

# Making Money on Scratch Tickets—The Impact of Prize Structures

Michael Czekanski & Alex Lyford  
Middlebury College

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## Motivation



## Our Questions:

- ▶ Is a given game worth playing?
- ▶ If not, how likely is it that it will become worth playing?

## Instant Tickets

- ▶ Games are played once
- ▶ Each game never resets
- ▶ Randomness is limited to location of tickets

# An Example:

## SAPPHIRE 7S

CLICK  
TO FLIP



**TOP PRIZE \$7,777**

Game #	<b>1522</b>
Ticket Price	<b>\$5</b>
Start Date	<b>08/02/2019</b>
Overall Odds	<b>1: 4.50</b>

### UNCLAIMED TOP PRIZES

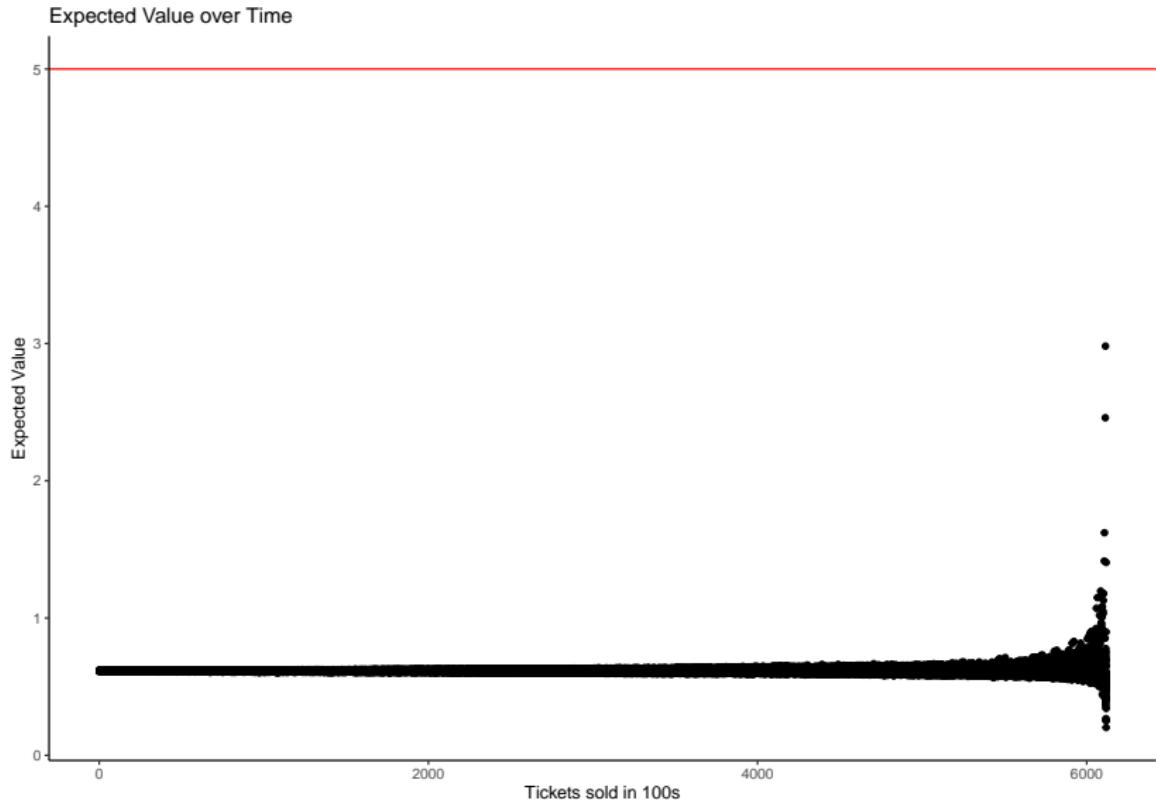
\$7,777	<b>1</b>
\$1,000	<b>13</b>
\$700	<b>26</b>
# Of Tickets	<b>420,000</b>
% of Tickets Sold	<b>70</b>
Total Unclaimed	<b>\$429,273</b>

## Our intuition is correct at the outset

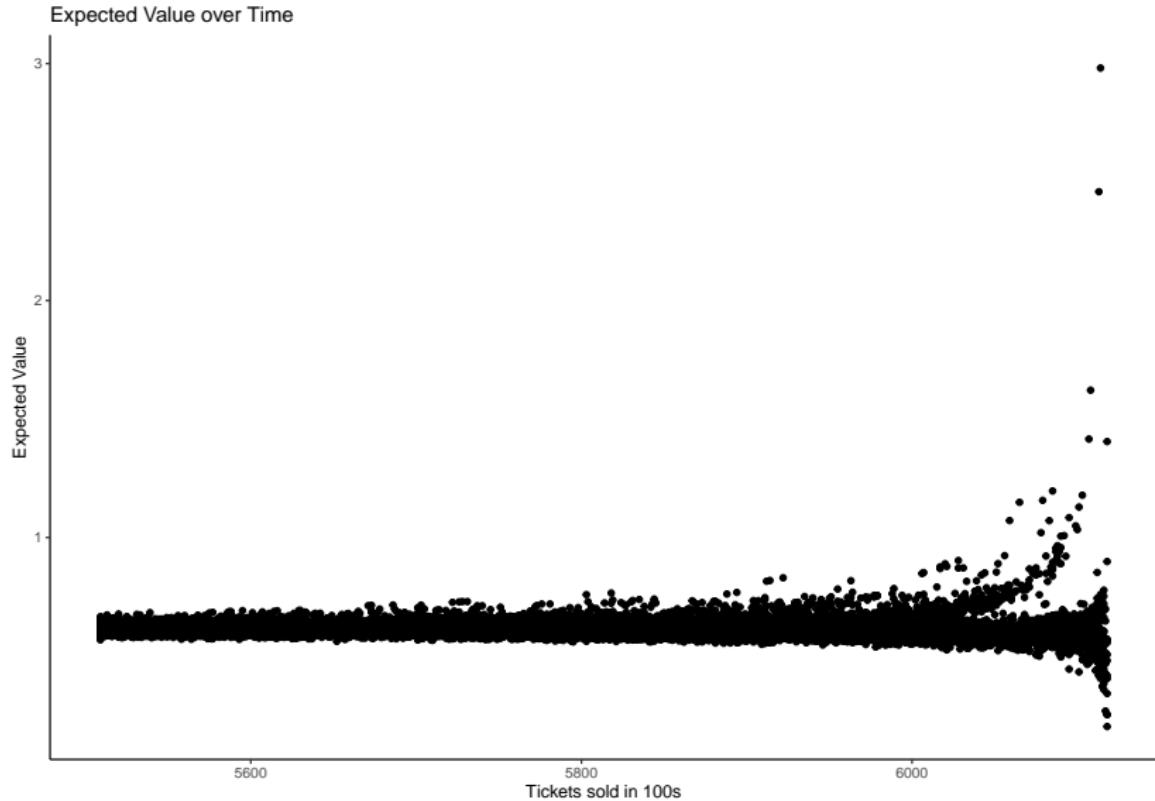
Value	Probability
0	0.78789
7	0.14286
15	0.02632
25	0.0303
70	0.01235
700	0.00019
1000	9e-05
7777	2e-05

Expected Value =  $3.365172 < 5$ .

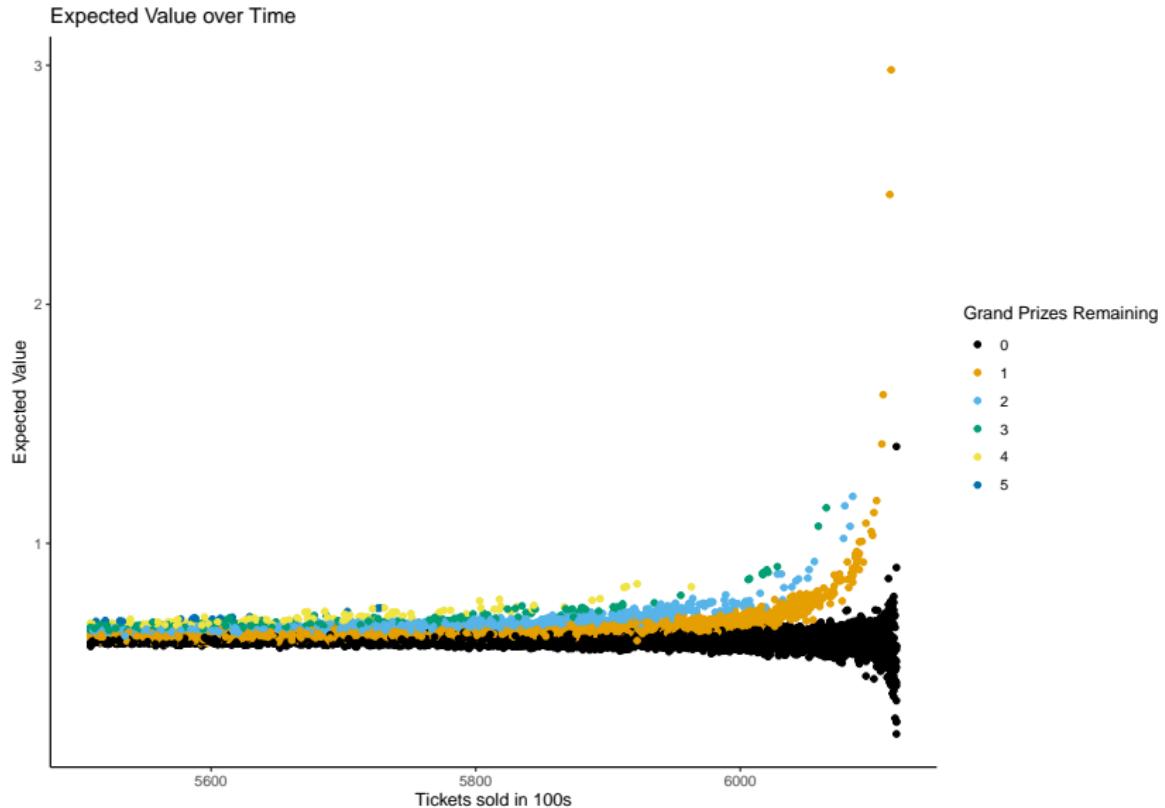
# This game is *sometimes* worth playing!



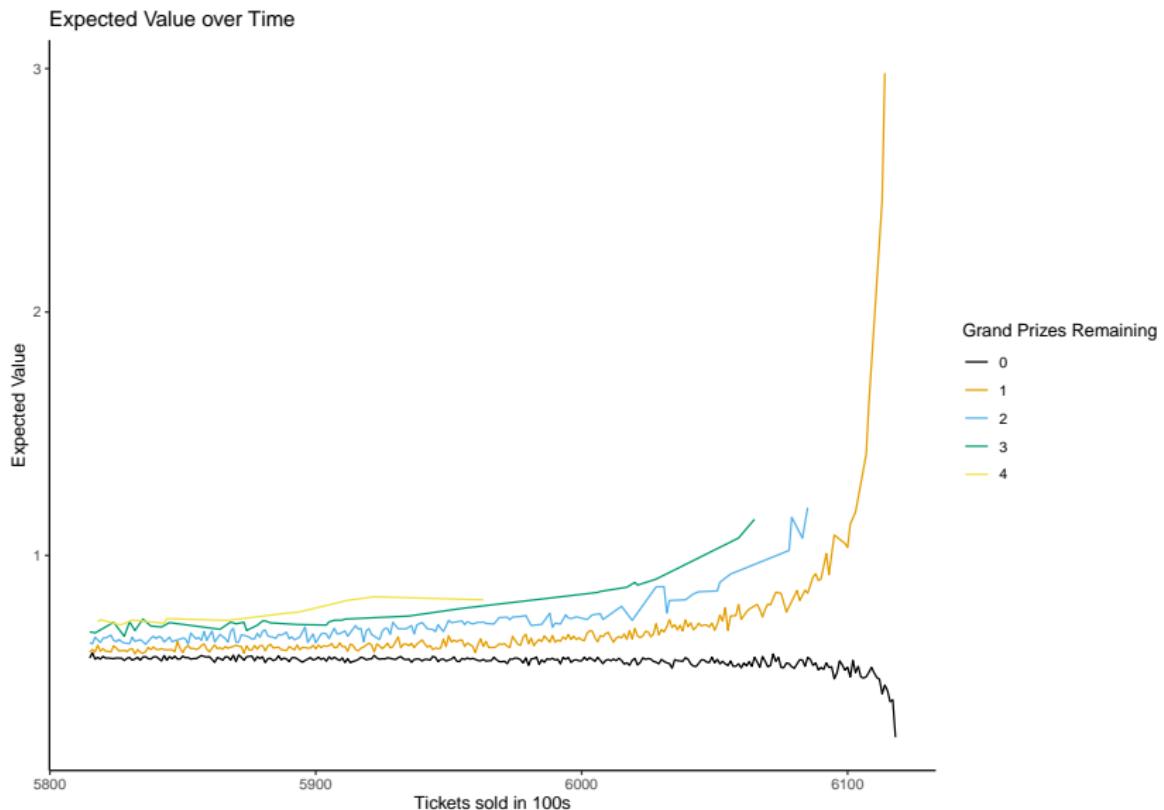
Let's take a closer look:



Then make use of the information available to us:

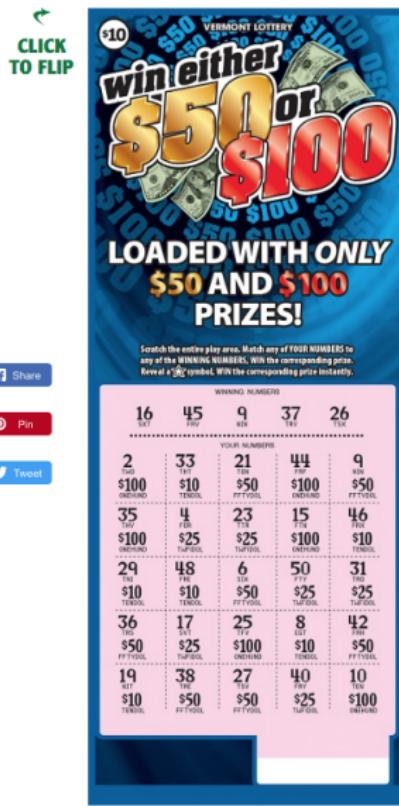


We have the necessary information to estimate the value of a ticket



Another game:

# WIN EITHER \$50 OR \$100



## TOP PRIZE \$100

Game #	1494
Ticket Price	\$10
Start Date	08/02/2019
Overall Odds	1 : 9.78

## UNCLAIMED TOP PRIZES

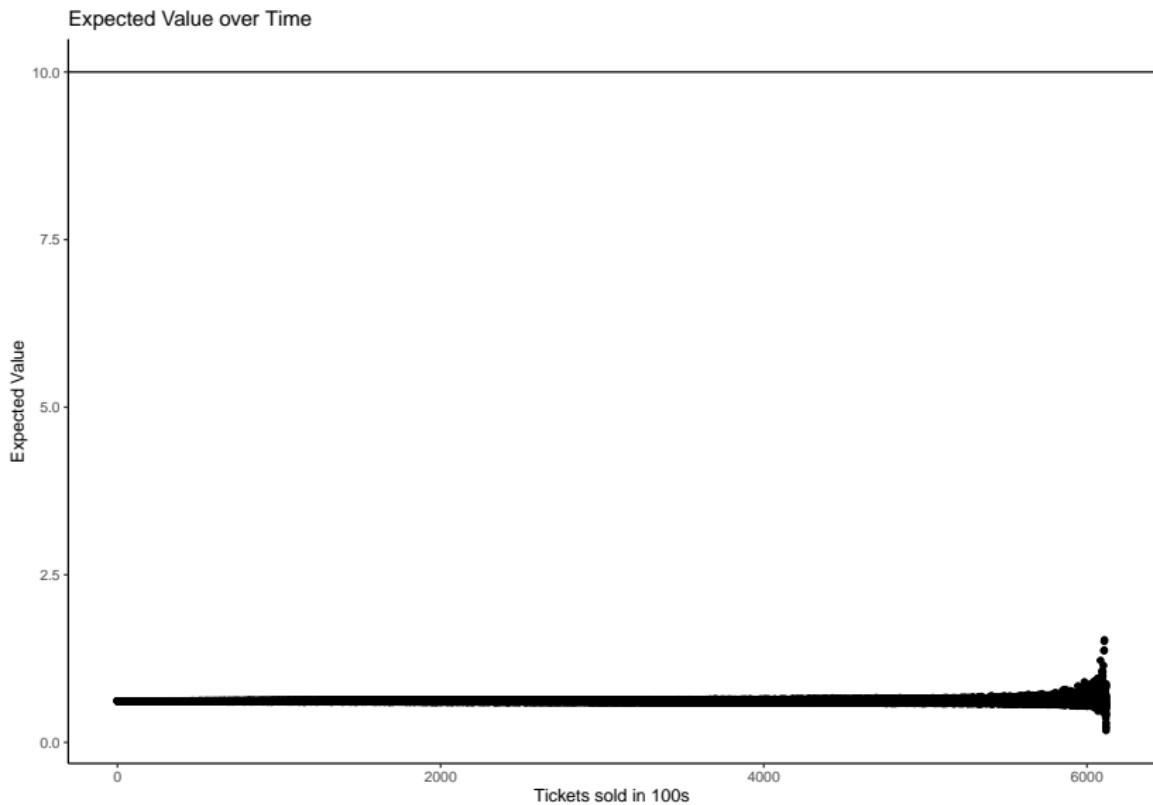
\$100	680
# Of Tickets	299,880
% of Tickets Sold	94
Total Unclaimed	\$128,300

It's all in the name:

Value	Probability
0	0.89904
50	0.0625
100	0.03846

Expected Value = 6.9711538 < 10.

# This game is also sometimes worth playing!



# But tracking grand prizes isn't helpful

