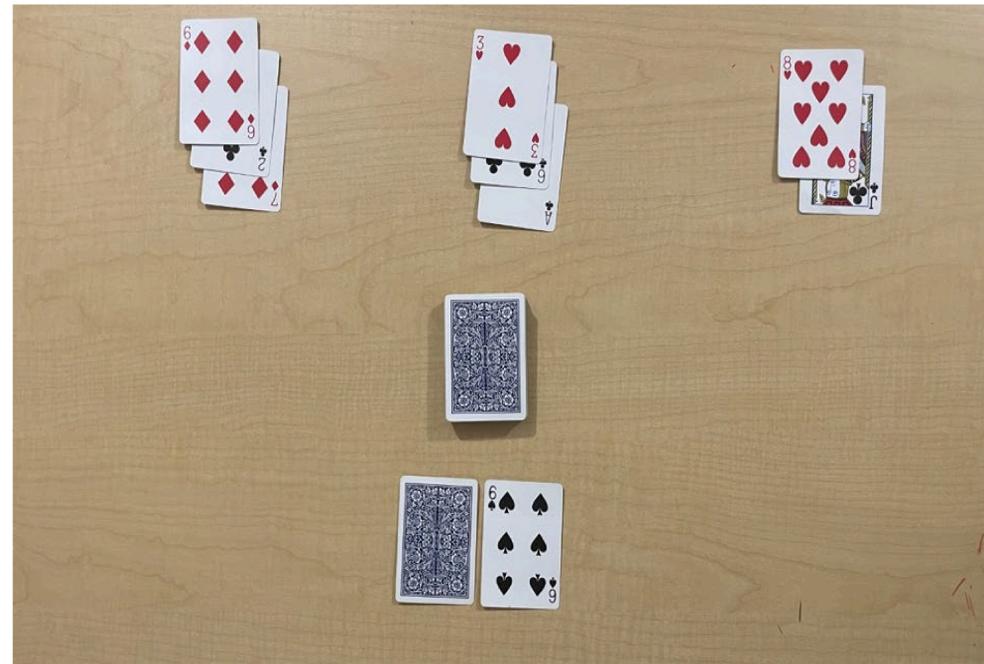


# Probability of Winning Blackjack

Authors: Ethan Pedrick, Dorian Blazevic, Allen Jiang, Quinn Pauly

## INTRODUCTION

The game of Blackjack, previously called “21,” is a card game that dates to 1760 France that is now extremely popular in American Casinos. The household version of Blackjack is simple; it consists of one or more players playing against the dealer. The dealer of the game handles all aspects of the game, such as dealing out the cards and shuffling the deck. The deck used is the standard 52-card deck. The dealer deals out the cards to themselves first and then to the players. The player’s object is to beat the dealer by getting cards that total 21 without going over. This is done by “hitting” to get a new card or “standing” to end the cycle. The ace is either worth 1 or 11, each face card is 10, and every other card is the actual displayed value.



## ABSTRACT

This project is about the probability of winning the card game of blackjack. Our group did this research because we wanted to know how risky it was to play blackjack and learn how great the odds were against the player. To do this, our group ran trials by playing blackjack and hitting on numbers twelve-seventeen and recording it as a win, loss, or passing on to another number within our hittable scale. Our focus was on obtaining a sufficient amount of data per tested number to get an accurate representation of the probability of winning on that number. We found that the chance of winning is meager but that some numbers have a higher chance of winning than others.

## OBJECTIVE

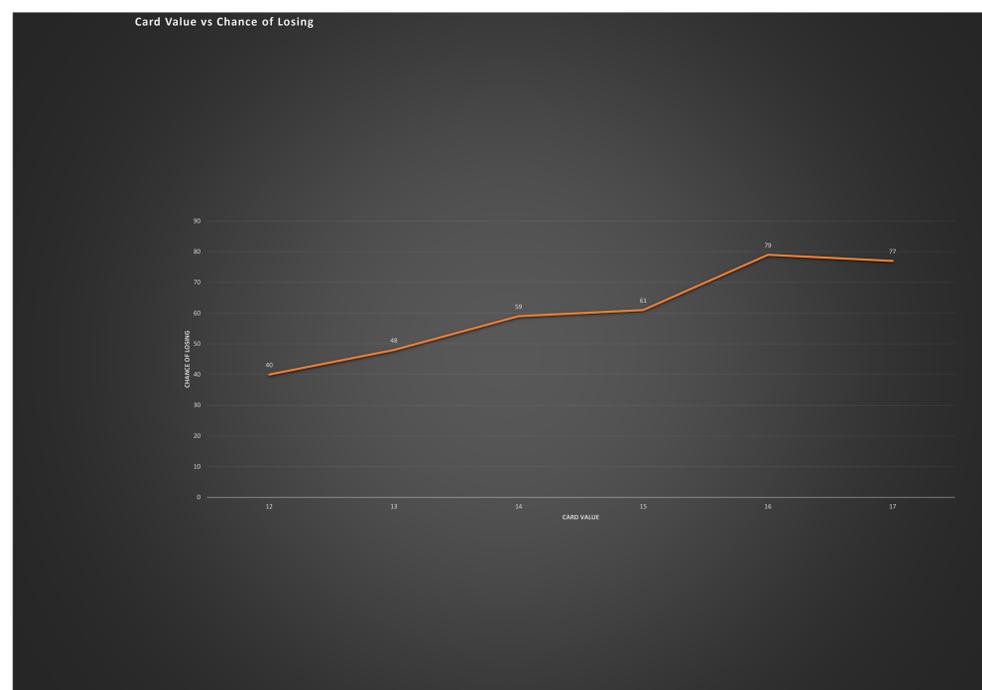
Our main objective is to determine the probability of winning Blackjack by hitting on each number between 12 and 17. Our secondary objective is to discover which values have the best and worst chances of winning blackjack. We also want to ensure that each data point is reliable and consistent. To secure that our data is reliable, we should ensure that we collect enough data for each data point. After our experiment is completed, our results should show how each data point affects the probability of winning.

## METHODS

- “Hitting” at 12
- “Hitting” at 13
- “Hitting” at 14
- “Hitting” at 15
- “Hitting” at 16
- “Hitting” at 17

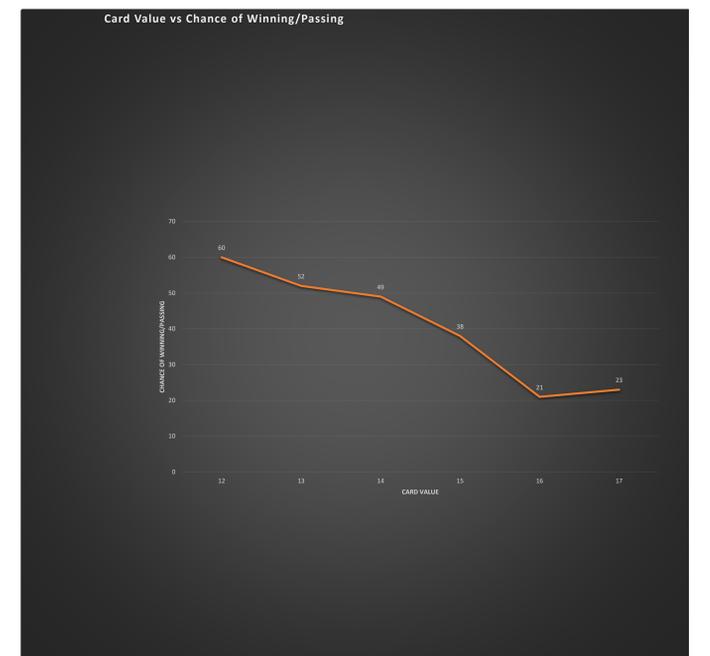
## RESULTS

- Hitting on a 12 has a 40 percent chance of failure.
- Hitting on a 13 has a 48 percent chance of failure.
- Hitting on a 14 has a 59 percent chance of failure.
- Hitting on a 15 has a 61 percent chance of failure.
- Hitting on a 16 has a 79 percent chance of failure.
- Hitting on a 17 has a 77 percent chance of failure.



## CONCLUSION

By performing this research, we were able to determine the probability of winning or losing in Blackjack for each available card value. The conclusion reached was that the chances of the average player winning Blackjack is very low but that some card values have a much higher chance of success than others.



## FUTURE WORK

Our project has multiple uses for the future. The results of this research could be used by someone who is planning a trip to a casino and wants to prepare themselves so that they are slightly less likely to lose money. Our results can also be used for informative anti-gambling presentations to prove how low the chances are of winning Blackjack and that the return rate is low enough that a player will usually have still lost money after winning a round.

## REFERENCES

The official Blackjack Rules: [bicyclecards.com/how-to-play/blackjack/](https://bicyclecards.com/how-to-play/blackjack/)

## ACKNOWLEDGMENTS

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