
Costs of School Closure

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Outline

- Why Close Schools?
 - Direct Economic Cost
 - Decreased GDP through absenteeism, workers staying home to care for school aged children (<16)
 - Disparate Impact on Households' Finances
 - One-earner households particularly at risk
 - Disruption of Education
 - Lost classroom time impedes learning, especially for low-income students
 - Impact on Health Care System
 - Absenteeism from Health Care Work Force specifically
 - Implications for Policy and Future Research
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Why Close Schools?

- Closing schools can reduce social contact among children, who are especially likely to catch and spread the flu virus.
- Review by Cauchemez, et. al. found that closing schools could modestly reduce total cases and greatly reduce peak attack rates.¹
- High peak attack rates could overwhelm health care system.

¹ Cauchemez S, Ferguson, NM, Wachtel C, Tegnell A, Saour G, Duncan B, Nicoll A: **Closure of Schools During an Influenza Pandemic.** *Lancet Infect Dis* 2009, 8: 473-481.

But closing schools also
has costs...

Costs Associated with School Closure: Direct Economic Costs

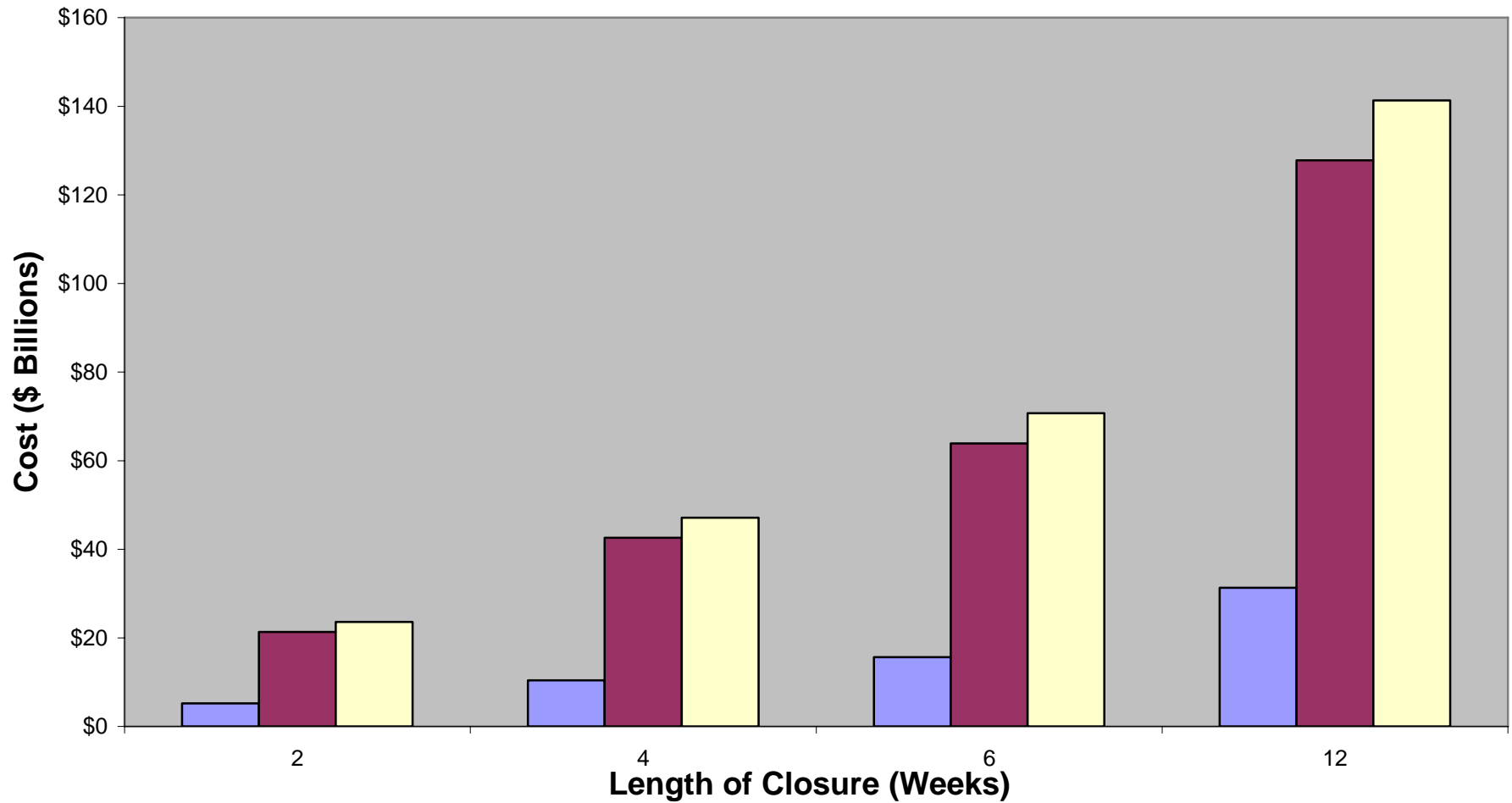
- If schools close, parents must find way to look after children
 - Some households will have adults who can care for children without missing work
 - In other households, adults will need to miss work
 - Those missed work hours are costly to the economy!
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Calculating Economic Costs: Selected Considerations

- How much worker absenteeism does closure produce?
 - ❑ Are all household adults fully employed?
 - ❑ If so, do any have informal child care?
 - ❑ If not, can any employed adults work from home?
 - ❑ If [Y, N, N] an absentee
 - How does that absenteeism from the labor force affect GDP?
 - ❑ Who stays home (Occupation, Gender, Age)
 - ❑ Can coworkers pick up slack from absentees?
 - ❑ Are absent workers able to make up missed work?
 - ❑ How do we value their lost production?
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How large are the potential direct economic costs of closing schools and formal daycare?

Economic Cost of Absenteeism Due to School Closure in the U.S. (Three Scenarios¹)



¹ See Table 1 for description of scenarios.

Low Medium High

Economic Costs for Various Closure Durations

Economic Costs of Absenteeism Due to School Closure in the United States
(Billions of 2008 US dollars and Percent of 2008 GDP)

Closure Length	Low Cost Estimate ¹	Base Estimate ²	High Cost Estimate ³
2 weeks	\$5.2 (<0.1%)	\$21.3 (0.1%)	\$23.6 (0.2%)
4 weeks	\$10.6 (0.1%)	\$42.6 (0.3%)	\$47.1 (0.3%)
6 weeks	\$15.6 (0.1%)	\$ 63.9 (0.4%)	\$70.7 (0.5%)
12 weeks	\$31.3 (0.2%)	\$127.8 (0.9%)	\$141.3 (1.0%)

Sources: 2007 and 2008 CPS Outgoing Rotation Groups; 2008 CPS March Supplement; Child Care Module of the 2004 SIPP; Sadique et. al.; Harvard School of Public Health Project on the Public and Biological Security's *Pandemic Influenza Survey*.

¹ Allows for use of informal care and work-from-home and assumes the elasticity of output with respect to hours worked is 0.8. If a male and female are equally closely related to a child, the female misses work.

² Assumes that an adult must miss work in each household with at least one child and the elasticity of output with respect to hours worked is 1. If a male and female are equally closely related to a child, the female misses work.

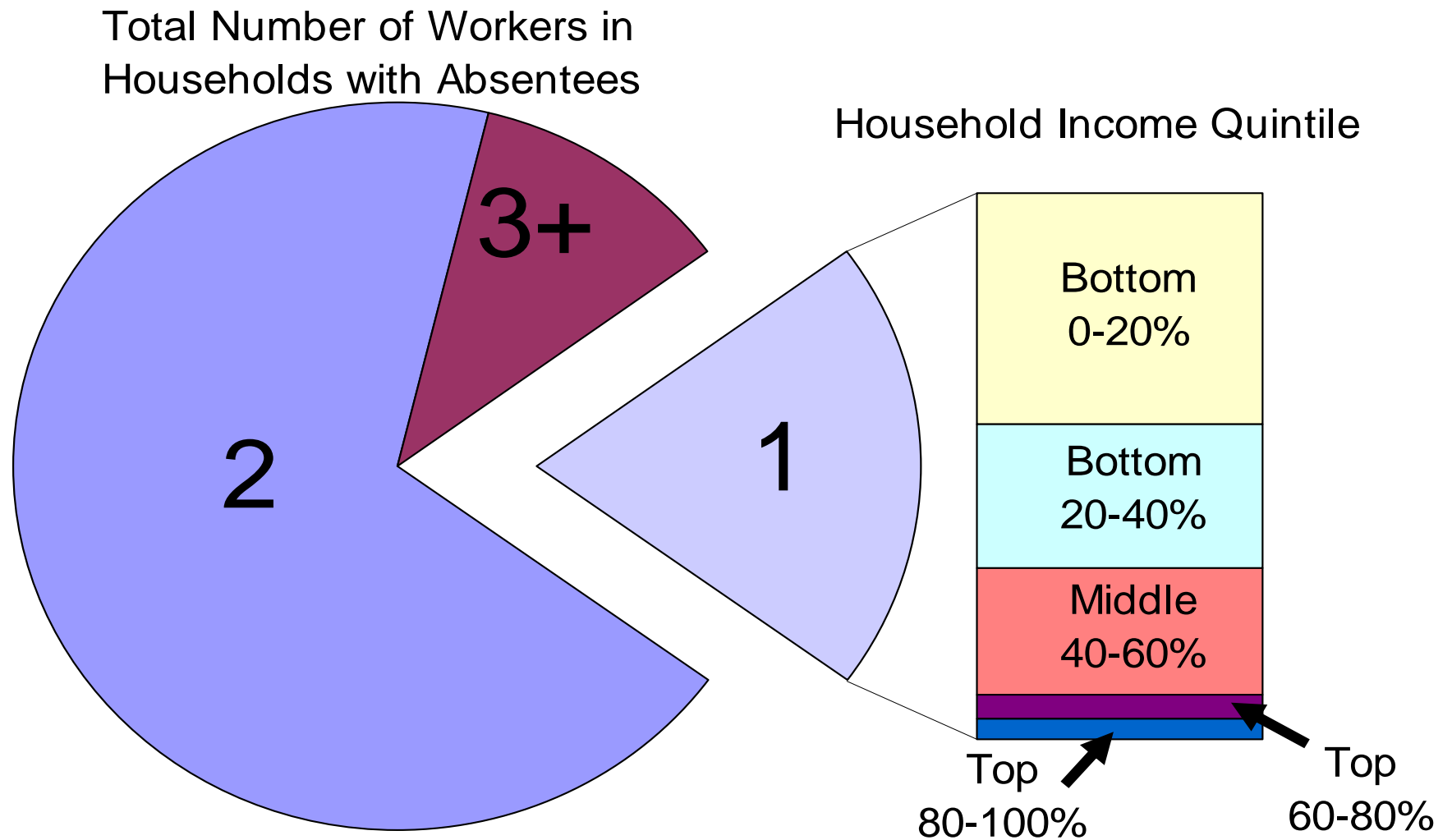
³ Assumes that an adult must miss work in each household with at least one child and the elasticity of output with respect to hours worked is 1. Assumes that households randomly choose whether males or females care for children.

Cost Per Student

- Cost per student allows any regional breakdown of interest
 - Cost per student per week of closure is
 - \$ 35 Low
 - \$142 Baseline
 - \$ 157 High
 - Ignores regional heterogeneities (future research)
 - Estimated cost of 4-week school closure for:
 - Los Angeles County: \$1.5 billion
 - New York City: \$1.1 billion
 - Washington, D.C.: \$65 million
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Economic Impact of School Closures Unevenly Distributed at Household Level

Households with Just One Worker Are Most Vulnerable to School Closure



20% of projected absentees live in households with no other workers and are at risk of having no earned income if they miss work to provide childcare. These absentees predominantly live in low- and middle-income households.

School Closure Also Disrupts Education

Impact of School Closure on Students

- Evidence from staff compensation
 - Lost learning costs \$6.1 billion per week
- Evidence from summer learning loss¹
 - On average, students lose about one month of learning over summer break.

¹ Cooper H, Nye B, Charlton K, Lindsay J, Greathouse S: **The effects of summer vacation on achievement test scores: A narrative and meta-analytic review.** *Rev Ed Research* 1996, 66: 227-268.

Some absent workers will
be from Health Care
Workforce (HCW)

Health Care Impact of School Closure

- How large is absenteeism level among HCW?
 - For delivery of services, correct measure is work hours (not percent of work force)
 - Estimate of percent work hours lost among key health care personnel
 - 6% Low
 - 19% High
 - Excludes absent due to illness or fear
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Potential Impact of HCW Absenteeism

- Does this loss in work hours degrade mitigation?
 - Vaccine delivery
 - Treatment
 - If so, should special arrangements be made for school-age children of HCWs?
 - Might do this at low cost, by using teachers.
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Summary: Costs of School Closure

- Surprisingly high direct economic costs
 - 4 weeks = \$47 B.
 - Interruption in education
 - Substantial absenteeism in the HCW force, and associated degradations in vaccine delivery and other mitigation efforts.
 - Important: If the epidemic is severe, the benefits of closing schools may outweigh these costs.
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- End
