Practice Problems Solutions

1. The projected probability that a degree will be granted to a man is

$$p(male) = \frac{773,600}{1,906,100} = .406$$

2. The projected probability that a degree will be granted to a woman is

$$p(female) = \frac{1,132,500}{1,906,100} = .594$$

3. The projected probability that a woman will be granted either a Master's Degree or a Ph.D. =

$$p(woman \text{ B.A. degree or woman Master's degree}) = \frac{824,000}{1,132,500} + \frac{287,000}{1,132,500} = \frac{1,111,000}{1,132,500} = .981$$

4. The projected probability that a man will be granted either a B.A. or a Master's Degree =

$$p(man \text{ B.A. degree or man Master's degree}) = \frac{568,000}{773,600} + \frac{178,000}{773,600} = \frac{746,000}{773,600} = .964$$

5. The projected probability that a student will be granted a Ph.D. is 21,500 + 27,600 = 49,100 total Ph.D.s

are projected to be granted. $p(Ph.D.) = \frac{49,100}{1,906,100} = .026$

6. $\sum X = 255, \bar{X} = 25.5, n = 10$

$$\sigma_{\bar{X}} = \frac{\sigma}{\sqrt{n}} = \frac{5.00}{\sqrt{10}} = \frac{5.00}{3.162} = 1.581$$

$$z = \frac{\overline{X} - \mu_{\overline{X}}}{\sigma_{\overline{X}}} = \frac{25.5 - 25.00}{1.581} = .316$$

Table Z indicates 37.4% out of 100 samples will have this mean. Because this is greater than .05, fail to reject the null hypothesis and conclude that these new employees were drawn from the population of employees at the Abbey Do Company. Thus, these new individuals do not differ from the other employees in terms of social affiliation.

7. $\sum X = 52, \overline{X} = 5.2, n = 10$

$$\sigma_{\overline{X}} = \frac{\sigma}{\sqrt{n}} = \frac{2.00}{\sqrt{10}} = \frac{2.00}{3.162} = 1.897$$

$$z = \frac{\overline{X} - \mu_{\overline{X}}}{\sigma_{\overline{X}}} = \frac{5.2 - 6.00}{1.897} = -.4217$$

Table Z indicates 42.17% out of 100 samples will have this mean. Because this is greater than .05, fail to reject the null hypothesis and conclude that the high school students in Dr. V's class do not differ from the other students at their high school in their tendency to conform to others.