Data visualization

SPSS, 3/14/2025

Objectives

- Make a scatterplot based on a dataset
- Modify the scatterplot for better visualization
  - Makers: change size, color, shape based on a third factor
  - Title / axis labels: change font size, font family, etc.

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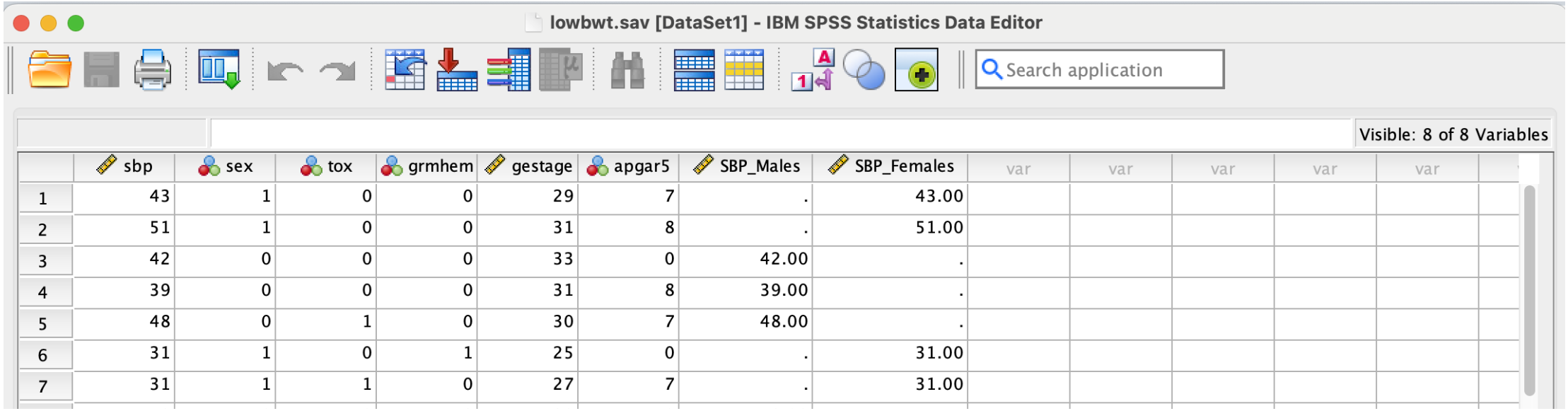
Information for a sample of 100 low birth weight infants born in two teaching hospitals in Bostons. Indicators of a maternal diagnosis of toxemia during the pregnancy – a condition characterized by high blood pressure and other potentially serious complications – are saved under the variable name **tox**.

The save file you prepared… right?



	sbp	sex	tox	grmhem	gestage	apgar5	SBP_Males	SBP_Females	var	var	var	var	var
1	43	1	0	0	29	7	.	43.00					
2	51	1	0	0	31	8	.	51.00					
3	42	0	0	0	33	0	42.00	.					
4	39	0	0	0	31	8	39.00	.					
5	48	0	1	0	30	7	48.00	.					
6	31	1	0	1	25	0	.	31.00					
7	31	1	1	0	27	7	.	31.00					

sbp: Systolic Blood Pressure (in mmHg)
tox: whether toxemia was experienced or not
grmhem: whether an infant experienced a germinal matrix hemorrhage or not
apgar5: infants' five-minute apgar scores [max score 10; 7, 8, 9 is normal & 10 is rare for blue hands?]

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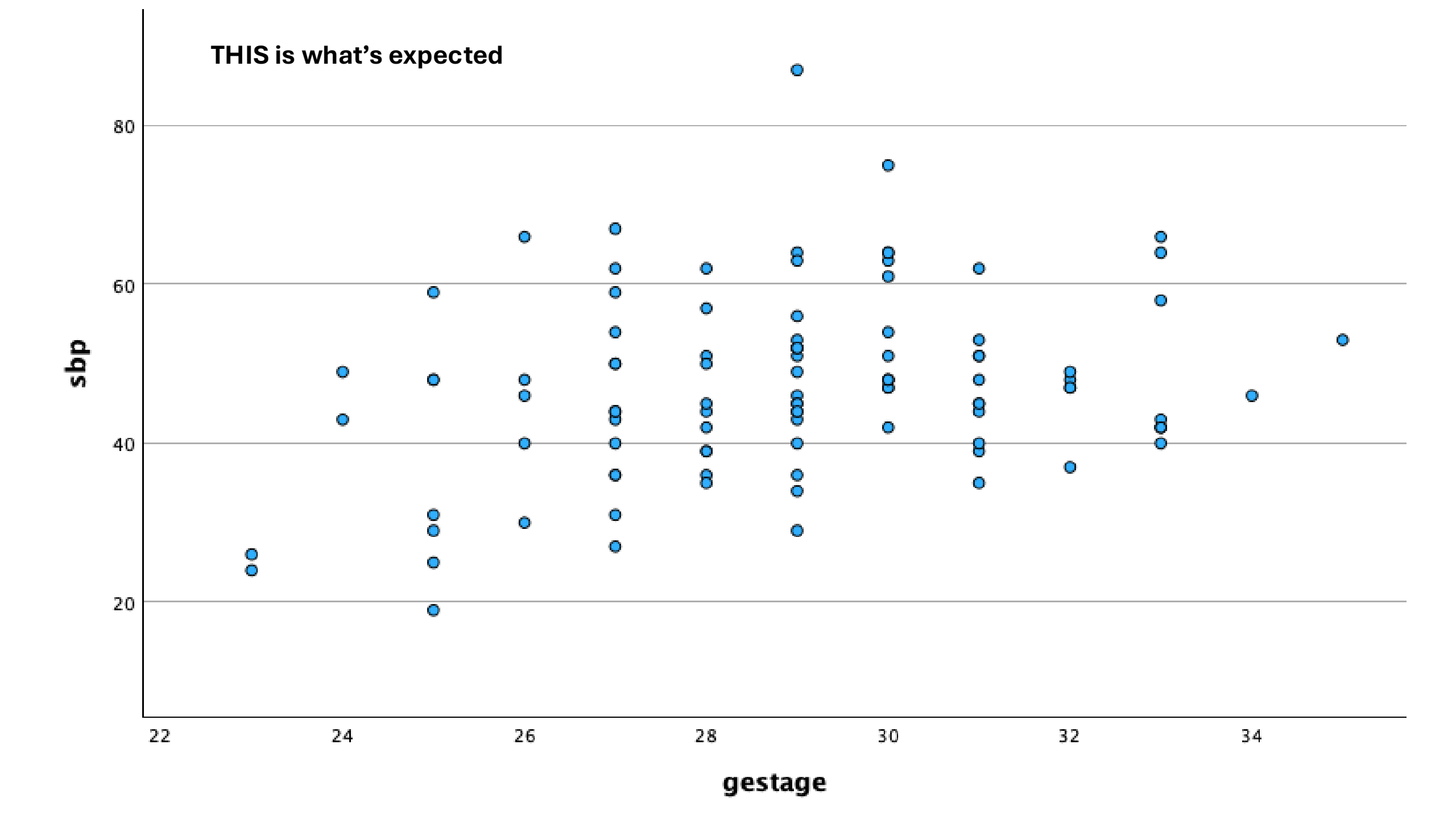
- We will replicate what we've done with MATLAB

- Task 1: Using systolic blood pressure as the response and gestational age as the explanatory variable, construct a scatter plot of systolic blood pressure versus gestational age.

- Does the graph suggest anything about the nature of the relationship between these variables?


THIS is what's expected
sbp
80
60
40
20
22
24
26
28
30
32
34
gestage

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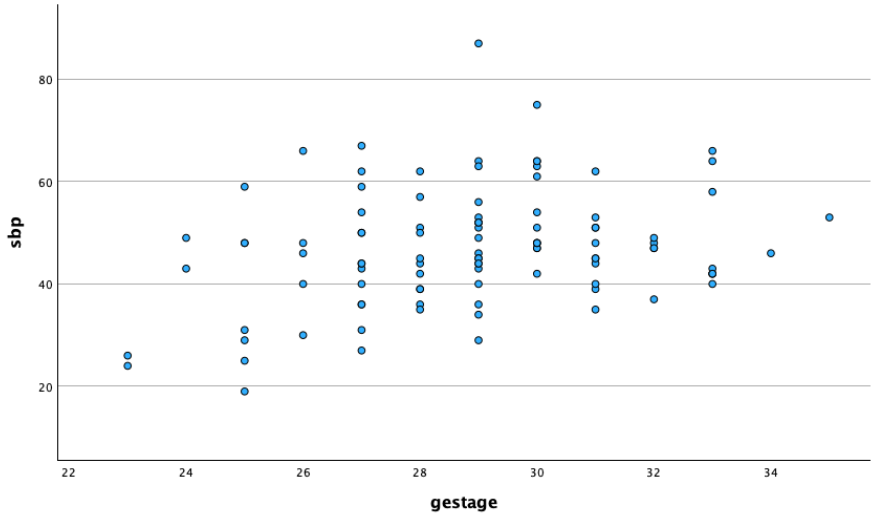
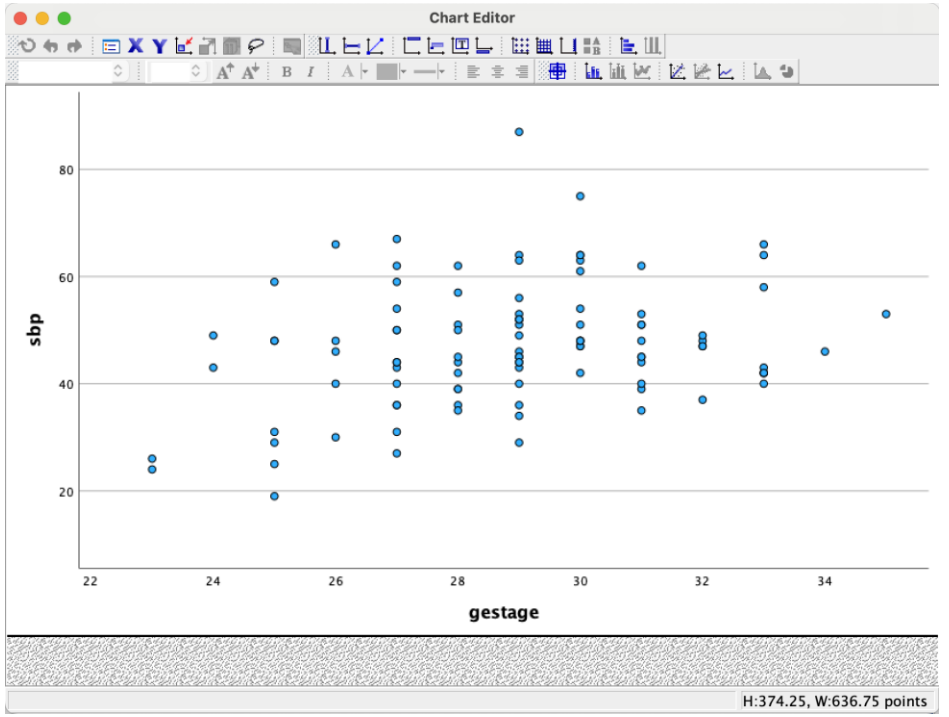
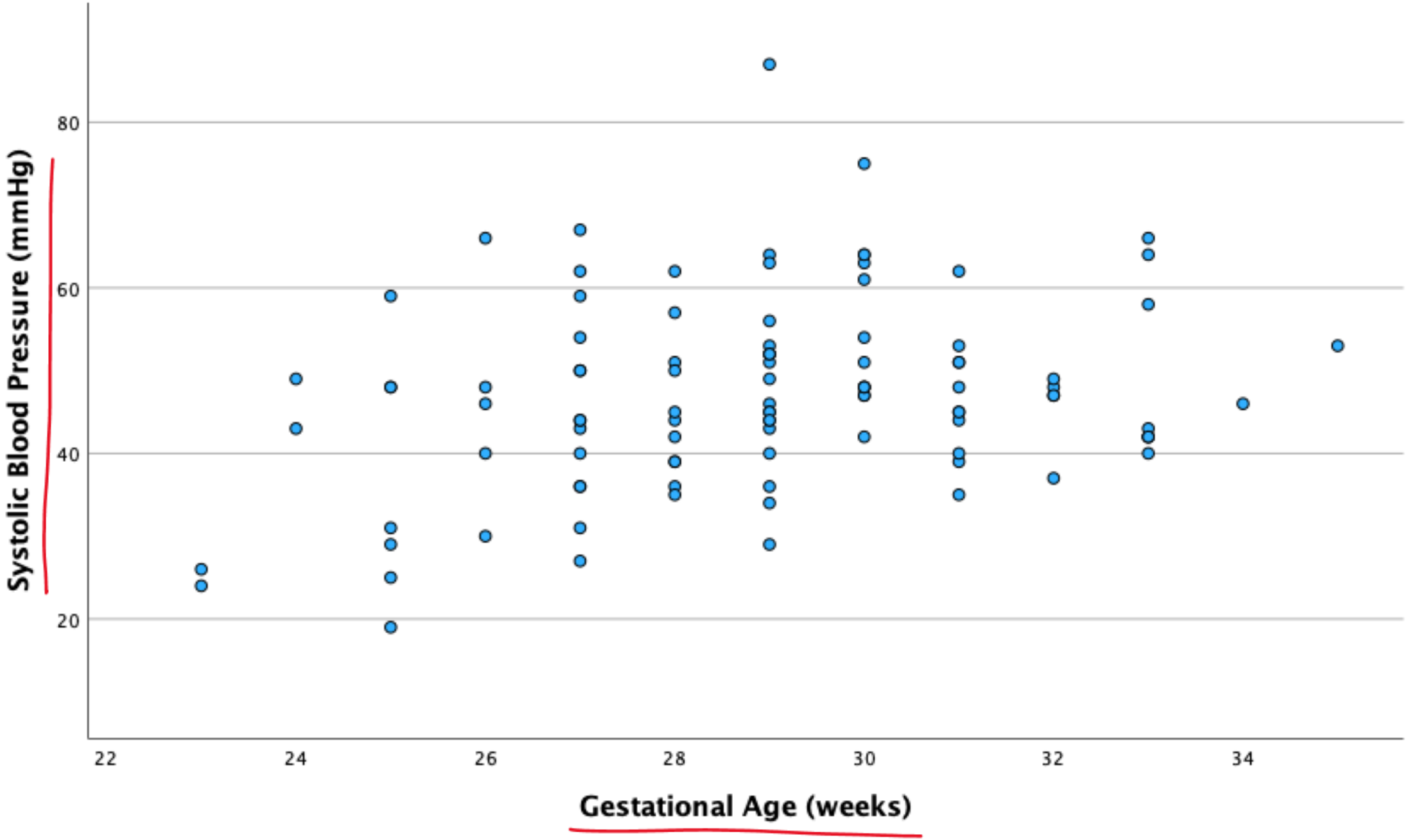
- Task 2: Let's change the labels. Change the Y-label to "Systolic Blood Pressure (mmHg)" and X-label to "Gestational Age (weeks)".

Double-click this figure to edit Chart



Inside the Chart Editor, click labels to modify




Systolic Blood Pressure (mmHg)
80
60
40
20
22
24
26
28
30
32
34
Gestational Age (weeks)

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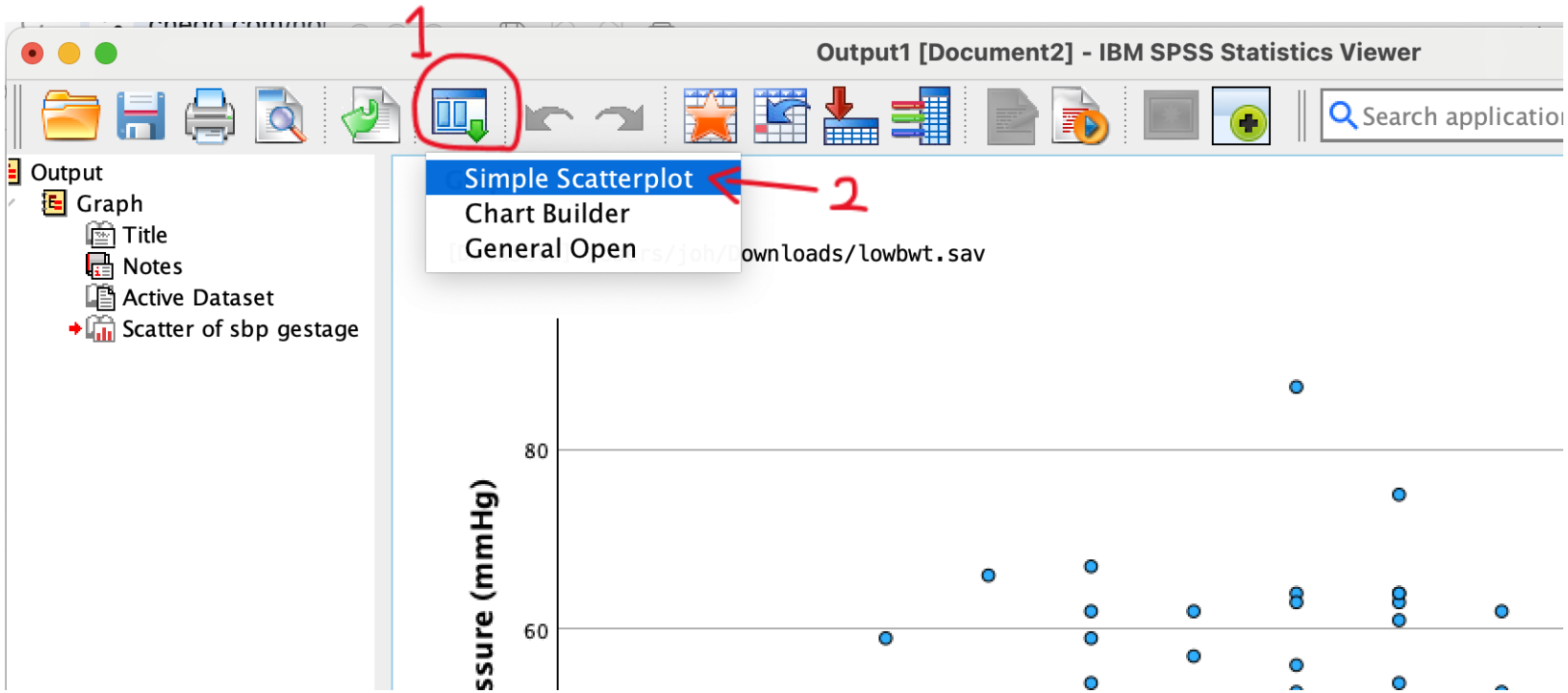
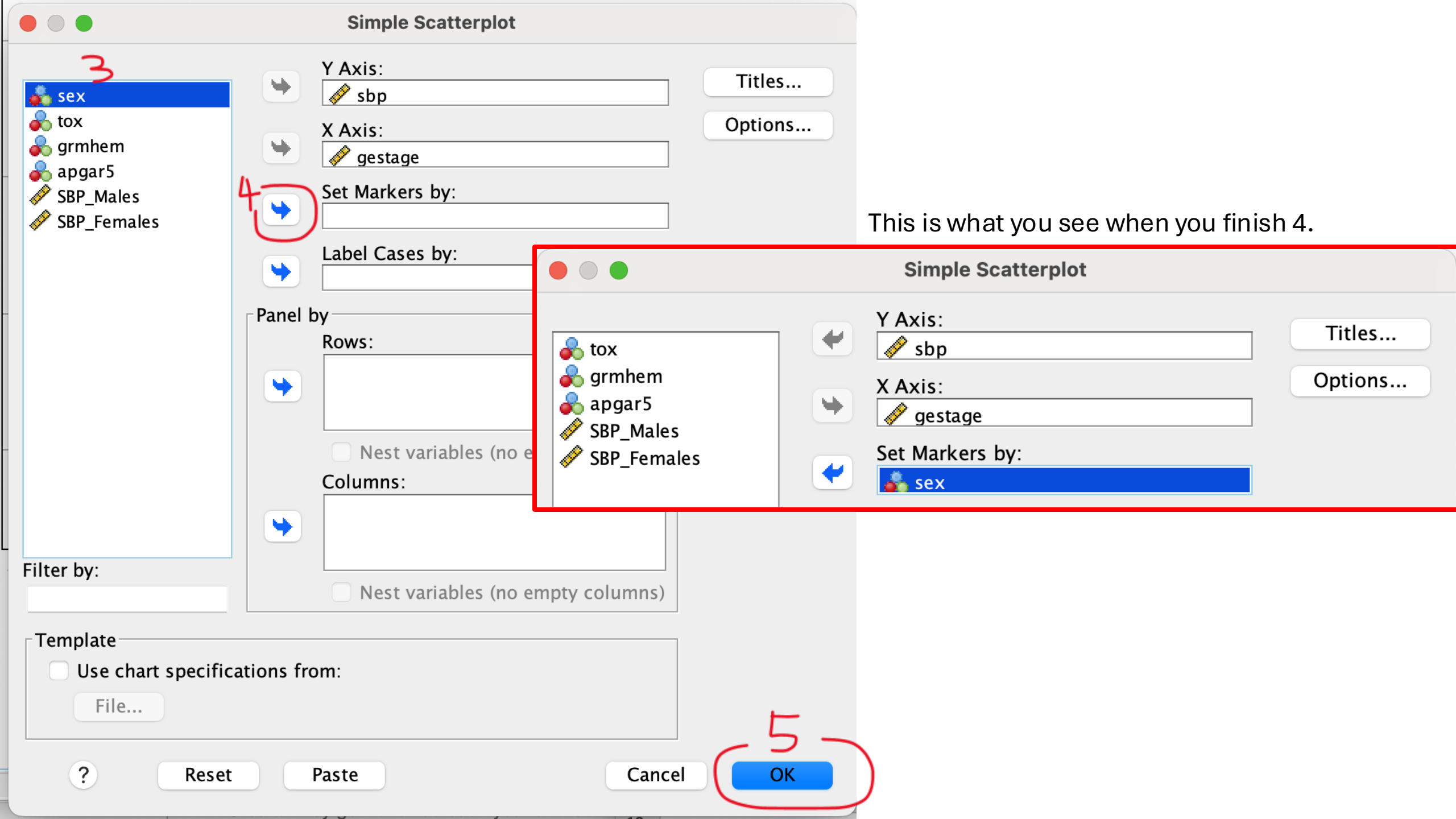
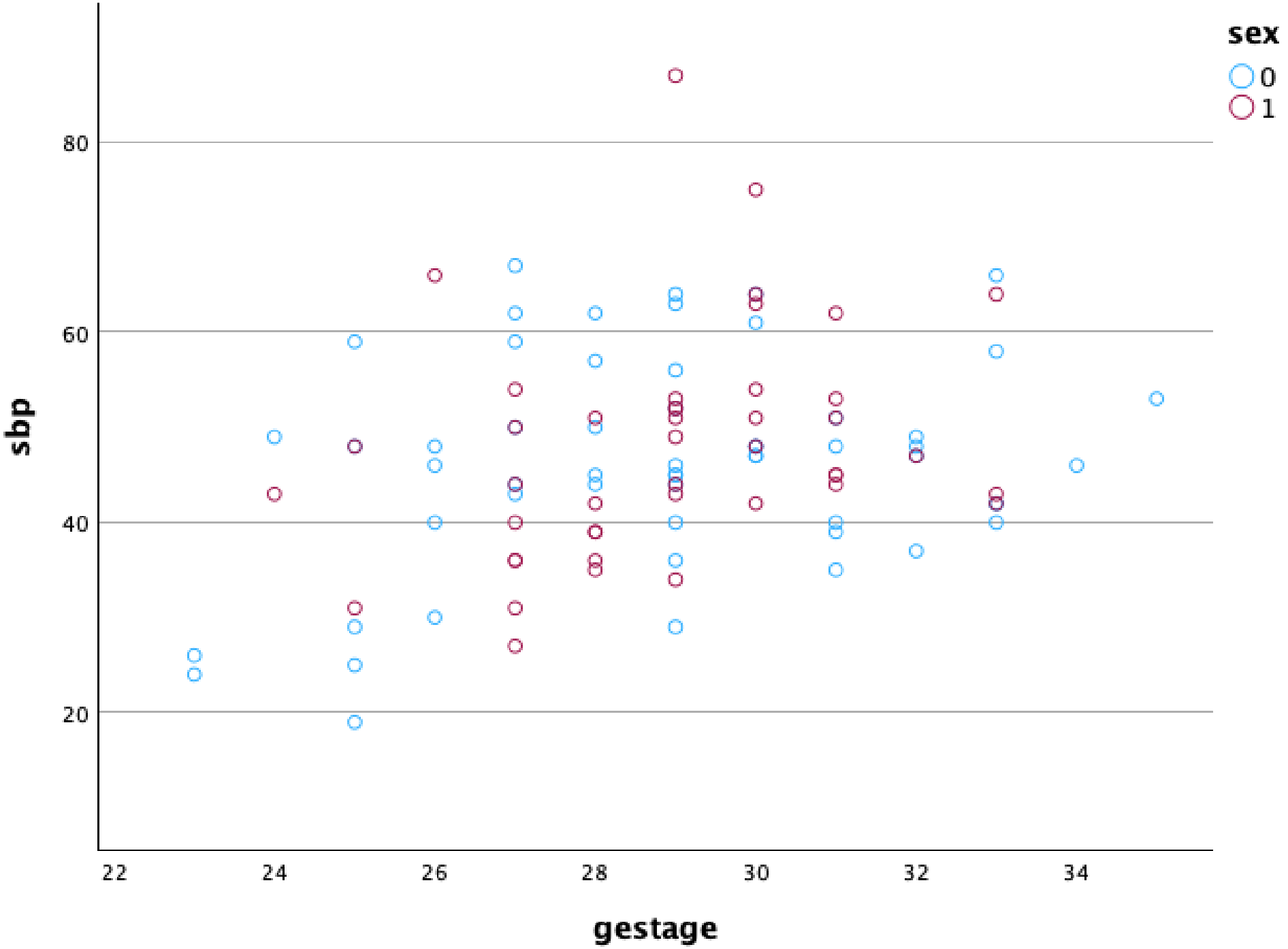
- Task 3: Let's make data points (markers) to be distinguished by sex. First, close the Chart Editor and go back to the output screen.



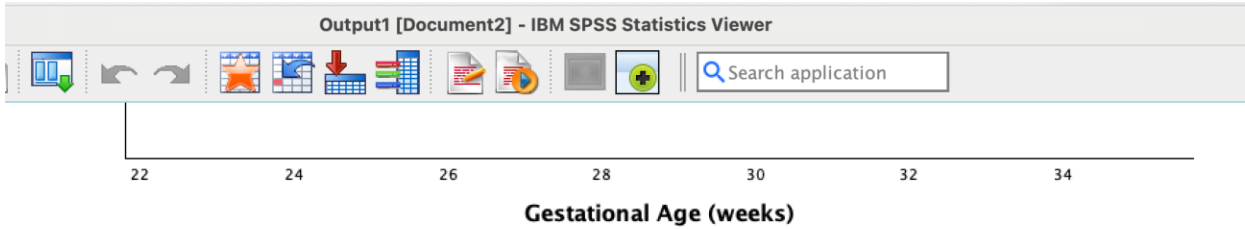

Simple Scatterplot
3
sex
tox
grmhem
apgar5
SBP_Males
SBP_Females
Y Axis:
sbp
X Axis:
gestage
4
Set Markers by:
Label Cases by:
Titles...
Options...
Panel by
Rows:
Nest variables (no e
Columns:
Nest variables (no empty columns)
Filter by:
Template
Use chart specifications from:
File...
?
Reset
Paste
Cancel
5
OK
This is what you see when you finish 4.
Simple Scatterplot
tox
grmhem
apgar5
SBP_Males
SBP_Females
Y Axis:
sbp
X Axis:
gestage
Set Markers by:
sex
Titles...
Options...

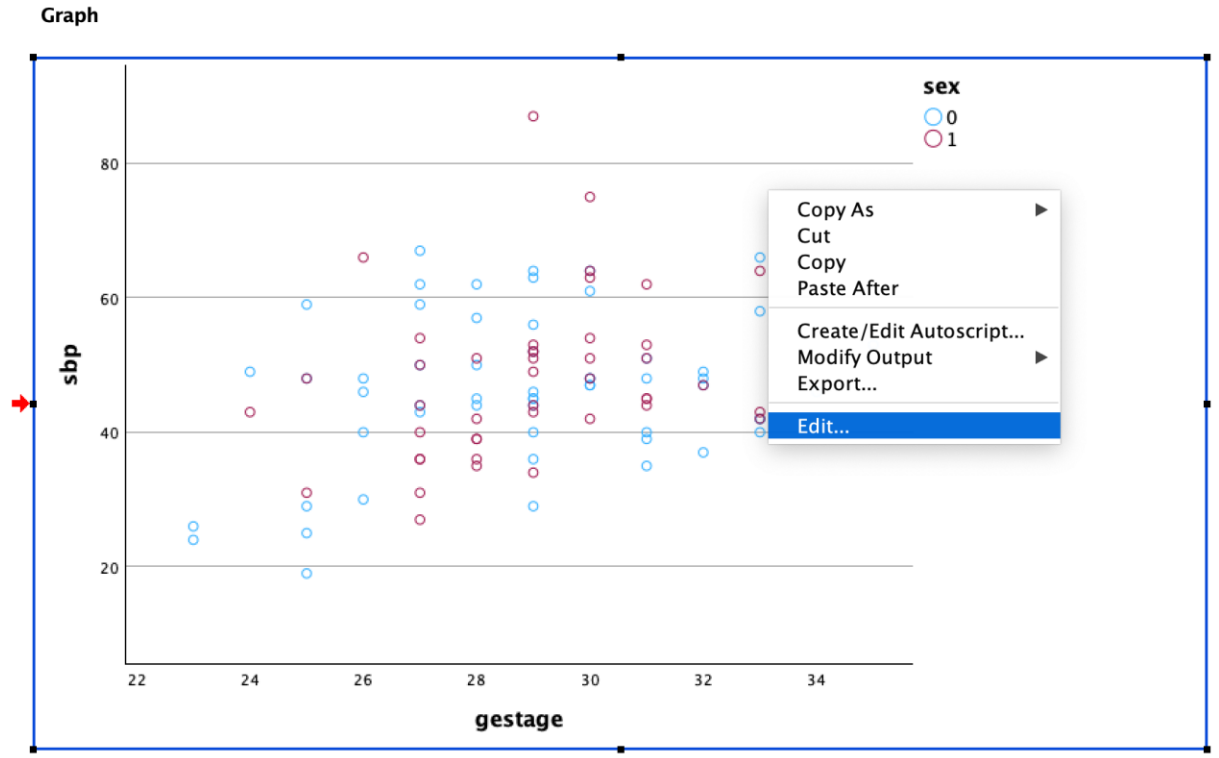

sex
0
1
80
60
40
20
sbp
22
24
26
28
30
32
34
gestage

lowbwt.sav

- Task 4: Let's change properties of the markers.

Right click the scatterplot to edit and select **Edit**.
This is an alternative method to open the Chart Editor





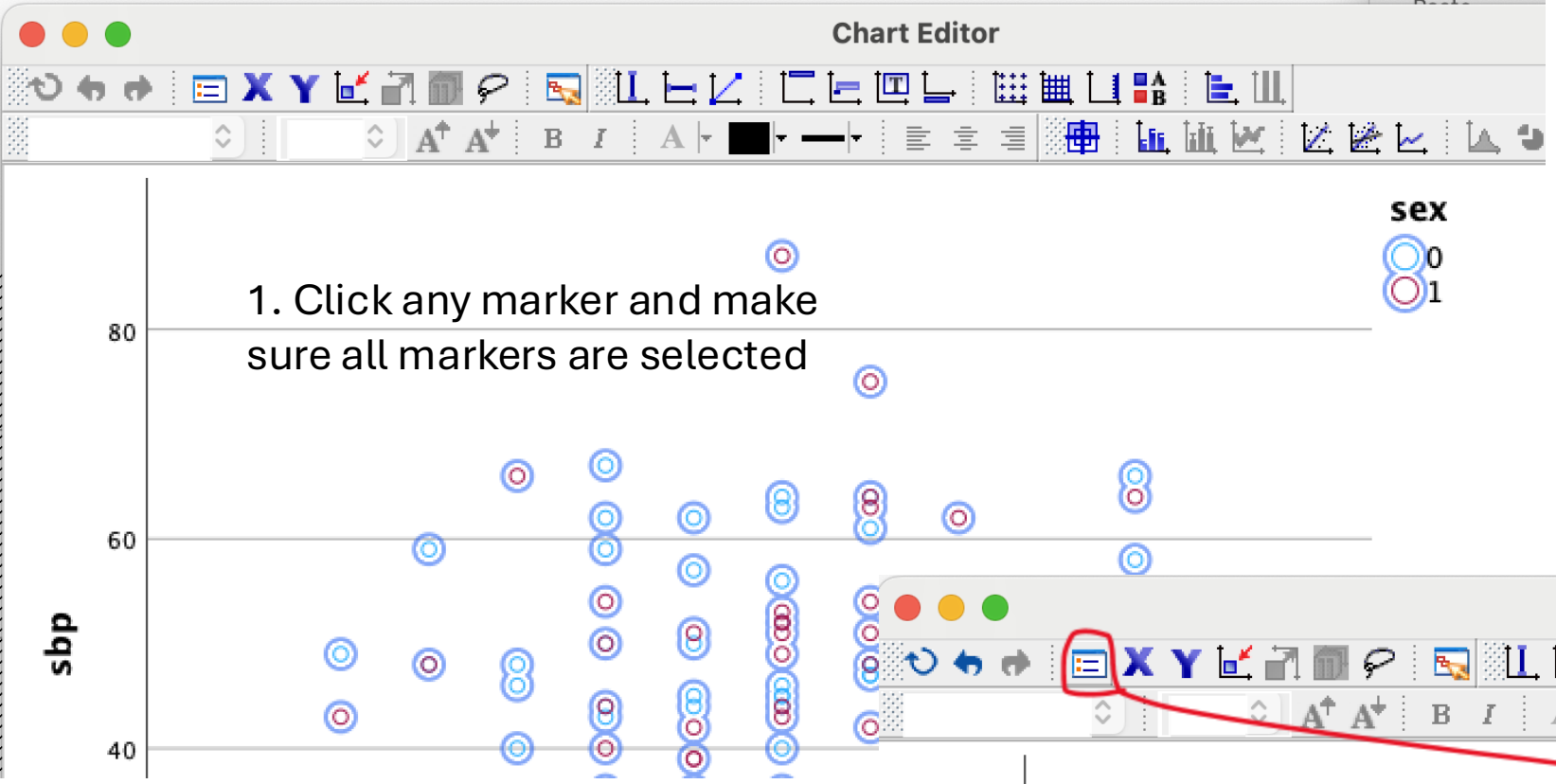


Chart Editor
sex
0
1
80
60
40
sbp
1. Click any marker and make sure all markers are selected

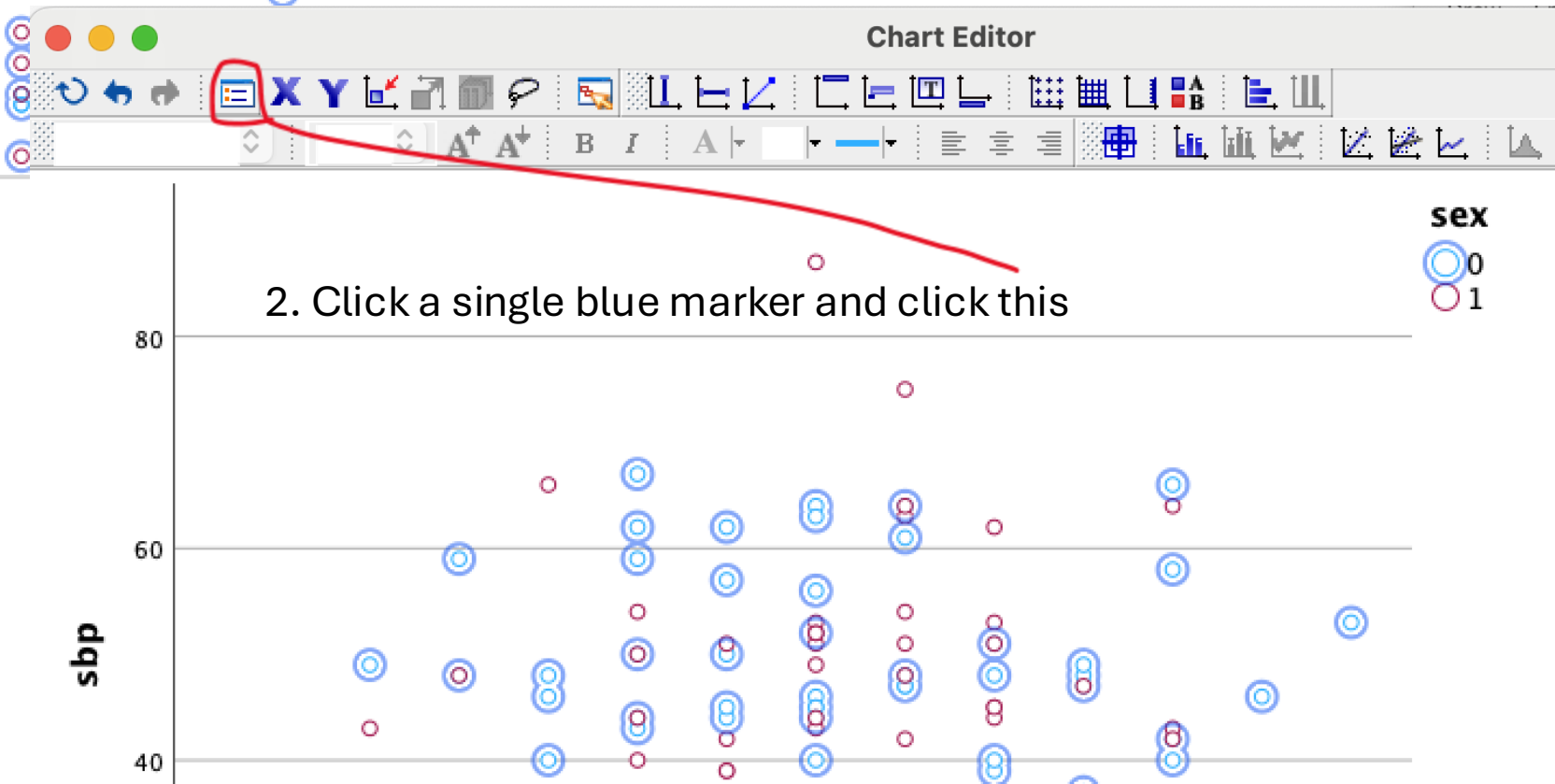


Chart Editor
2. Click a single blue marker and click this
sex
0
1
80
60
40
sbp

Properties

Chart Size | Marker | Categories | Spikes | Variables

2. Click this to change the marker size to 8

Preview

Marker

Type

Size 5

Border Width 1

5
6
8
10
12
15
18
21

Color

Fill

(255, 255, 255)

Border

(41, 134, 38)

Edit | Reset

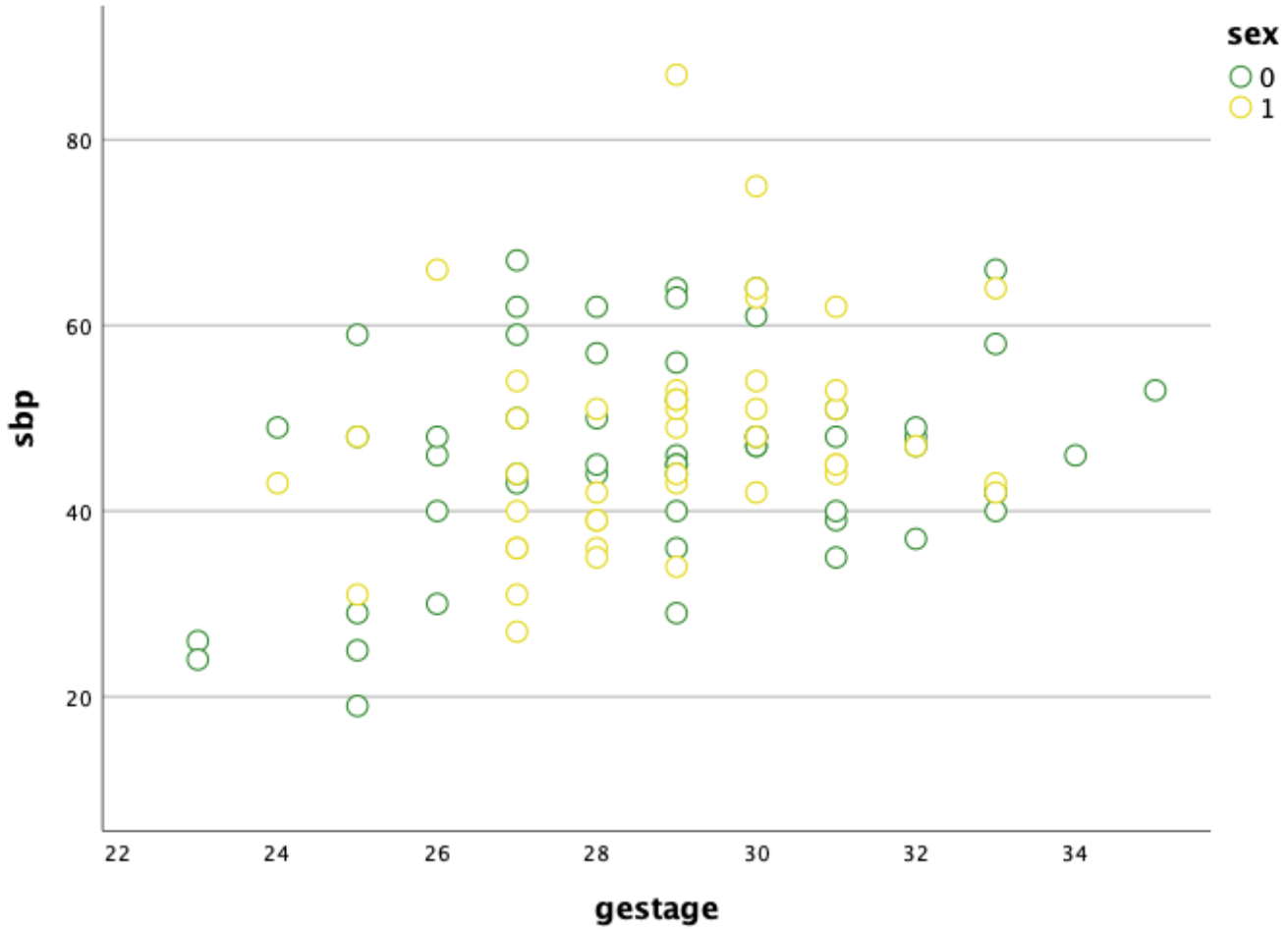
(41, 134, 38)

1. Click this to change the edge color to dark green

3. Click this when done

? | Cancel | Apply

Repeat the process to create the scatterplot below.



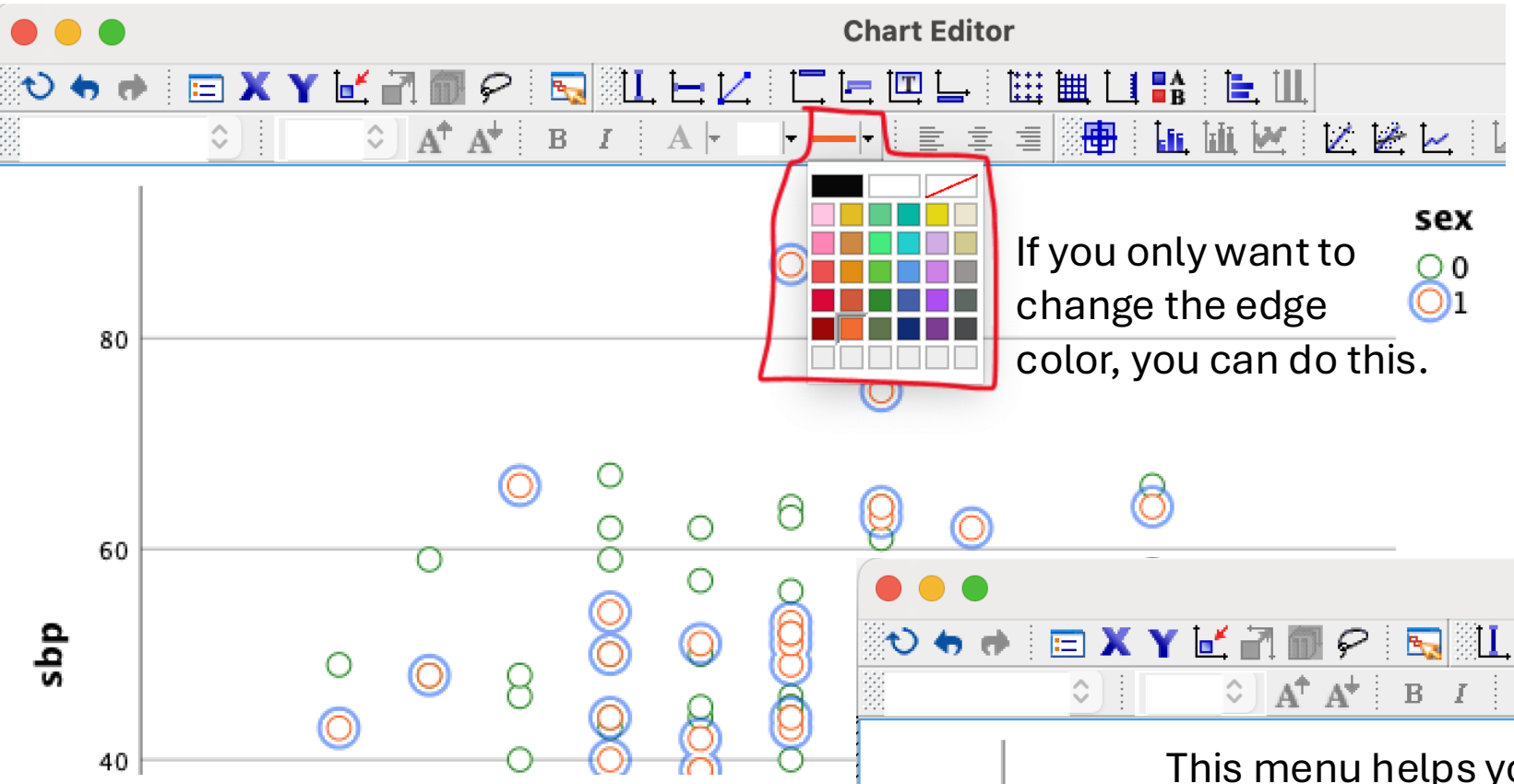


Chart Editor
If you only want to change the edge color, you can do this.
sex
0
1
80
60
40
sbp

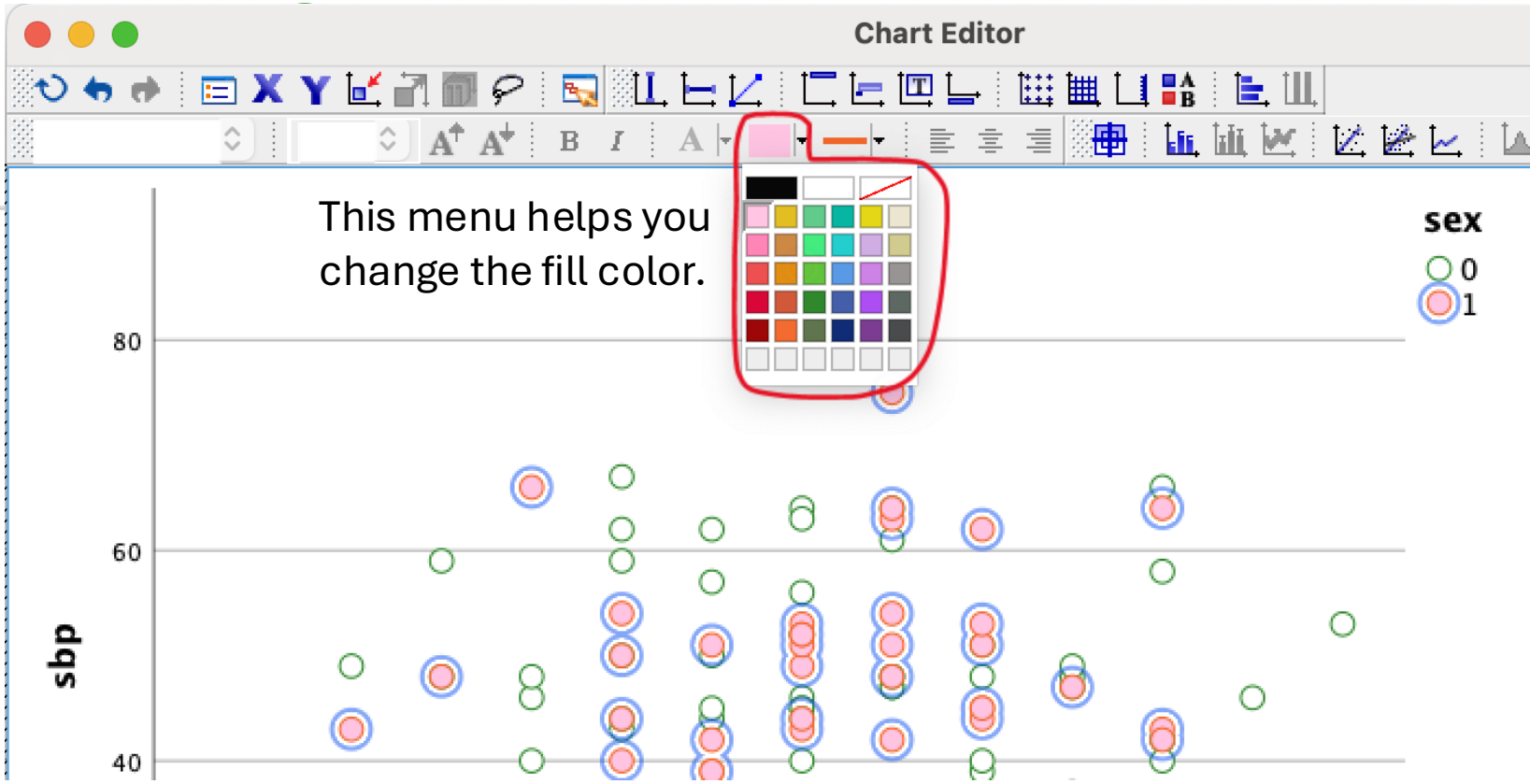
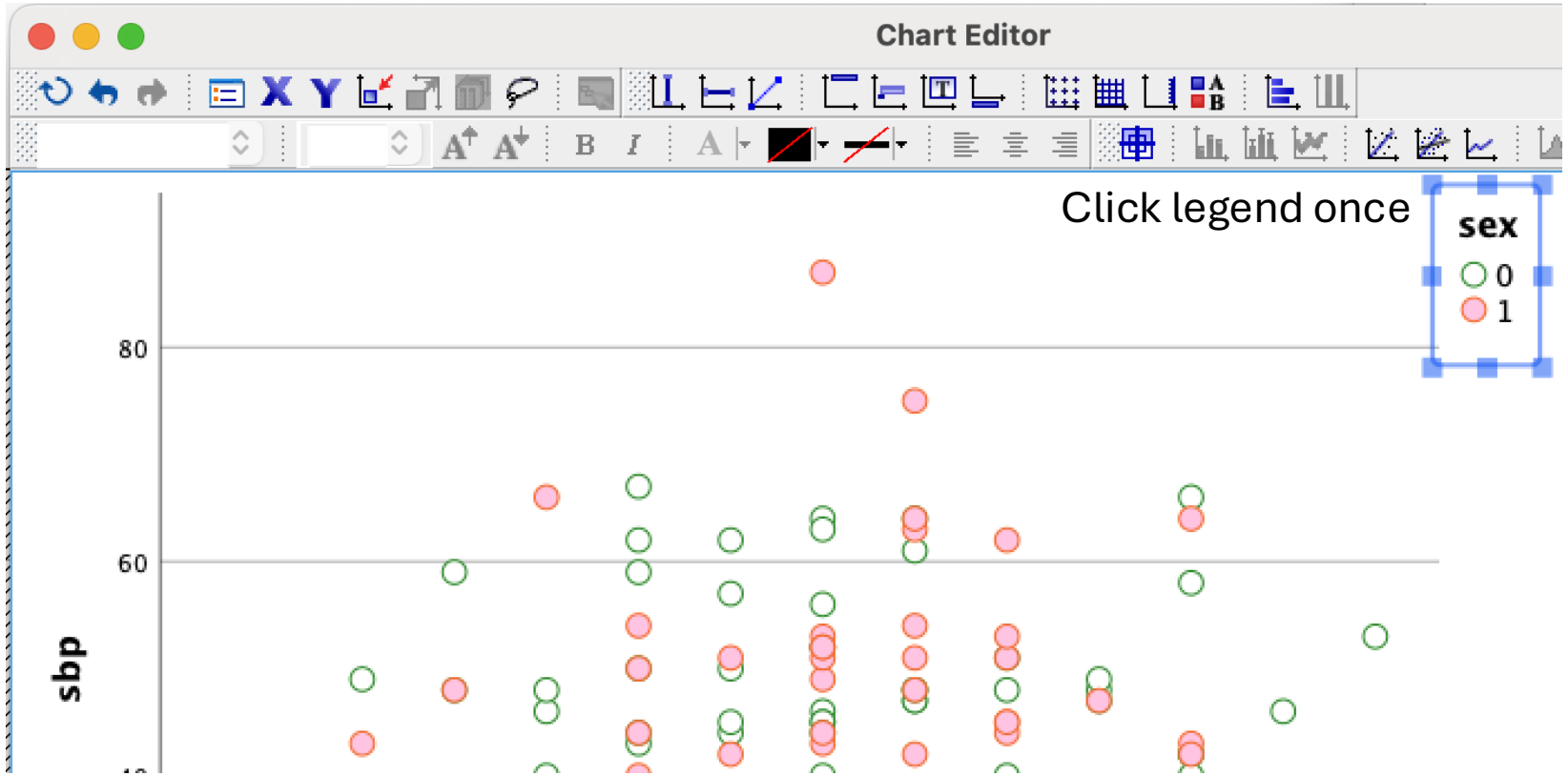
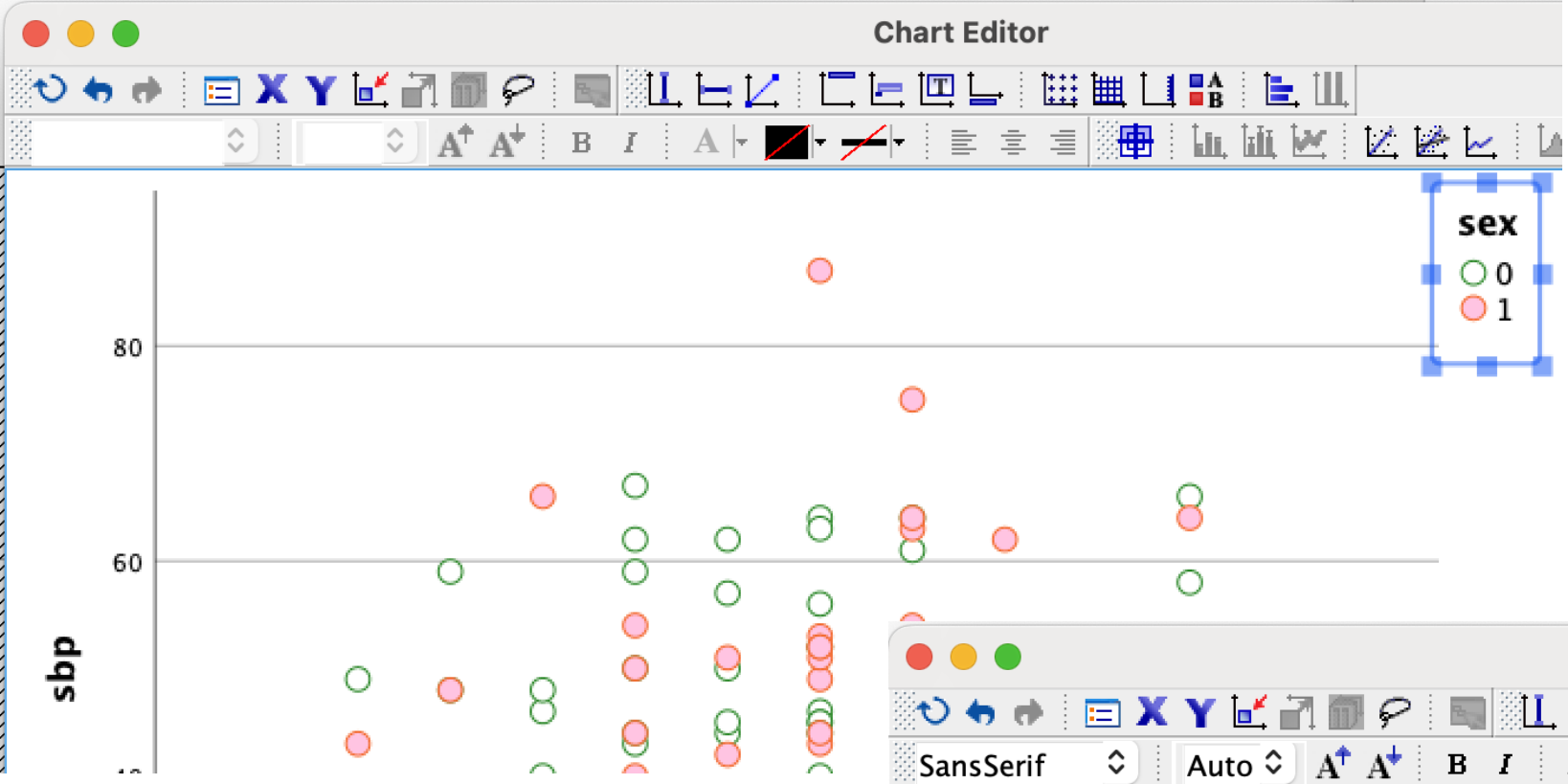


Chart Editor
This menu helps you change the fill color.
sex
0
1
80
60
40
sbp

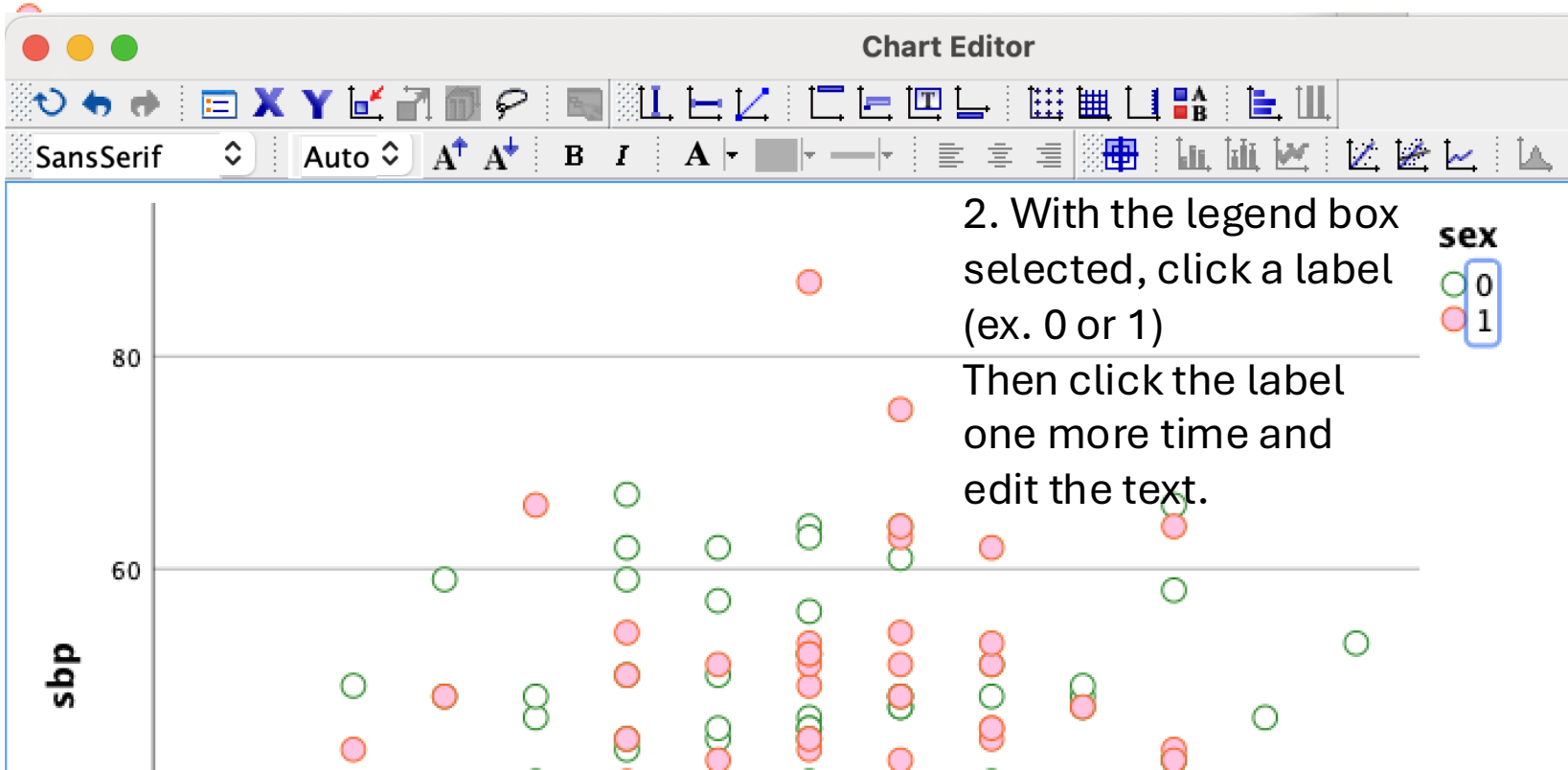
lowbwt.sav

- Task 5: Let's change the text in the legend

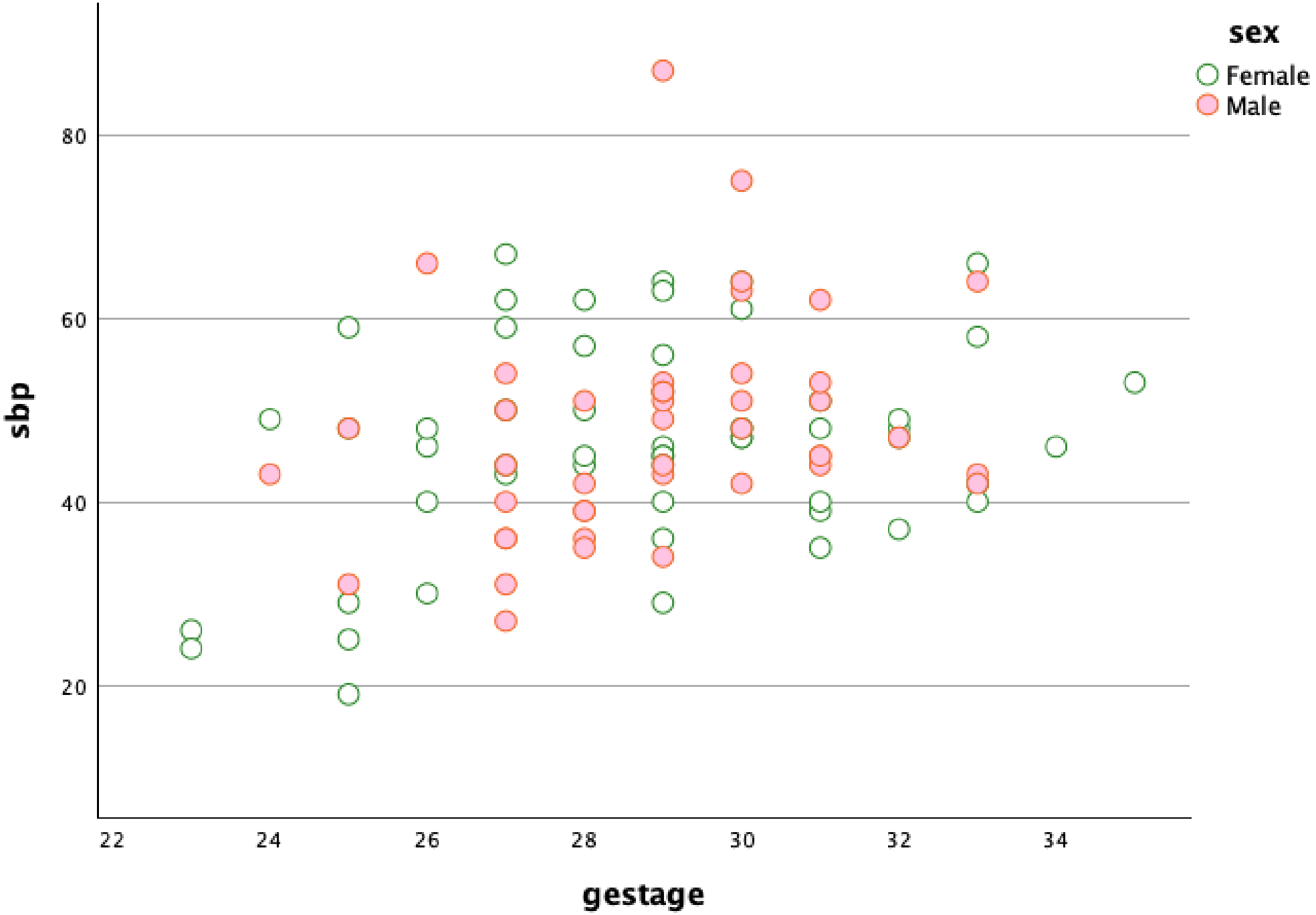




1. Click the legend once.

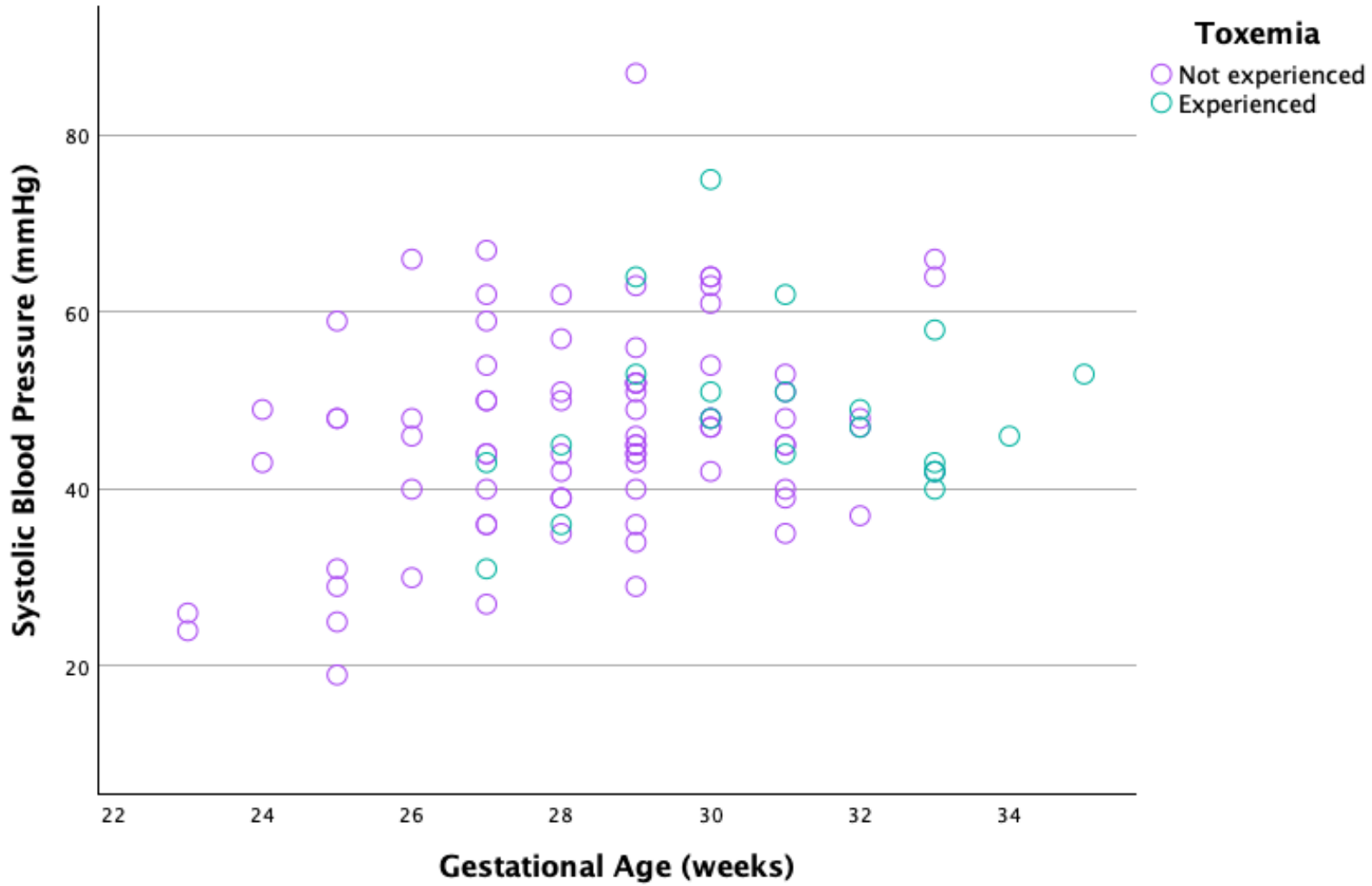


2. With the legend box selected, click a label (ex. 0 or 1)
Then click the label one more time and edit the text.


sex
Female
Male
sbp
80
60
40
20
22
24
26
28
30
32
34
gestage

Do It Yourself

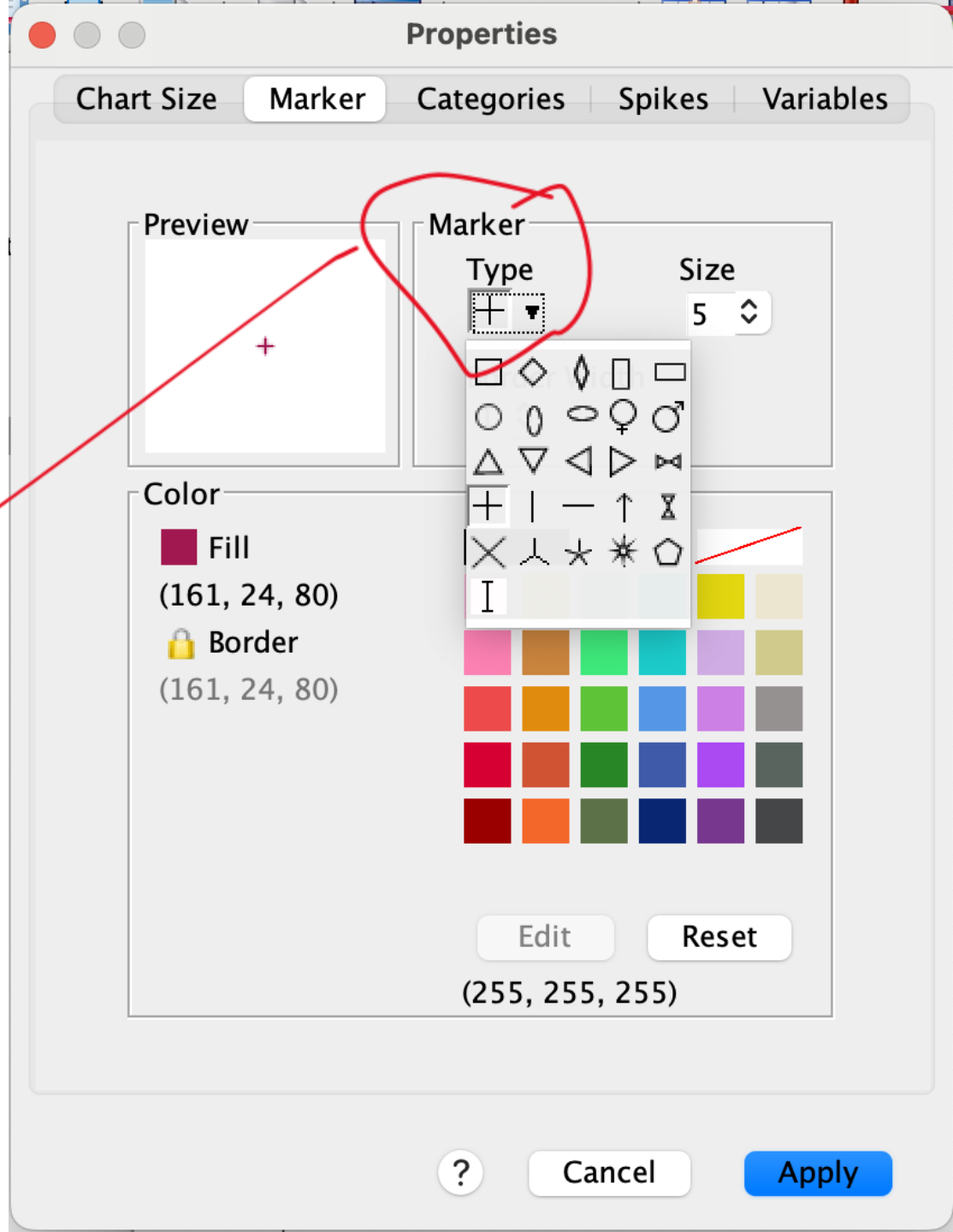
- Goal:



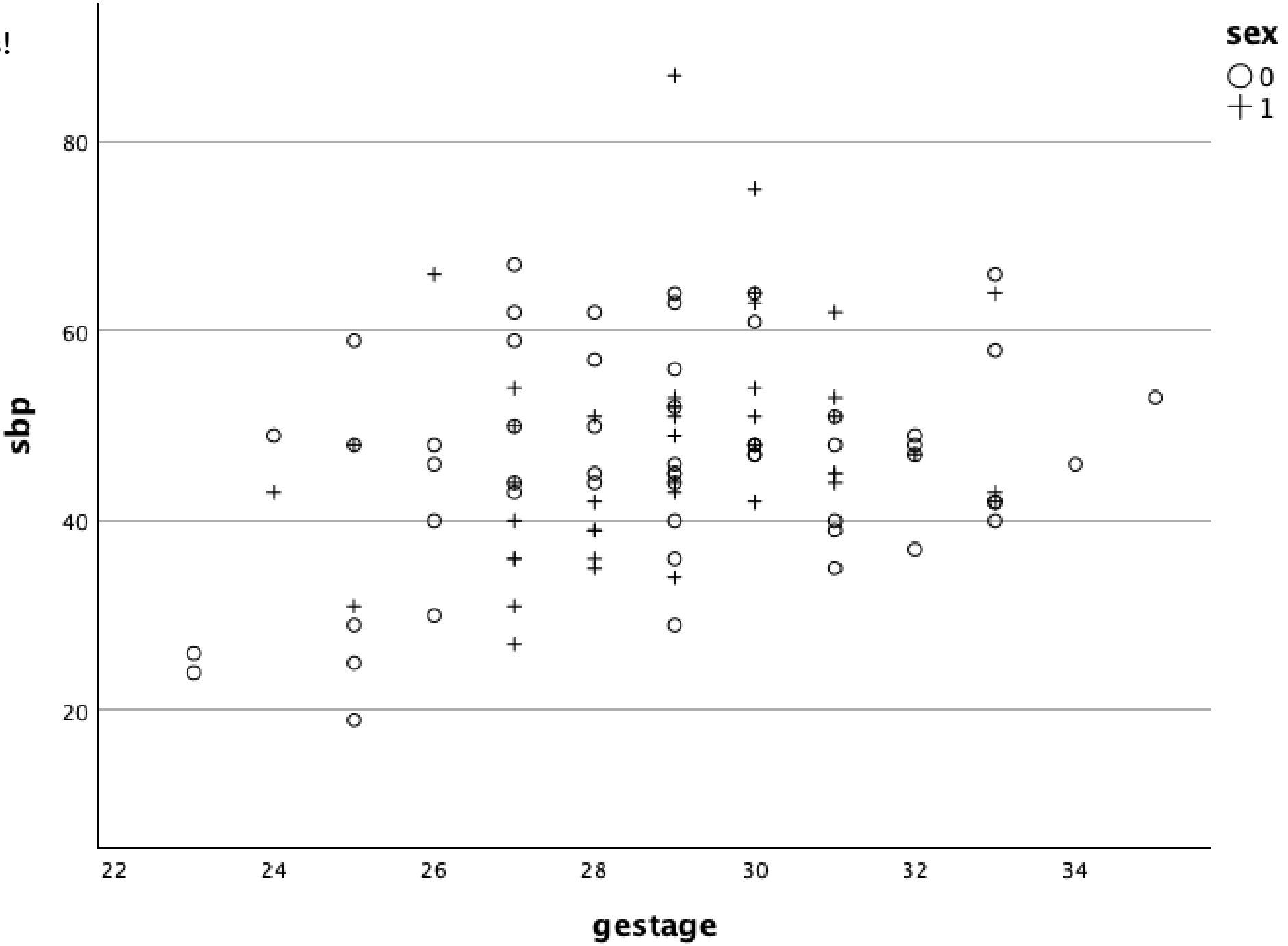
lowbwt.sav

- Task 6: Let's distinguish markers by sex, but with different symbols.

- Similar to how you changed the edge colors, change the Type of a marker to a different symbol.



Make this!

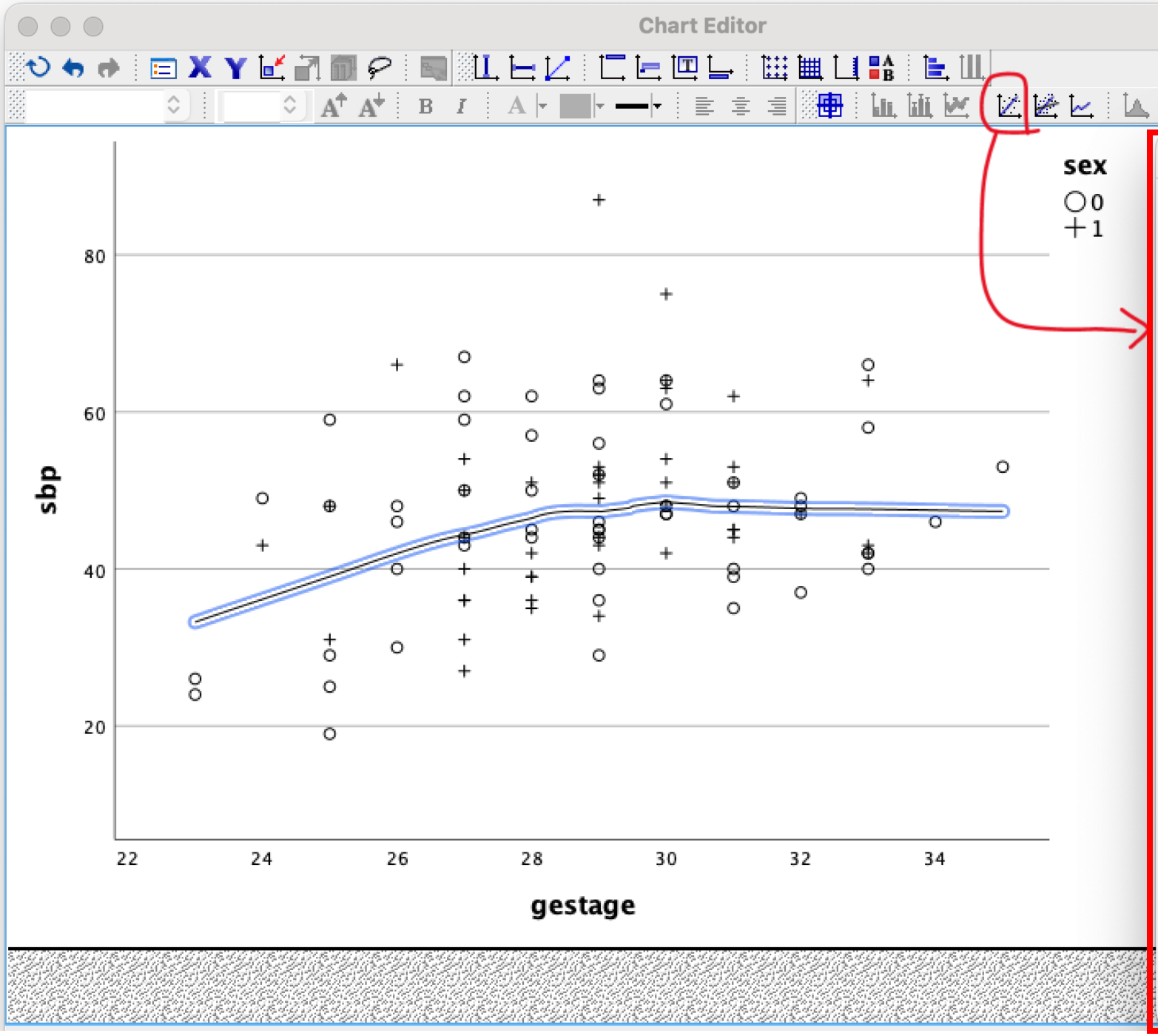


lowbwt.sav

- Task 7: Let's add trend lines (LOESS):
    1) for the entire data
    2) per each level of sex

LOESS: **LO**cally **E**stimated **S**catterplot **S**moothing.

othing) trend line to a scatterplot in



Properties

Chart Size | Lines | Categories | Fit Line | Variables

Display Spikes Suppress intercept

Fit Method

Mean of Y Quadratic

Linear Cubic

Loess

% of points to fit: 80

Kernel: Epanechnikov

Confidence Intervals

None

Mean

Individual

%: 95

Attach label to line

? Close Apply

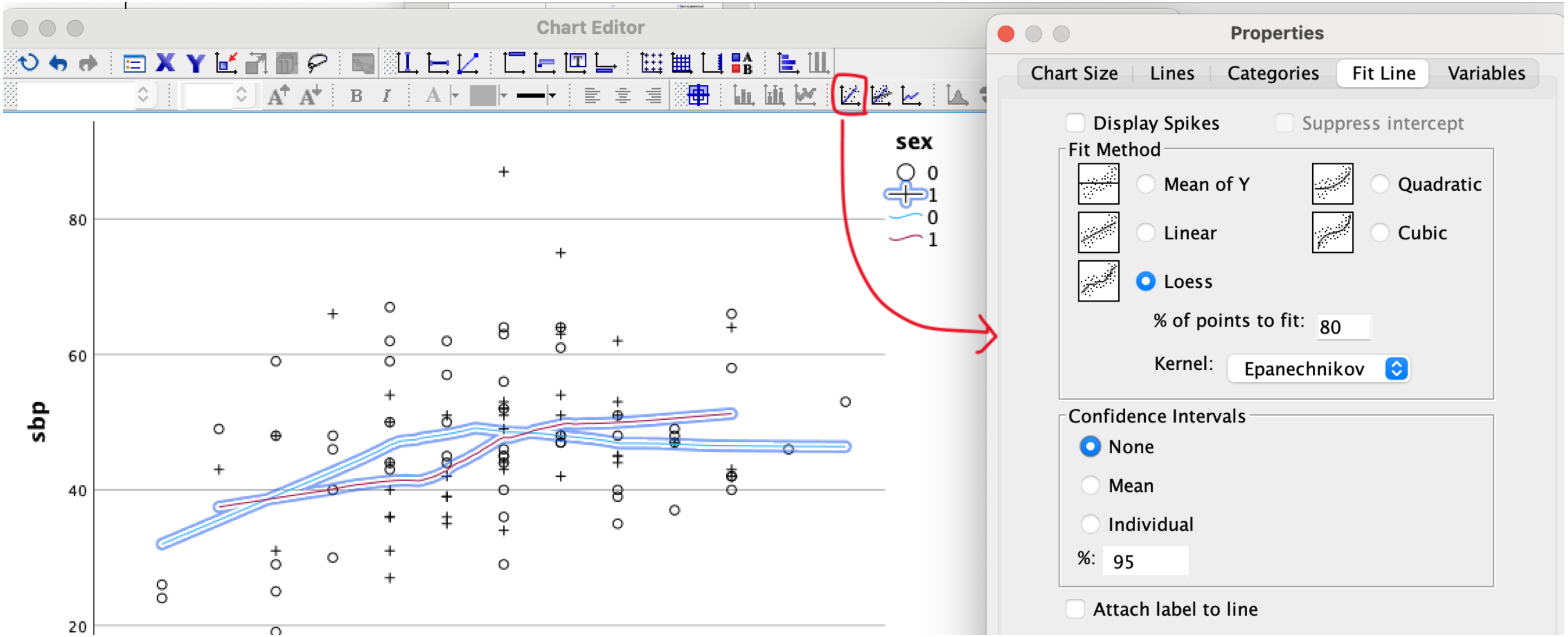


Chart Editor
Properties
Chart Size
Lines
Categories
Fit Line
Variables
Display Spikes
Suppress intercept
Fit Method
Mean of Y
Quadratic
Linear
Cubic
Loess
% of points to fit:
80
Kernel:
Epanechnikov
Confidence Intervals
None
Mean
Individual
%:
95
Attach label to line
sex
0
1
0
1
sbp
80
60
40
20

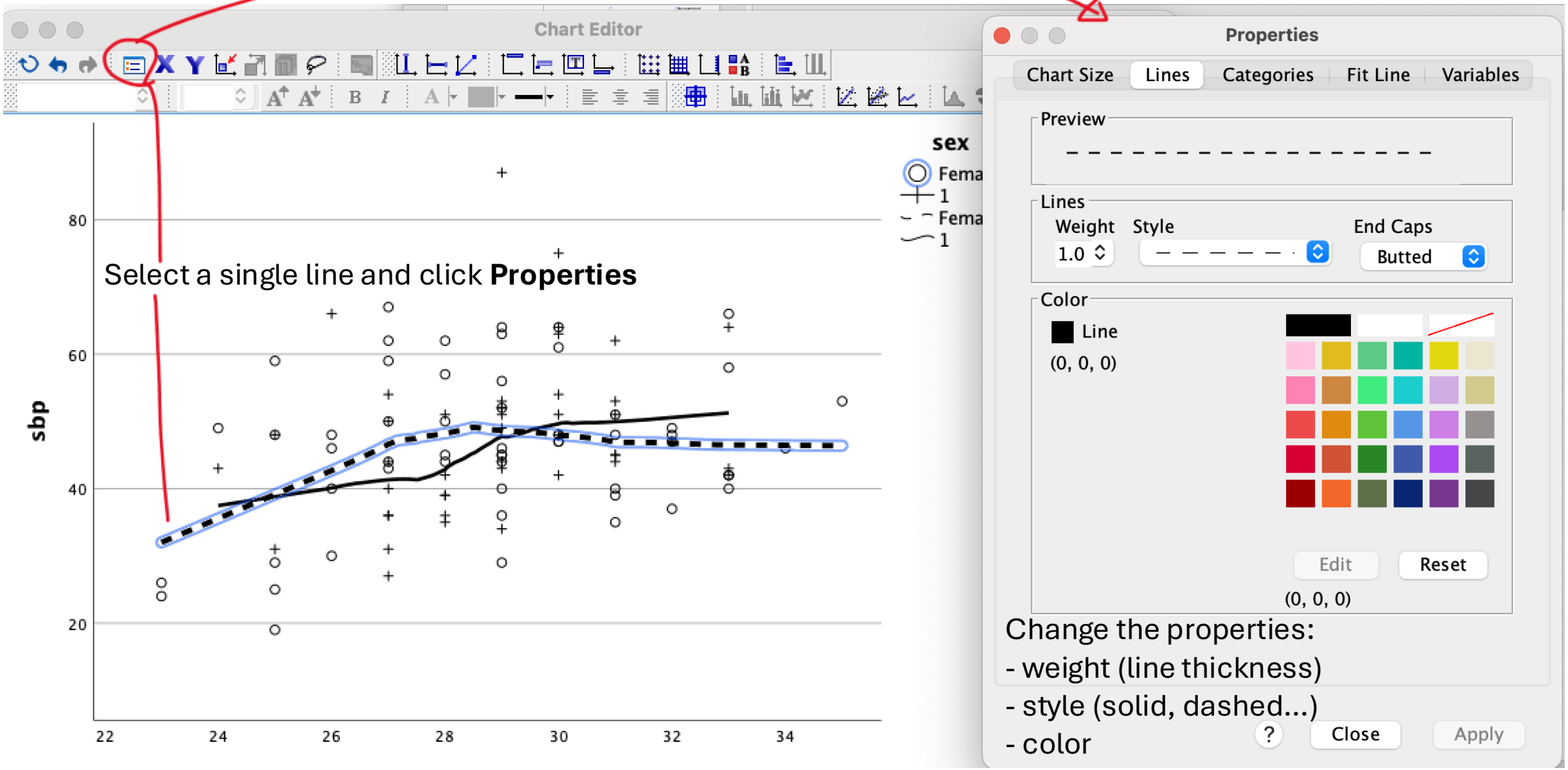
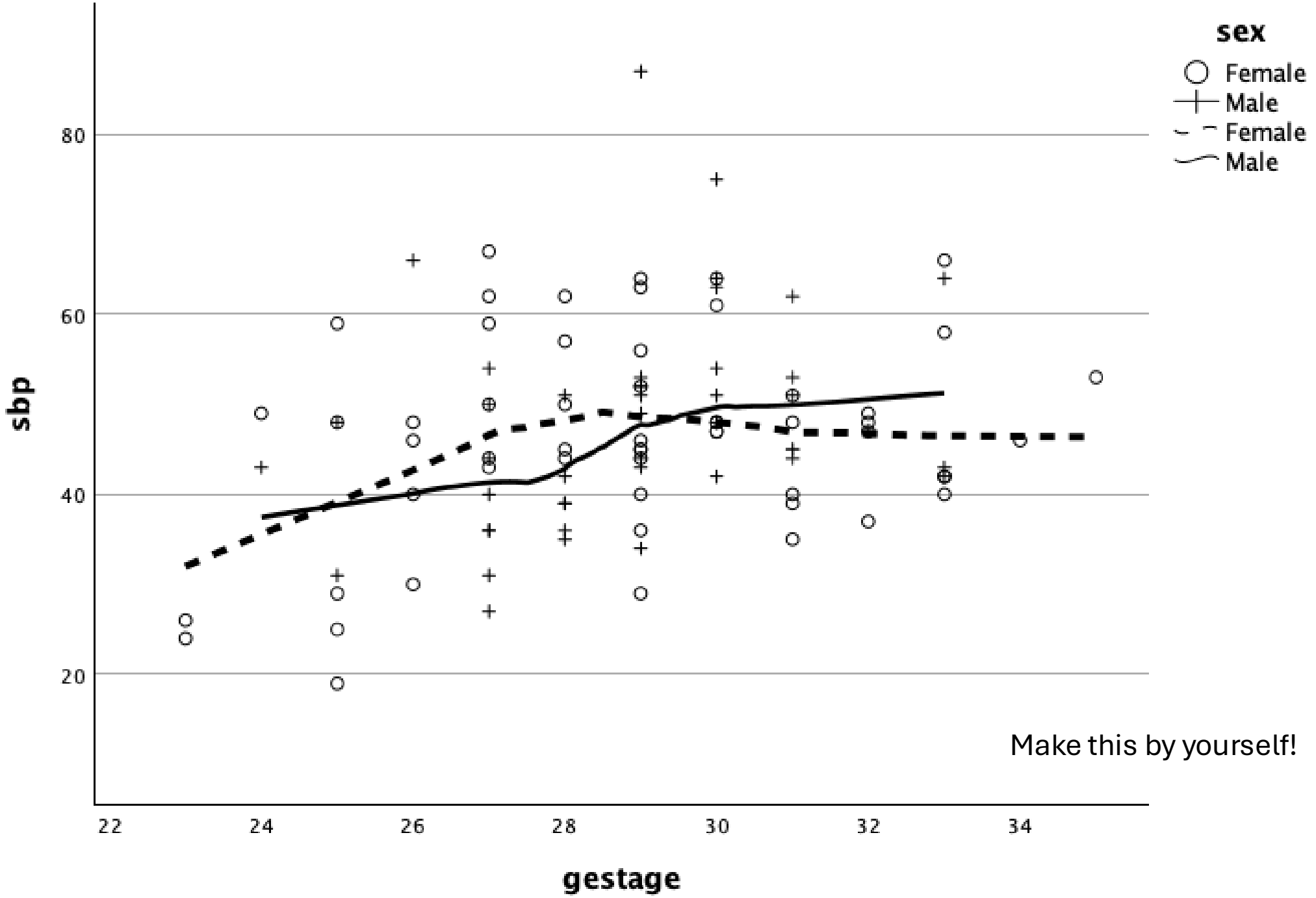


Chart Editor
Properties
Chart Size
Lines
Categories
Fit Line
Variables
Preview
Lines
Weight
1.0
Style
End Caps
Butted
Color
Line
(0, 0, 0)
Edit
Reset
(0, 0, 0)
sex
Fema
1
Fema
1
sbp
80
60
40
20
22
24
26
28
30
32
34
Select a single line and click **Properties**
Change the properties:
- weight (line thickness)
- style (solid, dashed...)
- color
?
Close
Apply



Make this by yourself!