



## **Meta-analysis in Application to Tracking Re-emerging Infectious Diseases with Social Media**

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Chikungunya and dengue share the same type of transmission and have similar clinical characteristics; we explore utility of rich informational archives on dengue data as a potential surrogate predictor for chikungunya. In particular, we focus on modelling relationship between the reported cases of chikungunya and Google Dengue Estimates in South and Central America. The results can shed light on benefits and limitations of online social media epidemiological monitoring in developing countries. Further, we combine the information from various locations to improve the estimation accuracy of the parameter of the interest. Further, the shrinkage estimation strategy is implemented. We investigate the relative performance both analytically and numerically of suggested estimation strategies. Finally, we apply these estimation techniques to a real data set for illustration purpose.

**Keywords:** Pooling Data; Shrinkage Estimation; Asymptotic Relative Efficiency; Simulation