

Pandemic Risk Management: Resources Contingency Planning and Allocation

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Abstract

The repeated history of pandemics, such as SARS, H1N1, Ebola, Zika, and COVID-19, has shown that pandemic risk is inevitable. Extraordinary shortages of medical resources have been observed in many parts of the world. Some attributing factors include the lack of sufficient stockpiles and the lack of coordinated efforts to deploy existing resources to the locations of greatest need.

This paper investigates contingency planning and resources allocation from a risk management perspective, as opposed to the prevailing supply chain perspective. The key idea is that the competition for limited critical resources is not only present in different geographical locations but also at different stages of a pandemic. This paper draws on an analogy between risk aggregation and capital allocation in finance and pandemic resources planning and allocation for healthcare systems. The main contribution is to introduce new strategies for optimal stockpiling and allocation balancing spatio-temporal competition for medical supply and demand.