

2. Rural-Urban Differences in Canadian Medical practice: the Importance of Physician, Patient and Geographic Characteristics

Hogenbirk, John C. ¹

Pong, Raymond W. ¹

Strasser, Roger ^{2 1}

Tesson, Geoff ^{1 2}

¹ Centre for Rural and Northern Health Research

² Northern Ontario School of Medicine

Rural-Urban Practice Differences

- Rural-Urban differences in medical practice characteristics have implications for:
 - Medical education
 - CME and professional development
 - Organization and delivery of health services
 - Nature of the services that support the delivery of medical care

Rural-Urban Practice Differences?

- Previous talk provided evidence that, relative to urban physicians, remote physicians...
 - Are younger, more likely to be male
 - Offer more medical services
 - Perform more procedures
 - Spend more time in the ED
 - More likely to be in a FP group practice than in Solo practice or in a FP/SP group practice

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Research Question

- What factors account for the variability in the number of (a) medical services and (b) procedures?
- Factor Groups:
 - Physician characteristics (age, gender)
 - Patient characteristics
 - Geo-Political boundaries
 - Practice setting/organization

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Methods - Survey

- Survey conducted in collaboration with the College of Family Physicians of Canada
- Questionnaire sent in 2001 to all family physicians and general practitioners in Canada
- 13,088 replies
 - 51% response rate

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Methods -Geographic Categories

- Statistical Area Classification (SAC), developed by Statistics Canada
- Based on commuter flows to large urban areas
- Proxy for access to tertiary care institutions
- Postal codes matched to CSDs, to SAC type

Urban	Small Urban	↔	Remote
CMA 100,000+	CA 10,000- 99,999	Strong/ Moderate MIZ 5-50% commuter flow	Weak/ No MIZ 0-<5%

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Methods - Statistical Analyses

Screen for significant factors

- Factorial ANOVAs for each Factor Group (e.g., physician, patient, geo-political, practice setting)
- Identify important factors & interactions
 - Statistical significance: $p \leq 0.05$
 - Effect size, Treatment magnitude: partial Eta squared ≥ 0.01

Derive final model

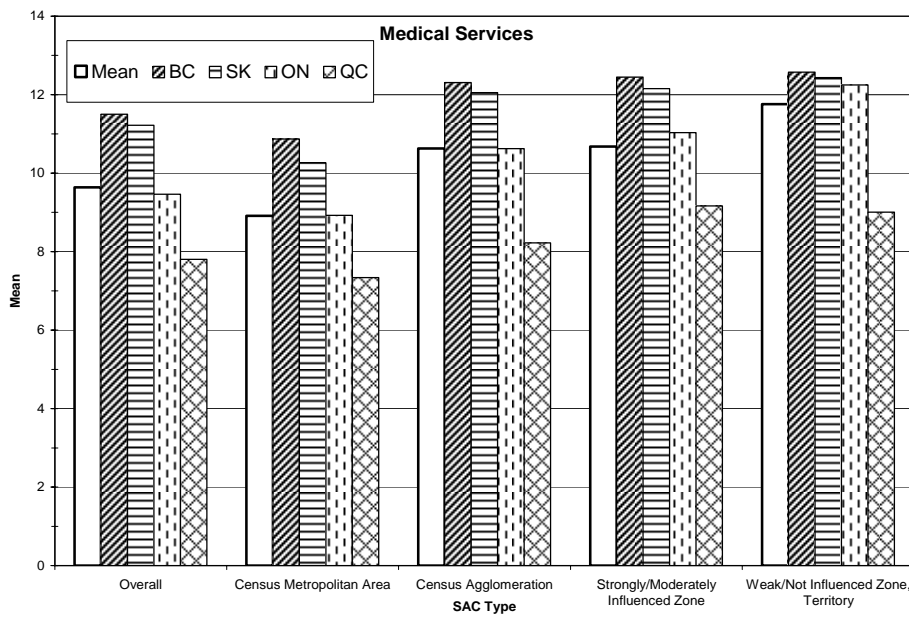
- Factorial ANOVA
- Post hoc means tests (Tukey's HSD, Dunnett's C)

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Results: Medical Services



Results: Medical Services

- Province/Territory (13% of variability based on partial Eta-squared)
 - (Previous slide presented mean, top 2 and bottom 2 provinces)
- Serve children (0-12 years) (4%)
 - 10.1 services in practices that serve children, 7.6 services in practices that **do not** serve children (statistically significant)
- Main practice setting (3%) (examples below)

~6 services	~10 services
Nursing home (6.0)	Private office/clinic (10.3)
Hospital in-patient (6.1)	FM teaching unit (10.0)
ED (6.1)	Community clinic (9.3)

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Results: Medical Services

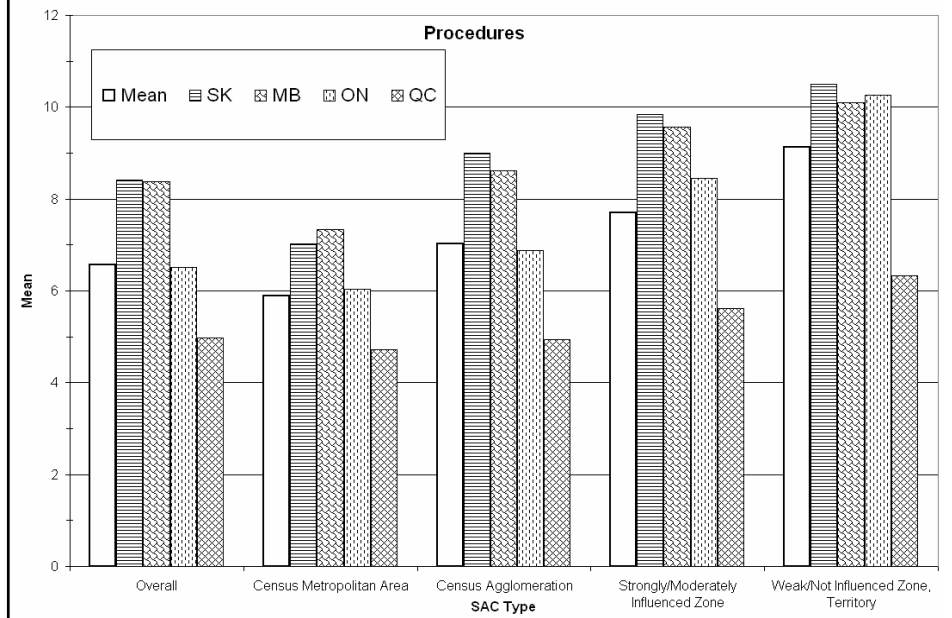
- Physician age (2%)
 - 25-54y (10.3 services) > 55-64 (9.8) > 65+ (7.8)
- Physician gender (2%)
 - Male (9.9) > female (9.1)
- SAC type (1%)
 - CMA (9.4) < S/M, CA (11) < W/N (12)
- Organization of main practice (1%)
 - FP/SP (9.2) <= Solo (9.4) < FP group (10.5)

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Results: Procedures



Results: Procedures

- Province/Territory (14% of variability)
(Previous slide presented mean, top 2 and bottom 2 provinces)
- Physician gender (5%)
 - Male (7.1 procedures) < female (5.7)
- Organization of main practice (3%)
 - Solo (5.8) < FP/SP (6.1) < FP group (7.0)

Results: Procedures

- Type of main practice setting (2%) (examples below)

~4 procedures	~ 8 procedures
Nursing home (3.9)	ED (8.0)
Hospital in-patient (4.2)	FM teaching unit (7.6)

- SAC type (2%)
 - CMA (5.9) < CA (7.1) < S/M (7.8) < W/N (9.3)

Summary (1 of 2)

- Provincial/territorial boundaries account for 13-14% of the variability in
 - Number of medical services
 - Number of procedures
- FP gender accounts for 2-5%

Summary (2 of 2)

- Main practice setting: 2-3%
- Organization of practice: 1-3%
- Statistical Area Classification: 1-2%
- In the final model, interactions between gender, age and SAC type did not meet the *a priori* criterion for partial Eta-squared ($p \geq 0.01$)

Caveats

- CMA, CA, S/M, W/N are categories along an urban-rural continuum
- Disproportionate response rates to survey
 - 48% of males vs. 57% of females responded
 - 25% from PEI vs. 66% from YK/NWT/NU
- Model accounts for 33% of variability in data—3-times more than univariate ANOVA of previous presentation—but some assumptions are suspect

Conclusions

- Political boundaries explain 3-5 times more variation than any other factor
 - Up to 7 times more than SAC
- Future analyses may help tease out other impacts of geography
 - Different statistical methods (logistic regression)
 - Separate analyses for each province/territory
 - Different ways of categorizing the rural-urban continuum

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For more information: www.cranhr.ca
jhogenbirk@laurentian.ca

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