20250516_01

May 16, 2025

[1]:
```
library(tidyverse)
```

```
  Attaching core tidyverse packages                tidyverse
2.0.0
  dplyr     1.1.4      readr     2.1.5
  forcats   1.0.0      stringr   1.5.1
  ggplot2   3.5.2      tibble    3.2.1
  lubridate 1.9.4      tidyr     1.3.1
  purrr     1.0.4
  Conflicts
tidyverse_conflicts()
  dplyr::filter() masks stats::filter()
  dplyr::lag()    masks stats::lag()
  Use the conflicted package
(<http://conflicted.r-lib.org/>) to force all conflicts to
become errors
```

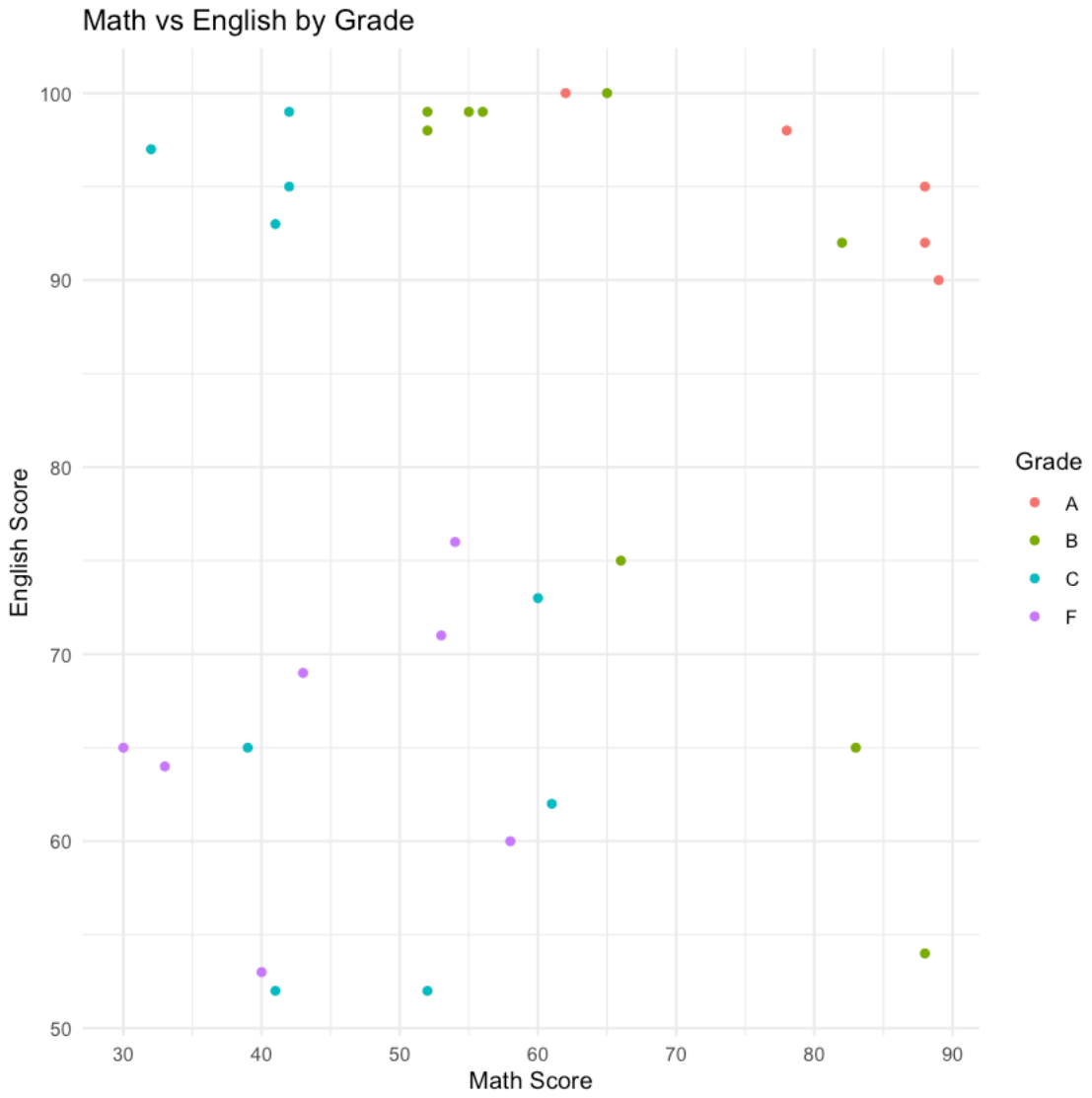
[3]:
```
set.seed(2025)

students = tibble(Student_ID = 1:30,
                  Math = sample(30:90, 30, replace = TRUE),
                  English = sample(50:100, 30, replace = TRUE),
                  Science = sample(45:95, 30, replace = TRUE))
```

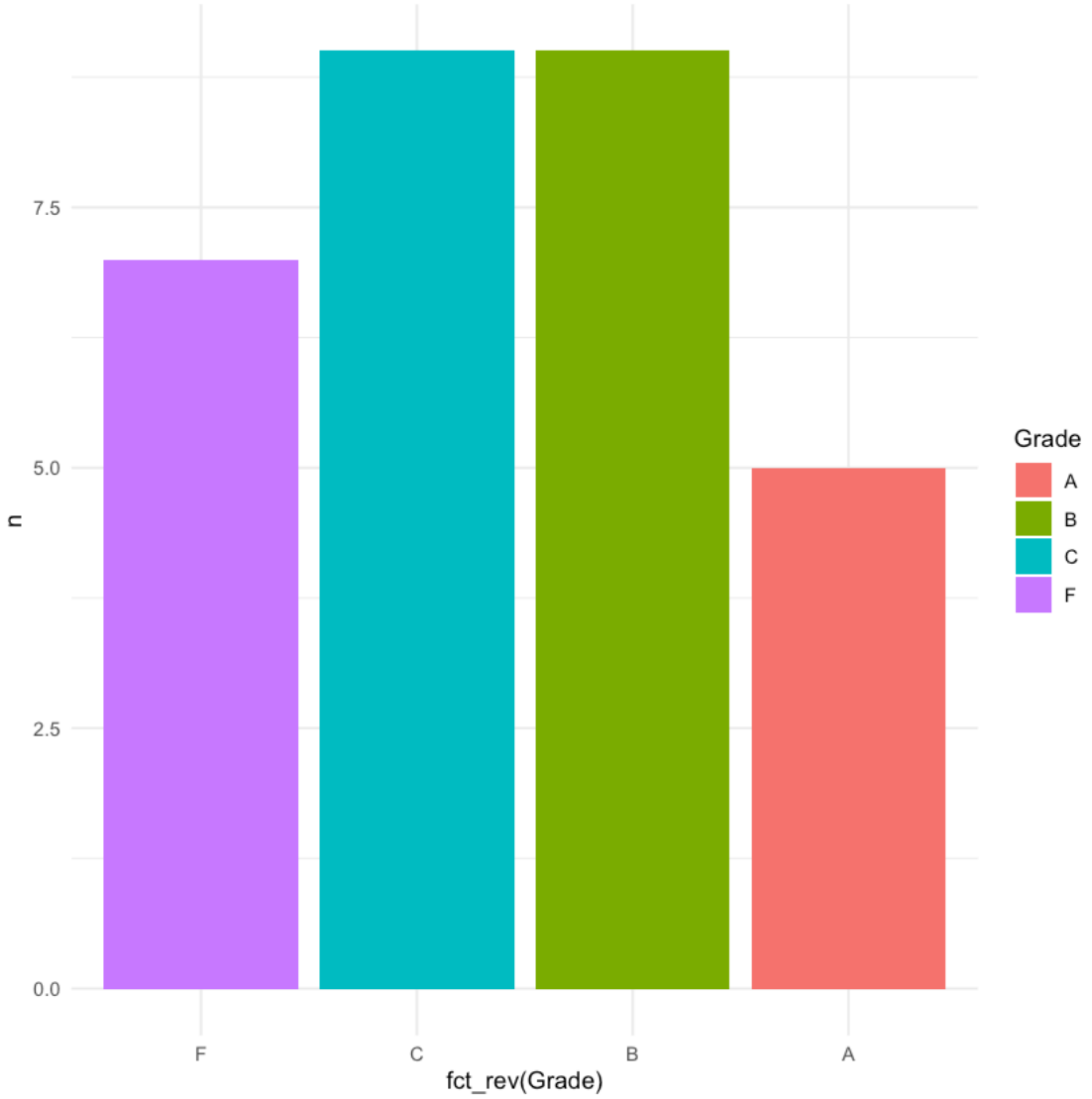
[5]:
```
students = students %>% mutate(Avg_Score = (Math + English + Science)/3,
                               Grade = ifelse(Avg_Score >= 80, 'A',
                                       ifelse(Avg_Score >= 70, 'B',
                                       ifelse(Avg_Score >= 60, 'C', 'F'))),
                               Passed = ifelse(Avg_Score >= 60, 'Passed',␣
 ↪'Failed'),
                               Flag = ifelse(Math < 60 | English < 60 | Science␣
 ↪< 60, 'Need Help', 'Good'))
```

[37]:
```
ggplot(students, aes(x = Math, y = English, color = Grade)) +
geom_point() +
labs(title = "Math vs English by Grade",
     x = "Math Score",
     y = "English Score") +
```

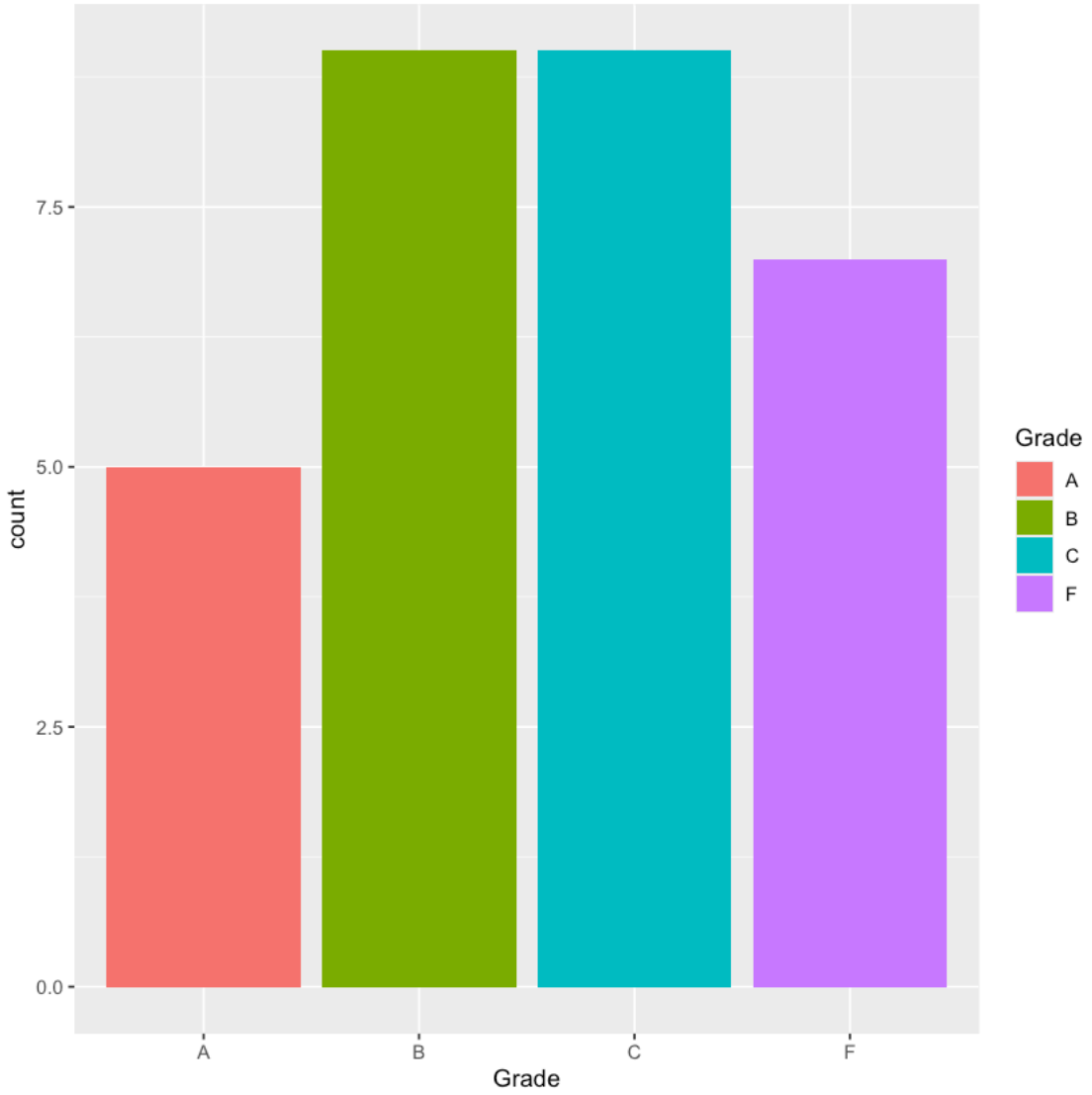
```
theme_minimal()
```



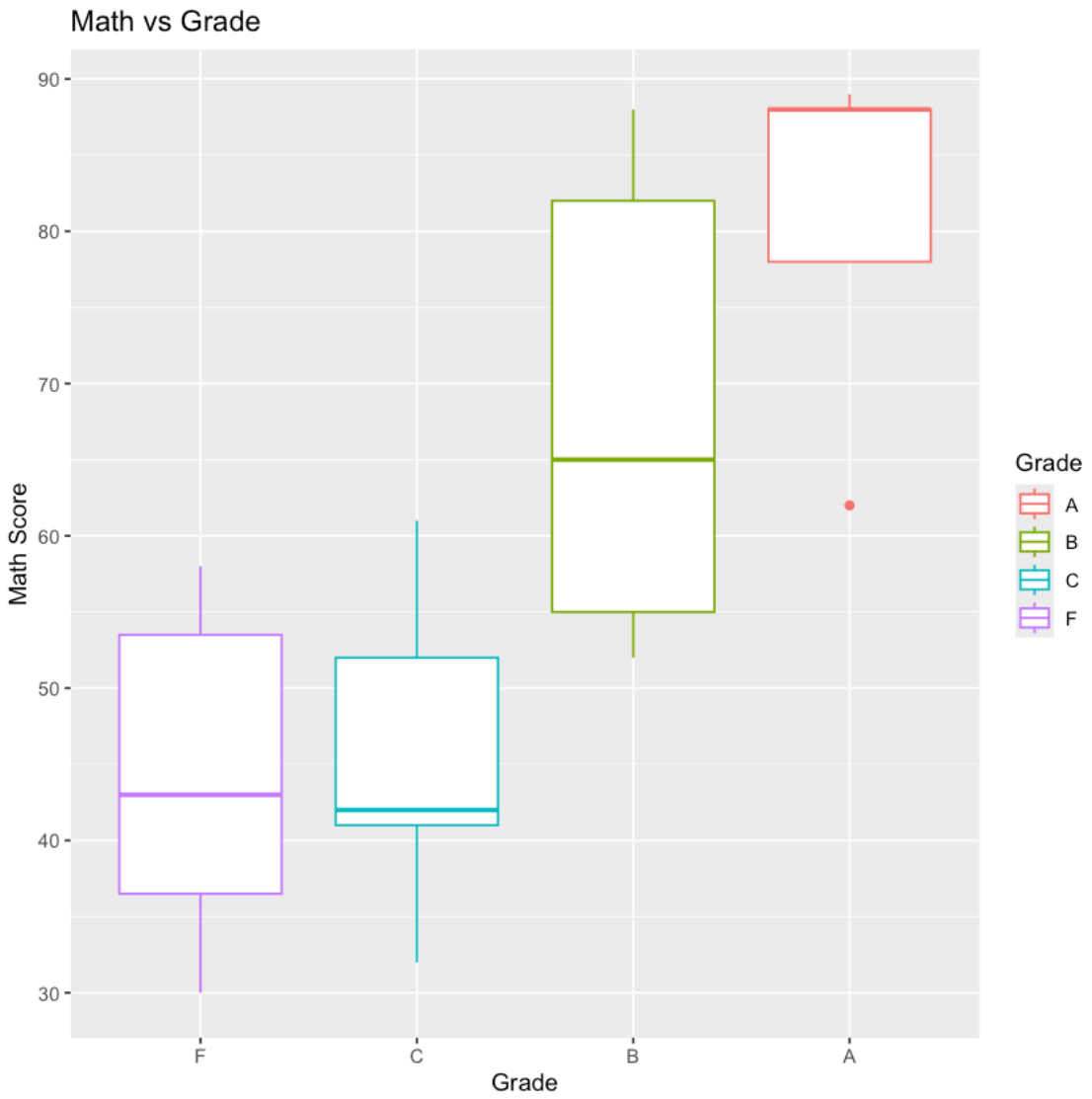
[51]:
```
students %>%
count(Grade) %>%
ggplot(aes(x = fct_rev(Grade), y = n, fill = Grade)) +
geom_col() +
theme_minimal()
```



[49]:
```
ggplot(students, aes(x = Grade, fill = Grade)) +
geom_bar()
```



[65]:
```
ggplot(students, aes(x = fct_rev(Grade), y = Math, color = Grade)) +
labs(title = "Math vs Grade",
     x = "Grade",
     y = "Math Score") +
geom_boxplot()
```



[69]:
```
library(patchwork)
```

[109]:
```
p1 = ggplot(students, aes(x = fct_rev(Grade), y = Math, color = Grade)) +
     geom_boxplot() +
     labs(x = 'Grade', y = '', title = "Math")
p2 = ggplot(students, aes(x = fct_rev(Grade), y = English, color = Grade)) +
     geom_boxplot() +
     labs(x = 'Grade', y = '', title = "English")
p3 = ggplot(students, aes(x = fct_rev(Grade), y = Science, color = Grade)) +
     geom_boxplot() +
     labs(x = 'Grade', y = '', title = "Science")
```

[120]:
```
options(repr.plot.width = 15, repr.plot.height = 5)
p1 + p2 + p3
```