

## One-Sample z Tests

**1.** The National Center for Health Statistics reports that the mean blood pressure for males 35-44 years of age is 128 and the standard deviation in this population is 15. The medical director of 3M looks at the medical records of a random sample of 72 executives in this age group and finds that the mean blood pressure in this sample is  $\bar{x} = 126.07$ . Is there significant evidence at the 5% level that 3M's executives have a different mean blood pressure from the general population? Assume that 3M has over 1000 male executives in this age group.

**P:** *State what the **parameter** of interest is representing in this problem.*

**H:** *State **hypotheses** in words and symbols.*

**A:** *Verify the **assumptions**/conditions.*

- Random.
- Normal.
- Independent.

**N:** ***Name** the appropriate inference procedure.*

**T:** *Carry out the selected procedure. Find the **test statistic**.*

$$z = \frac{\bar{x} - \mu_0}{\sigma / \sqrt{n}}$$

**O:** ***Obtain** the corresponding **P-value** based on the test statistic and  $H_a$ .*

**M:** ***Make** a decision to reject or fail to reject  $H_0$ .*

**S:** ***State** your conclusion in the context of the problem.*

2. In a discussion of the education level of the American workforce, someone says, “The average young person can’t even balance a checkbook.” The NAEP survey says that a score of 275 or higher on its test reflects the skill needed to balance a checkbook. The NAEP random sample of 840 young Americans had a mean score of  $\bar{x} = 272$ , a bit below the checkbook-balancing level. If the standard deviation of scores of every young American on the test is  $\sigma = 60$ , is this sample result significant evidence at the 5% level that the mean score for *all* young Americans is less than 275?