A Comparative Analysis of Changes in Consumers' Perceptions and Attitudes toward Local Wines in an Emerging Wine Region

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Abstract

By comparing consumer data from two surveys (2006 and 2021), the current study analyzes factors contributing to changes in consumer attitudes toward local wines in an emerging region. Results of two regression models indicate that over a 15-year period Texas wines have improved in quality and earned a higher reputation among local consumers. Three factors—visiting local wine festivals, higher incomes, and recommending local wines to others—played a particularly significant role in paying higher prices for local wines. Three attributes—wines are well-known, good quality, and better than expected—significantly contributed to changes in attitudes over time.

Keywords: consumer attitudes, emerging wine production region, Texas wine

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Introduction

Wine is one of the oldest commodities on the market, and yet the global wine industry continues to dynamically develop, grow, and expand. Recent consumer trends indicate that while older consumers still show attachments to Old World wines, younger generations are more open to wines from new regions, as well as nontraditional varieties and unique production technologies (Thach and Chang, 2016). Historically, Europe, North Africa, and the Middle East were considered the Old World wine-producing regions, whereas wines made in Argentina, Chile, South Africa, New Zealand, Canada, and the United States are considered the New World. The list of New World regions is expanding, with more unconventional wine-producing countries, like Mexico, Japan, and China, making and exporting their wine.

Currently, the United States is considered one of the most dynamic and important wine markets in the world. Globally, the United States is the top wine-consuming country and the fourth largest wine producer (International Organization of Vine and Wine, 2022). While California accounts for the largest share of the total U.S. wine market (85%), several other states became notable players. Cumulatively, Washington, New York, Oregon, and Texas account for 12% of the total U.S. wine production (America Wines Paper, 2019; Wines Vines Analytics, 2021). These emerging wine regions experience considerable economic growth and importantly, play a critical role not only for the local economies but also for the growth of wine consumption worldwide. While wine consumption has fallen within the last decade globally, particularly in European countries, the number of wine consumers is on the rise, and the growth in the wine category comes from new consumers located in emerging markets (Huyghe, 2014). Therefore, what drives emerging markets' consumer choices is worth researching.

The current research focuses on one such emerging market—the state of Texas. Texas was selected as a site for the study for a variety of reasons, including a long history of grape growing and wine production (much longer than in California). The first vineyard in North America was established in Texas by Spanish missionaries in the late 1600s. At the turn of the 20th century, there were 1.3 million grapevines of bearing age (the equivalent of 2,900 acres today) and two dozen commercial wineries that collectively produced more than 100,000 gallons of wine (Marshall, 2007). Unfortunately, when the Eighteenth Amendment instituted Prohibition in 1919, the flourishing growth of the Texas wine industry had ended.

It was not until 50 years later when the state started seeing a rebirth of its wine and grape industry. Texas has come a long way since the emergence of only a handful of wineries in the early 1980s to 487 wineries today producing 2 million cases (Wines Vines Analytics, 2021). Throughout the last four decades, the Texas wine industry propelled itself to great heights, growing into a $13.1 billion industry (Danze, 2022).

This study aims to investigate the factors behind the successful growth and development of the Texas wine industry. The evaluation of economic growth can be approached through a myriad of methods. The current study focuses on the *consumer perspective* to identify factors that guide local consumers in their selections of Texas wine.

There are five general categories of factors that influence consumer behavior: *cultural, social, personal, economic,* and *psychological* (Bakkah, 2023). The current study approaches wine consumer behavior through a mix of constructs reflecting these categories. Personal and economic factors are combined into a demographic category in this study. This category was evaluated by using age, gender, education, and income variables. The role of gender has been widely examined in the literature to determine if male and female consumers have different perspectives on evaluating products (Palan, 2001) and how gender stereotypes influence consumers' choices (Thach, 2012).

Researchers recognize that age is an important factor in driving consumer behavior (Gregoire, 2003; Thach and Olsen, 2006; Koksal, 2019; Tait et al., 2020; Thach, Riewe, and Camillo, 2021; Wolf, Wolf, and Lecat, 2022). For example, a study of four generational groups of wine consumers in Lebanon identified differences in wine attributes, information sources, purchasing and consumption, and sociodemographic characteristics (Koksal, 2019). It is also well-established in the literature that tastes and preferences change as people go through different stages of their life cycles. The share of wine consumption by Baby Boomers and Gen-X'ers has fallen; therefore, some recent research is focusing on millennials and Generation Z (e.g., Thach, Riewe, and Camillo, 2021). Consumers' age also impacts sources of information, how information is gathered and processed, decision making, purchasing behavior, and brand choices (Thach and Olsen, 2006; Evanschitzky and Woisetschläger, 2008; Thach, Riewe, and Camillo, 2021; Wolf, Wolf, and Lecat, 2022).

Other demographic factors, such as income, education, and occupation, not only represent the demographic characteristics of consumers, but also show how they influence consumer behavior. For example, income affects buying behavior in terms of the amount, types, and prices of products purchased, and education influences consumers' evaluation criteria in the decision process (Williams, 2002).

It has been observed that wine consumer choices are influenced by culture and other beliefs (Banks and Overton, 2010). *Cultural factors* can be reflected in loyalty developed to place, local products, and brands, while living in a specific surrounding, state, or country. The current study uses *the number of years lived in the state* as a cultural factor. In addition, price patterns for red and white wine are different and known to correlate with consumer opinions (Cacchiarelli et al., 2014). Batra (2008) found that red wine was most popular among consumers at the time of his study. However, consumer trends change, and today sparkling wine has gained popularity, especially among younger consumers and during special festive occasions (Castellini and Samoggia, 2018). Another example is the popularity of still rose wine, the sales volume of which in the U.S. market alone had grown by 118% from 2015 to 2020 (Dupuy, 2021). The *type of wine* as consumer preference will also be considered as a factor in the current research.

One recent study examined how wine preferences are related to wine attributes and to tasters' experiences (Wang and Prešern, 2018). Researchers found that wine preferences are positively correlated with the following wine characteristics: age, acidity, sweetness, and color. Another finding is related to the assessment of how the experience of wine tasting changes with the

acquisition of training and expertise. Researchers found that training improves the accuracy of guesses of grape variety, country, region, and wine acidity estimation. These results have important implications for growing markets with an increasingly educated population.

Wine tasting is essential in wine marketing (Batra, 2008). Wine tourism, which includes wine tasting, is an effective way to promote wine. While traveling to wineries, customers create unique experiences, and at the same time, they get educated about local wines through wine tastings. Their stories later become an excellent method of advertisement (Zainurin, Neill, and Schanzel, 2021). Therefore, several variables related to *attendance at wine festivals and tasting wine there*, *visiting local wineries*, and *recommendation of Texas wine* are used to explain how consumers arrive at decisions for purchasing Texas wine.

Previous research also examined the effect of product information provided on a label and expert ratings on the price of wine. Costanigro, McCluskey, and Mittelhammer (2007) showed that the information on the label and the appellation have a positive impact on the price only for inexpensive and mid-to-low price segments. These effects, however, were insignificant or negative for more expensive and reputable wines. Other information related to wine quality can be perceived by consumers through national and international awards (e.g., medals). Throughout history, Texas wines have received numerous awards. To cite just a few recent examples, at the 2021 TEXSOM International Wine Awards, 29 countries and 16 U.S. states presented their wine. Texas wineries brought home 98 medals, five of which were Platinum medals, seven Gold, 45 Silver, and 39 Bronze medals. Thus, information about Texas wine through public channels signals an improvement in the quality of Texas wines. Experts' opinions is another factor that has a positive contribution to wine prices (Hilger, Rafert, and Villas-Boas, 2011).

A study by Eustice, McCole, and Rutty (2019) researched the impact of product information provided on a label on consumers' willingness to pay for wine in an emerging wine region. Their findings show that awards and medals had the greatest impact on consumer willingness to pay. In addition, local production messages on the bottle also increased willingness to pay.

Some recent studies showed that a causal relationship exists between perceived quality and revealed prices. If consumers lack information about the quality of a product, then higher prices signal higher quality perceptions. This is especially relevant for wine, as it is virtually impossible to evaluate the quality of wine in an off-premise setting unless sampling is offered. Schnabel and Storchmann (2010) found price differences to be positively related to wine quality and negatively related to increased information. Lewis and Zalan (2014) examined the relationship between price and willingness to pay for wines by conducting a wine-tasting experiment when the same wines were presented at different prices. The authors concluded that no relationship exists between intrinsic wine characteristics and enjoyment, since individuals rate the same wines differently, and price influences both appreciation and willingness to pay. Another study found that wine rating and willingness to pay are driven by brand, labeling, or by the price of wine (Lewis et al., 2019).

Developing new products for a region/country and introducing them to the market is full of risks and uncertainties. At the introductory stage of any new industry, consumers pay higher prices for

new products until some demand is created and sales increase. The Texas wine industry is not an exception. The survey data used for this study show that the average price paid for a bottle of *Texas wine* in 2021 was $3.87 higher than the average price paid for a bottle of wine in general (see Table 2). Therefore, this paper aims to investigate what perceptions and attitudes drive consumers to pay higher prices when purchasing locally produced wines in the state of Texas and how the significance of these factors has changed over time. This study considers the average price of a bottle of *Texas wine* paid by consumers as an important response variable based on a set of identified explanatory variables. For comparison, the average price paid for a bottle of wine *in general* is surveyed.

Current research aims to achieve the following objectives:

  i. To identify factors affecting consumer purchasing behavior of Texas wine;

 ii. To compare the changes in factors impacting the price of Texas wine over time; and

iii. To evaluate Texas consumers' perceptions and attitudes toward Texas wine.

Data

Procedures

Two surveys were used for comparative analysis. The surveys were administered online. In both cases, samples were drawn from panels of wine consumers provided by reputable market research companies. The first survey was conducted in 2006 and resulted in a dataset of 502 responses collected from Texas wine consumers. The second survey was conducted in 2021 and obtained a dataset of 895 surveys. After eliminating observations with missing values, the final samples used in the analysis had 344 observations from the 2006 survey and 732 from the 2021 survey.

The two surveys were carried out with the same purpose: to assess local residents' attitudes and perceptions of local wines. The surveys were not entirely identical, but the key questions pertaining to consumer attitudes and perceptions were the same. Measures for these constructs were borrowed from previous research on emerging wine markets (Kolyesnikova, Dodd, and Duhan, 2008; Velikova, Murova, and Dodd, 2013).

Prior to the collection of data, the surveys were pretested. Similar pretesting procedures were used for both surveys. First, an expert panel was asked to review a draft of the questionnaire and provide their feedback on the wording and/or administration of the survey. The expert panels were selected according to the criteria proposed by Ballester et al. (2008) and included people who are knowledgeable in the subject area—industry professionals, scholars, and marketing experts. Based on the experts' feedback, the instruments were scrutinized and refined. Next, online pretesting was conducted by self-administering the surveys to developmental samples of about 50 respondents. Samples for online pretesting were provided by the same marketing companies that distributed the actual surveys and included respondents from the target population (i.e., wine consumers residing in Texas). Participants were asked to answer the survey questions, followed by an additional open-

ended question asking respondents to provide comments regarding the survey. Minor editorial changes were made to the questions, after which the surveys were launched. On average, it took participants about 10 minutes to complete the entire survey.

To make the two datasets comparable, only complete responses to the identical questions asked in both surveys were retained. With the data from the two surveys, we expanded the analysis of consumer attitudes and perceptions by applying econometric modeling to identify which attitudes have changed over the 15 years between the data collection points.

Sample

To participate, respondents had to be of legal drinking age (21+ in the United States), to be Texas residents, and to be wine consumers (the screening question asked if respondents consumed wine within the last 3 months). Both surveys collected information on socioeconomic characteristics, wine consumption behavior, attitudes and consumption/purchasing behavior toward Texas wines, wine purchase frequency, and perceptions regarding the importance of Texas wine attributes. To evaluate wine attribute perceptions, respondents were asked to rate the significance of six product characteristics describing Texas wines. Responses were evaluated on a 5-point Likert scale ranging from 1 = "strongly disagree" to 5 = "strongly agree." The surveys also reported the zip code where the respondents lived. We used these zip codes to construct a variable for the location of the respondents in terms of their residence in urban or rural areas (UT Health Houston, 2015).

Model

Our empirical model is based the Houthaker-Theil model of demand for quality and quantity (Cox and Wohlgenant, 1986). Consumers are assumed to face the following optimization problem to choose:

$$Max_{q \geq 0, b \geq 0} \ U(\boldsymbol{q}, \boldsymbol{b}, z, \boldsymbol{c}) \text{ subject to } \sum_i p_i(\boldsymbol{b})q_i + z = y \tag{1}$$

where **q** is defined as a vector of commodities, $\boldsymbol{b}$ is a vector of characteristics of the commodities, **c** is a vector of household characteristics, z is numeraire commodity, and y is income.

The hedonic price functions $p_i(\boldsymbol{b})$, reflect price quality tradeoffs. Moreover, since the solutions to the optimization problem include quantity and quality demand functions, which are a function of exogenous variables (i.e., $q_i(\boldsymbol{c}, y)$ and $\boldsymbol{b}(\boldsymbol{c}, y)$), the reduced form for the price functions can be written as $p_i(\boldsymbol{c}, y)$:

$$p_i(\boldsymbol{b}) = p_i(\boldsymbol{c}, y). \tag{2}$$

For empirical estimation, a log linear model can be considered:

$$lnp = \ \alpha + \sum_j \gamma_j c_j + \varepsilon, \tag{3}$$

where p is commodity price, lnp is log of commodity price, α is a constant, the $c_j's$ are household characteristics, the $\gamma_j's$ are parameters to be estimated, and ε is the regression error. This reduced form hedonic price model provides a useful framework for the analysis of the relationship between prices and consumers' characteristics (e.g., Sirmans, Macpherson, and Zietz, 2005; De Haan and Diewert, 2013; Hussein and Fraser, 2018).

Using equation 3, the empirical model for log of a bottle of Texas wine price can be expressed as a function of three groups of household characteristics: demographic variables (b_1), variables describing the wine attribute preferences and behavior toward Texas wines (b_2), and cultural and social variables (b_3) (see Table 1).

$$P = \alpha + \sum_k \gamma_{1k}b_{1k} + \sum_m \gamma_{2m}b_{2m} + \sum_n \gamma_{3n}b_{3n} + \varepsilon, \qquad (4)$$

where k is the number of demographics variables, m is the number of variables describing attribute preferences and behavior toward Texas wine, and n is the number of variables describing consumers' cultural and social characteristics.

Demographic variables included respondents' age (expressed as years old) and the number of years they have lived in Texas. Binary variables were used for gender (1 if male, and 0 otherwise) and the household location (1 if resides in urban area, 0 otherwise). Information about education included three binary variables representing lower than bachelor's degree, bachelor's degree, and advanced degrees (Master/PhD). Income data were grouped into eight categories. The midpoint of the household income was calculated for each category and was used in the model as a continuous variable.

Wine attributes variables included the type of wine, level of sweetness/dryness, and wine consumption behavior variable, approached as wine consumption frequency. Three binary variables were created to represent the type of wine: red wines or not, rose/blush wines or not, and others or not. The taste of wine was collapsed into a binary variable (1 if sweet, 0 otherwise). Wine consumption frequency was also considered, and binary variables were used to indicate whether the respondents consume wine every day, at least once a week, about once a month, and other.

Cultural and social variables included in the model were recommendations of Texas wines to others, whether consumers tasted Texas wines, visited Texas wineries, had seen or heard advertising for Texas wines, and attended a festival involving Texas wine. These variables were binary variables (see Table 1). Since the model in equation 4 has a semi-log form with the natural log of price used as the dependent variable, coefficient estimates can generally be interpreted as the percentage change in price associated with a 1-unit change in the explanatory variable. Two separate regression models were estimated, one for each survey. These separate regressions allow us to assess changes in the relative importance of Texas consumers' characteristics, perceptions, and preferences for prices paid.

Table 1. Characteristics of Texas Wine Consumers

Household Characteristics	
Demographic variables	Age
	Number of years lived in Texas
	Gender
	Location
	Education
	Household income
Attribute preferences and behavior toward Texas wine	Type of wine (red, rose/blush, or others)
	Taste of wine (sweet or others)
	Frequency of wine consumption (daily, at least once a week, about once a month, or other)
Cultural and social variables	Willingness to recommendation Texas wines (yes or no)
	Have tasted Texas wines (yes or no)
	Visited Texas wineries (yes or no)
	Seen or heard advertising for Texas wine (yes or no)
	Been to a festival involving Texas wine (yes or no)

Results

Table 2 presents descriptive statistics of the data, including sociodemographic characteristics of the samples and the prices paid for wine by the respondents. The average price paid for a bottle of wine *in general* was $14.67 in 2006, increasing to $20.87 in 2021. The average price paid for a bottle of *Texas wine* was $16.20 in 2006, rising up to $24.74 in 2021. Thus, prices paid for both types of wines increased, and these differences are statistically significant at least at the 5% level. The differences in prices (increased from $1.53 in 2006 to $3.87 in 2021) were also significant, according to *t*-test results.

A comparison of sociodemographic characteristics between survey participants in 2006 and 2021 shows the average age was similar in magnitude (about 50 year olds), as well as comparable average number of years living in Texas (about 35 years), although both averages across survey periods were statistically significant at the 5% and 10% level, respectively. Most of the survey participants were female (64.53% in 2006 and 54.51% in 2021) and lived in urban areas (78.49% in 2006 and 77.73% in 2021). Chi-square test results suggest that these differences are statistically significant at the 1% level of significance for gender, but not for location. Finally, chi-square test results also show that households levels of education and income levels differed between samples (at the 1% level).

Summary statistics also show that most survey respondents consumed red wine (52.62% in 2006 and 57.51% in 2021); tasted Texas wines (84.30% in 2006 and 93.44% in 2021); would

recommended Texas wines to other people (50% in 2006 and 81.01% in 2021); visited Texas wineries (50.29% in 2006 and 56.42% in 2021); and have seen or heard advertising for Texas wine (54.07% in 2006 and 65.71% in 2021). Participants reported preferring sweet wines considerably more in the 2006 survey (47.67%) than in the 2021 survey (24.45%). Only 21.51% in 2006 had visited a festival involving Texas wine, whereas in 2021 participation in festivals involving Texas wine had increased to 44.54%. Chi-square test results show that all the differences across survey periods are statically significant at the 1% level, except for visiting Texas wineries, which was significant at the 10% level.

Table 2. Socio-Demographic Characteristics of Texas Wine Consumers (Mean and Proportion)

Characteristics	Survey 2006	Survey 2021	*P*-value[a]
	Mean (Standard Deviation)	**Mean (Standard Deviation)**	***T*-test**
Average price paid for a bottle of wine in general	14.67 (12.56)	20.87 (21.31)	< .0001
Average price paid for a bottle of Texas wine	16.20 (15.03)	24.74 (23.34)	< .0001
Price difference between Texas and bottle of wine in general	1.53 (15.76)	3.87 (17.75)	0.0293
Age	50.55 (14.26)	52.66 (16.55)	0.0320
Number of years living in Texas	33.53 (19.71)	35.94 (18.76)	0.0580
	Percentage	**Percentage**	**Chi-Square Test**
Gender			0.0019
Male	35.47	45.49	
Female	64.53	54.51	
Location			0.7802
Urban	78.49	77.73	
Rural	21.51	22.27	
Education			0.0075
Lower than bachelor's degree	34.30	42.48	
Bachelor's degree	36.05	35.66	
Master's and PhD degrees	29.65	21.86	
Household Income			< .0001
Under $20,000	3.20	9.70	
$20,000–$39,999	9.30	15.16	
$40,000–$59,999	20.06	14.62	
$60,000–$79,999	18.31	12.98	
$80,000–$99,999	15.70	10.11	
$100,000–$119,999	9.59	9.43	
$120,000–$139,999	6.69	6.56	
$140,000 or more	17.15	21.45	

Table 2. continued

Characteristics	Survey 2006	Survey 2021	*P*-value[a]
	Percentage	**Percentage**	**Chi-Square Test**
Type of wine preference			0.2694
Red wines	52.62	57.51	
Rose/blush wines	17.15	16.53	
Others	30.23	25.96	
Taste of wine preference			< 0.0001
Sweet	45.35	75.55	
Other	54.65	24.45	
Frequency of wine consumption			0.0002
Daily	8.14	15.03	
At least once of week	52.62	39.75	
About once a month	21.51	25.55	
Others	17.73	19.67	
Willingness to recommend Texas wines to other people			< 0.0001
Not recommend and not sure	50.00	18.99	
Recommend	50.00	81.01	
Tasted Texas wines			< 0.0001
Yes	84.30	93.44	
No	15.70	6.56	
Visited Texas wineries			0.0597
Yes	50.29	56.42	
No	49.71	43.58	
Seen or heard advertising for Texas wine			0.0002
Yes	54.07	65.71	
No	45.93	34.29	
Visited festival involving Texas wine			< 0.0001
Yes	21.51	44.54	
No	78.49	55.46	

Note: [a] *P*-values correspond to *T*-tests for differences of means and Chi-Square Tests for differences in proportions.

Log Model Estimation Results

To address the research objectives related to the identification of factors affecting consumer purchasing behavior and to analyze changes of factors affecting Texas wine prices over time, two regression models were estimated, one for each survey. Estimated results for two logs of Texas wine price models for the 2006 and 2021 surveys are shown in Table 3.[1] The measure of goodness-of-fit (R^2) for the estimated Texas wine price equation was 0.1933 for 2006 and 0.1088 for 2021. The reduction in the R^2 values might be related to increased consumption heterogeneity due to the well-documented increase in product variety (Neiman and Vavra, 2020). Thus, the same explanatory variables now predict a lower percentage of willingness-to-pay values.

The overall results for the 2006 dataset showed that the consuming wine every day or at least once a week, respondents' age, and whether respondents have tasted Texas wine variables were found to have a negative and significant effect on Texas wine prices. Specifically, Texas wine consumers paid less for Texas wine when they consumed wine every day or at least once a week. They also paid less for Texas wine when they had tasted Texas wine. Older consumers paid less for Texas wine. Higher income consumers were willing to pay more for Texas wine. In addition, consumers paid more for Texas wine when they were likely or extremely likely to recommend Texas wine to others.

For the 2021 dataset, age and advance education degree variables were found to have a negative and significant effect on Texas wine prices. Particularly, older and highly educated consumers paid less for Texas wine. Preferences for red wine, rose/blush wines, income, as well as willingness to recommend Texas wines and visiting festivals have been found to have positive and significant effects on Texas wine prices. This implies that consumers who mostly drink red and rose/blush wine were willing to pay more for Texas wine. Texas wine consumers with higher income, as well as those who would willingly recommend Texas wine to other people, and those who have been to wine festivals, also pay more for Texas wines.

Compared to consumers who drink wine less than once a month, each additional consumer who drinks wine daily was willing to pay 34% less, and an additional consumer who drinks wine at least once a week was also willing to pay about 17% less for Texas wine in the 2006 survey. Furthermore, an additional consumer who had tasted Texas wine paid about 25% less for Texas wine in 2006.

In the 2021 survey, higher educated consumers (those with graduate degrees) were willing to pay about 16% less for Texas wine relative to consumers who have less than an undergraduate degree. Compared to consumers preferring white wine, an additional red wine drinker added about a 20%

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[1] We tested to see whether the two surveys should be used as pooled dataset or as separate regression models. The null hypothesis tested whether the interaction between parameter and year dummy are equal to zero. Thus, we rejected the null hypothesis. The test result implies that parameter estimates of the model are different for these two surveys, and it is more appropriate to estimate the model separately for the dataset 2006 and 2021.

increase to the price of Texas wine, and an additional rose/blush wine drinker increased Texas wine price by 24%.

This analysis showed the negative and significant effects of age on purchasing behavior of Texas wine. With each additional increase in age by 1 year, consumers paid 1.2% less for Texas wine in 2006 and 0.3% less in 2021. The observed reduction in percentage of price paid within a 15-year period can be interpreted as the indicator of the improved quality of Texas wine. The variable "*would recommend Texas wine*" produced similar results. Each additional recommendation added about a 17% increase to the price of Texas wine in 2006 and a 25% increase in 2021. These results regarding the two variables in the model—consumers' age and willingness to recommend—attested to the improved quality of Texas wine over the years considered in the study. Additional income increased Texas wine price by 2.9% in 2006 and 1.6% in 2021. Each additional participation in a wine festival added about a 13% increase to Texas wine prices in the 2006 survey and a 15% increase in 2021.

Table 3. Parameter Estimate the Log Model of a Bottle of Texas Wine Price

Variable	Parameter Estimate (Standard Estimate)[a]	
	2006	**2021**
Intercept	3.018 (0.200)**	2.462 (0.172)**
Every day	-0.342 (0.181)*	-0.007 (0.086)
Week	-0.169 (0.085)**	0.069 (0.060)
Month	0.038 (0.096)	0.000 (0.060)
Age	-0.012 (0.003)**	-0.003 (0.001)**
# Years living in TX	0.002 (0.002)	-0.001 (0.001)
Male	-0.050 (0.074)	-0.005 (0.049)
BS	-0.020 (0.088)	-0.042 (0.057)
MS and PhD	-0.048 (0.090)	-0.163 (0.075)**
Red wine	-0.012 (0.066)	0.197 (0.056)**
Rose/blush wines	0.047 (0.102)	0.240 (0.068)**
Sweet	0.004 (0.066)	0.007 (0.060)
Recommend	0.173 (0.061)**	0.253 (0.053)**
Income	0.029 (0.010)**	0.016 (0.006)**
Tasted Texas wine	-0.248 (0.092)**	0.121 (0.114)
Visited Texas winery	0.046 (0.067)	0.051 (0.054)
Visited festival	0.129 (0.071)*	0.153 (0.047)**
Seen advertising of Texas wine	0.008 (0.067)	-0.004 (0.047)
Urban residency	0.067 (0.075)	0.010 (0.055)
R^2	0.1933	0.1088
Adjusted R^2	0.1486	0.0863
F-Statistics	4.33 (< 0.0001)	4.83 (< 0.0001)

Notes: [a] Heteroscedasticity consistent standard errors; ** Denotes significance at 5% level, and * denotes significance at 10% level

Importance of Texas Wine Attribute Results

Next, the evaluation of Texas consumers' perceptions and preferences toward Texas wine was carried out by testing six attributes on statistical differences in the average value of each attribute importance between the two surveys ($p < 0.05$) (see Table 4). Three of the six attributes regarding Texas wine were found to be significant. *Well-known, good quality,* and *better than expected* had higher ratings in the 2021 survey than in 2006. These results were significant even after controlling for the sociodemographic characteristics of the respondents, showing that over time Texas wines were improving, were better quality, and earned a good reputation.

Two other attributes—*appropriately priced* and *widely available*—did not show statistical significance in both wine surveys. The *Good value* attribute showed a statistically significant difference at a 10% level of significance when controlling for the sociodemographic characteristics of the respondents.

Testing significance in the average values of each attribute allowed us to answer the third research objective. To summarize, results show that out of six attributes describing Texas wines, three attributes—*well-known, good quality, and better than expected*—were significant over time, reflecting the improved perceptions of consumers about Texas wines, specifically regarding improvements in quality and taste perceptions over time. *Good value* was significant at a higher level of significance, which shows that consumers are aware of the improvements in Texas wine quality, yet they expect the prices of Texas wine to meet their expectations. The remaining two wine attributes—*appropriately priced* and *widely available*—were not significant over time.

Table 4. Importance of Texas Wine Attributes

| Attribute | Surveys of Texas Wine Consumers | | | | Comparison of the Datasets | |
	Mean 2006 (Std. Deviation)	**Mean 2021 (Std. Deviation)**	**Parameter (Std. Error)**	***P*-value**	**Parameter [a] (Std. Error)**	***P*-value [a]**
Good value	3.873 (1.021)	3.969 (0.877)	0.095 (0.067)	0.153	0.112* (0.066)	0.093
Well-known	2.586 (1.040)	3.361 (1.003)	0.775** (0.069)	< 0.0001	0.776** (0.069)	< 0.0001
Appropriately priced	3.848 (0.946)	3.835 (0.811)	-0.013 (0.062)	0.830	-0.003 (0.061)	0.964
Good quality	3.717 (1.028)	4.075 (0.791)	0.358** (0.065)	< 0.0001	0.364** (0.064)	< 0.0001
Widely available	3.583 (1.224)	3.592 (1.000)	0.008 (0.078)	0.917	-0.001 (0.079)	0.994
Better than expected	3.783 (1.077)	4.055 (0.830)	0.271** (0.068)	< 0.0001	0.280** (0.068)	< 0.0001

Notes: [a] The parameter estimated takes into account for socio-demographic variables ;** Denotes significance at 5% level, and * denotes significance at 10% level.

Discussion and Managerial Implications

The current study examined changes in consumers' attitudes toward a local agricultural product (wine) in an emerging region (Texas) over a 15-year period. Despite the region's early historic connections with wine and the recent exponential growth, the Texas wine industry is still considered new and developing. Consumers in new wine regions are generally faced with a choice between more familiar, established products, which are non-regional (e.g., wines from the Old World), and regional but less-known wines. As the emerging market develops, local consumers' perceptions are likely to evolve as well. It is under this premise that the current study was conducted, with the primary goal to identify the factors that contribute to changes in consumers' attitudes toward local products.

In 2006 when the first survey was administered, the Texas wine industry was still experimenting with grape varieties, different winemaking techniques, and various marketing strategies. Texas wines were not well-known at the time, even to local residents, and the taste of many Texas wines likely needed improvement. To illustrate the dramatic growth of the industry, the number of Texas wineries increased almost 10-fold within the 15 years between the two surveys. Undoubtably, the Texas wine industry has grown considerably. Typical for emerging wine regions, as the market matures, so does the quality of wine. Many experts assert that the quality of Texas wines has noticeably improved (McCreary, 2020; Boot Ranch, 2022). The results of our comparative analysis support these expert opinions.

Our findings indicate that in both surveys, consumers' age was a significant factor contributing to consumer attitudes toward Texas wines, with older consumers paying less for a bottle of Texas wine. Consumer attitudes toward Texas wine have shifted as the younger generation is paying higher prices for locally made wines than the previous generations. With the increase in social media presence of Texas wineries, producers now have better (and more cost-effective) marketing approaches and promote themselves in a manner that is more appealing to younger consumers. On the other hand, older consumers are likely to still perceive the quality of Texas wines as they did in the past. Thus, the industry needs to focus on educating older consumers about local wines and on providing opportunities for these consumers to taste local wines.

One such opportunity could be wine festivals and events. Our findings from the 2021 survey indicate that consumers who visited a local wine festival, on average, pay more for Texas wines. This is likely the effect of wine tasting at the festival, as well as the unique wine tourism experience. Given the tremendous growth in the number of Texas wineries within the last decade, the wine industry has much room to expand in terms of enhancing the frequency of tourist visits. Again, our study suggests that it is the opportunity to taste the wines that largely contributes to changes in attitudes and in paying higher prices. Texans are yet to become acquainted with the abundance of wine tourism resources in the state. The industry needs to focus on designing wine tours and festivals, appealing to the state residents and visitors. The discovery of wineries as a place to gather with friends is a growing trend, especially for younger consumers.

Another factor found to positively contribute to consumers paying higher prices for Texas wines was their willingness to recommend Texas wines to other people. This is a particularly interesting finding, as in 2006, a large cluster of local wine consumers had been found who had higher-quality ratings and assessments of Texas wines; yet, they were not willing to recommend them to others (Kolyesnikova, Dodd, and Duhan, 2008). The wine industry relies heavily on personal recommendations for introducing new products. Thus, it was unfortunate at the time for local wineries that local residents believed in the wine quality, but were not willing to recommend the wines to others. Therefore, it was particularly satisfying to discover in the comparative analysis that willingness to recommend not only increased over the years, but it also contributed to paying higher prices.

These findings are consistent with many previous studies (e.g., Lockshin et al., 2017; Castellini and Samoggia, 2018; Thach, Riewe, and Camillo, 2021) that found recommendation by friends and family to be a very strong influence on consumer choice. By better understanding how information is transferred from one person to the next will assist marketers in their efforts to establish new products or introduce new brands or regional wines.

Not surprisingly, consumers with higher annual household incomes were found to pay more for Texas wines. Texans are known for having pride in their birthplace and being more likely to identify themselves as "Texans" rather than "Americans" when travelling abroad (Texas SEGP, 2014). Having a sense of pride for their state, consumers with higher incomes are likely to support the development and expansion of the local wine industry. Paying higher prices for local wines is one way to support the state's economy.

Somewhat unexpected was the finding that consumers with advanced graduate degrees and those who consume wine frequently were paying less for a bottle of local wine. One possible explanation is that such consumers included many wine connoisseurs. They are typically more knowledgeable about wine than consumers with lower levels of education and those who consume wine only occasionally. Connoisseurs typically prefer imported wine, likely from Europe or more established wine regions. With respect to wine brands, these consumers are likely at least somewhat image conscious. Texas products may be seen as less fitting with their social image. At the same time, such consumers are generally open to wine education and typically seek variety in terms of wine brands. The industry should take advantage of their willingness to try new products and find opportunities to educate them about the improved quality of Texas wines.

With regards to attitudes toward local wines, some significant changes were found. The ratings for the following attitudes—Texas wines are *well-known, good quality,* and *better than expected*— were higher in the 2021 survey, once again illustrating that within the last 15 years, Texas wines have improved, are of better quality, and have earned a good reputation. Importantly, local consumers have recognized these improvements. On the other hand, perceptions of Texas wines as being *appropriately priced* and *widely available* did not change over time. This finding should be a concern for the industry and should be addressed by better marketing promotions and, in some cases, adjusting prices.

To conclude, by using a comparative analysis of the local residents' wine consumption behavior and attitudes toward local wines in two studies conducted 15 years apart, the current study outlined the factors contributing to changes in these attitudes. The key to developing a successful marketing strategy in an emerging wine region is to first undertake a rigorous assessment of the local market (Jovanović et al., 2017; Mehta and Bhanja, 2018). The findings of the current study contribute to a more comprehensive understanding of consumer attitudes that leads to the commercial success of new products in an emerging region.

Limitations and Future Research

The findings from this research shed light on many questions concerning characteristics and factors contributing to local residents' attitudes and prices paid for local wines. This study was exploratory in nature and hopefully provides impetus for further investigations into this research area. There were two limitations, however. First, we investigated only one emerging wine region. The results, therefore, could be region-specific. Regarding an emerging region being linked to local residents buying the product and the prices they pay for it, future research efforts in other emerging wine regions of the United States or other countries would be useful in determining the generalizability of the results.

Second, the two surveys used for comparison were developed with a broader purpose in mind, such as the analysis of socioeconomic characteristics of wine consumers, wine festivals, marketing, and wine tourism in Texas. While the current study used only the identical variables for the comparative analysis, more variables specifically tailored to study consumers' perceptions and attitudes toward local products may be lacking. For example, measuring changes in per capita consumption of Texas wine over time may shed light on how loyalty, acquired wine tastes, and preferences among consumers develop with time. Ethnicity can be used as a cultural factor influencing attitudes toward wine. Using ethnicity by generational cohorts in a study may show changing trends in the consumption of wine within an ethnical group if observed over time or between ethnical groups. Wine education, measured through variables like information on the label about local products and awards, and a short presentation about wine at wine festivals or wine-tasting events, can also be used in research related to consumer perceptions and attitudes.

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