Loss Aversion - Learning Rates

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Loss Aversion and the Sunk Cost Fallacy

Focus:

~~Examine people's decisions in an environment where the 'odds are against against them'. How quickly do people recognize a "bad bet" and under what circumstances?~~ Examine *Loss Aversion* is the tendency to prefer avoiding losses to acquiring equivalent gains. Individuals commit the *Sunk Cost Fallacy* when they continue a behavior or endeavor as a result of previously invested resources (time, money or effort) (Arkes & Blumer, 1985).

Research Goal:

Examine the effects of the Sunk Cost fallacy on betting procedure.

Questions:

Does the Sunk Cost Fallacy have an effect on "betting" size?

How quickly are "bad odds" recognized?

Research Procedure:

We will present participants with a betting scenario of our design. We may pose this betting scenario as a "weighted die roll" or "stock purchase" or "sports bet" with simple terms.

The participant is **not** explicitly told about the properties of the distribution beforehand.

```
n = 10000
sd = .1
mean = -.1
```

Betting Outcomes Distribution
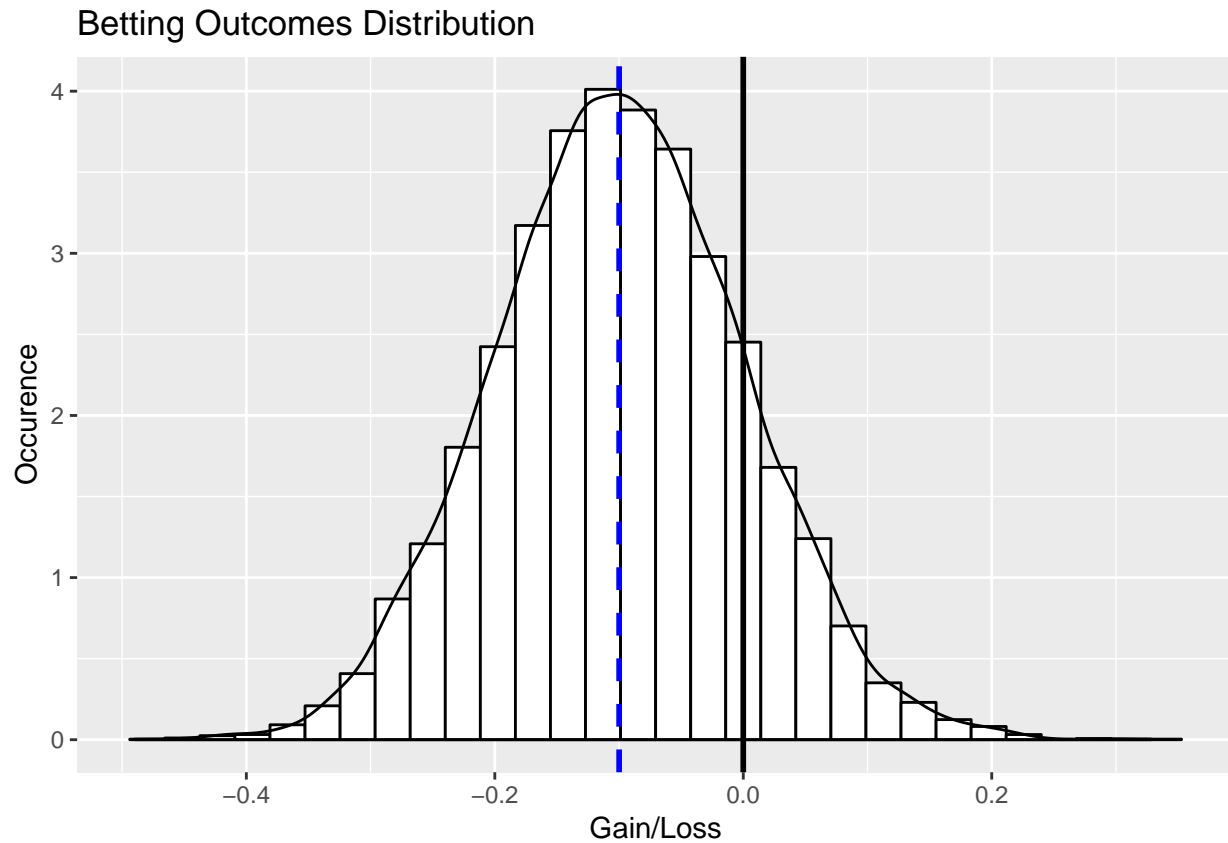
Summary Distribution Statistics

```
##      Outcome
## Min.   :-0.48974
## 1st Qu.:-0.16779
## Median :-0.10077
## Mean   :-0.09993
## 3rd Qu.:-0.03288
## Max.   : 0.32862
```

Chances of earnings greater than $0.00 dollars is:

```
## [1] 15.87
```

Each participant is given an endowment and allowed to choose the amount of their endowment they are willing to risk per bet. Here we demonstrate a hypothetical trial with a maximum betting size of 100% given a 100 dollar endowment.

Simulated Outcomes for 10 Total Bets
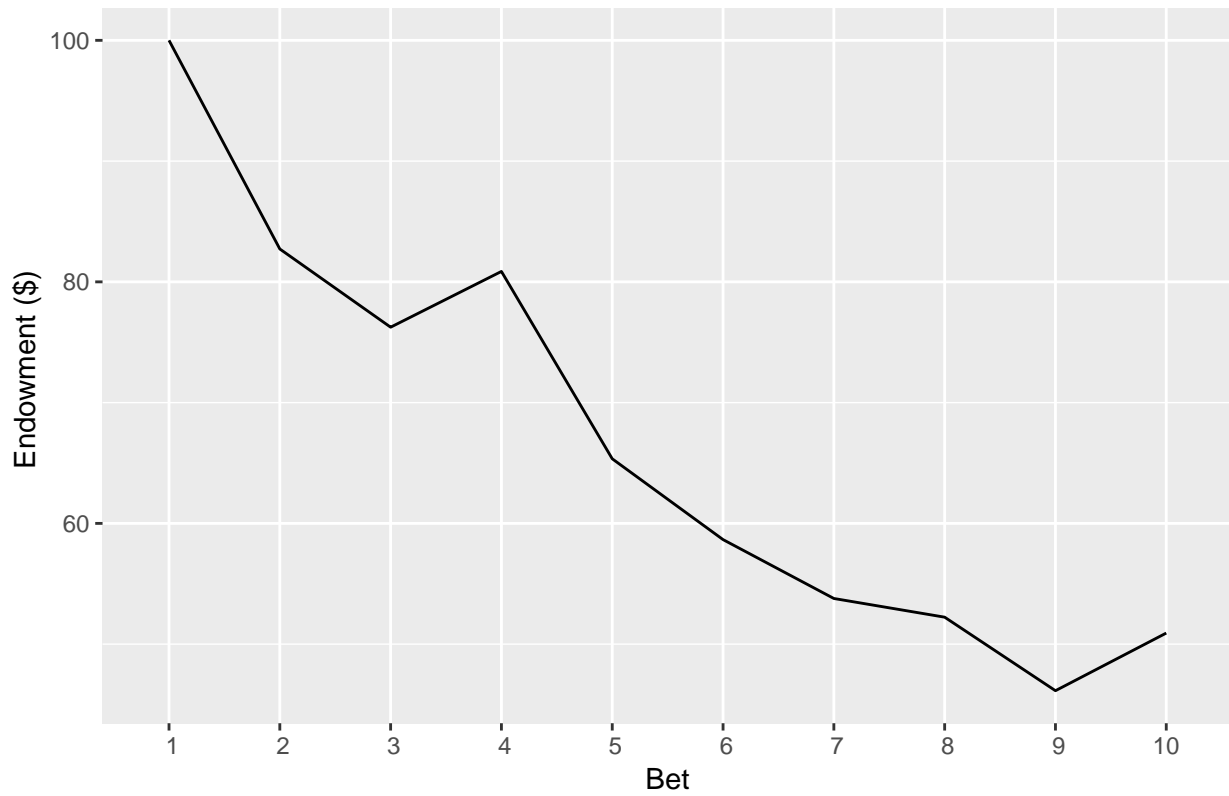
Here we demonstrate the same process for 1000 hypothetical trials

1000 Simulations With 10 Bets Each
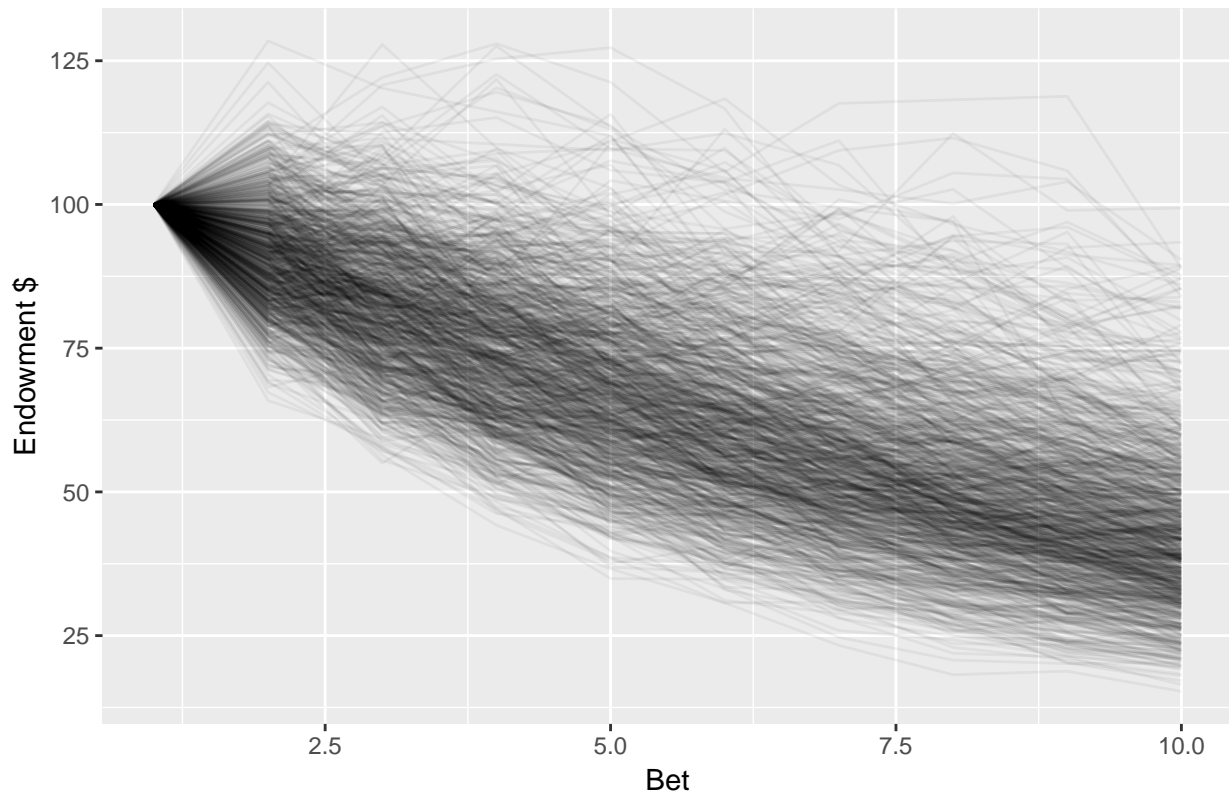
Summary intervals for the end of our simulation:

```
##  0.5%  2.5%    25%    50%    75% 97.5% 99.5%
## 19.09 21.78 33.22 41.14 50.59 76.85 88.95
```

Expected Results:

Analysis:

We are looking to record the *change* in each participant's betting sizes with every iterative gain or loss, with the purpose of analyzing any relationships between size of gain/loss and subsequent betting size.

- Expected Result: Individuals will *increase* their betting size in some proportion to the amount lost in an attempt to "make the money back".
- Expected Result: Individuals will play until they go broke.

Challenges:

- Participants may not mind betting the entire $100 allotment until they go broke - it is not their money (Separate Mental Accounts).

Possible Modifiers:

- Ask volunteer participants to play with their own money.
- Show participants the probability distribution at some point before/during betting.