

# Where's The Next Brady?



## The Brain Trust

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# Motivation & Summary Slide

Where do Quarterbacks get drafted from?

How do draft picks perform in the NFL?

Are there factors that guarantee success?

Summary: A lot of factors but no definitive stats with strong correlation that hold up over time.



(10:23) T-B. Roethlisberger PASS to B-A. Brown for a 21 yard gain (37-T. Frederick).



**Antonio Brown**  
PIT WR #84

39.42 yds  
Distance Travelled

AFTERBURNER RANKING

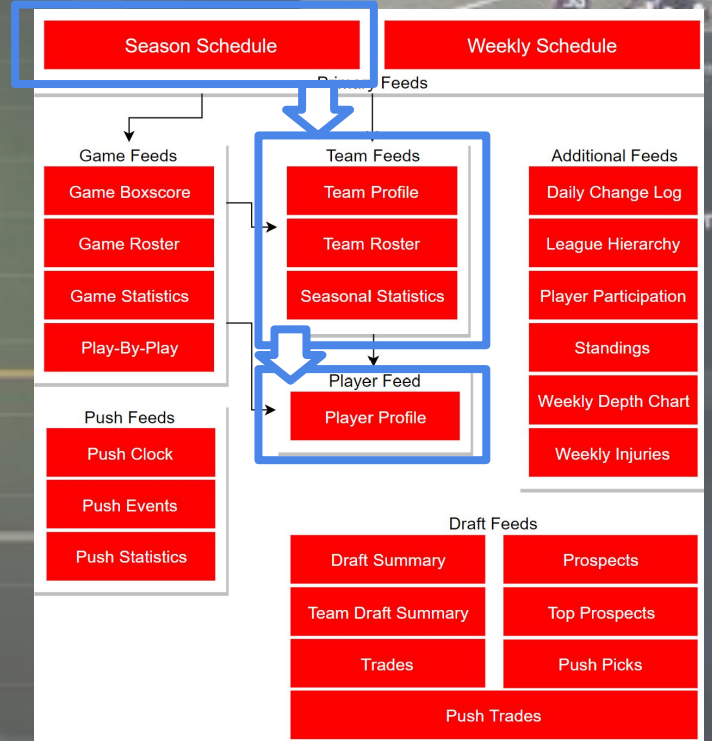
2ND  
Week 5

8TH  
Season



# Questions & Data

- NFL data was obtained from Sportradar using their proprietary API for NFL data
- We explored the data using the model illustrated here >>
- We had to run a top down approach for collect API keys
  - From Season to Teams to Players
- We narrow our scope:
  - Last 5 years = 11K players
  - Only Quarterbacks = 153 players





# Data Cleanup & Exploration

Insights we did not anticipate:

- Data is highly nested in dictionaries
- Unstructured data challenges (validations and exceptions)
  - Real Life data. Not every quarterback played every year (New players, old players, etc)
  - Players changed teams
  - Some statistics did not have data for some players
  - Large number of keys and values
- Multiple number of calls of the API
  - We called the API more than 3K while developing the data extracted process
  - We need to use a new API Key after 700 calls

Simplification was our key for success

- We apply the use of Keys, Values and items as elements to simplify the looping of data and the need to retype Key Names



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# Data extraction

## Player Stats - Passing for all seasons

```
In [21]: stats_name = 'passing'
output_file_name = 'Resources/player_stats_passing.csv'
player_stats_lst = []

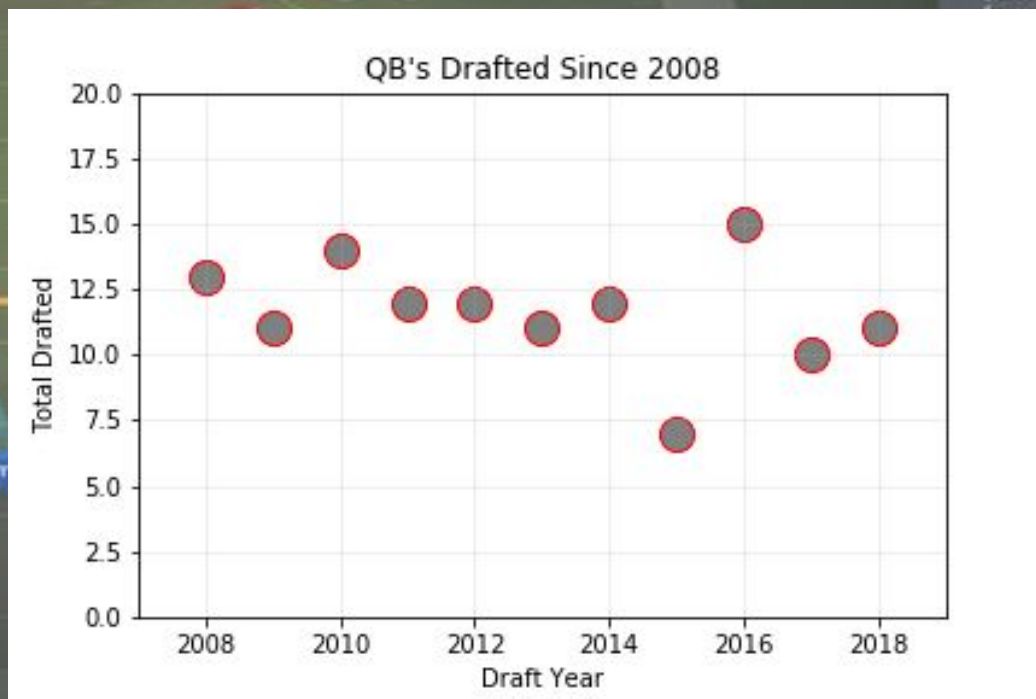
for qb in range(len(all_QBs_profile_df)):
    for season in range(len(all_QBs_profile_df['seasons'][qb])):
        player_stats_dic = {}
        if all_QBs_profile_df['seasons'][qb][season]['teams'][0]['statistics']['games_played'] > 0:
            if stats_name in all_QBs_profile_df['seasons'][qb][season]['teams'][0]['statistics'].keys():
                player_stats_dic['player_id'] = all_QBs_profile_df['id'][qb]
                player_stats_dic['player_name'] = all_QBs_profile_df['name'][qb]
                player_stats_dic['position'] = all_QBs_profile_df['position'][qb]
                player_stats_dic['season_year'] = all_QBs_profile_df['seasons'][qb][season]['year']
                player_stats_dic['season_type'] = all_QBs_profile_df['seasons'][qb][season]['type']
                player_stats_dic['team_name'] = all_QBs_profile_df['seasons'][qb][season]['teams'][0]['name']
                player_stats_dic['team_market'] = all_QBs_profile_df['seasons'][qb][season]['teams'][0]['market']
                player_stats_dic['games_played'] = all_QBs_profile_df['seasons'][qb][season]['teams'][0]['statistics']['game
                player_stats_dic['games_started'] = all_QBs_profile_df['seasons'][qb][season]['teams'][0]['statistics']['game
                player_stats_dic['_timestamp'] = round(time.time())

                for k,v in all_QBs_profile_df['seasons'][qb][season]['teams'][0]['statistics'][stats_name].items():
                    stat = "stat_"+k
                    player_stats_dic[stat] = v

                player_stats_lst.append(player_stats_dic)

player_stats_df = pd.DataFrame(player_stats_lst)
player_stats_df.to_csv(output_file_name, index=False)
player_stats_df.head()
```

# Total Amount of Quarterbacks Drafted by Year: Last Decade



(10:23) 7-B, Roethlisberger PASS to 84-A, Brown  
1 yard gain (37-T, Frederick).



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Season



Pause

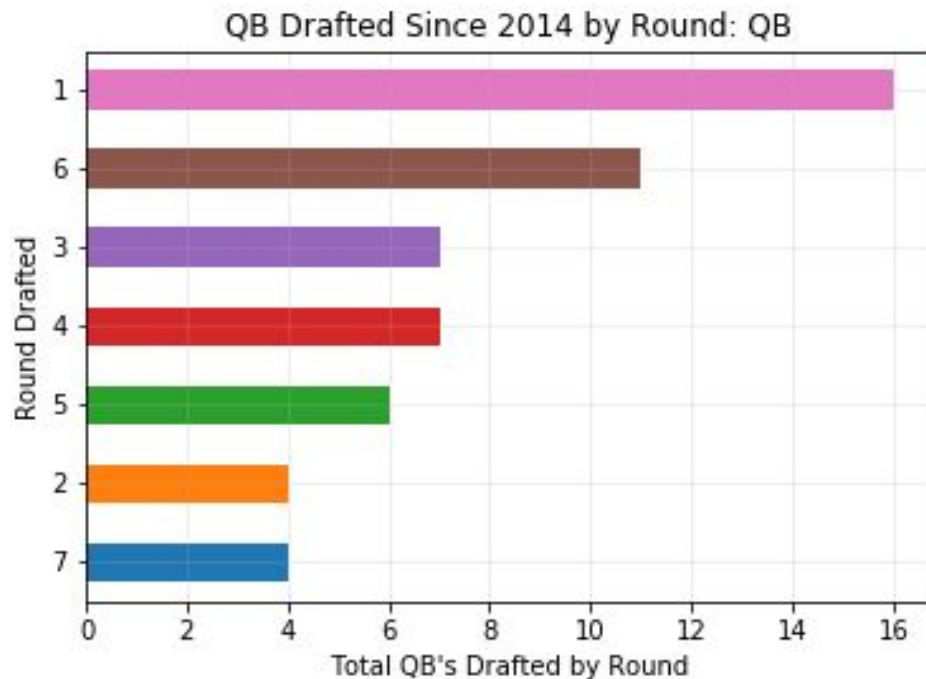
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113

12



# QB's Drafted By Round: Since 2014



B. Roethlisberger PASS to B4-A. Brown  
and gain (37-T. Frederick).

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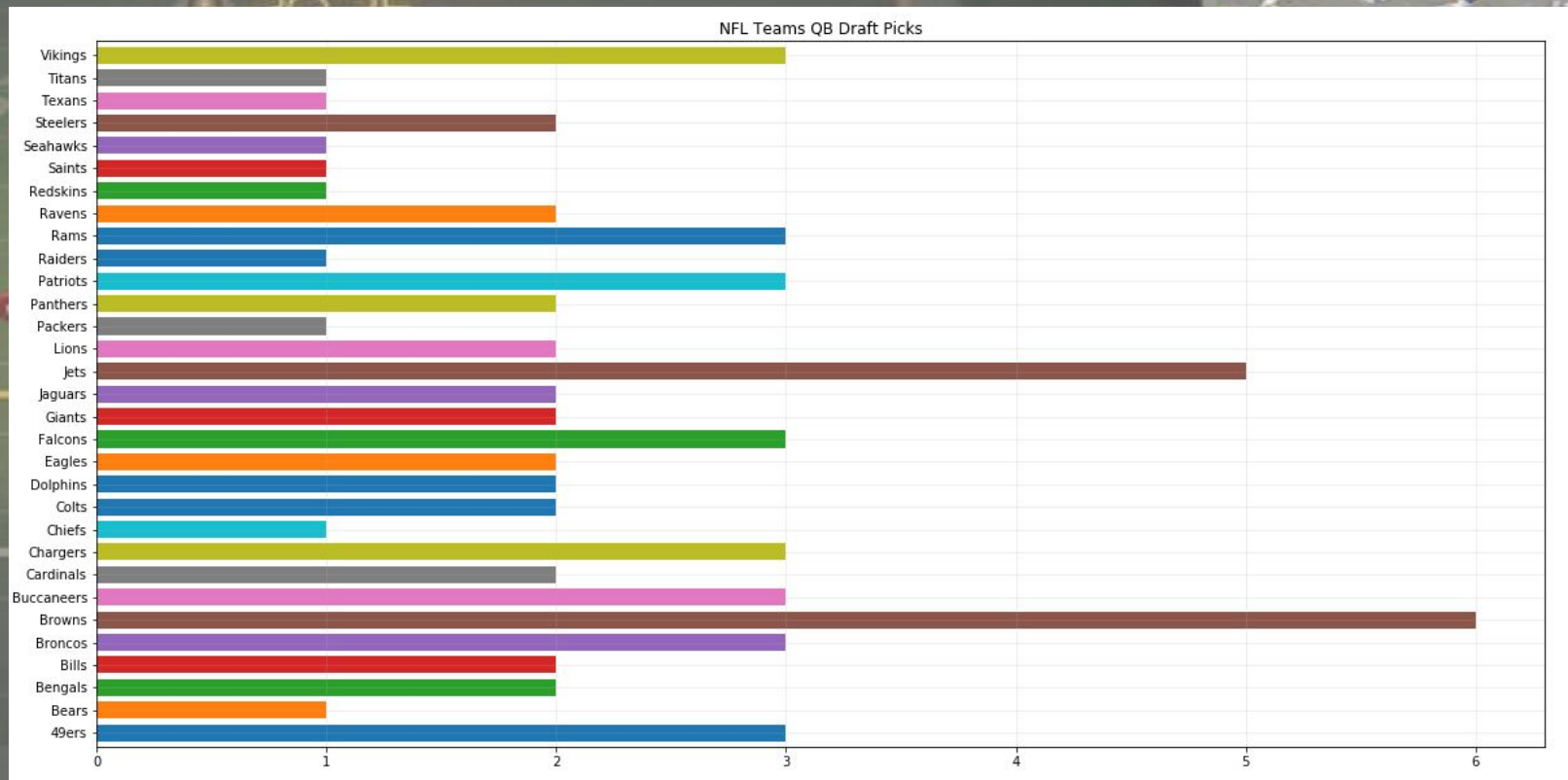
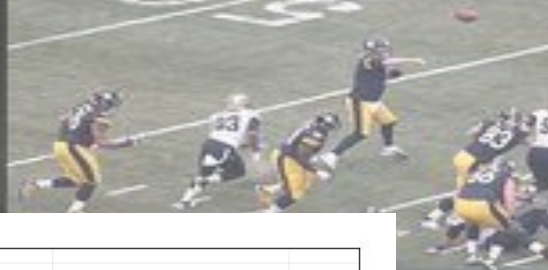
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LB ❤️ 113

RB 🍀 12

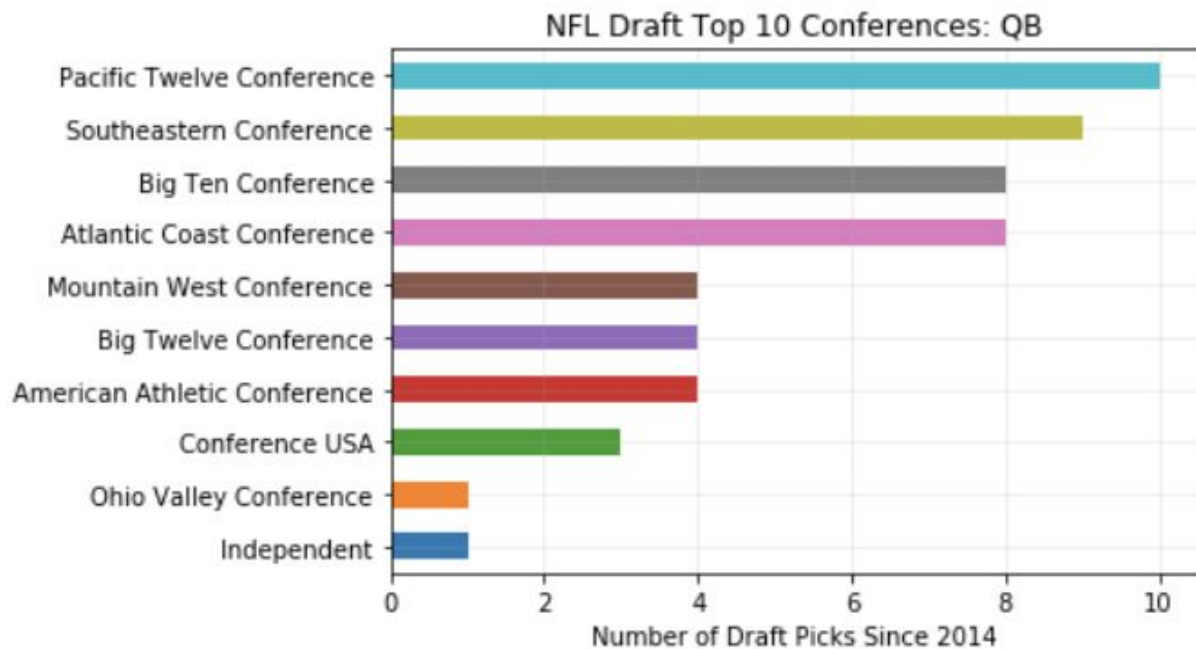
# Team Allocated Draft Picks: Rounds 1-3



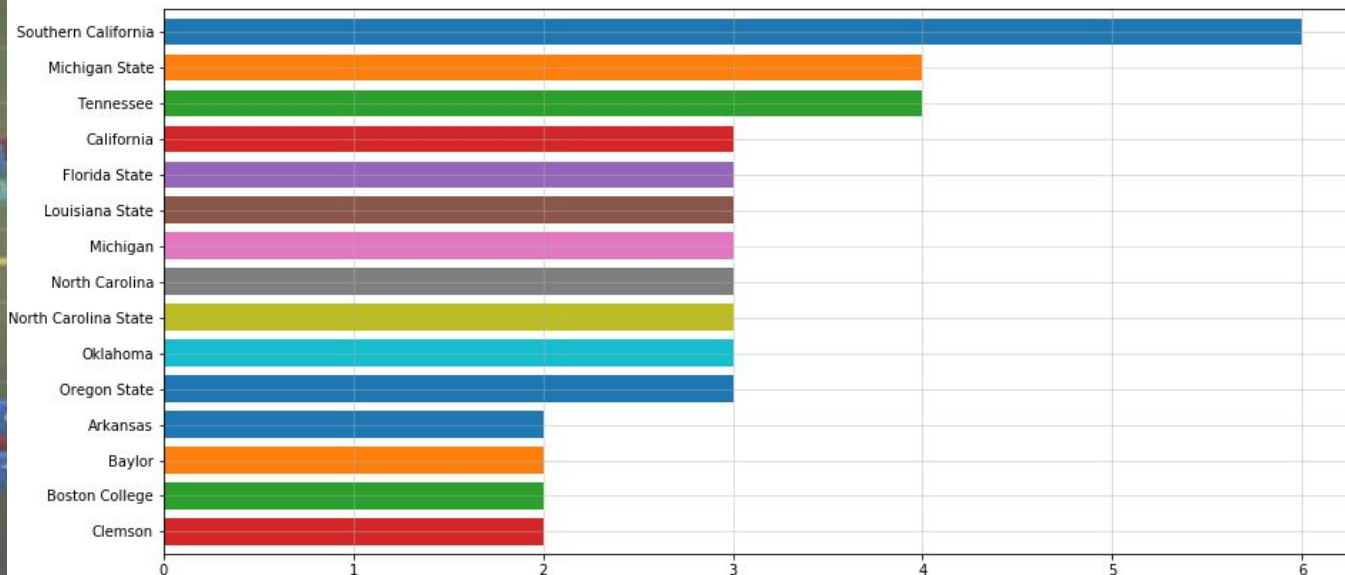
to 84-A. Brown  
4).  
onio Brown  
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42 yrs  
e Travelled  
RANKING  
8TH  
Season  
5  
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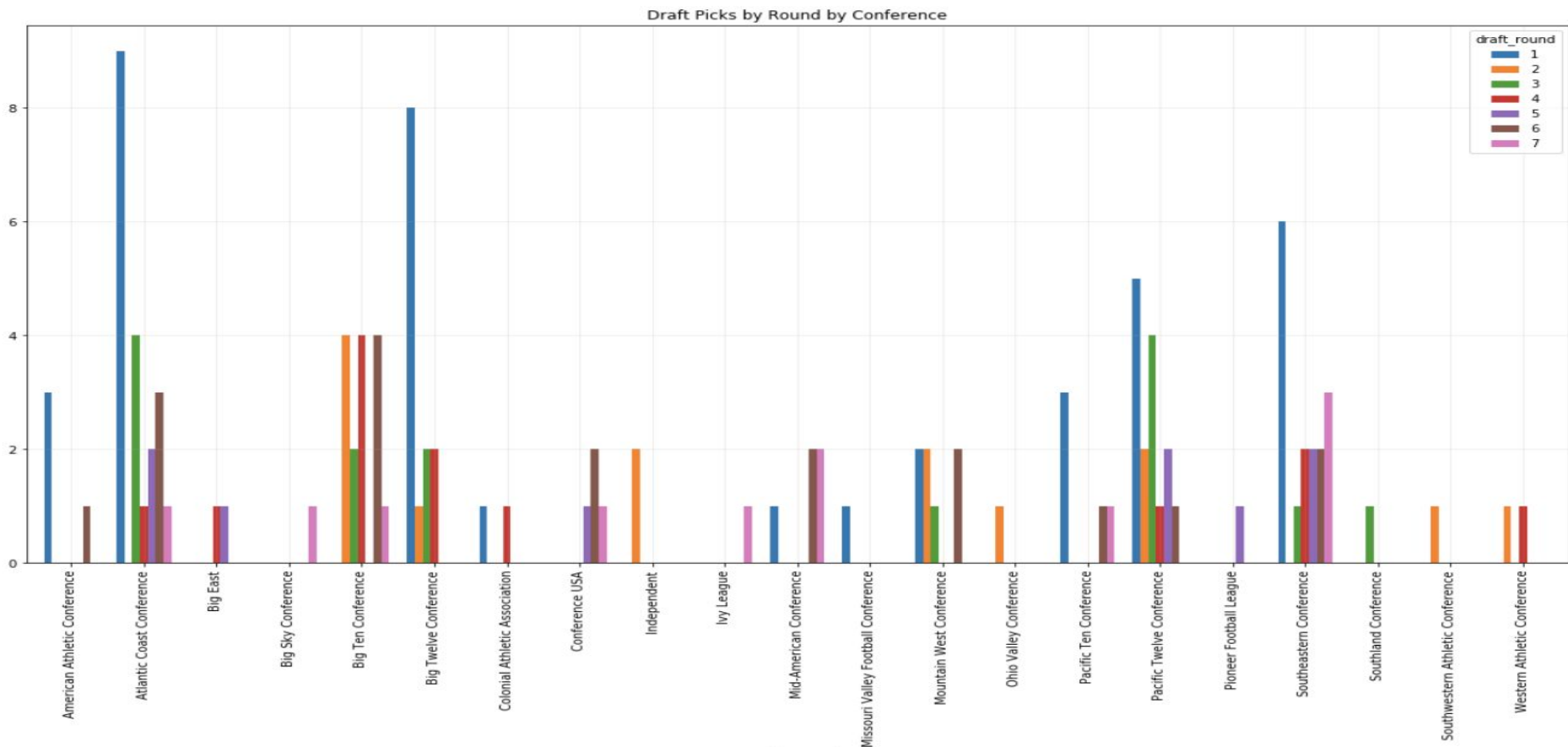
# Top 10 Conferences NFL Draft Picks: All Rounds



# Top 15 Colleges: Drafted QB's: All Rounds

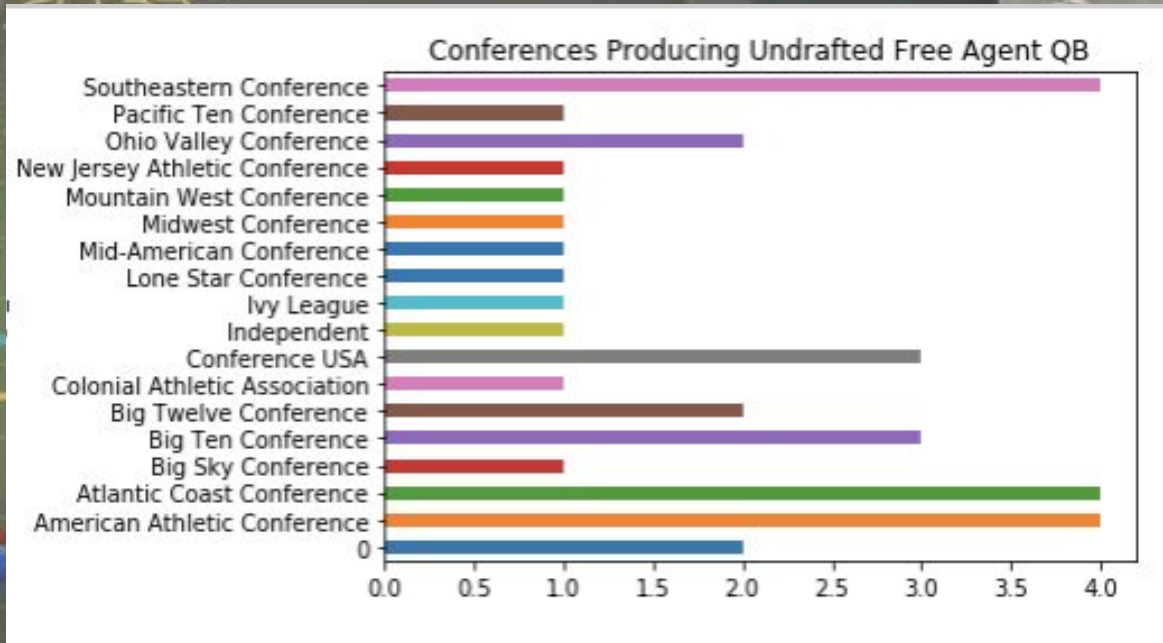


# Draft Picks by Conference by Round





# Undrafted Free Agents by Conference



Roethlisberger PASS to B4-A. Brown  
gain (37-T. Frederick).

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TOP SPEED  
20.35  
MPH

30.0

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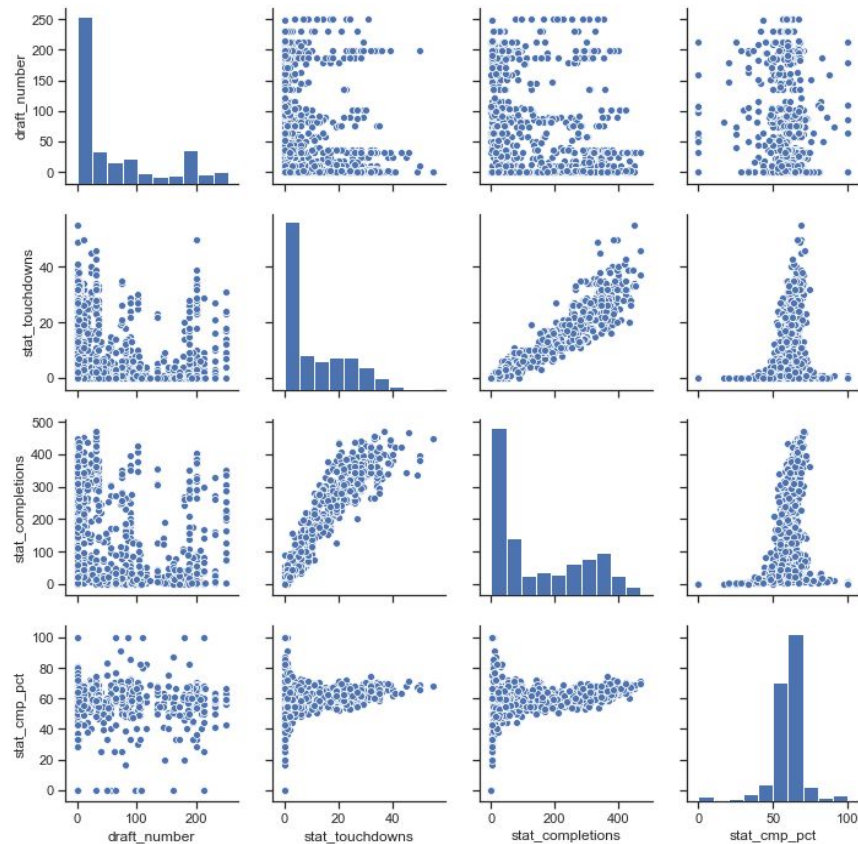
LB ❤️ 113

RB 🍀 12

# Correlation Analysis

```
draftnumber_touchdowns_df.corr()
```

	draft_number	stat_touchdowns	stat_completions	stat_cmp_pct
draft_number	1.000000	-0.169637	-0.176757	-0.122186
stat_touchdowns	-0.169637	1.000000	0.942507	0.258475
stat_completions	-0.176757	0.942507	1.000000	0.255534
stat_cmp_pct	-0.122186	0.258475	0.255534	1.000000



# Discussion

## Findings:

- QB draft picks don't waiver from traditional heuristics (best conferences, best schools, high draft #)
- Draft number and QB stats show correlation

## Conclusions

- Despite findings - "no franchise or GM has shown ability to beat the draft over time"
- More to the story than data, need to look at qualitative factors
- QB drafting is an art not a science



(10:23) 7-B. Roethlisberger PASS to 84-A. Brown



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# Post Mortem

## Challenges:

- High Volume of Data > Simplifying our Question
- Broad scope > Picked a position and analyzed

## More time and research:

- Bring in college data
- Explore other APIs
- Look at coaching staff & schemes



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Q & A

