## Hardrock Hundred 2022, Lottery Chances

The following pages show the chances of getting into Hardrock for applicants with a particular number of tickets in each lottery. These distributions have been calculated using my Monte Carlo program, which simulates a million lotteries.

These results require some explanation, as the Hardrock lottery is even more complicated this year than usual. For 2022, we have allocated 65 entry slots to the Nevers, 55 entry slots to the Elses, and 25 entry slots to the Veterans. However, we offered to deferred entry to last year's international entrants, due to COVID travel restrictions. Eighteen such runners are thus entered into the 2022 Hardrock outside of the lottery. Their distribution between the Never/Else/Veteran lotteries is 12/5/1.

The individual male and female winners of Hardrock also get to bypass the lottery the next year. Both of last year's winners would have been in the Else lottery this year.

In addition, I have chosen to subtract out Dale's Picks from this year's lottery calculation. There are six of these. We don't know who they will be or what lottery they will come from, but I have made the reasonable assumption that four of them will be from the Never lottery and two will be from the Else lottery.

All of these entrants who are bypassing the lottery need to be subtracted from the available slots. This means that, effectively, our 65/55/25 available lottery slots actually are 49/46/24.

There is also the complication of our new Gender Equity Policy, whereby we commit to having at least the same percentage of our entrant field be women as the percentage they represent of our applicant field. For 2022, this is 18%. This will increase the odds of entry for women. My modeling suggests this will be a modest increase, for example, in the Never lottery men with 4 tickets have a 1.4% chance and women with 4 tickets have a 1.7% chance. For holders of 64 tickets it is 19.9% and 24.2%. I have chosen not to present those results here for simplicity sake.

Blake Wood, Hardrock Lottery Coordinator

## Hardrock Hundred 2022, Never Lottery Chances

Entry slots: 49, Lotteries: 1,000,000 Entrants: 1683, Total Tickets: 15567

845 holders of 1 tickets have a 0.4 percent chance of getting in. Expected number = 3.0 Expected Range = 1.3 - 4.7 217 holders of 2 tickets have a 0.7 percent chance of getting in. Expected number = 1.5 Expected Range = 0.3 - 2.8212 holders of 4 tickets have a 1.4 percent chance of getting in. Expected number = 3.0 Expected Range = 1.3 - 4.7 146 holders of 8 tickets have a 2.8 percent chance of getting in. Expected number = 4.1 Expected Range = 2.1 - 6.1 115 holders of 16 tickets have a 5.5 percent chance of getting in. Expected number = 6.4 Expected Range = 3.8 - 8.9 66 holders of 32 tickets have a 10.8 percent chance of getting in. Expected number = 7.1 Expected Range = 4.4 - 9.8 48 holders of 64 tickets have a 20.4 percent chance of getting in. Expected number = 9.8 Expected Range = 6.7 - 12.9 27 holders of 128 tickets have a 36.7 percent chance of getting in. Expected number = 9.9 Expected Range = 6.8 - 13.0 7 holders of 256 tickets have a 59.9 percent chance of getting in. Expected number = 4.2 Expected Range = 2.1 - 6.2 Entrants with this # of tickets: Were chosen 0 times in this # of lotteries: 43998 206708 43463 12295 Were chosen 1 times in this # of lotteries: 142626 333756 143170 58500 31 16041 Were chosen 2 times in this # of lotteries: 226956 260934 228194 134108 25219 12142 227 75393 Were chosen 3 times in this # of lotteries: 233426 132537 234553 195303 62886 35654 1364 195183 Were chosen 4 times in this # of lotteries: 175179 48254 174979 208623 113581 75748 5668 296624 Were chosen 5 times in this # of lotteries: 102060 13885 101096 171426 157755 123847 25216 17437 263006 Were chosen 6 times in this # of lotteries: 48043 3215 47826 112910 175379 159834 52468 42269 126821 Were chosen 7 times in this # of lotteries: 18965 612 18473 61793 161133 171722 89636 81214 25562 Were chosen 8 times in this # of lotteries: 6365 6022 28547 125630 152836 128402 126215 Were chosen 9 times in this # of lotteries: 1798 1686 11203 82908 115448 153746 161128 Were chosen 10 times in this # of lotteries: 3777 47621 74675 156316 170728 Were chosen 11 times in this # of lotteries: 1130 23969 41354 137154 151947 Were chosen 12 times in this # of lotteries: 298 10454 20360 103879 112147 Were chosen 13 times in this # of lotteries: 8793 68299 Were chosen 14 times in this # of lotteries: 3281 38848 Were chosen 15 times in this # of lotteries: 440 1119 19563 16196 Were chosen 16 times in this # of lotteries: Were chosen 17 times in this # of lotteries: Were chosen 18 times in this # of lotteries: Were chosen 19 times in this # of lotteries: Were chosen 20 times in this # of lotteries: Were chosen 21 times in this # of lotteries: Were chosen 22 times in this # of lotteries: Were chosen 23 times in this # of lotteries: Were chosen 24 times in this # of lotteries: Were chosen 25 times in this # of lotteries: 

## Hardrock Hundred 2022, Else Lottery Chances

Entry slots: 46, Lotteries: 1000000 Entrants: 197, Total Tickets: 847

4 holders of 1 tickets have a 6.1 percent	chance	of get	ting in.	. Exped	cted nur	nber =	0.2 Ex	spected	Range =	-0.2 - 0.7
41 holders of 2 tickets have a 11.9 percent	chance	of get	ting in.	. Exped	cted nur	nber =	4.9 Ex		Range =	2.7 - 7.1
23 holders of 3 tickets have a 17.3 percent	chance	of get	ting in.	. Exped	cted nur	nber =	4.0 Ex	xpected	Range =	2.0 - 6.0
47 holders of 4 tickets have a 22.4 percent	chance	of get	ting in.	. Exped	cted nur	nber = 1	10.5 Ex		Range =	7.3 - 13.8
28 holders of 5 tickets have a 27.2 percent	chance	of get	ting in.	. Expec	cted nur	nber =	7.6 Ex	pected	Range =	4.9 - 10.4
27 holders of 6 tickets have a 31.7 percent	chance	of get	ting in.	. Expec	cted nur	nber =	8.6 Ex	pected	Range =	5.6 - 11.5
18 holders of 7 tickets have a 35.9 percent	chance	of get	ting in.	. Expec	cted nur	nber =	6.5 Ex	pected	Range =	3.9 - 9.0
8 holders of 8 tickets have a 39.8 percent	chance	of get	ting in.	. Expec	cted nur	nber =	3.2 Ex	spected	Range =	1.4 - 5.0
1 holders of 12 tickets have a 53.4 percent	chance	of get	ting in.	. Expec	cted nur	nber =	0.5 Ex	spected	Range =	-0.2 - 1.3
Entrants with this # of tickets:	1	2	3	4	5	6	7	8	12	
Were chosen 0 times in this # of lotteries:	775373	3826	9849	1	57	9	166		466073	
Were chosen 1 times in this # of lotteries:	204389	24353	53765	10	727	170	2074	86135	533927	
Were chosen 2 times in this # of lotteries:	19455		134814	172	4440	1345		211524	0	
Were chosen 3 times in this # of lotteries:		143027		975	17222	6286		286841	0	
Were chosen 4 times in this # of lotteries:		195044		3891	46834	20577		236449	0	
Were chosen 5 times in this # of lotteries:		200108		12540	93449		161118		0	
Were chosen 6 times in this # of lotteries:		161259			146163		202752		0	
Were chosen 7 times in this # of lotteries:		104736			179234			6290	0	
Were chosen 8 times in this # of lotteries:	0	55306	19020		178649			470	0	
Were chosen 9 times in this # of lotteries:	0	24507			144320			0	0	
Were chosen 10 times in this # of lotteries:	0	9102		156782		142548	38881	0	0	
Were chosen 11 times in this # of lotteries:	0	2894		153892	53877		13853	0	0	
Were chosen 12 times in this # of lotteries:	0	761		130760	24847	53070	3888	0	0	
Were chosen 13 times in this # of lotteries:	0	189	5	95269	9504	24573	831	0	0	
Were chosen 14 times in this # of lotteries:	0	36	0	59373	3170	9688	102	0	0	
Were chosen 15 times in this # of lotteries:	0	7	0	32691	792	3187	11	0	0	
Were chosen 16 times in this # of lotteries:	0	2	0	15534	190	845	0	0	0	
Were chosen 17 times in this # of lotteries:	0	0	0	6583	29	179	0	0	0	
Were chosen 18 times in this # of lotteries:	0	0	0	2378	6	41	0	0	0	
Were chosen 19 times in this # of lotteries:	0	0	0	800	0	4	0	0	0	
Were chosen 20 times in this # of lotteries:	0	0	0	231	1	1	0	0	0	
Were chosen 21 times in this # of lotteries:	0	0	0	47	0	0	0	0	0	
Were chosen 22 times in this # of lotteries:	0	0	0	12	0	0	0	0	0	
Were chosen 23 times in this # of lotteries:	0	0	0	2	0	0	0	0	0	
Were chosen 24 times in this # of lotteries:	0	0	0	1	0	0	0	0	0	
Were chosen 25 times in this # of lotteries:	0	0	0	0	0	0	0	0	0	

## Hardrock Hundred 2022, Veteran Lottery Chances

Entry slots: 24, Lotteries: 1,000,000 Entrants: 36, Total Tickets: 339

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8 holders of 5 tickets have a 49.3 percent chance of getting in. Expected number = 3.9 Expected Range = 2.0 - 5.9
 7 holders of 6 tickets have a 55.8 percent chance of getting in. Expected number = 3.9 Expected Range = 1.9 - 5.9
 4 holders of 7 tickets have a 61.4 percent chance of getting in. Expected number = 2.5 Expected Range = 0.9 - 4.0
 4 holders of 8 tickets have a 66.4 percent chance of getting in. Expected number = 2.7 Expected Range = 1.0 - 4.3
 1 holders of 9 tickets have a 70.7 percent chance of getting in. Expected number = 0.7 Expected Range = -0.1 - 1.5
 1 holders of 10 tickets have a 74.4 percent chance of getting in. Expected number = 0.7 Expected Range = -0.1 - 1.6
 1 holders of 11 tickets have a 77.7 percent chance of getting in. Expected number = 0.8 Expected Range = -0.1 - 1.7
 3 holders of 13 tickets have a 82.9 percent chance of getting in. Expected number = 2.5 Expected Range = 0.9 - 4.1
 1 holders of 14 tickets have a 85.0 percent chance of getting in. Expected number = 0.9 Expected Range = -0.1 - 1.8
 1 holders of 15 tickets have a 86.8 percent chance of getting in. Expected number = 0.9 Expected Range = -0.1 - 1.8
 1 holders of 16 tickets have a 88.5 percent chance of getting in. Expected number = 0.9 Expected Range = -0.1 - 1.8
 2 holders of 17 tickets have a 89.9 percent chance of getting in. Expected number = 1.8 Expected Range = 0.5 - 3.1
 1 holders of 24 tickets have a 95.8 percent chance of getting in. Expected number = 1.0 Expected Range = -0.0 - 1.9
 1 holders of 25 tickets have a 96.3 percent chance of getting in. Expected number = 1.0 Expected Range = -0.0 - 1.9
Entrants with this # of tickets:
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Were chosen 0 times in this # of lotteries:
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Were chosen 1 times in this # of lotteries:
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Were chosen 2 times in this # of lotteries:
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Were chosen 3 times in this # of lotteries: 244546 249001 371061 412555
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Were chosen 4 times in this # of lotteries: 319112 335462 124153 175163
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Were chosen 5 times in this # of lotteries: 223396 225470
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Were chosen 6 times in this # of lotteries: 82536 71425
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Were chosen 7 times in this # of lotteries: 14779
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Were chosen 8 times in this # of lotteries:
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Were chosen 9 times in this # of lotteries:
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Were chosen 10 times in this # of lotteries:
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