

The Monty Hall Problem

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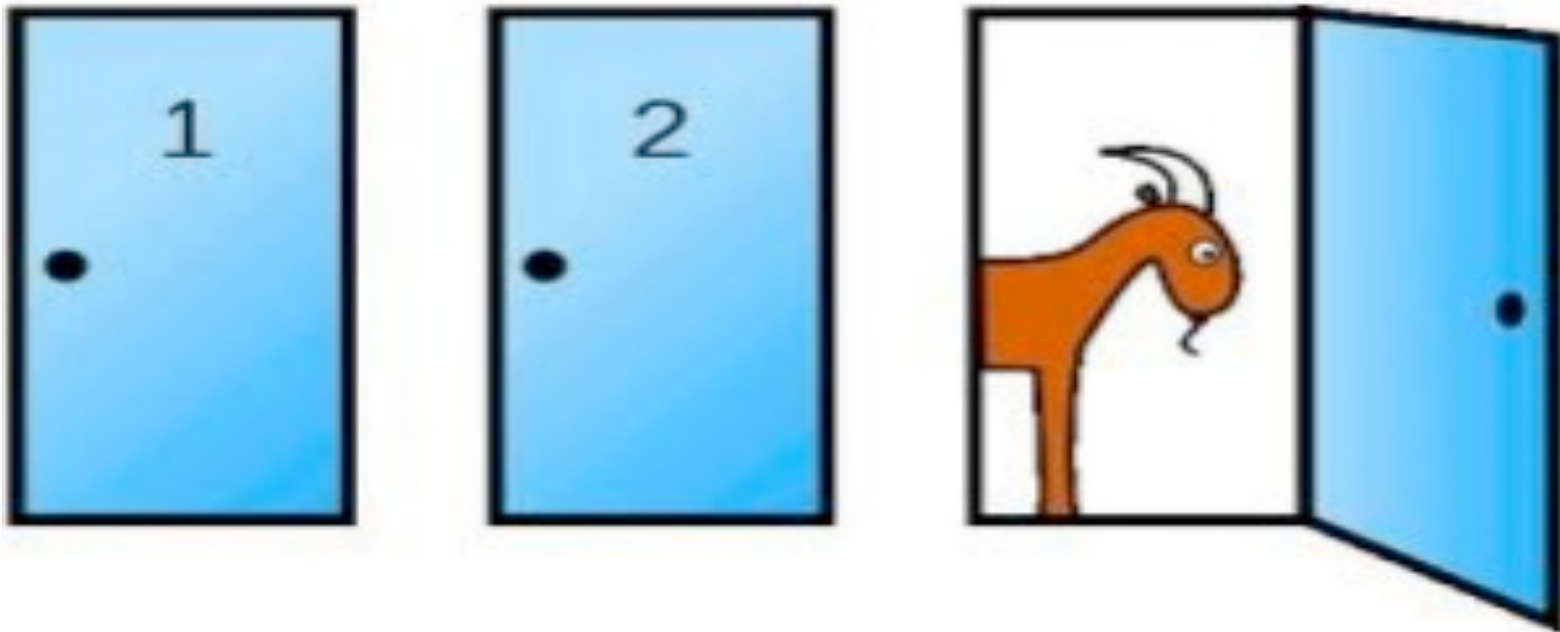
She Picks Door 1



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The Monty Hall Problem

Monty Opens a Door that Has a Goat



Do You Want to Switch?



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The Monty Hall Problem

```
def simMontyHall(numTrials = 100, chooseFcn):  
    stickWins, switchWins, noWin = (0, 0, 0)  
    prizeDoorChoices = [1,2,3]  
    guessChoices = [1,2,3]  
    for t in range(numTrials):  
        prizeDoor = random.choice([1, 2, 3])  
        guess = random.choice([1, 2, 3])  
        toOpen = chooseFcn(guess, prizeDoor)  
        if toOpen == prizeDoor: noWin += 1  
        elif guess == prizeDoor: stickWins += 1  
        else: switchWins += 1  
    return (stickWins, switchWins)
```



```
def montyChoose(guessDoor, prizeDoor):  
    if 1 != guessDoor and 1 != prizeDoor:  
        return 1  
    if 2 != guessDoor and 2 != prizeDoor:  
        return 2  
    return 3
```

```
def randomChoose(guessDoor, prizeDoor):  
    if guessDoor == 1:  
        return random.choice([2,3])  
    if guessDoor == 2:  
        return random.choice([1,3])  
    return random.choice([1,2])
```

```
def displayMHSim(simResults, title):  
    stickWins, switchWins = simResults  
    pylab.pie([stickWins, switchWins],  
              colors = ['r', 'c'],  
              labels = ['stick', 'change'],  
              autopct = '%.2f%%')  
    pylab.title(title)
```