

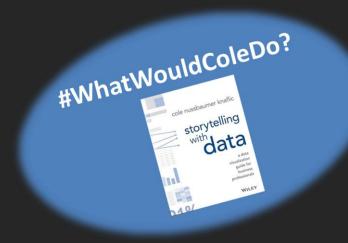
Best practices for sharing quant/statistical research findings



Patti Wojnicz
P&K Research, Chicago

Lessons learned from 2016 Conference



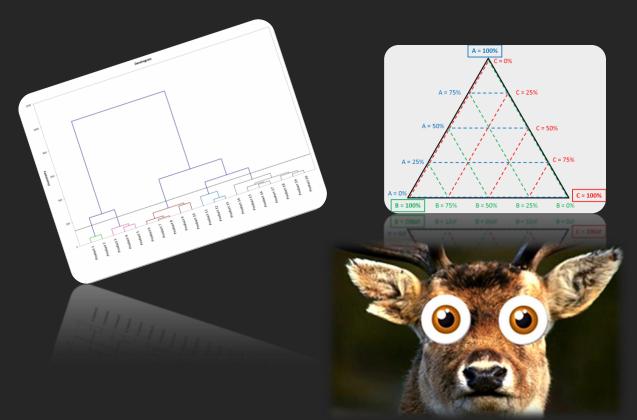


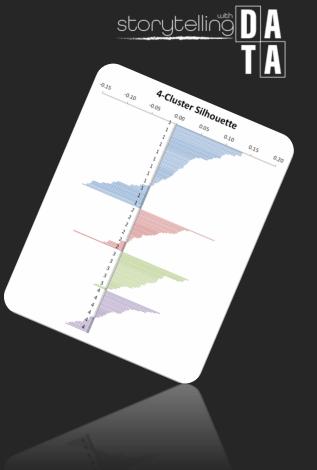
Exploratory

VS.

Explanatory

Exploratory Analysis





Explanatory Analysis



Illustration of Espresso Drinks





Reference: Data Points: Visualization That Means Something https://lokeshdhakar.com/coffee-drinks-illustrated/



As long as information comes at us in an <u>orderly fashion</u>, we can make sense of the world around us

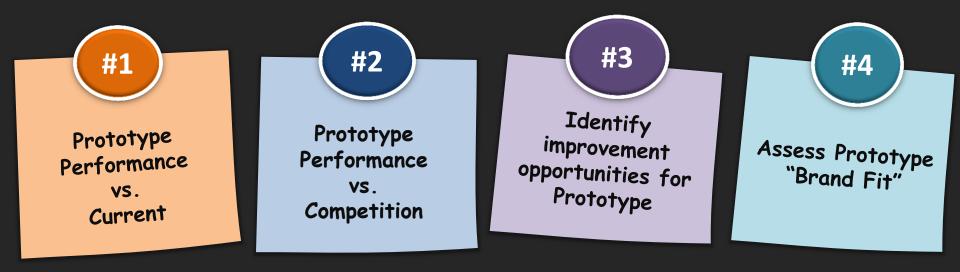
When overwhelmed by too much information or too many choices, your brain can freeze, and easily lose track of what's happening around you



Establish an "Orderly Fashion" framework

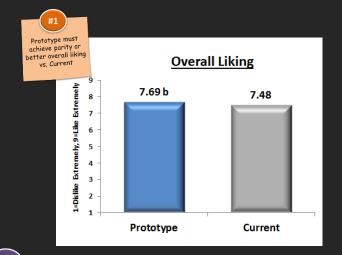


Four key objectives will be addressed:

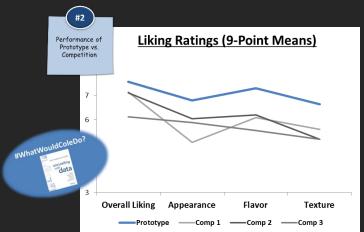


Carry that framework throughout





Improvemen opportunities prototype	t Penalty Analysis	Duckshing	Comment	
	Summary	Prototype	Current	
Size Overall Flavor		-	Too Small	
		-	Too Weak	
	Specific Flavor		Too Weak	
	Saltiness	Not Salty Enough	Not Salty Enough	
Sweetness		Too Sweet	Not Sweet Enough	





Introduce Exploratory Analytic Steps





Consumer Liking

Consumer overall liking is collected and merged with the sensory data



Sensory <u>Landscape</u>

ratings collected from a panel of expert consumers who are trained to measure the presence or absence of specific attributes, and the degree to which they exist



Driver Analysis

Advanced analysis
technique (PLS/Regression)
to identify the rank order of
importance of each
descriptive attribute, and
the "optimal" level of each
(e.g. more is better, less is
better) which provides a
"recipe" to guide future



Consumer Segmentation

To uncover different groups of consumers that may like particular products more than others, with the goal of providing strategic direction for how to further delight target consumers based on their product preferences



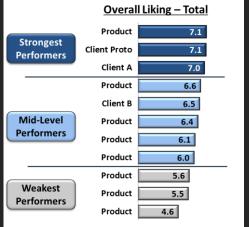
Results provide <u>strategic</u> and <u>tactical</u> product development guidance

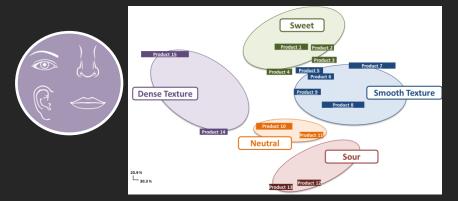
To Set a Framework for **Explan**atory Output



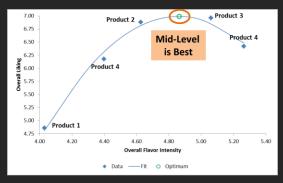


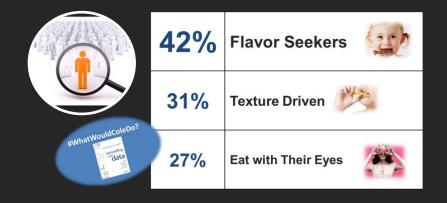












Tips for sharing <u>complex stats</u> and numbers in an <u>easy to understand way</u>





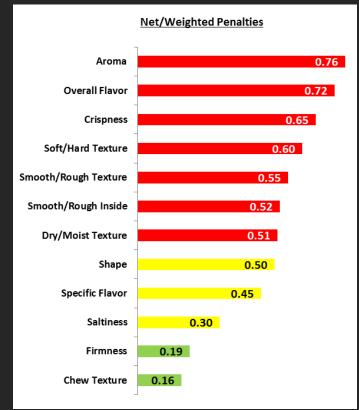


Penalty Analysis: **Exploratory**



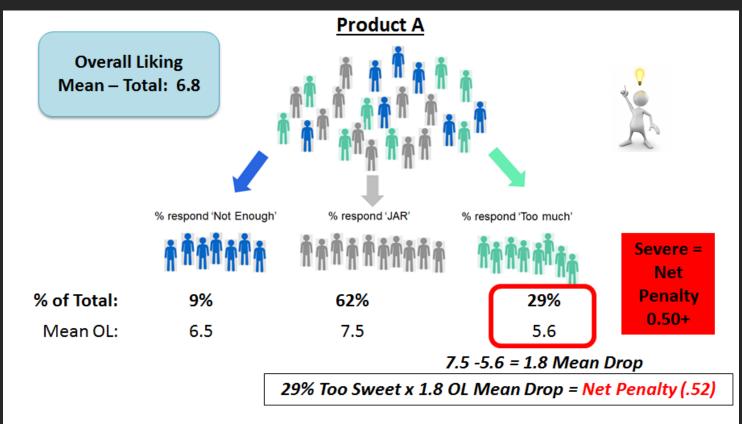


Donalty Analysis Symmony	Total Respondents			
Penalty Analysis Summary	Prototype	Current		
Shape	Not Uniform	Not Uniform		
Aroma	Too Weak	Too Weak		
Overall Flavor	Too Weak	Too Weak		
Specific Flavor	Too Weak			
Saltiness	Not Salty Enough	Not Salty Enough		
Crispness	Not Crisp Enough	Not Crisp Enough		
Soft/Hard Texture	Too Soft	Too Soft		
Smooth/Rough Texture	Too Smooth	Too Smooth		
Firmness	Not Firm Enough	Not Firm Enough		
Smooth/Rough Inside	Too Smooth	Too Smooth		
Dry/Moist Texture	Too Dry	Too Dry		
Chew Texture	Too Chewy			



Penalty Analysis: **Explanatory**





Modeling Output: Exploratory



SAS Output – Design of Experiment (DOE) Modeling

Forward Regression with Alpha to Enter = 0.1000

Analysis of variance table [Classical sum of squares - Type II]

	Sum of		Mean	F	p-value
Source	Squares	df	Square	Value	Prob > F
Model	1.21	5	0.24	37.10	<0.0001
B-Factor 2	0.21	2	0.10	15.88	0.0001
C-Factor 3	1.00	3	0.33	51.24	<0.0001
Residual	0.12	18	0.01		
Cor Total	1.33	23			



R-Squared 0.9115 **Adj R-Squared** 0.8870

Backward Elimination Regression with Alpha to Exit = 0.1000

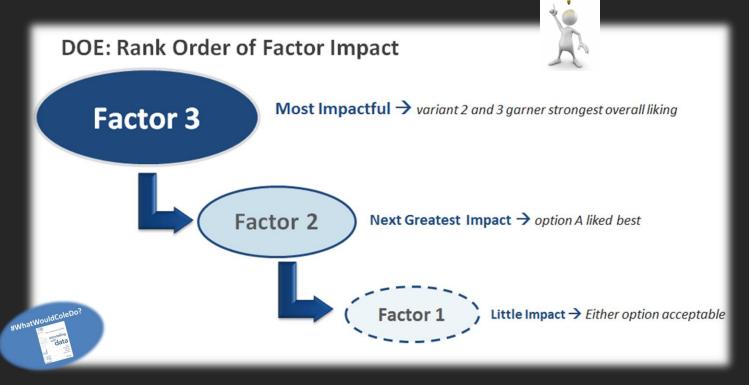
Analysis of variance table [Classical sum of squares - Type II]

	Sum of		Mean	F	p-value
Source	Squares	df	Square	Value	Prob > F
Model	1.31	14	0.09	38.94	<0.0001
A-Factor 1	0.02	1	0.02	6.32	0.0331
B-Factor 2	0.21	2	0.10	43.26	<0.0001
C-Factor 3	1.00	3	0.33	139.56	<0.0001
AB	0.03	2	0.02	6.45	0.0182
ВС	0.05	6	0.01	3.47	0.0465
Residual	0.02	9	0.0024		
Cor Total	1.33	23			

R-Squared 0.9838 **Adj R-Squared** 0.9585

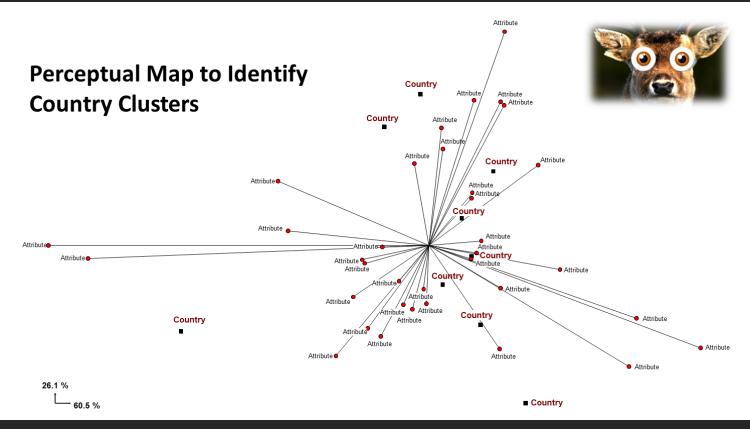
Modeling Output: Explanatory





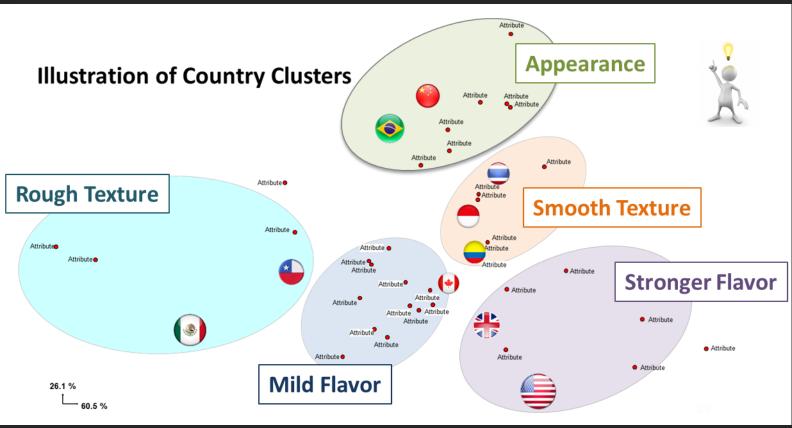
Perceptual Map: Exploratory





Perceptual Map: <u>Explan</u>atory





PLS/Regression: Exploratory

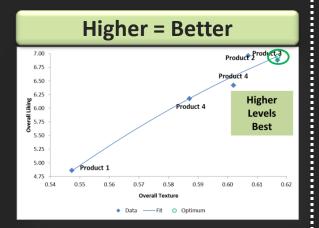


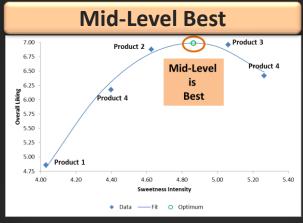
Typical "raw" output



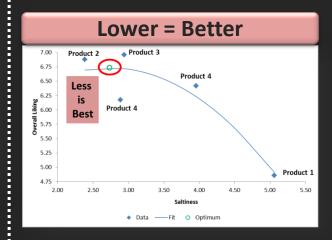
	VIP			Opt	Std
Description	Linear	Quad	Total	Val	วเน
VAR1	1.51	0.11	0.81	42.82	1.25
VAR2	1.13	1.15	1.14	24.49	0.26
VAR3	1.76	0.93	1.34	35.12	1.66
VAR4	0.49	1.23	0.86	58.69	0.15
VAR5	1.75	0.33	1.04	49.95	-1.78
VAR6	0.71	0.62	0.67	44.8	1.88
VAR7	1.34	0.00	0.67	32.69	1.88
VAR8	1.14	1.73	1.43	76.61	0.19
VAR9	1.50	1.35	1.42	60.8	0.58
VAR10	0.20	1.19	0.70	69	1.40
VAR11	0.21	0.89	0.55	56.27	0.21
VAR12	0.08	1.10	0.59	32.32	-0.30
VAR13	0.58	0.96	0.77	39.86	1.74
VAR14	1.43	0.19	0.81	37.82	-1.53
VAR15	1.42	0.27	0.84	34.96	1.29

PLS/Regression: Explanatory











Key Takeaways...





Keep the Exploratory
 Analysis in the appendix



#2

<u>Explan</u>atory

Analysis

 Set a framework to establish an "orderly fashion" in which to display and label Explanatory Analysis graphs and charts



 Have a favorite reference (website, book, etc.)

