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Abstract

I chose to research how weather change and temperature increase on the grape vineyards in Napa Valley and how this will affect the growing season and the wine industry. Using interviews and a few studies done on this topic I will show that as of right now weather change and temperature increase aren't really affecting the crop. The Napa Valley Vintners have done extensive research on this and have a new study coming out in the summer of 2017, with more data that will hopefully lead the vintners in the Napa Valley to become more conscious about climate change and how it can and will eventually affect their crops and their profits.

Introduction

Napa Valley is a very interesting place to observe climate change. It is neither coastal climate nor inland climate, so it shares those traits to become its own kind of climate. Also the southern part of Napa Valley is more coastal climate, since it is more intertwined with the Napa River and closer to the San Francisco Bay, and the northern part is more of a coastal valley climate since it is farther away from the bay and not as closely intertwined with the Napa River. This is why the temperature change has only increased one to two degrees in the past sixty years (Stults). The grape and wine industry are doing fine, for now. There is concern for the grapes if the weather becomes much colder at night, which would lead to the frosting of crops, which has been happening with the end of the season nights. There is also concern if it rains a lot during the summer time since prime growing season is warm and dry (Stults). If it rains a lot like in the summer of 2011, then it could ruin the crop for the year and the wine would be scarce. There are many tactics becoming part of the vintner's routine to make sure their crop isn't ruined. This is how climate change will affect the grape crop and wine industry of Napa Valley.

Methods

The Napa Valley Vintner's have done a lot of research about how climate change affects the vineyards in Napa. Their study that concluded in 2011 had three main objectives, them being, "a) describe the spatial and temporal structure of climate in NV; b) explore linkages between climate and phenology/harvest; and c) evaluate historical trends in temperature" (Cayan). One of their strategies to observe their objectives was to put in a total of 30 private weather stations at each winery to get exact readings, rather than relying on two public weather stations that were nowhere near a winery and did not accurately gage the weather over time. Also some of the wineries in Napa have begun to change the way they plant their vines. The vintners teach the vines to grow in different ways so that they can maximize the amount of sun the grapes get (Stults). That way if the summer season is particularly rainy, there is a chance that whatever sun they do get will be helpful to the growing process.

"Suitability is projected to decline in many traditional wine-producing regions (e.g., the Bordeaux and Rhône valley regions in France and Tuscany in Italy) and increase in more northern regions in North America and Europe, under RCP 8.5 and RCP 4.5. Current suitability is projected to be retained in smaller areas of current wine-producing regions, especially at upper elevations and in coastal areas" (Hannah). This is also a big issue in the wine producing world. The suitability of producing wine is very dependent on how the weather changes, because if it too cold the grapes freeze and if it's too wet then the grapes will not produce good grapes at harvest. The suitability in certain regions only seems to be a big problem in France and Italy regions; whereas in "coastal areas" such as Napa, suitability seems to be pretty stable because the weather has not changed drastically in the past 60 years.

Results

"Data from two weather stations in the valley show an average annual warming trend of 0.03 degrees Fahrenheit since 1931. Studies using this data say that minimum temperatures during the April-to-October growing season have increased by 2.9 degrees Celsius (5.2 degrees Fahrenheit). But the NVV says the locations of the weather stations are not comparable to the conditions found in a vineyard" (@kristenandallie). This information shows that while using the weather stations for normal day activity for the mass populous and basic weather data, it is not very specific to what the vintners wanted to find out for this particular study and therefore needed to create a way to collect data that would help their needs.

"According to the study, the average temperature in Napa Valley during the growing season could increase as much as 2 F (1.1 C), with the number of very hot days increasing by 10. As a result, the amount of land with historically hospitable growing conditions could shrink by half over the next three decades, the study found" (Zubryd). This information was much more helpful to the vintners since this was much more specific to the areas that were pertinent to them. With the increase of temperatures of 2 degrees it could affect the land that is available to grow the vines and affect the vines themselves.

"Different years and different weather patterns change the quality of wine like in 2011, it was the coldest wettest summer in Napa Valley so the grapes weren't able to ripen enough and we didn't get good quality of wine" (Stults). This shows that weather can have an immense impact on the quality of wine. If a summer is too wet, then there isn't a good harvest and that means lower production of wine and lower profits for the vintners.

Discussion

Seeing that the temperatures have not specifically affected the vineyards as much as they thought it would, it will be interesting to watch how climate change, specifically weather temperatures and wetness, will change the vineyards later on. The studies that have been done have not gotten into the speculation stages, which will probably help show that while not a lot of climate change has affected the vineyards, a large change could easily affect them harshly. The land that they grow on could eventually vanish if we do not consciously change our ways to where climate change would not be an issue.

The one odd year, 2011, shows that weather really can affect the harvest immensely; this would be considered more of natural variability since it only happened once, but since this is an ongoing study I think that the vintners need to watch the weather of each season and learn how to grow their crop properly. They were unable to produce good quality wine in 2011, which in turn hurts the wineries and vintners who make a living off of the wine that they produce. 2011 was a warning year for the vintners, that if they don't make a big to do about climate change, they could very easily lose a huge amount of their profit.

Conclusion

The weather is changing and while it may not be affecting the vineyards of Napa right now, it will affect them once the climate gets to the point where their land is unusable and they are no longer able to create the amount of wine they need to make a profit. Odd years have shown the vintners exactly what climate change can do to their profits and because of this they have taken initiative to find out what climate change can do to their crops and how to make the best of a bad situation. The Napa Valley Vintners are heading research projects to see what climate change will do to the crops and finding new ways to produce wine in unfavorable climate circumstances. While the world keeps drinking wine, the vintners in Napa Valley are determined to keep making the best wine they can, while they can.

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