

Ithaca 2018 Abstract Submission

Title

GRAPES AND WINERIES IN THE UNITED STATES: GEOGRAPHIC LOCATION AND INDUSTRIAL COLOCATION

I want to submit an abstract for:

Conference Presentation

Corresponding Author

Elizabeth A. Dobis

E-Mail

edobis@psu.edu

Affiliation

Pennsylvania State University

Co-Author/s

Name	E-Mail	Affiliation
Anil Hira	ahira@sfu.ca	Simon Fraser University
Paul Gottlieb	pdgott@sebs.rutgers.edu	Rutgers University
Stephan Goetz	sgj16@psu.edu	Pennsylvania State University
Neil Reid	neil.reid@utoledo.edu	University of Toledo

Keywords

spatial distribution, geographic location, industrial colocation, wine production, grape production

Research Question

Do geographic location patterns of grape and wine production occur in the United States beyond the premier growing regions? Are grape and wine production industries collocated?

Methods

Index of Agglomeration, Index of Coagglomeration, Univariate and Bivariate Moran's I, Univariate and Bivariate Local Indicators of Spatial Association

Results

We expect statistical evidence of the dispersion of both grape and wine production over time through either a decline in clustering or the emergence of new centers of clustered production.

Abstract

Literature concerning the geographic location of grape and wine production is sparse. Existing economic studies about the geographic location of the wine industry focus on transportation cost reduction and the importance of geographic origins on price premiums and quality. Horticulturally-based studies with a locational focus discuss viticulture, the best conditions under which to grow grapes, and how these factors may be influenced by climate change. The proximate location of vineyards has also been studied to determine the extent to which clustering affects knowledge exchange among producers.

These existing studies focus on how geographic location affects the production and consumption of wine without addressing the structure of that location. They do not address whether production facilities are geographically clustered or dispersed, whether they are solely located in ideal growing conditions, whether grape and wine production is colocated, or whether these relationships change over time. Perhaps this gap in the literature is due to the assumption that grape and wine production in the United States are focused in premier growing regions. For example, American wines may only be associated with locations such as Napa Valley and Sonoma Valley in California, Yakima Valley in Washington, or the Finger Lakes in New York. However, data from the United States Census of Agriculture indicates that grapes are grown in every state except Alaska.

Even these premier growing regions were recognized relatively recently. Initial wine production efforts on the East Coast date back to Thomas Jefferson, but the region has had to develop techniques, some only recently, to deal with a series of challenges, including mold and mildew due to high summer humidity and phyloxera pest issues. As a result, for most of American history the East Coast used domestic labrusca or hybrid grapes to produce brandies, which are sweeter and mask the taste. Only on the West Coast was European vinifera able to thrive, particularly in California, but even there quality wine only emerged in the 1960s. These regions are also associated with specific wine varieties. In general, Ontario and New York have produced quality ice wine and riesling varieties, while other clusters have tried to find variety niches that are competitive, such as vignonier in Virginia. However, the geographic conditions in the Northeast may not be suitable for producing high end cabernets or other deep red wines, as can be done in California.

Between 2002 and 2012 (the most recent year for which we have data), there was an expansion in the production of grapes and wine. The number of bearing acres of grapes increased by 8 percent, the number of grape production operations increased by 18 percent, and the number of wineries increased by 140 percent. The spatial distribution of this growth was not consistent numerically or proportionally. Bearing acres of grapes and the number of grape production operations decreased in six states, but, generally, not in the same six states. Only one state, Ohio, experienced a decrease in both acres and operations between 2002 and 2012.

At the more geographically-refined county level, the number of counties where grapes were produced increased 14 percent from 2002 to 2012, but only 35 percent of counties growing grapes in 2002 were also growing grapes in 2012. This data begins to reveal interesting spatial patterns in the expansion of grape growing, indicating that the proliferation of grape production may be occurring in a geographically dispersed manner with a high rate of firm entry and exit within the industry. The industry is clearly more spatially and temporally dynamic than may be commonly believed.

Our paper addresses this gap in the literature by using regional and spatial economic techniques to determine whether geographic location patterns of grape and wine production occur in the United States beyond the premier growing regions, as well as by addressing whether the grape and wine production industries are colocated. We use 2002, 2007, and 2012 county-level data obtained from the Census of Agriculture and County Business Patterns datasets, as well as Dun & Bradstreet establishment-level data for our analysis.

We first use regional economic techniques, particularly Ellison and Glaeser's Index of Agglomeration, to determine whether there is aspatial economic clustering in the production of grapes and wine, and whether the intensity of that pattern has changed over time. We also use spatial economic techniques, particularly Moran's I, to determine whether there is spatial clustering when accounting for production in neighboring counties. Finally, we utilize local indicators of spatial association (LISA) to understand where the spatial hot and cold spots of production are in the United States.

It is not reasonable to assume that the production of grapes is independent from the production of wine, since grapes are a direct input for the production of wine (at the same time, we recognize that not all grapes are used in wine production, e.g., in the Erie, PA area). We therefore analyze the colocation of grape and wine production using Ellison and Glaeser's Index of Coagglomeration as our regional economic technique and the Bivariate Moran's I as our spatial economic technique. Again, we also use a bivariate LISA to understand the spatial distribution of colocation in the United States.

We expect to see statistical evidence of the dispersion of both grape and wine production over time. This may

occur through a general decline in the level of clustering in these industries or due to the emergence of new centers of clustered production. We expect that this result is due to new varieties that support grape production in different soil and climate types, the local food movement which creates demand for locally grown and produced wines, and the artisanal food movement which creates demand for high-quality wines with unique flavor profiles produced at a small scale.