Community Level SES and Late Stage Colorectal Cancer in Oregon

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Oregon State Cancer Registry
Presentation Objectives

- OSCaR
- Purpose
- Colorectal cancer in Oregon
- Methods
- Preliminary Results
  - Community level predictors
  - Risk maps
Oregon State Registry (OSCaR)

- Created 1995
- Reference date January 1, 1996
- 19,000+ cases annually
- NAACCR certified
  - Every year of complete data (4 gold, 1 silver)
- 10 FTE; 3 part-time contractors (CTR)
  - 2 research analysts
Colorectal Cancer - Incidence and Mortality
Observed Rates and Fitted Historical Trends
Males and Females, 1996 - 2001

Rate per 100,000

Year

Male Incidence Observed
Male Incidence Trend
Male Mortality Observed
Male Mortality Trend
Female Incidence Observed
Female Incidence Trend
Female Mortality Observed
Female Mortality Trend
Stage at Diagnosis
Colorectal Cancer
Oregon 2001

- Localized: 35%
- Regional: 40%
- Distant: 18%
- In situ: 7%
% Early Stage, Colorectal Cancer
Oregon, Male and Female

Year


Male Female

0% 10% 20% 30% 40% 50%
Routine Colon Screening, 50+
Urban/ Rural Continuum, Oregon 2001

Frontier  Non-Metro  Metro

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Frontier</th>
<th>Non-Metro</th>
<th>Metro</th>
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<tbody>
<tr>
<td>20%</td>
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<td>35%</td>
<td>36%</td>
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Legend:
- Frontier
- Non-Metro
- Metro
Colorectal Cancer – Oregon

Stage
- Differs by age, sex, ethnicity, population density, time
- Based on screening rates

Screening
- Age, sex, location, time
- Based on access
  - Financial?
  - Cultural?
  - Location of clinics/providers?
Colorectal Cancer Mortality
1997 - 2001
Regional Variation
Purpose

- Incorporate GIS into normal registry operations
  - Standardized in-house geocoding

- Map cancer data
  - Evaluate potential reporting problems by location
  - Evaluate potential at risk areas in need of screening
    - Community characteristics
    - High percent late stage
Methods

- Ecological study
- Combine community level data with case level data based on location
  - Census
  - BRFSS (pending)
- Univariate analysis for potential predictors
- Regression model for at risk communities
Case Selection

- Person versus cases (first primary fitting criteria)
- Years 1996-2001
- SEER CRC definition
  - Excluding lymphomas
- Age 50 – 89
- No unstaged cases except for DCOs
- No autopsy unless CRC is cause of death
Late Stage County
Late Stage Tract
Late Stage Block Group
Variables

Density
- Calculated, % living on farm &/or rural

Distance from services
- (averaged based on cases in community)
- GI specialists & Internists

SES
- Age distribution, race distribution, language isolation, poverty, education level, working class, median income
Community Predictors

County Level
- distance from GI or internist

Tract Level
- Percent living below poverty
- Percent living on farm
- Percent living on rural
Community Predictors cont…

* Block Group Level
  - Percent aged 50+
  - Percent Hispanic
  - Percent with < 9th grade education
  - Percent living below poverty (all & 65+)
  - Calculated density and percent living on rural
  - Percent isolated by language ability
  - Percent working class
Census Tract Analysis

Regression Model

- \( \geq 20\% \) of people living on farm land
- \( \geq 30\% \) of people living below poverty

Mutually exclusive

- Density is factor in rural areas
- Poverty is factor in urban areas
At Risk Counties
At Risk Tracts and Late Stage
Major Limitations

- Ecological study design
  - Identify potential associations not prove causality
- Small area/small number analysis
- Regional differences as confounders
  - Reporting
  - Geocoding
  - Clinical services
- Case level characteristics
  - Age, sex, ethnicity, histology, year of diagnosis
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