




Northwind Business Analytics



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Module 2 Final Project



Purpose & Methodology

Generating business insight using statistical hypothesis testing with
Data Exploration, Welch's T-Test, Cohen's D, ANOVA

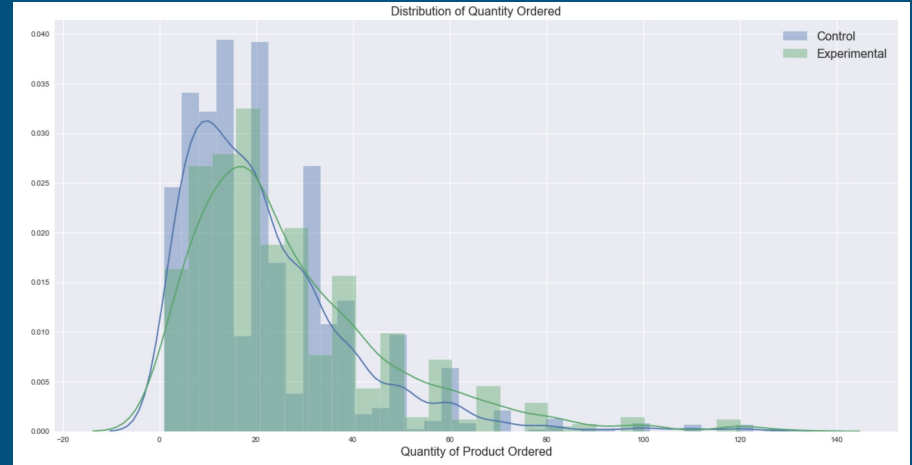
General Data and Questions

- There are 9 employees at Northwind
- 8 food categories are sold; refrigerated and non-refrigerated
- There are 29 different suppliers in 11 regions
- There are 3 shipping companies that service Northwind orders
- The database contains 830 orders in 70 different cities worldwide.
- There are 4 regions - Eastern, Western, Northern and Southern

1. Do discounts make a difference in sales? If so, how much?
2. Do certain shipping companies perform better?
3. Does time of year impact sales?
4. Do UK and US employees perform differently?

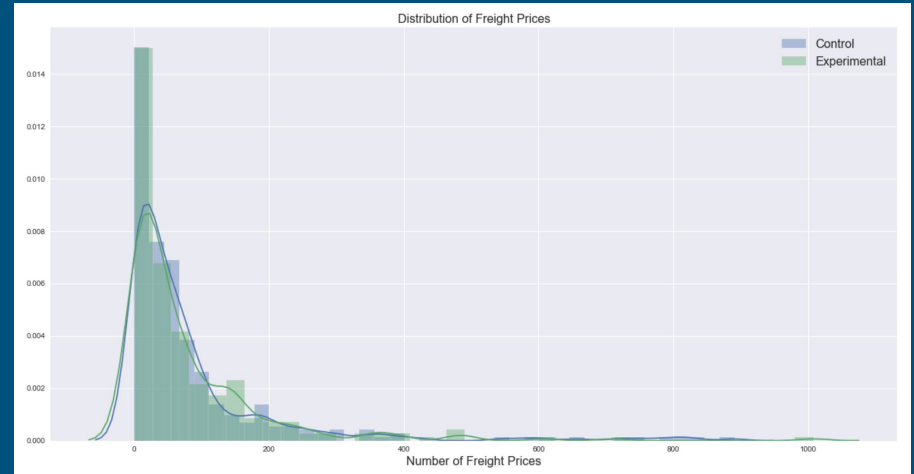
Q: Do discounts make a difference in quantity of orders?

- In the hypothesis testing, we learn, as we would have probably assumed, that having a discount on an order increases quantity.
- There are 10 different discount types yet the lower discounts have very few orders applied to the discount.
- There is an effect on quantity depending on discount type.



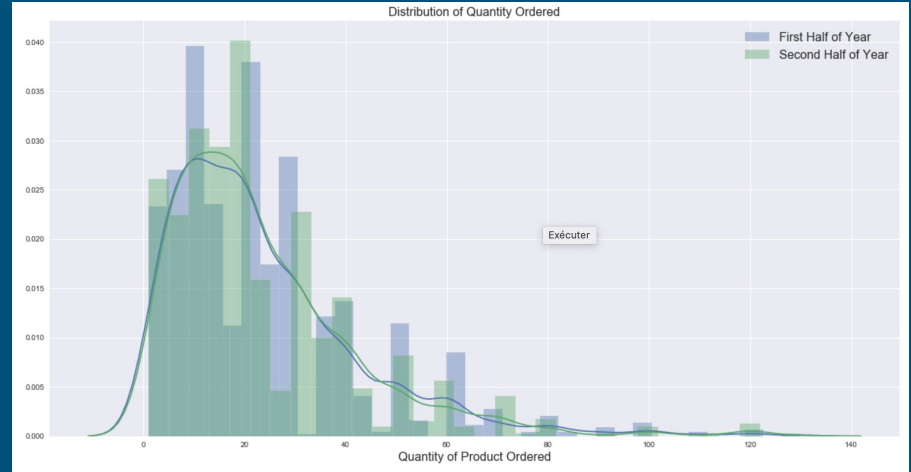
Q: Do certain shipping companies perform better?

- There are three shipping companies serving Northwind business yet this question focuses on two companies - United Package, and Federal Shipping.
- There is not enough evidence that the difference between the performance of these two companies is statistically significant.



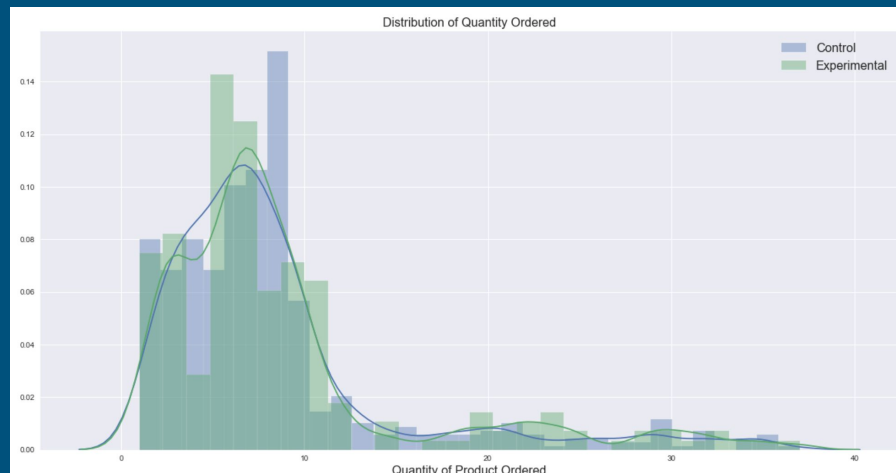
Q: Does time of year impact sales?

- Does seasonality affect the quantity of the orders?
- The orders were divided based on two periods, first (Jan-June) and second (July-December) halves of each year.
- Intuitively, you might think sales would be different based on seasons and holidays yet through hypothesis testing, we learn time of year does not have statistical significance on the quantity of sales.



Q: Do UK and US employees perform differently?

- This question addresses whether UK or US employees perform differently according to the efficiency between order date and shipping date.
- With hypothesis testing, we do not have strong evidence that there is a significant difference between UK and US employee performances based on shipping efficiency.



Moving Forward

- Can we use different metrics to understand employee performance? For example, is there a statistical significance between employees and their quantity of orders?
- Are there some categories of products that some employees are better at selling than others?
- Is there a significant difference between sale of refrigerated vs. non-refrigerated products?