More One-Sample z Tests

1. A company has developed a new AAA battery. Based on years of experience, the company knows that its regular AAA batteries last for 30 hours of continuous use on average with a standard deviation of 2 hours. The company selects an SRS of 50 new batteries and uses them continuously until they are completely drained. The batteries in this sample last an average of 30.48 hours. Is there evidence that the length of time the new batteries last is different than that of the regular batteries?

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. A company has developed a new AAA battery that is supposed to last longer than its regular AAA battery. Based on years of experience, the company knows that its regular AAA batteries last for 30 hours of continuous use on average with a standard deviation of 2 hours. The company selects an SRS of 50 new batteries and uses them continuously until they are completely drained. The batteries in this sample last an average of 30.48 hours. Is there evidence that the new batteries last longer than the regular batteries?