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What Drives Wine Expenditure in the United States? A Four-State Wine Market Segmentation and Consumer Behaviors Study

Xueting Deng, Timothy Woods
Department of Agricultural Economics, University of Kentucky
xueting.deng@uky.edu, tim.woods@uky.edu

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INTRODUCTION

- ❖ The United States consumes the most wine in the world by both value and volume; consumption has increased over the past decade.
- ❖ All 50 states have been developing wine regions. Excluding CA, other states' wineries are small & underdeveloped vs. foreign competitors.
- ❖ Understanding U.S. wine consumers provides opportunities for state wineries to absorb first-hand information and to enhance wine sales.
- ❖ Wine studies focusing on U.S. wine consumers and specifically stressing on their local wine consumption are scarce.

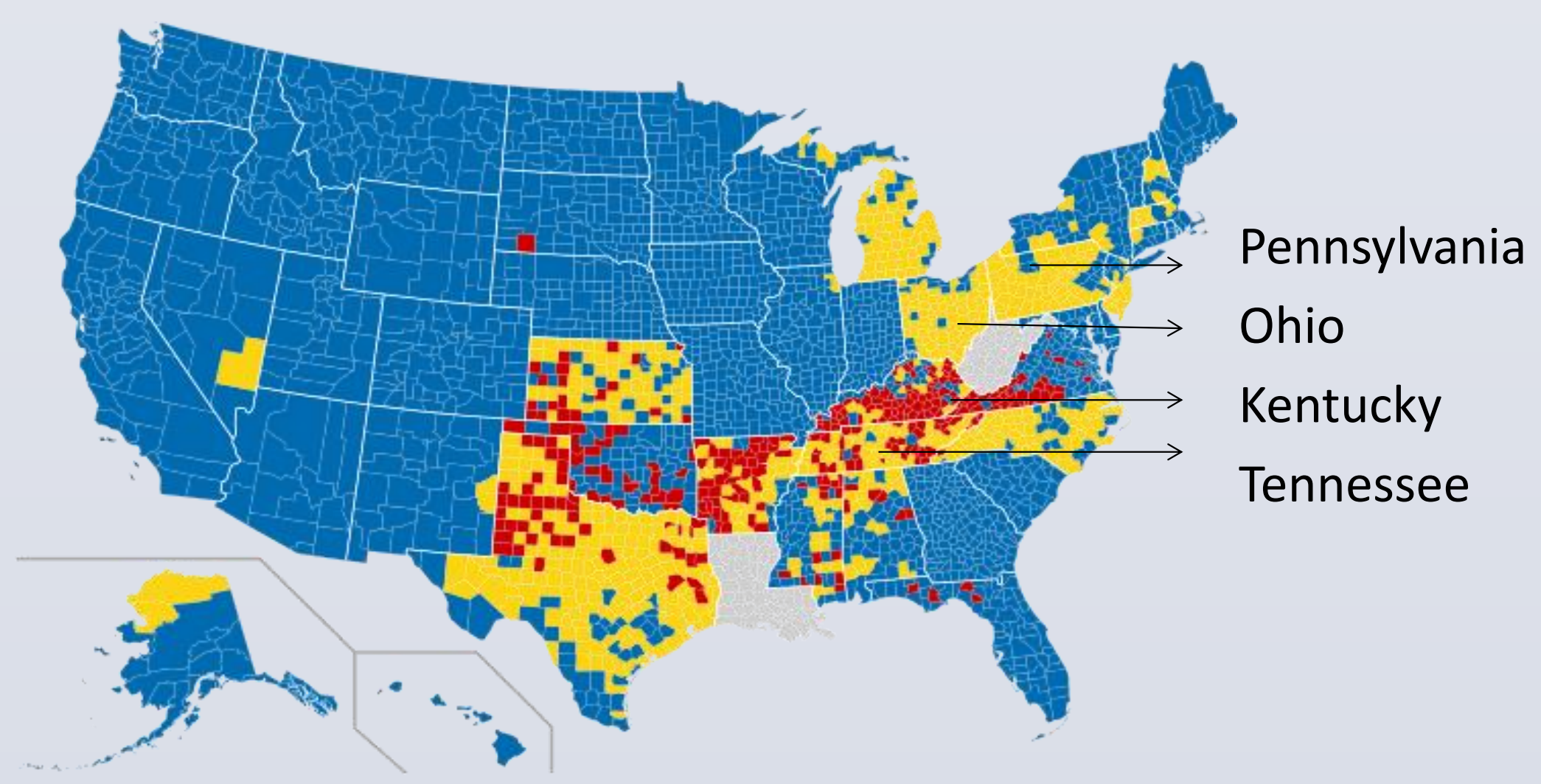
OBJECTIVES

- ❖ Characterize U.S. wine consumers, especially local wine consumers.
- ❖ Explore wine consumers' wine expenditure and consumption driven factors and trends.
- ❖ Determine effective wine consumption driven factors to be further incorporated in wine marketing strategies, especially for local wine.

RESEARCH AREA

- ❖ Except CA, WA, NY and OR, wine production in the U.S. is relatively small. Though PA, OH, KY and TN are highly regulated for wine sales, they were in the top 10 wine producing states in 2012 except TN.
- ❖ Most local (state) wine is consumed within states. Research on local wine consumption in these states can help local wine development in other states with emerging local-wine markets.

REGULATION OF WINE SALES IN THE UNITED STATES



Map showing dry (red), wet (blue), and mixed (yellow) counties.

Sources: "USA Counties with FIPS and Names. Svg ".

DATA AND SAMPLE

- ❖ Online survey was launched in Aug.2012 via Zoomerang.
- ❖ Subjects were wine consumers in PA, OH, KY and TN.
- ❖ Excluded non-drinkers and non-adopters.
- ❖ Full Sample contained 1609 usable online questionnaires totally.
- ❖ Sub-sample included 490 consumers who tried local wine and provided local wine expenditure in dollars (for local wine related topics).

Topics	Full Sample (N = 1609)	Sub-sample (N = 490)
Total wine expenditure	\$39.0	\$48.3
Tried local wine	39%	100%
Local wine expenditure	/	\$17.2
Local wine purchase probability	/	83.5%
Wine expenditure ratio	/	0.41

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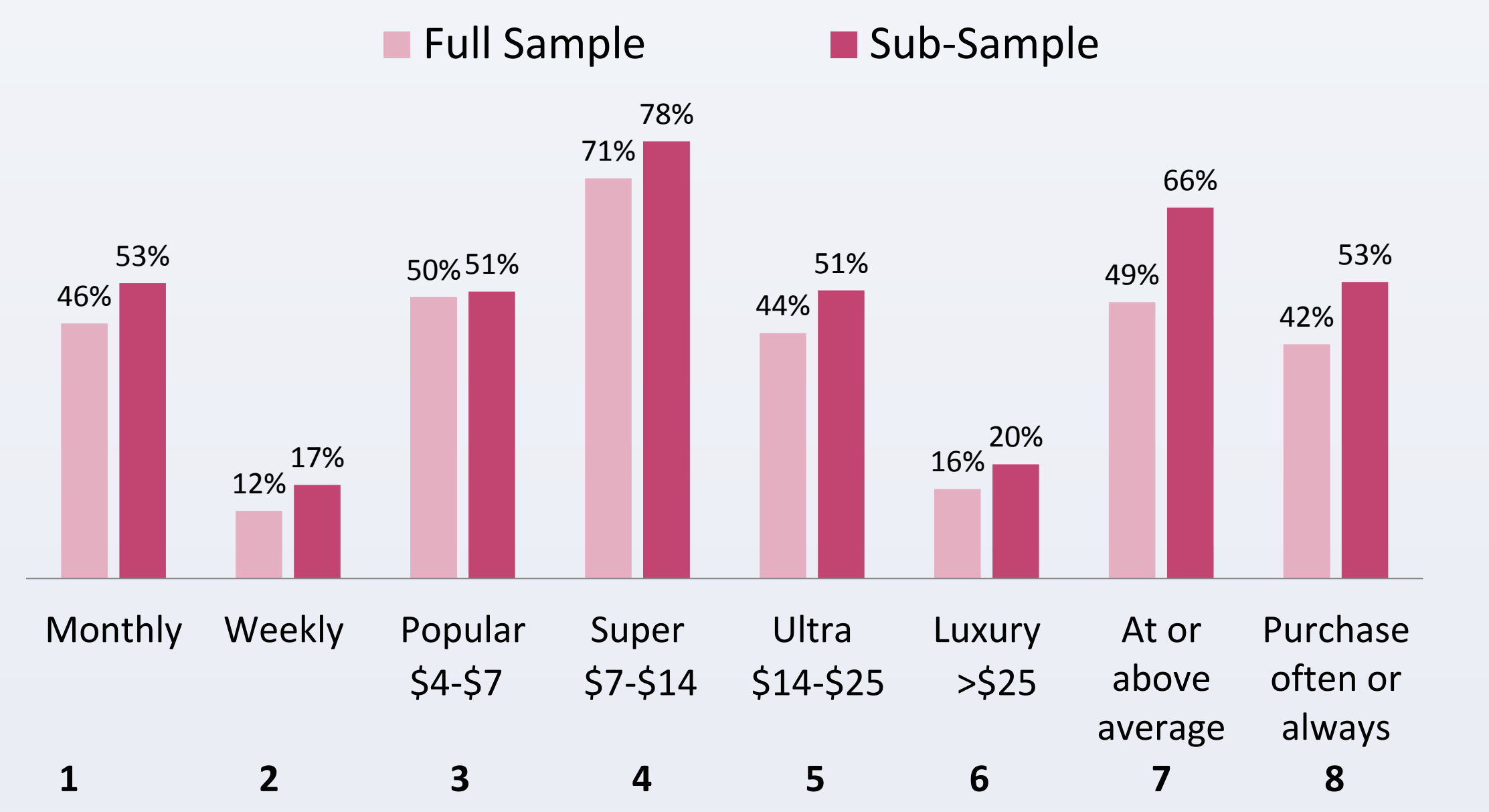
Comparison of Market Segmentations



Market Segmentation Measurements:
1-2: Wine purchase frequency
3-6: Wine price (sometimes or often purchase differently priced wines)
7 : Wine knowledge (at or above average)
8 : Local involvement (frequency of purchasing locally produced foods)
Sub-sample only: ratings of the last local wine experience

MODELS

- ❖ Total Wine Expenditure—OLS Model

(1) $Y_1 = X\beta + \varepsilon$

- ❖ Local Wine Purchase Probability—Probit Model

(2) $P = p_r[y = 1|x] = \Phi(x'\beta) = \int_{-\infty}^{x'\beta} \phi(z)dz$

- ❖ Local Wine Expenditure—Heckman Model

(3) $\text{Prob}\ (T = 1) = \Phi\ (Z'\ Y)$ (1st stage: sample selection)

(4) $E\ (E|T = 1) = X\beta + \rho\sigma\ \lambda\ (Z'\ Y)$ (2nd stage: expenditure equation)

- ❖ Local Wine to Total Wine Expenditure Ratio—Two-limit Tobit Model

(5) $Y^* = X\beta + \varepsilon$

Where
$$Y_i = \begin{cases} Y_i^* & \text{if } 1 > Y_i^* > 0 \\ 0 & \text{if } Y_i^* = 0 \\ 1 & \text{if } Y_i^* = 1 \end{cases}$$

- ❖ Additional Wine Consumption Information—Decision Matrix Method

(6) $F_i^{WSM-score} = \sum_{j=1}^{n} (F_{ij} * W_j)$ (Weighted Sum Model)

for $i = 1, 2, 3,\ldots,m;\ j = 1, 2, 3,\ldots, n$.

X: explanatory variables including market segmentation measurements, life style factors, and demographics.

Y_1: monthly expenditure on wine from all sources .

E: monthly expenditure on wine from state of residency .

P & T: whether purchased local wine or not after a trial of local wine.

Y_i & Y^*: local wine to total wine expenditure ratio.

F_{ij}: score of alternative i associated with criterion j.

W_j : weighs allocated to different criteria j.

F_i: weighted sum scores of alternative i.

Life style factors: distance perception of local winery away from residency and frequency of any winery visits.

Demographics: gender, generation, residency areas, and state of residency.

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RESULTS

- ❖ Partial Model Results

Research Topics	Local Wine Expenditure	Purchase Probability	Expenditure Ratio	Total Wine Expenditure
Models	Heckman	Probit	Tobit	OLS
Market segmentation measurements				
Wine purchase frequency				
Midlevel(monthly)	10.12^{***}	0.227	0.018	18.59^{***}
Core(weekly)	18.52^{***}	0.434	0.034	37.66^{***}
Purchase frequency of differently priced wines				
Popular	-0.574	-0.009	-0.054	0.501
Super	-1.424	0.448^{**}	0.075	0.420
Ultra	1.968	0.346^{*}	-0.020	5.221^{***}
Luxury	4.520*	0.168	-0.012	11.59^{***}
Wine knowledge				
Average	2.268	-0.048	0.029	3.031^{*}
Above average	3.633	0.121	0.025	7.326^{***}
Expert	-1.559	-1.108^{*}	-0.255^{*}	7.885
Last local wine experience				
Neutral	4.550	0.387	0.221^{**}	
Somewhat positive	11.86^{**}	1.031^{***}	0.310^{***}	
Very positive	14.19^{**}	1.540^{***}	0.399^{***}	
Local involvement levels				
Buy local often	3.023	0.394^{**}	0.136^{***}	
Buy local always	2.416	0.036	-0.032	
Life style factors				
Freq visit winery				1.269^{***}
Local is 25-49miles	2.641	0.491^{*}	0.074	2.641
Demographic variables				
Female	-3.931^{*}	-0.506^{**}	-0.072^{*}	0.796
Generation X	2.009	-0.391	0.073	-3.310
Boomers	-2.477	-0.628^{*}	0.001	-3.098
Traditionalists	4.281	-0.391	0.060	-1.107
Urban residents	-2.680	-0.132	-0.092^{**}	-0.624
Pa	5.984^{**}	0.162	0.130^{**}	-0.307
Ky	2.869	-0.042	0.007	4.627^{**}
Tn	4.847^{*}	-0.035	-0.023	5.234^{***}
Constant	8.110	-0.031	0.178	27.75^{***}
R-squared				0.365
Log Likelihood		-162.881	-310.237	
LR χ2		113.64^{***}	92.74^{***}	
Correctly predict		85.92%		
Lambda	16.69^{**}			
Rho	0.972			
Sigma	17.168		0.391^{***}	

Asterisks indicate levels of significance: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Kentuckywine.com

- ❖Wine Purchase Information (Decision Matrix Method Results)

Motivations	Purchase Channels	Purchase Types	Importance
Recognized brand	Independent liquor store	Red wine	High
Holiday or celebration	Grocery affiliated liquor stores	White wine	↓
Spouse/partner preference	State liquor stores	Fruit wine	
Premium quality	Restaurants/ food establishments	Champagne/ sparkling wine	
Food paring	Winery		
From local winery	Wine specialty shops		
	Bars/clubs/pubs		
	Pharmacy		Low

- The major wine purchase purpose is for home consumption, followed by restaurant consumption.

CONCLUSIONS AND IMPLICATIONS

- ❖ Comparing the absolute marginal effects, market segmentation measurements affect expenditure patterns the most, compared with life style factors and demographics.
- ❖ Recommendations on Consumer Targets

To increase general wine sales
- purchase wine ≥ 1 time/month
- purchase wines ≥ \$14
- have average or above average wine knowledge

To acquire more local wine consumers
- males with positive local wine experiences
- purchase wine ≥ 1 time/month
- purchase wine \$25+ sometimes or often

To acquire more local wine consumers
- Millennials with positive local wine experiences
- purchase wines \$7 - \$25
- define "local" as 25 - 49 miles away from residency
- purchase locally produced foods often

To increase the market share of local wine
- non wine experts
- had non-negative local wine experiences
- purchase locally produced foods often
- live in rural areas

- ❖ Incorporate unique features of each state, e.g. in comparison with Ohio, Pennsylvania and Tennessee are better promoted for local wine.

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