

SUPPLEMENTARY DATA

Souza Gonzaga, L., Bastian, S., Capone, D., Ranaweera, R., & Jeffery, D. (2021). Modelling Cabernet-Sauvignon wine sensory traits from spectrofluorometric data. *OENO One*, 55(4)
<https://doi.org/10.20870/oeno-one.2021.55.4.4805>



TABLE S1. Wine sample code with winery, blend components, oak contact information, and basic analytical measurements. Values for free and total SO₂, pH and TA are the means of duplicate measurements, and those for ethanol are from triplicate measurements.

Sample code	Winery	Composition of blend	Type of oak contact	pH	TA (gL ⁻¹)	Free SO ₂ (mgL ⁻¹)	Total SO ₂ (mgL ⁻¹)	Ethanol % v/v
CS1	A	100 % Cabernet-Sauvignon	Initial barrel maturation ¹	3.61	7.0	22.0	42.0	14.7
CS2	A	79 % Cabernet-Sauvignon, 21 % Petit Verdot	Initial barrel maturation	3.55	7.2	30.4	52.4	15.2
CS3	A	86 % Cabernet-Sauvignon, 14 % Petit Verdot	Initial barrel maturation	3.58	7.2	26.0	48.0	14.8
CS4	A	100 % Cabernet-Sauvignon	Initial barrel maturation	3.54	7.4	33.6	70.8	15.3
CS5	B	100 % Cabernet-Sauvignon	No contact	3.50	7.0	0.4	0.4	15.1
CS6	B	100 % Cabernet-Sauvignon	Initial barrel maturation	3.48	7.5	1.2	8.0	15.3
CS7	C	100 % Cabernet-Sauvignon	Initial barrel maturation	3.87	6.5	4.4	9.2	14.7
CS8	C	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.40	7.0	13.6	20.8	15.2
CS9	D	100 % Cabernet-Sauvignon	Initial barrel maturation	3.67	5.9	13.2	21.2	14.7
CS10	D	100 % Cabernet-Sauvignon	Initial barrel maturation	3.55	5.9	20.0	33.2	13.7
CS11	D	100 % Cabernet-Sauvignon	Initial barrel maturation	3.63	5.9	21.6	26.4	14.9
CS12	E	100 % Cabernet-Sauvignon	Initial barrel maturation	3.73	5.6	29.2	46.8	14.5
CS13	E	100 % Cabernet-Sauvignon	Initial barrel maturation	3.82	5.6	23.6	37.2	14.3
CS14	F	100 % Cabernet-Sauvignon	Initial barrel maturation	3.46	6.1	20.0	39.2	12.9
CS15	G	100 % Cabernet-Sauvignon	Initial barrel maturation	3.55	6.1	29.2	46.4	14.6
CS16	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.73	7.0	20.0	39.6	14.4
CS17	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.53	6.8	16.8	26.8	13.7
CS18	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.60	7.2	23.6	39.6	14.3
CS19	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.58	6.9	23.2	45.2	13.7
CS20	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.59	6.7	22.0	40.8	13.8
CS21	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.63	6.5	14.8	26.8	15.1
CS22	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.74	6.4	18.8	26.8	14.1
CS23	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.55	6.6	18.0	31.6	15.1
CS24	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.58	6.5	23.2	37.2	14.2
CS25	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.50	6.9	16.0	25.6	14.1
CS26	H	100 % Cabernet-Sauvignon	Oak chips during fermentation	3.67	7.44	20.0	34.0	13.8

¹ Initial barrel maturation was ≤ 5 months

TABLE S2. Aroma/flavour, taste, and mouthfeel attributes used for the RATA evaluation with respective description available to panellists during tasting.

Attribute	Description
Aroma/flavour	
Dark fruits	blackcurrant, blackberry, mulberry, plum, blueberry
Red fruits	strawberry, raspberry
Confectionery	lollies
Jammy	preserved or cooked fruit
Dried fruits	raisin, prune, sultana
Spices	clove, cinnamon, nutmeg, mixed spice, mulled wine, liquorice, anise
Savoury	meaty, soy sauce, black olives, salami
Green	green pepper, capsicum, asparagus, green beans
Tobacco	smoky, cigar
Earthy	mushroom, truffle, forest floor
Minty	spearmint, mint, peppermint
Eucalyptus	menthol, VapoRub ointment
Violets	blue flowers
Oaky	woody, pencil shaving, toasty, cedar, coconut
Cooked Vegetables	pickles, cabbage, canned beans or mixed veggies
Grassy	stalky, leafy, cut grass, herbaceous, tomato leaf
Floral	roses, perfume, musk
Vanilla/Chocolate	vanilla and chocolate
Dried herbs	oregano
Barnyard	band-aid, medicinal, horse-like, stables
Cherry cola	sarsaparilla
Brine	oyster shell, sea spray, sardine oil
Yeasty	bread, doughy
Taste	
Bitterness	bitter taste
Acidity	tart, sour taste
Sweetness	sweet taste
Mouthfeel	
Body	weight of the wine when you swirl it in your mouth, thickness, mouth feeling
Astringency	drying, roughing and puckering sensation
Alcohol	warmth or burning sensation
Length of flavour	how persistent was the wine flavour in the mouth after expectoration

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TABLE S3. Mean values of each sensory attribute along with p-values according to ANOVA (significant differences with $\alpha = 0.1$ are shown in bold) for Cabernet-Sauvignon wines from Coonawarra (n = 26; refer to Table S1 for wine codes).

Attributes	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8	CS9	CS10	CS11	CS12	CS13	CS14	CS15	CS16	CS17	CS18	CS19	CS20	CS21	CS22	CS23	CS24	CS25	CS26	p-value
A-Barnyard	0.83	0.48	0.87	1.10	1.07	0.67	0.82	0.68	1.42	1.07	0.70	1.03	0.85	0.73	0.75	0.73	0.65	0.77	1.40	1.23	0.92	0.70	0.43	0.80	0.95	0.78	0.004
A-Brine	0.67	0.55	0.43	0.38	0.37	0.52	0.43	0.48	0.45	0.68	0.77	0.58	0.43	0.47	0.77	0.48	0.28	0.48	0.85	0.80	0.55	0.52	0.48	0.52	0.53	0.18	0.233
A-Cherry cola	0.90	1.00	0.85	0.82	1.53	1.62	1.12	1.37	0.70	1.07	1.18	1.02	1.03	1.17	0.90	1.07	1.08	1.08	0.93	0.98	1.10	1.07	1.18	1.13	1.17	1.20	0.440
A-Confectionery	1.22	1.50	1.38	1.23	1.85	1.90	1.48	1.67	1.22	1.25	1.47	1.57	1.28	1.33	1.58	1.55	1.22	1.15	1.70	1.53	1.15	1.43	1.57	1.92	1.15	1.75	0.268
A-Cooked Vegetables	0.93	0.57	0.93	0.67	0.68	0.47	0.57	0.58	1.12	0.80	0.92	0.82	0.88	0.55	1.02	0.73	0.60	0.67	0.60	0.53	1.22	1.15	0.78	1.17	1.07	0.77	0.021
A-Dark fruits	3.63	3.32	3.75	3.43	3.05	3.55	3.07	3.95	3.02	3.17	3.65	3.52	3.32	3.35	3.37	3.43	3.25	3.17	2.83	2.88	3.38	2.90	3.47	2.97	3.17	3.00	0.063
A-Dried fruits	1.92	2.00	2.30	1.98	2.25	2.10	1.68	2.30	1.57	2.08	2.15	2.05	1.75	2.30	2.02	1.73	1.90	2.15	1.77	1.72	2.17	1.75	2.28	1.92	2.02	1.88	0.692
A-Dried herbs	1.05	0.87	1.02	0.95	0.82	0.58	1.15	0.90	0.82	0.62	0.92	1.03	0.73	0.73	0.72	1.02	0.75	0.78	1.22	1.00	0.77	1.15	0.90	0.68	1.10	0.75	0.453
A-Earthy	2.10	1.33	1.93	1.47	1.20	1.00	1.12	1.67	1.20	1.22	1.58	1.73	1.10	1.08	1.97	1.27	1.22	1.38	1.57	1.27	1.35	1.35	1.37	1.45	1.75	1.25	0.004
A-Eucalyptus	1.07	1.07	1.17	1.07	1.32	1.13	1.58	1.02	0.88	0.78	0.78	0.85	0.82	0.97	1.00	0.78	0.68	0.77	0.97	1.12	0.67	0.75	0.90	0.70	0.92	0.85	0.115
A-Floral	1.48	1.27	1.97	1.40	1.77	2.07	1.65	1.40	1.38	1.53	1.30	1.42	1.28	1.02	1.37	1.28	1.38	1.37	1.30	1.62	1.30	1.17	1.65	1.42	1.62	1.52	0.301
A-Grassy	1.38	1.10	1.38	1.18	1.03	0.98	1.05	1.53	1.23	1.00	1.75	1.13	1.22	1.02	1.17	1.02	0.97	1.20	1.75	1.08	1.40	1.35	1.23	1.35	1.40	1.05	0.198
A-Green	1.08	1.02	1.27	1.27	1.28	0.88	1.40	1.28	0.83	1.10	1.10	1.07	0.82	1.35	1.10	1.27	1.03	1.17	1.17	1.25	1.40	1.48	1.18	1.33	1.15	1.20	0.754
A-Jammy	2.47	1.82	1.80	1.97	2.23	2.37	1.90	2.52	1.70	2.05	2.10	2.18	1.95	1.85	2.40	2.07	1.73	2.08	1.40	1.73	2.18	2.02	2.37	2.12	2.07	1.87	0.140
A-Minty	0.87	1.23	1.52	1.28	1.08	1.35	1.18	1.13	0.80	0.92	1.28	0.88	0.75	1.20	0.97	0.92	0.87	0.68	1.17	1.03	0.95	0.87	0.90	1.03	1.47	1.62	0.010
A-Oaky	1.88	1.83	1.93	1.88	1.72	1.60	1.38	2.25	1.70	1.43	1.92	2.20	1.60	1.90	1.57	1.80	1.48	1.75	1.65	1.25	1.62	1.40	1.65	1.53	1.98	1.30	0.069
A-Red fruits	2.88	2.13	2.87	2.35	2.47	2.52	2.20	2.83	2.43	2.45	2.60	2.82	2.37	2.82	2.45	2.08	2.70	2.57	2.02	2.50	1.90	2.17	2.82	2.47	2.28	2.37	0.104
A-Savoury	1.72	1.38	1.50	1.25	1.10	0.60	0.85	1.30	1.23	1.50	1.30	1.30	0.97	0.97	1.35	1.20	0.85	0.93	1.30	0.82	1.43	1.25	1.30	1.32	1.22	0.87	0.013
A-Spices	2.22	2.37	2.23	2.03	2.12	1.83	2.05	1.95	1.33	1.68	2.12	2.32	1.92	2.18	1.97	1.50	1.58	2.00	1.75	1.82	1.95	1.85	1.93	1.93	1.83	1.87	0.237
A-Tobacco	1.18	0.93	1.20	0.78	0.78	0.53	0.83	1.20	0.75	0.67	1.28	1.07	0.77	0.88	0.72	0.65	0.70	1.05	1.13	0.92	1.03	1.10	0.93	0.90	1.17	0.48	0.024
A-Vanilla/Chocolate	0.87	1.18	1.02	0.92	1.27	1.07	0.97	1.05	0.65	0.70	0.77	0.98	0.62	0.78	0.85	0.78	1.03	0.92	0.65	0.72	0.83	0.68	1.22	0.68	0.80	0.72	0.347
A-Violets	0.62	0.73	1.10	1.00	0.88	1.28	1.20	0.73	0.83	0.85	0.87	0.88	0.80	0.92	0.73	1.08	1.22	0.90	0.90	0.92	0.67	0.95	0.88	0.87	1.17	1.08	0.581
A-Yeasty	0.57	0.60	0.55	0.43	0.58	0.67	0.35	0.75	0.35	0.42	0.63	0.75	0.47	0.37	0.88	0.58	0.62	0.45	0.57	0.28	0.57	0.48	0.63	0.57	0.48	0.45	0.387
F-Barnyard	0.57	0.58	0.82	0.62	0.92	0.52	0.57	0.57	0.95	0.65	0.50	0.67	0.63	0.88	0.68	0.48	0.47	0.65	1.60	0.95	0.65	0.85	0.37	0.62	0.87	0.48	< 0.0001
F-Brine	0.60	0.45	0.48	0.65	0.65	0.53	0.45	0.88	0.58	0.38	0.48	0.57	0.37	0.43	0.95	0.40	0.53	0.47	0.82	0.68	0.40	0.48	0.43	0.62	0.57	0.38	0.151
F-Cherry cola	0.87	0.85	0.88	1.03	1.35	1.65	1.32	1.17	0.73	0.85	1.12	0.65	0.77	1.10	0.80	0.82	1.30	0.98	0.77	0.93	1.10	1.45	1.10	1.25	1.25	1.18	0.007
F-Confectionery	1.33	1.30	1.27	1.20	1.60	2.08	1.28	1.43	0.97	1.23	1.48	1.22	1.37	1.13	1.22	1.25	1.65	1.37	1.02	1.27	1.05	1.43	1.48	1.57	1.27	1.27	0.212
F-Cooked Vegetables	0.77	0.40	0.95	0.60	0.47	0.53	0.60	0.57	0.88	0.45	0.92	0.55	0.62	0.55	0.83	0.75	0.65	0.90	0.68	0.58	0.95	1.07	0.50	1.15	0.93	0.55	0.026
F-Dark fruits	3.78	3.53	3.47	3.70	3.52	3.92	3.50	3.97	3.38	3.22	4.02	3.63	3.27	3.18	3.47	3.75	3.33	3.45	2.88	3.13	3.85	3.25	3.60	3.25	3.65	2.93	0.008
F-Dried fruits	1.90	1.80	1.72	1.92	2.12	1.82	1.78	2.17	1.73	2.10	1.90	2.23	1.97	1.77	2.00	1.85	1.60	1.93	1.52	1.75	2.13	2.02	2.23	1.93	2.33	2.12	0.720
F-Dried herbs	0.90	0.93	0.83	1.02	0.77	0.97	0.87	0.95	0.98	0.90	0.90	0.95	0.88	0.67	1.00	1.10	0.85	0.55	0.98	1.05	0.75	0.98	1.02	0.82	1.10	0.82	0.976
F-Earthy	1.80	1.63	1.62	1.53	1.62	1.20	0.97	1.75	1.13	0.98	1.77	1.80	1.37	1.38	1.90	0.90	0.92	1.45	1.55	1.43	1.43	1.25	1.50	1.38	1.72	1.32	0.001
F-Eucalyptus	0.90	1.12	1.13	0.87	1.13	1.03	0.95	0.93	0.60	0.67	0.77	0.67	0.67	0.90	0.63	0.68	0.52	0.80	0.90	0.80	0.68	0.58	0.88	0.73	0.88	0.80	0.332
F-Floral	1.22	0.98	1.20	0.93	1.45	1.53	1.28	1.22	0.97	1.40	0.88	1.13	1.10	1.00	1.07	1.15	1.25	1.15	0.92	0.88	0.95	1.12	1.58	1.03	1.07	1.30	0.431
F-Grassy	1.30	1.12	1.20	1.43	1.05	0.98	1.07	1.32	0.97	1.07	1.18	1.23	0.82	0.88	1.33	1.05	0.77	1.10	1.12	1.28	1.20	0.95	1.28	1.17	1.45	0.88	0.496
F-Green	1.15	1.12	1.08	1.28	1.33	0.82	0.87	1.03	1.15	1.00	1.15	1.00	1.17	1.02	1.23	1.27	1.12	1.13	1.27	1.32							

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TABLE S3. CONTD.

Attributes	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8	CS9	CS10	CS11	CS12	CS13	CS14	CS15	CS16	CS17	CS18	CS19	CS20	CS21	CS22	CS23	CS24	CS25	CS26	p-value
F-Minty	0.78	0.97	1.32	1.28	1.22	1.10	1.27	1.12	0.80	0.75	1.02	0.67	0.68	1.05	0.82	0.83	0.85	0.68	0.85	0.68	0.97	0.85	0.85	0.85	1.10	1.10	0.063
F-Oaky	2.15	2.45	2.22	2.20	2.07	2.10	1.50	2.35	1.97	1.88	2.33	2.13	1.92	1.70	2.18	1.80	1.45	2.13	1.87	1.60	1.95	1.83	2.10	1.90	2.13	1.95	0.127
F-Red fruits	2.70	2.40	2.82	2.53	2.52	2.43	2.67	2.73	2.20	2.45	2.53	2.30	2.27	2.73	2.62	2.13	3.22	2.50	1.93	2.50	2.38	2.28	2.77	2.57	2.67	2.25	0.165
F-Savoury	1.52	1.38	1.47	1.63	1.08	1.02	1.12	1.45	1.42	1.40	1.38	1.25	1.05	1.08	1.52	1.08	0.77	1.43	1.30	1.32	1.40	1.32	1.57	1.55	1.63	0.93	0.141
F-Spices	2.40	2.25	2.30	2.35	2.30	2.12	2.42	2.45	1.87	1.85	2.42	2.43	1.55	1.98	1.90	2.10	1.80	2.13	2.20	1.90	2.48	2.00	2.27	2.10	1.73	2.10	0.105
F-Tobacco	1.13	0.92	1.05	1.20	0.97	0.72	0.72	1.13	0.60	0.62	1.12	0.88	0.72	0.70	0.75	0.73	0.50	0.97	1.05	0.60	1.08	0.70	0.90	1.05	1.15	0.82	0.099
F-Vanilla/Chocolate	0.73	0.78	0.83	0.68	0.70	0.90	0.98	1.18	0.88	1.00	0.73	0.60	0.80	0.43	0.50	0.73	1.33	0.63	0.40	0.57	0.80	0.82	0.98	0.47	0.75	0.68	0.010
F-Violets	0.55	0.82	0.78	0.65	1.02	1.03	1.10	0.77	0.53	0.75	0.63	0.62	0.68	0.75	0.60	0.60	1.07	0.63	0.73	0.93	0.62	0.70	0.93	0.85	0.85	1.03	0.248
F-Yeasty	0.42	0.37	0.43	0.27	0.48	0.30	0.65	0.50	0.60	0.45	0.47	0.48	0.20	0.58	0.50	0.47	0.32	0.57	1.00	0.75	0.38	0.48	0.42	0.45	0.47	0.37	0.103
T-Acidity	3.97	3.48	3.80	3.52	3.75	3.62	3.15	4.17	3.20	3.38	3.73	4.18	3.33	3.58	3.75	3.45	3.20	3.57	3.75	3.73	3.17	3.00	3.83	3.23	3.68	3.62	< 0.0001
T-Bitterness	2.80	2.83	2.73	2.80	2.85	2.78	2.02	2.72	2.68	2.55	2.77	3.07	2.63	2.87	2.90	2.58	2.08	2.68	3.15	2.55	2.52	2.55	2.77	2.25	2.87	2.60	0.029
T-Sweetness	2.23	2.15	2.22	2.13	2.48	2.43	2.75	2.15	2.23	2.35	2.63	1.82	2.07	2.07	2.25	2.22	2.70	2.18	1.77	1.95	2.65	2.52	2.30	2.57	2.18	2.03	0.004
MF-Alcohol	3.87	3.78	3.88	3.92	3.93	4.17	3.58	3.80	4.00	3.75	3.90	3.70	3.75	3.77	3.80	3.92	3.67	3.62	3.50	3.67	3.85	3.78	3.75	3.53	3.62	3.60	0.447
MF-Astringency	3.85	4.10	4.48	4.05	4.15	4.17	3.37	4.17	4.20	3.67	4.10	4.93	4.32	3.95	4.55	4.05	3.60	4.02	4.82	4.05	3.92	3.68	4.23	3.75	4.10	4.65	< 0.0001
MF-Body	3.65	3.77	4.02	3.95	4.17	3.97	3.82	3.73	3.77	3.58	3.80	3.83	3.62	3.72	3.80	3.97	3.57	3.70	3.75	3.57	3.92	3.70	3.92	3.55	3.68	3.73	0.272
Length of flavour	4.35	4.45	4.55	4.40	4.50	4.62	4.27	4.35	4.27	4.08	4.47	4.30	4.27	4.12	4.32	4.28	4.07	4.05	4.33	4.12	4.42	4.33	4.47	4.03	4.38	4.27	0.115

SUPPLEMENTARY DATA

Souza Gonzaga, L., Bastian, S., Capone, D., Ranaweera, R., & Jeffery, D. (2021). Modelling Cabernet-Sauvignon wine sensory traits from spectrofluorometric data. *OENO One*, 55(4)
<https://doi.org/10.20870/oenone.2021.55.4.4805>

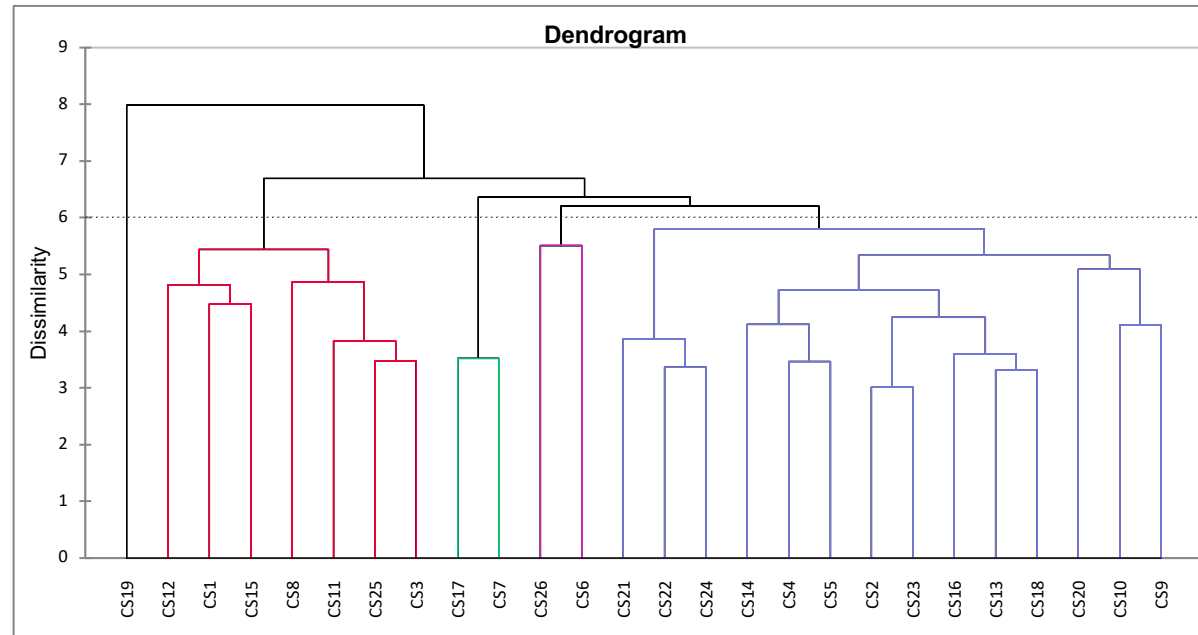


FIGURE S1. Agglomerative hierarchical clustering dendrogram plot of the five clusters segregating the Coonawarra Cabernet-Sauvignon wines (n = 26, refer to Table S1 for wine codes) evaluated with rate-all-that-apply (significantly different attributes as presented in Table S3, $\alpha = 0.1$). The dotted line shows the truncation according to the dissimilarity on the y-axis.