



ARIZONA DEPARTMENT
OF HEALTH SERVICES

Aging in Arizona:
Leading Causes and Risk Factors of Death
Among Arizona Residents 65 Years and
Older-2021
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Intended Audience

This is a technical report on the analysis of morbidity, mortality and behaviors among Arizona's aging population. This report is aimed primarily at those actively involved in promoting the health and wellness of Arizonans who are 65 years and older, including healthcare providers, community service providers, researchers, policymakers, and other stakeholders. While publicly available, the intended audience of this report is not the general public, and extra care in the use or interpretation of this report should be taken by those with limited background or subject-matter expertise in the areas of healthy aging.

How to Use This Report

This report describes the morbidity, mortality and self-reported health behaviors of Arizonans who are 65 years and older. The key findings presented in this report should assist in the targeted outreach for those involved in the care and well-being of the elderly population.

Disclaimer

This report includes findings of primary cause of death, hospitalization and emergency visits from 2017-2021. The use of SARS-CoV-2 (the virus that causes coronavirus disease, COVID-19)

ICD-10 codes in pandemic years, may alter the data trends from 2020-2021. Rates based on non-zero counts less than 6 have been suppressed.

Previous ADHS Reports on Injury among Older Persons

In 2014, ADHS published a [report](#) on Aging in Arizona: The Health Status of Older Arizonans. ADHS also publishes an annual [summary of Falls](#) in Arizona. This report differs from these in that it details the top leading causes of death, hospitalizations and emergency department visits in addition to demographic characteristics.

Executive Summary

Arizonans 65 years and older experienced a 14% population growth between 2017 and 2021.¹ Although hospitalizations and emergency department visits were steady over this period, the number of deaths increased by 37%.

In 2021, there were a total of 58,014 deaths among Arizonans 65 years and older. The rate of mortality among persons 65 years and older is approximately 13 times that of persons younger than 65 years. The highest mortality rates were among persons 85 years and older (13,346 per 100,000 residents), American Indian or Alaska Native persons (5,589 per 100,000 residents), males (4,859 per 100,000 residents), and persons living in rural regions of Arizona (4,588 per 100,000 residents). The leading cause of death among Arizonans 65 years and older was heart disease (n=12,083) followed by malignant neoplasms (9,718).

In 2021, the highest rates of inpatient hospitalizations among Arizonans 65 years and older were among Black or African American persons (41,236 per 100,000 residents), males (19,862 per 100,000 residents), and persons living in urban regions of Arizona (18,901 per 100,000 residents). The highest rates of emergency department visits among Arizonans 65 years and older were among persons 85 years and older (45,457 per 100,000 residents), Black or African American persons (41,235 per 100,000 residents), persons living in rural regions of Arizona (39,179 per 100,000 residents), and females (33,132 per 100,000 residents). Diseases of the circulatory system were most commonly associated with inpatient hospitalizations (24%) and symptoms, signs and ill-defined conditions were most commonly associated with emergency department visits (25%).

In 2021, 3,936 Arizonans aged 65 and older participated in the Behavioral Risk Factor Surveillance Survey (BRFSS). Of those who participated, most reported experiencing “good,” “very good,” or “excellent” health (78%), and had a routine medical checkup within the past year (86%). The majority of Arizonans 65 years and older report not binge drinking within the past month (87%), and about half (51%) reported never smoking. A history of serious health concerns was self-reported by some participants, the most common being arthritis (48%), diabetes (22%), having a heart attack (11%), coronary heart disease (10%), and stroke (8%).

This report utilizes vital records, inpatient and emergency department discharge records from all Arizona licensed hospitals, and population survey data. This report will inform the Arizona State Plan on Aging and activities coordinated through the Governor’s Advisory Council on Aging (GACA) that provides guidance on matters relating to aging.

¹Arizona Department of Health Services, Population Health and Vital Statistics (2017-2021), Population Denominators. Accessed October 21, 2022. <https://pub.azdhs.gov/health-stats/menu/info/pop/index.php>

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Introduction

The increase in the number of older adults in the United States is unprecedented.² The population age 65 and older increased from 39.6 million in 2009 to 54.1 million in 2019 (a 36% increase), representing more than 1 in 7 Americans². With aging, comes the increasing risk of chronic diseases such as heart disease, type II diabetes, arthritis, and cancer.²

In 2020, the leading causes of death among all persons in the United States were heart disease (n=556,655 deaths), cancer (n=440,753) and COVID-19 (n=282,836).³ Between 2015-2018, women aged 75 and older represented the highest percentage of individuals with hypertension (86%) and women aged 65-74 years old represented the highest percentage of individuals with obesity (46%).³ In 2019, only 1 in 4 (25.1%) persons aged 65 and over reported being in “fair” or “poor” health.³

The increasing number and proportion of Arizonans 65 years and older will necessitate the strategic planning of cost-effective health and social services to properly care for our older population. Understanding the health of Arizona’s current aging population provides guidance in preparing for the coming growth of our older adult population. Increasing the quality of life for Arizona’s older adults now and into the future requires addressing existing causes and patterns of mortality among the state’s aging population. Chronic diseases that are currently most associated with mortality among the oldest Arizonans will become increasingly problematic as the population expands.

This report provides a comprehensive outline of the health status, morbidity and mortality of Arizonans 65 years and older based on data from vital records, hospital discharge and survey data.

²Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Promoting Health for Older Adults (2022). Accessed October 24, 2022. <https://www.cdc.gov/chronicdisease/resources/publications/factsheets/promoting-health-for-older-adults.htm>

³Centers for Disease Control and Prevention, National Center for Health Statistics, Older Person’s Health, (2022). Accessed, December 6 2022. <https://www.cdc.gov/nchs/fastats/older-american-health.htm>

Methodology

Data Sources

Vital Records

The [ADHS Population Health and Vital Statistics](#) compiles original death certificate transcripts of deaths. These compiled data were used to calculate the leading causes of death among Arizona residents 65 years and older. Data from here are on pages 10 to 18.

Hospital Discharge Data (HDD)

ADHS collects [hospital discharge data](#) (HDD) records for emergency department visits and hospitalizations from all Arizona licensed hospitals. This collection is required by Arizona Revised Statute (A.R.S.) § 36-125-05, and Arizona Administrative Code Title 9, Chapter 11, Articles 4 and 5. Submission of hospital discharge records for federal (e.g., military) and tribal facilities is voluntary. HDD represents 100% of reporting hospital and inpatient Arizona medical facility encounters based on ICD-10 billing codes. These data were used to calculate inpatient hospitalizations and emergency department visits among Arizona residents 65 years and older. Inpatient hospitalizations and emergency department visits were counted based on patient's residence. Data from here are on pages 19 to 34 and page 44.

Behavioral Risk Factor Surveillance System (BRFSS)

The [Arizona Behavioral Risk Factor Surveillance System](#) (BRFSS) is a representative telephone survey conducted in Arizona and across the United States that provides population-level estimates of important health indicators⁴. The combined response rate for landline and cell phone samples was 43.4% (2021)⁴. Data from the 2017-2021 AZ BRFSS was used to calculate weighted estimates of health indicators and behaviors among Arizonans 65 years and older using the Centers for Disease Control and Prevention [Web Enabled Analysis Tool](#).

BRFSS uses weighting to adjust for noncoverage and nonresponse and approximates the total number of cases to equal population estimates for each geographic region, which for the BRFSS sums to the state population. In this way, users can generalize the sample to the state's population. Data from here are on pages 35 to 41.

Population Denominators

The 2021 ADHS [population denominators](#) were developed using the finalized population estimates of Arizona residents from the Arizona Office of Economic Opportunity⁵. These denominators were used to calculate population-based prevalence rates.

⁴Centers for Disease Control and Prevention, Behavioral Risk Factor Surveillance System (2021). Accessed October 24, 2022. <https://www.cdc.gov/brfss/index.html>

⁵Arizona Department of Health Services, Population Health and Vital Statistics, Population Denominators, (2021). Accessed, October 24, 2022. <https://pub.azdhs.gov/health-stats/menu/info/pop/index.php>

ICD-10 Codes

Cause of death and primary diagnosis codes for HDD are specified in accordance with the International Statistical Classification of Diseases and Related Health Problems, 10th Edition (ICD-10). ICD-10 codes were identified from the leading cause of death and primary diagnosis field for vital records death certificate and HDD records respectively, to calculate the five leading causes of death, hospitalizations and emergency department visits (Table 1).

Table 1: ICD-10 Codes of the most common causes of death, inpatient hospitalizations, and emergency department visits-Arizona 2021

ICD-10 Codes	Description
A00-B99	Infectious and Parasitic Diseases
C00-C97	Malignant Neoplasm
G30	Alzheimer's Disease
I00-I99	Diseases of the Circulatory System
I01-I02, I05-I09, I11, I13.0-I13.2, I10-I27, I30-I52, R00.1, I97.10-I97.19	Heart Disease
I60-I69	Cerebrovascular Disease
J00-J99	Diseases of the Respiratory System
J40-J47	Chronic Lower Respiratory Disease
K95.0-K95.8	Diseases of the Digestive System
M00-M99	Diseases of the Musculoskeletal System and Connective Tissue
R00-R99	Symptoms, Signs, and Ill-Defined Conditions*
S00-T88	Injury and Poisoning
U07.1	COVID-19

*Signs, symptoms, abnormal results of clinical, laboratory, or other investigative procedures, and ill-defined conditions regarding which no diagnosis classifiable elsewhere is recorded.

Rates

The rate of mortality, hospitalizations, and emergency department visits were calculated as the number of deaths among Arizonans 65 years and older at a given point of time divided by the number of Arizonans aged 65 years and older. Rates are presented as the number of events per 100,000 residents aged 65 years and older.

Findings



Population Trends

Over the past ten years, the population of Arizonans 65 years and older consistently increased year over year, by age group with a 1% decrease among Arizonans 65-69 years old from 2017 to 2018 (Table 2). The highest increase in population was among Arizonans 75-79 years old (58%).

Table 2: Total population and percent change from previous year of Arizonans 65 years and older by age group-Arizona 2012-2021

Year	65-69 years Population (% Change)	70-74 years Population (% Change)	75-79 years Population (% Change)	80-84 years Population (% Change)	85+ years Population (% Change)
2012	306,544 (-)	232,175 (-)	169,948 (-)	123,380 (-)	108,457 (-)
2013	321,008 (+4.7%)	245,805 (+5.9%)	176,196 (+3.7%)	125,760 (+1.9%)	112,360 (+3.6%)
2014	335,910 (+4.4%)	257,816 (+4.9%)	182,344 (+3.5%)	129,095 (+2.7%)	119,940 (+6.8%)
2015	352,655 (+5.0%)	272,757 (+5.8%)	192,968 (+5.8%)	131,672 (+2.0%)	125,255 (+4.4%)
2016	369,373 (+4.7%)	284,953 (+4.5%)	201,999 (+4.7%)	135,183 (+2.7%)	130,946 (+4.5%)
2017	389,725 (+5.5%)	297,536 (+4.4%)	213,385 (+5.6%)	140,550 (+4.0%)	137,663 (+5.1%)
2018	385,998 (-1.0%)	322,476 (+8.4%)	223,671 (+4.8%)	144,052 (+2.5%)	138,064 (+0.3%)
2019	391,275 (+1.4%)	338,038 (+4.8%)	240,854 (+7.7%)	151,171 (+4.9%)	142,880 (+3.5%)
2020	393,041 (+0.5%)	348,046 (+3.0%)	248,829 (+3.3%)	156,161 (+3.3%)	143,733 (+0.6%)
2021	405,067 (+3.1%)	367,153 (+5.5%)	261,719 (+5.1%)	164,580 (+5.4%)	149,281 (+3.9%)

Data Source: Arizona Population Health and Vital Statistics

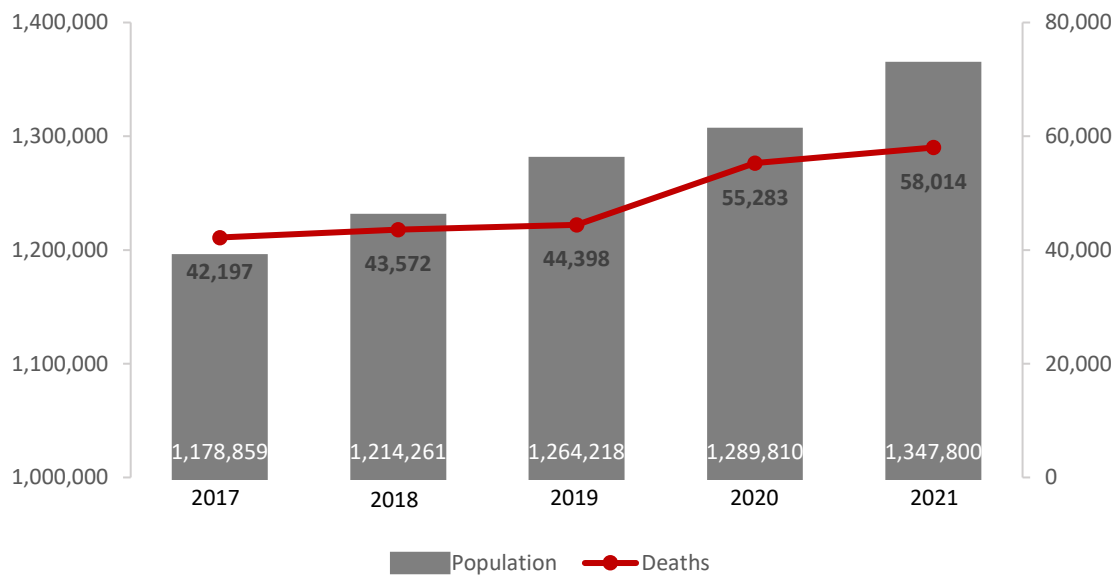


Mortality

Deaths and Population Growth

From 2017-2021, the number of deaths among Arizonans 65 years and older increased by 38% while the population size increased by only 14% during the same time period (Figure 1). In 2021, there were a total of 58,014 deaths (from all causes) among persons 65 years and older resulting in a rate of 4,304 deaths per 100,000 persons 65 years and older. This equates to a 20% increase in mortality rate from 2017 (3,579 per 100,000) to 2021 (4,304 per 100,000) among persons 65 years and older (Figure 3).

Figure 1: Number of deaths and total population of Arizonans 65 years and older-Arizona 2017-2021

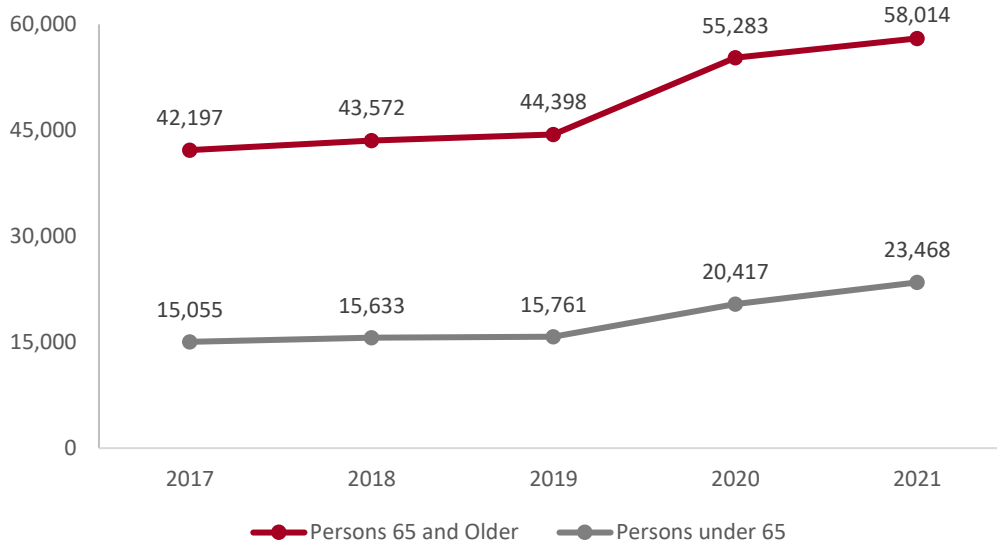


Data Source: Arizona Vital Statistics, Death Certificates

Age Comparisons

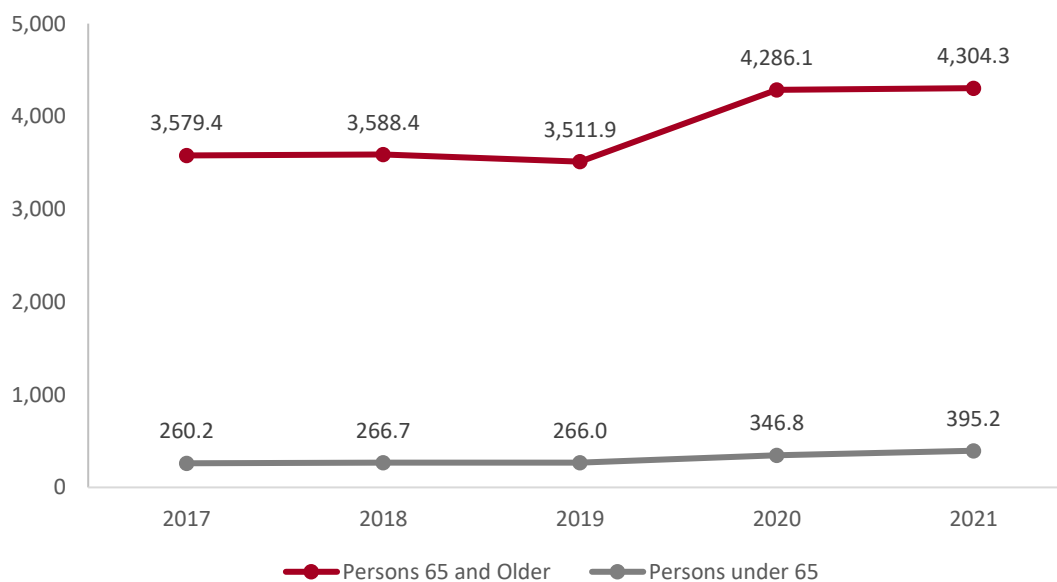
While the number of deaths among persons 65 years and older is approximately 2.5 times that of persons younger than 65 years (Figure 2), the rate of mortality among persons 65 years and older is approximately 13 times that of persons younger than 65 years (Figure 3).

Figure 2: Number of deaths among Arizonans 65 years and older and under 65 years-Arizona 2017-2021



Data Source: Arizona Vital Statistics, Death Certificates

Figure 3: Mortality rate (per 100,000 residents) among Arizonans 65 years and older and under 65 years -Arizona 2017-2021



Data Source: Arizona Vital Statistics, Death Certificates

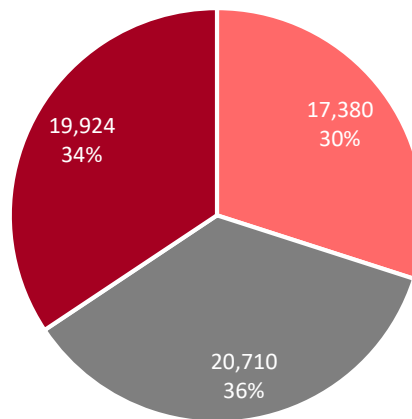
Demographic Comparisons

Age Group

In 2021, the distribution of deaths was approximately a third for all age groups among Arizonans 65 years and older (Figure 4). The mortality rate increased by age group with the highest rate (13,346 per 100,000) observed among persons 85 years and older (Figure 5).

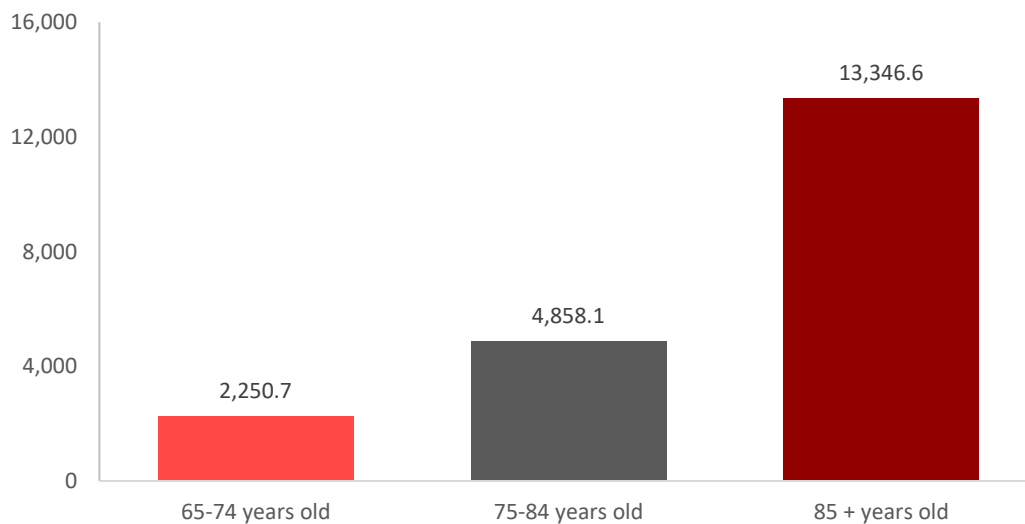
Figure 4: Number of deaths among Arizonans 65 years and older by age group -Arizona 2021

■ 65-74 years old ■ 75-84 years old ■ 85 + years old



Data Source: Arizona Vital Statistics, Death Certificates

Figure 5: Mortality rate (per 100,000 residents) among Arizonans 65 years and older by age group -Arizona 2021

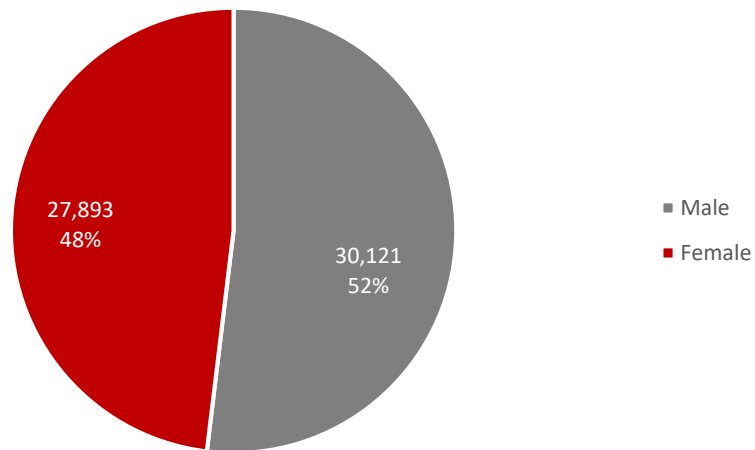


Data Source: Arizona Vital Statistics, Death Certificates

Sex

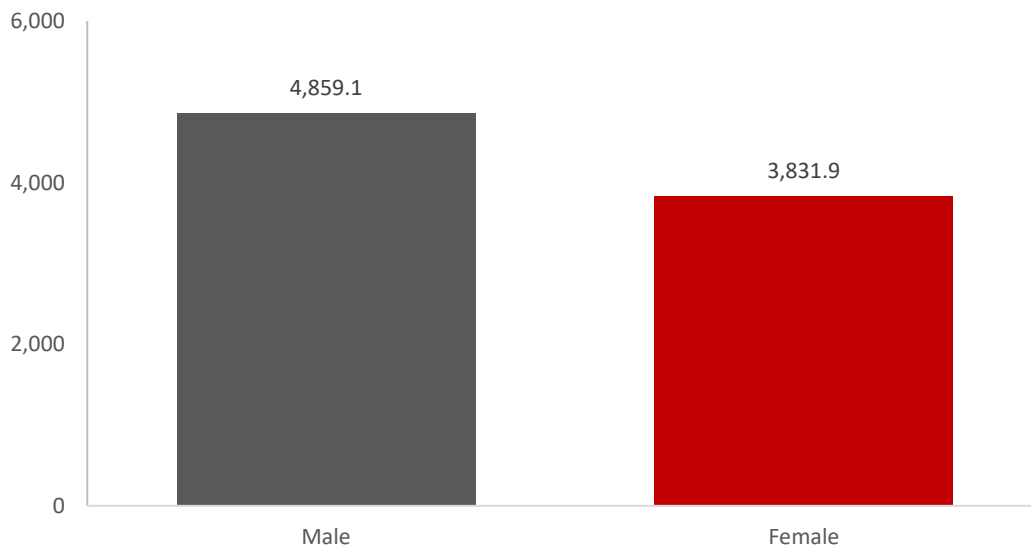
In 2021, males represented a little over one half (52%) of the deaths among Arizonans 65 years and older (Figure 6), and the mortality rate among males was approximately 27% higher than females 65 years and older (Figure 7).

Figure 6: Number of deaths among Arizonans 65 years and older by sex -Arizona 2021



Data Source: Arizona Vital Statistics, Death Certificates

Figure 7: Mortality rate (per 100,000 residents) among Arizonans 65 years and older by sex - Arizona 2021

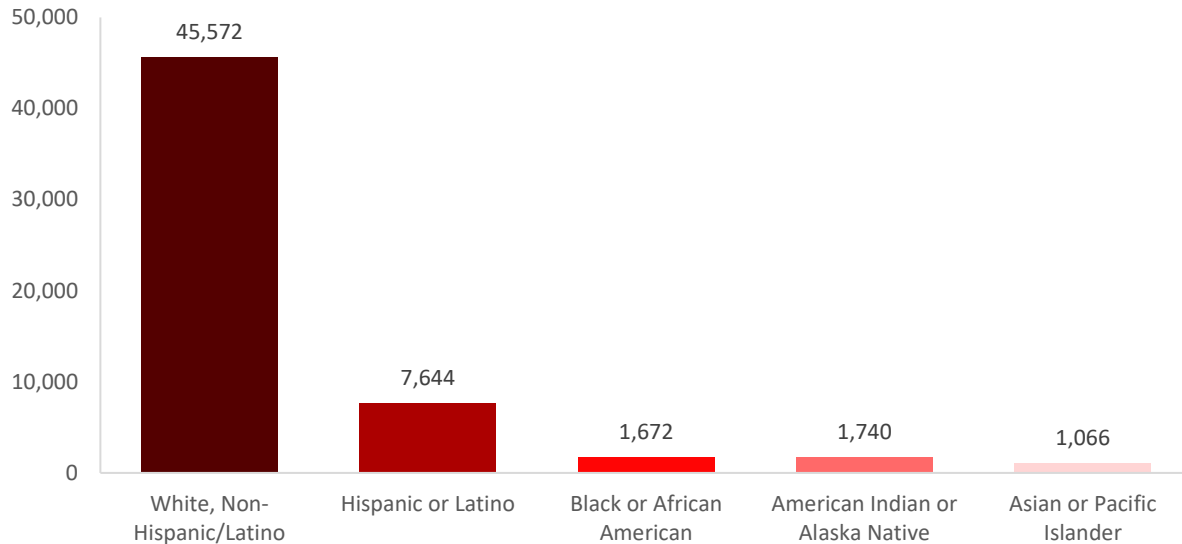


Data Source: Arizona Vital Statistics, Death Certificates

Race and Ethnicity

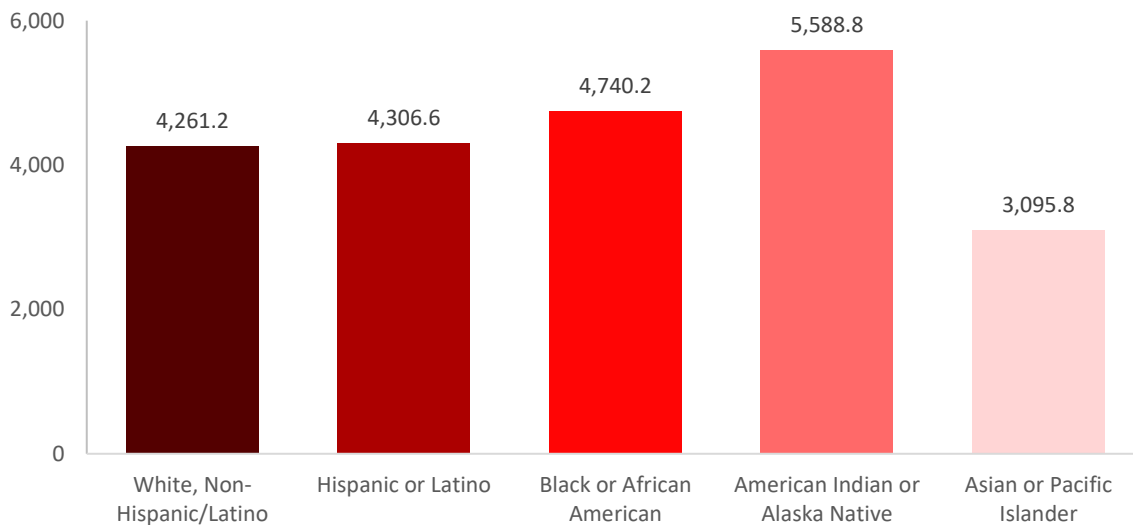
In 2021, non-Hispanic White persons represented the majority of deaths among Arizonans 65 years and older (Figure 8). However, the mortality rate was highest among American Indian and Alaska Native (AI/AN) persons (Figure 9). For context, the mortality rate among AI/AN persons was approximately 31% higher than non-Hispanic White persons.

Figure 8: Number of Deaths among Arizonans 65 years and older by race and ethnicity - Arizona 2021



Data Source: Arizona Vital Statistics, Death Certificates

Figure 9: Mortality rate (per 100,000 residents) among Arizonans 65 years and older by race and ethnicity -Arizona 2021

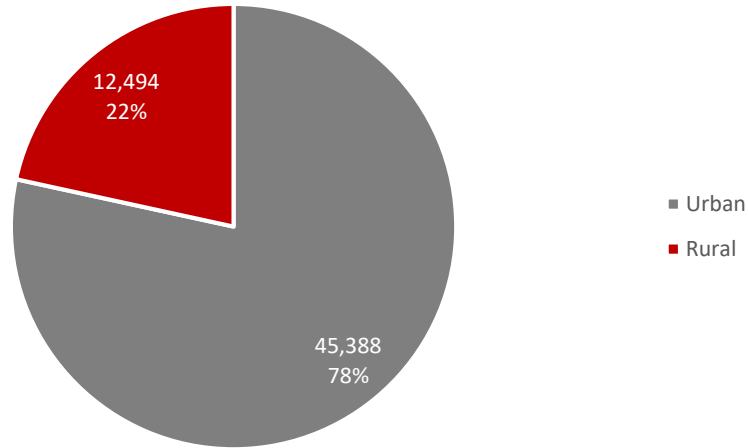


Data Source: Arizona Vital Statistics, Death Certificates

Urban/Rural Residence Area

In 2021, persons living in urban regions represented the majority (78%) of deaths among Arizonans 65 years and older (Figure 10). However, the mortality rate of persons living in rural regions was slightly higher (9%) than persons living in urban regions. (Figure 11).

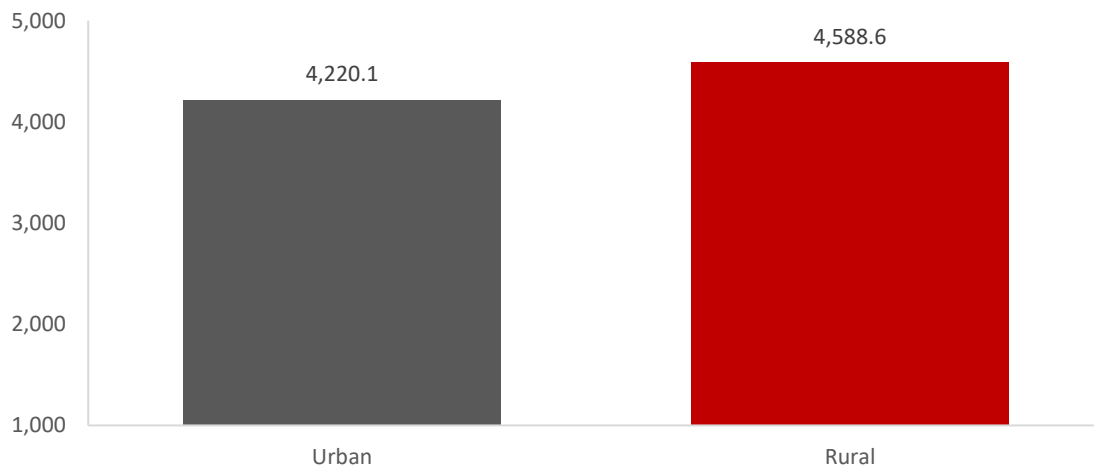
Figure 10: Number of deaths among Arizonans 65 years and older by urban/rural regions *- Arizona 2021



Data Source: Arizona Vital Statistics, Death Certificates

*Urban residence regions include Maricopa, Pinal, Pima and Yuma Counties. Rural residence regions include Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Santa Cruz and Yavapai Counties. Deaths counted by county of residence. The urban population is greater than the rural population in Arizona.

Figure 11: Mortality rate (per 100,000 residents) among Arizonans 65 years and older by urban/rural residence regions-Arizona 2021

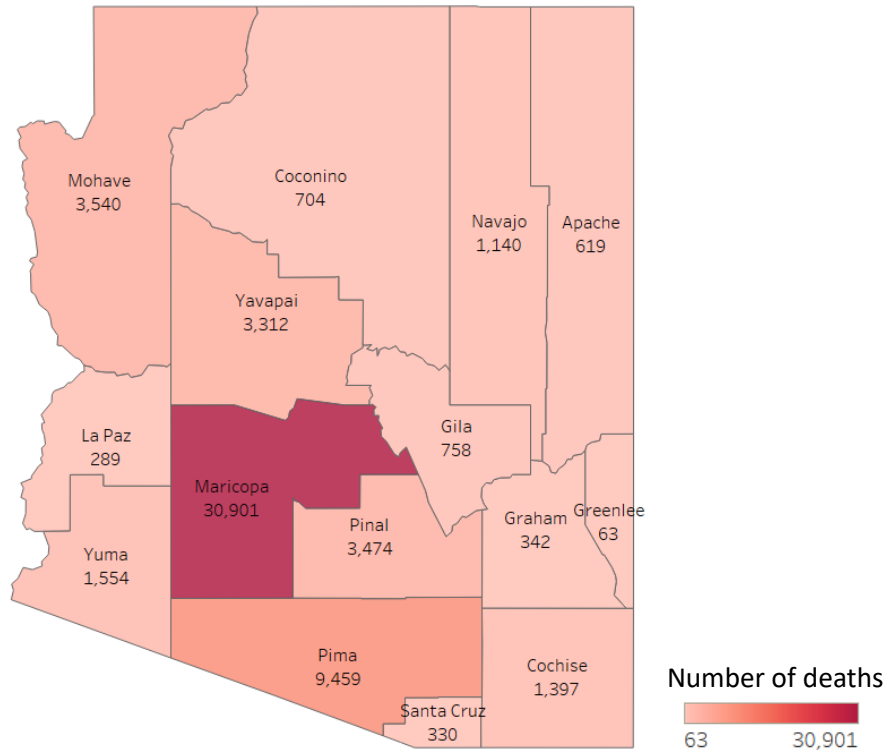


Data Source: Arizona Vital Statistics, Death Certificates

County of Residence

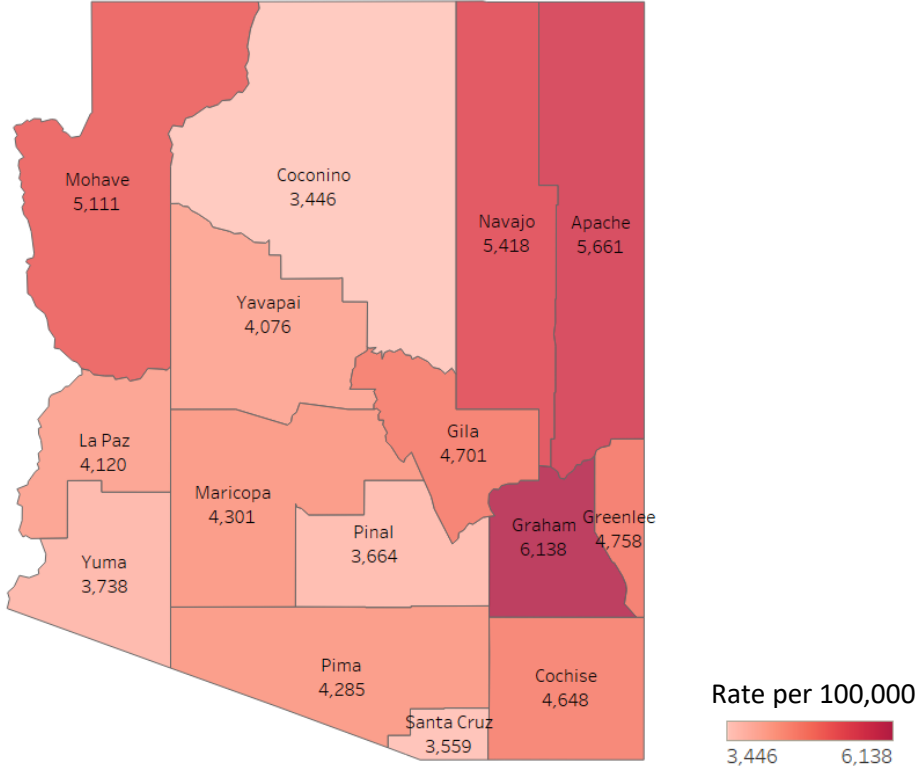
In 2021, the number of deaths among Arizonans 65 years and older was highest in Maricopa and Pima counties (Figure 12). However, the mortality rate among Arizonans 65 years and older was highest in Graham, Apache, Navajo, and Mohave counties (Figure 13).

Figure 12: Number of deaths among residents among Arizonans 65 years and older by county of residence-Arizona 2021



Data Source: Arizona Vital Statistics, Death Certificates

Figure 13: Mortality rate (per 100,000 residents) among Arizonans 65 years and older by county of residence-Arizona 2021



Data Source: Arizona Vital Statistics, Death Certificates

Leading Causes of Death

Between 2017 and 2021, heart disease was the leading cause of mortality among Arizonans 65 years and older (Table 3). In 2020 and 2021, COVID-19 was one of the top 5 leading causes of death among Arizonans 65 years and older (Table 3).

Table 3: Number and rate by Top 5 leading causes of deaths among Arizonans 65 years and older-Arizona, 2017-2021

	Number of deaths (N)					Mortality Rate per 100,000 residents				
	2017	2018	2019	2020	2021	2017	2018	2019	2020	2021
Heart Disease	10,171	10,265	10,406	11,701	12,083	862.8	845.4	823.1	907.2	896.5
Malignant Neoplasm	8,850	8,984	9,356	9,644	9,718	750.7	739.9	740.1	747.7	721.0
COVID-19	*	*	*	6,260	8,421	*	*	*	485.3	624.8
Chronic Lower Respiratory Disease	3,293	3,310	3,237	3,220	3,135	279.3	272.6	256.1	249.7	232.6
Cerebrovascular Disease	2,292	2,456	2,473	*	2,847	194.4	202.3	195.6	*	211.2
Alzheimer's Disease	2,997	2,979	3,009	3,195	*	254.2	245.3	238.0	247.7	*

Data Source: Arizona Vital Statistics, Death Certificates

* Ranked Top 5 leading causes of death varied from year-to-year from 2017-2021. Leading causes of death not represented in Top 5 (based on number of deaths) for that reported year are denoted by an asterisk.

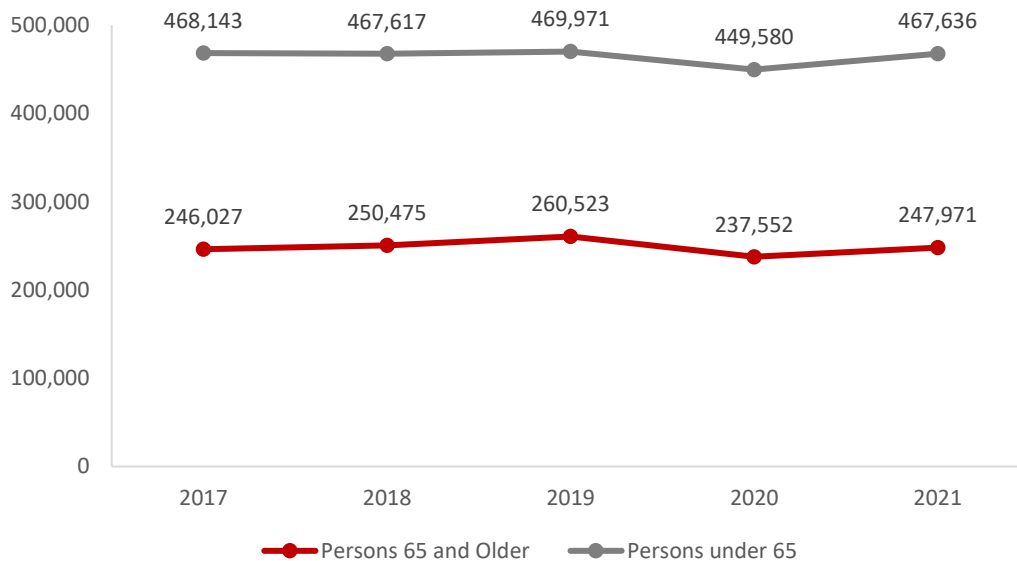


Inpatient Hospitalizations

Age Comparisons

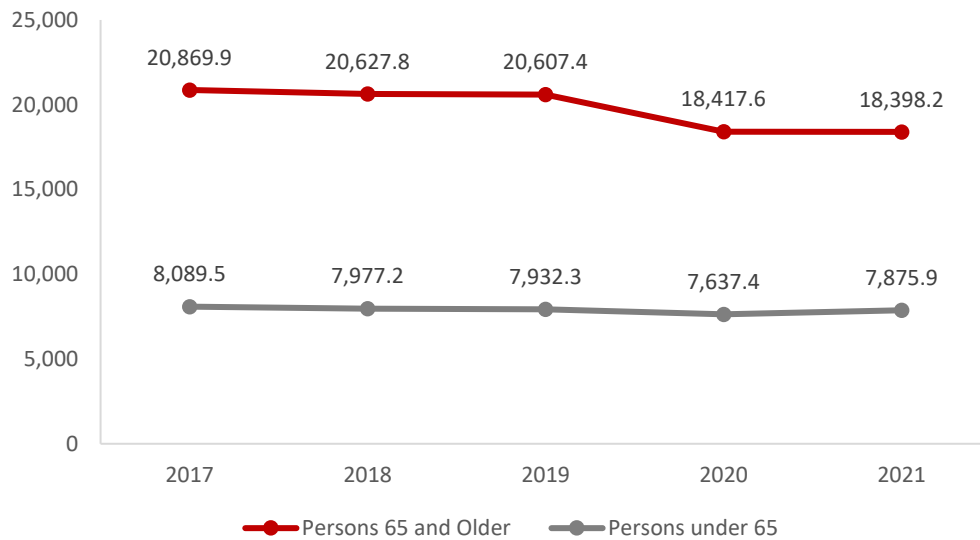
From 2017-2021, the number of inpatient hospitalizations among Arizonans 65 years and older has been stable (Figure 14). In 2021, there were a total of 467,636 inpatient hospitalizations (from all causes) among persons 65 years and older resulting in a rate of 18,398 per 100,000 persons 65 years and older (Figure 15). The number of inpatient hospitalizations among persons 65 under 65 years is approximately 2 times that of persons 65 years and older (Figure 14), and the rate is approximately 2.5 times that of persons under 65 years (Figure 15).

Figure 14: Number of inpatient hospitalizations among Arizonans 65 years and older and under 65 years-Arizona 2017-2021



Data Source: Arizona Hospital Discharge Data

Figure 15: Inpatient hospitalization rate (per 100,000 residents) among Arizonans 65 years and older and under 65 years-Arizona 2017-2021



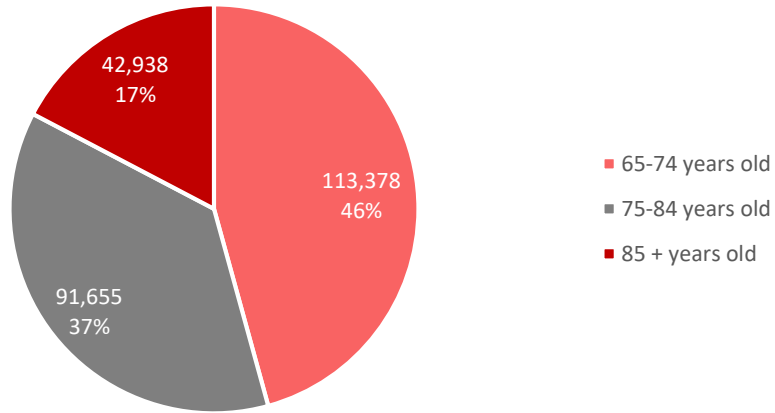
Data Source: Arizona Hospital Discharge Data

Demographic Comparisons

Age Group

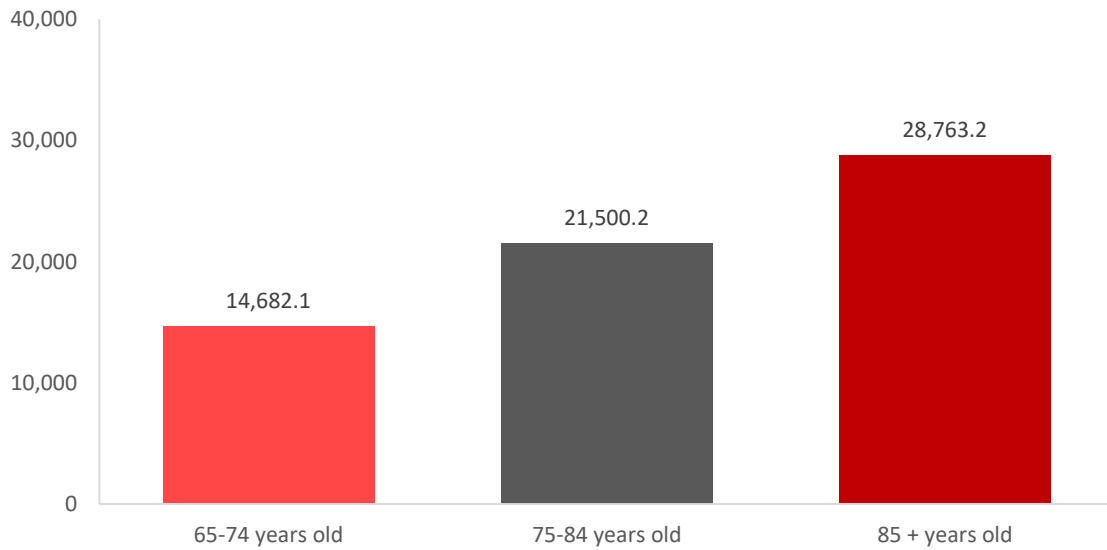
In 2021, persons 65-74 years old represented approximately half (46%) of the number of inpatient hospitalizations among Arizonans 65 years and older (Figure 16). The inpatient hospitalization rate increased by age group with the highest observed among persons 85 years and older (28,763 per 100,000) (Figure 17).

Figure 16: Number of Inpatient hospitalizations among Arizonans 65 years and older by age group-Arizona 2021



Data Source: Arizona Hospital Discharge Data

Figure 17: Inpatient hospitalization rate (per 100,000 residents) among Arizonans 65 years and older by age group-Arizona 2021

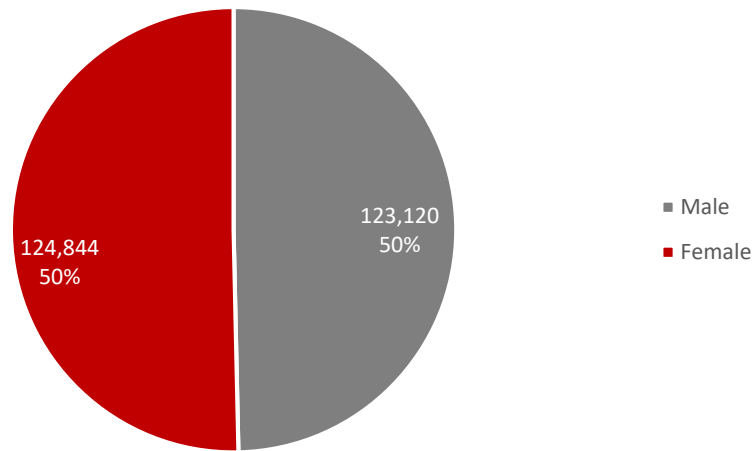


Data Source: Arizona Hospital Discharge Data

Sex

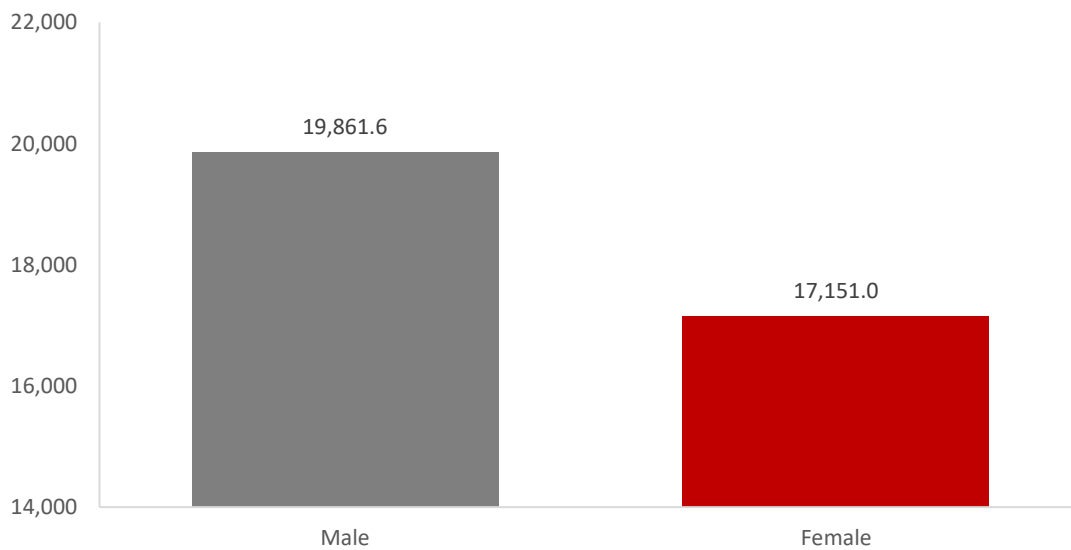
In 2021, females represented a little over one half (50%) of the inpatient hospitalizations among Arizonans 65 years and older (Figure 18). However, the inpatient hospitalization rate among males was approximately 16% higher than female Arizonans 65 years and older (Figure 19).

Figure 18: Number of inpatient hospitalizations among Arizonans 65 years and older by sex-Arizona 2021



Data Source: Arizona Hospital Discharge Data

Figure 19: Inpatient hospitalization rate (per 100,000 residents) among Arizonans 65 years and older by sex-Arizona 2021

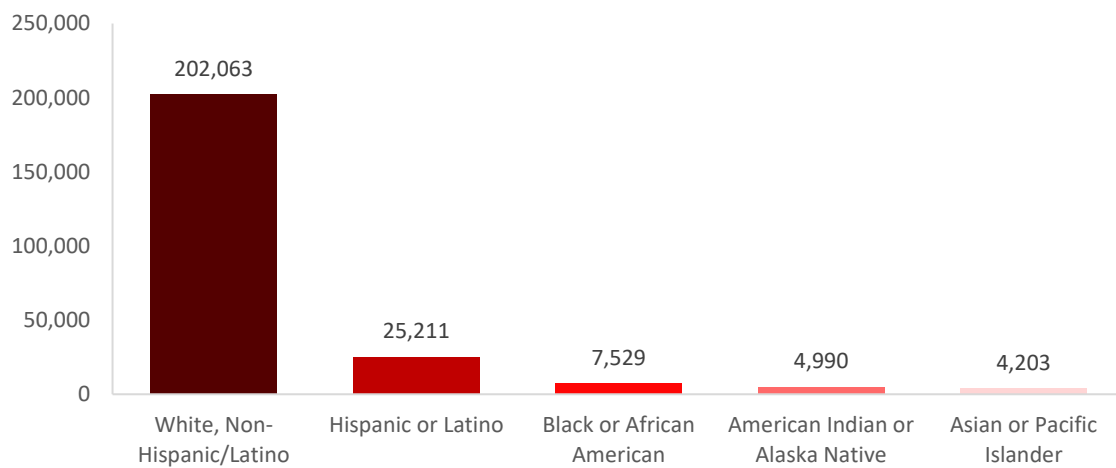


Data Source: Arizona Hospital Discharge Data

Race and Ethnicity

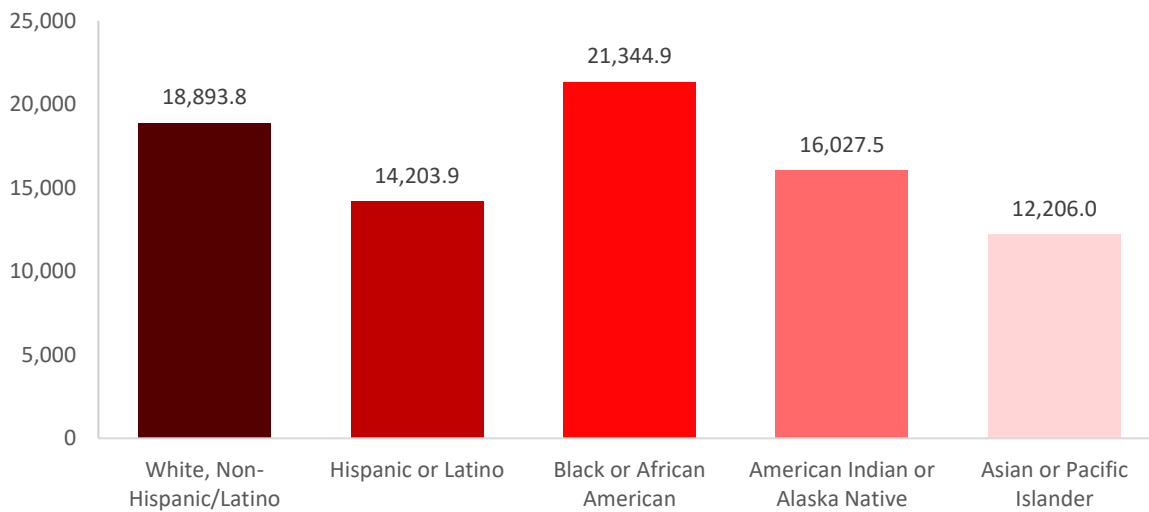
In 2021, non-Hispanic White persons represented the majority of inpatient hospitalizations among Arizonans 65 years and older (Figure 20). However, the inpatient hospitalization rate was highest among Black or African American persons. (Figure 21). For context, the inpatient hospitalization rate among Black or African American persons was approximately 13% higher than non-Hispanic White persons. Comparisons were made to non-Hispanic White persons because they comprise the largest demographic race/ethnicity group among persons in Arizona.

Figure 20: Number of inpatient hospitalizations among Arizonans 65 years and older by race and ethnicity-Arizona 2021



Data Source: Arizona Hospital Discharge Data

Figure 21: Inpatient hospitalization rate (per 100,000 residents) among Arizonans 65 years and older by race and ethnicity-Arizona 2021

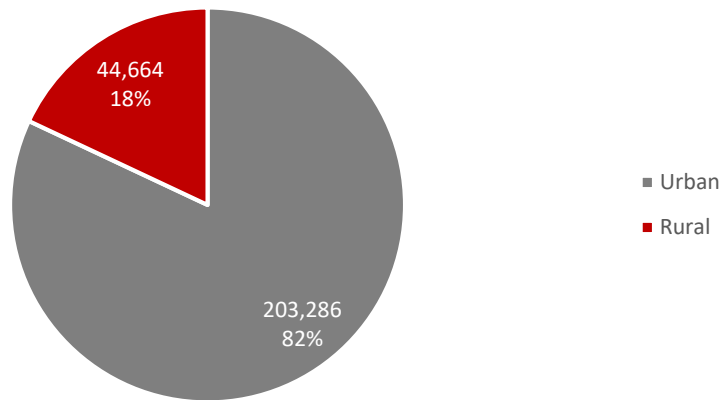


Data Source: Arizona Hospital Discharge Data

Urban/Rural Residence Region

In 2021, persons living in urban regions represented the majority (82%) of inpatient hospitalizations among Arizonans 65 years and older (Figure 22). The inpatient hospitalization rate of persons living in urban regions was higher (15%) than residents living in rural regions. (Figure 23).

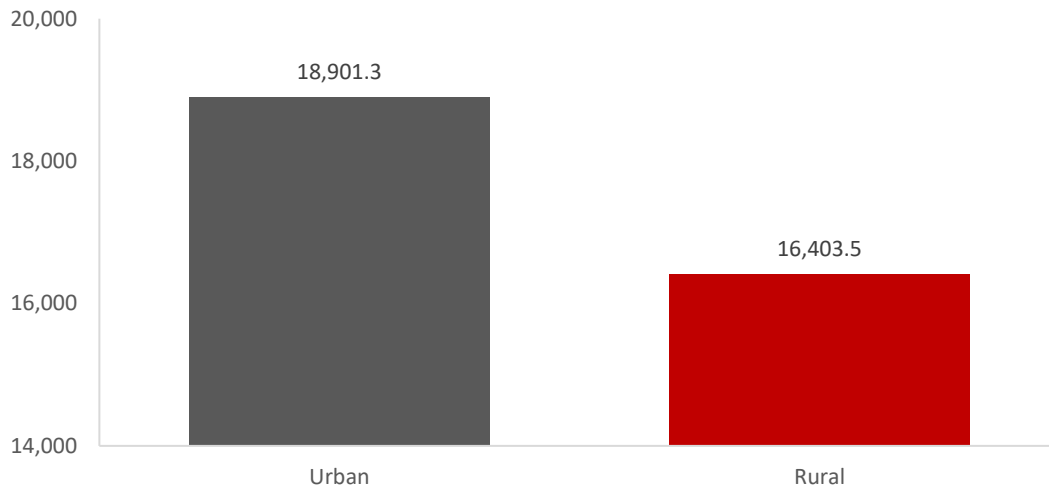
Figure 22: Inpatient hospitalization rate (per 100,000 residents) among Arizonans 65 years and older by urban/rural residence region-Arizona 2021



Data Source: Arizona Hospital Discharge Data

*Urban residence regions include Maricopa, Pinal, Pima and Yuma Counties. Rural residence regions include Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Santa Cruz and Yavapai Counties. Patients counted by county of residence.

Figure 23: Inpatient hospitalization rate (per 100,000 residents) among Arizonans 65 years and older by urban/rural residence area-Arizona 2021

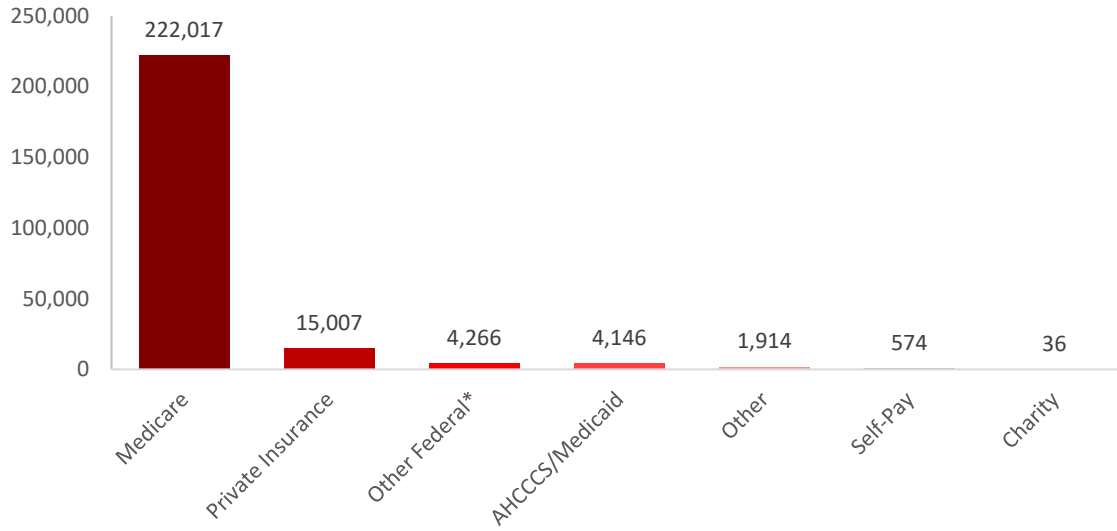


Data Source: Arizona Hospital Discharge Data

Primary Insurance Payer

In 2021, the most common insurance payer for inpatient hospitalizations among Arizonans 65 years and older was Medicare, followed by private insurance (Figure 24).

Figure 24: Number of inpatient hospitalizations among Arizonans 65 years and older by insurance payer-Arizona 2021

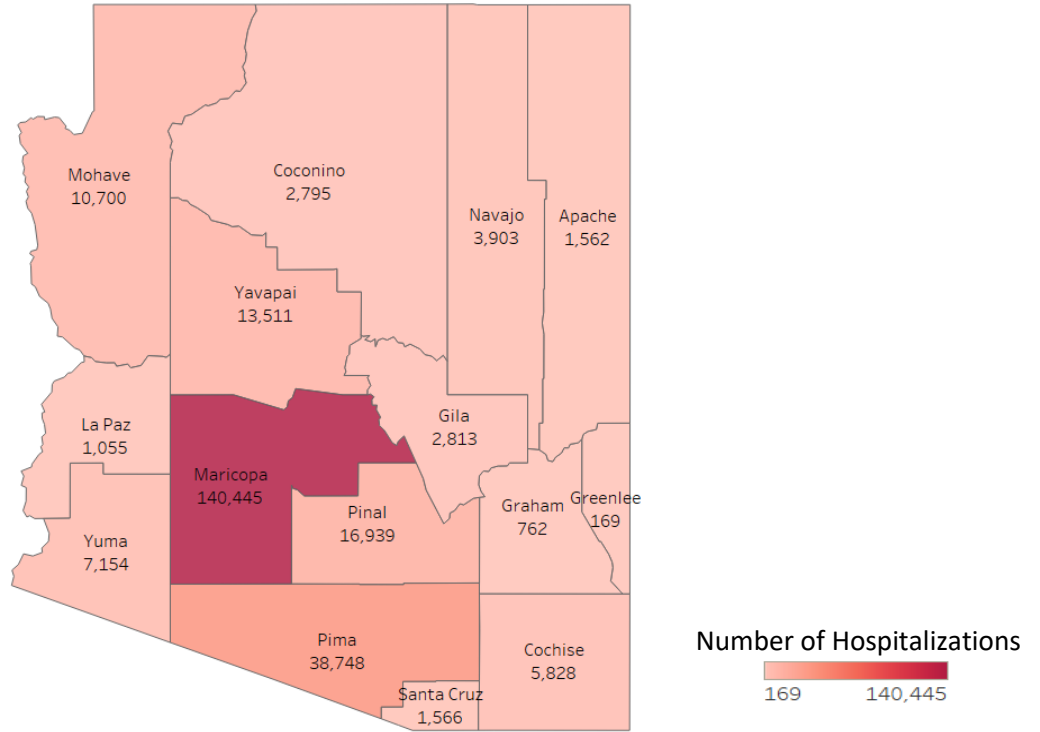


Data Source: Arizona Hospital Discharge Data; primary insurance payer for inpatient hospitalization visit
*Other federal insurances include Tricare and Indian Health Services.

County of Residence

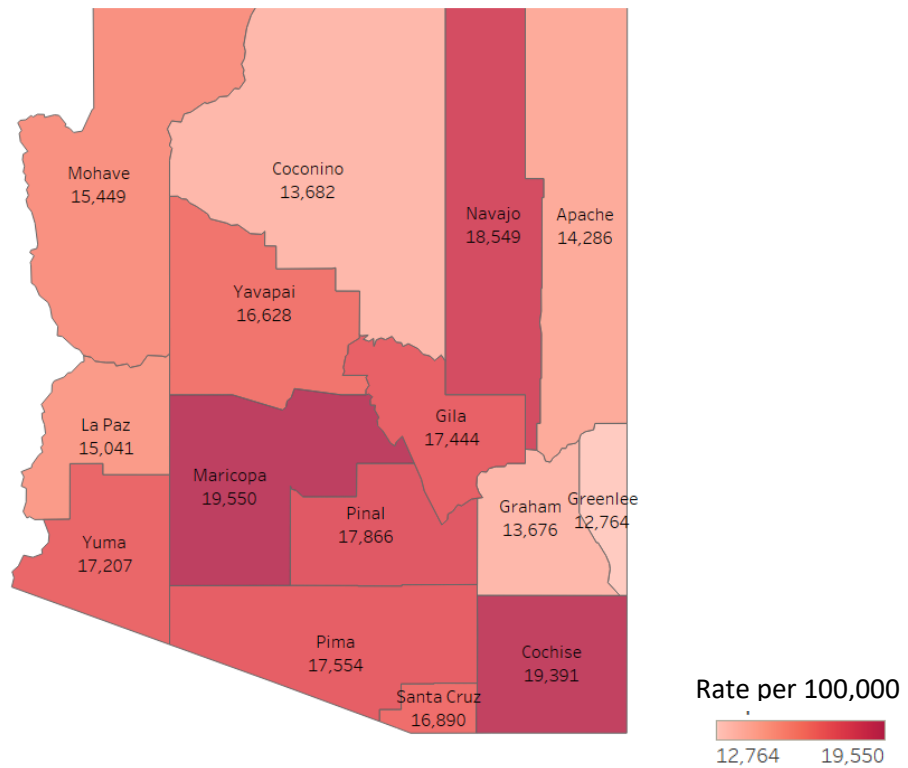
In 2021, the number of inpatient hospitalizations among Arizonans 65 years and older was highest in Maricopa and Pima counties (Figure 25). The inpatient hospitalization rate among Arizonans 65 years and older was highest in Maricopa, Cochise, and Navajo counties (Figure 26).

Figure 25: Number of inpatient hospitalizations among Arizonans 65 years and older by county of residence -Arizona 2021



Data Source: Arizona Hospital Discharge Data

Figure 26: Inpatient hospitalization rate (per 100,000 residents) among Arizonans 65 years and older by county of residence -Arizona 2021



Data Source: Arizona Hospital Discharge Data

Leading Causes of Inpatient Hospitalizations

In 2021, diseases of the circulatory system were leading causes of inpatient hospitalizations among Arizonans 65 years and older (Table 4). COVID-19 was the fifth leading cause of inpatient hospitalization among Arizonans aged 65 and older (Table 4).

Table 4: Number and Rate of the Top 5 leading causes of inpatient hospitalizations among Arizonans 65 years and older-Arizona 2021

Leading Cause of Inpatient Hospitalization	Count	Rate
Diseases of the Circulatory System	58,699	4,355.2
Infectious and Parasitic Diseases	28,425	2,109.0
Diseases of the Digestive System	23,914	1,744.3
Diseases of the Respiratory System	15,668	1,162.5
COVID-19	15,591	1,156.0

Data Source: Arizona Hospital Discharge Data; ICD-10 codes for categories in table above are described in Table 1.

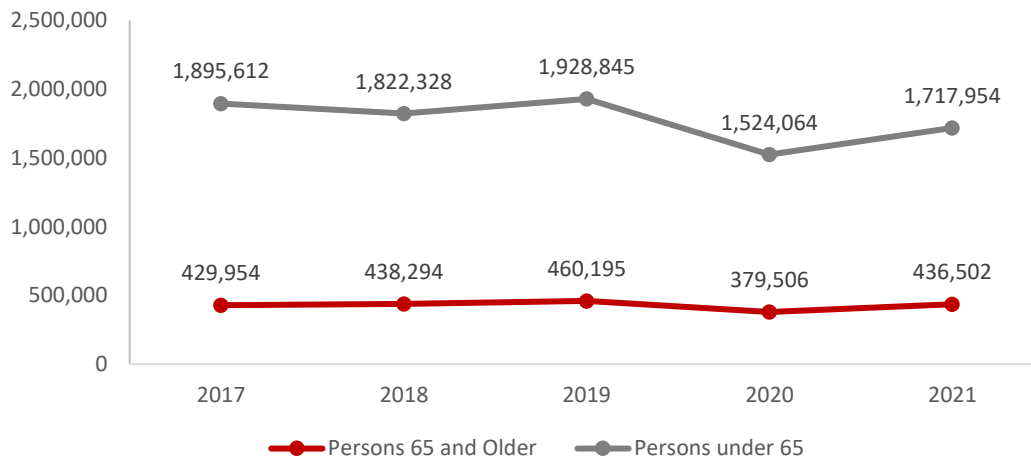


Emergency Department Visits

Age Comparisons

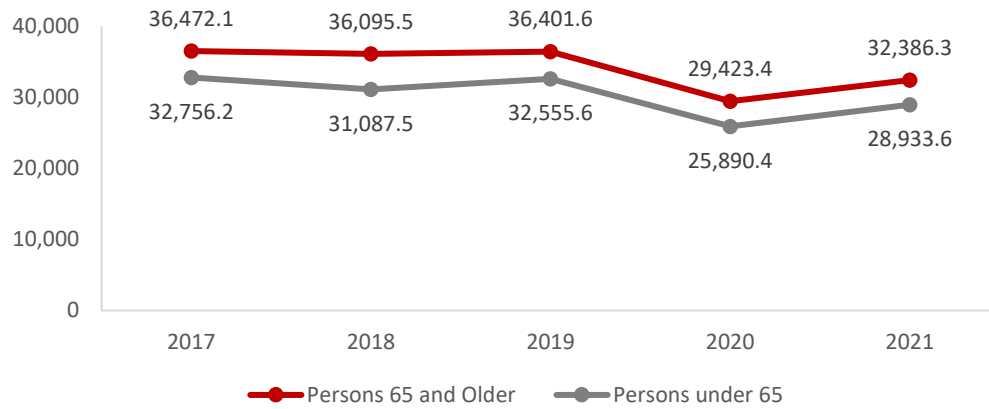
From 2017-2021, the number of emergency department visits among Arizonans 65 years and older was stable (Figure 27). In 2021, there were a total of 436,502 emergency department visits (from all causes) among persons 65 years and older resulting in a rate of 32,386 per 100,000 persons 65 years and older (Figure 28). The number of emergency department visits among persons 65 years and older is approximately one quarter (25%) of persons under 65 years (Figure 27). However, the emergency department visit rate (from all causes) among persons 65 years and older is approximately 12% higher than that of persons under 65 years (Figure 28).

Figure 27: Number of emergency department visits among Arizonans 65 years and older and under 65 years-Arizona 2017-2021



Data Source: Arizona Hospital Discharge Data

Figure 28: Emergency department visit rate (per 100,000 residents) among Arizonans 65 years and older and under 65 years-Arizona 2017-2021



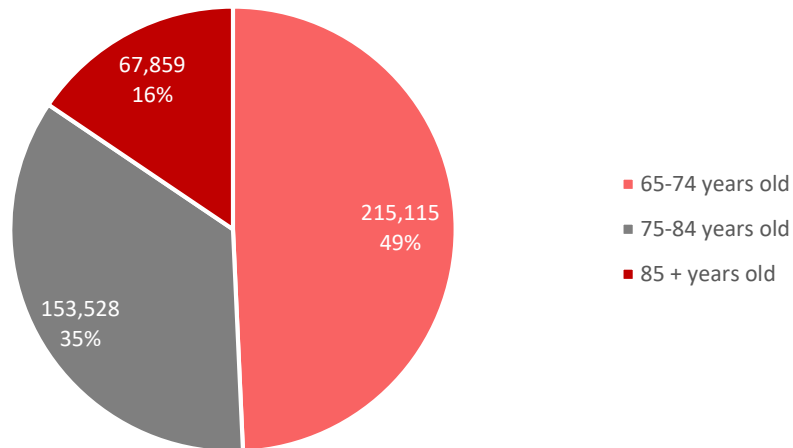
Data Source: Arizona Hospital Discharge Data

Demographic Comparisons

Age Group

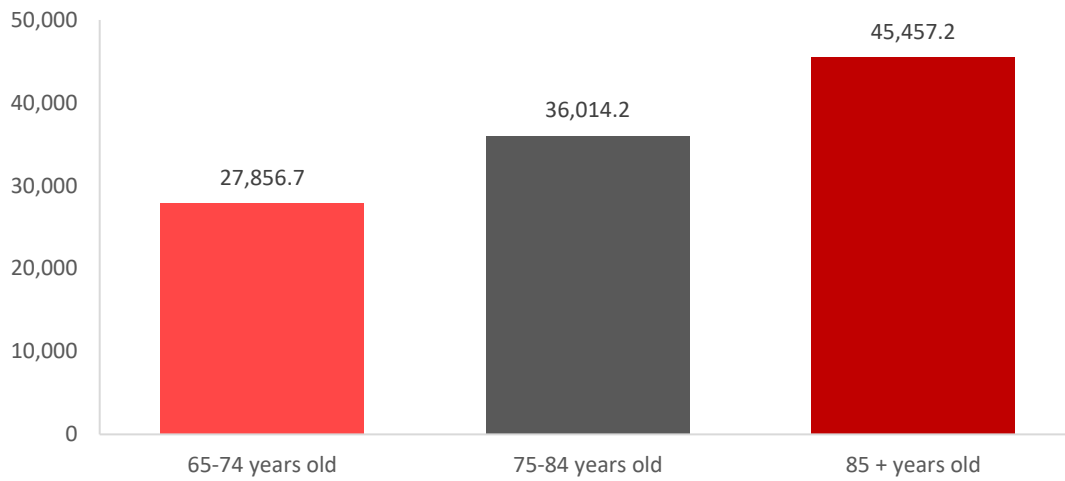
In 2021, persons 65-74 years represented approximately half (49%) of the number of emergency department visits among Arizonans 65 years and older (Figure 29). The emergency department visit rate increased by age group with the highest rate observed among persons 85 years and older (45,457 per 100,000) (Figure 30).

Figure 29: Number of emergency department visits among Arizonans 65 years and older by age group -Arizona 2021



Data Source: Arizona Hospital Discharge Data

Figure 30: Emergency department visit rate (per 100,000 residents) among Arizonans 65 years and older by age group -Arizona 2021

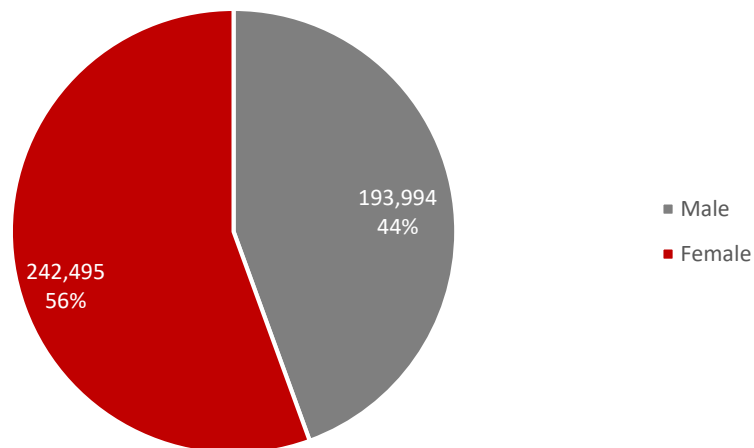


Data Source: Arizona Hospital Discharge Data

Sex

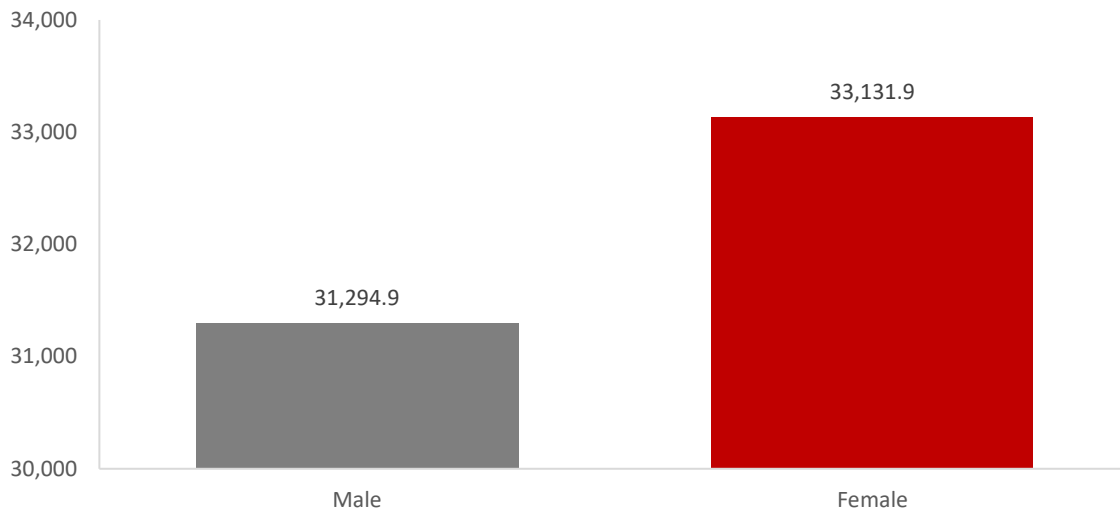
In 2021, females represented a little over one half (56%) of the emergency department visits among Arizonans 65 years and older (Figure 31). The emergency department visit rate among females was approximately 6% higher than males among Arizonans 65 years and older (Figure 32).

Figure 31: Number of emergency department visits among Arizonans 65 years and older by gender -Arizona 2021



Data Source: Arizona Hospital Discharge Data

Figure 32: Emergency department visit rate (per 100,000 residents) among Arizonans 65 years and older by gender -Arizona 2021

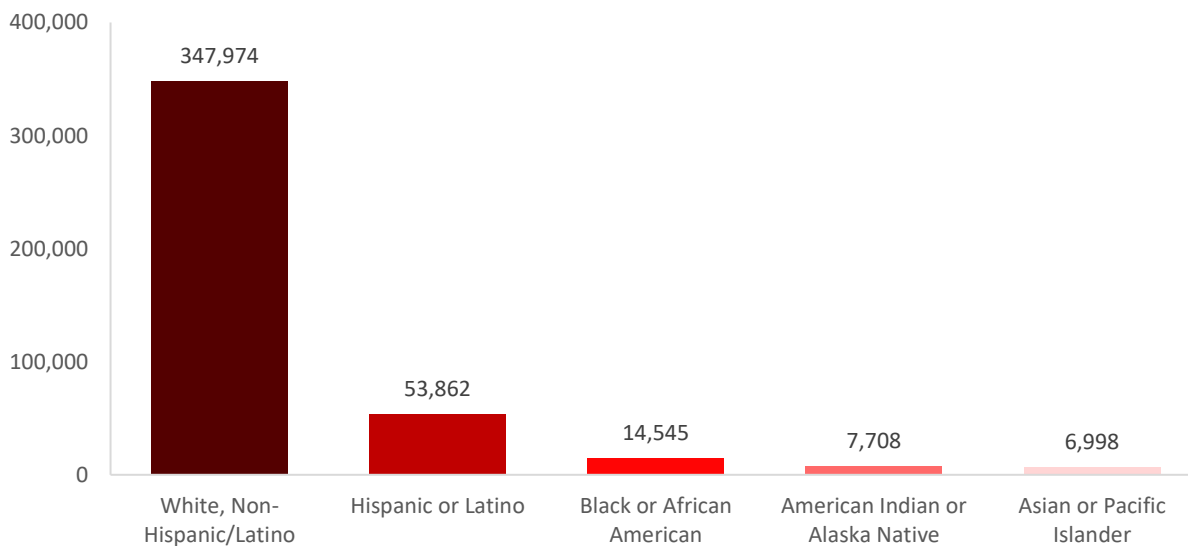


Data Source: Arizona Hospital Discharge Data

Race and Ethnicity

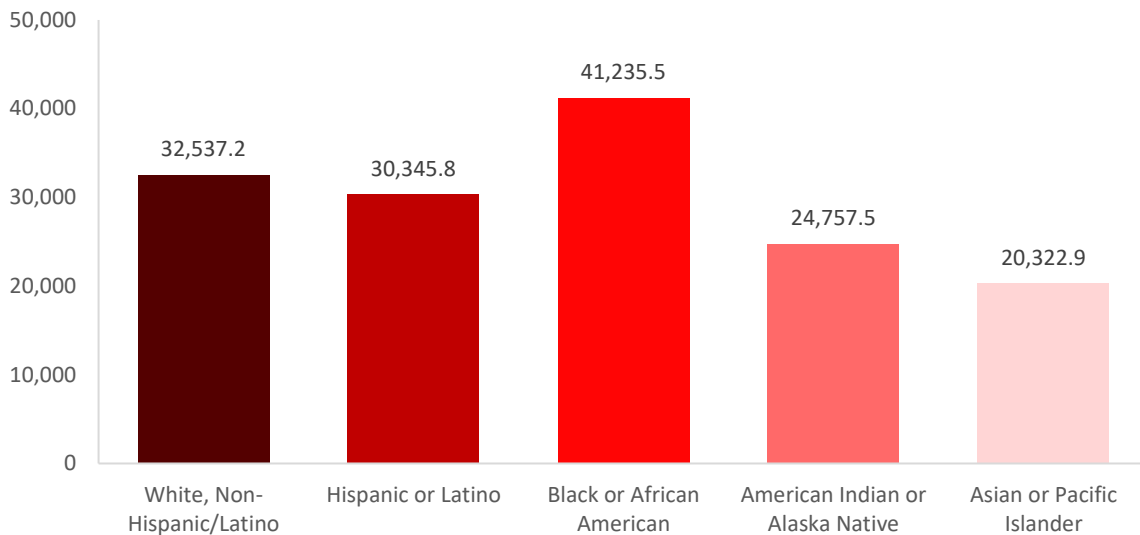
In 2021, non-Hispanic White persons represented the majority (80%) of emergency department visits among Arizonans 65 years and older (Figure 33). However, the emergency department visit rate was highest among Black or African American persons (Figure 34). For context, the emergency department visit rate among Black or African American persons was approximately 27% higher than non-Hispanic White persons.

Figure 33: Number of emergency department visits among Arizonans 65 years and older by race and ethnicity -Arizona 2021



Data Source: Arizona Hospital Discharge Data

Figure 34: Emergency department visit rate (per 100,000 residents) among Arizonans 65 years and older by race and ethnicity -Arizona 2021

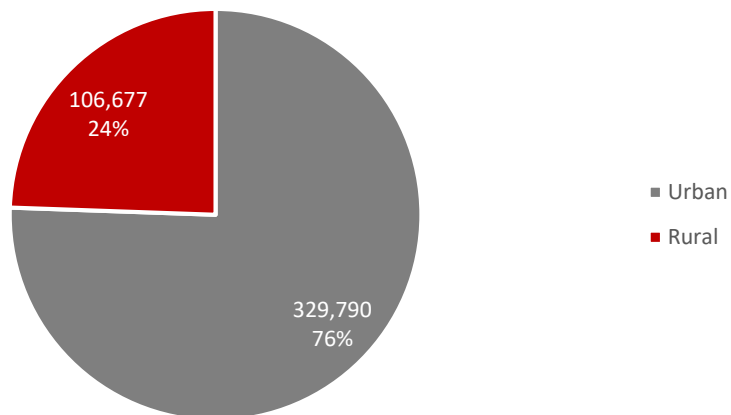


Data Source: Arizona Hospital Discharge Data

Urban/Rural Residence Region

In 2021, persons living in urban regions represented the majority (76%) of emergency department visits among Arizonans 65 years and older (Figure 35). However, the emergency department visit rate of persons living in rural regions was higher (28%) than persons living in urban regions. (Figure 36).

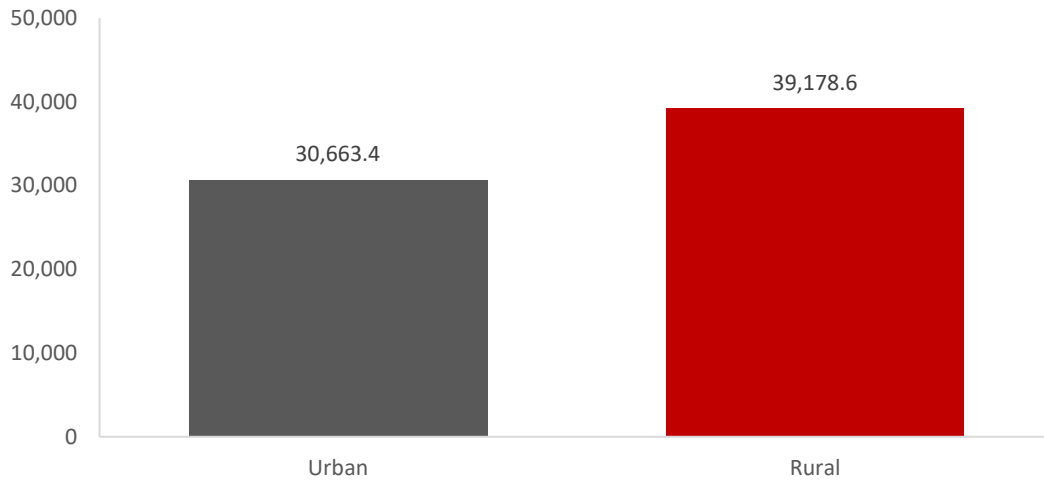
Figure 35: Number of emergency department visits among Arizonans 65 years older and by residence area-Arizona 2021



Data Source: Arizona Hospital Discharge Data

*Urban residence regions include Maricopa, Pinal, Pima and Yuma Counties. Rural residence regions include Apache, Cochise, Coconino, Gila, Graham, Greenlee, La Paz, Mohave, Navajo, Santa Cruz and Yavapai Counties. Patients counted by county of residence.

Figure 36: Emergency department visit rate (per 100,000 residents) among Arizonans 65 years and older by residence area-Arizona 2021

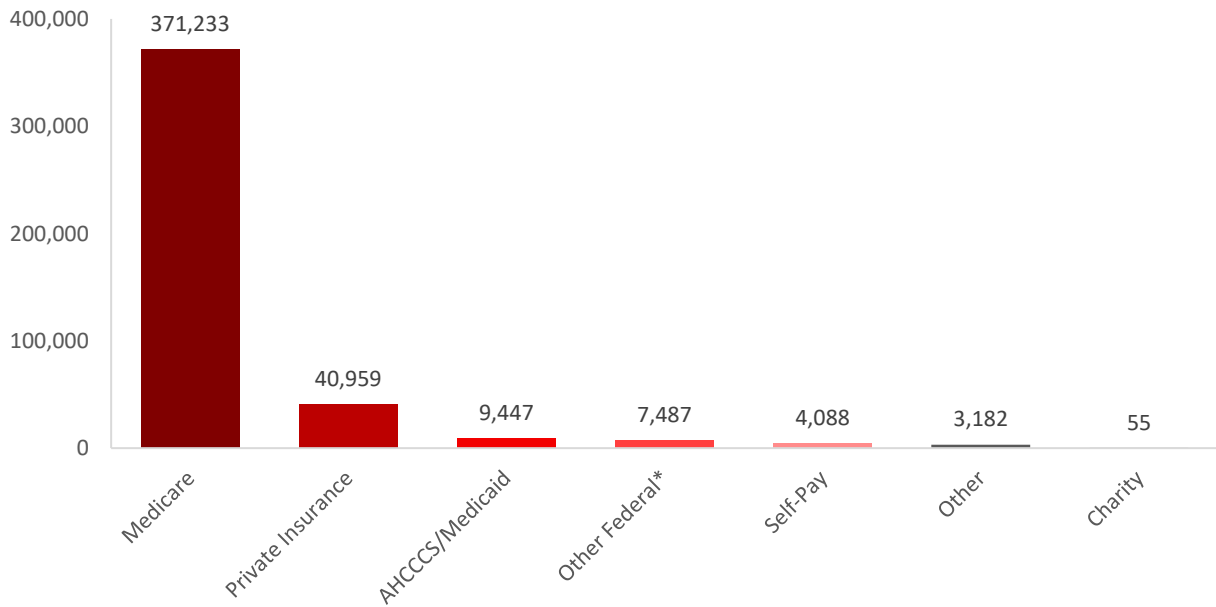


Data Source: Arizona Hospital Discharge Data

Primary Insurance Payer

In 2021, the most common insurance payer for emergency department visits among Arizonans 65 years and older was Medicare, followed by private insurance (Figure 37).

Figure 37: Number of emergency department visits among Arizonans 65 years and older by insurance payer-Arizona 2021

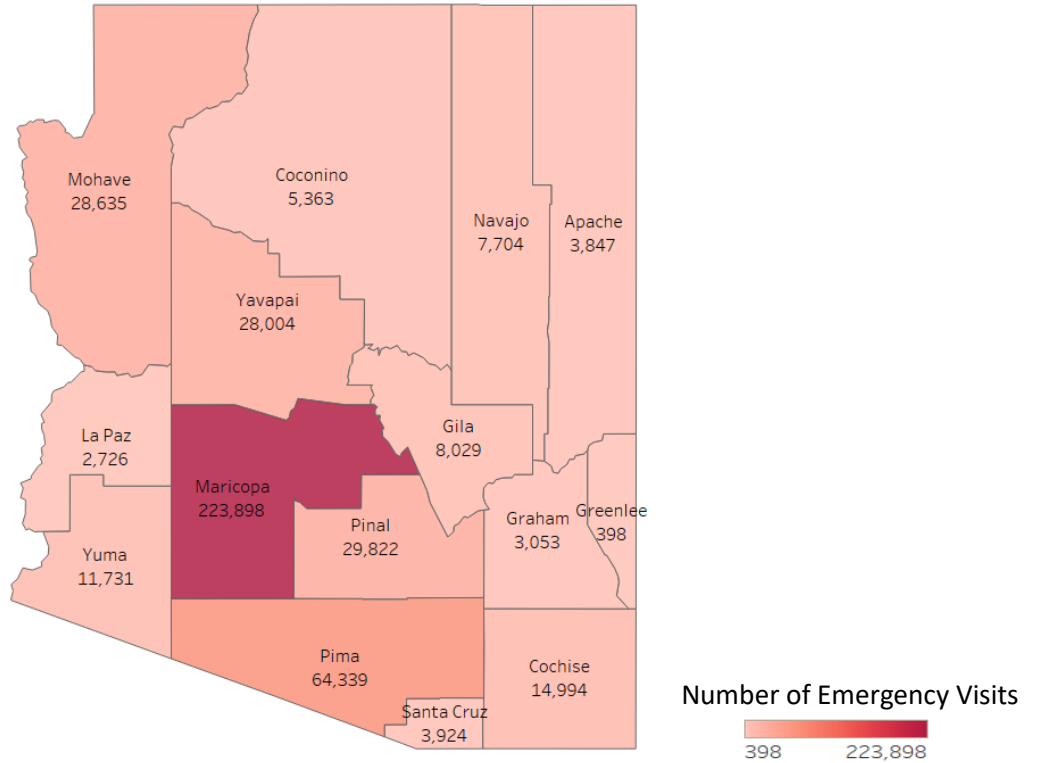


Data Source: Arizona Hospital Discharge Data; primary insurance payer for inpatient hospitalization visit
 *Other federal insurances include Tricare and Indian Health Services.

County of Residence

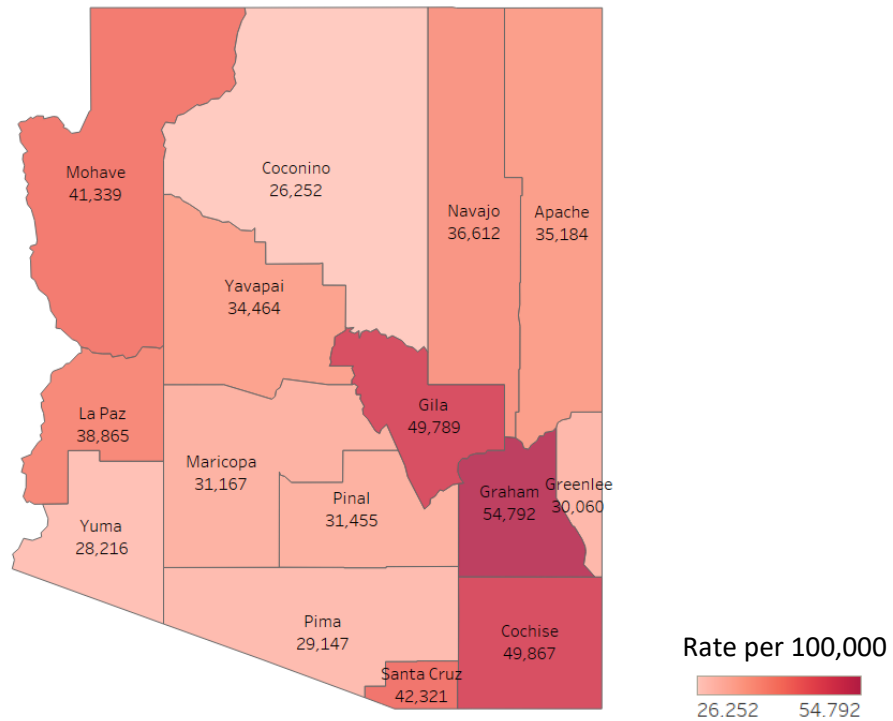
In 2021, the number of emergency department visits among Arizonans aged 65 and older was highest in Maricopa and Pima counties (Figure 38). However, the emergency department visit rate among Arizonans 65 years and older was highest in Graham, Cochise, and Gila counties (Figure 39).

Figure 38: Number of emergency department visits among Arizonans 65 years and older by county of residence -Arizona 2021



Data Source: Arizona Hospital Discharge Data

Figure 39: Emergency department visit rate (per 100,000 residents) among Arizonans 65 years and older by county of residence-Arizona 2021



Data Source: Arizona Hospital Discharge Data

Leading Causes of Emergency Visits

In 2021, signs, symptoms and ill-defined conditions were leading causes of emergency department visits among Arizonans 65 years and older (Table 5).

Table 5: Number and Rate of the Top 5 leading causes of emergency department visits among Arizona residents 65 years and older-Arizona 2021

Leading Cause of Emergency Department Visits	Count	Rate
Symptoms, Signs, and Ill-Defined Conditions*	110,412	8,192.0
Injury and Poisoning†	87,464	6,489.4
Diseases of the Circulatory System	38,061	2,823.9
Diseases of the Musculoskeletal System and Connective Tissue	36,127	2,680.4
Diseases of the Digestive System	30,045	2,229.2

*Signs, symptoms, abnormal results of clinical, laboratory, or other investigative procedures, and ill-defined conditions regarding which no diagnosis classifiable elsewhere is recorded.

†Further categories of injury and poisoning provided in [Supplemental Table A](#) and [Supplemental Table B](#)

Data Source: Arizona Hospital Discharge Data



Morbidity and Self-Report Health Behaviors

Demographic Comparisons

In the 2021 BRFSS, Arizonan BRFSS participants 65 years and older were commonly females (54%), non-Hispanic White persons (79%), who attended college or technical school (39%), and with an annual income between \$50,000 and \$100,000 (30%) (Table 6).

Table 6: Prevalence Estimates of Demographics among Arizonan BRFSS participants 65 years and older-Arizona 2021

		Weighted Frequency	Prevalence Estimate
Total	Age 65 and Older	1,345,583	24.4%
Gender	Male	617,609	45.9%
	Female	727,974	54.1%
Race/Ethnicity	White, Non-Hispanic/Latino	1,066,246	79.2%
	Black or African American	41,824	3.1%
	American Indian or Alaska Native	26,094	1.9%
	Asian or Pacific Islander	*	*
	Other race	10,756	0.8%
	Multiple races	10,535	0.8%
	Hispanic or Latino	180,381	13.4%
Education	Did not Graduate high school	149,960	11.2%
	High school graduate	272,475	20.3%
	Attended college or technical school	528,327	39.4%
	College or technical school graduate	391,596	29.2%
Income	<\$15,000	69,326	6.8%
	\$15,000-\$25,000	145,670	14.3%
	\$25,000-\$35,000	164,350	16.1%
	\$35,000-\$50,000	173,434	17.0%
	\$50,000-\$100,000	306,727	30.1%
	\$100,000-\$200,000	124,779	12.3%
	>\$200,000	33,395	3.3%

Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

* Estimate suppressed if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3.

Self-Reported Health Status

In 2021, the majority (78%) of Arizonan BRFSS participants 65 years and older reported having “good,” “very good,” or “excellent” general health (33%, 31% and 14%, respectively, Table 7). Only a small percent of Arizonan BRFSS participants 65 years and older reported having 14 or more days (during the past 30) of “not good” mental health (9%) or physical health (16%) (Table 7).

Table 7: Prevalence estimates of self-reported health status among Arizonan BRFSS participants 65 years and older-Arizona 2021

Topic	Answer Choices	Weighted Frequency	Prevalence Estimate
General health status	Excellent	181,304	13.5%
	Very good	422,306	31.4%
	Good	444,779	33.1%
	Fair	218,547	16.3%
	Poor	76,916	5.7%
Days mental health "not good" (during past 30 days)	0 days	987,444	75.1%
	1-13 days	212,134	16.1%
	14 + days	115,485	8.8%
Days physical health “not good” (during past 30 days)	0 days	844,148	64.6%
	1-13 days	249,342	19.1%
	14 + days	213,740	16.4%

Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

Healthcare Access and Utilization

In 2021, the majority of Arizonan BRFSS participants 65 years and older reported Medicare as their primary insurance payer (75%, Table 8). The majority of Arizonan BRFSS participants 65 years and older reported they were able to afford to see a doctor when needed (97%) and completed a routine medical checkup within the past year (86%, Table 8).

Table 8: Prevalence estimates of healthcare access and utilization among Arizonan BRFSS participants 65 years and older-Arizona 2021

Topic	Answer Choices	Weighted Frequency	Prevalence Estimate
Primary health insurance payer	Plan purchased through employer/union	98,904	7.6%
	Private plan	53,326	4.1%
	Medicare	983,916	75.3%
	Medigap	*	*
	Medicaid	23,140	1.8%
	Military	66,689	5.1%
	Indian Health Service	*	*
	State sponsored health plan	23,685	1.8%
	Other govt program	37,207	2.8%
	No coverage	16,878	1.3%
Needed to see a doctor but could not afford (past 12 months)	Yes	43,033	3.2%
	No	1,301,755	96.8%
Length of time since last routine medical checkup	Within the past year	1,147,861	86.2%
	1-2 years	122,421	9.2%
	Within the past 5 years	33,128	2.5%
	5 + Years	25,690	1.9%
	Never	*	*

Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

* Estimate suppressed if the unweighted sample size for the denominator was < 50 or the Relative Standard Error (RSE) is > 0.3.

Health Behaviors and Risk Factors

In 2021, the majority of Arizonan BRFSS participants 65 years and older reported exercise or physical activity within the past month (73%, Table 9). Most Arizonan BRFSS participants 65 years and older reported not binge drinking within the past month (87%) and about half reported never smoking (51%, Table 9). When asked about health conditions, 57% reported they had high blood pressure, 48% reported they had high cholesterol and 67% reported being overweight or obese (Table 9).

Table 9: Prevalence estimates of health behaviors and risk factors among Arizonan BRFSS participants 65 years and older-Arizona 2021

Topic	Answer Choices	Weighted Frequency	Prevalence Estimate
Any exercise or physical activities (past month)	Yes	974,110	72.5%
Binge drank (number past 30 days) [†]	0 times	470,630	87.3%
	1 time	17,571	3.3%
	2-4 times	30,580	5.7%
	5 or more times	20,014	3.7%
Smoking status	Current smoker-every day	87,083	6.8%
	Current smoker-some days	31,576	2.5%
	Former smoker	499,552	39.3%
	Never smoked	654,421	51.4%
Ever been told had high blood pressure	Yes	767,329	57.1%
	Borderline	562,815	41.9%
	No	10,138	0.8%
Ever been told had high cholesterol	Yes	610,975	48.0%
Body Mass Index category	Underweight	22,298	1.8%
	Normal weight	380,327	31.3%
	Overweight	467,726	38.5%
	Obese	344,942	28.4%

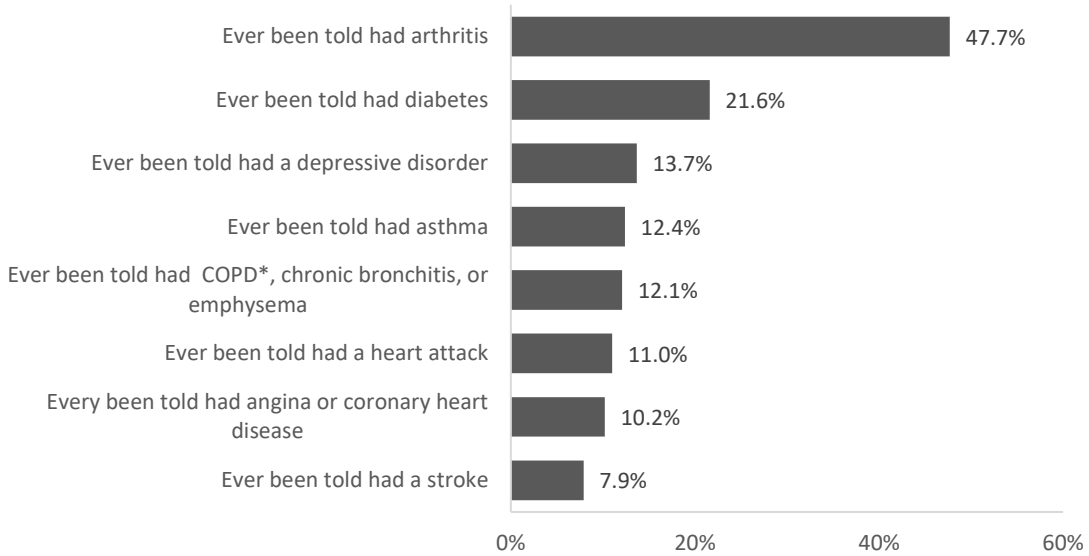
Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

[†]Binge drinking is considered 5 or more drinks on one occasion for men and 4 or more drinks on one occasion for women

Health Outcomes

In 2021, the most common self-reported health outcomes among Arizonan BRFSS participants 65 years and older were arthritis (48%) and diabetes (22%) (Figure 40).

Figure 40: Prevalence estimates of self-reported health outcomes among Arizonan BRFSS participants 65 years and older-Arizona 2021



*Chronic Obstructive Pulmonary Disease

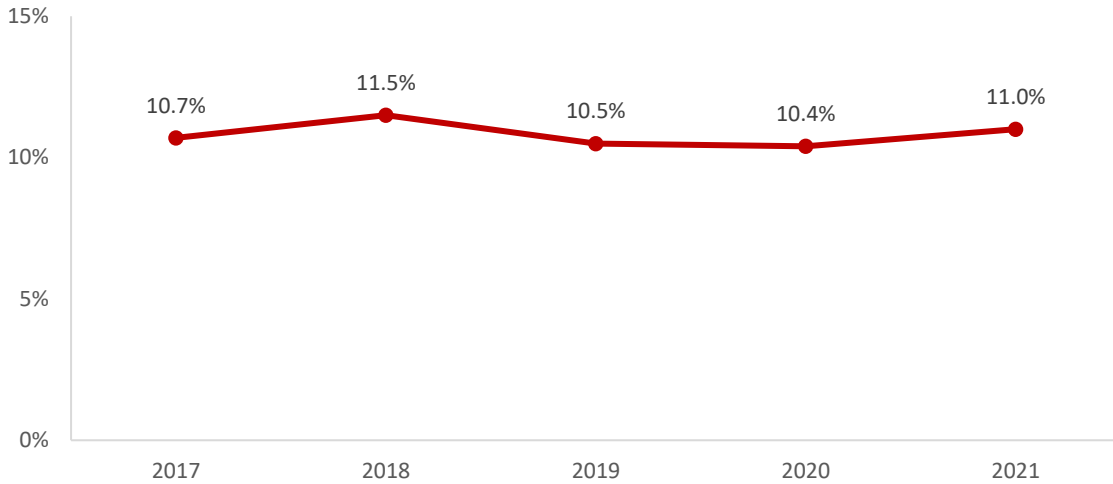
Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

Health Outcome Trends 2017-2021

Heart Attack

Between 2017-2021, the prevalence of Arizonan BRFSS participants 65 years and older who were ever told they had a heart attack was been stable (Figure 41).

Figure 41: Prevalence of Arizonan BRFSS participants 65 years and older who were ever told they had a heart attack-Arizona 2017-2021

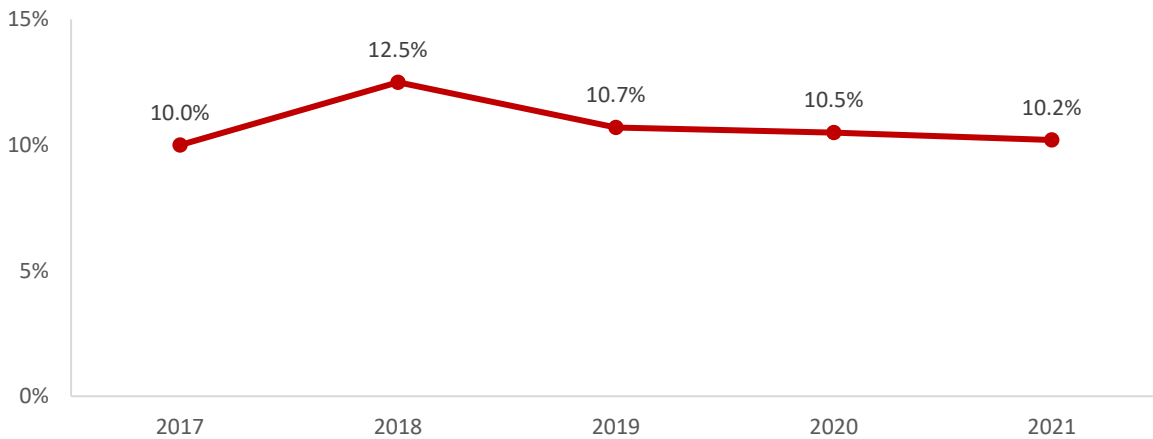


Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

Coronary Heart Disease

The prevalence of Arizonan BRFSS participants 65 years and older who were ever told they had angina or coronary heart disease increased between 2017 and 2018, and has since steadily decreased between 2019 and 2021 (Figure 42).

Figure 42: Prevalence of Arizonans BRFSS participants 65 years and older who were ever told they had angina or coronary heart disease-Arizona 2017-2021

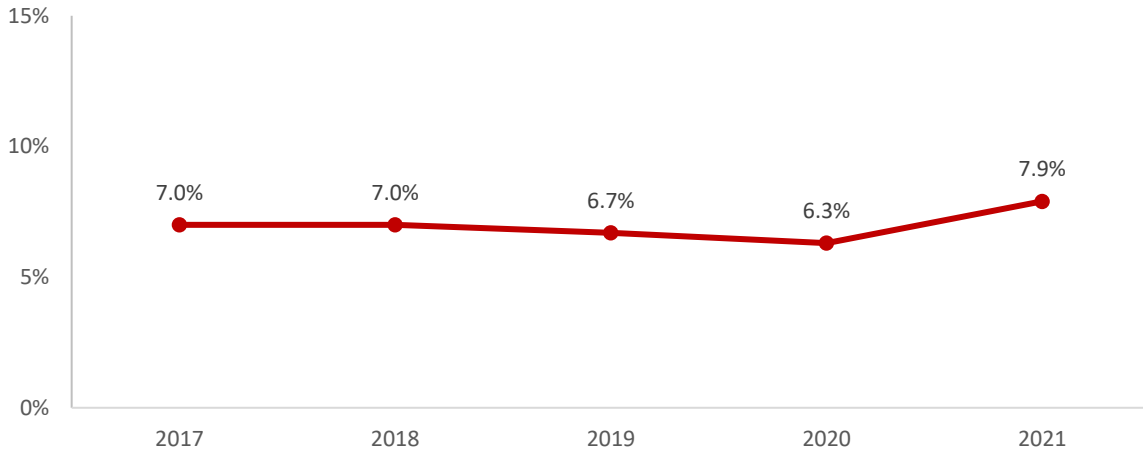


Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

Stroke

The prevalence of Arizonan BRFSS participants 65 years and older who were ever told they had a stroke decreased between 2017 and 2020, but increased between 2020 and 2021 (Figure 43).

Figure 43: Prevalence of Arizonan BRFSS participants 65 years and older who were ever told they had a stroke-Arizona 2017-2021

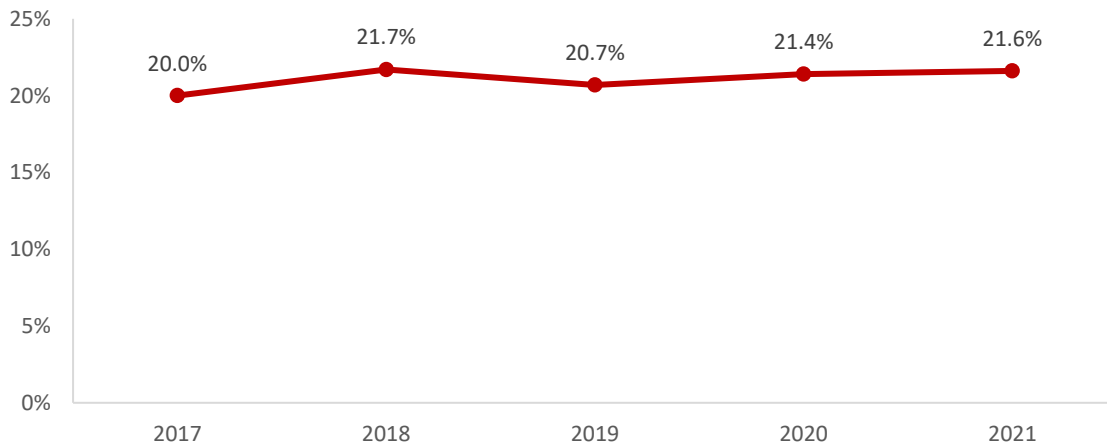


Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

Diabetes

The prevalence of Arizonan BRFSS participants 65 years and older who were ever told they had diabetes has increased overall between 2017 and 2021 (Figure 44).

Figure 44: Prevalence of Arizonan BRFSS participants 65 years and older who were ever told they had diabetes (excluding during pregnancy)-Arizona 2017-2021



Data Source: Arizona Behavioral Risk Factor Surveillance System Data, 2021

Limitations

Several limitations should be kept in mind when reviewing data included in this report.

Nationally, a striking decline in emergency department visits for all causes other than COVID-19 was observed in year 2020, with the highest declines in regions where the pandemic was most severe, suggesting that the pandemic altered the use of the emergency department visits by the public.⁶ It is unclear to what extent (during 2020) the spread of COVID-19 may have impacted the trends of other diseases, however all of the observed trends for emergency department visits should be interpreted cautiously.

Hospital discharge data are a valuable source of information about the patterns of care, public health, and the burden of chronic disease and injury morbidity. ADHS collects hospital discharge records for inpatient and emergency department visits from all Arizona licensed hospitals. Federal hospitals, such as Veteran's Administration and Indian Health Service, data are not captured. Hospital records for Arizona residents who use hospitals in another state (state border crossings) are also not captured.

Misclassification of persons by race may occur, especially for American Indian/Alaska Native persons.⁶ This could lead to over or underestimation of persons among this group. Discharge data is an administrative data sets and may include misclassification of characteristics at the hospital-level.

For the BRFSS data there may be reporting, recall and social desirability bias from participants. Data are also only on those who choose to participate.

In addition, the data utilized in this report is based on encounters and may include duplicate cases for the same person resulting in an overestimate of the number of cases and associated rates.

⁶ Lan CW, Joshi S, et al. Racial Misclassification and Disparities in Neonatal Abstinence Syndrome Among American Indians and Alaska Natives. J Racial Ethn Health Disparities. 2021. <https://stacks.cdc.gov/view/cdc/114608>.

Future Directions for Analysis

For future reports, ADHS would like to focus on how social determinants of health such as transportation and poverty affect older adults. ADHS would also like to explore data on other populations of interest such as LGBTQ+ communities and persons with disabilities. Factors that disproportionately affect older Arizonans, including Alzheimer’s disease and loneliness should also be explored in future reports.

Conclusions

From 2017-2021, Arizonans 65 years and older experienced a 17% growth in population. Although hospitalizations and emergency department visits have been steady over this period of time (2017-2021), the number of deaths increased 37%. The highest mortality rates were among persons 85 years and older (13,346 per 100,000 residents), American Indians or Alaska Native persons (5,589 per 100,000 residents), males (4,859 per 100,000 residents), and persons living in rural regions of Arizona (4,588 per 100,000 residents). The leading cause of death among Arizonans 65 years and older was heart disease (897 per 100,000 residents).

In 2021, the highest rates of inpatient hospitalizations among Arizonans 65 years and older were among males (19,862 per 100,000 residents) and persons living in urban regions of Arizona (18,901 per 100,000 residents) whereas the highest rates of emergency department visits were among females (33,132 per 100,000 residents) and persons living in rural regions of Arizona (39,179 per 100,000 residents). The rates of both inpatient hospitalizations and emergency department visits were highest amongst persons 85 years and older (28,763 per 100,000 residents and 45,457 per 100,000 residents, respectively) and Black or African American persons (41,236 per 100,000 residents and 41,235 per 100,000 residents, respectively). Diseases of the circulatory system were most commonly associated with inpatient hospitalizations (24%), while symptoms, signs and ill-defined conditions were most commonly associated with emergency department visits (25%).

In 2021, among Arizonans 65 years and older who participated in the BRFSS survey, 78% self-reported “good,” “very good,” or “excellent” general health; and 86% reported they had a routine medical checkup within the past year. A history of health concerns was self-reported by some participants, the most common being arthritis (48%), diabetes (22%), having a heart attack (11%), coronary heart disease (10%), or stroke (8%).

As part of our commitment to supporting the Arizona State Plan on Aging, the Arizona Department of Health Services has committed to completing the following report “Aging in Arizona: Leading and Risk Factors of Death Among Arizona Residents 65 and Older-2021.” This report provides information to provide guidance on matters related to the older adult/aging population in Arizona, and can be used as a resource to raise awareness, help guide program planning, and inform training on vital aging issues.

Supplemental Tables

Supplemental Table A: Number of Injury and Poisoning Emergency Department Visits by Injury Diagnosis

Injury Diagnosis	Count
Anatomic Injuries	76,250
Other/Unspecified	6,860
Foreign Bodies, Burns, Corrosions, Frostbite	2,554
Toxic Effects of Nonmedical Substances	973
Poisoning by Drugs, Medicants and biological substances*	827

Categorization is based on [CDC Injury Indicator Guidance](#)

*For more information on opioid overdoses, please see [ADHS Opioid Surveillance report](#)

Data Source: Arizona Hospital Discharge Data

Supplemental Table B: Number of Injury and Poisoning Emergency Department Visits by Mechanism of Injury

Mechanism of Injury	Count
Other External Cause of Accidental Injury	73,440
<i>Falls*</i>	50,460
Undetermined/Other	8,503
Transportation Accidents	4,999
Assault	462
Intentional Self Harm	60

Categorization is based on [CDC Injury Indicator Guidance](#)

*For more information on falls, please see [ADHS Falls Report and Fact Sheet](#)

Data Source: Arizona Hospital Discharge Data