

Heat-Caused & Heat-Related Deaths from Exposure to Excessive Natural Heat in Arizona (2013-2024)

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SUMMARY REPORT OF HEAT-RELATED DEATHS IN 2024

977 Heat-related deaths occurred in Arizona during 2024



Around **63%** of the heat-related deaths occurred in Maricopa



The rate of Heat-related deaths among Arizona residents per 100,000 population is highest among La Paz, Mohave and Yuma counties



3 out of every **4** heat-related deaths are among males



65% of the heat-related deaths were age 50 years or older



A significant proportion of heat-related deaths occurred during the months of May, June, July, August and September and over **45%** of the annual heat-related deaths occurred in the month of July



Over **55%** of the Arizona residents who died of heat-related illness during 2024, lived in the state for 20+ years



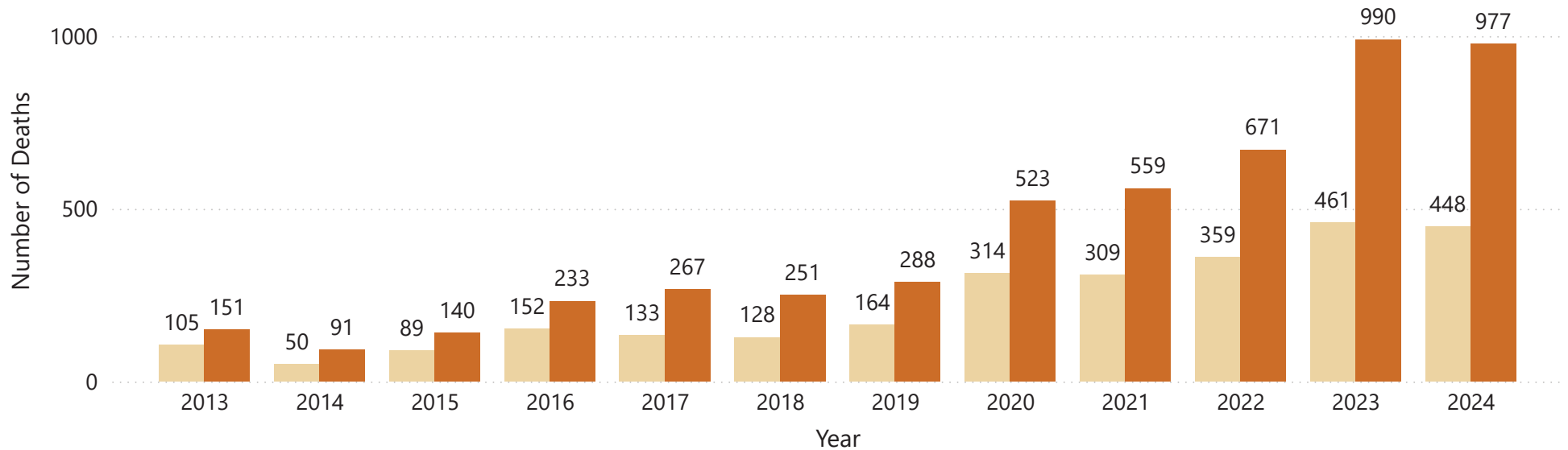
50% of heat-related deaths involved substance use in 2024



Heat-Caused & Heat-Related Deaths from Exposure to Excessive Natural Heat in Arizona by Year

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Heat - Caused Deaths	105	50	89	152	133	128	164	314	309	359	461	448
Heat - Related Deaths	151	91	140	233	267	251	288	523	559	671	990	977

● Heat - Caused Deaths ● Heat - Related Deaths



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

Heat-Caused Deaths by State of Residence and Geographic Region

State or County of Residence	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Arizona Resident	56	35	46	102	106	91	118	207	190	241	352	346	1,890
Non-Arizona Resident	49	15	43	50	27	37	46	107	119	118	109	102	822

Geographic Region of Occurrence	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Central Counties	47	29	43	71	66	74	102	161	128	156	259	232	1,368
Northern Counties	13	*	6	12	33	19	24	54	68	74	50	69	430†
Southern Counties	45	17	39	64	33	35	36	96	110	121	139	132	867
Western Counties	0	*	*	*	*	0	*	*	*	8	13	15	50†

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

*Number of deaths 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.

Heat-Related Deaths by State of Residence and Geographic Region

State or County of Residence	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Arizona Resident	96	76	95	177	230	187	221	378	418	525	824	806	4,033
Non-Arizona Resident	55	15	45	56	37	64	67	145	141	146	166	171	1,108

Geographic Region of Occurrence	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Central Counties	88	66	91	145	195	193	216	357	366	460	686	664	3,527
Northern Counties	16	7	7	17	34	20	26	58	70	77	54	75	461
Southern Counties	47	17	41	66	37	38	43	103	119	126	232	207	1,076
Western Counties	0	*	*	*	*	0	*	*	*	8	18	31	80+

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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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.

Heat-Caused Deaths by Gender and Race/Ethnicity

Race/Ethnicity	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
American Indian/Alaskan Native	6	*	*	10	10	6	6	11	14	23	28	26	150†
Asian or Pacific Islander	*	0	*	*	*	*	*	*	*	*	*	6	30†
African American/Black	6	*	*	*	*	7	9	20	21	26	35	48	180†
Hispanic/Latino	44	15	34	53	31	34	43	91	113	120	124	108	810
White Non-Hispanic	40	27	45	80	78	71	76	152	151	179	252	251	1,402
Unknown	8	*	*	*	10	9	26	37	7	8	17	9	140†

GENDER	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Female	20	17	17	45	40	25	39	74	77	94	125	133	706
Male	85	33	72	107	93	103	125	240	232	265	336	315	2,006

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Related Deaths by Gender and Race/Ethnicity

Race/Ethnicity	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
American Indian/Alaskan Native	9	10	6	14	16	11	11	28	33	51	60	64	313
Asian or Pacific Islander	*	0	*	*	6	*	*	*	*	8	11	9	60+
African American/Black	12	*	*	8	11	16	20	39	55	60	93	111	440+
Hispanic/Latino	52	19	37	63	47	56	65	127	156	181	239	212	1,254
White Non-Hispanic	69	55	86	141	161	142	146	251	298	358	561	570	2,838
Unknown	8	*	*	*	26	25	41	73	12	13	26	11	250+

GENDER	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Female	27	22	35	60	77	53	68	116	122	139	230	240	1,189
Male	124	69	105	173	190	198	220	407	437	532	760	737	3,952

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Caused & Heat-Related Deaths from Exposure to Excessive Natural Heat for Arizona Residents

Year	Heat Related Deaths	Rate per 100,000 (HRD)	Heat Caused Deaths	Rate per 100,000 (HCD)
2013	96	1.46	56	0.85
2014	76	1.14	35	0.52
2015	95	1.41	46	0.68
2016	177	2.59	102	1.49
2017	230	3.30	106	1.52
2018	187	2.64	91	1.29
2019	221	3.07	118	1.64
2020	378	5.27	207	2.88
2021	418	5.74	190	2.61
2022	525	7.09	241	3.25
2023	824	10.95	352	4.68
2024	806	10.58	346	4.54

Note: Crude rates are calculated per 100,000 population. For the years 2013-2024, their respective year estimates were used. Rate calculations utilize the official population estimates from Arizona Department of Health Services: vital statistics-<https://pub.azdhs.gov/health-stats/menu/info/pop/index.php>

Heat-Caused Deaths by Age Group

Age_Group	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Less than 1	*	*	*	*	*	0	*	*	*	0	0	*	10+
1 - 4	*	*	0	0	*	0	*	*	0	0	0	*	10+
5 - 14	0	0	*	*	0	*	*	*	*	0	*	*	10+
15 - 24	17	*	15	12	6	7	10	25	27	30	26	25	210+
25 - 34	13	*	11	26	18	19	17	31	47	35	50	30	300+
35 - 44	15	8	15	18	10	16	17	39	41	48	43	49	319
45 - 54	19	*	10	16	23	15	18	48	38	47	55	57	350+
55 - 64	10	7	15	31	20	19	30	61	43	60	97	72	465
65 - 74	6	9	14	17	24	32	25	47	53	58	90	102	477
75 - 84	11	*	*	15	23	16	24	44	42	68	71	82	410+
85+	6	*	*	13	7	*	15	14	16	13	26	26	140+
Missing Ages	6	*	*	*	0	0	*	0	0	0	*	0	10+

Notes: + Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Related Deaths by Age Group

Age_Group	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Less than 1	*	*	*	*	*	0	*	*	*	0	0	*	10†
1 - 4	*	*	*	0	*	0	*	*	*	0	0	*	10†
5 - 14	0	0	*	*	0	*	*	*	*	0	*	*	10†
15 - 24	17	6	16	12	8	8	13	29	33	39	34	39	254
25 - 34	13	8	16	29	31	26	26	50	83	73	115	80	550
35 - 44	23	12	19	27	24	31	32	80	77	120	148	139	732
45 - 54	25	15	16	30	47	40	51	88	84	109	144	157	806
55 - 64	23	15	30	56	49	53	60	118	105	113	215	173	1,010
65 - 74	17	14	24	32	42	57	43	67	90	106	179	206	877
75 - 84	14	8	10	27	46	28	36	64	63	92	114	136	638
85+	10	9	*	16	17	7	19	22	20	18	38	41	220†
Missing Ages	7	*	*	*	0	0	*	0	*	*	*	*	20†

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Caused and Heat-Related Deaths by Substance Abuse

Heat-Caused

Substance Use	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Alcohol Use	8	*	6	16	12	14	13	22	20	31	41	38	220†
Drug Use	*	6	*	8	8	10	30	54	33	33	75	59	320†
Combined Alcohol and Drug Use	0	0	*	0	*	*	0	*	*	*	7	6	30†
No Substance Use	94	41	78	128	111	101	121	235	254	293	338	345	2,139

Heat-Related

Substance Use	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Alcohol Use	18	11	14	28	30	25	30	38	50	53	72	77	446
Drug Use	12	17	14	37	57	65	92	176	165	235	400	377	1,647
Combined Alcohol and Drug Use	*	*	10	*	*	9	*	9	19	16	43	32	160†
No Substance Use	119	59	102	164	176	152	161	300	325	367	475	491	2,891

Heat-Caused and Heat-Related Deaths by Years in Arizona

Heat-Caused

Years in Arizona	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Non-Resident	48	15	43	49	25	34	42	84	85	109	100	95	729
<3 years residency	6	*	*	8	6	8	11	22	19	17	28	23	150†
3-9 years residency	8	6	*	12	8	17	14	24	17	18	33	37	200†
10-19 years residency	8	*	7	15	20	7	18	23	22	38	39	43	250†
20+ years residency	24	20	23	51	51	45	52	98	91	126	186	176	943
Unknown length residency	10	*	8	16	21	14	23	40	41	42	66	67	350†
Unknown residence state	*	0	0	*	*	*	*	23	34	9	9	7	90†

Heat-Related

Years in Arizona	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Non-Resident	54	15	45	55	35	61	63	111	106	136	157	164	1,002
<3 years residency	9	*	7	12	14	13	17	30	28	33	48	46	260†
3-9 years residency	12	10	11	24	19	23	25	44	34	45	75	74	396
10-19 years residency	13	12	7	20	37	22	32	43	41	63	77	87	454
20+ years residency	49	45	53	91	118	100	115	187	237	285	457	448	2,185
Unknown length residency	13	6	17	30	42	29	32	74	78	99	167	151	738
Unknown residence state	*	0	0	*	*	*	*	34	35	10	9	7	110†

Heat-Caused Deaths by County

County of Occurrence	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Apache	*	0	0	0	0	*	0	0	*	*	*	*	10+
Cochise	*	0	*	*	*	*	*	8	9	10	14	13	60+
Coconino	*	*	*	0	8	*	*	*	*	*	*	*	40+
Gila	*	0	0	*	*	*	*	*	0	*	*	*	10+
Graham	0	0	0	0	0	0	0	*	*	*	*	*	10+
La Paz	0	*	*	*	*	0	*	*	*	8	13	15	50+
Maricopa	37	23	36	66	59	66	89	143	115	139	239	213	1,225
Mohave	7	*	*	11	25	15	22	49	60	66	48	65	370+
Navajo	0	0	0	*	0	0	0	*	*	*	0	*	10+
Pima	38	12	28	45	26	26	25	45	53	54	91	78	521
Pinal	*	*	*	*	*	*	12	11	8	12	13	12	90+
Santa Cruz	*	*	*	*	0	*	0	7	12	8	7	6	50+
Yavapai	*	*	*	*	*	*	0	*	*	*	*	*	30+
Yuma	*	*	7	16	6	*	10	36	36	49	27	35	230+

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Related Deaths by County

County of Occurrence	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Apache	*	0	0	0	0	*	0	0	*	*	*	*	10+
Cochise	*	0	*	*	*	*	*	8	9	10	20	17	70+
Coconino	*	*	*	0	9	*	*	6	*	*	*	*	50+
Gila	*	0	*	*	*	*	*	*	*	*	*	*	30+
Graham	0	0	0	0	*	0	0	*	*	*	*	*	10+
La Paz	0	*	*	*	*	0	*	*	*	8	18	31	80+
Maricopa	77	60	82	137	173	175	192	322	337	418	644	614	3,231
Mohave	8	*	*	14	25	16	22	51	60	67	49	68	390+
Navajo	*	*	0	*	0	0	0	*	*	*	*	*	20+
Pima	39	12	29	46	28	28	32	51	59	58	173	146	701
Pinal	6	*	*	*	17	15	22	27	20	33	30	36	220+
Santa Cruz	*	*	*	*	0	*	0	7	12	8	8	6	50+
Yavapai	*	*	*	*	*	*	*	*	*	*	*	6	40+
Yuma	*	*	8	17	8	*	10	37	39	50	31	38	250+

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Caused & Heat-Related Deaths from Exposure to Excessive Natural Heat for Arizona Residents by County (2024)

County of Residence	Heat Related Deaths	Rate per 100,000 (HRD)	Heat Caused Deaths	Rate per 100,000 (HCD)
Apache	*	*	*	*
Cochise	7	5.46	*	*
Coconino	8	5.34	*	*
Gila	*	*	0	0.00
Graham	*	*	*	*
La Paz	18	105.09	8	46.71
Maricopa	445	9.42	164	3.47
Mohave	63	27.62	57	24.99
Navajo	6	5.41	*	*
Pima	104	9.57	38	3.50
Pinal	42	8.68	15	3.10
Santa Cruz	*	*	*	*
Yavapai	7	2.78	*	*
Yuma	28	12.85	24	11.01

Notes: Crude rates are calculated per 100,000 population. For 2024, the respective year estimates were used. Rate calculations utilize the official population estimates from Arizona Department of Health Services: vital statistics-<https://pub.azdhs.gov/health-stats/menu/info/pop/index.php>.

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

Heat-Caused Deaths by Month

Month of Occurrence	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
January	0	0	0	0	0	0	*	0	0	*	0	*	*
February	0	0	0	0	0	0	0	0	0	*	0	0	*
March	*	0	0	*	*	0	0	0	*	*	*	0	10†
April	*	*	0	*	*	*	*	*	*	7	*	*	30†
May	9	0	*	*	*	11	*	9	15	25	8	7	100†
June	30	13	34	54	50	16	22	30	101	88	21	93	552
July	39	18	13	52	36	49	54	116	81	139	272	205	1,074
August	14	8	36	28	22	28	54	122	56	41	110	76	595
September	7	*	*	9	8	20	19	26	41	47	32	40	260†
October	*	*	*	*	*	*	*	9	8	*	10	23	70†
November	*	*	*	*	*	*	0	0	*	*	*	0	10†
December	0	0	0	0	*	0	0	*	*	0	0	*	*

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Related Deaths by Month

Month of Occurrence	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
January	0	0	0	0	0	0	*	0	0	*	0	*	10+
February	0	0	0	0	0	0	*	0	0	*	0	0	*
March	*	*	*	*	*	0	0	0	*	*	*	0	20+
April	*	*	*	*	*	*	*	*	*	10	7	6	50+
May	10	0	*	*	9	17	7	21	26	35	23	19	180+
June	41	22	43	84	85	28	37	46	174	139	51	198	948
July	67	36	31	81	93	97	112	226	155	316	597	447	2,258
August	18	15	51	46	45	68	86	178	119	87	230	178	1,121
September	9	10	7	11	17	35	32	36	67	68	66	85	443
October	*	*	*	*	*	*	6	12	9	*	12	42	100+
November	*	*	*	*	*	*	*	0	*	*	*	0	20+
December	0	0	0	0	*	0	0	*	*	0	0	*	10+

Notes: + Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Caused Deaths by Place of Injury

Place of Injury	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Home	20	9	11	39	45	39	45	91	92	124	186	189	890
Other Specified	80	31	70	100	76	75	103	194	189	205	225	227	1,575
Residential Institution	0	0	0	*	*	*	*	0	*	*	*	0	10†
Street/Highway	*	*	*	*	*	*	8	10	9	19	17	10	90†
Trade & Service Area	0	0	0	0	*	*	0	*	*	0	*	0	10†
Unknown	*	7	6	8	9	7	7	16	15	10	31	19	140†

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Related Deaths by Place of Injury

Place of Injury	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	Total
Home	35	17	23	75	89	71	84	144	173	207	331	336	1,585
Other Specified	98	63	94	138	133	142	178	314	328	389	547	555	2,979
Residential Institution	0	0	0	*	*	*	*	0	*	*	*	0	10+
Street/Highway	*	*	*	*	6	13	13	32	26	48	47	37	240+
Trade & Service Area	0	0	0	0	*	*	0	*	*	*	*	*	20+
Unknown	14	8	19	13	36	22	12	28	24	25	61	44	306

Notes: † Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Caused Deaths by County and State of Residence 2013-2024

County of Occurrence	Arizona Resident	Non-Arizona Resident	Total
Apache	9	0	9
Cochise	13	50	63
Coconino	18	17	35
Gila	14	0	14
Graham	6	*	10†
La Paz	36	16	52
Maricopa	1,061	164	1,225
Mohave	340	32	372
Navajo	9	0	9
Pima	176	345	521
Pinal	66	26	92
Santa Cruz	*	46	50†
Yavapai	23	7	30
Yuma	115	118	233

Notes: Years 2013 through 2024 were aggregated due to small cell sizes that, if reported annually, would require suppression of most data points.

† Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Heat-Related Deaths by County and State of Residence 2013-2024

County of Occurrence	Arizona Resident	Non-Arizona Resident	Total
Apache	10	0	10
Cochise	21	52	73
Coconino	31	20	51
Gila	28	0	28
Graham	10	*	10†
La Paz	55	22	77
Maricopa	2,813	418	3,231
Mohave	350	35	385
Navajo	15	0	15
Pima	347	354	701
Pinal	187	31	218
Santa Cruz	*	46	50†
Yavapai	31	8	39
Yuma	130	121	251

Notes: Years 2013 through 2024 were aggregated due to small cell sizes that, if reported annually, would require suppression of most data points.

† Sum rounded to nearest tens unit due to non-zero addend less than 6;

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

Methods - ICD-10 Codes Related to HRI Deaths

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

- * For this report, we are exclusively using ICD-10 codes for analyses. This approach enhances standardization and comparability of our findings with other outcomes.
- * 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

*Responsibility of this report has moved to the ADHS Vital Statistics Program. New methods were implemented for this year's report and applied to previous years. Previous report annual totals may not match. This new method utilizes the same inclusion and exclusion ICD-10 codes, but the search in the database uses a more flexible approach instead of exact matching. This wildcard search allows for a more accurate understanding of data entry variations among the heat-related codes.

Methods - ICD-10 Codes Related to Substance Use

Substance Use ▲	ICD-10 Codes
Alcohol	E52, G621, I426, K292, P043, R780, K700-K701, K703, K709, K743-K745, T510, T519, F102, F101
Drug	F111-F112, F119, F121-F122, F129, F131-F132, F139, F141-F142, F149, F151-F152, F159, F161-F162, F169, F172, F181-F182, F189, F191-F192, F199, P040-P042, P044-P049, T360-T369, T370-T375, T378-T379, T380-T389, T390-T394, T398-T399, T400-T409, T410-T415, T420-T428, T430-T439, T440-T449, T450-T459, T460-T469, T470-T479, T480-T489, T490-T499, T500-T509, T50A, T50B, T50Z

- For this report, we are exclusively using ICD-10 codes for analyses. This approach enhances standardization and comparability of our findings with other outcomes.
- Methods search entire death record for ICD-10 codes.
- Substance use codes (ICD-10) for alcohol-and drug-related deaths are defined by [ADHS Population Health and Vital Statistics Diagnostics Categories](#)