Project 3

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Project Summary

I grew up playing baseball since I was 4 years old. Because of this passion of mine, I have always been fascinated with the statistics behind the game. Modern baseball has seen a large shift in relying on data to predict outcomes of games.

The following analysis dives into some of the more general stats in the great game of baseball. It utilizes SQL queries that gather data from the Lahman database. This data is compiled and then used to gain insights into baseball

Technical Details

Question 1: Pro salaries for former BYU-Idaho baseball players

playerid	schoolid	salary	yearid	teamid
stephga01	idbyuid	800000	2003	SLN
stephga01	idbyuid	900000	2002	SLN
stephga01	idbyuid	550000	2000	SLN
lindsma01	idbyuid	410000	2009	FLO
lindsma01	idbyuid	2300000	2013	CHA
stephga01	idbyuid	215000	1999	SLN
stephga01	idbyuid	1025000	2001	SLN
lindsma01	idbyuid	380000	2007	FLO
stephga01	idbyuid	185000	1998	PHI
lindsma01	idbyuid	1625000	2010	HOU
lindsma01	idbyuid	3600000	2012	BAL

playerid	schoolid	salary	yearid	teamid
lindsma01	idbyuid	4000000	2014	CHA
lindsma01	idbyuid	2800000	2011	COL
lindsma01	idbyuid	395000	2008	FLO
stephga01	idbyuid	150000	1997	PHI

Question 2: Batting Average Analysis

Players with one at bat

PlayerID	YearID	BattingAvg
peterbi01	1942	1
henrydu01	1921	1
kuczest01	1949	1
whiteer01	1947	1
schlibi01	1914	1

Players with ten at bats

PlayerID	YearID	BattingAvg
nymanny01	1974	0.643
carsoma01	2013	0.636
altizda01	1910	0.6
silvech01	1948	0.571
puccige01	1930	0.563

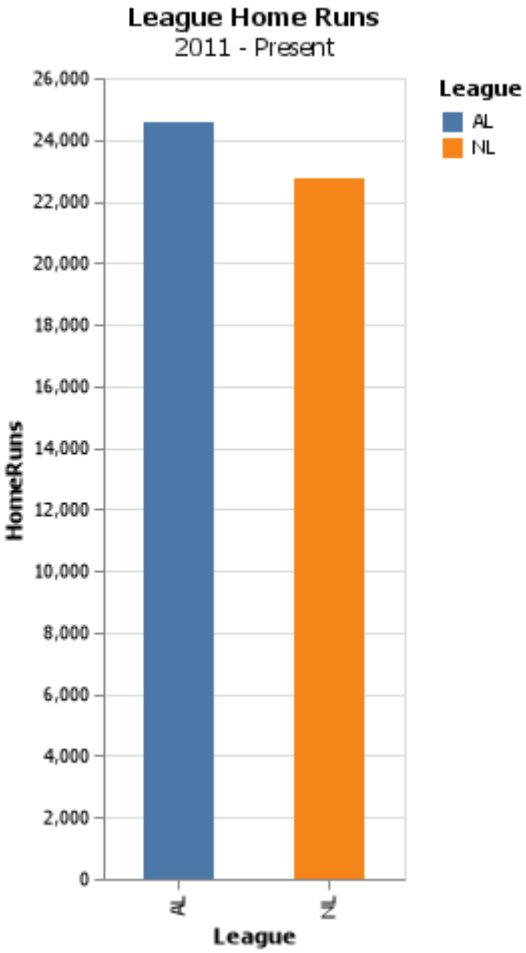
Entire careers with at least 100 at bats

PlayerID	Hits	AtBats	BattingAvg
cobbty01	4189	11436	0.366
barnero01	860	2391	0.36

PlayerID	Hits	AtBats	BattingAvg
meyerle01	513	1443	0.356
kingst01	96	272	0.353
delahed01	2597	7510	0.346

Question 3: Total League HRs in last decade

In the last decade, which League (American or National) has hit more home runs.



League	HomeRuns
NL	22747
AL	24571

Since 2011, the American League has hit 24,571 home runs. This is 1,824 more than the national league or about 180 more homeruns per season. This result makes sense to me because the biggest difference between the two leagues is the Designated Hitter rule. In the AL, the pitchers (who are statistically weaker hitters) do not hit and are replaced with a designated hitter (Who are generally

strong hitters). The NL, on the other hand, has no such rule. Therefore, 1 out of the 9 hitters in the line up is statistically less likely to hit a home run.

Appendix A

This is where your python script will go. Your code should be commented and well organized.

```
import datadotworld as dw
import altair as alt
import pandas as pd

byuiplayers = dw.query('byuidss/cse-250-baseball-database',
'''
SELECT DISTINCT c.playerid, c.schoolid, salary, s.yearid, s.teamid
FROM collegeplaying c
JOIN salaries s
ON c.playerid = s.playerid
WHERE schoolid = "idbyuid"
''')

print(byuiplayers.dataframe.to_markdown(index = False))

oneatbat = dw.query('byuidss/cse-250-baseball-database',
'''
SELECT playerid as PlayerID, yearid as YearID, SUM(h)/SUM(ab) AS BattingAvg
FROM batting
GROUP BY playerid, yearid
HAVING ab >= 1
ORDER BY battingavg desc
LIMIT 5
''')

print(oneatbat.dataframe.to_markdown(index = False))

tenatbat = dw.query('byuidss/cse-250-baseball-database',
'''
SELECT playerid as PlayerID, yearid as YearID, ROUND (h/ab, 3) AS BattingAvg
FROM batting
GROUP BY playerid, yearid
HAVING ab >= 10
ORDER BY battingavg desc
LIMIT 5
''')

print(tenatbat.dataframe.to_markdown(index = False))

hundredatbat = dw.query('byuidss/cse-250-baseball-database',
'''
SELECT playerid as PlayerID, sum(H) as Hits, sum(AB) as AtBats, ROUND(sum(H)/sum(AB), 3) AS Batt
FROM batting
GROUP BY playerid
HAVING ab >= 100
ORDER BY battingavg desc
LIMIT 5
''')

print(hundredatbat.dataframe.to_markdown(index = False))
```

```
SELECT  lgid as League, SUM(hr) as HomeRuns

LHRChart = (alt.Chart(LHR)
    .mark_bar(size = 35)
    .encode(
            x = 'League',
            y = 'HomeRuns',
            color = 'League')
    .properties(
        height = 400,
        width = 150,
        title = {'text': "League Home Runs", 'subtitle': "2011 - Present"}
))

LHRChart.save('LHR.png')
```