

# Dying in a Nursing Home: A Cancer Registry Approach to Understanding Care at End of Life with Cancer

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# Outline

- Research themes
- Rationale
- Data sources
- Technical problems and partial solutions
- Preliminary results
  - Univariate
  - Regression

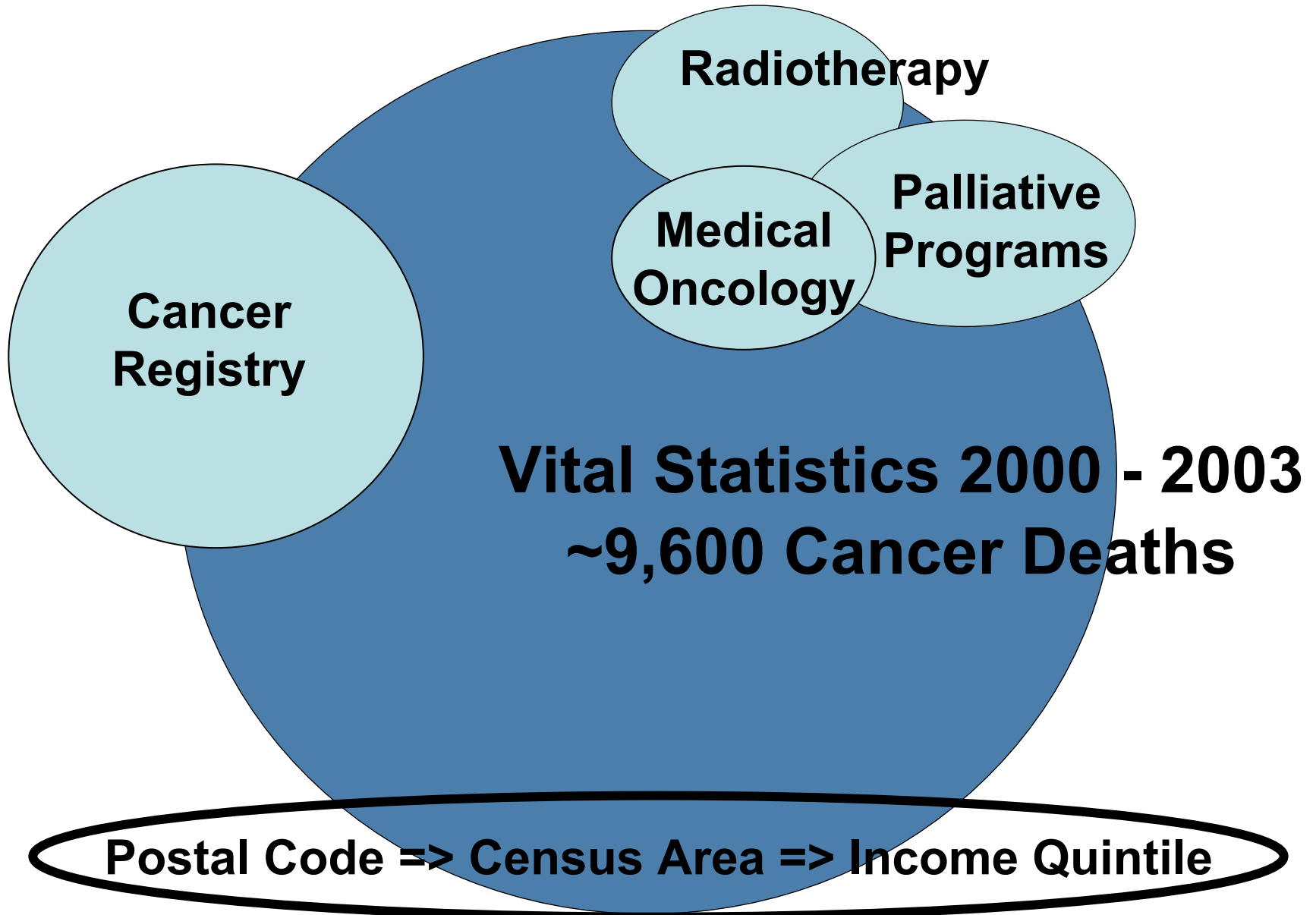
# Research Objectives

- Using cancer registry data to
  - Begin surveillance of the nursing home as a place of end of life care
  - Describe other correlates of out-of-hospital death, in particular, the use of palliative care services
    - Palliative radiotherapy
    - Chemotherapy at end of life
    - Palliative care programs

# Rationale

- Half of people diagnosed with cancer will die of cancer.
- Death certificate data in cancer registries can be linked to administrative data to plan for and monitor end of life care provision
- With an aging population, the need for palliative care programs as well as long-term care facilities will increase.

# Nova Scotia Data Sources



# Data Fields

- Death Certificate
  - Usual Residence (postal code, street address)
  - Place of death (hospital or other address)
  - Cancer cause of death
- Census Data (linked to postal codes)
  - Neighbourhood income quintiles, SES, ethnicity
- Administrative data
  - List of registered nursing homes

# Technical Problems

- Not all nursing homes registered
- Alternate spellings / names of facilities
- Some address fields with postal code only
- Postal codes not unique to nursing homes
- Place of death is nursing home, usual residence is *not* nursing home
- Neighbourhood income not defined for institutions

# Identifying Nursing Home Residents (1)

- Names, alternate spellings from list of nursing homes
- Specific keywords: 'Home', 'Care', 'Lodge', 'Haven', 'Manor', 'Manour' ...
- Common postal codes evaluated manually, corresponding addresses added where necessary



# Identifying Nursing Home Residents (2)

- (exclusion of non-nursing home residents)
- Some residential addresses incomplete
- List postal codes associated with identified Nursing Homes
- Identify those probably *not* nursing home among addresses with only a postal code (ie, no street address)

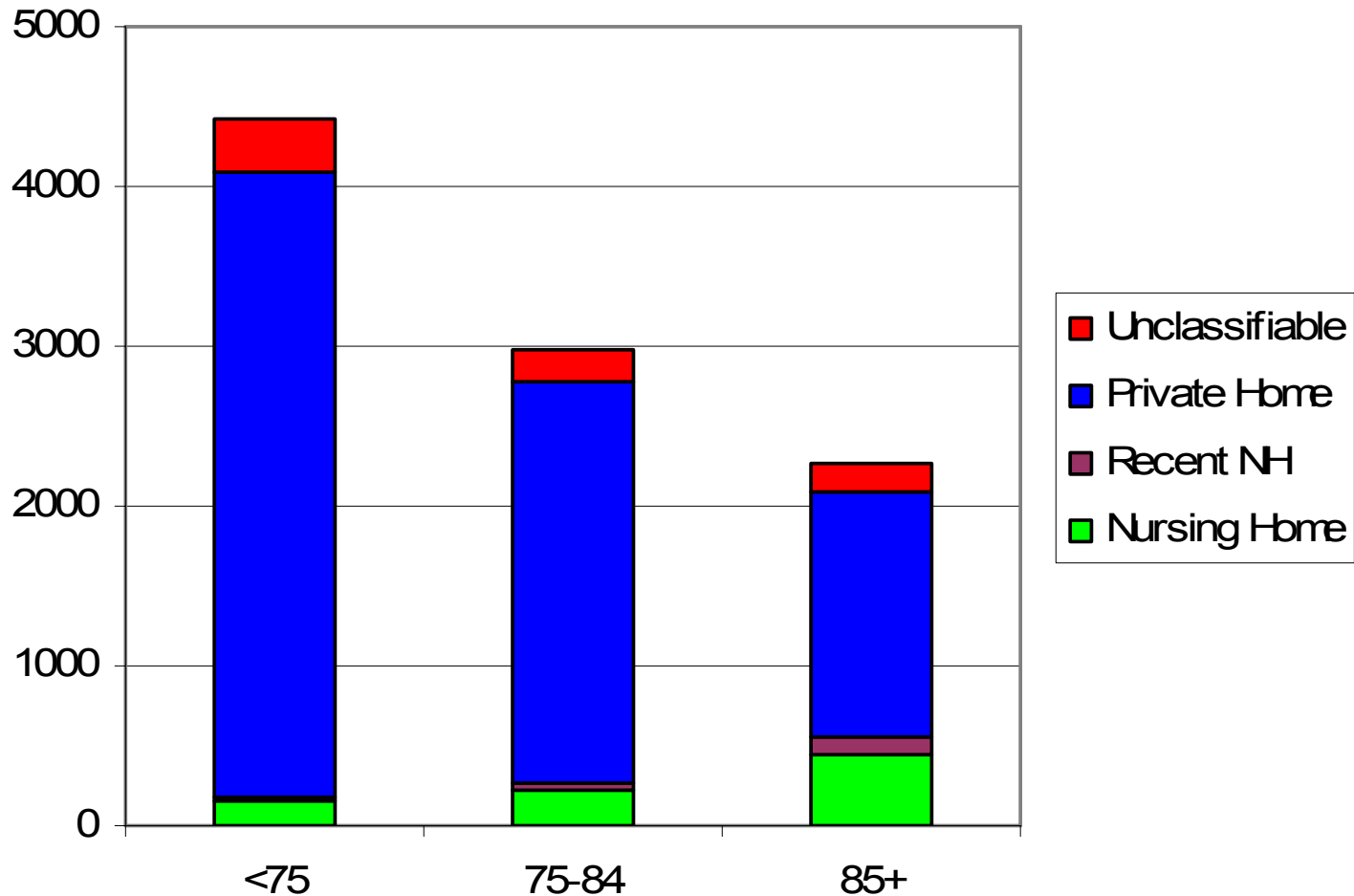
# Classification of Place of Death

- Hospital (72%)  
data field reserved in VS data for this use
- Private Residence (20%)
- Nursing Home (7%)  
- address of place of death is identified as nursing home by algorithm described
- Unclassified (1%)

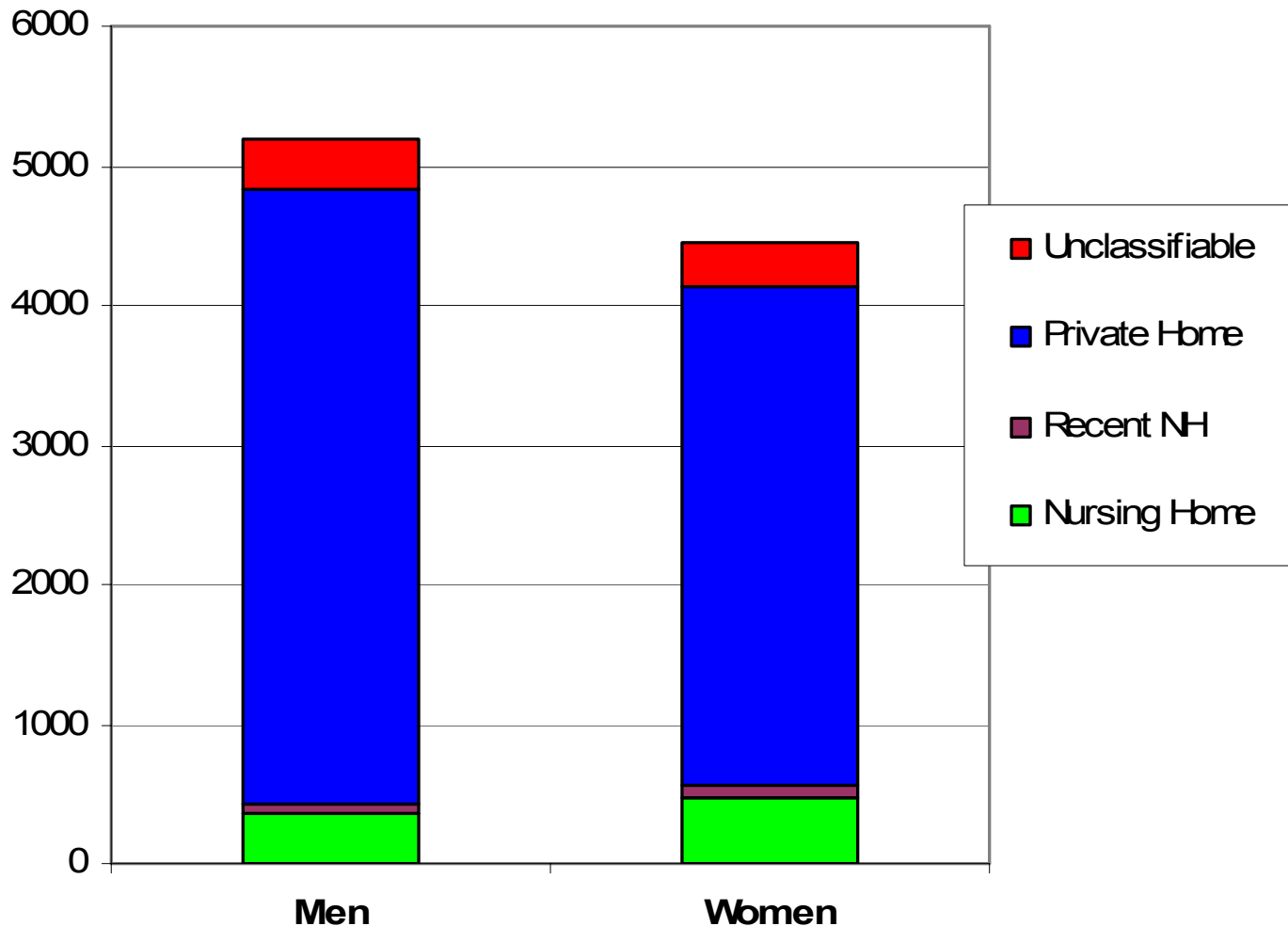
# Classification of Residence

- Long-term Nursing Home: (8%)  
address of usual residence = nursing home
- Recent / Ambiguous Nursing Home: (2%)  
place of death nursing home *and*  
address of usual residence *not* nursing home
- Private Residence: (83%)  
place of death *not* nursing home *and*  
-detailed residence address *not* nursing home *or*  
-residence postal code *not* associated with nursing home
- Unclassified: (7%)  
no address detail, nursing home postal code

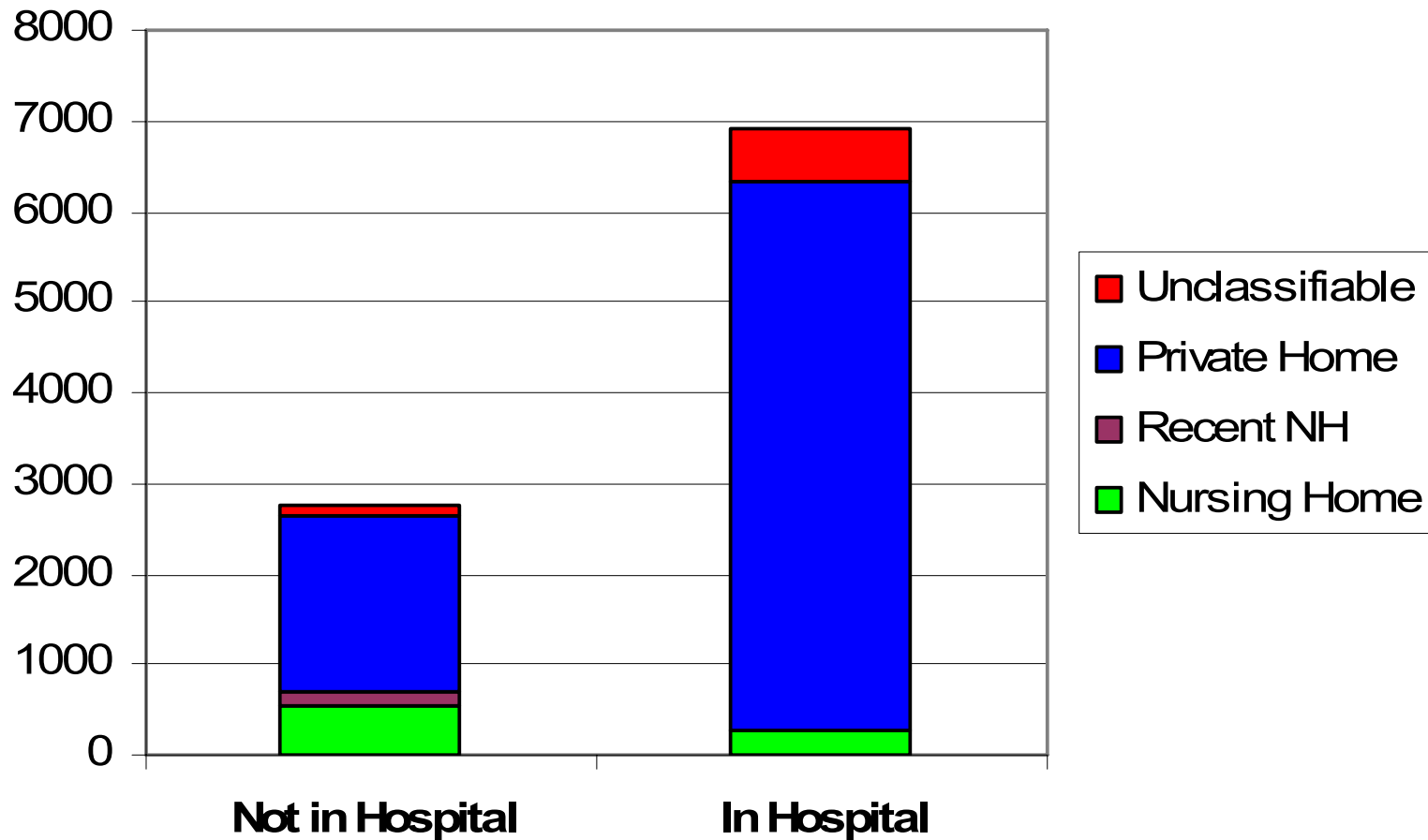
# Residential Type by Age Cancer Deaths in Nova Scotia, 2000-2003



# Residential Type by Gender Cancer Deaths in Nova Scotia, 2000-2003



# Place of Death for Cancer Deaths in Nova Scotia, 2000-2003



# Other Covariates

- In counties with cancer centres:
  - Palliative Care Program
  - Chemotherapy in last 6 months of life
- Palliative Radiotherapy (in last 9 months of life)
- Previous Radiotherapy (in period prior to last 9 months of life)
- Neighbourhood Income Quintile (not for nursing homes)

# Effect of Cancer Cause of Death

- In regions with Cancer Clinics: no effect of cause of death on out-of-hospital death
- In regions more distant from Cancer Clinics (no organised palliative care programs, maybe poorer access to other services) noticeable effects of cause of death

Gastro-Intestinal, Genito-Urinary ↑ out-of-hosp

Hematologic, Lymphomas ↓ out-of-hosp



# Odds\* of Dying Out of Hospital

<b>Factor</b>	<b>Odds ratio</b>	<b>95% Conf. Limits</b>
Private Home	1	
Nursing Home	6.9	(5.8 - 8.1)
Unclassified	0.8	(0.7 - 1.0)
Previous RadioT	1.4	(1.2 - 1.6)
Palliative RadioT	1.1	(0.9 - 1.2)
age < 75	1	
74-84	1.0	(0.9 - 1.2)
85+	1.4	(1.2 - 1.6)
Men	1	
Women	1.2	(1.1 - 1.3)

\* Adjusted for Cancer Cause of Death

# Odds\* of Dying Out of Hospital (Nursing Home Residents only)

<b>Factor</b>	<b>Odds ratio</b>	<b>95% Conf. Limits</b>
Previous RadioTx	1.3	(0.8 - 2.2)
Palliative RadioTx	1.2	(0.7 - 2.0)
age < 75	1	
74-84	1.7	(1.1 - 2.6)
85+	3.4	(2.2 - 5.2)
Men	1	
Women	1.4	(1.0 - 2.1)

\* Adjusted for Cancer Cause of Death

# Odds\* of Dying Out of Hospital non-Nursing Home Residents, in region of Cancer Clinics

<b>Factor</b>	<b>Odds ratio</b>	<b>95% Conf. Limits</b>
Income Q1	0.7	(0.6 - 1.0)
Q2	0.9	(0.7 - 1.2)
Q3	1.0	(0.8 - 1.3)
Q4	1.1	(0.9 - 1.5)
Q5	1	
Palliative Care Program	2.4	(1.9 - 3.1)
ChemoTx	1.2	(1.0 - 1.5)
Previous RadioTx	1.3	(1.1 - 1.7)
Palliative RadioTx	1.1	(0.9 - 1.3)
Age < 75	1	
75 - 84	1.0	(0.8 - 1.2)
85 +	1.6	(1.2 - 2.0)
Women	1.2	(1.0 - 1.4)
Men	1	

\* Adjusted for Cancer Cause of Death

# Odds\* of Dying Out of Hospital non-Nursing Home Residents, entire province

<b>Factor</b>	<b>Odds ratio</b>	<b>95% Conf. Limits</b>
Income Q1	0.8	(0.6 - .9)
Q2	1.0	(0.8 - 1.1)
Q3	0.9	(0.7 - 1.0)
Q4	1.1	(0.9 - 1.3)
Q5	1	
Previous RadioTx	1.4	(1.2 - 1.6)
Palliative RadioTx	1.1	(0.9 - 1.2)
Age < 75	1	
75 - 84	1.0	(0.9 - 1.1)
85 +	1.1	(1.0 - 1.3)
Women	1.2	(1.0 - 1.3)
Men	1	

\* Adjusted for Cancer Cause of Death