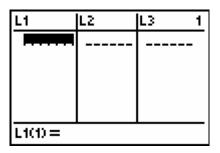# TI Technology Guide for Breast cancer risks
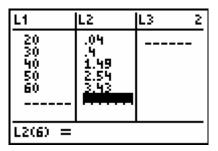
TI-83 Plus and TI-84 Plus Families

Creating Lists of Data, Displaying the Graph, Using the Regression Capabilities of the Calculator, and Predicting Using the Regression Model

Creating Lists of Data

1. To enter the data from the Snapshot in the activity, press ☐and select **1:Edit** to access the **List Editor** window. Be sure to clear any existing data in the lists by highlighting the list name and pressing ☐⊆. If you see a list other than L1 through L6, press and select ☐5:SetUpEditor ⊆and then follow the above instructions.

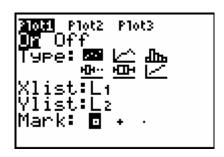| L1	L2	L3	1
▄▄▄▄	------	------	

L1(1) =

2. Move the cursor to the first data position in L1. Enter the data from the USA TODAY Snapshot "Breast cancer risks" into the lists of your graphing calculator. Enter the ages shown in L1 and the corresponding percent risk for that age group in L2.

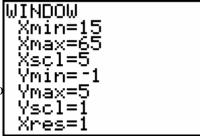| L1	L2	L3	2
20	.04	------	
30	.4		
40	1.49		
50	2.54		
60	3.43		

L2(6) =

Displaying the Graph

3. Access the STAT PLOTS menu screen by pressing ψ o.   Select (press ⊆or the number 1) 1:Plot1 to get the screen shown. Notice that Plot1 and On are highlighted. To turn on or off any plot, place the cursor over the name, press ⊆, then select either On or Off, and press ⊆again. This process acts like a toggle switch to turn the plots on and off the graphing display. Plot1 should have the same settings as shown at the right.

Plot1 Plot2 Plot3
On Off
Type: ▦ ⌇ dlu
       ▦ ▦ ⌇
Xlist:L₁
Ylist:L₂
Mark: ▫ + ·

4. To insure that all the data points are visible, press π and enter values for the x-axis and y-

WINDOW
Xmin=15
Xmax=65
Xscl=5
Ymin=-1
Ymax=5
Yscl=1
Xres=1

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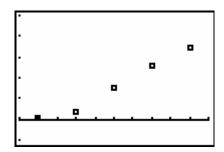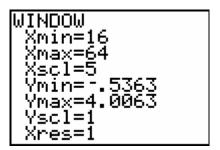
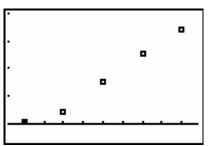### TI-83 Plus and TI-84 Plus Families

axis that contain the range of values for the set of data shown in the Snapshot (see suggested values at the right).

5. Press o and clear all equations listed. Press σ to view the scatter plot. Ages (L1) are on the horizontal axis, and percent risk for that age group (L2) are on the vertical axis. Press ρ and use the | or ~ keys to read the values of the data points listed at the bottom of the screen.

6. Another way to set the window for a scatter plot is to press θ →. This will select 9:ZoomStat which will automatically set the viewing window and display all the data points from the scatter plot.
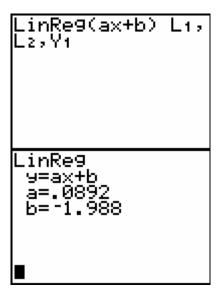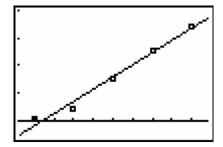
```
WINDOW
 Xmin=16
 Xmax=64
 Xscl=5
 Ymin=-.5363
 Ymax=4.0063
 Yscl=1
 Xres=1
```

Using the Regression Capabilities of the Calculator

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7. To use the regression capabilities, press □~to access the CALC menu. Select **4:LinReg(ax+b)** and press ψδ′ ψε′ □~ℵℵ.

```
LinReg(ax+b) L₁,
L₂,Y₁
```

8. Press ⊆to calculate the linear model.

```
LinReg
 y=ax+b
 a=.0892
 b=-1.988

■
```

9. Press σ. The linear model and the scatter plot are displayed.

10. Press oto view the model. Notice that Plot 1 is highlighted, which indicates that the data points for L1 and L2 are showing on the graph. The = beside Y1 is also highlighted, which indicates that the model determined by the regression capabilities is also showing on the graph. Pressing ⊆when the cursor is in either of these highlighted areas acts as a toggle to turn on or off the display of that component on the graph.

```
Plot1 Plot2 Plot3
\Y₁■.0892X+-1.98
8
\Y₂=
\Y₃=
\Y₄=
\Y₅=
\Y₆=
```

11. Repeat steps 9-12 to determine the logistic model for the scatter plot. In step 9 change Y1 to Y2 so that both models will be saved.

```
Logistic L₁,L₂,Y
₂
```

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Compare the regression models and the scatter plot to determine which model is the best fit.

Predicting Using the Regression Model

Note: The values in the screen shots are shown as a guide and do not represent the correct answers or which model to use.

12. Press ψ5☐ to return to the home screen. Press ☐~ℵℵ≤←⊇⊆to use the regression model to predict the percent chance that a woman in her 70s will develop breast cancer using the model in Y1.

13. Repeat the process from Step 12 for a woman 35 years old. Press ψ [to recall the last expression or instruction on the home screen. Press |||ℜ• to edit the age and press ⊆ to determine the percent chance of developing breast cancer in the next ten years.