

Inferring Risks of Coronavirus Transmission from Community Household Data: Tranche 7 Update

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Headline results

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

- **Tranche 7:** 16 July 2021 to 31 August 2021; high prevalence; school holidays; Delta variant dominant; over 48 million first and 42 million second 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.

Apart from a higher overall external infection risk, these results are a continuation of the trends seen in Tranche 6.

					Tranche 7	All
Number of participants					317542	441051
Number of households					167131	217738
Number of positive individuals					4524	33468
Households with 1+ positive					3490	24443
Children <12					20695	34700
Children 12–16					16574	24201
OR+N+S positives					3747	18582
OR+N positives					266	9156
Patient-facing participants					10152	16655

Table 1: Tranche 7 sample properties.

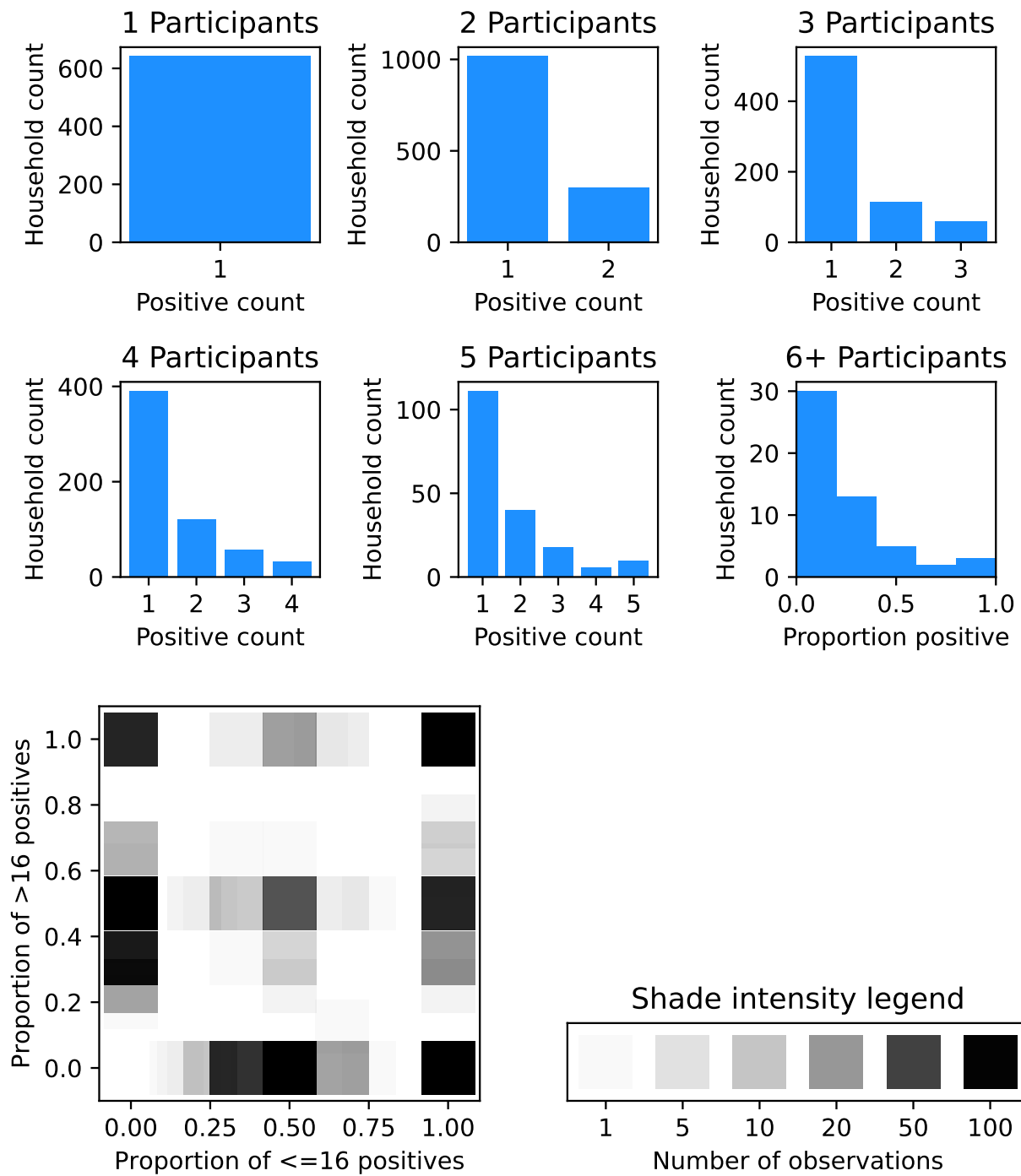


Figure 1: Top: histogram and Bottom: density plot for Tranche 7 data

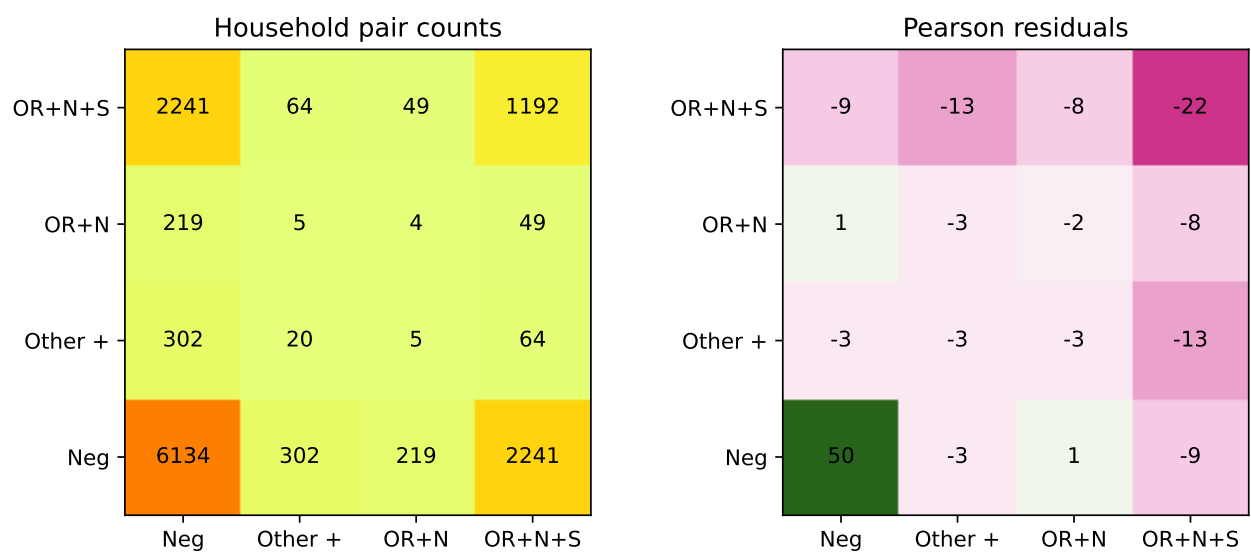


Figure 2: Left: pair count and Right: Pearson residual plots for Tranche 7 data

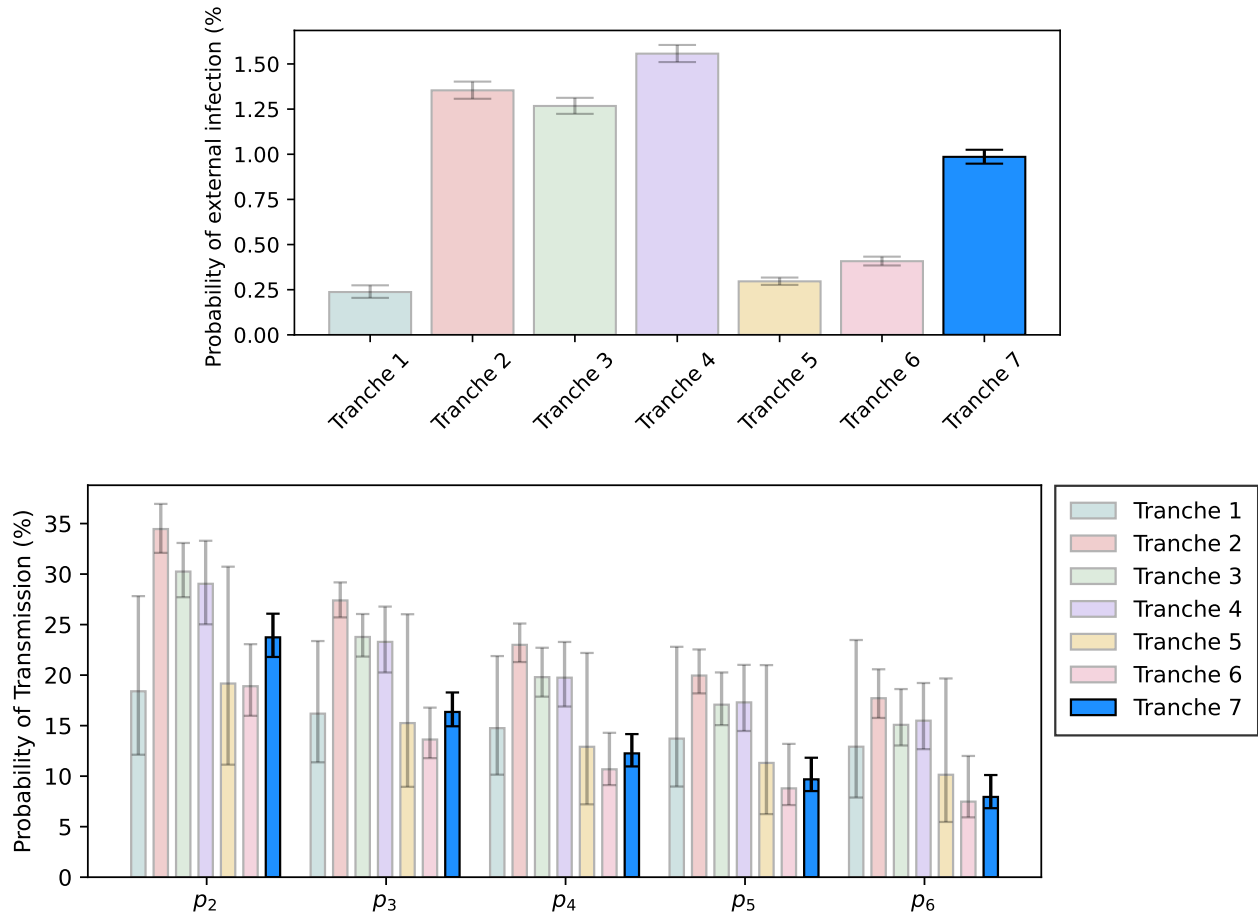


Figure 3: Visualisation of the fitted model. Top: Baseline probability of infection from outside. Bottom: Per-pair baseline probabilities of secondary transmission within the household, not including tertiary transmission effects.

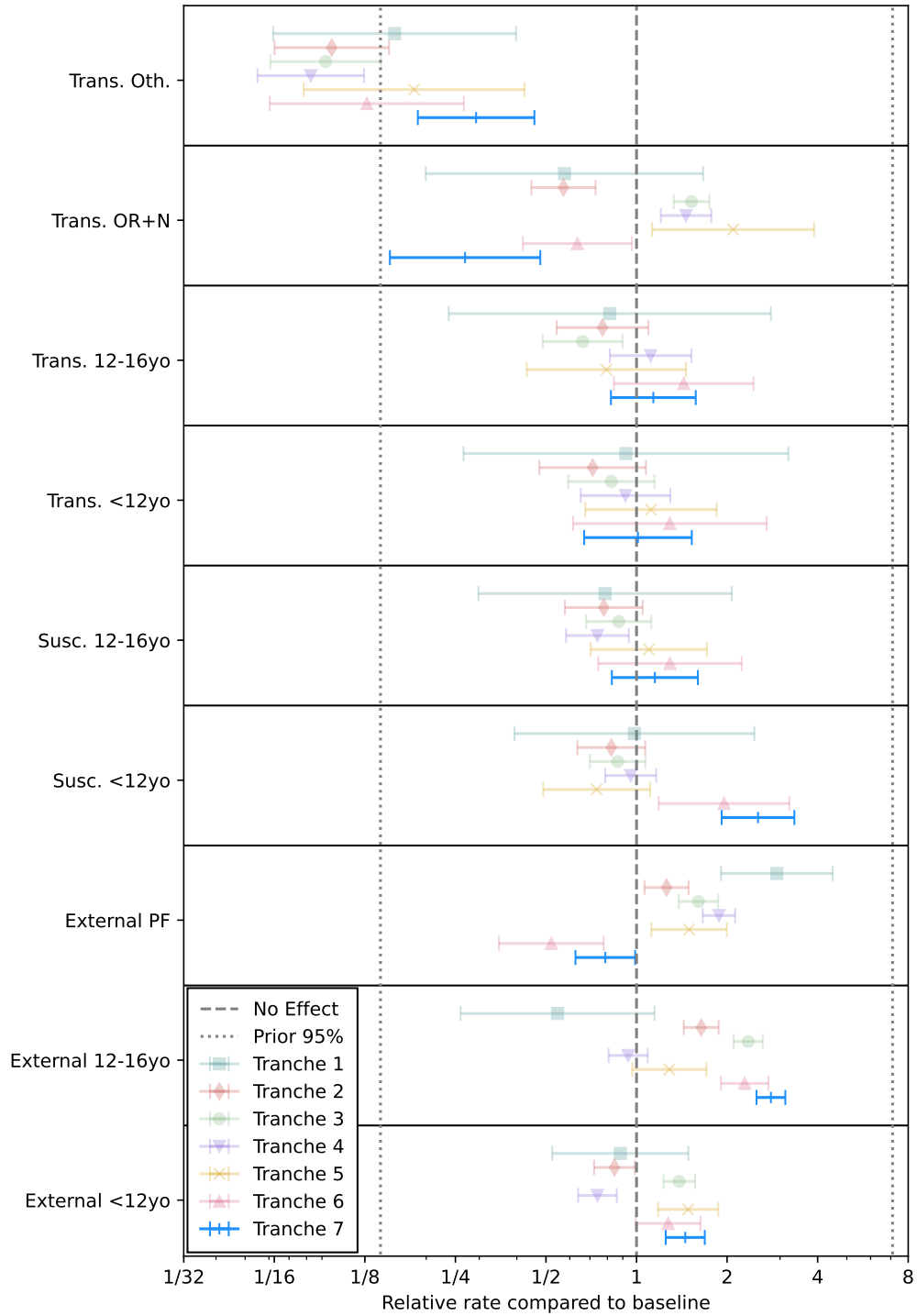


Figure 4: Visualisation of the fitted model. Relative effects on transmission, susceptibility and external exposure compared to baseline of an adult not working in a patient-facing role with OR+N+S maximal PCR gene positivity pattern if positive. ‘Trans.’ stands for relative transmissibility, ‘Susc.’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

						Tranche 7
$1 - q$						0.986 (0.948,1.02) %
p_2						23.7 (21.8,26.1) %
p_3						16.4 (14.9,18.3) %
p_4						12.3 (11.0,14.2) %
p_5						9.68 (8.52,11.8) %
p_6						7.94 (6.83,10.1) %
$\exp(\alpha_{2-11})$						1.45 (1.25,1.69)
$\exp(\alpha_{12-16})$						2.8 (2.5,3.12)
$\exp(\alpha_{PF})$						0.788 (0.627,0.99)
$\exp(\beta_{2-11})$						2.53 (1.92,3.35)
$\exp(\beta_{12-16})$						1.15 (0.828,1.6)
$\exp(\gamma_{2-11})$						1.01 (0.67,1.53)
$\exp(\gamma_{12-16})$						1.14 (0.822,1.57)
$\exp(\gamma_{OR+N})$						0.269 (0.151,0.479)
$\exp(\gamma_{CT-oth})$						0.293 (0.188,0.458)

Table 2: Tranche 7 parameter point estimates and CIs.