

Face masks helped to reduce viral transmission during covid's first wave in Italy

26 February 2021



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Face masks likely played a role in reducing the spread of SARS-CoV-2 in Italy during the first half of 2020, according to a new study by mathematical modellers, who show that the use of face coverings could have reduced the number of official COVID-19 cases in Italy by up to 30,000 during Spring 2020.

Analysing official Italian data, the findings, published in the peer-reviewed journal *Infectious Diseases*, suggest that the protective masks also have important implications for public health decisions around their use.

"We found an excellent correspondence between nationwide lockdown and the peak of the epidemic in late March 2020, suggesting that this measure is the main factor in stopping the spread of the virus," said lead author of the study associate professor Morten Gram Pedersen at the Department of Information Engineering of the University of Padova.

"Surprisingly, we identified further drops in viral transmission in mid-April 2020 within certain regions, which corresponded well with the provision of free [face masks](#) and/or their mandatory use. We did not see this reduction in places that did not introduce any additional local interventions at that time."

In early March 2020, Italy was the first Western country to implement drastic measures to contain the spread of SARS-CoV-2, the virus that causes COVID-19. These restrictions, culminating in a full national lockdown between 11th March and 4th May 2020, proved effective at controlling the first wave of the epidemic. The number of new daily cases peaking at around 6,000 in late March to fewer than 300 by early June.

The researchers used mathematical modelling to compare official data from eight demographically similar Italian regions that had introduced specific local control measures at different times—or did not impose any additional restrictions beyond the national rules. Each region was effectively isolated from the rest of the country during the nationwide lockdown, making regional comparisons even more relevant.

"We found a change point reflecting a peak in the number of new cases for all eight regions that correspond well with the lockdown imposed between the 8th to 11th March 2020 depending on the region," said Pedersen. "Five of the eight regions showed further change points during April 2020 that corresponded well with the introduction of additional general containment measures, mandatory face mask use and/or distribution of free face masks."

The team explored alternative explanations for the accelerated decline in new cases in late April 2020

in these regions, including the activity of people using public data from Google and weather conditions. But they found that none of the investigated alternatives could account for the acceleration of the end of the first wave of the COVID-19 epidemic. "However, we cannot exclude that other, unobserved events caused the accelerated decline, as this was an observational study," commented Pedersen.

"Several recent studies have advocated for the use of face masks, and our work is in line with other recent regional studies in Germany and the USA that correlate widespread face mask use with a reduction in the spread of COVID-19," said Pedersen. "The reopening of society in May did not lead to any change in the decay rate. Therefore, our findings lend further support to the importance of face mask use in addition to lockdowns and other public health measures for the control of COVID-19."

Co-author Matteo Meneghini, associate professor at the Department of Information Engineering at Padova, added: "The benefit of face mask wearing appears to be largely a cohort effect operating at the public-health, rather than the individual, level.

"We stress, however, that—whenever the situation is critical—face [masks](#) are insufficient, and should be used in addition to other containment measures such as partial or total lockdowns, to provide further contribution to public health protection."

More information: Morten Gram Pedersen et al, Data-driven estimation of change points reveals correlation between face mask use and accelerated curtailing of the first wave of the COVID-19 epidemic in Italy, *Infectious Diseases* (2021). [DOI: 10.1080/23744235.2021.1877810](https://doi.org/10.1080/23744235.2021.1877810)

Provided by Taylor & Francis

APA citation: Face masks helped to reduce viral transmission during covid's first wave in Italy (2021, February 26) retrieved 4 August 2022 from <https://medicalxpress.com/news/2021-02-masks-viral-transmission-covid-italy.html>

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