

“Measuring Up”

Improving Health Systems Performance in OECD Countries



Composite Indicators of System Performance

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Composite indicators: the rationale

- performance is multidimensional;
- need a rounded assessment of performance;
 - assessing managerial competence;
 - assessing efficiency;
 - accountability and public assurance;
- need to make comparisons systematic.



Structure of talk

- introduction to the concept;
- four examples from health;
- some theory;
- practical issues in developing composites;
- concluding comments.



Health System Performance in OECD

(source: OECD Health Data 2000)

	<i>Life expectancy 1995: Females at age 65</i>		<i>Infant mortality 1996: Deaths per 1,000 live births</i>	
	Years	Rank	Rate	Rank
Australia	19.5	8	5.8	16
Austria	18.7	15	5.1	10
Belgium	19.6	7	6.0	17
Canada	20.1	4	5.6	13
Czech Republic	16.1	27	6.0	17
Denmark	17.6	23	5.6	13
Finland	18.6	17	3.9	3
France	20.6	2	4.8	7
Germany	18.5	18	5.0	9
Greece	18.4	19	7.3	22
Hungary	15.8	28	10.9	26
Iceland	19.4	9	3.7	1
Ireland	17.4	24	5.5	11
Italy	19.4	9	6.2	20
Japan	20.9	1	3.8	2
Korea	17.0	25	7.7	24



Two performance indicators in OECD countries



What is a composite indicator?

- A linear example:

$$C = \alpha_1 P_1 + \alpha_2 P_2 + \dots + \alpha_n P_n$$

- where α_1 indicates “value” attached to an extra unit of indicator 1.



Towards a measure of efficiency

Divide the composite performance score by expenditure:

$$E = \{\alpha_1 P_1 + \alpha_2 P_2 + \dots + \alpha_n P_n\} / EXP$$

.... but what about environmental influences on performance?



Some examples from health

- US Medicare;
 - ranking states.
- Canadian health regions;
 - more sensitive measurement.
- British health authorities;
 - more attention to weights.
- WHO national health systems;
 - towards a measure of efficiency.



Issues in health system efficiency measurement

- what are the health system boundaries?
- measuring outcomes vs processes;
- external influences on performance;
 - other agencies
 - social and other external factors
- measuring expenditure;
- complexity.



US Medicare

Jencks *et al* (2000)

- Objective is “to provide a performance monitoring system to support continuous quality improvement”;
- Fifty US states plus DC and Puerto Rico;
- Twenty-two process indicators of performance;
- Each state ranked 1-52 on each indicator;
- Ranks summed across 22 indicators.



US Medicare - Criteria for Inclusion

- The disease is a major source of morbidity or mortality;
- Certain processes of care are known to improve outcomes;
- Measurement of these processes is feasible;
- There is substantial scope for improvement in performance;
- Managerial intervention can potentially improve performance.



US Medicare - the chosen indicators

- acute myocardial infarction (6 indicators),
- heart failure (2),
- stroke (3),
- pneumonia (7),
- breast cancer (1),
- diabetes (3).



Medicare the pneumonia indicators

Inpatient setting

- Antibiotic within 8 hr of arrival at hospital
- Antibiotic consistent with current recommendations
- Blood culture drawn (if done) before antibiotic given
- Patient screened for or given influenza vaccine
- Patient screened for or given pneumococcal vaccine

Any setting

- Influenza immunization every year
- Pneumococcal immunization at least once ever

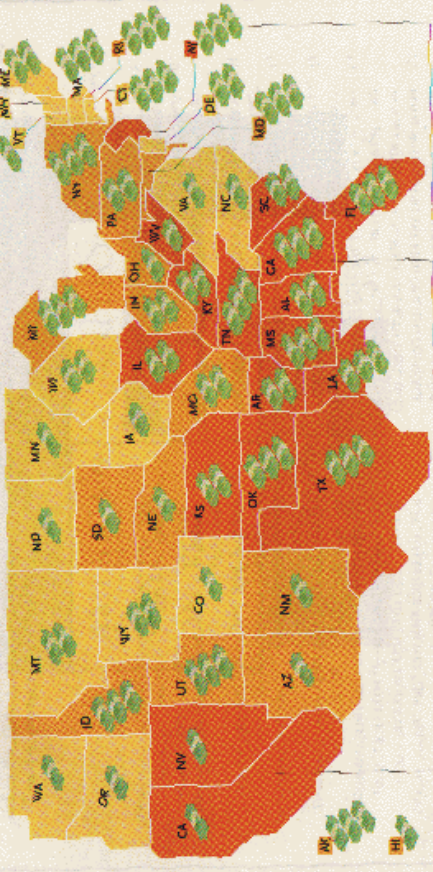




MAP

MEDICARE: TOO LITTLE, TOO LATE

As America struggles to find ways to cut the cost of health care, many researchers have cast the quality of care well aside. Although Medicare enrollees reveal no direct correlation between the value of care and what is spent on it, Alaska, Texas, Connecticut, and Louisiana, for example, spend the most but rank 23rd, 45th, 6th, and 47th, respectively, in quality among the top twenty spenders. Only three states are among the best caregivers. According to the "Jameson Atlas of Health Care," differences in Medicare reimbursement rates cannot be explained by geographic variations in wealth, population, age, sex, race, diagnosis, or local costs. But high spending often coincides with a reliance on expensive care and specialists—treatments used heavily in end-of-life care. In terms of quality, generally population northern states generally do better than southern ones and pay more than the Southwest, where a legacy of poverty and segregation has made for a particularly sickly population. Even though this sort of fringe benefit is common in the richest country in the world, the numbers also show that coordination of care and shared preferences can buy better care for fewer dollars, suggesting that a diagnosis may be a good and that money wouldn't always buy the best and quality treatment valued.



Although California often flies from Oregon in overall quality, income equality, and lack of disparities, it receives proportionally less national funding to maintain its sprawling health care system, which insures more exchange-rate enrollees than most of its neighbors yet fewer community hospitals per capita. California's Medicare patients are skewed to expensive care at twice their size national rate, creating a health-care population that is generally more vulnerable with a system that doesn't even set up to controlling spending that to coordinating and monitoring quality. The state's size and demographic diversity also add to the uneven quality and distribution of its care.

Like many of its neighbors, Georgia has a high rates of cardiovascular disease, hypertension, cancer, and diabetes, particularly in its rural counties, where a majority of the state's hospitals, though fewer than one in five of its doctors, is located. These doctors tend to be overwhelmed and must treat sicker patients at later stages of illness. As in Alabama and South Carolina, you don't always get the "rural population" lives in relatively desolate "persistently poor" counties. Such counties account for about a fifth of the state's population in other neighboring states.

New Jersey's lack of statewide coordination of standards and monitoring is a apart from its high cost to states of quality. The problem is aggravated by the fact that a large proportion of the state's doctors work in small private practices, fewer focus on primary care, and almost half were trained abroad. Like many states, New Jersey has also been sluggish in adopting an integrated health-care records, its hospitals are chronically underfunded but unlike most states in the region, are required by statute to serve all patients, regardless of their ability to pay.

Map of United States, research by the U. Penn. team based on analysis by researchers at the University of Michigan, the University of Maryland School of Medicine, and the University of California, San Francisco, published in *Health Affairs*, September 15, 2010.



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 - Edmonton
 - Saskatoon



Canadian Regions

the Macleans report

- Objective is to present information on health care that “truly matters to Canadians”;
- 54 largest Canadian health regions;
- 15 indicators of performance organized in six categories;
- indicators combined using weights based on “expert judgement”.



Canadian Regions

the categories of performance

- outcomes (0.2);
- prenatal care (0.2);
- community health (0.2);
- elderly services (0.1);
- efficiencies (0.2);
- resources (0.1).

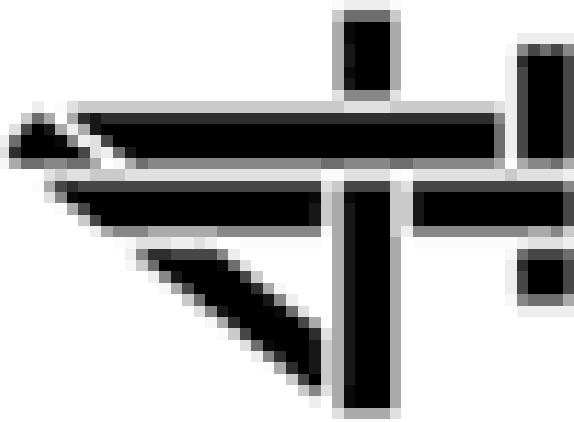


Canadian Regions

“efficiencies”

- *Possible outpatients*: percentage of acute care hospitalizations for conditions not requiring admission.
- *Early discharge*: variation from the expected length of stay, standardized for age and diagnosis.
- *Preventable admissions*: age standardized hospital admissions per 100,000 people for conditions (such as diabetes or asthma) where appropriate ambulatory care reduces the need for hospitalization.





The Sick List: The NHS from best to worst

British Health Care -

Channel 4: “the sick list”

- Objective is to “measures the standard of healthcare against public expectations”;
- 120 British health authorities (populations about 500,000);
- Six indicators of performance;
- Weights based on public preferences;
- Some attempt made to adjust for environmental factors.



British Health Care - the chosen indicators

- Deaths from cancer (per 100,000 people)
- Deaths from heart disease (per 100,000)
- Total number of people on hospital waiting lists (per 1,000)
- Percentage of people on waiting lists who had been waiting over 12 months
- Number of hip operations (per 100,000)
- Deaths from “avoidable” diseases (per 100,000)



UK health care: Average allocation of 60 chips between six performance indicators

Indicator	Chips	Weight
1. Reducing deaths from cancer	16	1.00
2. Reducing deaths from heart disease	12	0.75
3. Reducing total number of people on hospital waiting lists	10	0.63
4. Reducing number of people waiting over 12 months	9	0.56
5. Increasing number of hip operations	5	-0.31
6. Reducing deaths from 'avoidable' diseases	8	0.50





National health systems:

the WHO World Health Report 2000

- Objective is to examine “whether a health system is performing as well as it could”;
- 191 countries;
- Five indicators of system performance;
- Missing data inferred statistically;
- Weights based on survey of informants;
- Measure of efficiency estimated after some adjustment for environment.



WHR 2000 Indicators

- Overall health outcomes (measured by disability-adjusted life expectancy)
- Inequality in health (measured by an index based on child mortality)
- Overall health system responsiveness, reflecting respect for persons and client orientation (as assessed by a panel of key informants)
- Inequality in health system responsiveness (as assessed by the key informants)
- Fairness of financing (measured by an index based on the proportion of non-food expenditure spent on health care).

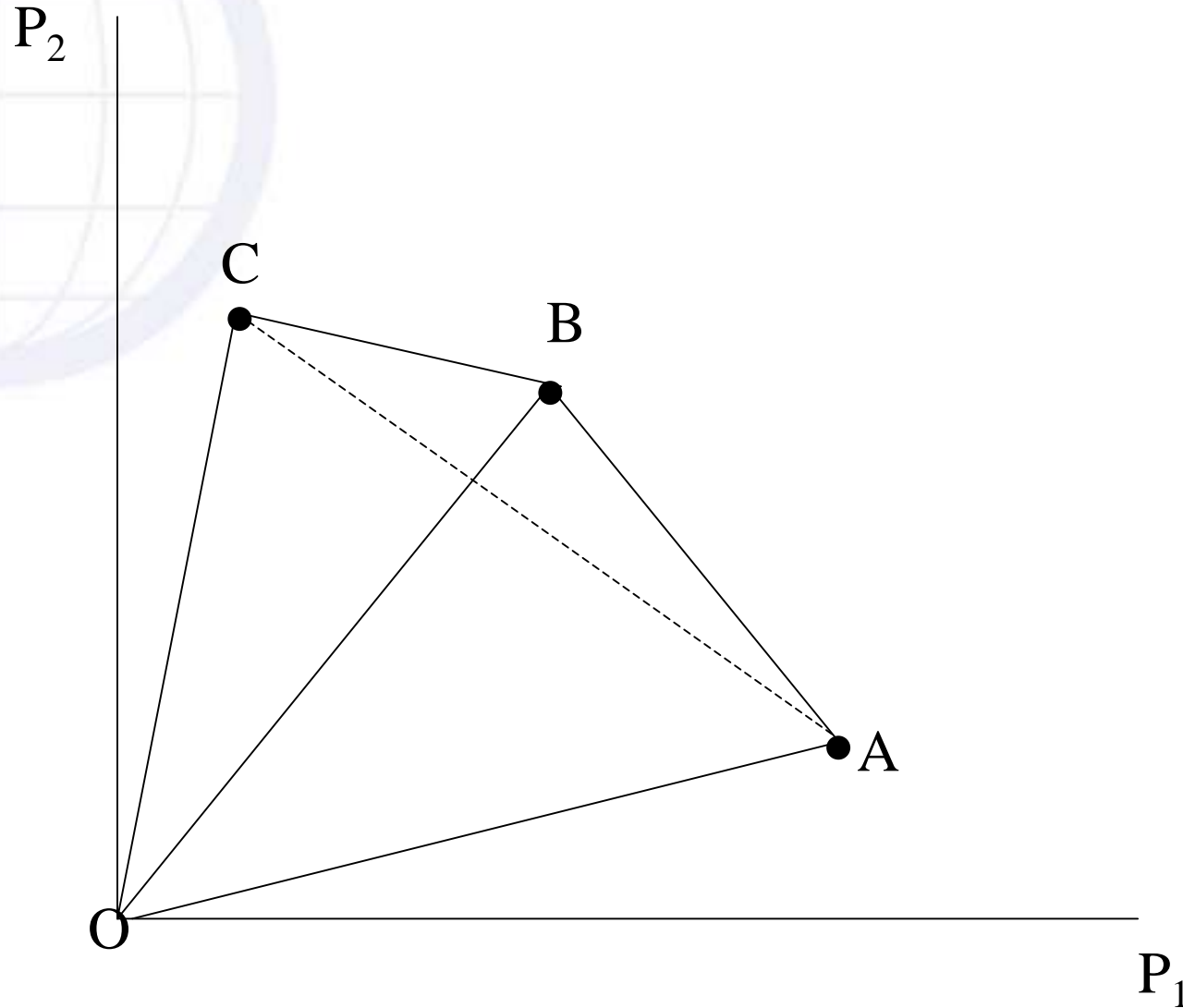


World Health Report 2000: Weights and transformations used for five objectives

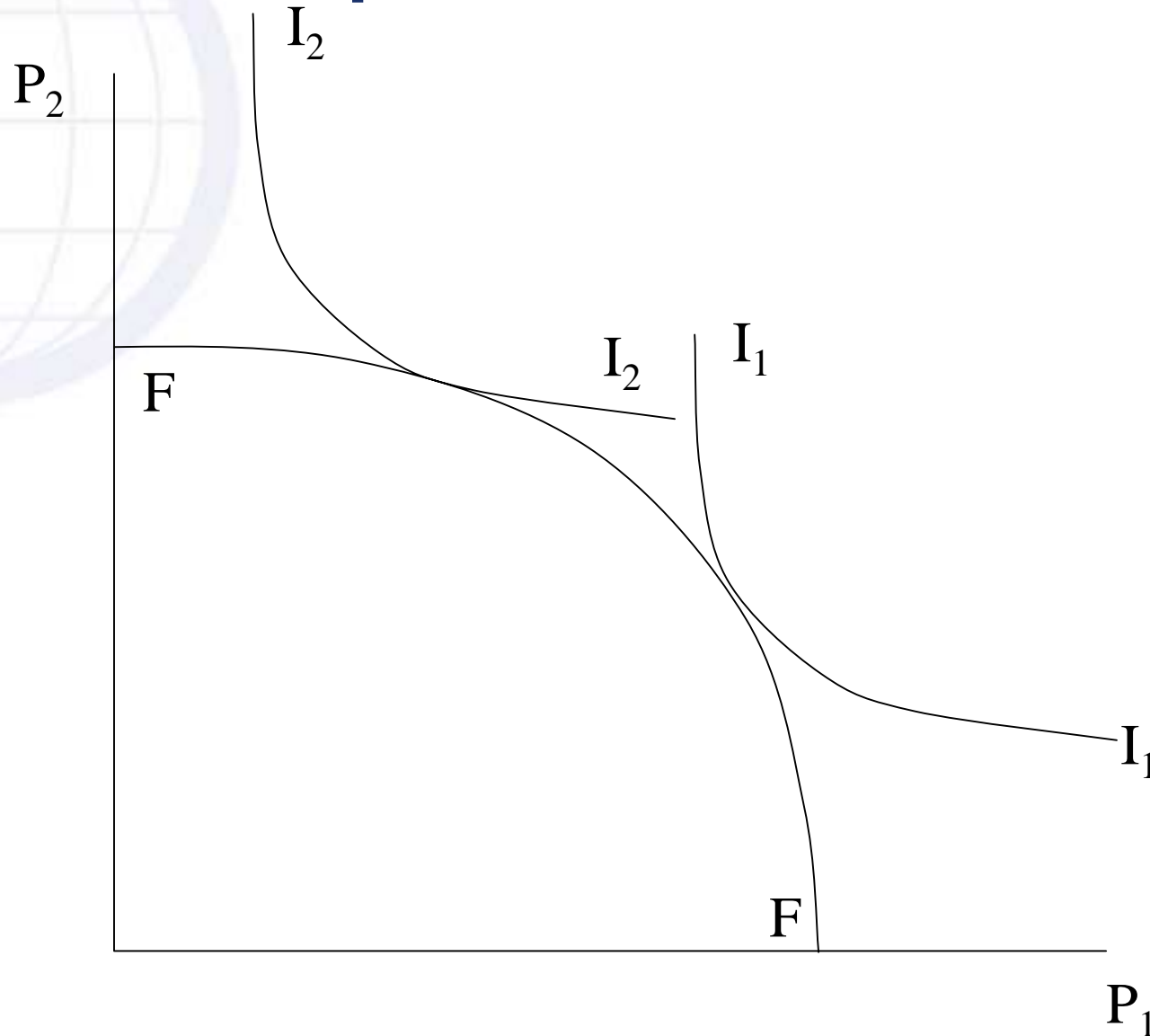
<i>Objective</i>	<i>Weight</i>	<i>Transformation</i>
H: Overall health outcome	0.250	$(H-20)/(80-20)*100$
HI: Distribution of health outcome	0.250	$(1-HI)*100$
R: Overall responsiveness	0.125	$(R/10)*100$
RI: Distribution of responsiveness	0.125	$(1-RI)*100$
FF: Fairness of financing	0.250	$FF*100$



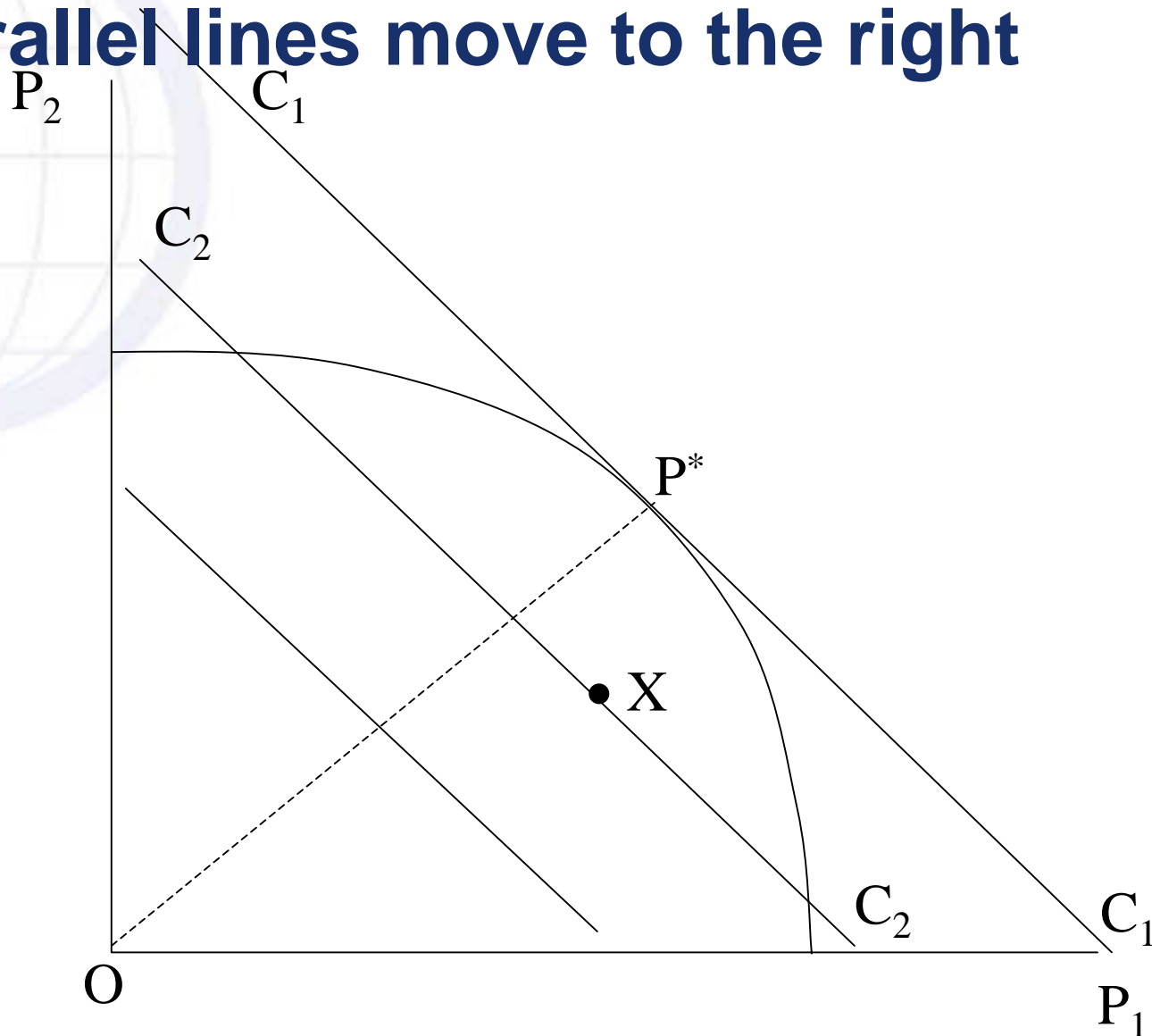
Building up the “production possibility frontier”



Preferences affect the preferred production point on the frontier



The composite score increases as the parallel lines move to the right



Some technical issues

- Choosing what should be measured.
- Collinearity of components.
- Identifying the composite weights.
- Transforming the constituent indicators
- Analytic approaches to inferring efficiency
- External influences on measured performance



Potential influences on measures of health system performance

- differences in health status of citizens being served;
- external environment – for example, geography, climate, other agencies, culture;
- quality of resources being used;
- different accounting treatments;
- data errors;
- random fluctuation;
- different priorities;
- differences in effectiveness.



For composite indicators ...

- Place system performance at the centre of the policy arena;
- Offer a rounded assessment of system performance;
- Enable judgements to be made on system efficiency;
- Facilitate communication and promote accountability;
- Indicate which systems represent the beacons of best performance;
- Indicate which systems represent the priority for improvement efforts;
- Stimulate the search for better data and better analytic efforts across all of health care;
- Offer local policy makers the freedom to set their own priorities.



Against composite indicators ...

- May disguise serious failings in parts of some systems;
- Difficult to know what remedial action to take;
- Individual elements of composite indicator often contentious;
- May have to rely on very feeble or opaque data in some dimensions of performance;
- A composite that ignores dimensions of performance that are difficult to measure may distort behaviour;
- Methodology for calculating weights seriously inadequate;
- The weights used in composite indicators reflect a single set of preferences.



The last word: Oscar Wilde

“What is a cynic? A man who knows the price of everything and the value of nothing.

“And a sentimentalist is a man who sees an absurd value in everything, and doesn’t know the market price of any single thing.”

Lady Windermere’s Fan

The challenge:

to find a way between the cynics and the sentimentalists.

