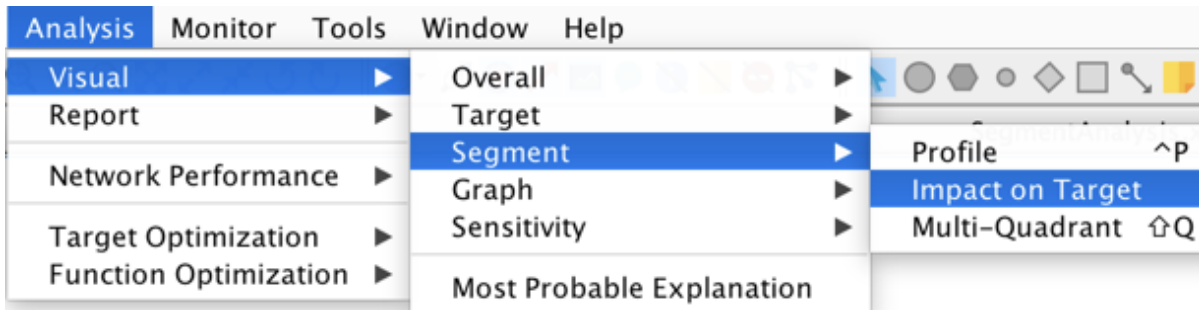


Impact on Target (8.0)

Context

Analysis | Visual | Segment | Impact on Target



Impact

This new feature allows comparing a segment with a selected benchmark (either the entire data set, or another segment). The comparison is done in terms of **Impacts**, a term combining the difference of the observable variables' mean values and their effect on the Target node.

The Impact I for each observable variable V is computed as follow:

$$I_{s \rightarrow b}^V = (\bar{v}_s - \bar{v}_b) E_b^V$$

where:

s is the analyzed segment,

b is the benchmark,

\bar{v} is the mean value of V on the data set defined by the segment or the benchmark,

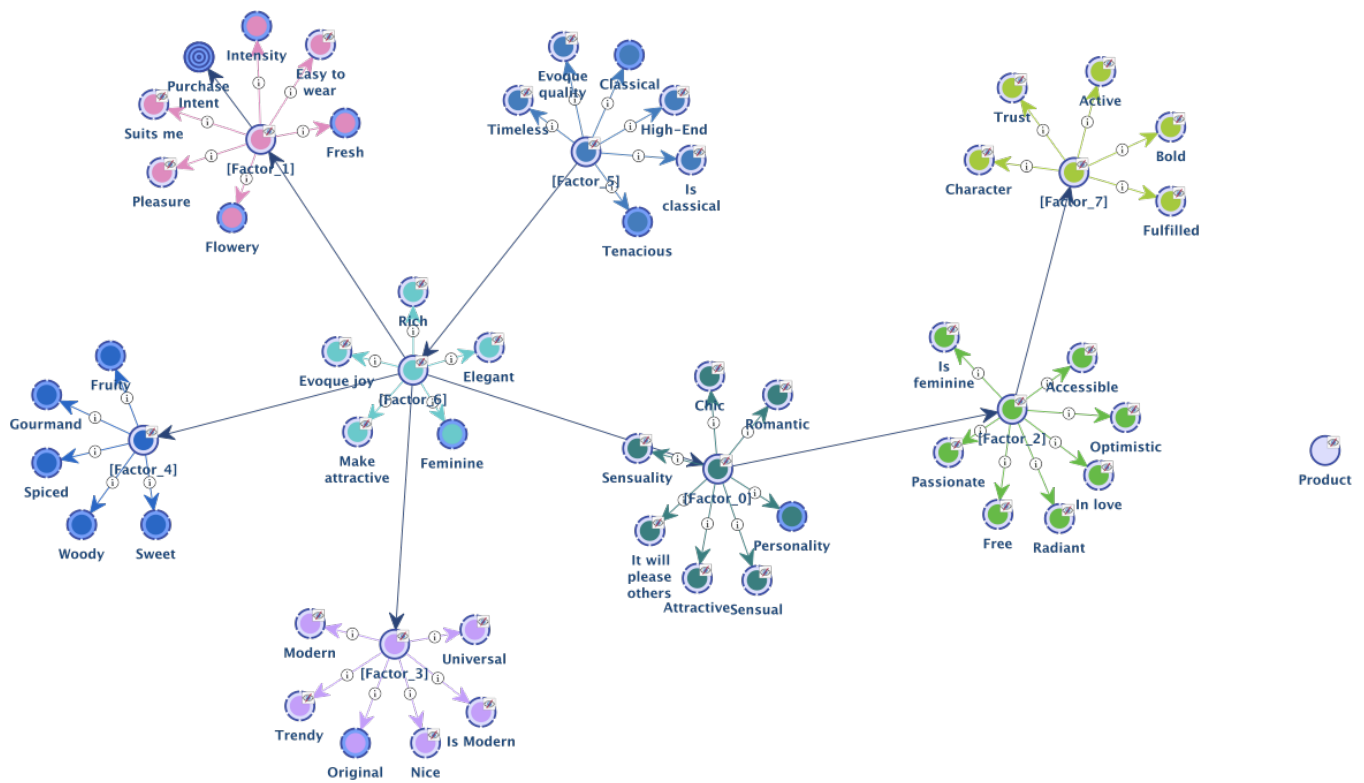
E_b^V is the effect of V on the Target node, evaluated on the benchmark.

Four types of effects are available:

- Total Effect,
- Standardized Total Effect,
- Direct Effect,
- Standardized Direct Effect.

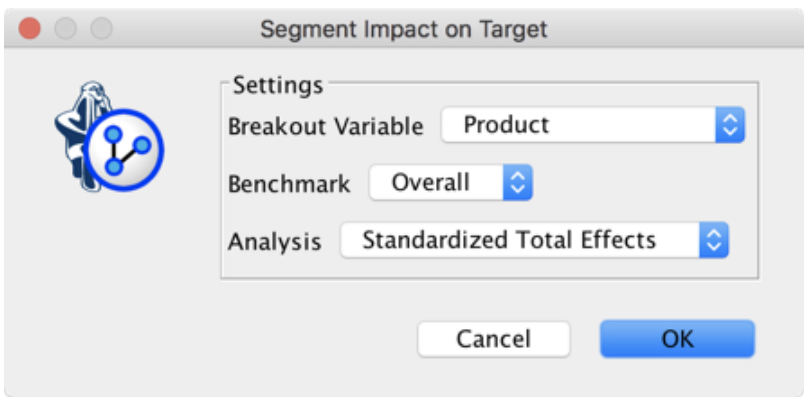
Example

Let's take the **Perfume** example for which we have defined five segments with the **Breakout Variable** *Product*, namely *Prod3*, *Prod4*, *ProdG1*, *ProdG5* and *Prod G6*.



Below is the table with the **Standardized Total Effects** of all the observable variables on *Purchase Intent*, and the mean values of these variables, computed on the entire data set, and on the segment represented by *Prod3*. These figures allows computing the **Impacts** of each variable.

Observable Variables	Standardized Total Effect (Overall)	Mean Value (Overall)	Mean Value (Prod3)	Delta	Impact
Fresh	0.56	6.61	6.40	-0.21	-0.12
Feminine	0.53	7.25	6.80	-0.45	-0.24
Flowery	0.43	6.89	6.82	-0.08	-0.03
Original	0.42	5.96	5.47	-0.50	-0.21
Personality	0.41	6.36	5.65	-0.71	-0.29
Gourmand	0.37	6.13	5.68	-0.45	-0.17
Sweet	0.35	6.12	5.64	-0.48	-0.17
Fruity	0.34	6.41	6.07	-0.34	-0.12
Tenacious	0.34	6.49	5.59	-0.90	-0.31
Classical	0.30	6.10	6.13	0.04	0.01
Spiced	0.21	4.72	4.22	-0.50	-0.10
Woody	0.20	4.91	4.70	-0.21	-0.04
Intensity	-0.16	3.07	2.96	-0.11	0.02



Prod3

Prod4

ProdG1

ProdG5

ProdG6

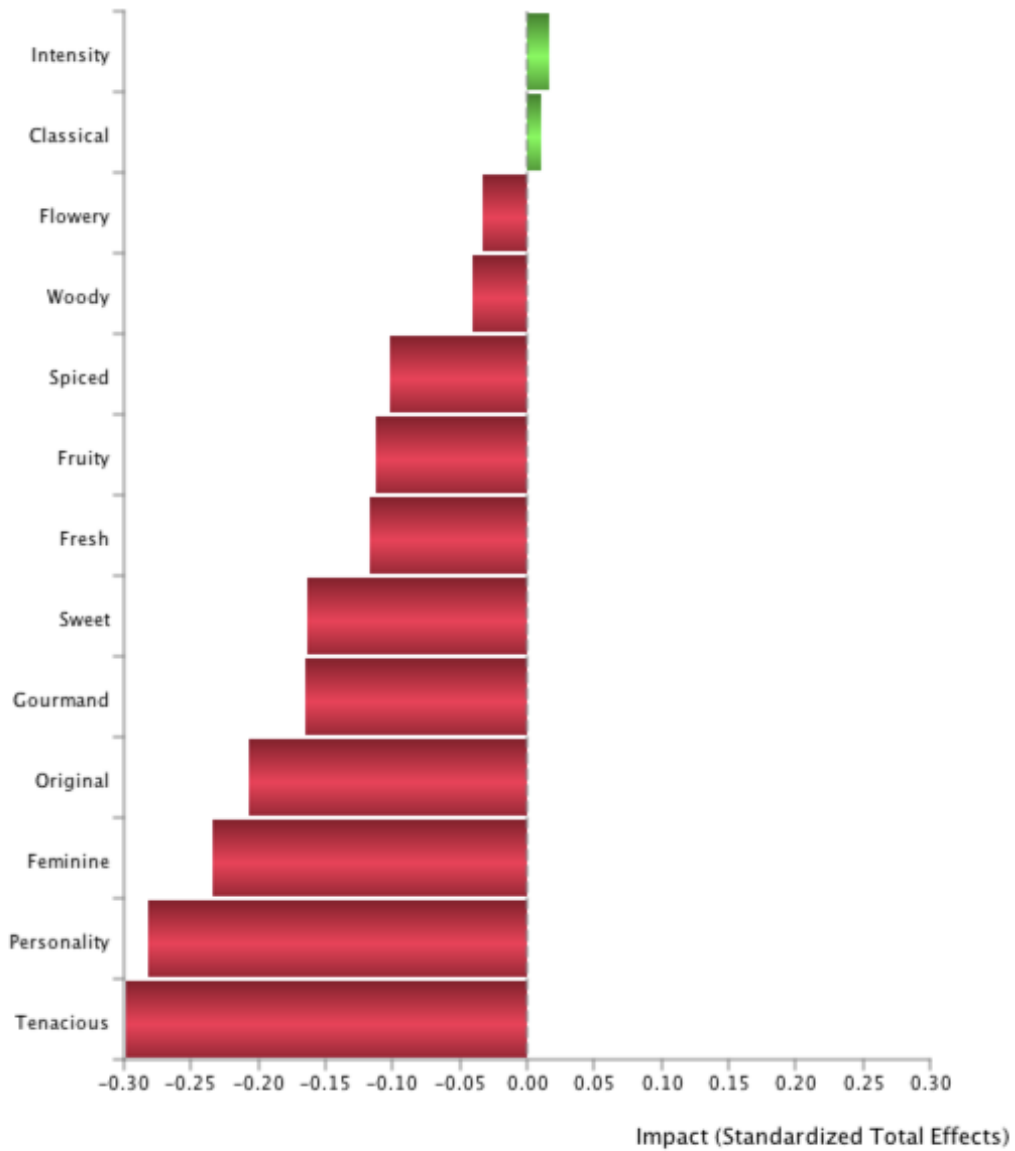
Node:

Impact:

■ BEST:

■ NHST t-test:

Prod3 vs Overall: Impact on Purchase Intent



Null Value Assessment

Close

Save As...

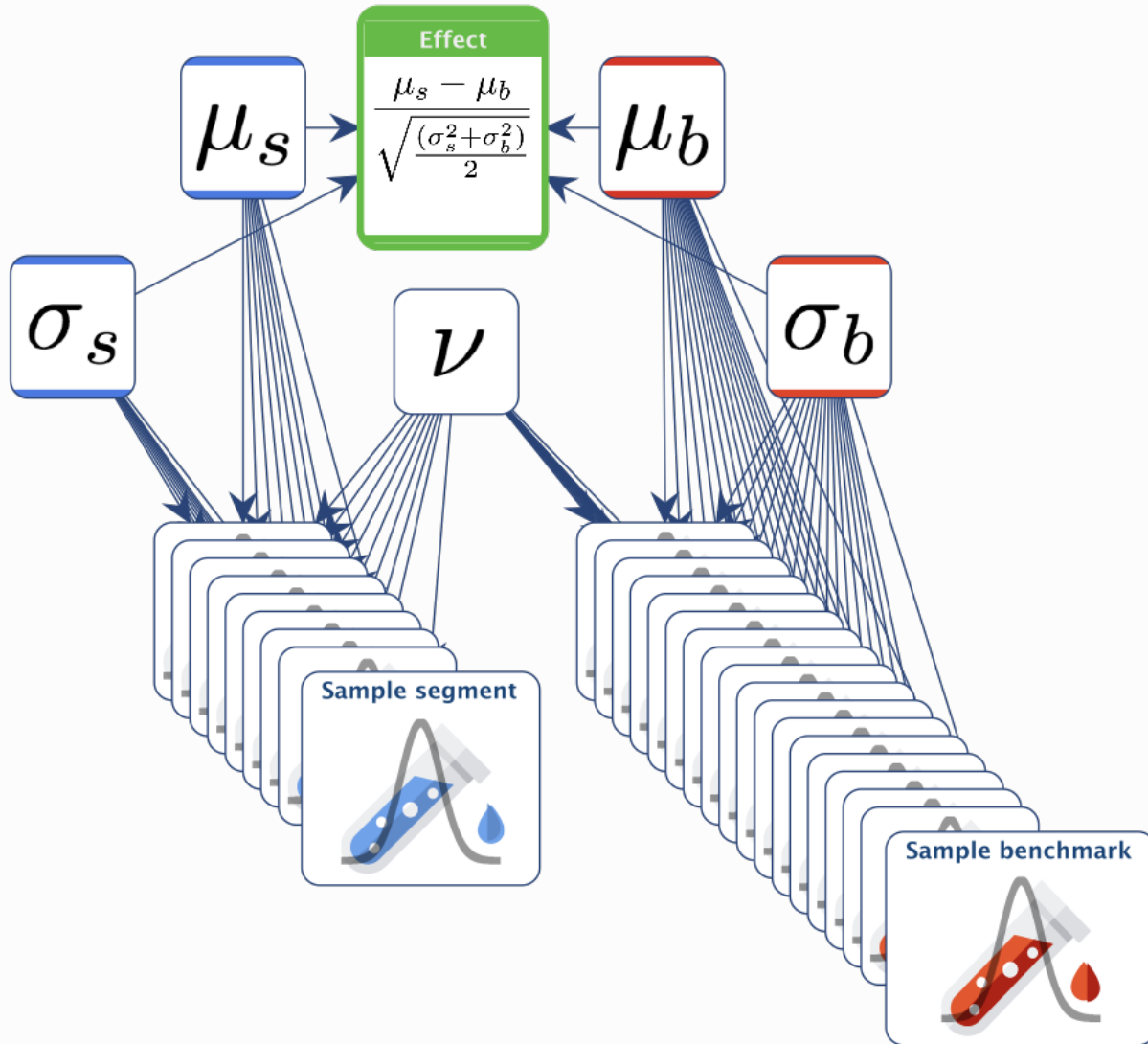
Print

Null Value Assessment

This option allows estimating if the segment and benchmark mean values are significantly different. Two tests are proposed for answering this question:

- a Frequentist one, **NHST t-test**, the Null Hypothesis Significance Testing with the Welch's two-sample, two tailed t-test, and
- a Bayesian one, **BEST**, described in the paper by John K. Kruschke, "*Bayesian Estimation Supersedes the t-test*", Journal of Experimental Psychology: General, 2013.

i Below is the Bayesian network used in the **BEST** approach. We are assuming that the samples follow a Student's t-distribution. The segment and the benchmark have their own μ and σ , but they share the same ν .



i The default **Confidence Level** has been set to 95%. This is the same for both tests.

As for the Bayesian test, the **Region of Practical Equivalence (ROPE)** on the **Effect** size around the null value has been set by default to [-0.1, 0.1].

The null value is declared to be rejected if the 95% **Highest Density Interval (HDI)** falls completely outside the **ROPE**.



You can use the **Preferences**  to modify:

- the confidence level (for both the t-test and BEST),
- the **Monte Carlo Markov Chain** parameters that are used for inference in the Bayesian network described above,
- the ROPE size that defines an interval centered at 0, i.e. 0.2 defines the interval [-0.1, 0.1].

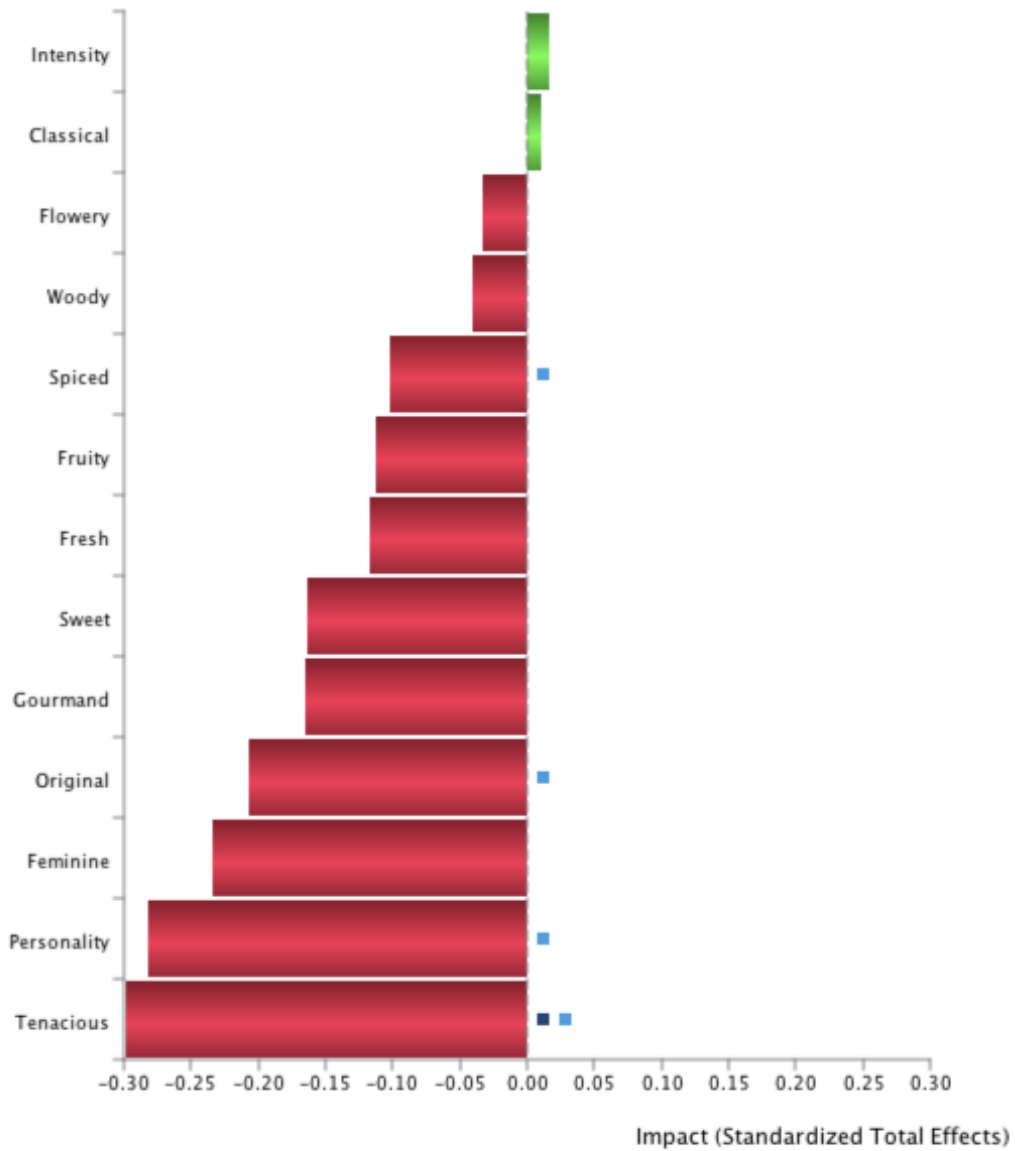
Example

Checking **Null Value Assessment** triggers the computation of both tests.

Prod3 Prod4 ProdG1 ProdG5 ProdG6

Node:
Impact:
■ BEST:
■ NHST t-test:

Prod3 vs Overall: Impact on Purchase Intent



Null Value Assessment

Close

Save As...

Print

When the mean values are estimated as significantly different, a square is added next to the Impact bar:

-  for t-test
-  for BEST