Evaluation of stationary demand models

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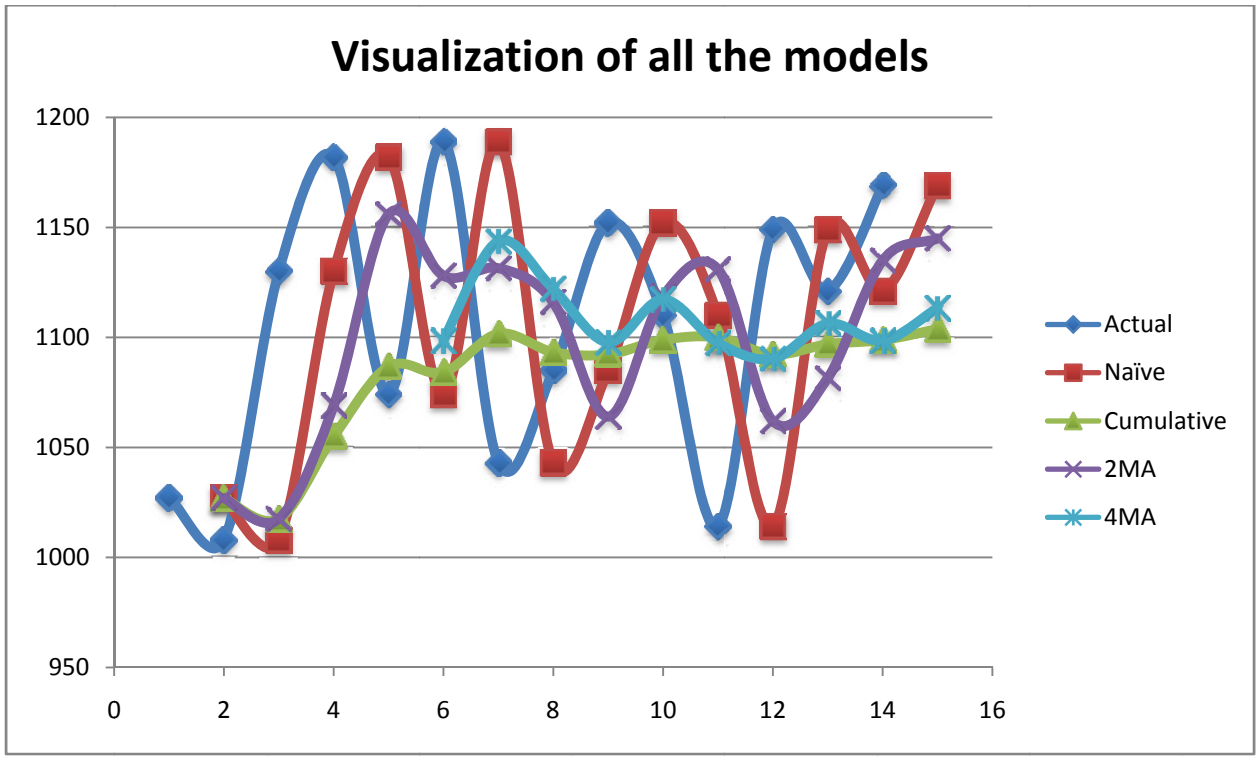
Objective

Select a suitable model among the given choices.

Introduction

TrainMax is a manufacturer of high-end specialty engine equipment for high speed trains. They produce parts that are sent to the original equipment manufacturers (OEMs) for manufacturing new engines. They face a continuing challenge of trying to forecast demand for their products. The demand for one part in particular, XC-288, was highlighted as needing to be examined.

Visualization of all the models



Check for stationary demand

One way of doing is to determine the coefficient of variation (CV)

$$CV = \frac{STDEV(data)}{AVERAGE(data)}$$

We get

STDEV	62.6899312
AVERAGE	1103.78571
CV	0.05679538

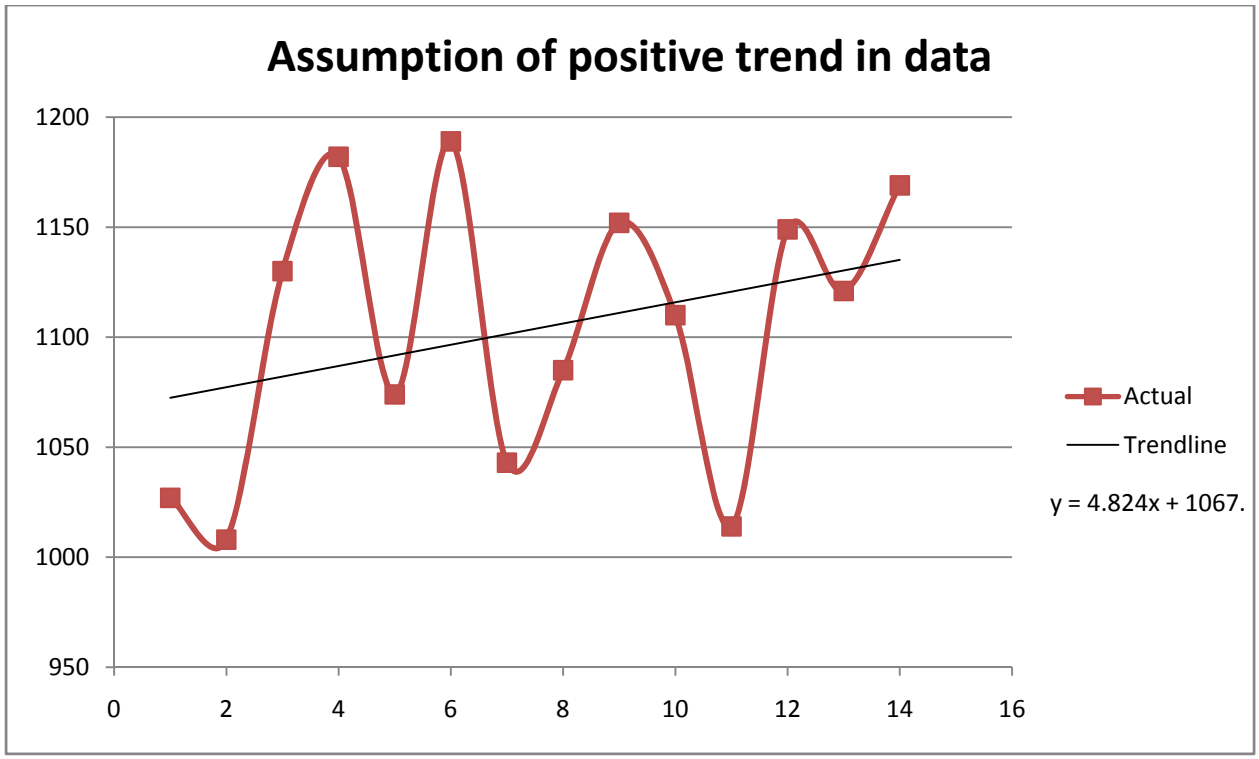
CV is very low & hence the demand is quite stationary & stable in nature.

Calculations among the models

	Prediction for period 15	**MAPE(%)**
Period 14 value	1169	
Naïve	1169	7.08446274
Cumulative	1103.78571	5.13422811
2MA	1145	6.46420824
4MA	1113.25	4.79251584

Here we see that the moving average forecasts need not always be between the naïve & cumulative forecasts.

Selection of the model in the presence of a trend



If we assume there is a positive trend in the data then none of these models are appropriate for demand with a trend pattern. The Cumulative, Naive, and Moving Average forecasts all assume stationary demand. That means that you only assume a Level pattern to the demand with some random noise.