

Michigan Heat-Related Illness, Emergency Department Visits: August 12, 2013

Executive Summary

There were a total of 118 hospital emergency department (ED) visits in Michigan with self-reported dehydration, sun-associated complaints, and/or heat-associated complaints during the week of August 4 to August 10, 2013. This represents a 17.5% decrease from the previous week (Figure 1, Table 1) and an average of 16.9 ED visits per day. This decline in ED visits (Figure 2, Table 1) continues from the previous week as temperatures across the state remain below average for this time of year (Figure 3). The weekly age-distribution of heat-related illnesses continues to be within normal variation during the week of August 4 to August 10, 2013 (see figure 4). More males presented for all age groups except for those 18 to 34 years (Table 2). Heat-associated and sun-associated complaints are slightly higher this week compared to the previous week (see Figures 5, 6, 8). The proportion of heat-related ED visits slightly increased in Regions 3, 6, and 8 and decreased in the rest of the Regions (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 – August 11, 2013)

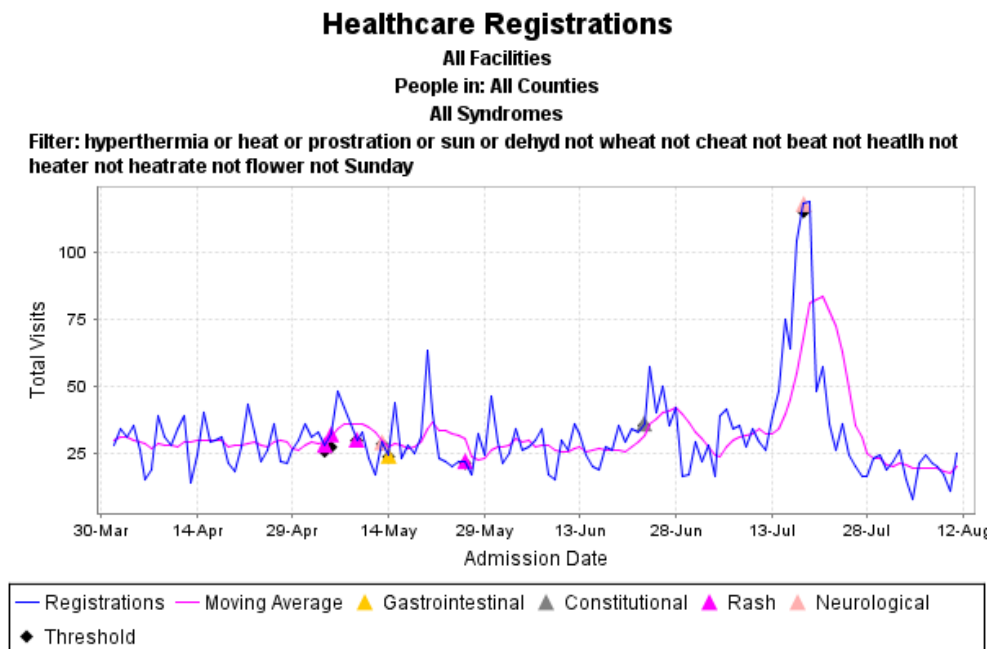


Figure 2: Seasonal (May 15-Aug 15) Daily Heat-Related ED Visits, 2010 – 2013(to date)

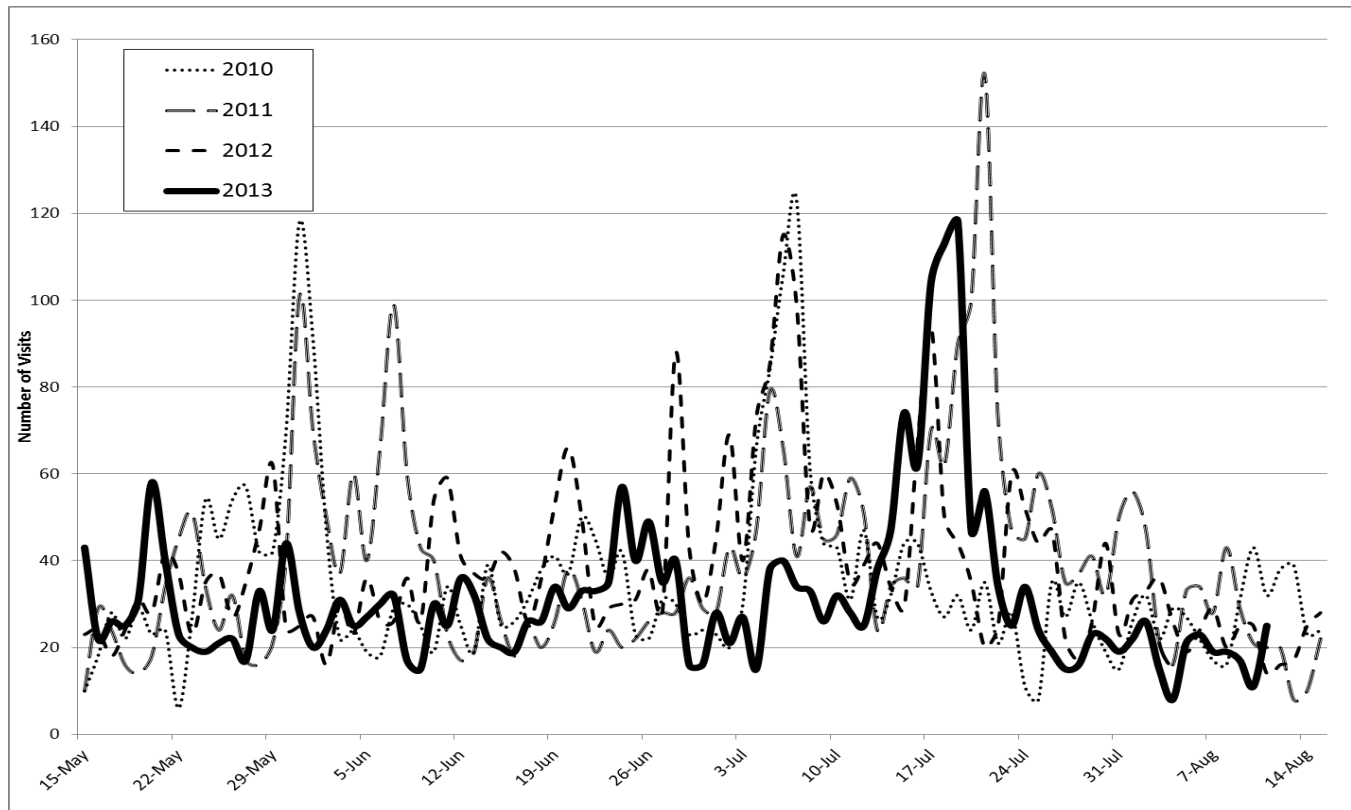


Figure 3: Statewide Heat-Related ED Visits and National Oceanic and Atmospheric Administration (NOAA) Maximum Daily Temperature Averages for 6 Select Cities (April 1 – August 11, 2013)

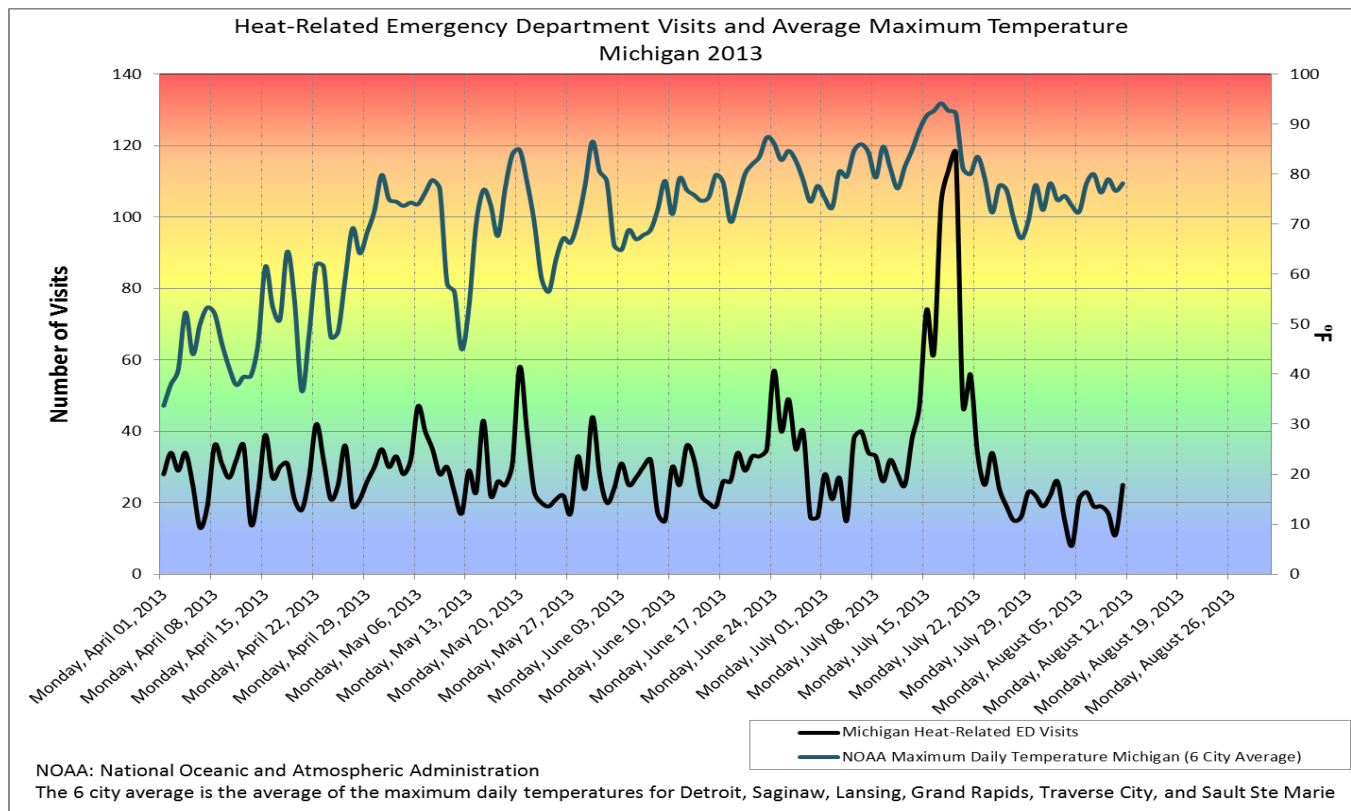


Figure 4: Age Distribution of Heat-Related ED Visits by Week (June 2 – August 10, 2013)

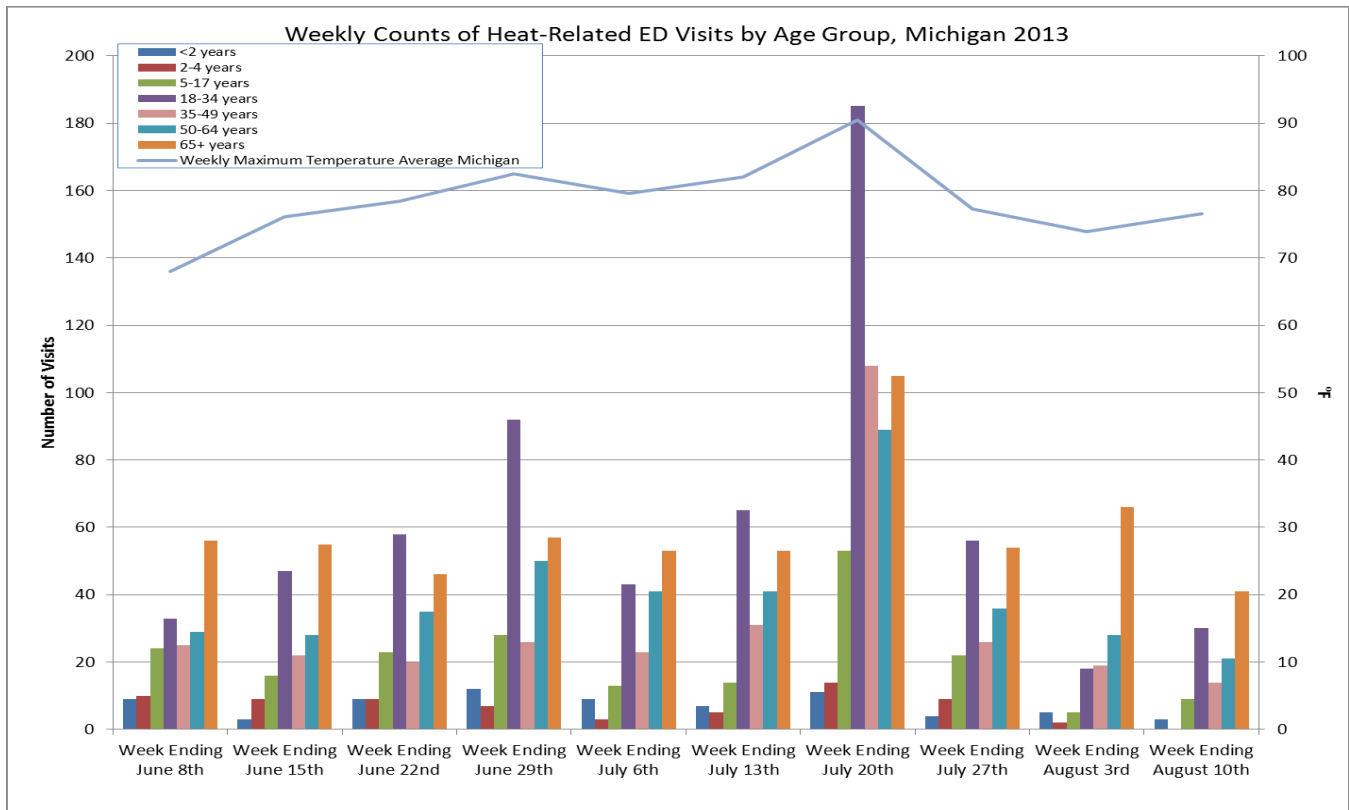


Table 1: Weekly Heat-Related ED Visits and Average Weekly Temperature, Previous 4 Weeks

Week	Total Heat-Related ED visits	Average Weekly Temperature (°F)
Jul 14 – Jul 20	565	90.5
Jul 21 – Jul 27	207	77.2
Jul 28 – Aug 3	143	73.9
Aug 4 – Aug 10	118	76.6

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

Age Group	Weekly Average (April 1 – August 3)*			Current Week (Week Ending August 10)		
	Gender		Male to Female Ratio	Gender		Male to Female Ratio
	Male	Female		Male	Female	
<18 years	20	21	0.94	8	4	2.00
18-34 years	18	26	0.70	11	19	0.58
35-49 years	12	13	0.94	10	4	2.50
50-64 years	16	18	0.84	13	8	1.63
65+ years	18	36	0.50	20	21	0.95
Total	83	114	0.73	62	56	1.11

*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 11, 2013)

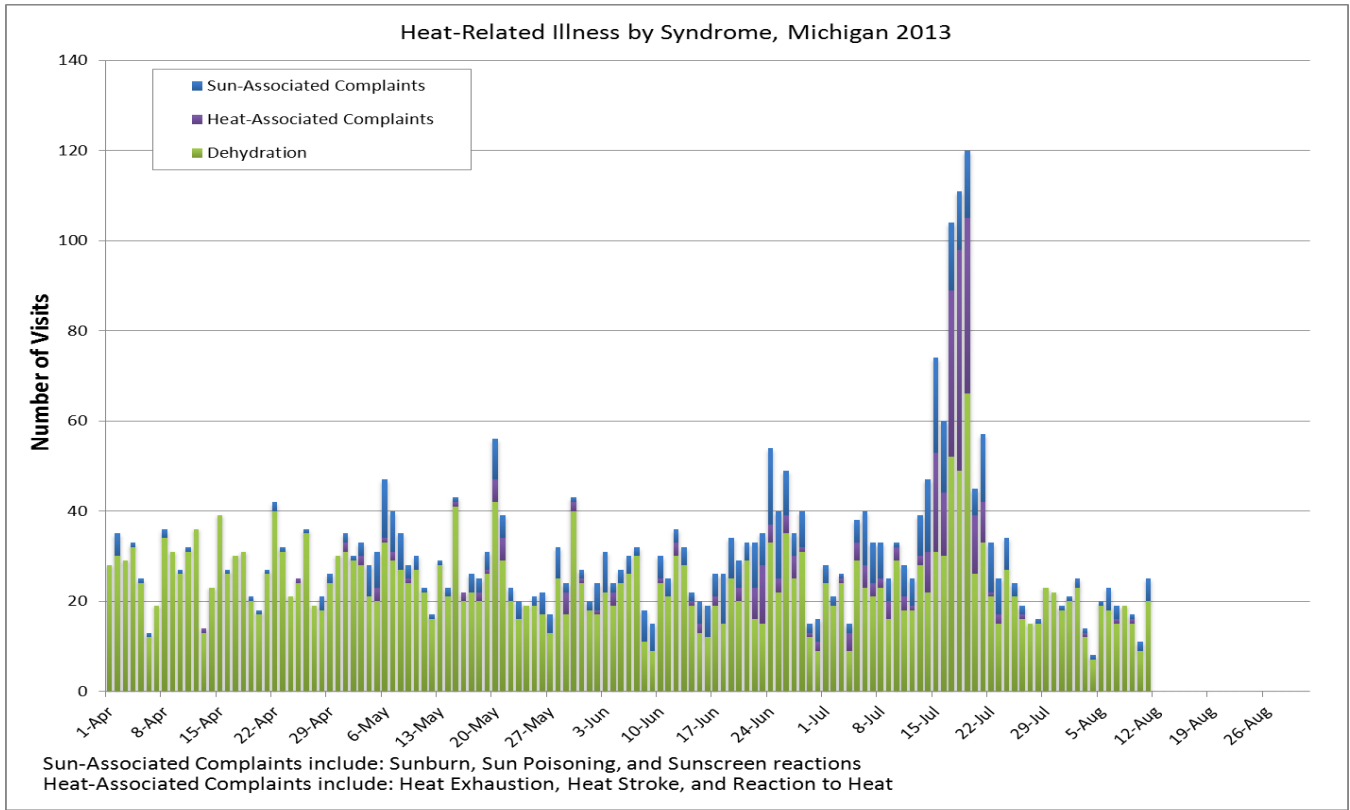


Figure 6: Statewide Heat-Related ED Visits by Syndrome Excluding Dehydration (April 1 – August 11, 2013)

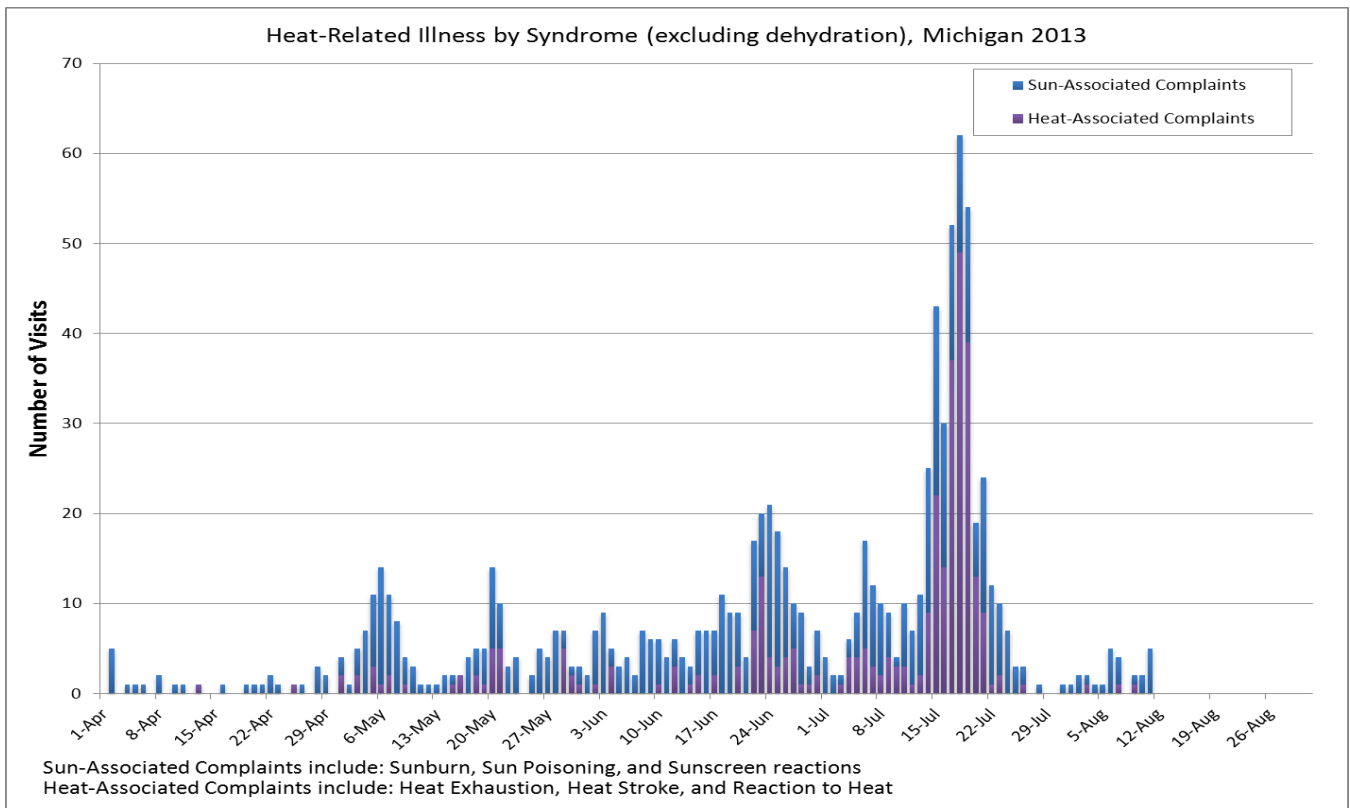
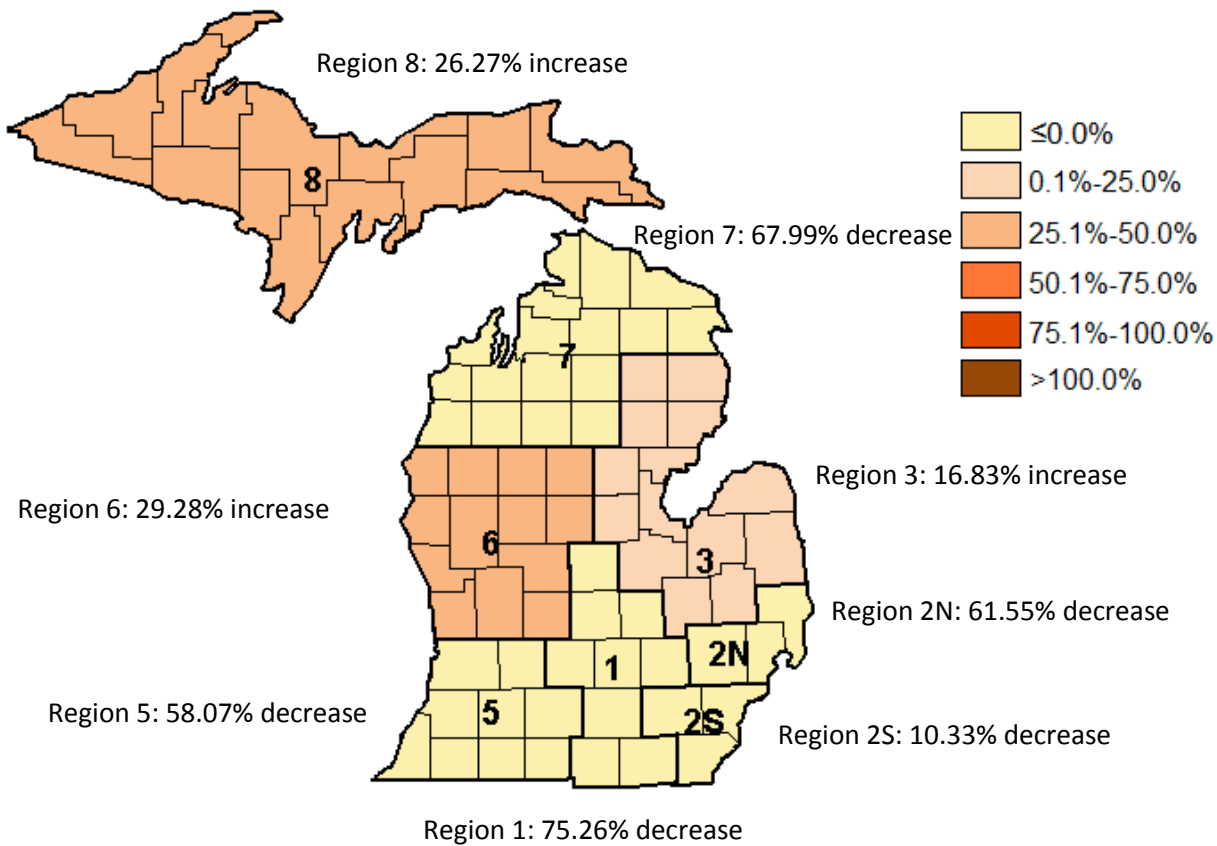


Figure 6: Percent Change of Heat-Related Emergency Department Visits by Region: Week Ending August 10, 2013 Compared to Week Ending August 3, 2013



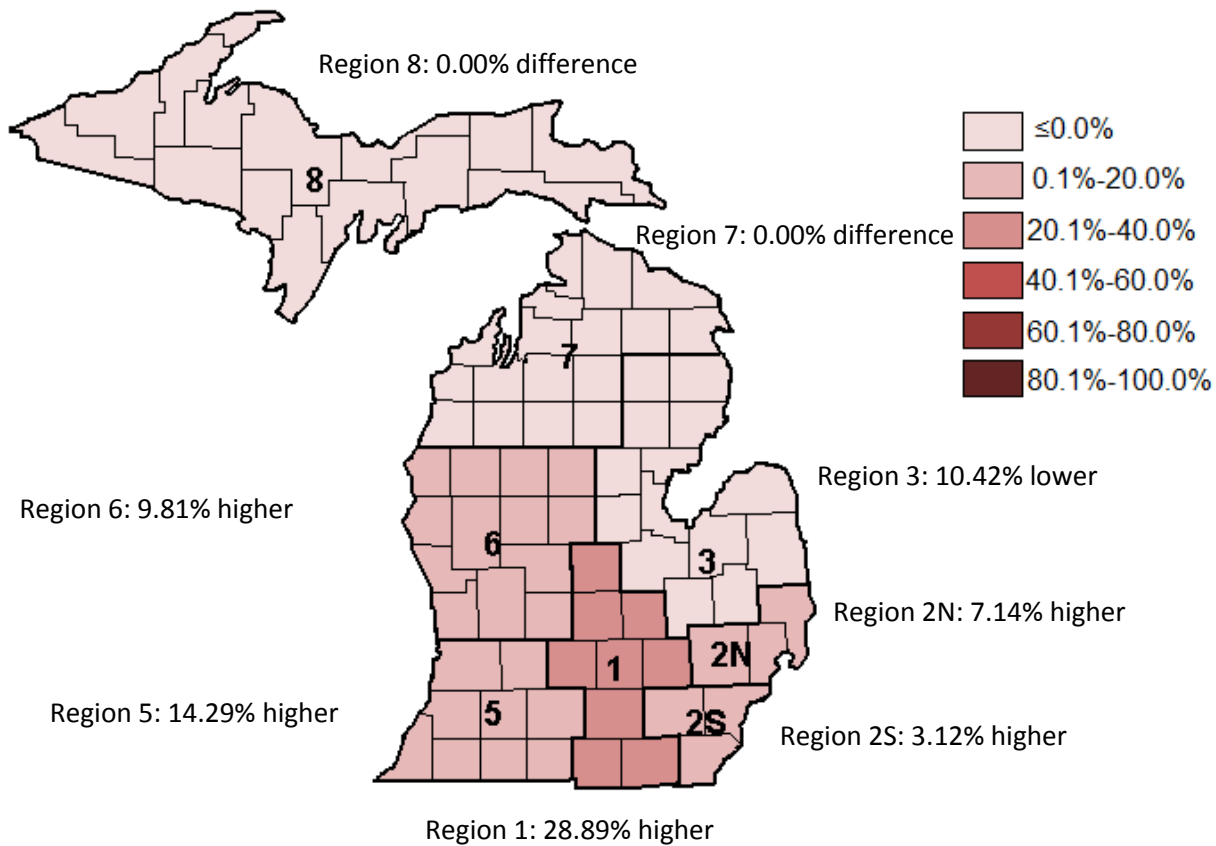
This regional map indicates the percent change in the normalized values of heat-related emergency department complaints from the previous week ending August 3, 2013, to the current week ending August 10, 2013.

Table 2: Number and percent of heat-related visits by region

Region	Week Ending August 3		Week Ending August 10		% Change
	# of Visits	% of All ED Visit	# of Visits	% of All ED Visit	
1	18	0.163%	5	0.040%	-75.26%
2N	31	0.223%	14	0.086%	-61.55%
2S	30	0.142%	31	0.127%	-10.33%
3	12	0.121%	16	0.141%	16.83%
5	14	0.154%	7	0.064%	-58.07%
6	23	0.175%	35	0.226%	29.28%
7	11	0.275%	4	0.088%	-67.99%
8	4	0.239%	6	0.301%	26.27%

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 7: Risk Difference of Heat-Related Emergency Department Visits Due to Heat-Associated and Sun-Associated complaints by Region: Week Ending August 10, 2013 Compared to Week Ending August 3, 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 3, 2013 to the current week ending August 10, 2013.

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

Region	Week Ending August 3		Week Ending August 10		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	11.11%	2	40.00%	28.89%
2N	0	0.00%	1	7.14%	7.14%
2S	1	3.33%	2	6.45%	3.12%
3	2	16.67%	0	6.25%	-10.42%
5	2	14.29%	1	28.57%	14.29%
6	3	13.04%	1	22.86%	9.81%
7	0	0.00%	0	0.00%	0.00%
8	0	0.00%	0	0.00%	0.00%

Report prepared by:

Fatema Mamou, MPH – Region 6 Epidemiologist mamouf@michigan.gov

Roger Racine, MS – Region 7 Epidemiologist raciner@michigan.gov

Tiffany Henderson, MPH – Manager, Regional Epidemiology Unit

Jay Fiedler, MS – Manager, Surveillance and Infectious Disease Epidemiology Section