Chapter 8: One-sample hypothesis tests

μ = average gain in fees, lessons, etc for participating golf facility

Play Golf America program. In the Play Golf America program, teaching professionals at participating golf clubs provide a free 10-minute lesson to new customers. According to the Professional Golf Association (PGA), golf facilities that participate in the program gain, on average, $2,400 in green fees, lessons, or equipment expenditures. A teaching professional at a golf club believes that the average gain in green fees, lessons, or equipment expenditures for participating golf facilities exceeds $2,400.

a. In order to support the claim made by the teaching professional, what null and alternative hypotheses should you test?
b. Suppose you select $\alpha = .05$. Interpret this value in the words of the problem.
c. For $\alpha = .05$, specify the rejection region of a large-sample test.

a. $H_0: \mu \leq 2400$ (the teaching professional is wrong)
$H_1: \mu > 2400$ (the teaching professional is right)

b. $\alpha = .05$ is an upper bound for the maximum probability of deciding that the teaching professional is right when actually he/she is wrong (Type I error)

c. We would take a sample of n participating golf clubs and observe in each of them the value of
X = gain (in \$) in green fees, lessons or equipment expenditures in the Play Golf America program

For the resulting sample $x_1, \ldots, x_n$, we would compute the sample mean $\bar{x}$ and the standard deviation s. The test statistic is $z = \dfrac{\bar{x} - 2400}{s/\sqrt{n}}$ and the rejection region for the large-sample test is $R = \{z > z_\alpha\}$.