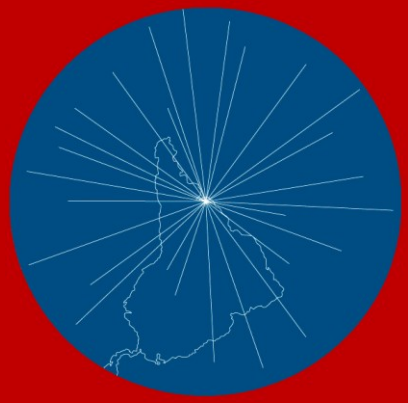
Modelling temporal sensory data via a graphic theoretical approach

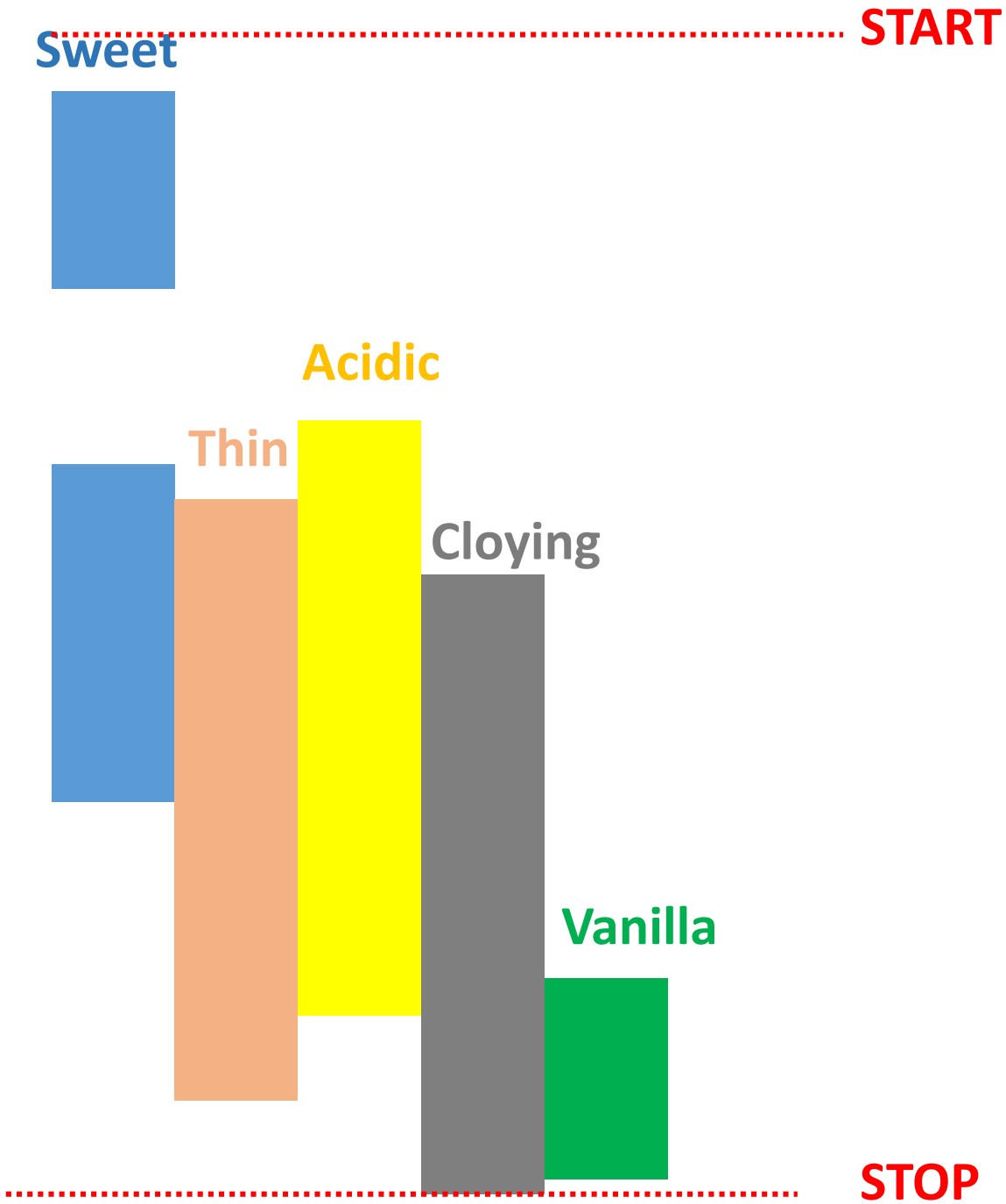
John C. Castura
VP Innovation & Research
Compusense Inc.

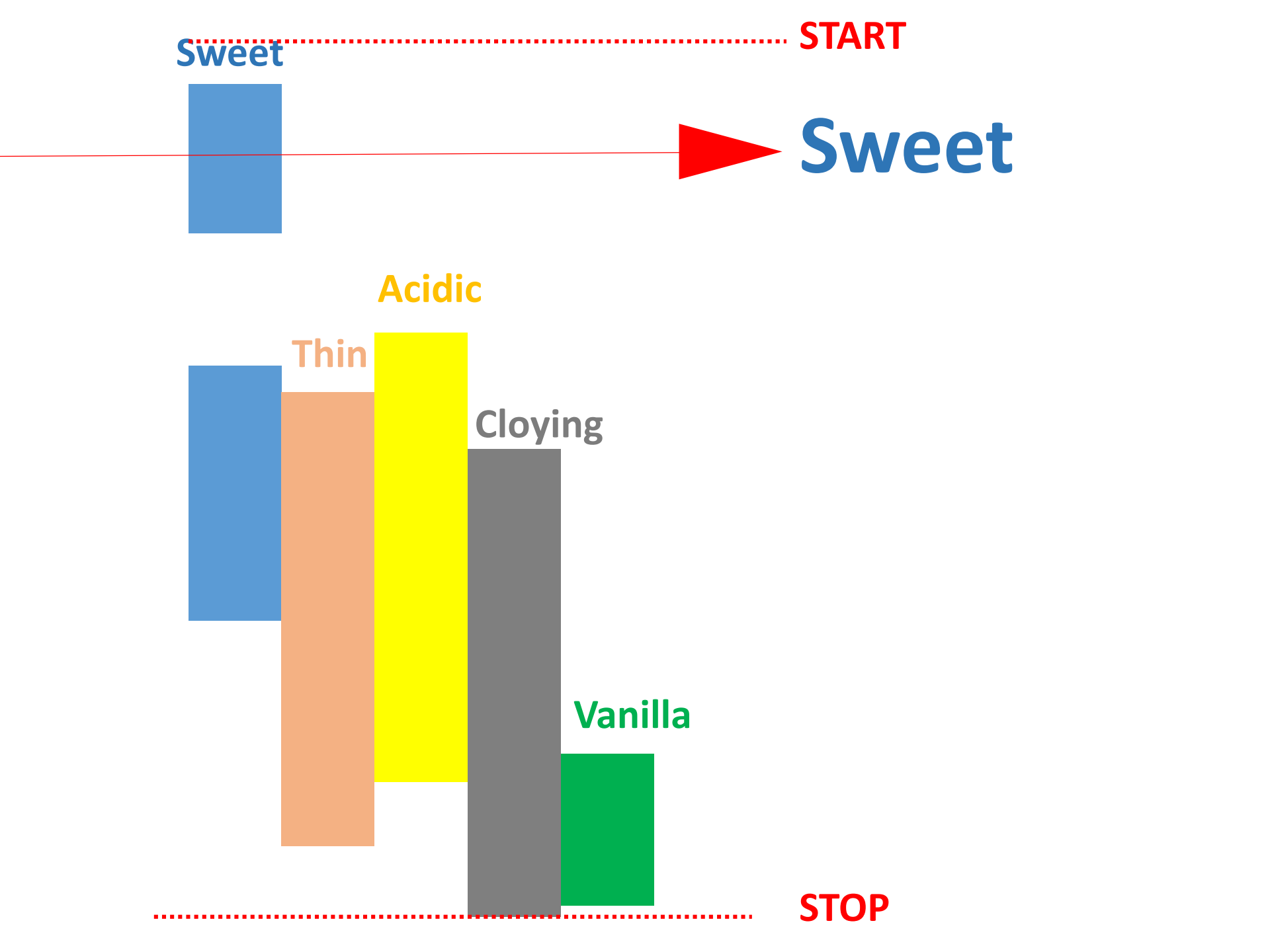
Compusense®

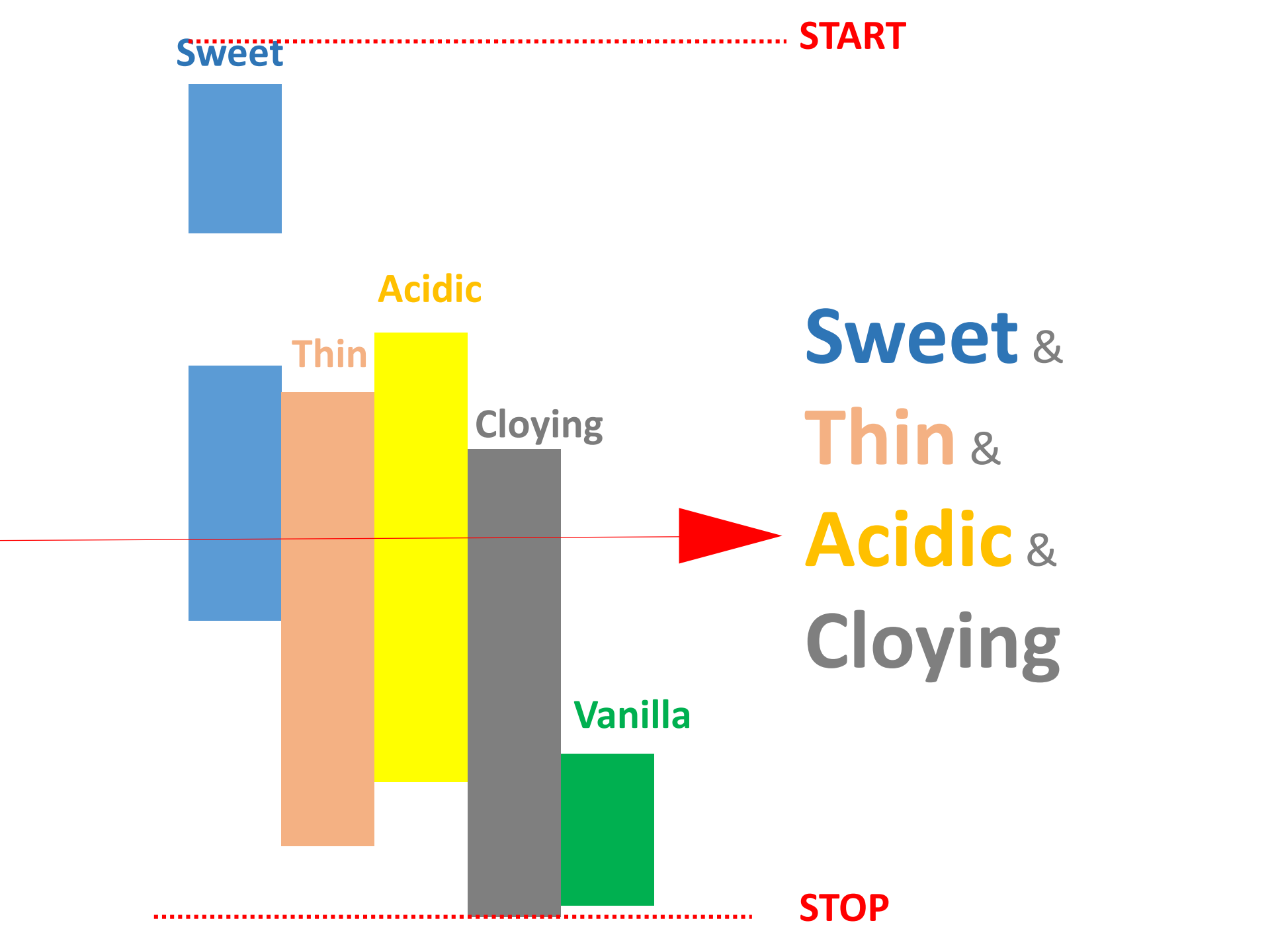
Sensometrics 2018
Data Analysis Workshop

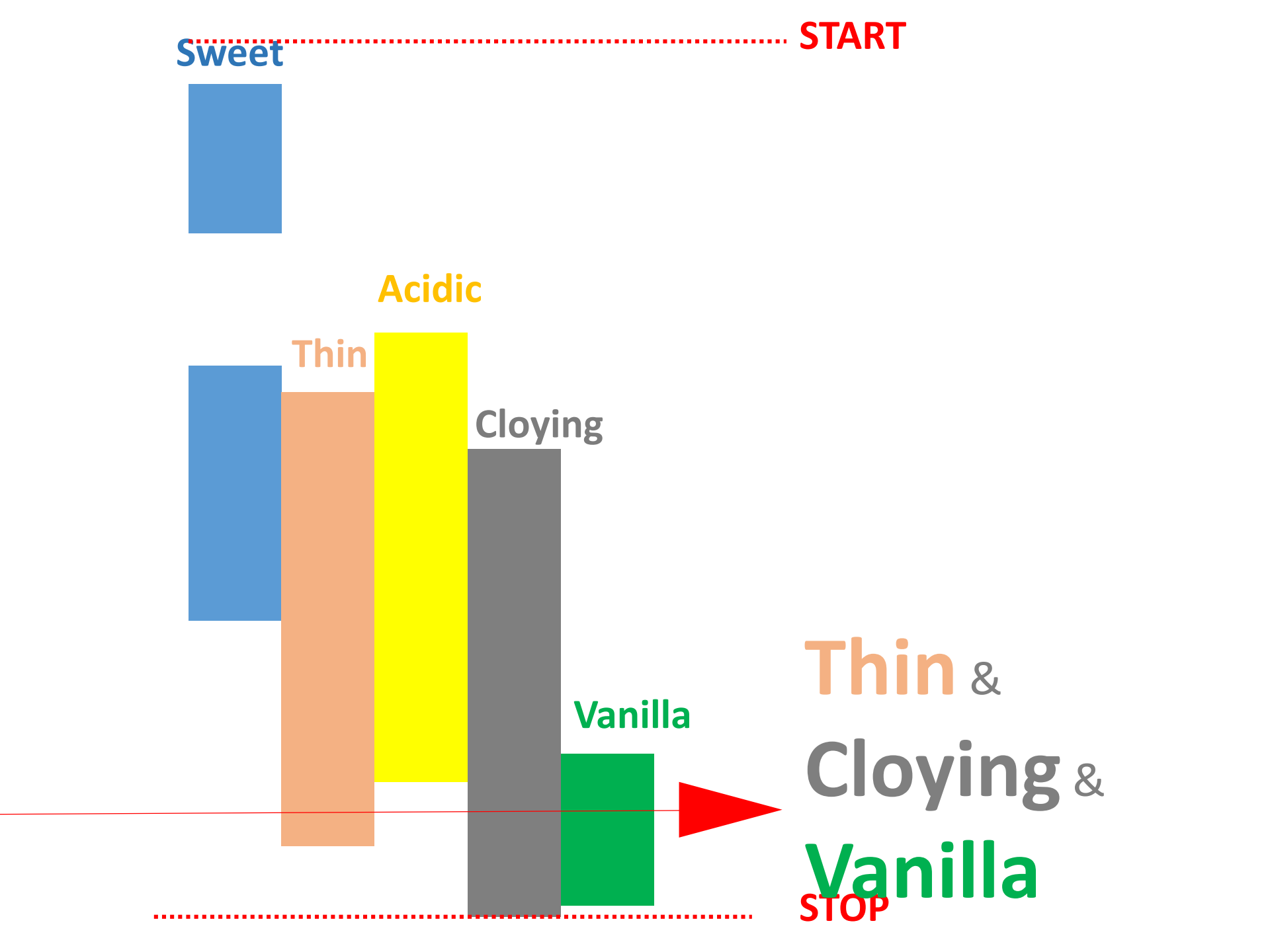


TCATA


START
Sweet
Acidic
Thin
Cloying
Vanilla
STOP

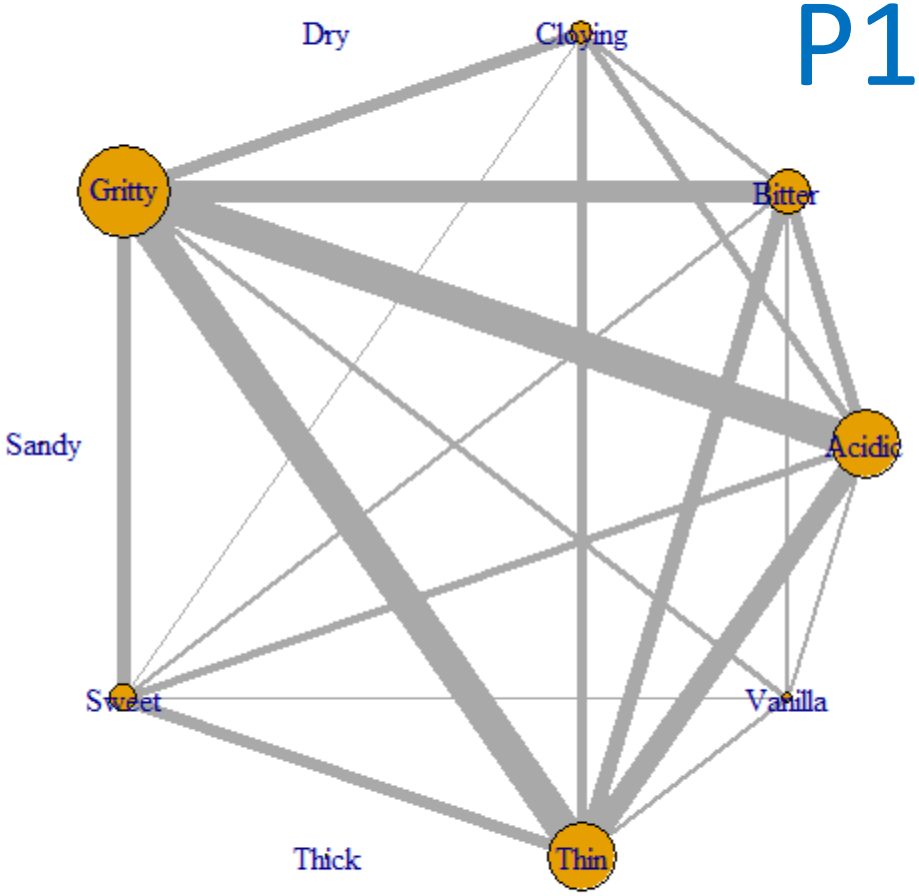

START
Sweet
Sweet
Acidic
Thin
Cloying
Vanilla
STOP


START
Sweet
Acidic
Thin
Cloying
Vanilla
STOP
Sweet &
Thin &
Acidic &
Cloying


START
Sweet
Acidic
Thin
Cloying
Vanilla
Thin &
Cloying &
Vanilla
STOP

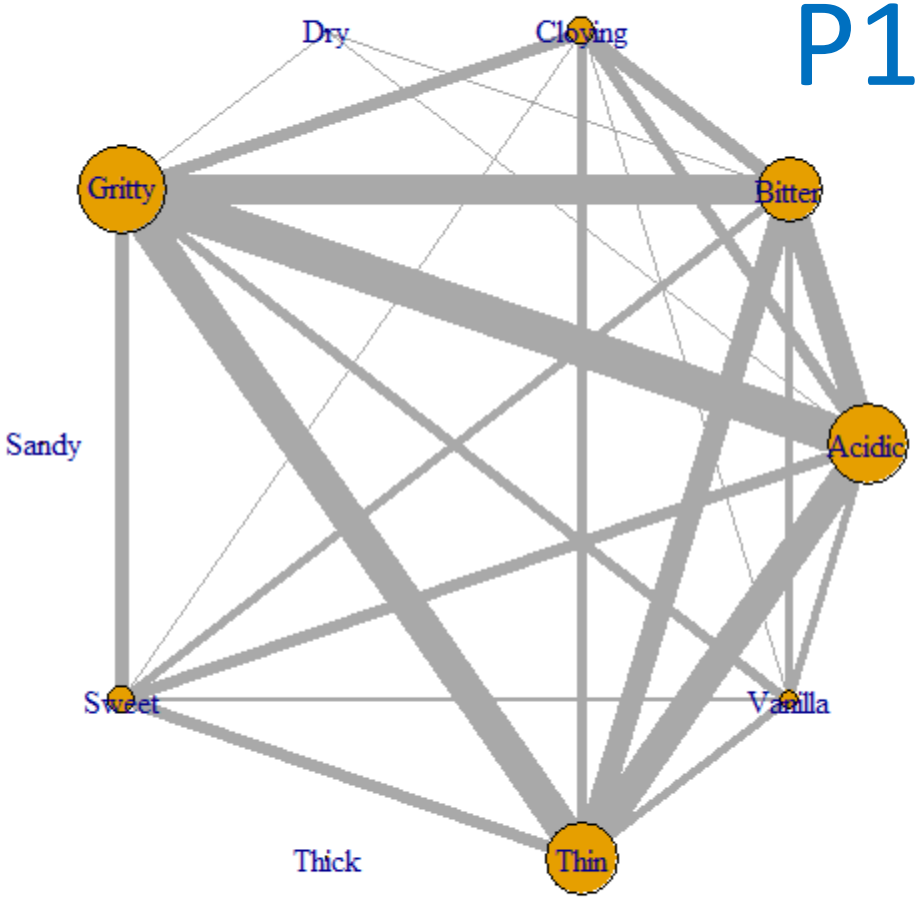
TCATA

P1 at 5 s



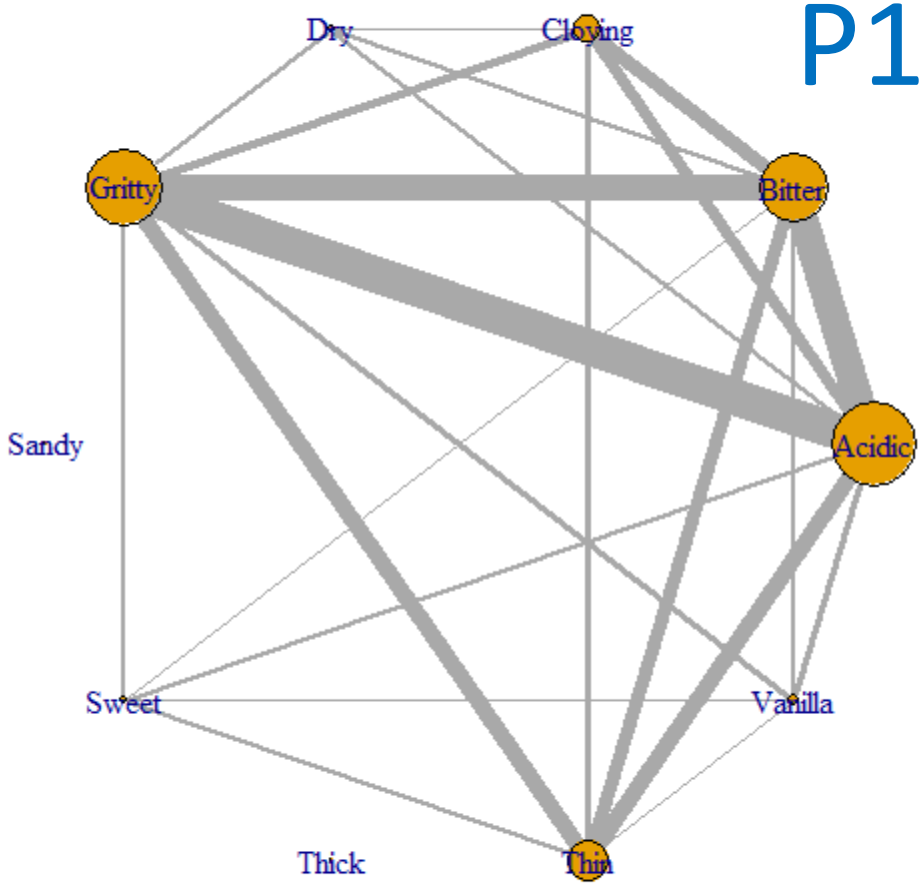
TCATA

P1 at 10 s



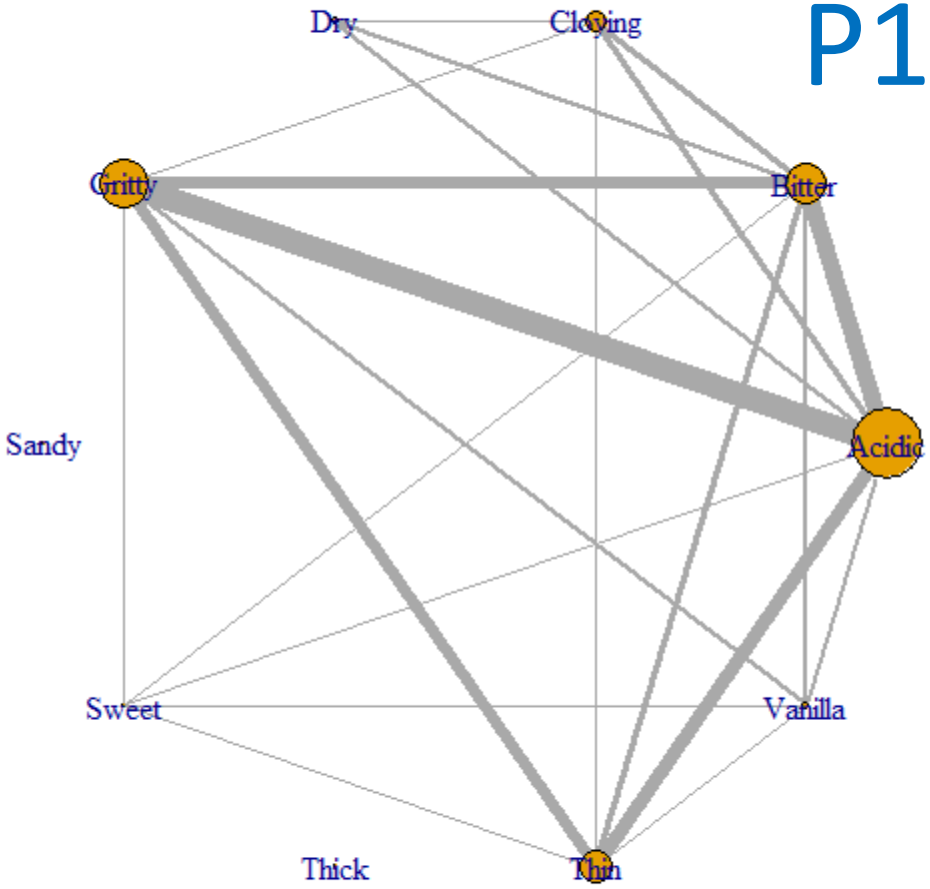
TCATA

P1 at 15 s



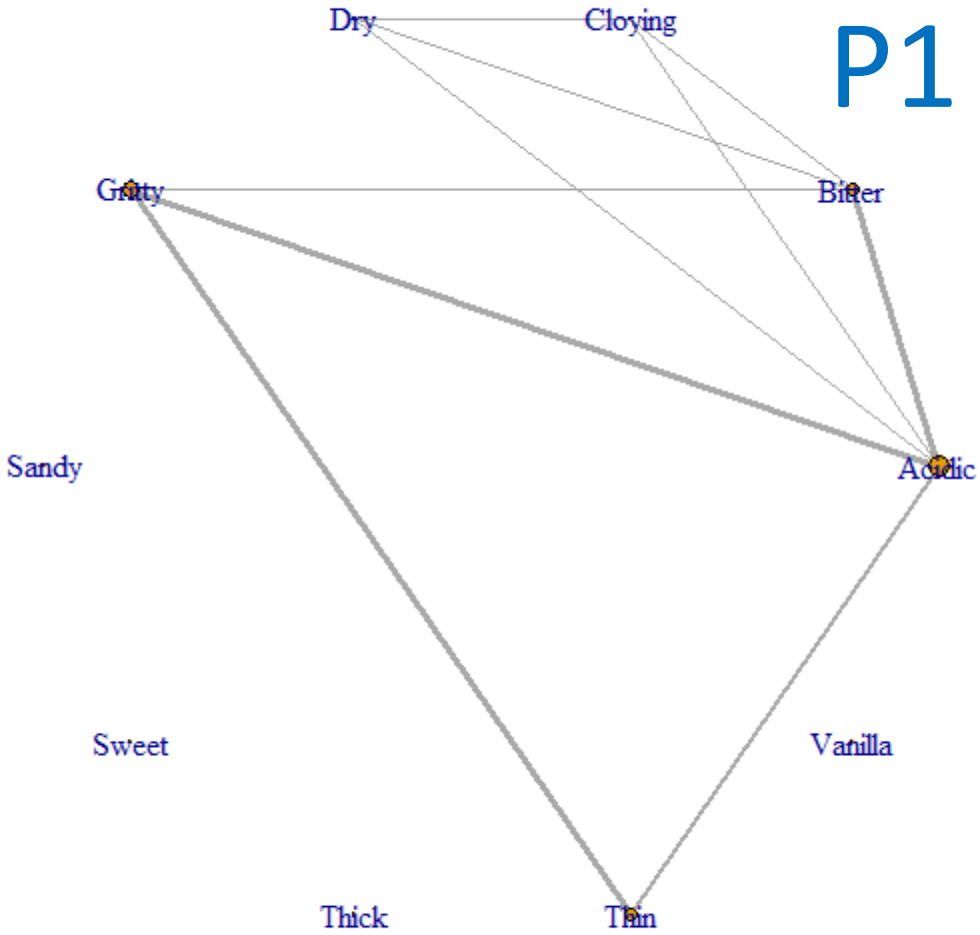
TCATA

P1 at 20 s



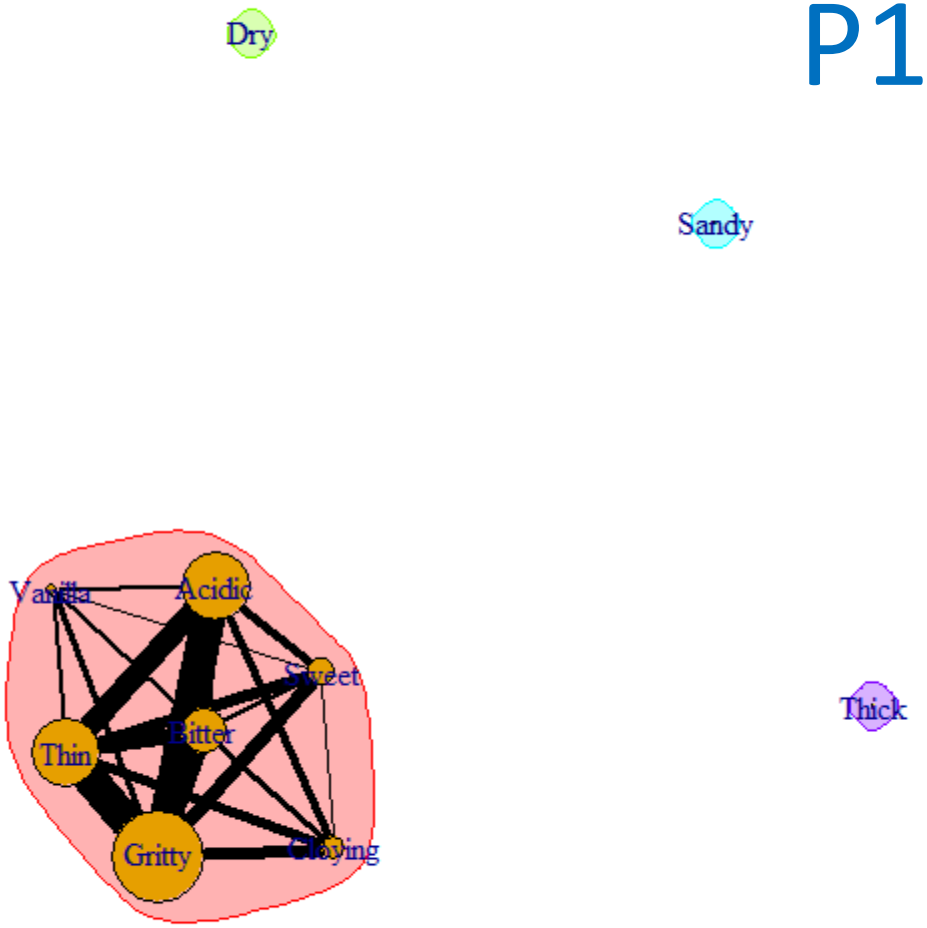
TCATA

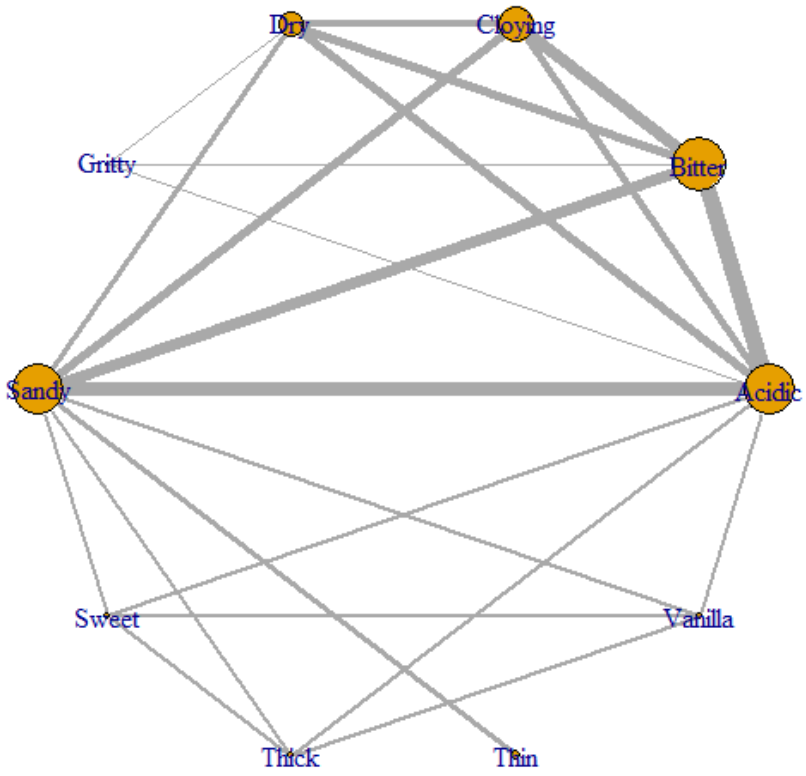
P1 at 25 s



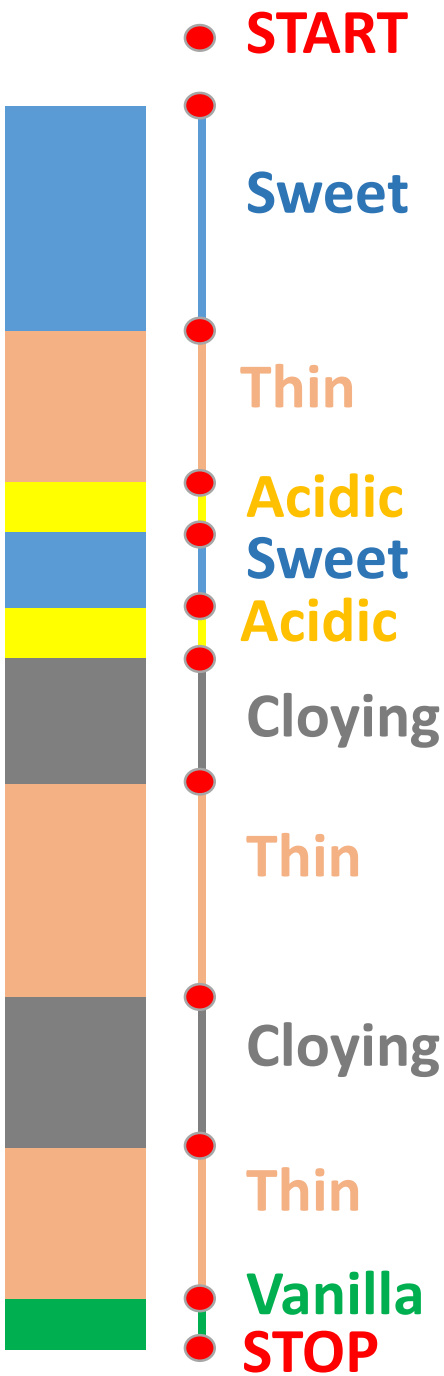
TCATA

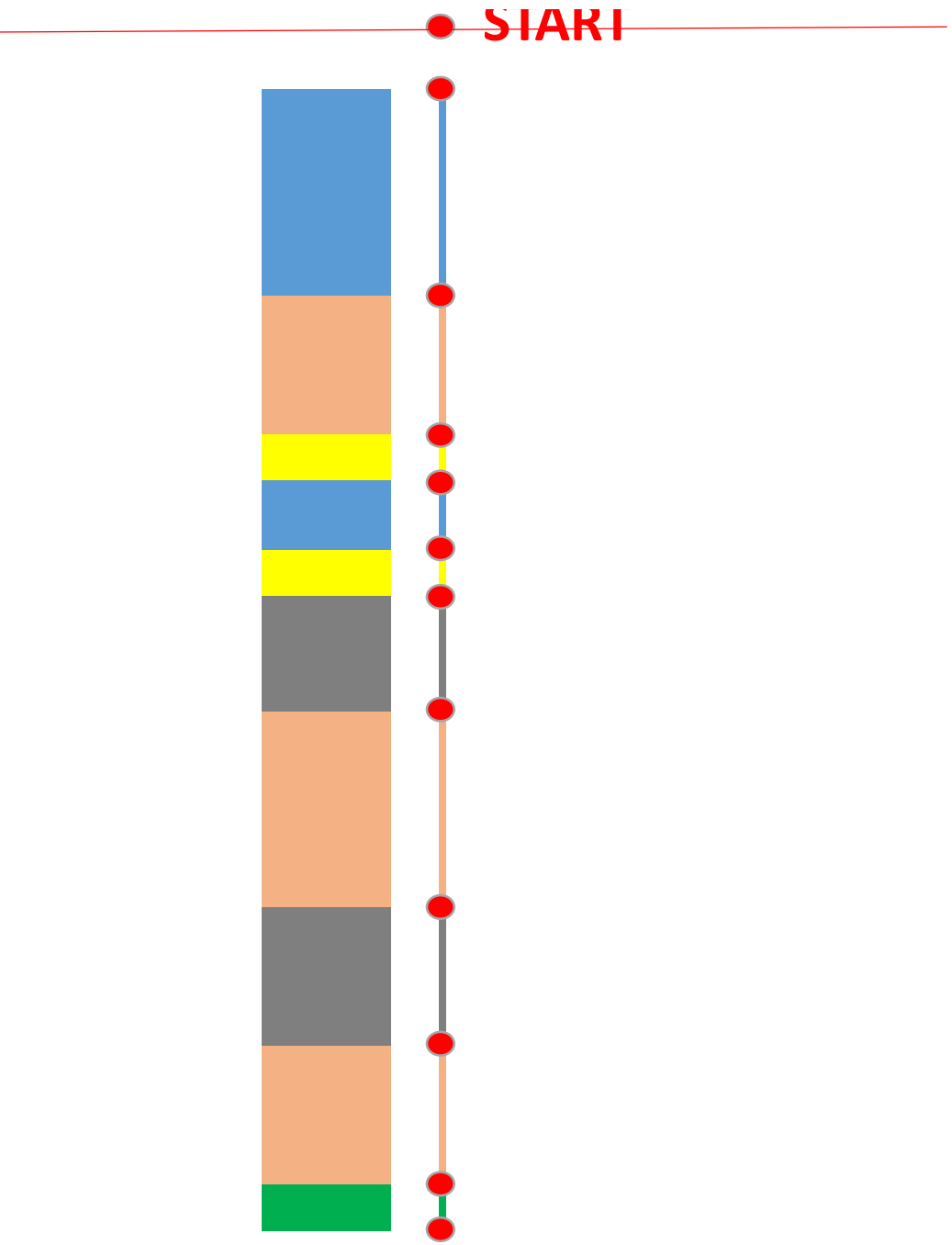
P1 at 5 s

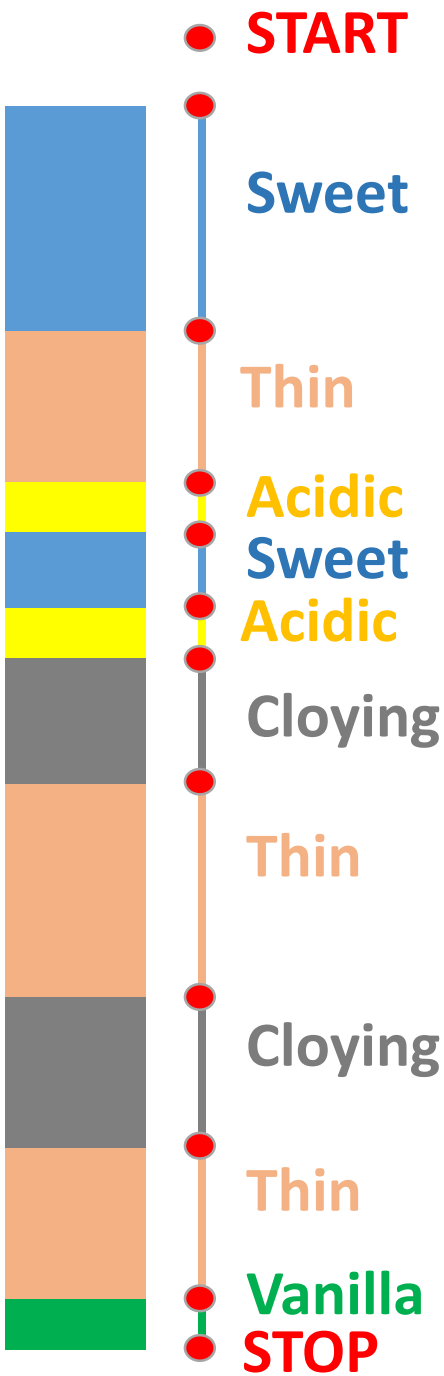


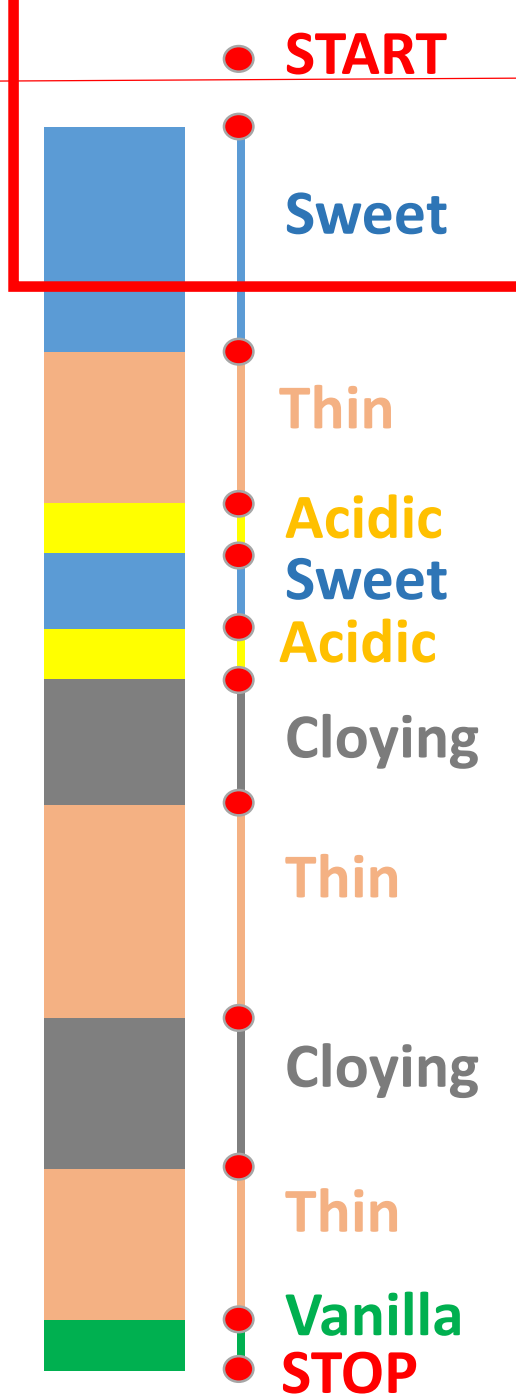

Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

TDS

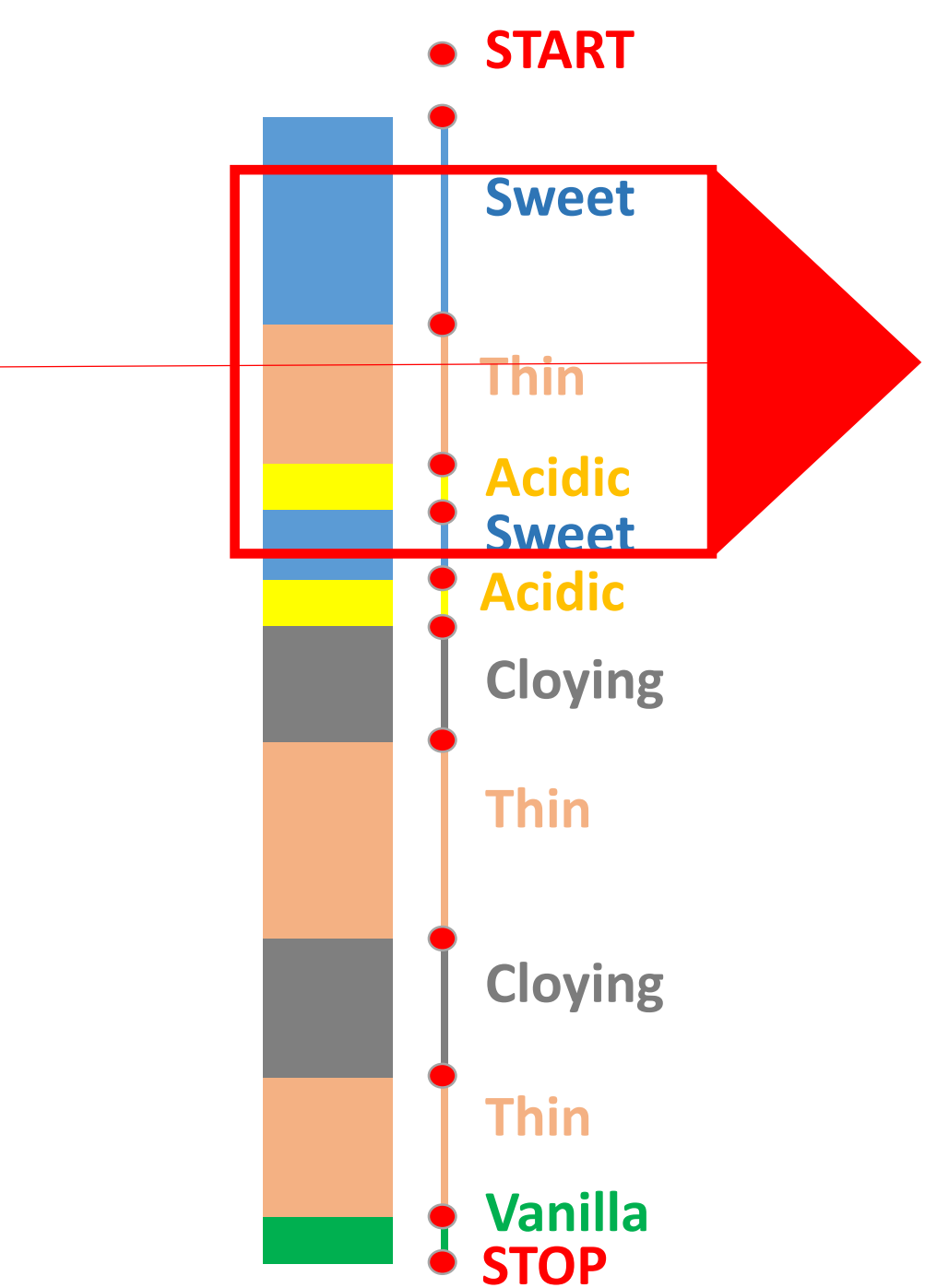

START
Sweet
Thin
Acidic
Sweet
Acidic
Cloying
Thin
Cloying
Thin
Vanilla
STOP


START


START
Sweet
Thin
Acidic
Sweet
Acidic
Cloying
Thin
Cloying
Thin
Vanilla
STOP


START
Sweet
Thin
Acidic
Sweet
Acidic
Cloying
Thin
Cloying
Thin
Vanilla
STOP

Sweet

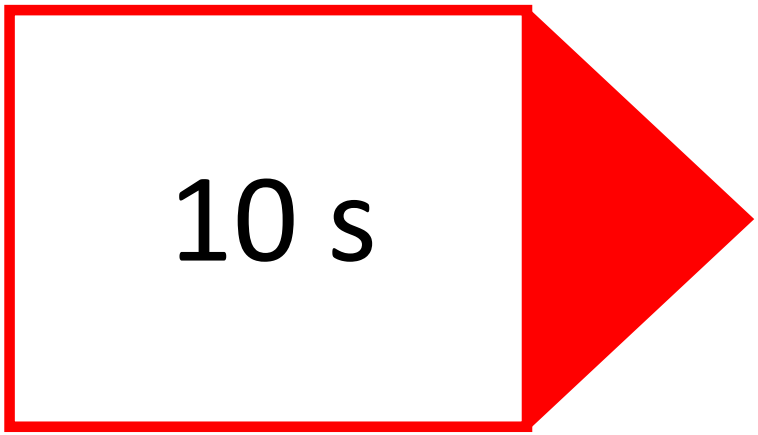


Sweet &
Thin & **Acidic**

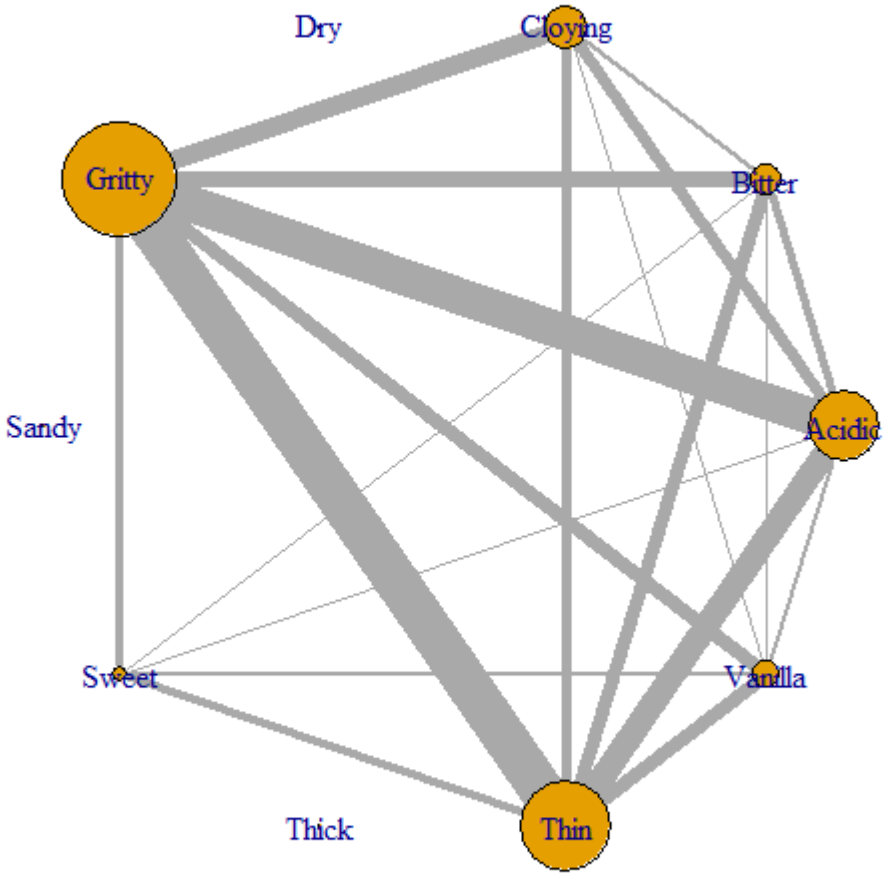
Thin & Cloying

TDS

(Raw time)



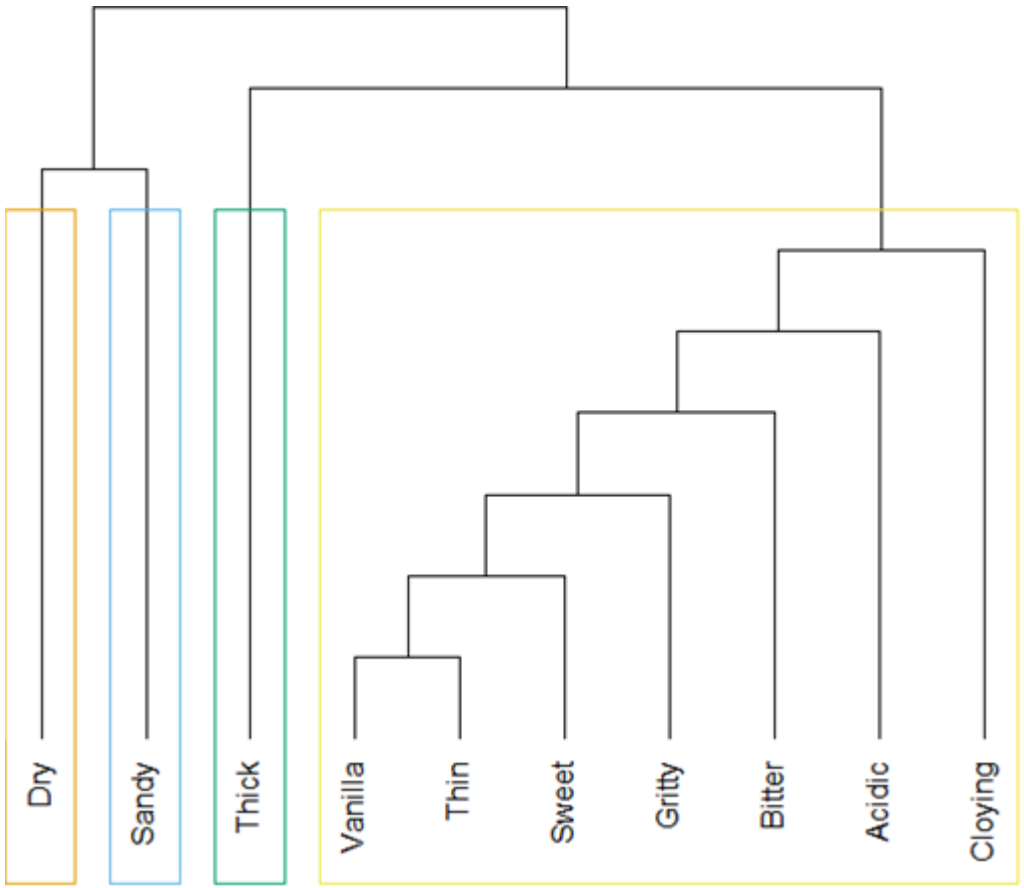
TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1 at 5 s

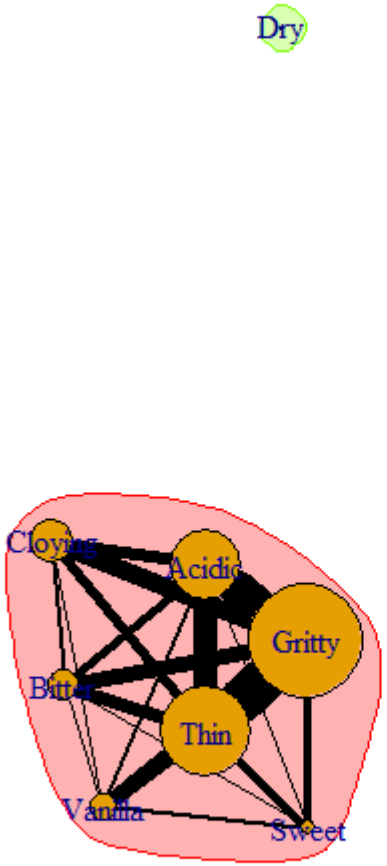
TDS

P1 at 5 s

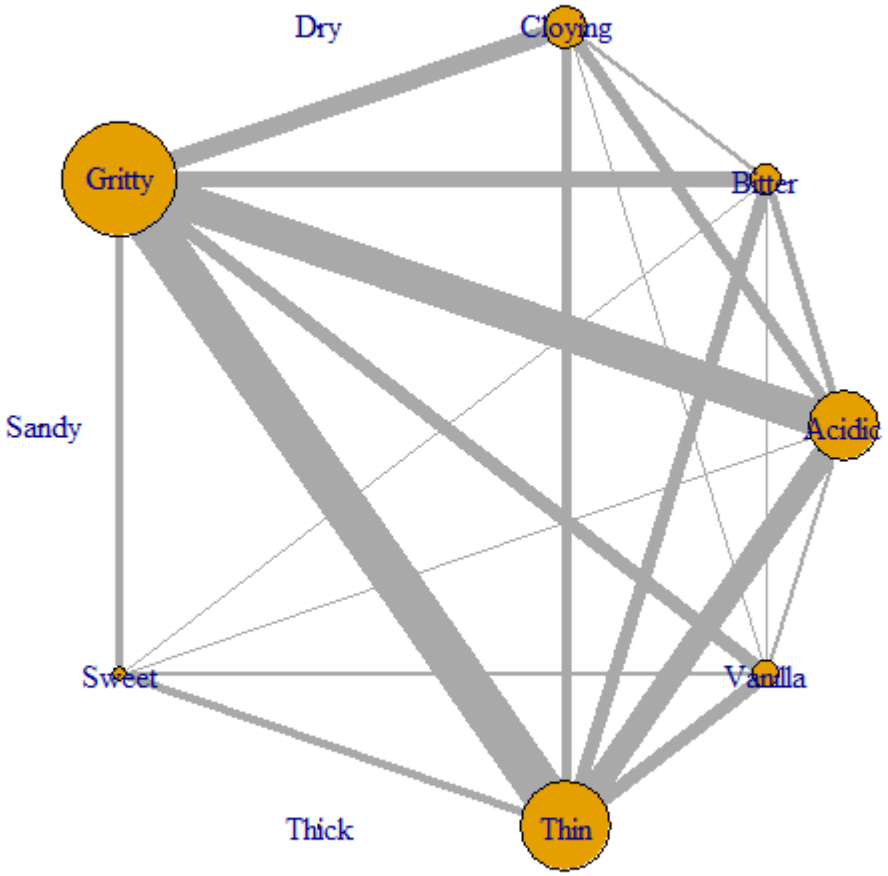

Dry
Sandy
Thick
Vanilla
Thin
Sweet
Gritty
Bitter
Acidic
Cloying

TDS

P1 at 5 s

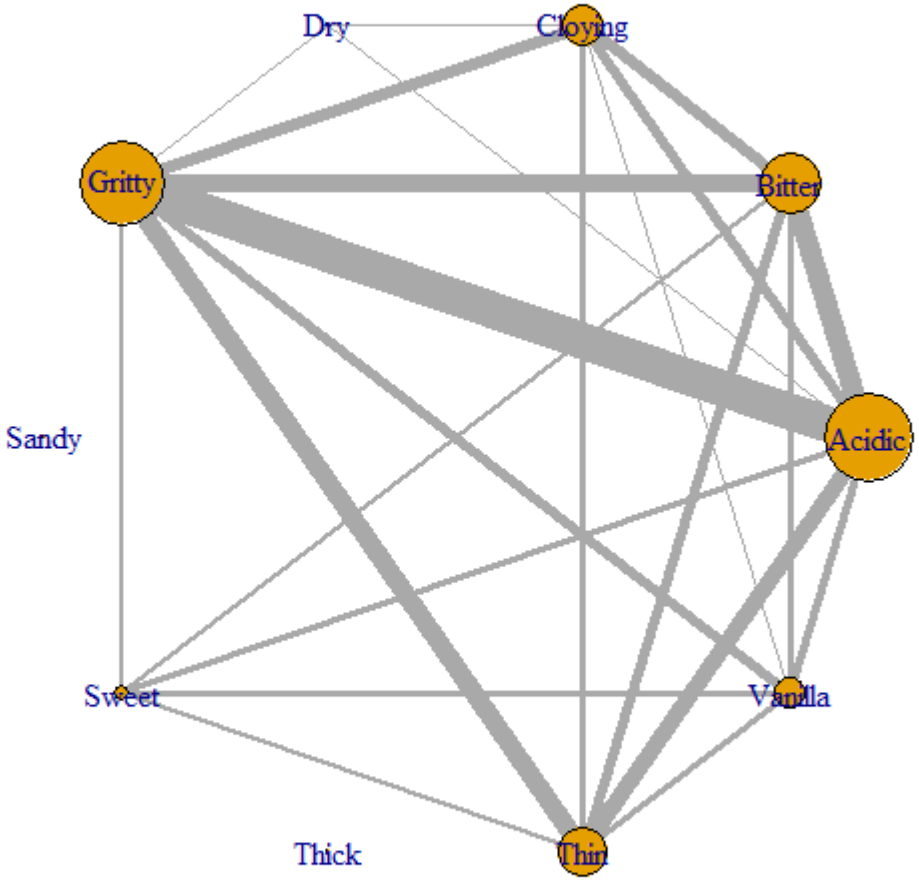

Dry
Thick
Cloying
Acidic
Gritty
Bitter
Thin
Vanilla
Sweet
Sandy

TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

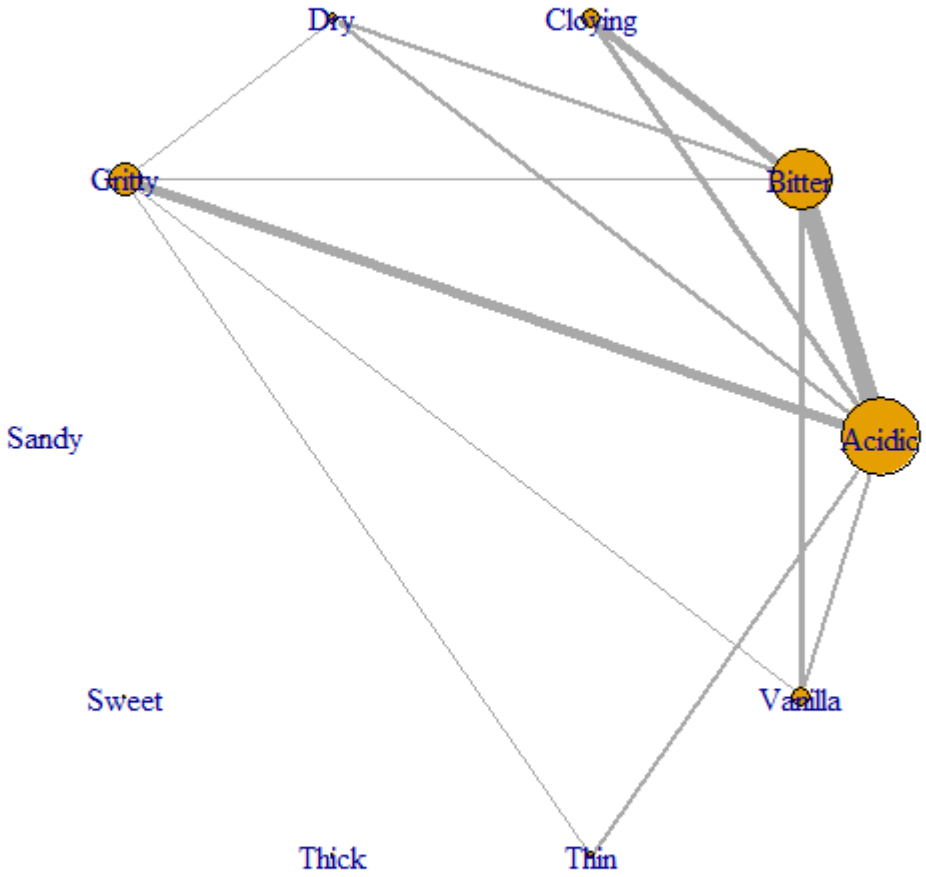
P1 at 5 s

TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

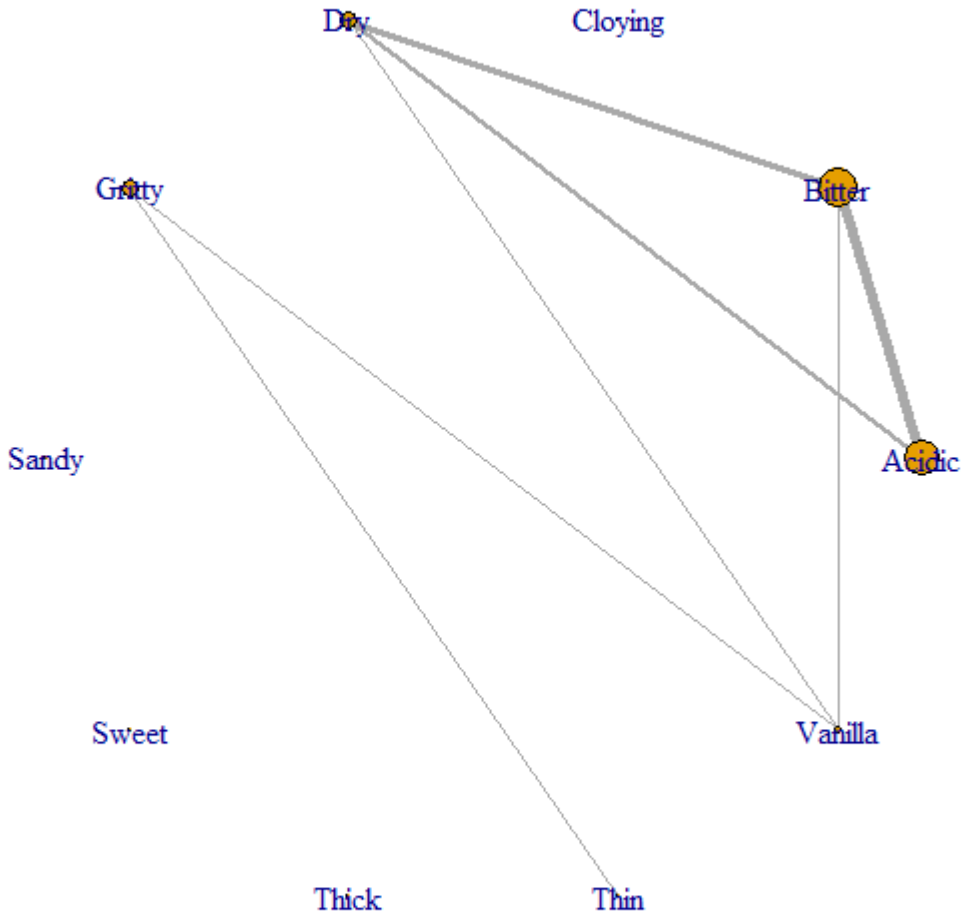
P1 at 10 s

TDS


Dry
Cloying
Gritty
Bitter
Acidic
Sandy
Sweet
Vanilla
Thick
Thin

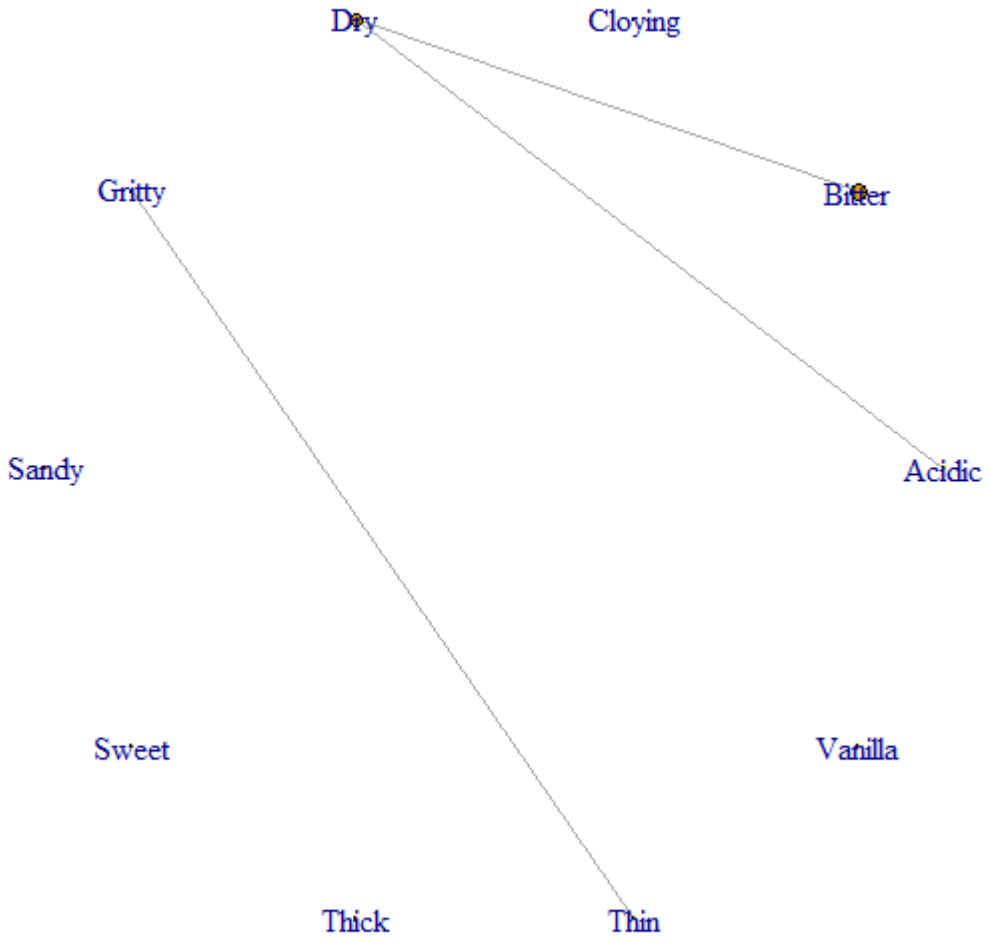
P1 at 15 s

TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1 at 20 s

TDS

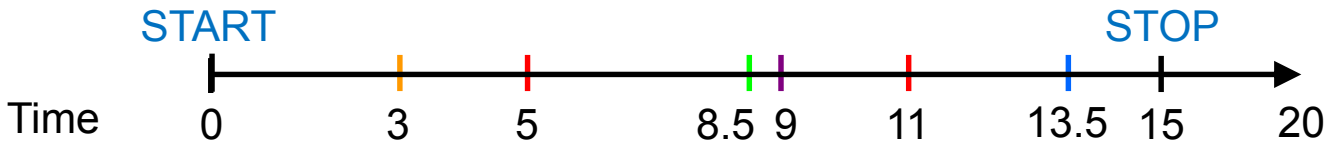

Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1 at 25 s

TDS

(Standard time)

Time standardization



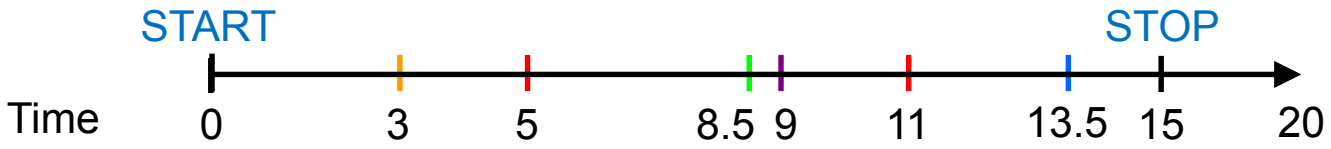
Raw timeline

Time standardization
(trim after last response)

Time standardization
(trim before first response)

Time standardization
(trim before first and after last response)

Time standardization



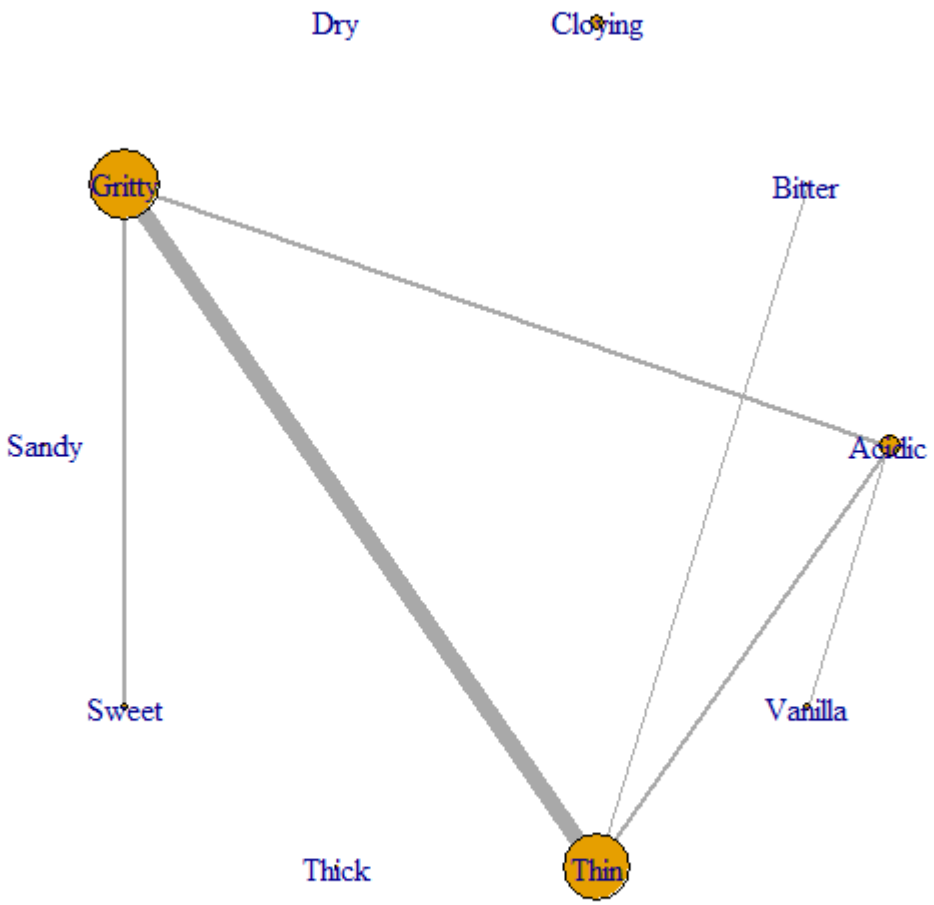
Raw timeline

Time standardization
(trim after last response)

Time standardization
(trim before first response)

Time standardization
(trim before first and
after last response)

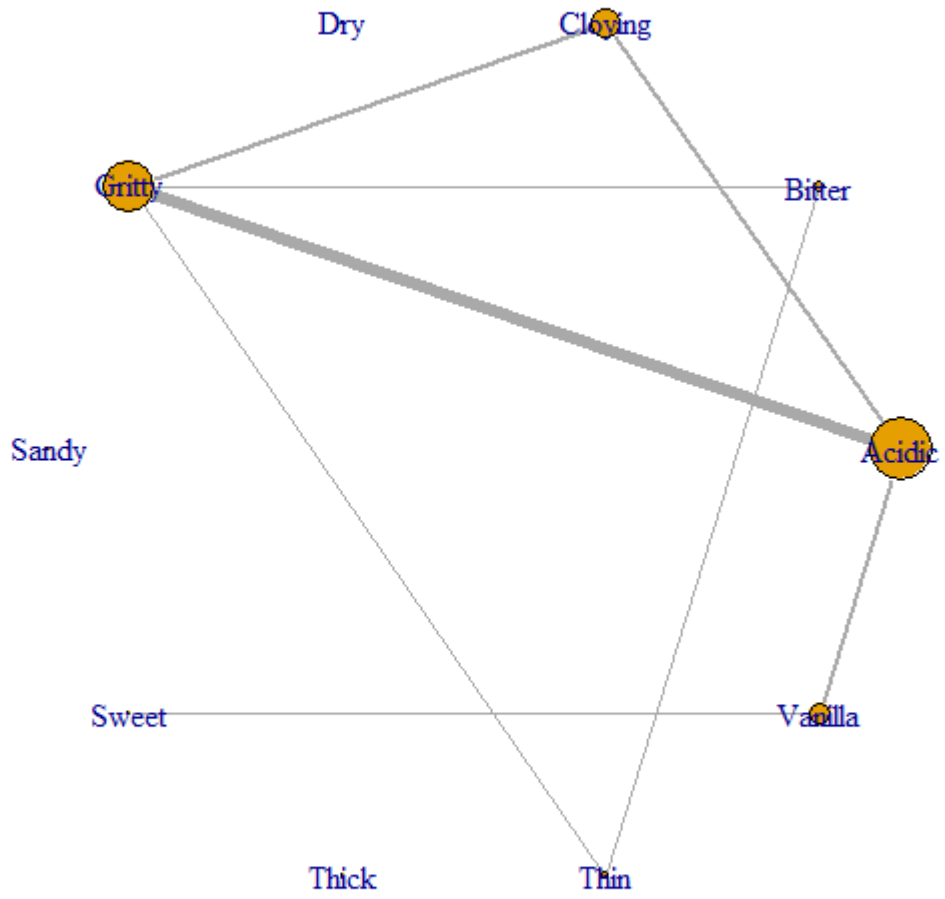
TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1

25/100

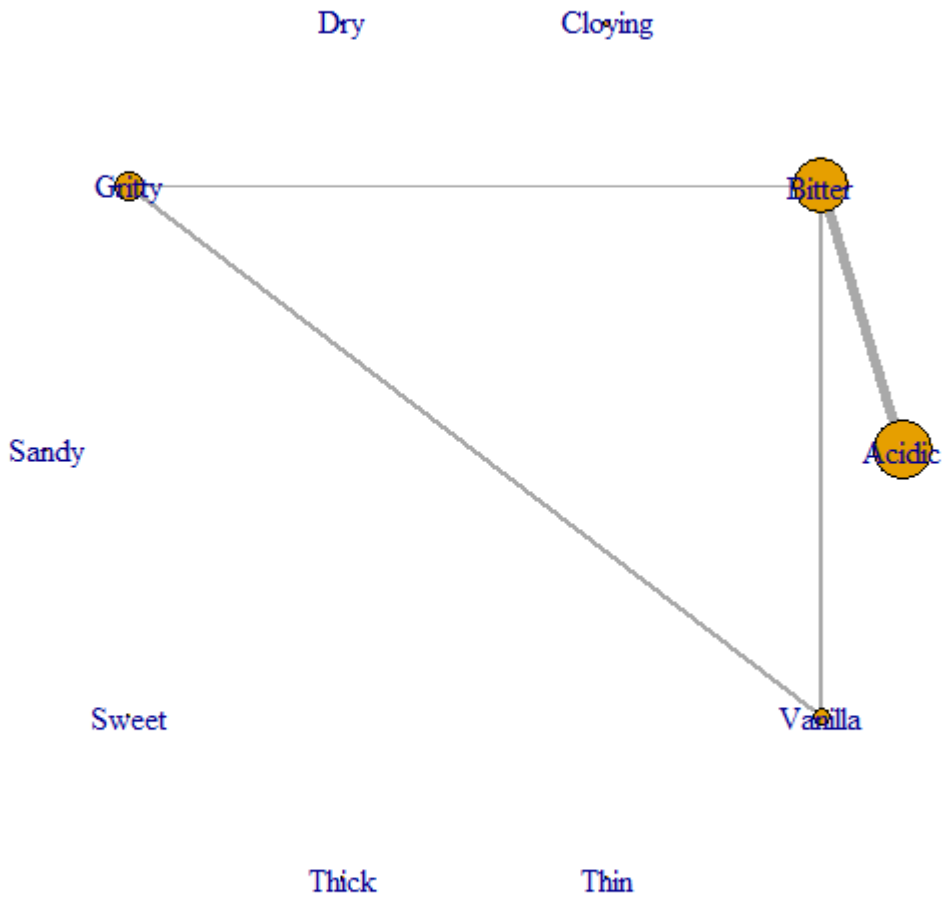
TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1

50/100

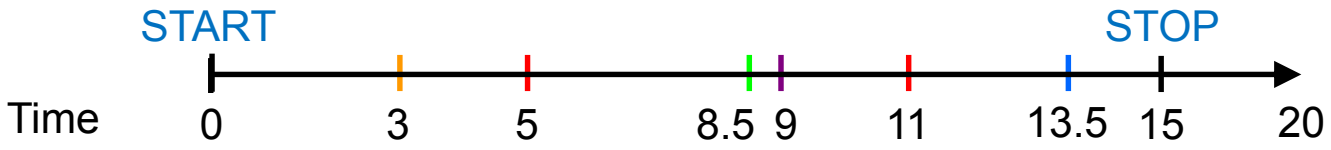
TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1

75/100

Time standardization



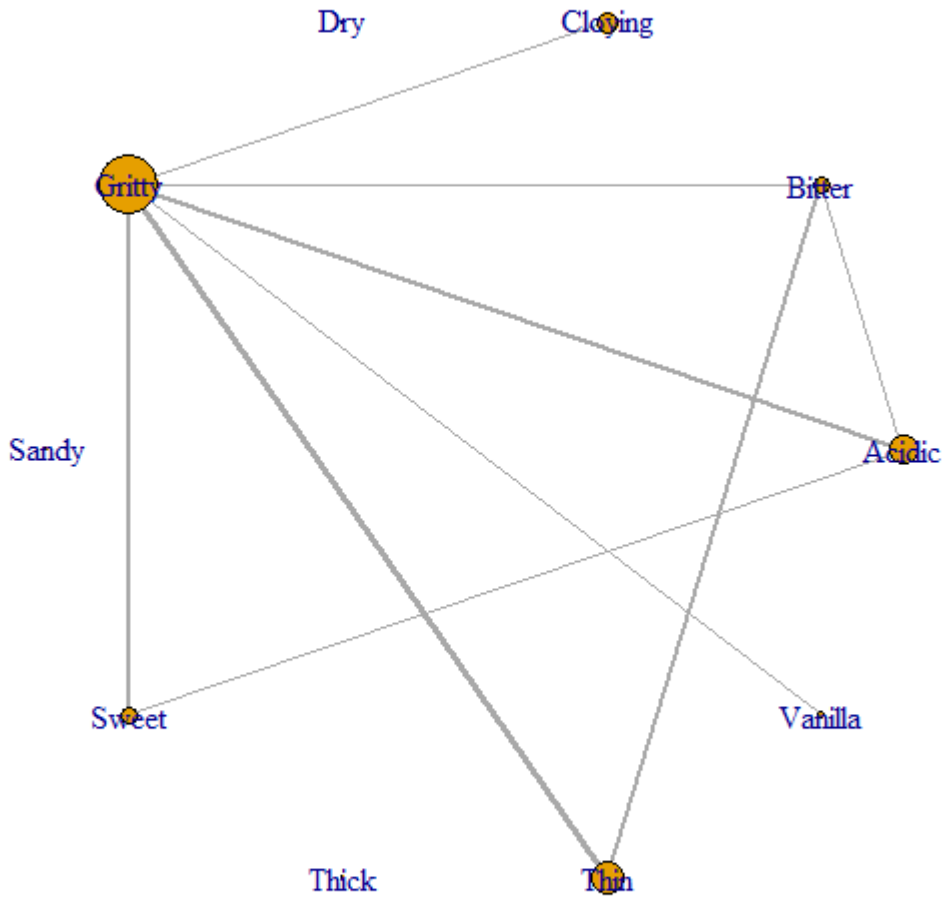
Raw timeline

Time standardization
(trim after last response)

Time standardization
(trim before first response)

Time standardization
(trim before first and after last response)

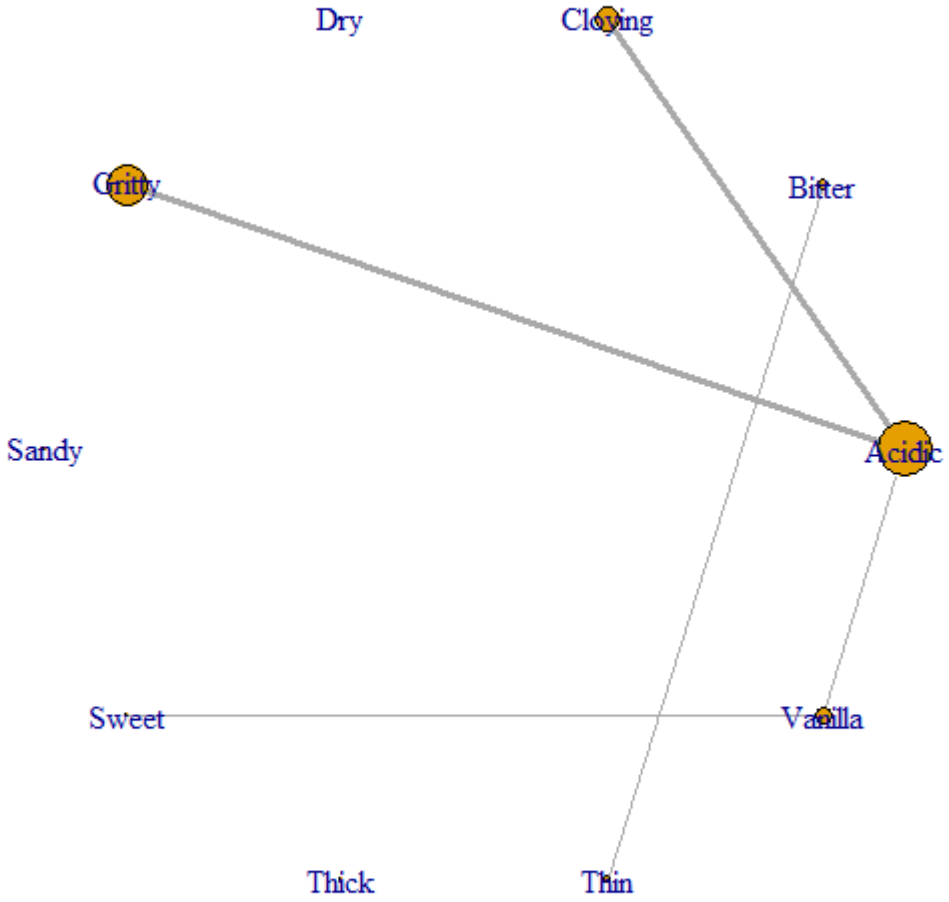
TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1

25/100

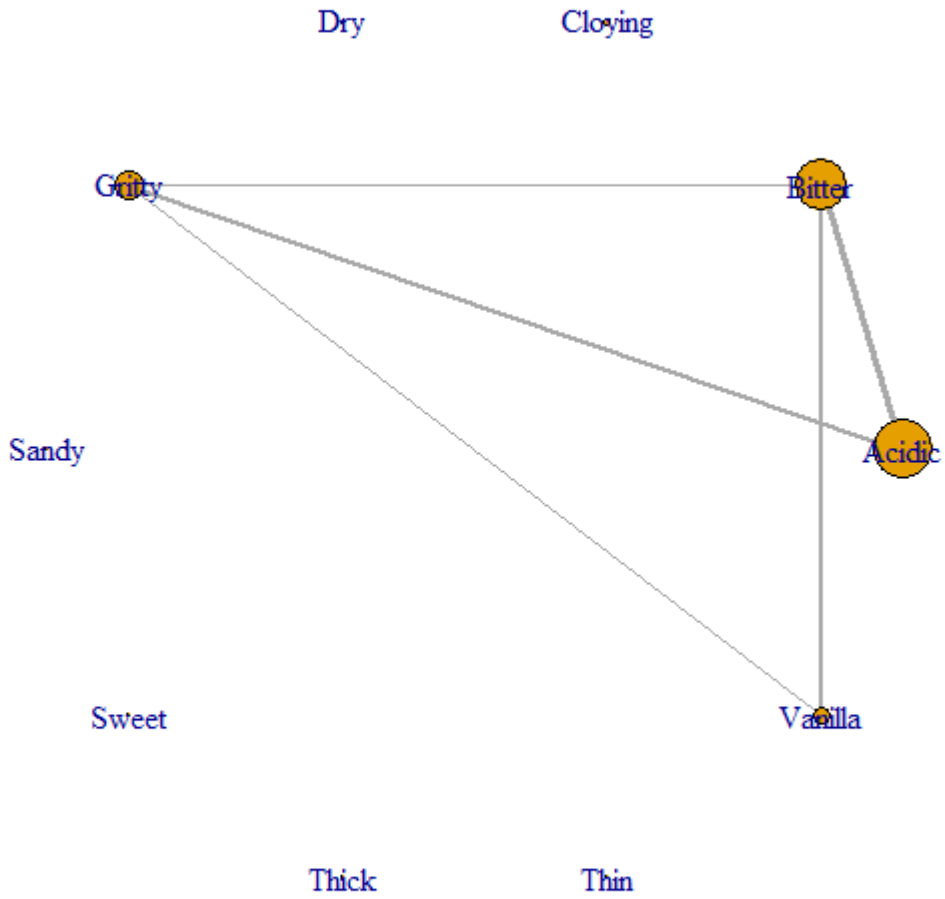
TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1

50/100

TDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

P1

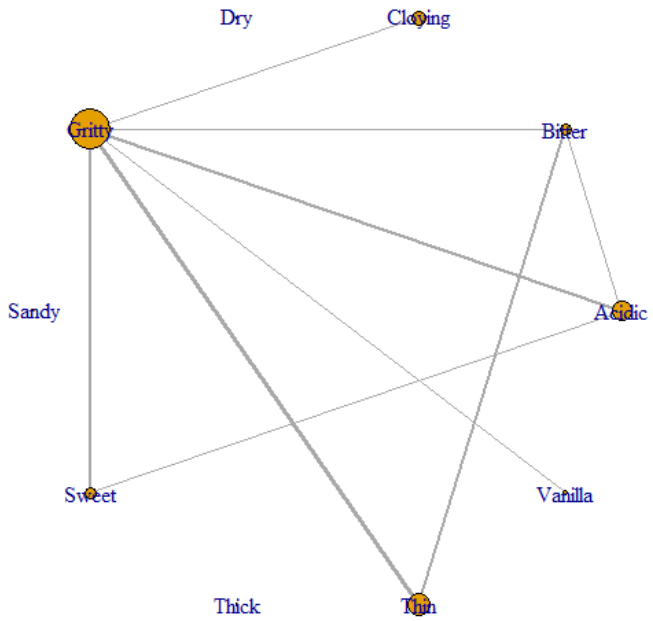
75/100

TDS

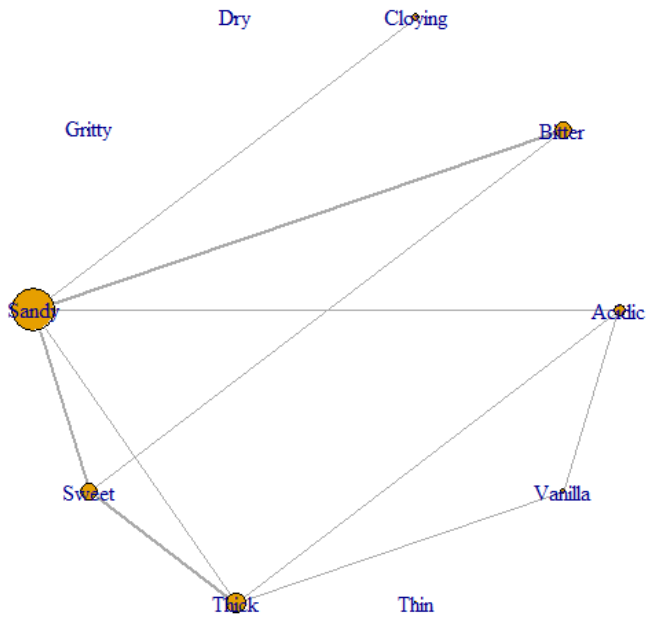
(**P1** & **P8**, Standard time)

TDS (25/100)

P1

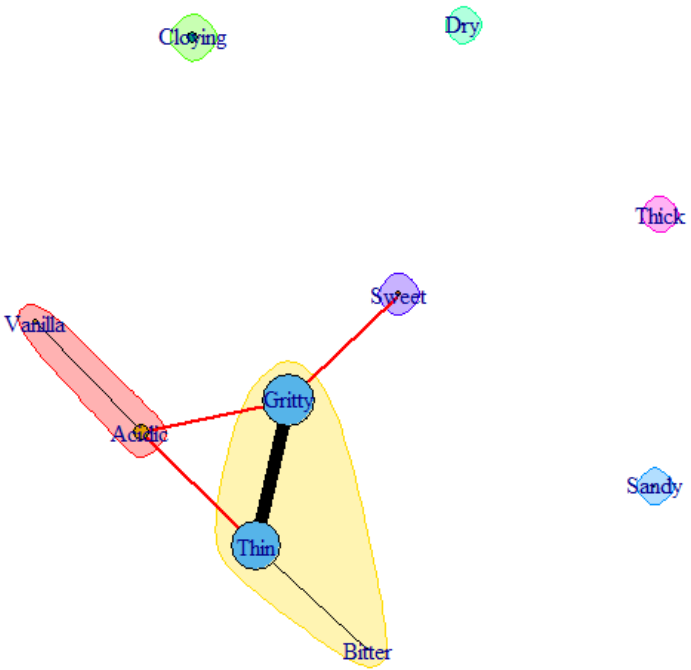


P8

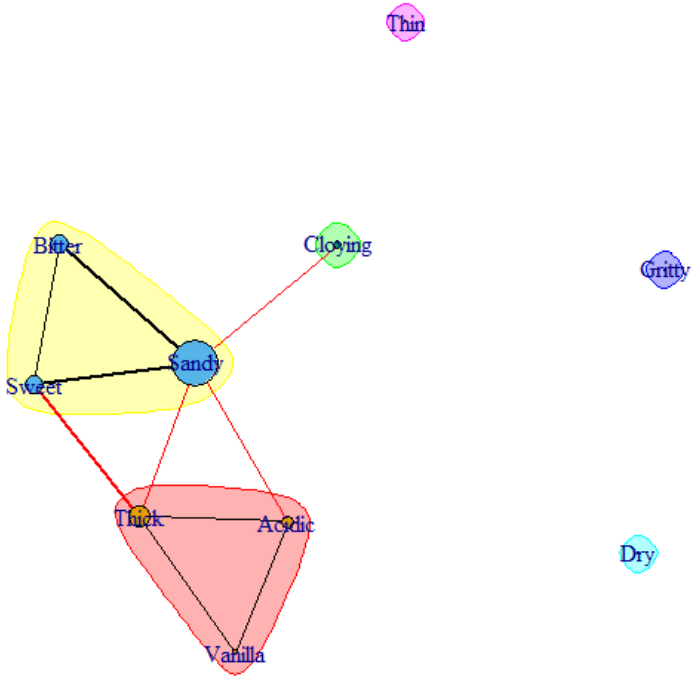


TDS (25/100)

P1



P8



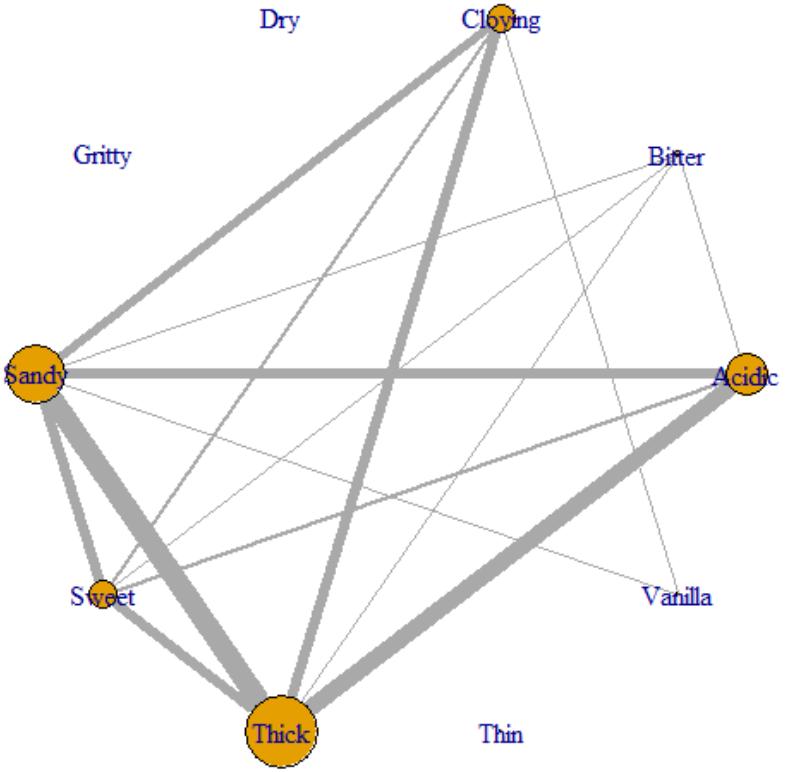
mTDS & TCATA

Product 4

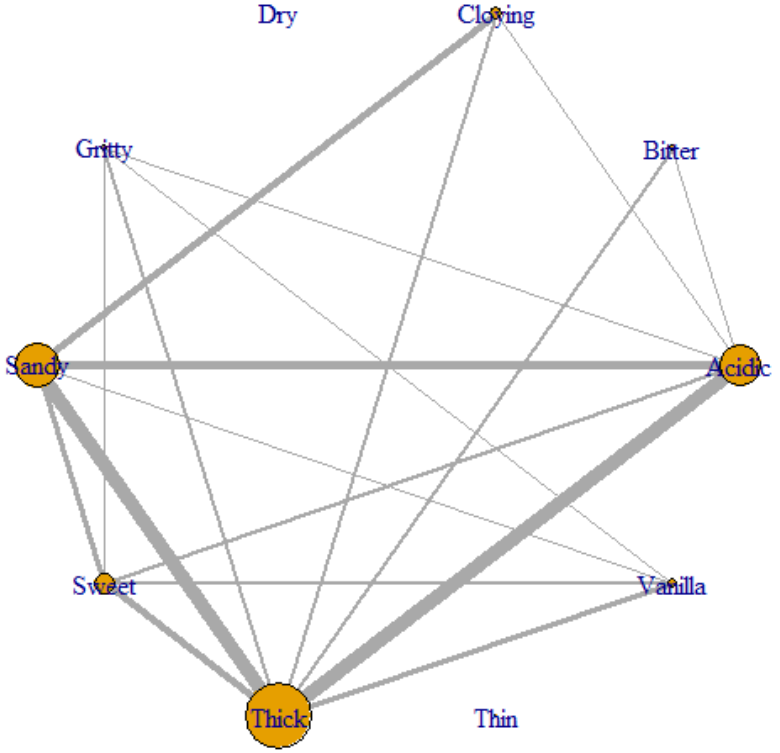
Dual trimmed & Time standardized

Time standardization
(trim before first and after last response)

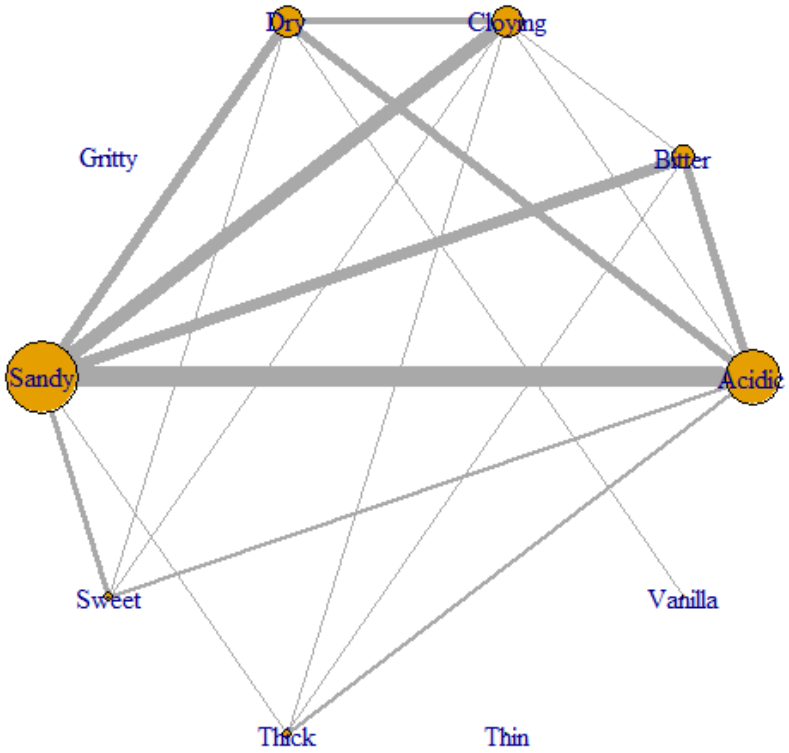
mTDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

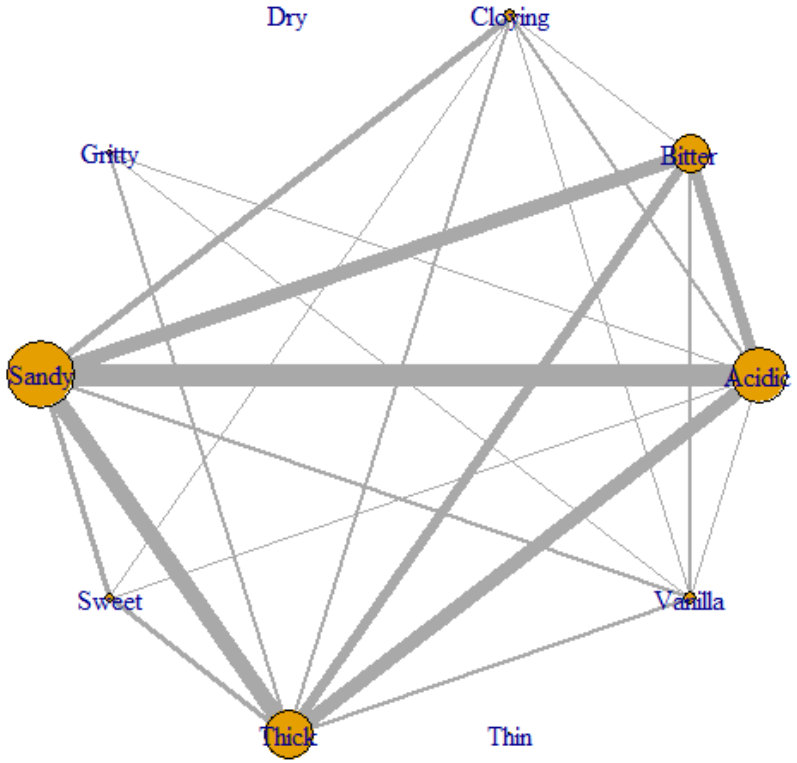
TCATA


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

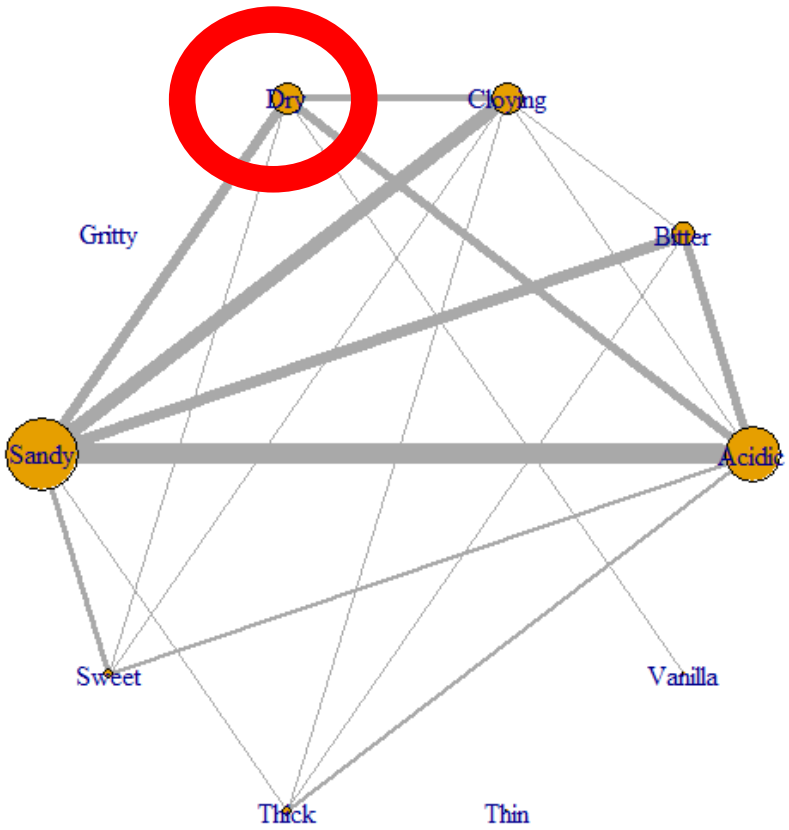
mTDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

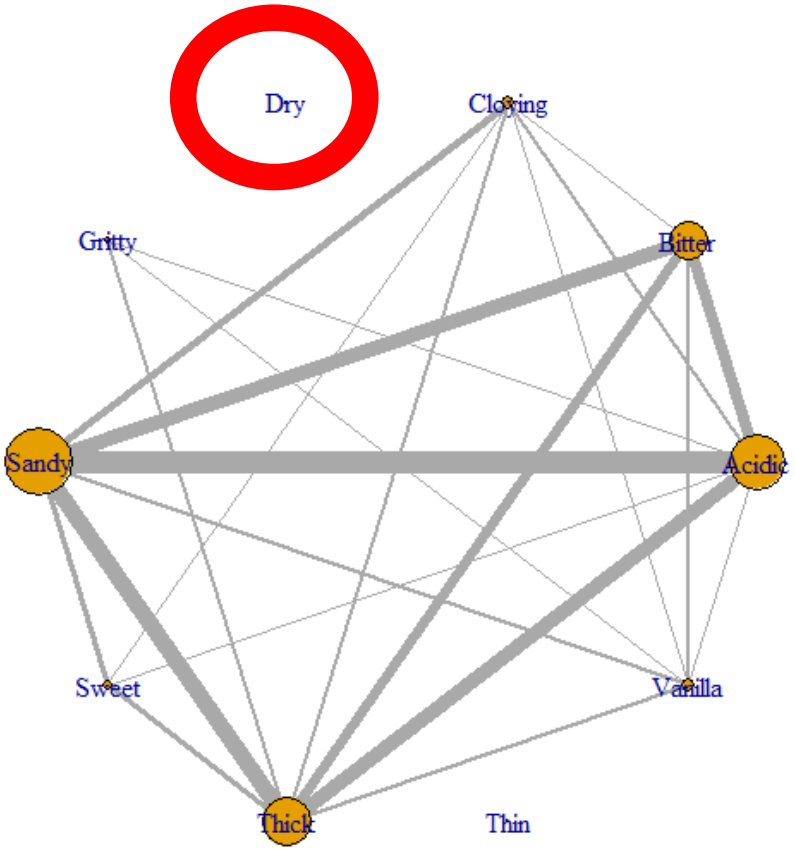
TCATA


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

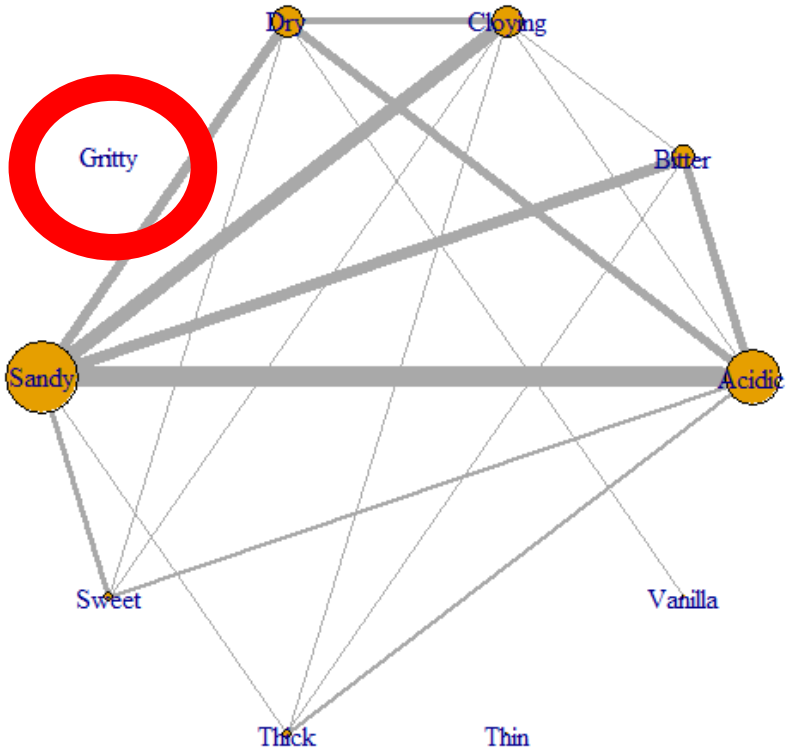
mTDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

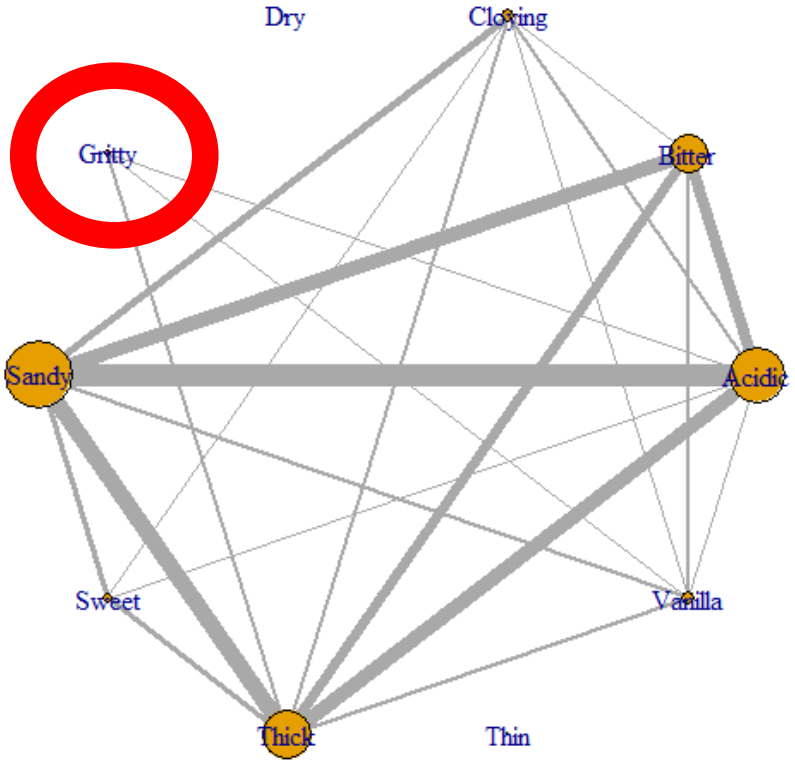
TCATA


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

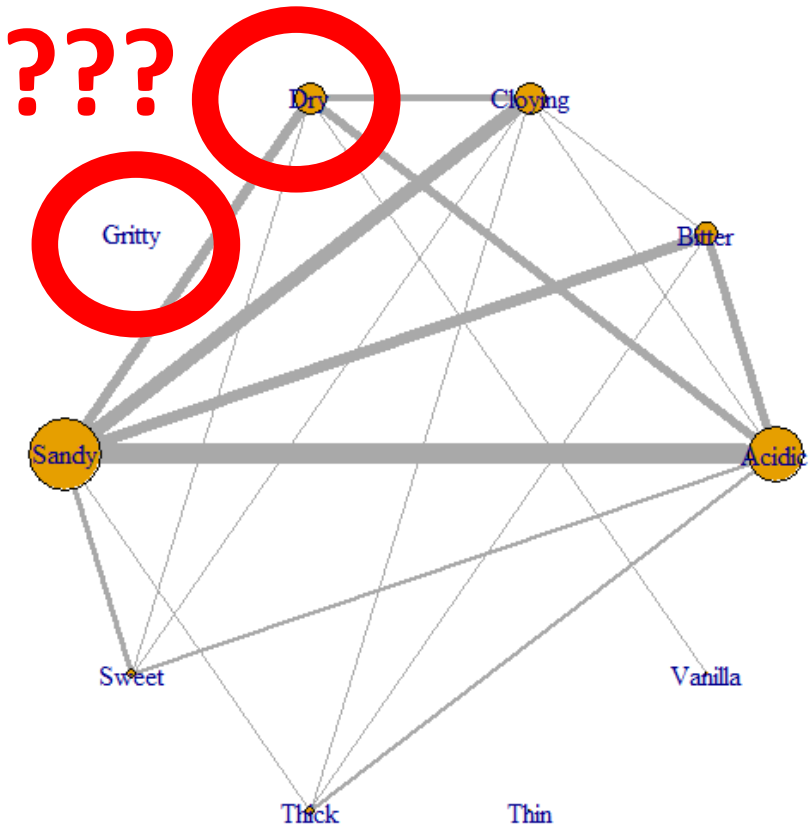
mTDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

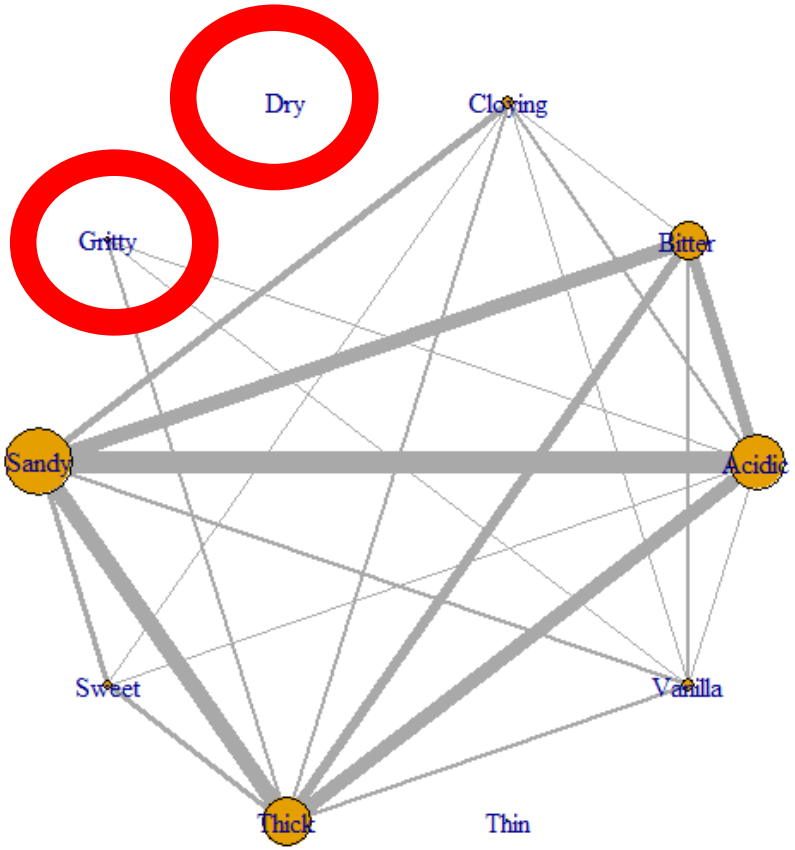
TCATA


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

mTDS

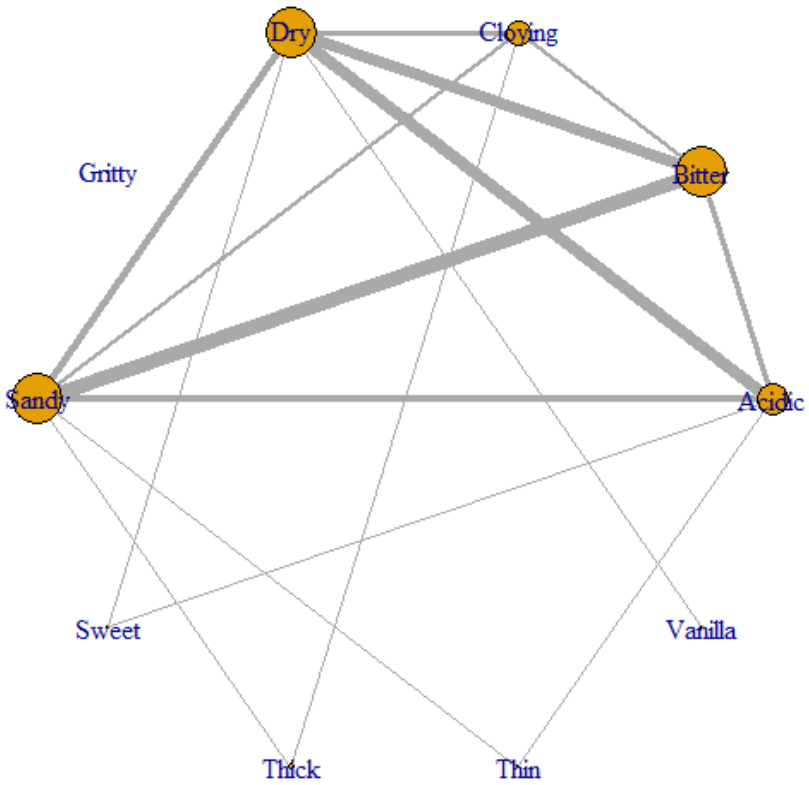


TCATA

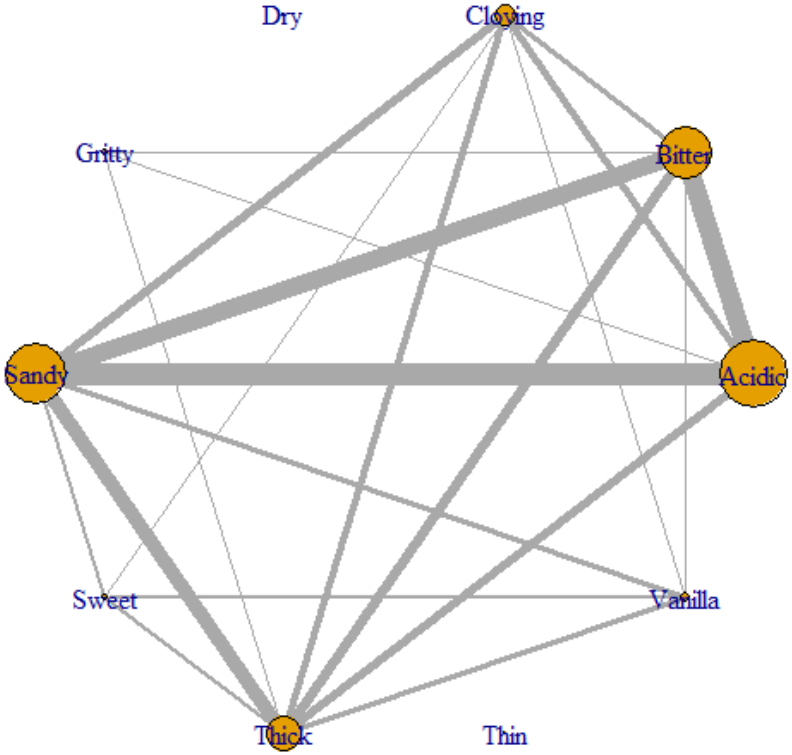


40/100

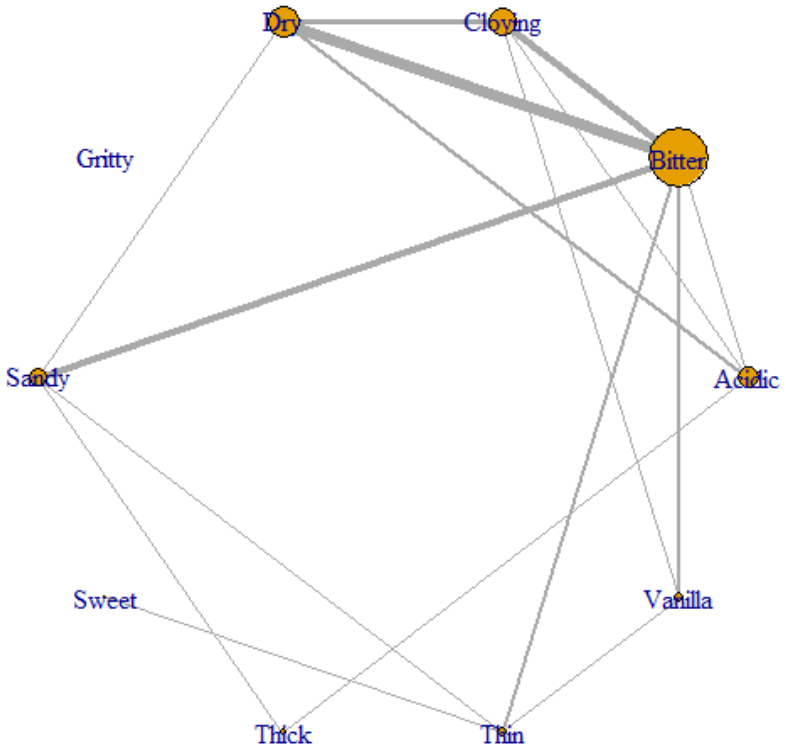
mTDS


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

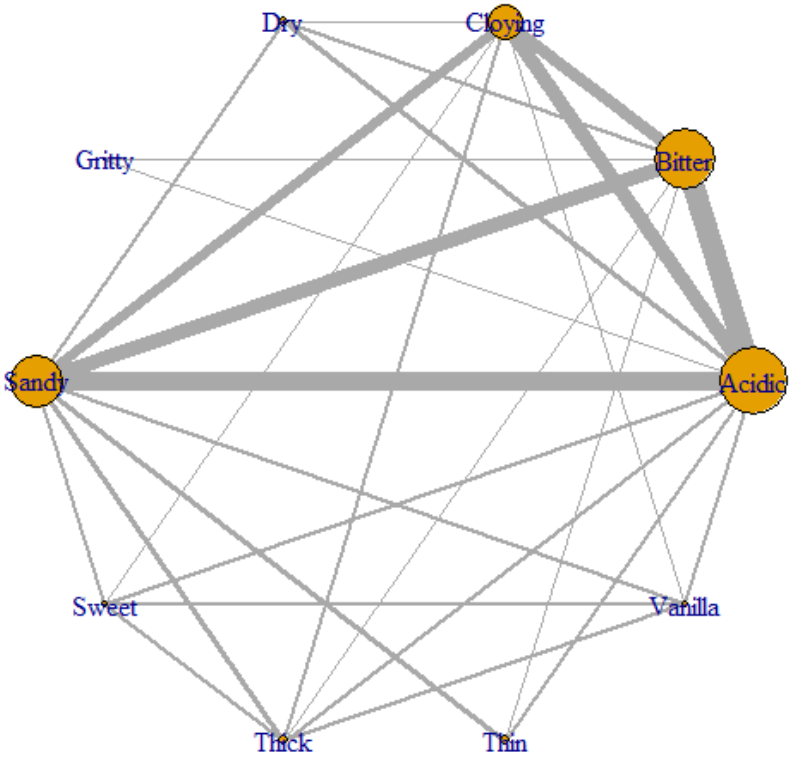
TCATA


Dry
Cloying
Gritty
Bitter
Sandy
Acidic
Sweet
Vanilla
Thick
Thin

mTDS



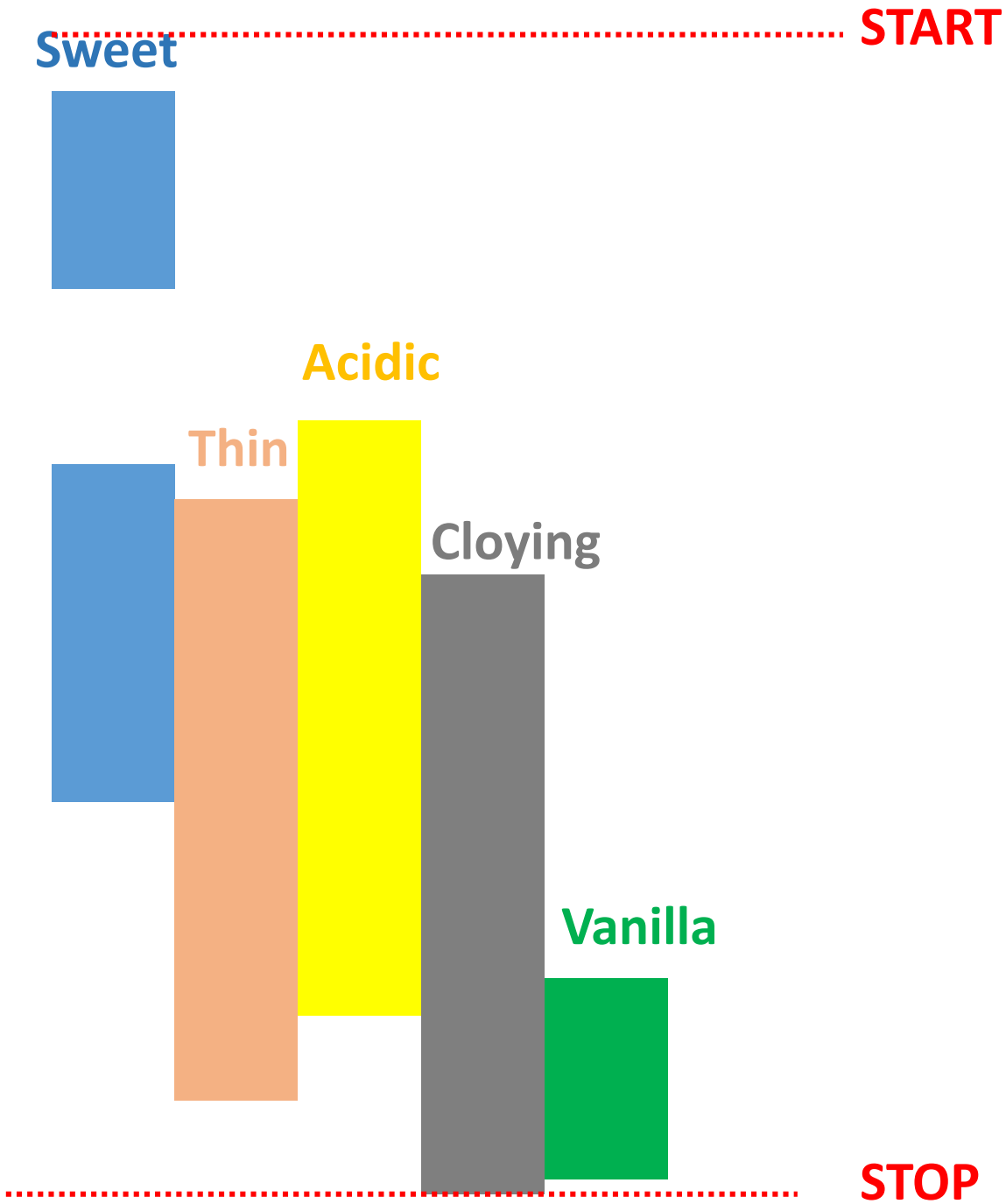
TCATA



80/100

TCATA

Vanilla	Gritty
Cloying	Dry
Sweet	Thin
Thick	Bitter
Acidic	Sandy


START
Sweet
Acidic
Thin
Cloying
Vanilla
STOP

mTDS (1st)

Vanilla

Acidic

Cloying

Bitter

Sweet

START

Flavour & taste

STOP

mTDS (2nd)

Thick

Gritty

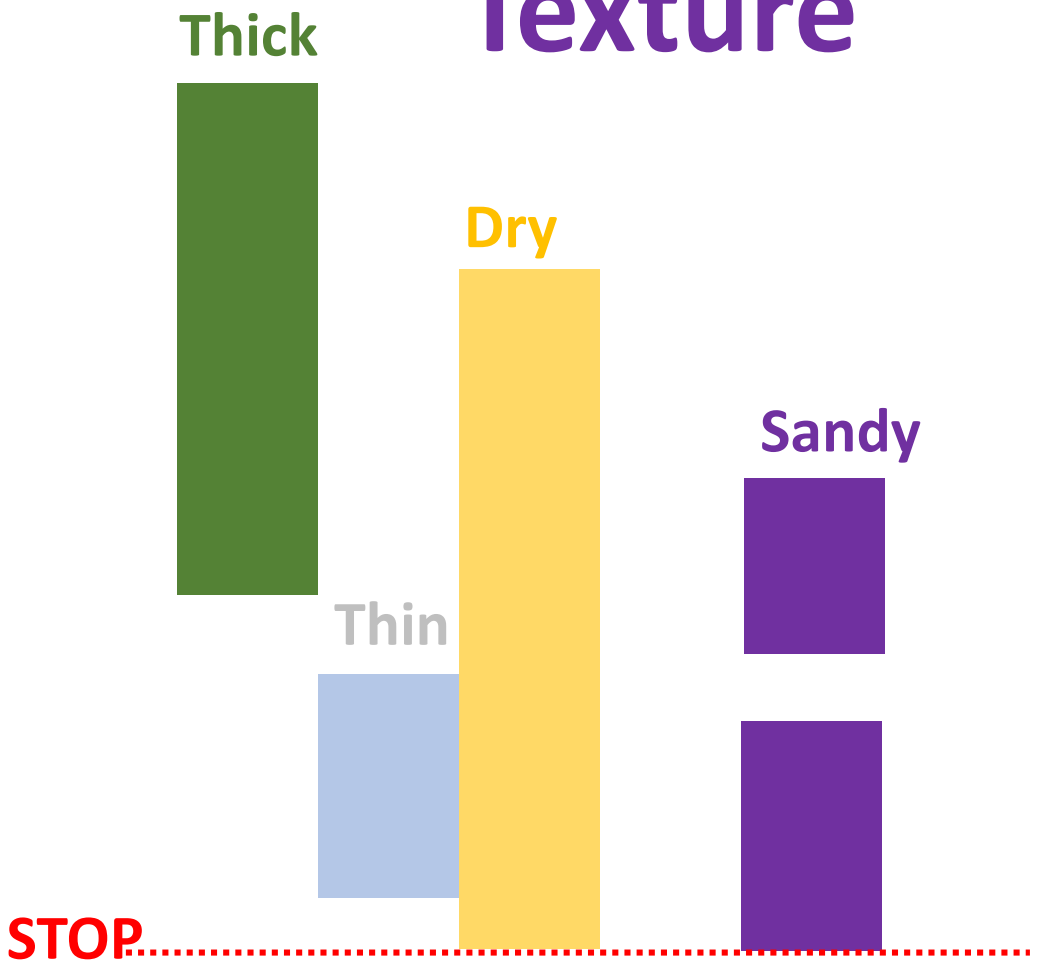
Dry

Thin

Sandy

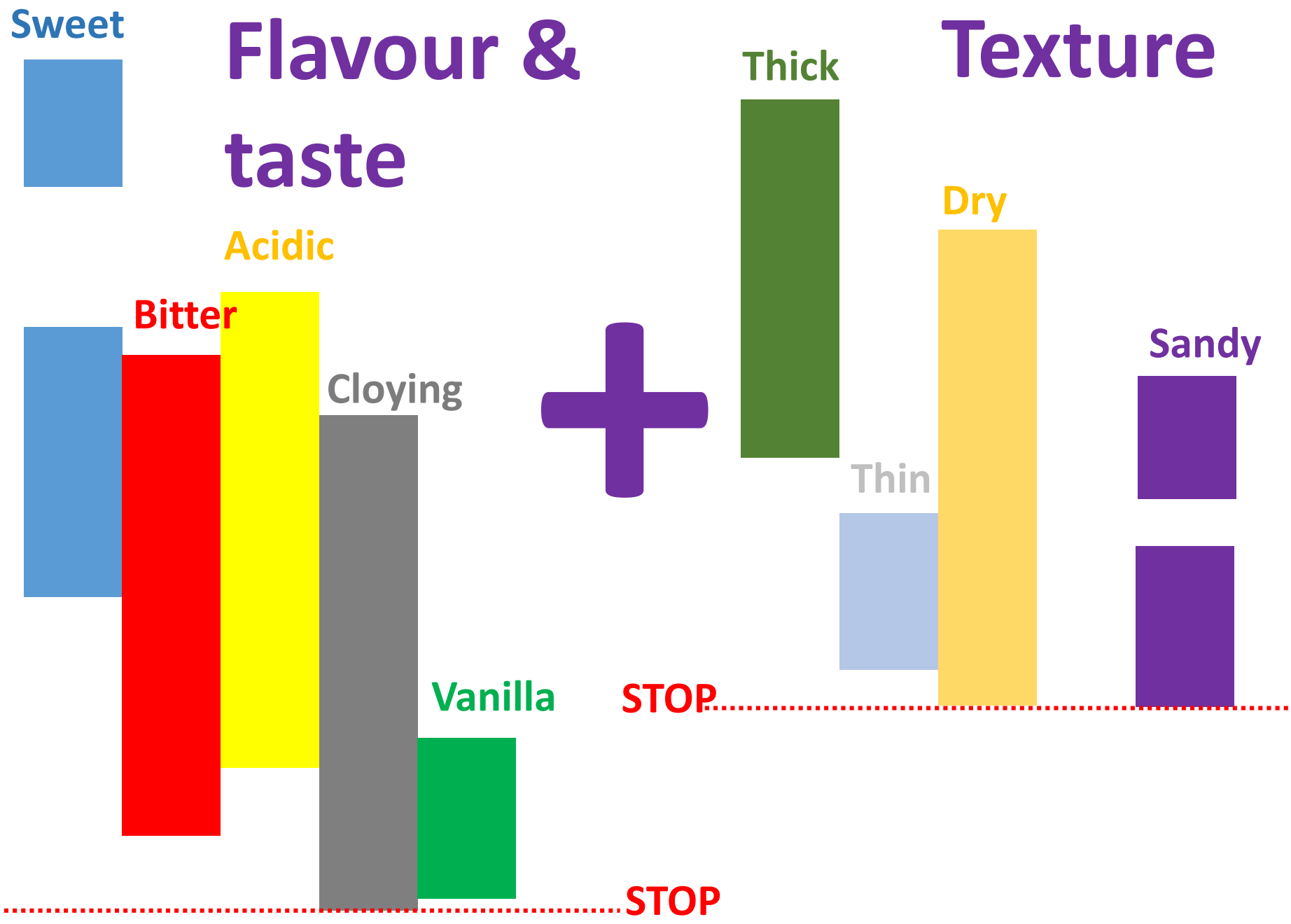
START

Texture



STOP

START


Sweet
Flavour & taste
Acidic
Bitter
Cloying
Vanilla
Thick
Texture
Dry
Thin
Sandy
STOP
STOP

TCATA data are simple and enable investigation of marginal response rates, as well as the possibility of investigating concurrent perception.

Attributes remain ‘checked’ at the end of the evaluation.

Potential Solution

TCATA Fading would be expected to help by allowing assessors to attend to the onset of attributes (not the offset of attributes).

TDS data are simple and enable investigation of marginal response rates.

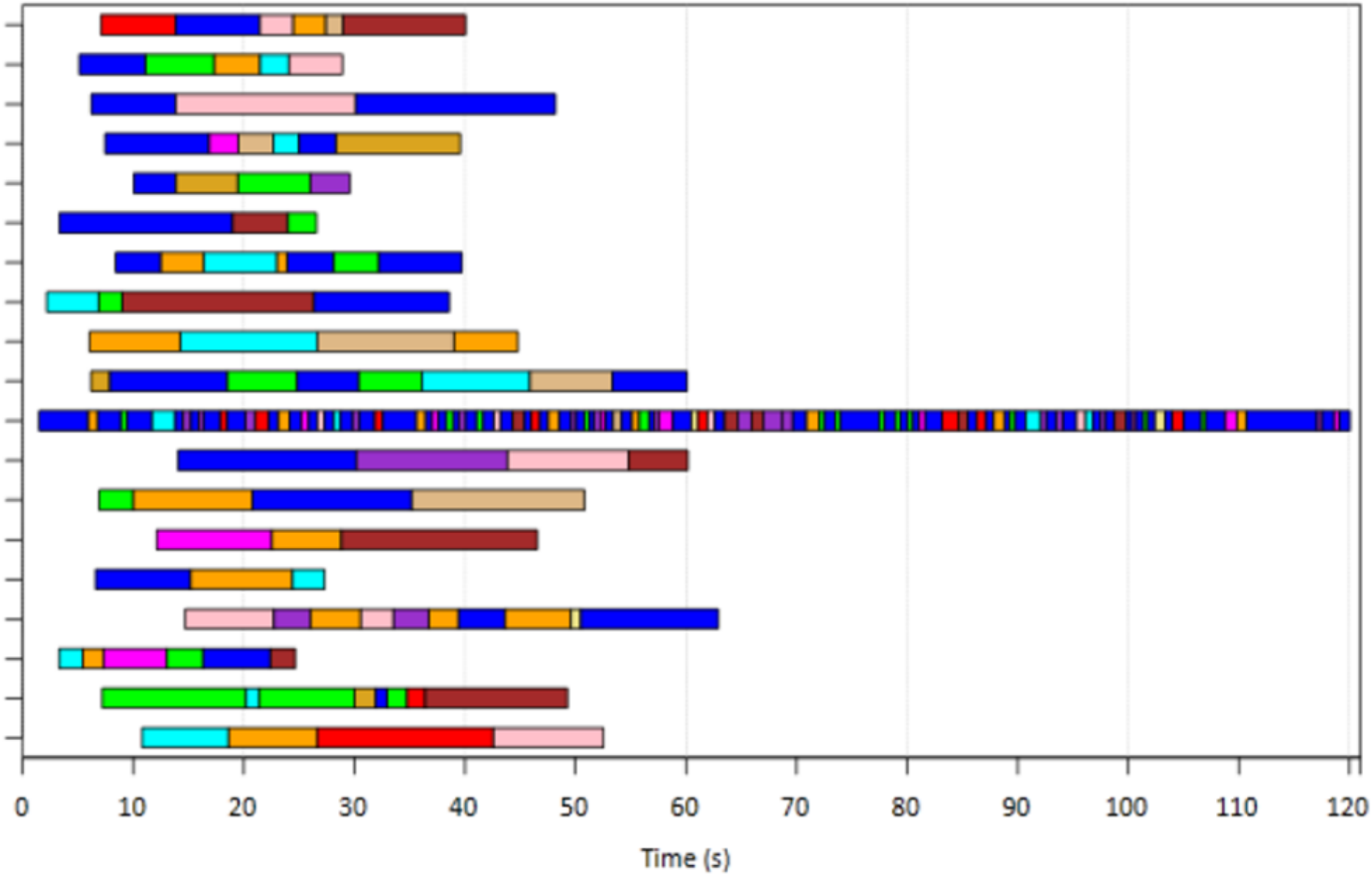
The meaning of ‘dominance’ may be unclear.

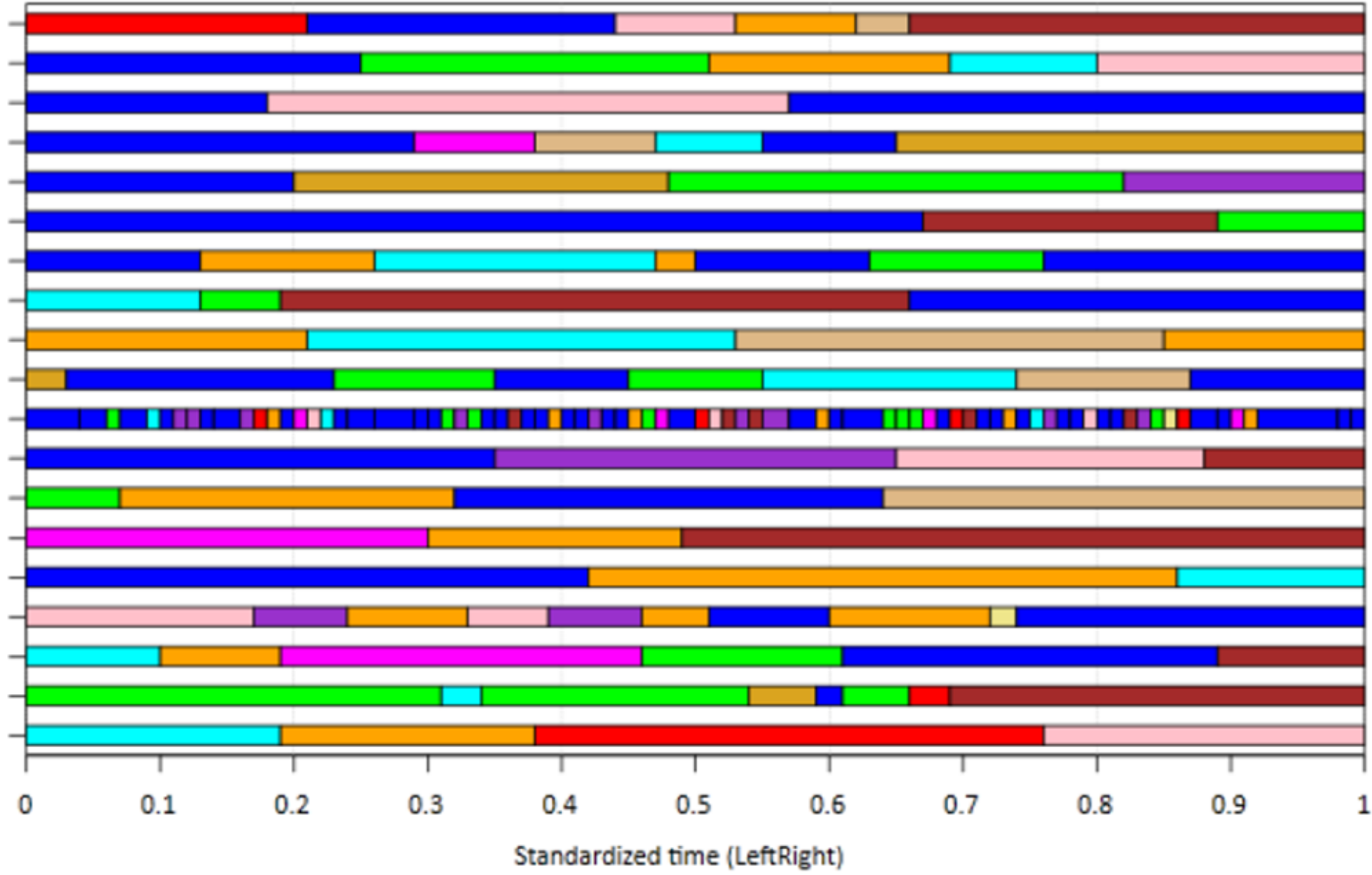
Massaging is required to investigate concurrent perception.

Potential Solution

Is it the sensation that is **most striking**, **or** the **sensation that catches the attention**??

Thin & Cloying


0
10
20
30
40
50
60
70
80
90
100
110
120
Time (s)


0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1
Standardized time (LeftRight)

mTDS data could be useful if the experimenter wants a detailed investigation into more than one sensory modality: a list of flavour attributes and the list of texture attributes can be used, providing more precision into each modality.

Joining two evaluations as if these evaluation occurred simultaneously seems questionable due to sensory adaptation, etc. Also: same cautions as for TDS.

Solution

Data collected within sensory modality. Perhaps they should be analyzed within modality as well?

Modelling temporal sensory data via a graphic theoretical approach

John C. Castura
VP Innovation & Research
Compusense Inc.

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Sensometrics 2018
Data Analysis Workshop