Homework 2

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Libraries

I will use the `tidyverse` package to run this code.

Overview

For this assignment, I am using code from *Project 3 in Hands-On Programming with R*[1] to complete the first section. I create a slot machine game that can be run using the `play()` function that generates symbols using specified probabilities and calculates the player's score.

In section 2, I modify the function and rename it `play2()`, giving different probabilities for certain symbols. Additionally, I create the function `number_of_turns()` that counts the number of turns each game allows given the initial funds a player has and the cost of the game. Lastly, I provide an analysis for which game allows for the most number of turns by replicating the games 100 times and comparing the average number of turns the game allows.

[1][Note, italics indicate hyperlink]

Section 1: Project 3

Creating first slot machine

The function, `play()`, calculates the score that is randomly generated by the following slot machine symbols:

- DD - diamonds
- 7 - sevens
- BBB - triple bars
- BB - double bars
- B - single bars
- C - cherries
- 0 - zeroes

Playing the slot machine

Below is an example of the results of playing the slot machine 3 times. The first line are the symbols the function outputs, and the second line is the calculated score.

```
## [1] "0" "0" "0"
## [1] 0

## [1] "0" "0" "0"
## [1] 0

## [1] "BBB" "0"   "B"
## [1] 0
```

Section 2: Homework 2

1. Create `play2()`

`play2()` changes the probabilities of triple bars, zeroes, and cherries, and it adds the values for three single bars. In order to change the probabilities, we need to reassign them in `get_symbols()` above.

2. Create `number_of_turns()`

Next, we are going to create a new function that returns the number of turns played before running out of money.

3. Which game allows for the most turns on average?

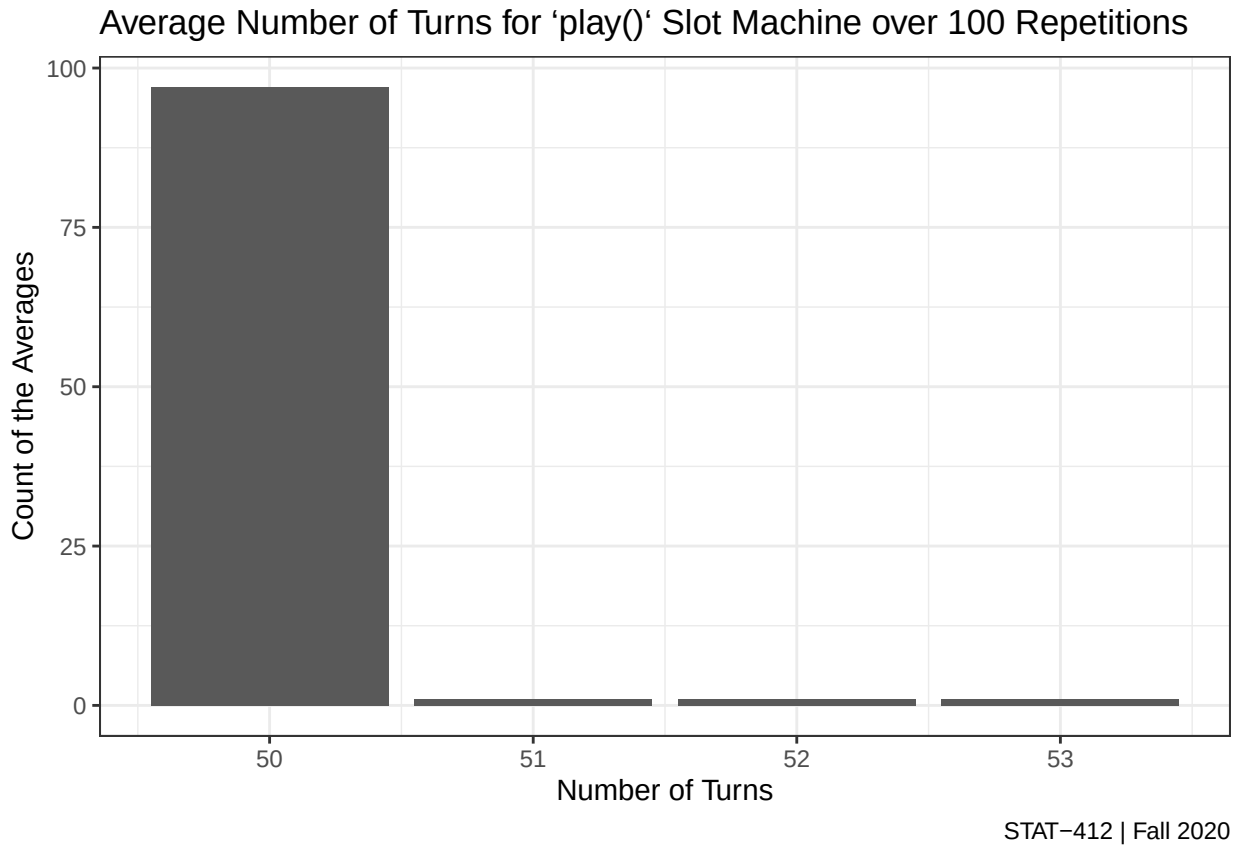
The average number of turns for `play()` and `play2()` when replicated 100 times are as follows.

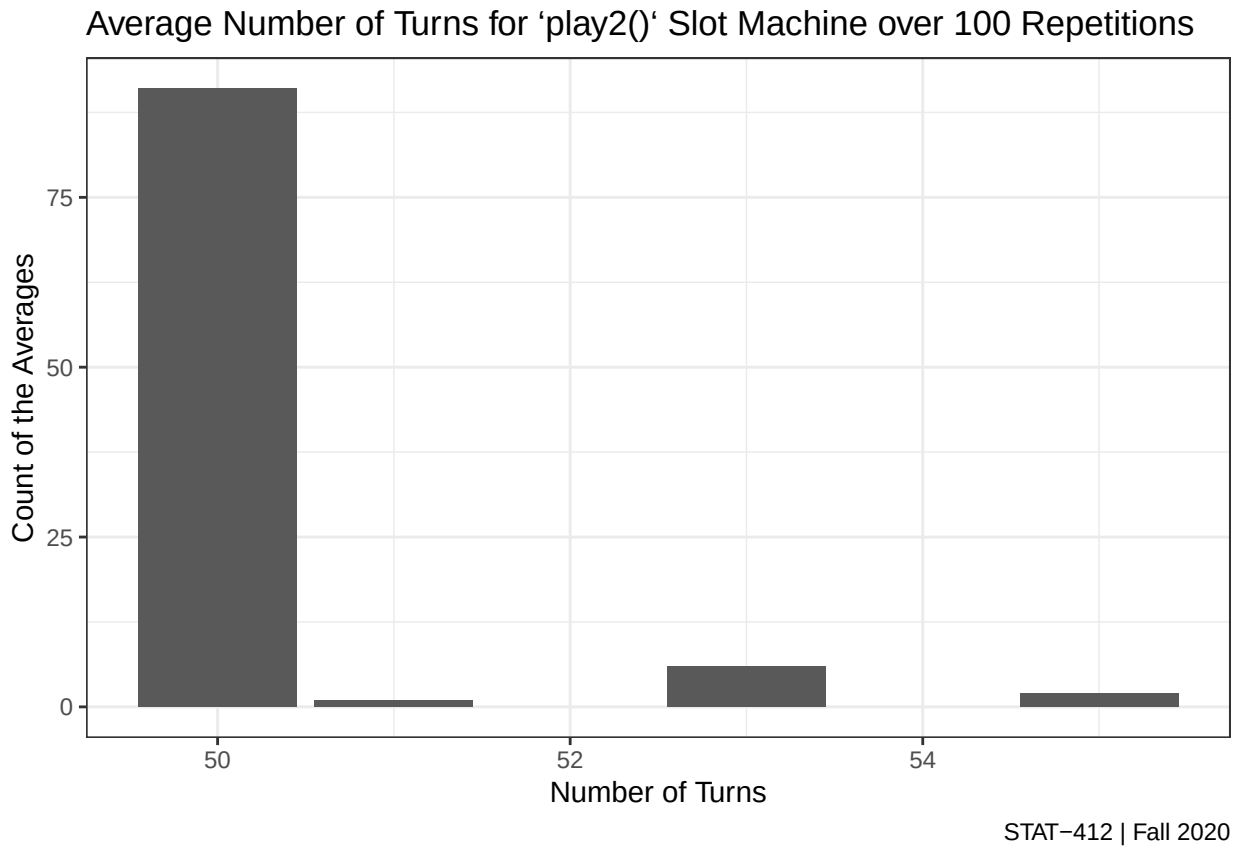
```
## [1] 50.06

## [1] 50.29
```

It appears the average number of turns for `play2()` has a slight advantage over `play()`, but let's investigate further by comparing the results in bar graphs.

4. Supporting analysis for recommendation





As we can see from the graphs above, `play2()` only has a slight advantage over `play()`, but given that the probabilities are higher for triple bars and cherries in `play2()`, I would reccomend that game.