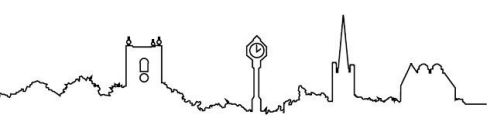
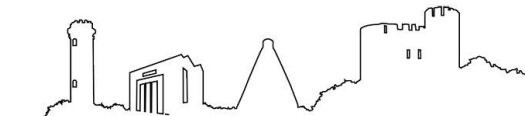


Measuring Heat and Health Impacts in Dudley

Quantifying local heatwave deaths



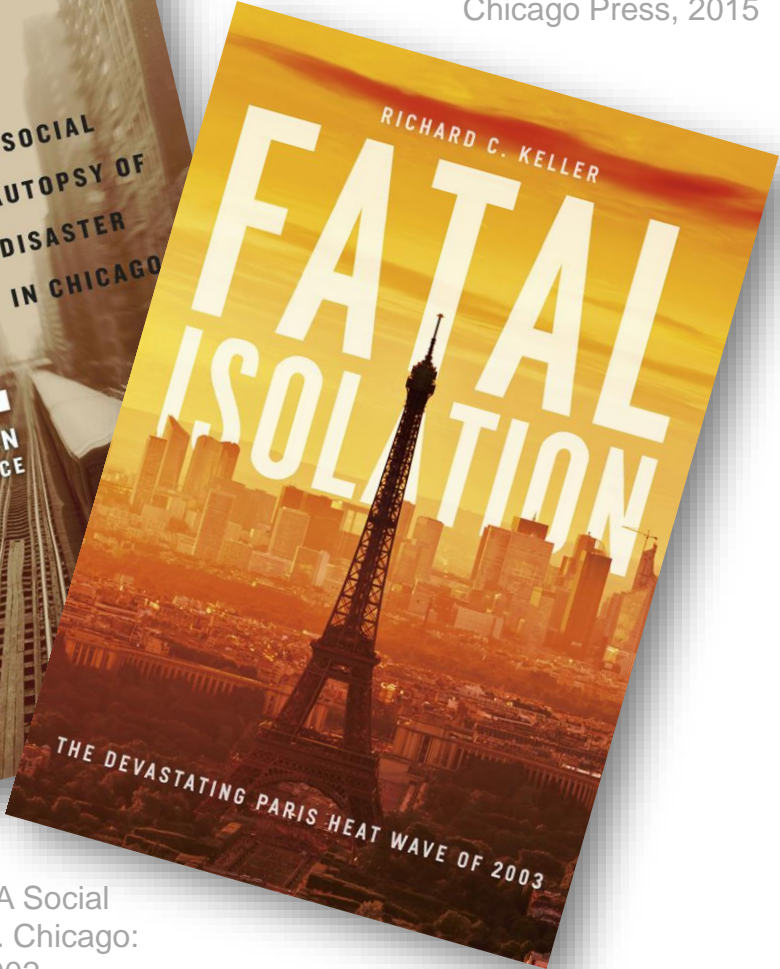
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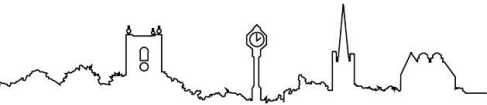
Social Isolation

Our interest in heatwaves arose out of work on the health impact of loneliness and social isolation

Keller, Richard C. **Fatal isolation:** the devastating Paris heat wave of 2003. Chicago: University of Chicago Press, 2015



Klinenberg, Eric. **Heat Wave: A Social Autopsy of Disaster in Chicago.** Chicago: University of Chicago Press, 2002



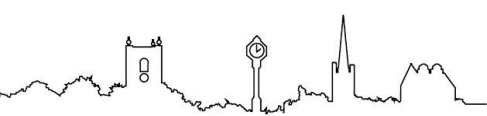
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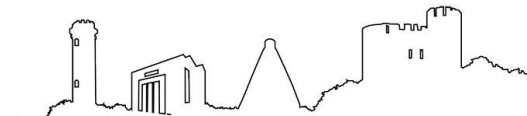
This presentation:

1. Heatwave days

2. Excess heatwave deaths



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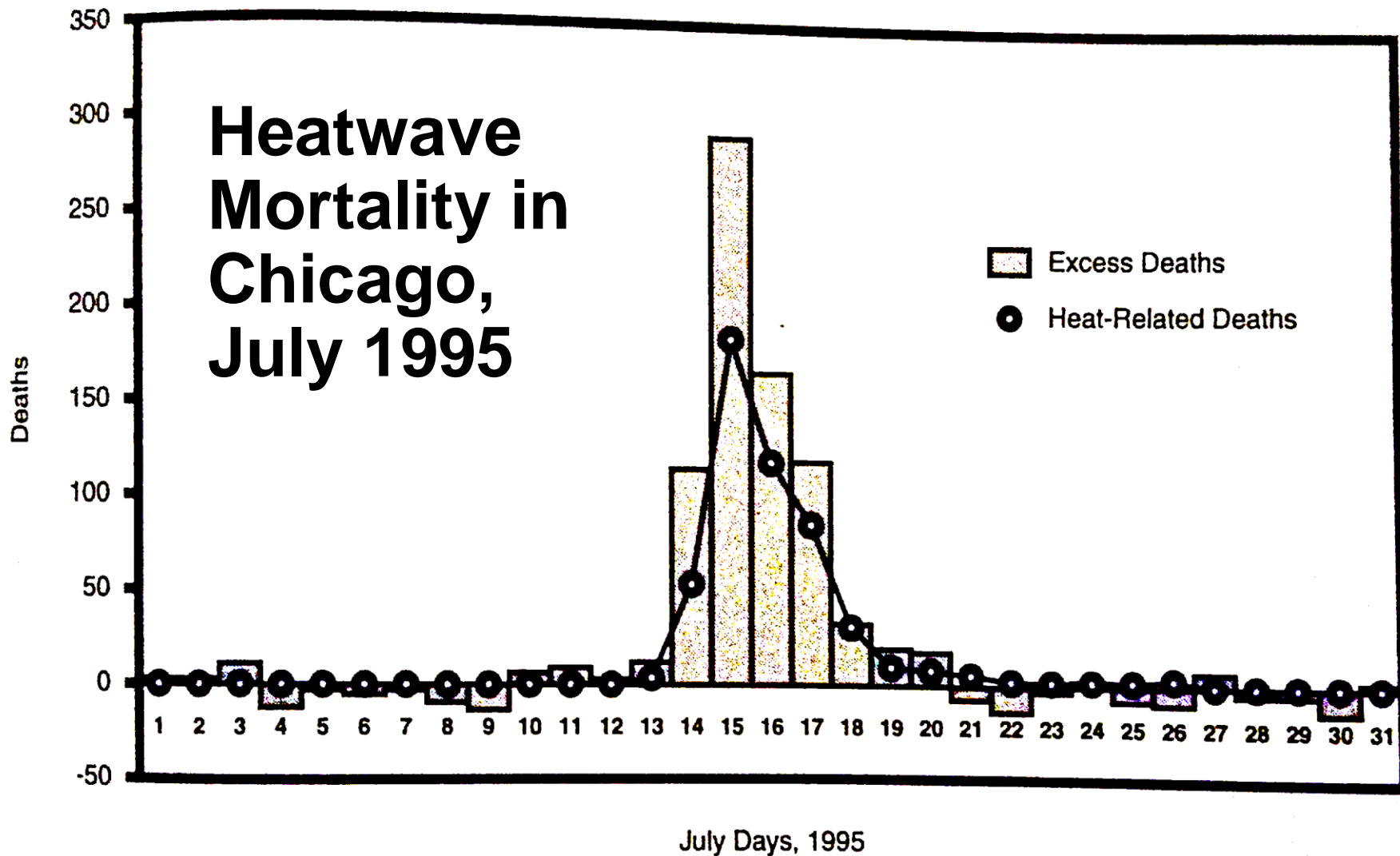
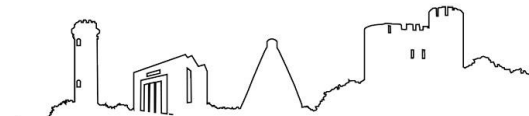
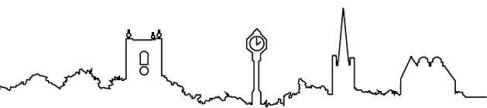
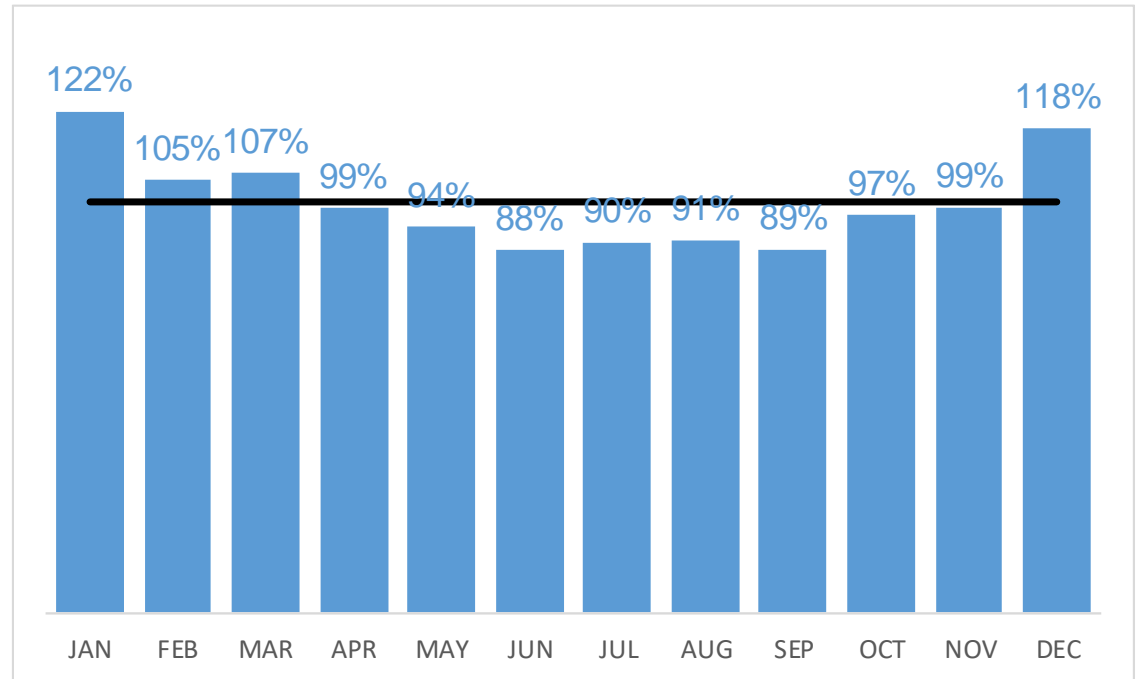


Figure 7. Excess and heat-related mortality in Chicago, July 1995. Source: City of Chicago, Department of Public Health.

Source: Klinenberg, Eric. Heat Wave: A Social Autopsy of Disaster in Chicago. Chicago: University of Chicago Press, 2002

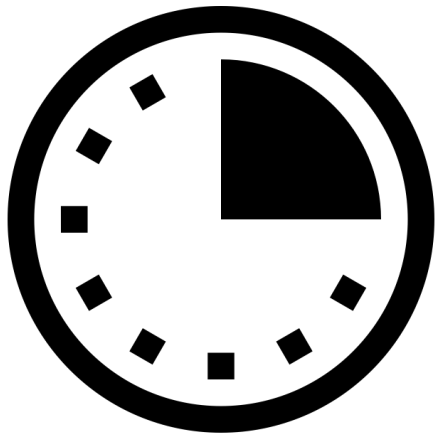
Mortality is higher in the winter months

... so using time periods as long as a month, there are no excess deaths in the summer months

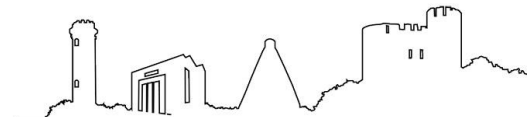
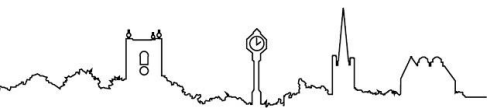


Heatwave days

defined through observation



- Based on temperature recorded continuously every 15 mins in the months April to September over the **eight years** 2012 to 2019 (inclusive)
- Using a single recording device in Dudley Town Centre



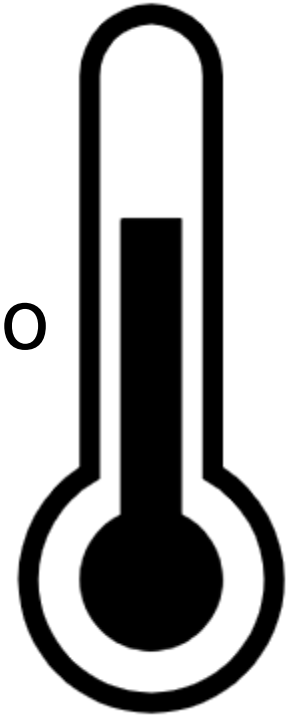
Heatwave days

defined through observation

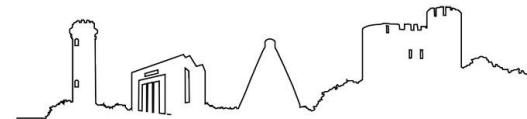
Any day for which either:

- the observed temperature in Dudley **exceeded 24.5°C** for more than six consecutive hours, or
- the **two previous days** met the condition in (a)

24.5°



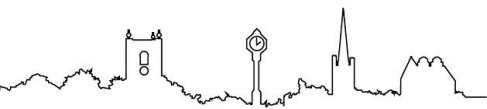
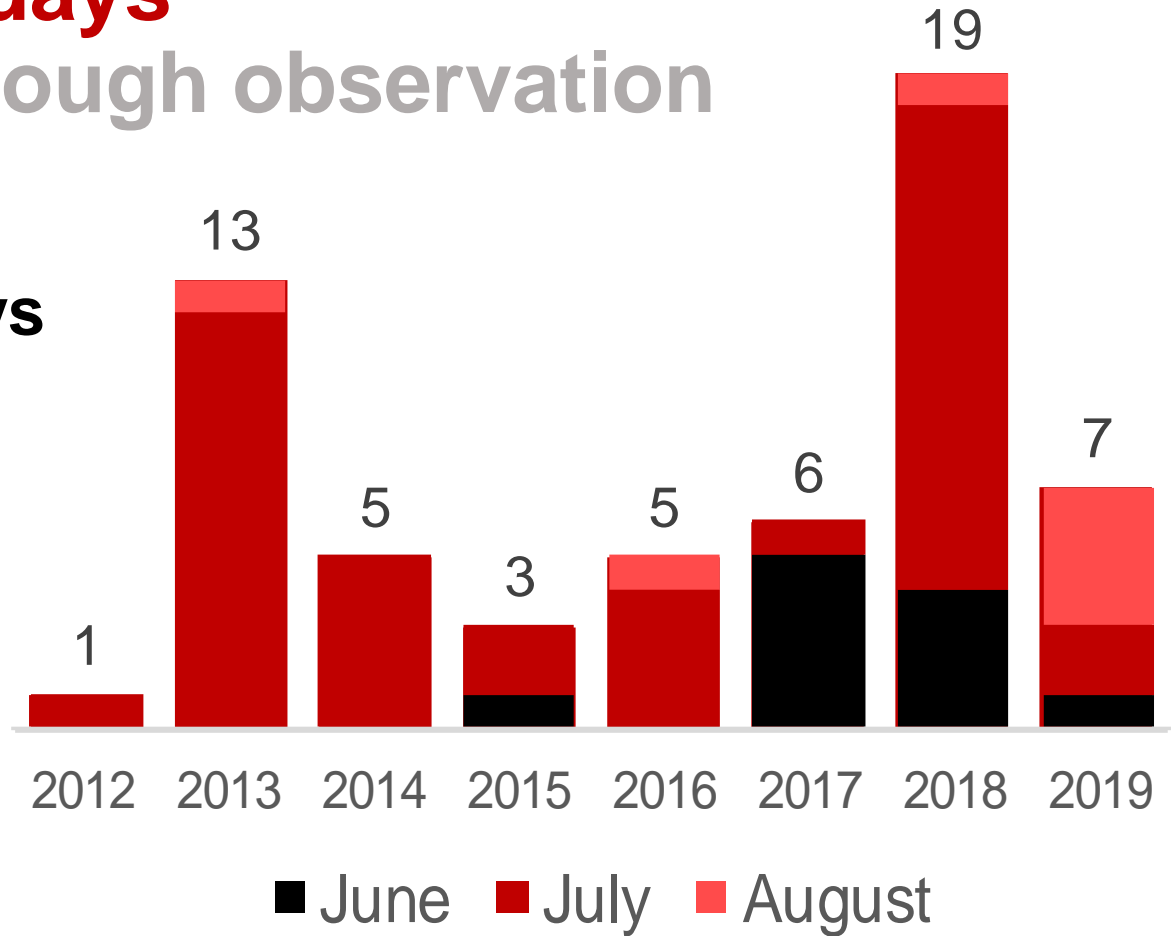
24.5°C = the temperature at which any excess deaths may become apparent (Heatwave Plan for England)



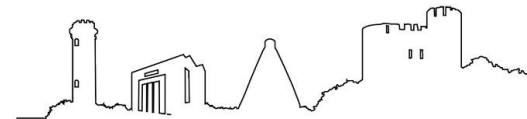
Heatwave days defined through observation

Count of Heatwave Days in Dudley

Total = 59 Days



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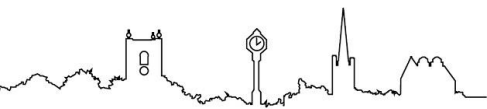
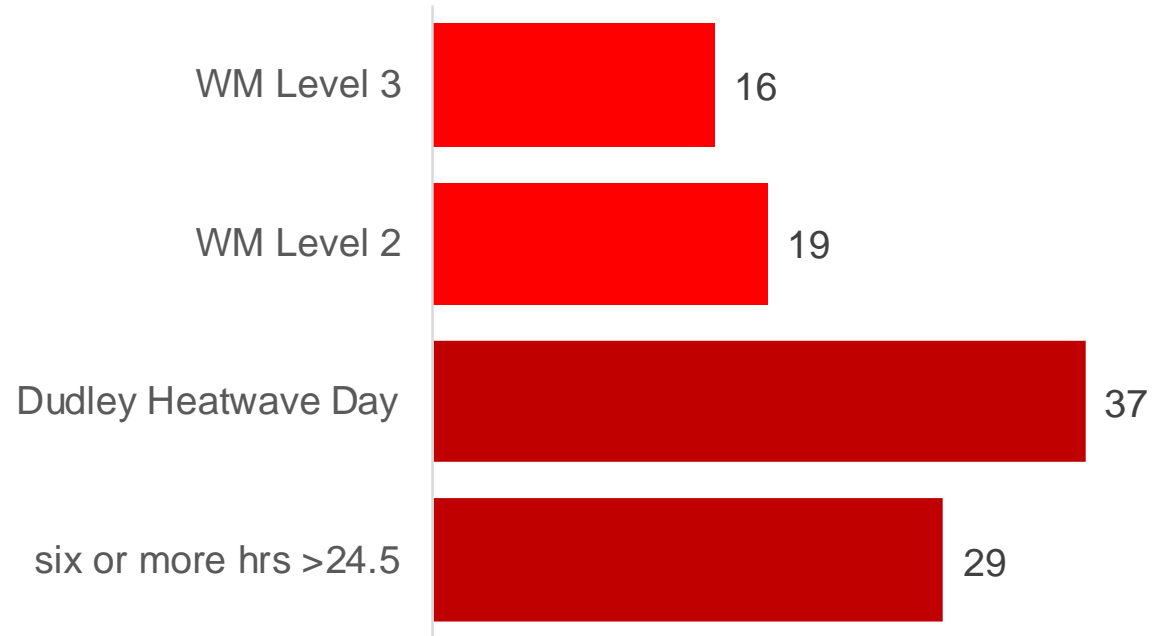


Heatwave days defined through observation

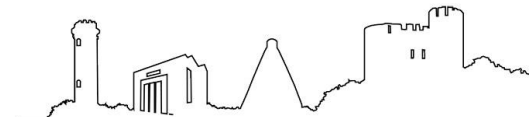
Comparison of Dudley Heatwave Days and Met Office Warnings, 2016 - 2019

37 Dudley Heatwave Days,
21 of which were not subject
to at least a Level-2 warning

19 Level-2 warnings, 3 of
which were not Dudley
Heatwave Days

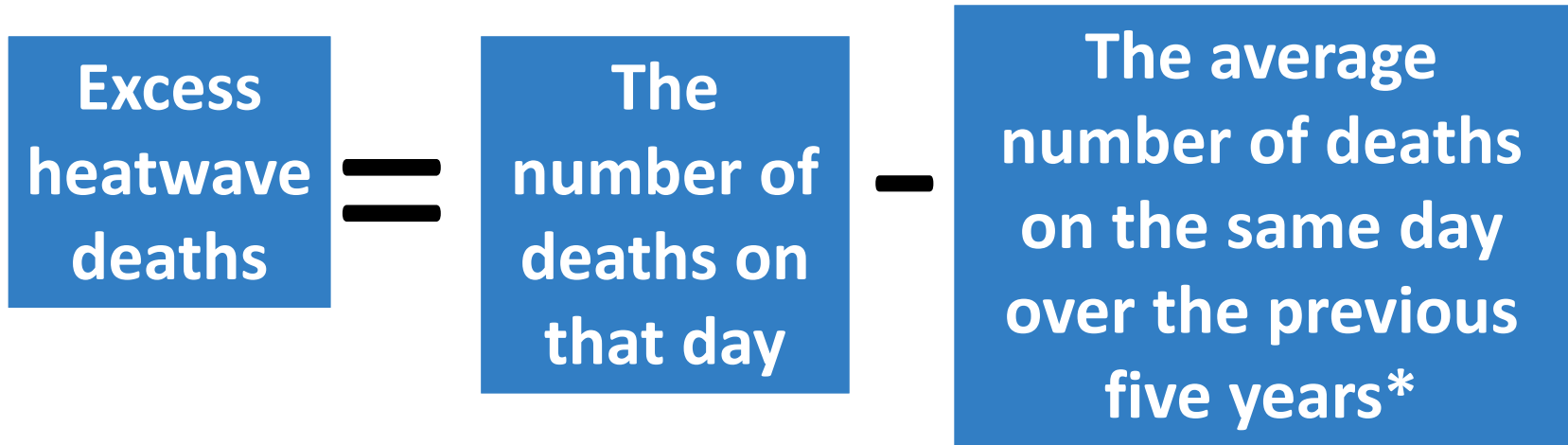


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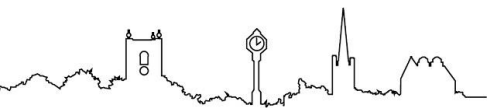
Excess Heatwave Deaths

defined by comparison with previous years

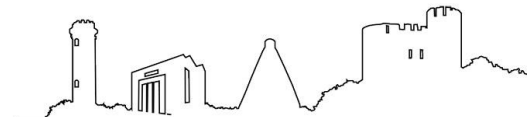


*Except where those days are themselves heatwave days

Taking into account the increasing population of Dudley Borough



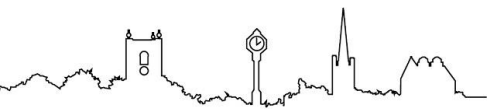
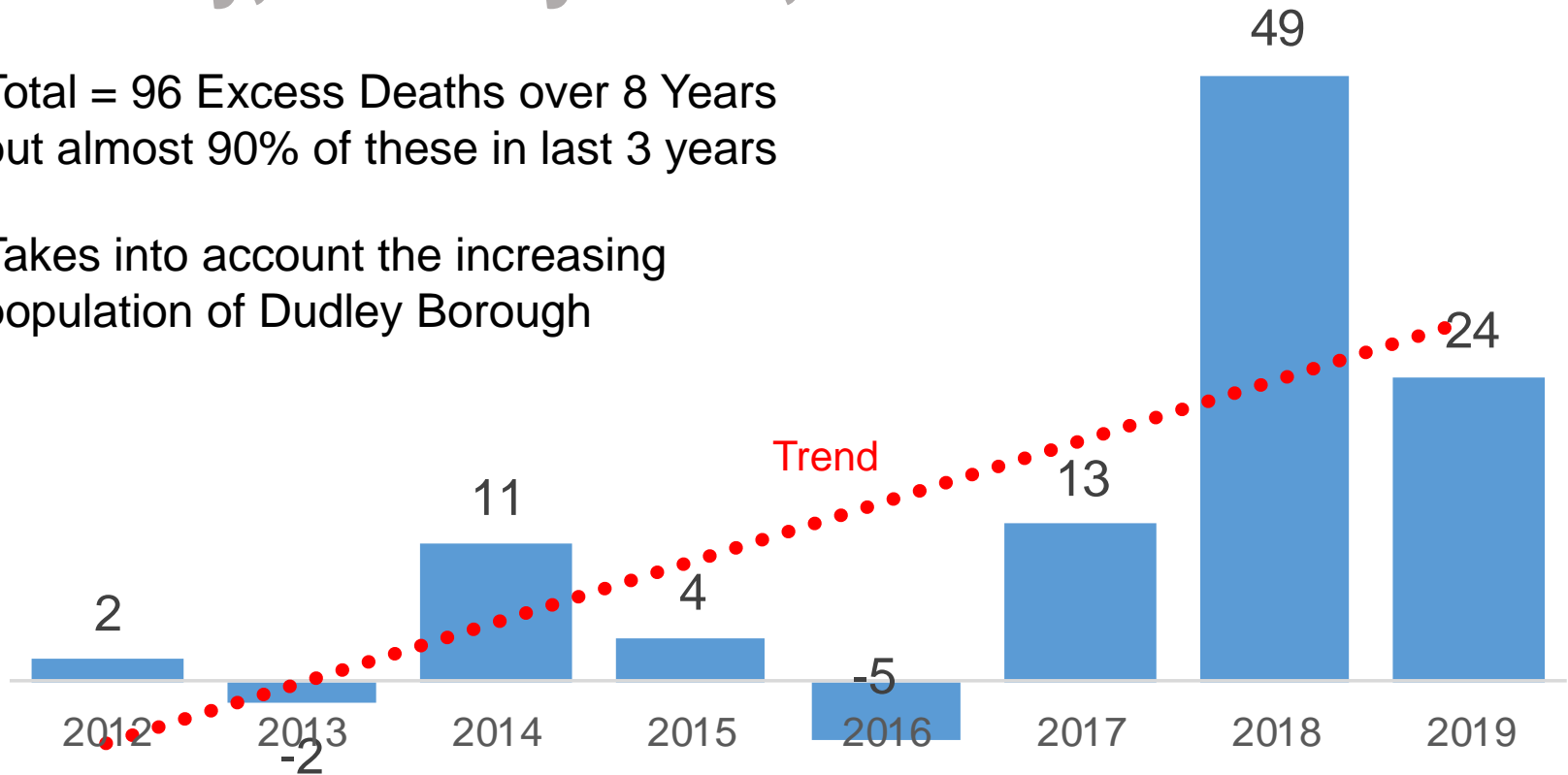
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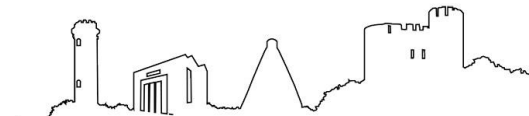
Daily Excess Heatwave Deaths Dudley, total by Year, 2012-19

Total = 96 Excess Deaths over 8 Years
but almost 90% of these in last 3 years

Takes into account the increasing
population of Dudley Borough

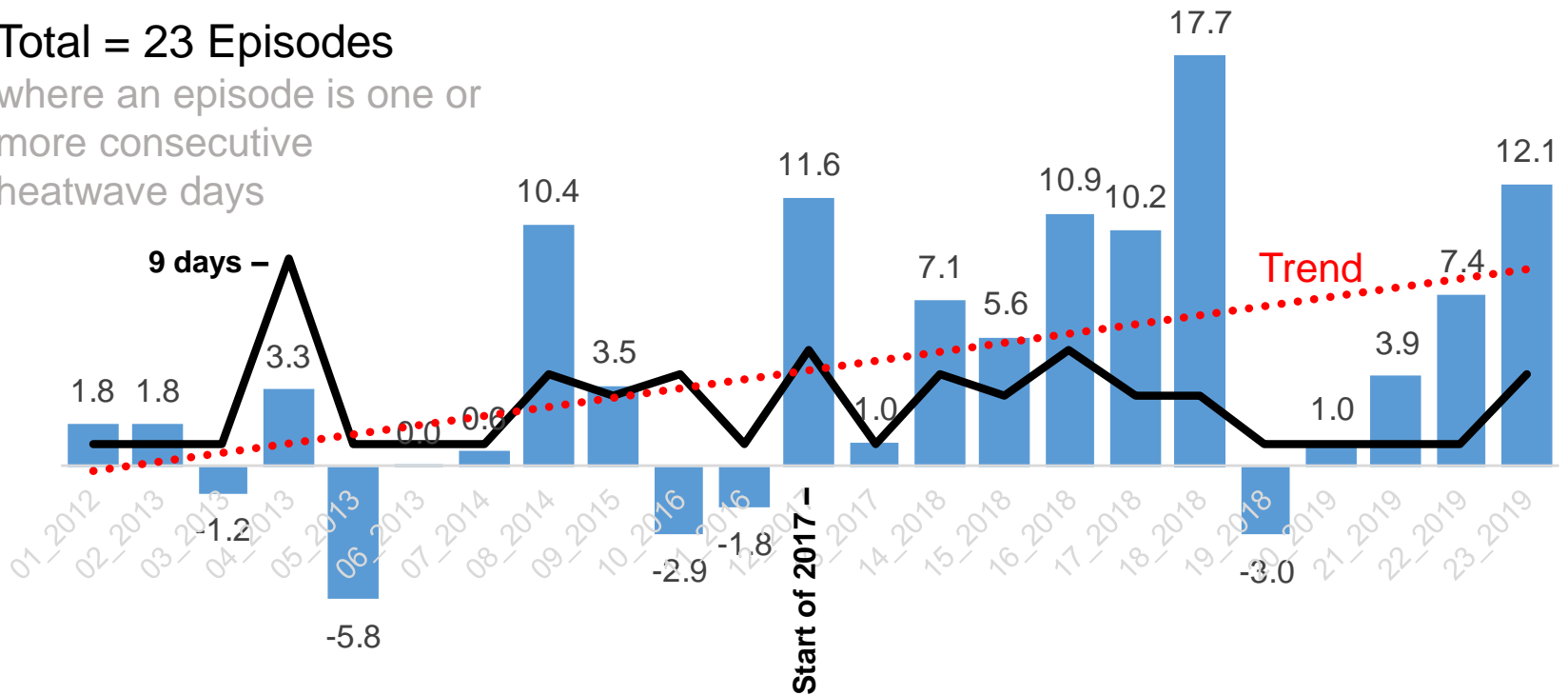


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Daily Excess Heatwave Deaths Dudley, total by Episode, 2012-19

Total = 23 Episodes
where an episode is one or more consecutive heatwave days



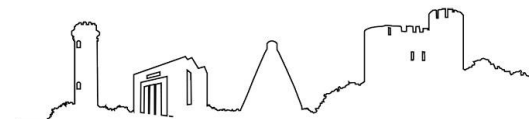
■ Total daily excess deaths

— Days per episode

..... Linear (Total daily excess deaths)



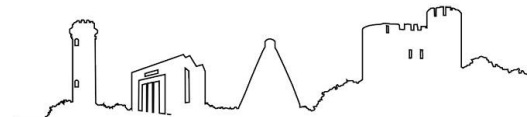
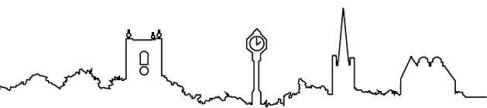
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Heatwave Deaths

Dudley, by Condition, 2012-19

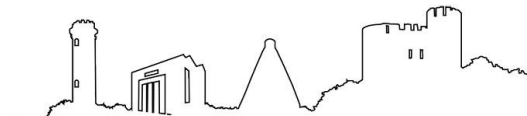
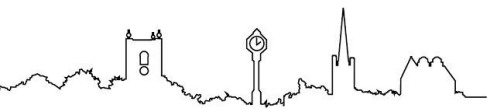
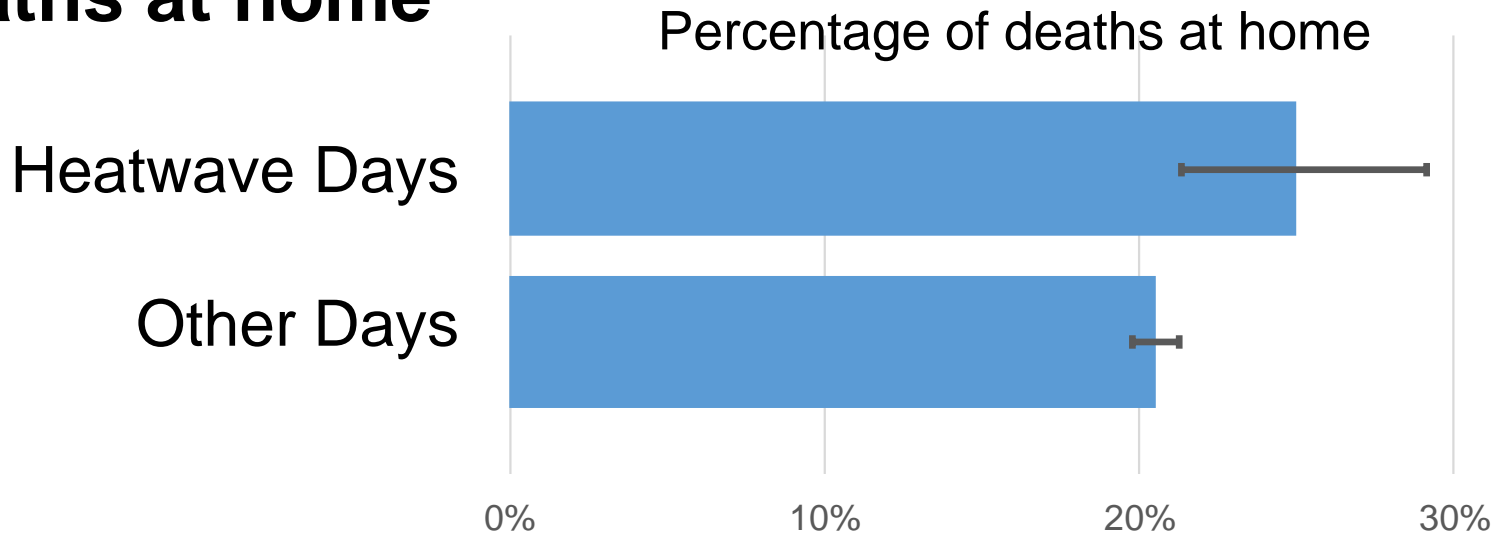
- On heatwave days there were high rates for:
 - Neoplasms (ICD10 C)
 - **lung cancer** (C34)
 - Mental and behavioural disorders (ICD10 F)
 - **Dementia** (F019, F03)
 - Diseases of the respiratory system (ICD10 J)
 - Diseases of the genito-urinary system (ICD10 N)
 - **Urinary tract infection** (N390)
 - **Kidney failure** (N179, N185)



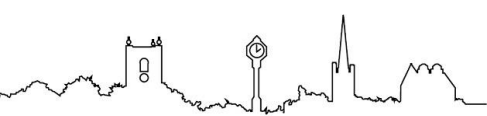
Heatwave Deaths

Dudley, by Place of Death, 2012-19

**Significant difference
in the number of
deaths at home**



paul.quigley@dudley.gov.uk



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