



# Big Bug Consulting

making your business more profitable

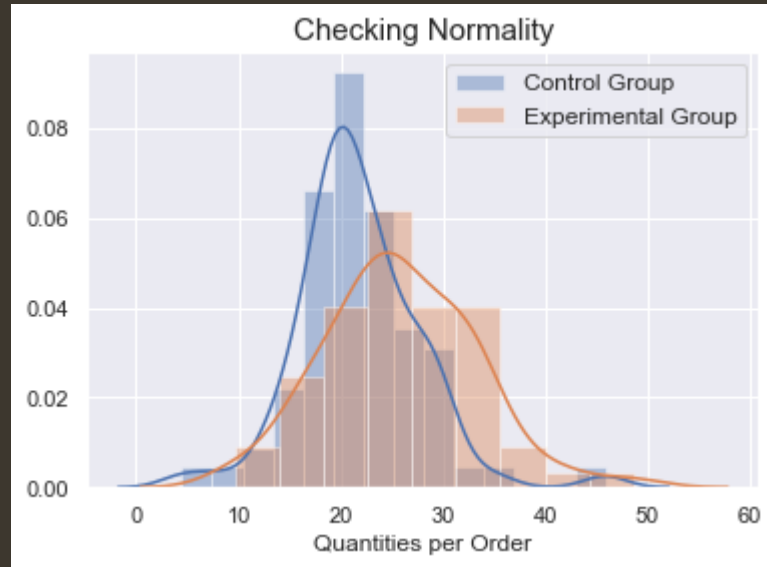
By Diego Vallejos



# Questions

- 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?
- Is there a significant difference in profit when discounts are applied?
- Is there a significant difference in profit between customer's region?
- Is there a significant difference in quantity of orders per month?

# Does discount amount have a statistically significant effect on the quantity of a product in an order?



Steps:

1. Checking normality
2. Check means and standard deviation
3. Compare means
4. Cohen's d for effect size (low size effect 0.12)
5. Welch's T test (3.7707979879779603)
6. Degrees of freedom (142.42959979066148)
7. P-Value = 0.00

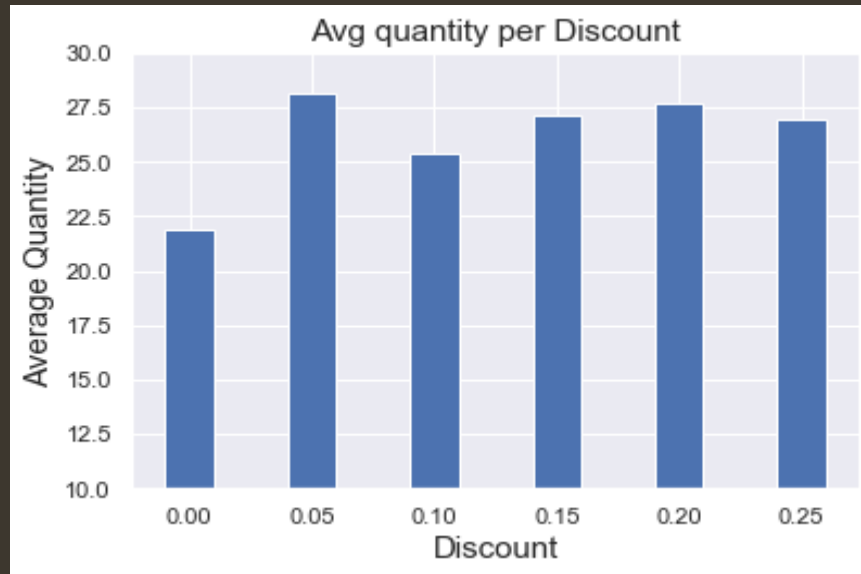
~~H0 = There is no significant difference in quantity of products in orders when discounts are applied.~~

H1 = There is a significant difference in quantity of products in orders when discounts are applied.



Yes, they have a significant effect

# Is there a significant difference in effect of different discounts over quantities of products ordered



1. Plot means per category
2. Applying ANOVA.
3. P-Value = 1.472424

H0: There is no significant difference in effect of different discounts over quantities of products ordered

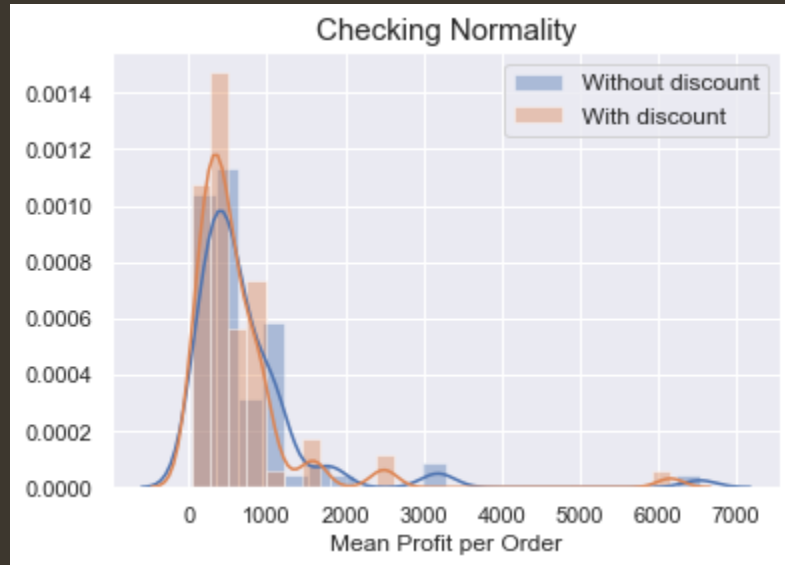


No, they don't have a significant effect over quantities

H1: There is a significant difference in effect of different discounts over quantities of products ordered.



# Is there a significant difference in profit when discounts are applied?



## Steps:

1. Checking normality
2. Check means and standard deviation
3. Compare means
4. Cohen's d for effect size (low size effect 0.12)
5. Welch's T test (0.7734188190551299)
6. Degrees of freedom (146.318783787519)
7. P-Value = 0.22

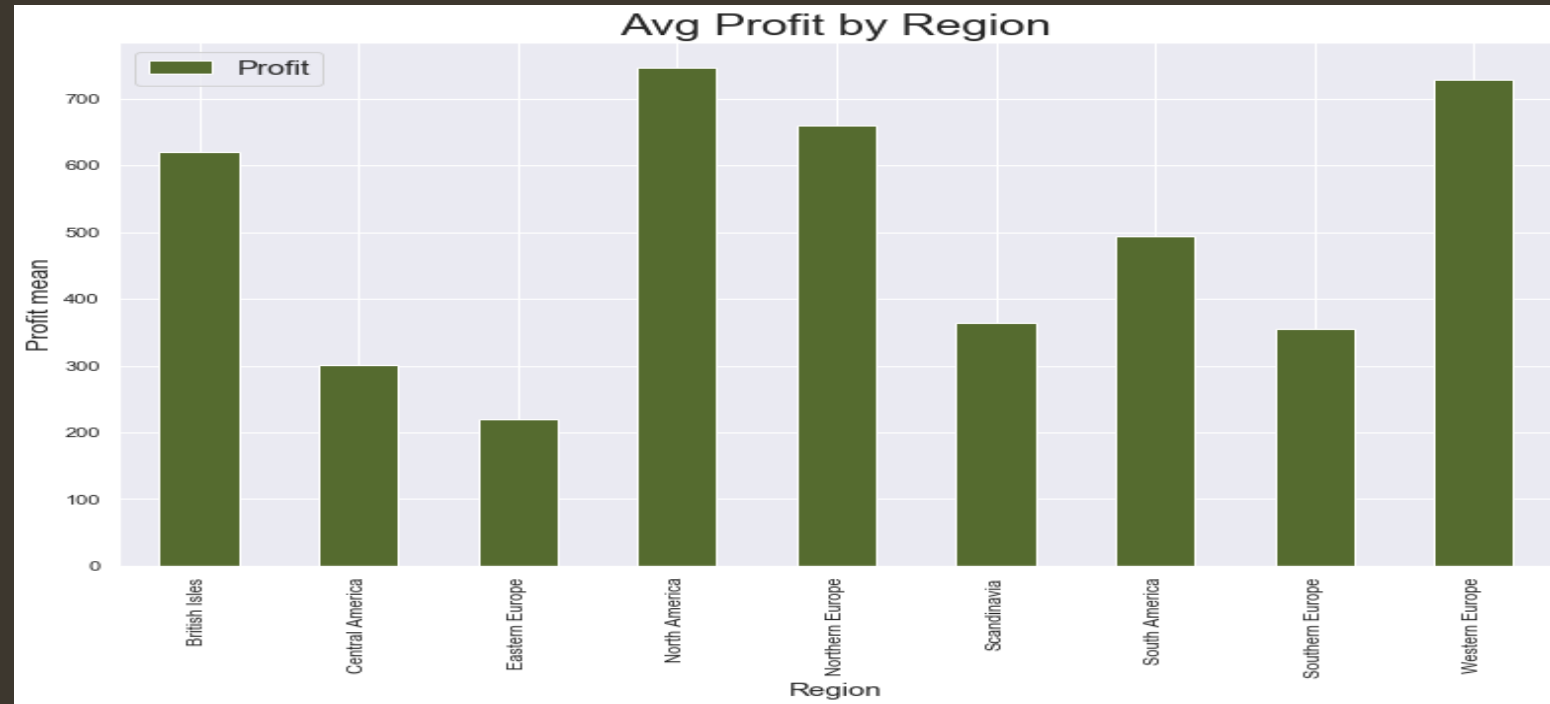
H0 = There is no significant difference in Profit in orders when discounts are applied.¶



No, discounts don't have a significant effect on profit.

H1 = There is a significant difference in profit in orders when discounts are applied.

# Is there a significant difference in profit between customer's regions?



Steps:

1. Plot means per category
2. Applying ANOVA.
3. P-Value = 0.000003

~~H0: there is no significant difference in profit mean of products purchased by region~~

H1: there is a significant difference in profit mean of products purchased by region



Yes, regions have a significant effect on profit.

# Is there a significant difference in quantity of orders per month?



Steps:

1. Plot means per category
2. Applying ANOVA.
3. P-Value = 0.039229

~~H0: there is no significant difference in quantity of products purchased by month~~

H1: there is a significant difference in quantity of products purchased by month



Yes, months have a significant effect on quantity of orders.

# Conclusions

- 1- When the company applies discounts the quantity of products per order will increase.
- 2- The quantity of products per order won't increase due to the amount of discount. This means that applying a 5% or 25% the company will increase the number of products per order in a very similar amount. Due to this, we suggest to decision makers to try to apply just 5% discount and maybe use that 25% in some specific kind of products or customers.
- 3- We can assume that the profit of the company is not significantly affected when discounts are applied to products.
- 4- We can assume that the mean profit is significantly different between regions. Said that, we can try to increase or sales force in those regions where the mean profit is higher than others. At the same time we can apply aggressive discounts to regions with lower profit per order so the company can penetrate the market.
- 5- We could see that the quantity of products vary significantly between months, so this is telling us when should we apply discounts or vary the amount of them.



# Future tasks

- It would be very useful to have the total profit of each product with the logistics and workforce discounted. In that way we can have a better idea of which products are being more important to the company in order to make profits.
- Get deeper into people, shipping and time for delivery.
- Is there a discount limit that we can give without affecting profits?

Thanks for your time.