

Causation in demography

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Aims

Consider aggregate level change

Suggest causal criteria/guidelines

Full paper:

“On causation in demography: issues and illustrations,”
Population and Development Review 33 (1): 1-36, 2007

Preliminaries..

Intervention model rarely applicable

- can't manipulate => no causes?
- imaginary intervention irrelevant
- where intervene, good counterfactuals absent
- causes of effects, effects of causes

Confusion of levels of analysis

Variability not always of interest

So, find an alternative approach

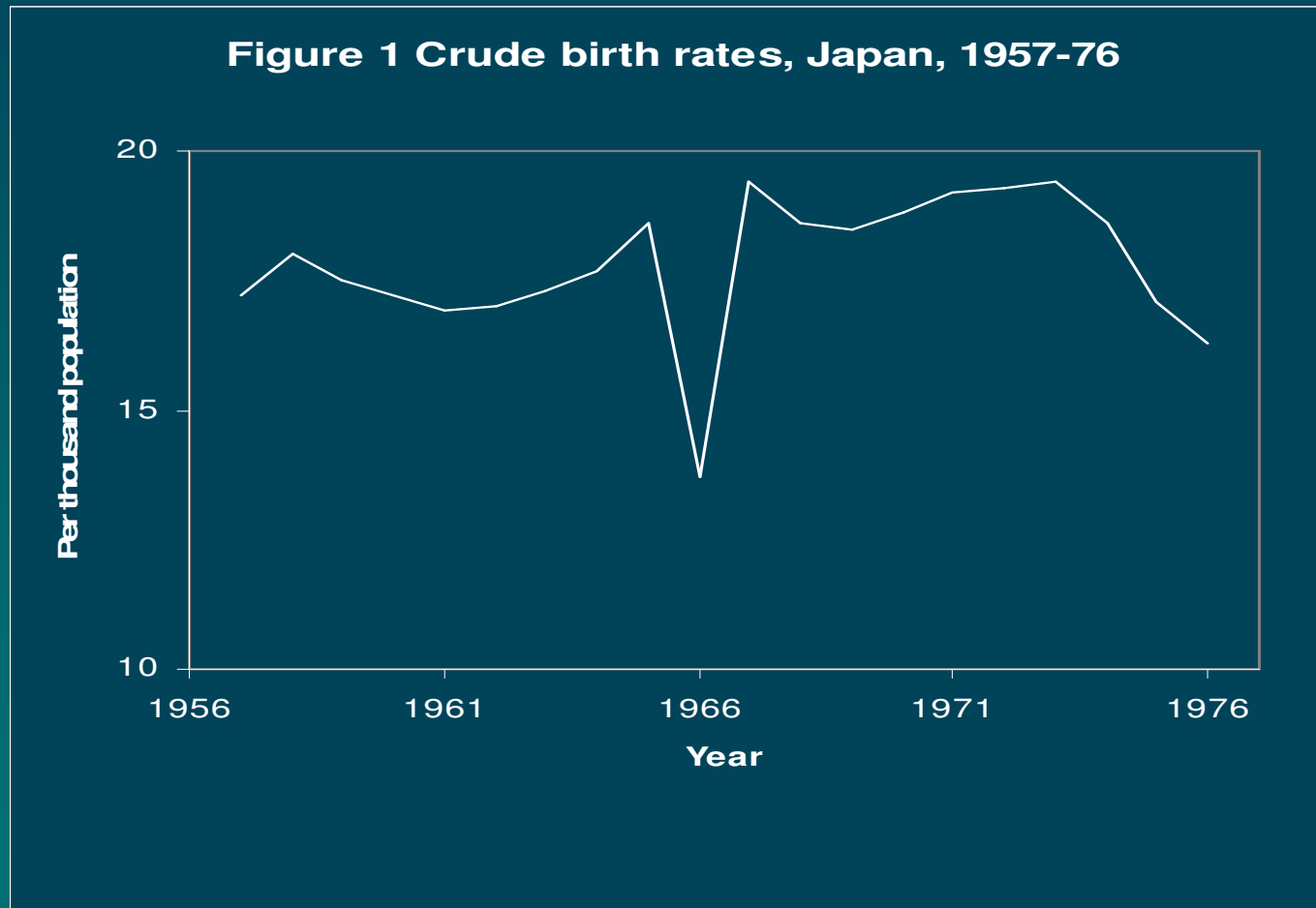
Start with causes we know for sure!

mechanical demographic processes

Then, substantive examples

from clear-cut to more complex

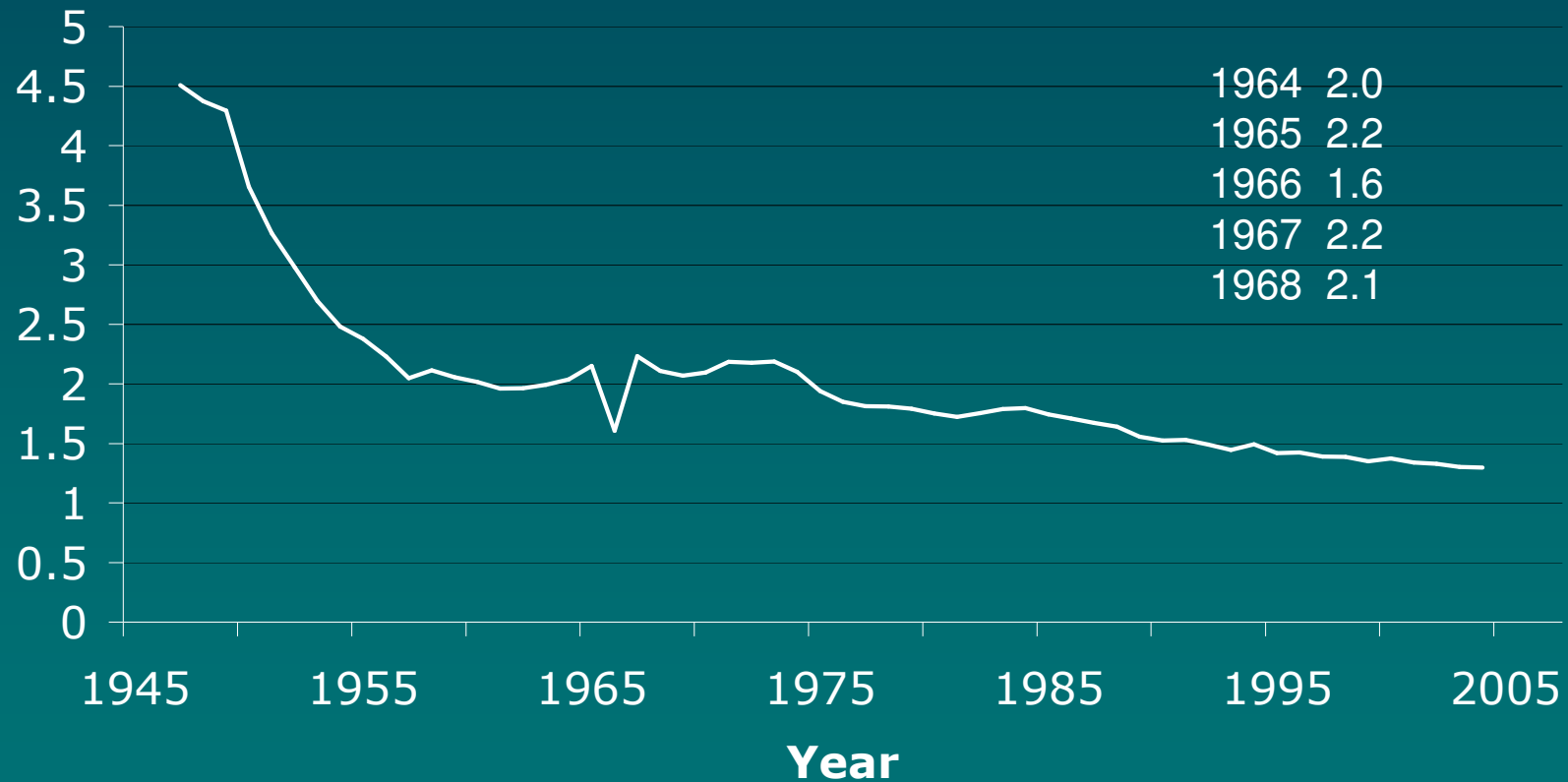
Year of the Fire Horse —Japan 1966



Source: Japan Statistical Association (1987).

Year of the Fire Horse —Japan 1966

Total Fertility Rate Japan 1947-2004



Distinctive features

1. cause precedes effect — *time order*
2. effect follows soon after — *contiguity*
3. effect lasts while cause does — *duration*
4. unusual / large effect — *distinctiveness*
5. in expected direction — *direction*
6. appropriate scale — *proportionality*
7. similar effects — *recurrence*
8. only in Fire Horse year — *no cause, no effect*
9. realistic process specifiable — *mechanism*
10. alternatives ruled out — *no alternative*

Figure 4 Total fertility rates, China, 1949-1999

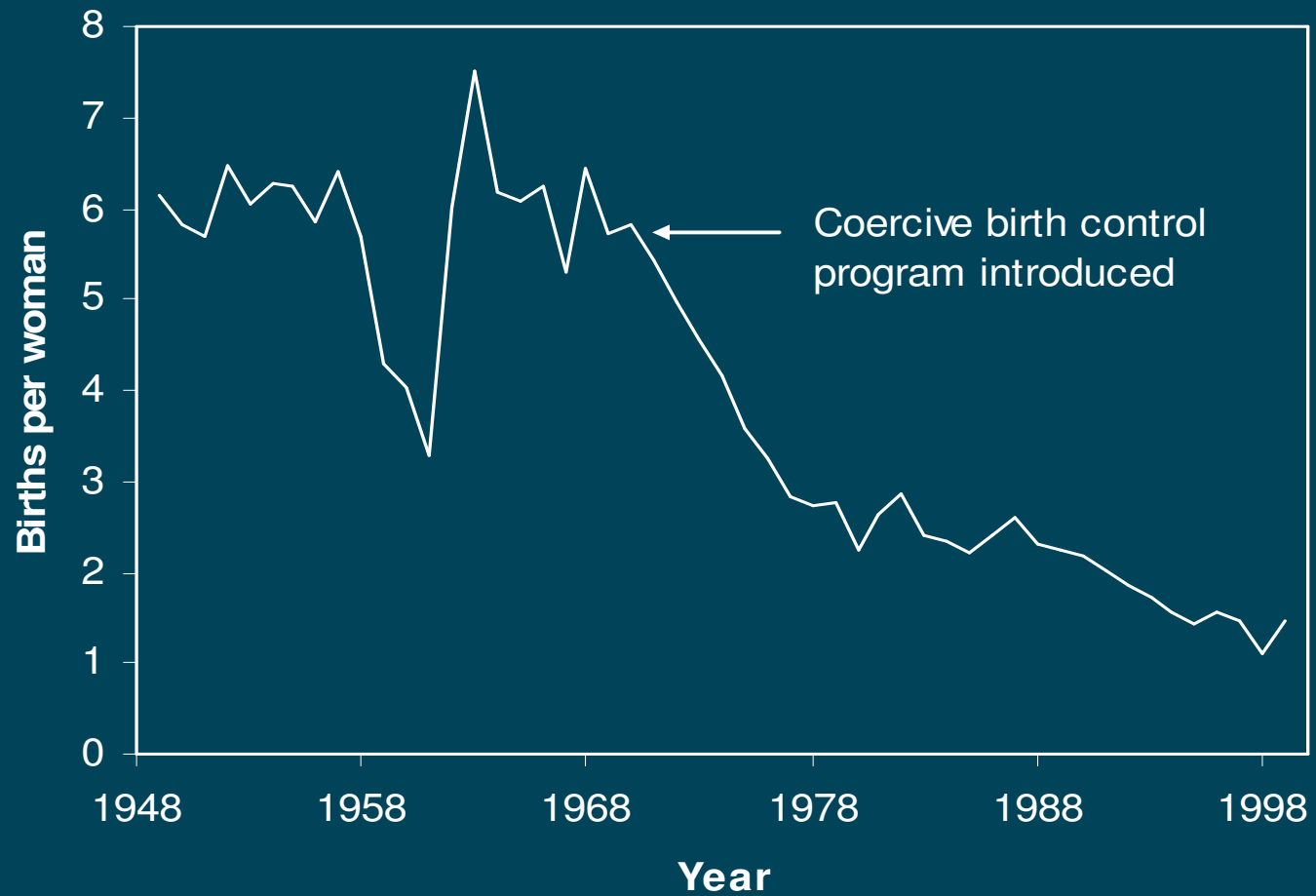
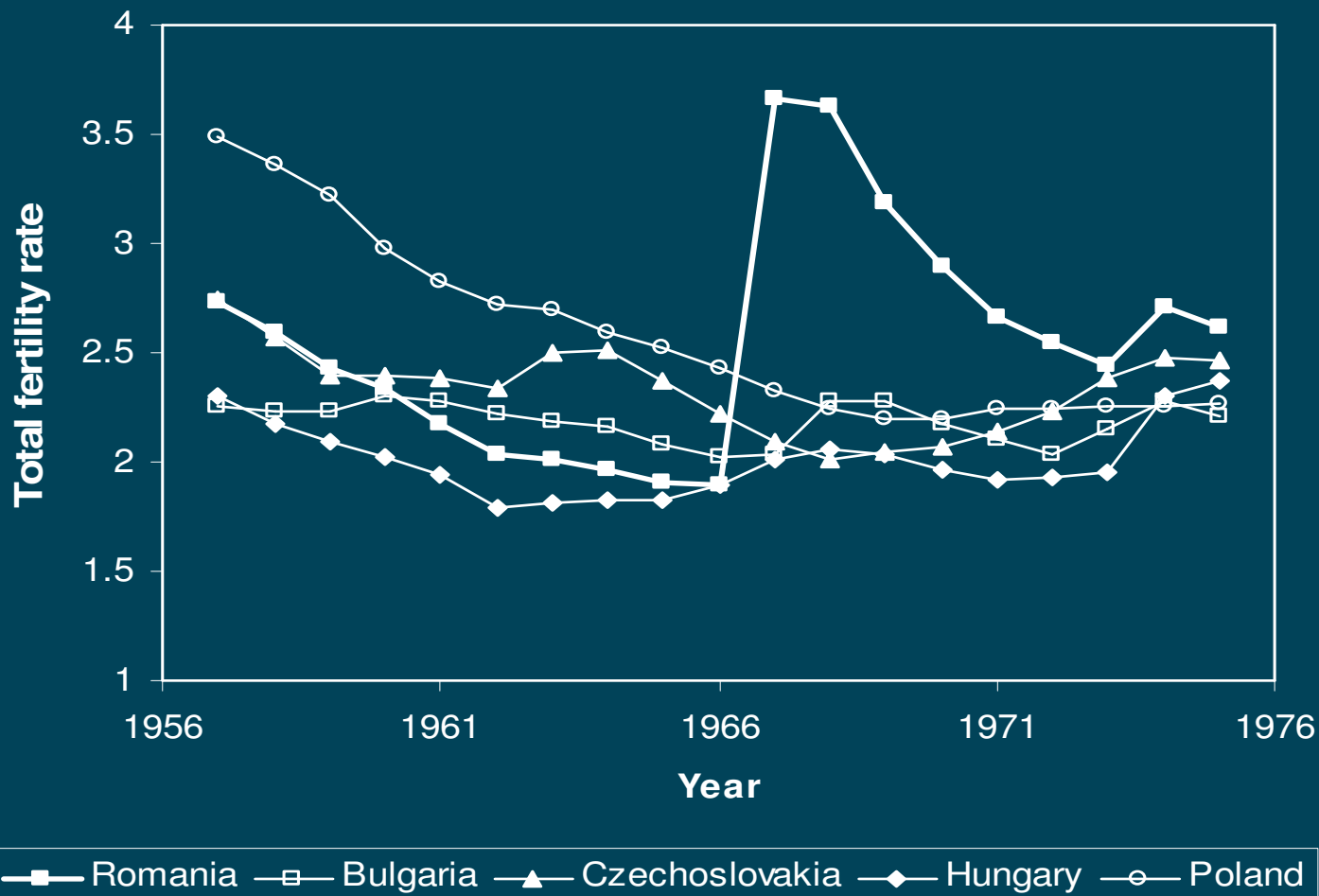


Figure 2 Total fertility rates, Romania and selected East European countries, 1957-75



**Figure 5(a) Crude birth and death rates,
Denmark, 1800-2004**

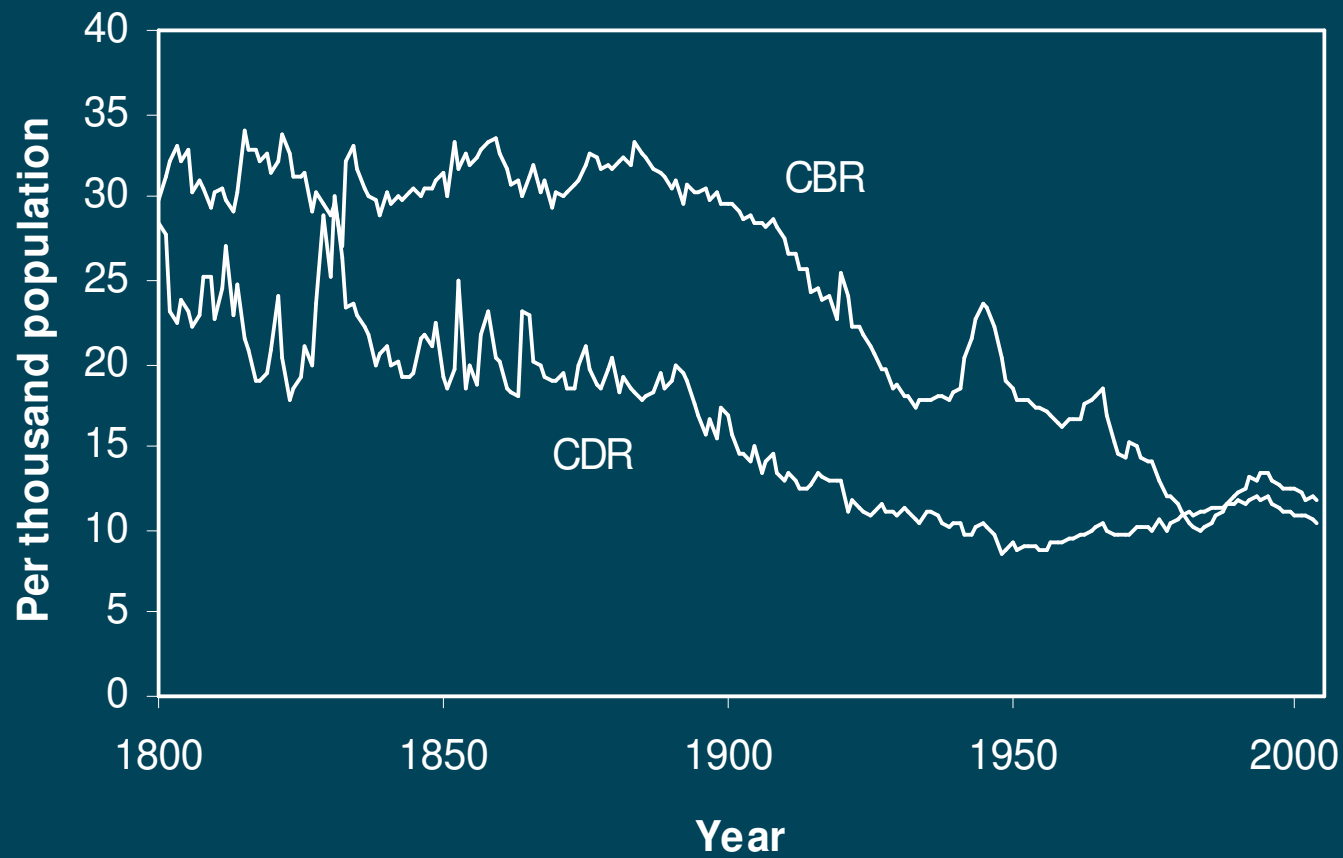
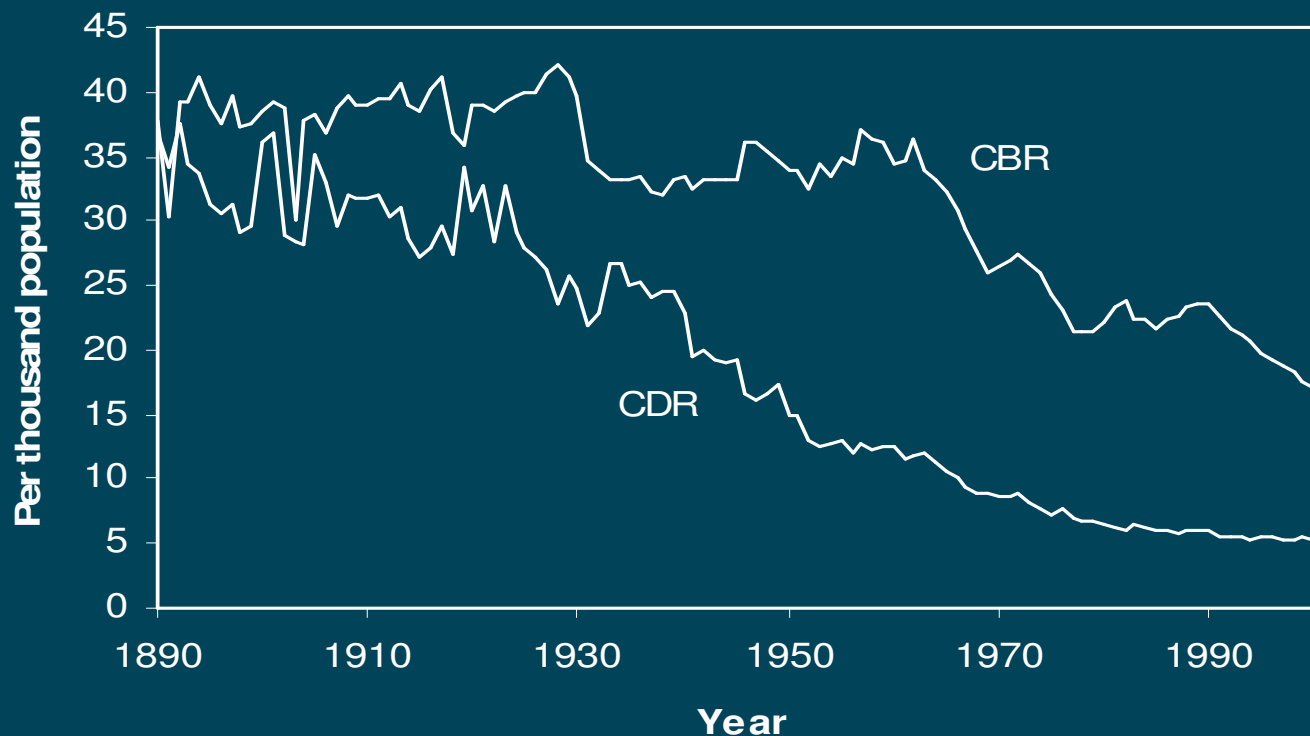


Figure 5(b) Crude birth and death rates, Chile, 1885-2000



Sources: For Denmark, Chesnais (1992) and Statistics Denmark (2005); for Chile, Mitchell (1983) and INE-CELADE (2000)

Exploring causation easier in these demographic examples because...

- events discrete, measurable
- can be located in time
- reasonable supply of reliable data
- can respond rapidly to exogenous factors
- mainly exogenously determined