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# COVID-19 and the Supply Chain

UMass Amherst professor studies supernetworks and disaster relief



UMass Amherst Professor Anna Nagurney is an expert on the impacts of disruptions on supply chains.

If you didn't know what a supply chain was a month ago, you do now. We are feeling them palpably, through strikes of essential workers, surgical mask shortages, and bleak shelves in the paper-products aisle. Anna Nagurney, John F. Smith Memorial Professor of Operations Management at the UMass Amherst Isenberg School of Management, has spent her career studying supply chains and the impacts of disruptions.

Nagurney is a world-renowned expert, with over 200 journal articles and 14 books. She established the [Virtual Center for Supernetworks](#) [1], which she directs, in 2001. At Isenberg, Nagurney teaches a course in humanitarian logistics and healthcare, at which she hosts practitioners who have been at the frontlines of disaster response—whether the disaster be an infectious disease such as Ebola, a hurricane such as Maria, or a terrorist act.

Unpredictable human behaviors like panic buying and hoarding can be hard to model, and right now the fact that almost everything is unstable makes reliable predictive models difficult to form. Nagurney, who has written widely in the popular press on how specific supply chains—including the unique blood supply chain—are impacted by the coronavirus, can offer some insights and perspective.

First, to get the bad news out of the way. What should we be concerned about? “Pharmaceuticals,” replies Nagurney: antibiotics, and generic medications, especially for people with chronic ailments who require a long-term supply—and of course: personal protective equipment, such as masks, for health care workers, since so much of their production has been outsourced overseas in the interest of cutting costs in the short term. The medical supply chain, where many materials have been “offshored” or have become reliant on a single source,

has been especially impacted by political trade restrictions. “Not only do we have to deal with getting the supplies themselves,” Nagurney points out, complicating the matter are “political situations that may affect the flow of supplies.”

But there are reasons to be cheerful. Paper products, such as toilet tissue and diapers, are mostly produced in the United States, so even if you see empty shelves in the moment, they should be refilled. And in the United States, points out Nagurney, “our food network is robust. And we are coming up to spring and summer, for seasonal harvests of produce.”

Looking ahead, Nagurney reflects on how response to COVID-19 may influence supply networks in the future. It could lead to speeded-up implementation of such technologies as self-driving trucks and drone deliveries. Future imperatives that might mitigate the effects of disasters such as pandemics could include creating a resilient supply chain that regularly checks for storage of supplies, and their freshness and usability. And supply chains that, instead of focusing on being “leaner and meaner,” design for redundancy.

One network that has been functioning particularly well at this time is the online social network, especially close to “home.” “Our community at UMass has simply been amazing,” comments Nagurney. “People are reaching out to show appreciation for one another and the connections are powerful.”

Nagurney urges one way we can fortify a life-saving supply chain and help others: “Give blood if you can.”

*For reliable information about supply chains, you can follow Nagurney on Twitter at @supernetworks, and the nightly summary of her professional network @INFORMS.*

## Related Links

- [Nagurney’s article about COVID-19 and the blood supply chain in The Conversation](#) [2]
- [“The Unseen Networks,” a UMass feature on Nagurney’s work](#) [3]
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### **Links**

[1] <https://supernet.isenberg.umass.edu/>

[2] <https://theconversation.com/how-coronavirus-is-upsetting-the-blood-supply-chain-133424>

[3] <https://www.umass.edu/gateway/feature/unseen-networks>