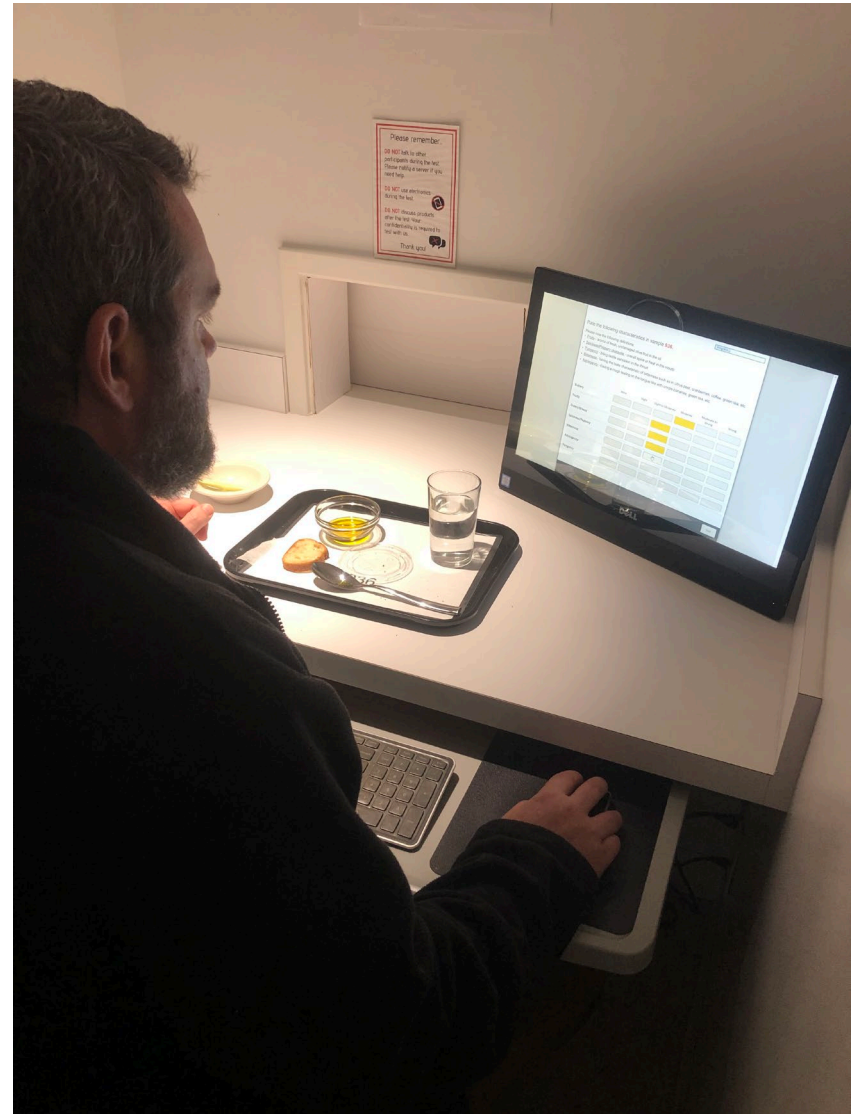# 2022/23 Olive Oil Consumer Sensory Evaluation
Ann Colonna, Sensory Consumer Program Director
Dec. 12-14th, 2023

Oregon State University
Food Innovation Center

Test Objectives

- To measure <u>drivers of liking</u> of six **olive oils** from major olive growing regions around the world (**Greece, Italy, California, Oregon**) with frequent olive oil consumers in Oregon.

- To measure the **sensory appeal**, **purchase intent** and **overall quality assessments** of the six olive oils and how they compare to the ideal.

- To assess sensorial and emotional descriptive measurements for projective mapping of the six oils.

- To understand perceptions about olive oils and the **purchasing habits of frequent users and likers** in the product category.

Quantitative Study

Participant Recruitment

- A Central Location Test was conducted at the OSU Food Innovation Center in Portland, OR with a sample of 119 olive oil consumers.

- Participants were recruited using the OSU FIC database who completed the screening questionnaire.

- The primary criteria was frequent olive oil consumption.

- Respondents received a $50 incentive for participation in a 90 minute session.
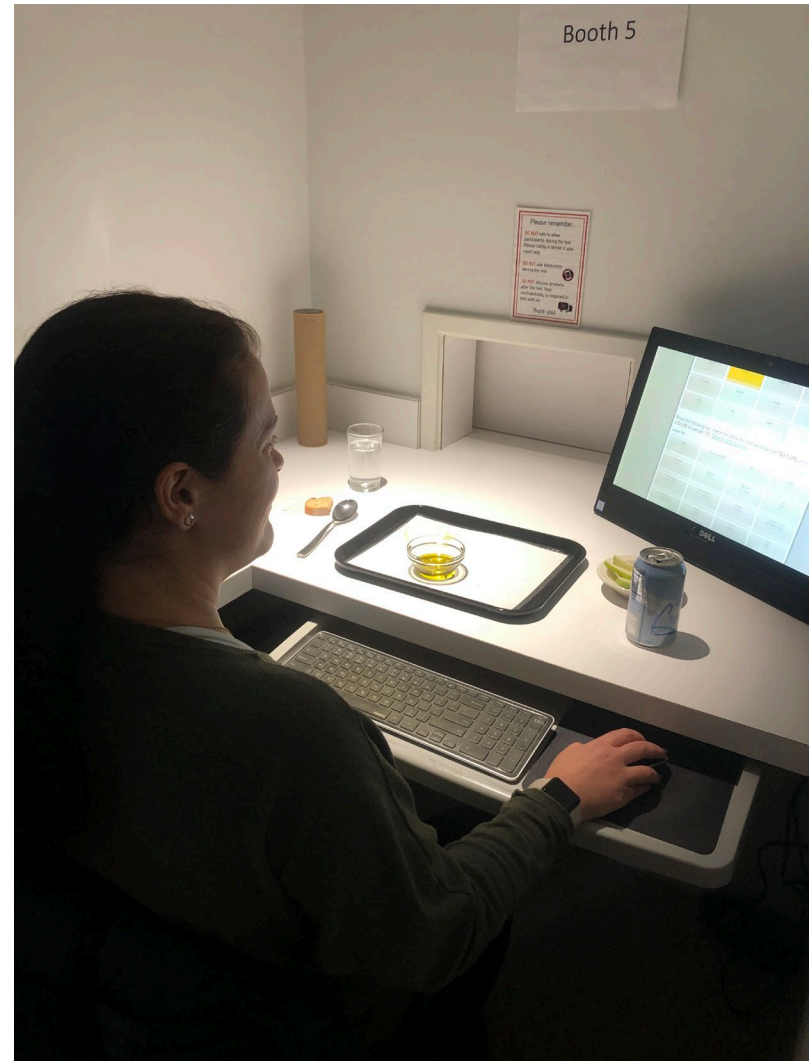
2022 Olive Oil Samples

River Ranch Oregon Arbequina Olive Oil

Kyoord The Governor Limited Edition Greek Olive oil

Mother Tree Oregon Olive oil

Oregon State University
Food Innovation Center

Italian Olive from the Raw 2022

2023 Olive Oil Samples

Cobram California
First Harvest Olive oil

La Creole Oregon
First Harvest Olive oil

Scales

Hedonic/ Likert Scale (9-point)

dislike extremely	dislike very much	dislike moderately	dislike slightly	neither like nor dislike	like slightly	like moderately	like very much	like extremely

Just-About-Right Scale (5-point)

Much too weak	Somewhat too weak	Just about right	Somewhat too strong	Much too strong

*JAR scale values are not always "strength" but vary depending on the question
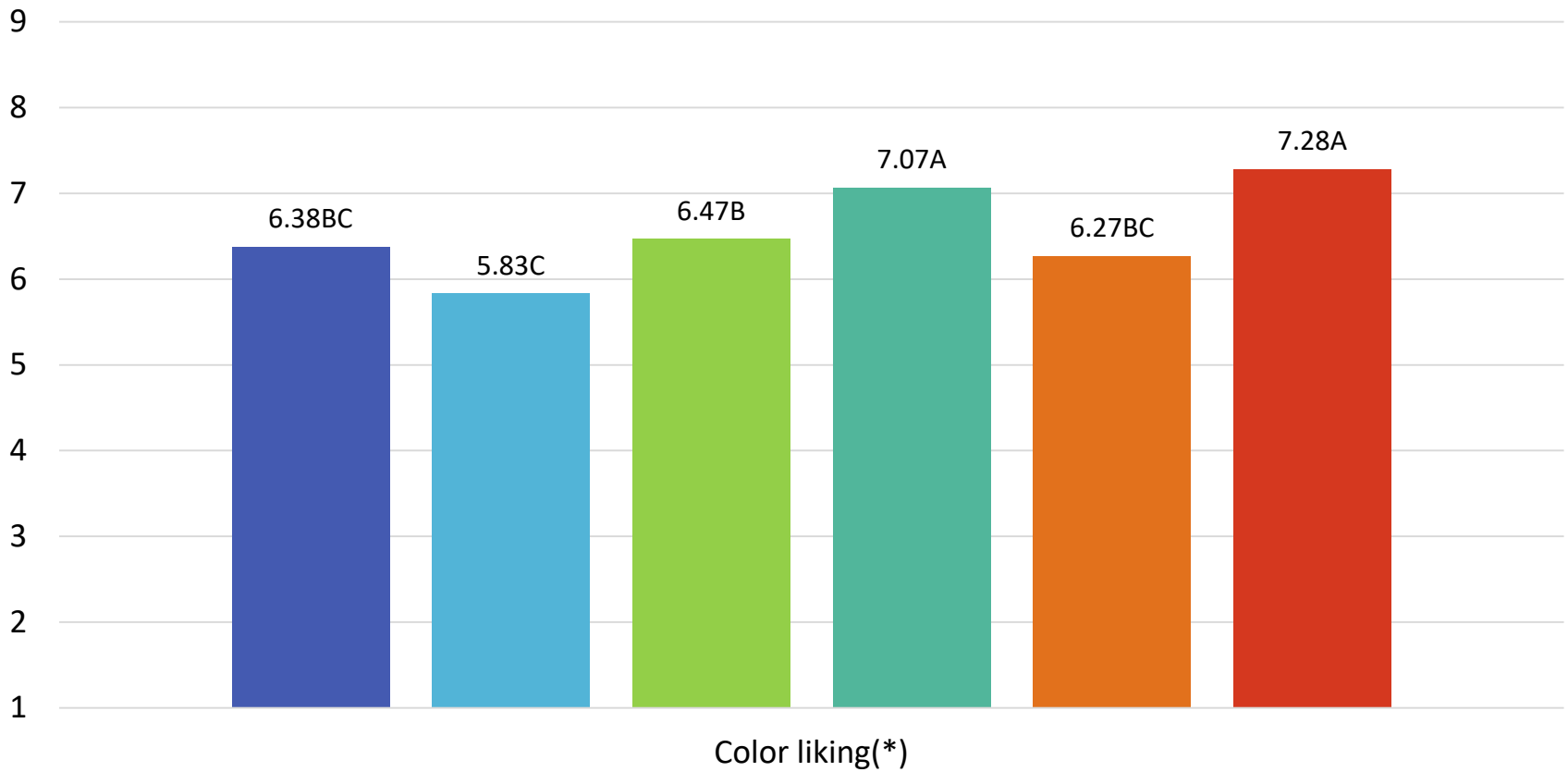
Purchase Intent Scale (5-point)

Would definitely not buy	Would probably not buy	Might buy / Might not buy	Would probably buy	Would definitely buy

*A threshold of 65%-75% of "just about right" responses is commonly used in industry for an attribute to be considered ideal.

Color liking - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
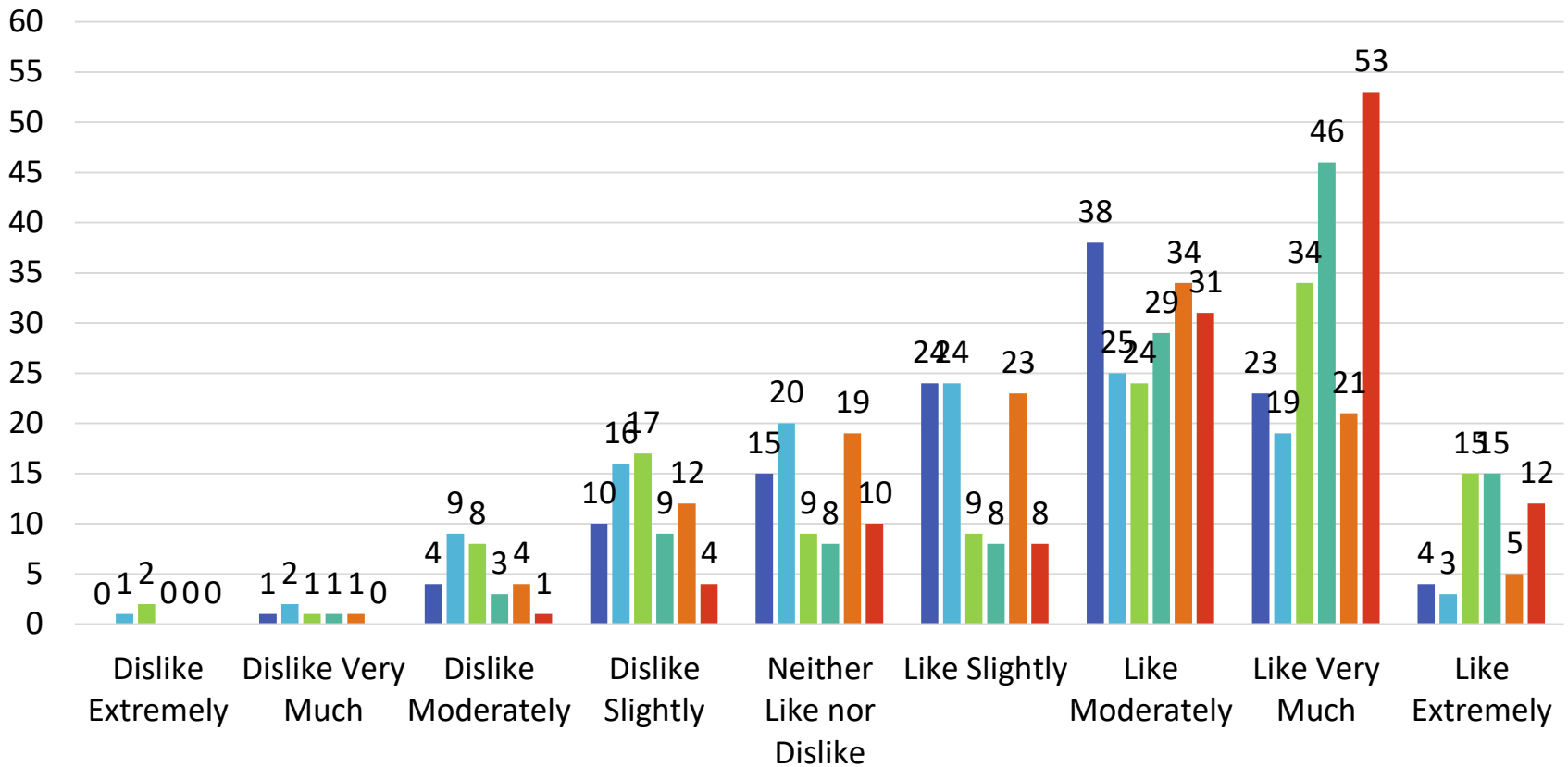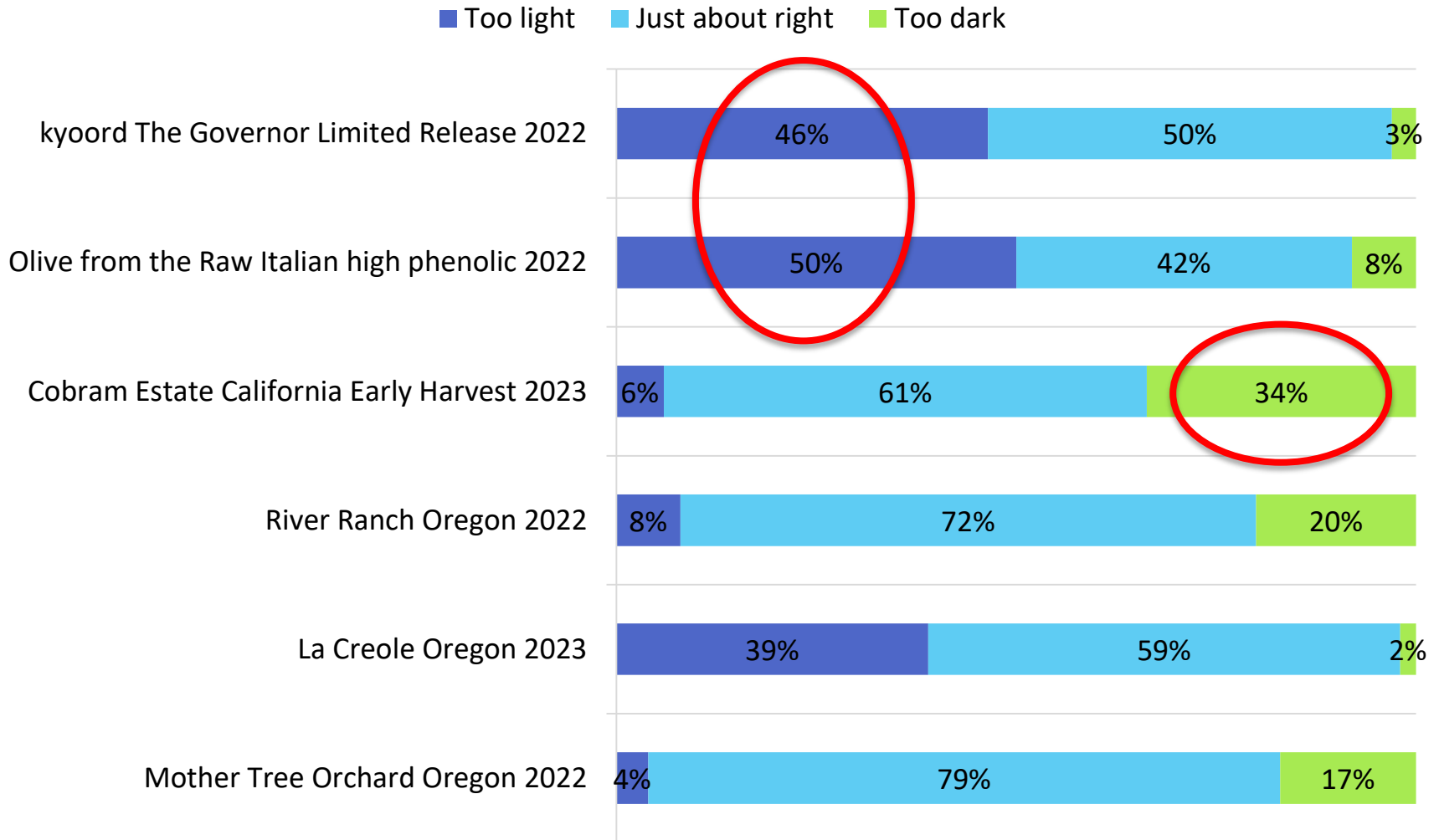- Mother Tree Orchard Oregon 2022

Category	kyoord The Governor	Olive from the Raw	Cobram Estate	River Ranch	La Creole	Mother Tree
Dislike Extremely	0	1	2	0	0	0
Dislike Very Much	1	2	1	1	1	0
Dislike Moderately	4	9	8	3	4	1
Dislike Slightly	10	16	17	9	12	4
Neither Like nor Dislike	15	20	9	8	19	10
Like Slightly	24	24	9	8	23	8
Like Moderately	38	25	24	29	34	31
Like Very Much	23	19	34	46	21	53
Like Extremely	4	3	15	15	5	12

Compusense

Color "Just about right" (JAR) scores

Legend: ■ Too light ■ Just about right ■ Too dark

Product	Too light	Just about right	Too dark
kyoord The Governor Limited Release 2022	46%	50%	3%
Olive from the Raw Italian high phenolic 2022	50%	42%	8%
Cobram Estate California Early Harvest 2023	6%	61%	34%
River Ranch Oregon 2022	8%	72%	20%
La Creole Oregon 2023	39%	59%	2%
Mother Tree Orchard Oregon 2022	4%	79%	17%

Color JAR - Crosstabulations

Aroma - Mean Graph

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
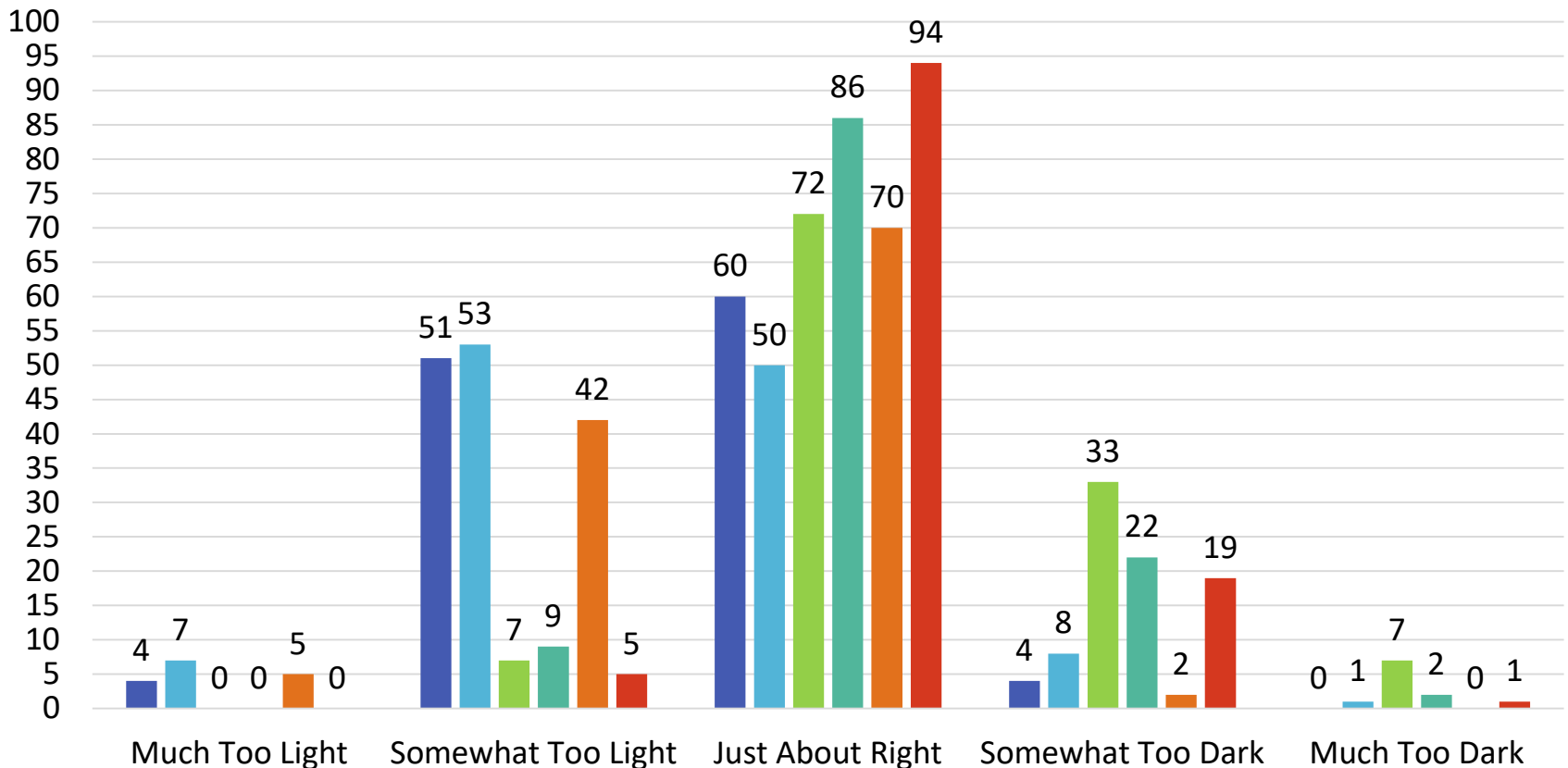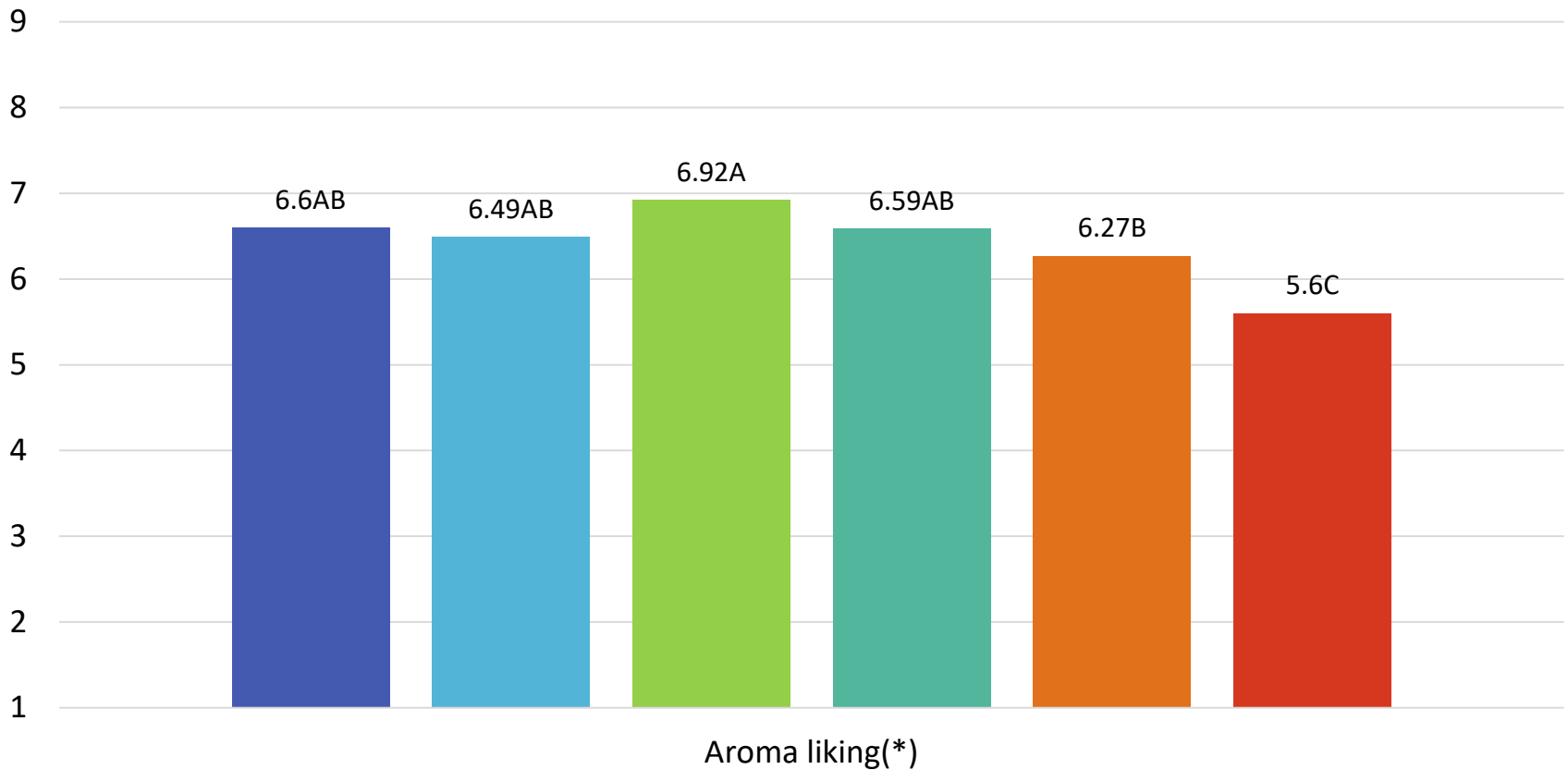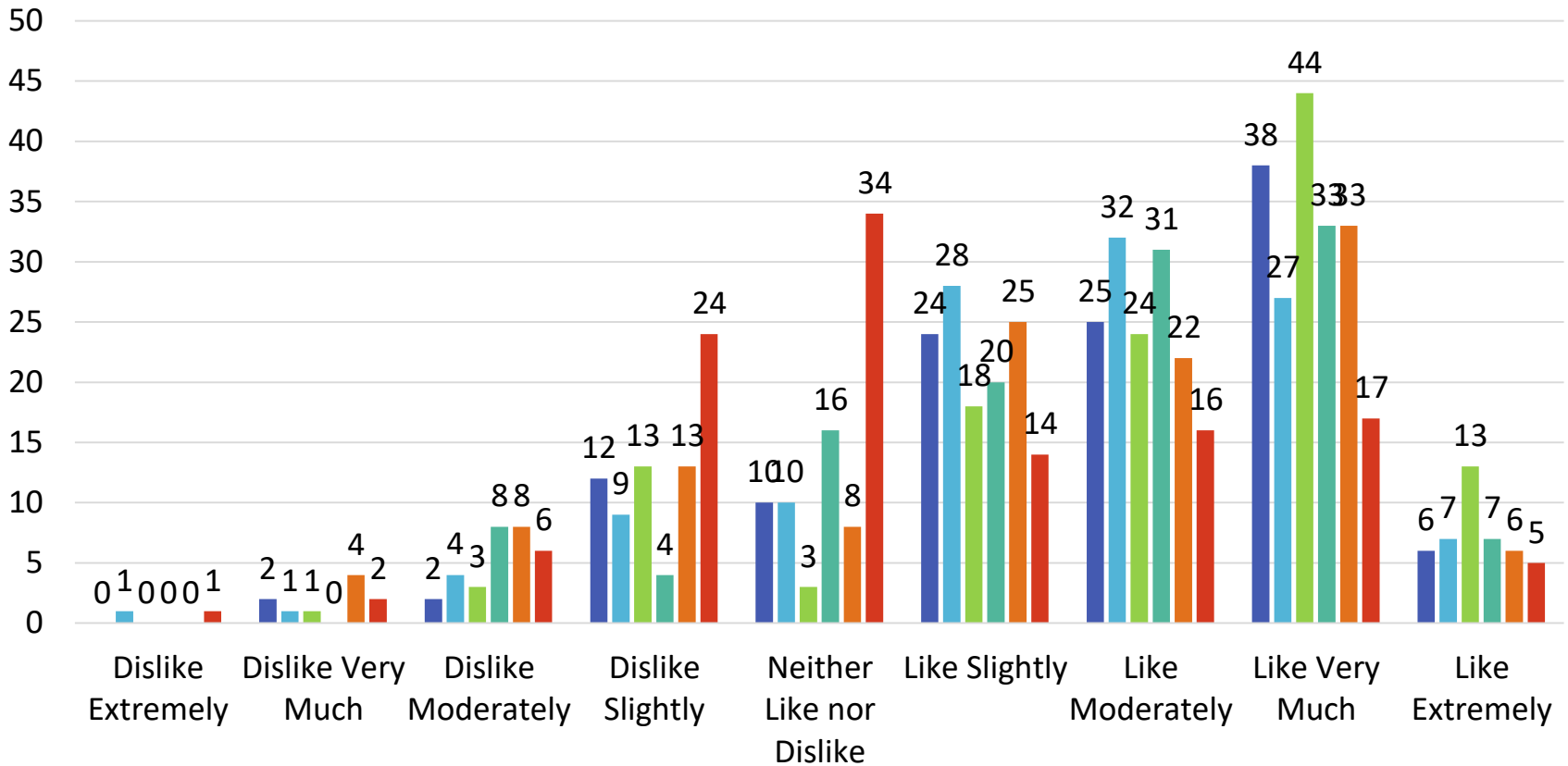- Mother Tree Orchard Oregon 2022

Values:
- 6.6AB
- 6.49AB
- 6.92A
- 6.59AB
- 6.27B
- 5.6C

Aroma liking(*)

Scale Values: 1-9, where 1=dislike extremely and 9=like extremely

Compusense

Aroma (Aroma liking) - Crosstabulations

Aroma JAR

■ Too weak   ■ Just about right   ■ Too strong

kyoord The Governor Limited Release 2022
24% | 66% | 9%

Olive from the Raw Italian high phenolic 2022
34% | 60% | 7%

Cobram Estate California Early Harvest 2023
12% | 70% | 18%

River Ranch Oregon 2022
34% | 60% | 6%

La Creole Oregon 2023
19% | 56% | 24%

Mother Tree Orchard Oregon 2022
70% | 29% | 2%

Compusense
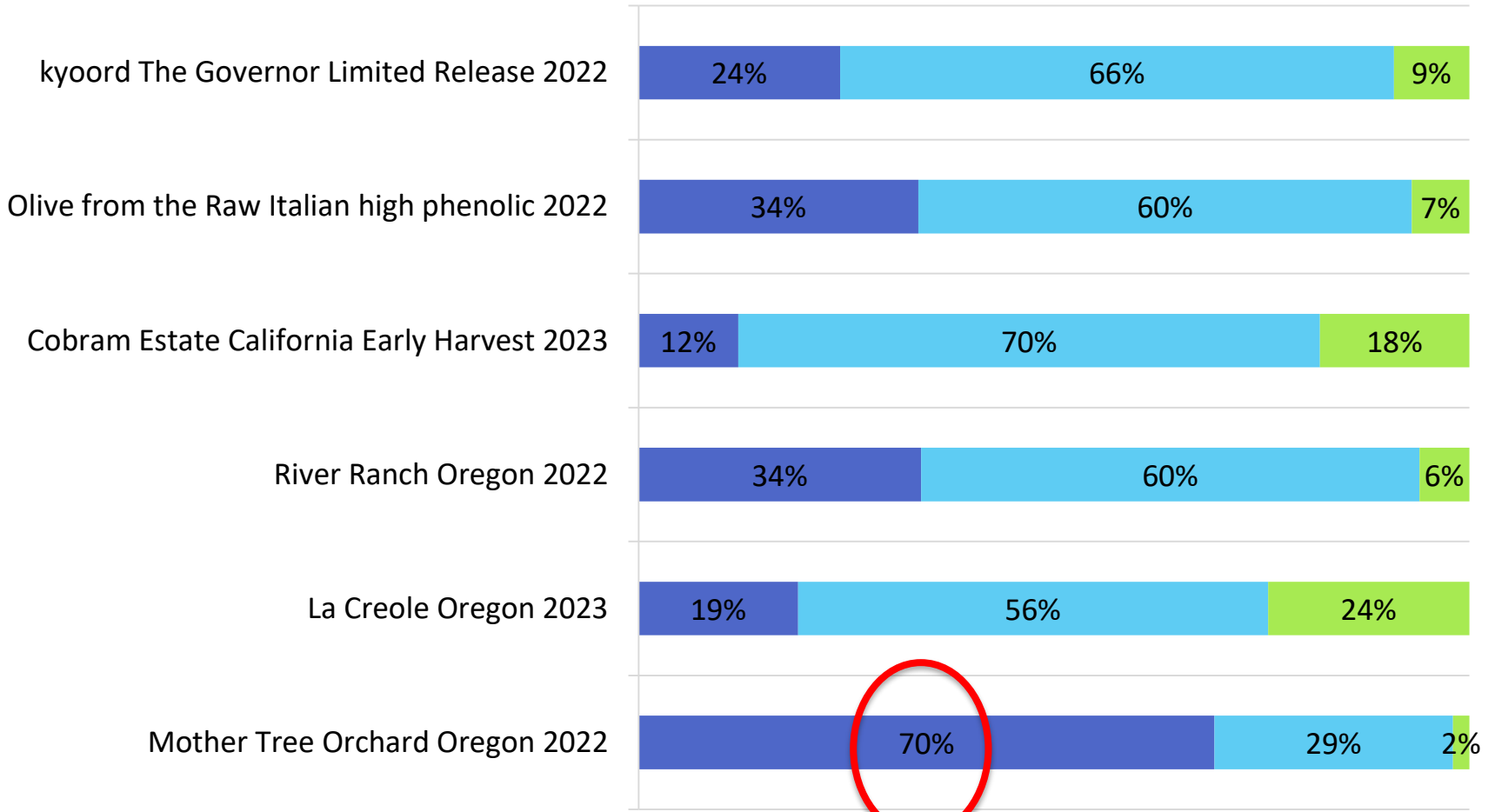
Overall Liking - Mean Graph

- ■ kyoord The Governor Limited Release 2022
- ■ Olive from the Raw Italian high phenolic 2022
- ■ Cobram Estate California Early Harvest 2023
- ■ River Ranch Oregon 2022
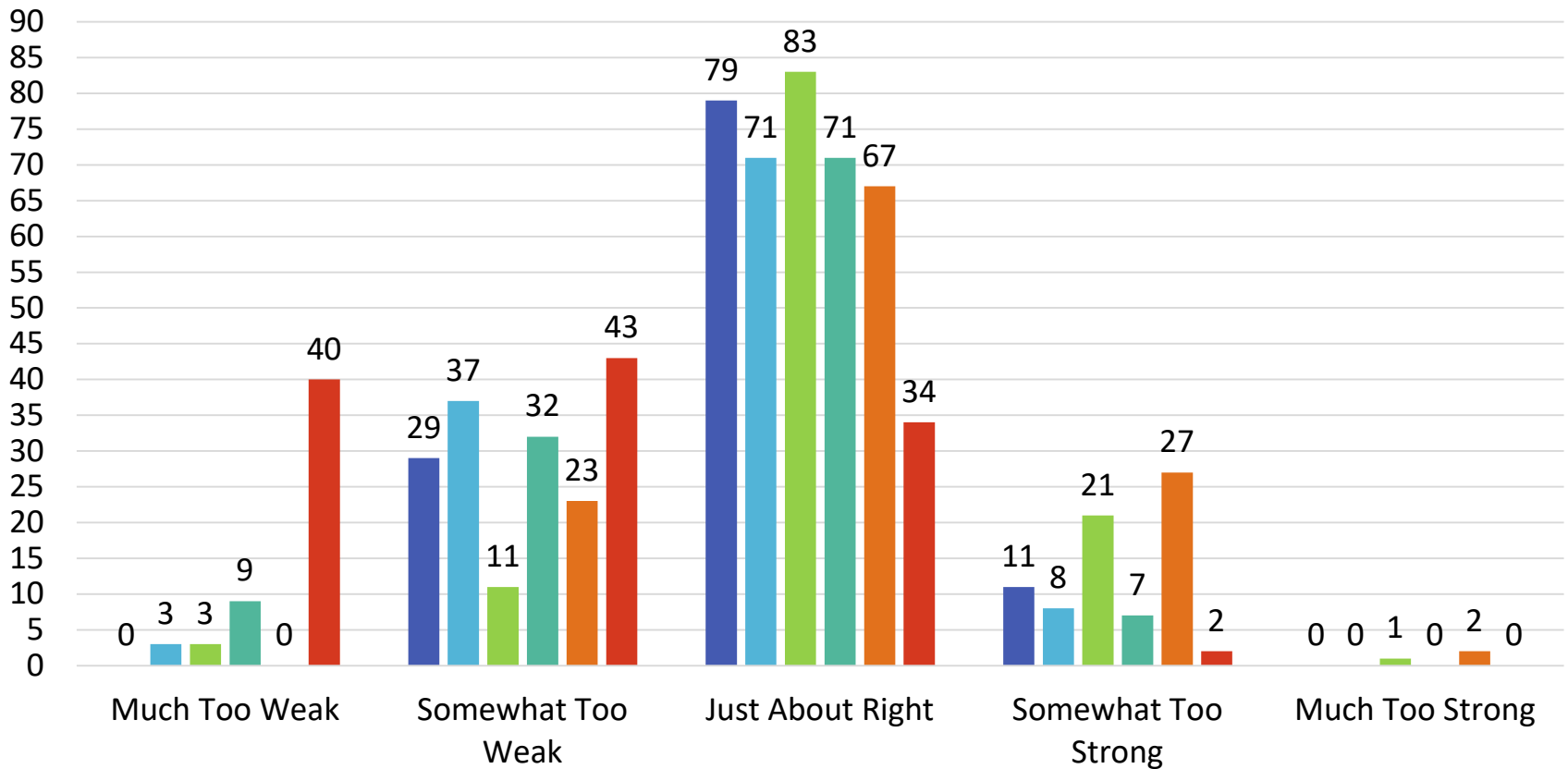- ■ La Creole Oregon 2023
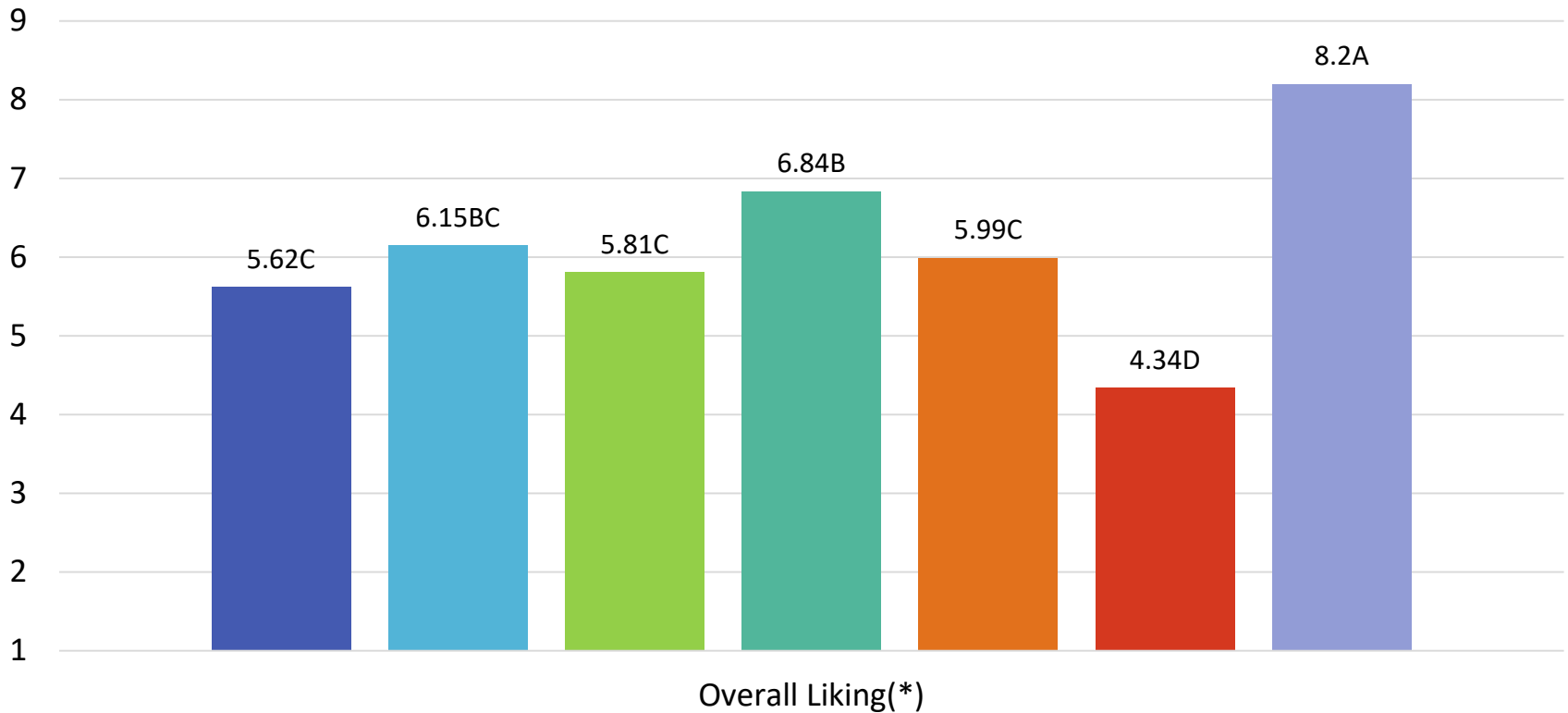- ■ Mother Tree Orchard Oregon 2022
- ■ IDEAL

Bar chart values:
- kyoord The Governor Limited Release 2022: 5.62C
- Olive from the Raw Italian high phenolic 2022: 6.15BC
- Cobram Estate California Early Harvest 2023: 5.81C
- River Ranch Oregon 2022: 6.84B
- La Creole Oregon 2023: 5.99C
- Mother Tree Orchard Oregon 2022: 4.34D
- IDEAL: 8.2A

Overall Liking(*)

Scale Values: 1-9, where 1=dislike extremely and 9=like extremely

Compusense.

Overall Liking - Crosstabulations

Flavor Strength JAR

Flavor Strength JAR - Crosstabulations
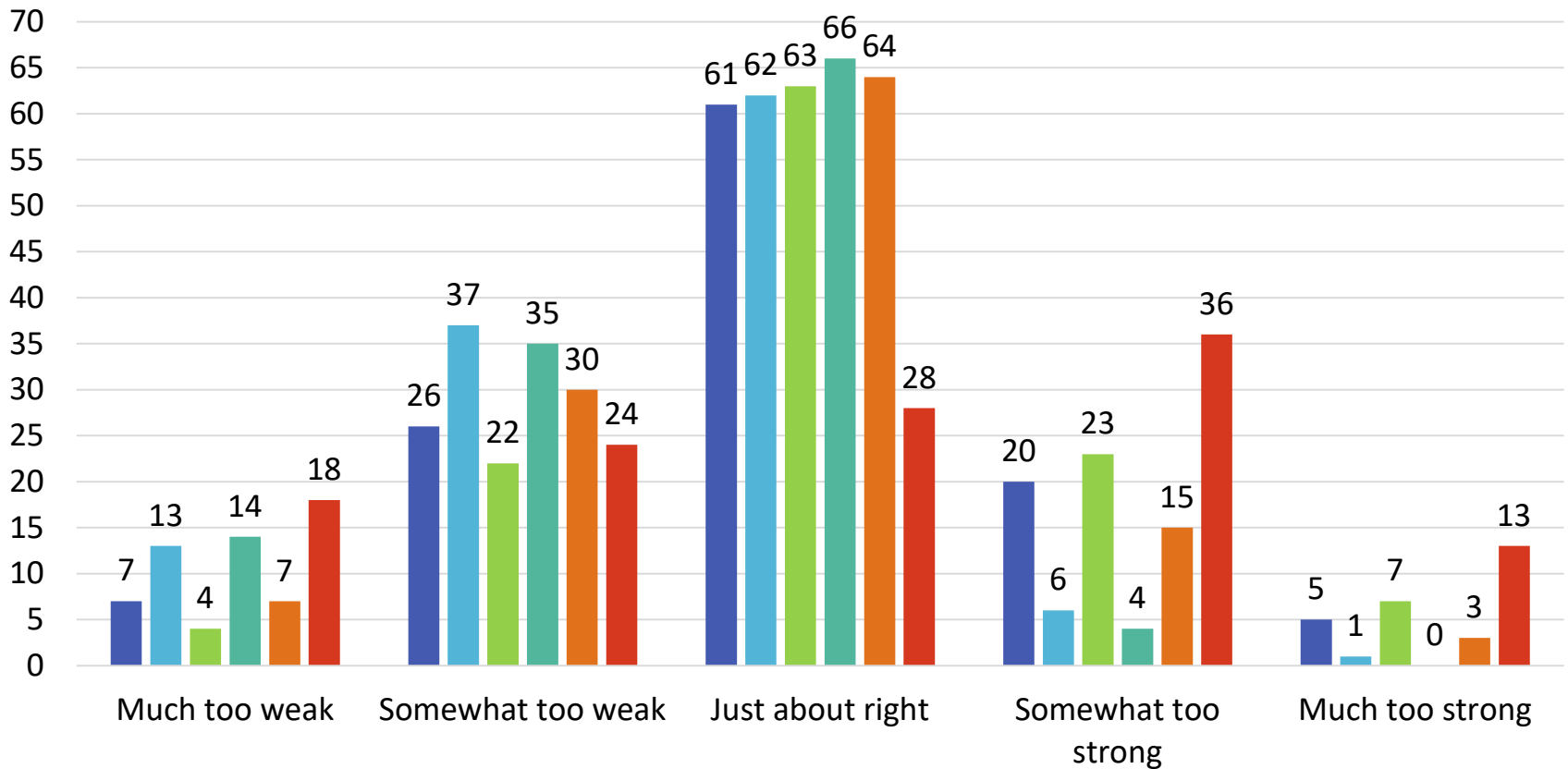
Fruity character JAR - Crosstabulations

Spiciness/Peppery Character JAR

Spiciness/Peppery Character JAR - Crosstabulations

Grassy character JAR

Legend: ■ Not green/grassy enough ■ Just about right ■ Too green/grassy

Product	Not green/grassy enough	Just about right	Too green/grassy
kyoord The Governor Limited Release 2022	32%	50%	18%
Olive from the Raw Italian high phenolic 2022	34%	55%	12%
Cobram Estate California Early Harvest 2023	16%	61%	24%
River Ranch Oregon 2022	39%	53%	8%
La Creole Oregon 2023	29%	42%	29%
Mother Tree Orchard Oregon 2022	48%	31%	21%

Compusense.

Grassy character JAR - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
- Mother Tree Orchard Oregon 2022

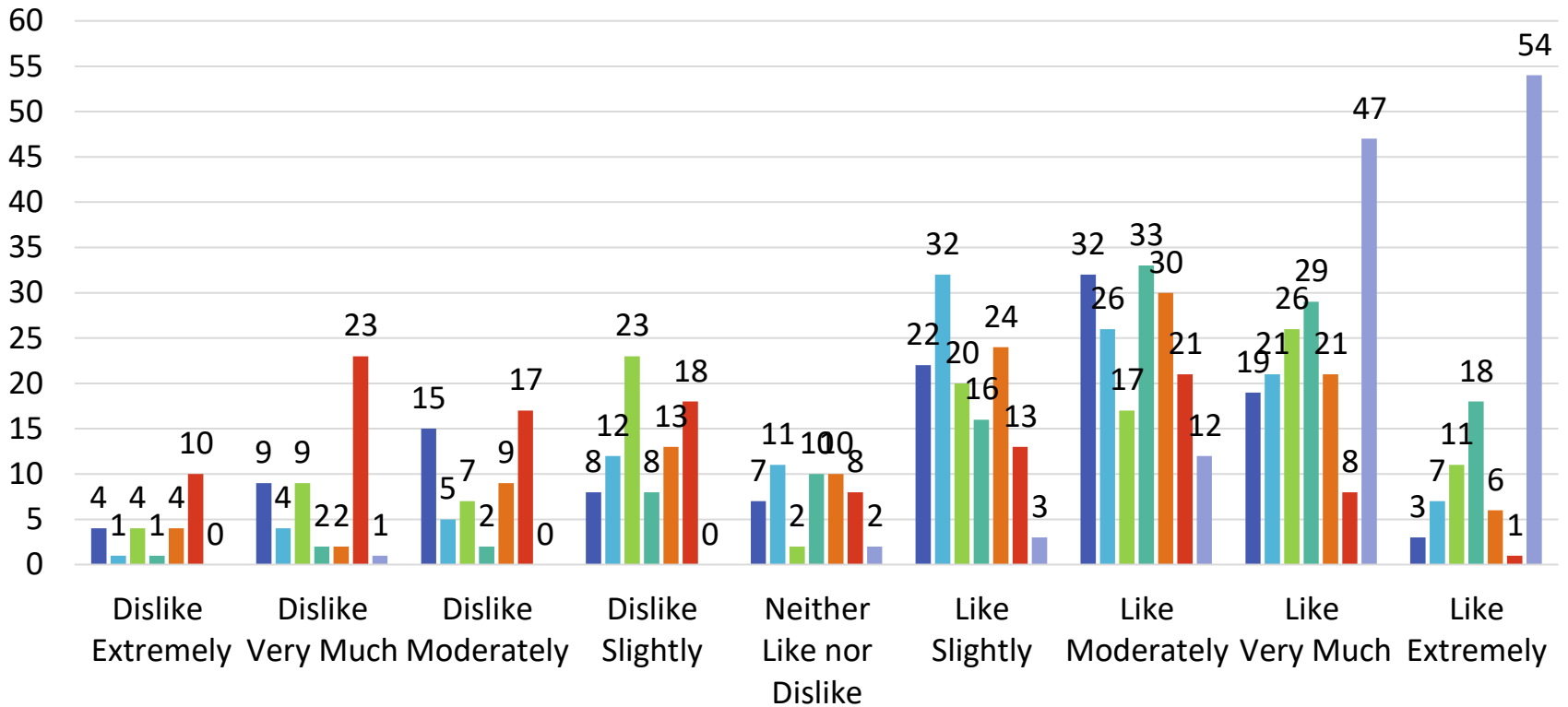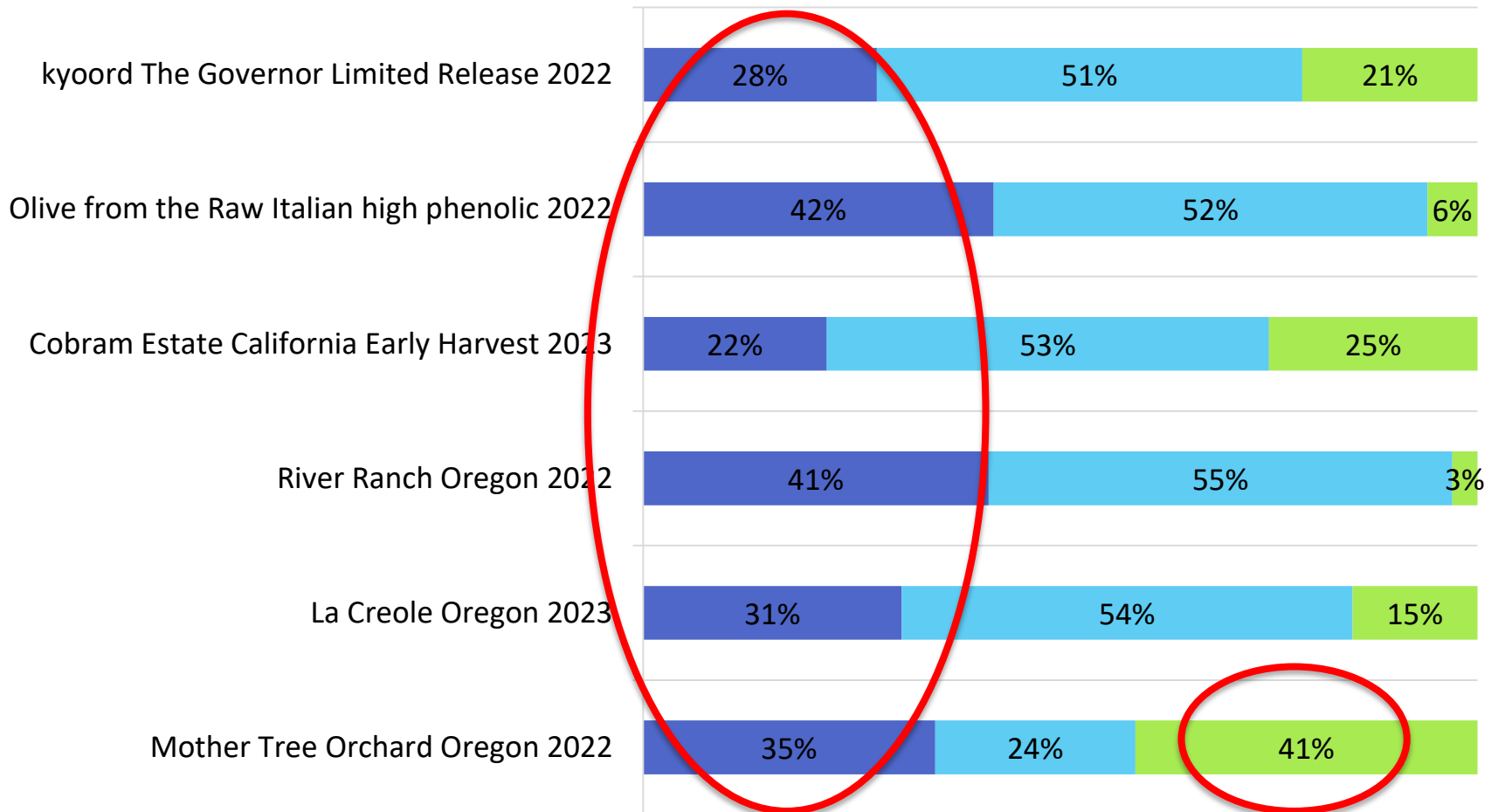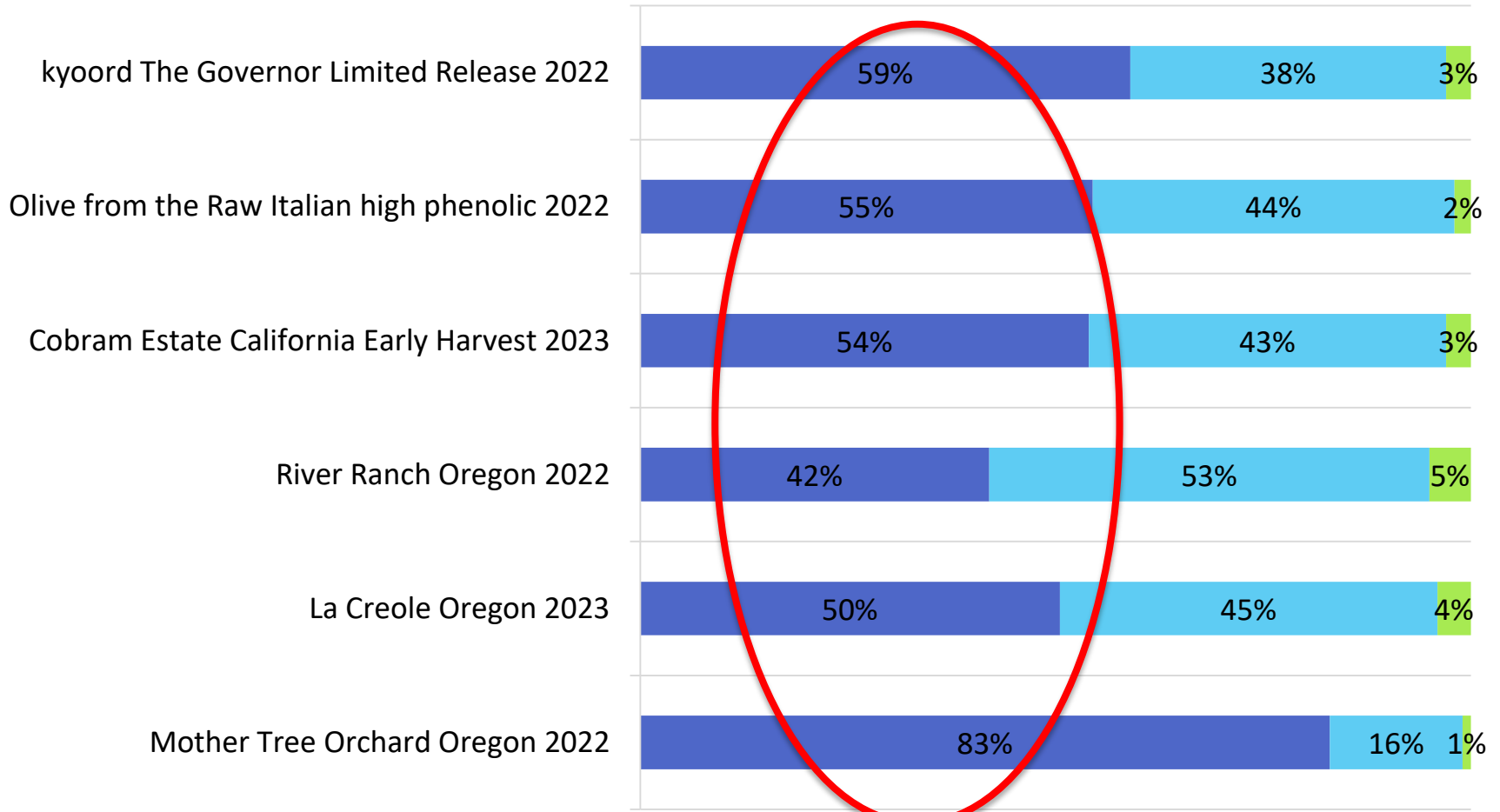| Category	kyoord The Governor	Olive from the Raw	Cobram Estate	River Ranch	La Creole	Mother Tree
Not at all green/grassy enough	9	13	3	10	11	24
Somewhat not green/grassy enough	29	27	16	37	23	33
Just about right	60	65	72	63	50	37
Somewhat too green/grassy	16	13	20	9	25	16
Much too green/grassy	5	1	8	0	10	9

Compusense

Bitterness JAR

Legend: Not bitter enough (dark blue), Just about right (light blue), Too bitter (green)
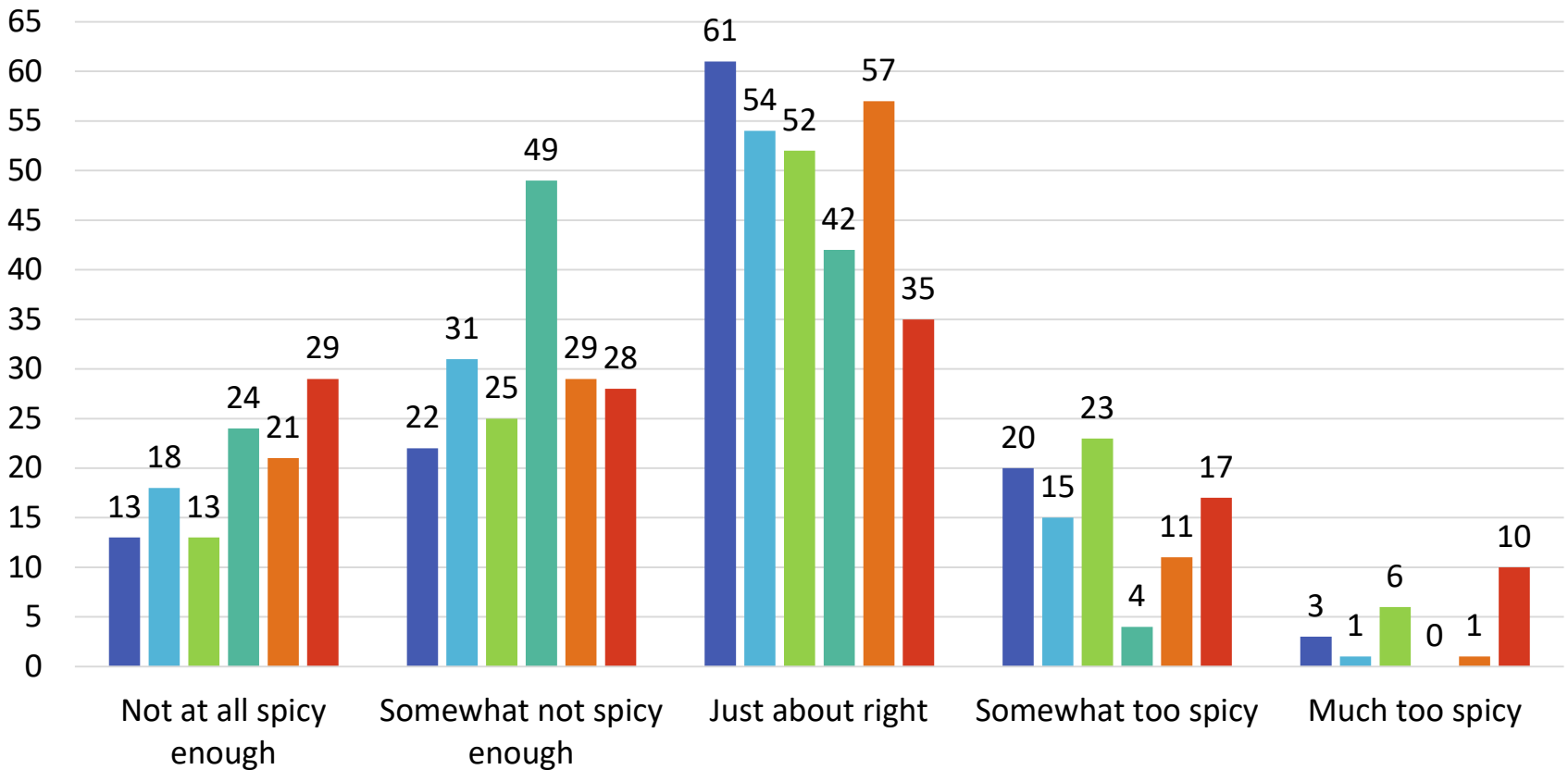
Product	Not bitter enough	Just about right	Too bitter
kyoord The Governor Limited Release 2022	16%	39%	45%
Olive from the Raw Italian high phenolic 2022	26%	61%	13%
Cobram Estate California Early Harvest 2023	11%	49%	40%
River Ranch Oregon 2022	36%	63%	1%
La Creole Oregon 2023	24%	52%	24%
Mother Tree Orchard Oregon 2022	14%	24%	62%

Compusense

Bitterness JAR - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
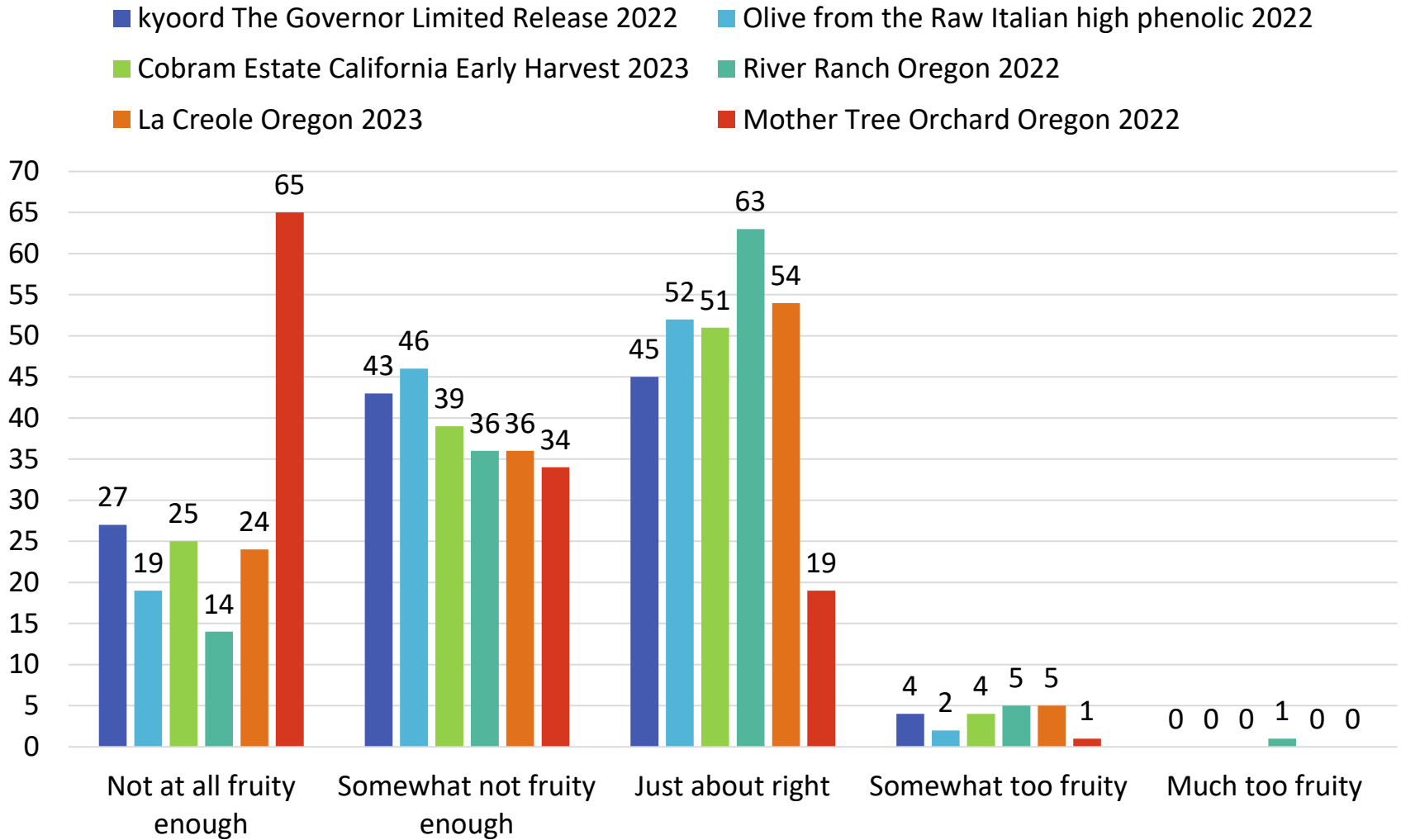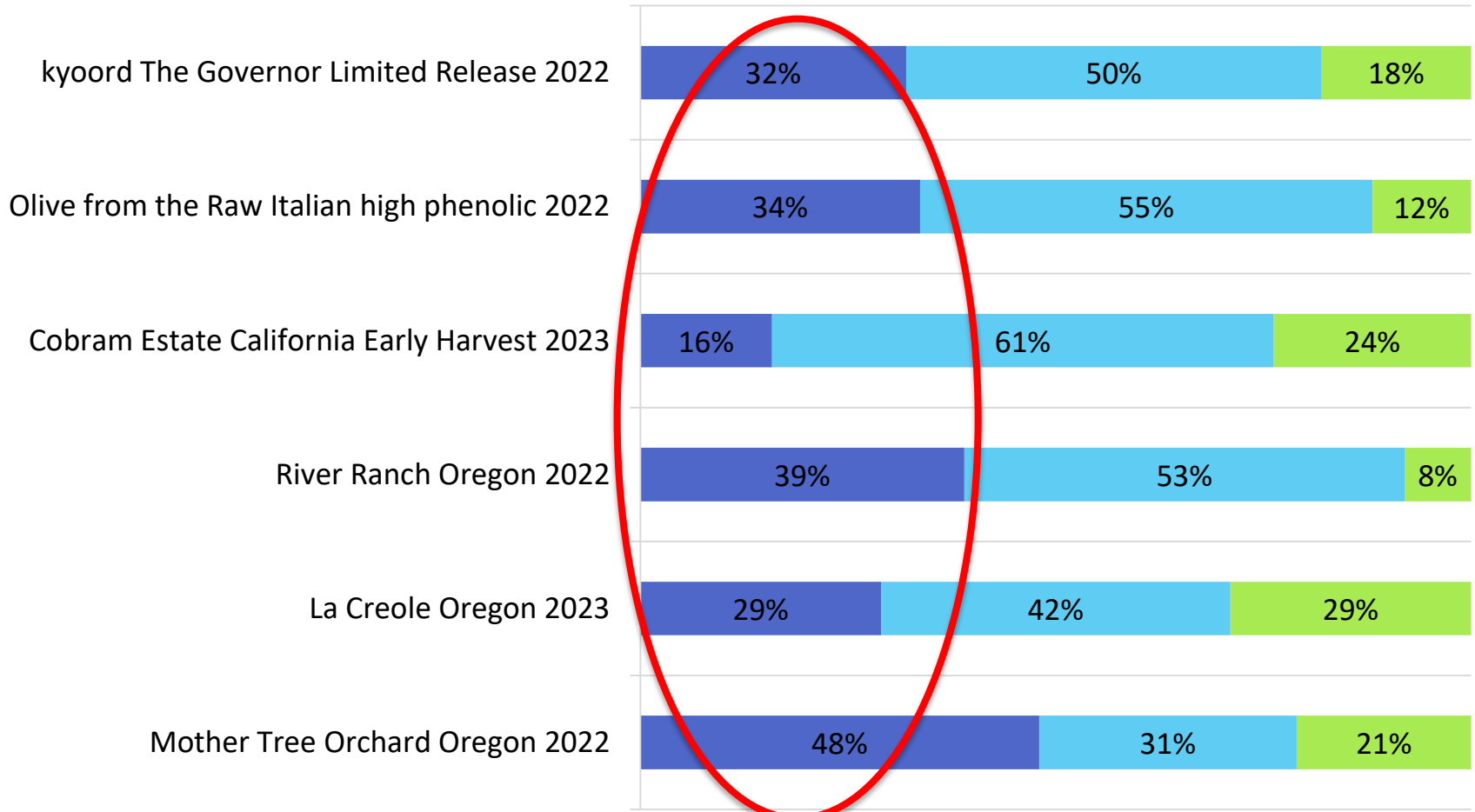- Mother Tree Orchard Oregon 2022

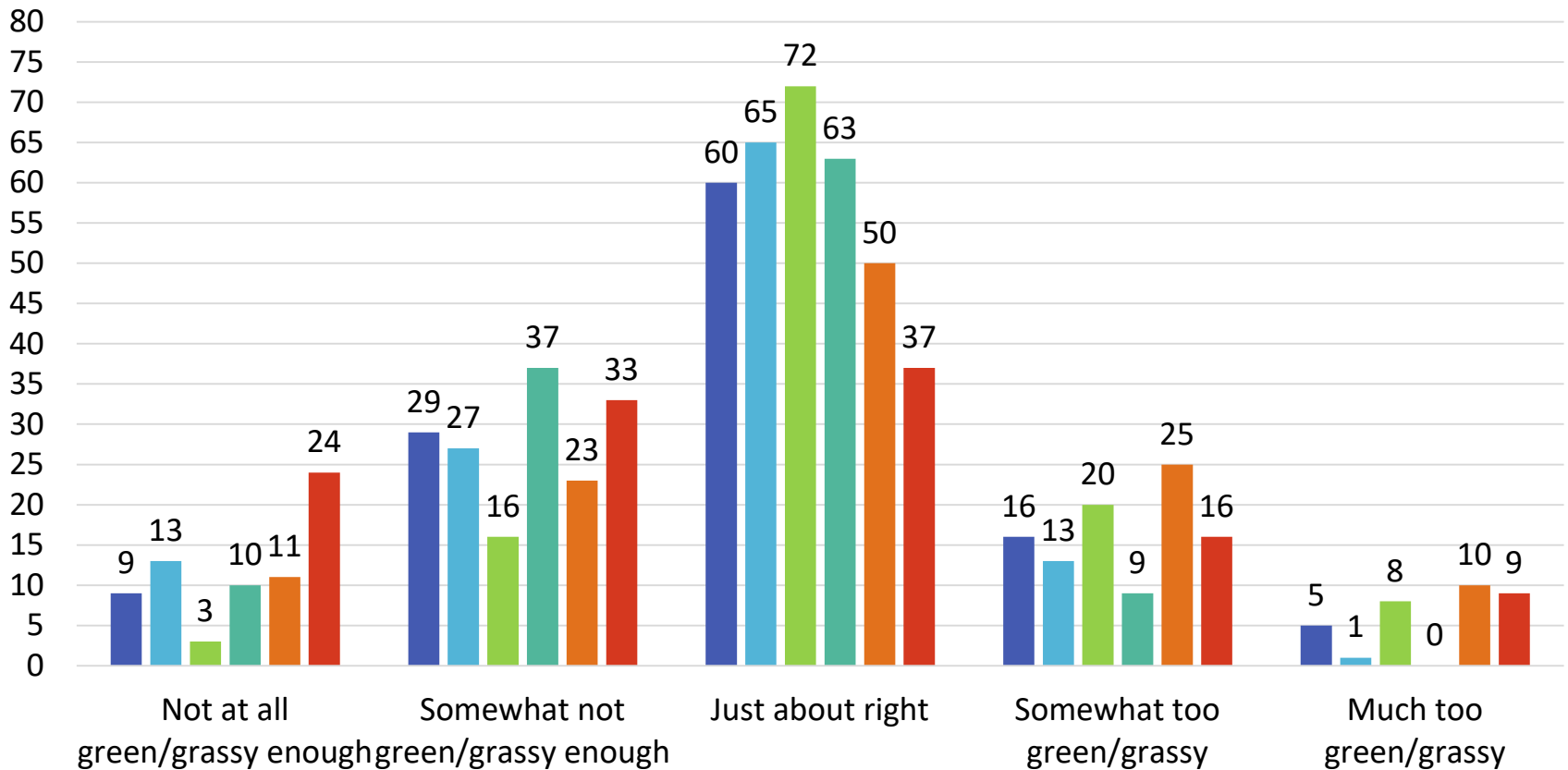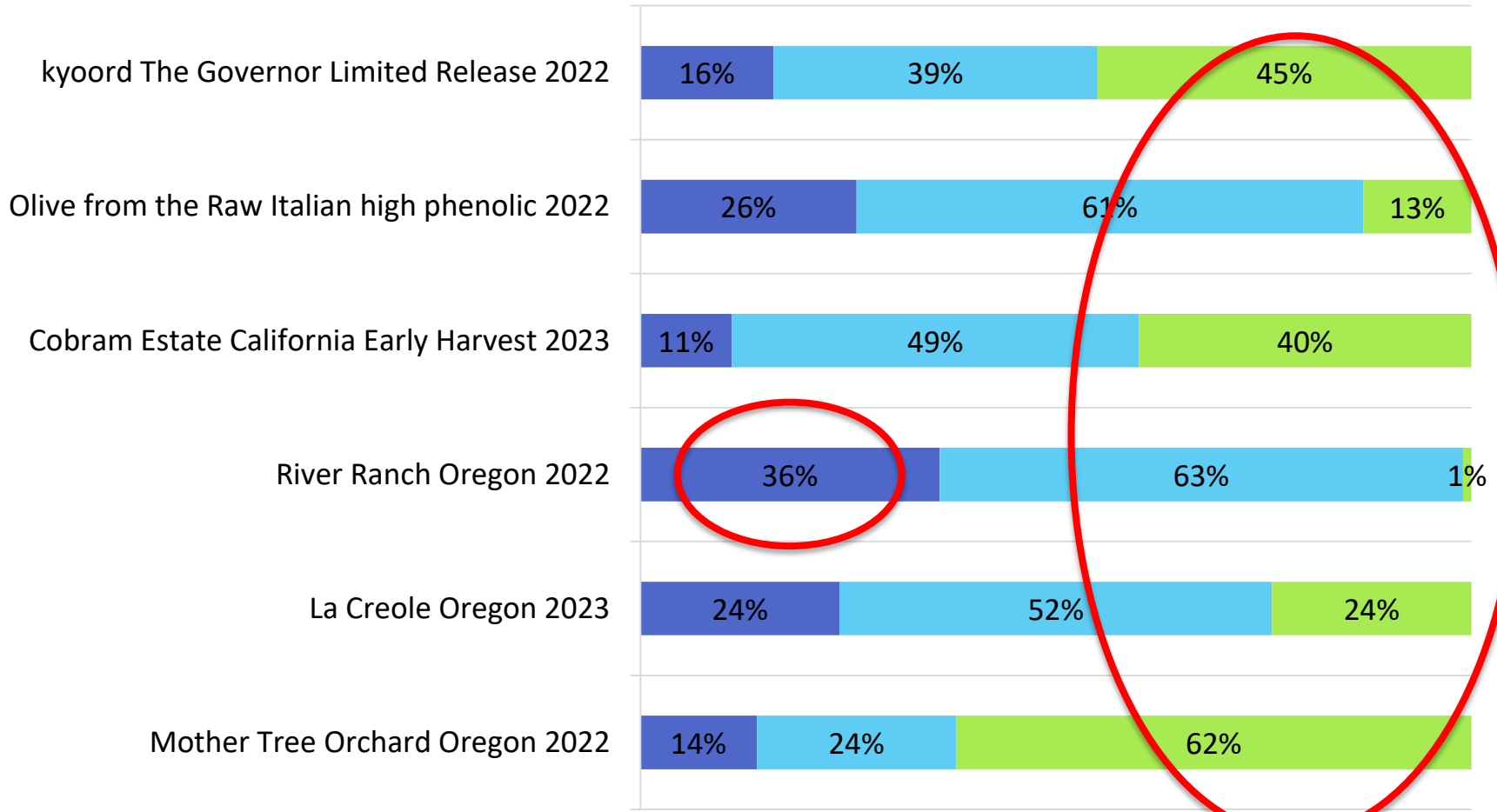| Category	kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	River Ranch Oregon 2022	La Creole Oregon 2023	Mother Tree Orchard Oregon 2022
Not at all bitter enough	5	13	4	22	8	5
Somewhat not bitter enough	14	18	9	21	21	12
Just about right	47	73	58	75	62	28
Somewhat too bitter	38	14	33	1	19	33
Much too bitter	15	1	15	0	9	41

Compusense

Astringency JAR

Astringency JAR - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
- Mother Tree Orchard Oregon 2022

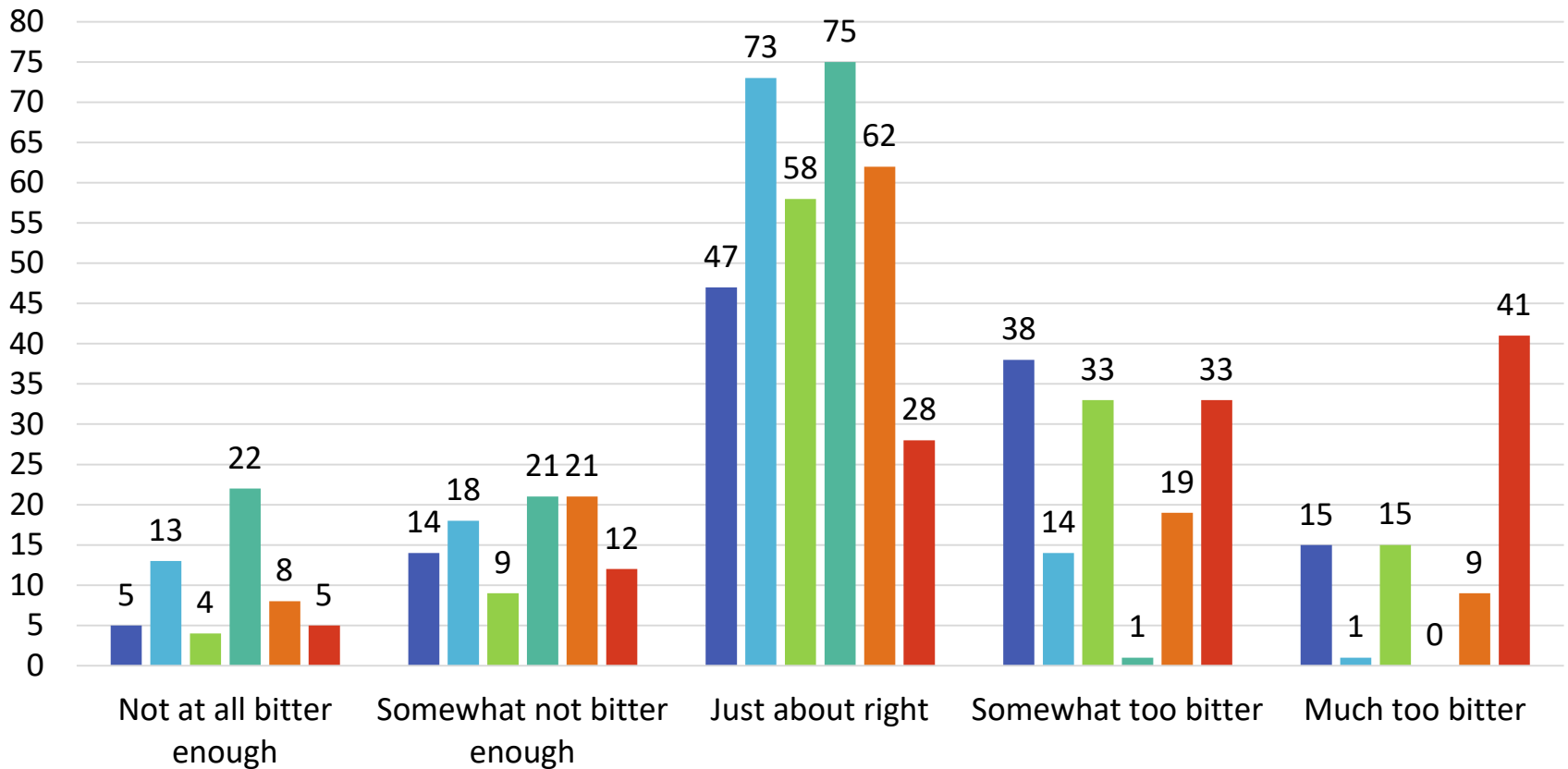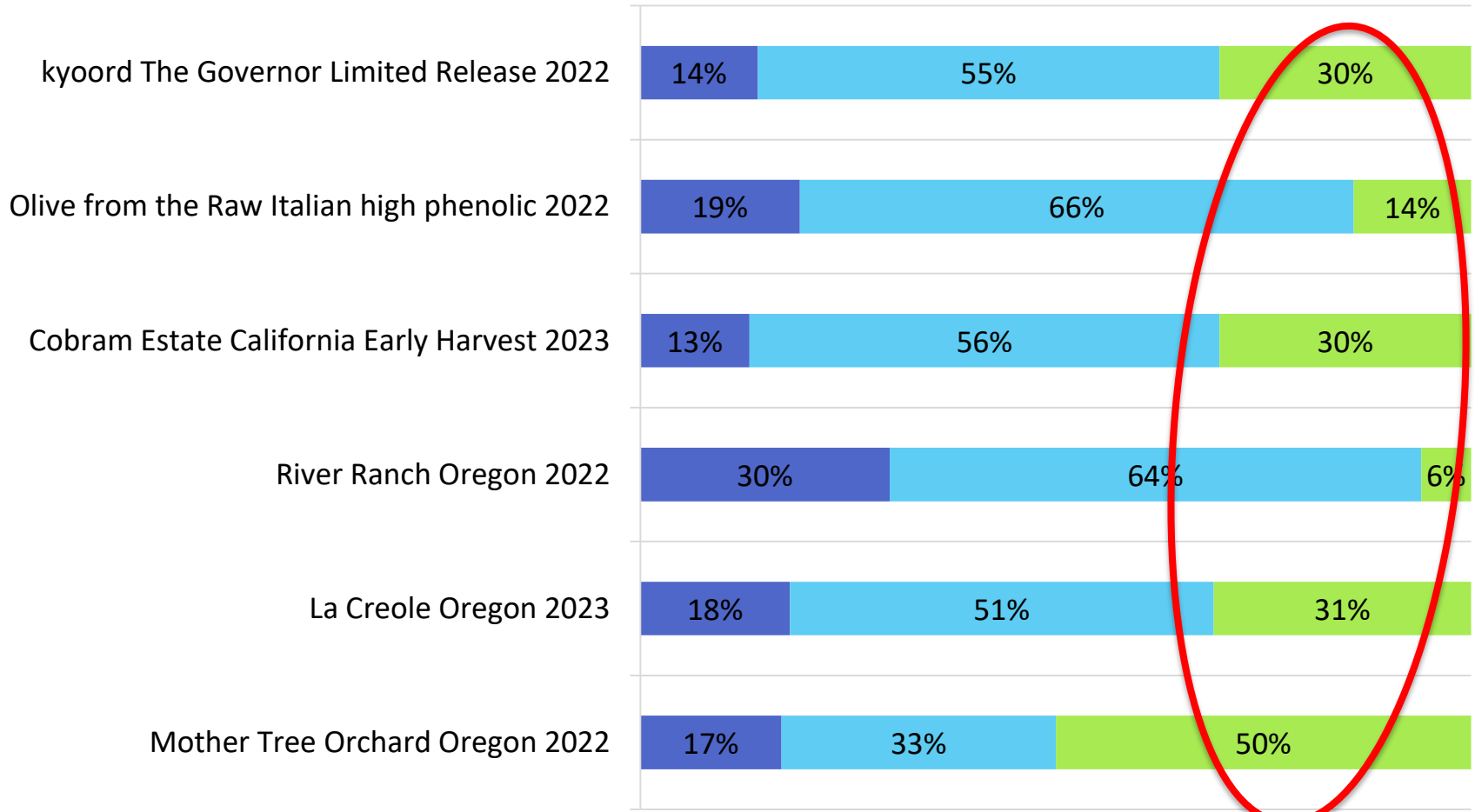| Category	kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	River Ranch Oregon 2022	La Creole Oregon 2023	Mother Tree Orchard Oregon 2022
Not at all astringent enough	3	11	4	15	9	7
Somewhat not astringent enough	14	12	12	21	12	13
Just about right	66	79	67	76	61	39
Somewhat too astringent	26	14	25	6	33	42
Much too astringent	10	3	11	1	4	18

Compusense

Pungency JAR - Crosstabulations

La Creole Penalty Analysis – when this oil is perceived as too low in overall fruity character and too green/grassy and pungent, it has a HIGH negative impact on the overall liking of the product

Net Penalties - La Creole Oregon 2023

Net Penalty=[Proportion Indicated][Mean Drop]

Net Penalty < 0.25 = Low Impact (Grey)

Net Penalty > 0.25 & < 0.5 = Potential Impact (Yellow)

Net Penalty > 0.5 = High Impact (Red)

Legend: ▇ Low Impact ▇ Potential Impact ▇ High Impact

Chart categories:
- Color JAR (59% JAR): Much Too Light, Much Too Dark
- Aroma JAR (56% JAR): Much Too Weak, Much Too Strong
- Flavor Strength JAR (54% JAR): Much too weak, Much too strong
- Fruity character JAR (45% JAR): Not at all fruity enough, Much too fruity
- Spiciness/Peppery Character JAR (48% JAR): Not at all spicy enough, Much too spicy
- Grassy character JAR (42% JAR): Not at all green/grassy enough, Much too green/grassy
- Bitterness JAR (52% JAR): Not at all bitter enough, Much too bitter
- Astringency JAR (51% JAR): Not at all astringent enough, Much too astringent
- Pungency JAR (56% JAR): Not at all pungent enough, Much too pungent

Compusense.

Net Penalties - kyoord The Governor Limited Release 2022

Net Penalty=[Proportion Indicated][Mean Drop]
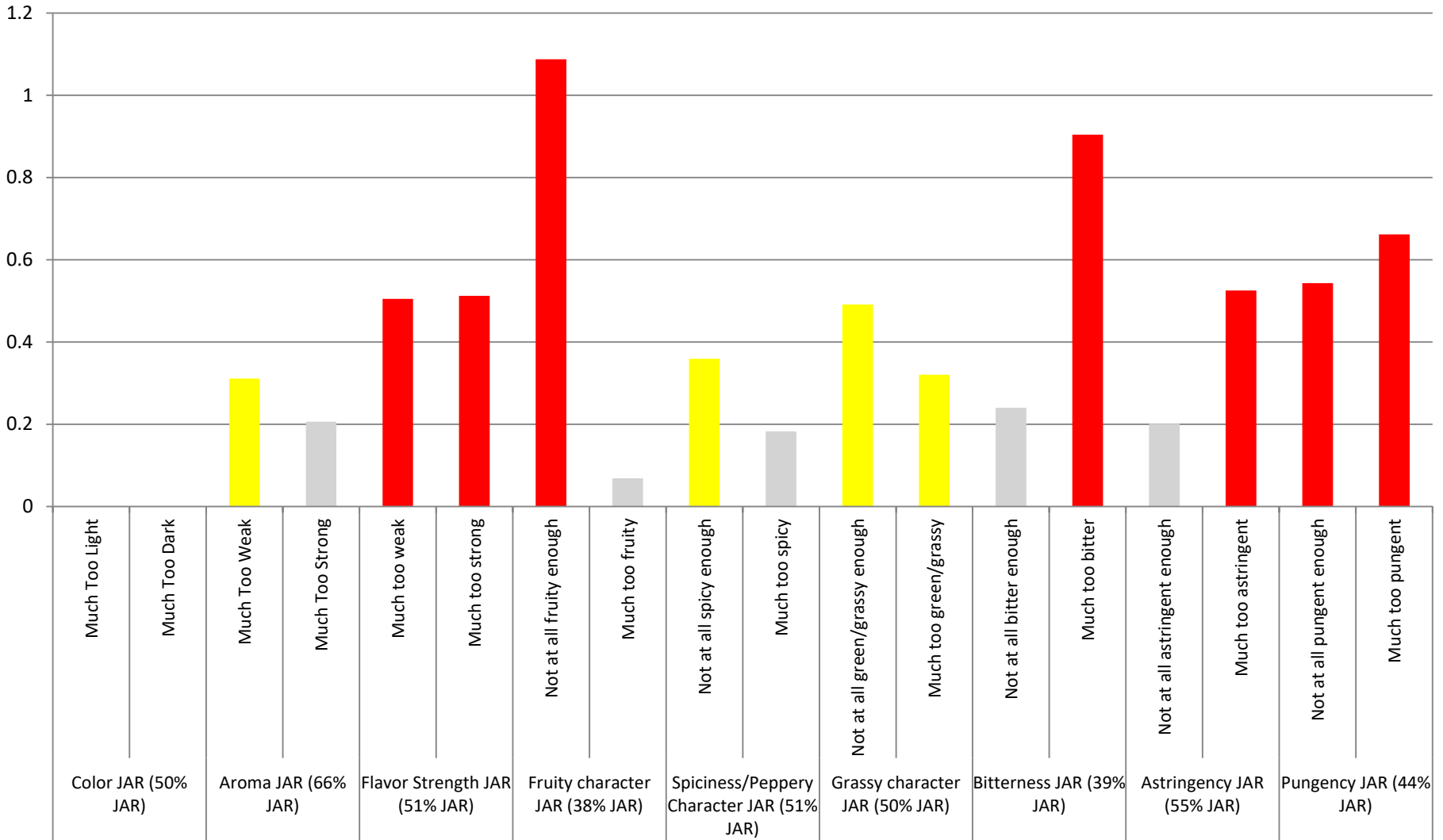
Net Penalty < 0.25 = Low Impact (Grey)

Net Penalty > 0.25 & < 0.5 = Potential Impact (Yellow)

Net Penalty > 0.5 = High Impact (Red)

Legend: ■ Low Impact ■ Potential Impact ■ High Impact

Chart categories:
- Color JAR (50% JAR): Much Too Light, Much Too Dark
- Aroma JAR (66% JAR): Much Too Weak, Much Too Strong
- Flavor Strength JAR (51% JAR): Much too weak, Much too strong
- Fruity character JAR (38% JAR): Not at all fruity enough, Much too fruity
- Spiciness/Peppery Character JAR (51% JAR): Not at all spicy enough, Much too spicy
- Grassy character JAR (50% JAR): Not at all green/grassy enough, Much too green/grassy
- Bitterness JAR (39% JAR): Not at all bitter enough, Much too bitter
- Astringency JAR (55% JAR): Not at all astringent enough, Much too astringent
- Pungency JAR (44% JAR): Not at all pungent enough, Much too pungent

Compusense.

Net Penalties - Olive from the Raw Italian high phenolic 2022

Net Penalties - Cobram Estate California Early Harvest 2023

Net Penalty=[Proportion Indicated][Mean Drop]

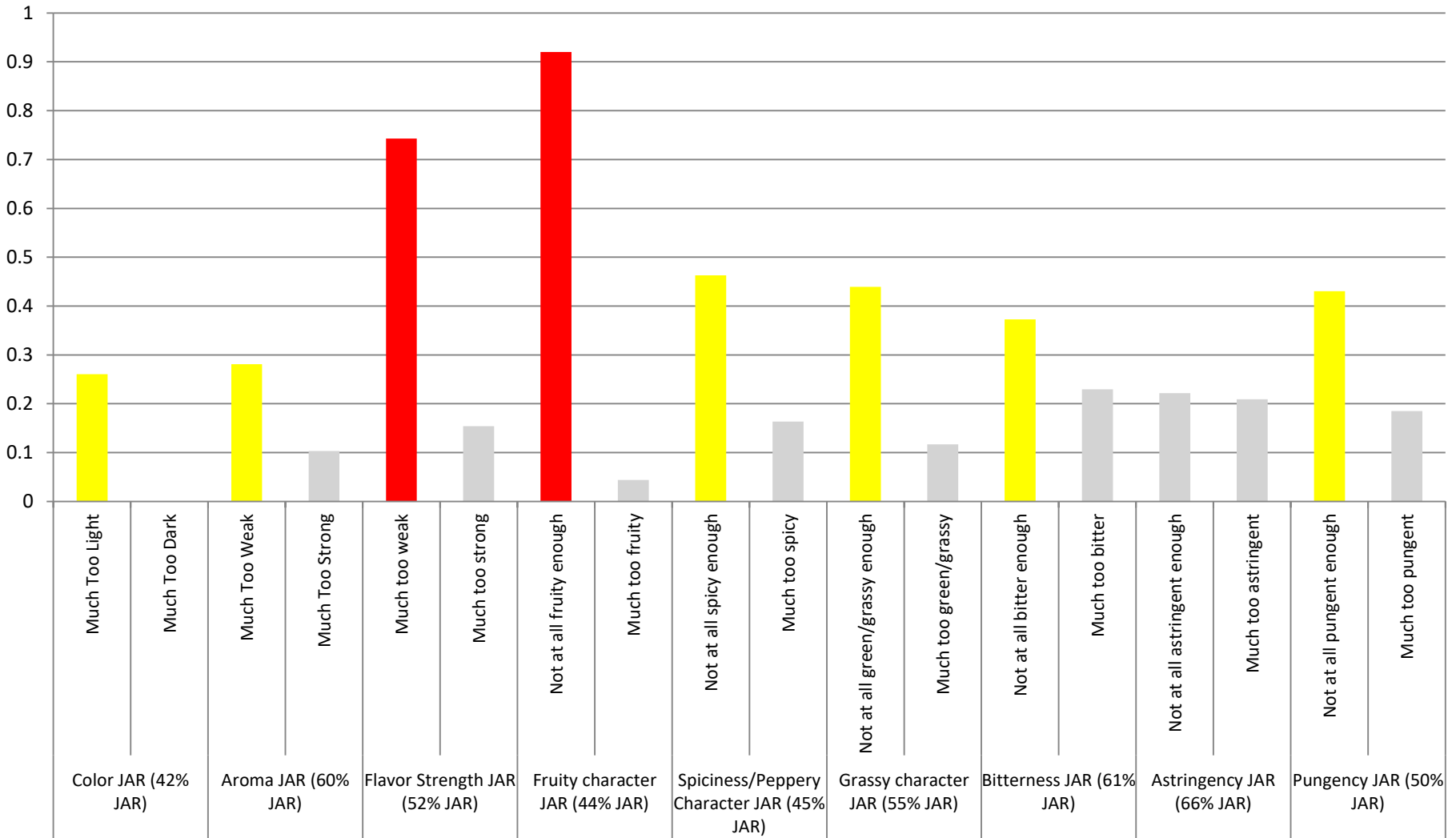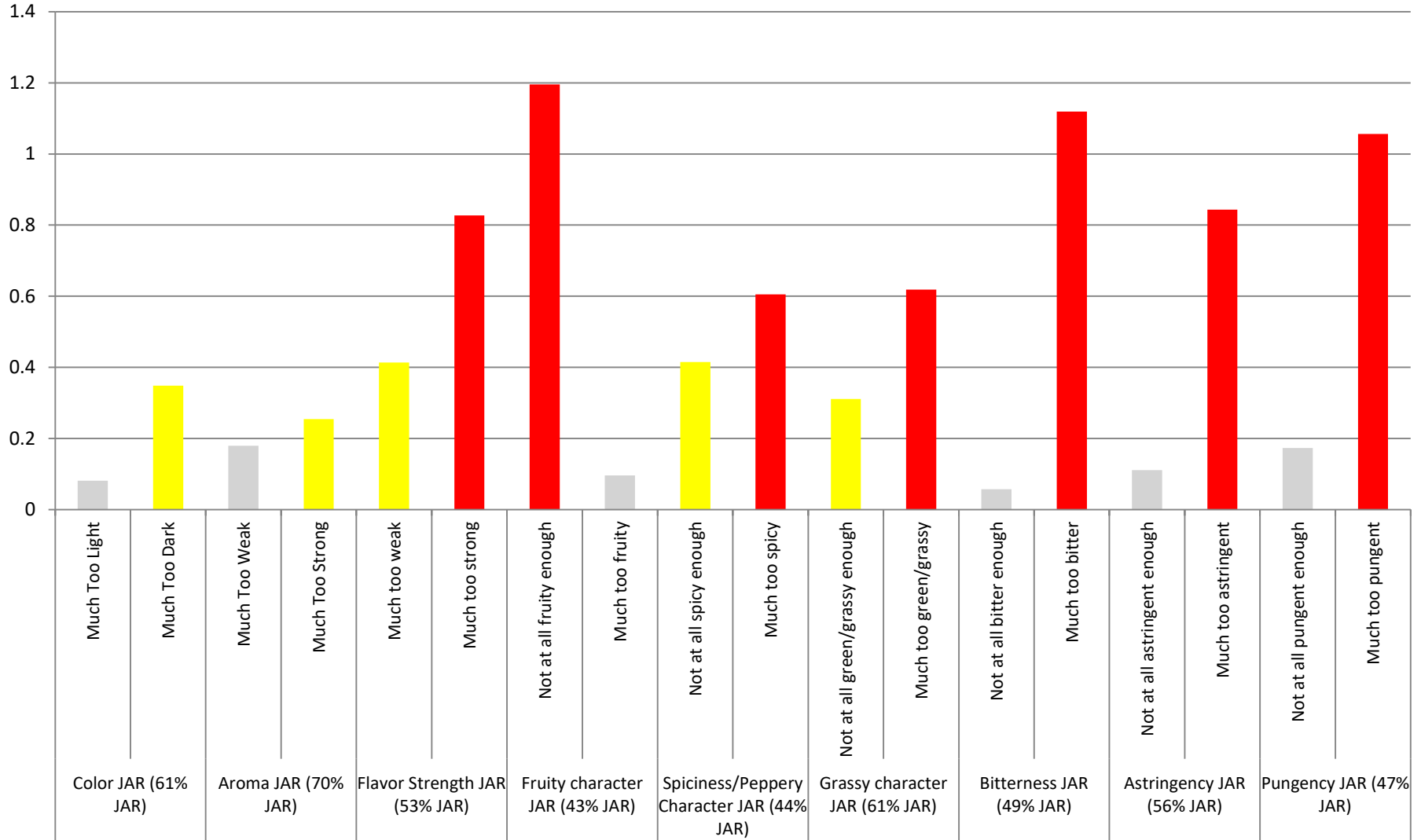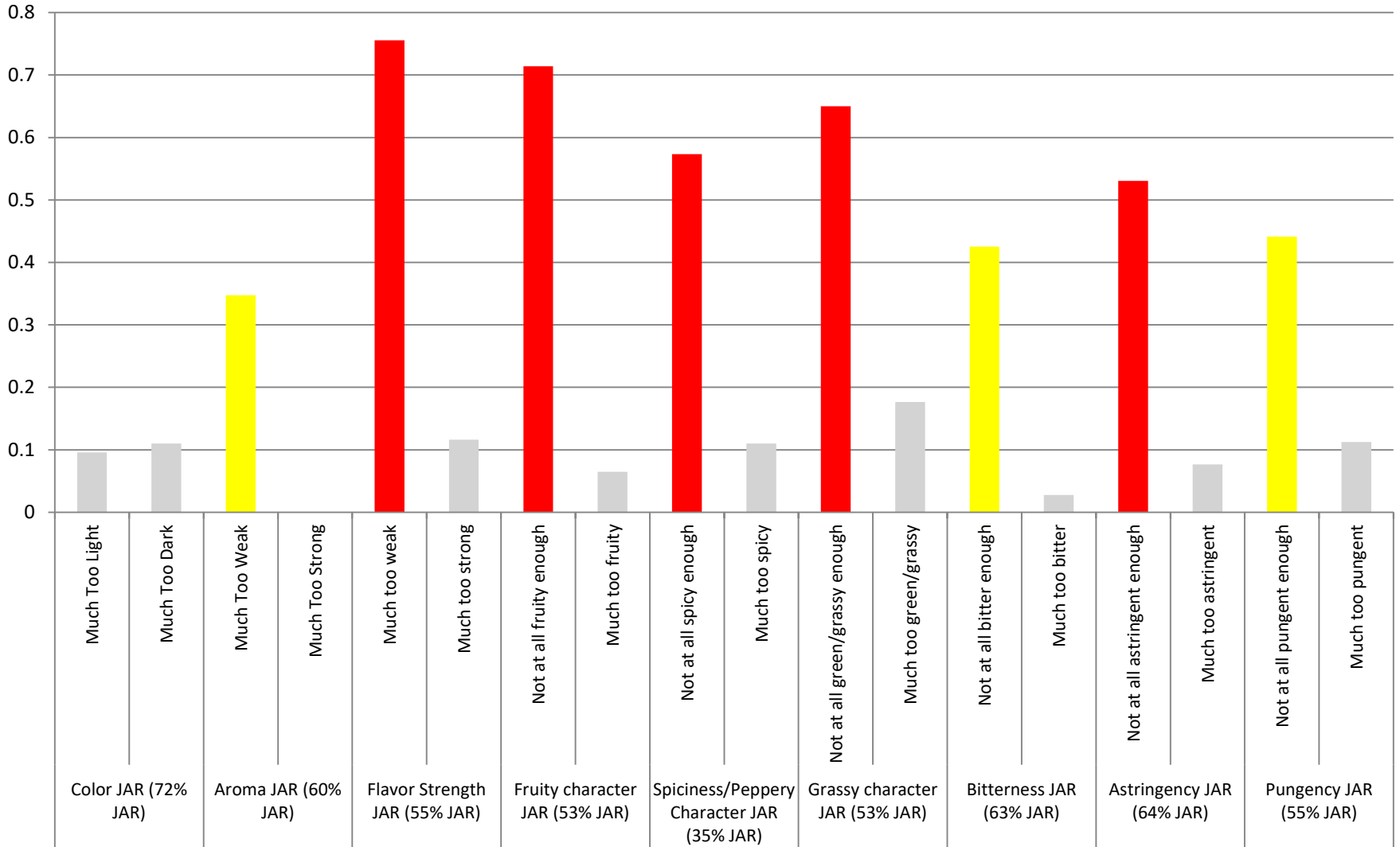Net Penalty < 0.25 = Low Impact (Grey)

Net Penalty > 0.25 & < 0.5 = Potential Impact (Yellow)

Net Penalty > 0.5 = High Impact (Red)

Legend: ■ Low Impact ■ Potential Impact ■ High Impact

Compusense.

Net Penalties - River Ranch Oregon 2022

	Much Too Light	Much Too Dark	Much Too Weak	Much Too Strong	Much too weak	Much too strong	Not at all fruity enough	Much too fruity	Not at all spicy enough	Much too spicy	Not at all green/grassy enough	Much too green/grassy	Not at all bitter enough	Much too bitter	Not at all astringent enough	Much too astringent	Not at all pungent enough	Much too pungent
Color JAR (72% JAR)	0.095	0.110																
Aroma JAR (60% JAR)			0.347	0														
Flavor Strength JAR (55% JAR)					0.755	0.115												
Fruity character JAR (53% JAR)							0.713	0.063										
Spiciness/Peppery Character JAR (35% JAR)									0.573	0.110								
Grassy character JAR (53% JAR)											0.650	0.177						
Bitterness JAR (63% JAR)													0.425	0.027				
Astringency JAR (64% JAR)															0.530	0.076		
Pungency JAR (55% JAR)																	0.440	0.112

Low Impact Potential Impact High Impact

Net Penalty=[Proportion Indicated][Mean Drop]

Net Penalty < 0.25 = Low Impact (Grey)

Net Penalty > 0.25 & < 0.5 = Potential Impact (Yellow)

Net Penalty > 0.5 = High Impact (Red)

Compusense.

Net Penalties - Mother Tree Orchard Oregon 2022

Net Penalty=[Proportion Indicated][Mean Drop]
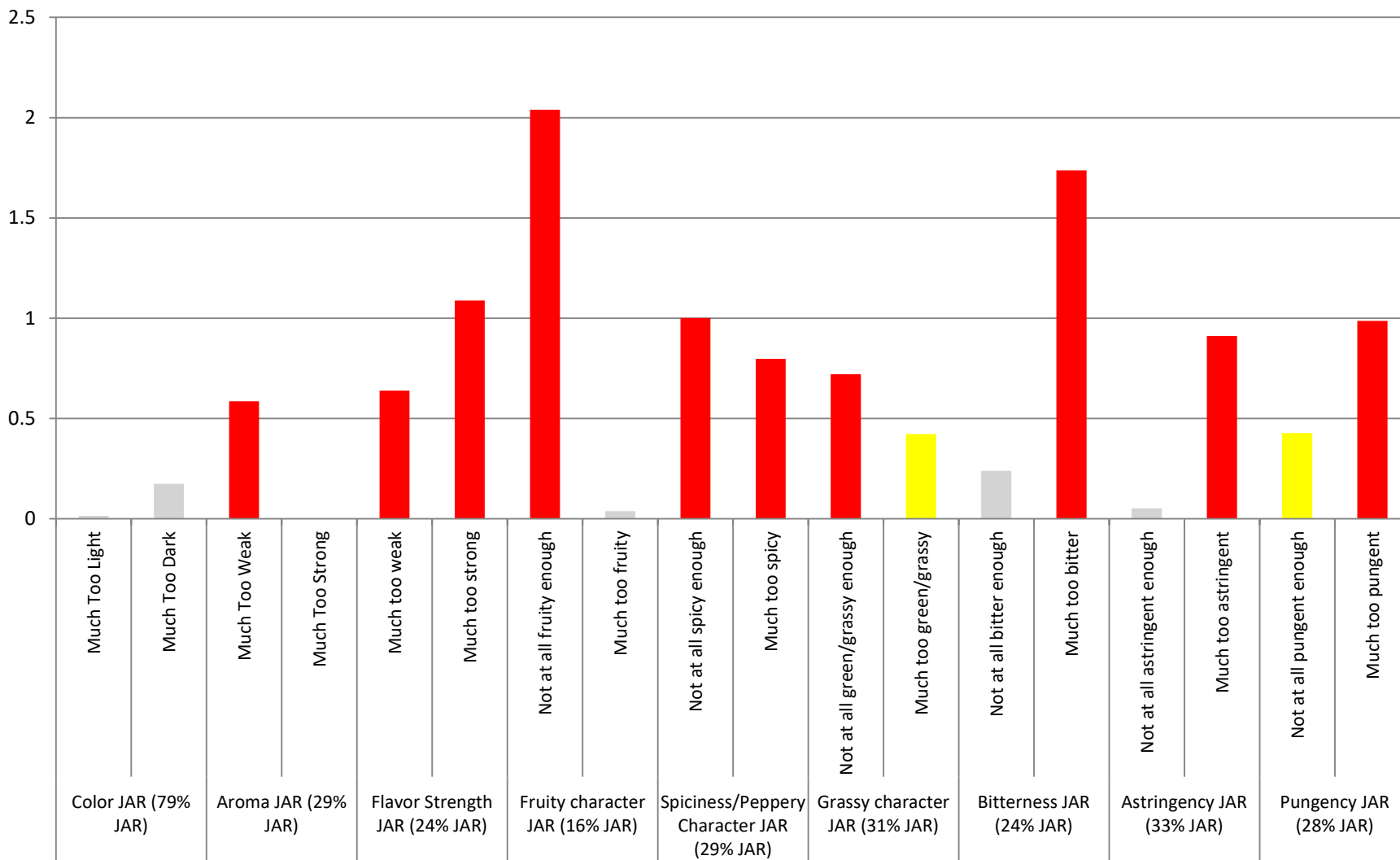
Net Penalty < 0.25 = Low Impact (Grey)

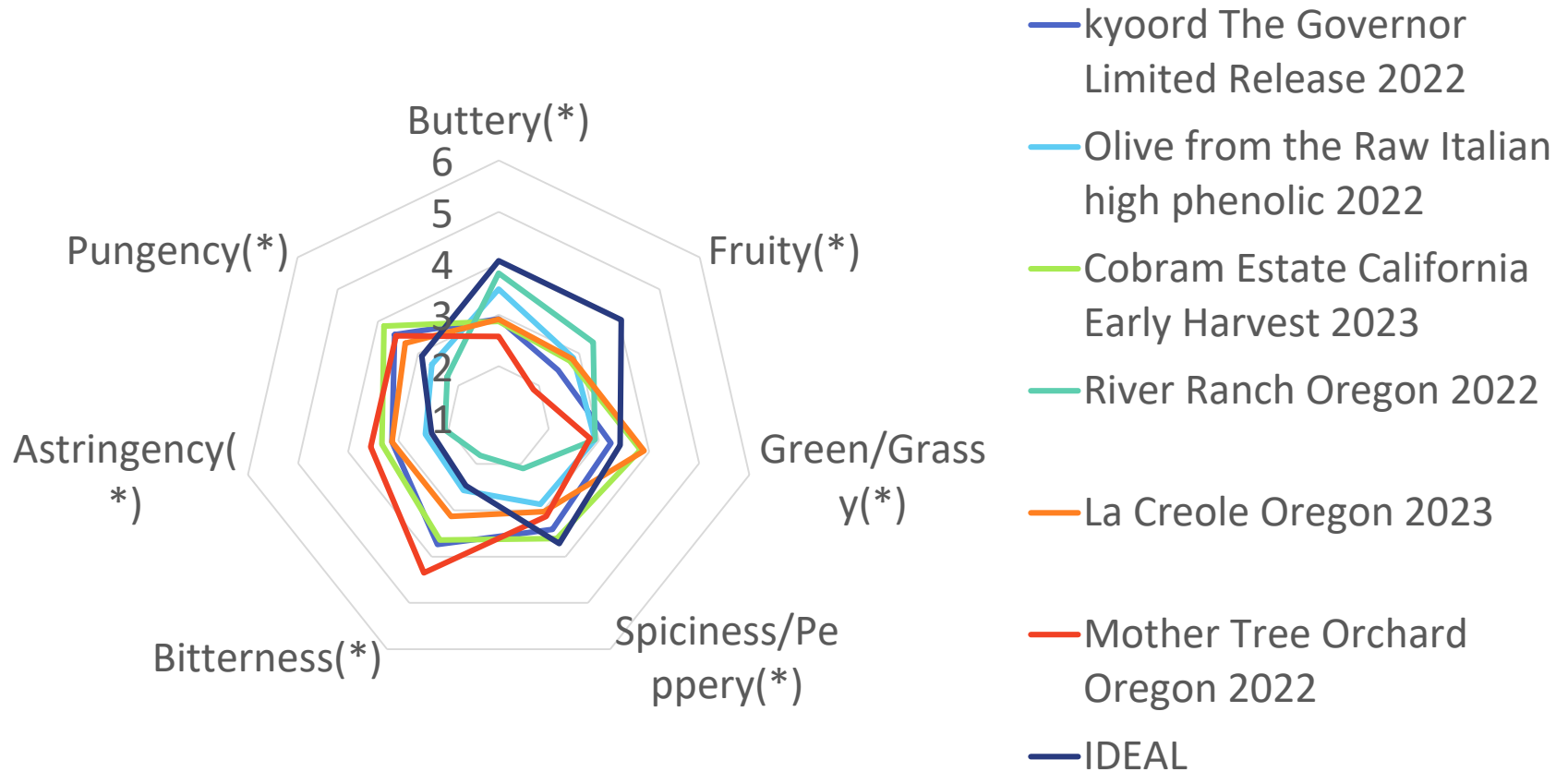Net Penalty > 0.25 & < 0.5 = Potential Impact (Yellow)

Net Penalty > 0.5 = High Impact (Red)
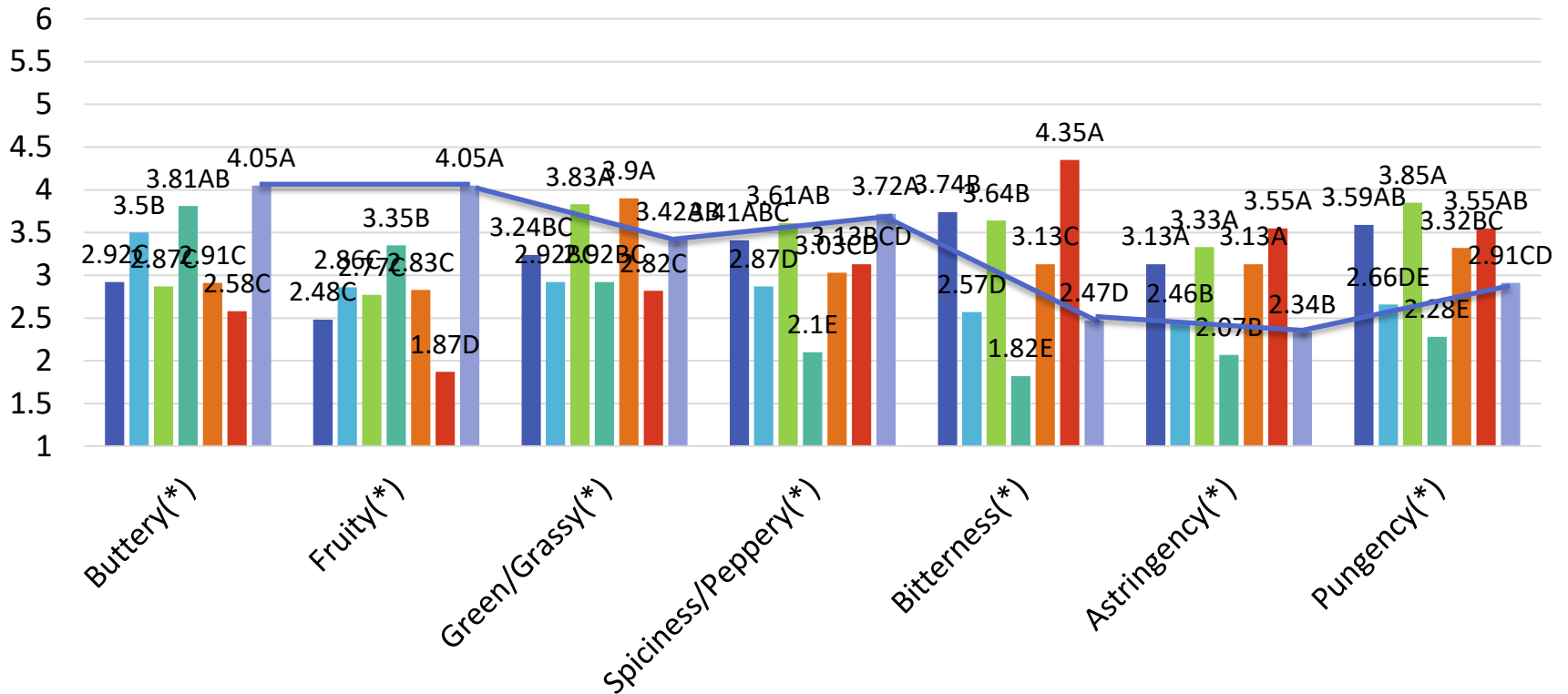
■ Low Impact   ■ Potential Impact   ■ High Impact

Compusense.

Ideal Olive Oil Rate All - Mean Graph

Scale Values: 1-6, where 1=none and 6=strong

Ideal Olive Oil Rate All - Mean Graph

Scale Values: 1-6, where 1=none and 6=strong

Ideal Olive Oil Rate All (Buttery) - Crosstabulations

Ideal Olive Oil Rate All (Fruity) - Crosstabulations

Ideal Olive Oil Rate All (Green/Grassy) - Crosstabulations
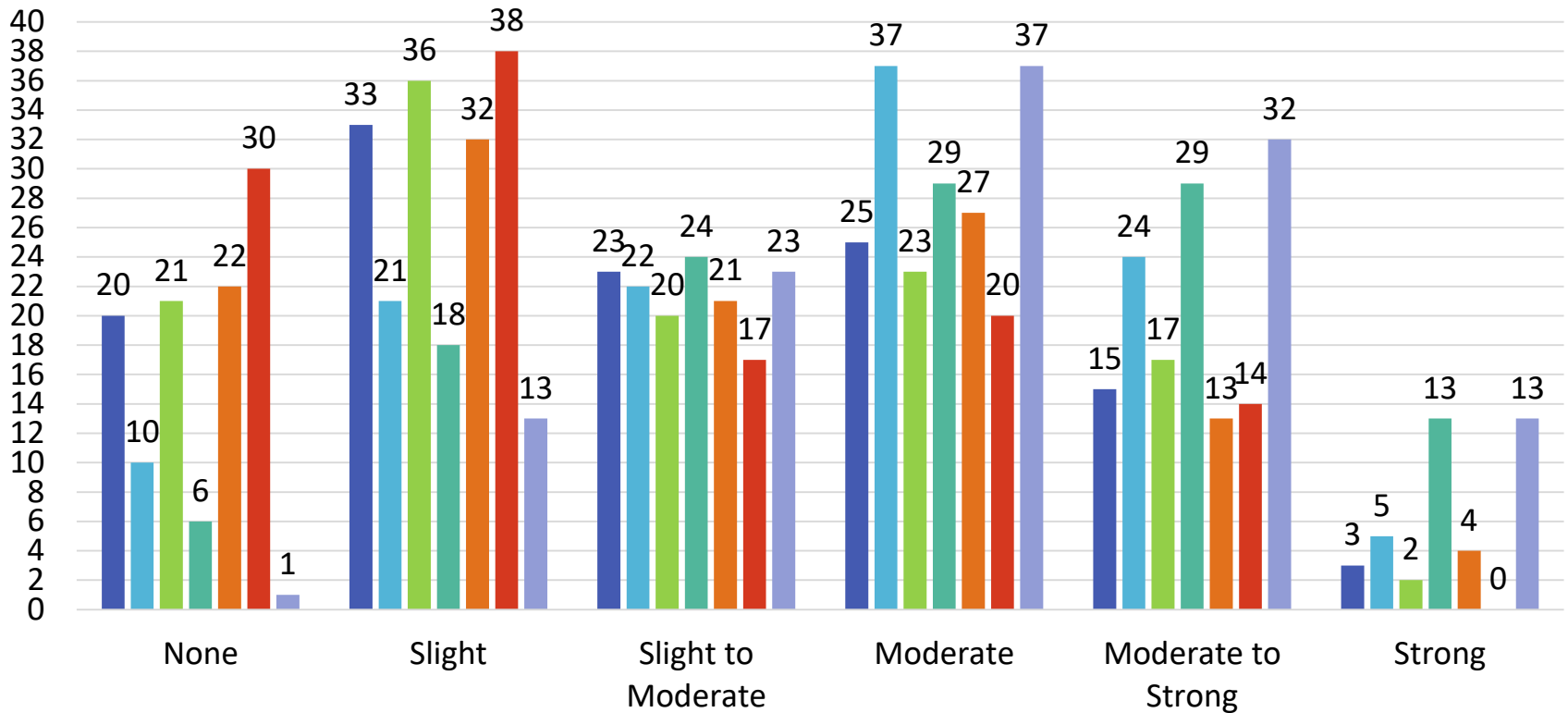

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
- Mother Tree Orchard Oregon 2022
- IDEAL

Compusense

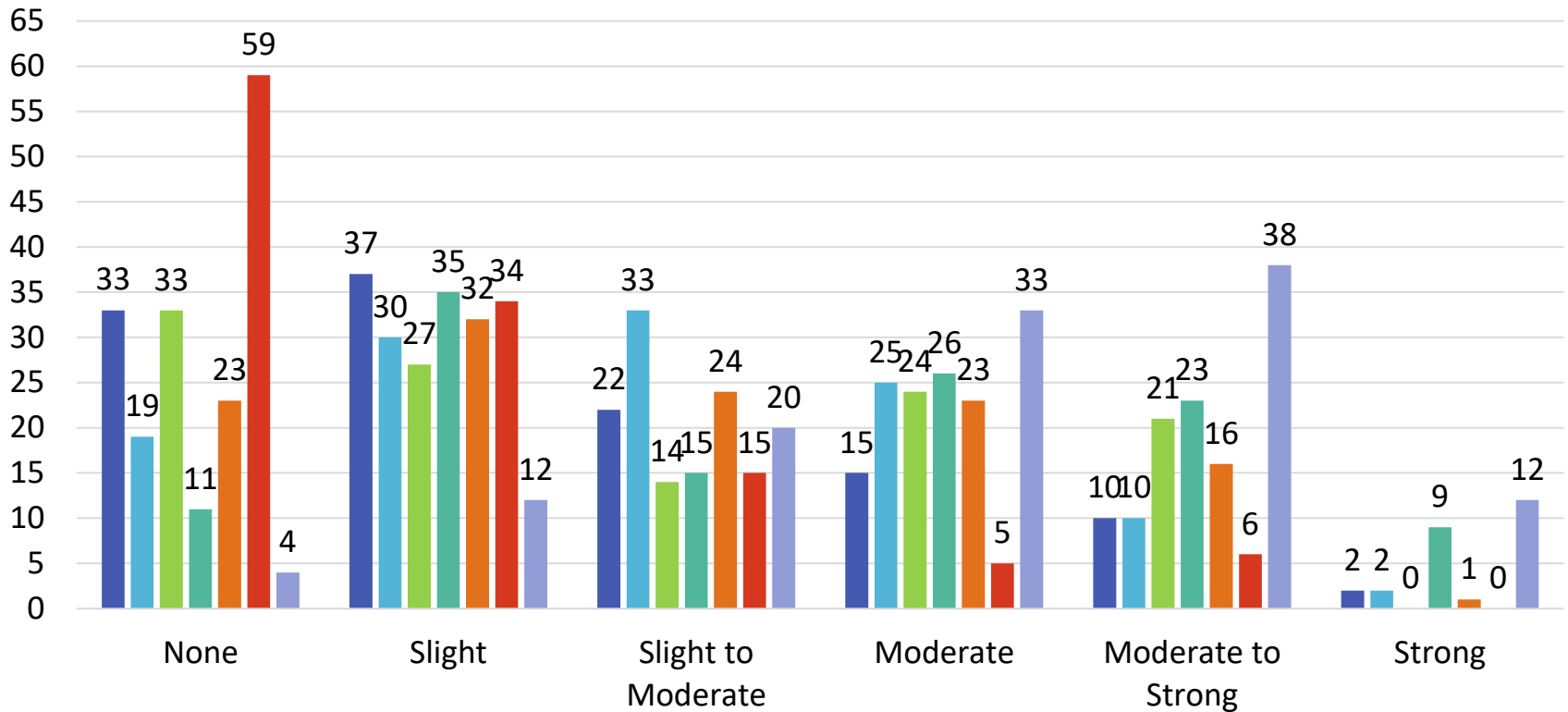Ideal Olive Oil Rate All (Spiciness/Peppery) - Crosstabulations

Ideal Olive Oil Rate All (Bitterness) - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
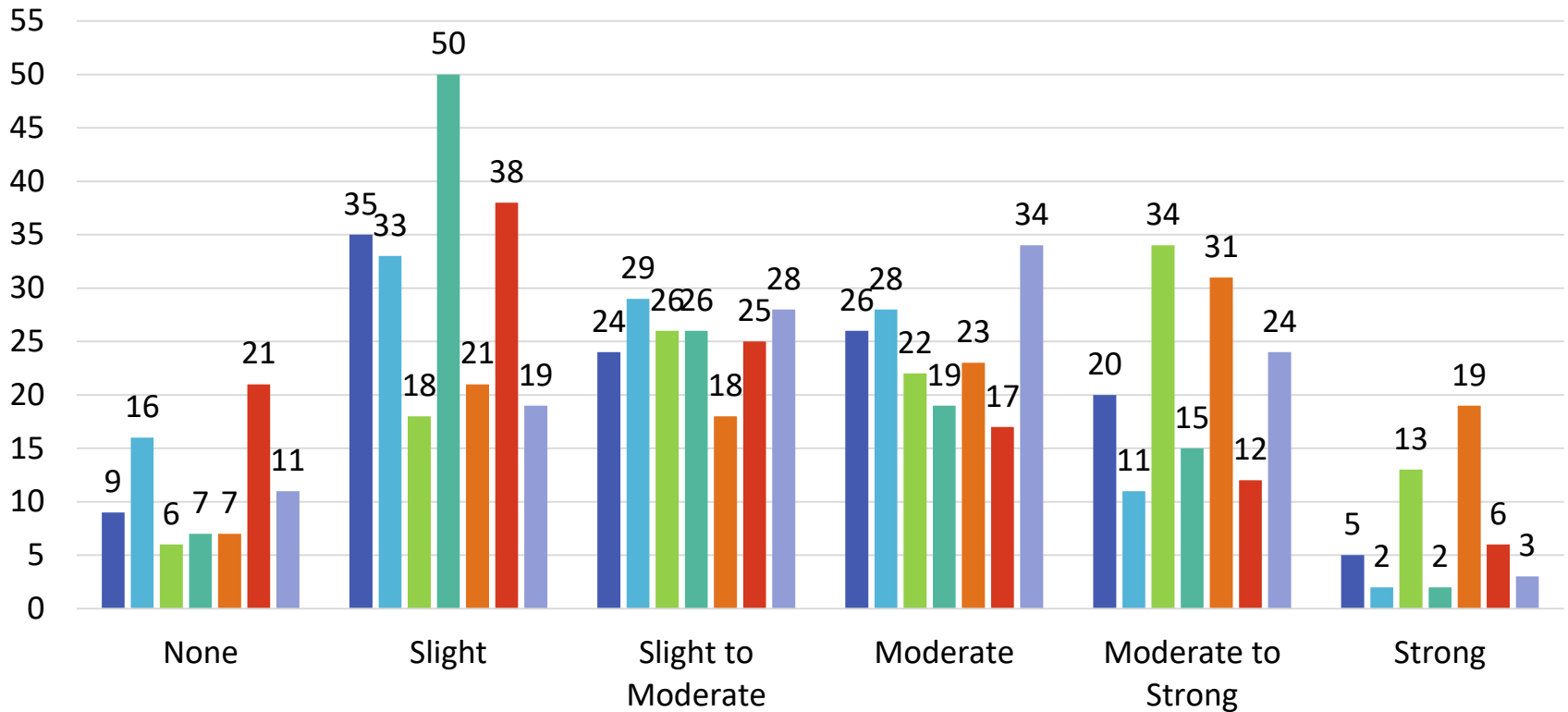- Mother Tree Orchard Oregon 2022
- IDEAL

Category	kyoord	Olive Raw	Cobram	River Ranch	La Creole	Mother Tree	IDEAL
None	13	28	8	50	17	12	29
Slight	17	39	27	48	31	11	40
Slight to Moderate	23	22	22	14	26	9	27
Moderate	20	17	24	7	18	19	13
Moderate to Strong	27	12	19	0	18	27	8
Strong	19	1	19	0	9	41	2

Compusense

Ideal Olive Oil Rate All (Astringency) - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
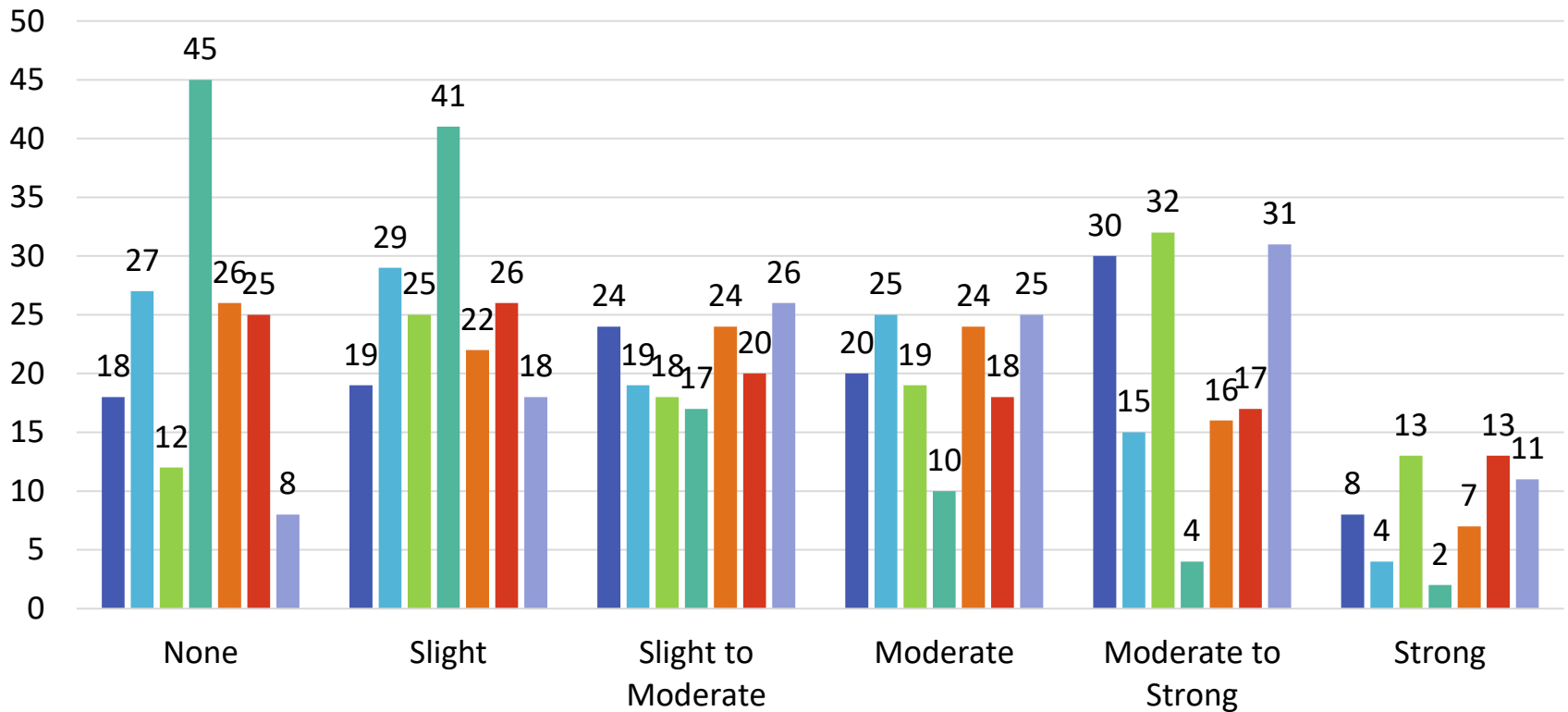- Mother Tree Orchard Oregon 2022
- IDEAL

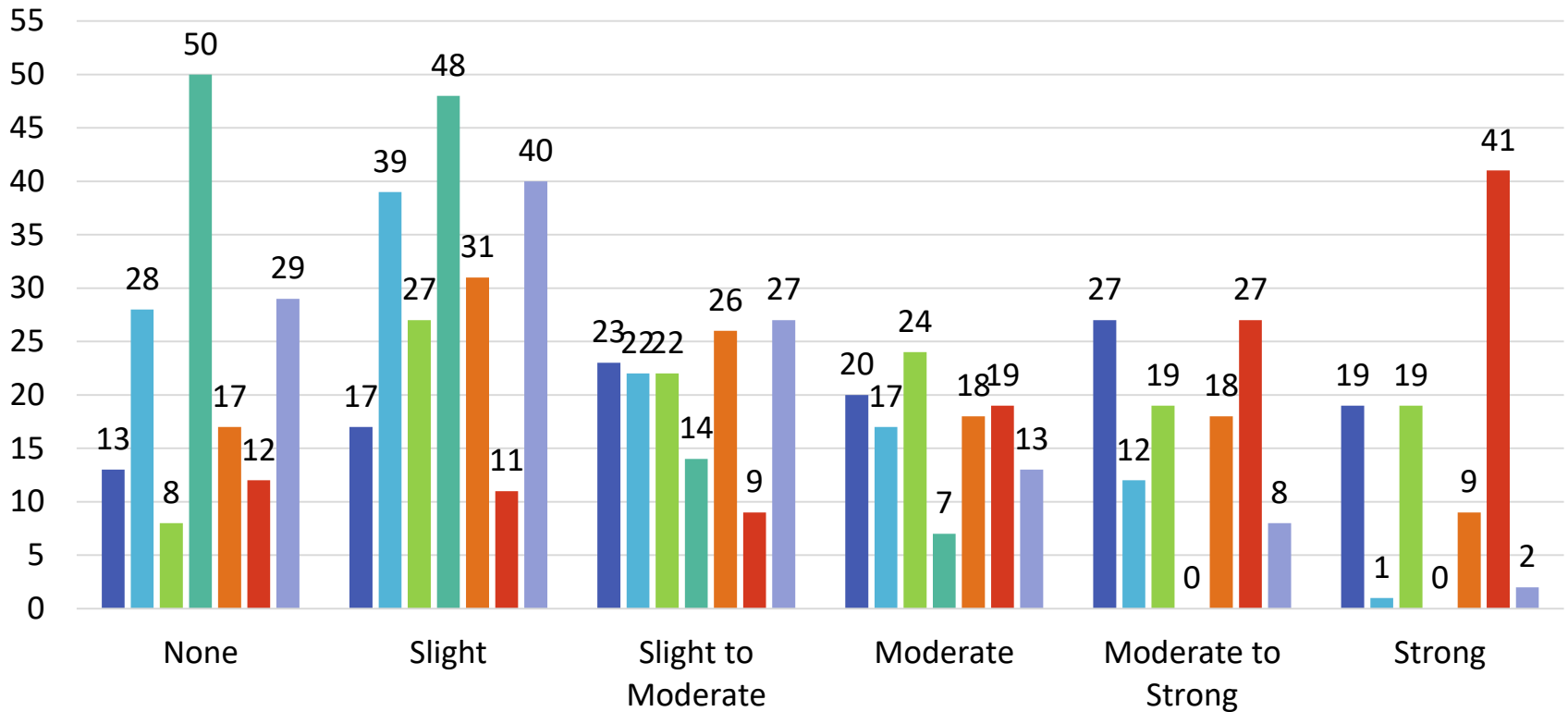| Category	kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	River Ranch Oregon 2022	La Creole Oregon 2023	Mother Tree Orchard Oregon 2022	IDEAL
None	20	33	17	45	19	20	30
Slight	27	33	25	41	32	19	42
Slight to Moderate	23	31	23	16	19	19	28
Moderate	23	13	20	14	21	16	16
Moderate to Strong	19	5	24	3	19	26	2
Strong	7	4	10	0	9	19	1

Compusense.

Ideal Olive Oil Rate All (Pungency) - Crosstabulations
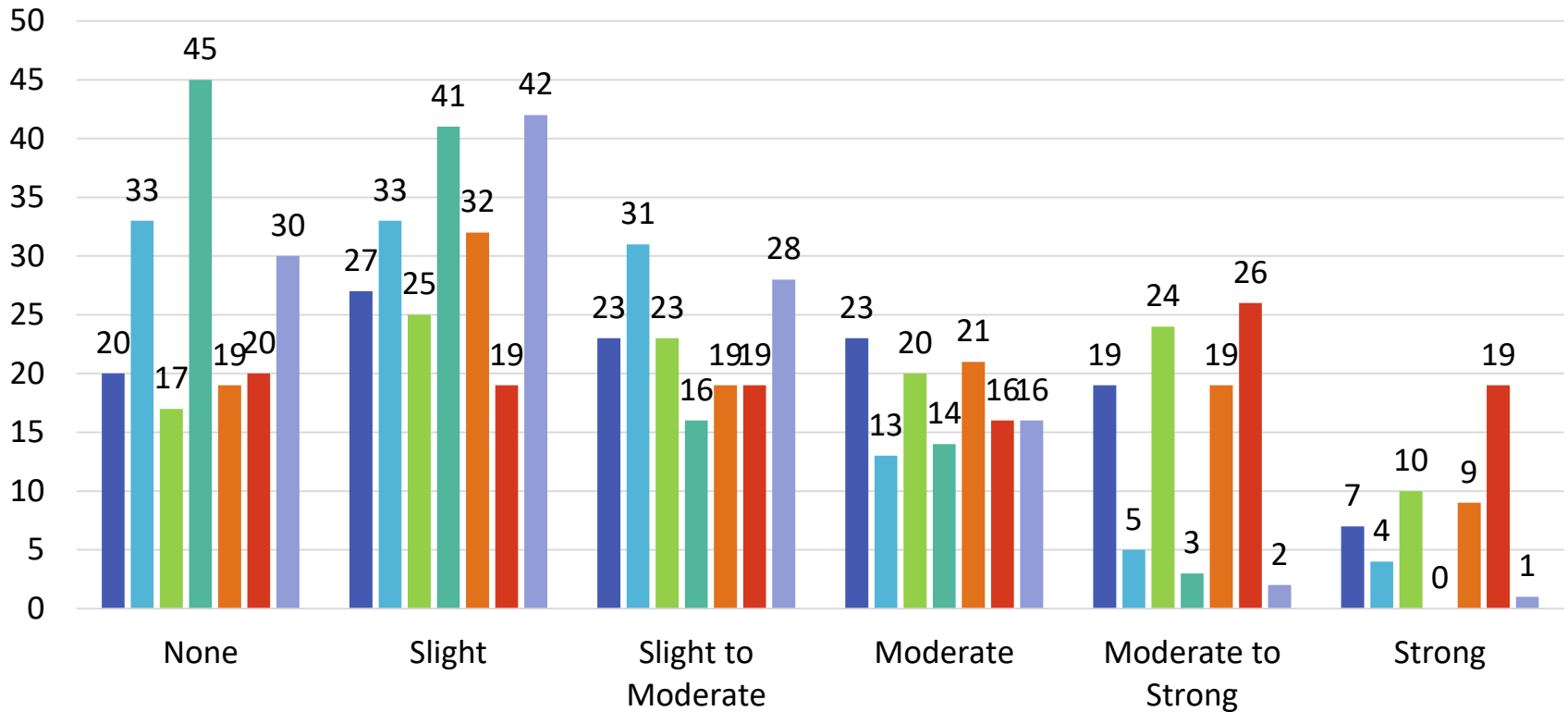

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- River Ranch Oregon 2022
- La Creole Oregon 2023
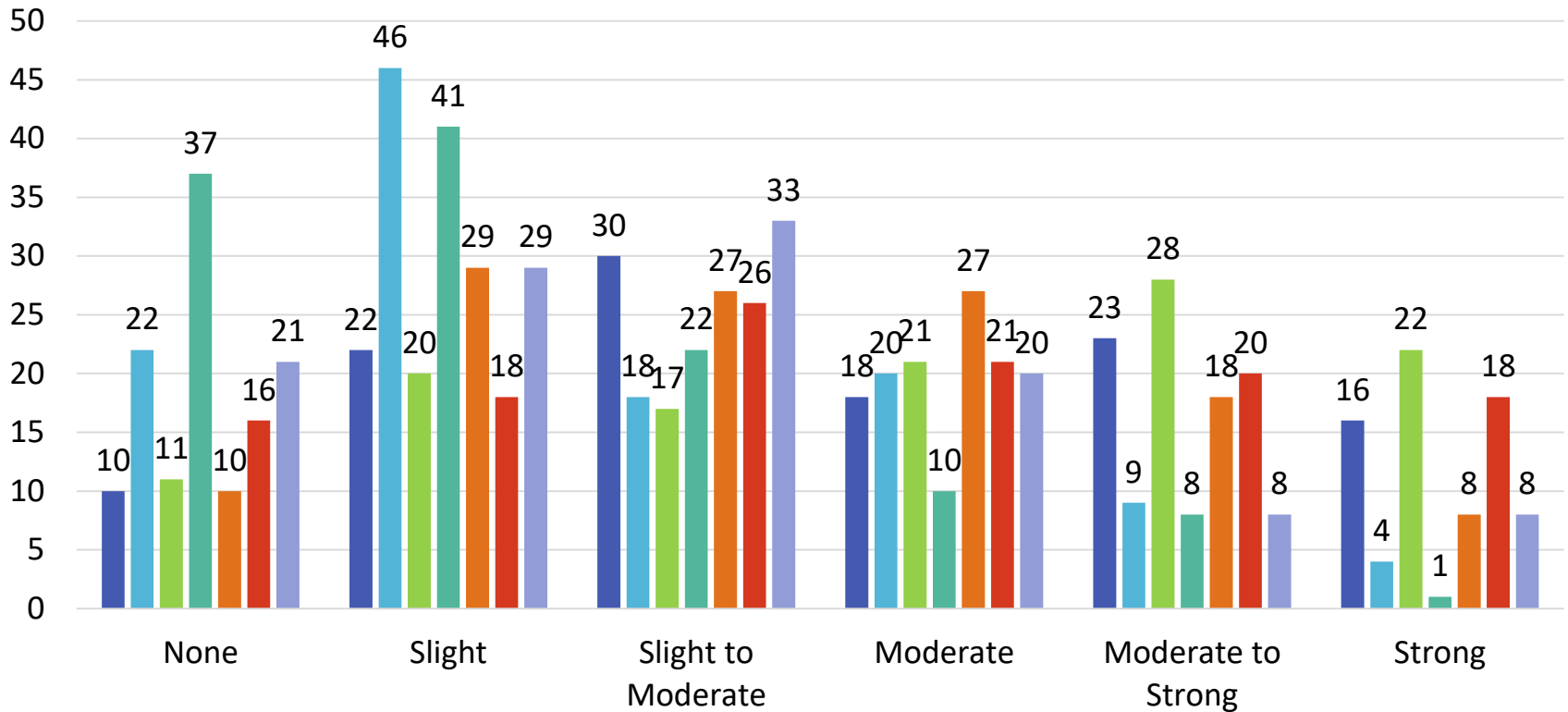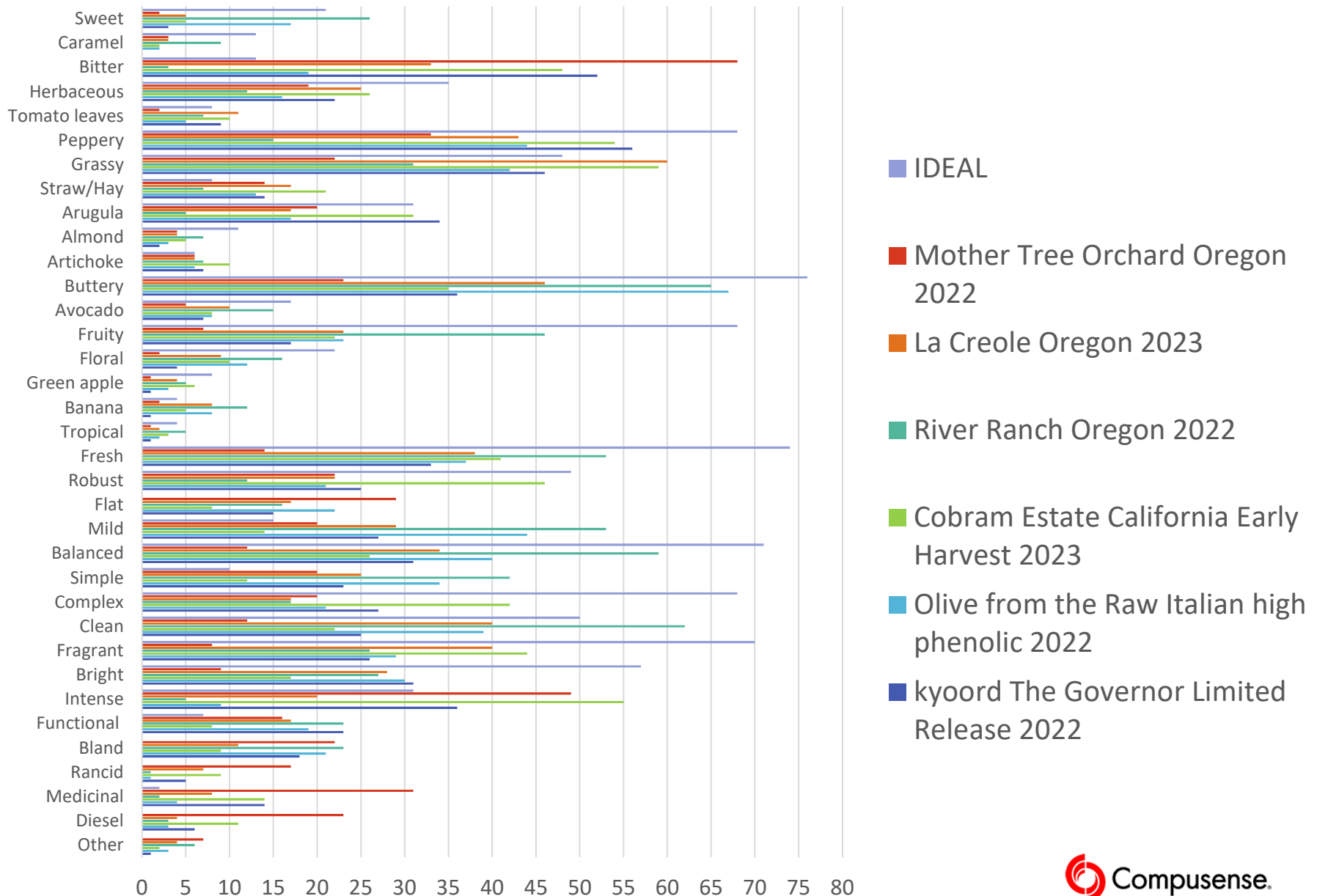- Mother Tree Orchard Oregon 2022
- IDEAL

	None	Slight	Slight to Moderate	Moderate	Moderate to Strong	Strong
kyoord The Governor Limited Release 2022	10	22	30	18	23	16
Olive from the Raw Italian high phenolic 2022	22	46	18	20	9	4
Cobram Estate California Early Harvest 2023	11	20	17	21	28	22
River Ranch Oregon 2022	37	41	22	10	8	1
La Creole Oregon 2023	10	29	27	27	18	8
Mother Tree Orchard Oregon 2022	16	18	26	21	20	18
IDEAL	21	29	33	20	8	8

Compusense.

Did you taste the "ideal" olive oil you just described today?

No, 60, 50%   Yes, 59, 50%

Compusense.

EVOO sensory flavor descriptors – All CATA

Legend:
- IDEAL
- Mother Tree Orchard Oregon 2022
- La Creole Oregon 2023
- River Ranch Oregon 2022
- Cobram Estate California Early Harvest 2023
- Olive from the Raw Italian high phenolic 2022
- kyoord The Governor Limited Release 2022

Descriptors (top to bottom): Sweet, Caramel, Bitter, Herbaceous, Tomato leaves, Peppery, Grassy, Straw/Hay, Arugula, Almond, Artichoke, Buttery, Avocado, Fruity, Floral, Green apple, Banana, Tropical, Fresh, Robust, Flat, Mild, Balanced, Simple, Complex, Clean, Fragrant, Bright, Intense, Functional, Bland, Rancid, Medicinal, Diesel, Other
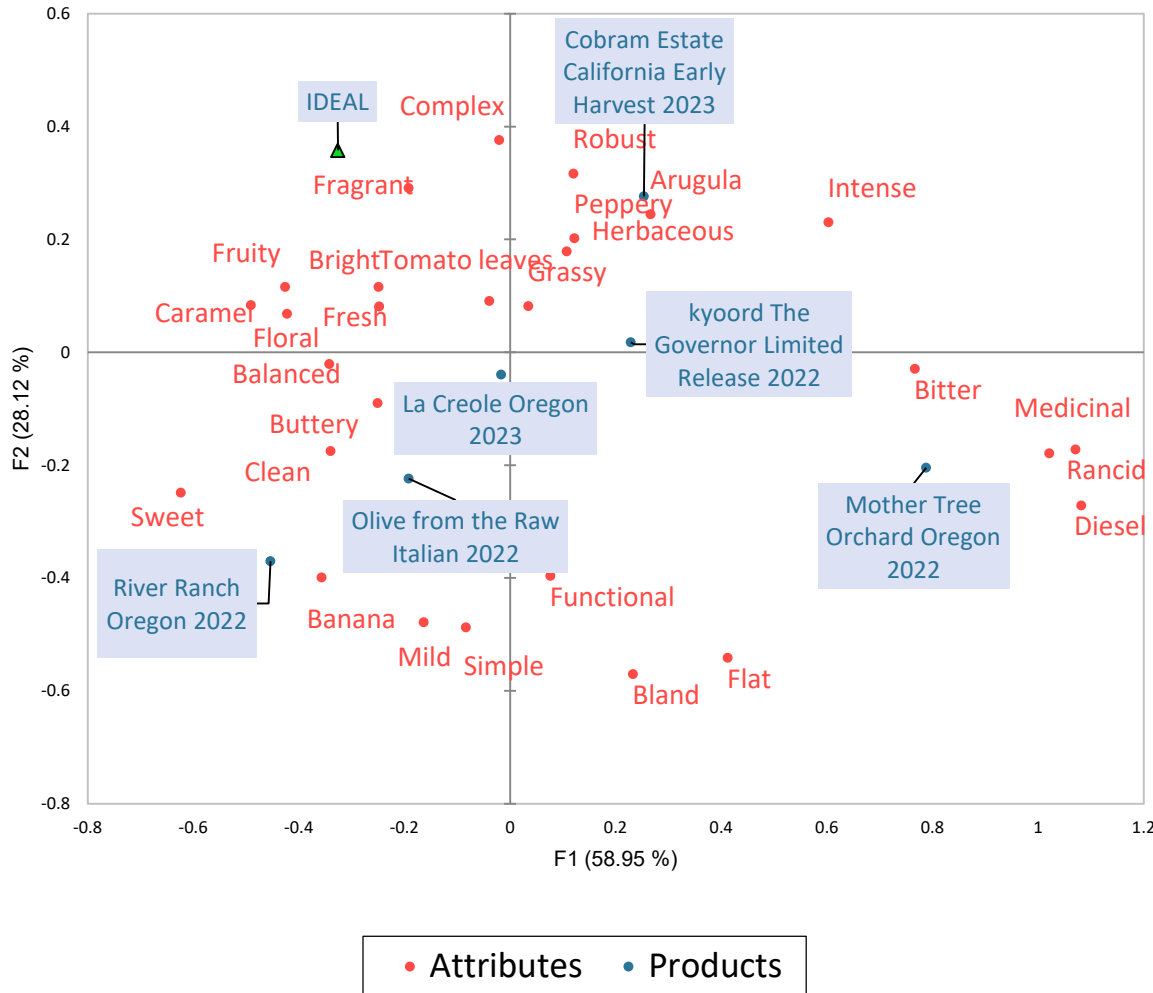
Compusense.

EVOO sensory flavor descriptors – Ideal vs. La Creole 2023
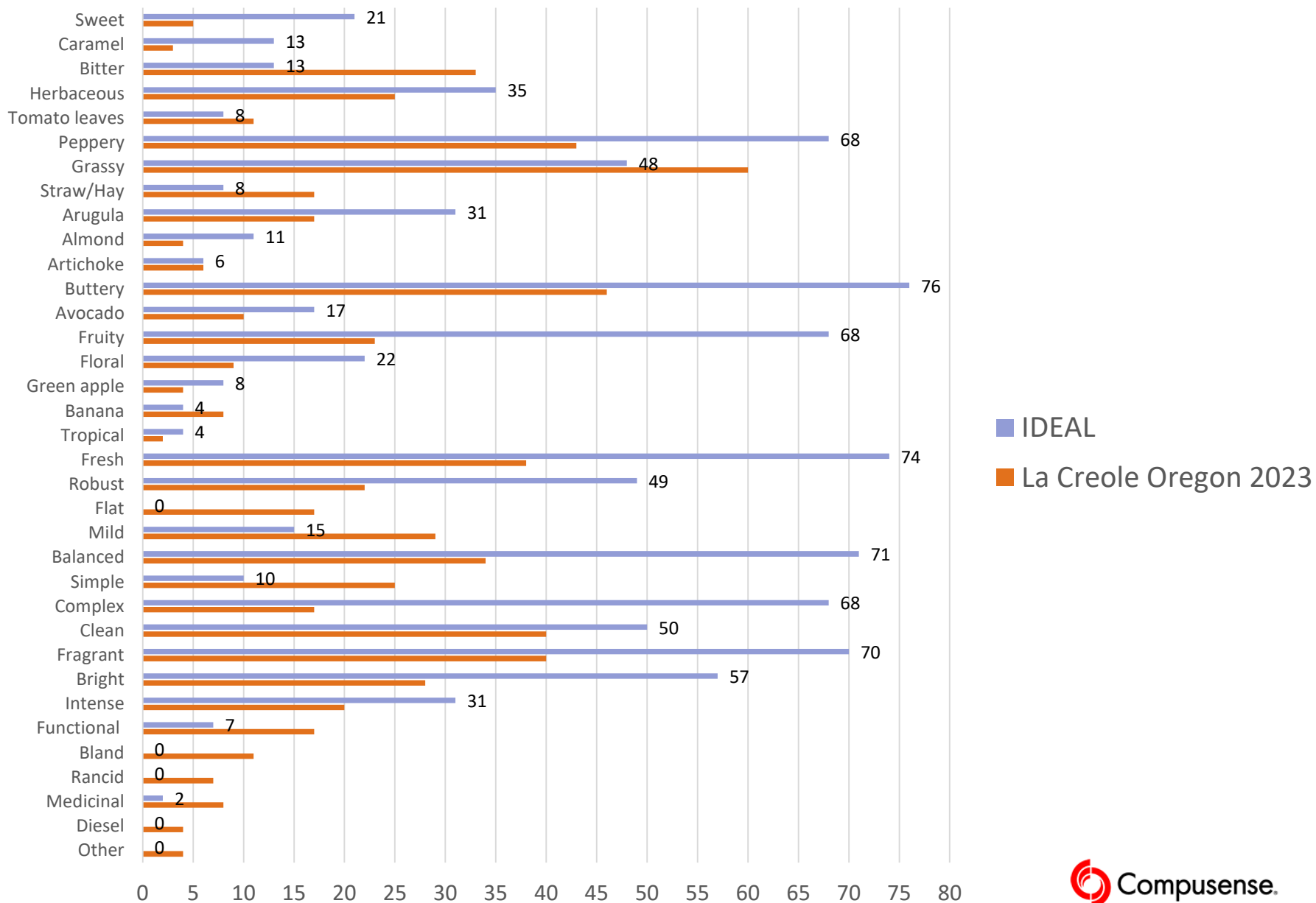
Correspondence Analysis on Sensory Descriptors

Symmetric plot (axes F1 and F2: 87.07 %)

A test of independence between the rows and columns was significant (p=0.00) thereby indicating that real differences existed among the sensory profiles of the products.

Cobram – is most associated with the sensory attributes: peppery, intense, arugula, herbaceous, robust, grassy, fragrant, complex.

La Creole – grassy, buttery, peppery, clean, fragrant, fresh, balanced.

**Mother Tree –** bitter, intense, medicinal, rancid, flat and diesel.

Olive from the Raw – buttery, mild, balanced, clean, fresh, simple, bright.

River Ranch – sweet, clean, buttery, balanced, fresh, fruity, simple, bright, floral, banana, caramel.

kyoord – peppery, bitter, grassy, intense, arugula, bright.

IDEAL –fragrant, complex, bright, fruity, fresh, peppery, buttery, balanced, clean.

Principal Coordinate Analysis on Sensory Descriptors
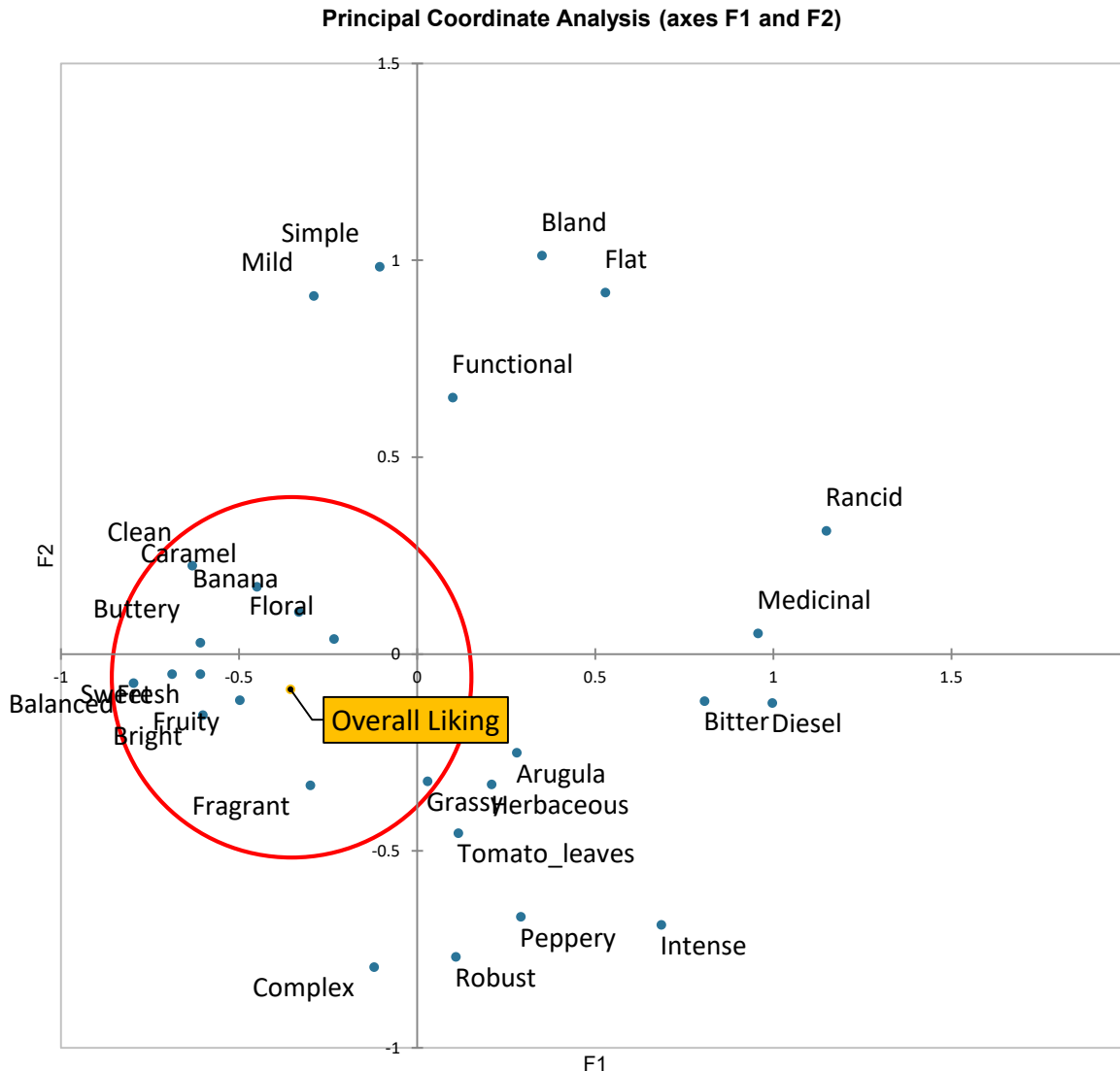
Principal Coordinate Analysis (axes F1 and F2)

Principal Coordinate Analysis (PCoA) displays the relationship between the descriptive attributes and overall liking of the products. The PCoA shows the **overall liking** of these oils is most associated with the attributes **fragrant, fruity, bright, sweet, balanced, floral, buttery, banana, grassy**.

The attributes that are not preferred include: **rancid, medicinal, bland, flat, bitter, diesel.**

Mean Impact of Sensory Descriptor Properties on Overall Liking
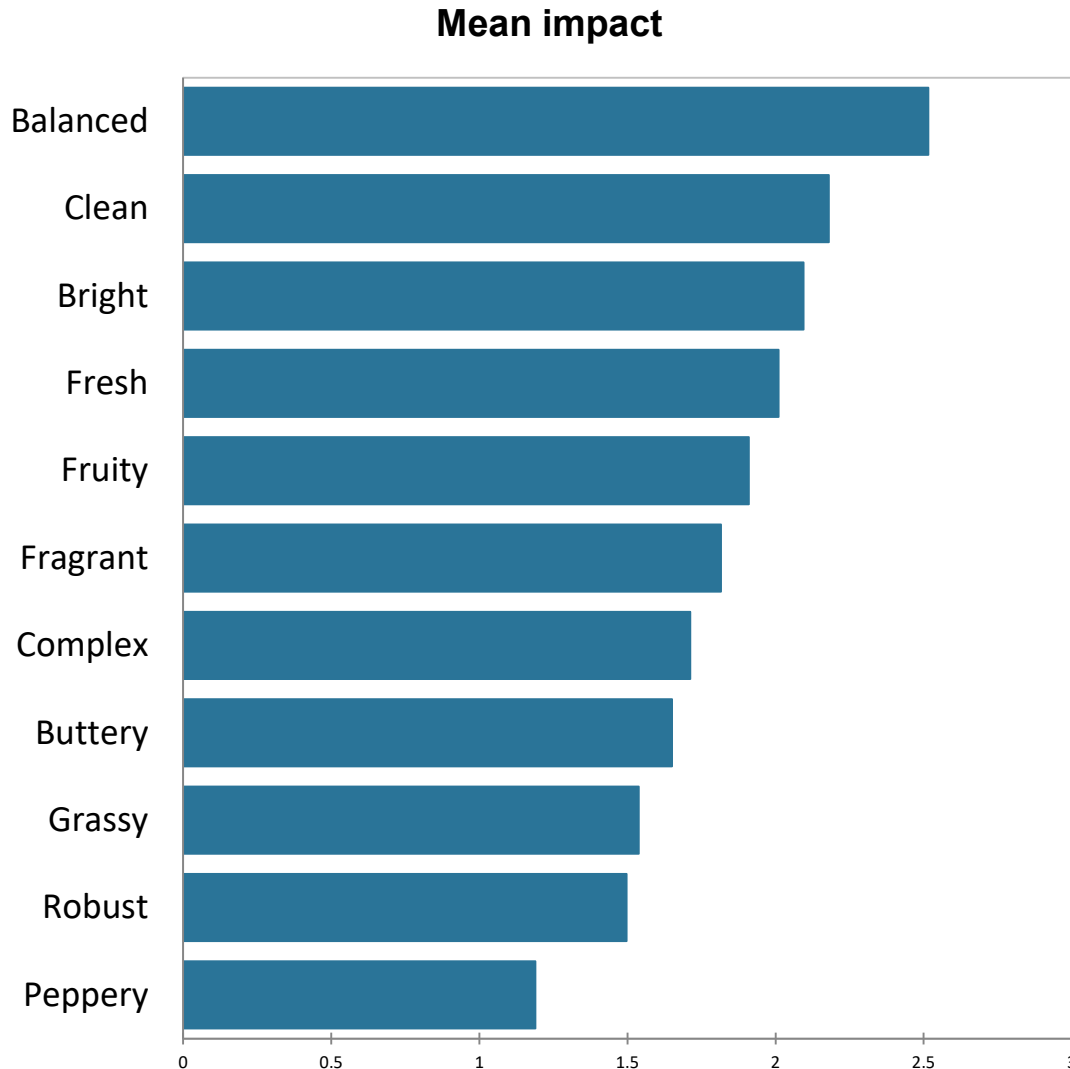

Mean impact

Liking data was used in a penalty analysis where the mean drops were tested for significance at a 95% confidence level and displayed in a mean impact chart to show those attributes with a significant mean impact on the overall liking of the products.

The attribute **balanced**, followed by clean, bright, fresh, fruity, fragrant, complex and buttery had the highest positive impact on overall liking.

Comparison of elicitation rates between each product and the ideal product for sensory characteristics

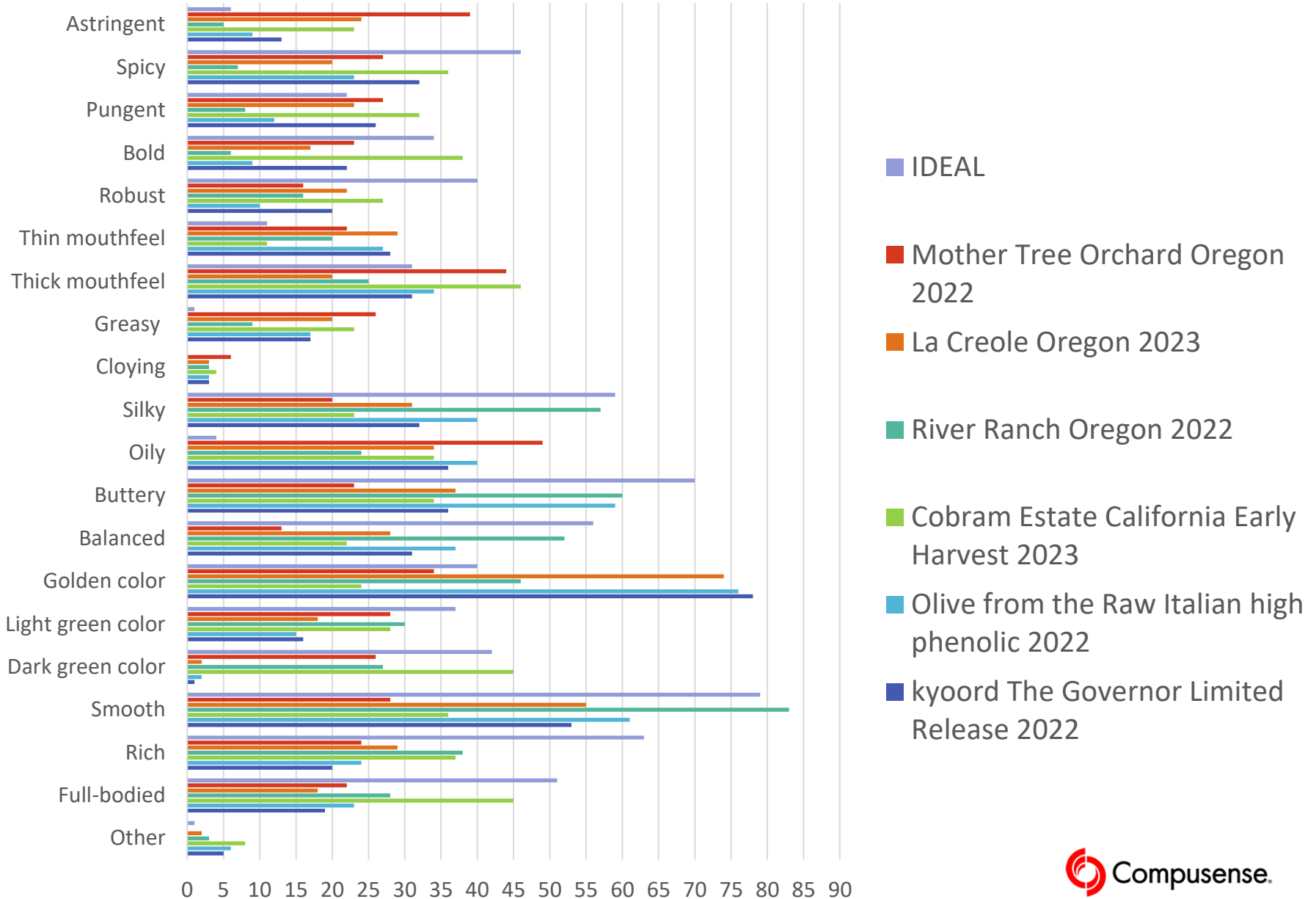**Product La Creole Oregon 2023 vs Ideal product**
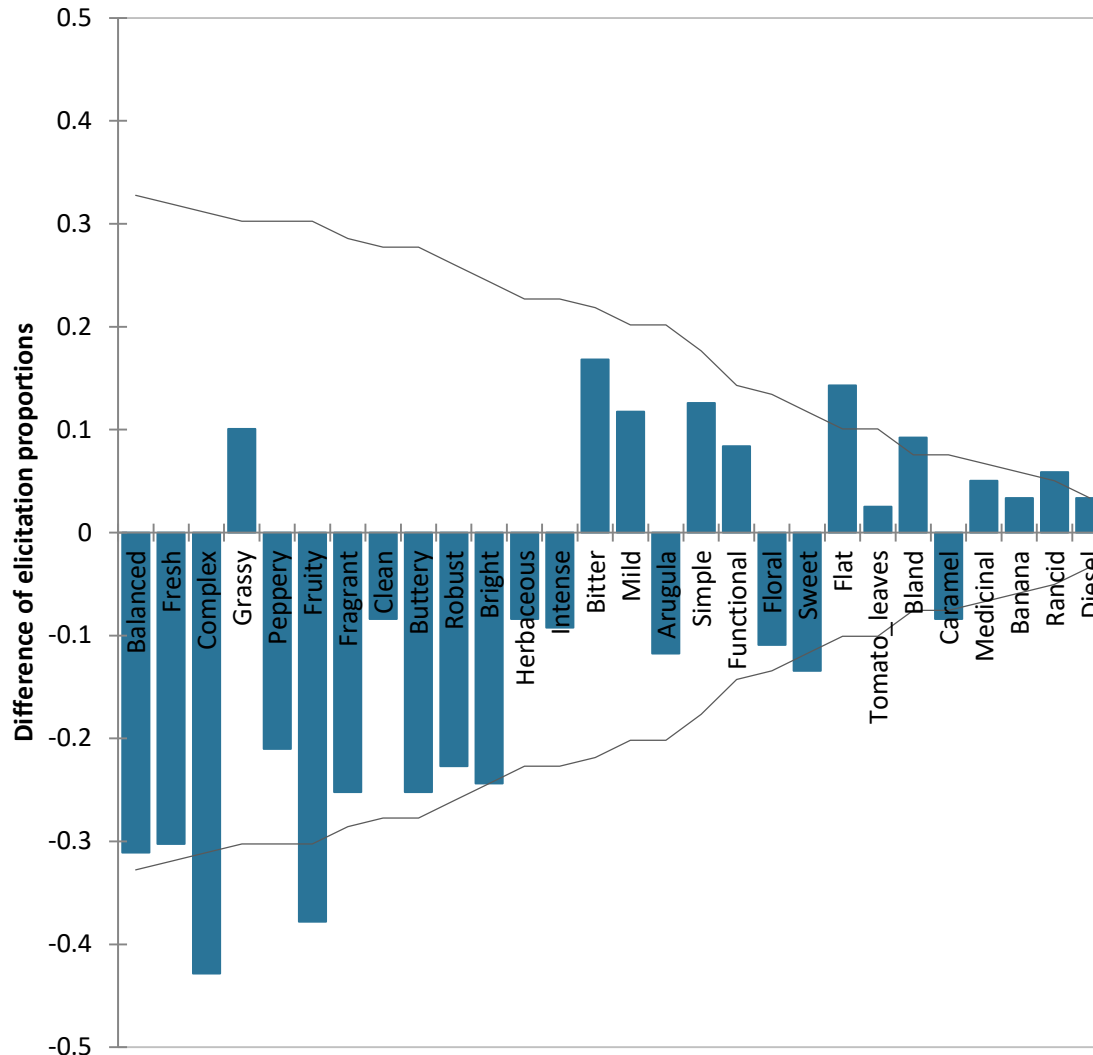
For each attribute, this represents whether the product is similar or different from the ideal product. The more differences an attribute is subject to, the more problematic it is and will be located on the left side of the graph. Conversely, the more for a given attribute the product is similar to the ideal product, the closer the line will be to 0. If the difference is negative, the attribute is not present enough, while if it is positive, it is too present.

La Creole has more grassy, bitter, mild, simple, functional, flat, bland, medicinal, banana, rancid and diesel than the ideal. It is much less balanced, fresh, complex, peppery, fruity, fragrant, clean buttery, robust, bright and sweet character.
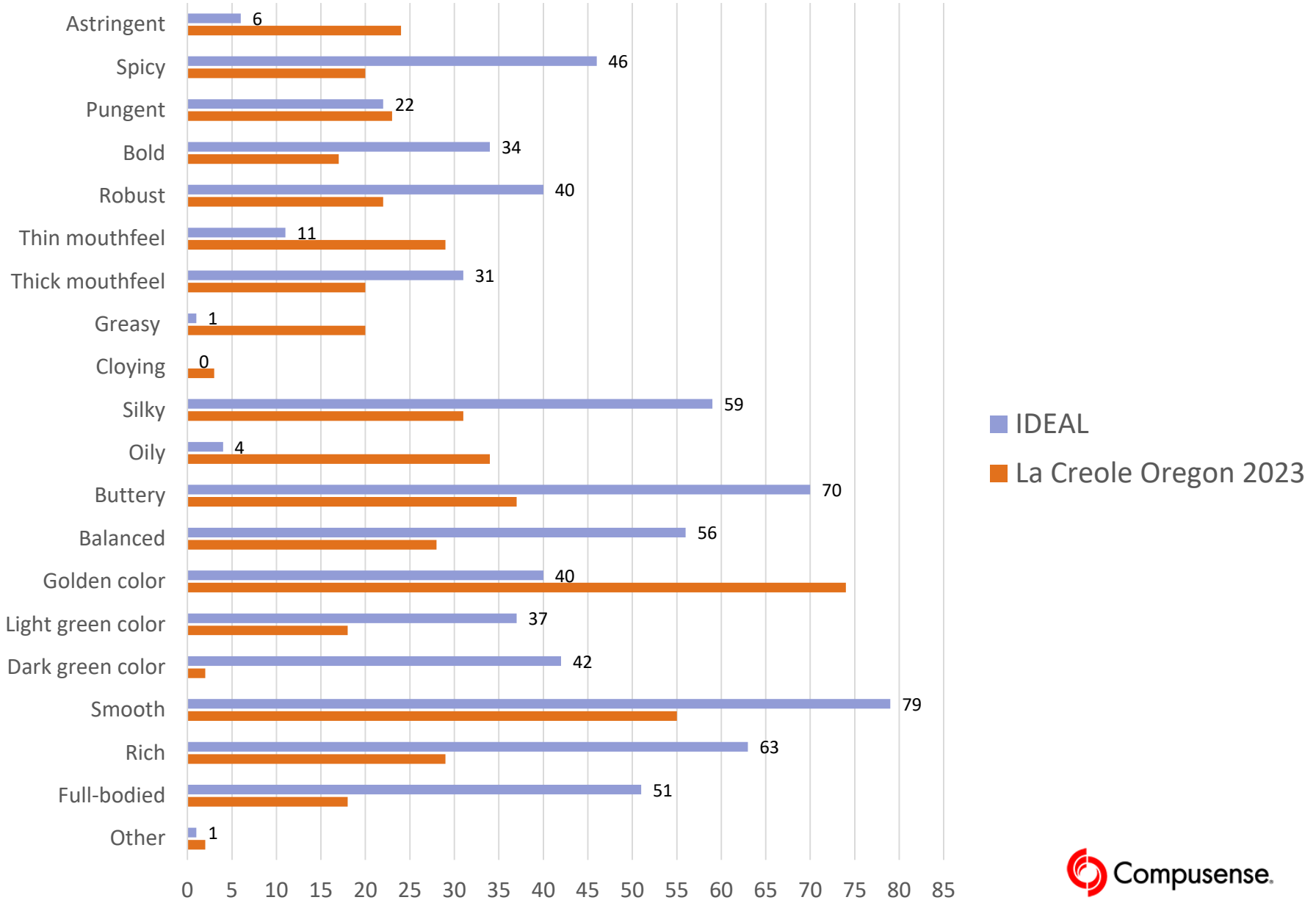
Summary for product characteristics based on the ideal olive oil

Must have	Nice to have	Does not influence	Does not harm	Must not have
Peppery			Herbaceous	Bitter
Buttery			Tomato leaves	
Fruity			Grassy	
Fresh			Arugula	
Balanced			Floral	
Complex			Banana	
Fragrant			Robust	
			Mild	
			Simple	
			Functional	

EVOO sensory texture/color descriptors - CATA

Legend:
- IDEAL
- Mother Tree Orchard Oregon 2022
- La Creole Oregon 2023
- River Ranch Oregon 2022
- Cobram Estate California Early Harvest 2023
- Olive from the Raw Italian high phenolic 2022
- kyoord The Governor Limited Release 2022

Descriptors (top to bottom): Astringent, Spicy, Pungent, Bold, Robust, Thin mouthfeel, Thick mouthfeel, Greasy, Cloying, Silky, Oily, Buttery, Balanced, Golden color, Light green color, Dark green color, Smooth, Rich, Full-bodied, Other

Compusense

EVOO sensory texture/color descriptors - CATA

Descriptor	IDEAL	La Creole Oregon 2023
Astringent	6	24
Spicy	46	20
Pungent	22	23
Bold	34	17
Robust	40	22
Thin mouthfeel	11	29
Thick mouthfeel	31	20
Greasy	1	20
Cloying	0	3
Silky	59	31
Oily	4	34
Buttery	70	37
Balanced	56	28
Golden color	40	74
Light green color	37	18
Dark green color	42	2
Smooth	79	55
Rich	63	29
Full-bodied	51	18
Other	1	2

Compusense.

Correspondence Analysis on Texture Descriptors

Symmetric plot (axes F1 and F2: 85.91 %)

A test of independence between the rows and columns was significant (p=0.00) thereby indicating that real differences existed among the sensory profiles of the products.

Cobram – is most associated with the texture attributes: bold, spicy, robust, thick mouthfeel, dark green color.

La Creole – golden color, smooth, buttery, oily, silky, thin mouthfeel.

Mother Tree – oily, thick mouthfeel, astringent, pungent, greasy, bold.

Olive from the Raw – golden color, smooth, buttery, silky, balanced.

River Ranch – smooth, buttery, silky, balanced.

kyoord – golden color, smooth, oily, thin mouthfeel.

**IDEAL –** full bodied, rich, light green color, robust, smooth, buttery, silky, balanced, spicy.

Principal Coordinate Analysis on Texture Descriptors
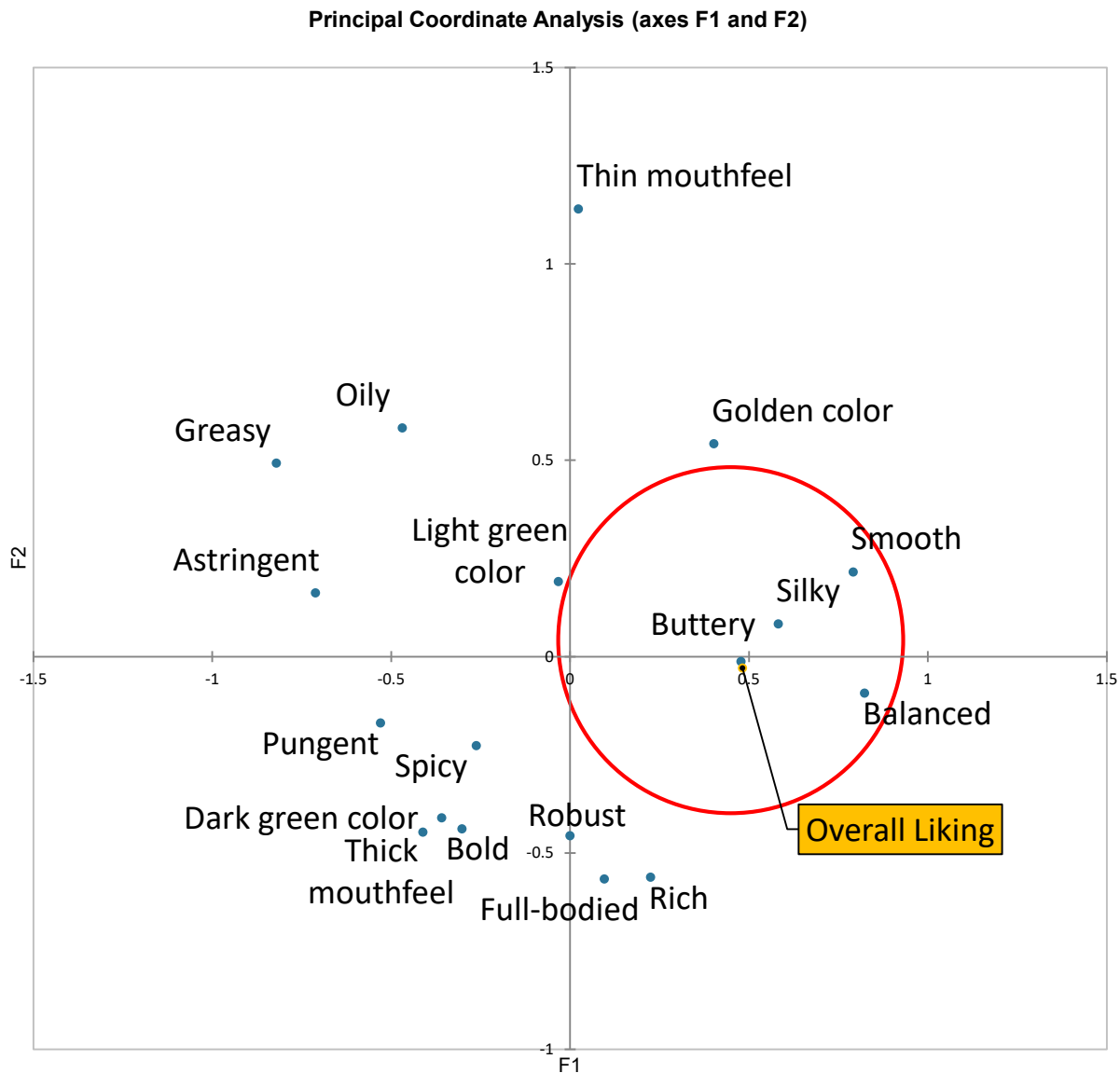
Principal Coordinate Analysis (axes F1 and F2)

Principal Coordinate Analysis (PCoA) displays the relationship between the descriptive attributes and overall liking of the products. The PCoA shows the **overall liking** of these oils is most associated with the attributes **buttery, silky, smooth, balanced, rich, robust, full-bodied**.

The attributes that are not preferred include: **thin mouthfeel, greasy, oily, astringent.**

Mean Impact of Texture Descriptor Properties
on Overall Liking
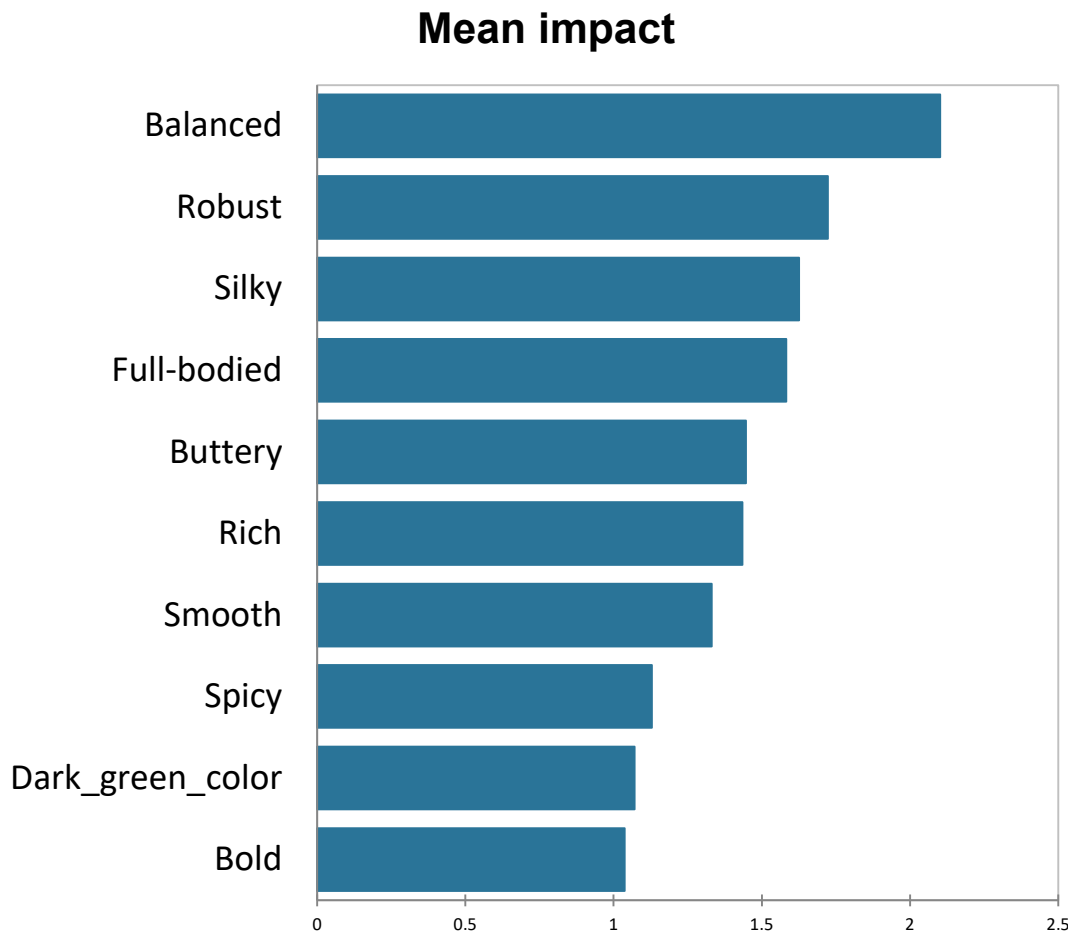
Mean impact

Liking data was used in a penalty analysis where the mean drops were tested for significance at a 95% confidence level and displayed in a mean impact chart to show those attributes with a significant mean impact on the overall liking of the products.

The attribute **balanced**, followed by robust, silky, full-bodied, buttery, rich and smooth had the highest positive impact on overall liking.

Comparison of elicitation rates between each product and the ideal product for texture

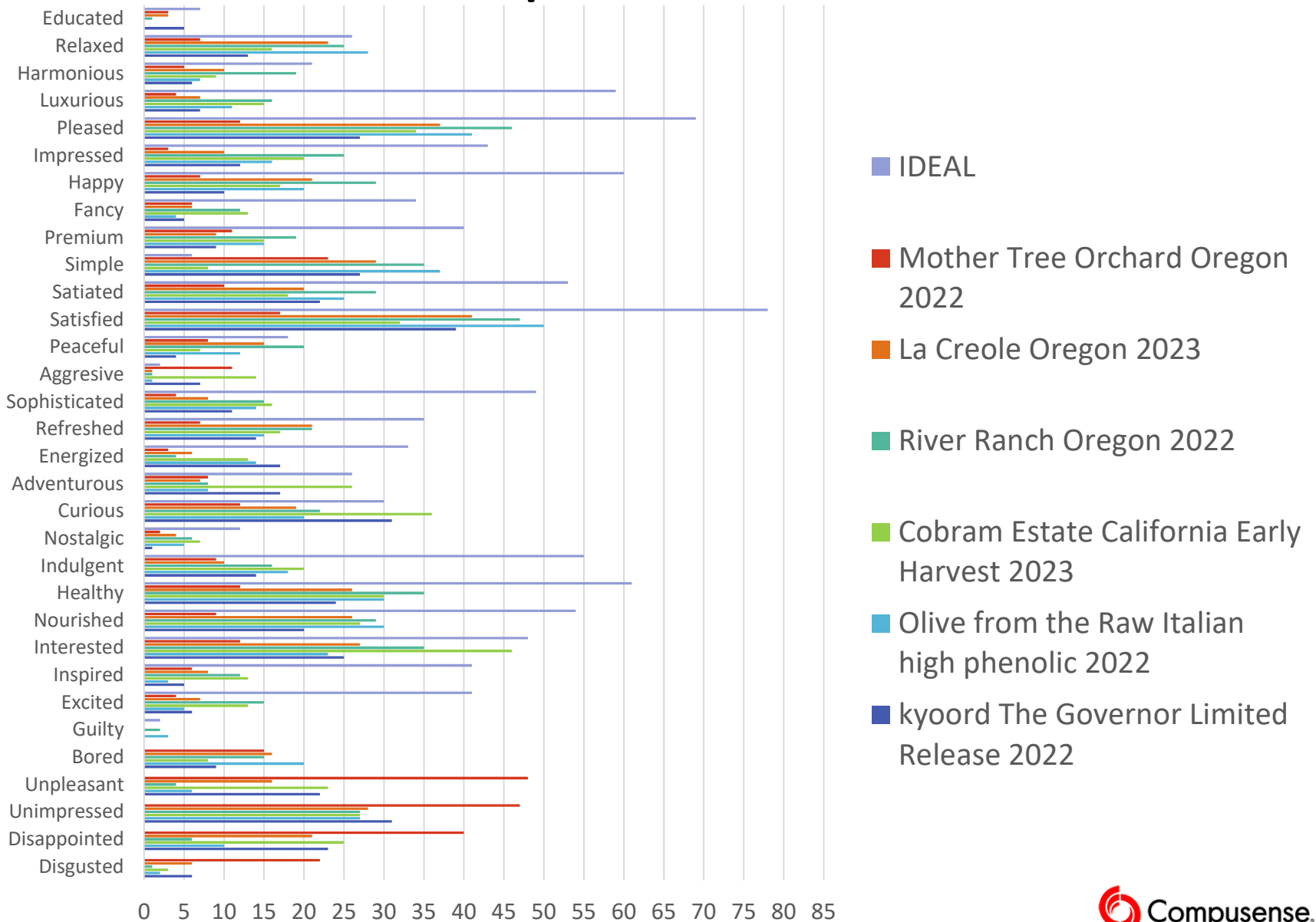**Product La Creole Oregon 2023 vs Ideal product**
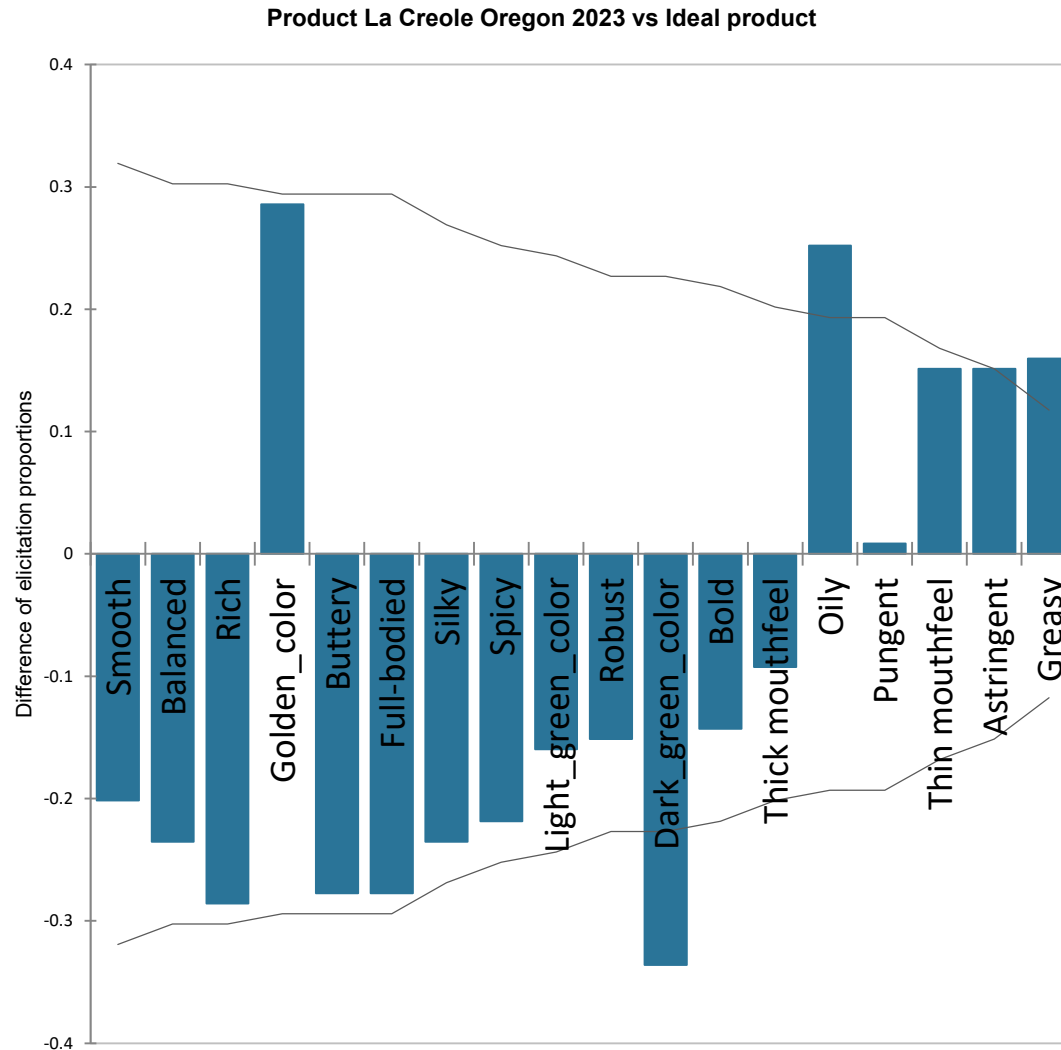
La Creole has more golden color, oily, astringent and greasy character, and thin mouthfeel than the ideal. It is much less smooth, balanced, rich, buttery, full-bodied, silky, robust and spicy.
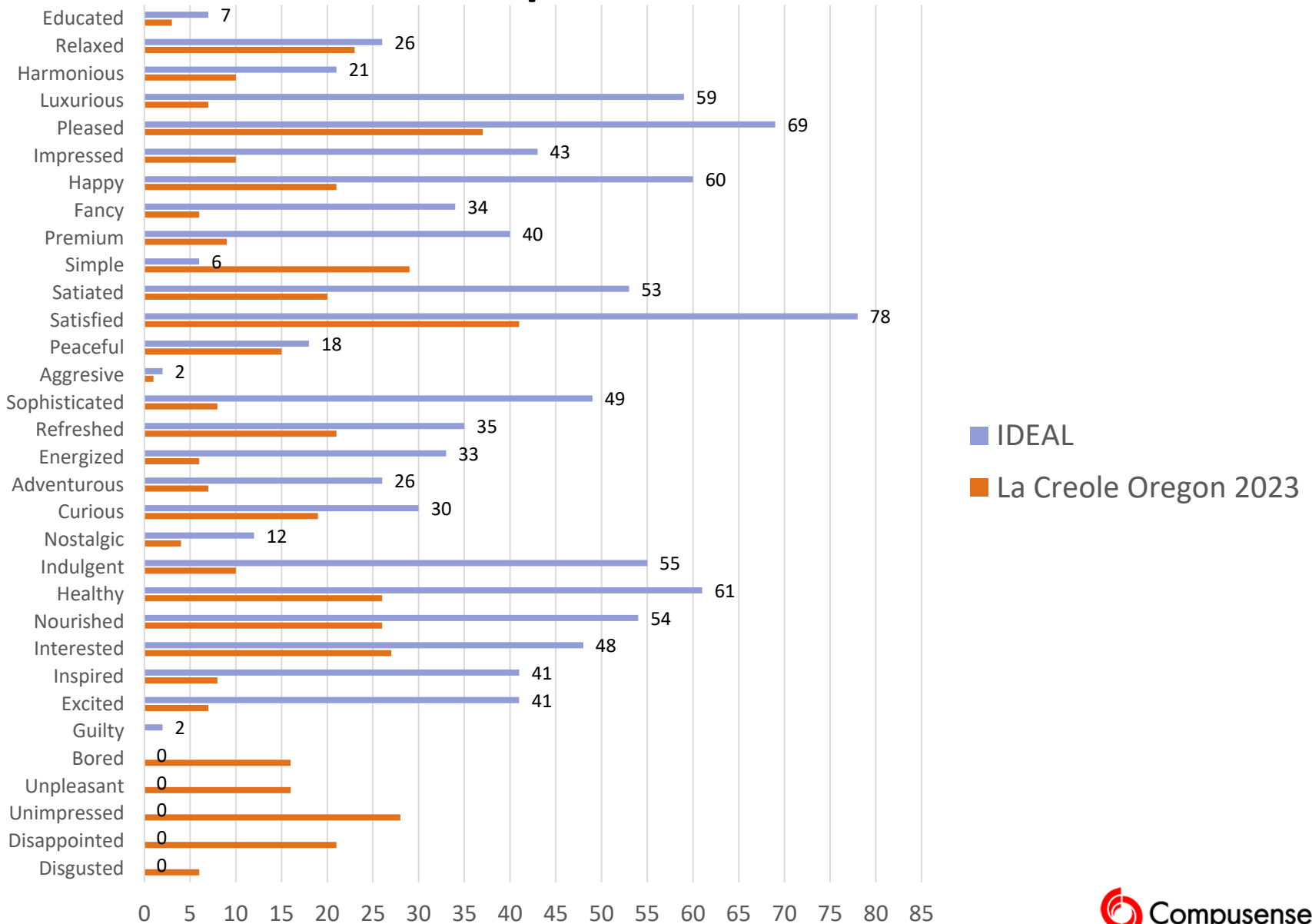
Summary for texture characteristics based on the ideal olive oil

Must have	Nice to have	Does not influence	Does not harm	Must not have
Buttery			Spicy	Oily
Smooth			Bold	
Rich			Robust	
			Thin mouthfeel	
			Thick mouthfeel	
			Silky	
			Golden color	
			Light green color	

Emotion descriptors CATA - evaluation

Legend:
- IDEAL
- Mother Tree Orchard Oregon 2022
- La Creole Oregon 2023
- River Ranch Oregon 2022
- Cobram Estate California Early Harvest 2023
- Olive from the Raw Italian high phenolic 2022
- kyoord The Governor Limited Release 2022

Categories (top to bottom): Educated, Relaxed, Harmonious, Luxurious, Pleased, Impressed, Happy, Fancy, Premium, Simple, Satiated, Satisfied, Peaceful, Aggresive, Sophisticated, Refreshed, Energized, Adventurous, Curious, Nostalgic, Indulgent, Healthy, Nourished, Interested, Inspired, Excited, Guilty, Bored, Unpleasant, Unimpressed, Disappointed, Disgusted

Compusense

Emotion descriptors CATA - evaluation

Correspondence Analysis on Emotion Descriptors
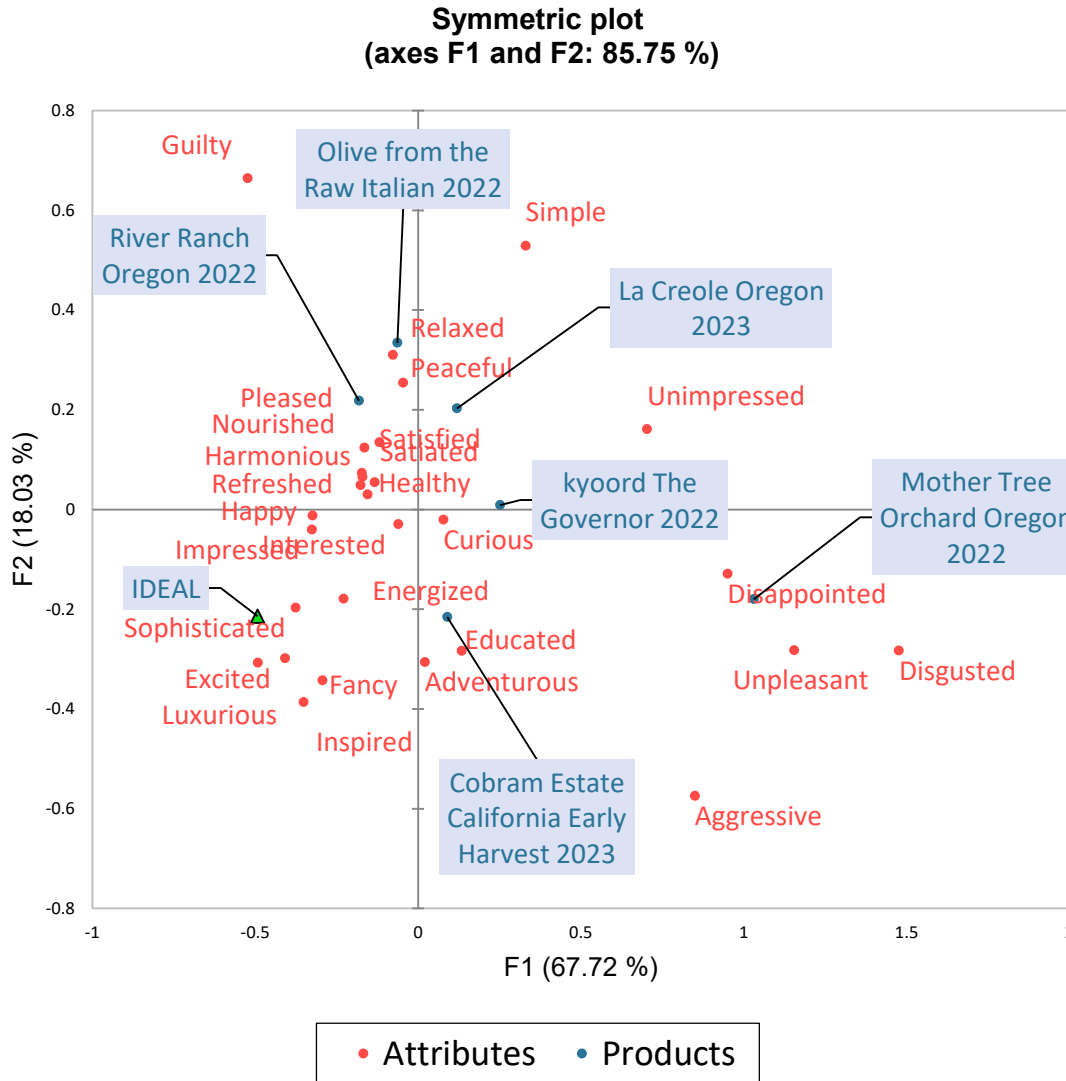
Symmetric plot (axes F1 and F2: 85.75 %)

A test of independence between the rows and columns was significant (p=0.00) thereby indicating that real differences existed among the sensory profiles of the products.

Cobram – is most associated with the texture attributes: interested, curious, adventurous, indulgent, luxurious, aggressive, unpleasant.

La Creole – satisfied, pleased, simple, peaceful, satiated, relaxed.

Mother Tree – unimpressed, disappointed, unpleasant, disgusted.

Olive from the Raw – satisfied, pleased, simple, nourished, relaxed, satiated, bored, .

River Ranch – pleased, healthy, nourished, happy, simple, satiated, peaceful, impressed, harmonious, premium, luxurious.

kyoord – curious, unimpressed, energized, satisfied.

IDEAL – full bodied, rich, light green color, robust, smooth, buttery, silky, balanced, spicy.

Principal Coordinate Analysis on Emotion Descriptors
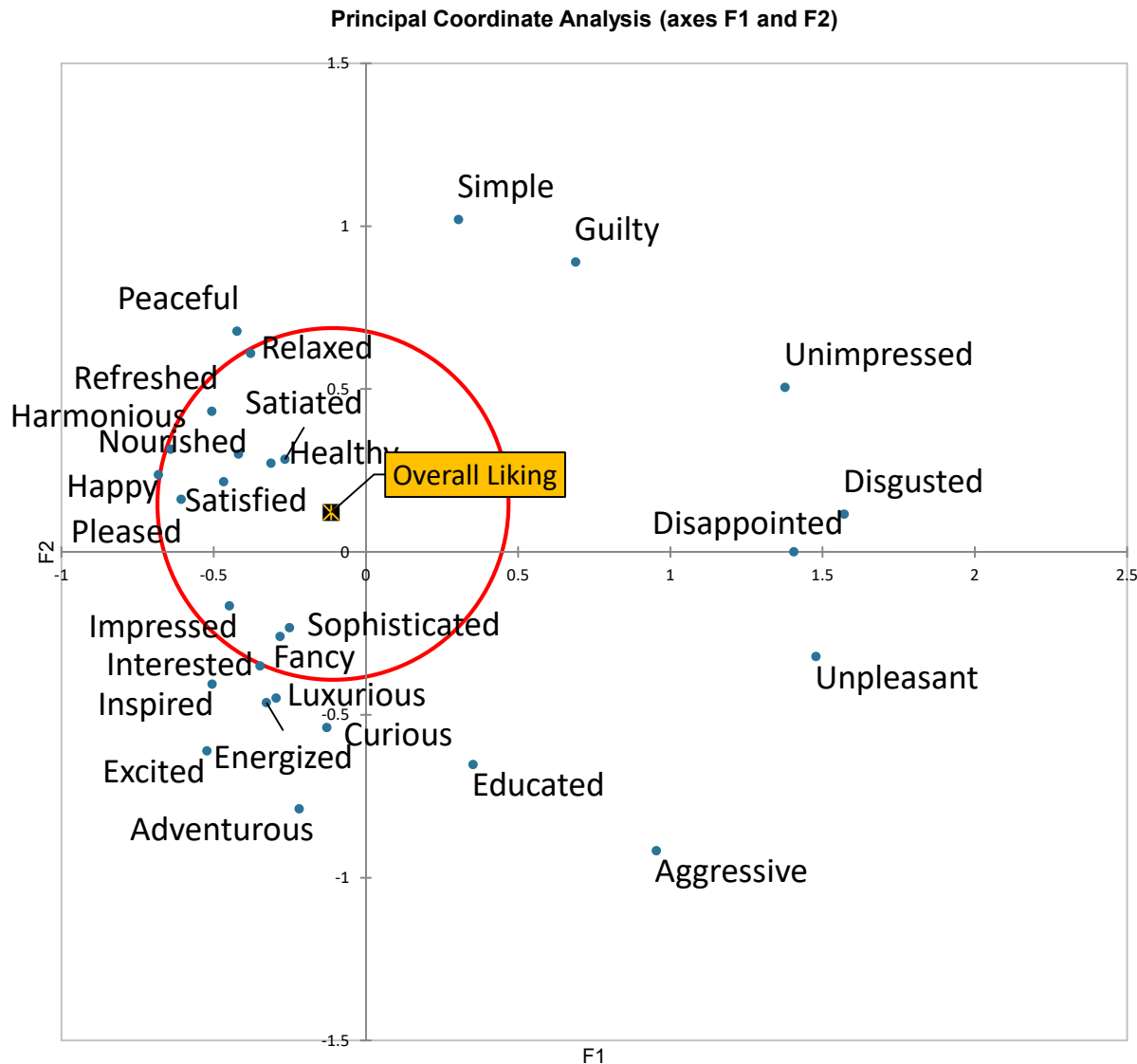
Principal Coordinate Analysis (axes F1 and F2)

Principal Coordinate Analysis (PCoA) displays the relationship between the descriptive attributes and overall liking of the products. The PCoA shows the **overall liking** of these oils is most associated with the attributes **healthy, satiated, satisfied, pleased, happy, nourished, harmonious, relaxed, sophisticated, fancy, impressed**.

The attributes that are not preferred include: **disgusted, unimpressed, aggressive, guilty, disappointed.**

Mean Impact of Emotion Descriptor Properties on Overall Liking
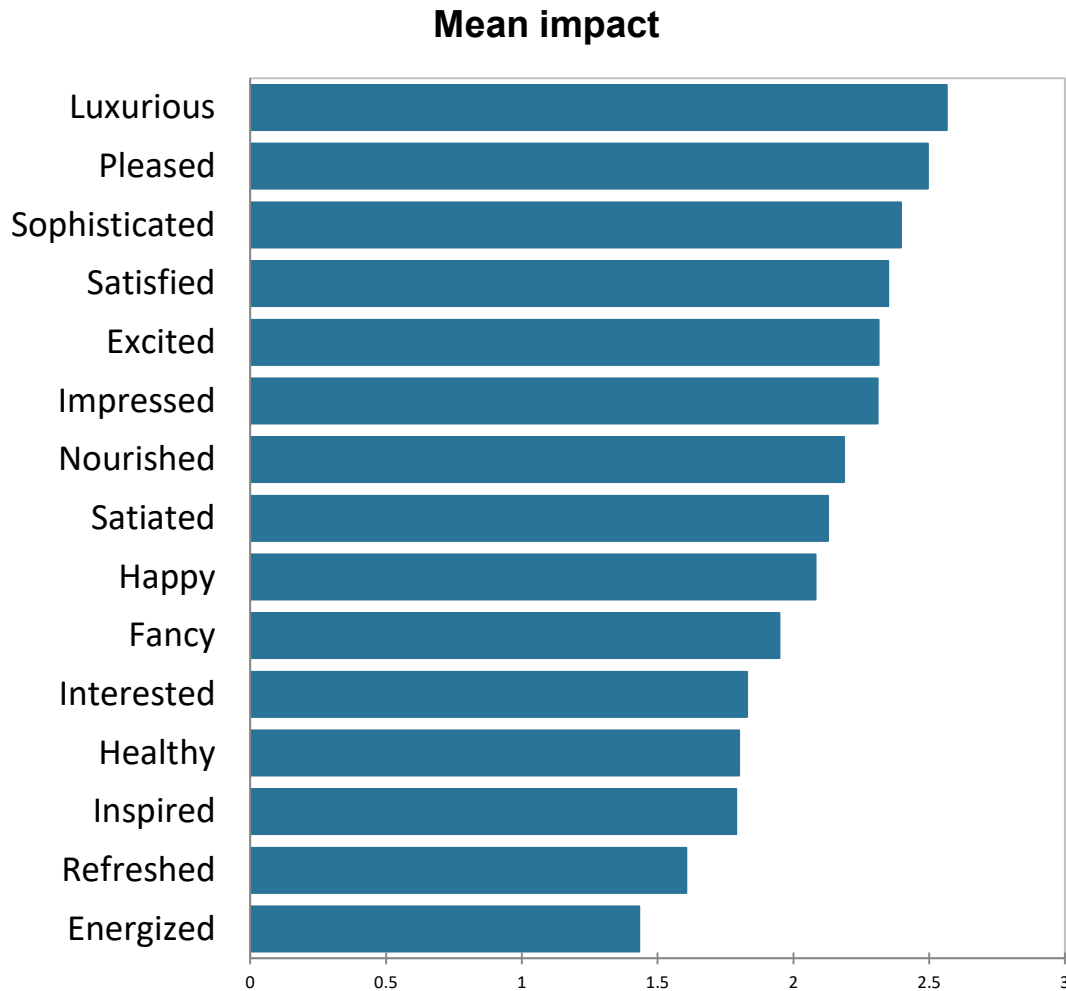
Mean impact

Liking data was used in a penalty analysis where the mean drops were tested for significance at a 95% confidence level and displayed in a mean impact chart to show those attributes with a significant mean impact on the overall liking of the products.

The attribute **luxurious**, followed by pleased, sophisticated, satisfied, excited, impressed, nourished and satiated had the highest positive impact on overall liking.

Comparison of elicitation rates between each product and the ideal product based on emotions

Product La Creole Oregon 2023 vs Ideal product

Difference of elicitation proportions

Pleased, Satisfied, Happy, Luxurious, Nourished, Healthy, Satiated, Interested, Sophisticated, Refreshed, Impressed, Inspired, Excited, Curious, Relaxed, Energized, Simple, Adventurous, Fancy, Unimpressed, Harmonious, Disappointed, Peaceful, Unpleasant, Educated, Disgusted, Aggresive, Guilty

La Creole was rated much more simple than the ideal.

Summary for emotion characteristics based on the ideal olive oil

Must have	Nice to have	Does not influence	Does not harm	Must not have
Pleased			Educated	Unimpressed
Happy			Relaxed	
Satisfied			Simple	
Healthy			Adventurous	

Rate Quality
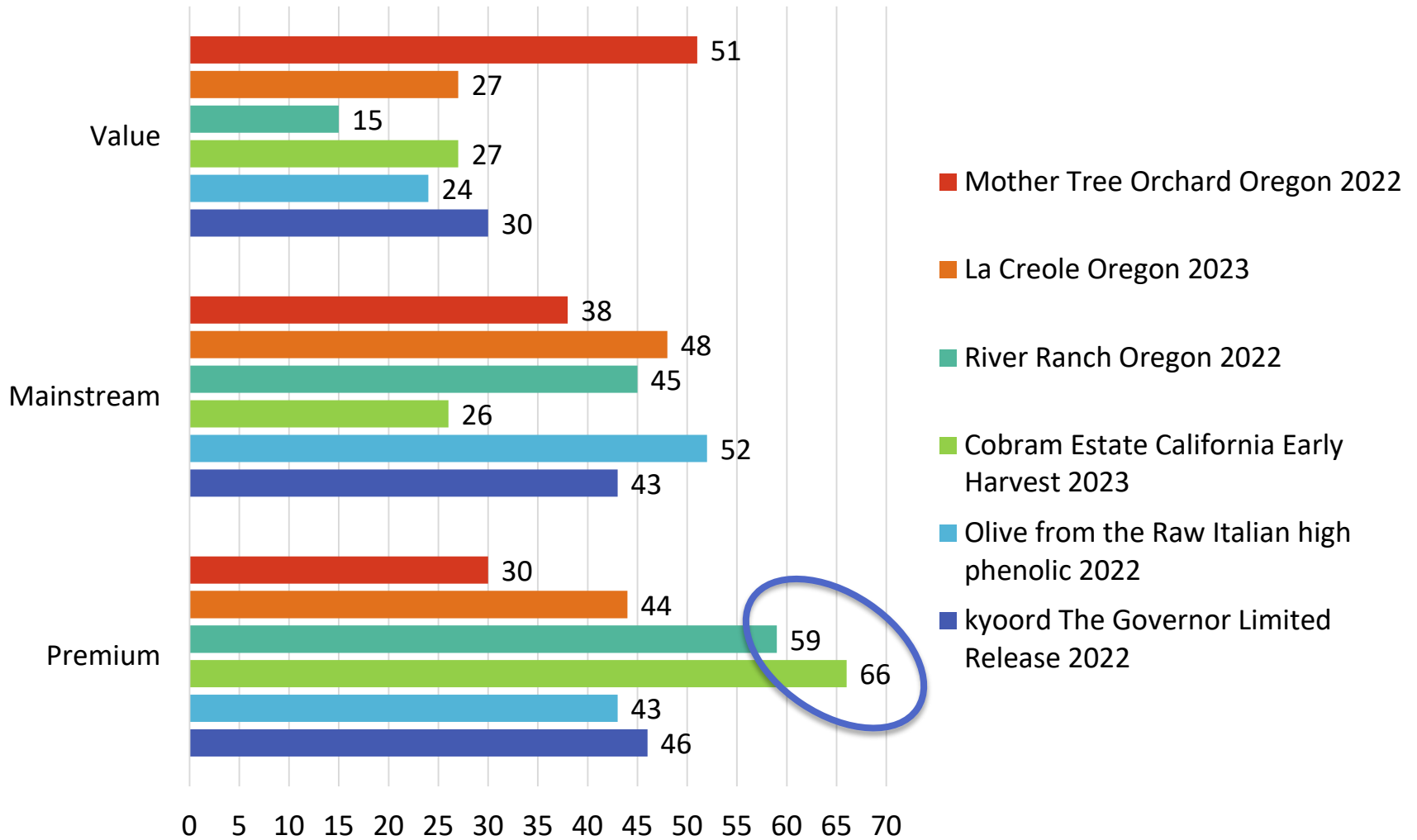
Rate Quality	kyoord The Governor 2022		Olive from the Raw Italian 2022		Cobram Estate California Early Harvest 2023		River Ranch Oregon 2022		La Creole Oregon 2023		Mother Tree Orchard Oregon 2022		p-value
Mean	2.13	a	2.16	a	2.33	a	2.37	a	2.14	a	1.82	b	< 0.01

Purchase Intent

Legend: ■ Would not buy ■ Might buy ■ Would buy

Product	Would not buy	Might buy	Would buy
kyoord The Governor Limited Release 2022	43%	20%	37%
Olive from the Raw Italian high phenolic 2022	34%	30%	36%
Cobram Estate California Early Harvest 2023	44%	15%	41%
River Ranch Oregon 2022	27%	20%	53%
La Creole Oregon 2023	39%	29%	33%
Mother Tree Orchard Oregon 2022	72%	13%	15%
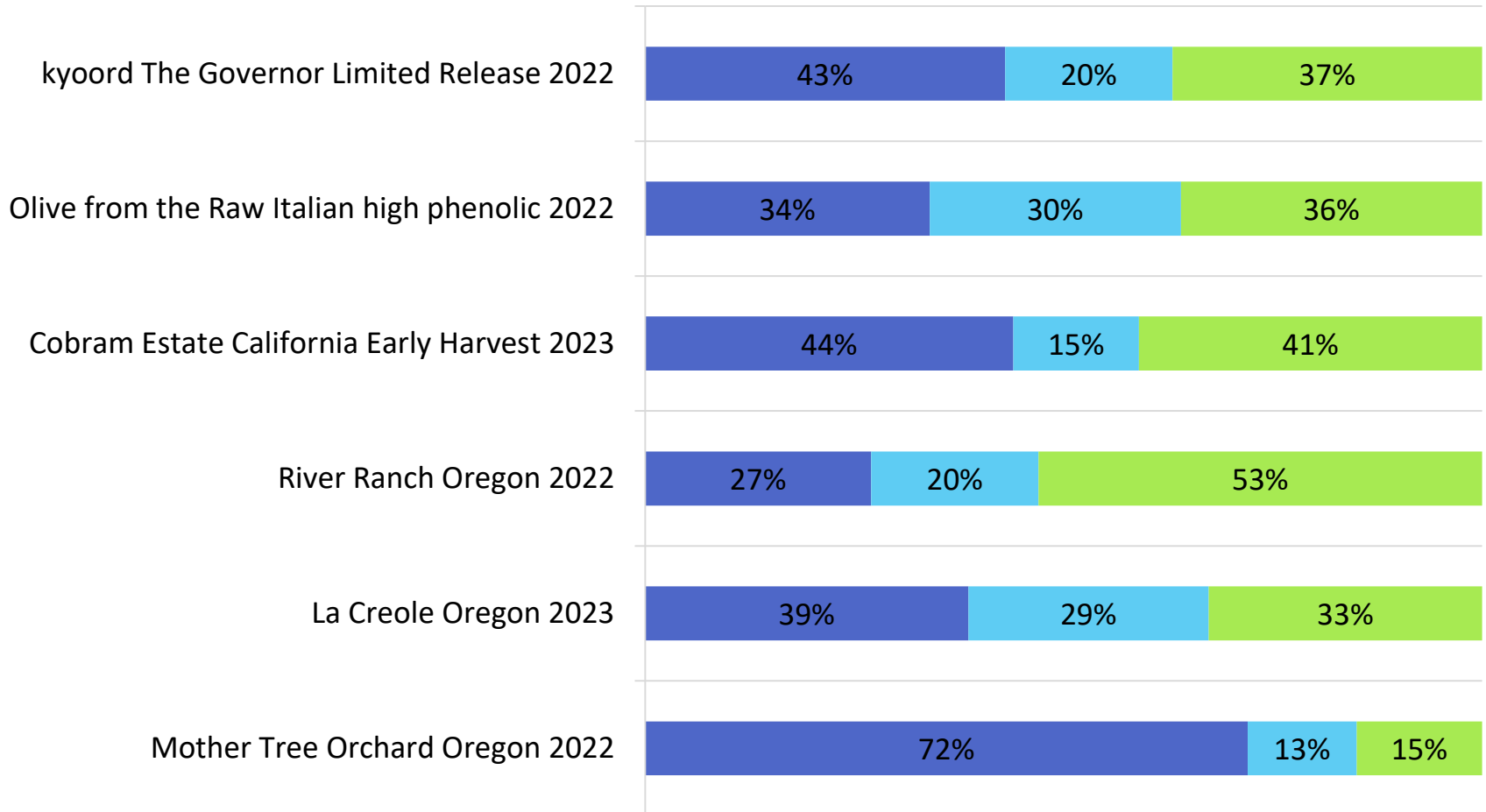
Purchase Intent	kyoord The Governor 2022		Olive from the Raw Italian 2022		Cobram Estate California Early Harvest 2023		River Ranch Oregon 2022		La Creole Oregon 2023		Mother Tree Orchard Oregon 2022		p-value
Mean	2.79	b	3.03	ab	2.89	b	3.44	a	2.82	b	1.96	c	< 0.01

Purchase Intent - Crosstabulations
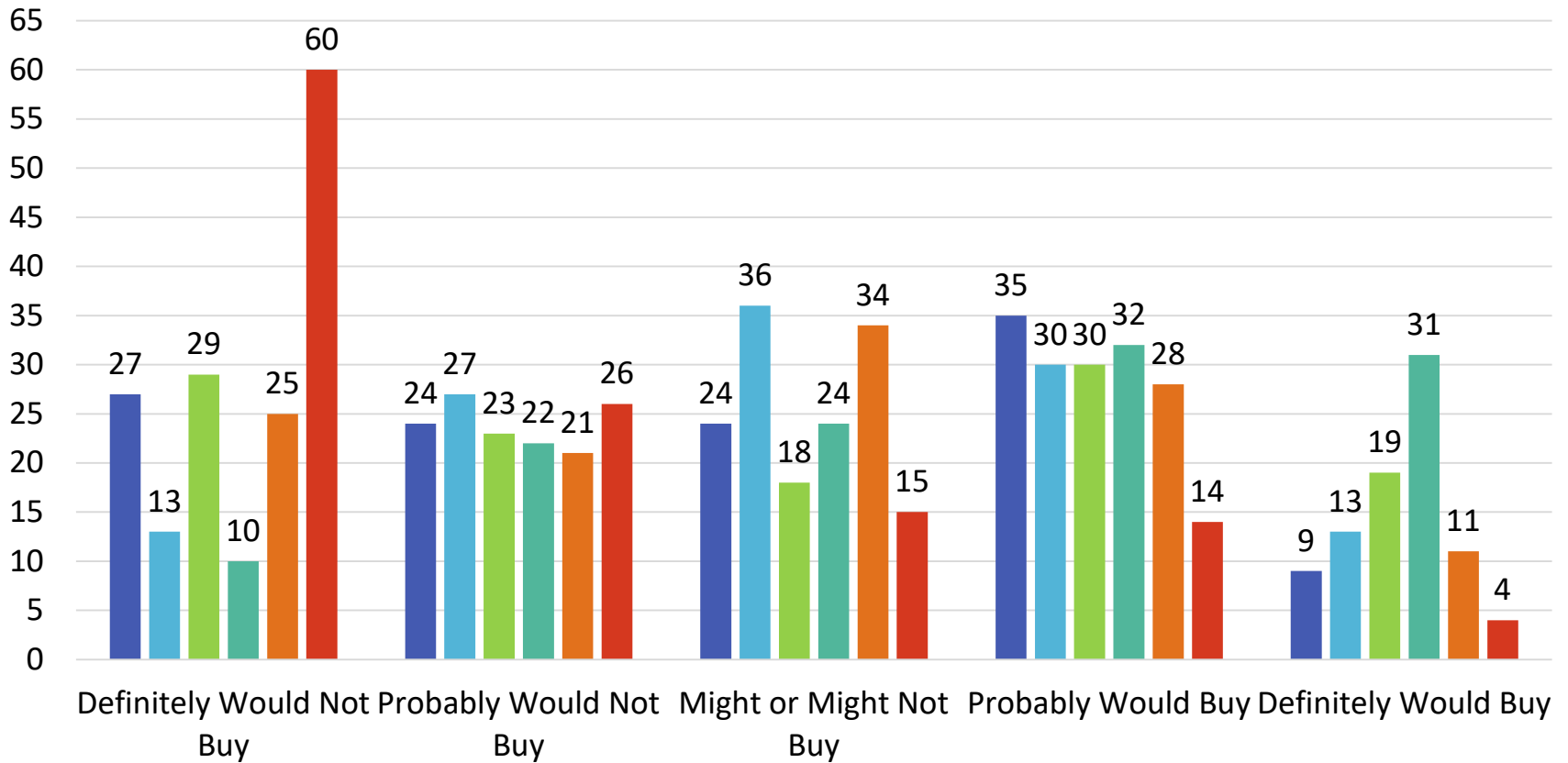
TURF (Total Unduplicated Reach and Frequency) Analysis

SKU	SKU	Total Reach (%)	Total Frequency (%)
kyoord The Governor Limited Release 2022	River Ranch Oregon 2022	70	45
Cobram Estate California Early Harvest 2023	River Ranch Oregon 2022	69	47
Olive from the Raw Italian high phenolic 2022	River Ranch Oregon 2022	68	45
River Ranch Oregon 2022	La Creole Oregon 2023	66	43
kyoord The Governor Limited Release 2022	Cobram Estate California Early Harvest 2023	63	39
kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	61	37
Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	60	39
Cobram Estate California Early Harvest 2023	La Creole Oregon 2023	60	37
River Ranch Oregon 2022	Mother Tree Orchard Oregon 2022	59	34
kyoord The Governor Limited Release 2022	La Creole Oregon 2023	58	35
Olive from the Raw Italian high phenolic 2022	La Creole Oregon 2023	57	34
Cobram Estate California Early Harvest 2023	Mother Tree Orchard Oregon 2022	48	28
kyoord The Governor Limited Release 2022	Mother Tree Orchard Oregon 2022	48	26
Olive from the Raw Italian high phenolic 2022	Mother Tree Orchard Oregon 2022	47	26
La Creole Oregon 2023	Mother Tree Orchard Oregon 2022	44	24

TURF is an analysis type that is used for providing estimates for market potential. TURF analysis is used on sample related category questions specifically (purchase intent). It is used in marketing to highlight a line of products from a complete range of products in order to have the highest market share. From all of the products of a category you can obtain a subset which should then be the line of products with the maximum reach.
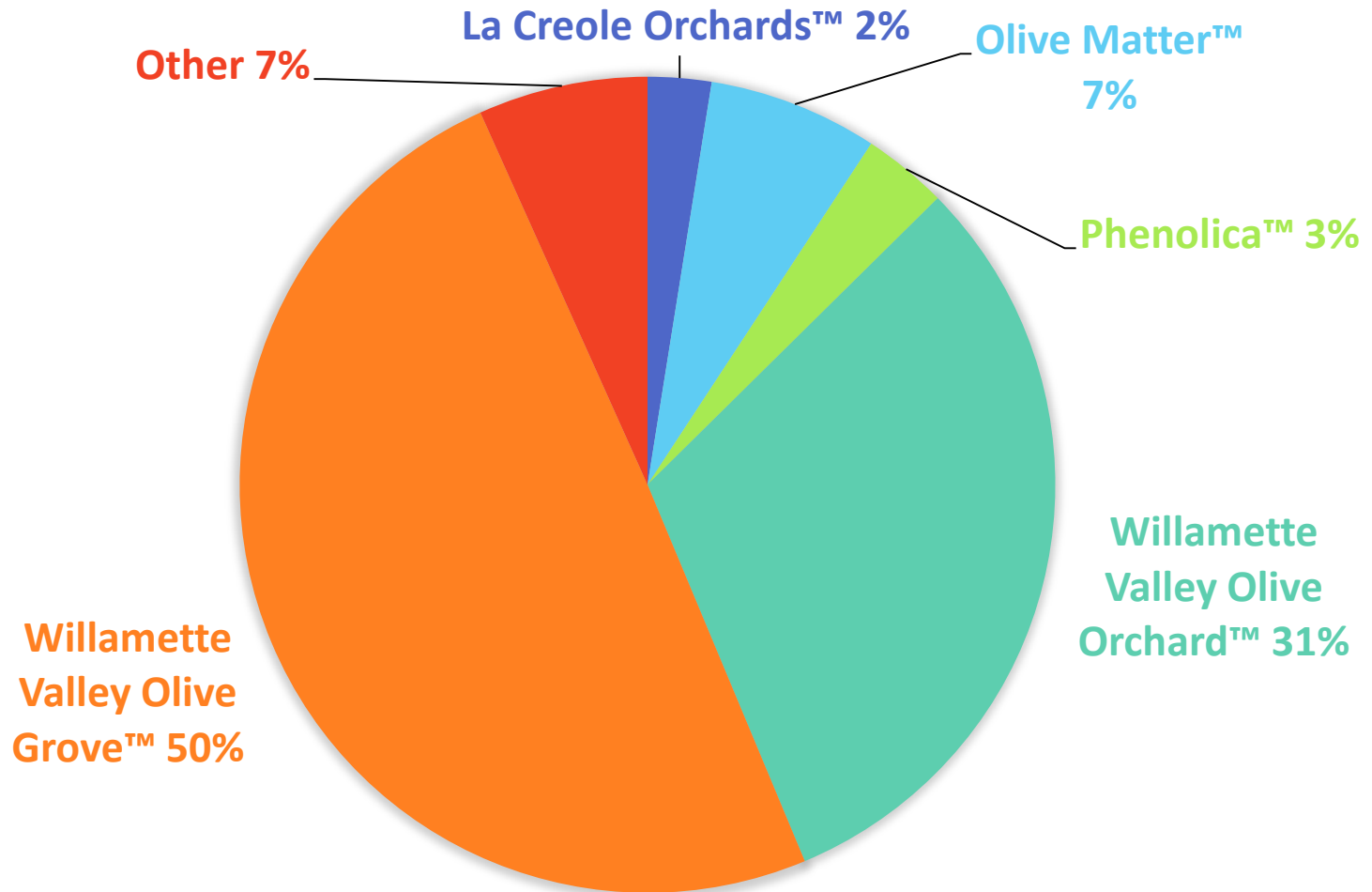
For example, you may have new varieties and you want to launch 1 or 2 that will have the most reach. This report identifies which will be most likely to reach the most consumers.

This analysis shows the two product combinations that would have the highest penetration based on purchase intent. Reach can be expressed as the overall number of survey respondents who preferred at least one of the product mix combinations, or as a percentage of the overall customer base. Frequency shows the number of times that each product combination is preferred.
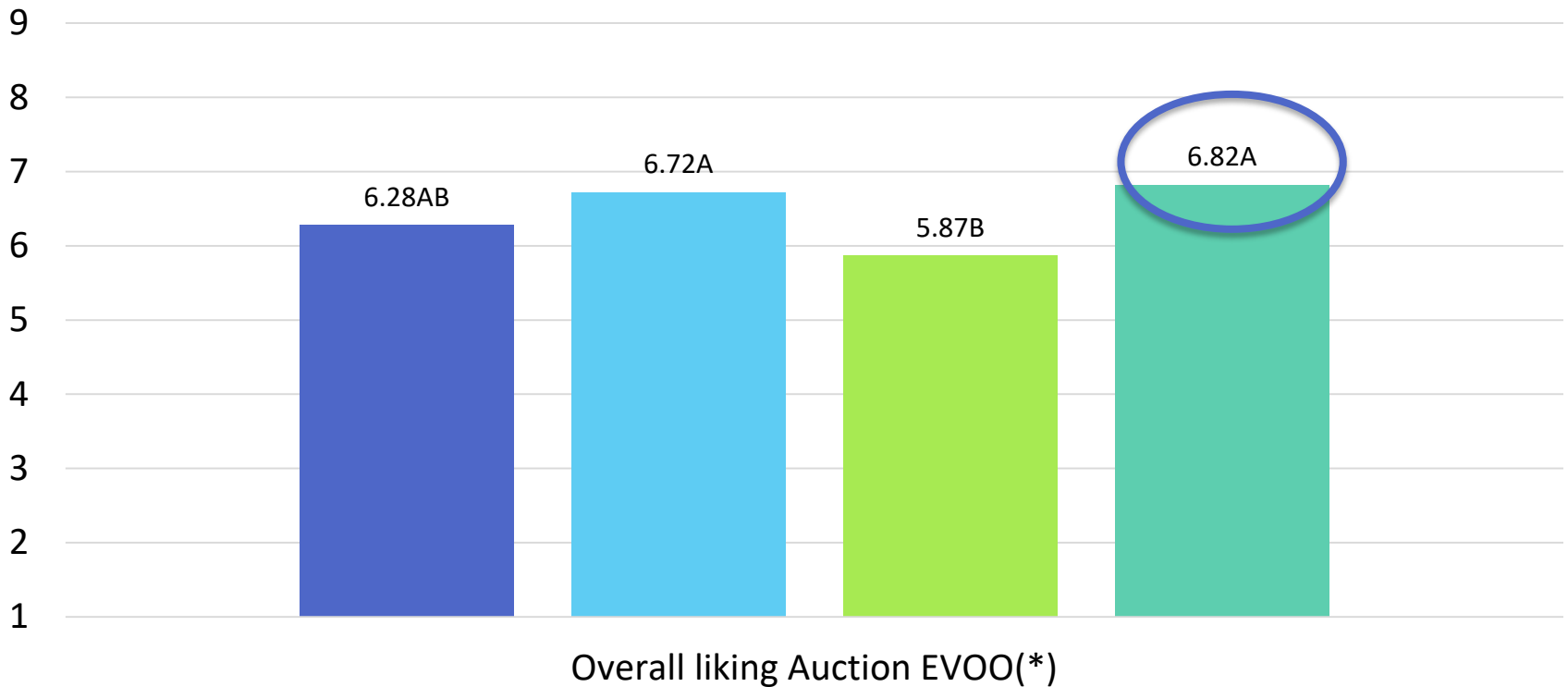
The **River Ranch and Kyoord oils** combined show the highest penetration based on blind coded tasting for purchase intent (70% would buy one of these).
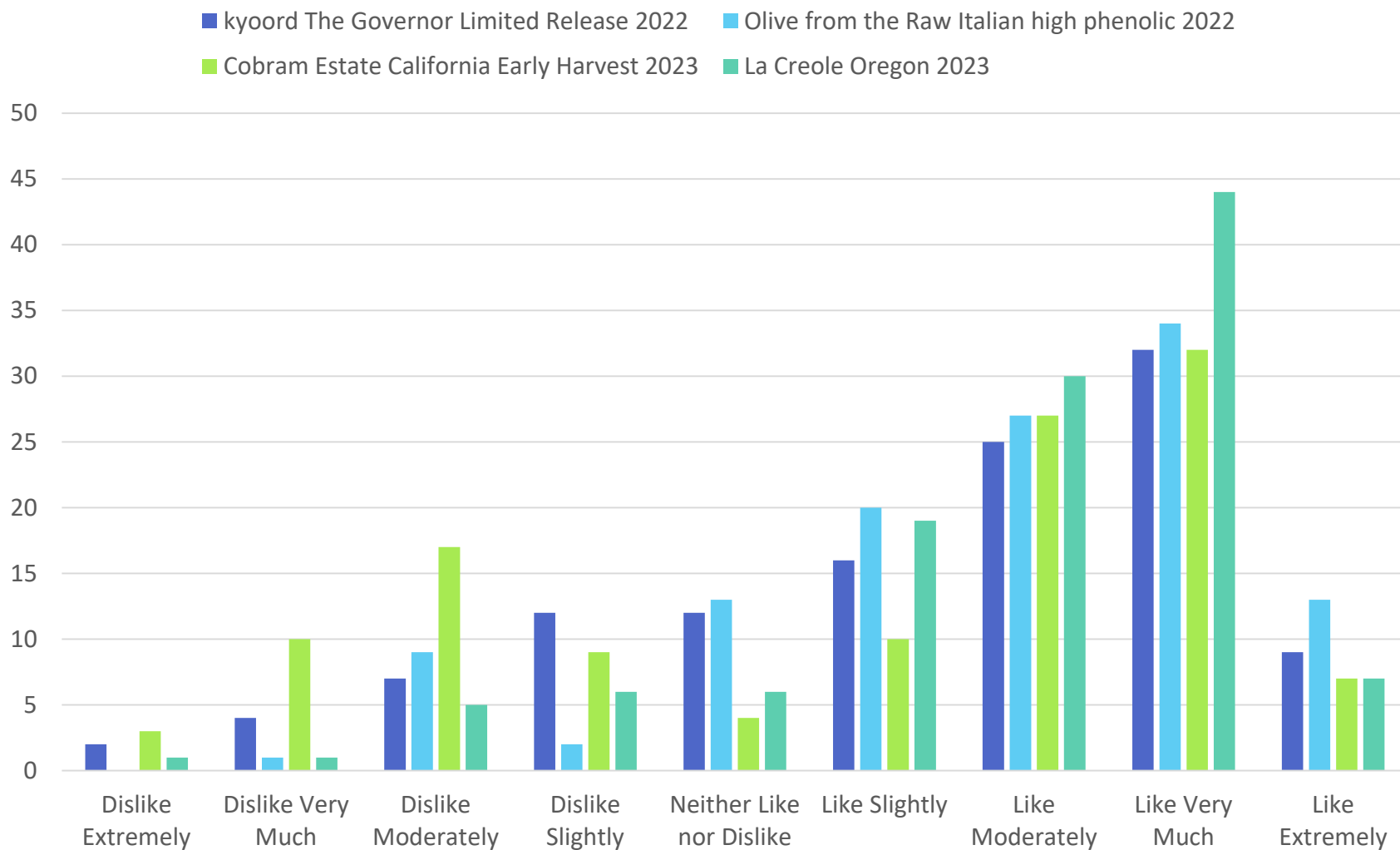
La Creole name

La Creole Orchards™ 2%

Olive Matter™ 7%

Other 7%

Phenolica™ 3%

Willamette Valley Olive Orchard™ 31%

Willamette Valley Olive Grove™ 50%

Compusense.

Overall liking auction oil (Overall liking Auction EVOO) - Crosstabulations

Color liking - Mean Graph

Legend:
- ■ kyoord The Governor Limited Release 2022
- ■ Olive from the Raw Italian high phenolic 2022
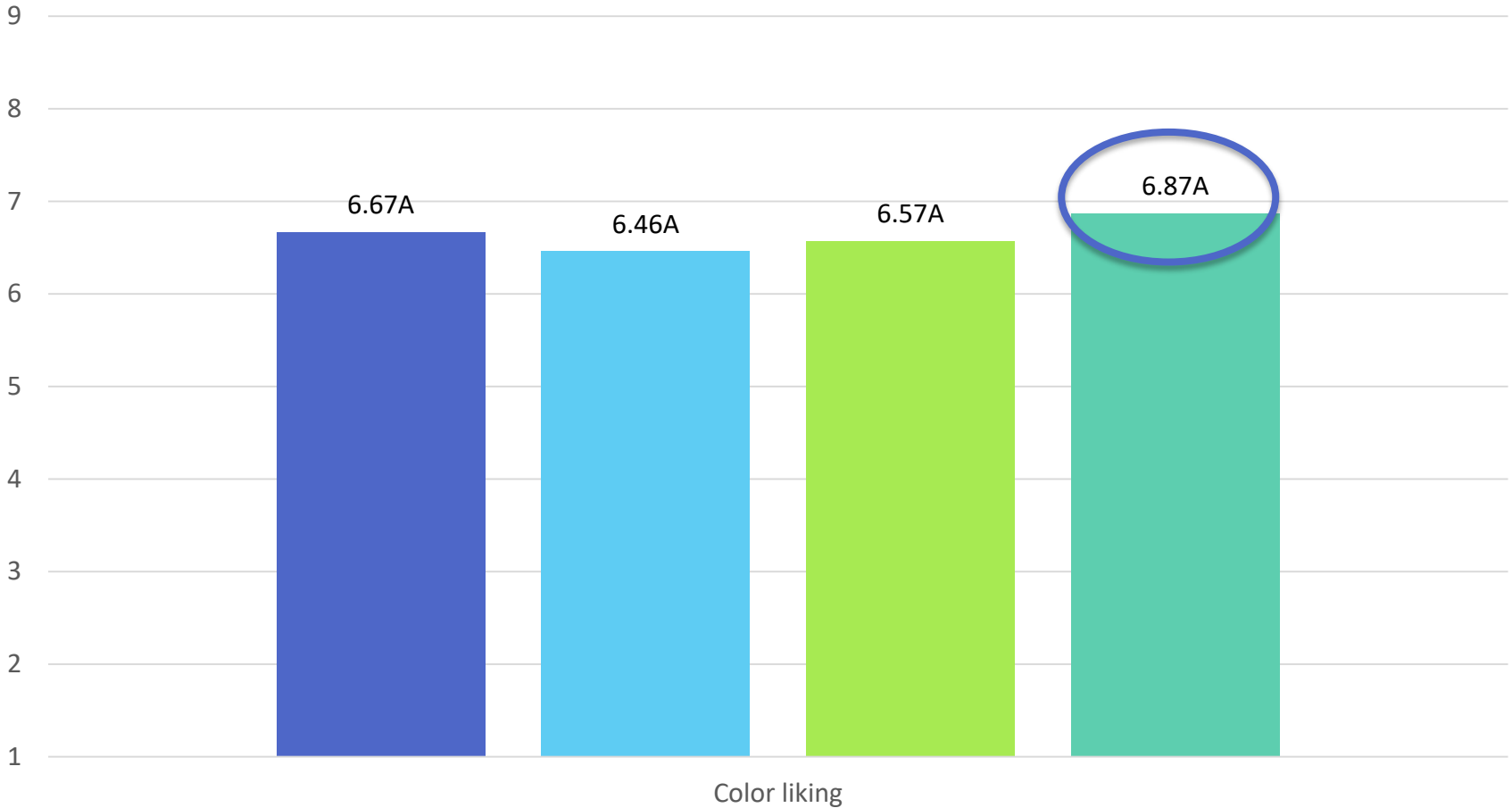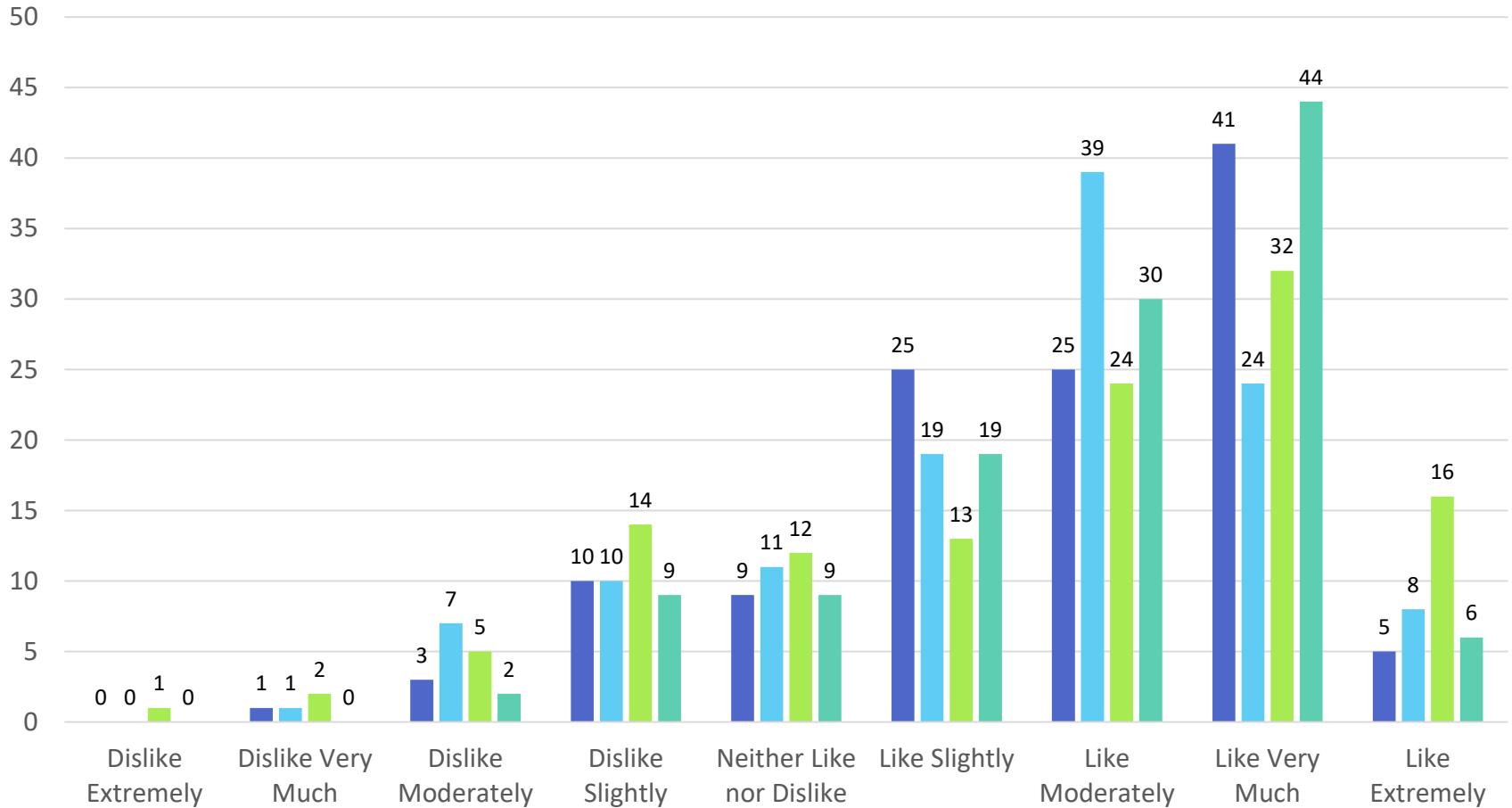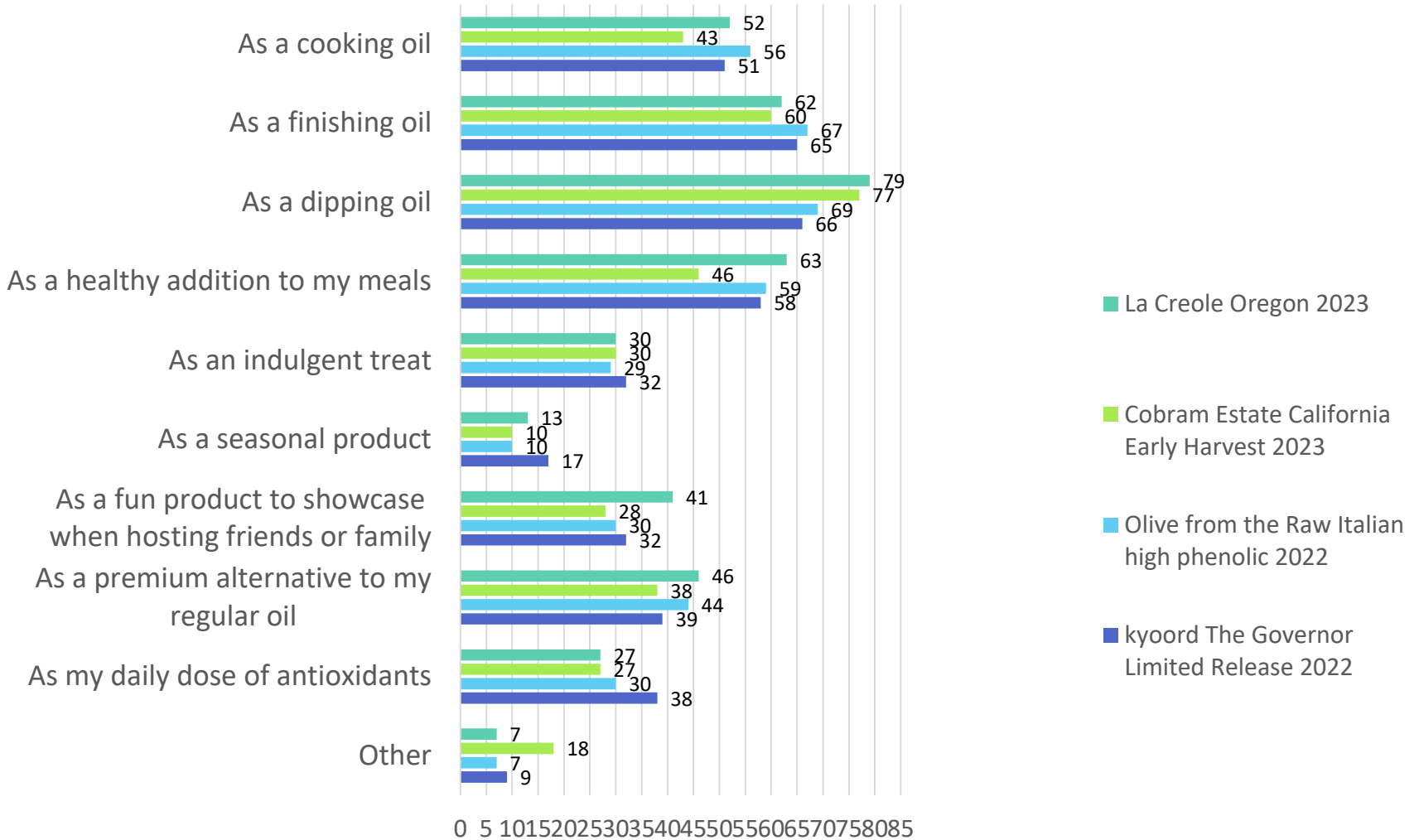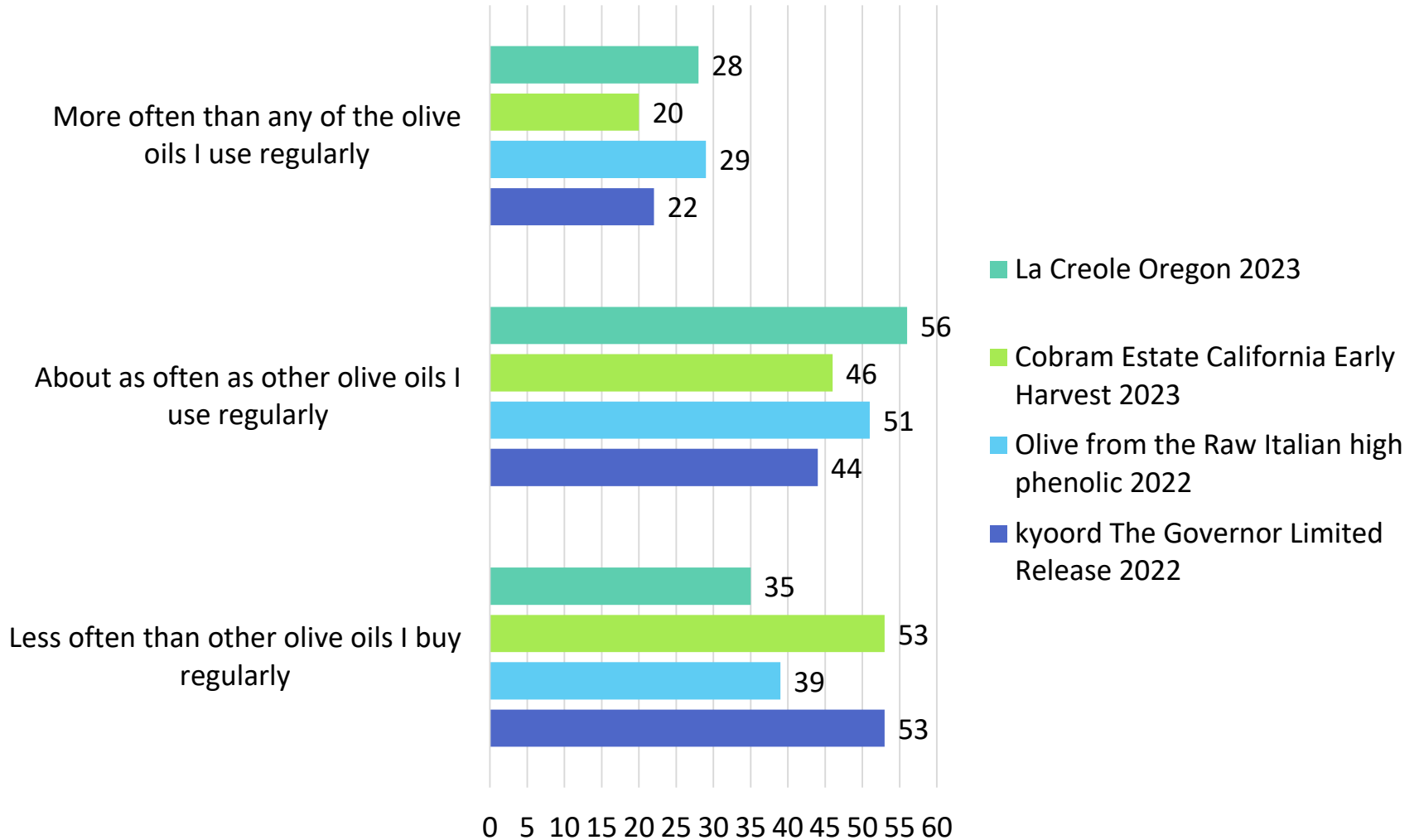- ■ Cobram Estate California Early Harvest 2023
- ■ La Creole Oregon 2023

Bar values:
- 6.67A
- 6.46A
- 6.57A
- 6.87A

Color liking

Scale Values: 1-9, where 1=dislike extremely and 9=like extremely

Compusense

Color liking - Crosstabulations

For what occasion would you most often use this olive oil?

La Creole Oregon 2023

Cobram Estate California Early Harvest 2023

Olive from the Raw Italian high phenolic 2022

kyoord The Governor Limited Release 2022

As a cooking oil: 52, 43, 56, 51

As a finishing oil: 62, 60, 67, 65

As a dipping oil: 79, 77, 69, 66

As a healthy addition to my meals: 63, 46, 59, 58

As an indulgent treat: 30, 30, 29, 32

As a seasonal product: 13, 10, 10, 17

As a fun product to showcase when hosting friends or family: 41, 28, 30, 32

As a premium alternative to my regular oil: 46, 38, 44, 39

As my daily dose of antioxidants: 27, 27, 30, 38

Other: 7, 18, 7, 9

Compusense.

How often use this olive oil

Meet expecations - evaluation
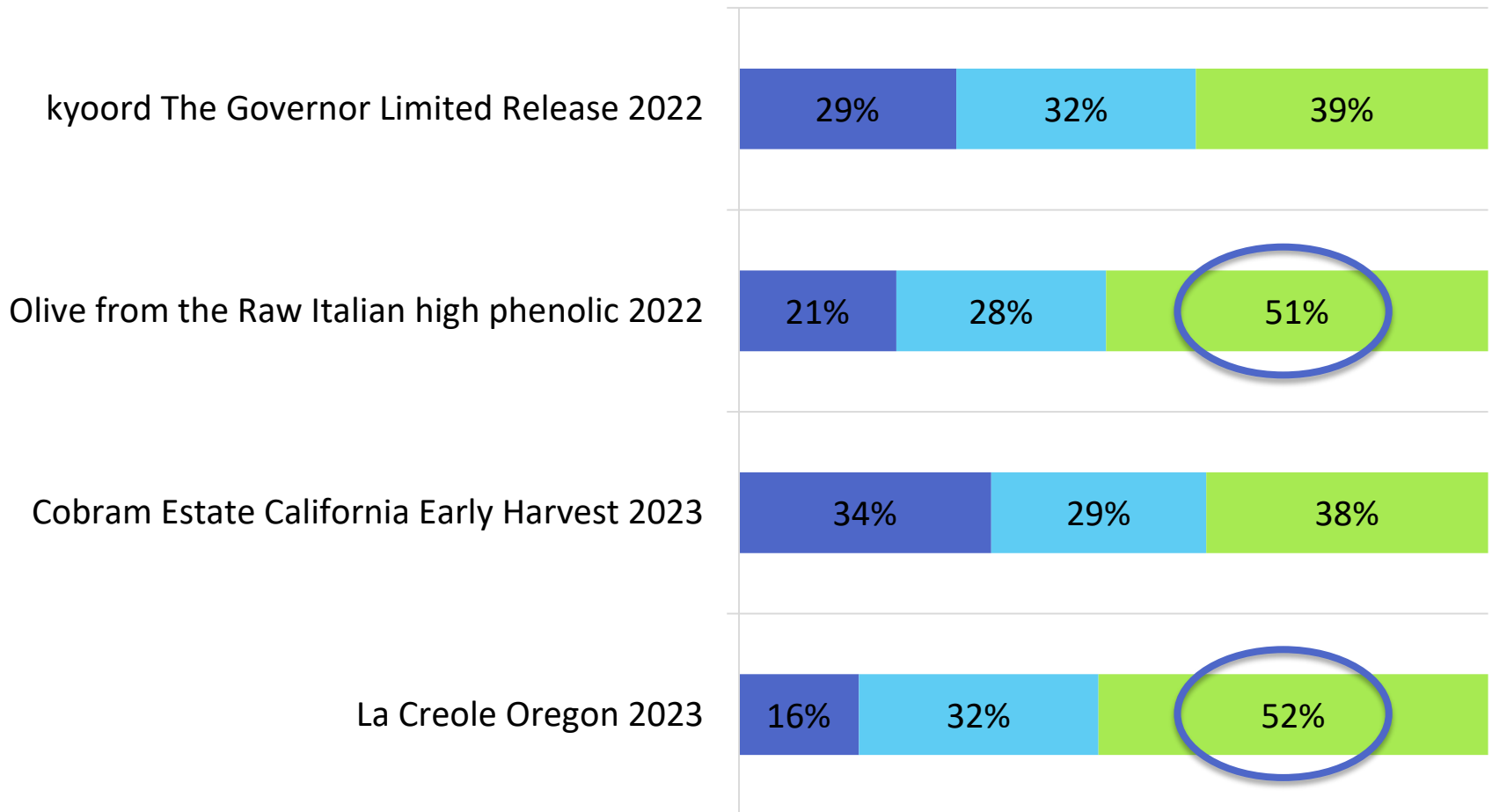
Meet expectations (Meet expecations - evaluation) - Crosstabulations
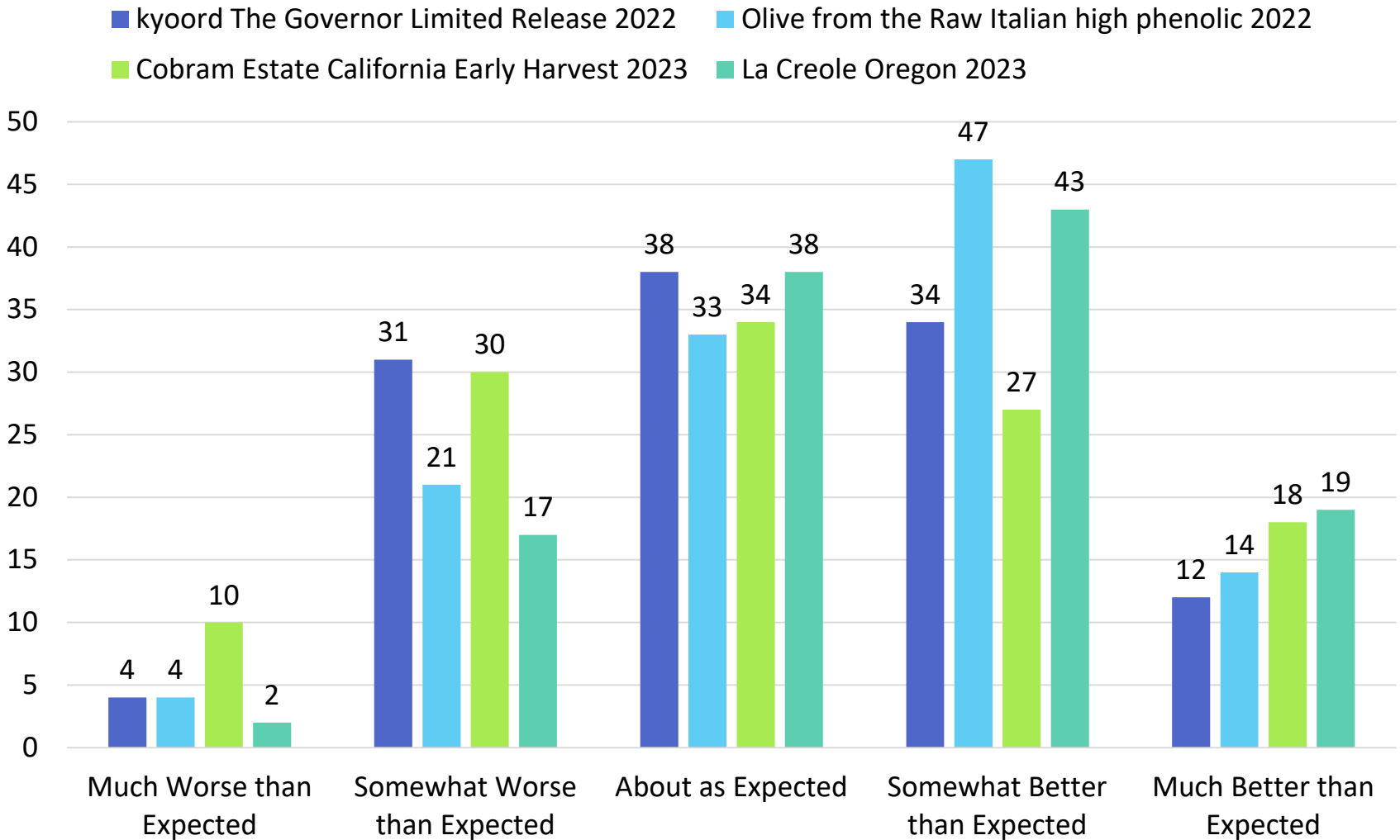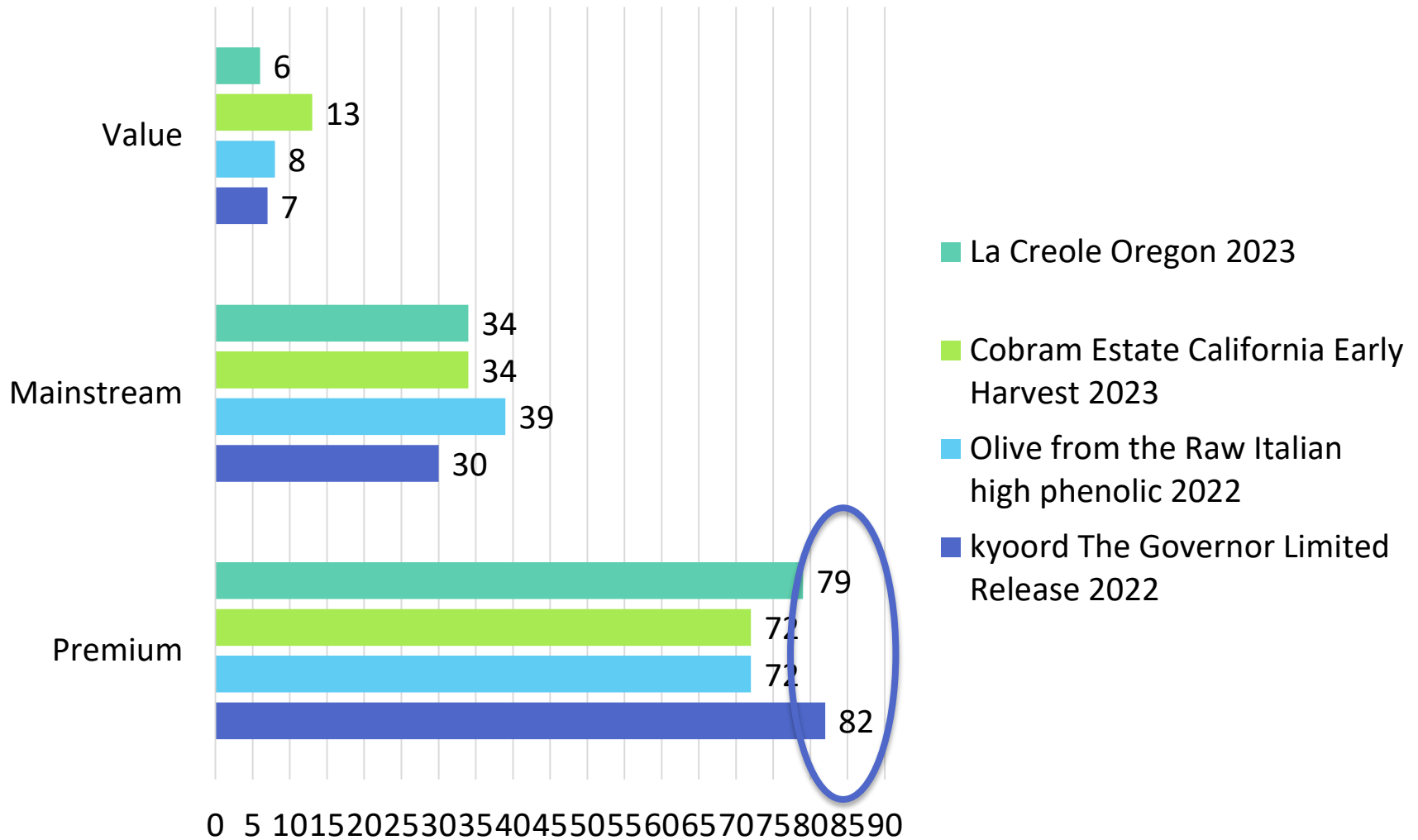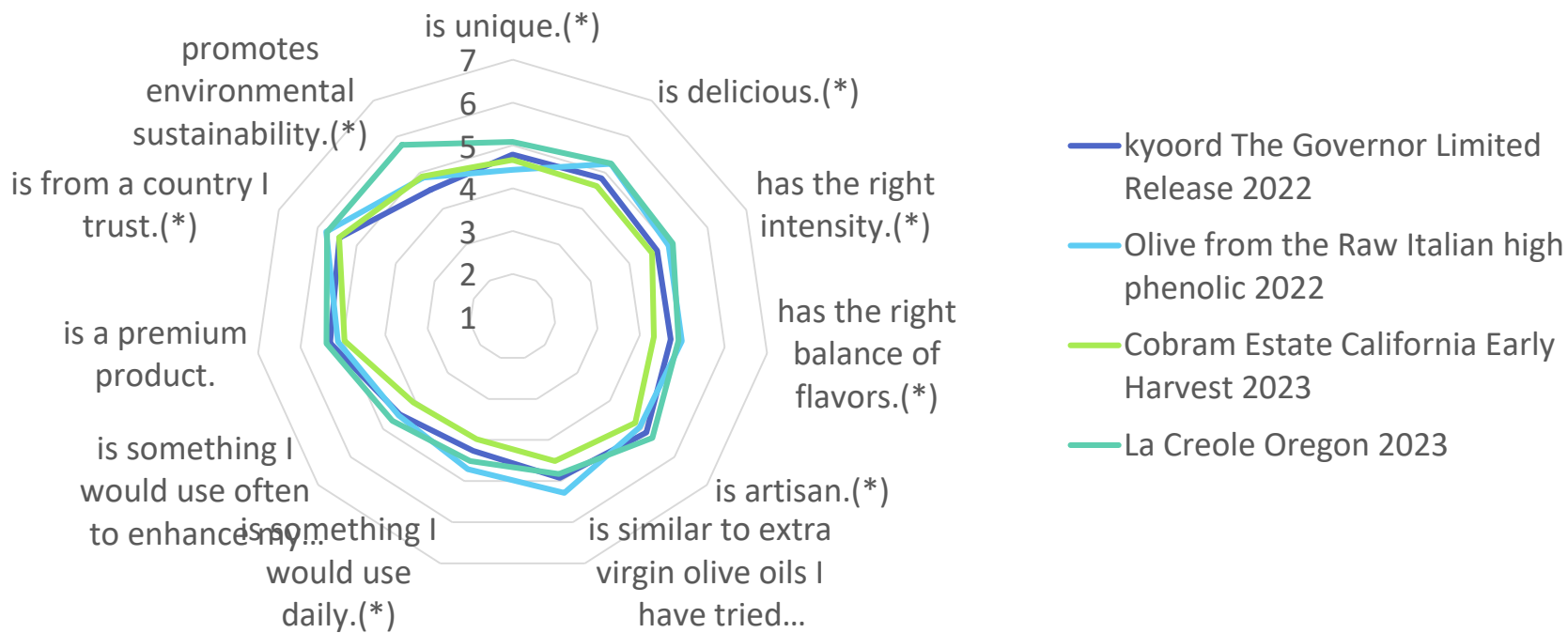
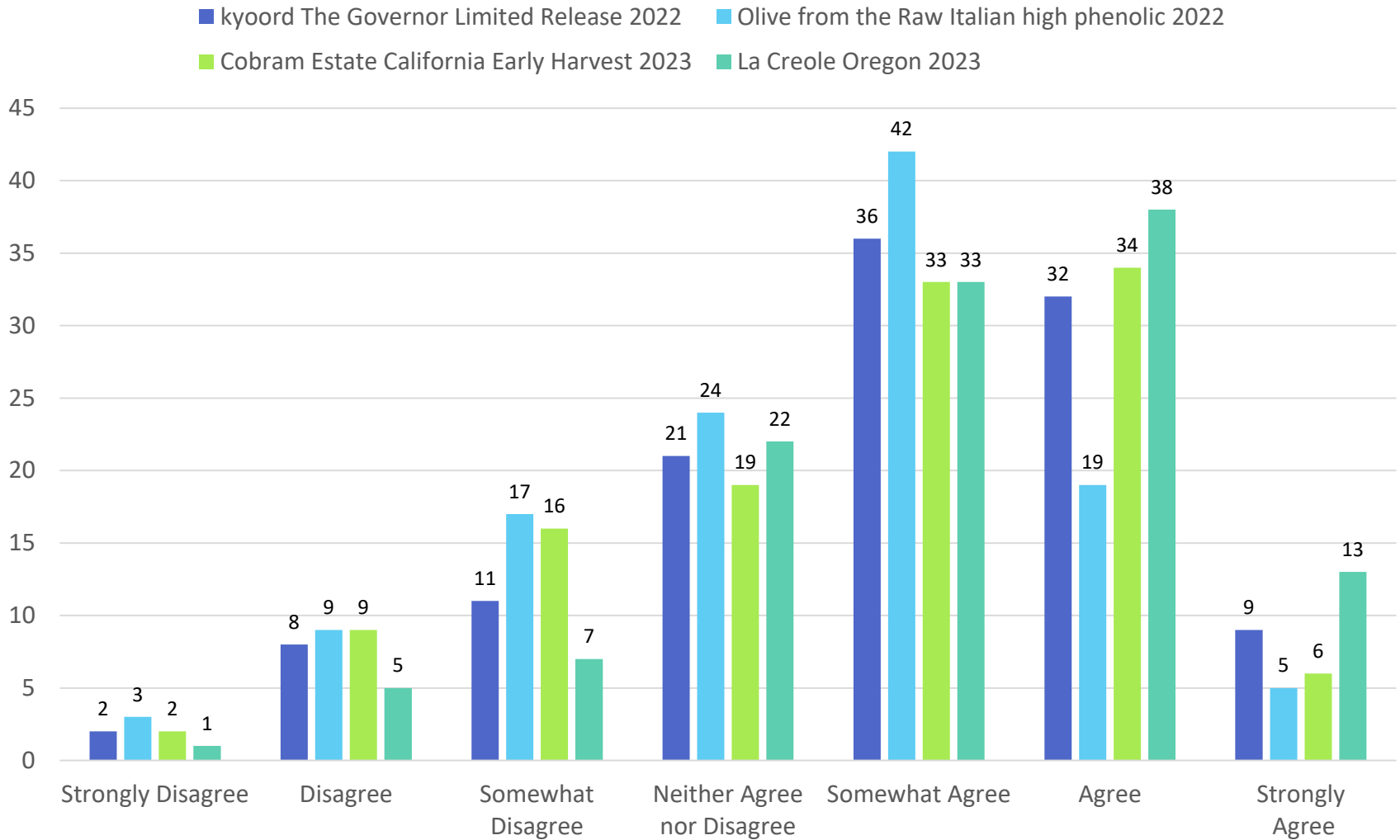Legend: kyoord The Governor Limited Release 2022 | Olive from the Raw Italian high phenolic 2022 | Cobram Estate California Early Harvest 2023 | La Creole Oregon 2023

Category	kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	La Creole Oregon 2023
Much Worse than Expected	4	4	10	2
Somewhat Worse than Expected	31	21	30	17
About as Expected	38	33	34	38
Somewhat Better than Expected	34	47	27	43
Much Better than Expected	12	14	18	19

Compusense.

Agree/Disagree Statements - Mean Graph

Scale Values: 1-7, where 1=strongly disagree and 7=strongly agree

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- La Creole Oregon 2023

Agree/Disagree Statements - Mean Graph

Scale Values: 1-7, where 1=strongly disagree and 7=strongly agree

Compusense.
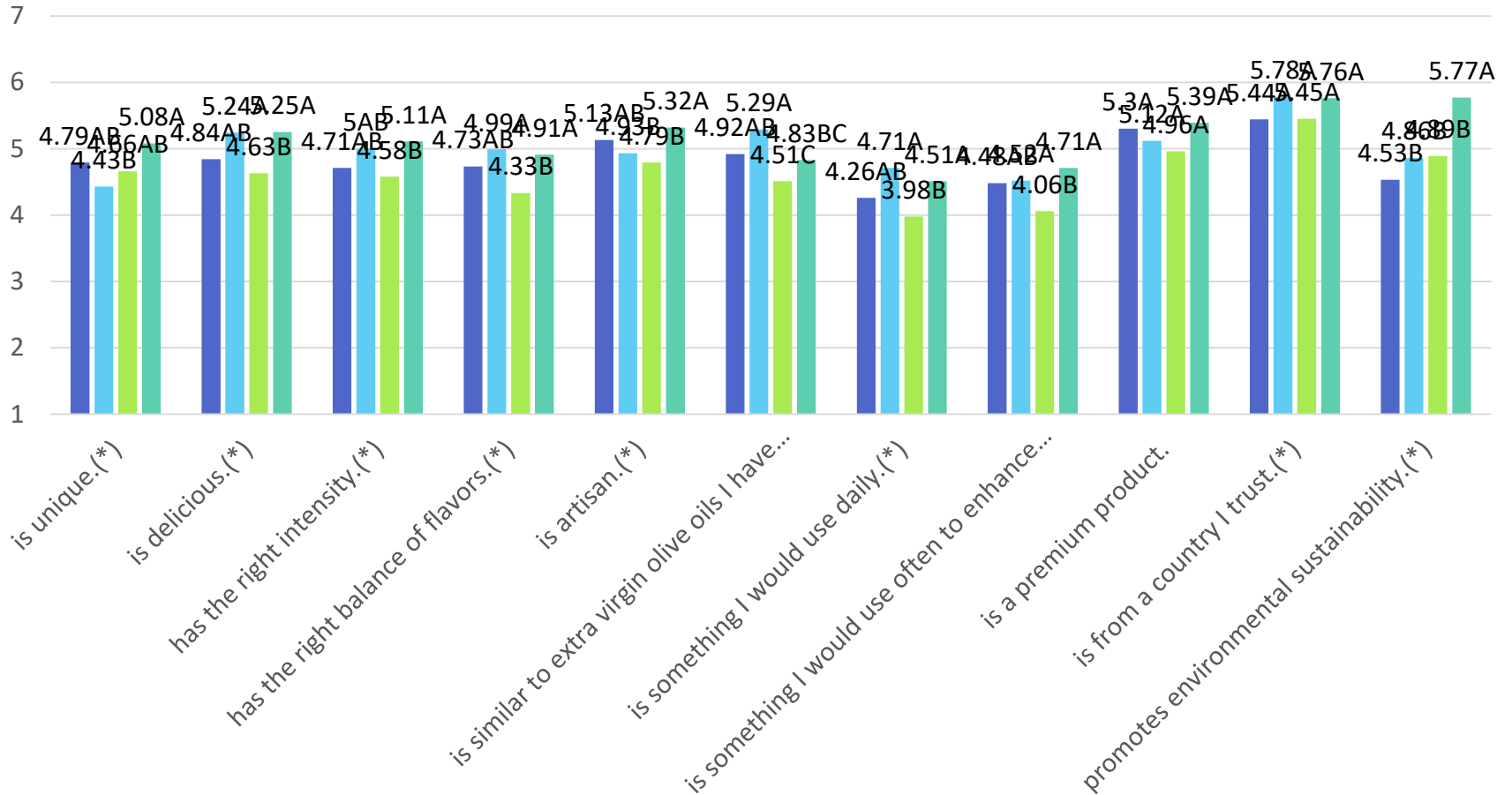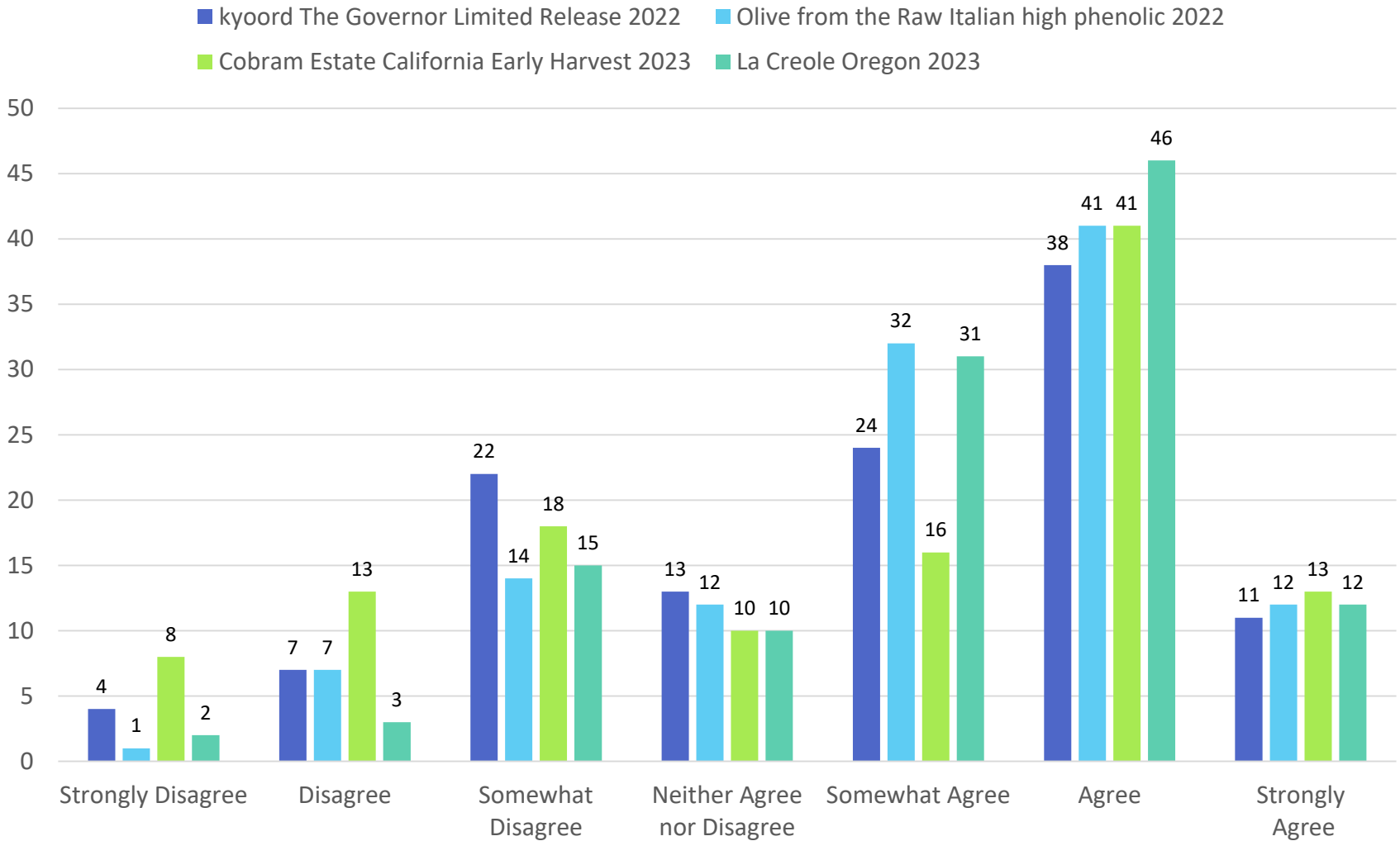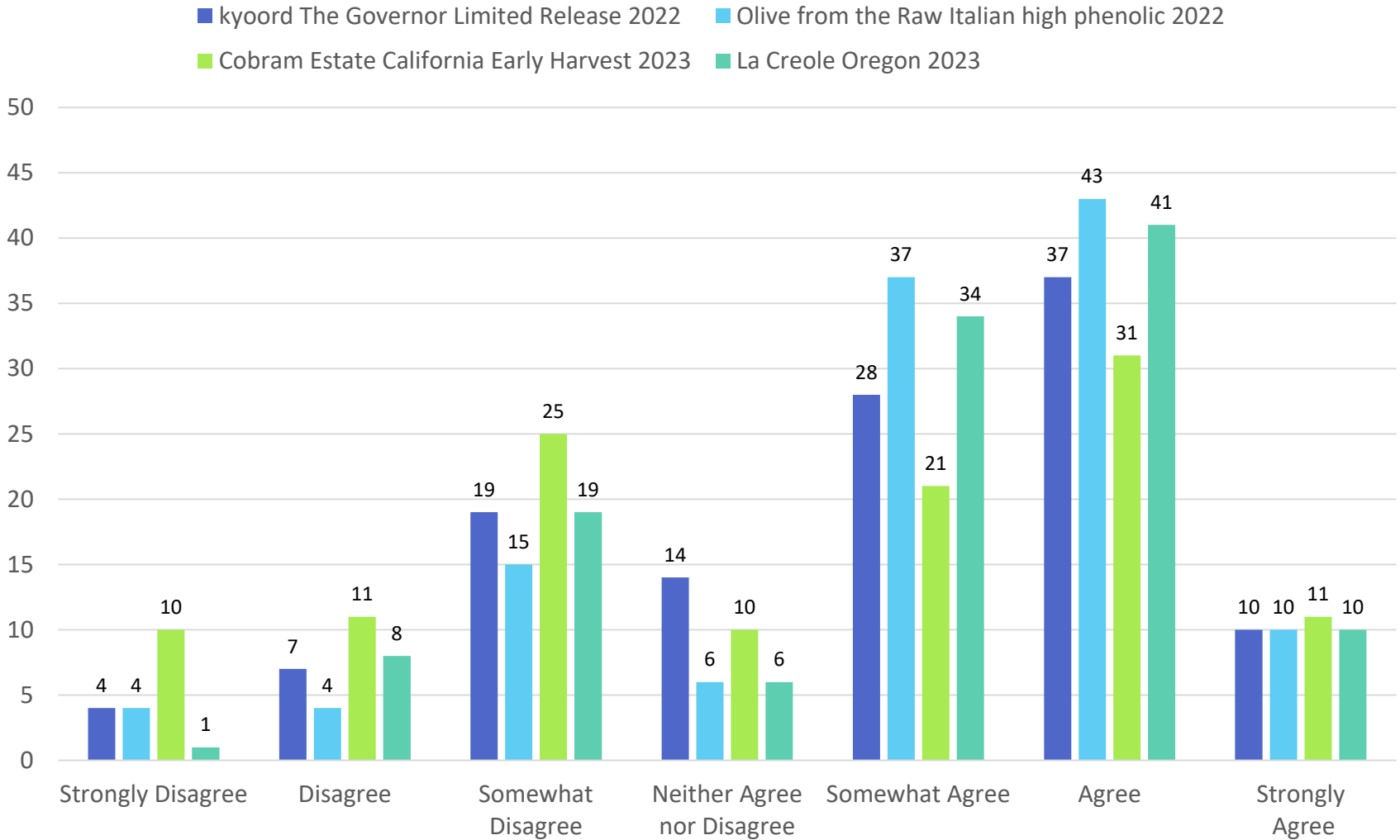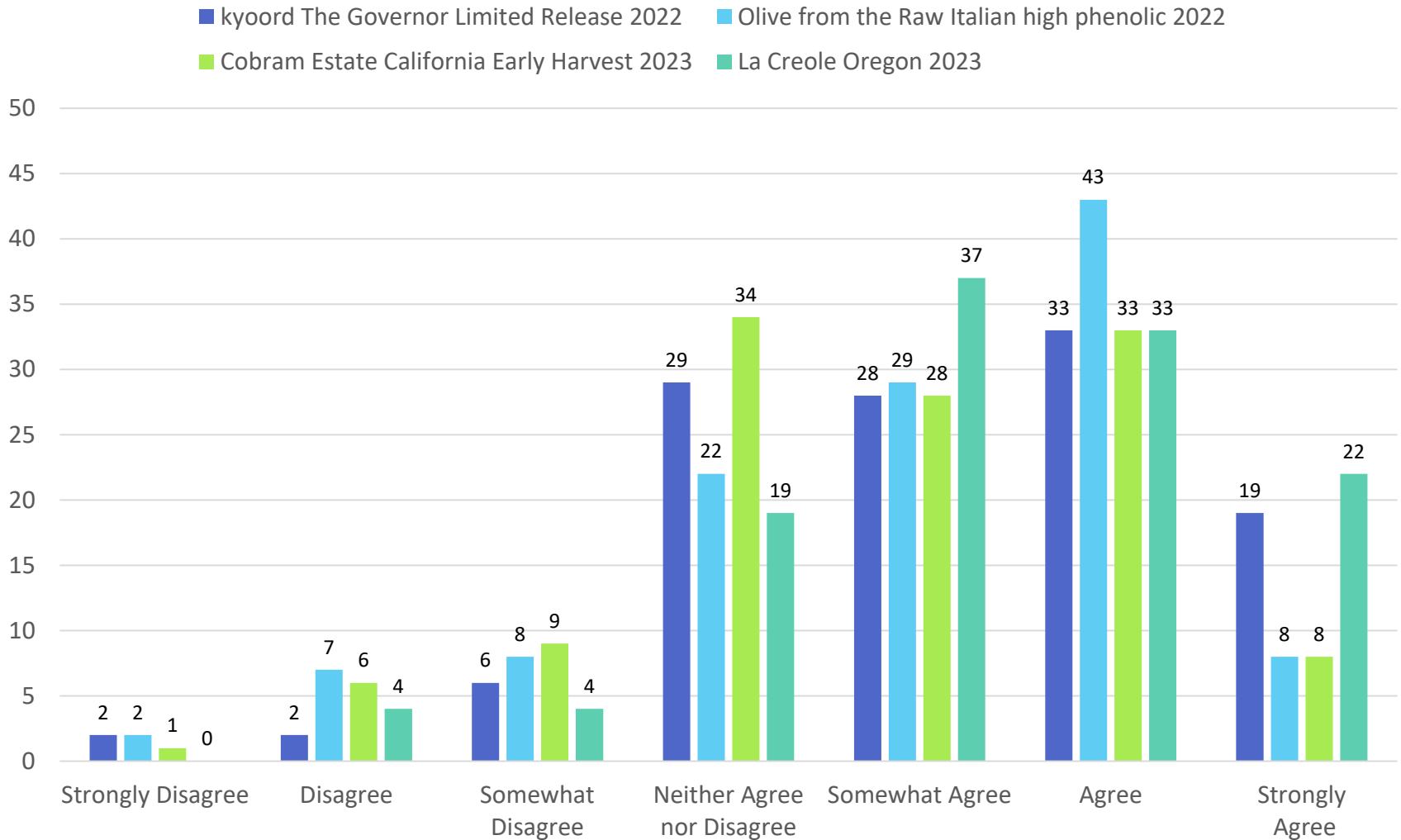
Agree/Disagree Statements (is unique.) - Crosstabulations

Agree/Disagree Statements (is delicious.) - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- La Creole Oregon 2023

Category	kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	La Creole Oregon 2023
Strongly Disagree	6	1	8	1
Disagree	4	7	16	5
Somewhat Disagree	20	6	12	11
Neither Agree nor Disagree	11	15	11	7
Somewhat Agree	20	27	17	36
Agree	48	45	39	40
Strongly Agree	10	18	16	19

Compusense.
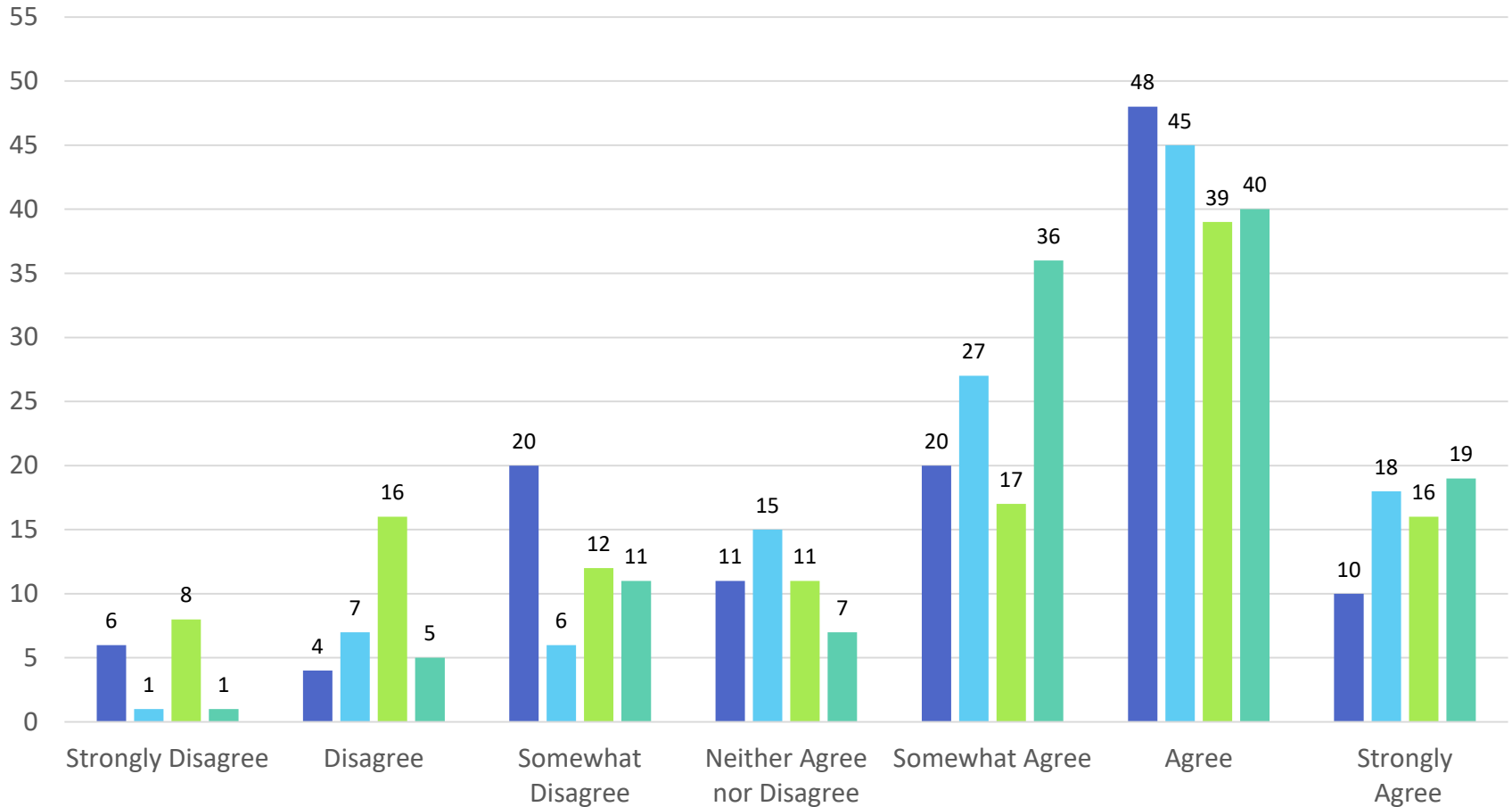
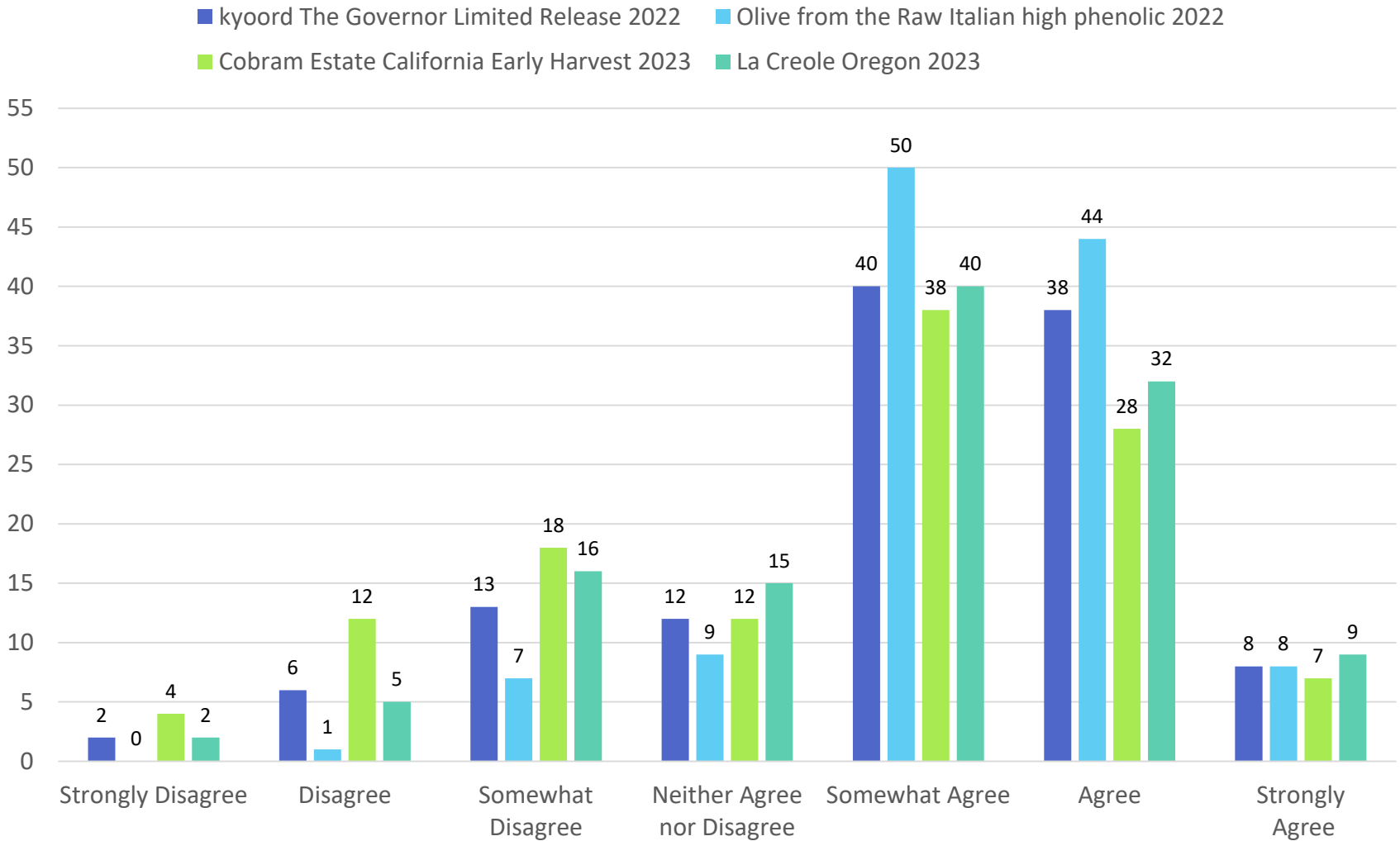Agree/Disagree Statements (has the right intensity.) - Crosstabulations

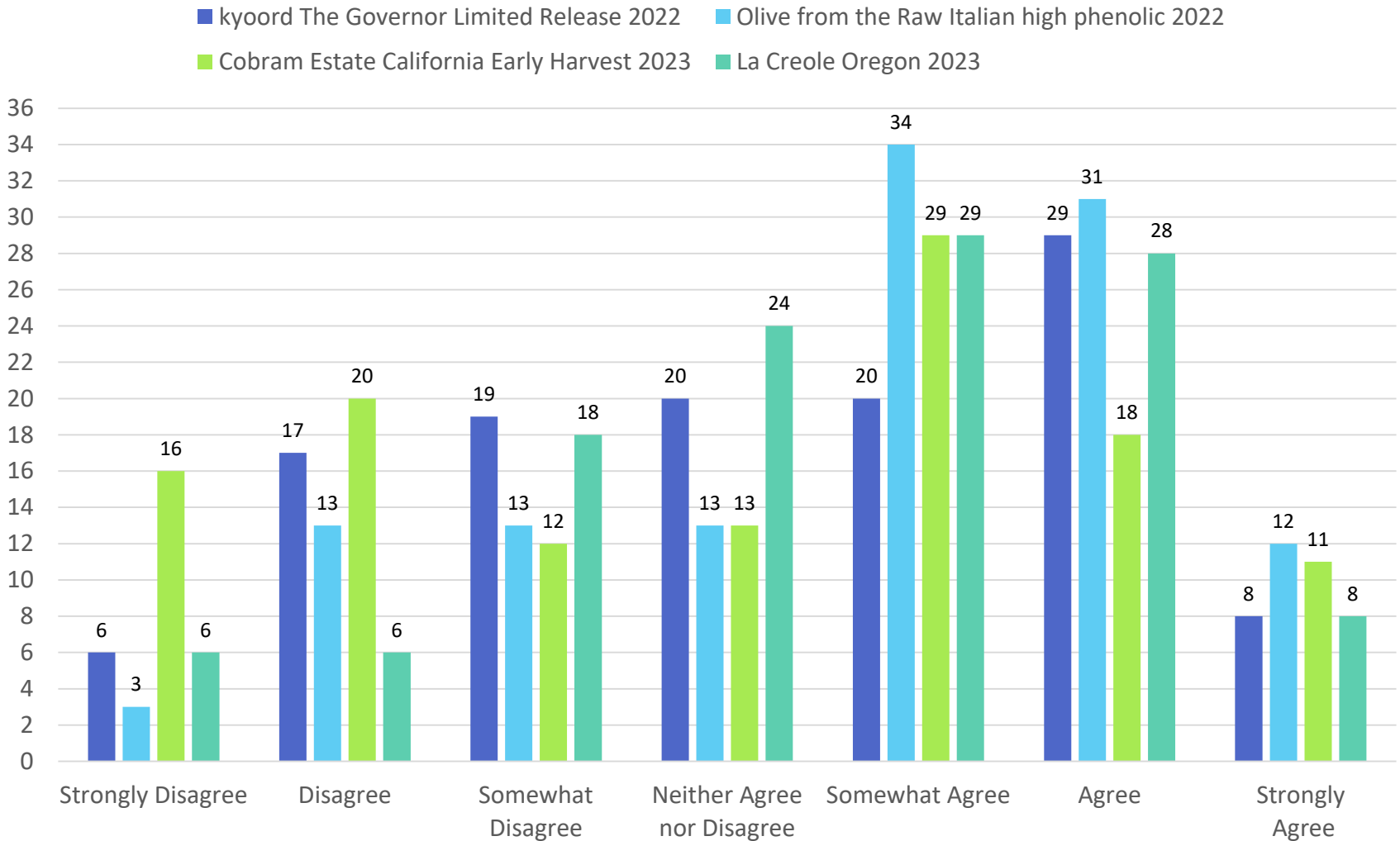Agree/Disagree Statements (has the right balance of flavors.) - Crosstabulations
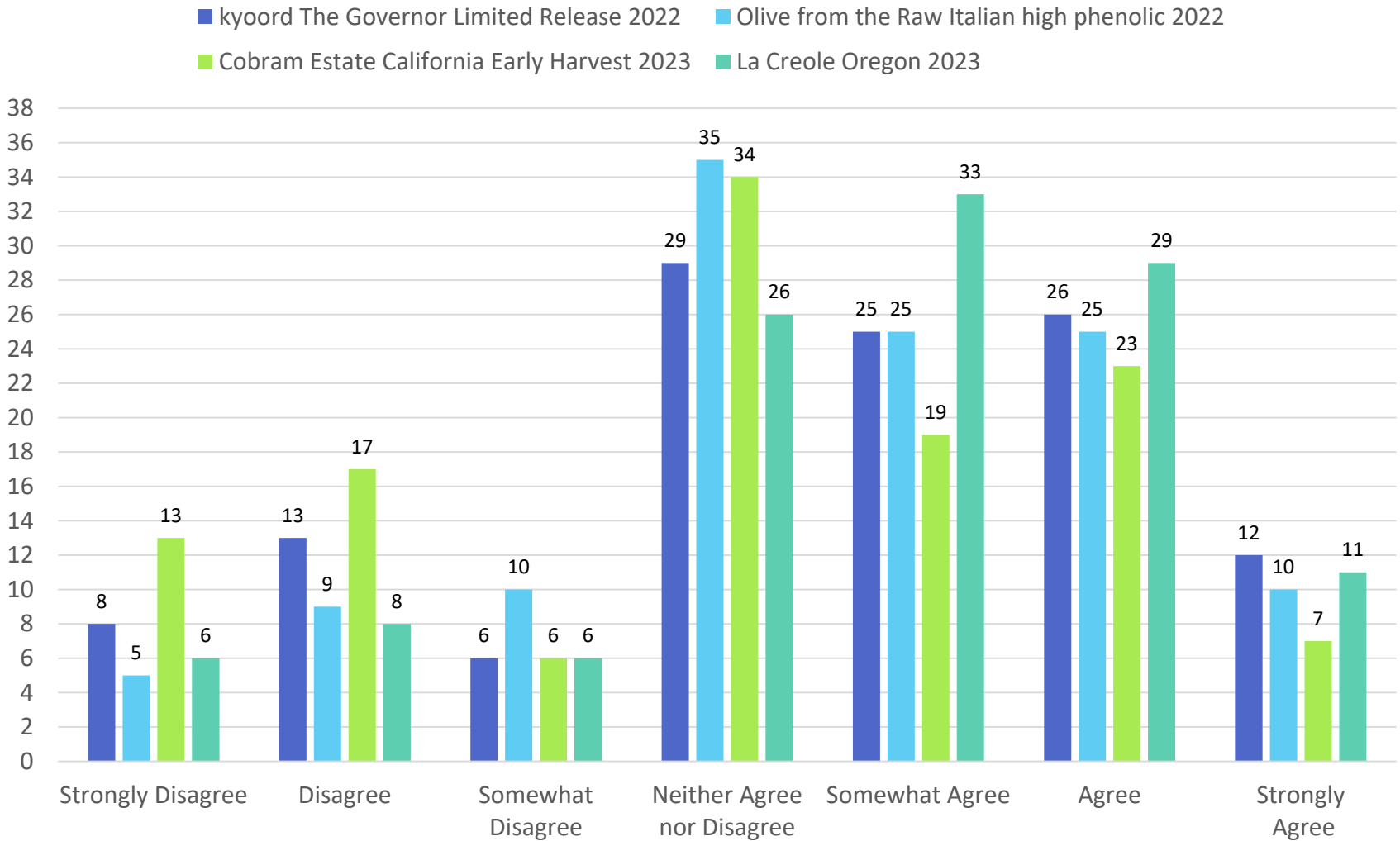
Agree/Disagree Statements (is artisan.) - Crosstabulations

Agree/Disagree Statements (is similar to extra virgin olive oils I have tried before.) - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- La Creole Oregon 2023

Response	kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	La Creole Oregon 2023
Strongly Disagree	2	0	4	2
Disagree	6	1	12	5
Somewhat Disagree	13	7	18	16
Neither Agree nor Disagree	12	9	12	15
Somewhat Agree	40	50	38	40
Agree	38	44	28	32
Strongly Agree	8	8	7	9

Compusense.

Agree/Disagree Statements (is something I would use daily.) - Crosstabulations

Agree/Disagree Statements (is something I would use often to enhance my health.) - Crosstabulations
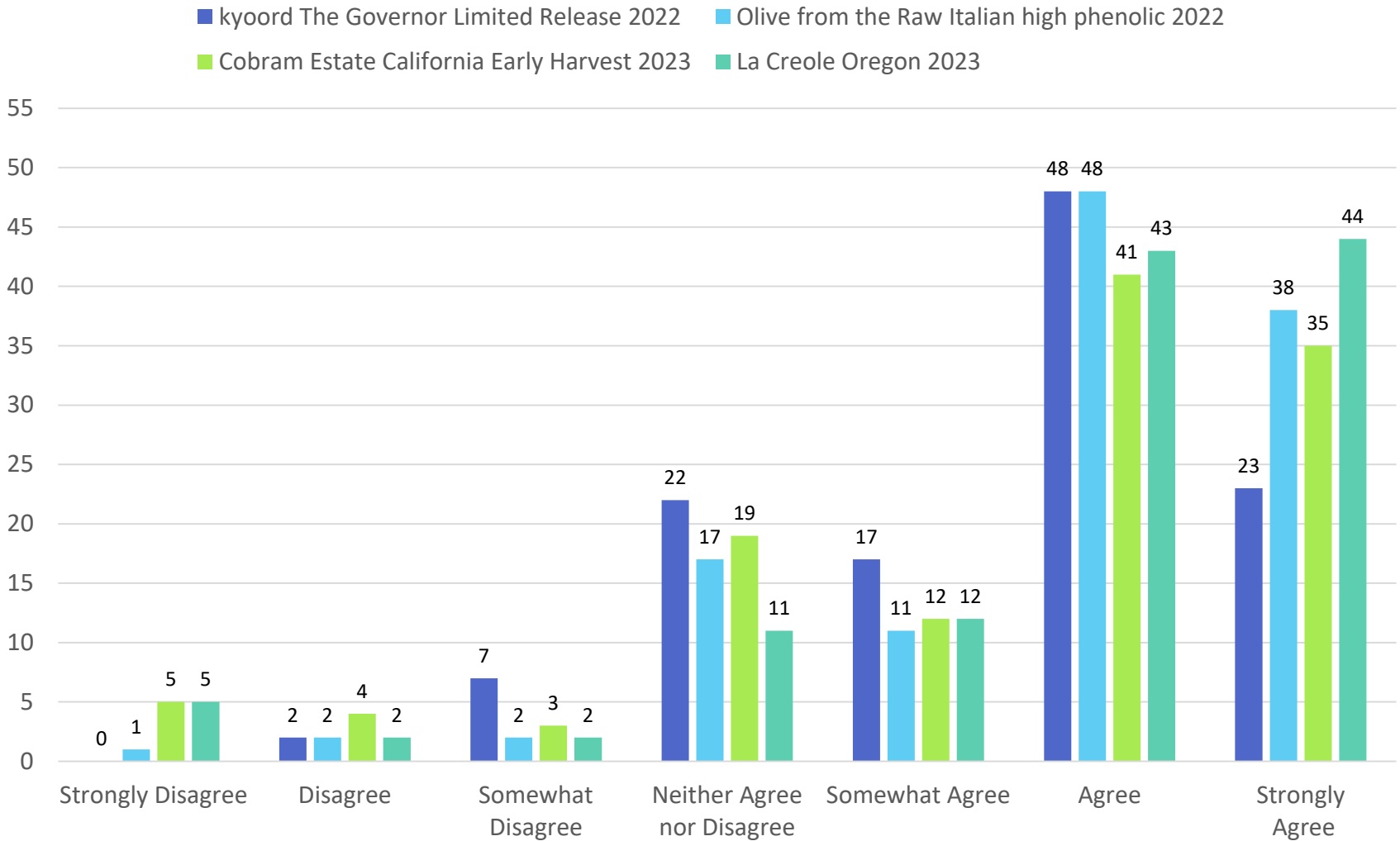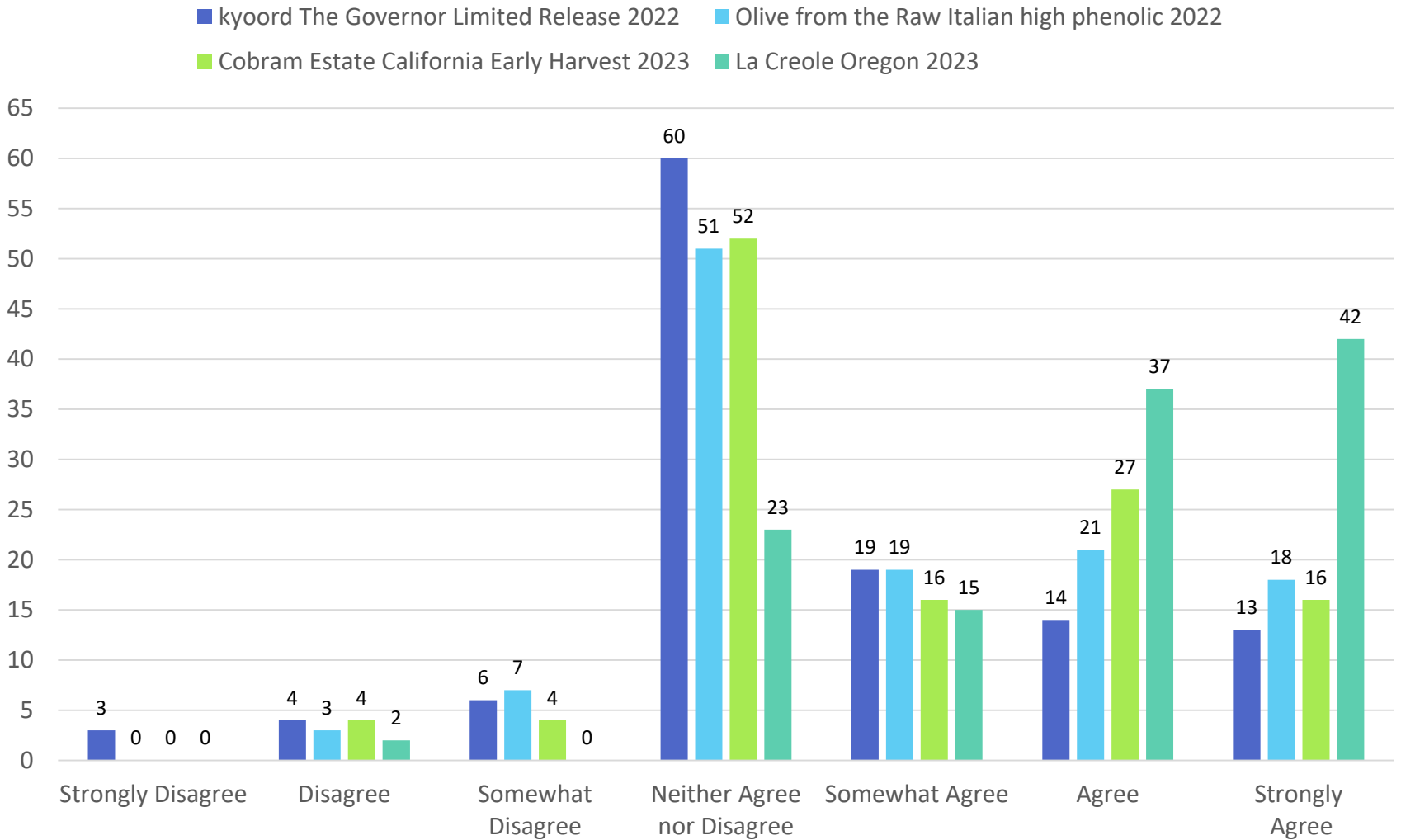

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- La Creole Oregon 2023

Category	kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	La Creole Oregon 2023
Strongly Disagree	8	5	13	6
Disagree	13	9	17	8
Somewhat Disagree	6	10	6	6
Neither Agree nor Disagree	29	35	34	26
Somewhat Agree	25	25	19	33
Agree	26	25	23	29
Strongly Agree	12	10	7	11

Compusense

Agree/Disagree Statements (is a premium product.) - Crosstabulations
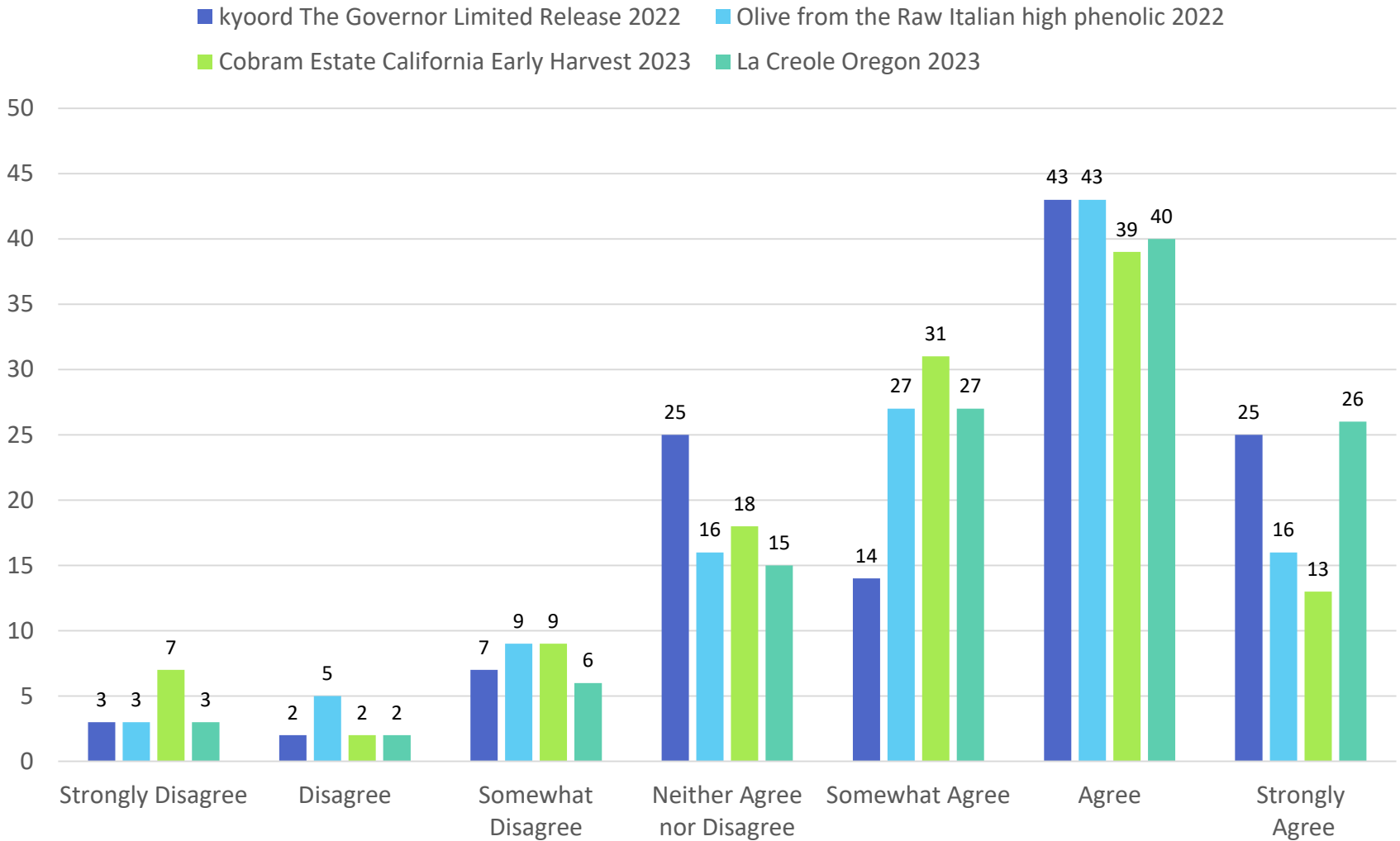
Agree/Disagree Statements (is from a country I trust.) - Crosstabulations

Legend:
- kyoord The Governor Limited Release 2022
- Olive from the Raw Italian high phenolic 2022
- Cobram Estate California Early Harvest 2023
- La Creole Oregon 2023

Response	kyoord The Governor Limited Release 2022	Olive from the Raw Italian high phenolic 2022	Cobram Estate California Early Harvest 2023	La Creole Oregon 2023
Strongly Disagree	0	1	5	5
Disagree	2	2	4	2
Somewhat Disagree	7	2	3	2
Neither Agree nor Disagree	22	17	19	11
Somewhat Agree	17	11	12	12
Agree	48	48	41	43
Strongly Agree	23	38	35	44

Compusense.

Agree/Disagree Statements (promotes environmental sustainability.) - Crosstabulations

Branding/look and feel of package
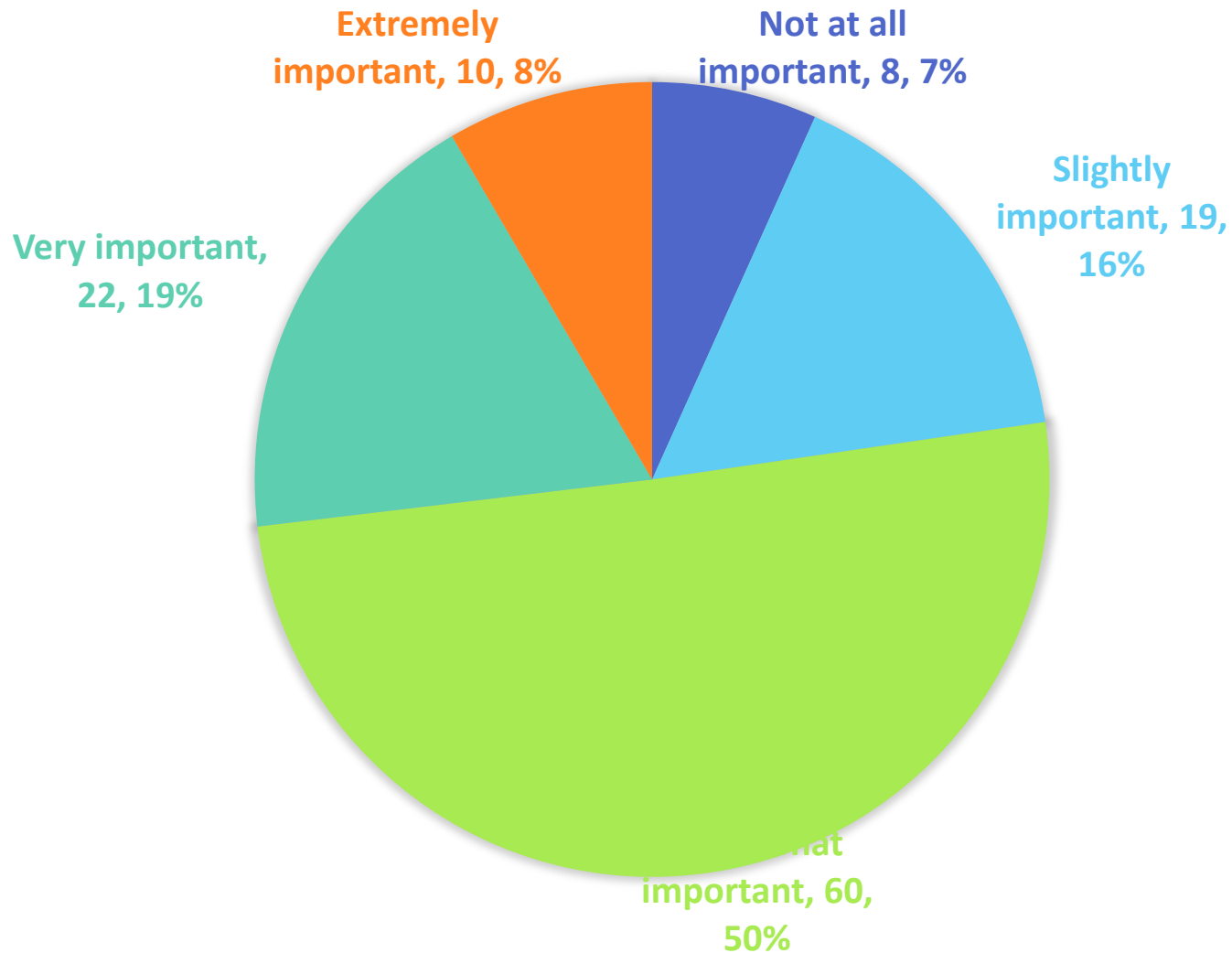
When considering an olive oil, how important are the following factors?

Protective packaging format (e.g. glass vs. dark glass vs. aluminum)
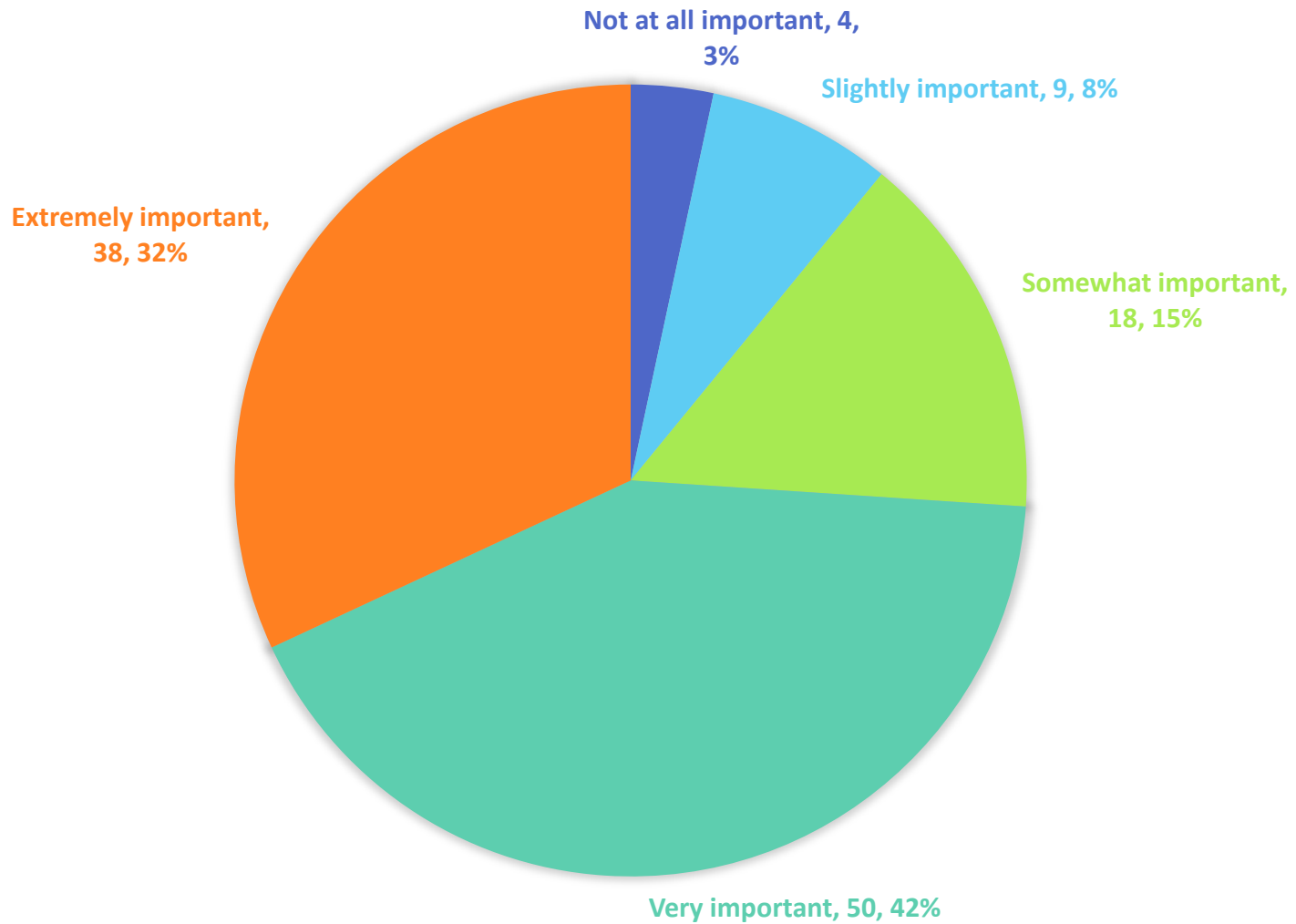
Not at all important, 4, 3%

Slightly important, 9, 8%

Extremely important, 38, 32%

Somewhat important, 18, 15%

Very important, 50, 42%

When considering an olive oil, how important are the following factors?

Compusense.

Country of origin

Not at all important, 3, 2%

Slightly important, 14, 12%

Extremely important, 20, 17%

Somewhat important, 34, 29%

Very important, 48, 40%

When considering an olive oil, how important are the following factors?

Compusense.
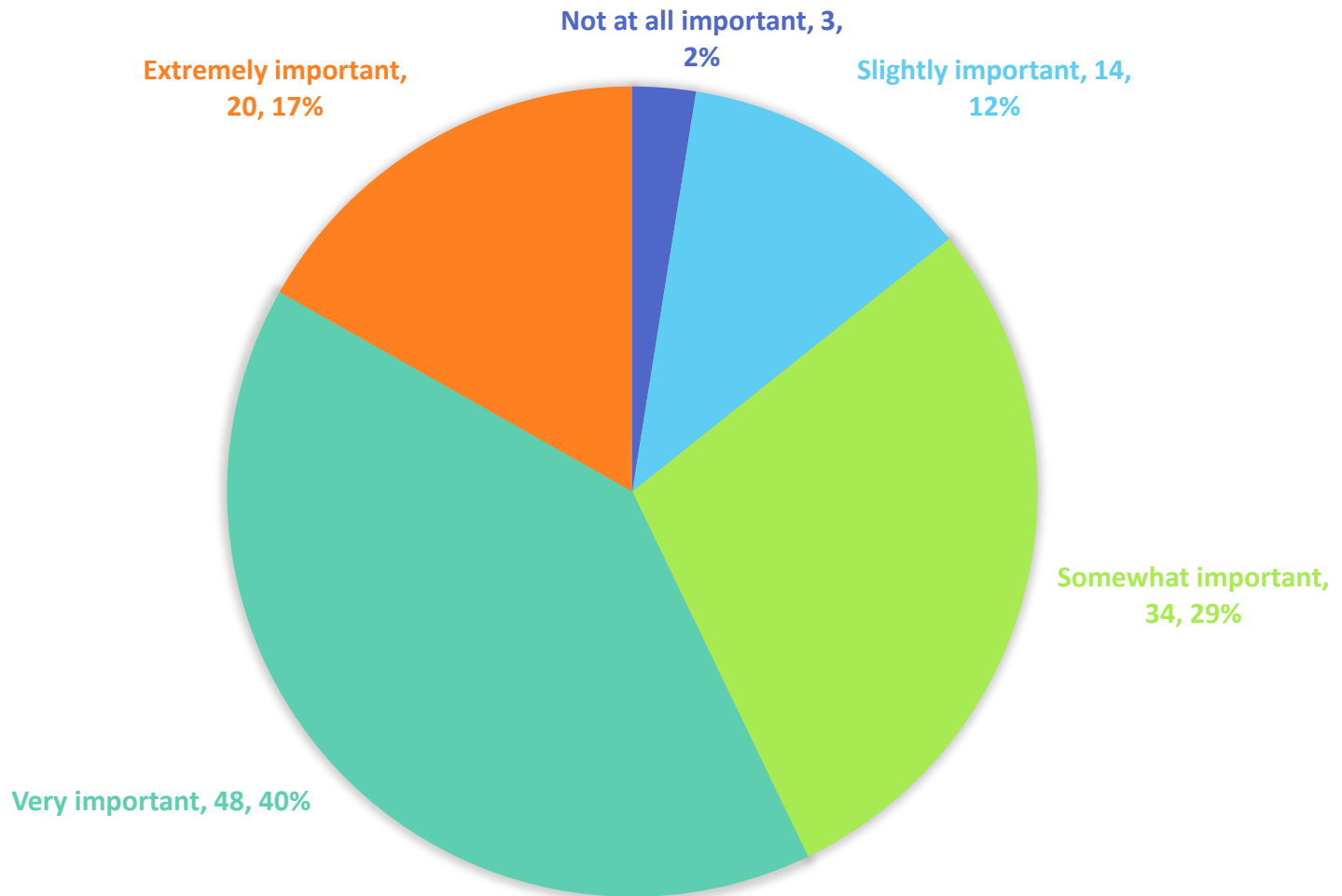
Locally grown and processed
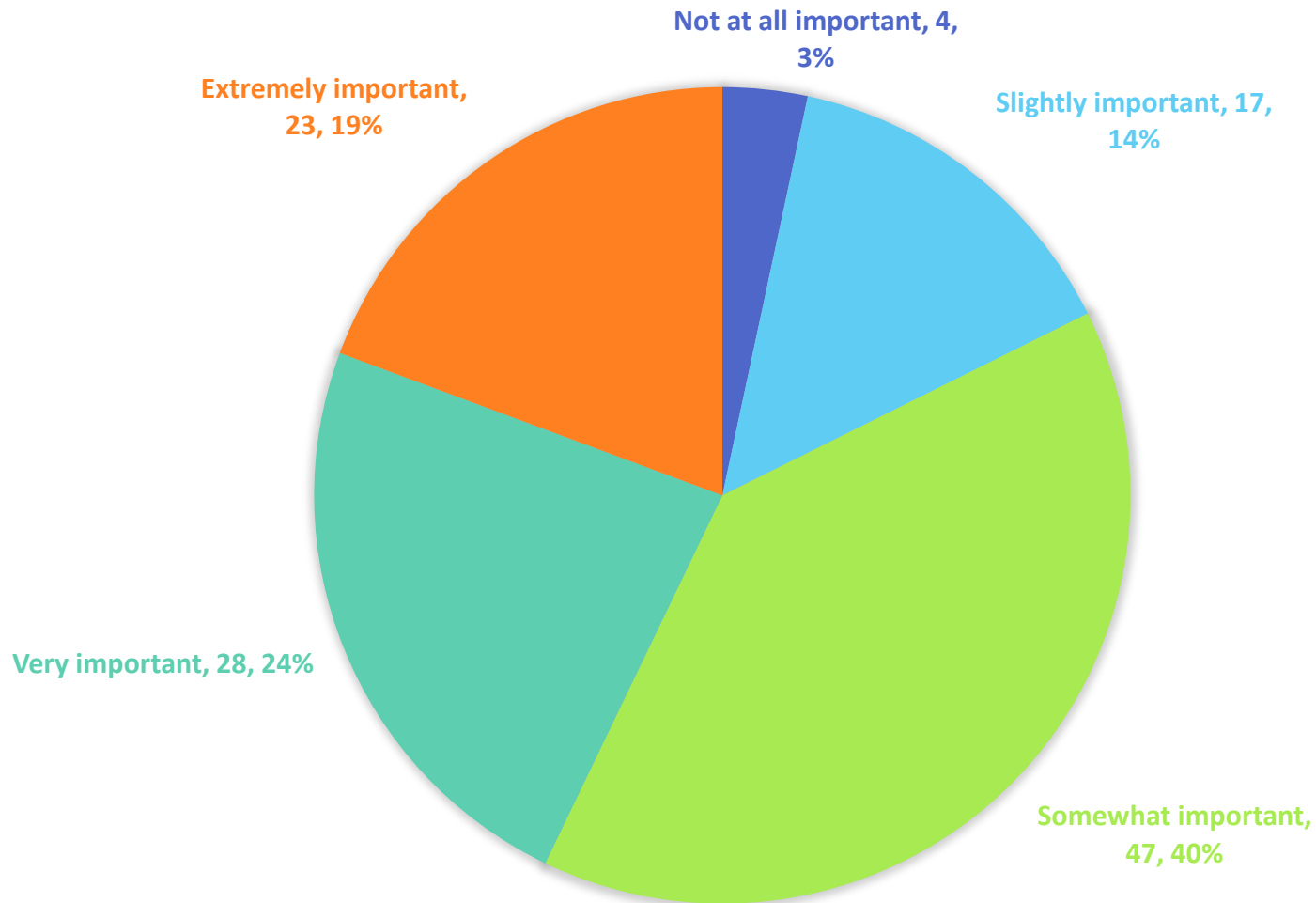
When considering an olive oil, how important are the following factors?

Supports regional artisan growers and your local economy

When considering an olive oil, how important are the following factors?

Compusense
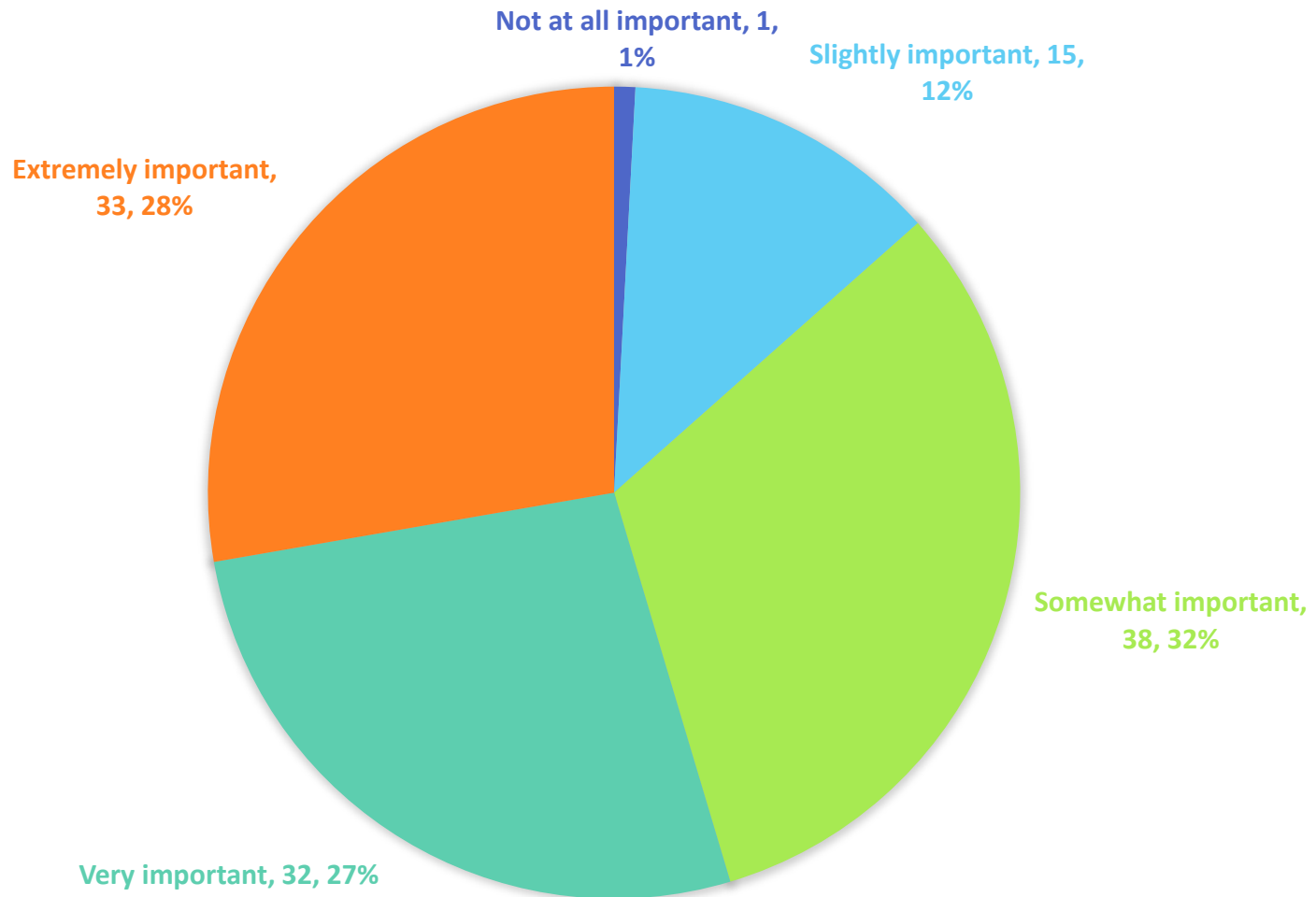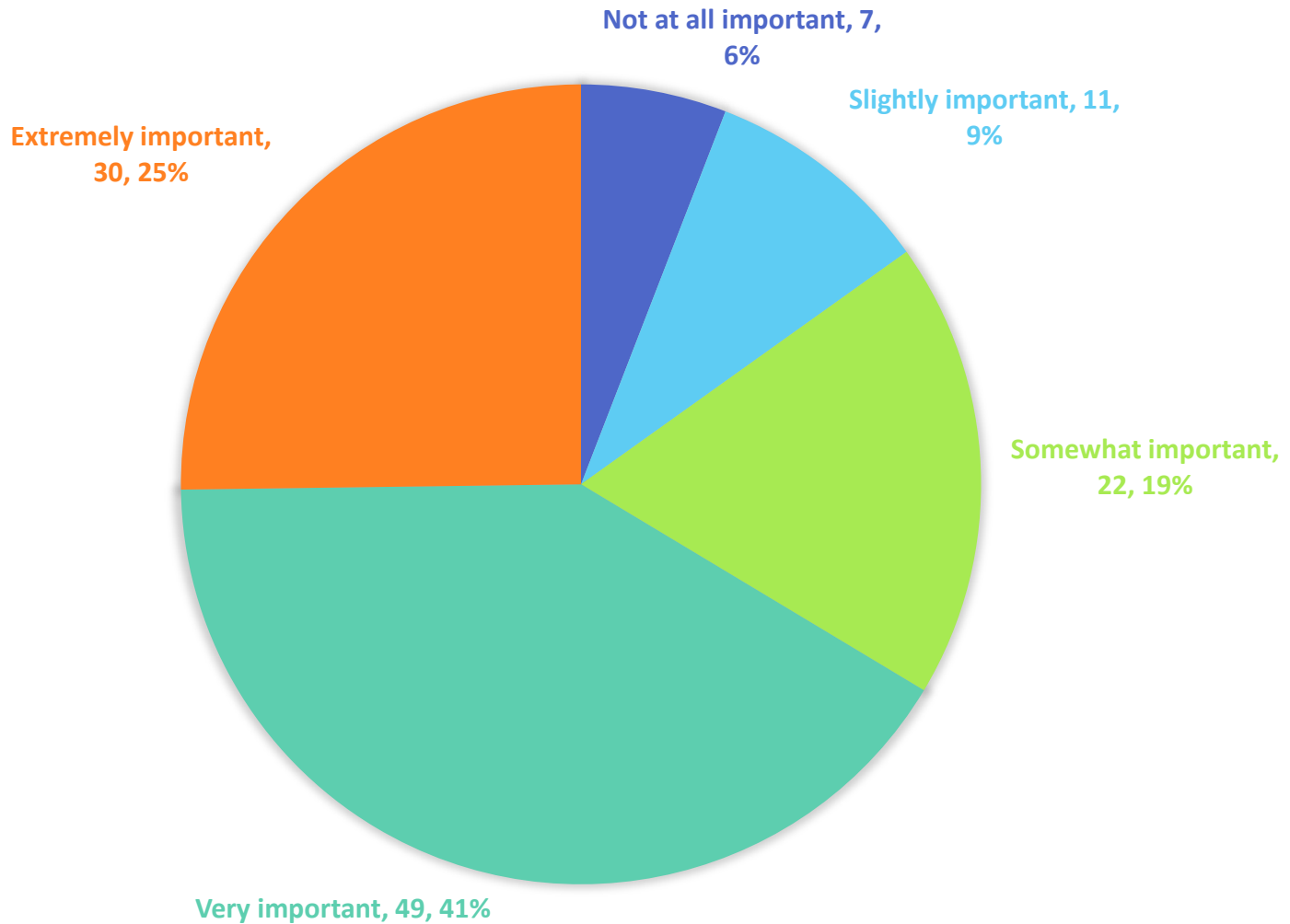
Hand harvested olives
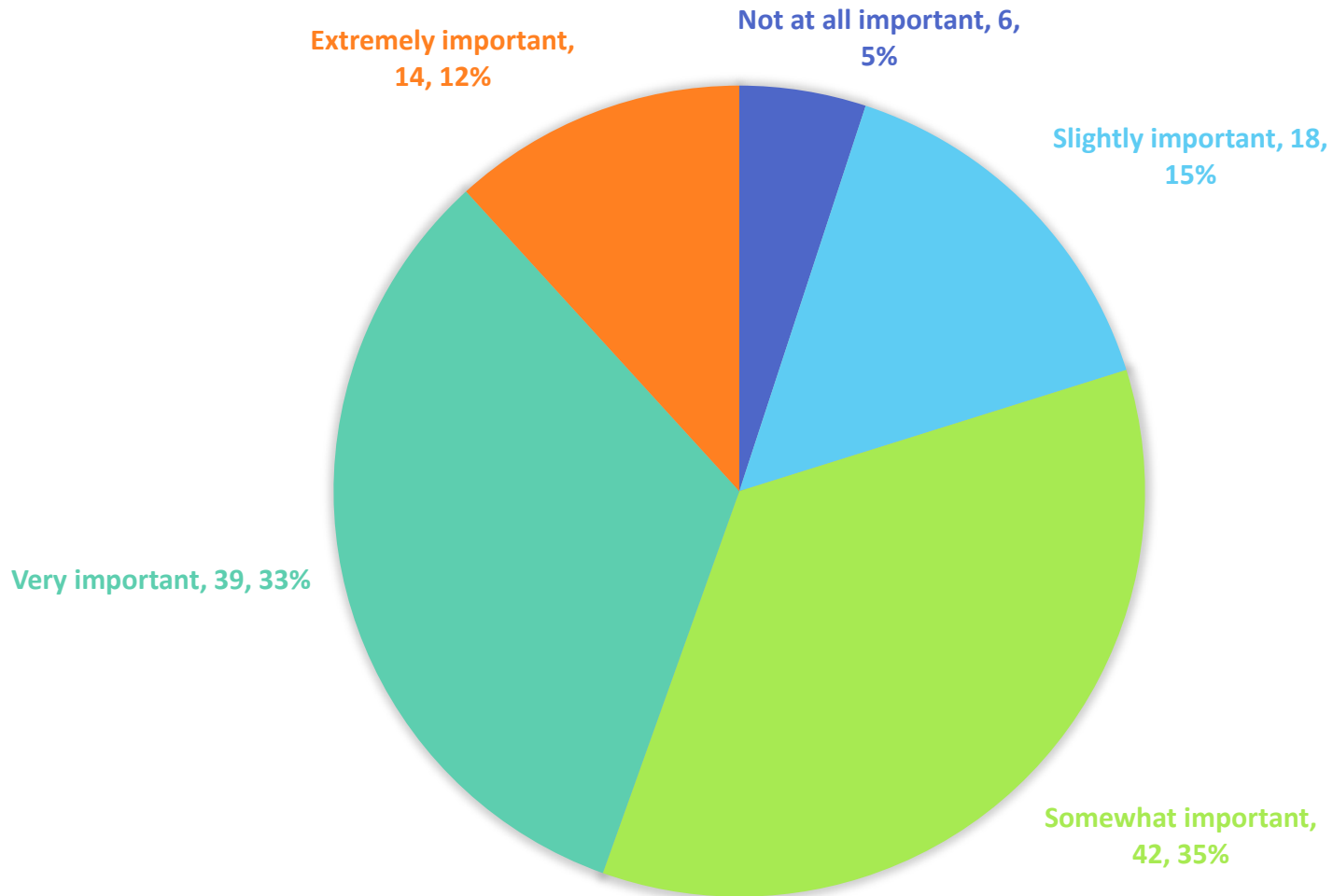
When considering an olive oil, how important are the following factors?

Sustainable farming practices
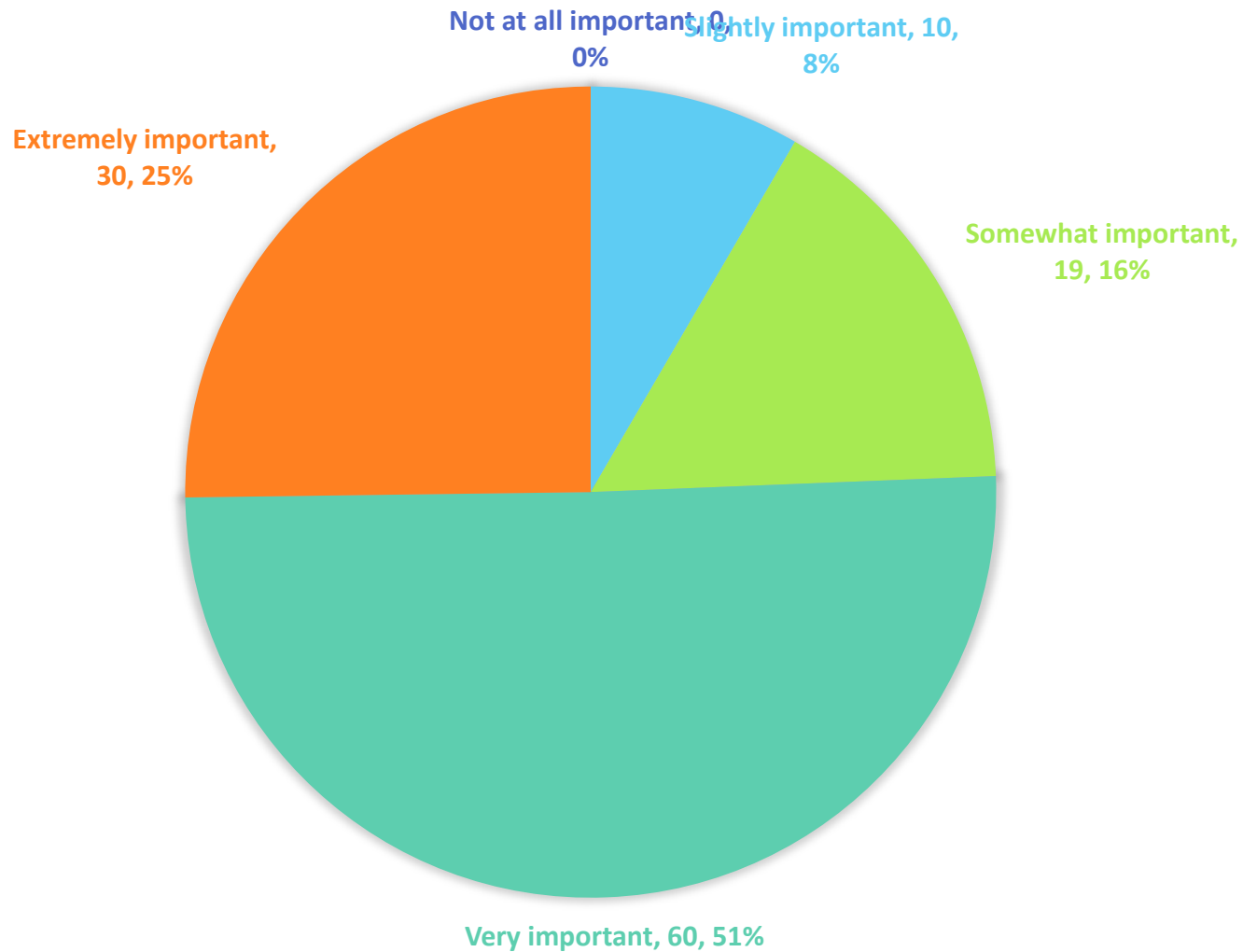
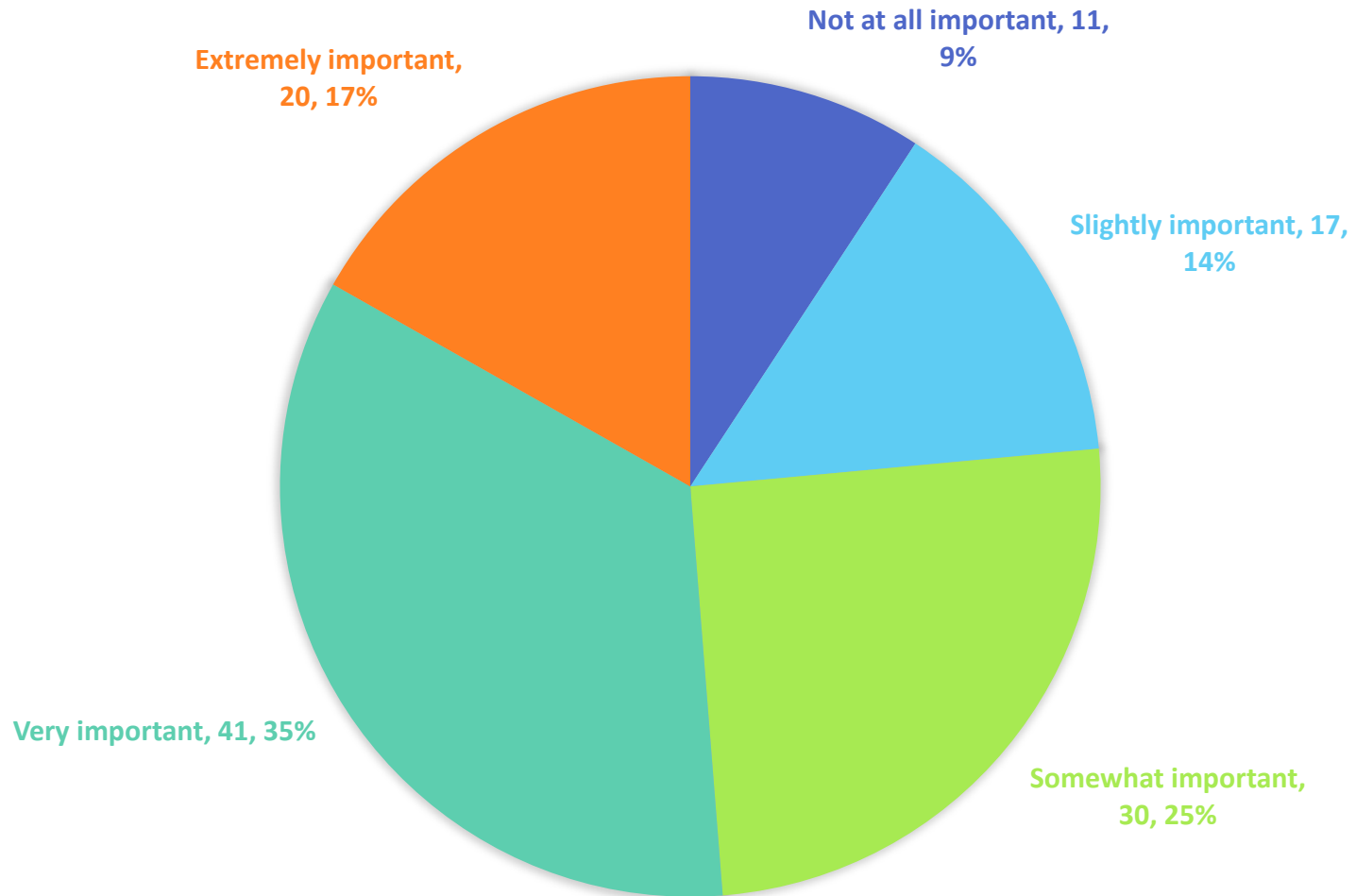When considering an olive oil, how important
are the following factors?
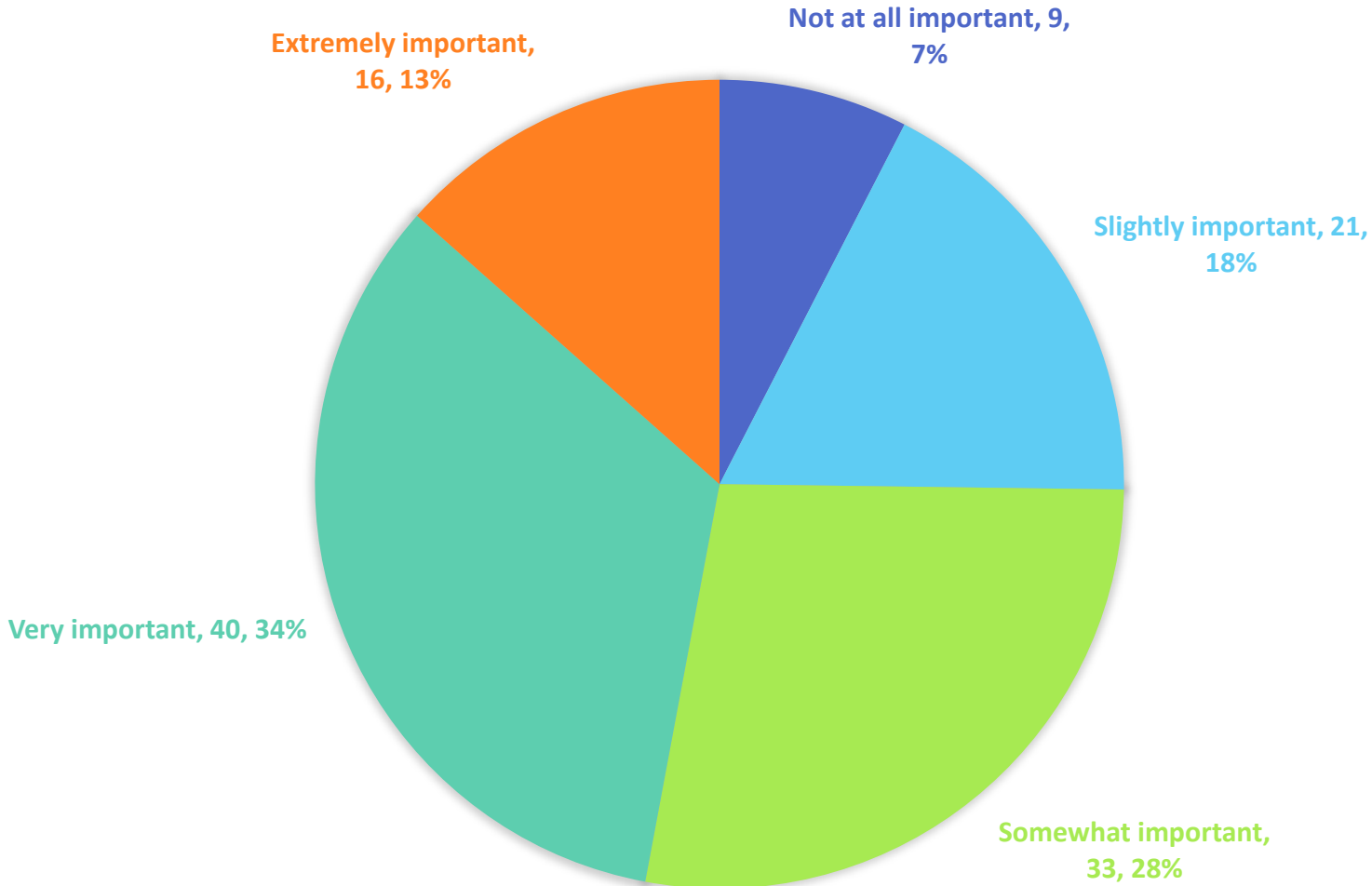
Compusense.

USDA Organic

Not at all important, 9, 7%

Slightly important, 21, 18%

Extremely important, 16, 13%

Very important, 40, 34%

Somewhat important, 33, 28%

When considering an olive oil, how important are the following factors?

Compusense

Non-GMO

Not at all important, 15, 12%

Slightly important, 14, 12%

Somewhat important, 24, 20%

Very important, 33, 28%

Extremely important, 33, 28%

When considering an olive oil, how important are the following factors?

Compusense

Early harvest date

Extremely important, 11, 9%

Not at all important, 11, 9%

Slightly important, 22, 19%

Very important, 32, 27%

Somewhat important, 43, 36%

When considering an olive oil, how important are the following factors?

Compusense.
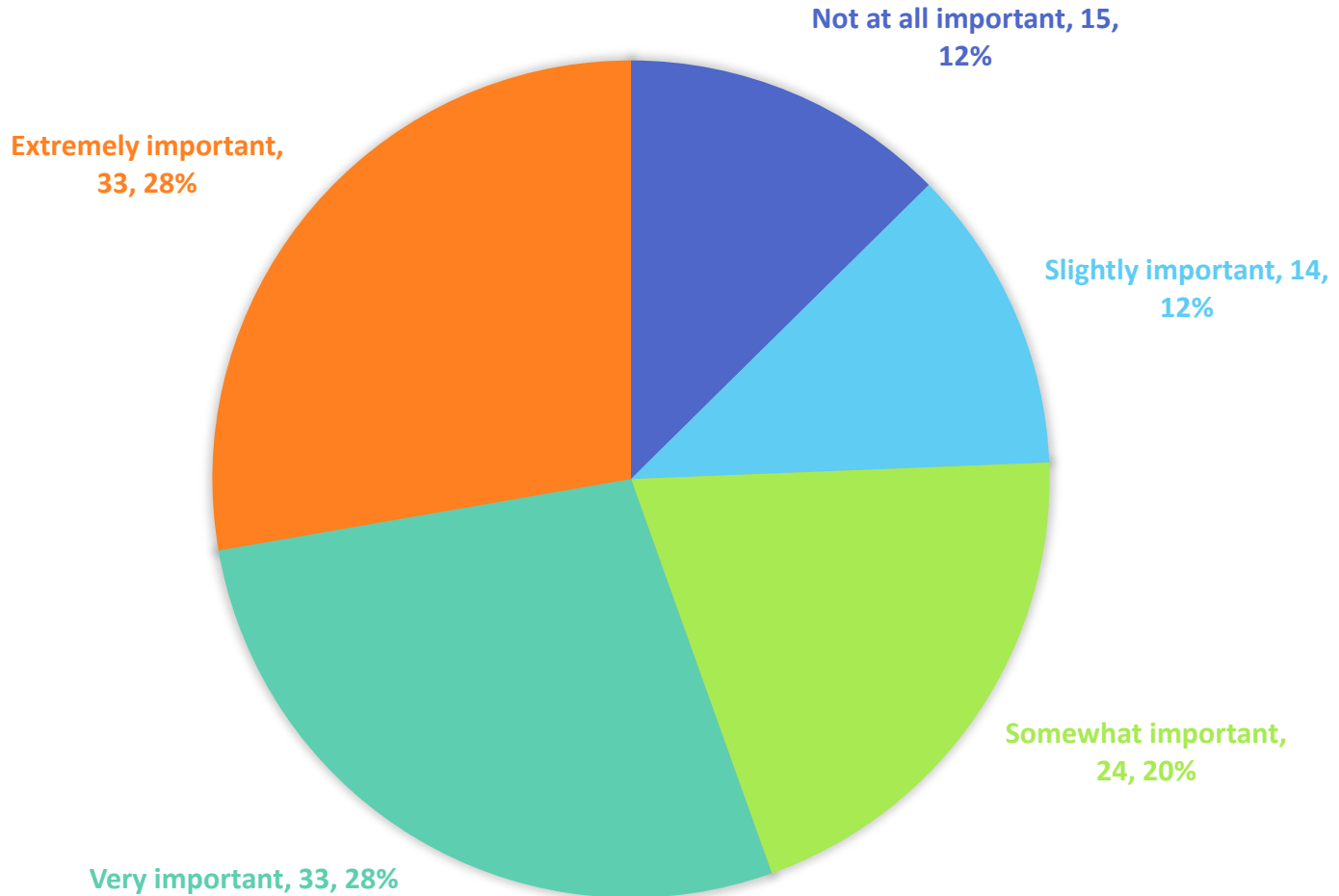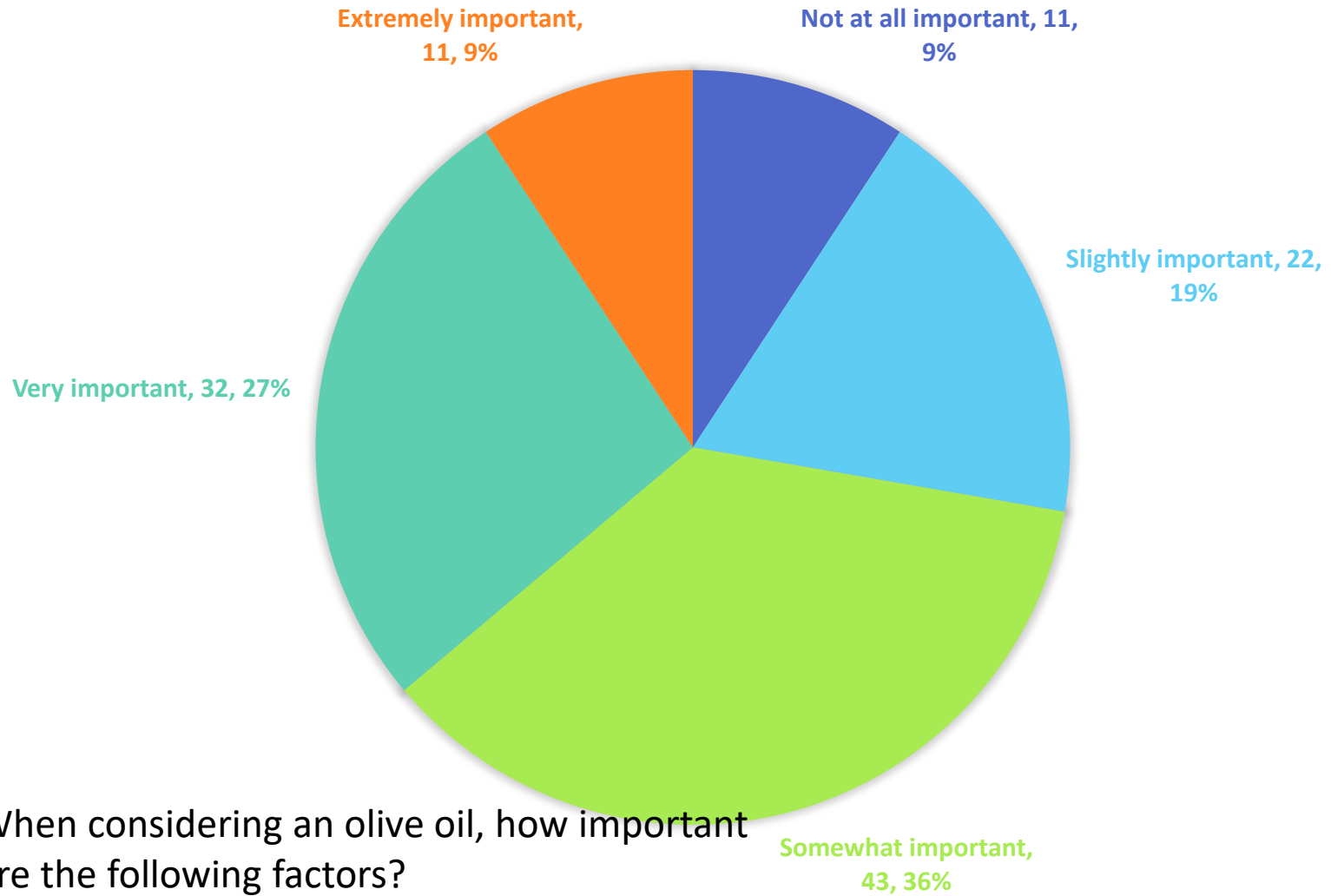
100% Pure
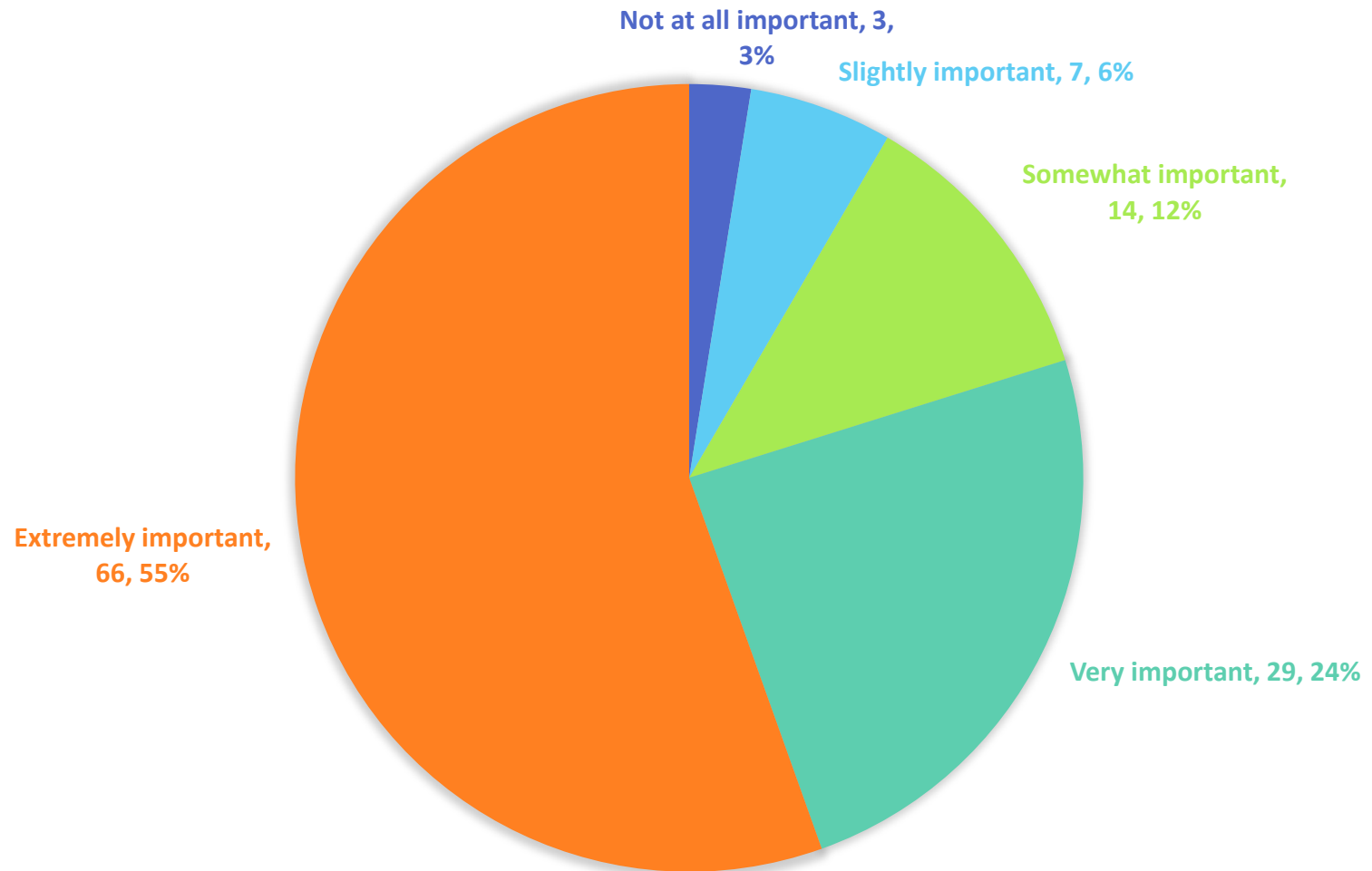
When considering an olive oil, how important are the following factors?

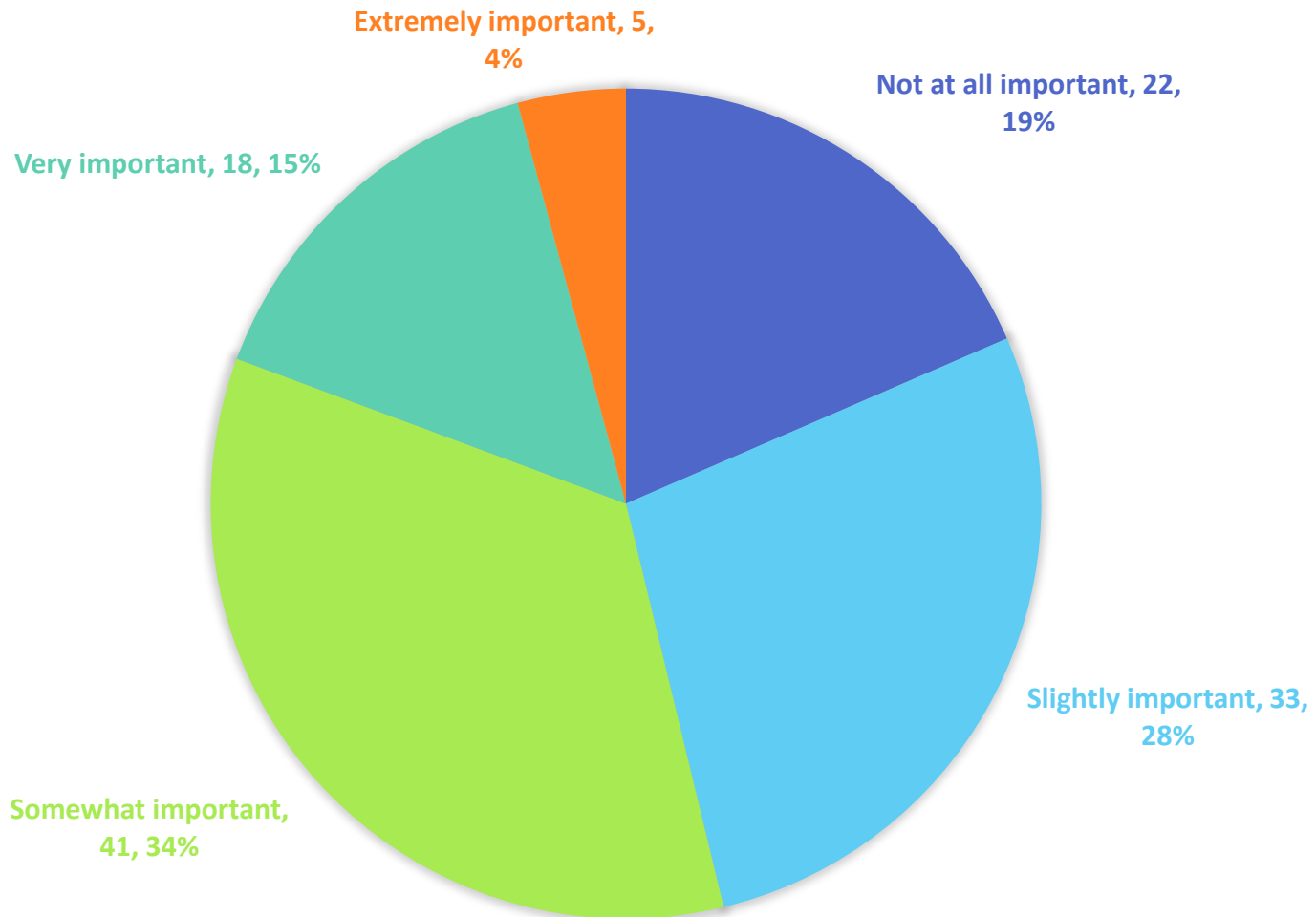# Polyphenol (antioxidant) levels

Not at all important, 11, 9%

Slightly important, 17, 14%

Somewhat important, 30, 25%

Very important, 41, 35%

Extremely important, 20, 17%

When considering an olive oil, how important are the following factors?

Compusense

Robust flavor & aroma

Not at all important, 0, 0%

Slightly important, 6, 5%

Somewhat important, 16, 13%

Extremely important, 41, 35%

Very important, 56, 47%

When considering an olive oil, how important are the following factors?
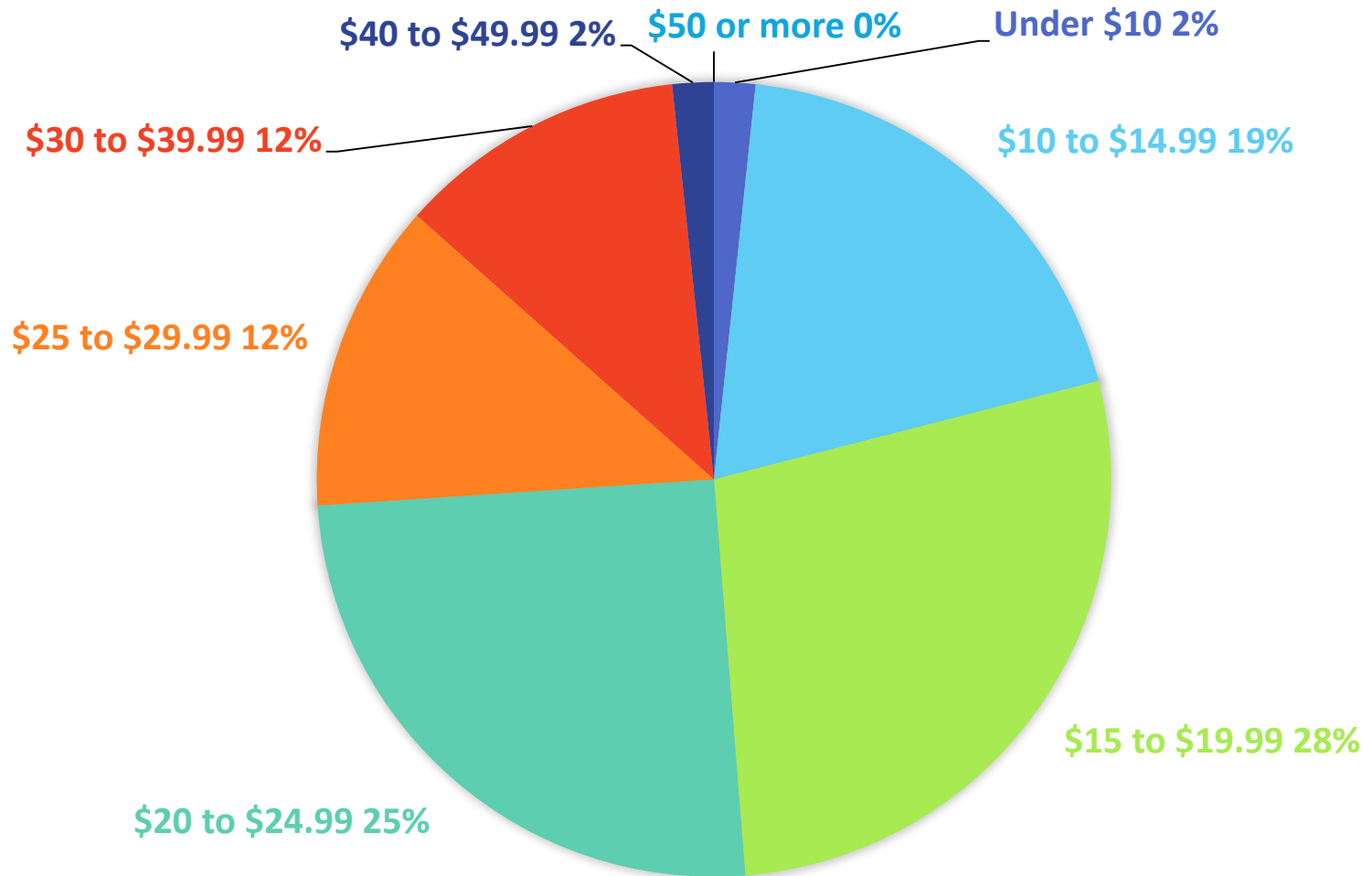
Compusense.
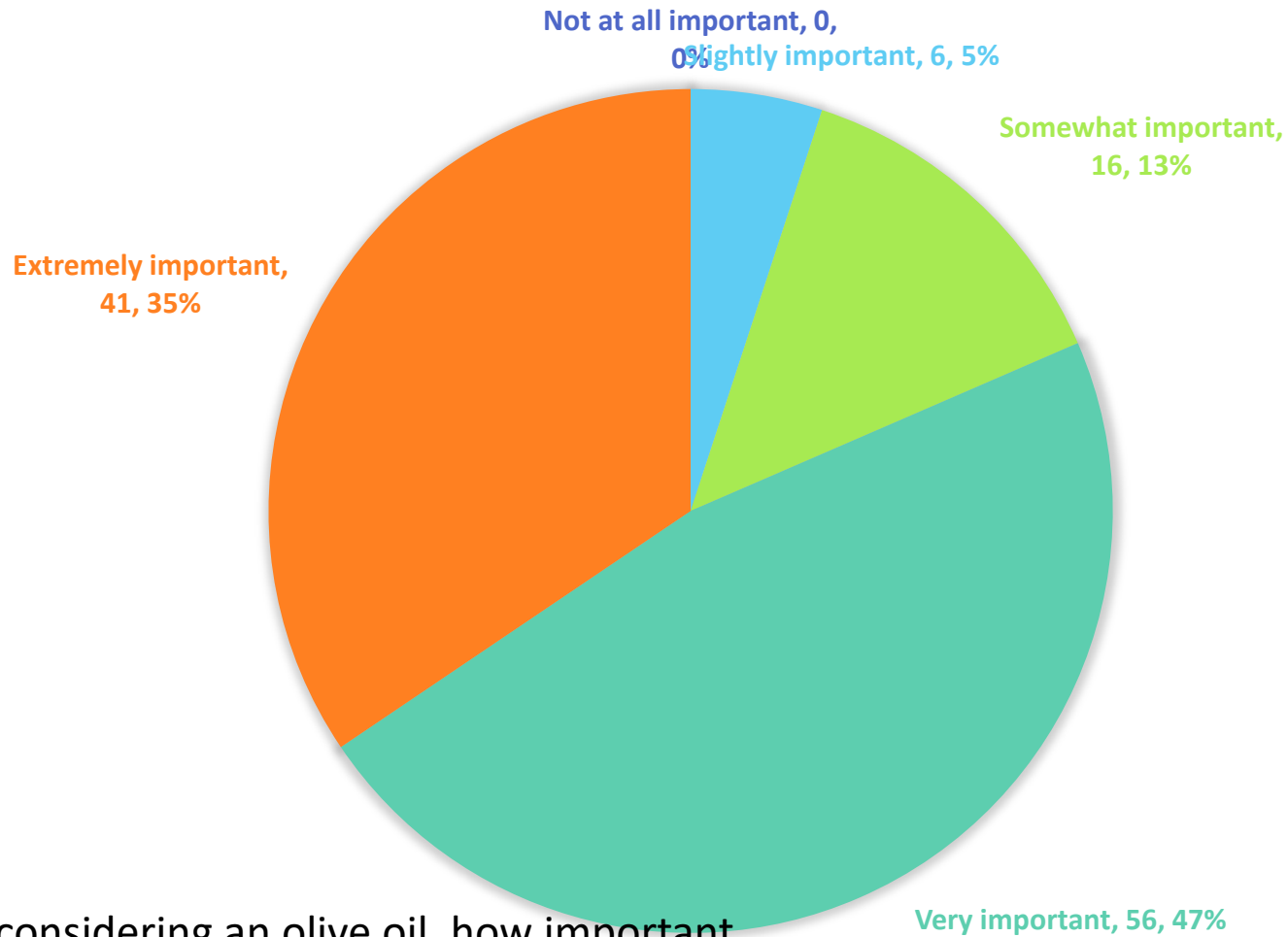
Award winning

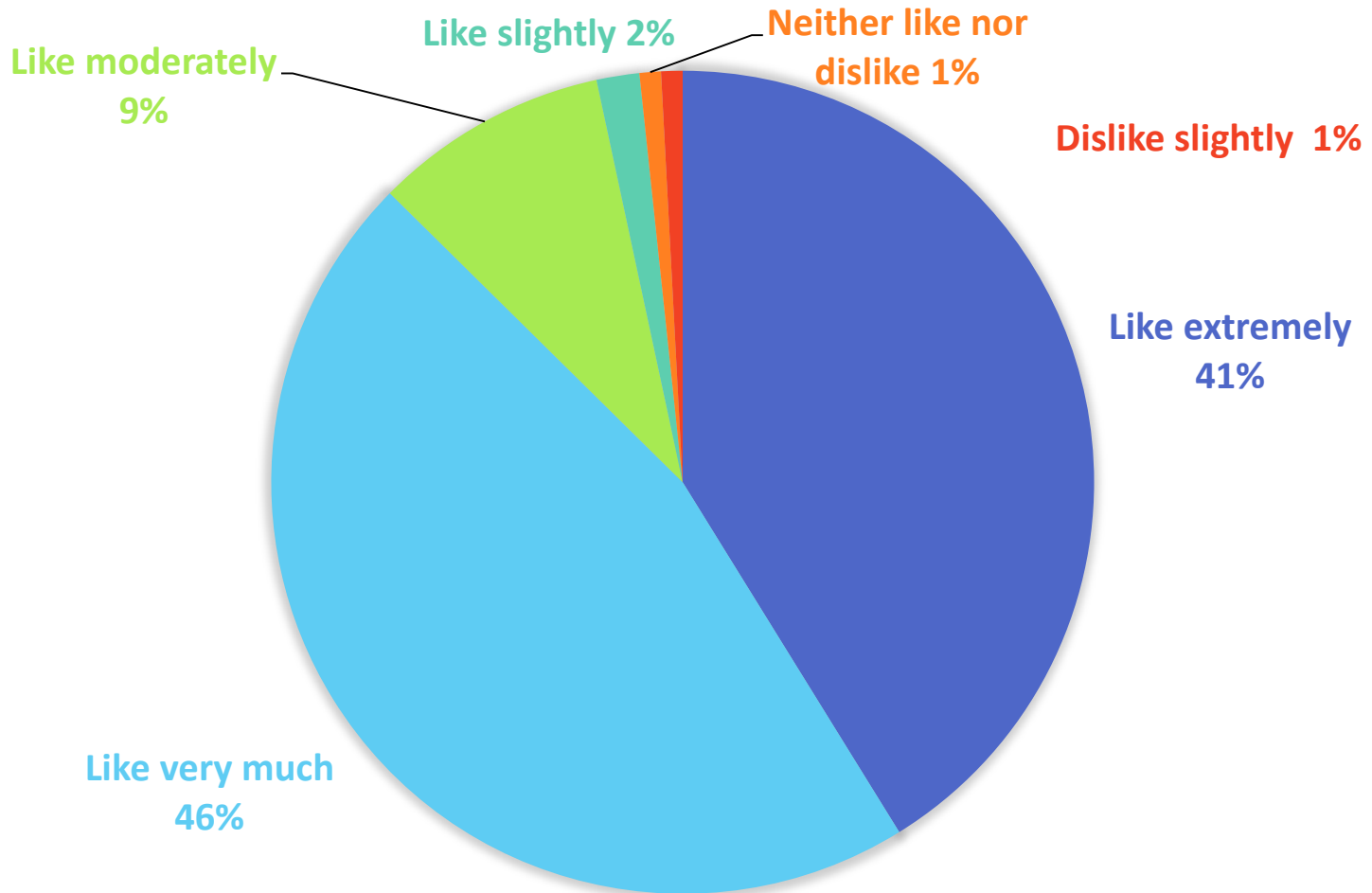When considering an olive oil, how important are the following factors?

Price
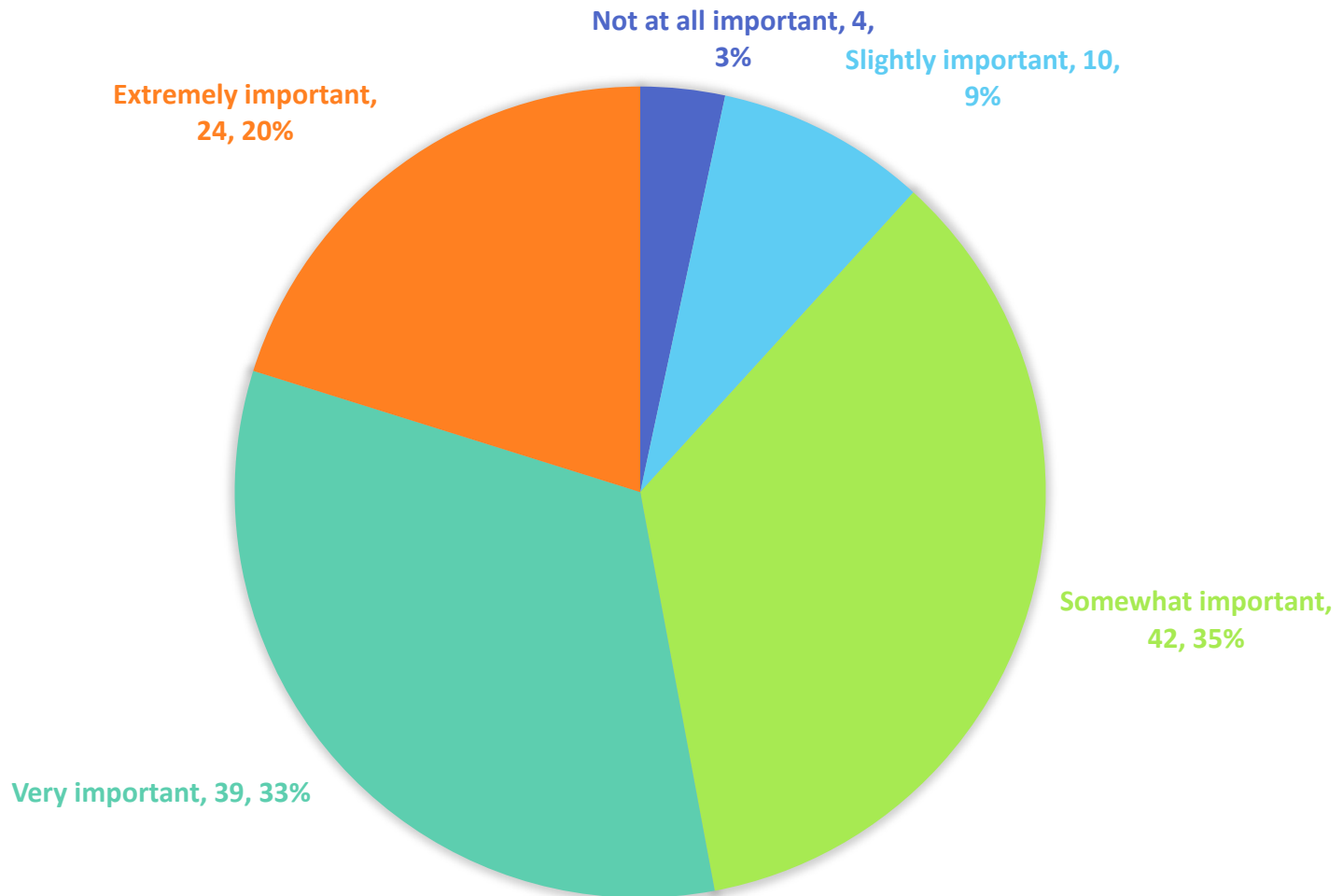
When considering an olive oil, how important are the following factors?
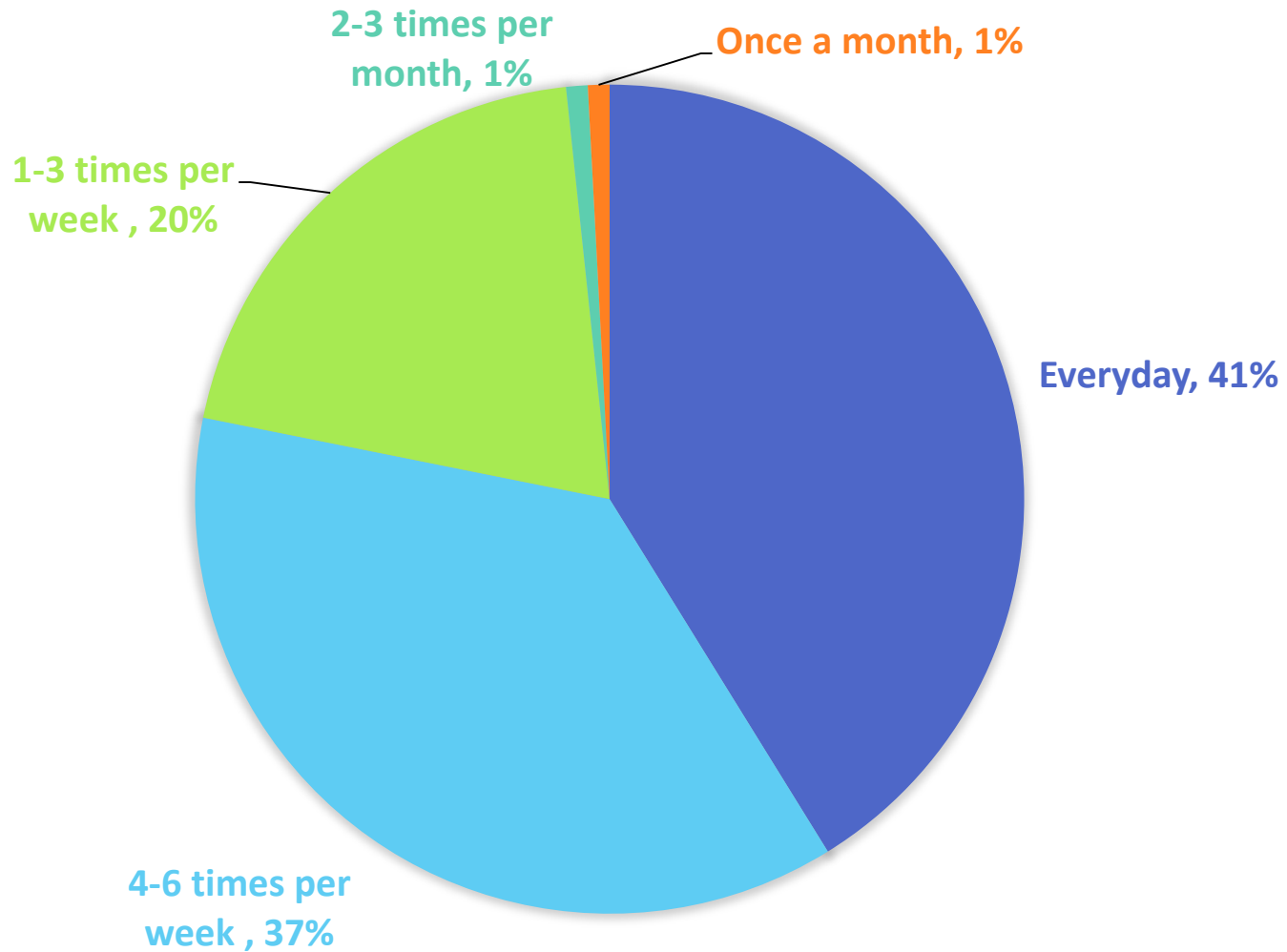
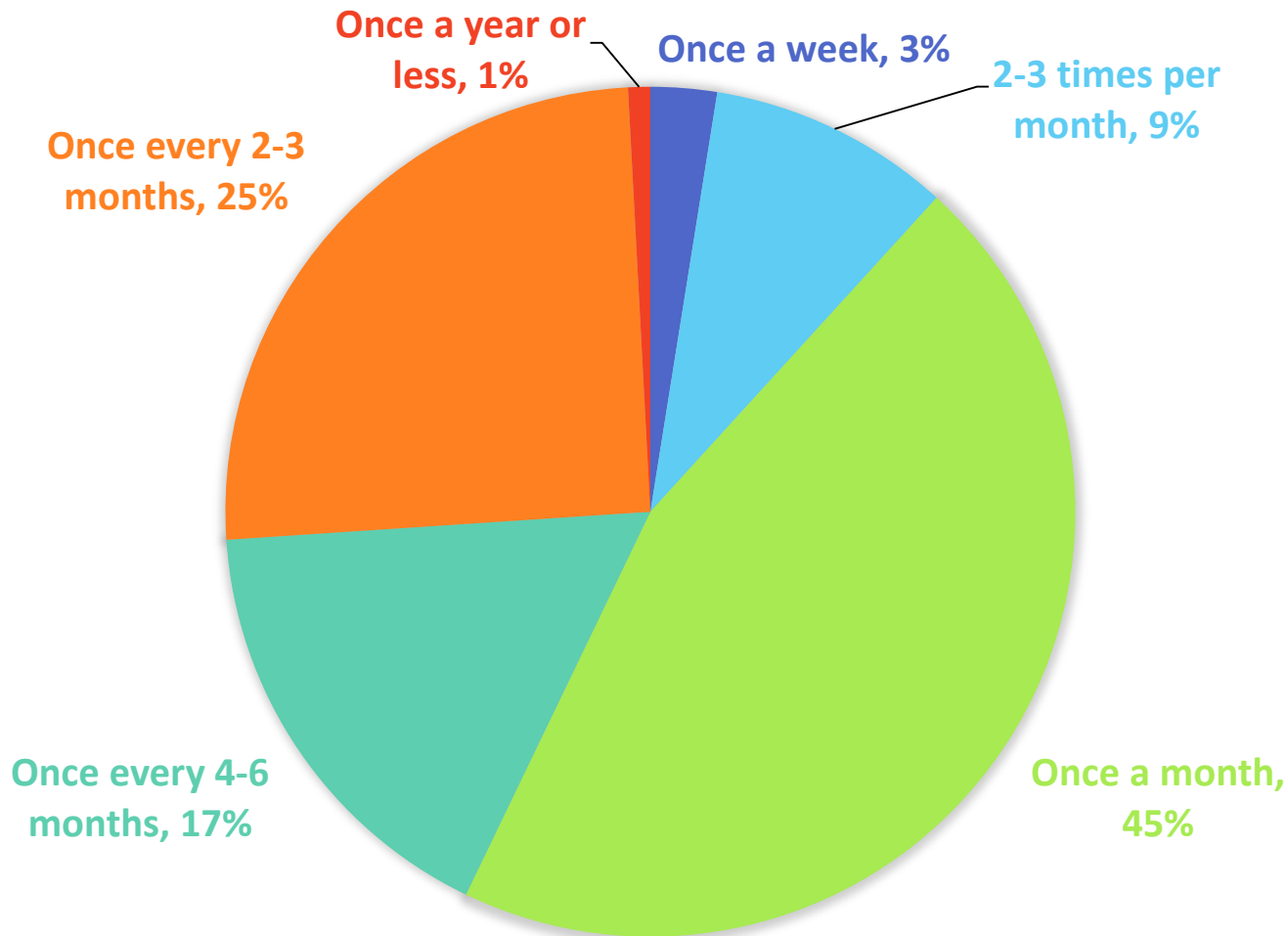# How much do you usually spend when purchasing premium olive oil?

$40 to $49.99 2%

$50 or more 0%

Under $10 2%

$30 to $39.99 12%

$10 to $14.99 19%

$25 to $29.99 12%

$15 to $19.99 28%

$20 to $24.99 25%

Compusense.

Olive oil use frequency

2-3 times per month, 1%

Once a month, 1%

1-3 times per week , 20%

Everyday, 41%

4-6 times per week , 37%

Compusense.

EVOO purchase frequency

Once a year or less, 1%

Once a week, 3%

2-3 times per month, 9%

Once every 2-3 months, 25%

Once every 4-6 months, 17%

Once a month, 45%

Compusense

Age

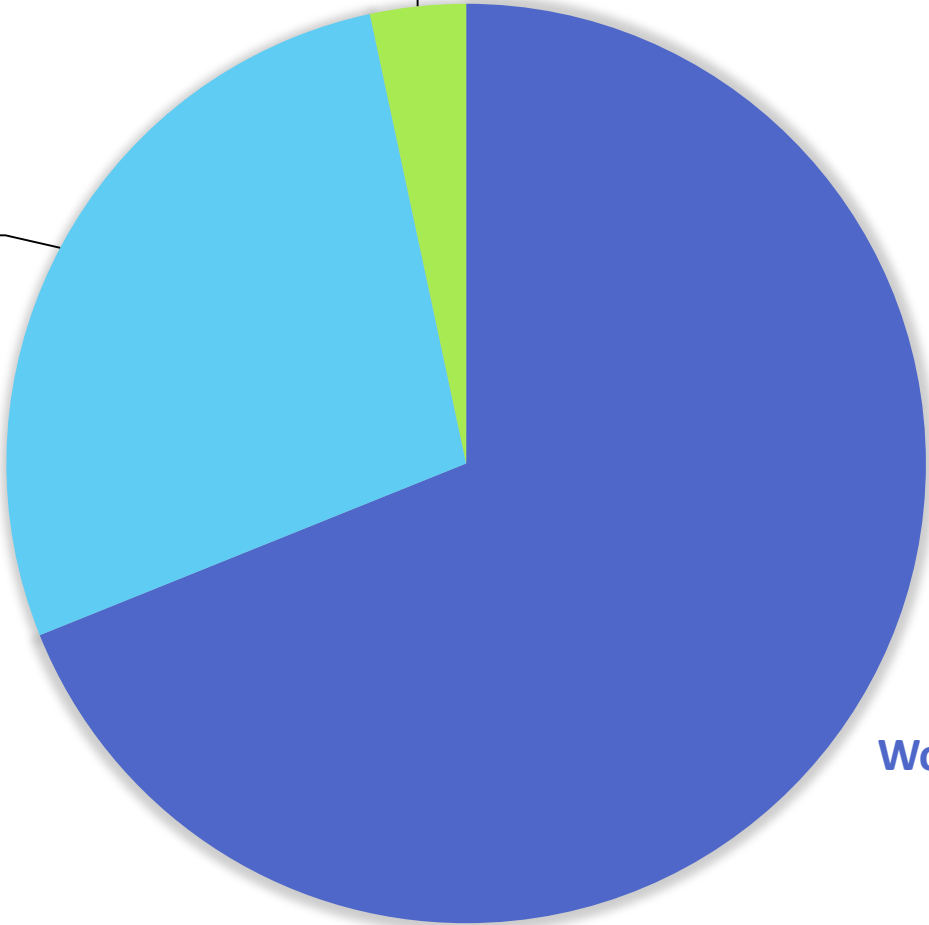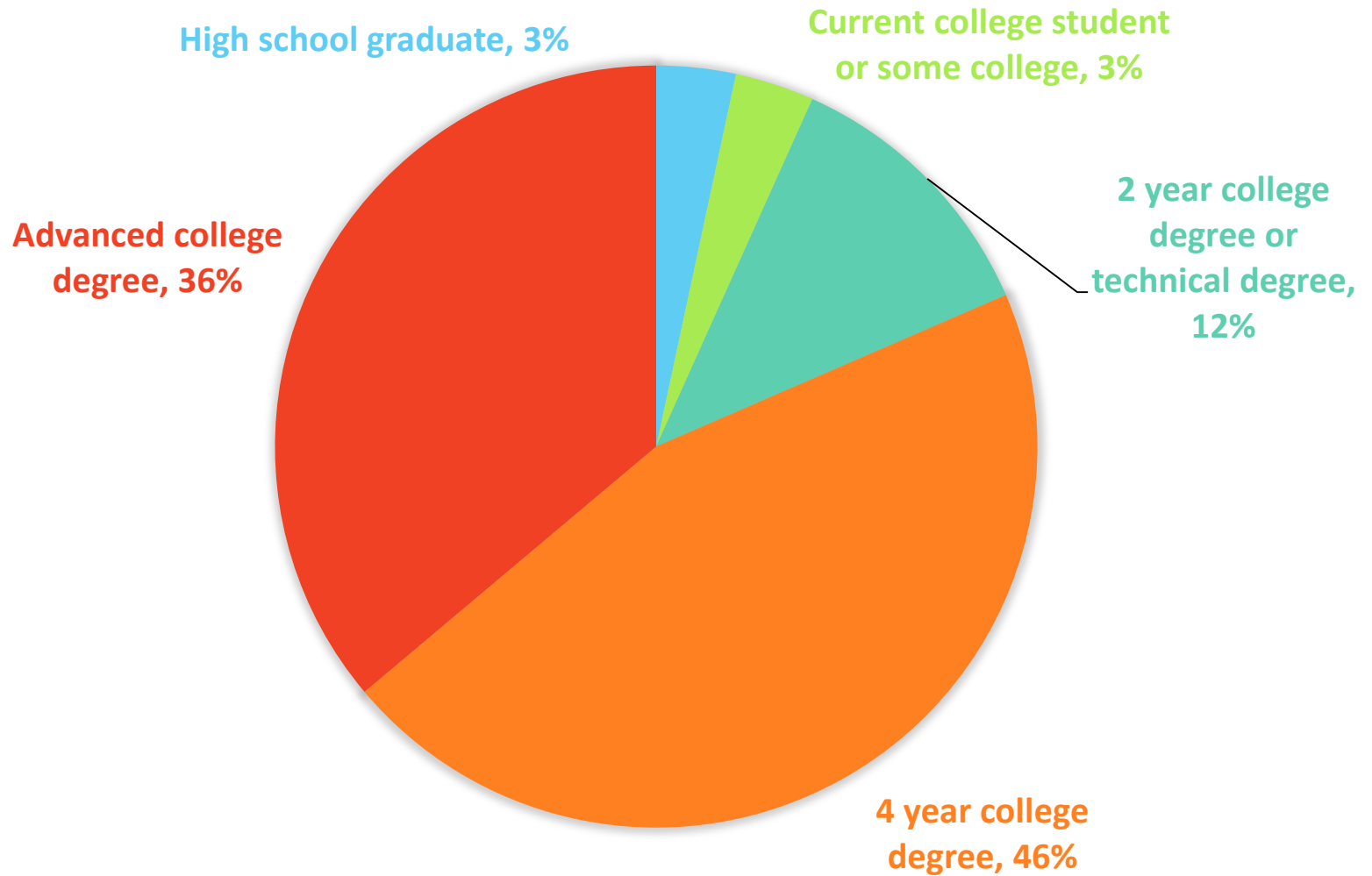| Age Group	Count
26-35 years	39
36-45 years	30
46-55 years	23
56-65 years	17
66-75 years	5
18-25 years	4
76 years or older	1

Compusense
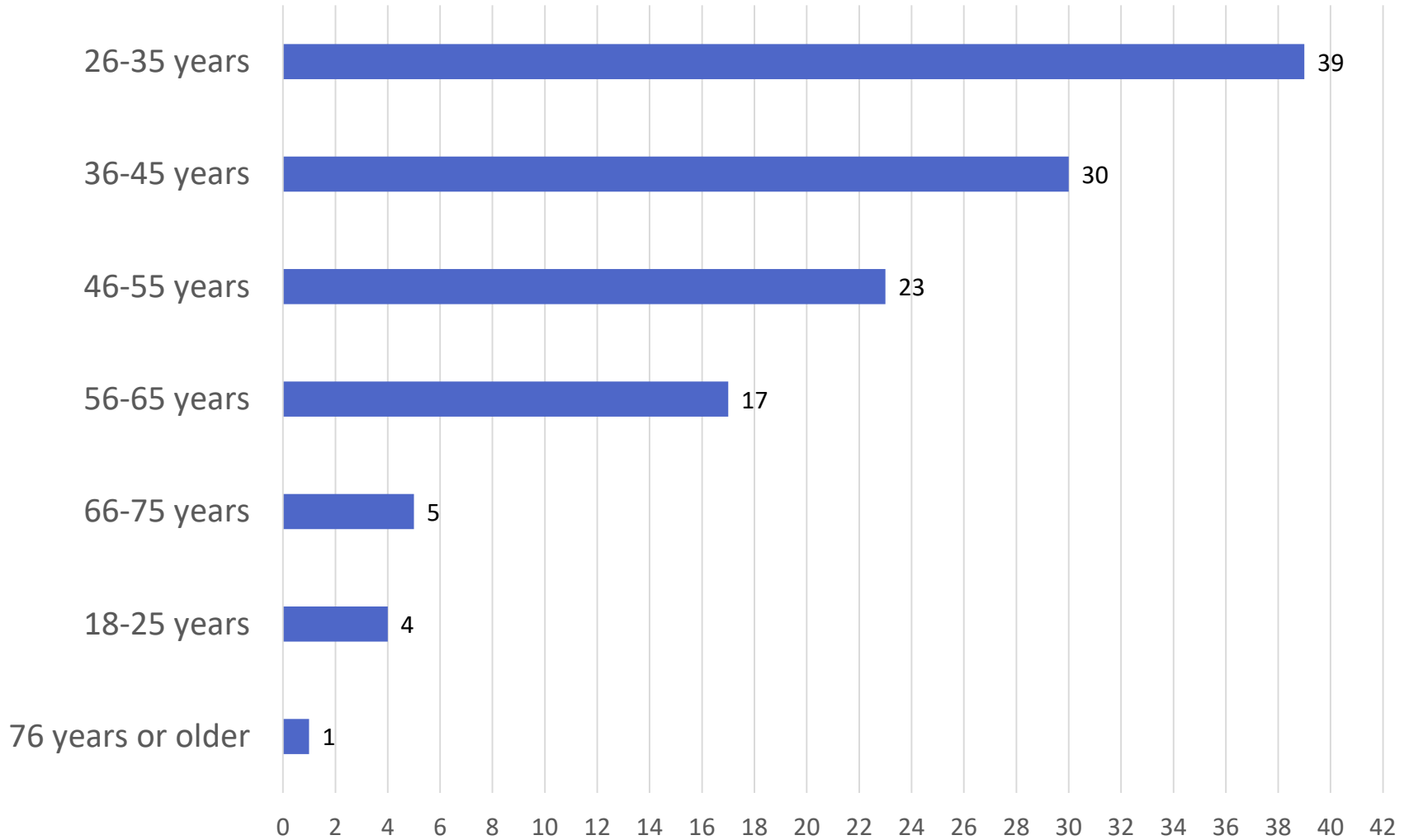
Gender

Gender queer / gender non-conforming, 3%

Man, 28%

Woman, 69%

Compusense.

Education

HH Income

Less than $20,000/yr, 2%

$20,000-$39,999/yr, 13%

$40,000-$59,999/yr, 9%

$60,000-$79,999/yr, 14%

$80,000-$119,999/yr, 16%

$120,000/yr or more, 46%

Compusense.

Ethnicity