Inferring Risks of Coronavirus Transmission from Community Household Data: Tranche 12 Update

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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.

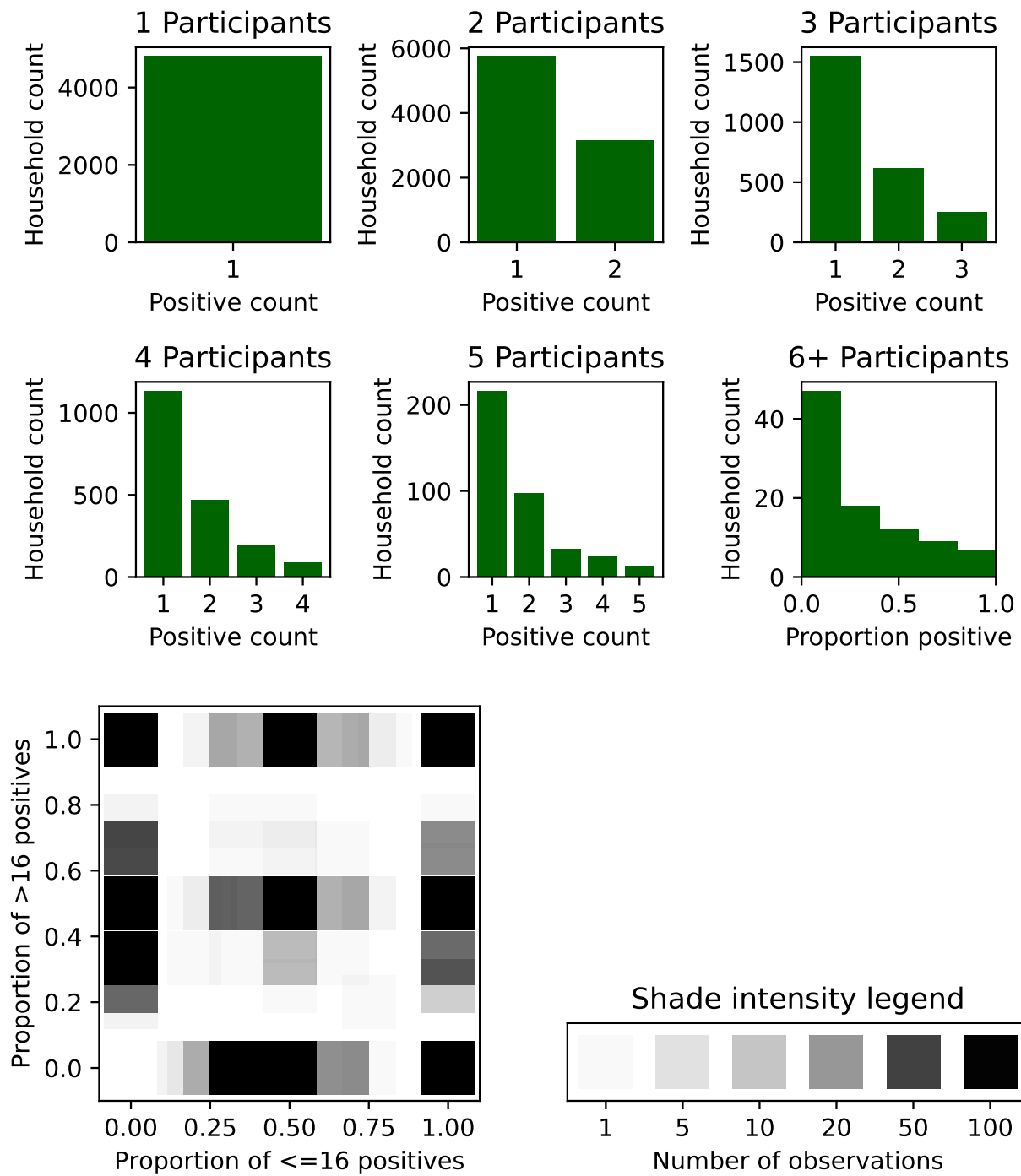|	Tranche 12	All
Number of participants	355357	451082
Number of households	184309	222746
Number of positive individuals	24300	93787
Households with 1+ positive	18489	64862
Children <12	23393	35505
Children 12–16	20630	24837
OR+N+S positives	16947	49761
OR+N positives	6445	36646
Patient-facing participants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

Table 1: Tranche 12 sample properties.

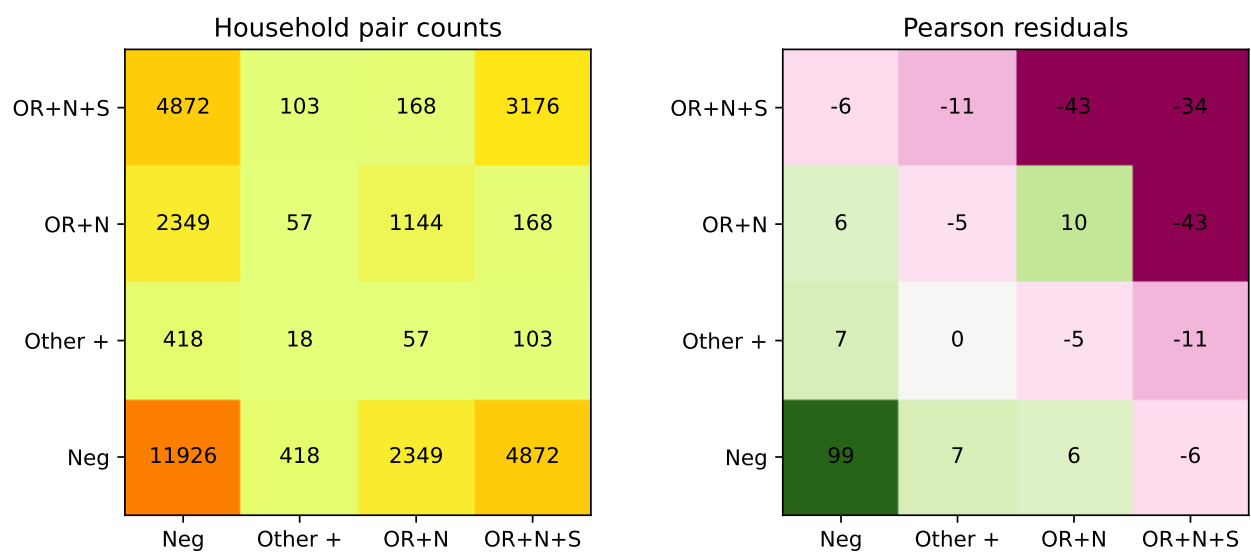Figure 1: Top: histogram and Bottom: density plot for Tranche 12 data

Figure 2: Left: pair count and Right: Pearson residual plots for Tranche 12 data
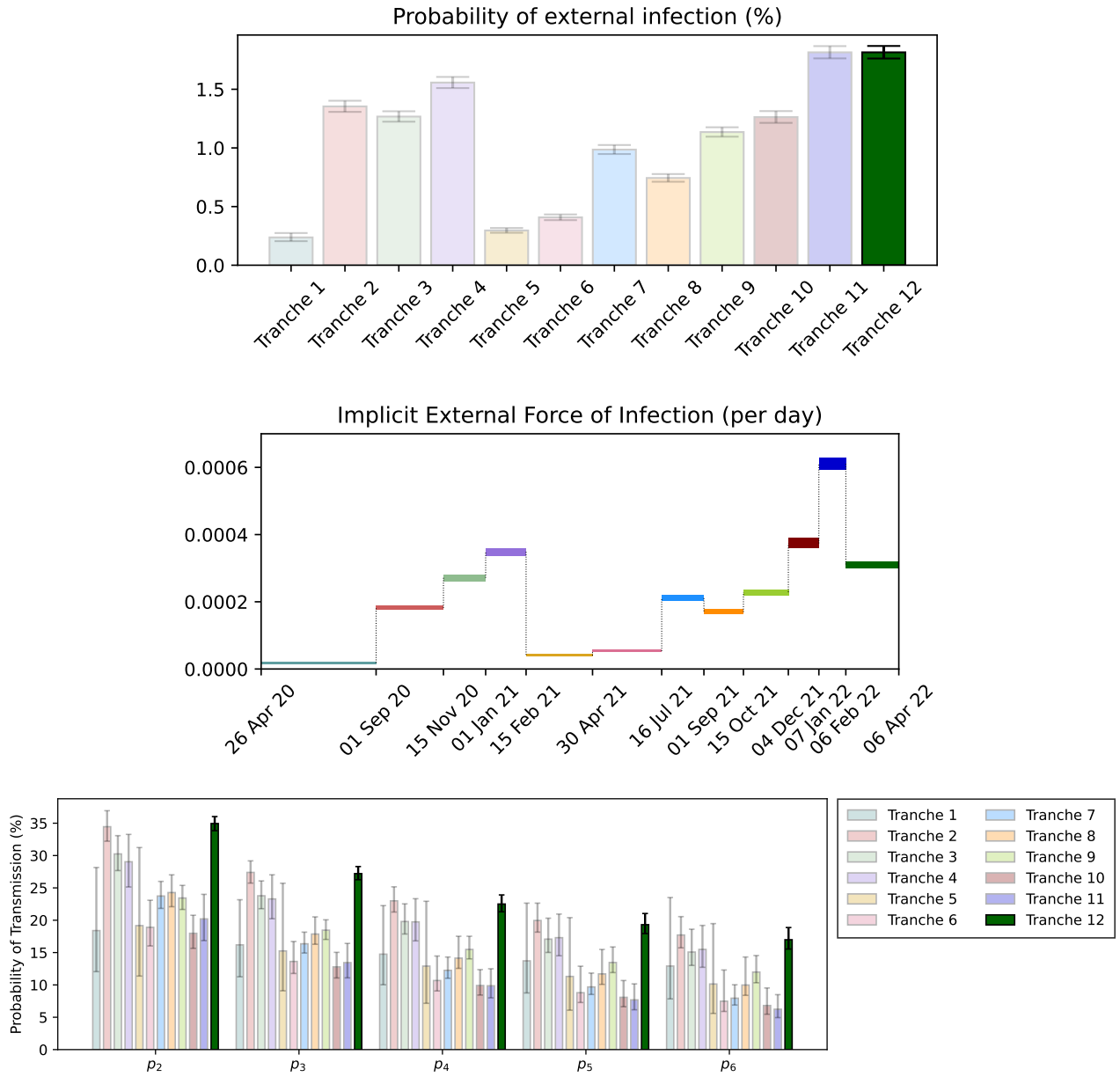
Figure 3: Visualisation of the fitted model. Top: Baseline probability of infection from outside. Middle: Force of infection implied by tranche duration and probabilities of infection from outside. Bottom: Per-pair baseline probabilities of secondary transmission within the household, not including tertiary transmission effects.
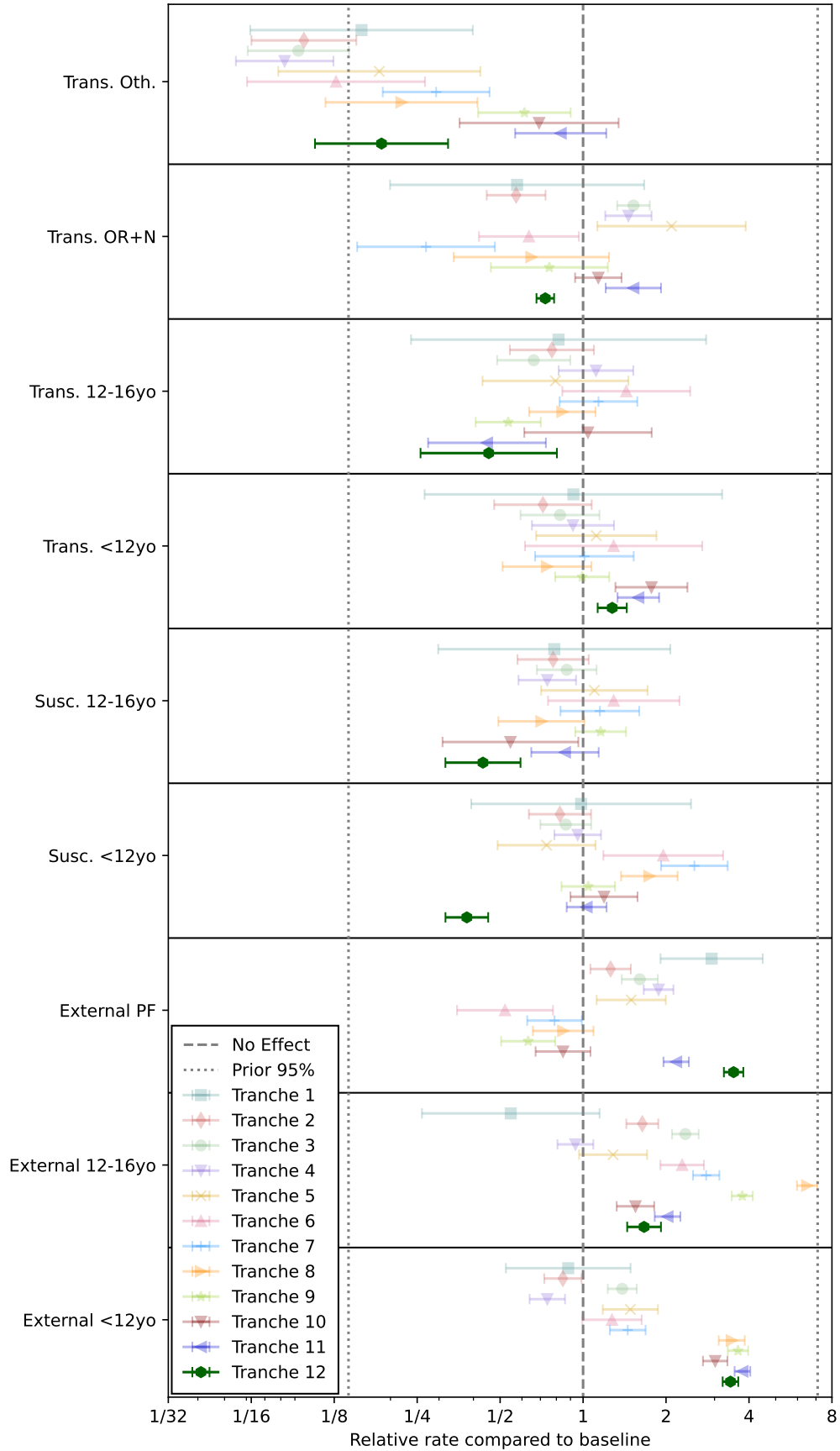
Figure 4: Visualisation of the fitted model. Relative effects on transmission, susceptibility and external exposure compared to baseline of an adult not working in a patient-facing role with OR+N+S maximal PCR gene positivity pattern if positive. 'Trans.' stands for relative transmissibility, 'Susc.' for relative susceptibility, and 'External' for relative external exposure.

	Tranche 12
$1-q$	1.81 (1.76,1.87) %
p_2	34.9 (33.8,36.1) %
p_3	27.2 (26.2,28.3) %
p_4	22.5 (21.3,24.0) %
p_5	19.3 (17.9,21.0) %
p_6	17.0 (15.5,18.8) %
$\exp(\alpha_{2\text{-}11})$	3.43 (3.21,3.66)
$\exp(\alpha_{12\text{-}16})$	1.66 (1.45,1.92)
$\exp(\alpha_{\text{PF}})$	3.52 (3.24,3.81)
$\exp(\beta_{2\text{-}11})$	0.379 (0.317,0.453)
$\exp(\beta_{12\text{-}16})$	0.433 (0.317,0.593)
$\exp(\gamma_{2\text{-}11})$	1.28 (1.13,1.44)
$\exp(\gamma_{12\text{-}16})$	0.454 (0.257,0.803)
$\exp(\gamma_{\text{OR+N}})$	0.729 (0.677,0.785)
$\exp(\gamma_{\text{CT-oth}})$	0.186 (0.106,0.324)

Table 2: Tranche 12 parameter point estimates and CIs.