

Heat-Related Illness Emergency Department & Inpatient Admissions (Hospitalizations) 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Year		
Year	Emergency Department Visit	Inpatient Admission (Hospitalization)
2016	2913	594
	<i>Of those, 1812 were heat-caused[†] (62.2%)</i>	<i>Of those, 240 were heat-caused[†] (40.4%)</i>
2017	3131	760
	<i>Of those, 2070 were heat-caused[†] (66.1%)</i>	<i>Of those, 283 were heat-caused[†] (37.2%)</i>
2018	3026	753
	<i>Of those, 1928 were heat-caused[†] (63.7%)</i>	<i>Of those, 250 were heat-caused[†] (33.2%)</i>
2019	2944	761
	<i>Of those, 1903 were heat caused[†] (64.6%)</i>	<i>Of those, 299 were heat-caused[†] (39.3%)</i>
2020	2414	893
	<i>Of those, 1401 were heat caused[†] (58.0%)</i>	<i>Of those, 360 were heat-caused[†] (40.3%)</i>

[†]Heat-caused emergency department and inpatient visits (hospitalizations) are visits where the primary diagnosis is listed as exposure to excessive natural heat. Heat-related visits are where exposure to excessive natural heat is listed anywhere in the diagnoses and include those that were heat-caused.



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2016-2020, Arizona Residents and Non-Residents

Heat-Related Emergency Department Visits and Inpatient Admissions (Hospitalizations) by Resident Status					
Resident Status	2016	2017	2018	2019	2020
AZ Resident Emergency Department Visit	2605	2745	2672	2649	2086
Non-Resident Emergency Department Visit	308	386	354	295	328
AZ Resident Inpatient Admission (Hospitalization)	539	662	668	648	751
Non-Resident Inpatient Admission (Hospitalization)	55	98	85	113	142



Emergency Department Visits 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Sex and Age Group

Sex	2016	2017	2018	2019	2020
Female	988	1026	971	931	714
Male	1925	2105	2055	2013	1700

Age Group	2016	2017	2018	2019	2020
Infants <1	10	6	11	8	6
Children 1 - 14	151	157	137	140	53
Adolescents 15-19	195	171	198	167	121
Young Adults 20-44	1333	1447	1358	1354	1088
Middle-Aged Adults 45 - 64	805	859	870	846	715
Elderly 65+	419	491	452	429	431



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Inpatient Admissions (Hospitalizations) 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Sex and Age Group

Sex	2016	2017	2018	2019	2020
Female	139	169	168	195	178
Male	455	591	585	566	715

Age Group	2016	2017	2018	2019	2020
Infants <1	0	0	0	<6*	6
Children 1 - 14	<6*	<6*	<6*	<6*	6
Adolescents 15-19	11	12	15	8	9
Young Adults 20-44	182	230	218	227	255
Middle-Aged Adults 45 - 64	220	290	281	289	360
Elderly 65+	178	226	234	233	257

*Number of visits related to exposure to excessive natural heat were suppressed due to non-zero count less than 6.



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Emergency Department Visits 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Race/Ethnicity

Race/Ethnicity	2016	2017	2018	2019	2020
American Indian/Alaskan Native	124	124	99	108	94
Asian or Pacific Islander	35	39	34	40	24
Black or African American	205	232	215	213	165
Hispanic	721	773	817	765	575
White	1802	1932	1828	1788	1526
Other	26	31	33	30	30



Inpatient Admissions (Hospitalizations) 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Race/Ethnicity

Race/Ethnicity	2016	2017	2018	2019	2020
American Indian/Alaskan Native	26	21	28	19	32
Asian or Pacific Islander	<6*	6	10	12	10
Black or African American	49	64	67	70	85
Hispanic	122	172	161	159	164
White	378	481	466	485	585
Other	14	16	21	16	17

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Emergency Department Visits 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Month					
Month	2016	2017	2018	2019	2020
January	<6*	<6*	6	<6*	<6*
February	36	7	10	<6*	10
March	51	101	30	32	12
April	62	95	115	105	61
May	144	231	238	96	283
June	1013	1080	603	518	377
July	881	809	941	968	620
August	498	508	710	859	722
September	134	227	325	306	248
October	72	52	37	40	62
November	14	13	6	15	15
December	<6*	<6*	<6*	<6*	<6*

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Inpatient Admissions (Hospitalizations) 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Month					
Month	2016	2017	2018	2019	2020
January	0	<6*	<6*	0	<6*
February	<6*	<6*	<6*	0	<6*
March	6	15	<6*	6	<6*
April	12	10	23	17	20
May	19	45	47	16	56
June	221	250	124	128	101
July	204	225	271	270	310
August	84	136	193	221	304
September	29	65	80	94	80
October	13	6	<6*	8	16
November	<6*	<6*	<6*	<6*	0
December	0	<6*	0	0	<6*

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Emergency Department Visits 2016-2020, Arizona Residents

Heat-Related Illness by County

County Residence	2016	2017	2018	2019	2020
Apache	7	9	7	10	6
Cochise	36	53	43	47	27
Coconino	28	23	27	20	25
Gila	22	15	20	31	23
Graham	19	14	14	14	18
Greenlee	<6*	<6*	<6*	<6*	<6*
La Paz	28	20	25	10	23
Maricopa	1498	1602	1492	1545	1237
Mohave	190	174	173	136	159
Navajo	23	18	13	12	17
Pima	305	332	340	307	214
Pinal	196	191	232	224	186
Santa Cruz	<6*	6	6	13	<6*
Yavapai	54	55	50	46	39
Yuma	192	229	227	231	105

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Emergency Department Visits 2016-2020, Arizona Residents

Heat-Related Illness Rates by County

County Residence	2016	2017	2018	2019	2020
Apache	9.8	12.6	9.7	13.9	9.1
Cochise	28.6	42.4	34.0	36.9	21.5
Coconino	19.9	16.3	18.9	13.9	17.2
Gila	41.2	28.0	37.2	57.3	43.2
Graham	50.2	37.3	36.8	36.0	46.7
Greenlee	*	*	*	*	*
La Paz	135.5	96.4	118.9	47.0	138.9
Maricopa	35.2	37.0	33.9	34.4	28.0
Mohave	92.3	83.8	82.2	63.6	74.6
Navajo	21.2	16.5	11.8	10.8	15.9
Pima	30.0	32.3	32.8	29.3	20.5
Pinal	47.0	44.3	52.0	48.5	43.7
Santa Cruz	*	12.9	12.9	27.8	*
Yavapai	24.0	24.1	21.5	19.5	16.5
Yuma	92.7	109.4	107.5	107.9	51.5
Arizona	37.5	38.9	37.3	36.3	29.2

Note: Crude rates are per 100,000 population. For years 2016-2019, [Vintage 2020 estimates from US Census](#) were used and for 2020, the 2020 Census counts were used to calculate rates.

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Inpatient Admissions (Hospitalizations) 2016-2020, Arizona Residents

Heat-Related Illness by County					
County Residence	2016	2017	2018	2019	2020
Apache	<6*	<6*	<6*	<6*	<6*
Cochise	<6*	7	7	<6*	<6*
Coconino	<6*	<6*	<6*	<6*	<6*
Gila	<6*	<6*	<6*	<6*	0
Graham	<6*	<6*	<6*	<6*	<6*
Greenlee	0	0	0	<6*	0
La Paz	6	<6*	<6*	<6*	<6*
Maricopa	357	462	443	433	547
Mohave	31	36	27	28	37
Navajo	<6*	<6*	<6*	<6*	<6*
Pima	52	63	78	83	74
Pinal	35	43	54	51	50
Santa Cruz	<6*	<6*	<6*	<6*	<6*
Yavapai	7	11	<6*	9	<6*
Yuma	36	25	39	24	22

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Inpatient Admissions (Hospitalizations) 2016-2020, Arizona Residents

Heat-Related Illness Rates by County

County Residence	2016	2017	2018	2019	2020
Apache	*	*	*	*	*
Cochise	*	5.6	5.5	*	*
Coconino	*	*	*	*	*
Gila	*	*	*	*	0.0
Graham	*	*	*	*	*
Greenlee	0.0	0.0	0.0	*	0.0
La Paz	29.0	*	*	*	*
Maricopa	8.4	10.7	10.1	9.6	12.4
Mohave	15.1	17.3	12.8	13.1	17.3
Navajo	*	*	*	*	*
Pima	5.1	6.1	7.5	7.9	7.1
Pinal	8.4	10.0	12.1	11.0	11.8
Santa Cruz	*	*	*	*	*
Yavapai	3.1	4.8	*	3.8	*
Yuma	17.4	11.9	18.5	11.2	10.8
Arizona	7.8	9.4	9.3	8.9	10.5

Note: Crude rates are per 100,000 population. For years 2016-2019, [Vintage 2020 estimates from US Census](#) were used and for 2020, the 2020 Census counts were used to calculate rates.

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Emergency Department Visits 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Comorbidity and Substance Use

Comorbidity [†]	2016	2017	2018	2019	2020
Obese/Overweight	35	26	39	37	30
Mental Disorders	769	817	770	849	695
Circulatory Disease	477	536	490	463	422
Respiratory Disease	158	145	147	123	95
No Comorbidity	1474	1607	1580	1472	1172
Substance Use	2016	2017	2018	2019	2020
Alcohol Use	67	67	64	56	63
Drug Use	516	592	546	610	509
Combined Alcohol and Drug Use	44	38	44	49	57
No Substance Use	2286	2434	2372	2229	1785

[†] More than 1 comorbidity may be listed in the visit record. All comorbidities identified in a record are represented in these yearly totals.



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Heat-Related Illness by Comorbidity and Substance Use

Comorbidity†	2016	2017	2018	2019	2020
Obese/Overweight	23	25	18	27	32
Mental Disorders	260	365	334	346	442
Circulatory Disease	199	237	275	262	289
Respiratory Disease	60	73	52	57	66
No Comorbidity	23	25	18	27	32
Substance Use					
Substance Use	2016	2017	2018	2019	2020
Alcohol Use	29	37	38	53	49
Drug Use	220	293	280	293	377
Combined Alcohol and Drug Use	61	78	62	78	104
No Substance Use	284	352	373	337	363

† More than 1 comorbidity may be listed in the visit record. All comorbidities identified in a record are represented in these yearly totals.



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Emergency Department Visits 2016-2020, Arizona Residents and Non-Residents

Heat-Related Illness by Place of Injury and Preceding Activity

Place of Injury	2016	2017	2018	2019	2020
Industrial Site	455	439	408	442	380
Private Residence	768	923	1056	1005	750
Public Building	77	91	82	94	41
Recreational Site	146	120	129	88	65
Residential Institution	27	31	30	21	26
Street/Highway	522	580	516	518	481
Not Listed	918	947	805	776	671
Preceding Activity	2016	2017	2018	2019	2020
Exercise	16	7	12	<6*	12
Household Activities	27	24	28	27	13
Occupational	179	163	150	129	114
Recreational	332	359	318	323	272
Sports/Athletics	138	119	127	100	76
Not Listed	2221	2459	2391	2360	1927

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Heat-Related Illness by Place of Injury and Preceding Activity

Place of Injury	2016	2017	2018	2019	2020
Industrial Site	67	67	81	79	90
Private Residence	195	256	249	238	283
Public Building	16	22	27	25	18
Recreational Site	11	10	18	7	13
Residential Institution	<6*	9	8	<6*	<6*
Street/Highway	139	200	208	226	287
Not Listed	161	196	162	182	197
Preceding Activity	2016	2017	2018	2019	2020
Exercise	<6*	<6*	<6*	0	<6*
Household Activities	<6*	<6*	<6*	<6*	<6*
Occupational	31	44	32	22	9
Recreational	31	39	31	28	25
Sports/Athletics	11	11	12	6	7
Not Listed	516	659	673	702	846

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Methods

ICD-10 Codes	Description
T67.0	Heat stroke and sunstroke
T67.1	Heat syncope
T67.2	Heat cramps
T67.3	Heat exhaustion from water depletion
T67.4	Heat exhaustion from salt depletion
T67.5	Heat exhaustion, unspecified
T67.6	Heat fatigue, transient
T67.7	Heat edema
T67.8	Other specified heat effects
T67.9	Unspecified effects of heat and light
X30	Exposure to excessive natural heat

- Criteria adapted from Council of State & Territorial Epidemiologists (CSTE)
- Methods search entire record for ICD-10 codes
- The ICD-9 to ICD-10 conversion occurred October 2015
- ICD codes related to man-made sources of heat were excluded



Methods

ICD-10 Codes	Description
E66	Overweight and obesity
FXX	Mental, behavioral, and neurodevelopmental disorders
IXX	Diseases of the circulatory system
JXX	Diseases of the respiratory system

- ICD codes related to selected comorbidities are listed here
- Methods search entire record for ICD-10 codes
- The ICD-9 to ICD-10 conversion occurred October 2015
- Substance use codes (ICD-10) for alcohol-and drug-related comorbidities are defined by [ADHS Population Health and Vital Statistics Diagnostics Categories](#)

