

# **Regional Effects on Consumer Acceptability of Beef**

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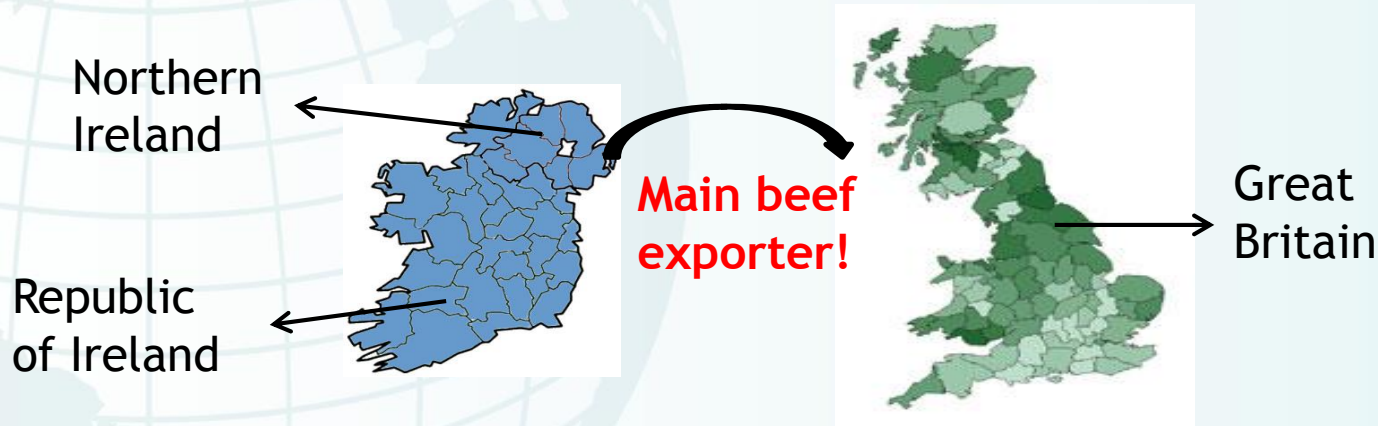
# Regional Effects on Consumer Acceptability of Beef

- Objectives
- Experimental Design
- Results
  - External Preference Mapping
  - Differences between regions
  - Demographic survey
- Conclusion



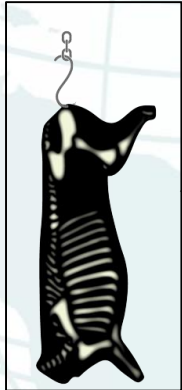
# Objectives

- To determine the differences and similarities in consumer preferences for beef in different regions of Ireland (R.O.I), Northern Ireland (N.I) and Great Britain (G.B)



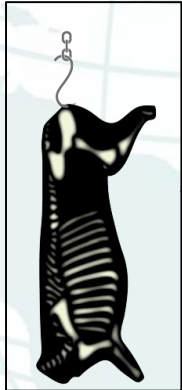
- To relate consumer data to quantitative descriptive analysis.

# Experimental design- Treatment



Hanging method	Bulls	Steers	Old Cows
Straight Hung (AT)	T1	T3	T5
Tenderstretch (TS)	T2	T4	T6

# Experimental design- Treatment



Hanging method	Bulls	Steers	Old Cows
Straight Hung (AT)	T1a	T3a	T5a
	T1b	T3b	T5b
Tenderstretch (TS)	T2a	T4a	T6a
	T2b	T4b	T6b

a= continental breed, b=dairy breed

# Experimental Design: Sensory Evaluation

- Ageing period: 21 days
- Cooking method: Grilled

## 1) Sensory profiling panel

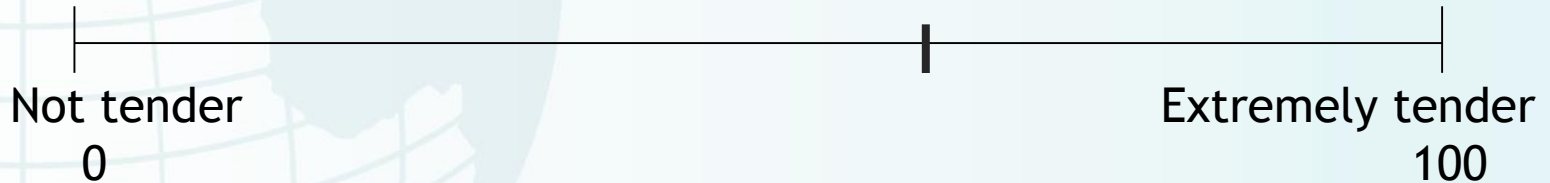
- Trained panellists (Belfast)
- 48 attributes, aspects of:

Aroma (AR), Flavour (FL), Mouthfeel (MOU), Texture on Cutting(TXC), External Appearance (EXAP), Internal Appearance (INAP), Aftertaste (AT)

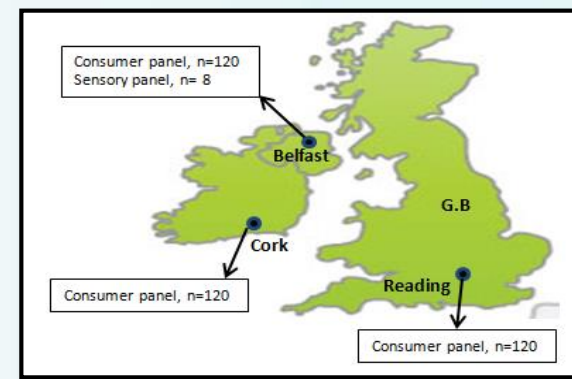
## 2) Consumer panels

- 3 locations
- 120 consumers at each location
- Aroma liking, tenderness, juiciness, flavour liking and overall liking

e.g.,



- $MQ4 = 0.3 \text{ tenderness} + 0.1 \text{ juiciness} + 0.3 \text{ flavour liking} + 0.3 \text{ overall liking}$





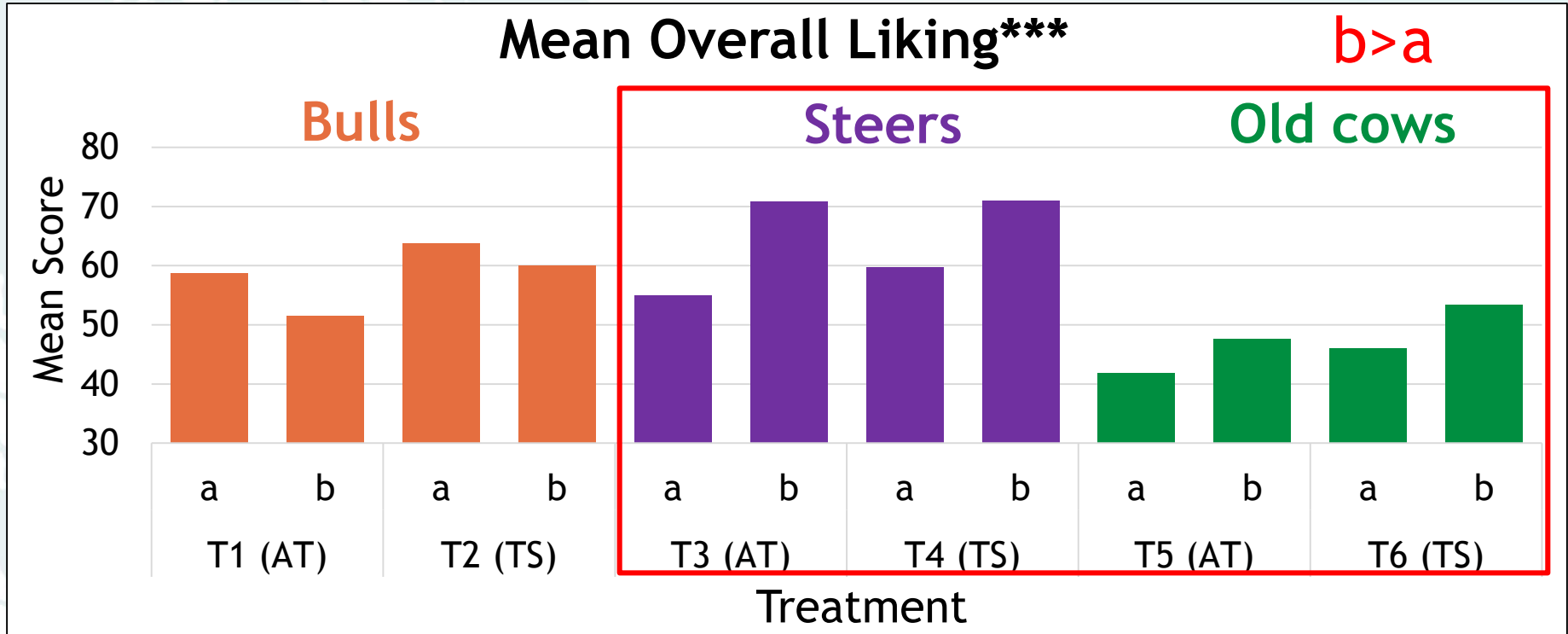


# Results



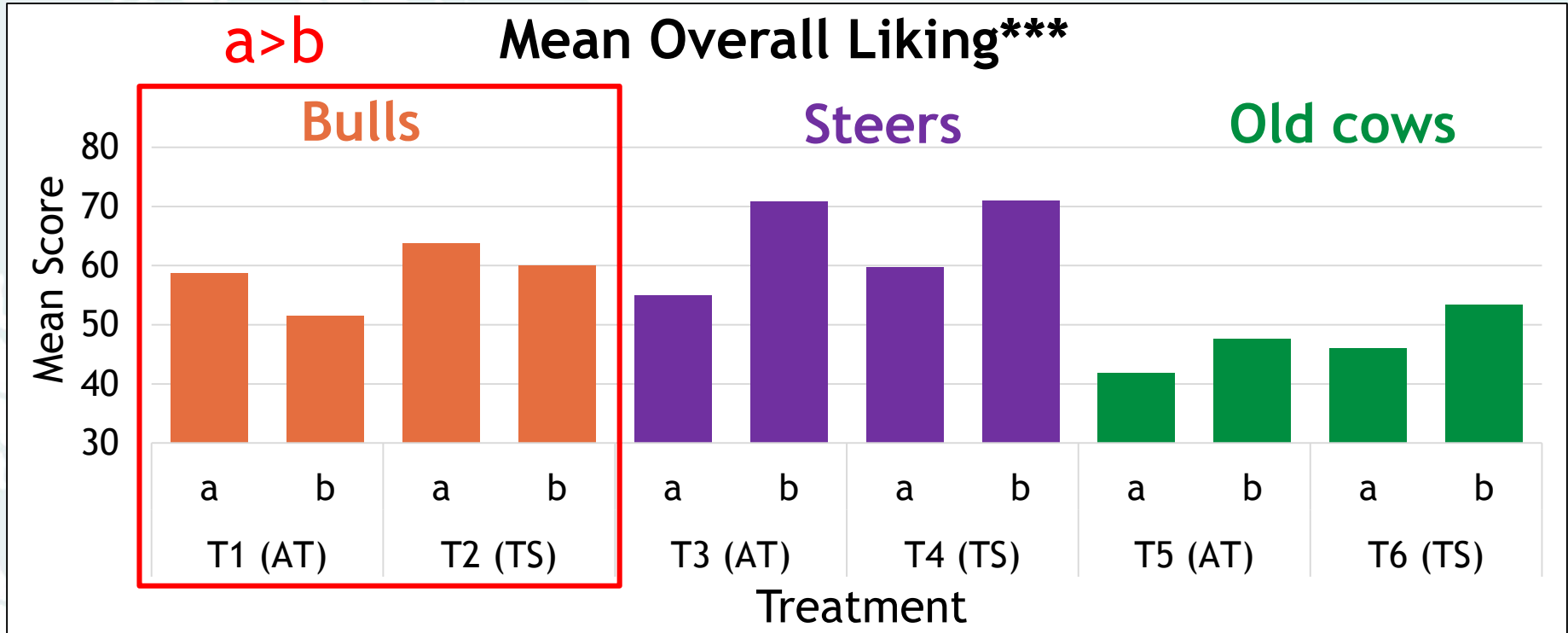


# Meat Quality- Comparison between treatment



AT= straight-hung, TS=Tenderstretch,  
a= continental breed, b=dairy breed, \*\*\* P<0.001

# Meat Quality- Comparison between treatment



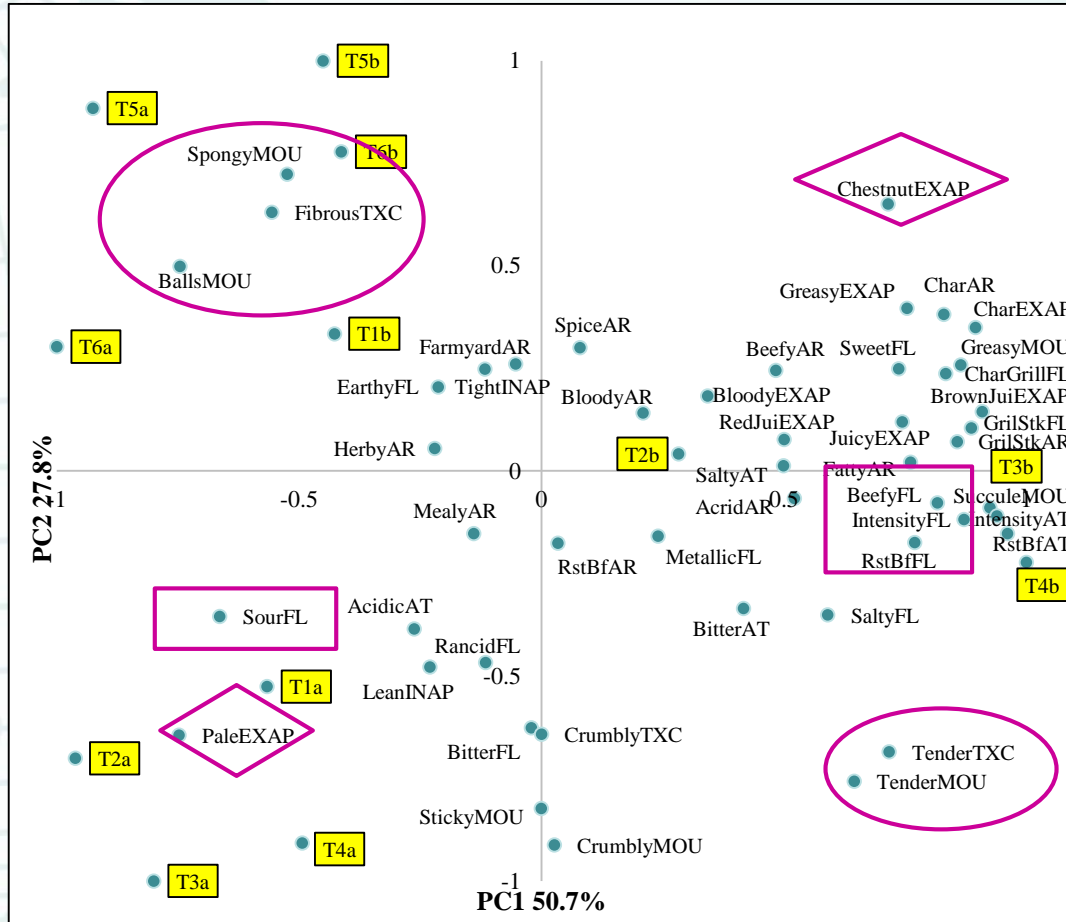
AT= straight-hung, TS=Tenderstretch,  
a= continental breed, b=dairy breed, \*\*\* P<0.001

# Principle Component Analysis (PCA)

Flavour

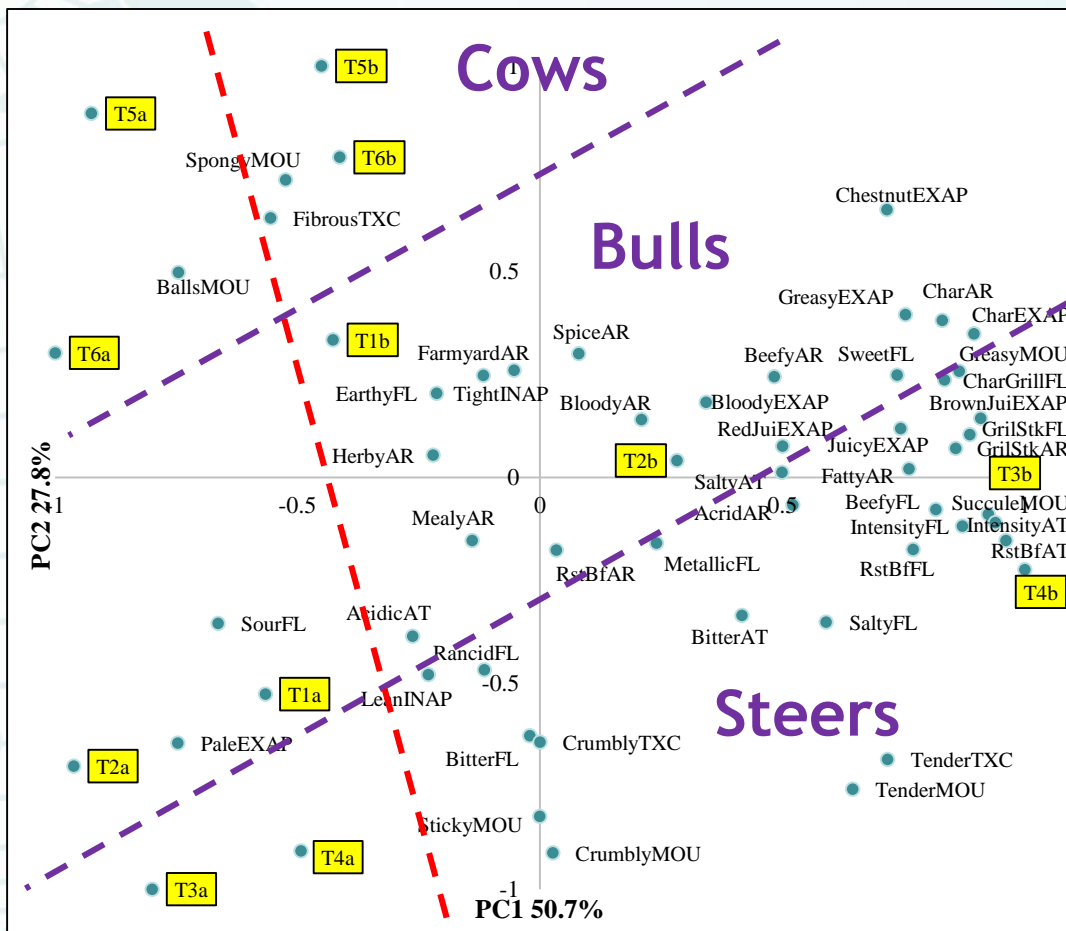
Appearance

Texture/  
Mouthfeel



# Principle Component Analysis (PCA)

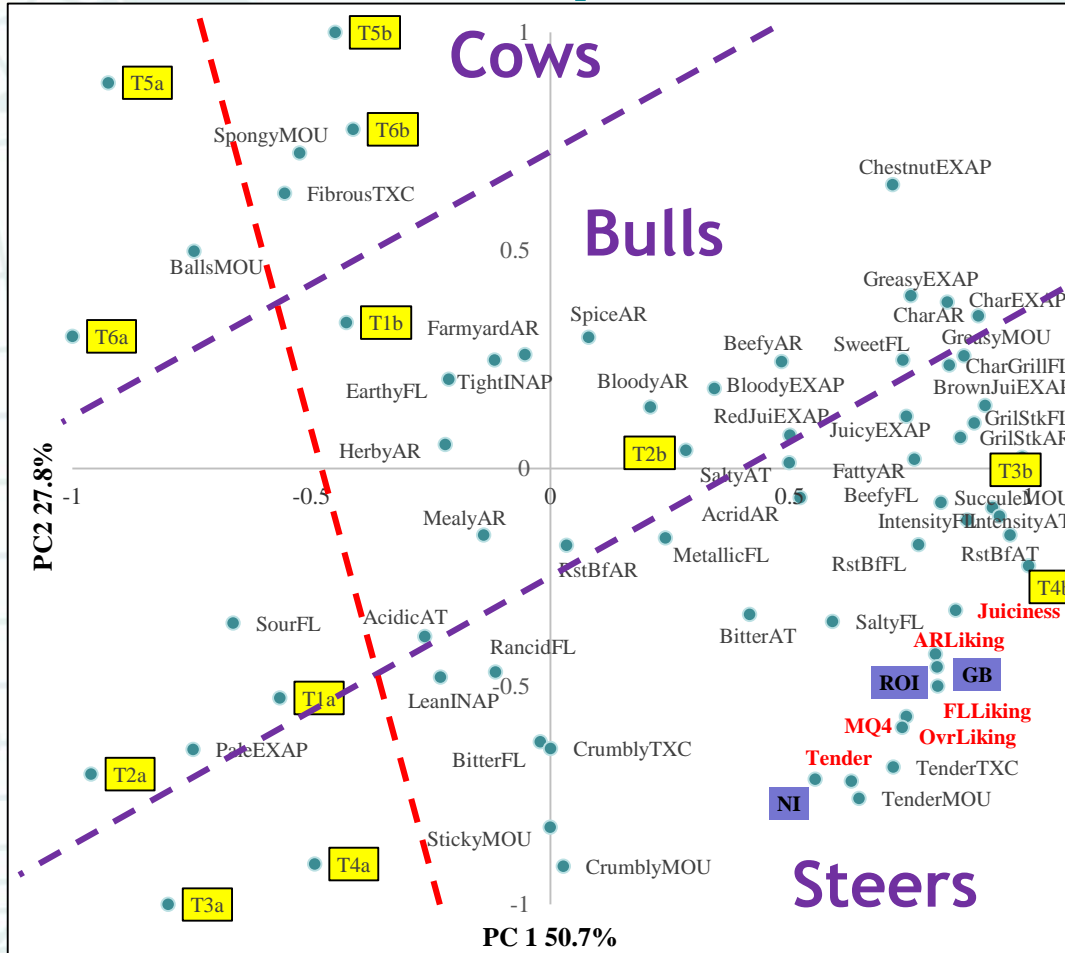
a=continental



b=dairy

# External Preference Map

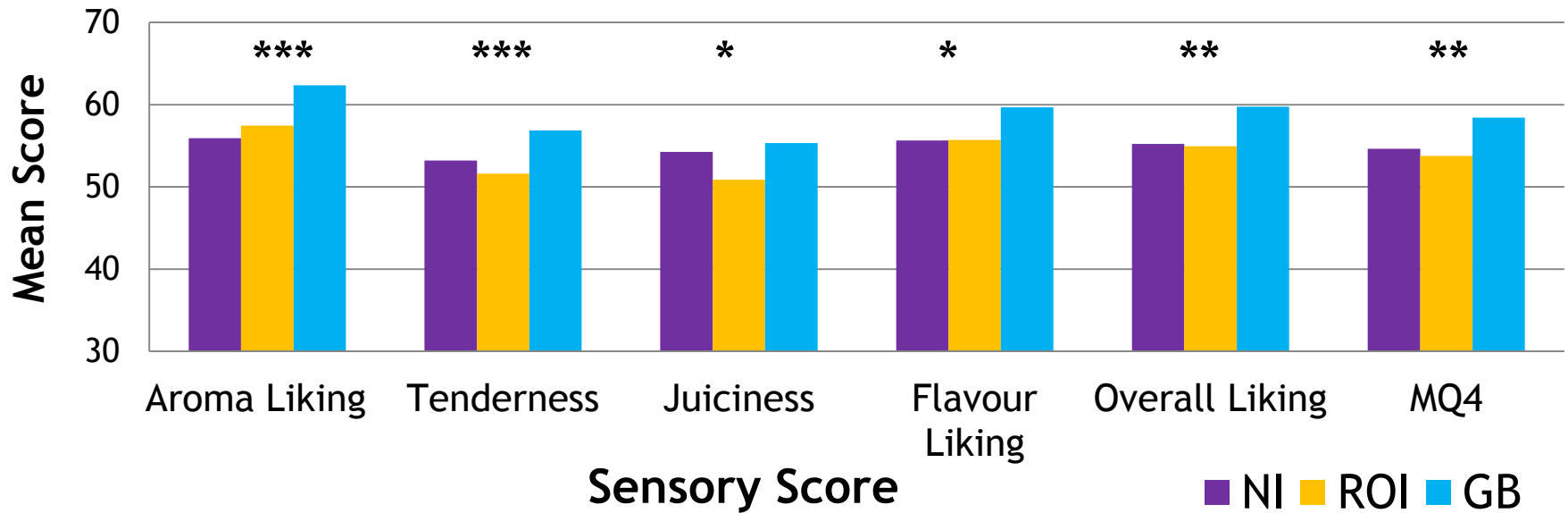
a=continental



b=dairy

# Is there any regional difference?

## Consumer Panel-Mean sensory scores



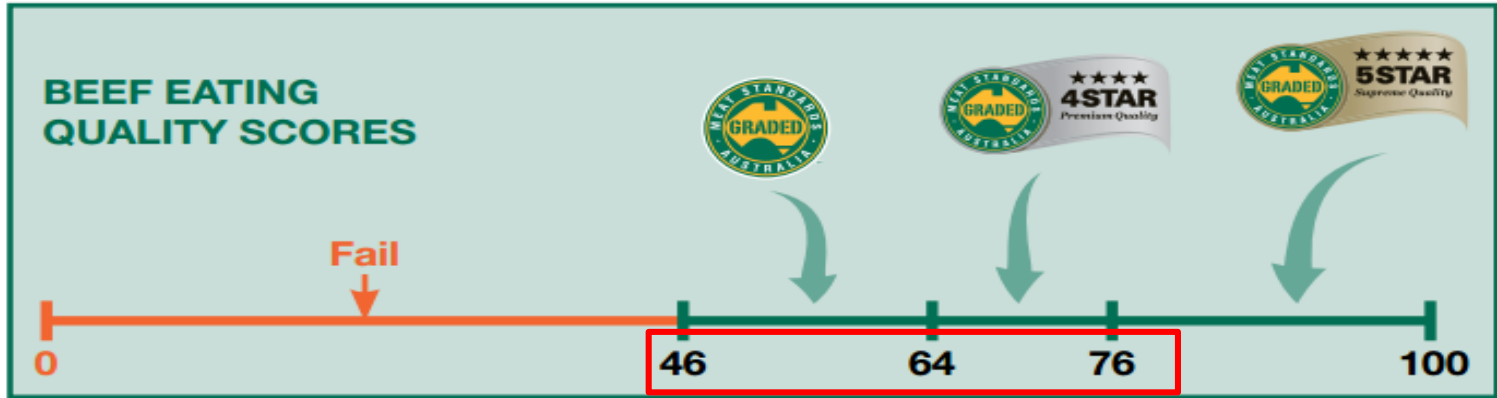
\*  $P < 0.05$ , \*\*  $P < 0.01$ , \*\*\*  $P < 0.001$

# What caused the differences?

- Use of line scale
- Socio-demographic factors
- Motivations on beef choice
- Consumption habit



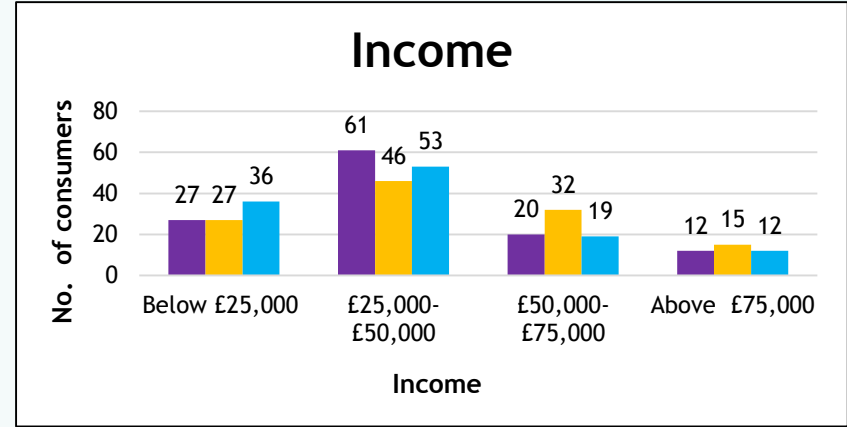
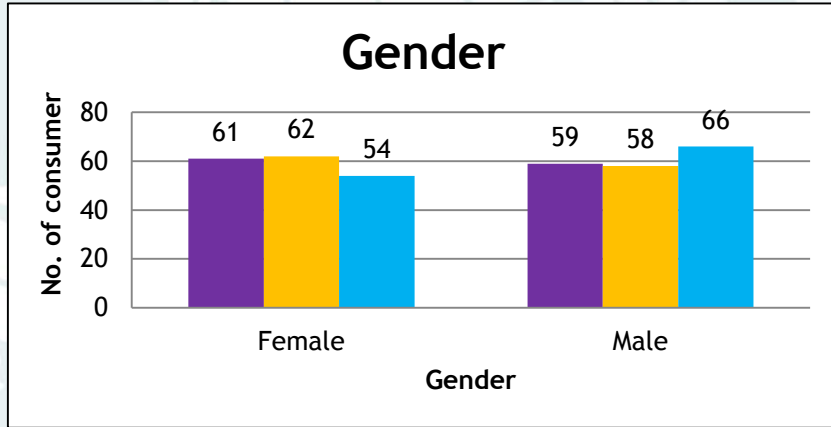
# MSA Boundaries/ Cut off scores



Regions	Cut off score		
	Fail/ 3*	3*/4*	4*/5*
NI	36.0	57.5	76.5
ROI	35.0	58.0	76.5
GB	37.0	58.5	76.5

# Demographic Survey- Consumer distribution

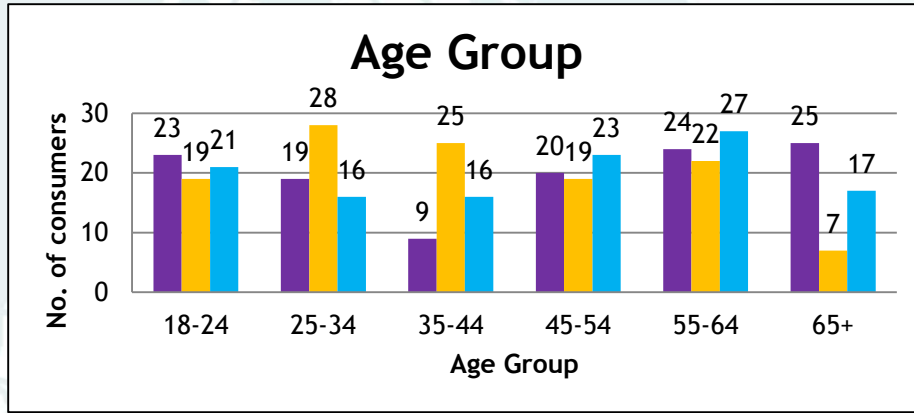
■ NI ■ ROI ■ GB



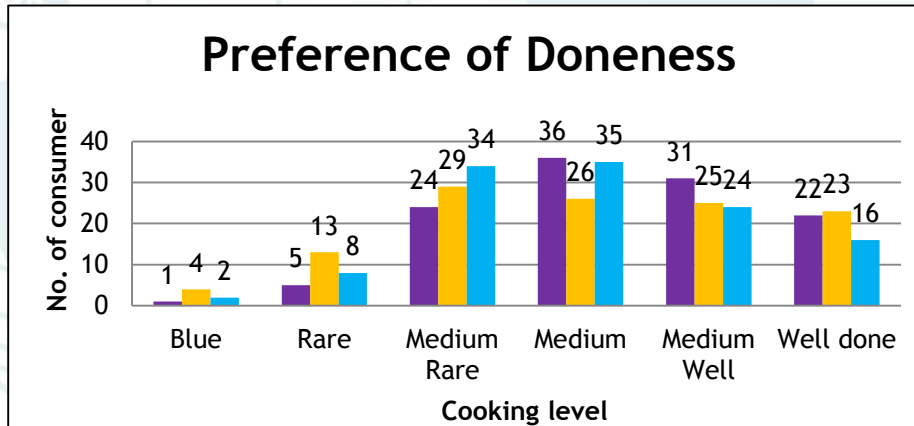
No effect on consumer score

# Demographic Survey- Consumer distribution

■ NI ■ ROI ■ GB



No effect on consumer score



$P < 0.05$ , tenderness and overall liking

# Motivation of beef choice

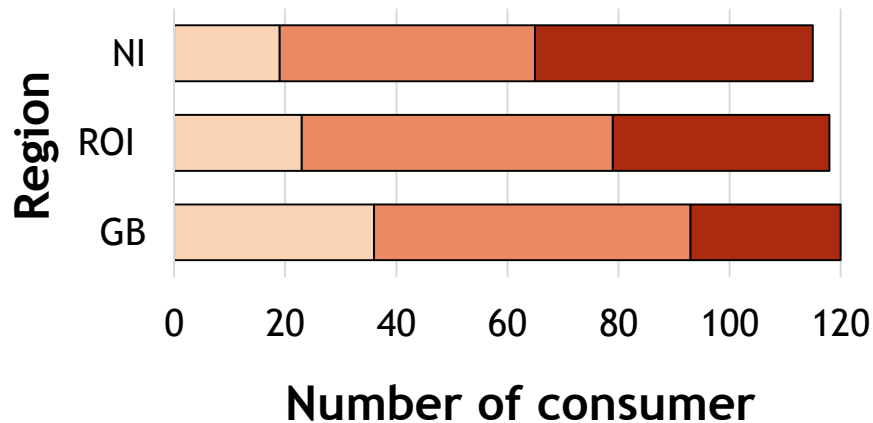
Not/Little important

Moderately important

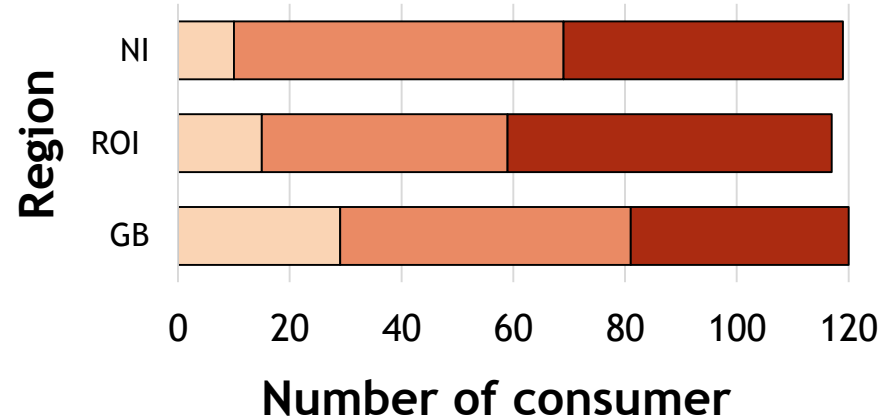
Very important

\*\*P<0.01

(a) Healthiness of beef product \*\*



(b) Beef source \*\*

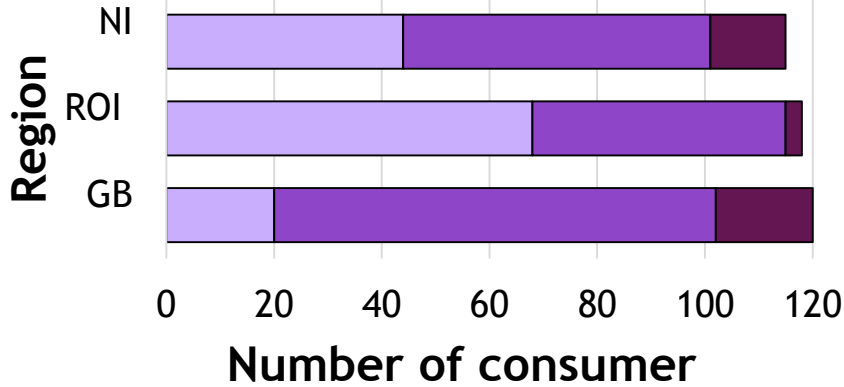


# Consumption habit

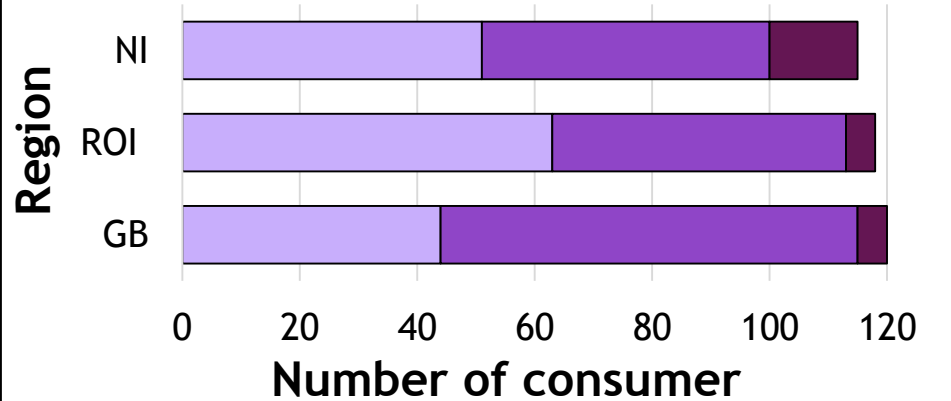
Never    Less than twice monthly    Twice or more monthly

\*\*P<0.01, \*\*\*P<0.001

(a) Rump\*\*\*

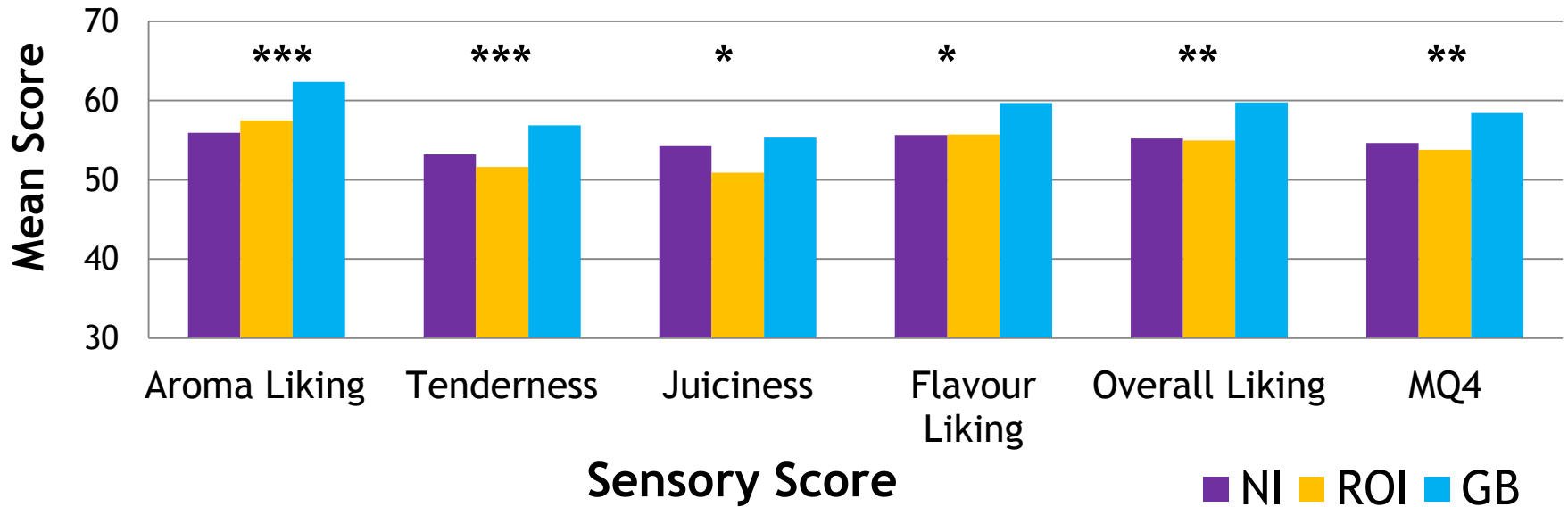


(b) Topside\*\*



- Unsatisfactory: 25% of grilled rump and 53% of roasted topside (Farmer et al., 2016)

# Mean sensory scores for striploin steaks



\*  $P < 0.05$ , \*\*  $P < 0.01$ , \*\*\*  $P < 0.001$

# Conclusion

- Significant differences between regions
- GB consumers scored higher on the same beef
- Beef from NI or ROI meet GB consumers' expectation





## Next Phase:

Understanding the importance of flavor volatiles, precursors and taste compounds on consumer liking for beef



THANK YOU