













5.6.4 Boxplots

Boxplots are based on percentiles and provide an excellent vehicle to display the distribution of your data. Boxplots also label outliers farther than 1.5 times the interquartile range away from the median so that you can give these cases special treatment (for example, by examining these cases and be sure they are not mistakes). To create a boxplot, select **Graphs** → **Chart Builder** → **Boxplot**. A dialog box very similar to Screen 5.2 appears.

The sequence step below produces a graph with total points (**total**) on the Y-axis, class section (**section**) on the X-axis, and separate boxplots for females and males (**gender**).











In Screen	Do This	Step 5c
	 Graphs →  Chart Builder →  Boxplot	
	 → drag to Chart preview box (directly above)	
	 total → drag to Y-Axis? box →  section → drag to X-Axis? box →	
	 gender → drag to Cluster on X: set color box →  OK	

The graph appears on the Output screen, ready to edit or print. Certain editing options follow:

Using pattern rather than color to distinguish between bars: Unless you print out your graphs on a color printer, patterns within bars often provides a better resource for differentiating between groups than does color

  on graph →  on next to **male** in the legend → right- on a “male” bar in the chart → move cursor to **Select** →  **This Group of Box** →  **Fill & Border** tab →  ▼ to the right of **pattern** →  desired pattern →  **Apply** →   in main window to return

Changing the thickness of the bars and clustering: The original graph is adequate, but looks better with thicker bars and more distinct clustering.

  on graph →   one of the bars →  Bar options tab →  (under **Bars**) and drag right until 60% shows →  (under **Clusters**) drag left until 75% shows →  **Apply** →   to return

Changing the scale values: Although this graph has no crying need to be changed, it is frequently an important step. We change the maximum value to 130 to make a shorter graph.

  on graph →   y-axis values →  **Scale** tab →  inside **Maximum** box → **type** 130 →  **Apply** →   in main window to return

Adding grid lines: To enhance clarity we may wish to add grid lines to the chart. The following sequence will place horizontal grid lines at 10-point intervals.

  on graph →  y-axis values →  **Grid Lines** tab →  **Both major and minor ticks** →  **Apply** →   in main window to return

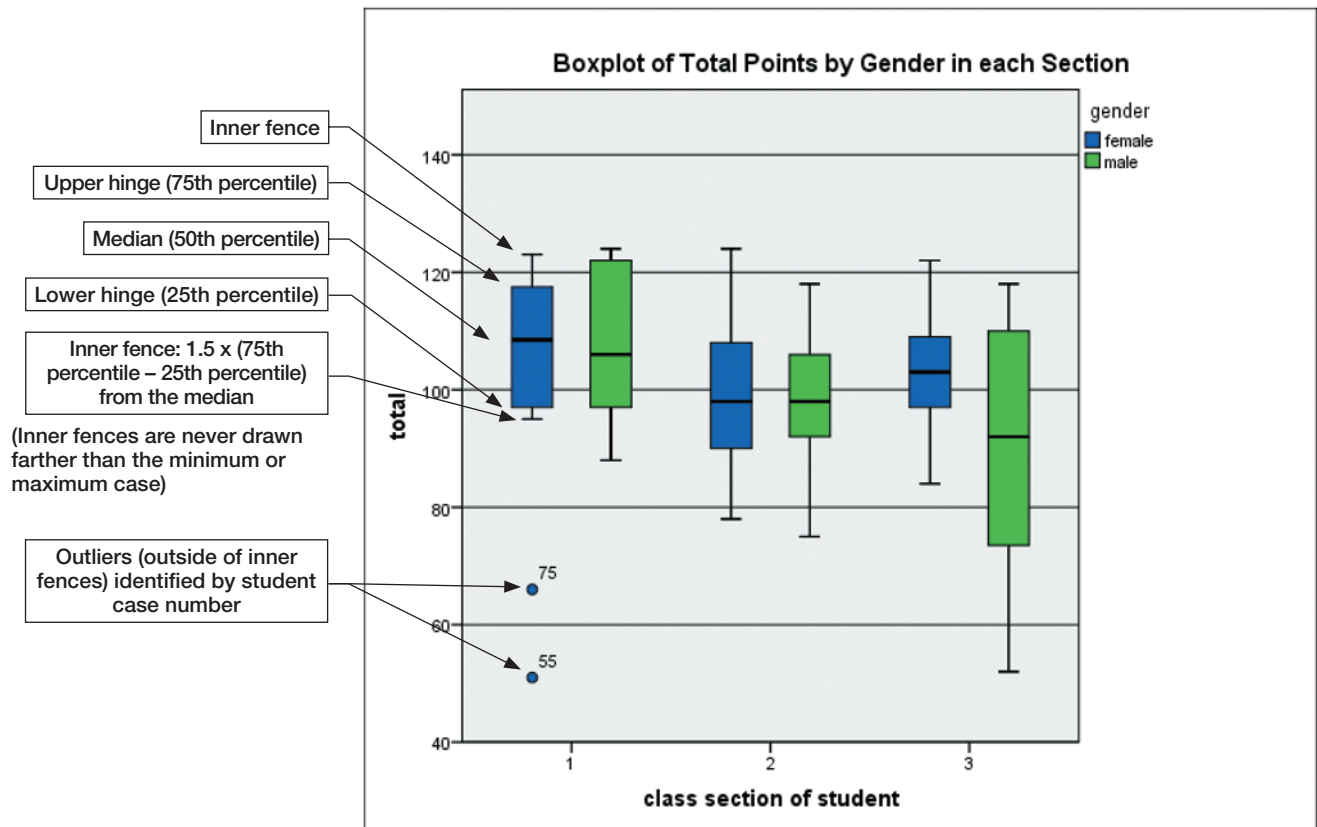
Adding a Title and Changing the Font: The following sequence will create a title for the Chart and then change the font size to 14.

on graph → current Title (to select) → Title again (to edit) → Highlight all text (using red cursor line)
 → type "Mean Total Points by Gender in Each Section" → press Enter → on (just created) Title →
 ▾ next to Preferred Size → 14 → Apply → in main window to return

The graph produced by the sequences listed above is displayed below.

Here are some additional editing options:

- 1) Changing the format, font, or size of axis labels or values along each axis (on the label or value you wish to edit and then edit using the tabbed table to the right);
- 2) Changing the wording of axis labels or values along each axis (on the label or value you wish to edit, a second time and a red cursor appears that allows you to edit the text);
- 3) Change the orientation of the graph: (if you want the axes switched; again if you wish to change back to the original).



5.6.5 Error Bar Charts

Error bars indicate the confidence interval, the standard deviation, or the standard error of the mean. This is useful for visually clarifying which differences are or are not significant.

For Error Bar Charts we choose to go with **Legacy Dialogs** graphs rather than **Chart Builder**. These graphs provide a number of important options not easily available with Chart Builder. We will also not discuss editing options for this very simple chart.

To create an error bar chart, select **Graphs** → **Legacy Dialogs** → **Error Bar**. A dialog box somewhat similar to Screen 5.1 appears. Options specific to error bar charts let you specify what type of error bars you want to produce. You can request error bars