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Timothy C Reluga* (treluga@math.psu.edu), Department of Mathematics, McAllister Hall, Penn State University, University Park, PA 16802. *Exact solution of a Differential Population Game for Social Distancing during an Epidemic*. Preliminary report.

In a recent publication, I described the numerical construction of subgame perfect equilibria for a differential population game, where individuals trade off costly social distancing against costly infection during an epidemic. In this talk, I'll present an exact analytic construction of equilibria for the special case of a linear effectiveness function with zero-lower bound. Equilibrium distancing patterns are shown to consist of sequential periods of no action, complete isolation, moderated isolation, and no action, with periods that depend on the basic reproduction ratio, and the amount of time before a vaccine becomes available. This construction provides an upper bound for the performance of all other convex effectiveness functions. In some cases, the overall benefits of social distancing can be sensitive to the tail-shape of the efficacy. (Received January 30, 2012)