gganimate

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What is gganimate?

- An extension of ggplot2
- Creates a new class of object known as ‘gganim’
- Utilizes the ‘gifski’ and ‘av’ packages for rendering
    - Saves as gif or mp4, respectively

Syntax

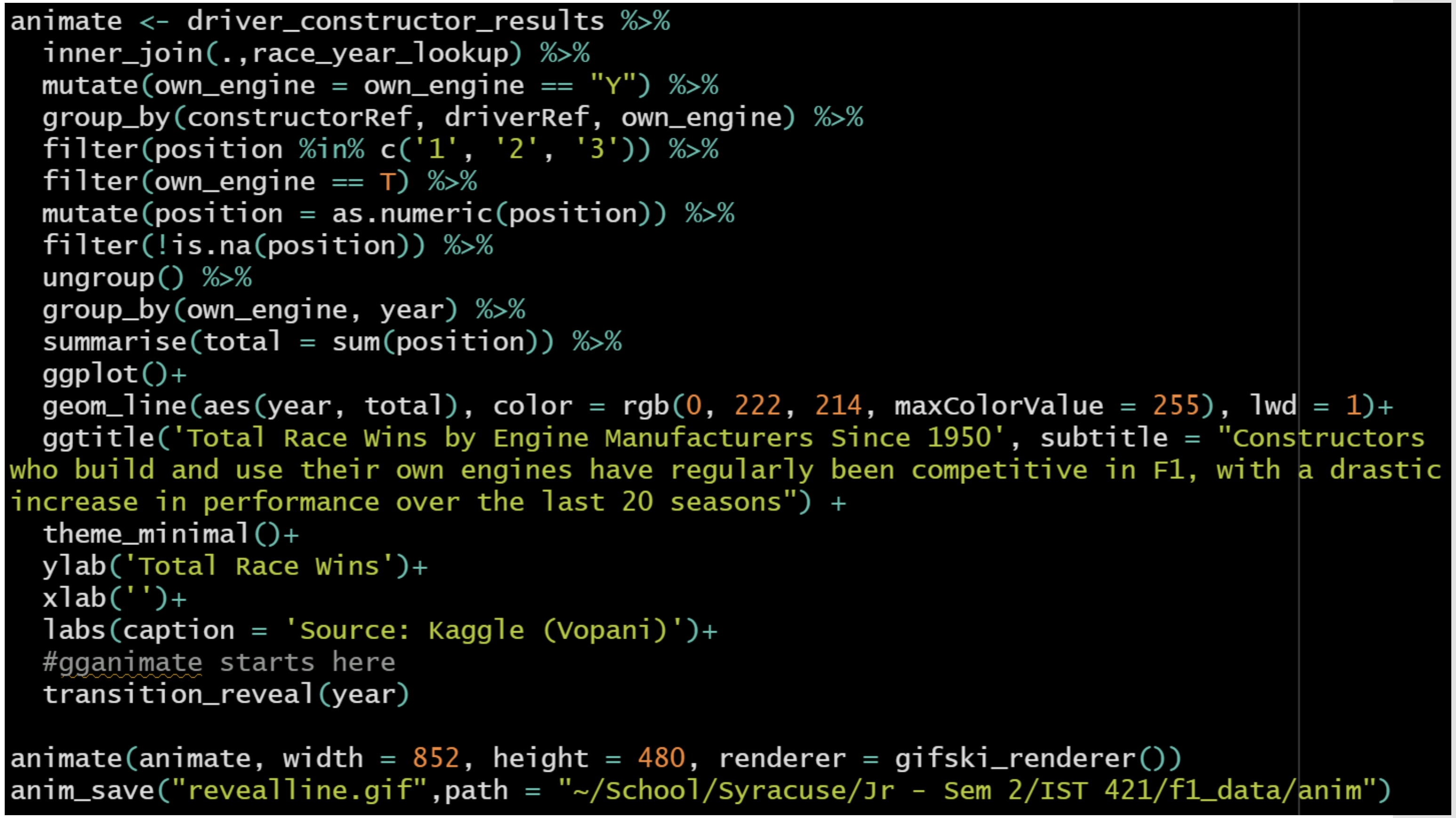
All added on to the end of existing ggplot code as a new layer

- transition_*() – code defining what type of transition
  - components, events, filter, layers, reveal, states, time
- enter_*() – code defining how new data should appear
  - appear, fade, grow, recolor, fly, drift
- exit_*() – exactly the same as `enter_*()` but for how data leaves
  - exactly the same options as well
- shadow_*() – determines how the other points should appear
  - mark, trail, wake
- ease_aes() – controls how a value changes from one to another
  - functions: quadratic, cubic, sine, exponential, elastic, bounce, etc.
  - modifiers: -in, -out, -in-out

Sample Code

regular
dplyr and
ggplot

gganimate
and save
functions



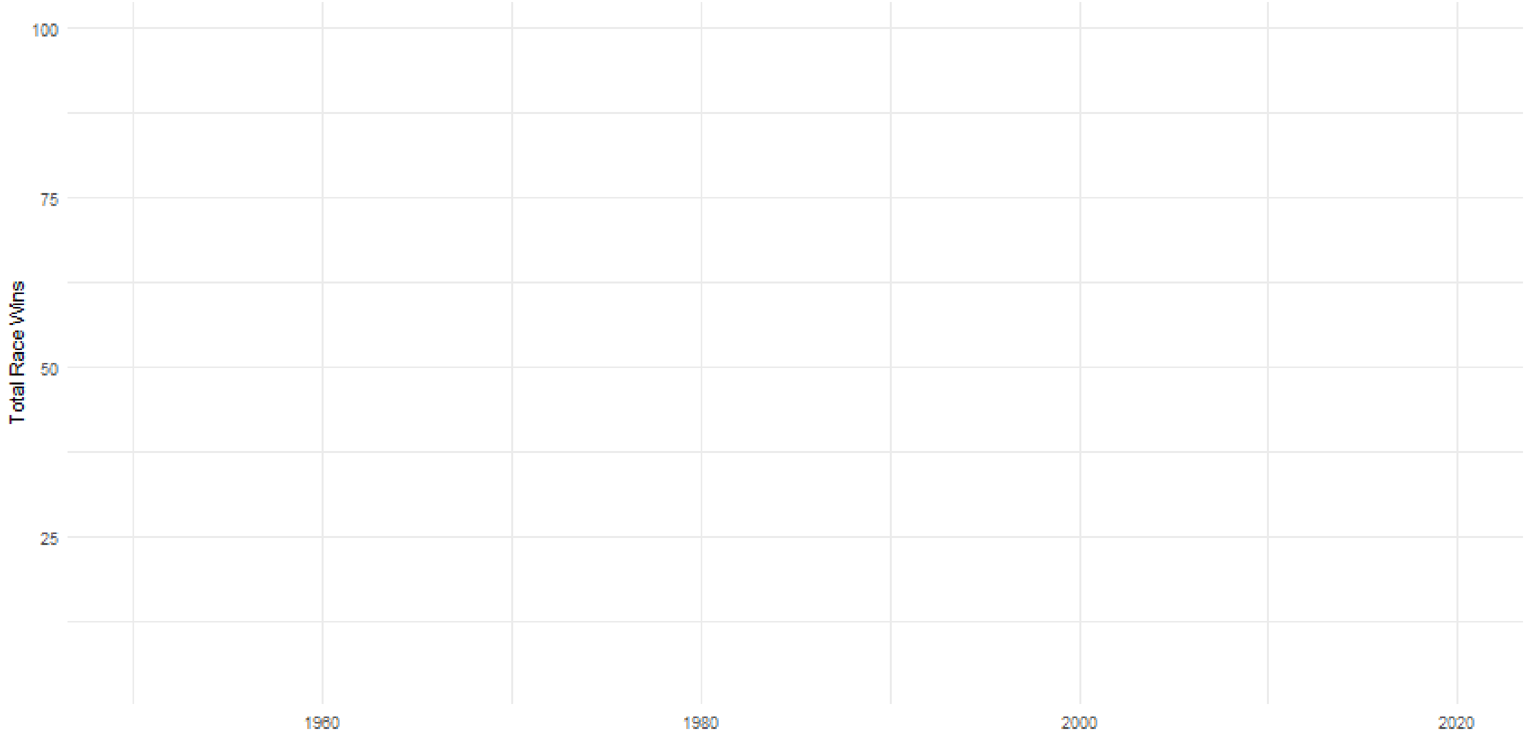
```
animate <- driver_constructor_results %>%
  inner_join(.,race_year_lookup) %>%
  mutate(own_engine = own_engine == "Y") %>%
  group_by(constructorRef, driverRef, own_engine) %>%
  filter(position %in% c('1', '2', '3')) %>%
  filter(own_engine == T) %>%
  mutate(position = as.numeric(position)) %>%
  filter(!is.na(position)) %>%
  ungroup() %>%
  group_by(own_engine, year) %>%
  summarise(total = sum(position)) %>%
  ggplot()+
  geom_line(aes(year, total), color = rgb(0, 222, 214, maxColorValue = 255), lwd = 1)+
  ggtitle('Total Race Wins by Engine Manufacturers Since 1950', subtitle = "Constructors
who build and use their own engines have regularly been competitive in F1, with a drastic
increase in performance over the last 20 seasons") +
  theme_minimal()+
  ylab('Total Race Wins')+
  xlab('')+
  labs(caption = 'Source: Kaggle (Vopani)')+
  #gganimate starts here
  transition_reveal(year)

animate(animate, width = 852, height = 480, renderer = gifski_renderer())
anim_save("reveal1ine.gif",path = "~/School/Syracuse/Jr - Sem 2/IST 421/f1_data/anim")
```

Resulting Visualization

Total Race Wins by Engine Manufacturers Since 1950

Constructors who build and use their own engines have regularly been competitive in F1, with a drastic increase in performance over the last 20 seasons

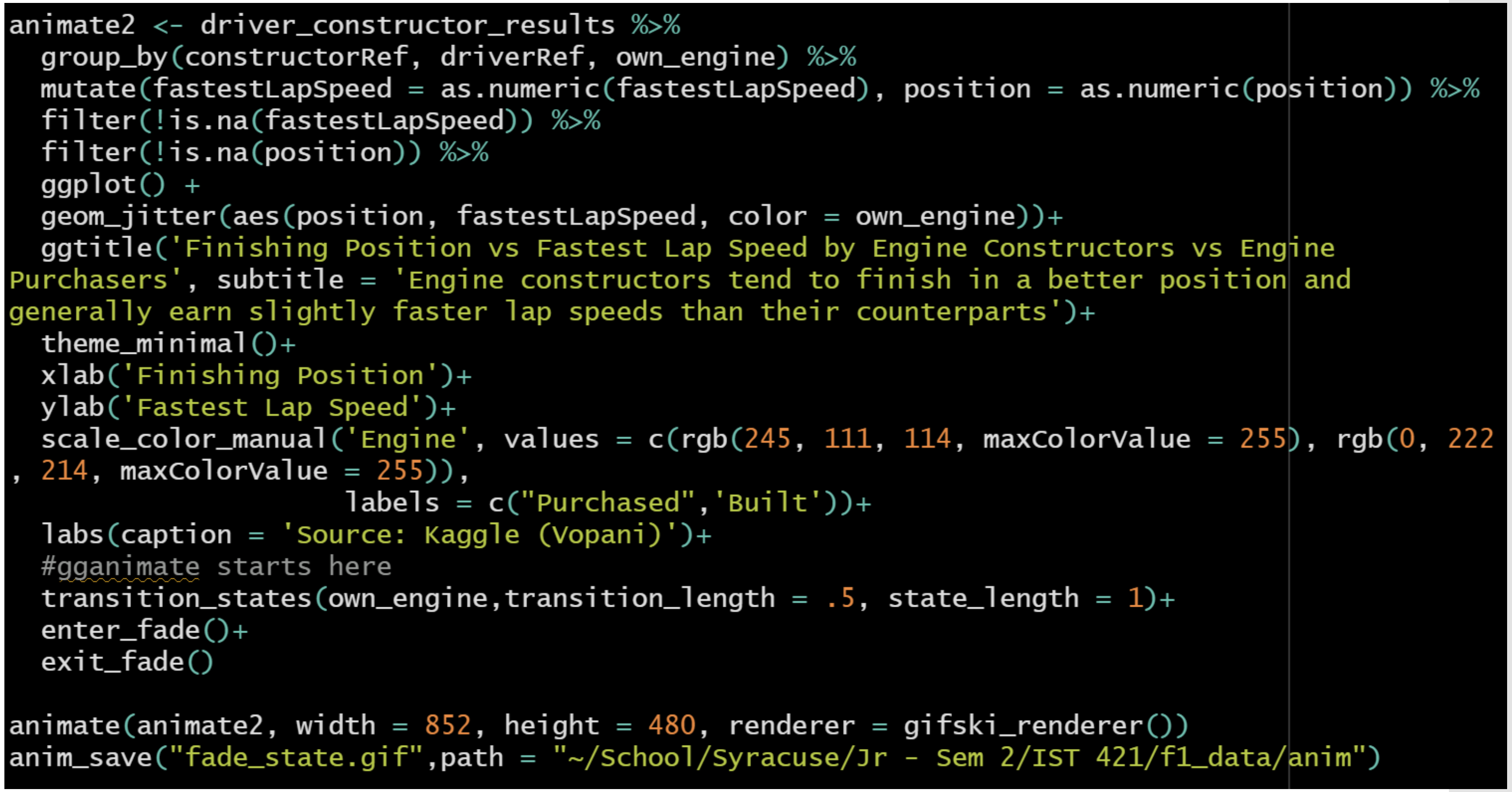


Source: Kaggle (Vopani)

Sample Code II

regular dplyr and ggplot

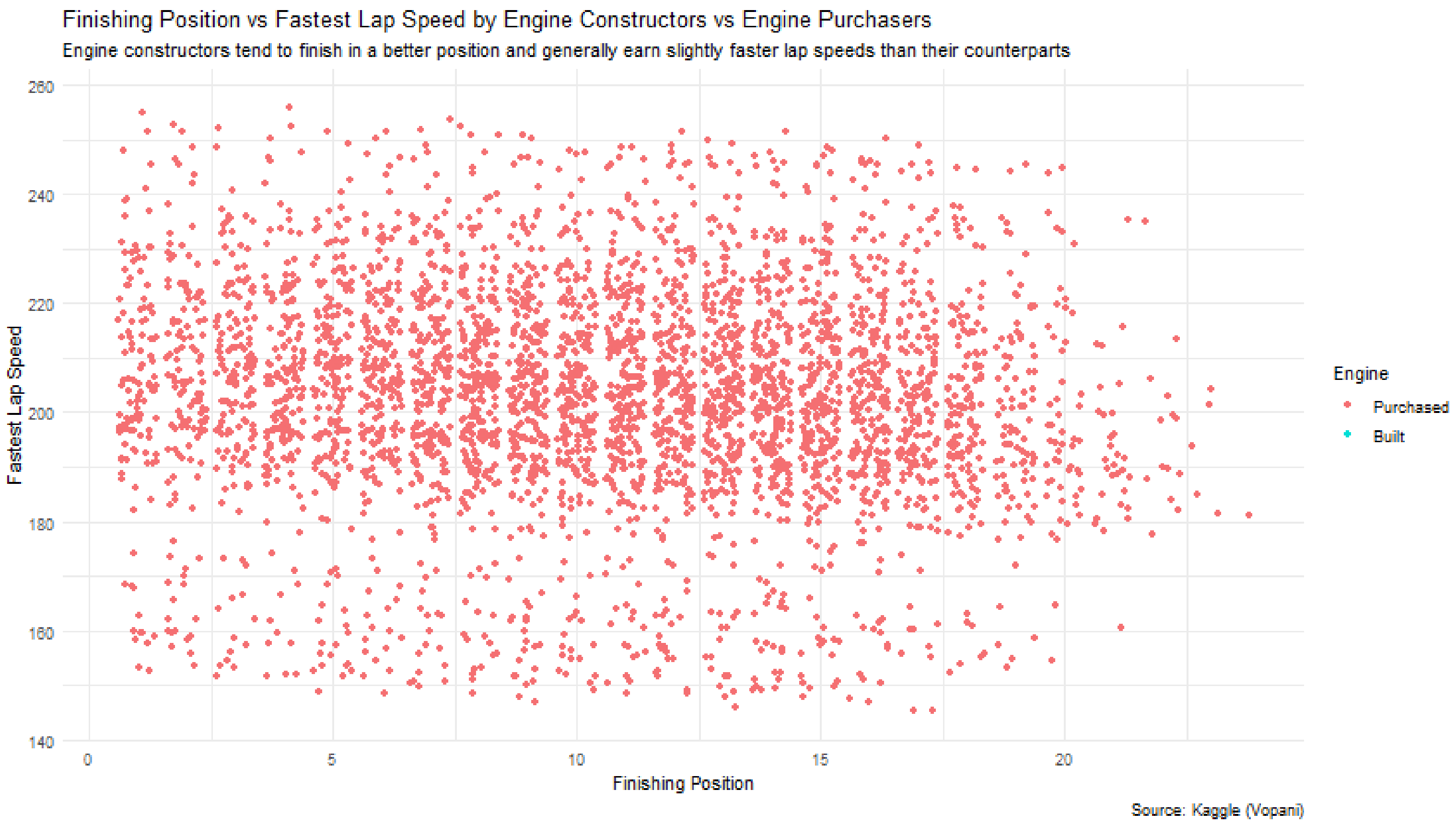
gganimate and save functions



```
animate2 <- driver_constructor_results %>%
  group_by(constructorRef, driverRef, own_engine) %>%
  mutate(fastestLapSpeed = as.numeric(fastestLapSpeed), position = as.numeric(position)) %>%
  filter(!is.na(fastestLapSpeed)) %>%
  filter(!is.na(position)) %>%
  ggplot() +
  geom_jitter(aes(position, fastestLapSpeed, color = own_engine))+
  ggtitle('Finishing Position vs Fastest Lap Speed by Engine Constructors vs Engine
Purchasers', subtitle = 'Engine constructors tend to finish in a better position and
generally earn slightly faster lap speeds than their counterparts')+
  theme_minimal()+
  xlab('Finishing Position')+
  ylab('Fastest Lap Speed')+
  scale_color_manual('Engine', values = c(rgb(245, 111, 114, maxColorValue = 255), rgb(0, 222
, 214, maxColorValue = 255)),
                     labels = c("Purchased",'Built'))+
  labs(caption = 'Source: Kaggle (Vopani)')+
  #gganimate starts here
  transition_states(own_engine,transition_length = .5, state_length = 1)+
  enter_fade()+
  exit_fade()

animate(animate2, width = 852, height = 480, renderer = gifski_renderer())
anim_save("fade_state.gif",path = "~/School/Syracuse/Jr - Sem 2/IST 421/f1_data/anim")
```

Resulting Visualization II


Finishing Position vs Fastest Lap Speed by Engine Constructors vs Engine Purchasers

Engine constructors tend to finish in a better position and generally earn slightly faster lap speeds than their counterparts

Source: Kaggle (Vopani)

Questions?

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