

Supply and demand of health workers in an economic downturn: Literature Review

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The questions we were asked to address

- What was the impact of an economic downturn on the supply and demand of health workers (physicians and nurses) in Canada?
- Did demand (in the form of utilization rates) increase during the 1990-1992 recession?
- How did supply of Health Human Resources (HHR) change over this time period? What were the drivers for this change?

Not so simple

- What is demand?
 - ◆ How do we measure it?
- What is supply?
 - ◆ How do we measure it?
- What impact would we expect an economic downturn to have?
 - ◆ What actually happened?
- What questions should we be asking?

Factors affecting demand

- Andersen's model:
- Enabling factors (e.g., SES, insurance coverage)
- affect ability to use health care system
- Predisposing factors (e.g., age, education) affect how much individual might seek to use health care systems
- Need factors (e.g., health status, chronic conditions) affect appropriateness of use

Demand:

Are we interested in:

- Demand?
- Utilization?
- Need?

Definitions

- “In health economics, the term demand is the amount of a good or service consumers are willing and able to buy at varying prices, given constant income and other factors. Demand should be distinguished from utilization (the amount of services actually used) and need (which has a normative connotation and relates to the amount of goods or services which should be consumed based on professional value judgments)”

Source: AcademyHealth 2004

Multiple ways to measure

- Key findings:
- Utilization \neq Demand \neq Need
 - ◆ Must consider both over-use and under-use
- Non-medical determinants of health do affect need
 - ◆ Financial barriers may affect ability to receive care
- Overall, economic downturn has a relatively minor impact on demand

Why?

- Data shows utilization of health services is highly skewed
- Based on need
- Berk and Monheit found that for US
- For Canada, we studied distribution of expenditures for province of Manitoba

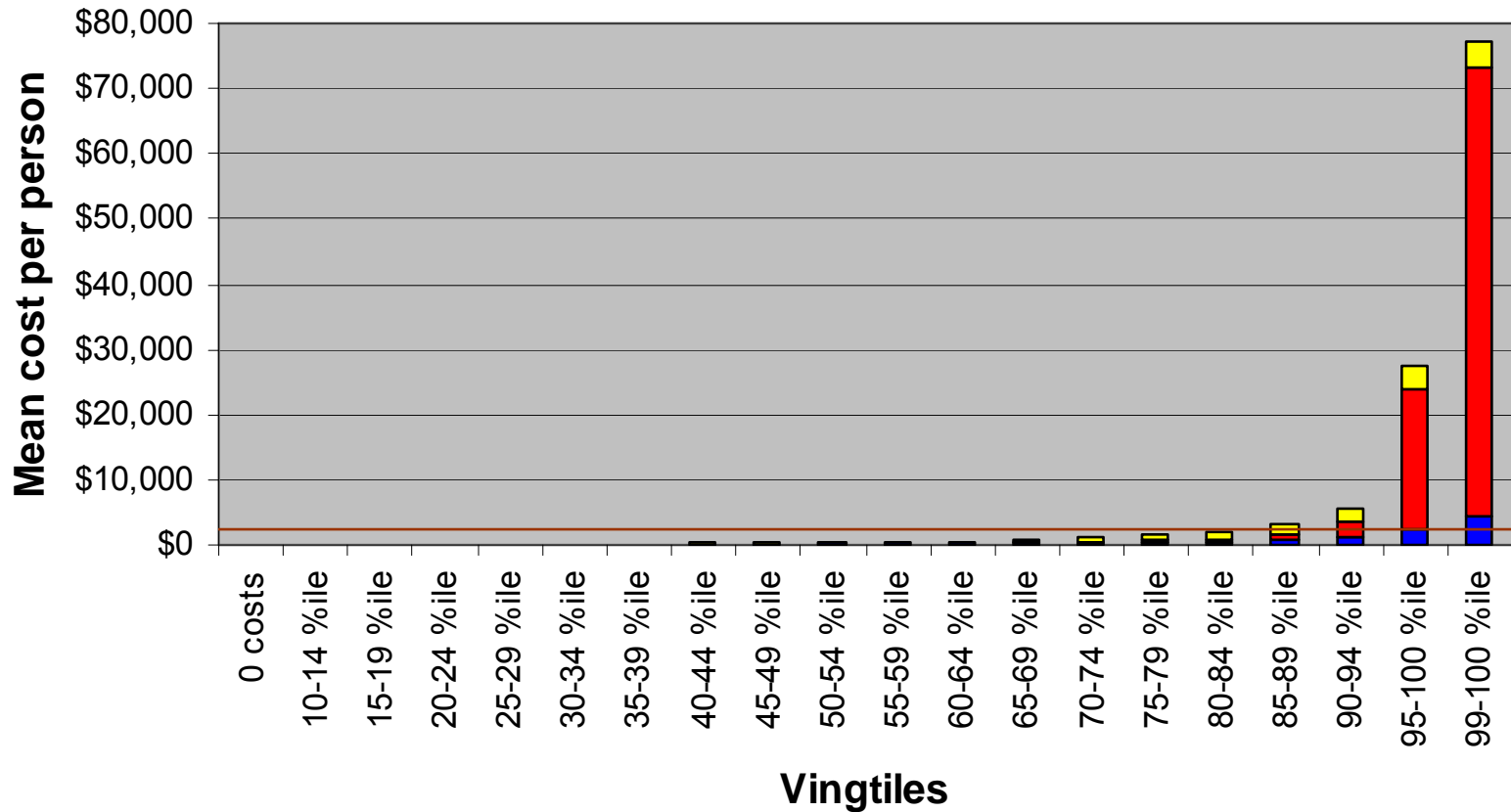
Source: Deber and Lam, Handling the high spenders, 2009. Presented at APSA meeting.

Downloaded from

<http://papers.ssrn.com/sol3/papers.cfm?abstractid=1450788>

Mean Total Expenditures for the Full Population by Vingtiles in Manitoba, Fiscal 2005-2006

(Population Mean = \$2,203.95)

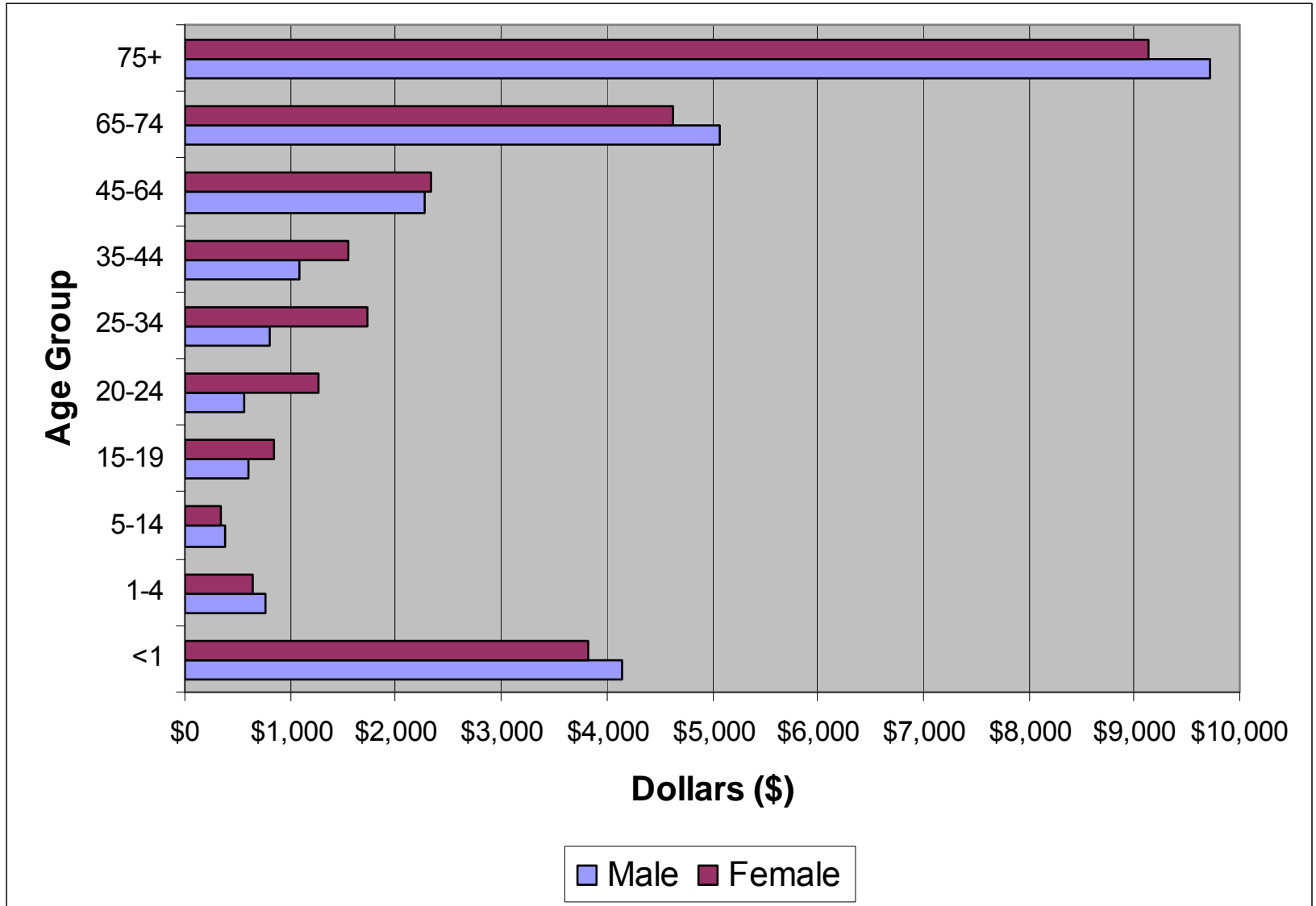


■ Physician
 ■ Hospital
 ■ Drug
 — Population Mean

Distribution by Sub-Category of Expenditures for the Full Population, 2005-06

Subcategory	Mean	% < Mean	Share: Top 1%	Share: Bottom 50%
Physician	\$391.22	70%	11.21%	9.51%
Hospital	\$1,277.99	90%	53.81%	0.00%
Pharmaceutical	\$534.74	70%	7.71%	2.38%
Total Expenditures	\$2,203.95	85%	35.06%	2.27%

Mean Total Expenditures for all Age-Sex Grouping, 2005-06



Distribution, Total Expenditures by Age-Sex Grouping, 2005-06

Age-Sex Group	Mean Expenditure	% < Subcategory Mean	Share: Top 1%	Share: Bottom 50%	% < Population Mean
Male <1	\$4,146.20	85%	23.87%	16.10%	65%
Male 1-4	\$756.86	85%	39.50%	6.18%	95%
Male 5-14	\$392.15	85%	33.86%	4.82%	95%
Male 15-19	\$598.42	90%	48.16%	2.27%	95%
Male 20-24	\$562.11	90%	46.43%	1.40%	95%
Male 25-34	\$805.63	90%	49.65%	1.39%	95%
Male 35-44	\$1,078.07	85%	37.63%	2.03%	90%
Male 45-64	\$2,277.22	85%	33.99%	2.72%	85%
Male 65-74	\$5,063.51	85%	25.14%	5.56%	65%
Male 75+	\$9,727.27	80%	20.63%	5.33%	45%

Distribution, Total Expenditures by Age-Sex Grouping, 2005-06

Age-Sex Group	Mean Expenditure	% < Subcategory Mean	Share: Top 1%	Share: Bottom 50%	% < Population Mean
Female <1	\$3,823.47	85%	28.73%	17.13%	70%
Female 1-4	\$651.12	85%	40.80%	6.35%	95%
Female 5-14	\$336.62	85%	37.81%	5.42%	95%
Female 15-19	\$851.78	85%	31.54%	4.13%	95%
Female 20-24	\$1,261.21	85%	20.01%	5.79%	85%
Female 25-34	\$1,734.76	80%	20.03%	4.92%	80%
Female 35-44	\$1,554.81	80%	26.10%	4.72%	85%
Female 45-64	\$2,339.98	80%	27.38%	5.52%	80%
Female 65-74	\$4,631.87	80%	26.12%	7.05%	60%
Female 75+	\$9,132.05	85%	23.96%	5.82%	50%

What does this mean for demand projections?

- Skewing occurs among all age-sex groups!
- Most people use very little care
- Extrapolations on assumptions that the population (or population sub-groups) is homogeneous unlikely to be helpful
- Effect of economic downturn, assuming people still have coverage, should be minimal

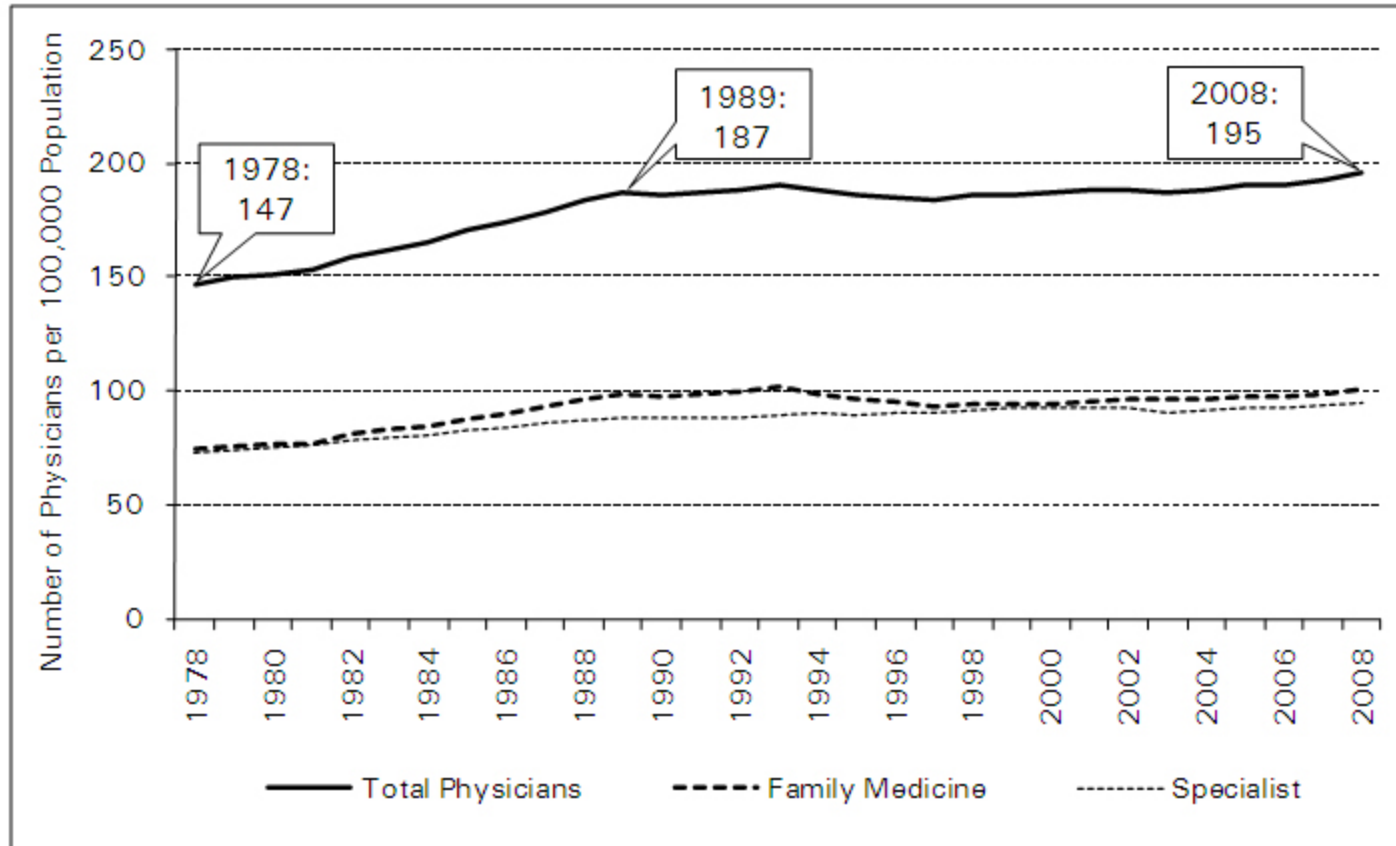
Supply

- Usually - use stock and flow model
- But, 'right' answer depends on how much supply is needed
- In turn, depends on what services need to be provided

Example: physician growth in Canada

- Raw numbers: grew, then stabilized
- 1984/85 to 1989/90 period. Physician supply grew faster than population
- Policy recommendations: surplus; cut training slots and restrict IMGs
- Post 1993/94 - population growth faster than physician growth
- 1998/99 ratio: same as 1989/90, higher than 1984/85, but less than peak (1993/94)

Physicians per 100,000 population, Canada 1978 to 2008



Source: CIHI

The policy response

- Shortages!
- Increased supply.
- Costs rising accordingly

Feast-famine

- Do we have a surplus or a shortage?
- Depends
- In Canada, perceptions have fluctuated widely
- Note: change depends on the starting point!

One approach: fixed coefficient approach

- Assume current levels of use are appropriate
- Project
- Doesn't really allow for changes in patterns of disease and treatment

What should we measure?

- Numbers? (head count)
- Numbers per capita?
- Full time equivalents?
- What's expected workload for a provider?
- How about distribution?
 - ◆ Geographical (urban/rural)
 - ◆ By where they work (sub-sector)
 - ◆ By type of patient served

What do providers do?

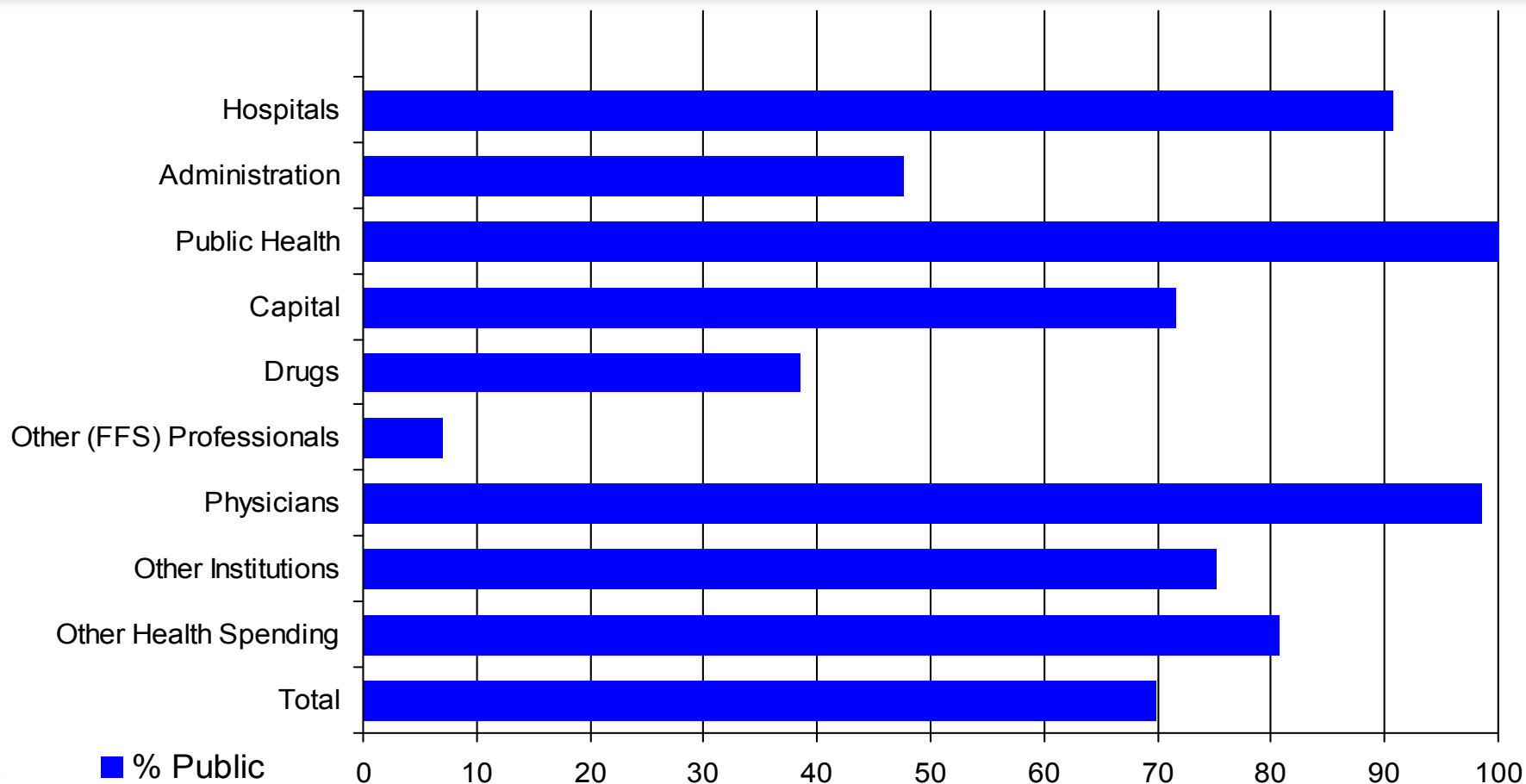
- Should our analysis focus profession-by-profession (silos)?
- Or recognize teams, substitution?

How are providers paid?

- Physicians - largely FFS
- Nurses - often employed by organizations
- When economy is tight, organizations are squeezed
- Respond with layoffs, not hiring
- Nurses may leave the profession
- Then need to replace (often at higher cost)

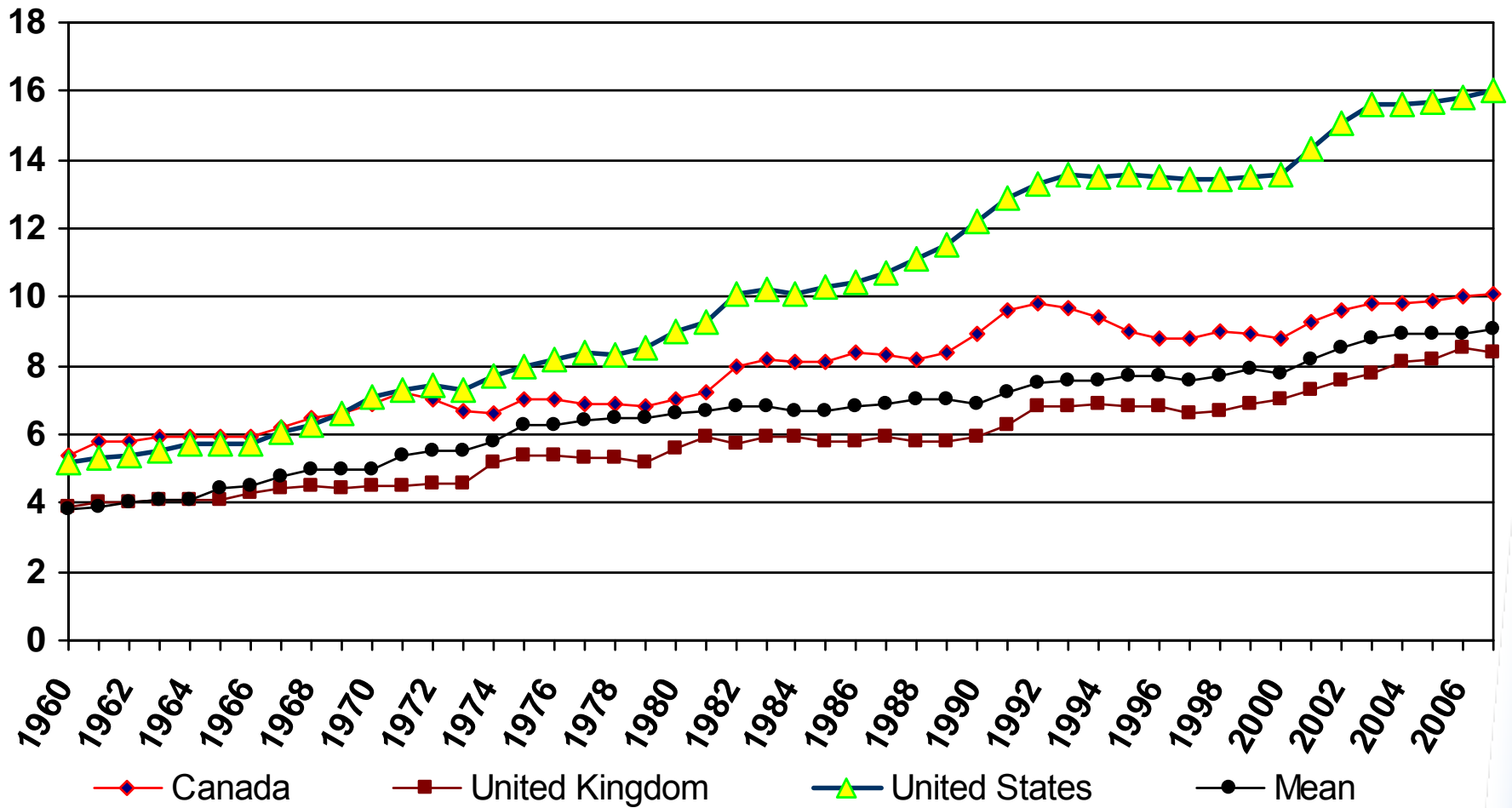
Public Share of Expenditure

Canada 2006



Source: CIHI National Health Expenditure Trends, 1975-2008, Figure 12

As the economy improves, the ratio of spending to GDP falls



Key impact of economic downturn?

- Affects ability/willingness of governments to maintain and pay for health workforce!

Recommendations:

1. Data

- Important to ensure data is good
- Definitions should be clear, and consistent, to allow longitudinal comparisons
- Good steps being made
- Note: such data not available for much of the period of interest

2. Uncertainty

- Methods of forecasting have many assumptions
- Rather than point estimates, recommend being explicit about assumptions
- Doing sensitivity analysis to test robustness of conclusions
- Particularly since unexpected events often do occur

3. Avoid boom-bust cycles

- Health care requires highly trained workers
- Takes many years to train
- Losing supply can be wasteful
- Think longer term
- Create attractive, and stable work environments to retain these needed professionals at manageable cost

Acknowledgments

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