## Title
Influential Factors in the Econometric Modeling of the Price of Grapes in Texas

## I want to submit an abstract for:
Conference Presentation

## Corresponding Author
OLGA MUROVA

## E-Mail Corresponding Author
olga.murova@ttu.edu

## Affiliation
Texas Tech University

## Co-Author/s
<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tullaya Boonsaeng</td>
<td>Texas Tech University</td>
</tr>
<tr>
<td>Kirk Williams</td>
<td>Texas Tech University</td>
</tr>
</tbody>
</table>

## E-Mail/s Co-Author/s
<table>
<thead>
<tr>
<th>E-Mail</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:Tullaya.Boonsang@ttu.edu">Tullaya.Boonsang@ttu.edu</a></td>
</tr>
<tr>
<td><a href="mailto:kirk.w.williams@ttu.edu">kirk.w.williams@ttu.edu</a></td>
</tr>
</tbody>
</table>

## Keywords
Price of grapes, Texas wine, econometric analysis

## Research Question
The main research question of the study is to identify the determinants of the price of grapes in Texas.

## Methods
Fixed effects, least-squares dummy variables regression model:

## Results
Authors expect to identify significant factors that explain the price of grapes used in the production of red, white, rose, and sparkling wines.

## Abstract
Influential Factors in the Econometric Modeling of the Price of Grapes in Texas
This study identifies factors that significantly affect price of winegrapes and explains the differences in the prices of winegrapes by the type of wine in Texas.

The surveyed years (2015, 2017, 2019 and 2020) for five grape producing regions of Texas surveyed by NASS of USDA are used to explain winegrape prices. The average price of red and white wines in Texas were obtained from the study “This if How Much a Bottle of Wine Costs in Your State,” Today’s Homeowner, todayhomeowner.com, accessed 03/08/2024 and using copilot in Microsoft Bing. The max and min temperatures for five regions collected from noaa.gov (national climatic data center). The prices of red and white wine adjusted for inflation using the U.S. Consumer Price Index (CPI). The price of grape adjusted for inflation using the U.S. Producer Price Index (PPI), BLS cite.

Econometric Model
The econometric model of the price of grapes by type of wine in Texas can be written as:

\[
\ln y_{it}=\alpha_t+x_{it}^'\beta+\mu_i+\epsilon_{it} (1)
\]

Where \( y_{it} \) is the ln of the price of grapes for region \( i \) and time \( t \), \( \alpha_t \) is a time fixed effect (year 2017, year 2019, and year 2020), \( x_{it}^' \) is a vector of explanatory variables, \( \beta \) are parameters to be estimated, \( \mu_i \) is region random effect, and \( \epsilon_{it} \) is an idiosyncratic error term. The explanatory variables are yield, acres, wine price, minimum temperature, and maximum temperature. Two models were estimated corresponding to two types of wine: red wine and white wine. A random effect was used for region given the small number of observation (20 observations).

The econometric model of the price of Texas grapes used in the study:

\[
\ln y_{it}=\alpha+x_{it}^'\beta+\mu_i+v_t+\epsilon_{it} (2)
\]

where \( y_{it} \) is the dependent variable which is the ln of the price of Texas grapes, \( \mu_i \) is wine type random effect, \( v_t \) is time random effect, \( \alpha \) is the intercept, \( x_{it}^' \) is a vector of explanatory variables, and \( \epsilon_{it} \) is an idiosyncratic error term. The explanatory variables are production, wine price, minimum temperature, and wine type dummy variables (dummy for red wine and white wine).

Results
The first two log-linear models explain the price of winegrapes used in white and red wine production. In these models, time is specified as fixed effect and regions as random effect given the small number of observations in the dataset. Production and minimum temperatures in both models negatively and significantly affect price, whereas maximum temperatures show a significant positive effect on the price of white winegrapes. Time effect was significant for all years in the white winegrape model.

The two following models explain price of winegrapes by the type of wine. Wine type is specified as fixed effect and time as random effect in these models. The model with three wine types of specification shows positive significant effect of acres, price of wine and white wine varieties on the price of winegrapes; and yield, minimum tems and red wine varieties show significant negative effect on the price of winegrapes. The model with four types of wine shows similar relationships; however, price of wine is not significant, and white sweet and dry wines have a significant impact on the price of winegrapes.

Further developments of this research will include expansion of dataset and treatment of time effects and type of wine as random effects in the models.

Consent
✔️ I agree to the privacy policy.

You find the link to our privacy policy at the bottom of the page. In the privacy policy you find a link for exporting and/or erasing your personal data stored in our database.