

1125-F5-2981 **Paul R Coe*** (coepaul@dom.edu), Dominican University, 7900 W. Division Street, River Forest, IL 60305. *Does Monte Hall know Bayes' Rule?*

You are a contestant on the game show "Let's Make a Deal". The host, Monte Hall, shows you three curtains. He tells you that behind one of these curtains is a car and behind the other curtains is a goat and asks you to choose a curtain. You choose curtain number two. Oddly, the host now asks you what the probability is that you chose the curtain with the car behind it. A bit bewildered, you answer $1/3$. Monte Hall now reminds you that at least one of the two curtains that you did not choose must have a goat behind it. To prove this, he opens curtain number one. He claims that he has not given you any information about what is behind your curtain, but you now see only two curtains on the stage, one of which has a car behind it. Being Monte Hall, he now offers you the chance to keep your curtain or trade for what's behind the other curtain. Should you keep your curtain because you don't trust Monte Hall or trade it for the other curtain? I use this problem in class as an example of Bayes' Rule. Depending on what you believe about Monte Hall's behavior, the posterior probability that the car is behind your curtain can be anything between zero and one half. In my presentation I will describe how I use this problem and the importance of observing Monte Hall very carefully. (Received September 20, 2016)