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# Practice: Conducting a Two-Sample t Test

A pharmaceutical company produces tablets in two facilities. The target weight for the tablets is 150 mg. You are concerned that the tablet weight for the two facilities might not be the same. In this practice, you test the null hypothesis that the average tablet weight for the two facilities is the same. The data are in the file **Tablets.jmp**.

1. What is the alternative hypothesis for this test?

   The two means are not equal.

2. Conduct a two-sample *t* test. What is the average difference between the mean tablet weight for the two facilities? Interpret this value.

   **Hint**: Use **Analyze**, **Fit Y by X**, with **Weight** for **Y, Response** and **Facility** for **X, Factor**. Then select **Means/Anova/Pooled t** from the red triangle for the analysis. JMP produces nearly identical results with the unpooled *t* Test.

   The average difference is 0.316 mg. The mean for Facility B is 0.316 mg higher than the mean for Facility A.

3. What is the 95% confidence interval for the difference?

   The 95% CI for the difference is 0.19 to 0.44. This interval does not include zero.

4. What is the *p*-value for this test? Interpret this value.

   The *p*-value is < 0.0001. The difference is statistically significant.

5. Summarize what you learned from this analysis. **Hint**: Translate the statistical results into non-statistical business results.

   There is a significant difference in the mean tablet weights for the two facilities. The mean weight for tablets from Facility A is significantly lower than the mean weight for tablets from Facility B.

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