YOU DON'T KNOW BLACKJACK

Olivia Fox

7th Grade

Canterbury School

INTRODUCTION

Have you ever played blackjack and wondered if the house strategy is actually best? A test was developed to see if the standard strategy in blackjack is actually the best. The standard house strategy in blackjack is hitting on 16 and staying on 17. Three different strategies for the house were tested to see which strategy resulted in the highest win percentage (the standard strategy, staying on 16, and staying on 18).

HYPOTHESIS

If three different Blackjack strategies are tested using a random number generator to simulate many games, then it is predicted that the standard strategy of hitting on 16 and staying on 17 has the highest win probability.

METHODS

Sample Games Using Real Cards: play out 50 physical games with a standard deck of cards utilizing this player strategy card

Observation: there was not enough data collected with this experiment alone, so a larger sample size was needed

	Dealer Upcard									
Hard Total	2	3	4	5	6	7	8	9	10	A
5-7	H	H	H	H	H	H	H	H	H	H
8	H	H	H	H	H	H	H	H	H	H
9	H	D	D	D	D	H	H	H	H	H
10	D	D	D	D	D	D	D	D	H	H
11	D	D	D	D	D	D	D	D	D	H
12	H	H	S	S	S	H	H	H	H	H
13	S	S	S	S	S	H	H	H	H	H
14	S	S	S	S	S	H	H	H	H	H
15	S	S	S	S	S	H	H	H	R	H
16	S	S	S	S	S	H	H	R	R	R
17	S	S	S	S	S	S	S	S	S	S
Soft Total	2	3	4	5	6	7	8	9	10	A
A,2	H	H	H	D	D	H	H	H	H	H
A,3	H	H	H	D	D	H	H	H	H	H
A,4	H	H	D	D	D	H	H	H	H	H
A,5	H	H	D	D	D	H	H	H	H	H
A,6	H	D	D	D	D	H	H	H	H	H
A,7	S	DS	DS	DS	DS	S	S	H	H	H
A,8	S	S	S	S	S	S	S	S	S	S
A,9	S	S	S	S	S	S	S	S	S	S

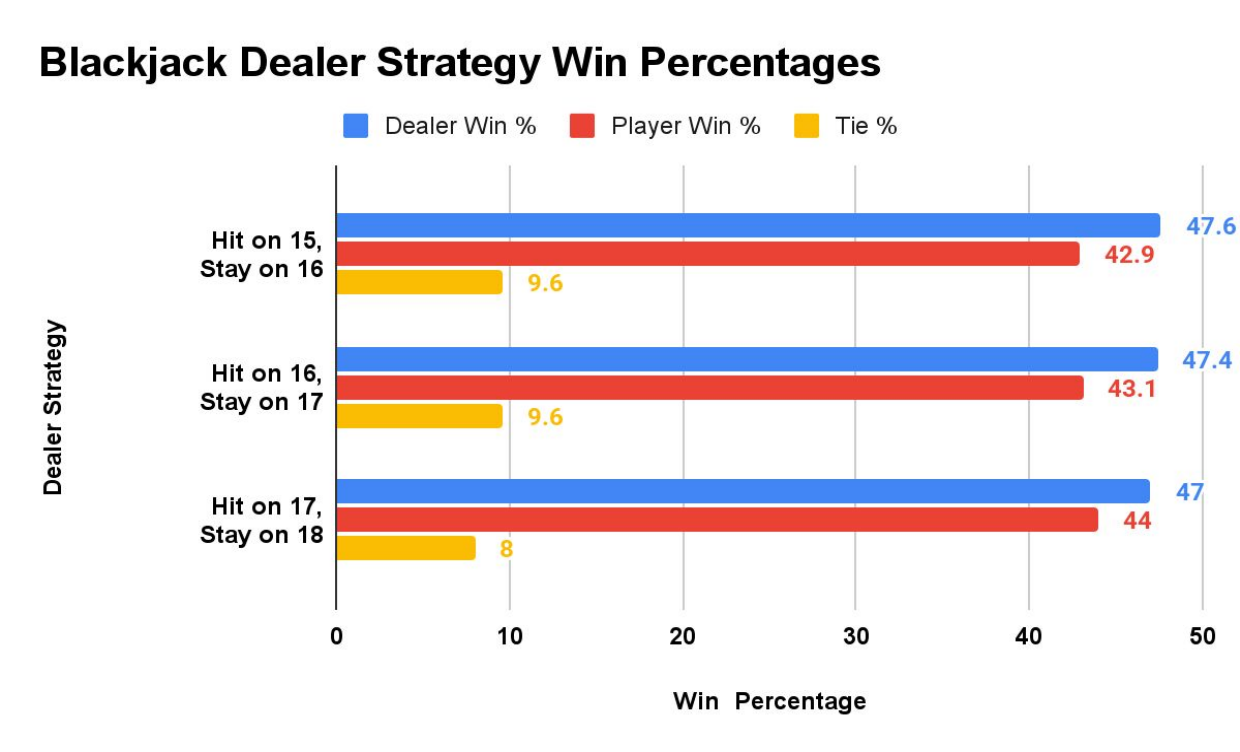
METHODS

Use Excel to create a program to “play” many games of Blackjack easily:

1. **Generate Cards:** using a random number generator
2. **Create Player Hand:** referencing the same strategy card used in physical games
3. **Create Dealer Hand:** implementing each strategy to make decisions
4. **Decide Winner:** create a chart showing win, loss, and tie percentages of each strategy

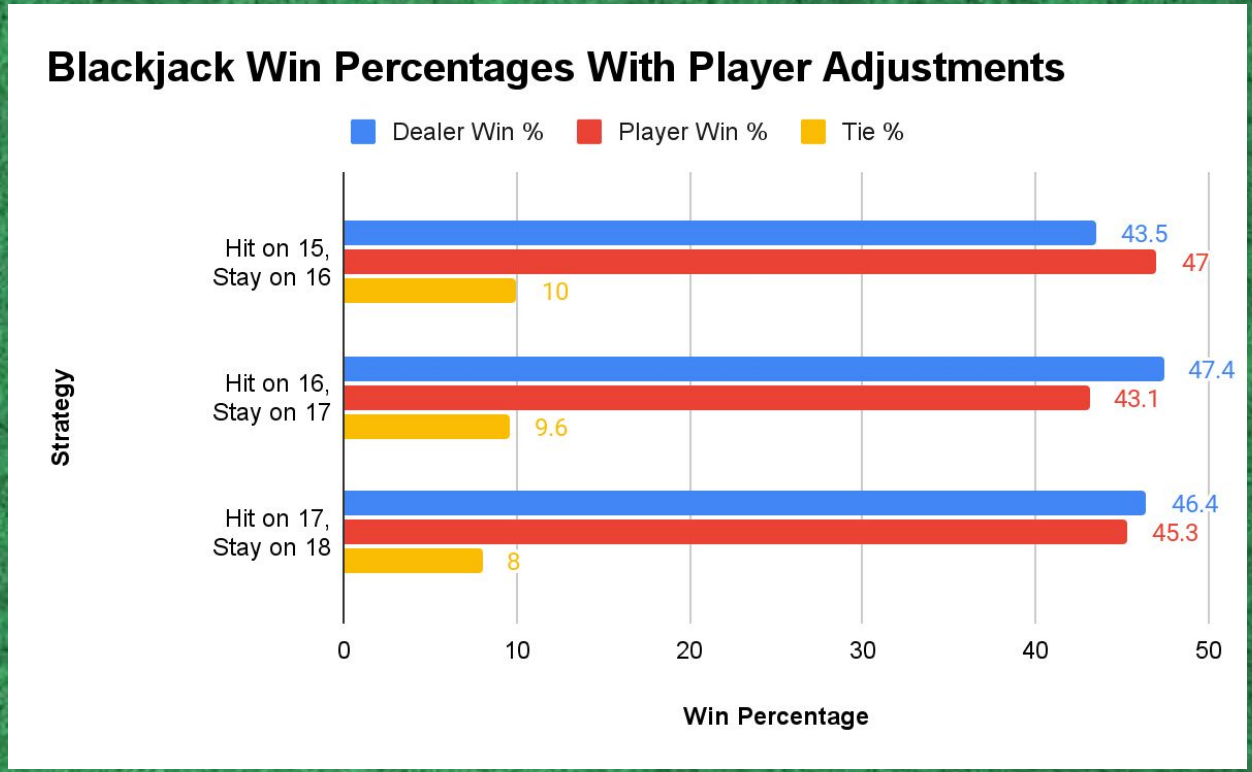
DATA

The initial results of the simulation (diagram on the right) showed that staying on 16 gave the dealer a slightly higher win percentage, but that didn't make sense. This implies that every casino in the world is employing the wrong strategy.



DATA & CONCLUSION

After thinking about the surprising results, it was realized that as the dealer changed their strategy, the player was not attempting to match it. Once the player strategy was adjusted in response to the dealer's different strategies, the results showed the hypothesis to be correct.



THANK YOU!

I appreciate this opportunity, and the time you took to learn about my project. I can’t wait to share more about it.