

A Comparison of Syndromic Surveillance and Mortality Statistics for Heat-Related Illness in Missouri

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1

Background

- ❖ Heat-related illnesses can occur when high ambient temperatures overcome the body's natural ability to dissipate heat [1].
- ❖ Illness can result in death, and these deaths are largely preventable [2].

2

Background

- ❖ More intense, more frequent and longer duration heat waves are projected for the coming decades [3].
- ❖ Heat wave-related illness and death are the most likely related challenges to public health practitioners [4].

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Background

- ❖ Patterns of morbidity are reported to be different from patterns of mortality in hospital admissions [5].

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Background

- ❖ Missouri has been tracking heat-related illness for many years using two data sources:
 - Death data since 1980.
 - Syndromic data since 2006.

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Background

- ❖ Death certificate data are routinely collected from vital records for heat-related causes in Missouri (not just during heat waves).

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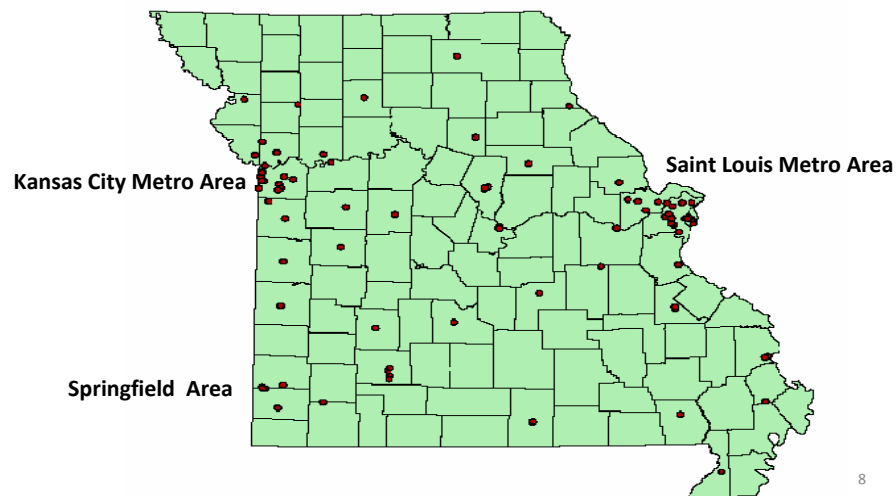
Background

- ❖ Heat-related chief complaints reported upon admission from emergency department (ED) visits are collected and analyzed temporally using ESSENCE.
- ❖ **ESSENCE** stands for **E**lectronic **S**urveillance **S**ystem for the **E**arly **N**otification of **C**ommunity-based **E**pidemics.

7

Background

Missouri ESSENCE hospitals



8

Objectives

- ❖ To characterize the epidemiology of emergency department (ED) heat-related chief complaints reported via Missouri ESSENCE.
- ❖ To compare those findings to heat-related mortality data from the same time period.

9

Methods

- ❖ ESSENCE was queried for ED chief complaints that contained keywords “heat” or “therm” to identify reports of heat stroke, heat exhaustion, heat cramps or hyperthermia reported upon admission.

10

Methods

- ❖ Heat-related death is defined as any case recorded with the International Classification of Diseases Version 10 (ICD-10) code of “X30” as an underlying or contributing cause of death on the death certificate.

11

Methods

- The time period examined was for May 1 through September 30 in three consecutive summers, 2006, 2007 and 2008.

12

Methods

- ❖ Statistical Analysis Software (version 9.2) was used to tabulate the age and sex distribution of ESSENCE heat-related ED visits and heat-related death data.

13

RESULTS

Heat-related ED Visits	Heat-related Deaths
Greatest among persons aged 15-54 years.	Greatest among individuals 65 years and older.
More ED visits were observed among males than females in every age group except for individuals 65 years and older.	More males died from heat-related causes than females in every age group except for children younger than five years.
Average age was 40 years for males and 43 years for females.	Average age was 60 years for males and 76 years for females.
52 % of the total number of heat-related visits is males 15 to 54 years.	46% of all heat-related deaths is individuals 65 and older. No variance by sex.
Males accounted for 70 percent and females for 30 percent of heat-related visits.*	Males accounted for 70 percent and females for 30 percent of heat-related deaths.*

14

RESULTS

Figure 1. Heat-related ED Visits by Age Group and Sex, Missouri ESSENCE 2006-2008

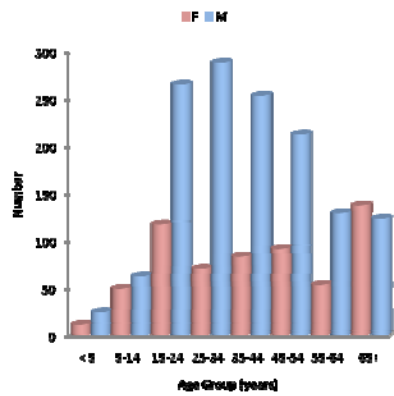
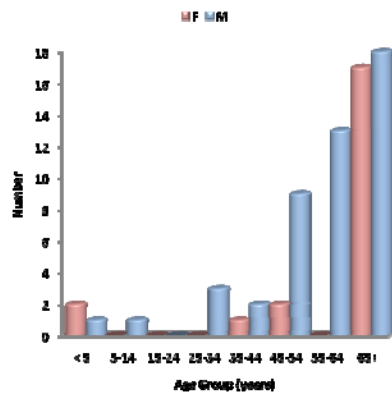
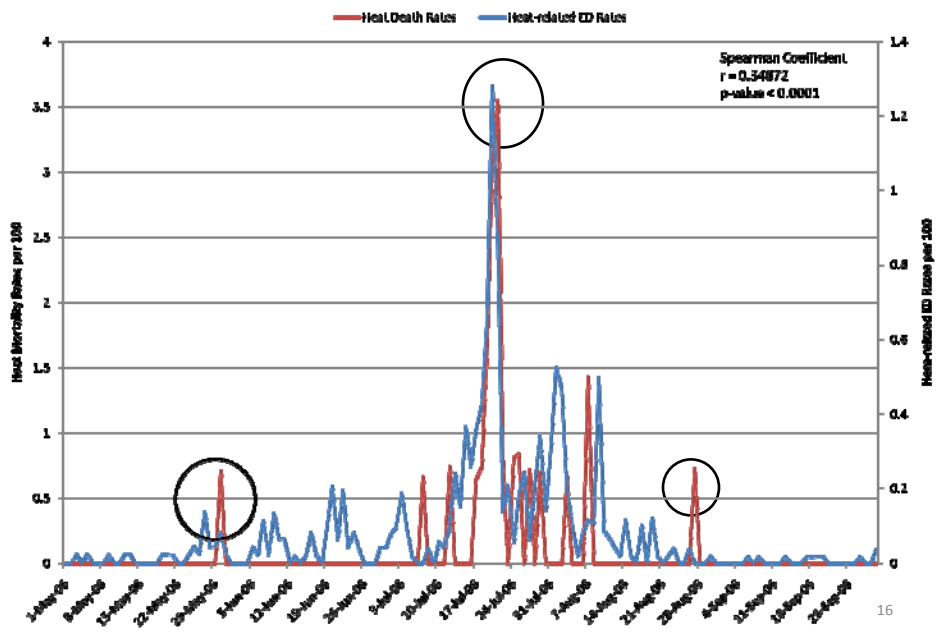


Figure 2. Heat Mortality by Age Group and Sex, Missouri 2006-2008

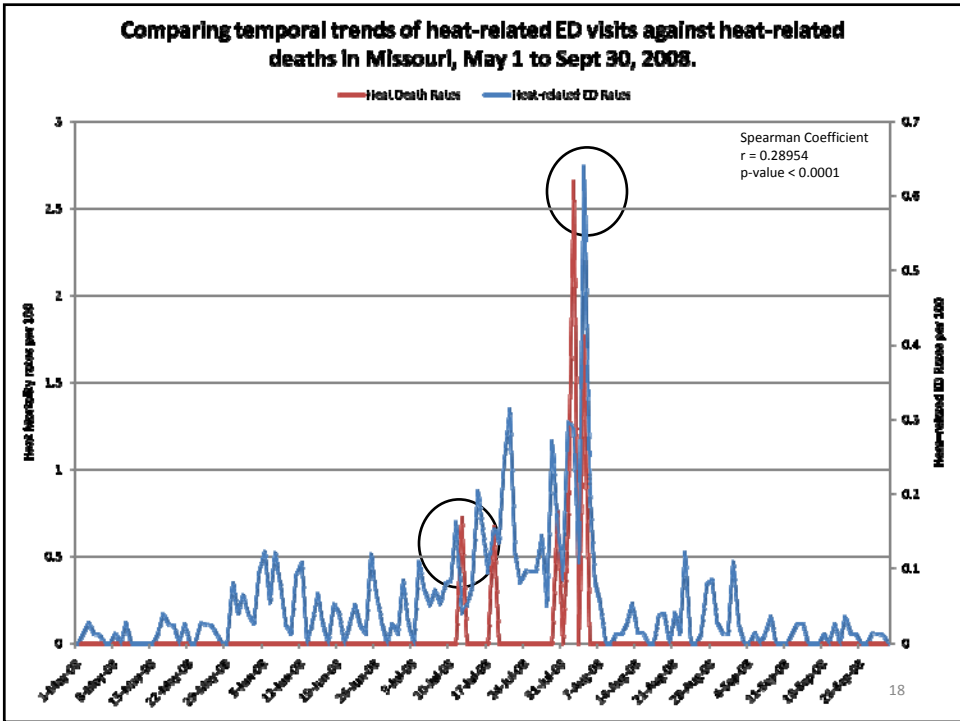
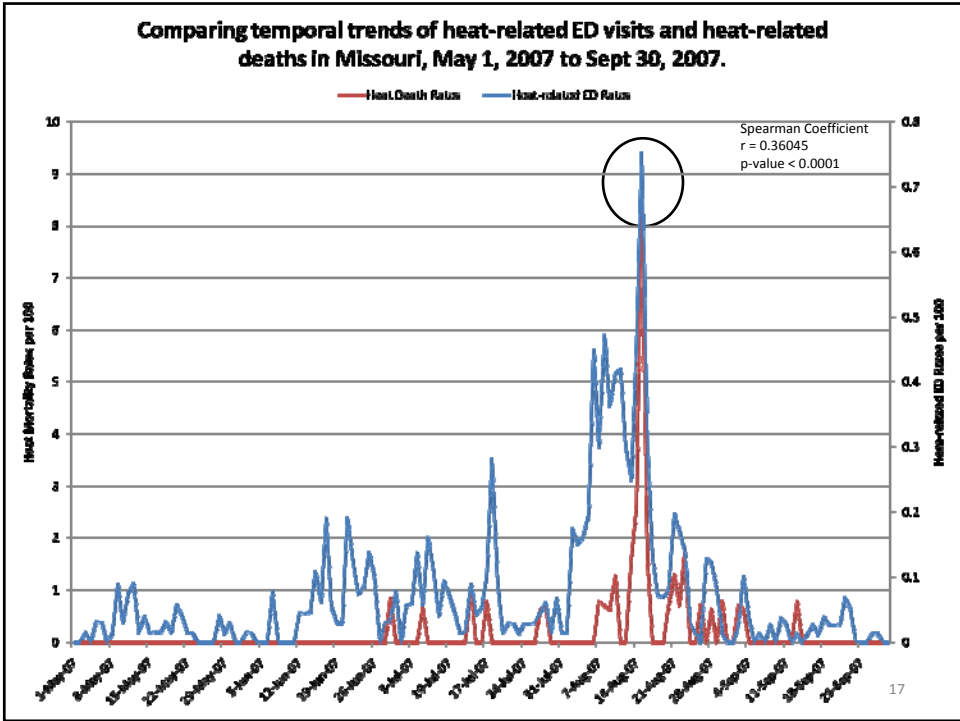


15

Comparing temporal trends of heat-related ED visits against heat-related deaths in Missouri, May 1 to Sept 30, 2006



16



Conclusions

- ❖ In Missouri, the epidemiology of heat-related emergency department visits differs from mortality patterns.
- ❖ More younger than older individuals become ill with heat-related illness while more older than younger individuals die from heat-related causes.

19

Conclusions

- ❖ These results can help public health authorities to tailor warnings aimed at preventing heat-related mortality **AND** heat-related morbidity toward specific audiences.

20

Conclusions

- ❖ For younger individuals, messages should emphasize increased fluid intake and advise temporarily decreased physical activity during hot days.
- ❖ Older individuals and their caregivers should be educated on signs and symptoms of heat-related illness as well as ways to cool during hot weather.

21

Conclusions

- ❖ In addition, heat-related ED visits vary temporally from heat-related deaths.
- ❖ Such findings may facilitate cross talks between two surveillance systems and enable public health officials to intervene in a timely manner.

22

Acknowledgements

- ❖ Missouri Department of Health and Senior Services –
 - Bureau of Environmental Epidemiology.
 - Bureau of Communicable Disease Control and Prevention.
 - Office of Epidemiology.

23

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24