Lareisha Lewis

MSDS 5321

Power Curve Assignment

**1.**

Chart, line chart

Description automatically generated

The above power curve has a set sample size of 25 people. It shows the relationship between the power and effect size. The line graph indicates one must have a minimum effect size of 0.81 with a significance level of 5% to maintain a power of 80%. The greater the effect size the more power gained.

**2.** Chart, line chart

Description automatically generated

This power curve has a set sample size of 100 per group. The relationship between power and effect size being shown above indicates that the greater the effect size the more power you gain. One must have an effect size of 0.47 to maintain power of 80%. To gain 100% power one must have an effect size of 0.74 or higher.

**3.**

Chart, line chart

Description automatically generated

This power curve has a set sample size of 30 per group. In this two proportions test graph we can see an increase in power as the effect size increases. The significance level has been set to 5% and require a minimum effect size of 0.6 to gain at least 80% power.

**4.**

Chart, line chart

Description automatically generated

This power curve has a set sample size of 50 per group. In this two proportions graph we can see an increase in power as the effect size increases. The significance level has been set to 5% and require a minimum effect size of 0.6 to gain at least 80% power just like the previous test.

**5.**

Chart, line chart

Description automatically generated

The above power curve has a set sample size of 50 per group. The key on the side indicates the significance levels ranging between 0.01 – 0.10. This two-sample t-test indicates the lower the significance level the higher effect size you need to maintain power of 80% or more. For example, a significance level of 0.10 requires an effect size of 0.5 to gain 80% power. However, a significance level of 0.01 requires an effect size of 0.7 to gain power slightly greater than 80%.

**6.**

Chart, line chart

Description automatically generated

The above power curve has a set sample size of 60 per group. The key on the side indicates the significance levels ranging between 0.01 – 0.10. This two proportions test indicates the lower the significance level the higher effect size you need to maintain power of 80% or more. For example, a significance level of 0.10 requires an effect size of 0.5 to gain power greater than 80%. However, a significance level of 0.01 requires an effect size of 0.7 to gain power greater than 80%.

**7.**

Chart, line chart

Description automatically generated

This power curve has a set effect size of 0.7 and power set at .80. In this two-sample t-test we can see that larger sample sizes require smaller effect sizes and vice versa. For example, a sample size of 50 per group has a significance level of about 0.01, while a sample size of 26 per group has a significance level of 0.10.

[**Click the access R code.**](file:///Users/lareishalewis/Desktop/DataAnalyticsSPR21/Assignment2.R)