Chapter 5 The forecaster’s Toolbox

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```
library(fpp3)
```

```
## Warning: package 'fpp3' was built under R version 4.2.3
```

```
## ── Attaching packages ─────────────────────────────────────── fpp3 0.5 ──
```

```
## ✓ tibble      3.2.0     ✓ tsibble     1.1.3
## ✓ dplyr       1.1.0     ✓ tsibbledata 0.4.1
## ✓ tidyr       1.3.0     ✓ feasts      0.3.1
## ✓ lubridate   1.9.2     ✓ fable       0.3.3
## ✓ ggplot2     3.4.1     ✓ fabletools  0.3.3
```

```
## Warning: package 'lubridate' was built under R version 4.2.3
```

```
## Warning: package 'ggplot2' was built under R version 4.2.3
```

```
## Warning: package 'tsibble' was built under R version 4.2.3
```

```
## Warning: package 'tsibbledata' was built under R version 4.2.3
```

```
## Warning: package 'feasts' was built under R version 4.2.3
```

```
## Warning: package 'fabletools' was built under R version 4.2.3
```

```
## Warning: package 'fable' was built under R version 4.2.3
```

```
## ── Conflicts ────────────────────────────────────── fpp3_conflicts ──
## ✕ lubridate::date()    masks base::date()
## ✕ dplyr::filter()      masks stats::filter()
## ✕ tsibble::intersect() masks base::intersect()
## ✕ tsibble::interval()  masks lubridate::interval()
## ✕ dplyr::lag()         masks stats::lag()
## ✕ tsibble::setdiff()   masks base::setdiff()
## ✕ tsibble::union()     masks base::union()
```

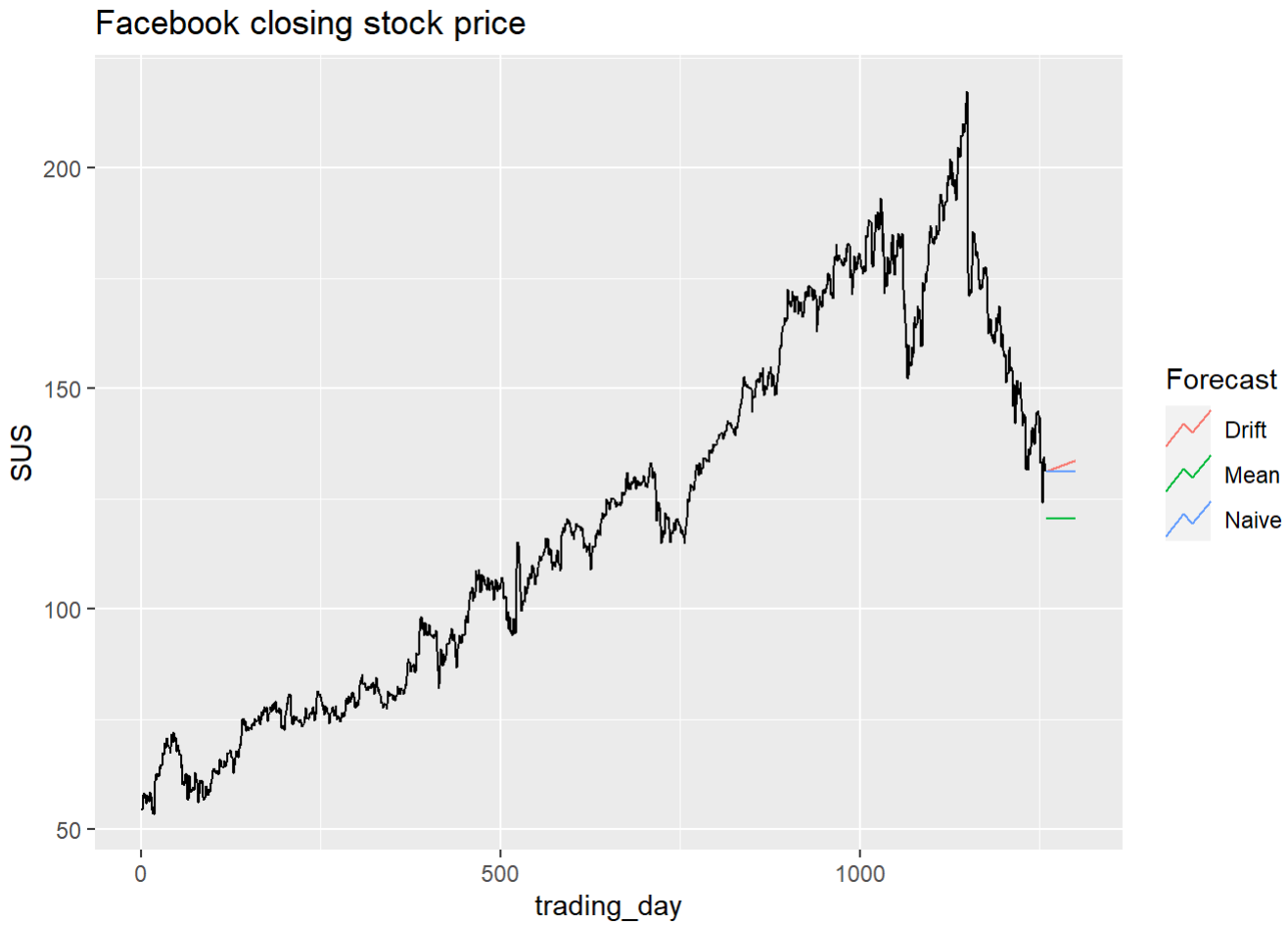
Facebook closing stock price

Extract training data

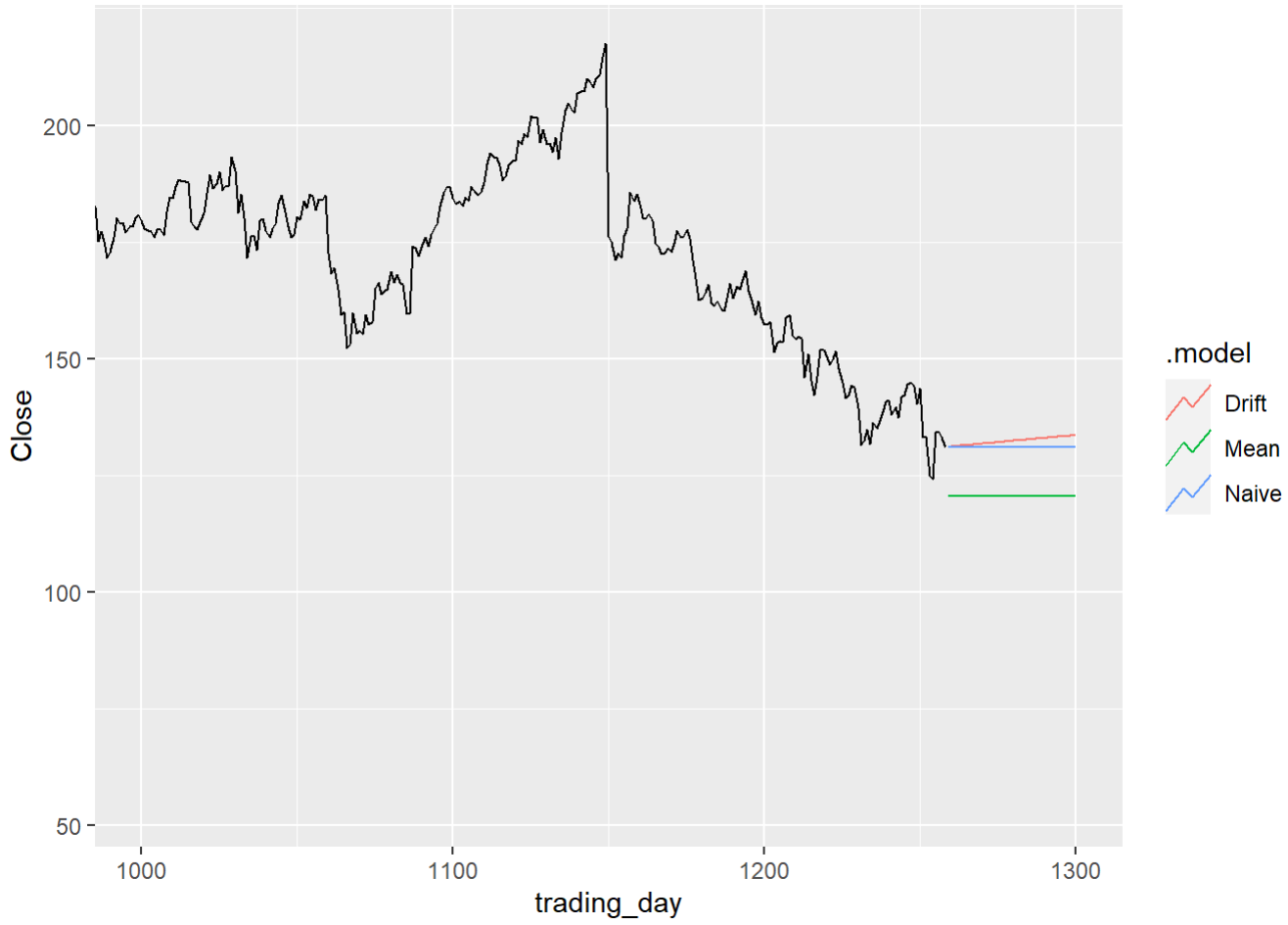
```
fb_stock <- gafa_stock |>
  filter (Symbol == "FB") |>
  mutate (trading_day = row_number ()) |>
  update_tsibble (index = trading_day, regular = TRUE)
```

Specify, estimate and forecast

```
fb_stock |> model (
  Mean = MEAN(Close),
  Naive = NAIVE (Close),
  Drift = RW(Close ~ drift ())
) |>
  forecast (h = 42) |>
  autoplot (fb_stock, level = NULL) +
  labs (title = "Facebook closing stock price", y = "SUS") +
  guides (colour = guide_legend(title = "Forecast" ))
```




```
fb_stock|> model( Mean=MEAN(Close), Naive=NAIVE(Close), Drift=RW(Close~drift()) )|> forecast(h=4
2)|> autoplot(fb_stock,level=NULL)+coord_cartesian(xlim=c(1000,1300))
```



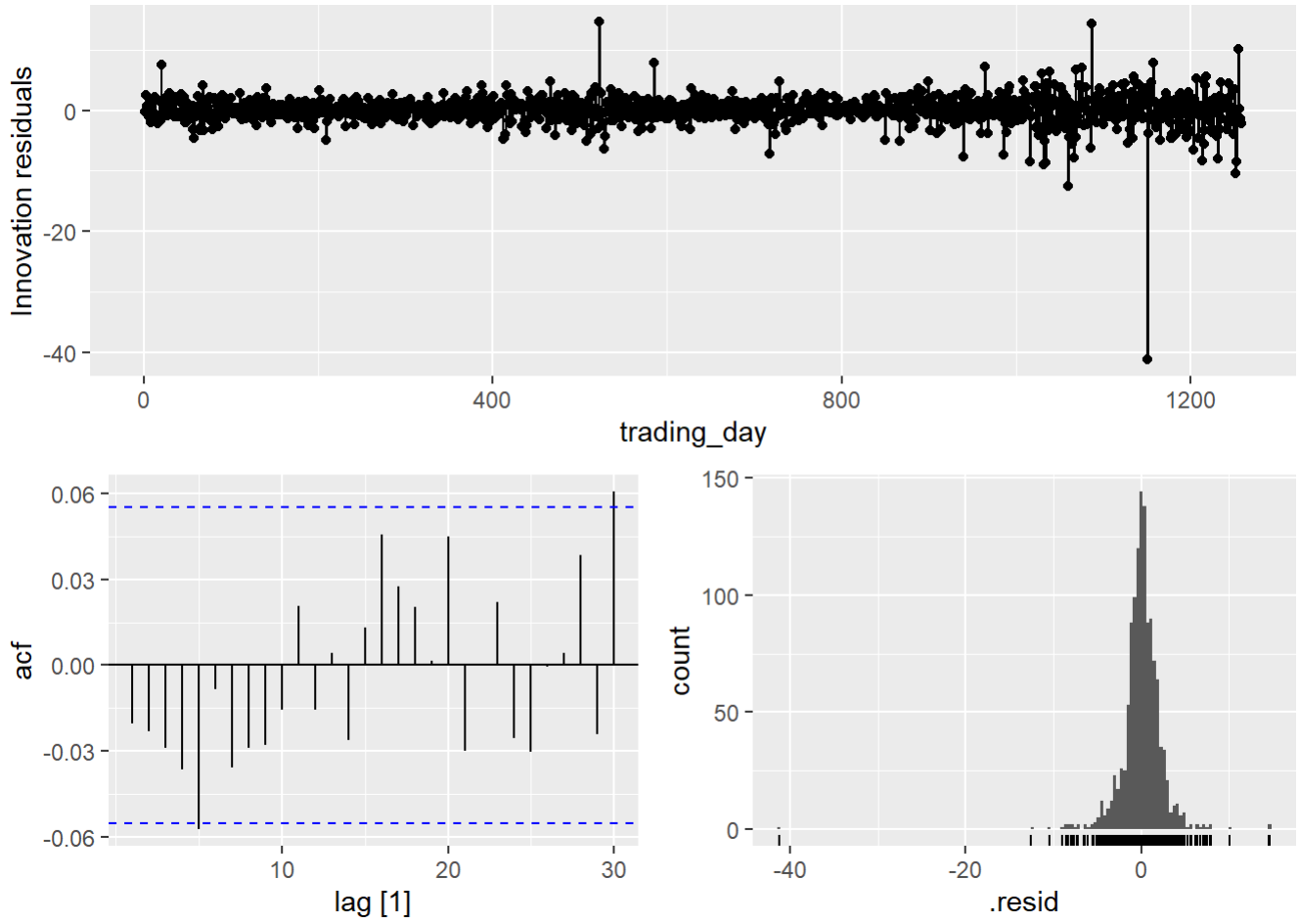

```
fit <- fb_stock |> model(NAIVE(Close))
augment(fit)
```

```
gg_tsresiduals(fit)
```

```
## Warning: Removed 1 row containing missing values (`geom_line()`).
```

```
## Warning: Removed 1 rows containing missing values (`geom_point()`).
```

```
## Warning: Removed 1 rows containing non-finite values (`stat_bin()`).
```




```
augment(fit) |>
  features(.resid, ljung_box, lag=10)
```