University of Manitoba

Cardiac Sciences Program / Programme des sciences cardiaques

How cold is too cold: the effect of seasonal temperature variation on risk of STEMI

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DECLARATION OF INTEREST

- I have nothing to declare

Background

- Clear correlation between cold weather and the incidence of and hospitalization for acute MI as well as cardiac deaths.
- However, no consensus on the relationship of weather and STEMI (highest risk MI).
- Our objective was to assess the relationship between cold weather (temperature and snowfall) with STEMI in Winnipeg, Manitoba, Canada

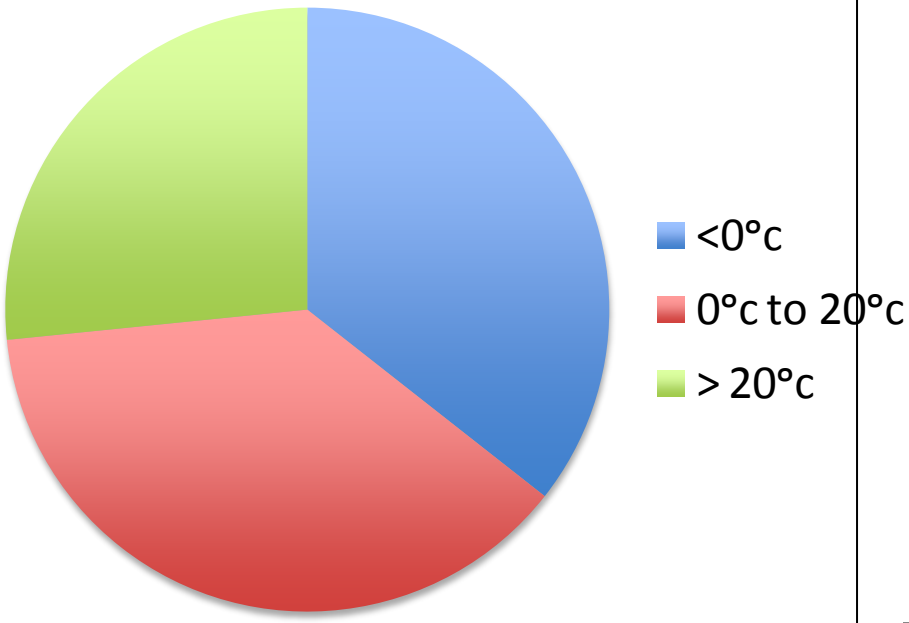
2013 ACC/AHA STEMI guidelines
Gerber Y, Jacobsen SJ, Killian JM, Weston SA, Roger VL. Seasonality and daily weather conditions in relation to myocardial infarction and sudden cardiac death in Olmsted County, Minnesota, 1979 to 2002. J Am Coll Cardiol 2006;48:287-92
Dilaveris P, Synetos A, Giannopoulos G, Gialafos E, Pantazis A, Stefanadis C. Climate Impacts of Myocardial infarction deaths in the Athens Territory: the CLIMATE study. Heart 2006;92:1747-1751
Gasparrini A, Guo Y, Hashizume M. Mortality risk attributable to high and low ambient temperature: a multicountry observational study. Lancet 2015: 386:369-75

Methods

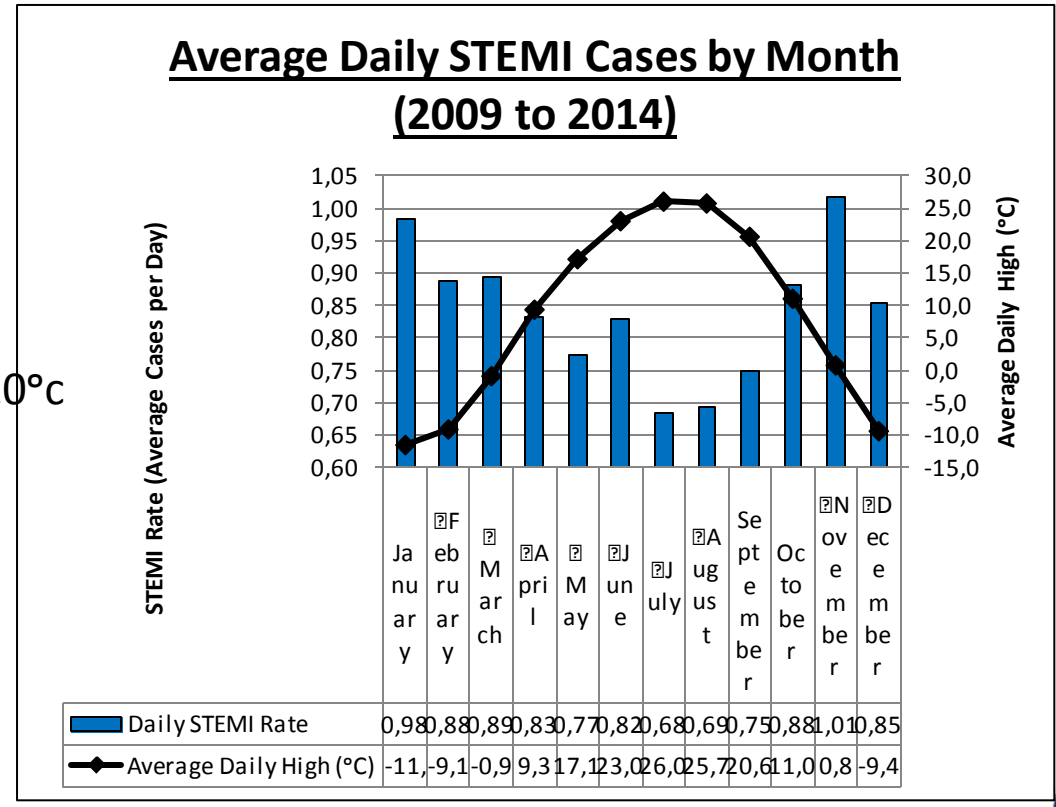
- We performed a review of all patients with STEMI in Winnipeg from January 1, 2009 to December 31, 2014.
- Information was collected from Environment Canada:
  - Temperature
    - Daily high, mean, daily low
  - Snow fall

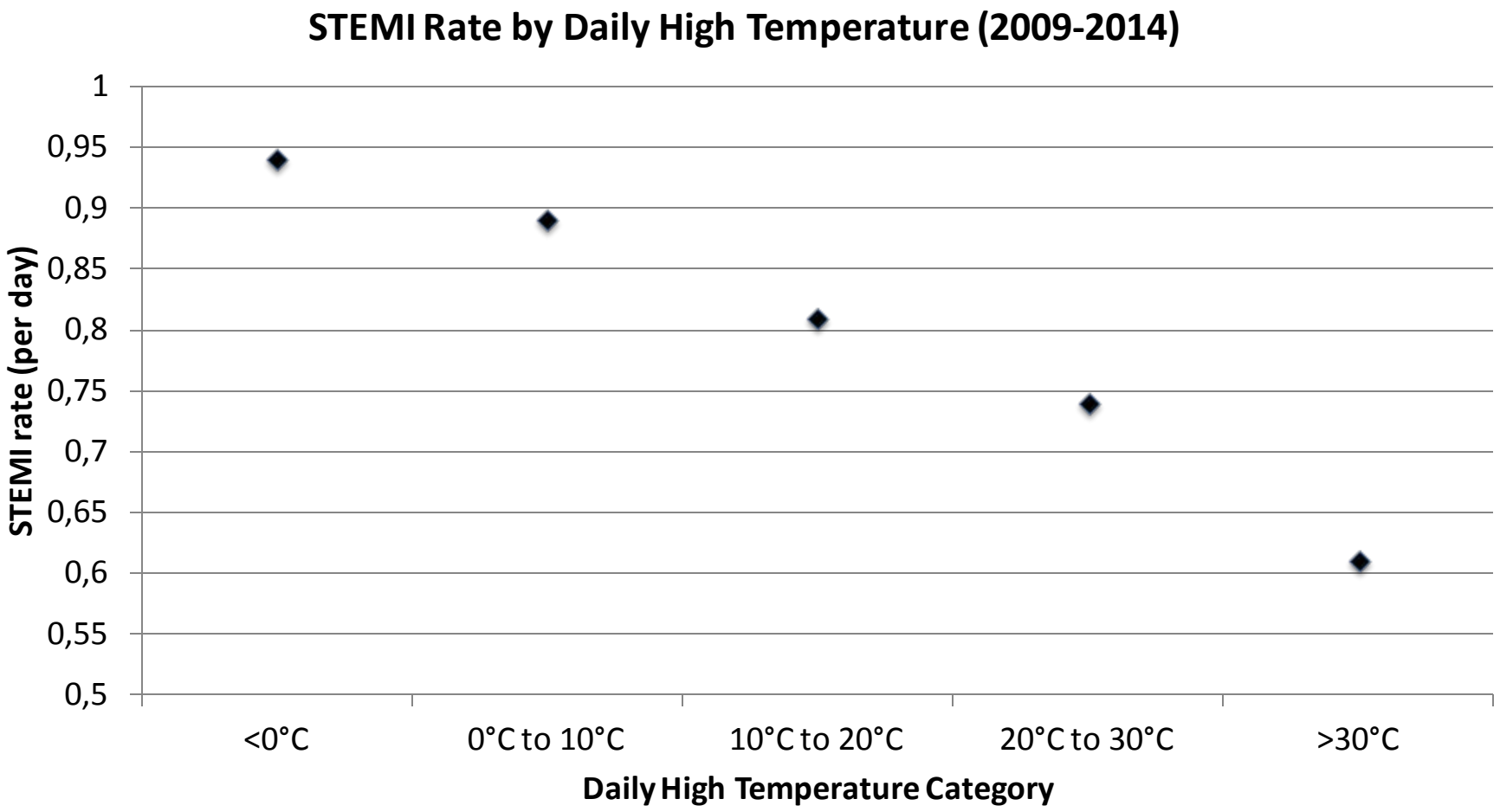
Distribution of temperature

% of events



1817 STEMI over 6 years (2190 days)




STEMI Rate by Daily High Temperature (2009-2014)
STEMI rate (per day)
1
0,95
0,9
0,85
0,8
0,75
0,7
0,65
0,6
0,55
0,5
<0°C
0°C to 10°C
10°C to 20°C
20°C to 30°C
>30°C
Daily High Temperature Category

Conclusions

- There is a clear association between temperature and the rate of STEMI.
- For every 10 degrees colder, the risk of STEMI goes up by 7%
- No detrimental effect of hot weather