Name(s)

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Project Number

J1503

Project Title

Switch Craft: Is the Switch Strategy Still Optimal When the Monte Hall Game Is Expanded to More Than Three Doors?

Abstract

Objectives/Goals
It is well established that a "switch strategy" gives you a better chance of winning a prize in the traditional 3-door Monte Hall Problem. The objective of this study was to see if the "switch strategy" would still be preferred if you played the game with more than three doors. Additionally the goal was to see how the statistical chances of winning would change and could be predicted.

Methods/Materials
Cups, toy goats, toy car, computer, Microsoft Excel. Wrote a code to simulate playing the game on a computer automatically. Use this to show the results from playing the game 10 times, 100 times, 1000 times etc. up to 1,000,000 times.

Results
The "switch strategy" gave you a better chance of winning the prize, even when the game was played with more than three doors.

Conclusions/Discussion
I predicted a formula for the chances of winning if you played with "n" doors and always switched. That formula is $(n-1)/n$.

Summary Statement

I simulated millions of rounds of the famous Monte Hall game with various numbers of doors then proposed a formula for the chances of winning if you switch.

Help Received

Jennifer Parker, Bryn Dombkowski, Ashley Dombkowski