INFLUENCE OF WINE HEALTH BENEFIT KNOWLEDGE AND PRIOR HEALTH
CONCERNS ON A CONSUMER'S WILLINGNESS TO PURCHASE WINE

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TITLE: Influence of Wine Health Benefit Knowledge and Prior Health Concerns on A Consumer's Willingness to Purchase Wine

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ABSTRACT

With the substantial increase in demand for wine, enhanced knowledge of consumers' preferences for wine can help give wineries an opportunity to improve sales and bring in new marketing techniques. Over the past several years, the demand for functional food and beverages have increased, which is why promoting the beneficial aspects of red wine when consumed, can be a marketing tool that sets a winery apart from its competitors. This study used over 200 survey responses of individuals located throughout the U.S. in order to determine further information about wine health benefit knowledge in relation to the willingness of consumers to purchase wine from a functional standpoint. The majority of respondents listed that the effects of food/beverage intake on their health status was very important to them. Also, it was determined that there is no association between the health concerns of respondents on how important nutritional attributes are on their purchase decisions. The highest amount of respondents was calculated to have moderate wine health benefit knowledge and it was concluded that the willingness to purchase wine from a functional standpoint did not depend on the respondents wine knowledge levels.

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CHAPTER 1

INTRODUCTION

In today's society, there seems to be an increasing hype put on foods and beverages with additional health benefits; the "functional foods." Food companies are now starting to market functional foods with health-promoting or wellness-maintaining properties (Singer, 2011). Package claims can range from the heart-healthy red hearts found on the box of Quaker Oats cereal, to the happy-colon yellow arrow on a carton of Activia Yogurt. According to estimates from the Nutrition Business Journal, sales of functional foods and beverages totaled at $37.3 billion in the U.S. in 2009, which was up from $28.2 billion in 2005 (Singer, 2011).

Exploration about health-promoting foods and beverages are increasing, however limited research has been done on the health benefits of alcoholic beverages; specifically red wine. Studies have shown that France surpasses many countries in average life expectancy partly due to the common practice of drinking red wine with meals (Brownlee, 2006). The French consume red wine moderately, at 2-3 glasses daily, reducing the unhealthy effects of high cholesterol foods, such as breads, cheeses, and rich desserts (Brownlee, 2006). The French Paradox has suggested that consuming red wine daily not only helps the cardiovascular system, but it also fights against signs of aging,

and increases lifespan. The resveratrol content in red wine seems to help protect the blood vessel linings in the heart. Another recent study found that resveratrol is an aid in persevering muscle fiber that would normally be reduced by lack of activity; mostly by maintaining a common protein found in muscle cells (Aaron, 2011). This powerful supplement can be found in the skins and tannins of red grapes.

Red wine is also packed with antioxidants, called flavonoids, which reduce the risk of coronary heart disease by decreasing the bad cholesterol (low density lipoprotein-LDL), and boosting the good cholesterol (high density lipoprotein-HDL). Research has shown that a daily dose of red wine is linked to, on average, a 12% increase in HDL (Catanese, 2013). These powerful antioxidants and resveratrol content found in red wine can be used to aid a wide range of medical problems. Red wine has also been linked to fighting off some types of cancers. Studies have shown that red wine can potentially decrease the risk of colon and prostate cancer when consumed in moderation (Catanese, 2013). Nevertheless, not all wine is "created equal," with red wine containing eight times as many flavonoids as white wine (Catanese, 2013).

Despite the poor health reputation of alcohol, many people don't realize the beneficial aspects of drinking red wine. Many doctors advocate that alcoholic beverages are unhealthy because they can cause an increase in triglycerides and bad blood lipids. However, the resveratrol found in red wine helps to fight against these harmful effects that other alcoholic substances cannot (e.g. high cholesterol, rising blood pressure, and unhealthy triglycerides). With just about everything in life, moderation is crucial. All of the research and studies that have been linked to the health benefits of red wine are designated to specific serving restrictions (Catanese, 2013). Samantha Lynch, R.D.,

founder of Samantha Lynch Nutrition in New York City advocates to her patients to consume no more than one five-ounce drink a day if you are female and two if you are male (Catanese, 2013).

With about 600,000 people dying from heart disease in the United States each year, red wine has been becoming increasingly more popular among health conscious consumers (February is American Heart Month, 2013). Also, heart disease is the leading cause of death for both men and women (February is American Heart Month, 2013). The most common type of heart disease in the United States is coronary heart disease, which arises when plaque builds up in the arteries that supply blood to the heart (February is American Heart Month, 2013). The good news is that heart disease can be preventable and controllable through healthy diet and lifestyle choices. With moderate red wine consumption, the risk of death by heart disease and heart attack can be reduced by 30-50% (Catanese, 2013). Overall, heart disease is a major problem in the United States, however it is unclear if consumers will change their wine purchase decisions based on these health concerns. This is why further research may help aid wineries and producers on determining whether consumers with prior health concerns are willing to make health conscious purchasing decisions after knowing the benefits of red wine consumption.

Problem Statement

Do prior health concerns and knowledge about wine health benefits impact a consumer's willingness to purchase wine based on the health benefits of that wine?

<u>Hypotheses</u>

There is a relationship between prior health concerns and the importance of nutrition (from a functional standpoint) on wine purchase decisions. In addition there is a relationship between wine health benefit knowledge and willingness to purchase wine from a functional standpoint. It is believed that there is an association between prior wine health benefit knowledge and the willingness to consumer wine with increased resveratrol levels.

<u>Objectives</u>

1) To determine the existing knowledge of wine consumers about wine health benefits.

2) To determine the relationship between wine health benefit knowledge and the willingness to purchase wine from a functional standpoint.

3) To determine if there is a relationship between a consumer's health concerns and the importance of nutrition on purchase decisions.

4) To determine the willingness of consumers to purchase wine with higher resveratrol levels.

5) To determine if there is a relationship between prior wine health knowledge and the willingness to consume wine with increased resveratrol levels.

6) To determine where consumers are most likely to get information on wine health benefits.

<u>Justification</u>

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Very little research has been done about how wine health benefits impact a consumer's willingness to purchase wine based on those benefits, which can be largely due to limitations in appropriate methods. Functional foods and beverages have shown an increase in sales over the past decade because Americans have begun to buy into the health claims for these products at an increasing rate (Singer, 2011). With wine being such a profitable and increasingly popular beverage, informing the public about the beneficial aspects of red wine when consumed, in moderation, can be a new strategy tactic that gives a winery a competitive advantage over its rivals.

With around 600,000 people dying from heart disease in the United States each year, red wine has become increasingly more popular among health conscious consumers (February is American Heart Month, 2013). Based on the results of the research, wineries and consumers all over the U.S. can both benefit from an understanding of the relationship between prior health concerns and the importance of nutrition on wine purchase decisions. By better identifying where consumers are most likely to get information about wine health benefits, wineries can develop marketing methods on ways to inform consumers about health benefits. Not only that, but with this new information wineries may have a better chance of influencing purchasing decisions of health conscious consumers.

CHAPTER 2

REVIEW OF LITERATURE

Purpose of Literature Review

The purpose of this literature review is to explore relevant concepts and theories about health claims in food and beverage products and the willingness of consumers to purchase these items. Health marketing is starting to play a more prevalent role in consumer's purchasing decisions, especially for those who are already health conscious. Different methods and previous research about health marketing will be presented and an overview of basic models and results found by others that have made an impact on health marketing literature will be provided. The review of literature will first examine previous research on health marketing and perceived healthiness of different food and beverages. Following, role that consumer attitudes, behaviors, and demographics have on wine purchasing decisions, concluding with the various types of methods, data, and results others have used to investigate this topic will be explored. These sections review the similarities and differences of others in the field, emphasizing how consumers' preferences play a large role in purchasing decisions. It's important to review past research from others in the field because their work may give new insight on how

existing wine knowledge may affect the willingness to purchase wine from a functional

standpoint.

<u>Health Marketing</u>

Health information is starting to become more commonly seen on food and

beverage products, as consumers become more health conscious. Food and beverage

choices are more focused around healthier options, which in turn are creating new

promotional challenges for manufacturers (Lähteenmäki, 2013). Health claims in food

and beverage products are trying to acknowledge consumers' interest in health by

delivering messages about product-specific benefits that can potentially add value to the

consumers (Lähteenmäki, 2013). Marketing products with health-related messages can

be challenging because there are many different characteristics of perceived healthiness.

When consumers evaluate products that they consider to be healthy, nutrition and health

are merely just two aspects that they use to assess a products potential benefit for them

(Lähteenmäki, 2013).

When it comes to health claims, the wording in the claim usually isn't as valid to

consumers as it appears to be. Health claims seem to be more acknowledged on products

that already are considered "healthy" (Bech-Larsen and Grunert, 2003; Dean et al., 2007;

Siegrist et al., 2008). It is easier for consumers to see products that already have

established health benefits like yogurt, or whole grain cereals and accept their health

claims as opposed to adding health claim labeling on a product like steak. Nevertheless,

adding health claims on existing nutritious products can be complex as questions may

arise from consumers of why healthy products need to be made to look even more wholesome (Lähteenmäki, 2013).

This was the case when focus groups in Finland, France, and the Netherlands, introduced an idea of enhancing flavonoid content in fruit and vegetables, consumers were skeptical (Lampila et al., 2009). A flavonoid is a group of oxygen containing aromatic antioxidant compounds that includes many common pigments, such as the anthocyanin's and flavones (Agati et al., 2012). Enhancing the flavonoid content can be done by choosing a variety that already has naturally high flavonoid content and then applying appropriate growing conditions, using new processing methods, or by using two different breeding (either conventional of genetic modification) (Lampila et al., 2009). However, focus group participants seemed to be caught up on the idea that enhancing flavonoid content may impact the quality of the product, including the most important aspect, taste (Lampila et al., 2009). In flavonoids, naturalness is seen as a positive factor given that most fruit and vegetables innately contain flavonoids (Lampila et al., 2009). Enhancing the flavonoid content may require processing or refinement methods that reduce the perceived naturalness of the product, causing concern among consumers even though the enhanced flavonoid carries a claimed health benefit (Evans et al., 2010; Lampila et al., 2009). When consumers see products that claim health attributes, it is suggested that there is also a lower appeal, which thereby creates lower hedonic value to consumers (Lähteenmäki et al., 2010). Consumers have demonstrated unwillingness to compromise taste for perceived health benefits (Lyly et al., 2007; Verbeke, 2005).

The attitudes and beliefs of consumers about functional foods influence the willingness to purchase these products. Consumers feel better about themselves when

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they make healthy decisions and use products that guarantee health benefits (Urala & Lähteenmäki, 2004; Urala & Lähteenmäki, 2007). Attitudes toward functional foods seem to change from one study to another suggesting that attitudes are still under formation and not yet strongly established (Urala and Lähteenmäki, 2004; Urala & Lähteenmäki, 2007).

Debate has also occurred questioning whether gender plays a role in preferences for products with health claims. It appears that preferences for products that claim health benefits depend on the relationship between the actual health benefits being proposed and the gender that will incur the greatest advantages of the product (Lähteenmäki, 2013). For example, claims on bone health and calcium are perceived more by women and cholesterol lowering claims are perceived more by men (Ares and Gambaro, 2007; Dean et al., 2007; Urala et al., 2003). Not only does gender somewhat play a role in consumers preferences, but so does age. Age increases health-related consciousness and concerns, which added attractiveness to products with health claims (Ares et al., 2009; Herath et al., 2008; Siegrist et al., 2008). Overall, socio- demographic factors do not seem to play a strong role in consumer's responses to health claims, and results show that links tend to be weak and dependent on the type of benefit being rendered, product, and target group (Lähteenmäki, 2013).

Using an element that is already widely marketed with health-related benefits seems to create a bigger advantage in consumer perception than a new factor, suggesting that the previous market exposure as such, is recognized as beneficial, even when no additional information is given (Lähteenmäki et al., 2010; Lähteenmäki, 2013). Previous market exposure of the product, or the reported use of functional products by the

consumer, has been reflected on higher appeal of health claims as well (Grunert et al., 2009; Dean et al., 2012). Without any previous information about a product, consumers will have to form their own thoughts and opinions.

An increasing amount of research is being done to examine the link between nutrition label use and consumers' healthier food choices. Five of the six leading risk factors for ill health are linked to poor nutrition (World Health Organization, 2002). It has also been recognized that changing lifestyle and dietary habits may present more benefits than medical care, yet adjusting individual dietary habits is a challenge involving trade-offs between nutrition and taste, price, convenience and cost (Wansink, 2006; Blaylock et al., 1999). Availability of knowledge, education and information is key to informed consumer purchase decisions. A variety of options are being made available, of which the most widely recognized and used is that of product labeling (Ippolito, 1999). Product labeling can be an essential instrument for changing and influencing dietary habits and behavior (Grunert and Wills, 2007). Drichoutis et al. (2005) was able to determine that there is a positive link between nutrition label use and purchase decisions because of the impact that nutritional label use has on consumers' perceptions. Overall, it was established that education, gender, income level, and health status all positively influenced nutritional knowledge, which furthermore influenced the use of nutrient labels when shopping for food (Guthrie et al., 1995; Szykman et al., 1997; Nayga, 2000; Drichoutis et al., 2005; Drichoutis et al., 2006; Gracia et al., 2007).

Wine Purchasing Decisions

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Several studies have been performed focusing on the concept of wine involvement and how it impacts the way consumers purchase wine (Lockshin and Hall, 2003). Hollebeek et al. (2007) used price, price discount, and region to determine purchase decisions where region was more important for high involvement wine consumers and price more important for low involvement wine consumers. Low involvement consumers more commonly used price and awards to make their decision compared to high involvement consumers that used region (Lockshin et al., 2006). The Casini et al. (2009) paper looked at choice attributes for wine using Best-Worst Scaling in Italy, with the most important attributes being previous experience, personal recommendations, and the taste of the wine. Casini et al., (2009) also found that some differences in respondents' preferences were based on demographics such as age, involvement level, and geographic area.

Another wine study used simulated purchasing experiments (discrete choice analysis) to gauge the impact of different aspects of wine on purchasing behavior (Mueller et al., 2010a). The importance of taste compared to packaging elements in choice was determined by combining discrete choice and actual sensory tasting (Mueller et al., 2010a). Mueller et al. (2010a) found that packaging, lower price, and market share influenced choice while higher price and sensory features, such as fruity and sweet influenced hedonic liking. The influence of back label statements on choice were also evaluated and results found that winery history and ornate taste descriptors to be the most positive influence on choice, while ingredient labeling was the only negative influence on choice (Mueller et al., 2010b).

Labeling aesthetics and location of purchase play very important roles when consumers are making wine purchasing decisions. Along with labeling aesthetics, wines are often offered for tasting because consumers report that they like to know how a wine tastes before buying it (Lockshin and Knott, 2009). Lockshin and Knott (2009) measured the effect of free wine tastings on sales before, during, and after a tasting period. Free tasting enhanced sales on the day by over 400% compared to before and after the tasting (Lockshin and Knott, 2009). Another study focused on the difference between in store and online wine purchasing (Quinton and Harridge-March, 2008). This study concluded, through a convenience sample of wine buyers, that it is important to have an online service mix that instills trust for the first time online consumer (Quinton and Harridge-March, 2008).

Looking more closely at wine preferences by gender, studies done by Barber (2009) and Atkin et al. (2007) found that women were willing to use more sources of information in making their wine purchase decision than men. Barber (2009) found that men had both greater objective and self-assessed wine knowledge compared to women, but used fewer information sources. Atkin et al. (2007) found that if a consumer was unsure about what kind of wine to buy, women were more prone to seek information from store or restaurant personnel and were more likely to rely on medals and awards than men.

In order to examine consumer preference and consumption behavior with respect to health benefits of wine, two contextually and socially diverse consumer groups were studied (Yoo et al., 2013). This study showed that Chinese consumers prefer sweet wine, but tend to drink more red wine due to its potential health benefits, whereas Australian

consumers are less likely to rate wine as a health product (Somogyi et al., 2007; Yoo et al., 2013). Saliba and Moran (2010) found that only about 25% of Australians believe wine to be healthy. Given this information, identifying contrasts and similarities in consumer preferences amongst diverse groups is critical to deliver the product that is suited to a specific consumer group (Yoo et al., 2013).

Not only do different cultures play a significant role on wine purchasing decisions, but research suggests that consumers' wine choices are more complex than their choices of many other products (Lockshin, 2004). This is because wine choice combines both intrinsic and extrinsic cues (Barreiro-Hurle et al., 2008). Wine consumers in general face more difficult purchasing decisions when it comes to buying wine because they cannot assess the quality of the wine before they buy it.

Overall, a wide range of different factors affects consumers' purchasing behavior. Consumer choices and valuation of functional wine (red wine) are affected by consumer characteristics (Barreiro-Hurle et al., 2008). Consumers who trust technological developments in agribusiness and the control systems currently in place tend to lean towards purchasing functional wines more often (Barreiro-Hurle et al., 2008). Whereas socio-demographic differences are not very important, except to distinguish new vs. longer-term wine buyers (Lockshin and Corsi, 2012). The other three important personal features are wine involvement, sensory preferences towards the products, and all other characteristics (i.e. price, environmental friendliness, etc.) pertain to the product or the environment where the product is located (Lockshin and Corsi, 2012).

Approaches Used for Analyzing Purchasing Decisions

Very little research has been done about how consumers understand health claims, which can be largely due to limitations in appropriate methods. Health claims provide information about the benefits of a product, which should add value to the consumer; however, health claims can only give true added value if consumers both recognize the benefit and find it important (Lähteenmäki, 2013). Perceived relevance increases the perceived benefit and makes products or concepts more appealing to consumers (Dean et al., 2012; Petty and Cacioppo, 1986; Verbeke, 2005). However, there is still a shortage of evidence on whether understanding the content of the claim is linked with relevance (Dean et al., 2012; Petty and Cacioppo, 1986; Verbeke, 2005). Furthermore, it could be useful to discover more comprehensible methods to examine consumers' awareness of health claims.

The most common type of study done on the impact of health benefits on purchases have presented a set of claims and asked respondents to rate their thoughts on a set of verbally anchored scales. These studies measure perceived healthiness and benefits, convincingness or credibility of the claim, and appeal or liking for the product with a health claim (Lähteenmäki, 2013). In these studies consumers' responses are grouped into three categories; claim structure and content, product category, and consumer-related factors (Lähteenmäki, 2013).

Grunert, Scholderer, and Rogeaux (2011) proposed studying consumer understanding of claims with a method that uses an approach that follows the guidelines set by Leathwood et al. (2007), using both qualitative interpretation of what is understood

by the claim and quantified content analyses of whether these interpretations can be regarded as safe. Grunert et al. (2011) grouped the interpretations as safe, risky, and vague. Safe interpretations do not assume anything beyond the claim content, risky interpretations clearly make assumptions beyond the claim, and vague interpretations could not be categorized as either risky or safe (Lähteenmäki, 2013). Results showed that 67% of the respondents could be classified as safe in their interpretation and 21% as risky (Lähteenmäki, 2013). A positive attitude towards functional foods was the top predictor of risky answers (Lähteenmäki, 2013). The respondents with attitudes closely linked with risky interpretation of claims caused alarm for the researchers because a positive attitude was closely linked with an inclination to use products with health claims (Urala and Lähteenmäki, 2007). This information suggests that this group (positive attitudes) may be the most easily misled by the claims (Urala and Lähteenmäki, 2007).

To explore the role of wine packaging attributes on choices, Boudreaux and Palmer (2007) measured the effect of wine label image, label color, and label layout on purchase intent and product personality for U.S. west coast consumers. Whereas, Bourdreaux and Palmer (2007) examined the associations consumers have with different holistic packaging designs. Nevertheless, label designs cannot be evaluated separately form brand names, as they physically cover a substantial part of the label (Orth & Malkewitz, 2008). Sherman and Tuten (2011) explored this affiliation through research conducted on 527 U.S. consumers. The experimenters set up a 3x3 full factorial design of label designs, thus generating all possible combinations of visual designs and naming conventions (traditional, contemporary, and novelty), asking consumers to rate the

influence of these two factors in terms of wine perceptions, purchase intent by the occasion and the relative importance of wine choice drivers (Sherman and Tuten, 2011).

The methodology presented by Henley et al. (2011) adopted a different technique from those used in previous studies. A wine tasting was set up with 97 U.S. Millennial consumers where the authors asked them to examine several packaging characteristics including font type, label design, closure, and information specified on the label (Henley et al., 2011). The results revealed that consumer's perceptions changed from the first blind tasting to the second when product packaging and labeling information were divulged to participants ahead of time (Henley et al., 2011). In addition, when specific fruit characteristics were provided, consumers perceived them in the wine much more than without this information in the blind tasting (Henley et al., 2011). This study revealed that in-person studies affected the way respondents perceived the wine when the researcher previously disclosed information about the wine.

In order to determine if health benefits of wine impacted purchase decisions, one study set out to characterize each of its samples in terms of wine choice factors, perceptions wine and health, and purchase decisions (Yoo et al., 2013). An Internet research company recruited participants in Korea and Australia with registered panels in both countries in order to determine these objectives (Yoo et al., 2013). A one-way ANOVA test was used to further analyze the factors involved in choosing wine, the perceived healthiness of wine, preferred alcohol type, preferred wine type, place of wine purchase in the Korean and Australian sample, and to analyze gender differences in wine consumption patterns (Yoo et al., 2013). Descriptive statistics of demographics were used in addition to the one-way ANOVA (Yoo et al., 2013). This study found that

Korean consumers were more likely to choose wine on the basis of health enhancement, however both groups indicated that they disagree that wine can cure certain diseases (Yoo et al., 2013).

CHAPTER 3

METHODOLOGY

Procedures for Data Collection

The purpose of this study is to evaluate if prior health concerns and knowledge about wine health benefits impact a consumer's willingness to purchase wine based on the health benefits of that wine. The following sections organize this chapter: the reasoning for survey data used, the methods for collecting the survey data, the development of the survey, and data analysis.

Reasoning for Survey Data

In order to answer the six objectives that have been laid out, a survey was conducted. Since this is the first type of research done on red wine health benefits and purchase decisions, a survey was used in order to be able to make conclusions about wine health knowledge and a consumer's willingness to purchase wine based on health benefits. Drawing conclusions about purchase decisions is best accomplished with the help of scientific procedures. By setting up a research design such as a survey, the six objectives can be translated into measureable and valid information. Even though this

type of research design doesn't always assure completely accurate results, it does reduce many of the errors that are part of nonscientific observation procedures and helps us to arrive at conclusions about larger numbers of people.

By conducting a survey, the questions are standardized and the respondents can answer them at their own pace. Surveys can address multiple topics and overall it is easier to compare with other studies using similar techniques and questions. One type of survey that was conducted was an online questionnaire. An online survey was used because they are better for personal topics and since they are self-administered there is no contact with the respondent and interviewer so the chance for bias and error is reduced. The other method of surveying done was in person surveys. In person surveys were used because it allowed the researcher to see the respondent and gauge their mood and demeanor. In person surveys helped build rapport with respondents and physical presence usually helps to build trust and confidence. Both of these methods were used concurrently to collect data in order to obtain faster and more efficient response rates.

Methods for Collecting the Survey Data

The study began by developing an online questionnaire on the Survey Monkey website. Both the online questionnaire and the in-person survey were convenience samples where the respondents selected were those from the population that were obtainable or convenient to reach. Respondents who are of the legal drinking age were asked to complete the survey. With a confidence level of 95% and a confidence interval of 7, the sample size needed was 196 respondents (Sample Size Calculator, 2012).

For the first method of distribution, the researcher sent out an email to family and friends. Also, the researcher used various Internet outlets, including Facebook, and email to send out the questionnaire link. These electronic forms of communication allowed respondents to invite others to open the link. To ensure that a range of respondents, other than those readily accessible to the researcher, were being utilized, several friends of the researcher were asked to post the link to their web page as well. The online questionnaire was open to respondents for three weeks in order to obtain the sample size needed.

For the second method of collection, the researcher handed out surveys in-person around the Cal Poly campus along with San Diego's East County. The researchers verified that only respondents 21+ years old were allowed to complete the survey. Response rates tend to be the highest with face-to-face questionnaires and had the advantage of gathering more details through the use of open-ended questions. The in person questionnaire was also distributed for three weeks.

Development of the Survey

The instrument used in this study was a seventeen-question survey, which can be found in the Appendix. The first four questions in the survey had to do with wine purchasing habits. The first question was designed to measure the amount of wine consumed monthly. Next, a list of wine knowledge levels were given in order to assess which category respondents most associated with ranging from wine novice to wine connoisseur. This question was based off of the research of Hall and Mitchell (2008) where they determined respondent's level of wine knowledge through four categories.

The third question was designed to assess what influences the subject's decision to purchase wine. The fourth question was formatted to indicate the importance of different wine characteristics on purchase decisions using a Likert scale, with 1 representing "Not at all Important" and 5 representing "Extremely Important" to the respondent's purchase decisions. These features (including price, brand, and taste expectations) were selected from prior research, including Lockshin et al. (2006) and Casini et al. (2009) who examined the concept of wine involvement and its impact on how consumers purchase wines.

The next ten questions in the survey were used to gauge health impressions and health status. The first four questions in this section were used to help better understand how health plays a role in consumer's purchase decisions. For example, the questions asked if respondents have suffered from cardiovascular disease and if they suffer or have suffered from health problems related to food/beverage intake. This question was formulated similar to the research done by Barriero-Hurle et al. (2010) where consumers were asked whether members of their household suffered from cardiovascular diseases in order to measure the effect of diet choice on health status. One question asked how often respondents read the list of ingredients on food/beverage labels on a Likert scale, which was based off of the research of Drichoutis et al. (2005). In this study, Drichoutis et al. (2009) demonstrated a positive link between nutrition label use and purchase behavior through the influence that nutritional label use has on consumer perception.

The next two questions gave the subjects several health statements about wine in order to examine prior knowledge levels about the perceived benefits. One of the questions gave a list of health benefits of wine (some true, some false) and asked

respondents to check each one that they know to be true for both red and white wine. This question was designed to test the prior knowledge of respondents and to see if they can identify health benefits with only red wine. The other question asked respondents which of the following statements do they most agree with using a Likert scale from 5 "Strongly Agree" to 1 "Strongly Disagree." This question was based off of research done by Yoo et al. (2013) where respondents were given different statements about the perceived healthiness of wine in order to gauge participants' level of agreement with attitudinal items such as: wine can reduce the risk of certain diseases, I think wine is a healthy alcoholic beverage, I would drink more wine if I thought it was healthy for me. The next question asked respondents where they would most likely get information on wine related health benefits, giving several options such as general online information sites (e.g. Yahoo!, Google, blogs) and ads (including print, TV, radio, and billboards). The final two questions in this section asked subjects if they would be more likely to consume and/or pay more for wine with higher resveratrol levels after reading a short excerpt given about the affects of resveratrol in wine.

The final section of the survey asked basic questions about the demographics of the respondents including gender, age, and employment status. This information on demographics is important because it will help the researcher further analyze the respondents' individual characteristics.

Procedures for Data Analysis

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The data for this study was tabulated and analyzed using SPSS and Microsoft Excel programs. Questions that asked respondents if they have suffered from prior health problems were broken down into three categories: cardiovascular disease, other, or not affected. Respondents were also asked to indicate the importance of seven different wine characteristics when making purchase decisions, with nutritional attributes being amongst the list to choose from. A mean nutrition score, based on its ranking, for each of the three categories was then determined and an ANOVA test was run. These tests helped the researcher determine if there was a relationship between prior health concerns and the importance of nutrition in wine purchasing decisions.

The question that asked respondents to check the benefits that they perceive for both red and white wine was first entered into Microsoft Excel in order to determine each respondent's score. A scoring method of (-6, 6) was calculated by taking the sum of the correctly answered red and white survey questions checked and subtracting the incorrect responses. This gave the researcher an idea of the wine health benefits knowledge level score for each respondent. The researcher then broke down knowledge levels into four different categories where scores that got (-6, -3) was considered no wine knowledge, (-2, 0) was considered very low wine knowledge, (1, 2) was considered moderate knowledge, and (3, 6) was considered very good knowledge. For each category the mean nutrition score was calculated and an ANOVA test was run. This test helped determine if there was a relationship between wine health benefit knowledge and the willingness to purchase wine from a functional standpoint.

The question that asked how much more likely respondents were to consume wine with increased resveratrol levels and prior wine health benefit knowledge was put into a

contingency table in order to determine the frequency of people in each category. After the contingency table was done a Chi-squared test was run to determine if there was a relationship between prior wine health knowledge and the willingness to consume wine with higher resveratrol levels. The question that asked consumers where they are most likely to get information on wine health benefits was calculated using descriptive statistics in order to determine which category was most significant. For all of the tests executed, an alpha level of 0.05 and confidence level of 95% were used.

Assumptions

It is assumed the sample size, n=196, is sufficient enough to provide accurate results. These results are based on the assumption that each respondent answered the survey honestly and to the best of their capability. It is also assumed that each respondent accurately interpreted the questions being asked in the survey. It is assumed that consumer willingness to purchase wine based on the health benefits of that wine were directly related to prior wine health benefit knowledge and that the questions asked about prior health concerns within the survey are enough to identify the importance of nutrition on wine purchase decisions. Lastly, it assumed that the researcher didn't influence the respondent's answers in any way.

Limitations

This study was confined to convenience sampling due to the limited amount of resources of the researcher, which inhibits the generalizability of the findings. Since the results and conclusions of the survey were based on the preferences of residents in the U.S., the findings may not be completely pertinent to the entire wine industry.

CHAPTER 4

DEVELOPMENT OF THE STUDY

Data Collection Problems

A 17-question survey was distributed to roughly 220 individuals in the cities of

San Luis Obispo and San Diego via Survey Monkey and in-person handouts. Out of this

total, 206 individuals completely finished the survey, leaving 14 surveys unfinished.

This formatted some questions to have more observations than others. Another problem

was the distribution of female respondents and male respondents. The gender

classification was widely skewed with female respondents outnumbering male

respondents by more than double.

Analysis

The surveys were entered into Excel and SPSS software about three weeks after

they were first distributed to respondents. Tables, charts and figures were generated

based on the nature of the question asked. In Excel, proportions and frequencies were

formed to show the basic demographic information of the respondents. The data entered

into the SPSS software was selected to determine if there were any significant relationships.

The proportions of the demographic questions were generated in individual charts and discussed first in order to illustrate a general idea of the characteristics of the individuals surveyed. There was a significant difference within the representation of gender, with females outnumbering males by more than double. About 70% of the total 200 respondents were female, with male's only making up 30% of the sample size. Out of this total, the male in-person survey respondents outnumbered the female by half. Respondents were mostly between the ages of 21 to 25 years old, and least between the ages of 66 or over (see Table 1). This also showed to be true for in-person surveys, with majority of the respondents falling within the age group of 21 to 25 years old.

Table 1: Age Range of Wine Consumers

Age Range	Percent	Number
21 to 25 years	37.50%	75
26 to 35 years	14%	28
36 to 45 years	7.50%	15
46 to 55 years	17.50%	35
56 to 65 years	22%	44
66 or over	1.50%	3
Total		200

The majority of respondents were employed full-time at 44%, with part time employment at 13.5%, self-employed was 12%, unemployed at 4.5%, students were 21%, and retired was 5%. The current employment status for in-person surveys showed similar results to the total with most respondents being employed full-time, followed by part time employment. When asked the average amount of wine consumed each month,

respondents were most likely to fall within the range of 1-5 glasses at about 36%. Those

who consumed 6-11 glasses were the next highest at 27%, followed by 12-19 glasses at

14%, over 20 glasses at about 13%, and lastly 0 glasses at about 10%. When respondents

were given four levels of wine knowledge (Wine Novice, Wine Interested, Wine Lover,

and Wine Connoisseur) and were told to indicate which category they most associate

with, they best related to the wine interested category at 55.1% (see Table 2).

Table 2: Wine Knowledge Levels

Wine Knowledge Level	Percent	Number
Wine Novice	22.90%	49
Wine Interested	55.10%	118
Wine Lover	18.20%	39
Wine Connoisseur	3.70%	8
Total		214

The most common reasons for consumption of wine that that the respondents

chose were to drink socially at 75%, followed by enjoyment of the taste at 72%, and to

relax at 62%. When asked how important seven wine features were when purchasing

wine by indicating a number from 1-5, from 5 being Extremely Important and 1 being

Not at all Important, respondents chose taste expectations the most as being Extremely

Important at about 50%. The characteristic that respondents marked the most at Not at all

Important was nutrition attributes at 35%.

In order to determine how often respondents read the list of ingredients on

food/beverage labels, a five point Likert scale was given where individuals had to pick

which classification they most associated with ranging from Always to Never. The

results were very closely related with most respondents choosing Almost always and

Often at 27.7% (see Table 3).

Table 3: Reading of Ingredient Labels

How Often Labels are Read	Percent	Number
Always	15.40%	31
Almost always	27.70%	56
Often	27.70%	56
Once in a while	24.80%	50
Never		9
Total		202

The majority of respondents said they would get their information about wine

health benefits from General online information sites (e.g. Yahoo!, Google, blogs) at

62.9%, followed by Online health websites (e.g. WebMD, Mayo Clinic, Yahoo! Health)

at 58.9% (see Table 4).

Table 4: Information on Health Benefits

Information Sources	Percent	Number
Information from the winery	29.00%	59
General online information sites (Yahoo!, Google, blogs)	63%	127
Online health websites (WebMD, MayoClinic, Yahoo! Health)	58.90%	119
Ads (print, TV, radio, billboards)	16.80%	34
Social media (facebook, twitter, pinterest)	22%	44
Friends and family	44.00%	89
Total		202

In general, more than half of the respondents answered that they have never suffered from health problems related to food/beverage intake, and only 7 out of 204 respondents answered that they have suffered from cardiovascular disease. In order to determine if there was a relationship between prior health concerns and the importance of nutrition on purchase decisions, an ANOVA test was run with SPSS software using a significance level .05. The null hypothesis was that the mean (average) of those that have suffered from cardiovascular disease was equal to the mean of those that have suffered other health related problems due to food/beverage intake, which was also equal to the mean of those that didn't suffer from any health problems related to food/beverage intake. The alternative hypothesis stated that at least two of the means differ. When analyzing the ANOVA results, the researcher compared the mean ranking of nutrition for those three groups in the null hypothesis. From the data it was determined that the majority of respondents did not suffer from health problems related to food/beverage intake and that significance is higher than .05 which indicates that we accept the null hypothesis. With such a small F value, we can determine that it is less likely that this relationship between prior health concern and importance on nutrition is significant at a given probability. The test shown in Table 5 demonstrates that there is no influence between the health concerns of respondents on how important nutritional attributes are on their purchase decisions.

Table 5: ANOVA Test with Prior Health Concerns and Importance of Nutrition

Descriptives

Willingness to Purchase (based on
nutritional attributes)

Feature	N	Mean	Std. Deviation
Cardiovascular	7	2.286	1.3801
Other	22	2.136	1.1253
None	175	2.189	2.189
Total	204	2.186	2.186

ANOVA

Willingness to Purchase (based on
nutritional attributes)

Health Concerns	Sum of Squares	Mean Square	F	Sig.
Between Groups	0.125	0.062	0.048	0.953
Within Groups	262.797	1.301		
Total	262.922			

In order to determine if there was a relationship between wine health benefit

knowledge and the willingness to purchase wine from a functional standpoint, an

ANOVA test was run with SPSS software using a significance level of .05. The null

hypothesis was that the means for willingness to purchase from a functional standpoint of

each of the four wine health benefit knowledge categories (no wine knowledge, very low

wine knowledge, moderate wine knowledge, and very good knowledge) were equal to

each other. The alternative hypothesis was that at least two of the means differ. When

analyzing the ANOVA results, the researcher compared the mean ranking of nutrition, to

determine the willingness to purchase from a functional standpoint, for those categories

in the null hypothesis. It was determined that the majority of respondents identified as

having moderate wine knowledge. In Table 6, the significance level is greater than .05,

which indicates that we accept the null hypothesis. This means that the willingness to

purchase wine from a functional standpoint did not depend on the respondents wine

knowledge levels.

Table 6: ANOVA Test with Wine Health Benefit Knowledge Levels and Importance of

Nutrition

Descriptives
Willingness to Purchase (based on
nutritional attributes)

Feature	N	Mean	Std. Deviation
No Wine Knowledge	6	2.333	1.5055
Very Low Wine Knowledge	41	2.268	1.1186
Moderate Wine Knowledge	123	2.098	1.082
Good Wine Knowledge	34	2.382	1.303
Total	204	2.186	1.1381

ANOVA
Willingness to Purchase (based on
nutritional attributes)

| Knowledge Levels	Sum of Squares	Mean Square	F	Sig.
Between Groups	2.681	0.894	0.687	0.561
Within Groups	260.241	1.301		
Total	262.922			

Lastly, an excerpt was given about the benefits of resveratrol in wine and based

on this statement, respondents were asked how much more likely they were to consume

wine with increased resveratrol levels. After reading the statement, the majority of

consumers said that they were somewhat more likely: 82 out of 204 respondents. The

next highest, with 45 responses, was very likely, followed by not very likely with 41

responses. In order to establish if there was a relationship between prior wine health

knowledge and willingness to purchase wine with higher resveratrol levels, a Chi-squared

test was run with SPSS software and using a significance level of .05. The null

hypothesis was that there is no association between prior wine health knowledge and

willingness to purchase wine with higher resveratrol levels, whereas the alternative

hypothesis stated that there was an association between the two. When analyzing the

Chi-squared test results, it was determined that the moderate wine knowledge group had

the highest amount of respondents and were somewhat likely to purchase wine with

increased resveratrol levels. Based on Table 7, we can conclude that .333 is more than

.05, which means that there is not a statistically seen difference. This indicates that we

cannot conclude if there is an association between prior wine health knowledge and the

willingness to purchase wine with higher resveratrol levels.

Table 7: Chi-Squared Test with Wine Health Benefit Knowledge and Willingness to
Purchase Wine With Higher Resveratrol Levels

Chi-Square Test

	Value	df	Asymp. Sig. (2- tailed)
Pearson Chi-Square	13.518	12	0.333
Likelihood Ratio	13.002	12	0.369
Linear-by-Linear Association	0	1	0.99
N of Valid Cases	204		

Bar Chart
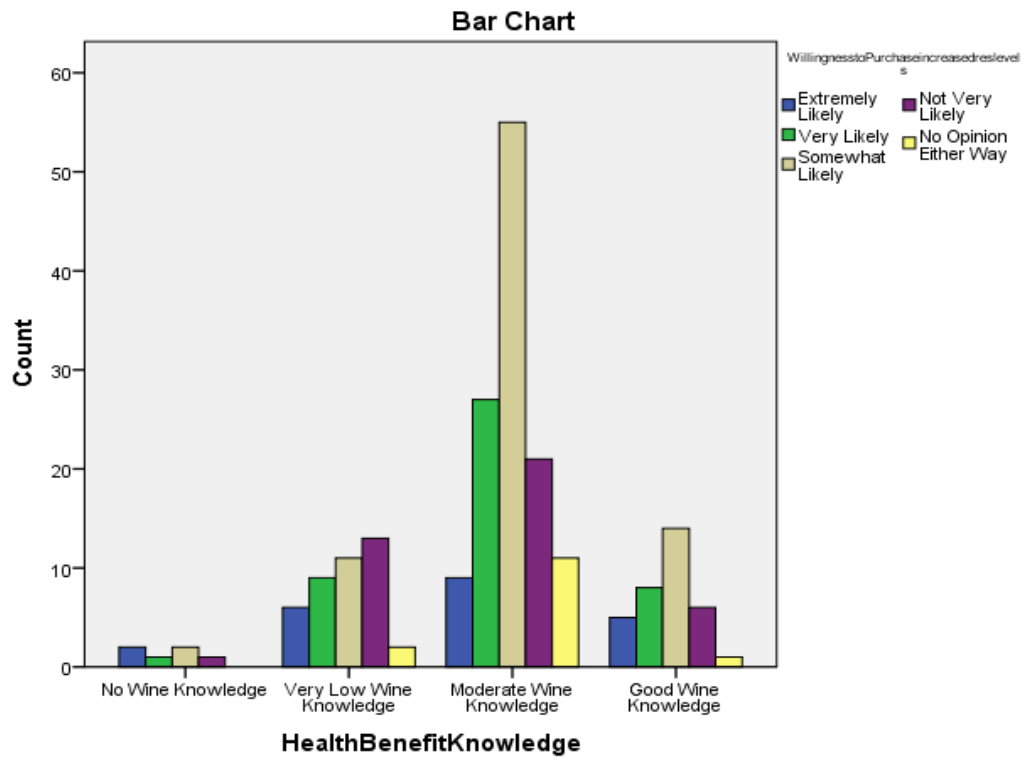
CHAPTER 5

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Summary

Despite the downturn in the economy, the wine industry is still thriving. With the substantial increase in demand for wine, enhanced knowledge of consumers' preferences for wine can help give wineries an opportunity to improve sales and bring in new marketing techniques. However, while wine has not been typically marketed using health claims, it's important for wineries to understand that advertising functional food or beverages have to first meet high government standards. Increased regulations on label and advertising claims of functional food and beverages are intended to put some structure in place in order to protect the consumer (Sepessy, 2012). It is suggested that the increased regulation will eventually lead to more generic claims being made on food and beverages, since businesses don't want to take the risk of making a strong, hard claim (Sepessy, 2012). In the long run, manufacturers and market analysts both concur that while new guidelines may be tough to adhere to at first, they will ultimately create a more secure, strong industry (Sepessy, 2012).

With the increase in demand for functional food and beverages over the past several years, promoting the beneficial aspects of red wine when consumed, can be a

marketing tool that sets a winery apart from its competitors. This study used survey responses of individuals located throughout the U.S. in order to compute further information about wine health benefit knowledge in relation to the willingness of consumers to purchase wine from a functional standpoint.

Based on the results of this study it was concluded that nutritional attributes was not considered an important characteristic when consumer purchase wine. The features of wine that consumers most look for when purchasing wine was taste expectations (50%), price (26%), and varietal (17%). Out of the wine knowledge levels, most respondents associated themselves with wine interested at 55% followed by wine novice at 23%. The most commons reasons for consumption of wine were indicated to be to drink socially at 75%, followed by the taste at 72%, and for relaxation at 63%. When prior health concerns and wine health benefit knowledge were crossed with the importance of nutrition on purchase decisions in SPSS, it was determined that there no influence between the health concerns of respondents on how important nutritional attributes are on their purchase decisions. The bulk of respondents did not suffer from health related problems due to food or beverage intake, while only 7 individuals reported having suffered from cardiovascular disease.

Also, wine health benefit knowledge were compared to the importance of purchasing wine based on its nutritional attributes in order to examine if individuals with greater wine knowledge are as likely to purchase wine from a functional standpoint as those with very low wine knowledge. It was concluded that willingness to purchase wine from a functional standpoint did not depend on the respondents wine knowledge levels. The majority of respondents were considered to have moderate wine knowledge level and

indicated that the importance of purchasing wine based on its nutritional attributes was only slightly important. Lastly, when prior wine health benefit knowledge was compared to the willingness to purchase wine higher resveratrol levels in SPSS, it was determined that there was not a statistical difference between the two and that we cannot conclude if there is an association. The largest group of respondents with moderate wine knowledge implied that they were somewhat likely to purchase wine with increased resveratrol levels after reading the excerpt given on the compound. Even those who were calculated to have very good wine knowledge mostly indicated that they would be somewhat more likely to purchase wine with increased resveratrol levels.

Conclusions

Based on the findings of this study, it can be deduced that respondents wouldn't go to wineries to get information about red wine health benefits over general online information and health websites or from word of mouth from their friends and family. In this survey, a little less than half of the respondents stated that the effects of food/beverage intake on their health status are very important. If a winery wished to target those who have suffered from prior health concerns then they would need to make information about the benefits of red wine readily available and develop new marketing techniques that would relate to those consumers' preferences. The typical wine consumer collected from this survey was a full-time employed female with a wine interested knowledge level. Although this the first time research has been done about wine health benefits knowledge and the willingness to purchase wine with higher resveratrol levels,

the findings are still very substantial into how a particular group of consumers think before making wine purchasing decisions.

Recommendations

To further develop this research, a larger amount of results may be collected, throughout California, to obtain a better sample of the respondents. A question regarding the willingness to purchase wine with higher resveratrol levels before and after an insert about resveratrol has been read may also be presented to respondents in order to determine how the insert changed their opinions about purchasing decisions. Also, the sample size of those who considered themselves a Wine Connoisseur should be expanded in order to determine the characteristics of this wine knowledge level.

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APPENDIX

Initials: [   ]   Date: [   ]

Part A: Purchasing Habits

1.   Which range best represents the average amount of wine you consume each month?
☐ 0 glasses   ☐ 1-5 glasses   ☐ 6-11 glasses   ☐ 12-19 glasses   ☐ Over 20 glasses

2.   The following is a list of wine knowledge levels. Please indicate which category you most associate with.
☐ Wine novice- little to no knowledge   ☐ Wine interested- curious, with some knowledge   ☐ Wine lover- good wine knowledge, wine is a passion/hobby   ☐ Wine connoisseur- avid wine consumer and buyer with expert knowledge

3.   What are your most common reasons for consumption of wine? **Check all that apply**.
☐ To drink socially   ☐ To relax   ☐ I enjoy the taste   ☐ To aid socializing   ☐ To try something new   ☐ The health benefits
☐ Food pairings   ☐ To celebrate   ☐ Due to peer pressure   ☐ For an aesthetic experience

4.   Based on this list of features, please indicate the importance of each characteristic when you purchase wine by indicating a number from 1-5. **Responses range from Extremely Important (5) to Not at all Important (1). Try to use all the numbers on the scale.** The first attribute is brand. How important is brand when you choose which wines to buy and drink?

	Extremely Important 5	Very Important 4	Somewhat Important 3	Slightly Important 2	Not at all Important 1
a. Brand	☐	☐	☐	☐	☐
b. Taste expectations	☐	☐	☐	☐	☐
c. Nutrition attributes	☐	☐	☐	☐	☐
d. Visual appeal of the label	☐	☐	☐	☐	☐
e. Price	☐	☐	☐	☐	☐
f. Availability at retail outlets	☐	☐	☐	☐	☐
g. Varietal	☐	☐	☐	☐	☐

Part B: Health Impacts

5.   How often do you read the list of ingredients on food/beverage labels?
☐ Always   ☐ Almost always   ☐ Often   ☐ Once in a while   ☐ Never

6. Do you suffer or have you suffered from cardiovascular diseases?
  ☐ Yes ☐ No

7. How important are the effects of food/beverage intake on your health status?
  ☐ Extremely important ☐ Very important ☐ Somewhat important ☐ Slightly important ☐ Not at all important

8. Are you following a special diet recommended by a physician?
  ☐ Yes ☐ No

9. Do you suffer or have you suffered from health problems related to food/beverage intake? (e.g. diabetes, high blood pressure, obesity, food allergies)
  ☐ Yes ☐ No

10. Which of the following statements do you agree with? **Responses range from Strongly agree (5) to Strongly disagree (1).**

	Strongly Agree 5	Somewhat Agree 4	Neutral 3	Somewhat disagree 2	Strongly disagree 1
a. Wine can reduce the risk of certain diseases	☐	☐	☐	☐	☐
b. I would drink more wine if it was healthy for me	☐	☐	☐	☐	☐
c. I would pay more for wine if it were health-enhanced	☐	☐	☐	☐	☐
d. I think wine is a healthy alcoholic beverage	☐	☐	☐	☐	☐
e. Wine has better health properties than other alcoholic beverages	☐	☐	☐	☐	☐
f. I read wine labels when I buy wine	☐	☐	☐	☐	☐
g. Red wine has more health enhancing properties than other alcohol	☐	☐	☐	☐	☐
h. I understand how much alcohol is considered healthy	☐	☐	☐	☐	☐

11. What do you perceive the benefits of red and white wine to be? **Check all that apply**.

	Red	White
a. Lowers your cholesterol		
b. Lowers risk of kidney stones		
c. Helps control blood sugar		
d. Boosts your eyesight		
e. Boosts your energy levels		
f. Helps the cardiovascular system		
g. Helps boost your memory		
h. Helps the elasticity in your skin		

12. Where are you most likely to get information on wine related health benefits?
  ☐ Information from the winery ☐ General online information sites (e.g Yahoo!, Google, blogs)
  ☐ Online health websites (e.g. WedMD, MayoClinic, Yahoo! Health) ☐ Ads (including print, TV, radio, billboards)
  ☐ Social media (facebook, twitter, pinterest) ☐ Friends and family ☐ Other (please specify):

Resveratrol is a compound that has antioxidant properties found in the skins and tannins of red grapes. These antioxidants have been known to help protect the body against the kind of damage linked to increased risk for conditions such as cancer, heart disease and diabetes.

13.　　How much more likely are you to consume wine with increased resveratrol levels?
☐ Extremely likely　☐ Very likely　　　　☐ Somewhat likely　　　☐ Not very likely
☐ No opinion either way

14.　　Would you be willing to pay more for wine with higher resveratrol levels?
☐ Yes　☐ No　☐ Maybe

15.　What is your gender?
☐ Male　☐ Female

16.　In which of the following range does your age fall in?
☐ 21 to 25 years　　　　☐ 26 to 35 years　　　☐ 36 to 45 years　　　☐ 46 to 55 years
☐ 56 to 65 years　　　☐ 66 or over

17.　　What is your current employment status?
☐ Self-employed　　　　☐ Employed full-time　　　☐ Employed part-time　☐ Unemployed　　　☐ Student　　　　☐ Retired

That concludes our survey. Thank you very much for your time.