

Understanding wine consumers: the role of analytical sensory testing, consumer product acceptance and marketing research

Leigh Francis

Patricia Osidacz Williamson



Wine is a complex category



The Australian Wine
Research Institute





- ❖ *“Brand loyalty is driven by flavor preference acquired by trial and error”* John Stallcup Wine Business Monthly (USA) 2003¹
- ❖ *“The number one reason anyone buys a bottle of wine is they’ve tried it before and liked it”* Bruce Tyrell WBM 2014²

¹<http://www.winebusiness.com/wbm/?go=getArticleSignIn&dataId=21669>

²Anthony Madigan “Eye on the Size” WBM November 2014



- ❖ “[brand] loyalty is underpinned by salience... a brand must stand out” Byron Sharp Ehrenberg-Bass Institute How Brands Grow Oxford University Press 2010
- ❖ “Sensory characteristics cannot..... tell us much about consumer choice” Marshall Food Quality and Preference (2003)

Sensory acceptance testing and marketing research



The Australian Wine
Research Institute



Consumer-sensory test

- differences in liking based on sensory differences
- sensory attributes that relate to like/dislike
- provide a choice foundation for wines for marketing studies
- Only way to assess the product without the biasing effects of concept or label – essential feedback to product developers



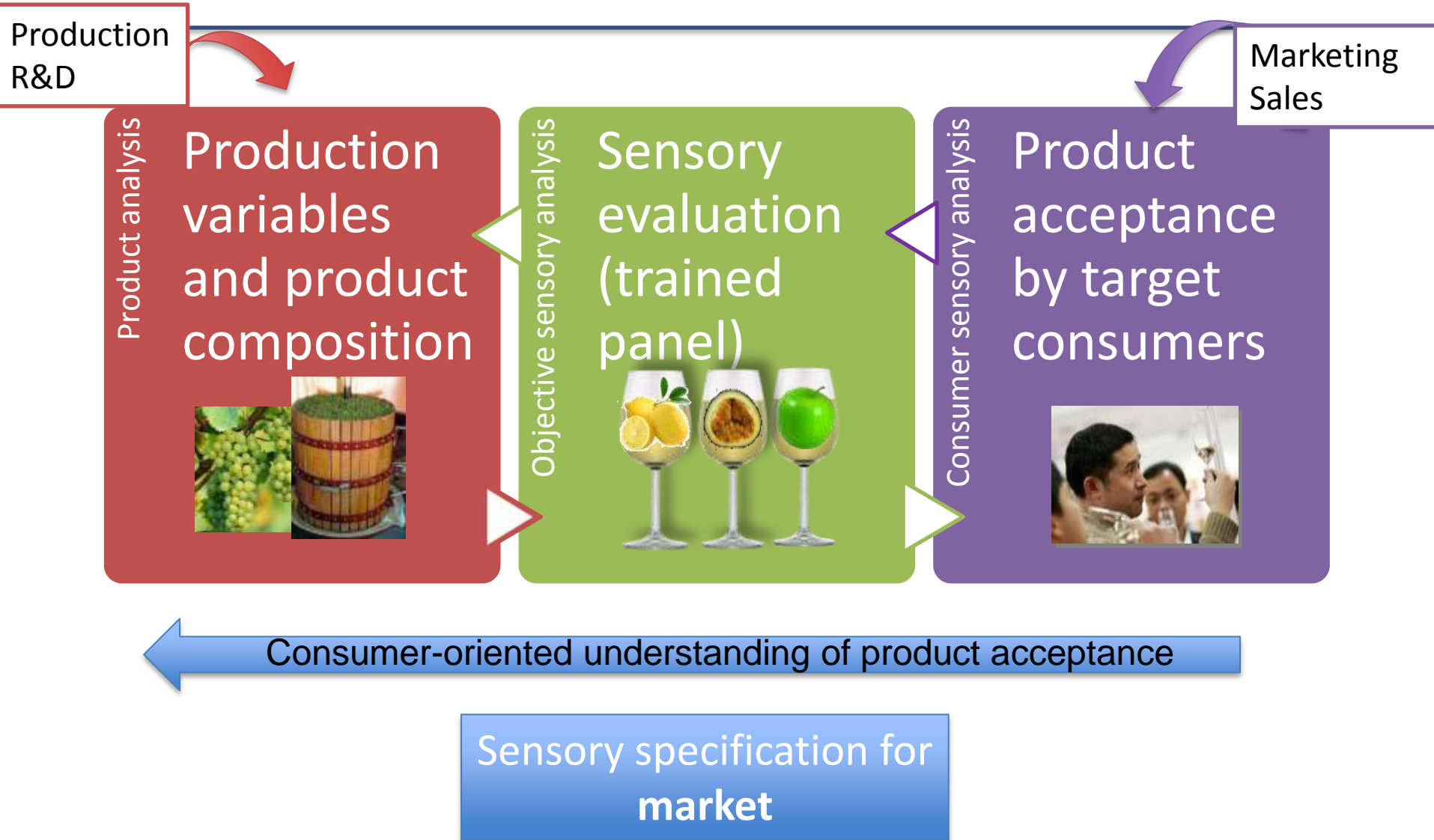
Marketing research

- doesn't necessarily involve tasting
- variables such as pricing, branding, promotion and packaging
- Purchase intent or choice
- larger-scale testing to assess populations
- finding consumers to whom the wine will have the greatest appeal and finding ways to sway those consumers

Consumer testing to product innovation



The Australian Wine
Research Institute

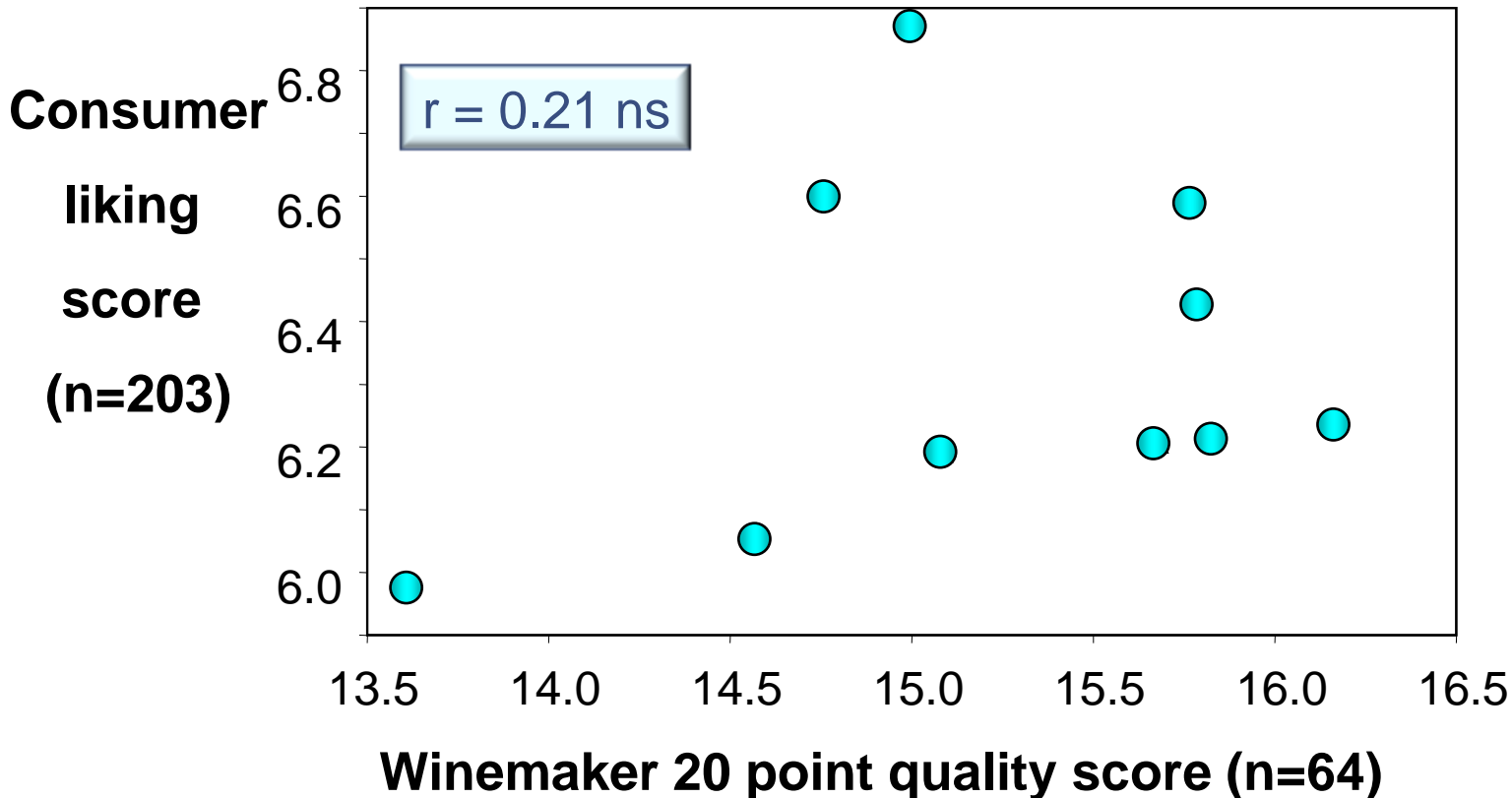


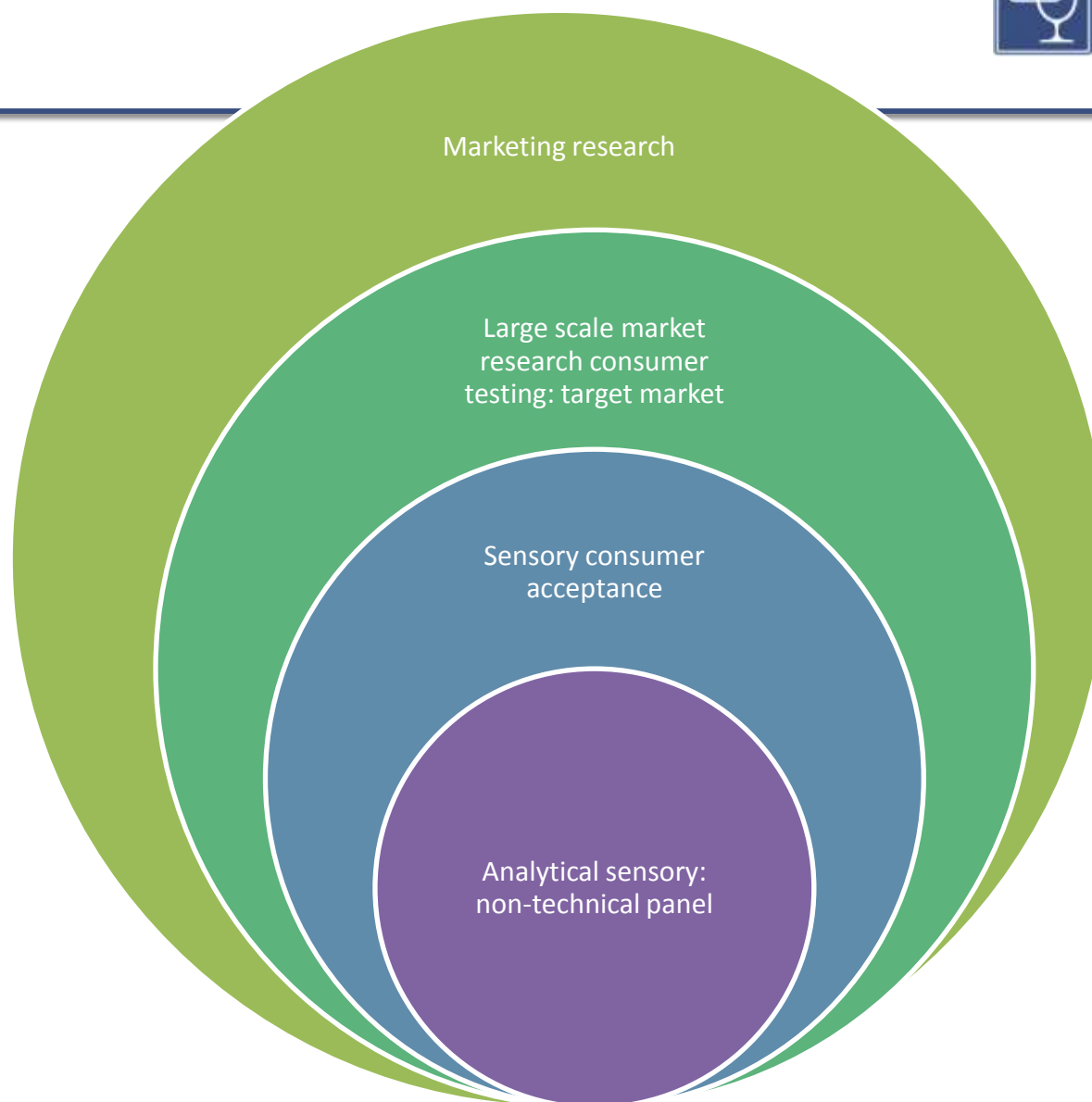
Expert quality assessment has little relationship with consumer preference



The Australian Wine
Research Institute

10 commercial Cabernet Sauvignon and Shiraz wines \$10-\$30

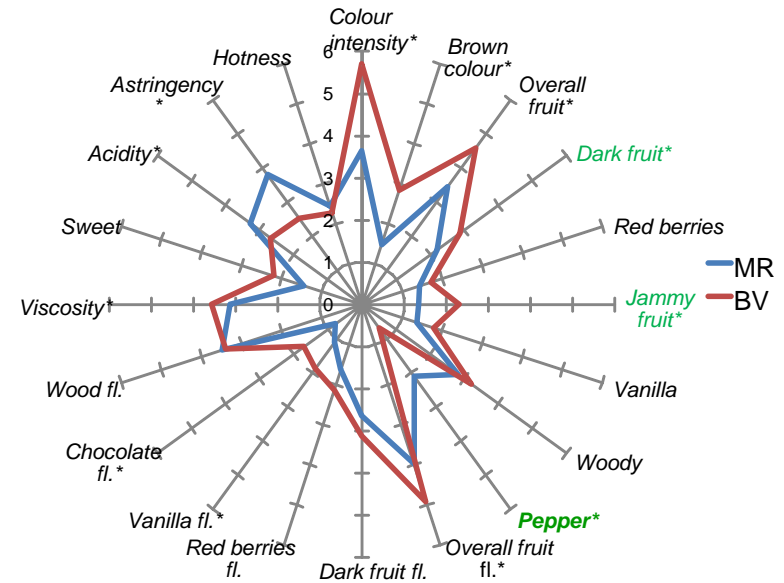
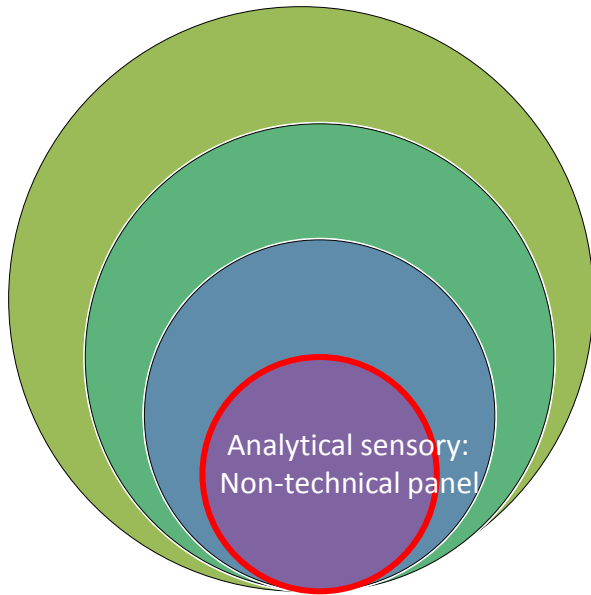




Sensory analysis: what a wine tastes like



The Australian Wine
Research Institute

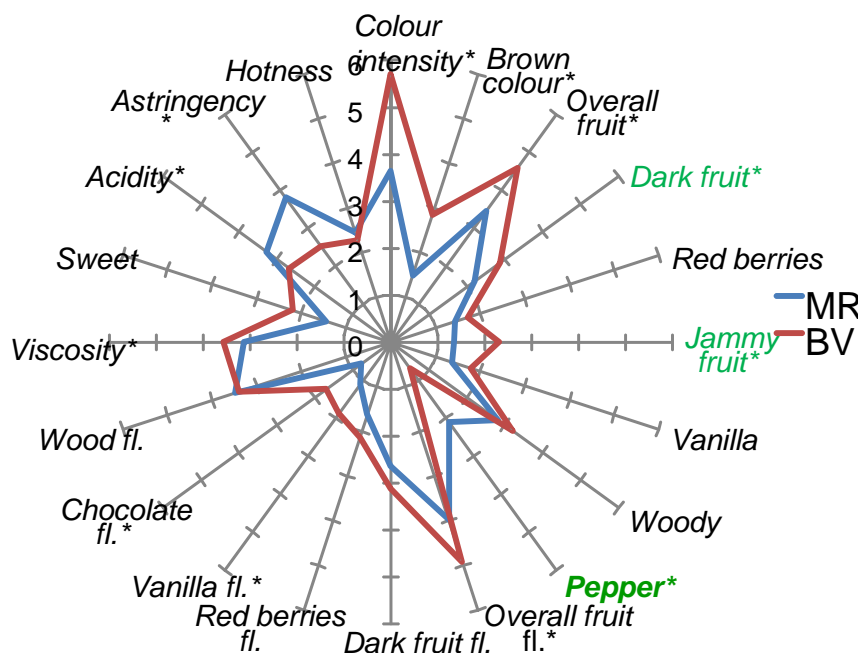


Sensory descriptive analysis



The Australian Wine
Research Institute

- ❖ Descriptions and attribute intensities from a consumer perspective
- ❖ Unbiased
- ❖ Comparative sensory profiles
 - Competitors, market leaders
 - Product development



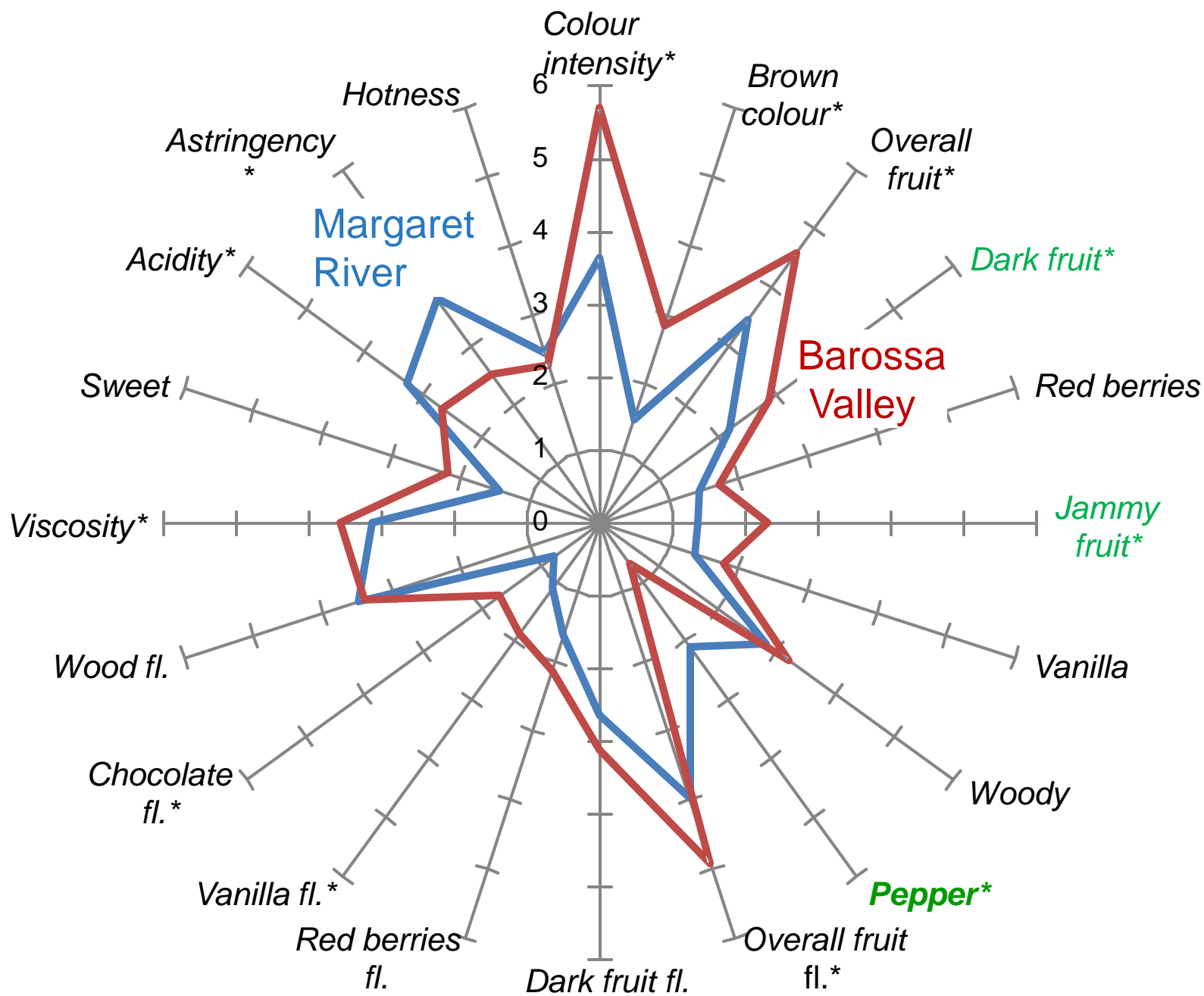
Attributes: defined, reference standards produced



The Australian Wine
Research Institute

Aroma attribute	Standard added to wine
Passionfruit	passion fruit pulp, tinned
Pineapple	pineapple pieces, fresh; pineapple juice, tinned
Apricot	apricot pieces, tinned
Peach	white peach pieces, fresh, no skin
Lemon	lemon slice with rind, fresh
Lime	lime slice with rind, fresh
Floral	linalool solution; 2-phenylethanol solution
Grassy	grass, fresh; green bean, chopped; no wine
Vegetal	asparagus juice, tinned
Box hedge	box hedge leaves; no wine
Honey	honey
Butter	butter
Nutty	mixed nuts; no wine
Flint	benzenemethanethiol solution
Sweaty/cheesy	hexanoic acid and 3-methylbutanoic acid solutions
Pungent	ethanol
Kerosene	1,1,6-trimethyl-1,2-dihydronaphthalene solution

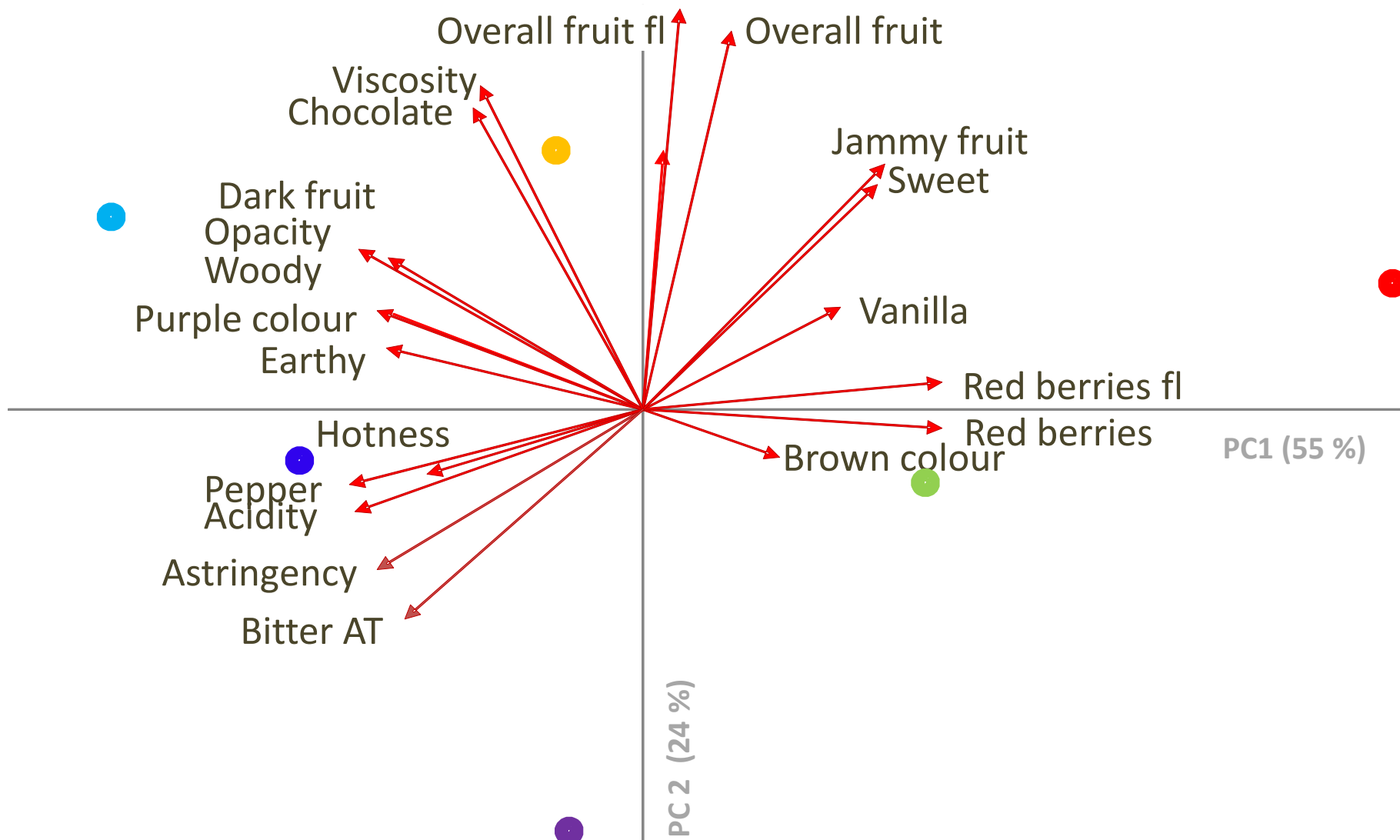




Six Australian Shiraz: sensory properties

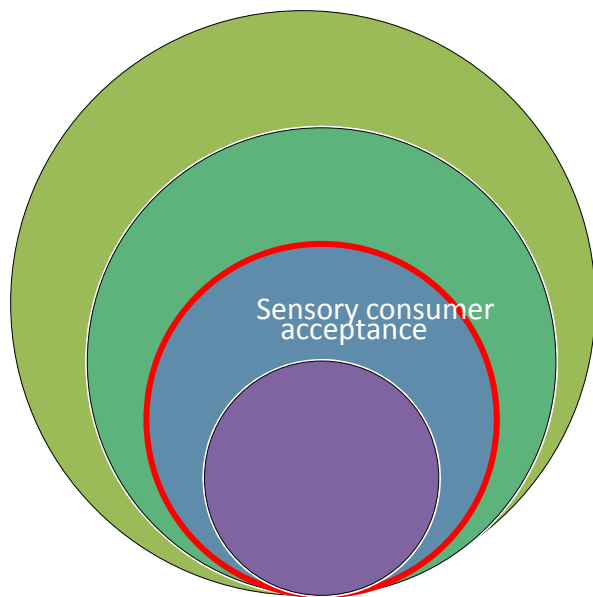


The Australian Wine
Research Institute





Consumer acceptance testing



258



875



Which wine do you prefer?

☐

Dislike
extremely

☐

Dislike very
much

☐

Dislike
moderately

☐

Dislike
slightly

☐

Neither like
nor dislike

☐

Like
slightly

☐

Like
moderately

☐

Like very
much

☐

Like
extremely

Why ask consumers?



The Au
Research



- ❖ Understand likes and dislikes of consumers
 - avoid investing in a product which is not liked because of a sensory deficiency
 - potential for repeat purchase
- ❖ What characteristics of wines are most liked by consumers?
 - What properties should be avoided/enhanced and at what level
- ❖ Can new wine styles be produced to better meet consumer acceptance?
- ❖ New/emerging markets



Recruiting consumers



The Australian Wine
Research Institute

- ❖ In-house staff not recommended (but better than nothing)
- ❖ target consumers: regular consumers of the product type
- ❖ establish a database of consumers
- ❖ cellar-doors (watch for over-acceptance)
- ❖ market research agencies can provide consumers or be contracted to carry out consumer tests
 - Specific demographics, consumption habits



But what do consumers know?



The Australian Wine
Research Institute

Brett study

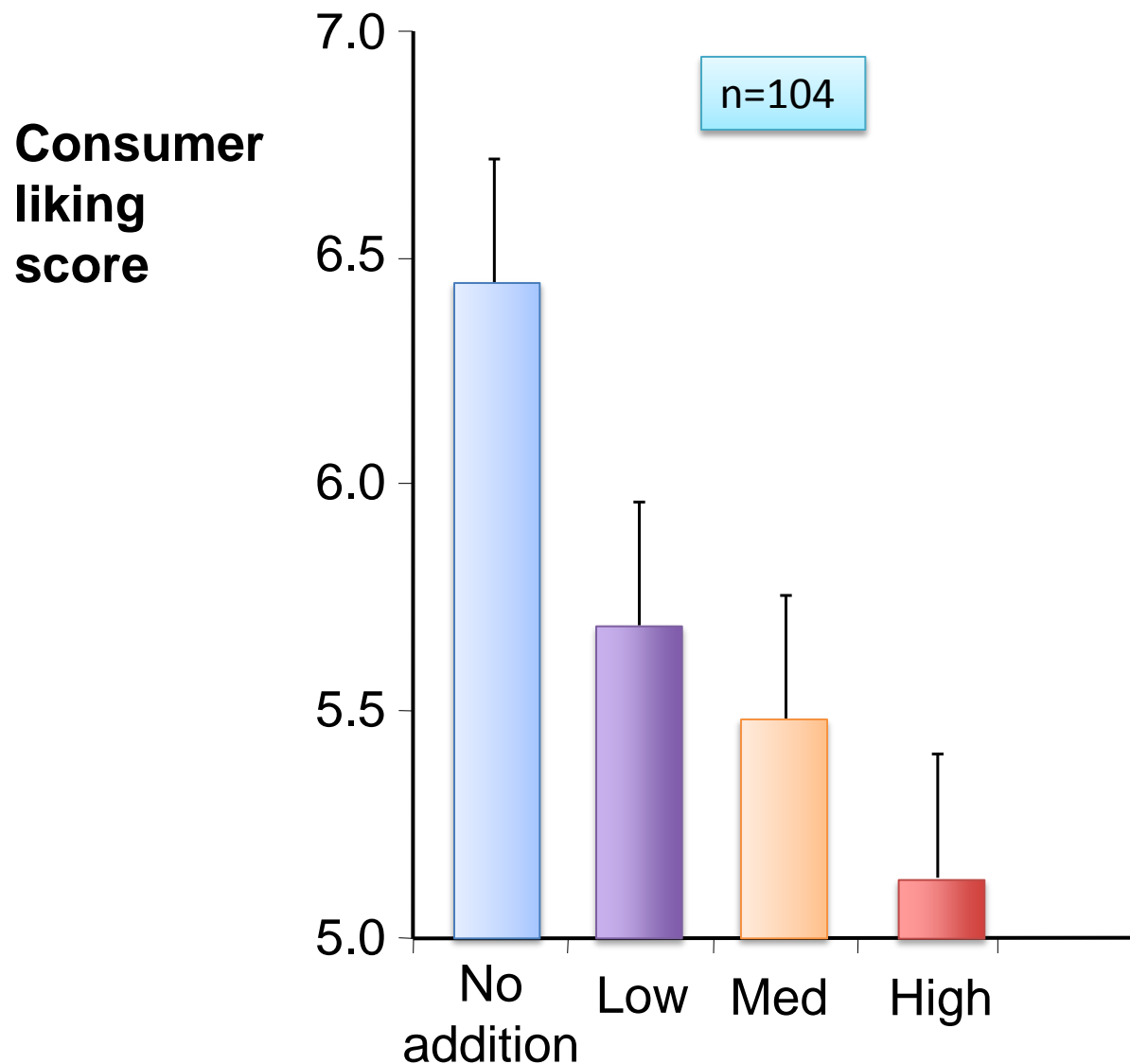
- ❖ 104 Sydney consumers
- ❖ Consumers of red wine
- ❖ Drink red wine >1/month
- ❖ Had purchased a bottle of red wine in the past month



Consumer scores – Cabernet Sauvignon with ‘Brett’ compounds added



The Australian Wine
Research Institute



L: 600 $\mu\text{g/L}$ 4-EP
H: 1200 $\mu\text{g/L}$ 4-EP

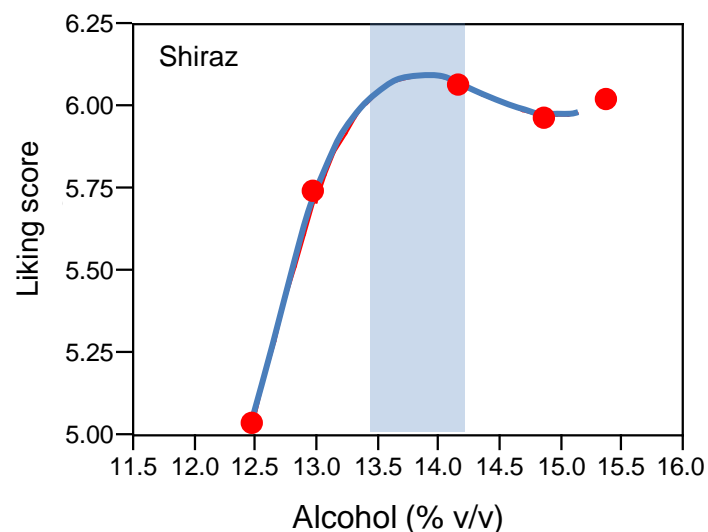
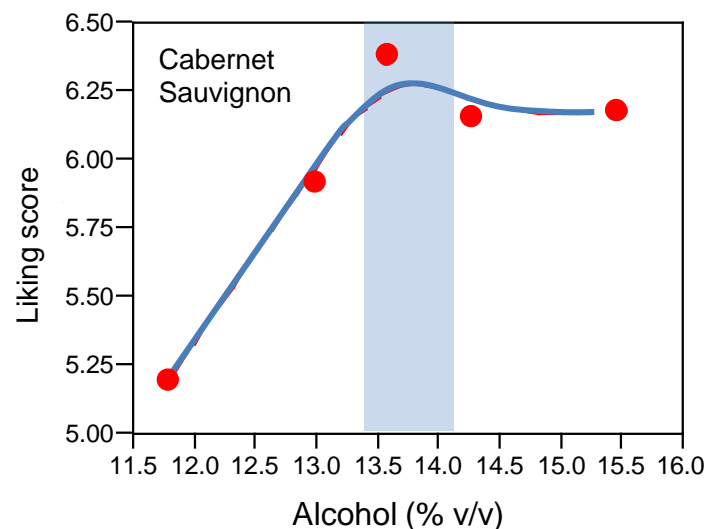


Grape maturity and consumer preference



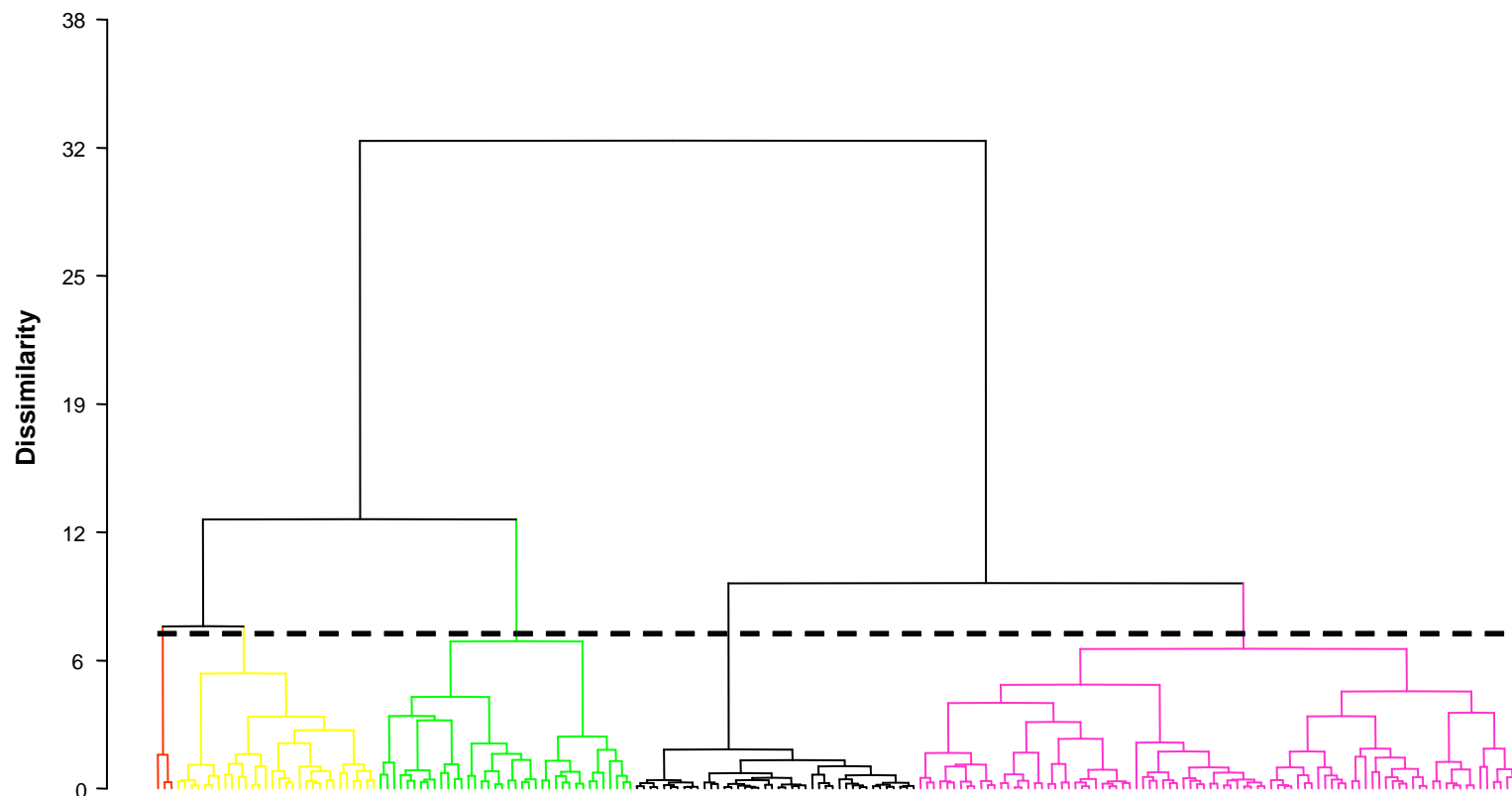
The Australian Wine
Research Institute

Wines made
from grapes
picked at
weekly intervals





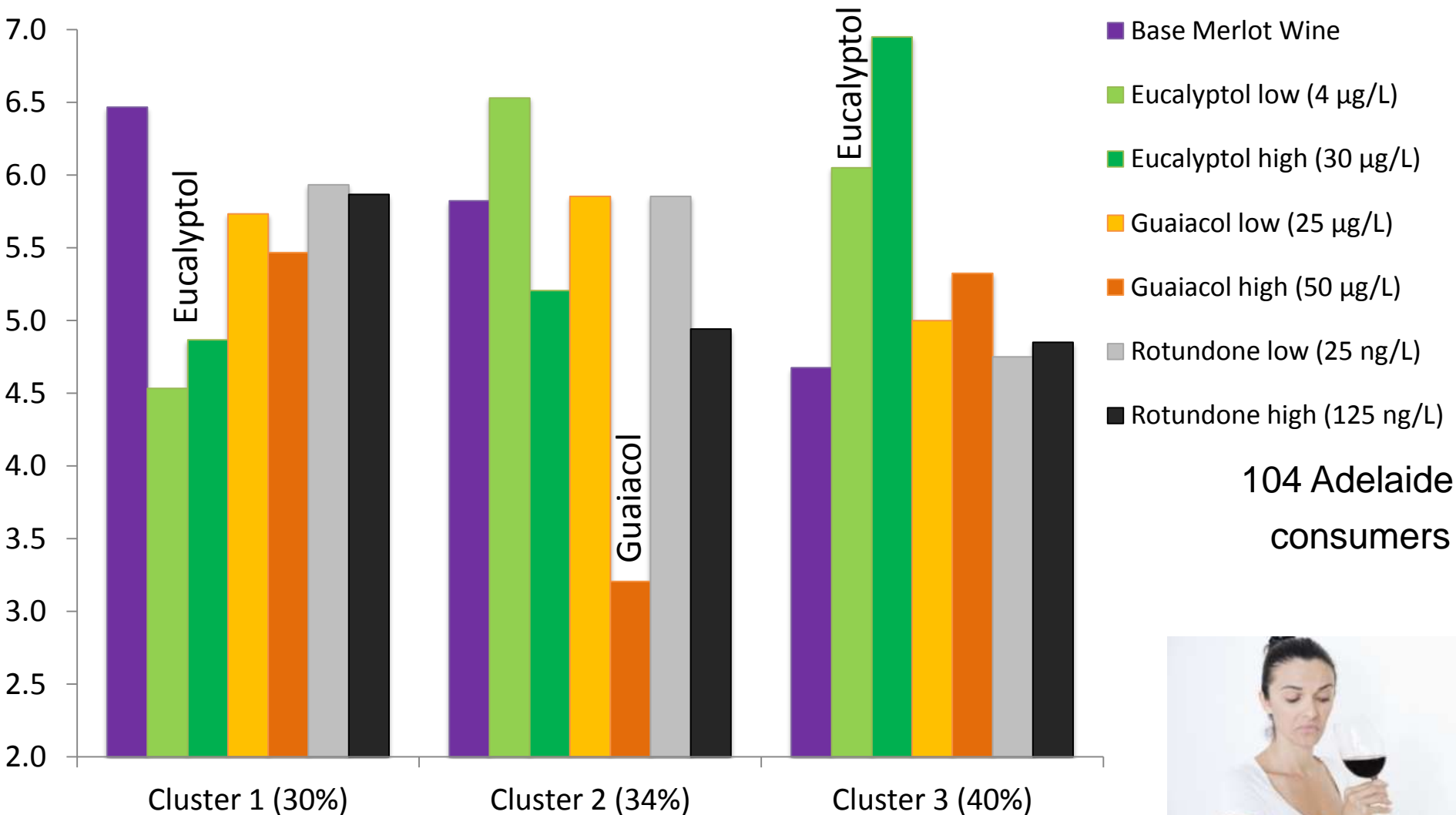
Cluster analysis: consumers who like the same wines are identified



Consumer liking scores for a Merlot wine with added flavour compounds



The Australian Wine
Research Institute



Consumer sensory evaluation in product development



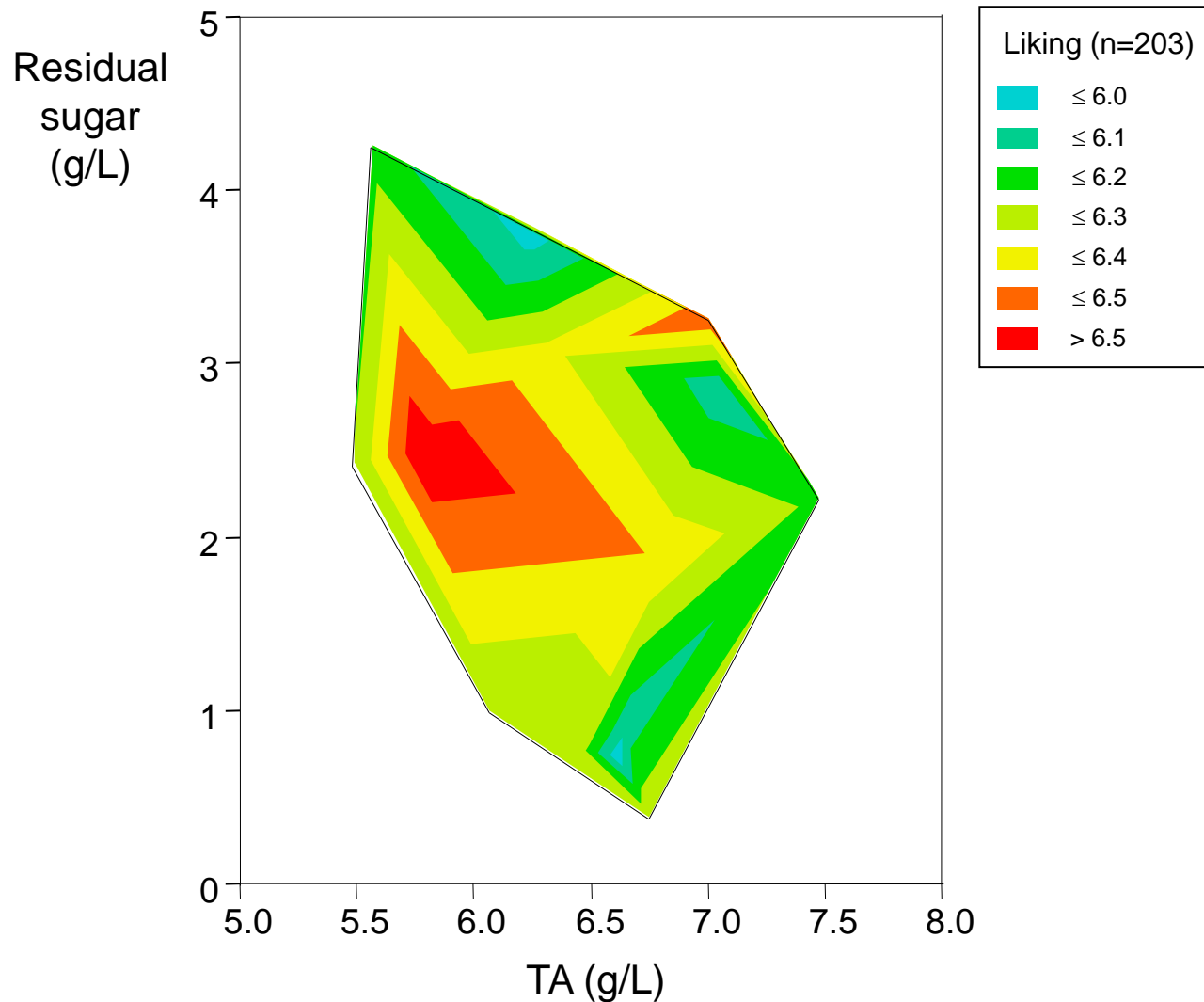
The Australian Wine
Research Institute

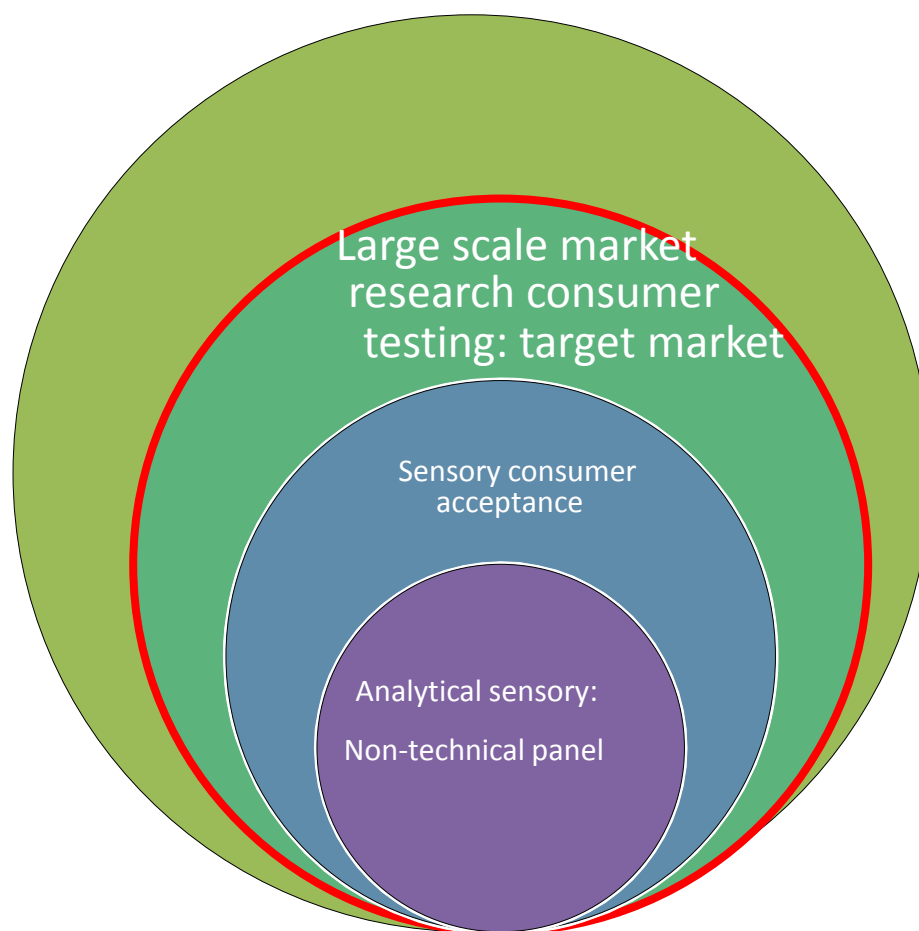
- ❖ compare products in the marketplace
- ❖ find a niche for a new product
- ❖ match category leader sensory properties
- ❖ select a product from different prototypes
- ❖ compare a product with competitors
- ❖ check if reformulations are preferred to your current product





Contour plot of consumer liking scores against residual sugar and titratable acidity: white wines





China consumer sensory study



The Australian Wine
Research Institute



Trained Sensory Panel
attribute intensity
ratings

AWRI external panel:
consumer based
descriptive language

Consumer testing 14
wines

- 310 Beijing, Shanghai,
Guangzhou consumers
- 210 Sydney and
Melbourne consumers

Chemical measures

Chinese and Australian consumers: important sensory attributes



The Australian Wine
Research Institute

Cluster 1 (50%)

fruit aftertaste,
dark colour,
sweetness,
oak/wood,
nutty

Cluster 2 (30%)

fruit aftertaste, red
fruit fl., sweetness,
floral/confectionary

Cluster 3 (20%)

fruit aftertaste, red fruit fl.,
dark fruit, purple, vanilla



China

alcohol, dark
fruit, purple

bruised fruit, brown,
earthy, mineral

acidity, bitterness,
bruised fruit, brown,
earthy, astringency

Cluster A (38%)

red berry/red
fruit,
sweetness,
nutty

Cluster B (39%)

dark colour, purple,
sweetness, viscosity, dark
fruit, red berry/red fruit

Cluster C (23%)

dark colour, dark fruit,
alcohol, oak, astringency,
fresh green, acidity,
bitterness



Australia

fresh green,
acidity,
bitterness

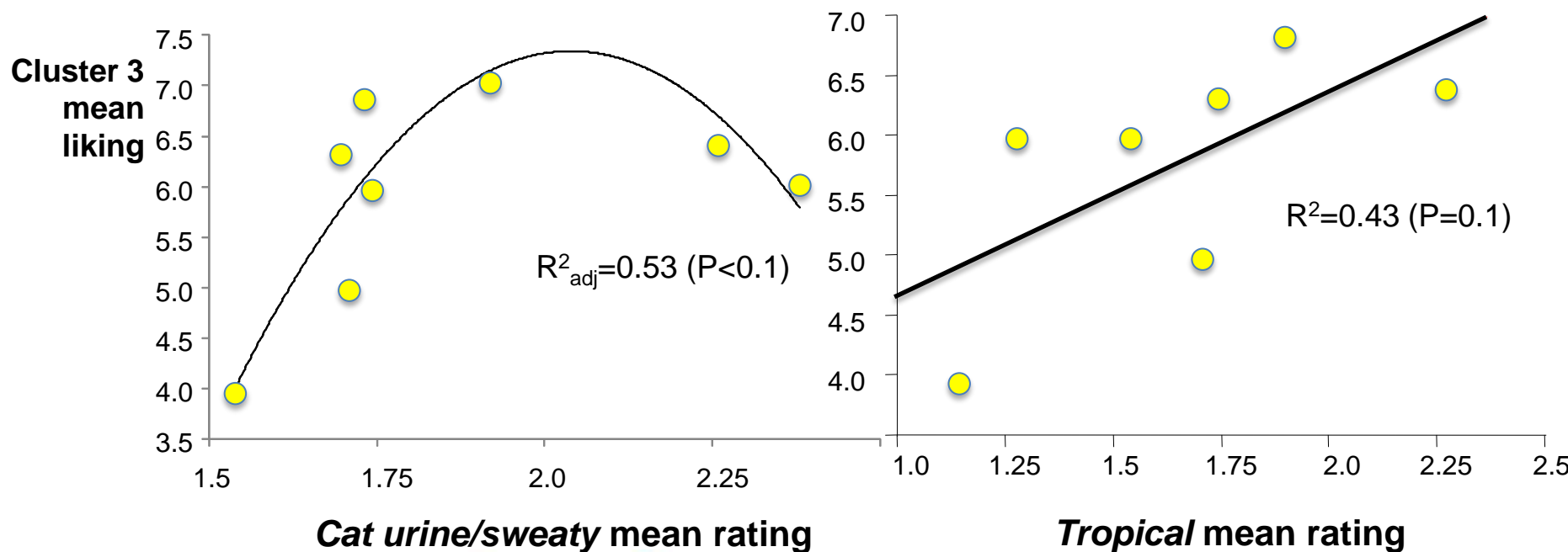
earthy, nutty, bruised fruit

sweetness, red fruit

Sauvignon blanc wines: Some cat pee is good



The Australian Wine
Research Institute



Demographics can sometimes relate to preference



The Australian Wine
Research Institute

- ❖ Cluster 1 (43%) '*green*'+ *tropical likers*
 - Drink/prefer NZ SAB
 - Lower wine knowledge

- ❖ Cluster 2 (26%) *dislike tropical/cat pee*
 - don't like/drink NZ SAB
 - More males
 - Higher wine knowledge

- ❖ Cluster 3 (31%) *tropical likers, dislike 'green'*
 - More females
 - More people who drink mainly white wines

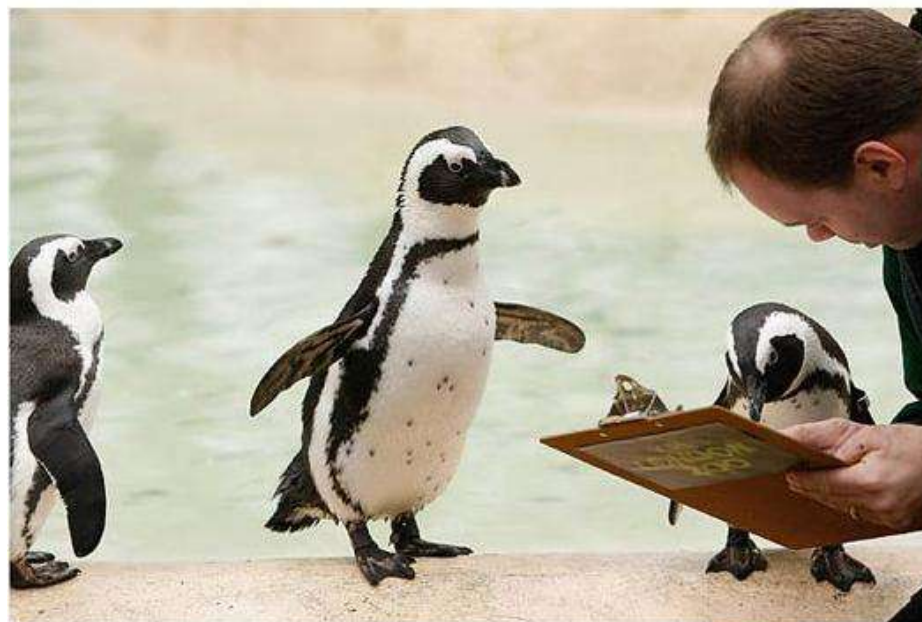


Methodology issues



The Australian Wine
Research Institute

- ❖ Tempting to add preference at the end of any analytical sensory test
- ❖ Consumers are not good in explaining why they like or dislike a wine
- ❖ Marketing researchers may not understand the importance of testing products on a blind basis (unrealistic)
- ❖ Avoid bias:
 - randomise samples
 - temperature control
 - 3-digit numbers
 - Context (Home use test or central location test)



Would you say that you are extremely satisfied, mostly satisfied, neither satisfied nor dissatisfied, mostly dissatisfied, extremely dissatisfied, or dumb penguin?

Acknowledgements



The Australian Wine
Research Institute

- ❖ Chris Curtin, AWRI Brett researchers
- ❖ Ellie King, Keren Bindon, Helen Holt
- ❖ Pernod Ricard Winemakers, Kate Lattey
- ❖ AWRI Sensory team and the sensory panellists
- ❖ AWRI Commercial Services
- ❖ Mark Stevens - Sensory Insights (Sydney)
- ❖ Conor Delahunty and Ciarán Forde (formerly Food Science Australia)

This project is supported by Australia's grapegrowers and winemakers through their investment body, the Australian Grape and Wine Authority, with matching funds from the Australian Government. The AWRI is a member of the Wine Innovation Cluster in Adelaide, South Australia.



Australian Government

**Australian Grape and
Wine Authority**