

What effects can a rule change have in the NBA?

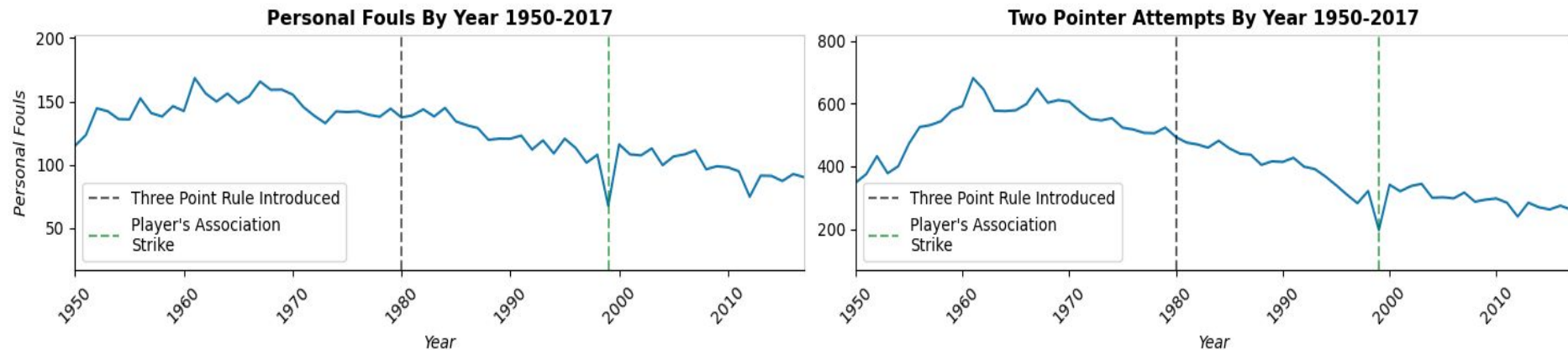
By Jordan Fairbanks

First, let's ask: 'What makes basketball fun to watch?'

I want to see:

- Fancy ball handling
- Dunks
- Fouls
- Blocks
- Lots of points

What was basketball like in the beginning?



- Taller/bigger players had an advantage
- Lots of layups
- Lots of fouling
- Slower pace

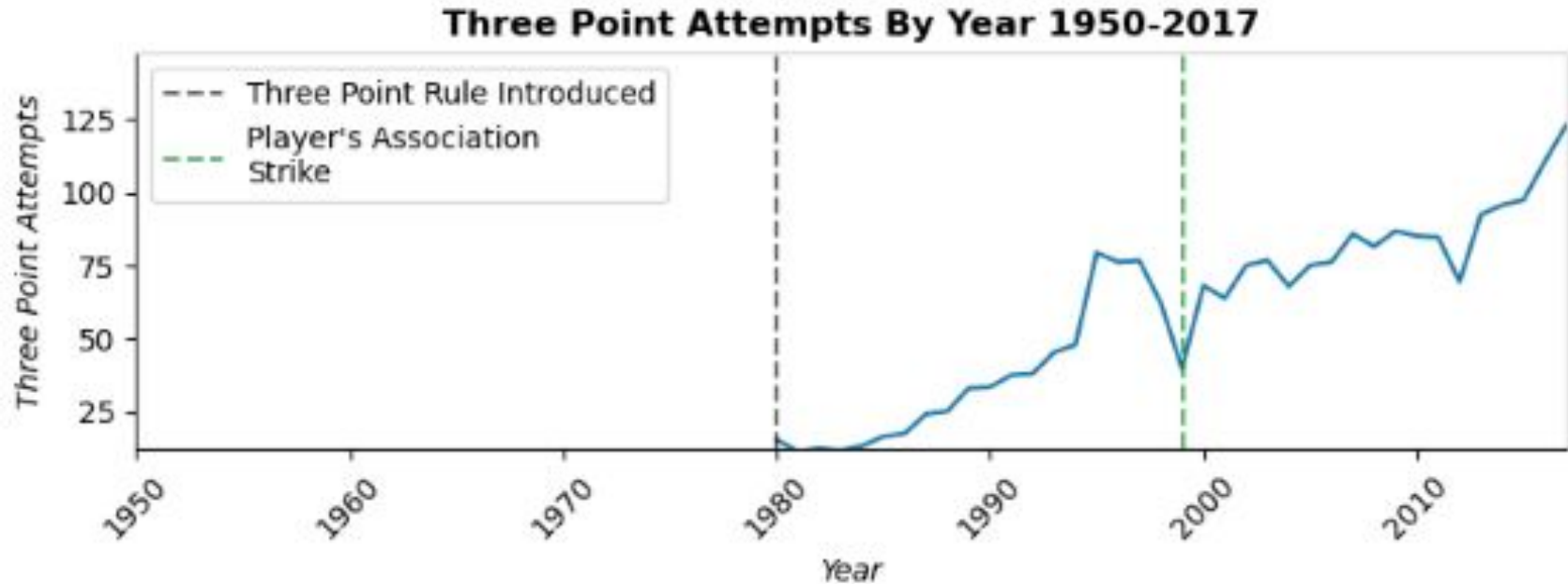
From the 1950's to the 1970's, the NBA tried a lot of different rule changes to handle the amount of fouls.

In the 1978 pre-season, the NBA tried out the three pointer, later implementing a full rule change in the 1979-80 season.

It took a few years to show significant change as college and high school athletes started to train to better shooters.

In 1999 there was a players association strike, they only played about 60% of the season which corresponds to the green dotted line (and the dip in both graphs.)

In 1980, the Three Pointer was introduced.



How did this affect the stats of the average player over time?

Why is a three pointer so much better than a two pointer?

When you score a three pointer, you get 50% more points than a two pointer. That's a big difference!

Let's take a look at the 2015 stats for Steph Curry, one of the best shooters in the NBA today.

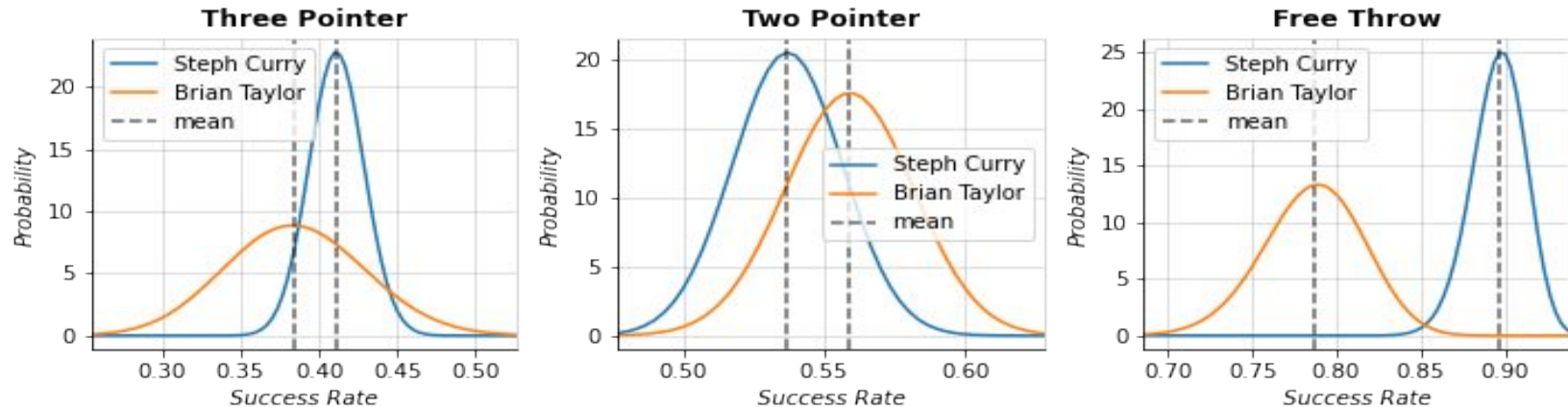
Player	Year	3PA	3P%	2PA	2P%
Stephen Curry	2015.0	646.0	0.443	695.0	0.528

	Percentage	Attempts	Expected points
2 Pointers	52.8	695	733.92
3 Pointers	43.3	646	858.534

- Even though Steph Curry attempted (and made) more two pointers that year, he scored more points from three's.

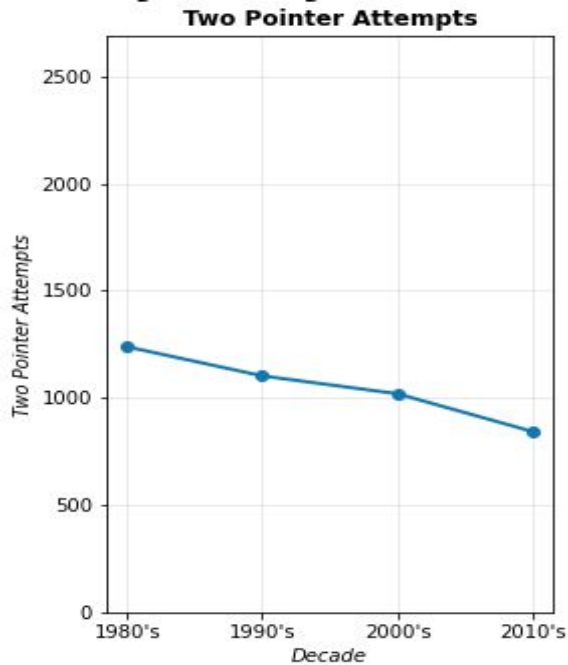
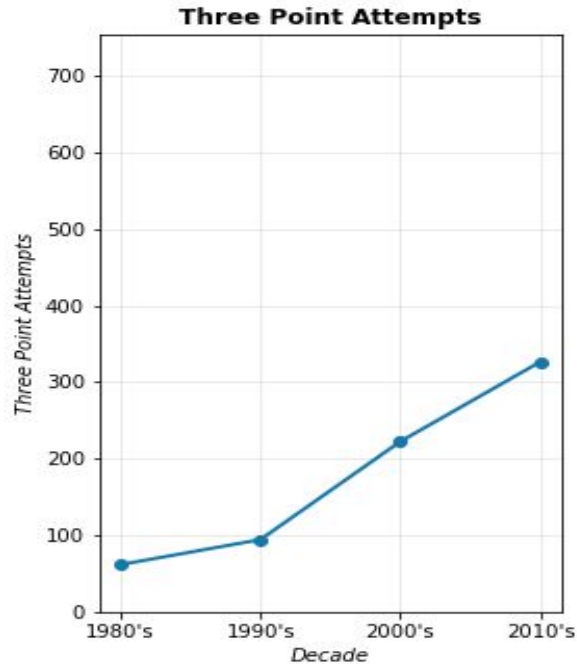
Let's Compare...

Steph Curry Vs Brian Taylor(3 Point Shooting Leader 1981)

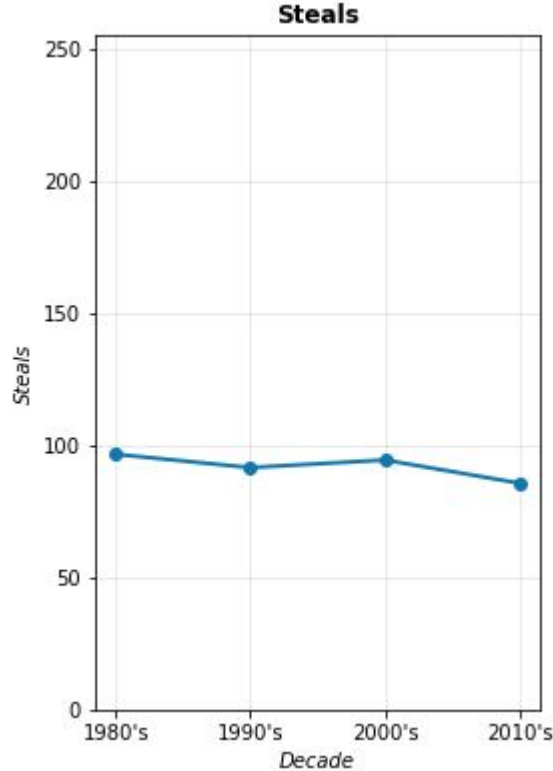
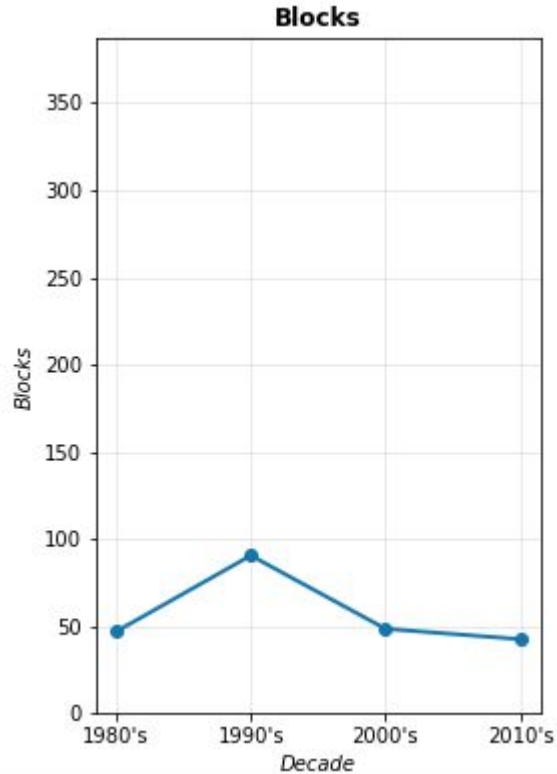


- These graphs represent the shooting percentages of Steph Curry in 2017 and Brian Taylor in 1981.
- You can see how much more consistent of a three point shooter Steph Curry is by looking at the variance of the three point graph, and we can infer that he spent more time and energy developing his shooting.

Even the top scorers show the trend of favoring three pointers.



As the top scorers in the league start to favor three pointers, they attempt fewer layups and shots from inside the key.



We also see:

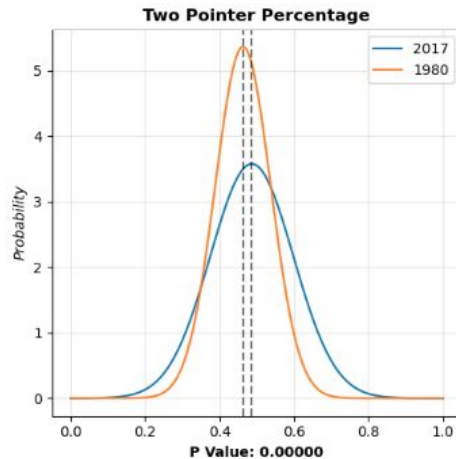
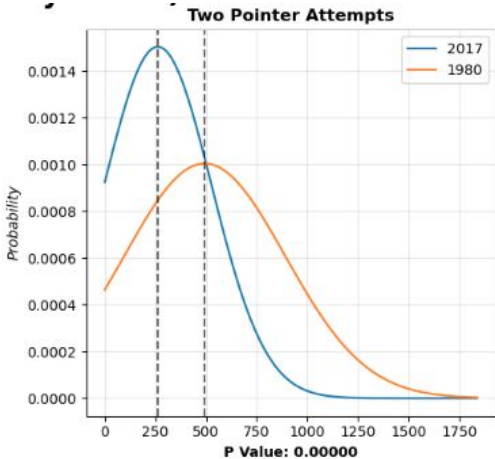
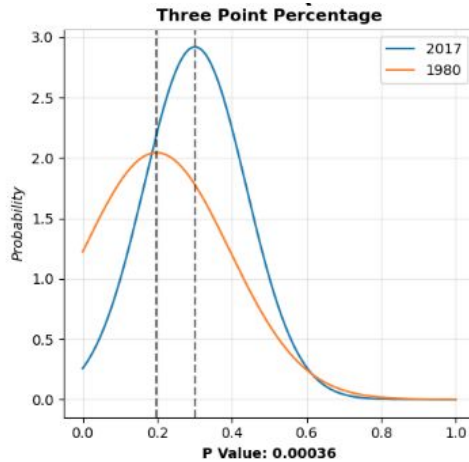
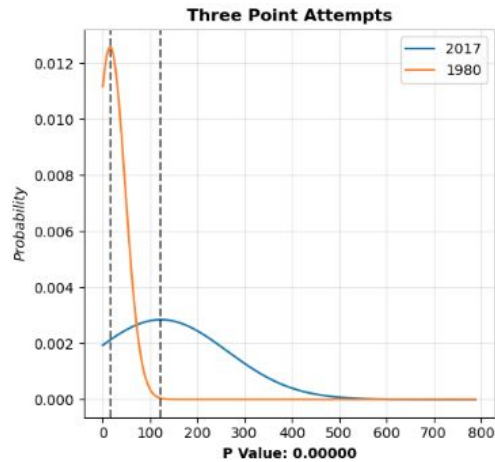
-less blocking

-less stealing

Which means:

-less ball handling

-today's games are
less exciting



Mann-Whitney U Test:

- Proves the underlying distributions are different
- Non-parametric

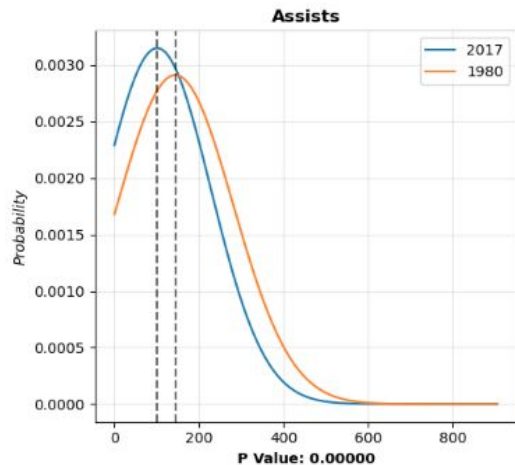
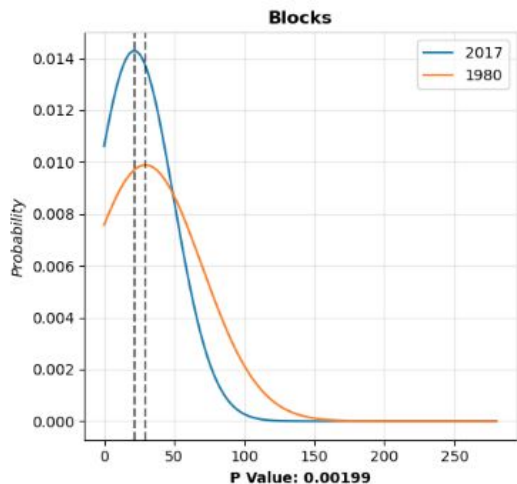
Null Hypothesis:

There was no change from 1980 to 2017 in the statistic being measured.

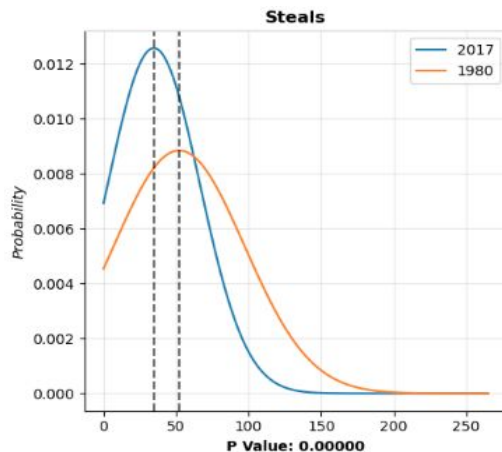
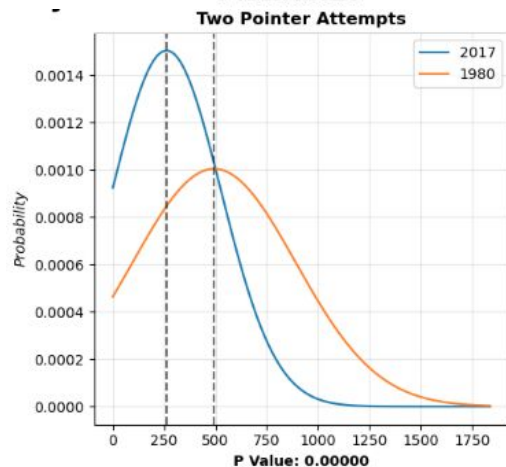
Results:

- $\alpha = .01$
- we can say with 99% confidence that the average player in 2017 performs differently in these categories than players from 1980.

Which has led to...



- Fewer blocks
- Fewer assists
- Fewer dunks
- Fewer layups
- Fewer steals
- **Less exciting games**



Conclusion/Next Steps

- The 3 Pointer rule changed the way top athletes train, and in turn has affected the league statistics.
- To study this phenomenon further, I could look at data from more recent years, or I could look at the statistics for each game since 1980 and study the trend more closely.

Sources

- Dataset:

https://www.kaggle.com/drgilermo/nba-players-stats?select=Seasons_Stats.csv

- Rules:

<https://cdn.nba.net/nba-drupal-prod/nba-rules-changes-history.pdf>

Wait, where can I check out more from this author?

- check me out on Github

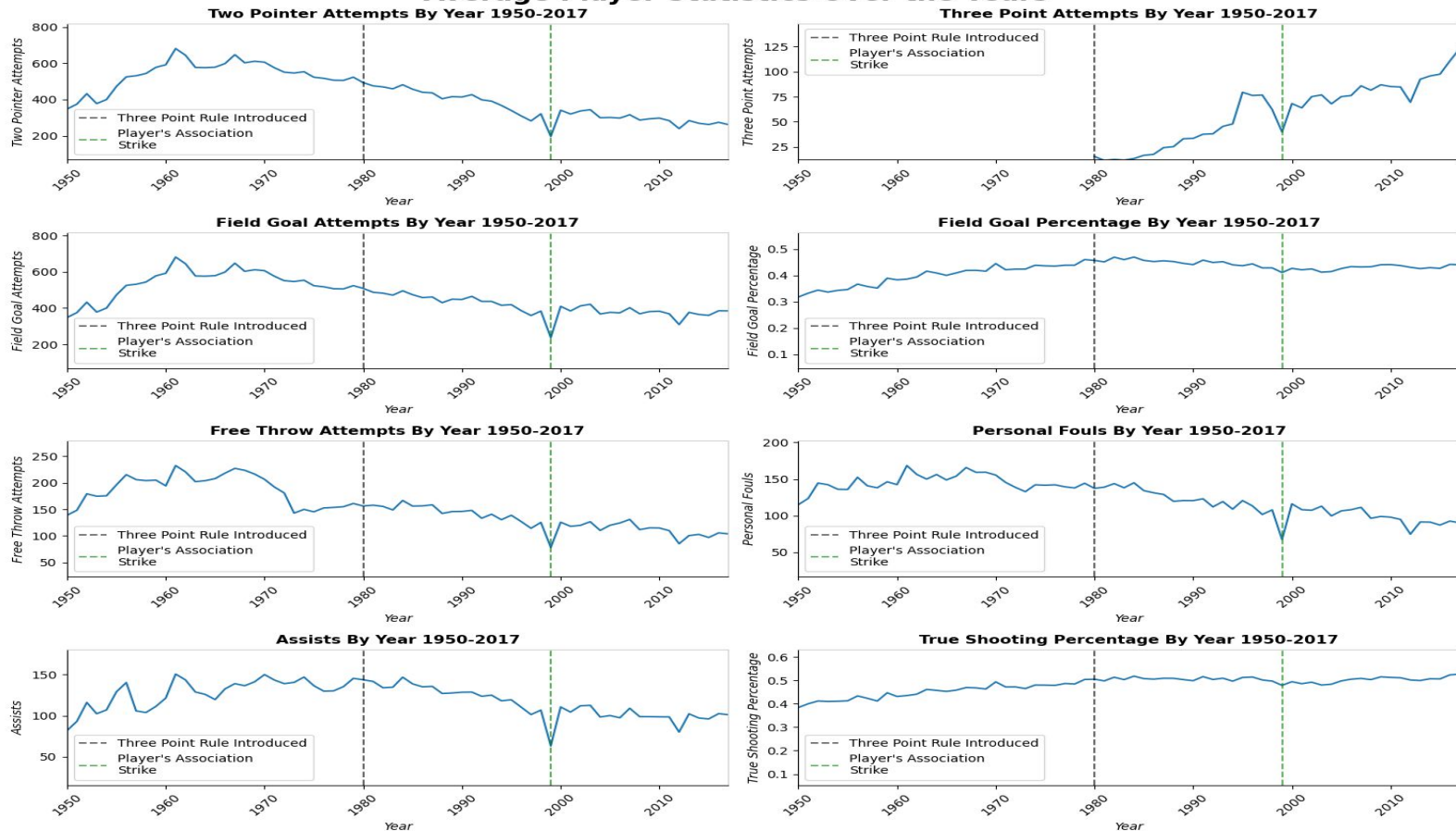
<https://www.github.com/Jordan-Fairbanks>

- or try my LinkedIn

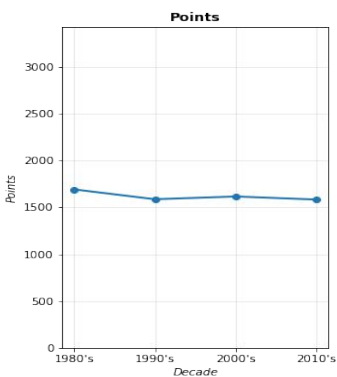
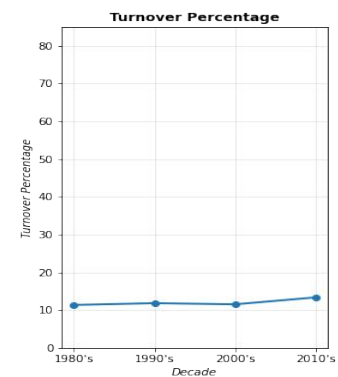
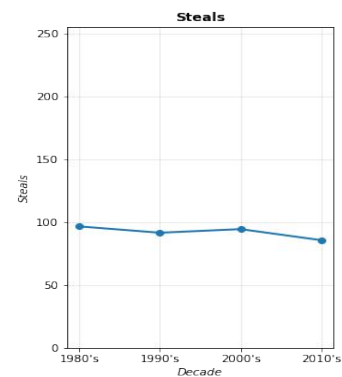
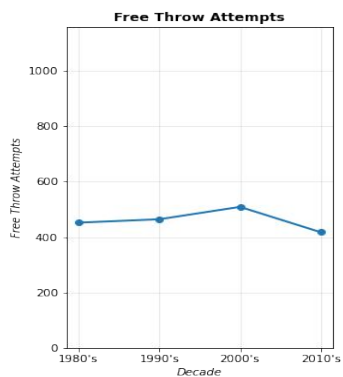
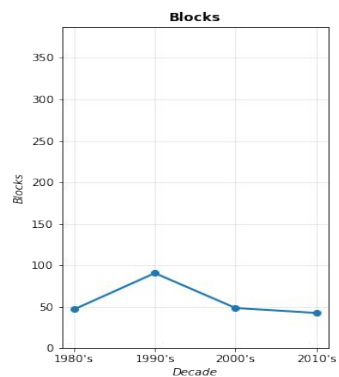
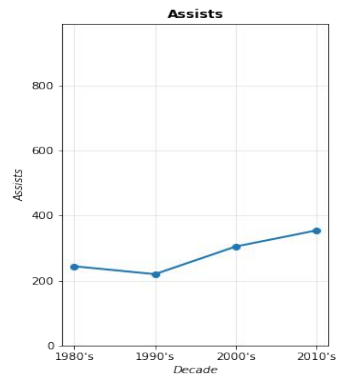
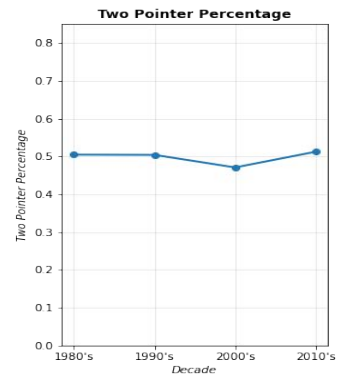
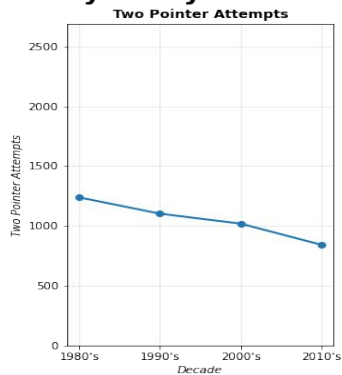
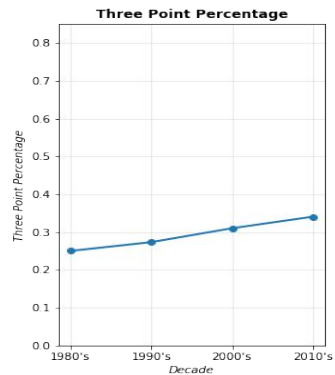
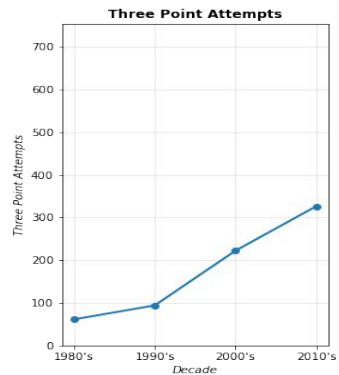
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Appendix

Average Player Statistics Over the Years



Average Statistics for the Top Ten Players by decade



Average League Statistics 2017 vs 1980

(Mann Whitney U Test)

