Cluster Heatmap Usage Survey

This survey should take 5 to 10 minutes to complete. There is no payment or other form of compensation for your participation in this survey. This survey will close on March 20, 2015 at 11:59 PST.

Because we will not be collecting any information that can uniquely identify you, the data you provide will be anonymous. You may discontinue the survey at any point.

This data is being collected by Professor Sophie Engle and the University of San Francisco. Please email sjengle@cs.usfca.edu if you have any questions or concerns regarding this survey.

* Required

1. **Age Bracket** *
   You must be 18 or older to continue.
   Mark only one oval.

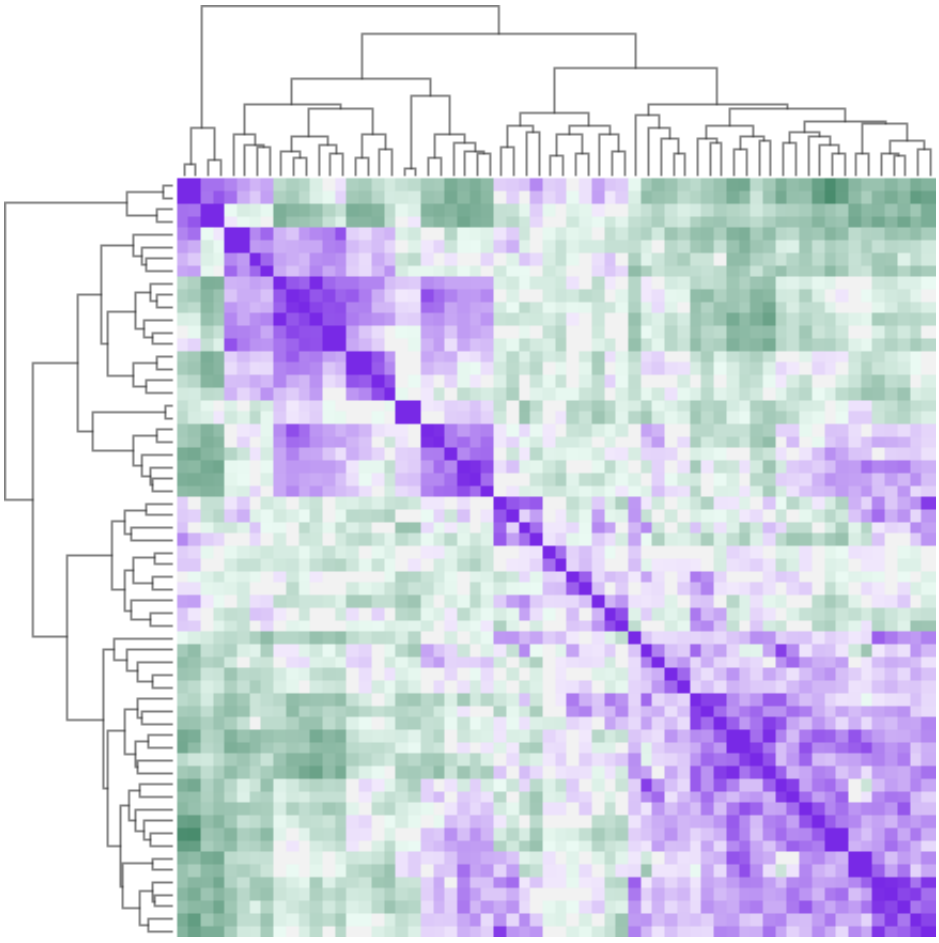
   - ◯ I am 18 years or older.
   - ◯ I am under 18 years old. *Stop filling out this form.*

You will be asked several questions regarding cluster heatmaps in this survey, including questions on your background as related to this topic.

A heatmap uses color to visualize the individual values of a data matrix. A cluster heatmap first clusters the rows and/or columns of the matrix, and then re-orders those rows and/or columns in the heatmap by the results of that clustering.

These visualizations often use hierarchical clustering and display the clustering results as a dendrogram (a special type of tree) along the margins of the heatmap.

See below for an example cluster heatmap:



This survey requires basic familiarity with cluster heatmaps. This familiarity can range from interpreting cluster heatmaps in research publications to creating and/or using cluster heatmaps to analyze your own data.

2. **Familiarity** *

   You must have basic familiarity with cluster heatmaps to continue.
   Mark only one oval.

   - ◯ I have basic (or greater) familiarity with cluster heatmaps.
   - ◯ I am not familiar with cluster heatmaps. *Stop filling out this form.*

We will be asking general questions about your background in this section to gauge your levels and areas of exposure to cluster heatmaps.

Because we will not be collecting any information that can uniquely identify you, the data you provide will be anonymous. You may also skip any questions you feel uncomfortable answering.

3. **Highest Degree**

   Select the highest degree you have earned.
   Mark only one oval.

   - ◯ Doctorate (PhD, MD, etc.)
   - ◯ Master's (MS, MA, MBA, etc.)
   - ◯ Bachelor's (BS, BA, etc.)
   - ◯ Associate's (AA, AS, etc.)
   - ◯ Other: _____

4. **Areas of Study**

   Indicate your major areas of study for the degree you selected above (e.g. Biology).

   _____

5. **Frequency**

   Indicate how frequently you encounter cluster heatmaps (either in your own research or in related literature).
   Mark only one oval.

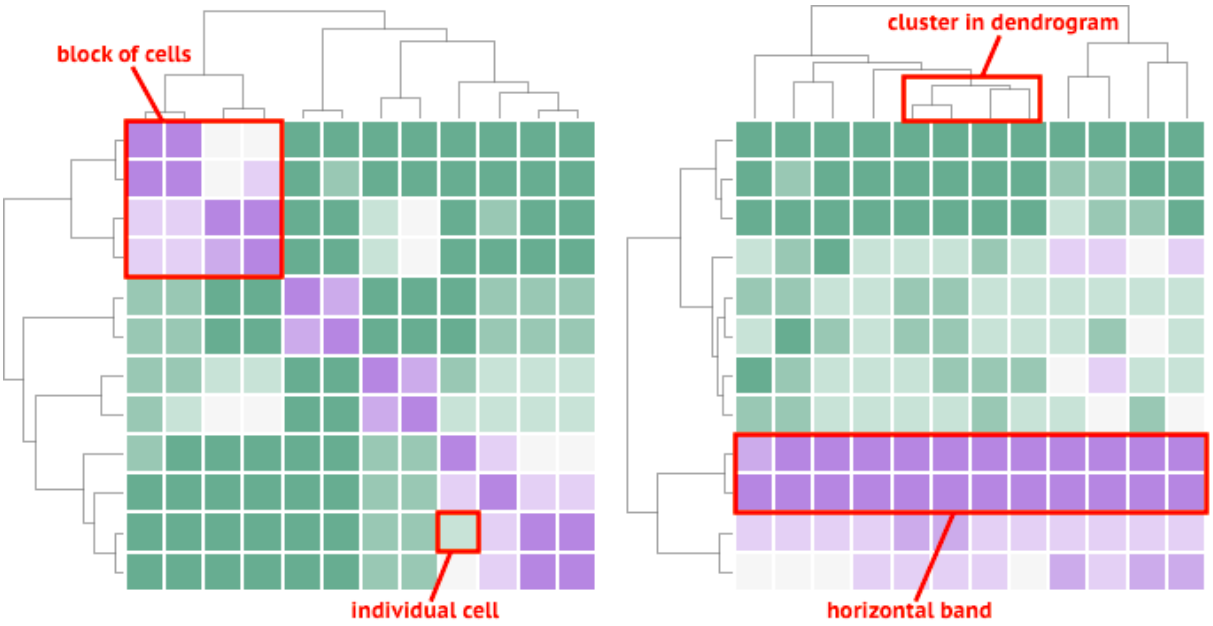
   - ◯ Daily
   - ◯ Weekly
   - ◯ Monthly
   - ◯ Yearly
   - ◯ Other: _____

6. **Experience**

   Estimate how many years you have used or encountered cluster heatmaps.
   Mark only one oval.

   - ◯ Under 1 year
   - ◯ 1 to 4 years
   - ◯ 5 to 9 years
   - ◯ 10 or more years

We will be asking you questions about how you use cluster heatmaps in this section. For reference, see below for two example cluster heatmaps:



7. **Elements**

Indicate how often you look for specific elements in the cluster heatmap. (You can indicate that you always look at all elements if that is the case.)
Mark only one oval per row.

	Never	Infrequently	Occasionally	Frequently	Always
Individual cells in the heatmap	◯	◯	◯	◯	◯
Clusters or blocks of cells in the heatmap	◯	◯	◯	◯	◯
Clusters of rows or columns (horizontal or vertical bands) in the heatmap	◯	◯	◯	◯	◯
Clusters of rows or columns in the dendrogram/tree	◯	◯	◯	◯	◯
Overview of values via heatmap	◯	◯	◯	◯	◯
Overview of clustering via dendrogram	◯	◯	◯	◯	◯
Other (please describe below)	◯	◯	◯	◯	◯

8. **Additional Elements**

List any elements you look for when viewing a cluster heatmap that are not listed above.

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9. **Languages**

   Indicate whether you have used any of the following programming languages/environments to create cluster heatmaps. Check all that apply.
   Check all that apply.

   - [ ] R (using gplots heatmap.2, heatmap3, ggplot2, etc.)
   - [ ] Python (using matplotlib, seaborn, etc.)
   - [ ] Javascript (using D3.js, Vega, Raphaël, etc.)
   - [ ] Matlab (using clustergram, etc.)
   - [ ] Other: .....

10. **Tools**

    Indicate whether you have experience using any of the following tools to create and/or explore cluster heatmaps. Check all that apply.
    Check all that apply.

    - [ ] DECODON Delta2D (https://www.decodon.com/)
    - [ ] Partek (http://www.partek.com/)
    - [ ] NetWalker (https://netwalkersuite.org/)
    - [ ] Circos (http://circos.ca/)
    - [ ] Gitools (http://www.gitools.org/)
    - [ ] MapleTree (http://mapletree.sourceforge.net/)
    - [ ] Tableau (http://www.tableau.com/)
    - [ ] TIBCO Spotfire (http://spotfire.tibco.com/)
    - [ ] Cytoscape (http://www.cytoscape.org/)
    - [ ] InCHlib (http://openscreen.cz/software/inchlib/)
    - [ ] DNAStar (http://www.dnastar.com/)
    - [ ] NG-CHM (http://bioinformatics.mdanderson.org/chm)
    - [ ] GENE-E (http://www.broadinstitute.org/cancer/software/GENE-E/)
    - [ ] Other: .....

11. **Preference**

    Indicate which language or tool selected in the previous questions you prefer and why.

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We will be asking you questions about the type of data you visualize in cluster heatmaps in this section.

We separate data matrices into two types: symmetric and asymmetric matrices. A symmetric data

matrix is a square matrix such that the upper triangle above the diagonal is a reflection of the lower triangle below the diagonal. All other matrices are considered asymmetric.

A correlation matrix is an example symmetric matrix. In a correlation matrix, the value at (i, j) gives the correlation between variables i and j. Gene expression matrices are usually asymmetric.

This is the last section of this survey.

12. **Type Frequency**

    Indicate how frequently you visualize symmetric versus non-symmetric data matrices using cluster heatmaps.
    Mark only one oval per row.

	Never	Infrequently	Occassionaly	Frequently	Always
Symmetric Matrices	◯	◯	◯	◯	◯
Asymmetric Matrices	◯	◯	◯	◯	◯

13. **Maximum Size**

    Estimate the maximum size matrix you have visualized using cluster heatmaps (e.g. "100 rows by 1000 columns"). You can approximate by the order of magnitude (e.g. 10, 100, 1000).

14. **Minimum Size**

    Estimate the minimum size matrix you have visualized using cluster heatmaps (e.g. "10 rows by 10 columns"). You can approximate by the order of magnitude (e.g. 10, 100, 1000).

15. **Comments**

    If you have any other comments about cluster heatmaps, please include them below.