Innovative cities follow a unique historical pattern, study shows

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A new study from the Kellogg School of Management at Northwestern University revealed a unique historical pattern that cities follow in order to become strong and innovative economies.

Population size seems to be the key driver propelling urban economies to new heights, according to Hyejin Youn, assistant professor of management and organizations at Kellogg and the corresponding author on the study.

The researchers analyzed industrial employment and population changes in 350 U.S. cities between 1998 and 2013, including over 100 million workers.

They observed a transition to innovative economies when the population reaches 1.2 million people.

Another key factor in that transition is also the ability of the city to attract and retain certain industries that tend to grow much faster compared to population growth. Some of these industries include arts, entertainment, professional services, science and information technology. Youn calls these "superlinear industries."

"What we observed is not a blip in history," Youn said. "These two factors go hand in hand and depend on one another."

Sublinear industries are those whose growth rate is less than the population size. These include primary industries such as fishing, agriculture, mining and manufacturing.

"These are industries that need geographical resources in order to grow, which obviously doesn't scale with the size of the city," Youn said. "They're also less dependent on human interaction and population."

According to Youn, human interactions are known to drive the creation of ideas. In other words, innovation somehow depends on the rate of human interaction, which is pushed forward by population size.

Policy implications

Cities account for 90% of the U.S. economic output and are home to 86% of the population, according to recent data from the Bureau of Economic Analysis and the Census Bureau.

The study may have implications for policy makers, especially mayors who are trying to transform their cities' economies. For example, cities losing more people than they gain must look at population size as a strategic priority, according to Youn. "They wouldn't be losing only economically, but also squandering a lot of possible innovative power."

Areas in the United States that have typically relied on manufacturing but now face challenges due to outsourcing and globalization may consider a policy of "upskilling" where they make their workforce employable in more advanced industries.

"The caveat here is this transformation may be more dependent on national rather than city policy," Youn said. "The federal government needs to think about the industrial composition of the country as a whole."

Remote work may slow down innovation

Youn thinks the largest cities will survive after COVID-19 despite fleeting trends of workers flocking away from major urban centers. But she warns that innovation may take a hit.

Since innovation, in many ways, is driven by strong communication, serendipitous interactions and being largely together in the same physical space for quick decision making, Youn warns that new ideas and breakthroughs might slow down as we continue to work from home.

"Remote work is efficient only if communication processes are well-established and most tasks are well-defined with little room for ambiguity," said Youn. "If you're presenting a new idea to your company, you will need multiple ways of communicating it, and it will probably not be understood the first time. This is very hard to do online compared with face-to-face interactions."

The study, titled "The universal pathway to innovative urban economies," will be published by *Science Advances* online Friday, Aug. 21.

More information: Inho Hong et al. The universal pathway to innovative urban economies, *Science Advances* (2020). DOI: 10.1126/sciadv.aba4934

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