The NBA 2020 Draft

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Our Mission

<u>The New Orleans Pelican's 2019 Season in numbers</u>

- 33 Wins and 49 Losses (League Rank 22/30)
- 116.8 points conceded per Game (League Rank 27/30)
- A 9.1% decrease in blocks per game from the year before
- A decrease in 3 point percentage throws from the year before
- A League Rank of 19 for Personal Fouls

Why we are here:

We want to help your franchise reach the playoffs of the 2020 Season

How we can improve your team

4 Points of Action

We want to improve your team by:

1. **Raising your 3 point shooting percentage**
   - **The modern game needs clinical 3 point shooters**

2. **Decreasing the team's personal fouls count**
   - **Giving away too many fouls will make defenses weaker**

3. **Raising your free throw shooting percentage**
   - **Maximizes attacking output**

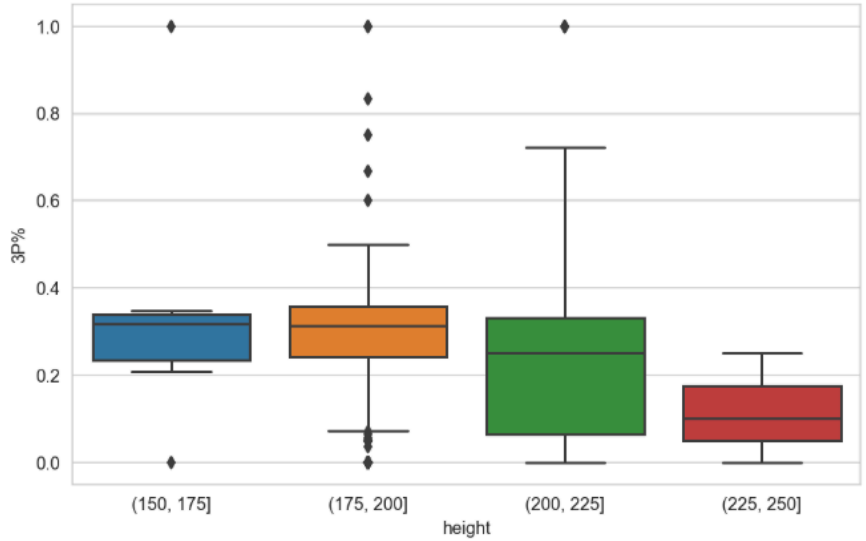
4. **Making your defense more robust with more blocks**
   - **Decrease the chance of your opponents scoring points**

Our approach:

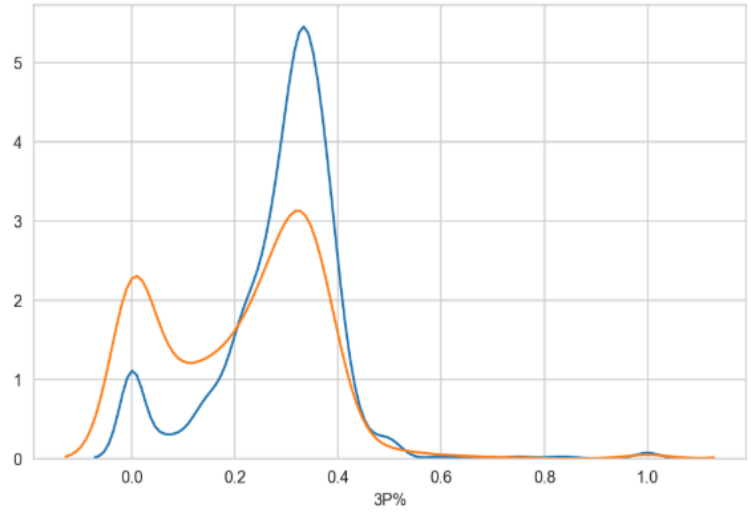
Using comprehensive statistics consisting of more than 1500 players we investigated these points of action

Our thorough analysis will allow us to prescribe the type of player the New Orleans Pelicans ought to buy in the NBA 2020 Draft

Is there a connection between players' height and 3P shooting percentage and is this difference statistically significant?



Since our data wasn't normally distributed we used the central limit theorem to normalize it by getting distribution of many samples' means



Null Hypothesis

H0 = The mean difference between short players' 3 point shooting percentage and tall players' 3 point shooting percentage is zero.

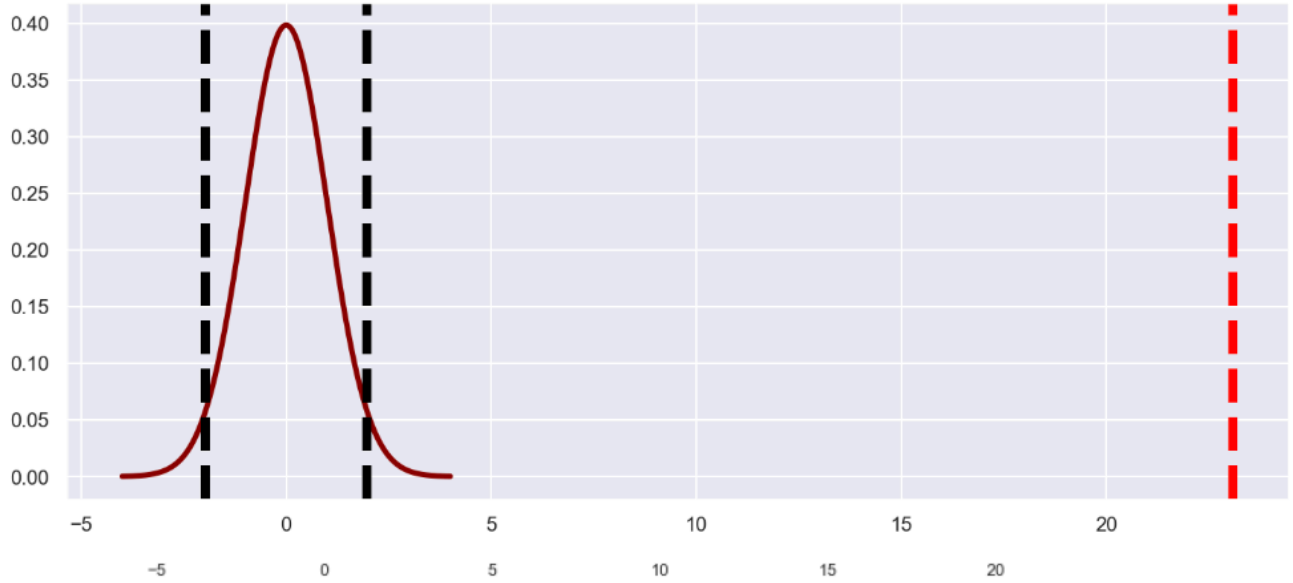
Alternative Hypothesis

In this example, the alternative hypothesis is that there is in fact a mean difference in 3 Points Shooting Percentage between short players and tall players.

H1(two tailed) = The parameter of interest, our mean difference between short peoples' 3 point shooting percentage and tall players' 3 point shooting percentage, is different than zero.

H1(one tailed, >) = The mean difference between short players' 3 point shooting percentage and tall players' 3 point shooting percentage is greater than zero.

H1(one tailed, <) = The mean difference between short players' 3 point shooting percentage and tall players' 3 point shooting percentage is less than zero.

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In [14]: ht.Two_Sample_Test.conclusion(result, t_crit, alpha)
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Null hypothesis rejected. H1 is accepted. Results are statistically significant with t-value
= 23.09 critical t-value = 0.6757308423854822 and p-value = 0.0
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In [ ]:
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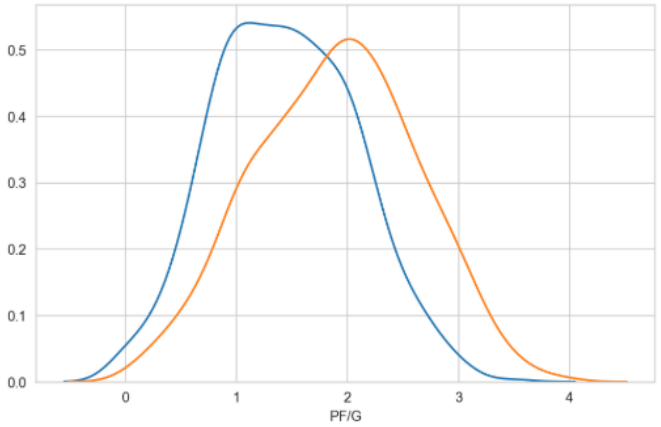
Is there a connection between players' weight and fauls percentage and is this difference statistically significant?



Null Hyp. is rejected.

Null Hypothesis

H0 = The mean difference between short players' 3 point shooting percentage and tall players' 3 point shooting percentage is zero.

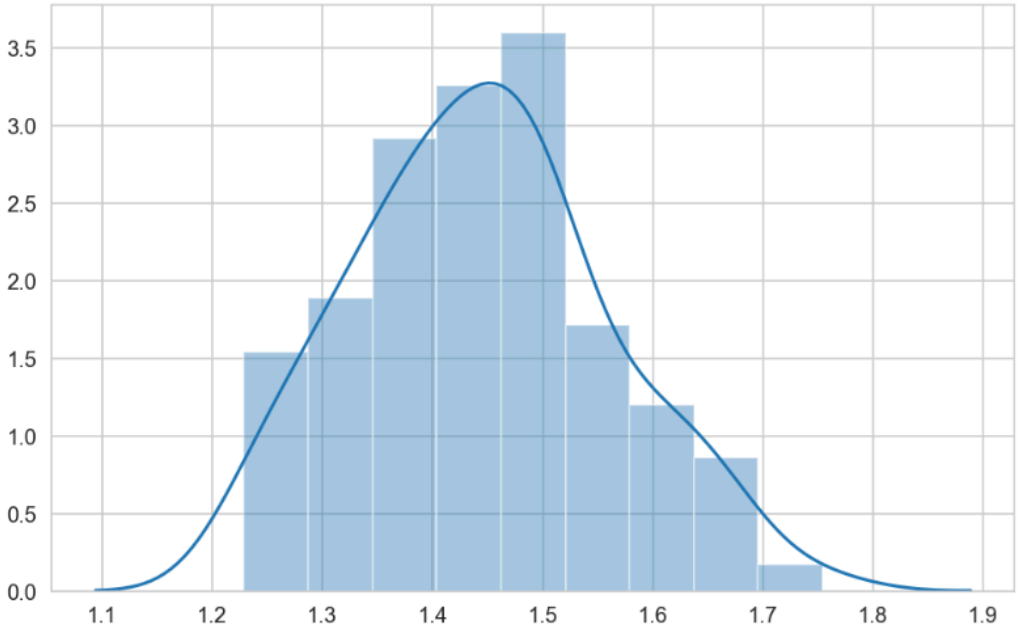
Alternative Hypothesis

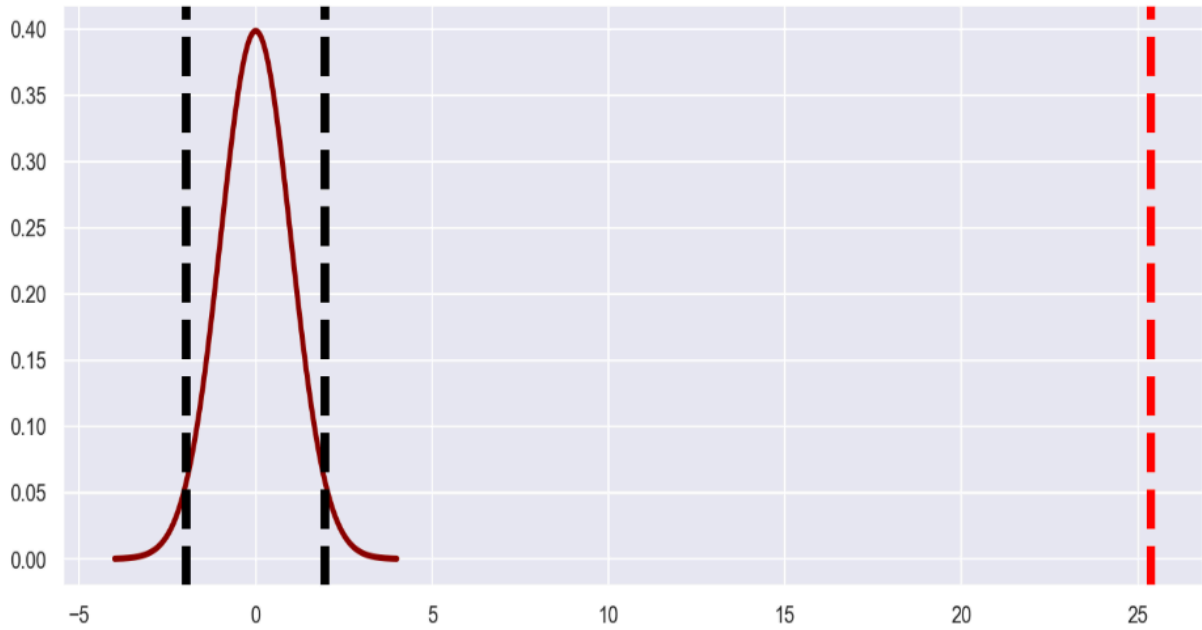
In this example, the alternative hypothesis is that there is in fact a mean difference in fauls Percentage between heavy players and skinny players.

H1(two tailed) = The parameter of interest, our mean difference between heavy players fauls percentage and skinny players' fauls percentage, is different than zero.

H1(one tailed, >) = The mean difference between heavy players fauls percentage and tskinny players' fauls percentage is greater than zero.

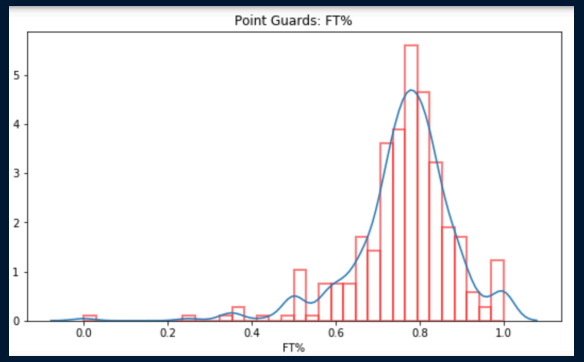
H1(one tailed, <) = The mean difference between heavy players fauls percentage and skinny players fauls percentage is less than zero.

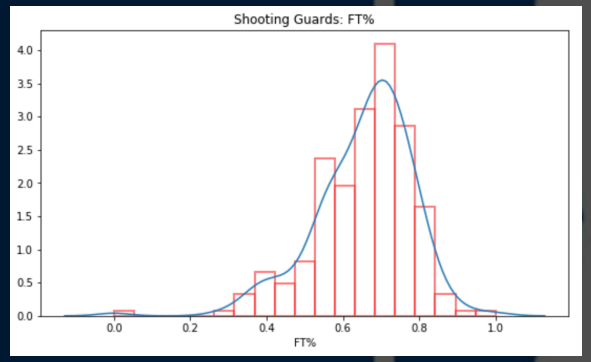




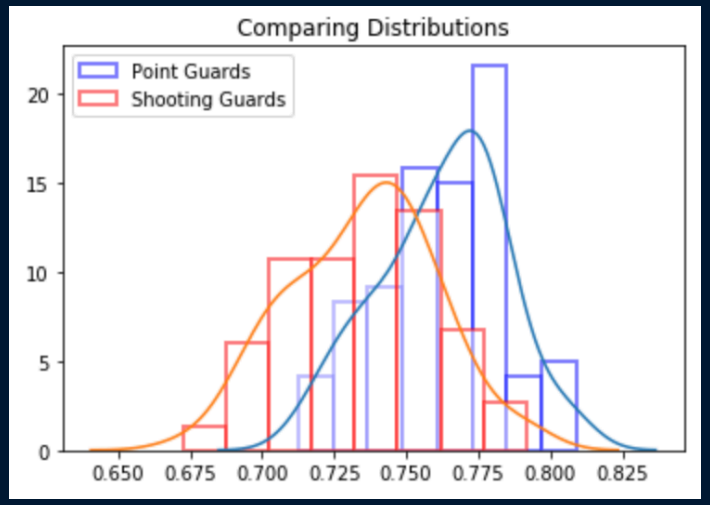
3) Raising your free throw percentage

An initial glimpse into the data





Our sample distributions



Point Guards vs. Shooting Guards

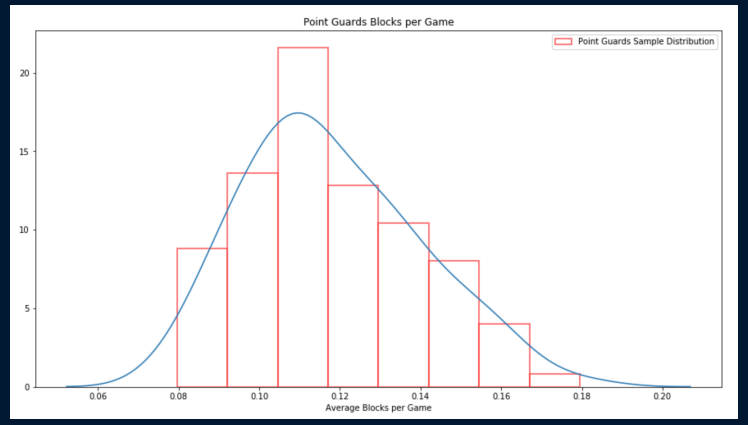
Our hypothesis more formally:

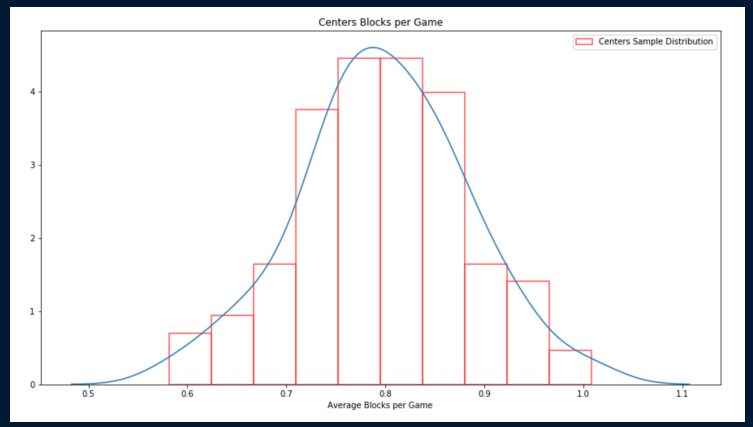
Null Hypothesis:
The average free throw shooting percentage for point guards is NO DIFFERENT to the shooting percentage of shooting guards

Alternative Hypothesis:
The average free throw shooting percentage for point guards is GREATER THAN the shooting percentage of shooting guards

Welch's t-statistic	8.28
p-value	Very small
t-critical value	1.645
Conclusion	REJECT the Null Hypothesis

4) Raising your blocks per game





A pair-wise t-test between point guards and centers allows us to conclude that centers are better at blocking!!

Blocks per game differ by positions

- Using another statistical method called ANOVA, we can compare the differences in blocks per game across all the different positions on a basketball court

Our hypothesis more formally:

Null Hypothesis:
Across different positions, there is NO DIFFERENCE in blocks per game

Alternative Hypothesis:
Across different positions, there are certain positions which have GREATER blocks per game

ANOVA Analysis

	sum_sq	df	F	PR(>F)
C(POS)	79.314438	4.0	196.649897	2.608512e-136
Residual	155.382167	1541.0	NaN	NaN

REJECT THE NULL!!

Concluding remarks

- Draft point guards over shooting guards to increase free throw percentage
- Draft centers to improve blocks per game
- Draft shorter players to improve 3 point percentage
- Draft lighter people to avoid more fouling

SAFE

Q&A