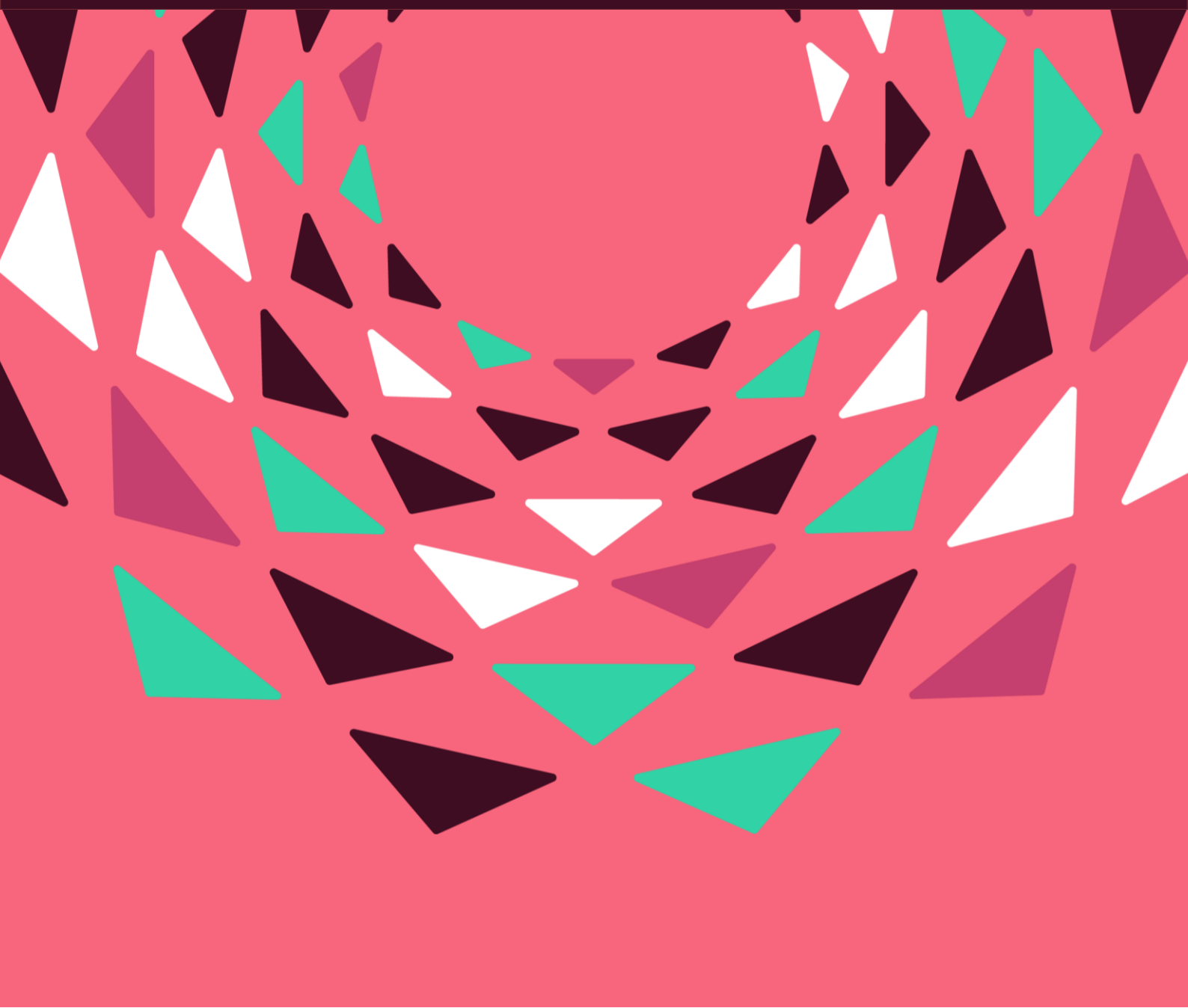


Disability and COVID-19 outcomes in Scotland

Author: Yusuff Adebayo Adebisi

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Background

Disabled people experienced disproportionately poorer outcomes during the COVID-19 pandemic. However, much of the existing evidence treats disability as a single broad category or focuses mainly on mortality (Kuper and Smythe, 2023). This can conceal important differences between disability groups and makes it difficult to identify where inequalities arise: at the point of infection, during progression to severe illness, or at death. Earlier Scottish work highlighted elevated risks among adults with intellectual disabilities specifically (Henderson et al., 2022), but few population-wide studies have examined infection, hospitalisation and mortality together while distinguishing intellectual disability from physical disability.

This study addressed that gap by quantifying associations between disability status and COVID-19 outcomes in a national cohort of adults in Scotland. It forms part of a broader research programme established through the COVID-19 Data Intelligence Network to investigate socioeconomic, household and environmental risk factors for COVID-19 health outcomes (ADR Scotland, 2021). Further methodological details of the wider study were subsequently published by Pattaro et al. (2025). A specific protocol for the disability-focused research, including the investigation of household living arrangements and COVID-19 outcomes, has also been published (Adebisi et al., 2026b).

What we did

We used linked administrative data held securely within Scotland's National Safe Haven (Gao et al., 2022). The study linked the Community Health Index (CHI) population register, the 2011 Scottish Census, national COVID-19 testing and vaccination records, hospital admission records and death registrations.

The cohort included all 3,719,651 adults aged 16 years or older who were alive and resident in Scotland on 1 March 2020 and could be linked to the 2011 Census. Disability status was identified from Census responses and grouped into three mutually exclusive categories: intellectual disability (17,354 adults), physical disability (377,706 adults) and a comparison group with no recorded intellectual or physical disability (3,324,591 adults). The comparison group comprised adults who did not report an intellectual or physical disability in the Census measure used.

We followed everyone from 1 March 2020 to 30 April 2022 and examined three outcomes across the disease pathway: first laboratory-confirmed SARS-CoV-2 infection, first COVID-19 hospitalisation and COVID-19-related death. Cox regression models were used to compare risks between groups, adjusting step by step for age, sex, ethnicity, area deprivation, educational attainment, multigenerational household status, shielding status, chronic health conditions and COVID-19 vaccination status. This allowed us to test whether differences between groups remained after accounting for these measured factors.

What we found

Key findings at a glance

- Adults with intellectual disability and adults with physical disability both had higher risks of COVID-19 infection, hospitalisation and mortality than adults with no recorded intellectual or physical disability.
- The strongest relative risks were among adults with intellectual disability, who had more than twice the risk of recorded infection and around 60% higher risks of hospitalisation and death after accounting for all measured factors.
- Elevated risks persisted after accounting for demographic, socioeconomic, household, health-related and vaccination factors.
- Inequalities were visible at every stage of the disease pathway, not only at death.

During follow-up, 306,343 adults had a first recorded SARS-CoV-2 infection, 22,945 experienced a first COVID-19 hospitalisation and 12,893 died from COVID-19-related causes.

The crude rate of recorded infection was highest among adults with intellectual disability, at 1,686.4 infections per 10,000 person-years, compared with 689.7 among adults with physical disability and 574.7 in the comparison group. Crude rates of hospitalisation and death were highest among adults with physical disability. This largely reflects the much older age profile of that group: 64.0% of adults with physical disability were aged 65 or older, compared with 12.7% of adults with intellectual disability and 21.8% of the comparison group.

The table below shows fully adjusted hazard ratios (HRs), which compare each disability group with the comparison group after accounting for the measured factors described above. A hazard ratio above 1 indicates a higher risk. For example, a hazard ratio of 2.65 means adults with intellectual disability had 2.65 times the hazard of recorded infection.

Outcome	Intellectual disability	Physical disability
Recorded COVID-19 infection	HR 2.65 (95% CI 2.57 to 2.73)	HR 1.60 (95% CI 1.58 to 1.62)
COVID-19 hospitalisation	HR 1.60 (95% CI 1.40 to 1.83)	HR 1.16 (95% CI 1.12 to 1.19)
COVID-19-related mortality	HR 1.58 (95% CI 1.30 to 1.91)	HR 1.23 (95% CI 1.19 to 1.28)

Fully adjusted hazard ratios compared with adults with no recorded intellectual or physical disability (Adebisi et al., 2026a).

Community testing was limited early in the pandemic, so we checked whether the infection results simply reflected differences in access to testing during that period. When the analysis was restricted to the later period, when testing was widely available, adults in both disability groups still had higher risks of recorded infection. Age-stratified analyses also showed higher risks of recorded infection across all age categories for both disability groups, and higher risks of hospitalisation across all age categories among adults with intellectual disability.

Why it matters

These findings show that disabled adults in Scotland were not only at higher risk of dying from COVID-19. Inequalities emerged earlier, at the point of infection, and continued through hospitalisation and death. If inequalities begin at exposure and infection, responses that focus only on hospital treatment or mortality prevention will come too late. Prevention, accessible testing, inclusive public health communication, vaccination delivery, early clinical assessment and support for safe isolation all need to be designed with disabled people in mind right from the start.

The results also show why disability should not be treated as a single category. Adults with intellectual disability faced the highest relative risks across all three outcomes. This may reflect a combination of reliance on close-contact care and support, shared or supported living arrangements, barriers to accessible information, communication barriers in healthcare, a higher burden of chronic conditions and delays in clinical recognition or escalation of care. Adults with physical disability also faced elevated risks, but the pattern differed, with a large burden of severe outcomes shaped in part by older age and underlying health conditions.

For policy and practice, the message is clear. Disability status should be considered alongside age, clinical vulnerability and socioeconomic disadvantage in pandemic preparedness and future respiratory infection planning. This includes accessible information, reasonable adjustments in healthcare pathways, proactive follow-up after infection, flexible vaccination delivery and support for carers and frontline care workers providing close-contact care.

More broadly, the study demonstrates the value of linked administrative data. By bringing together Census, health, testing, vaccination, hospital and mortality records at national scale, it was possible to identify inequalities among vulnerable groups that are often underrepresented in surveys and smaller clinical datasets.

What's next?

The next stage of this research examines the role of household and residential context, including whether household living arrangements modify the relationship between disability and COVID-19 outcomes (Adebisi et al., 2026b). This matters because risk is not shaped by individual characteristics alone. Household size, multigenerational living, communal or supported settings, reliance on paid or unpaid care and the ability to isolate safely may all influence exposure and outcomes. Understanding these pathways can help identify where targeted support is most needed during future infectious disease emergencies and support more inclusive pandemic preparedness in Scotland and other comparable settings.

Notes on interpretation

- Recorded infection captures infections that were tested and recorded in national data, not every SARS-CoV-2 infection that occurred.
- Disability status was measured in the 2011 Scottish Census and may have changed before the study period, particularly for physical disability. Some adults may have acquired a disability after 2011, while others may no longer have experienced or reported the same limitations. Such changes are less likely for intellectual disability.
- The analysis adjusted for a wide range of measured factors, but we should be aware that administrative data do not fully capture disability severity, care intensity or all barriers to healthcare.

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Publication Contact

Name: Yusuff Adebayo Adebisi

Email: y.adebisi.1@research.gla.ac.uk

<https://edin.ac/4ysO8Ly>

