

**Alessandro Vespignani/Network Science Institute Executive Summary**

**COVID-19: Forecasting its Reach and Flattening the Curve**

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As the COVID-19 pandemic advances, it is upending every facet of human life: endangering lives, changing the ways we interact, overloading healthcare systems, confounding workplaces and educational institutions, and threatening the economy.

One of the world’s most renowned experts on the modeling of infectious diseases, Northeastern University’s Alessandro Vespignani has mobilized an interdisciplinary team to combat COVID-19. His data-driven predictions are vital to slowing the virus’s march, and he is fronting the race to identify, assess, and deploy intervention strategies. But to accelerate his work, Vespignani requires financial resources to help bolster personnel, meet computation expenses, and acquire datasets.

**Mapping an Invisible Foe**

Vespignani, the Sternberg Family Distinguished University Professor, and director of both the Network Science Institute (NetSI) and the Laboratory for the Modeling of Biological and Sociotechnical Systems (MOBS Lab), is harnessing computing power to analyze how human behavior patterns fuel or suppress COVID-19. These models simulate different intervention strategies, such as travel bans, school closures, and social distance policies, to evaluate their effectiveness in limiting the pandemic’s spread.

The demand on the MOBS Lab is acute and intensifying: The lab is one of four teams advising the White House on the COVID-19 outbreak in the United States; Vespignani reports daily to the World Health Organization and Centers for Disease Control and Prevention; and his models are used by government leaders at all levels to inform decisions that impact communities. Northeastern invites philanthropic support to boost the following areas:

**Personnel**—The MOBS Lab seeks to add researchers, software developers, PhD students, and technical writers who will amplify Vespignani’s ability to model and predict the pandemic’s reach.

**Computation**—Since January, Vespignani’s monthly computation costs have more than tripled. Forecasting the epidemic requires resources to process the incredibly large-scale complex models through powerful cloud systems.

**Datasets**—With funds to compile and collect the latest data on population mobility, COVID-19 cases, and hospital capacity and referral patterns, Vespignani will be better able to model the pandemic in real time and design impactful interventions.

By investing in Vespignani’s work, members of the Northeastern community will empower him to make a real-time, lasting difference in leading the fight against COVID-19 and mitigating its calamitous effects.