Eval Fest

Which Analysis is Right for Me?

1. When considering the type of analysis that is best to answer your evaluation question, you should consider which types of variables you are working with.
2. Once you have collected data, each question from a survey becomes a variable.
3. Consider the question that asks, “How would you rate today's event overall?”, which is answered on a rating scale from Poor, or 1, to Excellent, or 5. Once you have answers for this question from festival-goers, or data, we now consider this item a continuous variable.
    a. A continuous variable is one that can take on an infinite number of possible values. Continuous variables differ from discrete variables in that discrete variables can take on only a fixed number of values.
    b. When a participant rates the festival a 4, or Very Good, on the rating scale, they may actually mean 4.25…or 4.327…or 4.412357895412…you get the point. There are infinitely many possible values between each integer 1 through 5, and thus ratings variables such as the Overall Festival rating are considered continuous.
    c. Most evaluations consider ratings data that include at least 5 answer categories in the scale to be continuous.
4. The question, “Did today's event make you more aware of how STEM is part of your daily life?”, for which the answer options are Yes or No, becomes a categorical variable once you have responses, or data.
5. In all tests demonstrated in our videos – Independent samples t-test, ANOVA test, and Chi Square test of independence – the predictor variable will be categorical.
    a. The predictor variable is the variable that defines the groups that you think might affect the outcome variable.
    b. Categorical variables are generated from questions where the answers are names, groups, or categories. Examples are: time at festival (grouped by time ranges), zip code, or group type.
    c. The outcome variable is the variable you want to learn more about – the variable where you’re looking for changes or differences among groups in the predictor variable. For example, ratings or opinions.
    d. For all three tests – Independent samples t-tests, ANOVA tests, and Chi Square tests of independence, it is the outcome variable, or the variable you want to learn more about, that determines which test is right for your analysis.
6. Let’s start with continuous variables. If the outcome variable is continuous, (such as a rating variable, and if the predictor includes only 2 groups, you want to conduct an Independent samples t-test.

    a. For example, let's say you want to answer the evaluation question, "Were festival goers who reported that the festival made them more aware of STEM in their daily lives more satisfied with the festival?" Here, the predictor variable is STEM awareness (a yes/no question, which is a categorical variable) and the outcome variable is the overall rating question.
7. If the outcome variable is continuous, again, such as a rating variable, and if the predictor includes 3 or more groups, you want to conduct an ANOVA test.
    a. The evaluation question, "Does overall rating of the festival differ significantly among different ethnic groups?" should be analyzed using an ANOVA test. Here, the predictor variable is ethnicity, for which there are typically 3 or more groups. The outcome variable is the overall rating question.
8. But what if your outcome variable is categorical instead of continuous? If both your outcome and predictor variables are categorical, you want to conduct a chi square test of independence. This is regardless of the number of categories or groups in the predictor variable.
    a. One example where a chi square test is required is, "Are tweens or teens more likely to attend an event similar to the festival?" Here, age category (tweens or teens) is the categorical predictor variable. Whether or not they would attend a similar event (for which the answer options are yes or no) is the outcome variable, which is also categorical.
9. No matter which statistical test you use to answer your evaluation question, you should always begin by exploring your data to ensure that your data are clean and ready for analysis. For more on these topics, please see our videos in the Data Management and the Data Analysis: Exploring Your Data sections of the EvalFest website.