Effectiveness of policies to improve diabetes care and outcomes: the case of British Columbia and Alberta

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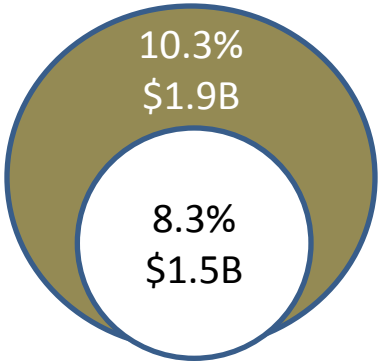
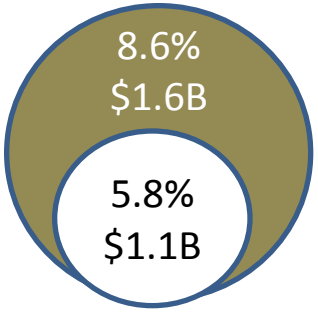
Background

- Importance of diabetes in Canada:
  - 2 Million Canadians affected
  - Costs and prevalence are expected to grow between 2013 and 2020:

British Columbia



Alberta



- Main source of direct costs of diabetes are related to hospitalizations
- Diabetes is an ambulatory care sensitive condition (ACSC) = hospitalizations are potentially preventable
- Hospitalizations rates are a measure of quality of primary care
- Reducing hospitalizations for ACSC is a priority for governments in BC and in Alberta

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Background: Primary Care Reforms

Province	Pre-2003	Changes introduced	Evidence
British Columbia	- Mostly solo FFS practices	- Financial incentives for care management: $125 for diabetes care (can only be charged once per patient per year)	- incentive associated with better diabetes care and outcomes -HbA1c, blood pressure, serum creatinine and cholesterol (McGovern et al 2008) - Lower hospital costs (Lee et al 2010)
Alberta	- Mostly solo FFS practices	- Creation of Primary Care Networks (PCNs): groups of family physicians with funding to hire other providers; funding based on patient enrolment	- Characteristics of primary care practices associated with better preventive care (Dahrouge et al 2012)

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Objective

- Evaluate the effect of policy changes targeted at improving care and patient outcomes on diabetes hospitalizations in British Columbia and Alberta.

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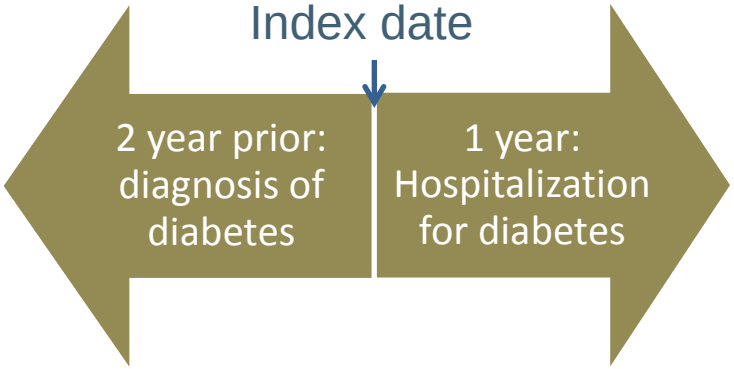
Methods

- Data sources:
  - Discharge Abstract Database
  - Physician Billings
- Study period: April 1, 1996 to March 31, 2010
- Study population:
  - People with a diagnosis of diabetes at the index date for each year & province
- Construction of the diabetes hospitalization rate for year y:

$$\text{Rate}_y = \frac{\text{\# of diabetes hospitalizations}}{\text{\# of diabetics}} * 100$$



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Methods

- Study variables:

Outcome measure	Independent Variables
age-sex standardized rate of diabetes hospitalization per 100 diabetic patients	- Post-2003 (after reform) - Year - Post-2003*BC (interaction term)

- Statistical Analysis: difference-in-difference:

$$\text{Rate} = \beta_0 + \beta_1 * \text{post2003} + \beta_2 * \text{year} + \beta_3 * (\text{post-2003} * \text{BC}) + \varepsilon$$

Where:

β_0 = constant,

β_1 = coefficient of the period post-2003,

β_2 = coefficient of the year,

β_3 = coefficient of the interaction between post-2003 and BC (incentive)

ε = error term

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Results

Table 1. Descriptive statistics from 1998 and 2009

Variable	Alberta		British Columbia	
	1998	2009	1998	2009
Number of diabetic patients	63,583	157,208	100,886	250,376
Number of hospitalizations	1,966	1,986	1,611	1,890
Percentage of males	55.4	56.5	55.5	55.5
Age group distribution:	(%)	(%)	(%)	(%)
1 to 19	2.69	1.86	1.80	1.32
20 to 39	10.77	9.03	8.98	7.03
40 to 59	41.69	44.42	40.43	41.69
60 to 75	44.86	44.68	48.79	49.95

Table 2. Predictors of diabetes hospitalization

Variable	Fixed Effects
Year	-0.128***
Post-2003	-0.216
Post-2003*BC	0.55***

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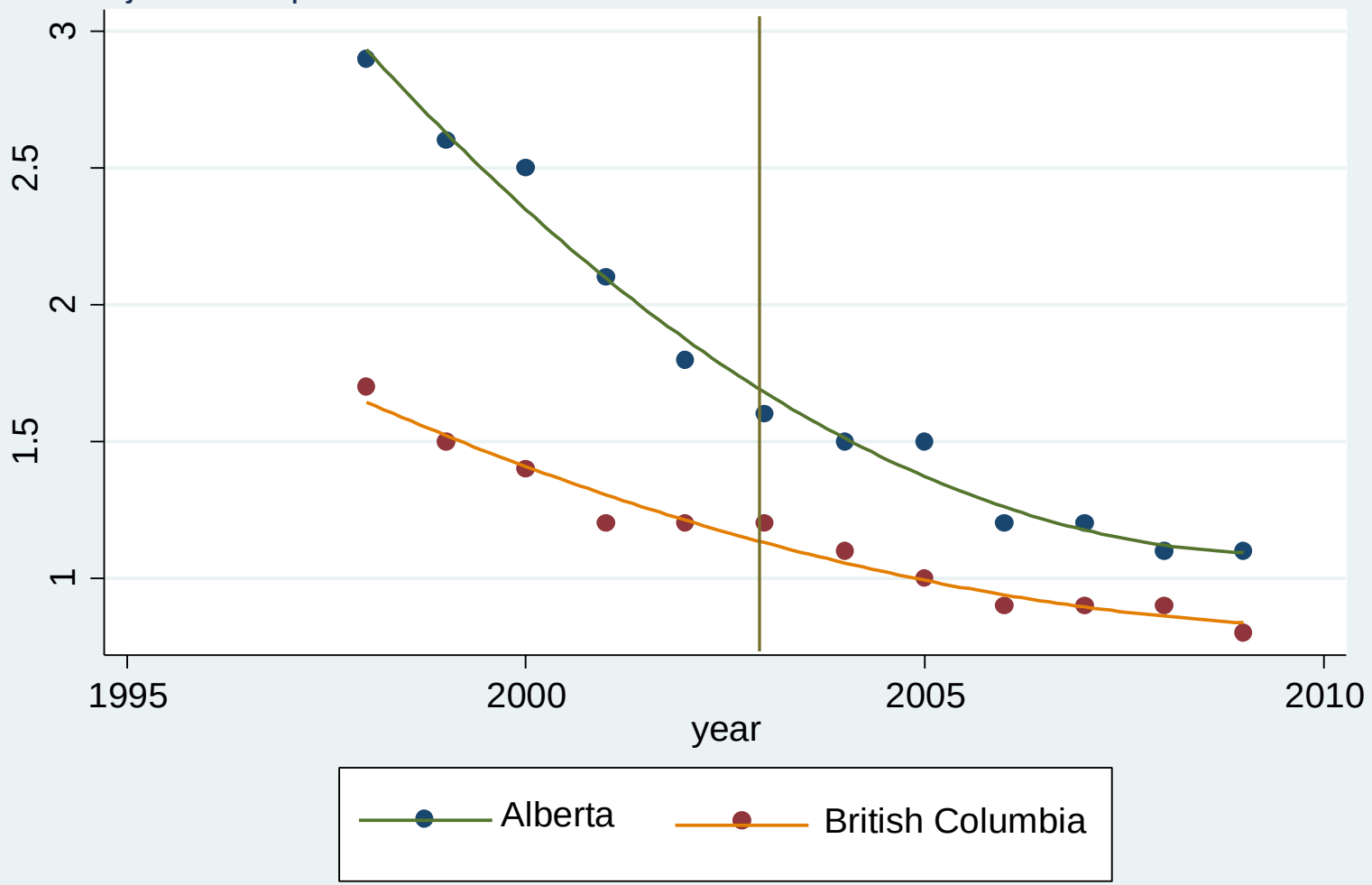
Results



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Discussion

- Decrease during the study period in both provinces
- Policy reforms in both provinces may have supported improvement in primary care and better diabetic care to contribute to lowering hospitalization rates
- Improvements in hospitalization rates cannot be directly attributed to policies
- Decrease in a negative curve is difficult to interpret:
  - Plateau in the absence of the policies?
  - Would the trend of decreases have continued at the same rate?

Limitations

- Difficult to know whether uptake of the incentive in BC meant improved diabetes care; in Ontario, physicians who were already providing diabetes care billed and received additional income after the introduction of an incentive (Kiran et al 2012)
- In Alberta, most PCNs have been found to offer chronic disease management programs to patients with diabetes including patient education (Campbell et al 2013)
- Both policy reforms included additional funding for primary care but this study does not look at whether these were offset by decreased hospital costs.
- Adjustments were limited to demographics; there were no control for patient diabetes characteristics (duration, glycemic control, HbA1c level, use of insulin), comorbidities and lifestyle (physical inactivity, smoking or alcohol consumption)

Thank You!

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