What a researcher in health economics can contribute with in infection control

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Economists can contribute in four ways:

1. Spread of infections depend on decisions and behaviours of people. Economists, and other social scientists, can contribute to better understand these and their implications.

2. Evaluate societies costs of infection control measures in society

2. Cost-benefit analysis of interventions and programs

3. Impact evaluations of reforms

1. Understanding decisions and behaviours

- Incentives matter!
  - Much of economics can be reduced to this.
  - Individuals make decisions by comparing (marginal) costs and (marginal) benefits.

  - Which does not mean that all individuals are always rational.

1. Understanding health behaviors

- Example: Decisions about sexual risk-taking (which affect spread of HIV and other STIs)
  - Benefits
  - Costs
    - In Lindskog and Durevall (2021) we show theoretically and empirically how education reduce sexual risk talking among women and increase it among men in Botswana.

Understanding decisions and behaviours

- Context: Education reform 1996 in Botswana increased lower secondary school with one year.
  - High HIV prevalence rates in the general population.
  - Concurrency and transactional sex generally believed to matter for the spread.

  - What is the costs and benefits of risky sexual behaviour for women?
    - Costs: Risk of HIV; risk of unwanted pregnancies (which generally imply school drop-out)
    - Benefits: Pleasure; gifts and transfers from partners

  - What is the cost and benefit of risky sexual behavior for men?
    - Cost: Risk of HIV; risk of unwanted pregnancies (much less costly than for women); gifts and transfers to partners.
    - Benefits: Pleasure

Understanding decisions and behaviours

- What happens when secondary education increase?
    - We assume increased education to increase earnings potential

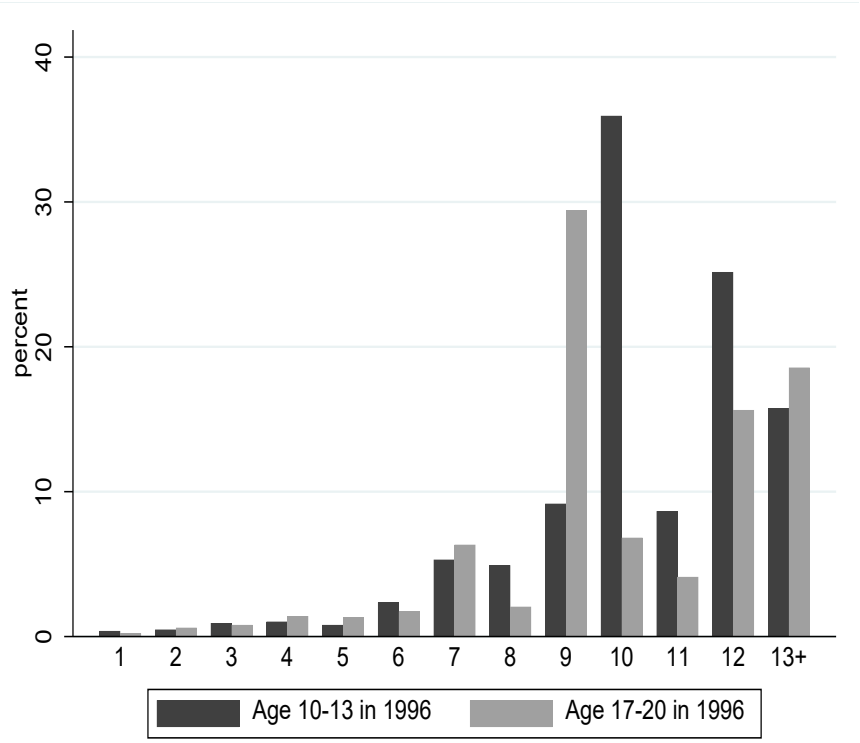
    - For women:
        - Costs: Risk of HIV (same); risk of unwanted pregnancies (higher)
        - Benefits: Pleasure (same); gifts and transfers from partners (lower)

    - What is the cost and benefit of risky sexual behavior for men?
        - Cost: Risk of HIV (same); risk of unwanted pregnancies (much less costly than for women); gifts and transfers to partners (lower).
        - Benefits: Pleasure (same).

    - So women should reduce risky sexual behavior, while men might increase it.

Understanding decisions and behaviours

- Large increase in students completing 10 rather than 9 years of schooling
- Importantly this increase in education is not because of unobserved characteristics of the students but because of a reform
- Hence we interpret consequences of the reform-induced increase in education as causal



Understanding decisions and behaviours

	Women	Men
Skill level of occupation	0.077* (0.039)	0.108* (0.055)
Age at first sex	1.117*** (0.139)	0.333 (0.453)
Transactional sex	0.013 (0.011)	0.052*** (0.009)
Concurrency	-0.027 (0.031)	0.139** (0.044)
HIV infection	-0.101* (0.048)	-0.039 (0.030)

Understanding decisions and behaviours

- To formally model costs and benefits and how these respond to changes can be helpful to understand decisions and behaviours of importance for spread of infections (as for any other decision or behaviour).

- Methods to learn about causal effects by using exogenous changes or exogenous variation.

1. Understanding health behaviors

- Example: Decisions about staying at home with mild symptoms (which affect spread of Covid and other infectious diseases)
  - Benefits
  - Costs

1: The concept of externalities

- Any positive or negative effect of a behaviour or a market transaction that falls on someone else than the decision-maker(s)
  - Sexual risk-taking has negative externalities if I thereby risk infecting others.
  - Staying at home with mild symptoms has positive externalities, since it reduce the probability that I will infect others
- If the individual does not take these effects on others into account when weighting (marginal) benefits against (marginal) costs, the decision will not be what is best for society at large.
  - Lampi and more (2021) show that Swedish physicians prescribe antibiotics more often for themselves than for patients.

1. Understanding decisions and behaviours

- Incentives matter!
  - Also for health care workers
  - In China drug sales was an important source of revenue for hospitals, what should we expect regarding antibiotics prescriptions?

1. Understanding health care worker behaviour

- Incentives matter!
  - Also for health care workers
  - In China drug sales was an important source of revenue for hospitals, what should we expect?
  - High rates of antibiotics prescriptions which studies showed depended on financial incentives (Currie et a., 2014)

1. Understanding decisions and behaviours

- Incentives matter!
  - Also for health care workers
  - A large literature document know-do gaps, i.e. health care performers do not always preform at capacity.
    - Organizational structure matter for whether physicians perform at capacity (Leonard, 2007)
    - It is not (just) explained by excess workload (Kovacs and Lagarde, 2022).
    - Health care workers also need incentives/motivation to put in the effort and work at capacity
    - Note that all incentives do not have to be financial, non-financial incentives can also be important (appreciation etc.).

1. Understanding health care worker behaviour

- Summing up, the health care system create incentives for health workers and decision-makers
  - How hospitals, clinics and staff are paid matters.
    - Capitation – fixed amount?
    - Fee for service?
    - Performance pay?

    - Example: Covid testing in Sweden took off when regions were paid for it separately.

1. What are the incentives for infection prevention at hospitals?

At hospital level:

- In principle infection control can save costs
  - Renumeration system matter for how this affects finances at the hospital

At health care worker level:

- Infection control routines cost effort
  - How do we motivate staff to make the effort?
  - The effort cost to change habits particularly high (Celhay et al., 2019)

1. Creating good incentives

- Ideally the system should be such that what is best for society is also best for the decision-maker.
  - We may for example use taxes, subsidies, and payment structures for this.
  - Economists are typically in favor of changing prices in this way. But there are obviously other ways too:
    - Regulations and laws
    - Monitoring
    - Changing/reinforcing attitudes and norms
      - So that you feel good if you “do the right thing”

2. Evaluate societies costs of infection prevention measures in society

- Two types of research:
  - Data-driven
  - Model-based

- Research on how the Covid pandemic has affected the economy:
  - Consumption of certain goods and services are reduced regardless of any measures taken
    - People try to avoid infections, especially older people.
    - People with jobs that can be done from home have an easier time doing so.
    - Some sectors, who disproportionally employ young and low-educated are affected more
    - (Some small sectors and firms benefitted)
  - Labor shortages may affect production of goods and services

  - NPIs may strengthen these effects
    - But if they actually reduce infections that may be economically beneficial too

2. Evaluate societies costs of infection prevention measures in society

- Infections and measures in other countries have economic impacts
  - Imports and exports
  - Tourism/travel

- Economic measures:
  - Interventions to maintain employment and save firms
    - Risk that they slow down adjustment
  - Interventions to increase demand
    - Risk that they just increase inflation

- What are the long-run effects?
  - On the whole economies seem to have recovered after Covid.
  - The NPI which could matter most in the long-run is school closures, may have impacts on human capital for decades.

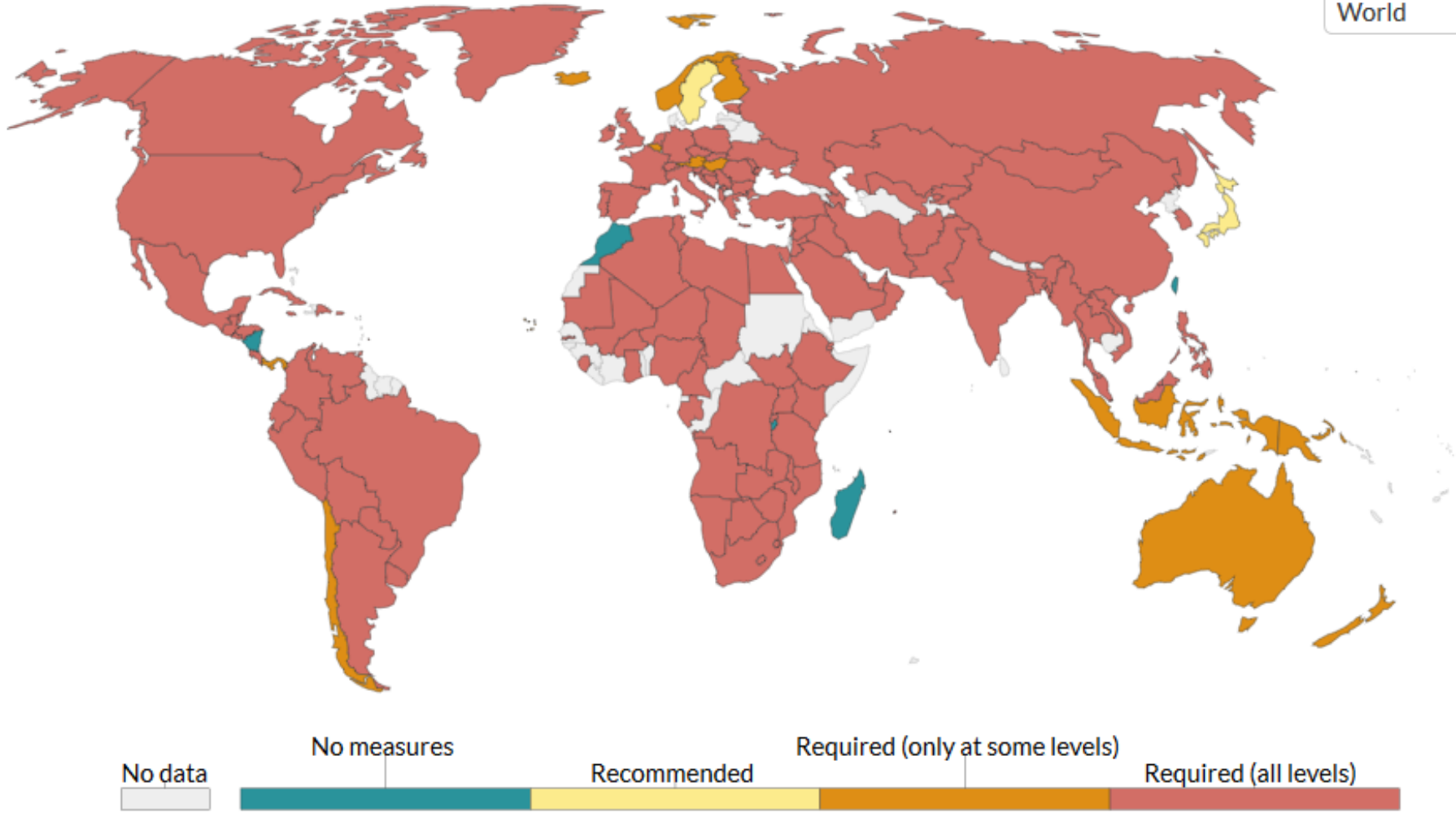
2. Evaluate societies costs of infection prevention measures in society

- Study on non-pharmaceutical interventions to counteract the “Spanish flu” in US find no short run impacts on the economy, and possibly positive effects in the medium run (Correia et al, 2022).
  - Should bear in mind though that these were generally less restrictive than typical measures against Covid-19

School closures during the COVID-19 pandemic, May 8, 2020

Our World in Data

World



Source: Hale, Thomas and Samuel Webster (2020). Oxford COVID-19 Government Response Tracker

2. Evaluate societies costs of infection prevention measures in society

- One measure against Covid-19 that have been studied quite a lot is school closures (e.g. Engzell et al., 2021).
  - Studies typically find negative effects in particular for weaker students, the extent varies. However hard to distinguish the impact of school closures from other possible effects of the pandemic.
    - We plan to do a study utilizing the large variation in school closures between schools in grade 8 and 9 in spring 2021
  - Studies from US have found some recovery when kids go back to school.
    - Generally we should expect larger effects in poorer countries that have less possibilities for good remote learning – huge losses in human capital that could have economic consequences for many decades.

3. Cost-benefit or cost-effectiveness analysis

- We assume decision-makers to weight costs and benefits, but these are not always so easy to know.
  - Therefore cost-benefit or, more often, cost-effectiveness analysis can be useful.

3. Cost benefit analysis

- The relevant cost is the **Opportunity cost**.
  - How we could otherwise have used the resources?
  - What could health care staff time and effort, and hospital space otherwise have been used for?

3. Cost benefit analysis

- What are the benefits?
  - From the perspective of the hospital?
  - From the perspective of society?

4: Impact evaluations of reforms

Natural experiments help answer important questions for society

This year's Laureates – David Card, Joshua Angrist and Guido Imbens – have provided us with new insights about the labour market and shown what conclusions about cause and effect can be drawn from natural experiments. Their approach has spread to other fields and revolutionised empirical research.

From https://www.nobelprize.org/prizes/economic-sciences/2021/press-release/

4: Impact evaluations of reforms/changes

- Impacts of telemedicine (Kjellsson and more)
  - Does not increase prescriptions of antibiotics

Thank you for listening!