

in London 1854, being the most notable historical example. Contemporary spatial analysis tools e.g. Geographic Information Systems (GIS) are increasingly advanced and being applied in many expert domains. Limited research or applicative examples exist regarding analysis of geographic variance in drowning incidents.

Objective The objective of this study is to provide an overview of widely accepted spatial analysis tools in order to turn raw drowning event data, into decision making information and communicate geographically varying levels of risk.

Methods From the National Coroners Information System (NCIS), 391 drowning deaths within Victoria, Australia were identified and spatially represented. Closed cases from 1 July 2000 to 30 June 2011 were used. A selection of spatial analysis tools (i.e. Hot Spot Analysis) were selected and executed across different administrative extents (i.e. Local Government Area - LGA), using different parameter and variable inputs (i.e. Census data inputs) to illustrate the different spatial analysis approaches, representations and assessment outputs.

Results Spatial analysis identified drowning 'Hot Spots' within Victorian LGAs based on z-scores greater than 1.65 Standard Deviations (signified on attached maps by orange and red colors) for usual place of residence and place of occurrence.

Significance Spatial analysis of geographically varying drowning incidents permits:

- 1) Summarization of drowning incidents for varying geographic extents and timeframes,
- 2) Identification of significant spatial clusters and outliers,
- 3) Assessment of overall patterns and dispersion, and;
- 4) Modeling spatial and temporal relationships to better apply injury prevention and safety promotion strategies.

DROWNING RISK ASSESSMENT AND COMMUNICATION USING SPATIAL ANALYSIS

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^{1,2}R Andronaco*, ¹B Matthews, ²C Arrowsmith. ¹*Life Saving Victoria, Australia*; ²*RMIT University, Australia*

Background Spatial analysis is a widely accepted injury prevention and safety promotion tool. Dr John Snow's causes of Cholera map