Calculate an Approximate Lambda from a Set of P-Values
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Overview

This script calculates an approximate lambda value from a column containing p-values.

If you had a test with chi-squared values as output, you could compute the genomic-control inflation factor Lambda by dividing the median of the chi-squared values by the expected median of the chi-squared distribution:

Lambda = (median chi-squared value) / (expected median chi-squared value).

However, what if your chi-squared values were not output, OR your test found p-values by some method other than using chi-squared values? Then, you could "work backwards" from the p-values to get (approximate) chi-squared values, afterward using the above formula for Lambda. At least, you could find the chi-squared value corresponding to the median p-value, then use the above formula for that (median) chi-squared value.

This is what this script does. The process may be summarized as follows:

Lambda = isf(median p-value)/ isf(expected median p-value = 0.5) ,

where "isf" is the "inverse survival function" of the chi-squared distribution with one degree of freedom. (Note that assuming one degree of freedom will not precisely match your original method if that method used chi-squared values with more than one degree of freedom—but at least, it will yield an approximate lambda value.)

Recommended Directory Location

Save the script to the following directory:
*..**Application Data\Golden Helix SVS\UserScripts\Spreadsheet\Column**

Note: The **Application Data** folder is a hidden folder on Windows operating systems and its location varies between operating systems. The easiest way to locate this directory on your computer is to open SVS and go to **Tools > Open Folder > User Scripts Folder** and save the script in the **\Spreadsheet\Column** folder. If saved to the proper folder, this script will be accessible from a real-valued column menu.

Using the Script

1. From a spreadsheet that contains a p-value column, click on the p-value column header and select **Calculate Approximate Lambda from P Values**.

The script will calculate an approximate lambda value using the formula above. This value will be displayed in a message window and will also be annotated in the node log for the spreadsheet.