

	2000	2001	2002	2003	2004	2006	2006	2007
County of residence:								
<b>Apache</b>	0	0	2	1	0	0	1	1
<b>Cochise</b>	2	3	4	2	0	2	1	1
<b>Coconino</b>	1	0	0	0	1	3	5	0
<b>Gila</b>	0	0	2	1	1	0	0	1
<b>Graham</b>	0	0	1	0	1	0	0	0
<b>Greenlee</b>	0	0	0	0	0	0	0	0
<b>Maricopa</b>	12	23	29	34	39	46	52	48
<b>Mohave</b>	1	1	1	0	2	4	3	6
<b>Navajo</b>	0	0	1	0	0	2	12	2
<b>Pima</b>	7	4	13	4	10	9	2	15
<b>Pinal</b>	1	1	2	4	3	4	0	2
<b>Santa Cruz</b>	0	0	0	0	0	0	1	2
<b>Yavapai</b>	0	1	1	2	1	6	2	5
<b>Yuma</b>	0	1	4	4	0	5	0	0
<b>La Paz</b>	0	0	0	0	1	0	0	0
<b>Unknown</b>	0	0	0	1	0	0	0	0

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 5**  
**CHARACTERISTICS OF DEATHS FROM MORBID OBESITY (ICD-10 CODES E668, E889) AMONG ARIZONA RESIDENTS IN 2007**

1	50	Male	White non-Hispanic	E669	ARRHYTHMIA NOS	CORONARY ARTERY DISEASE NOS	OBESITY NOS	SELF EMPLOYED
2	40	Male	White non-Hispanic	E669	SUDDEN CARDIAC DEATH DUE TO HYPERTENSIVE	CARDIOVASCULAR DISEASE AND CHRONIC COR	PULMONALE DUE TO OBESITY AND SLEEP APNEA	SECURITY GUARD
3	63	Female	White non-Hispanic	E668	CARDIAC ARREST	MORBID OBESITY	SLEEP APNEA	RN
4	59	Female	White non-Hispanic	E668	RESPIRATORY ARREST	MORBID OBESITY		UNKNOWN
5	63	Male	White non-Hispanic	E668	RESPIRATORY FAILURE	SLEEP APNEA	MORBID OBESITY	SALESMAN
6	48	Male	White non-Hispanic	E669	HYPERTENSIVE HEART DISEASE	HYPERLIPIDEMIA	OBESITY	BOILER ROOM TECHNICIAN
7	60	Female	White non-Hispanic	E668	MORBID OBESITY			CASHIER
8	74	Male	White non-Hispanic	E668	RESPIRATORY FAILURE	MORBID OBESITY		ACCOUNTANT
9	61	Male	Black or African American	E668	OBSTRUCTIVE SLEEP APNEA AND OBESITY HYPOVENTILATION	SYNDROME	MORBID OBESITY	LABORER
10	48	Male	White non-Hispanic	E668	MORBID OBESITY			UNKNOWN
11	35	Male	Black or African American	E668	HYPERTENSIVE CARDIOVASCULAR DISEASE	MORBID OBESITY		DISABLED
12	70	Female	Hispanic or Latino	E668	CARDIOPULMONARY ARREST	MORBID OBESITY	DIABETES MELLITUS INSULIN DEPENDENT UNCONTROLLED	NURSE
13	59	Female	Hispanic or Latino	E668	PROBABLE CARDIOVASCULAR DISEASE	HYPERTENSION	MORBID OBESITY	CASHIER
14	58	Male	White non-Hispanic	E669	RESPIRATORY FAILURE	OBESITY	HYPERTENSION	MECHANIC
15	46	Male	White non-Hispanic	E668	COMPLICATIONS OF MORBID OBESITY			DRIVER
16	50	Female	Black or African American	E668	RESPIRATORY FAILURE	PULMONARY EDEMA	ETIOLOGY UNKNOWN	HOMEMAKER
17	62	Male	White non-Hispanic	E668	KLEBSIELLA SEPSIS	RENAL FAILURE	MORBID OBESITY	UNKNOWN
18	69	Male	White non-Hispanic	E669	RESPIRATORY FAILURE	SLEEP APNEA	OBESITY	OWNER

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 5**  
**CHARACTERISTICS OF DEATHS FROM MORBID OBESITY (ICD-10 CODES E668, E889) AMONG ARIZONA RESIDENTS IN 2007**

19	54	Female	White non-Hispanic	E668	COMPLICATIONS OF MORBID OBESITY			HOMEMAKER
20	61	Male	White non-Hispanic	E668	COR PULMONALE WITH RIGHT HEART FAILURE	OBSTRUCTIVE SLEEP APNEA	MORBID OBESITY	ENTREPRENEUR
21	33	Female	Hispanic or Latino	E668	HEART FAILURE	RENAL FAILURE	MORBID OBESITY	INDEPENDENT CONTRACTOR
22	44	Female	Black or African American	E669	CARDIOPULMONARY ARREST	HYPERTENSION	OBESITY	TELLER
23	45	Male	Hispanic or Latino	E669	CORONARY ARTERY DISEASE	HYPERTENSION DIABETES	OBESITY	SUPERVISOR
24	51	Female	White non-Hispanic	E668	CARDIOPULMONARY ARREST	CORONARY ARTERY DISEASE	MORBID OBESITY	RECEPTIONIST
25	76	Female	White non-Hispanic	E669	CONGESTIVE HEART FAILURE	CHRONIC OBSTRUCTIVE PULMONARY DISEASE	OBESITY	TELEPHONE OPERATOR
26	73	Female	White non-Hispanic	E669	CARDIOMYOPATHY	OBESITY HYPOVENTILATION SYNDROME	RENAL FAILURE	INSURANCE AGENT
27	44	Female	White non-Hispanic	E668	SUSPECTED MYOCARDIAL INFARCTION	CORONARY ARTERY DISEASE	MORBID OBESITY	CERTIFIED NURSING ASSISTANT
28	51	Female	White non-Hispanic	E669	COMPLICATIONS OF OBESITY			UNKNOWN
29	51	Male	White non-Hispanic	E668	SEQUELAE OF MORBID OBESITY			SOCIAL WORKER
30	69	Male	White non-Hispanic	E668	COR PULMONALE	OBSTRUCTIVE SLEEP APNEA	MORBID OBESITY	TRUCK DRIVER
31	57	Female	White non-Hispanic	E668	CARDIOPULMONARY ARREST	SLEEP APNEA	MORBID OBESITY	SALES LADY
32	51	Female	White non-Hispanic	E668	COMPLICATIONS OF MORBID OBESITY			MEDICAL TECHNICIAN
33	55	Male	White non-Hispanic	E669	CARDIO RESPIRATORY ARREST	PUL EMBOLISM	OBESITY	TEACHER COACH
34	38	Male	American Indian or Alaska Native	E669	COMPLICATIONS OF OBESITY			COOK
35	76	Female	White non-Hispanic	E668	RESPIRATORY FAILURE SECONDARY TO MORBID OBESITY			ROAD COMMISSIONER

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 5**  
**CHARACTERISTICS OF DEATHS FROM MORBID OBESITY (ICD-10 CODES E668, E889) AMONG ARIZONA RESIDENTS IN 2007**

36	38	Female	Hispanic or Latino	E668	COMPLICATIONS OF MORBID OBESITY			HOMEMAKER
37	74	Male	White non-Hispanic	E668	RESPIRATORY ARREST	PULMONARY EMBOLISM	MORBID OBESITY	SHOE SALESMAN
38	56	Male	White non-Hispanic	E669	CARDIAC ARREST	HYPERTENSION	OBESITY	OWNER
39	69	Female	White non-Hispanic	E668	COMPLICATIONS OF MORBID OBESITY			BUS DRIVER
40	38	Male	Hispanic or Latino	E668	COMPLICATIONS OF MORBID OBESITY			DISPATCHER
41	45	Female	White non-Hispanic	E669	ACUTE SUBACUTE AND CHRONIC MYOCARDIAL ISCHEMIA	COMBINED EFFECTS OF OBESITY, SLEEP APNEA,	HYPERTENSION AND RECENT GASTRIC SLEEVE SURGERY	ACCOUNT MGR
42	41	Male	White non-Hispanic	E669	SEIZURE DISORDER			CALL CENTER TECH
43	55	Female	White non-Hispanic	E668	CARDIO RESPIRATORY FAILURE	MORBID OBESITY SLEEP APNEA	COPD	PURCHASING AGENT
44	46	Female	White non-Hispanic	E668	DISSEMINATED INTRAVASCULAR COAGULATION	MASSIVE RETROPERITONEAL BLEED	ANTICOAGULATION	NURSE ASSISTANT
45	49	Female	White non-Hispanic	E668	COMPLICATIONS OF MORBID OBESITY			NEVER WORKED
46	49	Male	American Indian or Alaska Native	E668	PULM HYPERTENSION	PNEUMONIA - UNSPECIFIED	MORBID OBESITY	IRRIGATIONS SYSTEMS
47	74	Male	White non-Hispanic	E669	ACUTE RESPIRATORY FAILURE	SEVERE CHRONIC OBSTRUCTION PULMONARY DISEASE	SENILITY / OBESITY	SANITATION WORKER
48	51	Female	White non-Hispanic	E668	MORBID OBESITY			HOMEMAKER
49	43	Female	White non-Hispanic	E668	MORBID OBESITY WITH SLEEP APNEA			CASHIER
50	72	Male	White non-Hispanic	E668	CARDIO PULMONARY COLLAPSE	MULTI ORGAN SYSTEM FAILURE	MORBID OBESITY	CAB DRIVER

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 5**  
**CHARACTERISTICS OF DEATHS FROM MORBID OBESITY (ICD-10 CODES E668, E889) AMONG ARIZONA RESIDENTS IN 2007**

51	58	Male	White non-Hispanic	E669	CORONARY ARTERY DISEASE	OBESITY		MASTER PLUMBER
52	21	Male	American Indian or Alaska Native	E668	PNEUMONIA	VERY MORBID OBESITY		STUDENT
53	71	Male	White non-Hispanic	E669	BACTERIAL SEPSIS / RENAL FAILURE	ATRIAL FIBRILLATION RESPIRATORY FAILURE	OBESITY AND PROSTATE CANCER	REALTOR
54	54	Male	White non-Hispanic	E669	CARDIAC ARREST	RESPIRATORY FAILURE	OBESITY - HYPOVENTILATION SYNDROME	ATTORNEY
55	41	Female	White non-Hispanic	E668	COMPLICATIONS OF MORBID OBESITY			TECHNOLOGIST
56	87	Male	White non-Hispanic	E668	SEPTIC PROSTETIC RIGHT HIP	MORBID OBESITY		NATIONAL GUARD
57	53	Male	American Indian or Alaska Native	E669	COMPLICATIONS OF OBESITY			COMPUTER TECHNICIAN
58	52	Male	Hispanic or Latino	E668	CARDIOMYOPATHY	MORBID OBESITY		PAINT SALESMAN
59	64	Female	White non-Hispanic	E668	CARDIAC ARRHYTHMIA	GASTRO-INTESTINAL BLEEDING	MORBID OBESITY	DIE CAST TRIMMER
60	53	Female	White non-Hispanic	E668	MULTI - SYSTEM ORGAN FAILURE	MORBID OBESITY	DM	HOMEMAKER
61	58	Male	White non-Hispanic	E668	MORBID OBESITY			OWNER/OPERATOR
62	22	Male	Hispanic or Latino	E669	SEIZURE DISORDER, NOT OTHERWISE SPECIFIED			RECREATION CORDINATOR
63	78	Female	White non-Hispanic	E669	HYPERCAPNIC RESPIRATORY FAILURE	OBESITY		BOOKKEEPER
64	83	Female	White non-Hispanic	E669	PULMONARY EMBOLISM	OBESITY NO OTHER APPARENT CAUSE		LPN
65	45	Male	Hispanic or Latino	E668	RESPIRATORY FAILURE	BACTERIAL PNEUMONIA	MORBID OBESITY	CLERK
66	33	Male	White non-Hispanic	E668	COMPLICATIONS OF MORBID OBESITY			DRIVER
67	58	Female	White non-Hispanic	E668	MORBID OBESITY			COUNSELOR
68	62	Female	American Indian or Alaska Native	E668	MORBID OBESITY			HOMEMAKER
69	67	Female	White non-Hispanic	E668	RESPIRATORY ARREST	MORBID OBESITY		HOMEMAKER

OBESITY IN ARIZONA: PREVALENCE, HOSPITAL CARE UTILIZATION, MORTALITY

**TABLE 5**  
**CHARACTERISTICS OF DEATHS FROM MORBID OBESITY (ICD-10 CODES E668, E889) AMONG ARIZONA RESIDENTS IN 2007**

70	84	Male	White non-Hispanic	E668	DECOMPENSATED CONGESTED HEART FAILURE	COR PULMONALE	MORBID OBESITY	PHOTO JOURNALIST
71	60	Female	White non-Hispanic	E668	MORBID OBESITY			HOMEMAKER
72	61	Female	White non-Hispanic	E669	CARDIORESPIRATORY FAILURE	OBESITY HYPOVENTILATION SYNDROME		HOMEMAKER
73	31	Male	White non-Hispanic	E668	ACUTE MYOCARDIAL DYSFUNCTION	MORBID OBESITY		HOMEMAKER
74	41	Male	White non-Hispanic	E668	MORBID OBESITY WITH CONGESTIVE HEART FAILURE			CLEANING OFFICE
75	68	Male	White non-Hispanic	E668	ATHEROSCLEROSIS (ASCHD)	MORBID OBESITY	HYPERTENSION	QUALITY CONTROL MANAGER
76	56	Male	White non-Hispanic	E668	COMPLICATIONS OF MORBID OBESITY			ADMINISTRATOR
77	46	Female	Black or African American	E668	COMPLICATIONS OF MORBID OBESITY AND	COMBINED TOXICITY OF MULTIPLE MEDICATIONS		SUPERVISOR
78	60	Male	White non-Hispanic	E668	PNEUMONIA ASPIRATION	MORBID OBESITY	SLEEP APNEA	SOCIAL WORKER
79	39	Male	Hispanic or Latino	E668	SEPSIS	METABOLIC ENCEPHALOPATHY	MORBID OBESITY	WELDER
80	78	Male	White non-Hispanic	E669	RESPIRATORY ARREST	OBSTRUCTIVE SLEEP APNEA	OBESITY	MANAGER
81	73	Female	White non-Hispanic	E668	RESPIRATORY FAILURE	CHRONIC OBSTRUCTIVE PULMONARY DISEASE /	HYPOVENTILATION	WAITRESS
82	33	Male	American Indian or Alaska Native	E668	Heart Attack	Hypertension	Morbid Obesity	OIL FIELD
83	22	Male	American Indian or Alaska Native	E668	COMPLICATIONS OF MORBID OBESITY			HOME MAKER

**References**

1. Ogden CL, Fryar CD, Carroll MD, Flegal KM. Mean body weight, height, and body mass index, United States 1960–2002. *Advance data from vital and health statistics; no 347*. Hyattsville, Maryland: National Center for Health Statistics. 2004.
2. Mokdad AH, Bowman BA, Ford ES, Vinicor F, Marks JS, Koplan JP. *The Continuing Epidemics of Obesity and Diabetes in the United States*. JAMA. 2001 Sep 12. 286 (10).
3. U.S. Department of Health and Human Services. The Surgeon General's call to action to prevent and decrease overweight and obesity. [Rockville, MD]: U.S. Department of Health and Human Services, Public Health Service, Office of the Surgeon General; [2001].
4. Fontaine KR, Redden DT, Ford ES, Wang C, Westfall AO, Allison DB. *Years of Life Lost Due to Obesity*. JAMA. 2003 Jan 8. 289 (2).
5. Must A, Spadano J, Coakley EH, Field AE, Colditz G, Dietz WH. *The Disease Burden Associated With Overweight and Obesity*. JAMA. 1999 Oct 27. 282 (16).
6. U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: U.S. Government Printing Office, November 2000.