

MAS09

MULTIPLE LEVEL OF AUTOREGRESSION FOR ANALYZING BORDER CROSSING IN THE US

Suprim Maharjan¹, Wen Cheng²

¹University of the West, Rosemead, CA, USA. ²Cal Poly Pomona, Pomona, CA, USA

Abstract

The purpose of this research is to determine how well time series models predict the volume of people entering the US at the Eastport port of entry near the border with Canada. The study covers data from January 1, 1996, to February 1, 2020, and focuses on several variables, such as drivers' personal vehicles, passengers in personal vehicles, trains, empty and full rail containers, truck containers, and trucks. To find the most accurate way to estimate traffic levels, the study makes use of Auto Regression (AR) and Vector Auto Regression (VAR) models. The findings show that the VAR model performs noticeably better than the AR model in every metric that was examined, offering forecasts that are more accurate and reliable. The VAR model's greater performance is attributed to its capacity to represent intricate interdependencies among various traffic measurements. The VAR model's use can enhance border crossing crisis response, infrastructure development, and resource allocation. To improve the forecasting models, future research will expand this analysis to other ports and include other factors including meteorological and economic statistics. The results imply that implementing the VAR model can result in improved security management and more effective border operations.

Conference Track

Modeling and Simulation