May has 31 days. How would the experimental probability be affected if someone mistakenly used 30 days to calculate the experimental probability that the maximum temperature will not be greater than 90ºF on a given day in May?

Solution
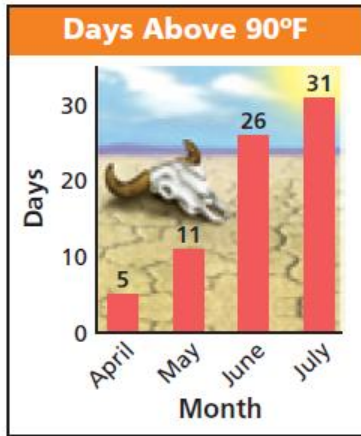
True probability that the maximum temperature will not be greater than 90ºF on a given day in May is

$$P_0 = \frac{31 - 11}{31} = 0.645.$$

The probability that the maximum temperature will not be greater than 90ºF on a given day in May (used 30 days) is

$$P_1 = \frac{30 - 11}{30} = 0.633.$$

$$\frac{P_1 - P_0}{P_0} = \frac{0.633 - 0.645}{0.645} = -0.0186.$$

Therefore the experimental probability that the maximum temperature will not be greater than 90ºF on a given day in May decreased by 1.86%.