Supporting Information Text S2

Results using an uniformative prior for μ

This is similar to Table 1 in the main manuscript but for the uninformative prior for μ.

Model	Description	Prior for μ	Log marginal likelihood
1-C	no immunity ($\alpha = 0$) Constant FOI: $\log\beta(a) = \beta_0$	$N(0.0, \sqrt{1000})$	-303.2 ($\Delta_{ML} = 16.4$)
1-L	no immunity ($\alpha = 0$) Linear FOI: $\log\beta(a) = \beta_0 + \beta_1 a$	$N(0.0, \sqrt{1000})$	-306.4 ($\Delta_{ML} = 22.8$)
1-Q	no immunity ($\alpha = 0$) Quadratic FOI: $\log\beta(a) = \beta_0 + \beta_1 a + \beta_2 a^2$	$N(0.0, \sqrt{1000})$	-300.3 ($\Delta_{ML} = 10.6$)
1-P	no immunity ($\alpha = 0$) Periodic FOI: $\log\{\beta(a)\} = \beta_0 + \beta_1 \sin\left\{2\pi\left(a - \frac{\exp(a_s)}{1+\exp(a_s)}\right)\right\}$	$N(0.0, \sqrt{1000})$	-295.0 ($\Delta_{ML} = 0.0$)
2	lifelong immunity ($\gamma = 0$) periodic FOI: $\log\{\beta(a)\} = \beta_0 + \beta_1 \sin\left\{2\pi\left(a - \frac{\exp(a_s)}{1+\exp(a_s)}\right)\right\}$	$N(0.0, \sqrt{1000})$	-296.2 ($\Delta_{ML} = 2.4$)
3	transient immunity ($\gamma \neq 0$) periodic FOI: $\log\{\beta(a)\} = \beta_0 + \beta_1 \sin\left\{2\pi\left(a - \frac{\exp(a_s)}{1+\exp(a_s)}\right)\right\}$	$N(0.0, \sqrt{1000})$	-297.4 ($\Delta_{ML} = 4.8$)

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