Northwind

"Executive Summary" by Jacob Tadesse

Methodology

- **Question(s)**
- **Hypothesis or Assumptions**
- **Research and Sampling Data**
- **Visualizing Sample Data**
- **Analysis of the Sample Data**
- **Results or Findings Summary**
- **Recommendations from Summary**

Hypothesis Tests

1. Initial Question: 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. Second Question: Are US employees generating the same profit on average as UK employees?
3. Third Question: On average, are our teams generating more profit from inside sales or outside sales in the US?
4. Final Question: Are all employees generating equal revenue over time?

Findings (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?

On average, customers order quantity increases at around 9%. Our recommendation around order discounts would be to create a campaign for 9% discounts to current and future customers in the selected area of expansion. This targeted campaign will significantly increase order quantity, in any new regions or territories of expansion.


Multiple Comparisons Between All Pairs (Tukey)
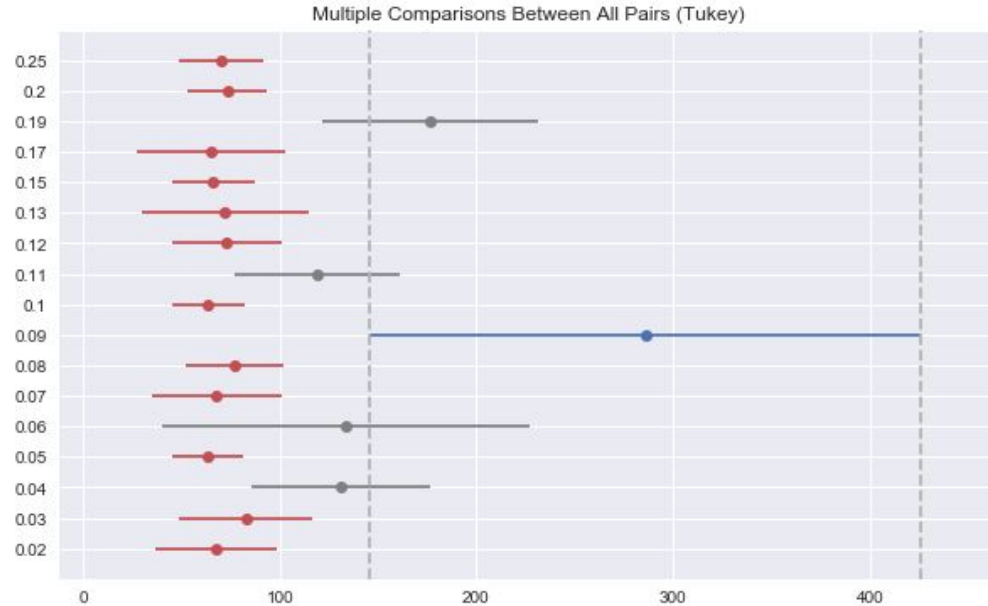
- H0 = quantity of order is NOT affected by discount size
- H1 = quantity of order is significantly effect by discount size

Findings (2)

Are US employees generating the same profit on average as UK employees?

On average, we do not see a significant difference in profit generation between countries. Our recommendation would be to expand offices in other regions to replicate the profit generated from teams in the US and the UK.

Avg Profit by Country
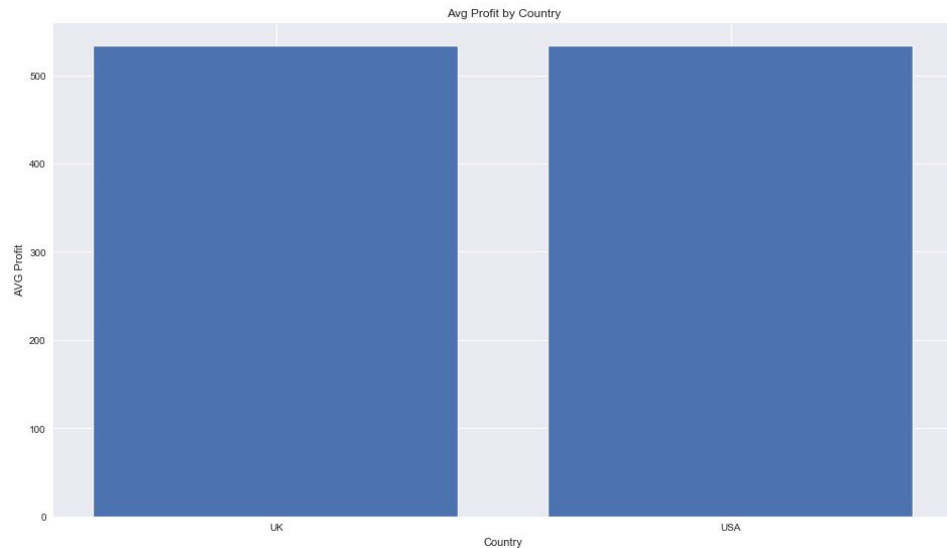
- H0 = AVG US employee sales = AVG employee sales in UK
- H1 = AVG US employee sales != AVG employee sales in UK

Findings (3)

On average, are our teams generating more profit from inside sales or outside sales in the US?

On average, we do not see a significant difference in revenue generation between inside and outside teams. Our recommendation would be to expand teams in other regions to replicate the profit generated from inside and outside sales in the US and the UK.


Avg Profit by Country
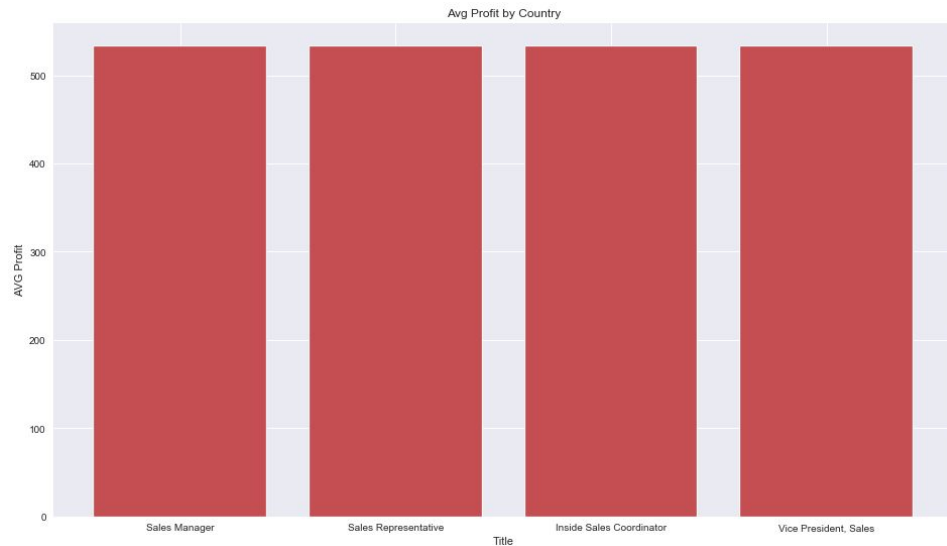
- H0 = North America regions performs equally to all other regions
- H1 = North america regions do not perform equally to all other regions

Findings (4)

Are all employees generating equal revenue over time?

On an average day, we see significant difference in average profit generation between employees. Our recommendation would be to promote Anne Dodsworth from Sales Representative to Sales Manager for new regions to replicate her daily profit average of roughly $645 per day, in her past experience in the British Isles, UK.

Multiple Comparisons Between All Pairs (Tukey)
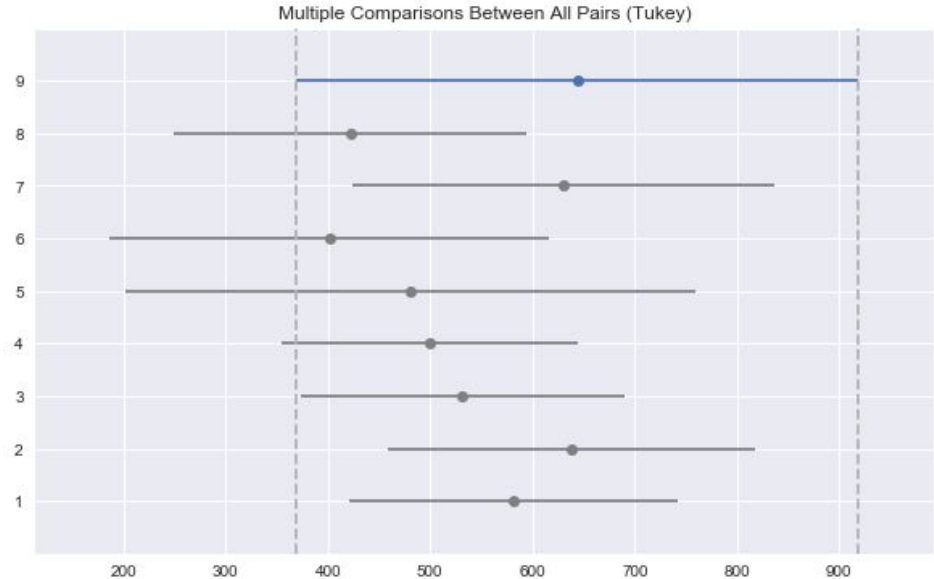
- H0 = Average employee revenue per order is equal across individual employees
- H1 = Average employee revenue per order is not equal across individual employees

Future Work

Recommendation 1

- Just like we analyzed **Employee Performance** for expansion, we can also look at **Product Performance** to share which products may have a significant impact on average profit per order, before going into uncharted regions. Given the results from our discount campaigns recommendation, the products with significant impact will help new teams and new leadership increase average profit per order in new regions.

Recommendation 2

- In addition to **Product Performance**, we can also analyze **Supplier Performance**. While the employees can lead sales, we can take another look at purchasing in order which suppliers product offerings have a significant effect on our average profit per order. This will allow leadership to cancel contracts with suppliers that yield a negative impact and replace those contracts with suppliers that yield positive impacts on profit per order. e correctly identified and articulated.

Recommendation 3

- Finally, we can analyze **Shipper Performance**. While analyzing supplier performance can save money in purchasing, and analyzing product performance can help employee performance, by analyzing shipper performance, we can measure customer satisfaction. If we attribute an ontime order to the equivalent of a satisfied customer, we would be able to see which shippers have a significant impact on an average delayed in orders per day. This information will allow leadership to source different shipping companies, and also allow more opportunity current shippers without significant impacts on average daily delays.

Thank you!

Contact Me

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Appendix:

Scipy Stats - https://docs.scipy.org/doc/scipy/reference/stats.html

Statsmodels - https://www.statsmodels.org/stable/index.html

SQLite - https://www.sqlite.org/docs.html

Pandas - https://pandas.pydata.org/pandas-docs/stable/

Learn.co - https://learn.co/