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**Andrew Kaplan\*** ([amkaplan3@gmail.com](mailto:amkaplan3@gmail.com)), Mathematical Sciences Building, 520 Portola Plaza, Room 8209, University of California, Los Angeles, Los Angeles, CA 90095. *Nonparametric Estimation of the Recursive Point Process Model with Application to Mumps in Pennsylvania.*

The self-exciting Hawkes point process model (Hawkes, 1971) has been used to describe and forecast communicable diseases. A variant of the Hawkes model, called the recursive model, was proposed by Schoenberg et al. (2018) and shown to fit well to cases of Rocky Mountain Spotted Fever in California. Unlike the Hawkes model, the recursive model allows the productivity to vary as the overall rate of incidence of the disease varies. Here, we extend the data-driven non-parametric E-M method of Marsan and Lengliné (2008) in order to fit the recursive model without assuming a particular functional form for the productivity. The non-parametric recursive model is trained to fit to weekly reported cases of mumps in Pennsylvania during the January 1970 - September 1990 time frame and then assessed using one week forecasts for the October 1990 - December 2001 time period. Both its training and predictive ability are evaluated compared to that of other candidate models, such as Hawkes and SEIR (Susceptible, Exposed, Infected, Recovered) compartmental models. (Received March 02, 2020)