# Statistical Insights: Northwind Traders Database*
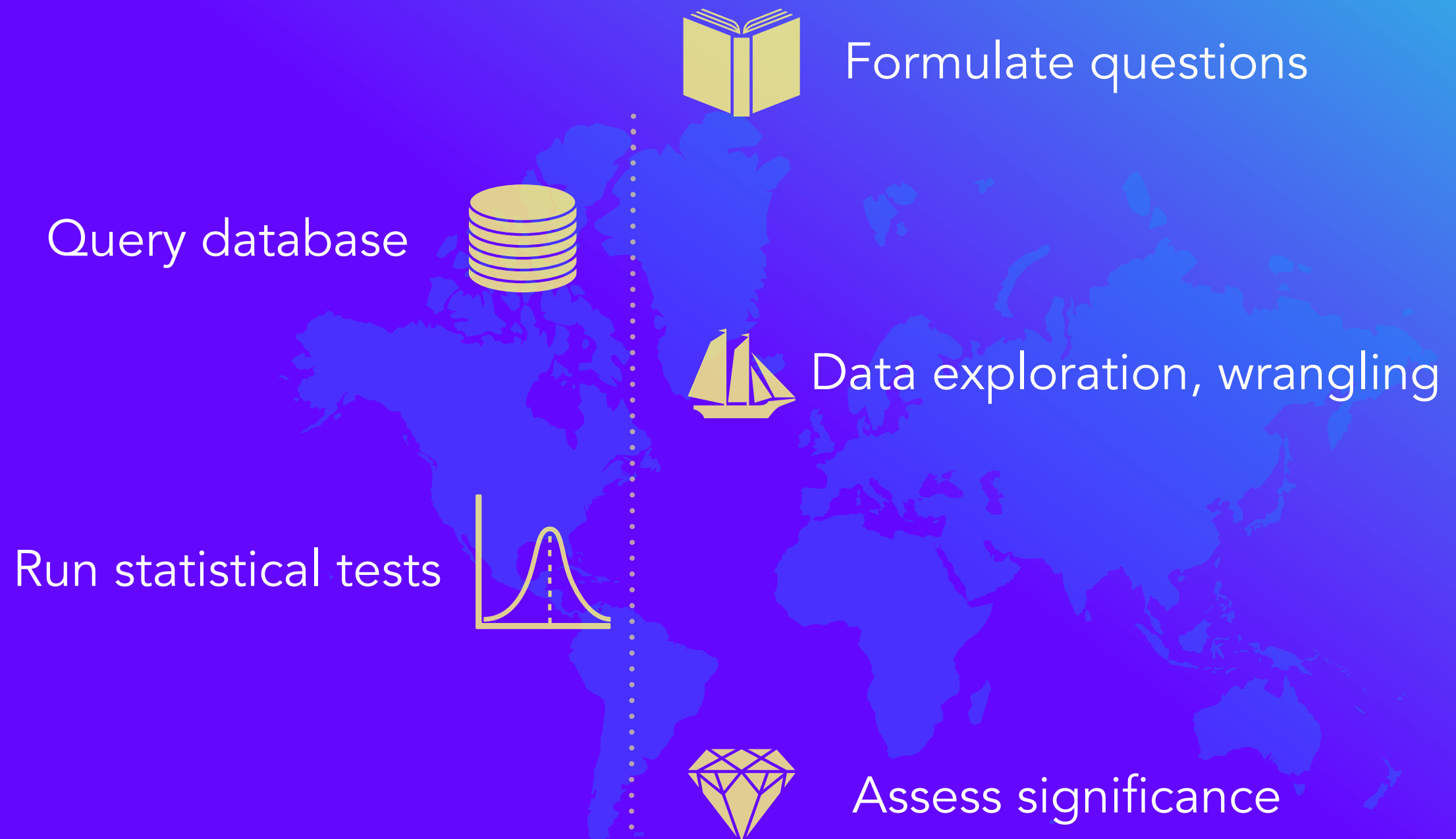
## * A *very* fictional dataset

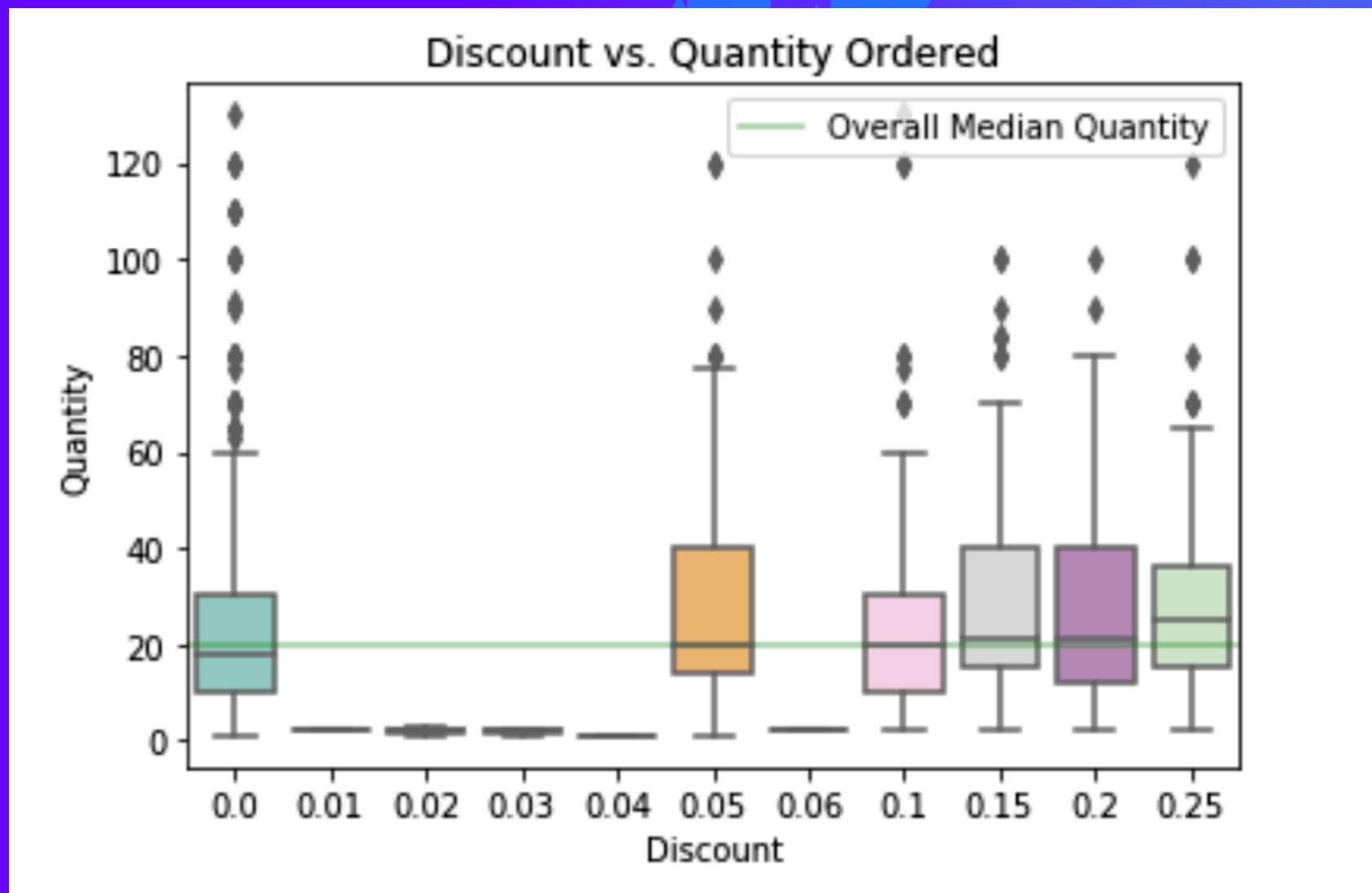By Valentina Fontiveros
2019

# Business Value

- Exercise to show value of SQL, Statistics, Visualization

- Are discounts effective, or is the business losing value?

- Do prices vary in the various regions of the world?

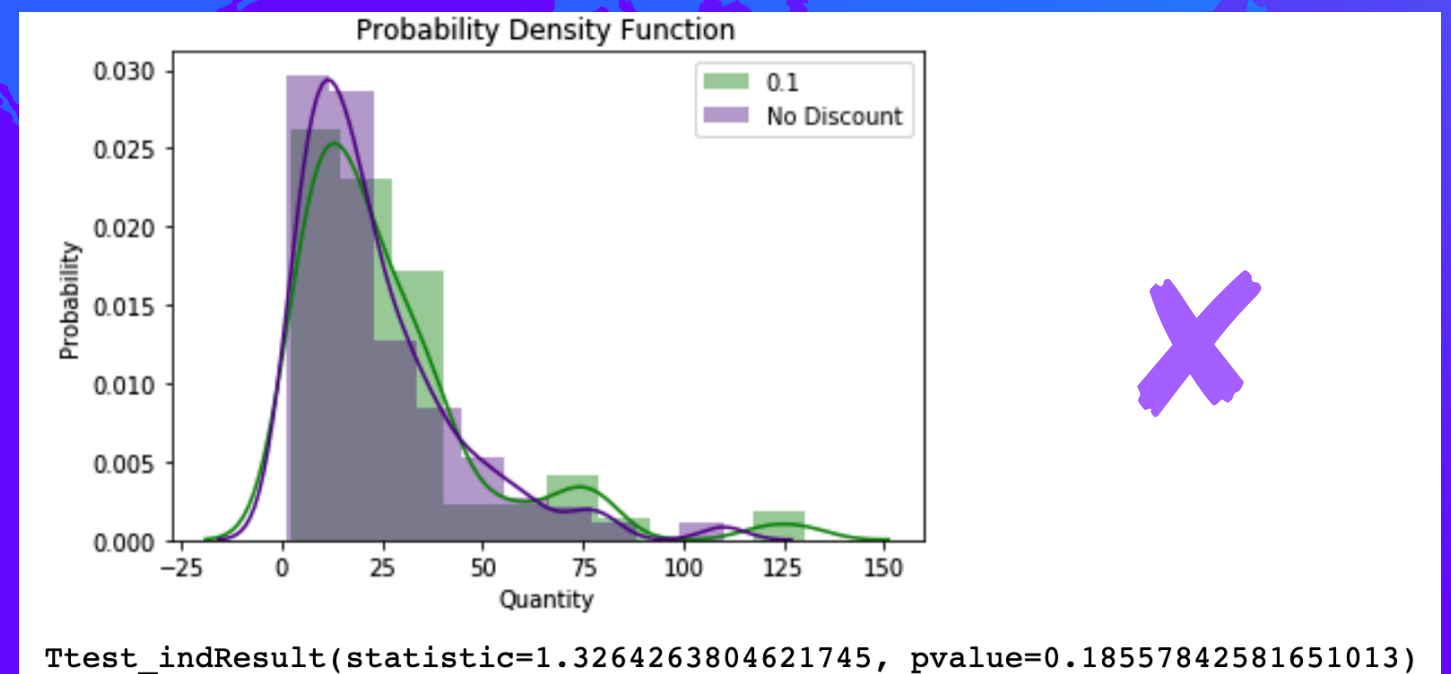- Are delivery wait times affected by the shipment destination?
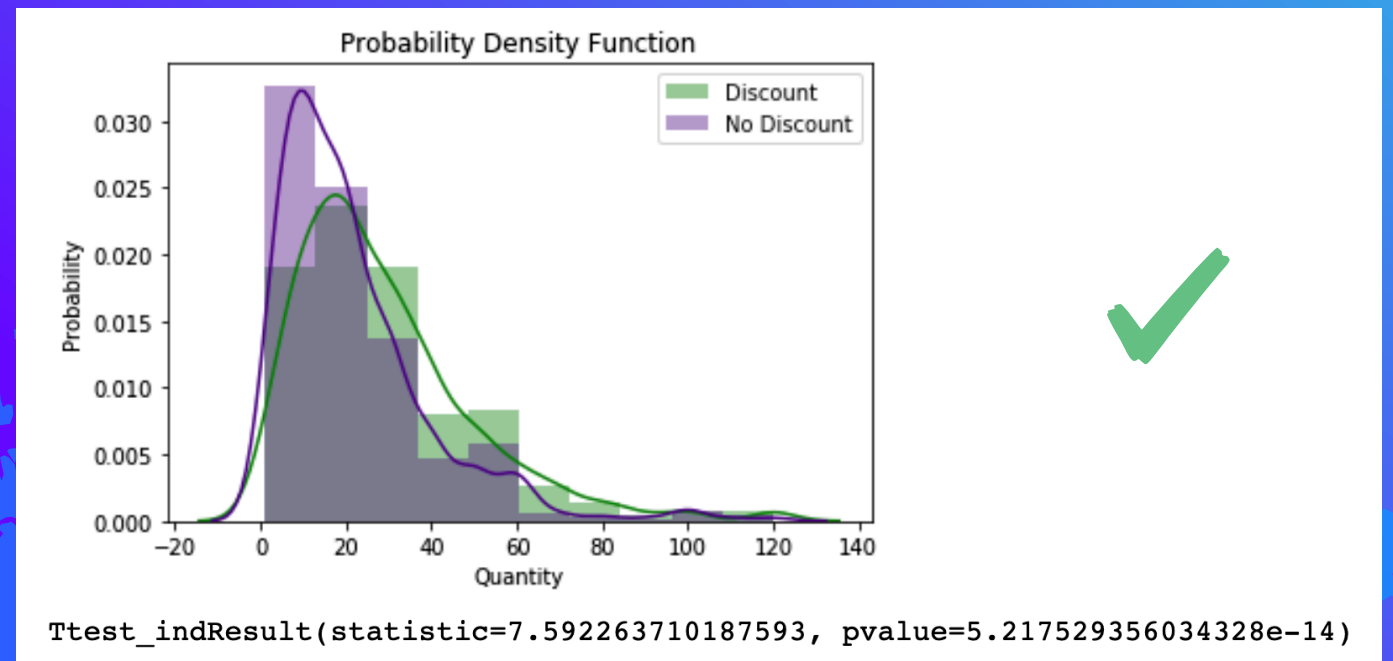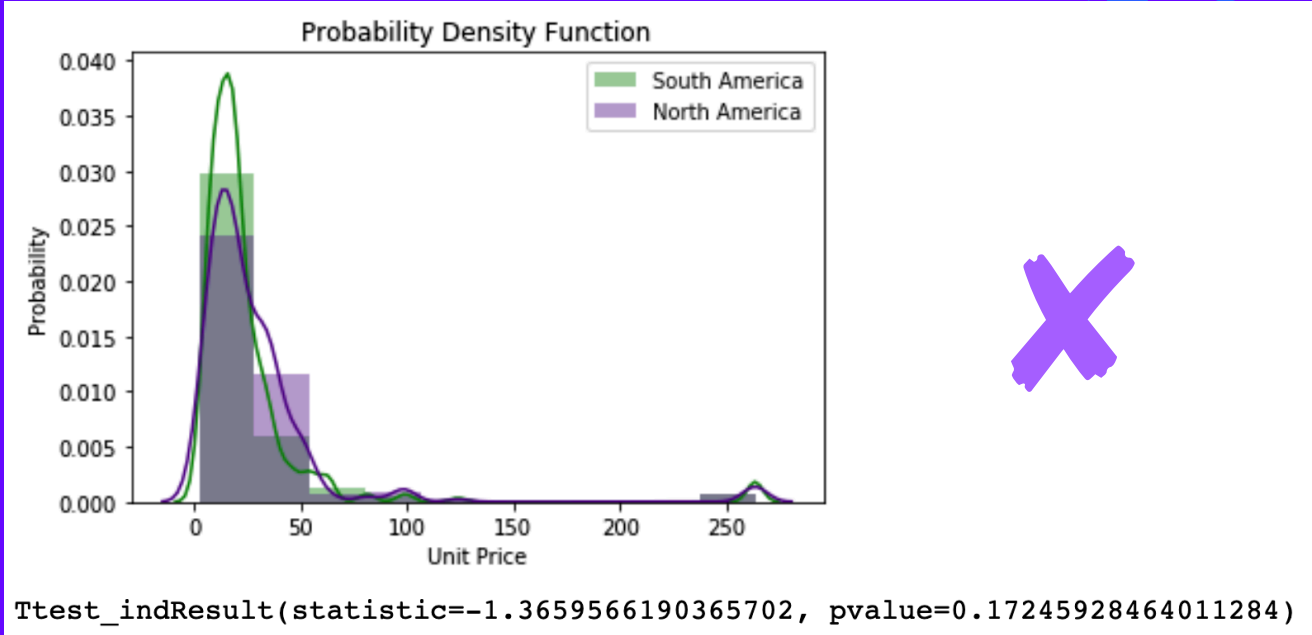
# Methodology

Formulate questions

Query database

Data exploration, wrangling

Run statistical tests

Assess significance

# Do discounts guarantee bulk orders?

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| Discount | Mean P value 1000 trials | Significant? |
|----------|--------------------------|--------------|
| 5% | 0.03 | ✔️ |
| 10% | 0.20 | ✖️ |
| 15% | 0.03 | ✔️ |
| 20% | 0.06 | ✖️ |
| 25% | 0.03 | ✔️ |



Ttest_indResult(statistic=7.592263710187593, pvalue=5.217529356034328e-14)



Ttest_indResult(statistic=1.3264263804621745, pvalue=0.18557842581651013)

# Does shipment destination affect price?



Probability Density Function — Europe / America

Ttest_indResult(statistic=-0.447201530065468, pvalue=0.6547765260199837)



Probability Density Function — South America / North America

Ttest_indResult(statistic=-1.3659566190365702, pvalue=0.17245928464011284)
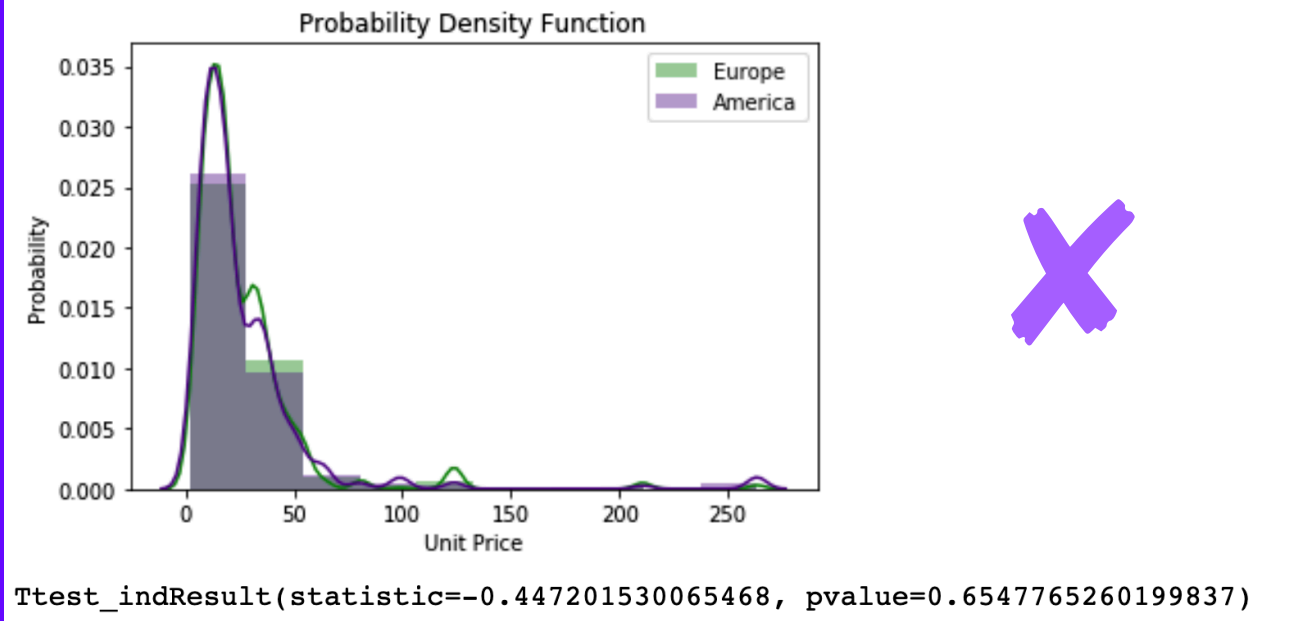
| COMPARING | P VALUE | Significant? |
|---|---|---|
| EUROPE VS. AMERICAS | 0.65 | ✖ |
| NORTH VS. SOUTH AMERICA | 0.17 | ✖ |

# Does Geography Affect Delivery Times?
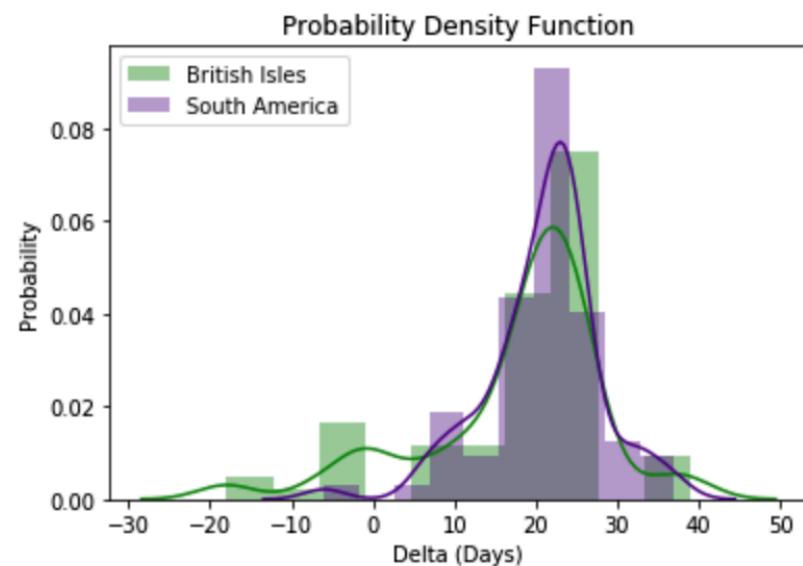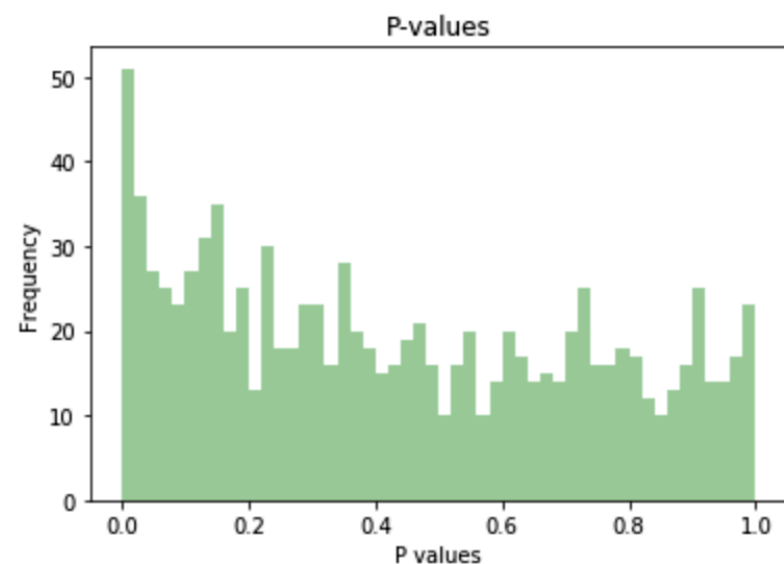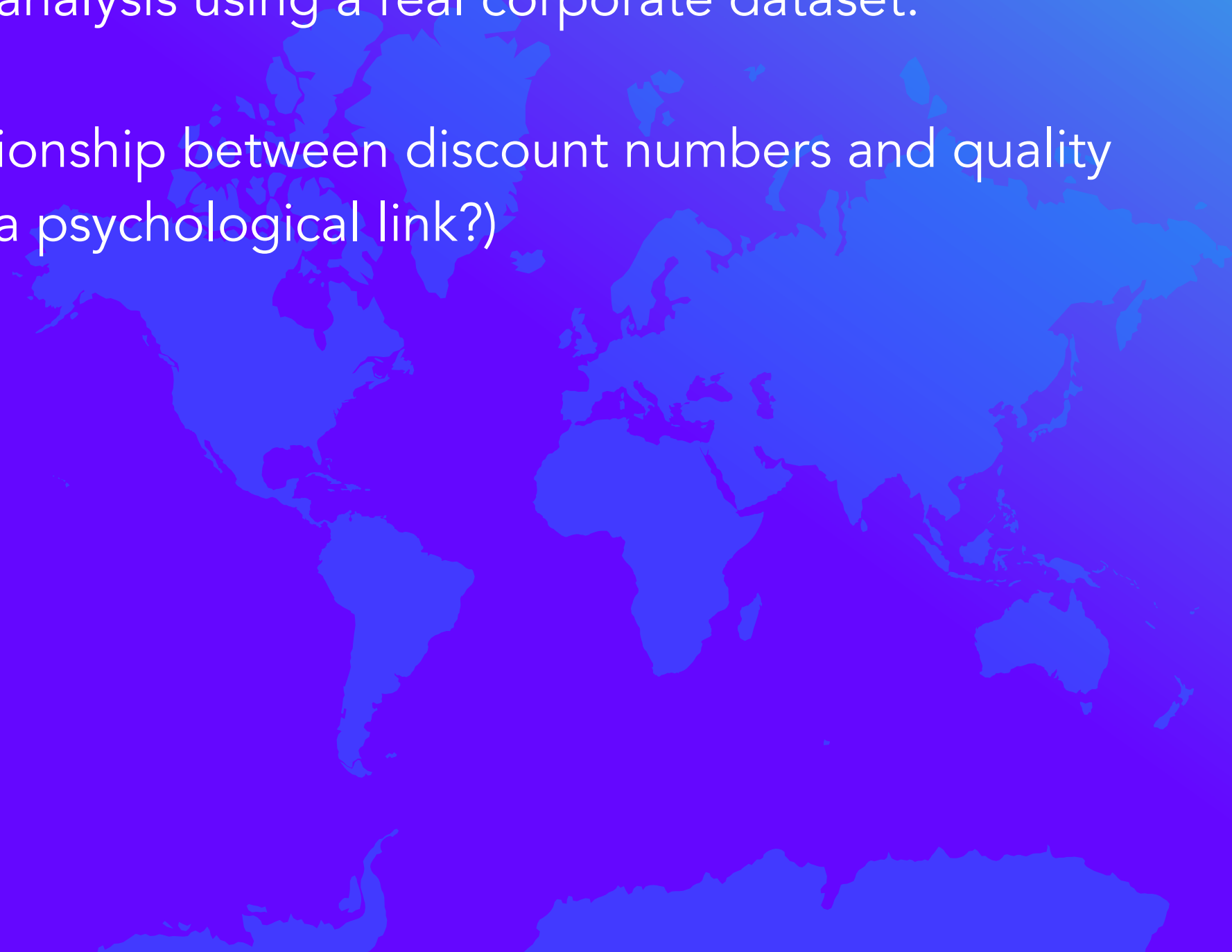


**What's going on here?**

**Sample size matters!**

# Conclusions

- Not all discount levels significantly affect order quantity.

- All significant discounts ended in # 5

- Shipment destination does not affect price.

- Shipment destination does not affect delivery wait times.

# Future Work

- Repeat a similar analysis using a real corporate dataset.

- Explore the relationship between discount numbers and quality bought (is there a psychological link?)

# Thank you!

Questions?