Streaking and Clutching in Round-Based First Person Shooter (FPS) Esports

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Game types

- Search and Destroy (SnD) in Call of Duty (COD)
  - 2020-2022 Call of Duty League (CDL) matches (qualifiers and majors)
  - 4v4.
  - First to 6 round wins
  - Teams swap sides (offense and defense) after every round
- Plant/Defuse in Valorant
  - Data from Valorant professional league, updated through January 1, 2022
  - 5v5
  - First to 13 round wins
  - One team plays offense in 12 consecutive rounds before swapping sides
  - Must win by 2 rounds

How does a team win a round of COD SnD / Valorant plant/defuse?

1. One team eliminates all members of the other team prior to a bomb plant.

2. The offensive team eliminates all members of the defensive team after a bomb plant.

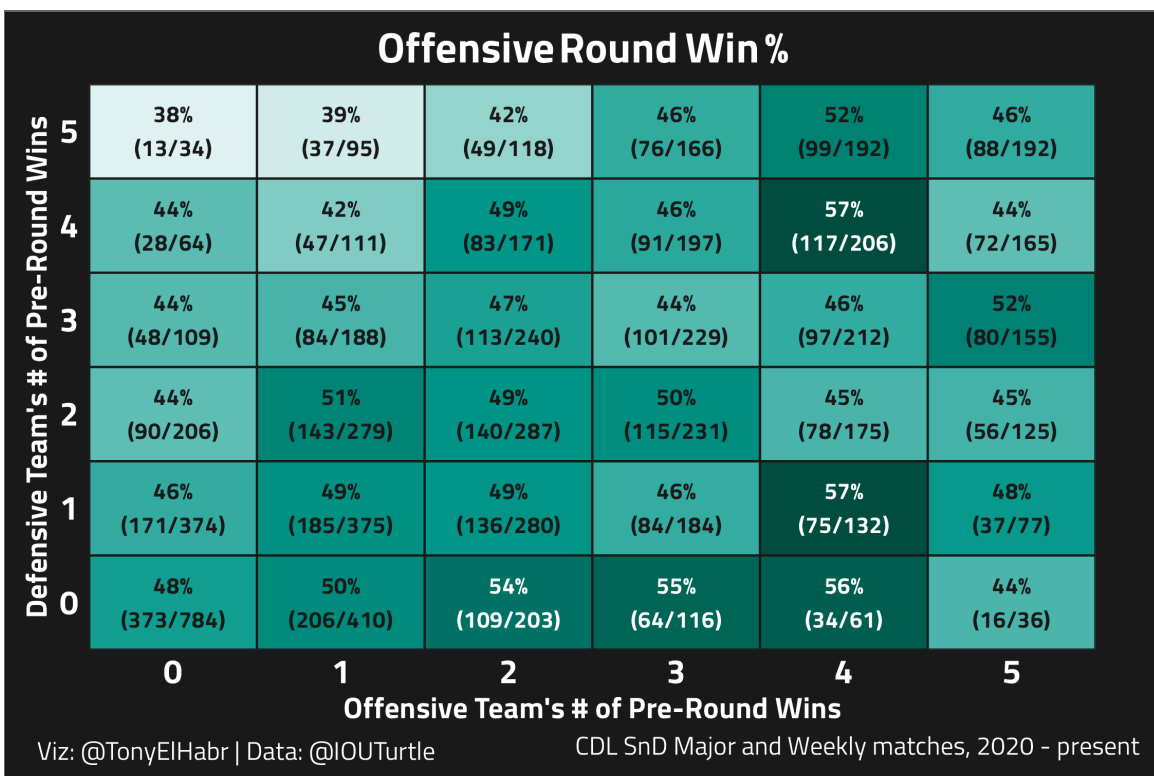3. The defensive team defuses the bomb after a bomb plant.

   Often the defensive team will try to eliminate all o team members prior to making the defuse, but in some cases, they may try to "ninja" defuse.

4. The offensive team does not make a plant by the time the round timer ends.
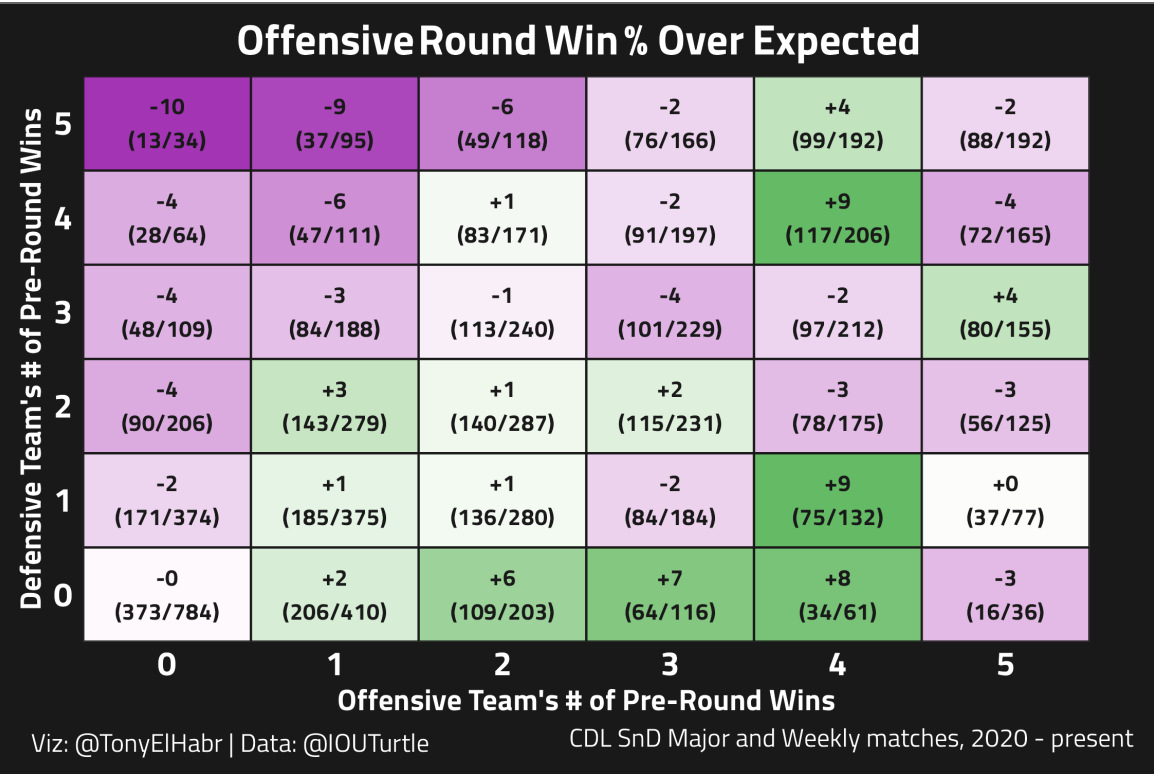
COD SnD data overview

- Total series: **784**

- Total rounds: **7,179**

- Offensive plant %: **52%**

- Offensive win %: **48%**

- Win % when planting: **66%**

- Win % when earning first blood: **73%**

What are your chances of winning a round, given the series state?

Offensive Round Win %

Defensive Team's # of Pre-Round Wins	0	1	2	3	4	5
5	38% (13/34)	39% (37/95)	42% (49/118)	46% (76/166)	52% (99/192)	46% (88/192)
4	44% (28/64)	42% (47/111)	49% (83/171)	46% (91/197)	57% (117/206)	44% (72/165)
3	44% (48/109)	45% (84/188)	47% (113/240)	44% (101/229)	46% (97/212)	52% (80/155)
2	44% (90/206)	51% (143/279)	49% (140/287)	50% (115/231)	45% (78/175)	45% (56/125)
1	46% (171/374)	49% (185/375)	49% (136/280)	46% (84/184)	57% (75/132)	48% (37/77)
0	48% (373/784)	50% (206/410)	54% (109/203)	55% (64/116)	56% (34/61)	44% (16/36)

Offensive Team's # of Pre-Round Wins

Viz: @TonyElHabr | Data: @IOUTurtle   CDL SnD Major and Weekly matches, 2020 - present

How do the empirical round results compare to expectation?

Offensive Round Win % Over Expected

Defensive Team's # of Pre-Round Wins	0	1	2	3	4	5
5	-10 (13/34)	-9 (37/95)	-6 (49/118)	-2 (76/166)	+4 (99/192)	-2 (88/192)
4	-4 (28/64)	-6 (47/111)	+1 (83/171)	-2 (91/197)	+9 (117/206)	-4 (72/165)
3	-4 (48/109)	-3 (84/188)	-1 (113/240)	-4 (101/229)	-2 (97/212)	+4 (80/155)
2	-4 (90/206)	+3 (143/279)	+1 (140/287)	+2 (115/231)	-3 (78/175)	-3 (56/125)
1	-2 (171/374)	+1 (185/375)	+1 (136/280)	-2 (84/184)	+9 (75/132)	+0 (37/77)
0	-0 (373/784)	+2 (206/410)	+6 (109/203)	+7 (64/116)	+8 (34/61)	-3 (16/36)

Offensive Team's # of Pre-Round Wins

Viz: @TonyElHabr | Data: @IOUTurtle   CDL SnD Major and Weekly matches, 2020 - present

What are your chances of winning the series, given the series state?

Offensive Series Win %

Defensive Team's # of Pre-Round Wins	0	1	2	3	4	5
5	0% (13/34)	4% (37/95)	5% (49/118)	13% (76/166)	21% (99/192)	46% (88/192)
4	8% (28/64)	5% (47/111)	26% (83/171)	25% (91/197)	59% (117/206)	70% (72/165)
3	9% (48/109)	27% (84/188)	35% (113/240)	50% (101/229)	63% (97/212)	88% (80/155)
2	26% (90/206)	38% (143/279)	53% (140/287)	60% (115/231)	85% (78/175)	92% (56/125)
1	35% (171/374)	54% (185/375)	60% (136/280)	75% (84/184)	88% (75/132)	99% (37/77)
0	52% (373/784)	60% (206/410)	75% (109/203)	78% (64/116)	100% (34/61)	94% (16/36)

Offensive Team's # of Pre-Round Wins

Viz: @TonyElHabr | Data: @IOUTurtle   CDL SnD Major and Weekly matches, 2020 - present
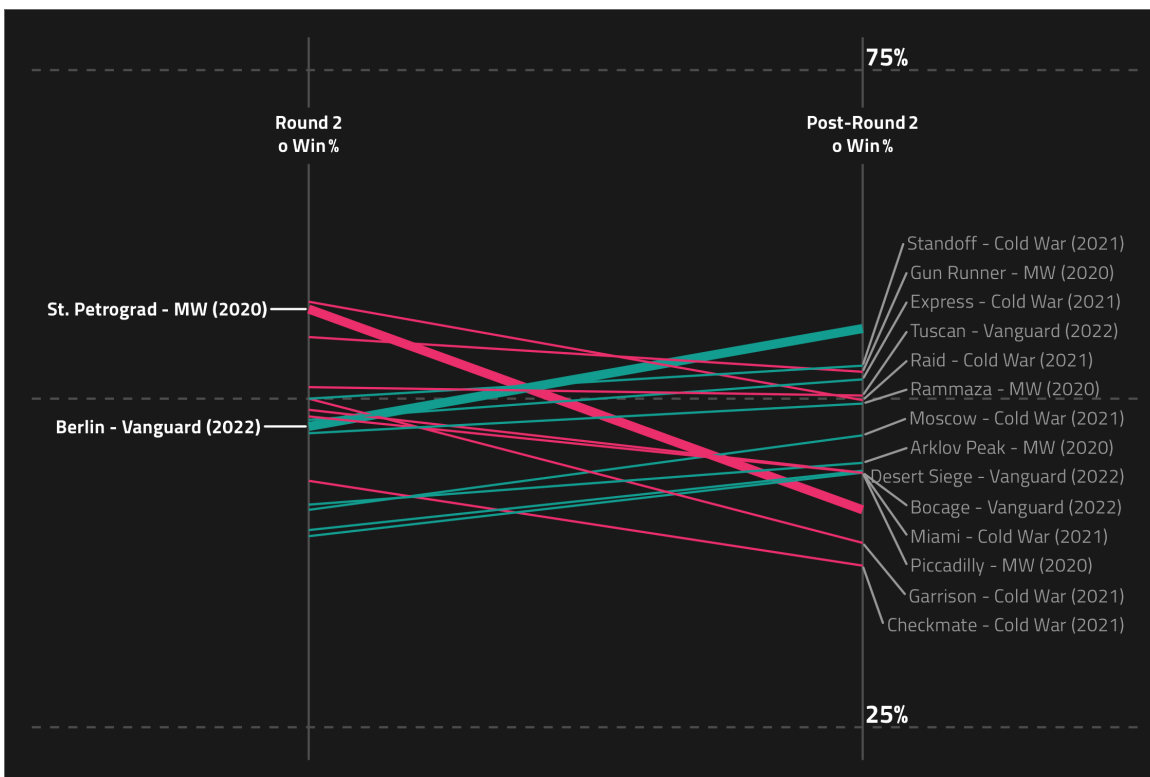
How do the empirical series results compare to expectation?
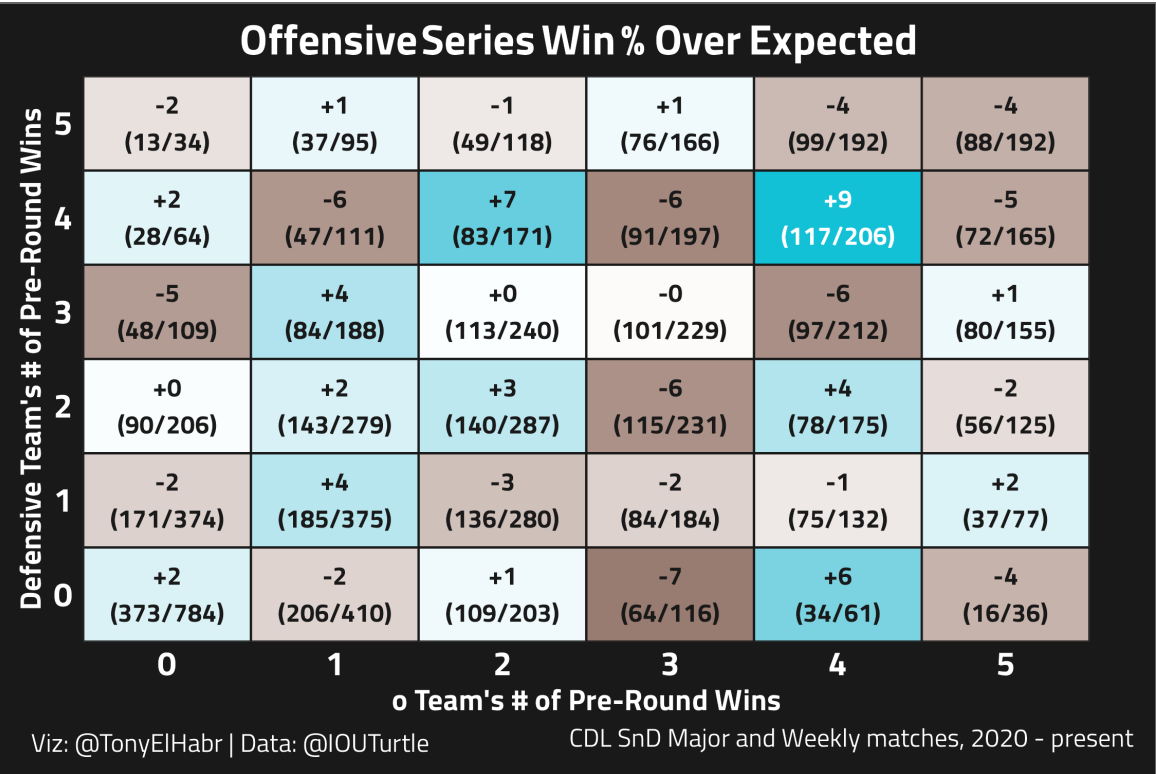
Are offensive win %'s different in round 1?
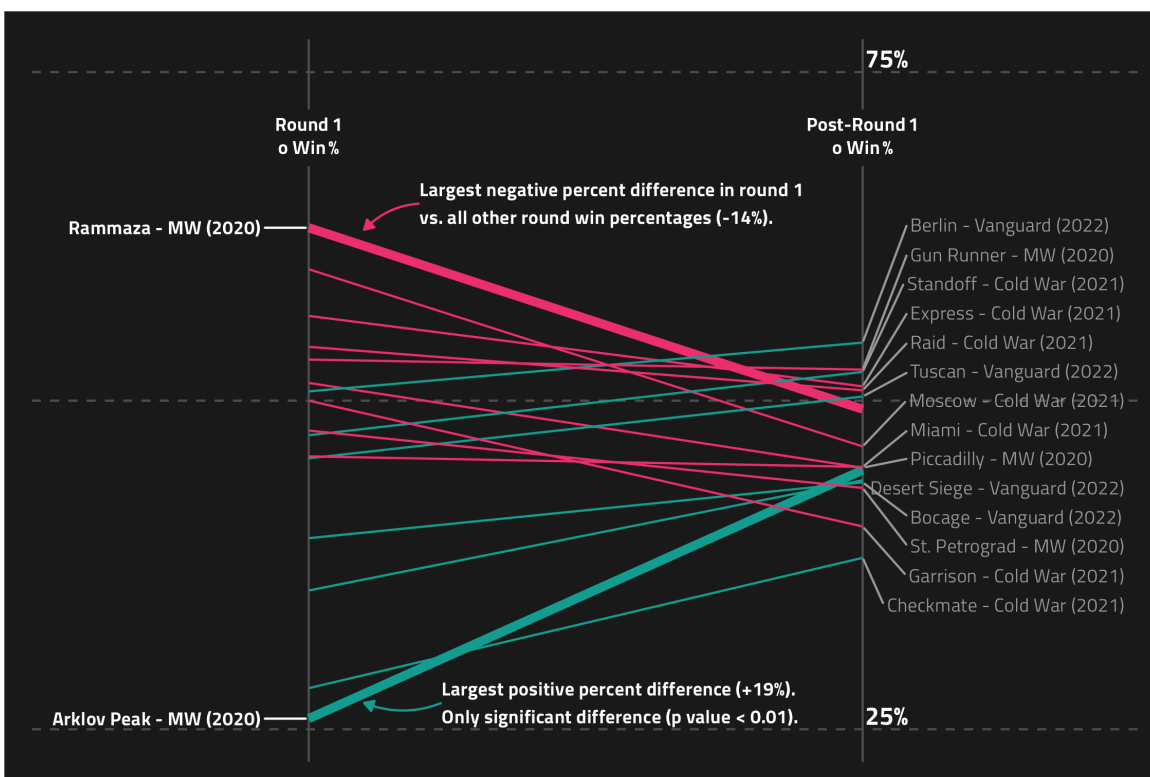
Are offensive win %'s different in round 2?

What are the most common series winning states?

How do end states compare to expectation?

When do back-to-back round wins occur?

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Is there evidence for the "hot hand"?

- Round win % after a streak of 3 round wins:
- Expected: **38.4%**
- Actual: **55.7%** (352 / 632)

What is the optimal strategy?