MT_370

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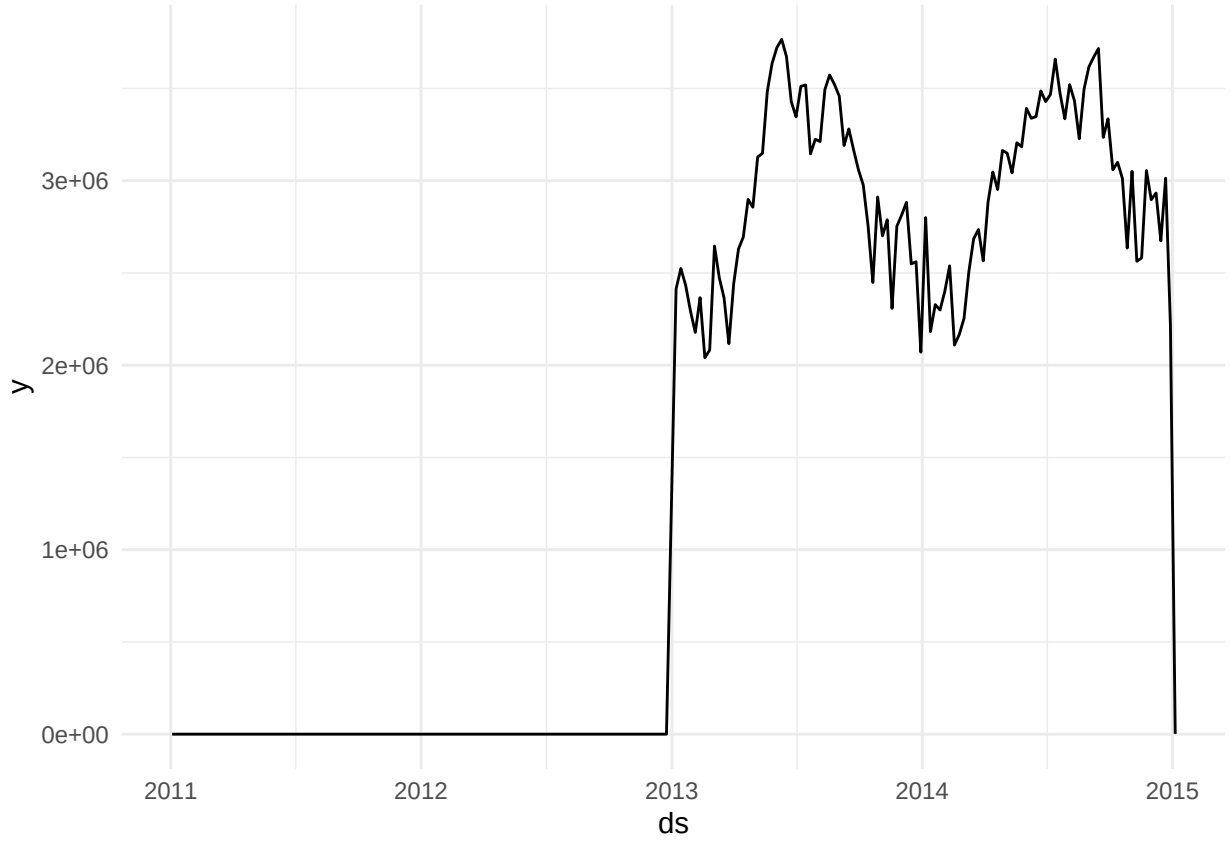
```
library(tidyverse)
library(lubridate)
library(prophet)
library(MLmetrics)
library(scales)
```

```
source("make-model.R")
```

```
data <- get_account("MT_370")
```

```
data %>%
   ggplot(aes(x = ds, y = y)) +
   geom_line() +
  theme_minimal()
```



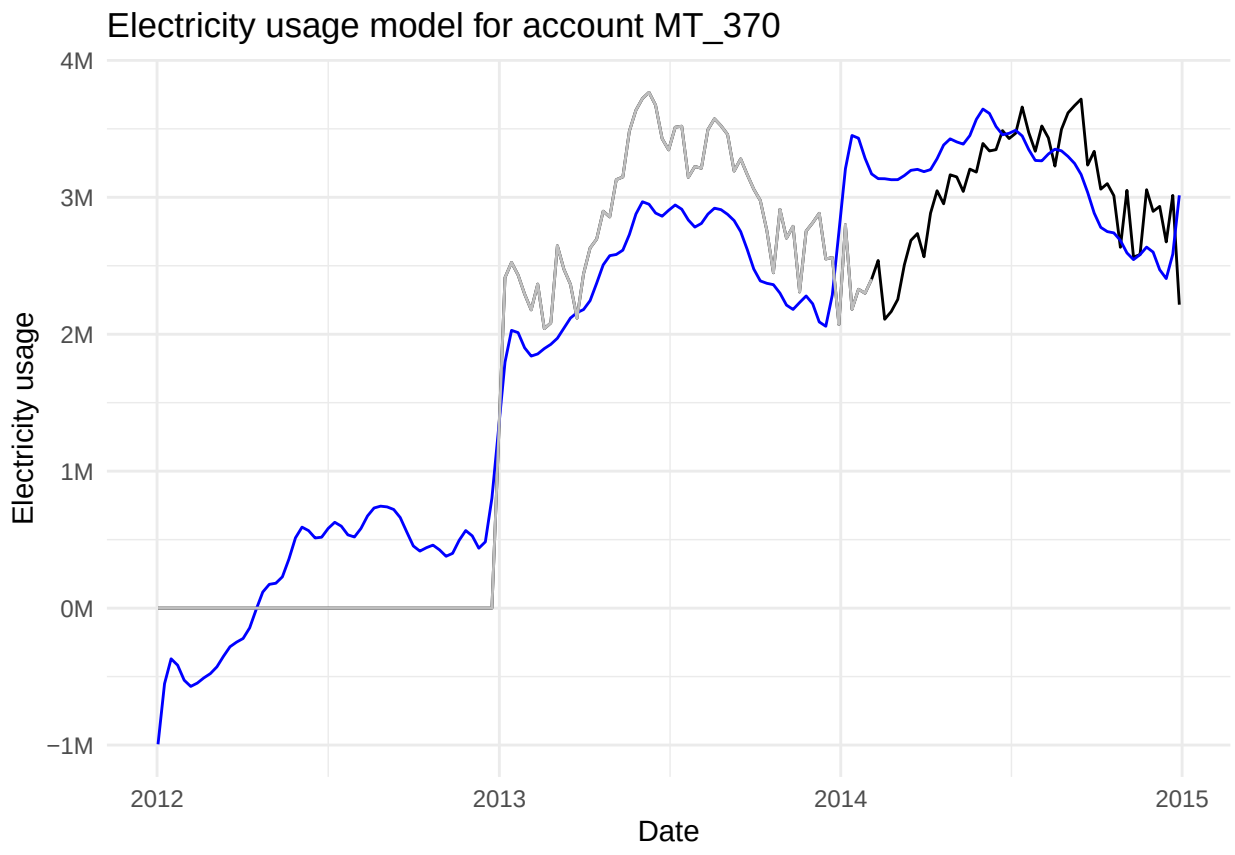
There appears to be an outlier so I looked at the end of the data and starting from year 2013

```
data <- data %>% slice(1: nrow(data) - 1)
data <- filter(data,year(ds)>=2012)
```

```
train <- split_data(data)$train
validation <- split_data(data)$validation
test <- split_data(data)$test
```

```
m <- prophet(rbind(train, validation))
future <- make_future_dataframe(m, periods = nrow(test), freq = "week")
forecast <- predict(m, future)
```

```
full_join(data, forecast) %>%
  ggplot() +
  geom_line(aes(x = ymd(ds), y = y), color = "black") +
  geom_line(aes(x = ymd(ds), y = yhat), color = "blue") +
  theme_minimal() +
  geom_line(data = data%>%slice_head(n=nrow(train)), aes(x = ymd(ds), y = y), color = "grey") +
  scale_y_continuous(labels = label_number(scale = 0.000001, suffix = "M")) +
  labs(
    x = "Date",
    y = "Electricity usage",
    title = "Electricity usage model for account MT_370"
  )
```



```
find_mape(forecast, test)$total
```

```
## [1] 0.1135
```

```
find_mape(forecast, test)$first
```

```
## [1] 0.1098288
```

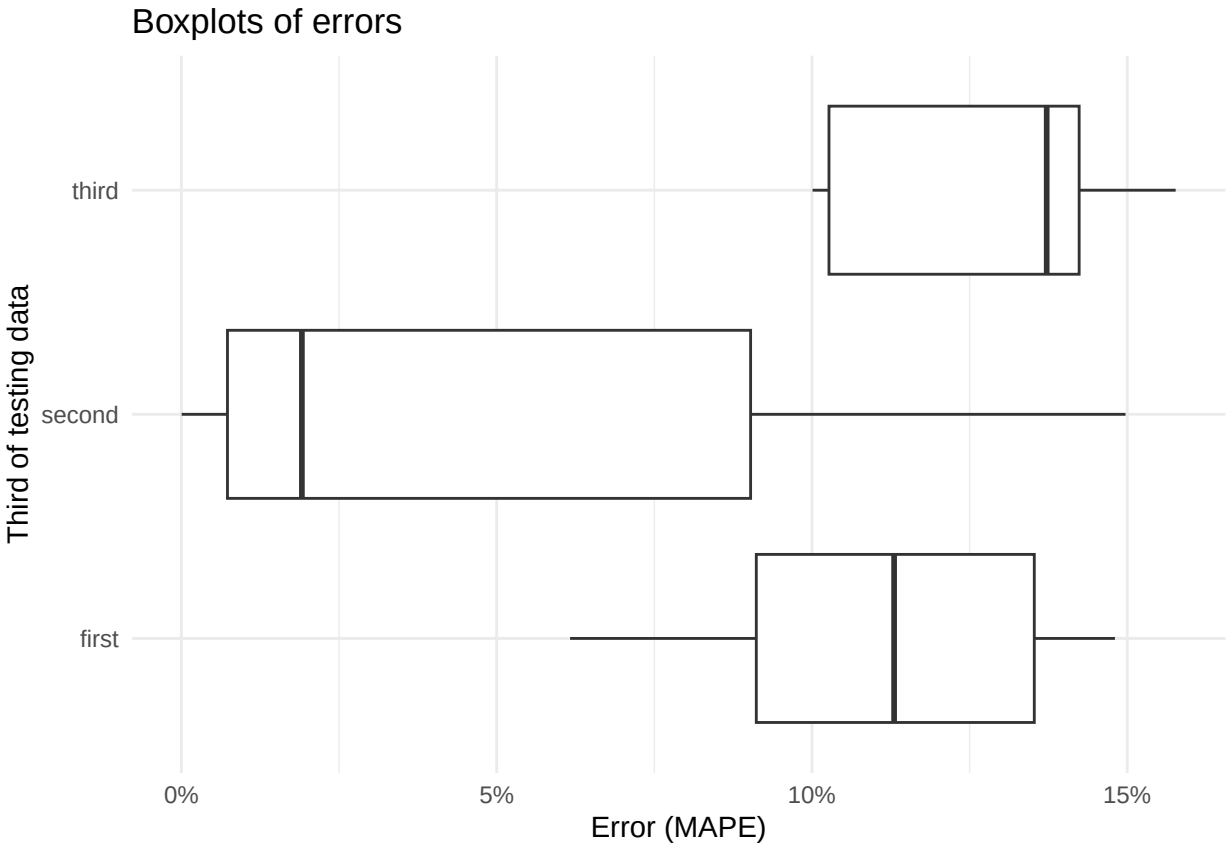
```
find_mape(forecast, test)$second
```

```
## [1] 0.05328926
```

```
find_mape(forecast, test)$third
```

```
## [1] 0.166735
```

```
split_mape(forecast, test )%>%
  pivot_longer(
    cols = everything(),
    names_to = "segment",
    values_to = "error"
  ) %>%
  ggplot(aes(x = error, y = segment)) +
  geom_boxplot() +
  scale_x_continuous(label = label_percent()) +
  labs(
    x = "Error (MAPE)",
    y = "Third of testing data",
    title = "Boxplots of errors"
  ) +
  theme_minimal()
```


Boxplots of errors
Third of testing data
third
second
first
0%
5%
10%
15%
Error (MAPE)