

## #1306: HyperStudy – User defined distribution

**Product:** HyperStudy

**Product Version:** HyperStudy 14.0 or above

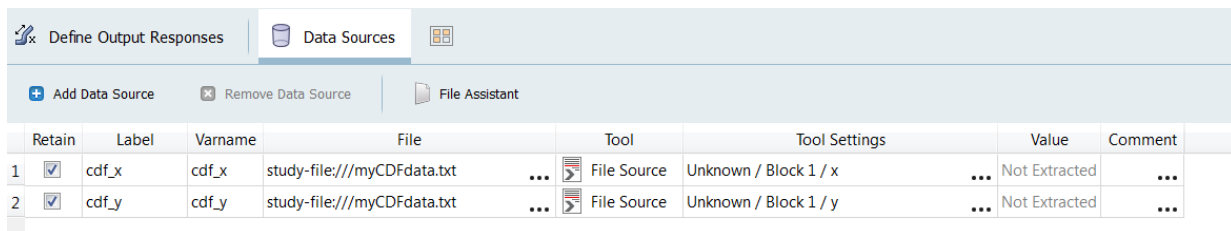
### Topic Objective

User defined distribution in HyperStudy.

### Topic Details

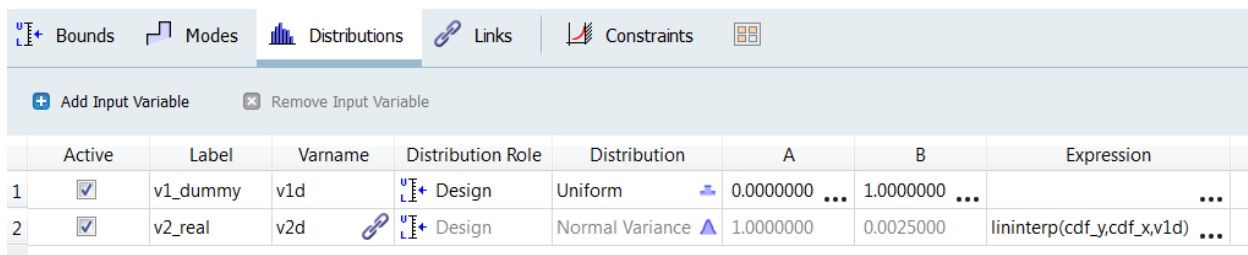
While doing stochastic study HyperStudy provides multiple distribution choices to use with design variable. They are sufficient to handle most of the use cases. But sometimes you may need to provide special distribution to represent the variation of a variable. HyperStudy doesn't let you do it directly, but with little creativity one can achieve this.

First thing you need is cumulative distribution function (CDF) data for your distribution in form of XY column data. Let's say you have this data in file 'myCDFdata.txt'. You need to create data sources for column X and column Y in file 'myCDFdata.txt' as shown in image below



Retain	Label	Vname	File	Tool	Tool Settings	Value	Comment
<input checked="" type="checkbox"/>	cdf_x	cdf_x	study-file:///myCDFdata.txt	File Source	Unknown / Block 1 / x	...	Not Extracted
<input checked="" type="checkbox"/>	cdf_y	cdf_y	study-file:///myCDFdata.txt	File Source	Unknown / Block 1 / y	...	Not Extracted

Then create two DVs as shown in image below. The first DV (v1\_dummy) is dummy DV and second DV (v2\_real) is real DV. The v1\_dummy changes from 0 to 1 and it has uniform distribution. The v2\_real is linked to v1\_dummy using expression that uses data sources created above.



Active	Label	Vname	Distribution Role	Distribution	A	B	Expression
<input checked="" type="checkbox"/>	v1_dummy	v1d	Design	Uniform	0.0000000	1.0000000	...
<input checked="" type="checkbox"/>	v2_real	v2d	Design	Normal Variance	1.0000000	0.0025000	lininterp(cdf_y,cdf_x,v1d)

The expression used of v2\_real produces values consistent with distribution you want to apply on it. In example above, I applied double hump distribution on v2\_real and it looks like in image below.

