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Exploring Road Incident Data with Heat Maps

Iain Dillingham, Jason Dykes - the giCentre, City University London Bryn Mills - Trafficlink

1) Road incident data

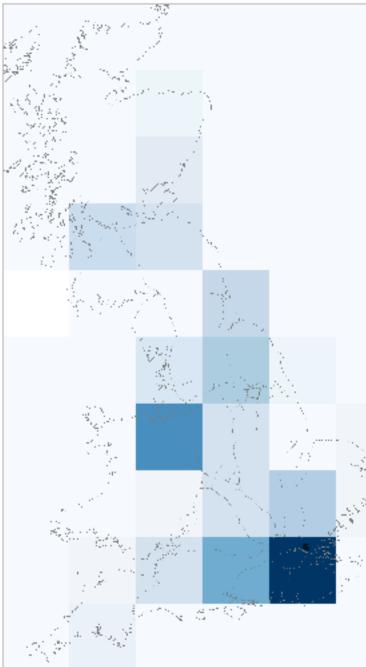
- 14.5 million records
- 2.5 million road incidents
- United Kingdom
- September 2002 to September 2009
- 2) Method and tools
- Parse, filter and mine (Fry, 2007)
- UNIX command-line utilities
- GDAL/OGR geo-tools
- LandSerf GIS
- MySQL

3) Software

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sketches.CountHeatMap

Total road incidents by date and grid cell: 2008-02-11_07:00:00_0_100000.csv

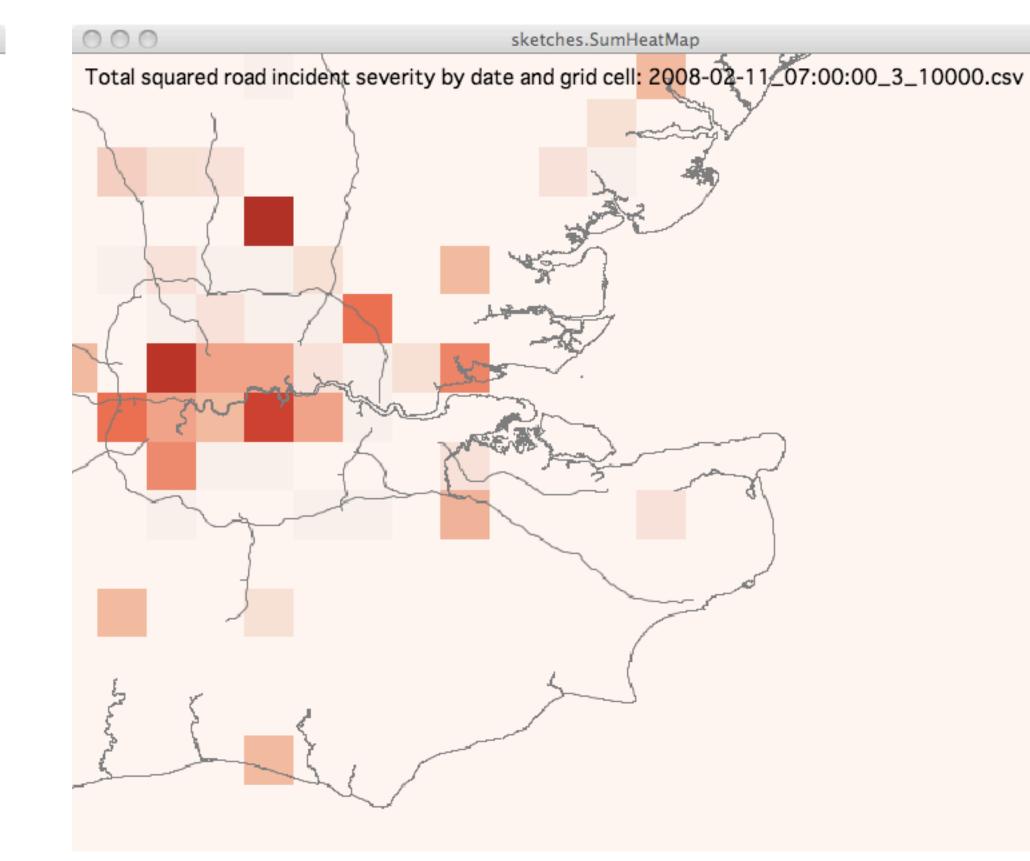


Each cell represents either a 100km, 50km, 25km, 10km, 5km, or 2km area, at one of five one-hour periods, on one of three dates. Cells are coloured by number of road incidents in the area (light-dark, low-high).

The file name should help determine the date, time period and resolution. It is in the form yyyy-mm-dd_hh:mm:ss_number_resolution.csv.

Dates and time periods reflect the hour before, the hour of and the three hours after a severe incident on the M25, just north of the Dartford Crossing. This incident is located within the black cell, which can be toggled with the 'i' key.

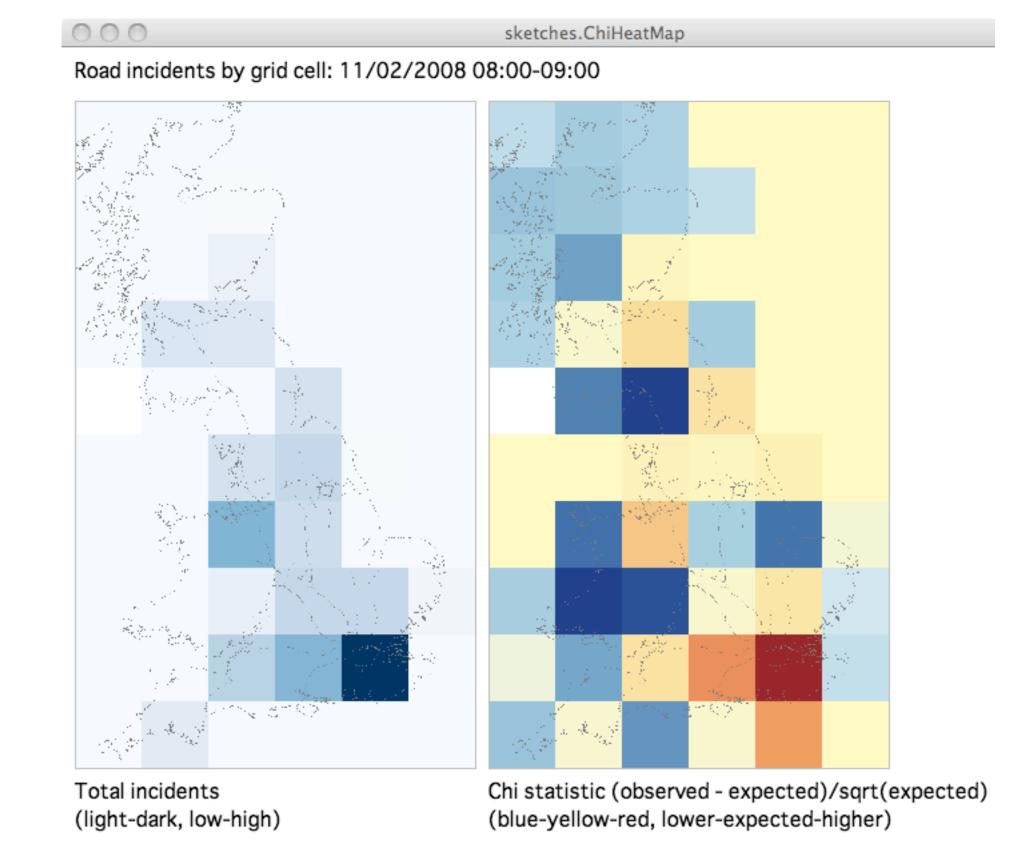
Press the 'h' key to learn how to reaggregate, change time period or date, and zoom and pan.



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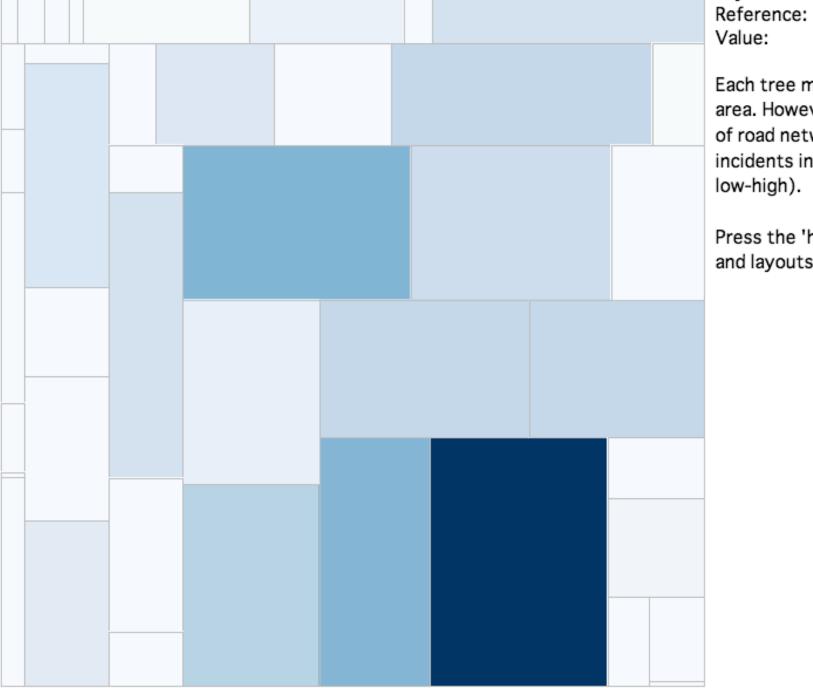
Interactive heat maps at multiple spatial and temporal resolutions enable the user to explore patterns before, during and after several severe road incidents (rated 5 on a 1 to 5 integer scale) at one London location.

Single spatial and



000	Sketches. Heemap
Total road incidents by time a	d grid cell: 2008-02-11_08-00-00_all.csv
	Layout:

temporal resolution heat maps demonstrate abstract, interactive spatial representations and alternative values.



Value: 113.0 Each tree map cell represents a 100km x 100km area. However, tree map cells are sized by length of road network and coloured by number of road incidents in the 100km x 100km area (light-dark, low-high).

(50000.0, 10000.0)

spatia

Press the 'h' key to learn how to change datasets and layouts.

4) Evaluation

The software prototypes follow cartographic practice. Based on system provision, interaction is reasonably powerful.

5) Conclusions and future work
The exploration process detected:
anomalies in the data
patterns for further investigation

Presentation and discussion of results with domain experts highlighted further requirements.

The software should be extended to support:
existing interaction and task typologies
the tasks performed by domain experts

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