Chapter 4: Exploring data with graphs

Labcoat Leni's Real Research

Gonna be a rock 'n' roll singer (again)

Oxoby, R. J. (2008). *Economic Enquiry, 47*(3), 598–602.

In Labcoat Leni's Real Research 3.1 we came across a study that compared economic behaviour while different music by AC/DC played in the background. Specifically, they manipulated whether the background song was sung by their original singer (Bon Scott) or his replacement (Brian Johnson). They measured how many offers participants accepted (**Oxoby (2008) Offers.sav**) and what the minimum offer was that they would accept (**Oxoby (2008) MOA.sav**). See Labcoat Leni's Real Research 3.1 for more detail on the study. We entered the data for this study in the previous chapter, now let's graph it. Produce separate population pyramids for the number of offers and the minumum acceptable offer and in both cases split the data by which singer was singing in the background music. Compare these plots with Figures 1 and 2 in the original article.
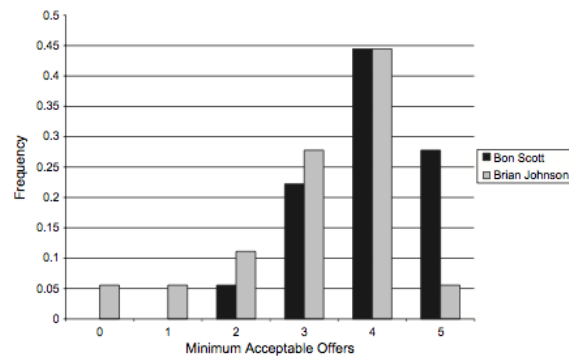
Solution

First, let's produce a population pyramid for the minimum acceptable offer data. To do this, first open the file **Oxoby (2008) MAO.sav**, then access the Chart Builder and then select *Histogram* in the list labelled *Choose from* to bring up the gallery. This gallery has four icons representing different types of histogram, and you should select the appropriate one either by double-clicking on it, or by dragging it onto the canvas in the Chart Builder. Click on the population pyramid icon (see the book chapter) to display the template for this graph on the canvas. Then from the variable list select the variable representing the minimum acceptable offer and drag it into ▭ Distribution Variable? to set it as the variable that you want to plot. Then select the variable representing background music and drag it to ▭ Split Variable? to set it as the variable for which you want to plot different distributions. Click on ▭ OK to produce the graph. The resulting population pyramid is show below.
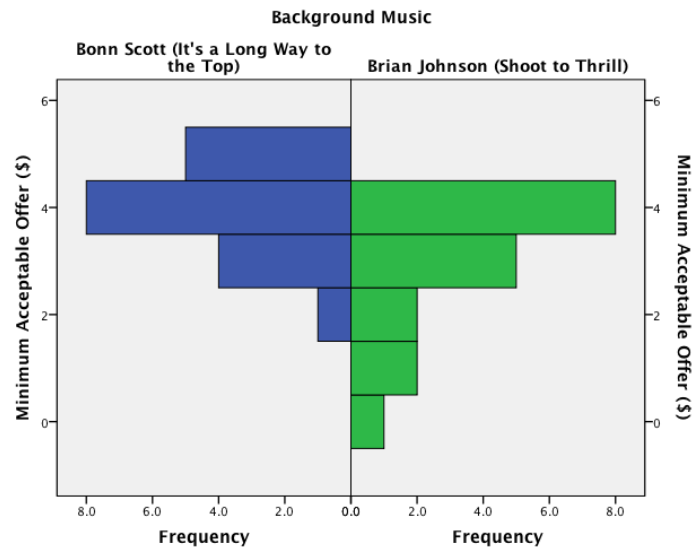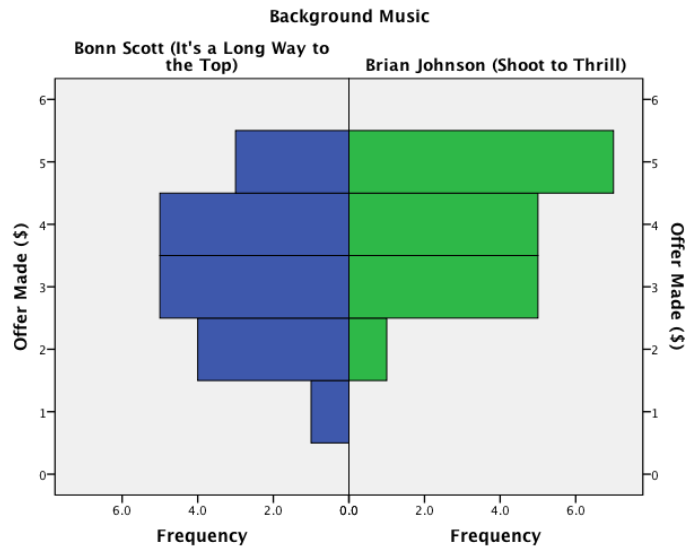
Population pyramid of minimum acceptable offers

We can compare the resulting population pyramid above with Figure 2 from the original article (below). Both graphs show that MAOs were higher when participants heard the music of Bon Scott. This suggests that more offers would be rejected when listening to Bon Scott than when listening to Brian Johnson.

Next we want to produce a population pyramid for number of offers made. To do this, first open the file **Oxoby (2008) Offers.sav**, then access the Chart Builder and then select *Histogram* in the list labelled *Choose from* to bring up the gallery. This gallery has four icons representing different types of histogram, and you should select the appropriate one either by double-clicking on it, or by dragging it onto the canvas in the Chart Builder. Click on the population pyramid icon (see the book chapter) to display the template for this graph on the canvas. Then from the variable list select the variable representing offers made and drag it into ⎡Distribution Variable?⎤ to set it as the variable that you want to plot. Then select the variable representing background music and drag it to ⎡Split Variable?⎤ to set it as the variable for which
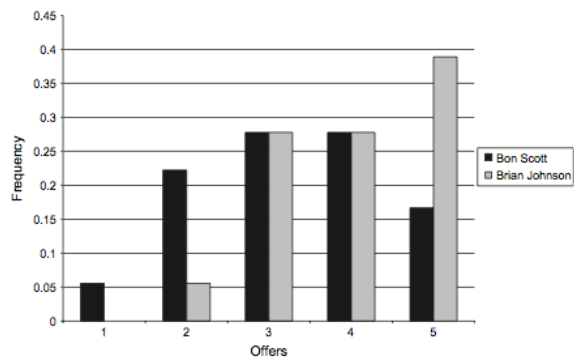
you want to plot different distributions. Click on [CK] to produce the graph. The resulting population pyramid is show below.

Population pyramid of offers accepted

We can compare the resulting population pyramid above with Figure 1 from the original article (below). Both graphs show that offers made were lower when participants heard the music of Bon Scott.

Seeing Red

Problem

Johns, S. E., et al. (2012). *PLoS One, 7*(4), e34669.

It is believed that males have a biological predispoition towards the colour red because it is sexually salient. The theory suggests that women use the colour red as a proxy signal for genital colour to indicate ovulation and sexual proceptivity. If this hypothesis is true then using the colour red in this way would have to attract men (otherwise it's a pointless strategy). In a novel study, Sarah Johns tested this idea by manipulating the colour of four pictures of female genitalia to make them increasing shades of red (pale pink, light pink, dark pink, red). Heterosexual males rated the resulting 16 pictures from 0 (unattractive) to 100 (attractive). The data are in the file **Johns et al. (2012).sav**. Draw and error bar graph of the mean ratings for the four different colours. Do you think men preferred red genitals? (Remember, if the theory is correct then red should be rated highest.)

Solution

First of all, access the Chart Builder and select a simple bar chart. The *y*-axis needs to be the dependent variable, or the thing you've measured, or more simply the thing for which you want to display the mean. In this case it would be the four different colours (pale pink, light pink, dark pink and red). So select all of these colours from the variable list and drag them into the *y*-axis drop zone (Y-Axis?) (see below). A dialog box should pop up (see below) informing you that the values from your variables will be used to summarize your data; this is fine, so click on OK .
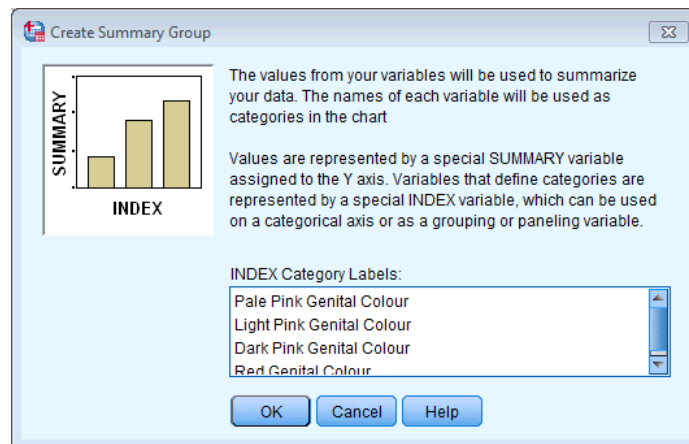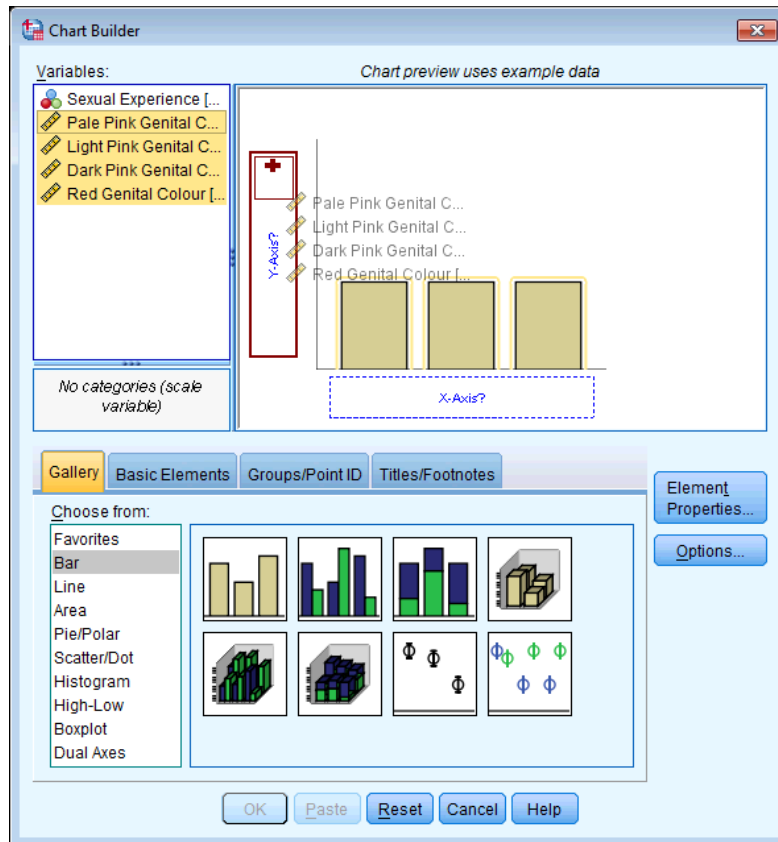
To add error bars to your graph click on ⬚ Element Properties... and select 'mean' from the *statistics* dropdown list and ☑ Display error bars, then click on ⬚ Apply. The finished Chart Builder will look like this:

Next, click on ⟨ OK ⟩ to produce the graph.

Error Bars: 95% CI
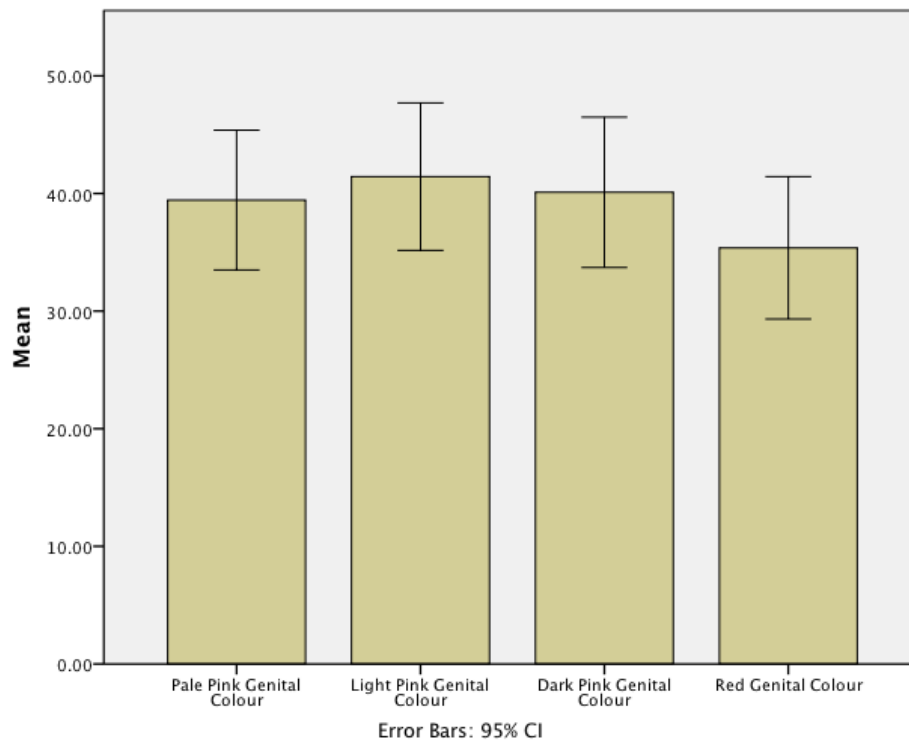
Looking at the resulting graph above, we can see that the mean ratings for all colours are fairly similar, suggesting that men don't prefer the colour red. In fact, the colour red has the lowest mean rating, suggesting that men liked the red genitalia the least. The light pink genital colour had the highest mean rating; however, as I said, the means are all fairly similar.