1st:

Analysis of variance, or ANOVA, can have a variety of uses within the business world. Another item of note is that there are subcategories for types of ANOVA tests, making this statistical tool adaptable to whatever question a business is trying to answer. This post will address some common forms of ANOVA tests and accompanying business examples for the tests.

ANOVA tests allow analysts to assess two or more groups to determine if there is any relationship between the groups (Kenton, 2021). One common type of ANOVA test is the one-way ANOVA test. One-way ANOVA tests have one independent variable and multiple dependent variables. The analyst is attempting to determine if the independent variable has similar or varying effects on the multiple dependent variables (Kenton, 2021). An example of this would be a pharmacy chain attempting to see if and how the percentage of sunny versus rainy days in a week affected the mean weekly sales level of sunscreen at different store locations using data from the spring months in preparation for the summer. If the results show that there is a statistically significant difference between different store location's mean sunscreen sales levels, the pharmacy chain may choose to invest in sunscreen inventory more heavily for certain store locations in the summer.

Another type of ANOVA test addressed in this week's lesson is the two-way ANOVA test without replication. This type of test is similar to one-way ANOVA testing except with two independent variables (Kenton, 2021). Because it is without replication, there is only one group of data that the analyst is working with. As a business example, an analyst could be working with male and female subjects to see what aspects of online advertisements will get the maximum amount of clicks. These aspects could be size of the advertisement on the screen, brightness of the colors, dynamic or static movement, placement of the advertisement on the screen, etc. If the results show that female and male consumers respond, or click more frequently, to different aspects of online advertising, the company may choose to tailor their advertisements based upon these findings. For example, the company may choose to use one type of advertisement on a predominantly male consumer website and another type of advertisement on a predominantly female consumer website. Alternatively, a two-way ANOVA test with replication has multiple independent variables, but instead has multiple sample items for the group members. To take the two-way ANOVA test without replication example and revise it into a test with replication, these same test subjects would be sampled multiple times to see what advertisement aspects generate the most clicks instead of only being sampled once (Kenton, 2021).

References

Kenton, W. (2021, October 6). Analysis of Variance (ANOVA). Investopedia with Dotdash Meredith Publishing. [*https://www.investopedia.com/terms/a/anova.asp*](https://www.investopedia.com/terms/a/anova.asp)

1 hour ago

2nd:

To first understand how analysis of variance (ANOVA) is helpful in solving business problems you must first understand what ANOVA means. An ANOVA is used when testing a survey or experiment. It helps you determine if you need to reject the null hypothesis or accept the alternate. In simple terms you are testing different groups to see if there are any differences between them. The analysis splits aggregate data into two parts: systematic factors and random factors. Systematic factors are those that have an influence on said data set whereas the random factors don’t. Using ANOVA will allow us to determine the influence that independent variables have on the dependent ones. There are two main types of ANOVA: one-way and two-way (Kenton, 2021). One-way and two-way refer to the number of independent variables. A one-way evaluates the impact of a sole factor on a sole response variable. A two-way uses two independent variables.

ANOVA is used differently depending the type of business. It can be used to help manage budgets by comparing your costs to and help manage things like revenue and inventory. It can also be used to forecast trends (both positive and negative) by analyzing patterns in data sets. In a business that relies on sales this can help predict future performance. An example of how a two-way ANOVA would be the comparison of an employees productivity based on two independent variables such as pay and skill set. Another example of how ANOVA is used in business could be how farmers determine which fertilizers lead to the highest crop yield. With this, they could conduct a one-way ANOVA. The fertilizer would be the factor and the crop yield would be the response. This would help them determine which fertilizer produces the best crops.

References

Kenton, W. (2021, October 6). How analysis of variance (ANOVA) works. Investopedia. <https://www.investopedia.com/terms/a/anova.asp#:~:text=For%20example%2C%20a%20two%2Dway,factors%20at%20the%20same%20time>