



Università  
di Catania

# ETNA WINE SURVEY

Analysis of Questionnaire Data



ESFANDIARYFARD • INCARDONA • MAZZAGLIA • OLIVEIRA



## GOAL

DISCOVER WINERY MARKET TRENDS  
AND CUSTOMER PREFERENCES



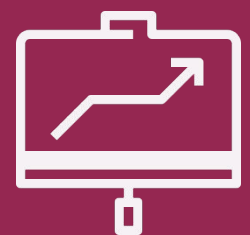
## SURVEY

ETNA WINES



## TOOL

SAS



## ANALYSIS

UNIVARIATE AND MULTIVARIATE





# QUESTIONNAIRE STRUCTURE



## RESPONDENTS

247 people answered the questionnaire.



## QUESTIONS

23 questions divided in four sections: wine preferences, buying experiences, Etna Doc experience and socio-economic characteristics



## LANGUAGES

Italian and English versions.



## MISSING VALUES

Categorical values replaced with mode and numerical replaced with median.

# UNIVARIATE ANALYSIS



Three overlapping geometric shapes in shades of maroon and purple, located in the top right corner of the slide.

# **SOCIO-ECONOMIC CHARACTERISTICS**

# GENDER AND AGE



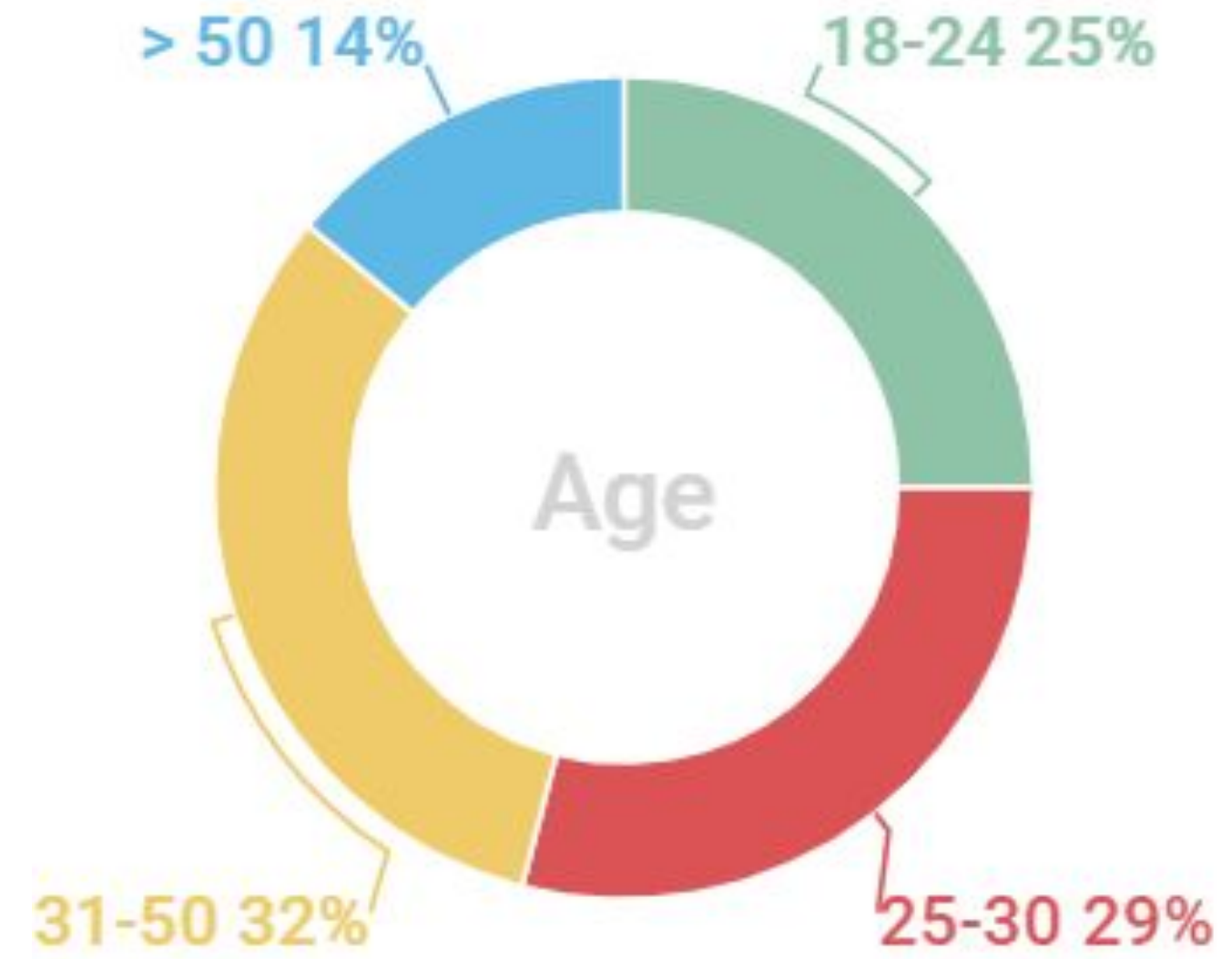
**115 WOMEN**



**126 MEN**



**6 PREFERRED  
NOT TO SAY**



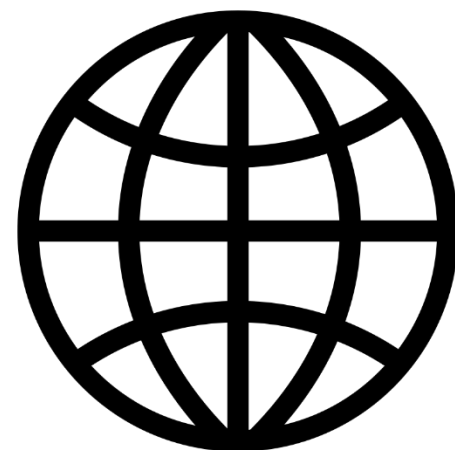
# LOCATION



**SICILY**

⋮

**75,30%**



**WORLD (NO EU)**

⋮

**10,12%**



**EU (NO ITALY)**

⋮

**7,69%**



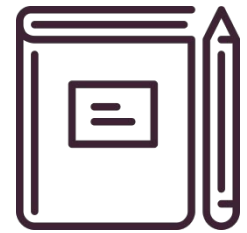
**ITALY (NO SICILY)**

⋮

**6,88%**



# EDUCATION AND OCCUPATION



**PRIMARY SCHOOL**

**1%**



**HIGH SCHOOL**

**28%**



**UNIVERSITY DEGREE**

**71%**

**OCCUPATION**

**STUDENT**

37,2%

**EMPLOYEE**

35,2%

**FREELANCER**

11,7%

**OTHERS**

15,6%



Three overlapping geometric shapes (polygons) in shades of maroon and purple, located in the top right corner of the slide.

# **WINE PREFERENCES**

# DRINK PREFERENCE



**COCKTAILS**

**25,5%**

**LIKE A LOT**



**WINE**

**46,6%**

**LIKE A LOT**



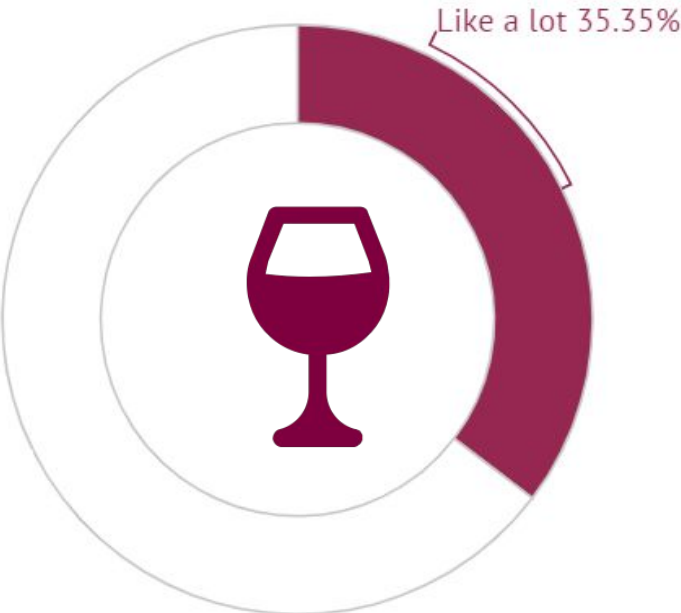
**BEER**

**34%**

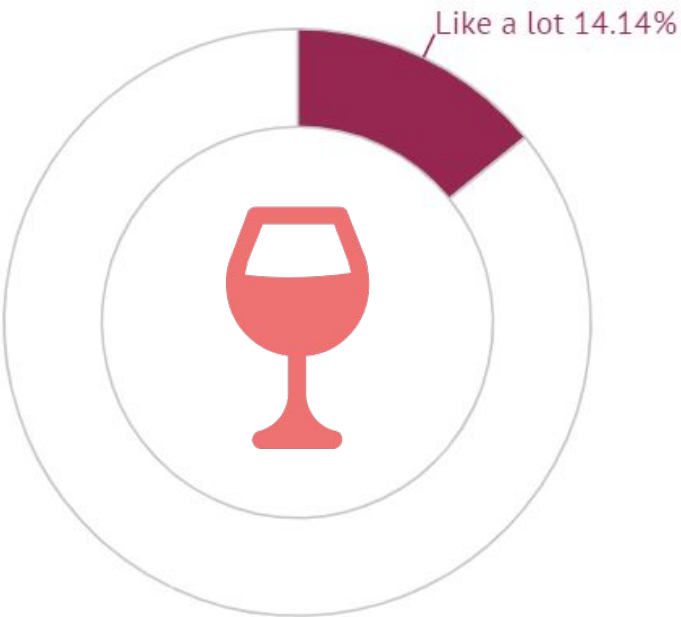
**LIKE A LOT**

# TYPES OF WINE PREFERENCE

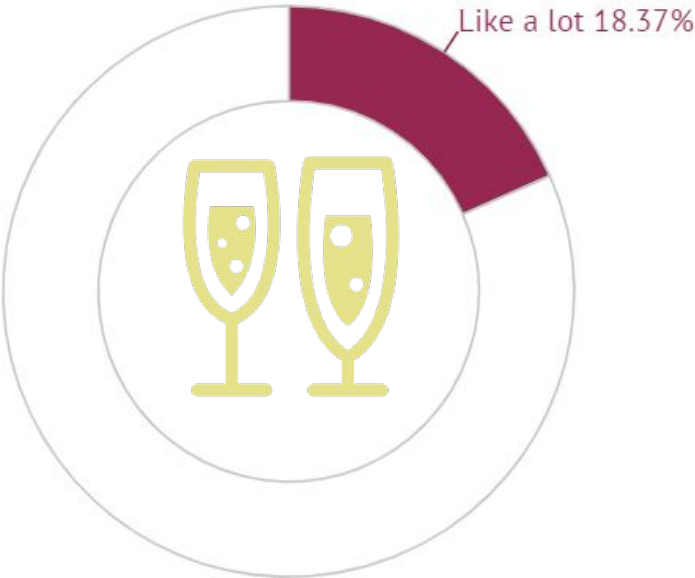
## RED WINE



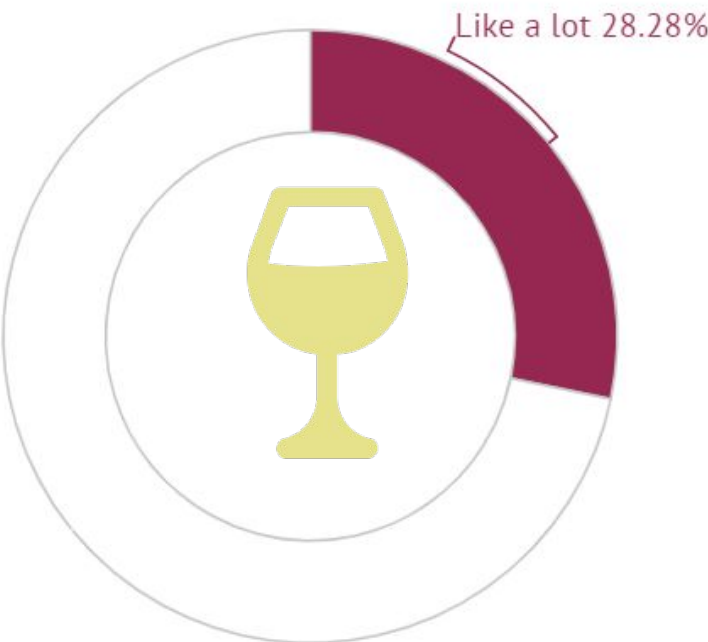
## ROSÉ WINE



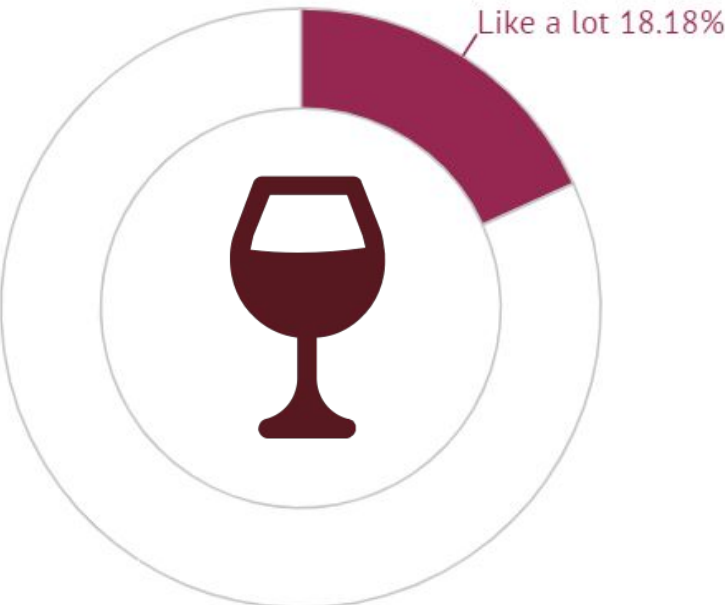
## SPARKLING WINE



## WHITE WINE



## SWEET WINE





# WINE TASTING AND WINERY VISIT



## WINE TASTING

**43%**

Participated in a wine tasting experience at least once.

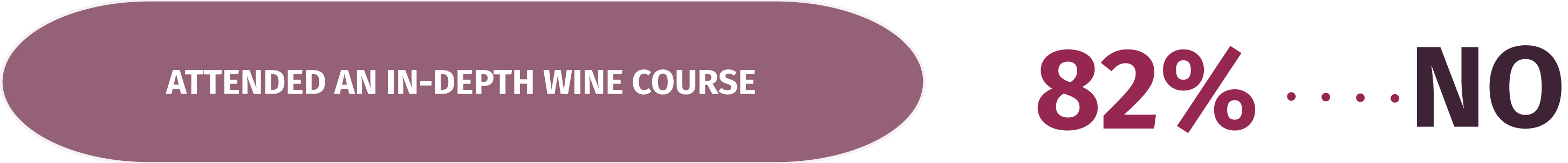


## WINERY VISIT

**60%**

Visited a winery at least once.

# COURSES AND GENERAL KNOWLEDGE ABOUT WINE

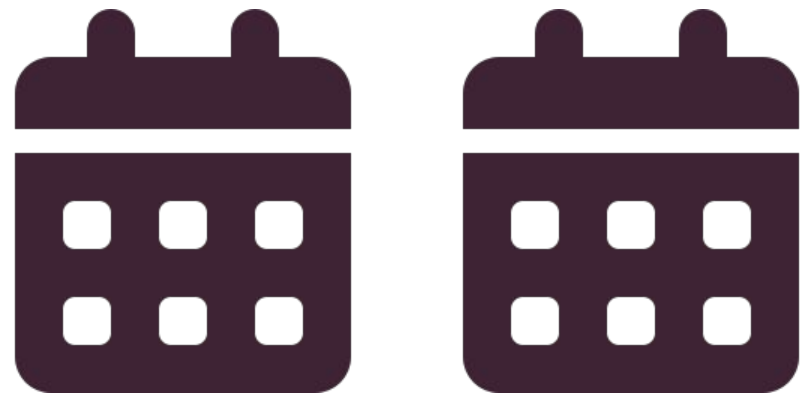


Three overlapping geometric shapes in shades of maroon and purple, located in the top right corner of the page.

# **WINE BUYING EXPERIENCE**



# PURCHASE FREQUENCY AND NUMBER OF BOTTLES



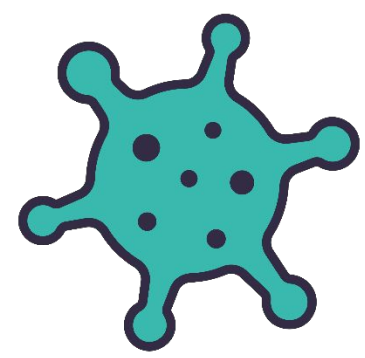
**44,5%**

Declared to buy wine 1-2 times  
a month.

**64,4%**

Declared to buy 2-3 bottles of  
wine a month.

# WINE EXPENSES, REASONS TO BUY AND PANDEMIC EFFECTS



- ↑ 24,3% increased the wine buying habits during pandemic.
- 59,5% did not change the wine buying habits during pandemic.
- ↓ 16,2% decreased the wine buying habits during pandemic.

# BUYING FREQUENCY IN SOME STORES



**34,8%**

Declared to buy wine at supermarket every time.



**1,2%**

Declared to buy wine online every time.



**8,5%**

Declared to buy at wine shop every time.



# IMPORTANCE OF FEATURES WHEN BUYING WINE



GRAPE ORIGIN

27,1%



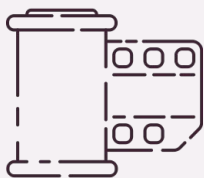
GRAPE VARIETY

21,9%



BUDGET FRIENDLY

29,2%



VINTAGE

14,6%



BRAND AWARENESS

18,2%



LABEL INFO

19,4%



PACKAGING

9,7%



PROMOTION

15,4%

%  
of people who  
consider these  
features extremely  
important.

Three overlapping geometric shapes in shades of maroon and purple, located in the top right corner of the page.

**ETNA DOC. WINE**

# ETNA WINE AWARENESS

% of people that  
already heard about  
Etna Wine before.

55,5%



48,6%

% of people that  
already bought Etna  
Wine before.

**\*10,1% of people don't know if they  
bought Etna Wine or not.**



## ETNA WINE PREFERENCE AMONG OTHERS AND RECOMMENDATION



% of people that prefer Etna Wine way more than other Wines.

... **75,71%**

**74,90%** ...

% of people that would strongly recommend Etna Wine to Family and friends.



# ETNA WINE FEATURES

FLAVOR

84,2%

EXPENSIVE

15,4%



EXCELLENCES

88,3%

QUALITY

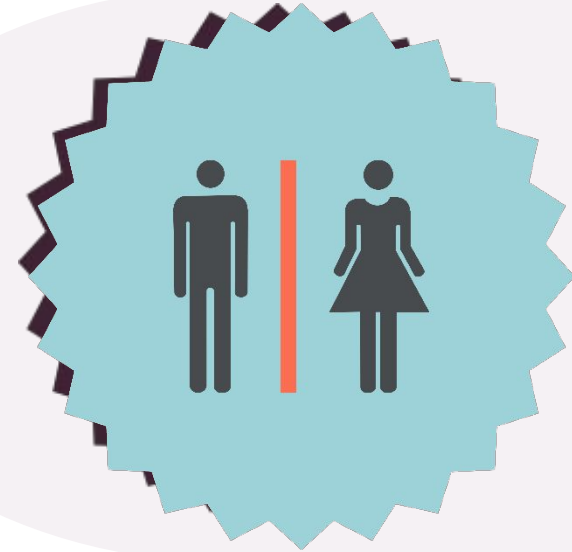
83,8%

% of people that chose  
levels 3 and 4 of  
importance in these  
features.

# ANALYSIS OF CORRESPONDENCE



# GENDER AND AGE X ETNA WINE PREFERENCE



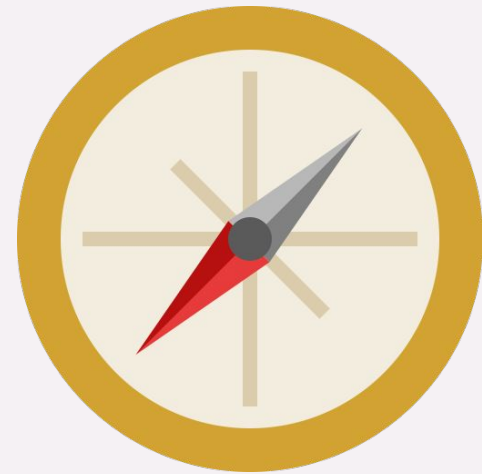
**GENDER DOES NOT INFLUENCES ON  
ETNA WINE PREFERENCE.**



**AGE DOES NOT INFLUENCES ON ETNA  
WINE PREFERENCE.**

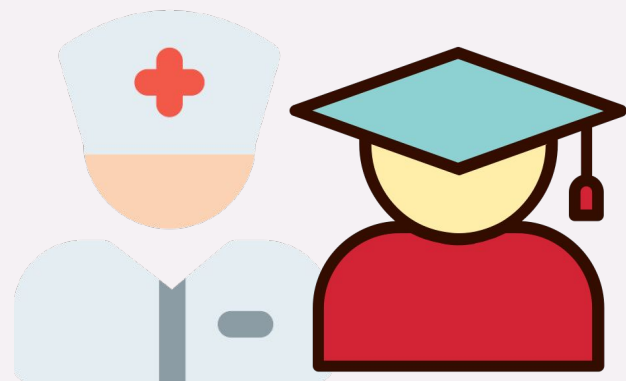


# LOCATION, OCCUPATION AND EDUCATION X ETNA WINE PREFERENCE



**LOCATION INFLUENCES ON ETNA WINE PREFERENCE.**

The p-value of the chi-square test was low!



**OCCUPATION AND LEVEL OF EDUCATION DOES NOT INFLUENCES ON ETNA WINE PREFERENCE.**

# LATENT CLASS ANALYSIS



# LATENT CLASSES



Briefly elaborate on what you want to discuss

# AGGREGATE ANALYSIS



Class1

32.59%

67.11%

Class2

52.54%

44.07%

3.39%

Class 3

57.37%

41.18%

1.47%

Class 4

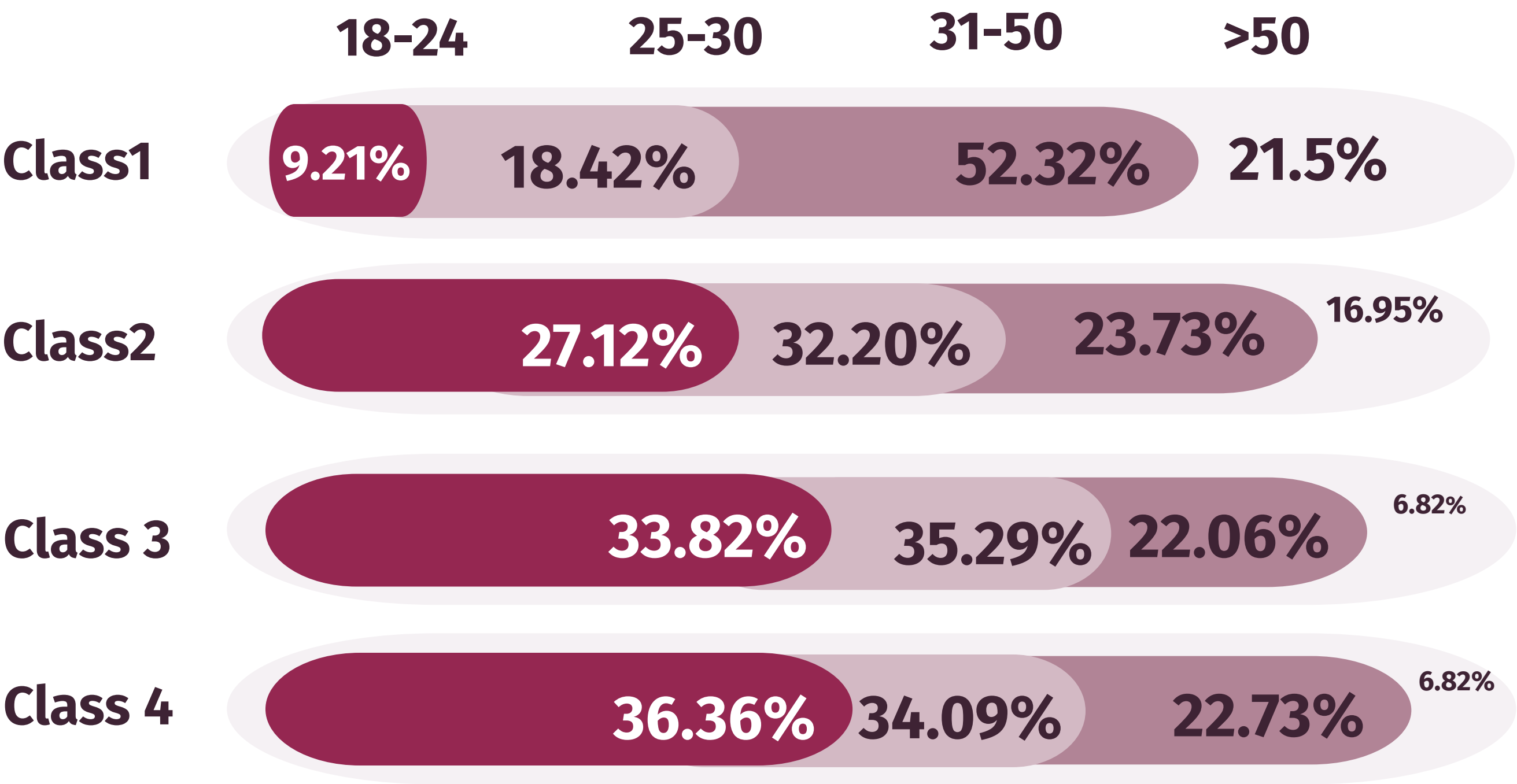
45.45%

47.43%

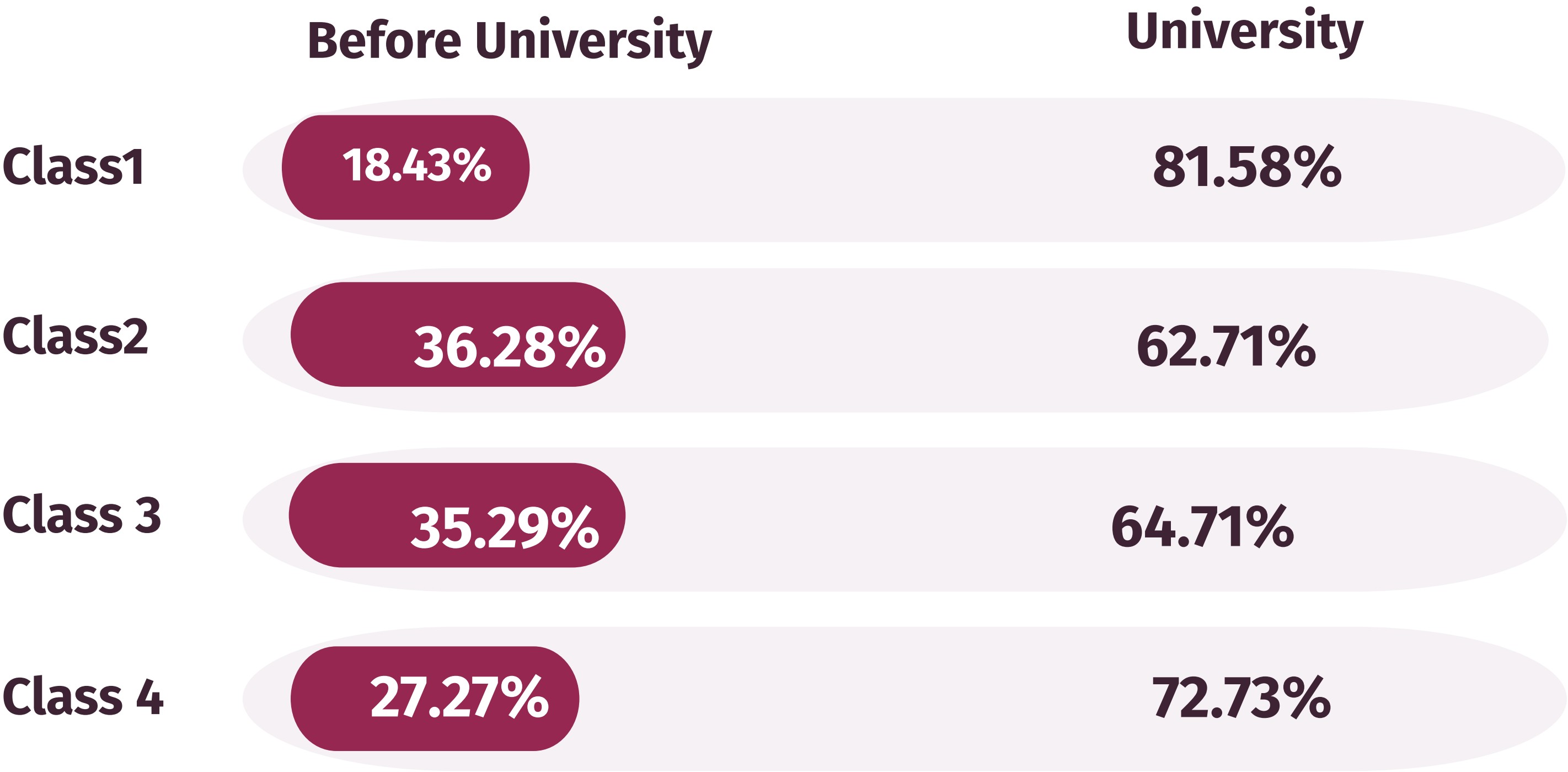
6.82%



# AGGREGATE ANALYSIS



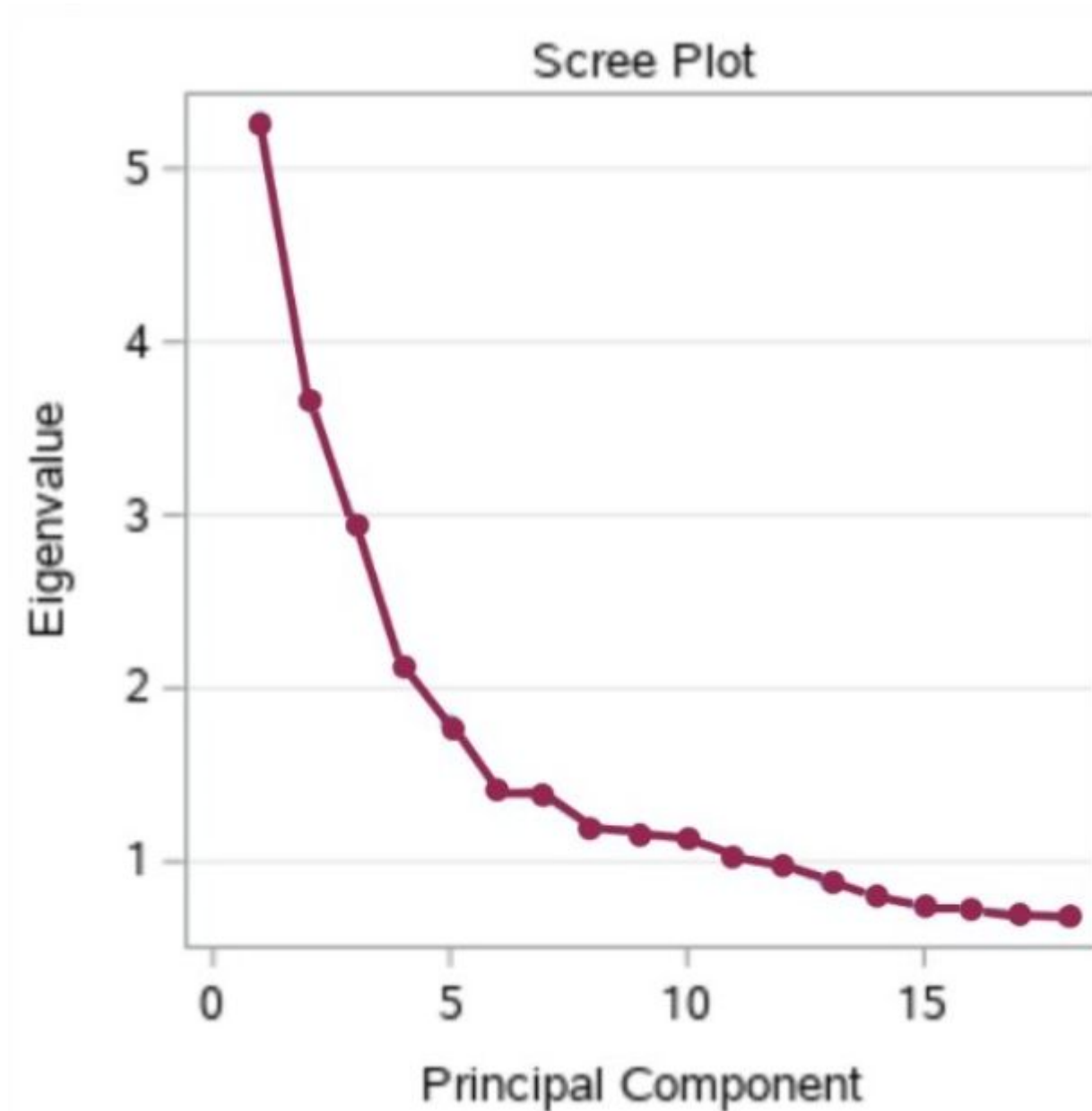
# AGGREGATE ANALYSIS



# PRINCIPAL COMPONENT ANALYSIS



# PCA



11 EIGENVALUES  
18 PCA TO EXPLAIN  
**80%**

PCA 2 TO 18  
EXPLAINED MORE  
VARIABLES

**1º PC**

wine\_preference | wine\_tasting | wine\_course

**2º PC**

etna\_recommendation | etna\_flavour | etna\_preference

**3º PC**

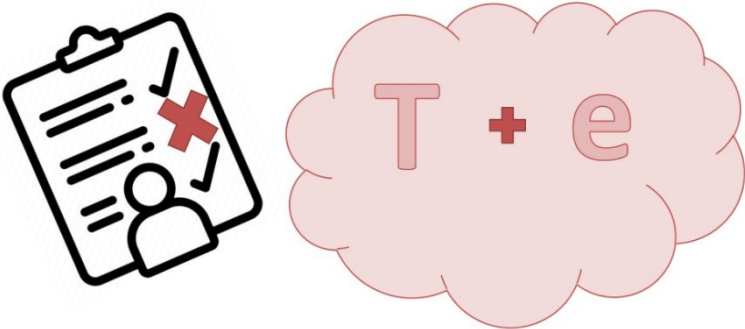
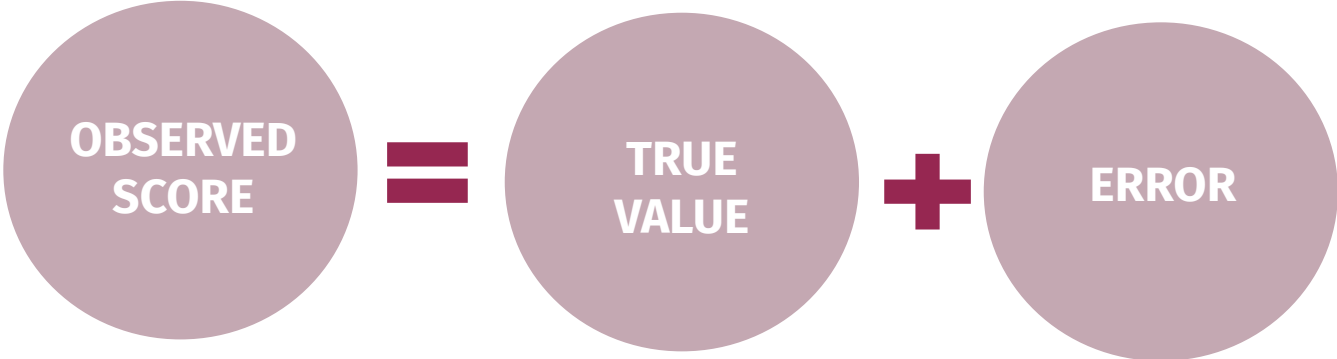
white\_wine | rose\_wine | sparkling\_wine



# CLASSICAL TEST THEORY



# CRONBACH ALPHA



ELIMINATED VARIABLE	ALFA	TOTAL CORRELATION
ETNA FLAVOR	0.7056	0.6639
ETNA EXCELLENCES	0.7417	0.5589
ETNA EXPENSIVE	0.8112	0.3125
ETNA QUALITY	0.6907	0.7010
ETNA RECOMMENDATION	0.7397	0.5630

VARIABLE	ALFA
RAW	0.7821
STANDARDIZED	0.7778

# FACTOR ANALYSIS



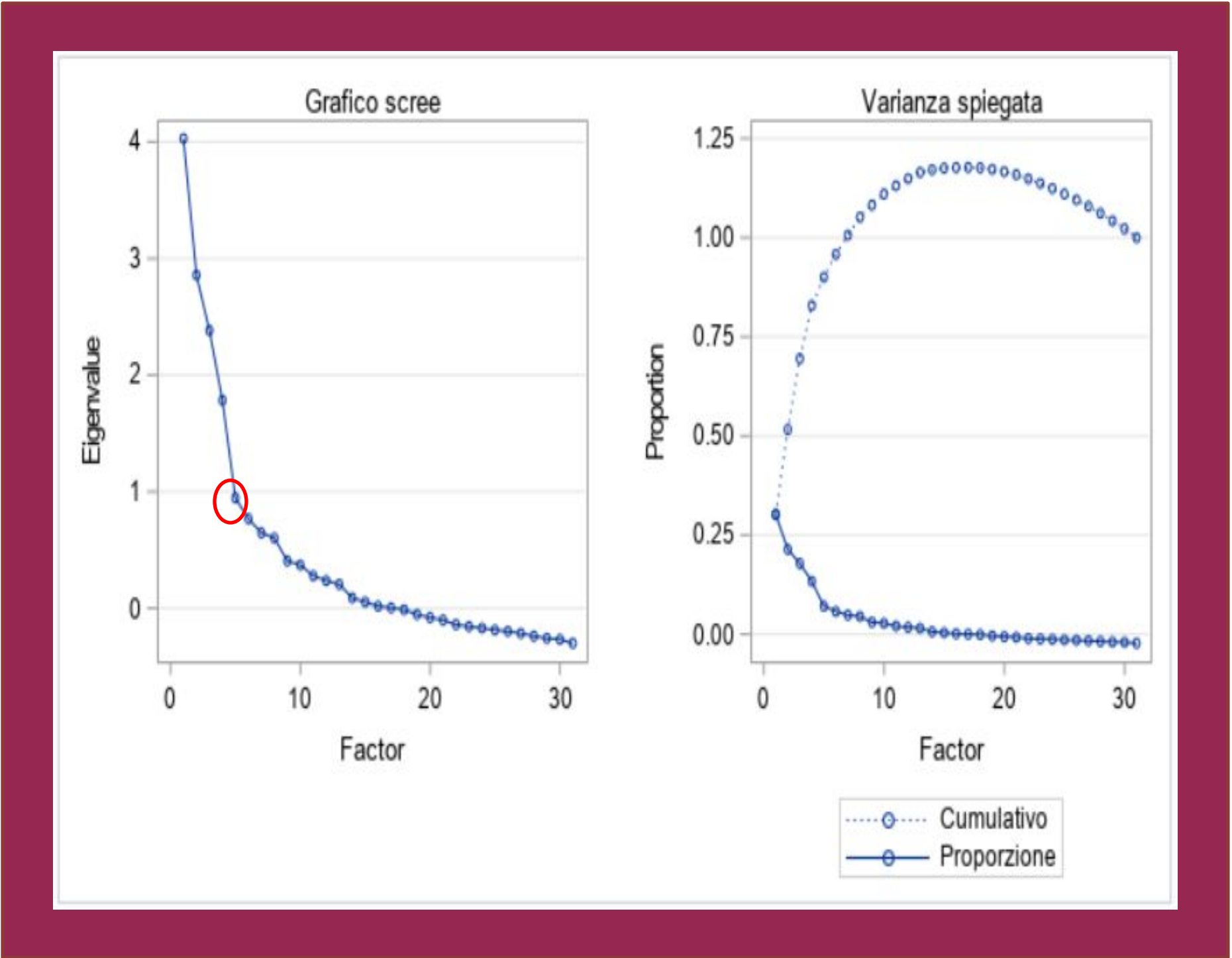


NUMBER OF FACTORS

KAISER’S RULE - VARIANCE EXPLAINED

SCREE PLOT

FACTOR	EIGENVALUE	DIFFERENCE	PROPORTION	CUMULATIVE
1	4.03058198	1.17177982	0.3022	0.3022
2	2.85880215	0.47403863	0.2144	0.5166
3	2.38476352	0.59958495	0.1788	0.6954
4	1.78517857	0.83759358	0.1339	0.8292
5	0.94758500	0.17860976	0.0711	0.9003
6	0.76897524	0.12116639	0.0577	0.9579
7	0.64780884	0.04432727	0.0486	1.0065
8	0.60348157	0.19604285	0.0452	1.0518
9	0.40743872	0.03468061	0.0306	1.0823



# COMPARING COMMUNALITIES

Substantial  
increase in  
communalities  
of 8 variables.

⋮

1 FACTOR

2 FACTORS

3 FACTORS

4 FACTORS

5 FACTORS

6 FACTORS

7 FACTORS

Substantial  
increase in  
communalities  
of 10 variables.

⋮

Substantial  
increase in  
communalities  
of 2 variables.

⋮

⋮  
Not satisfactory  
at all.

⋮

Substantial  
increase in  
communalities  
of 8 variables.

⋮

Substantial  
increase in  
communalities  
of 2 variables

⋮

Substantial  
increase in  
communalities  
of 2 variables



# 5 Factors

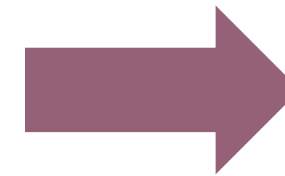
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Improve the communalities in 28 of 31 variables

# 4 Factors

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Improve the communalities in 26 of 31 variables



**BEST  
SOLUTION!**

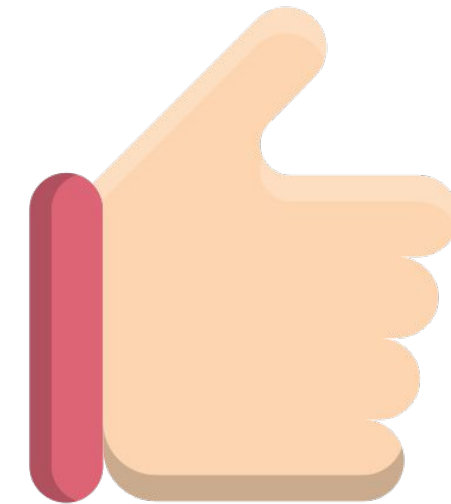
# ROTATION OF FACTORS

VARMAX ROTATION WITH 4 FACTORS : VARIANCE EVENLY DISTRIBUTED

Variance Explained by Each Factor					
	Factor 1	Factor 2	Factor 3	Factor 4	
Before Rotation	4,03	2,85	2,34	1,78	
After Rotation	3,00	2,70	2,68	2,67	

# FACTOR

01<sub>/04</sub>



## **SATISFACTION**

This factor is entirely composed of items that represent the overall Satisfaction of the respondents to the Etna wine. Higher values mean an overall higher level of satisfaction considering Etna wine as a Sicilian Excellence.

# FACTOR

## 02<sub>/04</sub>



### **TYPE OF WINE**

This factor is positively related with the choice between tipologies of wine (white, red, rose, sweet, sparkling) and vintage.

# FACTOR

03<sub>/04</sub>



## WINE REFERENCE AND SHOP LOCATION

This factor is based on the reason that encourage people to buy wine (grape origin, variety, packaging) and according to their knowledge they tend to buy in different shop location. High value indicates deeply attention by the consumer to the reference of wine.



# FACTOR

## 04<sub>/04</sub>



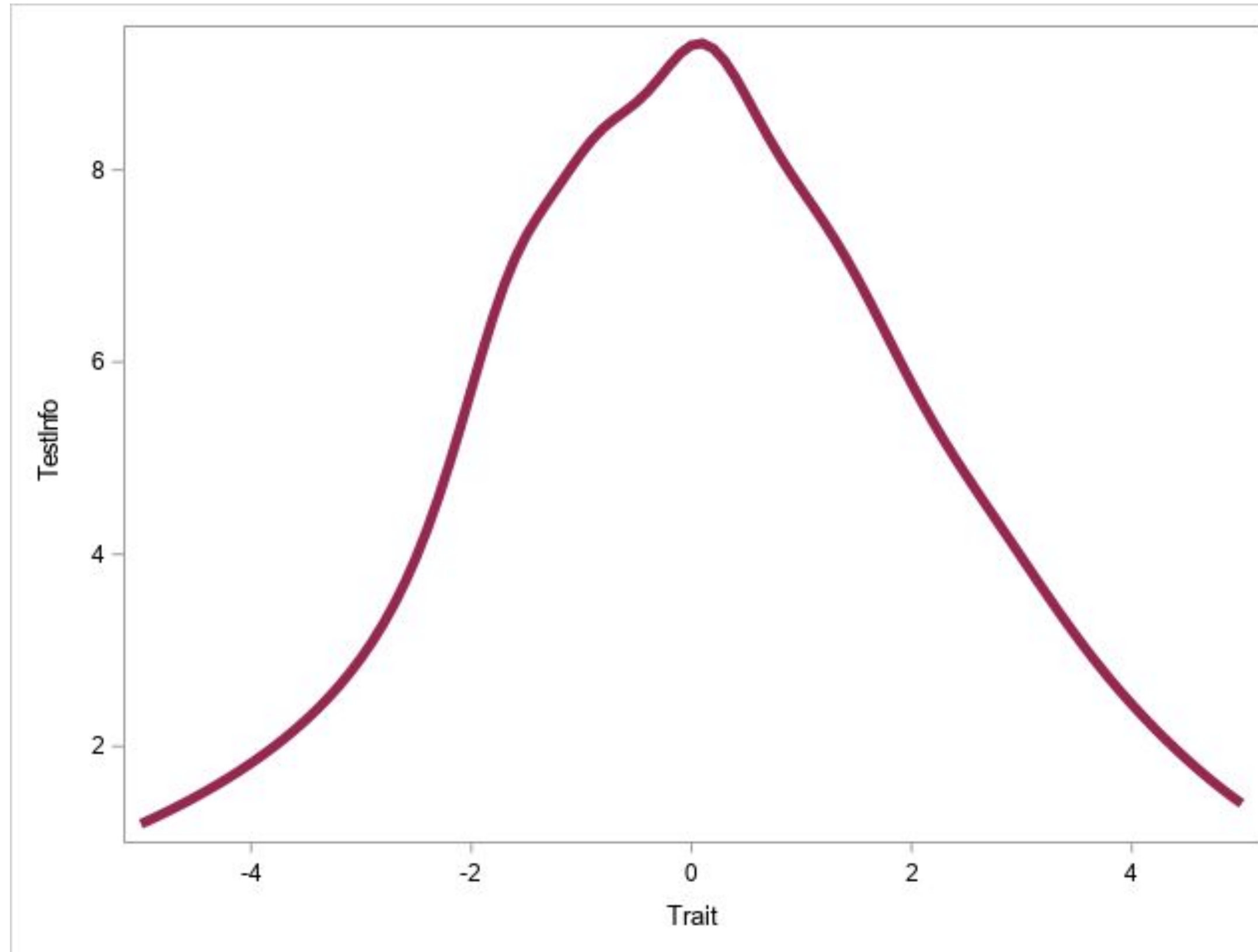
## **BRAND PRESTIGIOUS AND BUYING EXPERIENCE**

This factor is connected to the focus that people have when they have their buying experience.

# IRT – ITEM RESPONSE THEORY



# Global Test Information Curve



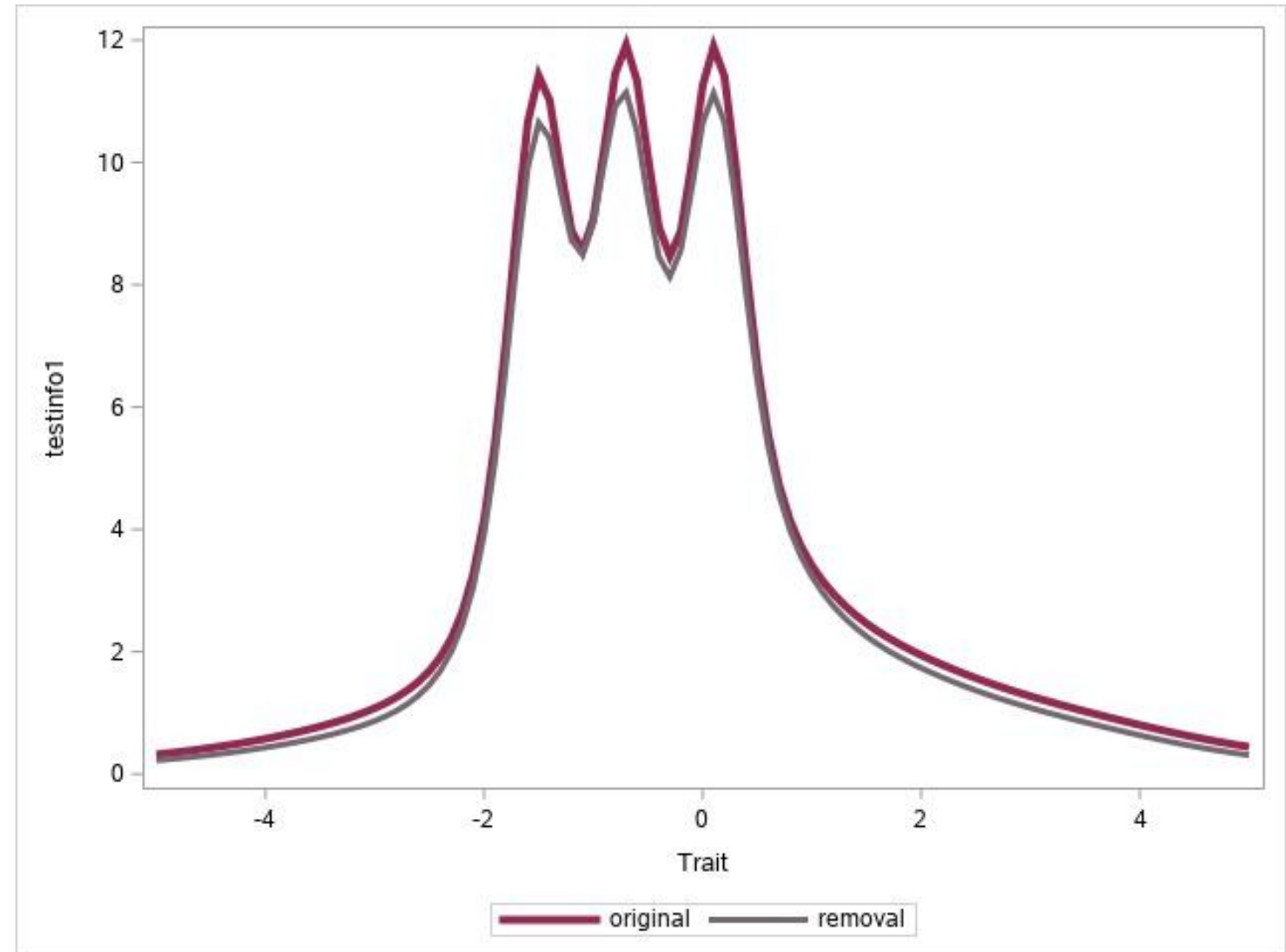
# TOPIC: WINE PREFERENCES, EXPERTISE AND EXPERIENCE

## DROP

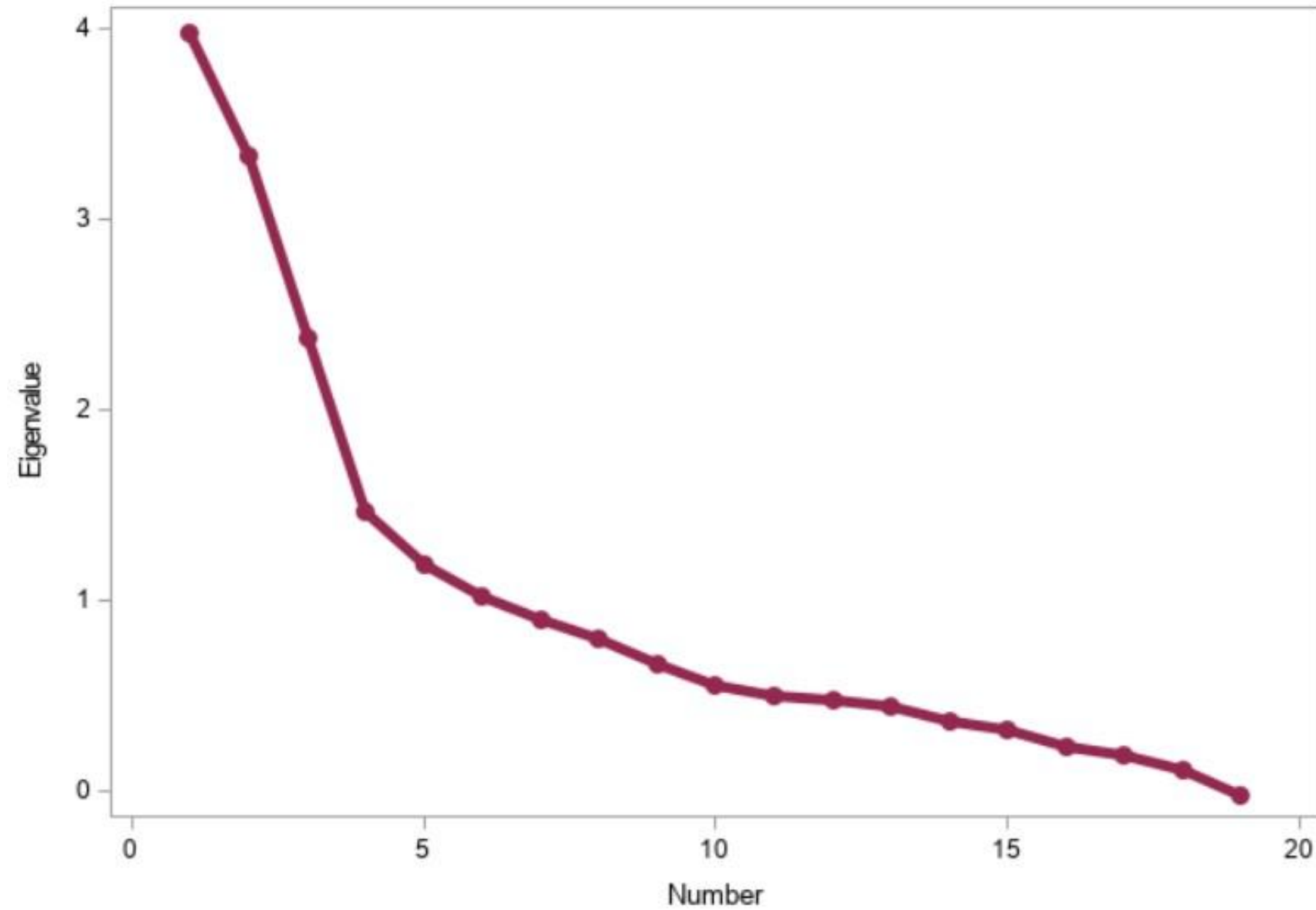
↓ cocktail\_preference

↓ soft\_preference

↓ rose\_wine



# TOPIC: Wine Buying Experience

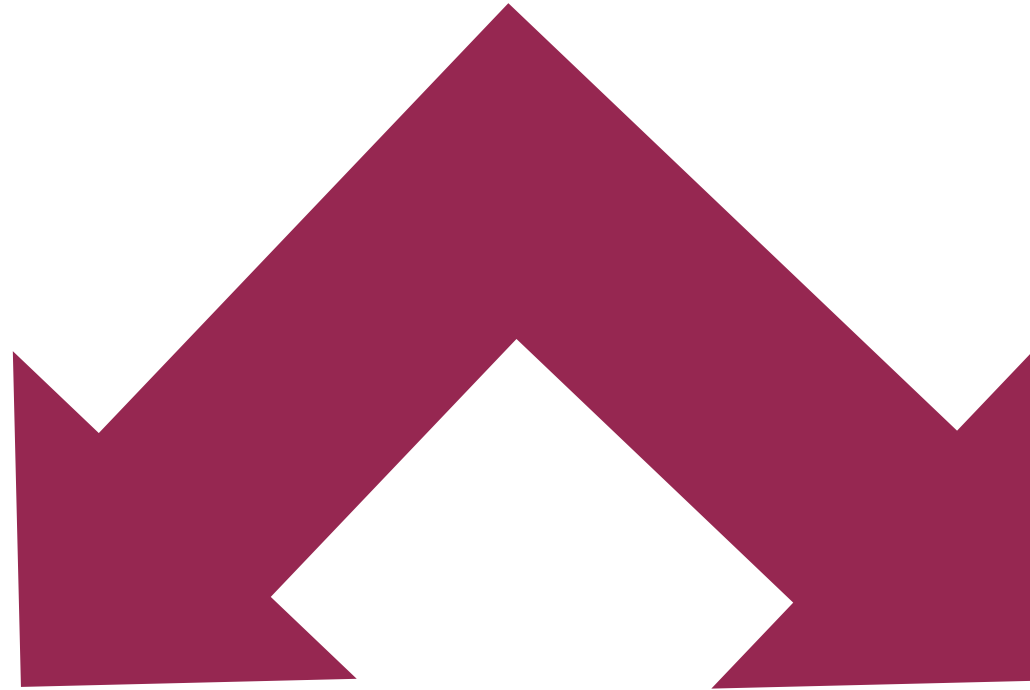




# TOPIC: Wine Buying Experience

## Factor 1

BUYING\_EXPERIENCE  
WINE\_BOTTLES  
BRAND\_AWARNESS  
LABEL\_INFO  
BUYING\_FREQUENCY  
PARTY  
GIFT  
HOME  
TASTE



## Factor 2

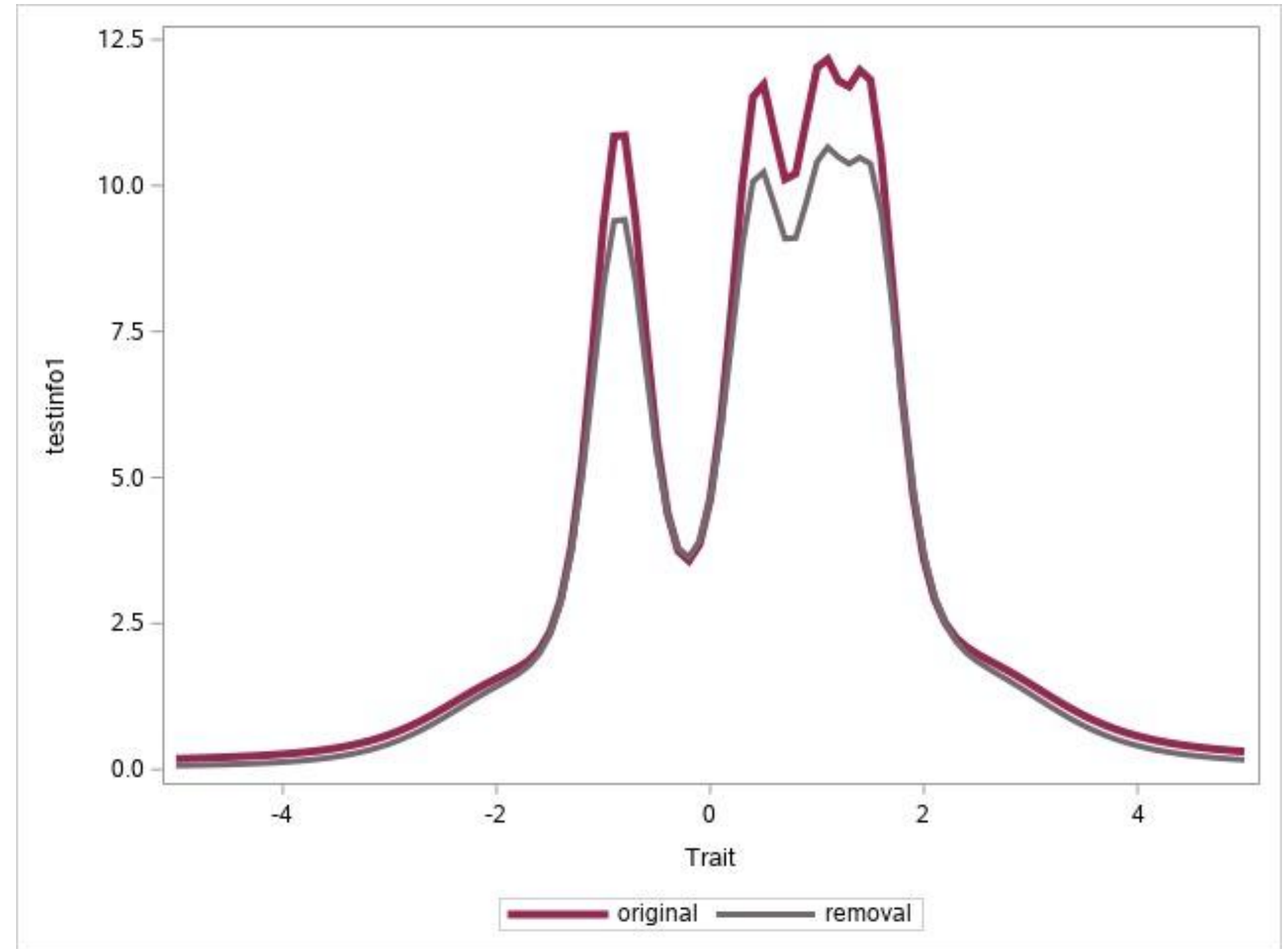
SUPERMARKET  
WINE\_SHOP  
GRAPE\_ORIGIN  
ONLINE\_SHOP  
GRAPE\_VARIETY  
BUDGET\_FRIENDLY  
VINTAGE  
PACKAGING  
PROMOTION  
BOTTLE\_BUDGET



## TOPIC: FACTOR 1

# DROP

- ↓ Brand\_awareness
- ↓ Label\_info
- ↓ Buying\_frequency
- ↓ party



# **QUESTIONNAIRE IMPROVEMENTS AND CONCLUSIONS**





**ADD** 

- Salary question
- Control item

**ASK**   


- About interest in wine free course
- About interest in free winery  
tasting experience

**MODIFY** 

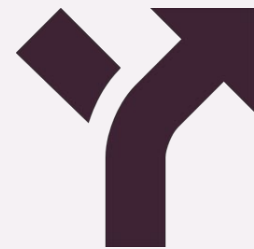
- Question about “how much you  
spend in a bottle of wine on  
average?”

**REMOVE**



Cocktail\_Preference  
Beer\_Preference  
Soft\_Preference  
Online\_Shop  
Buying\_Preference  
Budget\_friendly  
Packaging  
Promotion  
Etna\_Preference  
Label\_Info  
Bottle\_Budget  
Etna\_Recommendation

**SPLIT**



Wine buying experience split into  
wine buying experience and wine  
consumption



A close-up photograph of several hands holding wine glasses filled with red wine, clinking them together in a toast. The background is a warm, out-of-focus restaurant interior with soft bokeh lights. A purple circular overlay in the top right corner contains white text.

**ANY DOUBTS?**

**GRAZIE!**