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Roberto A. Saenz* (rsaenz@math.uiowa.edu), University of Iowa, Department of Mathematics, 14 MacLean Hall, Iowa City, IA 52242, and **Herbert W. Hethcote**. *Competing Species Models with an Infectious Disease*.

The frequency-dependent (standard) form of the incidence is used for the transmission dynamics of an infectious disease in a competing species model. In the global analysis of the SIS model with the birth rate independent of the population size, a modified reproduction number R_1 determines the asymptotic behavior, so that the disease dies out if $R_1 \leq 1$ and approaches a globally attractive endemic equilibrium if $R_1 > 1$. Because the disease-reduced reproduction and disease-related death rates are often different in two competing species, a shared disease can change the outcome of the competition. Models of SIR and SIRS type are also considered. A key result in all of these models with the frequency-dependent incidence is that the disease must either die out in both species or remain endemic in both species. (Received September 27, 2005)