

## Investigating two data-driven models with mosquito-borne diseases

**Suzanne Lenhart**<sup>1</sup>

<sup>1</sup> *University of Tennessee, Department of Mathematics, Knoxville TN  
37996-1320, USA*

[slenhart@utk.edu](mailto:slenhart@utk.edu)

Two models for diseases primarily transmitted by mosquitoes and with different types of data sets will be presented. La Crosse virus is the leading pediatric mosquito borne virus in the continental United States. Because this virus is transmitted via the bite of an infected *Aedes* mosquito, understanding the dynamics of the local vector population is important in order to assess risk and transmission. Using data collected from Knox County, Tennessee in 2013, we formulated an environmentally-driven system of ODEs to model mosquito population dynamics over a single season. Our second model is a PDE system representing Zika virus spreading across a state in Brazil; vaccination varying in space and time was used as a control. Data from Brazil in 2015 were used to estimate some parameters.

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