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| **Iowa State University**  OF SCIENCE AND TECHNOLOGY | Department of Statistics  Snedecor Hall  Iowa State University  Ames, Iowa 50011-1210  [sgw96@iastate.edu](mailto:sgw96@iastate.edu)  18 December 2024 |

Dear Editor,

Thank you for considering our submission of the paper *Forecasting Influenza Hospitalizations Using a Bayesian Hierarchical Nonlinear Model with Discrepancy*. We affirm the originality of this work and that it has not been published elsewhere nor has been submitted elsewhere for publication.

Every year the United States Centers for Disease Control (CDC) hosts a competition for forecasting the influenza outbreak. The forecasts must be probabilistic, and each competing forecaster is allowed to construct their forecasts any way they please. For the first few years of the competition, data measuring what’s known as influenza-like illness (ILI) was the object of forecasting, but the COVID-19 pandemic led to changes so that now the targeted data is hospitalizations. The object of the paper is to present a modeling framework which takes advantage of successful ILI models in modeling hospitalizations for flu forecasts.

In the paper, we present a framework for our own probabilistic forecasts of the flu. The modeling consists of two components, one for modeling the ILI data and one for modeling the hospitalization data. The modeling components are nonlinear Bayesian hierarchical models, and the component for the ILI data is largely based on a forecast model from Osthus et al. (2019) which was published in *Bayesian Analysis*. We improve upon the ILI forecast model by using a nonlinear function called the asymmetric Gaussian function and show that it often outperforms the compartmental model used by Osthus et al. We believe the model being Bayesian and the relation to the model of Osthus et al. make the paper a good fit for *Bayesian Analysis.*

We hope you enjoy reviewing the manuscript, and we await any feedback you have to offer. All correspondence should be made to me at [sgw96@iastate.edu](mailto:sgw96@iastate.edu).

Respectfully,

Spencer Wadsworth

PhD (to be conferred December 2024)

Department of Statistics