



THE VALORISATION OF EXISTING TOP 12 SHIRAZ WINE DATA

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Background



Objective

- 🍷 Unlocking knowledge from under-utilised datasets about the winning South African Shiraz wines.

Questions

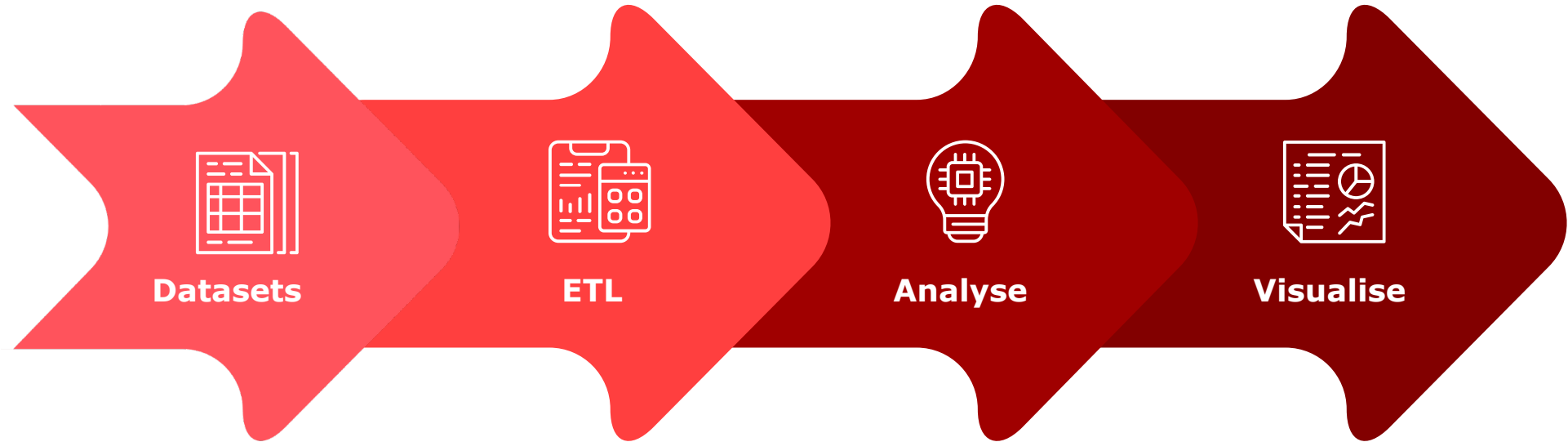
- 🍷 What are the variables shared by the winning wines?
- 🍷 What are the data shortcomings (if any) in the industry?
- 🍷 Is there variation from year to year?
- 🍷 Is there a correlation between social user data scores and expert panel scores?

Disclaimers

- 🍷 Meng (Industrial Engineering) Data Science
- 🍷 Ethical approval
- 🍷 I present a plan and some preliminary work



Data: The process



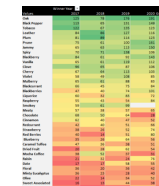
Key datasets were identified

Extracting, transforming and loading the data was critical to obtain useable data

Analysis was done in order to understand the wines with a key focus on tasting notes and comments

The data is then visualised to provide key insights regarding the wine data and reviews

- Shiraz SA Challenge annual top 12 winners (10 wines from 2017 to 2022)
- Viticulture information of winning wines
- Winemaking detail
- Social user-generated wine data
- Open internet, public data
- Web-scraping application
- Tasting notes and information published in Platter's Wine Guide for all the major SA winners from 2017 to 2022
- Winning on this data
- Wine expert tasting panel data
- Collected by the Department of Viticulture and Oenology
- Dr. Heare Brand



Datasets



- 🍷 Shiraz SA Challenge annual top 12 winners (83 wines from 2017 to 2023)
- 🍷 Viticulture information of winning wines
- 🍷 Winemaking detail



- 🍷 Social user-generated wine data
- 🍷 Open source, public data
- 🍷 Web-scraping application



- 🍷 Tasting notes and information published in Platters Wine Guide for all the shiraz SA winners from 2017 to 2023.
- 🍷 Waiting on this data



- 🍷 Wine expert tasting panel data
- 🍷 Collected by the Department of Viticulture and Oenology
- 🍷 Dr Jeanne Brand



 SHIRAZ SA
CHALLENGE 2023

Every year in April a panel of local and international judges convene to adjudicate the Shiraz wines entered for this prestigious competition. A second category, Shiraz Blends was added in the second year of the competition. All producers of Shiraz are invited to enter their wines irrespective whether they are members of the association or not. The University of Stellenbosch assisted with the development of a special judging system used for the Shiraz Challenge. It is a tasting format which eliminates any inter-session discussion of wines and presents each judge with his/her unique tasting order to combat palate fatigue and ensure that each wine is judged fairly and without bias. Twenty Shiraz and six Shiraz Blend finalists are finally selected.

In its continued commitment to industry skills development, a protégée under mentorship of the esteemed Cape Winemakers Guild is invited every year to join the panel.



SHIRAZ SA TOP 12 WINES

2017	2018	2019	2020	2021	2022	2023
Cederberg Shiraz 2015	Alvi's Drift Signature Shiraz 2016	Babylonstoren Shiraz 2017	Babylonstoren Shiraz 2018	Cederberg Shiraz 2018	Bellingham The Bernard Series Basket Press Syrah 2019	Anthonij Rupert Cape of Good Hope Riebeeksrivier Syrah 2018
D'Aria The Soprano Shiraz 2015	Babylonstoren Shiraz 2015	Bellingham The Bernard Series Basket Press Syrah 2016	Benguela Cove Syrah 2018	Driehoek Shiraz 2019	Bon Courage Wine Estate Inkará 2020	Darling Cellars Gustus Shiraz 2021
Eagles' Nest Shiraz 2014	Bloemendal Syrah 2013	Driehoek Shiraz 2016	De Grendel Elim Shiraz 2018	Flagstone Dark Horse Shiraz 2017	Cederberg Shiraz 2020	De Grendel Op die Berg Syrah 2021
Fairview Swartland Shiraz 2014	Boschkloof Louis 57 Syrah 2016	Driehoek Shiraz 2017	Flagstone Dark Horse Shiraz 2016	Glen Carlou Syrah 2019	De Grendel Wine and Restaurant Op Die Berg Shiraz 2020	Dewaldt Heyns Weathered Hands Shiraz 2020
Fairview The Beacon Shiraz 2014	D'Aria The Soprano Shiraz 2016	Flagstone Dark Horse Shiraz 2015	Koelfontein Shiraz 2017	Kleine Zalze Family Reserve Shiraz 2017	Diemersdal Estate Shiraz 2021	Diemersdal Syrah 2022
Flagstone Dark Horse Shiraz 2013	De Grendel Elim Shiraz 2016	KWV Cathedral Cellar Shiraz 2016	Kunjani Shiraz 2015	Kleine Zalze Vineyard Selection Shiraz 2018	Driehoek Shiraz 2020	Fairview The Beacon Shiraz 2020
KWV Cathedral Cellar Shiraz 2015	Diemersfontein Shiraz 2017	Neethlingshof Shiraz 2015	Leeuwenkuil Family Vineyards Shiraz 2017	Koelfontein Shiraz 2019	Fuselage Sideslip 2021	Flagstone Dark Horse Shiraz 2019
La Motte Pierneef Syrah Viognier 2015	Eagles' Nest Shiraz 2015	Quoin Rock Shiraz 2015	Lomond Estate Syrah 2018	Landskroon Paul de Villiers Shiraz 2019	Groot Phesantekraal Wines and Restaurant Syrah 2021	Groenland Syrah Premium 2018
Rustenberg Buzzard Kloof Syrah 2015	KWV Cathedral Cellar Shiraz 2015	Rhebokskloof Black Marble Hill Syrah 2016	Old Road Wine Co Pepper Wind Syrah 2017	Neil Ellis Groenekloof Syrah 2019	KWV Cathedral Cellar Shiraz 2019	Kleine Zalze Family Reserve Shiraz 2019
Saronsberg Shiraz 2015	Oldenburg Vineyards Syrah 2014	Stellenview Kruger Family Reserve Shiraz 2016	Saronsberg Shiraz 2018	Rooiberg Winery Shiraz Reserve 2019	Saronsberg Shiraz 2020	Stellenzicht Arenite Syrah 2019
Strandveld Syrah 2013	Saronsberg Provenance Shiraz 2016	Strandveld First Sighting Shiraz 2017	Trizanne Reserve Syrah 2018	Saronsberg Shiraz 2019	Stellenbosch Reserve Syrah 2020	Uva Mira The Mira Shiraz 2020
Wildekrans Barrel Select Reserve Shiraz 2015	Wellington Wines La Cave Shiraz 2016	Wellington Wines La Cave Shiraz 2017	Wildeberg Red 2019	Stellenbosch Vineyards Credo Shiraz 2018	Swartland Winery Bush Vine Syrah 2020	Wildeberg Red 2022

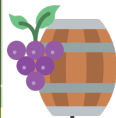
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Shiraz SA Winemaking and Viticulture information



Winemaking

Wine of Origin • Harvest Date • °B • pH
• TA g/l • Sorting • Cold Maceration •
Yeast • Fermentation Temperature •
Tank Type • Pump-Overs/Punch-Down
• Intervals • Days on Skins • MLF Tank
or Barrel • MLF Spontaneous or
Inoculated • Oak Origin • Barrel Size
• Toasting • Barrel Rackings • Finings
in Barrel • Months in Barrel • Finings
Prior to Bottling • Type of Filtration •
Filtration at Bottling • Bottles
Produced • Cellar Door Price •
Cork/Screw Cap



Viticulture

BLOCK INFORMATION • Clone/s • Ha •
Tons/Ha • Planting Date • Rootstock •
Row Direction • Row Width X Planting
Width • Trellising System • **SOIL** •
Water Holding Capacity • Structure •
Geology • Potential • Irrigation System
• Drainage • **TERRAIN** • Aspect
• Position in Landscape • Incline •
Proximity to the Ocean • Altitude •
CLIMATE • Mean Temperature for
Ripening • Mean Annual Rainfall •
CANOPY MANAGEMENT • Leaf Break •
Trellising System





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Flagstone Dark Horse Shiraz 2018

South Africa · Stellenbosch · Flagstone · Red wine · Shiraz/Syrah

4.3 99 ratings

Add to Wishlist

★ Among top 1% of all wines in the world

Community reviews

Helpful Recent Friends You

★ 4.5 Still a great shiraz. Deep bold and spicy. White pepper notes coming through. Definitely a great buy and drinking. Some tannins still, so could age a bit more tp smooth it out

Thandi Mcizana (1940 ratings) Aug 6, 2022

9 0

★ 4.4 Very good wine. Tasting notes of white pepper, spices, cigar box, and black fruit. The has soft tannins, although still relatively young, with long finish. It pairs well with game.

Jaco Von Wielligh (676 ratings) Jan 4, 2023

1 0

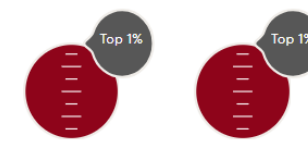
★ 4.3 Very complex woody nose with a dark and mysterious oaky taste. I had the 2017 before and this one was just as good.

4.3

99 ratings



Add your own rating and help other Vivino users Add rating! wine!



Want to see your favorites in the list? Make sure you rate them and check the list every week. Next update in 7 days



Vivino Code: Review scraping



ETL



🍷 Extract

- Data Source: Mined user-generated data from Vivino, a leading online wine marketplace and app.
- Wine Focus: Specifically targeted information related to Top 12 Shiraz wines using wine ID's on the app.
- Automated Collection: Utilised Python scripts to gather details like ratings, reviews, and price points

🍷 Transform

- Data Cleaning: Removed inconsistencies and inaccuracies to make sure only reliable data is analysed.
- Feature Selection: Chose the most relevant aspects like vintage, wine ratings, number of reviews and winery information to create a focused dataset.

🍷 Load

- Data Integration: Combined all the cleaned and transformed data
- Ready for Analysis: Data is now prepared and formatted for in-depth analysis and insights.

```
import json
import requests
import re
import pandas as pd

def get_wine_data(wine_id, year, page):
    headers = {
        "User-Agent": "Mozilla/5.0 (X11; Ubuntu; Linux x86_64; rv:89.0) Gecko/20100101 Firefox/89.0",
    }

    api_url = "https://www.vivino.com/api/wines/{id}/reviews?per_page=50&year={year}&page={page}"
    data = requests.get(
        api_url.format(id=wine_id, year=year, page=page), headers=headers
    ).json()

    return data

wine_ids = [
    '1376034', '1861091', '1145292', '1890969', '2531613', '1199768', '2408888', '23325', '1546875', '7000844', '9716192', '1174566', '18729', '1362466',
]
ratings = []

for wine_id in wine_ids:
    year = 2017
    page = 1
    while True:
        print(f"Getting info about wine {wine_id} Page {page}")
        d = get_wine_data(wine_id, year, page)

        if not d.get("reviews"):
            break

        for r in d["reviews"]:
            ratings.append(
                [
                    year,
                    wine_id,
                    r["vintage"]["id"],
                    r["vintage"]["year"],
                    r["vintage"]["winery"]["name"],
                    r["vintage"]["wine"]["name"],
                    r["vintage"]["statistics"]["ratings_count"],
                    r["vintage"]["wine"]["region"]["country"]["name"],
                ]
            )
```





Vivino Wine Data- Flagstone Dark Horse Example



Year	Wine ID	Vintage ID	Vintage	Winery	Wine Name	Rating Count	Country	Region	User Rating	Note
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4.4	New Year's Eve needed something special! so out came the Dark Horse from Flagstone. Stunning Shiraz! Happy N
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4.5	A rare find! Dark purple deliciousness! Dark fruit, oak, vanilla and a bit of cinnamon. Smooth with well integrated fl
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4.5	Dark horse ðŷž shiraz indeed
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4.5	blackberry dark fruit
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	5	chocolate oak vanilla
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	A very smooth and dry Shiraz with bold flavors which makes it fit to many types of food and delicious on it&e™s ow
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	Needs air time then boooooom full flavour and spice, does lack a bit elegance and layers of the higher end competi
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	Big full bodied wine. plum chocolate pepper vanilla oak
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	3.5	Good, maybe just a bit too much in one go
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4.7	Grande VIno, grande shiraz. Would be great for a roast in a LeCreuset pot or a Coq au Vin :)
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4.5	Beautiful fruity red, perfect with roast lamb or steak
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	Playing cards at the coast waiting for braai. Drank it straight after finishing a rum and coke and it still tasted great.
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	5	Great wine. smooth. Rich and full. Berry after taste.
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	3.5	Aerating this shiraz became an entire experience of taste compared to drinking "straight from the bottle"
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	This Shiraz from stellenbosch, of course, has a fruity nose. Magnificent wine for a small amount of monies, I went b
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	5	Great wine with strong flavours
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	5	Rich and smooth. Absolutely fabulous
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	Bold dry red, balanced tannins and acidity with pepper and tobacco tones.
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	blackcurrant cassis delicious thanks
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	Cracking Shiraz, earthy and fruity slight bitterness on finish but a wonderful silky glass of Shiraz
2016	76034	26603842	2015	Flagstone	Dark Horse Shiraz	254	South Africa	Stellenbos	4.5	Just so good. Plum and prune. Liqueurice an chocolate. Pepper and cinnamon. Good palette.Nice tannins. Smooth ar
2016	76034	144139971	2016	Flagstone	Dark Horse Shiraz	91	South Africa	Stellenbos	4	Nice smooth wine

4

“ This Shiraz from Stellenbosch, of course, has a fruity nose. Magnificent wine for a small number of monies, I went back for more bottles. A South African with a large potential. ”

4.5

“ My kind of wine/shiraz. Just class in the glass. Liquorice, white pepper. plum chocolate vanilla oak. ”

4.5

“ Just so good. Plum and prune. Liquorice an chocolate. Pepper and cinnamon. Good palette. Nice tannins. Smooth and ripe structured on back of palette. ”

4.4

“ Some lovely Shiraz this weekend!! This probably the best: bold, rich flavours. Blackberry & plum. Such well-integrated oak, also soft and smooth. Tannins are gentle & rounded. Delightful ”

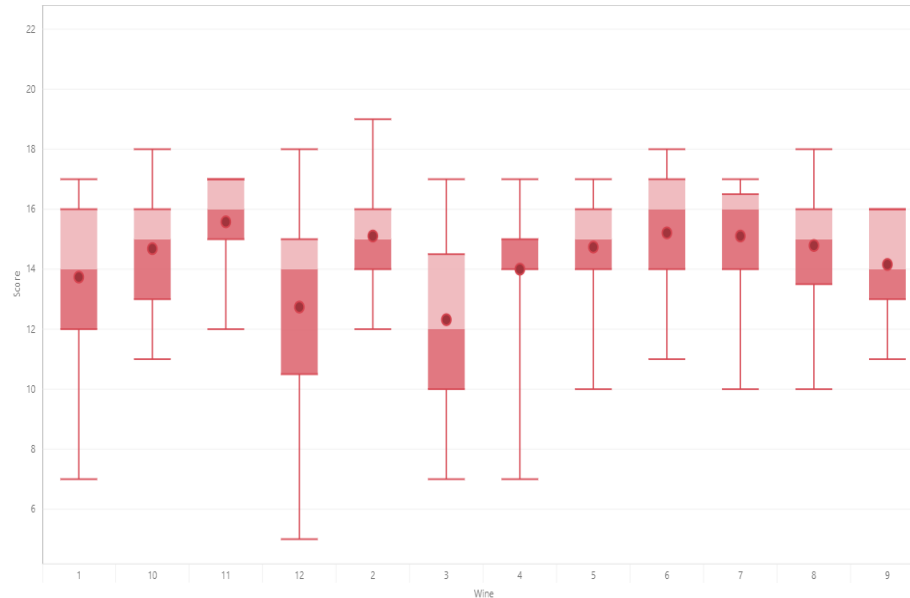
SU dataset: Preliminary Discoveries



Tasting Variables

Astringency • Bitter • Body • Complexity •
 Balance • Aftertaste • Tasting Notes •
 Acidity • Alcohol • Bitterness • Visual •
 Aroma/Nose • Quality

Score Variance by Wine and Judge



Values	Winner Year	2017	2018	2019	2020	Grand Total
Oak		125	78	176	191	570
Black Pepper		113	65	131	149	458
Tobacco		122	67	135	123	447
Leather		84	86	127	116	413
Plum		81	89	114	123	407
Prune		75	61	100	161	397
Jammy		65	63	113	150	391
Spicy		70	71	138	106	385
Blackberry		84	61	92	143	380
Vanilla		65	61	119	112	357
Clove		96	65	87	106	354
Cherry		67	64	113	103	347
Violet		58	49	108	85	300
Mulberry		65	61	88	83	297
Blackcurrant		66	45	75	84	270
Blackberries		47	40	74	101	262
Liquorice		60	32	83	72	247
Raspberry		55	43	54	84	236
Smokey		59	61	99		219
Meaty		57	38	57	65	217
Chocolate		68	50	64	28	210
Cinnamon		62	40	47	52	201
Redcurrant		42	40	51	66	199
Strawberry		38	26	52	74	190
Red Berries		40	14	51	80	185
Blueberry		35	26	64	56	181
Caramel Toffee		47	36	38	51	172
Dried Fruit		20	28	62	54	164
Mocha Coffee		38	52	37	31	158
Raisin		21	32	24	76	153
Date		17	17	58	55	147
Floral		36	20	36	42	134
Minty Eucalyptus		36	23	28	40	127
Olive		22	14	34	52	122
Sweet Associated		16	13	44	38	111
Herbaceous		22	9	19	55	105

What's to come?



Next Steps

- 🍷 Natural Language Processing (NLP) of the Vivino and other qualitative feedback
- 🍷 Comparing tasting notes of all the data sources of the various wines.
- 🍷 Build a dashboard for the visualisation of the concatenating dataset.
- 🍷 Applying machine learning techniques to the dataset to identify any patterns in the data

Further Studies

- 🍷 Expand panel data from 2020 onwards
- 🍷 Add more data sources (e.g., Tim Atkins, Wine Searcher,...?)
- 🍷 Other grape varieties

