Engaging Communities in Health System Change Through Mapping: The Code Red Project
Patrick DeLuca, MA, GISP
What is Code Red?

• A ground breaking series that ran in The Hamilton Spectator from April 10 – April 17, 2010

• A series that “harshly exposes shocking and unacceptable realities by comparing health and life outcomes in the most and least prosperous parts of Hamilton”. (Howard Elliott, 2010)

• Technically, Code Red can be described as a health mapping project, using health and health care data gathered and processed in a way that allows simple comparisons of broad determinants of health
Code Red Team

- Steve Buist (Journalist, The Hamilton Spectator)
- Neil Johnston (Epidemiologist, Department of Medicine, McMaster University)
- Patrick DeLuca (Lecturer/Researcher, School of Geography and Earth Sciences, GIS/Mapping Expert)
Objectives of Code Red

• To describe the disparities in the determinants of health and health status in Hamilton in a way that is easily comprehended by public

• To stimulate discussion among planners and political leaders about:
  – Polarization of the community in health status
  – Waste of health care resources when people turn to the ER first
  – Fragmentation of health and social services has lead to incoherent accountability for results
The City of Hamilton

[Map of Hamilton City and surroundings with designated areas like Flamborough, Dundas, Ancaster, Hamilton, Stoney Creek, and Glanbrook. The map includes a legend showing Niagara Escarpment, Community Boundaries, 2006 Municipal Boundaries, and 2006 Census Tract Boundaries.]
# The City of Hamilton

<table>
<thead>
<tr>
<th>Communities</th>
<th>Average Dwelling Value</th>
<th>Median Family Income</th>
<th>% Children below low income cutoff</th>
<th>Government Transfers as % of total income</th>
<th>High School Dropout Rate per 1000 Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Former City of Hamilton</td>
<td>$197,819</td>
<td>$58,283</td>
<td>24.0</td>
<td>16.2</td>
<td>87.3</td>
</tr>
<tr>
<td>Lower City</td>
<td>$176,981</td>
<td>$52,118</td>
<td>28.7</td>
<td>18.0</td>
<td>107.9</td>
</tr>
<tr>
<td>Upper City</td>
<td>$227,979</td>
<td>$67,206</td>
<td>17.3</td>
<td>13.6</td>
<td>57.5</td>
</tr>
<tr>
<td>Stoney Creek</td>
<td>$272,447</td>
<td>$76,377</td>
<td>11.6</td>
<td>11.6</td>
<td>42.4</td>
</tr>
<tr>
<td>Glanbrook</td>
<td>$305,495</td>
<td>$81,432</td>
<td>4.1</td>
<td>10.2</td>
<td>39.0</td>
</tr>
<tr>
<td>Ancaster</td>
<td>$396,976</td>
<td>$103,651</td>
<td>3.5</td>
<td>5.8</td>
<td>35.0</td>
</tr>
<tr>
<td>Dundas</td>
<td>$305,856</td>
<td>$79,350</td>
<td>12.3</td>
<td>8.8</td>
<td>27.5</td>
</tr>
<tr>
<td>Flamborough</td>
<td>$367,121</td>
<td>$91,305</td>
<td>3.6</td>
<td>6.8</td>
<td>41.2</td>
</tr>
</tbody>
</table>
Methods

• Sources of Data
  – Health Data collected for April 1, 2006 – March 31, 2008
    • Canadian Institute for Health Information
      – Emergency room visit data and hospital admission records (~ 400,000 observations)
    • Service Ontario
      – Death records (> 12,000 observations)
  – Demographics
    • District School Boards
      – High school completion data by dissemination area, 2006-2008
    • Statistics Canada
      – Variables collected from the 2006 Census of the Population at Census Tract level of geography
Methods

• Simple, intuitive treatments of data rather than standard epidemiological approaches
  – Average length of stay in hospital
  – Hospital admission / 1000 people
  – Urgent hospital admission / 1000
  – Respiratory related emergency room visits / 1000
  – Cardiovascular related emergency room visits / 1000
  – % of emergency room visits with patients reporting no family physician
  – Average Age at Death
Methods

• Simple, intuitive approach to mapping
  – Rather than mapping rates, mapped ranks
  – Used quintiles to map the ranks
  – Used intuitive colours (green-to-red colour ramp)

• Each of the 7 days included
  – Multiple maps
  – Interviews with relevant stakeholders
  – Simple statistics
  – Relevant photographs
The Code Red Series of Publications

21 year difference from worst to best (65 – 86 years)
One neighbourhood had 69% of children below poverty line, at other end 7 had 0%
Hospitalization, emergency room and ambulance use costs ranged from $2080 per person in highest use neighbourhood to $138 per person in the lowest.

One person interviewed indicated that elderly parent waited 154 consecutive days for placement in a long-term care facility (at a cost of $1299 per day in hospital = $200 046)
The Code Red Series of Publications
One neighbourhood had 267 per 1000, while another had 3 per 1000 (89 fold difference)
The Code Red Series of Publications

$87,000 in one north end neighbourhood, $500,000 in one affluent neighbourhood
The Reaction to Code Red

- Code Red is now viewed as the most important journalism project ever put together by The Hamilton Spectator.
- Astounding longevity
  - 221 subsequent articles, opinion pieces, letters to editor (most recently this past Thursday)
The Reaction to Code Red

- It has been discussed in the House of Commons and Provincial Legislature.
- City of Hamilton created a new staff position specifically in response to Code Red:
  - Director of Neighbourhood Initiatives, with mandate to improve neighbourhoods.
  - Has started to roll out action plans for specific neighbourhoods based on their input.
The Reaction to Code Red

• From April 2010 through today authors delivered dozens of speeches and presentations at
  – Hospitals
  – University classes across Southern Ontario
  – Government agencies across Southern Ontario
  – Community groups
  – Academic conferences
The Reaction to Code Red

- Education
  - Mohawk College is using Code Red data to see if they are adequately servicing the areas of the city most in need, have since received 1.5 million for scholarships
  - Both school boards have created curriculum based on Code Red
  - More than 2 dozen university courses use Code Red as part of its curriculum
The Reaction to Code Red

• Health / Health Care
  – City of Hamilton has offered $650 000 to any company to open a full service supermarket in the downtown core
  – McMaster University has shifted their new Health Care Campus from the west end of the city to the downtown area
  – CMA has established a cross country “Town Hall” discussion
  – A team of McMaster nursing faculty obtained a grant to study maternal health outcomes at the neighbourhood level in Hamilton based on Code Red
Concluding Remarks

• Successfully able to describe disparity in determinants of health and health status in Hamilton
• Attracted attention of policy makers
• Identified the waste that occurs in the Provincial Health Care system
• Code Red had a profound effect on the community
  – Attributed to the overall approach in publishing series
    • Simple Metrics for policy makers and lay audience
    • Visualization through maps added a sense of place which people were able to identify with
Concluding Remarks

• Further details can be found in:

THANK YOU