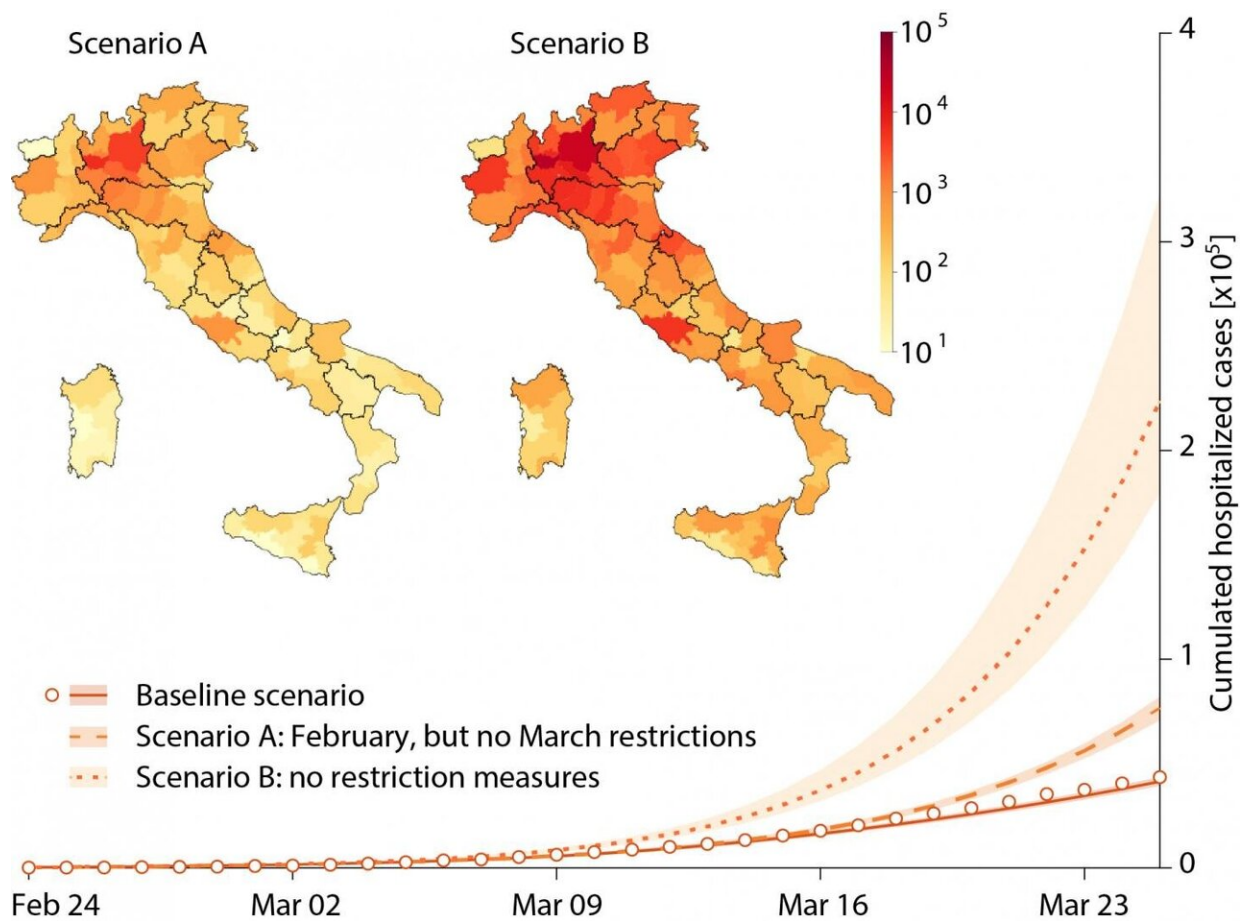


# COVID-19: Impact of containment measures in Italy: 200,000 hospitalizations avoided in March

April 16 2020



Graphs show the hospitalization demands according to different scenarios. Baseline scenario is the one that includes all the implemented containment measures. Scenario A corresponds to implementing only February restrictions without the March lockdown. Scenario B corresponds to no restrictions. Maps

report the expected hospitalization increase in the various provinces with respect to the baseline scenario. Credit: Politecnico di Milano/Università Ca' Foscari Venezia

Since the beginning of the epidemic until March 25, the mobility restrictions implemented by the Italian government have avoided at least 200,000 hospitalizations and reduced the contagion transmission by 45% according to a study accepted for publication in the renowned journal *PNAS*, coauthored by a group of Italian scientists belonging to Politecnico di Milano, Università Ca' Foscari Venezia, University of Zurich, EPFL Lausanne, and Università di Padova.

Researchers have constructed the first spatial model of COVID-19 spread in Italy accounting for both the time evolution of the infection in [local communities](#) and their [geographical distribution](#) and including the individuals' mobility to and from work and study-places. The spatial resolution is at the level of provinces. The Istat census has been used to estimate pre-epidemic mobility, while the reduction of mobility due to restrictions has been estimated from an independent study based on mobile phones geolocalization.

The map of infections has been contrasted with data and the model turns out to be quite accurate. Therefore, it can be used to provide scenarios regarding future governmental measures

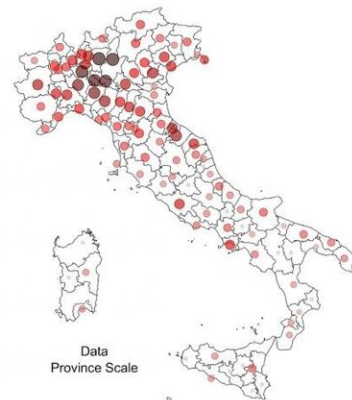
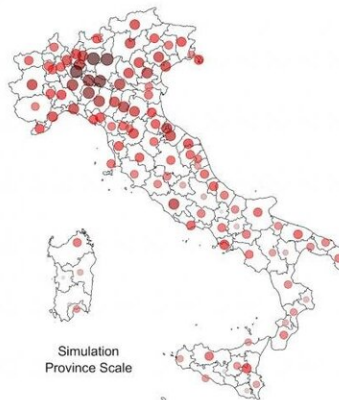
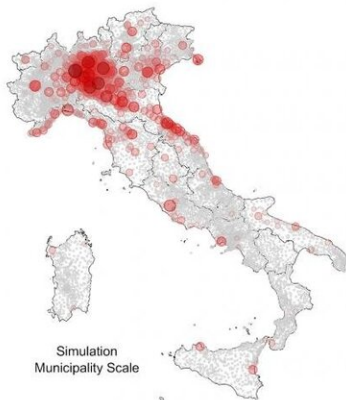
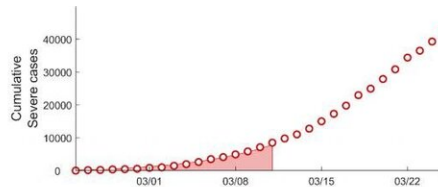
By analyzing the contagion map, scientists have found that the epidemic has initially spread quite rapidly along the main transportation infrastructures of their country.

"If the restrictions had not been implemented, the hospitalizations would have been about 200,000 thus exceeding our hospitals' capacity—says

Marino Gatto, Professor of Ecology at Politecnico di Milano and leading author of the article—We can conclude that the quite restrictive measures enforced since March 10, whose effect is only partially accounted for in the study (concluded on March 25), are responsible for the continuous decrease of the infections that we are observing right now."

**Spread of the COVID-19 in Italy**

Gatto<sup>1</sup>, Bertuzzo<sup>2</sup>, Mari<sup>1</sup>, Miccoli<sup>1</sup>, Carraro<sup>3</sup>, Casagrandi<sup>1</sup>, Rinaldo<sup>4,5</sup>, PNAS 2020  
 1) Politecnico di Milano, 2) Università Ca' Foscari Venezia  
 3) EAWAG, 4) EPFL 5) Università di Padova



Preview of animation available at <https://tinyurl.com/tjl3kw2>. Map on the left shows the epidemic spread as simulated at the municipal level resolution. Maps at center and on the right show the comparison between the geography of the epidemic as simulated by the model at the level of provinces (center) and as observed in data (right). Credit: Politecnico di Milano/Università Ca' Foscari Venezia

"We have updated the model using the most recent data. Our projections confirm a further decrease of new infections in the next weeks if the current containment measures are maintained—adds Enrico Bertuzzo,

professor of hydrology at Università Ca' Foscari Venezia and coauthor of the study—However, uncertainty is quite large and any new available data is important to understand the epidemic dynamics and its likely future evolution."

The authors of the study are experienced scientists, who have a long-term history of collaboration in the analysis of epidemic diffusion, in particular cholera and water-related diseases. Their previous research results have been provided to the World Health Organizations and Médecins Sans Frontières to develop intervention strategies aimed at limiting the spread of these diseases.

Provided by Politecnico di milano

Citation: COVID-19: Impact of containment measures in Italy: 200,000 hospitalizations avoided in March (2020, April 16) retrieved 20 April 2024 from <https://medicalxpress.com/news/2020-04-covid-impact-italy-hospitalizations.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.