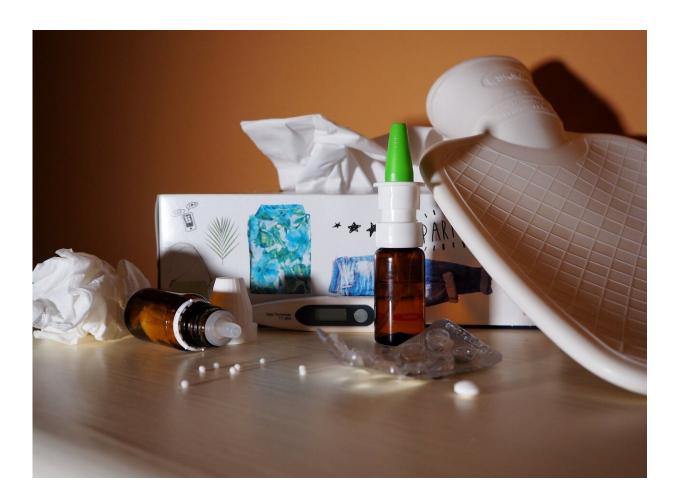# Multiple factors synergistically drive socioeconomic disparities in flu burden

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Credit: Flockine, Pixabay

A comprehensive modeling study sheds new light on socioeconomic-based mechanisms that drive disparities in influenza burden across the

U.S. Casey Zipfel of Georgetown University in Washington D.C. and colleagues present this analysis in the open-access journal *PLOS Computational Biology.*

People of lower socioeconomic status experience increased burden of influenza. Past studies have identified various factors that underlie this health inequity, including decreased flu vaccination, lack of access to paid sick leave, lack of healthcare access, increased susceptibility to infection, and different exposure patterns. However, no previous study has considered all of these factors at once.

For the new study, Zipfel and colleagues considered how multiple underlying factors independently and synergistically drive health disparities in influenza burden. They combined large-scale disease datasets and observations from past studies to develop data-driven computational models, enabling them to explore how various factors impact influenza transmission and burden for people of varying socioeconomic status across the U.S.

The analysis showed that people of lower socioeconomic status bear a disproportionate burden of influenza infection in the U.S., and this disparity arises from the synergistic combination of multiple social-economic and healthcare factors. The researchers also identified geographic regions where disparities are most severe and where existing systems to track influenza tend to overlook flu cases among people of low socioeconomic status.

"As the divide in health disparities grows wider across the world, it is imperative that we continue to understand how social determinants impact health, and how this is reflected geographically," Zipfel says. "Our work spotlights inequities in respiratory disease transmission, currently on display due to the COVID-19 pandemic."

The new findings could help inform efforts to eliminate public health disparities due to socioeconomic status and systemic racism. Meanwhile, the researchers note the need to collect better data on healthcare access and usage among people of low socioeconomic status in order to validate their model findings and inform future research and public health efforts.

More information: Zipfel CM, Colizza V, Bansal S (2021) Health inequities in influenza transmission and surveillance. *PLoS Comput Biol* 17(3): e1008642. doi.org/10.1371/journal.pcbi.1008642

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