

## Making a Time Series Using Minitab

1. Put the data values for each time period in a column of the Minitab worksheet.
2. Add a variable name in the gray box just above the data values.
3. Click on “Graph” and then click on “Time Series Plot”.
4. Make sure “Simple” is highlighted and then click “OK”.
5. Choose the variable you want to graph and click on “Select”.
6. Click on the “Time/Scale” button.
  - Choose the circle next to “Index” if the data values are numbered in order of appearance.
  - Choose the circle next to “Calendar” if the data is ordered by days, months, quarters or years.
  - Choose the circle next to “Clock” if the data is ordered by hours, minutes or seconds.
7. Under “Start Values”, click on the circle next to “One set for all values.” In the open box that appears next to “All”, put the starting index number or time value.
8. In the open box next to “Data Increment”, enter the step size between each recorded time value.
9. Next, click on the “Gridlines” tab, and click on the boxes next to “Y major ticks” and “X major ticks”, and then click on the “OK” button in that window. This will add horizontal and vertical gridlines to the time series plot.
10. Click on the “Labels” box.
11. Type a description of your data in the box under “Title:”
12. Write a note saying you created the graph in the box under “Subtitle 1:”.
13. Click on “OK” in that window and click on “OK” in the next window.
14. If you have a Microsoft Word document open, you can right click on the graph and choose “Send Graph to Microsoft Word” and the time series will appear in your Word document. If you are working in another program, click in the gray area outside the graph. Choose the “Edit” tab at the very top of the window and then choose “Copy Graph”. You now will be able to copy your time series into the document you are creating.

**Example** (Navidi & Monk, *Elementary Statistics*, 2<sup>nd</sup> edition, #25 page 76, right side of chart): The table below shows the U.S. unemployment rates (in percent) for the years 2001 through 2012.

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Rate | 4.7  | 5.8  | 6.0  | 5.5  | 5.1  | 4.6  | 4.6  | 5.8  | 9.3  | 9.6  | 8.9  | 8.1  |

Enter the unemployment rates under C1. The figure below left shows a portion of the entered data. Now choose “Graph” and then “Time Series Plot”. Make sure “Simple” is selected and then click on “OK”.

Click in the box under “Series:”, choose C1 from the box on the left and then click on the “Select” button.

Click on the “Time/Scale ...” button. Since this data is given yearly, click on the circle next to “Calendar” and then choose “Year” from the drop-down box to the right. In the open box that appears under

| ↓         | C1          | C2 |
|-----------|-------------|----|
|           | <b>Rate</b> |    |
| <b>1</b>  | 4.7         |    |
| <b>2</b>  | 5.8         |    |
| <b>3</b>  | 6.0         |    |
| <b>4</b>  | 5.5         |    |
| <b>5</b>  | 5.1         |    |
| <b>6</b>  | 4.6         |    |
| <b>7</b>  | 4.6         |    |
| <b>8</b>  | 5.8         |    |
| <b>9</b>  | 9.3         |    |
| <b>10</b> | 9.6         |    |

“Year” below the section that says “Start Values”, enter 2001, since that is the starting year. Then in the box to the right of “Data Increment” enter 1, since the years increase by one from 2001 to 2002 to 2003, etc.

Now click on the “Gridlines” tab, and click on the boxes next to “Y major ticks” and “X major ticks”, and then click on the “OK” button in that window.

Next click on the “Labels ...” button. Enter a description of the data under “Title:” like “U.S. Unemployment Rates from 2001 to 2012”. Under “Subtitle 1:”, enter “created by *your name*”. Click on “OK” in that window and on “OK” in the one below it.

The time series will appear. You can change the axis titles at this point. If you click on the vertical axis title, a window appears with the vertical axis title in a box near the bottom below the word “Text:”. I changed the title from “Rate” to “Unemployment Rate (%)”. Clicking on “OK” will change the axis title in the graph.

If you are working in Word, you can right click on the time series and choose “Send Graph to Microsoft Word”, and the time series will appear in your Word document. If you are working in another program, you can right click on the time series and then paste it into your document.

