Tourism Data Analysis

31 July 2019

BoxCox Transformation

R.method	Bias	Unbiased (Method 1)	Unbiased (Method 2)
Base	12.27	139.94	13.45
Bottom-up	18.06	15.76	23.33
MinT(Shrink)	10.27	10.11	12.43
OLS	11.84	116.91	12.96
WLS	15.83	14.20	19.51

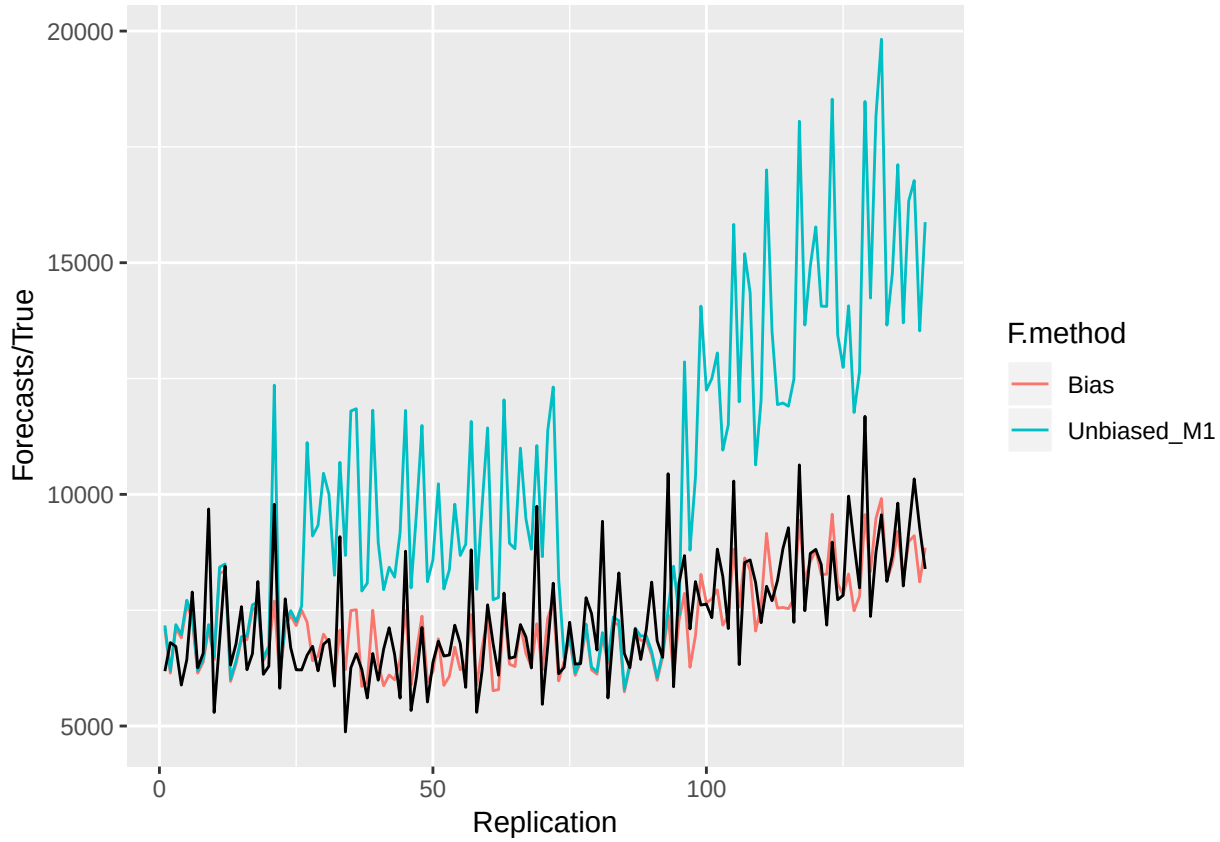
More analysis on BoxCox transformed resulst

```
DF_BoxCoxTrans %>%
  group_by(`F.method`, `R.method`, Forecast_Horizon, Series) %>%
  summarise(MSE = round(mean(SquaredE)/1e3, digits = 2)) %>%
  filter(R.method == "Base", Forecast_Horizon == 1,
         F.method %in%c("Bias","Unbiased_M1")) %>%
  ungroup() %>%
  dplyr::select(-R.method, -Forecast_Horizon) %>%
  spread(key = F.method, value = MSE) %>%
  mutate("Bias-Unbiase" = Bias - Unbiased_M1) %>%
  filter(`Bias-Unbiase` < -5)
```

```
## # A tibble: 1 x 4
##   Series  Bias Unbiased_M1 `Bias-Unbiase`
##   <fct>  <dbl>       <dbl>          <dbl>
## 1 Total   808.      14866.        -14058.
```

Bias correction is giving wiered results for `Total` series.

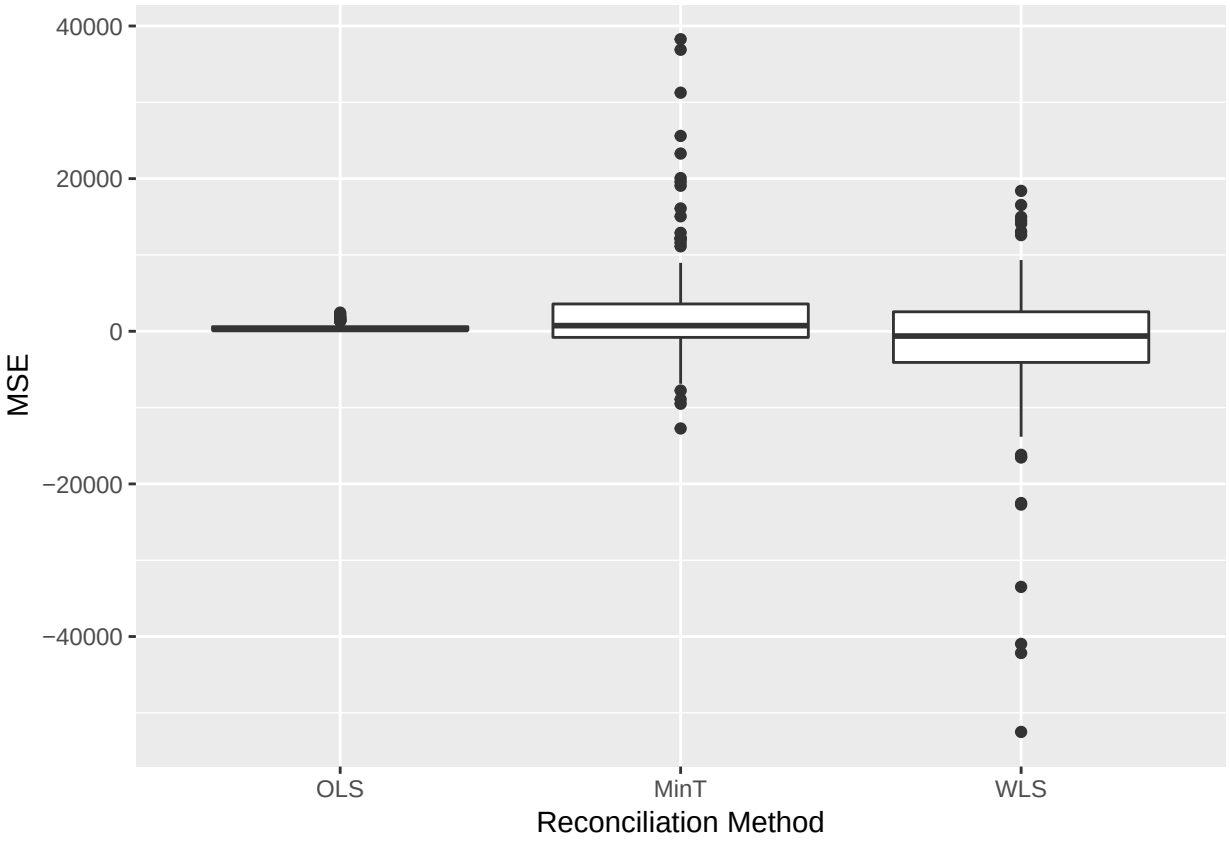
```
DF_BoxCoxTrans %>%
  filter(Forecast_Horizon == 1) -> DF_BoxCoxTrans_h1

DF_BoxCoxTrans_h1 %>%
  filter(Series == "Total", R.method == "Base", F.method == "Bias") %>%
  dplyr::select(Actual, Replication) -> Total_True


DF_BoxCoxTrans_h1 %>%
  filter(Series == "Total", R.method == "Base", F.method %in%c("Bias","Unbiased_M1")) -> Total_Fc


ggplot() +
  geom_line(data = Total_Fc, aes(x = Replication, y = Forecasts, color = `F.method`)) +
  geom_line(data = Total_True, mapping = aes(x = Replication, y = Actual)) +
    ylab("Forecasts/True")
```



Log Transformation

R.method	Bias	Unbiased (Method 1)	Unbiased (Method 2)
Base	12.06	11.87	12.52
Bottom-up	17.37	15.47	21.58
MinT(Shrink)	9.36	9.25	10.35
OLS	11.59	11.41	11.98
WLS	15.00	13.83	17.55

```
## Adding missing grouping variables: `F.method`
```


40000
20000
0
−20000
−40000
MSE
OLS
MinT
WLS
Reconciliation Method