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Article

Willingness to pay for a wine produced in the state of Guanajuato

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Abstract

This study aims to estimate the willingness to pay for a red wine produced in the state of Guanajuato, as well as to determine the socioeconomic variables that most influence the willingness to pay under the hypothesis that there is a positive willingness to pay among the participants. A total of 120 surveys were conducted in the municipality of Dolores Hidalgo, Guanajuato. We used the contingent valuation method and the binomial logit model by means of the Nlogit software. The estimated willingness to pay was $727.30, a 34.7% premium over the average price of wine produced in the country. The variables that explain the willingness to pay are price, income, age, economic dependents, and amount of wine consumed.

Keywords:

binomial logit model, contingent valuation, wine.

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Introduction

The state of Guanajuato has positioned itself as one of the most important wine producers in Mexico, currently ranking fourth nationally, with nearly 400 hectares of vines planted in the state, Mexican Vitiviniculture Council (CMV, 2020). Since 2005, when the first project was born in Guanajuato, the quality has been increasing thanks to the artisanal way of taking care of the vineyard and making wine, a vocation of study and constant experimentation have been defining the differentiating characteristics of this region. Winegrowing extends to eight municipalities of the state: Dolores Hidalgo, San Miguel Allende, Comonfort, San Felipe, León, Salvatierra, San Francisco del Rincón, and Guanajuato (state capital).

The production amounts to 1 240 000 L of wine, with the Cabernet Sauvignon, Merlot, Syrah, Malbec, Cabernet Franc, Tempranillo, Nebbiolo, Semillón, Chardonnay, Sauvignon Blanc varieties standing out; Guanajuato wines have won more than 50 gold, silver, and bronze medals, obtained in the most renowned European competitions (Secretaría de Turismo del Estado de Guanajuato, 2021). On the other hand, wine consumption in Mexico has been increasing as it almost tripled in seven years, going from 450 ml in 2013 to 1.2 L in 2020; the demand for wine in Mexico is mainly covered by imported wine since the production of domestic wine is only enough to satisfy 30% of domestic demand (CMV, 2020).

Mexican wine is already recognized worldwide because since 2000, in addition to large companies (with production of more than 450 000 L), small vineyards with reduced production (producers of less than 9 000 L) but of good quality have emerged (INAES, 2018). The Mexican wine industry has all the elements to be able to grow and become an important sector, it just needs a little support and positioning (Poncelis, 2007).

Guanajuato offers a differentiated wine since, thanks to the agroclimatic characteristics of the state, the wines acquire desirable attributes, where the Guanajuato *terroir* imprints a unique character to its wines, which are beginning to be recognized nationally and internationally.

In addition, according to the (Secretaría de Turismo del Estado de Guanajuato, 2021), the state has 100 000 ha with viticultural potential, which, together with the growth of national consumption, opens an opportunity for the development of existing wine companies and for the creation of new wineries, where hand in hand with wine tourism, can increase sales and position their brands. As wine is considered a multisensory experience and in some cases, as a symbol of social status, it is associated with high-demand tourism where travelers seek high levels of satisfaction and authenticity.

Currently, Guanajuato wines are sold at similar prices and sometimes below the national average prices of wines with the same characteristics but produced in other states, which is why there is a need to carry out studies that provide information to Guanajuato wine companies to seek the possibility of a better price that is in accordance with the quality of their products.

This study uses the CVM, which belongs to the declared preferences methods; this method aims to get people to declare their preferences in relation to a certain good or service in hypothetical markets (Tudela and Leos, 2017), which are constructed through the use of surveys.

By taking simulated markets as a basis, they make it possible to assess changes in the well-being of individuals before a decision is made regarding the good to be valued a priori and a posteriori. An important advantage of these methods is that they can detect both use and non-use values (Mogas, 2004). According to Riera (1994), the CVM was proposed by Davis (1963), who applied this technique in his doctoral thesis at Harvard University; Davis developed his research with hunters and hikers in the State of Maine, United States of America, trying to find the value that the forests of that state had for users; subsequently, in the 1970s and 1980s, the method had its empirical and theoretical refinement, mainly in the United States of America (Sánchez, 2008).

This method seeks to determine, from direct surveys, the average value of the compensating variation or the equivalent variation of a specific population, measures that correspond to an approximation of the benefits generated by policies or projects (Pearce and Turner, 1995). The CVM

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has been shown to be a useful tool to know the preferences of individuals, with high acceptance for the analysis of environmental policy (Osorio and Correa, 2009).

There are several studies that use the CVM, mainly on environmental issues, such as the one carried out by Tequia and Camargo (2016), who studied the willingness to pay for the ecological restoration of the Cueva del zorro quarry in the municipality of Soacha, Colombia, finding that 82% are not willing to pay.

There is also the study carried out by Castro and Arévalo (2019), which determined the economic value that the inhabitants of La Yarada-Los Palos would be willing to pay for drinking water service, obtaining that most of the inhabitants have a positive willingness to pay because they value the resource. The use of CVM has become widespread and research is also being done on the subject of food consumer behavior, an example of this is the study carried out by Sánchez *et al*. (2001), who analyzed the willingness to pay for organic tomatoes; in the same vein, Cerda *et al*. (2011) estimated the willingness to pay for organic grapes.

Another study is that carried out by Brugarolas-Mollá *et al*. (2005), they calculated the willingness to pay for an organic wine, the main finding found in the three studies is that people were willing to pay a premium for each of the products analyzed.

The present research aims to estimate the willingness to pay (WTP) for a wine from Guanajuato, using the contingent valuation methodology. The proposed hypothesis is that there is a positive WTP among the participants.

Materials and methods

The CVM is one of the techniques used to calculate the value of goods for which there is no market, although as mentioned by Sánchez *et al*. (2001), they can also be used in products where there is a real market. It is about simulating a market by surveying potential consumers, the idea is to quantify the average willingness to pay (WTP) as an approximation of well-being that reflects the user's preferences. For this purpose, there are three types of formats: open format, auction format and referendum format, with the referendum format being the most used in contingent valuation studies (Tudela *et al*., 2011).

In the open format, an open-ended question about willingness to pay is asked. In the auction format, it is about asking the respondent whether or not they are willing to pay a certain price for a good, depending on the answer, a new price is offered to the interviewee, in case the answer is affirmative, then a new offer is made with a higher price and if it is negative, a new offer is made with a lower price (Higuera, 2018).

The referendum format leaves the individual with only the problem of deciding whether or not they are willing to pay a certain sum for a good with certain characteristics and attributes (Tudela *et al*., 2011). To estimate the WTP, the referendum format was used in this study. The methodology used consists of three stages: questionnaire design, application of surveys and data analysis.

Survey design

According to Riera (1994); Tudela *et al*. (2017), a standard questionnaire is usually structured in three parts: information about the person interviewed, description of the good to be valued, and the valuation of the good. Based on the above, the design of the questionnaire for this research included socioeconomic questions related to age, sex, marital status, education, income, economic dependents, and number of family members.

In addition, a set of questions related to the appreciation of wine was included, for example, frequency of consumption, quantity, etc.; they were also shown a list of five characteristics related to wine and asked to order them according to the importance they assign to each of them at the time of making their purchase. The characteristics chosen were: 1) type of wine (red, rosé or white); 2) origin; 3) type of vine (variety); 4) aging; and 5) price, which are based on a literature review to know the attributes that have been previously used in other studies on wine valuation, where the

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following stand out: origin (Bernabeu *et al*., 2005; Lockshin *et al*., 2009); (Cerda *et al*., 2010) who mention the vine and, of course, the price (Kallas *et al*., 2012; Tait *et al*., 2019; Araya *et al*., 2020).

Other attributes that have been considered are aging, type of bottle, brand, type of cap, etc. The socioeconomic and wine appreciation questions posed were chosen because they were considered relevant to the research, as they allow us to better understand the reasons for the answers, mainly those for evaluation, as well as to be able to check in some way the coherence of the answers.

Subsequently, the respondents were explained about the production of wine in the state of Guanajuato (the place it occupies in terms of national level, types of wine that are produced, how many wine projects exist; they were also told about the competitions that several wines from the state have won).

Once the scenario has been explained, we ask about the monetary willingness to pay for a red wine made with the Cabernet Sauvignon grape variety, which has spent 12 months resting in wooden barrels, in a 750 ml bottle and produced in the state of Guanajuato. The prices established for the valuation exercise were $500.00, $550.00, $600.00, and $650.00 pesos per 750 ml bottle. This represents a premium of 10%, 20%, 30% and 40%, respectively, for being a wine from Guanajuato.

Sample size

The surveys were conducted in the municipality of Dolores Hidalgo, Guanajuato, from July 8 to 11, 2021, among wine consumers over 18 years of age. This municipality is one of the most important in the state in terms of wine production, located in the central-northern region of the state, and this municipality is also home to the Guanajuato Wine Museum. Dolores Hidalgo has a population of 163 038 inhabitants (INEGI, 2021).

The sample size was determined based on the simple random sampling (SRS) technique with a confidence level of 95% and a permissible margin of error of 9%. A sample size of 118 surveys was obtained; nevertheless, following the recommendations of Riera (1994) on the application of the CVM, it was rounded to 120 surveys to apply the same number of surveys for each price level.

Referendum format

Considering the use of the referendum-type format, in this study the dependent variable of the model is the individual's utility (U) and the independent variables are wine consumption (Q), income (Y) and a vector of socioeconomic variables (S), this is: $U= f(Q, Y, S)$. Thus, the initial utility of the surveyed individuals (U_0), which corresponds to a state of non-consumption of Guanajuato wine (Q_0), can be improved up to (U_1) through the consumption of Guanajuato wine (Q_1), for which they must pay an additional amount (P), which comes from their disposable income (Y).

The utility function U_i (Q,Y,S) for each of these situations (with consumption of Guanajuato wine and without consumption of Guanajuato wine) will be composed of a deterministic component, $V_i(Q, Y, S)$, which is estimated from a survey and an unobservable stochastic component, e_i. The utility function of the representative user can be expressed as: $U_i(Q, Y; S)= V_i(Q, Y; S) + e$. Where: the subscript i (which has a value of 1 or 0) denotes the state with and without consumption of Guanajuato wine, respectively. The term e_i is the random component of the utility function; and $V_i(Q, Y; S)$ is the deterministic part that can be estimated by means of the econometric model.

Thus, if the user agrees to pay an amount of money 'P' to maintain the proposed scenario, it must be true that: $V_1(Q= 1, Y- P; S)-V_0(Q= 0, Y; S)> e_0-e_1$. Where: the terms e_0 and e_1 are assumed to be independent and identically distributed random variables. The change in utility experienced by the user will be equal to the difference between the final utility function minus the initial one, in order to access the utility in the final situation defined by the proposed scenario, a certain amount of money proposed by the interviewer must be paid (Tudela *et al*., 2011).

The utility change, defined as the difference between the final and initial utility levels, ΔV, can be represented as: $\Delta V= V_1(Q= 1, Y- P; S) - V_0(Q= 0, Y; S)$ $\eta= e_0 - e_i$. Consequently, the probability of

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having an affirmative answer (YES) to the question of willingness to pay is given by: Prob(Yes)= Prob($\Delta V > \eta$)= F(ΔV).

Econometric model specification

The model used was binomial logit, estimated by maximum likelihood through the N-Logit program, in order to estimate the parameters of the variables that explain the willingness to pay of the interviewees. The YES/NO response is a random variable, so the probability of a positive response was posed through the following binomial logit econometric model: Prob(Yes)= α0 + β1AGE + β2SEX + β3MARS + β4SCH + β5FAM + β6DEPEN + β7INCO + β8FREQ + β9CONSUM + β10PRIC+ ε.

The binary dependent variable, Prob(Yes), represents the probability of answering Yes to the question of willingness to pay for Guanajuato wine, which depends on age (AGE), sex (SEX), marital status (MARS), schooling (SCH), number of family members (FAM), number of economic dependents (DEPEN), income (INCO), frequency of wine consumption per month (FREQ), as well as the amount of wine consumed in liters per month (CONSUM) and the hypothetical price to be paid (PRIC); the symbol ε represents the unobservable error. The explanatory variables of the specified econometric model were obtained directly from the surveys.

Calculation of WTP

According to Hanemann (1984); Valdivia-Alcalá *et al*. (2011), the average WTP is calculated using the formula:

$$WTP_{average}=\frac{\alpha}{-\beta}$$

Where: α is the sum of the coefficients of the independent variables multiplied by their mean including the ordinate to the origin or β0 and β is the coefficient of the variable of PRICE with a negative sign.

Results and discussion

Generals aspects

As can be seen in Table 1, of the 120 people surveyed, it was found that 51.7% were men and 48.3% women, most of them between the ages of 18 and 35 (58.3%), 60.8% said they were single; in terms of the level of education, the participation of people with a bachelor's degree was the highest (52.5%), followed by those with a postgraduate degree (37.5%); 60% of respondents said they had from 1 to 4 economic dependents and only 3 people had more than 4 dependents, which represents only 2.5% of the total sample; regarding the income level, 30.8% obtained an income of $7 001.00 to $15 000.00 per month, 30% have incomes of more than $25 000.00, in third place are those who earn monthly incomes between $15 001.00 and $25 000.00 and finally those who earn less than $7 000.00 pesos per month with a participation percentage of 12.5%.

Table 1.Socioeconomic variables of the wine consumers interviewed (n= 120).

Variable	Description	Quantity	Percentage
Sex	Women	58	48.3
	Men	62	51.7
Age	18-35 years	70	58.3
	36-55 years	45	37.5
	Morea than 55 years	5	4.2

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Variable	Description	Quantity	Percentage
Marital status	Single	73	60.8
	Married	47	39.2
Schooling	Junior high school	1	0.8
	High school	7	5.8
	Technical degree	4	3.3
	Bachelor's degree	63	52.5
	Postgraduate degree	45	37.5
Economic dependents	None	45	37.5
	From 1 to 4	72	60
	From 5 to 9	3	2.5
Income	From $0.00 to $7 000.00	15	12.5
	From $ 7 001.00 to $15 000.00	37	30.8
	From $15 001.00 to $25 000.00	32	26.7
	More than $25 000.00	36	30
Total		120	100

Among the 120 respondents, the average amount of wine consumption per month is 2 L, the minimum consumption is 0.5 L, and the maximum is 10 L. Thirty-nine percent said they consume about 1 L per month and 17% consume 2 L per month. The majority of respondents buy wine in supermarkets, followed by specialty stores (wineries) and department stores, a minority buy directly from the vineyard.

The characteristic or attribute that the interviewees considered most important to choose a wine was the type of wine (eg., red, white, rosé), the second place is occupied by the grape variety, followed by the origin, in fourth place is the aging time in barrels, and in last place the price. Some people mentioned that, in addition to the attributes already mentioned, when buying wine, they consider other characteristics, such as the alcohol level and brand.

The preferred occasion for the consumption of wine is at meetings with friends, many others prefer to do it on weekends and only a few consume it during the week, especially in the evenings. Sixty-three point three percent answered that they were willing to pay for Guanajuato wine, while 36.7% stated that they were not willing to pay, similar to what was found in other studies (Bao *et al*., 2017). Table 2 presents the descriptive results of the willingness to pay, where it is observed that, at lower rates, the percentage of positive responses is higher than in the case of higher rates.

Table 2. Affirmative answers to the question about willingness to pay.

Hypothetical price of the product (mxn)	No. of surveys conducted	Affirmative answers	
		No.	(%)
500	30	22	73.3
550	30	20	66.7
600	30	18	60
650	30	16	53.3

Econometric analysis

According to Tudela *et al*. (2011), the following economic and econometric criteria are used to choose the best regressions: that the coefficients of the variables have the expected signs, ie. that the signs of the estimated coefficients for the explanatory variables reflect a logical relationship with

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the dependent variable, that the coefficients of the independent variables are significant at a certain acceptable level of reliability, and that the logarithm of maximum likelihood of the model is large. Considering the above, after running several regressions, the optimal one was chosen to calculate the WTP. Table 3 shows the econometric results of the binomial logit model.

Table 3. Econometric results of the logit model.

Variable	Coefficient
Constant	2.8257802 (1.13)*
AGE	-0.04360572 (-1.606)*
DEPEN	-0.25768892 (-1.719)**
INCO	0.2634796 (3.385)***
CONSUM	0.47014064 (2.288)**
PRIC	-0.00506205 (-1.279)*
Restricted likelihood logarithm	-78.85893
Unrestricted likelihood logarithm	-63.0185
McFadden pseudo R-square	0.2008705
Chi square	31.68086

* = significance at 10%, **= at 5% and ***= 1% (standard error in parentheses). Based on N-Logit 4.0 results

The Mc Fadden pseudo R-square is 0.2, an acceptable fit for this model (Melo-Guerrero *et al*., 2020). The results of the coefficients behave as expected, based on the theory. The variable of income had a significance of 1%, the variables of consumption and economic dependents had a significance of 5% and finally, the variables of age and price had a significance of 10%. The variable of income showed a positive sign, which implies that the higher the income, the greater the willingness to pay for the product in question.

This result coincides with other studies (Valdivia-Alcalá *et al*., 2011; Jaramillo-Villanueva *et al*., 2018; Cervantes *et al*., 2020). The variable of consumption also had a positive sign, which indicates that people who consume more wine are more willing to pay than those who consume very little. On the other hand, the sign of the coefficient of the variable of economic dependents was negative, this result coincides with the study developed by Tequia *et al*. (2016), they found that as the number of children increases, the willingness to pay decreases.

Age has a negative relationship with the dependent variable, a result similar to the results found by Tudela *et al*. (2011); Jaramillo-Villanueva *et al*. (2018), explainable since, at an older age, it is likely that people will have less income. The coefficient of the price variable is negative, as expected. This indicates that, the higher the price of the product studied, the lower the probability of obtaining a positive response from the respondent. With the data obtained, the final model for wine would be: Prob(Yes)= 2.8257802 - 0.04360572AGE - 0.25768892DEPEN + 0.2634796INCO + 0.47014064CONSUM - 0.00506205PRIC.

Calculation of the average willingness to pay

Once the econometric model has been analyzed and validated, the willingness to pay is estimated. To do this, we add the coefficients of the independent variables multiplied by their value in each case (including the constant), and the total is divided by the coefficient of the price variable with a negative sign.

$$WTP=\frac{2.826-0.044AGE_i-0.258DEPEN_i+0.263INCO_i+0.470CONSUM_i}{-0.005} \quad i=1,\ 2,\ 3,\ 120$$

The average willingness to pay obtained is $727.30 for a red wine made with a Cabernet Sauvignon grape variety, which has spent 12 months resting in wooden barrels, in a 750 ml bottle and produced

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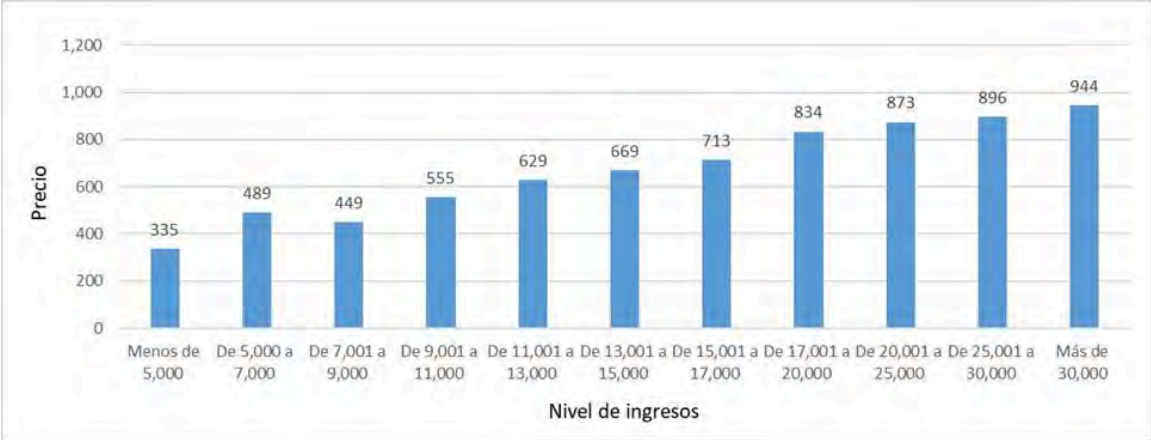
in the state of Guanajuato, which represents a premium of 34.7% compared to the average price of a wine with the same characteristics but produced in other states of the country ($540.00). There is a standard deviation of 258.7, a maximum value of $1 548.00, and a minimum of $107.70.

WTP by income level

Figure 1 shows the behavior by income level, where it is observed that the lower the income, the lower the willingness to pay, and as income increases, the willingness to pay increases, because while the WTP of those with incomes of less than $5 000.00 is $335.00, the WTP of those who obtain income of more than $30 000.00 is $944.00.

Figure 1. Willingness to pay by income level.



Conclusions

In general terms, the results of the research agree with the hypothesis proposed since 63.3% of the sample are willing to pay an additional amount for a red wine produced in the state of Guanajuato, the additional amount compared to the average price of a product with similar characteristics but produced in some other state of the country is $187.30; that is, a premium of 34.7%. Therefore, it represents an opportunity for the state's winegrowers to diversify their products, betting on the production of wines with greater aging than the one that is mainly offered at present.

The variables that have a positive impact on the willingness to pay for the product studied are income and the amount of wine consumed per month, while the variables that have a negative influence are price, age, and the number of economic dependents. Since consumers are willing to pay an additional amount for wine produced in Guanajuato, it can be said that winegrowing is an activity that has potential in the state. The study focuses on the consumer, so it would be convenient to also analyze the production aspect, so that the production costs of the wine evaluated here are considered and it is concluded if the production of this wine is profitable, considering the willingness to pay found here.

Bibliography

1 Araya, P. S.; Rojas, E. L. and Ruiz, V. E. 2020. Importance of packaging in wine preferences: findings in a Chilean wine zone. Tec Empresarial. 14(3):2-15. Doi: https://doi.org/10.18845/te.v14i3.5359.

2 Bao, M.; Pierce, G. J.; Strachan, N. J. C.; Martínez, C.; Fernández, R. and Theodissiou, I. 2017. Consumers' attitudes and willingness to pay for Anisakis-free fish in Spain. Fisheries Research. 202:149-160. Doi: https://doi.org/10.1016/j.fishres.2017.06.018.

DOI: https://doi.org/10.29312/remexca.v15i4.3116

3 Bernabeu, R.; Olmeda, M. y Diaz, M. 2005. Estructura de preferencias de los consumidores de vino y actitudes hacia los vinos con denominación de origen. El caso de Castilla-La Mancha. Economía Agraria y Recursos Naturales. 5(9):57-80. Doi: https://doi.org/10.7201/earn.2005.09.03.

4 Brugarolas-Mollá, M.; Martínez-Carrasco, L.; Martínez-Poveda, A. and Rico, P. M. 2005. Determination of the surplus that consumers are willing to pay for an organic wine. Spanish Journal of Agricultural Research. 3(1):43-51.

5 Castro, C. E. y Arévalo, S. N. 2019. Valoración contingente del servicio de agua potable en la Yarada-Los palos Tacna 2016. Ciencia y desarrollo. 17(22):34-42. Doi: https://doi.org/10.33326/26176033.2018.22.743.

6 Cerda, U. A.; Torres, M. M. J. y García, P. L. 2010. Preferencias y disposición a pagar por vinos ecológicos de parte de los consumidores de la región del Maule, Chile. Panorama Socioeconómico. 28(40):60-70. https://www.redalyc.org/articulo.oa?id=39915685005.

7 Cerda, U. A.; García, P. L.; González, C. J. y Salvatierra, N. A. 2011. Preferencias y disposición a pagar por uva de mesa orgánica en la región del Maule, Chile. Rev. Bras. Frutic. 33(3):784-790. Doi: https://doi.org/10.1590/S0100-29452011000300012.

8 Cervantes, L. J. O.; Melo, G. E.; Hernández, O. J.; Valdivia, A. R.; Sandoval, R. F. y González, J. A. 2020. Disposición a pagar por mezcal añejo en San Felipe, Guanajuato, México. Acta Universitaria. 30:1-11. Doi: https://doi.org/10.15174/au.2020.2887.

9 CMV. 2020.Consejo Mexicano Vitivinicola. https://uvayvino.org.mx/index.php.

10 Hanemann, W. M. 1984. Welfare evaluations in contingent valuation experiments with discrete responses. Am. J. Agric. Econ. 66(1):332-341. Doi: https://doi.org/10.2307/1240800.

11 Higuera, G. L. 2018. Valoración económica del lago de Xochimilco. UNIVERSCIENCIA. 16(47):1-10 http://revista.soyuo.mx/index.php/uc/article/view/81/80.

12 INAES. 2018. Instituto Nacional de Economía Social. Historia de la Viticultura. https://www.gob.mx/inaes/es/articulos/historia-de-la-viticultura?idiom=es.

13 INEGI. 2021. Instituto Nacional de Estadística y Geografía. https://inegi.org.mx/

14 Jaramillo-Villanueva, J. L.; Córdova-Lázaro, C. E. and Cordoba-Ávalos, V. 2018. Willingness to pay for cultural attributes in handmade chocolates from the Chontalpa region, Tabasco, México. Economía Agraria y Recursos Naturales. 18(2):53-73. Doi: https://doi.org/10.7201/earn.2018.02.03.

15 Kallas, Z.; Escobar, C. and Gil, J. M. 2012. Assessing the impact of a Christmas advertisement campaign on Catalan wine preference using Choice Experiments. Appetite. 58(1):285-298. Doi: https://doi.org/10.1016/j.appet.2011.09.017.

16 Lockshin, L.; Mueller, S.; Louviere, J.; Francis, L. and Osidacz, P. 2009. Development of a new method to measure how consumers choose wine. The Australian and New Zealand wine industry Journal. 24(2):37-42. https://www.researchgate.net/profile/LarryLockshin/publication/282914702_Development_of_a_new_method_to_measure_how_consumers_choose_wine/links/562571b908aeedae57daeaab/Development-of-a-new-method-to-measure-how-consumers-choose wine.pdf?__cf_chl_jschl_tk__=pmd_CH9HTKhn4C1fciMV04sJCh1UkrHSxQ5COM4ZKRb.spo-1633136938-0-gqNtZGzNAyWjcnBszRDR%20

17 Melo-Guerrero, E.; Hernández-Ortiz, J.; Aguilar-López, A.; Rodríguez-Laguna, R.; Martínez-Damián, M. A.; Valdivia-Alcalá, R. and Razo-Zarate, R. 2020. Choice experiments for the management of Los Mármoles National Park, México. Revista Chapingo serie ciencias forestales y del ambiente. 26(2):17-32. https://revistas.chapingo.mx/plugins/generic/pdfJsViewer/pdf.js/web/viewer.html?file=https%3A%2F%2Frevistas.chapingo.mx%2Fforestales%2Farticle%2Fdownload%2Fr.rchscfa.2019.06.043%2Fr.rchscfa.2019.06.043%2F780.

DOI: https://doi.org/10.29312/remexca.v15i4.3116

18 Mogas, A. J. 2004. Métodos de referencias reveladas y declaradas en la valoración de impactos ambientales. Ekonomiaz: Revista Vasca de Economía. 57:12-29. https://dialnet.unirioja.es/servlet/articulo?codigo=1373268.

19 Osorio, J. D. y Correa, F. J. 2009. Un análisis de la aplicación empírica del método de valoración contingente. Semestre Económico. 12(25):11-30. https://www.redalyc.org/pdf/1650/165013651001.pdf.

20 Pearce, D. W. y Turner, P. K. 1995. Economía de los recursos naturales y del medio ambiente. Colegio de Economistas de Madrid. Hermosilla, Madrid-España.

21 Poncelis, B. P. 2007. Navidad con vinos mexicanos. Revista del consumidor. México: Procuraduría Federal del Consumidor. 370:52-63.

22 Riera, P. 1994. Manual de valoración contingente. Instituto de Estudios Fiscales. Madrid, España. 10-59 pp. http://www.economia.unam.mx/profesores/blopez/valoracion-manual.pdf.

23 Sánchez, J. M. 2008. Valoración contingente y costo de viaje aplicados al área recreativa laguna de Mucubají. Economía. 33(26):119-150. http://iies.faces.ula.ve/Revista/Articulos/Revista-26/Pdf/Rev26Sanchez.pdf

24 Sánchez, J. M.; Grande, E. I.; Gil, R. J. M. y Gracia, A. 2001. Diferencias entre los segmentos del mercado en la disposición a pagar por un alimento ecológico: valoración contingente y análisis conjunto. Revista de Estudios Agrosociales y Pesqueros. 190:141-163. https://doi.org/10.22004/ag.econ.165056.

25 Secretaría de Turismo del Estado de Guanajuato. 2021. Actividad vinícola en Guanajuato

26 Tequia, L. M. y Camargo, D. A. 2016. Análisis de valoración contingente de restauración ecológica de una cantera en Soacha, Cundinamarca, Colombia. Revista de Investigación Agraria y Ambiental. 7(2):171-183. Doi: https://doi.org/10.22490/21456453.1566.

27 Tudela, M. J. W. y Leos, R. J. 2017. Herramientas metodológicas para aplicaciones del método de valoración contingente. Universidad Autónoma Chapingo. México. http://repositorio.chapingo.edu.mx:8080/handle/20.500.12098/268.

28 Tudela, M. J. W.; Martínez, D. M. A.; Valdivia, A. R.; Romo, L. J. L.; Portillo, V. M. y Rangel, G. R. V. 2011. Valoración económica de los beneficios de un programa de recuperación y conservación en El Parque Nacional Molino de Flores, México. Revista Chapingo. Serie Ciencias Forestales y del Ambiente.17(2):231-244. https://www.redalyc.org/articulo.oa?id=62919277006

29 Valdivia-Alcalá, R.; García-Ávalos, E.; López-Santiago, M. A.; Hernández-Ortiz, J. y Rojano-Aguilar, A. 2011. Valoración económica por la rehabilitación del río Axtla, S.L.P. Revista Chapingo serie ciencias forestales y del ambiente. 17(3):333-342. http://www.scielo.org.mx/scielo.php?script=sci-arttext&pid=S20074018201100030 0005&lng=es&tlng=es

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