

# Heat-Caused & Heat-Associated Deaths in Arizona by Year (2008-2018)

Deaths from Exposure to Excessive Natural Heat		
Year	Heat – Caused Deaths	Heat – Associated Deaths
2008	88	112
2009	120	154
2010	137	186
2011	123	177
2012	97	157
2013	103	149
2014	48	91
2015	88	132
2016	146	219
2017	132	264
2018 <sup>‡</sup>	130	251

**Heat-caused** deaths are deaths where the primary cause of death is listed as exposure to excessive natural heat. **Heat-associated** deaths are deaths where exposure to excessive natural heat is listed anywhere on the death record and include those that were heat-caused.

<sup>‡</sup>2018 data is preliminary.



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# Heat-Caused Deaths Summary 2008-2018

		Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>†</sup>
<b>State or Country of Residence</b>	Arizona Resident	658	34	38	50	57	53	56	32	42	98	105	93
	Non-Arizona Resident	549	54	82	87	66	44	47	16	41	48	27	37
<b>Geographic Region of Occurrence</b>	Central Counties	571	33	51	48	61	55	45	27	39	69	67	76
	Northern Counties	100 <sup>†</sup>	*	*	6	7	0	13	*	*	12	33	19
	Southern Counties	520	50	64	81	55	41	45	18	39	60	32	35
	Western Counties	10 <sup>†</sup>	*	*	*	0	*	0	0	*	*	0	0
<b>Race/Ethnicity</b>	American Indian/ Alaskan Native	40 <sup>†</sup>	*	*	*	*	*	*	0	0	0	11	6
	Asian or Pacific Islander	10 <sup>†</sup>	0	*	0	0	*	0	0	*	*	*	*
	African American/Black	40 <sup>†</sup>	*	*	6	6	*	6	*	*	*	*	7
	Hispanic/Latino	497	50	69	70	59	43	43	16	32	52	28	35
	White Non-Hispanic	582	32	43	59	53	46	48	28	44	81	77	71
	Unknown	40 <sup>†</sup>	0	0	0	0	0	0	*	*	10	12	10

Notes: <sup>†</sup> 2018 data is preliminary; <sup>†</sup> Sum rounded to nearest tens unit due to non-zero addend less than 6; \* Number of visits related to exposure to excessive natural heat were suppressed due to non-zero count less than 6.

Classification of geographic regions: Central = Gila, Graham, Maricopa, Pinal, and Yavapai; Eastern = Greenlee; Northern = Apache, Coconino, Mohave, and Navajo; Southern = Cochise, Pima, Santa Cruz, and Yuma; Western = La Paz.



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# Heat-Associated Deaths Summary 2008-2018

		Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>†</sup>
<b>State or Country of Residence</b>	Arizona Resident	1275	57	68	96	108	109	96	74	88	165	227	187
	Non-Arizona Resident	617	55	86	90	69	48	53	17	44	54	37	64
<b>Geographic Region of Occurrence</b>	Central Counties	1187	44	79	91	108	106	86	66	86	135	193	193
	Northern Counties	130 <sup>†</sup>	*	*	7	10	*	16	7	*	17	34	20
	Southern Counties	549	50	69	85	57	47	47	18	40	62	36	38
	Western Counties	10 <sup>†</sup>	*	*	*	*	*	0	0	*	*	*	0
<b>Race/Ethnicity</b>	American Indian/ Alaskan Native	70 <sup>†</sup>	8	8	*	8	8	9	0	0	0	16	11
	Asian or Pacific Islander	20 <sup>†</sup>	0	*	0	*	*	0	*	*	*	6	*
	African American/Black	90 <sup>†</sup>	*	*	10	9	*	12	6	*	7	11	16
	Hispanic/Latino	599	55	75	78	68	54	51	20	36	62	44	56
	White Non-Hispanic	1034	46	65	94	91	88	77	57	82	134	160	140
	Unknown	81	0	0	0	0	0	0	7	6	14	27	27

Notes: <sup>†</sup> 2018 data is preliminary; <sup>†</sup> Sum rounded to nearest tens unit due to non-zero addend less than 6; \* Number of visits related to exposure to excessive natural heat were suppressed due to non-zero count less than 6.

Classification of geographic regions: Central = Gila, Graham, Maricopa, Pinal, and Yavapai; Eastern = Greenlee; Northern = Apache, Coconino, Mohave, and Navajo; Southern = Cochise, Pima, Santa Cruz, and Yuma; Western = La Paz.



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# Heat-Caused Deaths Summary 2008-2018

		Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>‡</sup>
<b>Age Group (years)</b>	Less than 1	10 <sup>†</sup>	*	0	*	0	*	*	*	*	*	*	0
	1 – 4	0 <sup>†</sup>	*	0	*	0	0	0	0	*	0	*	0
	5 -14	10 <sup>†</sup>	0	*	*	0	0	0	0	*	*	0	*
	15 - 24	130 <sup>†</sup>	18	17	22	12	*	17	*	11	11	*	7
	25 - 34	188	17	25	22	26	14	9	6	9	22	19	19
	35 – 44	172	11	21	23	22	18	12	7	14	18	9	17
	45 – 54	170 <sup>†</sup>	16	18	21	17	17	19	*	10	14	20	16
	55 – 64	150 <sup>†</sup>	*	7	8	16	14	10	7	14	31	19	19
	65 – 74	130 <sup>†</sup>	*	6	7	*	12	6	8	14	16	24	32
	75 – 84	110 <sup>†</sup>	7	8	7	8	10	11	*	*	14	23	16
	85+	60 <sup>†</sup>	*	*	*	10	*	6	*	*	12	7	*
	Missing Age	80 <sup>†</sup>	*	14	19	7	*	12	*	*	*	*	0
	<b>Gender</b>	Female	279	19	22	26	26	23	20	16	18	43	41
Male		927	69	97	111	97	74	83	32	65	103	91	105
Unknown		0 <sup>†</sup>	0	*	0	0	0	0	0	0	0	0	0

Notes: <sup>‡</sup> 2018 data is preliminary; <sup>†</sup> Sum rounded to nearest tens unit due to non-zero addend less than 6; \* Number of visits related to exposure to excessive natural heat were suppressed due to non-zero count less than 6.



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# Heat-Associated Deaths Summary 2008-2018

		Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>‡</sup>
<b>Age Group (years)</b>	Less than 1	10 <sup>†</sup>	*	0	*	0	*	*	*	*	*	*	0
	1 – 4	10 <sup>†</sup>	*	0	*	0	*	0	0	*	0	*	0
	5 -14	10 <sup>†</sup>	*	*	*	*	0	0	0	*	*	0	*
	15 - 24	140 <sup>†</sup>	18	18	23	13	*	17	*	13	11	6	8
	25 - 34	230	18	27	26	27	18	9	9	15	24	31	26
	35 – 44	245	15	24	30	25	20	20	11	19	27	23	31
	45 – 54	291	18	21	35	28	26	25	14	15	25	44	40
	55 – 64	310	9	13	13	29	27	23	14	27	54	48	53
	65 – 74	258	7	17	12	15	23	17	14	24	30	42	57
	75 – 84	207	10	11	16	20	21	14	9	8	25	45	28
	85+	110 <sup>†</sup>	8	7	8	12	13	10	10	*	15	17	7
	Missing Age	80 <sup>†</sup>	*	14	19	7	*	13	*	*	*	*	0
	<b>Gender</b>	Female	459	25	35	41	41	46	27	21	35	58	77
Male		1432	87	118	145	136	111	122	70	97	161	187	198
Unknown		0 <sup>†</sup>	0	*	0	0	0	0	0	0	0	0	0

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# Heat-Caused Deaths Summary 2008-2018

		Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>†</sup>
<b>County of Occurrence</b>	Apache	0 <sup>†</sup>	*	0	0	*	0	*	0	0	0	0	*
	Cochise	10 <sup>†</sup>	0	*	*	0	0	*	0	*	*	*	*
	Coconino	30 <sup>†</sup>	0	*	*	*	0	*	*	*	0	8	*
	Gila	10 <sup>†</sup>	0	0	0	*	0	*	0	0	*	*	*
	Graham	0 <sup>†</sup>	0	0	0	0	*	0	0	0	0	0	0
	La Paz	10 <sup>†</sup>	*	*	*	0	*	0	0	*	*	0	0
	Maricopa	492	26	43	40	54	50	35	21	32	64	59	68
	Mohave	70 <sup>†</sup>	*	0	*	*	0	7	*	*	11	25	15
	Navajo	0 <sup>†</sup>	*	0	0	0	0	0	0	0	*	0	0
	Pima	425	41	50	74	49	35	38	13	28	45	26	26
	Pinal	50 <sup>†</sup>	7	6	6	6	*	*	*	*	*	*	*
	Santa Cruz	30 <sup>†</sup>	*	9	*	*	0	*	*	*	*	0	*
	Yavapai	20 <sup>†</sup>	0	*	*	0	*	*	*	*	*	*	*
	Yuma	50 <sup>†</sup>	*	*	*	*	6	*	*	7	12	*	*

Notes: <sup>†</sup> 2018 data is preliminary; † Sum rounded to nearest tens unit due to non-zero addend less than 6; \* Number of visits related to exposure to excessive natural heat were suppressed due to non-zero count less than 6.



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# Heat-Associated Deaths Summary 2008-2018

		Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>†</sup>
<b>County of Occurrence</b>	Apache	0 <sup>†</sup>	*	0	0	*	0	*	0	0	0	0	*
	Cochise	10 <sup>†</sup>	0	*	*	0	0	*	0	*	*	*	*
	Coconino	30 <sup>†</sup>	0	*	*	*	*	*	*	*	0	9	*
	Gila	10 <sup>†</sup>	0	0	0	*	0	*	0	*	*	*	*
	Graham	0 <sup>†</sup>	0	0	0	0	*	0	0	0	0	*	0
	La Paz	10 <sup>†</sup>	*	*	*	*	*	0	0	*	*	*	0
	Maricopa	1078	47	69	79	98	100	75	60	77	127	171	175
	Mohave	80 <sup>†</sup>	*	*	*	*	0	8	*	*	14	25	16
	Navajo	10 <sup>†</sup>	*	0	*	*	*	*	*	0	*	0	0
	Pima	443	41	54	78	50	37	39	13	29	46	28	28
	Pinal	90 <sup>†</sup>	7	8	10	9	*	6	*	*	*	17	15
	Santa Cruz	30 <sup>†</sup>	6	9	*	*	0	*	*	*	*	0	*
	Yavapai	20 <sup>†</sup>	*	*	*	0	*	*	*	*	*	*	*
	Yuma	60 <sup>†</sup>	*	*	*	6	10	*	*	7	13	7	*

Notes: <sup>†</sup> 2018 data is preliminary; <sup>†</sup> Sum rounded to nearest tens unit due to non-zero addend less than 6; \* Number of visits related to exposure to excessive natural heat were suppressed due to non-zero count less than 6.



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# Heat-Caused Deaths Summary 2008-2018

	Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>‡</sup>
<b>Month of Occurrence</b>												
January	0 <sup>†</sup>	0	0	0	*	0	0	0	0	0	0	0
February	0 <sup>†</sup>	*	0	0	0	0	0	0	0	0	0	0
March	10 <sup>†</sup>	*	*	0	*	0	*	0	0	*	*	0
April	20 <sup>†</sup>	*	*	*	*	*	*	*	*	*	*	*
May	70 <sup>†</sup>	*	12	8	*	9	9	*	*	*	*	11
June	313	38	10	23	27	24	30	12	32	52	49	16
July	407	24	53	71	30	28	39	17	9	51	34	51
August	253	10	29	18	39	26	14	7	34	26	22	28
September	100 <sup>†</sup>	*	9	12	15	6	6	*	*	8	9	20
October	20	*	*	*	*	*	*	*	*	*	*	*
November	10 <sup>†</sup>	0	0	*	*	*	*	*	*	*	*	*
December	0 <sup>†</sup>	0	*	0	0	0	0	0	0	0	*	0

Notes: <sup>‡</sup> 2018 data is preliminary; <sup>†</sup> Sum rounded to nearest tens unit due to non-zero addend less than 6; \* Number of visits related to exposure to excessive natural heat were suppressed due to non-zero count less than 6.



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# Heat-Associated Deaths Summary 2008-2018

		Total	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018 <sup>‡</sup>
<b>Month of Occurrence</b>	January	0 <sup>†</sup>	0	0	0	*	0	0	0	0	0	0	0
	February	0 <sup>†</sup>	*	0	0	*	0	0	0	0	0	0	0
	March	10 <sup>†</sup>	*	*	0	*	0	*	*	*	*	*	0
	April	20 <sup>†</sup>	*	*	*	*	*	*	*	*	*	*	*
	May	100 <sup>†</sup>	*	18	10	*	13	10	*	*	*	9	17
	June	457	44	13	37	37	32	41	20	42	80	83	28
	July	679	34	70	90	48	43	67	35	27	76	92	97
	August	426	17	36	25	58	52	18	17	48	42	45	68
	September	150 <sup>†</sup>	*	10	15	20	11	8	10	7	10	17	35
	October	30 <sup>†</sup>	*	*	*	*	*	*	*	*	*	*	*
	November	10 <sup>†</sup>	0	0	*	*	*	*	*	*	*	*	*
	December	10 <sup>†</sup>	0	*	*	0	*	0	0	0	0	0	*

Notes: <sup>‡</sup> 2018 data is preliminary; <sup>†</sup> Sum rounded to nearest tens unit due to non-zero addend less than 6; \* Number of visits related to exposure to excessive natural heat were suppressed due to non-zero count less than 6.



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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 death record for ICD-10 codes
- ICD codes related to man-made sources of heat were excluded

