

Deflategate 2014



VS



The big controversial ? since 2014

Did the **Patriots** *REALLY* have a winning advantage by having a deflated football under the NFL legal regulation level?

Well, we are not going to beat a dead horse here, let's be honest! There are too many influences other than just air pressure in a football that can make or break a game.

There are two sides that will argue whether or not that the **New England Patriots** had an advantage over the **Indianapolis Colts** in the 2014 NFL game which helped qualify them to go to the Super Bowl XLIX.

This brings me to my hypothesis: **It is easier to catch a deflated football, therefore the Patriots did have a winning advantage over the Colts.**

By performing my own simulation with a Football that meets the NFL regulation standards for PSI and with a football that violates the NFL regulation standards for PSI, by analyzing the game statistics, and reviewing some scientific research, I will be able to prove my hypothesis to be incorrect and convince you that **Deflategate 2014** did not in fact provide the key for the **Patriots** Win over the **Colts**.

The RULE

NFL Rule 2

Requires game balls to be inflated
between 12.5 and 13.5 PSI.



The Simulation

Supplies:

Pressure gauge 2 NFL leather footballs Thrower Catcher Recorder Ground markers

(Note: subjects were myself and a College Wide Receiver Football Player with 24 years of football experience)

Step 1:

Label each football A and B

Inflate football A to NFL regulation standard between 12.5 and 13.5 psi

Inflate football B to Average of referee #1 = 12.1 psi or to average of referee #2 = 11.38 psi (or average of ref 1 and ref 2 is 11.74 psi)

Step 2:

Mark the spot where the football thrower is to stand

Mark the spot where the football catcher is to stand

Step 3:

Thrower throws football A 20 times to catcher

Recorder documents the amount of catches and drops

Thrower throws football B 20 times to catcher

Recorder documents the amount of catches and drops

The Simulation

Step 4:

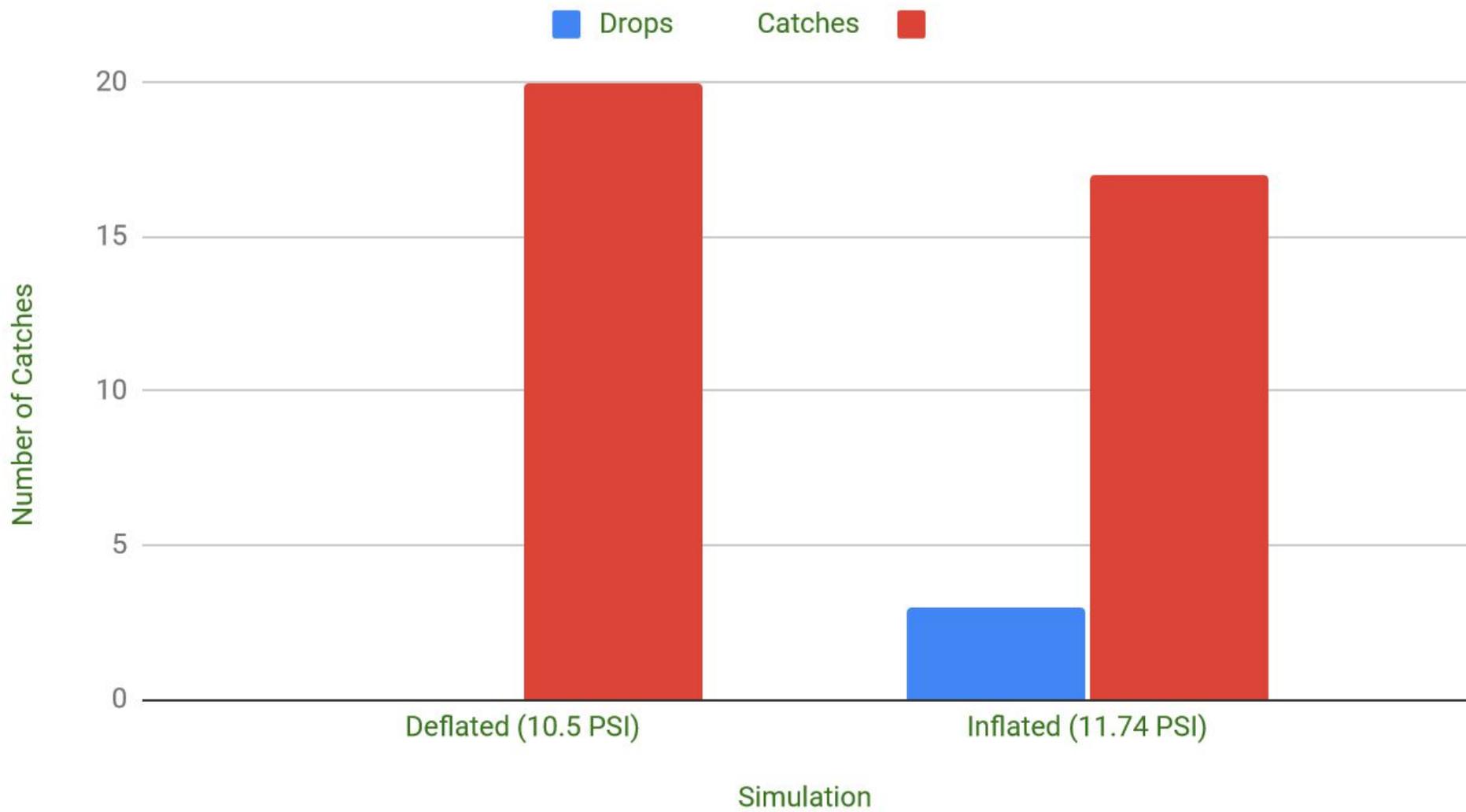
Analyze the data

	Football A	Football B
PSI	12.52	11.74

Football A		
	Catch	Drop
#1	Y	
#2	Y	
#3	Y	
#4	Y	
#5	Y	
#6	Y	
#7		Y
#8	Y	
#9	Y	
#10		Y
#11	Y	
#12	Y	
#13	Y	
#14	Y	
#15	Y	
#16		Y
#17	Y	
#18	Y	
#19	Y	
#20	Y	

Football B		
	Catch	Drop
#1	Y	
#2	Y	
#3	Y	
#4	Y	
#5	Y	
#6	Y	
#7	Y	
#8	Y	
#9	Y	
#10	Y	
#11	Y	
#12	Y	
#13	Y	
#14	Y	
#15	Y	
#16	Y	
#17	Y	
#18	Y	
#19	Y	
#20	Y	

Results	Catches	Drops
Football A	17	3
Football B	20	0



Game Stats

Fact: None of the game balls for the **Colts** or the **Patriots** were measured prior to game time.

Fact: Game balls were measured at Half Time by two referees with two different gauges, resulting in different readings.

Fact: Game balls were re-inflated for the Second Half but the readings were not disclosed to the public.

Fact: Only 4 balls were measured for the **Colts**, 3 of them measured on the low range on one gauge but measured within range on the other gauge however **Colts** were not found to be in violation and were continued to use their original footballs throughout the game.

Fact: **Patriots** scored more points in the second half than the first (28 points vs 14)

Fact: **Patriots** quarterback threw 63% vs **Colts** quarterback threw 58%.

Fact: **Patriots** had a home field advantage to begin with.

Game Stats

Fact: Patriots quarterback:

Threw 21 times and had 11 completions in the first half

Threw 14 times and had 12 completions in the second half



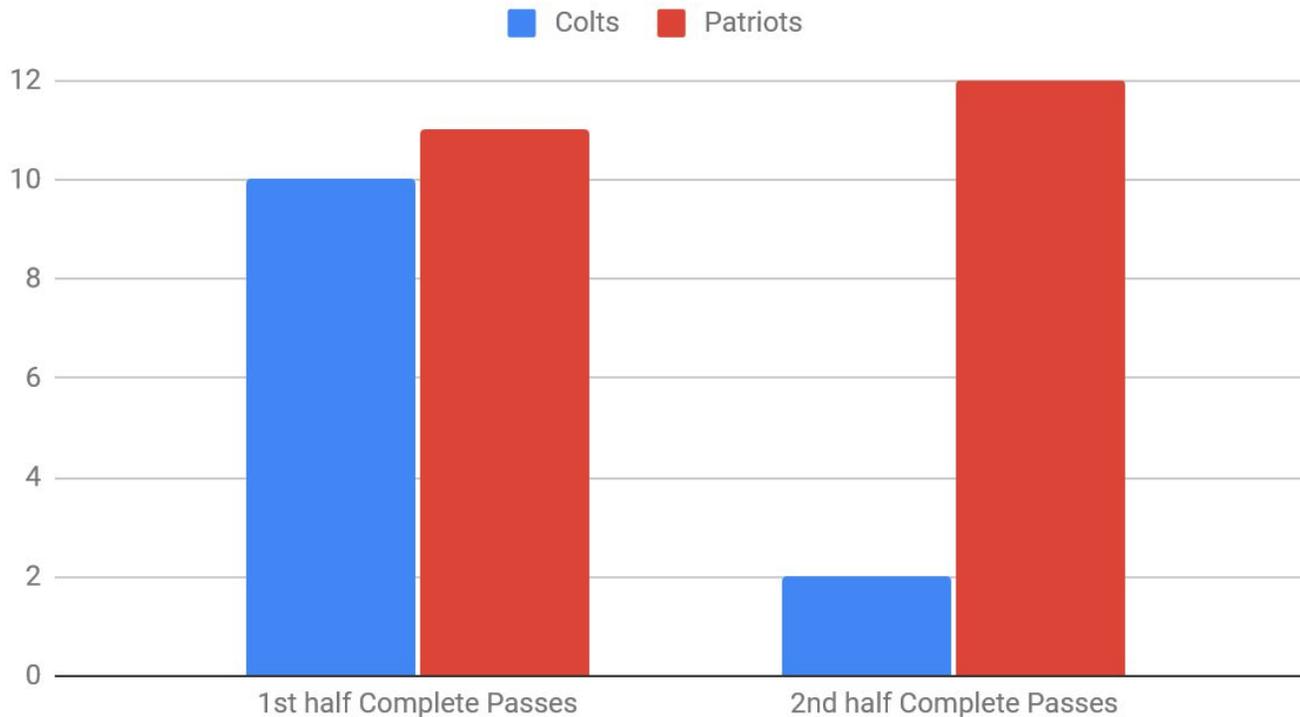
Fact: Colts quarterback:

Threw 18 times and had 10 completions in the first half

Threw 13 times and had 2 completions in the second half



Complete Passes For Each Team



NE vs IN Game Ball PSI readings

Team	Ref #1	Ref #2	Difference Between Refs
Patriot Football #1	11.5	11.8	0.3
Patriot Football #2	10.85	11.2	0.35
Patriot Football #3	11.15	11.5	0.35
Patriot Football #4	10.7	11	0.3
Patriot Football #5	11.1	11.45	0.35
Patriot Football #6	11.6	11.95	0.35
Patriot Football #7	11.85	12.3	0.45
Patriot Football #8	11.1	11.55	0.45
Patriot Football #9	10.95	11.35	0.4
Patriot Football #10	10.5	10.9	0.4
Patriot Football #11	10.9	11.35	0.45
Colt Football #1	12.7	12.35	-0.35
Colt Football #2	12.75	12.3	-0.45
Colt Football #3	12.5	12.95	0.45
Colt Football #4	12.55	12.15	-0.4

Research

Mythbusters used two footballs with amateur catchers and came to the unbiased conclusion that it clearly did not make any difference if it was easier to catch a football regardless of the PSI.

Source: (Youtube.com., “The Candidates first myth: are deflated balls actually easier to catch?”)

A Physics Professor explains that a football that is underinflated will not travel as far but makes for a more accurate throw at shorter distances.

Source: (Livescience.com., “Football Physics: Why Deflated Balls are easier to catch.”)

Two students: 1 argued that Tom Brady did cheat by using a deflated football and 1 argued that the temperature affected the PSI in the football therefore Tom Brady did not cheat.

Source: (Newsweek.com., “Child wins Science Fair Project by Proving Tom Brady Cheated.”)

Science

1. The weather: 52 degrees and raining winds of 14mph

Fact: The temperature of the environment is important to consider when measuring the amount of air in a football over time. For every 10 degree change in temperature it changes (on average) 1 PSI of air in a football.

Where is the proof that the NE Patriots did not start the game with Footballs inflated correctly to meet the rule? Measurements were not taken prior to the start of the game.

2. 3 out of 4 reputable Professional NFL Quarterbacks stated that having an under inflated ball does not make that big of a difference, where as the 1 outlier believes it does.

Having a football inflated to a specific level could also be a Quarterback's preference, just such as a quarterback deciding to wear gloves or not. (In fact [Tom Brady](#) preferred not to wear gloves whereas [Andrew Luck](#) preferred to wear them.)

Source: NESN., "Former NFL Quarterbacks Weigh In On Effect Of Under-Inflating Footballs"

3. A more deflated football is easier to grip in cold or wet conditions.

Conclusion

Is it in fact easier to catch a deflated football? From the simulation I performed, the answer was YES it was easier to catch. Did it make a difference in the amount of times the ball was caught? Yes, 15% more of the deflated footballs were caught versus the inflated footballs. My hypothesis was partially correct, at the distance simulated it was easier to catch the ball because the lower the PSI made for an easier grip.

Did this simple experiment answer the bigger question whether or not the Patriots had an advantage over the Colts in the 2014 Football Game?

NO, the facts are the facts!!

New England out performed the Colts in the second half when the footballs were set to the NFL Regulation PSI levels.

After all my research, I believe it clearly came down to whether or not you're a fan of New England or Tom Brady for that matter. And this did not support my hypothesis because I initially thought due to the under-inflated footballs the Patriots truly had an advantage over the Colts. Analyzing the game statistics were really the facts that disproved the second question of my hypothesis. The amount of times the Patriots scored in the first half versus the second half and the amount of completed passes increased in the second half versus the first.

My project could have been better if I could have varied the distances of the throws to determine whether or not at different distances it was easier to catch a deflated ball. As well as expanding the question to include is it easier to throw a deflated football, that would help test the scientific fact that the deflated football would not throw as accurate at further distances in turn possibly making it harder to catch.

By the end of my project I learned that although it is easier to catch a deflated football it is not always ideal to play with an underinflated football due to the overall disadvantages, there are biases when the question was asked if the Patriots had an unfair advantage playing with an underinflated football, and the game stats really told the truth, the Patriots played better not only in the second half but simply outplayed the Colts.

2014 Deflategate

Case Closed

