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Keywords
consumer behavior, supercore consumers, logit modeling, wine marketing, survey, U.S. Mid-Atlantic, cross tabulation, target

Research Question
Who are the main consumers of wine produced in New Jersey, New York, and Pennsylvania that wine enterprises should target for better sales? What characteristics do they possess?

Methods
Survey data with 977 qualifying samples administered on 22-24 October 2014. Cross-tabulation analysis, chi-square test for association, and logit modeling using software NLogit and SPSS.

Results
Supercore consumers are Married individuals; males; between age 25 and 64 years, preferably 45 to 64 years; with an annual household income preferably above $100,000, with two children.

Abstract
Super-Core Wine Consumers: A Study from the Mid-Atlantic United States

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Introduction
The United States is famous for its California wines, especially from Napa Valley. Along with its popularity, California has well-developed wine research institutes, well-organized wine enterprise associations, and well-constructed educational programs. On the other hand, wine producing states outside of California receive much less attention, especially in Mid-Atlantic region, for states such as New York, Pennsylvania and New Jersey in. Although wines in these three states are less recognized as having a positive reputation as California wines, the market potential, and subsequent consumer acceptance are still high and worth exploring.
Understanding who consumes Mid-Atlantic wine becomes one of the most crucial tasks when assessing market potential in these three states. Wine is a product that usually involves intrinsic cues that make studying consumer behavior even more important. There are several approaches that can be taken when segmenting the market:

creating groups based on demographics or geographic location, behaviors (i.e. frequency of drinking), psychographics (occasions and motivation) (Kotler and Keller, 2006, Lockshin & Hall, 2010), the level of knowledge on wine, etc. Each of these approaches can successfully classify wine consumers into categories. However, how to combine these approaches, make a complete profile of the consumers, and translate these results into wine marketing and production remains an issue.

Wine market research is an affordable option for some of the large wine enterprises; however, small or mid-sized wine enterprises most likely will not have access to consumer data specific to their market due to lack of financial support. This study serves as a guide to help wine enterprises in the Mid-Atlantic region understand their target market, through the use of market segmentation based on wine consumption frequency, and provide a guidance they can use to develop appropriate business strategies.

Research question: Who are the main consumers of wine produced in New Jersey, New York, and Pennsylvania that wine enterprises should target for better sales? What characteristics do they possess or describes them?

Objectives and Conceptual Framework

In order to answer the research question, we have established the following objectives: 1) profile the demographic and geographic characteristics of the super-core wine consumer (consumers who drink wine at least once a week) in the Mid-Atlantic region; 2) investigate how other factors such as social occasions, purchasing behaviors, and source of wine knowledge determine if a wine consumer could be classified as super-core; 3) predict the probability of a wine consumer in Mid-Atlantic region to be a super-core consumer based on demographic, geographic, and other factors that we have already proposed; and 4) develop business strategies for Mid-Atlantic wine enterprises based on our results.

We have designed our framework based on six distinct factors. Several of these factors were presented in previous studies that serve as the basis of our analysis for our study. These six parts are demographic and geographic factors, family influence, knowledge, occasions when wine is consumed, wine purchase preference, and other concerns.

Analysis employs three difference techniques: cross-tabulation, chi-square test for association, and logit modeling. Cross-tabulation and chi-square test was used for objective 1 and 2 while logit modeling was used for objective 3. Objective 4 was achieved based on the findings in previous objectives.

Data Source

Survey data was obtained that was designed and distributed by Pennsylvania State University. The data was collected through two separate 15-minute Internet surveys: 20-25 September, 2013 (phase I) and 22-24 October 2014 (phase II). The survey is administered in two phases because of different purpose and objectives and thus different questions were addressed in the two stages. However, since the same panelists did not necessarily participate in both surveys, the data is classified as two distinguished, cross-sectional data rather than one panel data. More specifically, we are working with the data collected during the second stage.

The survey was administered to Survey Sampling International, LLC (Shelton, CT) panelists residing in three states (New Jersey, New York, and Pennsylvania) in the Mid-Atlantic region. Panelists were screened for not being a member of the wine industry, being at least 21 years old, residing in one of the targeted states, and for having purchased and drank wine at least once within the previous year. Surveys were pre-tested on a subset (n= 98) of the target consumer. During survey distribution, 1,280 participants opened and attempted the survey, with 977 qualifying and completing the survey. A one dollar incentive was offered to encourage participation.

The Model

Based on our conceptual framework, we selected variables from the survey based on the six categories we proposed. Since the majority of our independent and dependent variables are binary dummy variables, we used logit model for objective 3, and we used NLogit software to construct the model.

We explicitly chose logit model because 1) the dependent variable is binary; 2) we want to investigate how does each variable affects probability of one being a super-core consumer; and 3) we want to use this model to predict the probability of one being a super-core consumer of wine given one's attributes including demographics, family influence, occasion, knowledge, purchase preference, and other concerns.

$$\text{logit(super core)}= \ln(P_{(super\ core)}/(1-P_{(super\ core)}))=\alpha+\delta_1 Gender+\delta_{2a} Age+\delta_{3i} Income+\delta_{4m} Marital\ Status+\delta_{5e} Education+g_i Residency+\sigma_o Occasion+\gamma_k Knowledge+\rho_p Purchase+\beta_b Bottle+\tau_t Type+\varphi_f Family\ Drink\ Wine+\theta_i Purchase\times Occation+\theta_1 Donation+\theta_2 Limitation$$

Results and Discussion

We employed cross-tabulation and chi-square test for association between two nominal/ordinal variables. For the chi-square test for association, we observed that gender, age, marital status, and income were strongly associated with being a super-core wine consumer ($p<0.05$), while residency was only significant at 10% significant level. Education, on the other hand, was not significant. From cross-tabulation, males (56% all male participants) appeared to be more likely to be a super-core wine consumer than females (44 %), resulting in about an 11% difference. This finding agrees with Fotopoulos (2002), Gjonbalaj (2009), and Guirao (2001).

In terms of age, participants with age 25 to 64 years were more likely to be super-core wine consumers. From age 21 to 24, the difference between super-core and non-super-core wine consumers is about -30%; age group 25 to 34 has a difference of about 5%; from 35 to 44, the difference is 7%; 45 to 64 has the difference of 8%; and age 65 or above, the difference is -11%. Pertaining to residency, participants who lived in New Jersey were more likely to be super-core wine consumers (7% in difference), followed by New York (-3%), and Pennsylvania (-13%).

In the case of marital status, we found that married couples are more likely to become super-core consumers (7% difference), while single participants (-17% difference), participants who were separated or divorced (-22%), or those who were widowed (-21%) were much less likely to become a super-core wine consumer. In term of level of education, despite being insignificant, a higher proportion of participants who had at least a master's degree were most likely to be a super-core wine consumer (6% difference), followed by consumers with a bachelor's degree (4%). Participants with a high school diploma (-9 %), who had some college/technical schools (-14%), or were associate/technical school graduates (-15.46%) were more likely to be non-super-core consumers. Besides education, there were more super-core wine consumer participants with household annual income in range of $100,000-$150,000 compared to non-super-core consumers (17.6% difference) followed by $200,000 or greater (11.54%), and $76,000-$99,999 (8.00%). Other income categories have a negative difference between the percentage of super-core wine consumers and non-super-core wine consumers.

In objective 2, we investigated the source of wine knowledge, occasions when participants drink wine, family composition, and purchase preference, and how these factors influenced the likelihood of being a super-core wine consumer. We found that the association between sources of learning about wine and being a super-core wine consumer was generally strong ($p<0.05$), except when the participant learned about wine through wine and liquor store employees ($p=0.370$), local or regional magazines ($p=0.052$, significant at 90% confident level), social media ($p=0.109$), or through TV or a radio program ($p=0.424$). From cross-tabulation, we found that learning about wine by reading wine magazines lead to a higher proportion of super-core wine consumers (40% difference), while those who did not read wine magazine were more likely to be non-super-core wine consumers (-16% difference). A higher proportion of food and cooking magazine readers (11% difference) were likely to be super-core wine consumers compared to those who did not read these magazines (-10% difference). Interestingly, fewer super-core wine consumers learned about wine from their family and friends (46%) than those who did not (56%) use this source to learn about wine. Participants who obtained knowledge from winery tasting staff (7% difference) or newspaper articles (31% difference) were more likely to be super-core wine consumers compared to those who did not use the sources (-11% and -9 % difference, respectively).

Three of the four occasions when survey participants drank wine were significant ($p<0.05$) with super-core wine consumers being more likely to drink/purchase wine for everyday occasions with except for special occasion ($p=0.201$). In cross tabulation, we found that less super-core consumers than non-super-core consumers drink everyday wine proportionally (-52% in difference for no, -0.11% for yes). In gifts, all proportions of super-cores become less than non-super-cores again as everyday wine (-43% in no and -2 % in yes). For Bring Your Own (BYO) restaurants, a higher proportion of super-cores are in yes (1%) than in no (-56%).

In terms of family composition, we found that only the number of children, age 17 years and younger, in the household had an influence on whether a participant was a super-core wine consumer. Super-core wine consumers were more likely to live in a household with two children (27% difference) or three children (4%). Non-super-core wine consumers were more likely to live in a household with no children, one child, or four or more children. Participants were asked in the case of purchase preference. Purchase due to donation serves to have a higher proportion in super-cores (20% difference) compared to those who do not (-11%) with a significant chi-squared value ($p=0.000$). On the other hand, purchase for household wine shows a higher proportion of super-cores in everyday (10%) and special occasion (7%) wine, while special occasion has a much lower proportion (-74% difference). Purchase for household wine also has a significant relationship with super-cores.

In summary, gender, age, marital status, income, sources of learning about wine, occasions to drink wine, the number of children, and purchase preference were strongly associated with being a super-core wine consumer. Our results suggest that males and married participants are more likely to become super-core wine consumers. On

the other hand, as age increases, consumers were more likely to become super-core wine consumers; however, when they reached 65 years old, survey participants were more likely to become a non-super-core wine consumer. Annual household income suggests higher income leads to a higher proportion of super-core consumers.

Based on the results, we suggest wine enterprises in the Mid-Atlantic region target married individuals; males; between age 25 and 64 years, preferably between ages 45 and 64 years; individuals with an annual household income (preferably above $100,000), with two children in the household. We recommend wine enterprises advertise in wine magazines, food and cooking magazines, and newspaper articles, and also through their own winery staff. Suggesting wine consumers buy wine to consume in bring-you-own restaurants and promoting that some of the profits from wine sales are donated to a cause are also appropriate strategies that are likely to attract super-core wine consumers.

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