

Pennsylvania Wine Industry - *An Assessment*

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EXECUTIVE SUMMARY

This research examined the Pennsylvania wine industry's characteristics, and compared the industry in terms of growth, state funding and shipping laws with those of other wine producing states in the East. The research also examined the industry's use of economic funding and technical assistance programs, its capacity and growth potential, and its strengths, weaknesses, opportunities, and threats. Finally, it offered considerations for the industry and policymakers.

For the study, the researchers used secondary data, interviewed industry stakeholders, observed and participated in two annual meetings of the Pennsylvania Winery Association (PWA), and conducted a survey to obtain data for an economic analysis on capacity and growth potential.

According to the research results, the Pennsylvania wine industry is growing, but not as rapidly as some other eastern states, including Ohio, Maryland, Virginia, and North Carolina, over the last 5 years. All of those states, except Maryland, have higher annual wine production volumes than Pennsylvania. Pennsylvania wine production is also lower than that of New Jersey, and much lower than that of New York; however those states experienced small declines in wine production over the examined 5-year period of 2007-2011.

Of the comparison states, New York, Ohio, Virginia, and North Carolina were found to have significantly higher levels of state funding for research and promotion than Pennsylvania. Funding sources for state wine industries included "dedicated" funding sources provided by excise taxes or similar assessments, legislative appropriations, grants and "gifts," or private-sector funding.

According to the study results, nine Pennsylvania wineries received state loans totaling more than \$1.1 million, or an average of \$126,483 per loan, from 2007 to 2012. In addition to the loans provided to individual wineries, PWA received two Tourism Promotion Assistance Grants and one Regional Marketing Partnership Grant totaling \$550,000 from 2007 to 2012. Penn State Cooperative Extension provided viticultural and enological education.

The study also found that the Pennsylvania wine industry is currently operating at 76 percent of capacity given current industry and market conditions. The analysis found that Pennsylvania's wine industry has room for growth without additional investment in production factors such as land, labor, technology, and capital goods applied to production. Such growth does not preclude the need for additional research and marketing. Growth may be achieved beyond 100 percent of current capacity; however such growth will require additional investment in production factors.

The research found that, in addition to Pennsylvania's individual winery operators, the principal players in the Pennsylvania wine industry are the Pennsylvania Liquor Control Board, PWA, the Pennsylvania Wine Marketing and Research Board, and Penn State University, primarily through its extension services. Additional support comes from the Pennsylvania Department of Community and Economic Development and the Pennsylvania Department of Agriculture. The research found that Pennsylvania wineries are promoted by the vast majority of

Tourism Promotion Agencies: with 81 percent of Pennsylvania wine being sold directly from the wineries or winery outlets, tourists are an essential distribution channel.

Overall, the study found that the Pennsylvania wine industry has demonstrated consistent growth. It has done so in part because Pennsylva-

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nia is the fifth largest grape producer in the U.S. However, the industry faces continuous challenges, from viticulture to enology to marketing. About 81 percent of the industry's product is sold directly from wineries, with virtually no sales at the wholesale or distributor level. There are limits as to how far this niche-marketing model can take the industry without action taken at the state level.

The researchers offered the following policy considerations:

- Designate any expected revenues from direct shipments of out-of-state wine to fund Pennsylvania wine research and marketing;
- Implement policies that facilitate and encourage increased signage for wine trails and wine regions;
- Enact policies that facilitate increased sales of local wines at PLCB stores;
- Revise PLCB Code to include a BYOB License to sell Pennsylvania wines; and
- Provide incentives to wineries to use Pennsylvania grapes.

INTRODUCTION

According to the Pennsylvania Liquor Control Board (PLCB), Pennsylvania wine production increased from 559,637 gallons in 2000 to 1.81 million gallons in 2010. According to the same PLCB production data, the number of wineries producing wine in/from Pennsylvania increased from 60 in 2000 to 159 in 2010. The Pennsylvania wine, winegrape and related industries generated an estimated \$870 million in economic value in 2007, including \$32.2 million in retail wine sales (MKF Research, 2009). (Note: at the time of this study, Frank Rimerman + Co. was conducting an updated economic impact study, with an expected completion date of December 2012.)

According to the U.S. Department of Agriculture (USDA), Pennsylvania is the fifth largest wine grape producer in the U.S. behind California, Washington, New York, and Oregon (USDA, 2012).

Continued expansion of the Pennsylvania wine industry would likely benefit Pennsylvania agriculture and tourism, two of the state's largest industries. The U.S. Alcohol and Tobacco Tax and Trade Bureau (USTTB) labeling regulations require that, for wine to be designated with a state appellation, such as Pennsylvania wine, at least 75 percent of the grapes used must be grown in Pennsylvania and the wine must be "finished" in Pennsylvania.

Tourism would also be a likely beneficiary. The

PLCB code states that the exception to the state-controlled distribution of all alcoholic beverages afforded to licensed limited wineries was created for "promoting tourism and recreational development in Pennsylvania." An estimated 894,000 tourists visited Pennsylvania wineries in 2007, which is an increase from the 877,000 reported tourists in 2005 (MKF Research, 2009). Warganau and Che (2006) suggested that wine tourism, which includes visiting vineyards, wineries, wine festivals, and wine shows for recreational purposes, can serve as a distribution channel for locally grown wines. Ryan, DeBord, and McClellan (2006) conducted an industry assessment of agritourism in Pennsylvania for a study sponsored by the Center for Rural Pennsylvania. Of 311 respondents in a survey of agricultural tourists to and within Pennsylvania, the most popular activity identified in the agricultural education category was winery/brewery tours. A review of the websites of the 49 designated Tourism Promotion Agencies (TPAs) eligible to participate in Pennsylvania's Tourism Promotion Assistance grant program found that 40 TPAs promote wineries or wine tours on their websites; most of the remainder represent counties without wineries present.

Wine tourism is an essential distribution channel in Pennsylvania, with 81 percent of wine sold directly to consumers in 2010 (PLCB, 2012).

Composition of the Pennsylvania Wine Industry

The principal players in the Pennsylvania wine industry are the PLCB, the Pennsylvania Winery Association (PWA), the Pennsylvania Wine Marketing and Research Program (PWMP), Penn State Cooperative Extension, and individual wineries. The Pennsylvania Department of Agriculture and Department of Community and Economic Development's (DCED) Office of Tourism play supporting roles. Each of these components is described below.

Pennsylvania Liquor Control Board

The state's role in the Pennsylvania wine industry is significant. Not only is the Pennsylvania wine industry an important part of agriculture and tourism, but the regulation and distribution of Pennsylvania wine is controlled to a great extent by the PLCB through its regulatory and distribution functions.

Pennsylvania is one of just two states with exclusive control over both the distribution and retail components of what is known as the three-tier distribution system. The three-tier distribution system for alcoholic beverages in the U.S. consists of independent producers, wholesalers and distributors, and retailers. This system was implemented by most states upon the repeal of Prohibition (Shanker, 1999). The PLCB buys more than \$1 billion worth of product (PLCB, 2012) from suppliers and distributes more than 12 million cases of wine and spirits annually to more than 600 state-operated retail outlets, which sell to consumers.

The PLCB is responsible for all licensing and retailing of wine in Pennsylvania. For limited wineries, that role extends to approval of applications for sale at up to five additional board-approved locations in addition to the winery itself, and at expositions and farmers' markets.

The PLCB also purchases Pennsylvania wines to sell at its stores. In 2010, the PLCB purchased 123,296 gallons of wine from Pennsylvania limited wineries, representing about 11 percent of Pennsylvania limited winery sales for 2010. Pennsylvania wineries receive approximately 50 percent of the retail price for their wine and the wine may be distributed to any Pennsylvania Wine and Spirits Store from one of three warehouse locations. At the time of the research, a pilot program was being tested with three wineries that would provide the opportunity for Pennsylvania wineries to deliver and sell to nearby PLCB stores of their choice.

Privatization of the PLCB was debated in 2012, and continued efforts at privatization are occurring in 2013. It is not known how privatization would affect the Pennsylvania wine industry.

Pennsylvania Winery Association

PWA is a non-profit trade association organized to: provide marketing assistance to Pennsylvania limited wineries; provide forums for the exchange of information and experience among members; and sponsor and support legislation and regulations that will benefit Pennsylvania's wine industry and oppose those that will be detrimental. According to the July 10, 2012 minutes of Pennsylvania Wine Marketing and Research Board meeting, 118 Pennsylvania wineries reported sales as of July 3, 2012 and membership in the PWA was 110, or more than 90 percent of Pennsylvania wineries that had reported production in the first half of 2012.

Pennsylvania Wine Marketing and Research Program and Board

The PWMP was created in accordance with the Pennsylvania Department of Agriculture's Agricultural Commodities Marketing Act. The program's purpose is to provide funds for wine and wine grape research and to support promotion and marketing of wines for the benefit of Pennsylvania's producers. The funds are generated by a \$.15/gallon charge on all wine produced in Pennsylvania and are administered by a nine-member board (PWMPB) consisting of the Pennsylvania Secretary of Agriculture and eight non-salaried members who are current Pennsylvania wine producers and are appointed by the Secretary. There are also at least three standing committees including marketing, enology, and viticulture, consisting of non-board members and that might include wine grape growers, wine retailers, and others the board chooses to assign. As of April 26, 2012, funds collected from members based on 2011 wine production totaled \$138,600 (PWMPB, 2012).

Penn State University

Penn State University is also a partner to the wine industry with viticulture and enology extension services along with non-dedicated research in plant pathology, horticulture, entomology, crop and soil science and food science (Chien, 2011). Research stations in Erie and Adams counties have teaching and pathology research vineyards. Pennsylvania is also part of USDA-NE 1020, a multi-state evaluation of wine grape varieties and clones project.

Penn State's research enologist is based in the Department of Food Science at Penn State's main campus with support provided by PWA, PWMRB, and Penn State's College of Agricultural Sciences. The research enologist conducts on-site evaluations of winemaking operations, recommends improvements, and keeps winemakers apprised of the latest science regarding wine production methods, winery economics, and business practices (Gill, 2011).

The state's viticulture educator, working through Penn State Cooperative Extension's Wine Grape Program, provides viticulture educational services and opportunities to commercial vineyards in Pennsylvania, mainly through workshops, field meetings and visits, electronic media and direct contact with grape growers. In his work with wine grapes, the viticulture educator collaborates with other Penn State faculty in horticulture, plant pathology, entomology, and crop and soil sciences (Weidner, 2010).

Pennsylvania Wineries

According to the most recent PLCB data available at the time of the research, 159 Pennsylvania wineries produced wine in 2010. An additional seven wineries from outside Pennsylvania were included in the PLCB production reports, and minutes from the most recent PWA meeting report that there were 204 licensed Pennsylvania wineries.

According to PLCB Code, Pennsylvania limited winery license holders may produce up to 200,000 gallons of wine, wine coolers, and alcoholic ciders per year. Limited wineries may sell their products to individuals at retail on the licensed premises, to the PLCB, hotel, restaurant, club, brewery, and public service liquor licensees. Pennsylvania limited wineries are permitted up to five satellite locations and can obtain permits for off-premises festivals and wine tastings (PLCB, 2012). A change to the code allows limited winery licenses to be held by any in-state or out-of-state winery adhering to the specified limitations, although the vast majority of licensees operate within Pennsylvania.

From an attitudinal survey of winery operators, Dombrosky (2011) found that 33 of the 61 respondent wineries had been in operation under current ownership for less than 10 years. Seven respondents said their winery had been in operation under current management for more than 30 years. It was not surprising that the majority of respondent wineries were less than 10 years old given the recent growth of the Pennsylvania wine industry from 57 bonded wineries in 1998 to 111

bonded wineries in 2005 and 140 in 2011 (PWA, 2011). According to PWA, 120 of the 140 bonded Pennsylvania wineries were actually operational in 2011.

The same survey asked respondents to identify the city closest to them from a list that included Johnstown, State College, Altoona, Sharon and Williamsport, all of which are located in rural counties as defined by the Center for Rural Pennsylvania. Of the 58 respondents, 62 percent were located less than 30 miles from the closest city, while the remaining 38 percent were located 30 miles or more from the closest city.

The survey also indicated that about 30 percent of respondents reported annual production of between 1,000 and 4,999 gallons, while about 19 percent reported production of 20,000 gallons or more in 2009. Nearly 90 percent reported production under 40,000 gallons. Only two wineries reported production of 60,000 gallons of wine or more for 2009. The smallest of nine USTTB classifications for wine production is "up to 5,000 gallons." The mid-point of the classifications is "50,000 to 100,000 gallons." Therefore, this survey's findings support a study by MKF Research (2009) that stated "the Pennsylvania wine industry is comprised primarily of smaller wineries producing less than 20,000 gallons per year."

Of the 57 survey respondents who answered a question about the percent of grapes grown by the winery, 32 percent reported growing less than 10 percent of their own grapes, 28 percent reported growing 10 to 49 percent of their own grapes, and 40 percent reported growing 50 percent or more of their own grapes for use in their wines (Dombrosky, 2011).

USDA (2011) reported that, in 2003, Pennsylvania's wine grape crop of 10,500 tons had a crop value of \$2,793,000. Crop value peaked in 2006 with 16,200 tons and a value of \$6,642,000. Crop value declined to 8,400 tons produced in 2009, with a value of \$3,805,000, and rebounded in 2010 with 10,300 tons produced and a crop value of \$4,913,000. More than 70 percent of Pennsylvania wine grapes are Native American, with 67 percent being Concord, and about 4 percent being Niagara. These grapes are used to make the sweet wines for which Pennsylvania is best known. Hybrid (Chambourcin, De Chaunac, etc.) account for about 13 percent, Vinifera (Cabernet, Merlot, etc.) for about 9 percent, and others for about 8 percent.

The researchers learned from talking with some large winery operators who grow their own grapes that wineries from other eastern states purchase juice from Pennsylvania grapes for processing into wine; no statis-

tics were available for the quantity of grapes or juice exported to other states. Figure 1 depicts the trend in Pennsylvania's wine grape production from 2003 to 2010, compared with its trend in wine production.

Dombrosky (2011) also found that about 42 percent of winery operators had a graduate-level education, 28 percent had a 4-year degree, 4 percent had a 2-year degree and 23 percent had some college or a high-school diploma. Winery operators were not asked about their field of study in college, so conclusions could not be drawn about the benefit or need for formal education to operate a winery.

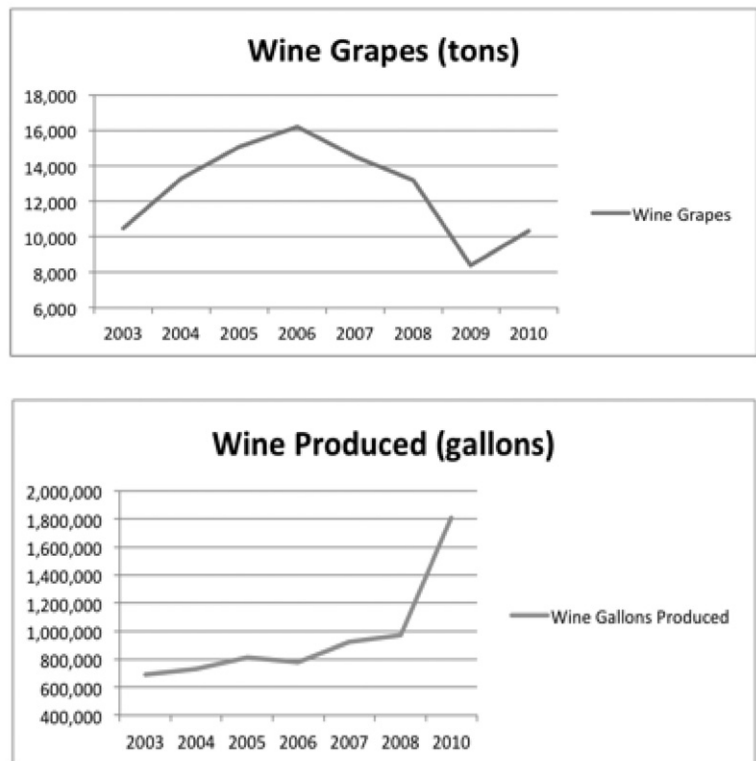
Dombrosky (2011) also found that 56 percent of the principal operators of the winery were 55 years old or older, 40 percent were between 35 and 54 years old, and 4 percent were between 25 and 34 years old.

Funding

As previously mentioned, the Pennsylvania wine industry funds the PWMRP through a self-imposed \$.15/gallon assessment that is administered by the Pennsylvania Department of Agriculture. The program was enacted in accordance with the Agriculture Commodities Marketing Act of 1998, and the initial marketing season was 2001. The general purpose of the program is to provide funds for wine and grape research and to support promotion and marketing of wine for the benefit of Pennsylvania producers. Article VI addresses the interconnectivity of Pennsylvania's wine grape production industry and its wine production industry, and states that the board shall "to the extent practicable, endeavor to include growers of wine grapes in its consideration of appropriate research or marketing projects relating to wine grapes or wine production." Article VIII states that at least 30 percent of annual funding shall be allocated to viticultural research. The proposed budget for 2012-2013 was based on an estimated 5 percent growth in revenue, which would be \$150,000, for fiscal year 2013.

Additional funding has been provided in the form of a budget line item for Agricultural Promotion, Education and Exports. For the 2012-2013 budget, funding was set at \$196,000; a large reduction from the \$1 million in the 2009-2010 budget. The money is allocated between wine and mushrooms, with \$125,000 going to the Pennsylvania wine industry in 2012.

Figure 1: Pennsylvania Wine Grape and Wine Production, 2003 to 2010



The PWA received federal grants as part of USDA's Specialty Crop Block Grant Program, which was authorized under the federal Farm Bill. Those grants have provided between \$33,000 and \$45,000, and have been used to improve the quality of Pennsylvania wine through the Wine Quality Initiative. For 2013, USDA awarded a \$32,000 grant, which will be used in re-branding efforts for Pennsylvania wine.

In 2009-2011, PWA received a Regional Marketing Partnership Grant and two Tourism Promotion Assistance Grants from DCED for \$75,000, \$50,000, and \$75,000, respectively; those grants, however, are no longer offered.

For 2013, the Pennsylvania wine industry expects to have \$307,000 to work with including \$150,000 collected from Pennsylvania wineries through the \$.15/gallon self-imposed assessment; \$125,000 as part of the budget line item provided to the Department of Agriculture for Agricultural Promotion, Education and Exports; and \$32,000 from a USDA grant. Only the \$150,000 from the PWMRP is a dedicated funding source with other sources uncertain.

Granholm Decision

The Supreme Court decision on *Granholm v. Heald*, 544 U.S. 460 (2005) had a major impact on the Pennsylvania wine industry. The Court ruled that regulations in Michigan and New York that allowed in-state, but not out-of-state wineries, to make direct sales to customers discriminated against interstate commerce.

The PLCB initially responded by issuing an advisory that said in-state wineries could no longer sell or ship directly to customers, in effect complying with the Granholm decision by disallowing direct sales from in-state wineries rather than allowing direct sales and shipping from out-of-state wineries. PWA and two in-state wineries then filed suit in the Commonwealth Court of Pennsylvania [*Pennsylvania Wine Assn. v. Commonwealth of Pennsylvania*, No. 564 MD 2005, (Pa. Commw. Ct., filed Nov. 4, 2005)], challenging the validity of the advisory notice. The Commonwealth Court granted a temporary restraining order against enforcement of the advisory notice, and Pennsylvania wineries continued to sell directly and ship to customers.

Compliance with the Granholm decision required out-of-state wineries to be treated equally. Therefore, the PLCB had to issue Pennsylvania Limited Winery Licenses to out-of-state wineries. Additionally, the PLCB could no longer enforce the regulation requiring 75 percent of grapes to be from Pennsylvania and the other 25 percent to be from within 350 miles, because it was considered discriminatory. Federal USTTB labeling laws that require 75 percent of grapes to be from the appellation stated on the label are still in effect, so a wine designated as a “Pennsylvania wine” must contain 75 percent of Pennsylvania grapes. However, Pennsylvania licensed wineries may make wine with grapes from another state as long as it is not labeled “Pennsylvania wine.” Other USTTB labeling regulations govern specific requirements for such labels. The researchers found that many Pennsylvania wineries continue to produce wine with all or mostly all Pennsylvania grapes; however, currently there is no incentive to do so.

Another ramification from these rulings is that out-of-state wineries are not required to pay the \$.15/gallon research and marketing assessment since it would not have the same benefit for them as it does for Pennsylvania wineries, and again, may be considered discriminatory.

Capacity and Growth Potential

There is considerable data on the Pennsylvania wine industry, including economic impact data from MKF Research (2006, 2009). According to MKF Research data, the full economic impact of winegrapes and wine on the Pennsylvania economy grew from \$661 million in 2005 to \$870 million in 2007. (Note: at the time of this research, an updated economic impact study was due in December 2012.)

However, existing economic impact studies on the wine industry do not address the sector’s capacity and growth potential. These existing studies focus on the economic impact of the wine industry using an input-output (IO) methodology through IMPLAN¹. While the IO framework is suited for economic impact studies, it cannot identify whether current output levels in the industry are efficient, given input prices, input availability and demand. A basic assumption in input-output models is that the level of production, or output, is directly proportional to the use of inputs. For instance, if labor is the only input needed for production, then the input-output model assumes that as more labor is added, the output produced increases by a fixed-proportion. The same assumption is extended to include other inputs, namely capital, equipment, machinery, energy and transportation. Hence, the input-output modeling approach is known as constant-proportions technology, or is often referred to as an approach that assumes constant returns-to-scale. However, this assumption is not a serious setback for input-output models because, these models examine intra-industry trade in the whole economy, and estimate the multipliers for different policy proposals.

The multipliers derived from input-output simulations are valid under the assumption of constant returns, and also under fixed prices. That is, under the input-output methodology, prices of outputs and inputs are fixed, and are taken as given. The input-output methodology uses technical details about input use and output produced from different sectors. This methodology does not allow for fluctuations in prices of different outputs or inputs. Consequently, certain key scenarios, such as cost-push inflation², cannot be adequately modeled under this methodology. Therefore, industrial capacity and growth cannot vary with price fluctuations, and this feature is a shortcoming that the researchers addressed in this study.

1. Research by the MKF Research group (particularly for Pennsylvania) issued in 2009.

2. Cost-push inflation is a type of inflation caused by substantial increases in the cost of important goods or services where no suitable alternative is available.

Additionally, the input-output model does not allow for input substitutability, and most importantly, the input-output modeling approach is also very similar to an engineering approach in its assumption that the observed installed levels of inputs in a company are also the optimal levels.

This study identified current industry capacity and growth potential of the Pennsylvania wine industry using a cost-function approach that relaxed these requirements. The researchers used existing data on prices and input use, including the size of wineries, and estimated the efficient levels of production. They then compared those levels to the actual levels of production, and derived the capacity utilization rates³.

The findings from this study may be beneficial to policy makers, winery operators, grape growers, restaurants, and other tourism stakeholders interested in protecting and maximizing the economic impact and other important benefits of wine production within the state.

GOALS AND OBJECTIVES

The goals of this study, which was conducted in 2011 and 2012, were to provide: a comparison between the wine industry of Pennsylvania and the wine industries of New York, Ohio, Maryland, New Jersey, Virginia, and North Carolina; an assessment of the Pennsylvania wine industry's participation in state economic development and technical assistance programs; a determination and report of the current capacity and growth potential for the Pennsylvania wine industry; an analysis of the strengths, weaknesses, opportunities and threats (SWOT) of the Pennsylvania wine industry; and specific policy considerations.

In addition to these stated goals, the researchers offered demographic data about Pennsylvania wineries and winery operators that are available from research conducted by principal investigator Dombrosky (2011) on the distribution of Pennsylvania wines through restaurants, conducted between 2009 and 2011.

METHODOLOGY

The research methods included a review of secondary data, a survey of winery operators, interviews with industry and government stakeholders, and observations at industry events.

3. The capacity utilization rates were derived from operations that currently exist in the industry, and did not include the effect of new competition that enter the sector.

Secondary Data Sources

The researchers used secondary data for the state comparisons and the use of economic development funding. Data were from USDA, USTTB, and DCED for the years 2007 through 2011.

Additionally, testimony from a Public Hearing on Direct Shipment of Wine from a Pennsylvania House of Representatives Committee on Liquor Control, held July 13, 2011, was used as a reference point for the considerations section. Additional secondary sources were consulted and reviewed, and are cited throughout the report.

Survey

The researchers conducted a survey of winery operators to determine industry capacity and growth potential. The survey required participants to review winery records and share production and cost data. The survey was sent to 121 wineries; however, only 12 wineries responded with the requested data, for a response rate of 10 percent.

The cost figures obtained were sufficient for the statistical analysis, which was adapted to control for a small sample size. The results were robust and statistically significant, and compatible with a similar study (Fickle, 1996) conducted in Washington.

The researchers also used the results of a study conducted between 2009 and 2011 by one of the principal investigators on the Pennsylvania wine industry and the distribution of Pennsylvania wine through restaurants. The survey was sent to 120 Pennsylvania winery operators and returned by 61 operators, for a response rate of 51 percent. Demographic characteristics of the wineries and winery operators as identified by that survey are provided as part of this assessment.

Interviews and Observations

The researchers used purposeful sampling for the selection of interviewees. In purposeful sampling, the researchers intentionally select individuals that will help answer the research problem. The interviews, along with observations, were used to obtain data for the SWOT analysis and the data gathered from the interviews significantly informed considerations for public policy.

Interviewees included eight winery operators, the state viticulture extension educator, the director of PWA, the chief executive officer (CEO) of the PLCB, and a member of PLCB's legal council. One of the winery operators interviewed was a member of the

PWMRB. Two of the interviewees sat on PWMRB committees. The researchers also interviewed others, such as the director of tourism grants for DCED, for answers to very specific questions, but these interviews were not included in the interview totals.

The researchers were given full access to the proceedings of PWA's 2011 and 2012 annual meetings. At these meetings, the researchers had informal discussions with meeting participants. The researchers also participated with winery operators in a demonstration of the Wine Quality Initiative being conducted by Penn State Extension's enologist.

RESULTS

Wine Industries in Other Eastern States

Pennsylvania can be "grouped" from a viticulture perspective with its eastern counterparts from the North Shore of Lake Ontario to Georgia (Chien, 2004). Chien notes that "while this is a geologically, geographically and climatically diverse area, there are enough common threads among important viticulture qualities to consider it a region with sub-appellations, similar to California as a wine producing entity."

The researchers selected the following comparison states from this region that have growing or established wine industries: New York, Ohio, New Jersey, Maryland, Virginia, and North Carolina. The comparisons did not include viticultural or enological attributes but did include growth trends both in production and the number of wineries, along with the amount of state support, and wine shipping laws (See Table 1).

New York has, by far, the largest wine industry among the comparison states based on both wine production (25.18 million gallons) and number of wineries (261), and ranked second only to California in U.S. wine production in 2011 (USTTB, 2012). The next closest of the comparison states is Ohio, with 1.57 million gallons. Based on 2011 data from USTTB, Pennsylvania ranked sixth among comparison states in wine production, with 922,632 gallons produced, and third in the number of bonded wineries with 144. Federal law requires that anyone wishing to conduct wine operations must first establish premises, obtain a bond and receive permission from the USTTB. Bonded wineries are those that have received permission and obtained a USTTB bond. Data from the PLCB were also available through 2010 and are provided here for reference. PLCB data may vary from USTTB for a variety of reasons, including reporting timing and the inclusion in

PLCB data of wineries licensed as Pennsylvania wineries but with locations outside of Pennsylvania.

Among the seven comparison states, New York, Virginia, and Ohio received the most state funding for research and promotion. Funding among the comparison states consisted of "dedicated" funding, legislative appropriations, grants and "gifts," or private sector funds, typically from industry stakeholders. Dedicated funding refers to an assessment or excise tax placed on wine sold in a state that is dedicated to that state's wine industry. Such funding is not as vulnerable to state budget cuts or other shifts in funding to different areas.

In Ohio, an excise tax of \$.05 is placed on all wine sold in the state, not just wines produced in Ohio. According to the Ohio 2010-2011 budget, \$850,000 was allocated for Ohio wine marketing and research.

New Jersey's wine industry receives \$.47/gallon on all sales of New Jersey wine sold by winery licensees each year amounting to \$144,000 in 2011.

Virginia, which increased its wine production about 19 percent in the 5-year period, established the Wine Promotion Fund (SB237/HB588), placing a \$.40/liter assessment on Virginia wine products, a portion of which is to be used specifically for researching, marketing, and promoting Virginia's wine industry. The Virginia General Assembly in 2012 agreed to more than triple the amount of funds placed into the fund, increasing the amount from the original \$580,000 to \$1.8 million (Rimerman, 2012).

New York's funding has been reduced in recent years to \$713,000 per year in appropriated legislative funds, a reduction from the \$3 million received in 2007 (Trezise, 2012).

Pennsylvania wineries fund the PWMRP with a self-imposed \$.15/gallon tax on all Pennsylvania wine sold; the fund is administered by the Pennsylvania Department of Agriculture in accordance with the requirements of the Agricultural Commodities Marketing Act (ACMA) and yields about \$140,000 annually that is used for wine industry research and marketing. At least 30 percent of the available funds must be allocated to viticulture research (Pennsylvania Bulletin, 2012). Additionally, the industry receives budget line-item support of varying amounts as part of an Agricultural Promotion, Education and Exports line item. That line item was eliminated and later restored to the 2012-2013 budget. The elimination, however, highlights the uncertain environment in which the Pennsylvania wine industry must operate.

Shipment of wine was included in the comparison

Table 1: State Comparisons*Pennsylvania*

	5-Yr Change (%)	2011	2010	2009	2008	2007
Gallons (Produced-USTTB)	+3%	922,632	823,390	816,054	902,318	895,386
Gallons (Produced- PLCB*)		N/A	1,811,458	N/A	971,191	919,936
Bonded Wineries	+ 17%	144	140	137	127	123

* PLCB data include non-Pennsylvania wineries with Pennsylvania Limited Winery licenses. Not available for 2009 due to change that year in data reporting procedures. Dedicated funding source: self-funded; wineries contribute \$.15/gallon of Pennsylvania wine sold to PWMRP, which is administered by the Pennsylvania Department of Agriculture. Legislative funds appropriated: \$125,000 as part of budget line item provided to the Pennsylvania Department of Agriculture for Agricultural Promotion, Education and Exports. Wine shipping laws: currently allowed in-state.

Maryland

	5-Yr Change (%)	2011	2010	2009	2008	2007
Gallons (Produced)	+25%	351,820	313,371	307,566	314,461	281,382
Bonded Wineries	+50%	45	38	35	37	30

Dedicated funding source: none. Legislative funds appropriated: none (grants and low-interest loans available for grape growers). Wine shipping laws: direct shipments permitted; permit required; 18 cases per household per year.

New Jersey

	5-Yr Change (%)	2011	2010	2009	2008	2007
Gallons (Produced)	-11.3%	1,507,311	1,519,742	1,711,915	1,579,561	1,699,928
Bonded Wineries	+7%	46	42	41	40	43

Dedicated funding source: New Jersey Wine Industry Advisory Council receives \$.47/gallon on all sales of New Jersey wine sold by plenary and farm winery licensees each year (www.state.nj.us/agriculture). Legislative funds appropriated: \$144,000 of above funneled back to industry in 2011. (Additional funding through grants from the New Jersey Wine Industry Advisory Council and the New Jersey Department of Agriculture). Wine shipping laws: direct shipments permitted; permit required; shipments permitted only from wineries producing 250,000 gallons or less; 12 cases per person per year; signed into law January 2012.

New York

	5-Yr Change (%)	2011	2010	2009	2008	2007
Gallons (Produced)	-7%	25,183,355	25,248,204	26,257,964	27,079,238	27,219,238
Bonded Wineries	+12.5%	261	251	223	232	232

Dedicated funding source: none. Legislative funds appropriated: \$750,000 (grants and gifts up to \$1.25 million). Wine shipping laws: direct shipments permitted; permit required; taxes paid; 36 cases annually.

North Carolina

	5-Yr Change (%)	2011	2010	2009	2008	2007
Gallons (Produced)	+39.5%	1,381,370	1,201,487	1,231,746	1,228,619	990,429
Bonded Wineries	+38%	110	105	93	86	80

Dedicated funding source: none. Current legislative funds (2012-13): \$500,000- one year, non-recurring. Wine shipping laws: direct shipments permitted; permit required; 2 cases per month limit.

Ohio

	5-Yr Change (%)	2011	2010	2009	2008	2007
Gallons (Produced)	+32%	1,568,378	1,093,443	1,102,958	1,106,719	1,186,698
Bonded Wineries	+19.8%	127	121	118	106	106

Dedicated funding source: wine excise taxes, \$.05/gallon on all wines sold in Ohio. Legislative funds appropriated: \$700,000. Wine shipping laws: direct shipments permitted; \$25 permit; only wineries producing less than 250,000 gallons annually are allowed to ship to consumers; 24 cases per household annually.

Virginia

	5-Yr Change (%)	2011	2010	2009	2008	2007
Gallons (Produced)	+18.5%	1,062,479	976,052	1,162,497	1,217,978	896,355
Bonded Wineries	+72.7%	202	195	162	152	147

Dedicated funding source: \$.40/liter (\$3.60/case) on Virginia wine products. Legislative funds appropriated: \$1.325 million in 2010/11 budget vs. \$580k previous year. Wine shipping laws: direct shipments permitted; permit required; 2 cases per month.

because it has recently been an issue in Pennsylvania. All the comparison states except Pennsylvania allow direct shipping from wineries to consumers, with varying restrictions and limitations. Pennsylvania wineries continue to ship as per the post-Granholm decision restraining order, while out-of-state wineries do not ship directly to Pennsylvania consumers.

For Table 1, wine production statistics were taken from the USTTB website (USTTB.org) and data on the number of wineries were compiled from USTTB data by Wine Business Monthly (2012).

Participation in State Economic Development Funding and Technical Assistance Programs

From 2007 to 2012, DCED issued loans to nine Pennsylvania wineries totaling \$1,138,345, or an average of \$126,483 per loan.

Eight loans were made under DCED's Small Business First (SBF) program, which provides low interest loan financing of up to \$200,000 for land and building acquisition and construction, machinery and equipment purchases, and working capital.

Five of the eight SBF loans were part of the First Industries Program sub-category that focuses on agriculture and tourism enterprises. According to DCED, the state investments made through the First Industries Program provide low interest loans, loan guarantees and grants to agriculture and tourism-related businesses to assist with business promotion and expansion.

The largest DCED loan was made under the Pennsylvania Industrial Development Authority (PIDA) program for \$240,845, greater than the \$200,000 maximum provided under the SBF program. The PIDA program provides capital to businesses, including agricultural processors, for building acquisition, construction and renovation work.

In addition to the loans provided to individual wineries, two Tourism Promotion Assistance Grants and one Regional Marketing Partnership Grant were provided to PWA totaling \$200,000. Therefore, a total of \$550,000 in grants and \$1,138,000 in loans were provided by DCED to members of the Pennsylvania wine industry from 2007 to 2012.

No such data exist for the Pennsylvania Technical Assistance Program (PennTAP). PennTAP provides technological assistance and information to small companies that lack in-house expertise or resources to resolve specific technology questions or needs (PennTAP, 2012). Service topic areas include advanced information technology, energy, sustainability, work safety services, food industry, and new product development.

Inquiries to PennTAP as to the use of PennTAP programs found that PennTAP has helped wineries over the years with food safety and innovation capabilities; however, quantifying those efforts was not possible.

One reason identified that may account for the limited use of PennTAP services may be the extensive technical services provided by Penn State Cooperative Extension, and services provided by a strong winery association. Numerous resources are provided by Penn State Cooperative Extension on viticulture and enology, and by PWA for marketing and promotion.

According to the Pennsylvania Wine Grape Network (PWGN) website, Penn State Cooperative Extension provides viticulture education services and opportunities to the commercial vineyard industry in Pennsylvania, mainly through workshops, field meetings and visits, electronic media and direct contact with grape growers. PWGN is a web portal that disseminates current and relevant viticulture news, information, and events to commercial wine growers in Pennsylvania and non-western wine states (PWGN, 2012). PWGN is funded by Penn State University's College of Agricultural Sciences and PWMRP. Through PWGN, Extension's viticulture educator provides educational resources and holds seminars on viticulture. Extension's enologist conducts on-site evaluations of wine-making operations, recommends improvements and keep winemakers apprised of the latest science regarding wine production methods, winery economics and business practices. Through its Wine Quality Initiative (WQI), a program that assists wineries in implementing quality assurance testing programs based on standardized sensory evaluation techniques, the industry strives to improve wine quality throughout the state. According to Penn State Cooperative Extension (2012), approximately 33 percent of the Pennsylvania wine industry participated in a recent WQI conducted during 2011-2012. Based on the researchers' observation at two PWA conferences and interviews with eight winery operators, these resources are welcomed and used by the majority of the Pennsylvania wine industry.

Industrial Capacity and Growth Potential

This research examined whether the wine industry is operating at capacity and if it has any growth potential.

The research began with the assumption that, if the industry is currently operating at full capacity, then any future growth must come at added costs, such as expansion of facilities or equipment upgrade. Similarly, if past trends indicated that the industry was undergoing a

decline, in terms of production, shipments and employment, then increasing capacity was not a viable option.

First, it was important to establish the conditions for an industry's future growth taking into account the industry's current operating capacity. The crucial question asked was could the industry increase production at lower per-unit costs. In other words, is there an opportunity to expand production at lower per-unit costs so as to exploit the economies of scale?

Capacity Utilization

Often "capacity" output for a company or a plant is approximated through various indicators of "installed capacity." Installed capacity or "engineering capacity" is defined as the maximum output that can be produced given the fixed factors of production (size of the plant, equipment and machinery requirements) and when there are no constraints on the flow of variable inputs, such as labor and electricity.

The capacity utilization (CU) indices based on production and engineering data are popular and widely used but they are ad hoc in nature with ambiguous interpretations and suspect economic foundations. Furthermore, information regarding determinants of CU and its response to external shocks are not integrated into the model. Also, there is no way to directly link changes in observed economic variables, such as interest rates, to changes in CU.

For this study, the researchers used a microeconomic approach called the "choice theoretic approach" to analyze the determinants of CU. This microeconomic methodology provided two advantages: the methodology incorporates the economic behavior of a firm and computes the magnitude of CU and enables a determination of the effects of input price changes, and changes in the demand conditions on CU.

The application of choice-theoretic measures of CU indicated that existing wineries operate under less-than-full capacity and that there are opportunities to expand capacity in the long run. The research estimates indicated that there are opportunities that can be exploited, because the industry can still take advantage of unused capacity for future growth⁴.

Economies of Scale

From an economic standpoint, a firm is said to experience economies of scale whenever the per-unit costs of production, or the average cost of production, declines as more units are produced. Under such conditions, the average cost declines as more output is produced. However, it is possible that the average cost of production has a U-shape, which means, that the per-unit costs decline for a range of output, and then begin to go up. When the per-unit costs start going up, then it means that the firm must engage in measures to cut back on production, or devise methods to reduce the average costs of production. On the other hand, if the average costs of production fall as more output is produced, then the firm can produce more output and experience lower per-unit costs. By and large, economists have estimated the average costs for many industries and have found that there are significant economies of scale at low output levels, but that these tend to diminish as output increases. Further, this line of research has also shown that the average cost eventually flattens out at high output levels. What this means is there is a limit to the cost advantages that can be reaped with higher output⁵.

According to PLCB data (2008), about 90 percent of Pennsylvania wineries are smaller establishments that produce less than 20,000 gallons per year and almost 66 percent of wineries produce less than 5,000 gallons per year.

To estimate the economies of scale for Pennsylvania wineries, the researchers used the survey responses for data on costs of production and gallons produced from the 12 wineries that responded to the survey. Nine out of the 10 wineries that reported the data in the survey were small establishments. Hence, while most of the data collected is representative of the whole industry, the actual sample size for this study is rather limited. However, the researchers were able to obtain the results for the economies of scale, which were statistically significant and consistent with a similar study conducted by Fickle et al. (1996)⁶.

The results indicated that, for most ranges of wine production, per-unit costs decline as production increases. Consequently, since most of the wineries were

4. It should be noted that the sample size was rather small, with only 10 observations without missing values. However, the statistical estimation of the cost function yielded an $R^2 = 0.90$ and statistically significant estimates. Consequently, with limited data, the researchers were not in a position to conduct further statistical tests, but given the sample size, they were able to generate statistically significant results with a parsimonious model.

5. For references see Edwin Mansfield, *Managerial Economics* (1993), Chapter 8, page 311 and also F.M.Scherer, *Industrial Market Structure and Economic Performance*, 2nd Edition.

6. It should be noted that with only 12 observations, the sample size was relatively small. However, the results indicate that a linear regression analysis provides an $R^2 = 0.8$ and the estimates were significant at 99 percent.

Table 2: Increased Output Cost Reduction

Quantity in Gallons	Per Unit Costs (\$)	% Change Quantity	% Change Unit Costs	Unit Cost Elasticity
960	161.31			
1,250	130.58	0.30	-0.19	-0.63
1,382	120.86	0.11	-0.07	-0.70
3,000	71.24	1.17	-0.41	-0.35
3,520	64.98	0.17	-0.09	-0.51
4,500	57.11	0.28	-0.12	-0.43
9,500	42.24	1.11	-0.26	-0.23
10,500	40.96	0.11	-0.03	-0.29
12,000	39.45	0.14	-0.04	-0.26
35,000	32.49	1.92	-0.18	-0.09
Average cost elasticity over the whole range				-0.39
Quantity in gallons is from the survey. The total costs of the operation were calculated by adding the various expenditure items. The researchers estimated a linear cost function and used the predicted values to generate the unit costs in the second column. The percent changes in production and unit costs were generated from the first two columns. The unit cost elasticity formula was used to generate the last column. The average of this column is -0.39.				

Table 3: Cost Reductions per Range of Production

Quantity (in Gallons)	Per-Unit Costs (\$)	% Increase in Quantity	% Reduction in Per-Unit Costs	Per-Unit Cost Elasticity
1,250	130			
3,250	65	1.60	-0.50	-0.31
9,500	42	1.92	-0.35	-0.19
12,000	40	0.26	-0.05	-0.18
35,000	33	1.92	-0.18	-0.09
Quantity in gallons is from the survey. The total costs of the operation were calculated by adding the various expenditure items. The researchers estimated a linear cost function and used the predicted values to generate the unit-costs in the second column. They then selected a set of ranges to check if the economies were observed for these ranges in production. The percent changes in production and unit costs were generated from the first two columns. The unit cost elasticity formula was used to generate the last column.				

below the 20,000-gallon range, economies and advantage of size would exist for most Pennsylvania wineries. The results in Table 2 indicate that, as the winery size increases, so do costs, but on a decreasing scale. Interestingly, these results are also compatible with those obtained by Fickle, Folwell, Ball and Clary (1996) for the wine industry in Washington.

Using the information from Table 2, the researchers derived unit costs and unit cost elasticity for selected production ranges. From the regression estimates and the values of cost and output, the researchers estimated that a winery that produces about 1,250 gallons has a per-unit cost of \$130, while a winery that produces 3,250 gallons has a per-unit cost of \$65, or a reduction

in costs by almost 0.31 percent for every 1 percent increase in production (or per-unit cost elasticity). The unit-cost reductions for select ranges of production are presented in Table 3. The negative unit cost elasticity measures indicated that there are significant scale economies for the wine sector, and that lower per-unit costs will accompany this sector's expansion.

From the analysis and estimation of CU, the researchers examined whether the industry can actually exploit these scale economies. If an industry currently operates at full capacity, then the possibility of expanding the industry's scale of operation becomes very difficult. Consequently, the research estimates of the wine industry's current CU rate are very important. These estimates indicated that wineries operate at 76 percent capacity, which imply that economies of scale exist in the industry and may be exploited in the long run.

Therefore, the analysis demonstrated that Pennsylvania's wine industry has room for growth without additional investment in production factors such as land, labor, technology, and capital goods. Such growth does not preclude the need for research and marketing, which are outside the factors of production.

For growth to be achieved beyond 100 percent of current capacity, additional investments in production factors will be needed.

Strategies for exploiting the economies of scale for the Pennsylvania wine industry are provided below in the strengths, weaknesses, opportunities and threats (SWOT) analysis.

SWOT Analysis

The researchers conducted a SWOT analysis of the Pennsylvania wine industry from an economic/business perspective. SWOT analysis is common in business and typically views strengths and weaknesses as internal factors, and opportunities and threats as external factors. This SWOT analysis was informed by interviews with the director of PWA, eight winery operators, the Penn State viticulture extension educator, and the CEO of the PLCB. It was also informed by the researchers' observation and participation at two annual conferences

Table 4: SWOT Analysis

Strengths	<ul style="list-style-type: none"> • Passion within the industry • Demonstration of local entrepreneurial talent for niche marketing • Growth trends in the number of wineries and sales • Extension support in viticulture and enology • Strong winery association and marketing research board • Direct sales from wineries generated through tourism and wine trails • Cooperation between wineries along wine trails • Comparative market advantage of Pennsylvania sweet wine • Improving reputation for quality of wines overall
Weakness	<ul style="list-style-type: none"> • Limited marketing and research budgets relative to other states • No dedicated support funding mechanisms from the state • Lack of signage for wine trails and prohibitive cost of signage • Enforcement issues concerning the 75 percent Pennsylvania grapes requirement • Lack of information in the value chain • Very limited distribution through restaurants • Lack of marketing research and information • Lack of a “Pennsylvania wine” brand or a dominant brand varietal • Sweet wine “stigma”
Opportunities	<ul style="list-style-type: none"> • Development of storehouse of information, database and web portal • Secure dedicated funding source and increased funding • Expand marketing research to identify consumer wants and tastes • Signage for wine trails and facilitation of signage for wineries • Create new PLCB license designation for BYOB restaurants • Increased sales through PLCB stores
Threats	<ul style="list-style-type: none"> • Pennsylvania Limited Winery Licenses given to out-of-state wineries • Ambiguity in shipping rules and guidelines • Increased competition from non-Pennsylvania shipments • Market saturation without opening new markets • Developing wine industries in proximate states • Overdependence on key people in important roles • Budget cuts without dedicated funding source • Inconsistent quality particularly with many new entrants • Aging demographic of principal winery operators

of PWA, and by Dombrosky’s (2011) research. Finally, it was informed by extensive review of secondary data sources. As with any qualitative research, the researchers’ interpretation of data also informed the findings. The analysis is summarized in Table 4.

CONCLUSIONS

The Pennsylvania wine industry has demonstrated consistent growth and has performed above the level of most eastern states, and most states overall. It has done so, in part, because it is the fifth largest grape producer in the U.S., and, based on the observations and interactions of the researchers, because of the quality and passion of the people in the industry.

However, it faces continuous challenges in all aspects

of the industry, from viticulture to enology to marketing. About 87 percent of its product is sold directly from the winery, with about 1 percent sold through restaurants, and virtually no sales at the wholesale or distributor level. There are limits as to how far this niche-marketing model can take the industry without action taken at the state level.

This analysis demonstrated that the industry is currently functioning at 76 percent of its capacity, with each 1 percent increase in wine production associated with a projected 39 percent reduction in per-unit cost production. Achievement of this growth and cost reduction in the Pennsylvania wine industry would enable associated growth to accrue to the Pennsylvania agriculture and tourism industries, with which the

Pennsylvania wine industry is so closely intertwined. To achieve this growth it must address deficiencies in transparency of information, in collection and access of marketing information, and in overall research.

POLICY CONSIDERATIONS

Designate pending revenues from shipments to fund dedicated funding source

It is expected that out-of-state wine shipments will soon be allowed in Pennsylvania and are a potential threat to local wineries. It is not disputed that these shipments should be allowed; in fact allowance of such shipments is desirable and recommended. Allowing these shipments would also present an opportunity for a dedicated funding source for Pennsylvania wineries.

An estimate of the revenue that may be generated by allowing out-of-state shipments can be derived from New York State, which began allowing direct shipping in 2005. Wineries that shipped directly to New York reported \$54 million in sales to New York consumers between March 2009 and February 2010 (Matthews, 2011). These sales yielded about \$4.5 million in sales taxes. Additionally, the New York Liquor Authority has collected \$431,375 in permit fees from wineries in the 15 states registered with New York for direct shipping. According to Wine Handbook (2007), the most recent data that could be located, consumption of table wine in New York was about three times the consumption of table wine in Pennsylvania. Therefore, if the shipment of wine into the state were approved, and estimated to be about 33 percent of shipments into New York, the value would be approximately \$18 million. If just a 2 percent allocation of the estimated sales generated from direct shipments went to the Pennsylvania wine industry for research and promotion, an estimated \$360,000 annually could be generated. This recommendation would apply only to direct wine shipments.

Of course there are other ways to derive an appropriate dedicated allocation to the Pennsylvania wine industry. The important point is that these shipments, if allowed, present an opportunity to create a dedicated allocation from the sale of wine to the Pennsylvania wine industry. This would put Pennsylvania on closer or equal footing with wine industries in other major wine producing states, without the need for an uncertain budget line-item allocation.

Implement policy that facilitates and encourages increased signage for wine trails and wine regions

According to PWA, more than 70 Pennsylvania wineries belong to 11 wine trails located throughout the state. PWA promotes the wine trails primarily through its website and public relations activities. In addition, each wine trail plans its own events and promotes itself independently.

Dombrosky (2011) found that seven of the eight Pennsylvania winery operators he interviewed mentioned the success they have had from their involvement in wine trails. The only exception was the one winery that was the only winery in its county. Location and proximity to other attractions appear to be critical to success. For the other seven operators interviewed, tourists visiting the wine trails were an important source of business since the wine trail and related events help get tourists and other to the wineries.

Wine trails are most closely integrated with the overall tourism experience. In addition to tourists whose primary motive was visiting wineries, operators also mentioned other tourist-related business important to their wineries, such as hunting, fishing, other outdoor activities, and historic and heritage destinations. Carmichael (2005) conducted an exit survey at eight selected wineries in the Niagara region of Canada. When asked the main reason for their visits to the Niagara region, only about 46 percent said wineries, although about 70 percent of the visitors surveyed purchased wine. Visiting friends and relatives, and visiting attractions, such as Niagara Falls, were among other reasons given, with about 10 percent saying they lived in the area. Rural landscapes, the variety of wineries, ease of access, and good signage most influenced visitor enjoyment of the region.

The researchers visited a variety of wineries for this study, almost all of which were part of attractive rural landscapes. Access to wineries on rural roads was adequate. However, while most of the wineries visited had small signs posted on rural roads providing directions to their wineries, the researchers did not see any signs for wine trails, and only one sign along busier highways. One winery operator reported that he received a local grant for a highway sign funded by a hotel tax. Given the importance placed on tourism and wine trails by the winery operators interviewed, and their perceived lack of state support, improved signage could be a means for the state to assist the state wine and grape industries, and tourism. It would not only

enhance the tourism experience, but also help build the Pennsylvania wine brand.

Findings from both this study and the literature review suggest that winery visitation is part of an overall tourism experience. Links and alliances along wine trails and in wine regions should extend beyond other wineries to other tourist attractions and tourism service providers including restaurants, lodging operators and tour guides.

Similar to recommendations made by Ryan, DeBord and McClellan (2006) for Pennsylvania agritourism, allowances for signage for the Pennsylvania wine industry should be made. Currently, signs are either not allowed or are cost prohibitive for most Pennsylvania wineries. While adhering to the restrictions of the Federal Highway Administration and the Highway Beautification Act of 1965, and adhering to or modifying Pennsylvania Code Chapter 445, promotion of Pennsylvania wineries needs to be facilitated through more affordable and more present signage. One recommendation would be to model it after the grant program made available from the Pennsylvania Department of Conservation and Natural Resources (2011) for businesses located in the Pennsylvania Wilds. A second option would be a coordinated effort to design and place signage promoting the 11 Pennsylvania wine trails. As such, signage could be funded through DCED's Tourism Office in alliance with PWA and trail members.

New York State offers affordable wine trail signs for wine trail members. Each road sign costs about \$250. According to the president of the New York Wine and Grape Foundation (NYWGF), the signs "pay for themselves the first day in terms of consumer traffic and sales" (Collins, 2006). New York trail members enlisted the support of state government and the Department of Transportation to increase wine trail signs throughout the area. Trail members pay a percentage of the signage maintenance costs. Individual road winery signs successfully direct tourists through the region, and increase trail awareness for local areas.

Enact policy that facilitates the increased sale of local wines at PLCB stores

One of the difficulties the PLCB stores face in stocking Pennsylvania wines is the lack of a single brand for "Pennsylvania wine." There are more than 140 wineries, each producing an extended product line. Hence, it is difficult for PLCB stores to choose from this portfolio and provide optimal shelf-space. On the other hand, the local wineries would benefit greatly from increased exposure of their product lines in PLCB venues.

At the time of the research, Pennsylvania wineries wishing to distribute wine through PLCB stores had to ship their wine to one of three central distribution points for sale at an unknown store in any part of the state. Generally, only the largest wineries availed themselves to this distribution method. The researchers concluded that a middle ground could be reached: PLCB stores that are located within certain Pennsylvania wine trails could carry an assortment of wines from local wineries that are located in the trail's jurisdiction. The Pennsylvania wine industry must use this opportunity to facilitate the sale of local wines at PLCB stores within specified jurisdictions. A pilot study with three wineries selling wine through local PLCB stores was underway as this study was being conducted. This program should be evaluated and expanded if proven effective, or analyzed to determine why it was ineffective.

Revise PLCB Code to include a BYOB License to sell Pennsylvania wines

Currently, the PLCB code has license designations for Restaurants, Clubs, Distributors (Beer), Eating Places (a limited "E" category license allowing only beer sales), and Hotels. Additionally, restaurants without a liquor license are permitted to allow customers to "bring their own bottle" (BYOB) of wine. Many offer "corkage" service, which is either complimentary or for a small charge.

The researchers recommend adding the allowance of sale of Pennsylvania wines to the Eating Places category and adding a license category allowing only the sale of Pennsylvania wines at BYOB restaurants. The presumption is that the price of such a license would be accessible to most small businesses.

Provide incentives to wineries to use Pennsylvania grapes

Currently, many users of Pennsylvania grapes do so voluntarily, and consequently, have no extended incentives to pursue this loyalty. This is especially true since the Granholm decision. Consequently, it is important to identify and reward the users of Pennsylvania grapes, either in terms of a direct subsidy or tax-relief. Without adequate incentives, the enforcement issue and branding of Pennsylvania wine remain weak.

Additional recommendations

The following two recommendations do not pertain specifically to legislative policy, but suggest niche-marketing strategies to help the industry grow and experience increased economies of scale. Any growth in the Pennsylvania wine industry is likely to accrue to Pennsylvania agriculture and tourism. While they are interrelated, the second strategy of creating a web portal is not necessarily dependent on the first recommendation of creating a marketing niche.

Create a niche

As markets become more competitive, firms of all sizes must become more focused. Smaller specialist organizations must develop market niches that distance themselves from larger wineries producing an extended product line (Swaminathan, 2001). As the resource base of these firms limits the strategic options available, small firms must place greater emphasis on relationship strategies with a small target market of consumers, distributors and retailers (Mintzberg et al., 1998; Beverland and Lindgreen, 2001)⁷.

Creating a niche for small wineries is important for at least two reasons. First, as Geene et al. (1999) indicated, the world wine market is undergoing substantial changes, with an increase in market segmentation between large and niche players. Second, wineries of all sizes will have to increase their market orientation and focus simultaneously on building market awareness and relationships, necessitating an increased strategic focus (Beverland and Lockshin, 2001; Beverland and Lindgreen, 2001; Swaminathan, 2001).

Development of new markets, however, requires a heavy focus and increased investment in distribution channels, marketing, and branding. Geene et al. (1999) indicated the challenges facing the wine industry are shifting demand, increased competition, and low brand awareness. With these difficulties in the background, a few strategies that could be pursued by PWMRB and others are noted below, with a view towards developing a niche market for small wineries in Pennsylvania.

Brand building and endorsements

The wineries in Pennsylvania and PWMRB can develop a number of marketing strategies, which can be divided into marketing mix, branding, and relationship marketing. Beverland and Lockshin (2001) stressed the importance of strong relationships with customers and an awareness of brand among the target market. This

latter aim is difficult given a typical winery's small budget. To overcome this limitation, wineries, as a group, or the PWMRB, as a consortium, could seek endorsements from wine shows and wine writers, and align the Pennsylvania brand with other strong brands that reflect the industry's potential. These efforts also complement the use of collaborative marketing approaches, such as event marketing and marketing networks. Finally, branding "Pennsylvania wine" is a crucial step for future development.

The brand-building strategy is more than just positioning and creating a right image. It is about producing the best quality wine with Pennsylvania grapes, and also has a fundamentally sound link in the production, distribution and selling chain. Similarly, the development of the "Pennsylvania Wine" brand must involve a number of marketing actions that build and strengthen relationships throughout the demand chain, build market awareness of the product, and build internal commitment to the industry's goals.

Small wineries cannot afford to undertake mass advertising. Consequently, these wineries have identified other ways of building their individual reputation and awareness among their target customers. To complement these efforts, PWMRB can also help by gaining endorsements from a number of sources: independent journalists and wine shows, co-branding with strong complementary brands, and using collective events and promotion. Wine show results and awards are also important in increasing niche markets. Consumers view these results as an indicator of quality. Therefore, PWMRB and others should encourage individual wineries to enter events, and the industry should view endorsements as an important part of its marketing strategy. Finally, co-branding should also be viewed as another strategic policy initiative. Co-branding could be accomplished through cooperative marketing strategies with other like-minded wineries or alignment with other high-profile brands that share similar features within the category. For example, co-branding could arise between local restaurants and local tourist goods.

The notion that "Pennsylvania wine" has an excellent quality must become fundamental across all actors. The investment on quality and on the product characteristics through research and a permanent enologist must be publicized to develop an image of the growing viticulture in Pennsylvania. Further, the award-winning brands must be firmly established in the minds of consumers.

7. Also see Aldrich, 1999; Swaminathan, 2001; and Beverland and Lockshin, 2001.

Table 5: Typical Web Interface Component

Supply-side	Demand-side
<p>Fruit growers (grapes, apples, pears etc.) and juice producers (for different fruits).</p> <ul style="list-style-type: none"> • Indicate the varieties • Tonnage available • Price per ton • Availability dates, shipping charges etc., • Minimum cost posted on a said date • Open for bidding, as through ebay • Each supplier identified by a special code 	<p>Wineries place their requests (elderberry, blueberry, strawberry, honey etc.)</p> <ul style="list-style-type: none"> • Indicate varieties needed • Indicate quantities needed • Maximum price per ton prepared to pay • Request dates, shipping details etc. • Post a price bid on a said date • Open for bidding, as through ebay • Each vendor identified by a special code

Most small wineries undertake some limited advertising. Most print exposure is through wine reviews and involvement in promotional events. Mostly, advertising is done via the Internet, as the wineries believe the Internet will have a huge impact on the sale of wine. Unfortunately, many sites are not continuously updated and redesigned, which involves constant investment. Consequently, a holistic web presence, which tracks and updates all information across the state, is required.

Strengthen niche markets with Web interface

This consideration suggests the creation of a web portal that would enable transparency of information and increased efficiencies. Current web interaction between Pennsylvania wineries and consumers falls in line with principles of direct marketing. The existing websites for different wineries signal the entrepreneurial marketing capabilities of many small and medium wineries. Without exception, these sites emphasize brand reputation, high quality, high value propositions, and, in a few cases, direct distribution channels adapted for interactive online communication. Further, the websites allow customers to self-select into different sites based on customers’ personal needs.

However, threats and weaknesses from the SWOT analysis are not adequately addressed in the current web interfaces.

Most importantly, the enforcement of the 75-25 rule in Pennsylvania has been difficult. Participation has been on a voluntary basis, or by those wine producers who also own their grapes. Thus, the 75-25 rule is a classic example of a public-goods failure, which can be addressed only by developing mechanisms to encourage voluntary participation among wineries. There are two additional difficulties that exacerbate the public-goods problem: provision of licensing agreements for out-of-state vendors, and the lack of adequate infor-

mation transmission in the fruit-producer and wineries channel⁸. Consequently, second-generation web interface models have to be developed between the fruit supplier wineries in the value chain, with incentives for the wineries’ participation. A typical web-interface component is illustrated in Table 5.

The above description in the flow chart characterizes some salient features of the demand-supply model between fruit producers and wineries. The interaction between these groups indicated by the arrows going both ways underplays the flow of information in this channel network. The mutual advantages of creating “an Internet market” to both parties are obvious. Finally, if vendors are given incentives based on the amount of Pennsylvania grapes, or fruits, that are purchased via this website, then the decision to participate and bid for the best Pennsylvania grapes become easier. Further, if these data are combined with other PLCB data from individual wineries concerning total grape purchases from individual wineries, then the process of identifying the true Pennsylvania wine makers versus the free-riders, including out-of-state licensees, becomes easier. If incentives to report such data are transparent and if the incentives are written in an easily understandable fashion, and communicated throughout the sector, then this second-generation web interface will be the first of its kind in the country, which can claim to have solved the public-goods problem.

It is possible to identify an entity to develop, implement and manage the site, and collect important economic data. The website can be managed and improved from voluntary contributions from the wineries and the fruit growers within Pennsylvania. Since a website interface model of this kind has never been developed or proposed in other states, with the same requirements, the recommendation concerning this opportunity should be considered significant.

8. This issue has been brought up in many of the researchers’ conversations with different winery owners. For instance, many wineries would like to produce elderberry or pear wine. However, information regarding availability or supply sources is not quickly accessible. Similarly, many wineries have had the same source for their grape suppliers and find it difficult to access other varieties, purely because of informational constraints.

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Information contained in this report does not necessarily reflect the views of individual board members or the Center for Rural Pennsylvania. For more information, contact the Center for Rural Pennsylvania, 625 Forster St., Room 902, Harrisburg, PA 17120, telephone (717) 787-9555, email: info@rural.palegislature.us, www.rural.palegislature.us.

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