

Michigan Heat-Related Illness, Emergency Department Visits: September 4, 2013

Executive Summary

There were a total of 166 hospital emergency department (ED) visits in Michigan with self-reported dehydration, sun-associated complaints and/or heat-associated complaints during the week of August 25 to August 31, 2013. This represents a 9.29% reduction from the previous week (Figure 1, Table 1) and an average of 23.7 ED visits per day. Temperatures were somewhat elevated (Figure 3), but the age-distribution of heat-related illnesses continued within normal variations (Figure 4, Table 2). Heat-associated complaints increased slightly this week (Figures 5, 6, and 8). The proportion of heat-related ED visits decreased in southeast Michigan, and increased elsewhere, especially in the southwest and the northern, Lower Peninsula (Figure 7).

Description of the Data

Heat-related emergency department (ED) visits were identified using the Michigan Syndromic Surveillance System which gathers data from participating hospital emergency departments across the state. "Heat-related illness" complaints are defined as daily ED visits with the primary complaints of: "hyperthermia", "heat", "sun", "prostration", or "dehydration" (including word derivatives and misspellings). Terms that have been identified in the search, but do not indicate heat-related illness, such as "wheat", are excluded.

Heat-related illness complaints were categorized into one of three syndromes based on the chief complaint.

- Sun-associated: sunburn, sun poisoning, sunscreen reactions
- Heat-associated: heat exhaustion, heat stroke, heat reaction
- Dehydration

Note: Due to the nature of categorizing ED complaint data, these visits do not represent all potential cases of heat-related illness. These data may also represent non-heat-related illnesses, i.e. dehydration due to other causes. However, the data can be used to describe trends in illness presentations over time.

Figure 1: Daily Counts of Statewide Heat-Related ED Visits (April 1 – September 1, 2013)

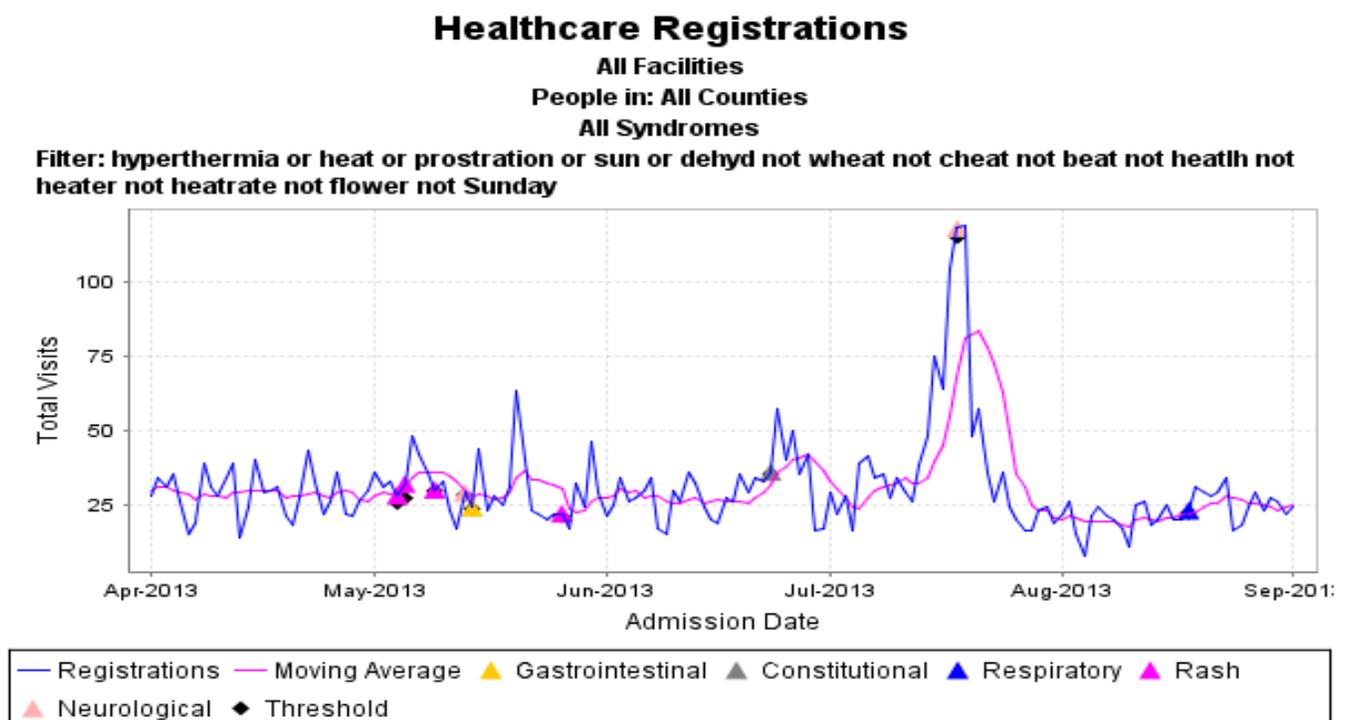


Figure 2: Seasonal (May 15 - Aug 31) Daily Heat-Related ED Visits, 2010 – 2013 (to date)

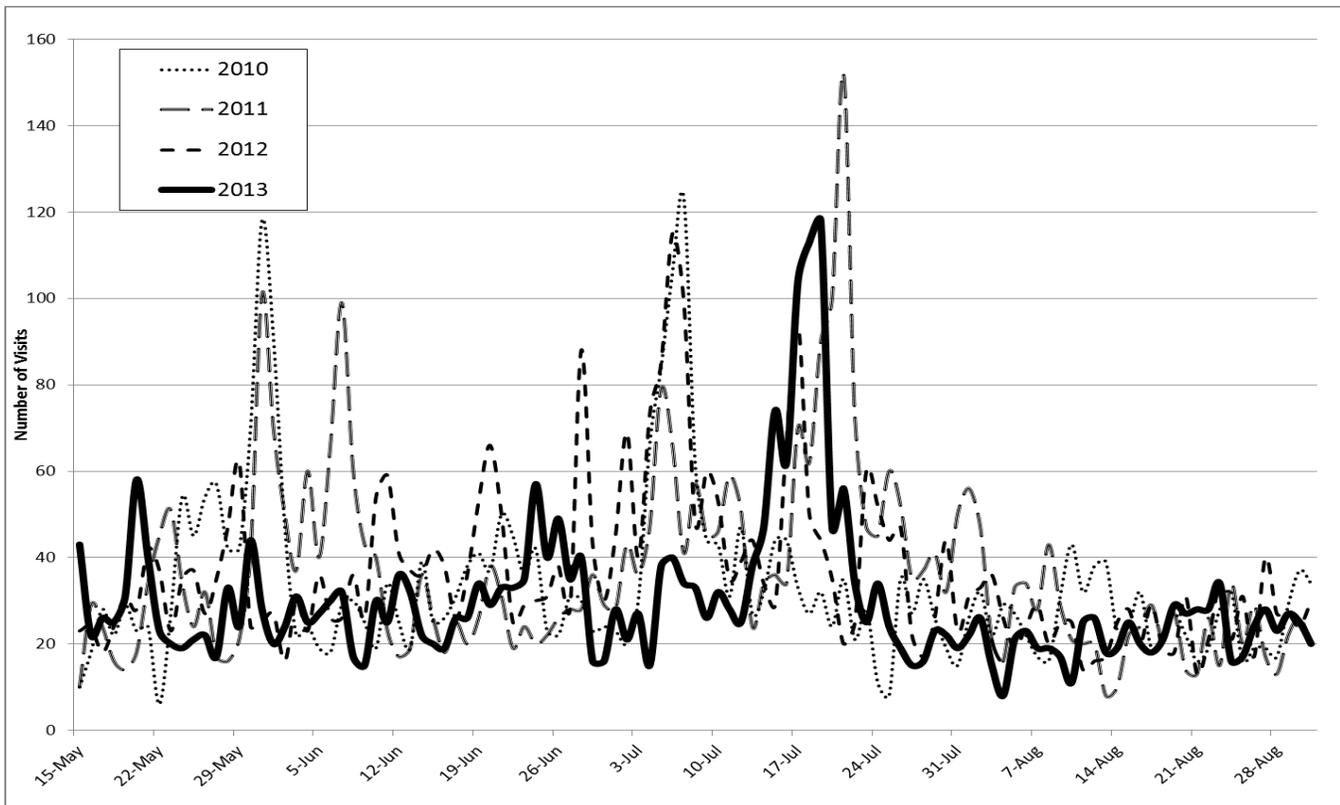


Figure 3: Statewide Heat-Related ED Visits and National Oceanic and Atmospheric Administration (NOAA) Maximum Daily Temperature Averages for 6 Select Cities (April 1 – August 31, 2013)

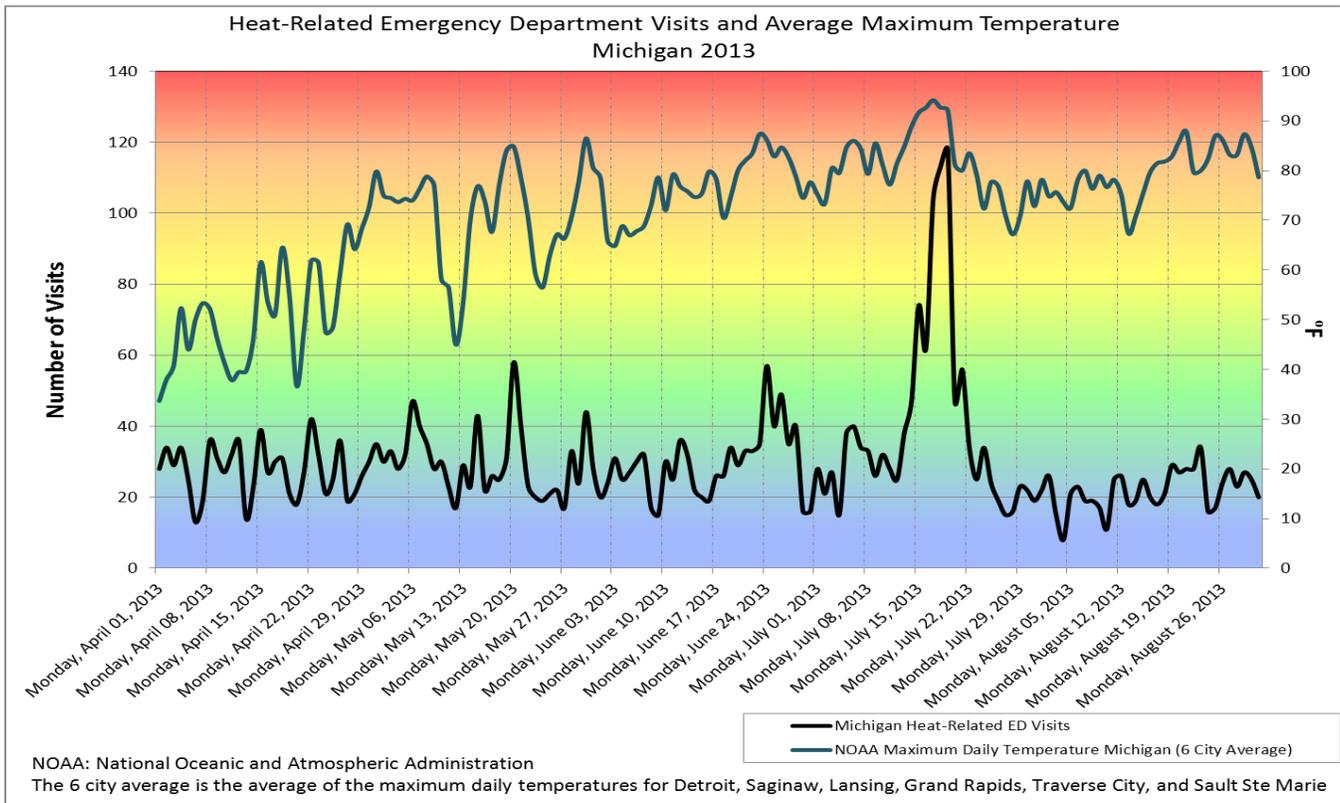


Figure 4: Age Distribution of Heat-Related ED Visits by Week (June 22 – August 31, 2013)

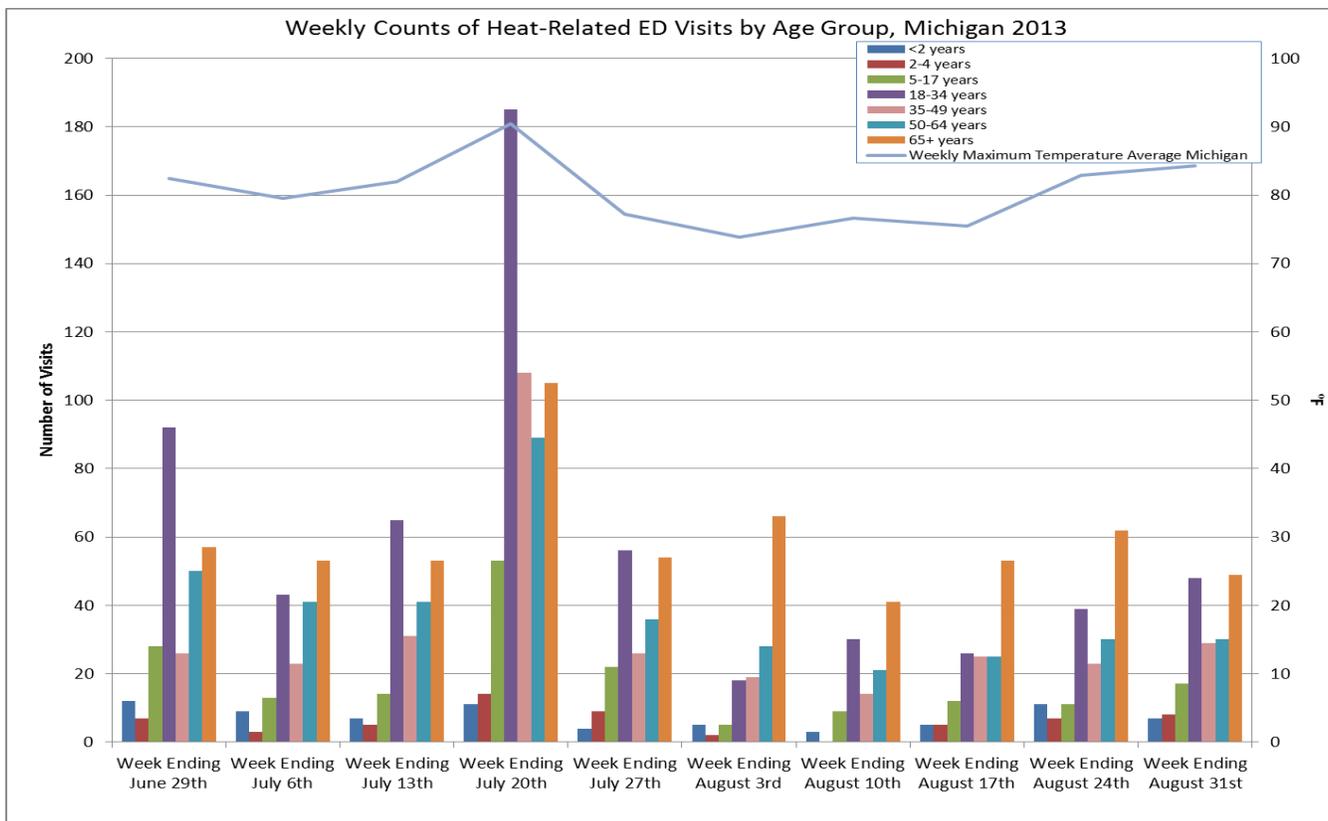


Table 1: Weekly Heat-Related ED Visits and Average Weekly Maximum Temperatures (Past 4 Weeks)

Week	Total Heat-Related ED visits	Average Weekly Max. Temps (°F)
Aug 4 – Aug 10	118	76.6
Aug 11 – Aug 17	151	75.4
Aug 18 – Aug 24	183	82.9
Aug 25 – Aug 31	166	84.3

Table 2: Heat-Related ED Visits by Age and Gender, Current Week Compared to the Weekly Average

Age Group	Weekly Average (April 1 – August 24)*			Current Week (Week Ending August 31)		
	Gender		Male to Female Ratio	Gender		Male to Female Ratio
	Male	Female		Male	Female	
<18 years	19	19	0.97	19	13	1.46
18-34 years	17	25	0.68	20	28	0.71
35-49 years	12	13	0.93	15	14	1.07
50-64 years	15	17	0.87	13	17	0.76
65+ years	18	36	0.52	24	25	0.96
Total	81	111	0.74	62	89	0.94

*excludes data from the week ending July 20th when Michigan experienced a heat wave

Bold indicates a Male to Female Ratio that is higher when compared to the average

Figure 5: Statewide Heat-Related ED Visits by Syndrome (April 1 – August 31, 2013)

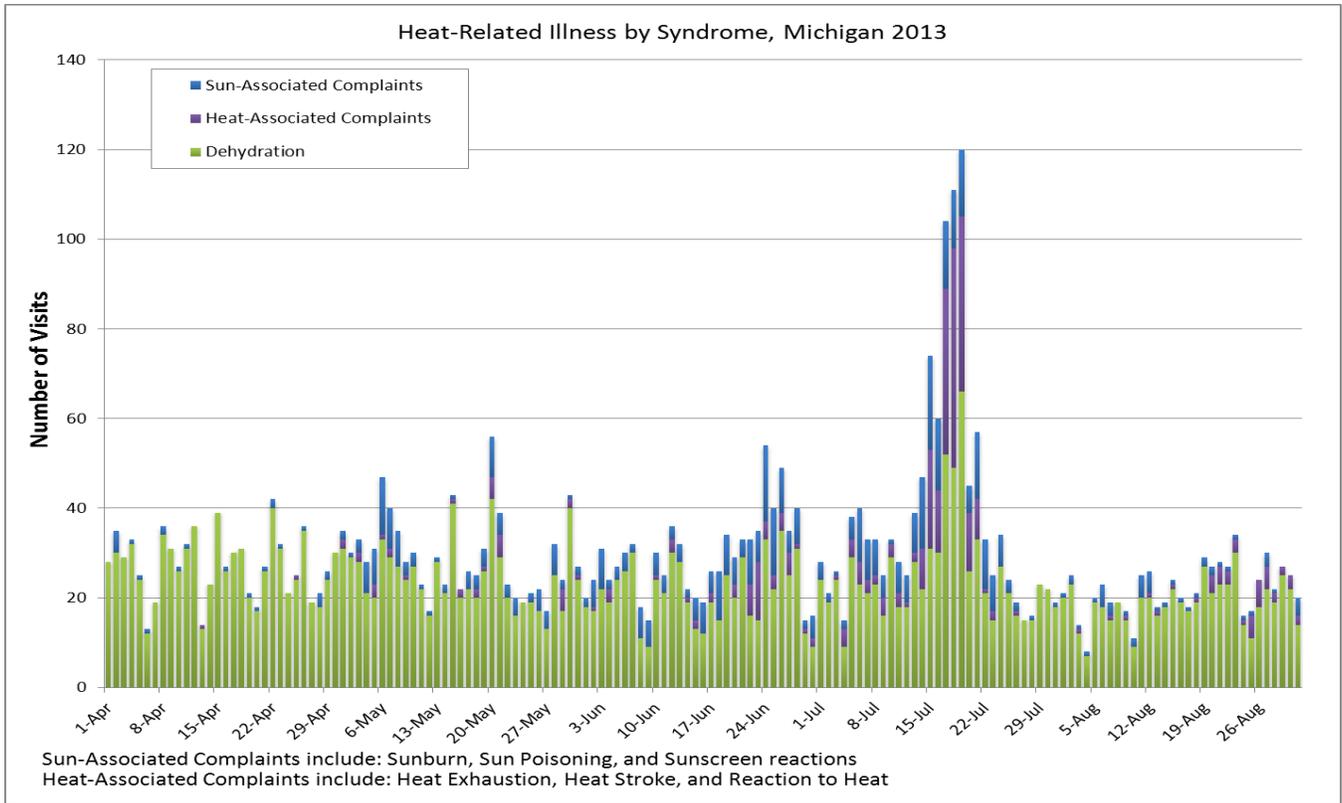


Figure 6: Statewide Heat-Related ED Visits by Syndrome Excluding Dehydration (April 1 – August 31, 2013)

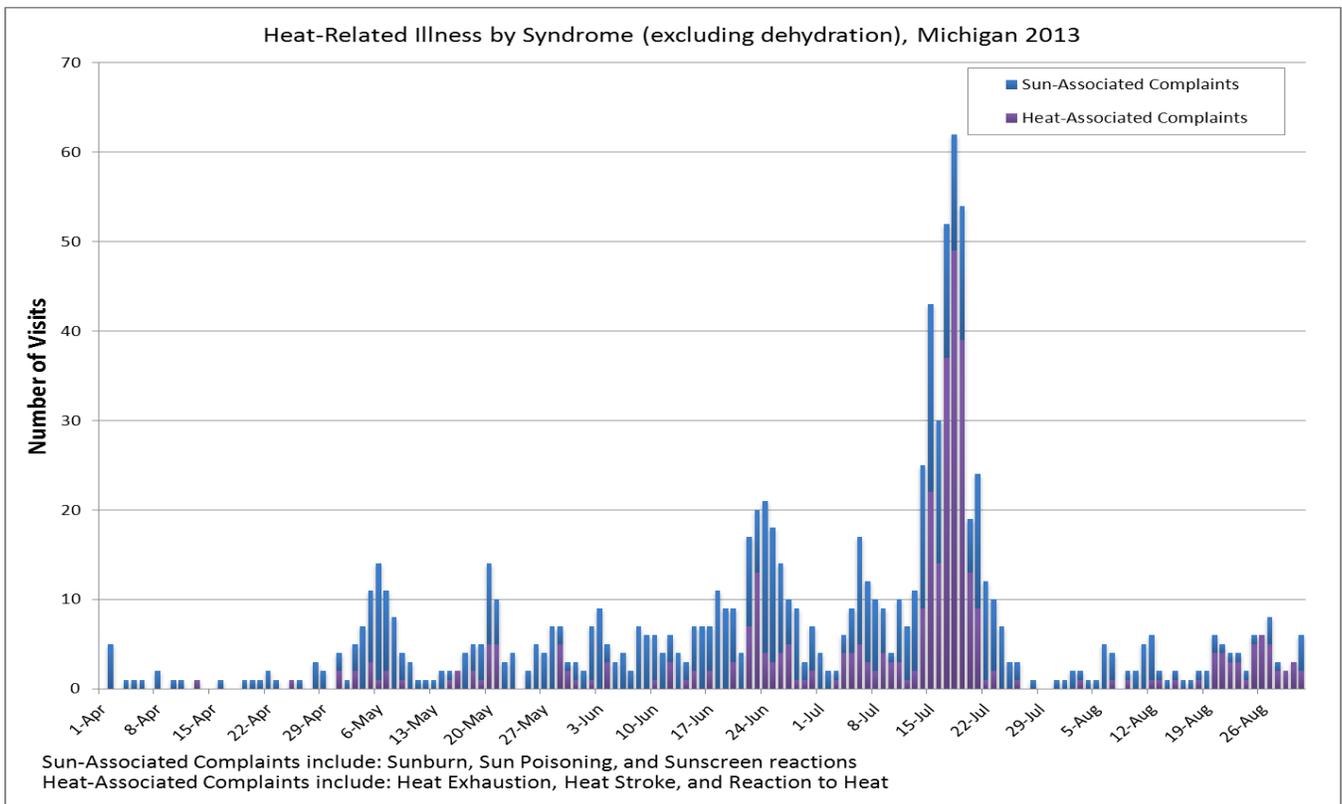
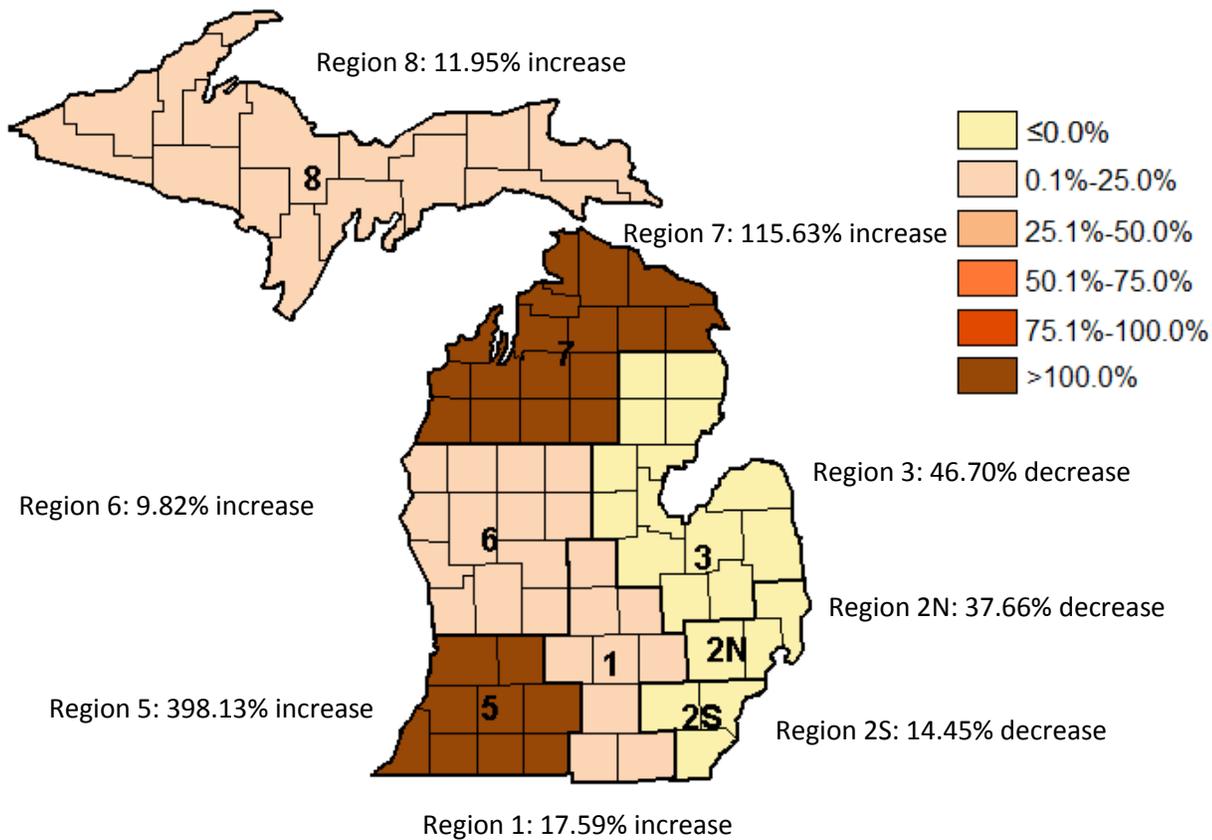


Figure 7: Percent Change of Heat-Related Emergency Department Visits by Region: Week Ending August 24, 2013 Compared to Week Ending August 31, 2013



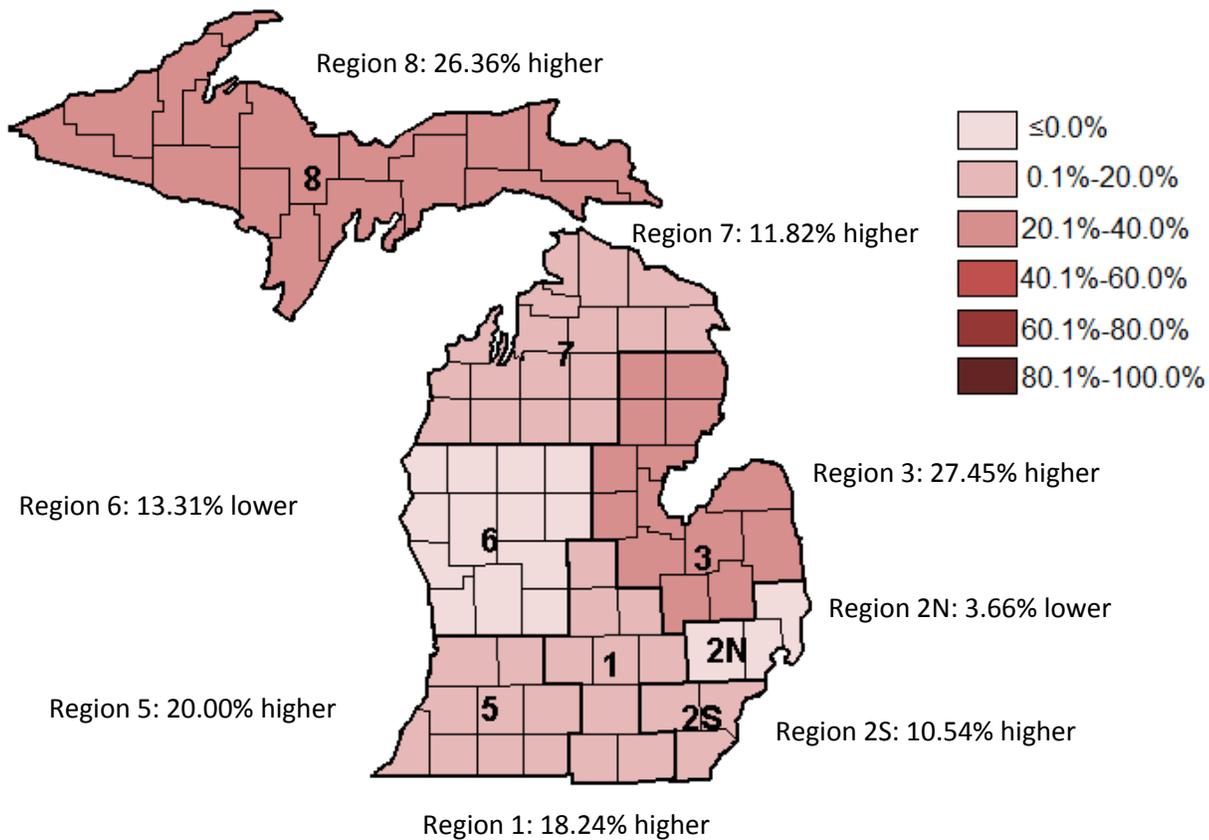
This regional map indicates the percent change in the normalized values of heat-related emergency department complaints from the previous week ending August 24, 2013, to the current week ending August 31, 2013.

Table 3: Number and percent of heat-related visits by region

Region	Week Ending August 24		Week Ending August 31		% Change
	# of Visits	% of All ED Visit	# of Visits	% of All ED Visit	
1	17	0.149%	20	0.175%	17.59%
2N	42	0.287%	26	0.179%	-37.66%
2S	49	0.222%	42	0.190%	-14.45%
3	17	0.165%	9	0.088%	-46.70%
5	4	0.041%	20	0.202%	398.13%
6	34	0.241%	38	0.265%	9.82%
7	10	0.256%	22	0.553%	115.63%
8	10	0.528%	11	0.591%	11.95%

Note: Very low rates are sensitive to small changes in the numerator (heat-related illness visits) and dramatic rate movements should be expected. Fluctuations in the total number of ED visits (denominator) unrelated to heat illnesses can also strongly impact rate comparisons and introduce bias.

Figure 8: Risk Difference of Heat-Related Emergency Department Visits Due to Heat-Associated and Sun-Associated complaints by Region: Week Ending August 31, 2013 Compared to Week Ending August 24, 2013



The regional map indicates the weekly difference in the proportion of sun/heat-associated ED visits out of all heat-related visits (sun/heat-associated and dehydration) from the previous week ending August 24, 2013 to the current week ending August 31, 2013.

Table 4: Number and percent of heat-associated and sun-associated visits by region

Region	Week Ending August 24		Week Ending August 31		Risk Difference
	# of Heat-Associated and Sun-Associated Visits	Proportion of All Heat-Related Visits	# of Heat-Associated and Sun-Associated Visits	Proportion of All Heat-Related Visits	
1	2	11.76%	9	30.00%	18.24%
2N	8	19.05%	4	15.38%	-3.66%
2S	3	6.12%	7	16.67%	10.54%
3	1	5.88%	3	33.33%	27.45%
5	0	0.00%	4	20.00%	20.00%
6	9	24.47%	5	13.16%	-13.31%
7	2	20.00%	7	31.82%	11.82%
8	1	10.00%	4	36.36%	26.36%

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