Appendix B (Online Only)

Dependence in the Transmission Number Category Data

Unfortunately, the sentinel chicken data was recorded in a form that leaves it unclear as to which chicken in which cage becomes seropositive (only the number of chickens is known). Additionally, the distribution of the seroconversion data is not normal. As a result, reconstruction of individual chicken time series and demonstration of independence or even the level of dependence is difficult.

Several types of analysis, however, reveal that some level of dependence may exist. Correlation of both the hard-clipped values of the weekly times series of the number of chickens with HI antibodies at each sentinel site, and the raw values, produces correlation coefficients that range from $r=0-0.6$, suggesting there is dependence among some of the sentinel sites. Furthermore, to examine within site dependence we compared the distributions of the weekly number of seropositive chickens within each flock (representing within site clustering of seroconversion events) and the weekly number of flocks with one or more seropositive chickens (representing between site clustering of seroconversion events) to Poisson distributions, which would represent random clustering of such events in time. Both empirical distributions were more clustered than the Poisson distributions; however, the amount of clustering within and between flocks appeared similar. These indications of dependence are accounted for in our empirical analysis of the transmission number category.

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