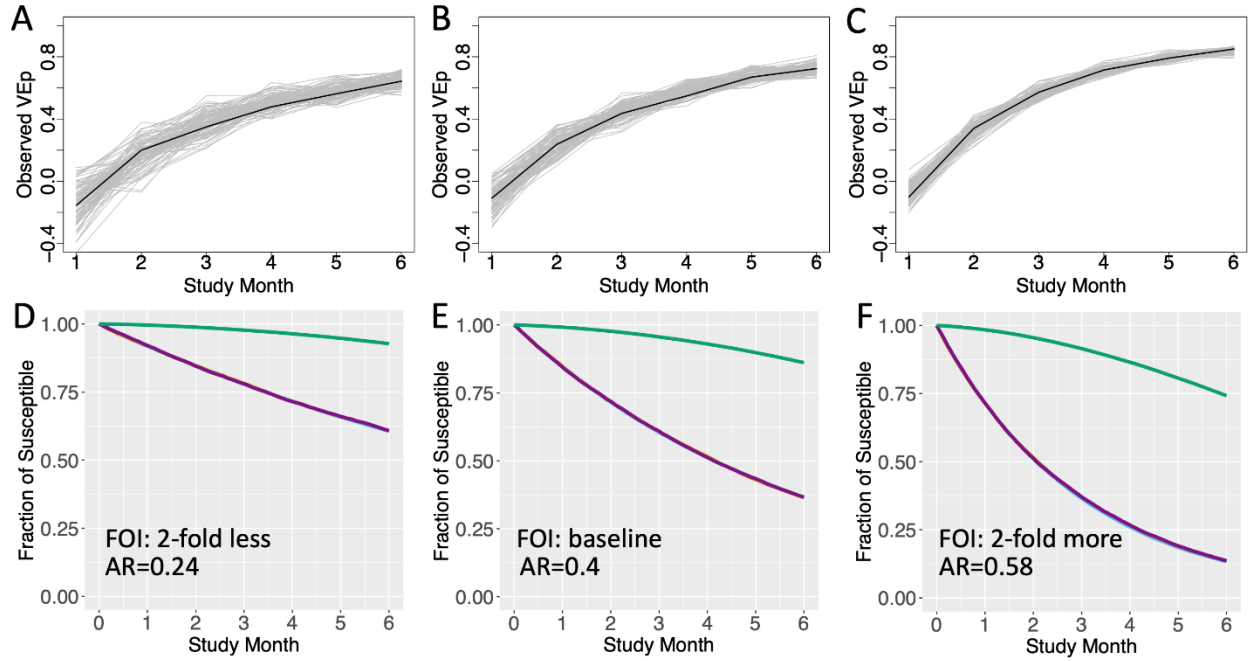


Supplemental Figure 1. Effect of changing the force of infection (FOI) on observed VE_p . Panels A–C show the dynamics of observed VE_p for a 2-fold decrease (Panel A) or a 2-fold increase (Panel C) in FOI, compared to the baseline parameters (Panel B, also see Figure 3 in the main text). The corresponding fractions of susceptibles in the four groups over the six-month period are presented in Panels D–F. Group 1 (orange) represents vulnerable/unvaccinated individuals, Group 2 (blue) represents immunocompetent/unvaccinated individuals, Group 3 (purple) represents vulnerable/vaccinated individuals, and Group 4 (green) represents immunocompetent/vaccinated individuals. Note that the curves for Groups 1, 2, and 3 overlap. ‘AR’ in Panels D–F represents the total attack rate, defined as the sum of infected individuals across all four groups divided by the total population at the end of the six-month period.



Supplemental Figure 2. Effect of correlation between infection risk and progression to severe disease at the individual level. Panel A: Histogram of 1,000 draws for vulnerable individuals (Beta(3.5625, 0.1875); mean = 0.05, variance = 0.01) and immunocompetent individuals (Beta(0.1875, 3.5625); mean = 0.95, variance = 0.01). **Panels B and C:** Comparison of uncorrelated and correlated coefficients (initial value of α_3 and β_3 and initial value of α_4 and β_4) for each individual. **Panel D:** Histogram of 1,000 draws for vulnerable individuals (Beta(14, 7); mean = 0.7, variance = 0.01), and immunocompetent individuals (Beta(0.1875, 3.5625); mean = 0.95, variance = 0.01). **Panels E and F:** Comparison of observed VE_p over a 6-month period for uncorrelated and correlated α and β coefficients.

