STA141B SQL and Relational Databases

Bohan Chen

2025-05-17

1. How many teams are there in the database? how many teams are there in 2022? List the names of the teams for 2022,including the league and division they are in and how many games they won and lost in that year. Group the results by league, division and then by games won.

```
library(DBI)
library(RSQLite)

con <- dbConnect(RSQLite::SQLite(), "/Users/chenbohan/Desktop/lahman_1871–2022.sqlit
e")
dbListTables(con)
```

```
##  [1] "AllstarFull"        "Appearances"        "AwardsManagers"
##  [4] "AwardsPlayers"      "AwardsShareManagers" "AwardsSharePlayers"
##  [7] "Batting"            "BattingPost"        "CollegePlaying"
## [10] "Fielding"           "FieldingOF"         "FieldingOFsplit"
## [13] "FieldingPost"       "HallOfFame"         "HomeGames"
## [16] "Managers"           "ManagersHalf"       "Parks"
## [19] "People"             "Pitching"           "PitchingPost"
## [22] "Salaries"           "Schools"            "SeriesPost"
## [25] "Teams"              "TeamsFranchises"    "TeamsHalf"
```

```
# 1. Total number of distinct teams in the full database
dbGetQuery(con, "
  SELECT COUNT(DISTINCT teamID) AS total_teams
  FROM Teams
")
```

```
##   total_teams
## 1         149
```

```
# 2. Number of teams that played in 2022
dbGetQuery(con, "
  SELECT COUNT(*) AS teams_in_2022
  FROM Teams
  WHERE yearID = 2022
")
```

```
##   teams_in_2022
## 1            30
```

```
# 3. List of team names and stats for 2022, grouped by league/division and sorted by
wins
teams_2022 <- dbGetQuery(con, "
  SELECT name, lgID AS league, divID AS division, W AS wins, L AS losses
  FROM Teams
  WHERE yearID = 2022
  ORDER BY league, division, wins DESC
")
print(teams_2022)
```

```
##                             name league division wins losses
## 1           Cleveland Guardians     AL        C   92     70
## 2            Chicago White Sox     AL        C   81     81
## 3              Minnesota Twins     AL        C   78     84
## 4               Detroit Tigers     AL        C   66     96
## 5           Kansas City Royals     AL        C   65     97
## 6             New York Yankees     AL        E   99     63
## 7            Toronto Blue Jays     AL        E   92     70
## 8               Tampa Bay Rays     AL        E   86     76
## 9            Baltimore Orioles     AL        E   83     79
## 10              Boston Red Sox     AL        E   78     84
## 11              Houston Astros     AL        W  106     56
## 12             Seattle Mariners    AL        W   90     72
## 13 Los Angeles Angels of Anaheim   AL        W   73     89
## 14               Texas Rangers     AL        W   68     94
## 15           Oakland Athletics     AL        W   60    102
## 16         St. Louis Cardinals     NL        C   93     69
## 17           Milwaukee Brewers     NL        C   86     76
## 18                Chicago Cubs     NL        C   74     88
## 19             Cincinnati Reds     NL        C   62    100
## 20          Pittsburgh Pirates     NL        C   62    100
## 21               Atlanta Braves     NL        E  101     61
## 22               New York Mets     NL        E  101     61
## 23       Philadelphia Phillies     NL        E   87     75
## 24                Miami Marlins     NL        E   69     93
## 25         Washington Nationals    NL        E   55    107
## 26         Los Angeles Dodgers     NL        W  111     51
## 27            San Diego Padres     NL        W   89     73
## 28        San Francisco Giants     NL        W   81     81
## 29        Arizona Diamondbacks     NL        W   74     88
## 30            Colorado Rockies     NL        W   68     94
```

Interpretation: There have been 149 different team IDs in the MLB database historically, and 30 teams were in the 2022 season.

Explanation: I used three queries to: Count the number of distinct teamID values to capture historical team variety. Count rows where yearID = 2022 to get current teams. Select team names and win/loss records for 2022 and sort them by league, division, and number of wins to group the output meaningfully.

Figure Out: The teamID is used to track franchises across years, even if names or cities change. The lgID and divID fields in the Teams table help group results by league and division.

2. What are the 10 teams that had the highest average attendance since 2015? Give the name and the average and total attendance for this period for each time.

```
top_attendance <- dbGetQuery(con, "
  SELECT
    name,
    teamID,
    SUM(attendance) AS total_attendance,
    COUNT(attendance) AS seasons_played,
    ROUND(1.0 * SUM(attendance) / COUNT(attendance)) AS avg_attendance
  FROM Teams
  WHERE yearID >= 2015 AND attendance IS NOT NULL
  GROUP BY teamID, name
  ORDER BY avg_attendance DESC
  LIMIT 10
")
print(top_attendance)
```

```
##                              name teamID total_attendance seasons_played
## 1            Los Angeles Dodgers    LAN         25731893              8
## 2            St. Louis Cardinals    SLN         22720377              8
## 3               New York Yankees    NYA         21287486              8
## 4                   Chicago Cubs    CHN         20222772              8
## 5          San Francisco Giants    SFN         20070905              8
## 6   Los Angeles Angels of Anaheim    LAA         19060870              8
## 7                Boston Red Sox    BOS         18924420              8
## 8              Colorado Rockies    COL         18608160              8
## 9              Milwaukee Brewers    MIL         17505787              8
## 10               Houston Astros    HOU         17459302              8
##     avg_attendance
## 1          3216487
## 2          2840047
## 3          2660936
## 4          2527847
## 5          2508863
## 6          2382609
## 7          2365553
## 8          2326020
## 9          2188223
## 10         2182413
```

Interpretation: The Los Angeles Dodgers had the highest average attendance per season since 2015, followed closely by the St. Louis Cardinals.

Explanation: I filtered the Teams table for rows where yearID >= 2015 and attendance IS NOT NULL. I grouped by both teamID and name to ensure uniqueness. I used SUM(attendance) for total attendance and divided by the count of non-null attendance records to compute the average. ORDER BY avg_attendance DESC ranks the teams by their average attendance over the years. LIMIT 10 shows the top 10.

Figure Out:Grouping by both teamID and name helps ensure correct aggregation for teams with consistent branding.

3. Who are the 10 people that had the "longest" career, i.e., spans the largest number of years? Who are the 10 people that played the most number of games

```
# Part (a): 10 players with the longest career span in years
longest_careers <- dbGetQuery(con, "
  SELECT
    p.nameFirst || ' ' || p.nameLast AS name,
    MIN(b.yearID) AS first_year,
    MAX(b.yearID) AS last_year,
    MAX(b.yearID) - MIN(b.yearID) + 1 AS career_span
  FROM Batting b
  JOIN People p ON b.playerID = p.playerID
  GROUP BY b.playerID
  ORDER BY career_span DESC
  LIMIT 10
")

# Part (b): 10 players who played the most total games
most_games <- dbGetQuery(con, "
  SELECT
    p.nameFirst || ' ' || p.nameLast AS name,
    SUM(b.G) AS total_games
  FROM Batting b
  JOIN People p ON b.playerID = p.playerID
  GROUP BY b.playerID
  ORDER BY total_games DESC
  LIMIT 10
")

print(longest_careers)
```

```
##              name first_year last_year career_span
## 1     Nick Altrock       1898      1933          36
## 2    Jim O'Rourke        1872      1904          33
## 3    Minnie Minoso       1949      1980          32
## 4  Charley O'Leary       1904      1934          31
## 5     Arlie Latham       1880      1909          30
## 6   Deacon McGuire       1884      1912          29
## 7     Johnny Evers       1902      1929          28
## 8  Hughie Jennings       1891      1918          28
## 9       Nolan Ryan       1966      1993          28
## 10     Gabby Street      1904      1931          28
```

```
print(most_games)
```

```
##                name total_games
## 1        Pete Rose          3562
## 2  Carl Yastrzemski         3308
## 3        Hank Aaron          3298
## 4  Rickey Henderson         3081
## 5     Albert Pujols         3080
## 6          Ty Cobb          3035
## 7      Eddie Murray         3026
## 8       Stan Musial         3026
## 9        Cal Ripken         3001
## 10      Willie Mays         2992
```

Interpretation: Nick Altrock had the longest official career span 36 years,Pete Rose played the most games in MLB history 3562.

Explanation: Part (a) finds the longest time between first and last year played, using MIN() and MAX() on yearID from the Batting table. I added +1 to ensure inclusive counting (e.g., 2000–2001 = 2 years). Part (b) sums all games played (G) per player and ranks them.

4. Compute which team won the world series in 2022? Include the team name, league, division, number of games won and lost during the season, and the total number of games in the

world series

```
ws_2022 <- dbGetQuery(con, "
  SELECT
    t.name AS team_name,
    t.lgID AS league,
    t.divID AS division,
    t.W AS regular_season_wins,
    t.L AS regular_season_losses,
    s.wins + s.losses AS world_series_total_games
  FROM SeriesPost s
  JOIN Teams t
    ON s.teamIDwinner = t.teamID AND s.yearID = t.yearID
  WHERE s.yearID = 2022 AND s.round = 'WS'
")

print(ws_2022)
```

```
##          team_name league division regular_season_wins regular_season_losses
## 1 Houston Astros      AL        W                   106                    56
##   world_series_total_games
## 1                        6
```

Interpretation: The Houston Astros won the 2022 World Series. They are a member of the American League (AL) and play in the Western Division (W). During the regular season, they recorded 106 wins and 56 losses. The World Series lasted 6 games, indicating a 4–2 series result.

Explanation: The winner is identified from SeriesPost where round = 'WS' and yearID = 2022. The teamIDwinner in SeriesPost is joined with the Teams table to get full team information. The number of games played in the World Series was calculated as wins + losses from the SeriesPost table.

Figure Out: I had to join SeriesPost with Teams using both teamID and yearID to get team name, league, and division. s.wins + s.losses provided the total number of games played in the series, since no direct "total games" field exists.

5. Compute the winner and the loser of the world series for all years. Include the team name, league, division, number of games won and lost during the season for both the winning and the

losing team

```
ws_all_years <- dbGetQuery(con, "
  SELECT
    s.yearID,

    -- Winning team info
    t_win.name AS winner_name,
    t_win.lgID AS winner_league,
    t_win.divID AS winner_division,
    t_win.W AS winner_wins,
    t_win.L AS winner_losses,

    -- Losing team info
    t_lose.name AS loser_name,
    t_lose.lgID AS loser_league,
    t_lose.divID AS loser_division,
    t_lose.W AS loser_wins,
    t_lose.L AS loser_losses

  FROM SeriesPost s
  JOIN Teams t_win
    ON s.teamIDwinner = t_win.teamID AND s.yearID = t_win.yearID
  JOIN Teams t_lose
    ON s.teamIDloser = t_lose.teamID AND s.yearID = t_lose.yearID
  WHERE s.round = 'WS'
  ORDER BY s.yearID DESC
")

print(ws_all_years)
```

```
##    yearID         winner_name winner_league winner_division winner_wins
## 1    2022        Houston Astros            AL               W         106
## 2    2021        Atlanta Braves            NL               E          88
## 3    2020   Los Angeles Dodgers            NL               W          43
## 4    2019  Washington Nationals            NL               E          93
## 5    2018        Boston Red Sox            AL               E         108
## 6    2017        Houston Astros            AL               W         101
## 7    2016          Chicago Cubs            NL               C         103
## 8    2015    Kansas City Royals            AL               C          95
## 9    2014  San Francisco Giants            NL               W          88
## 10   2013        Boston Red Sox            AL               E          97
## 11   2012  San Francisco Giants            NL               W          94
## 12   2011   St. Louis Cardinals            NL               C          90
## 13   2010  San Francisco Giants            NL               W          92
## 14   2009      New York Yankees            AL               E         103
## 15   2008  Philadelphia Phillies           NL               E          92
## 16   2007        Boston Red Sox            AL               E          96
## 17   2006   St. Louis Cardinals            NL               C          83
## 18   2005     Chicago White Sox            AL               C          99
## 19   2004        Boston Red Sox            AL               E          98
## 20   2003        Florida Marlins            NL               E          91
## 21   2002        Anaheim Angels            AL               W          99
## 22   2001  Arizona Diamondbacks            NL               W          92
## 23   2000      New York Yankees            AL               E          87
## 24   1999      New York Yankees            AL               E          98
## 25   1998      New York Yankees            AL               E         114
## 26   1997        Florida Marlins            NL               E          92
## 27   1996      New York Yankees            AL               E          92
## 28   1995        Atlanta Braves            NL               E          90
## 29   1993      Toronto Blue Jays            AL               E          95
## 30   1992      Toronto Blue Jays            AL               E          96
## 31   1991        Minnesota Twins            AL               W          95
## 32   1990       Cincinnati Reds            NL               W          91
## 33   1989      Oakland Athletics           AL               W          99
## 34   1988   Los Angeles Dodgers            NL               W          94
## 35   1987        Minnesota Twins            AL               W          85
## 36   1986          New York Mets            NL               E         108
## 37   1985    Kansas City Royals            AL               W          91
## 38   1984        Detroit Tigers            AL               E         104
## 39   1983      Baltimore Orioles            AL               E          98
## 40   1982   St. Louis Cardinals            NL               E          92
## 41   1981   Los Angeles Dodgers            NL               W          63
## 42   1980  Philadelphia Phillies           NL               E          91
## 43   1979      Pittsburgh Pirates           NL               E          98
## 44   1978      New York Yankees            AL               E         100
## 45   1977      New York Yankees            AL               E         100
## 46   1976       Cincinnati Reds            NL               W         102
## 47   1975       Cincinnati Reds            NL               W         108
## 48   1974      Oakland Athletics           AL               W          90
## 49   1973      Oakland Athletics           AL               W          94
## 50   1972      Oakland Athletics           AL               W          93
## 51   1971      Pittsburgh Pirates           NL               E          97
## 52   1970      Baltimore Orioles            AL               E         108
## 53   1969          New York Mets            NL               E         100
## 54   1968        Detroit Tigers            AL            <NA>         103
```

```
## 55    1967     St. Louis Cardinals        NL        <NA>        101
## 56    1966      Baltimore Orioles         AL        <NA>         97
## 57    1965     Los Angeles Dodgers        NL        <NA>         97
## 58    1964     St. Louis Cardinals        NL        <NA>         93
## 59    1963     Los Angeles Dodgers        NL        <NA>         99
## 60    1962      New York Yankees          AL        <NA>         96
## 61    1961      New York Yankees          AL        <NA>        109
## 62    1960     Pittsburgh Pirates         NL        <NA>         95
## 63    1959     Los Angeles Dodgers        NL        <NA>         88
## 64    1958      New York Yankees          AL        <NA>         92
## 65    1957      Milwaukee Braves          NL        <NA>         95
## 66    1956      New York Yankees          AL        <NA>         97
## 67    1955      Brooklyn Dodgers          NL        <NA>         98
## 68    1954       New York Giants          NL        <NA>         97
## 69    1953      New York Yankees          AL        <NA>         99
## 70    1952      New York Yankees          AL        <NA>         95
## 71    1951      New York Yankees          AL        <NA>         98
## 72    1950      New York Yankees          AL        <NA>         98
## 73    1949      New York Yankees          AL        <NA>         97
## 74    1948      Cleveland Indians         AL        <NA>         97
## 75    1947      New York Yankees          AL        <NA>         97
## 76    1946     St. Louis Cardinals        NL        <NA>         98
## 77    1945       Detroit Tigers           AL        <NA>         88
## 78    1944     St. Louis Cardinals        NL        <NA>        105
## 79    1943      New York Yankees          AL        <NA>         98
## 80    1942     St. Louis Cardinals        NL        <NA>        106
## 81    1941      New York Yankees          AL        <NA>        101
## 82    1940       Cincinnati Reds          NL        <NA>        100
## 83    1939      New York Yankees          AL        <NA>        106
## 84    1938      New York Yankees          AL        <NA>         99
## 85    1937      New York Yankees          AL        <NA>        102
## 86    1936      New York Yankees          AL        <NA>        102
## 87    1935       Detroit Tigers           AL        <NA>         93
## 88    1934     St. Louis Cardinals        NL        <NA>         95
## 89    1933       New York Giants          NL        <NA>         91
## 90    1932      New York Yankees          AL        <NA>        107
## 91    1931     St. Louis Cardinals        NL        <NA>        101
## 92    1930   Philadelphia Athletics       AL        <NA>        102
## 93    1929   Philadelphia Athletics       AL        <NA>        104
## 94    1928      New York Yankees          AL        <NA>        101
## 95    1927      New York Yankees          AL        <NA>        110
## 96    1926     St. Louis Cardinals        NL        <NA>         89
## 97    1925     Pittsburgh Pirates         NL        <NA>         95
## 98    1924     Washington Senators        AL        <NA>         92
## 99    1923      New York Yankees          AL        <NA>         98
## 100   1922       New York Giants          NL        <NA>         93
## 101   1921       New York Giants          NL        <NA>         94
## 102   1920      Cleveland Indians         AL        <NA>         98
## 103   1919       Cincinnati Reds          NL        <NA>         96
## 104   1918        Boston Red Sox          AL        <NA>         75
## 105   1917      Chicago White Sox         AL        <NA>        100
## 106   1916        Boston Red Sox          AL        <NA>         91
## 107   1915        Boston Red Sox          AL        <NA>        101
## 108   1914        Boston Braves           NL        <NA>         94
## 109   1913   Philadelphia Athletics       AL        <NA>         96
## 110   1912        Boston Red Sox          AL        <NA>        105
```

```
## 111   1911  Philadelphia Athletics         AL          <NA>          101
## 112   1910  Philadelphia Athletics         AL          <NA>          102
## 113   1909       Pittsburgh Pirates         NL          <NA>          110
## 114   1908             Chicago Cubs         NL          <NA>           99
## 115   1907             Chicago Cubs         NL          <NA>          107
## 116   1906        Chicago White Sox         AL          <NA>           93
## 117   1905          New York Giants         NL          <NA>          105
## 118   1903          Boston Americans         AL          <NA>           91
## 119   1890     Brooklyn Bridegrooms         NL          <NA>           86
## 120   1889          New York Giants         NL          <NA>           83
## 121   1888          New York Giants         NL          <NA>           84
## 122   1887        Detroit Wolverines         NL          <NA>           79
## 123   1886          St. Louis Browns         AA          <NA>           93
## 124   1885  Chicago White Stockings         NL          <NA>           87
## 125   1884          Providence Grays         NL          <NA>           84
##      winner_losses              loser_name loser_league loser_division
## 1               56      Philadelphia Phillies           NL              E
## 2               73            Houston Astros           AL              W
## 3               17            Tampa Bay Rays           AL              E
## 4               69            Houston Astros           AL              W
## 5               54        Los Angeles Dodgers           NL              W
## 6               61        Los Angeles Dodgers           NL              W
## 7               58          Cleveland Indians           AL              C
## 8               67            New York Mets           NL              E
## 9               74         Kansas City Royals           AL              C
## 10              65         St. Louis Cardinals           NL              C
## 11              68            Detroit Tigers           AL              C
## 12              72             Texas Rangers           AL              W
## 13              70             Texas Rangers           AL              W
## 14              59      Philadelphia Phillies           NL              E
## 15              70            Tampa Bay Rays           AL              E
## 16              66          Colorado Rockies           NL              W
## 17              78            Detroit Tigers           AL              C
## 18              63            Houston Astros           NL              C
## 19              64         St. Louis Cardinals           NL              C
## 20              71          New York Yankees           AL              E
## 21              63       San Francisco Giants           NL              W
## 22              70          New York Yankees           AL              E
## 23              74            New York Mets           NL              E
## 24              64            Atlanta Braves           NL              E
## 25              48          San Diego Padres           NL              W
## 26              70          Cleveland Indians           AL              C
## 27              70            Atlanta Braves           NL              E
## 28              54          Cleveland Indians           AL              C
## 29              67      Philadelphia Phillies           NL              E
## 30              66            Atlanta Braves           NL              W
## 31              67            Atlanta Braves           NL              W
## 32              71          Oakland Athletics           AL              W
## 33              63       San Francisco Giants           NL              W
## 34              67          Oakland Athletics           AL              W
## 35              77         St. Louis Cardinals           NL              E
## 36              54            Boston Red Sox           AL              E
## 37              71         St. Louis Cardinals           NL              E
## 38              58          San Diego Padres           NL              W
## 39              64      Philadelphia Phillies           NL              E
## 40              70          Milwaukee Brewers           AL              E
```

```
## 41   47        New York Yankees   AL    E
## 42   71      Kansas City Royals   AL    W
## 43   64       Baltimore Orioles   AL    E
## 44   63     Los Angeles Dodgers   NL    W
## 45   62     Los Angeles Dodgers   NL    W
## 46   60        New York Yankees   AL    E
## 47   54          Boston Red Sox   AL    E
## 48   72     Los Angeles Dodgers   NL    W
## 49   68           New York Mets   NL    E
## 50   62         Cincinnati Reds   NL    W
## 51   65       Baltimore Orioles   AL    E
## 52   54         Cincinnati Reds   NL    W
## 53   62       Baltimore Orioles   AL    E
## 54   59     St. Louis Cardinals   NL   <NA>
## 55   60          Boston Red Sox   AL   <NA>
## 56   63     Los Angeles Dodgers   NL   <NA>
## 57   65         Minnesota Twins   AL   <NA>
## 58   69        New York Yankees   AL   <NA>
## 59   63        New York Yankees   AL   <NA>
## 60   66     San Francisco Giants  NL   <NA>
## 61   53         Cincinnati Reds   NL   <NA>
## 62   59        New York Yankees   AL   <NA>
## 63   68       Chicago White Sox   AL   <NA>
## 64   62        Milwaukee Braves   NL   <NA>
## 65   59        New York Yankees   AL   <NA>
## 66   57        Brooklyn Dodgers   NL   <NA>
## 67   55        New York Yankees   AL   <NA>
## 68   57       Cleveland Indians   AL   <NA>
## 69   52        Brooklyn Dodgers   NL   <NA>
## 70   59        Brooklyn Dodgers   NL   <NA>
## 71   56         New York Giants   NL   <NA>
## 72   56    Philadelphia Phillies  NL   <NA>
## 73   57        Brooklyn Dodgers   NL   <NA>
## 74   58           Boston Braves   NL   <NA>
## 75   57        Brooklyn Dodgers   NL   <NA>
## 76   58          Boston Red Sox   AL   <NA>
## 77   65            Chicago Cubs   NL   <NA>
## 78   49         St. Louis Browns   AL   <NA>
## 79   56     St. Louis Cardinals   NL   <NA>
## 80   48        New York Yankees   AL   <NA>
## 81   53        Brooklyn Dodgers   NL   <NA>
## 82   53           Detroit Tigers  AL   <NA>
## 83   45         Cincinnati Reds   NL   <NA>
## 84   53            Chicago Cubs   NL   <NA>
## 85   52         New York Giants   NL   <NA>
## 86   51         New York Giants   NL   <NA>
## 87   58            Chicago Cubs   NL   <NA>
## 88   58           Detroit Tigers  AL   <NA>
## 89   61      Washington Senators  AL   <NA>
## 90   47            Chicago Cubs   NL   <NA>
## 91   53    Philadelphia Athletics AL   <NA>
## 92   52     St. Louis Cardinals   NL   <NA>
## 93   46            Chicago Cubs   NL   <NA>
## 94   53     St. Louis Cardinals   NL   <NA>
## 95   44      Pittsburgh Pirates   NL   <NA>
## 96   65        New York Yankees   AL   <NA>
```

```
## 97           58    Washington Senators        AL       <NA>
## 98           62       New York Giants          NL       <NA>
## 99           54       New York Giants          NL       <NA>
## 100          61       New York Yankees         AL       <NA>
## 101          59       New York Yankees         AL       <NA>
## 102          56        Brooklyn Robins         NL       <NA>
## 103          44      Chicago White Sox         AL       <NA>
## 104          51          Chicago Cubs          NL       <NA>
## 105          54       New York Giants          NL       <NA>
## 106          63        Brooklyn Robins         NL       <NA>
## 107          50   Philadelphia Phillies        NL       <NA>
## 108          59   Philadelphia Athletics       AL       <NA>
## 109          57       New York Giants          NL       <NA>
## 110          47       New York Giants          NL       <NA>
## 111          50       New York Giants          NL       <NA>
## 112          48          Chicago Cubs          NL       <NA>
## 113          42         Detroit Tigers         AL       <NA>
## 114          55         Detroit Tigers         AL       <NA>
## 115          45         Detroit Tigers         AL       <NA>
## 116          58          Chicago Cubs          NL       <NA>
## 117          48   Philadelphia Athletics       AL       <NA>
## 118          47      Pittsburgh Pirates        NL       <NA>
## 119          43      Louisville Colonels       AA       <NA>
## 120          43     Brooklyn Bridegrooms       AA       <NA>
## 121          47        St. Louis Browns        AA       <NA>
## 122          45        St. Louis Browns        AA       <NA>
## 123          46 Chicago White Stockings       NL       <NA>
## 124          25        St. Louis Browns        AA       <NA>
## 125          28   New York Metropolitans       AA       <NA>
##     loser_wins loser_losses
## 1          87           75
## 2          95           67
## 3          40           20
## 4         107           55
## 5          92           71
## 6         104           58
## 7          94           67
## 8          90           72
## 9          89           73
## 10         97           65
## 11         88           74
## 12         96           66
## 13         90           72
## 14         93           69
## 15         97           65
## 16         90           73
## 17         95           67
## 18         89           73
## 19        105           57
## 20        101           61
## 21         95           66
## 22         95           65
## 23         94           68
## 24        103           59
## 25         98           64
## 26         86           75
```

```
## 27      96    66
## 28     100    44
## 29      97    65
## 30      98    64
## 31      94    68
## 32     103    59
## 33      92    70
## 34     104    58
## 35      95    67
## 36      95    66
## 37     101    61
## 38      92    70
## 39      90    72
## 40      95    67
## 41      59    48
## 42      97    65
## 43     102    57
## 44      95    67
## 45      98    64
## 46      97    62
## 47      95    65
## 48     102    60
## 49      82    79
## 50      95    59
## 51     101    57
## 52     102    60
## 53     109    53
## 54      97    65
## 55      92    70
## 56      95    67
## 57     102    60
## 58      99    63
## 59     104    57
## 60     103    62
## 61      93    61
## 62      97    57
## 63      94    60
## 64      92    62
## 65      98    56
## 66      93    61
## 67      96    58
## 68     111    43
## 69     105    49
## 70      96    57
## 71      98    59
## 72      91    63
## 73      97    57
## 74      91    62
## 75      94    60
## 76     104    50
## 77      98    56
## 78      89    65
## 79     105    49
## 80     103    51
## 81     100    54
## 82      90    64
```

```
## 83       97       57
## 84       89       63
## 85       95       57
## 86       92       62
## 87      100       54
## 88      101       53
## 89       99       53
## 90       90       64
## 91      107       45
## 92       92       62
## 93       98       54
## 94       95       59
## 95       94       60
## 96       91       63
## 97       96       55
## 98       93       60
## 99       95       58
## 100      94       60
## 101      98       55
## 102      93       61
## 103      88       52
## 104      84       45
## 105      98       56
## 106      94       60
## 107      90       62
## 108      99       53
## 109     101       51
## 110     103       48
## 111      99       54
## 112     104       50
## 113      98       54
## 114      90       63
## 115      92       58
## 116     116       36
## 117      92       56
## 118      91       49
## 119      88       44
## 120      93       44
## 121      92       43
## 122      95       40
## 123      90       34
## 124      79       33
## 125      75       32
```

Explanation: I used the SeriesPost table to get the World Series (round = 'WS') for each year. I joined the Teams table twice: once to get info for the winning team, and once for the losing team, using both teamID and yearID.

Explanation: I used the SeriesPost table to get the World Series (round = 'WS') for each year. I joined the Teams table twice: once to get info for the winning team, and once for the losing team, using both teamID and yearID.

6. Compute the total payroll for each team for each year. Plot these. Bonus: In the SQL query, also compute whether the team won or lost the world series for that year and add that to the plot

```
payroll_ws <- dbGetQuery(con, "
  SELECT
    s.yearID,
    s.teamID,
    t.name AS team_name,
    SUM(s.salary) AS total_payroll,

    CASE
      WHEN s.teamID = sp.teamIDwinner THEN 'Winner'
      WHEN s.teamID = sp.teamIDloser THEN 'Loser'
      ELSE 'No'
    END AS world_series_result

  FROM Salaries s
  LEFT JOIN Teams t
    ON s.teamID = t.teamID AND s.yearID = t.yearID
  LEFT JOIN SeriesPost sp
    ON s.yearID = sp.yearID AND sp.round = 'WS'

  GROUP BY s.yearID, s.teamID
  ORDER BY s.yearID, total_payroll DESC
")
print(payroll_ws)
```

```
##      yearID teamID              team_name total_payroll
## 1      1985    ATL          Atlanta Braves      14807000
## 2      1985    CAL        California Angels      14427894
## 3      1985    NYA        New York Yankees      14238204
## 4      1985    CHN             Chicago Cubs      12702917
## 5      1985    SLN       St. Louis Cardinals     11817083
## 6      1985    BAL        Baltimore Orioles      11560712
## 7      1985    ML4         Milwaukee Brewers     11284107
## 8      1985    SDN         San Diego Padres      11036583
## 9      1985    LAN       Los Angeles Dodgers     10967917
## 10     1985    BOS          Boston Red Sox      10897560
## 11     1985    NYN            New York Mets      10834762
## 12     1985    DET            Detroit Tigers     10348143
## 13     1985    PHI    Philadelphia Phillies      10124966
## 14     1985    HOU            Houston Astros       9993051
## 15     1985    CHA        Chicago White Sox       9846178
## 16     1985    MON            Montreal Expos       9470166
## 17     1985    KCA        Kansas City Royals       9321179
## 18     1985    PIT        Pittsburgh Pirates       9227500
## 19     1985    OAK         Oakland Athletics       9058606
## 20     1985    TOR         Toronto Blue Jays       8812550
## 21     1985    CIN           Cincinnati Reds       8359917
## 22     1985    SFN     San Francisco Giants        8221714
## 23     1985    TEX            Texas Rangers        7676500
## 24     1985    CLE         Cleveland Indians        6551666
## 25     1985    MIN           Minnesota Twins        5764821
## 26     1985    SEA          Seattle Mariners        4613000
## 27     1986    NYA        New York Yankees       18494253
## 28     1986    CHN             Chicago Cubs      17208165
## 29     1986    ATL          Atlanta Braves      17102786
## 30     1986    NYN            New York Mets      15393714
## 31     1986    LAN       Los Angeles Dodgers     14913776
## 32     1986    CAL        California Angels      14427258
## 33     1986    BOS          Boston Red Sox      14402239
## 34     1986    KCA        Kansas City Royals     13043698
## 35     1986    BAL        Baltimore Orioles      13001258
## 36     1986    TOR         Toronto Blue Jays      12611047
## 37     1986    DET            Detroit Tigers     12335714
## 38     1986    CIN           Cincinnati Reds     11906388
## 39     1986    PHI    Philadelphia Phillies      11590166
## 40     1986    SDN         San Diego Padres      11380693
## 41     1986    MON            Montreal Expos     11103600
## 42     1986    PIT        Pittsburgh Pirates     10843500
## 43     1986    CHA        Chicago White Sox      10418819
## 44     1986    ML4         Milwaukee Brewers      9943642
## 45     1986    SLN       St. Louis Cardinals      9875010
## 46     1986    HOU            Houston Astros       9873276
## 47     1986    OAK         Oakland Athletics       9779421
## 48     1986    SFN     San Francisco Giants        8947000
## 49     1986    MIN           Minnesota Twins        8748167
## 50     1986    CLE         Cleveland Indians        7809500
## 51     1986    TEX            Texas Rangers        6743119
## 52     1986    SEA          Seattle Mariners        5958309
## 53     1987    NYA        New York Yankees       17099714
## 54     1987    ATL          Atlanta Braves      16544560
```

```
## 55    1987    CHN          Chicago Cubs    14307999
## 56    1987    BAL      Baltimore Orioles    13900273
## 57    1987    NYN         New York Mets    13846714
## 58    1987    LAN    Los Angeles Dodgers    13675403
## 59    1987    CAL       California Angels    12843499
## 60    1987    HOU         Houston Astros    12608371
## 61    1987    DET         Detroit Tigers    12122881
## 62    1987    KCA      Kansas City Royals    11828056
## 63    1987    SLN     St. Louis Cardinals    11758000
## 64    1987    OAK      Oakland Athletics    11680839
## 65    1987    PHI   Philadelphia Phillies    11514233
## 66    1987    SDN       San Diego Padres    11065796
## 67    1987    CHA       Chicago White Sox    10641843
## 68    1987    TOR        Toronto Blue Jays    10479501
## 69    1987    BOS         Boston Red Sox    10144167
## 70    1987    CIN         Cincinnati Reds     9281500
## 71    1987    CLE      Cleveland Indians     8513750
## 72    1987    PIT     Pittsburgh Pirates     7652000
## 73    1987    ML4        Milwaukee Brewers     7293224
## 74    1987    SFN    San Francisco Giants     7290000
## 75    1987    MON         Montreal Expos     6942052
## 76    1987    MIN        Minnesota Twins     6397500
## 77    1987    SEA        Seattle Mariners     2263500
## 78    1987    TEX          Texas Rangers      880000
## 79    1988    NYA        New York Yankees    19441152
## 80    1988    LAN    Los Angeles Dodgers    16850515
## 81    1988    NYN         New York Mets    15269314
## 82    1988    KCA      Kansas City Royals    14556562
## 83    1988    BOS         Boston Red Sox    13896092
## 84    1988    PHI   Philadelphia Phillies    13838000
## 85    1988    BAL      Baltimore Orioles    13532075
## 86    1988    CHN          Chicago Cubs    13119198
## 87    1988    SLN     St. Louis Cardinals    12880000
## 88    1988    DET         Detroit Tigers    12869571
## 89    1988    ATL          Atlanta Braves    12728174
## 90    1988    MIN        Minnesota Twins    12462666
## 91    1988    SFN    San Francisco Giants    12380000
## 92    1988    HOU         Houston Astros    12286167
## 93    1988    TOR        Toronto Blue Jays    12241225
## 94    1988    CAL       California Angels    11947388
## 95    1988    OAK      Oakland Athletics     9690000
## 96    1988    MON         Montreal Expos     9603333
## 97    1988    SDN       San Diego Padres     9561002
## 98    1988    CLE      Cleveland Indians     8936500
## 99    1988    CIN         Cincinnati Reds     8888409
## 100    1988    ML4        Milwaukee Brewers     8402000
## 101    1988    SEA        Seattle Mariners     7342450
## 102    1988    CHA       Chicago White Sox     6390000
## 103    1988    PIT     Pittsburgh Pirates     5998500
## 104    1988    TEX          Texas Rangers     5342131
## 105    1989    LAN    Los Angeles Dodgers    21071562
## 106    1989    NYN         New York Mets    19885071
## 107    1989    KCA      Kansas City Royals    18683568
## 108    1989    BOS         Boston Red Sox    17481748
## 109    1989    NYA        New York Yankees    17114375
## 110    1989    TOR        Toronto Blue Jays    16261666
```

```
## 111   1989   SLN     St. Louis Cardinals      16078833
## 112   1989   OAK       Oakland Athletics      15613070
## 113   1989   MIN         Minnesota Twins      15531666
## 114   1989   DET           Detroit Tigers      15146404
## 115   1989   CAL        California Angels      15097833
## 116   1989   HOU           Houston Astros      15029500
## 117   1989   SFN     San Francisco Giants      14962834
## 118   1989   SDN        San Diego Padres      14195000
## 119   1989   MON           Montreal Expos      13807389
## 120   1989   PIT       Pittsburgh Pirates      12737500
## 121   1989   TEX            Texas Rangers      11893781
## 122   1989   ML4         Milwaukee Brewers      11533000
## 123   1989   ATL           Atlanta Braves      11112334
## 124   1989   CIN          Cincinnati Reds      11072000
## 125   1989   CHN             Chicago Cubs      10668000
## 126   1989   PHI     Philadelphia Phillies      10604000
## 127   1989   SEA          Seattle Mariners       9779500
## 128   1989   CLE        Cleveland Indians       9094500
## 129   1989   BAL         Baltimore Orioles       8275167
## 130   1989   CHA        Chicago White Sox       7265410
## 131   1990   KCA       Kansas City Royals      23361084
## 132   1990   NYN             New York Mets      21722834
## 133   1990   CAL        California Angels      21720000
## 134   1990   LAN       Los Angeles Dodgers      21318704
## 135   1990   NYA          New York Yankees      20912318
## 136   1990   BOS             Boston Red Sox      20558333
## 137   1990   SLN     St. Louis Cardinals      20523334
## 138   1990   OAK       Oakland Athletics      19887501
## 139   1990   ML4         Milwaukee Brewers      19719167
## 140   1990   SFN     San Francisco Giants      19335333
## 141   1990   HOU           Houston Astros      18330000
## 142   1990   TOR         Toronto Blue Jays      17756834
## 143   1990   DET           Detroit Tigers      17593238
## 144   1990   SDN        San Diego Padres      17588334
## 145   1990   MON           Montreal Expos      16586388
## 146   1990   PIT       Pittsburgh Pirates      15556000
## 147   1990   TEX            Texas Rangers      14874372
## 148   1990   MIN         Minnesota Twins      14602000
## 149   1990   ATL           Atlanta Braves      14555501
## 150   1990   CLE        Cleveland Indians      14487000
## 151   1990   CIN          Cincinnati Reds      14370000
## 152   1990   CHN             Chicago Cubs      13624000
## 153   1990   PHI     Philadelphia Phillies      13173667
## 154   1990   SEA          Seattle Mariners      12553667
## 155   1990   BAL         Baltimore Orioles       9680084
## 156   1990   CHA        Chicago White Sox       9491500
## 157   1991   OAK       Oakland Athletics      36999167
## 158   1991   BOS             Boston Red Sox      35167500
## 159   1991   CAL        California Angels      33060001
## 160   1991   LAN       Los Angeles Dodgers      32790664
## 161   1991   NYN             New York Mets      32590001
## 162   1991   SFN     San Francisco Giants      30967666
## 163   1991   NYA          New York Yankees      27344168
## 164   1991   KCA       Kansas City Royals      26319834
## 165   1991   CIN          Cincinnati Reds      26305333
## 166   1991   DET           Detroit Tigers      23838333
```

```
## 167    1991    PIT        Pittsburgh Pirates      23634667
## 168    1991    MIN         Minnesota Twins        23361833
## 169    1991    CHN           Chicago Cubs         23175667
## 170    1991    ML4         Milwaukee Brewers      23115500
## 171    1991    PHI      Philadelphia Phillies     22487332
## 172    1991    SDN         San Diego Padres       22150001
## 173    1991    SLN        St. Louis Cardinals     21860001
## 174    1991    TOR         Toronto Blue Jays      19902417
## 175    1991    ATL          Atlanta Braves        18403500
## 176    1991    TEX           Texas Rangers        18224500
## 177    1991    CLE        Cleveland Indians       17635000
## 178    1991    BAL        Baltimore Orioles       17519000
## 179    1991    CHA        Chicago White Sox       16919667
## 180    1991    SEA         Seattle Mariners       15691833
## 181    1991    HOU          Houston Astros        12852500
## 182    1991    MON          Montreal Expos        10732333
## 183    1992    TOR         Toronto Blue Jays      44788666
## 184    1992    LAN       Los Angeles Dodgers      44788166
## 185    1992    NYN           New York Mets        44602002
## 186    1992    BOS          Boston Red Sox        43610584
## 187    1992    OAK         Oakland Athletics      41035000
## 188    1992    NYA          New York Yankees      37543334
## 189    1992    CIN          Cincinnati Reds       35931499
## 190    1992    CAL         California Angels      34749334
## 191    1992    ATL          Atlanta Braves        34625333
## 192    1992    PIT        Pittsburgh Pirates      33944167
## 193    1992    KCA         Kansas City Royals     33893834
## 194    1992    SFN       San Francisco Giants     33163168
## 195    1992    ML4         Milwaukee Brewers      31013667
## 196    1992    CHA        Chicago White Sox       30160833
## 197    1992    TEX           Texas Rangers        30128167
## 198    1992    CHN           Chicago Cubs         29829686
## 199    1992    MIN         Minnesota Twins        28027834
## 200    1992    SLN        St. Louis Cardinals     27583836
## 201    1992    DET          Detroit Tigers        27322834
## 202    1992    SDN         San Diego Padres       26854167
## 203    1992    PHI      Philadelphia Phillies     24383834
## 204    1992    BAL        Baltimore Orioles       23780667
## 205    1992    SEA         Seattle Mariners       23179833
## 206    1992    MON          Montreal Expos        15822334
## 207    1992    HOU          Houston Astros        15407500
## 208    1992    CLE        Cleveland Indians        9373044
## 209    1993    TOR         Toronto Blue Jays      47279166
## 210    1993    CIN          Cincinnati Reds       44879666
## 211    1993    NYA          New York Yankees      42624900
## 212    1993    ATL          Atlanta Braves        41641417
## 213    1993    KCA         Kansas City Royals     41346167
## 214    1993    CHA        Chicago White Sox       39696166
## 215    1993    CHN           Chicago Cubs         39386666
## 216    1993    LAN       Los Angeles Dodgers      39331999
## 217    1993    NYN           New York Mets        39043667
## 218    1993    DET          Detroit Tigers        38150165
## 219    1993    OAK         Oakland Athletics      37812333
## 220    1993    BOS          Boston Red Sox        37120583
## 221    1993    TEX           Texas Rangers        36376959
## 222    1993    SFN       San Francisco Giants     35050000
```

```
## 223   1993   SEA        Seattle Mariners       32696333
## 224   1993   HOU         Houston Astros        30210500
## 225   1993   BAL       Baltimore Orioles       29096500
## 226   1993   CAL       California Angels       28588334
## 227   1993   PHI    Philadelphia Phillies      28538334
## 228   1993   MIN        Minnesota Twins        28217933
## 229   1993   SDN       San Diego Padres        25511333
## 230   1993   PIT      Pittsburgh Pirates       24822467
## 231   1993   ML4       Milwaukee Brewers       23806834
## 232   1993   SLN      St. Louis Cardinals      23367334
## 233   1993   FLO        Florida Marlins        19330545
## 234   1993   MON         Montreal Expos        18899333
## 235   1993   CLE       Cleveland Indians       18561000
## 236   1993   COL       Colorado Rockies        10353500
## 237   1994   ATL         Atlanta Braves        49383513
## 238   1994   NYA        New York Yankees       45731334
## 239   1994   TOR        Toronto Blue Jays      43433668
## 240   1994   SFN    San Francisco Giants       42638666
## 241   1994   DET         Detroit Tigers        41446501
## 242   1994   CIN        Cincinnati Reds        40961833
## 243   1994   KCA       Kansas City Royals      40541334
## 244   1994   CHA       Chicago White Sox       39183836
## 245   1994   BAL       Baltimore Orioles       38849769
## 246   1994   LAN      Los Angeles Dodgers      38000001
## 247   1994   BOS        Boston Red Sox         37859084
## 248   1994   CHN          Chicago Cubs         36287333
## 249   1994   OAK       Oakland Athletics       34172500
## 250   1994   HOU         Houston Astros        33126000
## 251   1994   TEX         Texas Rangers         32973597
## 252   1994   PHI    Philadelphia Phillies      31599000
## 253   1994   NYN          New York Mets        30956583
## 254   1994   CLE       Cleveland Indians       30490500
## 255   1994   SLN      St. Louis Cardinals      29275601
## 256   1994   SEA        Seattle Mariners       29228500
## 257   1994   MIN        Minnesota Twins        28438500
## 258   1994   CAL       California Angels       25156218
## 259   1994   ML4       Milwaukee Brewers       24350500
## 260   1994   PIT      Pittsburgh Pirates       24217250
## 261   1994   COL       Colorado Rockies        23887333
## 262   1994   FLO        Florida Marlins        21633000
## 263   1994   MON         Montreal Expos        19098000
## 264   1994   SDN       San Diego Padres        14916333
## 265   1995   TOR        Toronto Blue Jays      50590000
## 266   1995   NYA        New York Yankees       48874851
## 267   1995   ATL         Atlanta Braves        47235445
## 268   1995   CHA       Chicago White Sox       46961282
## 269   1995   BAL       Baltimore Orioles       43942521
## 270   1995   CIN        Cincinnati Reds        43144670
## 271   1995   LAN      Los Angeles Dodgers      39273201
## 272   1995   CLE       Cleveland Indians       37937835
## 273   1995   OAK       Oakland Athletics       37739225
## 274   1995   SLN      St. Louis Cardinals      37101000
## 275   1995   DET         Detroit Tigers        37044168
## 276   1995   SEA        Seattle Mariners       36481311
## 277   1995   SFN    San Francisco Giants       36462777
## 278   1995   TEX         Texas Rangers         34581451
```

```
## 279  1995  HOU      Houston Astros        34169834
## 280  1995  COL      Colorado Rockies      34154717
## 281  1995  BOS      Boston Red Sox        32455518
## 282  1995  CAL      California Angels      31223171
## 283  1995  PHI  Philadelphia Phillies     30555945
## 284  1995  KCA      Kansas City Royals    29532834
## 285  1995  CHN          Chicago Cubs       29505834
## 286  1995  NYN         New York Mets       27674992
## 287  1995  SDN      San Diego Padres      26382334
## 288  1995  MIN        Minnesota Twins      25410500
## 289  1995  FLO        Florida Marlins      24515781
## 290  1995  PIT     Pittsburgh Pirates     18355345
## 291  1995  ML4      Milwaukee Brewers     17798825
## 292  1995  MON         Montreal Expos      12364000
## 293  1996  BAL      Baltimore Orioles     54490315
## 294  1996  NYA         New York Yankees    54191792
## 295  1996  ATL         Atlanta Braves      49698500
## 296  1996  CLE      Cleveland Indians     48107360
## 297  1996  CHA      Chicago White Sox     45139500
## 298  1996  CIN        Cincinnati Reds      42526334
## 299  1996  BOS        Boston Red Sox       42393500
## 300  1996  SEA        Seattle Mariners     41328501
## 301  1996  SLN      St. Louis Cardinals   40269667
## 302  1996  COL      Colorado Rockies      40179823
## 303  1996  TEX           Texas Rangers      39041528
## 304  1996  SFN  San Francisco Giants     37144725
## 305  1996  LAN     Los Angeles Dodgers    35355000
## 306  1996  PHI  Philadelphia Phillies     34314500
## 307  1996  CHN          Chicago Cubs       33081000
## 308  1996  FLO        Florida Marlins      31022500
## 309  1996  TOR       Toronto Blue Jays     29555083
## 310  1996  CAL      California Angels      28738000
## 311  1996  HOU          Houston Astros      28487000
## 312  1996  SDN      San Diego Padres      28348172
## 313  1996  NYN         New York Mets       24479500
## 314  1996  DET         Detroit Tigers      23438000
## 315  1996  MIN        Minnesota Twins      23117000
## 316  1996  PIT     Pittsburgh Pirates     23017500
## 317  1996  ML4      Milwaukee Brewers     21730000
## 318  1996  OAK       Oakland Athletics     21243000
## 319  1996  KCA      Kansas City Royals    20281250
## 320  1996  MON         Montreal Expos      16264500
## 321  1997  NYA         New York Yankees    62241545
## 322  1997  BAL      Baltimore Orioles     58516400
## 323  1997  CHA      Chicago White Sox     57740000
## 324  1997  CLE      Cleveland Indians     56802460
## 325  1997  TEX           Texas Rangers      53448838
## 326  1997  ATL         Atlanta Braves      52278500
## 327  1997  CIN        Cincinnati Reds      49768000
## 328  1997  FLO        Florida Marlins      48692500
## 329  1997  TOR       Toronto Blue Jays     47079833
## 330  1997  SLN      St. Louis Cardinals   45456667
## 331  1997  LAN     Los Angeles Dodgers    45380304
## 332  1997  COL      Colorado Rockies      43559667
## 333  1997  BOS        Boston Red Sox       43558750
## 334  1997  CHN          Chicago Cubs       42155333
```

```
## 335   1997   SEA        Seattle Mariners      41540661
## 336   1997   NYN         New York Mets        39800400
## 337   1997   SDN        San Diego Padres      37363672
## 338   1997   PHI     Philadelphia Phillies    36656500
## 339   1997   SFN     San Francisco Giants     35592378
## 340   1997   HOU         Houston Astros       34777500
## 341   1997   KCA       Kansas City Royals     34655000
## 342   1997   MIN         Minnesota Twins      34072500
## 343   1997   ANA          Anaheim Angels      31135472
## 344   1997   OAK        Oakland Athletics     24018500
## 345   1997   ML4        Milwaukee Brewers     23655338
## 346   1997   MON         Montreal Expos       19295500
## 347   1997   DET          Detroit Tigers      17272000
## 348   1997   PIT       Pittsburgh Pirates     10771667
## 349   1998   BAL       Baltimore Orioles      72355634
## 350   1998   NYA        New York Yankees      66806867
## 351   1998   ATL          Atlanta Braves      61186000
## 352   1998   CLE        Cleveland Indians     60800166
## 353   1998   BOS          Boston Red Sox      56757000
## 354   1998   TEX           Texas Rangers      56572095
## 355   1998   SLN      St. Louis Cardinals     54672521
## 356   1998   SEA        Seattle Mariners      54087036
## 357   1998   NYN         New York Mets        52077999
## 358   1998   TOR        Toronto Blue Jays     51376000
## 359   1998   CHN           Chicago Cubs       50838000
## 360   1998   COL        Colorado Rockies      50484648
## 361   1998   LAN      Los Angeles Dodgers     48820000
## 362   1998   SDN        San Diego Padres      46861500
## 363   1998   SFN     San Francisco Giants     42565834
## 364   1998   HOU         Houston Astros       42374000
## 365   1998   FLO         Florida Marlins      41322667
## 366   1998   ANA          Anaheim Angels      41281000
## 367   1998   CHA       Chicago White Sox      38335000
## 368   1998   KCA       Kansas City Royals     36862500
## 369   1998   PHI     Philadelphia Phillies    36297500
## 370   1998   MIL        Milwaukee Brewers     33914904
## 371   1998   ARI     Arizona Diamondbacks     32347000
## 372   1998   MIN         Minnesota Twins      27927500
## 373   1998   TBA      Tampa Bay Devil Rays     27280000
## 374   1998   DET          Detroit Tigers      24065000
## 375   1998   CIN          Cincinnati Reds     23005000
## 376   1998   OAK        Oakland Athletics     21303000
## 377   1998   PIT       Pittsburgh Pirates     15065000
## 378   1998   MON         Montreal Expos       10641500
## 379   1999   NYA        New York Yankees      86734359
## 380   1999   LAN      Los Angeles Dodgers     80862453
## 381   1999   BAL       Baltimore Orioles      80605863
## 382   1999   TEX           Texas Rangers      76709931
## 383   1999   ATL          Atlanta Braves      73140000
## 384   1999   CLE        Cleveland Indians     72978462
## 385   1999   ARI     Arizona Diamondbacks     68703999
## 386   1999   NYN         New York Mets        65092092
## 387   1999   BOS          Boston Red Sox      63497500
## 388   1999   CHN           Chicago Cubs       62343000
## 389   1999   COL        Colorado Rockies      61935837
## 390   1999   ANA          Anaheim Angels      55388166
```

```
## 391   1999   HOU        Houston Astros     54914000
## 392   1999   SEA       Seattle Mariners    54125003
## 393   1999   SLN    St. Louis Cardinals    49778195
## 394   1999   SDN       San Diego Padres    49768179
## 395   1999   SFN    San Francisco Giants   46595057
## 396   1999   TOR       Toronto Blue Jays   45444333
## 397   1999   MIL       Milwaukee Brewers   43377395
## 398   1999   TBA    Tampa Bay Devil Rays   38870000
## 399   1999   DET          Detroit Tigers   36489666
## 400   1999   CIN         Cincinnati Reds   33962761
## 401   1999   PHI    Philadelphia Phillies  31692500
## 402   1999   KCA      Kansas City Royals   26225000
## 403   1999   CHA       Chicago White Sox   25620000
## 404   1999   PIT      Pittsburgh Pirates   24697666
## 405   1999   OAK       Oakland Athletics   24431833
## 406   1999   MIN         Minnesota Twins   21257500
## 407   1999   FLO          Florida Marlins  21085000
## 408   1999   MON           Montreal Expos  17903000
## 409   2000   NYA        New York Yankees   92338260
## 410   2000   LAN     Los Angeles Dodgers   87924286
## 411   2000   ATL          Atlanta Braves   84537836
## 412   2000   BAL       Baltimore Orioles   81447435
## 413   2000   ARI    Arizona Diamondbacks   81027833
## 414   2000   NYN           New York Mets   79509776
## 415   2000   BOS          Boston Red Sox   77940333
## 416   2000   CLE        Cleveland Indians  75880771
## 417   2000   TEX           Texas Rangers   70795921
## 418   2000   TBA    Tampa Bay Devil Rays   62765129
## 419   2000   SLN    St. Louis Cardinals    61453863
## 420   2000   COL         Colorado Rockies  61111190
## 421   2000   CHN            Chicago Cubs   60539333
## 422   2000   SEA       Seattle Mariners    58915000
## 423   2000   DET          Detroit Tigers   58265167
## 424   2000   SDN       San Diego Padres    54821000
## 425   2000   SFN    San Francisco Giants   53737826
## 426   2000   ANA          Anaheim Angels   51464167
## 427   2000   HOU          Houston Astros   51289111
## 428   2000   PHI    Philadelphia Phillies  47308000
## 429   2000   CIN         Cincinnati Reds   46867200
## 430   2000   TOR       Toronto Blue Jays   44838332
## 431   2000   MIL       Milwaukee Brewers   36505333
## 432   2000   MON           Montreal Expos  32994333
## 433   2000   OAK       Oakland Athletics   31971333
## 434   2000   CHA       Chicago White Sox   31133500
## 435   2000   PIT      Pittsburgh Pirates   28928334
## 436   2000   KCA      Kansas City Royals   23433000
## 437   2000   FLO          Florida Marlins  19872000
## 438   2000   MIN         Minnesota Twins   16519500
## 439   2001   NYA        New York Yankees  112287143
## 440   2001   BOS          Boston Red Sox  110035833
## 441   2001   LAN     Los Angeles Dodgers  109105953
## 442   2001   NYN           New York Mets   93174428
## 443   2001   CLE        Cleveland Indians  93152001
## 444   2001   ATL          Atlanta Braves   91936166
## 445   2001   TEX           Texas Rangers   88633500
## 446   2001   ARI    Arizona Diamondbacks   85082999
```

```
## 447   2001   SLN      St. Louis Cardinals    78538333
## 448   2001   TOR       Toronto Blue Jays     76895999
## 449   2001   SEA        Seattle Mariners     74720834
## 450   2001   COL       Colorado Rockies      71541334
## 451   2001   BAL       Baltimore Orioles     67599540
## 452   2001   CHA       Chicago White Sox     65653667
## 453   2001   CHN           Chicago Cubs      64715833
## 454   2001   SFN     San Francisco Giants    63280167
## 455   2001   HOU          Houston Astros     60612667
## 456   2001   PIT      Pittsburgh Pirates     57760833
## 457   2001   TBA     Tampa Bay Devil Rays    56980000
## 458   2001   DET          Detroit Tigers     53416167
## 459   2001   CIN         Cincinnati Reds     48986000
## 460   2001   ANA          Anaheim Angels     47535167
## 461   2001   MIL        Milwaukee Brewers    43886833
## 462   2001   PHI    Philadelphia Phillies    41663833
## 463   2001   SDN        San Diego Padres     39182833
## 464   2001   FLO          Florida Marlins    35762500
## 465   2001   KCA       Kansas City Royals    35422500
## 466   2001   MON           Montreal Expos    35159500
## 467   2001   OAK        Oakland Athletics    33810750
## 468   2001   MIN          Minnesota Twins    24130000
## 469   2002   NYA         New York Yankees    125928583
## 470   2002   BOS           Boston Red Sox    108366060
## 471   2002   TEX            Texas Rangers    105526122
## 472   2002   ARI    Arizona Diamondbacks     102819999
## 473   2002   LAN      Los Angeles Dodgers    94850953
## 474   2002   NYN            New York Mets    94633593
## 475   2002   ATL           Atlanta Braves    92870367
## 476   2002   SEA         Seattle Mariners    80282668
## 477   2002   CLE        Cleveland Indians    78909449
## 478   2002   SFN     San Francisco Giants    78299835
## 479   2002   TOR        Toronto Blue Jays    76864333
## 480   2002   CHN            Chicago Cubs     75690833
## 481   2002   SLN      St. Louis Cardinals    74660875
## 482   2002   HOU           Houston Astros    63448417
## 483   2002   ANA           Anaheim Angels    61721667
## 484   2002   BAL        Baltimore Orioles    60493487
## 485   2002   PHI    Philadelphia Phillies    57954999
## 486   2002   CHA        Chicago White Sox    57052833
## 487   2002   COL         Colorado Rockies    56851043
## 488   2002   DET           Detroit Tigers    55048000
## 489   2002   MIL        Milwaukee Brewers    50287833
## 490   2002   KCA       Kansas City Royals    47257000
## 491   2002   CIN          Cincinnati Reds    45050390
## 492   2002   PIT       Pittsburgh Pirates    42323599
## 493   2002   FLO          Florida Marlins    41979917
## 494   2002   SDN         San Diego Padres    41425000
## 495   2002   MIN          Minnesota Twins    40425000
## 496   2002   OAK        Oakland Athletics    40004167
## 497   2002   MON           Montreal Expos    38670500
## 498   2002   TBA     Tampa Bay Devil Rays    34380000
## 499   2003   NYA         New York Yankees    152749814
## 500   2003   NYN            New York Mets    116876429
## 501   2003   ATL           Atlanta Braves    106243667
## 502   2003   LAN      Los Angeles Dodgers    105572620
```

```
## 503    2003    TEX        Texas Rangers    103491667
## 504    2003    BOS       Boston Red Sox     99946500
## 505    2003    SEA      Seattle Mariners     86959167
## 506    2003    SLN    St. Louis Cardinals    83786666
## 507    2003    SFN   San Francisco Giants    82852167
## 508    2003    ARI   Arizona Diamondbacks    80657000
## 509    2003    CHN          Chicago Cubs     79868333
## 510    2003    ANA        Anaheim Angels     79031667
## 511    2003    BAL     Baltimore Orioles     73877500
## 512    2003    HOU        Houston Astros     71040000
## 513    2003    PHI   Philadelphia Phillies   70780000
## 514    2003    COL      Colorado Rockies     67179667
## 515    2003    CIN        Cincinnati Reds    59355667
## 516    2003    MIN        Minnesota Twins    55505000
## 517    2003    PIT     Pittsburgh Pirates    54812429
## 518    2003    MON         Montreal Expos    51948500
## 519    2003    TOR      Toronto Blue Jays    51269000
## 520    2003    CHA      Chicago White Sox    51010000
## 521    2003    OAK      Oakland Athletics    50260834
## 522    2003    FLO        Florida Marlins    49450000
## 523    2003    DET         Detroit Tigers    49168000
## 524    2003    CLE      Cleveland Indians    48584834
## 525    2003    SDN      San Diego Padres     45210000
## 526    2003    MIL      Milwaukee Brewers    40627000
## 527    2003    KCA     Kansas City Royals    40518000
## 528    2003    TBA    Tampa Bay Devil Rays   19630000
## 529    2004    NYA       New York Yankees   184193950
## 530    2004    BOS       Boston Red Sox     127298500
## 531    2004    ANA        Anaheim Angels    100534667
## 532    2004    NYN          New York Mets    96660970
## 533    2004    PHI   Philadelphia Phillies   92919167
## 534    2004    LAN     Los Angeles Dodgers   92902001
## 535    2004    CHN          Chicago Cubs     90560000
## 536    2004    ATL         Atlanta Braves    90182500
## 537    2004    SLN    St. Louis Cardinals    83228333
## 538    2004    SFN   San Francisco Giants    82019166
## 539    2004    SEA      Seattle Mariners     81515834
## 540    2004    HOU        Houston Astros     75397000
## 541    2004    ARI   Arizona Diamondbacks    69780750
## 542    2004    COL      Colorado Rockies     65445167
## 543    2004    CHA      Chicago White Sox    65212500
## 544    2004    OAK      Oakland Athletics    59425667
## 545    2004    SDN      San Diego Padres     55384833
## 546    2004    TEX         Texas Rangers     55050417
## 547    2004    MIN        Minnesota Twins    53585000
## 548    2004    BAL     Baltimore Orioles     51623333
## 549    2004    TOR      Toronto Blue Jays    50017000
## 550    2004    KCA     Kansas City Royals    47609000
## 551    2004    DET         Detroit Tigers    46832000
## 552    2004    CIN        Cincinnati Reds    46615250
## 553    2004    FLO        Florida Marlins    42143042
## 554    2004    MON         Montreal Expos    40897500
## 555    2004    CLE      Cleveland Indians    34319300
## 556    2004    PIT     Pittsburgh Pirates    32227929
## 557    2004    TBA    Tampa Bay Devil Rays   29556667
## 558    2004    MIL      Milwaukee Brewers    27528500
```

```
## 559   2005   NYA           New York Yankees   208306817
## 560   2005   BOS            Boston Red Sox     123505125
## 561   2005   NYN            New York Mets      101305821
## 562   2005   PHI       Philadelphia Phillies    95522000
## 563   2005   LAA  Los Angeles Angels of Anaheim  94867822
## 564   2005   SLN         St. Louis Cardinals     92106833
## 565   2005   SFN         San Francisco Giants     90199500
## 566   2005   SEA           Seattle Mariners       87754334
## 567   2005   CHN               Chicago Cubs       87032933
## 568   2005   ATL              Atlanta Braves       86457302
## 569   2005   LAN          Los Angeles Dodgers     83039000
## 570   2005   HOU              Houston Astros       76779000
## 571   2005   CHA           Chicago White Sox       75178000
## 572   2005   BAL           Baltimore Orioles       73914333
## 573   2005   DET              Detroit Tigers       69092000
## 574   2005   SDN            San Diego Padres       63290833
## 575   2005   ARI        Arizona Diamondbacks       62329166
## 576   2005   CIN             Cincinnati Reds       61892583
## 577   2005   FLO             Florida Marlins       60408834
## 578   2005   MIN             Minnesota Twins       56186000
## 579   2005   TEX               Texas Rangers       55849000
## 580   2005   OAK           Oakland Athletics       55425762
## 581   2005   WAS        Washington Nationals       48581500
## 582   2005   COL            Colorado Rockies       47839000
## 583   2005   TOR            Toronto Blue Jays       45719500
## 584   2005   CLE           Cleveland Indians       41502500
## 585   2005   MIL            Milwaukee Brewers       39934833
## 586   2005   PIT          Pittsburgh Pirates       38133000
## 587   2005   KCA           Kansas City Royals       36881000
## 588   2005   TBA        Tampa Bay Devil Rays       29679067
## 589   2006   NYA            New York Yankees      194663079
## 590   2006   BOS             Boston Red Sox      120099824
## 591   2006   LAA  Los Angeles Angels of Anaheim  103472000
## 592   2006   CHA           Chicago White Sox      102750667
## 593   2006   NYN            New York Mets      101084963
## 594   2006   LAN          Los Angeles Dodgers      98447187
## 595   2006   CHN               Chicago Cubs       94424499
## 596   2006   ATL              Atlanta Braves       90156876
## 597   2006   SFN         San Francisco Giants       90056419
## 598   2006   SLN         St. Louis Cardinals       88891371
## 599   2006   HOU              Houston Astros       88694435
## 600   2006   PHI       Philadelphia Phillies       88273333
## 601   2006   SEA           Seattle Mariners       87959833
## 602   2006   DET              Detroit Tigers       82612866
## 603   2006   BAL           Baltimore Orioles       72585582
## 604   2006   TOR            Toronto Blue Jays       71365000
## 605   2006   SDN            San Diego Padres       69896141
## 606   2006   TEX               Texas Rangers       68228662
## 607   2006   MIN             Minnesota Twins       63396006
## 608   2006   WAS        Washington Nationals       63143000
## 609   2006   OAK           Oakland Athletics       62243079
## 610   2006   CIN             Cincinnati Reds       60909519
## 611   2006   ARI        Arizona Diamondbacks       59684226
## 612   2006   MIL            Milwaukee Brewers       57568333
## 613   2006   CLE           Cleveland Indians       56031500
## 614   2006   KCA           Kansas City Royals       47294000
```

```
## 615    2006    PIT        Pittsburgh Pirates    46717750
## 616    2006    COL         Colorado Rockies    41233000
## 617    2006    TBA     Tampa Bay Devil Rays    34917967
## 618    2006    FLO           Florida Marlins    14671500
## 619    2007    NYA         New York Yankees   189259045
## 620    2007    BOS            Boston Red Sox   143026214
## 621    2007    NYN             New York Mets   115231663
## 622    2007    LAA Los Angeles Angels of Anaheim   109251333
## 623    2007    CHA         Chicago White Sox   108671833
## 624    2007    LAN       Los Angeles Dodgers   108454524
## 625    2007    SEA          Seattle Mariners   106460833
## 626    2007    CHN              Chicago Cubs    99670332
## 627    2007    DET             Detroit Tigers    94800369
## 628    2007    BAL         Baltimore Orioles    93174808
## 629    2007    SLN        St. Louis Cardinals    90286823
## 630    2007    SFN       San Francisco Giants    90219056
## 631    2007    PHI       Philadelphia Phillies    89428213
## 632    2007    HOU             Houston Astros    87759000
## 633    2007    ATL             Atlanta Braves    87290833
## 634    2007    TOR         Toronto Blue Jays    81942800
## 635    2007    OAK         Oakland Athletics    79366940
## 636    2007    MIN           Minnesota Twins    71439500
## 637    2007    MIL          Milwaukee Brewers    70986500
## 638    2007    CIN            Cincinnati Reds    68524980
## 639    2007    TEX             Texas Rangers    68318675
## 640    2007    KCA        Kansas City Royals    67116500
## 641    2007    CLE          Cleveland Indians    61673267
## 642    2007    SDN          San Diego Padres    58110567
## 643    2007    COL          Colorado Rockies    54041000
## 644    2007    ARI      Arizona Diamondbacks    52067546
## 645    2007    PIT        Pittsburgh Pirates    38537833
## 646    2007    WAS       Washington Nationals    36947500
## 647    2007    FLO           Florida Marlins    30507000
## 648    2007    TBA     Tampa Bay Devil Rays    24123500
## 649    2008    NYA         New York Yankees   207896789
## 650    2008    NYN             New York Mets   137793376
## 651    2008    DET             Detroit Tigers   137685196
## 652    2008    BOS            Boston Red Sox   133390035
## 653    2008    CHA         Chicago White Sox   121189332
## 654    2008    LAA Los Angeles Angels of Anaheim   119216333
## 655    2008    LAN       Los Angeles Dodgers   118588536
## 656    2008    CHN              Chicago Cubs   118345833
## 657    2008    SEA          Seattle Mariners   117666482
## 658    2008    ATL             Atlanta Braves   102365683
## 659    2008    SLN        St. Louis Cardinals    99624449
## 660    2008    PHI       Philadelphia Phillies    97879880
## 661    2008    TOR         Toronto Blue Jays    97793900
## 662    2008    HOU             Houston Astros    88930414
## 663    2008    MIL          Milwaukee Brewers    80937499
## 664    2008    CLE          Cleveland Indians    78970066
## 665    2008    SFN       San Francisco Giants    76594500
## 666    2008    CIN            Cincinnati Reds    74117695
## 667    2008    SDN          San Diego Padres    73677616
## 668    2008    COL          Colorado Rockies    68655500
## 669    2008    TEX             Texas Rangers    67712326
## 670    2008    BAL         Baltimore Orioles    67196246
```

```
## 671    2008    ARI        Arizona Diamondbacks    66202712
## 672    2008    KCA         Kansas City Royals     58245500
## 673    2008    MIN           Minnesota Twins      56932766
## 674    2008    WAS        Washington Nationals    54961000
## 675    2008    PIT         Pittsburgh Pirates     48689783
## 676    2008    OAK          Oakland Athletics     47967126
## 677    2008    TBA           Tampa Bay Rays       43820597
## 678    2008    FLO           Florida Marlins      21811500
## 679    2009    NYA          New York Yankees      201449189
## 680    2009    NYN            New York Mets       149373987
## 681    2009    CHN             Chicago Cubs       134809000
## 682    2009    BOS           Boston Red Sox       121345999
## 683    2009    DET            Detroit Tigers      115085145
## 684    2009    LAA Los Angeles Angels of Anaheim  113709000
## 685    2009    PHI        Philadelphia Phillies   113004046
## 686    2009    HOU            Houston Astros      102996414
## 687    2009    LAN        Los Angeles Dodgers     100414592
## 688    2009    SEA           Seattle Mariners      98904166
## 689    2009    ATL            Atlanta Braves       96726166
## 690    2009    CHA         Chicago White Sox       96068500
## 691    2009    SLN         St. Louis Cardinals     88528409
## 692    2009    SFN        San Francisco Giants     83026450
## 693    2009    CLE          Cleveland Indians      81579166
## 694    2009    TOR          Toronto Blue Jays      80538300
## 695    2009    MIL          Milwaukee Brewers      80182502
## 696    2009    COL          Colorado Rockies       75201000
## 697    2009    CIN           Cincinnati Reds       73558500
## 698    2009    ARI        Arizona Diamondbacks     73115666
## 699    2009    KCA         Kansas City Royals      70519333
## 700    2009    TEX            Texas Rangers        68178798
## 701    2009    BAL          Baltimore Orioles      67101666
## 702    2009    MIN           Minnesota Twins       65299266
## 703    2009    TBA           Tampa Bay Rays        63313034
## 704    2009    OAK          Oakland Athletics      61910000
## 705    2009    WAS        Washington Nationals     59928000
## 706    2009    PIT         Pittsburgh Pirates      48693000
## 707    2009    SDN          San Diego Padres       43333700
## 708    2009    FLO           Florida Marlins       36834000
## 709    2010    NYA          New York Yankees      206333389
## 710    2010    BOS           Boston Red Sox       162447333
## 711    2010    CHN             Chicago Cubs       146609000
## 712    2010    PHI        Philadelphia Phillies   141928379
## 713    2010    NYN            New York Mets       134422942
## 714    2010    DET            Detroit Tigers      122864928
## 715    2010    CHA         Chicago White Sox      105530000
## 716    2010    LAA Los Angeles Angels of Anaheim  104963866
## 717    2010    SFN        San Francisco Giants     98641333
## 718    2010    MIN           Minnesota Twins       97559166
## 719    2010    LAN        Los Angeles Dodgers      95358016
## 720    2010    SLN         St. Louis Cardinals     93540751
## 721    2010    HOU            Houston Astros       92355500
## 722    2010    SEA           Seattle Mariners      86510000
## 723    2010    ATL            Atlanta Braves       84423666
## 724    2010    COL          Colorado Rockies       84227000
## 725    2010    BAL          Baltimore Orioles      81612500
## 726    2010    MIL          Milwaukee Brewers      81108278
```

```
## 727   2010   TBA         Tampa Bay Rays    71923471
## 728   2010   CIN         Cincinnati Reds   71761542
## 729   2010   KCA      Kansas City Royals   71405210
## 730   2010   TOR       Toronto Blue Jays   62234000
## 731   2010   WAS     Washington Nationals  61400000
## 732   2010   CLE        Cleveland Indians  61203966
## 733   2010   ARI      Arizona Diamondbacks 60718166
## 734   2010   FLO           Florida Marlins 57029719
## 735   2010   OAK         Oakland Athletics 55254900
## 736   2010   TEX            Texas Rangers  55250544
## 737   2010   SDN         San Diego Padres  37799300
## 738   2010   PIT       Pittsburgh Pirates  34943000
## 739   2011   NYA         New York Yankees 202275028
## 740   2011   PHI     Philadelphia Phillies 172976379
## 741   2011   BOS           Boston Red Sox 161762475
## 742   2011   LAA Los Angeles Angels of Anaheim 138543166
## 743   2011   CHA         Chicago White Sox 127789000
## 744   2011   CHN             Chicago Cubs 125047329
## 745   2011   NYN            New York Mets 118847309
## 746   2011   SFN        San Francisco Giants 118198333
## 747   2011   MIN           Minnesota Twins 112737000
## 748   2011   DET            Detroit Tigers 105700231
## 749   2011   SLN        St. Louis Cardinals 105433572
## 750   2011   LAN       Los Angeles Dodgers 104188999
## 751   2011   TEX            Texas Rangers  92299264
## 752   2011   COL          Colorado Rockies 88148071
## 753   2011   ATL            Atlanta Braves 87002692
## 754   2011   SEA          Seattle Mariners 86110600
## 755   2011   MIL          Milwaukee Brewers 85497333
## 756   2011   BAL          Baltimore Orioles 85304038
## 757   2011   CIN          Cincinnati Reds  75947134
## 758   2011   HOU            Houston Astros  70694000
## 759   2011   OAK         Oakland Athletics 66536500
## 760   2011   WAS     Washington Nationals  63856928
## 761   2011   TOR       Toronto Blue Jays   62567800
## 762   2011   FLO           Florida Marlins 56944000
## 763   2011   ARI      Arizona Diamondbacks 53639833
## 764   2011   CLE        Cleveland Indians  48776566
## 765   2011   SDN         San Diego Padres  45869140
## 766   2011   PIT       Pittsburgh Pirates  45047000
## 767   2011   TBA         Tampa Bay Rays    41053571
## 768   2011   KCA      Kansas City Royals   35712000
## 769   2012   NYA         New York Yankees 196522289
## 770   2012   PHI     Philadelphia Phillies 174538938
## 771   2012   BOS           Boston Red Sox 173186617
## 772   2012   LAA Los Angeles Angels of Anaheim 154485166
## 773   2012   DET            Detroit Tigers 132300000
## 774   2012   TEX            Texas Rangers  120510974
## 775   2012   MIA             Miami Marlins 118078000
## 776   2012   SFN        San Francisco Giants 117620683
## 777   2012   SLN        St. Louis Cardinals 110300862
## 778   2012   MIL          Milwaukee Brewers 97653944
## 779   2012   CHA         Chicago White Sox 96919500
## 780   2012   LAN       Los Angeles Dodgers 95143575
## 781   2012   MIN           Minnesota Twins 94085000
## 782   2012   NYN            New York Mets 93353983
```

```
## 783   2012   CHN              Chicago Cubs     88197033
## 784   2012   ATL            Atlanta Braves     82829942
## 785   2012   CIN            Cincinnati Reds     82203616
## 786   2012   SEA           Seattle Mariners     81978100
## 787   2012   WAS       Washington Nationals     80855143
## 788   2012   CLE          Cleveland Indians     78430300
## 789   2012   COL           Colorado Rockies     78069571
## 790   2012   BAL          Baltimore Orioles     77353999
## 791   2012   TOR          Toronto Blue Jays     75009200
## 792   2012   ARI       Arizona Diamondbacks     73804833
## 793   2012   TBA            Tampa Bay Rays     64173500
## 794   2012   PIT         Pittsburgh Pirates     62951999
## 795   2012   KCA         Kansas City Royals     60916225
## 796   2012   HOU             Houston Astros     60651000
## 797   2012   OAK          Oakland Athletics     55372500
## 798   2012   SDN           San Diego Padres     55244700
## 799   2013   NYA           New York Yankees    231978886
## 800   2013   LAN        Los Angeles Dodgers    223362196
## 801   2013   PHI       Philadelphia Phillies    169863189
## 802   2013   BOS            Boston Red Sox    151530000
## 803   2013   DET             Detroit Tigers    145989500
## 804   2013   SFN        San Francisco Giants    140180334
## 805   2013   TOR          Toronto Blue Jays    126288100
## 806   2013   LAA Los Angeles Angels of Anaheim    124174750
## 807   2013   CHA          Chicago White Sox    120065277
## 808   2013   WAS       Washington Nationals    113703270
## 809   2013   TEX             Texas Rangers    112522600
## 810   2013   CIN            Cincinnati Reds    106404462
## 811   2013   CHN              Chicago Cubs    100567726
## 812   2013   SLN         St. Louis Cardinals     92260110
## 813   2013   ARI       Arizona Diamondbacks     90132000
## 814   2013   ATL            Atlanta Braves     87871525
## 815   2013   BAL          Baltimore Orioles     84393333
## 816   2013   KCA         Kansas City Royals     80091725
## 817   2013   PIT         Pittsburgh Pirates     77062000
## 818   2013   MIL           Milwaukee Brewers     76947033
## 819   2013   CLE          Cleveland Indians     75771800
## 820   2013   MIN             Minnesota Twins     75337500
## 821   2013   COL           Colorado Rockies     74409071
## 822   2013   SEA           Seattle Mariners     74005043
## 823   2013   SDN           San Diego Padres     65585500
## 824   2013   OAK          Oakland Athletics     60132500
## 825   2013   TBA            Tampa Bay Rays     52955272
## 826   2013   NYN             New York Mets     49448346
## 827   2013   MIA             Miami Marlins     33601900
## 828   2013   HOU             Houston Astros     17890700
## 829   2014   LAN        Los Angeles Dodgers    217014600
## 830   2014   NYA           New York Yankees    197543907
## 831   2014   PHI       Philadelphia Phillies    180944967
## 832   2014   SFN        San Francisco Giants    163510167
## 833   2014   DET             Detroit Tigers    152855500
## 834   2014   BOS            Boston Red Sox    139019929
## 835   2014   WAS       Washington Nationals    131983680
## 836   2014   LAA Los Angeles Angels of Anaheim    121988250
## 837   2014   SLN         St. Louis Cardinals    120693000
## 838   2014   TEX             Texas Rangers    112255059
```

```
## 839   2014   TOR   Toronto Blue Jays               109920100
## 840   2014   CIN   Cincinnati Reds                 108217500
## 841   2014   BAL   Baltimore Orioles               103416000
## 842   2014   MIL   Milwaukee Brewers               101217000
## 843   2014   ARI   Arizona Diamondbacks             97861500
## 844   2014   ATL   Atlanta Braves                   97609000
## 845   2014   COL   Colorado Rockies                 95403500
## 846   2014   SEA   Seattle Mariners                 92531100
## 847   2014   NYN   New York Mets                    85556990
## 848   2014   MIN   Minnesota Twins                  83762500
## 849   2014   CLE   Cleveland Indians                82151899
## 850   2014   CHA   Chicago White Sox                81830500
## 851   2014   PIT   Pittsburgh Pirates               77178000
## 852   2014   SDN   San Diego Padres                 75685700
## 853   2014   KCA   Kansas City Royals               74594075
## 854   2014   TBA   Tampa Bay Rays                   72689100
## 855   2014   OAK   Oakland Athletics                72408400
## 856   2014   CHN   Chicago Cubs                     65522500
## 857   2014   MIA   Miami Marlins                    41836900
## 858   2014   HOU   Houston Astros                   35116300
## 859   2015   LAN   Los Angeles Dodgers             215792000
## 860   2015   NYA   New York Yankees                212751957
## 861   2015   BOS   Boston Red Sox                  181103400
## 862   2015   DET   Detroit Tigers                  172284750
## 863   2015   SFN   San Francisco Giants            164701500
## 864   2015   WAS   Washington Nationals            155587472
## 865   2015   TEX   Texas Rangers                   143742789
## 866   2015   SEA   Seattle Mariners                122208700
## 867   2015   LAA Los Angeles Angels of Anaheim     120005415
## 868   2015   SLN   St. Louis Cardinals             119241500
## 869   2015   SDN   San Diego Padres                118441300
## 870   2015   CHN   Chicago Cubs                    115879310
## 871   2015   BAL   Baltimore Orioles               115044833
## 872   2015   CIN   Cincinnati Reds                 113072286
## 873   2015   TOR   Toronto Blue Jays               112992400
## 874   2015   CHA   Chicago White Sox               112373700
## 875   2015   KCA   Kansas City Royals              112107025
## 876   2015   PHI   Philadelphia Phillies           111693000
## 877   2015   MIN   Minnesota Twins                 107755000
## 878   2015   MIL   Milwaukee Brewers               100850000
## 879   2015   NYN   New York Mets                    96766683
## 880   2015   COL   Colorado Rockies                 95688600
## 881   2015   PIT   Pittsburgh Pirates               88892499
## 882   2015   CLE   Cleveland Indians                87663766
## 883   2015   OAK   Oakland Athletics                79053501
## 884   2015   HOU   Houston Astros                   72256200
## 885   2015   ATL   Atlanta Braves                   71781250
## 886   2015   MIA   Miami Marlins                    68056500
## 887   2015   TBA   Tampa Bay Rays                   64521233
## 888   2015   ARI   Arizona Diamondbacks             61834000
## 889   2016   NYA   New York Yankees                222997792
## 890   2016   LAN   Los Angeles Dodgers             221288380
## 891   2016   DET   Detroit Tigers                  194876481
## 892   2016   BOS   Boston Red Sox                  188545761
## 893   2016   TEX   Texas Rangers                   176038723
## 894   2016   SFN   San Francisco Giants            172253778
```

```
## 895   2016   BAL              Baltimore Orioles   161863456
## 896   2016   CHN                  Chicago Cubs   154067668
## 897   2016   SLN             St. Louis Cardinals   143053500
## 898   2016   WAS             Washington Nationals   141652646
## 899   2016   TOR                Toronto Blue Jays   138701700
## 900   2016   LAA  Los Angeles Angels of Anaheim   137251333
## 901   2016   SEA                 Seattle Mariners   135683339
## 902   2016   NYN                  New York Mets   133889129
## 903   2016   KCA              Kansas City Royals   131487125
## 904   2016   CHA              Chicago White Sox   112998667
## 905   2016   COL               Colorado Rockies   112645071
## 906   2016   PIT             Pittsburgh Pirates   103778833
## 907   2016   MIN                 Minnesota Twins   102583200
## 908   2016   SDN               San Diego Padres   101424814
## 909   2016   HOU                  Houston Astros    94893700
## 910   2016   CIN                 Cincinnati Reds    88940059
## 911   2016   ARI           Arizona Diamondbacks    87439063
## 912   2016   OAK               Oakland Athletics    86806234
## 913   2016   MIA                  Miami Marlins    77314202
## 914   2016   CLE               Cleveland Indians    74311900
## 915   2016   MIL               Milwaukee Brewers    68775237
## 916   2016   ATL                  Atlanta Braves    68498291
## 917   2016   PHI           Philadelphia Phillies    58980000
## 918   2016   TBA                 Tampa Bay Rays    57097310
##       world_series_result
## 1                      No
## 2                      No
## 3                      No
## 4                      No
## 5                   Loser
## 6                      No
## 7                      No
## 8                      No
## 9                      No
## 10                     No
## 11                     No
## 12                     No
## 13                     No
## 14                     No
## 15                     No
## 16                     No
## 17                 Winner
## 18                     No
## 19                     No
## 20                     No
## 21                     No
## 22                     No
## 23                     No
## 24                     No
## 25                     No
## 26                     No
## 27                     No
## 28                     No
## 29                     No
## 30                 Winner
## 31                     No
```

```
## 32                     No
## 33                  Loser
## 34                     No
## 35                     No
## 36                     No
## 37                     No
## 38                     No
## 39                     No
## 40                     No
## 41                     No
## 42                     No
## 43                     No
## 44                     No
## 45                     No
## 46                     No
## 47                     No
## 48                     No
## 49                     No
## 50                     No
## 51                     No
## 52                     No
## 53                     No
## 54                     No
## 55                     No
## 56                     No
## 57                     No
## 58                     No
## 59                     No
## 60                     No
## 61                     No
## 62                     No
## 63                  Loser
## 64                     No
## 65                     No
## 66                     No
## 67                     No
## 68                     No
## 69                     No
## 70                     No
## 71                     No
## 72                     No
## 73                     No
## 74                     No
## 75                     No
## 76                 Winner
## 77                     No
## 78                     No
## 79                     No
## 80                 Winner
## 81                     No
## 82                     No
## 83                     No
## 84                     No
## 85                     No
## 86                     No
## 87                     No
```

```
## 88                     No
## 89                     No
## 90                     No
## 91                     No
## 92                     No
## 93                     No
## 94                     No
## 95                  Loser
## 96                     No
## 97                     No
## 98                     No
## 99                     No
## 100                    No
## 101                    No
## 102                    No
## 103                    No
## 104                    No
## 105                    No
## 106                    No
## 107                    No
## 108                    No
## 109                    No
## 110                    No
## 111                    No
## 112                Winner
## 113                    No
## 114                    No
## 115                    No
## 116                    No
## 117                 Loser
## 118                    No
## 119                    No
## 120                    No
## 121                    No
## 122                    No
## 123                    No
## 124                    No
## 125                    No
## 126                    No
## 127                    No
## 128                    No
## 129                    No
## 130                    No
## 131                    No
## 132                    No
## 133                    No
## 134                    No
## 135                    No
## 136                    No
## 137                    No
## 138                 Loser
## 139                    No
## 140                    No
## 141                    No
## 142                    No
## 143                    No
```

```
## 144                 No
## 145                 No
## 146                 No
## 147                 No
## 148                 No
## 149                 No
## 150                 No
## 151             Winner
## 152                 No
## 153                 No
## 154                 No
## 155                 No
## 156                 No
## 157                 No
## 158                 No
## 159                 No
## 160                 No
## 161                 No
## 162                 No
## 163                 No
## 164                 No
## 165                 No
## 166                 No
## 167                 No
## 168             Winner
## 169                 No
## 170                 No
## 171                 No
## 172                 No
## 173                 No
## 174                 No
## 175              Loser
## 176                 No
## 177                 No
## 178                 No
## 179                 No
## 180                 No
## 181                 No
## 182                 No
## 183             Winner
## 184                 No
## 185                 No
## 186                 No
## 187                 No
## 188                 No
## 189                 No
## 190                 No
## 191              Loser
## 192                 No
## 193                 No
## 194                 No
## 195                 No
## 196                 No
## 197                 No
## 198                 No
## 199                 No
```

```
## 200                   No
## 201                   No
## 202                   No
## 203                   No
## 204                   No
## 205                   No
## 206                   No
## 207                   No
## 208                   No
## 209               Winner
## 210                   No
## 211                   No
## 212                   No
## 213                   No
## 214                   No
## 215                   No
## 216                   No
## 217                   No
## 218                   No
## 219                   No
## 220                   No
## 221                   No
## 222                   No
## 223                   No
## 224                   No
## 225                   No
## 226                   No
## 227                Loser
## 228                   No
## 229                   No
## 230                   No
## 231                   No
## 232                   No
## 233                   No
## 234                   No
## 235                   No
## 236                   No
## 237                   No
## 238                   No
## 239                   No
## 240                   No
## 241                   No
## 242                   No
## 243                   No
## 244                   No
## 245                   No
## 246                   No
## 247                   No
## 248                   No
## 249                   No
## 250                   No
## 251                   No
## 252                   No
## 253                   No
## 254                   No
## 255                   No
```

```
## 256                    No
## 257                    No
## 258                    No
## 259                    No
## 260                    No
## 261                    No
## 262                    No
## 263                    No
## 264                    No
## 265                    No
## 266                    No
## 267                Winner
## 268                    No
## 269                    No
## 270                    No
## 271                    No
## 272                 Loser
## 273                    No
## 274                    No
## 275                    No
## 276                    No
## 277                    No
## 278                    No
## 279                    No
## 280                    No
## 281                    No
## 282                    No
## 283                    No
## 284                    No
## 285                    No
## 286                    No
## 287                    No
## 288                    No
## 289                    No
## 290                    No
## 291                    No
## 292                    No
## 293                    No
## 294                Winner
## 295                 Loser
## 296                    No
## 297                    No
## 298                    No
## 299                    No
## 300                    No
## 301                    No
## 302                    No
## 303                    No
## 304                    No
## 305                    No
## 306                    No
## 307                    No
## 308                    No
## 309                    No
## 310                    No
## 311                    No
```

```
## 312                          No
## 313                          No
## 314                          No
## 315                          No
## 316                          No
## 317                          No
## 318                          No
## 319                          No
## 320                          No
## 321                          No
## 322                          No
## 323                          No
## 324                        Loser
## 325                          No
## 326                          No
## 327                          No
## 328                       Winner
## 329                          No
## 330                          No
## 331                          No
## 332                          No
## 333                          No
## 334                          No
## 335                          No
## 336                          No
## 337                          No
## 338                          No
## 339                          No
## 340                          No
## 341                          No
## 342                          No
## 343                          No
## 344                          No
## 345                          No
## 346                          No
## 347                          No
## 348                          No
## 349                          No
## 350                       Winner
## 351                          No
## 352                          No
## 353                          No
## 354                          No
## 355                          No
## 356                          No
## 357                          No
## 358                          No
## 359                          No
## 360                          No
## 361                          No
## 362                        Loser
## 363                          No
## 364                          No
## 365                          No
## 366                          No
## 367                          No
```

```
## 368                  No
## 369                  No
## 370                  No
## 371                  No
## 372                  No
## 373                  No
## 374                  No
## 375                  No
## 376                  No
## 377                  No
## 378                  No
## 379              Winner
## 380                  No
## 381                  No
## 382                  No
## 383               Loser
## 384                  No
## 385                  No
## 386                  No
## 387                  No
## 388                  No
## 389                  No
## 390                  No
## 391                  No
## 392                  No
## 393                  No
## 394                  No
## 395                  No
## 396                  No
## 397                  No
## 398                  No
## 399                  No
## 400                  No
## 401                  No
## 402                  No
## 403                  No
## 404                  No
## 405                  No
## 406                  No
## 407                  No
## 408                  No
## 409              Winner
## 410                  No
## 411                  No
## 412                  No
## 413                  No
## 414               Loser
## 415                  No
## 416                  No
## 417                  No
## 418                  No
## 419                  No
## 420                  No
## 421                  No
## 422                  No
## 423                  No
```

```
## 424                  No
## 425                  No
## 426                  No
## 427                  No
## 428                  No
## 429                  No
## 430                  No
## 431                  No
## 432                  No
## 433                  No
## 434                  No
## 435                  No
## 436                  No
## 437                  No
## 438                  No
## 439               Loser
## 440                  No
## 441                  No
## 442                  No
## 443                  No
## 444                  No
## 445                  No
## 446              Winner
## 447                  No
## 448                  No
## 449                  No
## 450                  No
## 451                  No
## 452                  No
## 453                  No
## 454                  No
## 455                  No
## 456                  No
## 457                  No
## 458                  No
## 459                  No
## 460                  No
## 461                  No
## 462                  No
## 463                  No
## 464                  No
## 465                  No
## 466                  No
## 467                  No
## 468                  No
## 469                  No
## 470                  No
## 471                  No
## 472                  No
## 473                  No
## 474                  No
## 475                  No
## 476                  No
## 477                  No
## 478               Loser
## 479                  No
```
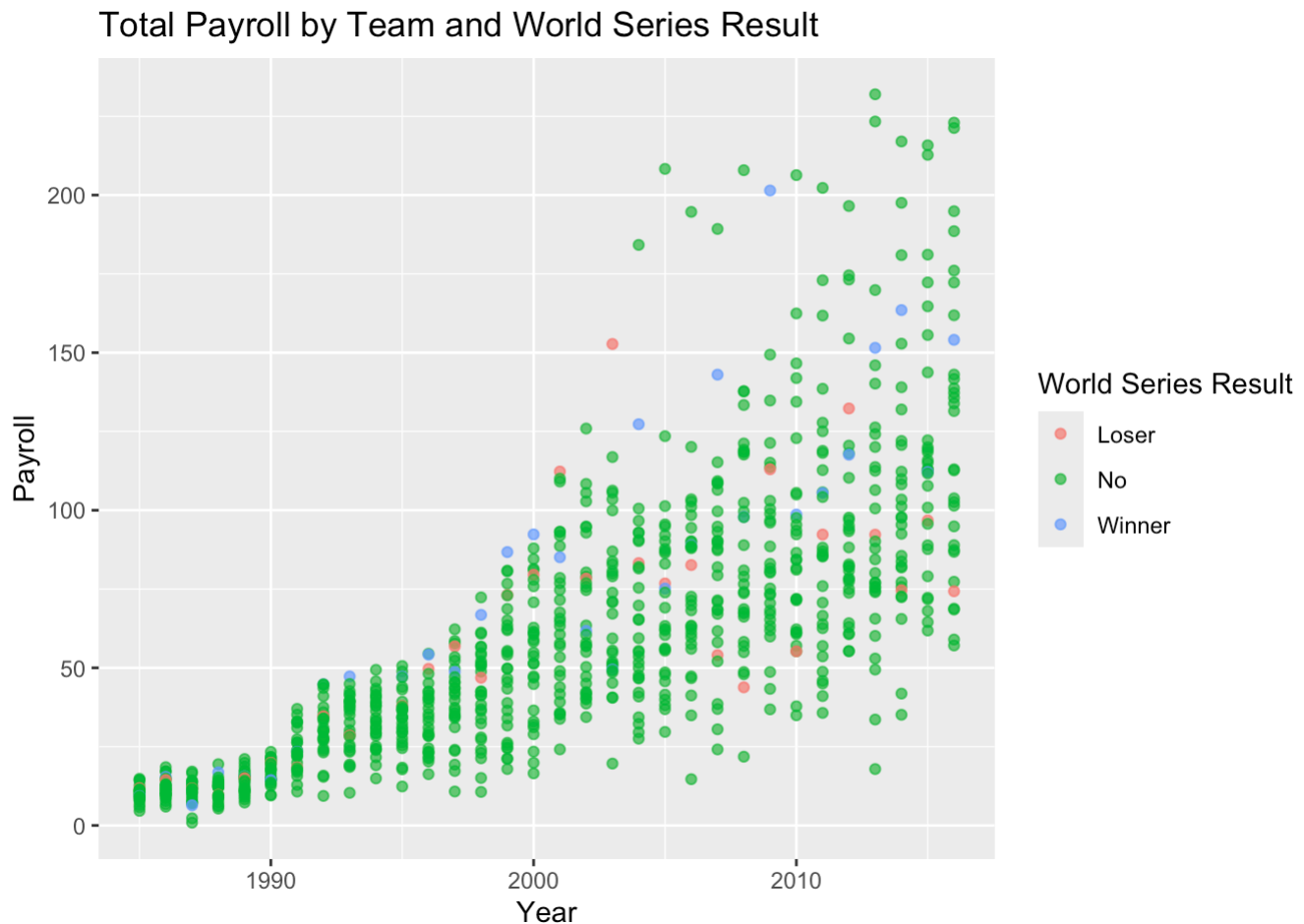
```
## 480                   No
## 481                   No
## 482                   No
## 483               Winner
## 484                   No
## 485                   No
## 486                   No
## 487                   No
## 488                   No
## 489                   No
## 490                   No
## 491                   No
## 492                   No
## 493                   No
## 494                   No
## 495                   No
## 496                   No
## 497                   No
## 498                   No
## 499                Loser
## 500                   No
## 501                   No
## 502                   No
## 503                   No
## 504                   No
## 505                   No
## 506                   No
## 507                   No
## 508                   No
## 509                   No
## 510                   No
## 511                   No
## 512                   No
## 513                   No
## 514                   No
## 515                   No
## 516                   No
## 517                   No
## 518                   No
## 519                   No
## 520                   No
## 521                   No
## 522               Winner
## 523                   No
## 524                   No
## 525                   No
## 526                   No
## 527                   No
## 528                   No
## 529                   No
## 530               Winner
## 531                   No
## 532                   No
## 533                   No
## 534                   No
## 535                   No
```

```
## 536                      No
## 537                   Loser
## 538                      No
## 539                      No
## 540                      No
## 541                      No
## 542                      No
## 543                      No
## 544                      No
## 545                      No
## 546                      No
## 547                      No
## 548                      No
## 549                      No
## 550                      No
## 551                      No
## 552                      No
## 553                      No
## 554                      No
## 555                      No
## 556                      No
## 557                      No
## 558                      No
## 559                      No
## 560                      No
## 561                      No
## 562                      No
## 563                      No
## 564                      No
## 565                      No
## 566                      No
## 567                      No
## 568                      No
## 569                      No
## 570                   Loser
## 571                  Winner
## 572                      No
## 573                      No
## 574                      No
## 575                      No
## 576                      No
## 577                      No
## 578                      No
## 579                      No
## 580                      No
## 581                      No
## 582                      No
## 583                      No
## 584                      No
## 585                      No
## 586                      No
## 587                      No
## 588                      No
## 589                      No
## 590                      No
## 591                      No
```

```
## 592                  No
## 593                  No
## 594                  No
## 595                  No
## 596                  No
## 597                  No
## 598              Winner
## 599                  No
## 600                  No
## 601                  No
## 602               Loser
## 603                  No
## 604                  No
## 605                  No
## 606                  No
## 607                  No
## 608                  No
## 609                  No
## 610                  No
## 611                  No
## 612                  No
## 613                  No
## 614                  No
## 615                  No
## 616                  No
## 617                  No
## 618                  No
## 619                  No
## 620              Winner
## 621                  No
## 622                  No
## 623                  No
## 624                  No
## 625                  No
## 626                  No
## 627                  No
## 628                  No
## 629                  No
## 630                  No
## 631                  No
## 632                  No
## 633                  No
## 634                  No
## 635                  No
## 636                  No
## 637                  No
## 638                  No
## 639                  No
## 640                  No
## 641                  No
## 642                  No
## 643               Loser
## 644                  No
## 645                  No
## 646                  No
## 647                  No
```

```
## 648             No
## 649             No
## 650             No
## 651             No
## 652             No
## 653             No
## 654             No
## 655             No
## 656             No
## 657             No
## 658             No
## 659             No
## 660         Winner
## 661             No
## 662             No
## 663             No
## 664             No
## 665             No
## 666             No
## 667             No
## 668             No
## 669             No
## 670             No
## 671             No
## 672             No
## 673             No
## 674             No
## 675             No
## 676             No
## 677          Loser
## 678             No
## 679         Winner
## 680             No
## 681             No
## 682             No
## 683             No
## 684             No
## 685          Loser
## 686             No
## 687             No
## 688             No
## 689             No
## 690             No
## 691             No
## 692             No
## 693             No
## 694             No
## 695             No
## 696             No
## 697             No
## 698             No
## 699             No
## 700             No
## 701             No
## 702             No
## 703             No
```

```
## 704                   No
## 705                   No
## 706                   No
## 707                   No
## 708                   No
## 709                   No
## 710                   No
## 711                   No
## 712                   No
## 713                   No
## 714                   No
## 715                   No
## 716                   No
## 717               Winner
## 718                   No
## 719                   No
## 720                   No
## 721                   No
## 722                   No
## 723                   No
## 724                   No
## 725                   No
## 726                   No
## 727                   No
## 728                   No
## 729                   No
## 730                   No
## 731                   No
## 732                   No
## 733                   No
## 734                   No
## 735                   No
## 736                Loser
## 737                   No
## 738                   No
## 739                   No
## 740                   No
## 741                   No
## 742                   No
## 743                   No
## 744                   No
## 745                   No
## 746                   No
## 747                   No
## 748                   No
## 749               Winner
## 750                   No
## 751                Loser
## 752                   No
## 753                   No
## 754                   No
## 755                   No
## 756                   No
## 757                   No
## 758                   No
## 759                   No
```

```
## 760              No
## 761              No
## 762              No
## 763              No
## 764              No
## 765              No
## 766              No
## 767              No
## 768              No
## 769              No
## 770              No
## 771              No
## 772              No
## 773           Loser
## 774              No
## 775              No
## 776          Winner
## 777              No
## 778              No
## 779              No
## 780              No
## 781              No
## 782              No
## 783              No
## 784              No
## 785              No
## 786              No
## 787              No
## 788              No
## 789              No
## 790              No
## 791              No
## 792              No
## 793              No
## 794              No
## 795              No
## 796              No
## 797              No
## 798              No
## 799              No
## 800              No
## 801              No
## 802          Winner
## 803              No
## 804              No
## 805              No
## 806              No
## 807              No
## 808              No
## 809              No
## 810              No
## 811              No
## 812           Loser
## 813              No
## 814              No
## 815              No
```

```
## 816              No
## 817              No
## 818              No
## 819              No
## 820              No
## 821              No
## 822              No
## 823              No
## 824              No
## 825              No
## 826              No
## 827              No
## 828              No
## 829              No
## 830              No
## 831              No
## 832          Winner
## 833              No
## 834              No
## 835              No
## 836              No
## 837              No
## 838              No
## 839              No
## 840              No
## 841              No
## 842              No
## 843              No
## 844              No
## 845              No
## 846              No
## 847              No
## 848              No
## 849              No
## 850              No
## 851              No
## 852              No
## 853           Loser
## 854              No
## 855              No
## 856              No
## 857              No
## 858              No
## 859              No
## 860              No
## 861              No
## 862              No
## 863              No
## 864              No
## 865              No
## 866              No
## 867              No
## 868              No
## 869              No
## 870              No
## 871              No
```

```
## 872                No
## 873                No
## 874                No
## 875            Winner
## 876                No
## 877                No
## 878                No
## 879             Loser
## 880                No
## 881                No
## 882                No
## 883                No
## 884                No
## 885                No
## 886                No
## 887                No
## 888                No
## 889                No
## 890                No
## 891                No
## 892                No
## 893                No
## 894                No
## 895                No
## 896            Winner
## 897                No
## 898                No
## 899                No
## 900                No
## 901                No
## 902                No
## 903                No
## 904                No
## 905                No
## 906                No
## 907                No
## 908                No
## 909                No
## 910                No
## 911                No
## 912                No
## 913                No
## 914             Loser
## 915                No
## 916                No
## 917                No
## 918                No
```

```
library(ggplot2)
ggplot(payroll_ws, aes(x = yearID, y = total_payroll / 1e6, color = world_series_resu
lt)) +
  geom_point(alpha = 0.7) +
  labs(title = "Total Payroll by Team and World Series Result",
       x = "Year",
       y = "Payroll",
       color = "World Series Result")
```


Total Payroll by Team and World Series Result

Interpretation: Winning the World Series sometimes happens with mid-range payrolls, showing that success depends on more than just money. Payroll inflation is visible, with 1980s teams mostly below $30 million and post-2010 teams often exceeding $50 million.

Explanation: I joined Salaries with Teams to get names and divisions, and with SeriesPost to identify winners and losers. A CASE block determined whether each team was a World Series Winner, Loser, or Not in the WS. Payroll was aggregated per team per year using SUM(s.salary). The plot was created using ggplot2 and colored by WS result.

Figure Out:Data ends at 2016 for payroll (Salaries table) — that's the latest year visible in the plot.

7. What are the 10 colleges/universities that have produced the most players in MLB since 2000? Give the college name, city and state and the number of players they have produced in this

time period.

```
top_colleges <- dbGetQuery(con, "
  SELECT
    sc.name_full AS college_name,
    sc.city,
    sc.state,
    COUNT(DISTINCT cp.playerID) AS num_players
  FROM CollegePlaying cp
  JOIN People p ON cp.playerID = p.playerID
  JOIN Schools sc ON cp.schoolID = sc.schoolID
  WHERE p.debut >= '2000-01-01'
  GROUP BY cp.schoolID
  ORDER BY num_players DESC
  LIMIT 10
")

print(top_colleges)
```

```
##                                college_name        city state num_players
## 1  California State University Long Beach  Long Beach    CA          29
## 2                     Stanford University   Palo Alto    CA          29
## 3                   Arizona State University      Tempe    AZ          25
## 4  California State University Fullerton    Fullerton    CA          25
## 5       University of Southern California  Los Angeles    CA          25
## 6            Louisiana State University  Baton Rouge    LA          24
## 7                    University of Miami Coral Gables    FL          23
## 8         University of Texas at Austin      Austin    TX          22
## 9         University of South Carolina     Columbia    SC          21
## 10          Oklahoma State University    Stillwater    OK          20
```

Interpretation: California dominates the list, with 4 of the top 10 colleges coming from the state. Stanford University and Cal State Long Beach tie for the most MLB players 29 each.

Explanation: I joined CollegePlaying, People, and Schools to link player IDs to schools, filter by debut year, and retrieve location info. The debut field is stored in text, so filtering by '2000-01-01' works correctly in SQLite. I used COUNT(DISTINCT cp.playerID) to avoid counting the same player more than once if they appeared in multiple college seasons. Sorting by number of players and using LIMIT 10 returned the top-producing programs.

Figure Out:University naming varies in the database, so I used schoolID not just name to ensure correct grouping.

8. How many all-star games are there each year? How many players are there in each all-star

game(s) each year?

```r
# How many All-Star games per year
allstar_game_counts <- dbGetQuery(con, "
  SELECT
    yearID,
    COUNT(DISTINCT gameNum) AS num_allstar_games
  FROM AllstarFull
  GROUP BY yearID
  ORDER BY yearID
")

print(allstar_game_counts)
```

```
##      yearID num_allstar_games
## 1    1933                   1
## 2    1934                   1
## 3    1935                   1
## 4    1936                   1
## 5    1937                   1
## 6    1938                   1
## 7    1939                   1
## 8    1940                   1
## 9    1941                   1
## 10   1942                   1
## 11   1943                   1
## 12   1944                   1
## 13   1945                   1
## 14   1946                   1
## 15   1947                   1
## 16   1948                   1
## 17   1949                   1
## 18   1950                   1
## 19   1951                   1
## 20   1952                   1
## 21   1953                   1
## 22   1954                   1
## 23   1955                   1
## 24   1956                   1
## 25   1957                   1
## 26   1958                   1
## 27   1959                   2
## 28   1960                   2
## 29   1961                   2
## 30   1962                   1
## 31   1963                   1
## 32   1964                   1
## 33   1965                   1
## 34   1966                   1
## 35   1967                   1
## 36   1968                   1
## 37   1969                   1
## 38   1970                   1
## 39   1971                   1
## 40   1972                   1
## 41   1973                   1
## 42   1974                   1
## 43   1975                   1
## 44   1976                   1
## 45   1977                   1
## 46   1978                   1
## 47   1979                   1
## 48   1980                   1
## 49   1981                   1
## 50   1982                   1
## 51   1983                   1
## 52   1984                   1
## 53   1985                   1
## 54   1986                   1
```

```
## 55   1987              1
## 56   1988              1
## 57   1989              1
## 58   1990              1
## 59   1991              1
## 60   1992              1
## 61   1993              1
## 62   1994              1
## 63   1995              1
## 64   1996              1
## 65   1997              1
## 66   1998              1
## 67   1999              1
## 68   2000              1
## 69   2001              1
## 70   2002              1
## 71   2003              1
## 72   2004              1
## 73   2005              1
## 74   2006              1
## 75   2007              1
## 76   2008              1
## 77   2009              1
## 78   2010              1
## 79   2011              1
## 80   2012              1
## 81   2013              1
## 82   2014              1
## 83   2015              1
## 84   2016              1
## 85   2017              1
## 86   2018              1
## 87   2019              1
## 88   2021              1
## 89   2022              1
```

```r
# Number of players in each All-Star game
allstar_players_per_game <- dbGetQuery(con, "
  SELECT
    yearID,
    gameNum,
    COUNT(DISTINCT playerID) AS num_players
  FROM AllstarFull
  GROUP BY yearID, gameNum
  ORDER BY yearID, gameNum
")

print(allstar_players_per_game)
```

```
##      yearID gameNum num_players
## 1     1933       0          36
## 2     1934       0          41
## 3     1935       0          42
## 4     1936       0          43
## 5     1937       0          48
## 6     1938       0          48
## 7     1939       0          52
## 8     1940       0          53
## 9     1941       0          52
## 10    1942       0          53
## 11    1943       0          53
## 12    1944       0          54
## 13    1945       0          49
## 14    1946       0          52
## 15    1947       0          54
## 16    1948       0          53
## 17    1949       0          50
## 18    1950       0          50
## 19    1951       0          50
## 20    1952       0          53
## 21    1953       0          53
## 22    1954       0          55
## 23    1955       0          51
## 24    1956       0          52
## 25    1957       0          50
## 26    1958       0          50
## 27    1959       1          51
## 28    1959       2          63
## 29    1960       1          61
## 30    1960       2          61
## 31    1961       1          50
## 32    1961       2          57
## 33    1962       0          64
## 34    1963       0          53
## 35    1964       0          52
## 36    1965       0          53
## 37    1966       0          53
## 38    1967       0          53
## 39    1968       0          53
## 40    1969       0          59
## 41    1970       0          58
## 42    1971       0          61
## 43    1972       0          62
## 44    1973       0          61
## 45    1974       0          59
## 46    1975       0          57
## 47    1976       0          58
## 48    1977       0          62
## 49    1978       0          61
## 50    1979       0          62
## 51    1980       0          61
## 52    1981       0          61
## 53    1982       0          57
## 54    1983       0          60
```

```
## 55   1984        0        58
## 56   1985        0        60
## 57   1986        0        57
## 58   1987        0        58
## 59   1988        0        59
## 60   1989        0        60
## 61   1990        0        58
## 62   1991        0        59
## 63   1992        0        57
## 64   1993        0        58
## 65   1994        0        59
## 66   1995        0        61
## 67   1996        0        59
## 68   1997        0        61
## 69   1998        0        63
## 70   1999        0        64
## 71   2000        0        69
## 72   2001        0        63
## 73   2002        0        64
## 74   2003        0        70
## 75   2004        0        68
## 76   2005        0        68
## 77   2006        0        71
## 78   2007        0        66
## 79   2008        0        67
## 80   2009        0        71
## 81   2010        0        81
## 82   2011        0        83
## 83   2012        0        74
## 84   2013        0        77
## 85   2014        0        81
## 86   2015        0        76
## 87   2016        0        79
## 88   2017        0        71
## 89   2018        0        72
## 90   2019        0        72
## 91   2021        0        81
## 92   2022        0        62
```

Explanation: The AllstarFull table lists individual player appearances in All-Star Games. I used COUNT(DISTINCT gameNum) to find how many games were played each year. I used COUNT(DISTINCT playerID) to find how many unique players appeared per game. The value of gameNum = 0 indicates the only game for each of these years.

9. Consider players who have appeared in at least 15 all-star games. How many all-star games have they played in? Give the players' names,

teams and years for each year, in which they were in the all-star games, and the first and last year they were in an all-star game.

```
allstar_15plus <- dbGetQuery(con, "
  SELECT
    p.playerID,
    p.nameFirst || ' ' || p.nameLast AS name,
    COUNT(*) AS num_allstar_games,
    MIN(a.yearID) AS first_year,
    MAX(a.yearID) AS last_year
  FROM AllstarFull a
  JOIN People p ON a.playerID = p.playerID
  GROUP BY a.playerID
  HAVING COUNT(*) >= 15
  ORDER BY num_allstar_games DESC
")

print(allstar_15plus)
```

```
##       playerID              name num_allstar_games first_year last_year
## 1   mayswi01       Willie Mays                  26       1954      1973
## 2  aaronha01        Hank Aaron                  24       1955      1975
## 3  musiast01        Stan Musial                 24       1943      1963
## 4  mantlmi01      Mickey Mantle                 19       1952      1968
## 5  ripkeca01         Cal Ripken                 19       1983      2001
## 6  willite01       Ted Williams                 19       1940      1960
## 7  berrayo01          Yogi Berra                18       1948      1962
## 8  carewro01           Rod Carew                18       1967      1984
## 9  kalinal01           Al Kaline                18       1955      1974
## 10 robinbr01     Brooks Robinson               18       1960      1974
## 11 yastrca01    Carl Yastrzemski               18       1963      1983
## 12 clemero01   Roberto Clemente                17       1960      1972
## 13  rosepe01           Pete Rose                17       1965      1985
## 14 spahnwa01        Warren Spahn                16       1947      1963
## 15 aparilu01        Luis Aparicio               15       1958      1972
## 16   foxne01          Nellie Fox                15       1951      1963
## 17 gwynnto01          Tony Gwynn                15       1984      1999
## 18 smithoz01          Ozzie Smith               15       1981      1996
```

```
allstar_details <- dbGetQuery(con, "
  SELECT
    p.nameFirst || ' ' || p.nameLast AS name,
    a.yearID,
    a.teamID
  FROM AllstarFull a
  JOIN People p ON a.playerID = p.playerID
  WHERE a.playerID IN (
    SELECT playerID
    FROM AllstarFull
    GROUP BY playerID
    HAVING COUNT(*) >= 15
  )
  ORDER BY name, yearID
")

print(allstar_details)
```

```
##                  name yearID teamID
## 1         Al Kaline   1955    DET
## 2         Al Kaline   1956    DET
## 3         Al Kaline   1957    DET
## 4         Al Kaline   1958    DET
## 5         Al Kaline   1959    DET
## 6         Al Kaline   1959    DET
## 7         Al Kaline   1960    DET
## 8         Al Kaline   1960    DET
## 9         Al Kaline   1961    DET
## 10        Al Kaline   1961    DET
## 11        Al Kaline   1962    DET
## 12        Al Kaline   1963    DET
## 13        Al Kaline   1964    DET
## 14        Al Kaline   1965    DET
## 15        Al Kaline   1966    DET
## 16        Al Kaline   1967    DET
## 17        Al Kaline   1971    DET
## 18        Al Kaline   1974    DET
## 19   Brooks Robinson   1960    BAL
## 20   Brooks Robinson   1960    BAL
## 21   Brooks Robinson   1961    BAL
## 22   Brooks Robinson   1961    BAL
## 23   Brooks Robinson   1962    BAL
## 24   Brooks Robinson   1962    BAL
## 25   Brooks Robinson   1963    BAL
## 26   Brooks Robinson   1964    BAL
## 27   Brooks Robinson   1965    BAL
## 28   Brooks Robinson   1966    BAL
## 29   Brooks Robinson   1967    BAL
## 30   Brooks Robinson   1968    BAL
## 31   Brooks Robinson   1969    BAL
## 32   Brooks Robinson   1970    BAL
## 33   Brooks Robinson   1971    BAL
## 34   Brooks Robinson   1972    BAL
## 35   Brooks Robinson   1973    BAL
## 36   Brooks Robinson   1974    BAL
## 37        Cal Ripken   1983    BAL
## 38        Cal Ripken   1984    BAL
## 39        Cal Ripken   1985    BAL
## 40        Cal Ripken   1986    BAL
## 41        Cal Ripken   1987    BAL
## 42        Cal Ripken   1988    BAL
## 43        Cal Ripken   1989    BAL
## 44        Cal Ripken   1990    BAL
## 45        Cal Ripken   1991    BAL
## 46        Cal Ripken   1992    BAL
## 47        Cal Ripken   1993    BAL
## 48        Cal Ripken   1994    BAL
## 49        Cal Ripken   1995    BAL
## 50        Cal Ripken   1996    BAL
## 51        Cal Ripken   1997    BAL
## 52        Cal Ripken   1998    BAL
## 53        Cal Ripken   1999    BAL
## 54        Cal Ripken   2000    BAL
```

```
## 55         Cal Ripken  2001  BAL
## 56   Carl Yastrzemski  1963  BOS
## 57   Carl Yastrzemski  1965  BOS
## 58   Carl Yastrzemski  1966  BOS
## 59   Carl Yastrzemski  1967  BOS
## 60   Carl Yastrzemski  1968  BOS
## 61   Carl Yastrzemski  1969  BOS
## 62   Carl Yastrzemski  1970  BOS
## 63   Carl Yastrzemski  1971  BOS
## 64   Carl Yastrzemski  1972  BOS
## 65   Carl Yastrzemski  1973  BOS
## 66   Carl Yastrzemski  1974  BOS
## 67   Carl Yastrzemski  1975  BOS
## 68   Carl Yastrzemski  1976  BOS
## 69   Carl Yastrzemski  1977  BOS
## 70   Carl Yastrzemski  1978  BOS
## 71   Carl Yastrzemski  1979  BOS
## 72   Carl Yastrzemski  1982  BOS
## 73   Carl Yastrzemski  1983  BOS
## 74         Hank Aaron  1955  MLN
## 75         Hank Aaron  1956  MLN
## 76         Hank Aaron  1957  MLN
## 77         Hank Aaron  1958  MLN
## 78         Hank Aaron  1959  MLN
## 79         Hank Aaron  1959  MLN
## 80         Hank Aaron  1960  MLN
## 81         Hank Aaron  1960  MLN
## 82         Hank Aaron  1961  MLN
## 83         Hank Aaron  1961  MLN
## 84         Hank Aaron  1962  MLN
## 85         Hank Aaron  1963  MLN
## 86         Hank Aaron  1964  MLN
## 87         Hank Aaron  1965  MLN
## 88         Hank Aaron  1966  ATL
## 89         Hank Aaron  1967  ATL
## 90         Hank Aaron  1968  ATL
## 91         Hank Aaron  1969  ATL
## 92         Hank Aaron  1970  ATL
## 93         Hank Aaron  1971  ATL
## 94         Hank Aaron  1972  ATL
## 95         Hank Aaron  1973  ATL
## 96         Hank Aaron  1974  ATL
## 97         Hank Aaron  1975  MIL
## 98      Luis Aparicio  1958  CHA
## 99      Luis Aparicio  1959  CHA
## 100     Luis Aparicio  1959  CHA
## 101     Luis Aparicio  1960  CHA
## 102     Luis Aparicio  1960  CHA
## 103     Luis Aparicio  1961  CHA
## 104     Luis Aparicio  1962  CHA
## 105     Luis Aparicio  1962  CHA
## 106     Luis Aparicio  1962  CHA
## 107     Luis Aparicio  1962  CHA
## 108     Luis Aparicio  1963  BAL
## 109     Luis Aparicio  1964  BAL
## 110     Luis Aparicio  1970  CHA
```

```
## 111    Luis Aparicio   1971    BOS
## 112    Luis Aparicio   1972    BOS
## 113   Mickey Mantle    1952    NYA
## 114   Mickey Mantle    1953    NYA
## 115   Mickey Mantle    1954    NYA
## 116   Mickey Mantle    1955    NYA
## 117   Mickey Mantle    1956    NYA
## 118   Mickey Mantle    1957    NYA
## 119   Mickey Mantle    1958    NYA
## 120   Mickey Mantle    1959    NYA
## 121   Mickey Mantle    1959    NYA
## 122   Mickey Mantle    1960    NYA
## 123   Mickey Mantle    1960    NYA
## 124   Mickey Mantle    1961    NYA
## 125   Mickey Mantle    1961    NYA
## 126   Mickey Mantle    1962    NYA
## 127   Mickey Mantle    1963    NYA
## 128   Mickey Mantle    1964    NYA
## 129   Mickey Mantle    1965    NYA
## 130   Mickey Mantle    1967    NYA
## 131   Mickey Mantle    1968    NYA
## 132      Nellie Fox    1951    CHA
## 133      Nellie Fox    1952    CHA
## 134      Nellie Fox    1953    CHA
## 135      Nellie Fox    1954    CHA
## 136      Nellie Fox    1955    CHA
## 137      Nellie Fox    1956    CHA
## 138      Nellie Fox    1957    CHA
## 139      Nellie Fox    1958    CHA
## 140      Nellie Fox    1959    CHA
## 141      Nellie Fox    1959    CHA
## 142      Nellie Fox    1960    CHA
## 143      Nellie Fox    1960    CHA
## 144      Nellie Fox    1961    CHA
## 145      Nellie Fox    1961    CHA
## 146      Nellie Fox    1963    CHA
## 147     Ozzie Smith    1981    SDN
## 148     Ozzie Smith    1982    SLN
## 149     Ozzie Smith    1983    SLN
## 150     Ozzie Smith    1984    SLN
## 151     Ozzie Smith    1985    SLN
## 152     Ozzie Smith    1986    SLN
## 153     Ozzie Smith    1987    SLN
## 154     Ozzie Smith    1988    SLN
## 155     Ozzie Smith    1989    SLN
## 156     Ozzie Smith    1990    SLN
## 157     Ozzie Smith    1991    SLN
## 158     Ozzie Smith    1992    SLN
## 159     Ozzie Smith    1994    SLN
## 160     Ozzie Smith    1995    SLN
## 161     Ozzie Smith    1996    SLN
## 162       Pete Rose    1965    CIN
## 163       Pete Rose    1967    CIN
## 164       Pete Rose    1968    CIN
## 165       Pete Rose    1969    CIN
## 166       Pete Rose    1970    CIN
```

```
## 167          Pete Rose  1971   CIN
## 168          Pete Rose  1973   CIN
## 169          Pete Rose  1974   CIN
## 170          Pete Rose  1975   CIN
## 171          Pete Rose  1976   CIN
## 172          Pete Rose  1977   CIN
## 173          Pete Rose  1978   CIN
## 174          Pete Rose  1979   PHI
## 175          Pete Rose  1980   PHI
## 176          Pete Rose  1981   PHI
## 177          Pete Rose  1982   PHI
## 178          Pete Rose  1985   CIN
## 179 Roberto Clemente  1960   PIT
## 180 Roberto Clemente  1960   PIT
## 181 Roberto Clemente  1961   PIT
## 182 Roberto Clemente  1961   PIT
## 183 Roberto Clemente  1962   PIT
## 184 Roberto Clemente  1962   PIT
## 185 Roberto Clemente  1962   PIT
## 186 Roberto Clemente  1962   PIT
## 187 Roberto Clemente  1963   PIT
## 188 Roberto Clemente  1964   PIT
## 189 Roberto Clemente  1965   PIT
## 190 Roberto Clemente  1966   PIT
## 191 Roberto Clemente  1967   PIT
## 192 Roberto Clemente  1969   PIT
## 193 Roberto Clemente  1970   PIT
## 194 Roberto Clemente  1971   PIT
## 195 Roberto Clemente  1972   PIT
## 196          Rod Carew  1967   MIN
## 197          Rod Carew  1968   MIN
## 198          Rod Carew  1969   MIN
## 199          Rod Carew  1970   MIN
## 200          Rod Carew  1971   MIN
## 201          Rod Carew  1972   MIN
## 202          Rod Carew  1973   MIN
## 203          Rod Carew  1974   MIN
## 204          Rod Carew  1975   MIN
## 205          Rod Carew  1976   MIN
## 206          Rod Carew  1977   MIN
## 207          Rod Carew  1978   MIN
## 208          Rod Carew  1979   CAL
## 209          Rod Carew  1980   CAL
## 210          Rod Carew  1981   CAL
## 211          Rod Carew  1982   CAL
## 212          Rod Carew  1983   CAL
## 213          Rod Carew  1984   CAL
## 214         Stan Musial  1943   SLN
## 215         Stan Musial  1944   SLN
## 216         Stan Musial  1946   SLN
## 217         Stan Musial  1947   SLN
## 218         Stan Musial  1948   SLN
## 219         Stan Musial  1949   SLN
## 220         Stan Musial  1950   SLN
## 221         Stan Musial  1951   SLN
## 222         Stan Musial  1952   SLN
```

```
## 223     Stan Musial  1953     SLN
## 224     Stan Musial  1954     SLN
## 225     Stan Musial  1955     SLN
## 226     Stan Musial  1956     SLN
## 227     Stan Musial  1957     SLN
## 228     Stan Musial  1958     SLN
## 229     Stan Musial  1959     SLN
## 230     Stan Musial  1959     SLN
## 231     Stan Musial  1960     SLN
## 232     Stan Musial  1960     SLN
## 233     Stan Musial  1961     SLN
## 234     Stan Musial  1961     SLN
## 235     Stan Musial  1962     SLN
## 236     Stan Musial  1962     SLN
## 237     Stan Musial  1963     SLN
## 238    Ted Williams  1940     BOS
## 239    Ted Williams  1941     BOS
## 240    Ted Williams  1942     BOS
## 241    Ted Williams  1946     BOS
## 242    Ted Williams  1947     BOS
## 243    Ted Williams  1948     BOS
## 244    Ted Williams  1949     BOS
## 245    Ted Williams  1950     BOS
## 246    Ted Williams  1951     BOS
## 247    Ted Williams  1953     BOS
## 248    Ted Williams  1954     BOS
## 249    Ted Williams  1955     BOS
## 250    Ted Williams  1956     BOS
## 251    Ted Williams  1957     BOS
## 252    Ted Williams  1958     BOS
## 253    Ted Williams  1959     BOS
## 254    Ted Williams  1959     BOS
## 255    Ted Williams  1960     BOS
## 256    Ted Williams  1960     BOS
## 257      Tony Gwynn  1984     SDN
## 258      Tony Gwynn  1985     SDN
## 259      Tony Gwynn  1986     SDN
## 260      Tony Gwynn  1987     SDN
## 261      Tony Gwynn  1989     SDN
## 262      Tony Gwynn  1990     SDN
## 263      Tony Gwynn  1991     SDN
## 264      Tony Gwynn  1992     SDN
## 265      Tony Gwynn  1993     SDN
## 266      Tony Gwynn  1994     SDN
## 267      Tony Gwynn  1995     SDN
## 268      Tony Gwynn  1996     SDN
## 269      Tony Gwynn  1997     SDN
## 270      Tony Gwynn  1998     SDN
## 271      Tony Gwynn  1999     SDN
## 272    Warren Spahn  1947     BSN
## 273    Warren Spahn  1949     BSN
## 274    Warren Spahn  1950     BSN
## 275    Warren Spahn  1951     BSN
## 276    Warren Spahn  1952     BSN
## 277    Warren Spahn  1953     MLN
## 278    Warren Spahn  1954     MLN
```

```
## 279     Warren Spahn    1956    MLN
## 280     Warren Spahn    1957    MLN
## 281     Warren Spahn    1958    MLN
## 282     Warren Spahn    1959    MLN
## 283     Warren Spahn    1959    MLN
## 284     Warren Spahn    1961    MLN
## 285     Warren Spahn    1961    MLN
## 286     Warren Spahn    1962    MLN
## 287     Warren Spahn    1963    MLN
## 288     Willie Mays     1954    NY1
## 289     Willie Mays     1955    NY1
## 290     Willie Mays     1956    NY1
## 291     Willie Mays     1957    NY1
## 292     Willie Mays     1958    SFN
## 293     Willie Mays     1959    SFN
## 294     Willie Mays     1959    SFN
## 295     Willie Mays     1960    SFN
## 296     Willie Mays     1960    SFN
## 297     Willie Mays     1961    SFN
## 298     Willie Mays     1961    SFN
## 299     Willie Mays     1962    SFN
## 300     Willie Mays     1962    SFN
## 301     Willie Mays     1962    SFN
## 302     Willie Mays     1962    SFN
## 303     Willie Mays     1963    SFN
## 304     Willie Mays     1964    SFN
## 305     Willie Mays     1965    SFN
## 306     Willie Mays     1966    SFN
## 307     Willie Mays     1967    SFN
## 308     Willie Mays     1968    SFN
## 309     Willie Mays     1969    SFN
## 310     Willie Mays     1970    SFN
## 311     Willie Mays     1971    SFN
## 312     Willie Mays     1972    NYN
## 313     Willie Mays     1973    NYN
## 314     Yogi Berra      1948    NYA
## 315     Yogi Berra      1949    NYA
## 316     Yogi Berra      1950    NYA
## 317     Yogi Berra      1951    NYA
## 318     Yogi Berra      1952    NYA
## 319     Yogi Berra      1953    NYA
## 320     Yogi Berra      1954    NYA
## 321     Yogi Berra      1955    NYA
## 322     Yogi Berra      1956    NYA
## 323     Yogi Berra      1957    NYA
## 324     Yogi Berra      1958    NYA
## 325     Yogi Berra      1959    NYA
## 326     Yogi Berra      1959    NYA
## 327     Yogi Berra      1960    NYA
## 328     Yogi Berra      1960    NYA
## 329     Yogi Berra      1961    NYA
## 330     Yogi Berra      1961    NYA
## 331     Yogi Berra      1962    NYA
```

Interpretation: Willie Mays appeared in the most All-Star Games 26, followed closely by Hank Aaron and Stan Musial.

Interpretation: Willie Mays appeared in the most All-Star Games (26), followed closely by Hank Aaron and Stan Musial.

10. Find the 10 players who have appeared in the most number of years in the playoffs. This is the number of years, not the total number of playoff games they were in. Return the table with the person's name, number of years they have been in the playoffs, the first and last year they appeared in the playoffs, and the number of different teams they appeared for in the playoffs. Bonus: Include the average salary (over all the years they played) for each of the individual

```
playoff_years <- dbGetQuery(con, "
  SELECT
    p.nameFirst || ' ' || p.nameLast AS name,
    bp.playerID,
    COUNT(DISTINCT bp.yearID) AS num_playoff_years,
    MIN(bp.yearID) AS first_playoff_year,
    MAX(bp.yearID) AS last_playoff_year,
    COUNT(DISTINCT bp.teamID) AS num_playoff_teams
  FROM BattingPost bp
  JOIN People p ON bp.playerID = p.playerID
  GROUP BY bp.playerID
  ORDER BY num_playoff_years DESC
  LIMIT 10
")

print(playoff_years)
```

```
##              name  playerID num_playoff_years first_playoff_year
## 1     Derek Jeter jeterde01                16               1996
## 2  Mariano Rivera riverma01                16               1995
## 3    Jorge Posada posadjo01                15               1995
## 4      Yogi Berra berrayo01                14               1947
## 5  Andy Pettitte pettian01                14               1995
## 6    John Smoltz smoltjo01                14               1991
## 7    Greg Maddux maddugr01                13               1989
## 8  Yadier Molina molinya01                13               2004
## 9  Roger Clemens clemero02                12               1986
## 10   Tom Glavine glavito02                12               1991
##    last_playoff_year num_playoff_teams
## 1               2012                 1
## 2               2011                 1
## 3               2011                 1
## 4               1963                 1
## 5               2012                 2
## 6               2009                 2
## 7               2008                 3
## 8               2022                 1
## 9               2007                 3
## 10              2006                 2
```

```
playoff_years_salary <- dbGetQuery(con, "
  SELECT
    p.nameFirst || ' ' || p.nameLast AS name,
    bp.playerID,
    COUNT(DISTINCT bp.yearID) AS num_playoff_years,
    MIN(bp.yearID) AS first_playoff_year,
    MAX(bp.yearID) AS last_playoff_year,
    COUNT(DISTINCT bp.teamID) AS num_playoff_teams,
    ROUND(AVG(s.salary), 0) AS avg_salary
  FROM BattingPost bp
  JOIN People p ON bp.playerID = p.playerID
  LEFT JOIN Salaries s ON bp.playerID = s.playerID
  GROUP BY bp.playerID
  ORDER BY num_playoff_years DESC
  LIMIT 10
")

print(playoff_years_salary)
```

```
##                 name   playerID num_playoff_years first_playoff_year
## 1      Derek Jeter   jeterde01                16               1996
## 2   Mariano Rivera   riverma01                16               1995
## 3     Jorge Posada   posadjo01                15               1995
## 4       Yogi Berra   berrayo01                14               1947
## 5   Andy Pettitte   pettian01                14               1995
## 6     John Smoltz   smoltjo01                14               1991
## 7     Greg Maddux   maddugr01                13               1989
## 8   Yadier Molina   molinya01                13               2004
## 9   Roger Clemens   clemero02                12               1986
## 10    Tom Glavine   glavito02                12               1991
##     last_playoff_year num_playoff_teams avg_salary
## 1              2012                 1   13927268
## 2              2011                 1    8914834
## 3              2011                 1    7830567
## 4              1963                 1         NA
## 5              2012                 2    8078377
## 6              2009                 2    6456926
## 7              2008                 3    7325952
## 8              2022                 1    6783208
## 9              2007                 3    5761952
## 10             2006                 2    5636491
```

Interpretation: Derek Jeter and Mariano Rivera each appeared in the playoffs in 16 different years The average salaries show that long careers and playoff consistency often coincide with high compensation — especially in modern baseball.

Explanation: I used the BattingPost table to count unique playoff years (COUNT(DISTINCT bp.yearID)). People provided full names, and Salaries was used (via LEFT JOIN) to compute career-wide salary averages. Grouping by playerID gave each player's summary stats. The salary average includes all years with salary data, not just playoff seasons.

Verify the Result use only R

Q1

```
teams <- dbReadTable(con, "Teams")

# 1. Total number of distinct teams in the full database
total_teams_r <- length(unique(teams$teamID))
cat("Total distinct teams:", total_teams_r, "\n")
```

```
## Total distinct teams: 149
```

```
# 2. Number of teams that played in 2022
teams_2022_r <- subset(teams, yearID == 2022)
cat("Teams in 2022:", nrow(teams_2022_r), "\n")
```

```
## Teams in 2022: 30
```

```r
# 3. List team names and stats for 2022, grouped by league/division, sorted by wins d
escending
teams_2022_grouped <- teams_2022_r[order(teams_2022_r$lgID, teams_2022_r$divID, -team
s_2022_r$W), ]
teams_2022_display <- teams_2022_grouped[, c("name", "lgID", "divID", "W", "L")]

print(teams_2022_display)
```

```
##                              name lgID divID   W   L
## 2989          Cleveland Guardians   AL    C   92  70
## 2988            Chicago White Sox   AL    C   81  81
## 2994              Minnesota Twins   AL    C   78  84
## 2990               Detroit Tigers   AL    C   66  96
## 2992           Kansas City Royals   AL    C   65  97
## 2995             New York Yankees   AL    E   99  63
## 3000            Toronto Blue Jays   AL    E   92  70
## 2998               Tampa Bay Rays   AL    E   86  76
## 2986            Baltimore Orioles   AL    E   83  79
## 2987               Boston Red Sox   AL    E   78  84
## 2991               Houston Astros   AL    W  106  56
## 2997             Seattle Mariners   AL    W   90  72
## 2993 Los Angeles Angels of Anaheim   AL    W   73  89
## 2999                Texas Rangers   AL    W   68  94
## 2996            Oakland Athletics   AL    W   60 102
## 3014          St. Louis Cardinals   NL    C   93  69
## 3008            Milwaukee Brewers   NL    C   86  76
## 3003                 Chicago Cubs   NL    C   74  88
## 3004              Cincinnati Reds   NL    C   62 100
## 3011           Pittsburgh Pirates   NL    C   62 100
## 3002               Atlanta Braves   NL    E  101  61
## 3009               New York Mets   NL    E  101  61
## 3010        Philadelphia Phillies   NL    E   87  75
## 3007                Miami Marlins   NL    E   69  93
## 3015         Washington Nationals   NL    E   55 107
## 3006          Los Angeles Dodgers   NL    W  111  51
## 3012             San Diego Padres   NL    W   89  73
## 3013         San Francisco Giants   NL    W   81  81
## 3001         Arizona Diamondbacks   NL    W   74  88
## 3005             Colorado Rockies   NL    W   68  94
```

The output is match the result that using SQL.

Q2

```
teams <- dbReadTable(con, "Teams")

teams_recent <- subset(teams, yearID >= 2015 & !is.na(attendance))

attendance_summary <- aggregate(attendance ~ teamID + name, teams_recent,
                         function(x) c(total = sum(x), avg = mean(x)))

attendance_summary <- do.call(data.frame, attendance_summary)

names(attendance_summary) <- c("teamID", "name", "total_attendance", "avg_attendanc
e")

attendance_top10 <- attendance_summary[order(-attendance_summary$avg_attendance), ]
[1:10, ]

print(attendance_top10)
```

```
##    teamID                         name total_attendance avg_attendance
## 15    LAN          Los Angeles Dodgers         25731893        3216487
## 27    SLN          St. Louis Cardinals         22720377        2840047
## 20    NYA             New York Yankees         21287486        2660936
## 5     CHN                 Chicago Cubs         20222772        2527846
## 25    SFN         San Francisco Giants         20070905        2508863
## 14    LAA Los Angeles Angels of Anaheim         19060870        2382609
## 4     BOS               Boston Red Sox         18924420        2365552
## 10    COL             Colorado Rockies         18608160        2326020
## 17    MIL             Milwaukee Brewers         17505787        2188223
## 12    HOU               Houston Astros         17459302        2182413
```

The output is match the result that using SQL.

Q3

```r
batting <- dbReadTable(con, "Batting")
people <- dbReadTable(con, "People")

career_span <- aggregate(yearID ~ playerID, batting, function(x) max(x) - min(x) + 1)
names(career_span)[2] <- "career_span"

career_years <- aggregate(yearID ~ playerID, batting, function(x) c(first = min(x), last = max(x)))
career_years <- do.call(data.frame, career_years)
names(career_years) <- c("playerID", "first_year", "last_year")

career_long <- merge(career_span, career_years, by = "playerID")

career_long_named <- merge(career_long, people[, c("playerID", "nameFirst", "nameLast")], by = "playerID")
career_long_named$name <- paste(career_long_named$nameFirst, career_long_named$nameLast)

# Top 10 longest careers
longest_careers_r <- career_long_named[order(-career_long_named$career_span), c("name", "first_year", "last_year", "career_span")][1:10, ]
print(longest_careers_r)
```

```
##                    name first_year last_year career_span
## 302       Nick Altrock       1898      1933          36
## 13799     Jim O'Rourke       1872      1904          33
## 12590    Minnie Minoso       1949      1980          32
## 13692   Charley O'Leary       1904      1934          31
## 10341      Arlie Latham       1880      1909          30
## 12017    Deacon McGuire       1884      1912          29
## 5493       Johnny Evers       1902      1929          28
## 9036    Hughie Jennings       1891      1918          28
## 16092        Nolan Ryan       1966      1993          28
## 17833      Gabby Street       1904      1931          28
```

```r
# 2. Most total games played
games_played <- aggregate(G ~ playerID, batting, sum, na.rm = TRUE)
games_named <- merge(games_played, people[, c("playerID", "nameFirst", "nameLast")],
by = "playerID")
games_named$name <- paste(games_named$nameFirst, games_named$nameLast)

# Top 10 most games
most_games_r <- games_named[order(-games_named$G), c("name", "G")][1:10, ]
names(most_games_r)[2] <- "total_games"
print(most_games_r)
```

```
##                      name total_games
## 15908          Pete Rose        3562
## 20265 Carl Yastrzemski         3308
## 2               Hank Aaron       3298
## 7974   Rickey Henderson        3081
## 14882     Albert Pujols        3080
## 3418            Ty Cobb        3035
## 13142      Eddie Murray        3026
## 13166       Stan Musial        3026
## 15502       Cal Ripken        3001
## 11721       Willie Mays        2992
```

The output is match the result that using SQL.

Q4

```
teams <- dbReadTable(con, "Teams")
series <- dbReadTable(con, "SeriesPost")

ws_2022 <- subset(series, yearID == 2022 & round == "WS")

team_2022 <- subset(teams, yearID == 2022 & teamID == ws_2022$teamIDwinner)

team_2022$world_series_total_games <- ws_2022$wins + ws_2022$losses

winner_2022 <- team_2022[, c("name", "lgID", "divID", "W", "L", "world_series_total_g
ames")]
names(winner_2022) <- c("team_name", "league", "division", "wins", "losses", "world_s
eries_total_games")

print(winner_2022)
```

```
##           team_name league division wins losses world_series_total_games
## 2991 Houston Astros     AL        W  106     56                        6
```

The output is match the result that using SQL.

Q5

```r
teams <- dbReadTable(con, "Teams")
series <- dbReadTable(con, "SeriesPost")

ws <- subset(series, round == "WS")

winners <- merge(ws, teams,
                 by.x = c("teamIDwinner", "yearID"),
                 by.y = c("teamID", "yearID"))

losers <- merge(ws, teams,
                by.x = c("teamIDloser", "yearID"),
                by.y = c("teamID", "yearID"))

# 4. Merge winner and loser info by year
ws_combined <- merge(winners, losers, by = "yearID", suffixes = c("_winner", "_lose
r"))

# 5. Select and rename relevant columns
ws_results <- ws_combined[, c(
  "yearID",
  "name_winner", "lgID_winner", "divID_winner", "W_winner", "L_winner",
  "name_loser", "lgID_loser", "divID_loser", "W_loser", "L_loser"
)]

names(ws_results) <- c(
  "year",
  "winner_name", "winner_league", "winner_division", "winner_wins", "winner_losses",
  "loser_name", "loser_league", "loser_division", "loser_wins", "loser_losses"
)

ws_results <- ws_results[order(-ws_results$year), ]

print(head(ws_results, 10))
```

```
##      year        winner_name winner_league winner_division winner_wins
## 125 2022       Houston Astros            AL               W         106
## 124 2021       Atlanta Braves            NL               E          88
## 123 2020  Los Angeles Dodgers            NL               W          43
## 122 2019 Washington Nationals            NL               E          93
## 121 2018       Boston Red Sox            AL               E         108
## 120 2017       Houston Astros            AL               W         101
## 119 2016          Chicago Cubs           NL               C         103
## 118 2015    Kansas City Royals           AL               C          95
## 117 2014 San Francisco Giants            NL               W          88
## 116 2013       Boston Red Sox            AL               E          97
##     winner_losses            loser_name loser_league loser_division loser_wins
## 125            56 Philadelphia Phillies           NL              E         87
## 124            73        Houston Astros           AL              W         95
## 123            17         Tampa Bay Rays          AL              E         40
## 122            69        Houston Astros           AL              W        107
## 121            54    Los Angeles Dodgers          NL              W         92
## 120            61    Los Angeles Dodgers          NL              W        104
## 119            58       Cleveland Indians          AL              C         94
## 118            67          New York Mets          NL              E         90
## 117            74     Kansas City Royals           AL              C         89
## 116            65     St. Louis Cardinals          NL              C         97
##     loser_losses
## 125           75
## 124           67
## 123           20
## 122           55
## 121           71
## 120           58
## 119           67
## 118           72
## 117           73
## 116           65
```

The output is match the result that using SQL.

Q6

```
salaries <- dbReadTable(con, "Salaries")
teams <- dbReadTable(con, "Teams")
series <- dbReadTable(con, "SeriesPost")

payroll_r <- aggregate(salary ~ yearID + teamID, data = salaries, sum)
names(payroll_r)[3] <- "total_payroll"

ws <- subset(series, round == "WS")

payroll_r$key <- paste(payroll_r$yearID, payroll_r$teamID)
ws$winner_key <- paste(ws$yearID, ws$teamIDwinner)
ws$loser_key  <- paste(ws$yearID, ws$teamIDloser)

payroll_r$world_series_result <- ifelse(
  payroll_r$key %in% ws$winner_key, "Winner",
  ifelse(payroll_r$key %in% ws$loser_key, "Loser", "No")
)

teams_unique <- unique(teams[, c("yearID", "teamID", "name")])
payroll_labeled <- merge(payroll_r, teams_unique, by = c("yearID", "teamID"))

payroll_output <- payroll_labeled[, c("yearID", "teamID", "name", "total_payroll", "w
orld_series_result")]
names(payroll_output)[3] <- "team_name"
payroll_output <- payroll_output[order(payroll_output$yearID, -payroll_output$total_p
ayroll), ]

print(head(payroll_output, 10))
```

```
##     yearID teamID         team_name total_payroll world_series_result
## 1    1985    ATL     Atlanta Braves      14807000                  No
## 4    1985    CAL   California Angels      14427894                  No
## 16   1985    NYA    New York Yankees      14238204                  No
## 6    1985    CHN       Chicago Cubs      12702917                  No
## 24   1985    SLN St. Louis Cardinals      11817083               Loser
## 2    1985    BAL   Baltimore Orioles      11560712                  No
## 14   1985    ML4   Milwaukee Brewers      11284107                  No
## 21   1985    SDN    San Diego Padres      11036583                  No
## 12   1985    LAN Los Angeles Dodgers      10967917                  No
## 3    1985    BOS      Boston Red Sox      10897560                  No
```

The output is match the result that using SQL.

Q7

```
college_playing <- dbReadTable(con, "CollegePlaying")
people <- dbReadTable(con, "People")
schools <- dbReadTable(con, "Schools")

college_people <- merge(college_playing, people[, c("playerID", "debut")], by = "play
erID")

college_recent <- subset(college_people, debut >= "2000-01-01")

college_info <- merge(college_recent, schools, by.x = "schoolID", by.y = "schoolID")

college_counts <- aggregate(playerID ~ schoolID + name_full + city + state, college_i
nfo, function(x) length(unique(x)))
names(college_counts)[5] <- "num_players"

top_colleges <- college_counts[order(-college_counts$num_players), ][1:10, ]

top_colleges <- top_colleges[, c("name_full", "city", "state", "num_players")]
names(top_colleges)[1] <- "college_name"

print(top_colleges)
```

```
##                                 college_name          city state num_players
## 49   California State University Long Beach   Long Beach    CA           29
## 66                        Stanford University    Palo Alto    CA           29
## 27                   Arizona State University        Tempe    AZ           25
## 42   California State University Fullerton     Fullerton    CA           25
## 55         University of Southern California  Los Angeles    CA           25
## 239                Louisiana State University  Baton Rouge    LA           24
## 126                     University of Miami Coral Gables    FL           23
## 429           University of Texas at Austin       Austin    TX           22
## 407           University of South Carolina     Columbia    SC           21
## 372                Oklahoma State University   Stillwater    OK           20
```

The output is match the result that using SQL.

Q8

```
allstars <- dbReadTable(con, "AllstarFull")

games_per_year <- aggregate(gameNum ~ yearID, data = allstars, function(x) length(uni
que(x)))
names(games_per_year)[2] <- "num_allstar_games"

players_per_game <- aggregate(playerID ~ yearID + gameNum, data = allstars, function
(x) length(unique(x)))
names(players_per_game)[3] <- "num_players"

games_per_year <- games_per_year[order(games_per_year$yearID), ]
players_per_game <- players_per_game[order(players_per_game$yearID, players_per_game
$gameNum), ]

print(head(games_per_year, 10))
```

```
##      yearID num_allstar_games
## 1    1933                    1
## 2    1934                    1
## 3    1935                    1
## 4    1936                    1
## 5    1937                    1
## 6    1938                    1
## 7    1939                    1
## 8    1940                    1
## 9    1941                    1
## 10   1942                    1
```

```
print(head(players_per_game, 10))
```

```
##      yearID gameNum num_players
## 1    1933         0          36
## 2    1934         0          41
## 3    1935         0          42
## 4    1936         0          43
## 5    1937         0          48
## 6    1938         0          48
## 7    1939         0          52
## 8    1940         0          53
## 9    1941         0          52
## 10   1942         0          53
```

The output is match the result that using SQL.

Q9

```r
allstars <- dbReadTable(con, "AllstarFull")
people <- dbReadTable(con, "People")

asg_counts <- aggregate(yearID ~ playerID, data = allstars, length)
names(asg_counts)[2] <- "num_allstar_games"

asg_15plus <- subset(asg_counts, num_allstar_games >= 15)

first_last_years <- aggregate(yearID ~ playerID, data = allstars[allstars$playerID %in% asg_15plus$playerID, ],
                              function(x) c(first = min(x), last = max(x)))
first_last_years <- do.call(data.frame, first_last_years)
names(first_last_years) <- c("playerID", "first_year", "last_year")

summary_15plus <- merge(asg_15plus, first_last_years, by = "playerID")
summary_named <- merge(summary_15plus, people[, c("playerID", "nameFirst", "nameLast")], by = "playerID")
summary_named$name <- paste(summary_named$nameFirst, summary_named$nameLast)

top_allstars_summary <- summary_named[, c("name", "num_allstar_games", "first_year", "last_year")]
top_allstars_summary <- top_allstars_summary[order(-top_allstars_summary$num_allstar_games), ]

print(top_allstars_summary)
```

```
##                  name num_allstar_games first_year last_year
## 10        Willie Mays                26       1954      1973
## 1         Hank Aaron                 24       1955      1975
## 11        Stan Musial                24       1943      1963
## 9       Mickey Mantle                19       1952      1968
## 12         Cal Ripken                19       1983      2001
## 17       Ted Williams                19       1940      1960
## 3          Yogi Berra                18       1948      1962
## 4          Rod Carew                 18       1967      1984
## 8           Al Kaline                18       1955      1974
## 13    Brooks Robinson                18       1960      1974
## 18  Carl Yastrzemski                18       1963      1983
## 5    Roberto Clemente                17       1960      1972
## 14          Pete Rose                17       1965      1985
## 16       Warren Spahn                16       1947      1963
## 2       Luis Aparicio                15       1958      1972
## 6          Nellie Fox                15       1951      1963
## 7          Tony Gwynn                15       1984      1999
## 15         Ozzie Smith                15       1981      1996
```

```
details_15plus <- subset(allstars, playerID %in% asg_15plus$playerID)
details_named <- merge(details_15plus, people[, c("playerID", "nameFirst", "nameLas
t")], by = "playerID")
details_named$name <- paste(details_named$nameFirst, details_named$nameLast)

allstar_appearances <- details_named[, c("name", "yearID", "teamID")]
allstar_appearances <- allstar_appearances[order(allstar_appearances$name, allstar_ap
pearances$yearID), ]

print(head(allstar_appearances, 10))
```

```
##             name yearID teamID
## 132 Al Kaline    1955    DET
## 130 Al Kaline    1956    DET
## 127 Al Kaline    1957    DET
## 129 Al Kaline    1958    DET
## 131 Al Kaline    1959    DET
## 134 Al Kaline    1959    DET
## 138 Al Kaline    1960    DET
## 139 Al Kaline    1960    DET
## 123 Al Kaline    1961    DET
## 133 Al Kaline    1961    DET
```

The output is match the result that using SQL.

Q10

```r
batting_post <- dbReadTable(con, "BattingPost")
people <- dbReadTable(con, "People")
salaries <- dbReadTable(con, "Salaries")

playoff_years <- aggregate(yearID ~ playerID, data = batting_post, function(x) length
(unique(x)))
names(playoff_years)[2] <- "num_playoff_years"

first_last <- aggregate(yearID ~ playerID, data = batting_post, function(x) c(first =
min(x), last = max(x)))
first_last <- do.call(data.frame, first_last)
names(first_last) <- c("playerID", "first_year", "last_year")

num_teams <- aggregate(teamID ~ playerID, data = batting_post, function(x) length(uni
que(x)))
names(num_teams)[2] <- "num_playoff_teams"

avg_salary <- aggregate(salary ~ playerID, data = salaries, mean, na.rm = TRUE)
names(avg_salary)[2] <- "avg_salary"

merged1 <- merge(playoff_years, first_last, by = "playerID")
merged2 <- merge(merged1, num_teams, by = "playerID")
merged3 <- merge(merged2, avg_salary, by = "playerID", all.x = TRUE)
final_stats <- merge(merged3, people[, c("playerID", "nameFirst", "nameLast")], by =
"playerID")
final_stats$name <- paste(final_stats$nameFirst, final_stats$nameLast)

top_playoff_players <- final_stats[order(-final_stats$num_playoff_years), ]
top_10 <- top_playoff_players[, c("name", "num_playoff_years", "first_year", "last_ye
ar", "num_playoff_teams", "avg_salary")][1:10, ]

print(top_10)
```

```
##                     name num_playoff_years first_year last_year num_playoff_teams
## 2132    Derek Jeter                    16       1996      2012                 1
## 3671 Mariano Rivera                    16       1995      2011                 1
## 3482   Jorge Posada                    15       1995      2011                 1
## 326       Yogi Berra                   14       1947      1963                 1
## 3406  Andy Pettitte                    14       1995      2012                 2
## 4080    John Smoltz                    14       1991      2009                 2
## 2607   Greg Maddux                     13       1989      2008                 3
## 2953  Yadier Molina                    13       2004      2022                 1
## 810   Roger Clemens                    12       1986      2007                 3
## 1563    Tom Glavine                    12       1991      2006                 2
##      avg_salary
## 2132   13927268
## 3671    8914834
## 3482    7830567
## 326          NA
## 3406    8078377
## 4080    6456926
## 2607    7325952
## 2953    6783208
## 810     5761952
## 1563    5636491
```

The output is match the result that using SQL.