Socioeconomic determinants of Stay-at-Home Policies during the First COVID-19 Wave

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The COVID-19 pandemic has had a significant impact on public health and social systems worldwide. In the absence of vaccines, the most widespread reaction to stop the spread of the disease was the implementation of lockdowns or stay-at-home policies. In spite of the reported usefulness of such policies, their efficiency was highly constrained by socioeconomic factors determining their feasibility and their outcome in terms of mobility reduction and the subsequent limitation of social activity. My talk will consist of two studies that aim to assess the impact of the socioeconomic class of the population in both following the restrictions and curbing the pandemic, at two different scales. First, we take a look at the efficacy of the policies implemented in 42 different countries, quantifying the *social permeability* which reflects the inability of individuals to remain in confinement and continue social mixing allowing the spread of the virus. After calibrating the model to incidence and mobility data, our results show (Fig.2) low-income countries have a harder time slowing the advance of the pandemic, even if the virus did not initially propagate as fast as in wealthier countries. The study highlights the disparities between countries in their ability to mitigate the spread of the disease and the impact on vulnerable populations. In the second part [1], we turn to a smaller scale and focus on the three largest cities of Colombia: Bogotá, Medellín and Cali, where we have shown that the first policies were not successful in containing the virus due to the social permeability. Here we investigate the impact of these restrictions on the mobility patterns of different socioeconomic classes in the mentioned cities during the first wave of the COVID-19 pandemic. In global terms, we find a consistent positive correlation between the reduction in mobility levels and the economic stratum of the population in every city, implying that those with lower incomes were less capable of adopting the aforementioned policies (Fig.1). Our analysis also suggests a strong restructuring of the mobility network of lowest socioeconomic strata during the lockdown, which increased their mixing while hampering their connections with wealthiest areas due to sharp reduction in long-distance trips.

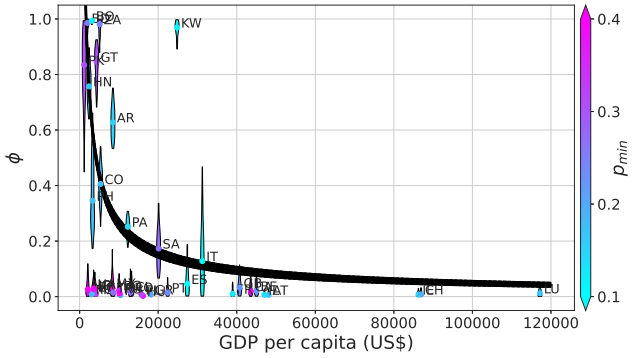

Fig. 1. Include here the figure caption.

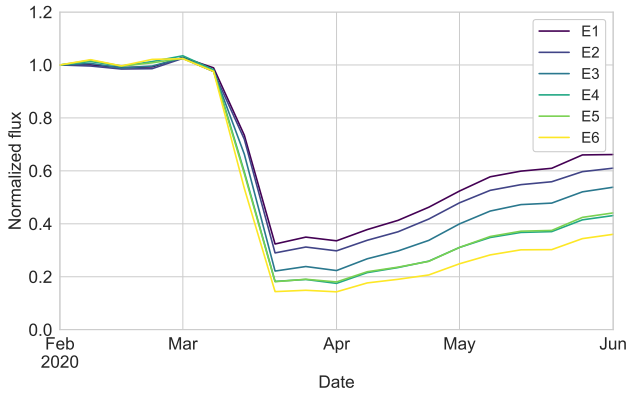

Fig. 2. Include here the figure caption.

[1] P. Valgañón, Andrés F. Useche, D. Soriano-Paños, Gourab Ghoshal and J. Gómez-Gardeñes, *Quantifying the heterogeneous impact of lockdown policies on different socioeconomic classes during the first COVID-19 wave in Colombia*, arXiv:2304.05746 [physics.soc-ph].