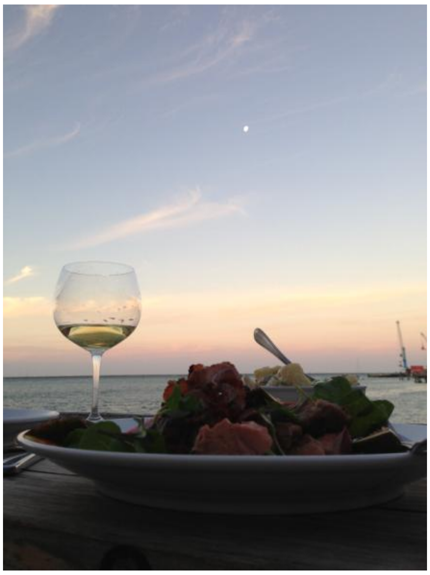
Attitudes, drivers of consumption and taste preference - a focus on Chardonnay



FINAL REPORT to
GWRDC

Project Number: NWG1103/OPA5025

Primary Investigator: *Anthony Saliba*
Co-Investigators: (authors of this report)

*Johan Bruwer , Leigh Schmidtke, Jasmine Thomas, John Blackman,
Jen Bullock, Hildegarde Heymann and Linda Ovington.
(full list of staff in appendix 4)*

Research Organisation: **NWGIC**

Date: **30/05/2013**

Grape and Wine Research and Development Corporation

Final Report, May 2013

Project Code: **OPA5025 (NWG1103)**

Project Title: **Attitudes, drivers of consumption and taste preference - a focus on Chardonnay.**

Table of Contents

1. Abstract 3
2. Executive Summary 3
3. Background 6
4. Project aims and performance target 7
5. Methods and 6. Results/Discussion 9
7. Outcome/Conclusion 12
8. Recommendations 12
9. Appendix 1: Detailed reports 16
(Instructions: Double-click the relevant image for each section of the report) 16
10. Appendix 2: Intellectual Property 18
11. Appendix 3: References 18
12. Appendix 4: Staff 18
13. Appendix 5: Budget Reconciliation 18

1. Abstract

The main aim of this project was to determine consumer perception of Chardonnay. Through a multi-disciplinary approach using qualitative and quantitative methodologies we were able to determine that there is currently a negative perception conveyed in the media, and that some consumers 'parrot' that negativism when in social settings as a way of demonstrating their knowledge of Chardonnay. However, we found no stable negative perception of Chardonnay in consumer attitudes and through a range of survey and experimental studies, we can confirm that there is in fact a net positive perception of Chardonnay in Australia. There is little parochialism for Australian Chardonnay domestically, at least in part due to the lack of flavour-definition around Australian Chardonnay and therefore a lack of awareness amongst consumers on the differentiation from international styles. We report on how Australian styles compare and contrast with international styles available domestically, offering a means of communicating 'reasons to buy' Australian Chardonnay.

2. Executive Summary

We have shown that there are a range of Australian Chardonnay wine styles that appeal to consumers and provided some guidance on flavours that are positively viewed. Overall, it was shown that 'taste' was not the reason for decline in sales of Chardonnay.
Next, we presented data from two 'deception' experiments, where we measured the influence of the perception of Chardonnay on taste preference ratings. Consumer responses showed that consumers do NOT rate the wines they taste lower when they are told that it is Chardonnay. This finding suggests that consumers do not currently hold general negative impressions of Australian Chardonnay.

We then conducted focus groups and qualitative results from that process showed a particularly negative perception of Chardonnay. The focus groups were made up of consumers of wine, but as it turned out, not Chardonnay. This was a required limitation of the work, since focus group recruitment needs to be performed agnostic of the key question – that is, we could not announce to potential participants that we were interested in Chardonnay and possibly bias their responses. The negative perception of Chardonnay found in the focus groups was cross-checked with a quantitative survey using population sampling. The focus group results were not found to be representative of the population. The survey showed that consumers did NOT hold negative views about Chardonnay. A total of four focus groups were run, so it is unlikely that the sampling alone produced such different and negative opinions. However, focus groups represent 'group' responses, and there is certainly clear negative information about Chardonnay known that may have influenced responses. That is, responses may have represented more about what participants thought they should say to appear knowledgeable to the group, rather than their own opinions. The negative responses about Chardonnay provided by the focus groups were consistent with what is well known and even promoted within the media, such as Chardonnay being 'uncool' because of what TV shows like Kath and Kim have done to the image. The incongruence between the group results from the focus groups and the individual responses from the survey suggest that individual responses are positive toward Chardonnay and group responses are negative. The negative responses from the focus groups may come from more than peer pressure associated with the focus group methodology as suggested above. The Australian media seems to have accepted that consumers have a negative perception of Chardonnay and this colours reports on the topic. In an environment where consistent negative messages are associated with Chardonnay, consumers will report those views back when asked, at least in a group setting. Some pockets of the Australian wine Industry have accepted the negative Chardonnay messages and even been involved in perpetuating them - not through any malicious attempt to 'talk down' the prospects of Chardonnay, instead in an attempt to be pragmatic about what they accepted as true.

Next we report detailed results from a survey specifically on Chardonnay; the results can be found in the current report below. In summary, the results unambiguously demonstrate that there are no systematic negative views of Australian Chardonnay. Further, attitudes towards Chardonnay have NOT changed over the last five years. This result requires some interpretation, as the commonly held viewpoint is that attitudes toward Chardonnay were extremely positive and have declined substantially in recent years. We conducted a review of the literature and found that all of the information pointing to Chardonnay being considered a 'hero' in the past and being viewed less positively now, was not peer reviewed research, instead based on opinion or similar forms of evidence. In fact, there was a paucity of empirical research on Chardonnay perception, and in the absence of such evidence less formal evidence dominates the formation of opinions.

The results presented below present a clear case for Chardonnay being moderately liked by a broad range of consumers, and no evidence for strong negative views amongst any segments. We do not have attitudinal data measured in the past, but we have asked respondents to reflect on their views of Chardonnay in previous years. If this kind of quantitative population survey had been conducted in the past, it would have shown us that Chardonnay was not the 'hero' that we thought it was. In the absence of this information and led only by less formal forms of evidence, the Australian wine Industry was understandably encouraged to plant and make more Chardonnay. This has created the kind of oversupply problem that has been reported elsewhere, and is explained in the literature review that we conducted. Unfortunately, at the same time as the industry was creating an oversupply pressure, the competitor space was developing. Several other white wine styles became more available, in particular styles from the varieties Sauvignon Blanc and Pinot Gris/Grigio. The industry was 'blind sighted' by the success of these wines, because it was thought that Chardonnay was extremely well liked by a large range of consumers. In reality, our data reported here suggests that Chardonnay was moderately liked by a broad range of consumers. With this understanding, it is clear that many consumers would transition to drinking competitors as they become available and as they meet their preferences. Again, if empirical data were available in say 2000 on attitudes and preference for Chardonnay, the industry would have been unlikely to move so quickly to plant further Chardonnay vines.

Our data measured using sensory, consumer, experimental, survey, qualitative focus group and critical reviews of the literature have all pointed to an unambiguous interpretation: that the 'Chardonnay Challenge' has come about because the industry misinterpreted moderate interest in Chardonnay to be high interest. This misinterpretation was allowed through a lack of empirical information on Chardonnay attitudes. The industry was eager to plant vines and make wine, and the best available information was suggesting that Chardonnay was in high demand, was loved by consumers and had excellent viticultural credentials.

The current report is aimed at recommending outcomes that will help mitigate the 'Chardonnay Challenge' happening again – to another well-performing Australian variety for instance. The best advice that we can provide, and we admit that it might be viewed as nepotistic given that we are researchers, is for the industry to fund more empirical varietal attitudinal research. At present, there is a focus on conducting this kind of work (like this very project) ***after*** sales decline, in an attempt to understand what 'went wrong'. It is highly likely that phenomena like the 'Chardonnay Challenge' can be avoided in future if the Australian wine industry funds research to understand base attitudes and makes this available in a co-ordinated way. That is, advice is available to growers on ***what*** to plant, based on likely future demand. In reality, that advice will never be so singular that the one variety will always be recommended, as growing conditions, target markets and other variables individual to companies will dictate different ideal varieties to plant.

A short extension to the project was granted and further outputs were achieved. A data mining activity uncovered some interesting and counter-intuitive findings. For instance, education now shows no relationship with wine consumption, so wine is no longer linked to social status in Australia. Older wine consumers purchased more wine, but at lower prices per bottle than younger consumers. It may be that the younger segment, once thought not to be avid consumers of wine, may warrant attention.

As part of the extension, Australian Chardonnay styles were compared to International styles readily available for sale in Australia. We found that Australian styles covered the flavour spectrum available through international wines except for a heavily oaked style and wine typical of the Chablis region. Australian wines, compared to the international styles, tended to be more balanced and one style driven by fresh fruit character stood out as unique. Chemical fingerprinting of wines tested provided support for the sensory findings. These findings present an opportunity to communicate the differences between Australian Chardonnay wine styles and international wines available for sale in Australia.

This project collected a large dataset on wine consumption, demographics and purchasing. On a limited budget, we produced a web-based interface that can search the database, allowing for detailed questions to be asked. We hope that this tool can be hosted in such a way that the Australian wine Industry can gain access and have their questions on Australian domestic wine consumer behaviour answered in real time.

3. Background

Chardonnay has been a mainstream variety and arguably the backbone of the Australian wine industry for almost three decades. It remains the most planted white variety and in the past has enjoyed positive public perception. The flavour styles in Australia are diverse, with many regions able to claim excellence. Chardonnay has solid viticultural properties and much research in Australia has placed Chardonnay in a position of strength as an earner of both money and reputation.

With these excellent credentials, Chardonnay accounts for a substantial proportion of Australian wine sector profits. However, in recent years, Chardonnay sales domestically have been rapidly declining and many growers are considering removing the variety. However, this represents a significant risk, with substantial cost in the short term. It also ignores the real problem, in that the next variety may fall out of favour in the same way.

The reason for the decline in consumer interest is not known. There is no shortage of opinion and while some may be right, the scientific literature is equally as ambiguous in deciphering exactly what 'went wrong'. It is important to understand the contribution of consumer perception and taste preference (separately and their interaction), so that a solution can be offered beyond removing Chardonnay altogether. It is also important to evaluate the Australian public's attitudes toward wine and the wine industry in general, to assess whether the turn against Chardonnay is linked to a general trend away from drinking Australian wine, or wine in general within the domestic market.

A project variation was submitted and accepted, to extend the project by 6-months to examine how the flavour profiles identified compare and contrast to the International Chardonnay available for sale in Australia. Further, chemical fingerprinting of the International wines, along with a data mining report based on the large datasets collected in the project were additional deliverables.

4. Project aims and performance target

All objectives are confined to the Australian domestic market. The important overseas market is outside the scope and resources of the current proposal.

The principal objective of this project is to answer the researchable question?

Can we define the consumer-related issues contributing to the Australian “Chardonnay”challenge” and provide potential solutions by using a range of consumer science tools to generate the source knowledge?

To answer this question we will pursue the following objectives:

1. To determine community attitudes towards wine and psychological drivers of consumption
    - Attitudes toward the Australian wine Industry
    - Attitudes community wine compared with competitor beverages
    - Psychological drivers of consumption
    - Change in all three above since 2008, predictions for the future

2. To determine consumer perceptions of Chardonnay
    - Current perception of Chardonnay
    - Source of current perception, any events that caused recent changes
    - 'Stickiness' of the current perception
    - Suggestions on how to change any negative perceptions
    - Size of relative markets

3. To determine consumer taste preferences and relative influence of perception for major Chardonnay styles

4. To chemically characterise Australian Chardonnay wine styles

The project variation introduced several new outputs to extend on the main aim of the project. Specifically:

- A report on the data mining of consumer data collected in the project
- Report in an Australian wine industry magazine on international flavour map for Chardonnay. That work will be converted into a journal article later in 2013.

5. Methods and 6. Results/Discussion

A multi-disciplinary approach using qualitative and quantitative methods was used. The methods and results used are summarised here with full details in the reports contained in the relevant appendices.

A literature review was conducted to determine the current state of knowledge. Because few peer reviewed papers could be found, the popular press was included in the search, which included opinion pieces. We found that the popular press was reporting a negative attitude towards Chardonnay and that this was based on opinions (albeit from some significant opinion leaders in the Industry) rather than qualitative or quantitative data. We thought it important to keep an open mind, but the anecdotal reports pointed to a negative impression of Chardonnay.

In our project, the consumer perception of Chardonnay was firstly assessed by multiple focus groups, a qualitative method that also informed the creation of the two quantitative surveys. Because the results of the focus groups and first survey were in contrast, Part 3 of the report contained in 'Appendix 1: Detailed reports', presents the focus group work and first survey together. The focus group results were in agreement with the opinions and reports in the popular press – that consumers had a negative attitude toward Chardonnay. However, the quantitative results showed that consumers were actually quite positive. Reasons for this were thought to be related to the data collection mechanisms – focus groups measured 'peer influenced' responses, and the reports in the popular press and like media had made it appealing to say negative things about Chardonnay. In fact, we found that it was a way that consumers demonstrated their knowledge – since a negative view accorded with that generally reported. However, in the quantitative surveys we found that consumers did not hold a negative attitude toward Chardonnay, when not influenced by peers.

The use of survey methodology that was similar to work conducted in 2007 allowed for a comparison of attitudes between 2007 and 2012. Part 4 of Appendix 1 outlines the methods used in full. In summary, the surveys were 'matched' such that participant demographics in one survey were matched to participant demographics in the other so that we had comparable samples. Further survey work developed scales of self-reported 'change in attitude' toward Chardonnay. We found that attitudes had not changed, and that while consumers tend to report a negative attitude in groups (because that is what is reflected in the media), attitudes have remained moderately high throughout.

The Perception of Chardonnay was then measured through consumer-sensory testing (preference mapping) and two purpose-designed experiments. The preference mapping followed the appropriate international standards, whereas the experiments were innovations designed to answer the specific questions raised in this project. The sensory work confirmed that there are a range of styles that appeal to consumers. Full details are contained in Part 5 of Appendix 1. The 'deception experiment' involved showing the same selected wine samples to participants while delivering different messages – that the wine was either Chardonnay or a 'new variety'. The resulting perception was thought to reflect the influence of being told that the wine was Chardonnay, an indirect but robust measure of the Perception of Chardonnay. This technique may be useful to further consumer perception work.

The experimental work was also important because it allowed us to disambiguate the different results obtained from qualitative and quantitative methodologies. The experimental results showed that there was indeed a neutral or moderately positive attitude toward Chardonnay. One experiment was planned, whereas two were conducted. The second experiment was conducted to replicate the results from the first experiment using a slightly more powerful methodology, as the results were, initially, so surprising (remembering that we had initially reported that there was a negative attitude, from focus group work and a review of the popular press).

The Chemical analyses are summarised in Part 6 of Appendix 1, and the final quantitative survey measuring Chardonnay attitudes is reported in Part 7. The chemical work demonstrated that a number of important flavour descriptors could be successfully modelled, such that further work investigating key flavours could point to the marker compounds known to influence the relevant flavour(s). This outcome was significant because such discoveries are usually not made in such a short-term project; the use of chemometric techniques allowed these discoveries to be made quickly.

The project was extended by 6-months to include extra deliverables. Firstly, a data mining report was generated from the substantial datasets that were collected by this project; full details of the method and results are contained in appendix 1, Part 8.

Secondly, an international flavour map was generated using methods based on relevant international standards for preference mapping. Results showed that Australian wine styles sit across a range of International styles, covering all but a few flavour profiles available through imported wine. Further, that there were specific profile aspects that set the Australian wines apart from the International wines. A full summary can be found in Part 9 of Appendix 1.

Thirdly, chemical fingerprinting of the International wines was undertaken in an attempt to define the chemical differences between the Australian and International wines. Full method and results can be found in Appendix 1, Part 10.

Finally, an additional deliverable was proposed and accepted, the generation of a web-based search tool. The tool can interrogate the consumer demographics, consumption and purchasing data that this project has generated. The output was a demonstration of what could be achieved and can be added to through further development of the tool, and also through addition of more data as it becomes available. However, as is, the tool can currently be used to generate quite complex queries. Exactly where and how the tool will be mounted is an issue that will need to be addressed.

More detail about the methodology used to design the tool

A MySQL relational database was designed that contained information from two surveys conducted online. This database grouped the data into 'Consumption', 'Person's demographics' and 'Purchasing' themes. A Java web-based application was designed that will be able to search the database by using user input. In the first graphical user input (GUI) the user chooses between 'Consumption', 'Person's demographics' and 'Purchasing' themes using check boxes. Drop-down menus and check boxes are displayed for these three themes. The user selects one or more inputs. Then a separate GUI is displayed so the user chooses the range of values. Then a new GUI is displayed, allowing the user to choose what data they would like to see in the output. The Application is then able to query the database using the JDBC (Java Database Connectivity) Application Programming Interface. The output of this database search is subsequently displayed on a new display screen.

More details about the deliverable including screen shots of the application can be found in

7. Outcome/Conclusion

The main conclusion of this work is that there is NOT a negative perception of Australian Chardonnay domestically. Part of this conclusion was drawn from the experimental work conducted. We have developed an innovative way to assess the perception of a wine variety or style, by asking participants to provide feedback on a test wine compared to a 'new variety', although in reality the wine used as the new variety is in fact identical to the test wine. Therefore, any differences in response are due to the perception of the test wine, and not the taste of the wine, nor the context in which the wine is consumed. This technique should be further developed and used.

Australian Chardonnay wine styles are diverse and offer much of what international styles sold in Australia have to offer. A possible new style that could be encouraged is a 'Chablis style'.

<u>Data Mining of Consumer Data</u>

- Male consumers consume the most wine, prefer red and pay the least per bottle.
- Females consume less overall, prefer white and sparkling and pay the most per bottle.
- The highest income earners spend the most on wine per month.
- Education now shows no relationship with wine consumption.
- Older wine consumers purchase more wine but at a lower average price per bottle than younger consumers, who drink less overall but pay more per bottle.

8. Recommendations

There is an understandable tendency to fund research in areas where challenges already exist, but often the results of that research are not able to 'solve' the problem once it has started. A major learning out of this project has been that costly industry-wide effects can be caused from not having access to reliable baseline consumer attitudes data. When Chardonnay became popular in Australia there was *some* Viticulture and Winemaking research undertaken, in order to understand this industry 'hero'. However, it is less intuitive to conclude that when a variety is performing well, we need baselines consumer attitude and taste preference research conducted. The current lack of research in this area is one of the biggest risks currently facing the Australian wine industry.

Based on the multi-discipline approach we undertook, we make the following recommendations:

- Baseline consumer attitude and taste preference research needs to be undertaken, particularly for high-performing varieties that are (or will likely become in the short term) highly valuable to the industry.

- There is a need to re-balance the supply-demand ratio of Australian Chardonnay for domestic sales, and find other markets to sell Chardonnay internationally. Understanding markets such as China are important, but also risky given the inherent volatility of the political landscape, at least in China. Emerging markets like India may prove a more stable investment, and pre-emerging markets such as Ghana are currently not considered at all despite cultural changes of revolutionary scale toward drinking wine.

- The sensory and consumer work undertaken have highlighted styles that appeal to consumers and some styles that do not. This information could be used to inform a wine business on proportion of wine volume to produce in given styles.

- The fact that other varieties were able to ‘usurp’ Chardonnay’s position in the shopping trolley suggests a strong demand for flavour innovations that winemakers were unable to supply through Chardonnay. Methods that allow potential flavour innovations cheaply would provide existing varieties with an ability to be more flexible to consumer needs, without the expensive requirement to replant vines.

- Australian Chardonnay currently enjoys a positive perception amongst domestic consumers. This is at odds with some messages conveyed by the media and even by the wine industry themselves. We found no reason to be pessimistic about Chardonnay, instead, these results could be used to communicate that Chardonnay is a well-liked variety, with many existing flavour styles that appeal to consumers and the potential to offer flavour innovations in the future.

The project was continued for 6-months to include work on data mining, sensory characterisation of international Chardonnay and how it compares to the Australian styles we described and the development of a tool that allows complex questions on consumer wine consumption, purchasing and demographics to be answered in real-time. The recommendations from this work are:

- Less frequent drinkers pay more per bottle, possibly as a compensation strategy, and could be a more profitable segment of the market than previously thought.

- Younger wine drinkers purchase less, but again pay more per bottle, therefore marketers could re-think how their products fit this segment.

- Wine variety is consumed consistently across States (though more fortified is consumed in the NT), suggesting that little parochialism for one's own State exists. Especially for some States, further work could differentiate their wine styles to allow larger States to benefit from a larger customer base.

- Australian Chardonnay styles are diverse and cover the majority of styles available through international wines sold in Australia. The exceptions are an oak dominated style and a traditional Chablis style. The oak dominated style, from the consumer results we reported earlier, would not likely to appeal to many Australian consumers. However, we believe that the Chablis style would. We are aware of some Chardonnay produced in Australia that shows the kind of characters found in wines from the Chablis region, however, because our study looked at wines under ~$20 per bottle, none were included in the wines we examined. The appeal of minerality in particular to consumers does need to be investigated before the Australian Industry commits substantial resources to producing consumer wines in this style; however, we think that it is likely that this style will be the next growth style for Chardonnay Australia.

- The sensory results differentiate Australian Chardonnay styles from the international styles available locally. This information is useful to communicate the differences, as well as the similarities, to domestic consumers. The creation of a New Zealand Sauvignon Blanc sensory map with comparisons to international styles was a major springboard that helped consumers understand the uniqueness of that product. Our results could be used in a similar way for Australian Chardonnay.

- We have developed a tool that allows users to search the data we collected on consumer wine consumption, purchase and demographics. The tool was developed on a limited budget and would benefit from further usability enhancements, but a soft-launch of the tool should now be executed. While further work may be required, the tool has the potential to become an asset to the Australian wine industry.