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Grape Variety Trends in South Australian Wine Regions, 2001 to 2021

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Grape Variety Trends in South Australian Wine Regions, 2001 to 2021

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A recent *WVJ* article (Anderson and Nelgen 2020a) reported on trends this century in the mix of winegrape varieties in Australia's vineyards. It found they have become more concentrated on a few (especially red) French varieties, and the mix is now more similar to/less distinct from the rest of the world's. That article did not drill down to see what is happening at the regional level. Nor did it have any information on the revenue earned per hectare from different varieties in the various regions. This article begins to fill that void by drawing on a newly compiled 2001-2021 annual database of regional-by-varietal data for South Australia (Anderson and Puga 2021). That state accounts for almost half the national vineyard area and – more importantly for this article – it has more-complete and more-detailed data than other states. The latter is thanks to required annual reporting by SA growers to what was the Phylloxera and Grape Industry Board of South Australia, now Vinehealth Australia (now available at Wine Australia 2021 and earlier). In total this new SA database distinguishes 11 separate legally defined regions (geographical indications) plus three smaller residual areas, and 60+ separate varieties that account for all but 3% of the state's total vine area. (Within that residual 3%, about 1% is accounted for by another 70 varieties grown by at least 3 growers, but their data are confidential; they are listed in Tables 3 and 6 of Anderson and Puga 2021.) A subsequent *WVJ* article will report on non-South Australian regions once the Anderson and Puga (2021) database is expanded to include them, building from and updating the historic regional-by-varietal data reported in Anderson (2015).

Spain down, France up

As in the rest of Australia, in the second half of the 20th century vineyards in South Australia moved away from varieties suited to fortified wines. In the early 1960s, when South Australia produced three-quarters of the country's wine, the national share of bearing area planted to varieties originating from Spain was more than 40% while the share of those of French origin was less than 20%. By the turn of the century those shares were less than 4% and more than 80%, respectively. The situation has not changed as rapidly this century, but that trend has continued: in South Australia the share of French varieties rose from 82% to 88% between 2001 and 2021. Meanwhile, Germany's share has been around 4%, as has Spain's, but Italian varieties continue to account for barely 1% of the state's winegrape area (Figure 1).

Red's revival, except in the Hills

The share of red varieties in the national vineyard also changed a lot in the second half of the 20th century, from 35% in the early 1960s to 50% in the early 70s, back to 35% in the late 1980s, and then 60% by 2000 (Anderson 2015). South Australia's share of red varieties has been a little higher, and has not changed much this century, averaging close to 70%. However, there have been substantial changes in that share for individual regions. In the Adelaide Hills, for example, the share of red varieties has fallen from three-fifths to two-

fifths, while in the Barossa Valley and McLaren Vale it has risen from around 70% and 80%, respectively, to 90% in area terms (and to even higher shares of winegrape production volume and value). Even in Coonawarra where traditionally the area share of reds has been very high, it has crept up from 86% to 92% over the past two decades (Figure 2). Both the Barossa Valley and Coonawarra also have raised the share of their favoured red variety between 2001-03 and 2019-21, from 43% to 64% for Syrah in the former and from 57% to 64% for Cabernet Sauvignon in the latter. These are clear signs of those regions moving toward their varietal comparative advantage. So too has the Clare valley, whose share of Riesling in total bearing area has risen over that same period from 15% to 21%, when that variety's share for the state has fallen from 4.2% to 3.1%.

Less distinct from the global varietal mix

The concentration on fewer varieties also has changed little this century, notwithstanding the exploration of 'alternative' or emerging varieties. The top three (Syrah/Shiraz, Cabernet Sauvignon and Chardonnay) accounted for 65% of the state's bearing area in 2001, and by 2021 that was 72% -- and among the reds Shiraz is increasing its lead over Cabernet Sauvignon (Figure 3). That has brought the state's varietal mix closer to that of the rest of the world's, which itself has become more concentrated on key French varieties and on reds (see Anderson and Nelgen 2021). The extent of South Australia's convergence on that changing global mix is measured by our varietal similarity index (VSI), which is like a correlation coefficient that ranges from zero to one: it indicates how close the varietal mix of one region is to another region or to the state or world average mix, based on varietal shares of total bearing area (see the formula in Anderson and Nelgen 2021). In 2001 that index for SA vis-à-vis the world mix was 0.47 (almost the same as Australia's 0.46), but by 2021 it was 0.65. And each of the state's wine regions has become much more similar to the world in its varietal mix, although least so for the Barossa Valley (Figure 4).

To drill down to get a clearer idea of the contribution of different varieties to that rising VSI, it is helpful to generate the varietal intensity index (VII), defined as a variety's share of the bearing area in South Australia relative to its share in the world. Shown in Table 1 are the 30 varieties with the highest VIIs for the state in 2021. The VIIs of the top 7 in that table have all declined substantially this century, indicating that their shares in the state's bearing area has grown less rapidly than in the rest of the world. This is particularly true of Syrah, Cabernet Sauvignon, Riesling and Chardonnay, whose combined share of the world's vine area grew from 11% to 17% between 2000 and 2016 (Anderson and Nelgen 2020b).

Also evident from Table 1 are the declining VIIs for varieties previously used for non-premium or fortified wines (Muscat of Alexandria, Ruby Cabernet, Sultaniye), and the rising (from zero) VIIs for emerging varieties such as Fiano, Lagrein and Pinot Gris. At the end of last century it was thought Viognier might be an emerging variety in SA, but its share of the state's vineyard peaked in 2010 and has since nearly halved while its share in the rest of the world has kept growing rapidly.

... but SA regions are becoming more distinct from each other

The state average varietal shares hide a much greater degree of change at the regional level. For example, while the similarity index reveals that the varietal mix in each SA region has become more similar to the rest of the world's (although least so for the Barossa Valley and Adelaide Hills – see final column of Table 2), the varietal mix in the majority of SA regions has become *less* similar to the state average (see 2nd to last column of Table 2). That is, regions within SA have differentiated themselves more over the past two decades from other

regions in the state not only in their share of reds but more broadly in terms of their overall varietal mix. The other columns of Table 2 reveal the extent to which various pairs of regions have become more or less similar in terms of their varietal mix. The majority have become less similar to other SA regions.

Changed ranking of regions in terms of winegrape value

The ranking of the state's wine regions in terms of area has not changed over the past two decades. The Riverland's share has dropped a little and that of the Barossa Valley has grown a little, but the ranking at the beginning is the same as at the end of that period (Figure 5(a)).

With differing climates, weather variations and extent of irrigation used across the regions, their average yields per hectare differ considerably (Table 3). In particular, yields in the warm irrigated Riverland region have averaged more than three times those in the rest of the state (20.5 vs 6.6 tonnes/ha). Average prices over the past two decades have differed greatly across regions too (middle columns of Table 3), and not always inversely with yields. So with the varietal mix also differing across regions, one might not expect the ranking of the state's regions to be the same in terms of winegrape crush value as that for bearing area. But in fact they were ranked not very differently in 2019-21 (which is the ordering criterion in Figure 5(b)). The main differences between the beginning and end of this 2-decade period are that Coonawarra and the Adelaide Hills are now ahead of Langhorne Creek, and the Clare Valley is behind Wrattonbully in the value chart as compared with the area chart (compare Figures 5(a) and 5(b)). What is more striking is that the regions have altered substantially in their value rankings over the past two decades. McLaren Vale has been overtaken by the Barossa Valley, and the Adelaide Hills is now ahead of Padthaway and the Clare Valley (Figure 5(b)).

... and changed regional ranking of average prices

The regional average prices over the past two decades (column 8 of Table 3) conceal very substantial changes over that period in the average winegrape price for each region, and also the regions' within-state rankings by that criterion. The five highest-priced regions in 2019-21 have higher average prices at the end than the beginning of this 2-decade period, led by the Barossa Valley, Eden Valley and McLaren Vale (column 6 of Table 3). The range of average regional prices has risen from \$1,110 in 2001-03 to \$1,720 in 2019-21, even though the state's average price is one-sixth lower in nominal terms in 2019-21 than in 2001-03.

Offsetting this, average yields per hectare have fallen in several of today's high-priced regions and have risen most in the low-priced Riverland (column 3 of Table 3). So what does all this (including changes in each region's mix of varieties) translate to in terms of gross revenue per hectare?

Gross revenue per hectare

Winegrape gross revenue per hectare data are summarized by region and variety in the final columns of Table 3, with the regions listed alphabetically and the varieties ranked in terms of the state's bearing area in 2019-21 (when those 14 varieties accounted for 96% of the state's vine area). Several things are worth noting from some of those numbers and their depiction in Figure 6.

First, the beginning and end of the two-decade period were high-priced compared with the vintages in between (Figure 6(a)).

Second, the ranking of regions in terms of average price is very different from that in terms of gross revenue per hectare over the 21 vintages since 2001 (Figure 6(b)). Indeed the latter indicator varies little across regions, compared with the wide variation in average prices. In particular, the low-priced hot irrigated Riverland region returned a similar 21-year average gross revenue per hectare as the high-priced Adelaide Hills and McLaren Vale regions. Notice also that Eden Valley and Clare Valley – whose shares of Riesling in total bearing area are currently more than seven times the state average – have very much lower revenue per hectare than any other SA region.

Third, the state's 2019-21 average price and average gross revenue per hectare are both nearly one-fifth below that of 2001-03, while the state's average yield/ha is almost the same in 2019-21 as in 2001-03. The yield change varies a lot across regions though: it rose by just over one-quarter in the Riverland but fell in the four highest-priced regions (Table 3).

Fourth, an additional contributor to the above changes is the combined set of changes in varietal mixes across regions, since there are huge differences in the average prices paid for each variety and the differences varied a lot across those 21 vintages (lower half of Table 3).

Even when considering just the state averages of varietal prices for the top 14 varieties (in terms of bearing area), Table 3 shows that their 3-year averages have ranged from less than \$300 to more than \$1200 per tonne. That table also shows how much those prices have changed this century: the average prices of the lower-priced varieties have declined in nominal terms while prices of today's higher-priced ones have tended to rise, led by Monastrell, Garnacha and Riesling. However, Monastrell and Garnacha yields/ha are much lower now than two decades ago, such that their 21-year average gross revenues per hectare, and that of Riesling, are among the lowest of those shown in the final column of Table 3.

Conclusion

This newly compiled database reveals much about changes in the varietal mix in South Australia's vineyard regions which, together with changes in varietal prices and their yields per hectare, has altered the rankings of the state's regions in terms of gross revenue per hectare of vines. The drift toward a few popular French varieties has continued this century, as has the increasing concentration on red varieties in the state. But those trends are even stronger in the rest of the world, which means the global distinctiveness of the state's varietal mix has declined. Yet within the state the various wine regions have become more distinct from each other, the most extreme examples being the Barossa Valley and the Adelaide Hills. As well, the rankings of regions in terms of average winegrape prices and gross revenue per hectare of vines have altered considerably. The move toward emerging varieties has so far played only a small part in these developments: there are another 70+ varieties not reported separately in the database, because they are grown by less than a handful of growers (they currently account for less than 2% of the state's vine bearing area) and so their data are confidential.

Helpful though the above summaries of trends are, many questions remain to be answered by further analysis. For example, why is there still a two-fold divergence in gross revenue per hectare between the highest and the lowest by region, and by variety? It is especially surprising that the Riverland has the highest gross revenue per hectare when it may also have the lowest costs of production per hectare – at least in years when the price of irrigation water is low. How are the decreases in gross revenue per hectare to be reconciled (in terms of changes in yields per hectare and in the mix of varieties) with rising vineyard purchase prices in some regions?

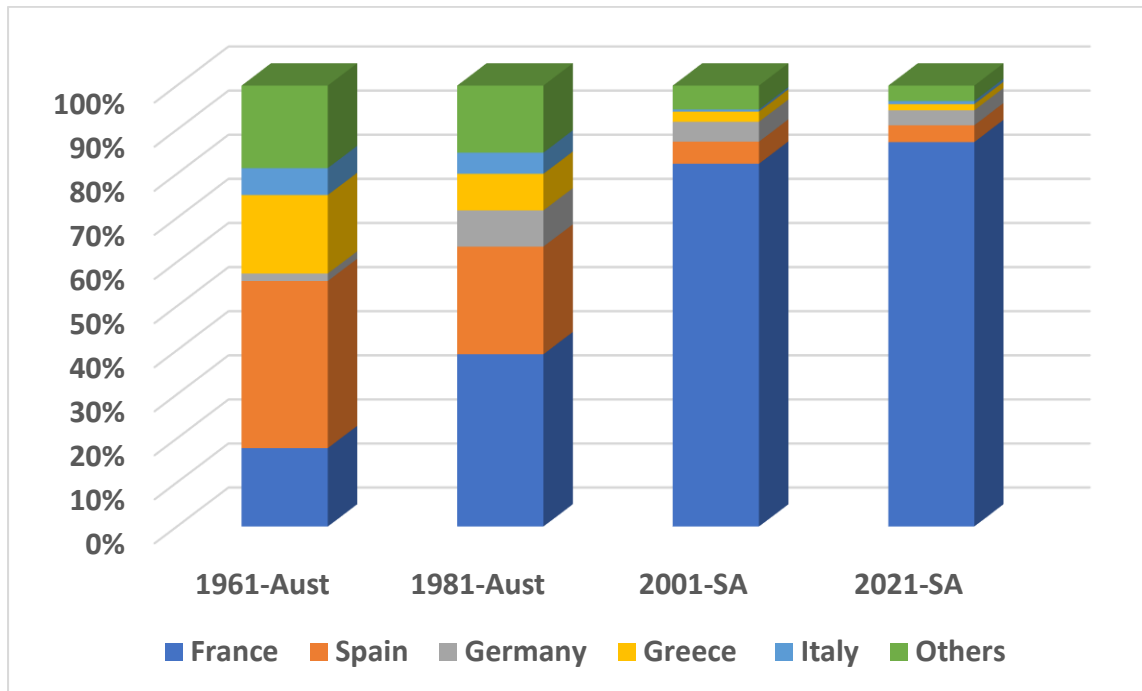
Repeating this analysis for other states is a work in progress. Unfortunately the bearing area data by variety and region are not available for those other states for years after 2015 (which is when the ABS ceased surveying the industry), so it will involve first estimating those areas.

A strong case has been made recently by former Wine Australia Deputy Chair Brian Croser for Australia's wine industry levy system to be simplified to a single levy based on the value of each grower's winegrape crush (Croser 2021). If/when such a reform is implemented, the industry would be well served to include in that single levy the small amount that would be needed to broaden Vinehealth Australia's charge, currently on just SA growers, to growers in other states to fund the annual collection of vine area data by variety in every wine region in the country, so that a complete picture of the varietal composition of the nation's vineyards can be obtained and analysed going forward.

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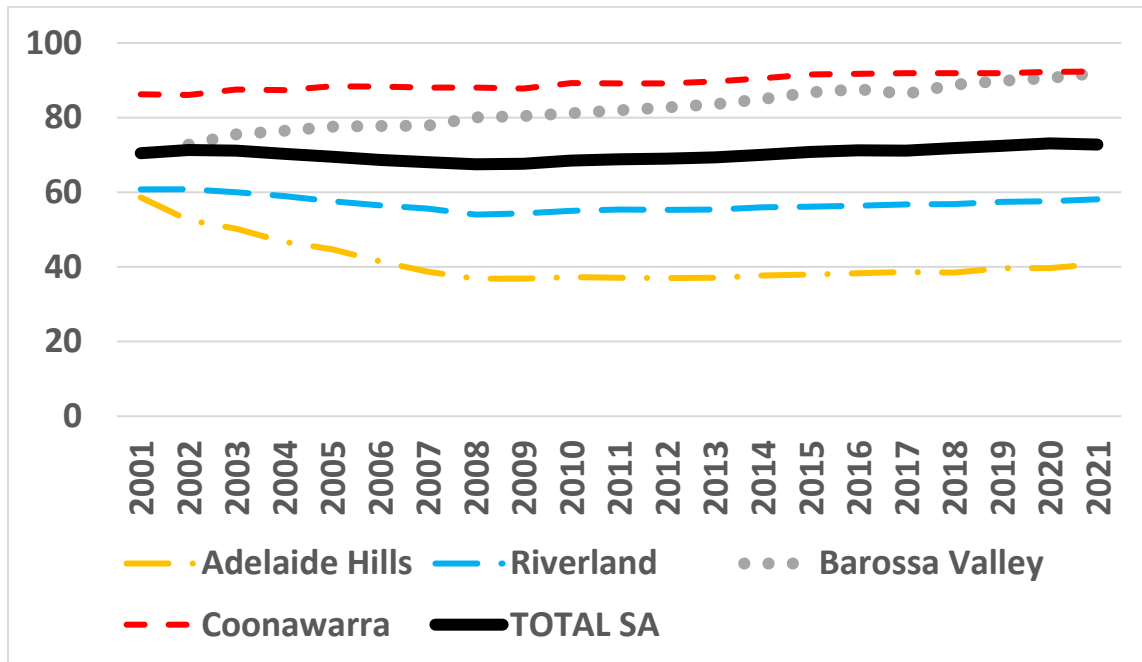
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Figure 1: Shares of winegrape bearing area, by varietal country of origin, Australia 1961 and 1981, and South Australia 2001 and 2021 (%)



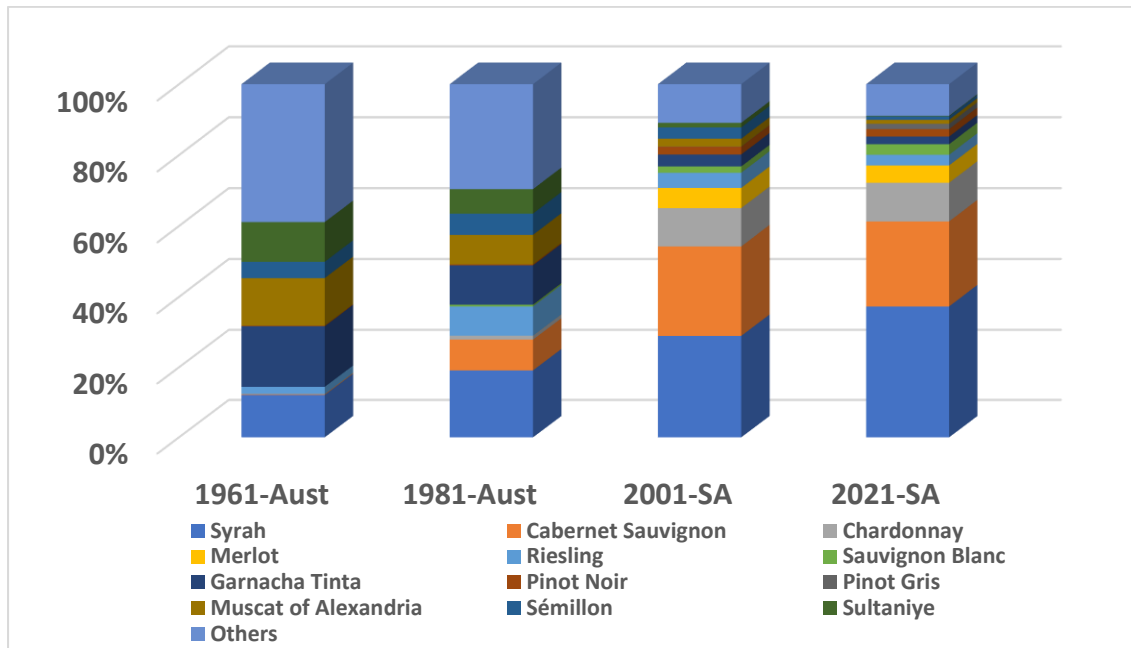
Source: Anderson (2015) and Anderson and Puga (2021).

Figure 2: Shares of South Australian winegrape bearing area planted to red varieties, by region, 2001 to 2021 (%)



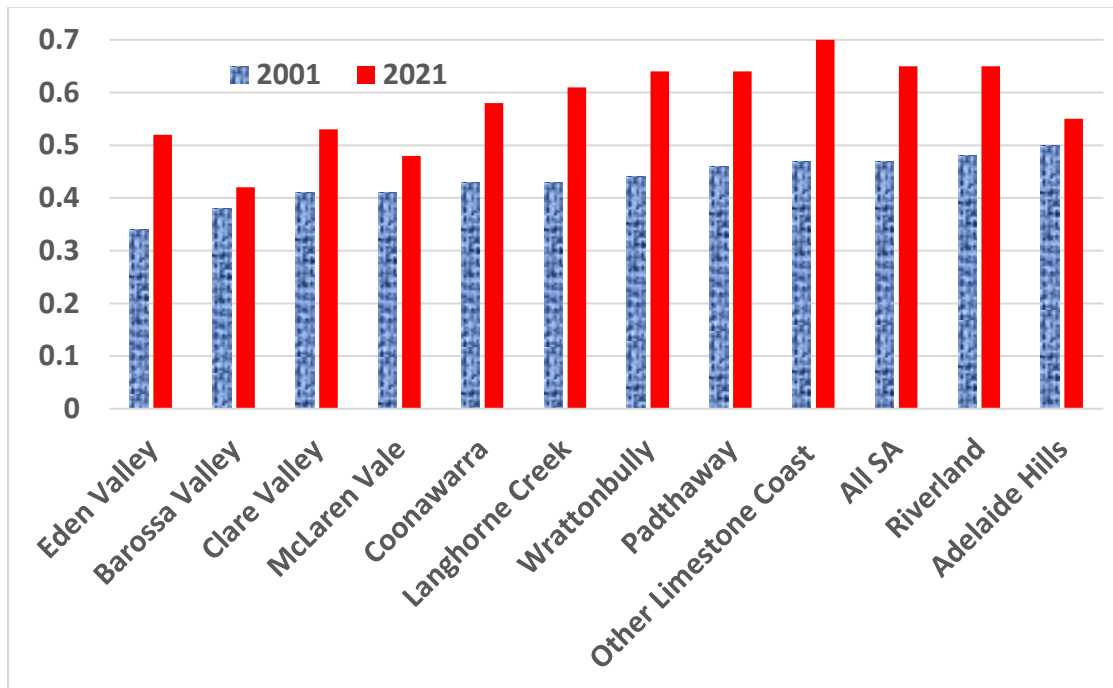
Source: Anderson and Puga (2021).

Figure 3: Shares of winegrape bearing area, by variety, Australia 1961 and 1981, and South Australia 2001 and 2021 (%)



Source: Anderson (2015) and Anderson and Puga (2021).

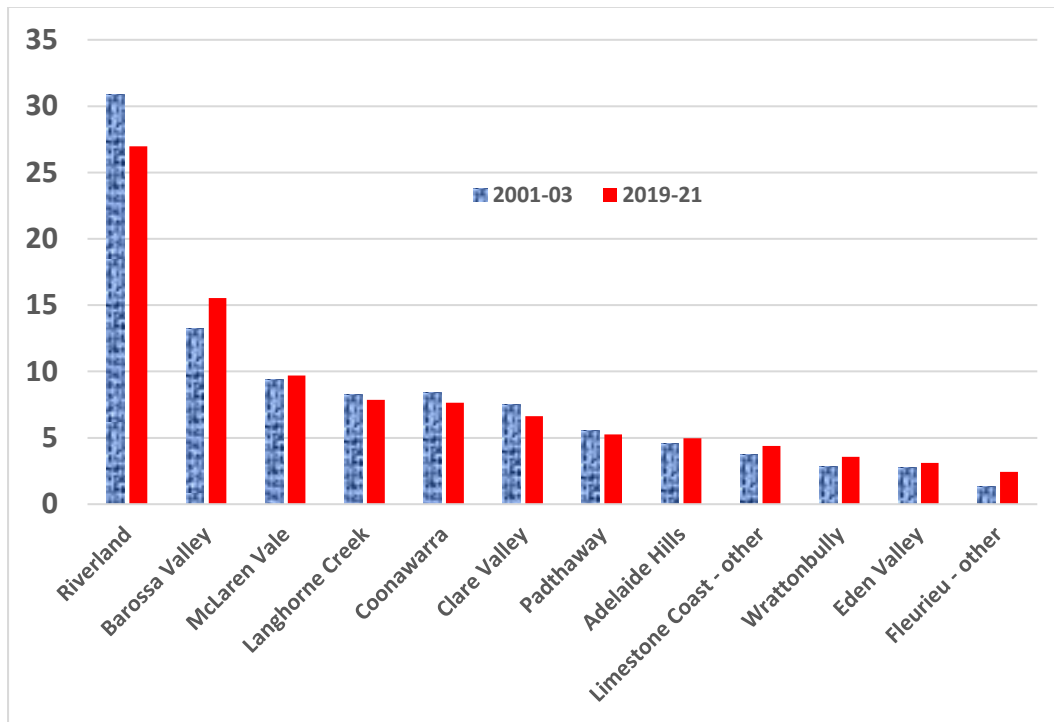
Figure 4: Index of varietal similarity between South Australian wine regions' winegrape varietal mix and that of the world, 2001 and 2021



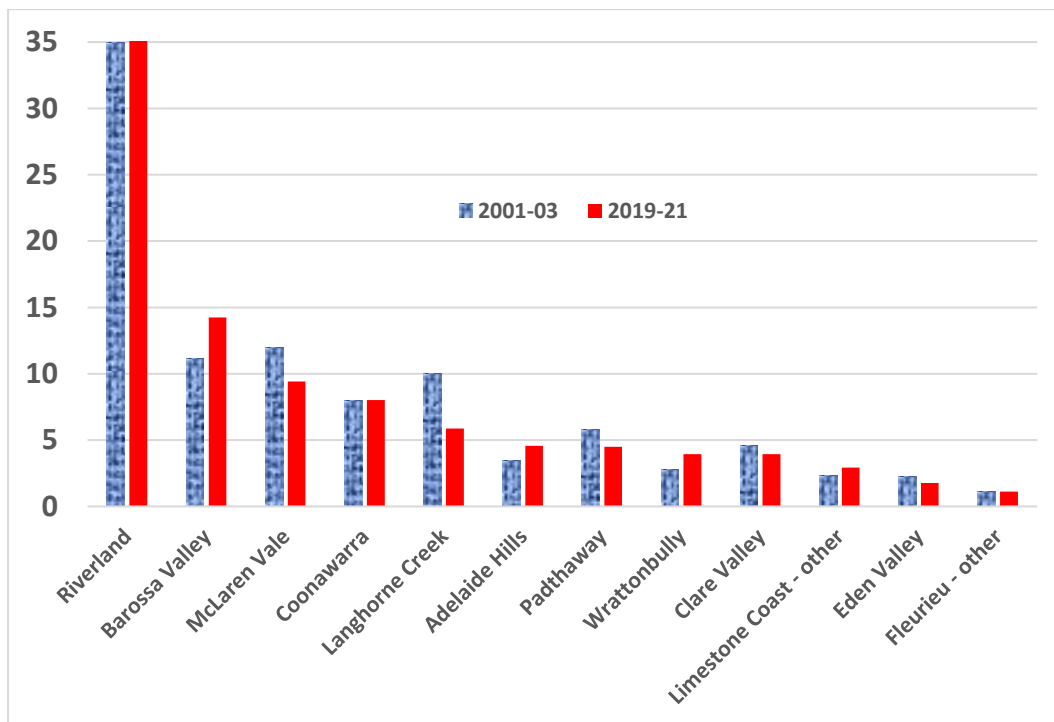
Source: Anderson and Puga (2021).

Figure 5: Regional shares of South Australian winegrape area and value, 2001-03 and 2019-21 (%)

(a) Vineyard bearing area shares (%)



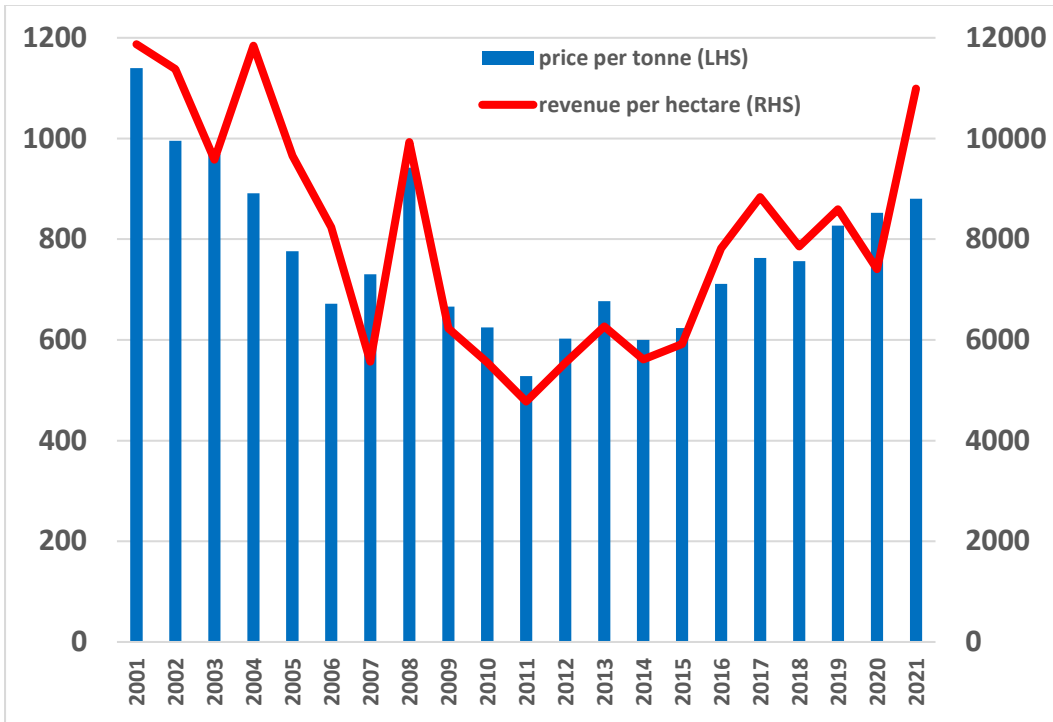
(b) Winegrape gross revenue shares (%)



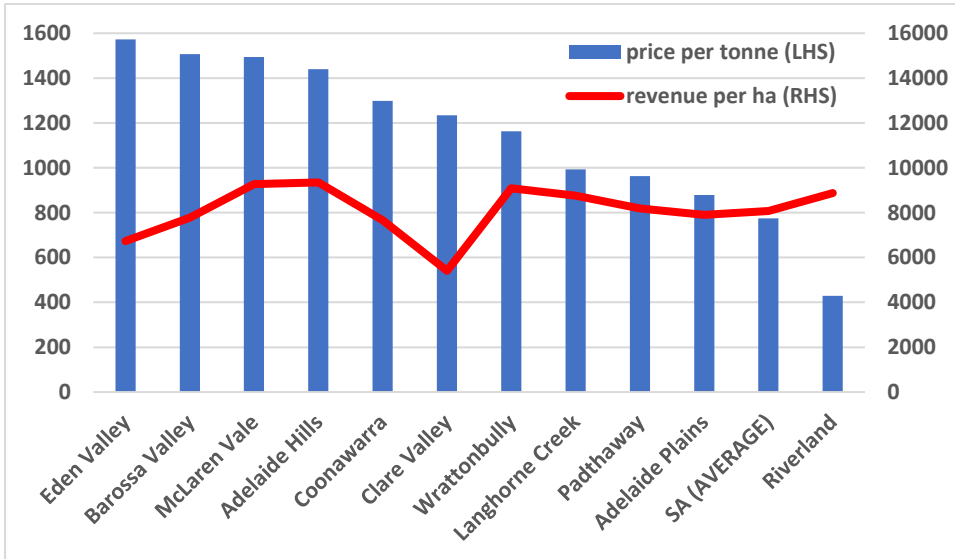
Source: Anderson and Puga (2021).

Figure 6: Average winegrape gross revenue per hectare and price per tonne, South Australia, 2001 to 2021 (nominal AUD)

(a) State annual averages, 2001 to 2021



(b) Regional averages over 21 vintages, 2001-21



Source: Anderson and Puga (2021).

Table 1: Varietal intensity index^a of winegrape varieties in South Australia relative to the world, 2001, 2011 and 2021

	2001	2011	2021
Syrah	12.76	8.03	7.96
Verdelho	12.02	7.30	4.93
Petit Verdot	30.48	6.15	4.93
Cabernet Sauvignon	5.09	3.40	3.48
Riesling	4.40	3.52	2.51
Chardonnay	3.19	3.06	2.44
Sémillon	5.34	3.82	2.38
Lagrein	0.00	0.90	2.37
Fiano	0.00	0.00	2.01
Colombard	1.35	1.56	1.47
Muscat of Alexandria	3.28	2.37	1.46
Pinot Gris	0.16	1.24	1.38
Sultaniye	4.69	3.49	1.35
Ruby Cabernet	9.08	1.85	1.34
Viognier	4.05	2.76	1.09
Sauvignon Blanc	1.19	1.38	1.08
Pinot Noir	1.40	0.99	0.90
Durif	0.45	0.33	0.84
Merlot	1.20	0.94	0.83
Monastrell	0.55	0.54	0.80
Muscadelle	2.70	1.11	0.75
Gewürztraminer	0.76	0.81	0.73
Garnacha Tinta	0.69	0.59	0.65
Sagrantino	0.00	0.00	0.52
Savagnin Blanc	0.00	0.91	0.45
Côt	0.82	0.36	0.42
Roussanne	0.00	0.48	0.42
Arneis	0.00	0.00	0.35
Marsanne	0.20	0.80	0.29
Graciano	0.00	0.00	0.29

^a The varietal intensity index (VII) is defined as a variety's share of the bearing area in South Australia relative to its share in the global bearing area of winegrapes in years 2000, 2010 and 2016 (the most-recent year available), from Anderson and Nelgen (2020b). The 30 varieties with the state's highest VIIs in 2021 are shown here.

Source: Anderson and Puga (2021).

Table 2: Varietal similarity indexes between pairs of South Australian regions, and between them and the world,^a 2001 and 2021

	Year	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Adelaide Hills	2001	1.00	0.65	0.70	0.65	0.56	0.69	0.83	0.71	0.85	0.76	0.66	0.77	0.50
	2021	1.00	0.31	0.33	0.27	0.44	0.41	0.51	0.34	0.54	0.61	0.37	0.50	0.55
2 Barossa Valley	2001		1.00	0.93	0.64	0.84	0.87	0.75	0.98	0.82	0.88	0.70	0.93	0.38
	2021		1.00	0.87	0.49	0.84	0.87	0.71	0.99	0.81	0.80	0.67	0.88	0.42
3 Clare Valley	2001			1.00	0.81	0.92	0.94	0.86	0.94	0.91	0.90	0.84	0.97	0.41
	2021			1.00	0.67	0.98	0.90	0.80	0.89	0.86	0.78	0.84	0.90	0.53
4 Coonawarra	2001				1.00	0.63	0.92	0.95	0.70	0.79	0.76	0.98	0.85	0.43
	2021				1.00	0.58	0.85	0.92	0.59	0.81	0.65	0.97	0.79	0.58
5 Eden Valley	2001					1.00	0.76	0.66	0.80	0.76	0.72	0.66	0.82	0.34
	2021					1.00	0.86	0.75	0.86	0.87	0.82	0.71	0.89	0.52
6 Langhorne Creek	2001						1.00	0.94	0.92	0.86	0.90	0.96	0.97	0.43
	2021						1.00	0.95	0.92	0.97	0.89	0.94	0.99	0.61
7 Other Limestone Coast	2001							1.00	0.82	0.90	0.86	0.95	0.93	0.47
	2021							1.00	0.78	0.94	0.85	0.98	0.94	0.70
8 McLaren Vale	2001								1.00	0.87	0.92	0.77	0.96	0.41
	2021								1.00	0.86	0.84	0.75	0.92	0.48
9 Padthaway	2001									1.00	0.90	0.78	0.93	0.46
	2021									1.00	0.95	0.91	0.98	0.64
10 Riverland	2001										1.00	0.80	0.96	0.48
	2021										1.00	0.78	0.94	0.65
11 Wrattenbully	2001											1.00	0.89	0.44
	2021											1.00	0.91	0.64
12 All SA	2001												1.00	0.47
	2021												1.00	0.65
13 WORLD	2001													1.00
	2021													1.00

^a World's varietal mix refers to 2000 and 2016, which are the nearest years available, as estimated by Anderson and Nelgen (2020a).
Source: Anderson and Puga (2021).

Table 3: Average winegrape price per tonne and per hectare yield and gross revenue, by region and by variety, South Australia, 2001-21

	yield/ha (tonnes)				price/tonne (AUD)				value/ha (AUD)			
	2001-03	2019-21	2019-21/ 2001-03	2001-21	2001-03	2019-21	2019-21/ 2001-03	2001-21	2001-03	2019-21	2019-21/ 2001-03	2001-21
Adelaide Hills	5.41	5.14	1.0	6.46	1696	1625	1.0	1439	8991	8541	1.0	9348
Adelaide Plains	14.24	6.48	0.5	8.52	1159	1065	0.9	879	16746	7106	0.4	7904
Barossa Valley	5.78	3.73	0.6	5.12	1412	2224	1.6	1507	8799	8429	1.0	7770
Clare Valley	4.91	3.43	0.7	4.27	1454	1551	1.1	1234	7547	5409	0.7	5407
Coonawarra	6.12	6.49	1.1	5.94	1759	1491	0.8	1298	10706	9408	0.9	7661
Eden Valley	4.59	2.59	0.6	4.52	1607	2060	1.3	1572	7906	5479	0.7	6737
Langhorne Creek	9.54	6.61	0.7	8.34	1397	1049	0.8	993	13408	6861	0.5	8752
McLaren Vale	8.49	4.43	0.5	6.22	1682	1908	1.1	1494	14608	8466	0.6	9280
Padthaway	8.27	8.01	1.0	8.69	1509	1046	0.7	963	13153	8298	0.6	8195
Riverland	19.32	24.37	1.3	20.46	649	505	0.8	429	12775	12347	1.0	8877
Wrattonbully	7.77	8.58	1.1	7.84	1561	1244	0.8	1163	11993	10153	0.8	9088
SA (all)	10.46	10.34	0.99	10.20	1035	853	0.82	774	10943	8996	0.82	8074
Syrah/Shiraz	10.01	8.61	0.9	8.94	1248	1144	0.9	982	12238	9842	0.8	8862
Cabernet Sauvignon	9.21	8.21	0.9	8.35	1215	1030	0.8	888	11426	8405	0.7	7472
Chardonnay	13.72	17.16	1.3	14.95	1019	494	0.5	580	13909	8563	0.6	8602
Merlot	9.87	12.32	1.2	11.02	1057	738	0.7	704	10359	9027	0.9	7719
Riesling	6.37	5.69	0.9	6.87	1016	1184	1.2	963	6252	5824	0.9	6445
Sauvignon Blanc	7.71	14.31	1.9	11.44	1040	709	0.7	871	7938	10370	1.3	9730
Garnacha Tinta/Grenache	9.80	6.02	0.6	7.76	865	1265	1.5	890	8351	7653	0.9	6765
Pinot Noir	8.59	10.43	1.2	10.63	1135	1024	0.9	924	8788	11000	1.3	9816
Sémillon	13.39	13.39	1.0	13.95	704	389	0.6	494	9350	4992	0.5	6824
Muscat of Alexandria	21.42	30.22	1.4	22.76	339	295	0.9	325	8853	8890	1.0	7362
Colombard	27.72	34.68	1.3	31.58	388	293	0.8	285	10744	10120	0.9	8917
Petit Verdot	12.23	22.1	1.8	17.27	724	543	0.8	463	8518	13079	1.5	8070
Pinot Gris	3.45	13.21	3.8	8.54	1635	864	0.5	1227	5834	11775	2.0	9992
Monastrell/Mataro	14.64	6.73	0.5	8.70	621	1126	1.8	780	8908	7738	0.9	6431

Source: Anderson and Puga (2021).