

# Inferring Risks of Coronavirus Transmission from Community Household Data: Tranche 12 Update (New)\*

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## Headline results

This document presents an updated analysis for the following time period:

- **Tranche 12:** 6 February 2022 to 5 April 2022; high prevalence; schools open; Omicron BA.2 lineage dominant; over 52 million first, 49 million second and 38 million third doses distributed by end of time period.

Properties of this Tranche are given in Table 1; the histogram and age density plots are in Figure 1; the pair and residual plots are in Figure 2; and the output from the fitted model is shown in Figure 3, Figure 4 and Table 2.

These results show an increase in baseline within-household transmission to levels seen last in late 2020, and also some evidence for reduced susceptibility of children.

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\*Slightly altered compared to previously released version

|                                |  |  |  |  |  |  |  |  |  | Tranche 12 | All    |
|--------------------------------|--|--|--|--|--|--|--|--|--|------------|--------|
| Number of participants         |  |  |  |  |  |  |  |  |  | 355357     | 451082 |
| Number of households           |  |  |  |  |  |  |  |  |  | 184309     | 222746 |
| Number of positive individuals |  |  |  |  |  |  |  |  |  | 24300      | 93787  |
| Households with 1+ positive    |  |  |  |  |  |  |  |  |  | 18489      | 64862  |
| Children <12                   |  |  |  |  |  |  |  |  |  | 23393      | 35505  |
| Children 12–16                 |  |  |  |  |  |  |  |  |  | 20630      | 24837  |
| OR+N+S positives               |  |  |  |  |  |  |  |  |  | 16947      | 49761  |
| OR+N positives                 |  |  |  |  |  |  |  |  |  | 6445       | 36646  |
| Patient-facing participants    |  |  |  |  |  |  |  |  |  | 11814      | 17778  |

Table 1: Tranche 12 sample properties.

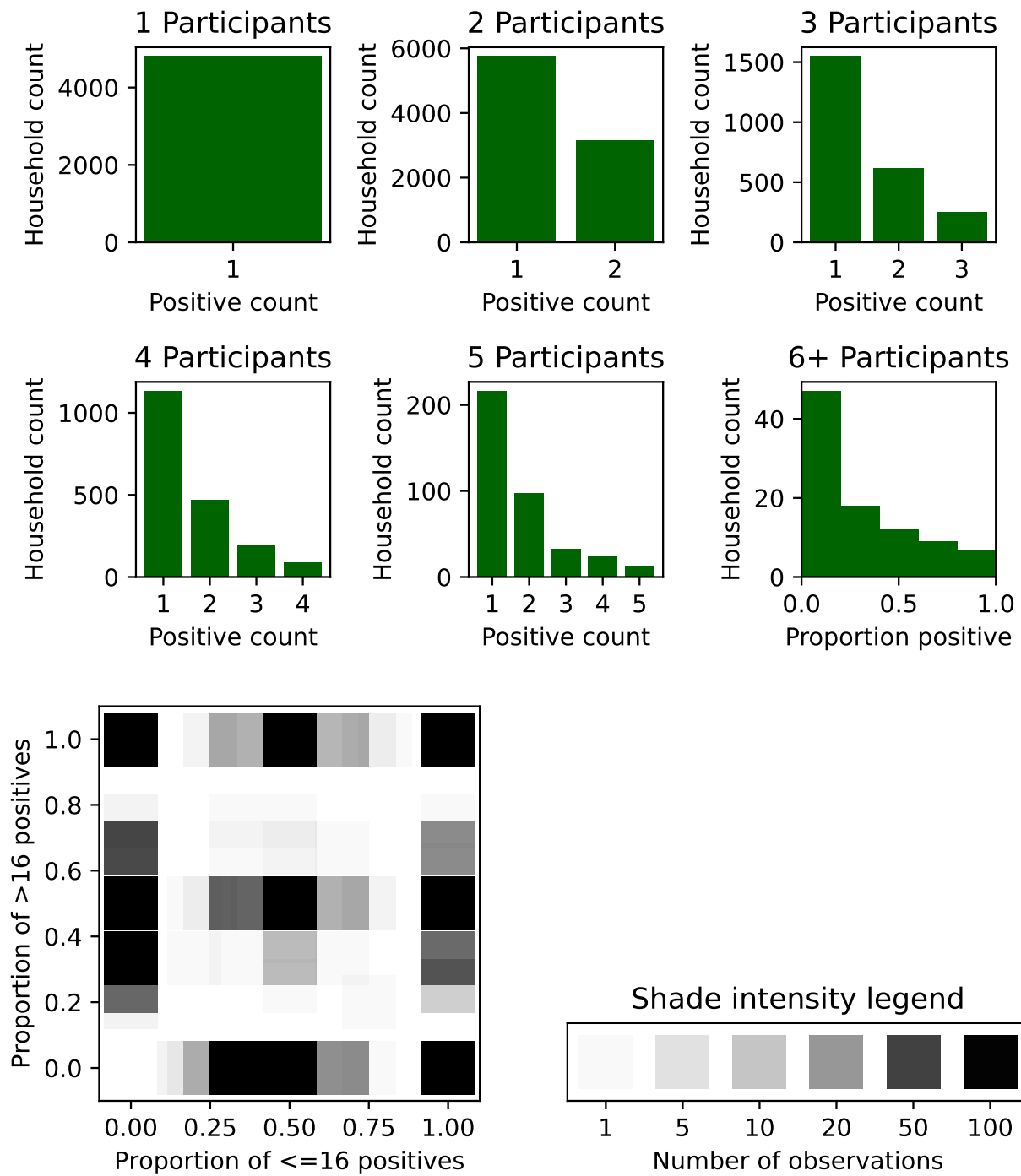


Figure 1: Top: histogram and Bottom: density plot for Tranche 12 data

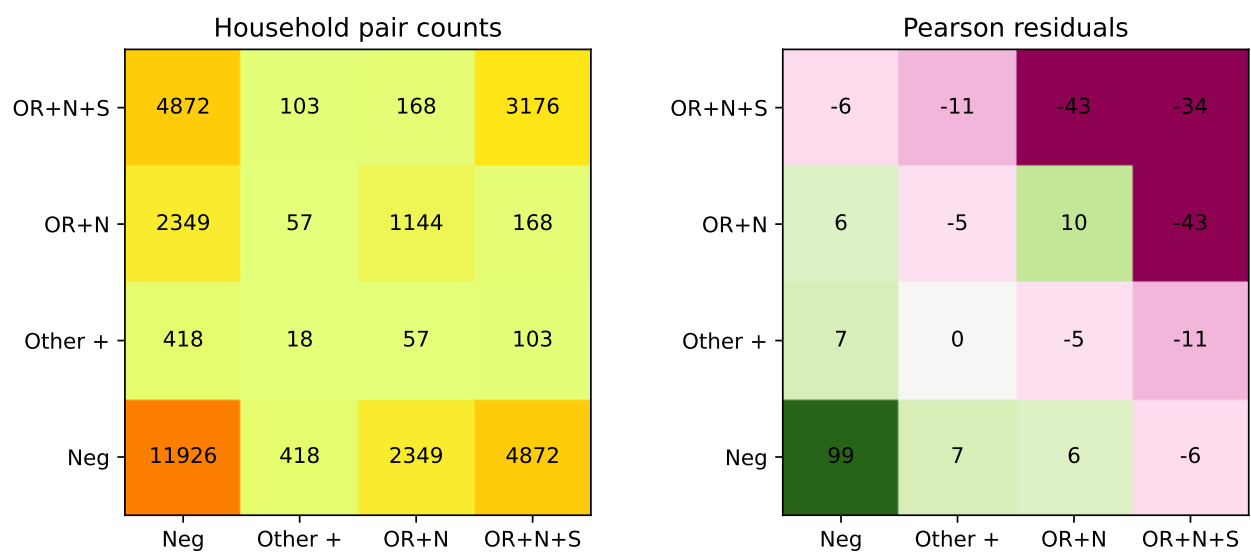


Figure 2: Left: pair count and Right: Pearson residual plots for Tranche 12 data

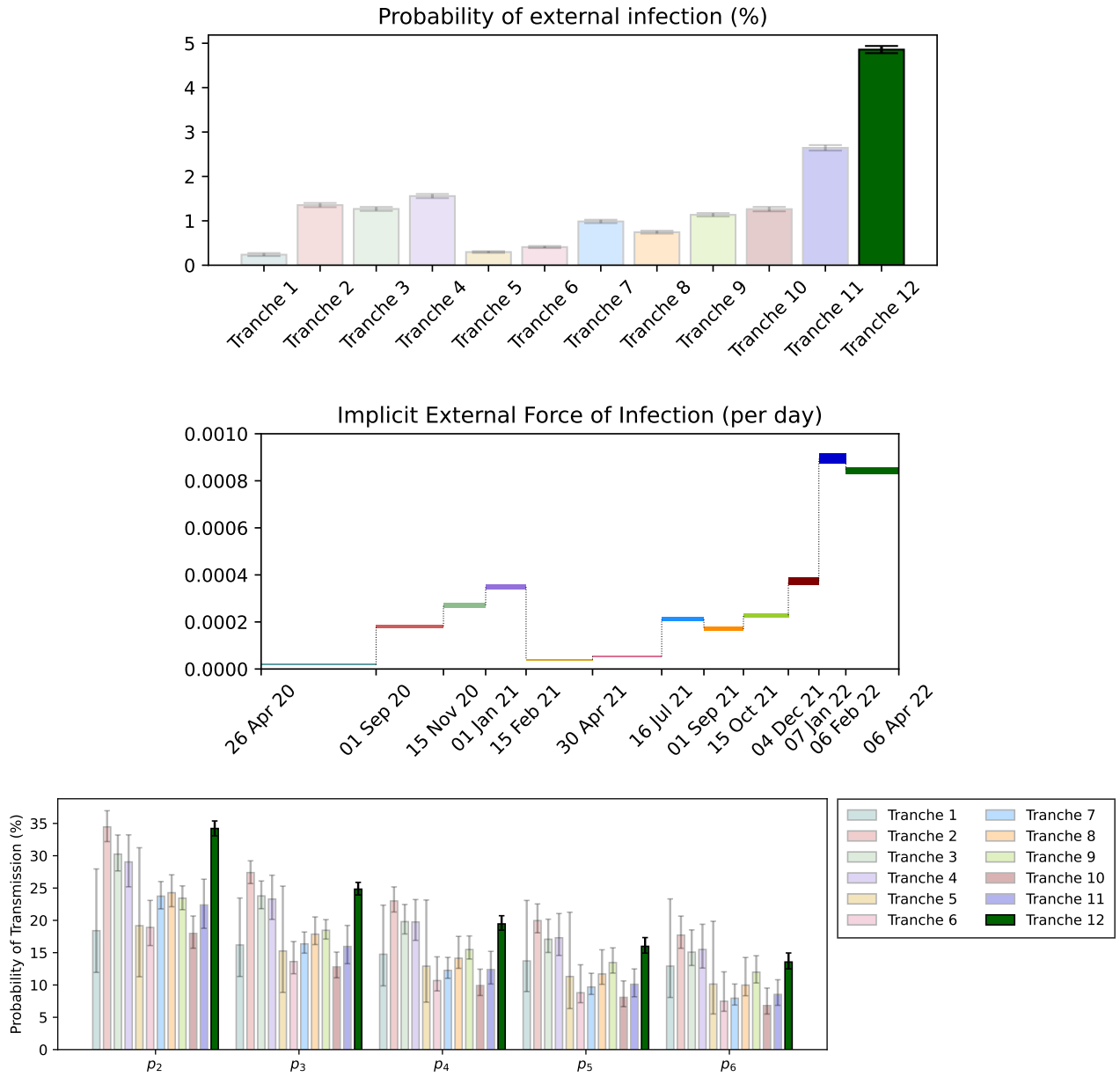


Figure 3: Visualisation of the fitted model. Top: Baseline probability of infection from outside. Middle: Force of infection implied by tranche duration and probabilities of infection from outside. Bottom: Per-pair baseline probabilities of secondary transmission within the household, not including tertiary transmission effects.

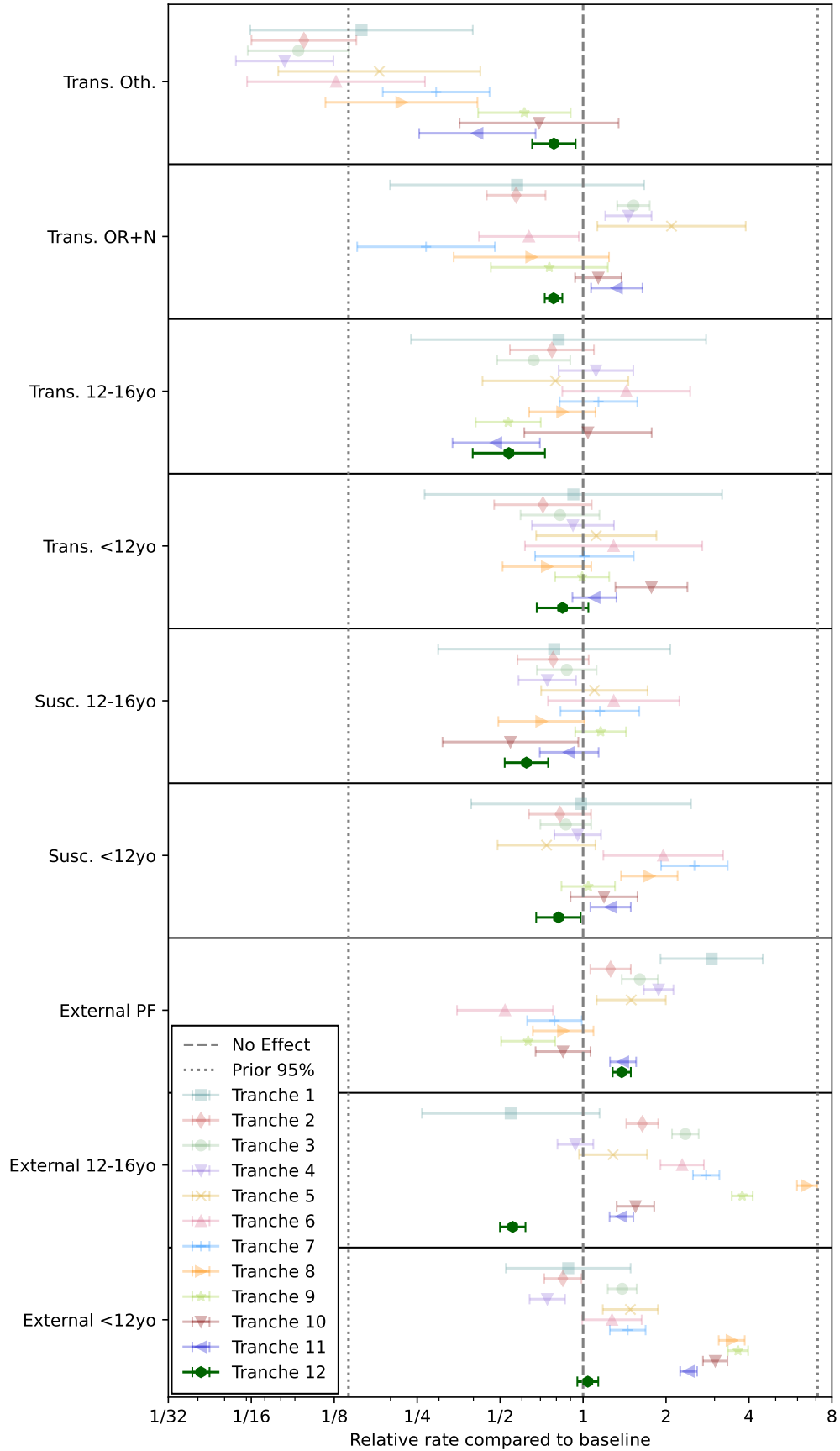


Figure 4: Visualisation of the fitted model. Relative effects on transmission, susceptibility and external exposure compared to baseline of an adult not working in a patient-facing role with OR+N+S maximal PCR gene positivity pattern if positive. ‘Trans.’ stands for relative transmissibility, ‘Susc.’ for relative susceptibility, and ‘External’ for relative external exposure.

|                                |  |  |  |  |  |  |  |  |  |  | Tranche 12          |
|--------------------------------|--|--|--|--|--|--|--|--|--|--|---------------------|
| $1 - q$                        |  |  |  |  |  |  |  |  |  |  | 4.86 (4.78,4.94) %  |
| $p_2$                          |  |  |  |  |  |  |  |  |  |  | 34.2 (33.1,35.4) %  |
| $p_3$                          |  |  |  |  |  |  |  |  |  |  | 24.8 (23.9,25.9) %  |
| $p_4$                          |  |  |  |  |  |  |  |  |  |  | 19.5 (18.5,20.7) %  |
| $p_5$                          |  |  |  |  |  |  |  |  |  |  | 16.0 (14.9,17.3) %  |
| $p_6$                          |  |  |  |  |  |  |  |  |  |  | 13.6 (12.5,15.0) %  |
| $\exp(\alpha_{2-11})$          |  |  |  |  |  |  |  |  |  |  | 1.04 (0.953,1.14)   |
| $\exp(\alpha_{12-16})$         |  |  |  |  |  |  |  |  |  |  | 0.556 (0.499,0.618) |
| $\exp(\alpha_{\text{PF}})$     |  |  |  |  |  |  |  |  |  |  | 1.38 (1.28,1.49)    |
| $\exp(\beta_{2-11})$           |  |  |  |  |  |  |  |  |  |  | 0.814 (0.676,0.98)  |
| $\exp(\beta_{12-16})$          |  |  |  |  |  |  |  |  |  |  | 0.623 (0.519,0.747) |
| $\exp(\gamma_{2-11})$          |  |  |  |  |  |  |  |  |  |  | 0.842 (0.679,1.05)  |
| $\exp(\gamma_{12-16})$         |  |  |  |  |  |  |  |  |  |  | 0.538 (0.398,0.727) |
| $\exp(\gamma_{\text{OR+N}})$   |  |  |  |  |  |  |  |  |  |  | 0.781 (0.726,0.841) |
| $\exp(\gamma_{\text{CT-oth}})$ |  |  |  |  |  |  |  |  |  |  | 0.783 (0.653,0.94)  |

Table 2: Tranche 12 parameter point estimates and CIs.