

MULTIPLICATIVE MODELS IN STRATAQED

FAQ

What is Multiplicative modeling and how does it compare to additive models?

Multiplicative models (also known as logged models) work on the premise that there is an interaction between all the independent factors in a model, and strataQED will build this interaction into the models. This is done automatically in strataQED when you select a Multiplicative dependent as your dependent in a model.

Multiplicative modeling can be useful if you want to capture certain dynamics, such as:

- A strong trend or seasonality within your Outcome.
- Business growth or decline passing a year-on-year threshold.
- If you are struggling to estimate the peaks or trends through model timeframe.
- Synergy between media channels.
- A variation in media effectiveness through time, for example, you'd expect to see better media ROIs as the business base grows.

Unlike additive models, it is possible to see an independent factor dropping but its contribution rising; for example, less GRPs driving higher contribution. This would be due to the interaction between factors boosting the contribution, and/or due to a rising Outcome.

How do I set-up my strataQED files so that I can run Multiplicative models? What do I need to do differently?

- Import your files and create a repository in the normal way.
- There is now a new option for dependent variables, found within the Series Definition settings.
- In order to run a Multiplicative model, when categorising your outcome data (dependent series) you need to set the Model Type to Multiplicative. This can be done in the Individual Data Series Definition and Data Definition Summary tabs.
- As soon as you have defined a Dependent variable with this setting, the models built for this dependent will be Multiplicative.
- Any existing strataQED project files can be used for running Multiplicative or additive; you don't need to create new files.

How do I create a model using Multiplicative method?

The process for creating a model using Multiplicative is the same as the current additive process. When you select your Dependent using the dropdown in both the Search For A Model and New Manual Model screens, you should select the dependent that you have categorised as Multiplicative.

Are the same statistics valid for additive and Multiplicative models?

The statistics that you use to assess the quality of an additive model can also be used with Multiplicative models.

Is there a new file type for Multiplicative models?

No.

A Multiplicative model is saved with the same file extension as an additive model. There is a flag in the file to indicate the model method used. However currently, Multiplicative models cannot be taken through to Nested models or Forecasts modules of strataQED.

Do we have the same reports for Multiplicative and additive models?

Most of the reporting of a Multiplicative model is the same. All statistics are visible, and all variables can be included in the Brand Painting. Note that the response curves are shown in Logged terms.

Can I create a model using one method and then switch to the other to see what changes?

Yes.

If the model was created using the Search For A Model, copy it to New Manual Model then you can change the modeling method by selecting the alternate form of the Dependent variable.

Can I compare models created using different methods?

Yes.

In Models > Compare Models you can select any models that you have. Details of the modeling method used have been added to the summary grid at the top. Note that you can't compare the coefficients of additive and Multiplicative models, as for Multiplicative they are in logged terms. In the lower grid, the relevant metrics are shown for each model, along with an average for all numerical statistics. You can also chart the results for each model, on the new Chart tab.

What is the strataQED decomposition method?

The strataQED decomp techniques employs a set of rules to allocate the inherent interaction, arising from the Multiplicative estimation, back to each variable. In other words the contribution will not add up to more of less than the fit but will always equal the fitted volume.

To decide on the proportion of contribution that a single driver gets, the approach assigns each variable to either the "Core" or "Incremental" group.

The final contribution reported for a variable then depends on four things:

- The shape of the variable's transformed data (e.g. if it has an adstock or diminishing response applied) and the sign and size of its coefficient.
- If it's incremental, it will interact with all other drivers (including those in the Core) for example heightened contribution when another variable is higher.
- If it is in Core, it will interact only with other variables in the Core*.
- If it has a reference point applied, the minimum or maximum level will be removed and included in the base. These reference points are controlled via the Contribution Manager.

By default, any variables categorised as Negative, Positive or Other Explanatory Factor will be assigned to the Core. Otherwise, any changes to the "Core" assignment can be made in the Contributions Manager.

To decide whether to assign a variable to the Core or the Incremental group: depends on how much you expect its impact to alter alongside the movements of other variables. In the Core, contributions remain more stable and more similar to their transformed data shapes. As Incremental, variables take on more shape of the other factors in the model.

All variables can be reported in the Brand Painting, whether they are Core or Incremental.

Where can I see what decomposition parameters were used?

Within the Contributions Manger, you can review and alter which independent variables are included in the Core, and which are treated as Incremental.

You can alter this by toggling the tick boxes in the column labelled "Include in log model core calculation". Those left unticked will remain as Incremental variables. These choices are set at the model level.

Glossary

Interaction – Similar to Synergy. The built-in effect between drivers that exists within Multiplicative models.

Core – a steady set of drivers that is not involved in the main subtractive algebra. This set do not take on 'shapes' of incremental drives in the equation.

Core Drivers – each variable that is chosen to be a part of the core, including the intercept (or constant).

Incremental – the drivers that are not in the core are said to be incremental; they drive contribution up and down and interact with one another as well the Core during subtraction algebra steps. This is only relevant when calculating contributions for Multiplicative models.

Incremental Drivers – all variables that are not in the Core.

For more information on Multiplicative and Additive models, please refer to the strata help file in your software.