

SYNOPSIS

06/29/2020

Review of “Face masks considerably reduce COVID-19 cases in Germany: a synthetic control method approach”

Article citation: Mitze T, Kosfeld R, Rode J, Wälde K. Face masks considerably reduce COVID-19 cases in Germany: a synthetic control method approach. IZA Discussion Paper Series No. 13319. Bonn, Germany: IZA Institute of Labour Economics; 2020. Available from:

<https://www.iza.org/publications/dp/13319/face-masks-considerably-reduce-covid-19-cases-in-germany-a-synthetic-control-method-approach>

One-Minute Summary

- This study used a synthetic control method (SCM) to **assess the effect of face mask use on the spread of Coronavirus Disease 2019 (COVID-19) in Germany.**
- In Jena, Germany (Thuringia), the mandatory use of face masks was announced on March 30 and came into effect on April 6.
 - 10 days after the use of face masks was compulsory (April 16), there was a 12.8% reduction in cumulative COVID-19 cases and by 20 days (April 26) there was a 22.9% reduction in cases, equating to a daily reduction in cases of 1.3%.
 - The largest effects on reduction of cases was in those ≥ 60 years (>50% reduction); the reduction in cases was between 10% and 20% for the other two age groups (i.e., 15-34 years, 35-59 years).
- In Jena, compared to the synthetic control, **the use of face masks led to a reduction in COVID-19 rates by approximately 30 cases per 100,000 population.**
 - To see a change in case counts due to face mask use, the authors estimated there would be lag of 7.2-8.2 days (accounting for COVID-19 incubation period of 5.2 days and a reporting delay of 2-3 days) after the use of face masks became compulsory (April 6). However, this lag was much shorter (3-4 days), leading the authors to conclude that the use of face masks anticipated by the public after the March 30 announcement contributed to part of the incidence fall.
 - Considering the above points, the authors estimated that it takes about 10 days (after program announcement) to notice a significant decrease in COVID-19 infections due to face mask use.
- **Face mask use significantly reduced COVID-19 cases in all regions of Germany, particularly in the larger cities of Germany.** When using multiple treatments (all regions), the growth rate in COVID-19 cases was reduced by approximately 18.9% with face mask use; however, using multiple treatment effects in larger cities, the rate of growth in cases was reduced by 37.3%.
- The authors conclude that the **use of face masks has led to a reduction in the growth rates of infections by 40% to 60%.** Depending on the region, the use of face masks reduced the cumulative number of COVID-19 cases between 2.3% and 13% after 10 days since face mask use was made compulsory.

Additional Information

- SCMs, as described by [Abadie 2019](#), are used to “estimate the effects of aggregate interventions, that is, interventions that are implemented at an aggregate level affecting a small number of large units (such as a cities, regions, or countries), on some aggregate outcome of interest.”
- In this study, the authors apply SCM to single and multiple units (cities and regions in Germany), where they compare a single treatment unit (city of Jena; on April 6, Jena was the first city to introduce use of face masks on public transit and in retail shops) to multiple synthetic control units (remaining cities and regions). The author’s approach takes advantage of the fact that the date when face masks became compulsory varied by city and region.
- Heinsberg, Germany (North Rhine-Westphalia region) was heavily impacted by COVID-19 and was a part of the donor pool of regions used to construct the synthetic Jena. Therefore, there is a potential for overestimation of the effect of face masks. Changing the donor pool (baseline synthetic control: removing Heinsberg or other cities and regions) did not have a significant impact on the size of the face-mask effect in Jena.
- The authors tested whether cities that did not make face masks mandatory on April 6 have also seen a reduction in COVID-19 cases. In other words, analyses were performed on similar-sized cities in Thuringia, using pseudo-treatment effects of face mask use on April 6. These cities showed that there was a significantly higher or a similar number of COVID-19 cases compared to their synthetic controls. These placebo-in-space tests indicate that the face mask-effect seen in Jena was not due to other factors or interventions.

PHO Reviewer's Comments

- It is not known from this ecological analysis the extent and quality of uptake of mask wearing, the type of masks worn, and if the demonstrated benefit is related to source control, protecting the wearer, or a combination thereof. It is possible there were other public health measures taken in Jena at this time that confound this finding (i.e. physical distancing), and the impact of behavioural change due to mandatory masking was not addressed. However, the authors do note that the timing of the introduction of face masks was not affected by other overlapping public health measures as a general “lock down” had been in place for two weeks.
- This report has not been peer-reviewed, and conclusions should be interpreted with caution.

Citation

Ontario Agency for Health Protection and Promotion (Public Health Ontario). Review of “Face masks considerably reduce COVID-19 cases in Germany: a synthetic control method approach”. Toronto, ON: Queen’s Printer for Ontario; 2020.

Disclaimer

This document was developed by Public Health Ontario (PHO). PHO provides scientific and technical advice to Ontario's government, public health organizations and health care providers. PHO's work is guided by the current best available evidence at the time of publication.

The application and use of this document is the responsibility of the user. PHO assumes no liability resulting from any such application or use.

This document may be reproduced without permission for non-commercial purposes only and provided that appropriate credit is given to PHO. No changes and/or modifications may be made to this document without express written permission from PHO.

Public Health Ontario

Public Health Ontario is an agency of the Government of Ontario dedicated to protecting and promoting the health of all Ontarians and reducing inequities in health. Public Health Ontario links public health practitioners, front-line health workers and researchers to the best scientific intelligence and knowledge from around the world.

For more information about PHO, visit publichealthontario.ca.

