

Ethnic, religious and social differences found in case rates between England's COVID-19 waves

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There were major ethnic, religious, and social differences in the risk of testing positive for SARS-CoV-2, the virus responsible for COVID-19



infection, between the second and third waves of the pandemic in England, finds research published in the open access journal *BMJ Medicine*.

The risks were highest for people of Bangladeshi and Pakistani ethnicities, Muslims, Sikhs, and those who were materially and socially disadvantaged in wave 2.

But in wave 3, the risks were highest for people of white British ethnicity, Christians, those with no underlying conditions or disabilities, and those who were relatively affluent. These differences aren't fully explained by geography, social, or <u>demographic factors</u>, nor a person's state of health before the pandemic, say the researchers.

While the pandemic has affected all areas of the UK, some groups have been more affected than others. But less is known about the social and demographic inequalities underpinning the <u>infection rates</u>.

In a bid to plug this knowledge gap, the researchers drew on national population-linked census, health, death registration and SARS-CoV-2 test data for 39 million people aged 10+ in England, to calculate the relative risk of testing positive for the virus during the second and third waves of the pandemic. Social and demographic information for each person—sex, age, ethnicity, religion, disability status, educational attainment, job title, English language proficiency, and country of birth—were obtained from the 2011 census.

Positive test results from 1 September 2020, up to and including 22 May 2021, were classified as occurring during the second wave, and those from 23 May 2021 to 10 December 2021 as occurring in the third wave.

Just over half (52%) of the study participants were female; the average age was 47; and most (82%) identified as white British. Just under 5%



identified as white other, nearly 3% as Indian, 59.5% as Christian, 25.5% as having no faith, and 5% as Muslim.

During the study period, 5,767,584 people (nearly 15%) tested positive for SARS-CoV-2.

In the <u>second wave</u>, the risk of testing positive was highest for people of Bangladeshi (75% higher) and Pakistani (69% higher) ethnicities than it was for people of white British ethnicity, after accounting for potentially influential factors.

Similarly, those identifying as Muslim and Sikh were 51% and 64% more likely to test positive than were Christians. Case rates were lowest for those with no religion or who identified as Buddhist. Their risks were 12% and 16%, lower, respectively, than for Christians.

Adjusting for geography, social and demographic characteristics, and state of health before the pandemic explained only 27% and 32% of the excess risk, respectively, for Bangladeshi and Pakistani ethnicities, and only 27% and 16% of the excess risk, respectively, for Muslim and Sikh faiths.

Greater area deprivation, social and <u>economic disadvantage</u>, living in a care home or <u>urban area</u>, and a low level of English language proficiency were also associated with higher relative risks of testing positive.

But during the third wave, identifying as Christian (average weekly rate of 353.8 per 100,000 people), white British (359.7), or as having no concurrent condition or disability (337.6), and being relatively affluent were all associated with a higher risk of testing positive.

Case rates were highest among people born in the UK (345 compared to 238.2 for those born outside the UK) and whose first language was



English during this wave (342.2).

Once again, adjusting for geography, social and demographic characteristics, and state of health before the pandemic explained some—but not all—of the excess risk.

This is an observational study, and as such, can't establish cause. The researchers acknowledge that the information for the study was restricted to people in the 2011 census, from which all the social and demographic definitions were taken, and these might have changed since then.

National SARS-CoV-2 test data don't represent the true extent of infections either because people are more likely to get tested if they have symptoms, add the researchers. But they suggest that a possible explanation for the observed differences in case rates by ethnicity, religion, and social and <u>economic factors</u> during the two waves is that "levels of population immunity were higher for the groups that had the highest case rates in the first and second waves, even considering the potential for reinfection."

They add, "Changes in the rate ratios observed in wave three compared with wave two could also be due to changes in testing behaviors in response to rollout of vaccination, changes in the perceived risk of infection or reinfection, and policy changes related to isolation periods and compensation after testing positive for SARS-CoV-2."

They conclude, "Further research is needed to understand why these inequalities exist and how they can best be addressed through policy interventions. Continued surveillance is essential to ensure that changes in the patterns of infection are identified early to inform [future] public health interventions."



More information: Inequalities in SARS-CoV-2 case rates by ethnicity, religion, measures of socioeconomic position, English proficiency, and self-reported disability: cohort study of 39 million people in England during the alpha and delta waves, *BMJ Medicine* (2023). DOI: 10.1136/bmjmed-2022-000187

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