



AMERICAN ASSOCIATION OF WINE ECONOMISTS

AAWE WORKING PAPER
No. 178
Economics

**CALIFORNIA WOMEN WINEMAKERS:
THREE STUDIES ASSESS THEIR
PROGRESS AND PROSPECTS**

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May 2015

www.wine-economics.org

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Three Studies Assess their Progress and Prospects**

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Abstract

Women are a powerful economic force in the world's wine market, with marketing of wines made by women to female consumers increasingly important. It is widely assumed that women winemakers in California have shattered the glass ceiling, but few studies have addressed their progress in what remains a male-dominated field. This paper reports on three separate studies assessing their progress. *Study 1* assessed the perception that women winemakers have shattered the glass ceiling. Results showed that only 9.8% of California wineries have a woman as the lead winemaker, illuminating a discrepancy between perception and fact. *Study 2* investigated whether winery acclaim was associated with this discrepancy. Coding of winery data in *Opus Vino* (2010) provided support for the hypothesis of proportionally greater acclaim for wineries having women as their lead winemakers. *Study 3* tested the hypothesis that the recent increased recognition and visibility received by lead women winemakers is opening doors for other well-qualified women. Using the wineries included in *Wine Spectator's California Wine* (1999) for a case study, the same set of major wineries was investigated at two times—1999 and 2014. Two approaches were taken to assessing progress: comparing the percentage of wineries with lead women winemakers at both times, and comparing the percentage, taking into account position availability and pattern of gender hiring into available positions. Results showed some increase, 10% in 1999 to 14.7% in 2014 overall, and 20.5% when considering only available positions. Progress appears steady but slow.

California Women Winemakers: Three Studies Assess their Progress and Prospects

Introduction

Since 1970, there has been a significant increase in women's participation in science-based fields. Today in the U.S., approximately half of all medical degrees and degrees in the life sciences are awarded to women. Similar increases have occurred in the field of enology, the science and study of wine and winemaking.

California is a large producer of wine and its wines have a global reputation. In the late 1960s and early 1970s, few female students were enrolled in the state's premier Enology and Viticulture programs at the University of California, Davis. By the 1990s, the number of female graduates at UC Davis had increased to approximately half, and it continues at that level today (Kauffman, 2009; Teague, 2015). Accompanying these changes is the *assumption* that women are increasingly moving into the lead winemaking positions of wineries in California and that gender equity is close to being achieved (Heimoff, 2008).

The current paper reports on three separate studies that investigated the presence of women as lead winemakers in California, each using a different reliable and valid data source. The first study used the official list of bonded and virtual California wineries provided by *Wines & Vines* as its data source; the second study, the wineries included in *Opus Vino*, a widely cited and credible source of winery quality; and the third study, the wineries listed in Laube's carefully researched book, *Wine Spectator's California Wines* (1999).

The theoretical underpinnings for all three studies were derived from gender theory. Contemporary views of gender focus on the cultural assumptions and stereotypes about the sexes, and how they are reproduced in the discourses and practices of a society. As noted by Heilman and Eagly (2008), for those who work in gender-incongruent fields, it is not the negativity of gender stereotypes, but rather their mismatch with desirable work roles that underlies biased workplace evaluations and practices. Changes in the "mismatch" or "lack of fit" stereotypes about women as winemakers are likely related to

their rate of progress in the field. Further detail is provided in the context of each study (*vide infra*).

Apart from providing accurate empirical data regarding the progress and status of women winemakers, women winemakers play an important role in the marketing of wine. Female consumers are an important segment of the wine market (Forbes, Cohen, & Dean, 2010), and factors that influence wine purchases (e.g., Lewis & Zalan, 2014) are increasingly studied. Recent statistics indicate that women in the U.S. constitute 59 percent of regular wine purchasers and 50 percent of occasional wine purchasers (Robinson, 2014). These consumers are especially attracted to wines crafted by women winemakers (e.g., More Uncorked). In addition, “only wines by women” are now featured in well-known restaurants and wine bars (e.g., Norum, 2015).

STUDY 1

Study one provided an empirical assessment of the widely held assumption that women winemakers in California had shattered the glass ceiling women (e.g., Heimoff, 2008; Kauffman 2009; Robinson, 2014). We hypothesized that the visibility and cult status of a few highly known lead women winemakers in California (e.g., Heidi Peterson Barrett and Helen Turley) have resulted in the perception that there are far more women winemakers in California than there actually are. Perceptions that women are already well represented in a field can serve as barriers to their increased participation in a traditionally male-dominated field (Barreto, Ryan, & Schmitt, 2009; Morrison et al., 1994; Rossi, 1985). Such perceptions lower the perceived need to encourage women to enter the field and to provide the mentoring and support needed to facilitate their career success.

Method

Key to the study was developing an accurate database of wineries and winemakers in California so that we could assess the presence of women as the lead or primary winemakers for wineries in the state. By taking this approach, we were able to take into account the fact that some winemakers craft wine for more than one winery or

craft wines for their own label in addition to their role as winemaker for one or more other wineries. This is particularly the case for well-known winemakers.

Using the official list of 3200+ wineries in California available from *Wines and Vines* (<http://www.winesandvines.com/>) in December 2010, we gathered information from winery websites and calls and visits to wineries to develop the database. Using this information, we coded whether a winery's main or lead winemaker was a female or a male or a female-male co-winemaking team. We were able to obtain sufficient information to code the sex of the winemaker for 97% of the wineries. We omitted from the data analysis those wineries that had a female-male co-winemaking team (2.7%). In nearly all these cases, the co-winemakers represented spousal pairs.

A winery's wine region was also coded. Eight regions were used: Mendocino/Lake County, Napa Valley, Sonoma/Marin, Sierra Foothills, Central Valley, North Central Coast, South Central Coast, and Southern California. These regions are widely recognized in the industry. The percentage of wineries in the eight wine regions ranged from approximately 5% to 29%, with Napa (29%) and Sonoma/Marin (21%) having the highest percentages, and Southern California (5%) and Mendocino/Lake Counties (5%) having the lowest. Approximately half of the state's wineries in the database were located in the Napa Valley and Sonoma/Marin regions.

Test of Hypothesis and Results

The results of the chi-square analyses performed to test the study's main hypothesis were statistically significant. We found that 9.8% of California wineries reported a woman as their main or lead winemaker, which differs significantly from the lower end of the widely held 15–20% estimate. The best estimate of the number of wineries with a lead woman winemaker is between 9.5% and 12.8%. The latter percentage would be true only if all winemakers whose sex was unknown were female (3% of total number of wineries).

We also compared the proportion of lead women winemakers in the state's wine regions. As anticipated, a higher percentage of women winemakers was found in the state's two premier wine regions than in the other six regions, $\chi^2 (7, N=3,015) = 28.02, p < .001$. Figure 1 depicts the percentage of lead women winemakers for the various

regions, which ranged from 4.7% to 12.4%, with Sonoma/Marin and Napa having the highest percentages, 12.4% and 12.2%, respectively. {An analysis of the approximately 400 new wineries established after December 2010 resulted in similar percentages, Gilbert & Gilbert, 2014.}

The percentage of wineries with male and female winemakers did not differ by production range.

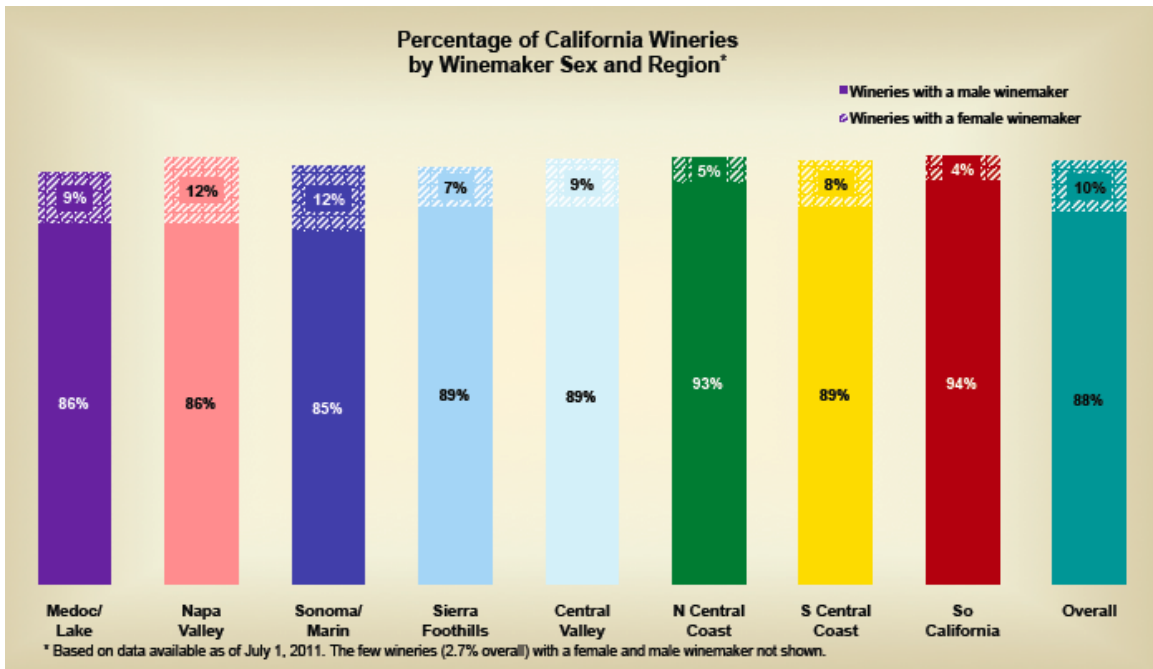


Figure 1. Percentage of Female and Male Lead Winemakers by Wine Region

Conclusion

It has been widely touted that women winemakers in California are shattering the glass ceiling in an industry historically dominated by men. However, this study, using a comprehensive database to assess the proportion of women and men who are lead winemakers in California’s wineries, found that only 9.8% of California wineries have a woman as their lead winemaker. Only one other study to date has used a comprehensive database to assess the presence of lead women winemakers, and its findings are remarkably similar. In his comprehensive study of the leadership roles among Australia’s wine producers, Galbreath (2014) reported that 9% of wineries employed women winemakers in the top winemaking role.

A factor that may contribute to this misperception between the assumed and actual number of California women winemakers is investigated in the second study. This factor is *winery acclaim*.

STUDY 2

Although approximately half of the graduates of premier enology programs in California are women, a much smaller percentage of them become lead winemakers. This results in lead women winemakers being a more highly selected group than their male peers in what remains a male-dominated industry. Clearly, the career paths for *both* female and male winemakers are challenging and demanding, but the fact that the field remains male dominated presents additional challenges to women who wish to achieve this goal (Catalyst, 2012).

Studies of women who persist and achieve in male-dominated fields indicate that their successful pursuits are related not only to high achievement motivation, ability, and self-efficacy (Greenhaus & Callanan, 2006; Gutek & Larwood, 1987), but also to performing better under working conditions of challenge, collaboration, and autonomy (Eagly & Carli, 2007) and doing better at managing risk (Barber & Odean, 2001). These are all factors associated with the uncertainties and challenges of winemaking (Heimoff, 2008). In addition, women in male-dominated fields often need to be more talented and hard working than their male peers in order to be recognized as successful (Ibarra, Ely, & Kolb, 2013; Matasar, 2006).

Another important factor in changing views of women's abilities in fields historically unavailable to them is for women to be awarded "exceptional" status (Unger, 2006). This kind of visibility opens doors for the exceptional women and also increases opportunities for other well-qualified women. The most highly acclaimed California wineries with women winemakers are in Napa and Sonoma (Laube, 2010).

For these reasons, we investigated the hypothesis that although wineries with lead women winemakers are far fewer in number than those with their male counterparts, their wines may be disproportionately more highly recognized for their quality, and that this

factor may contribute to the significant discrepancy between the perceived percentage of women winemakers and the actual figure.

Method

Two sources of data were used to test the hypothesis that, proportional to the representation of women in the field, the wines produced at wineries having lead women winemakers are more highly acclaimed than those having male winemakers. The first data source was the California winery comprehensive database developed for our first study. The second data source was *evidence of winery quality*, which was obtained by using the listing of wineries from *Opus Vino* (2010).

Opus Vino includes a total of some 4000 wineries throughout the world that were identified by leading wine critics and wine writers, who worked as a team with the volume's editor-in-chief, Jim Gordon. Gordon, is former managing editor of the *Wine Spectator* and current editor of *Wines & Vines Magazine*. Selections for *Opus Vino* were based on an accumulation of experiences with wineries in a particular wine region and tasting notes of wines from that region over a period of years. For each major wine region, both top-quality established wineries and "rising star" wineries were identified.

Criteria provided in *Opus Vino* for the category of top-quality established winery included making wines of very high or outstanding quality; having a long track record for quality, relative to its region; being a leader in its region in grape-growing and/or winemaking techniques; and performing particularly well in a special wine category. The criteria for the category of rising star winery included making wine of very high or outstanding quality; showing potential to be tomorrow's classic winery; and having been innovative in choice of variety, grape-growing, and/or winemaking techniques.

The California wineries listed in *Opus Vino* were used for this study. These wineries are a subset of the wineries in the California winery comprehensive database developed for the first study. In preparing the data for the second study, we coded whether wineries in our database were listed in *Opus Vino* (yes or no) and the sex of the winemaker (female, male, or female-male co-winemaking team) cited in the entry for the winery in *Opus Vino*. In those cases in which no specific winemaker was mentioned, we were able to determine who the winemaker was at the time described in the entry.

Because all the California wineries listed in *Opus Vino* were in our comprehensive database, we were able to code the sex of the winemaker in all cases. Winemaker/Owner was also coded as a yes or no. The wineries having female-male co-winemaking teams were again omitted from our data analysis.

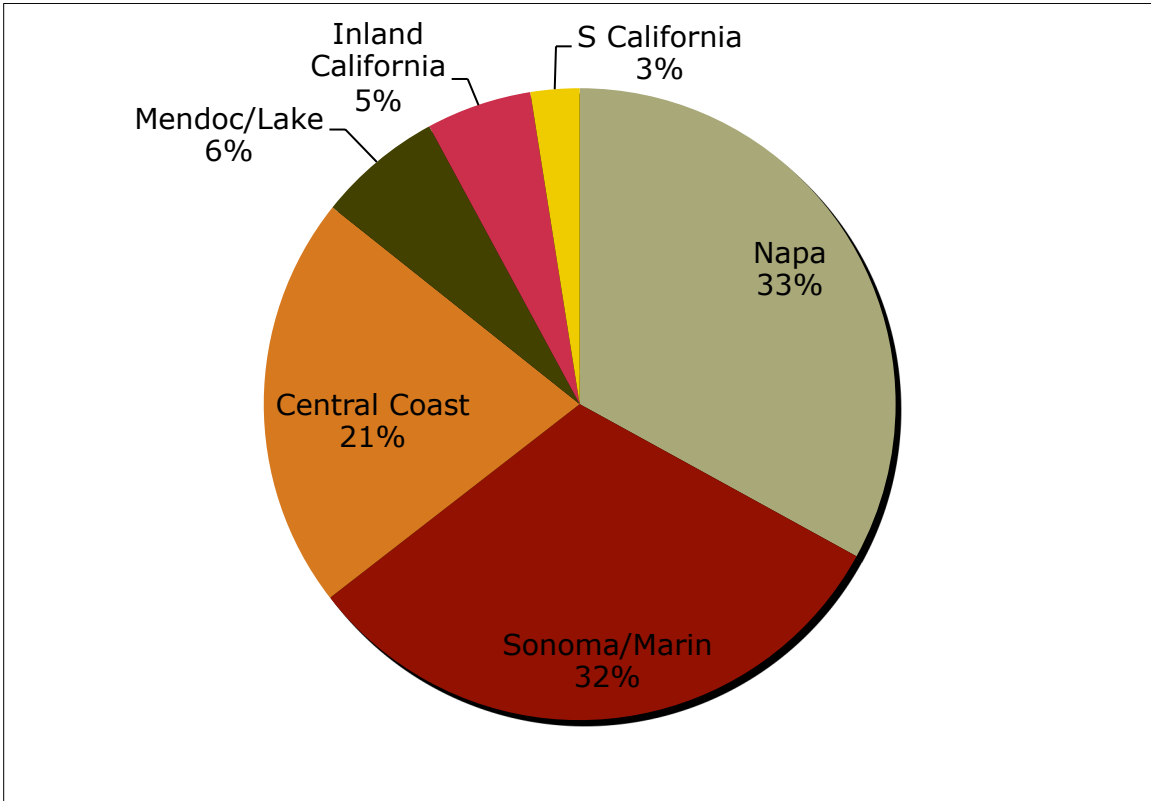


Figure 2. Proportion of All California Wineries by Wine Region included in *Opus Vino* (2010).

We identified each winery’s region. Figure 2 depicts the proportion of wineries listed in *Opus Vino* (2010) in the wine regions coded: Central Coast (North and South Central Coast), Inland California (Central Valley and Sierra Foothills), Mendocino/Lake County, Napa, Sonoma/Marin, and Southern California. These percentages closely paralleled the percentages by wine region for all California wineries in the comprehensive database.

Test of Hypothesis and Results

Chi-square analysis was used to test the hypothesis that as evidenced by inclusion in *Opus Vino*, and based on their proportional representation in the state of California, the wines produced from wineries having lead winemakers who were women would be more highly acclaimed than those having lead winemakers who were men.

In support of our hypothesis, we found that proportional to their representation in the comprehensive database of California wineries and their lead winemakers (i.e., 9.9% women, 91.1% men), a significantly higher proportion of wineries with women winemakers were listed in *Opus Vino* in comparison with wineries having male winemakers. Specifically, 23% of the California wineries with women winemakers were listed in *Opus Vino* when compared with only 14% of wineries with male winemakers, $\chi^2(1, N = 3020) = 14.99, p < .001$ (see Figure 3).

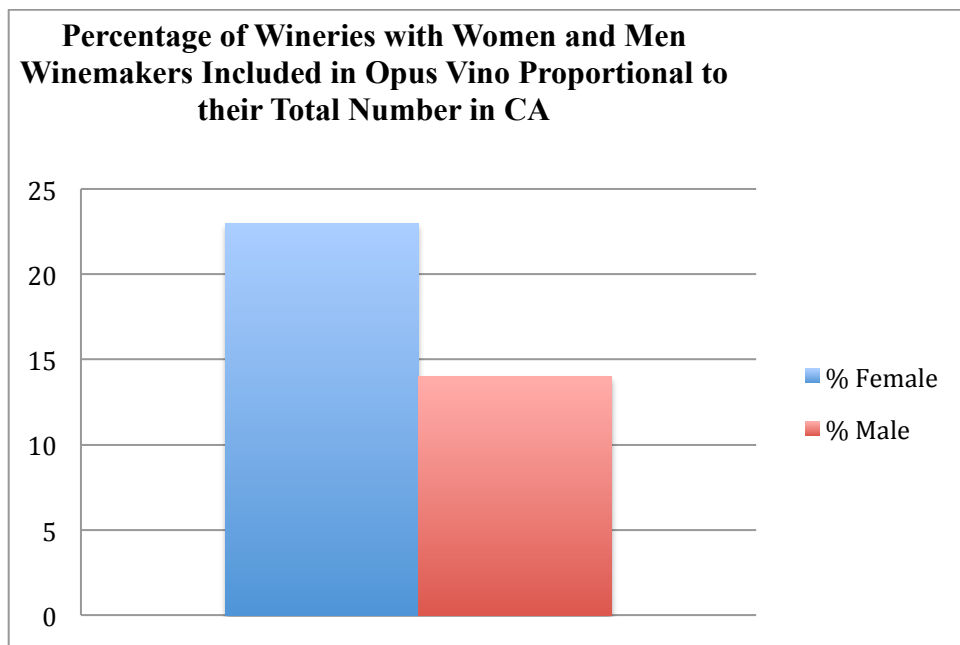


Figure 3. Percentage of Wineries with Women and Men Winemakers in *Opus Vino* Proportional to the Total Number of Wineries in CA having Women and Men Winemakers

Wine Region. The proportion of wineries in *Opus Vino* having women winemakers varied considerably across the various wine regions. For the relatively large

Napa and Sonoma/Marin wine regions, the percentages were higher for wineries with women winemakers than for men, 28.2% and 30.0%, respectively, for wineries with lead female winemakers, compared to 15.2% and 20.7%, respectively, for those with male winemakers. A similar pattern occurred for the relatively small wine region of Mendocino/Lake. In the remaining wine regions, the percentages were higher for wineries with male winemakers than for female winemakers in the Central Coast (24.6% vs. 12.5%) and Southern California (6.8% vs. 0%) regions, and approximately the same (12.2%) for Inland California. Thus wine region seems to be a factor in understanding the proportion of wineries with women winemakers identified in *Opus Vino* as top or rising star wineries.

Winemaker/Owner. In the California winery comprehensive database, a significantly larger proportion of men than women were winemakers and also owners of their wineries, ($\chi^2(1, N=3018) = 19.92, p < .001$). Among the wineries with lead women winemakers, 39% were both owners and winemakers; among those with lead men winemakers, the figure was 52%. The percentages for those wineries included in *Opus Vino* paralleled those for all California wineries—of the wineries with women winemakers, 28% were a winemaker/owner and of the wineries with men winemakers, 40% were a winemaker/owner, ($\chi^2(1, N=450) = 3.11, p < .07$). Thus, more men winemakers are also winery owners than are women.

A reversal to the pattern of more men than women owner/winemakers occurred when we considered winemaker/owners in *Opus Vino* proportional to the respective number of owner/winemakers in the field. When we compared the number of women and men owner/winemakers listed in *Opus Vino* to their respective numbers as owners/winemakers in the California winery comprehensive database, we found that 14.2% of women owners/winemakers were included in *Opus Vino* in comparison to 9.7% of men owners/winemakers, ($\chi^2(1, N=1706) = 2.79, p < .09$). These findings indicate that although men who are winemaker/owners are far more numerous among California wineries, a higher percentage of women owners/winemakers, proportional to their presence in the field, were among those wineries included in *Opus Vino*.

Production Range. The California wineries listed in *Opus Vino* included wineries in all the production ranges used by *Wines & Vines*, with 51% of the wineries falling into

the 5,000–49,999 case range, and 25% in the 1,000–4,999 case range. The percentage of wineries with male and female winemakers did not differ by production range

Conclusion

The results provide strong support for our hypothesis. Proportional to their representation in the field, the wines from California wineries having lead women winemakers are more highly acclaimed in comparison to those of their male counterparts, as evidenced by their inclusion in *Opus Vino*, a widely cited and credible source of winery quality. Having their wines more highly acclaimed provides a clear indicator that women winemakers have “made it” and are being recognized in a male-dominated industry.

However, it may also lead to the conclusion that lead women winemakers are far more numerous than they in fact are, and to the belief that women winemakers in California have shattered the glass ceiling. The findings from Napa and Sonoma present a case in point. In both of these regions, only about 12% of wineries have a lead women winemaker (Study 1); yet for both regions, the wineries selected for inclusion in *Opus Vino* reflected far more female winemakers proportional to their presence in the field (about 30%) than for male winemakers (15 to 20%).

Our third study further investigated this question of winemaker acclaim and tested the hypothesis that women’s higher acclaim in a field can open doors for other women and increase the proportion of wineries with lead women winemakers.

STUDY 3

The high level of talent among California’s women winemakers has received considerable recognition and visibility (Asimov, 2015; Pinney, 2012). One example is the induction of Merry Edwards, a Sonoma winemaker, into the Vintner’s Hall of Fame in 2013. She became the third women to be inducted into the Vintner’s Hall of Fame, established in 2007. A further example is the recent article on the “Top 100 most

influential U.S. winemakers” (Cervin, 2014). The list included 73 winemakers from California, 12 (16.4%) of whom were women.

Such significant positive attention can provide increased opportunities for well-qualified women and open more doors to them (Unger, 2006). Their recognized success in a traditional field can help change stereotypical perceptions of women’s abilities and provide opportunities to counter the “lack of fit” gender role traditionalism that can influence hiring and promotions (Ely & Padavic, 2007).

In 1999, James Laube published his impressive book, *Wine Spectator’s California Wine*. According to the author, the book “lists alphabetically all the major and many of the minor wineries and brands,” providing facts about each winery, including who were the winemakers and owners at the time. Laube’s (1999) carefully researched book provided us with a comprehensive list of major wineries in California together with their winemakers and owners in 1999. Studying this same set of wineries in 2014, fifteen years later, provided a unique case study of the progress of lead women winemakers among these recognized wineries.

Method

We used the information provided in Laube (1999) to develop a database that included all 543 wineries. We next verified whether each of the wineries still existed in 2014. Information available from *Wines & Vines*, winery websites and calls to wineries, web searches, and visits to wineries were used in making these determinations.

Of the 543 wineries included in Laube (1999), 480 (88.4%) were still in operation in 2014. Of the other 63 wineries, 13 (2.3%) had been sold, 28 (5.2%) had closed, and no information was available on 22 (4.1%).

The 480 wineries that we could confirm still existed constituted the set of wineries for the case study. Information provided by Laube (1999) was used to code whether a winery’s main or lead winemaker was a female or a male or a female-male co-winemaking team in 1999. Whether the lead winemaker (or co-winemakers) was the winery owner was also coded, as was the wine region in which the winery was located. . (There was no difference in the percentage of wineries with women winemakers for the 543 initial set of wineries and the 480 wineries included in the study.) For 2014, we again

coded the sex of the lead winemaker and whether the lead winemaker was the winery owner. We also coded the current production range of the winery.

We were able to code the sex of the winemaker for all 480 wineries in 1999 and in 2014. We omitted from the data analyses those wineries that had a female-male co-winemaking team (2.5% in 1999 and 3.0% in 2014). In a number of these cases, the co-winemakers represented spousal pairs or family members.

The same six wine regions as in Study 2 were used in the coding. Most of the wineries were located in Napa Valley (41.4%), Sonoma/Marin (28.5%), and Central Coast (21.3%), with a small percentage in each of the remaining wine regions (Inland California, 4.3%; Mendocino/Lake County, 3.9%, and Southern California, 1.4%).

The case production of a winery was coded into the five ranges provided by *Wines & Vines*. As in Studies 1 and 2, these ranges extended from less than 1000 cases to more than 500,000 cases per year. Approximately half the wineries (51%) included in the case study currently produce 5,000 to 49,999 cases per year, with 20% producing either 1000 to 4,999 cases or 50,000 to 499,999 cases, and 5% producing either less than 1000 cases (limited production) or more than 500,000 cases (large).

A little more than half the wineries in the case study are listed in *Opus Vino* (Gordon, 2010), indicating that as a group they represent high-quality wineries. Study 2 provided a description of the criteria for inclusion in *Opus Vino*. (Approximately 10% of California wineries are included in *Opus Vino*.)

Test of Hypotheses and Results

Two approaches were taken in providing data for testing our hypothesis of progress. The first approach compared the proportion of wineries in the case study having lead women winemakers in 1999 with the proportion having lead women winemakers in 2014. We hypothesized that the proportion of wineries having lead women winemakers, when we restudied them in 2014, would be greater than in 1999.

The second approach, designed to illuminate factors associated with hiring opportunity, focused on *position availability* during this time period and the *pattern of gender hiring* among these positions. We were fortunate to have the opportunity to look at these two variables within a set of established wineries within a 15-year time frame.

We viewed this approach as providing an assessment of changes in the “lack of fit” stereotypes of women as winemakers and a best guess scenario of the rate of their future progress in this field. We hypothesized that a significant proportion of wineries with available positions would report having appointed women as lead winemakers in 2014 but we were unsure about whether that proportion would approach or signal a shattering of the glass ceiling.

Approach 1: Comparisons of wineries with lead women winemakers in 1999 and in 2014

As hypothesized, some increase in the percentage of wineries with lead women winemakers had occurred over this 15-year period. The percentages were 10.5% (N=49) in 1999 and 14.7% (N=69) in 2014. The chi-square analysis used to test the hypothesis was statistically significant, $\chi^2(1, N=933) = 4.03, p < 0.05$.

Given that most of the wineries (91%) in the case study were located in Napa, Sonoma/Marin, and Central Coast, most of the changes were among wineries in these wine regions. The increased number of wineries with women winemakers was particularly noticeable in Sonoma/Marin, where the number increased from 12 to 22 wineries. Napa rose from 28 to 36 wineries, and Central Coast from 7 to 8 wineries. Mendocino/Lake increased from 1 to 2 wineries, and Inland California and Southern California remained constant with 1 and 0 wineries, respectively.

Approach 2: Availability of lead winemaker positions and patterns of gender hiring

In order for women winemakers to have moved into lead winemaker positions during this time period, such positions needed to be available. Two categories of wineries would potentially limit the number of available openings (see Table 1 below). The first category is wineries whose winery owner was also the lead winemaker in both 1999 and 2014. The second category is those wineries that retained the same winemaker over this 15-year period.

To identify these wineries, the following categories were coded. (Recall that we only coded the winemaker or winemaker/owner for each winery in 1999 and then again in 2014.)

- (1) Same Male or same Female *owner/winemaker* over this time period

(2) Same Male winemaker or same Female *winemaker* over this time period

Table 1 below provides summaries of the number of wineries in the case study falling into these two categories.

Table 1. Availability factors*

	Number of wineries in study 2014	Minus wineries with <i>same Owner/WM</i> 1999, 2014	Minus wineries with <i>same WM</i> in 2014 as in 1999	Number of wineries remaining
Male WM	396 (85.2%)	122	76	198
Female WM	69 (14.8%)	13	5	51
Total	465	135	81	249

*Note: The 15 F/M winemaking teams in 2014 are excluded from the total number of wineries.

As can be seen from Table 1, 135 wineries were in the category of same owner/winemaker over the time period, and 81 wineries in the category of having retained the same winemaker. In both categories, most winemakers were male. Removing these two categories of wineries from the total number of wineries provided the number of wineries (249) with available lead winemaking positions.

A visual summary of position availability among the wineries in the case study is provided in Figure 4. As can be seen from the Figure, slightly over half of the wineries were coded as having had available positions. Of these, 51 or 20.5%, had a woman winemaker in 2014, a percentage significantly higher than the 14.7% calculated using the first approach, $\chi^2 (1, N=714) = 3.69, p < 0.05$.

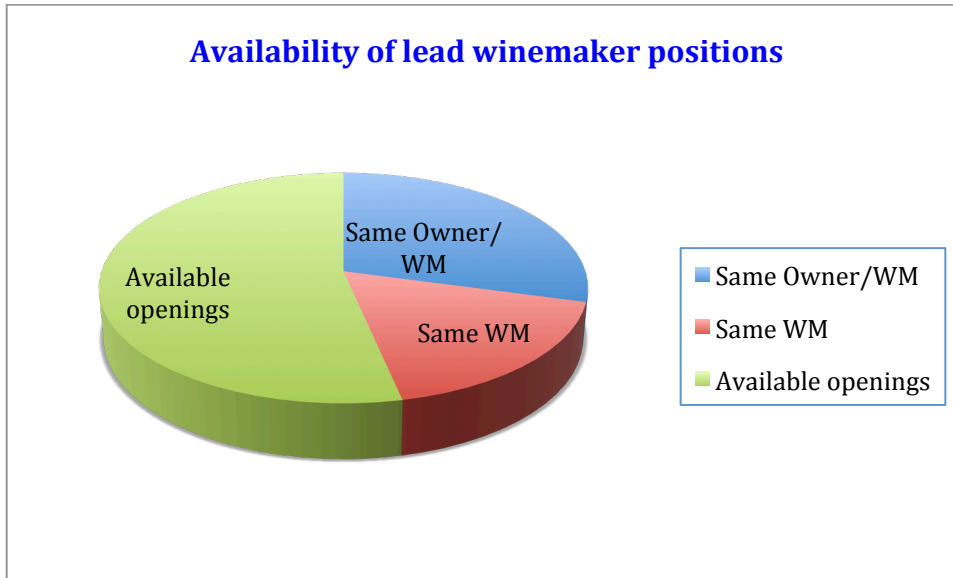


Figure 4. Availability of lead winemaker positions for wineries in the case study.

The pattern of hiring in available positions

To better understand the pattern of hiring into available positions, three categories were coded from the winery data available in 1999 and in 2014.

- (1) Change from a Male winemaker to a different Male winemaker
- (2) Change from a Female winemaker to a Male winemaker
- (3) Change from a Male or Female winemaker to a Female winemaker

Figure 5 depicts the results of the coding for wineries having available positions (i.e., not having an owner/lead winemaker and not retaining the same winemaker over the 15-year time period). Across all the wine regions, the most frequent pattern of change was from Male winemaker to Male winemaker: 69% of wineries with an available position reported a male lead winemaker in 1999 and a different male winemaker in 2014. The second most frequent pattern was a change from a Male or Female winemaker to a Female winemaker (21.6%) (Of these, only 1.6% was a Female to Female winemaker hiring). Least frequent was a change from Female to Male winemaker (9.3%).

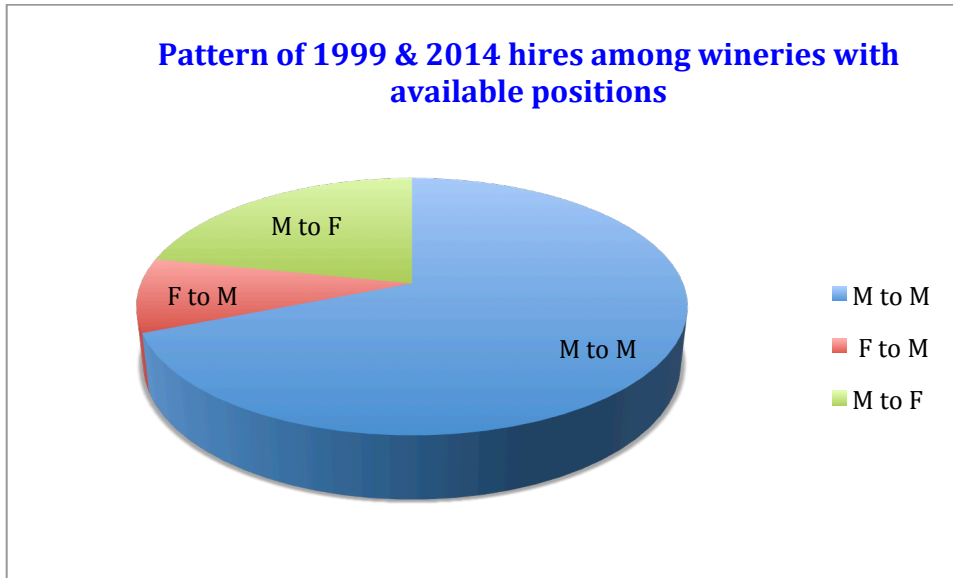


Figure 5. Proportion of wineries with available positions and the pattern of hires.

The pattern was similar for the Napa, Sonoma/Marin, and Central Coast wine regions, with the Male winemaker to Male winemaker pattern being most frequent and the Female to Male winemaker the least frequent.

Conclusion

This case study of winemakers at established California wineries has particular importance. First, it is rare that one has the longitudinal data for conducting such a study of wineries and their winemakers, and can investigate factors that may facilitate or hinder change in this important area of the wine industry. Second, the study used a methodology that not only calculated women winemakers' progress in two distinct ways, both of which provided evidence of their progress, but also helped illuminate factors that help explain why the apparent progress will be relatively slow.

Consistent with the underlying theory that women winemakers' recent higher acclaim would open doors for other well-qualified women, both the Napa and Sonoma/Marin wine regions showed increases in the percentage of wineries with lead women winemakers. Wineries with women winemakers in these two wine regions have received particular recognition and visibility. The increase of 20 winemakers over the 15-year period among the wineries in the case study, while small numerically given the large

number of wineries in California, was large, given the small number of women winemakers at these wineries in 1999 (a total of 49).

Data from the case study were used to calculate progress overall and progress based on the availability of lead winemaking positions. The overall progress from 10.0% to 14.7% could be viewed as discouraging were it not for the data on available positions, data that rarely if ever are available in making these kinds of calculations. That 21% of wineries in the case study with available positions had hired a lead women winemaker further underscores the extent of progress that has been made.

We also used the case study to examine the pattern of lead winemaker appointments among those wineries. The context of hiring is crucial in gender incongruent areas of employment, and any number of factors may limit women's advancement. In this case study, the pattern that emerged from our coding of winemaker sex in 1999 and in 2014 helped illuminate the influences of two factors associated with tradition in male dominated fields: (1) Winemaker longevity decreases the number of possible openings, and in the past men held nearly all of the lead wine making positions; and (2) men appear to be hired more often than women when positions do become available. Both these factors will diminish in influence over time, but likely not in the next decade.

It is well documented that women's career trajectories in male-dominated fields have been restricted by stereotypic views of women's abilities and roles, which in turn affects their chances of being hired and promoted (Budig, 2002; Eagly & Sczensy, 2009). Both gender stereotypes and the assumed mismatch of these stereotypes with desirable work roles are known to underlie biased workplace practices (Bobbitt-Zeher, 2011; Heilman & Eagly, 2008).

Finally, in this case study, as in the first two studies, the number of lead women winemakers (including owner/winemakers) is relatively small. Dynamics tied to gendered perceptions and social norms are still operative with regard to women gaining access to lead winemaking positions, particularly at well-known wineries in the U.S. (Eagly & Sczensy, 2009; Heilman & Eagly, 2008). Brescoli, Dawsin, and Uhlmann (2010), for example, reported that making small mistakes on the job is particularly damaging to individuals in gender-incongruent occupations. In addition, attitudinal changes take time

(Eagly & Chaiken, 1995), and are associated with other social and cultural factors (Greenwald & Banaji, 1995). A perhaps unconscious pattern illuminated in the case study, hiring another male winemaker to fill an open lead winemaker position, could inadvertently serve as a gatekeeper. Future studies would do well to learn more about the hiring process for lead winemakers and steps that can be taken to increase the number of qualified women in the pool of candidates being considered.

Concluding Remarks

Women have made notable advances in the field of winemaking, and some of the most esteemed winemakers in California are women. A growing group of female winemakers hold positions as lead winemakers at well-known California wineries. As the empirical data from these three studies help make clear, progress appears steady, but slow. The future appears bright, but the glass ceiling is far from being smashed. The absolute number of lead winemakers who are women remains relatively small and the pattern of hiring among the major wineries over the 15-year period included in Study 3 suggests a best guess scenario of around 20% for the near future. The findings reported by Galbreath (2014) for wineries in Australia provide evidence for slow progress more globally. This relatively slow progress has implications for wine marketing and sales and needs to be included as a variable in future studies on economic projections.

Note: Portions of this paper were presented at the Annual Meetings of the Association for Psychological Science.

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