

# **A Generalized Sampling Approach for Multi-linear Utility Functions Given Partial Preference Information**

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## Supplemental Materials Guide

This guide explains the use of the supplemental materials provided by the authors. In particular, we describe the use of four forms of the MLUF: the additive, the multiplicative, the utility independent, and the generalized utility independent forms. The examples presented in the supplemental materials consider two alternatives with three attributes.

### **Package Content:**

The “SupplementalMaterials” folder includes four files. The first one includes the main routines.

- MultiattributeSMpaper.nb.

The other three files are functions required by the main routine and are not intended to be edited by the user. The m-files are similar in nature, but include minor differences that help sampling different MLUF.

- NewRandDistHRIneq.m
- NewRandPointHRIneq.m
- NewRandDistHRMultLin.m

### **Package installation:**

- 1) Load the folder “SupplementalMaterials” into the “C:” root of the hard drive.
- 2) Open the file “MultiattributeSMpaper.nb” using Wolfram Mathematica 9.0.
- 3) Change the file path if needed, the default is set to:

```
<< C : \ \ SupplementalMaterials \ functionName.m;
```

Some minor changes might be required for Mac and Linux users, or in cases where the user wants to change the file path of the “SupplementalMaterials” folder.

### **Package Instructions:**

After installation the user needs to choose one of four sections of code in the main routine. The first section samples the A-MLUF, the second one samples the M-MLUF, the third one samples the ND-MLUF, and the last one samples the G-MLUF.

In all four sections, the following parameters can be adjusted to test different models:

sampleSize	Choose the sample size of the collection.
attributes	Number of attributes considered.
equalityA and equalityb	Set the equation $Ax=b$ .
inequalityA and inequalityb	Set the equation $Bx \leq c$ .
singleUtilityAttributes	Utilities for two alternatives using three attributes.
parameters	Provide an initial point in the interior of the utility set: $Ax=b$ and $Bx \leq c$ .

The output of the model is printed using plots for the parameter samples (the utility set), and the utility values of the two alternatives considered. The utility values have been sorted according to alternative one.