BUAN/OPRE 6398.003 Prescriptive Analytics

Homework 8

Team 6

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2.

(1)

(2) Seasonal patterns. It displays a seasonal pattern on a 12-month basis.

(3)



The yearly amount displays a trend forecast as below. The trend model y=268x + 2637.5

For 2017, let x=5, y=268\*5 + 2637.5 = 3977.5 (the yearly pollution level)

According to Di (i=1,2…,12) in the above table, we calculate the monthly pollution level in 2017 in the last row.

3.

(1) Below tables shows the MAD with Naïve, 2-month SMA, and SES with =0.2

  

(2) 2-month SMA is the most reliable because its MAD is the smallest (275)

(3) F7 = (3700+4300)/2 = 4000

(4) MSE of Naïve = 12400, MSE of 2-month SMA=101250, MSE of SES with  0.2 = 240800

  

(5) 2-month SMA is the most reliable because its MSE is the smallest

4.

(1) Naïve: we get the following past forecasts



(2) WMA with 0.6 and 0.4, we get the following past forecasts



(3) MAD of Naïve = 26.6667, and MAD of WMA = 23. It indicates that WMA is more accurate for WMA has smaller MAD.



(4) MSE of Naïve = 733.3333, MSE of WMA=754. It indicates Naïve is more accurate for Naïve has smaller MSE



(5) Not consistent. When this happens, it is a common practice to use a third measure of aggregate forecast error such as “bias,” “mean absolute percent error,” or something else as the tie-breaker to determine which of the two method is truly the best method. If X is better than Y based on the third measure, then X is the best forecasting method overall according to the majority rule (i.e., 2:1). If Y is better than X based on the third measure, however, then Y is the best forecasting method overall.