Merging data to inform health policy
NHS suppression, social epidemiology, and health policy planning
Saskatchewan Equity Study (SES)

• Purpose
  • Investigate the breadth and depth of inequalities in health behaviours, services and outcomes in Saskatchewan, and within the regional health authority (RHA) and Regional Inter-sectoral Committees (RIC).
  • Examine the relative impact of individual versus area level socio-economic factors on health inequalities.
Saskatchewan Equity Study (SES)

• Data sources
  • Index of Deprivation (2006 Census)
    • Merci Dr. Pampalon et Dr. Hamel!
  • Health services data (2002 – 2012)
    • Physician billing
    • Hospitalizations
    • Vital statistics
    • Sexually transmitted infections
Saskatchewan Equity Study (SES)

- Data sources
  - Canadian Community Health Survey
    - All cycles
Saskatchewan Equity Study (SES)

• Methods
  • Data linkage

• Analysis
  • Rate Ratios
  • Rate Differences
  • Lorenz Curves (Gini Coefficients)
  • Multilevel models
Saskatchewan Equity Study (SES)

• Health Policy Planning
  • Regional Intersectoral Committee (RIC)
    • Health, education, social services, and justice to develop shared priorities, evaluation plans and outcomes for action
  • Regional Health Authority (RHA)
    • Govern healthcare services the province
RIC

• N = 10
• City/Town dwellings
  • N = 306190
• Rural dwellings
  • N = 70215

Dwelling data was used because population data was not available
RHA

- \( N = 13 \)
- City/Town dwellings
  - \( N = 306190 \)
- Rural dwellings
  - \( N = 70215 \)

Dwelling data was used because population data was not available
Saskatchewan Equity Study (SES)

- Few of these groups have capacity for linkage and analysis
- Crucial for health policy planning
- We will report and give the RIC and RHA their data
Challenges with 2011 NHS

• Index of Deprivation 2006 and 2011
  • Could examine changes in area deprivation and health over time.

• Differential response rate by urban and rural population

• Differential response rate by deprived and non-deprived population
Some Data Analysis

• Census subdivision data
  • Final response rates for census subdivisions (CSDs)
  • CSD Geographies not released
• RHA Maps
• RIC Maps
• Data and R code available at:
  • www.walkabilly.net/Presentations/Conferences.html
NHS - Suppression

• Data Quality:
  • Global non-response rate (GNR) ≥ 50%

• Confidentiality:
  • Population less than 40 persons

• Uninhabited:
  • Population count is equal to zero
Sask Suppression

- Census SubDivision
  - Data Quality Suppression
Urban/Rural Data Quality

<table>
<thead>
<tr>
<th>CSD Type</th>
<th>Valid Dwellings</th>
<th>Suppressed Dwellings: Data Quality</th>
<th>Suppressed Dwellings: Confidentiality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>38,299</td>
<td>31,390</td>
<td>526</td>
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<tr>
<td>City/Town</td>
<td>281,846</td>
<td>24,309</td>
<td>35</td>
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</tbody>
</table>

- Rural dwellings = 55% data quality suppression
- Urban dwellings = 8% data quality suppression
Implications for policy planning

• Regional Intersectoral Committee
  • On average 22% (range = 7% to 35%) of dwellings per RIC are suppressed due to data quality issues

• Regional Health Authority
  • On average 25% (range = 10% to 38%) dwellings per RHA are suppressed due to data quality issues
Data Quality

- Certain populations are systematically underrepresented
  - Assessing socioeconomic differences using census data is already challenging in rural areas
  - NHS rather than census aggravates this problem
- CSDs with low population count could be systematically underestimating socioeconomic differences

Population growth rates

<table>
<thead>
<tr>
<th>City</th>
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<tbody>
<tr>
<td>Saskatoon</td>
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<tr>
<td>Ottawa-Gatineau, Quebec part</td>
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<tr>
<td>Regina</td>
</tr>
<tr>
<td>Calgary</td>
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<tr>
<td>Moncton</td>
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<tr>
<td>Edmonton</td>
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<tr>
<td>Toronto</td>
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<tr>
<td>Ottawa-Gatineau</td>
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<tr>
<td>Ottawa-Gatineau, Ontario part</td>
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<td>Oshawa</td>
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<td>Winnipeg</td>
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<td>Guelph</td>
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<td>Kitchener-Cambridge-Waterloo</td>
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<td>Hamilton</td>
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<td>Barrie</td>
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<td>Kingston</td>
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<tr>
<td>London</td>
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<tr>
<td>Abbotsford-Mission</td>
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</tbody>
</table>
Global Non-Response Saskatoon

The chart shows the number of DA's (Driving Areas) across different quintiles of deprivation. The x-axis represents the total quintile of deprivation, while the y-axis represents the number of DA's. The chart is divided into two categories: # of DA's >50% GNR and Total # of DA's.

- Quintile 1: 0 DA's >50% GNR, 82 Total # of DA's
- Quintile 2: 0 DA's >50% GNR, 58 Total # of DA's
- Quintile 3: 3 DA's >50% GNR, 64 Total # of DA's
- Quintile 4: 3 DA's >50% GNR, 62 Total # of DA's
- Quintile 5: 29 DA's >50% GNR, 84 Total # of DA's
- Null: 3 DA's >50% GNR, 10 Total # of DA's
Implications for policy planning

• Planning decisions are hampered by data:
  • Data is not available
  • Data is not representative of the population
• Evidence based policy making requires strong assumptions
• If certain groups are systematically underrepresented policy may have unintended consequences
Thank you

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  • Website: www.walkabilly.net
  • Presentation, Data and R code available:
    • www.walkabilly.net/Presentations/Conferences.html

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References

• Pampalon R, Hamel D, Gamache P. Health Inequalities In Urban And Rural Canada. Comparing Inequalities In Survival According To An Individual And Area-Based Deprivation Index. *Health & Place*. 2009:1–21.
