
THEY'RE CLUTCHING UP! TEAM MOMENTUM IN ROUND-BASED ESPORTS

A PREPRINT

Tony ElHabr

Georgia Institute of Technology

anthonyelhabr@gmail.com

August 12, 2022

ABSTRACT

My research investigates patterns in round win percentages in professional Search and Destroy (SnD) matches of the popular first-person shooter game Call of Duty (CoD).

First, I find evidence in CoD defying the naive hypothesis that a series represents a sequence of independent events (rounds), with each team having a constant 50% probability of winning a given round.

Second, I examine post-streak round win probability. I find that teams perform significantly worse than expected after streaks of 2, 3, and 4 wins when series end up going to 9, 10, or 11 (maximum) rounds, even after accounting for the “hot-hand” phenomenon.

Third, I compare win percentages in round one versus all other rounds, hypothesizing that there may be some advantage on either side when there is no prior information about how the opponent intends to play a given map in either game. I find only one instance for which there seems to be a significant defensive advantage in round one.

Finally, I evaluate behavior when teams have two rounds left to win the series, observing a peak in COD offensive win percentages in the 4-4 state, and no such oddity in Valorant.

1 Introduction

1.1 1 Description of Call of Duty Search and Destroy

Call of Duty (CoD), first released in 2003, is one of the most popular first-person shooter (FPS) video game franchises of all-time. The most popular mode in the competitive scene is “Search and Destroy” (SnD), which bears resemblance to “Bomb Defusal” in Counter-Strike and “Plant/Defuse” in Valorant, two other FPS games played in professional leagues. SnD is one-sided game mode in which one team, the offensive side, tries to destroy one of two designated bomb sites on the map.

In professional CoD, a team must win six rounds of SnD to win the match.¹ A round can end in one of four ways:

1. One team eliminates all members of the other team prior to a bomb plant. (Eliminating team wins.)
2. The offensive team eliminates all members of the defensive team after a bomb plant.² (Offense wins.)

¹A maximum of 11 even rounds can be played. There is no “sudden death” or “win by two” rule like there are for SnD equivalent in professional Counter-Strike and Valorant matches.

²

- The bomb can be picked up by any member of the offensive team.
- The bomb carrier is not obstructed at all by carrying the bomb (i.e. movement is the same, weapon usage is the same).
- The defense does not get any visual indication for who is carrying the bomb.
- A bomb plant takes five seconds. The timer resets if the player stops planting site prior to completing it.