

# Smashing the “1 in 3 people with Covid-19 have no symptoms” claim – and what it means about the true number of ‘cases’

Norman Fenton<sup>1</sup>, Martin Neil, Scott McLachlan

Queen Mary University of London

One of the most persistent and widely publicised claims made by the UK government and its scientific advisers about SARS-Cov-2 is that “1 in 3 people who have the virus have no symptoms”.

However, using data from a study of asymptomatics at Cambridge [1] we show that both the “1 in 3” claim and the Office for National Statistics (ONS) infection rate estimates are exaggerated. The full analysis is provided in [2], but here we provide a simplified summary and explanation.

The Cambridge study uses PCR tests on asymptomatic people, and a person is classified as having the virus if an initial positive test is confirmed in a follow-up test. Their data shows that, during a period when the ONS estimated the infection rate was 0.71%, an average of only 1 in 4,867 people (0.00205%) with no symptoms had the virus at any time. Although this does not tell us *how many people with the virus had no symptoms*, we can conclude the following (the formal proofs are provided in [2]):

**Conclusion 1:** If the ONS reported infection rate, 0.71%, is correct, then at most 2.9% (1 in 34) of people with the virus have no symptoms, and not 1 in 3 as claimed by the government.

*Informal explanation:* The population of Cambridge is 129,000. So, since only 1 in 4867 asymptomatics have the virus, the maximum possible number of asymptomatics with the virus is 27. If the ONS claimed infection rate is correct, then 0.71% of people in Cambridge would have the virus. This is about 916 people. Hence, at most 27 out of 916 with the virus had no symptoms. That is a maximum of 2.9% (27/916), 1 in 34.

But, on the other hand, it tells us:

**Conclusion 2:** If the government claim that “1 in 3 people with the virus has no symptoms” is correct, then the ONS reported infection rate must be at most 0.06%. This would mean the reported rate of 0.71% is at least 11 times greater than the true infection rate.

*Informal explanation:* We already noted that in Cambridge the maximum number of asymptomatics with the virus is 27. But if 1 in 3 people with the virus have no symptoms, then the maximum total number of people with the virus is three times that number, 81. That means a maximum of 81 out of 129,000 have the virus. Thus, the maximum infection rate consistent with the government’s claim is 0.06% (81/129,000) and not 0.71%.

Hence, the UK government claim “1 in 3” claim and the ONS infection rate claim **cannot both be simultaneously true**.

What is the explanation for the government and ONS claims being mutually incompatible, and what *is* the likely virus infection rate and proportion of people with the virus who have no symptoms? The explanation lies in the impact of false positives. Unlike in the Cambridge study, the government assumes that a person who tests positive in a single PCR test has SARS-

---

<sup>1</sup> Corresponding author: n.fenton@qmul.ac.uk

Cov-2 and they are very unlikely to be subject to confirmatory testing to determine whether this is a true or false positive. So, an estimated 0.71% infection rate is essentially an estimate that, if we randomly tested 100,000 people, we would expect 710 to test positive.

However, we also know from the Cambridge study that 3 in every 1000 people without symptoms will falsely test positive. Taking this, and all the other observed data into account in [2] we show that

- The infection rate, for the period in question, was most likely to be 0.379% (95% confidence interval is 0.372% to 0.387%). We also performed a sensitivity analysis that showed that the results are robust against a range of prior assumptions; specifically, there is no reasonable scenario under which the maximum value for the infection rate was greater than 0.44%.
- The percentage of people with SARS-Cov-2, but no symptoms was most likely to be 5% (95% confidence interval is 4.4% to 5.4%). Again, we showed this result was robust under a sensitivity analysis. There is thus no reasonable scenario in which more than 1 in 18 people with SARS-Cov-2 had no symptoms.

So, we conclude:

- **The government's "1 in 3" claim overestimates the percentage of people with SARS-Cov-2 who have no symptoms by at least 560%.**
- **The ONS's estimate of the infection rate (0.71%) is exaggerated by at least 80%.**

In [2] we also considered the extent to which the government and ONS claims are exaggerated for different possible infection rates. As the infection rate drops, the extent to which the estimated infection rate is exaggerated increases, because the proportion of false positives inevitably increases. At the current estimated infection rate of 0.35%, it is likely that the actual infection rate is only around 0.1% meaning that the current estimated infection rate exaggerates the true rate by 250%. The percentage of people with SARS-Cov-2, but no symptoms is most likely to be 9.62%, about 1 in 10, not 1 in 3 as claimed.

One other interesting observation we found was that, when the ONS estimated infection rate is 1% the proportion of people testing positive who have no symptoms is approximately 1 in 3. Hence, the claim that "1 in 3 people with the virus have no symptoms" claim is approximately true in this case only if we replace "with the virus" with "test positive".

While the focus was on just one UK city there is reason to believe that the results apply generally throughout the UK, and it is therefore also reasonable to conclude that SARS-Cov-2 case numbers have been systematically exaggerated. It is also reasonable to conclude that mass testing of asymptomatic people (who have not been in recent contact with a person confirmed as having the virus) may be causing unnecessary anguish for minimal benefit at a very high societal and economic cost.

## References

- [1] Cambridge University, "Asymptomatic COVID-19 screening programme," 2021. [Online]. Available: <https://www.cam.ac.uk/coronavirus/stay-safe-cambridge-uni/asymptomatic-covid-19-screening-programme>.
- [2] N. E. Fenton, M. Neil, and G. S. McLachlan, "What proportion of people with COVID-19 do not get symptoms?," 2021. [Online]. Available: <http://www.doi.org/10.13140/RG.2.2.33939.60968>.