**Guide to ISI Applets (www.rossmanchance.com/ISIapplets.html)**

*Note: All javascript applets should run on all browsers and platforms, including iPads. The java and flash applets will not run on iPads.*

* **One Proportion (javascript)***Access:* Click the “One Proportion” link on the top left of the main ISIapplets page (URL provided above).

*Instructions:* The one proportion applet focuses on inference (testing) for a single categorical variable. The applet default is to focus on probability of heads and number of tosses, and the animation displays coin tossing. If the user changes the probability of heads to a number other than 0.5, then the applet terminology switches to probability of success and number of samples, and the animation displays spinners. The **Animate** box can be unselected if you want to focus on the outcomes of individual trials (e.g., keep number of repetitions set to one and press the **Draw Samples/Toss Coins** button multiple times to visually see the sample to sample variability). Animation will also turn off automatically if you set the **Number of repetitions** to a value larger than one. The results of the last repetition are then sorted into successes (or heads) and failures (or tails) below the horizontal line for a type of bar graph of the simulated results. A “Total” appears under the Toss Coins/Draw Samples button displaying the number of repetitions/samples so far.

There is also a check box (**Summary Stats**) to display the mean and standard deviation of the null distribution in the upper left corner of the dotplot (which changes with choice of statistics as well). The statistic can be either the number of heads/successes or the proportion. You will need to match this format in the **As extreme as** box or the applet will give you a warning. The **As extreme as** proportion does not need to be a possible outcome (e.g., for informal continuity corrections) so you may want to be careful with rounding. You can also press the direction toggle to switch from ≥ to ≤.

By checking the **Two-sided box** the displayed probability will include all outcomes with a smaller probability than the one observed based on the exact binomial probabilities (in which case the applet does round any non-integer inputs to the most appropriate values depending on the direction toggle). By checking the **Exact Binomial** box this probability will be displayed along with green lines displaying the pmf on the dotplot and the output in terms of X values. You can check the **Normal Approximation box** to display this probability along with overlaying the pdf on the dotplot and the output in terms of Z values. (These last two probabilities can be obtained even without pressing the **Toss Coins/Draw Samples** button.)

The vertical line that is displayed in the dotplot corresponding to the inputted value for the observed statistic is also moveable, updating the p-value approximations automatically.

Note: If you have a touch screen computer, often the touch screen will work to move items but not the mouse.

* **Multiple Proportions (javascript)***Access:* Use the following URL: <http://www.rossmanchance.com/applets/ChisqShuffle.htm?yawning=1>

Note: If you click on the Multiple Proportions link on the main ISI applets page it will preload with a different dataset. Using the *?yawning=1* parameter on the URL loads the default data to be the 2x2 table from the Mythbusters’ yawning study (with a slight variation).

*Instructions:* This applet analyzes two or more proportions (a 2x2 table or larger two-way table).

Once the data have been inputted (see below), the applet will display the segmented bar graph. You can also check the **Show Table** box which will also display the conditional proportions (depending on which outcome you define as success which can be changed with the pull-down menu below the segmented bar graph).

The choice of statistic is through a pull-down menu. If the applet detects that you are using a 2x2 table the options available change to include difference in proportions and relative risk.

For the simulation, check the **Show Shuffle Options** box and specify the **Number of Shuffles**. You can choose to display either the re-randomized data values (Data) or the corresponding segmented bar graph (Plot). In this panel of the applet, titles are blue to convey they correspond to the re-randomized data. “Bricks” are added to the dotplot, with the most recently placed brick in blue, until you have over 100 shuffles when the graph switches to a histogram. The mean and standard deviation of the shuffled statistics are also displayed in the upper right corner of the graph. You can also click on a brick to turn it blue and to display the corresponding shuffled results for that shuffle (you may need to scroll to the top of screen first so the applet recognizes your mouse location). To reset the simulation, uncheck and recheck the Show Shuffle Options box.

The observed value of the statistic (shown in panel one) should be entered into the **Count Samples** box and the applet will complain (but will still do the counting) if a different value (for the observed statistic) is entered. The user can also specify counting values to the right, to the left, or in both tails (more extreme in either direction as determined by outcomes with smaller probabilities than the one observed).

Depending on the choice of statistic, you can **overlay** a normal or a chi-square pdf and the theoretical p-value result will also be shown. You can also proceed directly to displaying the chi-square output (**Show X2 output**) which includes the cell contributions to the chi-square statistic and the degrees of freedom.

With two proportions as the statistic and/or when displaying the chi-square output, you can also choose to display confidence intervals for differences in proportions. These match the individual two-sample *z*-intervals. An asterisk is displayed if the interval does not include zero.

(This version of the same applet will also allow you to display Fisher’s Exact Test: <http://www.rossmanchance.com/applets/ChisqShuffle.htm>?FET=1 )

*Inputting data*:

The user can **Clear** the sample data and paste in either raw data (and then press **Use Data**) or a two-way table, e.g., of the form dolphin control

improve 10 3

not 5 12

(using spaces between the columns if typing in or can use tabs from pasted data) and then pressing **Use Table**. Use single words for variable names. The results of the table are shown if the **Show table** box is checked but you may want to edit the table to improve formatting (e.g., shorten column names, align columns). You can also resize the table by clicking on the lower right corner and dragging in/out.