

# Predicting Quarterback Fantasy Score

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"

## Abstract

Hype.

## 1 Introduction

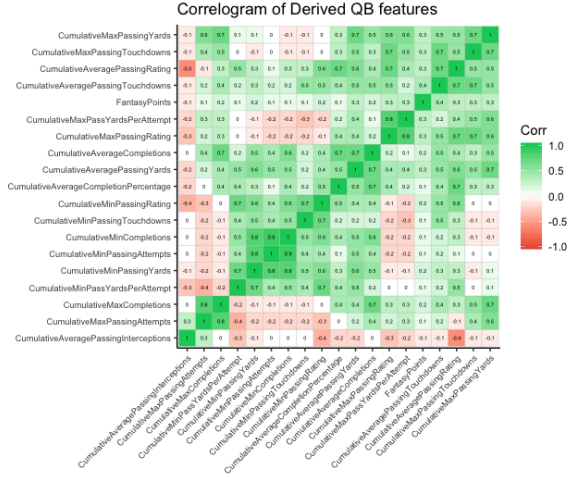
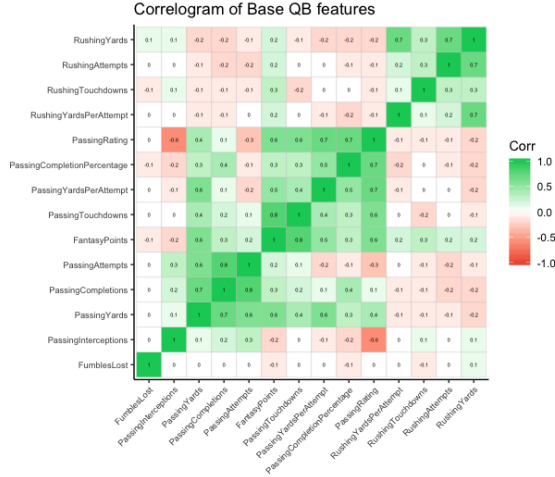
Fantasy sports are a big business. Generating nearly 7 billion dollars annually (cite) and with approximately 60 million players in the US/Canada (cite), fantasy sports – particularly football – have become as big as the sports that they mimic. Players can compete head to head in leagues across a wide range of providers (Yahoo, CBS, ESPN, DraftKings, DraftStreet etc) – each with their own rulesets and stakes. Some are just friendly leagues set up between friends or coworkers, no real stakes other than bragging rights, others have significant monetary rewards for those that can get to the top of the leaderboard.

The explosion of weekly leagues over the course of the last few years has seen an already huge business get even larger. In the weekly cash leagues – each player is given a budget and drafts a completely new team every week. Each draft site uses a predictive model to set player salaries based on the number of points the model predicts that player to score. Budget constraints make it impossible to simply select the players that are predicted to score the most points – hence having a predictive model for which players will generate the best return on investment would be a huge advantage. In the following analysis we will attempt to build position specific models that can accurately predict the number of points a given NFL player is likely to score in a given week.

## 2 Data Description

## 3 Exploratory Analysis

Data obtained through API calls from <https://fantasydata.com/> was almost clean. Section 6 of appendix shows data is clean and doesn't contain any missing values. This dataset contains statistics of weekly performance, All possible variables were examined during exploratory analysis and variables which found to be influence on fantasyPoints (Target Variable) were selected. Thirteen base predictors were found and 18 are derived (Cumulative sum) from the base. Scatterplots of base and derived predictors have been added in section 9 of the appendix. Here is the Corroleogram for base and derived predictors.



## 4 Objective One

### 4.1 Model Selection

#### 4.1.1 Type of Selection

Of the tools made available to us in the course, we believe that LASSO estimation is the best option available to us. Subset selection discretely adds and removes variables, leaving far too much room for overfitting. While ridge regression is a great shrinkage method for many scenarios, we believe that it is at least slightly desirable for the coefficients of truly unnecessary variables to actually be zero so that some true form of variable selection is occurring. We are implicitly saying that a small set of variables are necessary to predict fantasy scores, but the nature of football, the size of our dataset, and the disproportionate amount of points that goes to touchdowns indicates that this assumptions may very well be appropriate.

#### 4.1.2 Assumption-Checking

The LASSO model is a linear model and thus assumes that there is a linear relationship between the response and the parameters. Furthermore, it is also important that the variance of the residuals is constant across the predictors in order for our model to adequately capture the variation in the response. Because we are not interested in quantifying our uncertainty, we don't make any assumptions about the distribution of the residuals.

## 5 Objective Two

## A Appendix

# Appendix-I

## Exploratory Data Analysis

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#1 : Load required libraries

#2 : Load Quarterback Crosssectional data

```
load("../analysis/data/.RData")
QBCrossSectional = getFootballData(URL) %>% filterUnwantedVariables() %>% filter(Position == 'QB')
summary(QBCrossSectional)
```

```
##      PlayerID      Name      Week      Position
## Min.   : 611   Length:453   Min.   : 1.000   Length:453
## 1st Qu.: 7242   Class :character 1st Qu.: 5.000   Class :character
## Median :13723   Mode  :character Median : 9.000   Mode  :character
## Mean   :11932                      Mean   : 9.049
## 3rd Qu.:16763                      3rd Qu.:13.000
## Max.   :19029                      Max.   :17.000
##      Opponent      TeamIsHome      GameDate      PassingCompletions
## Length:453        Mode :logical   Length:453      Min.   : 5.00
## Class :character   FALSE:226      Class :character 1st Qu.:18.00
## Mode  :character    TRUE :227      Mode  :character Median :21.00
##                                     Mean   :21.24
##                                     3rd Qu.:25.00
##                                     Max.   :44.00
##      Result      PassingAttempts PassingCompletionPercentage
## Length:453      Min.   :10.00   Min.   :38.70
## Class :character 1st Qu.:29.00   1st Qu.:57.10
## Mode  :character Median :33.00   Median :63.20
##                                     Mean   :33.62   Mean   :63.48
##                                     3rd Qu.:38.00   3rd Qu.:69.40
##                                     Max.   :66.00   Max.   :87.00
##      PassingYards      PassingYardsPerAttempt      PassingTouchdowns
## Min.   : 57.0   Min.   : 3.100   Min.   :0.000
## 1st Qu.:199.0   1st Qu.: 6.200   1st Qu.:1.000
## Median :241.0   Median : 7.200   Median :1.000
## Mean   :244.6   Mean   : 7.378   Mean   :1.587
## 3rd Qu.:291.0   3rd Qu.: 8.400   3rd Qu.:2.000
## Max.   :506.0   Max.   :14.100   Max.   :5.000
##      PassingInterceptions      PassingRating      RushingAttempts      RushingYards
## Min.   :0.00   Min.   : 31.14   Min.   : 0.000   Min.   : -8.00
## 1st Qu.:0.00   1st Qu.: 77.92   1st Qu.: 1.000   1st Qu.: 0.00
## Median :0.00   Median : 92.94   Median : 3.000   Median : 8.00
## Mean   :0.66   Mean   : 93.88   Mean   : 3.185   Mean   :14.38
## 3rd Qu.:1.00   3rd Qu.:109.84   3rd Qu.: 5.000   3rd Qu.:23.00
## Max.   :4.00   Max.   :150.69   Max.   :14.000   Max.   :95.00
##      RushingYardsPerAttempt      RushingTouchdowns      FumblesLost      FantasyPoints
## Min.   : -2.700   Min.   :0.0000   Min.   :0.0000   Min.   : 7.12
## 1st Qu.: 0.000   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:11.86
```

```
## Median : 3.000      Median :0.0000      Median :0.0000      Median :15.86
## Mean   : 3.839      Mean    :0.1457      Mean    :0.1766      Mean    :16.89
## 3rd Qu.: 6.000      3rd Qu.:0.0000      3rd Qu.:0.0000      3rd Qu.:20.68
## Max.   :70.000      Max.    :2.0000      Max.    :3.0000      Max.    :37.64
##      Team
## Length:453
## Class :character
## Mode  :character
##
##
##
```

```
attach(QBCrossSectional)
```

```
## The following object is masked from package:ggplot2:
```

```
##
```

```
##      Position
```

```
Drop rushing yards per attempt
```

```
#3 : Defensive stats
```

```
## 3.1 : Team Defensive Stats
```

```
team_defense = getFootballData("https://fantasydata.com/FantasyStatsNFL/FantasyStats_Read?sort=FantasyP
team_defense$StatSummary = c(NULL)
```

```
defensive_columns = c('Team', 'Week', 'TacklesForLoss', 'Sacks', 'QuarterbackHits', 'Interceptions', 'F
```

```
team_defense = team_defense %>% dplyr::select(defensive_columns) %>% rename('DefensiveFantasyPoints'='F
```

```
attach(team_defense)
```

```
## The following objects are masked from QBCrossSectional:
```

```
##
```

```
##      Team, Week
```

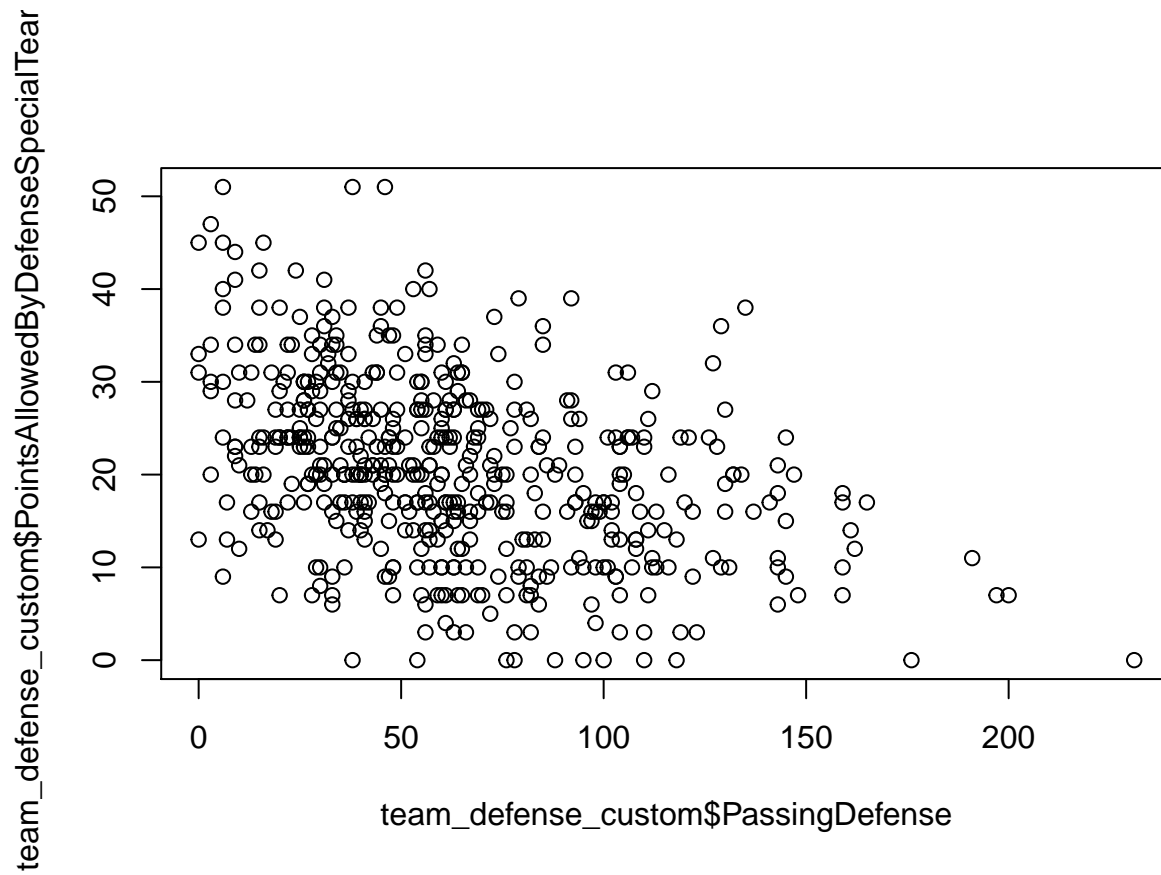
```
## 3.5 : Add defensive matchups
```

```
#This only adds the current weeks matchup - we need next week's matchup as a target
```

```
team_defense_custom = sqldf("SELECT Team
                             ,Week
                             ,(Sacks * 4
                             +QuarterbackHits * 3
                             +Interceptions * 7
                             +SackYards * 2) as PassingDefense
                             ,PointsAllowedByDefenseSpecialTeams
                             FROM team_defense")
```

```
#scheme: weight interceptions, qbsacks, quarterbackhits, passesdefended
```

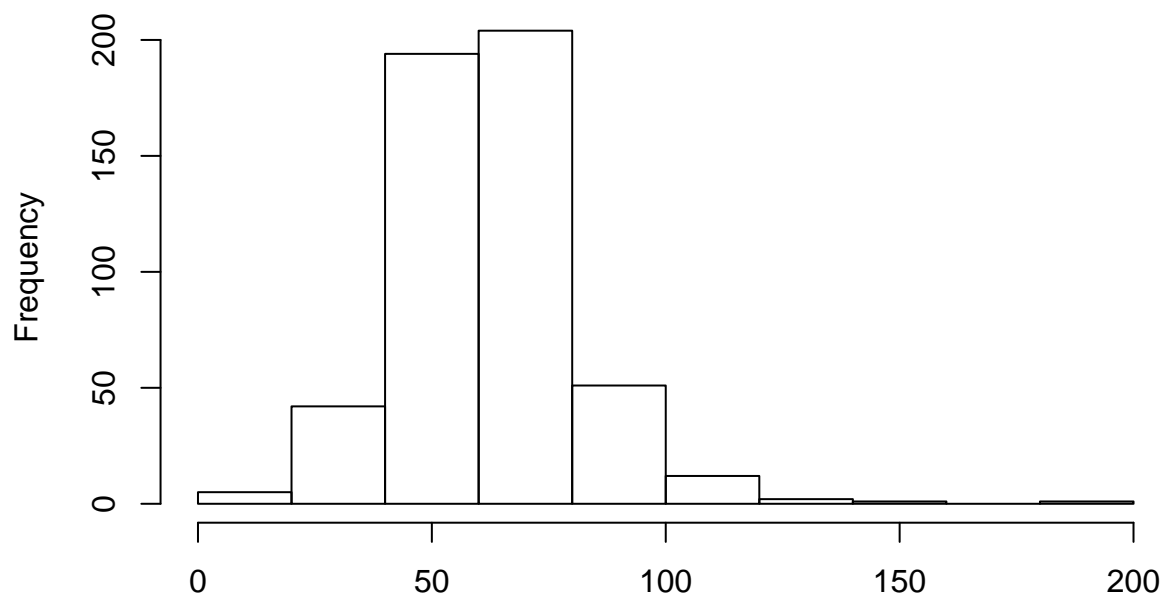
```
plot(team_defense_custom$PassingDefense, team_defense_custom$PointsAllowedByDefenseSpecialTeams)
```



```
team_defensive_rankings = team_defense_custom %>%
  #filter(Week > 1 & Week < 17)
  group_by(Team) %>%
  arrange(Week) %>%
  mutate(
    AvgPassDefense = cumsum(PassingDefense)/Week #Account for bye week....
  )
QBCrossSectional$Week = as.numeric(QBCrossSectional$Week)

hist(team_defensive_rankings$AvgPassDefense)
```

## Histogram of team\_defensive\_rankings\$AvgPassDefense



team\_defensive\_rankings\$AvgPassDefense

```
sqldf("SELECT * FROM team_defensive_rankings WHERE Team = 'LAC'")
```

##	Team	Week	PassingDefense	PointsAllowedByDefenseSpecialTeams
## 1	LAC	1	126	24
## 2	LAC	2	27	19
## 3	LAC	3	101	24
## 4	LAC	4	29	26
## 5	LAC	5	132	20
## 6	LAC	6	33	16
## 7	LAC	7	95	0
## 8	LAC	8	59	19
## 9	LAC	10	76	20
## 10	LAC	11	62	24
## 11	LAC	12	56	6
## 12	LAC	13	63	10
## 13	LAC	14	60	7
## 14	LAC	15	26	30
## 15	LAC	16	76	7
## 16	LAC	17	54	10
##	AvgPassDefense			
## 1			126.00000	
## 2			76.50000	
## 3			84.66667	
## 4			70.75000	
## 5			83.00000	
## 6			74.66667	
## 7			77.57143	
## 8			75.25000	
## 9			67.80000	
## 10			67.27273	

```

## 11      66.33333
## 12      66.07692
## 13      65.64286
## 14      63.00000
## 15      63.81250
## 16      63.23529

## 3.6 : Add some lag data for QB

### CumulativeVariables (these should definitely be combined into a weekly ranking)
QBCrossSectionalCumulativePassYards = QBCrossSectional %>% group_by(PlayerID)%>% filter(n() >= 8) %>% a
  mutate(CumulativeAveragePassingYards=cummean(PassingYards)
    , CumulativeAveragePassingTouchdowns=cummean(PassingTouchdowns)
    , CumulativeAveragePassingInterceptions=cummean(PassingInterceptions)
    , CumulativeAveragePassingRating=cummean(PassingRating)
    , CumulativeAverageCompletions = cummean(PassingCompletions) # not sure that completions matter
    , CumulativeAverageCompletionPercentage = cummean(PassingCompletionPercentage)
    , CumulativeMaxPassingTouchdowns = cummax(PassingTouchdowns)
    , CumulativeMaxPassingYards = cummax(PassingYards)
    , CumulativeMaxPassingAttempts = cummax(PassingAttempts)
    , CumulativeMaxPassingRating = cummax(PassingRating)
    , CumulativeMaxCompletions = cummax(PassingCompletions)
    , CumulativeMaxPassYardsPerAttempt = cummax(PassingYardsPerAttempt)
    , CumulativeMinPassingTouchdowns = cummin(PassingTouchdowns)
    , CumulativeMinPassingYards = cummin(PassingYards) #Let's get mins to capture downside risk
    , CumulativeMinPassingAttempts = cummin(PassingAttempts)
    , CumulativeMinPassingRating = cummin(PassingRating)
    , CumulativeMinCompletions = cummin(PassingCompletions)
    , CumulativeMinPassYardsPerAttempt = cummin(PassingYardsPerAttempt)
    , NextWeekFantasyPoints = lead(FantasyPoints) #Target Variable
    , NextOpponent = lead(Opponent)
    #, NextWeekDefensiveMatchup = lag(WeeklyRank) #Has to be last week's team ranking - not this we
  )

QBCrossSectionalDefensiveOverlayCumulativePassYards = QBCrossSectionalCumulativePassYards %>% left_join

#QBCrossSectionalDefensiveOverlayCumulativePassYards %>% filter(PlayerID == 6739) %>% write.csv('alex_s
attach(QBCrossSectionalDefensiveOverlayCumulativePassYards)

## The following objects are masked from team_defense:
##
##   PointsAllowedByDefenseSpecialTeams, Team, Week

## The following objects are masked from QBCrossSectional:
##
##   FantasyPoints, FumblesLost, GameDate, Name, Opponent,
##   PassingAttempts, PassingCompletionPercentage,
##   PassingCompletions, PassingInterceptions, PassingRating,
##   PassingTouchdowns, PassingYards, PassingYardsPerAttempt,
##   PlayerID, Position, Result, RushingAttempts,
##   RushingTouchdowns, RushingYards, RushingYardsPerAttempt, Team,
##   TeamIsHome, Week

## The following object is masked from package:ggplot2:

```

##

## Position

summary(QBCrossSectionalDefensiveOverlayCumulativePassYards)

```
##      PlayerID      Name      Week      Position
## Min.   : 611   Length:368   Min.   : 1.000   Length:368
## 1st Qu.: 6739   Class :character   1st Qu.: 4.000   Class :character
## Median :13320   Mode  :character   Median : 9.000   Mode  :character
## Mean   :11765
## 3rd Qu.:16763
## Max.   :18868
##
##      Opponent      TeamIsHome      GameDate      PassingCompletions
## Length:368      Mode :logical   Length:368      Min.   : 6.00
## Class :character FALSE:184      Class :character 1st Qu.:18.00
## Mode  :character TRUE :184      Mode  :character Median :21.00
##
##                                     Mean   :21.39
##                                     3rd Qu.:25.00
##                                     Max.   :44.00
##
##      Result      PassingAttempts PassingCompletionPercentage
## Length:368      Min.   :10.00   Min.   :39.30
## Class :character 1st Qu.:29.00   1st Qu.:57.40
## Mode  :character Median :33.00   Median :63.75
##                                     Mean   :33.56   Mean   :63.99
##                                     3rd Qu.:38.00   3rd Qu.:70.00
##                                     Max.   :66.00   Max.   :87.00
##
##      PassingYards PassingYardsPerAttempt PassingTouchdowns
## Min.   : 69.0   Min.   : 3.100   Min.   :0.000
## 1st Qu.:202.8   1st Qu.: 6.300   1st Qu.:1.000
## Median :242.0   Median : 7.300   Median :1.500
## Mean   :246.8   Mean   : 7.442   Mean   :1.617
## 3rd Qu.:292.2   3rd Qu.: 8.400   3rd Qu.:2.000
## Max.   :506.0   Max.   :14.100   Max.   :5.000
##
##      PassingInterceptions PassingRating      RushingAttempts      RushingYards
## Min.   :0.0000   Min.   : 31.14   Min.   : 0.000   Min.   : -8.00
## 1st Qu.:0.0000   1st Qu.: 79.29   1st Qu.: 1.000   1st Qu.: 0.00
## Median :0.0000   Median : 94.94   Median : 3.000   Median : 8.00
## Mean   :0.6114   Mean   : 95.45   Mean   : 3.258   Mean   :14.55
## 3rd Qu.:1.0000   3rd Qu.:110.83   3rd Qu.: 5.000   3rd Qu.:24.00
## Max.   :4.0000   Max.   :150.69   Max.   :14.000   Max.   :95.00
##
##      RushingYardsPerAttempt RushingTouchdowns FumblesLost      FantasyPoints
## Min.   : -2.700   Min.   :0.0000   Min.   :0.0000   Min.   : 7.32
## 1st Qu.: 0.000   1st Qu.:0.0000   1st Qu.:0.0000   1st Qu.:12.61
## Median : 3.000   Median :0.0000   Median :0.0000   Median :16.16
## Mean   : 3.818   Mean   :0.1495   Mean   :0.1793   Mean   :17.22
## 3rd Qu.: 6.050   3rd Qu.:0.0000   3rd Qu.:0.0000   3rd Qu.:20.70
## Max.   :70.000   Max.   :2.0000   Max.   :3.0000   Max.   :37.64
##
##      Team      CumulativeAveragePassingYards
## Length:368      Min.   :120.5
```



```

## Class :character    1st Qu.:221.9
## Mode  :character    Median :247.8
##                               Mean  :246.6
##                               3rd Qu.:271.5
##                               Max.   :369.0
##
## CumulativeAveragePassingTouchdowns CumulativeAveragePassingInterceptions
## Min.      :0.000                      Min.      :0.0000
## 1st Qu.:1.250                      1st Qu.:0.4125
## Median :1.667                      Median :0.5714
## Mean    :1.584                      Mean    :0.5933
## 3rd Qu.:2.000                      3rd Qu.:0.7500
## Max.    :4.000                      Max.    :2.0000
##
## CumulativeAveragePassingRating CumulativeAverageCompletions
## Min.      : 56.25                    Min.      :10.00
## 1st Qu.: 87.77                      1st Qu.:19.56
## Median : 97.01                      Median :21.85
## Mean    : 95.86                      Mean    :21.43
## 3rd Qu.:102.53                     3rd Qu.:23.13
## Max.    :148.57                     Max.    :29.00
##
## CumulativeAverageCompletionPercentage CumulativeMaxPassingTouchdowns
## Min.      :44.40                    Min.      :0.00
## 1st Qu.:61.60                      1st Qu.:2.00
## Median :64.13                      Median :3.00
## Mean    :64.42                      Mean    :2.91
## 3rd Qu.:67.37                      3rd Qu.:4.00
## Max.    :80.00                      Max.    :5.00
##
## CumulativeMaxPassingYards CumulativeMaxPassingAttempts
## Min.      :125.0                    Min.      :21.00
## 1st Qu.:288.0                      1st Qu.:39.00
## Median :332.0                      Median :44.00
## Mean    :331.3                    Mean    :43.31
## 3rd Qu.:368.0                    3rd Qu.:49.00
## Max.    :506.0                    Max.    :66.00
##
## CumulativeMaxPassingRating CumulativeMaxCompletions
## Min.      : 56.25                    Min.      :11.00
## 1st Qu.:110.80                    1st Qu.:25.00
## Median :125.96                    Median :28.00
## Mean    :123.69                    Mean    :27.42
## 3rd Qu.:141.79                    3rd Qu.:30.00
## Max.    :150.69                    Max.    :44.00
##
## CumulativeMaxPassYardsPerAttempt CumulativeMinPassingTouchdowns
## Min.      : 4.800                    Min.      :0.0000
## 1st Qu.: 8.500                      1st Qu.:0.0000
## Median :10.500                      Median :0.0000
## Mean    : 9.859                      Mean    :0.4647
## 3rd Qu.:10.900                      3rd Qu.:1.0000
## Max.    :14.100                      Max.    :4.0000
##

```

```
## CumulativeMinPassingYards CumulativeMinPassingAttempts
## Min. : 69.0 Min. :10.00
## 1st Qu.:128.0 1st Qu.:21.00
## Median :158.0 Median :24.00
## Mean :168.1 Mean :24.13
## 3rd Qu.:204.0 3rd Qu.:27.00
## Max. :369.0 Max. :41.00
##
## CumulativeMinPassingRating CumulativeMinCompletions
## Min. : 31.14 Min. : 6.00
## 1st Qu.: 59.66 1st Qu.:12.00
## Median : 68.58 Median :14.00
## Mean : 69.27 Mean :14.91
## 3rd Qu.: 77.92 3rd Qu.:17.00
## Max. :148.57 Max. :29.00
##
## CumulativeMinPassYardsPerAttempt NextWeekFantasyPoints NextOpponent
## Min. : 3.100 Min. : 7.32 Length:368
## 1st Qu.: 4.800 1st Qu.:12.79 Class :character
## Median : 5.800 Median :16.23 Mode :character
## Mean : 5.704 Mean :17.33
## 3rd Qu.: 6.200 3rd Qu.:20.91
## Max. :11.200 Max. :37.64
## NA's :28
## PassingDefense PointsAllowedByDefenseSpecialTeams AvgPassDefense
## Min. : 0.00 Min. : 0.00 Min. : 13.00
## 1st Qu.: 30.00 1st Qu.:16.00 1st Qu.: 46.22
## Median : 54.00 Median :21.00 Median : 60.17
## Mean : 56.76 Mean :21.48 Mean : 59.85
## 3rd Qu.: 76.00 3rd Qu.:27.00 3rd Qu.: 69.40
## Max. :200.00 Max. :51.00 Max. :200.00
## NA's :51 NA's :51 NA's :51
```

## 3.7 : Create indepenent structure for EDA from QBCrossSectional Data

```
eda_base <- QBCrossSectional %>% group_by(Week) %>%
  select(Week,
         FantasyPoints,
         PassingCompletions,
         PassingAttempts,
         PassingCompletionPercentage,
         PassingYards,
         PassingYardsPerAttempt,
         PassingTouchdowns,
         PassingInterceptions,
         PassingRating,
         RushingAttempts,
         RushingYards,
         RushingYardsPerAttempt,
         RushingTouchdowns,
         FumblesLost
  )

eda_base$Week <- as.factor(eda_base$Week)
```

```
## 3.8 : Create indepenent structure for derived features for EDA
      from QBCrossSectionalDefensiveOverlayCumulativePassYards Data
eda_derived <- QBCrossSectionalDefensiveOverlayCumulativePassYards %>% group_by(Week)%>%
  select(Week,
         FantasyPoints,
         CumulativeAveragePassingYards,
         CumulativeAveragePassingTouchdowns,
         CumulativeAveragePassingInterceptions,
         CumulativeAveragePassingRating,
         CumulativeAverageCompletions,
         CumulativeAverageCompletionPercentage,
         CumulativeMaxPassingTouchdowns,
         CumulativeMaxPassingYards,
         CumulativeMaxPassingAttempts,
         CumulativeMaxPassingRating,
         CumulativeMaxCompletions,
         CumulativeMaxPassYardsPerAttempt,
         CumulativeMinPassingTouchdowns,
         CumulativeMinPassingYards,
         CumulativeMinPassingAttempts,
         CumulativeMinPassingRating,
         CumulativeMinCompletions,
         CumulativeMinPassYardsPerAttempt)
eda_derived$Week <- as.factor(eda_derived$Week)
```

## 4 : Structures QBCrossSectional (Quarterbacks)

```
summary(QBCrossSectional)
```

```
##      PlayerID      Name      Week      Position
## Min.      : 611   Length:453   Min.      : 1.000   Length:453
## 1st Qu.: 7242   Class :character 1st Qu.: 5.000   Class :character
## Median :13723   Mode  :character Median : 9.000   Mode  :character
## Mean    :11932                      Mean    : 9.049
## 3rd Qu.:16763                      3rd Qu.:13.000
## Max.    :19029                      Max.    :17.000
##      Opponent      TeamIsHome      GameDate      PassingCompletions
## Length:453         Mode :logical   Length:453     Min.      : 5.00
## Class :character   FALSE:226     Class :character 1st Qu.:18.00
## Mode  :character   TRUE :227     Mode  :character Median :21.00
##                                     Mean    :21.24
##                                     3rd Qu.:25.00
##                                     Max.    :44.00
##      Result      PassingAttempts PassingCompletionPercentage
## Length:453       Min.      :10.00   Min.      :38.70
## Class :character 1st Qu.:29.00   1st Qu.:57.10
## Mode  :character Median :33.00   Median :63.20
##                                     Mean    :33.62   Mean    :63.48
##                                     3rd Qu.:38.00   3rd Qu.:69.40
##                                     Max.    :66.00   Max.    :87.00
##      PassingYards PassingYardsPerAttempt PassingTouchdowns
## Min.      : 57.0   Min.      : 3.100   Min.      :0.000
```

```
## 1st Qu.:199.0 1st Qu.: 6.200 1st Qu.:1.000
## Median :241.0 Median : 7.200 Median :1.000
## Mean :244.6 Mean : 7.378 Mean :1.587
## 3rd Qu.:291.0 3rd Qu.: 8.400 3rd Qu.:2.000
## Max. :506.0 Max. :14.100 Max. :5.000
## PassingInterceptions PassingRating RushingAttempts RushingYards
## Min. :0.00 Min. : 31.14 Min. : 0.000 Min. : -8.00
## 1st Qu.:0.00 1st Qu.: 77.92 1st Qu.: 1.000 1st Qu.: 0.00
## Median :0.00 Median : 92.94 Median : 3.000 Median : 8.00
## Mean :0.66 Mean : 93.88 Mean : 3.185 Mean :14.38
## 3rd Qu.:1.00 3rd Qu.:109.84 3rd Qu.: 5.000 3rd Qu.:23.00
## Max. :4.00 Max. :150.69 Max. :14.000 Max. :95.00
## RushingYardsPerAttempt RushingTouchdowns FumblesLost FantasyPoints
## Min. : -2.700 Min. :0.0000 Min. :0.0000 Min. : 7.12
## 1st Qu.: 0.000 1st Qu.:0.0000 1st Qu.:0.0000 1st Qu.:11.86
## Median : 3.000 Median :0.0000 Median :0.0000 Median :15.86
## Mean : 3.839 Mean :0.1457 Mean :0.1766 Mean :16.89
## 3rd Qu.: 6.000 3rd Qu.:0.0000 3rd Qu.:0.0000 3rd Qu.:20.68
## Max. :70.000 Max. :2.0000 Max. :3.0000 Max. :37.64
## Team
## Length:453
## Class :character
## Mode :character
##
##
##
```

## 5 : struture with Derived features

```
summary(eda_derived)
```

```
## Week FantasyPoints CumulativeAveragePassingYards
## 2 : 25 Min. : 7.32 Min. :120.5
## 3 : 24 1st Qu.:12.61 1st Qu.:221.9
## 4 : 24 Median :16.16 Median :247.8
## 13 : 24 Mean :17.22 Mean :246.6
## 14 : 24 3rd Qu.:20.70 3rd Qu.:271.5
## 7 : 23 Max. :37.64 Max. :369.0
## (Other):224
## CumulativeAveragePassingTouchdowns CumulativeAveragePassingInterceptions
## Min. :0.000 Min. :0.0000
## 1st Qu.:1.250 1st Qu.:0.4125
## Median :1.667 Median :0.5714
## Mean :1.584 Mean :0.5933
## 3rd Qu.:2.000 3rd Qu.:0.7500
## Max. :4.000 Max. :2.0000
##
## CumulativeAveragePassingRating CumulativeAverageCompletions
## Min. : 56.25 Min. :10.00
## 1st Qu.: 87.77 1st Qu.:19.56
## Median : 97.01 Median :21.85
## Mean : 95.86 Mean :21.43
## 3rd Qu.:102.53 3rd Qu.:23.13
```

```

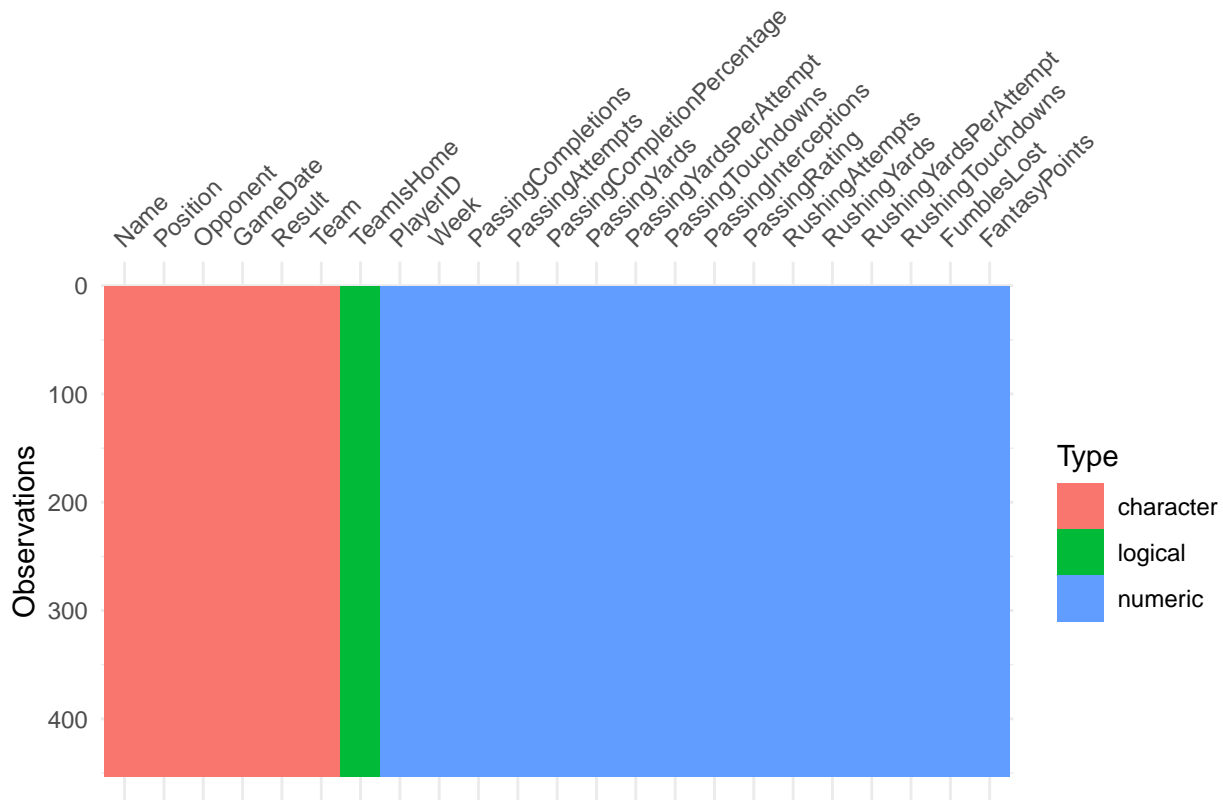
## Max. :148.57 Max. :29.00
##
## CumulativeAverageCompletionPercentage CumulativeMaxPassingTouchdowns
## Min. :44.40 Min. :0.00
## 1st Qu.:61.60 1st Qu.:2.00
## Median :64.13 Median :3.00
## Mean :64.42 Mean :2.91
## 3rd Qu.:67.37 3rd Qu.:4.00
## Max. :80.00 Max. :5.00
##
## CumulativeMaxPassingYards CumulativeMaxPassingAttempts
## Min. :125.0 Min. :21.00
## 1st Qu.:288.0 1st Qu.:39.00
## Median :332.0 Median :44.00
## Mean :331.3 Mean :43.31
## 3rd Qu.:368.0 3rd Qu.:49.00
## Max. :506.0 Max. :66.00
##
## CumulativeMaxPassingRating CumulativeMaxCompletions
## Min. : 56.25 Min. :11.00
## 1st Qu.:110.80 1st Qu.:25.00
## Median :125.96 Median :28.00
## Mean :123.69 Mean :27.42
## 3rd Qu.:141.79 3rd Qu.:30.00
## Max. :150.69 Max. :44.00
##
## CumulativeMaxPassYardsPerAttempt CumulativeMinPassingTouchdowns
## Min. : 4.800 Min. :0.0000
## 1st Qu.: 8.500 1st Qu.:0.0000
## Median :10.500 Median :0.0000
## Mean : 9.859 Mean :0.4647
## 3rd Qu.:10.900 3rd Qu.:1.0000
## Max. :14.100 Max. :4.0000
##
## CumulativeMinPassingYards CumulativeMinPassingAttempts
## Min. : 69.0 Min. :10.00
## 1st Qu.:128.0 1st Qu.:21.00
## Median :158.0 Median :24.00
## Mean :168.1 Mean :24.13
## 3rd Qu.:204.0 3rd Qu.:27.00
## Max. :369.0 Max. :41.00
##
## CumulativeMinPassingRating CumulativeMinCompletions
## Min. : 31.14 Min. : 6.00
## 1st Qu.: 59.66 1st Qu.:12.00
## Median : 68.58 Median :14.00
## Mean : 69.27 Mean :14.91
## 3rd Qu.: 77.92 3rd Qu.:17.00
## Max. :148.57 Max. :29.00
##
## CumulativeMinPassYardsPerAttempt
## Min. : 3.100
## 1st Qu.: 4.800
## Median : 5.800

```

```
## Mean   : 5.704
## 3rd Qu.: 6.200
## Max.   :11.200
##
```

## 6 : QBCrossSectional - Check Missing Data

```
vis_dat(QBCrossSectional)
```



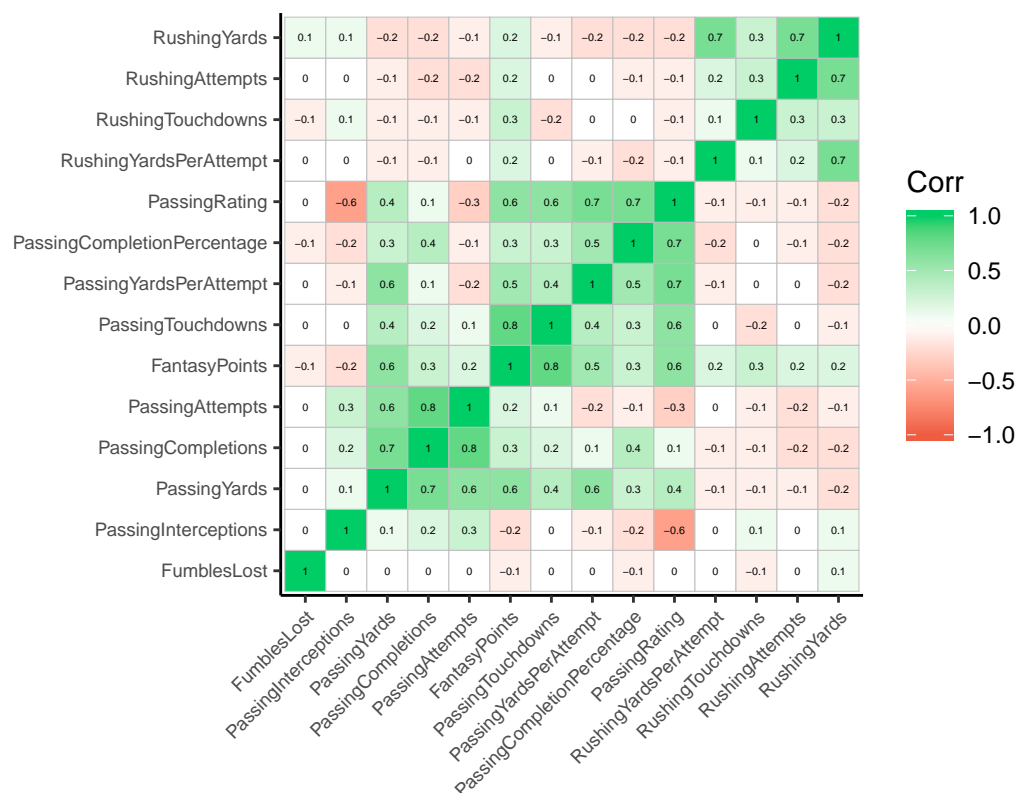
## 7 : Correlogram

```
## 7.1 : Base Feature Set
```

```
corr <- round(cor(eda_base[-1]), 1)

ggcorrplot(corr, hc.order = TRUE,
  type = "full",
  lab = TRUE,
  lab_size = 1.5,
  method="square",
  colors = c("tomato2", "white", "springgreen3"),
  title = "Correlogram of Base QB features",
  tl.cex = 7, pch=2, pch.col = 3, show.diag = T,
  ggtheme=theme_classic)
```

### Correlogram of Base QB features

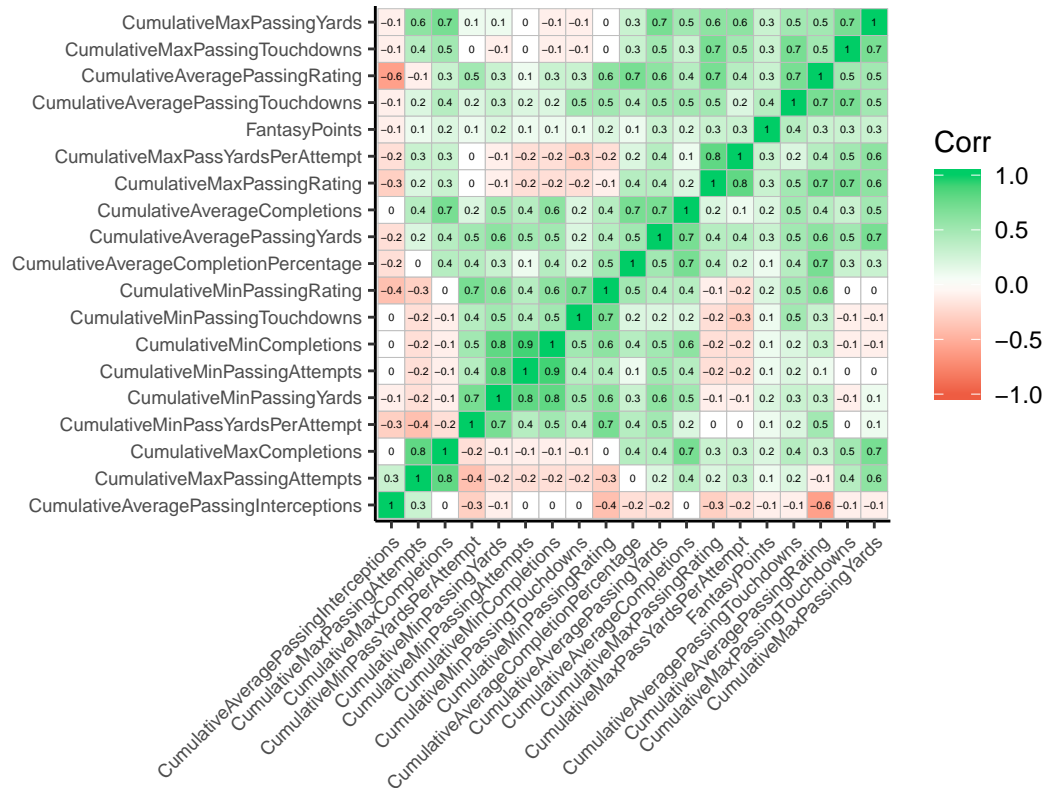


## 7.2 : Derived Feature Set

```
corr <- round(cor(eda_derived[-1]), 1)
```

```
ggcorrplot(corr, hc.order = TRUE,
  type = "full",
  lab = TRUE,
  lab_size = 1.5,
  method="square",
  colors = c("tomato2", "white", "springgreen3"),
  title = "Correlogram of Derived QB features",
  tl.cex = 7, pch=2, pch.col = 3, show.diag = T,
  ggtheme=theme_classic)
```

## Correlogram of Derived QB features

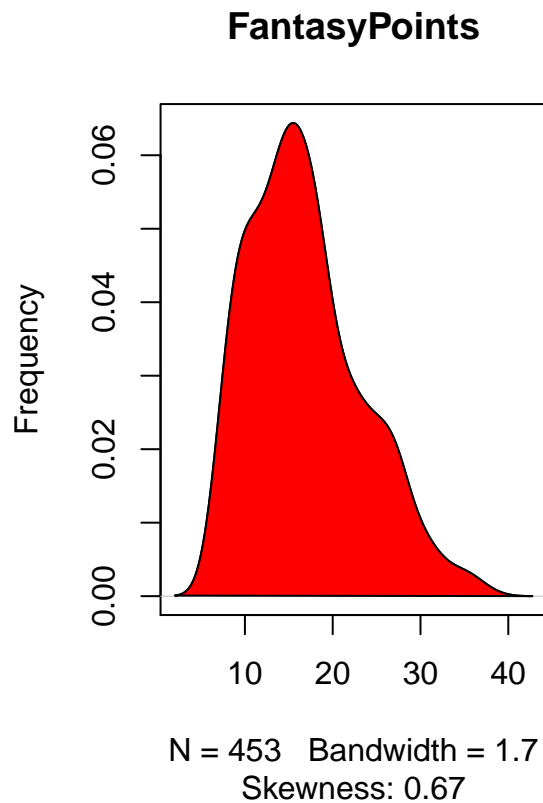


## 8 : Distributions

## 8.1 Density plot for FantasyPoints is approximately Normal

```
par(mfrow=c(1, 2)) # divide graph area in 2 columns
target <- QBCrossSectional$FantasyPoints
plot(density(target), main="FantasyPoints", ylab="Frequency", sub=paste("Skewness:", round(e1071::skewness(target), 2)))
polygon(density(target), col="red")
```

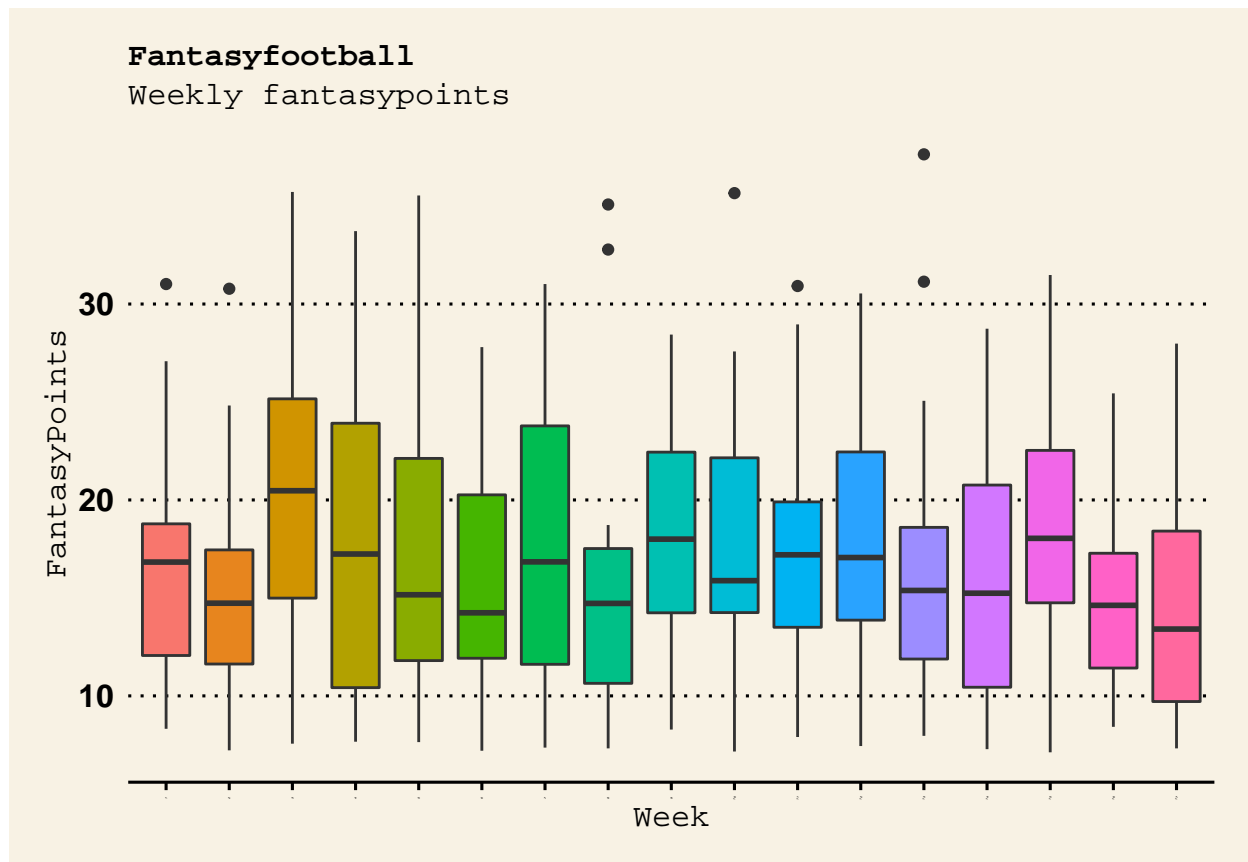




# 8.2 : Boxplots - Target and Individual Predictor Behavior for per Team

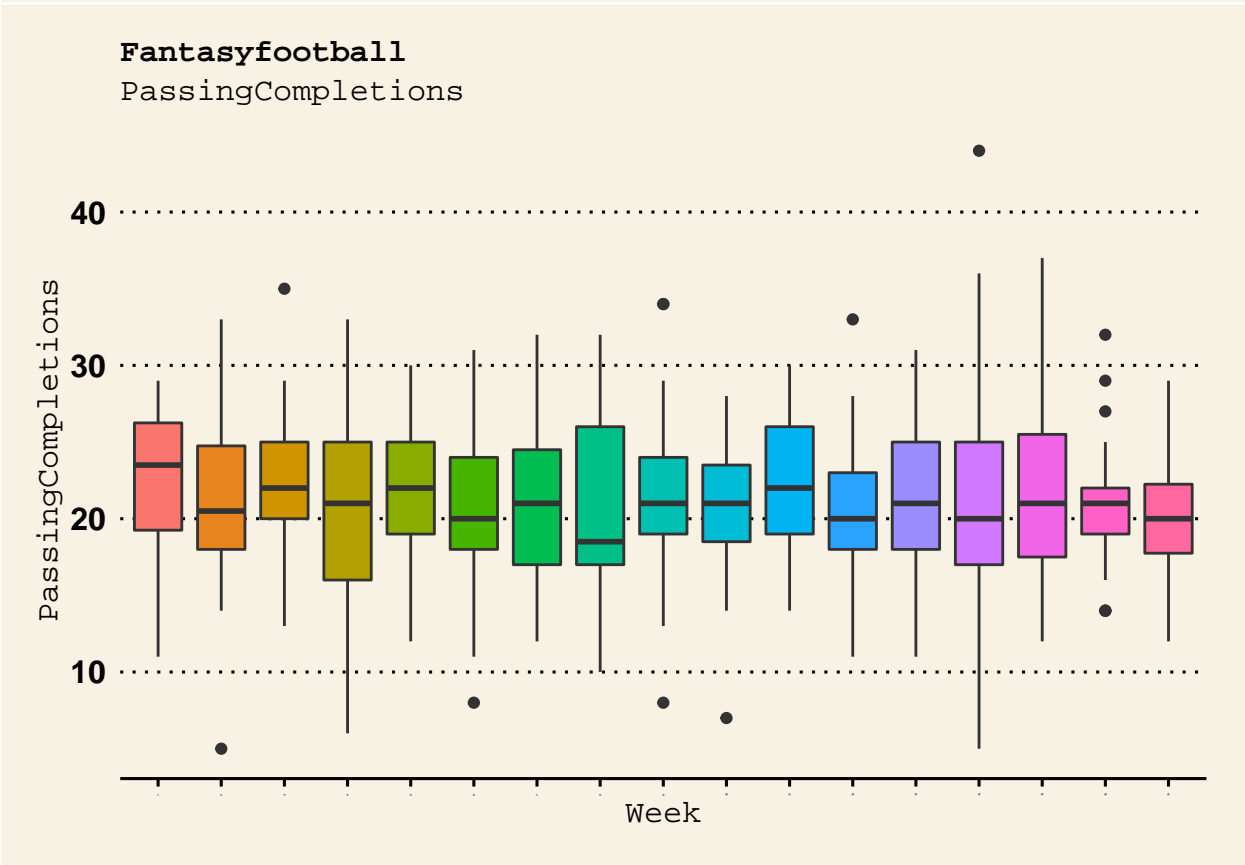
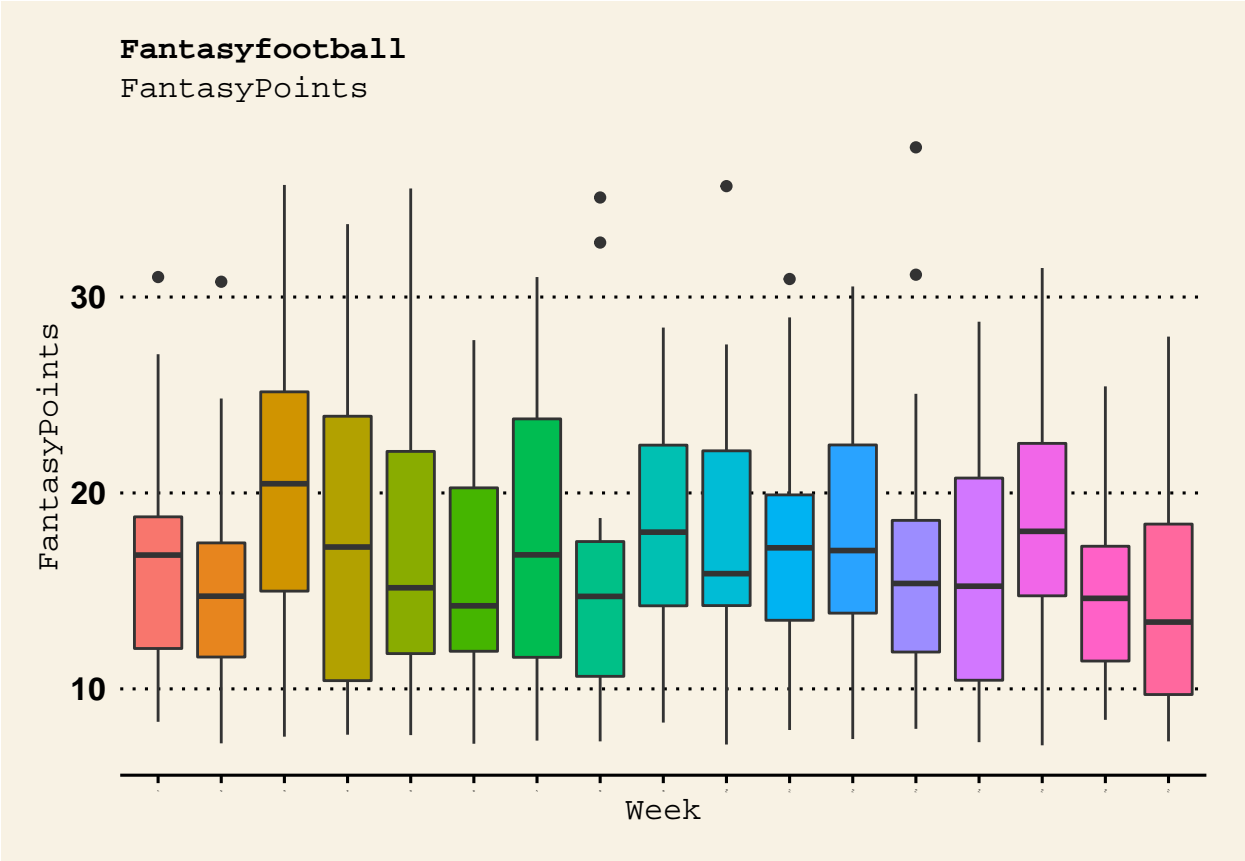
## 8.2.1 Base Feature set

```
eda_base %>% ggplot(aes(y=FantasyPoints,x=Week,fill=Week,group=Week))+
  geom_boxplot(show.legend = FALSE)+
  xlab("Week")+ylab("FantasyPoints")+
  labs(title="Fantasyfootball",
  subtitle="Weekly fantasypoints",
  caption="Source: Fantasyfootball")+
  theme_wsj()+
  theme(plot.title = element_text(size = rel(0.5)),
  plot.subtitle = element_text(size = rel(0.5)),
  axis.text.x = element_text(angle=65, vjust=0.6,size=1),
  axis.title = element_text(size = rel(0.5)),
  legend.position = "right",
  legend.direction = "vertical",
  legend.title = element_text(size = rel(0.5)))
```

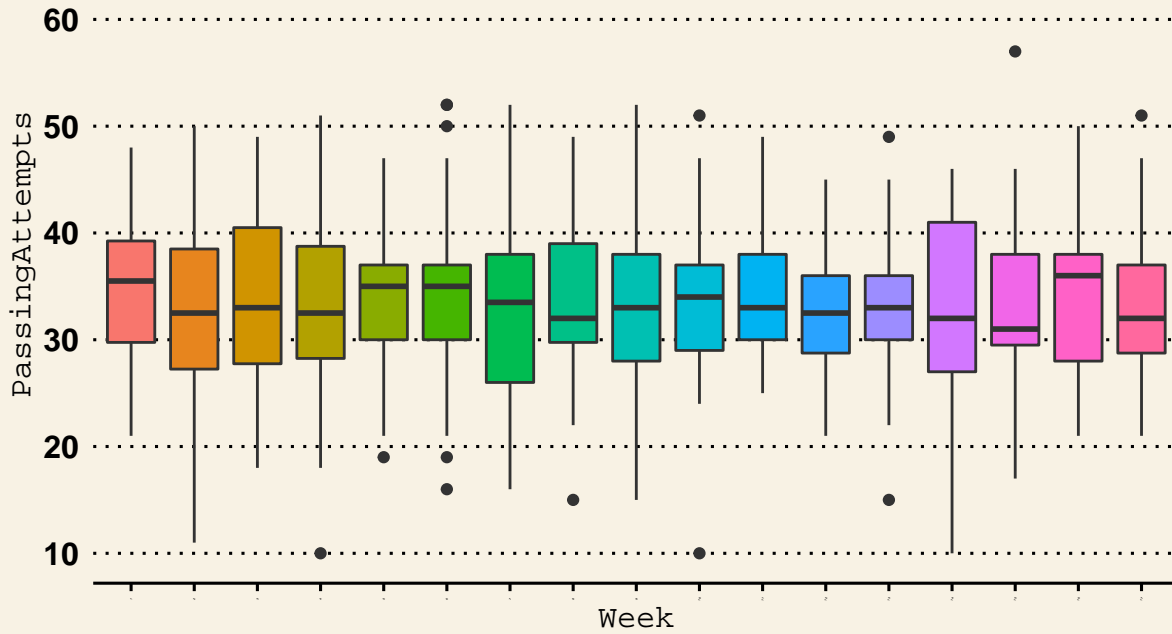


```
for (i in 2:15) {
  ggplotp <- eda_base %>%
    ggplot(aes_string(y=names(eda_base[i]),x="Week",fill="Week",group="Week"))+
    geom_boxplot(show.legend = FALSE)+
    xlab("Week")+ylab(names(eda_base[i]))+
    labs(title="Fantasyfootball",
         subtitle=names(eda_base[i]),
         aption="Source: Fantasyfootball")+
    theme_wsj()+
    theme(plot.title = element_text(size = rel(0.5)),
          plot.subtitle = element_text(size = rel(0.5)),
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),
          axis.title = element_text(size = rel(0.5)),
          legend.position = "right",
          legend.direction = "vertical",
          legend.title = element_text(size = rel(0.5)))

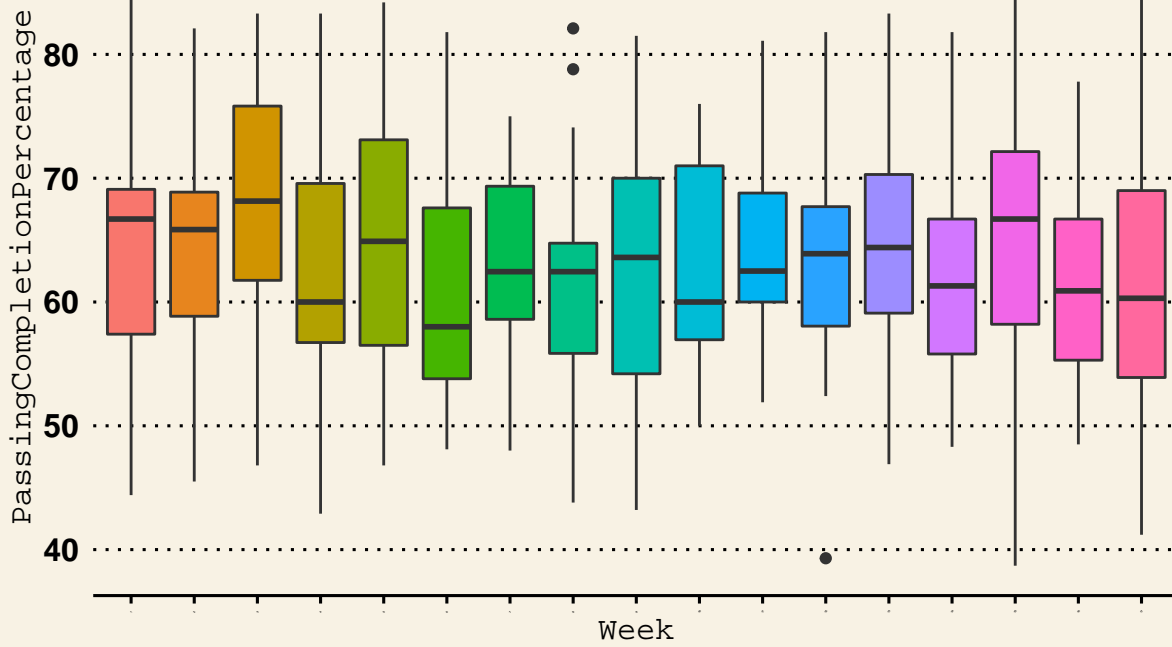
  print(ggplotp)
}
```

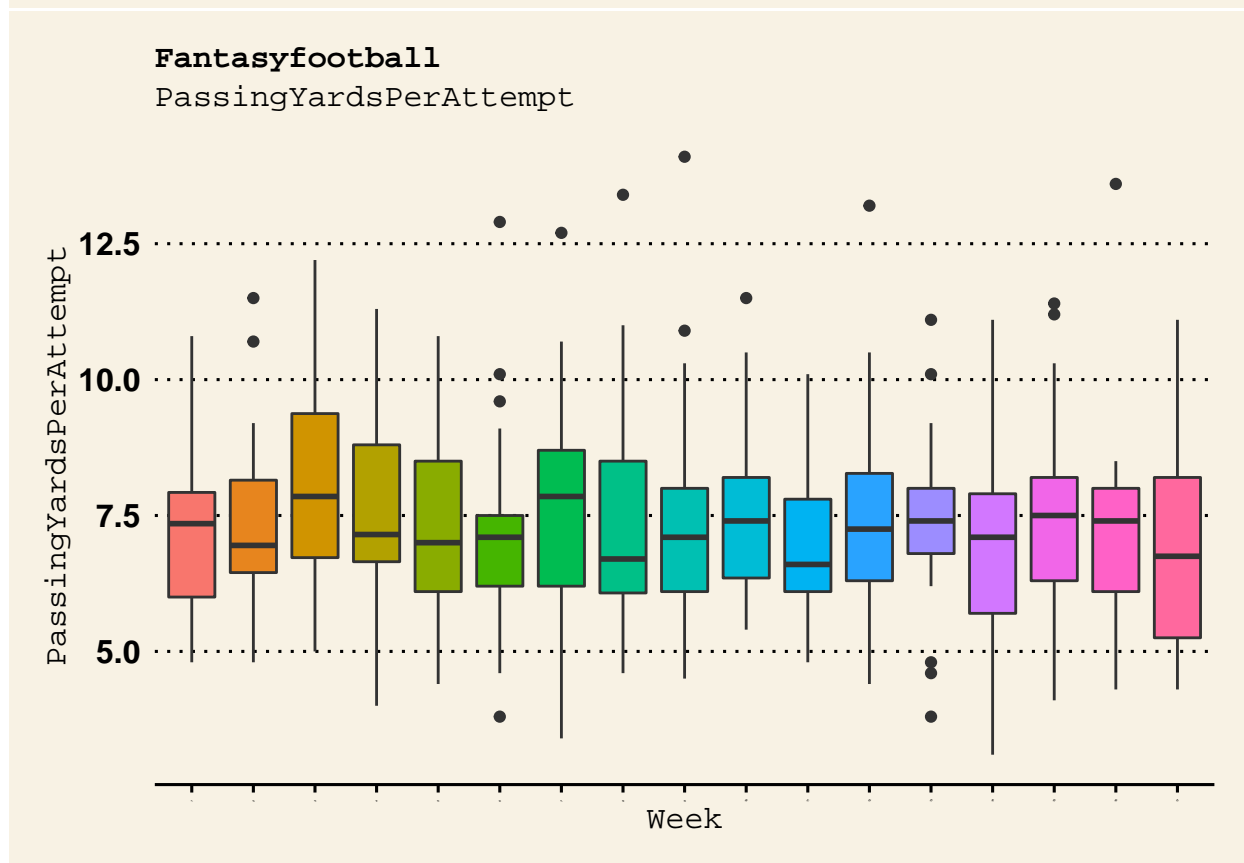
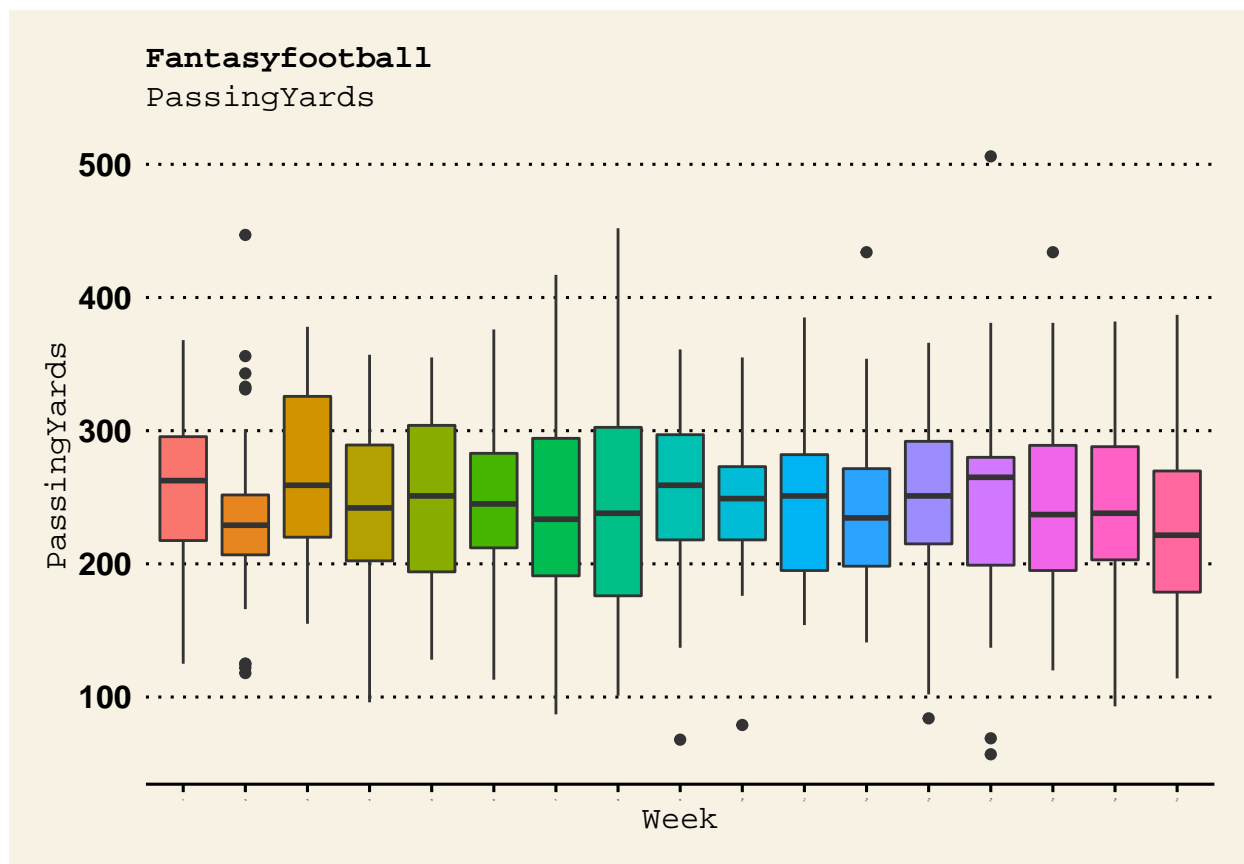


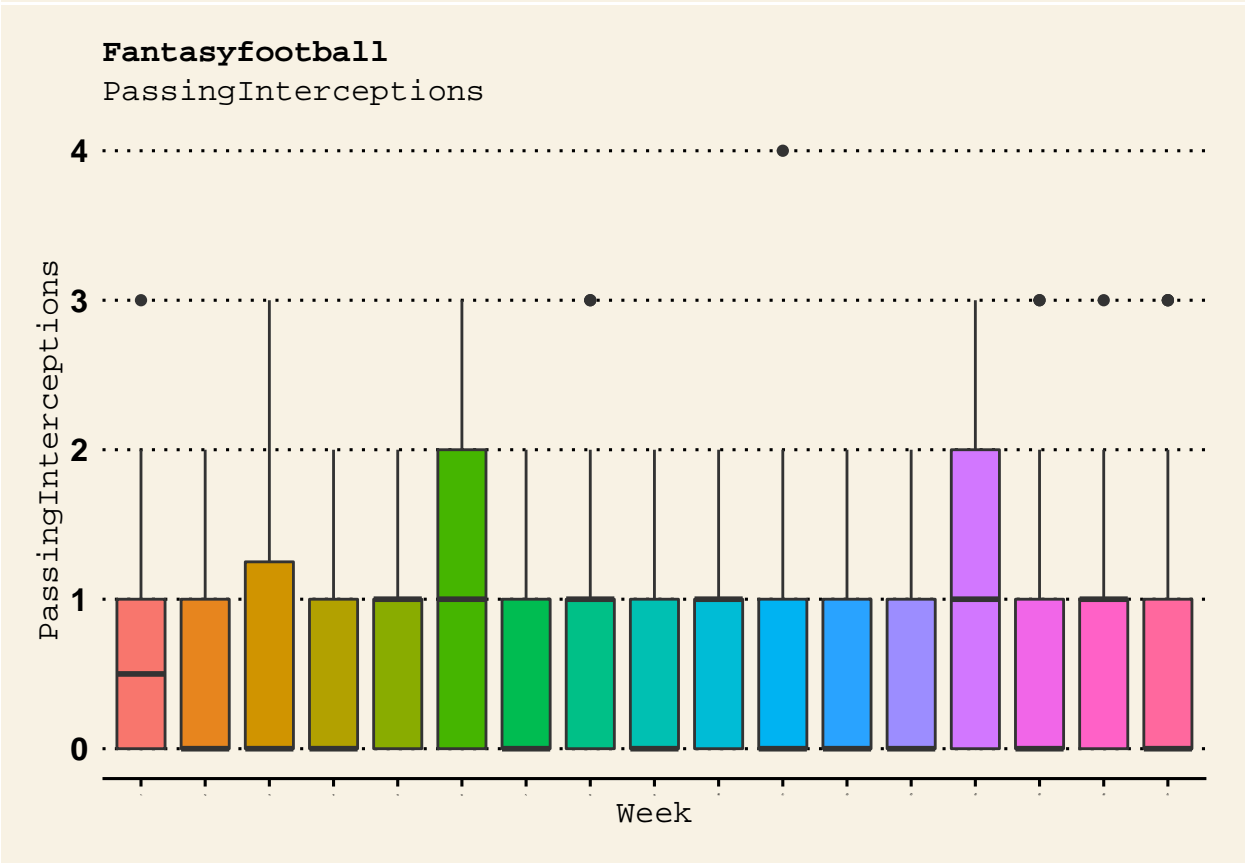
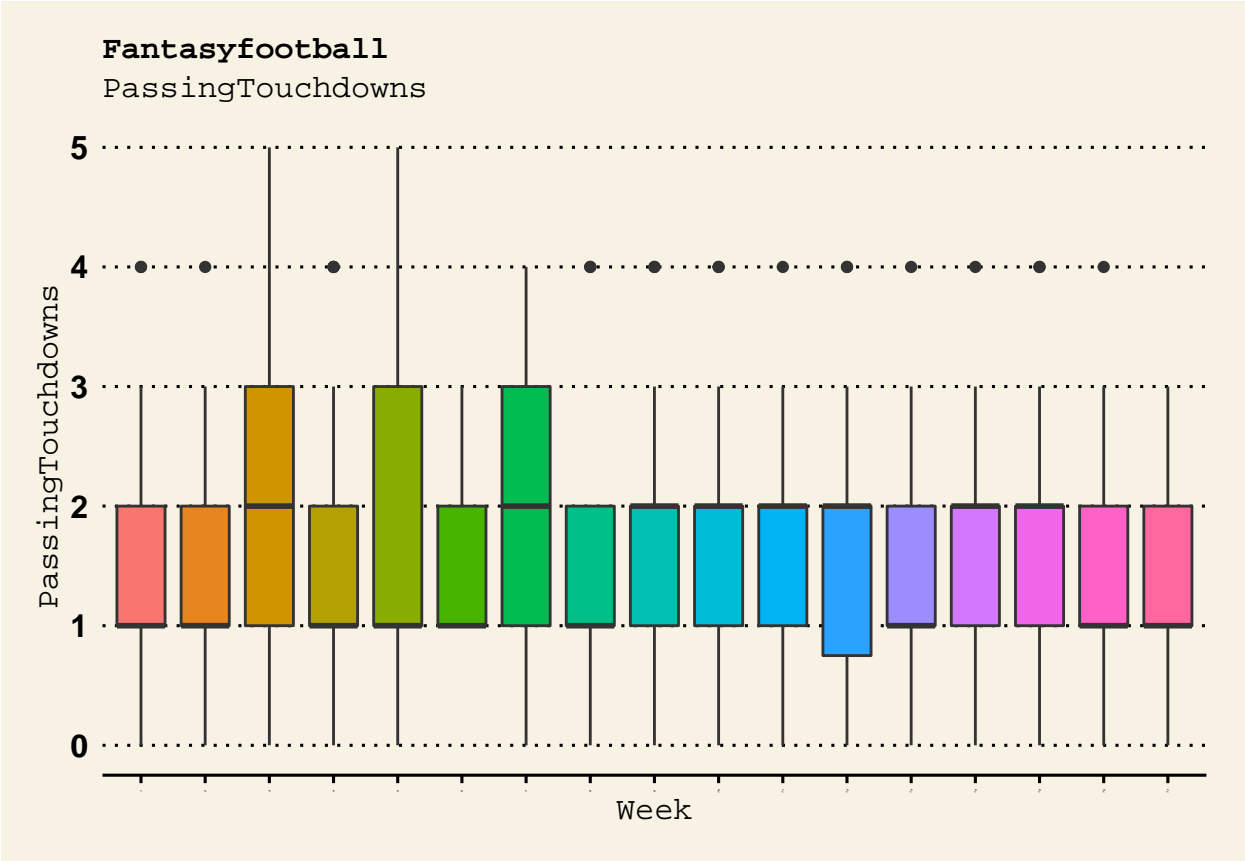
**Fantasyfootball**  
PassingAttempts

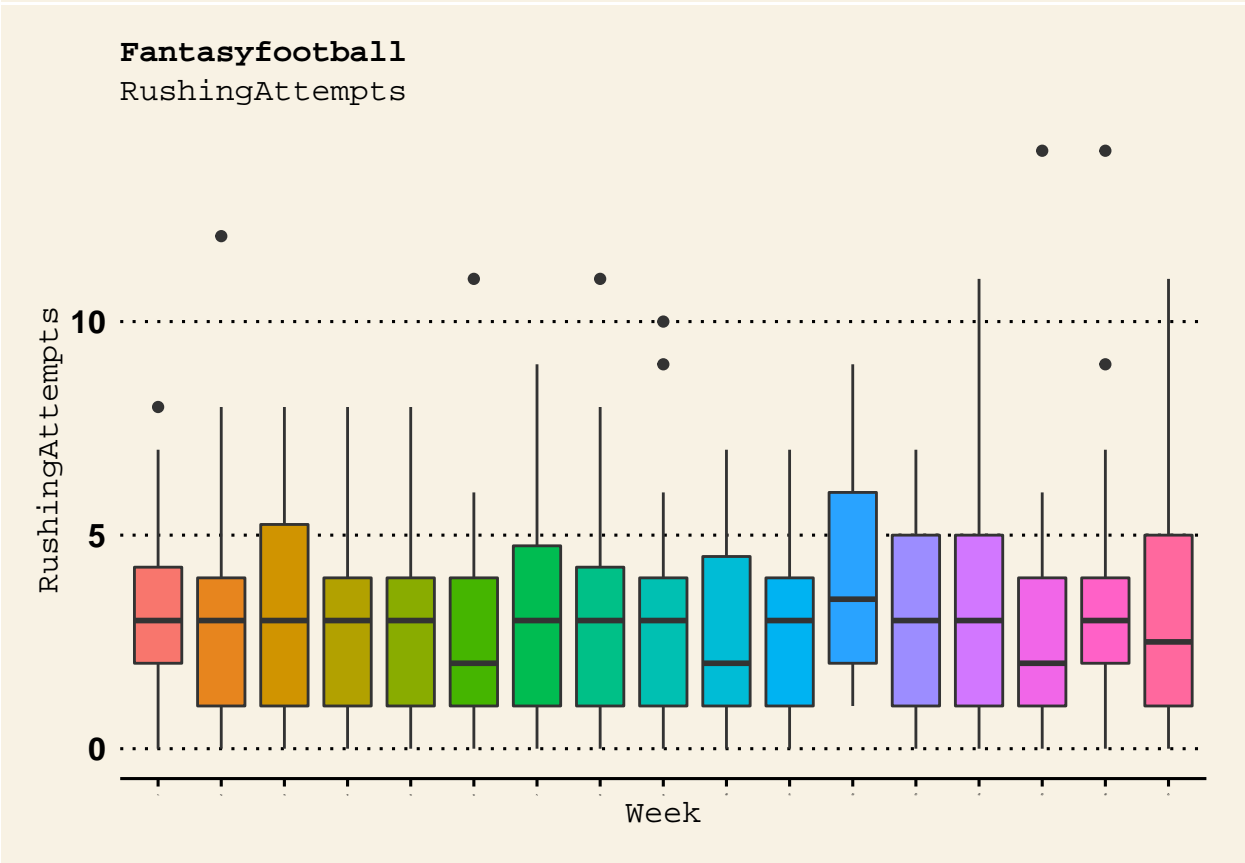
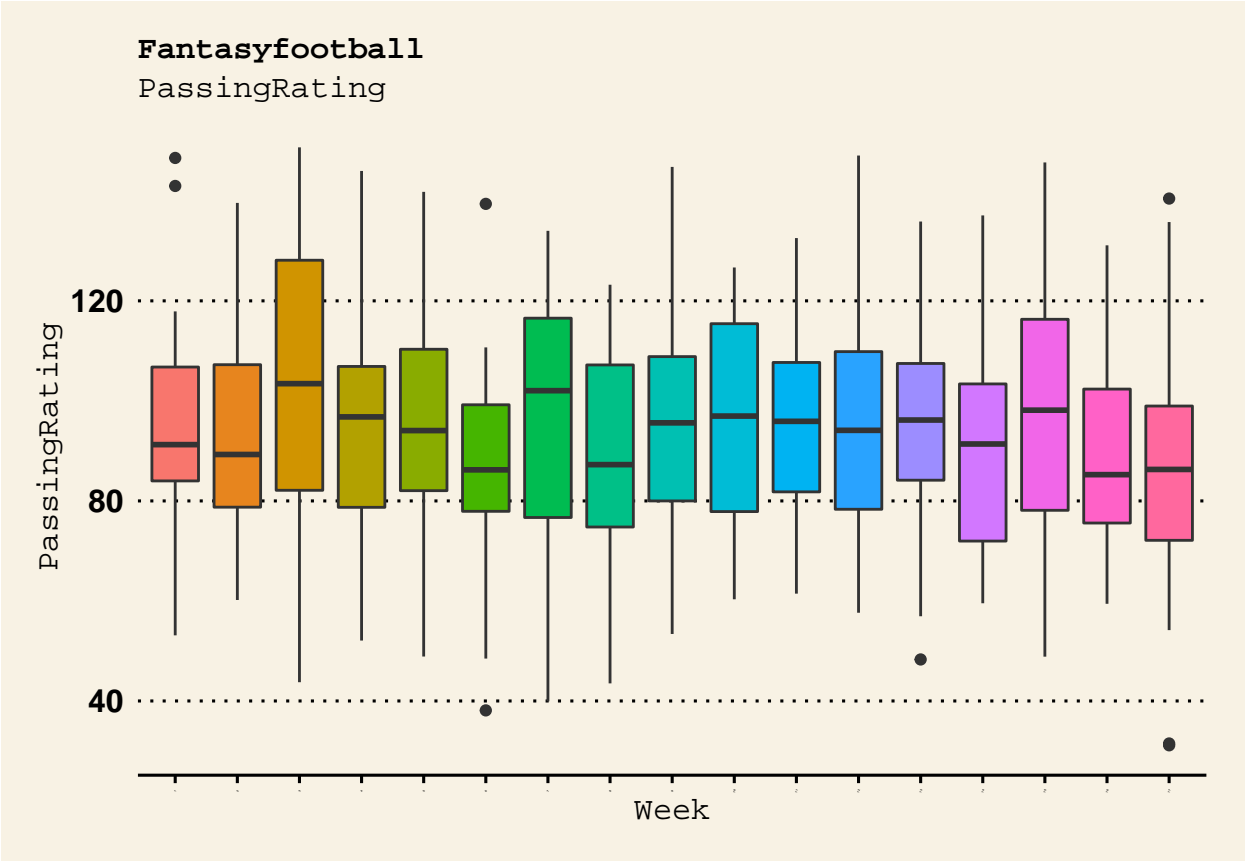


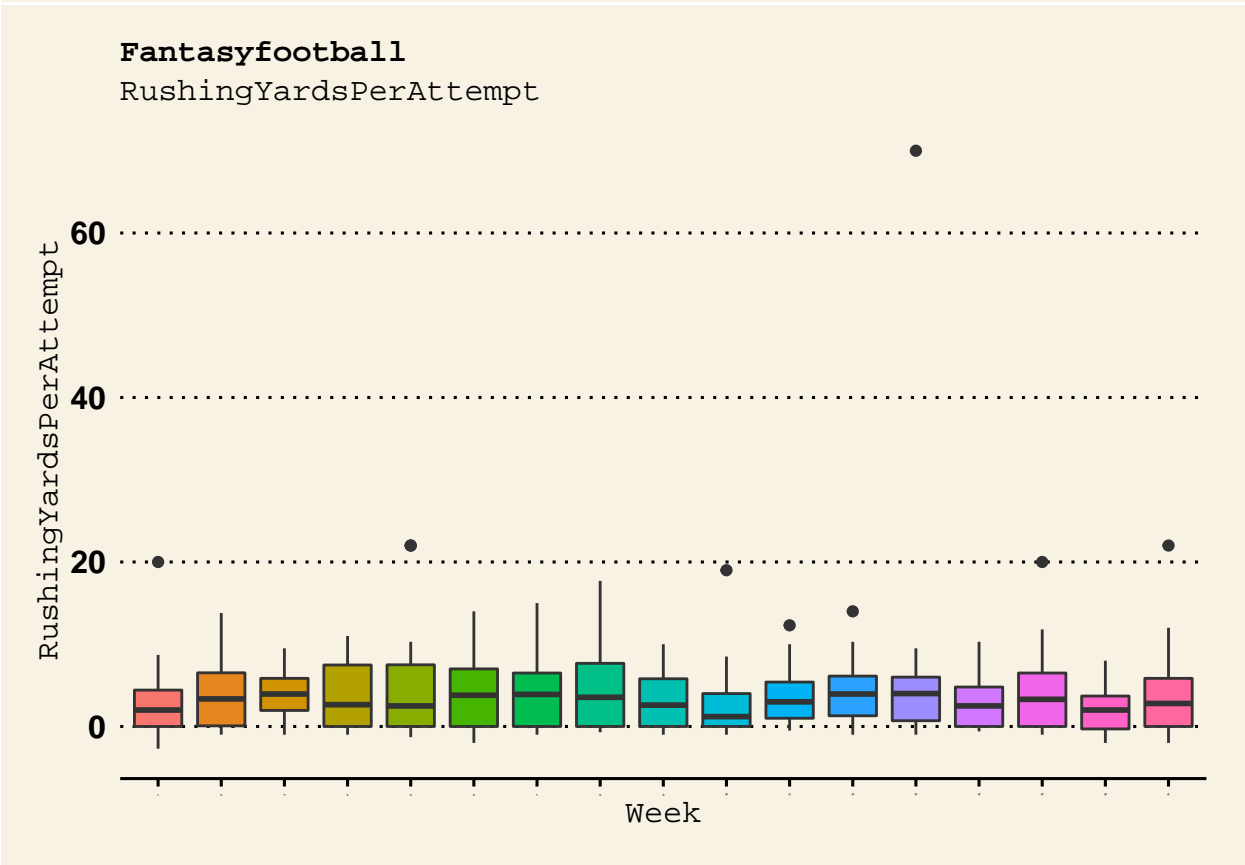
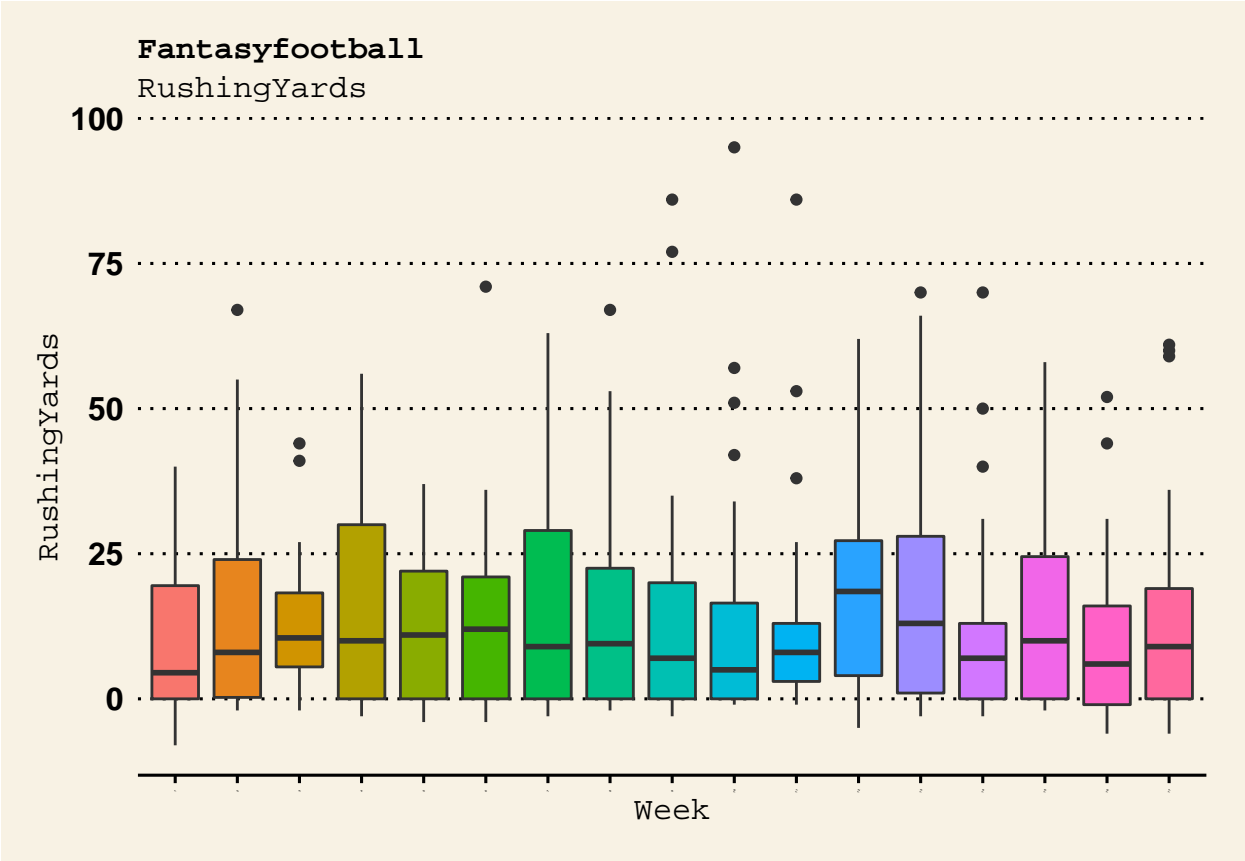
**Fantasyfootball**  
PassingCompletionPercentage



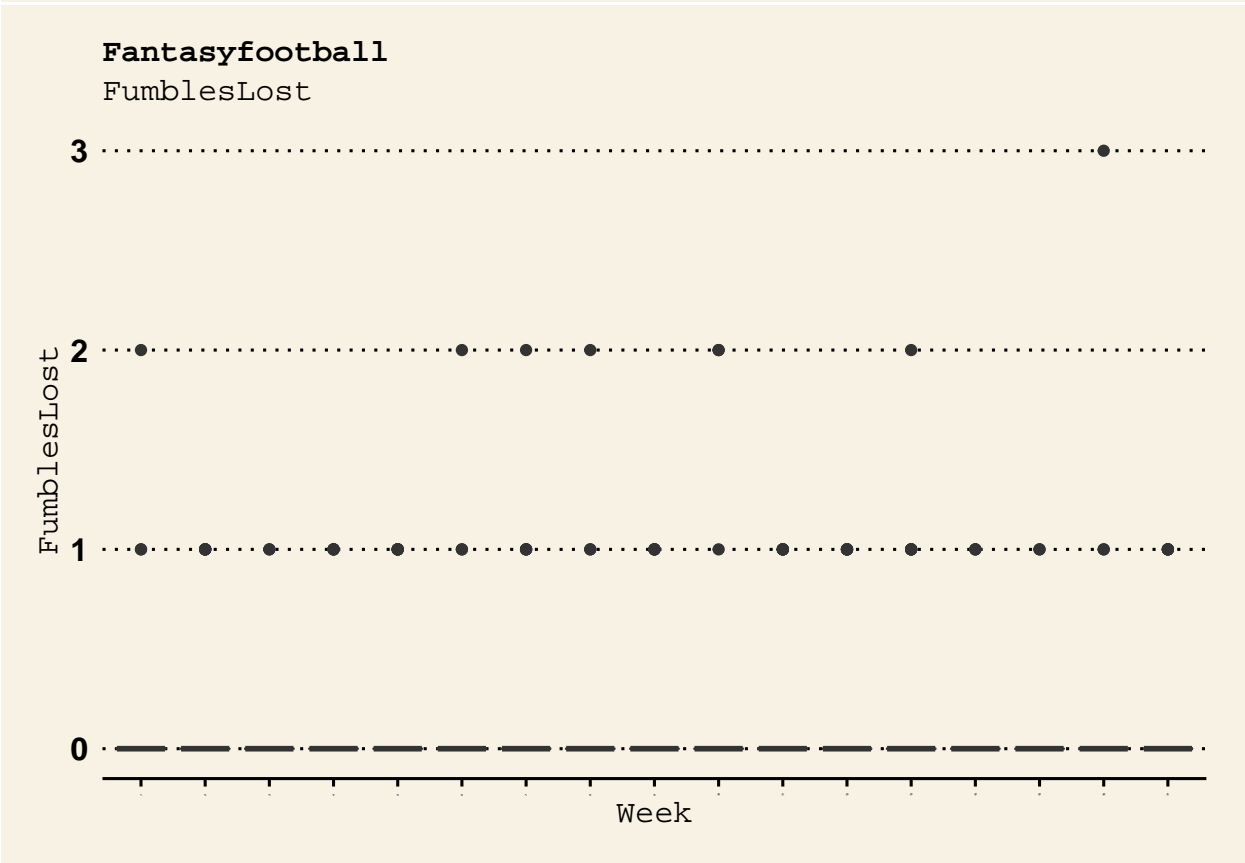
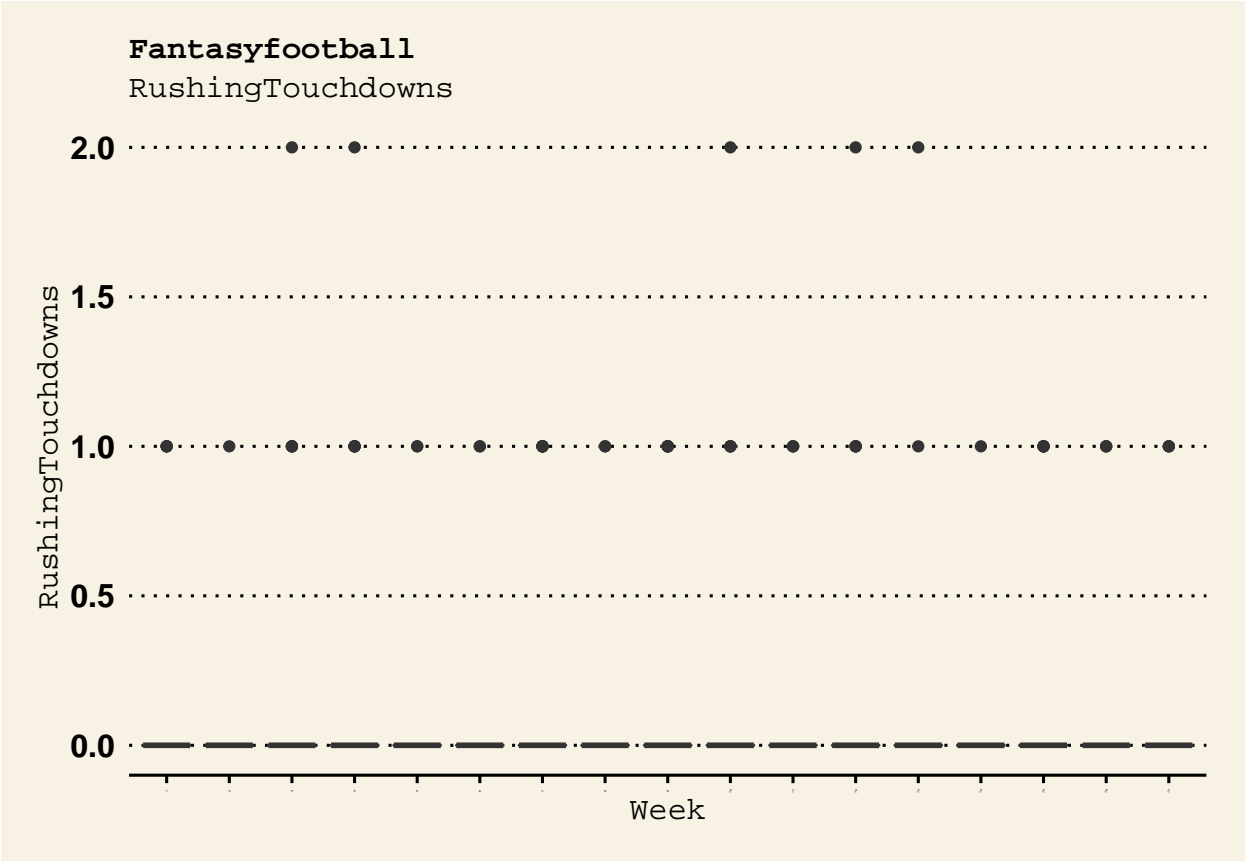






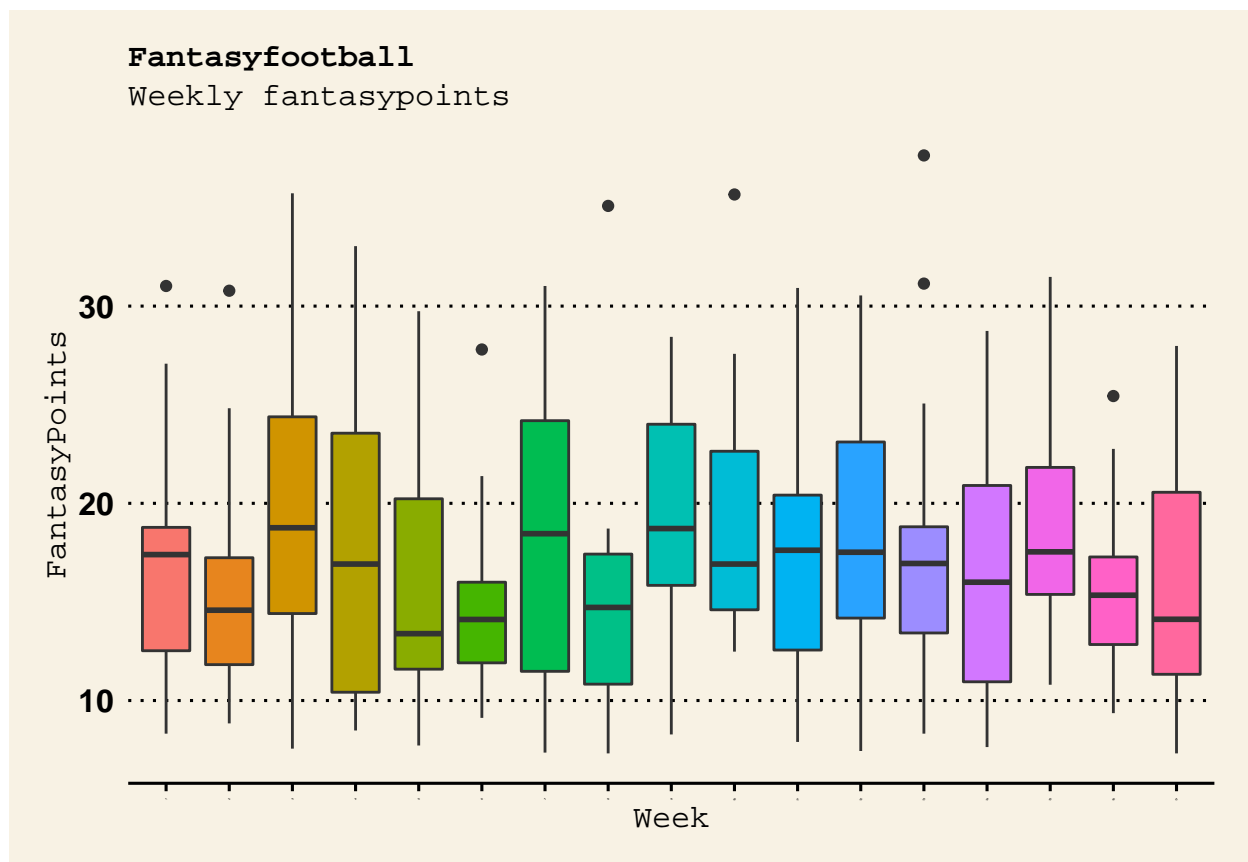






### ## 8.2.3 Boxplots Derived Feature set

```
eda_derived %>% ggplot(aes(y=FantasyPoints,x=Week,fill=Week,group=Week))+
  geom_boxplot(show.legend = FALSE)+
  xlab("Week")+ylab("FantasyPoints")+
  labs(title="Fantasyfootball",
        subtitle="Weekly fantasypoints",
        aption="Source: Fantasyfootball")+
  theme_wsj()+
  theme(plot.title = element_text(size = rel(0.5)),
        plot.subtitle = element_text(size = rel(0.5)),
        axis.text.x = element_text(angle=65, vjust=0.6,size=1),
        axis.title = element_text(size = rel(0.5)),
        legend.position = "right",
        legend.direction = "vertical",
        legend.title = element_text(size = rel(0.5)))
```



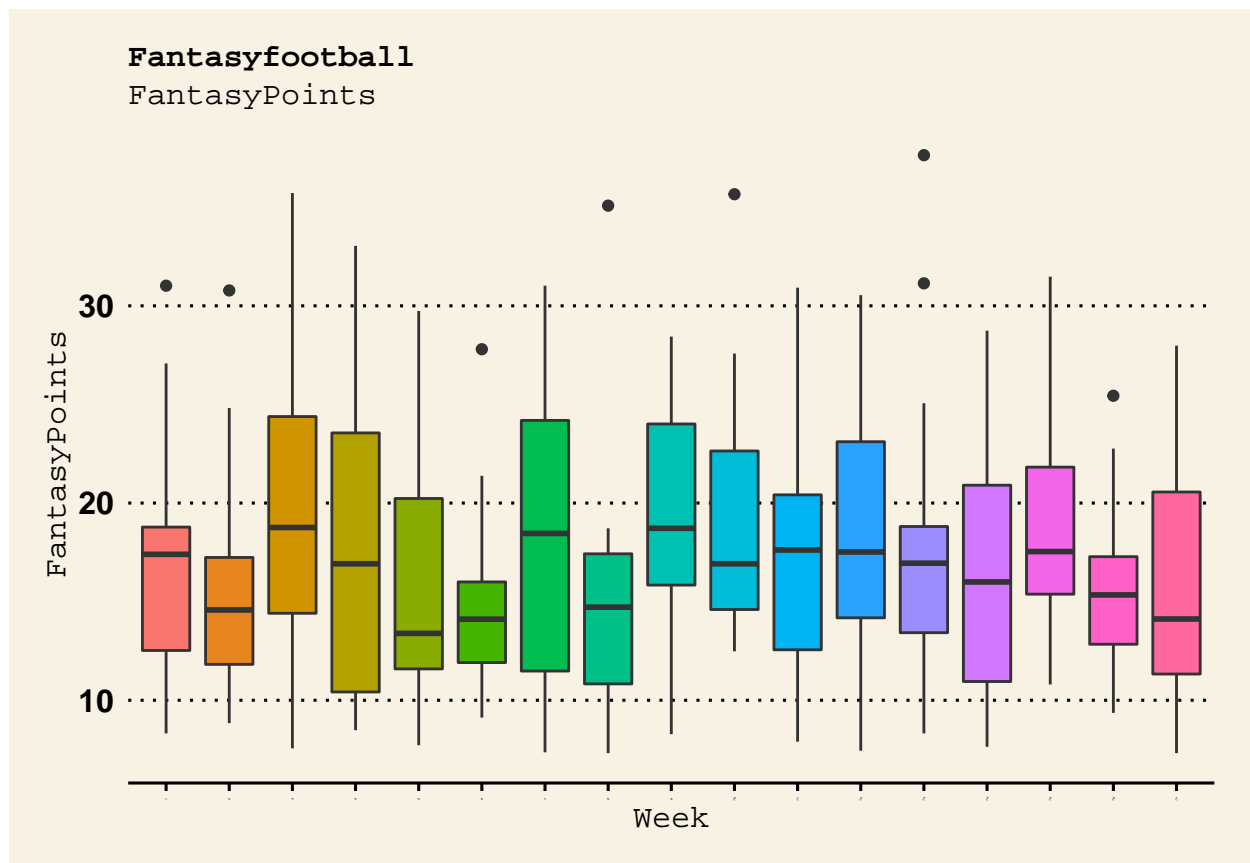
```
for (i in 2:20) {
  ggplotp <- eda_derived %>%
    ggplot(aes_string(y=names(eda_derived[i]),x="Week",fill="Week",group="Week"))+
    geom_boxplot(show.legend = FALSE)+
    xlab("Week")+ylab(names(eda_derived[i]))+
    labs(title="Fantasyfootball",
          subtitle=names(eda_derived[i]),
          aption="Source: Fantasyfootball")+
    theme_wsj()+
    theme(plot.title = element_text(size = rel(0.5)),
          plot.subtitle = element_text(size = rel(0.5)),
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),
          axis.title = element_text(size = rel(0.5)),
          legend.position = "right",
          legend.direction = "vertical",
          legend.title = element_text(size = rel(0.5)))
}
```

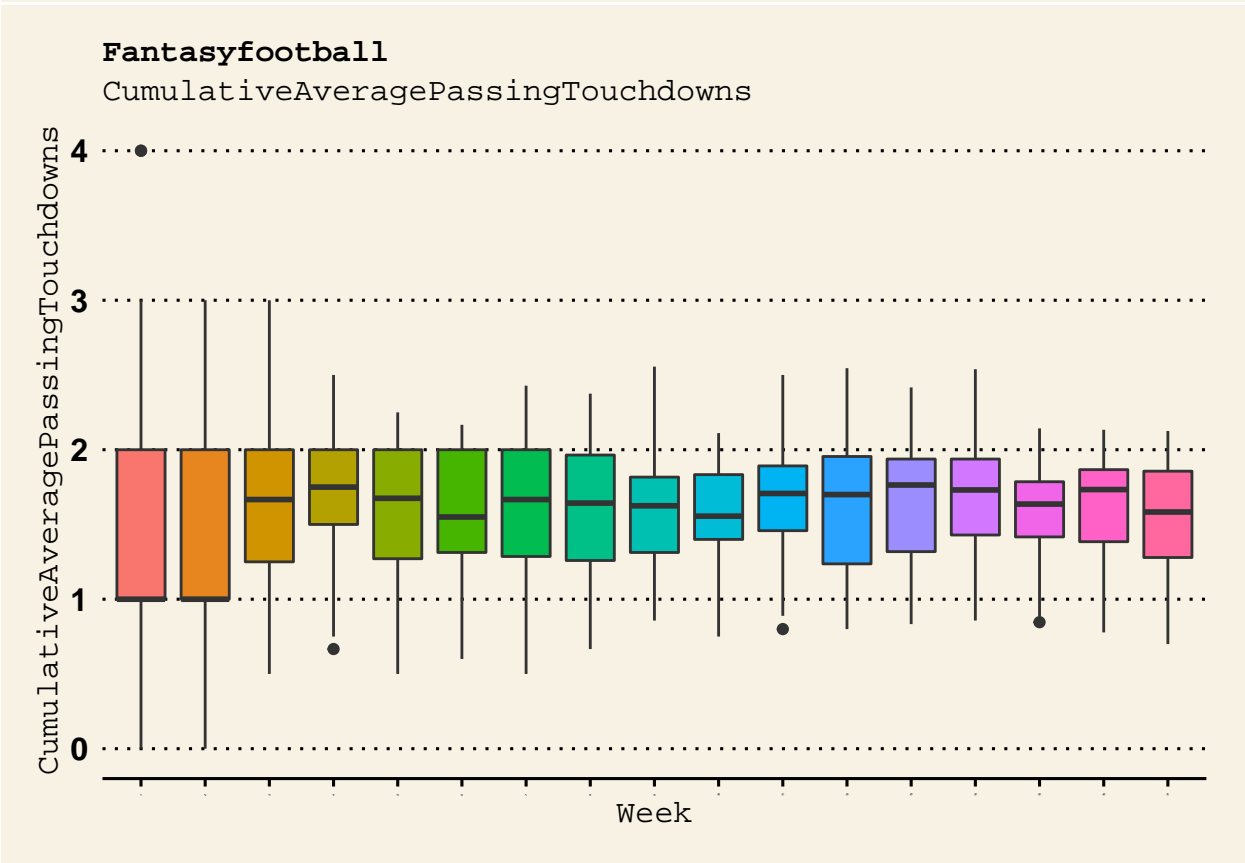
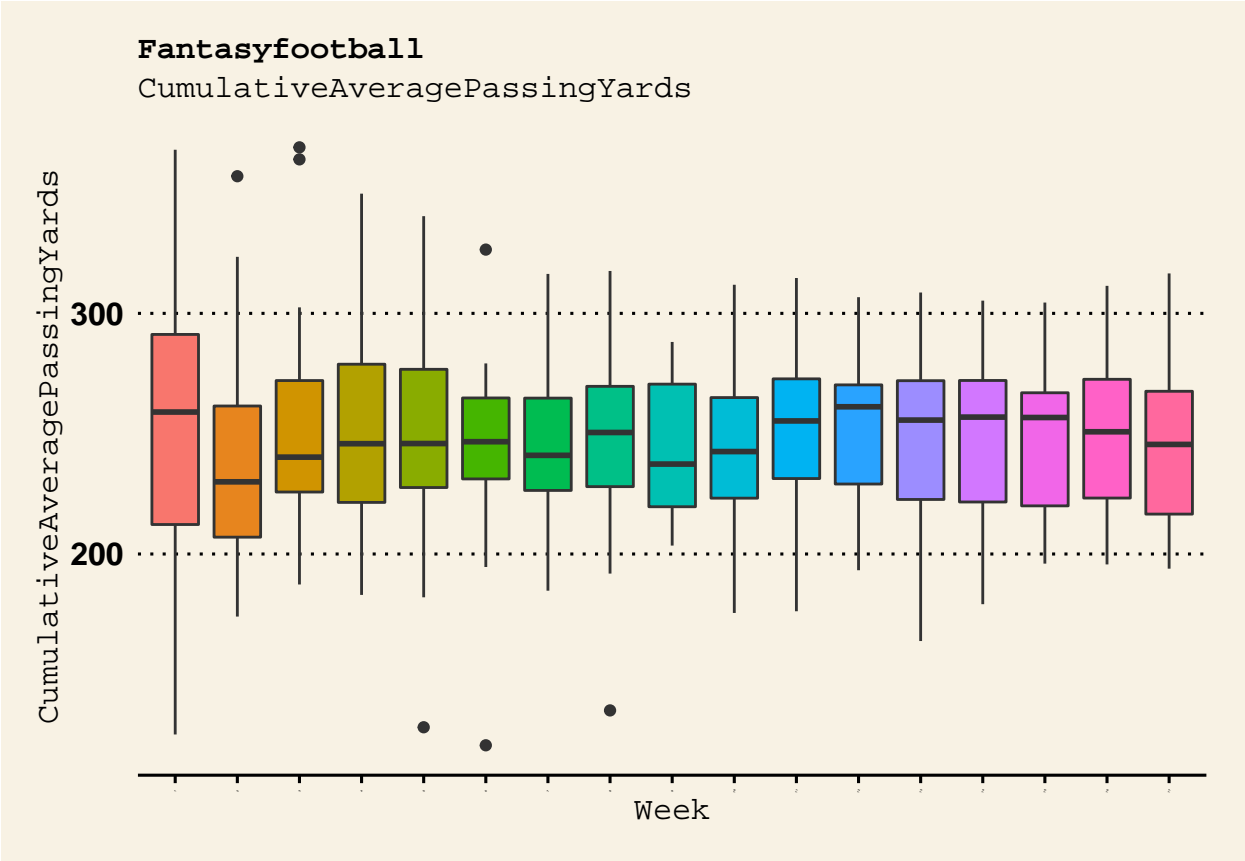
```

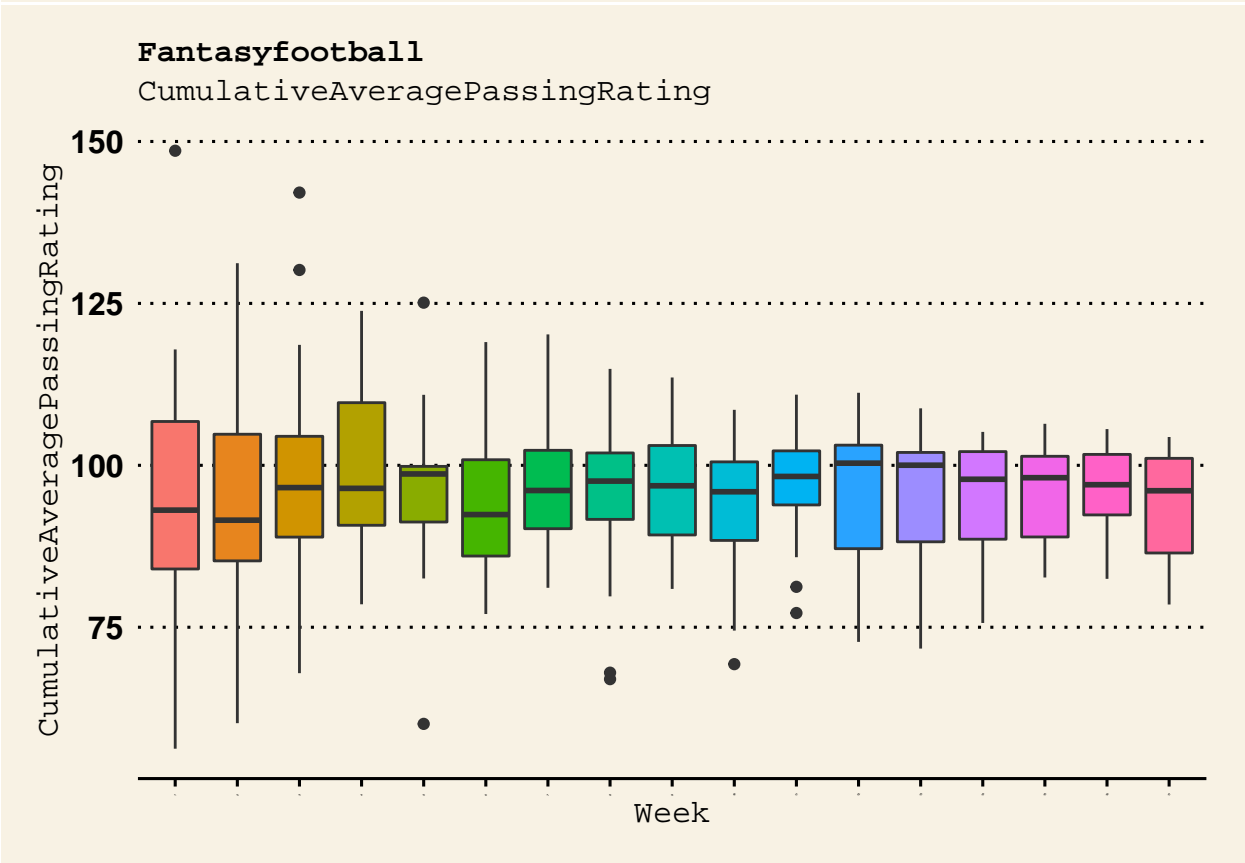
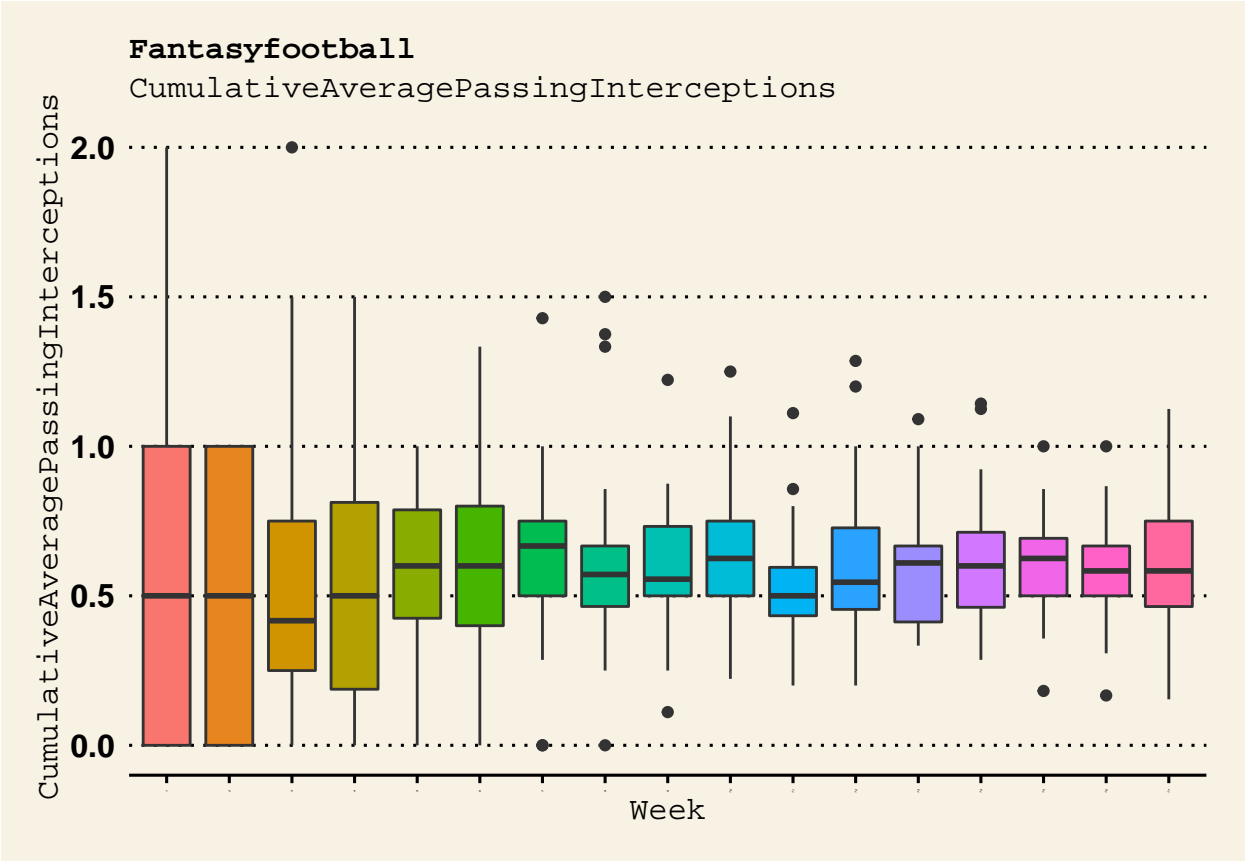
    theme(plot.title      = element_text(size = rel(0.5)),
          plot.subtitle   = element_text(size = rel(0.5)),
          axis.text.x     = element_text(angle=65, vjust=0.6,size=1),
          axis.title       = element_text(size = rel(0.5)),
          legend.position  = "right",
          legend.direction = "vertical",
          legend.title     = element_text(size = rel(0.5)))

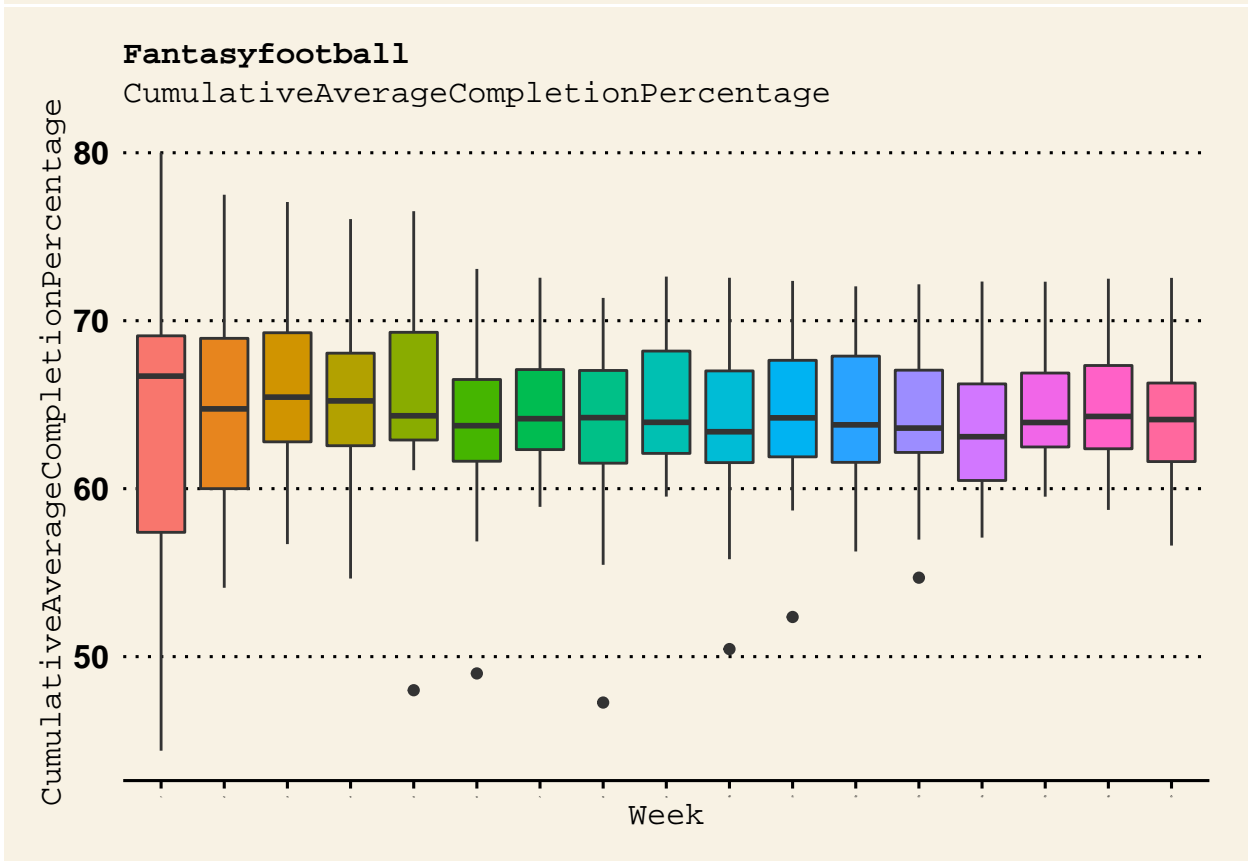
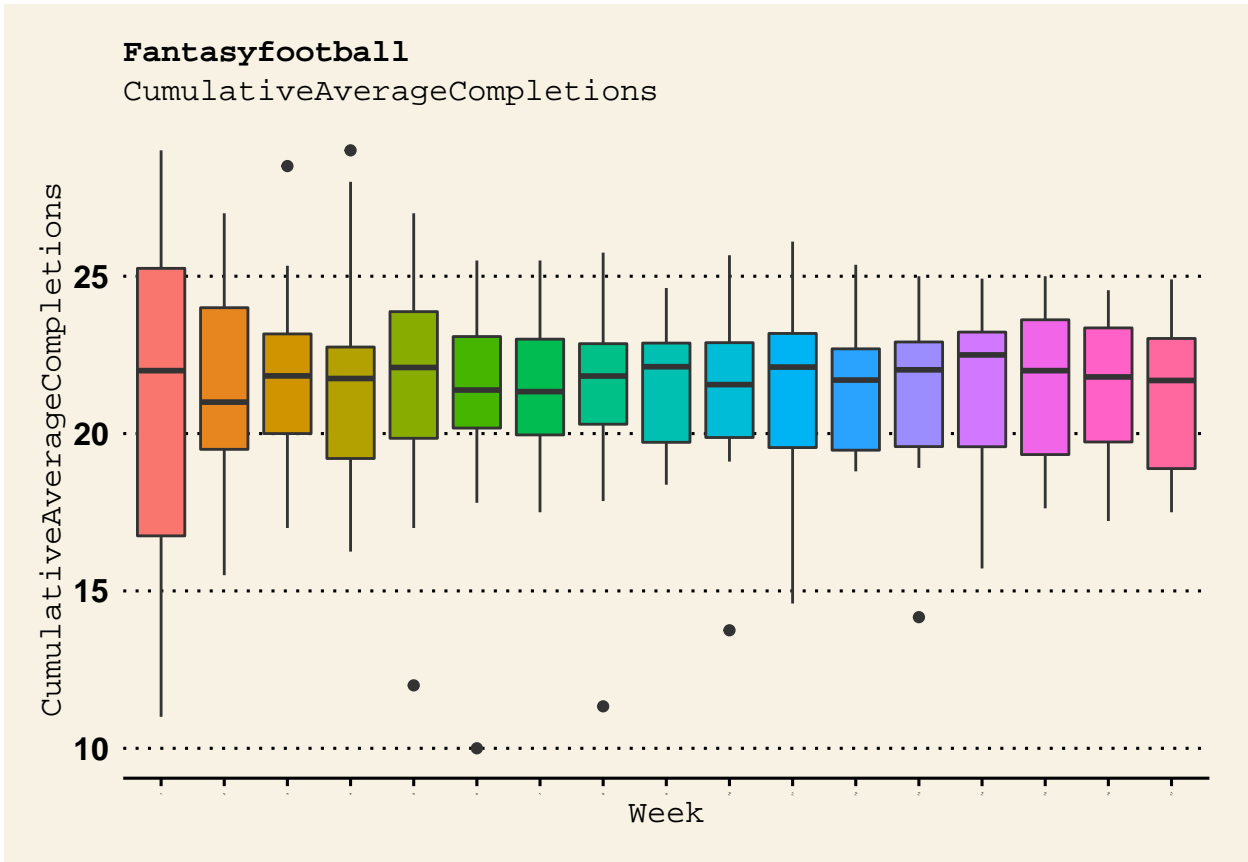
print(ggplotp)
}

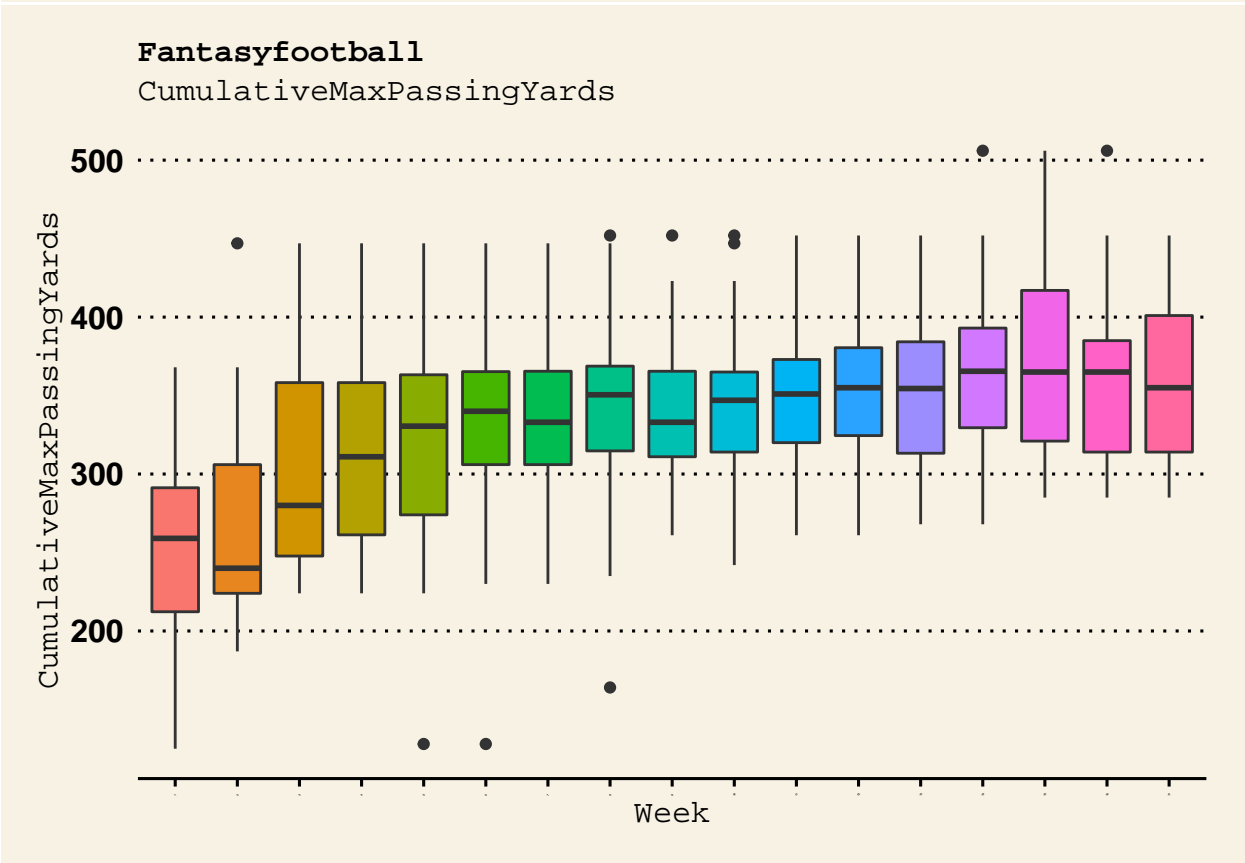
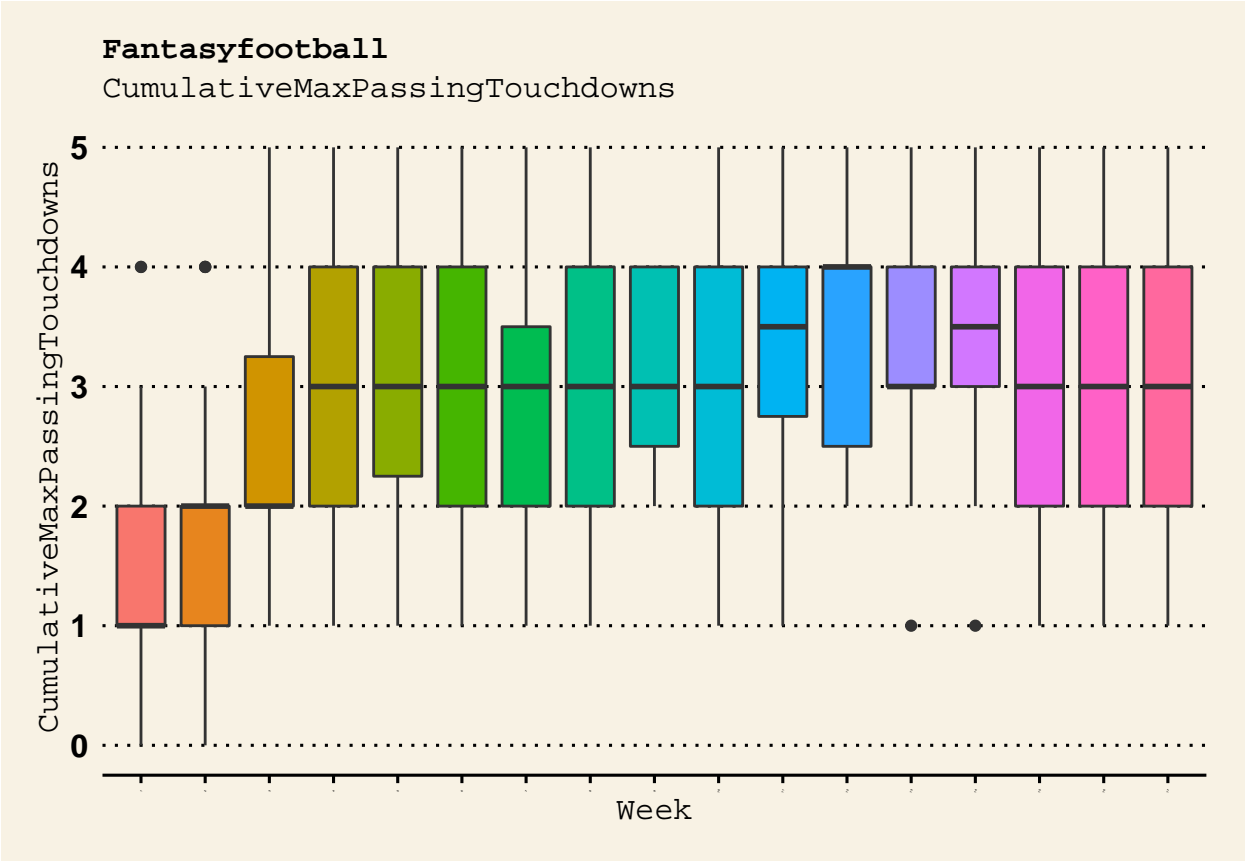
```





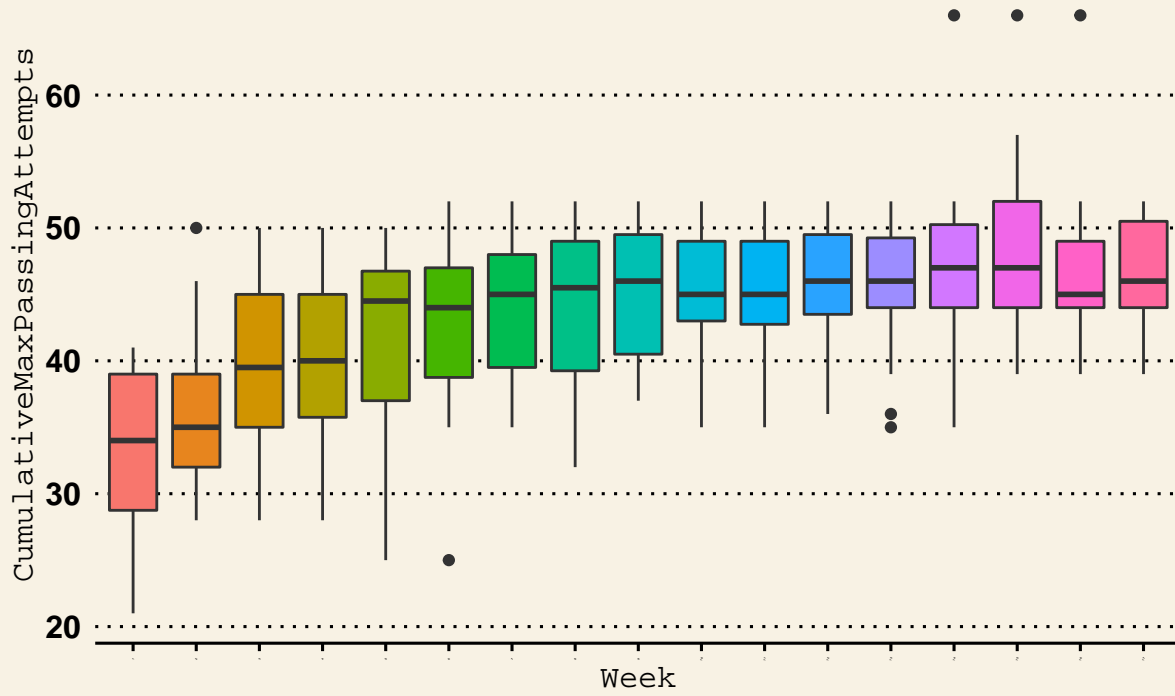






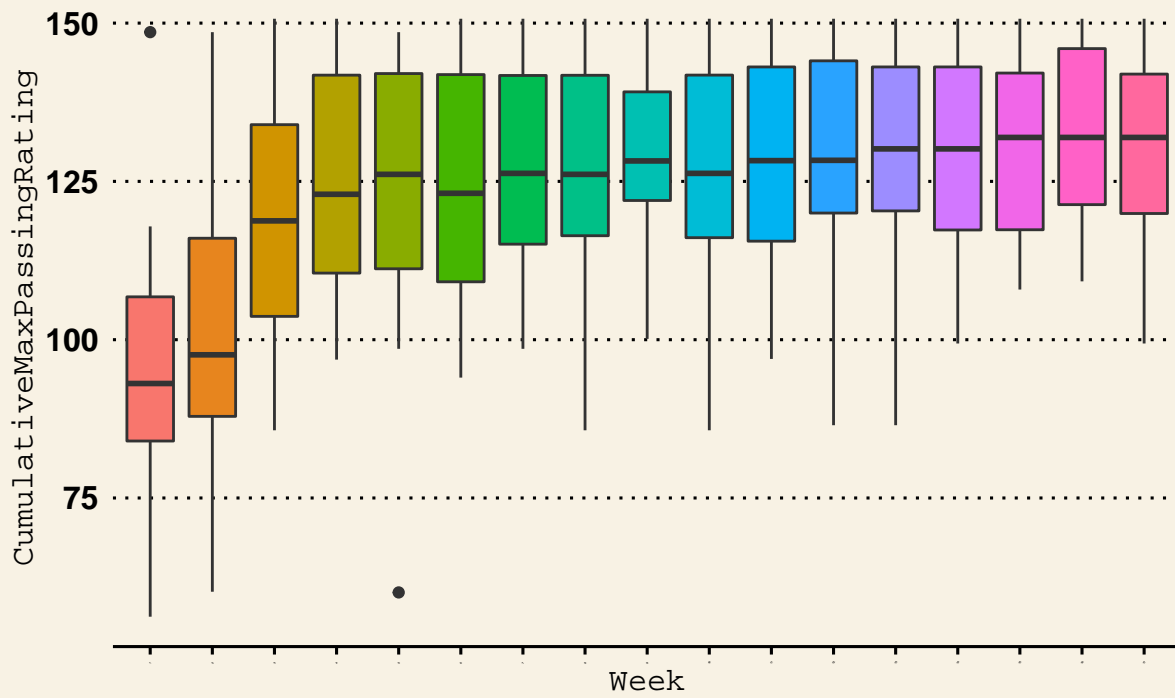
### Fantasyfootball

CumulativeMaxPassingAttempts



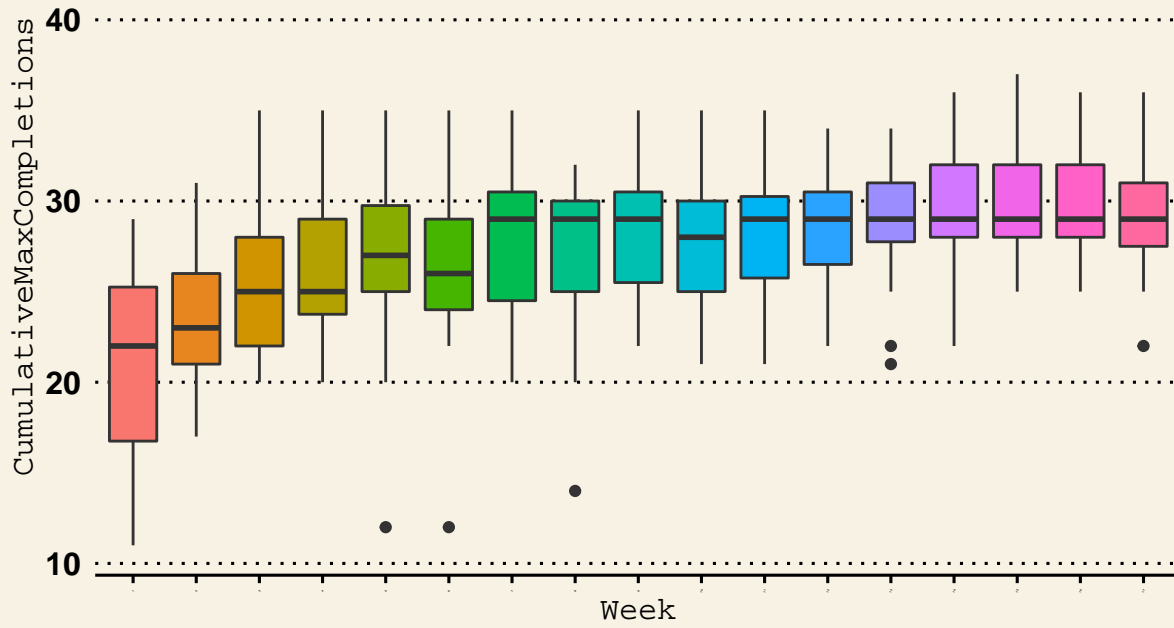
### Fantasyfootball

CumulativeMaxPassingRating

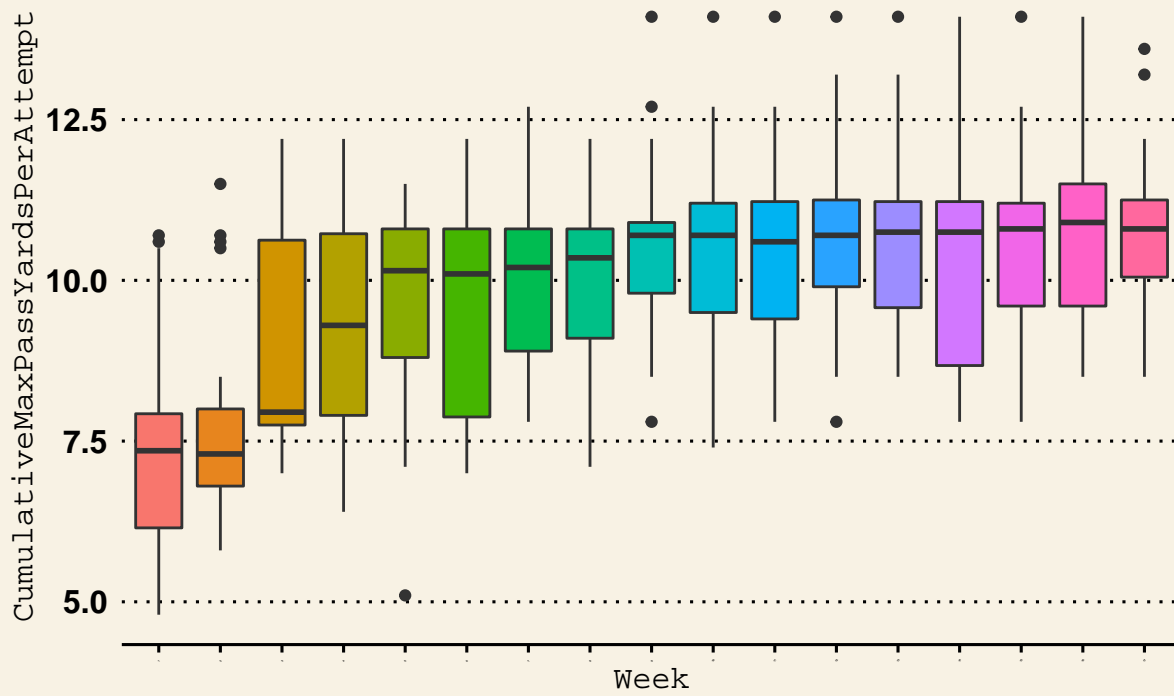


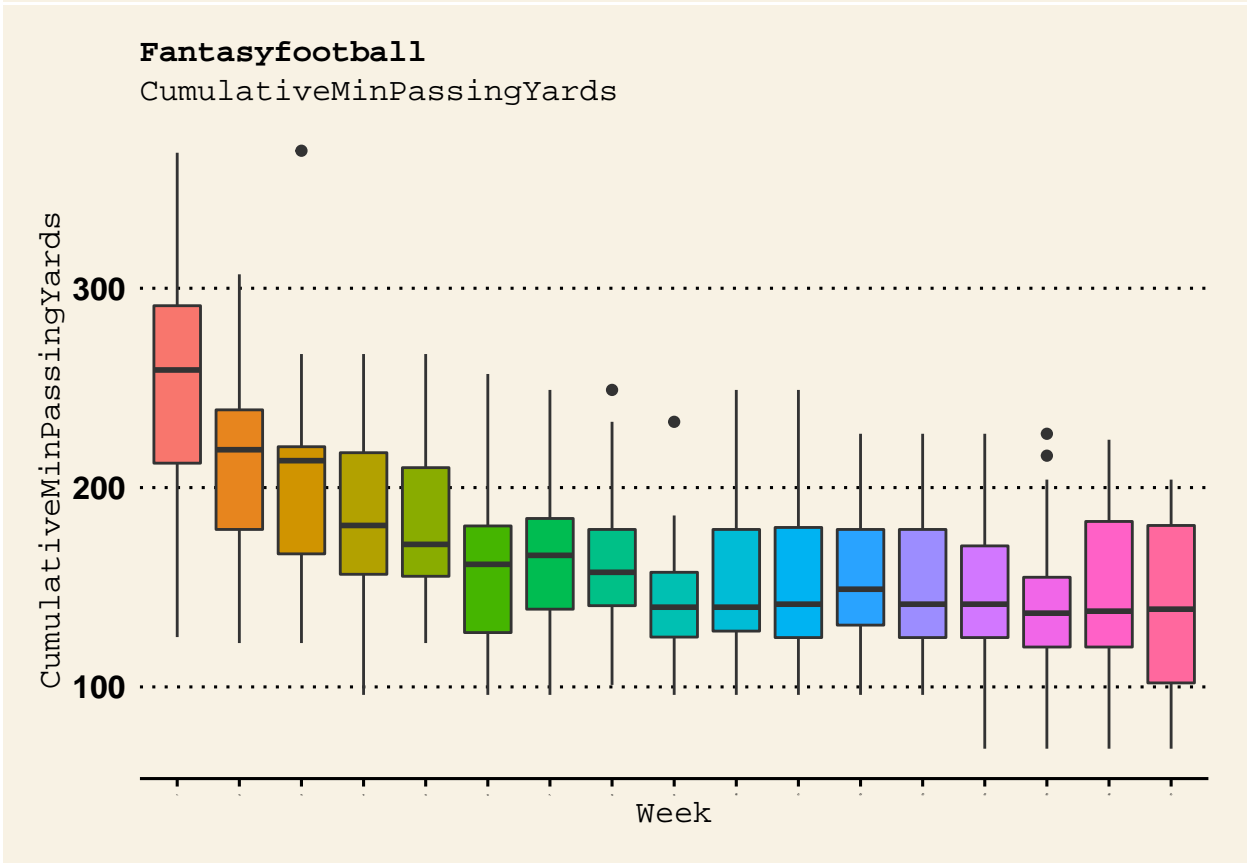
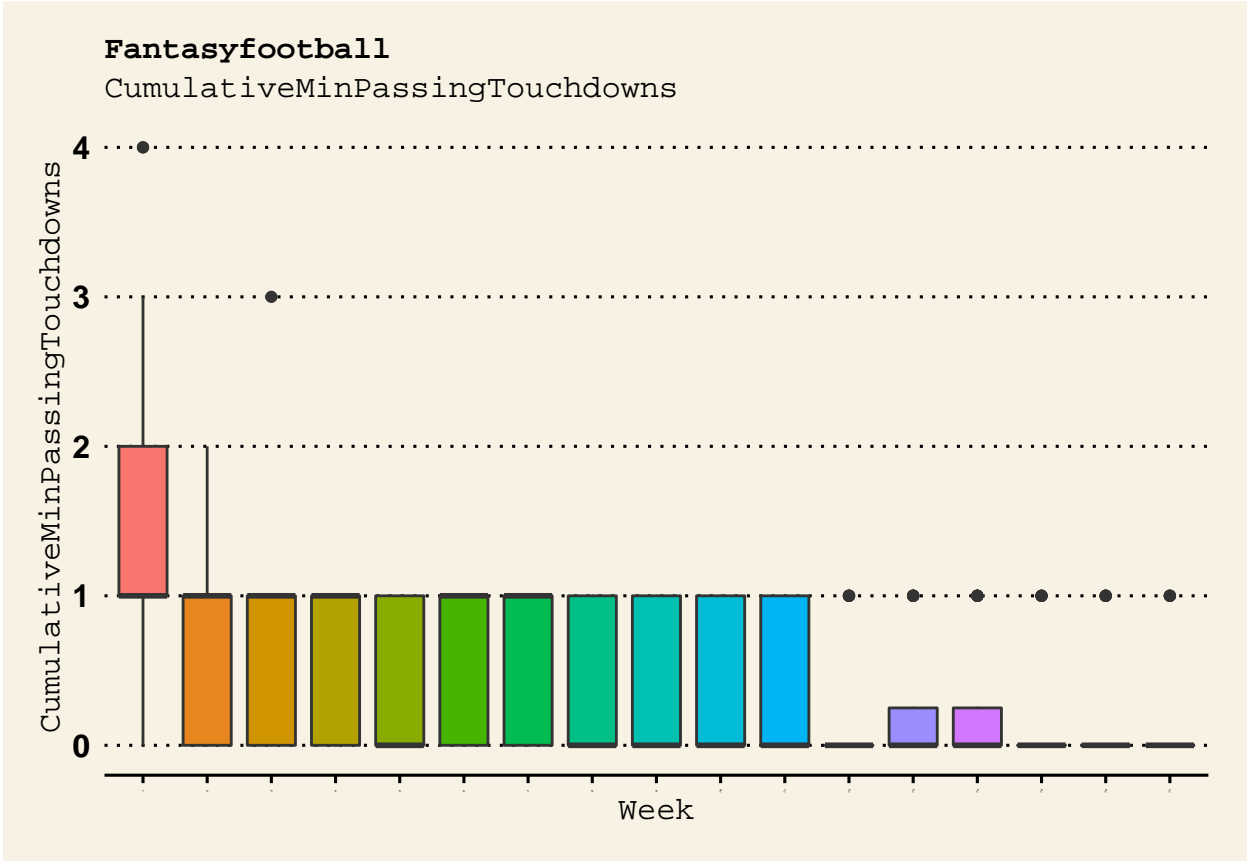


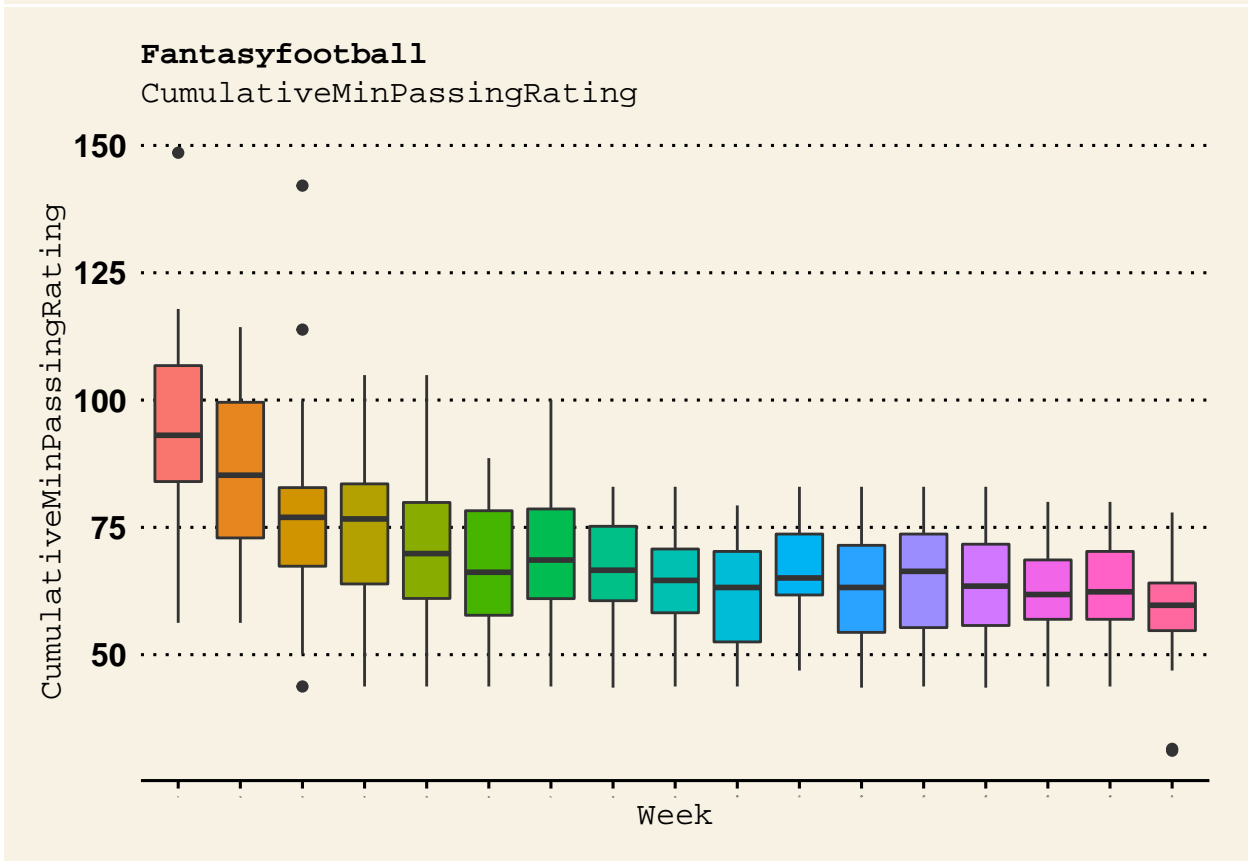
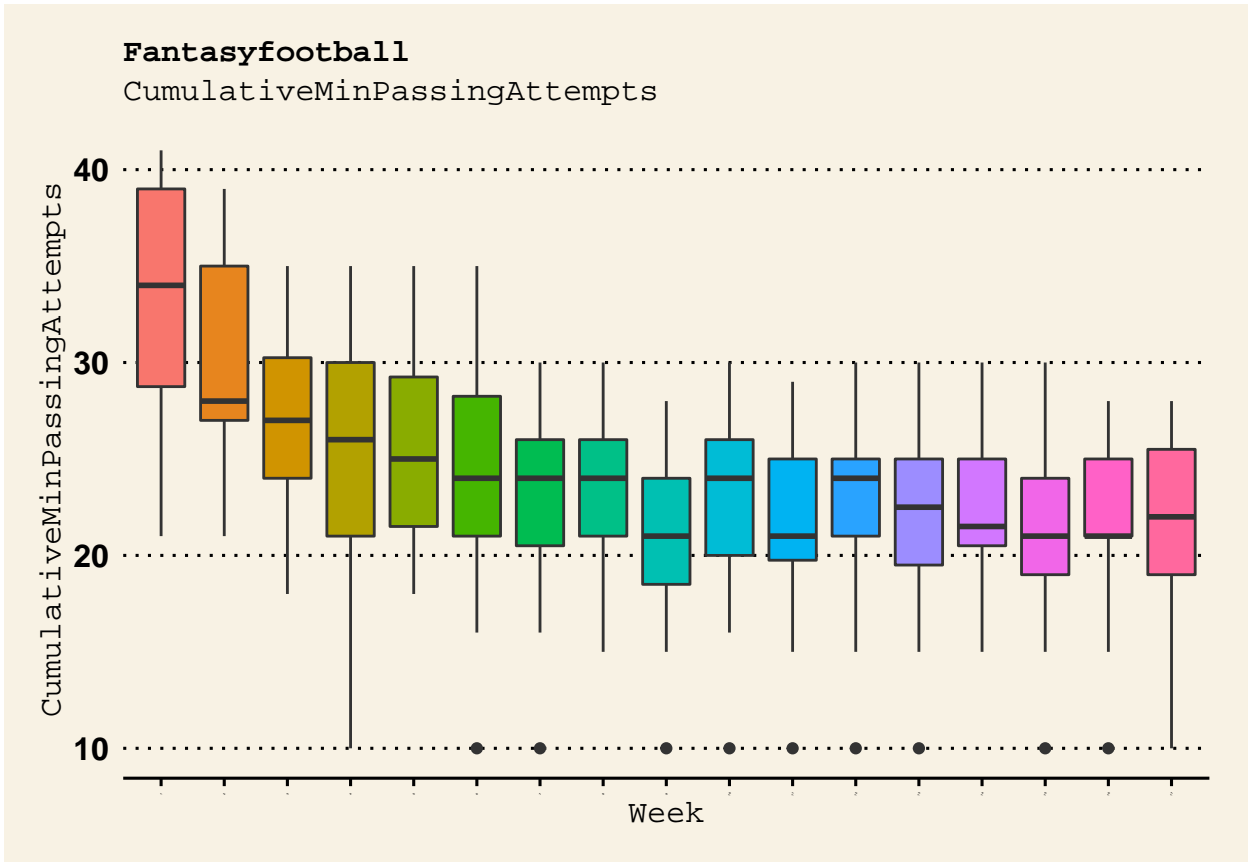
**Fantasyfootball**  
CumulativeMaxCompletions

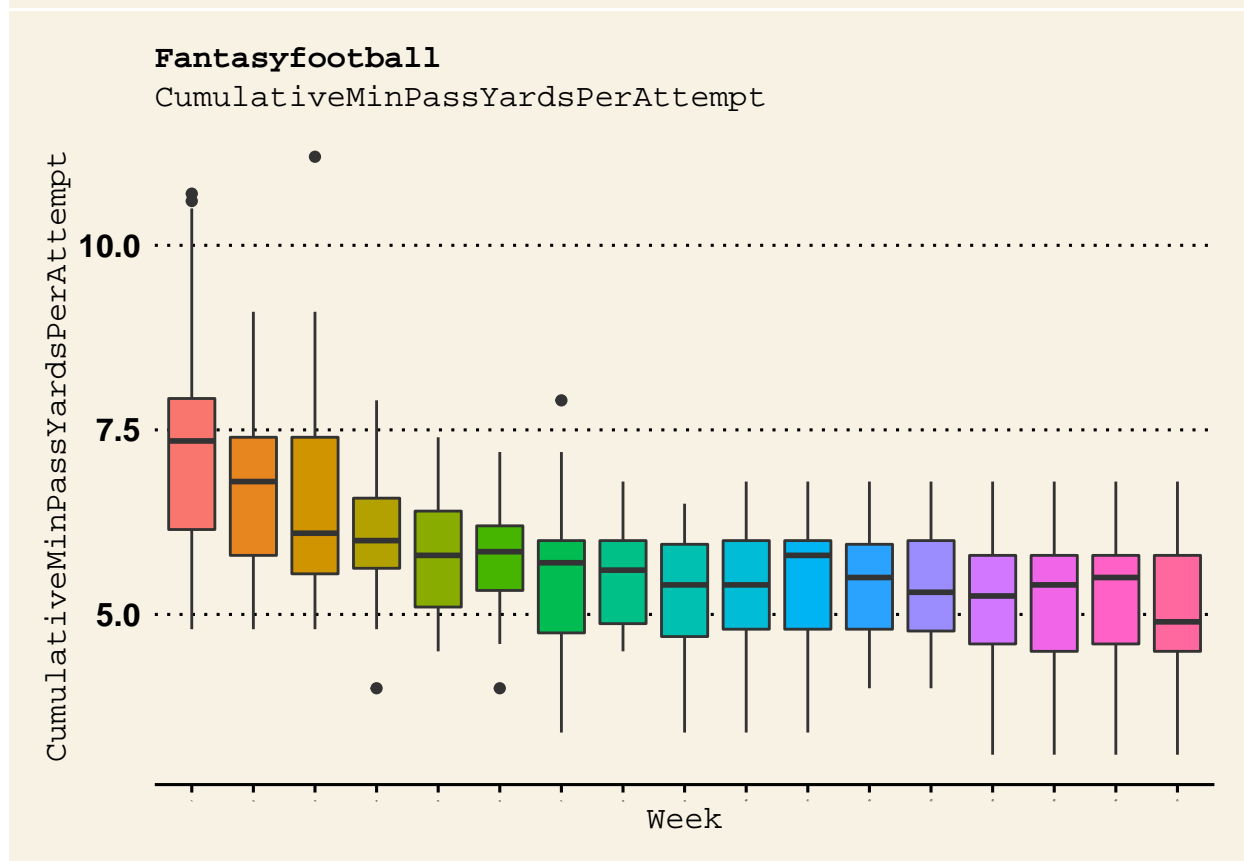
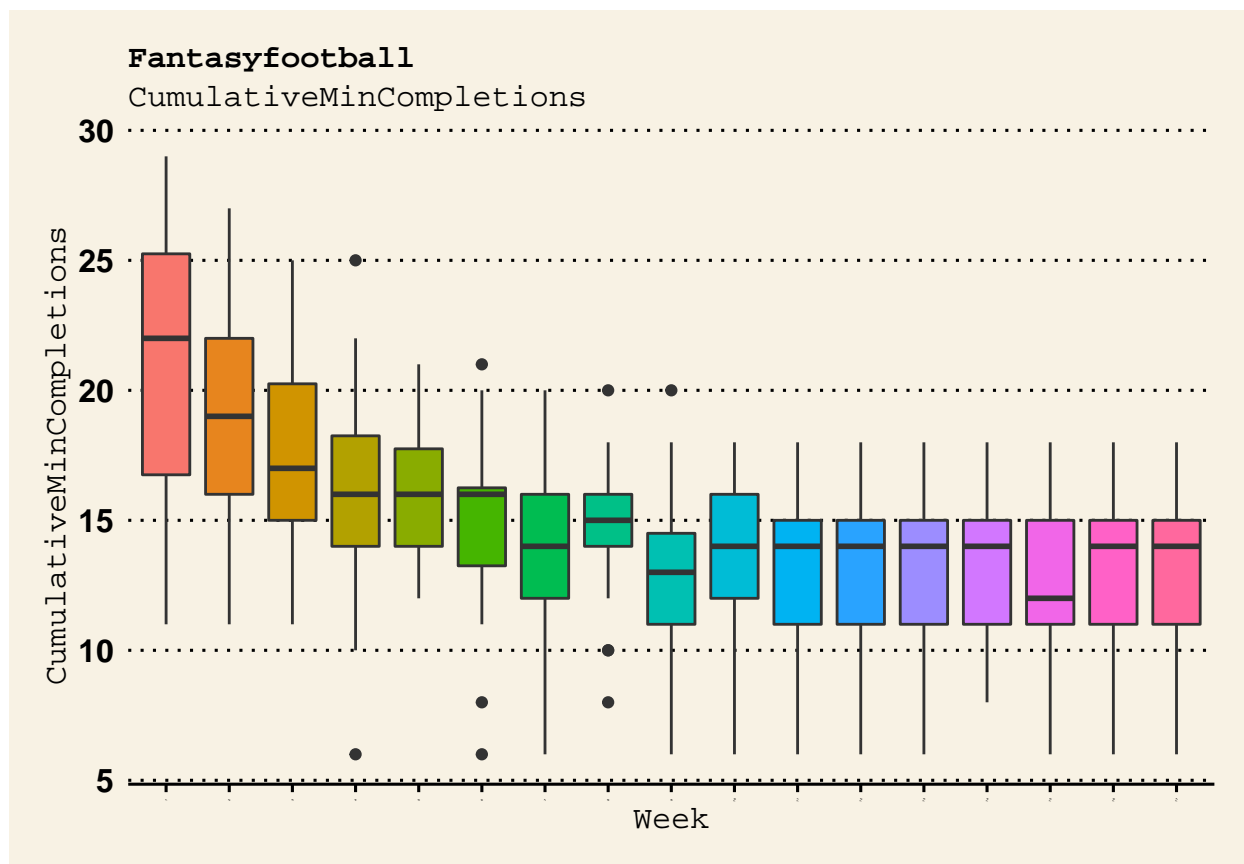


**Fantasyfootball**  
CumulativeMaxPassYardsPerAttempt



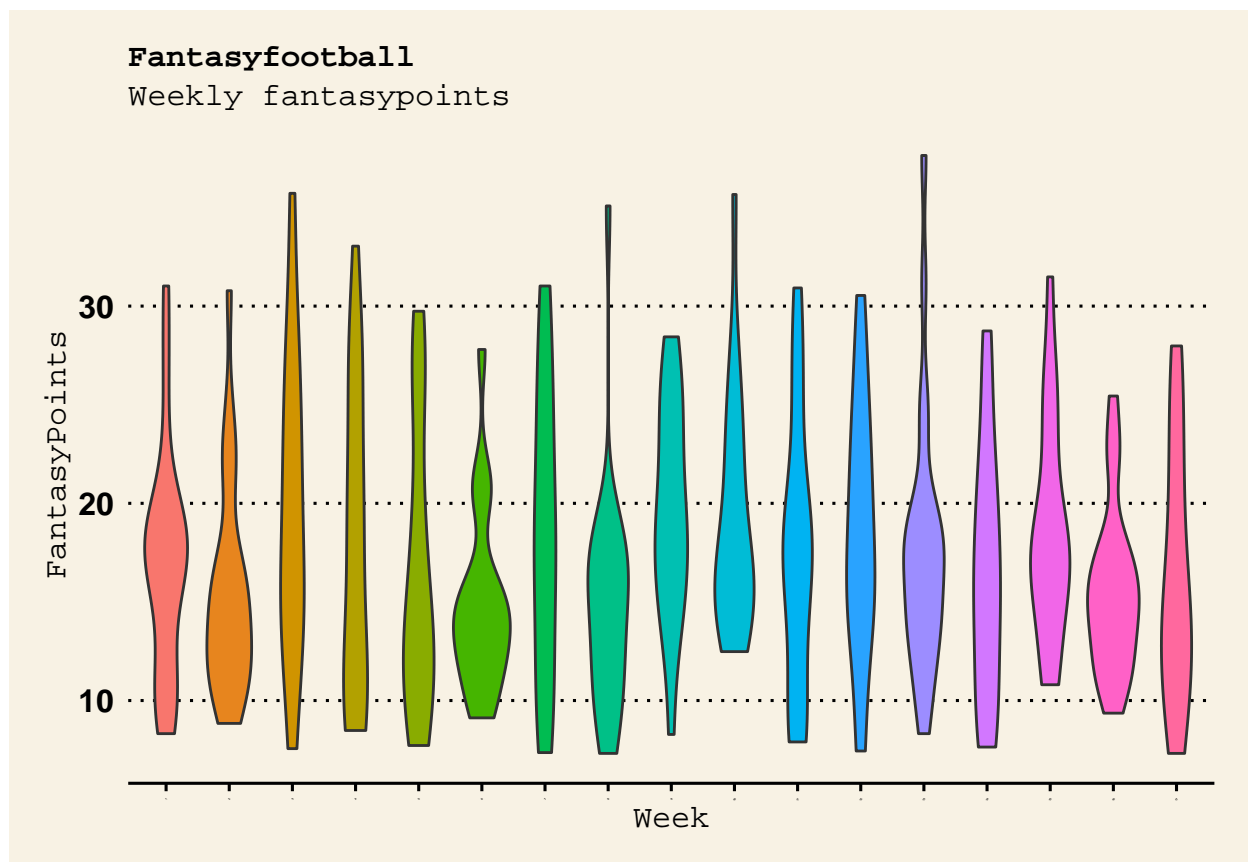






### ## 8.3 Violin plots Derived Feature set

```
eda_derived %>% ggplot(aes(y=FantasyPoints,x=Week,fill=Week,group=Week))+
  geom_violin(show.legend = FALSE)+
  xlab("Week")+ylab("FantasyPoints")+
  labs(title="Fantasyfootball",
        subtitle="Weekly fantasypoints",
        aption="Source: Fantasyfootball")+
  theme_ws() +
  theme(plot.title = element_text(size = rel(0.5)),
        plot.subtitle = element_text(size = rel(0.5)),
        axis.text.x = element_text(angle=65, vjust=0.6,size=1),
        axis.title = element_text(size = rel(0.5)),
        legend.position = "right",
        legend.direction = "vertical",
        legend.title = element_text(size = rel(0.5)))
```



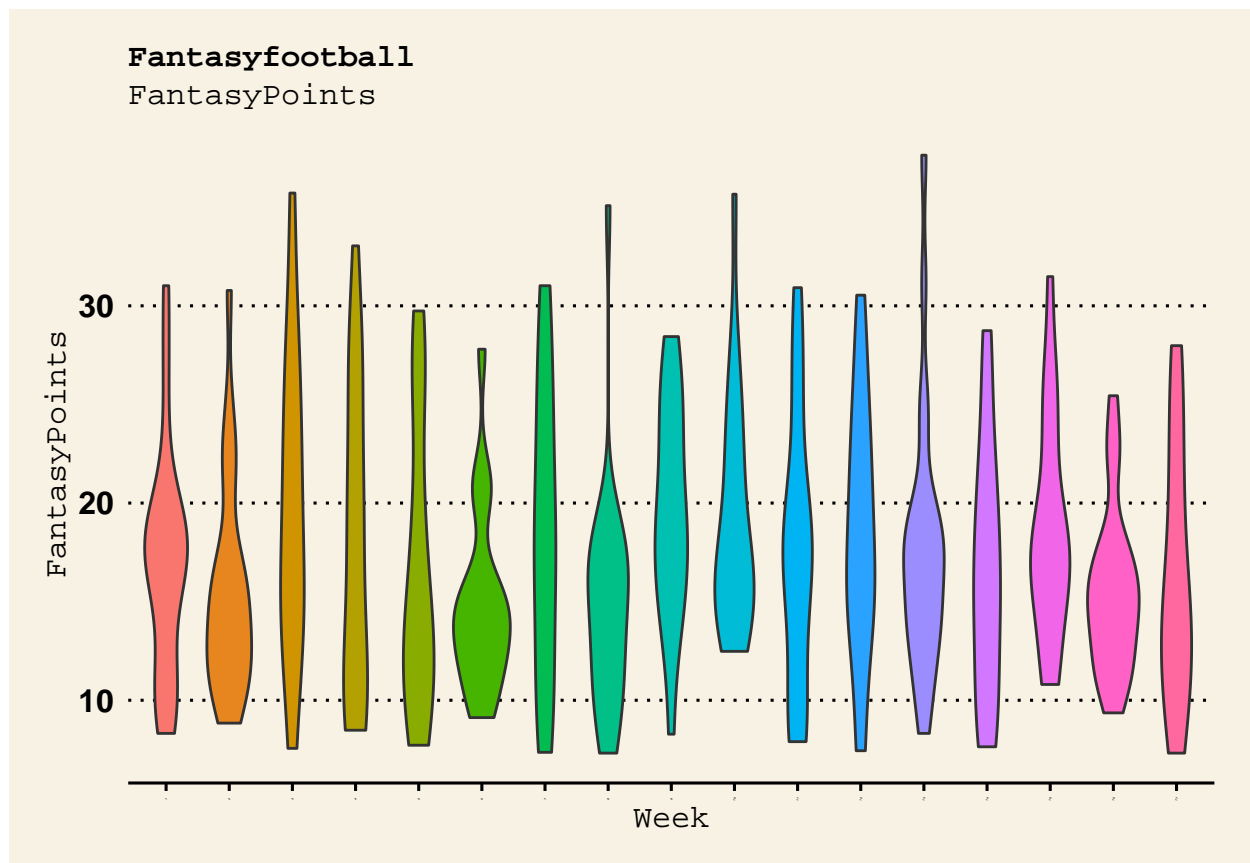
```
for (i in 2:20) {
  ggplotp <- eda_derived %>%
    ggplot(aes_string(y=names(eda_derived[i]),x="Week",fill="Week",group="Week"))+
    geom_violin(show.legend = FALSE)+
    xlab("Week")+ylab(names(eda_derived[i]))+
    labs(title="Fantasyfootball",
          subtitle=names(eda_derived[i]),
          aption="Source: Fantasyfootball")+
    theme_ws() +
  }
```

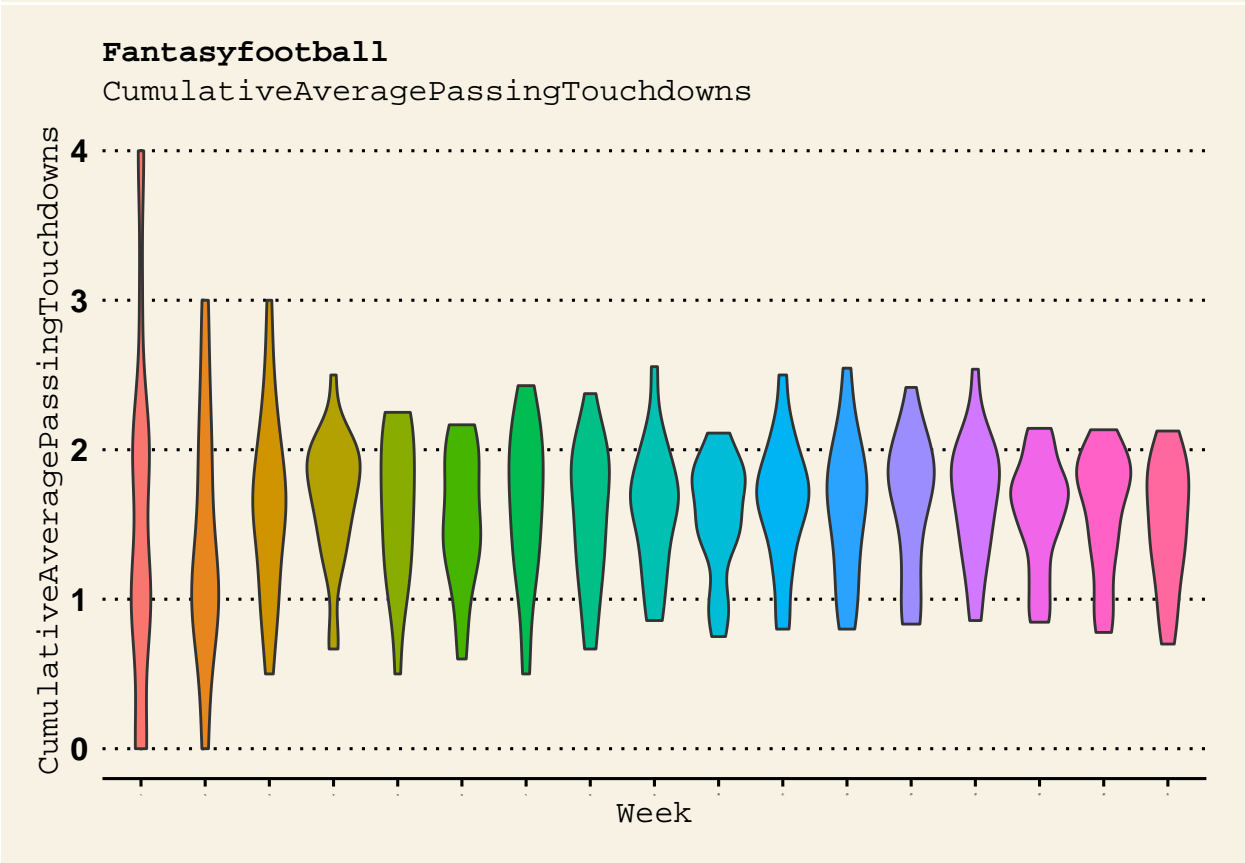
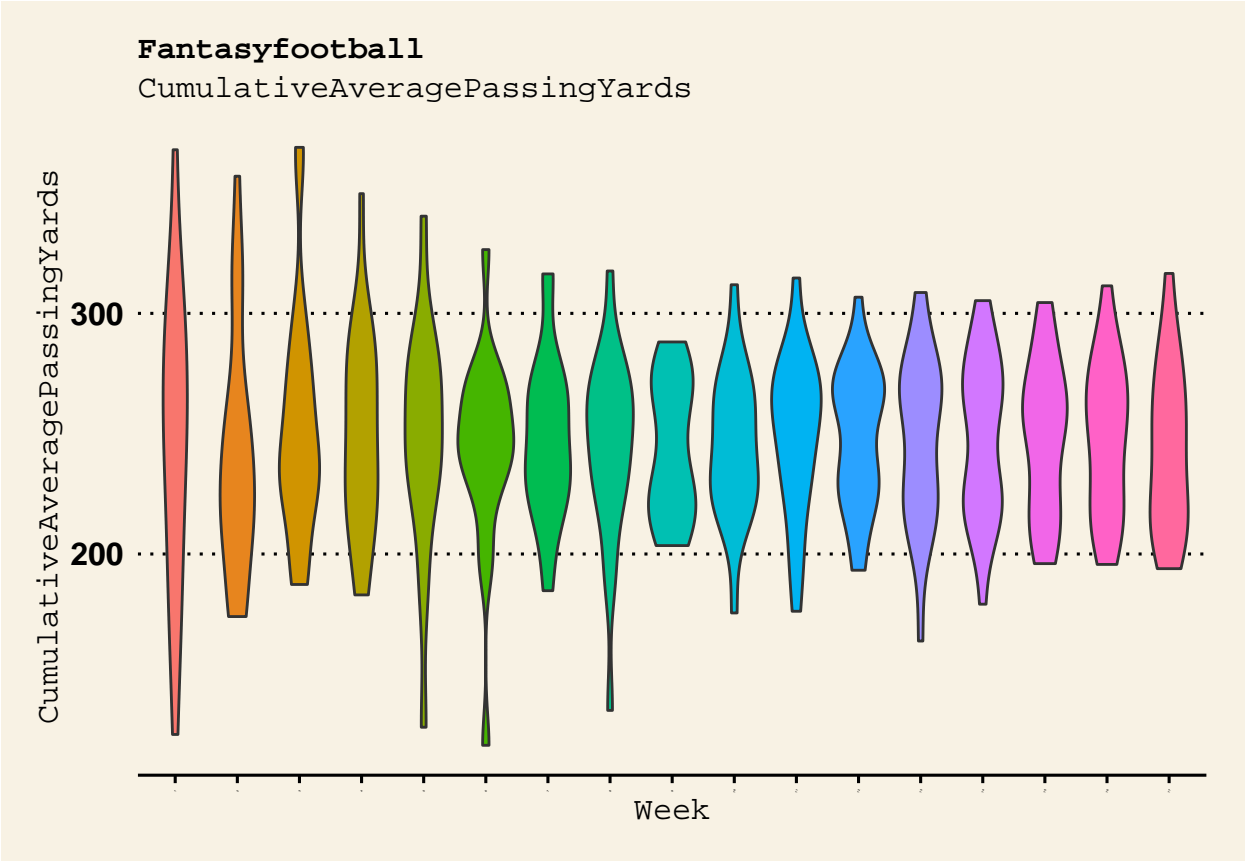
```

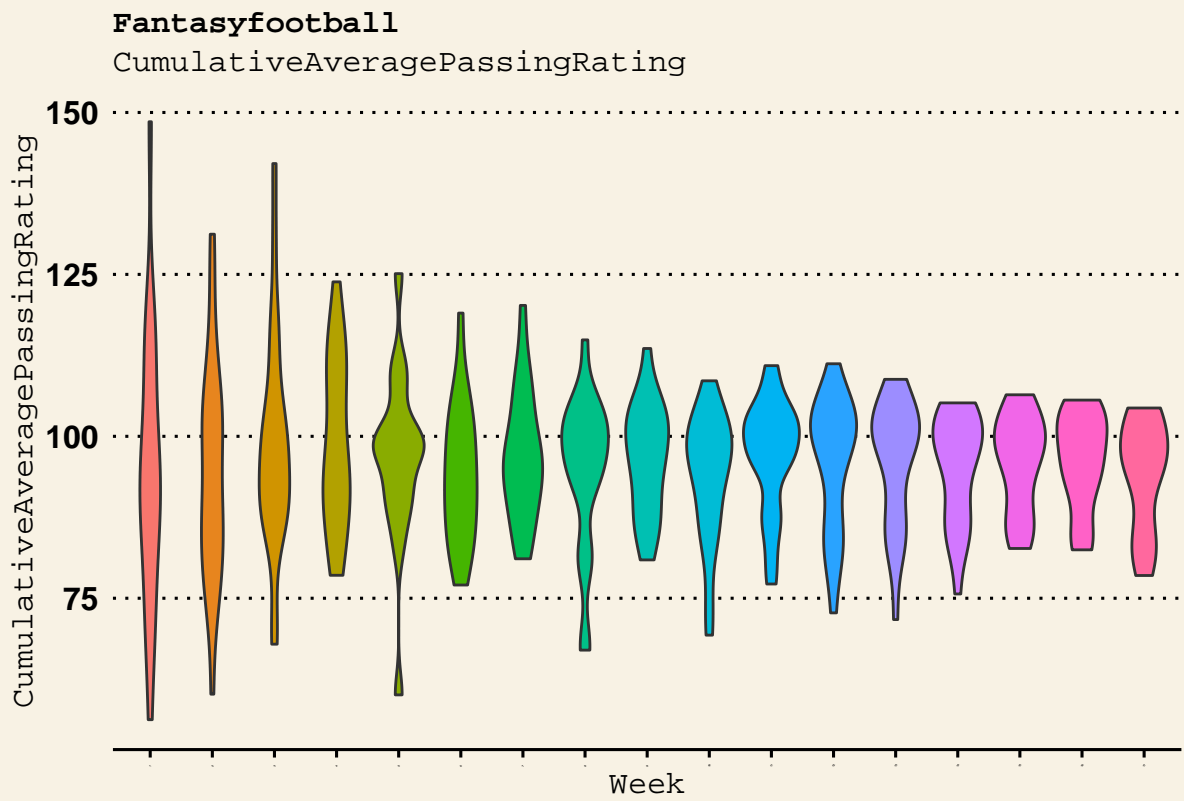
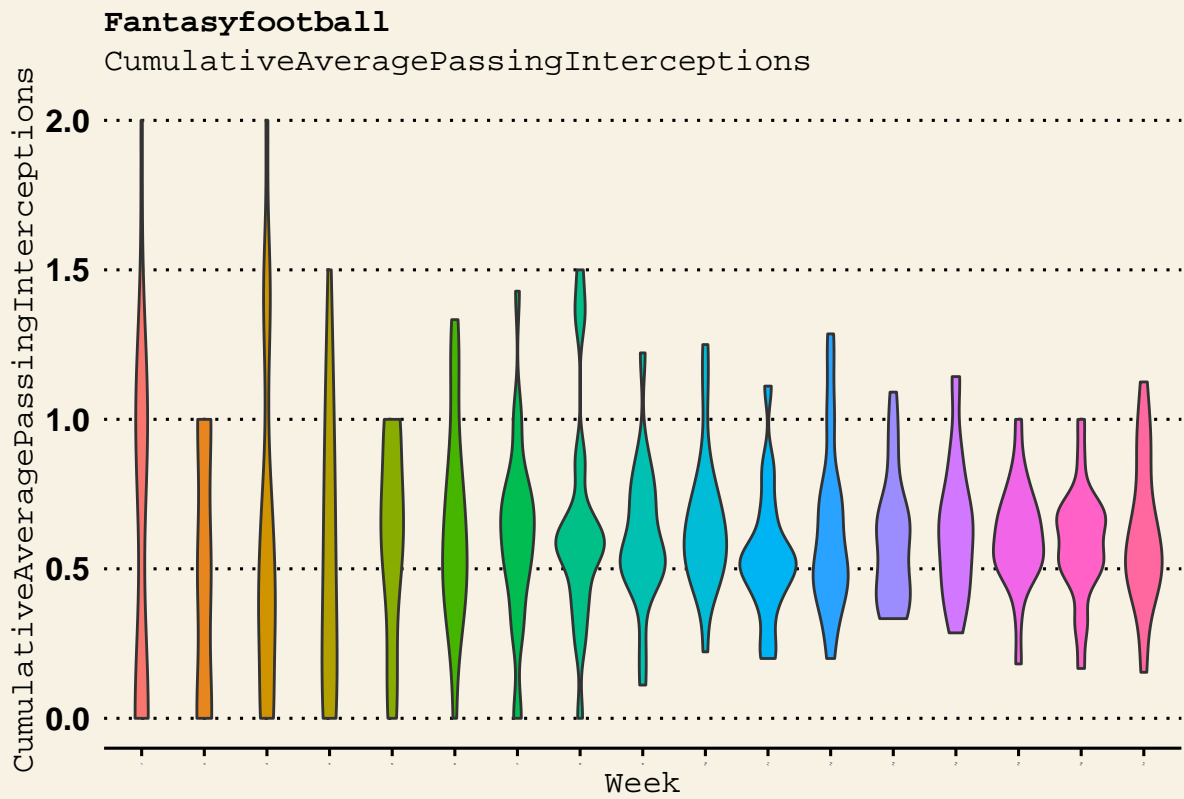
    theme(plot.title      = element_text(size = rel(0.5)),
          plot.subtitle   = element_text(size = rel(0.5)),
          axis.text.x     = element_text(angle=65, vjust=0.6,size=1),
          axis.title       = element_text(size = rel(0.5)),
          legend.position  = "right",
          legend.direction = "vertical",
          legend.title     = element_text(size = rel(0.5)))

    print(ggplotp)
  }

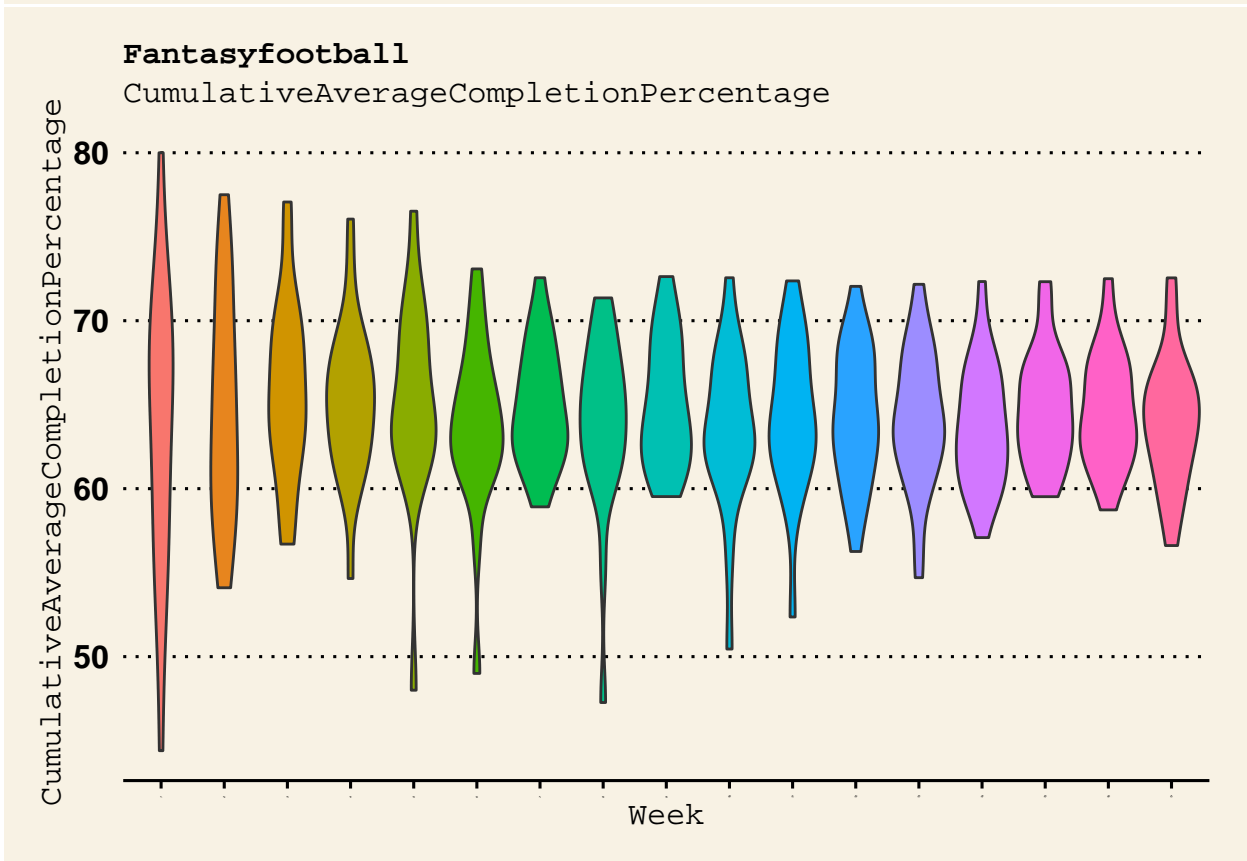
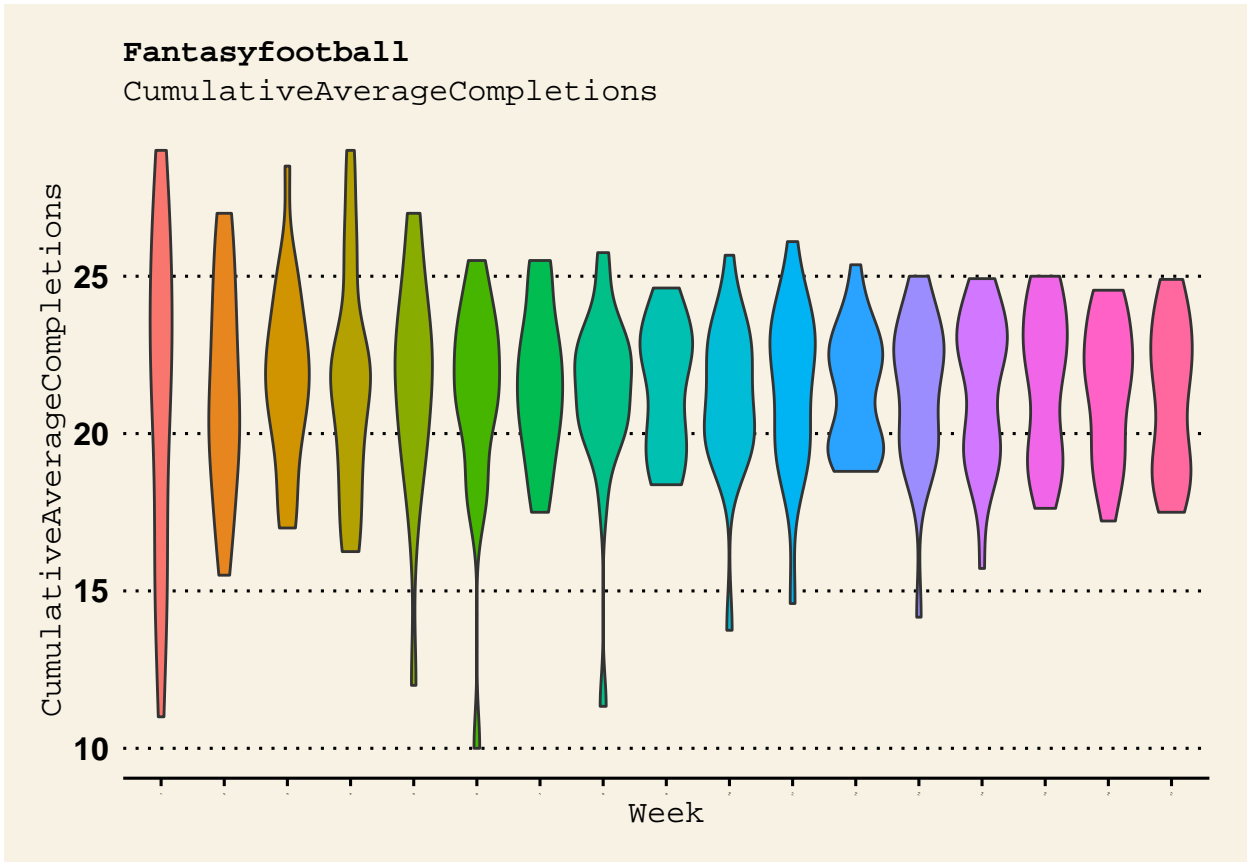
```

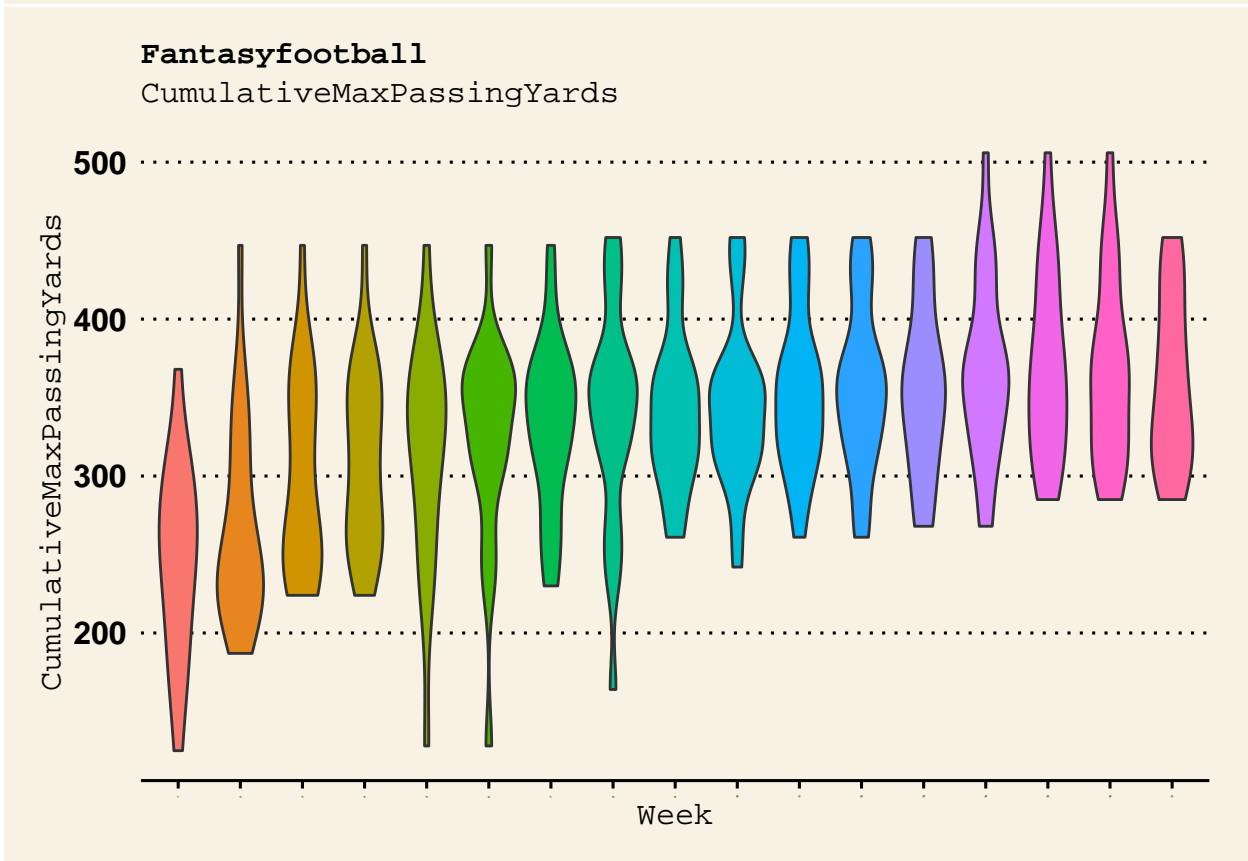
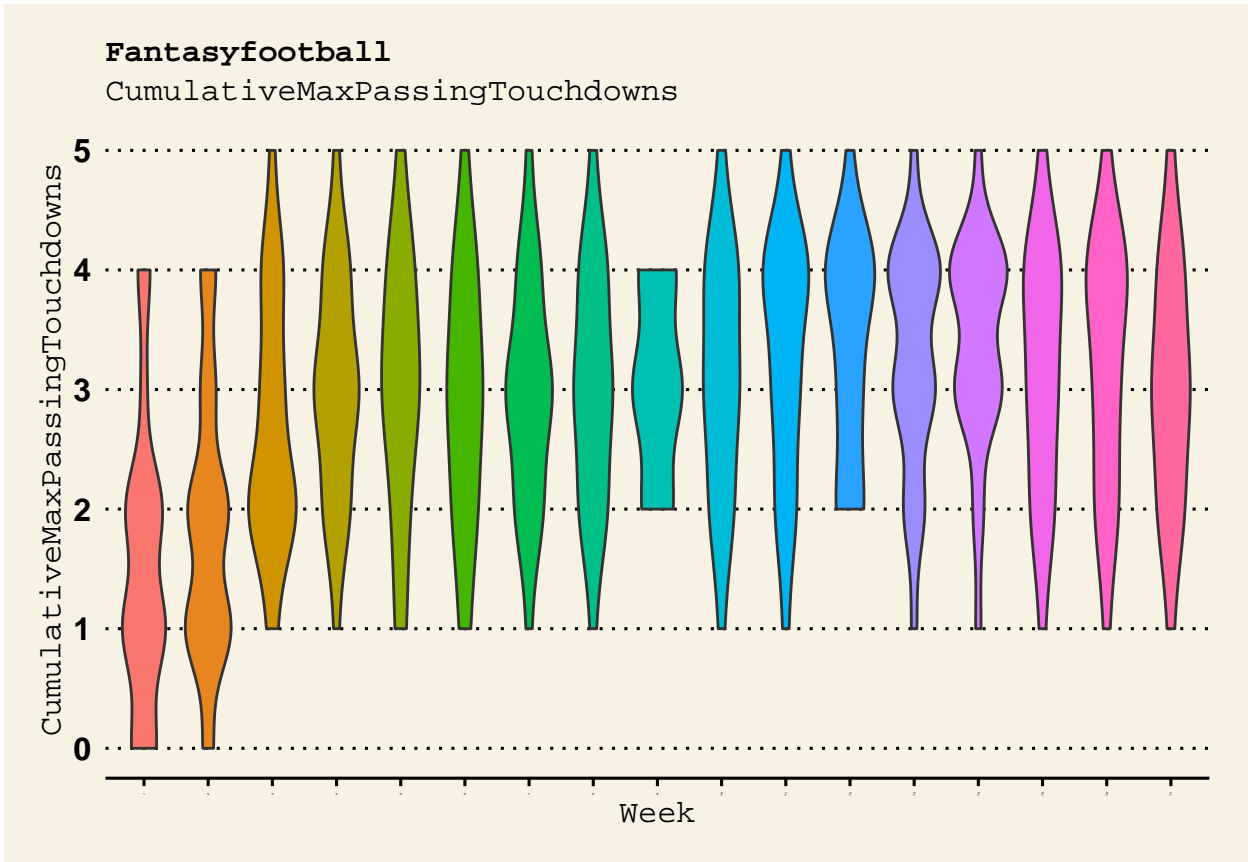


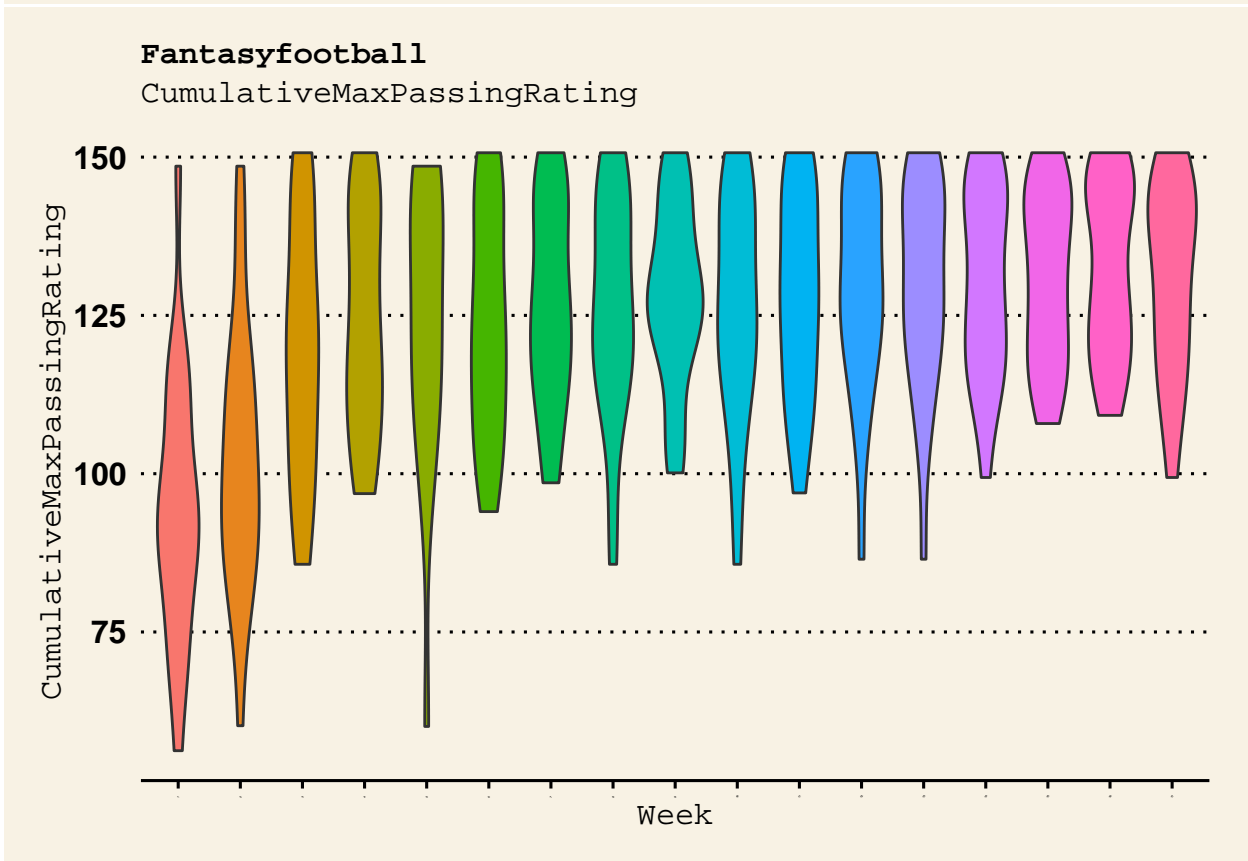
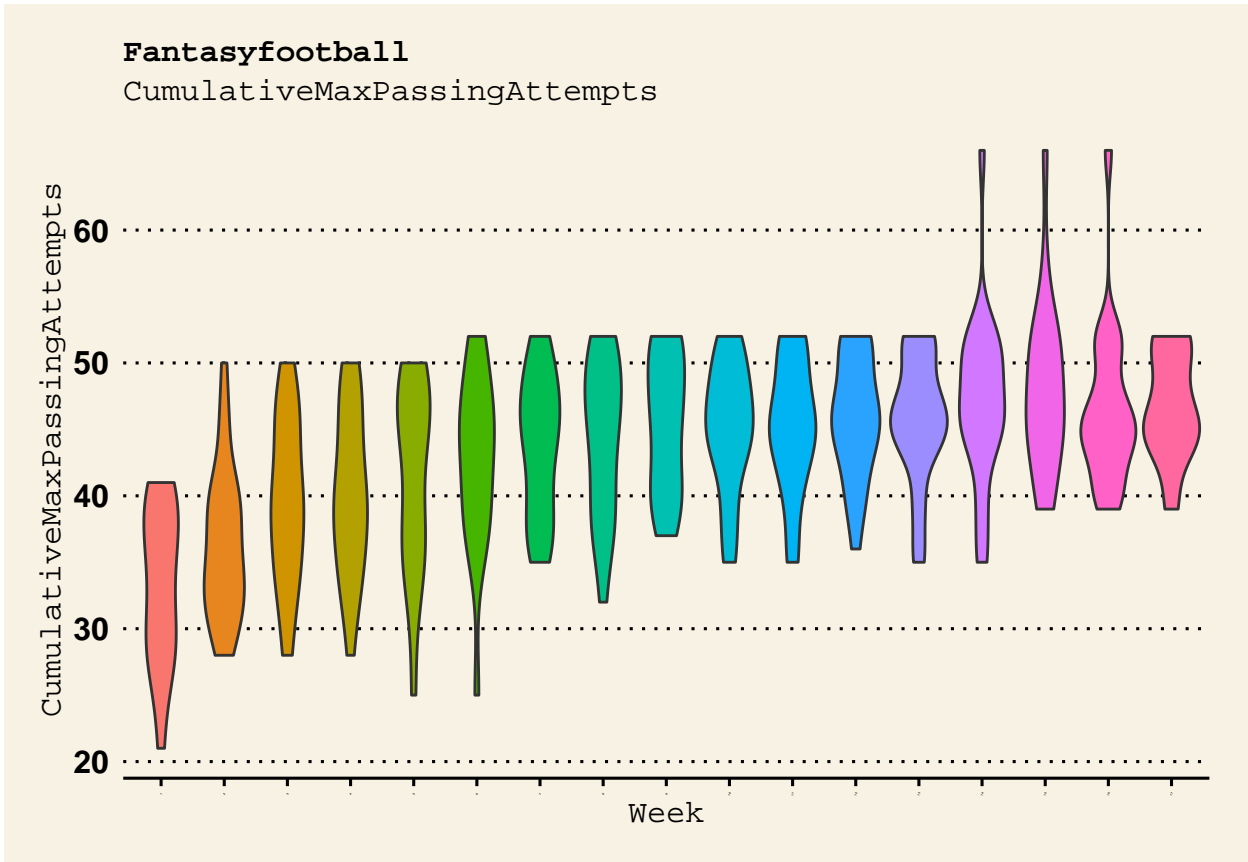




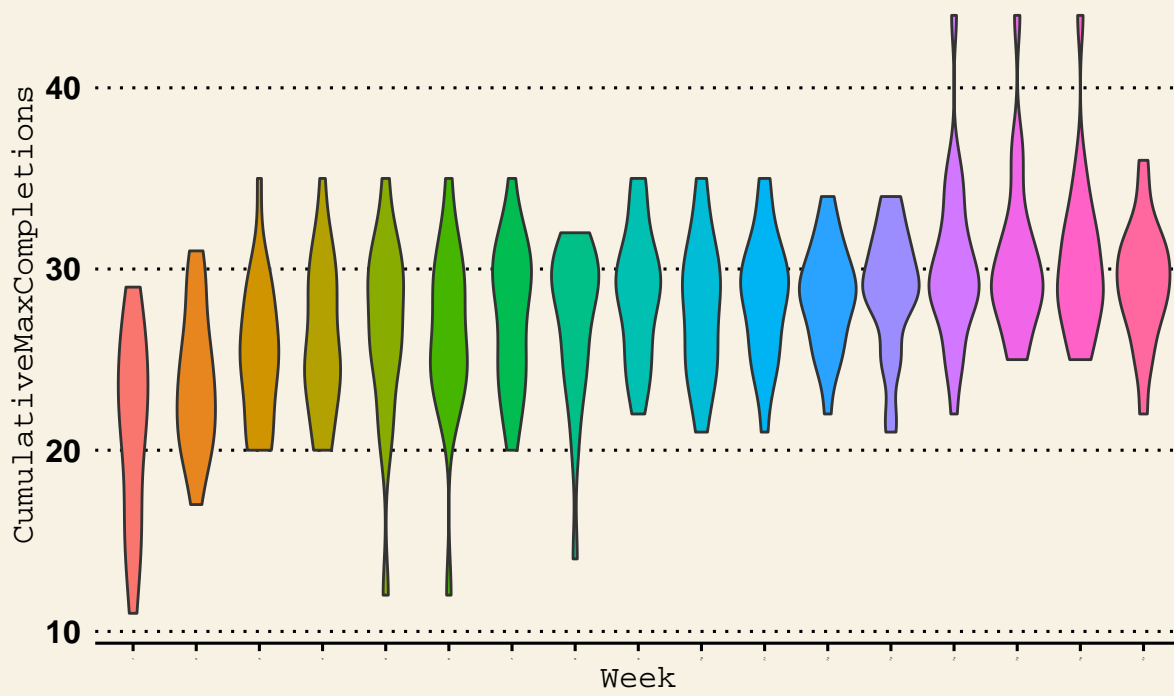




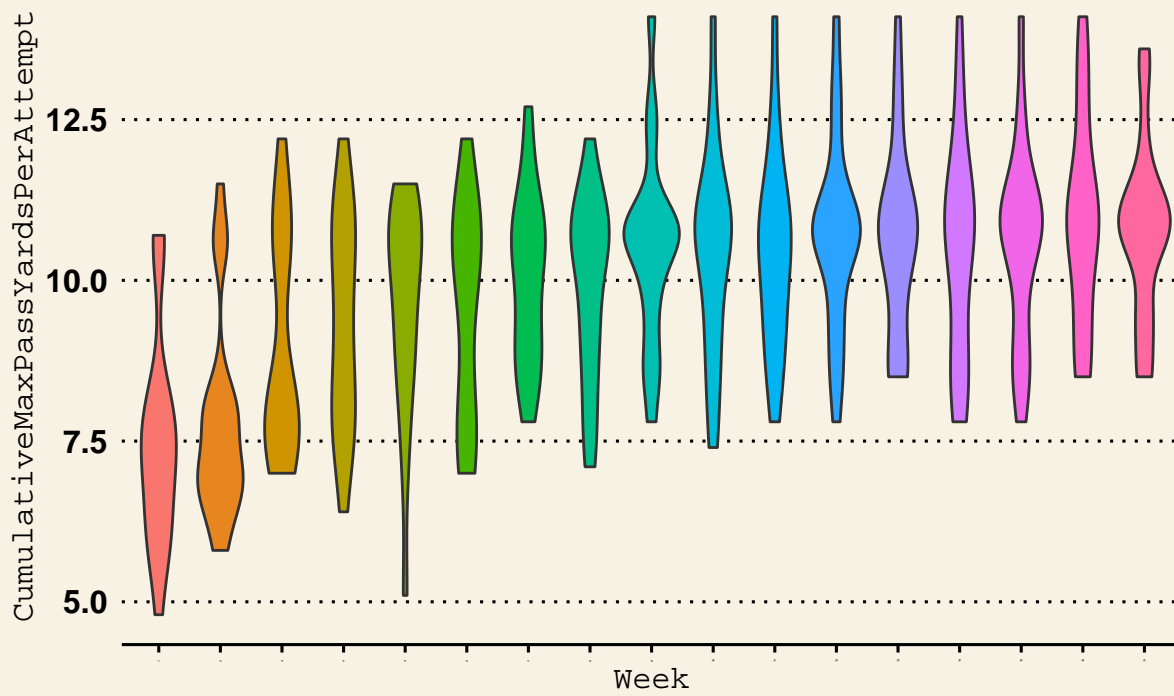




**Fantasyfootball**  
CumulativeMaxCompletions

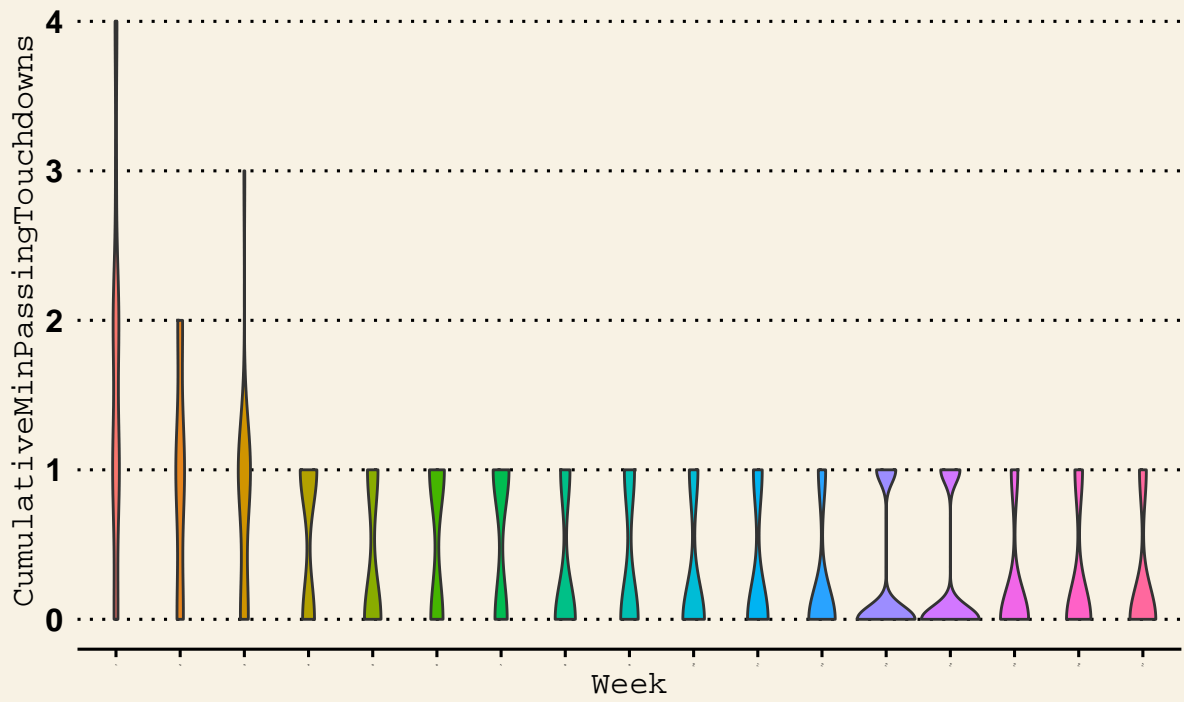


**Fantasyfootball**  
CumulativeMaxPassYardsPerAttempt



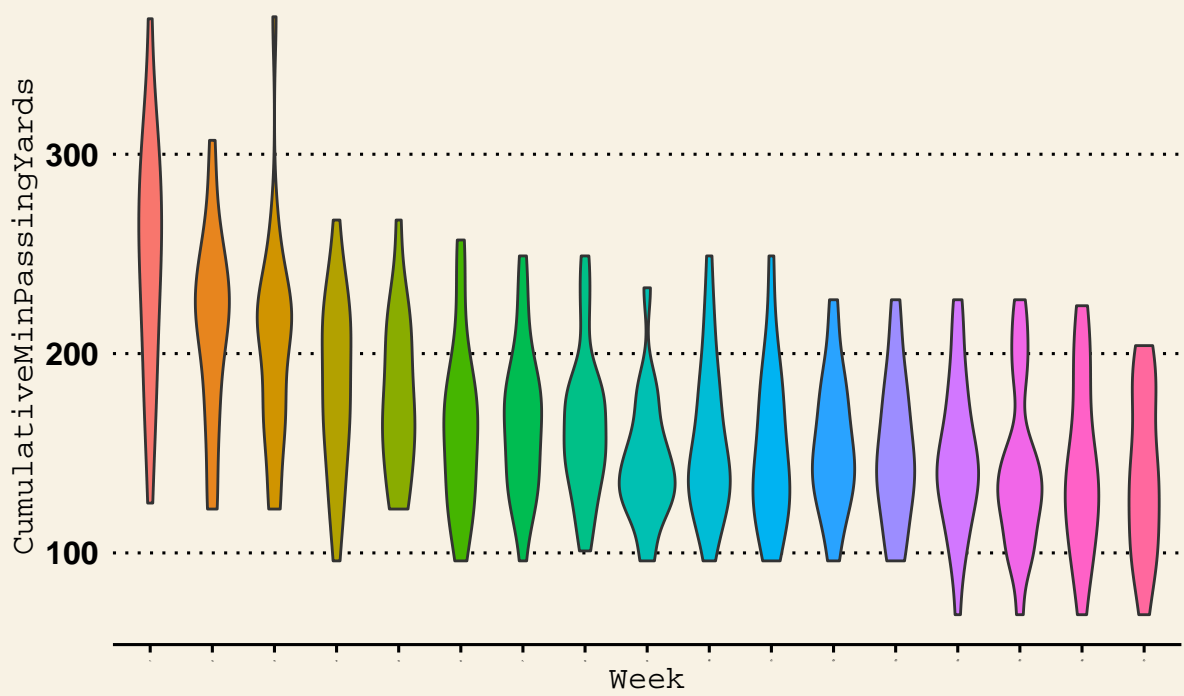
### Fantasyfootball

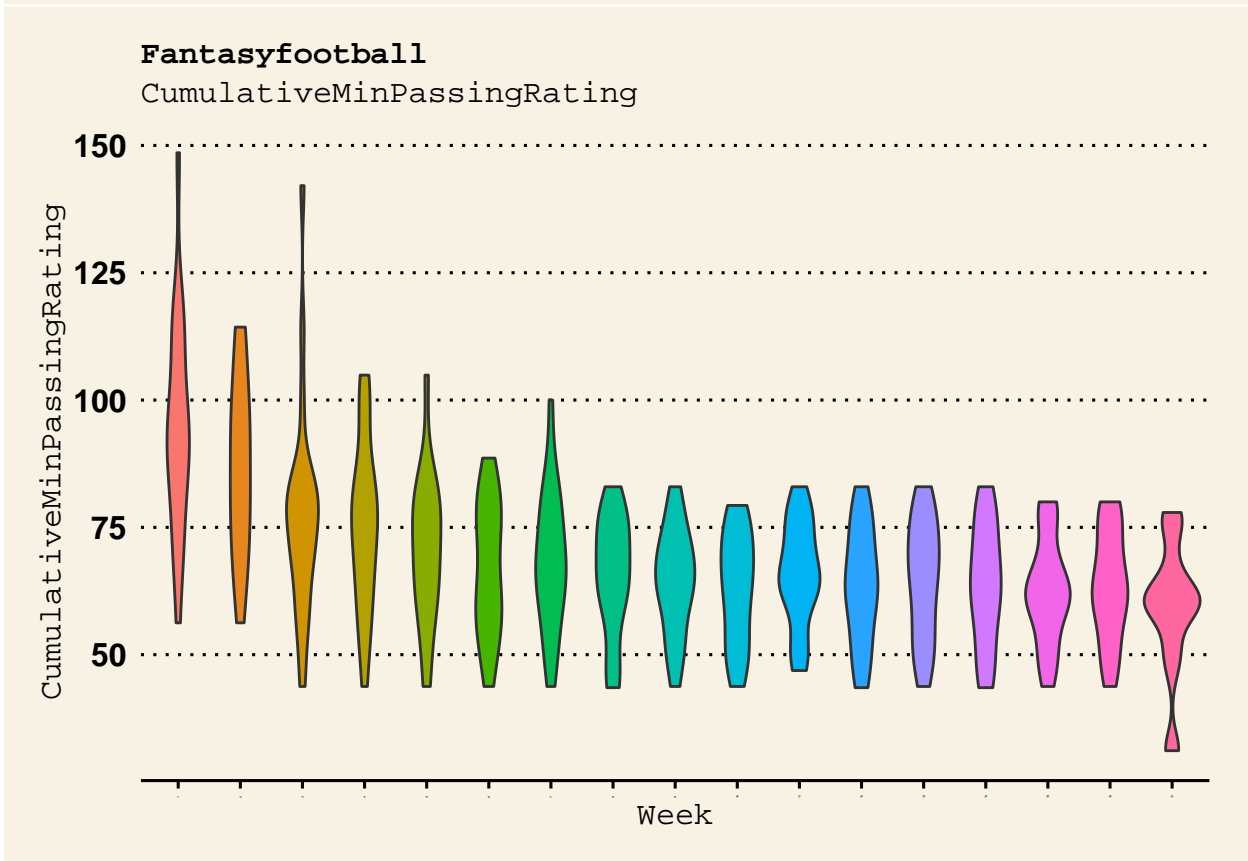
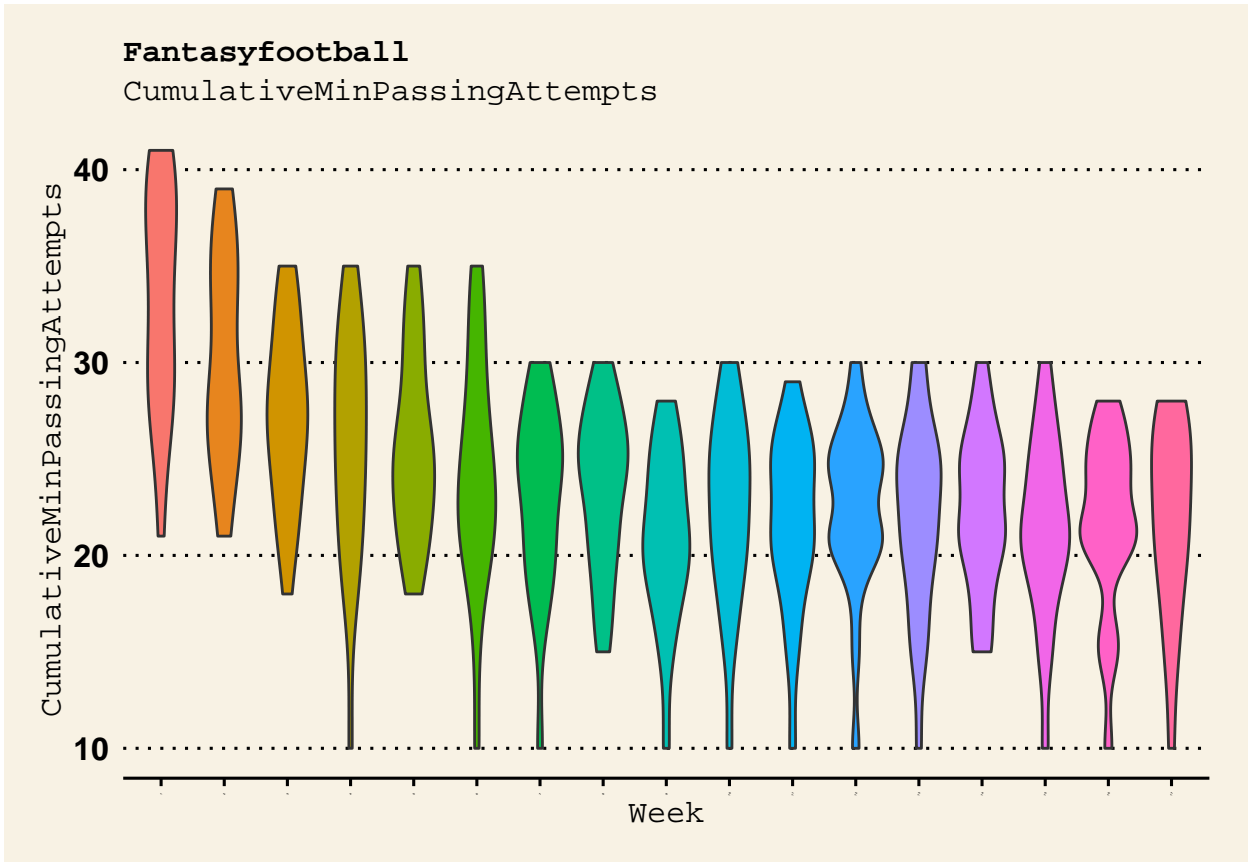
CumulativeMinPassingTouchdowns

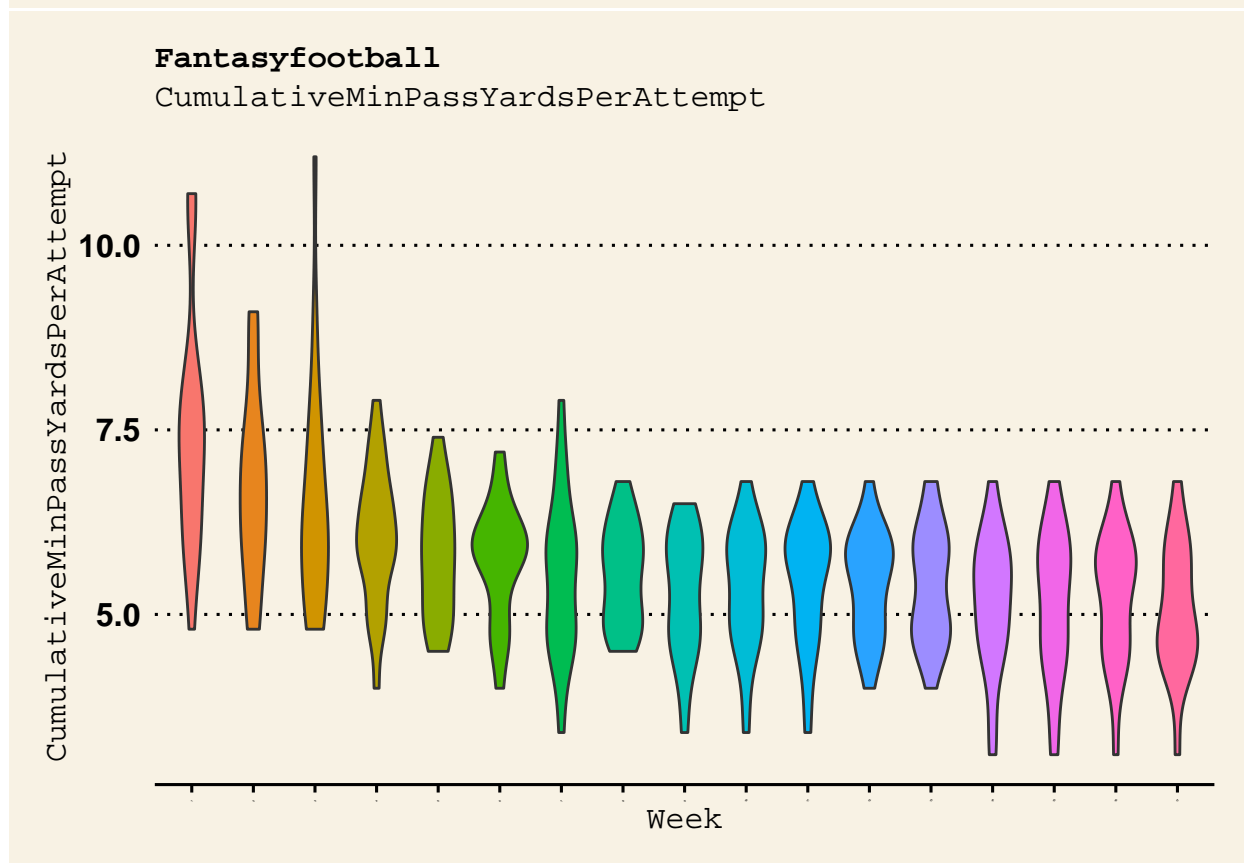
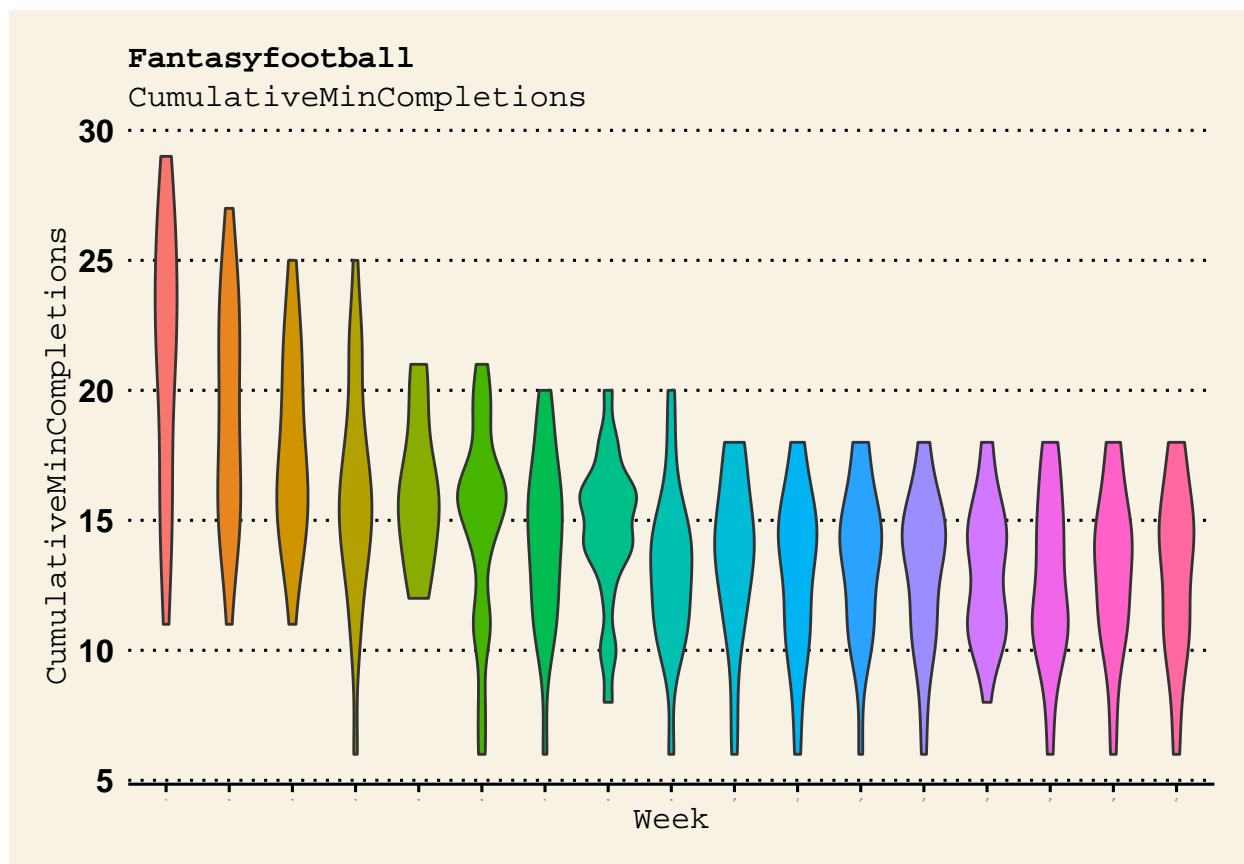


### Fantasyfootball

CumulativeMinPassingYards







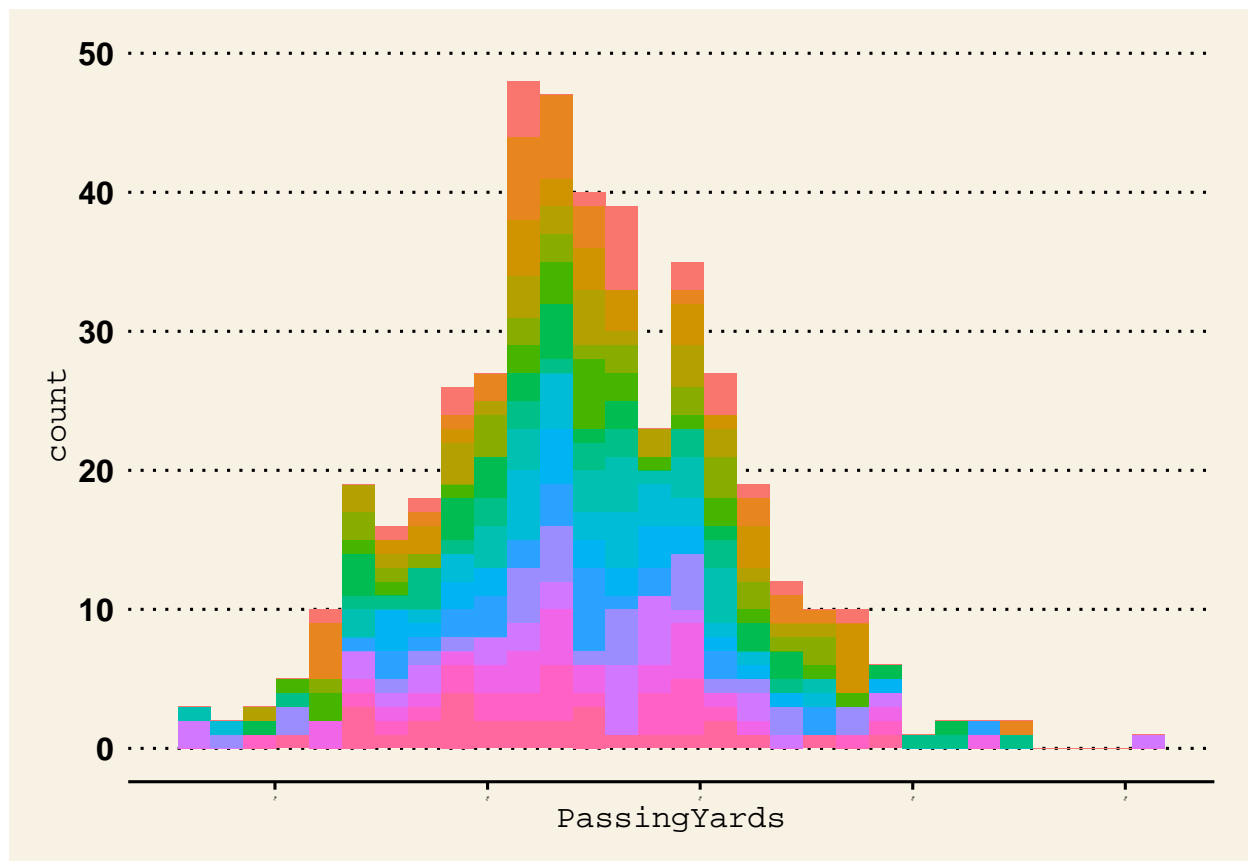
```
### Check for skewed predictors
```

```
## 8.4 : Histograms - Normality by Week
```

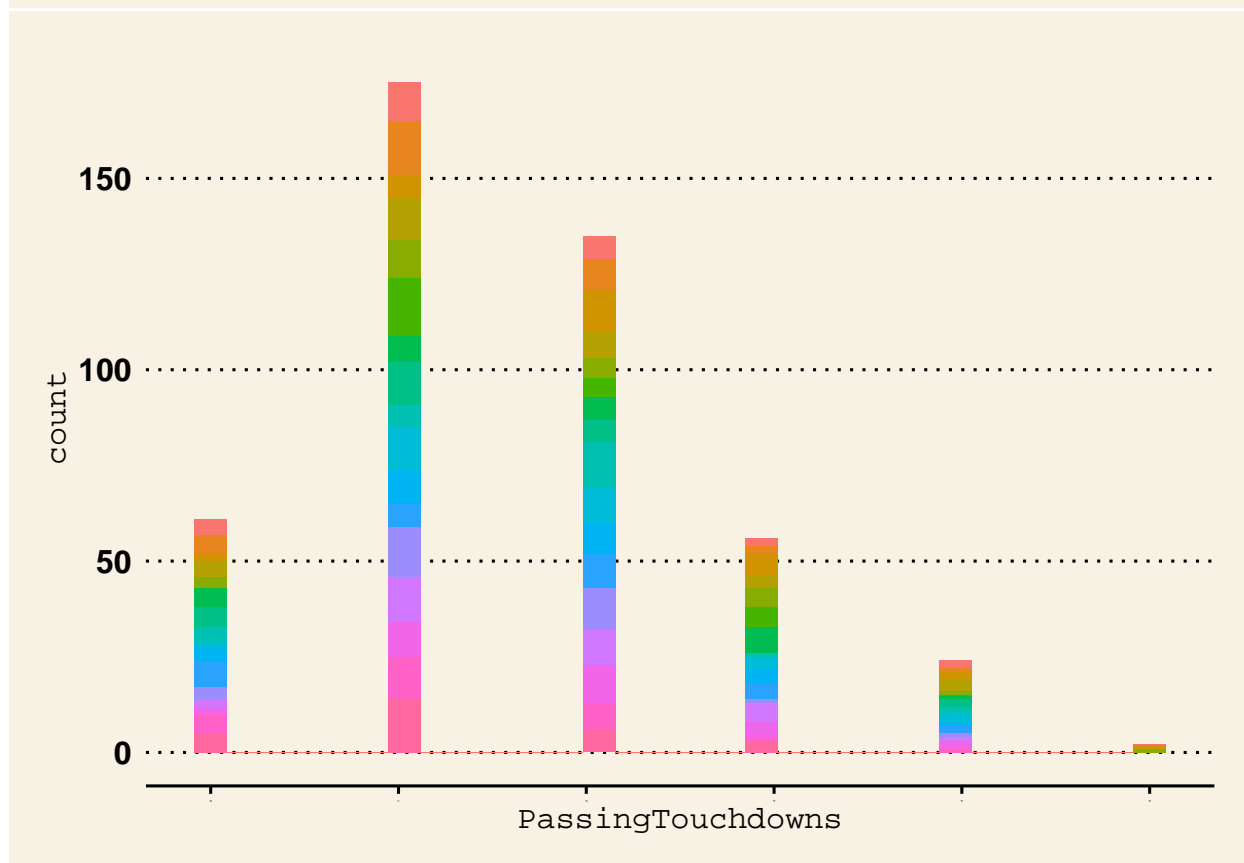
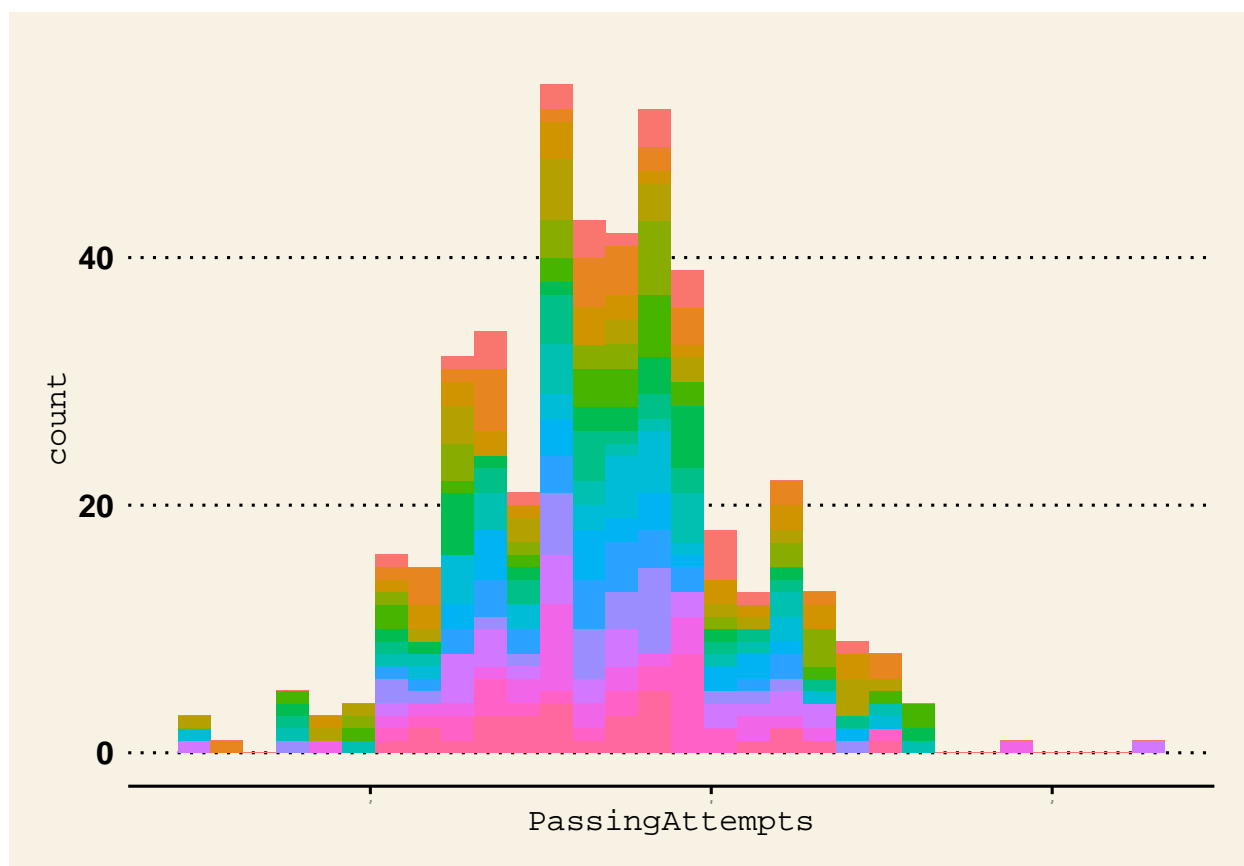
```
### 8.4.1 : Base feature Set
```

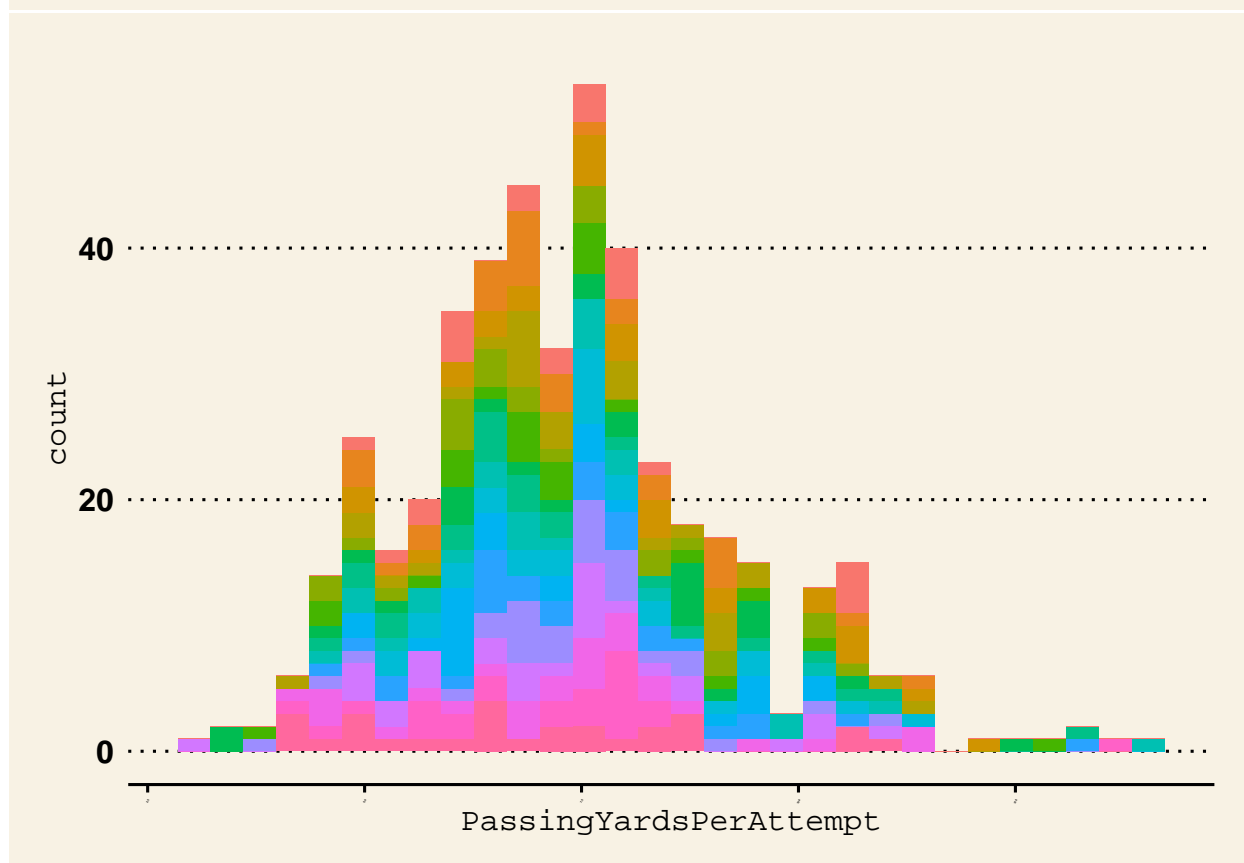
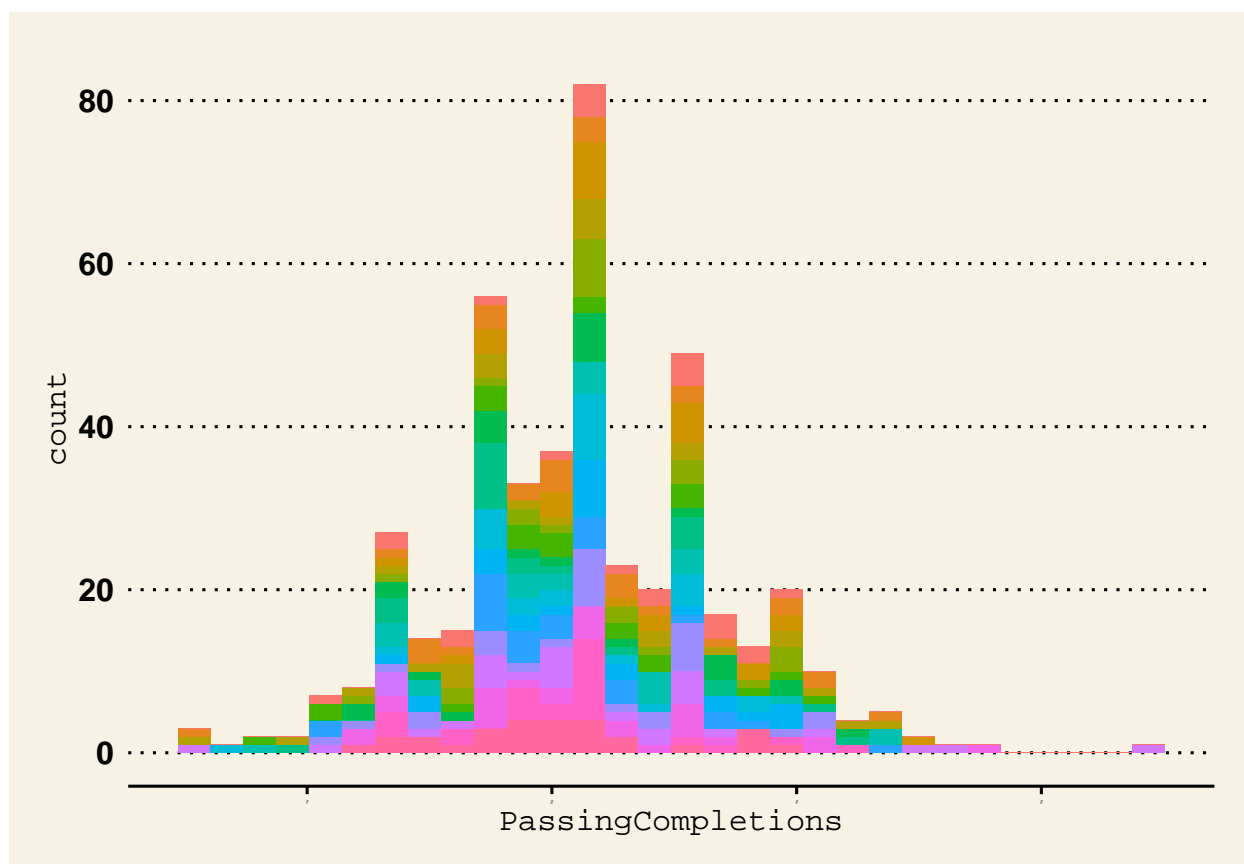
```
features_to_keep = c('PassingYards', 'PassingAttempts', 'PassingTouchdowns', 'PassingCompletions', 'Pas
```

```
for(f in features_to_keep){  
  hist = eda_base %>% ggplot(aes_string(x=f,fill="Week"))+  
    geom_histogram(bins=30,show.legend = FALSE)+  
    theme_wsj()+  
    theme(plot.title = element_text(size = rel(0.5)),  
          plot.subtitle = element_text(size = rel(0.5)),  
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),  
          axis.title = element_text(size = rel(0.5)),  
          legend.position = "right",  
          legend.direction = "vertical",  
          legend.title = element_text(size = rel(0.5)))  
  print(hist)  
}
```





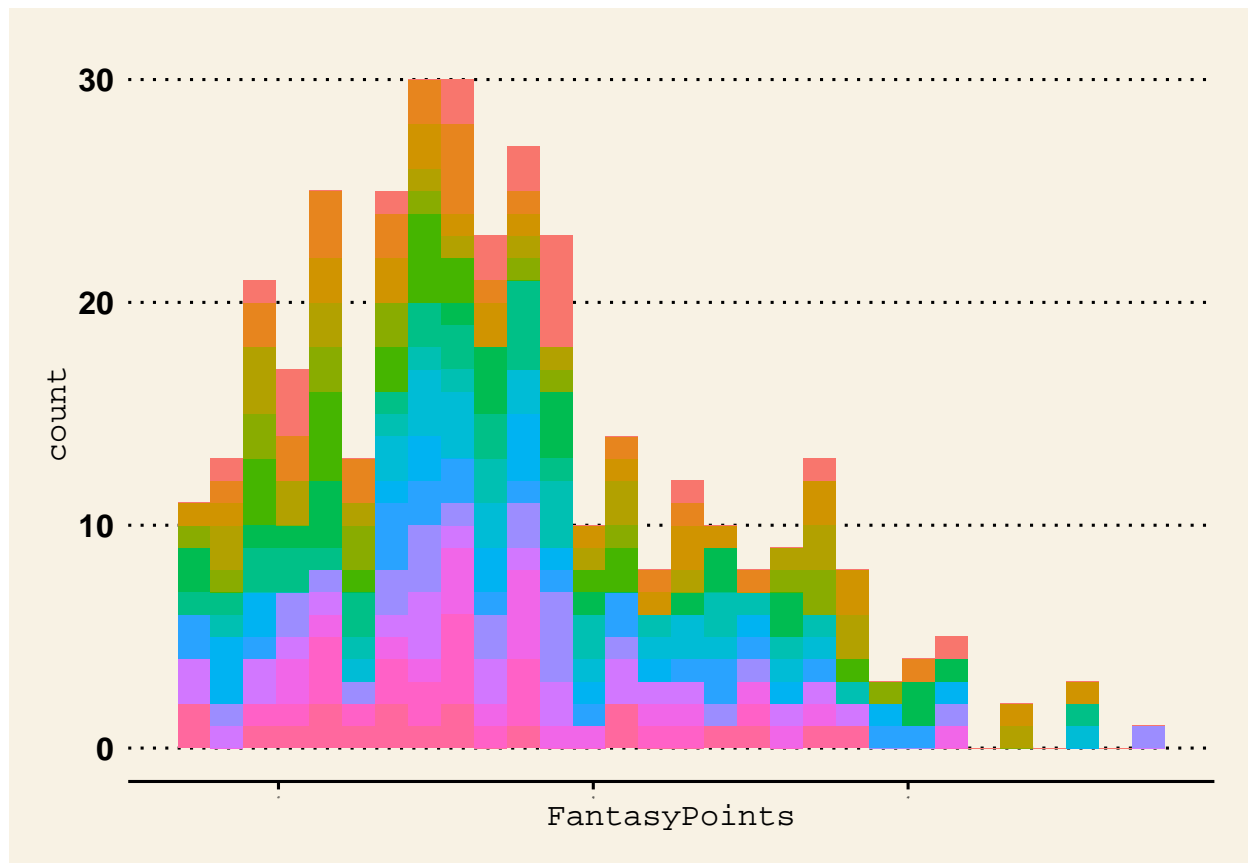


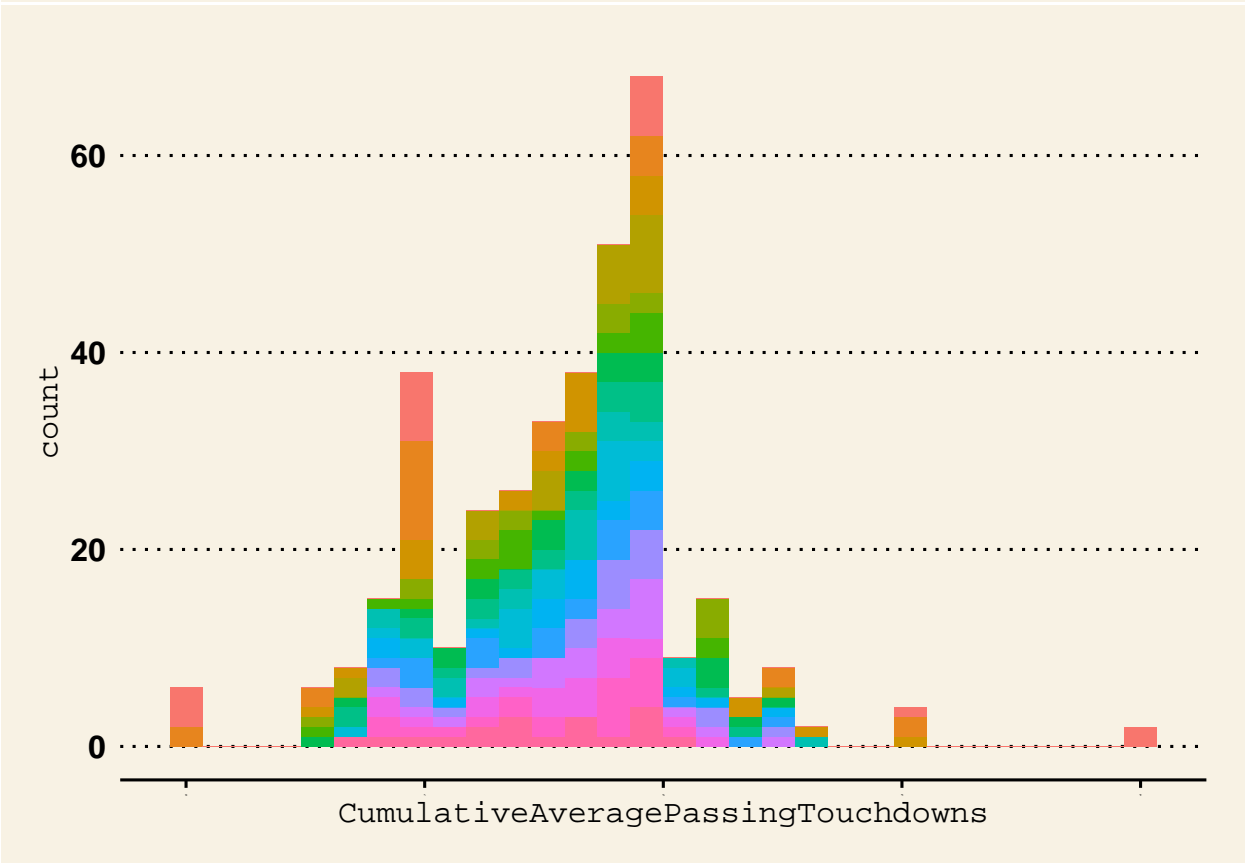
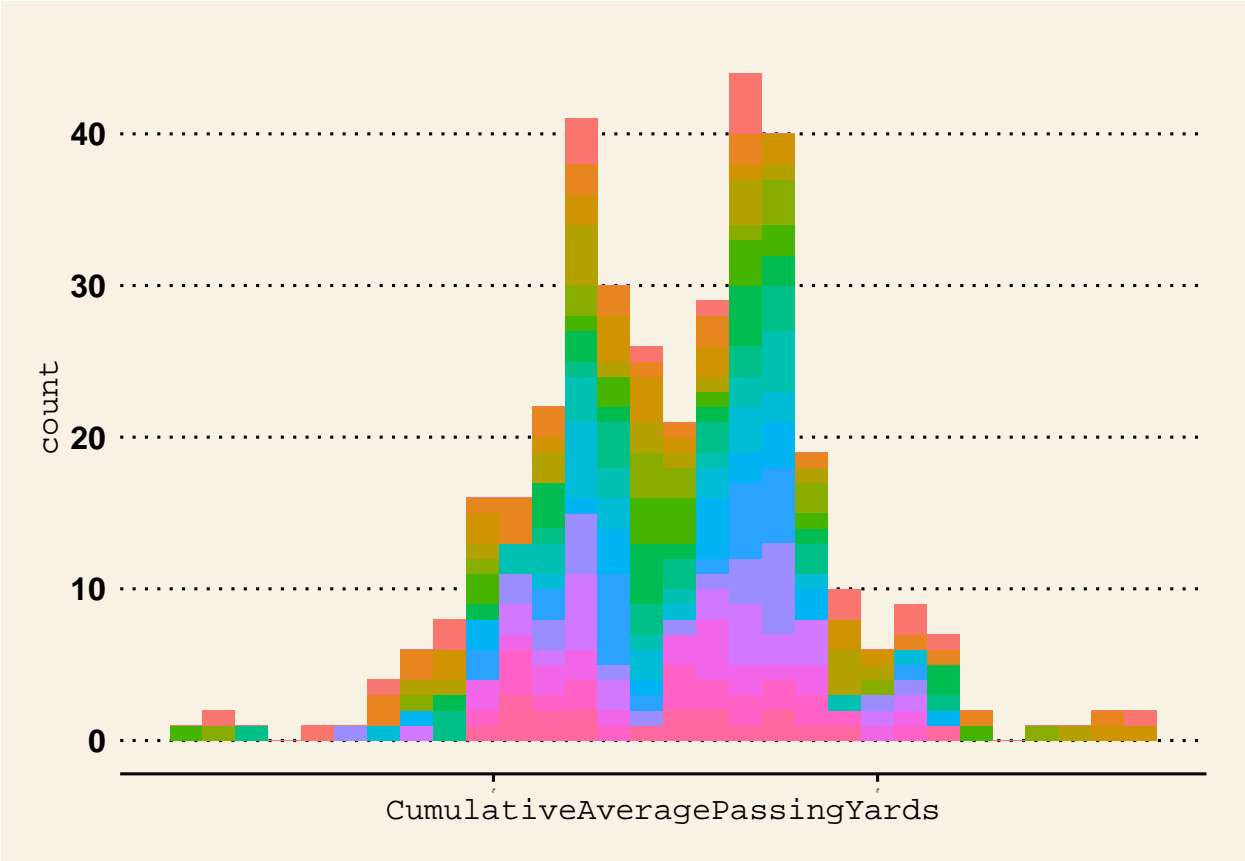


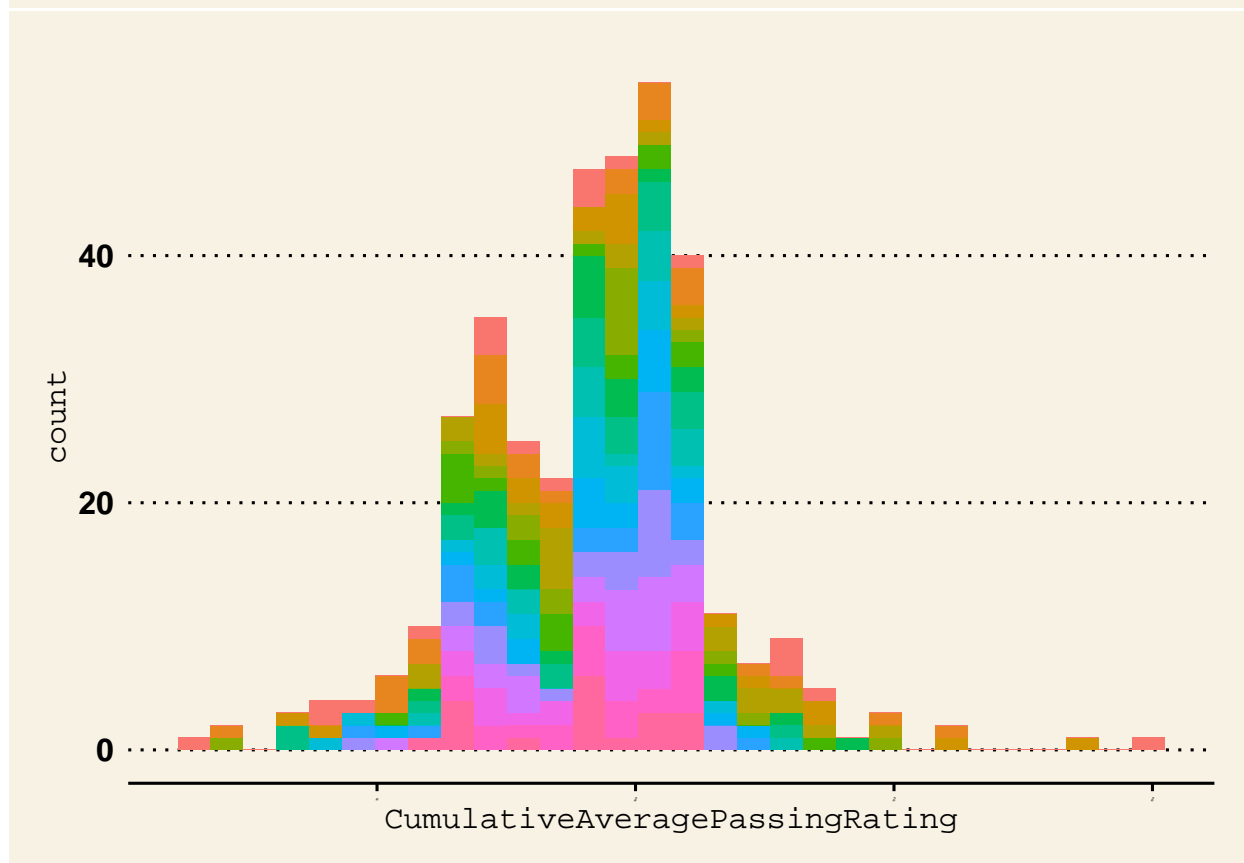
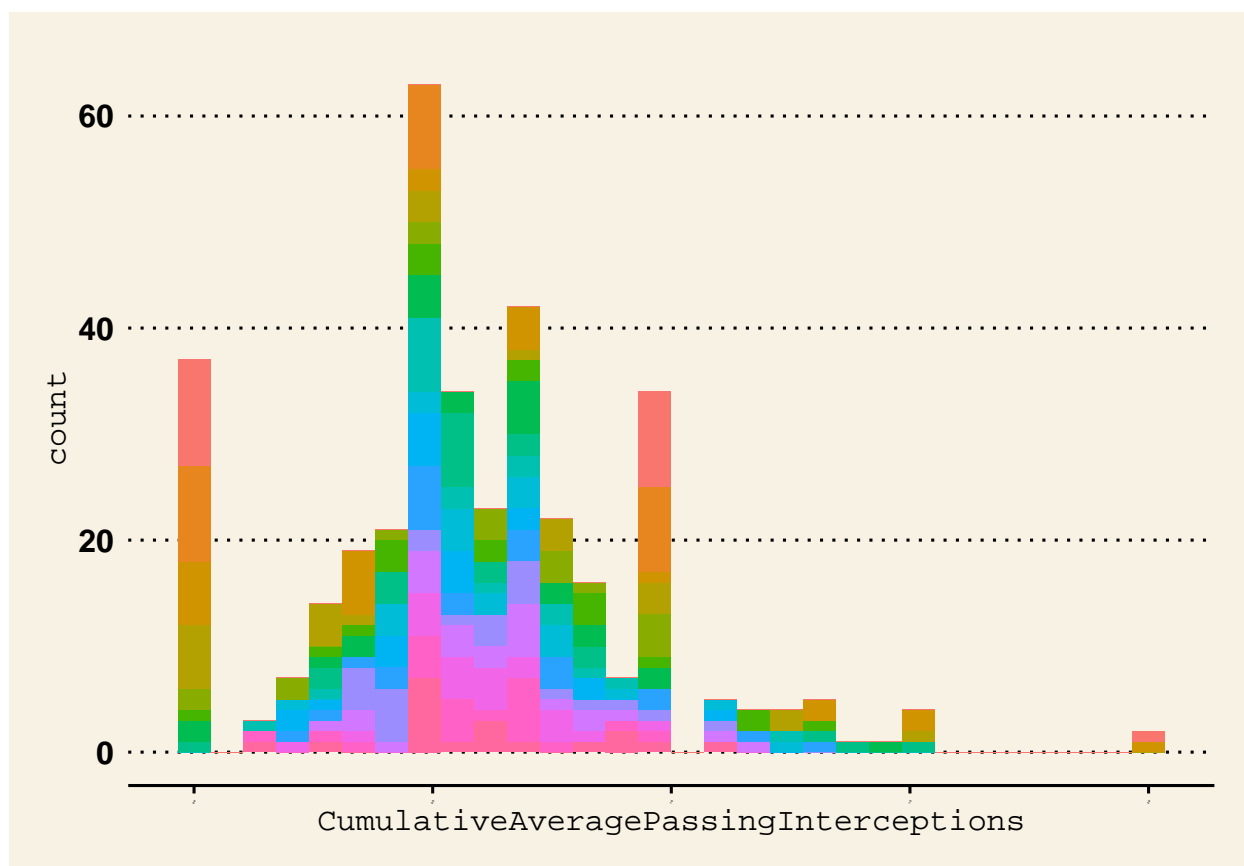
### 8.4.2 : Derived feature Set

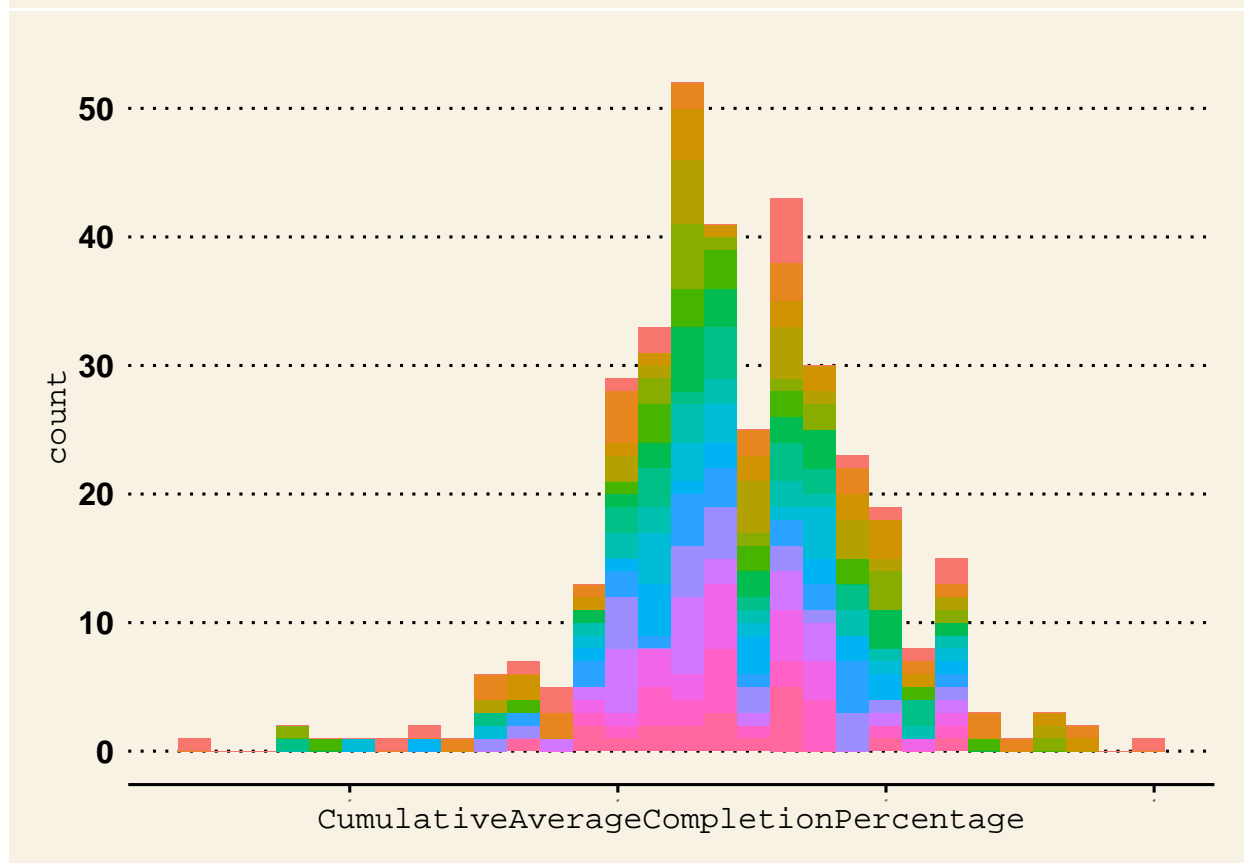
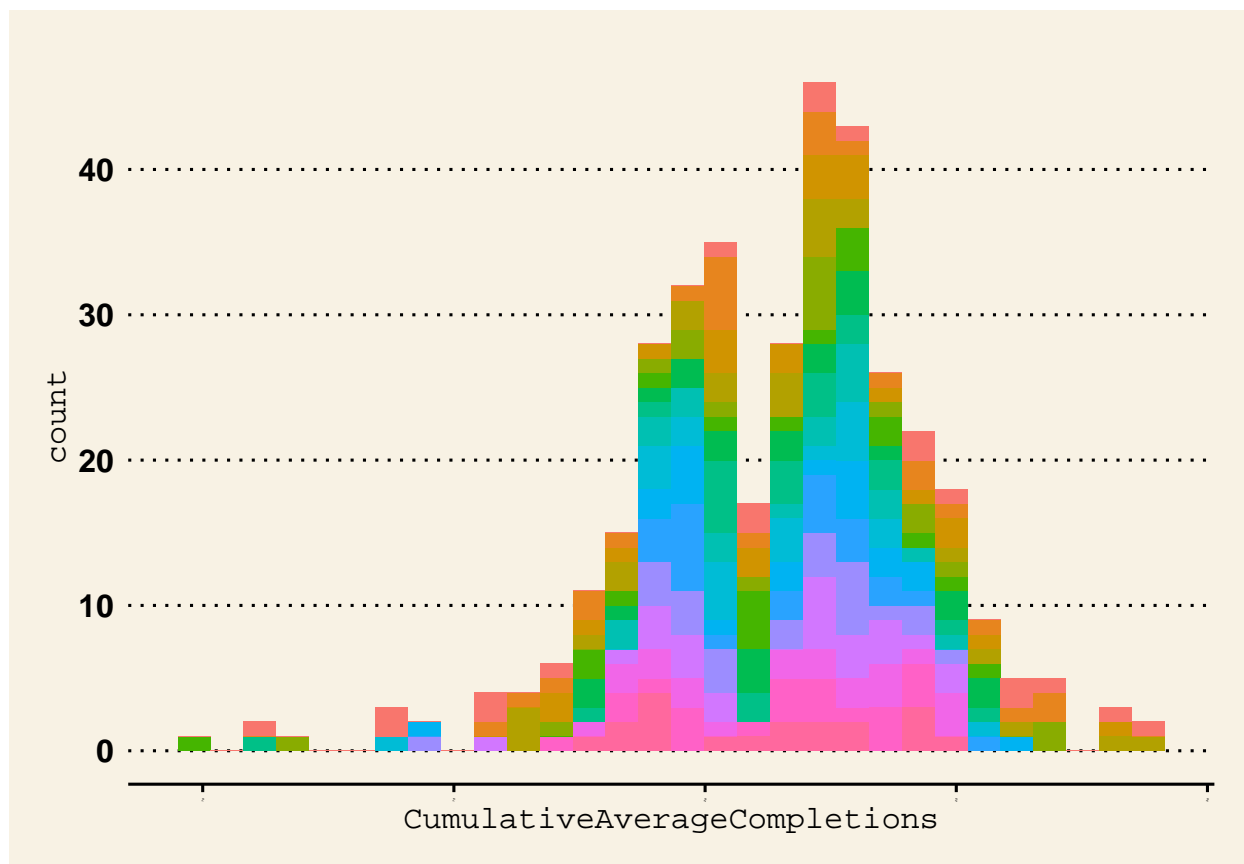
```
features_to_keep = names(eda_derived[-1])
```

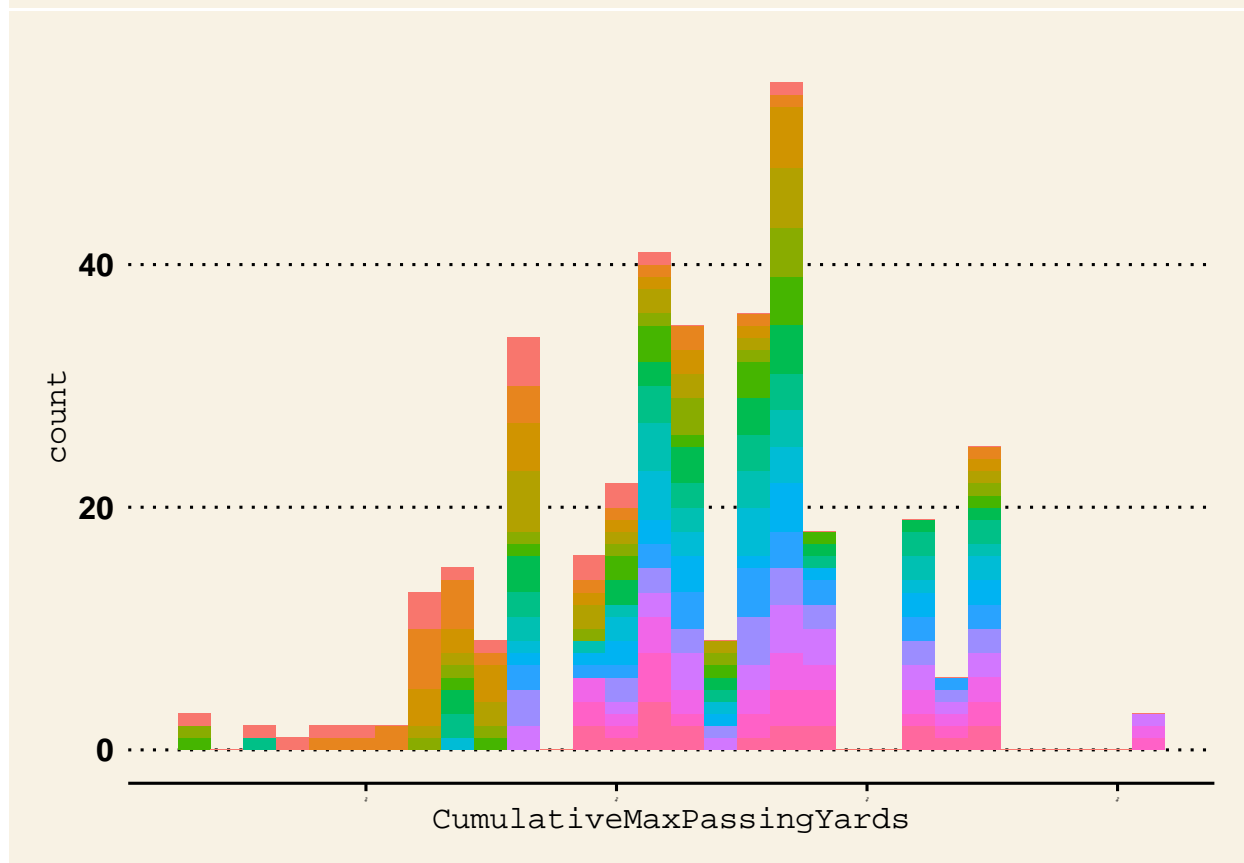
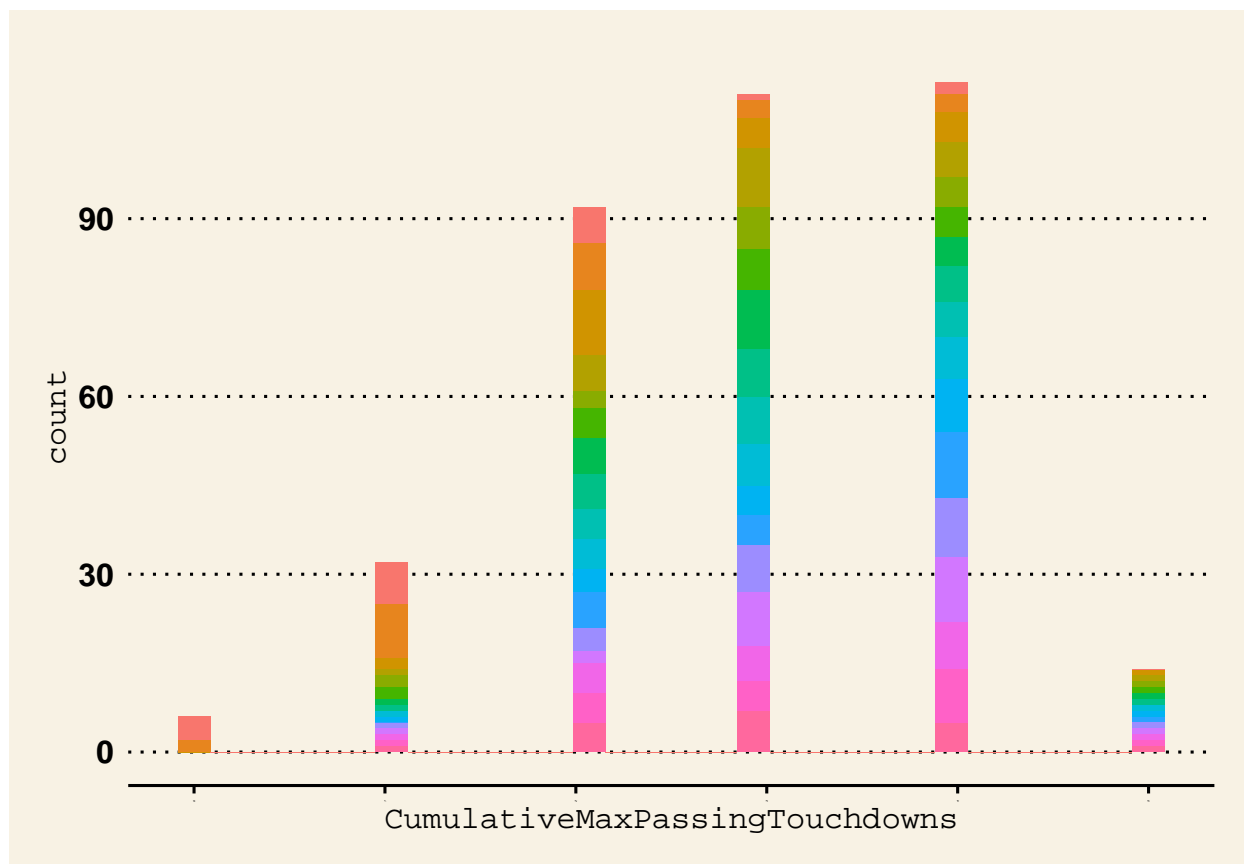
```
for(f in features_to_keep){  
  hist = eda_derived %>% ggplot(aes_string(x=f,fill="Week"))+  
    geom_histogram(bins=30,show.legend = FALSE)+  
    theme_wsj()+  
    theme(plot.title = element_text(size = rel(0.5)),  
          plot.subtitle = element_text(size = rel(0.5)),  
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),  
          axis.title = element_text(size = rel(0.5)),  
          legend.position = "right",  
          legend.direction = "vertical",  
          legend.title = element_text(size = rel(0.5)))  
  print(hist)  
}
```

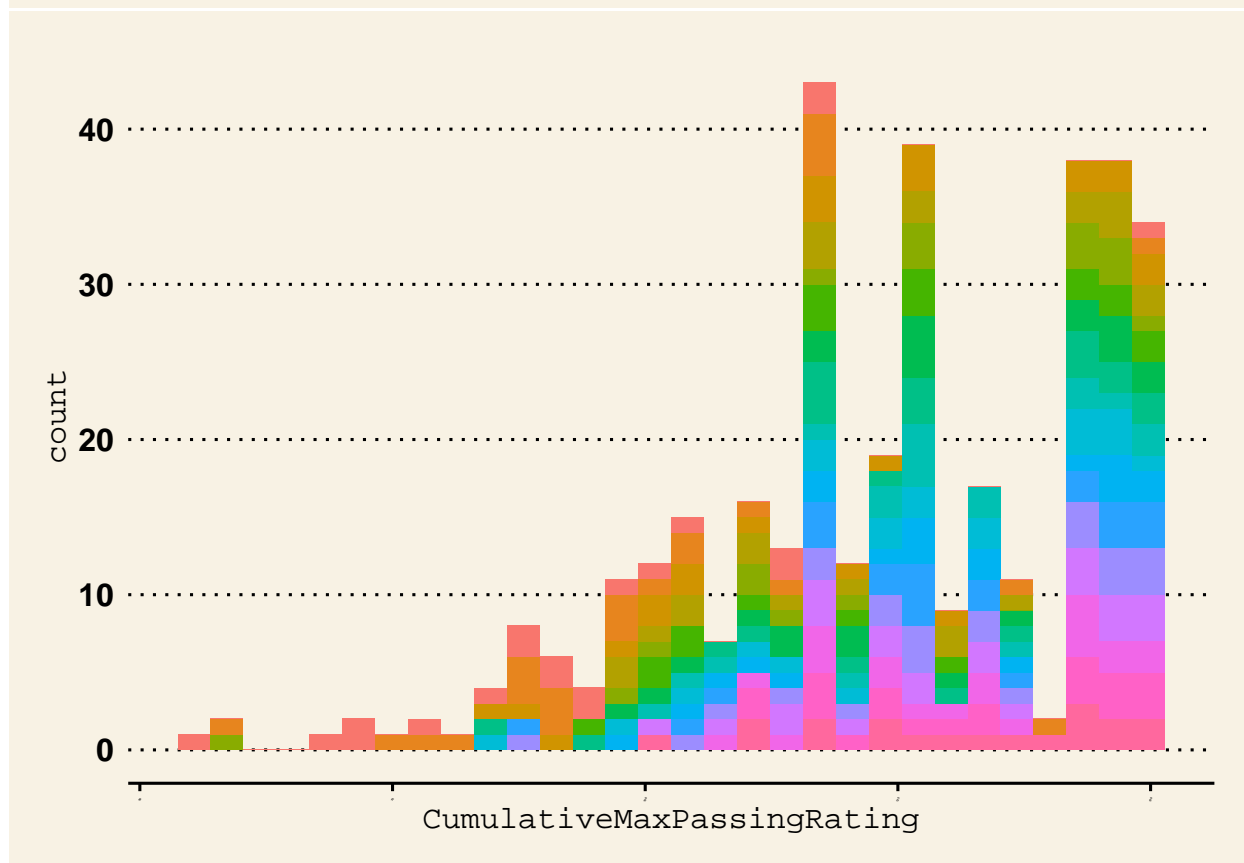
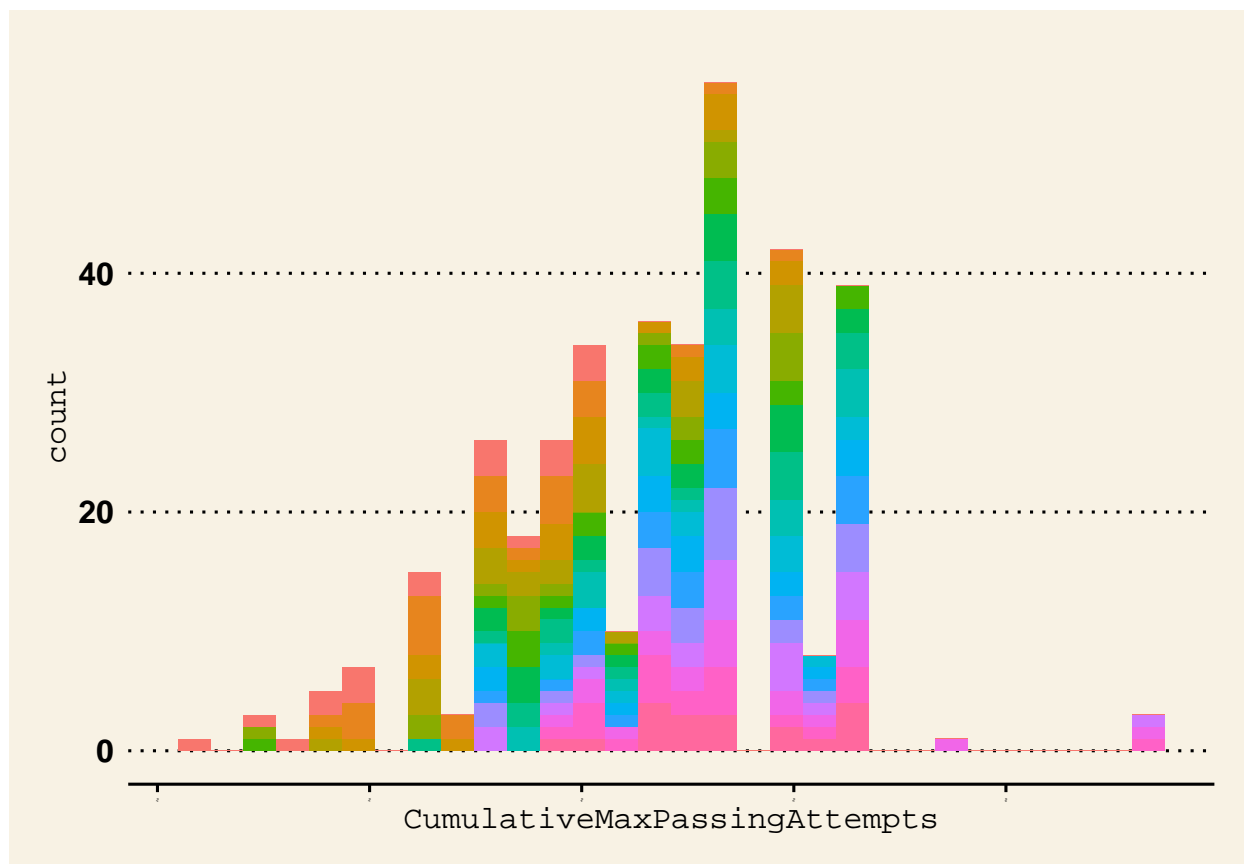




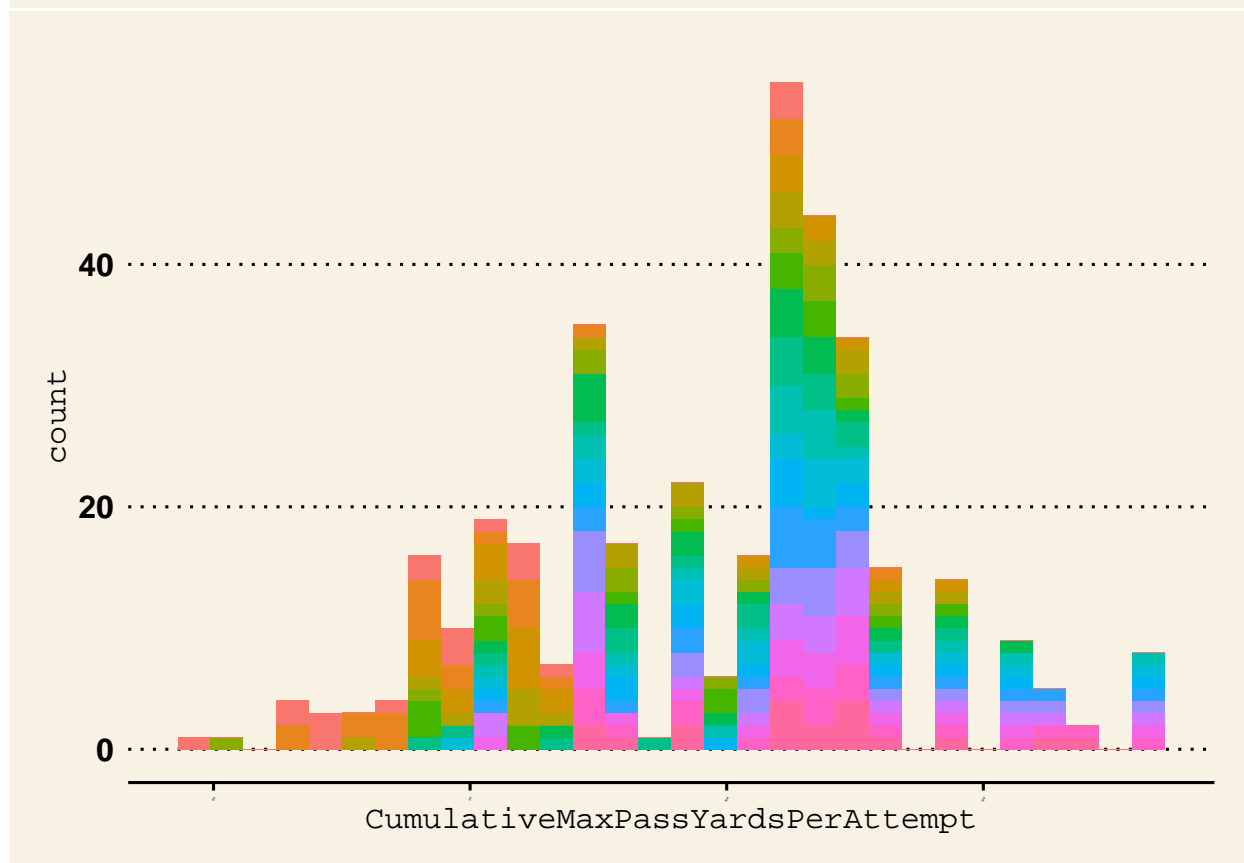
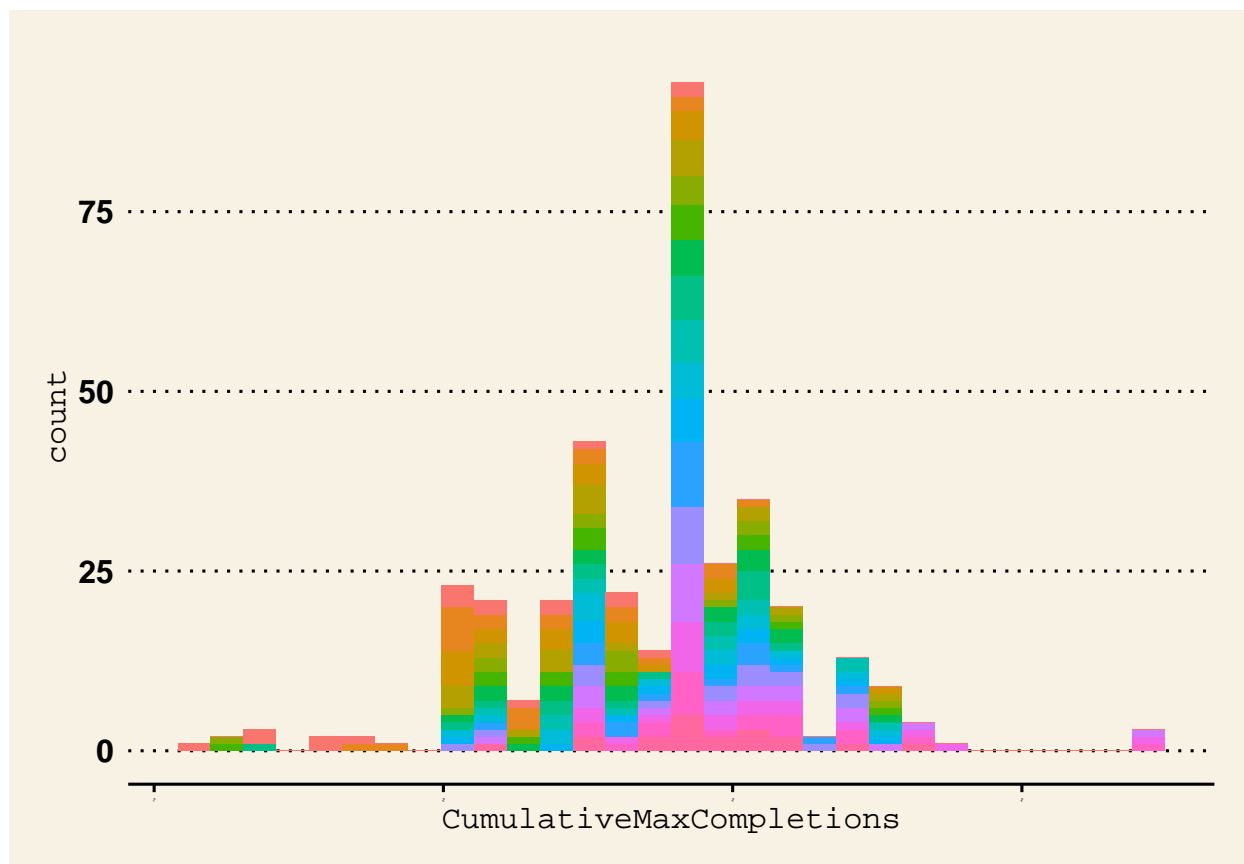


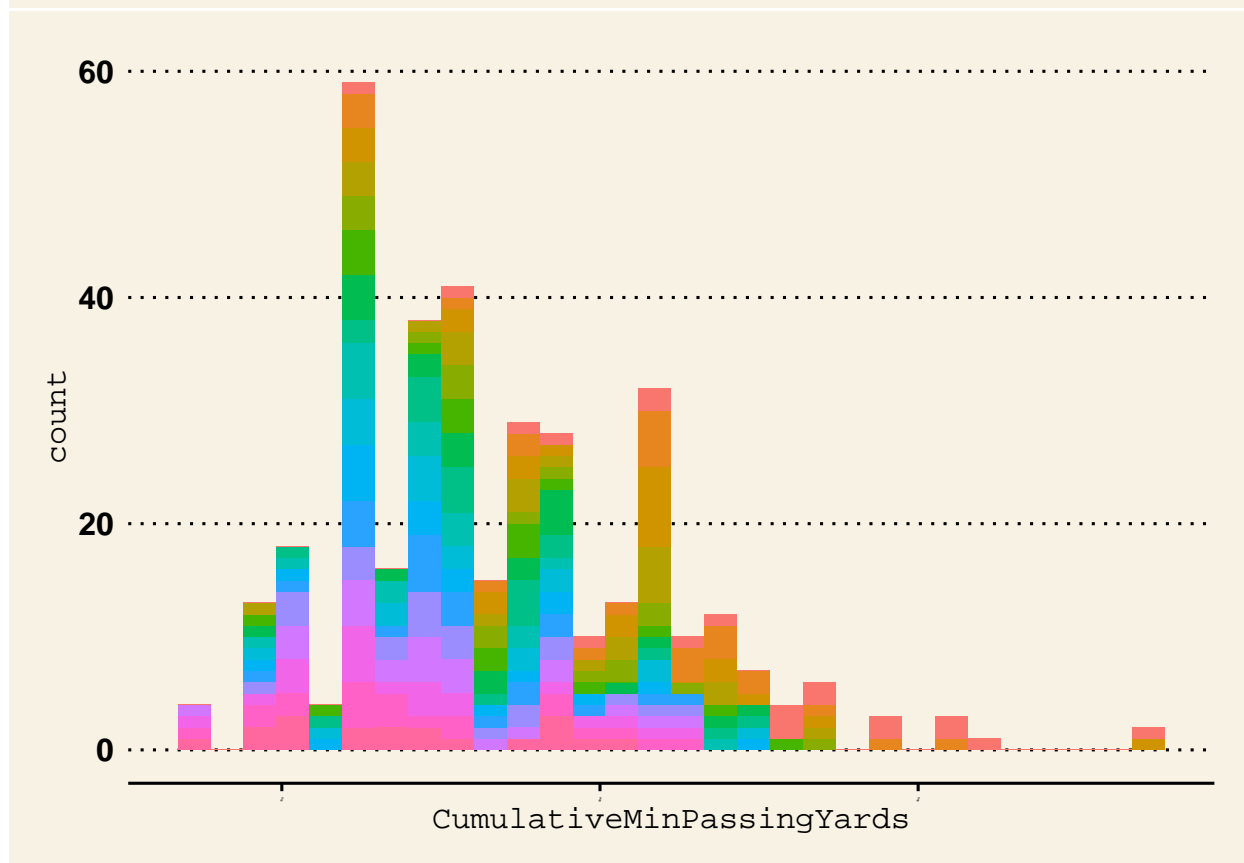
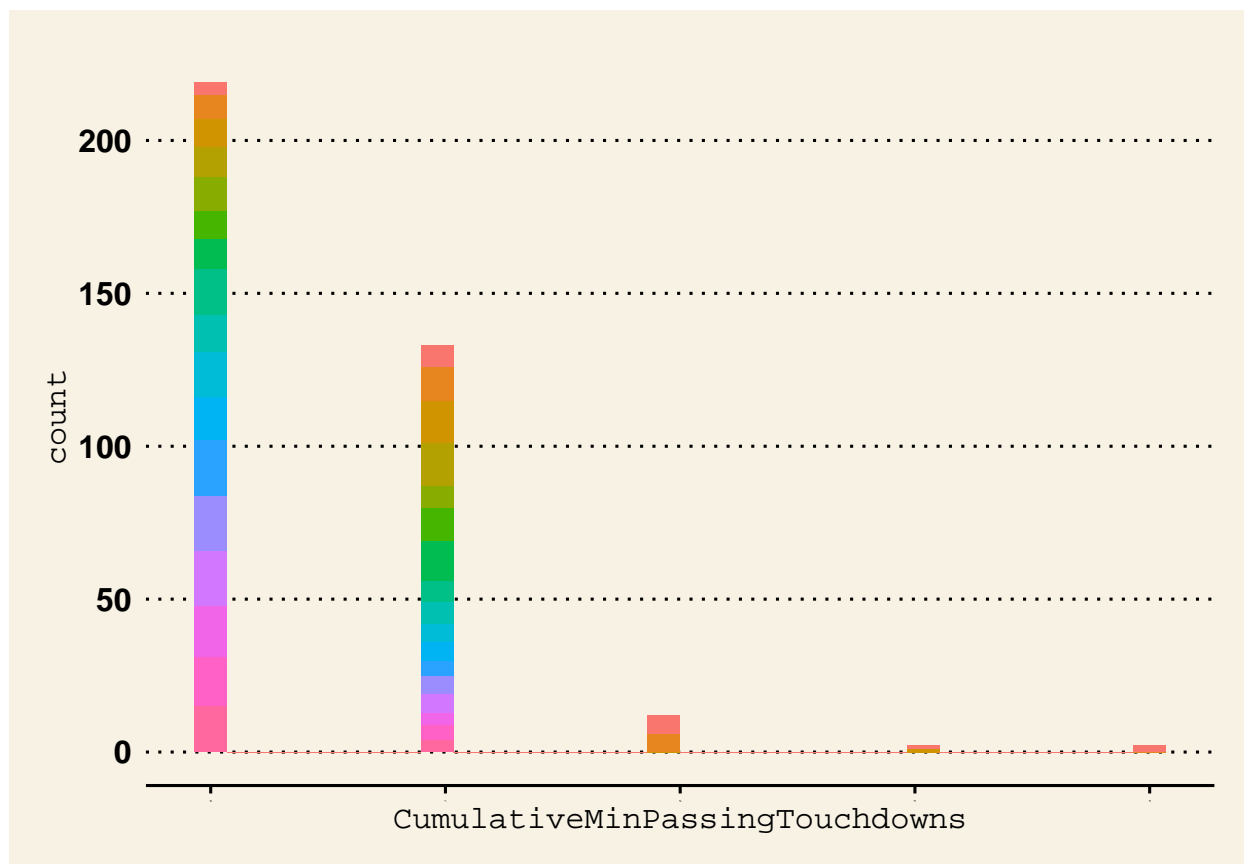


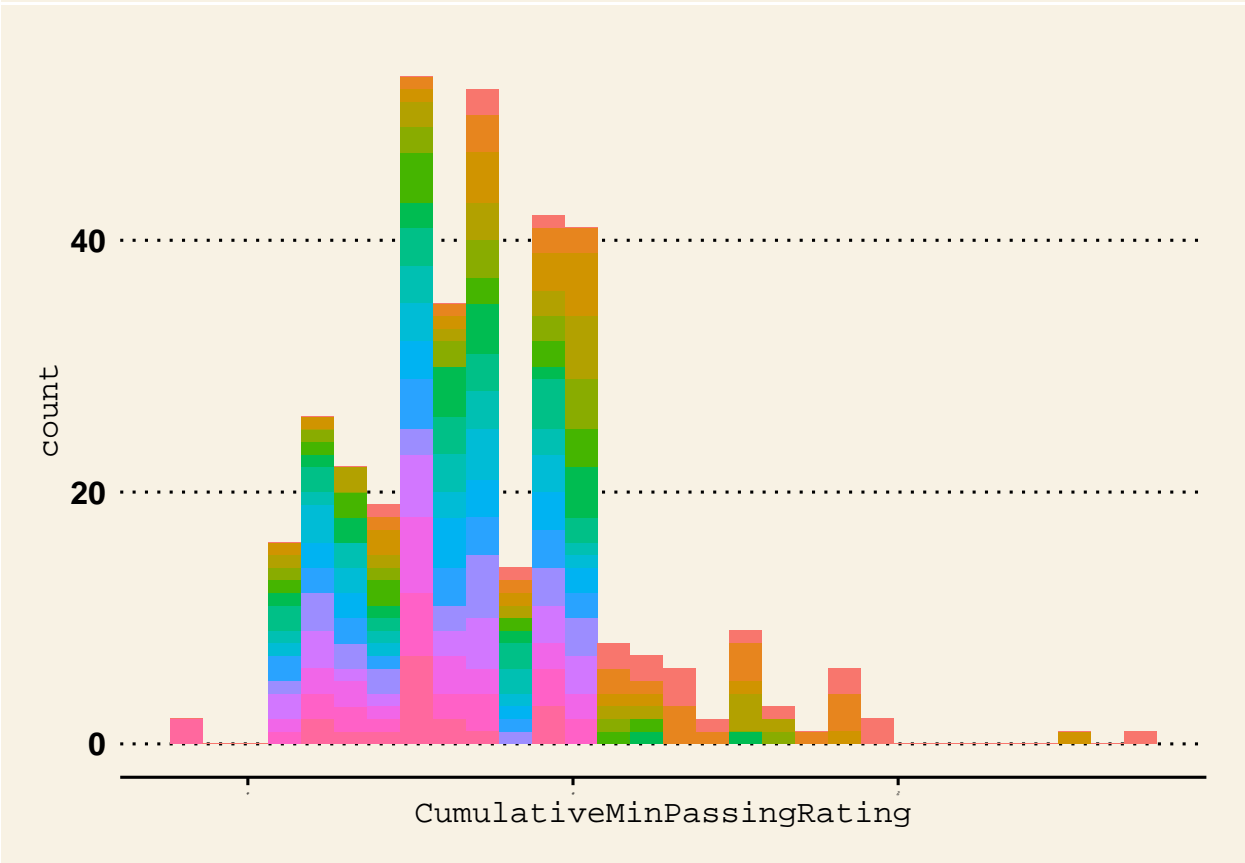
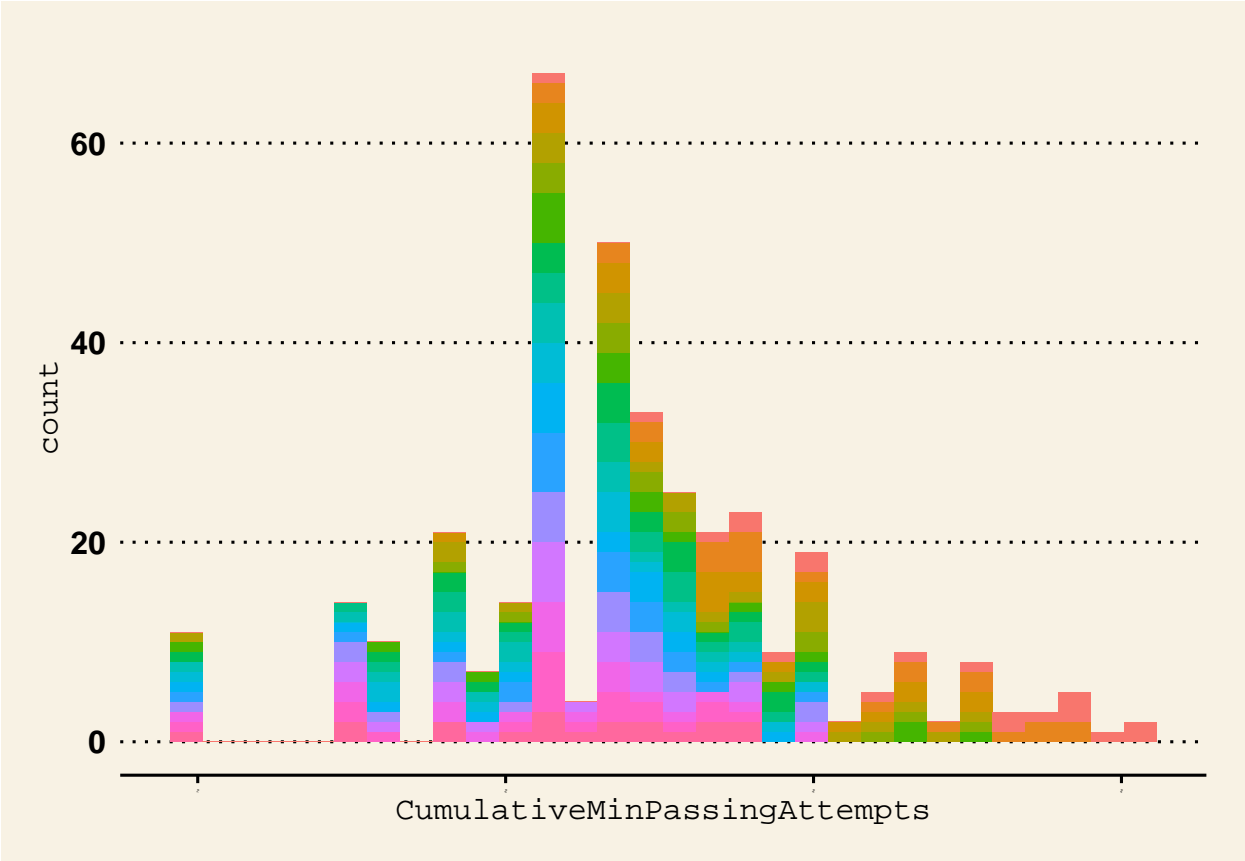


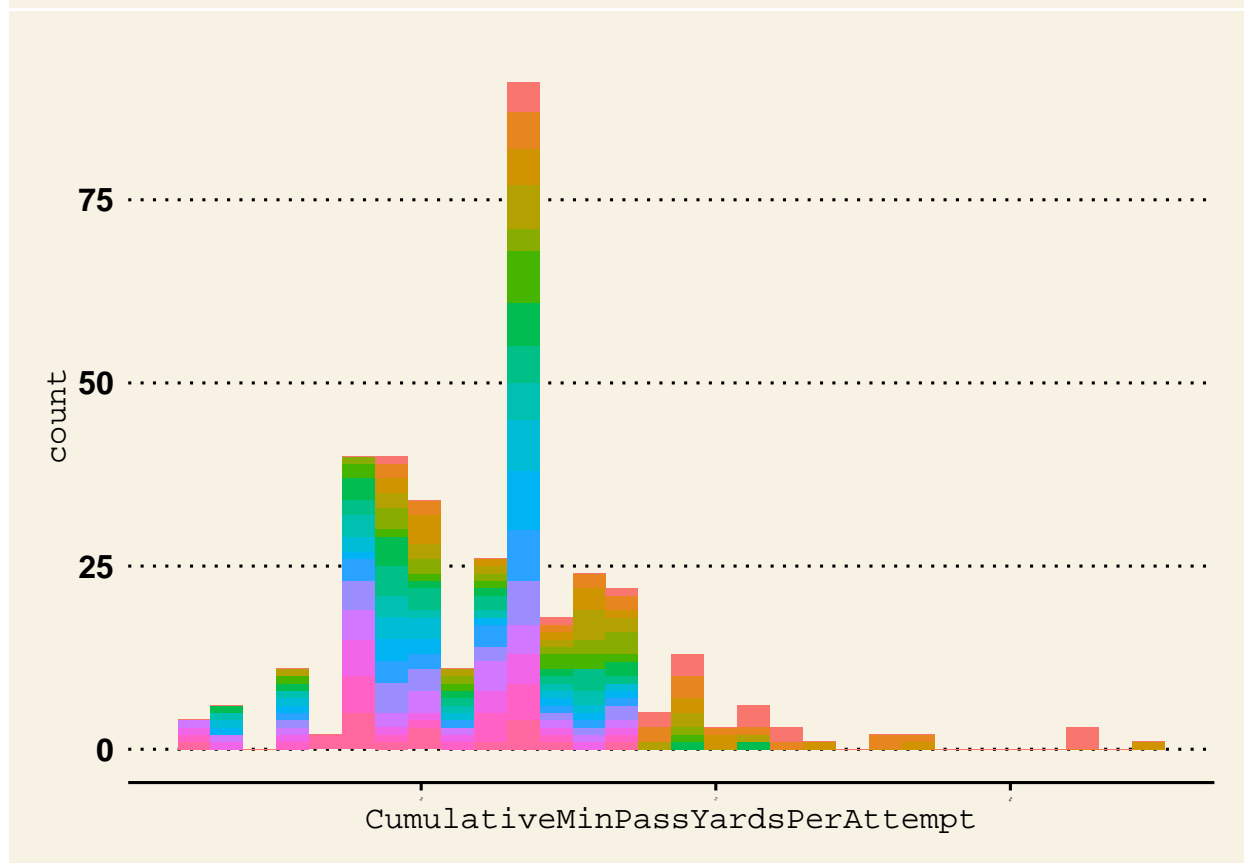
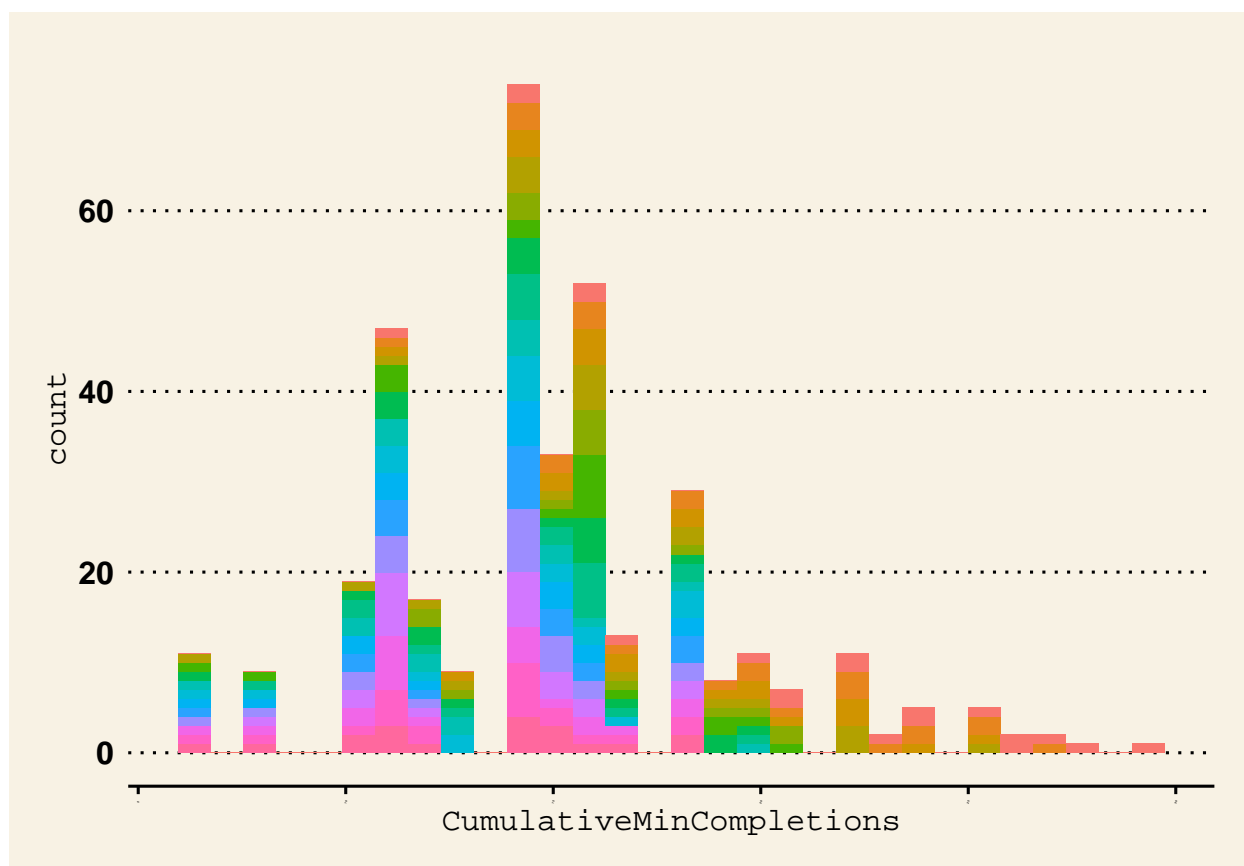






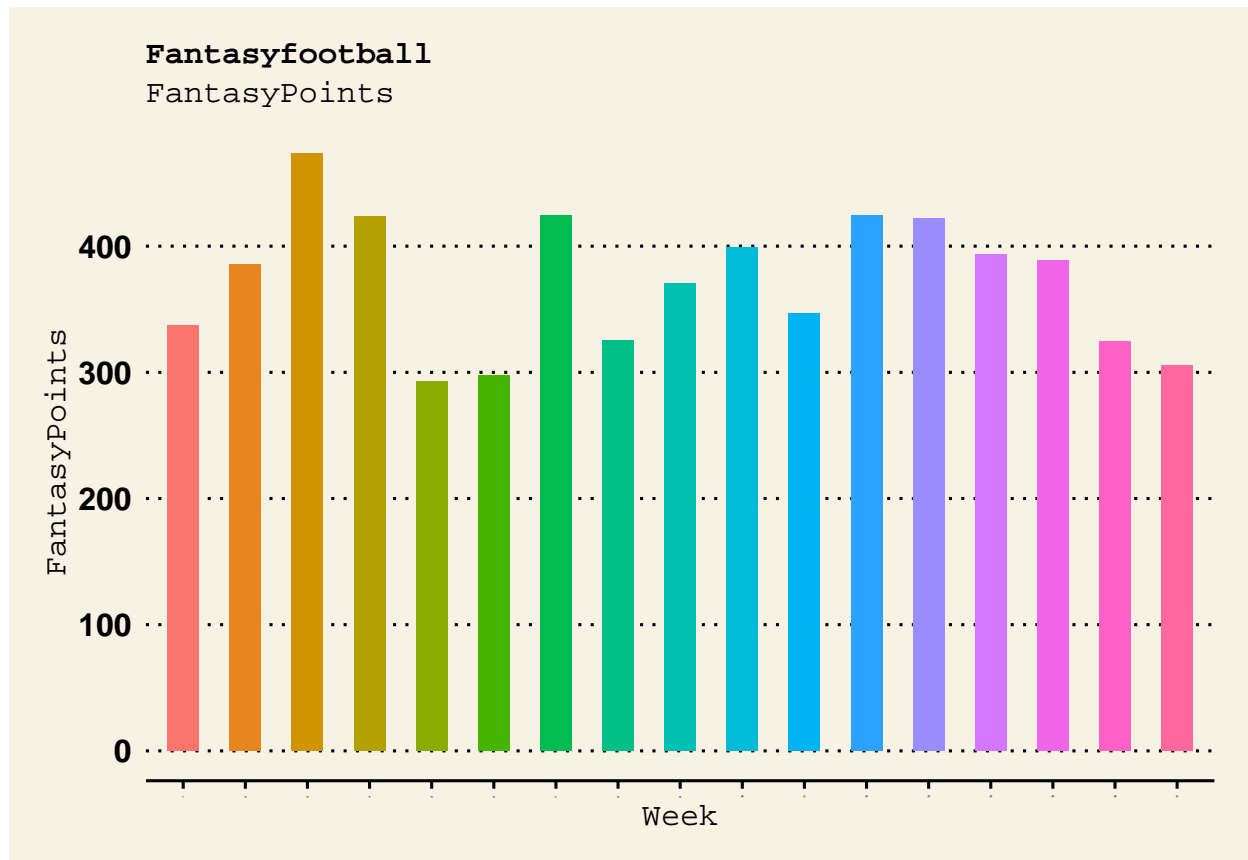


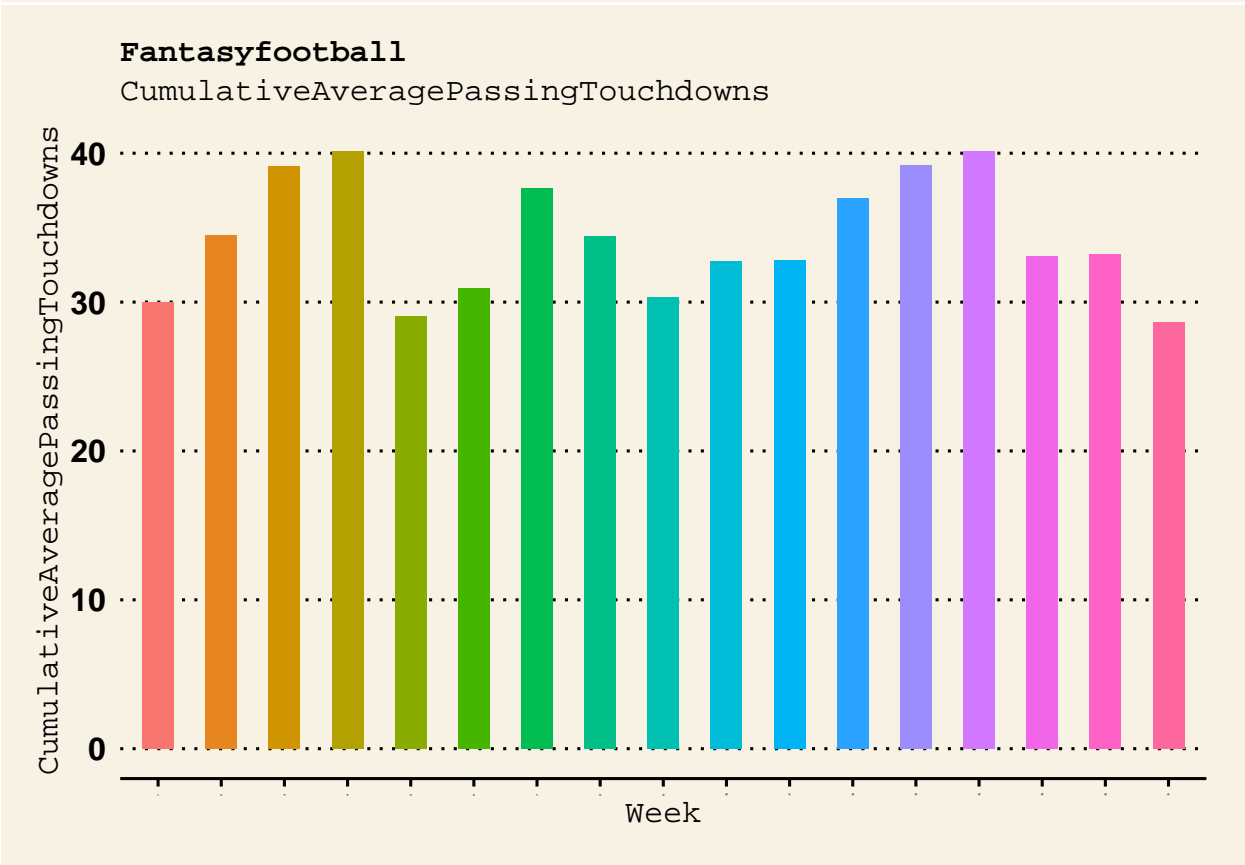
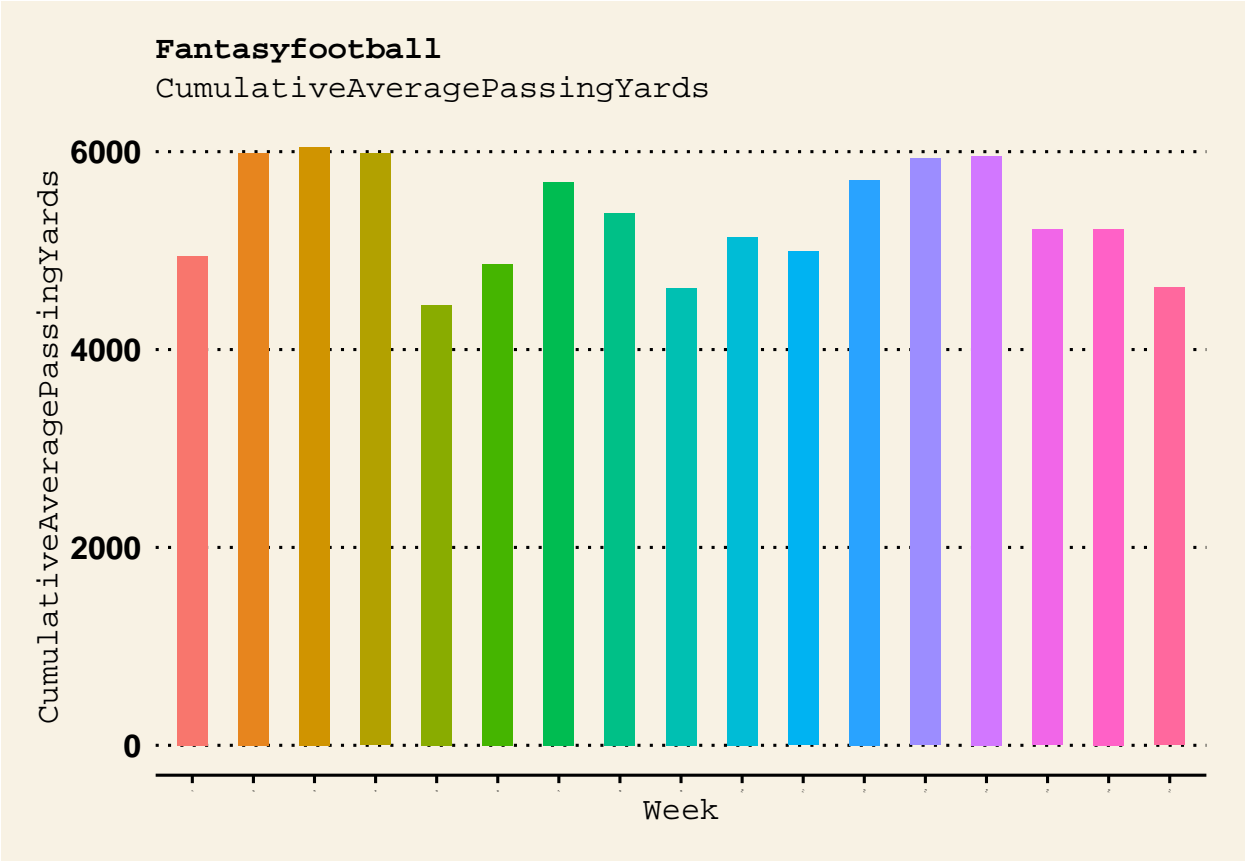


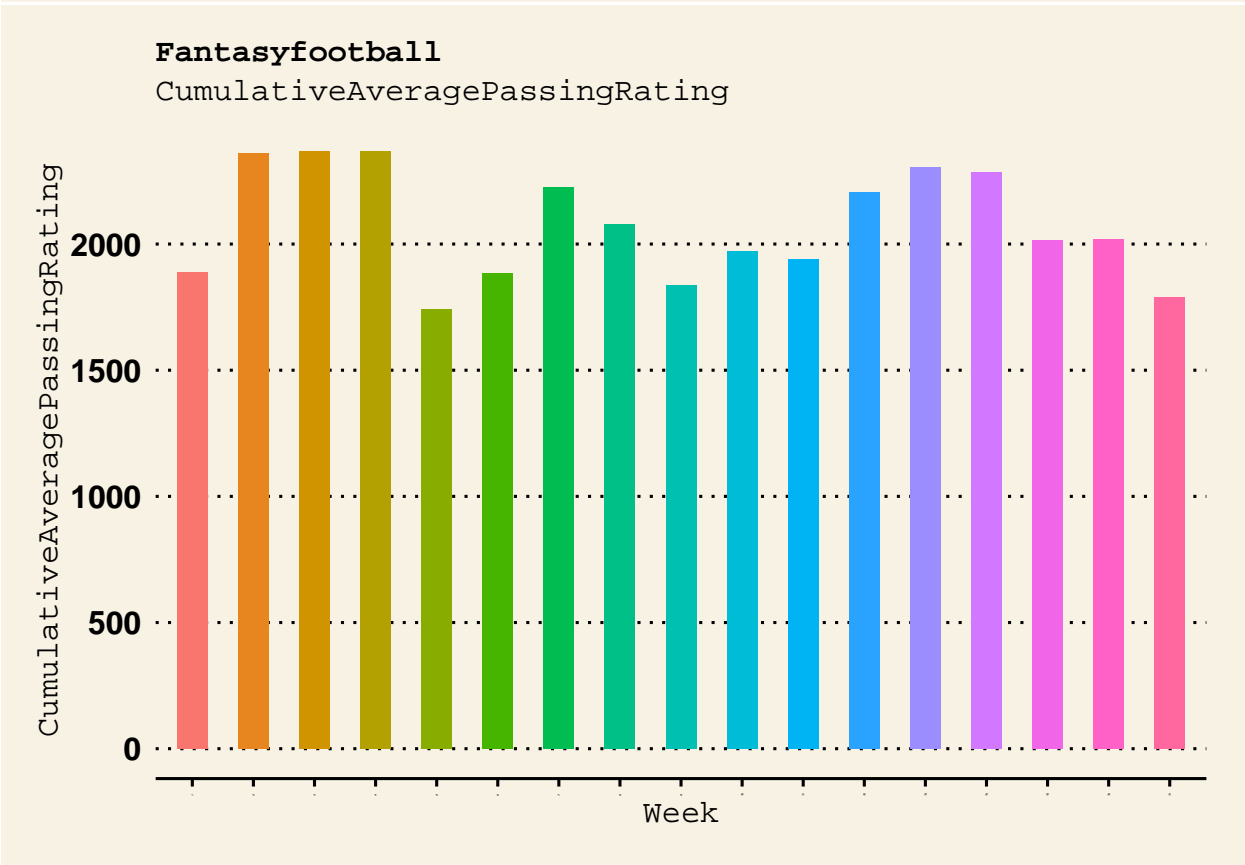
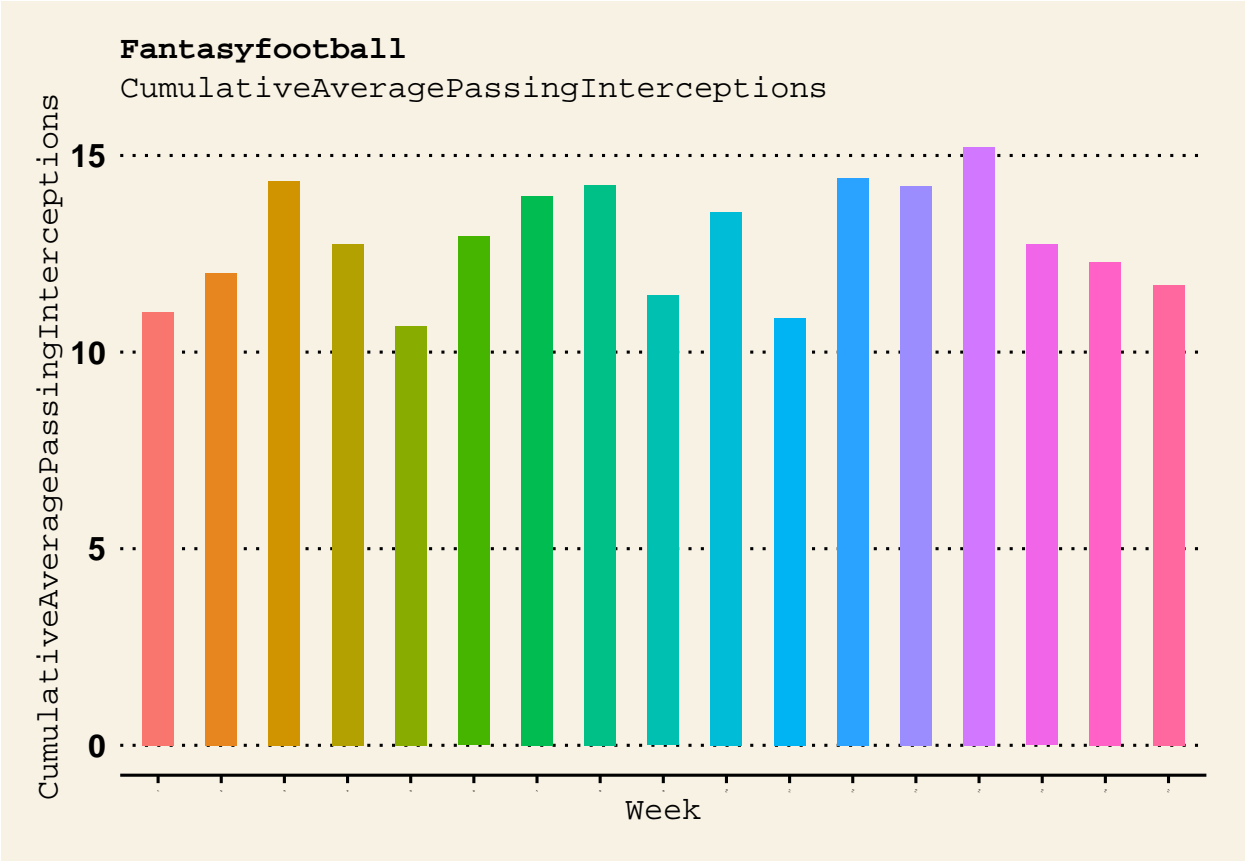


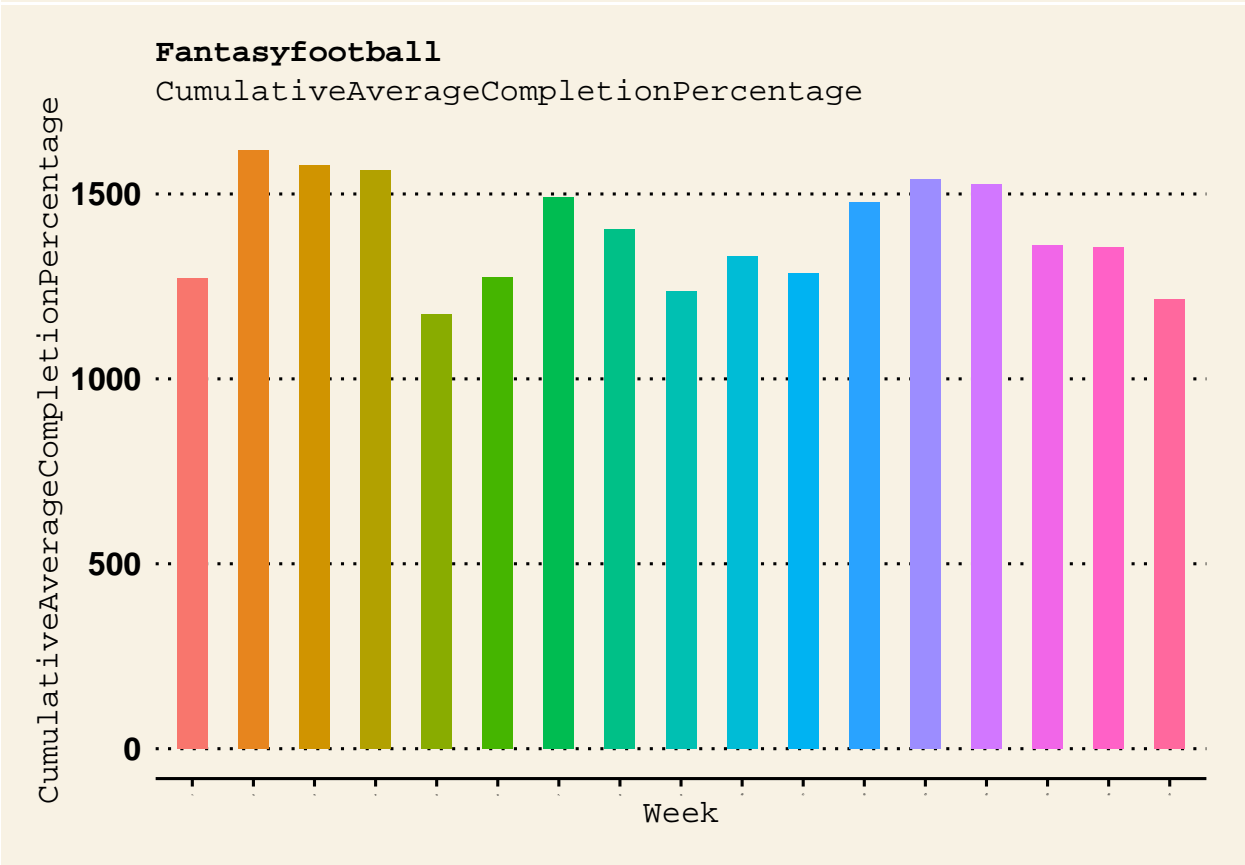
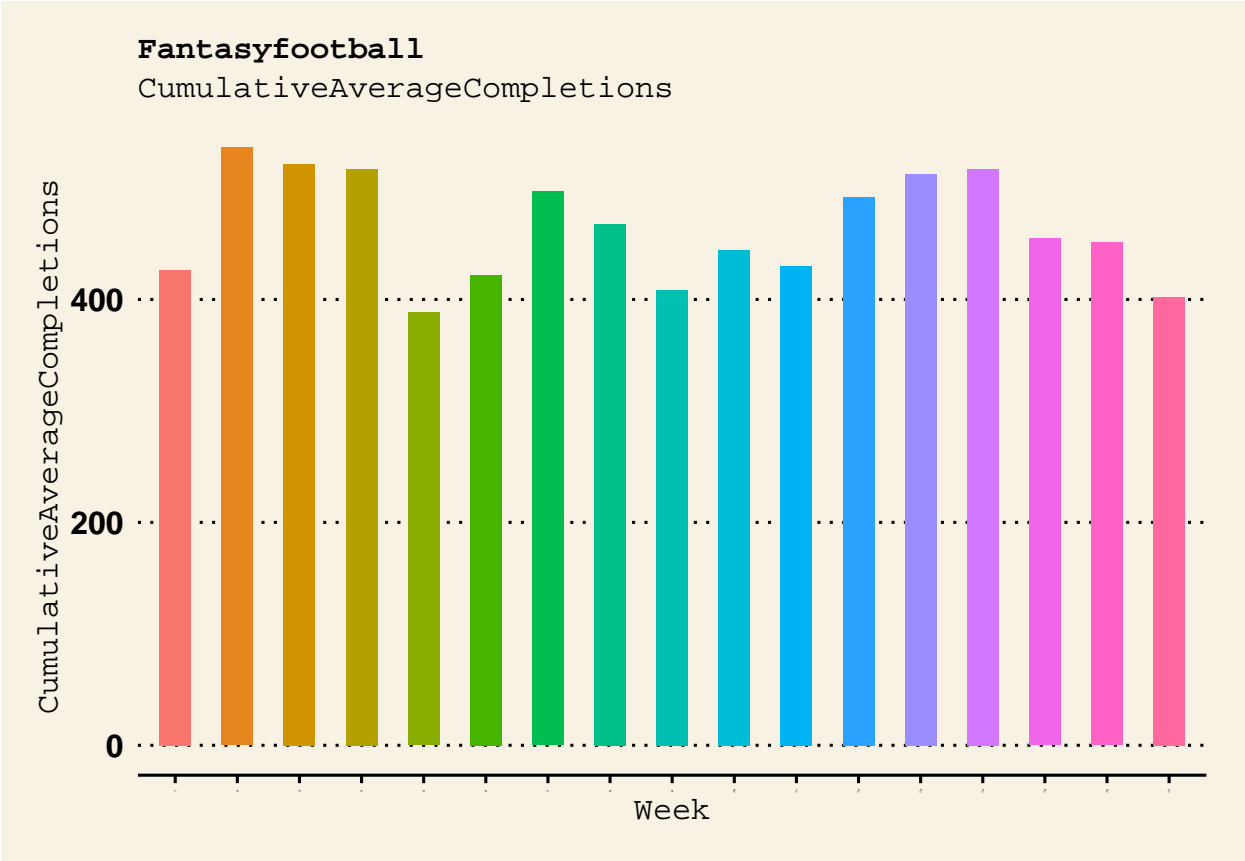
## 8.5 Bar plots Derived Feature set

```
for(p in 2:20){
  bar_plot <- eda_derived %>%
    ggplot(aes_string(x="Week",
                      y=names(eda_derived[p]),
                      fill="Week",group="Week"))+
    ggtitle(names(eda_derived[p]))+
    geom_bar(stat="identity", width=.5, show.legend = FALSE)+
    xlab("Week")+
    ylab(names(eda_derived[p]))+
    labs(title="Fantasyfootball",
         subtitle=names(eda_derived[p]),
         aption="Source: Fantasyfootball")+
    theme_wsj()+
    theme(plot.title = element_text(size = rel(0.5)),
          plot.subtitle = element_text(size = rel(0.5)),
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),
          axis.title = element_text(size = rel(0.5)),
          legend.position = "right",
          legend.direction = "vertical",
          legend.title = element_text(size = rel(0.5)))
  print(bar_plot)
}
```

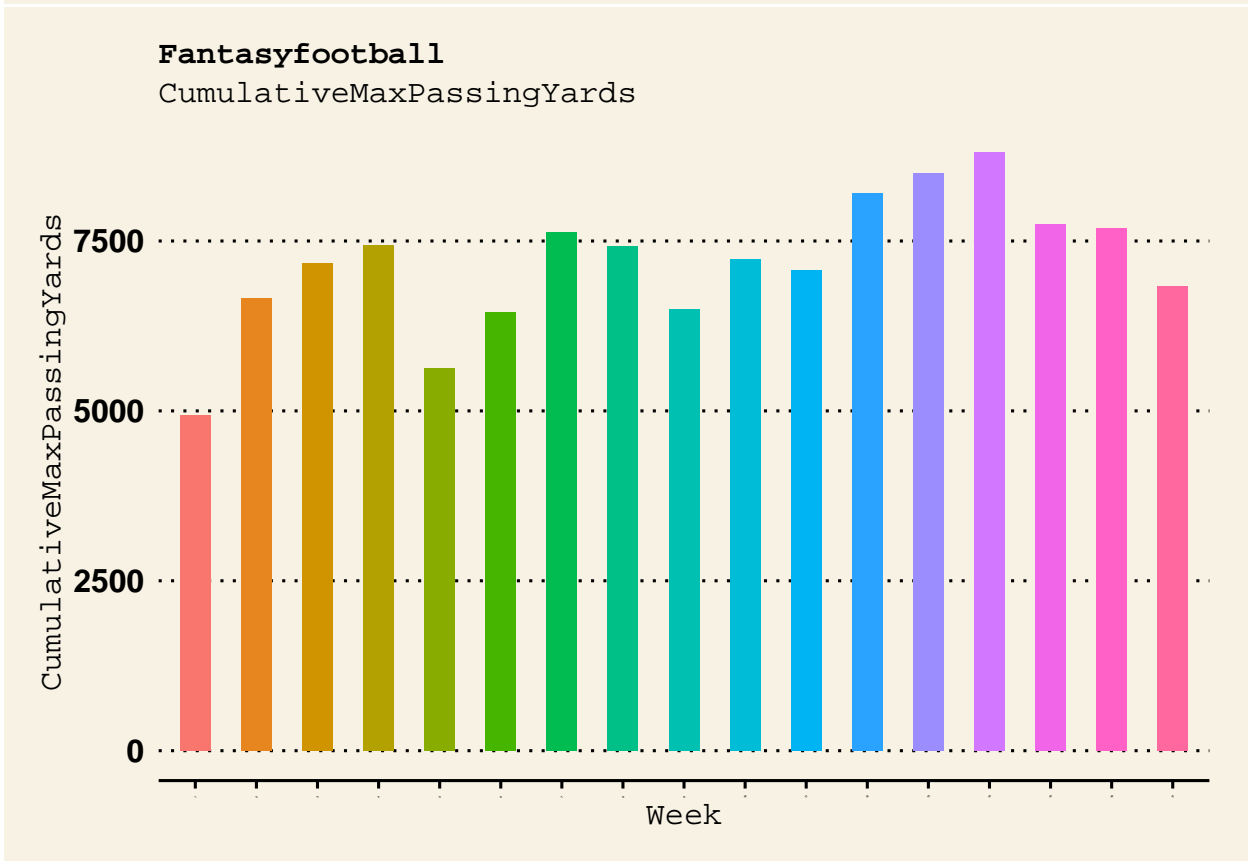
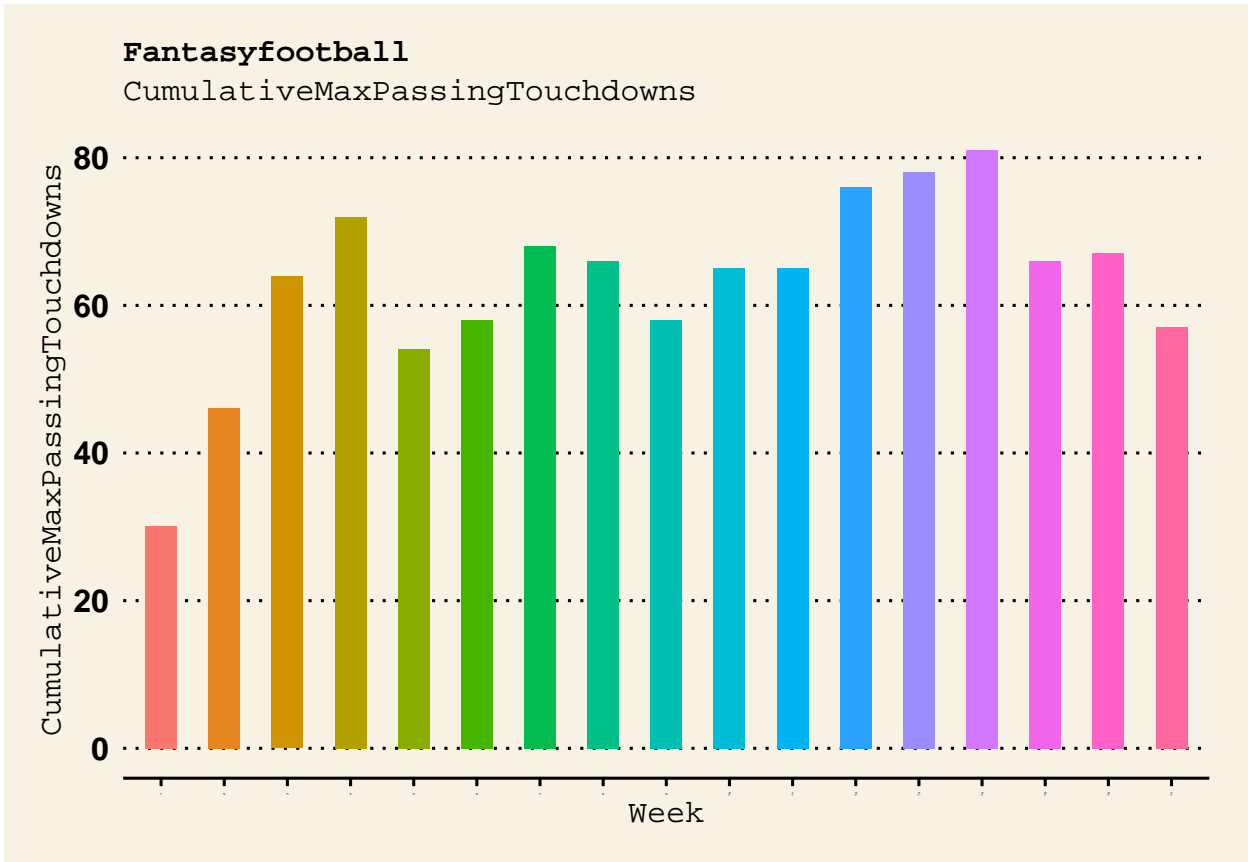


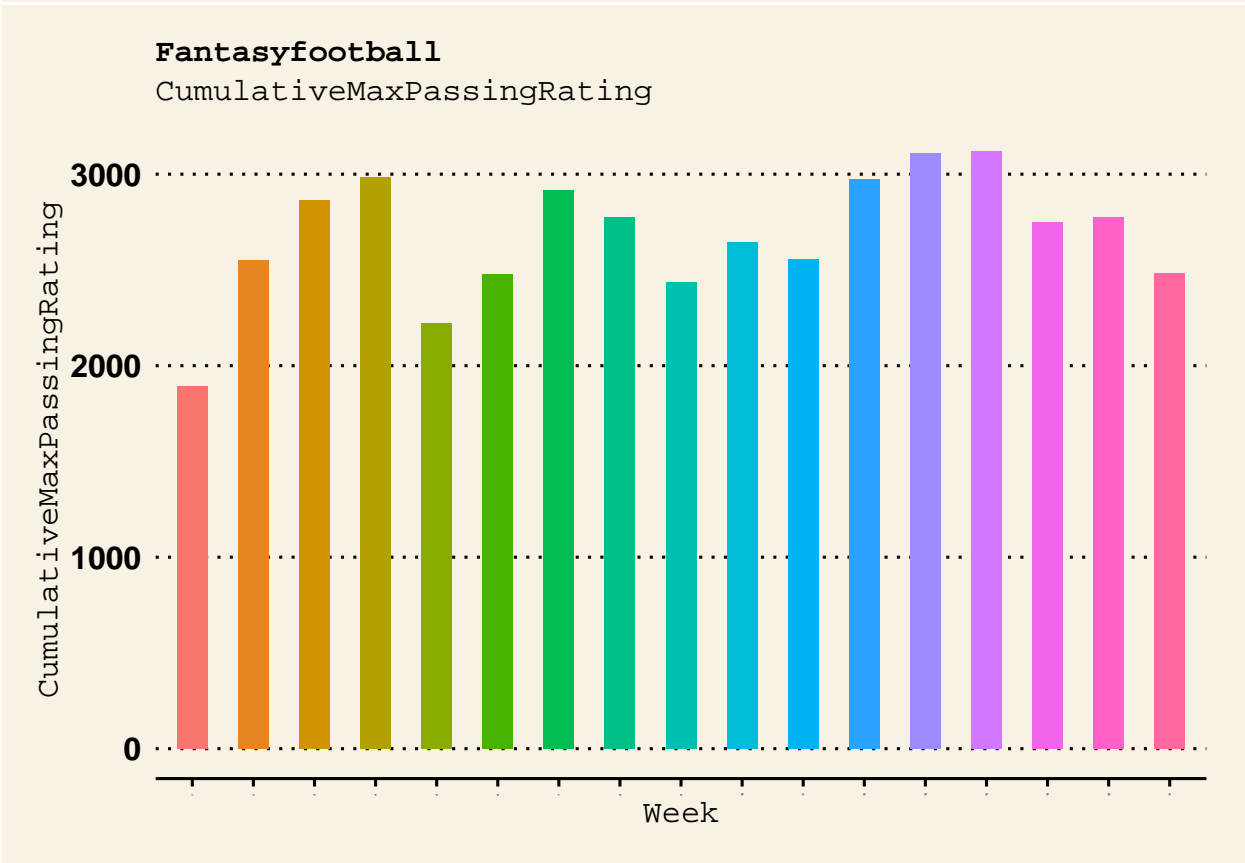
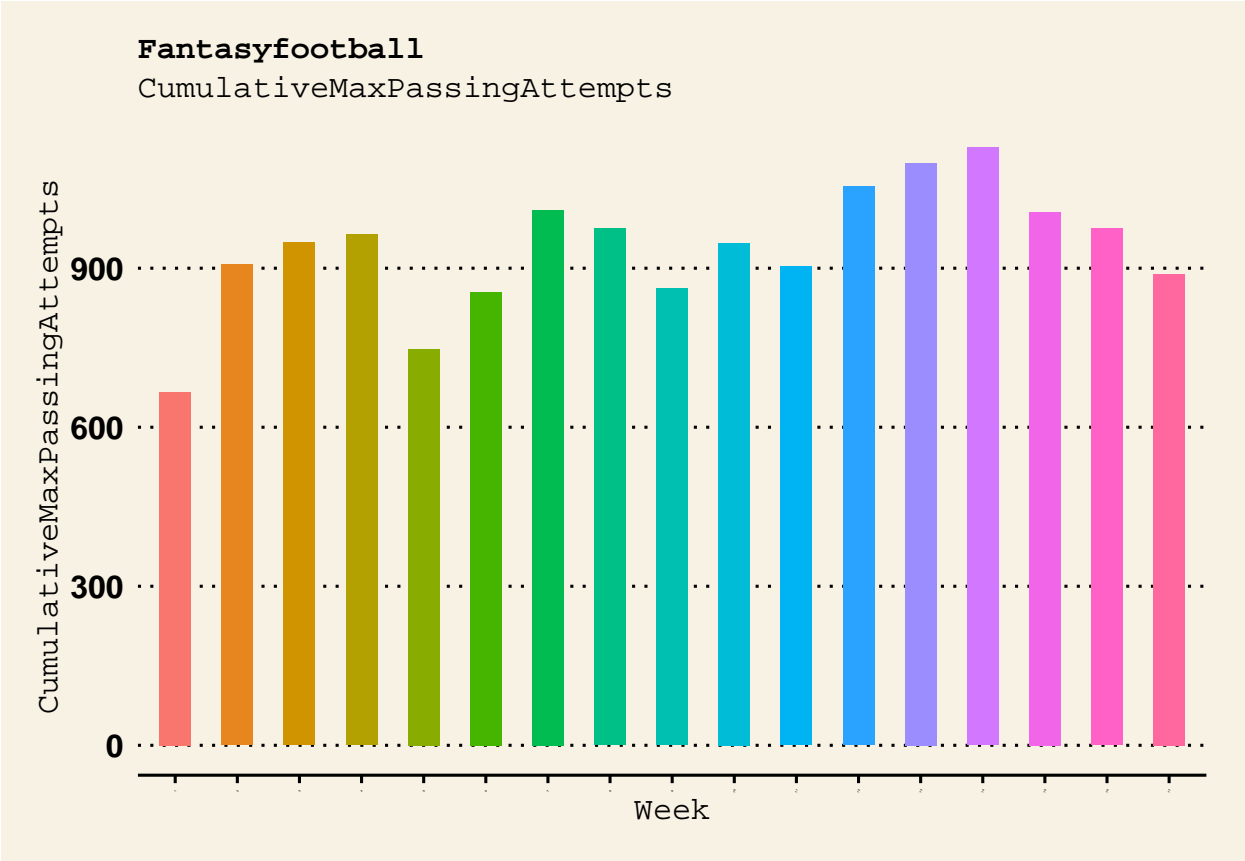


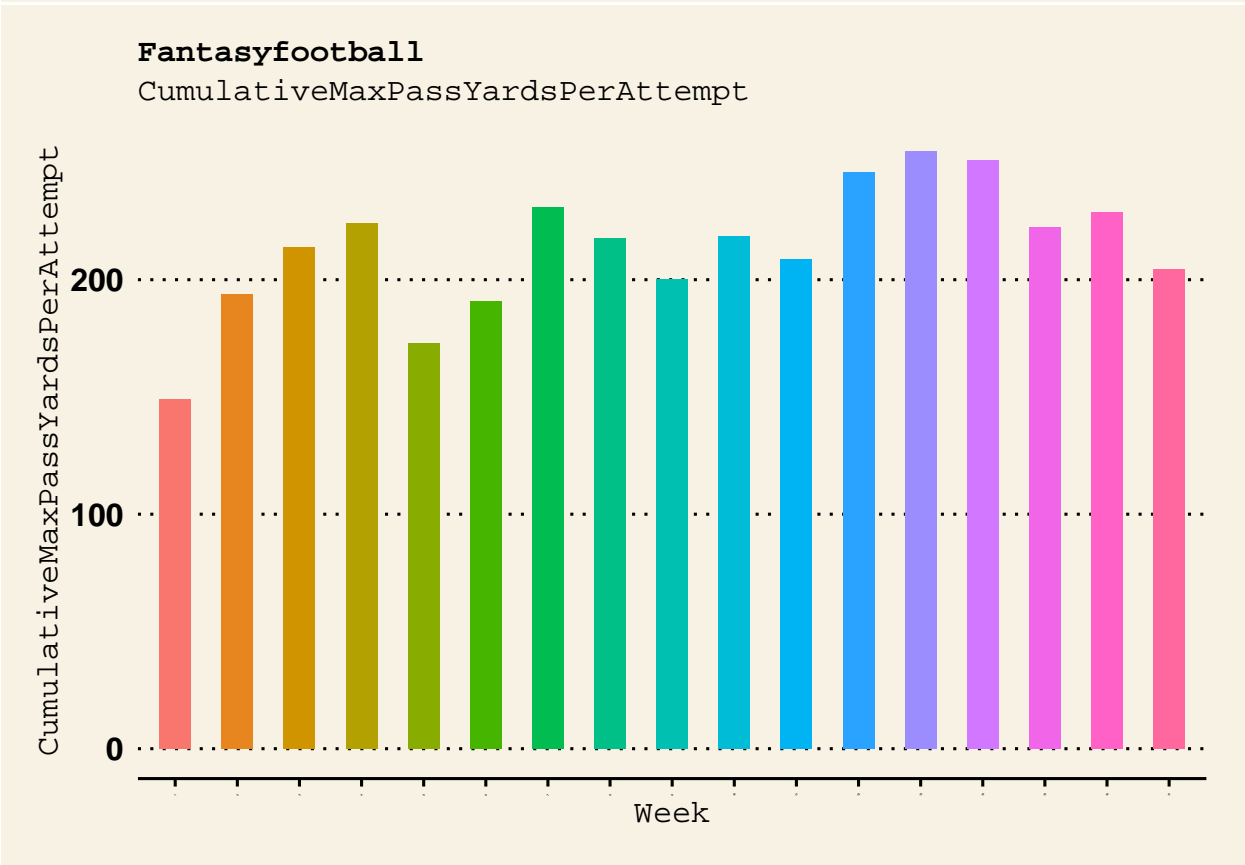
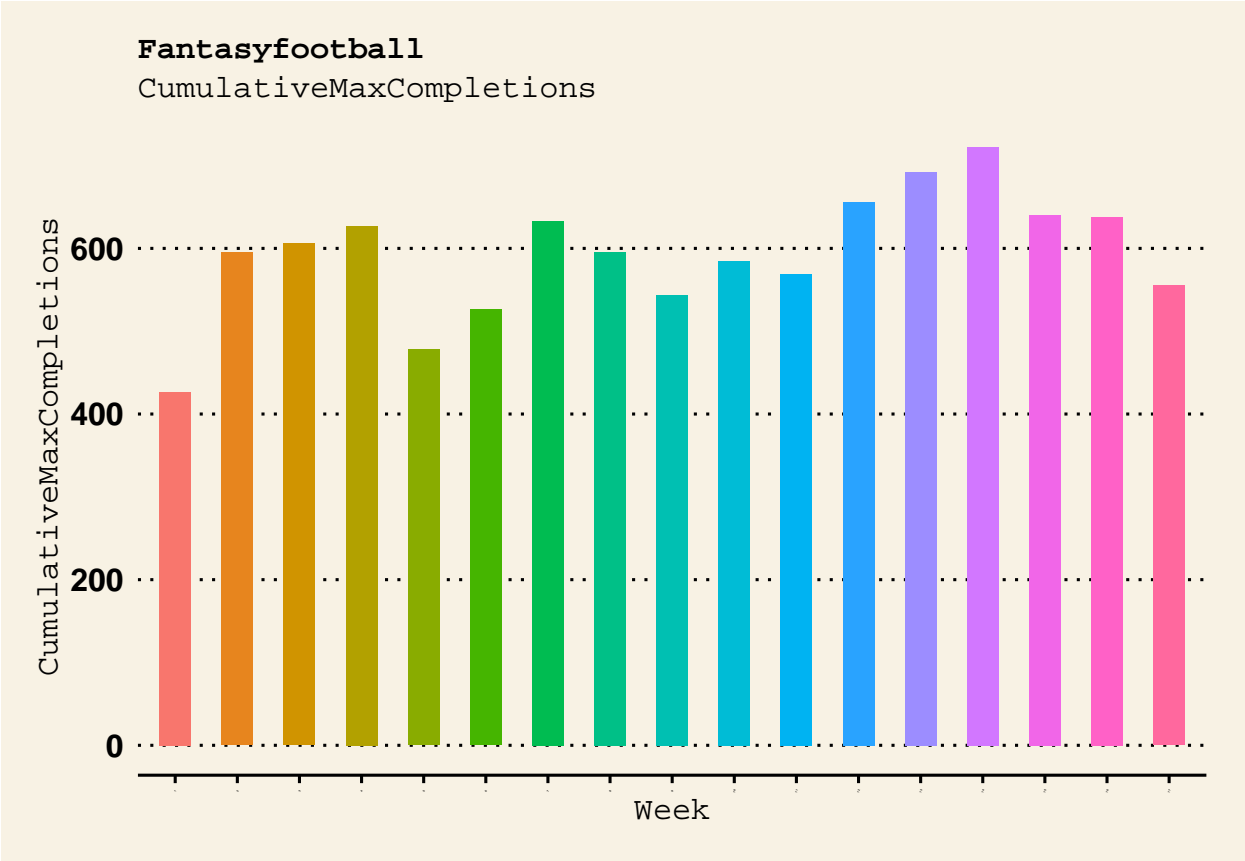


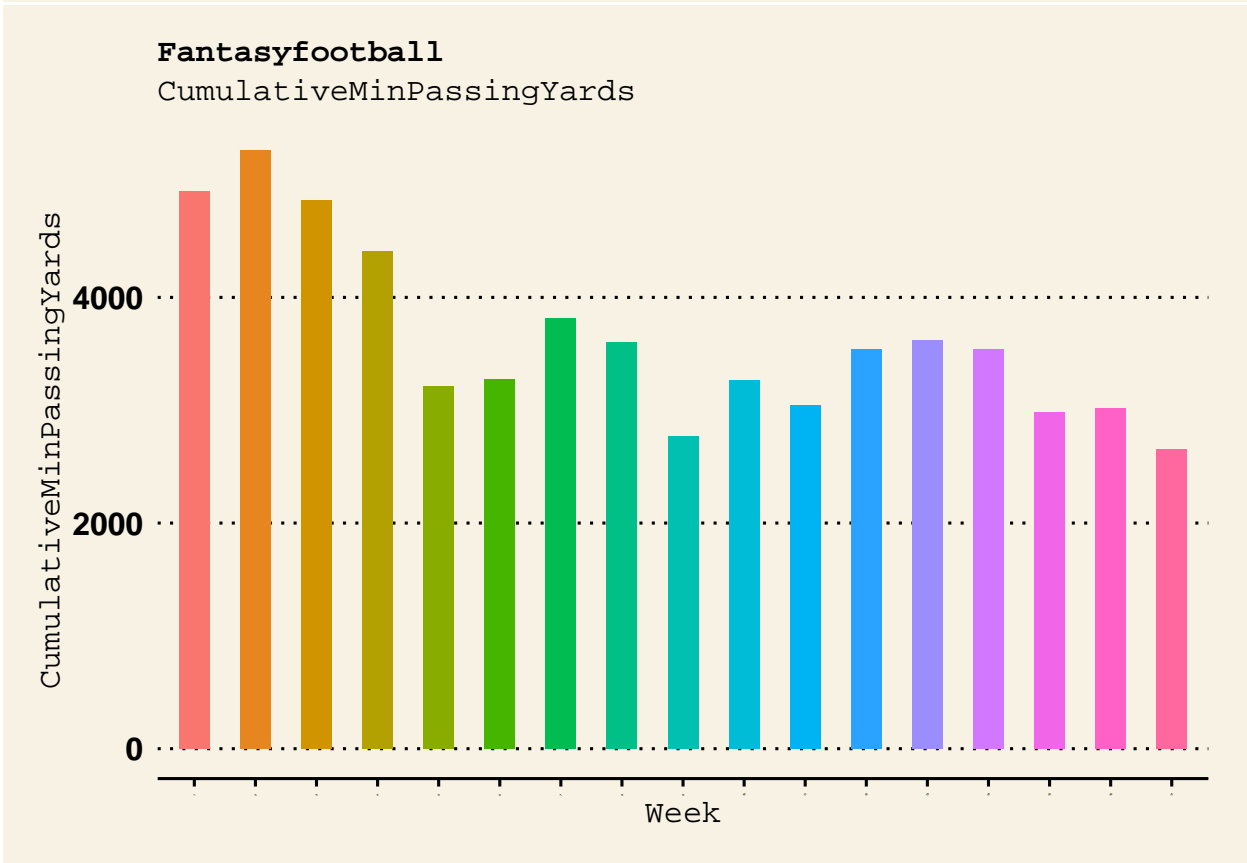
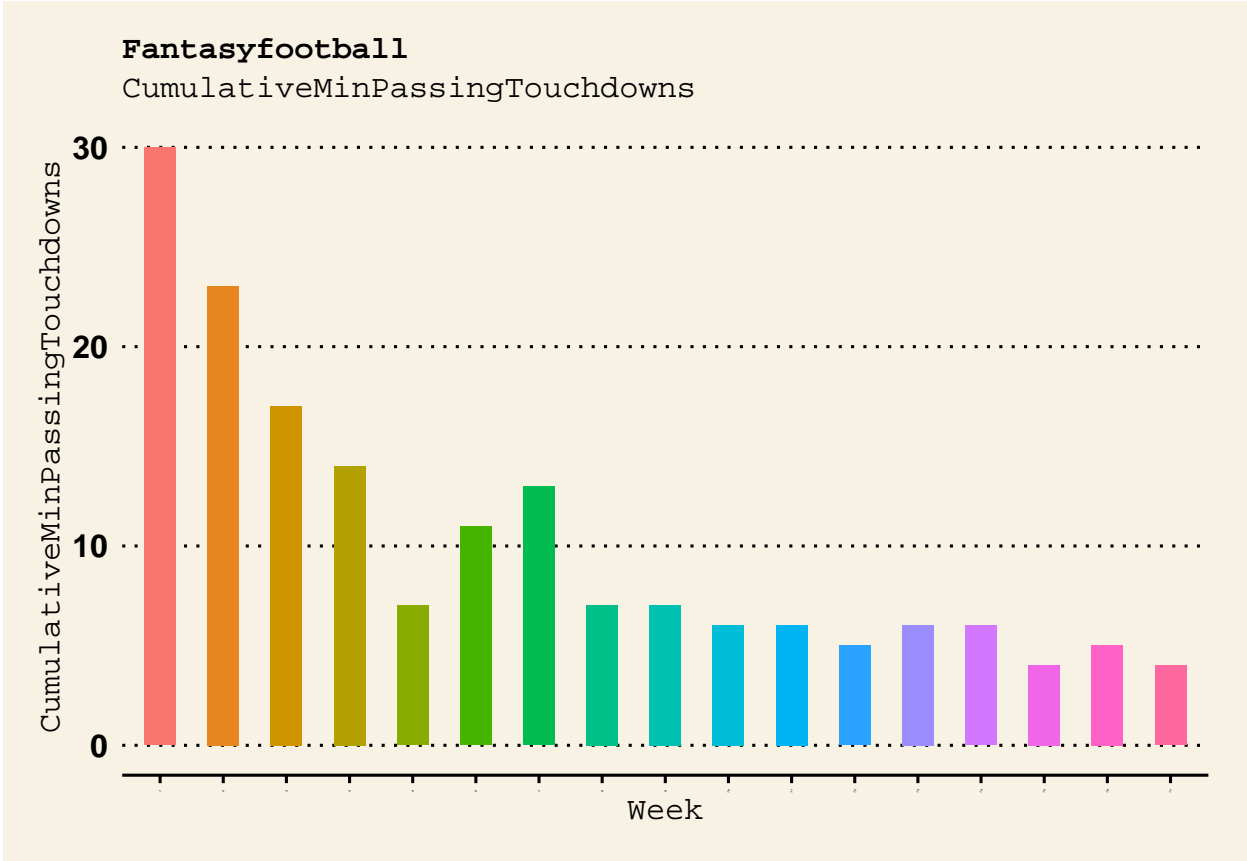


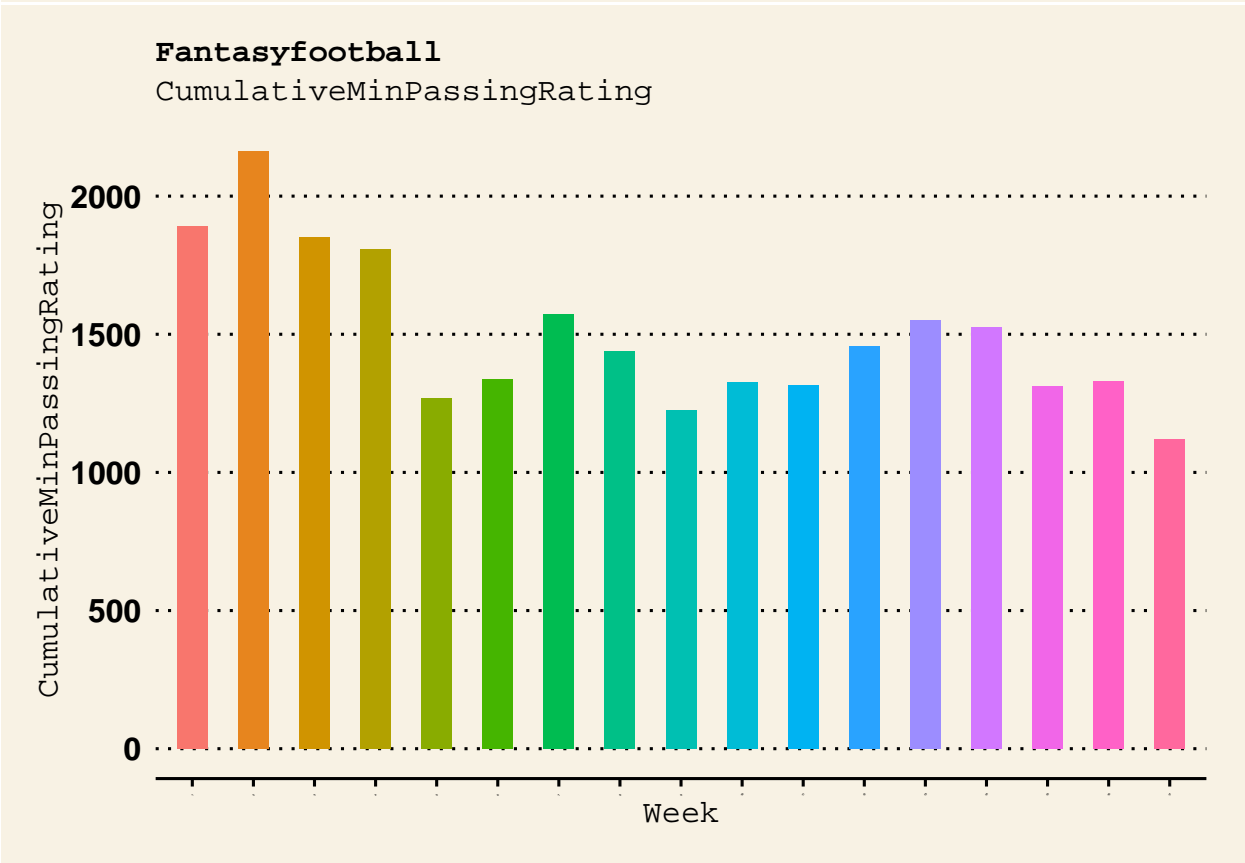
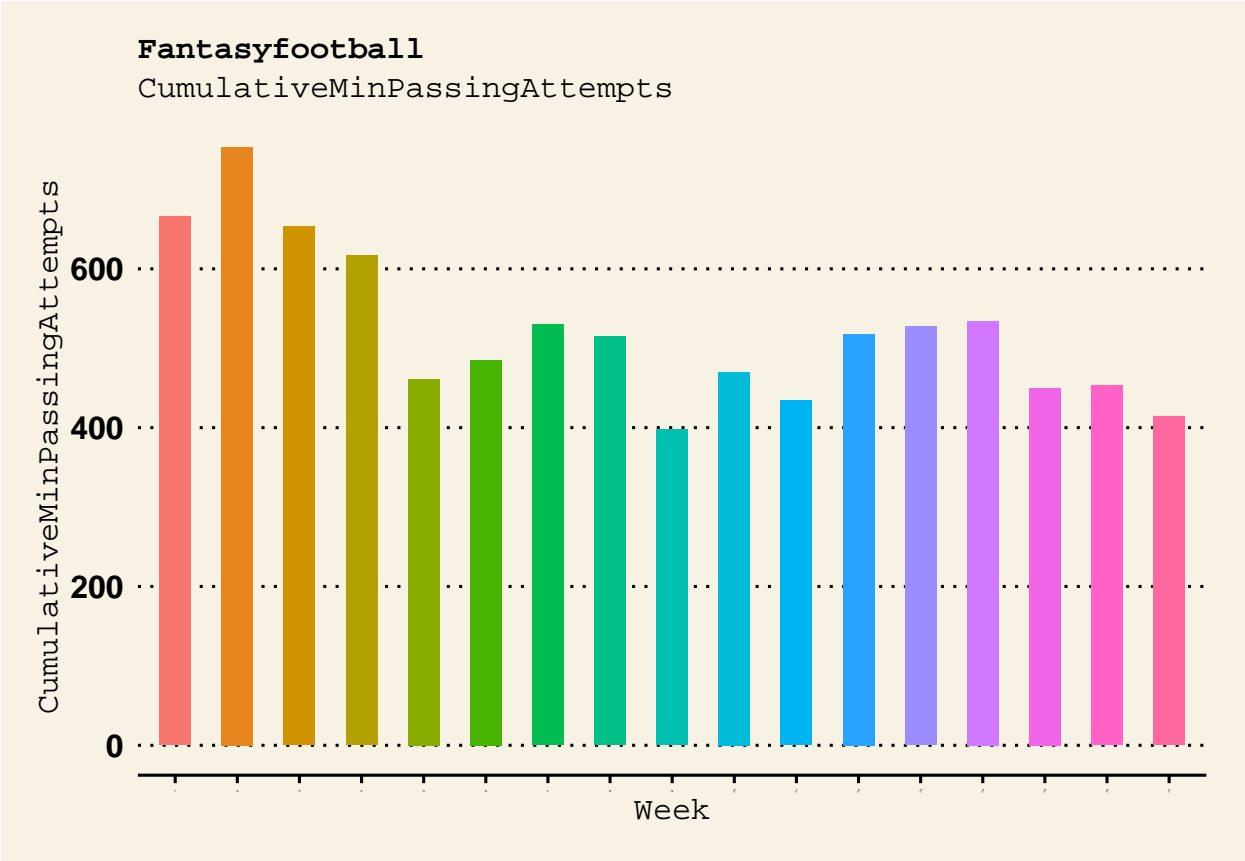


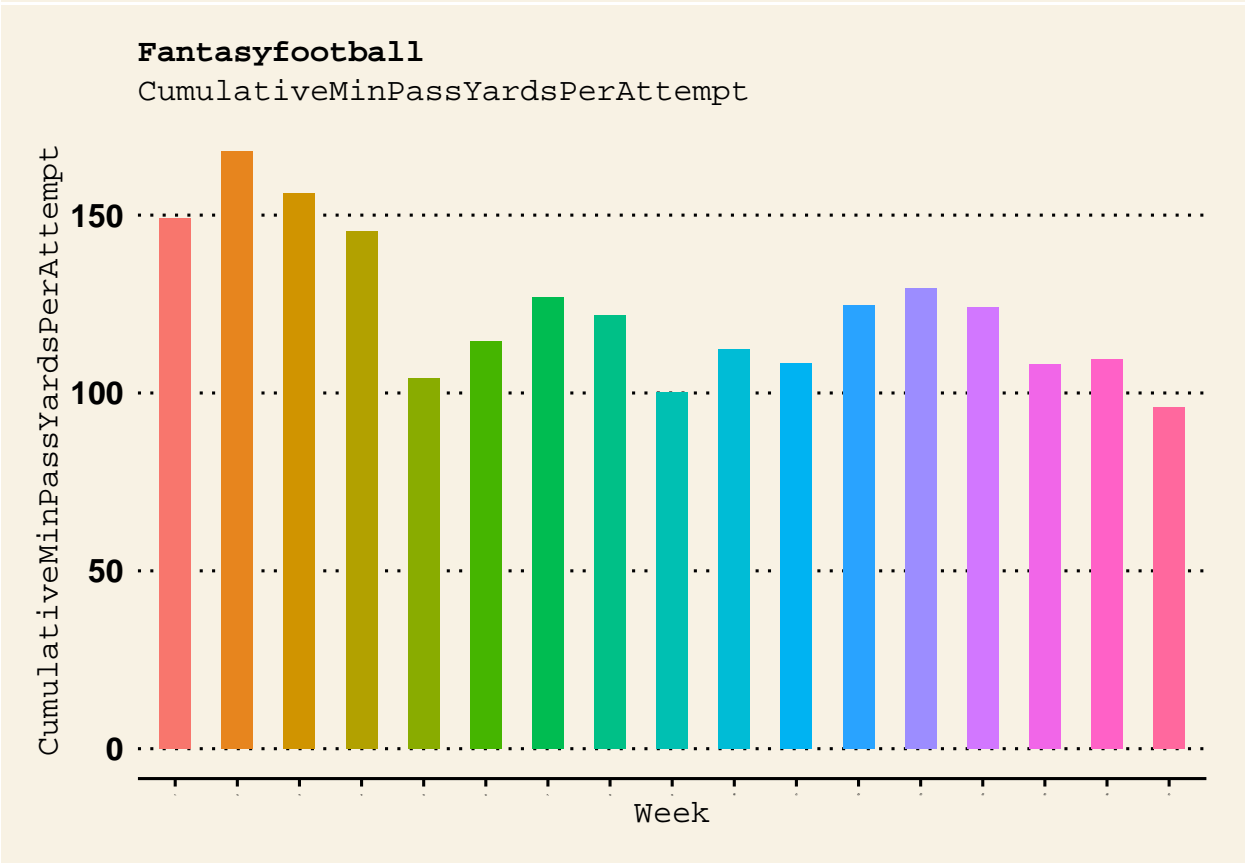
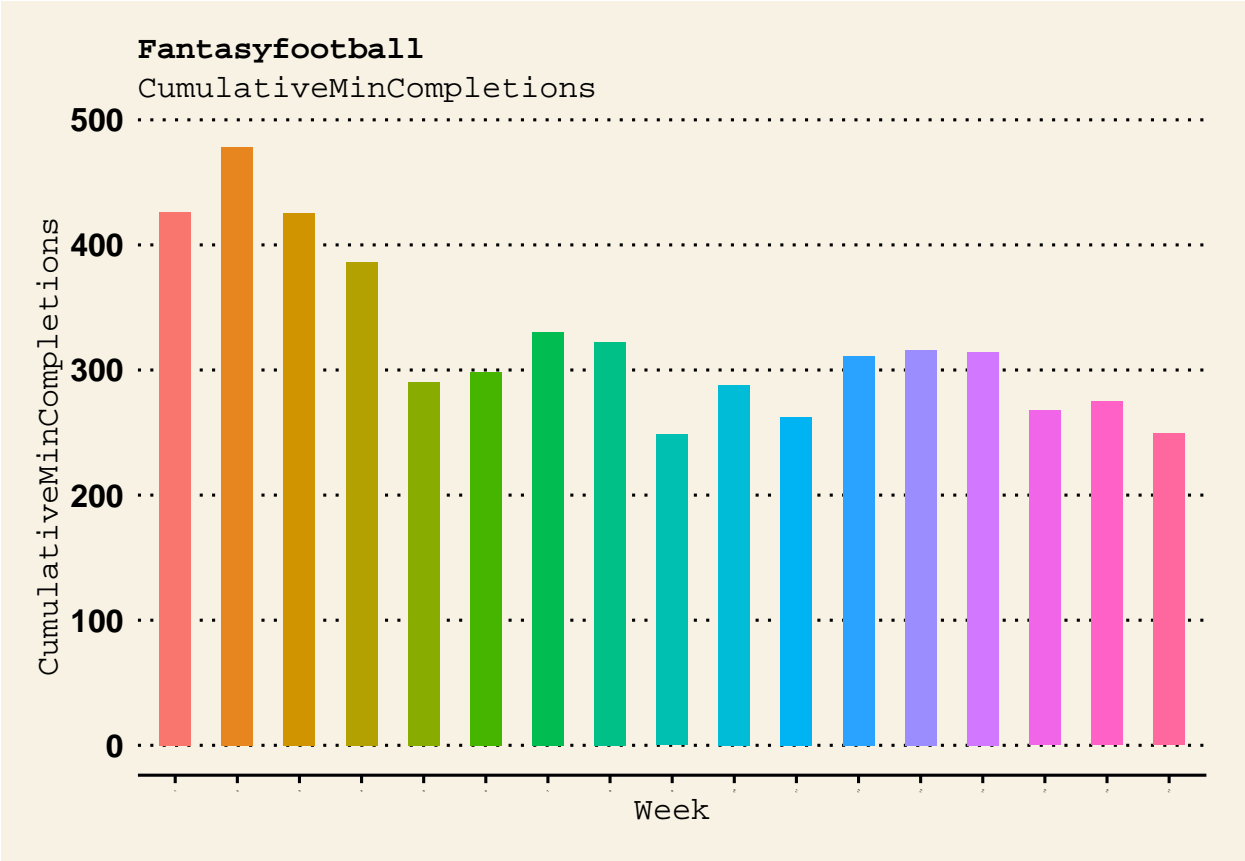










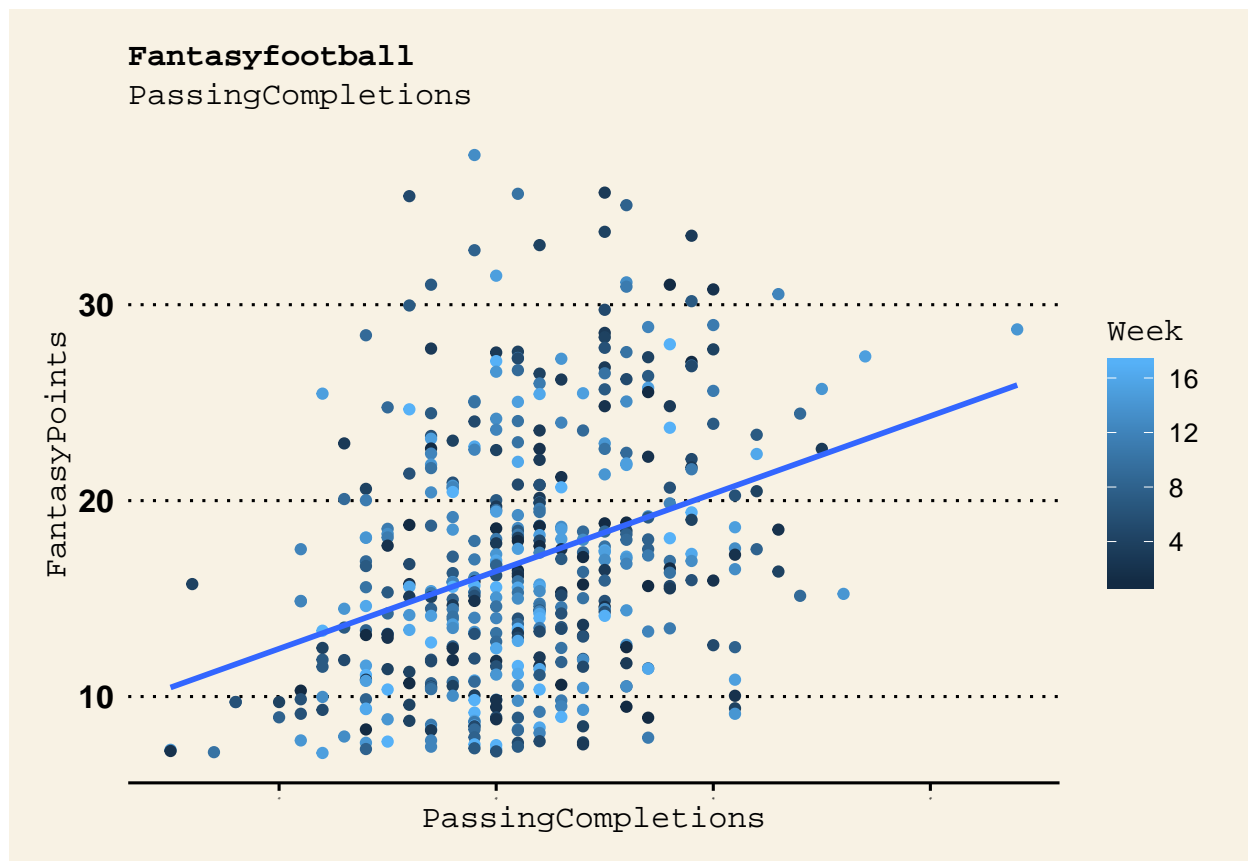


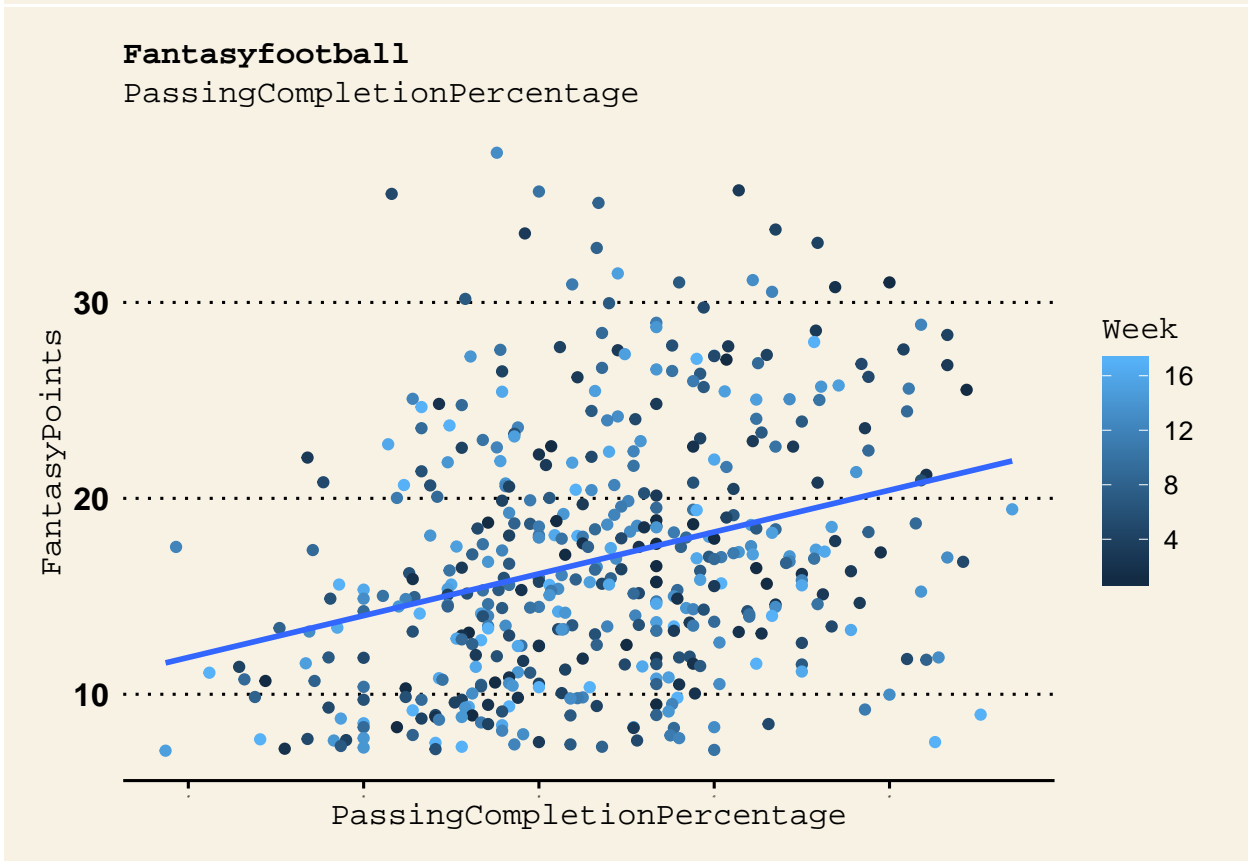
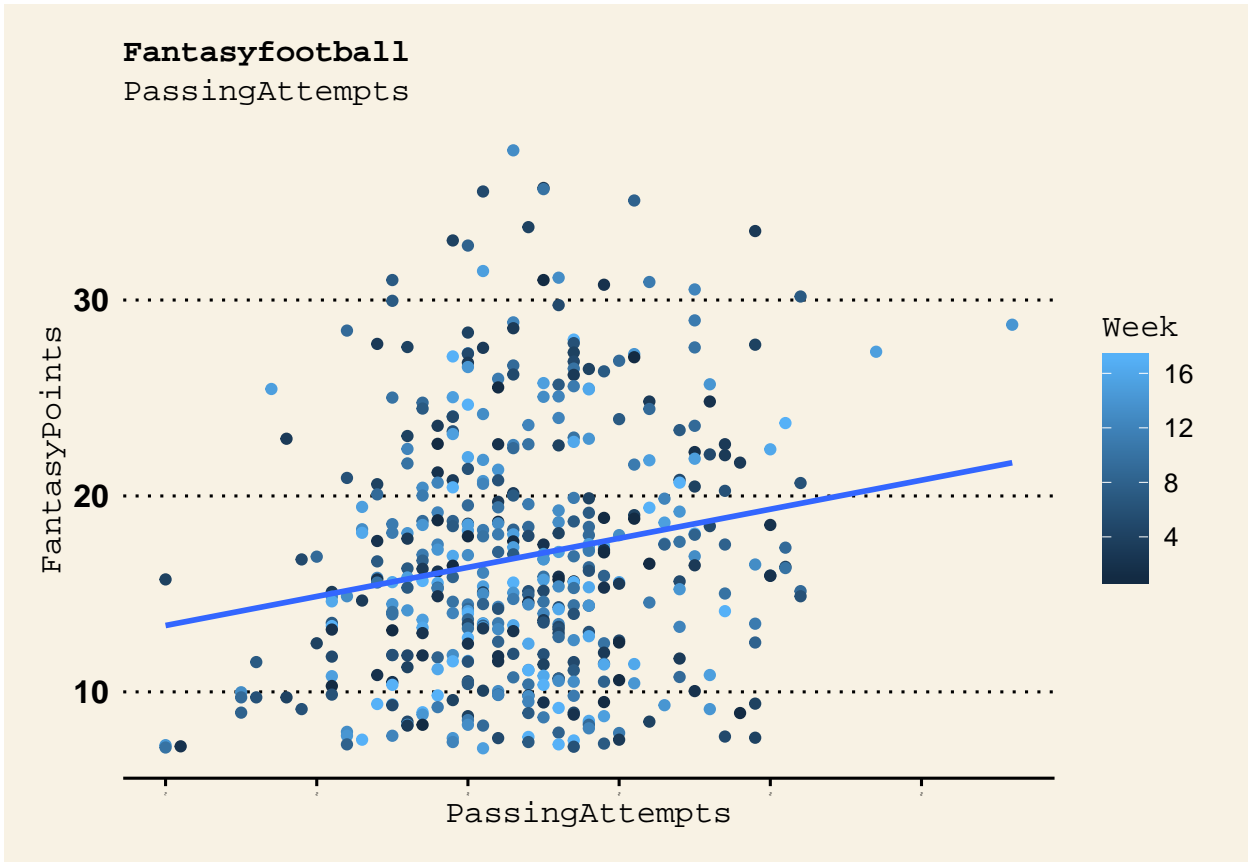
## 9 : Scatterplots

We are trying to capture what the NEXT value for fantasy points is likely to be - these are all going to be for the current week since the fantasy score is a linear combination of the predictors for any given week. We need to shift the data before running these charts.

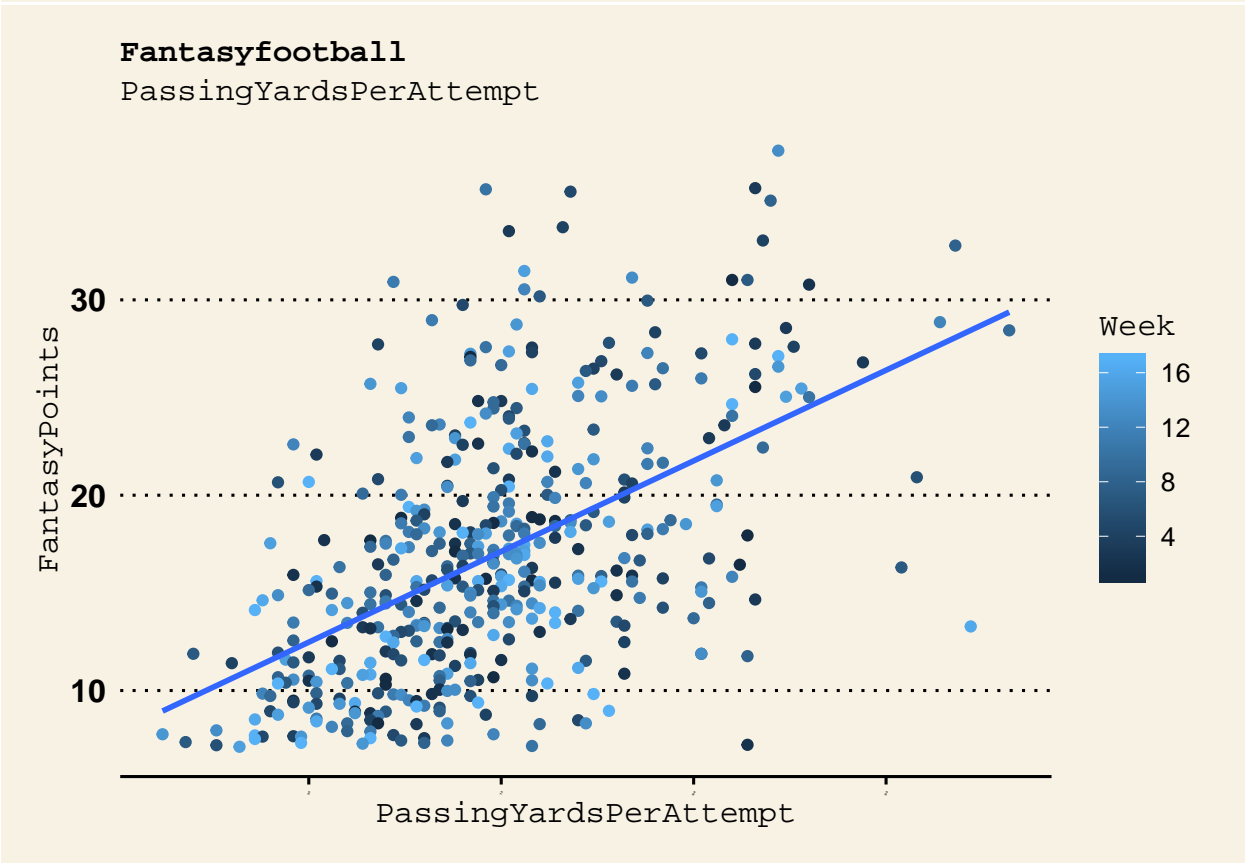
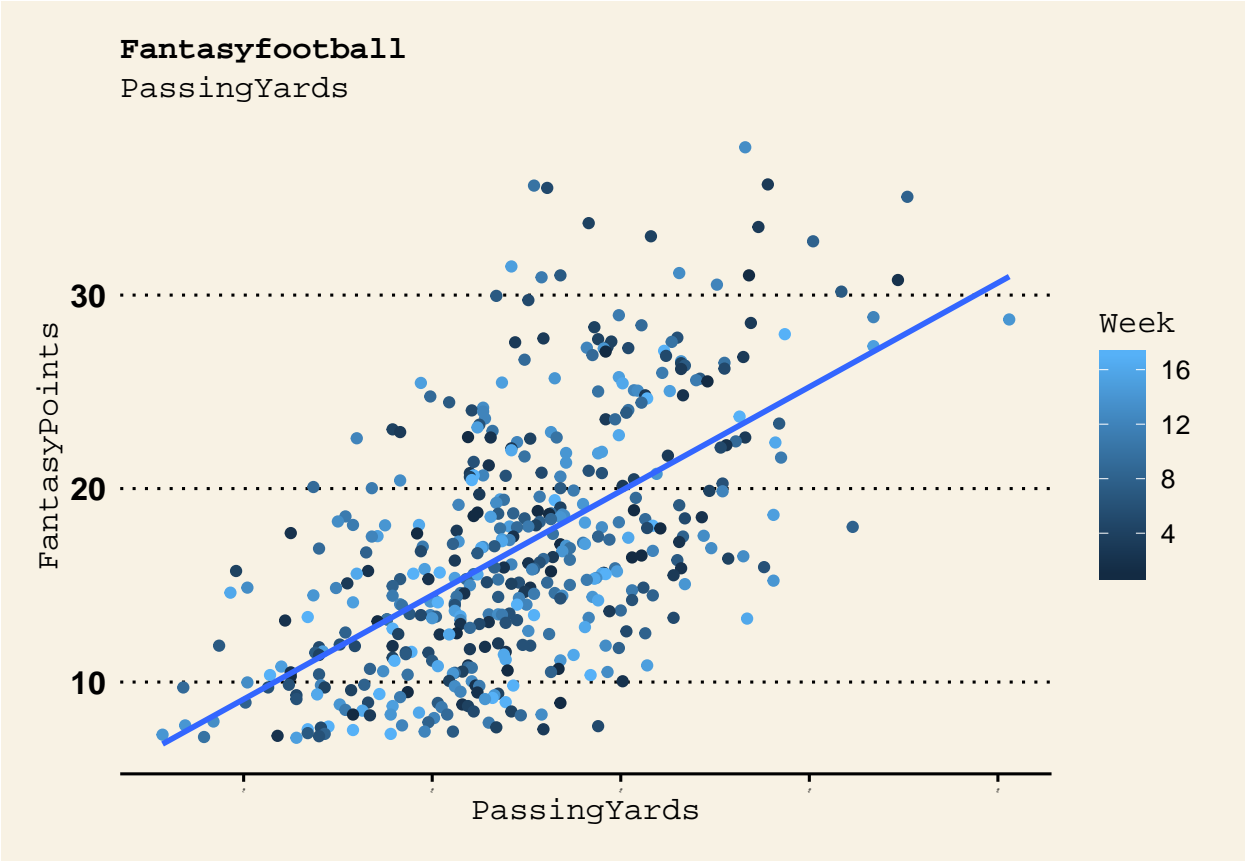
## 9.1 : Scatterplots for base features

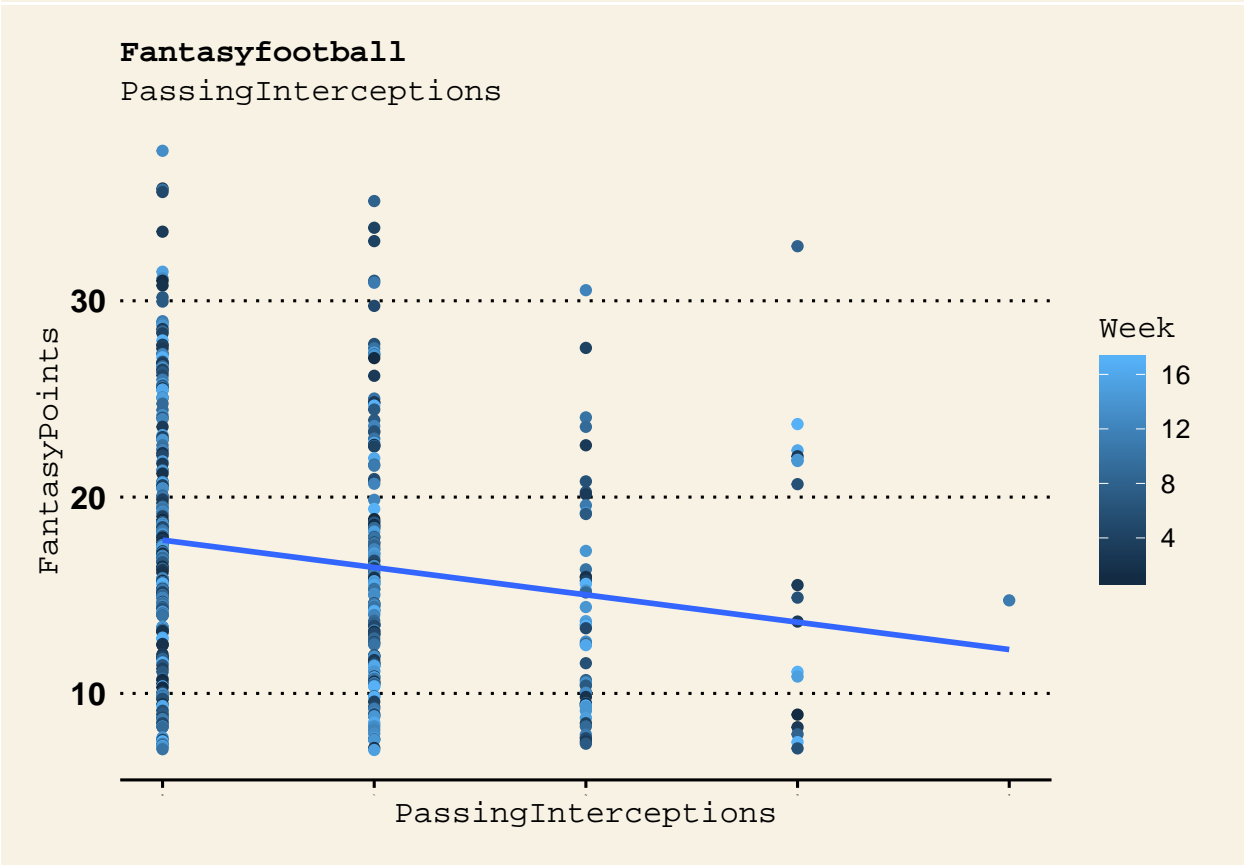
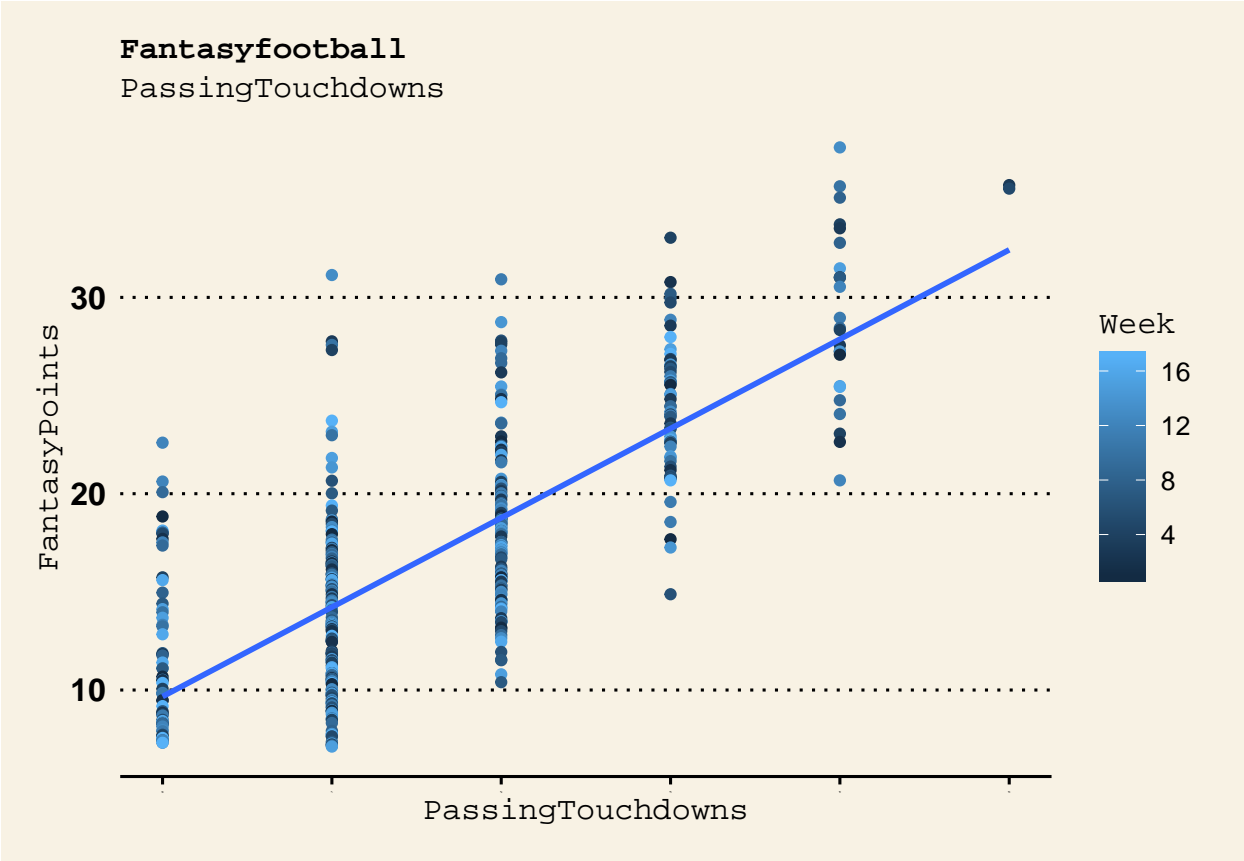
```
for (i in 3:15) {  
  base_scatter <- eda_base %>%  
    ggplot(aes_string(y="FantasyPoints",x=names(eda_base[i]),color="as.numeric(Week)")) +  
    geom_point()+geom_smooth(method="lm",se=F)+  
    labs(title="Fantasyfootball",  
         subtitle=names(eda_base[i]),  
         aption="Source: Fantasyfootball")+  
    labs(color="Week")+  
    theme_wsj()+  
    theme(plot.title = element_text(size = rel(0.5)),  
          plot.subtitle = element_text(size = rel(0.5)),  
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),  
          axis.title = element_text(size = rel(0.5)),  
          legend.position = "right",  
          legend.direction = "vertical",  
          legend.title = element_text(size = rel(0.5)))  
  print(base_scatter)  
}
```

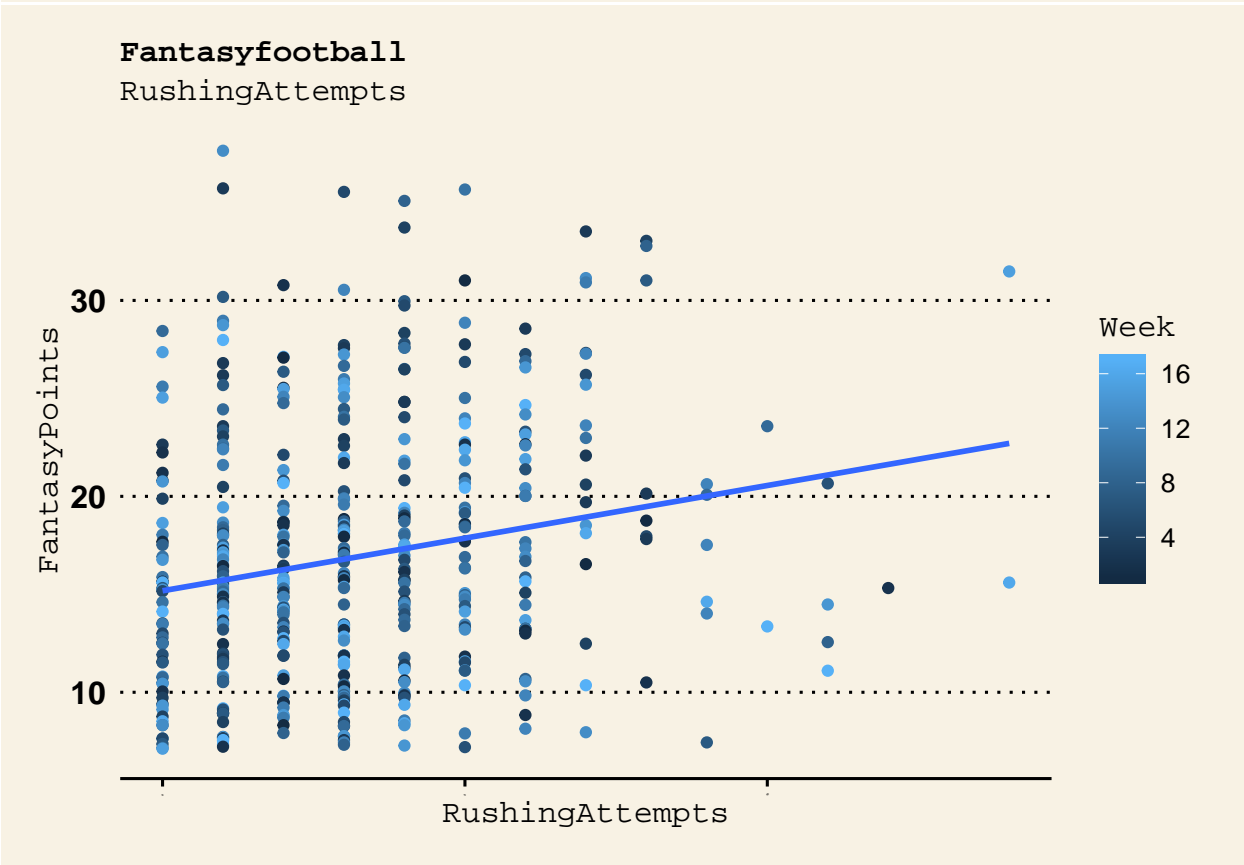
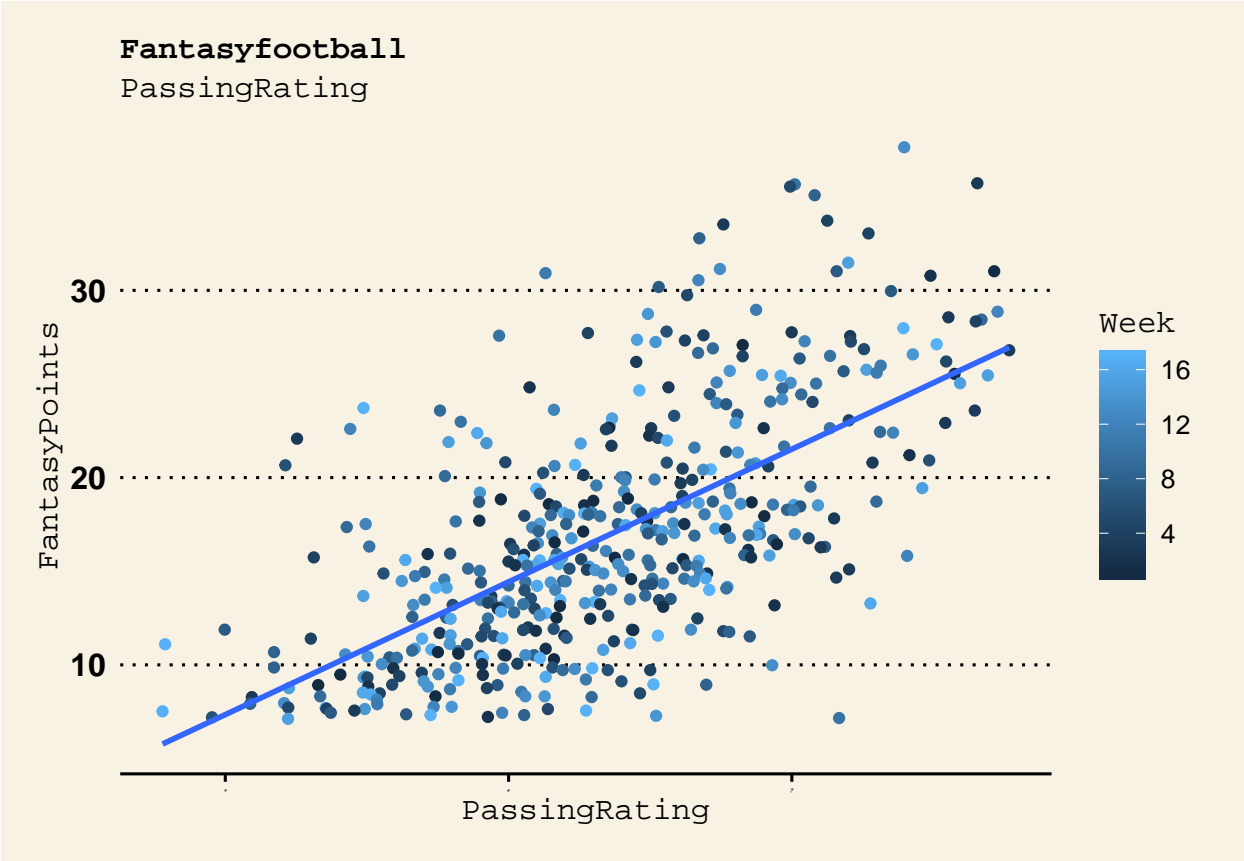


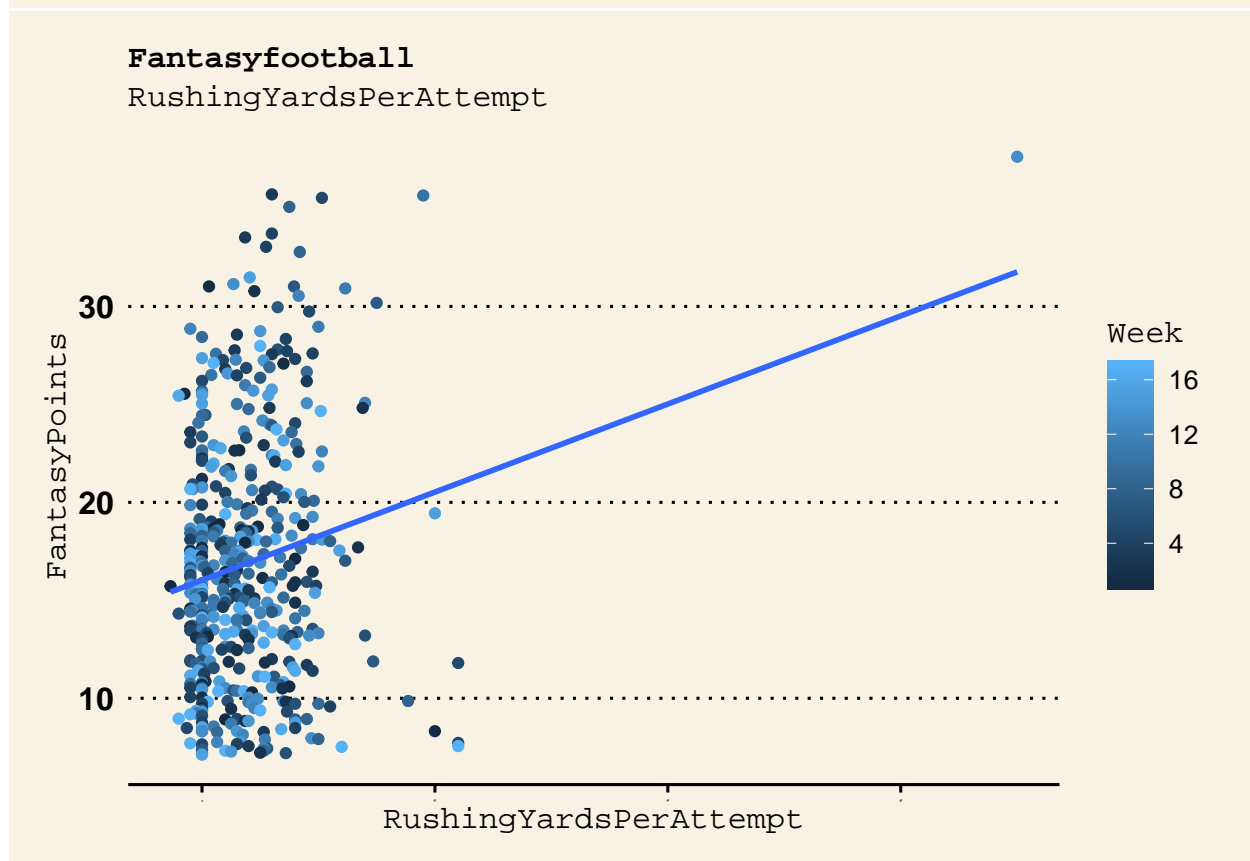
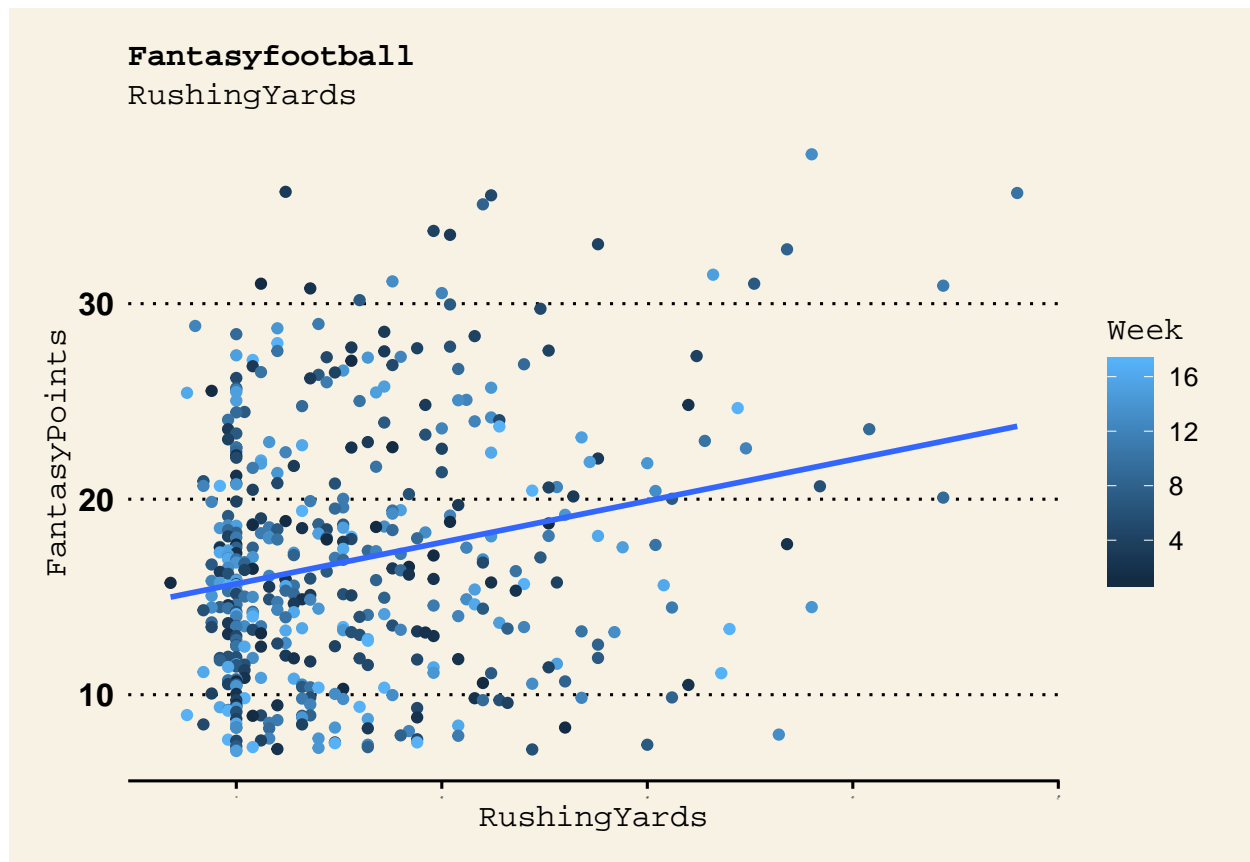


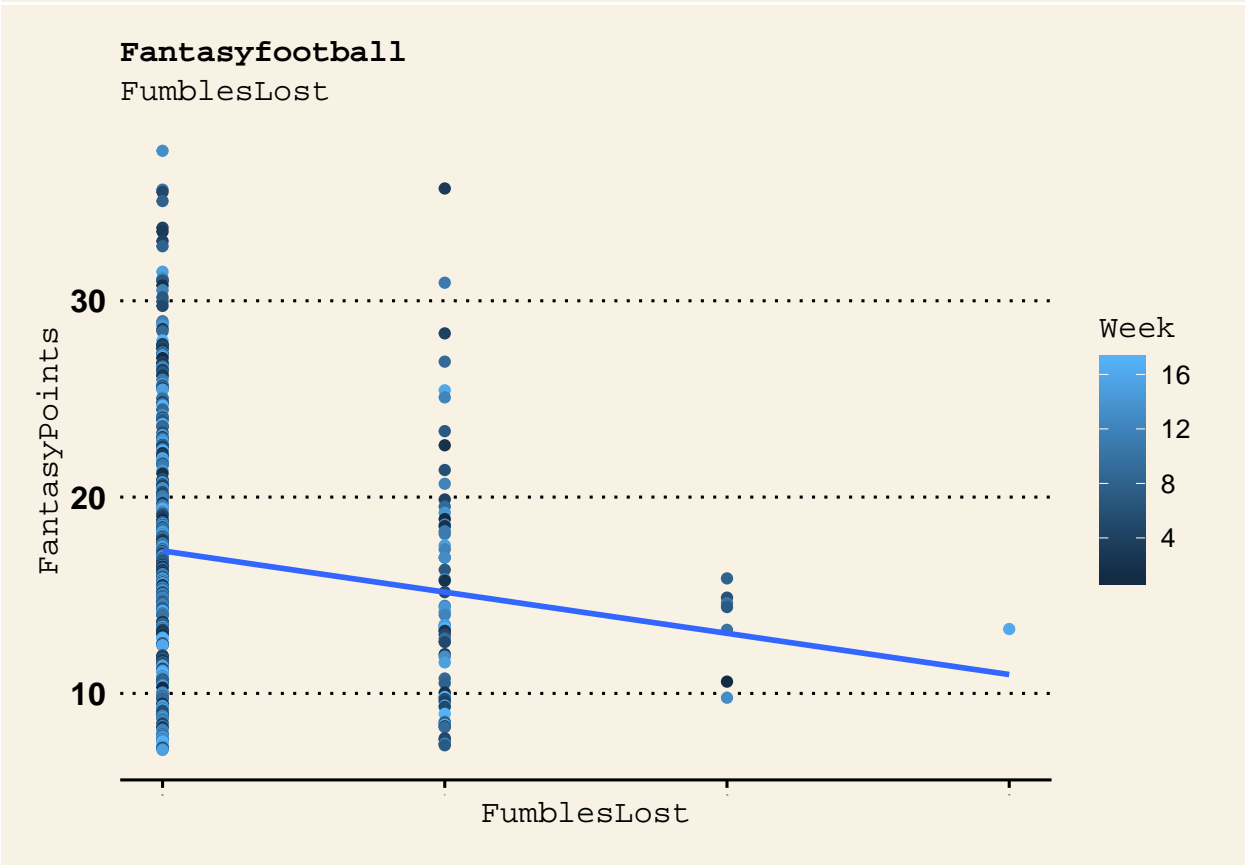
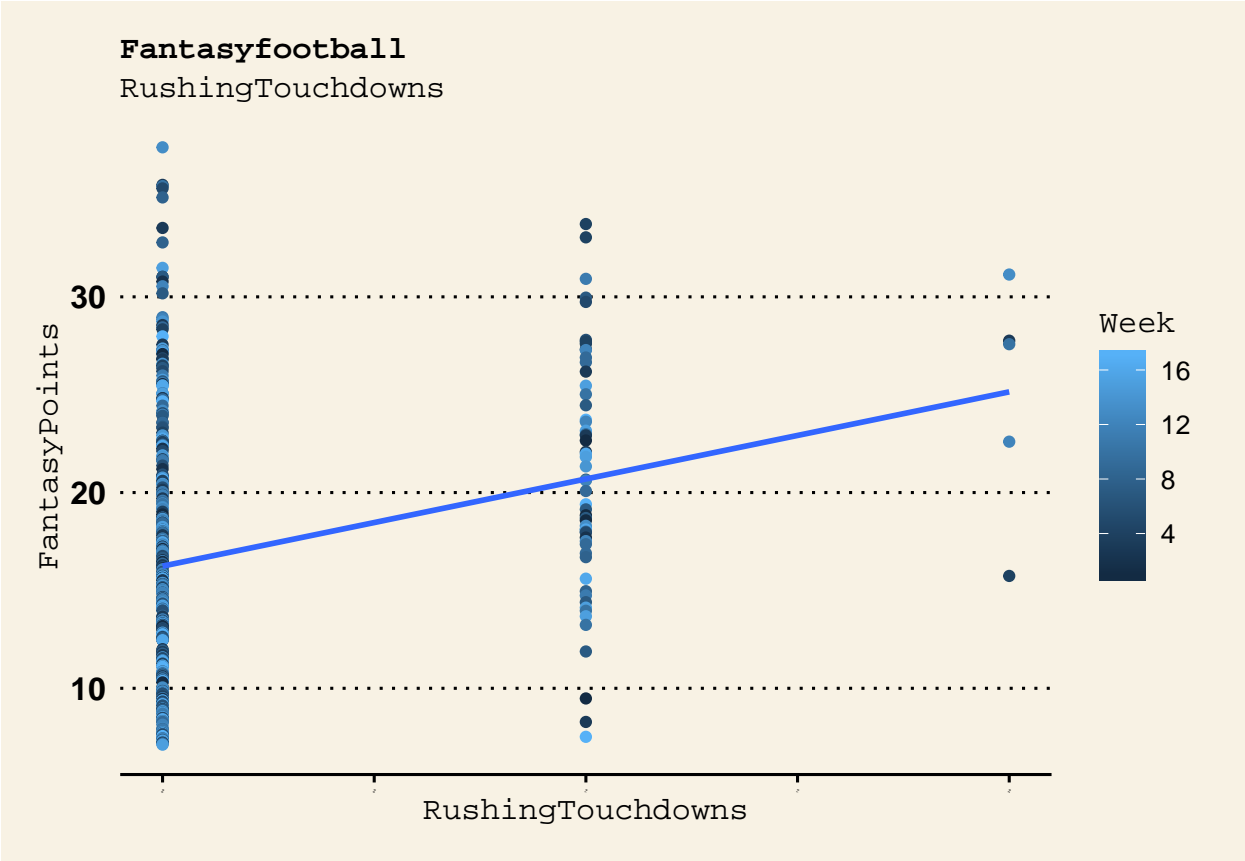






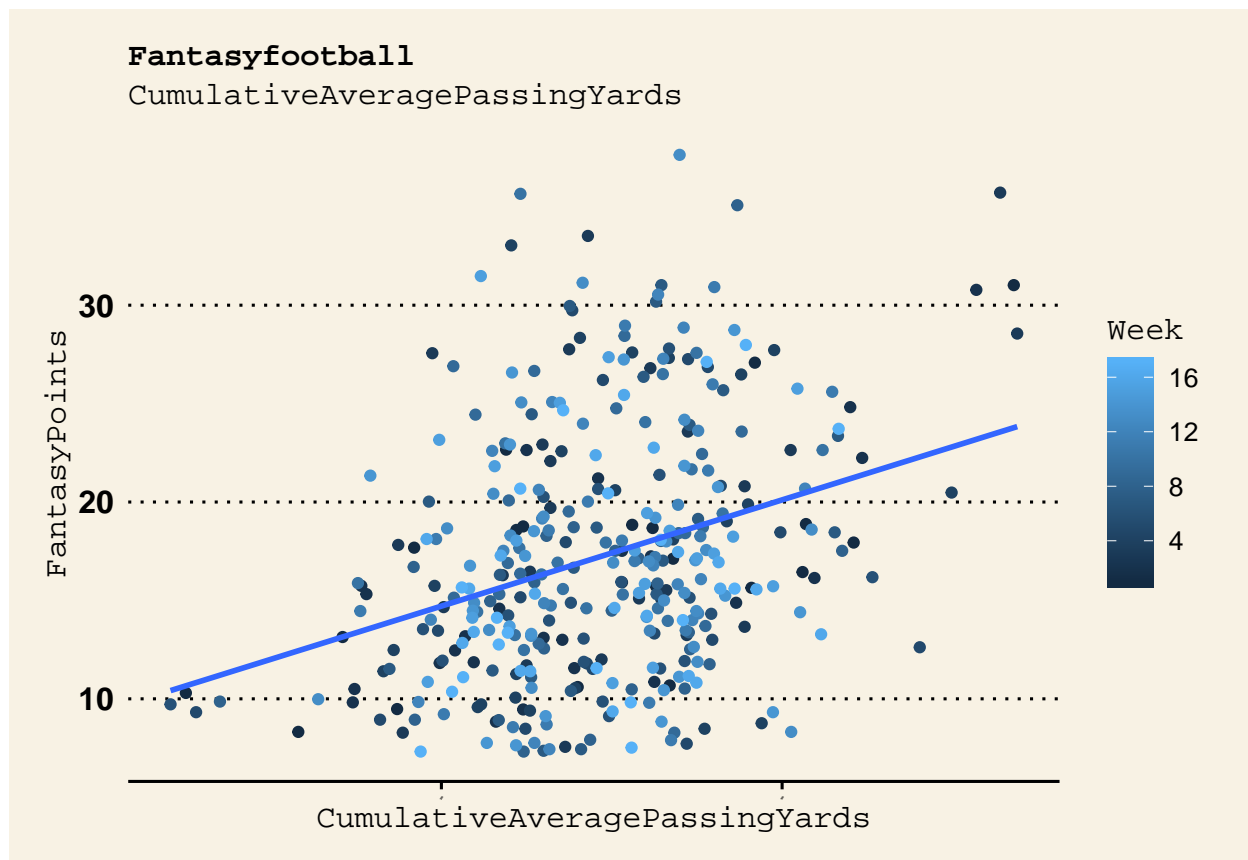






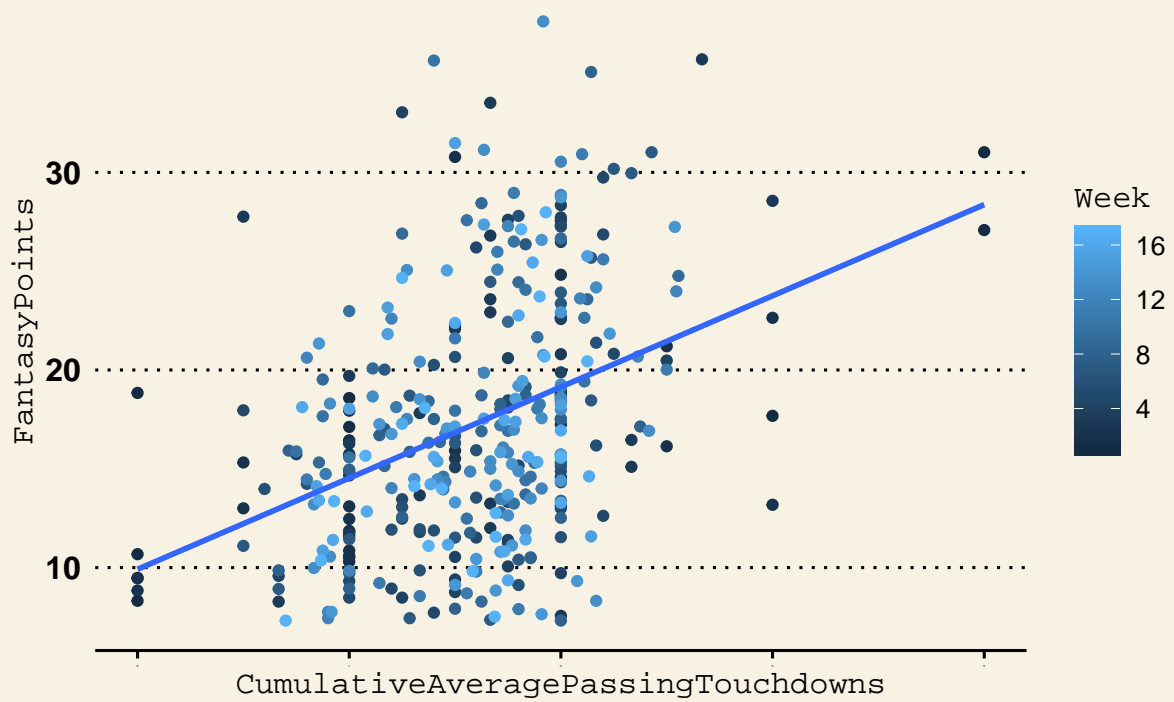
```
## 9.2 : Scatterplots for Derived features
```

```
for (i in 3:20) {
  derived_scatter <- eda_derived %>%
    ggplot(aes_string(y="FantasyPoints",x=names(eda_derived[i]),color="as.numeric(Week)",
    geom_point()+
    geom_smooth(method="lm",se=F)+
    xlab(names(eda_derived[i]))+
    ylab("FantasyPoints")+
    labs(title="Fantasyfootball",
         subtitle=names(eda_derived[i]),
         aption="Source: Fantasyfootball")+
    labs(color="Week")+
    theme_wsj()+
    theme(plot.title = element_text(size = rel(0.5)),
          plot.subtitle = element_text(size = rel(0.5)),
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),
          axis.title = element_text(size = rel(0.5)),
          legend.position = "right",
          legend.direction = "vertical",
          legend.title = element_text(size = rel(0.5))
    )
  print(derived_scatter)
}
```



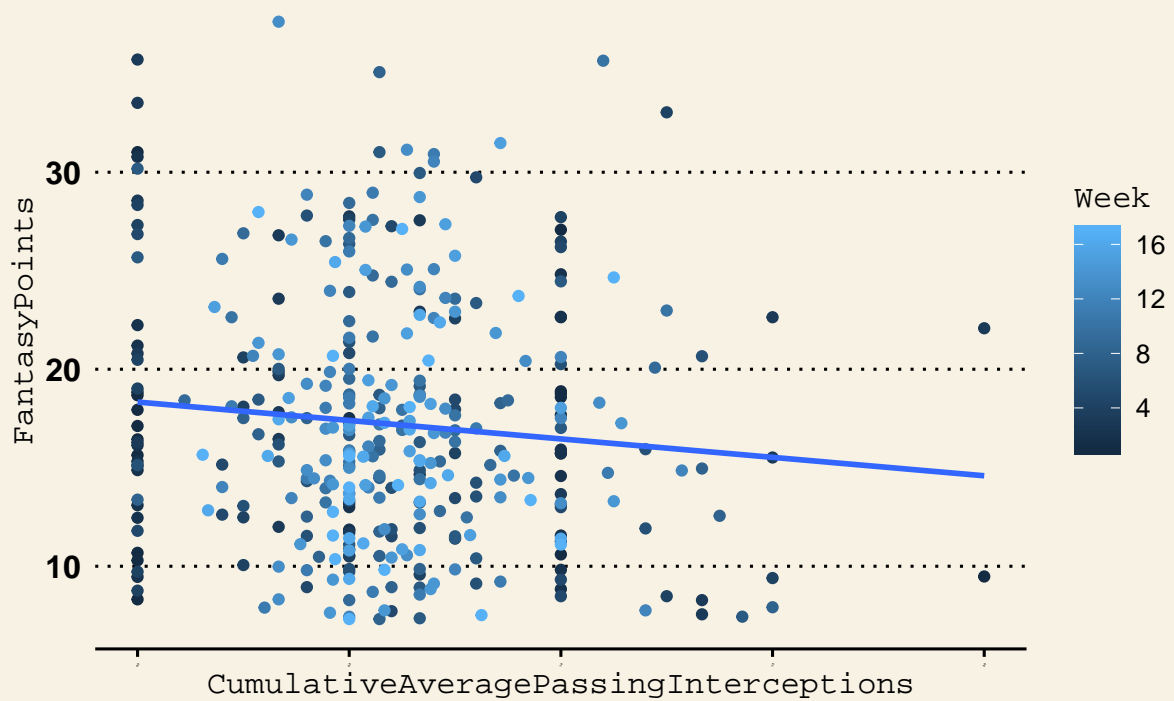
### Fantasyfootball

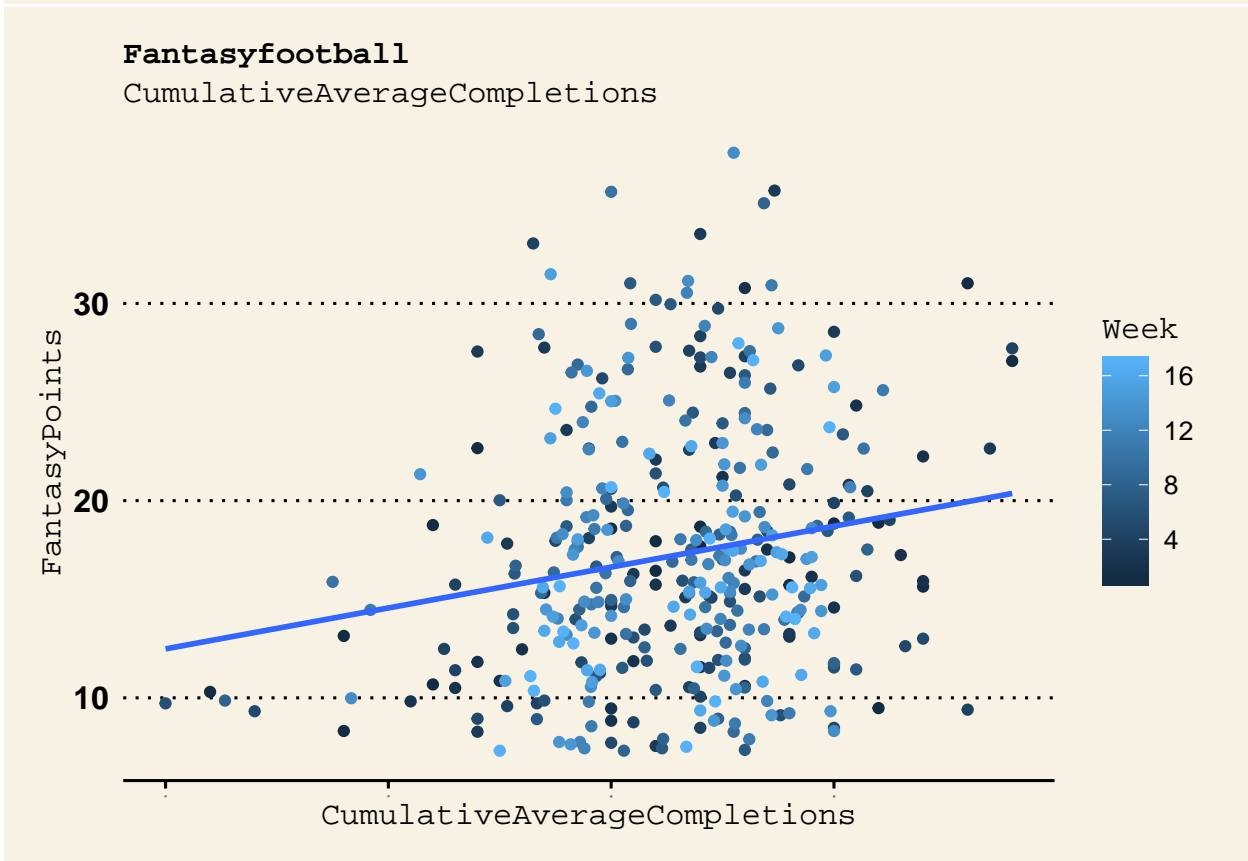
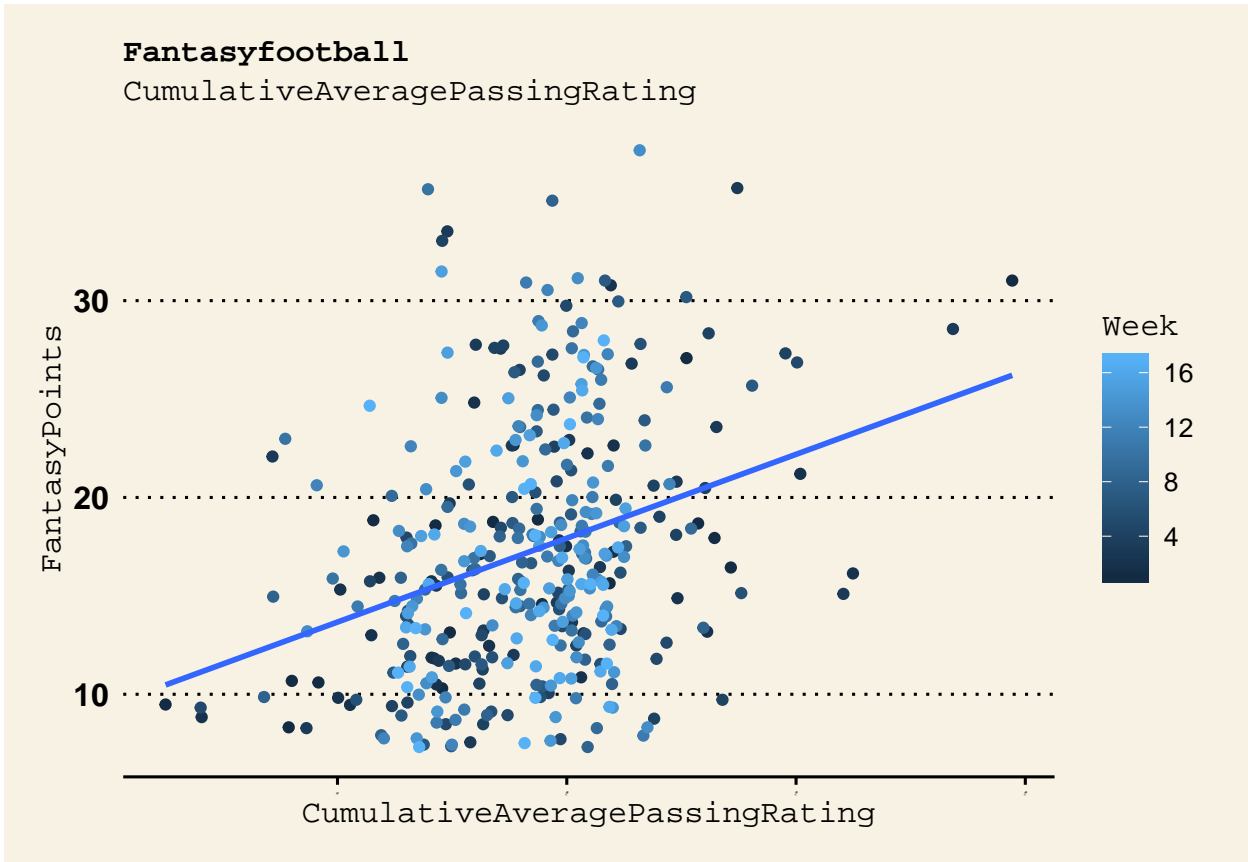
CumulativeAveragePassingTouchdowns



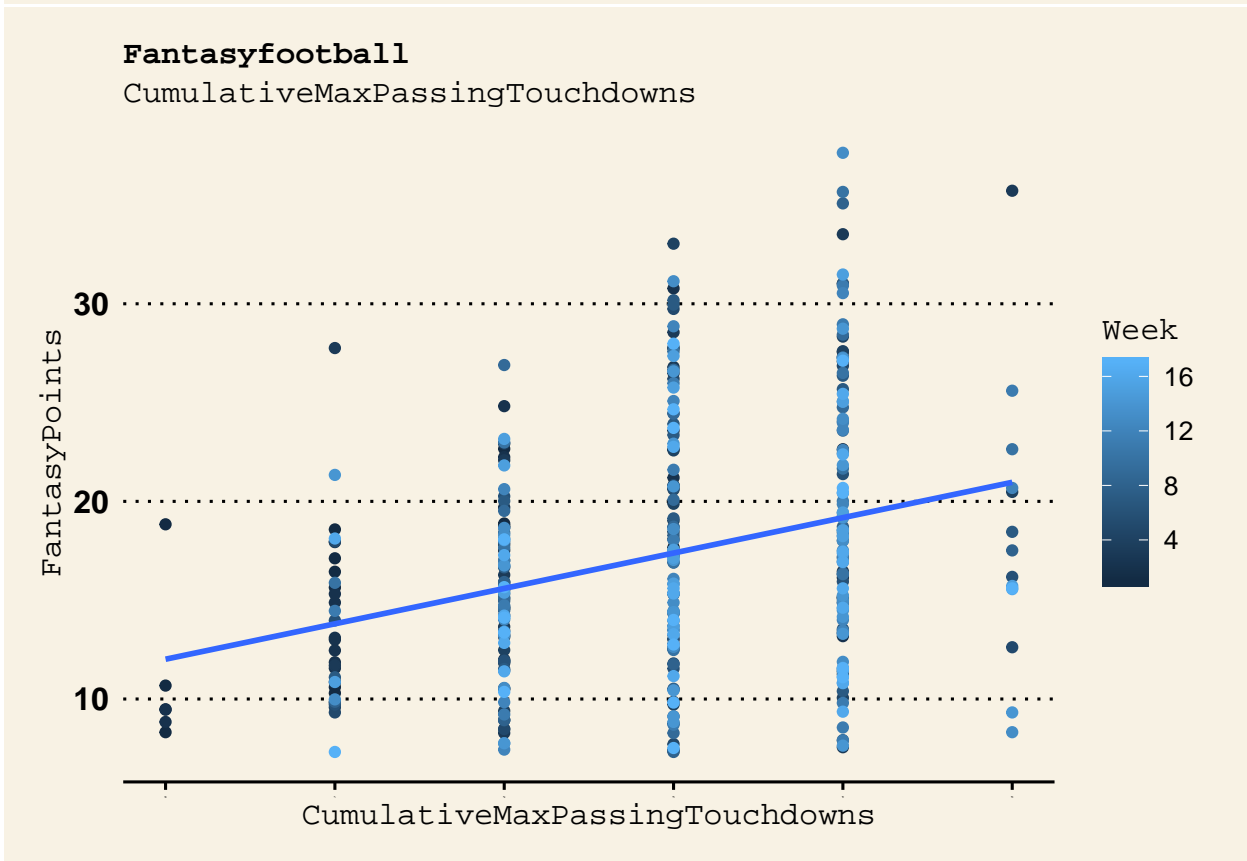
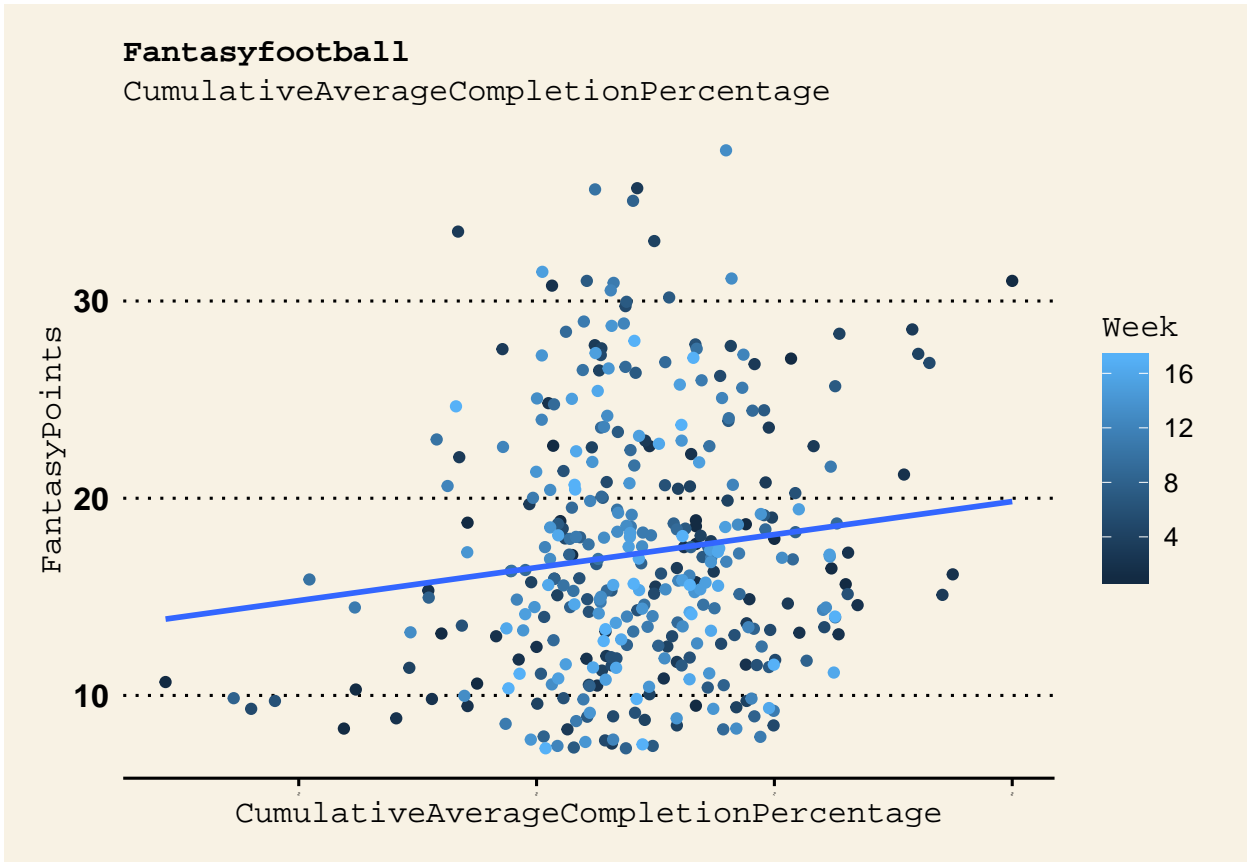
### Fantasyfootball

CumulativeAveragePassingInterceptions



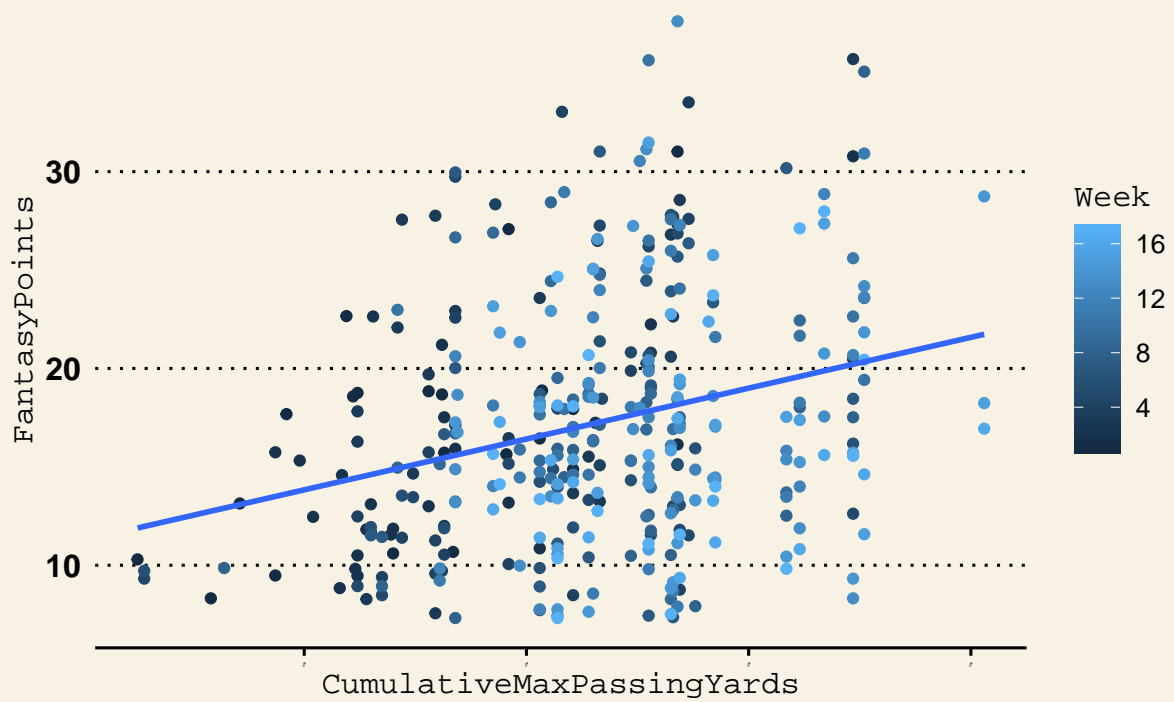






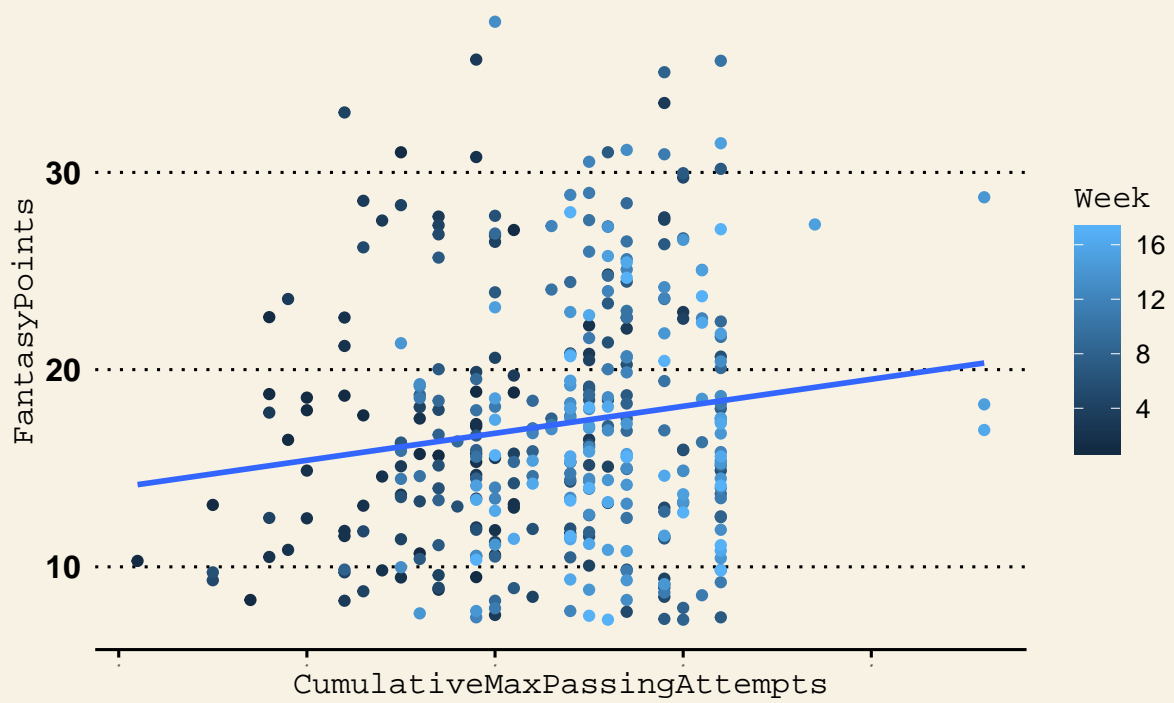
### Fantasyfootball

CumulativeMaxPassingYards



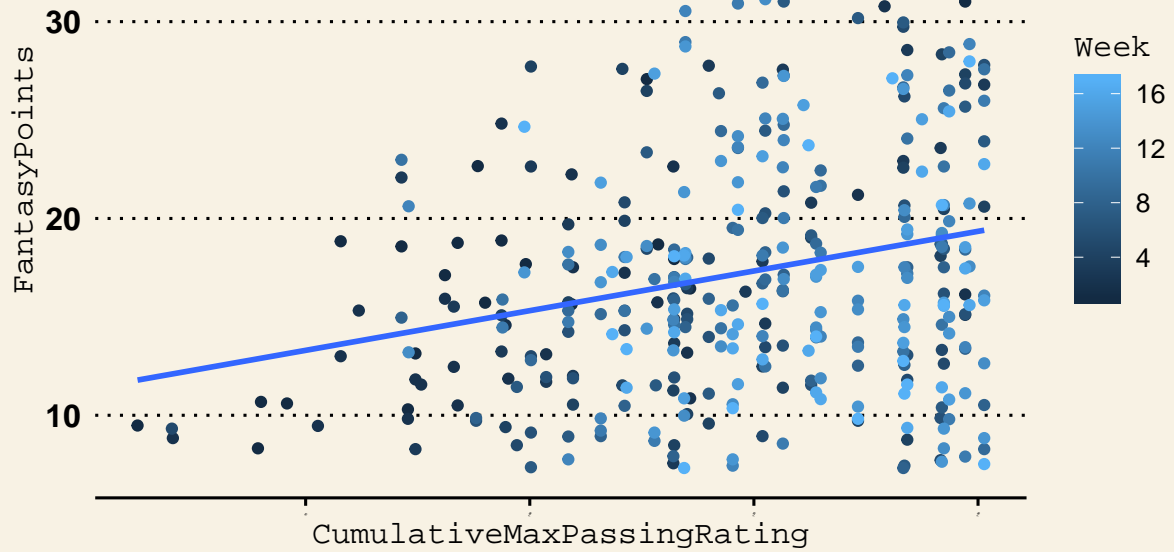
### Fantasyfootball

CumulativeMaxPassingAttempts



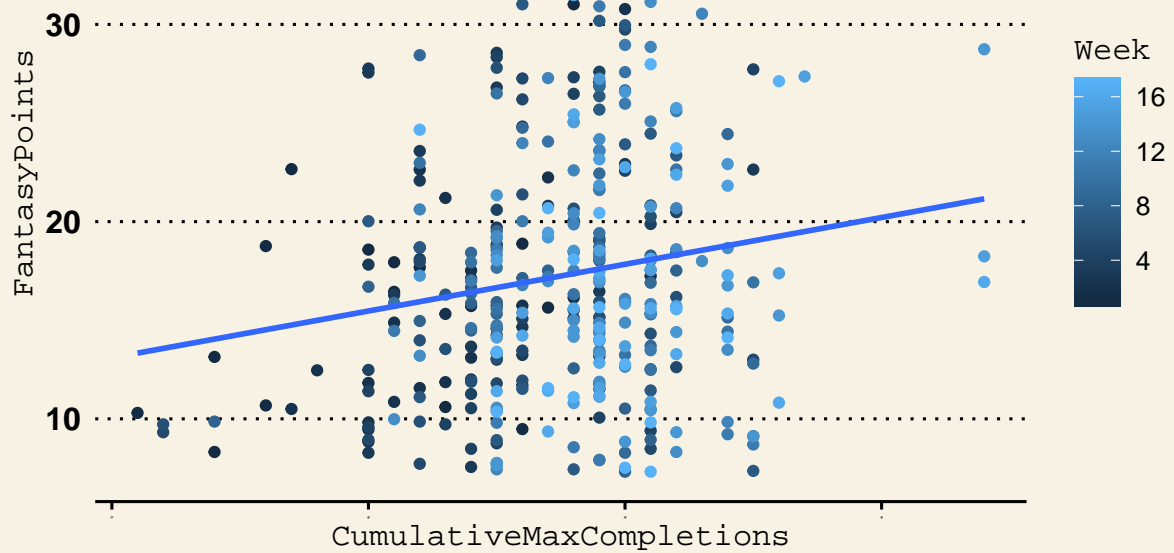
### Fantasyfootball

CumulativeMaxPassingRating



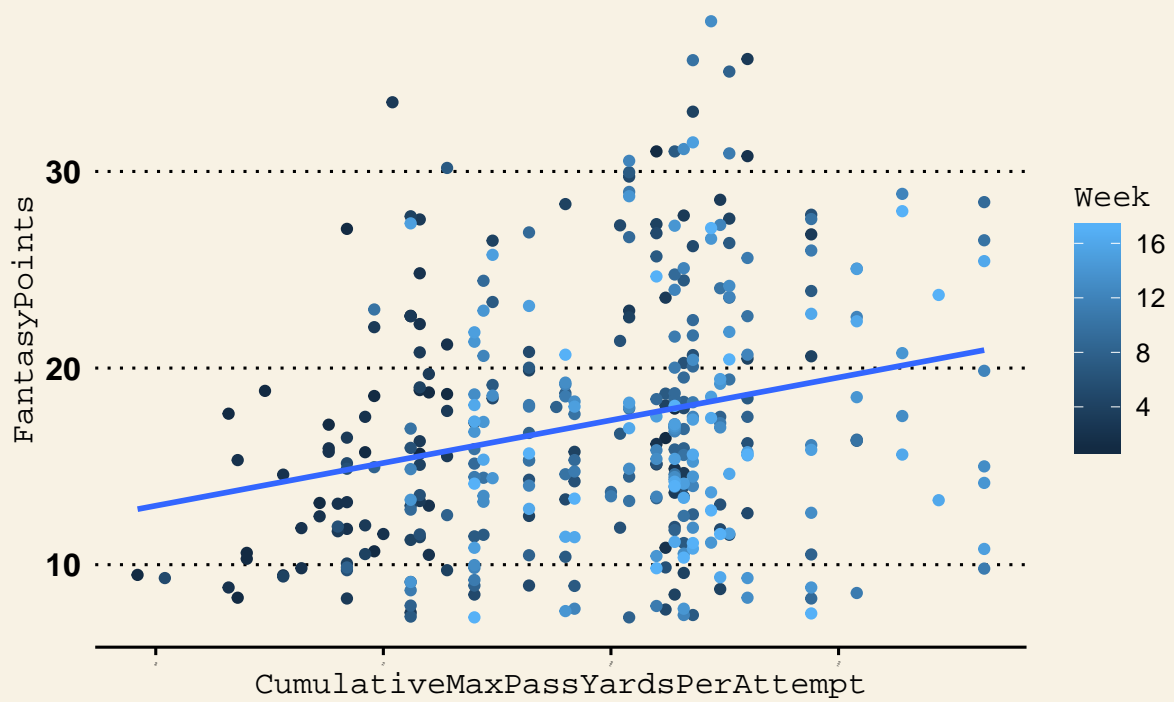
### Fantasyfootball

CumulativeMaxCompletions



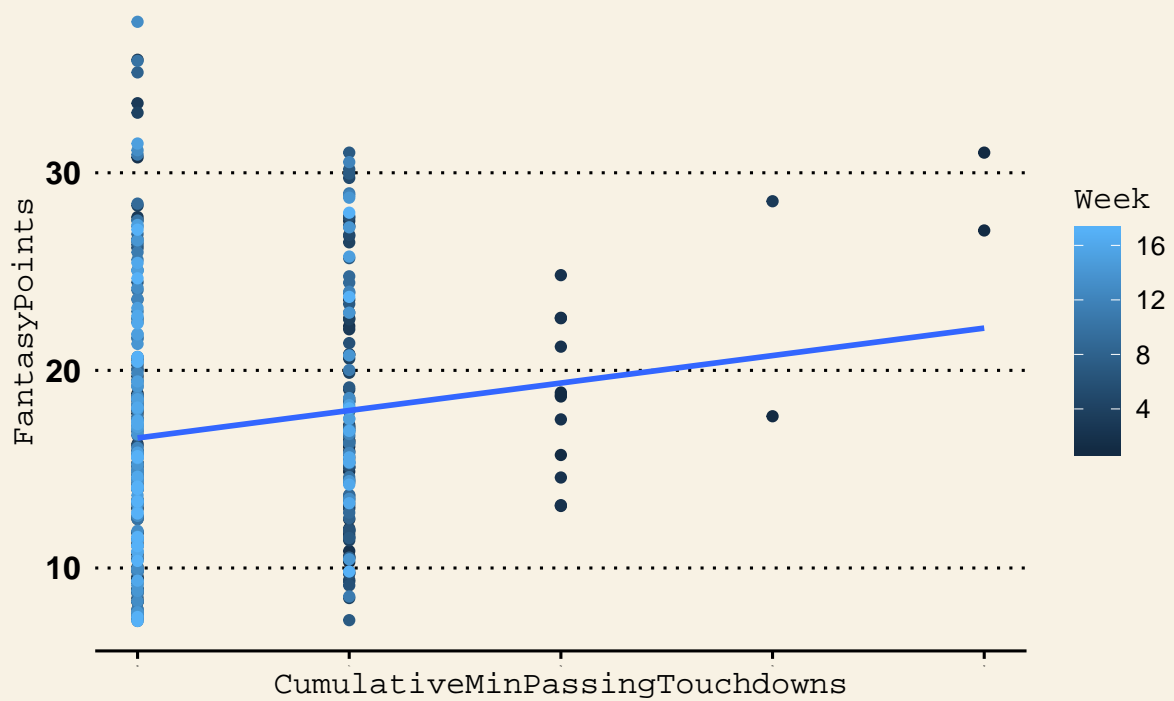
### Fantasyfootball

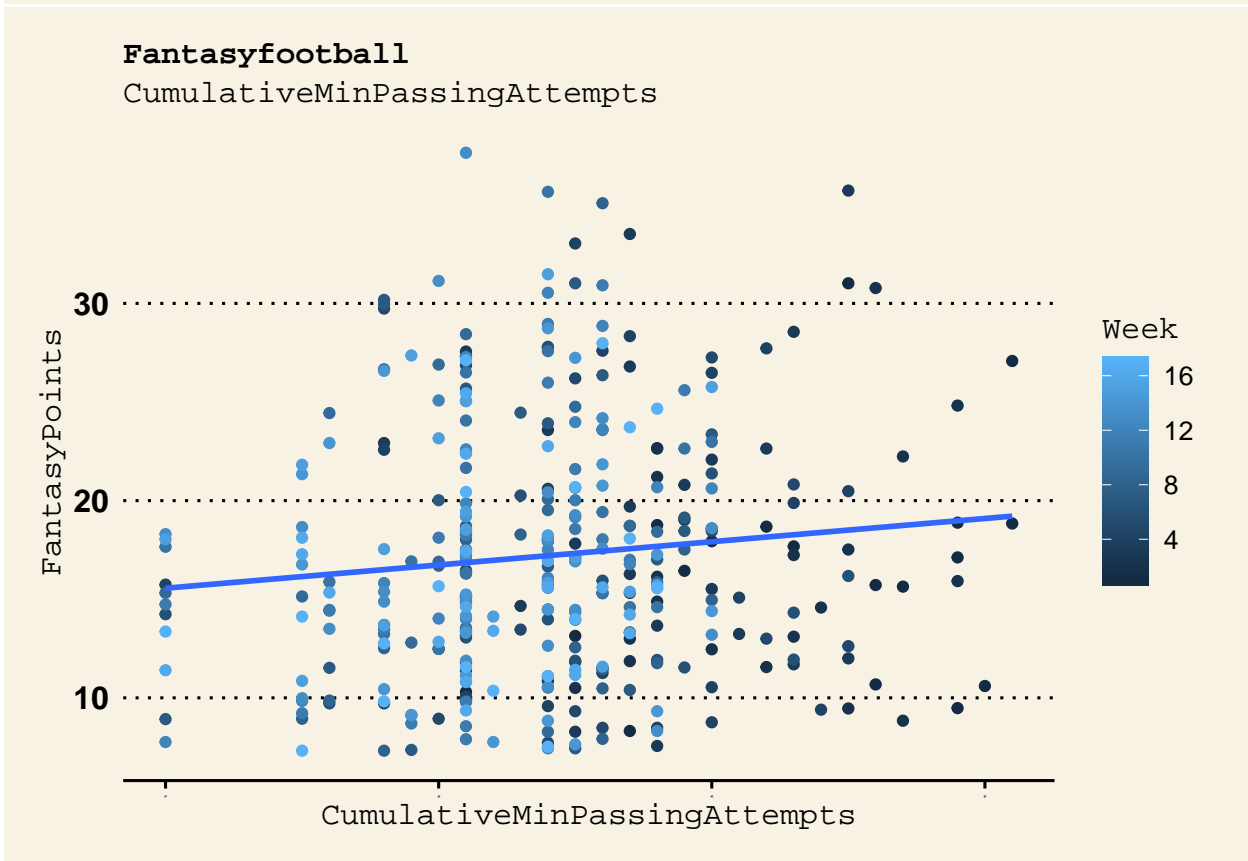
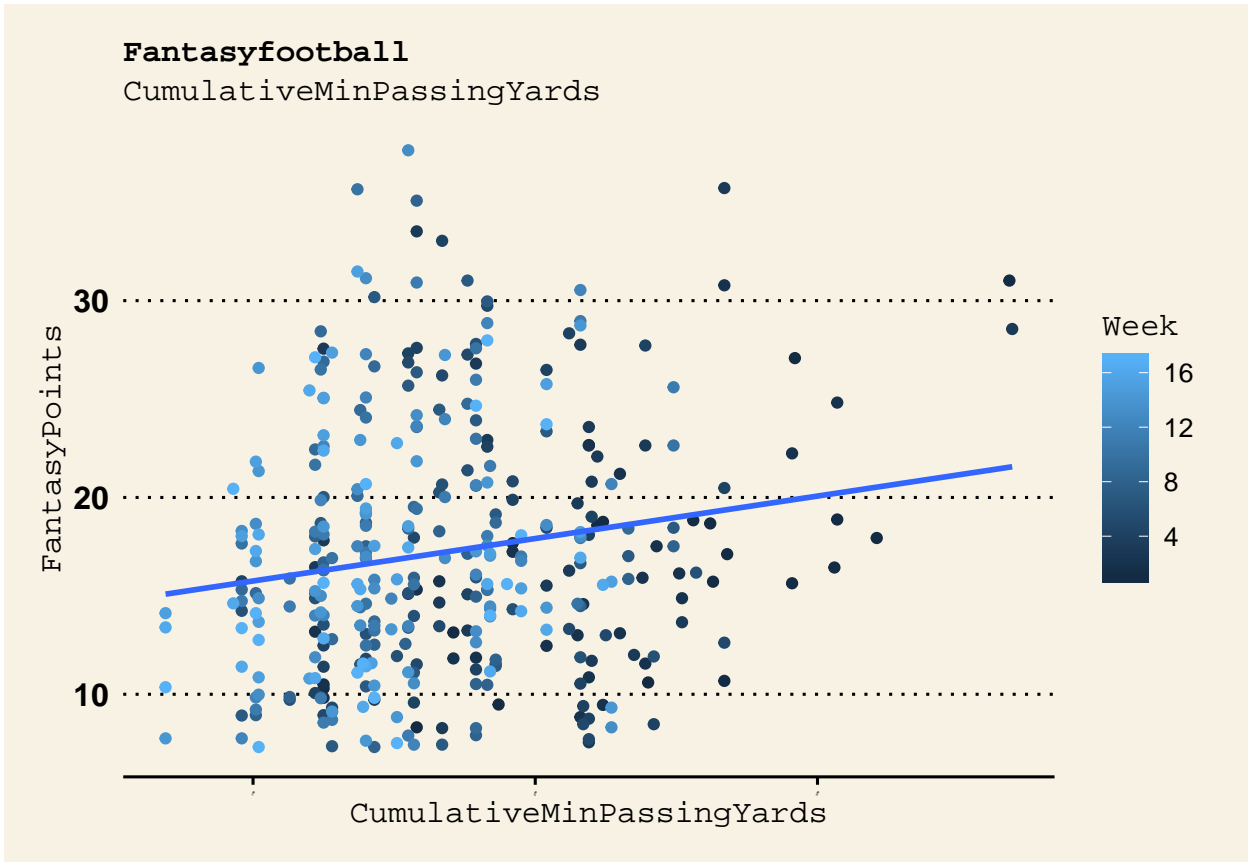
CumulativeMaxPassYardsPerAttempt

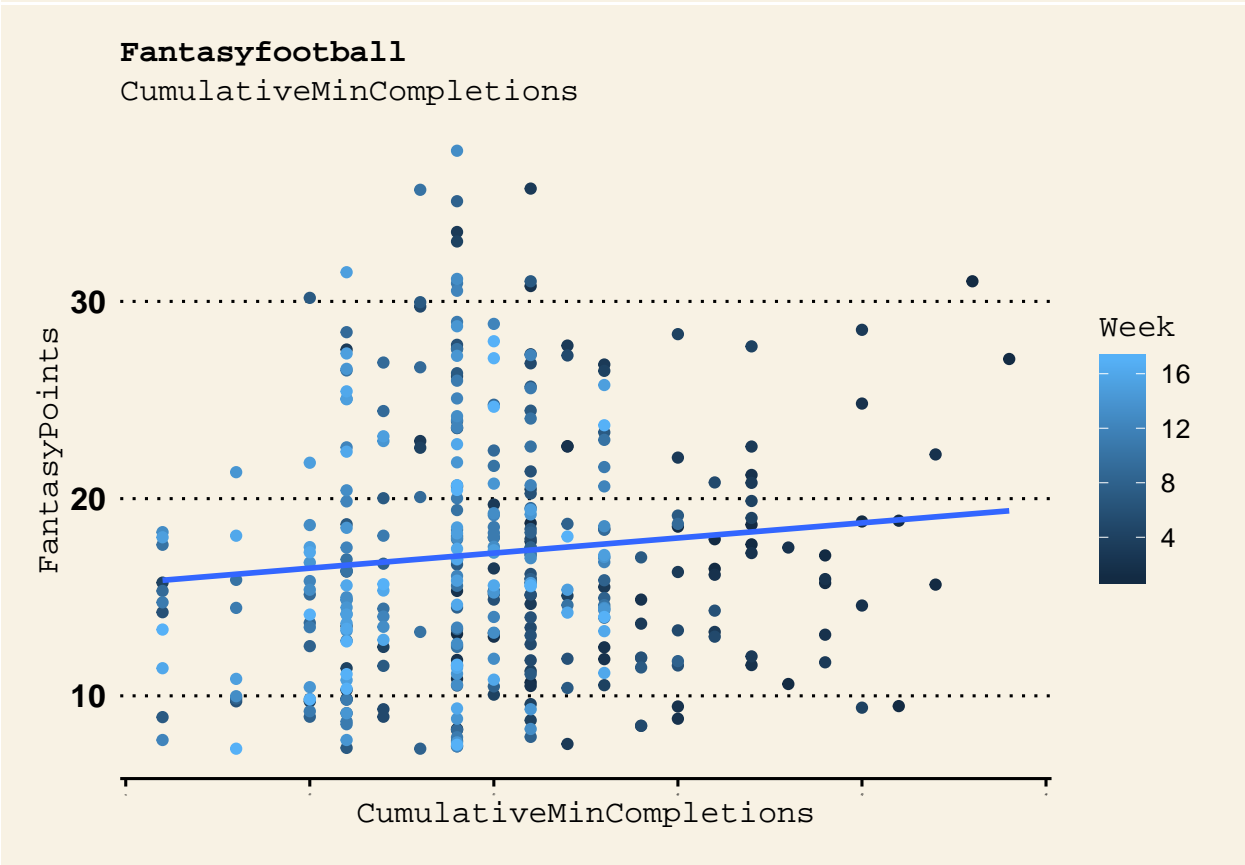
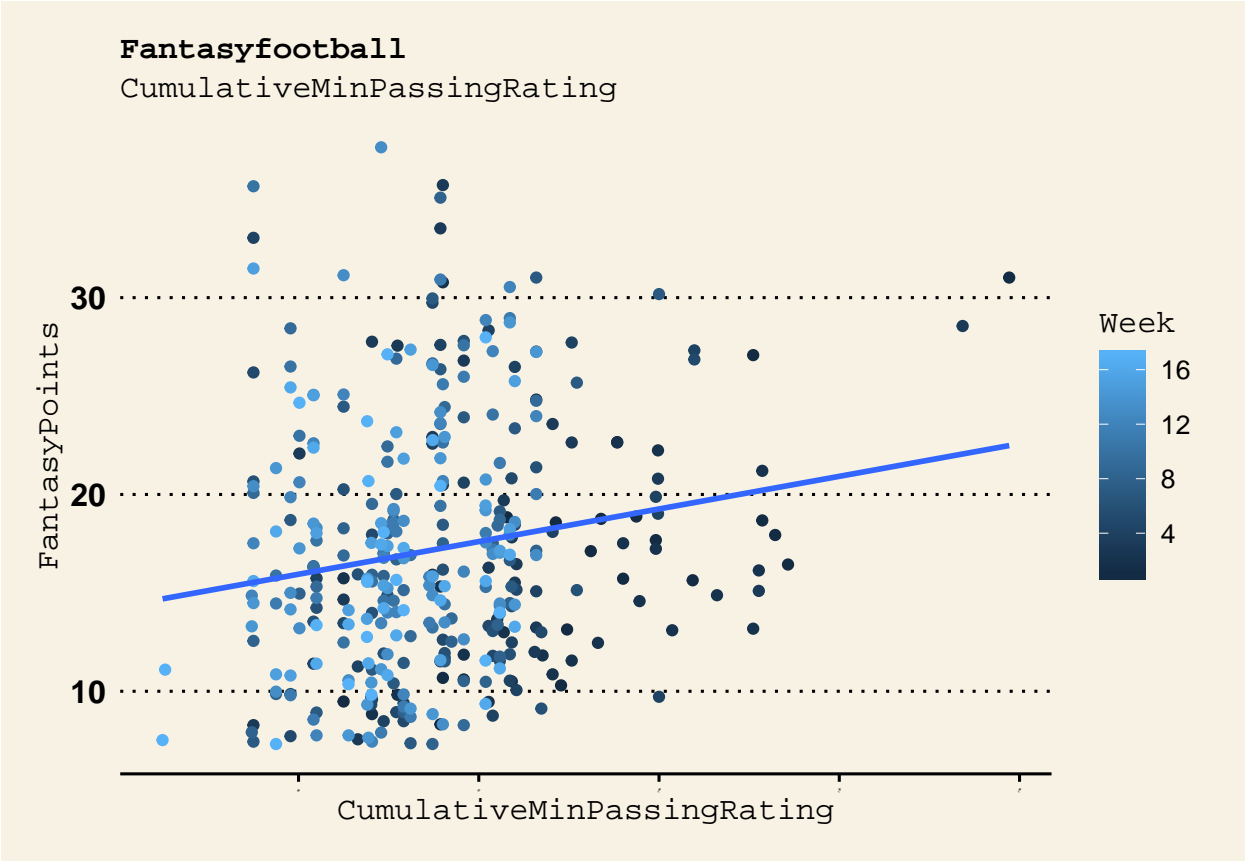


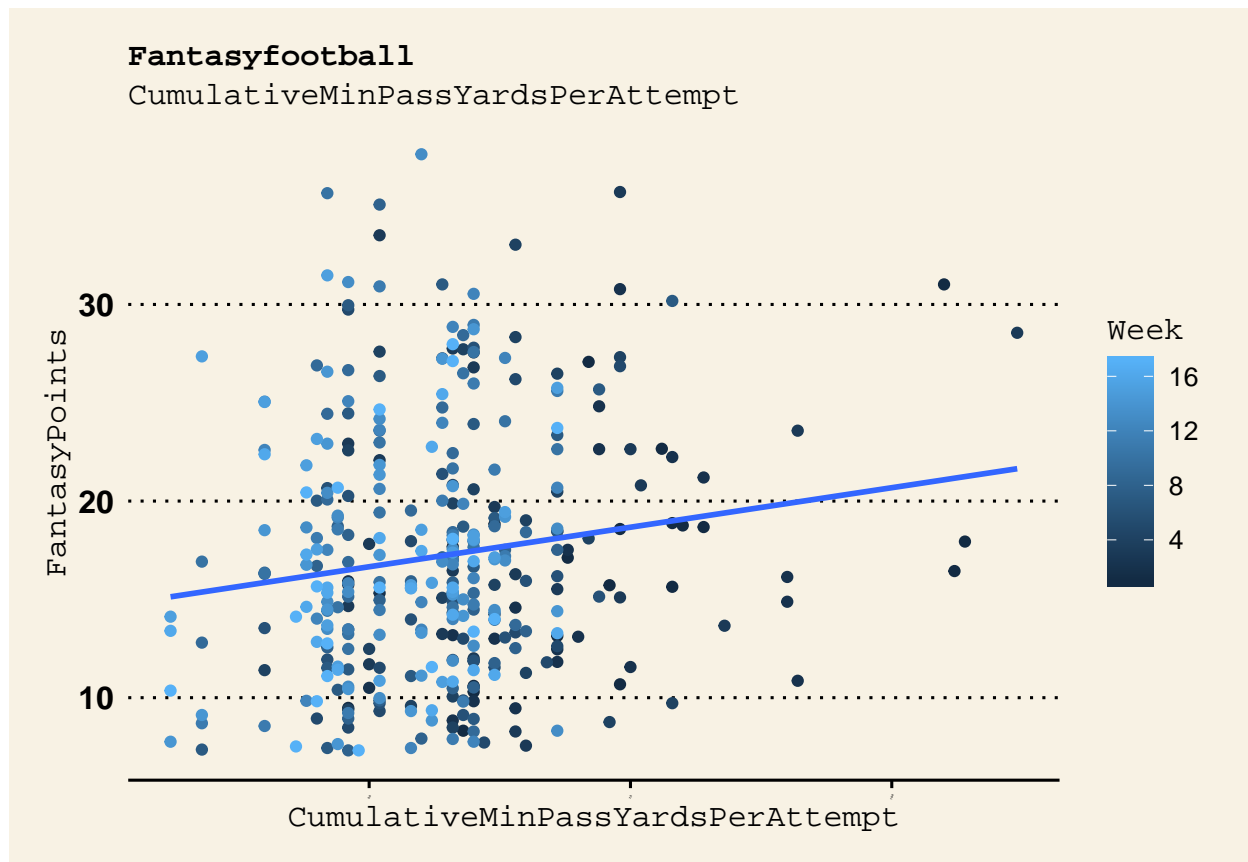
### Fantasyfootball

CumulativeMinPassingTouchdowns









## 10 : Line plots

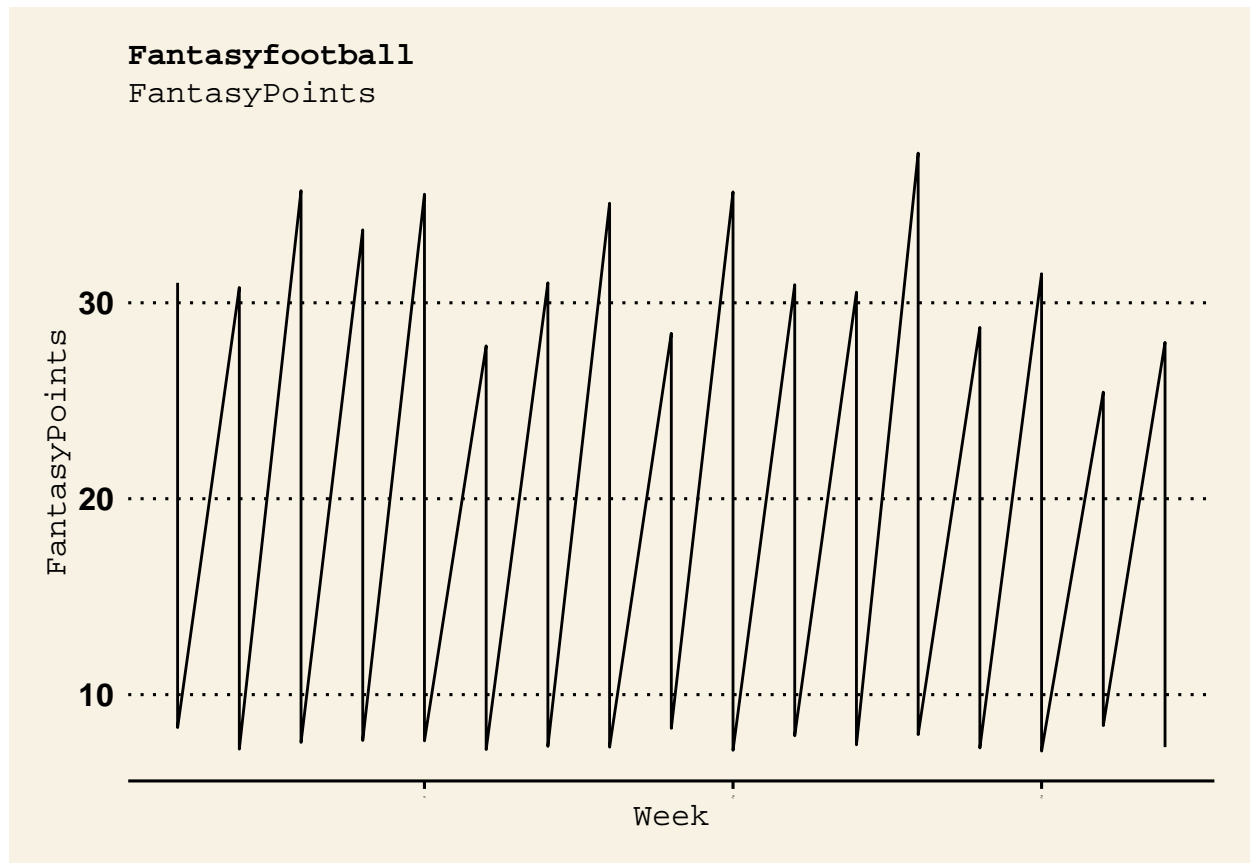
## 10.1 Base Features

```
line_ds <- eda_base %>% group_by(Week) %>% arrange(Week)

for(p in 2:15){

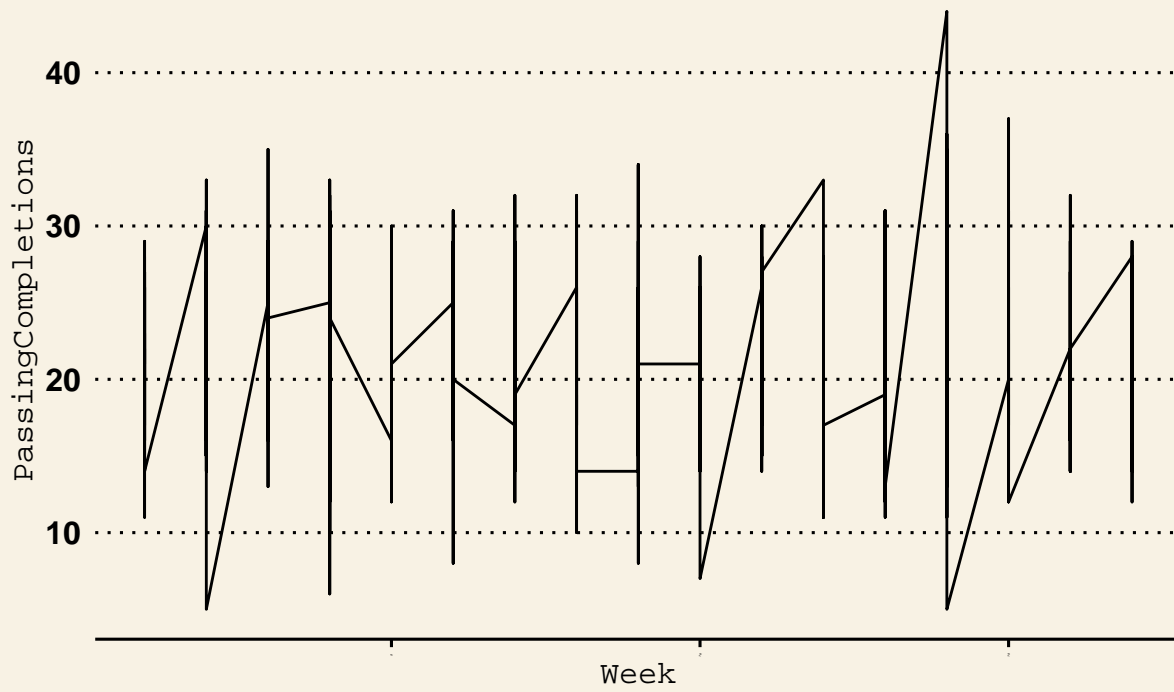
  line_plot <- line_ds %>%
    ggplot(aes_string(x="as.numeric(Week)",y=names(line_ds[p])))+
    ggtitle(names(line_ds[p]))+
    geom_line(show.legend = FALSE)+
    xlab("Week")+
    ylab(names(line_ds[p]))+
    labs(title="Fantasyfootball",
         subtitle=names(line_ds[p]),
         caption="Source: Fantasyfootball")+
    theme_wsj()+
    theme(plot.title = element_text(size = rel(0.5)),
          plot.subtitle = element_text(size = rel(0.5)),
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),
          axis.title = element_text(size = rel(0.5)),
          legend.position = "right",
          legend.direction = "vertical",
          legend.title = element_text(size = rel(0.5)))
```

```
print(line_plot)
}
```

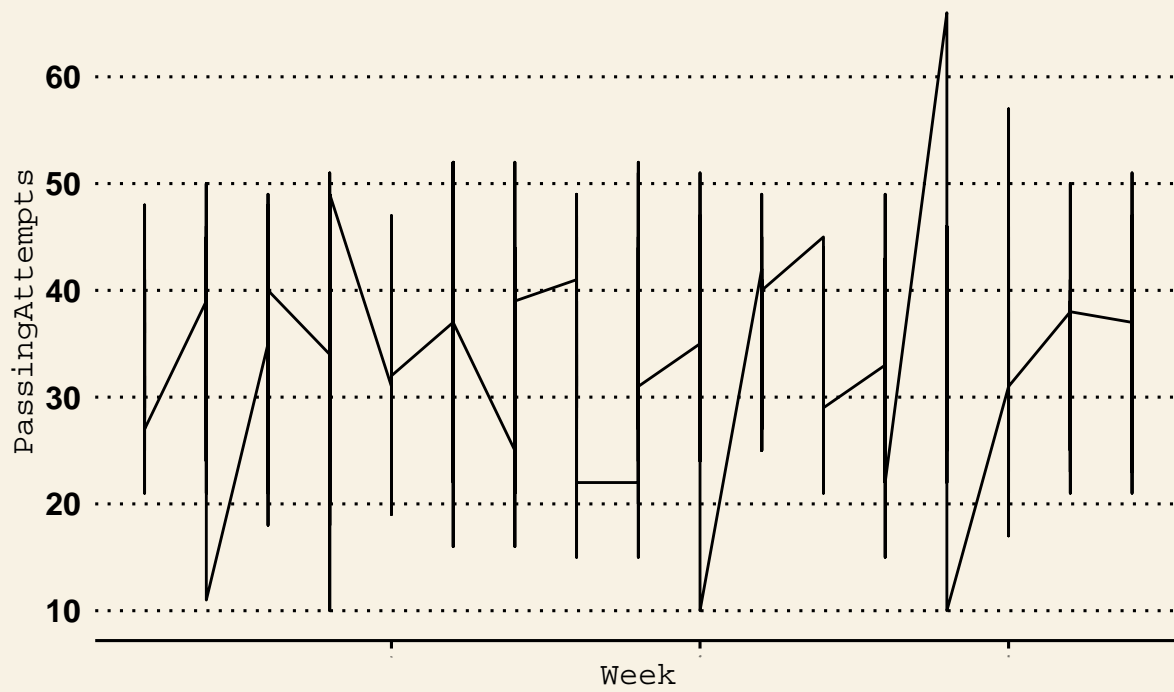




**Fantasyfootball**  
PassingCompletions

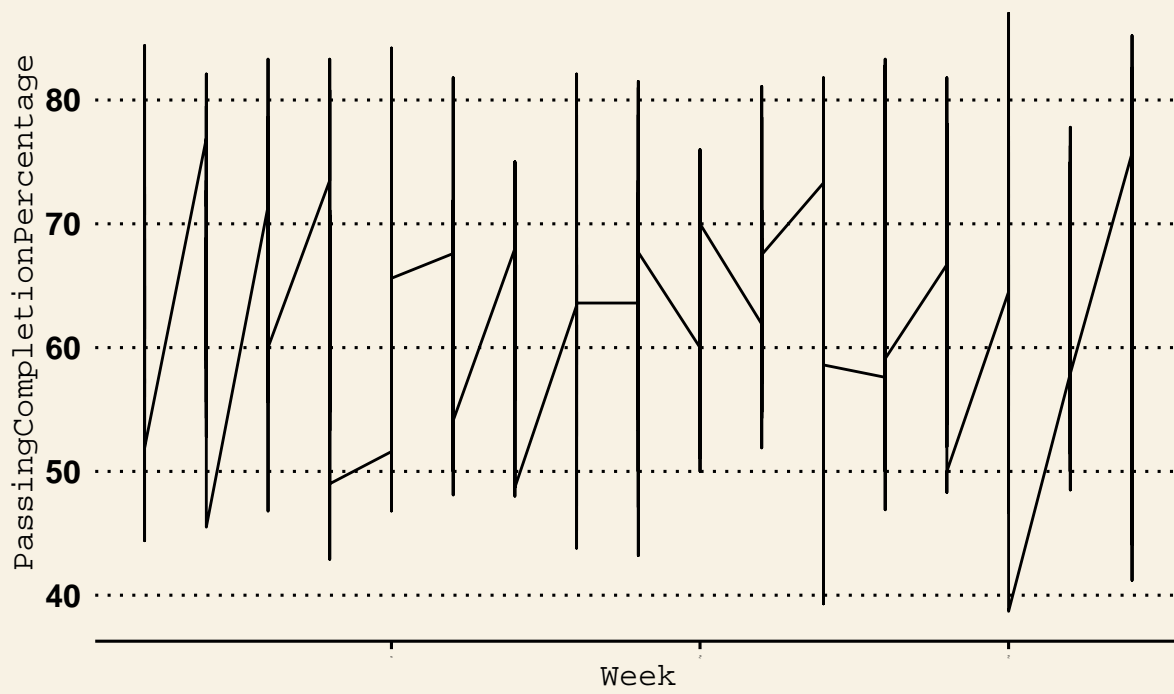


**Fantasyfootball**  
PassingAttempts



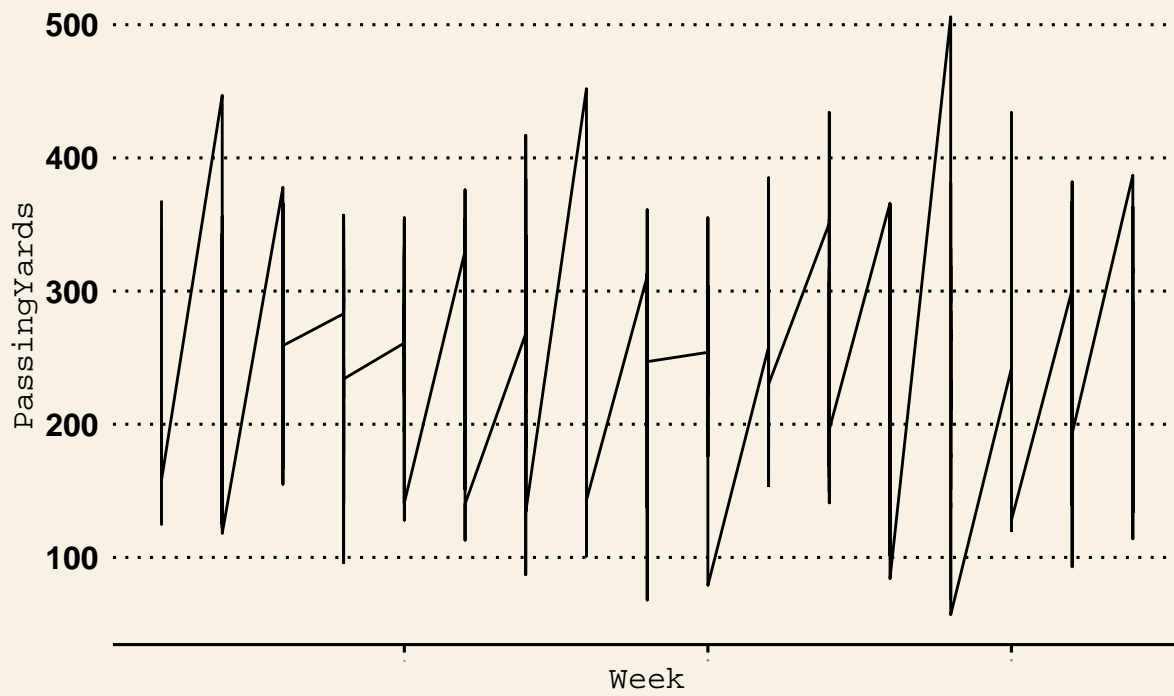
## Fantasyfootball

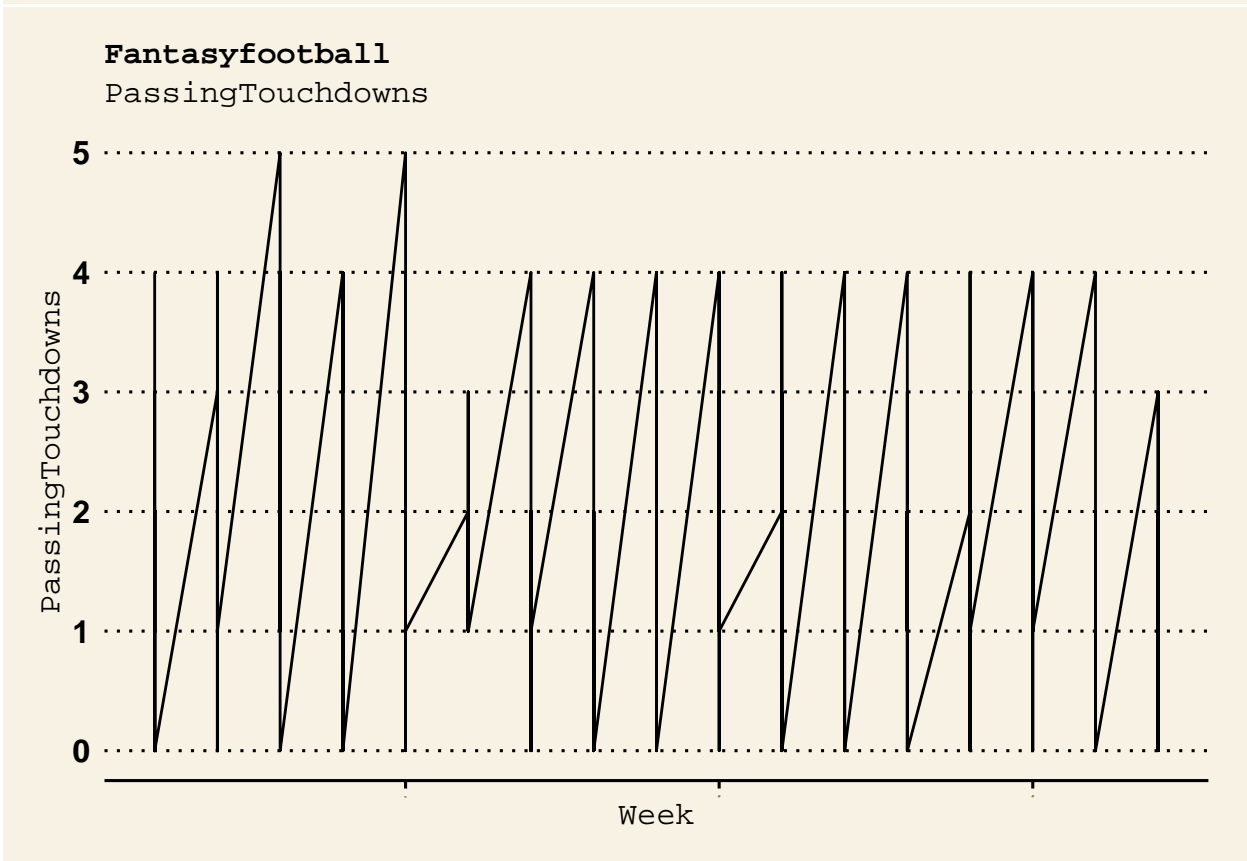
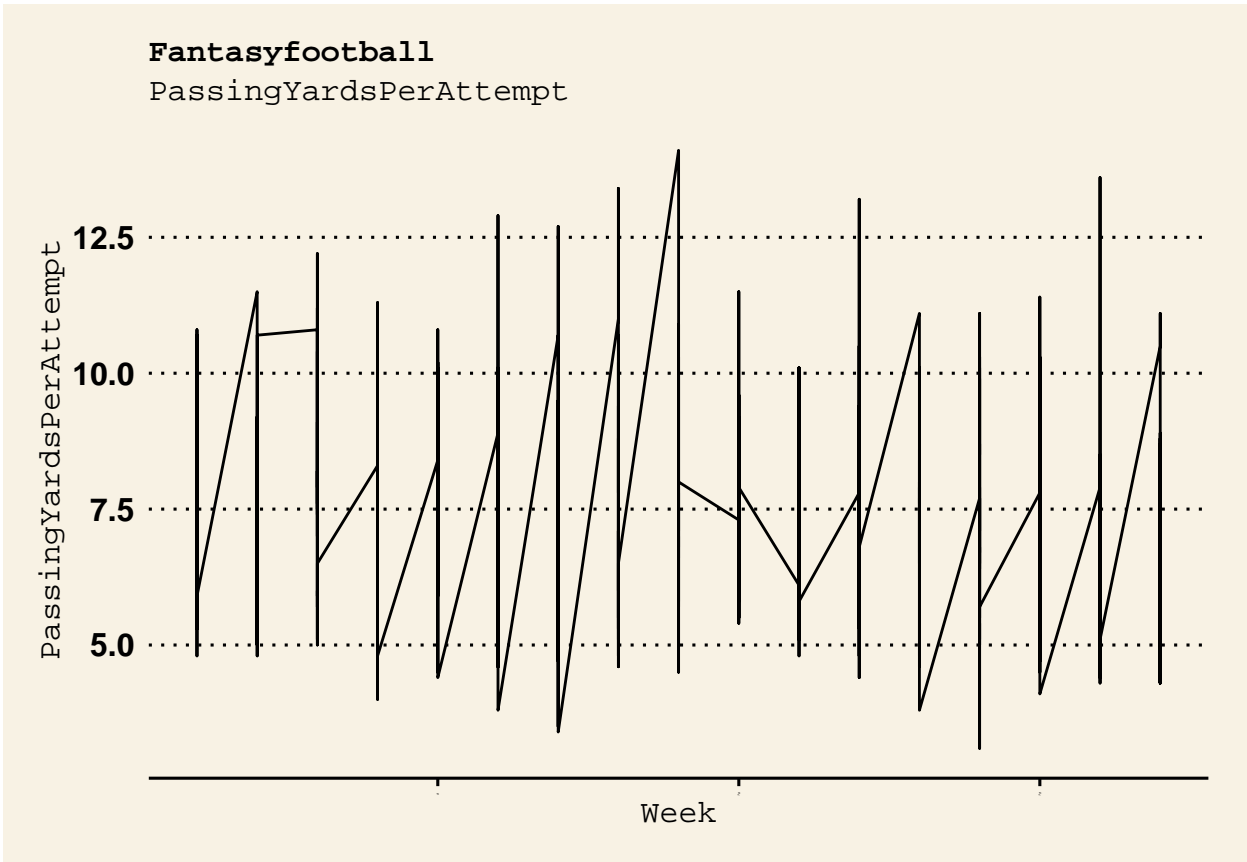
PassingCompletionPercentage



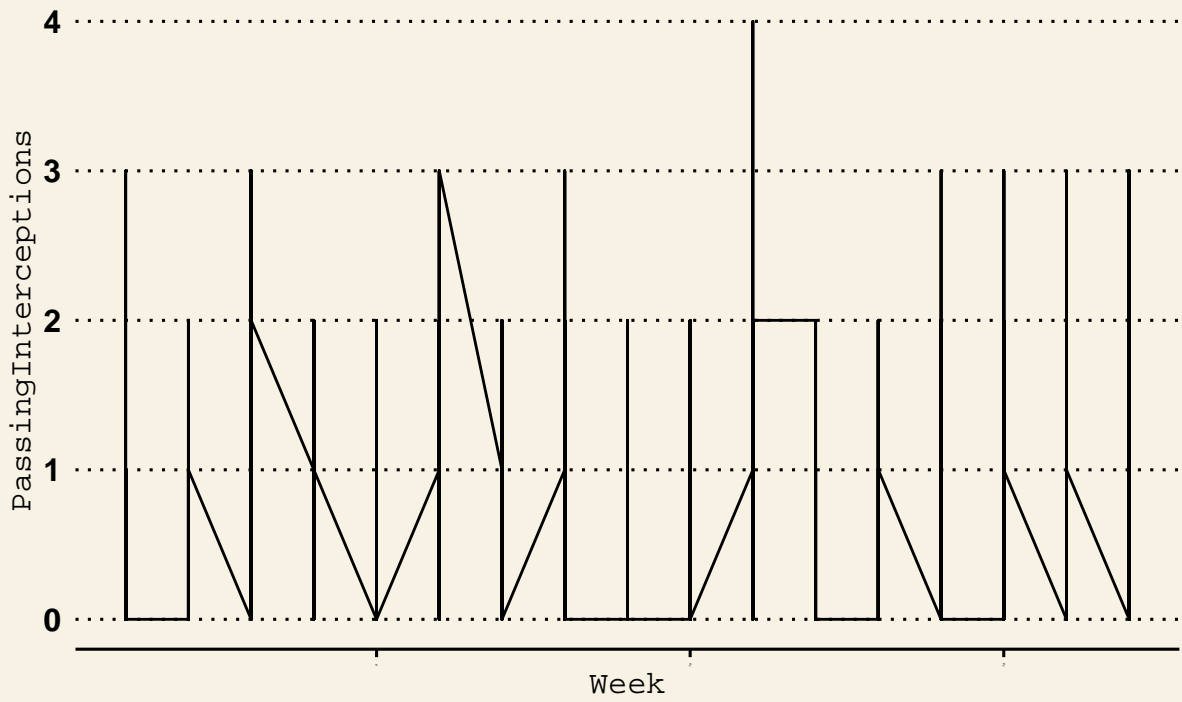
## Fantasyfootball

PassingYards

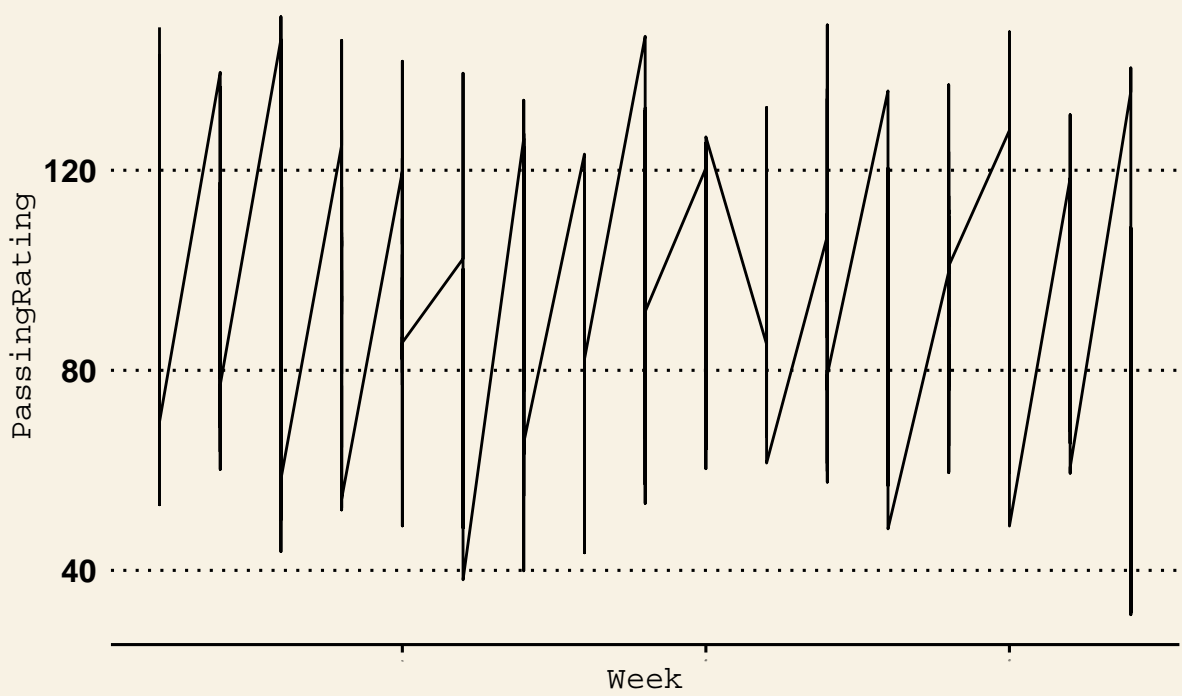




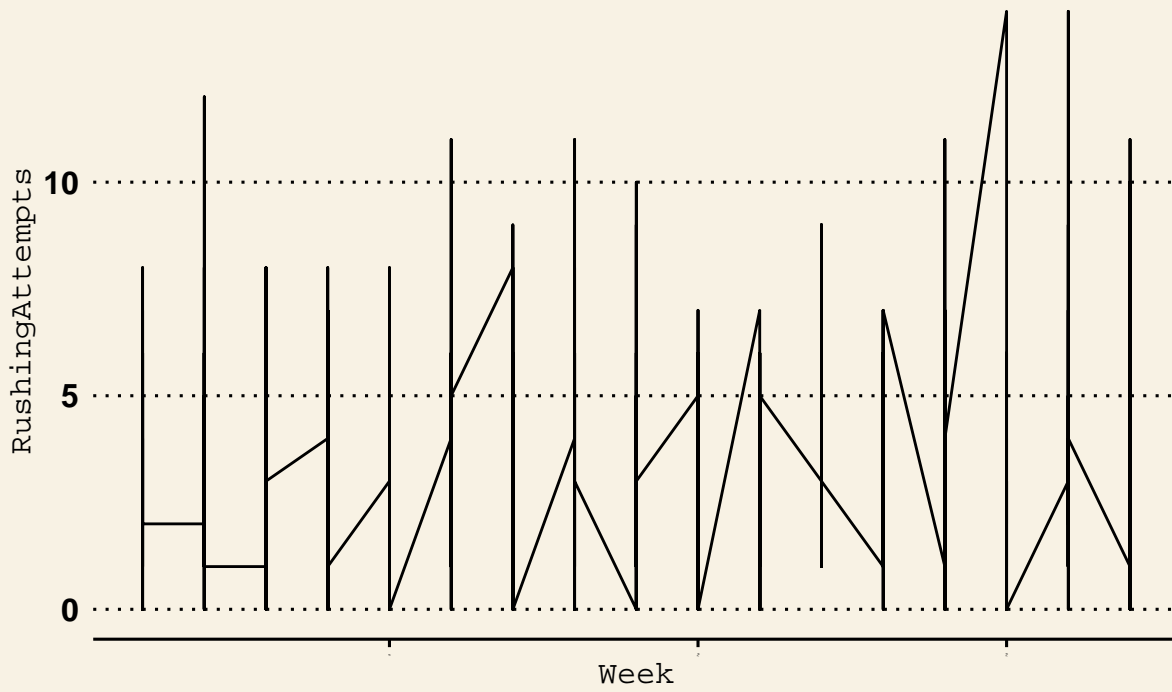
**Fantasyfootball**  
PassingInterceptions



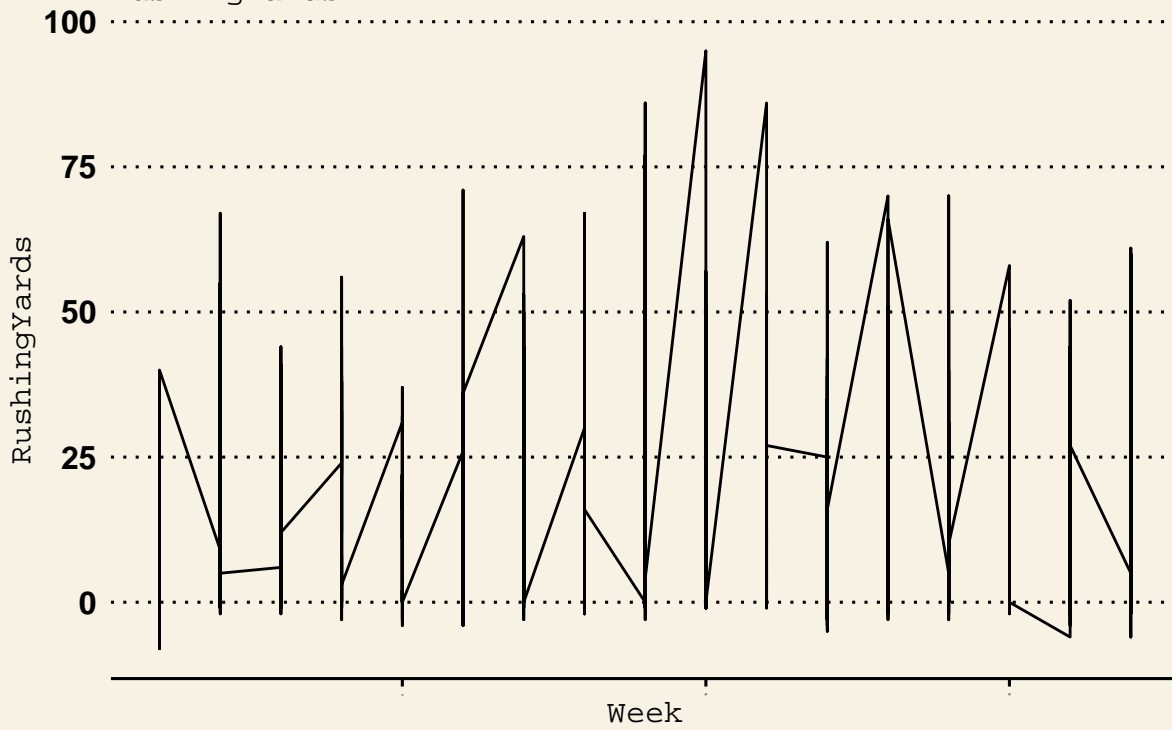
**Fantasyfootball**  
PassingRating



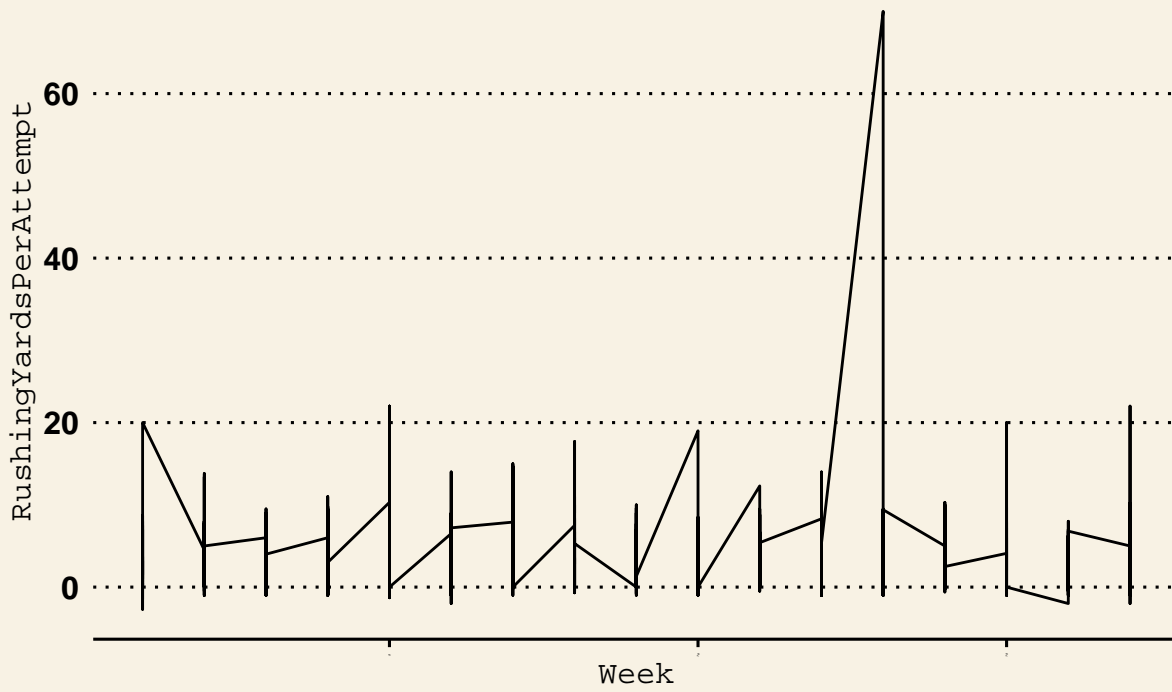
**Fantasyfootball**  
RushingAttempts



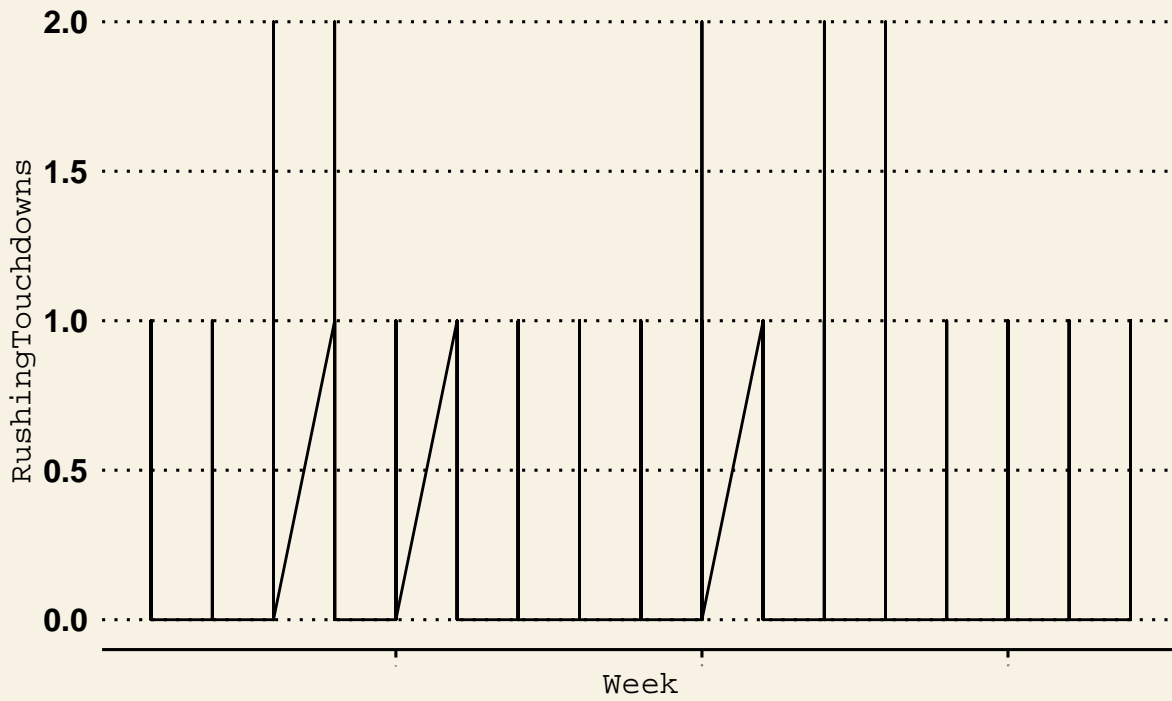
**Fantasyfootball**  
RushingYards

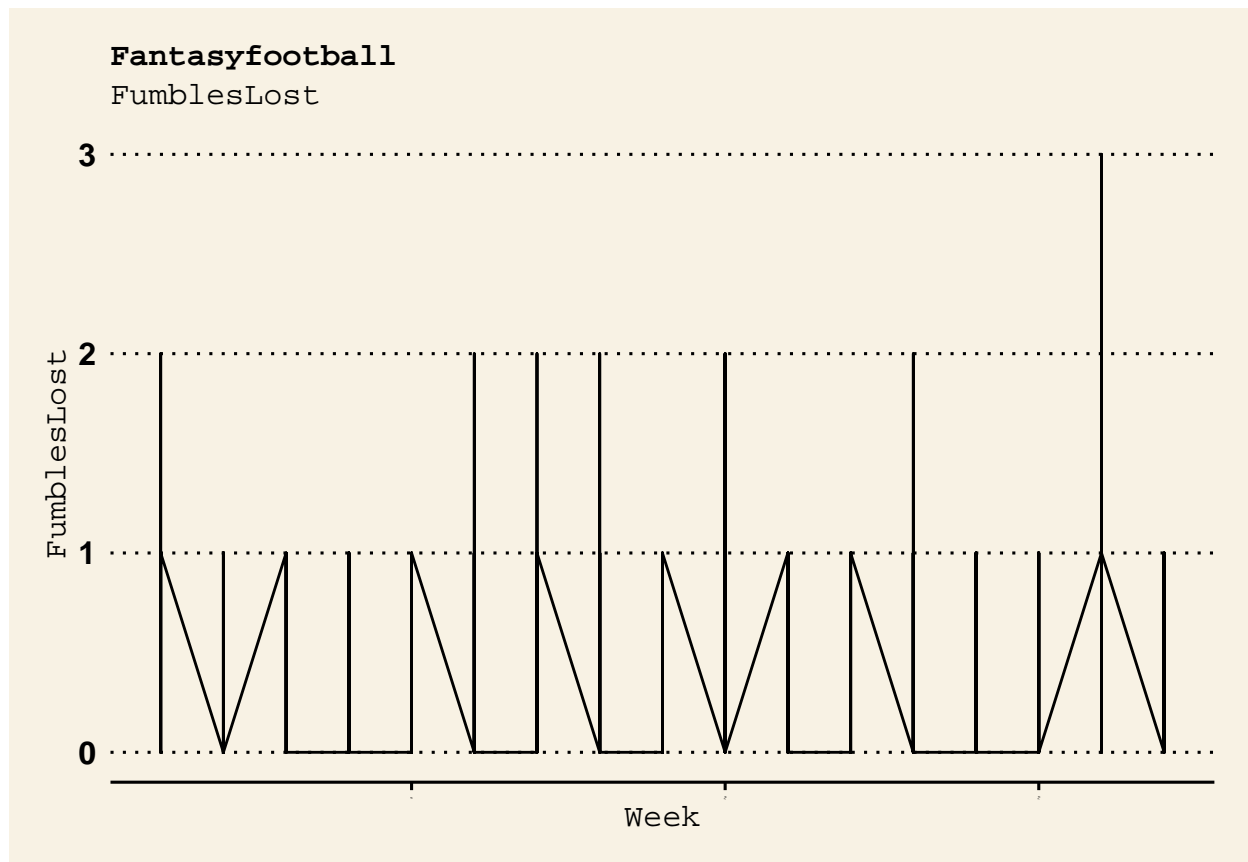


**Fantasyfootball**  
RushingYardsPerAttempt



**Fantasyfootball**  
RushingTouchdowns





## 10.2 Derived Features

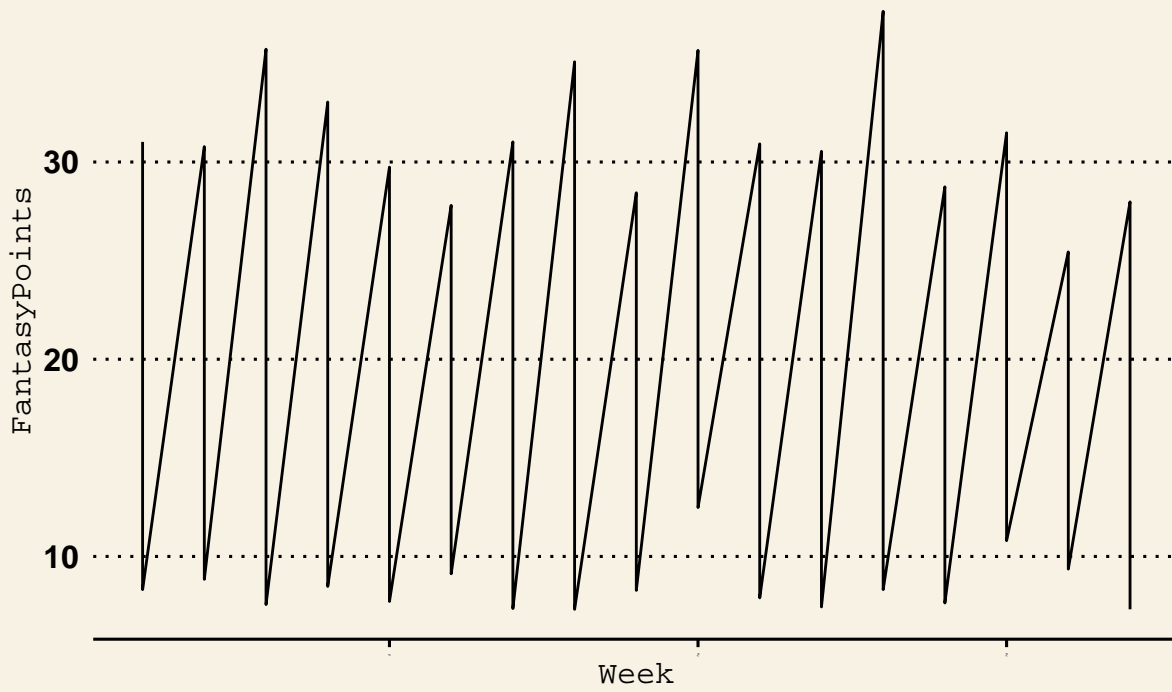
```
line_ds <- eda_derived %>% group_by(Week) %>% arrange(Week)

for(p in 2:20){

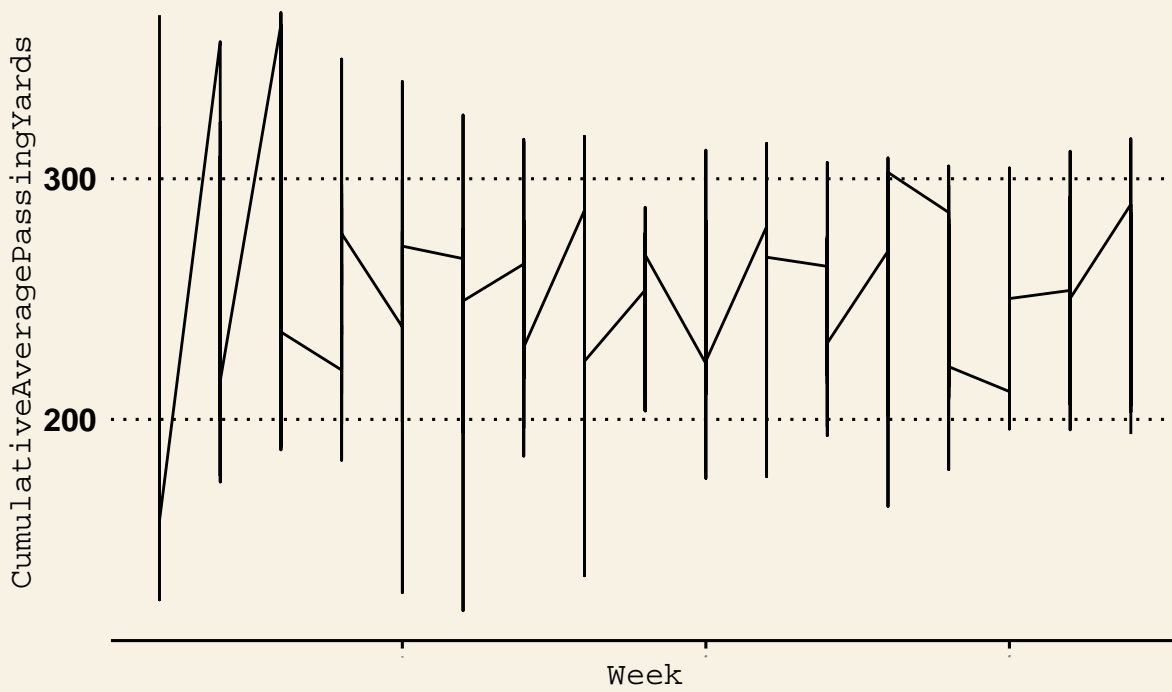
  line_plot <- line_ds %>%
    ggplot(aes_string(x="as.numeric(Week)",y=names(line_ds[p])))+
    ggtitle(names(line_ds[p]))+
    geom_line(show.legend = FALSE)+
    xlab("Week")+
    ylab(names(line_ds[p]))+
    labs(title="Fantasyfootball",
         subtitle=names(line_ds[p]),
         caption="Source: Fantasyfootball")+
    theme_wsj()+
    theme(plot.title = element_text(size = rel(0.5)),
          plot.subtitle = element_text(size = rel(0.5)),
          axis.text.x = element_text(angle=65, vjust=0.6,size=1),
          axis.title = element_text(size = rel(0.5)),
          legend.position = "right",
          legend.direction = "vertical",
          legend.title = element_text(size = rel(0.5)))

  print(line_plot)
}
```

**Fantasyfootball**  
FantasyPoints



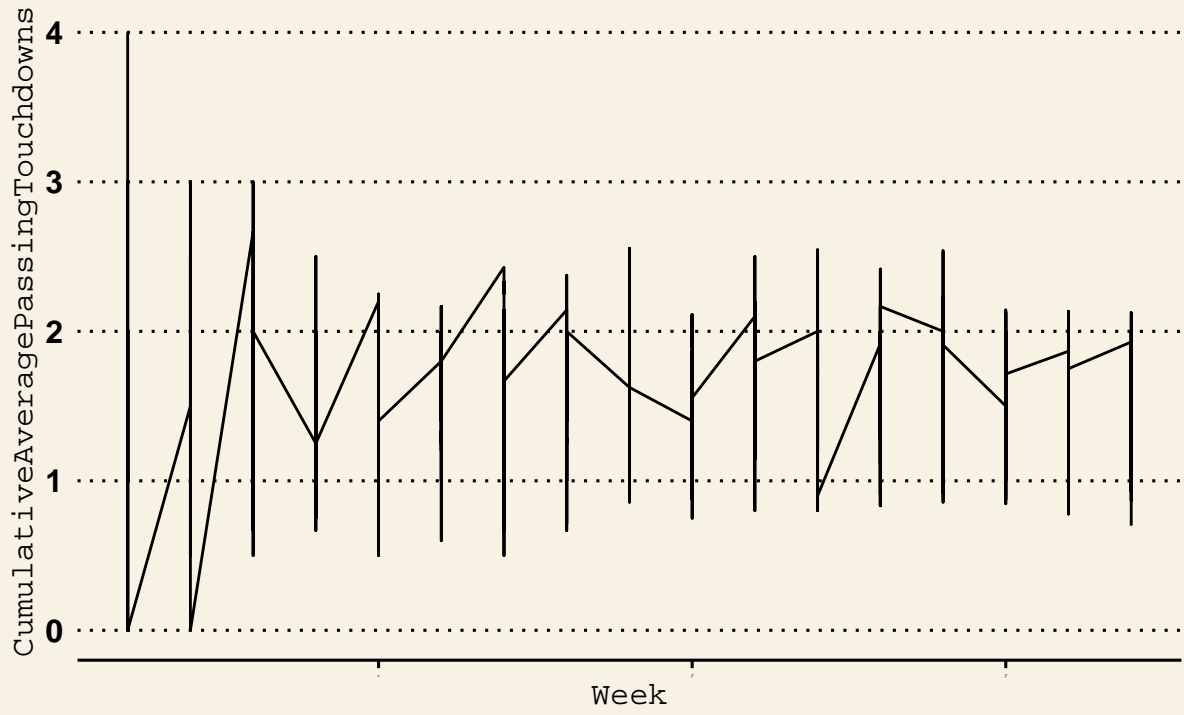
**Fantasyfootball**  
CumulativeAveragePassingYards





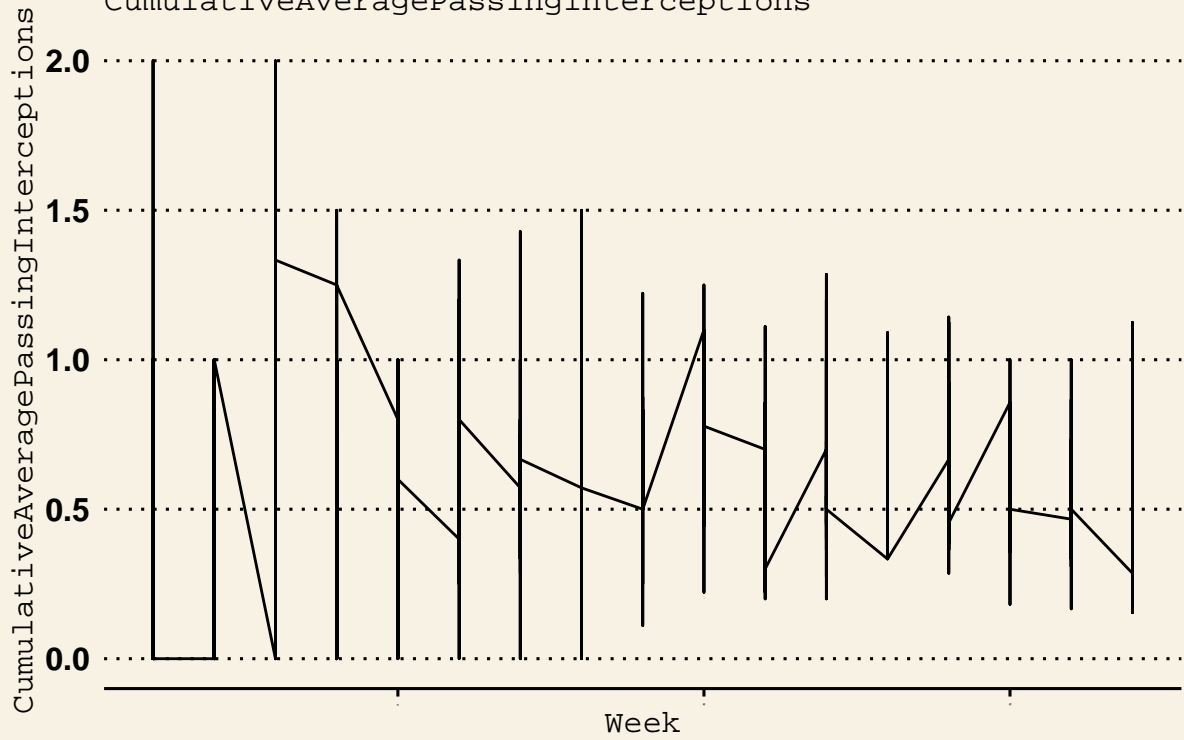
### Fantasyfootball

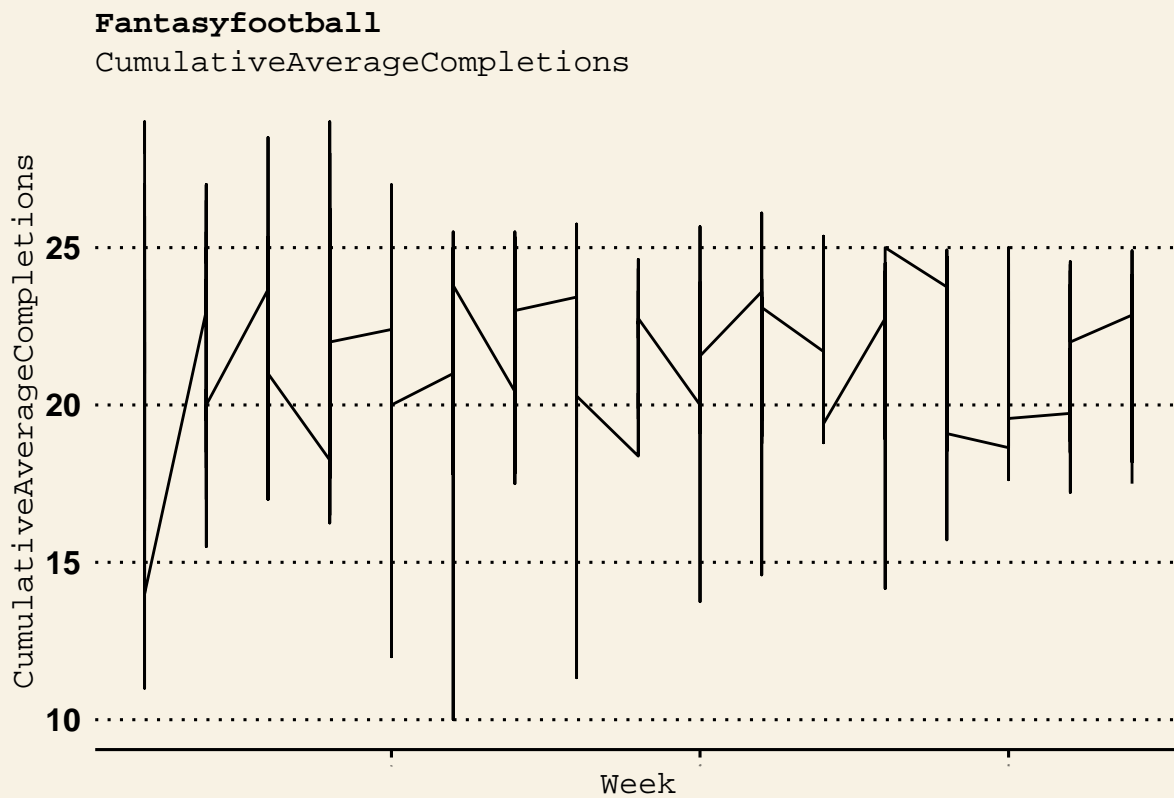
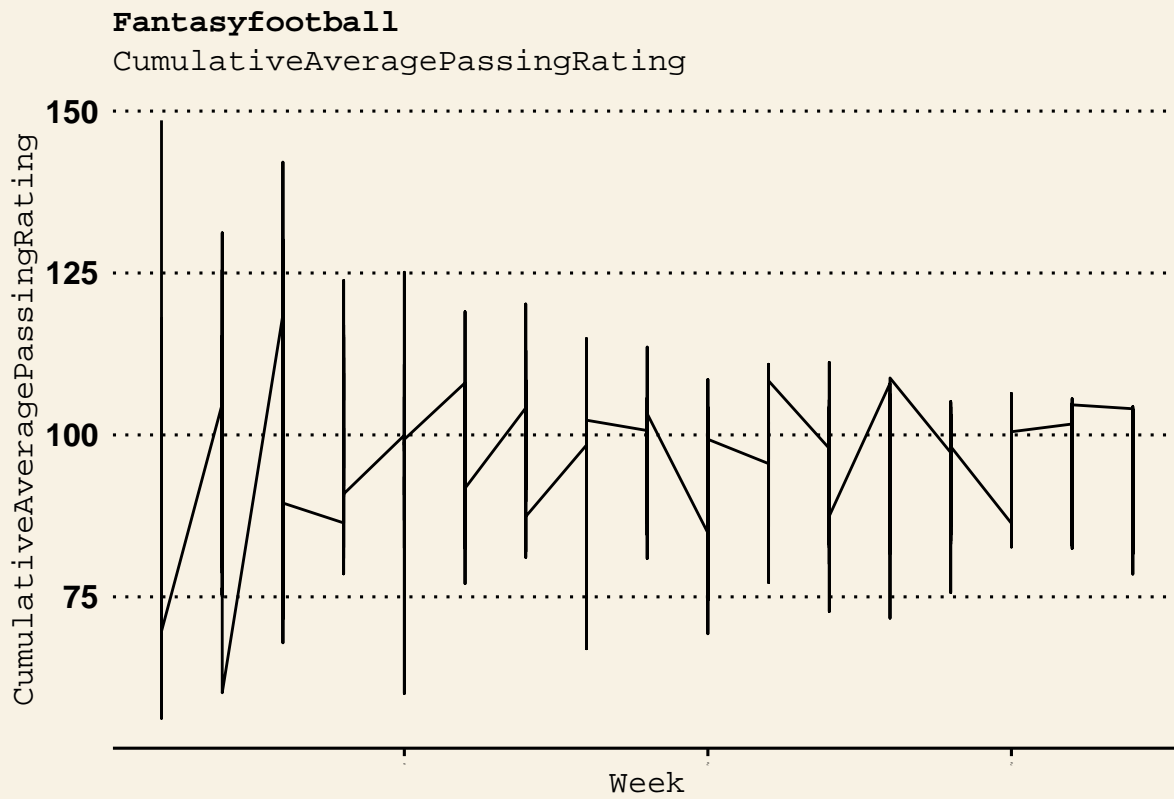
CumulativeAveragePassingTouchdowns

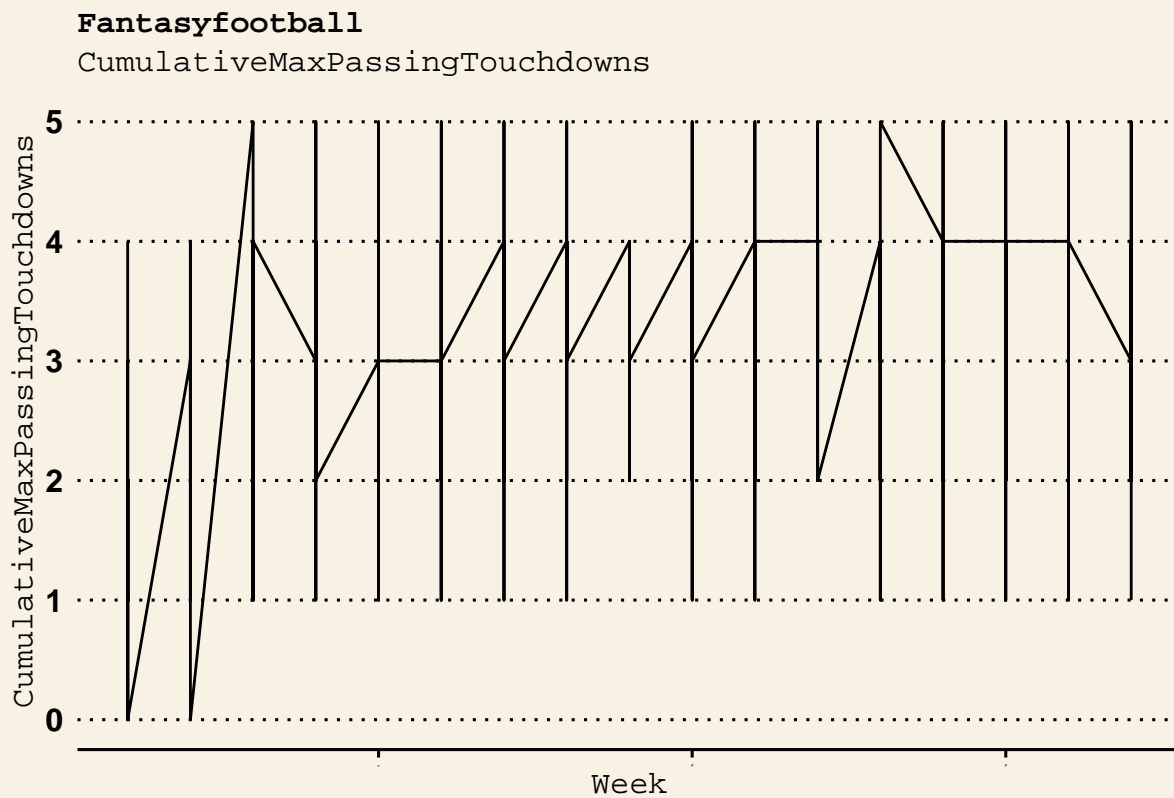
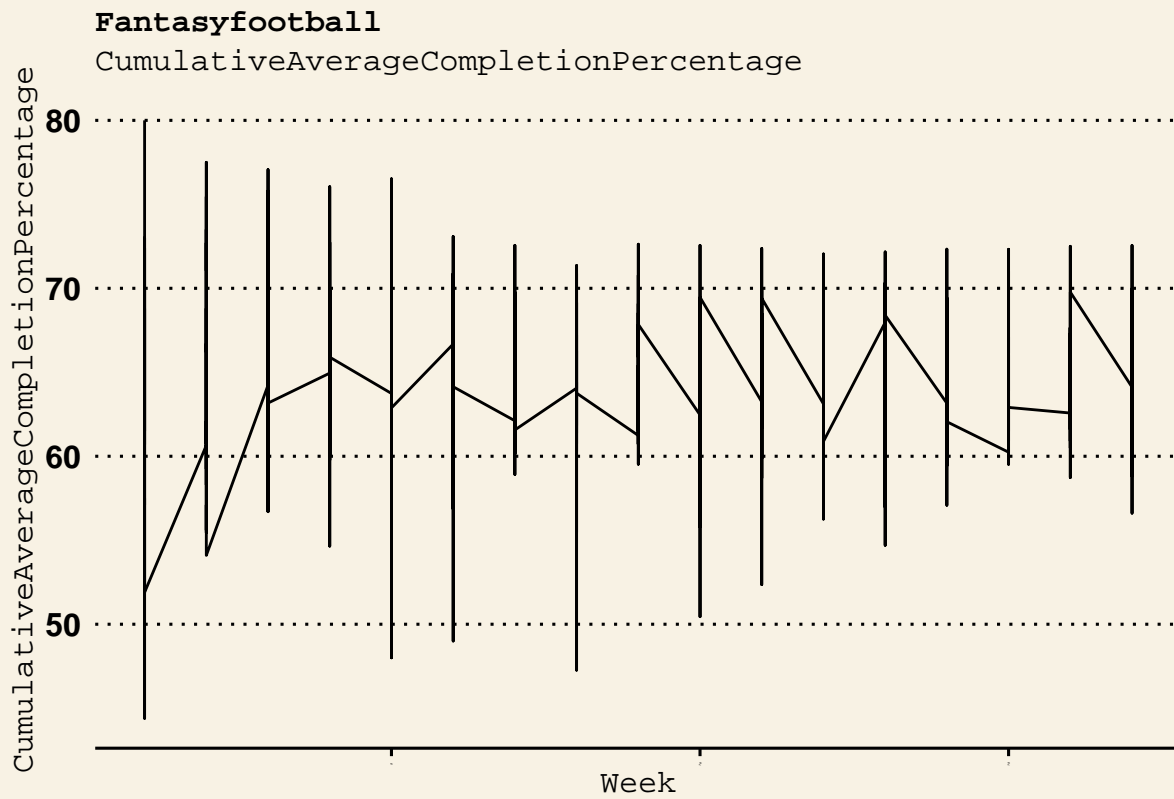


### Fantasyfootball

CumulativeAveragePassingInterceptions

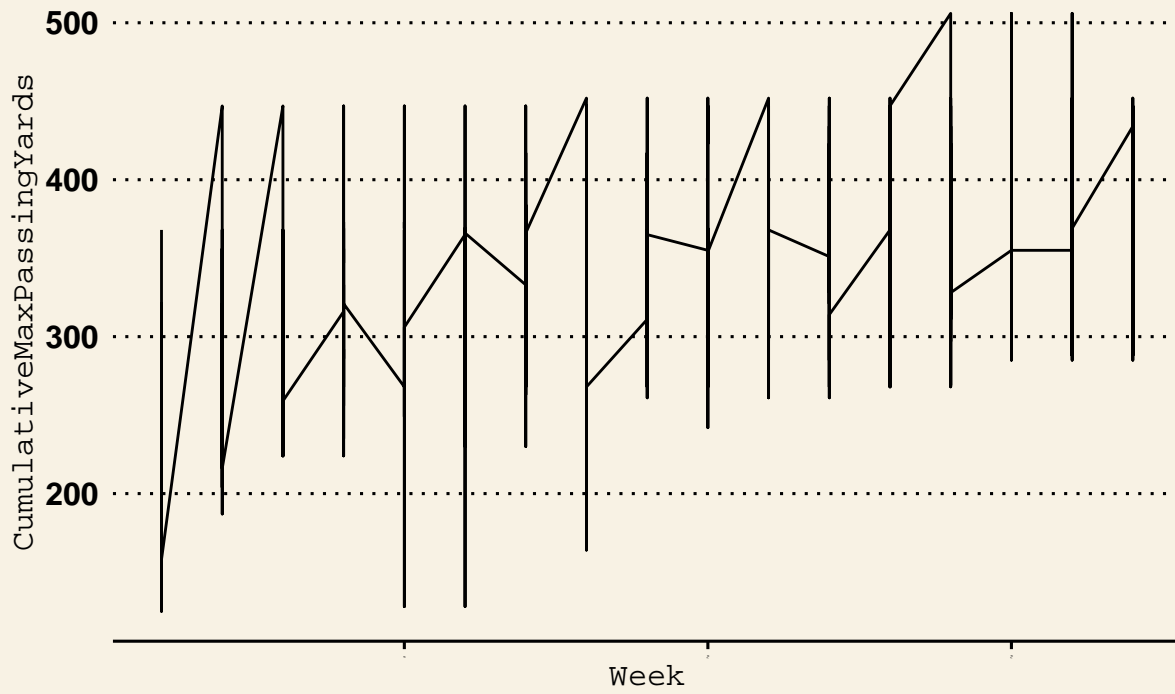






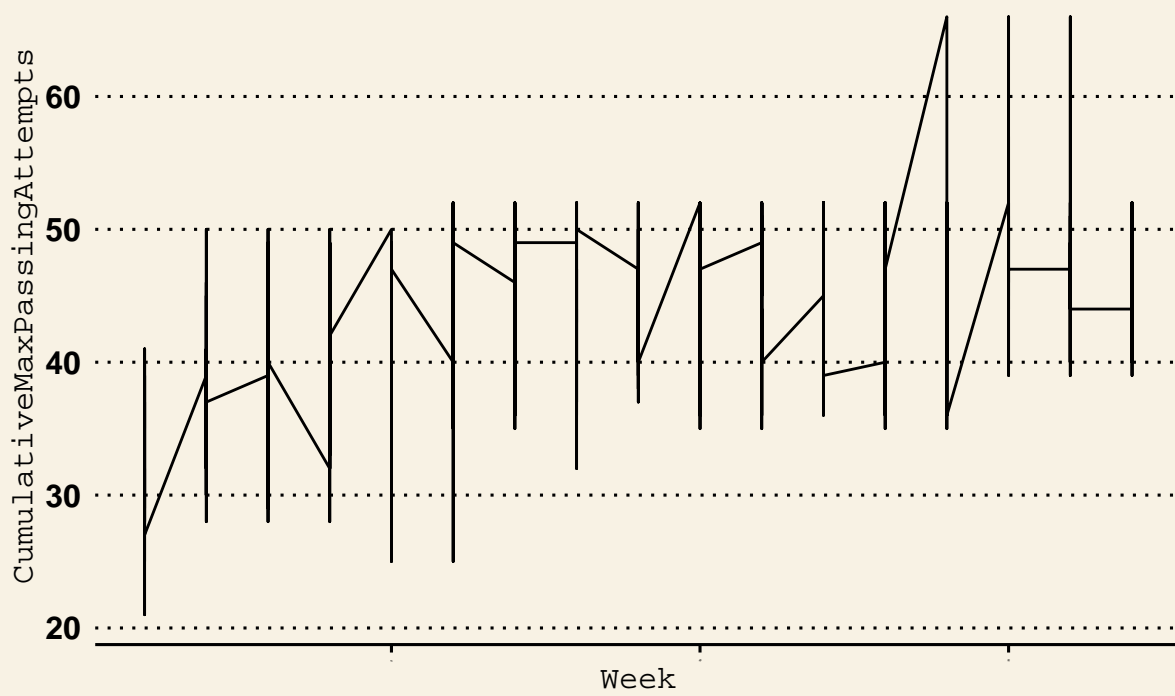
### Fantasyfootball

CumulativeMaxPassingYards



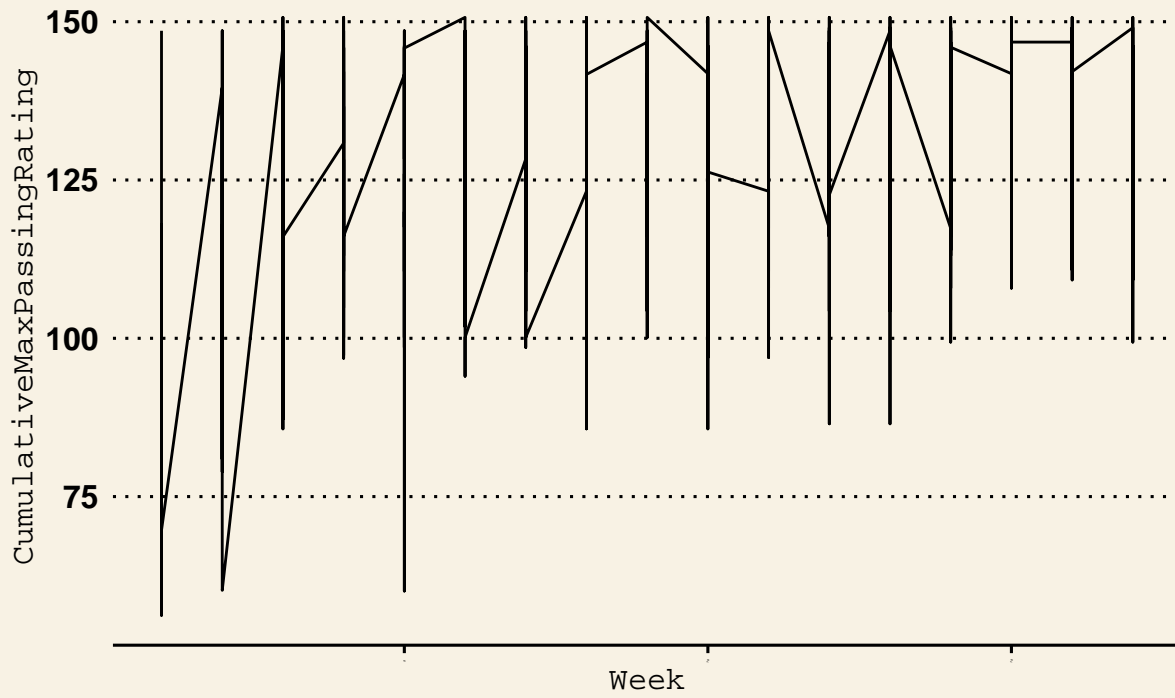
### Fantasyfootball

CumulativeMaxPassingAttempts



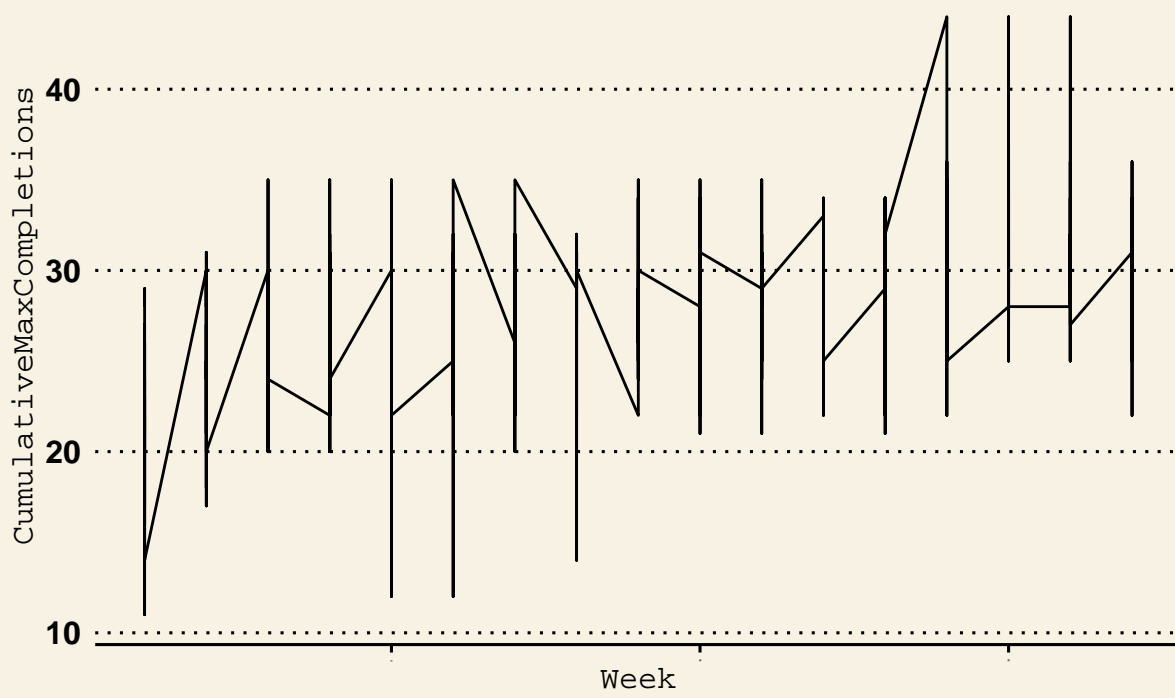
**Fantasyfootball**

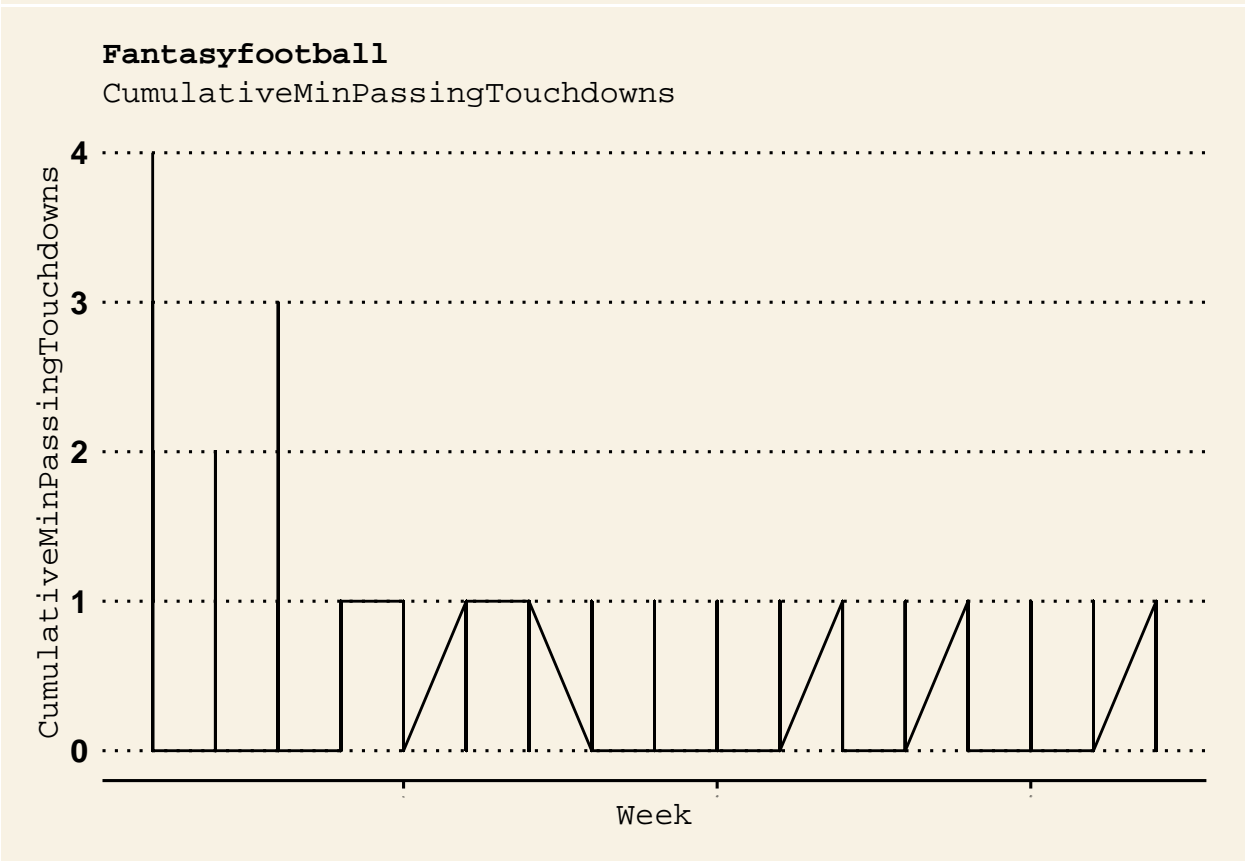
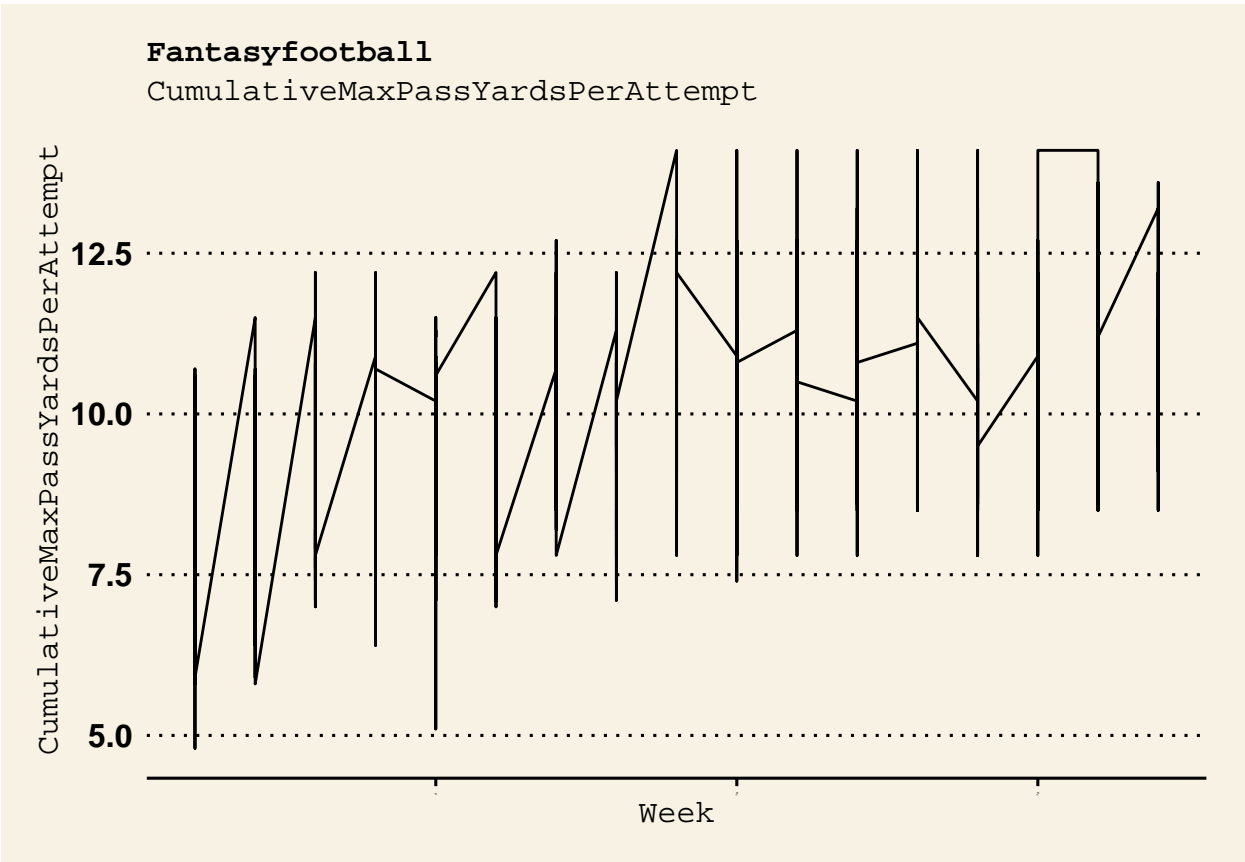
CumulativeMaxPassingRating



**Fantasyfootball**

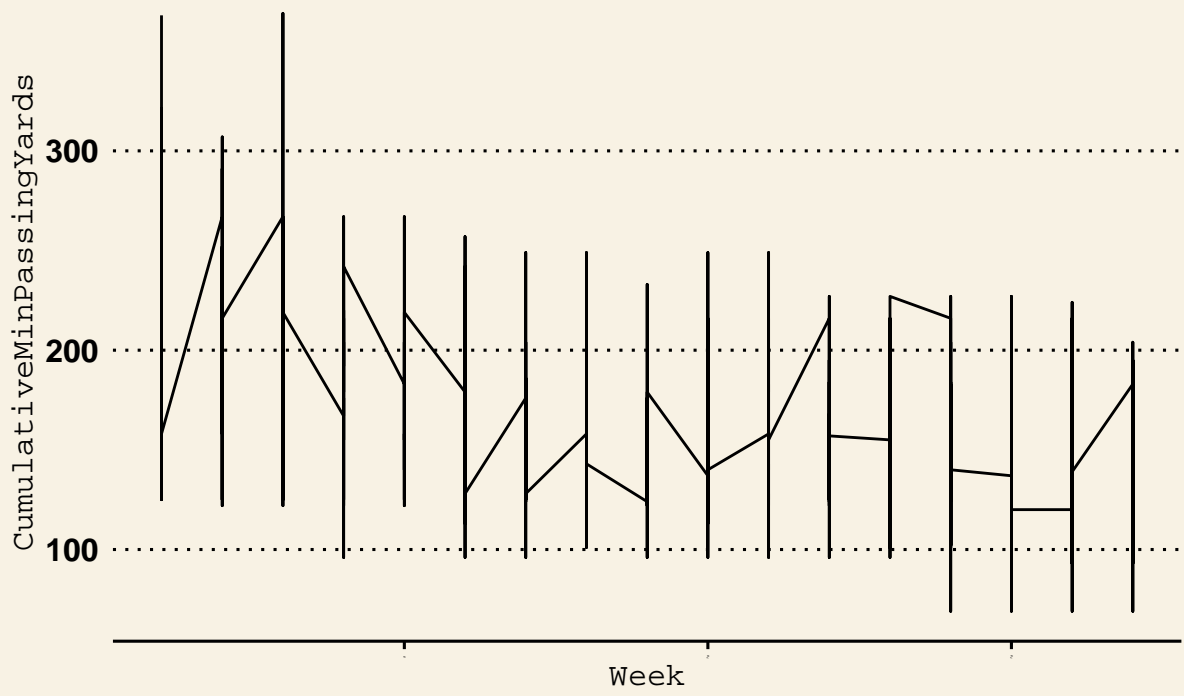
CumulativeMaxCompletions





### Fantasyfootball

CumulativeMinPassingYards



### Fantasyfootball

CumulativeMinPassingAttempts

