



# Viticulture, enology and marketing for cold-hardy grapes



## Policy Analysis for the Cold Hardy Grape and Wine Industries

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**Background and Rationale:** The emergence of cold hardy wine grape cultivars (primarily *vitis riparia*) in the 1990s created a new and rapidly expanding industry of small vineyard and winery enterprises in states across New England, northern New York, and the Upper Midwest. While the North American ancestry of these cultivars confers exceptional climatic adaptation and disease resistance, other challenges to production, processing, and marketing have slowed their successful commercialization in regional and national markets. Marketing tools are required to educate consumers unfamiliar with the grapes and the wine styles they produce. Consequently, the long-term viability of these new businesses requires coordinated research and extension to optimize viticulture, enological (winemaking), business management, and marketing practices including an assessment of the state of the industries. In the reports that detail the extent of the industry in the northern states it was revealed that the wineries identified government policies and regulations as the number one impediment to growing their business. Therefore an analysis of which policies had the most impact on production was undertaken.

**Methods:** Using a primary dataset collected in 2012 from 113 wineries currently operating across 10 northern states, this study examined how state-level policies are influencing the revenue of the emerging wine industry. OLS and Quantile regression methods are employed to account for possible heterogeneous effects of policy instruments on sales of wine. It is assumed that the revenue maximization problem of a winery is:

$$\max_q p \cdot q(p, \mathbf{z}, m, \mathbf{H}) \text{ s. t } q \in Q(\mathbf{z}) \quad (1)$$

where  $p$  is the price of wine per gallon,  $\mathbf{z}$  is the vector of inputs, exogenous vector of policy instruments denoted as  $\mathbf{H}$ . In addition, we include a proxy variable for owners motivation,  $m$ , following the suggestions from previous literature that owner's motivation plays an important role in the emerging wine industry.  $Q(p, \mathbf{z}, m, \mathbf{H})$  is the conditional supply of the wineries which represents revenue maximizing output quantity. It is required that the maximum output produced,  $q$ , is in the producible output set given the vector of inputs,  $Q(\mathbf{z})$ .

Six policy variables were selected from a large pool of policies that potentially affect winery operations. The selection process of policy variables was conducted following a certain set of rules. First, we chose variables that are thought to have a direct impact on winery revenue. Second, we chose variables that have a reasonable degree of variation across the states for the purpose of econometric analysis. Lastly, we chose policy variables that have been a popular topic of discussion in the wine economics literature.

Policy variables (**H**) included in the analysis were:

### Policy Variables

	Northern States									
	IL	IA	MA	MI	MN	NE	NH	NY	SD	WI
<b>Market Regulation</b>										
<i>H</i> <sub>1</sub> . Sell via middleman only	Yes	No	No	No	No	Yes	No	No	Yes	Yes
<i>H</i> <sub>2</sub> . Allow multiple outlets	Yes	No	No	Yes	No	Yes	No	Yes	Yes	No
<b>Tasting Room</b>										
<i>H</i> <sub>3</sub> . Allow provide garnish	No	No	No	No	Yes	Yes	Yes	Yes	Yes	No
<b>Direct Shipment to Customer</b>										
<i>H</i> <sub>4</sub> . Allow ship to customer	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	No	Yes
<b>Tax</b>										
<i>H</i> <sub>5</sub> . Excise tax(7%-16% Alcohol)(\$)	9.03	1.74	1.1	0.51	0.3	0.06	0	0.3	0.93	0.25
<b>The 'Farm' Winery</b>										
<i>H</i> <sub>6</sub> . Minimum in-state fruit content(%)	No	No	No	No	51	75	No	100	51	No

### Results:

The findings reveal that:

the higher the price of wine, the less revenue the winery obtains. This would indicate that cold hardy wine prices are operating in the elastic portion of the demand curve. As price increases overall revenue decreases.

The results for both OLS and quantile regression shows that  $\alpha_{H1}$ , the coefficient for "Sell via middleman only" policy, exhibits a positive effect. This result, that regulation which limits the channel of sales for a winery, is

having a positive effect may seem counter-intuitive. However, it should be noted that the variables have statistically significant effects only at the upper tail of the distribution, which indicates that the regulation largely benefits the revenue of those have large production wineries already well established in the market, rather than small-scale farm wineries.

Wineries in states with a favorable tasting room environment have revenue increases in the range of 70% to 100% more when controlling for other covariates. We can infer from this result that policies that are related to tasting room sales are the crucial factors affecting winery revenues in the northern states.

Not allowing direct shipment of wine to consumers did not have a negative effect on winery sales. However shipment makes up only a small portion of the revenue stream of wine sales and we did find that the smaller the winery the more its revenue was enhanced by allowing direct shipment.

The marginal excise tax rate did not show a meaningful effect on winery sales. However there was very little variation among the states in the amount of the excise tax in effect.

**What the results mean:** Policies directed at how tasting rooms operate had the greatest effect on winery revenues. Since the majority of sales to consumers occur through the tasting room for farm wineries, policies that enhance the tasting room experience (e.g. food sales, entertainment) should be carefully examined. There are probably other policies (e.g. local zoning ordinances) that also play an important role in revenue flows to wineries but they were not a part of this analysis. Further studies should expand the range of policies examined.