Ebola Forecasting - Residual Analysis

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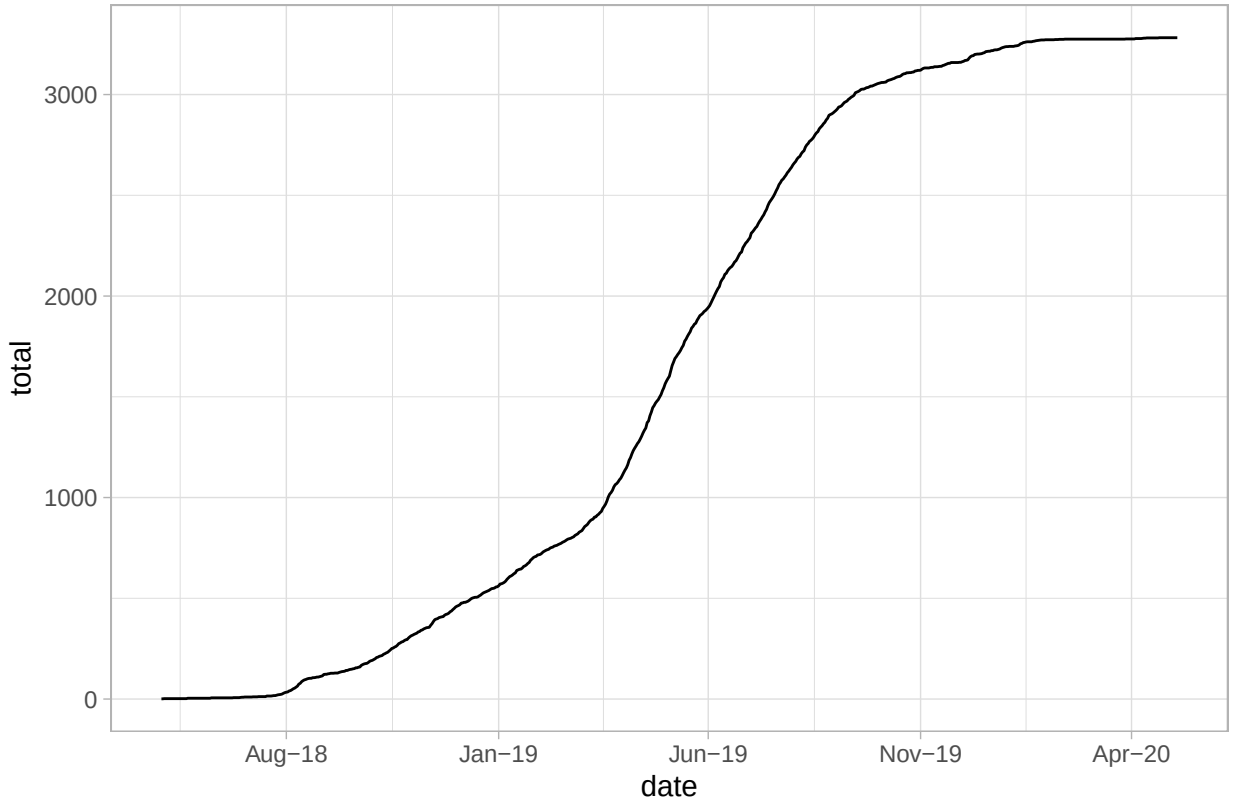
1 Full Outbreak

```
title <- paste0("Cumulative Ebola Cases by Day in West Africa")
overall <- ggplot(
  data = true,
  mapping = aes(x = date, y = total)) +
  geom_line() + theme_light() + labs(caption = title) +
  theme(plot.caption = element_text(hjust = 0.5)) +
  scale_x_date(date_breaks = "5 months", date_labels = "%b-%y")
overall #+ theme(panel.grid.minor = element_blank())
```



Cumulative Ebola Cases by Day in West Africa

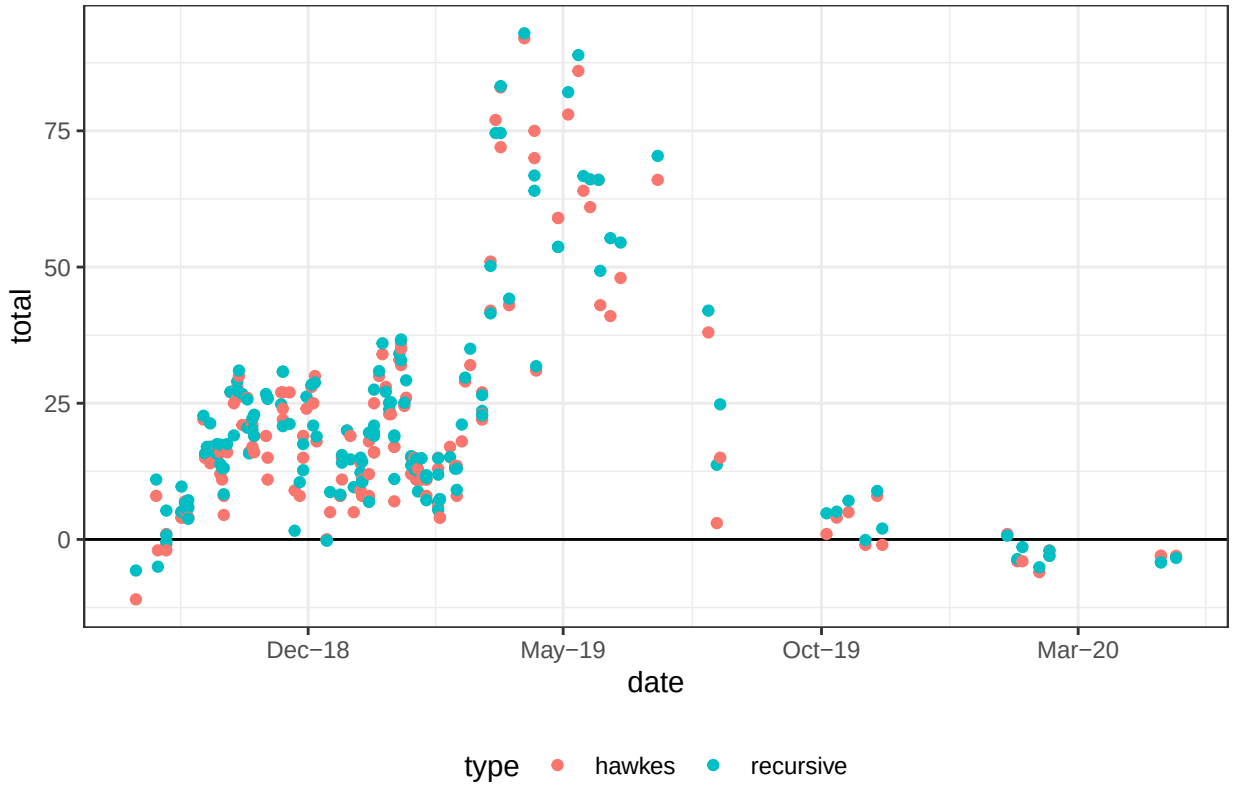
```
#ggsave("test.png",p,width = 6, height = 4, units="in")
```

2 Residual Analysis

2.1 With ggplot

```
cap <- paste0("Residual plot of Hawkes and Recursive 7-day models")
h7 <- (single_forecast(hdates, hpreds, days = 7)$results)
r7 <- (single_forecast(rdates, rpreds, days = 7)$results)
df <- data.frame(
  date = h7$forecast.date,
  hawkes = h7$resids,
  recursive = r7$resids
)
df <- pivot_longer(df, cols = 2:3, names_to = "type", values_to = "resid")
p <- ggplot(
  data = true,
  mapping = aes(x = date, y = total)
) +
  theme_bw() + labs(caption = cap) +
  theme(plot.caption = element_text(hjust = 0.5), legend.position = "bottom") +
  scale_x_date(date_breaks = "5 months", date_labels = "%b-%y") +
  geom_hline(aes(yintercept=0))

p + geom_point(
  data = df,
  mapping = aes(x = as.Date(date), y = resid, color = type)
)
```



Residual plot of Hawkes and Recursive 7−day models