Marketing Analytics Team Project

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Executive Summary

On Cloud Wine is a small brick & mortar wine retailer that also sells their wine online. The retailer sees the COVID-19 crisis is an opportunity to re-engage with their current customer base and accelerate the growth of their online business. As part of the growth strategy, the On Cloud Wine conducted a survey focusing on the following questions:

- Who are the current On Cloud Wine customers?
- What are the most important features when selecting a wine?
- How will those features support the new wine selections/product assortment?

The segmentation of our survey data showed that we have two customer groups, one that prefers to shop in our brick and mortar store and one that prefers to shop online. Both segments have the highest preference for red wine but differ on what they use to make their choices.

Using logit analysis, we concluded that we can target our customers that purchase more bottles per purchase to utilize our online site. This could be accomplished by simply asking our cashiers to call attention to the site we already have.

Game Plan

Opportunity:

On Cloud Wine is a small brick & mortar wine retailer that also utilizes a website for sales. The retailer sees the COVID-19 crisis is an opportunity to re-engage with their current walk-in customer base and accelerate the growth of their online business.

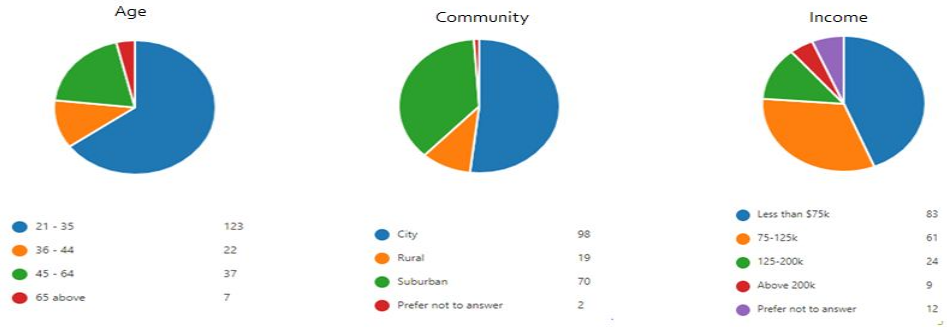
Strategy:

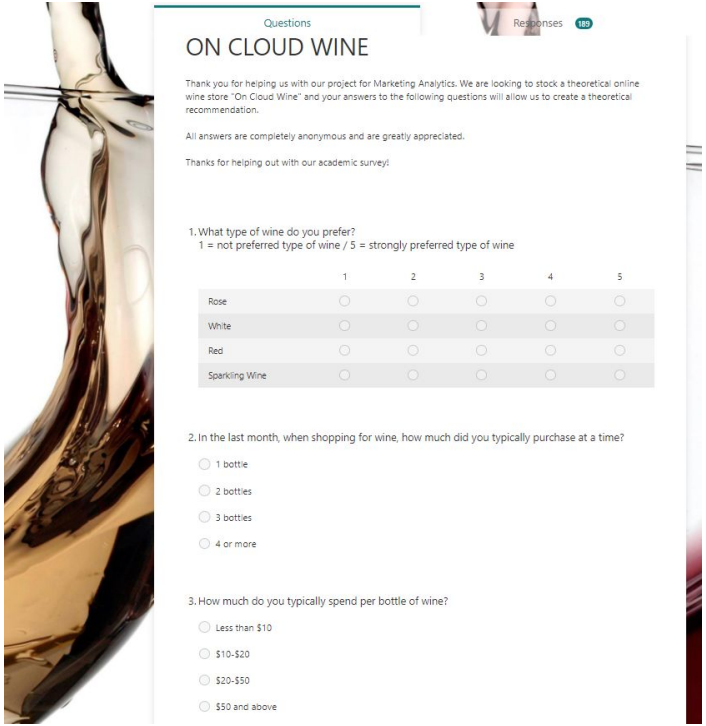
The management team has agreed to the following plan:

1) Compose and launch a survey to gain a better understanding of customers wine preferences, the factors that drive their purchasing behavior, their demographics, and their feelings on consuming wine.
2) Utilize the survey results to segment our current customer base and recommend new wines based on their preferences.
3) Utilize a logit analysis to predict how we can increase online sales.

Designing and Launching the Survey*

- Questions were laid out to encourage completion: opening with wine preferences, leading into purchasing features, asking psychographic questions, and finishing with basic demographics.
- 189 responses in 3 weeks
- Respondents were primarily young females living in cities and making lower incomes - very little variation in demographics alone.

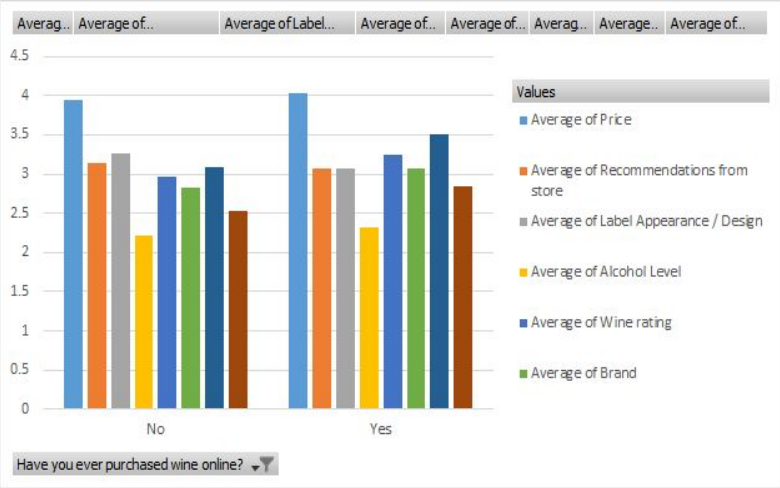




*See appendix 1 for the question layouts used in the survey

Initial Survey Responses Analysis

See Appendix 2 to see the output of the survey and the key to the transformations used in the analyses that follow in this presentation. This section is reviewing our customers that have purchased wine online vs. those that have not.

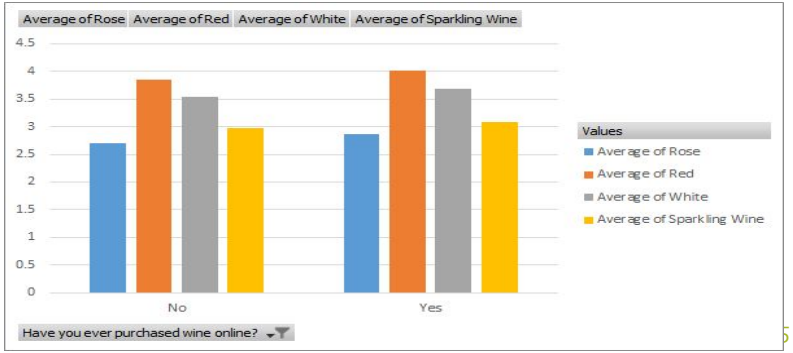


Values	No	Yes
Average of Bottles/purchase transformation	1.89	2.66
Average of Cost/bottle transformed	1.98	2.05
Average of Glasses/week Transformed	1.75	2.09

<u>Takeaways</u>:

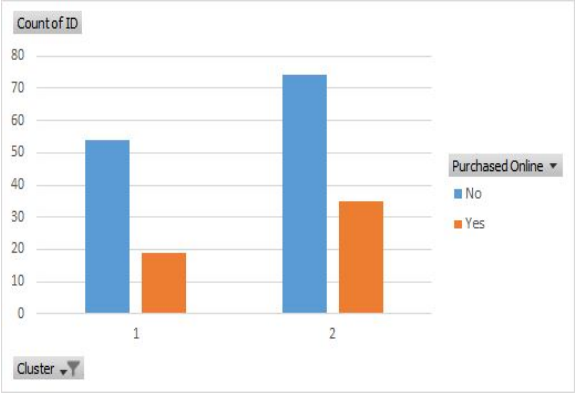
Online purchasers: focussed on varietal, brand, price, wine rating, drinks more, spends more, buy more and partake more frequently.

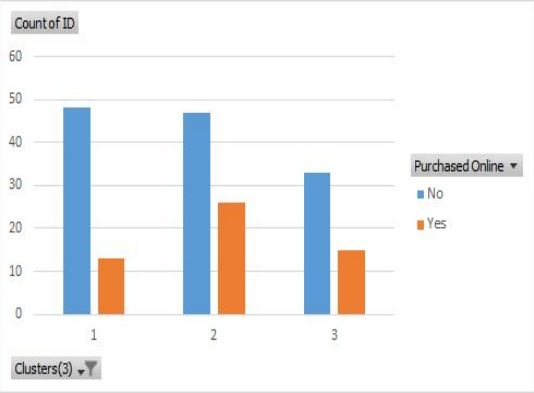
In-store purchasers: visual buyer , seeking a recommendation (love a fancy labels) for their purchase.

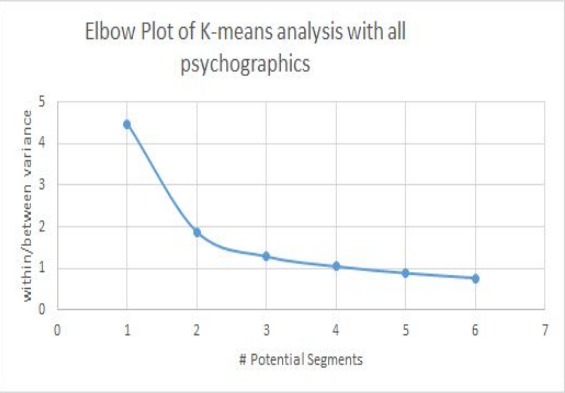


Segmentation

- K-means was run using the five psychographic questions from the survey
- 2 vs. 3 segments?*







Seg 1: 73 total, 26% online

Seg 2: 109 total, 32% online

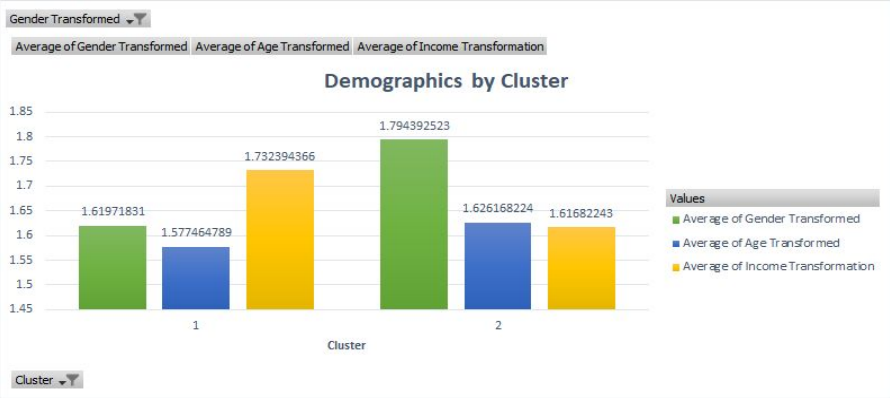
Seg 1: 61 total, 21% online

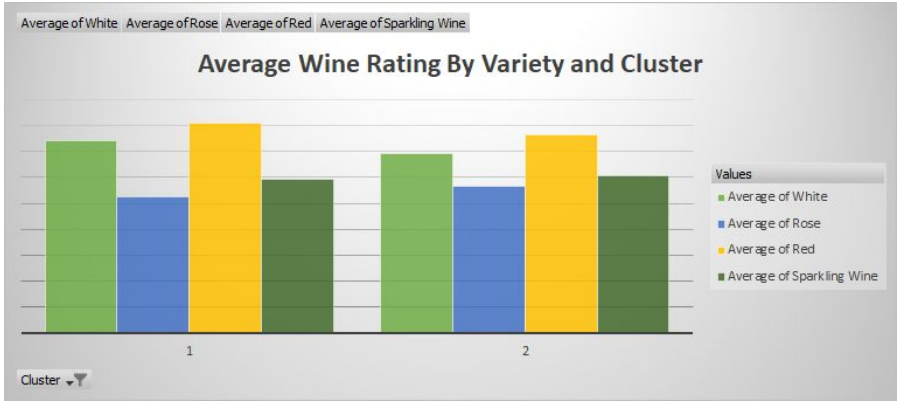
Seg 2: 73 total, 36% online

Seg 3: 48 total, 31 % online

*See Appendix 4 for the raw outputs

Demographics and Wine Preferences





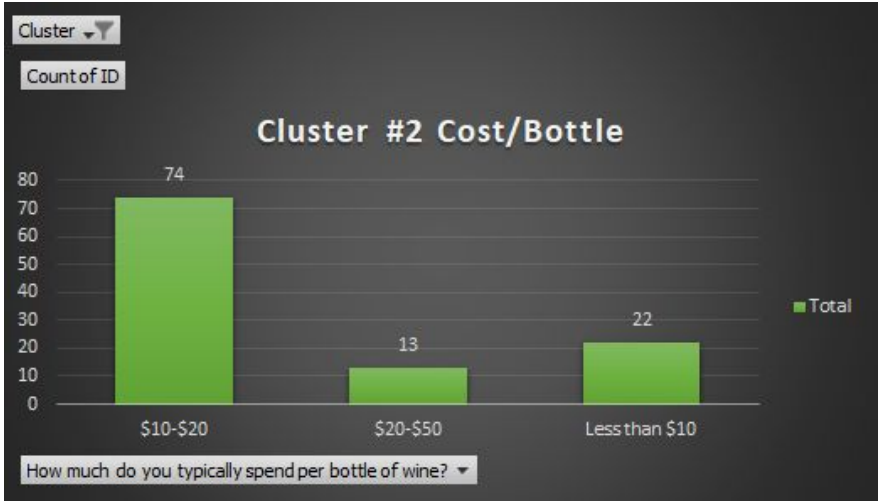
- Segment 1: more likely male, younger, higher income
- Segment 2: predominantly women, slightly older, lower income
- Only analyzed Male/Female data
- Wine preferences very similar across both segments
    - Red wine most preferred

See Appendix 5 for the pivot table comparisons of the averages of the two segments

In-Store vs. Online Shoppers

- Segment 1
  - Strongly prefers to purchase inside a liquor store
  - Less interested in purchasing online
- Segment 2
  - Does not care about buying at brick-and-mortar store
  - Slightly more interested in online shopping
- 0 ≤ Purchase Online ≤ 1

Price Sensitive Online Shoppers



- Segment 2 really factors in the price of a wine bottle
  - They strongly prefer bottles $10-$20
  - Lower income bracket
- Segment 1 more strongly considers recommendations from the store (appendix 5)

Wine recommendations for Segment 1: In-Store Shoppers

2015 Finca Flichman 'Dedicado' Gran Corte
Uco Valley, Argentina
Critics Score 91/100
$ 21.99 ex. sales tax

2017 Anko Estancia Los Cardones Malbec
Cafayate, Argentina
Critics Score 92/100
$ 14.99 ex. sales tax

JCB by Jean-Charles Boisset 'Leopard' Red
California, USA
Critics Score 91/100
$ 16.99 ex. sales tax

Terrazas de los Andes Reserva Malbec
Mendoza, Argentina
Critics Score 89/100
$ 8.99 ex. sales tax

2016 Diseno Old Vine Malbec
Mendoza, Argentina
Critics Score 89/100
$ 12.99 ex. sales tax

2014 Binyamina Yogev Cabernet – Shiraz
Galilee, Israel
Critics Score 90/100
$ 19.99 ex. sales tax

Wine recommendations:

- Red wine lovers
- Price range USD 10- 20
- Segment 1 strongly prefers to purchase inside a liquor store and favor more attractive labels and variety.
- Appreciates recommendation in the store

Wine recommendations for Segment 2: Online shoppers

Chateau Greysac
Medoc, France
Critics Score 87/100
$ 13.99 ex. sales tax

2016 Dominio del Plata BenMarco Malbec
Mendoza, Argentina
Critics Score 91/100
$ 14.27 ex. sales tax

2015 Beronia Reserva
Rioja DOCa, Spain
Critics Score 90/100
$ 19.49 ex. sales tax

2017 La Mascota Vineyards 'Unanime'
Maipu, Argentina
Critics Score 90/100
$ 19.99 ex. sales tax

Cellier des Dauphins Cotes du Rhone
France
Critics Score 89/100
$ 11.95 ex. sales tax

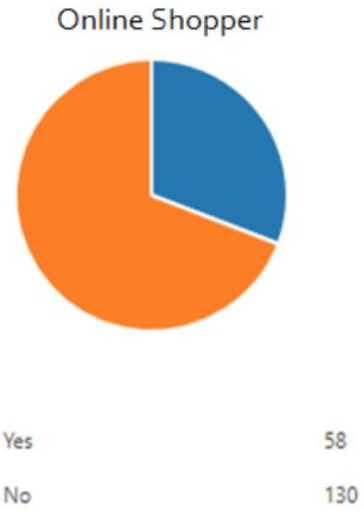
2018 Bodega Colome Estate Malbec
Salta, Argentina
Critics Score 91/100
$ 23.99 ex. sales tax

<u>Wine recommendations:</u>

- Red wine lovers
- Price range USD 10- 20
- Segment 2 is focussed on varietal, brand, price, wine rating

Driving More Online Shopping

Our current customer base is under utilizing our online shopping opportunities.



Goal: Increase online sales

Plan: FInd a driver that can predict if a customer will purchase online.

See Appendix 6 for a correlation matrix to analyze the variables obtained from the survey

Logistic Regression predicting an online purchase

Outline:

- Survey data was distributed into test and train data sets based on the responses for previous online purchase of wine.
- Train data contained 42 yes responses and 42 no responses
- Test data contained 17 yes responses and 88 no responses

Results:

- Quantity of bottles purchased provides best indicator.
- Hit Rate at 48%

Recommendation:

- Target our customers that are currently going to the brick and mortar store and buying more than 4 bottles in a single trip by requiring the cashier to point out the online features to these customers at check out.
- Create a delivery service model with discounts and incentives for larger quantities of wine.

R^2(Cox and Snell)	0.000	0.098		
Model parameters (Variable Online Transformation):				
Source	Value	Standard error	Wald Chi-Square	Pr > Chi^2
Intercept		0.543	6.591	0.010
Bottles/purchase	0.619	0.222	7.742	0.005

		no	yes	Actual Online Purchase
Predicted Online Purchase	yes	38	50	
	no	5	12	
	Hit Rate =	(38+12)/(38+50+5+12)		
	Hit Rate =	**48%**		

Lessons Learned

How we can make improvements for the next phase of the test:

1) Collect more survey responses to increase the sampling size.
2) Diversify the survey respondents.
3) Build an A/B Test to further specify the wines to highlight for both our in store and online customers.
4) Utilize online ratings to predict wine choices for online customers.

Appendices

Appendix 1: Survey Design

Demographic Questions

- What is your age?
- What is your gender?
- Which type of community do you live in?
- What is your income level?

Purchase Behavior

- What type of wines (red, white, rose sparking) do you prefer?
- In the last month, when shopping for wine, how much did you typically purchase at a time?
- How much do you typically spend per bottle of wine?
- In the last month, how many nights per week did you drink one or more glasses of wine?
- Have you ever purchased wine online?

Appendix 1 Cont'd: Survey Design

Psychographic Questions

- I typically only drink wine in social situations
- I typically have a glass of wine to wind down at the end of my day
- I prefer to purchase my wine in a liquor store
- I tend to stick to certain types and/or brands of wine
- I like to try new brands and/or types of wine

Factors that drive purchase behavior

- Price
- Brand
- Varietal
- Country of Origin
- Wine rating
- Alcohol level
- Label Appearance
- Design & Recommendations from store

Appendix 2: Survey Results

Have you ever purchased wine online?	Rose	White	Red	Sparkling Wine	Bottles per purchase transformed	Cost per bottle transformed	Glasses per week Transformed	Price	Brand	Varietal	Country of origin	Wine rating	Alcohol Level	Label Appearance / Design	Recommendations from store	I typically only drink wine in social situations	I typically have a glass of wine to wind down at the end of my day	I prefer to purchase my wine in a liquor store	I tend to stick to certain types and/or brands of wine	I like to try new brands and/or types of wine	Age Transformed	Gender Transformed	Community Transformed	Income Transformed
1	4	3	5	2	4	3	4	2	4	5	5	4	1	1	3	5	1	4	5	2	2	1	2	0
0	3	2	4	4	1	3	2	4	1	5	4	1	1	2	1	5	1	1	3	4	1	1	3	2
0	1	2	5	3	2	2	2	4	2	1	3	4	1	3	3	3	4	4	5	2	1	2	3	2
0	3	4	4	4	2	1	2	5	1	4	1	2	2	1	1	3	1	1	2	1	1	1	2	1
1			4		1	2	2	5	2	1	1	1	4	4	2	5	3	3	1	3	1	2	3	1
0	4	3	1	4	1	2	1	2	2	5	1	3	1	3	3	5	1	1	3	3	1	2	2	2
1	5	5	1	5	3	2	2	4	2		1		1	3		4	2	1	1	5	3	2	3	4
0	4	5	2	3	1	2	1	4	3	2	1	4	4	4	3	5	2	4	4	3	1	2	3	1
1	2	5	3	4	4	1	2	5	3	4	1	1	3	3	3	1	4	3	4	3	1	2	3	1
0	2	4	5	1	1	2	2	3	3	3	1	1	2	4	1	3	3	1	3	4	1	2	2	1
0	3	4	5	1	1	2	2	4	3	3	1	5	1	3	4	1	1	1	1	3	3	1	2	1
1			5		4	3	2	4			4				3	3	3	2	3	3	3	2	3	0
0	5	3	2	4	1	2	2	5	2	2	2	3	3	5	4						1	1	3	1
0	3	4	3	3	2	1	2	3	4	5	4	4	1	1	2	2	1	2	2	4	4	2	1	0
1	4	1	5	5	4	2	1	5	3	5	5	4	1	4	3	4	1	4	4	3	1	1	2	0
1	1	5	4	2	4	1	2	5	5	1	3	1	1	3	1	1	3	1	4	3	2	2	1	1
0	1	1	5	1	4	1	4	5	3	1	1	3	5	1	1	1	5	1	5	3	2	2	2	3
0	2	1	5	3	2	3	1	4	2	2	2	4	1	1	3	4	1	2	3	4	3	1	2	2
0			4		2	2	2	3	4	4	3	4	2	2	2	4	4	3	3	4	1	2	2	2

Data Transformations

- Removed unnecessary columns: Name, Email, Completion time, Start time
- Converted to non-numeric data to bins
  - Income level (under 75k = 1, 75-125k = 2, 125-200k = 3, Above 200k = 4, no answer = 0)
  - Community type (Rural = 1, Suburban = 2, Urban = 3, no answer = 0)
  - Gender (Male = 1, Female = 2, Nonbinary = 3, no answer = 0)
  - Age (21-35 = 1, 36-44 = 2, 45-64 = 3, 65+ = 4)
  - Wine purchased at a time (1 bottle = 1, 2 bottles = 2, 3 bottles = 3, 4 or more = 4)
  - Did you purchase wine online? (No = 0, Yes = 1)
  - Spending per bottle (Under $10 = 1, $10-$20 = 2, $20-$50 = 3, $50+ = 4)
  - Glasses of wine per week (0 -1 = 1, 2 -3 = 2, 4 - 5 = 3, 5 or more = 4)

Appendix 3: Pivot Table Results from Raw Data

	No	Yes
Average of Price	3.95	4.03
Average of Brand	2.83	3.07
Average of Varietal	3.09	3.51
Average of Recommendations from store	3.14	3.07
Average of Country of origin	2.53	2.84
Average of Wine rating	2.96	3.25
Average of Alcohol Level	2.21	2.33
Average of Label Appearance / Design	3.27	3.07

	No	Yes
Average of Rose	2.69	2.87
Average of White	3.53	3.68
Average of Red	3.84	4.02
Average of Sparklin	2.97	3.09

Values	No	Yes
Average of Bottles/purchase transformation	1.89	2.66
Average of Cost/bottle transformed	1.98	2.05
Average of Glasses/week Transformed	1.75	2.09

Appendix 4: K-means & Elbow Plot

XLSTAT 2020.3.1.1005 - k-means clustering - Start time: 25/11/2020 at 17:52:46 / End time: 25/11/2020 at 17:52:49

Observations/variables table: Workbook = survey_data.xlsx / Sheet = survey / Range = survey!$U$1:$Y$190 / 189 rows and 5 columns

Number of removed observations: 7

Cluster rows

Clustering criterion: Determinant(W)

Stop conditions: Iterations = 500 / Convergence = 0.00001

Number of classes: from:2 to:7

Center: No

Reduce: No

Initial partition: Random

Repetitions: 10

Seed (random numbers): 4591247

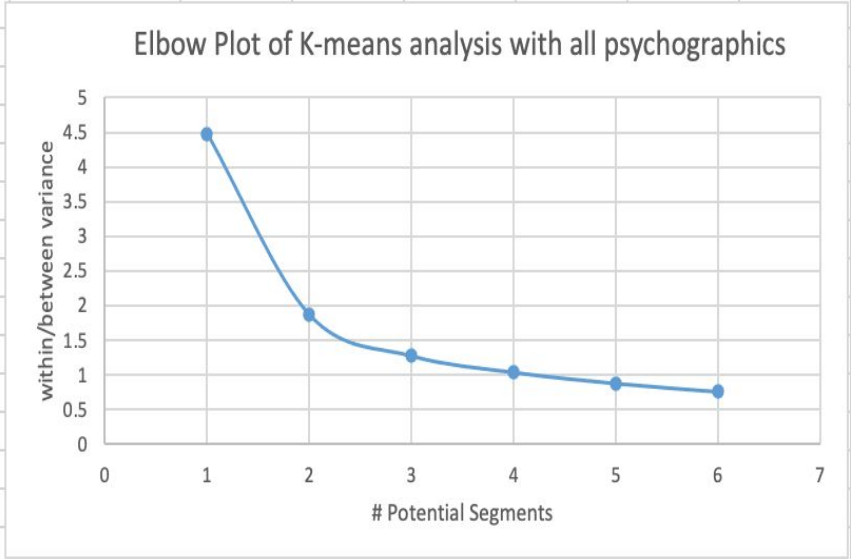
Variance\Classes	2	3	4	5	6	7
Within-class	7.106767	5.66476	4.873464	4.428394	4.066312	3.750834
Between-classes	1.585632	3.027639	3.818935	4.264005	4.626087	4.941564
witin/between	4.481978	1.871016	1.276132	1.038553	0.878996	0.759038

Results by object:

Observation	Class
Obs1	1
Obs2	2
Obs3	1
Obs4	2
Obs5	2
Obs6	2
Obs7	2
Obs8	1
Obs9	1

Decided upon 2 segments (see appendix 3) then inserted the assignments from the k-means into the excel file.

ID	I typically only drink wine in social situations	I typically have a glass of wine to wind down at the end of my day	I prefer to purchase my wine in a liquor store	I tend to stick to certain types and/or brands of wine	I like to try new brands and/or types of wine	Cluster
1	5	1	4	5	2	1
2	5	1	1	3	4	2
3	3	4	4	5	2	1
4	3	1	1	2	1	2
5	5	3	3	1	3	2
6	5	1	1	3	3	2
7	4	2	1	1	5	2
8	5	2	4	4	3	1



Appendix 5: Pivot Averages btw segments

	1	2
Average of White	3.71	3.46
Average of Red	4.06	3.81
Average of Sparkling Wine	2.97	3.03
Average of Rose	2.62	2.84

Values	1	2
Average of Age Transformed	1.56	1.63
Average of Gender Transformed	1.66	1.79
Average of Community Transformed	2.48	2.32
Average of Income Transformation	1.73	1.61

Values	1	2
Average of Price	3.86	4.05
Average of Brand	3.03	2.79
Average of Varietal	3.33	3.14
Average of Country of origin	2.93	2.42
Average of Wine rating	3.11	3.02
Average of Alcohol Level	2.35	2.17
Average of Label Appearance / Design	3.41	3.05
Average of Recommendations from store	3.49	2.91

Values	1	2
Average of Bottles/purchase transformation	2.13	2.16
Average of Cost/bottle transformed	2.15	1.92
Average of Glasses/week Transformed	1.86	1.85
Average of Online Transformation	0.26	0.32
Average of I typically only drink wine in social situations	2.85	2.90
Average of I typically have a glass of wine to wind down at the end of my day	2.90	2.57
Average of I prefer to purchase my wine in a liquor store	4.14	1.63
Average of I tend to stick to certain types and/or brands of wine	3.78	3.20
Average of I like to try new brands and/or types of wine	3.59	3.50

Appendix 5: Pivot Averages btw segments

Variables	Rose	White	Red	Sparkling Wine	Bottles/purchase transformation	Cost/bottle transformed	Glasses/week Transformed	Online Transformation	Price	Brand	Varietal	Country of origin	Wine rating	Alcohol Level	Label Appearance/ Design	Recommendations from store	I typically only drink wine in social situations	I typically have a glass of wine to wind down at the end of my day	I prefer to purchase my wine in a liquor store	I tend to stick to certain types and/or brands of wine	I like to try new brands and/or types of wine	Age Transformed	Gender Transformed	Community Transformed	Income Transformation
Rose	1	0.114	0.312	0.131	-0.047	0.006	-0.102	0.069	0.082	0.040	0.065	-0.090	0.069	0.189	0.102	-0.022	0.073	0.019	-0.057	-0.148	0.057	0.237	0.047	0.036	-0.198
White	0.114	1	0.322	-0.014	-0.042	-0.076	-0.138	-0.009	0.059	0.022	0.024	0.044	-0.167	0.008	0.070	-0.048	0.068	-0.041	-0.001	0.034	0.118	-0.094	0.098	0.060	-0.253
Red	0.312	-0.322	1	-0.174	0.292	0.207	0.270	0.056	0.012	0.052	0.081	0.240	0.118	0.186	-0.090	0.076	-0.080	0.188	0.055	-0.091	0.149	0.057	-0.238	-0.014	0.115
Sparkling Wine	0.131	-0.014	0.174	1	-0.055	-0.011	0.005	0.078	-0.046	-0.079	0.208	0.075	0.085	-0.093	0.059	0.052	0.114	-0.067	0.038	-0.080	0.053	-0.053	0.076	0.066	0.024
Bottles/purchase transformation	-0.047	-0.042	0.232	-0.055	1	0.129	0.529	0.380	0.104	0.195	0.199	0.259	0.098	-0.015	-0.177	0.015	0.319	0.404	-0.014	0.162	0.126	0.153	-0.028	0.059	0.113
Cost/bottle transformed	0.006	-0.076	0.207	-0.011	0.129	1	0.094	0.028	-0.317	0.116	0.241	0.280	0.168	-0.072	-0.017	0.289	0.095	0.051	0.271	0.008	0.235	0.053	-0.251	-0.003	0.214
Glasses/week Transformed	-0.102	-0.138	0.270	0.005	0.529	0.094	1	0.185	-0.092	0.191	0.123	0.134	0.073	-0.080	-0.177	0.001	0.403	0.527	0.004	0.149	0.042	0.167	0.042	0.022	0.016
Online Transformation	0.069	-0.009	0.056	0.078	0.380	0.028	0.185	1	0.074	0.104	0.117	0.148	0.105	0.033	-0.059	-0.022	-0.153	0.175	-0.028	0.102	-0.049	0.104	-0.007	-0.119	0.132
Price	0.082	0.059	0.012	-0.046	0.104	-0.317	-0.092	0.074	1	-0.013	-0.132	0.282	-0.191	0.196	0.208	-0.073	0.097	0.066	-0.119	0.063	0.045	0.202	0.135	0.041	-0.176
Brand	0.040	0.022	0.052	-0.079	0.195	0.116	0.191	0.104	-0.013	1	0.136	0.280	0.098	0.176	0.002	0.116	-0.027	0.175	-0.011	0.214	-0.111	0.260	0.067	-0.119	-0.078
Varietal	0.065	0.024	0.081	0.208	0.199	0.241	0.123	0.117	-0.132	0.136	1	0.352	0.148	-0.122	-0.039	0.008	0.022	-0.007	0.053	0.009	0.152	0.082	-0.130	0.004	0.017
Country of origin	-0.090	0.044	0.240	0.075	0.259	0.280	0.134	0.148	0.282	0.280	0.352	1	0.379	-0.124	-0.145	0.122	-0.078	0.039	0.213	-0.014	0.174	0.100	-0.162	0.035	0.137
Wine rating	0.069	-0.167	0.118	0.085	0.098	0.168	0.073	0.105	0.191	0.098	0.148	0.379	1	0.183	-0.035	0.388	-0.099	0.107	0.035	-0.120	0.162	0.057	-0.054	-0.062	0.075
Alcohol Level	0.189	0.008	0.186	-0.093	-0.015	-0.072	-0.080	0.033	0.196	0.176	-0.122	-0.124	0.183	1	0.161	0.166	-0.033	0.120	-0.023	0.132	-0.033	-0.100	0.124	-0.010	-0.185
Label Appearance/ Design	0.102	0.070	-0.090	0.059	0.177	-0.017	0.177	-0.058	0.218	0.002	-0.089	-0.145	-0.035	0.161	1	0.364	0.155	0.031	0.153	-0.006	0.162	0.390	0.145	0.256	-0.122
Recommendations from store	-0.022	-0.048	0.076	0.052	0.015	0.289	0.001	-0.022	-0.073	0.116	0.008	0.122	0.388	0.166	0.364	1	0.156	0.087	0.273	-0.033	0.073	-0.090	0.090	0.108	0.142
I typically only drink wine in social situations	0.073	0.068	-0.080	0.114	0.319	0.095	0.403	-0.153	0.097	-0.027	0.022	-0.078	-0.099	-0.033	0.155	0.156	1	0.447	0.021	0.047	-0.098	-0.083	0.002	-0.065	-0.027
I typically have a glass of wine to wind down at the end of my day	0.019	-0.041	0.188	-0.067	0.404	0.051	0.527	0.175	0.065	0.175	-0.007	0.039	0.107	0.120	0.031	0.087	0.447	1	0.118	0.117	0.191	-0.017	0.140	0.064	-0.001
I prefer to purchase my wine in a liquor store	-0.057	-0.001	0.055	0.058	-0.014	0.271	0.004	-0.028	-0.119	-0.011	0.053	0.213	0.095	-0.023	0.153	0.273	0.021	0.118	1	-0.027	0.147	-0.008	-0.176	0.166	0.100
I tend to stick to certain types and/or brands of wine	-0.148	0.034	-0.091	-0.080	0.162	0.008	0.149	0.102	0.063	0.214	0.009	-0.014	-0.120	0.132	-0.005	-0.033	0.047	0.117	-0.027	1	-0.343	0.105	0.116	-0.131	-0.022
I like to try new brands and/or types of wine	0.057	0.118	0.149	0.053	0.126	0.235	0.042	-0.049	0.045	-0.111	0.152	0.174	0.162	-0.033	0.162	0.073	-0.098	0.191	0.147	-0.343	1	-0.138	0.012	0.216	0.064
Age Transformed	0.237	-0.094	0.057	-0.053	0.153	0.053	0.167	0.104	0.202	0.260	0.082	0.100	0.057	-0.100	-0.180	-0.090	-0.083	-0.017	-0.008	0.105	-0.138	1	-0.089	-0.198	0.071
Gender Transformed	0.047	0.098	0.238	0.076	-0.028	-0.251	0.042	-0.007	0.135	0.067	-0.130	0.162	-0.054	0.124	0.145	0.090	0.002	0.140	0.176	0.116	0.012	-0.089	1	-0.020	-0.127
Community Transformed	0.036	0.060	-0.014	0.066	0.059	-0.003	0.022	-0.119	0.041	-0.119	0.004	0.035	-0.062	-0.010	0.256	0.108	-0.065	0.064	0.166	-0.131	0.216	0.198	-0.020	1	0.133
Income Transformation	0.198	-0.253	0.115	0.024	0.113	0.214	0.016	0.132	0.176	-0.078	0.017	0.137	0.075	0.185	-0.122	0.142	-0.027	-0.001	0.100	-0.022	0.064	0.071	-0.127	0.133	1

Appendix 7: Unused Regression Model Outputs

Wine Types

R^2(Cox and Snell)	0.000	0.113		
Model parameters (Variable Online Transformation):				
Source	Value	Standard error	Wald Chi-Square	Pr > Chi²
Intercept	-4.720	1.877	6.322	0.012
Rose	0.229	0.221	1.078	0.299
White	0.322	0.201	2.555	0.110
Red	0.637	0.234	7.429	0.006
Sparkling Wine	0.184	0.211	0.765	0.382

Age and Income

R^2(Cox and Snell)	0.000	0.138		
Model parameters (Variable Online Transformation):				
Source	Value	Standard error	Wald Chi-Square	Pr > Chi²
Intercept	-1.502	0.608	6.110	0.013
Age Transformed	-0.062	0.281	0.049	0.824
Income Transformatior	0.910	0.295	9.529	0.002

Bottles Purchased, Cost per Bottle, Glasses per week

R^2(Cox and Snell)	0.000	0.100		
Model parameters (Variable Online Transformation):				
Source	Value	Standard error	Wald Chi-Square	Pr > Chi²
Intercept	-1.337	0.981	1.860	0.173
Bottles/purchase transform	0.681	0.272	6.263	0.012
Cost/bottle transformed	0.030	0.397	0.006	0.940
Glasses/week Transformed	-0.132	0.314	0.179	0.673

Bottles Purchased and Income

R^2(Cox and Snell)	0.000	0.172		
Model parameters (Variable Online Transformation):				
Source	Value	Standard error	Wald Chi-Square	Pr > Chi²
Intercept	-2.260	0.676	11.178	0.001
Bottles/purchase tra	0.442	0.242	3.342	0.068
Income Transformat	0.729	0.291	6.299	0.012

Hit Rate = 33%

Appendix 8: Utility Conversion into Test Data

In the last month, when shopping for wine, how much did you typically purchase at a time?	Bottles/purchase transformation	Utility Function Applied to Test Data	Exp(Utility)	Exp(U)/(1+Exp(U))	Predicted Online
4 or more	4	5.506272599	246.2316105	0.99595521	1
2 bottles	2	4.623149994	101.8142418	0.990273721	1
3 bottles	3	1.064711296	2.900001622	0.74358985	1
4 or more	4	1.506272599	4.509889261	0.818508149	1
2 bottles	2	2.623149994	13.77905925	0.932336695	1
2 bottles	2	2.623149994	13.77905925	0.932336695	1
4 or more	4	1.506272599	4.509889261	0.818508149	1
2 bottles	2	-1.376850006	0.252372273	0.201515379	0