

# Analysis of Win Rate in Rainbow Six Siege

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December 10, 2019

# Overview

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# Introduction

- Rainbow Six Siege is the eighth installment released in December of 2015. The game is a multiplayer first-person shooter. The multiplayer consists of a 5 v 5 game mode with multiple rounds.
- We collected the S5 ranked data from Kaggle. The dataset has 31 variables such as operator, numberkills and weapontype.
- Our goal is to choose some variables and use a generalized linear model to predict the win rate. And use CHTC and statistical tools to analyze which is the most influential factor

# Data splitting and cleaning

- According to the background knowledge, the player's probability of winning differs between different platforms and maps so we decided to use these two variables as blocks and split the data sets by blocks. We will run a model within each block and see the difference within and between each block.
- There are 3 platforms and 16 different maps. After splitting the data sets we finally get 48 CSV files and there are no missing values so there's no need to do data cleaning.

# Model constructing

Since haswon is a binomial outcome so we decide to fit a generalized linear model and the formula is:

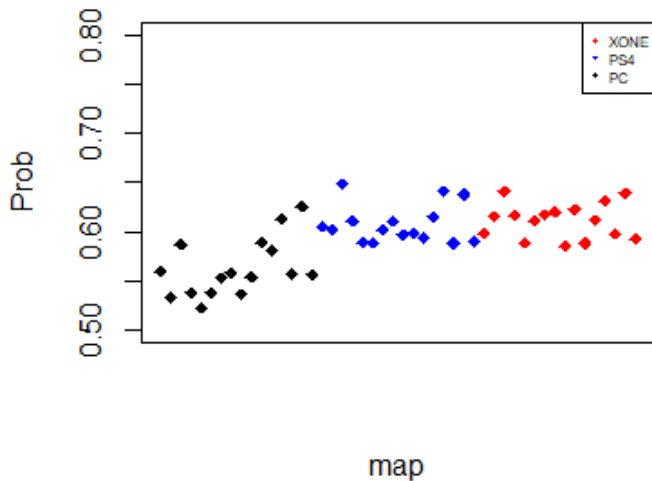
$$\text{logit}(\pi) = X\beta$$

where  $\pi$  is the probability of win and  $X$  are the predictors. For predictors, we choose those 5 variables can be controlled by players, such as game mode, operators, primary weapon types, secondary weapon types and role(attacker or defender).

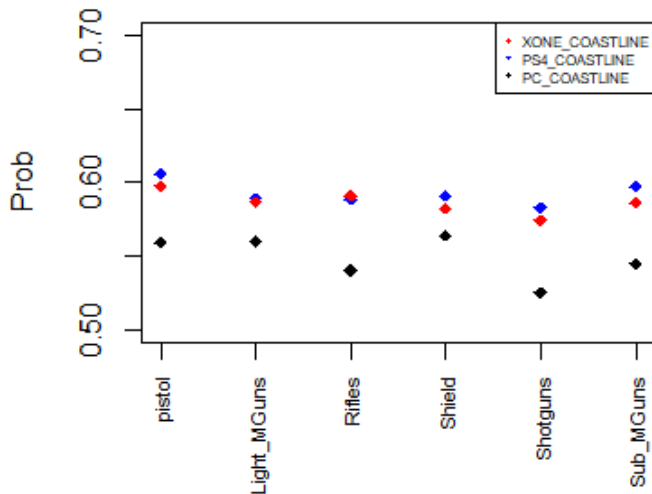
# Model constructing

- Since this game does not allow cross-platform matches, it is not reasonable to merge all data and build a general model. Also, we are interested in performance in different maps, so we decide to fit a model for each combination of maps and platforms.
- To be more efficient, we use CHTC to run 48 parallel jobs to do the model fitting.

## Platform V.S Prob of win

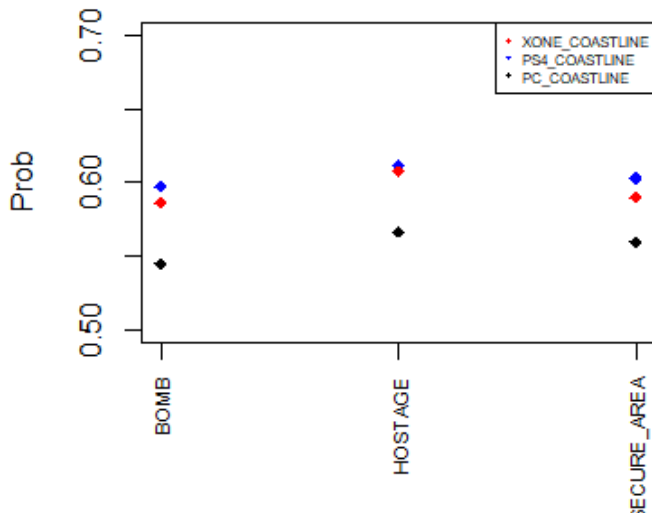


## Weapons V.S Prob of win

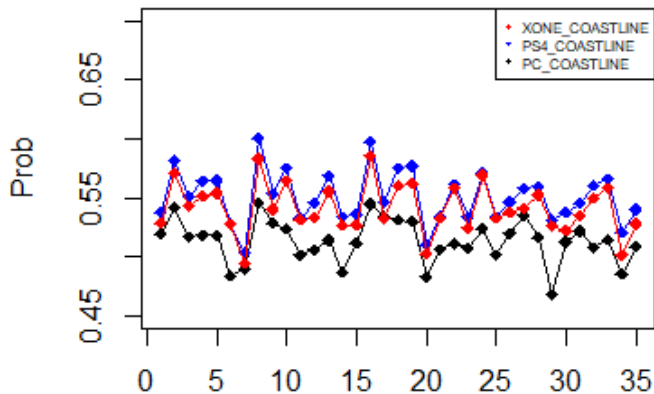




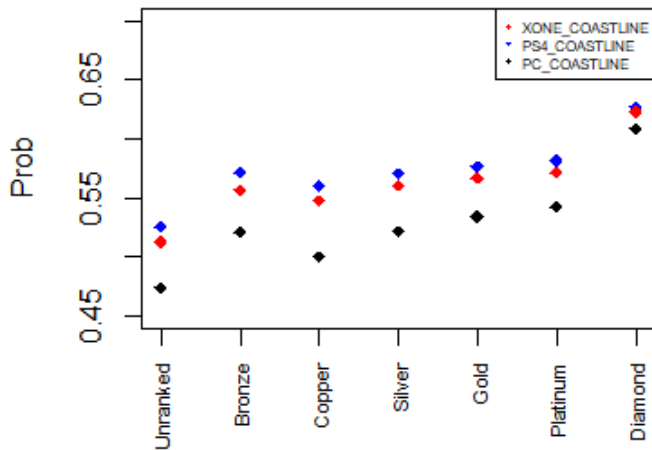
## GameMode V.S Prob of win



## Operators V.S Prob of win



## Rank V.S Prob of win



# Example

Through our model, we could give some advice to improve the players win rate based on platforms and maps.

For example, in the XONE platform and COASTLINE map, the player could choose the following to improve win rate.

- Operator : JTF2-FROST
- primaryweapontype : Pistols
- secondaryweapontype : *SubmachineGuns*

The End