General Steps in Computing, Graphing and Comparing PCI_2 Values

This document outlines the basic steps in using PCI_2. In general, there are 4 steps:

A. Compute the variable's frequency distribution and mean
B. Compute PCI_2
C. Graph PCI_2
D. Compare 2 PCI_2 values (optional)

The following provides an overview of each of these steps

A. Compute the Variable's Frequency Distribution and Mean

1. Using a statistical package of choice (e.g., SPSS, SAS, Minitab, R) compute the *frequency distribution* and *scale mean* for the variable(s) that will be used in the PCI_2 analysis
2. To use the existing PCI_2 graphing templates (Step C)
   - Bipolar variables should be coded negative to positive (e.g., –3 to +3)
   - The lowest value for unipolar values is 0 (i.e., zero)
3. If you wish to compare 2 or more groups of respondents (e.g., males vs. females, hikers vs. mountain bikers, hunters vs. wildlife viewers), compute the frequency distributions and scale means for each group.

B. Compute PCI_2

Select 1 of the 4 PCI_2 computation programs (i.e., Excel, Standalone, SPSS or SAS)

The Excel version of PCI_2 is used here for illustration purposes. The Standalone version follows the same basic steps. For examples of the SAS and SPSS versions, see the associated dropdown menus.

Download and open PCI_2 Excel
In Excel 2007 or 2010, click the Enable Content button
In Excel 2003, click Enable Macros

The Excel version of PCI_2 has 2 user input forms and 1 output page

1. On the 1st user input form:
   - Select the Scale Type (see Examples of Scale Types dropdown for more information)
     a. Bipolar with Neutral Value
     b. Bipolar without Neutral Value
     c. Unipolar

     Depending on the scale type selected, the program fills in the default distance function
   - Enter the variable's scale width (i.e., minimum [e.g., –2] and maximum [e.g., 2] scale values)
   - Select a Distance Function (see Selecting a Distance Function dropdown)
   - Select a Power Function (see Selecting a Power Function dropdown)
     Power = 1 is the recommended default
   - Enter the Number of Repetitions for the Simulation (400 is the default)
   - Click Submit for Analysis
2. On the 2nd user input form
   - Enter the frequency information (i.e., the n's not the percents) from Step A above
   - Click Submit for Analysis

3. The Excel output page displays the results from the PCI_2 analysis

   Columns on the *left* of this page display the:

   - Input information (i.e., distance / power functions and observed frequency distribution)
   - Observed PCI_2
     Use the Observed PCI_2 for graphing and comparing 2 PCI_2 values

   Columns on the *right* of this page display the simulation statistics:

   - The Simulated PCI_2 Std. Dev. is used when comparing 2 Observed PCI_2 values.
   - The Simulated PCI_2 Skewness and Kurtosis statistics are used to check for normality assumptions

C. Graph PCI_2

Microsoft PowerPoint can be used for the graphic component of PCI_2. The following templates have been constructed for graphing bipoplar and unipolar scales:

1. PCI_2 Bipolar PowerPoint 2003 Template.ppt
2. PCI_2 Bipolar PowerPoint 2007–2010 Template.pptx
3. PCI_2 Unipolar PowerPoint 2007–2010 Template.pptx

For the 2007–2010 templates:

Download the desired template (e.g., Bipolar)

Open the template in either PowerPoint 2007 or 2010

1. Select the appropriate scale width slide (e.g., 7–point)
   Template slides have been created for 2, 3, 4, 5, 6, 7, 8, and 9 point scales
2. Click on the graph
3. Chart Tools will appear on the top menu bar
   Click on the Design Tab
   In the "ribbon" menu, click on Edit Data
4. In the Excel datasheet, enter the:
   - Scale mean (from Step A)
   - Observed PCI_2 value (from Step B)

   for each variable that will be graphed

The template assumes that:

- Bipolar variables should be coded negative to positive (e.g., –3 to +3)
- The lowest value for unipolar values is 0 (i.e., zero)

D. Compare 2 PCI_2 values (optional)

When PCI_2 is adequately close to normality, the standard deviations calculated using simulations can be used to test differences between observed PCI_2 values. The Excel file "PCI2_Difference_test.xls" performs this calculation. This program computes *d* (difference). To test for a statistical difference between 2 observed PCI_2 values based on normality, compare *d* to the critical value for a normal distribution. If *d* is greater than 1.96, the difference is statistically significant ($p < .05$).