

Michigan Heat-Related Illness, Emergency Department Visits: July 29, 2013

Executive Summary

There were a total of 207 hospital emergency department (ED) visits in Michigan with self-reported dehydration, sun-associated complaints, and/or heat-associated complaints during the week of July 21 to July 27. This represents a 63.4% decrease from the previous week (Figure 1) to an average of 29.6 ED visits per day. The decline in ED visits (Figure 2) follows a substantial decrease in maximum temperatures from the heat wave experienced in the previous week (Figure 3). The weekly age-distribution of heat-related illnesses indicated all age groups have returned to normal variation (see figure 4), and both heat-associated and sun-associated ED visits were lower compared to the previous week (see Figures 5, 6, 8). Decreased ED visits were evident in every region of the state, but to a lesser extent in Region 8 (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 – July 28, 2013)

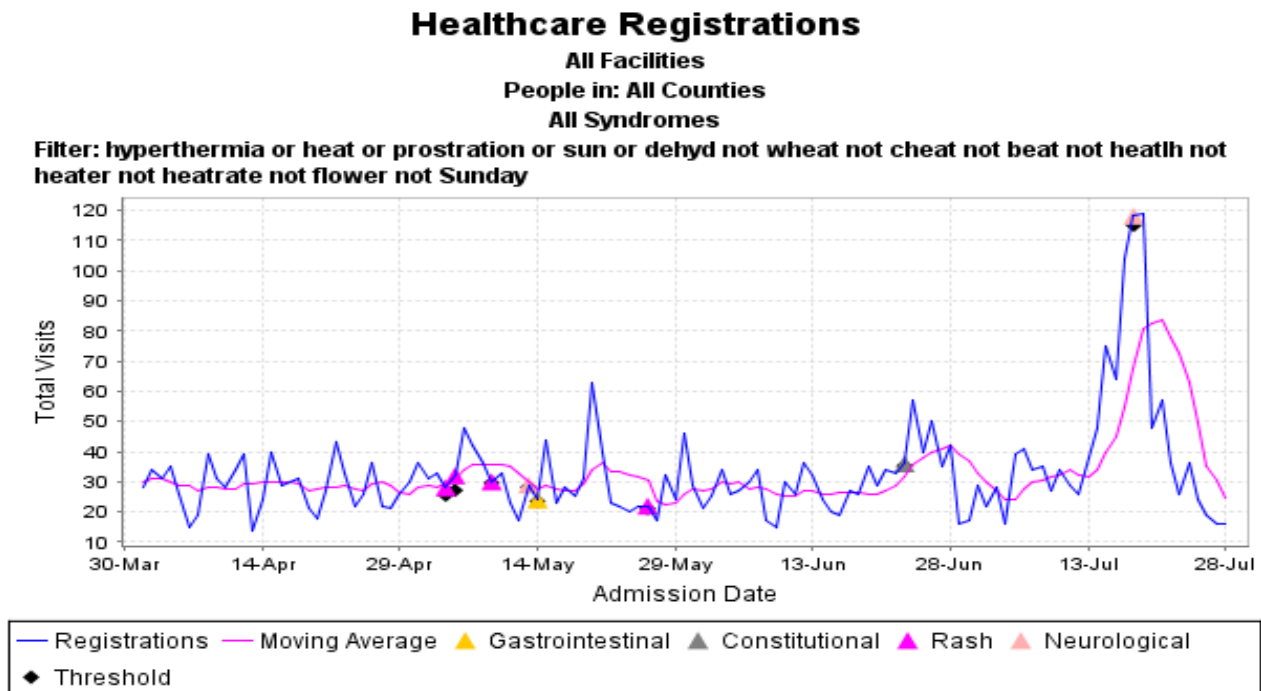


Figure 2: Seasonal (May 15-Aug 15) Daily Heat-Related ED Visits, 2010 – 2013(to date)

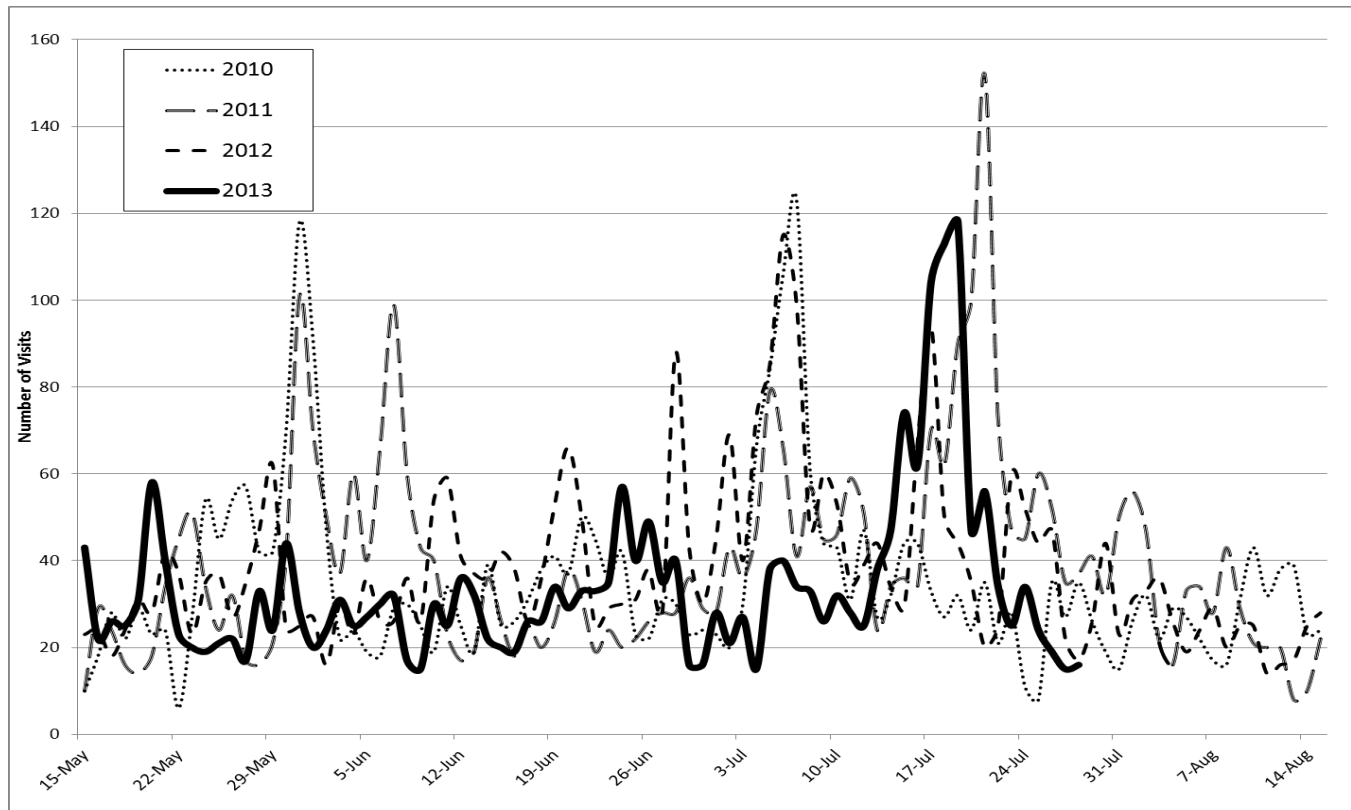


Figure 3: Statewide Heat-Related ED Visits and National Oceanic and Atmospheric Administration (NOAA) maximum daily temperature averages for 6 select cities (April 1 – July 28, 2013)

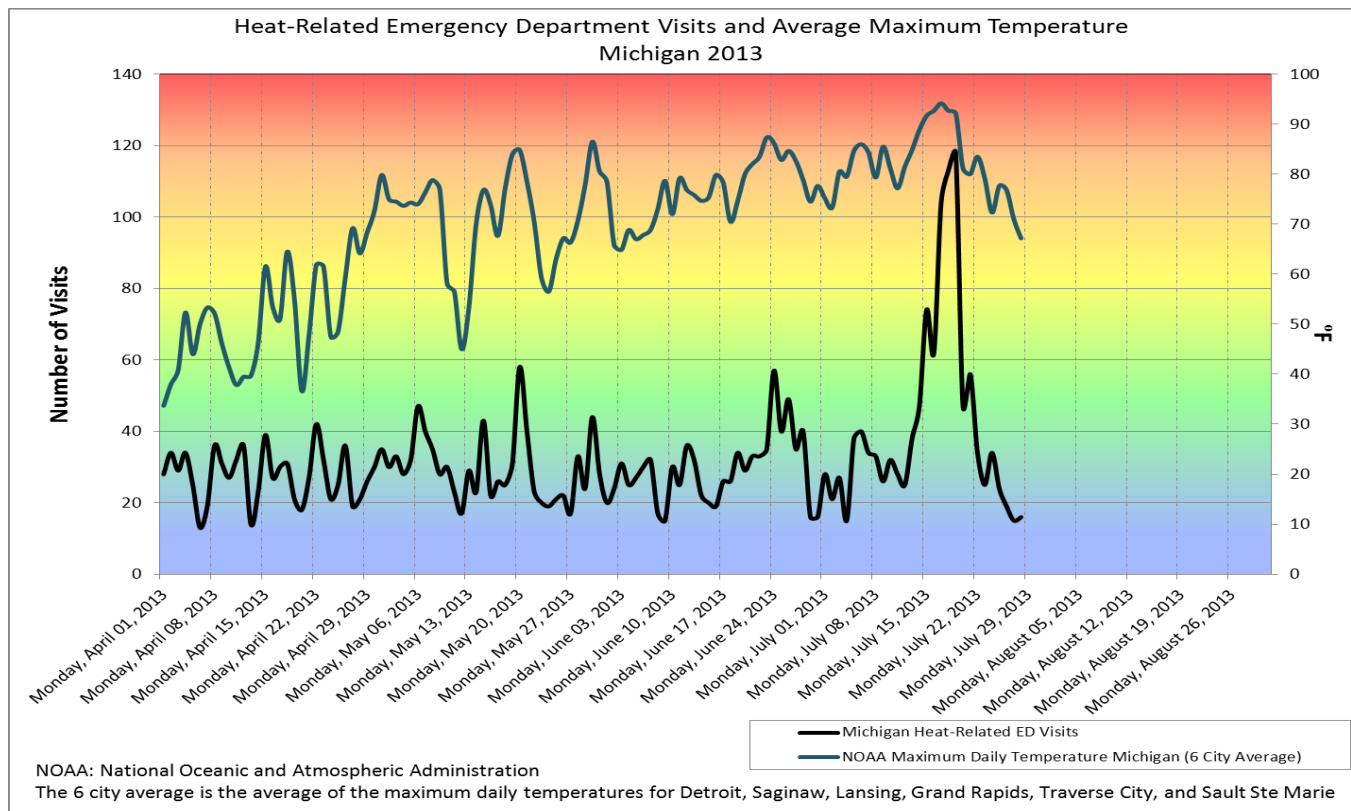


Figure 4: Age Distribution of Heat-Related ED Visits by Week (May 18 – July 27, 2013)

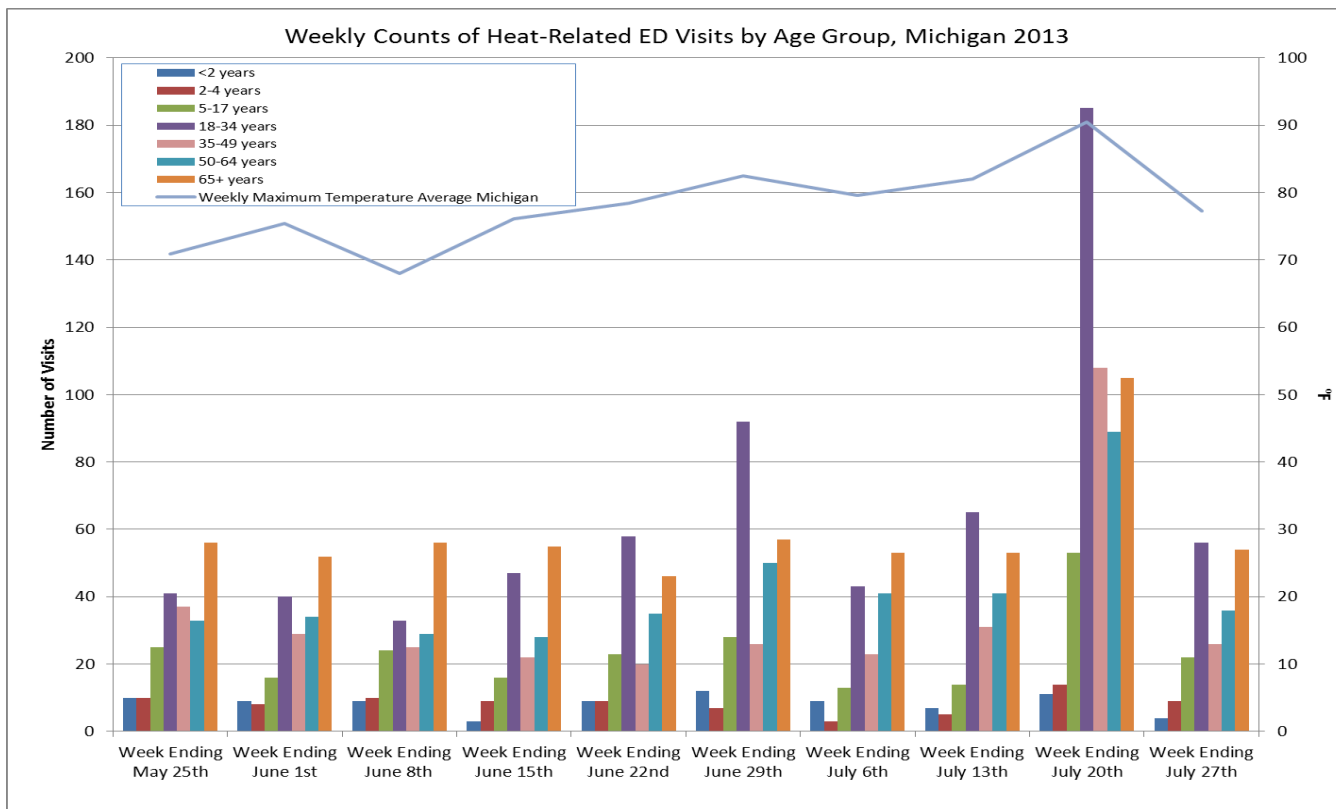


Table 1: Heat Related ED Visits by Age and Gender, Current Week Compared to the Weekly Average

Age Group	Weekly Average (April 1 – July 13)			Current Week (Week Ending July 27)		
	Gender		Male to Female Ratio	Gender		Male to Female Ratio
	Male	Female		Male	Female	
<18 years	21	22	0.96	15	20	0.75
18-34 years	18	26	0.70	27	29	0.93
35-49 years	13	13	0.97	12	14	0.86
50-64 years	16	18	0.86	14	22	0.64
65+ years	18	35	0.51	15	39	0.38
Total	86	115	0.75	83	124	0.67

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 – July 28, 2013)

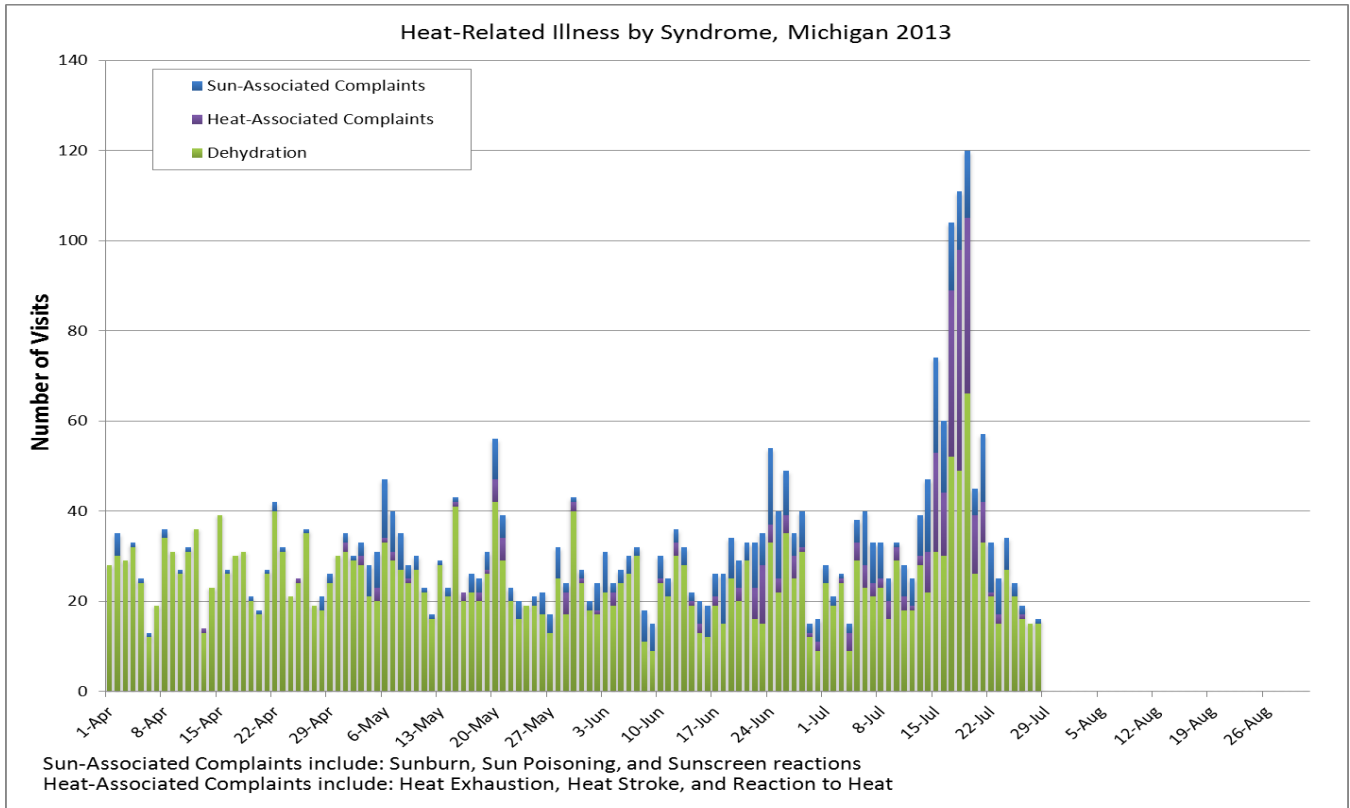


Figure 6: Statewide Heat-Related ED Visits by syndrome excluding dehydration (April 1 – July 28, 2013)

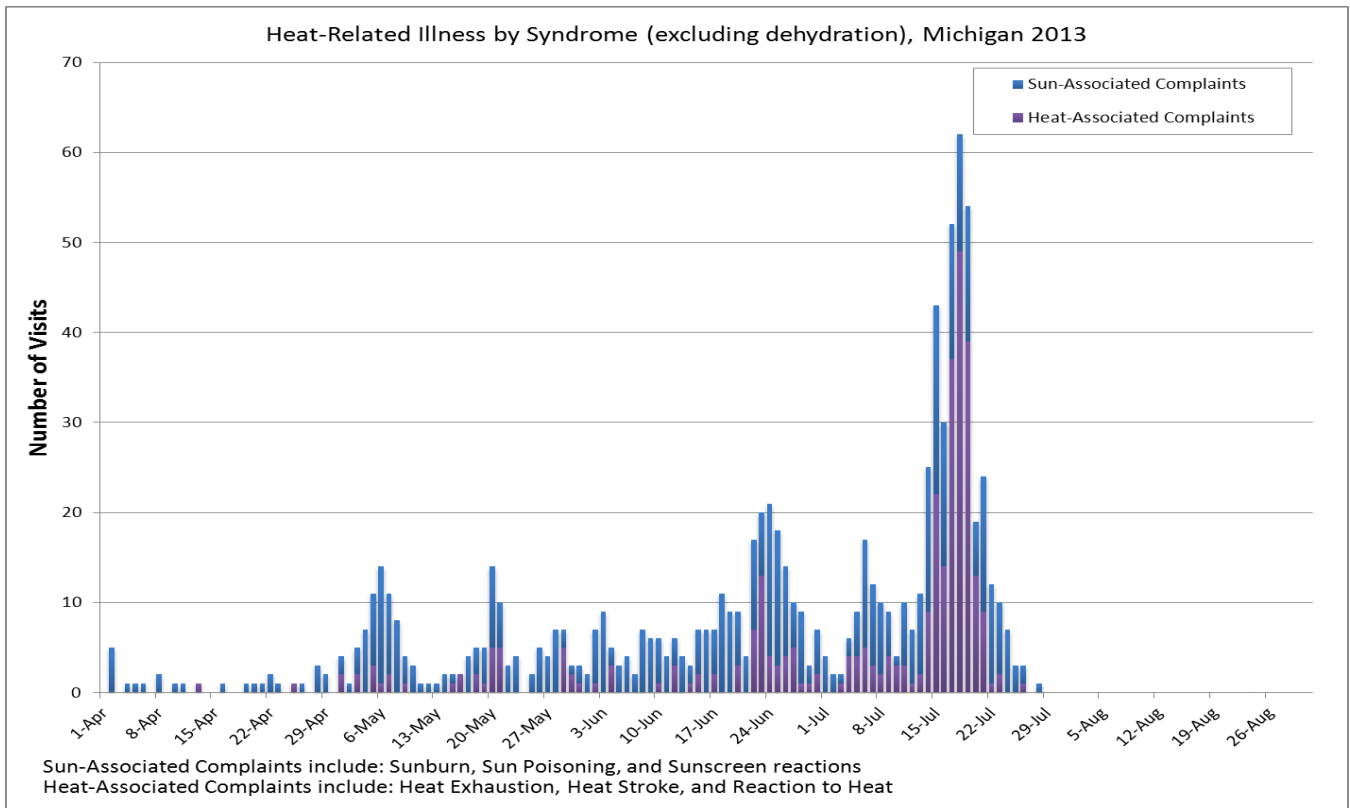
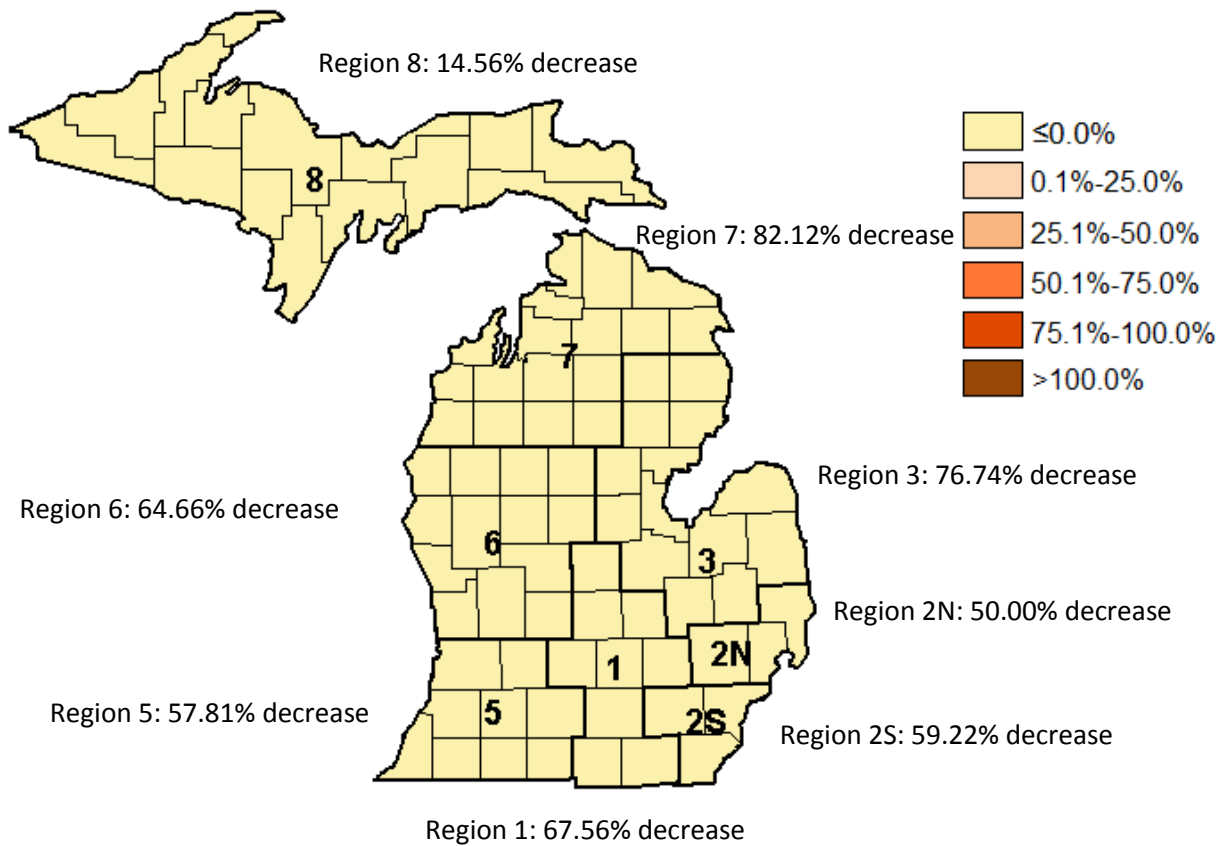


Figure 7: Percent Change of Heat-Related Emergency Department Visits by Region: Week Ending July 27, 2013 Compared to Week Ending July 20, 2013



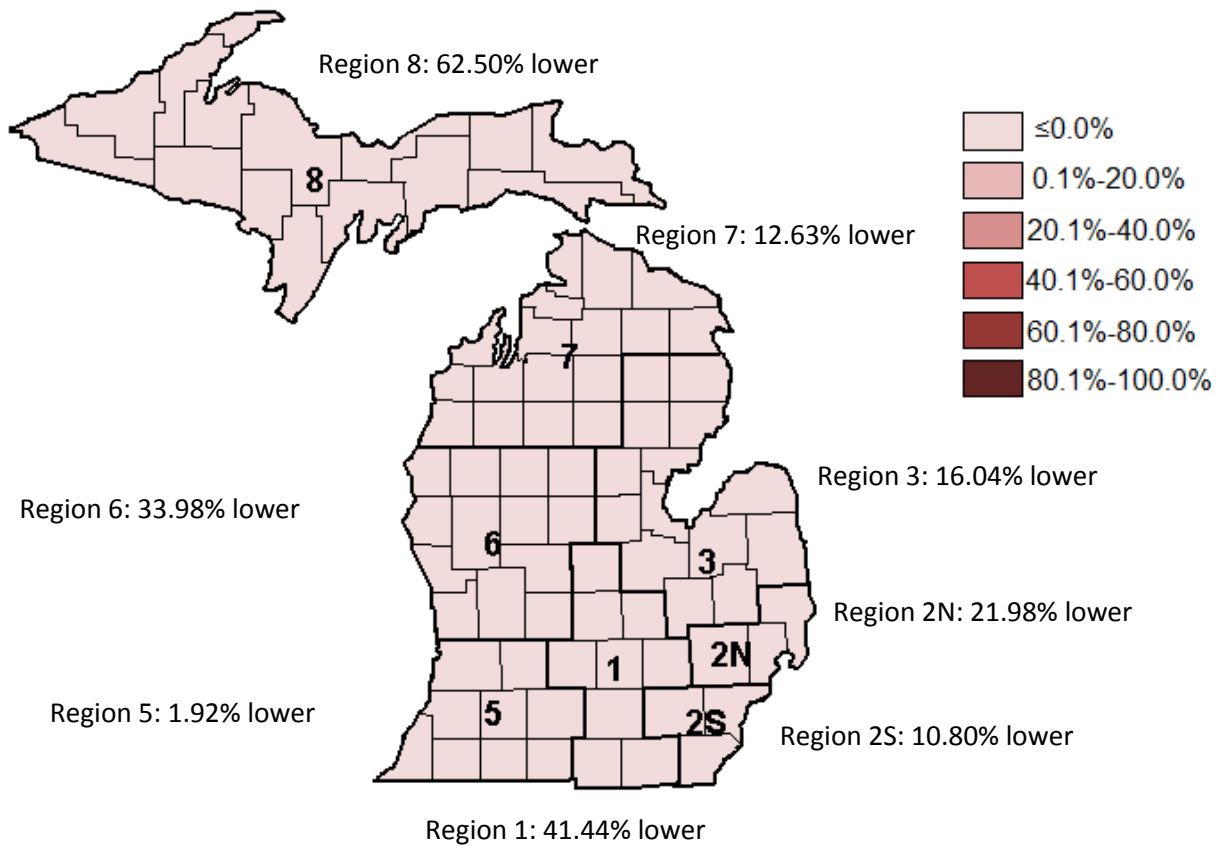
This regional map indicates the percent change in the normalized values of heat-related emergency department complaints from the previous week ending July 20, 2013, to the current week ending July 27, 2013.

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

Region	Week Ending July 20		Week Ending July 27		% Change
	# of Visits	% of All ED Visit	# of Visits	% of All ED Visit	
1	69	0.589%	22	0.191%	-67.56%
2N	80	0.557%	41	0.279%	-50.00%
2S	133	0.569%	53	0.232%	-59.22%
3	53	0.508%	12	0.118%	-76.74%
5	52	0.517%	22	0.218%	-57.81%
6	113	0.807%	40	0.285%	-64.66%
7	57	1.306%	10	0.234%	-82.12%
8	8	0.449%	7	0.384%	-14.56%

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 July 27, 2013 Compared to Week Ending July 20, 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 July 20, 2013 to the current week ending July 27, 2013.

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

Region	Week Ending July 20		Week Ending July 27		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	38	55.07%	3	13.64%	-41.44%
2N	41	51.25%	12	29.27%	-21.98%
2S	52	39.10%	15	28.30%	-10.80%
3	35	66.04%	6	50.00%	-16.04%
5	27	51.92%	11	50.00%	-1.92%
6	61	53.98%	8	20.00%	-33.98%
7	30	52.63%	4	40.00%	-12.63%
8	5	62.50%	0	0.00%	-62.50%

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