



Leaving Nursing: Predictors of Nursing Drop-out

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How long do nurses stay in nursing?

Many ways of approaching this:

- Perform descriptive statistics of how many are working each year?
- Survey nurses at one point in time and ask them about how long they have stayed in the profession?
- Obtain a few years of data and look at transition probabilities from year to year?

Or (if you can get the data), construct a linked longitudinal dataset and look at the history of particular nurses and how long they stay.

“Survival” analysis

We employ a Cox-proportional hazard model which allows us to incorporate:

- Dynamic aspects of nurse retention (model the same nurse over time, rather than aggregate numbers)
- Impact of multiple characteristics (age, sex etc.) simultaneously
- Career trajectories (allowing for departures and returns)

How deep is the pool?

The pool of nurses can be variously defined as including those who currently:

- Work as nurses in that jurisdiction ('actives')
- Are registered but not working ('eligibles')
- Are registered but work in another profession
- Are registered but work outside that jurisdiction
- Are NOT registered & are under 65 yrs of age

We focus here on predictors for the retention of those working in nursing in Ontario (i.e. active pool).

Data Sources

- To practice in Ontario, nurses must register annually with the Ontario College of Nurses (CNO).
- CNO data for 1993-2004 were merged on a unique registration number.
- This analysis is based on 50% sample of those registered in Ontario :
N = 161,933 RNs and 41,392 RPNs.
- Database includes: Demographic information (age, sex, education), Employment status (FT, PT, casual), Sector of employment, region, etc.

Regression Model

Relative likelihood of 'drop-out' as a function of:

- Additional education (over and above nursing degree)
- Multiple employers (Y/N)
- Working part-time/casual (vs. full-time)
- Age (broken into sub-categories)
- Sex (M/F)
- Sector of employment (Long-term Care, Acute Hospital, Community, Other)
- Region of residence
- Cohort

Ran Separate analysis for RNs and RPNs.

Baseline: RN/RPN with no additional education beyond nursing degree, only one employer, working full-time, living in the Central/Toronto region, aged 40-44 yrs, working in the Acute Hospital sector

- Used S+ to run analysis on 50% sub-samples (because program would otherwise still be running!)
- Allowance is made for exit and re-entry into workforce within window of study (i.e., controls for temporary absences, including child rearing leaves)
- Estimation included frailty parameters to allow for left and right hand censoring of observations.

Hazard Rates

- Analogous to relative risk ratios.
- If Hazard rate > 1 then factor is associated with greater likelihood of dropout (vs. base case).
- If Hazard rate < 1 then factor is associated with lower likelihood of dropout.
- Statistically significant results at .05 level are designated with.*

Determinants of 'Drop Out' from Nursing in Ontario - Training/Employer factors

| Variable | RN | RPN |
|-------------------------|-------------|-------------|
| | Hazard rate | Hazard Rate |
| Additional Education | 1.07* | 1.01 |
| Multiple Employers | 0.71* | 0.75* |
| Part-time | 1.38* | 1.50* |
| Cohort 1 (94/97, 94/04) | 1.346* | 1.16* |
| Cohort 2 (98/04) | 0.126* | |
| Male | 1.27* | 1.15* |

Baseline: RN/RPN with no additional education, only one employer, working full-time, living in the Central/Toronto region, aged 40-44 yrs, working in a Hospital
*Significant at the .05 level

Determinants of 'Drop Out' from Nursing in Ontario - Region variables

| Variable | RN | RPN |
|--------------|-------------|-------------|
| | Hazard rate | Hazard Rate |
| South west | 1.12* | 1.03 |
| Central west | 1.03 | 0.93 |
| Central east | 1.06* | 0.96 |
| East | 1.15* | 0.97 |
| North east | 1.10* | 1.05 |
| North west | 1.04 | 0.91 |

Baseline: RN/RPN with no additional education, only one employer, working full-time, living in the Central/Toronto region, aged 40-44 yrs, working in a Hospital
*Significant at the .05 level

Determinants of 'Drop Out' from Nursing in Ontario - Age variables

| | RN | RPN |
|-------------|-------------|-------------|
| | Hazard rate | Hazard rate |
| 55 Yrs over | 10.61* | 6.45* |
| 50-54 Yrs | 2.46* | 1.64* |
| 45-49 Yrs | 1.62* | 1.18* |
| 35-39 Yrs | 1.07 | 0.97 |
| 30-34 Yrs | 1.28* | 1.08 |
| 25-29 Yrs | 1.45* | 1.18* |
| 20-24 Yrs | 1.14* | 1.12* |

Determinants of 'Drop Out' from Nursing in Ontario - Sector variables

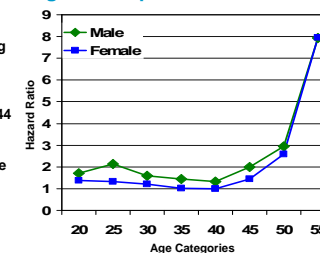
| Variable | RN | RPN |
|-----------|-------------|-------------|
| | Hazard rate | Hazard Rate |
| LTC | 1.23* | 1.06 |
| Community | 1.24* | 1.44* |
| Other | 1.59* | 1.71* |

Impact of Age on Drop-out

Sex

- Males at higher risk of leaving the profession until age 50 at which point risk increases dramatically for both sexes
- 'Drop-out' risk lowest for 40-44 group & increases for people younger than 40 yrs old
- But note blip for the 25-30 age group!

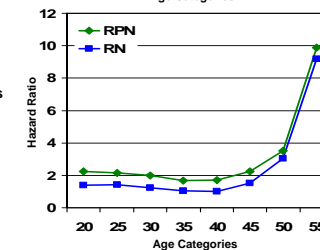
Relative to base case (all females aged 40-44 years)



RN/RPN

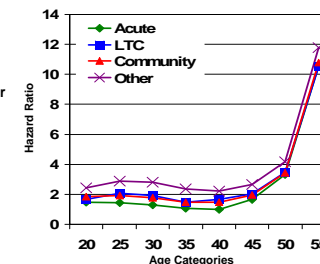
- RPNs significantly (5% level) more likely to drop out vs RNs
- However, at older ages RPNs resemble RNs

Relative to base case (all RNS aged 40-44)



Sector

- 40-44 yrs 'drop-out' rate is higher for LTC, Community & Other vs Acute Hospital sector
- After age 50, same 'drop-out' risk for LTC, Community & Acute Hospital
- Relative to base case (all nurses age 40-44 in Acute Hospital sector)



Policy Implications

RPNs are more likely than RNs to 'drop-out' (except for the LTC sector) The Other, Community, and LTC sectors have higher risk of 'drop-out' than do Acute Hospitals

Implication of shift away from hospitals?
Part time/casual work associated with higher risk of drop out (but multiple employers as independent factor are not – are these nurses constructing de facto full time jobs?) Policies designed to curb the loss of nurses to the profession must therefore be sector specific Higher departure rates among younger nurses suggest that shortages may be perpetuated into the future unless policy actions are taken

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