R Notebook

```
library(tidyverse)
```

```
## -- Attaching packages ----------------------------------------------- tidyverse 1.2.1 --
```

```
## v ggplot2 3.0.0     v purrr   0.2.5
## v tibble  1.4.2     v dplyr   0.7.6
## v tidyr   0.8.1     v stringr 1.3.1
## v readr   1.1.1     v forcats 0.3.0
```

```
## -- Conflicts -------------------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
library(sqldf)
```

```
## Loading required package: gsubfn
```

```
## Loading required package: proto
```

```
## Loading required package: RSQLite
```

```
library(forcats)

library(scales)
```

```
##
## Attaching package: 'scales'
```

```
## The following object is masked from 'package:purrr':
##
##     discard
```

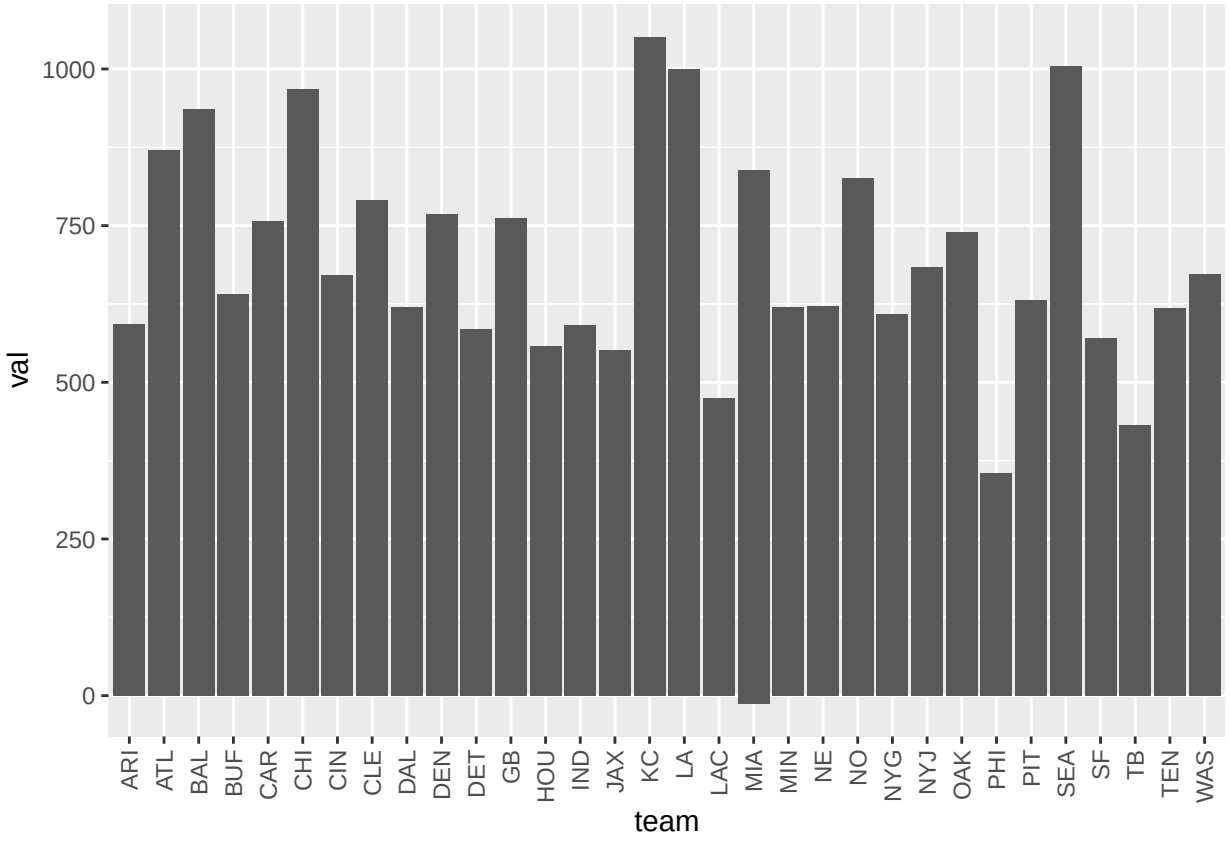
```
## The following object is masked from 'package:readr':
##
##     col_factor
```

```
drive<-readxl::read_xlsx('NFL.xlsx',sheet='Drive')
game<-readxl::read_xlsx('NFL.xlsx',sheet='Game')
play<-readxl::read_xlsx('NFL.xlsx',sheet='Player-Play')

game_stats<-readxl::read_xlsx('NFL.xlsx',sheet='Stats')

play<- merge(play,game_stats,by='cat')
play<- merge(play,game,by="gameid")

uniquestat<-game_stats$cat
```

```
NFLBlue <- rgb(1/255,51/255,105/255,1)
NFLRed <- rgb(213/255,10/255,10/255,1)
NFLWhite <-rgb(255/255.255/255,255/255,1)

theme_NFL <- function () {
    theme_bw(base_size=10, base_family="sans") %+replace%
        theme(
            axis.text.x=element_text(angle=30,
                                     hjust=1,
```

```
                                    vjust=1),
            panel.background  = element_blank(),
            plot.background = element_blank(),
            panel.grid = element_blank(),
            complete=TRUE
        )
}
```

```
tackles = sqldf('select * from play where cat="kickret_yds"')
ggplot(tackles,aes(team,val))+geom_bar(stat = 'identity')+
  theme(axis.text.x = element_text(angle = 90, vjust = 0.5, hjust=1))
```




```
sqldf('select * from tackles where team = "MIA"')
```

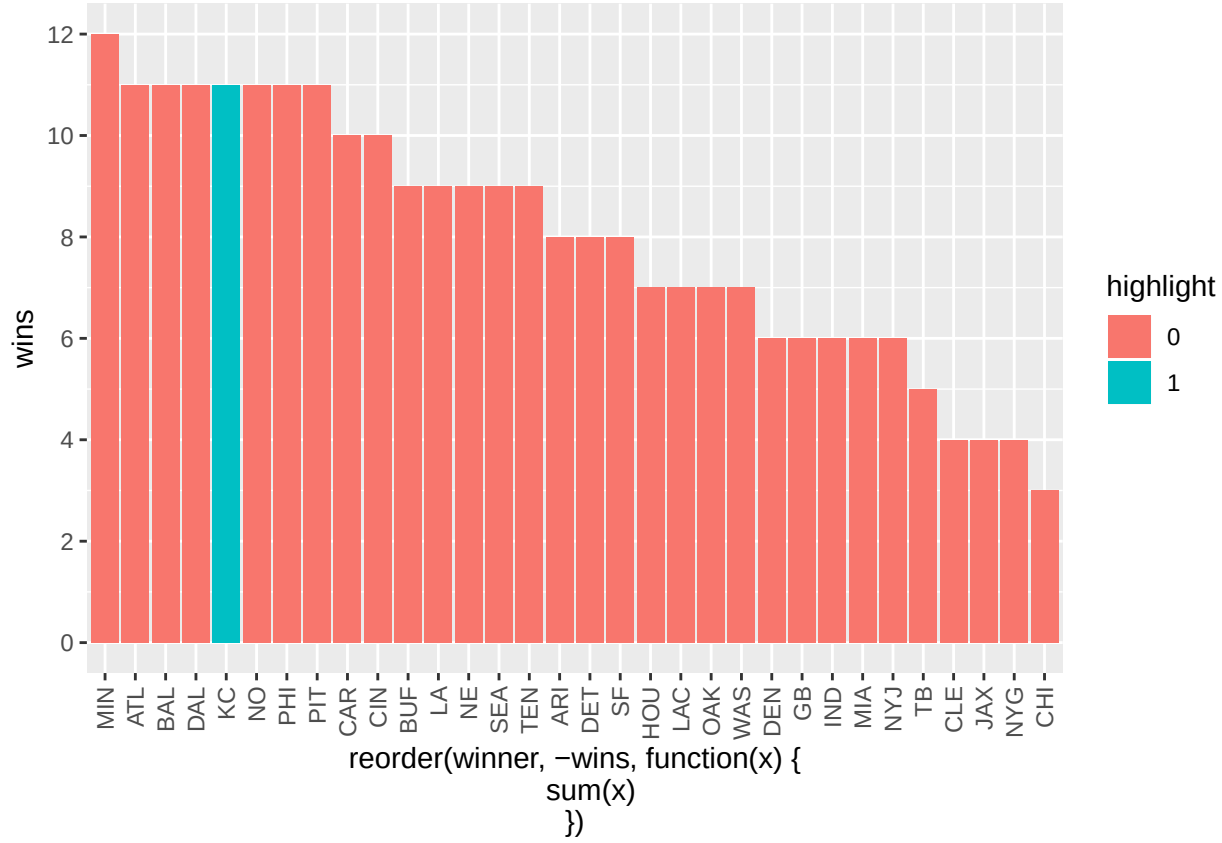
```
##        gameid         cat   id.x playername driveid playid val team O_D
## 1  2017091708 kickret_yds 262785    K.Drake       6     39  20  MIA   S
## 2  2017091708 kickret_yds 263162    K.Drake      13    105  17  MIA   S
## 3  2017091708 kickret_yds 262895    K.Drake       8     59  34  MIA   S
## 4  2017092408 kickret_yds 277184    J.Grant      12     76  15  MIA   S
## 5  2017100100 kickret_yds 284053    J.Grant       1      1  22  MIA   S
## 6  2017100100 kickret_yds 284809    J.Grant      16    147  23  MIA   S
## 7  2017100804 kickret_yds 301732    J.Grant      11     53  25  MIA   S
## 8  2017100804 kickret_yds 301884    J.Grant      18     87  19  MIA   S
## 9  2017101500 kickret_yds 315413    K.Drake       4     32  23  MIA   S
## 10 2017101500 kickret_yds 315305    K.Drake       2     14  12  MIA   S
## 11 2017102206 kickret_yds 329443    J.Grant       6     37  30  MIA   S
## 12 2017102206 kickret_yds 329692    K.Drake      14     90  26  MIA   S
```

```
## 13 2017102600 kickret_yds 336620    K.Drake      11     62  15  MIA   S
## 14 2017110510 kickret_yds 357648    J.Grant       2     15  22  MIA   S
## 15 2017110510 kickret_yds 357890    J.Grant       7     60  25  MIA   S
## 16 2017111300 kickret_yds 370911    S.Perry       1      1  29  MIA   S
## 17 2017111300 kickret_yds 371423    S.Perry      13    102  22  MIA   S
## 18 2017111300 kickret_yds 371365    S.Perry      11     89  16  MIA   S
## 19 2017111300 kickret_yds 371072    S.Perry       5     32  20  MIA   S
## 20 2017111911 kickret_yds 377182 D.Williams      25    179  -7  MIA   S
## 21 2017111911 kickret_yds 376722    J.Grant      15     88  26  MIA   S
## 22 2017111911 kickret_yds 377188   J.Landry      25    179  -5  MIA   S
## 23 2017111911 kickret_yds 376365    J.Grant       4     20  24  MIA   S
## 24 2017111911 kickret_yds 376712    J.Grant      14     84  31  MIA   S
## 25 2017112604 kickret_yds 390904    J.Grant      11     88  24  MIA   S
## 26 2017112604 kickret_yds 390741    J.Grant       7     58  22  MIA   S
## 27 2017112604 kickret_yds 390987    J.Grant      13    102  23  MIA   S
## 28 2017112604 kickret_yds 390576    J.Grant       4     26  28  MIA   S
## 29 2017120306 kickret_yds 404316    S.Perry       1      1  20  MIA   S
## 30 2017120306 kickret_yds 405108    J.Grant      28    158  21  MIA   S
## 31 2017120306 kickret_yds 404477    J.Grant       5     30  16  MIA   S
## 32 2017121100 kickret_yds 425697    S.Perry       1      1  15  MIA   S
## 33 2017121100 kickret_yds 426015    S.Perry       9     61  18  MIA   S
## 34 2017121100 kickret_yds 426405    J.Grant      19    133  14  MIA   S
## 35 2017121700 kickret_yds 432285    J.Grant      10     84  21  MIA   S
## 36 2017121700 kickret_yds 432174    J.Grant       8     63  22  MIA   S
## 37 2017122403 kickret_yds 443480    J.Grant       1      1  26  MIA   S
## 38 2017122403 kickret_yds 443798    A.Derby       7     65  11  MIA   S
## 39 2017122403 kickret_yds 444153    S.Perry      17    137   3  MIA   S
## 40 2017123104 kickret_yds 462975    S.Perry      13     97  37  MIA   S
## 41 2017123104 kickret_yds 462706    S.Perry       5     43  22  MIA   S
##    G_B id.y hometeam awayteam homescore awayscore dayofweek
## 1    G  642      LAC      MIA        17        19       Sun
## 2    G  642      LAC      MIA        17        19       Sun
## 3    G  642      LAC      MIA        17        19       Sun
## 4    G  658      NYJ      MIA        20         6       Sun
## 5    G  666      MIA       NO         0        20       Sun
## 6    G  666      MIA       NO         0        20       Sun
## 7    G  685      MIA      TEN        16        10       Sun
## 8    G  685      MIA      TEN        16        10       Sun
## 9    G  700      ATL      MIA        17        20       Sun
## 10   G  700      ATL      MIA        17        20       Sun
## 11   G  716      MIA      NYJ        31        28       Sun
## 12   G  716      MIA      NYJ        31        28       Sun
## 13   G  724      BAL      MIA        40         0       Thu
## 14   G  748      MIA      OAK        24        27       Sun
## 15   G  748      MIA      OAK        24        27       Sun
## 16   G  763      CAR      MIA        45        21       Mon
## 17   G  763      CAR      MIA        45        21       Mon
## 18   G  763      CAR      MIA        45        21       Mon
## 19   G  763      CAR      MIA        45        21       Mon
## 20   G  769      MIA       TB        20        30       Sun
## 21   G  769      MIA       TB        20        30       Sun
## 22   G  769      MIA       TB        20        30       Sun
## 23   G  769      MIA       TB        20        30       Sun
## 24   G  769      MIA       TB        20        30       Sun
```

```
## 25   G  785       NE      MIA        35        17       Sun
## 26   G  785       NE      MIA        35        17       Sun
## 27   G  785       NE      MIA        35        17       Sun
## 28   G  785       NE      MIA        35        17       Sun
## 29   G  801      MIA      DEN        35         9       Sun
## 30   G  801      MIA      DEN        35         9       Sun
## 31   G  801      MIA      DEN        35         9       Sun
## 32   G  825      MIA       NE        27        20       Mon
## 33   G  825      MIA       NE        27        20       Mon
## 34   G  825      MIA       NE        27        20       Mon
## 35   G  832      BUF      MIA        24        16       Sun
## 36   G  832      BUF      MIA        24        16       Sun
## 37   G  845       KC      MIA        29        13       Sun
## 38   G  845       KC      MIA        29        13       Sun
## 39   G  845       KC      MIA        29        13       Sun
## 40   G  867      MIA      BUF        16        22       Sun
## 41   G  867      MIA      BUF        16        22       Sun
##                   time winner year week X__1
## 1  1899-12-30 23:05:00    MIA 2017    2  971
## 2  1899-12-30 23:05:00    MIA 2017    2  971
## 3  1899-12-30 23:05:00    MIA 2017    2  971
## 4  1899-12-30 20:00:00    MIA 2017    3  868
## 5  1899-12-31 04:30:00     NO 2017    4  847
## 6  1899-12-31 04:30:00     NO 2017    4  847
## 7  1899-12-30 20:00:00    MIA 2017    5  818
## 8  1899-12-30 20:00:00    MIA 2017    5  818
## 9  1899-12-30 20:00:00    MIA 2017    6  815
## 10 1899-12-30 20:00:00    MIA 2017    6  815
## 11 1899-12-30 20:00:00    MIA 2017    7  900
## 12 1899-12-30 20:00:00    MIA 2017    7  900
## 13 1899-12-31 03:25:00    BAL 2017    8  848
## 14 1899-12-31 03:30:00    OAK 2017    9  919
## 15 1899-12-31 03:30:00    OAK 2017    9  919
## 16 1899-12-31 03:30:00    CAR 2017   10  839
## 17 1899-12-31 03:30:00    CAR 2017   10  839
## 18 1899-12-31 03:30:00    CAR 2017   10  839
## 19 1899-12-31 03:30:00    CAR 2017   10  839
## 20 1899-12-30 20:00:00     TB 2017   11  928
## 21 1899-12-30 20:00:00     TB 2017   11  928
## 22 1899-12-30 20:00:00     TB 2017   11  928
## 23 1899-12-30 20:00:00     TB 2017   11  928
## 24 1899-12-30 20:00:00     TB 2017   11  928
## 25 1899-12-30 20:00:00     NE 2017   12  940
## 26 1899-12-30 20:00:00     NE 2017   12  940
## 27 1899-12-30 20:00:00     NE 2017   12  940
## 28 1899-12-30 20:00:00     NE 2017   12  940
## 29 1899-12-30 20:00:00    DEN 2017   13  929
## 30 1899-12-30 20:00:00    DEN 2017   13  929
## 31 1899-12-30 20:00:00    DEN 2017   13  929
## 32 1899-12-31 03:30:00    MIA 2017   14  945
## 33 1899-12-31 03:30:00    MIA 2017   14  945
## 34 1899-12-31 03:30:00    MIA 2017   14  945
## 35 1899-12-30 20:00:00    BUF 2017   15  973
## 36 1899-12-30 20:00:00    BUF 2017   15  973
```

```
## 37 1899-12-30 20:00:00     KC 2017   16  866
## 38 1899-12-30 20:00:00     KC 2017   16  866
## 39 1899-12-30 20:00:00     KC 2017   16  866
## 40 1899-12-30 23:25:00    BUF 2017   17  916
## 41 1899-12-30 23:25:00    BUF 2017   17  916
```

```
game2<- group_by(game,week, winner) %>%
      summarise(wins = n())
game2<-sqldf('select * from game2 where week < 19' )
game2$highlight <- ifelse(game2$winner == "KC" , '1', '0')
ggplot(game2[order(game2$wins,decreasing=T),],aes(x=reorder(winner,-wins, function(x){ sum(x) }),wins))+
  theme(axis.text.x = element_text(angle = 90, vjust = 0.5, hjust=1))+
  scale_y_continuous(breaks=pretty_breaks())
```




```
game2
```

```
##     week winner wins highlight
## 1      1    ATL    1         0
## 2      1    BAL    1         0
## 3      1    BUF    1         0
## 4      1    DEN    1         0
## 5      1    DET    1         0
## 6      1    HOU    1         0
## 7      1    IND    1         0
## 8      1     KC    1         1
## 9      1    MIN    1         0
## 10     1    NYG    1         0
```

```
## 11     1    OAK    1         0
## 12     1    PHI    1         0
## 13     1    PIT    1         0
## 14     1    SEA    1         0
## 15     1     SF    1         0
## 16     2    ARI    1         0
## 17     2    ATL    1         0
## 18     2    BAL    1         0
## 19     2    CAR    1         0
## 20     2    CHI    1         0
## 21     2    CIN    1         0
## 22     2    DEN    1         0
## 23     2    DET    1         0
## 24     2     KC    1         1
## 25     2    MIA    1         0
## 26     2    MIN    1         0
## 27     2     NE    1         0
## 28     2    OAK    1         0
## 29     2     SF    1         0
## 30     2    TEN    1         0
## 31     2    WAS    1         0
## 32     3    ATL    1         0
## 33     3    BAL    1         0
## 34     3    BUF    1         0
## 35     3    CHI    1         0
## 36     3    DAL    1         0
## 37     3     GB    1         0
## 38     3    IND    1         0
## 39     3     KC    1         1
## 40     3     LA    1         0
## 41     3    MIA    1         0
## 42     3    MIN    1         0
## 43     3     NE    1         0
## 44     3     NO    1         0
## 45     3    PHI    1         0
## 46     3    TEN    1         0
## 47     3    WAS    1         0
## 48     4    ARI    1         0
## 49     4    BAL    1         0
## 50     4    BUF    1         0
## 51     4    CAR    1         0
## 52     4    CLE    1         0
## 53     4    DEN    1         0
## 54     4     GB    1         0
## 55     4    HOU    1         0
## 56     4     KC    1         1
## 57     4     LA    1         0
## 58     4    MIN    1         0
## 59     4     NO    1         0
## 60     4    NYJ    1         0
## 61     4    PHI    1         0
## 62     4    SEA    1         0
## 63     4     TB    1         0
## 64     5    ARI    1         0
```

```
## 65     5    BAL    1         0
## 66     5    CAR    1         0
## 67     5    CIN    1         0
## 68     5     GB    1         0
## 69     5    IND    1         0
## 70     5     KC    1         1
## 71     5    LAC    1         0
## 72     5    MIA    1         0
## 73     5    MIN    1         0
## 74     5     NE    1         0
## 75     5    NYJ    1         0
## 76     5    PIT    1         0
## 77     5    SEA    1         0
## 78     6    ARI    1         0
## 79     6    CHI    1         0
## 80     6    HOU    1         0
## 81     6     LA    1         0
## 82     6    LAC    1         0
## 83     6    MIA    1         0
## 84     6    MIN    1         0
## 85     6     NE    1         0
## 86     6     NO    1         0
## 87     6    NYG    1         0
## 88     6    PHI    1         0
## 89     6    PIT    1         0
## 90     6    TEN    1         0
## 91     6    WAS    1         0
## 92     7    ATL    1         0
## 93     7    BUF    1         0
## 94     7    CAR    1         0
## 95     7    CLE    1         0
## 96     7    DAL    1         0
## 97     7    JAX    1         0
## 98     7     LA    1         0
## 99     7    LAC    1         0
## 100    7    MIA    1         0
## 101    7    MIN    1         0
## 102    7     NO    1         0
## 103    7    NYG    1         0
## 104    7    OAK    1         0
## 105    7    PHI    1         0
## 106    7    PIT    1         0
## 107    8    ATL    1         0
## 108    8    BAL    1         0
## 109    8    BUF    1         0
## 110    8    CIN    1         0
## 111    8    DAL    1         0
## 112    8     KC    1         1
## 113    8    MIN    1         0
## 114    8     NE    1         0
## 115    8     NO    1         0
## 116    8    PHI    1         0
## 117    8    PIT    1         0
## 118    8    SEA    1         0
```

```
## 119    8     TB    1         0
## 120    9    ARI    1         0
## 121    9    CAR    1         0
## 122    9    CIN    1         0
## 123    9    DAL    1         0
## 124    9    DET    1         0
## 125    9    IND    1         0
## 126    9     LA    1         0
## 127    9     NO    1         0
## 128    9    NYJ    1         0
## 129    9    OAK    1         0
## 130    9    PHI    1         0
## 131    9    TEN    1         0
## 132    9    WAS    1         0
## 133   10    CAR    1         0
## 134   10    DAL    1         0
## 135   10    DET    1         0
## 136   10     GB    1         0
## 137   10    HOU    1         0
## 138   10    JAX    1         0
## 139   10    MIN    1         0
## 140   10     NE    1         0
## 141   10     NO    1         0
## 142   10    PIT    1         0
## 143   10    SEA    1         0
## 144   10     SF    1         0
## 145   10     TB    1         0
## 146   10    TEN    1         0
## 147   11    ATL    1         0
## 148   11    BAL    1         0
## 149   11    CIN    1         0
## 150   11    CLE    1         0
## 151   11    DAL    1         0
## 152   11    DET    1         0
## 153   11    HOU    1         0
## 154   11     KC    1         1
## 155   11     LA    1         0
## 156   11    LAC    1         0
## 157   11     NO    1         0
## 158   11    OAK    1         0
## 159   11    PIT    1         0
## 160   11     TB    1         0
## 161   12    ARI    1         0
## 162   12    ATL    1         0
## 163   12    BAL    1         0
## 164   12    BUF    1         0
## 165   12    CAR    1         0
## 166   12    CIN    1         0
## 167   12    DAL    1         0
## 168   12     LA    1         0
## 169   12    MIN    1         0
## 170   12     NE    1         0
## 171   12    OAK    1         0
## 172   12    PHI    1         0
```

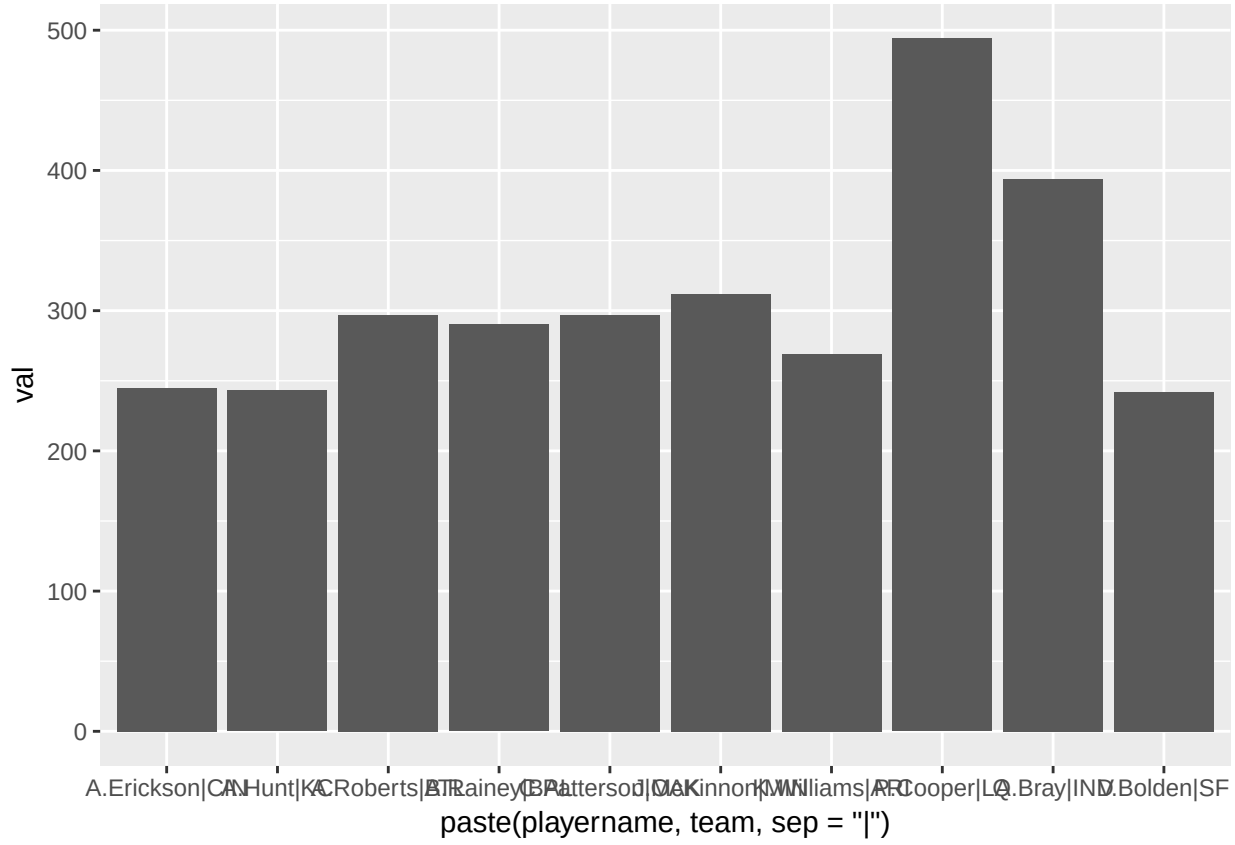
```
## 173   12    PIT    1         0
## 174   12    SEA    1         0
## 175   12    TEN    1         0
## 176   12    WAS    1         0
## 177   13    ATL    1         0
## 178   13    BAL    1         0
## 179   13    BUF    1         0
## 180   13    DAL    1         0
## 181   13    DEN    1         0
## 182   13     GB    1         0
## 183   13    JAX    1         0
## 184   13     LA    1         0
## 185   13    LAC    1         0
## 186   13     NO    1         0
## 187   13    NYJ    1         0
## 188   13    OAK    1         0
## 189   13    PIT    1         0
## 190   13    SEA    1         0
## 191   13     SF    1         0
## 192   13    TEN    1         0
## 193   14    ATL    1         0
## 194   14    CAR    1         0
## 195   14    CIN    1         0
## 196   14    DAL    1         0
## 197   14    DEN    1         0
## 198   14    DET    1         0
## 199   14     GB    1         0
## 200   14    IND    1         0
## 201   14    JAX    1         0
## 202   14     KC    1         1
## 203   14    LAC    1         0
## 204   14    MIA    1         0
## 205   14    PHI    1         0
## 206   14    PIT    1         0
## 207   14     SF    1         0
## 208   14    TEN    1         0
## 209   15    ATL    1         0
## 210   15    BAL    1         0
## 211   15    BUF    1         0
## 212   15    CAR    1         0
## 213   15    CIN    1         0
## 214   15    DAL    1         0
## 215   15    DEN    1         0
## 216   15    DET    1         0
## 217   15    HOU    1         0
## 218   15     KC    1         1
## 219   15     NE    1         0
## 220   15     NO    1         0
## 221   15    PHI    1         0
## 222   15    SEA    1         0
## 223   15     SF    1         0
## 224   15    WAS    1         0
## 225   16    ARI    1         0
## 226   16    BAL    1         0
```

```
## 227   16    CAR    1         0
## 228   16    CIN    1         0
## 229   16    CLE    1         0
## 230   16    HOU    1         0
## 231   16     KC    1         1
## 232   16     LA    1         0
## 233   16    MIN    1         0
## 234   16     NE    1         0
## 235   16     NO    1         0
## 236   16    NYJ    1         0
## 237   16    PHI    1         0
## 238   16    SEA    1         0
## 239   16     SF    1         0
## 240   16    WAS    1         0
## 241   17    ARI    1         0
## 242   17    ATL    1         0
## 243   17    BUF    1         0
## 244   17    CIN    1         0
## 245   17    DAL    1         0
## 246   17    DET    1         0
## 247   17    IND    1         0
## 248   17     KC    1         1
## 249   17    LAC    1         0
## 250   17    MIN    1         0
## 251   17    NYG    1         0
## 252   17    NYJ    1         0
## 253   17    PIT    1         0
## 254   17     SF    1         0
## 255   17     TB    1         0
## 256   17    TEN    1         0
```

```
    LL<-sqldf(paste('select * from play where week <= ',7,sep=' ' ))
    LL <- group_by(LL,team,playername,cat) %>%
      summarise(val = sum(val))
    LL$selcat <- ifelse(LL$cat == 'kickret_yds' , '1', '0')
    LL<-LL %>% filter(selcat == '1')

    LL<-LL[order(LL$val,decreasing=T),]
    LL = LL[1:10,]
    print(LL)
```

```
## # A tibble: 10 x 5
## # Groups:   team, playername [10]
##    team  playername  cat           val selcat
##    <chr> <chr>       <chr>       <dbl> <chr>
##  1 LA    P.Cooper    kickret_yds   494 1
##  2 IND   Q.Bray      kickret_yds   394 1
##  3 MIN   J.McKinnon  kickret_yds   312 1
##  4 ATL   A.Roberts   kickret_yds   297 1
##  5 OAK   C.Patterson kickret_yds   297 1
##  6 BAL   B.Rainey    kickret_yds   290 1
##  7 ARI   K.Williams  kickret_yds   269 1
##  8 CIN   A.Erickson  kickret_yds   245 1
##  9 KC    A.Hunt      kickret_yds   243 1
## 10 SF    V.Bolden    kickret_yds   242 1
```

```
    ggplot(LL,aes(paste(playername,team,sep='|'),val))+
        geom_bar(stat = 'identity')
```



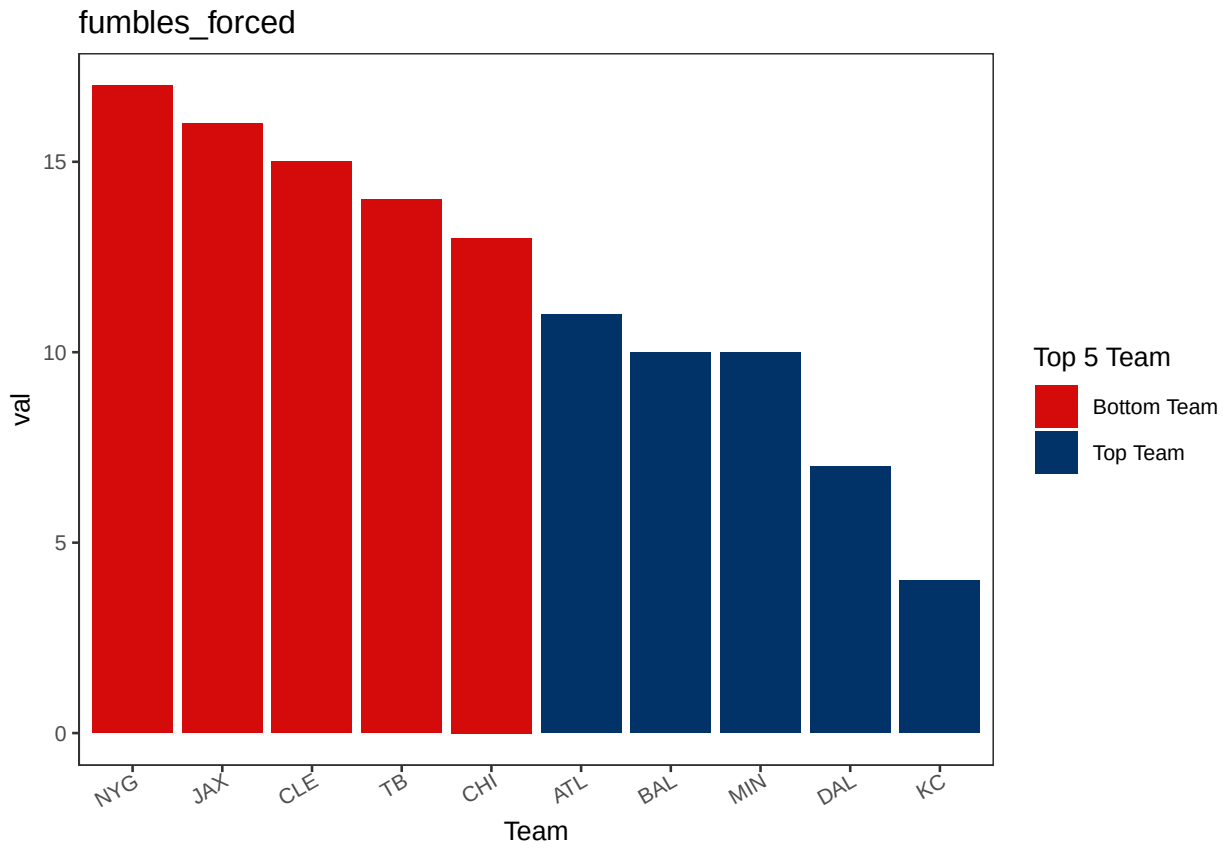

```
topTeam <-group_by(game2,winner)  %>% summarise(wins=sum(wins))
top5teams<-topTeam[order(topTeam$wins,decreasing = TRUE),][0:5,]$winner

bot5teams<-topTeam[order(topTeam$wins,decreasing = FALSE),][0:5,]$winner
```

```
teamStat <-group_by(play,team,cat,G_B,O_D)%>%
       summarise(val=sum(val))
#teamStat <-teamStat[teamStat$G_B =='G',]

teamStat <-teamStat[teamStat$O_D =='O',]
#ggplot(teamStat[teamStat$team %in% top5teams,],aes(cat,val))+
#        geom_bar(stat='identity')+
#        theme(axis.text.x = element_text(angle = 45, vjust = 0.5, hjust=1))+
#        facet_wrap(.~team )
teamStat<-teamStat[teamStat$team %in% bot5teams | teamStat$team %in% top5teams ,]

#uniquestat <-unique(teamStat$cat )
#for (i in 1:length(uniquestat)){

#tmpTS = sqldf(paste('select * from teamStat where cat = ',factor(uniquestat[as.numeric(i)]),sep=' ' ))
#print(tmpTS)
#plts = ggplot(tmpTS,aes(team,val))+
 #        geom_bar(stat='identity')+
```

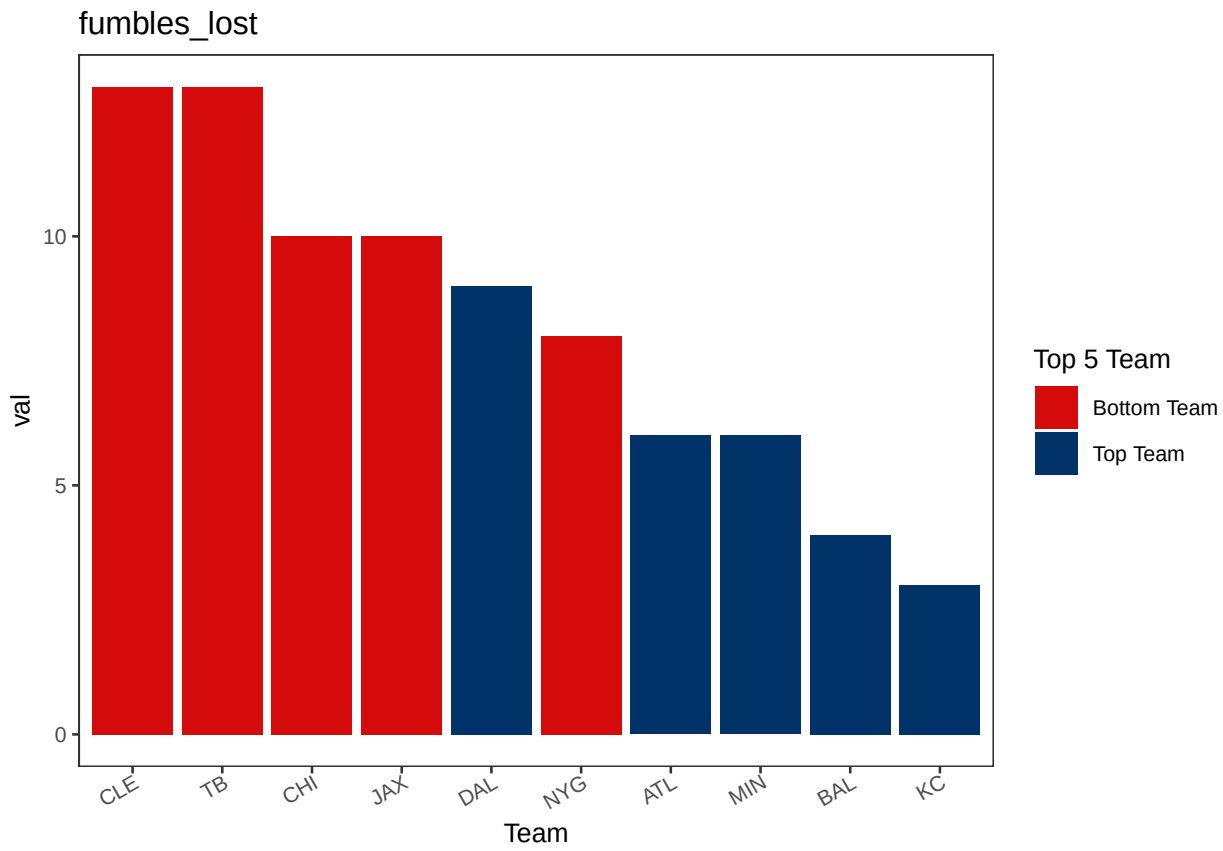
```
#        theme(axis.text.x = element_text(angle = 45, vjust = 0.5, hjust=1))
#print(plts)
#}
```

```
teamStat$topBot <- ifelse(teamStat$team %in% top5teams , 'Top Team', 'Bottom Team')

makePlot <- function(species, data){

#print(data$cat)
plts = ggplot(data[data$cat %in% species,],aes(reorder(team,-val, function(x){ sum(x) }),val,fill= topBo
        geom_bar(stat='identity')+
        theme(axis.text.x = element_text(angle = 45, vjust = 1, hjust=1))+
      ggtitle(species)+
  xlab("Team")+
  scale_fill_manual(name='Top 5 Team',values=setNames(c(NFLBlue,NFLRed),c('Top Team','Bottom Team')))+
  theme_NFL()
  #scale_colour_manual(name = 'PC1 > 0', values = setNames(c('red','green'),c(T, F)))


}

lapply(unique(teamStat$cat), makePlot, data = teamStat)
```

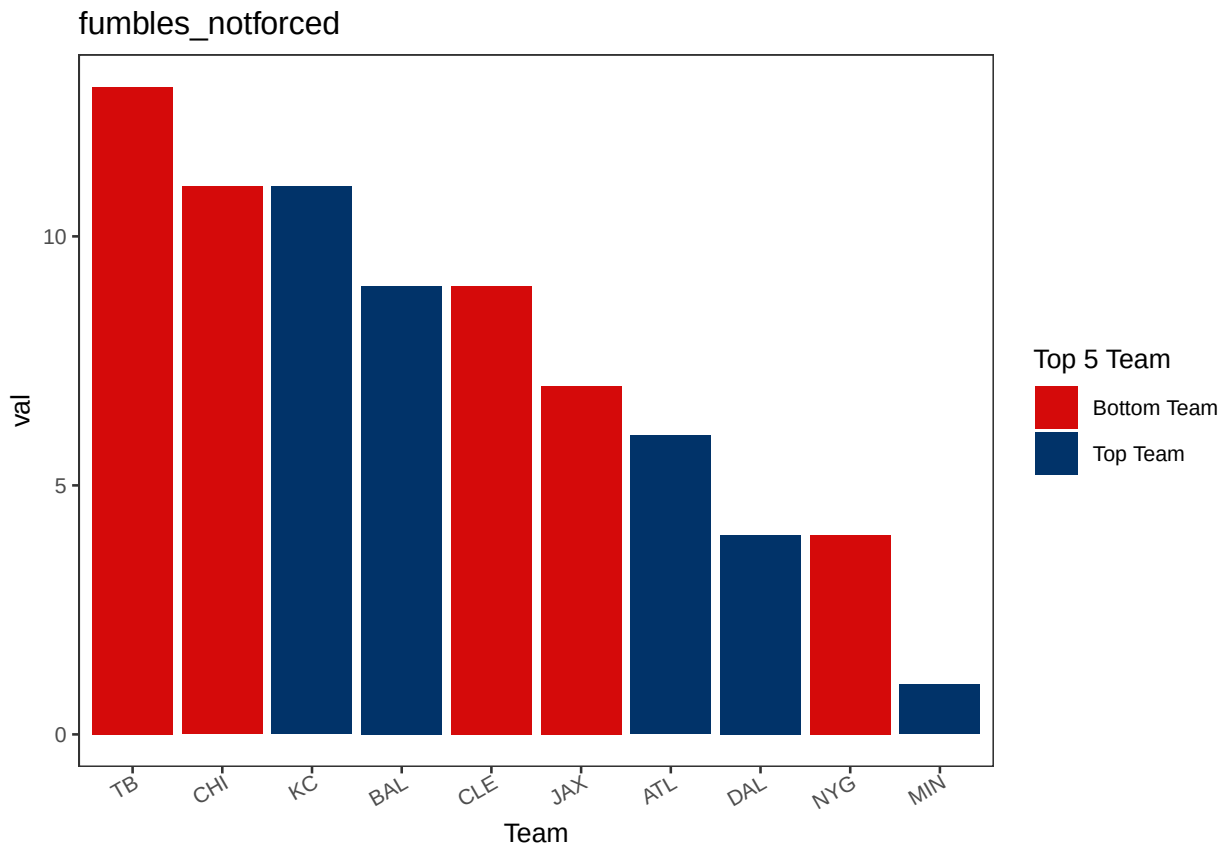
```
## [[1]]
```



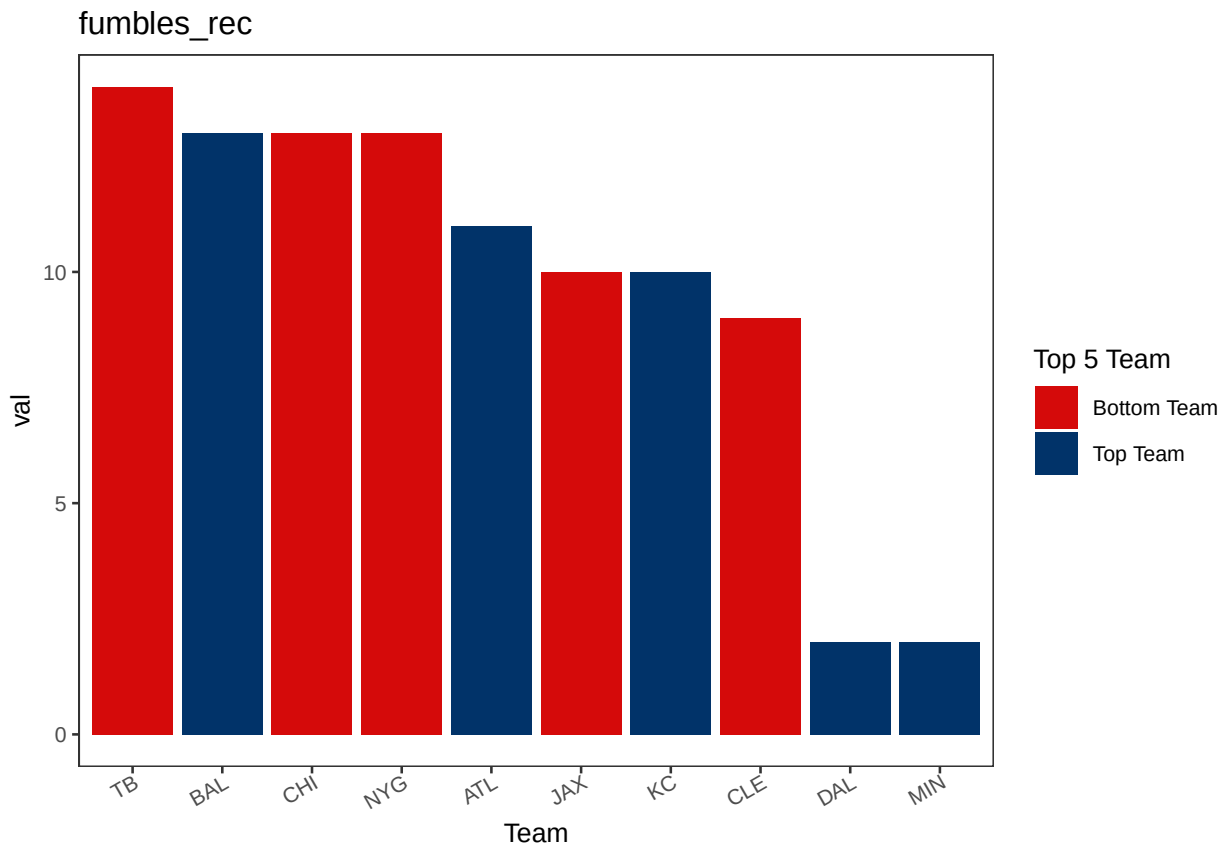

```
##
## [[2]]
```


fumbles_lost
10
5
0
val
CLE
TB
CHI
JAX
DAL
NYG
ATL
MIN
BAL
KC
Team
Top 5 Team
Bottom Team
Top Team

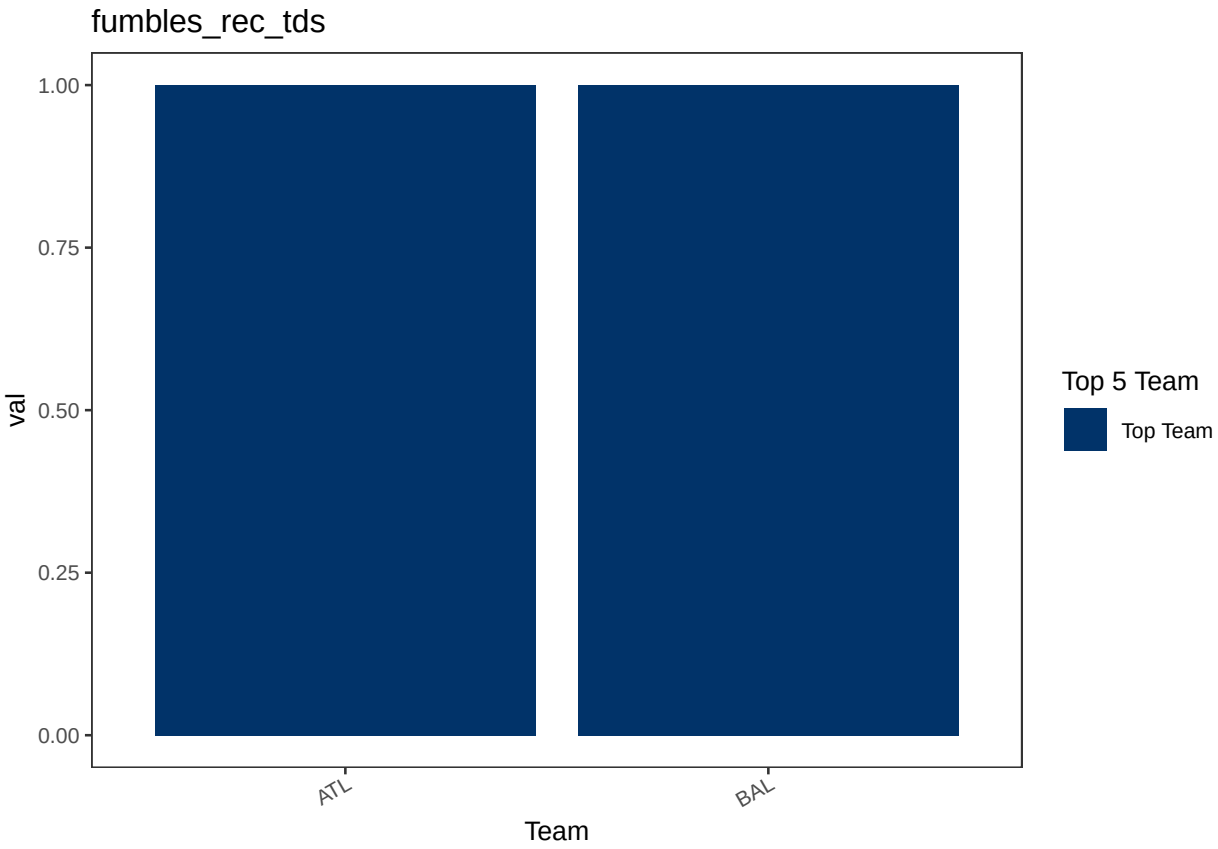
```
##
## [[3]]
```


fumbles_notforced
10
5
0
val
TB
CHI
KC
BAL
CLE
JAX
ATL
DAL
NYG
MIN
Team
Top 5 Team
Bottom Team
Top Team

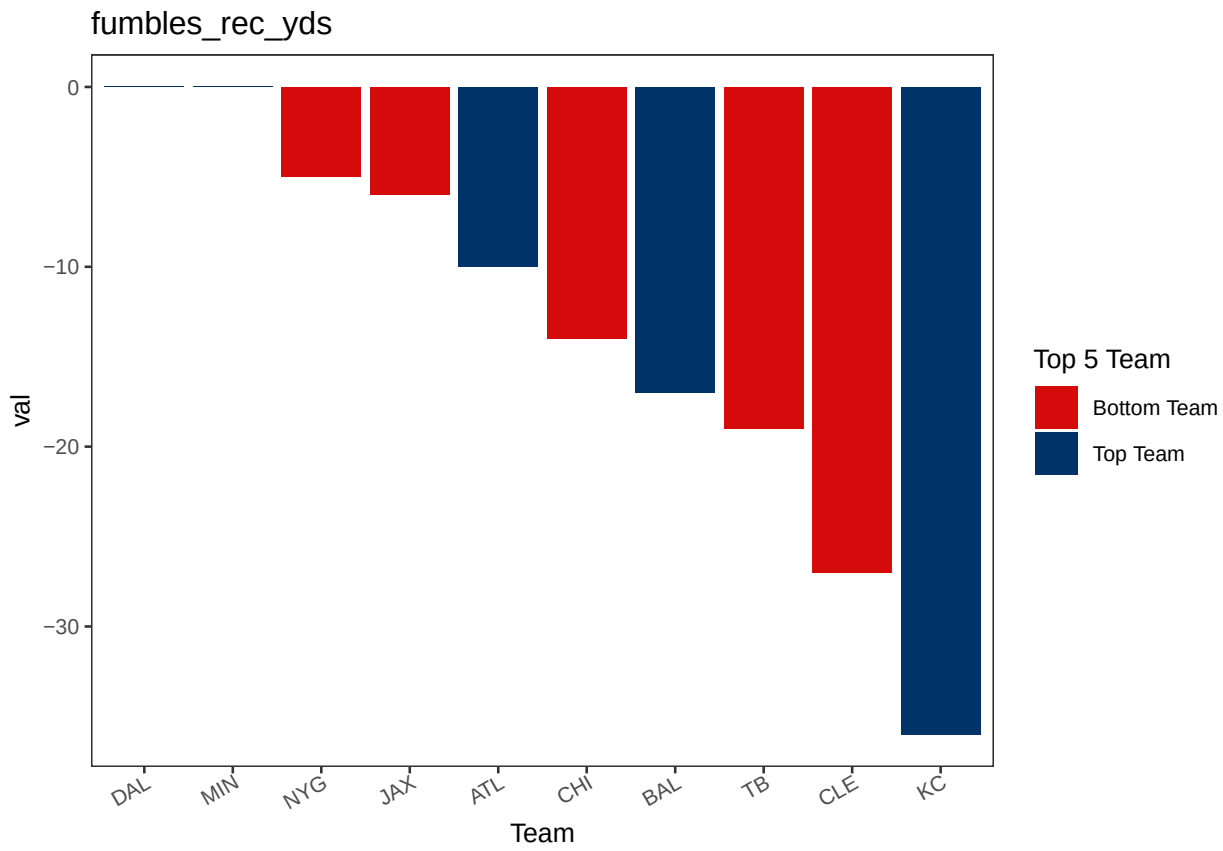
```
##
## [[4]]
```


fumbles_rec
10
5
0
val
TB
BAL
CHI
NYG
ATL
JAX
KC
CLE
DAL
MIN
Team
Top 5 Team
Bottom Team
Top Team

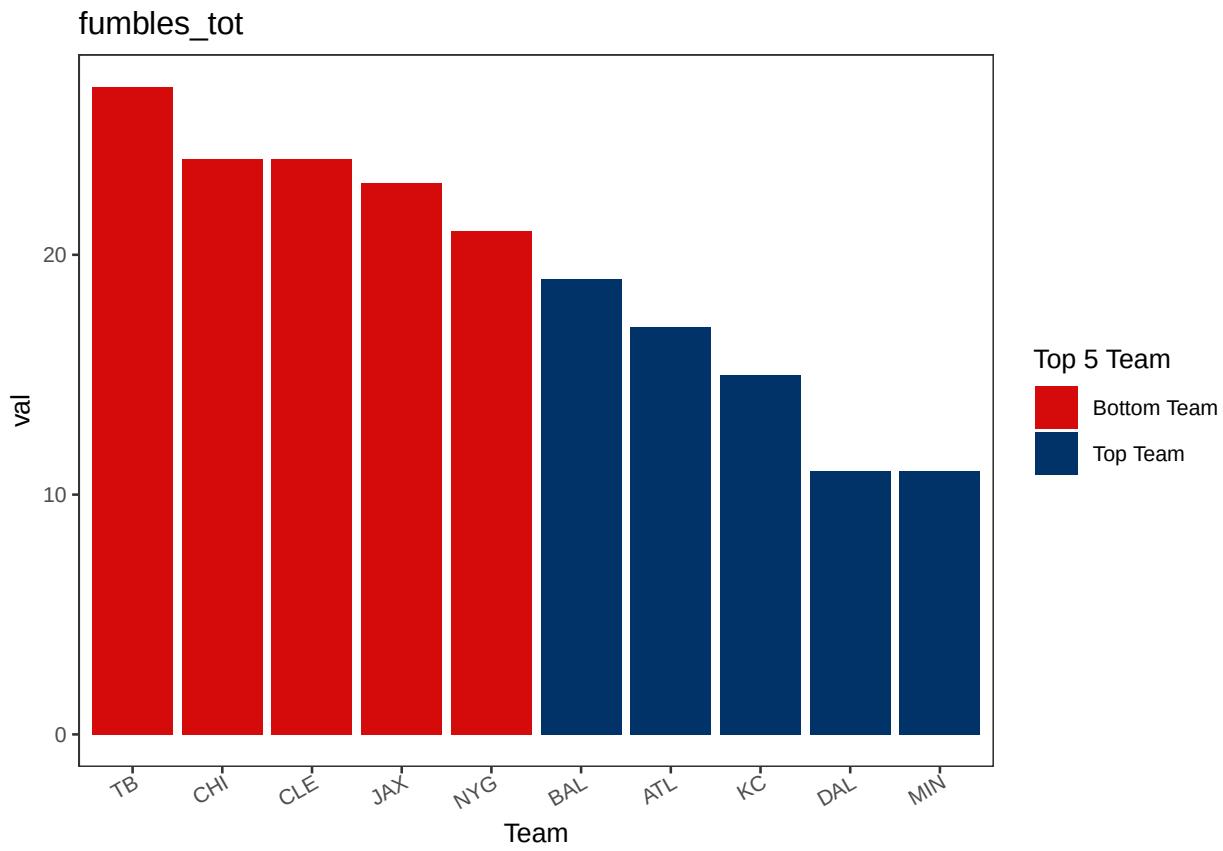
```
##
## [[5]]
```


fumbles_rec_tds
1.00
0.75
0.50
0.25
0.00
val
ATL
BAL
Team
Top 5 Team
Top Team

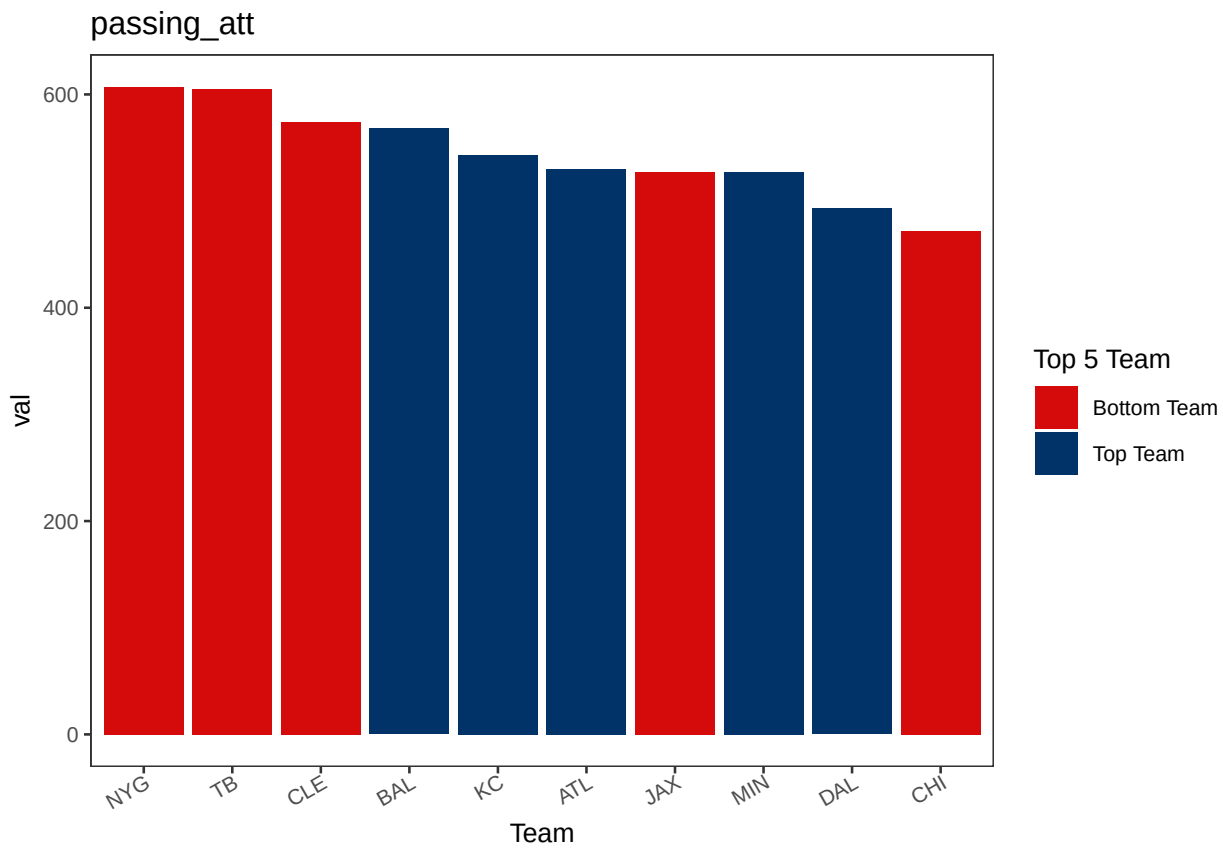
```
##
## [[6]]
```


fumbles_rec_yds
0
−10
−20
−30
val
DAL
MIN
NYG
JAX
ATL
CHI
BAL
TB
CLE
KC
Team
Top 5 Team
Bottom Team
Top Team

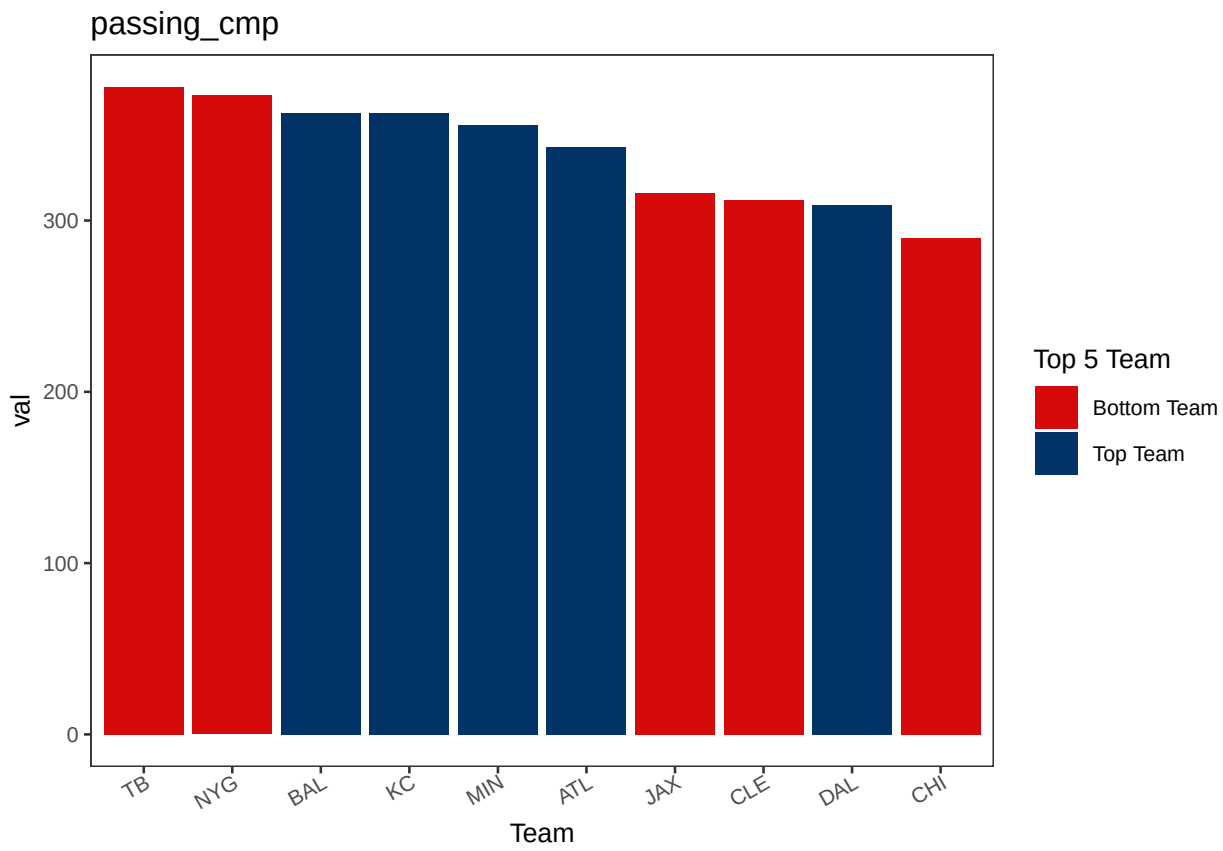
```
##
## [[7]]
```


fumbles_tot
val
20
10
0
TB
CHI
CLE
JAX
NYG
BAL
ATL
KC
DAL
MIN
Team
Top 5 Team
Bottom Team
Top Team

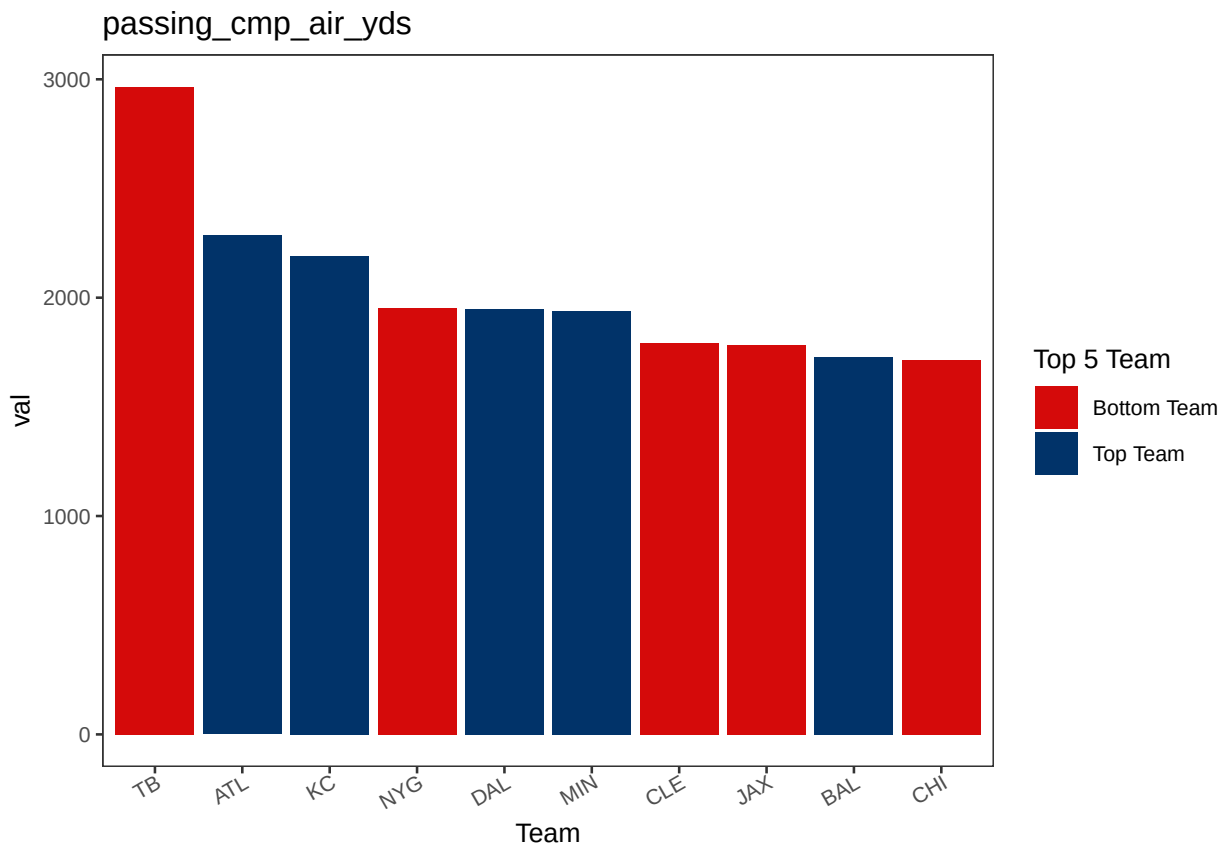
```
##
## [[8]]
```


passing_att
600
400
200
0
val
NYG
TB
CLE
BAL
KC
ATL
JAX
MIN
DAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

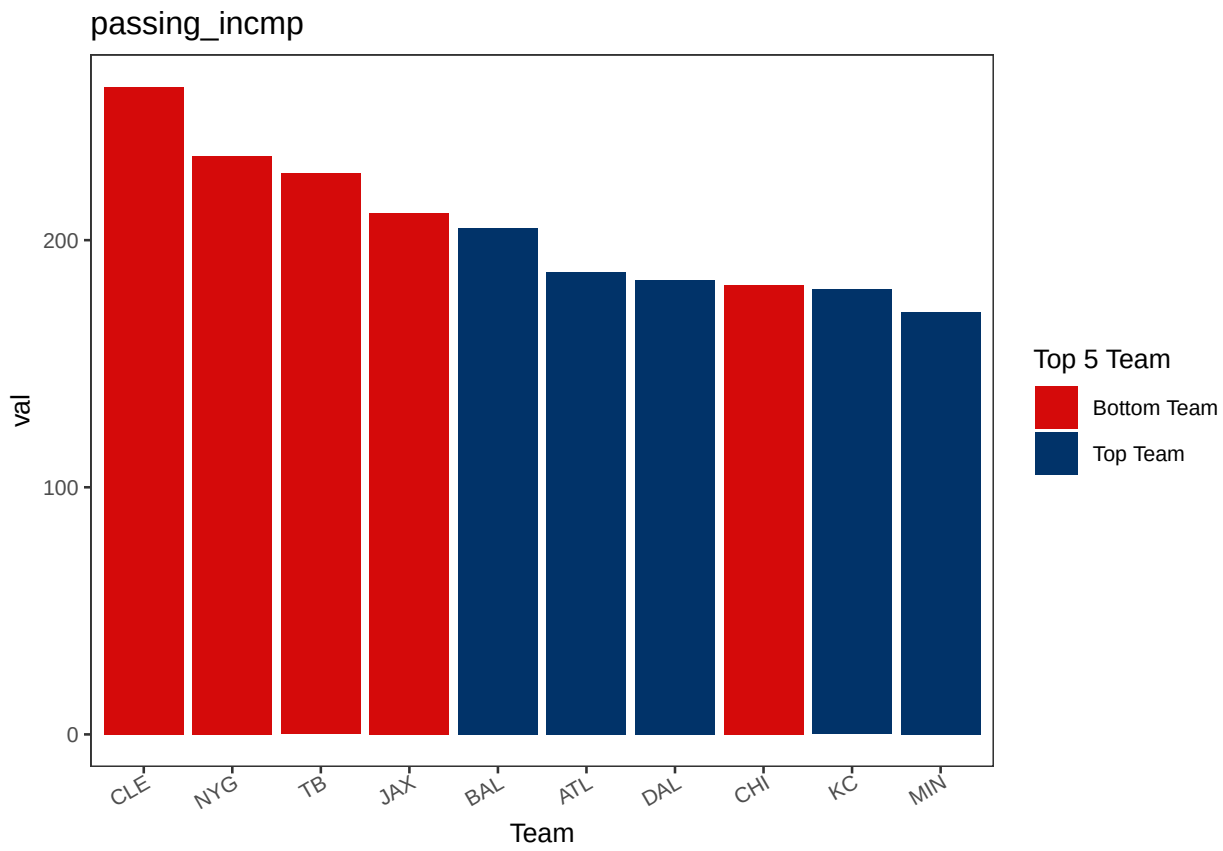
```
##
## [[9]]
```


passing_cmp
val
300
200
100
0
TB
NYG
BAL
KC
MIN
ATL
JAX
CLE
DAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

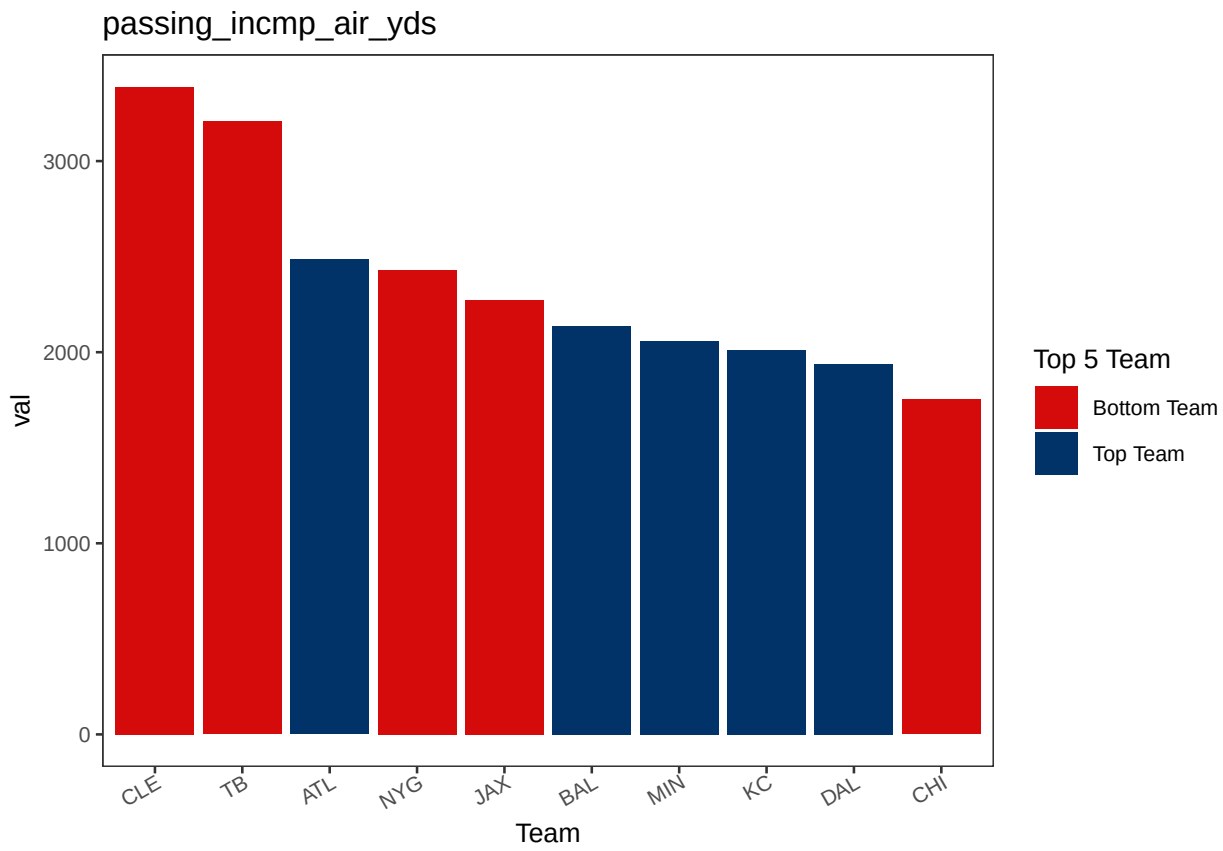
```
##
## [[10]]
```


passing_cmp_air_yds
3000
2000
1000
0
val
TB
ATL
KC
NYG
DAL
MIN
CLE
JAX
BAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

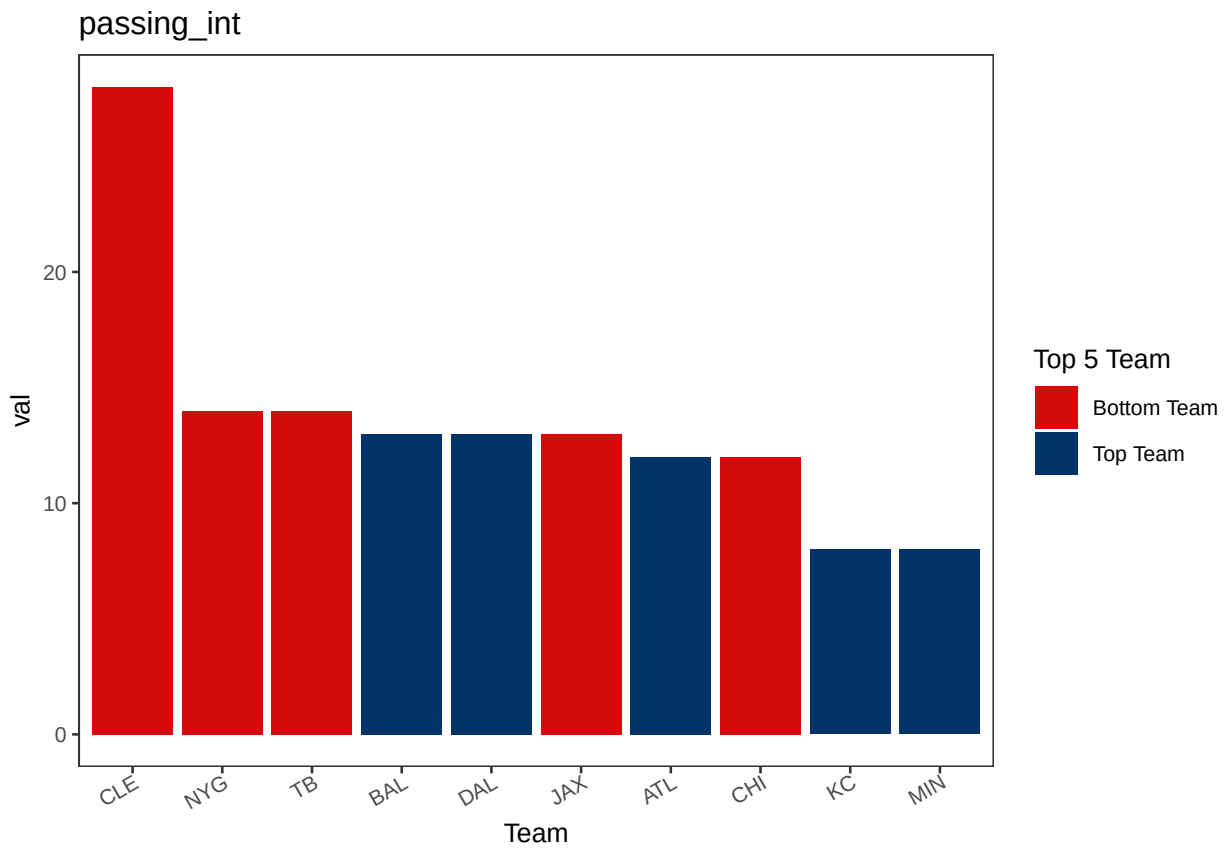
```
##
## [[11]]
```


passing_incmp
val
200
100
0
CLE
NYG
TB
JAX
BAL
ATL
DAL
CHI
KC
MIN
Team
Top 5 Team
Bottom Team
Top Team

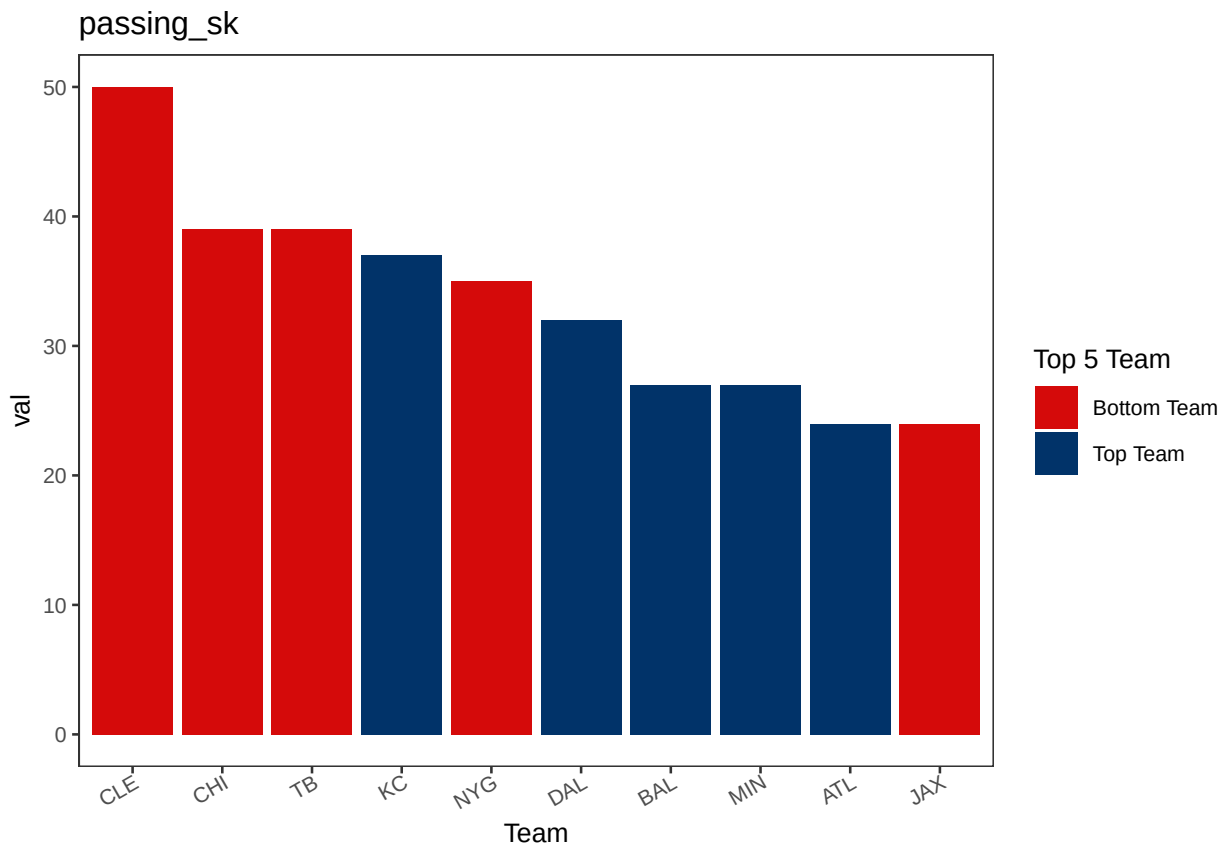
```
##
## [[12]]
```


passing_incmp_air_yds
3000
2000
1000
0
val
CLE
TB
ATL
NYG
JAX
BAL
MIN
KC
DAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

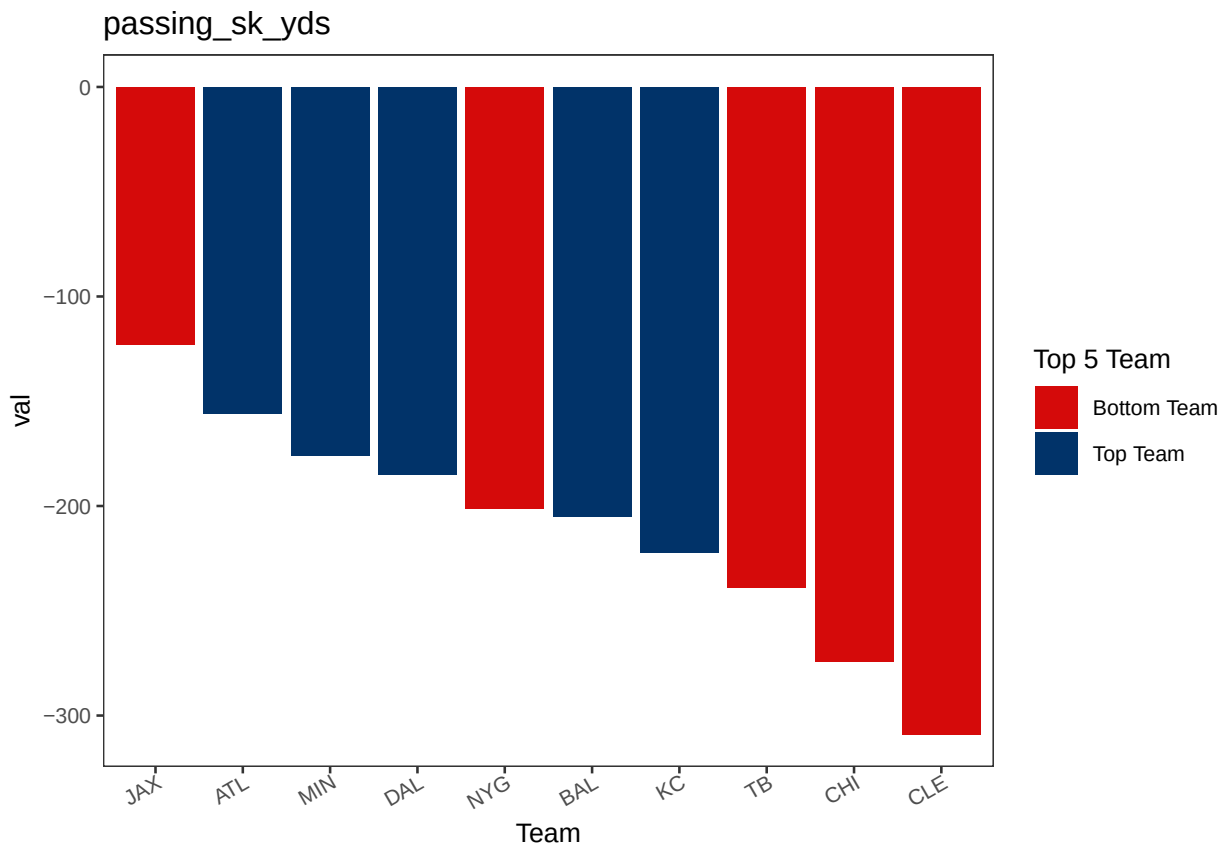
```
##
## [[13]]
```


passing_int
val
20
10
0
CLE
NYG
TB
BAL
DAL
JAX
ATL
CHI
KC
MIN
Team
Top 5 Team
Bottom Team
Top Team

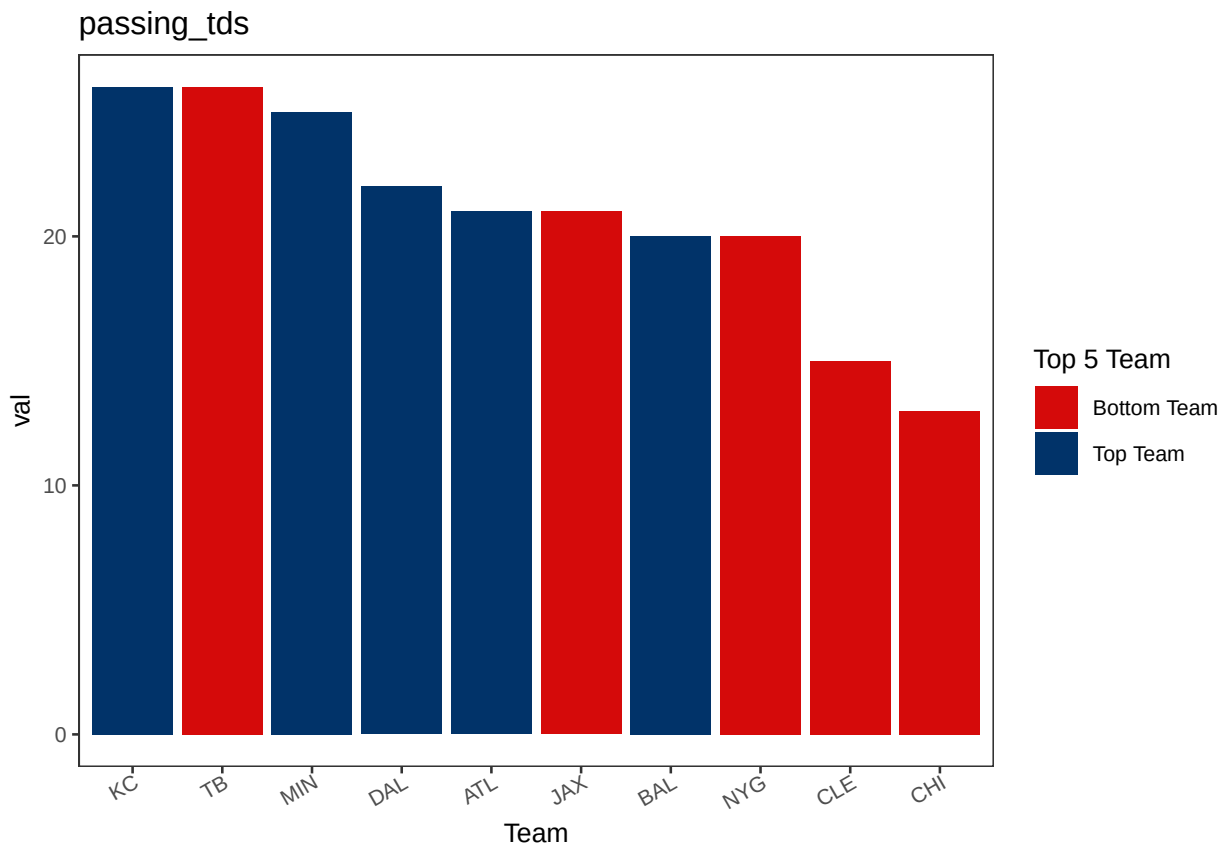
```
##
## [[14]]
```


passing_sk
50
40
30
20
10
0
val
CLE
CHI
TB
KC
NYG
DAL
BAL
MIN
ATL
JAX
Team
Top 5 Team
Bottom Team
Top Team

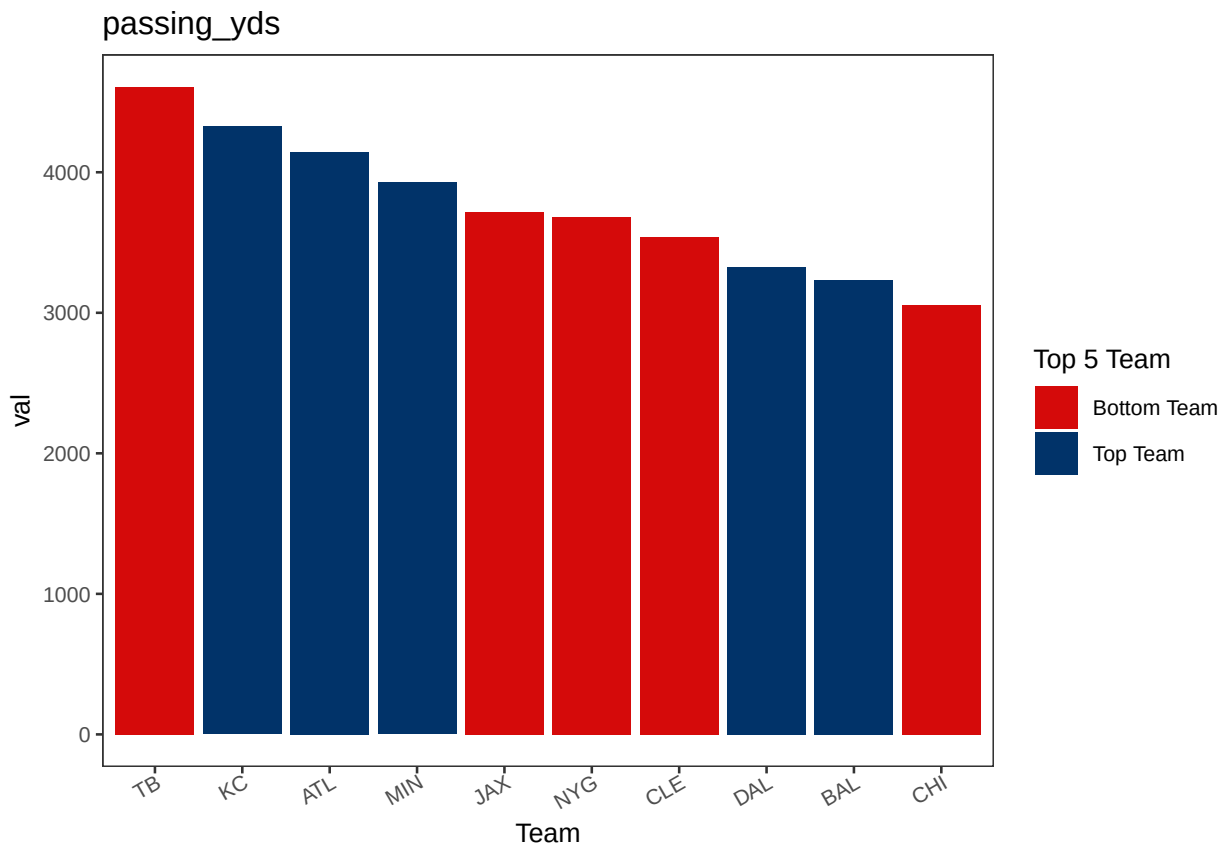
```
##
## [[15]]
```


passing_sk_yds
0
−100
−200
−300
val
JAX
ATL
MIN
DAL
NYG
BAL
KC
TB
CHI
CLE
Team
Top 5 Team
Bottom Team
Top Team

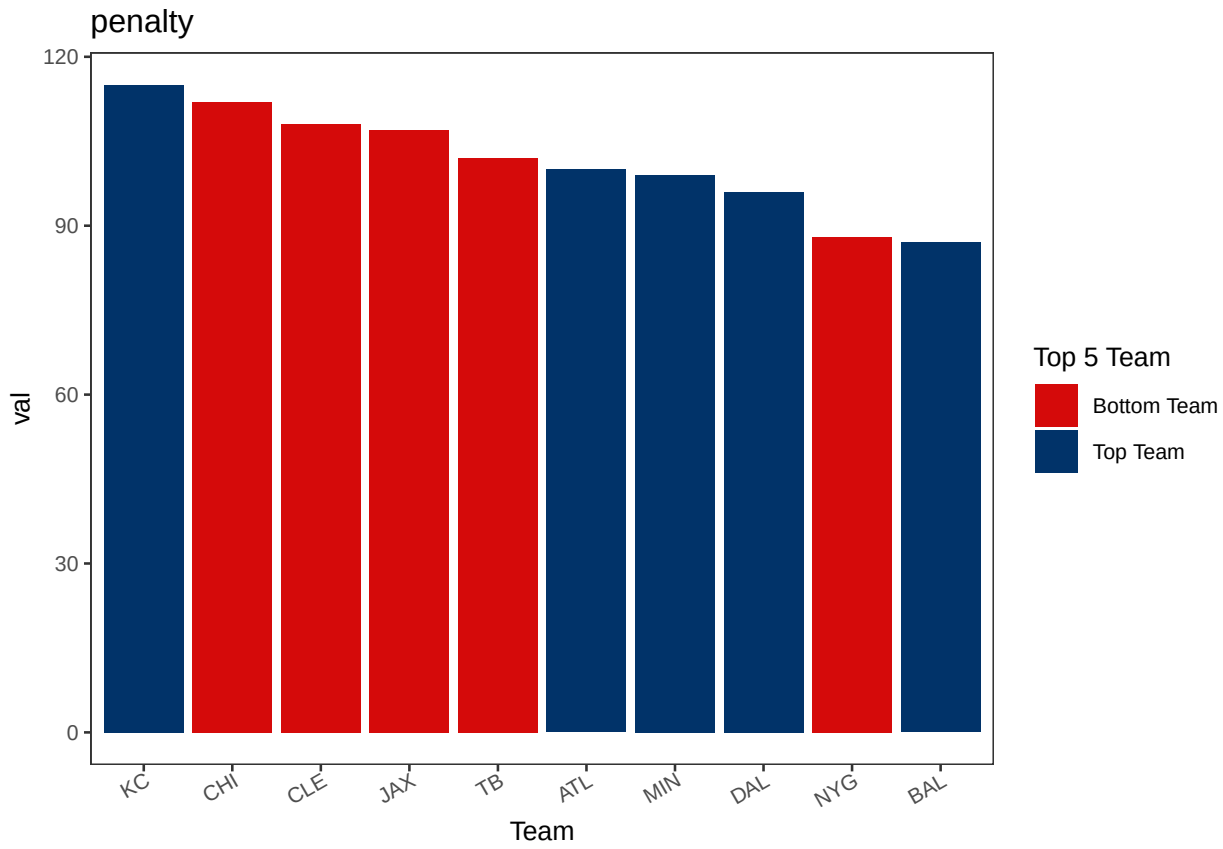
```
##
## [[16]]
```


passing_tds
val
20
10
0
KC
TB
MIN
DAL
ATL
JAX
BAL
NYG
CLE
CHI
Team
Top 5 Team
Bottom Team
Top Team

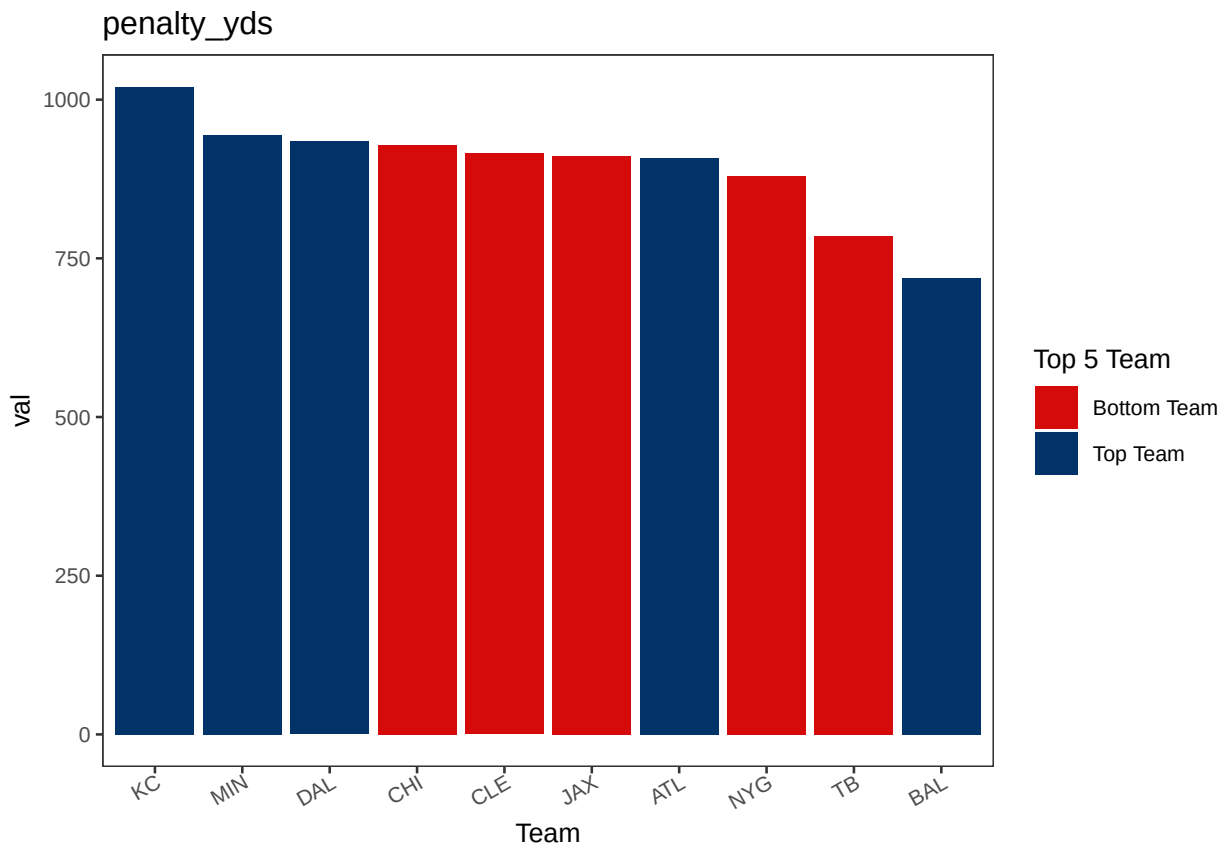
```
##
## [[17]]
```


passing_yds
4000
3000
2000
1000
0
val
TB
KC
ATL
MIN
JAX
NYG
CLE
DAL
BAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

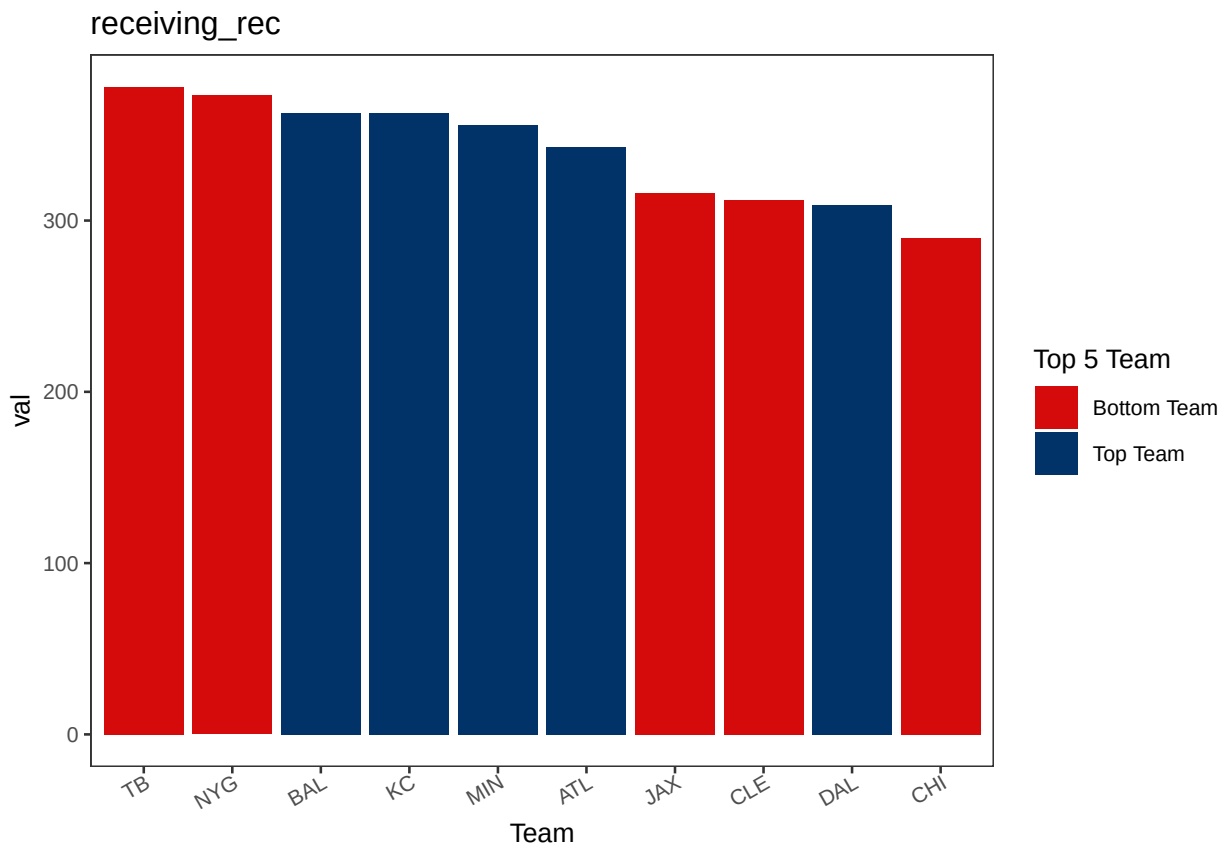
```
##
## [[18]]
```


penalty
120
90
60
30
0
val
KC
CHI
CLE
JAX
TB
ATL
MIN
DAL
NYG
BAL
Team
Top 5 Team
Bottom Team
Top Team

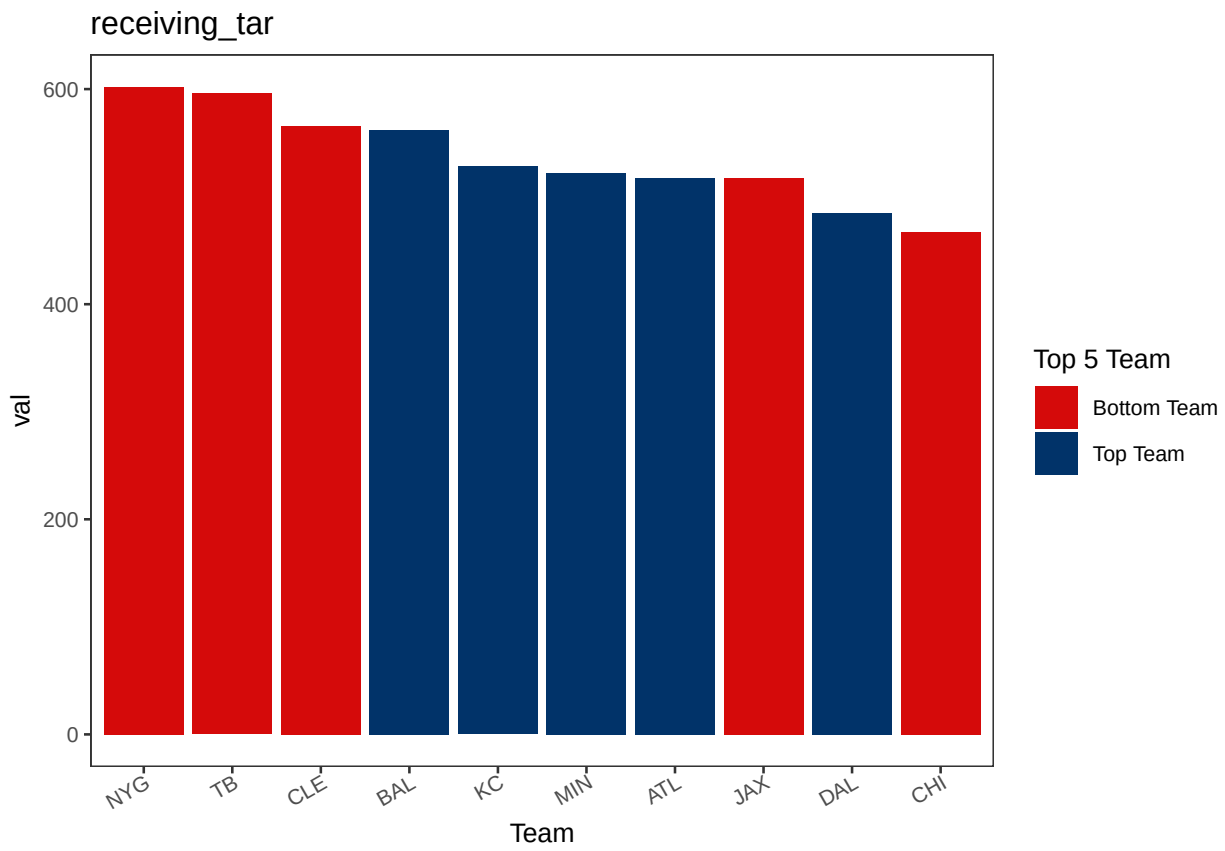
```
##
## [[19]]
```


penalty_yds
1000
750
500
250
0
val
KC
MIN
DAL
CHI
CLE
JAX
ATL
NYG
TB
BAL
Team
Top 5 Team
Bottom Team
Top Team

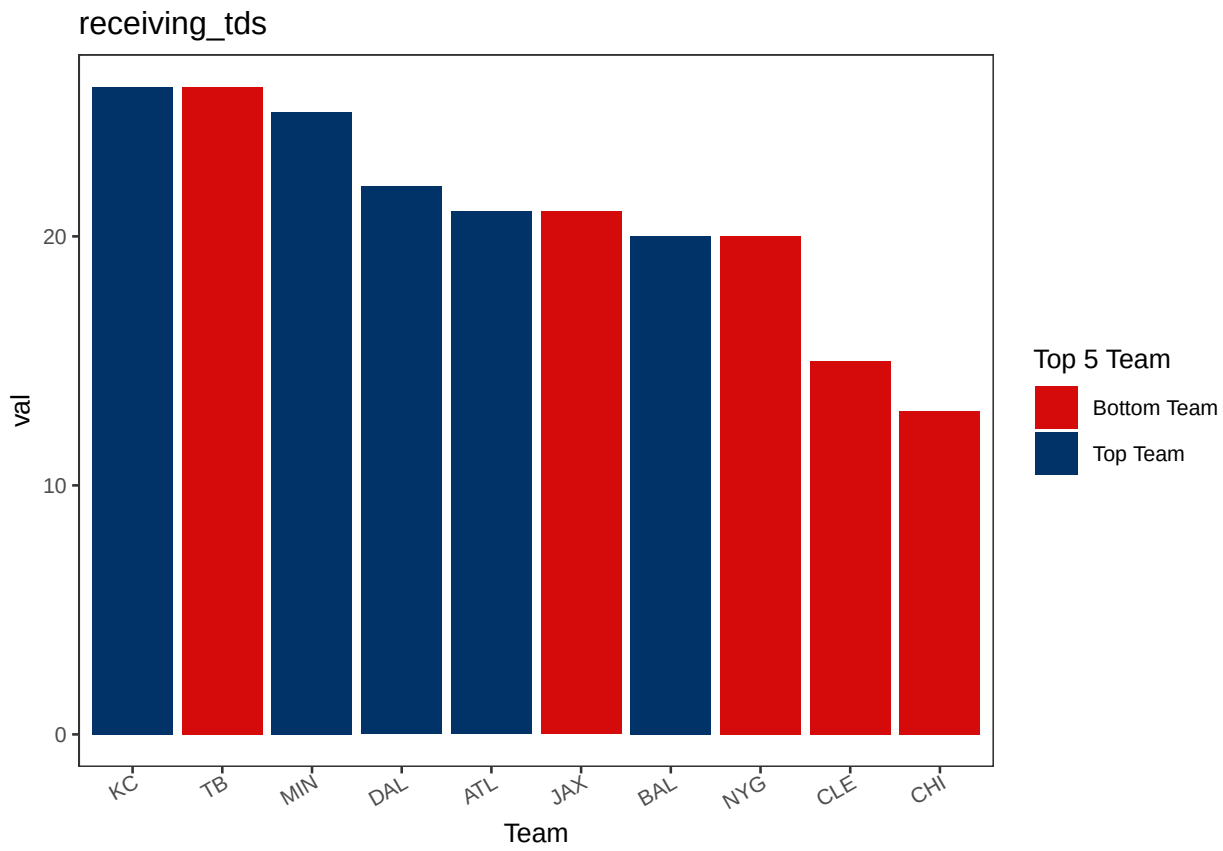
```
##
## [[20]]
```


receiving_rec
val
300
200
100
0
TB
NYG
BAL
KC
MIN
ATL
JAX
CLE
DAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

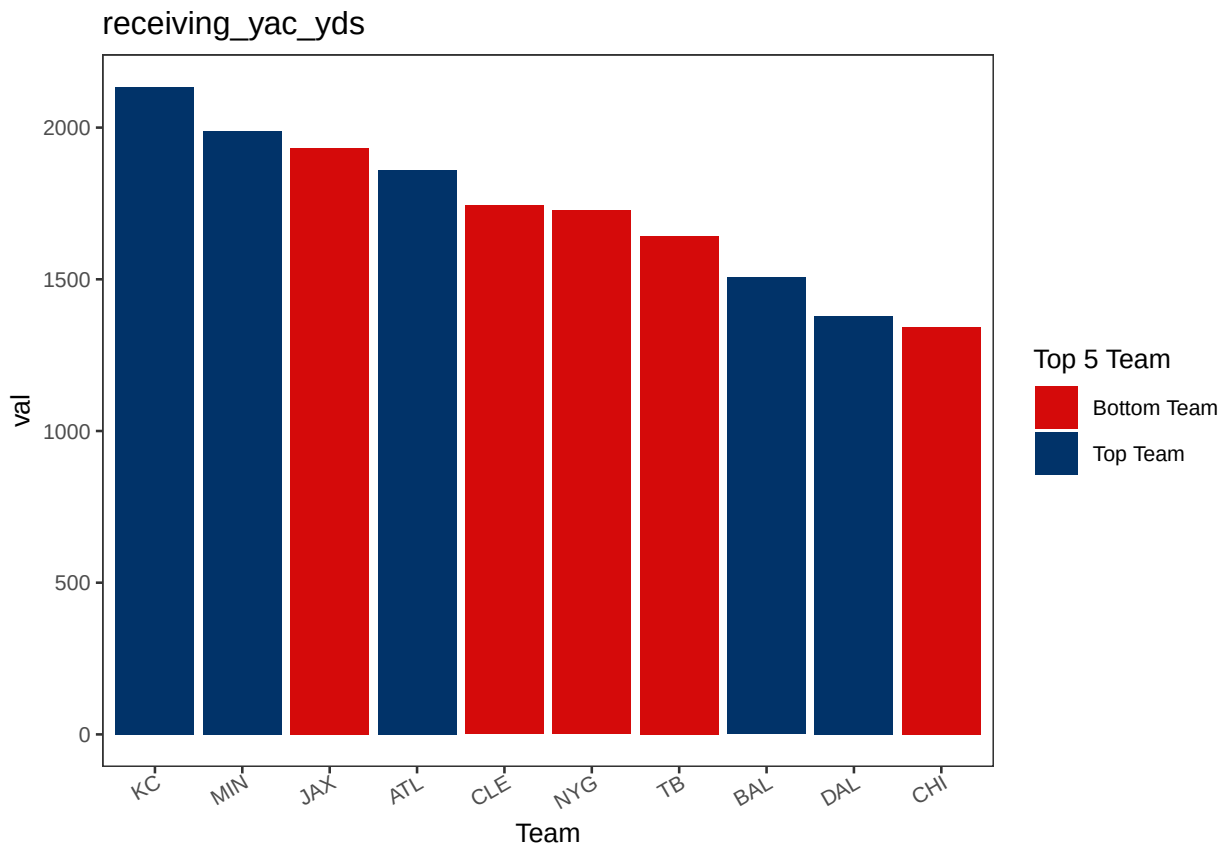
```
##
## [[21]]
```


receiving_tar
600
400
200
0
val
NYG
TB
CLE
BAL
KC
MIN
ATL
JAX
DAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

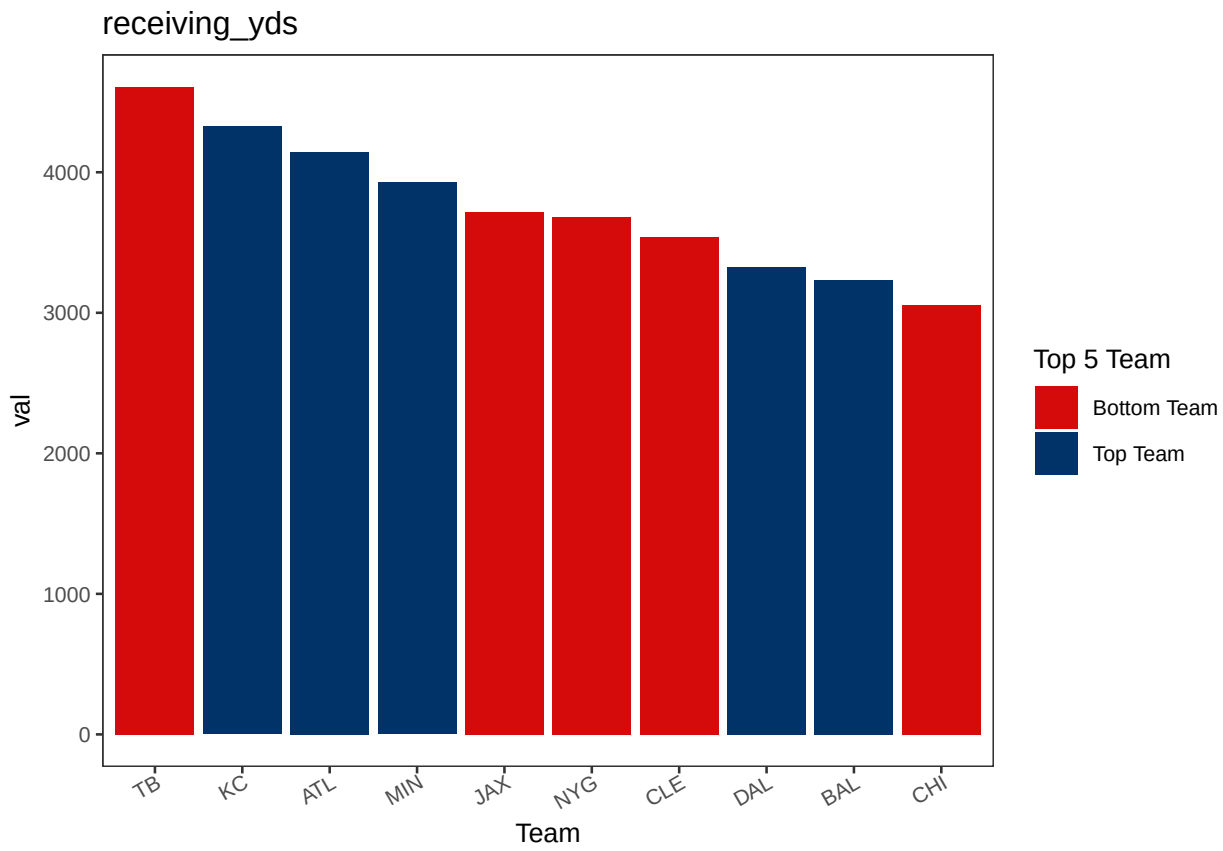
```
##
## [[22]]
```


receiving_tds
val
20
10
0
KC
TB
MIN
DAL
ATL
JAX
BAL
NYG
CLE
CHI
Team
Top 5 Team
Bottom Team
Top Team

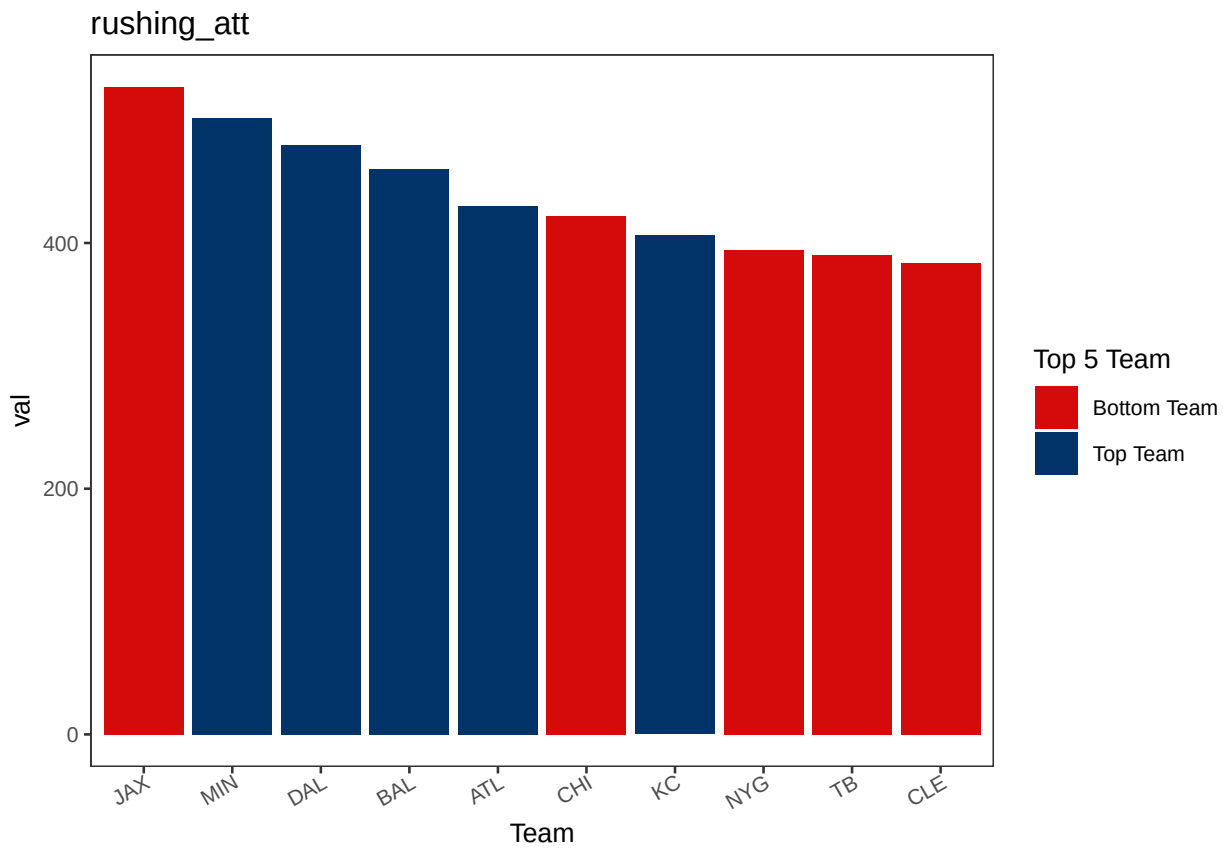
```
##
## [[23]]
```


receiving_yac_yds
2000
1500
1000
500
0
val
KC
MIN
JAX
ATL
CLE
NYG
TB
BAL
DAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

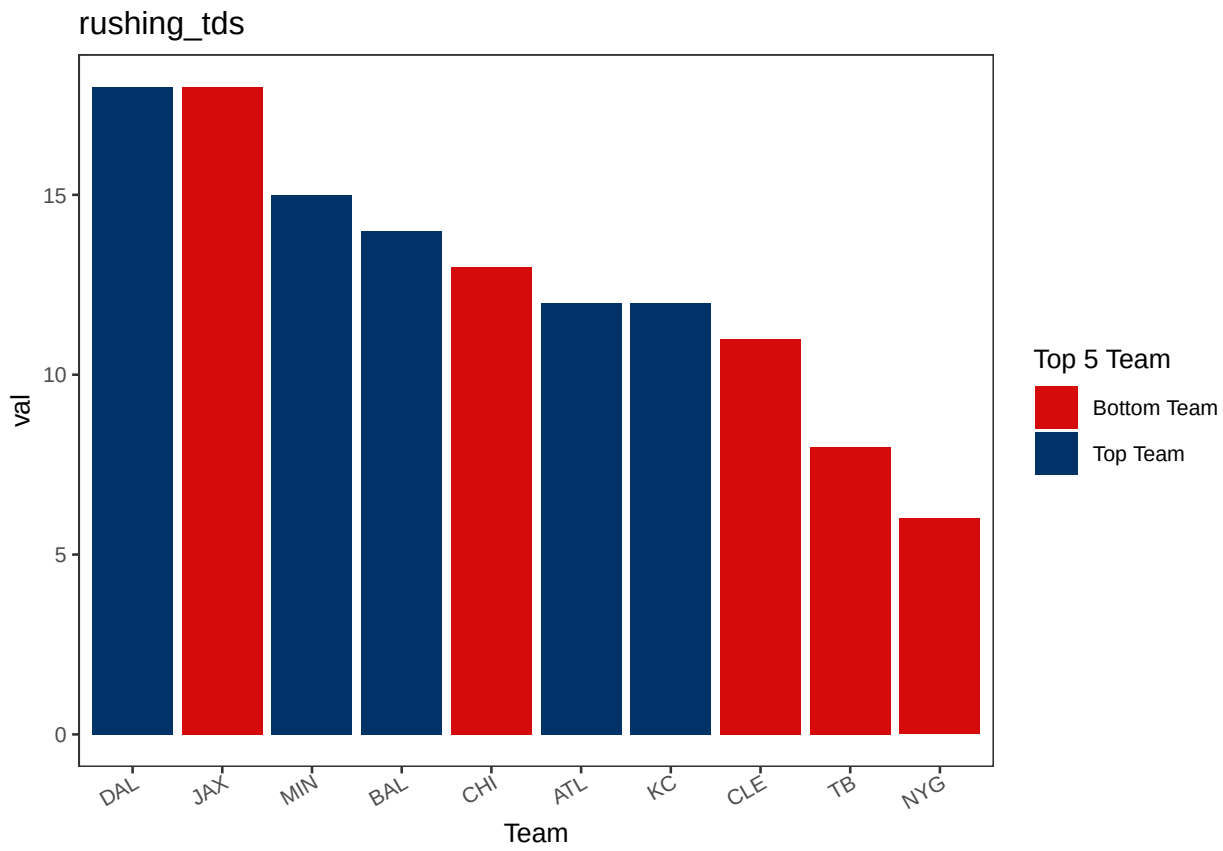
```
##
## [[24]]
```


receiving_yds
val
4000
3000
2000
1000
0
TB
KC
ATL
MIN
JAX
NYG
CLE
DAL
BAL
CHI
Team
Top 5 Team
Bottom Team
Top Team

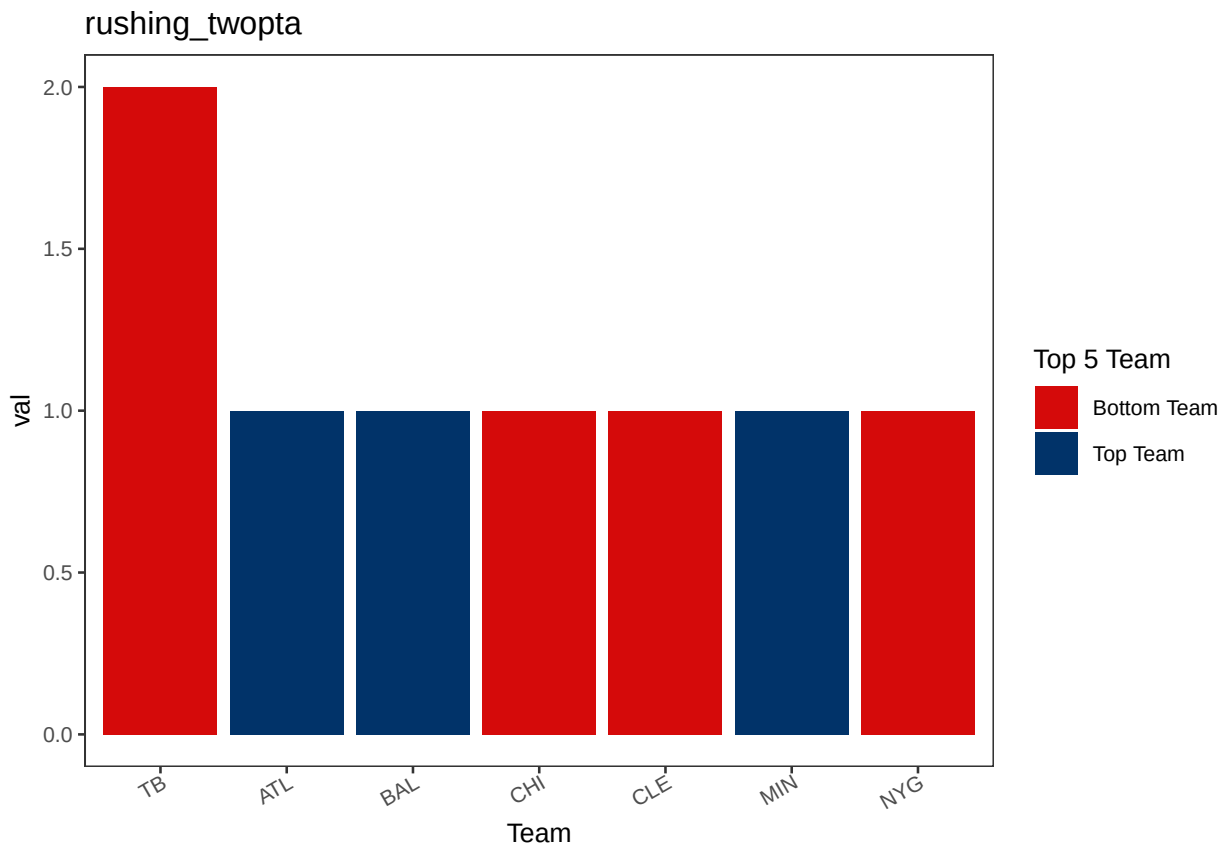
```
##
## [[25]]
```


rushing_att
val
400
200
0
JAX
MIN
DAL
BAL
ATL
CHI
KC
NYG
TB
CLE
Team
Top 5 Team
Bottom Team
Top Team

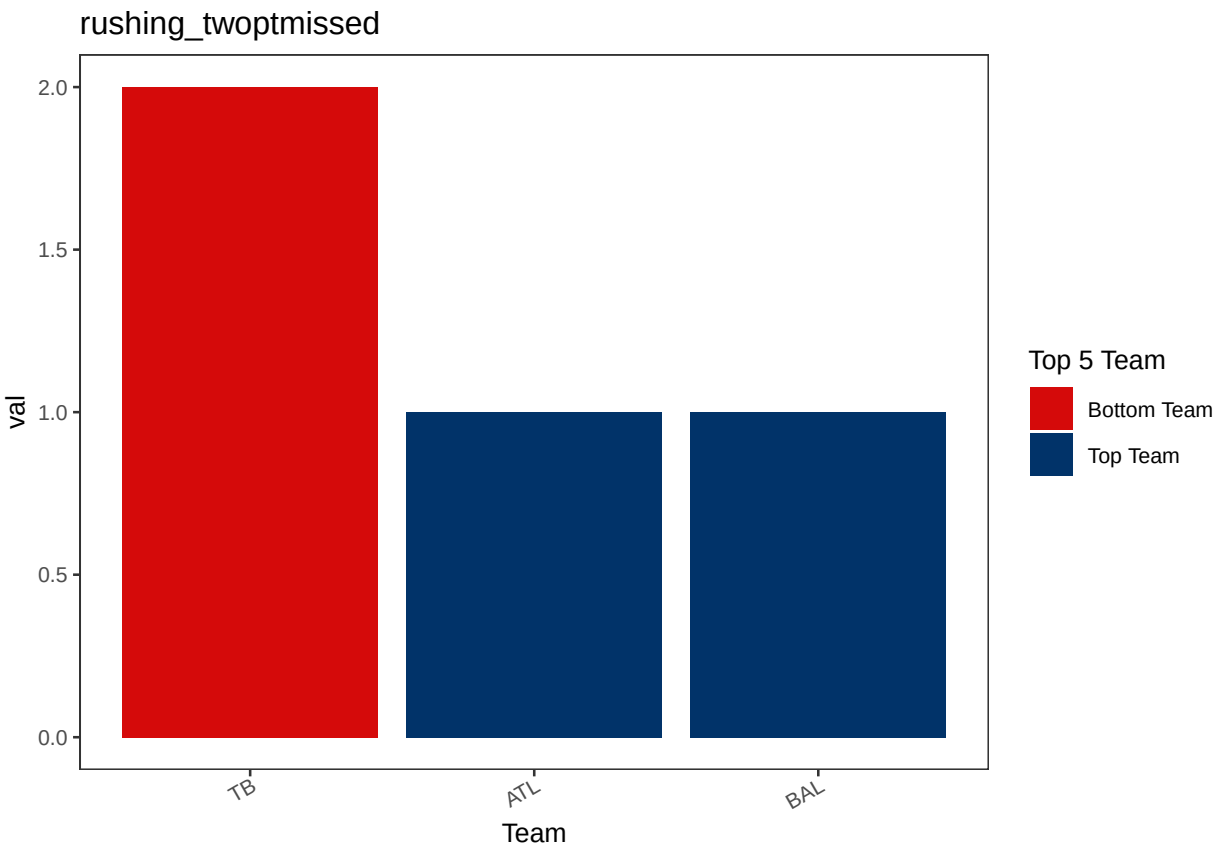
```
##
## [[26]]
```


rushing_tds
val
15
10
5
0
DAL
JAX
MIN
BAL
CHI
ATL
KC
CLE
TB
NYG
Team
Top 5 Team
Bottom Team
Top Team

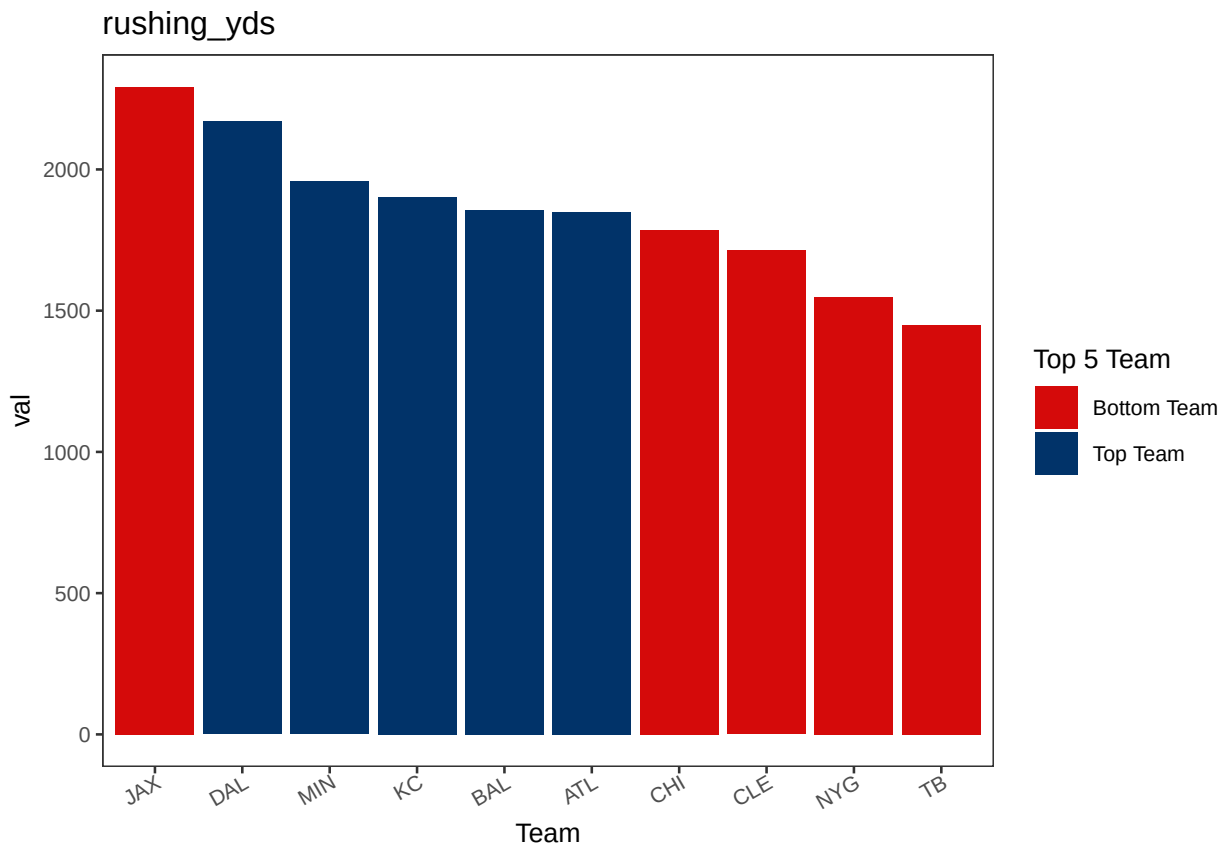
```
##
## [[27]]
```


rushing_twopta
2.0
1.5
1.0
0.5
0.0
val
TB
ATL
BAL
CHI
CLE
MIN
NYG
Team
Top 5 Team
Bottom Team
Top Team

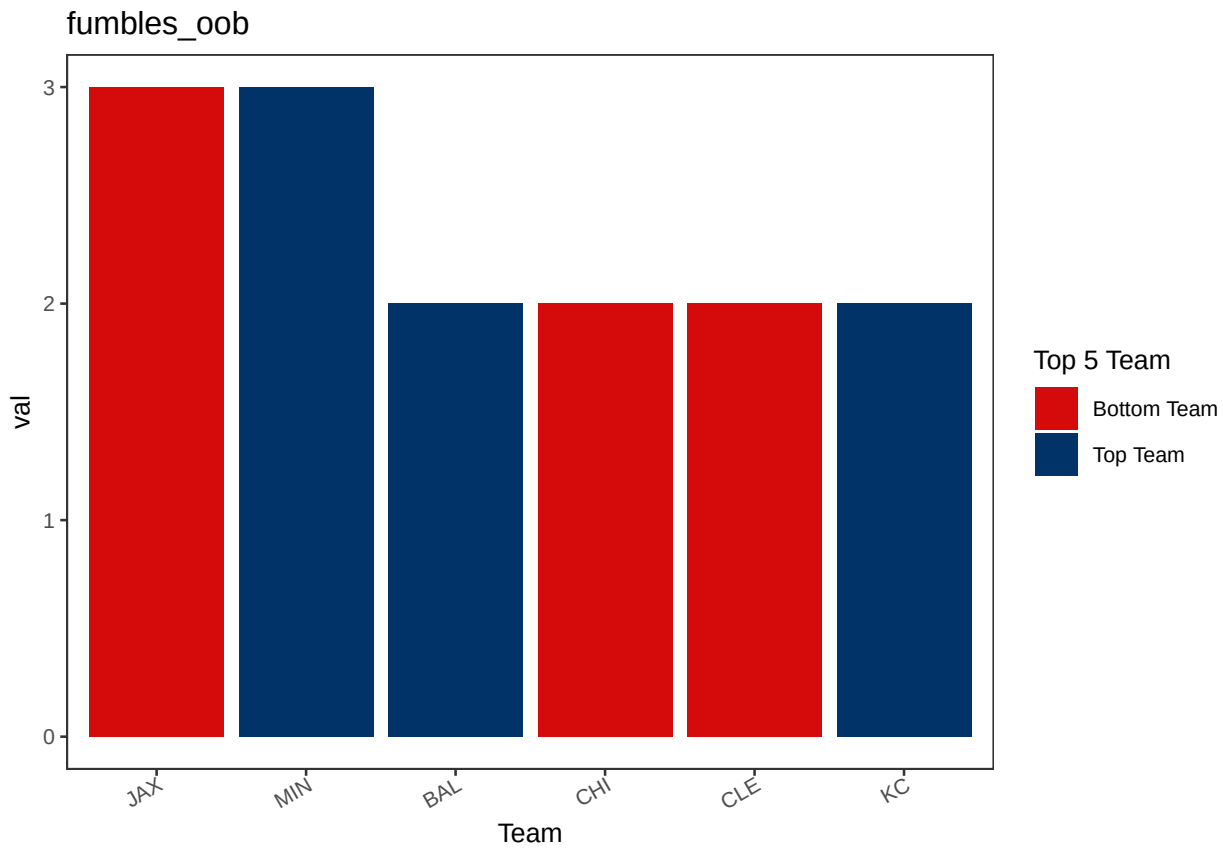
```
##
## [[28]]
```


rushing_twoptmissed
2.0
1.5
1.0
0.5
0.0
val
TB
ATL
BAL
Team
Top 5 Team
Bottom Team
Top Team

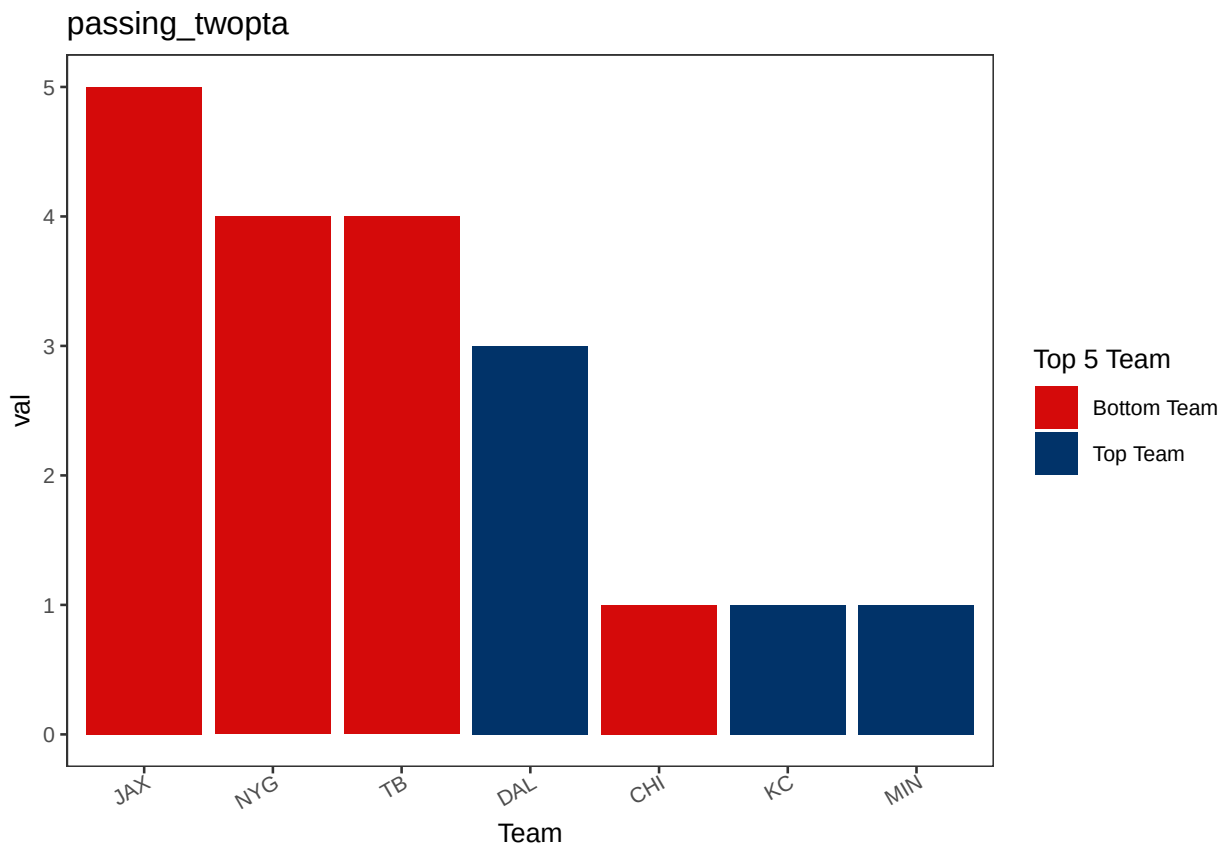
```
##
## [[29]]
```


rushing_yds
2000
1500
1000
500
0
val
JAX
DAL
MIN
KC
BAL
ATL
CHI
CLE
NYG
TB
Team
Top 5 Team
Bottom Team
Top Team

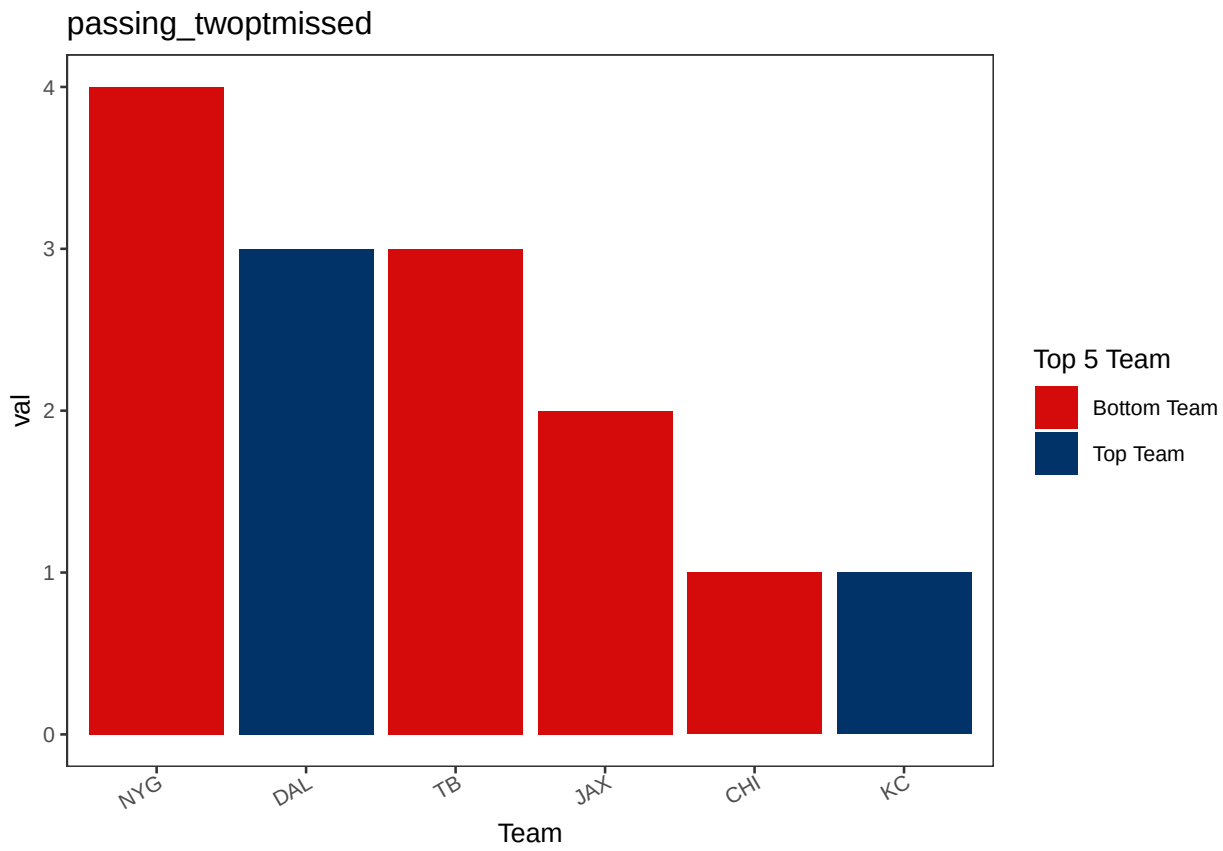
```
##
## [[30]]
```


fumbles_oob
val
3
2
1
0
JAX
MIN
BAL
CHI
CLE
KC
Team
Top 5 Team
Bottom Team
Top Team

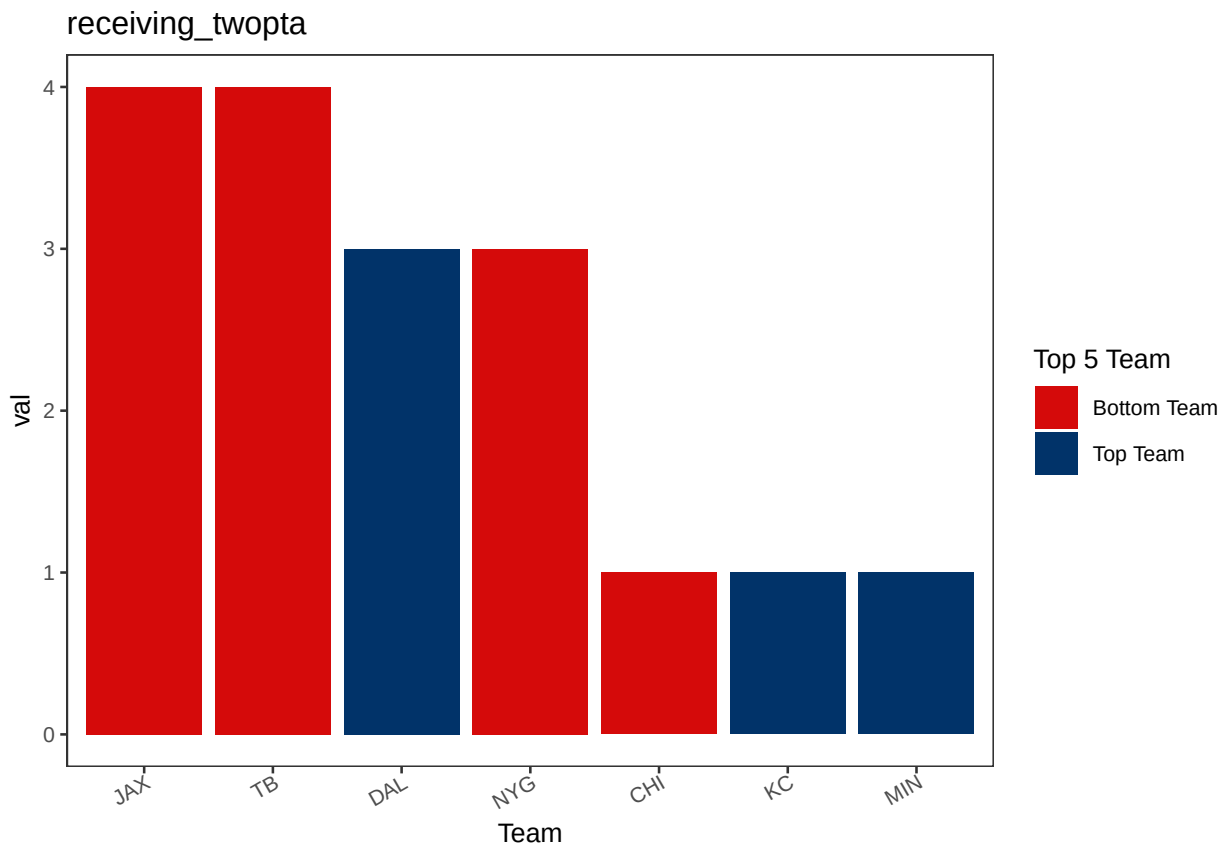
```
##
## [[31]]
```


passing_twopta
val
5
4
3
2
1
0
JAX
NYG
TB
DAL
CHI
KC
MIN
Team
Top 5 Team
Bottom Team
Top Team

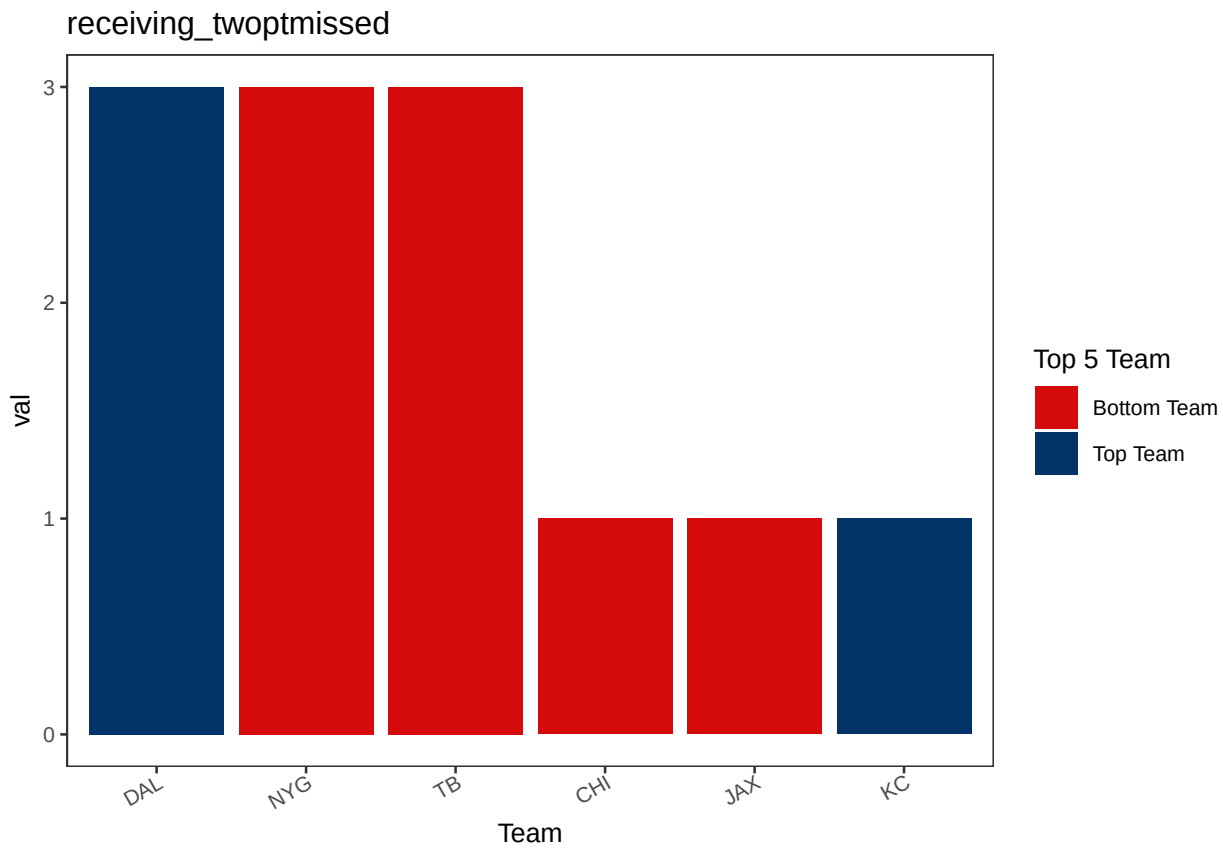
```
##
## [[32]]
```


passing_twoptmissed
val
4
3
2
1
0
NYG
DAL
TB
JAX
CHI
KC
Team
Top 5 Team
Bottom Team
Top Team

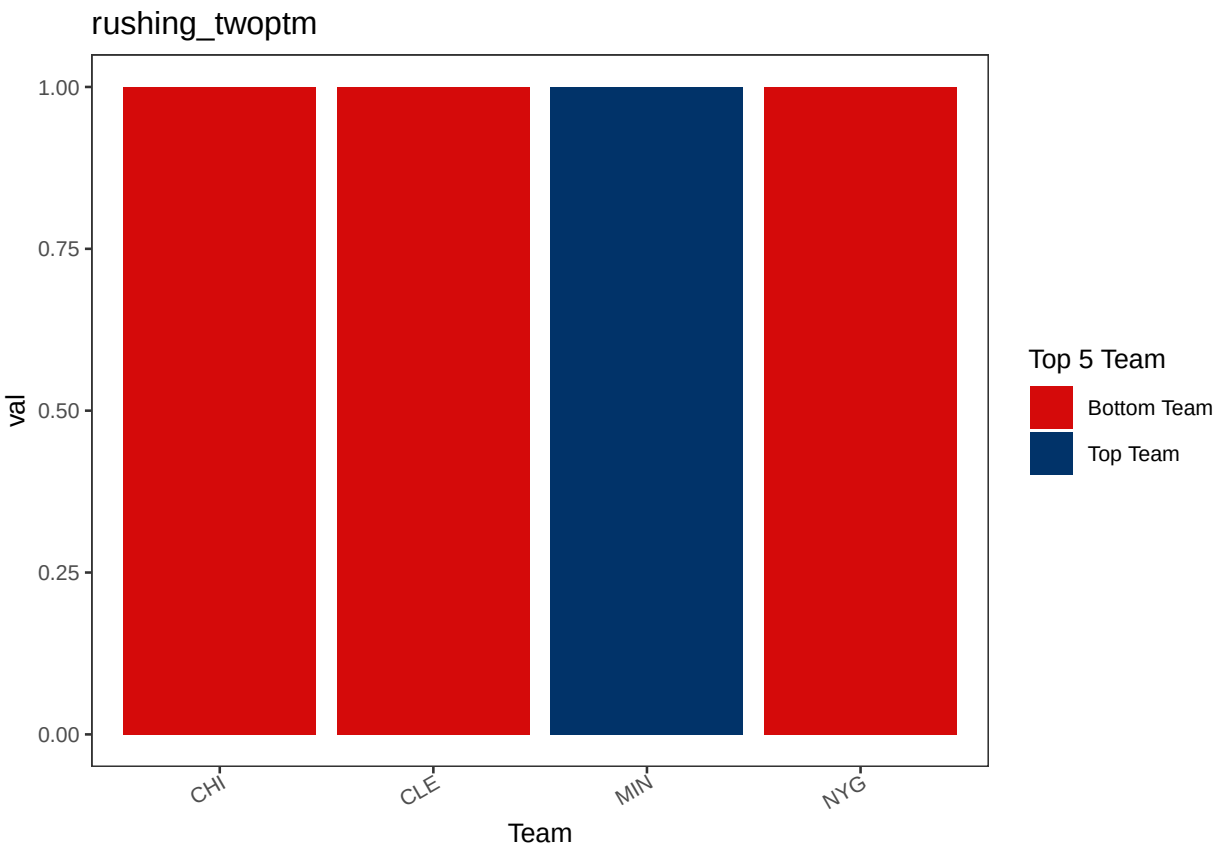
```
##
## [[33]]
```


receiving_twopta
val
4
3
2
1
0
JAX
TB
DAL
NYG
CHI
KC
MIN
Team
Top 5 Team
Bottom Team
Top Team

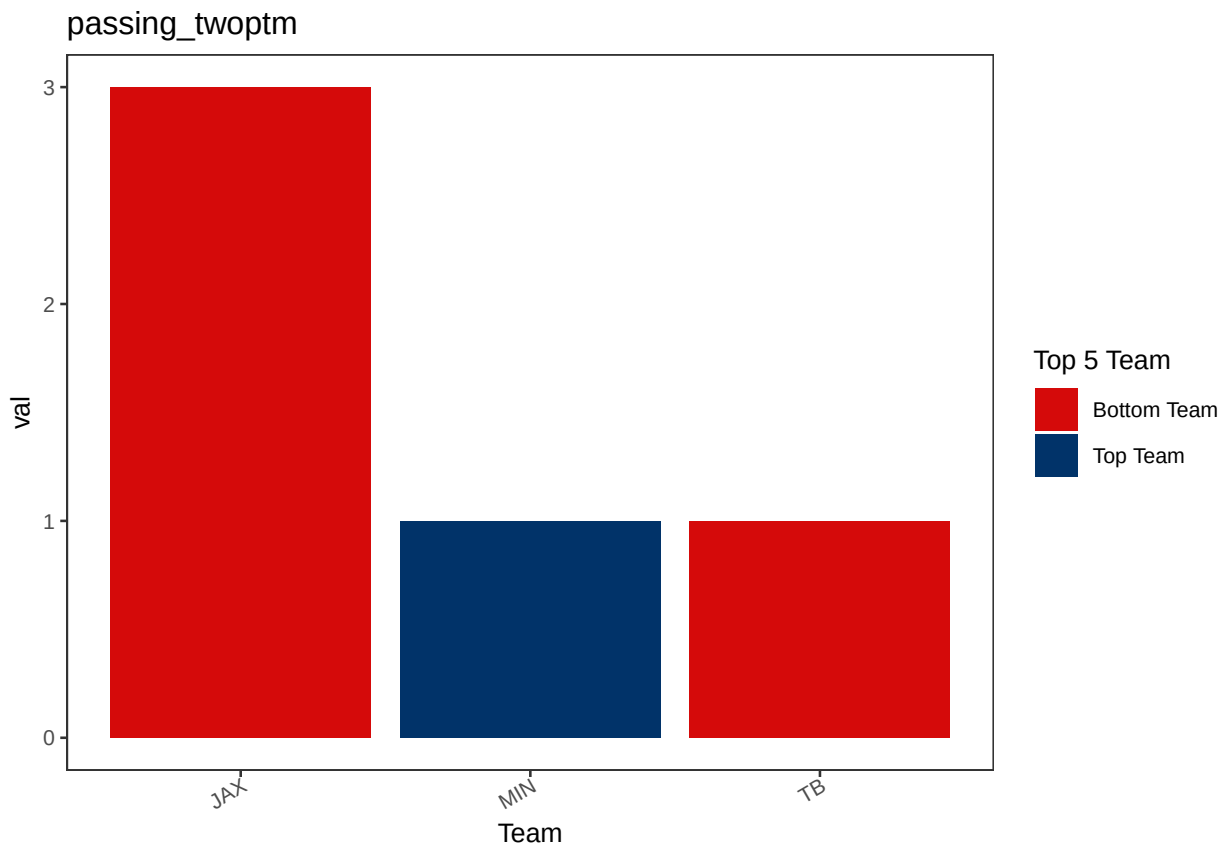
```
##
## [[34]]
```


receiving_twoptmissed
3
2
1
0
val
DAL
NYG
TB
CHI
JAX
KC
Team
Top 5 Team
Bottom Team
Top Team

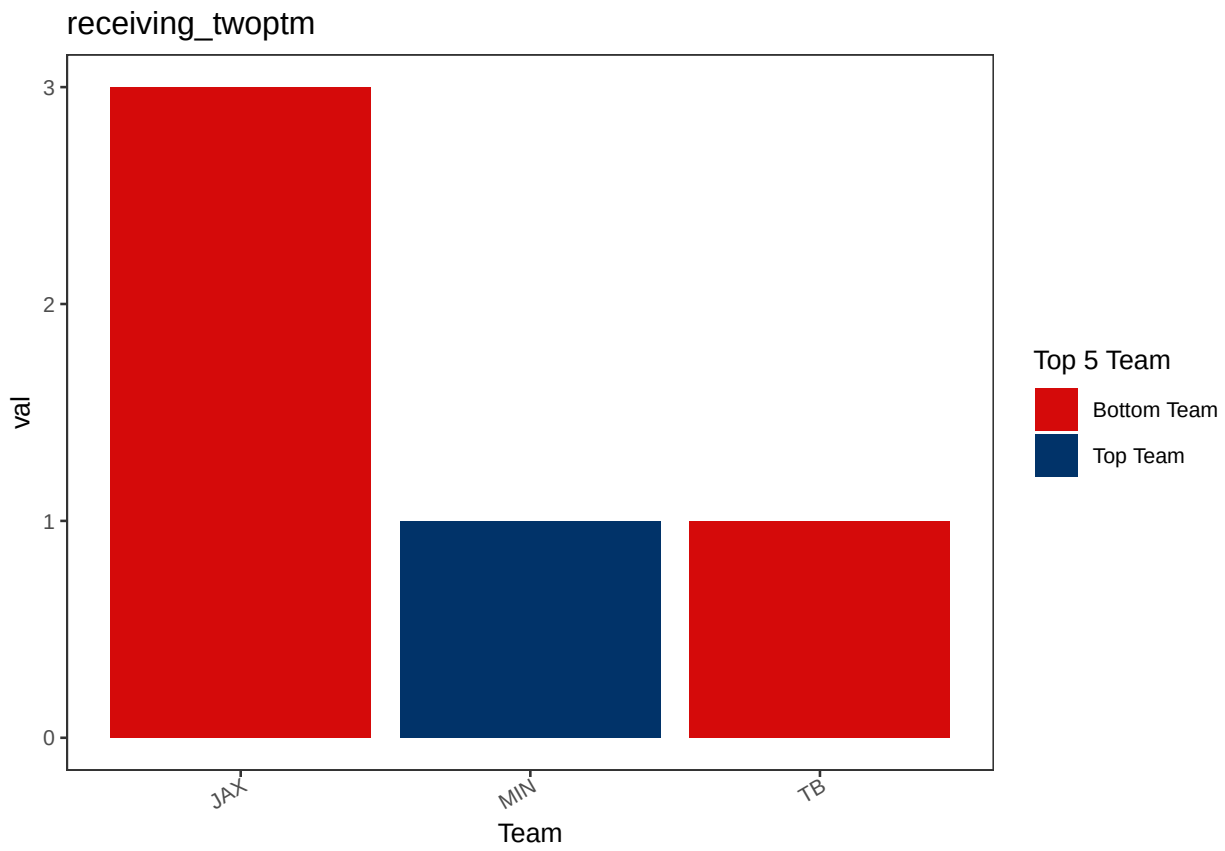
```
##
## [[35]]
```


rushing_twoptm
1.00
0.75
0.50
0.25
0.00
val
CHI
CLE
MIN
NYG
Team
Top 5 Team
Bottom Team
Top Team

```
##
## [[36]]
```


passing_twoptm
3
2
1
0
val
JAX
MIN
TB
Team
Top 5 Team
Bottom Team
Top Team

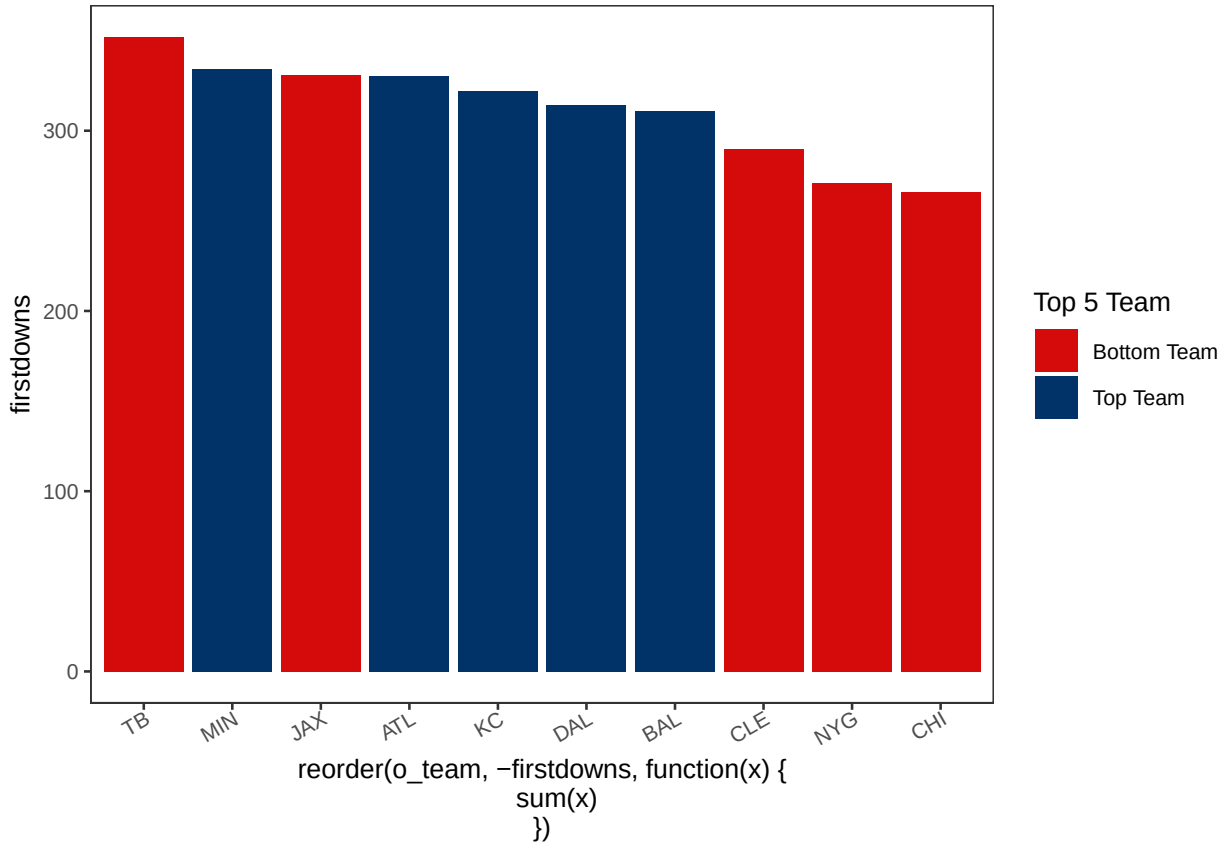
```
##
## [[37]]
```



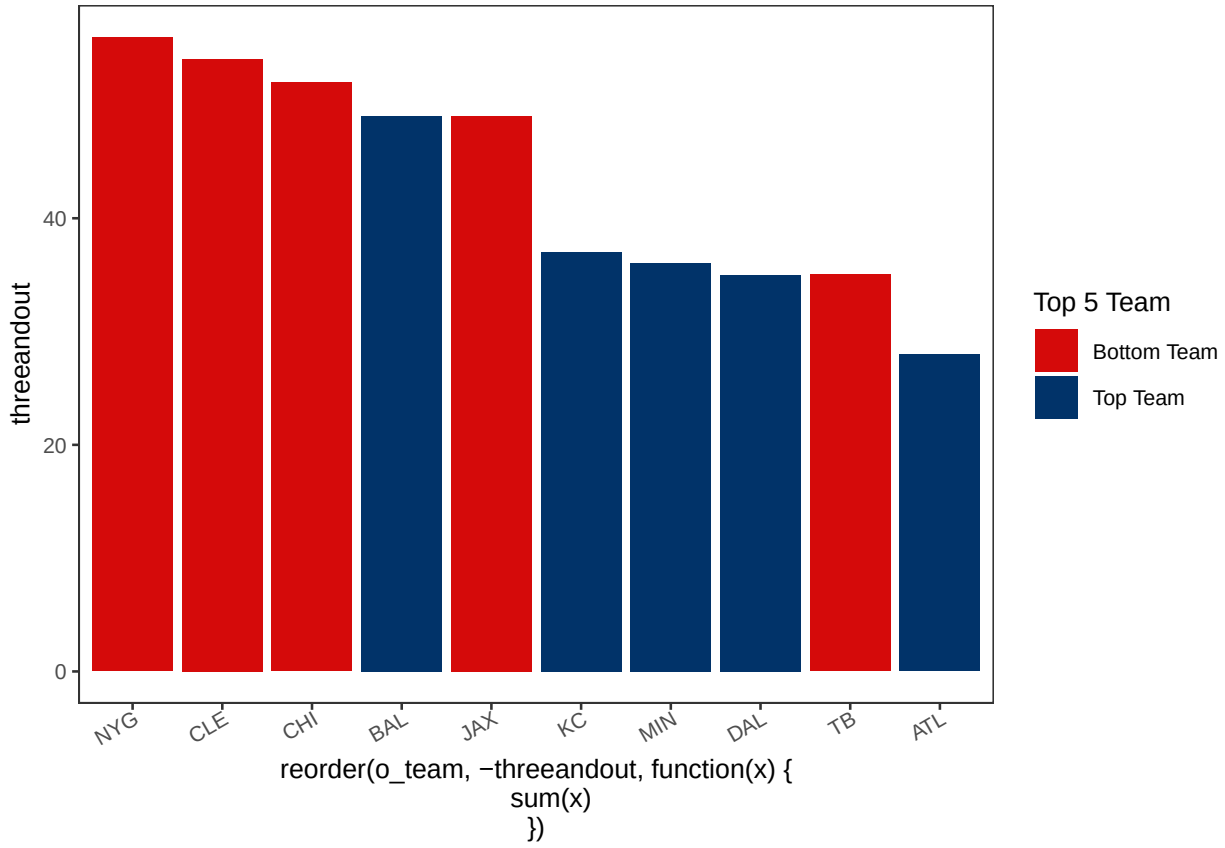

```
drive$threeandout <- ifelse(drive$firstdowns==0 & drive$result == 'Punt',1,0)
drive$tds <- ifelse( drive$result == 'Touchdown',1,0)
```

```
drive<-drive[drive$o_team %in% bot5teams | drive$o_team %in% top5teams ,]
drive$topBot <- ifelse(drive$o_team %in% top5teams , 'Top Team', 'Bottom Team')
```

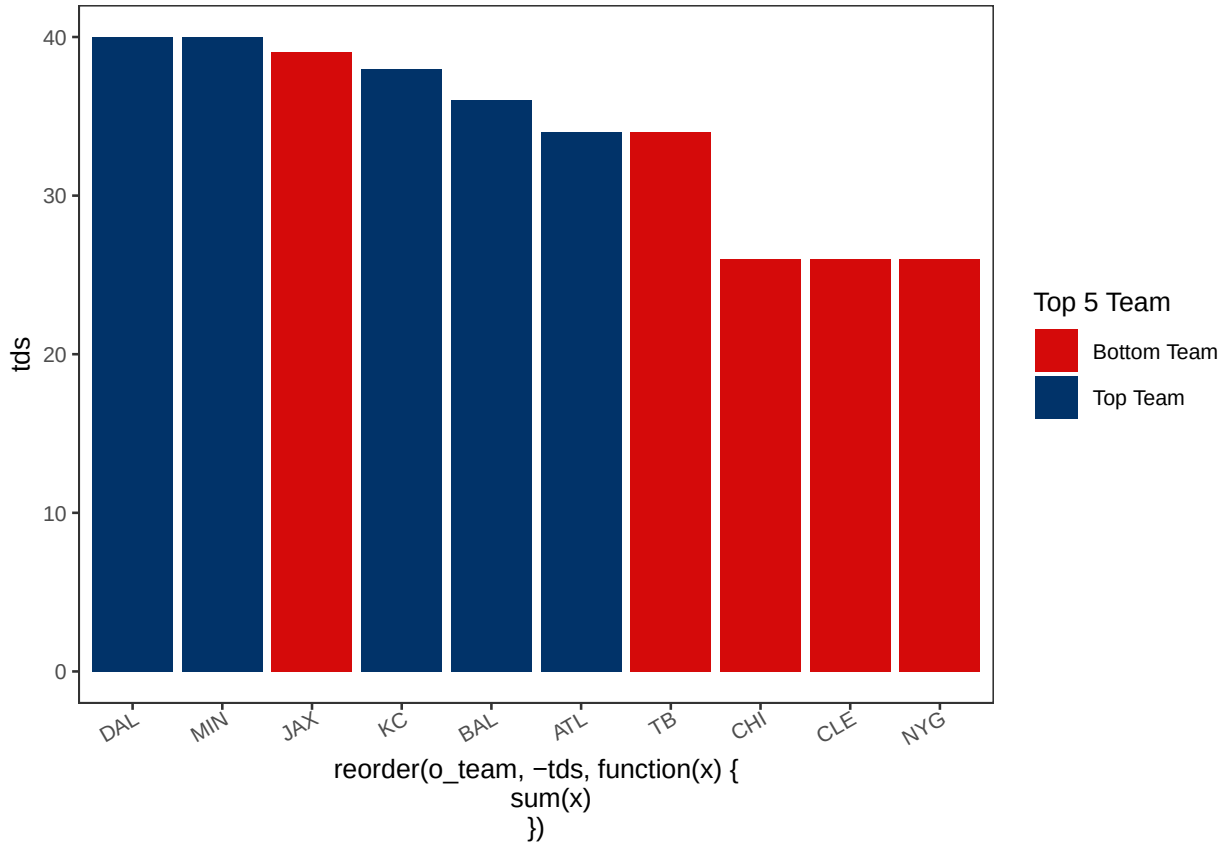
```
drive %>% group_by(gameid,o_team,topBot,topBot) %>%
  summarise(firstdowns = sum(firstdowns),threeandout = sum(threeandout)) %>%
  ggplot(aes(reorder(o_team,-firstdowns, function(x){ sum(x) }),firstdowns))+
  geom_bar(stat = 'identity',aes(fill=topBot))+
  scale_fill_manual(name='Top 5 Team',values=setNames(c(NFLBlue,NFLRed),c('Top Team','Bottom Team')))+
  theme_NFL()
```




```
drive %>% group_by(gameid,o_team,topBot) %>%
  summarise(firstdowns = sum(firstdowns),threeandout = sum(threeandout)) %>%
  ggplot(aes(reorder(o_team,-threeandout, function(x){ sum(x) }),threeandout))+
  geom_bar(stat = 'identity',aes(fill=topBot))+
  scale_fill_manual(name='Top 5 Team',values=setNames(c(NFLBlue,NFLRed),c('Top Team','Bottom Team')))+
  theme_NFL()
```

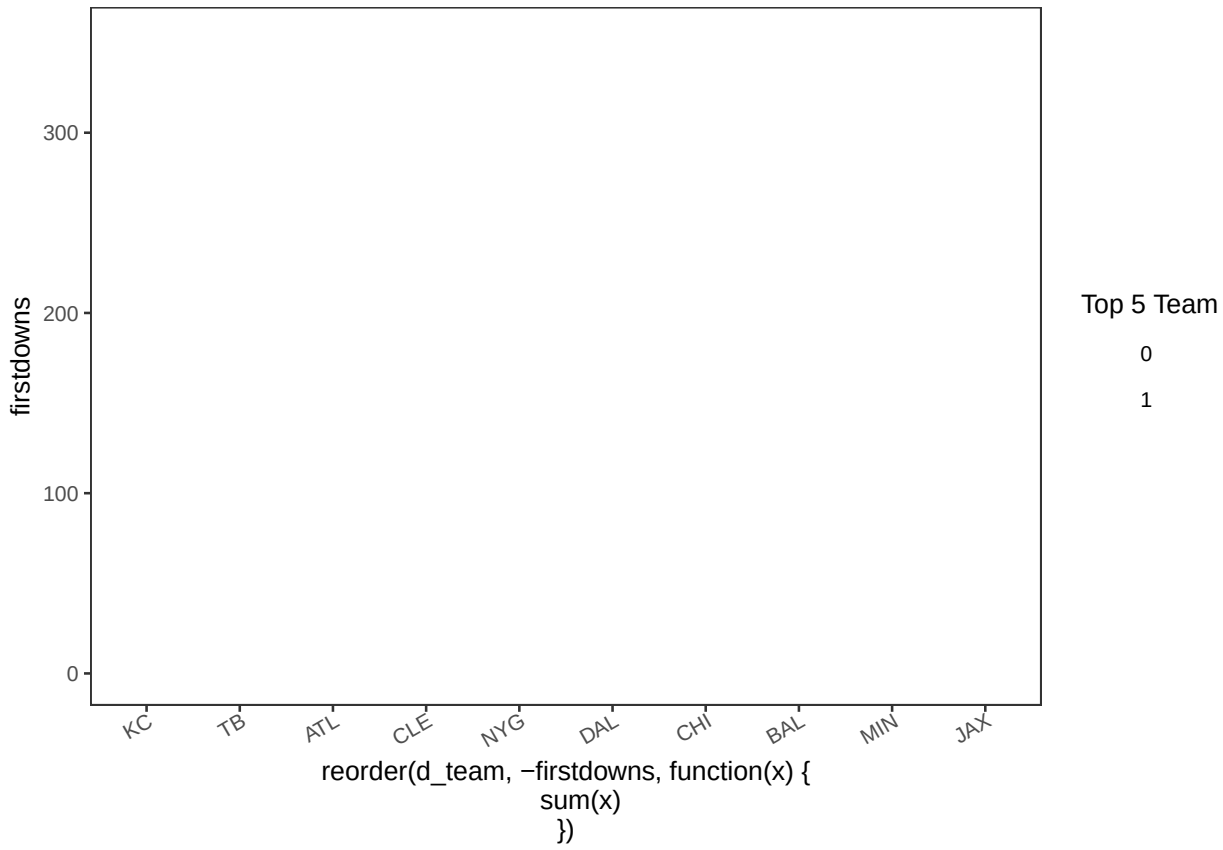



```
drive %>% group_by(gameid,o_team,topBot) %>%
  summarise(tds = sum(tds)) %>%
  ggplot(aes(reorder(o_team,-tds, function(x){ sum(x) }),tds))+
  geom_bar(stat = 'identity',aes(fill=topBot))+
  scale_fill_manual(name='Top 5 Team',values=setNames(c(NFLBlue,NFLRed),c('Top Team','Bottom Team')))+
  theme_NFL()
```

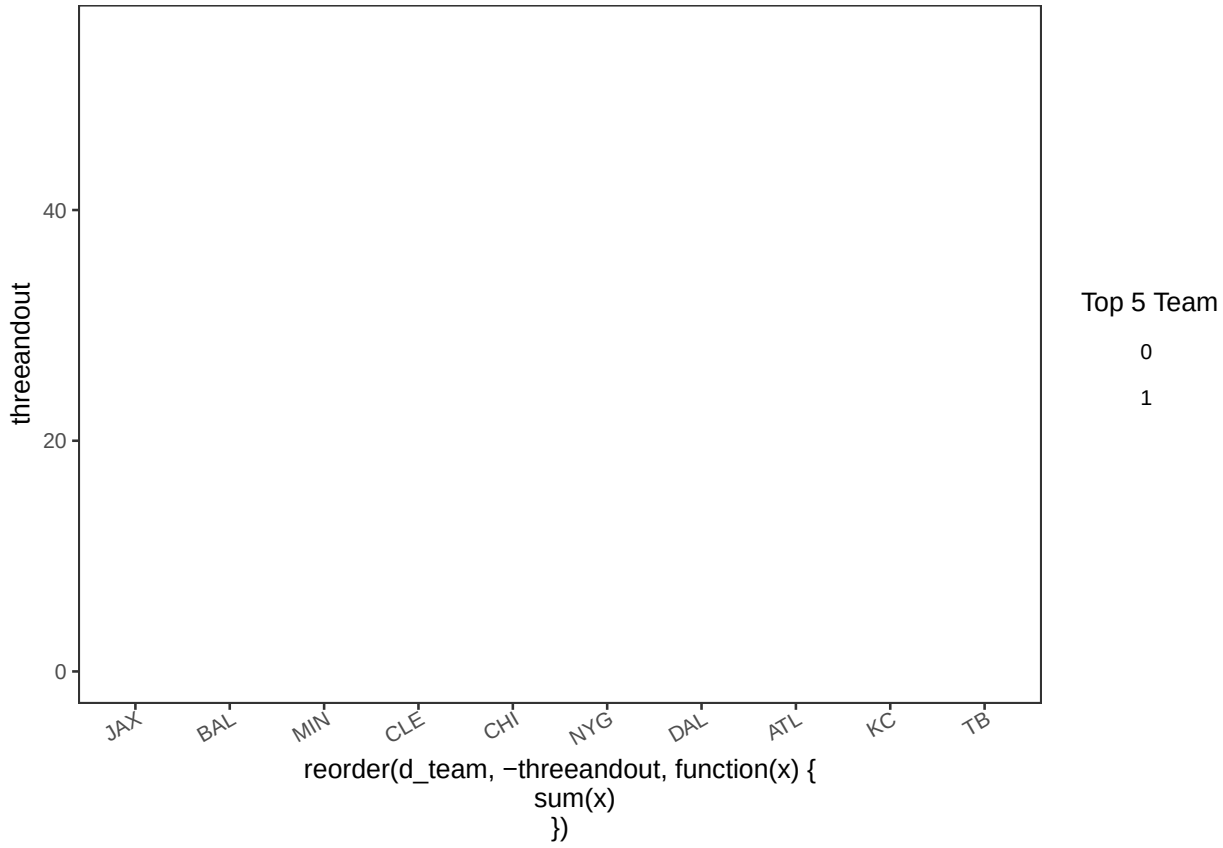


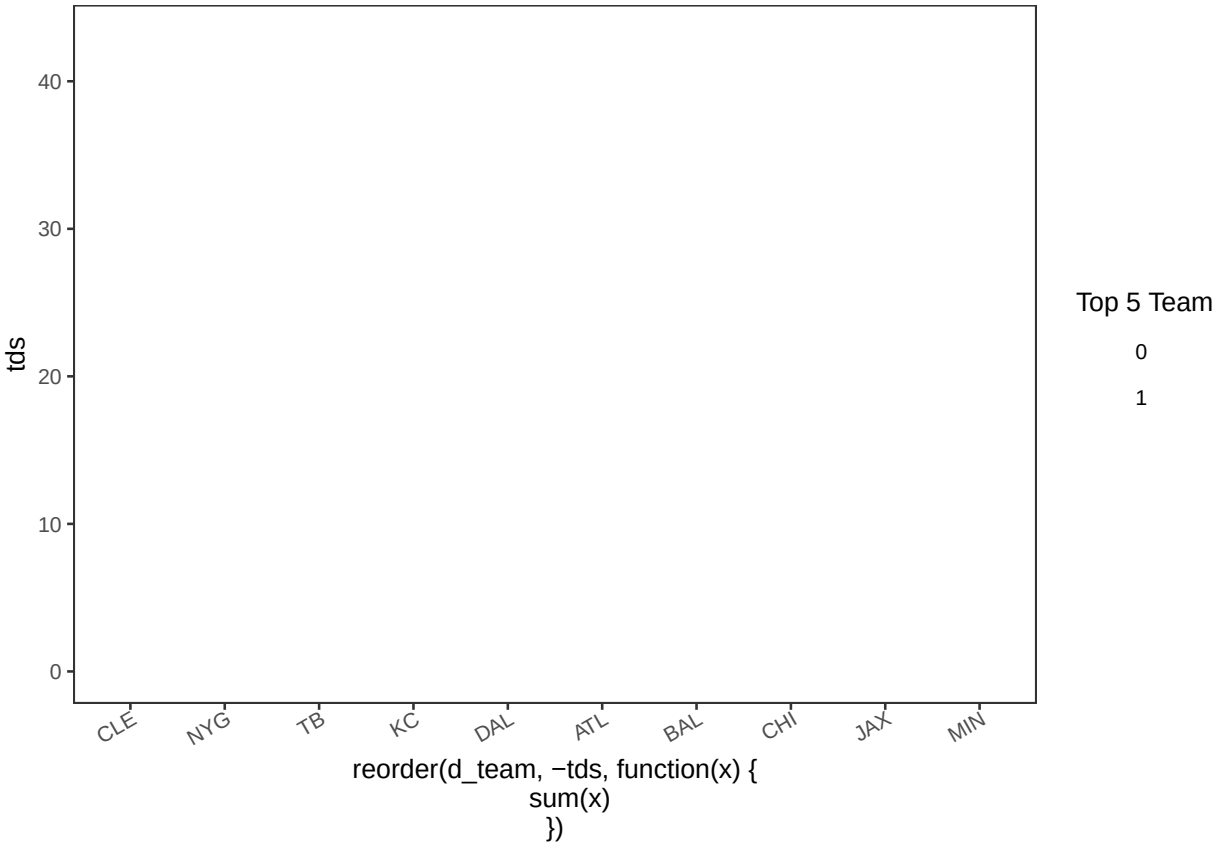

```
drive<-readxl::read_xlsx('NFL.xlsx',sheet='Drive')
drive<-drive[drive$d_team %in% bot5teams | drive$d_team %in% top5teams ,]
drive$topBot <- ifelse(drive$d_team %in% top5teams , '1', '0')
drive$threeandout <- ifelse(drive$firstdowns==0 & drive$result == 'Punt',1,0)
drive$tds <- ifelse( drive$result == 'Touchdown',1,0)
```

```
drive %>% group_by(gameid,d_team,topBot) %>%
  summarise(firstdowns = sum(firstdowns),threeandout = sum(threeandout)) %>%
  ggplot(aes(reorder(d_team,-firstdowns, function(x){ sum(x) }),firstdowns))+
  geom_bar(stat = 'identity',aes(fill=topBot))+
  scale_fill_manual(name='Top 5 Team',values=setNames(c(NFLBlue,NFLRed),c('Top Team','Bottom Team')))+
  theme_NFL()
```




```
drive %>% group_by(gameid,d_team,topBot) %>%
  summarise(firstdowns = sum(firstdowns),threeandout = sum(threeandout)) %>%
  ggplot(aes(reorder(d_team,-threeandout, function(x){ sum(x) }),threeandout))+
  geom_bar(stat = 'identity',aes(fill=topBot))+
  scale_fill_manual(name='Top 5 Team',values=setNames(c(NFLBlue,NFLRed),c('Top Team','Bottom Team')))+
  theme_NFL()
```


threeandout
40
20
0
JAX
BAL
MIN
CLE
CHI
NYG
DAL
ATL
KC
TB
reorder(d_team, −threeandout, function(x) {
sum(x)
})
Top 5 Team
0
1


40
30
20
10
0
tds
CLE
NYG
TB
KC
DAL
ATL
BAL
CHI
JAX
MIN
reorder(d_team, −tds, function(x) {
sum(x)
})
Top 5 Team
0
1