Section 1.11. Statistical Swindles

Note. DeGroot and Schervish describe three "statistical swindles" in this section.

Note. In a **Perfect Forecast**, a large number of letters are sent out predicting, say, whether a stock will go up or down in the following week. Some power of 2 letters can be sent out the first week, half predicting a stock will go up and half predicting that the stock will go down. The half of the letters which are correct are followed by a second similar letter the following week (again, half predicting gains and half predicting losses of some stock). This process allows a certain number of individuals to get several letters over consecutive weeks each accurately predicting the performance of some stock. To these recipients, a perfect forecast of the stock performance has been given.

Note. In the **Guaranteed Winner** scheme, an offer is made for a price to provide predictions of, say, the winner of an upcoming game with the guarantee that the money will be refunded if the prediction is wrong. The provider of the predictions can in fact give the refunds, but gets to keep the money from the correct predictions. The provider simply needs to sell lots of predictions, half with one predicted winner of the game and half with the other predicted winner. The only cost for the provider is for postage and paperwork.

Note. State lotteries are common these days. There are a number of books, videos, and websites devoted to **Improving Your Lottery Chances**. To illustrate the folly of some of this, suppose that a lottery is based on choosing 6 numbered balls from a set of 40 numbered balls. These numbers are comparable to the game "Tennessee Cash" (see the Tennessee Cash How-To-Play website, accessed 7/18/2019). It if often advised to pick numbers that are not too far apart. It is because the winning numbers often contain a pair of consecutive numbers. In Exercise 1.12.13 it is to be shown that the probability that 6 numbers chosen randomly from a set of 40 contains at least one pair of consecutive numbers is approximately 0.577. This is correct, but it is not useful in developing a strategy by which to choose numbers. Any combination of 6 numbers has the same $1/\binom{40}{6} = 1/3,828,380$ probability of being chosen. It just so happens that over half of the combinations of 6 numbers contain consecutive pairs of numbers; the fact that there are so many combinations of this form does not make each one any more likely than anything else.

Revised: 7/18/2019