



Global Warming & Global Wines:

How climate change is shaping the
wine industry

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Context

Climate change affects:

1. Temperature
2. Natural disaster frequency

Set out to learn three major things:

1. How will changing temperatures affect the global supply of wine?
2. In turn, how will this affect the price of wine?
3. Where will "wine country" be 50 years from now?

Our data:

1. Wine Reviews (150k data points)
2. Temperature Over Time (3448 cities, 1743-2013)
3. Natural Disaster Frequency (9924 disasters, 1960-2018)
4. Vivino Wine Prices (8990 wines)

Rising Temperatures

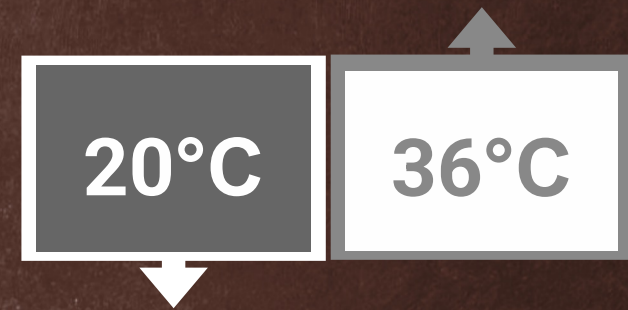
Top 20 wine growing regions:

country	quantity_wines
Italy	14850
France	14459
Spain	5443
Chile	3735
Portugal	3508
Argentina	3447
Australia	3152
Austria	1959
New Zealand	1865
Germany	1529
South Africa	1481
Greece	541
Israel	370
Canada	149
Hungary	139
Romania	106
Slovenia	72
Croatia	70
Bulgaria	56
Mexico	54

Climate change ranks:

country	avg_annual_pct_change	climate_change_rank
France	0.967815	4
Israel	0.939956	5
Canada	0.692260	7
Portugal	0.627612	9
Australia	0.523558	11
New Zealand	0.425622	12
Austria	0.342567	15
Germany	0.317299	16
Slovenia	0.312815	17
Spain	0.298973	18
Romania	0.111676	25
Hungary	0.026158	28
Bulgaria	-0.050796	31
Mexico	-0.076590	32
Italy	-0.164942	35
Croatia	-0.179708	37
Greece	-0.195121	38
Argentina	-0.211644	39
South Africa	-0.325858	41
Chile	-0.433108	42

Ideal Grape Growing Temperature:



- Top 4 major wine growing countries are not in the range
- Only four countries enter this range in the next 50 years:



Present-2063...



Present-2063...



2035-2063...



Present-2063...

Natural Disasters

- Wine industry is more resilient than we thought
- Countries with a high natural disaster rank tend to have lower climate change ranks
- **Resilient:** South Africa, Greece, Bulgaria, Croatia
Invest in wine production
- **Fragile:** Romania, Hungary, Germany, Australia, New Zealand, Canada, France
Invest in current wines based on long-term scarcity

Country	avg_annual_temperature_pct_change	natural_disaster_pct_change	natural_disaster_rank	Climate_change_rank
Romania	1.001117	1.094046	1.0	11.0
Argentina	0.997884	0.856969	2.0	18.0
Hungary	1.000262	0.853936	3.0	12.0
Germany	1.003173	0.737379	4.0	8.0
Chile	0.995669	0.727980	5.0	20.0
Australia	1.005236	0.726777	6.0	5.0
Mexico	0.999234	0.620607	7.0	14.0
Italy	0.998351	0.584982	8.0	15.0
New Zealand	1.004256	0.575319	9.0	6.0
Canada	1.006923	0.406430	10.0	3.0
France	1.009678	0.357452	11.0	1.0
Spain	1.002990	0.319713	12.0	10.0
South Africa	0.996741	0.273675	13.0	19.0
Austria	1.003426	0.181992	14.0	7.0
Greece	0.998049	0.177179	15.0	17.0
Portugal	1.006276	0.134142	16.0	4.0
Bulgaria	0.999492	0.033022	17.0	13.0
Israel	1.009400	0.016949	18.0	2.0
Croatia	0.998203	-0.015799	19.0	16.0
Slovenia	1.003128	-0.031073	20.0	9.0



Since 1960, Romania averages a 109% annual change in the frequency of natural Disasters

Bullish	Bearish
Romania	Slovenia
Argentina	Croatia
Hungary	Israel
Chile	Bulgaria
Australia	Portugal
Mexico	

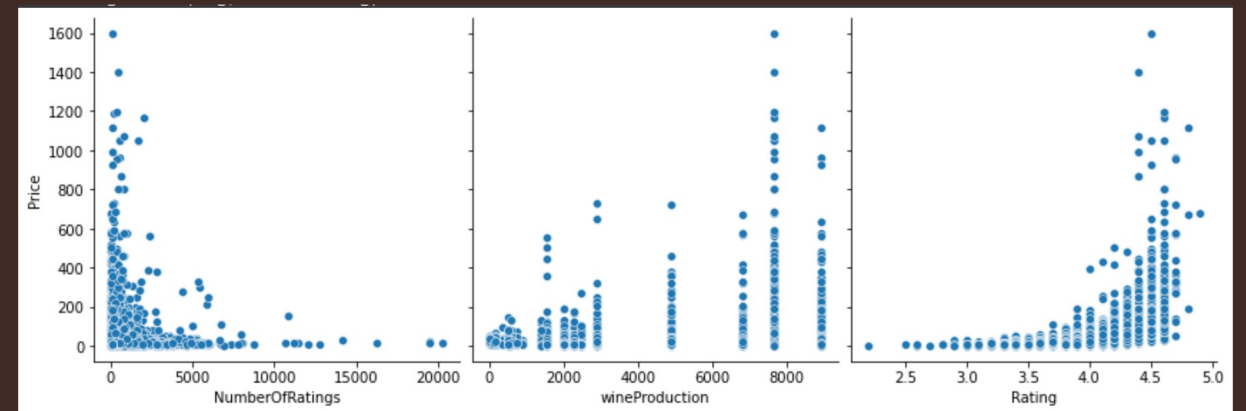
Pricing

Hypothesis:

Prices are determined based off macroeconomic trends of Supply and Demand

Results:

1. *Wine Production (supply) → Not significant*
2. *Rating → Very Important*
3. *Demand → Not significant*



*Thank
you!*

