

United States COVID-19 transmission driven by ages 20-49, research finds

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Resurging COVID-19 transmission in the US is being driven by ages 20-49 and targeted measures are needed to control the epidemic as schools re-open.

An estimated two in three COVID-19 cases came from adults aged 20-49 according to a new report by the Imperial College London COVID-19 Response Team, the Department of Mathematics and the University of Oxford.

The researchers estimate that the reproduction number (R) was only above one for adults aged 35-49, and close to one for those aged 20-34.

Only a small percentage (1.2%) of COVID-19 cases came from young children aged 0-9 years.

The researchers say that targeting interventions to adults aged 20-49 can facilitate the safe reopening of schools and kindergartens.

COVID-19 transmission by age groups

The researchers looked at which age groups drove onward transmission of COVID-19 infections in the United States (until August 2020) with average percentages as follows,

- 0-9 years: 1.2% (0.8%-1.8%)
- 10-19 years: 9.9% (9.2%-10.7%)
- 20-34 years: 28.3% (26.9%-29.5%)
- 35-49 years: 35.1% (34.0%-36.0%)
- 50-64 years: 19.1% (18.6%-19.6)
- 65-79 years: 5.6% (3.7%-8.5%)
- 80+ years: 0.6% (0.4%-0.9%)

The model predicts that re-opening kindergartens and [elementary schools](#) alone could lead to a substantial increase in infections and subsequent COVID-19 deaths over a three-month period in areas with on-going community wide transmission.

With the schools opening, they estimate that the contribution to transmission (in %) for the age group 0-9 years will increase and lead to increases across all age groups.

In most states and metropolitan areas in the United States that were evaluated, reproduction numbers were estimated to be above 1 or close to 1 for adults aged 20-49. In the United States, the report suggests that targeting interventions at adults aged 20-49 could avoid COVID-19 infections and deaths as schools re-open.

Mobility rebounds after initial drop

The team put together national level mobility data using cell phones from over 10 million individuals. From February 2020-August 2020 this data was analyzed to estimate the daily age-specific foot traffic for individuals for each state in the United States.

The researchers noted an initial decline in mobility across the United States was followed by a rebound for all age groups. As of August, the age groups 18-24 and 25-34 continue to show mobility trends no higher than those of older individuals. Looking at both the type of contacts and transmission dynamics over time, the team finds no evidence for a shift in the age groups that transmit the virus.

The work is presented in Report 32 from the WHO Collaborating Center for Infectious Disease Modeling within the MRC Center for Global Infectious Disease Analysis, Jameel Institute (J-IDEA), Imperial College London. The researchers emphasize substantial uncertainty in these predictions.

A 'big step' in understanding of how age affects dynamics of COVID-19 epidemics

Dr. Samir Bhatt, from the School of Public Health, said: "This work is a big step in understanding how age affects the dynamics of COVID-19 epidemics. We would like thank in particular all epidemiologists at state Departments of Health who work tirelessly to update data on the evolving COVID19 epidemics. Without this effort, this study would not have been possible."

Dr. Oliver Ratmann, from the Department of Mathematics, said: "We believe this study is important because we collected aggregated, age-specific mobility and COVID-19 attributable mortality data across the United States, and these data in turn allow us to characterize the primary [age groups](#) that have sustained the spread of SARS-Cov-2 until August 2020."

Dr. Melodie Monod, from the Department of Mathematics, said: "We find adults aged 20-49 are a main driver of the COVID-19 [epidemic](#) in the United State; nevertheless, in areas with resurging epidemics, opening schools will lead to more COVID-19-attributable deaths, so more targeted interventions in the 20-49 age group could bring epidemics under control, avert deaths, and facilitate the safe reopening of schools."

More information: Report 32 - Age groups that sustain resurging COVID-19 epidemics in the United States: [www.imperial.ac.uk/mrc-global- ... vid-19/report-32-us/](http://www.imperial.ac.uk/mrc-global-...vid-19/report-32-us/)

Provided by Imperial College London

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