


# Northwind Product Order Analysis



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# Problem Statement

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Do discounts have a statistically significant effect on the number of products customers order? If so, at what level(s) of discount?



# Business Value

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How can we optimize profits:

- value of discounts?
- differentiation between discount levels?

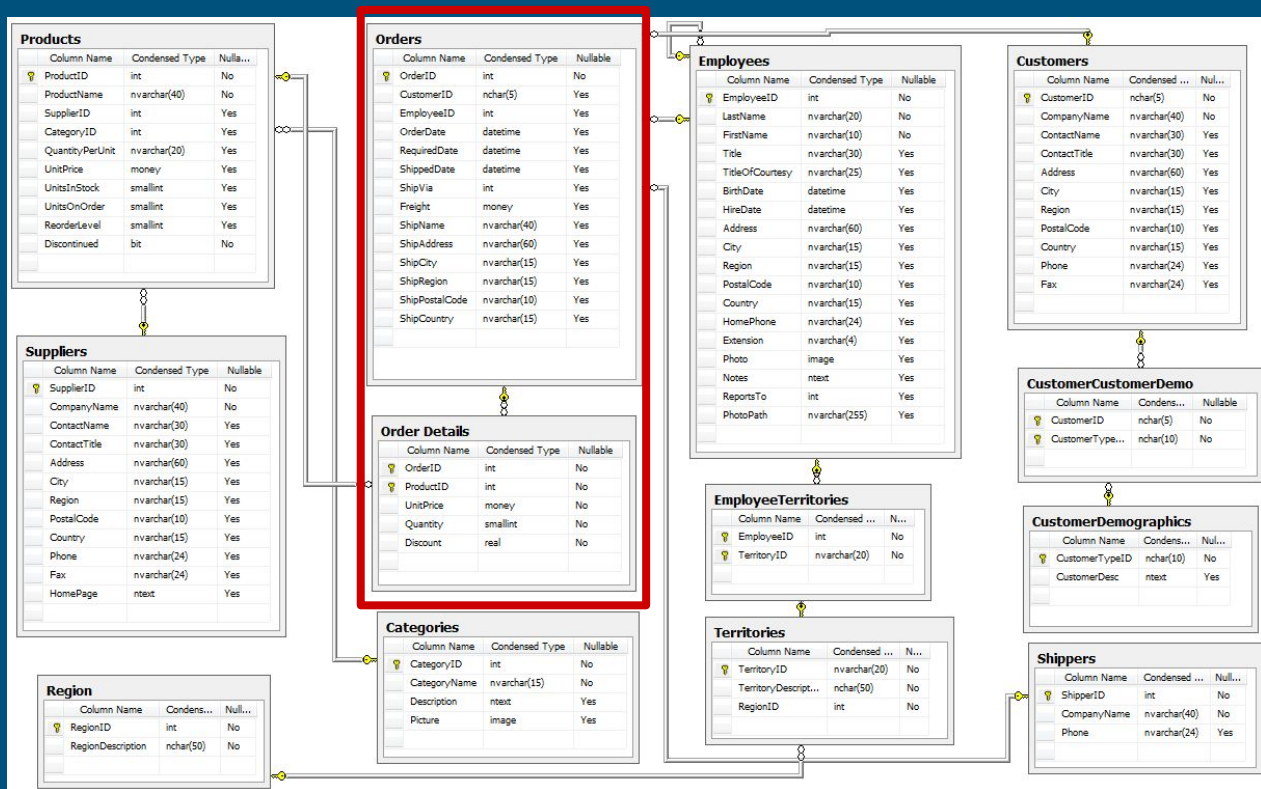
# Business Value

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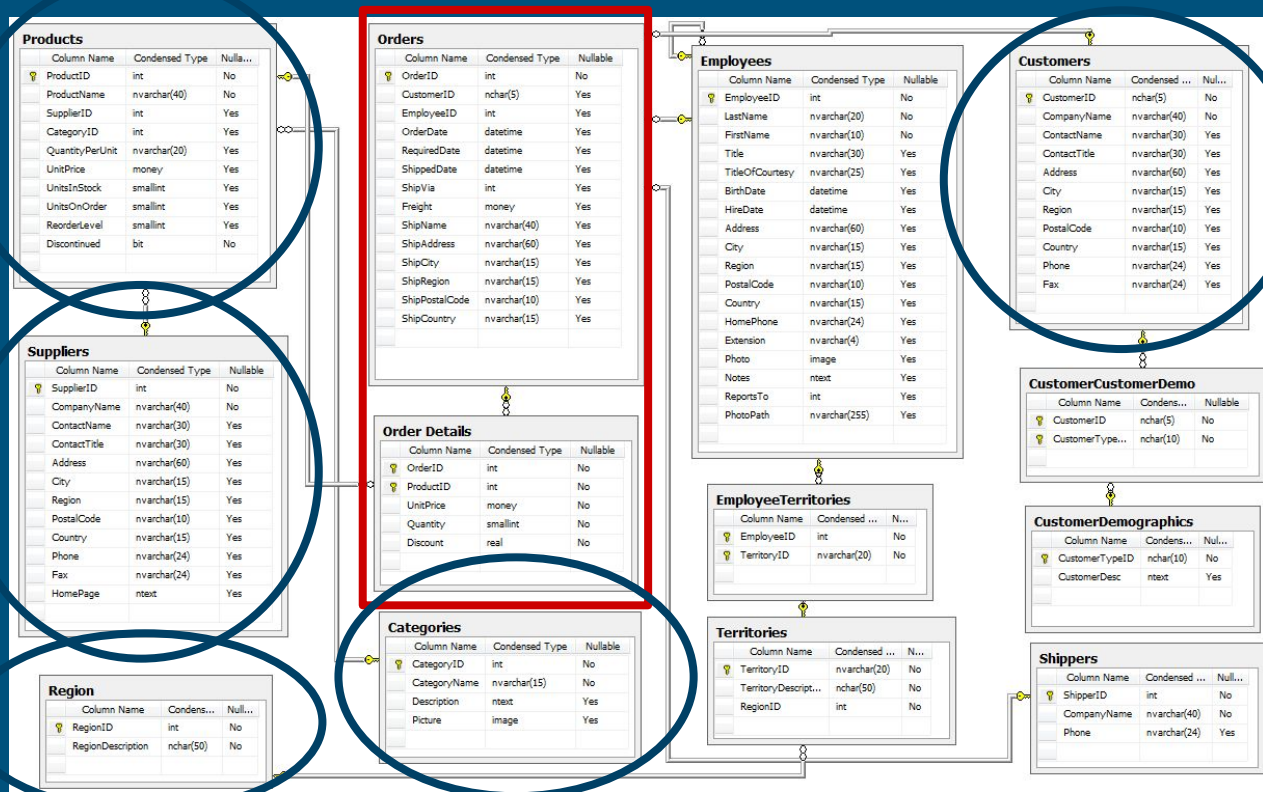
Other questions of interest:

- product profitability
- supplier/customer region
- product category

# Northwind Database

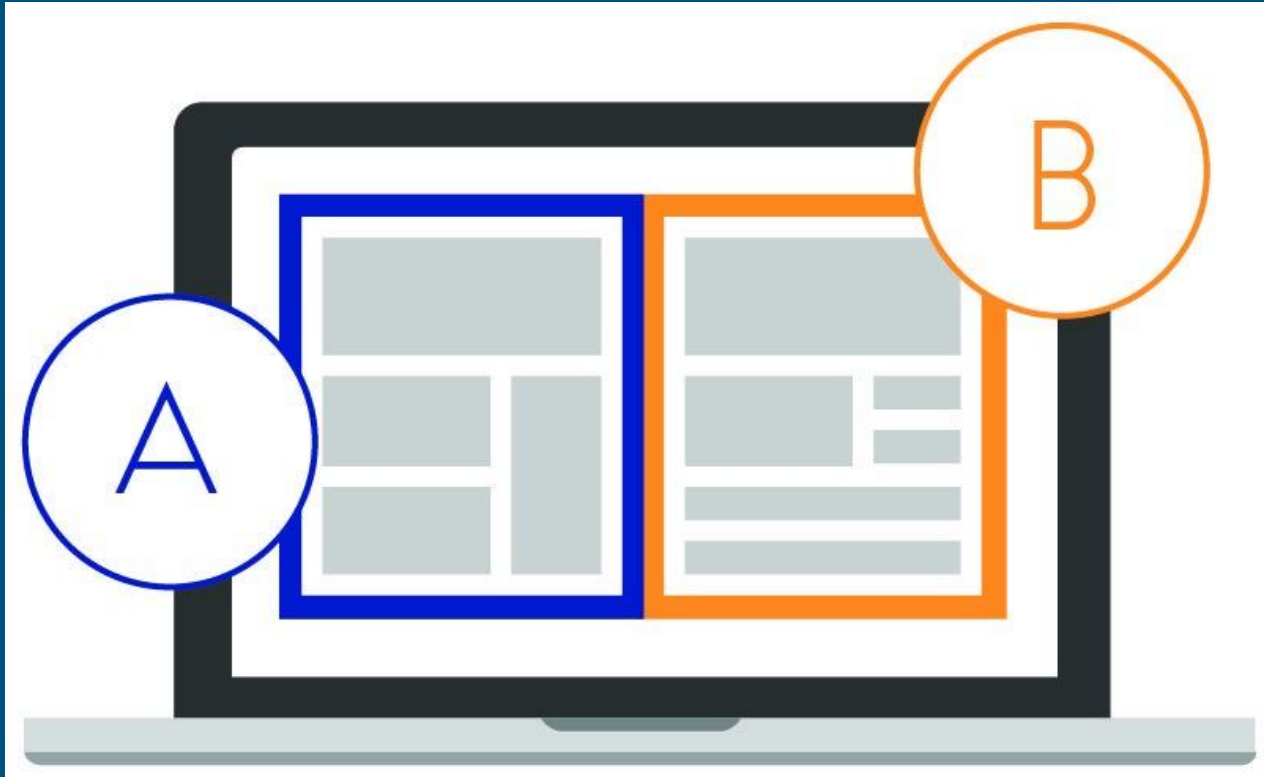


# Northwind Database



# Hypothesis Testing Framework

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# Findings



## Mean Quantity

No Discount: 21.72

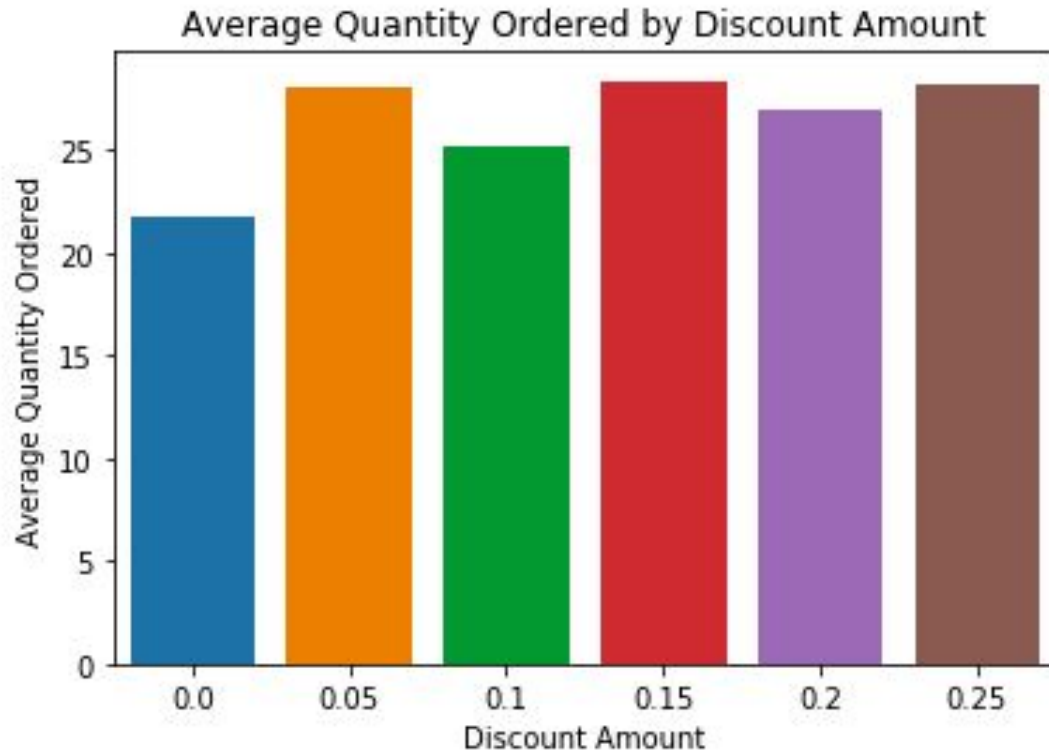
With Discount: 27.12

**Difference: 5.39**



# Findings

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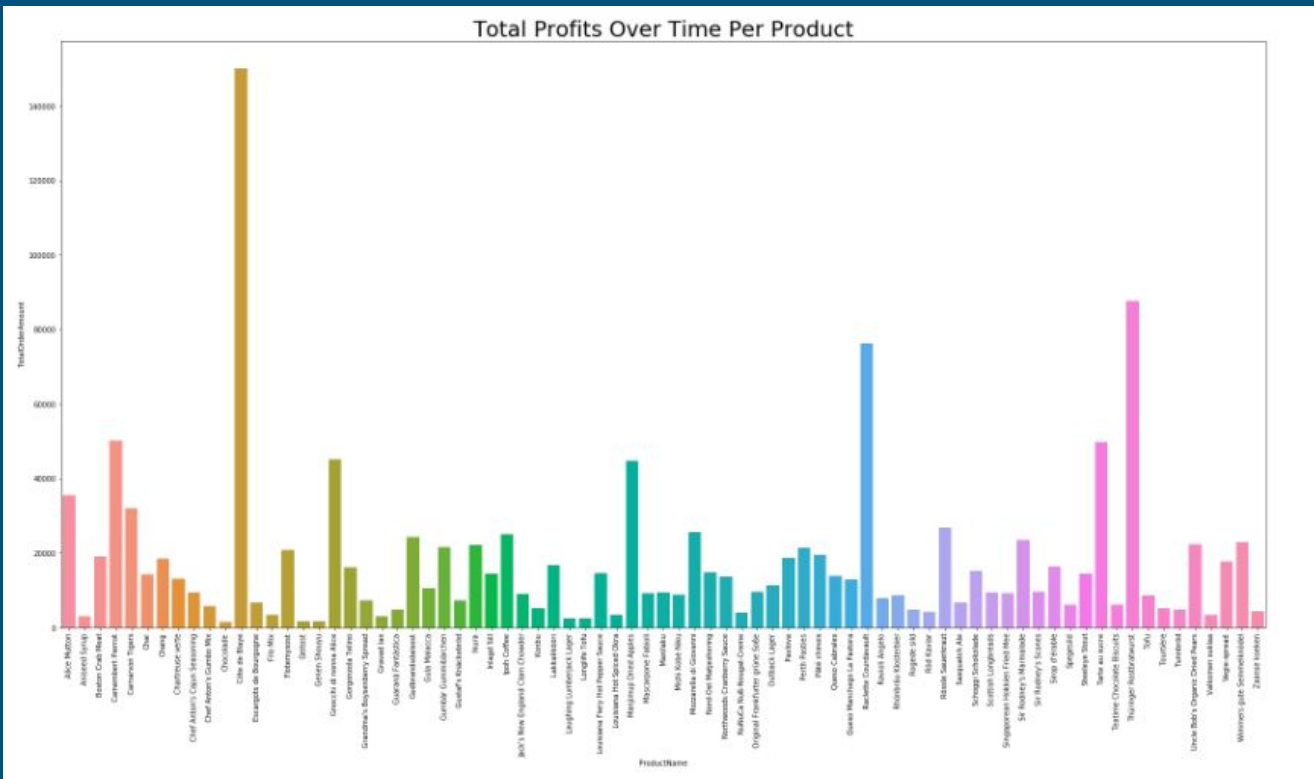
# Business Recommendations

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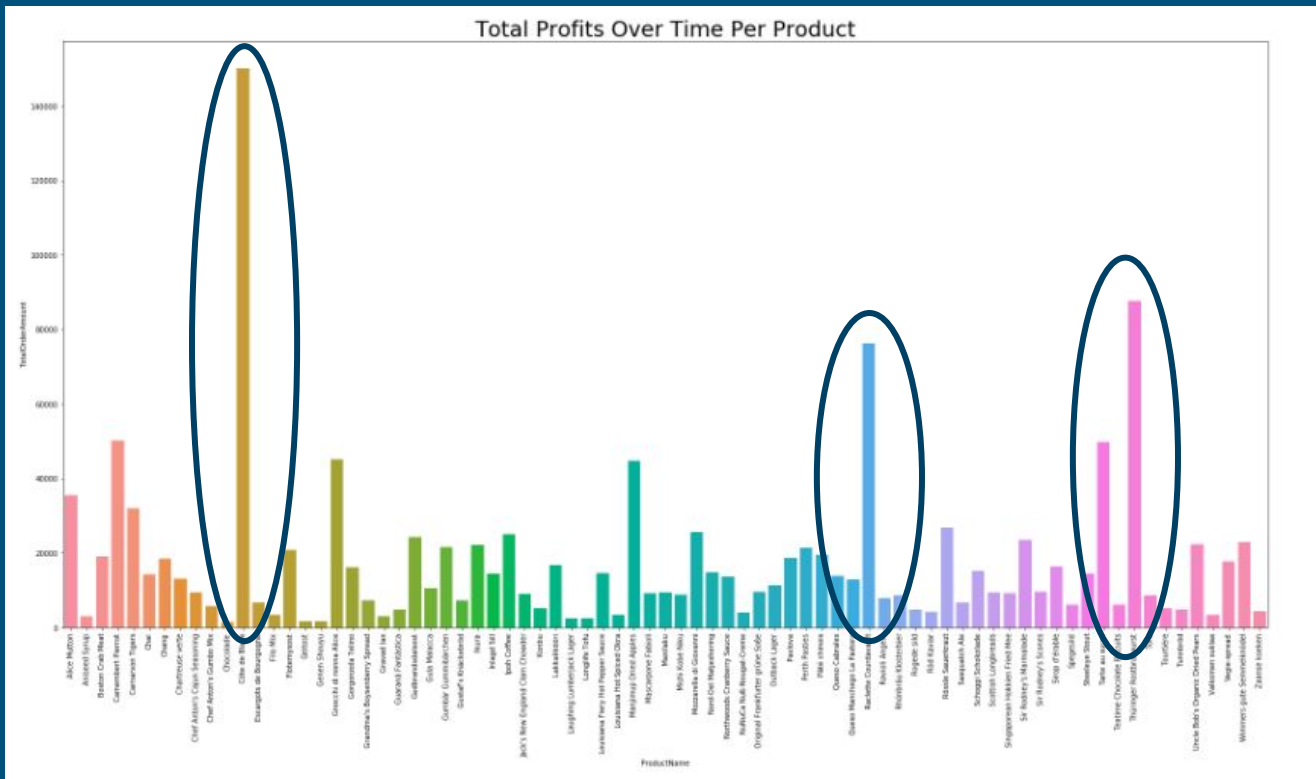


5%  
10%  
15%  
20%  
25%





# Findings - Product Profitability



Cause?

Higher  
average  
unit price!

# Findings - Order Quantity

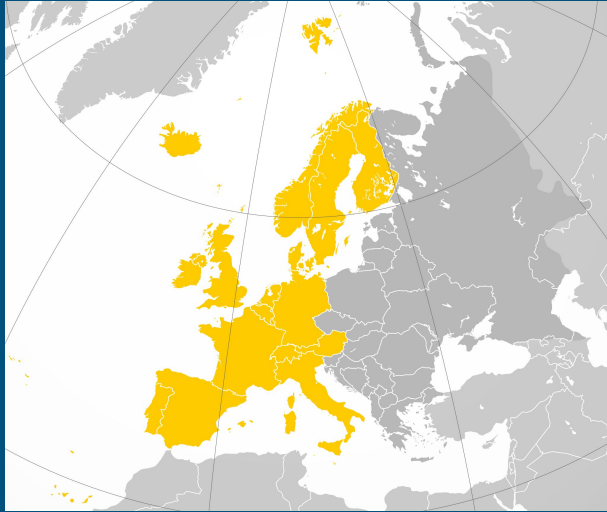
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- Supplier region = no effect
- Customer region
  - least: Central America, Eastern Europe
  - **greatest: North America, Western Europe**

# Findings - Total Order Price

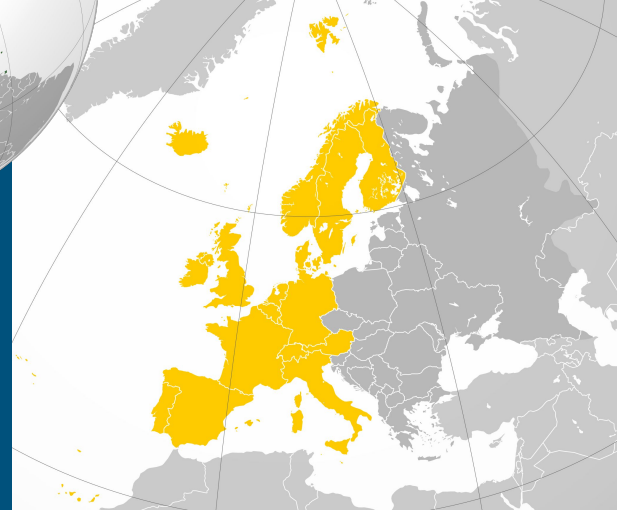
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**Suppliers**



**Customers**



# Findings - Product Category

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**Higher Unit Price**



**Increased Discounts**



**Greater Profitability!**

# Business Recommendations

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- Discounts increase order quantity
- Increased unit price → increased product profitability
- Customers in Western Europe and North America
- Suppliers in Western Europe = ↑\$400 per order
- Meat & Poultry (high unit price + discount opportunity)



# Future Work

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1. Optimal discount level for meat/poultry?
2. Specific Western European suppliers?  
Increase profitability & mirror success?
3. Re-source services from lowest performing suppliers?
4. Replicate success with most profitable products in other items?

