SOCIETY OF SENSORY PROFESSIONALS

mmr

Using real time panelist feedback to fast track consensus descriptive analysis

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Trained sensory panelists working collaboratively to agree on magnitude ratings of sensory attributes



How does consensus profiling work?

Existing sensory lexicon

1. **Initial individual scoring:** on paper ballots
2. **Data Collection:** panelists call out their scores and panel leader collates them on a data capture template
3. **Discussion:** for each attribute, particularly when scores are showing differences

Final agreed scores: updated on data capture table

When to use consensus profiling?

time constraints



screening large sample sets



limited product quantity



difficult products



When to use consensus profiling?

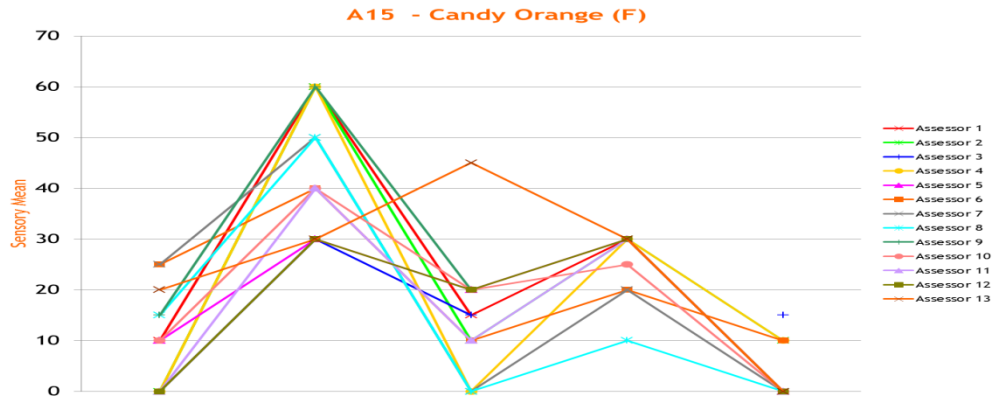
time constraints

screening large

lim

cts

to build panel consensus during training of classic descriptive analysis profiling projects



Using real time panelist feedback to fast track consensus descriptive analysis

A case study on natural orange sodas

Case study on NATURAL ORANGE SODAS:

- 6 commercial products
- 41 attributes
- 12 trained panelists



Traditional Consensus Profiling



Traditional Consensus Profiling



So how could we fast track the process?

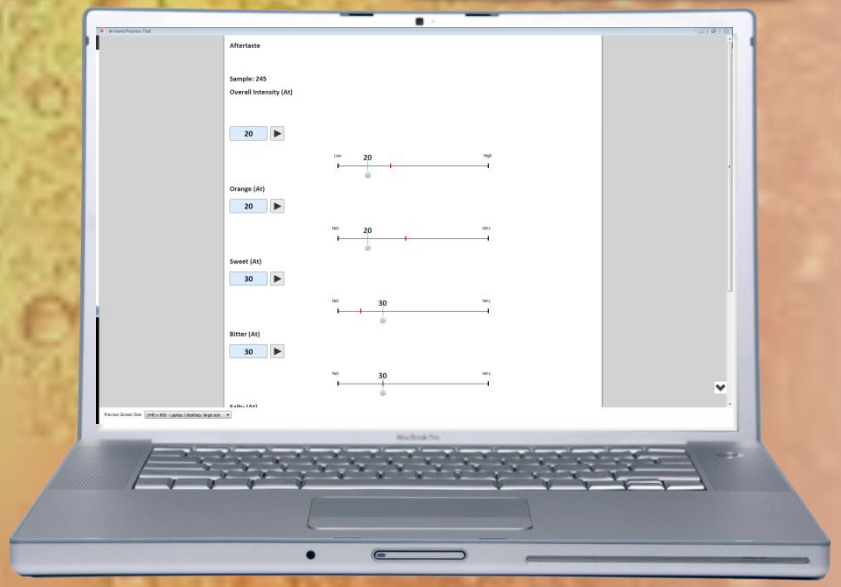
Traditional
Consensus Profiling

1. **Initial individual scoring:** on paper ballots
2. **Data Collection:** panelists call out their scores and panel leader collates them on a data capture template

Fast Track
Consensus Profiling

Scoring on a computerized ballot easily fast tracks vs. paper ballots

… panelists sharing their scores is key to providing feedback on how their scores compared to the group



So how could we fast track the process?

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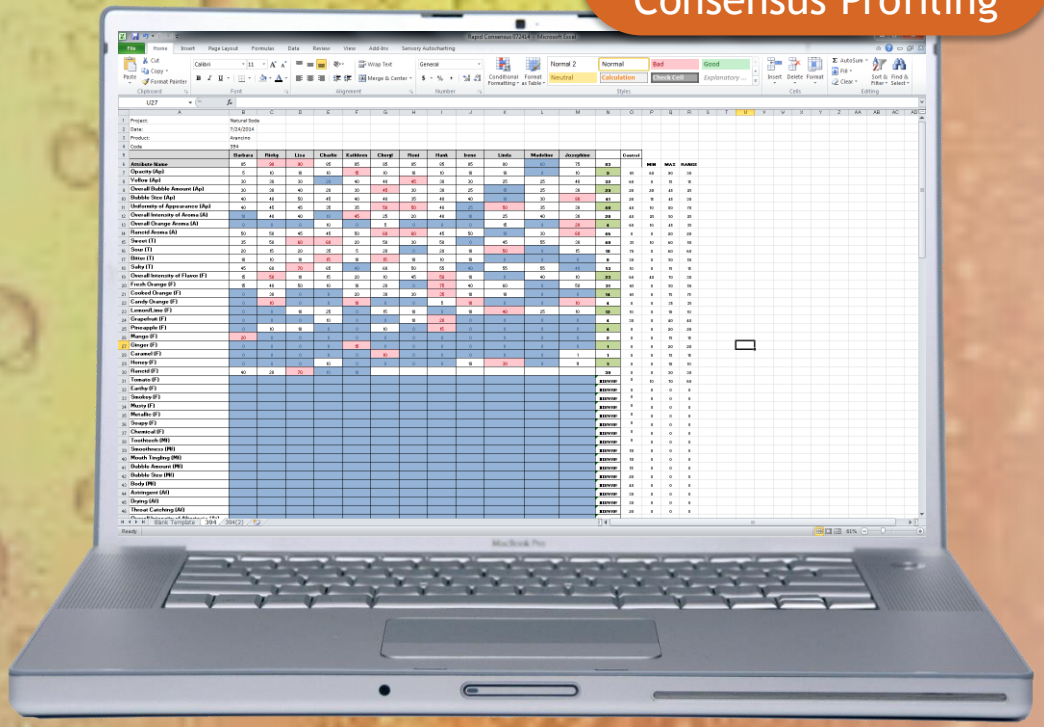
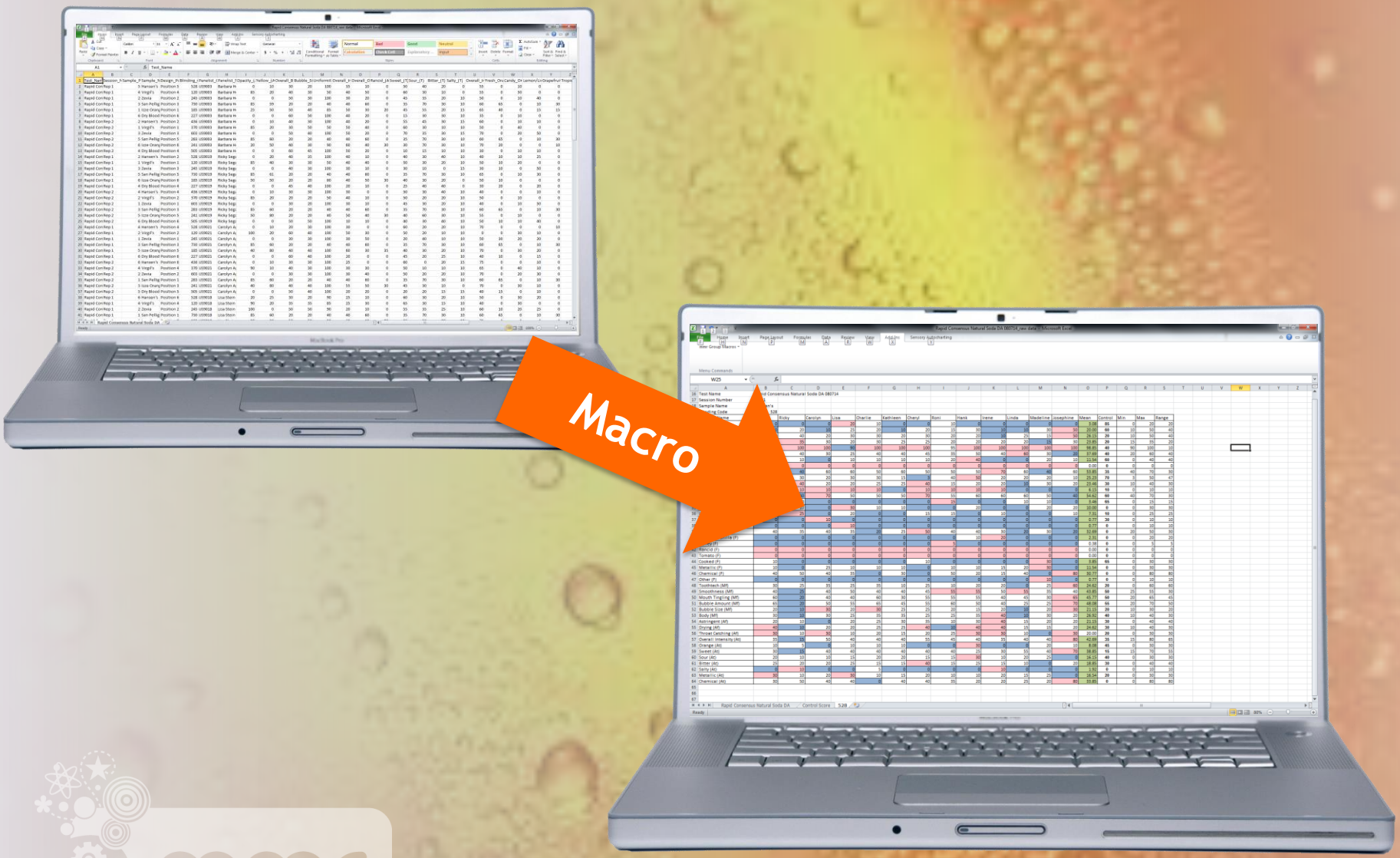
Fast Track
Consensus Profiling



Show panelists all the individual scores in real time

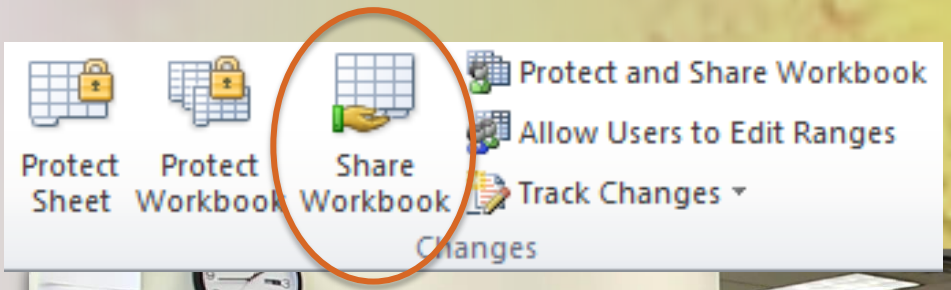
Fast Track
Consensus Profiling



Natural Soda
8/5/2014

Blinding Code	883	Consensus																
Panelist Name	Barbara	Ricky	Carolyn	Lisa	Charlie	Kathleen	Cheryl	Roni	Hank	Irene	Linda	Madeline	Josephine	**Mean**	**Control**	**Min**	**Max**	**Range**
Opacity (Ap)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	85	0	0	0
Yellow (Ap)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0
Overall Bubble Amount (Ap)	45	65	50	65	40	40	65	55	40	45	45	40	40	49	20	40	65	25
Bubble Size (Ap)	35	40	40	40	30	30	30	40	25	25	30	25	20	32	20	20	40	20
Uniformity of Appearance (Ap)	100	95	100	100	95	100	100	100	95	100	100	100	100	99	40	95	100	5
Overall Intensity (A)	25	30	20	25	10	30	25	15	30	30	15	30	20	23	40	10	30	20
Overall Orange (A)	20	0	20	10	10	10	15	10	20	10	10	15	20	13	60	0	20	20
Rancid (A)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sweet (T)	45	40	60	65	50	45	65	45	60	65	55	45	45	53	35	40	65	25
Sour (T)	50	40	35	40	35	20	40	45	50	30	40	50	40	40	70	20	50	30
Bitter (T)	20	20	20	35	25	20	35	20	30	40	20	20	20	25	30	20	40	20
Salty (T)	10	20	0	20	20	20	0	15	20	10	0	0	0	10	10	0	20	20
Overall Intensity (F)	50	50	50	65	60	40	50	50	55	40	60	65	50	53	60	40	65	25
Fresh Orange (F)	0	10	0	0	0	0	0	20	20	0	0	20	10	6	65	0	20	20
Candy Orange (F)	15	10	15	20	0	20	10	0	0	20	10	20	20	12	0	0	20	20
Lemon/Lime (F)	40	25	25	30	27	20	35	45	40	45	40	20	25	32	10	20	45	25
Grapefruit (F)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0	0	0
Tropical (F)	0	15	0	0	0	10	0	0	0	0	0	0	0	2	0	0	15	15
Ginger (F)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Caramel Vanilla (F)	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0
Honey (F)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Rancid (F)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tomato (F)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cooked (F)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	65	0	0	0
Metallic (F)	10	20	10	20	0	10	20	20	10	10	10	0	10	12	0	0	20	20
Chemical (F)	45	35	45	30	30	30	35	50	30	35	30	25	45	36	0	25	50	25
Toothtech (Mf)	30	30	30	30	25	20	25	20	30	20	30	25	35	27	20	20	35	15
Smoothness (Mf)	30	20	40	20	40	30	10	40	40	40	40	40	20	32	50	10	40	30
Mouth Tingling (Mf)	60	50	75	65	55	50	70	65	50	60	60	55	70	60	50	50	75	25
Bubble Amount (Mf)	65	60	75	65	60	70	60	75	60	70	60	60	65	65	55	60	75	15
Bubble Size (Mf)	30	30	40	35	25	35	25	30	25	30	30	35	35	31	20	25	40	15
Body (Mf)	30	30	35	30	35	35	20	20	30	25	25	30	20	28	40	20	35	15
Astringent (Af)	20	30	20	30	25	20	30	15	30	30	25	40	20	26	30	15	40	25
Drying (Af)	40	40	40	40	35	20	20	20	35	35	40	35	20	32	30	20	40	20
Throat Catching (Af)	30	30	30	35	25	30	35	20	25	30	30	30	40	30	20	20	40	20
Overall Intensity (At)	35	40	40	40	45	40	60	30	35	40	50	40	50	42	35	30	60	30
Orange (At)	10	10	0	10	10	20	10	15	20	10	0	15	10	11	45	0	20	20
Sweet (At)	30	30	40	35	30	30	30	30	25	25	25	25	30	30	15	25	40	15
Sour (At)	30	15	15	15	15	15	15	15	40	15	20	40	15	20	40	15	40	25
Bitter (At)	30	40	20	20	20	15	30	20	30	15	15	35	20	24	30	15	40	25
Salty (At)	0	0	0	0	5	15	0	0	10	0	0	15	0	3	0	0	15	15
Metallic (At)	10	20	0	25	0	15	30	15	20	5	10	0	20	13	20	0	30	30
Chemical (At)	40	30	30	30	25	30	50	45	40	35	35	35	50	37	0	25	50	25

Fast Track
Consensus Profiling





What does fast track consensus look like?

Existing sensory lexicon

1. **Initial individual scoring:** on computers/tablets
2. **Data Collection:** panel leader exports data and macro converts into table which highlights outlier scores
3. **Discussion:** based on table which is shared with panelists to drive focused discussion

Final agreed scores:
updated on summary table

How does the fast track consensus profile results compare to duplicate profiling?

Fast Track Consensus Profiling

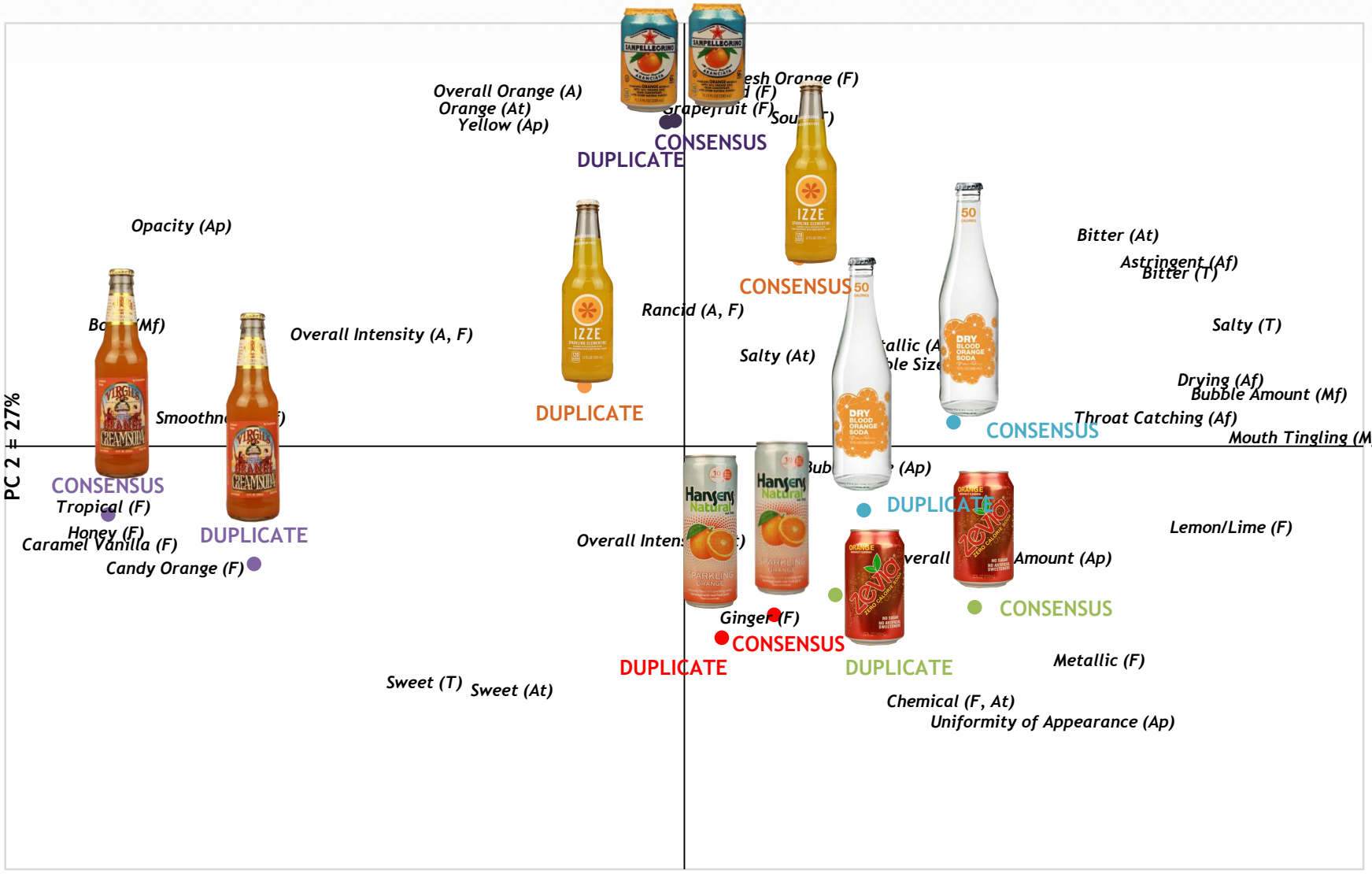
Duplicate Profiling

Attribute	Fast Track Consensus Profiling means scores & LSD							Duplicate profiling mean scores & LSD							Difference (Consensus-Duplicate)						Correlation
	San Pelligrino	Hansen's	Virgil's	Zevia	Izze	Dry Blood	LSD 95%	San Pelligrino	Hansen's	Virgil's	Zevia	Izze	Dry Blood	LSD 95%	San Pelligrino	Hansen's	Virgil's	Zevia	Izze	Dry Blood	
Opacity (Ap)	85.00	0.77	88.08	0.00	40.56	0.00	3.14	85.19	2.69	87.50	0.00	39.23	0.00	5.04	-0.19	-1.92	0.58	0.00	1.32	0.00	1.00
Yellow (Ap)	60.00	13.85	20.77	0.00	50.00	0.00	3.02	60.15	15.63	21.15	0.00	51.25	0.00	4.58	-0.15	-1.78	-0.38	0.00	-1.25	0.00	1.00
Overall Bubble Amount (Ap)	20.00	30.38	31.92	48.85	51.67	49.77	6.65	19.62	25.00	32.69	36.36	33.75	52.71	5.79	0.38	5.38	-0.77	12.48	17.92	-2.94	0.78
Bubble Size (Ap)	20.00	21.54	26.54	31.54	46.11	49.62	5.30	19.62	24.46	29.81	29.42	34.38	45.00	5.19	0.38	-2.92	-3.27	2.12	11.74	4.62	0.92
Uniformity of Appearance (Ap)	40.00	93.85	50.38	98.85	74.44	99.23	4.64	40.00	96.88	71.14	99.42	92.50	99.42	6.64	0.00	-3.03	-20.75	-0.58	-18.06	-0.19	0.93
Overall Intensity (A)	40.00	38.08	49.23	23.46	52.22	45.00	5.65	39.81	35.96	44.42	33.46	49.62	32.19	5.92	0.19	2.12	4.81	-10.00	2.61	12.81	0.70
Overall Orange (A)	60.00	12.31	39.62	13.08	44.44	38.85	6.46	59.62	7.71	31.36				9.39	0.38	4.60	8.25	-2.60	7.85	12.69	0.95
Rancid (A)	0.00	0.00	0.00	0.00	16.67	0.00	2.33	0.00						2.16	0.00	0.00	-0.38	0.00	-6.06	-0.77	1.00
Sweet (T)	35.00	58.08	53.46	52.69	25.00									6.06	0.00	2.31	-3.83	3.53	-13.13	-5.79	0.94
Sour (T)	70.00	36.92												6.19	0.19	12.00	2.60	10.75	9.33	15.24	0.96
Bitter (T)	30.00	20.3												6.00	0.00	-0.96	0.96	4.62	4.72	3.10	0.95
Salty (T)	10.00	6.5												2.27	0.77	0.58	-1.54	3.27	4.42	2.50	0.77
Overall Intensity (F)	60.00	58.0												5.28	-0.21	3.58	0.90	-5.85	1.83	1.35	0.93
Fresh Orange (F)	65.00	1.92												5.61	0.00	0.46	-1.15	-0.96	16.92	11.92	0.95
Candy Orange (F)	0.00	10.00												6.83	-0.38	2.71	8.37	0.22	12.64	-1.15	0.96
Lemon/Lime (F)	10.00	16.15												6.38	0.42	8.46	0.77	2.65	8.04	6.35	0.94
Grapefruit (F)	30.00	0.77												2.07	0.00	-0.38	0.00	-2.00	11.33	-0.19	0.92
Tropical (F)	0.00	6.00												1.85	0.00	6.00	1.88	1.92	-2.57	0.00	0.75
Ginger (F)	0.00	35.00												6.64	-0.04	4.42	0.00	-0.38	0.73	1.92	1.00
Caramel Vanilla (F)	0.00	0.15												4.25	0.00	-1.19	7.31	-0.04	0.11	0.00	1.00
Honey (F)	0.00	1.62											0.04	2.07	0.00	1.04	1.09	0.00	0.00	-0.04	0.99
Rancid (F)	0.00	0.00								0.00	0.00	20.19	0.00	3.86	0.00	0.00	0.00	0.00	2.08	0.08	1.00
Tomato (F)	0.00	0.00						0.00	0.00	0.00	0.00	0.00	0.00	NSD	0.00	0.00	0.00	0.00	0.00	0.00	
Cooked (F)	65.00	0.77	0.		74.09	6.92	3.87	64.75	1.25	2.50	0.00	19.75	0.91	3.07	0.25	-0.48	-1.73	0.00	54.34	6.01	0.78
Metallic (F)	0.00	8.92	3.92	11.54	10.00	8.46	4.01	0.04	10.58	4.81	7.12	7.71	10.00	3.09	-0.04	-1.65	-0.88	4.42	2.29	-1.54	0.83
Chemical (F)	0.00	39.62	5.38	35.77	3.33	3.46	6.38	0.00	32.05	5.77	31.54	1.92	5.83	8.12	0.00	7.57	-0.38	4.23	1.41	-2.37	0.99
Smoothness (Mf)	50.00	41.15	60.77	31.54	20.00	44.62	7.33	50.38	44.42	52.69	36.92	44.23	39.09	5.65	-0.38	-3.27	8.08	-5.38	-24.23	5.52	0.62
Mouth Tingling (Mf)	50.00	53.46	35.77	60.38	50.36	52.69	5.78	49.81	47.12	33.46	52.12	46.15	53.13	5.39	0.19	6.35	2.31	8.27	4.21	-0.43	0.91
Bubble Amount (Mf)	55.00	51.62	43.46	65.00	55.91	58.08	6.48	54.81	49.81	45.45	55.19	50.77	59.17	5.48	0.19	1.81	-1.99	9.81	5.14	-1.09	0.79
Bubble Size (Mf)	20.00	20.77	22.31	31.15	68.89	39.23	4.78	19.42	21.73	22.67	26.15	28.73	30.68	3.96	0.58	-0.96	-0.36	5.00	40.16	8.55	0.75
Body (Mf)	40.00	28.08	51.92	28.08	31.36	22.69	4.55	40.19	26.92	41.73	23.65	36.46	22.77	4.87	-0.19	1.15	10.19	4.42	-5.09	-0.08	0.88
Astringent (Af)	30.00	28.08	11.54	25.77	38.89	40.00	6.41	30.19	21.92	10.00	23.13	24.58	26.59	5.33	-0.19	6.15	1.54	2.64	14.31	13.41	0.81
Drying (Af)	30.00	27.69	14.62	32.31	25.56	38.85	5.16	30.00	26.92	11.67	34.32	22.69	23.06	4.82	0.00	0.77	2.95	-2.01	2.86	15.79	0.68
Throat Catching (Af)	20.00	20.77	8.08	30.00	27.78	23.92	5.15	19.81	20.00	12.69	29.09	20.96	12.73	5.63	0.19	0.77	-4.62	0.91	6.82	11.20	0.70
Overall Intensity (At)	35.00	39.23	32.31	41.92	29.00	18.46	6.59	34.81	41.36	33.54	37.69	35.00	23.13	4.79	0.19	-2.13	-1.23	4.23	-6.00	-4.66	0.92
Orange (At)	45.00	6.54	27.69	10.77	39.44	13.46	4.80	44.96	3.86	20.05	13.08	25.96	12.88	5.91	0.04	2.67	7.65	-2.31	13.48	0.58	0.93
Sweet (At)	15.00	40.77	33.46	29.62	32.78	7.69	5.46	15.00	37.08	37.08	33.75	18.08	12.69	4.95	0.00	3.69	-3.62	-4.13	14.70	-5.00	0.81
Bitter (At)	30.00	20.77	7.31	23.85	20.00	18.08	5.32	30.21	19.79	5.21	15.58	14.79	17.12	4.74	-0.21	0.98	2.10	8.27	5.21	0.96	0.92
Salty (At)	0.00	0.77	0.38	3.46	17.27	2.85	3.14	0.38	2.50	1.73	1.35	1.73	5.00	1.94	-0.38	-1.73	-1.35	2.12	15.54	-2.15	-0.02
Metallic (At)	20.00	21.92	6.54	13.08	0.00	13.85	5.28	19.04	11.82	5.77	13.08	12.50	11.38	3.97	0.96	10.10	0.77	0.00	-12.50	2.46	0.47
Chemical (At)	0.00	40.38	3.85	36.54	0.00	0.00	5.30	0.00	28.96	1.82	25.42	0.83	3.33	6.55	0.00	11.43	2.03	11.12	-0.83	-3.33	0.99

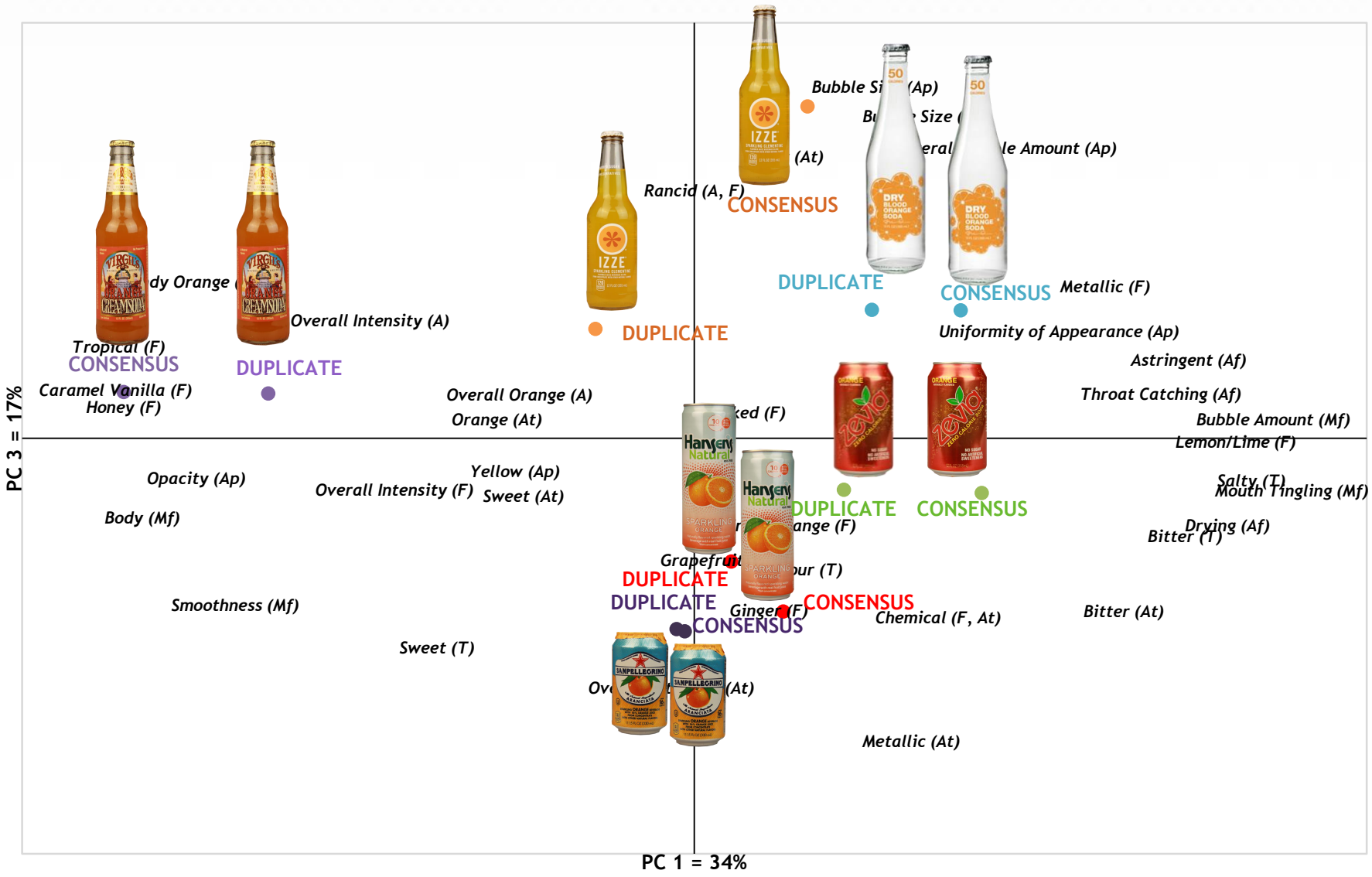
Differences observed for:
- Uniformity of appearance
- Cooked Flavor
- Salty and Metallic aftertastes

fast track consensus exaggerates the differences between products

PCA Map - Consensus and Duplicate Results Combined - D1 v D2



PCA Map - Consensus and Duplicate Results Combined - D1 v D3



1 Initial individual scoring

	Traditional consensus: paper ballots	Fast track consensus: computerized data capture
+	• Comparative element	• Faster (13 mins instead of 20)
-	• Potential errors	• Cost (computerized system) & space

2 Data Capture

	Traditional consensus : scores called out and entered	Fast track consensus: Data exported and macro formatting
+		• Fast & efficient
-	• Time, inefficiencies, human errors • Scores genuineness	• Panel wait time • Special skills

3 Group Discussion

	Traditional consensus: scores called out and entered	Fast track consensus: shared table with highlights
+	• Audition based: natural discussion • Smoother flow	• Better focus on key attributes
-	• Less holistic context	• Discussion more stilted • Cost: online connection, license fees

Thank you !



Amanda Petry Beth Logan Caitlin McLean



Gareth Pritchard