Univariate CoR: Nonparametric Threshold Modeling

Spike protein antibody

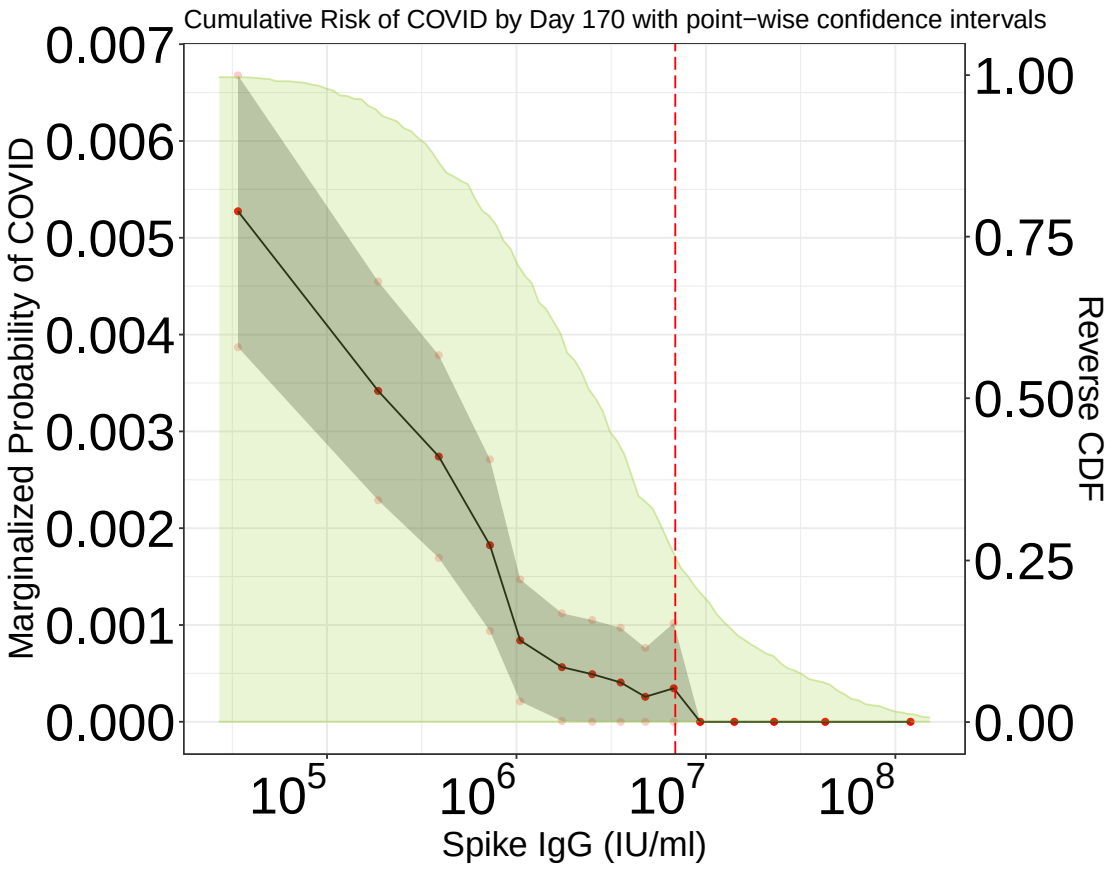

Figure 1: Adjusted threshold-response function for a range of thresholds of the Day 57 Spike protein antibody activity levels with point-wise 95% confidence intervals. The dashed red line marks the threshold after which no more COVID events are observed.

log10-Threshold	Threshold	Risk estimate	CI left	CI right
4.531	3.40*10^4	0.00527	0.00387	0.00668
5.588	3.87*10^5	0.00274	0.00169	0.00379
5.860	7.24*10^5	0.00182	0.00094	0.00271
6.236	1.72*10^6	0.00056	0.00001	0.00112
6.395	2.48*10^6	0.00049	0.00000	0.00105
6.677	4.75*10^6	0.00026	0.00000	0.00076
6.832	6.79*10^6	0.00035	0.00000	0.00102
7.151	1.42*10^7	0.00000	0.00000	1.00000
7.356	2.27*10^7	0.00000	0.00000	1.00000
8.081	1.21*10^8	0.00000	0.00000	1.00000

Figure 2: Table of risk estimates for range of thresholds of Spike protein antibody activity levels with point-wise 95% confidence intervals.

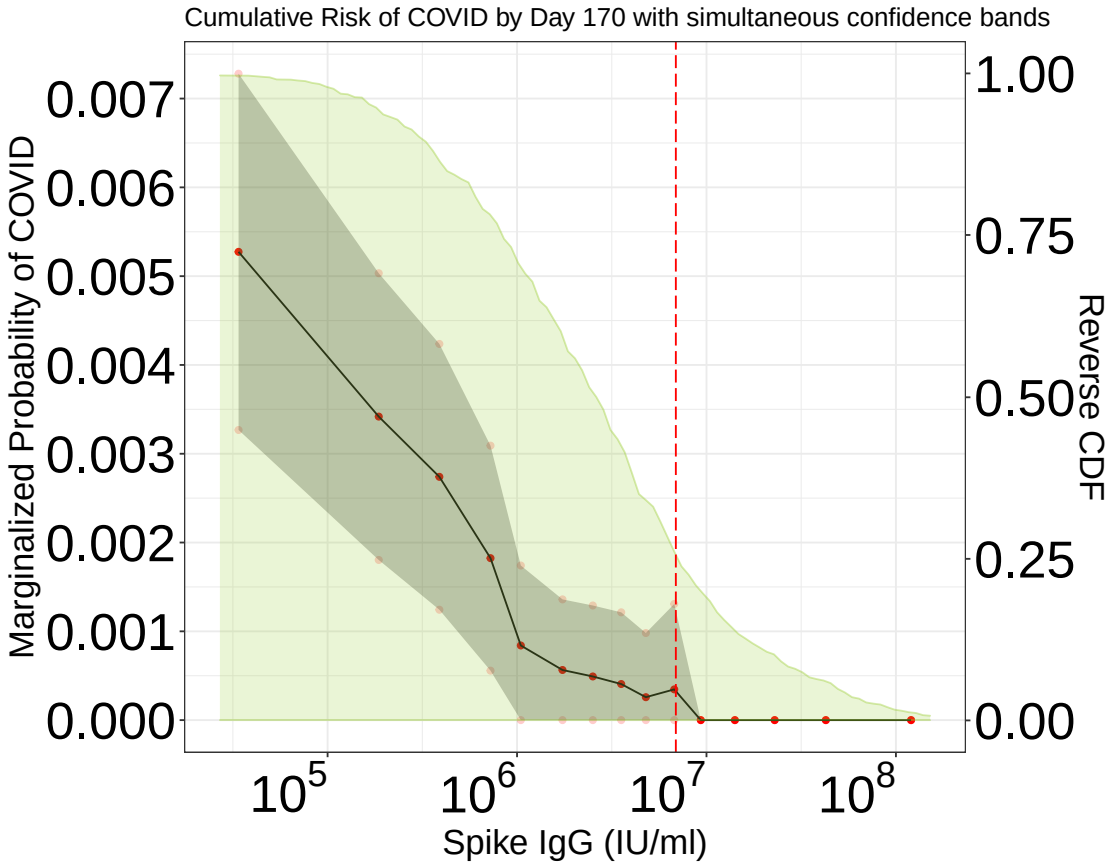

Figure 3: Adjusted threshold-response function for a range of thresholds of the Spike protein antibody activity levels with simultaneous 95% confidence bands. The dashed red line marks the threshold after which no more COVID events are observed.

log10-Threshold	Threshold	Risk estimate	CI left	CI right
4.531	3.40*10^4	0.00527	0.00327	0.00728
5.588	3.87*10^5	0.00274	0.00124	0.00424
5.860	7.24*10^5	0.00182	0.00056	0.00309
6.236	1.72*10^6	0.00056	0.00000	0.00136
6.395	2.48*10^6	0.00049	0.00000	0.00129
6.677	4.75*10^6	0.00026	0.00000	0.00098
6.832	6.79*10^6	0.00035	0.00000	0.00131
7.151	1.42*10^7	0.00000	0.00000	1.00000
7.356	2.27*10^7	0.00000	0.00000	1.00000
8.081	1.21*10^8	0.00000	0.00000	1.00000

Figure 4: Table of risk estimates for range of thresholds of Spike protein antibody activity levels with simultaneous 95% confidence bands

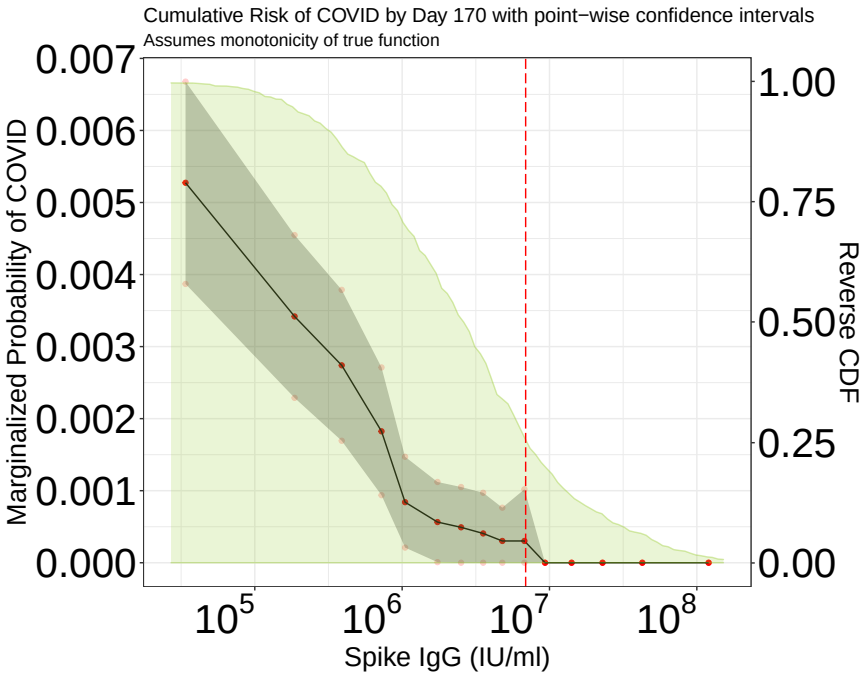

Figure 5: Assuming nonincreasing monotonicity of the true function, the plot shows the estimated (monotone) adjusted threshold-response function for a range of thresholds of the Spike protein antibody activity levels with point-wise 95% confidence intervals. The dashed red line marks the threshold after which no more COVID events are observed.

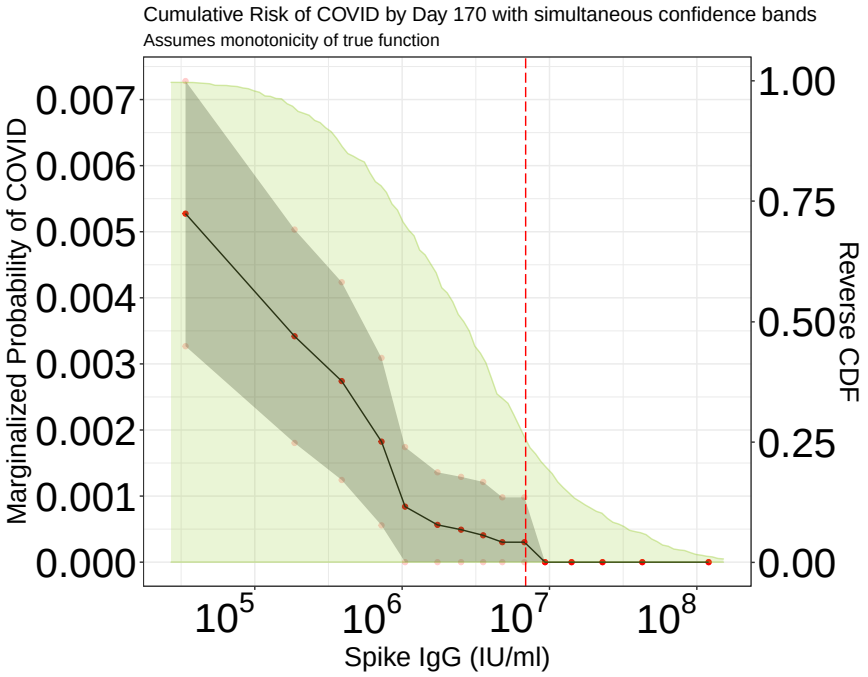

Figure 6: Assuming nonincreasing monotonicity of the true function, the plot shows the estimated (monotone) adjusted threshold-response function for a range of thresholds of the Spike protein antibody activity levels with simultaneous 95% confidence intervals. The dashed red line marks the threshold after which no more COVID events are observed.

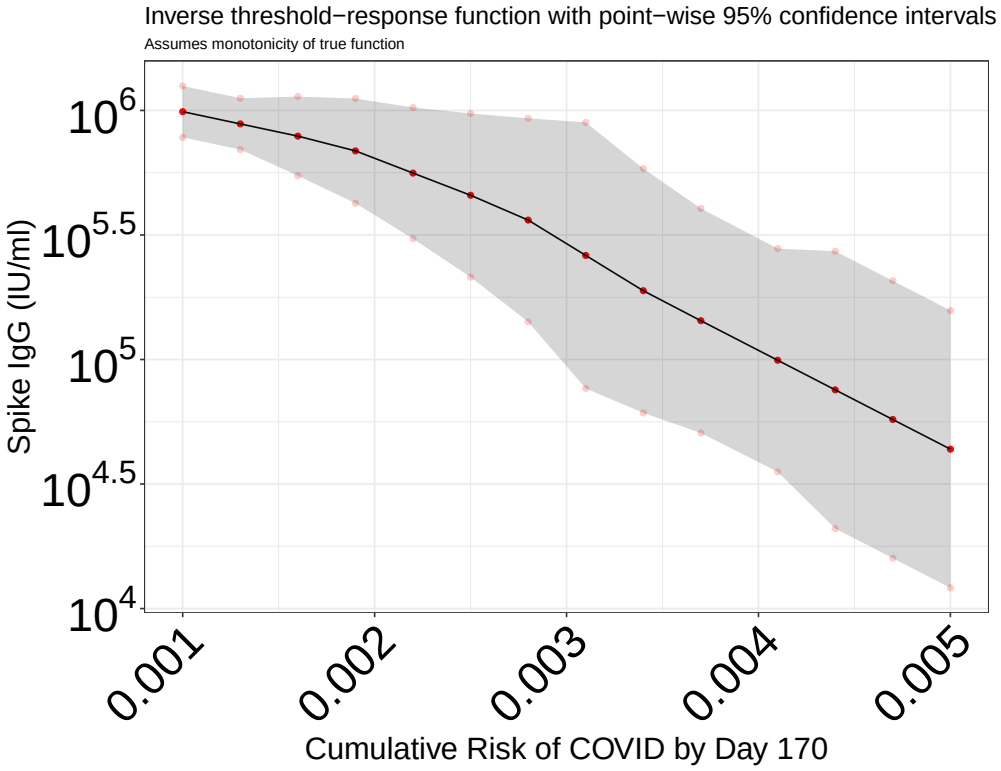

Figure 7: The inverse adjusted threshold-response function with pointwise 95% confidence intervals.

Risk	Threshold est.	CI left	CI right
0.001	1.00*10^6	7.76*10^5	1.26*10^6
0.0013	8.91*10^5	6.92*10^5	1.12*10^6
0.0016	7.94*10^5	5.50*10^5	1.15*10^6
0.0019	6.92*10^5	4.27*10^5	1.12*10^6
0.0022	5.62*10^5	3.09*10^5	1.02*10^6
0.0025	4.57*10^5	2.14*10^5	9.77*10^5
0.0028	3.63*10^5	1.41*10^5	9.33*10^5
0.0031	2.63*10^5	7.59*10^4	8.91*10^5
0.0034	1.91*10^5	6.17*10^4	5.89*10^5
0.0037	1.45*10^5	5.01*10^4	4.07*10^5
0.0041	1.00*10^5	3.55*10^4	2.82*10^5
0.0044	7.59*10^4	2.09*10^4	2.69*10^5
0.0047	5.75*10^4	1.58*10^4	2.09*10^5
0.005	4.37*10^4	1.20*10^4	1.58*10^5

Figure 8: This analysis assumes monotonicity of the true function. The table displays the estimated threshold of protection of Spike protein antibody activity level at a range of risk levels with pointwise 95% confidence intervals.

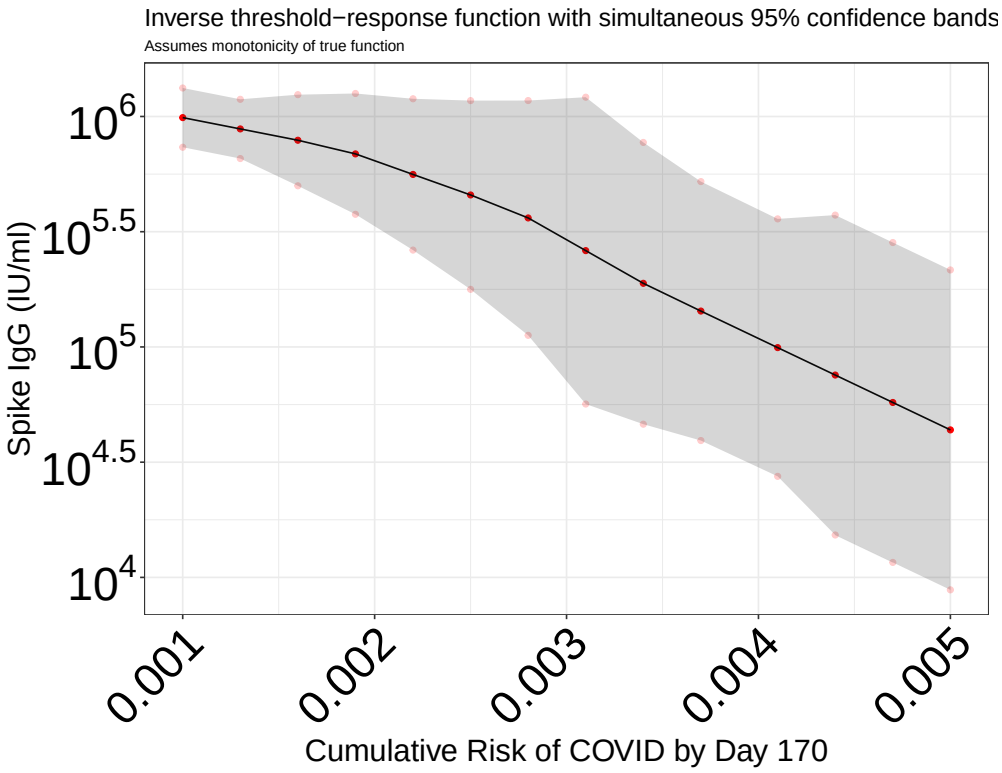

Figure 9: This analysis assumes monotonicity of the true function. The plot shows the inverse adjusted threshold-response function with simultaneous 95% confidence intervals.

Risk	Threshold est.	CI left	CI right
0.001	1.00*10^6	7.41*10^5	1.32*10^6
0.0013	8.91*10^5	6.61*10^5	1.17*10^6
0.0016	7.94*10^5	5.01*10^5	1.23*10^6
0.0019	6.92*10^5	3.80*10^5	1.26*10^6
0.0022	5.62*10^5	2.63*10^5	1.20*10^6
0.0025	4.57*10^5	1.78*10^5	1.17*10^6
0.0028	3.63*10^5	1.12*10^5	1.17*10^6
0.0031	2.63*10^5	5.62*10^4	1.20*10^6
0.0034	1.91*10^5	4.57*10^4	7.76*10^5
0.0037	1.45*10^5	3.89*10^4	5.25*10^5
0.0041	1.00*10^5	2.75*10^4	3.63*10^5
0.0044	7.59*10^4	1.51*10^4	3.72*10^5
0.0047	5.75*10^4	1.15*10^4	2.82*10^5
0.005	4.37*10^4	8.91*10^3	2.14*10^5

Figure 10: This analysis assumes monotonicity of the true function. The table displays the estimated threshold of protection of Spike protein antibody activity level at a range of risk levels with simultaneous 95% confidence bands