

Baseball in the Time of COVID:



Did rule changes and other protocol modifications impact
player performance in the 2020 MLB season?

By Reuben Akabas

A Brief Hello

- Reuben Akabas
 - 4 weeks of experience as a blossoming Data Scientist
 - 20+ years of mostly miserable experience as a Mets Fan and Armchair Analyst

Background

- Baseball: Our National Pastime
- COVID-19: A pandemic, you've probably heard of it

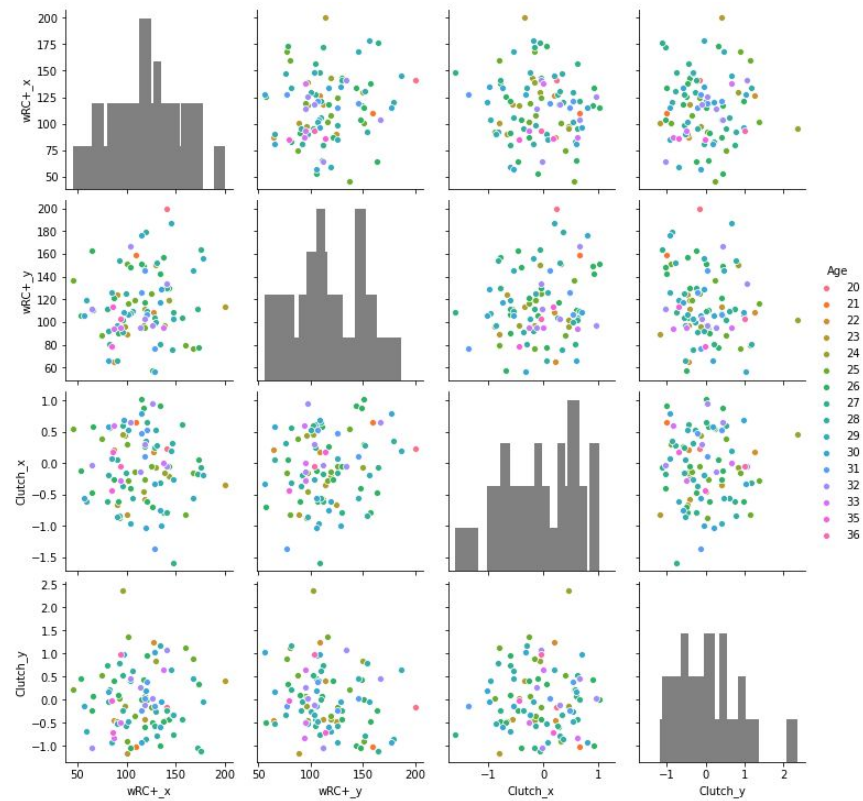
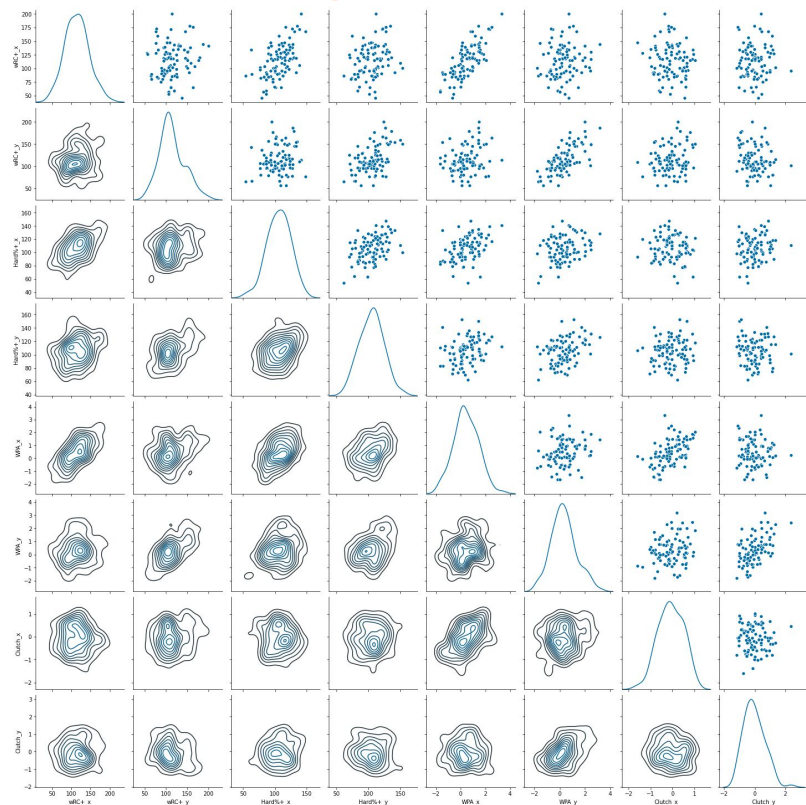
Typical Baseball Season	2020 Season
1.5 months of Spring Training in Feb and March	Spring training interrupted by COVID shutdown
162 games from April to October	60 games played from July to September
Fans allowed	No fans allowed
	Rule changes*
	Protocol restrictions between games

- Rule changes: Designated Hitter in the National League, 3 batter minimum for relief pitchers, extra innings start with a runner on 2nd base, 7 inning doubleheaders instead of 9 innings

Dataset Background

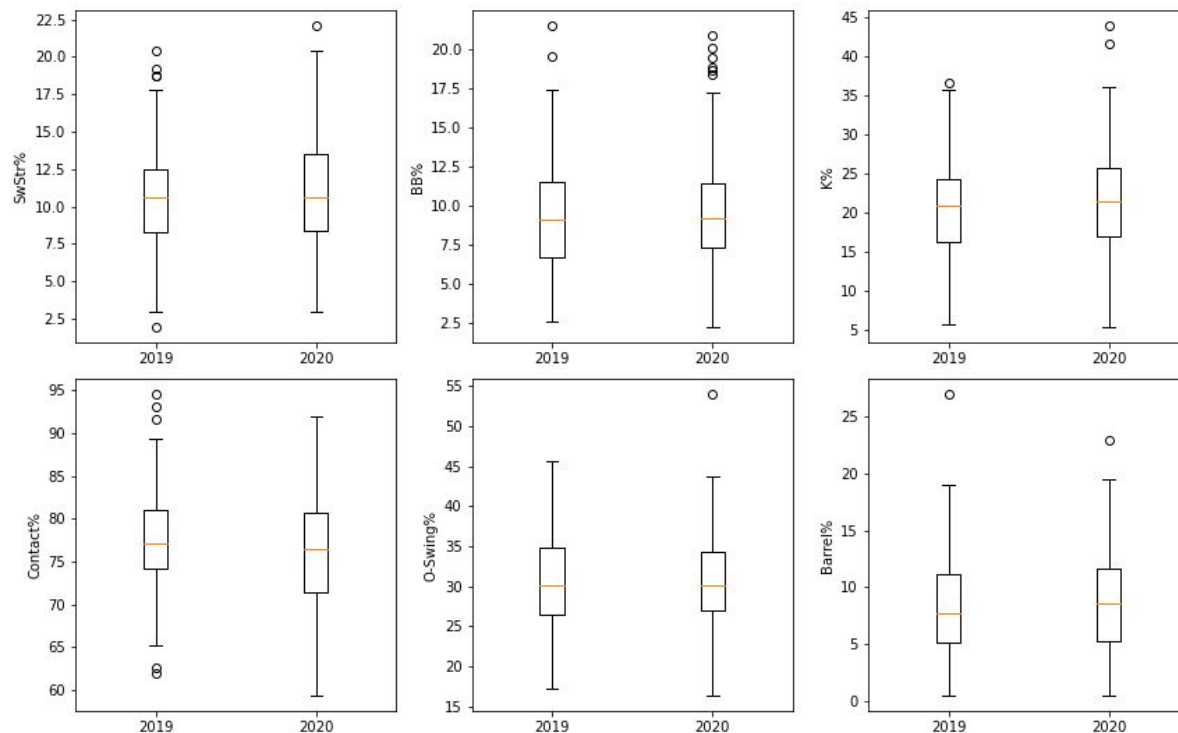
- Season-by-season data:
 - 1 data set for each season pulled from Fangraphs
 - 35 features - each representing a different statistic for measuring player performance
 - Each observation represents a single player's performance for that season
 - Number of observations varied by season depending on how many players had a “qualifying” number of Plate Appearances

Looking for obvious correlation



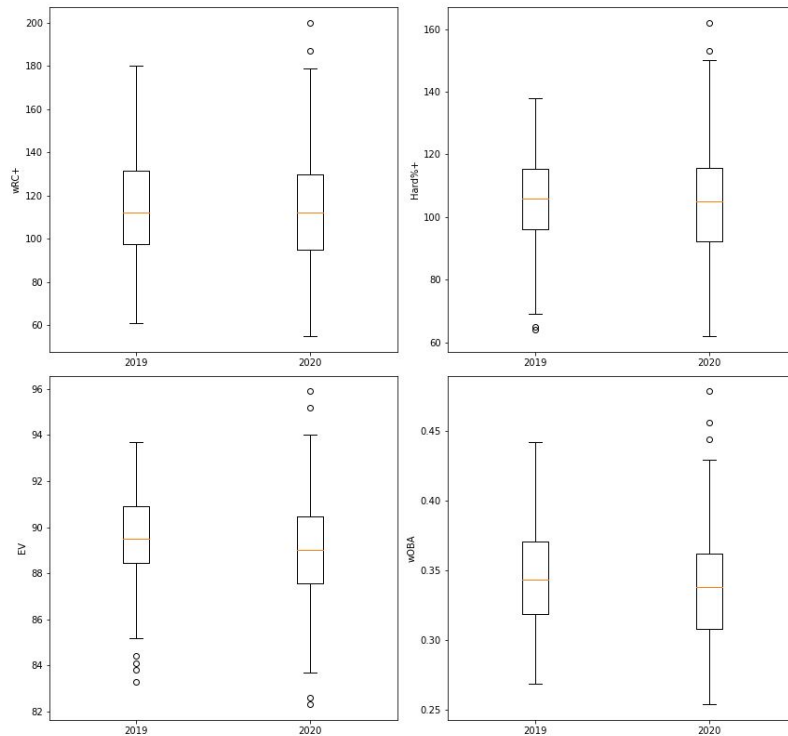
Examining Indicators of Performance

Comparison of various indicators of performance, 60 games



Examining Outcomes Statistics

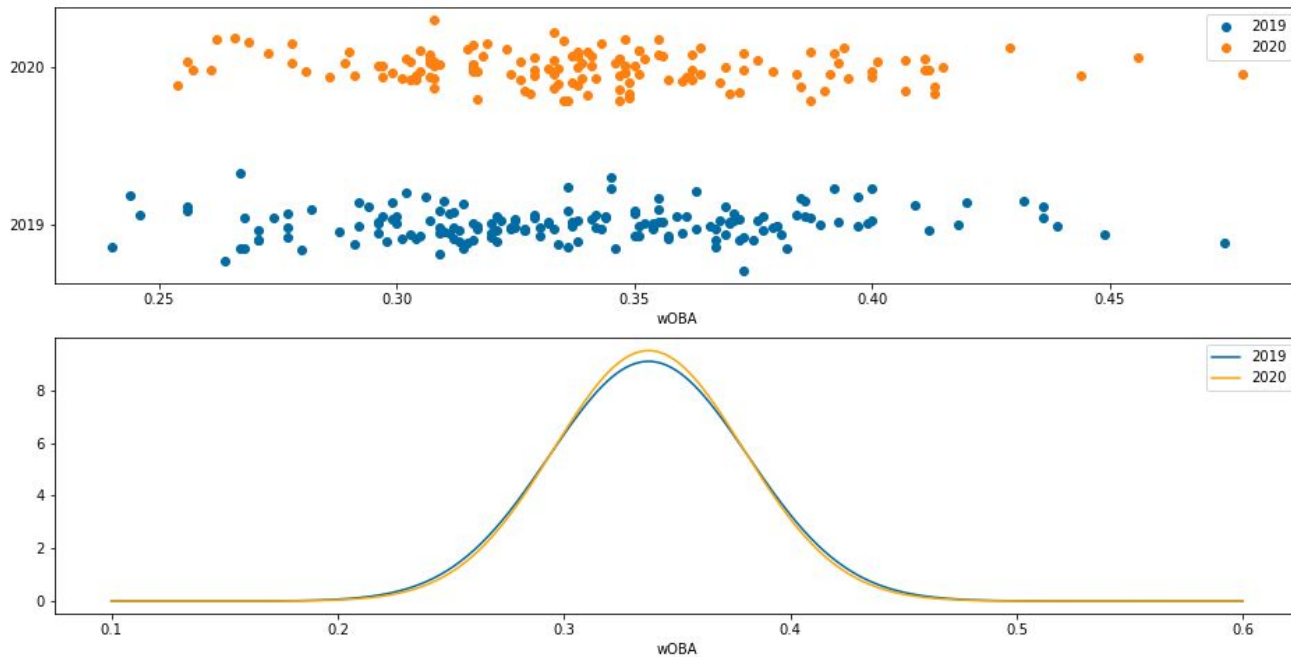
Comparison of various outcomes statistics, full seasons



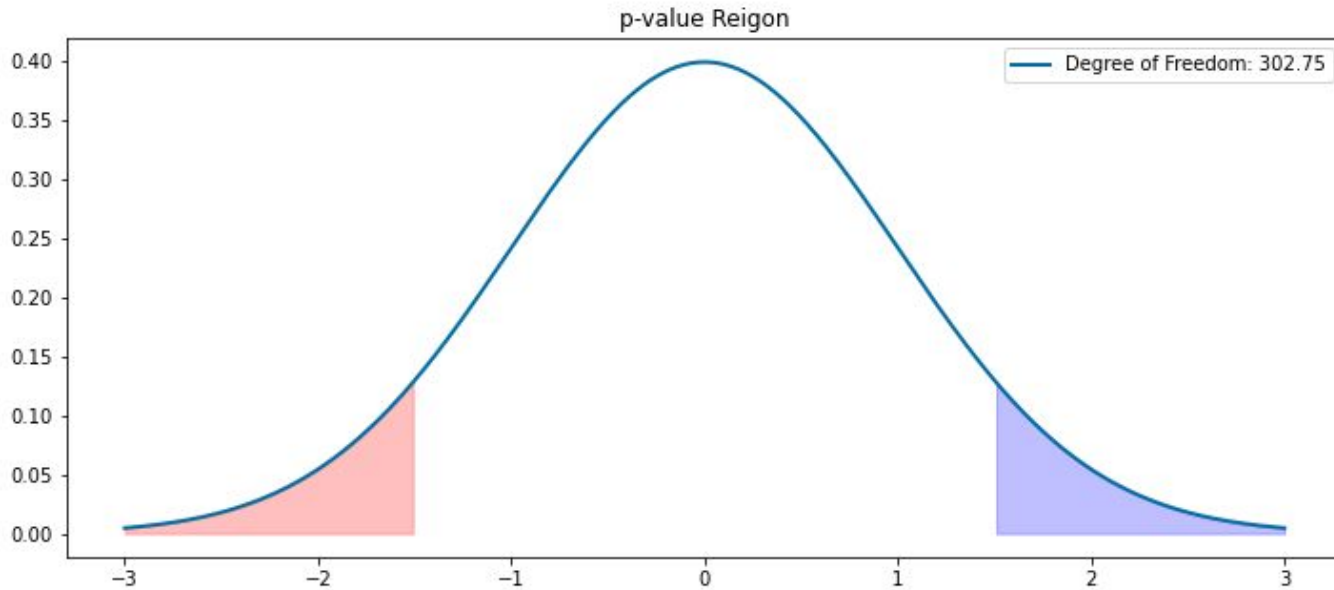
Hypothesis testing

- H_0 : There was no difference in batter performance between the 2019 and 2020 seasons
- H_A : There was a difference in batter performance, because of the rule changes and other adjustments
 - Two-tailed
- α : 0.1

T-test of wOBA for the 2019 and 2020



T-test contd.



- **P-value: 0.496**
 - *Fail to reject the null*

T-tests contd.

Statistic Used	p-value	Null?
wOBA	0.496	Fail to reject
Runs Scored	0.236	Fail to reject
HR	0.467	Fail to reject
Clutch	0.335	Fail to reject
Hard%+	0.302	Fail to reject

Conclusion

- Based on the factors that were examined, it could not be concluded that the many changes that took place before and during the 2020 season had any significant effect
 - More analysis must be done to ensure that no individual factors were changed
 - Perhaps individual factors that weren't examined did change, but the total effect was washed out
 - If this conclusion does in fact turn out to be true, it could give MLB more confidence to make the various rule changes more permanent

Future Directions

- More closely examine individual factors
- Try other statistical tests and break down the data sets in different ways
 - Break down data by league (AL vs. NL) in order to specifically examine the potential impact of introducing the Designated Hitter to the National League
 - More closely study home and away effect to examine whether perhaps players were more consistent overall this season
- Do more work with the game log datasets
- Find better datasets for injury and umpire performance data

Thank you

- More info on the project will be available on my GitHub:
 - <https://github.com/rakabas1>

References

- Fangraphs
 - <https://www.fangraphs.com/leaders.aspx?pos=all&stats=bat&lg=all&qual=y&type=8&season=2020&month=0&season1=2020&ind=0>
- Baseball Reference
 - <https://www.baseball-reference.com/players/gl.fcgi?id=bettsmo01&t=b&year=2020>