Longitudinal serological surveillance for COVID19 antibodies after infection and vaccination

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**Supplemental Table 1.** Descriptive statistics (N total=629)

| Variable                                      | Value                  | Count | Percent |
|-----------------------------------------------|------------------------|-------|---------|
| Sex                                           | Female                 | 387   | 63.1    |
|                                               | Male                   | 226   | 36.9    |
| Race                                          | White                  | 522   | 85.3    |
|                                               | Asian                  | 35    | 5.7     |
|                                               | Black                  | 23    | 3.8     |
|                                               | Other                  | 32    | 5.2     |
| Ethnicity                                     | Non-Hispanic           | 590   | 96.6    |
|                                               | Hispanic               | 21    | 3.4     |
| Ever received Covid vaccine                   | No                     | 108   | 17.2    |
|                                               | Yes                    | 521   | 82.8    |
| Ever received Covid booster                   | No                     | 372   | 59.1    |
|                                               | Yes                    | 257   | 40.9    |
| Ever diagnosed with Covid                     | No                     | 539   | 85.7    |
|                                               | Yes                    | 90    | 14.3    |
| Ever had breakthrough Covid infection         | No                     | 597   | 94.9    |
|                                               | Yes                    | 32    | 5.1     |
| Covid vaccine manufacturer                    | Pfizer                 | 254   | 48.8    |
|                                               | Moderna                | 171   | 32.8    |
|                                               | Johnson and Johnson [Janssen] | 21 | 4 |
|                                               | AstraZeneca            | 1     | 0.2     |
|                                               | Unknown                | 74    | 14.2    |
| Social isolation practice                     | 1: only home and work  | 24    | 3.9     |
|                                               | 2: as 1, plus essential shopping | 225 | 36.7 |
|                                               | 3: as 2, plus limited social gatherings | 295 | 48.1 |
|                                               | 4: as 3, plus larger gatherings, but with precautions | 39 | 6.4 |
|                                               | 5: No change in behavior from pre-COVID19 | 30 | 4.9 |
| Education                                     | Grade School           | 5     | 0.8     |
|                                               | Some College           | 51    | 8.3     |
|                                               | College+               | 555   | 90.8    |
| Currently working at home                    | No                     | 287   | 46.8    |
|                                               | Yes                    | 326   | 53.2    |
| Currently working at work                     | No                     | 384   | 62.6    |
|                                               | Yes                    | 229   | 37.4    |
| Own your home                                 | Own                    | 524   | 85.5    |
|                                               | Ren                    | 83    | 13.5    |
|                                               | Refuse to answer       | 6     | 1       |
| Marital status                                | Single                 | 114   | 18.7    |
|                                               | Married                | 436   | 71.6    |
|                                               | Other                  | 59    | 9.7     |
|                                |     |     |
|--------------------------------|-----|-----|
| Number of children <18 in household | 0   | 419  |
|                                | 1   | 76   |
|                                | 2   | 90   |
|                                | 3   | 19   |
|                                | 4   | 4    |
|                                | 5   | 5    |
| Number of adult children in household | 0 | 498  |
|                                | 1   | 69   |
|                                | 2   | 35   |
|                                | 3   | 10   |
|                                | 4   | 1    |
| Number of household members     | 0   | 9    |
|                                | 1   | 82   |
|                                | 2   | 274  |
|                                | 3   | 96   |
|                                | 4   | 108  |
|                                | 5+  | 44   |
| Description of the house       | Detached house | 494  |
|                                | Semi-detached house | 7  |
|                                | Townhouse | 57   |
|                                | Apartment building | 48  |
|                                | Other/no answer | 7    |
| Health care coverage           | No   | 13   |
|                                | Yes  | 598  |
| Known Covid-19 exposure        | No   | 471  |
|                                | Yes  | 91   |
| Direct contact with Covid-19 patients | No  | 567  |
|                                | Yes  | 46   |
### Supplemental Table 2. Reported health conditions (N total=629)

| Variable                                                      | Value | Count | Percent |
|---------------------------------------------------------------|-------|-------|---------|
| Flu shot in the past 12 month                                 | No    | 243   | 39.8    |
|                                                               | Yes   | 368   | 60.2    |
| Ever received pneumococcal vaccine                            | No    | 342   | 66      |
|                                                               | Yes   | 176   | 34      |
| Ever received BCG vaccine                                     | No    | 220   | 51.5    |
|                                                               | Yes   | 207   | 48.5    |
| Take blood pressure medication                                | No    | 502   | 81.9    |
|                                                               | Yes   | 111   | 18.1    |
| Take NSAIDs >4 times over last 2 weeks                       | No    | 515   | 84      |
|                                                               | Yes   | 98    | 16      |
| Take immune-weakening medicine                                | No    | 586   | 97.2    |
|                                                               | Yes   | 17    | 2.8     |
| Ever had myocardial infarction                                | No    | 609   | 99.5    |
|                                                               | Yes   | 3     | 0.5     |
| Have angina or coronary heart disease                         | No    | 602   | 98.5    |
|                                                               | Yes   | 9     | 1.5     |
| High cholesterol                                              | No    | 440   | 72.6    |
|                                                               | Yes   | 166   | 27.4    |
| Had stroke                                                    | No    | 609   | 99.3    |
|                                                               | Yes   | 4     | 0.7     |
| Had asthma                                                    | No    | 504   | 83      |
|                                                               | Yes   | 103   | 17      |
| Had any type of cancer                                        | No    | 573   | 93.6    |
|                                                               | Yes   | 39    | 6.4     |
| Viral respiratory tract infection within last 3 months         | No    | 564   | 92      |
|                                                               | Yes   | 49    | 8       |
| Other chronic lung disease                                    | No    | 606   | 99.5    |
|                                                               | Yes   | 3     | 0.5     |
| Arthritis                                                     | No    | 490   | 81      |
|                                                               | Yes   | 115   | 19      |
| Autoimmune disease                                            | No    | 564   | 92.9    |
|                                                               | Yes   | 43    | 7.1     |
| Depressive disorder                                           | No    | 473   | 78.3    |
|                                                               | Yes   | 131   | 21.7    |
| Kidney disease                                                | No    | 600   | 98.4    |
|                                                               | Yes   | 10    | 1.6     |
| Diabetes                                                      | No    | 581   | 95.6    |
|                                                               | Yes   | 27    | 4.4     |
Supplemental Figure 1. Temporal trend of Covid diagnoses
**Supplemental Figure 2.** Weekly average of anti-spike levels as a function of time since vaccination for different vaccine manufacturers, before booster vaccination. The Y-axis denotes the average of anti-spike levels, and the X-axis denotes the number of weeks since the first dose of COVID-19 vaccination. Pfizer: BNT162b2 vaccine (Pfizer-BioNTech), Moderna: mRNA-1273 vaccine (Moderna), J&J: Ad26.COV2.S vaccine (Johnson&Johnson/Janssen)
**Supplemental Figure 3.** Natural log transformed anti-spike antibody levels were plotted through time (starting at 35 days after first vaccine dose) in individuals not having yet received a booster.

JJ: Ad26.COV2.S vaccine (Johnson&Johnson/Janssen), Moderna: mRNA-1273 vaccine (Moderna), Pfizer: BNT162b2 vaccine (Pfizer-BioNTech)
Supplemental Figure 4. Weekly average of anti-spike levels as a function of time since vaccination for different vaccine manufacturers, plotted in logarithmic axis to demonstrate why linear mixed model is appropriate for analyses. The Y-axis denotes the average of anti-spike level and the X-axis denotes the number of weeks since the first dose of COVID19 vaccination. Pfizer: BNT162b2 vaccine (Pfizer-BioNTech), Moderna: mRNA-1273 vaccine (Moderna), Johnson and Johnson (Janssen): Ad26.COV2.S vaccine (Johnson&Johnson/Janssen)
Supplemental Figure 5. Absolute number of breakthrough cases plotted against imputed anti-spike antibody levels at time of infection and binned in 3,000 AU/ml increments.