

Supplementary Figure 1. Comparison between pediatric samples under 2 years old to the complete cohort for each seasonal spike coronavirus.

Supplementary Figure 2. IgG-subclass antibody responses to SARS-CoV-2 antigens.

Supplementary Figure 3. Discordance of serological false positive per isotype and antigen.

Supplementary Figure 4. Global sensitivity analysis (GSA) results for the Gaussian process regression (GPR) model.

Table S1. Demographic information of post-pandemic controls.

Table S2. Determination of SARS-CoV-2 assay cut-off values of the four cohorts combined and false discovery rate (FDR) per antigen, isotype & subtypes.

Table S3. Determination of SARS-CoV-2 assay cut-off values of pre-COVID-19 HCV and HIV patients and corresponding false discovery rate per antigen, isotype & subtypes.

Table S4. Determination of SARS-CoV-2 assay cut-off values of pre-COVID-19 > 70 years of age and corresponding false discovery rate per antigen, isotype & subtypes.

Table S5. Determination of SARS-CoV-2 assay cut-off values of pre-COVID-19 21 - 70 years of age and corresponding false discovery rate per antigen, isotype & subtypes.

Table S6. Determination of SARS-CoV-2 assay cut-off values of pre-COVID 19 < 21 years of age and corresponding false discovery rate per antigen, isotype & subtypes.

Table S7 Multi-antigen FDR calculation.

Table S8. Demographics of fuzzy mean clusters of patients segregated by serum antibody cross-reactivity.