

Economic and social consequences of human mobility restrictions under COVID-19

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The lockdown measures introduced in Italy to deal with COVID-19 have produced a mobility contraction which is not homogeneously distributed across Italian municipalities and regions. An examination of the steep fall on the Italian mobility network during the pandemic reveals some counterintuitive results, calling for further analysis.

Indeed, a counterintuitive and somehow paradoxical result emerges, since the contraction of mobility, in relative terms, has been more intense in the Regions where the diffusion of the virus has been negligible. Moreover, the shrinking of mobility flows has been more intense where the average income per capita is lower and inequality in the distribution of income is higher.

This is one of the key findings of the paper published in the *Proceedings of the National Academy of Sciences* by the research group (Giovanni Bonaccorsi, Andrea Flori, Francesco Pierri) coordinated by professor Fabio Pammolli at Impact, School of Management, Politecnico di Milano and CADS, joint center of Politecnico di Milano and Human Technopole, in collaboration with the research team of Walter Quattrociocchi

(Università di Venezia) and Antonio Scala (CNR).

The study analyzed a large-scale data set of anonymized near-real-time mobility data from the Facebook Data for Good Program, for over 3m Italian citizens. Data was collected before and after the lockdown introduced by the Italian Government.

The researchers observed a sharp reduction in the movements of individuals, with an average reduction in mobility of 70%.

However, even though mobility restrictions were designed and implemented for the whole Italian territory, their distribution across geographical areas reveals substantial differences. In particular, somehow paradoxically, those Regions which have been more affected by the contagion in the North-East of Italy have experienced a reduction of mobility flows that is less pronounced in relative terms. In particular, in municipalities in Lombardy and Veneto, the two regions which have been hit mostly by COVID-19, the contraction in mobility flows has been 5% to 15% lower than the national average. On the contrary, southern and poorer Regions in the South of Italy like Abruzzo and Calabria, which have been scarcely affected by the virus, show a contraction in mobility which has been 16% to 20% higher than the national average.

To get some insights into these findings, the research team led by Professor Pammolli reconstructed the economic and social features of the affected Italian municipalities, i.e., income per capita, fiscal capacity, deprivation, urban density, and inequality in the distribution of income.

The sudden stop triggered by the COVID-19 outbreak has been treated analogously to a large-scale, extreme, natural disaster. Through a quantile regression technique, the researchers have found that those municipalities which have been mostly affected by the lockdown are the ones where income per capita is lower and inequality is higher.

Municipalities where [income](#) per capita is below the national average (€18.175) have experienced a contraction in mobility which, on average, is 10% higher than the national average reduction.

The study sheds light on some unanticipated consequences of lockdown interventions, revealing how mobility disruption could have induced an increase in socio-economic segregation, damaging mostly the poor and the fragile.

More information: Giovanni Bonaccorsi et al, Economic and social consequences of human mobility restrictions under COVID-19, *Proceedings of the National Academy of Sciences* (2020). [DOI: 10.1073/pnas.2007658117](#)

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