IPL - Indian Premier League Analysis

Omkar Mutreja

7/9/2018

This is a R markdown file which explains different Data Manipulation techniques in R and the use of sqldf package for users who love using database and SQL queries.

There are various questions which are answered through this analysis:

Loading the required libraries

```
library(magrittr)
library(dplyr)

## Warning: package 'dplyr' was built under R version 3.5.1

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##     filter, lag

## The following objects are masked from 'package:base':
##
##     intersect, setdiff, setequal, union

library(sqldf)

## Loading required package: gsubfn

## Loading required package: proto

## Warning in doTryCatch(return(expr), name, parentenv, handler): unable to
load shared object
'/Library/Frameworks/R.framework/Resources/modules//R_X11.so':
##    dlopen(/Library/Frameworks/R.framework/Resources/modules//R_X11.so, 6):
Library not loaded: /opt/X11/lib/libSM.6.dylib
##    Referenced from:
/Library/Frameworks/R.framework/Resources/modules//R_X11.so
##    Reason: image not found

## Could not load tcltk.  Will use slower R code instead.
```

```
## Loading required package: RSQLite

library(reshape2)
library(ggplot2)
```

Importing the datasets required for the analysis

```
deliveries <- read.csv('/Users/omkarmutreja/Downloads/deliveries.csv')
head(deliveries)

##   match_id inning        batting_team                bowling_team over
## 1        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 2        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 3        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 4        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 5        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 6        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
##   ball   batsman non_striker   bowler is_super_over wide_runs bye_runs
## 1    1 DA Warner    S Dhawan TS Mills             0         0        0
## 2    2 DA Warner    S Dhawan TS Mills             0         0        0
## 3    3 DA Warner    S Dhawan TS Mills             0         0        0
## 4    4 DA Warner    S Dhawan TS Mills             0         0        0
## 5    5 DA Warner    S Dhawan TS Mills             0         2        0
## 6    6  S Dhawan   DA Warner TS Mills             0         0        0
##   legbye_runs noball_runs penalty_runs batsman_runs extra_runs total_runs
## 1           0           0            0            0          0          0
## 2           0           0            0            0          0          0
## 3           0           0            0            4          0          4
## 4           0           0            0            0          0          0
## 5           0           0            0            0          2          2
## 6           0           0            0            0          0          0
##   player_dismissed dismissal_kind fielder
## 1
## 2
## 3
## 4
## 5
## 6

matches <- read.csv('/Users/omkarmutreja/Downloads/matches.csv')
head(matches)

##   id season      city       date                       team1
## 1  1   2017 Hyderabad 2017-04-05         Sunrisers Hyderabad
## 2  2   2017      Pune 2017-04-06              Mumbai Indians
## 3  3   2017    Rajkot 2017-04-07               Gujarat Lions
## 4  4   2017    Indore 2017-04-08       Rising Pune Supergiant
## 5  5   2017 Bangalore 2017-04-08 Royal Challengers Bangalore
## 6  6   2017 Hyderabad 2017-04-09               Gujarat Lions
##                          team2                toss_winner toss_decision
## 1 Royal Challengers Bangalore Royal Challengers Bangalore         field
```

```
## 2        Rising Pune Supergiant        Rising Pune Supergiant        field
## 3        Kolkata Knight Riders         Kolkata Knight Riders         field
## 4              Kings XI Punjab               Kings XI Punjab         field
## 5            Delhi Daredevils Royal Challengers Bangalore            bat
## 6           Sunrisers Hyderabad            Sunrisers Hyderabad       field
##    result dl_applied                          winner win_by_runs win_by_wickets
## 1 normal          0        Sunrisers Hyderabad          35              0
## 2 normal          0        Rising Pune Supergiant        0              7
## 3 normal          0        Kolkata Knight Riders         0             10
## 4 normal          0              Kings XI Punjab         0              6
## 5 normal          0 Royal Challengers Bangalore         15              0
## 6 normal          0        Sunrisers Hyderabad           0              9
##    player_of_match                                   venue        umpire1
## 1    Yuvraj Singh Rajiv Gandhi International Stadium, Uppal    AY Dandekar
## 2       SPD Smith  Maharashtra Cricket Association Stadium A Nand Kishore
## 3        CA Lynn    Saurashtra Cricket Association Stadium     Nitin Menon
## 4       GJ Maxwell                  Holkar Cricket Stadium    AK Chaudhary
## 5        KM Jadhav                 M Chinnaswamy Stadium
## 6      Rashid Khan Rajiv Gandhi International Stadium, Uppal     A Deshmukh
##           umpire2 umpire3
## 1       NJ Llong       NA
## 2        S Ravi        NA
## 3      CK Nandan       NA
## 4 C Shamshuddin       NA
## 5                     NA
## 6       NJ Llong       NA
```

Joining deliveries and matches on the basis of match_id and id

```r
ipl <- sqldf('Select * from deliveries d join matches m on d.match_id=m.id')
head(ipl)

##   match_id inning        batting_team              bowling_team over
## 1        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 2        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 3        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 4        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 5        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
## 6        1      1 Sunrisers Hyderabad Royal Challengers Bangalore    1
##   ball   batsman non_striker   bowler is_super_over wide_runs bye_runs
## 1    1 DA Warner    S Dhawan TS Mills             0         0        0
## 2    2 DA Warner    S Dhawan TS Mills             0         0        0
## 3    3 DA Warner    S Dhawan TS Mills             0         0        0
## 4    4 DA Warner    S Dhawan TS Mills             0         0        0
## 5    5 DA Warner    S Dhawan TS Mills             0         2        0
## 6    6  S Dhawan   DA Warner TS Mills             0         0        0
##   legbye_runs noball_runs penalty_runs batsman_runs extra_runs total_runs
## 1           0           0            0            0          0          0
## 2           0           0            0            0          0          0
## 3           0           0            0            4          0          4
```

```
## 4               0         0              0              0              0         0
## 5               0         0              0              0              2         2
## 6               0         0              0              0              0         0
##   player_dismissed dismissal_kind fielder id season      city       date
## 1                                           1   2017 Hyderabad 2017-04-05
## 2                                           1   2017 Hyderabad 2017-04-05
## 3                                           1   2017 Hyderabad 2017-04-05
## 4                                           1   2017 Hyderabad 2017-04-05
## 5                                           1   2017 Hyderabad 2017-04-05
## 6                                           1   2017 Hyderabad 2017-04-05
##               team1                         team2
## 1 Sunrisers Hyderabad Royal Challengers Bangalore
## 2 Sunrisers Hyderabad Royal Challengers Bangalore
## 3 Sunrisers Hyderabad Royal Challengers Bangalore
## 4 Sunrisers Hyderabad Royal Challengers Bangalore
## 5 Sunrisers Hyderabad Royal Challengers Bangalore
## 6 Sunrisers Hyderabad Royal Challengers Bangalore
##                   toss_winner toss_decision result dl_applied
## 1 Royal Challengers Bangalore         field normal          0
## 2 Royal Challengers Bangalore         field normal          0
## 3 Royal Challengers Bangalore         field normal          0
## 4 Royal Challengers Bangalore         field normal          0
## 5 Royal Challengers Bangalore         field normal          0
## 6 Royal Challengers Bangalore         field normal          0
##              winner win_by_runs win_by_wickets player_of_match
## 1 Sunrisers Hyderabad          35              0    Yuvraj Singh
## 2 Sunrisers Hyderabad          35              0    Yuvraj Singh
## 3 Sunrisers Hyderabad          35              0    Yuvraj Singh
## 4 Sunrisers Hyderabad          35              0    Yuvraj Singh
## 5 Sunrisers Hyderabad          35              0    Yuvraj Singh
## 6 Sunrisers Hyderabad          35              0    Yuvraj Singh
##                                       venue      umpire1   umpire2 umpire3
## 1 Rajiv Gandhi International Stadium, Uppal AY Dandekar NJ Llong       NA
## 2 Rajiv Gandhi International Stadium, Uppal AY Dandekar NJ Llong       NA
## 3 Rajiv Gandhi International Stadium, Uppal AY Dandekar NJ Llong       NA
## 4 Rajiv Gandhi International Stadium, Uppal AY Dandekar NJ Llong       NA
## 5 Rajiv Gandhi International Stadium, Uppal AY Dandekar NJ Llong       NA
## 6 Rajiv Gandhi International Stadium, Uppal AY Dandekar NJ Llong       NA
```
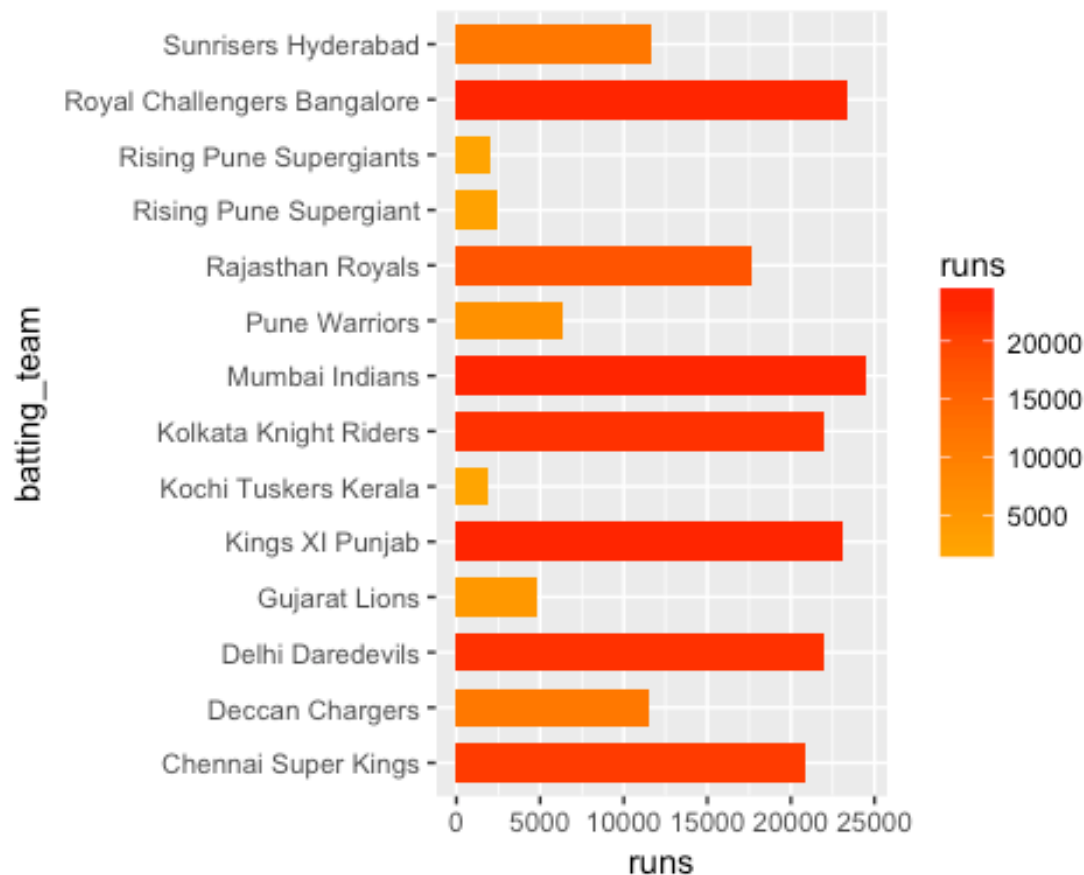
Which team has the highest number of runs in all the 10 seasons?

```r
a <- as.data.frame(sqldf('Select batting_team,sum(total_runs) as "runs" from
deliveries group by batting_team order by sum(total_runs)desc'))
ggplot(a, aes(x = batting_team, y=runs, fill=runs))+geom_bar(width=0.7, stat
= "identity")+coord_flip()+ scale_fill_gradient(low = "orange", high = "red")
```

Which team has the highest number of wickets in all the 10 seasons?

```
wickets <- ipl[,c('bowling_team','player_dismissed','id','season')]

for (i in 1:ncol(wickets))
{
  is.na(wickets[,i]) <- wickets[,i]==''
}
wickets <- na.omit(wickets)

max_wickets <- wickets %>% group_by(season,bowling_team) %>%
summarise(Wickets=n()) %>% arrange(desc(season),desc(Wickets))

max_wickets <- sqldf("Select season,bowling_team,max(Wickets) as wickets from
max_wickets group by season order by season desc ")

max_wickets

##      season              bowling_team wickets
## 1    2017        Rising Pune Supergiant     113
## 2    2016 Royal Challengers Bangalore      99
## 3    2015          Chennai Super Kings     113
```

```
## 4     2014         Kings XI Punjab      113
## 5     2013    Chennai Super Kings      123
## 6     2012    Chennai Super Kings      108
## 7     2011         Mumbai Indians      103
## 8     2010    Chennai Super Kings      103
## 9     2009         Deccan Chargers      110
## 10    2008        Rajasthan Royals      109
```

Which team has highest number of runs in each season and the team which won that season?

```
maxRunsTeam <- ipl  %>% group_by(season,batting_team) %>%
summarise(count=sum(total_runs))
maxRunsTeam <- sqldf('Select batting_team,season,max(count) as TotalRuns from
maxRunsTeam group by season order by season asc,count desc ')
maxRunsTeam <- maxRunsTeam %>% mutate(seasonWinner=c('Rajasthan
Royals','Deccan Chargers','Chennai Super Kings','Chennai Super
Kings','Kolkata Knight Riders',
                        'Mumbai Indians','Kolkata Knight Riders','Mumbai
Indians','Sunrisers Hyderabad','Mumbai Indians'))
maxRunsTeam
```

```
##                      batting_team season TotalRuns            seasonWinner
## 1             Rajasthan Royals   2008      2601       Rajasthan Royals
## 2             Deccan Chargers   2009      2408        Deccan Chargers
## 3               Mumbai Indians   2010      2738   Chennai Super Kings
## 4          Chennai Super Kings   2011      2560   Chennai Super Kings
## 5          Chennai Super Kings   2012      2831 Kolkata Knight Riders
## 6               Mumbai Indians   2013      2975        Mumbai Indians
## 7               Kings XI Punjab   2014      2987 Kolkata Knight Riders
## 8               Mumbai Indians   2015      2734        Mumbai Indians
## 9   Royal Challengers Bangalore   2016      2981   Sunrisers Hyderabad
## 10              Mumbai Indians   2017      2800        Mumbai Indians
```

Season wise winners as per the location

```
b <- ipl[,c('id','season','city','winner')]

MatchWinner <- function(teamname,ground='aaa')
{
  c <-  b %>% filter(winner==teamname) %>% group_by(season,city,winner,id)
%>% summarise(n=n()) %>% arrange(desc(season))
  d <-  c %>% group_by(season,city,winner) %>% select(city,winner) %>%
summarise(Count=n()) %>%
        arrange(desc(season),desc(Count)) %>% mutate(Ground=ifelse(city %in%
ground,'Home','Away') )
    sqldf("Select season,Ground,sum(Count) as 'Win' from d group by
season,Ground order by season desc, Count desc")
}
```

```
MatchWinner('Mumbai Indians','Mumbai')
```

```
## Adding missing grouping variables: `season`
```

```
##    season Ground Win
## 1    2017   Home   5
## 2    2017   Away   7
## 3    2016   Home   2
## 4    2016   Away   5
## 5    2015   Home   5
## 6    2015   Away   5
## 7    2014   Home   4
## 8    2014   Away   3
## 9    2013   Home   8
## 10   2013   Away   5
## 11   2012   Home   3
## 12   2012   Away   7
## 13   2011   Home   6
## 14   2011   Away   4
## 15   2010   Home   8
## 16   2010   Away   3
## 17   2009   Away   5
## 18   2008   Home   4
## 19   2008   Away   3
```

```
MatchWinner('Royal Challengers Bangalore','Bangalore')
```

```
## Adding missing grouping variables: `season`
```

```
##    season Ground Win
## 1    2017   Away   2
## 2    2017   Home   1
## 3    2016   Home   5
## 4    2016   Away   4
## 5    2015   Home   2
## 6    2015   Away   6
## 7    2014   Home   2
## 8    2014   Away   3
## 9    2013   Home   7
## 10   2013   Away   2
## 11   2012   Home   3
## 12   2012   Away   5
## 13   2011   Home   5
## 14   2011   Away   5
## 15   2010   Home   4
## 16   2010   Away   4
## 17   2009   Away   9
## 18   2008   Away   3
## 19   2008   Home   1
```

```
MatchWinner('Gujarat Lions','Rajkot')
```

```
## Adding missing grouping variables: `season`
```

```
##   season Ground Win
## 1   2017   Away   3
## 2   2017   Home   1
## 3   2016   Home   2
## 4   2016   Away   7
```

```
MatchWinner('Chennai Super Kings','Chennai')
```

```
## Adding missing grouping variables: `season`
```

```
##    season Ground Win
## 1    2015   Home   6
## 2    2015   Away   4
## 3    2014   Away  10
## 4    2013   Home   6
## 5    2013   Away   6
## 6    2012   Home   6
## 7    2012   Away   4
## 8    2011   Home   8
## 9    2011   Away   3
## 10   2010   Home   4
## 11   2010   Away   5
## 12   2009   Away   8
## 13   2008   Home   3
## 14   2008   Away   6
```

```
MatchWinner('Rising Pune Supergiant','Pune')
```

```
## Adding missing grouping variables: `season`
```

```
##   season Ground Win
## 1   2017   Home   5
## 2   2017   Away   5
```

```
MatchWinner('Sunrisers Hyderabad','Hyderabad')
```

```
## Adding missing grouping variables: `season`
```

```
##    season Ground Win
## 1    2017   Home   6
## 2    2017   Away   2
## 3    2016   Home   4
## 4    2016   Away   7
## 5    2015   Home   2
## 6    2015   Away   5
## 7    2014   Away   5
## 8    2014   Home   1
```

```
## 9     2013    Home    7
## 10    2013    Away    3
```

```r
MatchWinner('Deccan Chargers','Hyderabad')
```

```
## Adding missing grouping variables: `season`
```

```
##   season Ground Win
## 1   2012   Home    2
## 2   2012   Away    2
## 3   2011   Away    5
## 4   2011   Home    1
## 5   2010   Away    8
## 6   2009   Away    9
## 7   2008   Away    2
```

```r
MatchWinner('Delhi Daredevils')
```

```
## Adding missing grouping variables: `season`
```

```
##     season Ground Win
## 1     2017   Away    6
## 2     2016   Away    7
## 3     2015   Away    5
## 4     2014   Away    2
## 5     2013   Away    3
## 6     2012   Away   11
## 7     2011   Away    4
## 8     2010   Away    7
## 9     2009   Away   10
## 10    2008   Away    7
```

```r
MatchWinner('Kolkata Knight Riders','Kolkata')
```

```
## Adding missing grouping variables: `season`
```

```
##     season Ground Win
## 1     2017   Home    4
## 2     2017   Away    5
## 3     2016   Home    4
## 4     2016   Away    4
## 5     2015   Home    5
## 6     2015   Away    2
## 7     2014   Home    4
## 8     2014   Away    7
## 9     2013   Home    4
## 10    2013   Away    2
## 11    2012   Home    3
## 12    2012   Away    9
## 13    2011   Home    4
## 14    2011   Away    4
## 15    2010   Home    5
```

```
## 16    2010    Away    2
## 17    2009    Away    3
## 18    2008    Home    4
## 19    2008    Away    2
```

```r
MatchWinner('Kings XI Punjab',c('Dharamsala','Chandigarh'))
```

```
## Adding missing grouping variables: `season`
```

```
##     season Ground Win
## 1     2017   Home    2
## 2     2017   Away    5
## 3     2016   Home    2
## 4     2016   Away    2
## 5     2015   Away    2
## 6     2015   Home    1
## 7     2014   Home    2
## 8     2014   Away   10
## 9     2013   Home    5
## 10    2013   Away    3
## 11    2012   Away    5
## 12    2012   Home    3
## 13    2011   Home    5
## 14    2011   Away    2
## 15    2010   Away    3
## 16    2010   Home    1
## 17    2009   Away    7
## 18    2008   Home    6
## 19    2008   Away    4
```

```r
MatchWinner('Pune Warriors','Pune')
```

```
## Adding missing grouping variables: `season`
```

```
##   season Ground Win
## 1   2013   Home    2
## 2   2013   Away    2
## 3   2012   Home    2
## 4   2012   Away    2
## 5   2011   Away    4
```

```r
MatchWinner('Rajasthan Royals',c('Indore','Jaipur'))
```

```
## Adding missing grouping variables: `season`
```

```
##     season Ground Win
## 1     2015   Away    7
## 2     2014   Away    7
## 3     2013   Home    8
## 4     2013   Away    3
## 5     2012   Home    4
## 6     2012   Away    3
```

```
## 7     2011    Home    4
## 8     2011    Away    2
## 9     2010    Away    5
## 10    2010    Home    1
## 11    2009    Away    6
## 12    2008    Home    7
## 13    2008    Away    6
```

Which player has the max number of runs in each season

```
maxRunsPlayer <- ipl  %>% group_by(season,batsman) %>%
summarise(count=sum(batsman_runs))
maxRunsPlayer <- sqldf('Select batsman,season,max(count) from maxRunsPlayer
group by season order by season asc,count desc ')
maxRunsPlayer
```

```
##          batsman season max(count)
## 1       SE Marsh   2008        616
## 2      ML Hayden   2009        572
## 3   SR Tendulkar   2010        618
## 4       CH Gayle   2011        608
## 5       CH Gayle   2012        733
## 6     MEK Hussey   2013        733
## 7     RV Uthappa   2014        660
## 8      DA Warner   2015        562
## 9        V Kohli   2016        973
## 10     DA Warner   2017        641
```

Which player has the max number of wickets in each season

```
wicketsSubset <- ipl[,c(4,9,19:23)]

for (i in 1:ncol(wicketsSubset))
{
  is.na(wicketsSubset[,i]) <- wicketsSubset[,i]==''
}

wicketsSubset <- wicketsSubset[,-5]

wicketsSubset <-  na.omit(wicketsSubset)

aa <- data.frame(table(wicketsSubset$bowler,wicketsSubset$season))
aa <- aa %>% filter(Freq!=0) %>% arrange(desc(Var2),desc(Freq))

sqldf('Select * from aa where Var1="Sohail Tanvir"')
```

```
##            Var1 Var2 Freq
## 1 Sohail Tanvir 2008   24
```

```r
sqldf("Select count(*) from ipl where bowler='Sohail Tanvir' and
dismissal_kind in ('bowled','caught','caught and bowled','stumped','hit
wicket','lbw')")
```

```
##   count(*)
## 1       22
```

Identifying different type of dismissal_kind

```r
table(wicketsSubset$dismissal_kind)
```

```
##
##                                 bowled                 caught
##                     0             1382                   4373
##     caught and bowled       hit wicket                    lbw
##                   211                9                    455
## obstructing the field    retired hurt                run out
##                     1                9                    755
##               stumped
##                   243
```

```r
wicketsSubset <-  wicketsSubset %>% filter(dismissal_kind %in%
c('bowled','caught','caught and bowled','stumped','hit wicket','lbw')) %>%
  arrange(desc(season))

maxWicketsPlayer <- wicketsSubset  %>% group_by(season,bowling_team)  %>%
arrange(desc(season),bowler)

a <- data.frame(table(maxWicketsPlayer$bowler,maxWicketsPlayer$season))
colnames(a) <- c('BowlerName','Season','Wickets')

a <- a %>% filter(Wickets!=0) %>% arrange(desc(Season),desc(Wickets))
head(a)
```

```
##        BowlerName Season Wickets
## 1        B Kumar   2017      26
## 2     JD Unadkat   2017      24
## 3      JJ Bumrah   2017      20
## 4 MJ McClenaghan   2017      19
## 5     Imran Tahir  2017      18
## 6      CR Woakes   2017      17
```

Max wickets in each season of IPL

```r
sqldf('Select BowlerName,Season,max(Wickets)  from a group by Season order by
Season desc')
```

```
##   BowlerName Season max(Wickets)
## 1    B Kumar   2017           26
## 2    B Kumar   2016           23
```

```
## 3       DJ Bravo    2015         26
## 4      MM Sharma    2014         23
## 5       DJ Bravo    2013         32
## 6       M Morkel    2012         25
## 7     SL Malinga    2011         28
## 8        PP Ojha    2010         21
## 9       RP Singh    2009         23
## 10 Sohail Tanvir    2008         22
```

Which player has max catches in each season

```r
catchSubset <- ipl[,c(4,9,20:21,23)]

for (i in 1:ncol(catchSubset))
{
  is.na(catchSubset[,i]) <- catchSubset[,i]==''
}

catchSubset <- catchSubset %>% filter(dismissal_kind %in% c('caught','caught
and bowled'))

catchSubset$fielder <-
ifelse(is.na(catchSubset$fielder),as.character(catchSubset$bowler),as.charact
er(catchSubset$fielder))

catchSubset$fielder <- gsub("\\(sub\\)",'',catchSubset$fielder)

maxCatchPlayer <- catchSubset  %>% group_by(season,bowling_team)  %>%
arrange(desc(season),fielder)

c <- data.frame(table(maxCatchPlayer$fielder,maxCatchPlayer$season))
colnames(c) <- c('FielderName','Season','Catches')

c <- c %>% filter(Catches!=0) %>% arrange(desc(Season),desc(Catches))
head(c)
```

```
##   FielderName Season Catches
## 1  KA Pollard   2017      15
## 2   HH Pandya   2017      12
## 3   DA Warner   2017      10
## 4    MS Dhoni   2017      10
## 5   RG Sharma   2017      10
## 6     WP Saha   2017      10
```

Max catches in each season of IPL

```r
sqldf('Select FielderName,Season,max(Catches)from c group by Season order by
Season desc')
```

```
##        FielderName Season max(Catches)
## 1       KA Pollard   2017           15
## 2   AB de Villiers   2016           19
## 3        KD Karthik   2015           14
## 4         DA Miller   2014           14
## 5          MS Dhoni   2013           15
## 6           NV Ojha   2012           14
## 7    KC Sangakkara   2011           17
## 8         A Symonds   2010           12
## 9   AB de Villiers   2009           13
## 10         SK Raina   2008           10
```

Max catches overall - Top 10

```
sqldf('Select fielder,count(dismissal_kind) as "Catches" from catchSubset
          where dismissal_kind in ("caught","caught and bowled") group by
fielder order by Catches desc limit 10 ')
```

```
##            fielder Catches
## 1        KD Karthik      88
## 2          SK Raina      86
## 3   AB de Villiers      81
## 4          MS Dhoni      76
## 5        RV Uthappa      75
## 6         RG Sharma      71
## 7        KA Pollard      70
## 8           NV Ojha      65
## 9          DJ Bravo      60
## 10         PA Patel      60
```

Max overs bowled by a bower in each season

```
maxOvers <- ipl[,c(1,4,5,9,23)]

a <- sqldf('Select bowler,season,count(over)/6 as "Overs" from maxOvers group
by season,bowler order by season desc, Overs desc')
sqldf("Select season,bowler,max(overs) from a group by season order by
season, Overs desc")
```

```
##     season          bowler max(overs)
## 1     2008  M Muralitharan         61
## 2     2009        RP Singh         63
## 3     2010        A Kumble         64
## 4     2011       SL Malinga         66
## 5     2012        R Ashwin         67
## 6     2013 Harbhajan Singh         71
## 7     2014         AR Patel         67
## 8     2015         A Nehra         64
```

```
## 9      2016        B Kumar              69
## 10     2017      JJ Bumrah              62
```

Most extras conceeded by a team season wise

```
extraRuns <- ipl %>% group_by(season,bowling_team) %>%
summarise(extras=sum(extra_runs)) %>% arrange(desc(season),desc(extras))
sqldf("Select season,bowling_team, max(extras) from extraRuns group by season
order by season, extras desc")
```

```
##    season                 bowling_team max(extras)
## 1    2008         Chennai Super Kings         160
## 2    2009            Delhi Daredevils         151
## 3    2010         Chennai Super Kings         169
## 4    2011              Mumbai Indians         154
## 5    2012            Rajasthan Royals         151
## 6    2013            Rajasthan Royals         172
## 7    2014             Kings XI Punjab         142
## 8    2015            Rajasthan Royals         148
## 9    2016 Royal Challengers Bangalore         156
## 10   2017              Mumbai Indians         137
```

Most player of the match award season wise

```
ipl %>% group_by(season,id) %>% summarise(MoM=n_distinct(player_of_match))
```

```
## # A tibble: 636 x 3
## # Groups:   season [?]
##    season    id   MoM
##     <int> <int> <int>
## 1  2008    60     1
## 2  2008    61     1
## 3  2008    62     1
## 4  2008    63     1
## 5  2008    64     1
## 6  2008    65     1
## 7  2008    66     1
## 8  2008    67     1
## 9  2008    68     1
## 10 2008    69     1
## # ... with 626 more rows
```

```
MoM <- sqldf("Select player_of_match,id,season from ipl group by
season,player_of_match,id order by season desc")
MoM <- sqldf("Select player_of_match,count(player_of_match) as
count,id,season from MoM group by season,player_of_match order by season
desc,count(player_of_match) desc")
```

```
MoMSeason <- sqldf("Select player_of_match,max(count),season from MoM group
```

```
by season order by season")
MoMSeason
```

```
##    player_of_match max(count) season
## 1        SE Marsh          5   2008
## 2        YK Pathan         3   2009
## 3     SR Tendulkar         4   2010
## 4         CH Gayle         6   2011
## 5         CH Gayle         5   2012
## 6       MEK Hussey         5   2013
## 7       GJ Maxwell         4   2014
## 8        DA Warner         4   2015
## 9          V Kohli         5   2016
## 10       BA Stokes         3   2017
```

Number of unique players per team season wise

```
sqldf("Select season,batting_team,count(distinct batsman) as Player from ipl
group by batting_team,season order by season desc")
```

```
##      season              batting_team Player
## 1      2017            Delhi Daredevils    18
## 2      2017               Gujarat Lions    18
## 3      2017             Kings XI Punjab    18
## 4      2017        Kolkata Knight Riders    19
## 5      2017               Mumbai Indians    17
## 6      2017        Rising Pune Supergiant    20
## 7      2017 Royal Challengers Bangalore    18
## 8      2017           Sunrisers Hyderabad    15
## 9      2016            Delhi Daredevils    18
## 10     2016               Gujarat Lions    17
## 11     2016             Kings XI Punjab    20
## 12     2016        Kolkata Knight Riders    15
## 13     2016               Mumbai Indians    17
## 14     2016        Rising Pune Supergiants    18
## 15     2016 Royal Challengers Bangalore    15
## 16     2016           Sunrisers Hyderabad    16
## 17     2015           Chennai Super Kings    13
## 18     2015            Delhi Daredevils    16
## 19     2015             Kings XI Punjab    18
## 20     2015        Kolkata Knight Riders    16
## 21     2015               Mumbai Indians    16
## 22     2015             Rajasthan Royals    15
## 23     2015 Royal Challengers Bangalore    19
## 24     2015           Sunrisers Hyderabad    16
## 25     2014           Chennai Super Kings    11
## 26     2014            Delhi Daredevils    18
## 27     2014             Kings XI Punjab    17
## 28     2014        Kolkata Knight Riders    16
## 29     2014               Mumbai Indians    17
```

```
## 30   2014           Rajasthan Royals       21
## 31   2014 Royal Challengers Bangalore      18
## 32   2014         Sunrisers Hyderabad      15
## 33   2013         Chennai Super Kings      15
## 34   2013            Delhi Daredevils      21
## 35   2013             Kings XI Punjab      19
## 36   2013         Kolkata Knight Riders    21
## 37   2013              Mumbai Indians      15
## 38   2013               Pune Warriors      26
## 39   2013            Rajasthan Royals      19
## 40   2013 Royal Challengers Bangalore      20
## 41   2013         Sunrisers Hyderabad      16
## 42   2012         Chennai Super Kings      15
## 43   2012             Deccan Chargers      21
## 44   2012            Delhi Daredevils      20
## 45   2012             Kings XI Punjab      21
## 46   2012         Kolkata Knight Riders    14
## 47   2012              Mumbai Indians      22
## 48   2012               Pune Warriors      22
## 49   2012            Rajasthan Royals      16
## 50   2012 Royal Challengers Bangalore      19
## 51   2011         Chennai Super Kings      14
## 52   2011             Deccan Chargers      15
## 53   2011            Delhi Daredevils      21
## 54   2011             Kings XI Punjab      18
## 55   2011         Kochi Tuskers Kerala     19
## 56   2011         Kolkata Knight Riders    16
## 57   2011              Mumbai Indians      16
## 58   2011               Pune Warriors      22
## 59   2011            Rajasthan Royals      20
## 60   2011 Royal Challengers Bangalore      19
## 61   2010         Chennai Super Kings      19
## 62   2010             Deccan Chargers      21
## 63   2010            Delhi Daredevils      21
## 64   2010             Kings XI Punjab      20
## 65   2010         Kolkata Knight Riders    21
## 66   2010              Mumbai Indians      19
## 67   2010            Rajasthan Royals      23
## 68   2010 Royal Challengers Bangalore      20
## 69   2009         Chennai Super Kings      17
## 70   2009             Deccan Chargers      17
## 71   2009            Delhi Daredevils      16
## 72   2009             Kings XI Punjab      16
## 73   2009         Kolkata Knight Riders    21
## 74   2009              Mumbai Indians      19
## 75   2009            Rajasthan Royals      22
## 76   2009 Royal Challengers Bangalore      22
## 77   2008         Chennai Super Kings      18
## 78   2008             Deccan Chargers      20
## 79   2008            Delhi Daredevils      15
```

```
## 80   2008           Kings XI Punjab       19
## 81   2008    Kolkata Knight Riders        19
## 82   2008           Mumbai Indians        22
## 83   2008          Rajasthan Royals       19
## 84   2008 Royal Challengers Bangalore     22
```