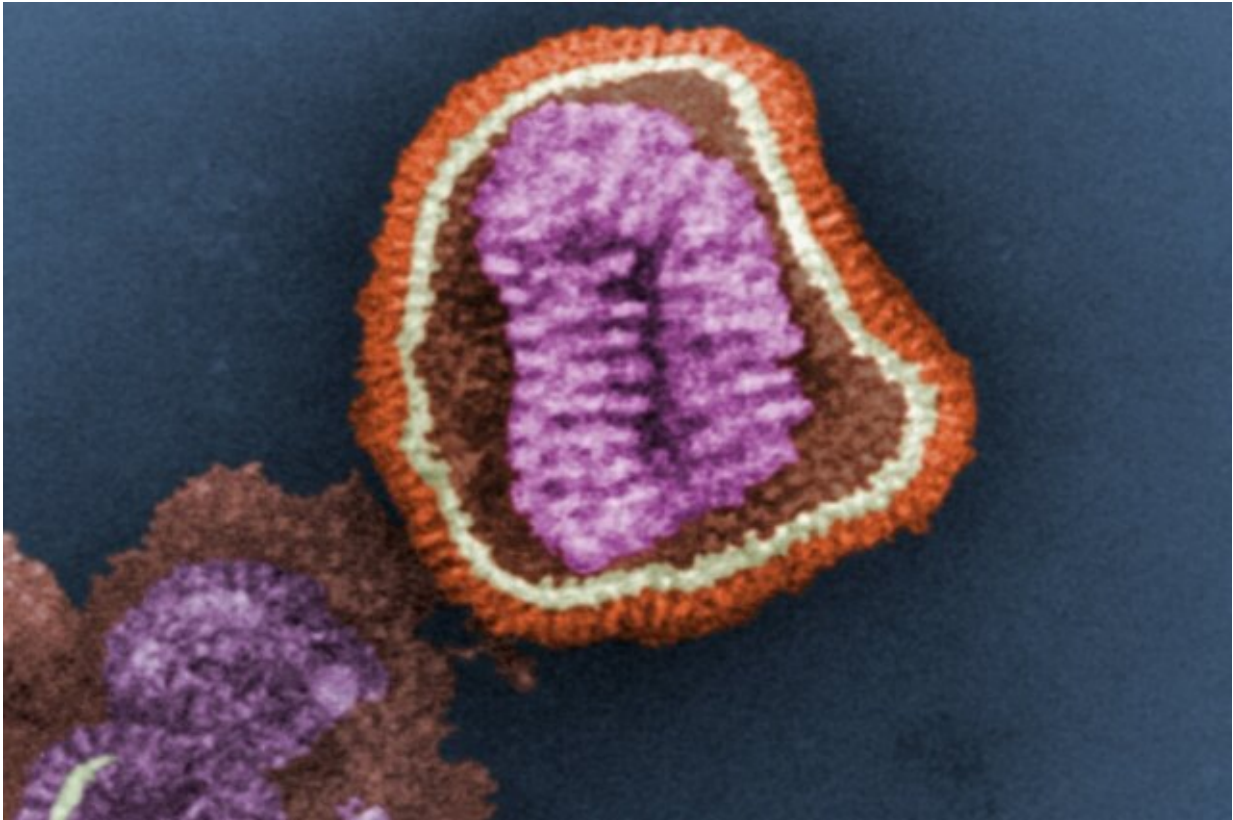


Brazil during the 1918 flu epidemic

June 11 2020, by Lawrence Goodman



This digitally-colored transmission electron microscopic image depicts the ultrastructural details of an influenza virus particle. Credit: CDC, Frederick Murphy

While the impact of the 1918 Spanish flu on the developed world has been extensively researched, a lot less is known about its health effects on the Global South.

In a first-of-its-kind study, Professor of Business at Brandeis International Business School Aldo Musacchio and his colleagues have applied modern statistical methods to study the toll of the century-old influenza pandemic on the developing world.

They specifically focused on the region of São Paulo in Brazil.

Among their findings:

- Literacy rates fell for females and rose for males.
- Detrimental health effects persisted in the population, resulting in increased hospital admissions even 20 years after the epidemic abated.
- Agricultural production fell both short- and long-term.

The results offer possible insights into what will happen in modern-day Brazil, which as of late May had the second-highest number of COVID-19 infections in the world after the United States. President Jair Bolsonaro has played down the virus's severity and opposed social distancing measures.

Professor of Economics Nidhiya Menon and graduate student Amanda Guimbeau coauthored the research, which was published as a [working paper](#) on the website of the *National Bureau of Economic Research* in April.

The Spanish flu came to the São Paulo area in September 1918 when an English-flag bearing ship entered the port in the city of Santos. Its sailors had been exposed to the virus in Senegal, where they'd made a pit stop after leaving Europe.

A few months later, roughly 350,000 people, two-thirds of the city of São Paulo's population, were infected, and 5,300 dead. Musacchio said

he and his coauthors focused on the state of São Paulo because it spread very quickly and widely there, having a broader impact on the population than in other places.

The researchers looked at both the short- and long-term effects of the Spanish flu, first in 1920 and then again in 1940.

- In the short-term, they found:
- Infant mortality and stillbirths increased, especially among males. This accords with [scientific research](#) showing males in the womb are more vulnerable than females to health crises.
- The literacy rate for males aged 15 and above rose. The researchers speculate that this may be because the virus killed more males who were less healthy or less educated (and likely less wealthy).
- The country's agricultural output dropped significantly. Per capita coffee production fell by 21%, rice by 47% and maize by 25%.

Long-term effects of the pandemic include:

- Lower rates of literacy among women and higher rates of literacy among men who were children during the pandemic. "Investing in [males](#)/boys at the expense of females/girls" is one possible explanation, the journal article states.
- A 33% increase in inpatient hospital admissions over what would be expected if the pandemic hadn't occurred. This suggests the Spanish flu continued to have [health effects](#) even 20 years later.
- A continued decline in agricultural productivity, though not as great as was seen in 1920.

"Right now developing countries are paying a lot of attention to the short-term," Musacchio said. "Our research shows there are long-term effects

to think about, too."

Provided by Brandeis University

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