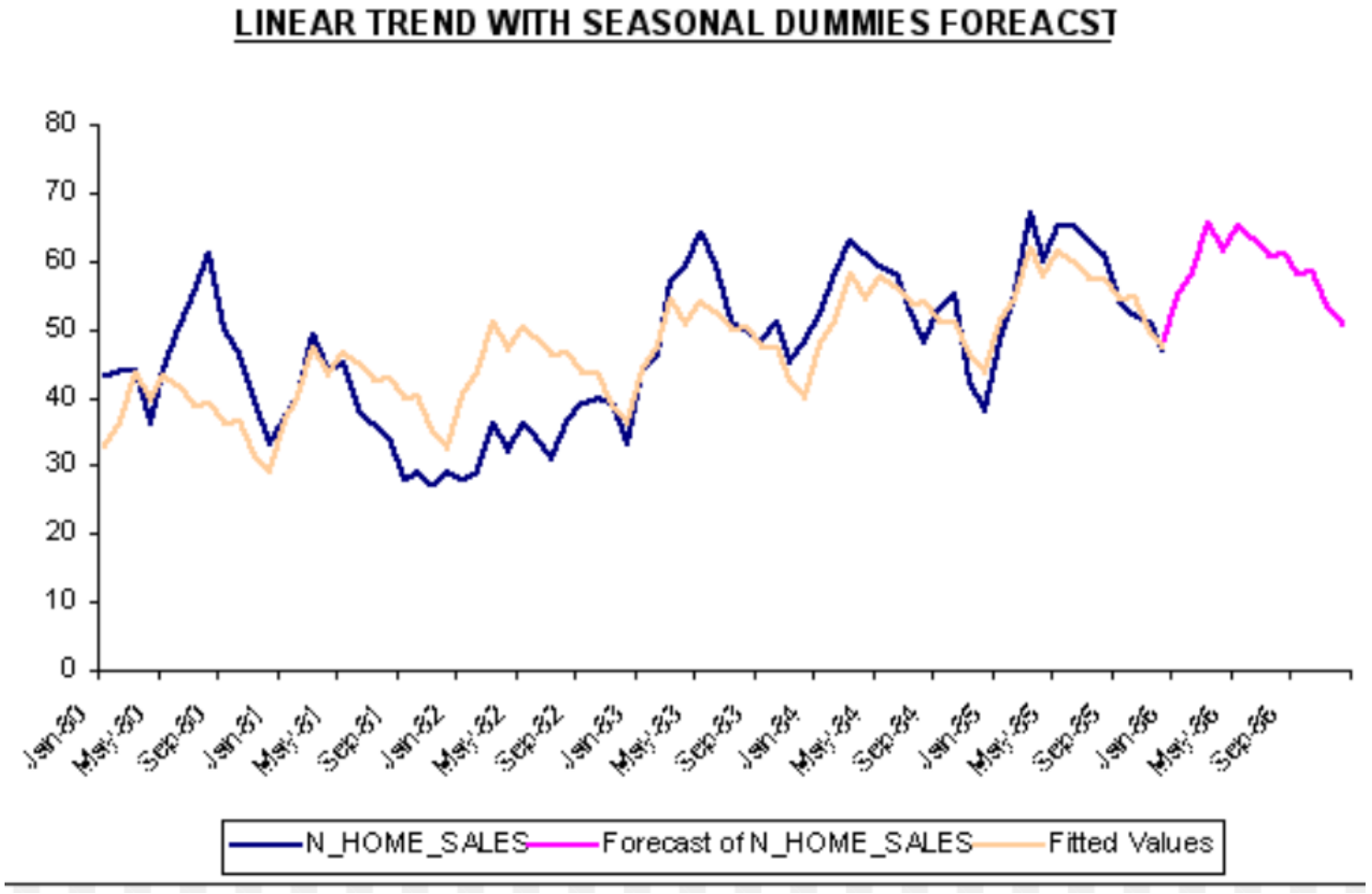
The Time Series Models Used in https://github.com/jaakko-paavola/time-series-forecasting-ensemble-with-R

The Time Series Models Used

Linear regression with seasonal components w/ or w/o trend

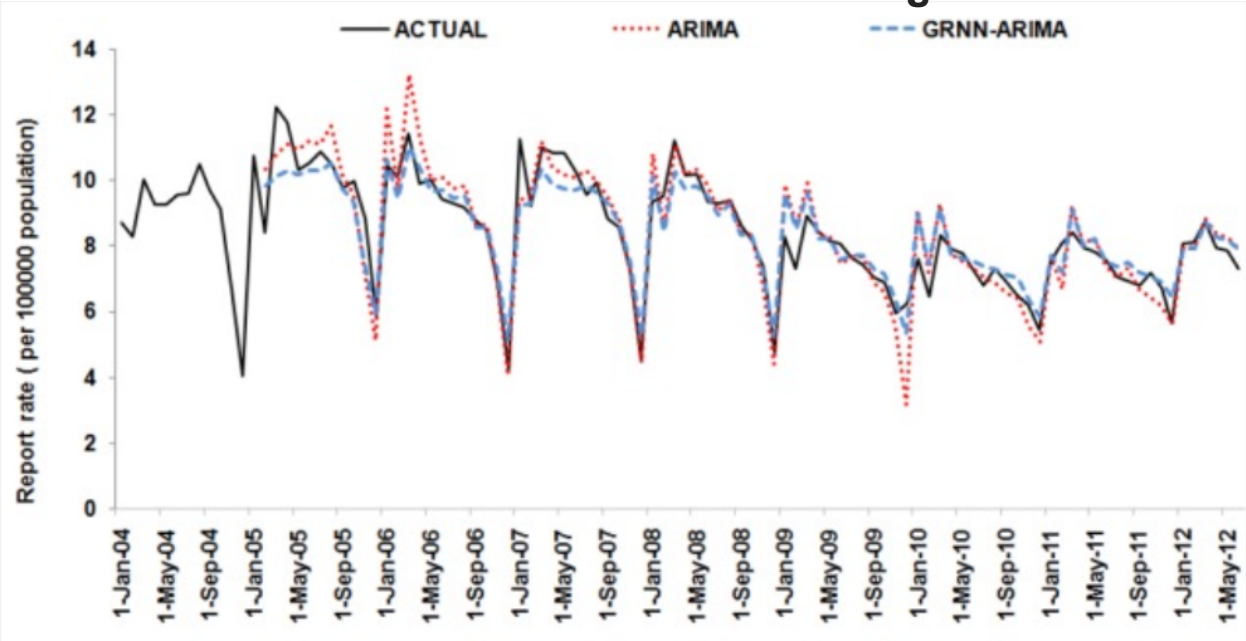


[https://www3.nd.edu/~busiforc/handouts/Case%20Folder/Chap005/Case2.htm]

The Time Series Models Used

Seasonal autoregressive integrated moving average (*SARIMA) w/&w/o **Box-Cox transformation

Autocorrelation is the correlation of a signal with a delayed copy of itself as a function of delay. Informally, it is the similarity between observations as a function of the time lag between them.
Autoregression (AR) models the response using observations from previous time steps as input to a regression equation.
Integrated (I) refers to the result of differencing the time series – subtracting the previous observation from the current observation – to remove trends and seasonality, making a non-stationary time series stationary, thereby enabling the use of stationary models.
Moving average (MA) models the response as a linear combination of error terms of the current and previous time steps.
Autocorrelation can be modeled with autoregression and/or moving average



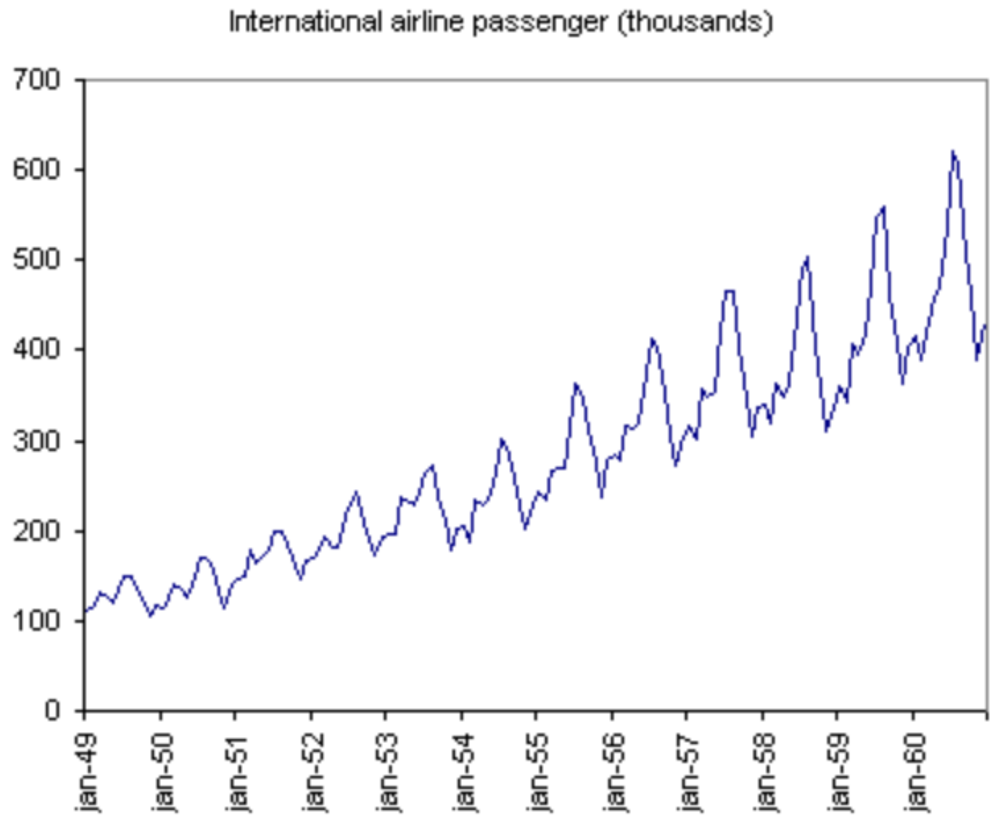
**Seasonal ARIMA models are generally denoted ARIMA(p,d,q)(P,D,Q) where p is the order (number of time lags) of the autoregressive model, d is the degree of differencing and q is the order of the moving-average model. P, D, and Q are the otherwise equivalent, but for seasonal components.*

***Box Cox transformation is a way to transform non-normal dependent variables into a normal shape. This is important since linear methods have an underlying assumption of normality.*

[https://www.researchgate.net/figure/ARIMAthe-autoregressive-integrated-moving-average-GRNNthe-generalized-regression_fig6_258504187]

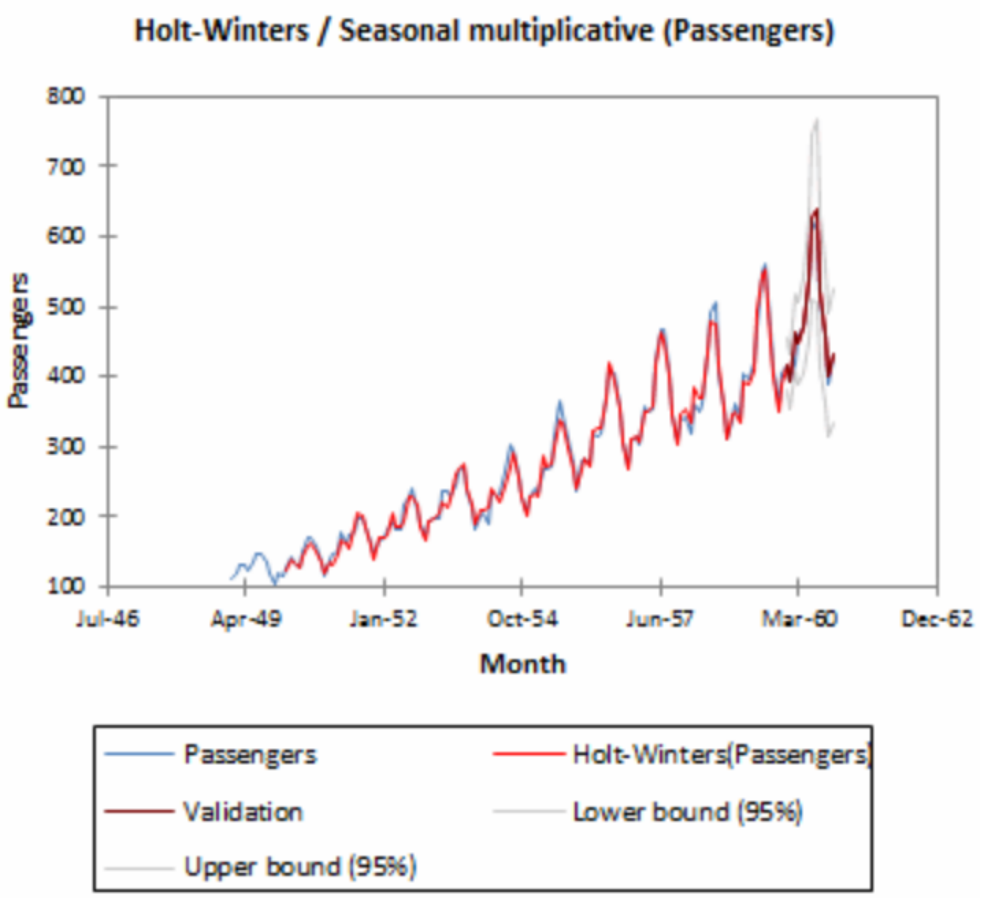
The Time Series Models Used

*Holt-Winters multiplicative&additive seasonal components



[https://link.springer.com/chapter/10.1007/978-1-4842-8005-8_6]

Holt-W. modeling

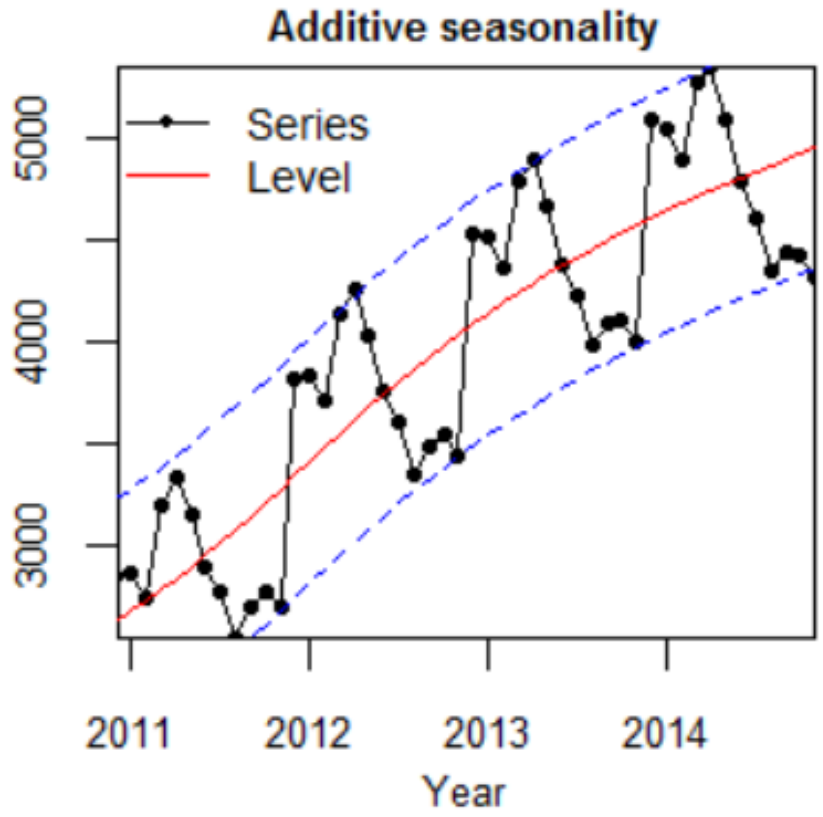


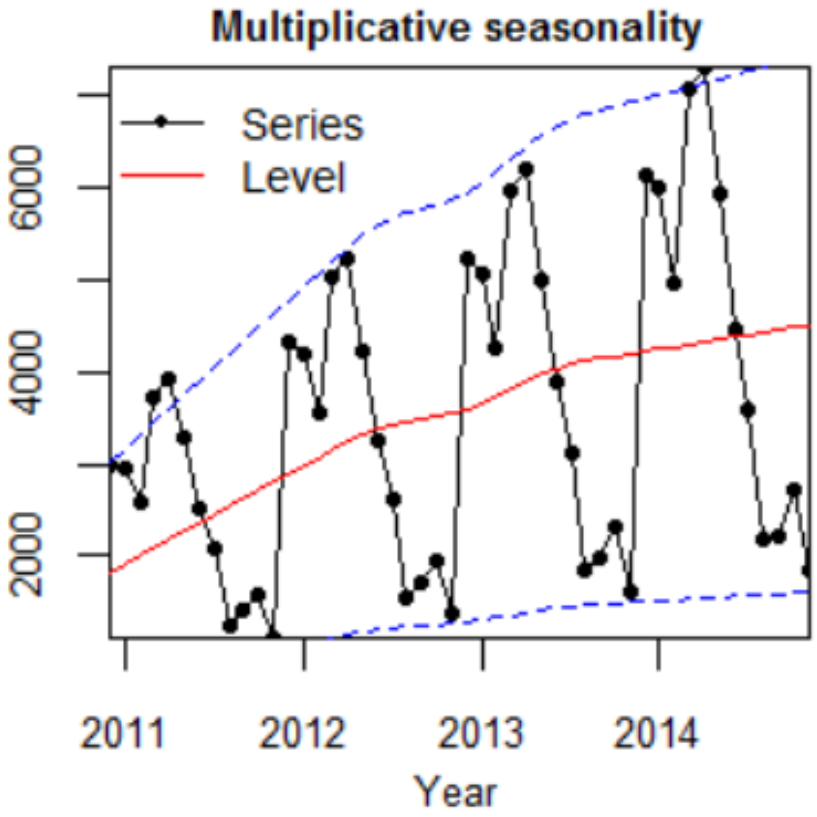
[https://help.xlstat.com/6752-holt-winters-seasonal-multiplicative-model-excel]

**Holt-Winters is a way to model three aspects of the time series: a typical value (average), a slope (trend) over time, and a cyclical repeating pattern (seasonality). Holt-Winters uses exponential smoothing to encode lots of values from the past and use them to predict "typical" values for the present and future. The model predicts a future value by computing the combined effects of these three influences.*

The Time Series Models Used

Holt-Winters multiplicative&additive seasonal components



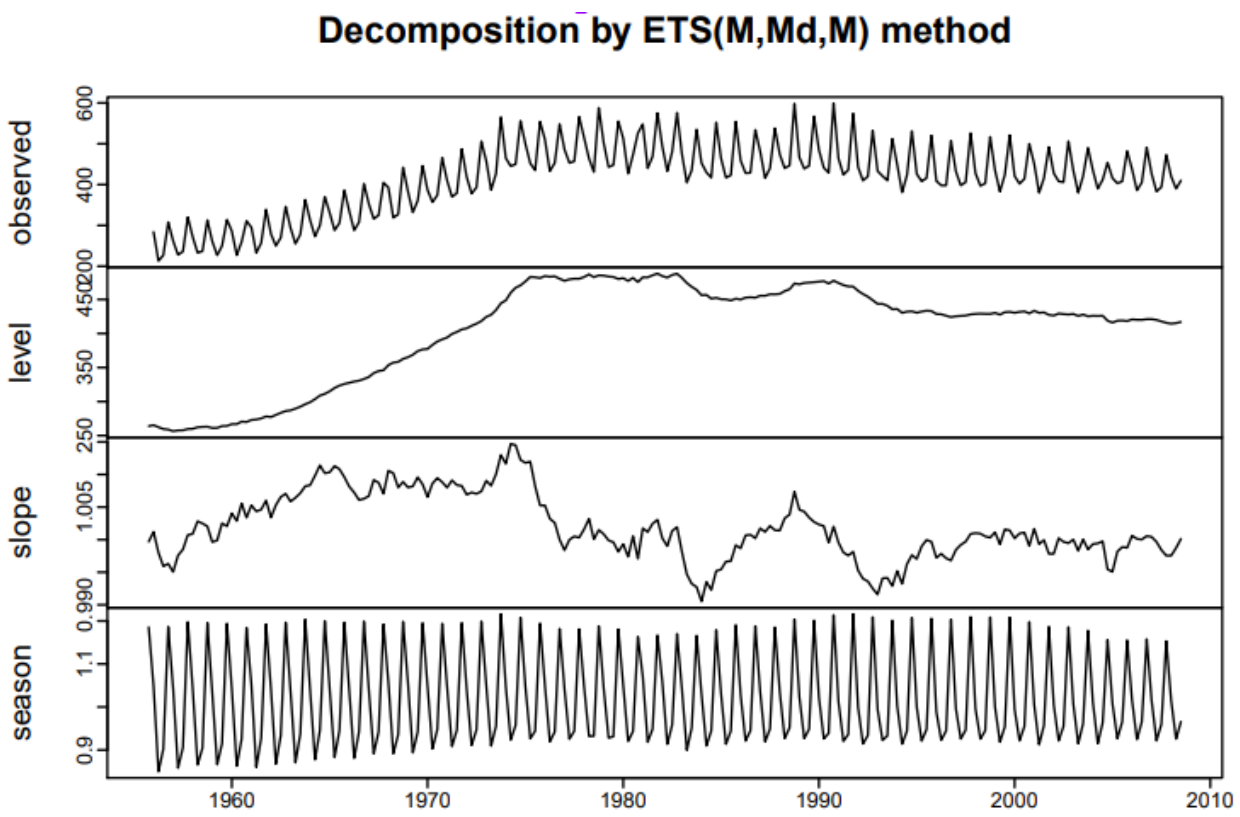


[https://ads.ifba.edu.br/dl2494]

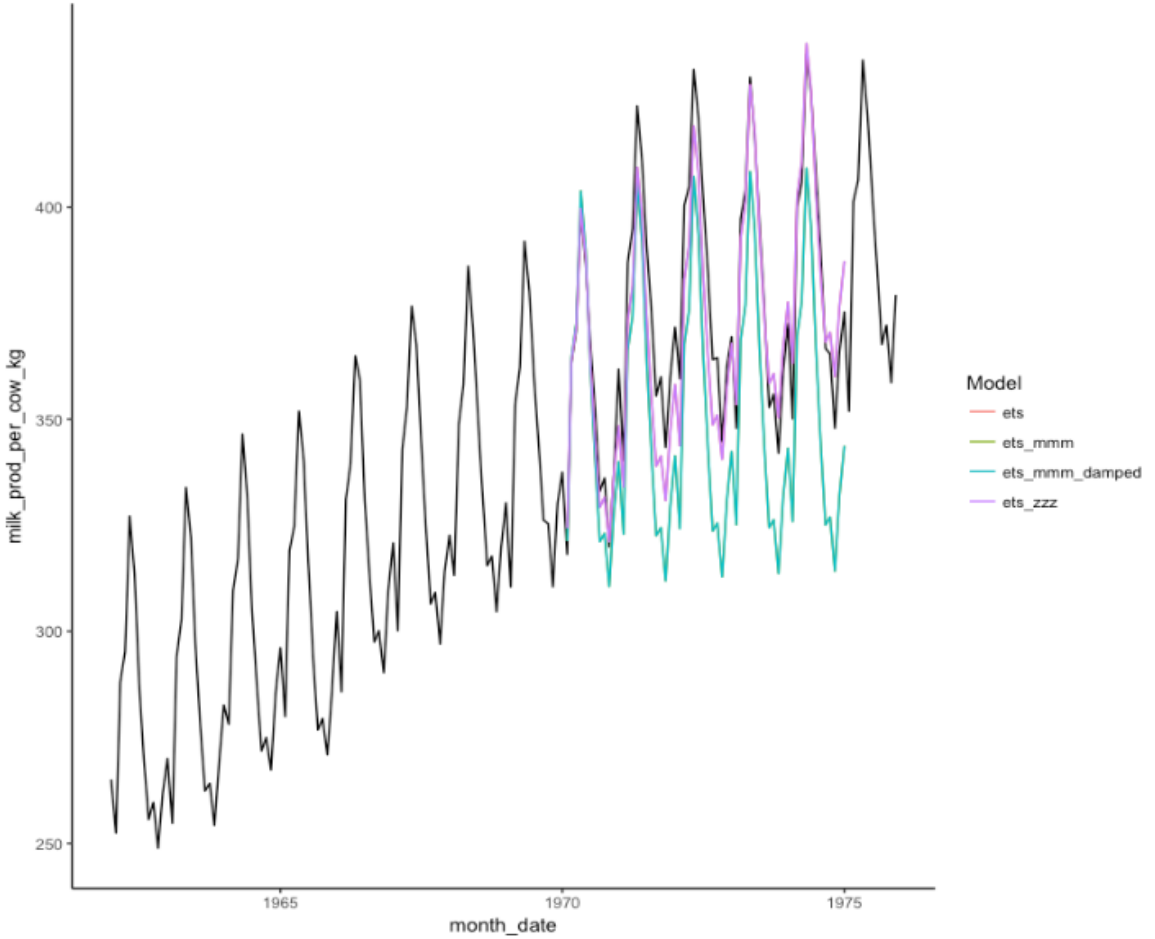
**ETS = Error, Trend, and Seasonality

The Time Series Models Used

*Exponential smoothing state space model (**ETS)



[https://blogs.vmware.com/load-balancing/2024/03/20/holt-winters-algorithm-anomaly-detection-vmware-avi-load-balancer/]



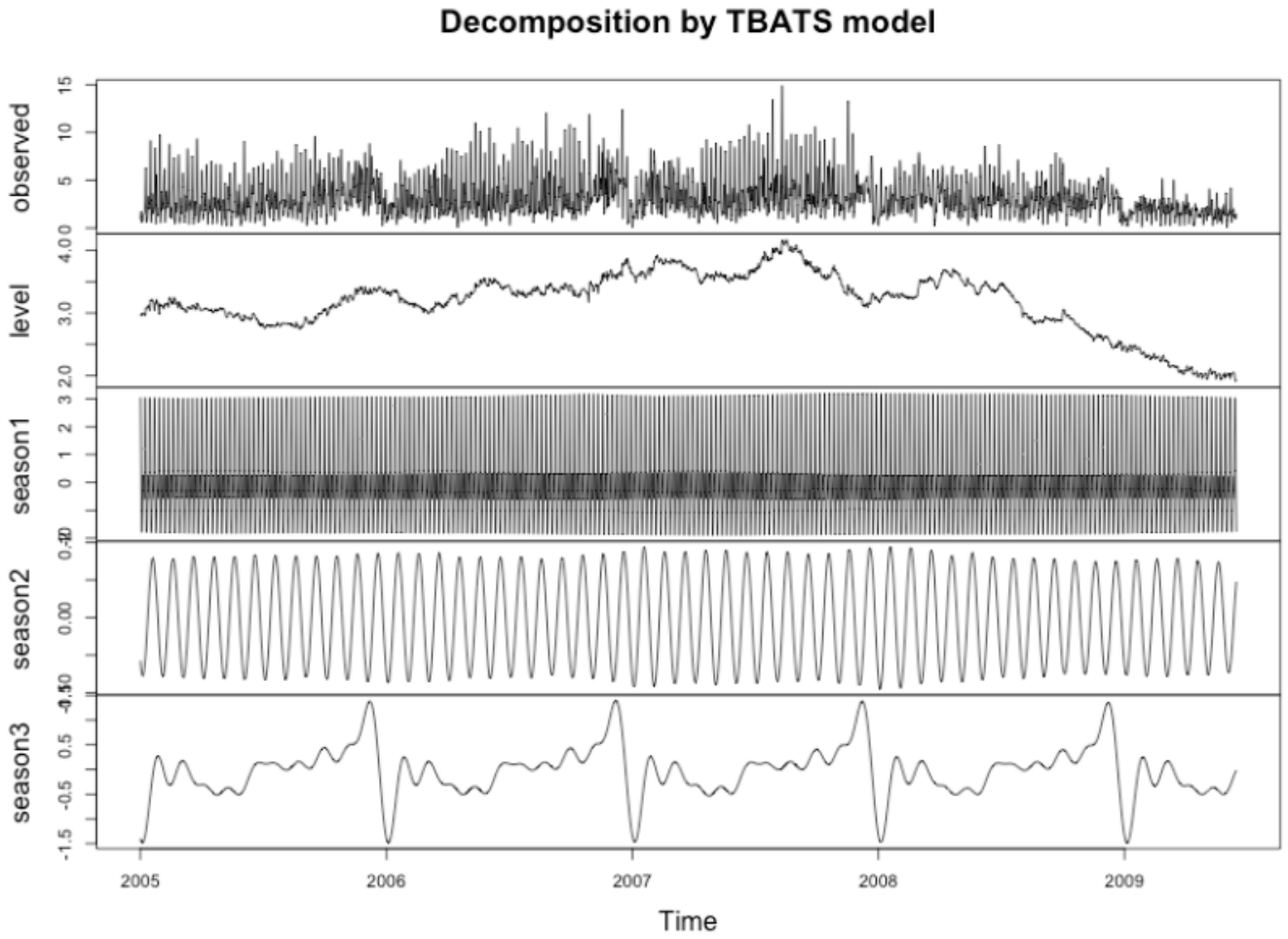
[https://ourcodingclub.github.io/tutorials/time/]

*Exponential smoothing is a technique to make forecasts by using a weighted mean of past values, wherein more recent values are given higher weights.

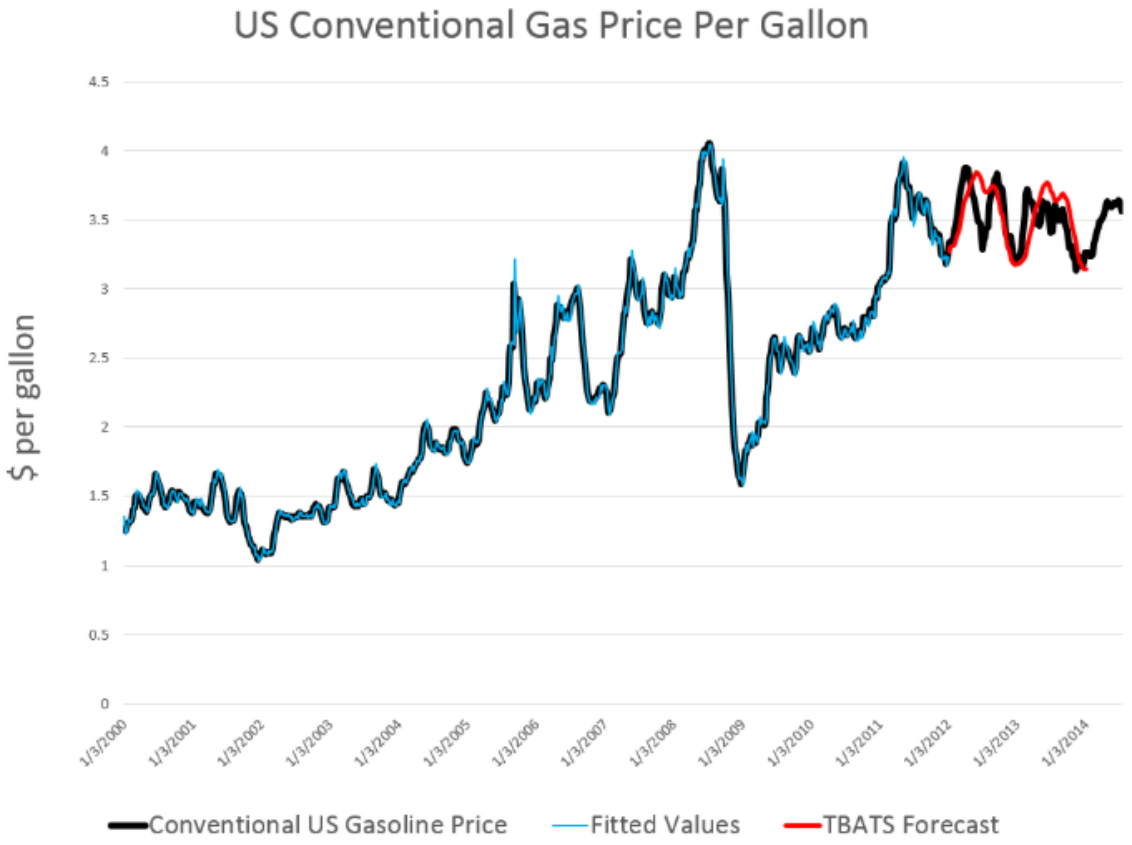
*TBATS = Trigonometric seasonal, Box-Cox transformation, ARIMA errors, Trend and Seasonality

The Time Series Models Used

Exponential smoothing state space model with Box-Cox transformation, ARIMA errors, Trend and Seasonal components (*TBATS)



[https://stats.stackexchange.com/questions/163371/work-with-results-of-tbats-decomposition]



[https://blog.csdn.net/yijiaobani/article/details/89360640]