

Z-score interpretation

Example 1. A certain company's customers are made up of **43% women and 57% men**.

Population proportion of women customers **$P = 43\%$**

An aggressive marketing campaign results in an increase of women customers to **46%**, according to a sample survey of **200 customers**. **Sample proportion $\hat{p} = 46\%$** ,

Was the campaign worth it?

(The **z-score** corresponding to the observed **46%** is **$Z = 0.86$**)

Example 2. As part of a quality-control program at a factory, random samples of **36 six-ounce cans of juice** are selected, and the amount of juice in each can is carefully measured.

When the manufacturing process is operating properly, the mean amount of juice per can is **6.04 oz**, with a standard deviation of **0.02 oz**. **$\mu = 6.04 \text{ oz}$** Type equation here.

The sample of **36 cans** has a mean amount of juice of **6.03 oz**. **$\bar{x} = 6.03 \text{ oz}$**

How likely is that process under control?

(The **z-score** corresponding to the observed sample mean of **6.03 oz** = **- 3.00**)

Example 3. A manufacturing company historically has a **3% defective rate** in its production.

Population proportion $P = 0.03$

After making changes to the manufacturing process, the company randomly inspects **1,000 items** and finds that **18 are defective**.

Sample proportion $\hat{p} = 0.018$

Based on the sample, is there evidence that the company has successfully reduced the percentage of defective items? ($Z = - 2.23$) Type equation here.