

# **“Turned on!”: Momentum in Round-Based First Person Shooter Esports**

Tony ElHabr

## **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

### **A Plant/Defuse in Valorant**

- 2021 Valorant Champions Tour (VCT) matches (qualifiers and majors)
- 5v5
- First to 13 round wins
- One team plays offense in 12 consecutive rounds before swapping sides
- Must win by 2 `cod_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%**

## Valorant data overview

- Total series: **5,333**
- Total rounds: **108,789**
- Offensive win %: **49.8%**

What are your chances of winning a round, given the series state in **COD SnD**?

Offensive Round Win %

Defensive Team's # of Pre-Round Wins	5					
	38% (13/34)	39% (37/95)	42% (49/118)	46% (76/166)	52% (99/192)	46% (88/192)
	44% (28/64)	42% (47/111)	49% (83/171)	46% (91/197)	57% (117/206)	44% (72/165)
	44% (48/109)	45% (84/188)	47% (113/240)	44% (101/229)	46% (97/212)	52% (80/155)
	44% (90/206)	51% (143/279)	49% (140/287)	50% (115/231)	45% (78/175)	45% (56/125)
	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						
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CDL SnD Major and Weekly matches, 2020 - present

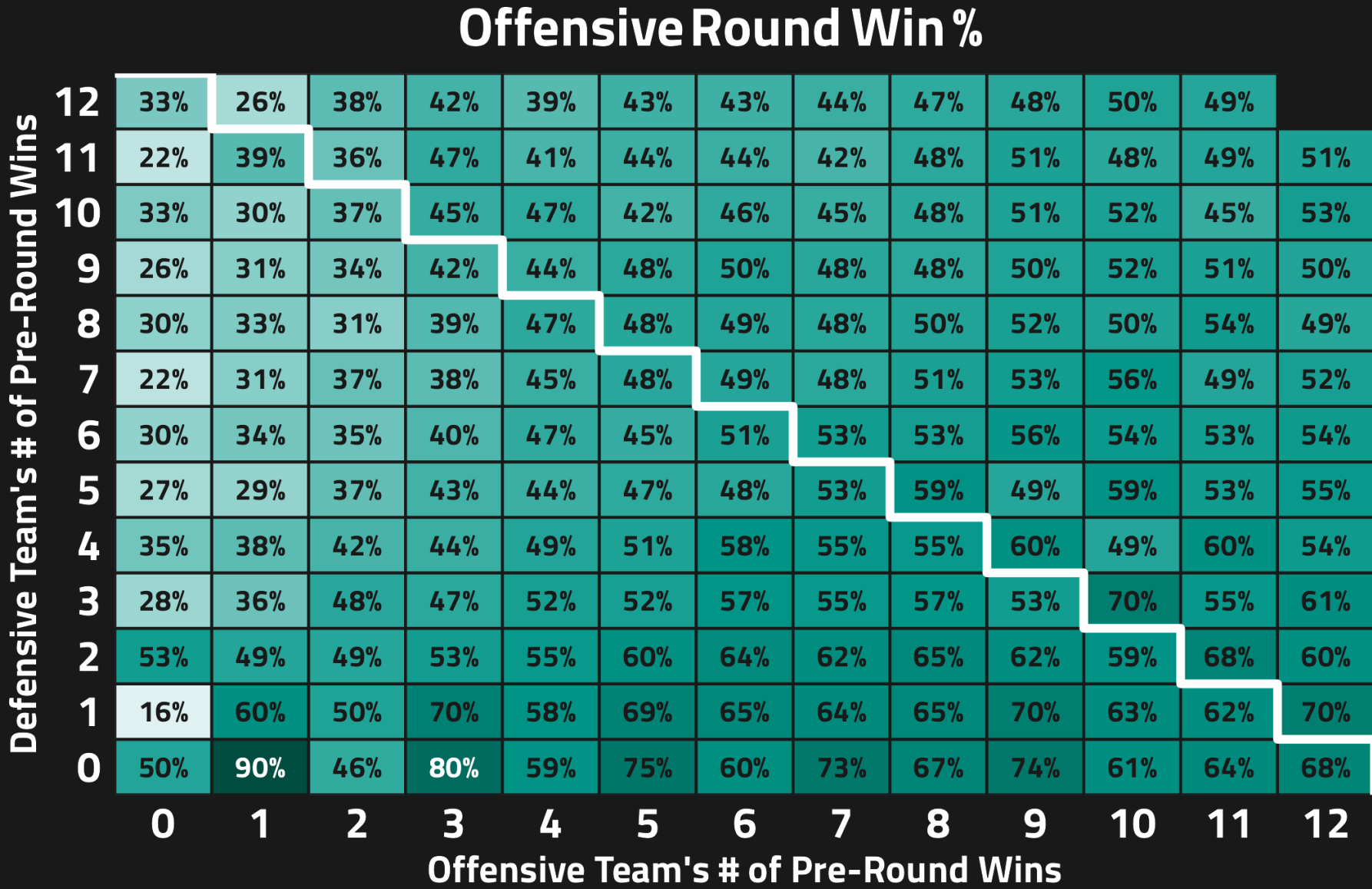
What are your chances of winning a round, given the series state in COD SnD?

Offensive Round Win % Over Expected

Defensive Team's # of Pre-Round Wins	5	-9.6 (34)	-8.9 (95)	-6.3 (118)	-2.1 (166)	+3.7 (192)	-2.0 (192)
	4	-4.1 (64)	-5.5 (111)	+0.7 (171)	-1.7 (197)	+8.9 (206)	-4.2 (165)
	3	-3.8 (109)	-3.2 (188)	-0.8 (240)	-3.7 (229)	-2.1 (212)	+3.8 (155)
	2	-4.2 (206)	+3.4 (279)	+0.9 (287)	+1.9 (231)	-3.3 (175)	-3.0 (125)
	1	-2.1 (374)	+1.5 (375)	+0.7 (280)	-2.2 (184)	+9.0 (132)	+0.2 (77)
	0	-0.3 (784)	+2.4 (410)	+5.8 (203)	+7.3 (116)	+7.9 (61)	-3.4 (36)
		0	1	2	3	4	5
		Offensive Team's # of Pre-Round Wins					

CDL SnD Major and Weekly matches, 2020 - present

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



2021 VCT matches



What are your chances of winning the series, given the series state in **COD SnD**?

Offensive Series Win %

Defensive Team's # of Pre-Round Wins	5	0% (0/34)	4% (4/95)	5% (6/118)	13% (22/166)	21% (41/192)	46% (88/192)
	4	8% (5/64)	5% (6/111)	26% (44/171)	25% (49/197)	59% (121/206)	70% (116/165)
	3	9% (10/109)	27% (50/188)	35% (83/240)	50% (114/229)	63% (133/212)	88% (137/155)
	2	26% (53/206)	38% (107/279)	53% (153/287)	60% (138/231)	85% (149/175)	92% (115/125)
	1	35% (132/374)	54% (201/375)	60% (169/280)	75% (138/184)	88% (116/132)	99% (76/77)
	0	52% (407/784)	60% (246/410)	75% (153/203)	78% (91/116)	100% (61/61)	94% (34/36)
		0	1	2	3	4	5
		Offensive Team's # of Pre-Round Wins					

CDL SnD Major and Weekly matches, 2020 - present

What are your chances of winning the series, given the series state in **COD SnD**?

Offensive Series Win % Over Expected

Defensive Team's # of Pre-Round Wins	5	-1.6 (34)	+1.1 (95)	-1.2 (118)	+0.8 (166)	-3.6 (192)	-4.2 (192)
	4	+1.6 (64)	-5.5 (111)	+7.0 (171)	-6.4 (197)	+8.7 (206)	-4.7 (165)
	3	-5.3 (109)	+3.9 (188)	+0.2 (240)	-0.2 (229)	-6.0 (212)	+0.9 (155)
	2	+0.3 (206)	+2.0 (279)	+3.3 (287)	-5.9 (231)	+3.9 (175)	-1.8 (125)
	1	-2.4 (374)	+3.6 (375)	-3.3 (280)	-2.3 (184)	-1.2 (132)	+1.8 (77)
	0	+1.9 (784)	-2.3 (410)	+0.8 (203)	-7.1 (116)	+6.3 (61)	-4.0 (36)
		0	1	2	3	4	5
		Offensive Team's # of Pre-Round Wins					

CDL SnD Major and Weekly matches, 2020 - present

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

Offensive Series Win %

Defensive Team's # of Pre-Round Wins	12	0%	1%	2%	2%	1%	1%	3%	3%	5%	8%	15%	25%	
	11	0%	3%	3%	2%	3%	3%	7%	8%	13%	21%	33%	48%	74%
	10	3%	3%	4%	5%	6%	9%	13%	17%	27%	38%	51%	63%	87%
	9	4%	3%	6%	10%	10%	15%	22%	29%	39%	49%	64%	76%	93%
	8	5%	4%	8%	14%	18%	25%	31%	40%	49%	62%	74%	85%	96%
	7	5%	8%	12%	18%	24%	32%	38%	49%	59%	72%	79%	89%	96%
	6	10%	11%	14%	25%	33%	41%	52%	60%	69%	78%	85%	93%	97%
	5	13%	14%	22%	34%	41%	48%	60%	69%	77%	84%	90%	95%	98%
	4	17%	21%	29%	41%	49%	59%	70%	76%	81%	87%	91%	95%	97%
	3	23%	30%	38%	49%	57%	66%	75%	82%	87%	91%	94%	97%	99%
	2	33%	40%	47%	60%	69%	77%	85%	88%	91%	94%	96%	99%	99%
	1	37%	53%	58%	72%	76%	84%	89%	91%	92%	94%	95%	98%	97%
	0	50%	63%	66%	78%	82%	89%	90%	92%	95%	98%	98%	98%	97%
		0	1	2	3	4	5	6	7	8	9	10	11	12
Offensive Team's # of Pre-Round Wins														

2021 VCT matches

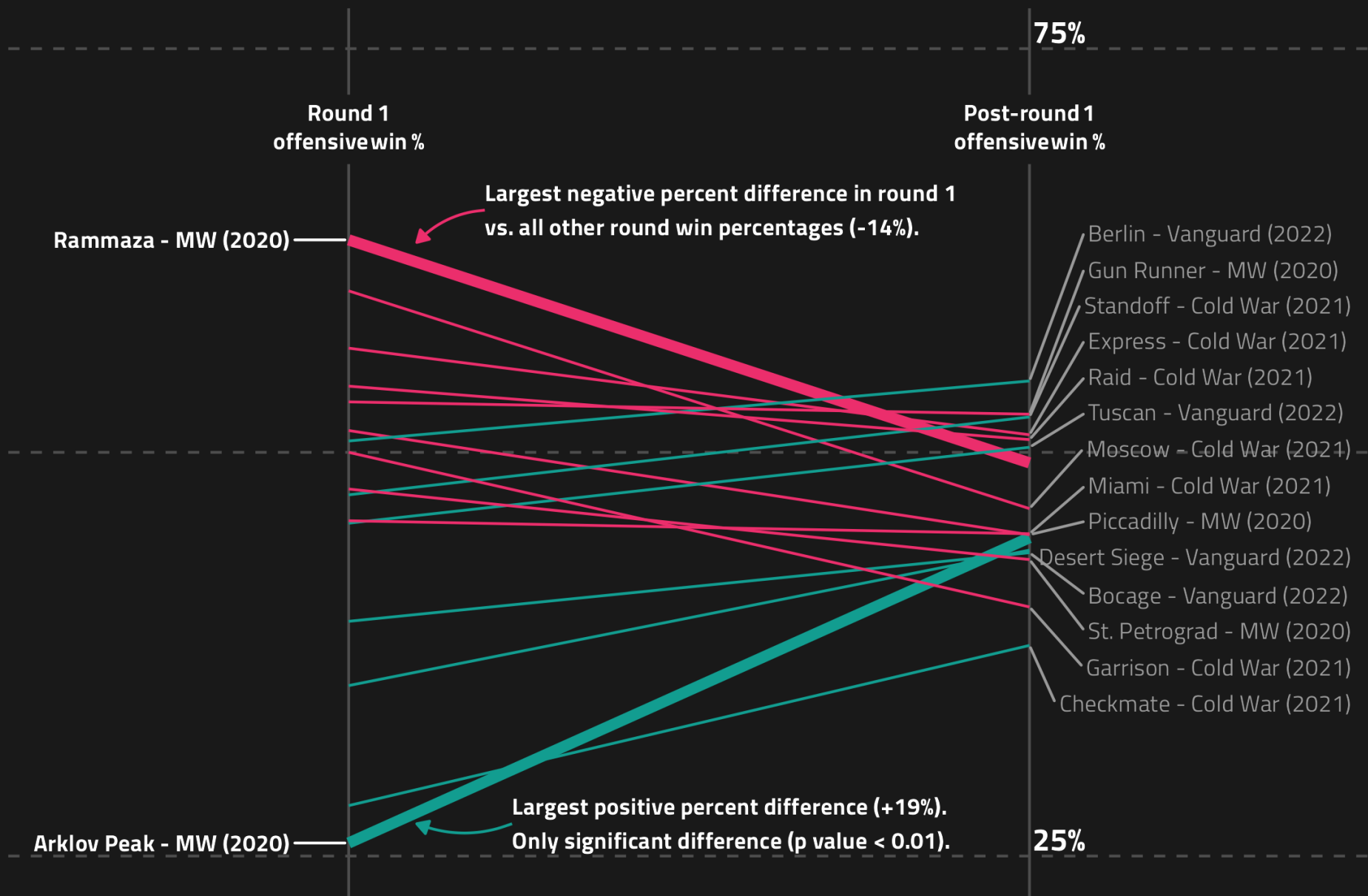
What are your chances of winning the series, given the series state in **Valorant**?

Offensive Series Win % Over Expected

Defensive Team's # of Pre-Round Wins	12	-0.0	+0.8	+2.2	+1.9	+0.7	+0.1	+1.9	+1.2	+1.6	+2.1	+2.8	-0.3	
	11	-0.1	+2.4	+2.4	+1.9	+2.1	+1.2	+3.5	+1.4	+2.4	+2.1	+1.6	-2.4	-0.9
	10	+2.2	+2.2	+2.7	+3.3	+3.0	+3.3	+4.4	+2.8	+4.4	+3.1	+0.9	-6.0	-0.0
	9	+2.8	+1.6	+2.8	+5.2	+2.9	+3.7	+4.5	+3.9	+2.6	-0.5	-2.0	-5.3	-0.4
	8	+2.1	+0.1	+1.9	+4.6	+4.9	+5.9	+3.7	+1.9	-1.4	-1.7	-2.9	-4.4	-1.2
	7	+0.6	+0.8	+1.6	+2.8	+3.0	+2.8	-1.1	-0.6	-3.2	-2.8	-6.5	-4.8	-2.0
	6	+1.2	-0.8	-2.9	+1.8	+3.1	+1.2	+1.7	-1.0	-3.5	-4.4	-6.2	-3.1	-2.1
	5	-0.4	-3.7	-2.5	+2.3	+0.6	-1.5	-0.4	-1.6	-3.4	-5.1	-4.2	-3.0	-2.1
	4	-2.6	-4.1	-3.2	+0.3	-1.0	-0.9	+0.2	-2.7	-5.8	-5.6	-5.9	-4.2	-2.3
	3	-3.2	-3.4	-3.3	-1.1	-1.9	-2.2	-2.0	-3.2	-4.0	-4.7	-3.8	-2.5	-0.9
	2	-1.4	-1.8	-3.0	+0.9	+1.2	+0.9	+1.6	-1.0	-2.7	-2.9	-2.7	-0.7	-0.8
	1	-5.1	+3.3	-0.7	+4.9	+1.4	+2.1	+1.1	-1.5	-3.8	-4.3	-4.2	-2.1	-3.5
	0	-0.0	+5.2	-0.4	+4.0	+1.3	+2.0	-1.6	-3.0	-2.6	-1.4	-1.9	-1.7	-2.7
		0	1	2	3	4	5	6	7	8	9	10	11	12
		Offensive Team's # of Pre-Round Wins												

2021 VCT matches

# Are offensive win %'s different in round 1?

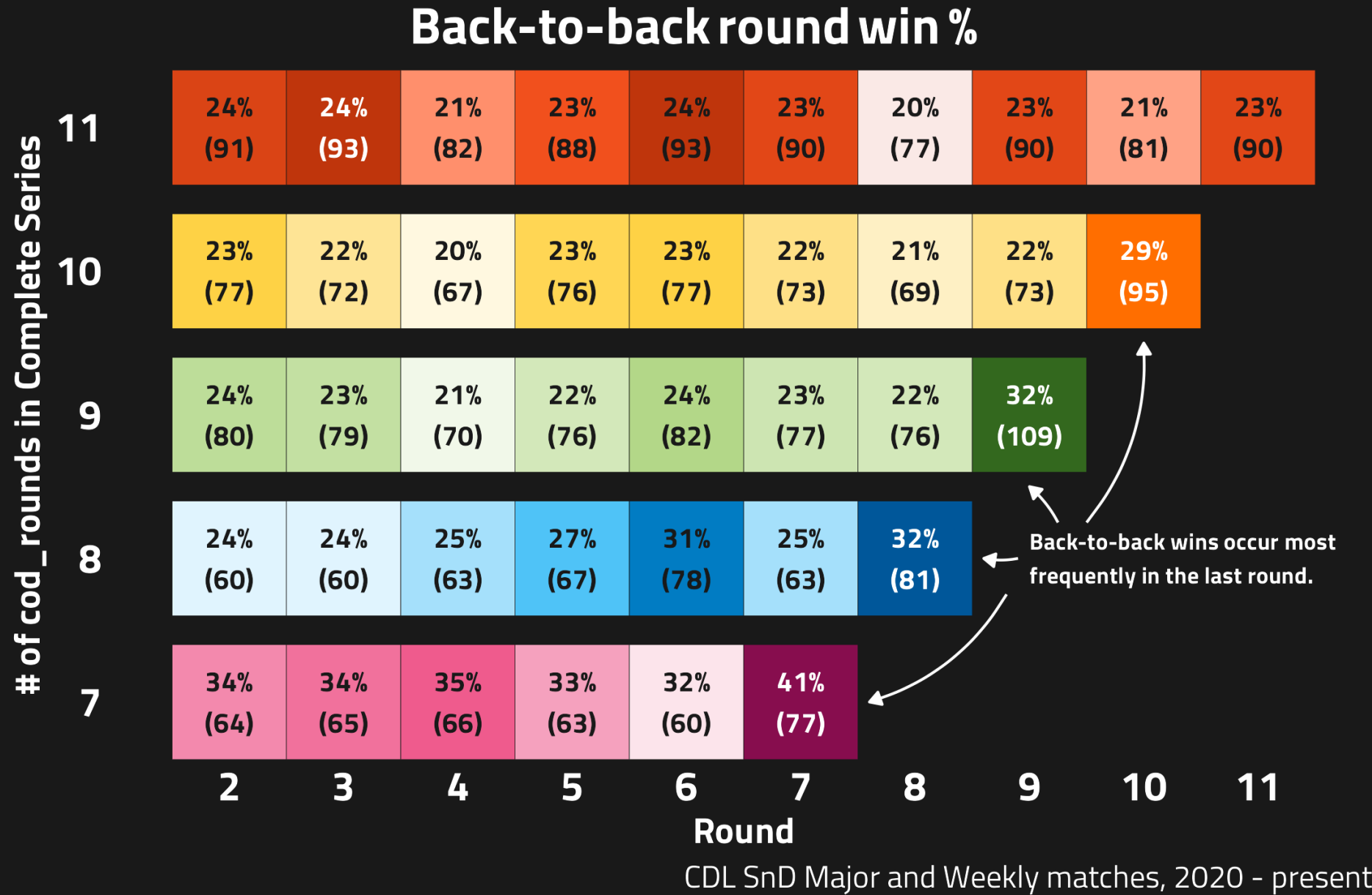


# What are the most common series winning states?

		Series outcome %					
		6-0	6-1	6-2	6-3	6-4	6-5
Actual	Actual	4.7% (37)	12.1% (95)	15.9% (125)	21.7% (170)	21.0% (165)	24.5% (192)
	Expected	3.1%	9.4%	16.4%	21.9%	24.6%	24.6%
Diff.		+1.6%	+2.7%	-0.5%	-0.2%	-3.6%	-0.1%

CDL SnD Major and Weekly matches, 2020 - present

# When do back-to-back round wins occur?



## Is there evidence for the “hot hand”?

Round win % after a streak of 3 round wins:

- Expected: **38.4%**
- Actual: **54%** (621 / 1150)



Is planting at one site better than the other?

Plant site	%
Primary	60.9%
Secondary	39.1%

Plant site	Win %
Primary	47.4%
Secondary	48.5%