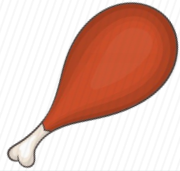# Northwind Database

Module 3 Project
By George Bennett

Image Source chicken leg
(https://www.iconfinder.com/icons/1740581/bone_cartoon_chicken_food_grilled_leg_meal_icon)
Image Source shrimp (https://www.pinclipart.com/maxpin/hJxTxo/)

Hello My Name is George Bennett and this is my Module 3 project on the Northwind Database

Problem Statement

- We need to know:
  - Does discount amount have a statistically significant effect on the quantity of a product in an order? If so, at what level(s) of discount?
  - Do different shippers have different freight costs?
  - Is there a statistically significant difference in demand of produce each month?
  - Do products in the Meat/Poultry category have a higher unit price than products in the Seafood category?

In this project I will be answering four questions.
1) Does discount amount have a statistically significant effect on the quantity of a product in an order? If so, at what level(s) of discount?
2) Do different shippers have different freight costs?
3) Is there a statistically significant difference in demand of produce each month?
4) Do products in the Meat/Poultry category have a higher unit price than products in the Seafood category?

Business Value

- Answering these questions will benefit the company by letting them know:
    - If discounts can be an effective way to sell more merchandise.
    - If one shipper is cheaper than the others.
    - Whether or not to stock up on a different amounts of produce depending on the month.
    - Which category of food to focus advertisements on.

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Methodology

- Use SQL to obtain data from the database
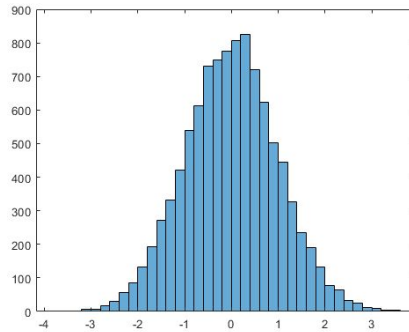- Use student's t-test, welch's t-test, ANOVA, and cohen's d for statistical testing

Image source SQL logo (http://www.complexsql.com/sql-logo/)
Image source histogram
(https://www.mathworks.com/help/matlab/ref/matlab.graphics.chart.primitive.histogram.html)

I will use SQL to obtain my data and then I will run several statistical tests including student's t-test, welch's t-test, and ANOVA to answer the questions.

Findings

- There is a statistically significant effect of discounts at all levels increasing the quantity in orders.
- There is NOT a significant difference between freight costs of the shippers
- There is NO statistically significant difference in demand of produce each month
- Products in the Meat/Poultry category have a statistically significant higher unit price than products in the Seafood category

I have my answers to the four questions:

1) There is a statistically significant effect of discounts at all levels increasing the quantity in orders.
2) There is NOT a significant difference between freight costs of the shippers
3) There is NO statistically significant difference in demand of produce each month
4) Products in the Meat/Poultry category have a statistically significant higher unit price than products in the Seafood category

This graph shows the difference in quantity between discounted orders and non-discounted orders
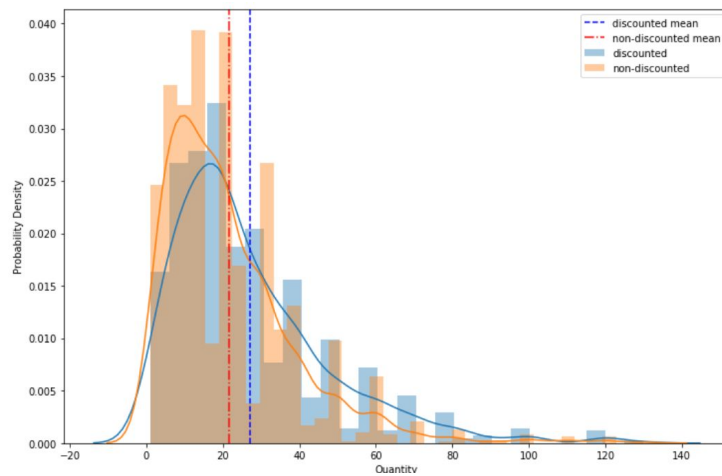
This graph shows the difference in quantity between discounted orders and non-discounted orders. There is a large difference between the means.

This graph shows the lack of difference between different shippers' freight costs
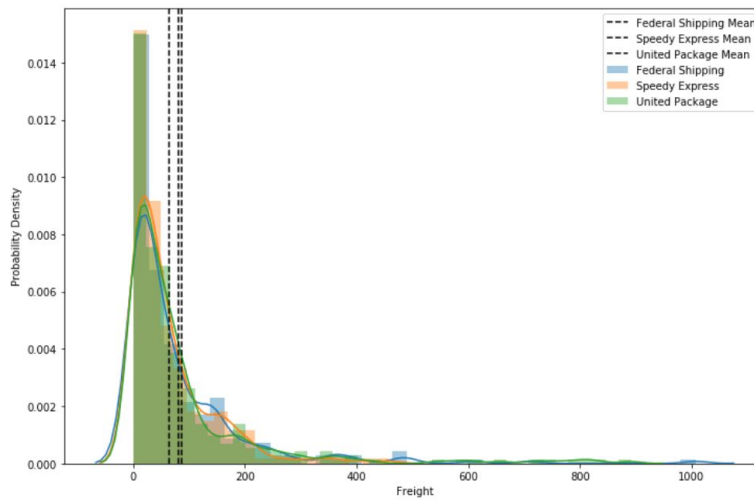
This graph shows the lack of difference between different shippers' freight costs.
There is only a small difference between the means.

Future Work

- Some Ideas for future work could include:
  - Analyze whether discounts increase gross profit.
  - See if there is a varying demand for certain categories of products on a month to month basis.
  - Further analyze different categories and compare to see which categories have higher unit prices.

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