Applications and Analysis of a Secondary Database

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What is secondary analysis?

- It is any reanalysis of data collected by another researcher or organization including the analysis of data sets collated from a variety of sources to create time-series or area based sets

(Singleton et al. 1993; Steward and Kamins, 1993)
Advantages of analyzing secondary databases

- Relatively easier to access
- Lower cost to acquire
- Less time to analyze → timely advise to decision making
- Relatively easier to get IRB approval
- It enables the study of trends
- It guides future primary data collection
Yet...despite multiple advantage using administrative data sources remains a major undertaking!
Data to decisions conceptual framework

- Data aggregation & Integration
- Data standardization, cleaning & refinement
- Data Collection/Access (Annually)
- Negotiating Access
- Prioritizing Minimum Dataset
- Knowledge generation
- Knowledge Translation
- Evidence Based Policies and Decisions

Stakeholder Consultations

Knowledge generation

Knowledge Translation

Evidence Based Policies and Decisions
How did we use CNO annual registration database to inform nurses’ policy and practice?
We carried out an analysis of 11 years (1993 to 2003) of the College of Nurses of Ontario (CNO) registration database
Research Questions:

✓ Has the rhetoric about shift of care from hospitals to community translated into a decrease in the number of nurses working in institutions?

✓ Over the period from 1993–2003, how have the numbers and proportion of nurses actively working in Ontario, and of those who are “eligible” but not currently working as a nurse in Ontario, changed?

✓ How has the proportion of nurses working in various sectors & sub-sectors employing nurses changed?
**Methodology: defining work status**

<table>
<thead>
<tr>
<th>Work status</th>
<th>Includes nurses who are</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actives</td>
<td>Registered and working in nursing in Ontario</td>
</tr>
<tr>
<td>Eligible</td>
<td>Registered in Ontario, unemployed and looking for nursing employment; Registered in Ontario, but working outside the province; and Registered in Ontario, but working in non-nursing jobs.</td>
</tr>
<tr>
<td>Not eligible</td>
<td>Retired, Or over age 65</td>
</tr>
<tr>
<td>Missing/Unknown</td>
<td>Work status and employment place unknown</td>
</tr>
</tbody>
</table>
Methodology: defining sector/sub-sector of analysis

<table>
<thead>
<tr>
<th>Sector</th>
<th>Sub-sectors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospital/LTC Sector</td>
<td>Acute, Chronic, LTC, Rehabilitation, Psychiatric, Agency nursing and Other Hospitals</td>
</tr>
<tr>
<td>Community Sector</td>
<td>Community Care Access Centres (CCAC), Community Health Centres (CHC), Community mental health, Community home care, Community agencies and Public health</td>
</tr>
<tr>
<td>Other</td>
<td>Education, Business, Government, Nursing station, Physician office, Self employed and Miscellaneous</td>
</tr>
<tr>
<td>Not Specified</td>
<td>Working as nurses but failing to provide work place information Working as nurses but not specifying whether in or outside Ontario</td>
</tr>
</tbody>
</table>
Main Findings

- Despite considerable rhetoric to the contrary, nurses still tend to work within institutions, yet:
  - A decrease of 8.4% (-5,339) and 14.3% (-3,223) of RNs and RPNs working in the hospital sector; respectively.
  - An increase of 24.5% (+2,286) & 76.9% (+1,213) of RNs & RPNs working in the community; respectively.
    - Despite increase in community homecare agencies lost 30.6% (-1,635) of its workforce.
    - Lower proportion of nurses were available to deliver direct patient care in the community (more in case management).
  - An aging workforce!
Now What?

- To unleash the full potential of CNO DB we need to work on integration and linkage.
- We need for a methodological tool that can help us track the short term career trajectories of nurses.
  - Stickiness & Inflow
We have developed two new concepts as proxies for differentiating the attractiveness of various settings.

- “Stickiness” is defined as the transition probability of a nurse working in a given setting in year “t” remaining in the same setting in year “t+1”
- “inflow” as the proportion of new employees.
Sub-sectors ranked by average stickiness for years (1993-2002)
Average Stickiness: RNs versus RPNS

Subsector

- Chronic
- Acute
- Psychiatric
- Rehabilitation
- LTC
- Agency
- Health Organizations
- Health care agency
- Public health
- CCAC
- Community Mental health
- Business
- Education
- Government
- Nursing station
- Physician office
- Self employed

average stickiness

Chronic: RNs 90, RPNS 80
Acute: RNs 80, RPNS 70
Psychiatric: RNs 85, RPNS 75
Rehabilitation: RNs 70, RPNS 60
LTC: RNs 65, RPNS 55
Agency: RNs 60, RPNS 50
Health Organizations: RNs 55, RPNS 45
Health care agency: RNs 50, RPNS 40
Public health: RNs 45, RPNS 35
CCAC: RNs 40, RPNS 30
Community Mental health: RNs 35, RPNS 25
Business: RNs 30, RPNS 20
Education: RNs 25, RPNS 15
Government: RNs 20, RPNS 10
Nursing station: RNs 15, RPNS 5
Physician office: RNs 10, RPNS 0
Self employed: RNs 5, RPNS 0
Average stickiness of nurses in the hospital sub-sectors by age group
Results: Stickiness varies by sub-sector training and age

- Acute hospitals consistently show the highest stickiness through the period of the analysis.
- RNs had higher stickiness than RPNs.
- Stickiness is lowest for:
  - Young nurses (aged 18-33) and
  - Nurses nearing retirement age (over age 55)
- This may reflect difficulties in the nursing employment market
- It may hinder the ability to recruit and train the next generation of nurses
Now What?

- We have learned the stickiness of active nurses
- How about learning about the career trajectories of nurses leaving the hospital sector?
- Do the short term career trajectories of nurses leaving the hospital sector indicate that they are moving to the community?
Objective:

- The aim of this study was to analyze the career trajectories of nurses one year after leaving hospitals.
- Key question: Where Ontario nurses displaced from hospitals working in the community a year after leaving hospitals?
Sub-categorization of Eligible Nurses

All nurses registered with CNO

Eligible nurses
- Not Working
  - Seeking
  - Not Seeking
- Work non nurse
  - Not Seeking
  - Seeking
- Work outside

Active nurses
- Community
- Other
  - Hospital/LTC

Colors:
- Red: Dropout
- Yellow: Seeking
- Green: Active
Main Findings

- For every nurse practicing nursing in any non-hospital job a year after leaving hospitals an average of 1.3 nurses dropped out of Ontario’s labor market.
- For every nurse practicing nursing in the community sector a year after leaving hospitals, 4 nurses dropped out of Ontario’s labor market.
- The proportion dropping out of Ontario’s market was higher for RPNs (compared to RNs), increased with age and decreased with degree of casualization in nurses’ jobs.
Conclusion

- The assumption that nurses displaced from hospitals will automatically find a job in other sectors of nursing employment is not accurate.
- Differences in skills needed in different sub-sectors of nursing employment should be clarified and incorporated in nursing educational programs.
- Policymakers must pay careful attention to the need to retain highly skilled nurses when they restructure healthcare systems.
• **Now What?**

  • We have learned about the career trajectories of nurses leaving the hospital sector?
  
  • How about learning about the career trajectories of inactive nurses (those that are registered and not working)?
Objective:

- Analyze the career transitions of nurses registered with the College of Nurses Ontario but not working in the province's nursing labor market.
- Determine the proportion of these nurses rejoining the active nursing workforce and examine the variation by inactive sub-category and age group.
Methodology

- Inactive nurses were then sub-categorized into five mutually exclusive sub-categories:
  - ‘not working and seeking nursing employment’,
  - ‘working in non-nursing and seeking nursing employment’,
  - ‘not working and not seeking nursing employment’,
  - ‘working in non-nursing and not seeking nursing employment’ and
  - ‘working outside Ontario’

- One-year career movements of nurses were tracked by generating 13 year-to-year transition matrixes.
Average stickiness of inactive nurses by sub-category (1993-2006)
Percent distribution of Inactive nurses rejoining the Active workforce in Ontario by age group (aggregated 1993-2006)
Main findings

- Nurses not currently working in nursing and seeking a nursing job might get discouraged and leave nursing if they do not find an appropriate job in a timely manner.
- Not seeking nursing employment is a heterogeneous category, and may include those on leave who may subsequently rejoin the active workforce should appropriate work opportunities arise.
- The proportion of nurses returning to the active workforce decreases with age irrespective of the eligible sub-category.
Our most recent analysis

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Leveraging Data to Make Better Decisions - An Overview of Databases

Webinar Series

![Graph showing the number of nurses from 2004-05 to 2009-10 for different categories.]

- **Balance of nurses to community**: 538, 326, 577, 419, 510, 632
- **All nurses from community to hospital**: 946, 1023, 1022, 1305, 1381, 1243
- **All nurses from hospital to community**: 1484, 1349, 1599, 1724, 1891, 1875
Main findings

- Analysis revealed an active movement of nurses between the hospital and community sectors during the period of analysis, with a positive balance of 3002 nurses toward the latter. We measure that around 60% of nurses gained in the community sector across the period of analysis are coming from hospitals,
- This necessitates the establishment of adequate orientation and preceptorship opportunities to ensure that those nurses possess the required competencies and skills to practice independently in the community.
- A wide variation in the stickiness of community subsectors of employment was noted, with those subsectors involving direct patient care and community visitation displaying relatively lower stickiness figures.
- Subsector stickiness increased with the offering of full-time jobs and the employment of Registered Nurses.
Lessons Learned: Success Tips!
Choose a high impact research idea/question that secondary databases could answer
Put together a multi-disciplinary team
Use **appropriate** design, methods, tools & analyses to ensure the database is answering your question.
Quantitative database analyses is enriched and complemented by qualitative research methods
Disseminate findings widely
Never give up!
Additional Questions?

- How to ensure alignment of interest between database owners and researchers?
- How to strike the balance between the length and comprehensiveness of annual registration renewal forms?
- How to ensure update of administrative data collection instruments without jeopardizing integration across time?
- What can be done to facilitate access to secondary data sources?
Questions?

Please give us your feedback:


The PowerPoint slides will be available on www.nhsru.com later in the week.
Questions