

Meeting: 1003, Atlanta, Georgia, MAA CP B1, MAA Session on My Favorite Demo: Innovative Strategies for Mathematics Instructors, I

1003-B1-375 **Jan O Case*** (jcase@jsu.edu), Jacksonville State University, Dept. MCIS, 700 Pelham Road North, Jacksonville, AL 36265. *Using Simulated Roulette to Demonstrate the Different Information Given by Expected Value and Standard Deviation.*

The availability of free web-based instructional materials in recent years has added a new and creative dimension to probability and statistics classes. In particular, the Virtual Lab developed by Kyle Siegrist at the University of Alabama in Huntsville is an excellent source. Simulated Roulette (www.math.uah.edu/stat/games/games5.xml) is a favorite of students because of the unexpected conclusion that each bet choice leads to the same negative expected value. The students realize that a measure of expected value is not enough, because while the end result might be the same, the game doesn't play out the same for all the bets. If a gambler has a limited amount of money and decides to always bet "even", she can play the game for a long time since she'll win almost half the time. Alternatively, if she wants to bet on "1" with every spin, it is conceivable that she could run out of money before receiving a winning payoff. The bet of "even" has a much smaller standard deviation than the bet of "1", and for the bets in between, the standard deviation is larger for those bets that have less frequent wins. This illustration is intuitive for students, and leads to an appreciation for the different information given by expected value and standard deviation. (Received September 13, 2004)