

Mapping Educational Inequalities During the Pandemic using Dutch Register Data



LEVERHULME
TRUST _____

Per Engzell

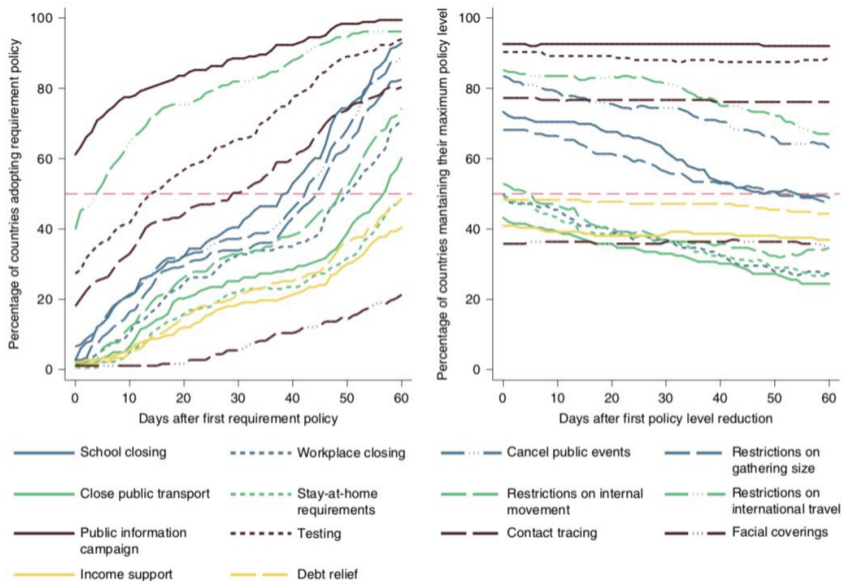
Arun Frey

Mark Verhagen

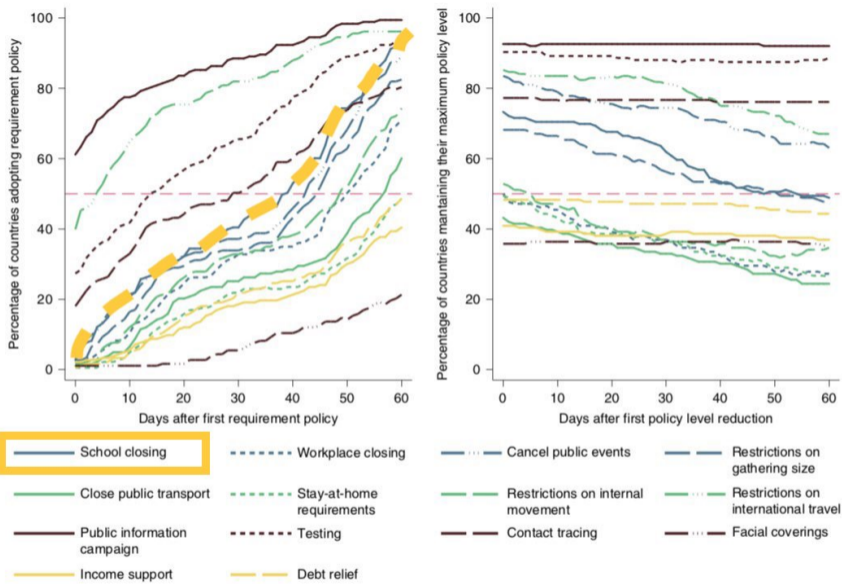
University of Oxford

April 27, 2021

European Commission Joint Research Centre (JRC)
Community of Practice on Fairness
Monitoring, Indicators and Impact Evaluation Unit




Hale et al. (2021) "A Global Panel Database of Pandemic Policies (Oxford Covid-19 Government Response Tracker)." Nature Human Behaviour.



Hale et al. (2021) "A Global Panel Database of Pandemic Policies (Oxford Covid-19 Government Response Tracker)." Nature Human Behaviour.

RESEARCH ARTICLE

Learning loss due to school closures during the COVID-19 pandemic

Per Engzell, Arun Frey, and  Mark D. Verhagen[+ See all authors and affiliations](#)PNAS April 27, 2021 118 (17) e2022376118; <https://doi.org/10.1073/pnas.2022376118>

Edited by Florencia Torche, Stanford University, Stanford, CA, and approved February 26, 2021 (received for review October 26, 2020)

Article

Figures & SI

Info & Metrics

 PDF

Significance

School closures have been a common tool in the battle against COVID-19. Yet, their costs and benefits remain insufficiently known. We use a natural experiment that occurred as national examinations in The Netherlands took place before and after lockdown to evaluate the impact of school closures on students' learning. The Netherlands is interesting as a "best-case" scenario, with a short lockdown, equitable school funding, and world-leading rates of broadband access. Despite favorable conditions, we find that students made little or no progress while learning from home. Learning loss was most pronounced among students from disadvantaged homes.

**Per Engzell**Researcher, Leverhulme Centre
for Demographic Science,
University of Oxford, and Swedish
Institute for Social Research**Arun Frey**PhD candidate in Sociology,
University of Oxford**Mark Verhagen**PhD student, Leverhulme Centre
for Demographic Science,
University of Oxford

Study context

Primary education in the Netherlands

- ▶ High degree of school autonomy, but school funding is centralized and redistributive
- ▶ Although schools are run by local school boards, all of them are publicly funded and report to the Ministry of Education
- ▶ Close to OECD average in school spending and reading, top performer in maths
- ▶ Often viewed as a success story that combines freedom of choice with accountability and uniformly high quality

Study context

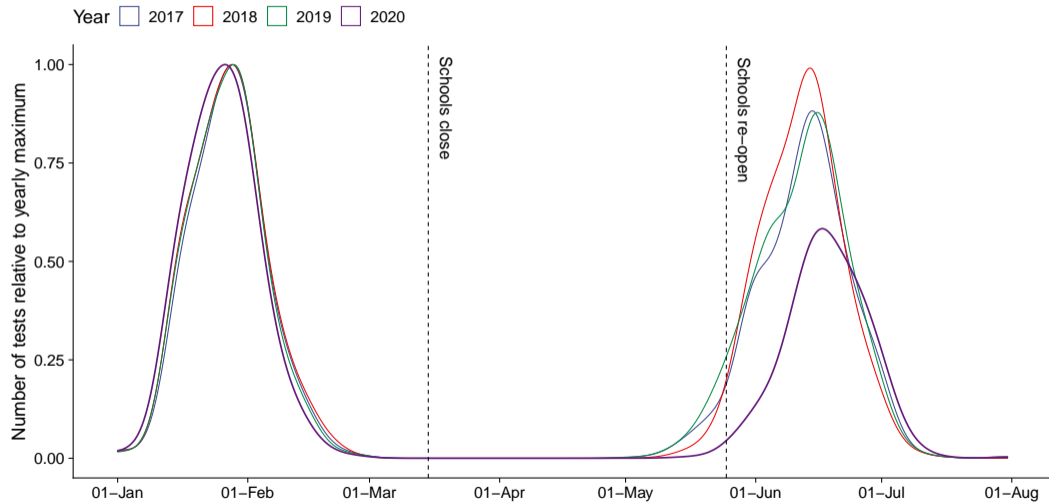
Primary education in the Netherlands

- ▶ High degree of school autonomy, but school funding is centralized and redistributive
- ▶ Although schools are run by local school boards, all of them are publicly funded and report to the Ministry of Education
- ▶ Close to OECD average in school spending and reading, top performer in maths
- ▶ Often viewed as a success story that combines freedom of choice with accountability and uniformly high quality

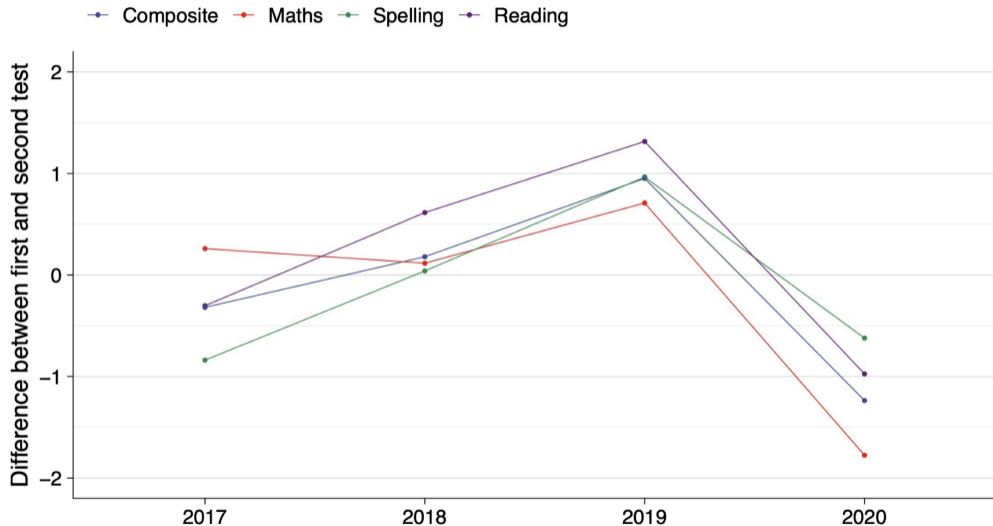
Three features make this study possible:

- ▶ Student monitoring system \Rightarrow standardized tests taken twice a year
- ▶ Weighted school funding \Rightarrow schools collect family background data
- ▶ Reliance on third-party service providers to curate data and provide insights

Design

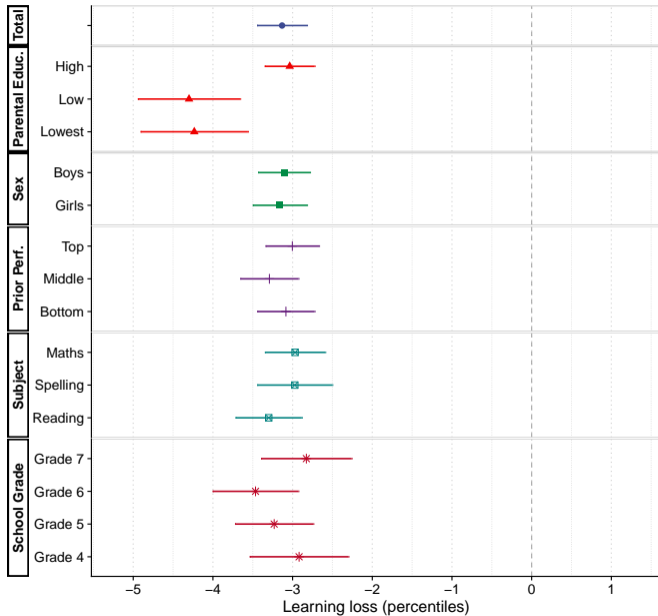


Learning loss

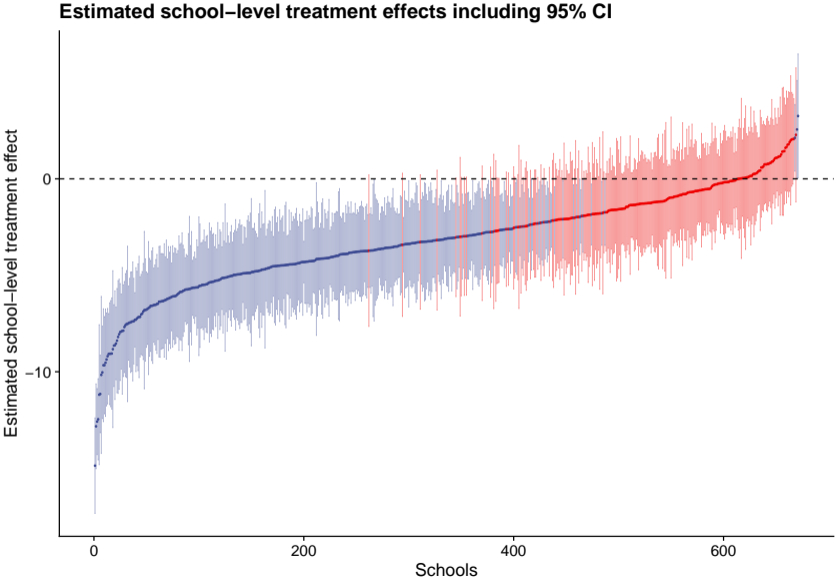


Trends in student progress. The graph shows trends in the difference between mid-year and end-of-year test scores by subject and year.

Social inequality



School-level variation



How representative is the Netherlands?

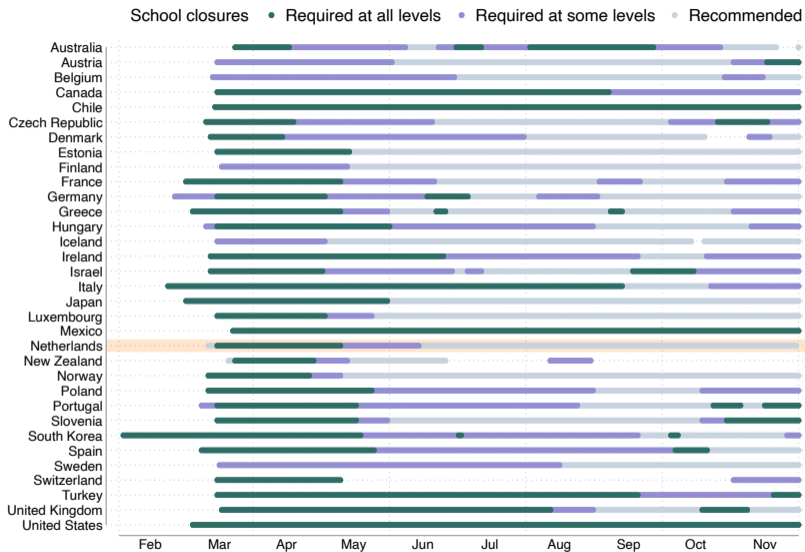
In reading performance, close to OECD average; in many other respects not

Three key differences:

- ▶ World-leading broadband access
- ▶ Central and equitable school funding
- ▶ Short first lockdown

Consequences may be more dire elsewhere

School closures

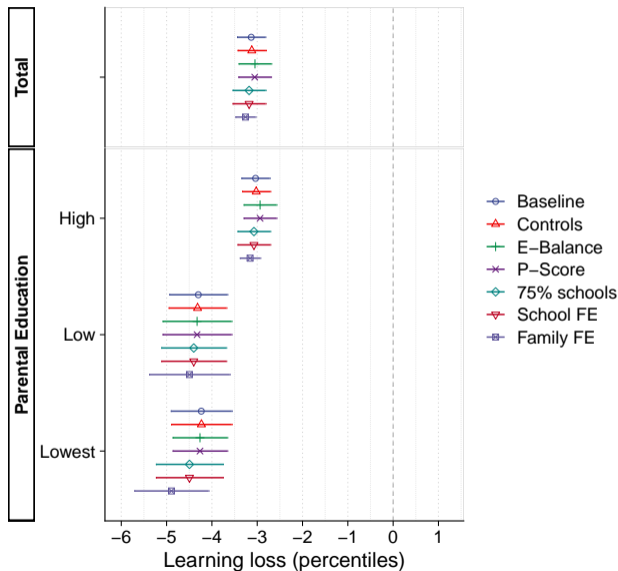


Data: Oxford Covid-19 Government Response Tracker

Robustness

- ▶ Regression adjustment
- ▶ Only schools that test $\geq 75\%$
- ▶ Propensity score weighting
- ▶ Entropy balancing
- ▶ School fixed effects
- ▶ Family fixed effects

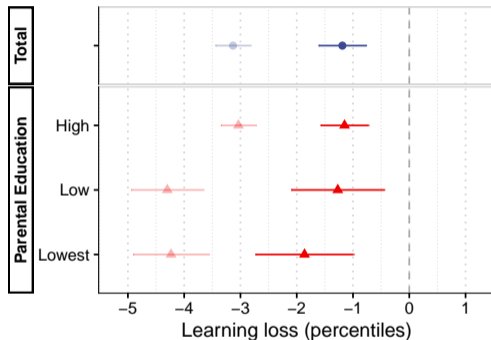
Controls: parental education, student sex, prior performance, school-level economic disadvantage, proportion immigrant background, school denomination



Mechanisms

Do these results reflect knowledge learned, or more transient “day of exam” effects?

- ▶ Students may be unaccustomed to school setting or under stress
- ▶ Social distancing could alter testing environment
- ▶ Teachers may have put less emphasis on testing under lockdown



We inspect performance on tasks not designed to test curricular knowledge

⇒ Effects shrink by two thirds, implying knowledge learned is the main channel

Conclusions

- ▶ Students lost on average 3 percentile points in the national distribution relative to a normal year. Equivalent to $\sim 8\%$ of a standard deviation
- ▶ Implies students made little or no progress from home, and suggests much larger losses in countries less prepared for remote learning
- ▶ Losses concentrated among students from less-educated homes. In the lower categories of parental education, effects up to 55% larger

Results likely a lower bound, not only for other countries but also within Netherlands

- ▶ Schools remained at reduced capacity following reopenings
- ▶ Dynamic models show that small initial losses can accumulate into larger ones
- ▶ Test scores are a narrow metric that does not consider children's psycho-social development, neither economic costs to parents and society

Overall, our results highlight the importance of social investment strategies to “build back better” and enhance resilience and equity

Thank you!

Per Engzell  @PEngzell
per.engzell@nuffield.ox.ac.uk

Arun Frey  @ArunFrey
arun.frey@sociology.ox.ac.uk

Mark Verhagen  @MarkDVerhagen
mark.verhagen@nuffield.ox.ac.uk