A close-up photograph of a baseball with red stitching resting on a brown dirt field. The baseball is positioned near a white chalk line. The background is blurred, showing a baseball field and some structures. The text "Bats & Balls" is overlaid in white, centered on the image.

# Bats & Balls

# Corked Bat

- Corked bats are specially modified bats that have pieces of cork in them to make the bat lighter. Cork is not very dense which makes the bat lighter, therefore improving the hitters timing and power.



# Regular Bats

Professional Baseball bats were invented in 1884 by a 17- year old named Bud . He created the bats for Louisville's major league baseball team for the teams megastar Pete Browning. Baseball bats can be made out of wood or metal like aluminum.



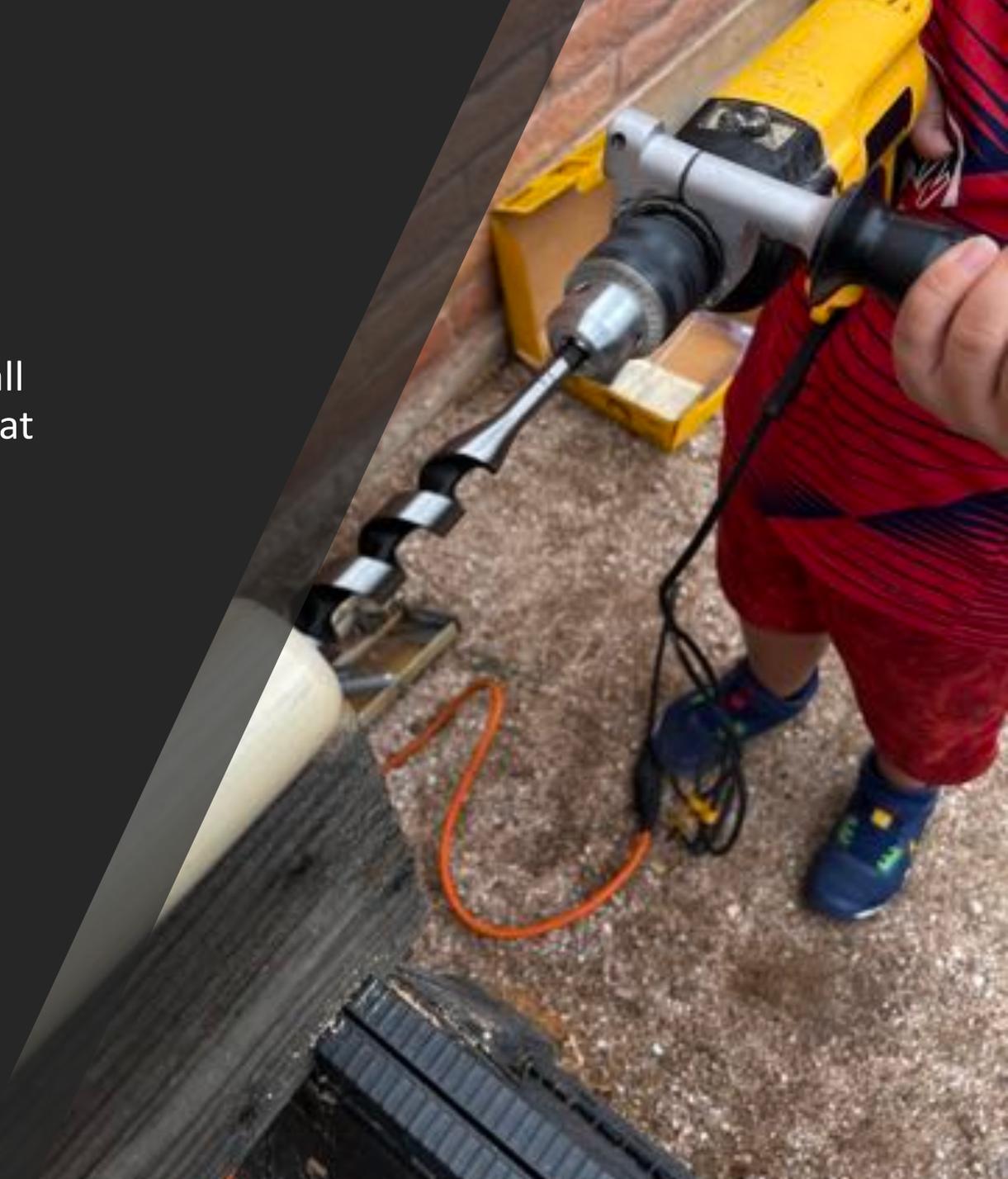
# Problem

- Adding cork inside of bats is thought to give the hitter an unfair advantage and improve the hitter's timing and swing and is considered cheating. For example, Chicago Cubs right fielder Sammy Sosa used a corked bat in a game. Sammy had a better batting percentage and RBI than he usually did when he used the corked bat. He would have gotten away with it, but as he was on the plate, his bat shattered as he was swinging revealing the cork. Sosa was later thrown out of the game and got an eight-game suspension for the cheating scandal. However, some researchers believe the advantage is psychological and not physical.



# Hypothesis

- My Hypothesis is that the corked bat will hit the ball harder, because the cork in the bat will make the bat lighter, therefore improving the batters timing and bat speed. I also think that if I give them a regular bat but tell them it's corked then they will try harder, and will hit it harder.





# Materials

Here are the materials I used:

- Corked bat
- Regular bat 2x
- Baseball
- Hitting tee
- Radar Gun
- Subjects
- Baseball field



# Procedure

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1. Get corked bat (Bat #2), regular bat (Bat #1), and a different regular bat with small piece of cork glued to the end (Bat #3).
  2. Put the three bats in front of contestant.
  3. Let contestant choose a bat
  4. If contestant chooses Bat #2 tell them its corked.
  5. If contestant chooses Bat #1 tell them its regular.
  6. If contestant chooses Bat #3 tell them its corked but with more cork inside of it (bat is actually regular but made to look corked).
  7. Have contestant hit 10 balls off the tee into the screen. Measure speed of balls hitting screen with radar gun. Only count balls that hit the screen.
  8. Have contestants hit with all 3 bats
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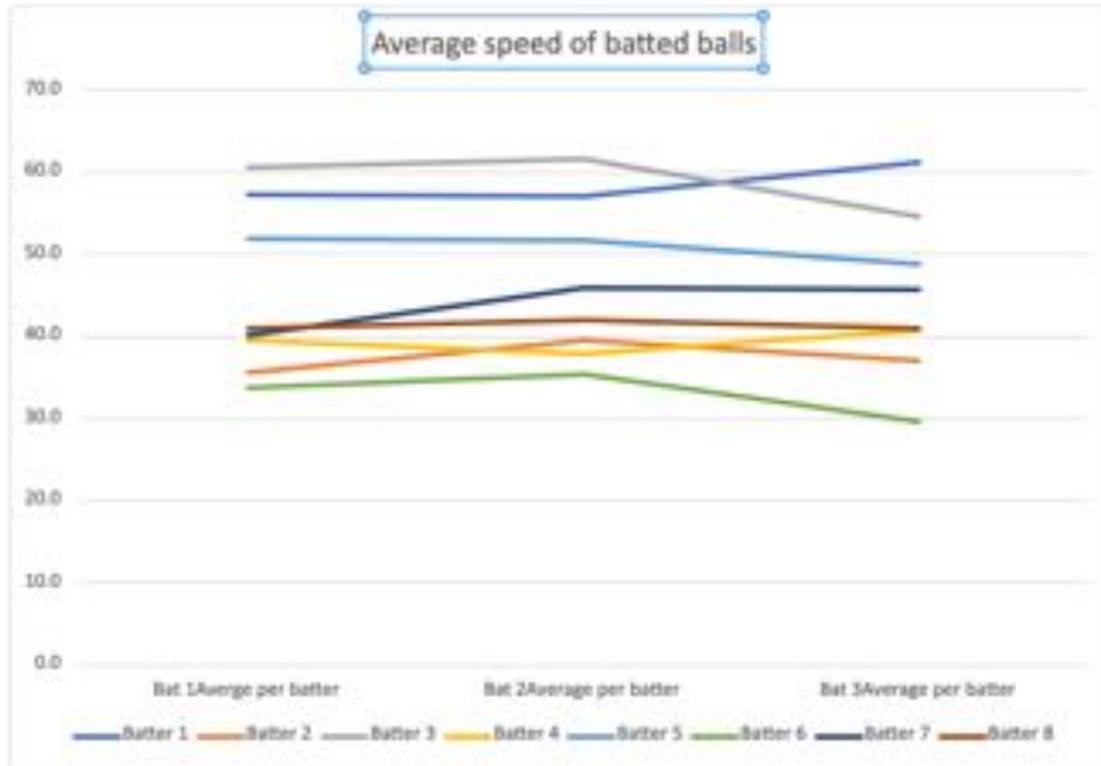


# Experiment Details

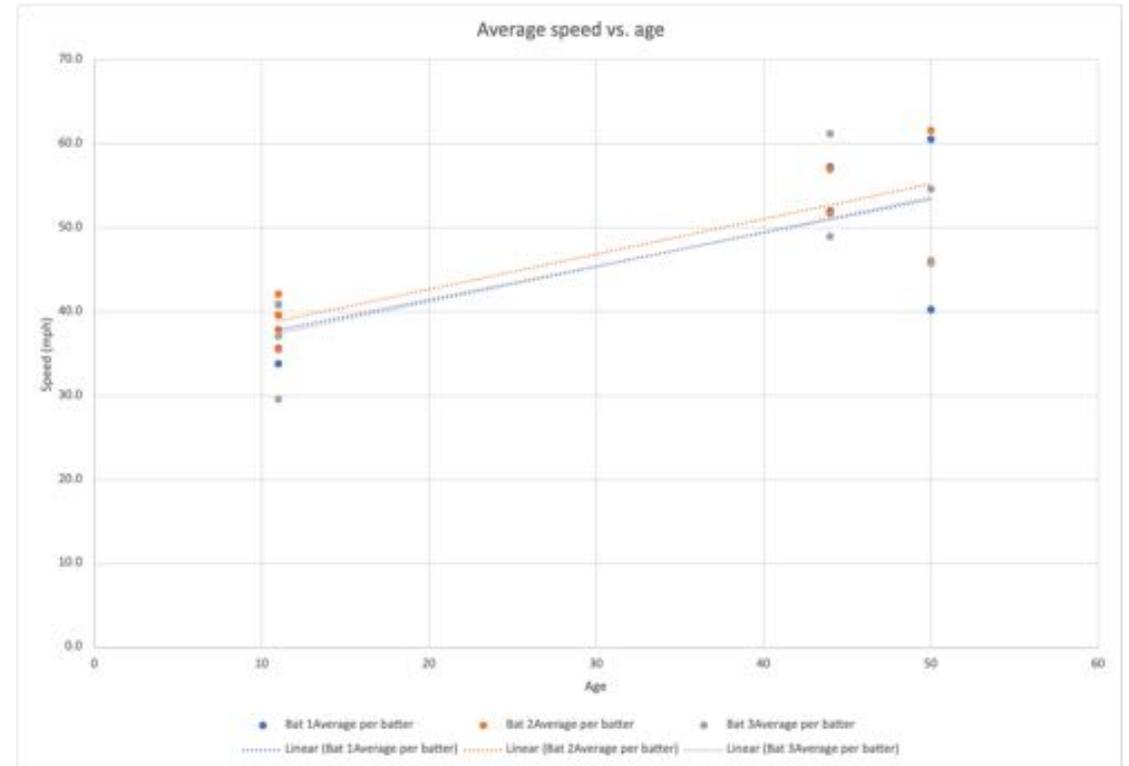
- The Table in my lab notebook has 3 columns, one for each bat. Bat 1 has no cork inside. Bat 2 has cork inside. Bat 3 is made to look like it has cork in it but really it does not..
- Inside the rows are the 10 hits that each hitter made.
- The tables contain the speed of the ball after it was hit off the tee. It also contains the Age, Height, Gender, and the hitter's baseball Athleticism.



Plot 1



Plot 2



# What plot 1 shows.

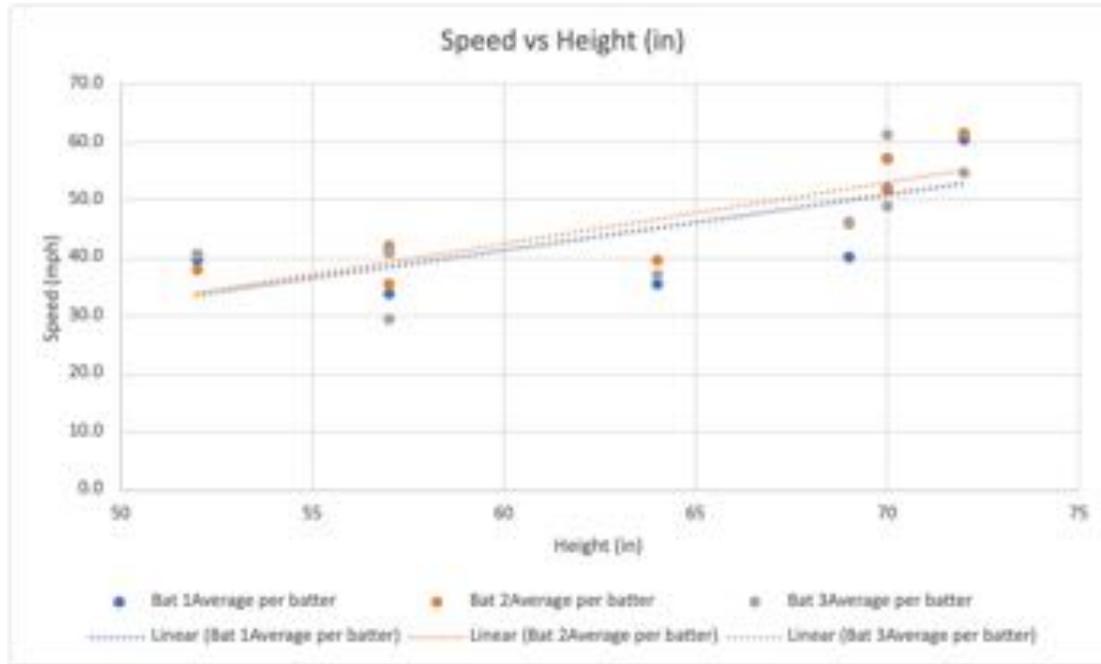
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- The plot shows the average speeds that I measured with each bat. It also shows that there was no real advantage in the corked vs regular bats. The corked bats didn't really differ in the speed of the balls and the fake one didn't differ either.

# What plot 2 shows (age)

- This plot shows the average speed of baseballs between ages. The plot shows that the adults hit it a bit harder and faster than the kids. It again shows there is very little difference between the bats.

Plot 3



# What plot 3 shows (Height)

- This plot shows that there was again no real difference between bats but taller batters did hit harder because the taller heights were adults.

# What plot 4 shows (athleticism)

- This plot shows the average speed between baseball athleticism. The plot again shows there was not much difference between the bats. Although there was not much difference between the bats, people with higher athleticism hit it a bit harder.

# What I could do for future research

- For future research I could see if the cork put in a bat affects the duration of the bats. When I was hitting with the corked bat, the fake corked bats shattered. Also it might show the contestants swung harder for the corked bats.



# How I could make my project better

- There are a few ways I could make my project better. I could make sure the person holding the radar gun does not flinch because that could affect what the gun shows. Also we could have measured how much the gun was pointing at the ball.



# Sources

- Wikipedia  
[https://en.wikipedia.org/wiki/Corked\\_bat](https://en.wikipedia.org/wiki/Corked_bat)
- Chicago Times  
<https://www.chicagotribune.com/sports/cubs/ct-sammy-sosa-corked-bat-chicago-cubs-20200603-hq36puopwnah3mefmdljxpouq4-story.html>
- Fansided  
<https://cubbiescrib.com/2020/04/07/chicago-cubs-sammy-sosa-corked/>



# Example tables from lab notebook

Age: 11	Height: 4'9		Gender: Male		Baseball Athleticism 5		
Bat 1	Bat 2	Bat 3					
40 mph	37 mph	42 mph					
47 mph	42 mph	28 mph					
37 mph	48 mph	46 mph					
37 mph	30 mph	41 mph					
38 mph	41 mph	33 mph					
45 mph	51 mph	41 mph					
46 mph	43 mph	43 mph					
43 mph	44 mph	37 mph					
32 mph	38 mph	48 mph					
44 mph	42 mph	50 mph					

Age: 50	Height: 5'9		Gender: Female		Baseball Athleticism 3		
Bat 1	Bat 2	Bat 3					
33 mph	47 mph	34 mph					
34 mph	38 mph	34 mph					
34 mph	52 mph	50 mph					
36 mph	50 mph	53 mph					
41 mph	32 mph	50 mph					
43 mph	45 mph	47 mph					
45 mph	50 mph	46 mph					
40 mph	47 mph	48 mph					
44 mph	47 mph	49 mph					
52 mph	52 mph	47 mph					