

BIRD SONG SYSTEM

Using Open Stat to Analyze Data

(1) Preparing data for OpenStat

- Prepare data in **Microsoft Excel**.
- Do not use scientific notation. If any cells employ this notation, convert them to their actual values.
- Represent all word/string variables (such as groups) with integers. If any columns contain written items, categorize its contents using integers. For example, groups must be designated as integers 1, 2, ..., n rather than “male control,” “female control,” “female 5µg,” ...
- Eliminate empty data. If any cells lack (non-zero) values, it is best to delete the entire row that contains it.
- Save the collected and prepared data as a **Comma Separated Value (.csv)** file.

(2) Launch OpenStat

*** NOTE: OpenStat is available for the Windows OS for FREE. To download the program, go to <http://www.statpages.org/miller/openstat/>, scroll down the page and click on the link that says [Click here to download the free version OpenStatSetup.exe \(INNO Setup\)](#).

Click the **OpenStat** icon in the taskbar located at the bottom left of the computer desktop.

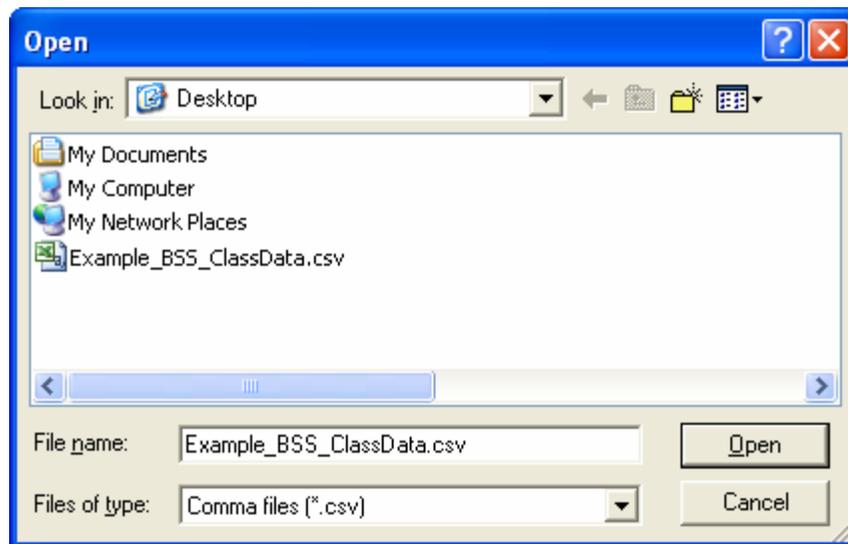
A **WELCOME** window may appear. If so, click the **Continue** button to open the program.

A blank **OpenStat** window will open. You will be importing your data here.

(3) Import Excel data

From the menu bar, select **FILE**, then **Import Comma File**. Choose to show **Comma Files (*.csv)** when looking for your data. Browse for your file, then click the **Open** button.

*** NOTE: These instructions may be using data that are NOT your own as an example. The results may NOT be identical to yours, but the procedures will be the same.



A **VARIABLES** window will appear. Type **Y** to include variable label, then click the **OK** button.



(4) **Define variables**

From the menu bar, select **VARIABLES**, then **Define**. A **Data Dictionary** window will appear.

- In the **Type** column, enter the number (as given by the **Var. Type** drop menu) that corresponds to the kind of values in the spreadsheet.
 - Type 0 = Floating Point
(data containing any decimal point values—
your data should be designated as Floating Point values)
 - Type 1 = Integer
(data containing only positive and negative natural numbers and zero—
your groups should be defined by distinct integer values)
 - Type 2 = String
(data containing any words or letters or numbers that are just labels)
- In the **Integers** column, enter a value of '0' (zero) for each row.
- In the **Decimals** column, enter a value of '2' (two) for floating point types (items with Type 2). Then enter a value of '0' (zero) for all other types.
- In the **Missing** column, enter a value of '0' (zero) for each row.
- Then click the **Return** button to update the changes.

Data Dictionary [X]

WARNING! NO BLANKS ALLOWED [Var. Types ▼]

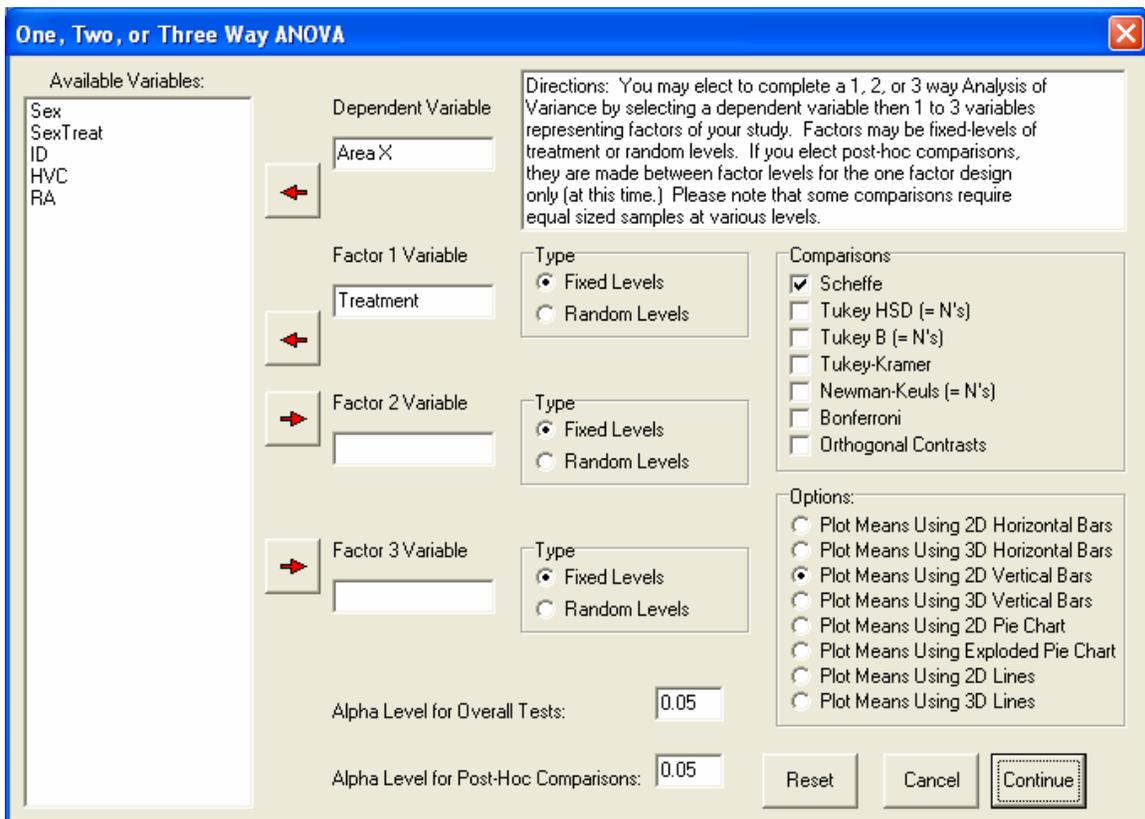
No.	Short Name	Long Name	Type	Integers	Decimals	Missing
1	Sex	Sex	2	0	0	0
2	Treatment	Treatment	1	0	0	0
3	SexTreat	SexTreat	2	0	0	0
4	ID	ID	2	0	0	0
5	Area X	Area X	0	0	2	0
6	HVC	HVC	0	0	2	0
7	RA	RA	0	0	2	0

Press to create a variable automatically [Delete Row] [Cancel] [Return]

(5) **Run a one-way ANOVA**

From the menu bar, select **ANALYSES**, then **Analyses of Variance**, then **One, Two, or Three-Way ANOVA**. A **One, Two, or Three-Way ANOVA** window will appear.

- Choose your results (Area X, HVC, or RA) as the **Dependent Variable**, and treatment (categorized by integers) as the **Factor 1 Variable**.
- In the **Comparisons** section on the middle right, check the box for **Scheffe**. This is a post-hoc test, but we may use the Fisher's LSD test, which will be calculated automatically.
- In the **Options:** section on the bottom right, select the circle for **Plot Means Using 2D Vertical Bars**.
- Then click the **Continue** button to analyze the data.



A **Results Window** will appear. Scroll through the window to view the complete results.

Select (highlight) all of the results, copy them (Ctrl+C) and paste them (Ctrl+V) into a word document, then save the document and email yourself a copy for reference.

Click the **Return** button at the top right of this window to view a plot of the means. A **Treatment** window will appear with the resulting graphical data.

Click the **Save** button at the bottom of this window to save the image as a .bmp file, then email yourself a copy for reference.

Click the **Return** button at the bottom of this window to exit the results.

(6) Close OpenStat

Close the **OpenStat** window. To exit without saving, simply click the **Cancel** button whenever it appears.