

A look back:

Two Years of Worldwide Sales



Maximizing Revenue:

Questions to be answered....



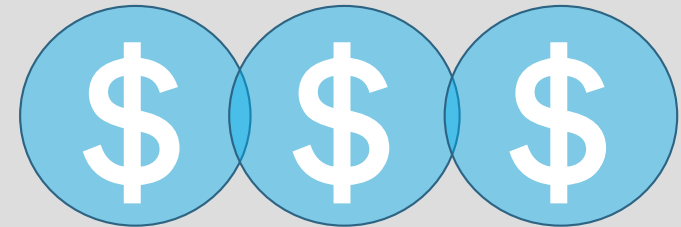
Do discount levels effect
quantity ordered?



Do some

- Product Categories
- Regions
- Sales Staff

generate more revenue than
others?



Sales/Order Data
April 2012 – June 2014

Hypothesis Testing: Methodology

Looking for “significant” differences in sample groups by comparing averages.

Two main measures:

- A ‘p-value’ $< .05$ indicates statistical significance.

* = $< .05$

** = $< .01$

*** = $< .001$

No ‘*’ = not significant

(Kruskal-Wallis)

- Effect Size / Relative size

(Tukey Test)

Relative size	Effect size	% of control group below the mean of experimental group
	0.0	50%
Small	0.2	58%
Medium	0.5	69%
Large	0.8	79%
	1.4	92%

Results.....

Discount Levels:



1

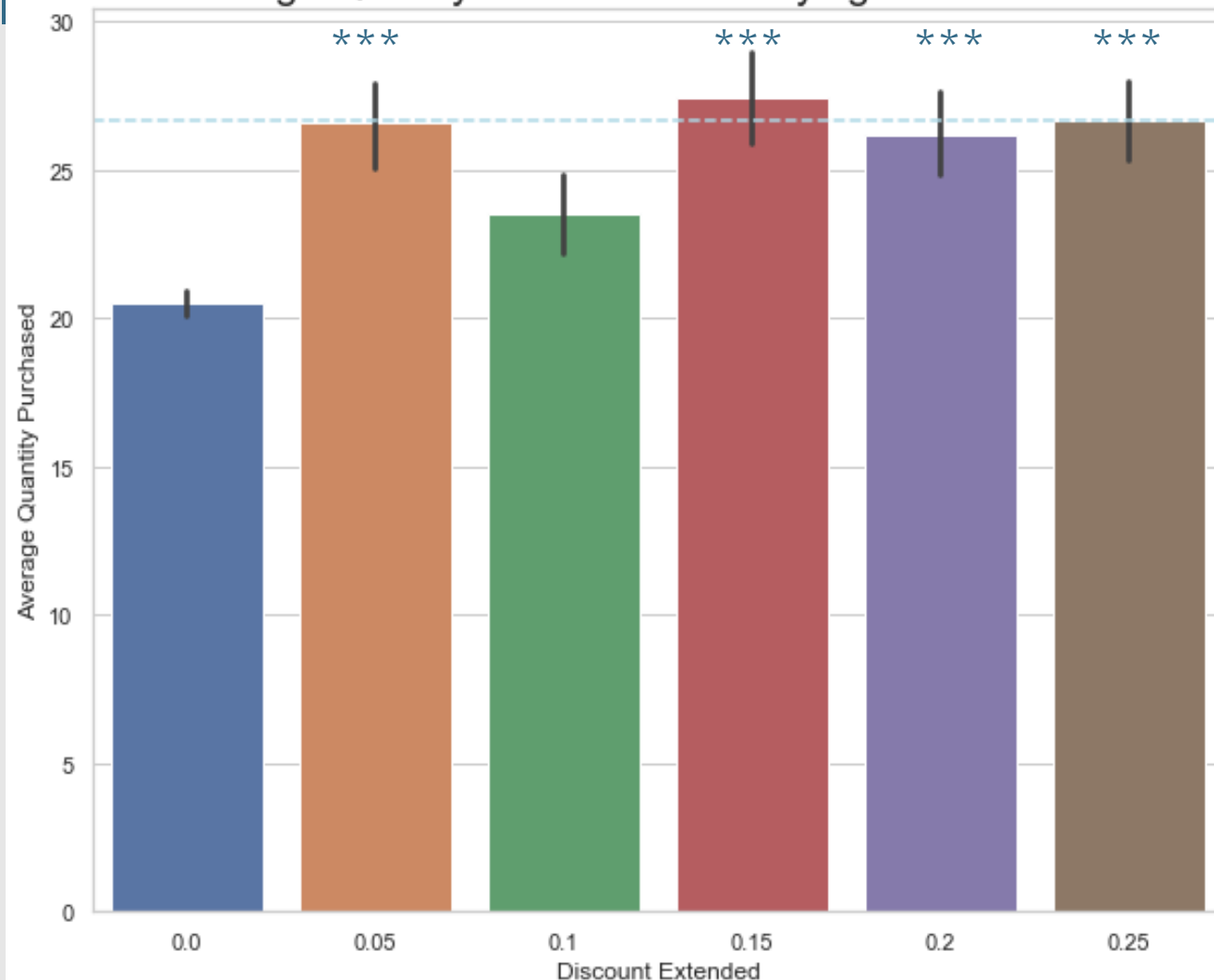
Question:

- Does discount amount have a statically significant effect on the quantity of a product in an order?
- &
- If so at what level(s) of a discount(s)?

Discount Levels:

Yes

Average Quantity Purchased at Varying Discount Levels



Statistically
Equal

Discount	AvQty	Effect Size	Effect
5 %	27	.1982	Small
15 %	27	.454	Medium
20 %	26	.3751	Medium
25 %	27	.454	Medium

P-Value of .001 in comparison to no discount

Recommendation:

- Since the effects of higher discounts are equal to lower in terms of quantity purchased, offer the lower discounts - specifically 5% and 15% more frequently when extending any discounts to preserve profit margins.

* Low ** Medium *** High Statistical Significance

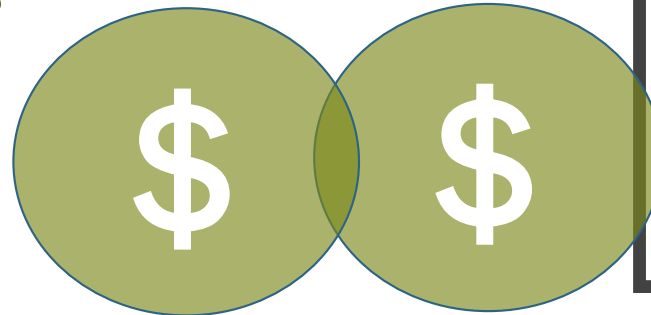
Product Categories:



2

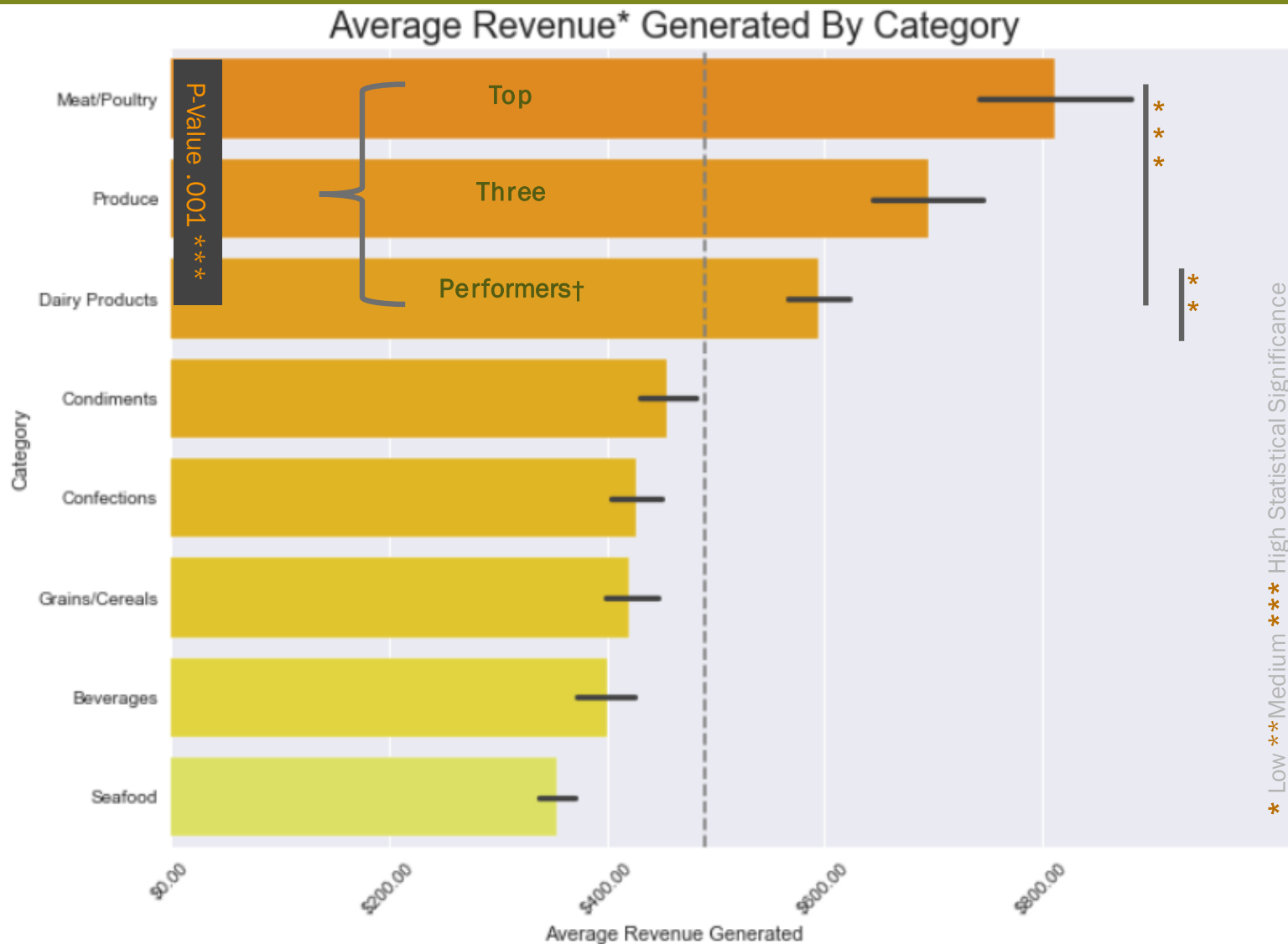
Question:

Do some product categories generate more revenue than others?



Product Categories:

Yes



Recommendations:

- Maximize revenues with additional products that align with the higher revenue generating categories.
- Minimize product offerings in lesser generating categories

Region:



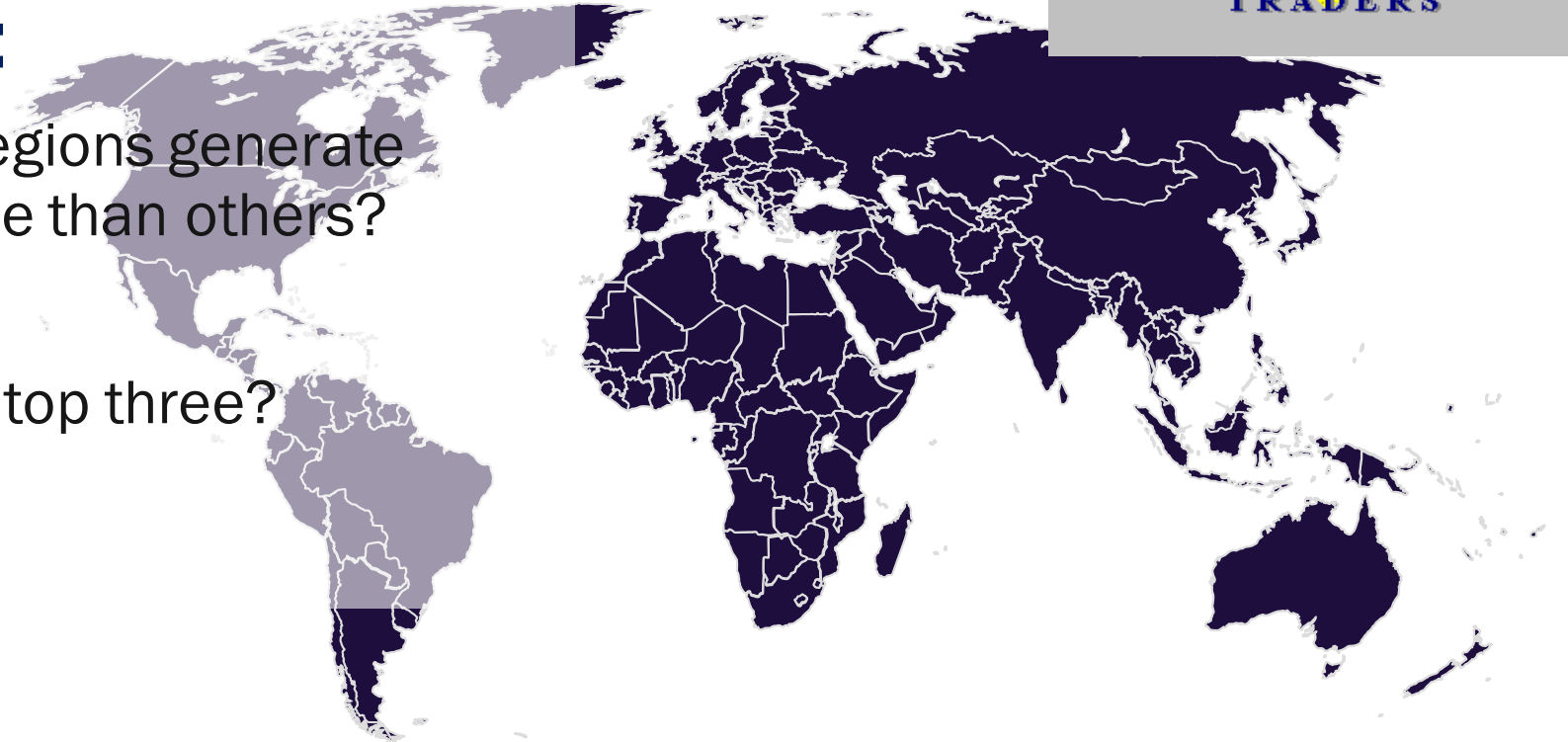
3

Question:

Do certain regions generate more revenue than others?

&

Who are the top three?



Region:

Yes

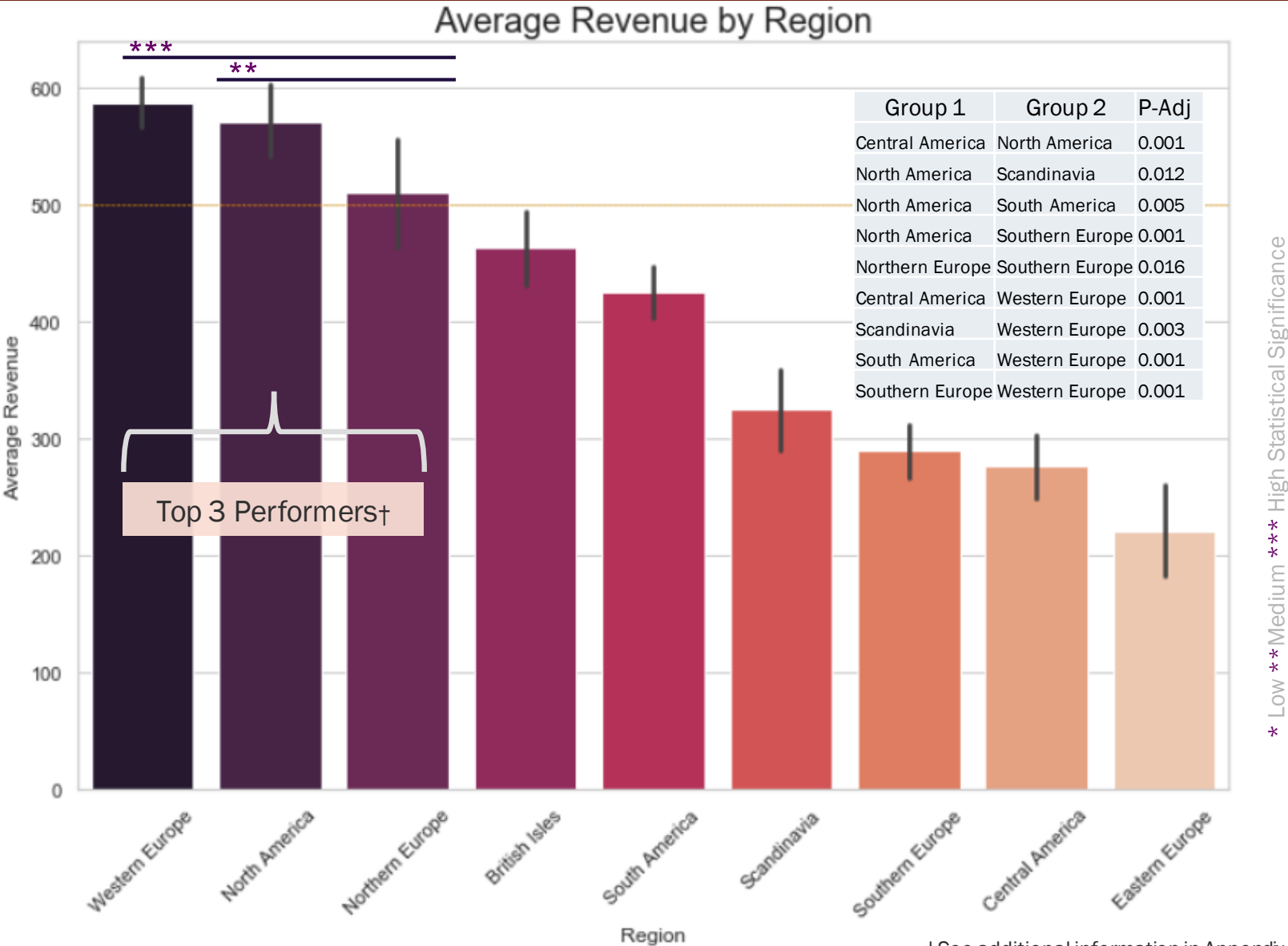
Western Europe, North America
... and
Northern Europe



Small sample sizes from Eastern Europe,
Scandinavia, Central America *

Recommendation:

- Explore best practices from regions that are top performers via additional market analysis.
- Additional analysis on underdeveloped regions (apply categorical and discount knowledge)



Sales Staff:



4

Question:

Do some sales representatives generate more revenue than others ?

&

Who are the top sellers?



Sales Staff:

NO

All sales staff, regardless of location or title statistically generate equal revenue.

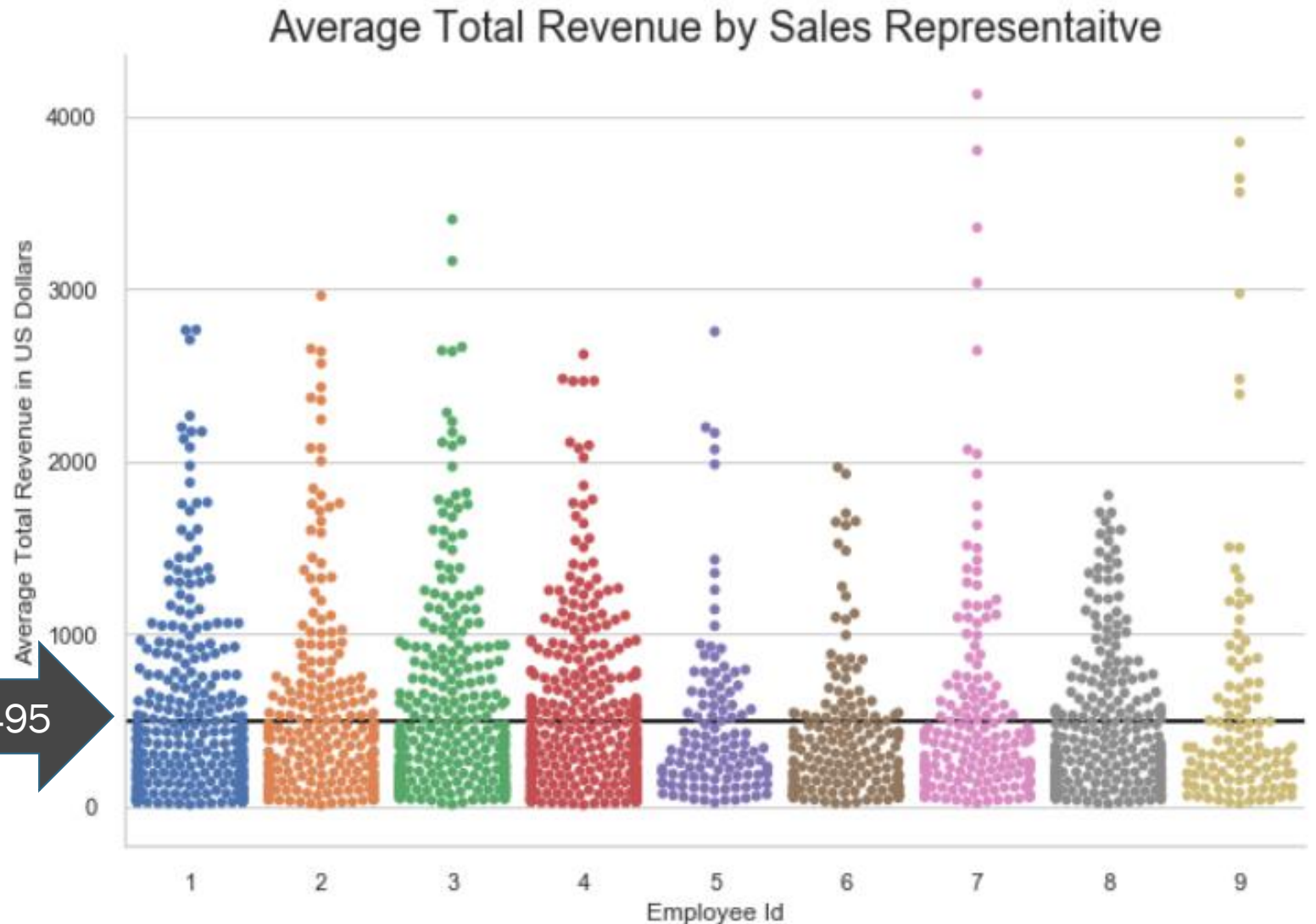
Recommendation:

- Build on knowledge of smaller discounts achieving larger quantities.
- Develop regional markets (via analysis - future work?)



Average
revenue
across all
sales staff:

\$495





What next?

Maximize Revenues

1. Offer discounts 5% and 15% more frequently to preserve profit margins.
2. Refine product categories offerings – expand those that generate higher revenues and cut those who are lacking.
3. Examine best practices in regions that generate the most revenue and analyze underdeveloped markets.
4. Use discovered insight to inform and develop sales staff.

Future Work:

- Market analysis for regions that need to be developed.
Examples:
 - Regional category refinement
 - Discount types and frequency
 - Sales relationships



Appendix:



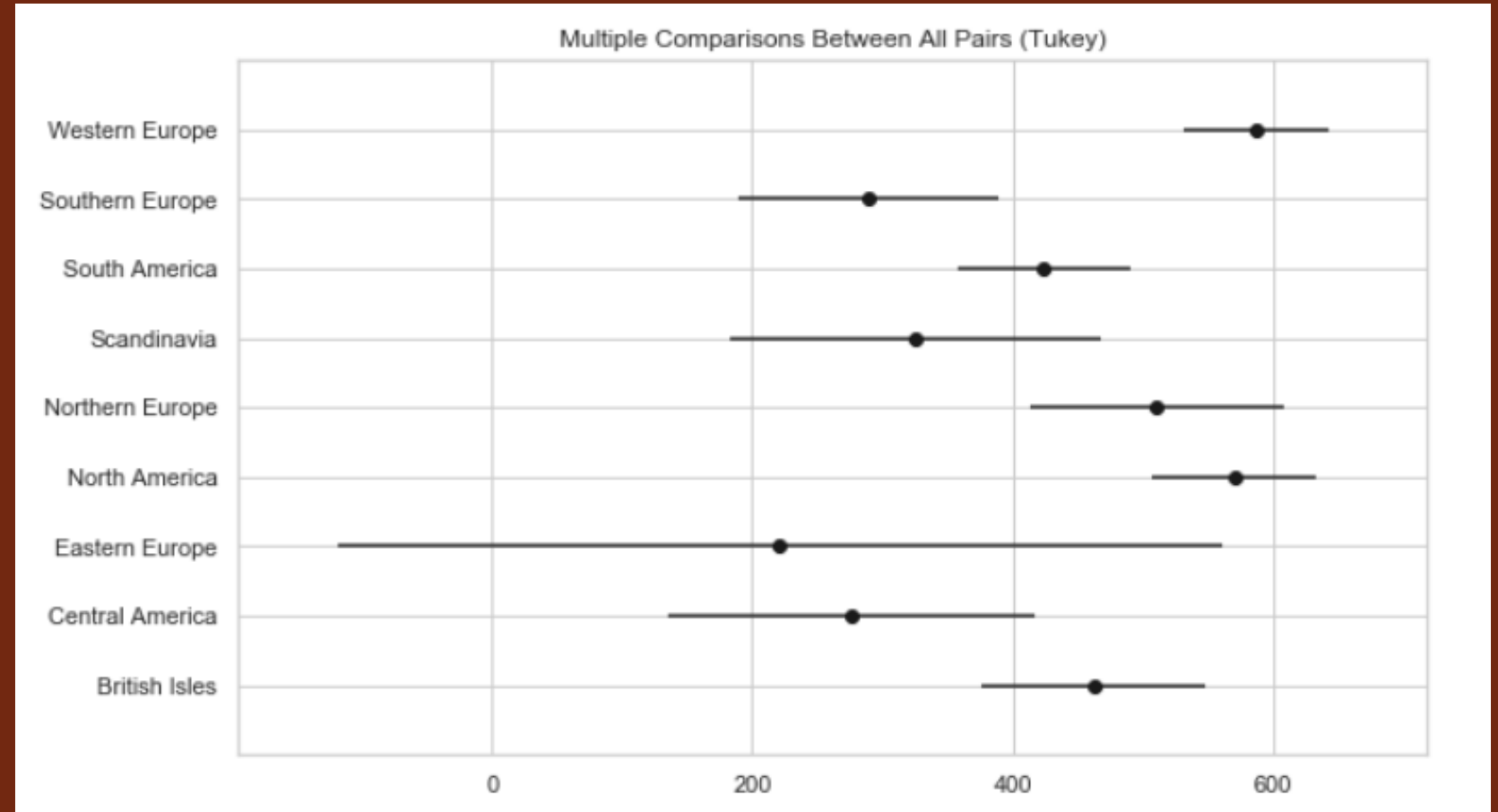
Region:

Appendix materials

Illustrates the difference in confidence intervals of Tukey test. Some regions that visibly look like they out perform others demonstrate equality here this might be attributed to varying sample sizes.

**N. & W. Europe, N. America
Statistically Equal Performance**

Region 1	Region 2	Adj P
North America	Northern Europe	0.9000
North America	Western Europe	0.9000
Northern Europe	Western Europe	0.7992



Categories:

Appendix Materials:

Statistically

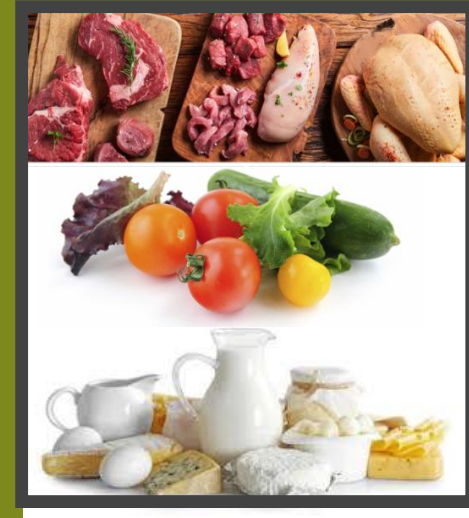
Group 1	Group 2	Adj - P	Effect	Reject Null Hypothesis: True
Beverages	Dairy Products	0.001	0.352	
Condiments	Dairy Products	0.045	0.277	
Confections	Dairy Products	0.001	0.341	
Dairy Products	Grains/Cereals	0.005	0.350	
Beverages	Meat/Poultry	0.001	0.596	
Condiments	Meat/Poultry	0.001	0.517	
Confections	Meat/Poultry	0.001	0.600	
Dairy Products	Meat/Poultry	0.001	0.311	
Grains/Cereals	Meat/Poultry	0.001	0.564	
Beverages	Produce	0.001	0.521	
Condiments	Produce	0.001	0.490	
Confections	Produce	0.001	0.560	
Grains/Cereals	Produce	0.001	0.571	
Dairy Products	Seafood	0.001	0.525	
Meat/Poultry	Seafood	0.001	0.755	
Produce	Seafood	0.001	0.798	

Significant

Equal

Group 1	Group 2	MeanDiff	Adj - P	Reject Null Hypothesis: False
Beverages	Condiments	55.7712	0.9	
Beverages	Confections	27.0669	0.9	
Beverages	Grains/Cereals	21.4034	0.9	
Beverages	Seafood	-46.1557	0.9	
Condiments	Confections	-28.7043	0.9	
Condiments	Grains/Cereals	-34.3678	0.9	
Condiments	Seafood	-101.927	0.3439	
Confections	Grains/Cereals	-5.6635	0.9	
Confections	Seafood	-73.2226	0.6099	
Dairy Products	Produce	102.0142	0.5181	
Grains/Cereals	Seafood	-67.5591	0.831	
Meat/Poultry	Produce	-114.9365	0.5359	

Performers





Background:

Worldwide Provisioner
Of Fine Foods

- *77 products, 8 Categories*
- *9 Sales Staff serving 9 Regions Globally*

