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Section E

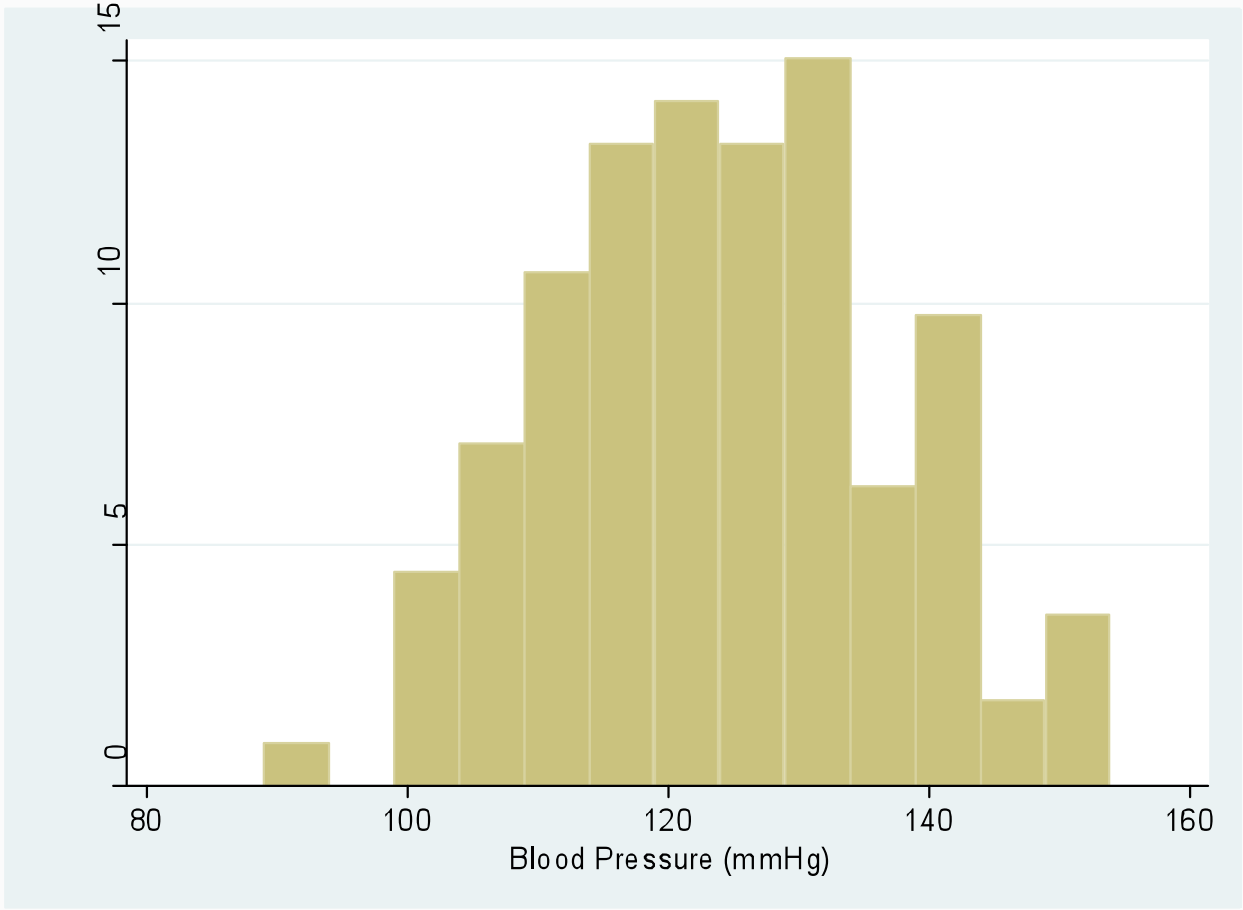
Stem and Leaf Plots, Box Plots

Sample 113 Men

- Suppose we took another look at our random sample of 113 men and their blood pressure measurements

- One tool for “visualizing” the data is the histogram

Histogram: BP for 113 males



Sample 113 Men: Stem and Leaf

- Another common tool for visually displaying continuous data is the "stem and leaf" plot

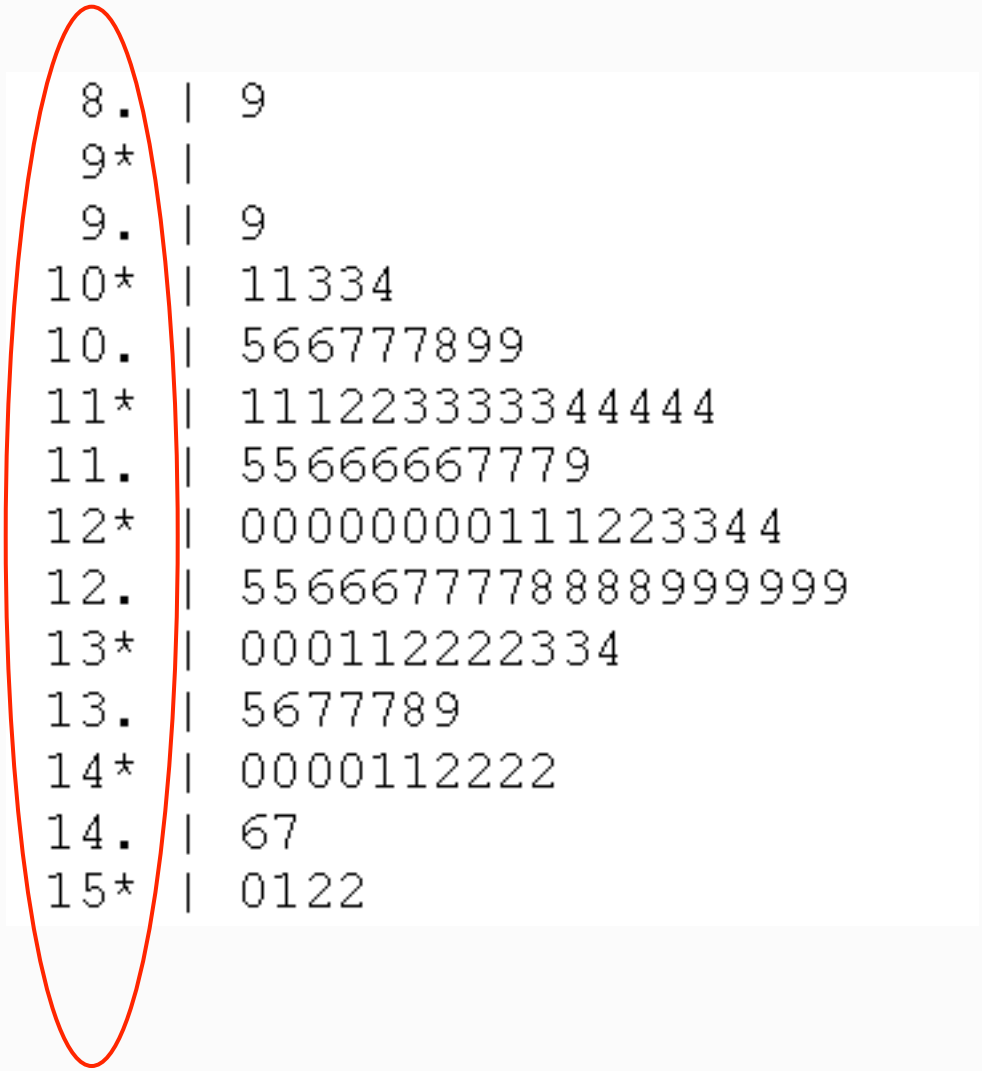
- Very similar to a histogram
  - Like a "histogram on its side"
  - Allows for easier identification of individual values in the sample

Stem and Leaf: BP for 113 Males

```
 8.  | 9
 9*  |
 9.  | 9
10*  | 11334
10.  | 566777899
11*  | 1112233333344444
11.  | 55666667779
12*  | 00000000111223344
12.  | 5566677778888999999
13*  | 000112222334
13.  | 5677789
14*  | 0000112222
14.  | 67
15*  | 0122
```

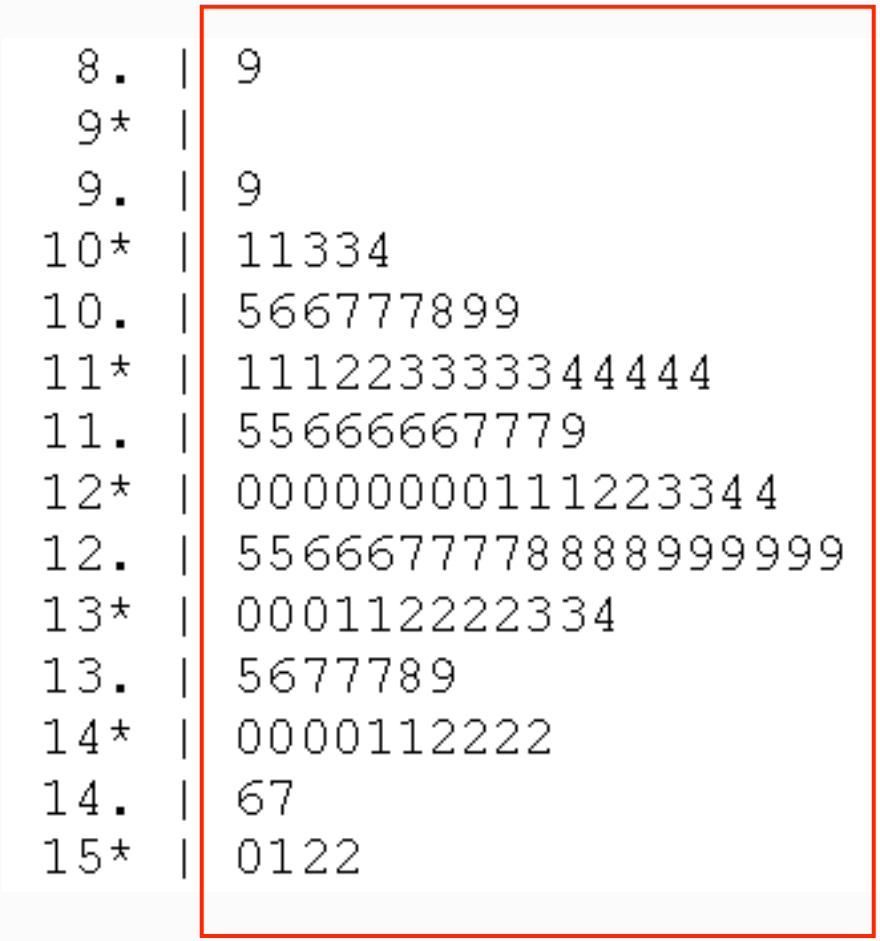
Stem and Leaf: BP for 113 Males

"Stems"



```
 8.  | 9
 9*  |
 9.  | 9
10*  | 11334
10.  | 566777899
11*  | 111223333344444
11.  | 55666667779
12*  | 00000000111223344
12.  | 5566677778888999999
13*  | 000112222334
13.  | 5677789
14*  | 0000112222
14.  | 67
15*  | 0122
```

Stem and Leaf: BP for 113 Males



8.	|	9
9*	|	
9.	|	9
10*	|	11334
10.	|	566777899
11*	|	111223333344444
11.	|	55666667779
12*	|	00000000111223344
12.	|	5566677778888999999
13*	|	000112222334
13.	|	5677789
14*	|	0000112222
14.	|	67
15*	|	0122

"Leaves"

Stem and Leaf: BP for 113 Males

```
  8. | 9
  9* |
  9. | 9
 10* | 11334
 10. | 566777899
 11* | 111223333344444
 11. | 55666667779
 12* | 00000000111223344
 12. | 5566677778888999999
 13* | 000112222334
 13. | 5677789
 14* | 0000112222
 14. | 67
 15* | 0122
```

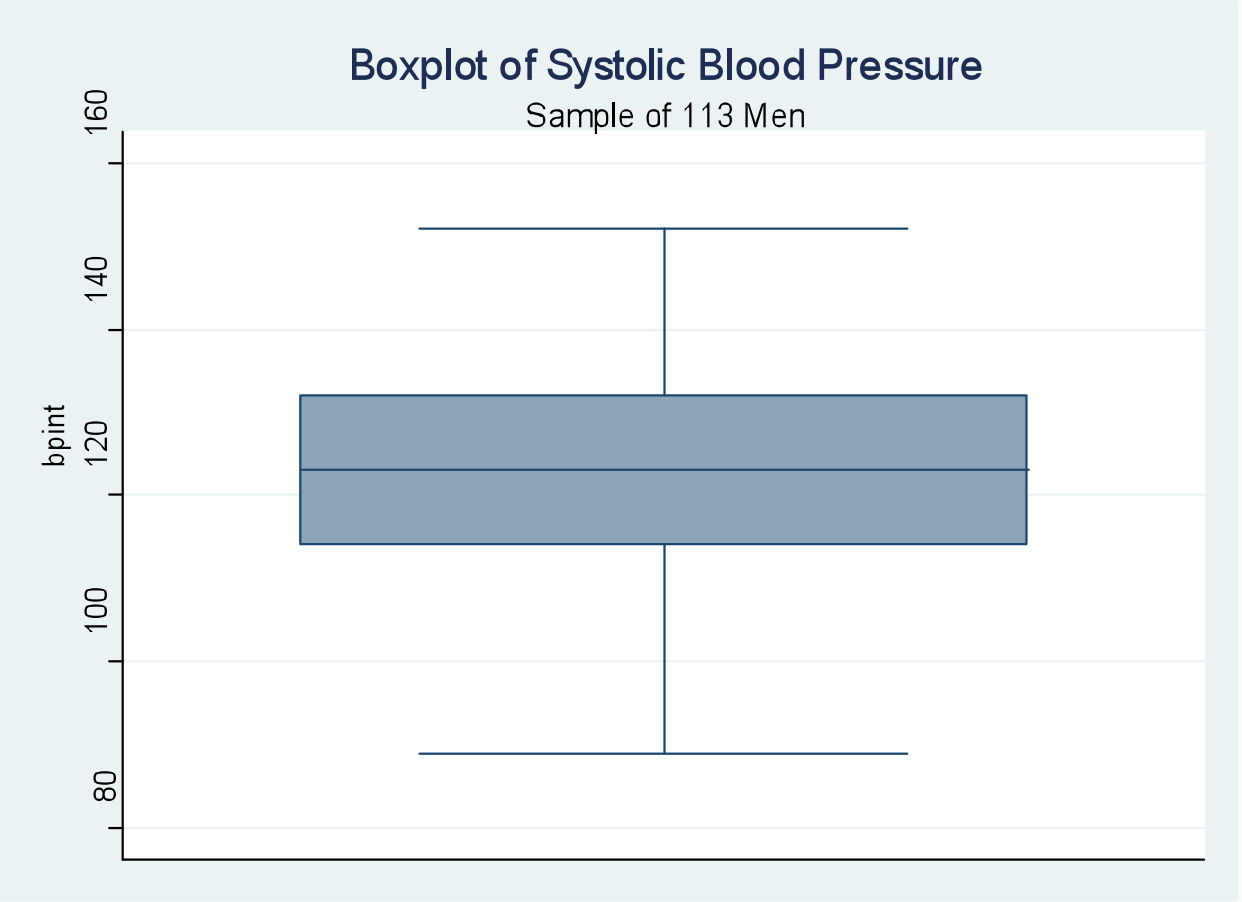
Stem and Leaf: BP for 113 Males

```
 8.  |  9
 9*  |
 9.  |  9
10*  |  11334
10.  |  566777899
11*  |  111223333344444
11.  |  5566666677779
12*  |  00000000111223344
12.  |  556667777888899999
13*  |  000112222334
13.  |  5677789
14*  |  0000112222
14.  |  67
15*  |  0122
```

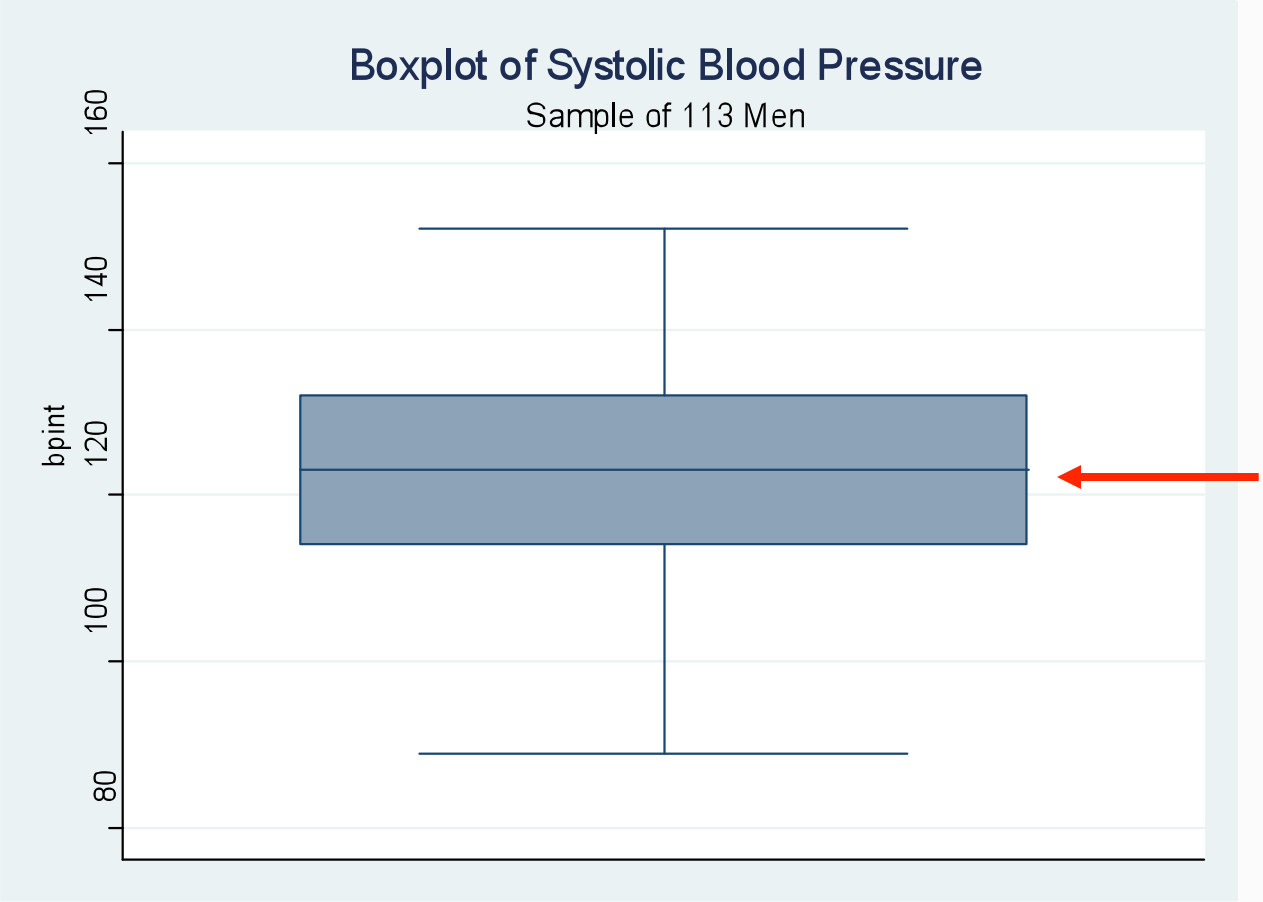
Sample 113 Men: Stem and Boxplot

- Another common visual display tool is the boxplot
  - Gives good insight into distribution shape in terms of skewness and outlying values (extremes: values different than “most” of the rest of the data)
  - Very nice tool for easily comparing distribution of continuous data in multiple groups—can be plotted side by side

Boxplot: BP for 113 Males

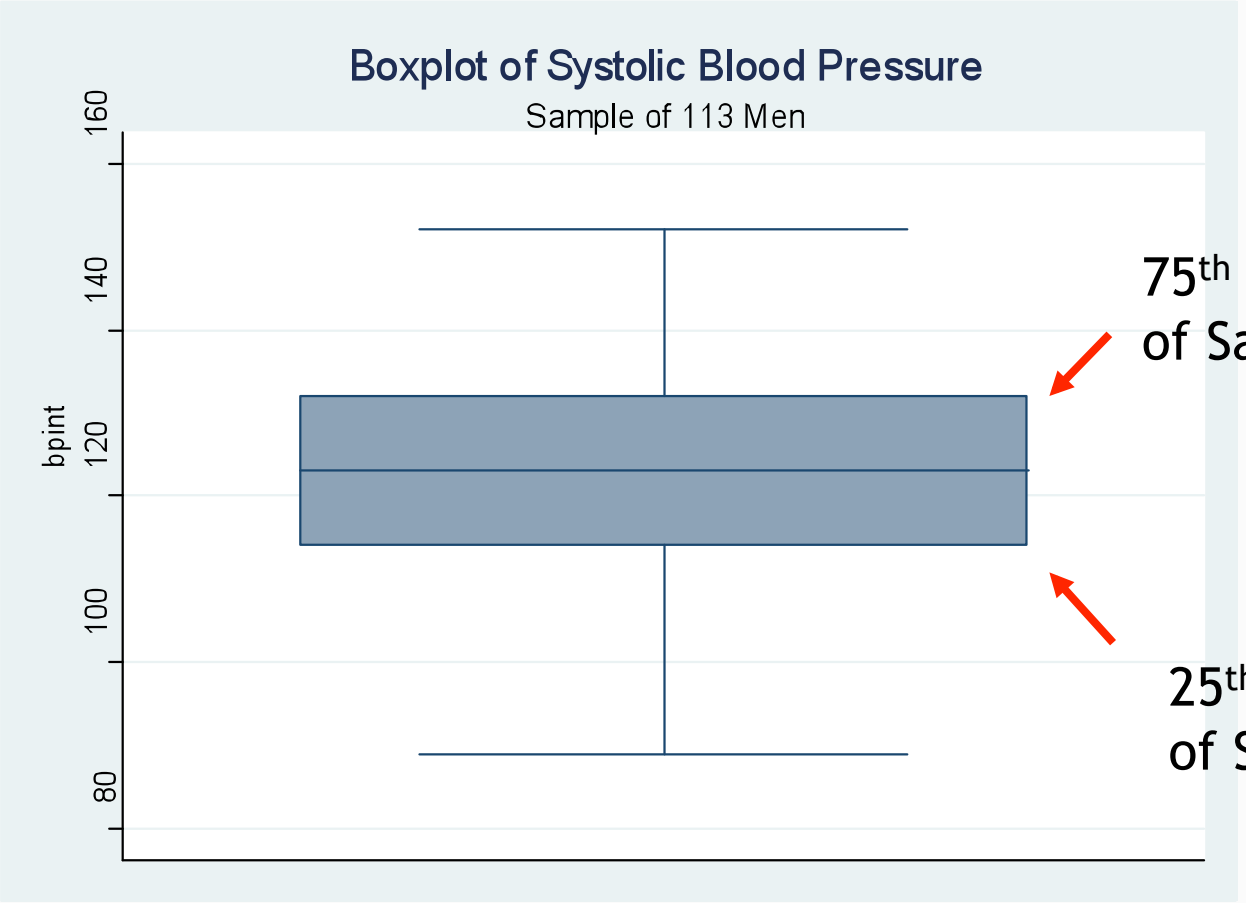


Boxplot: BP for 113 Males

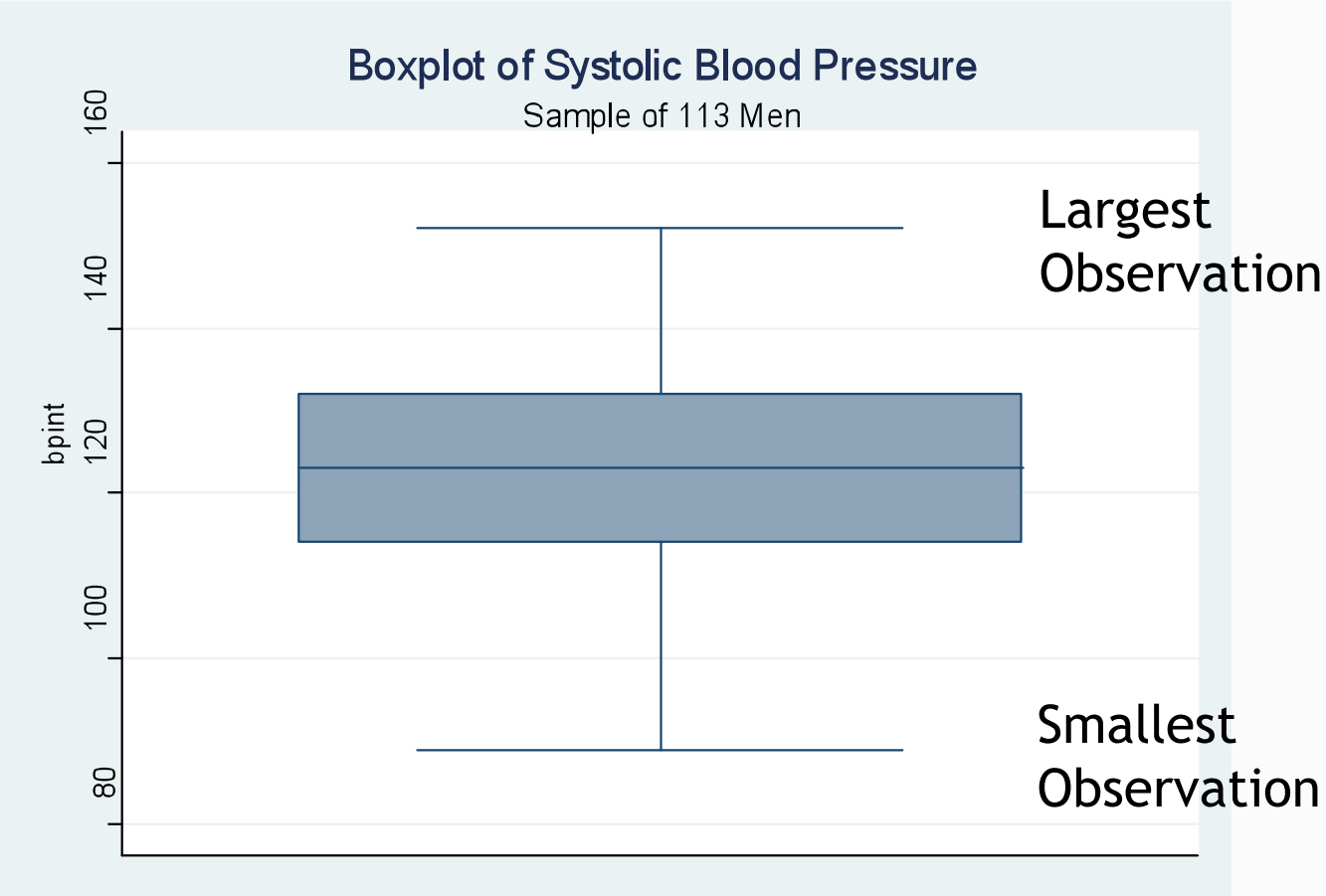


Sample Median Blood Pressure

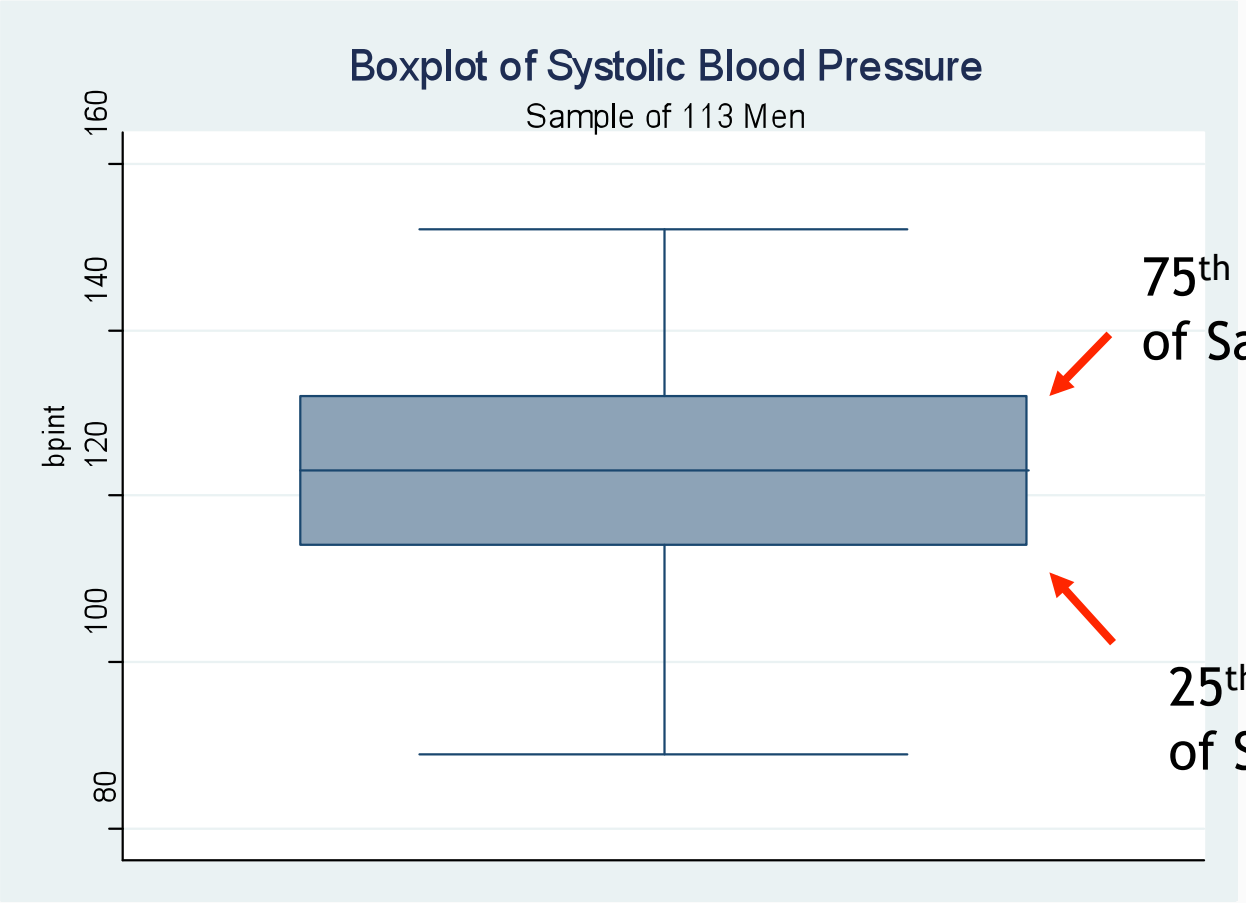
Boxplot: BP for 113 Males



Boxplot: BP for 113 Males



Boxplot: BP for 113 Males

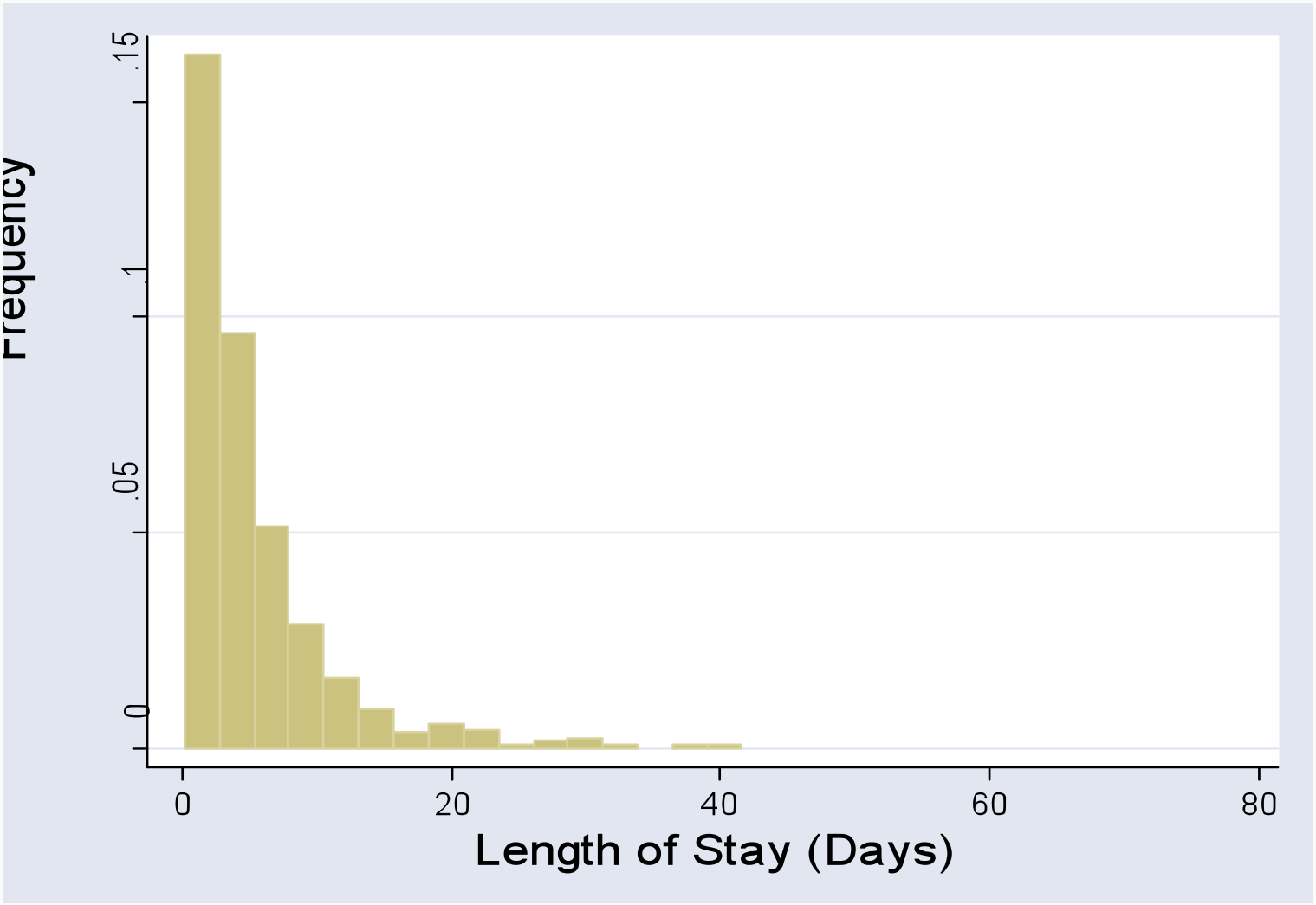


Hospital Length of Stay for 1,000 Patients

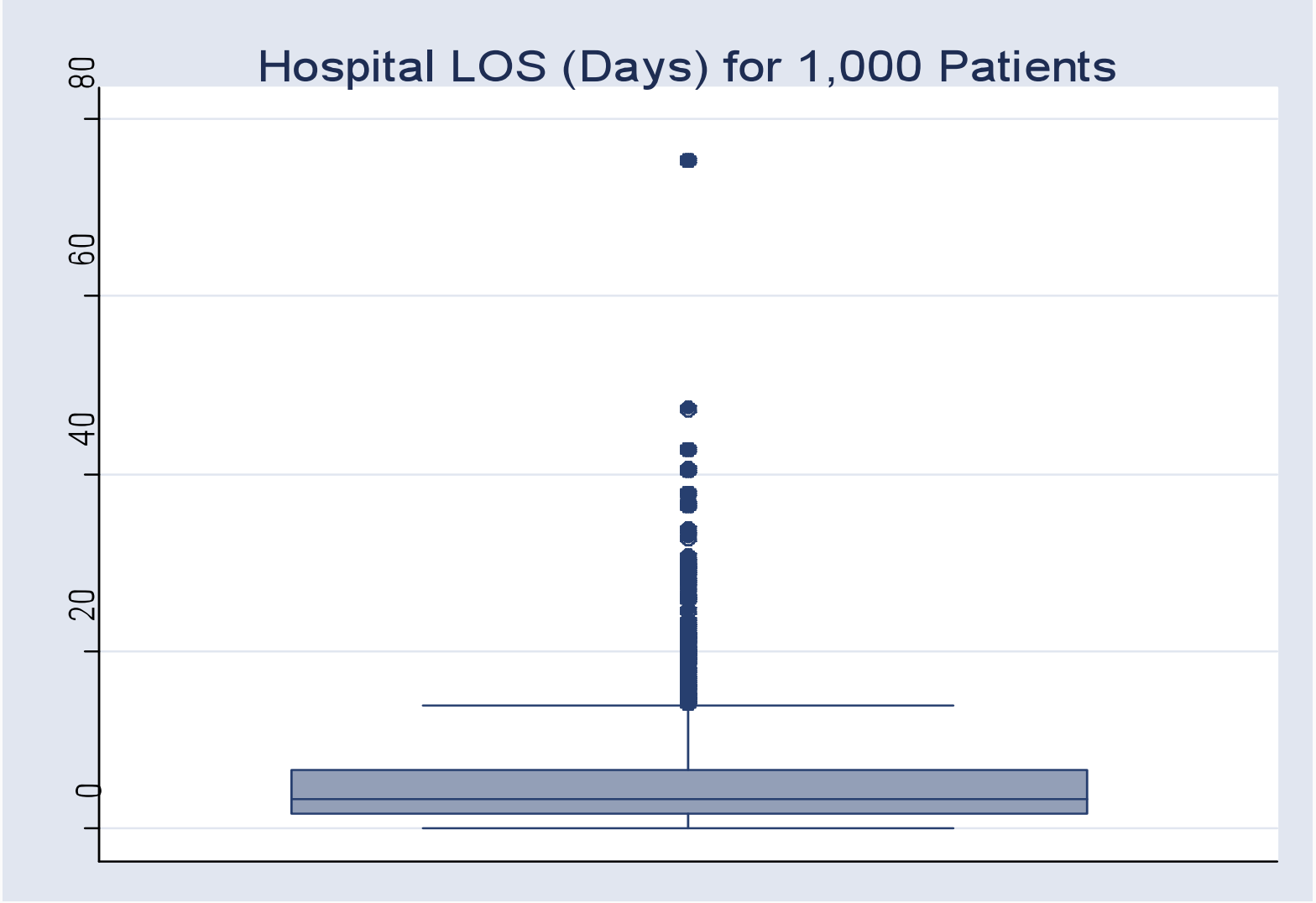
- Suppose we took a representative sample of discharge records from 1,000 patients discharged from a large teaching hospital in a single year

- How could we visualize this data?

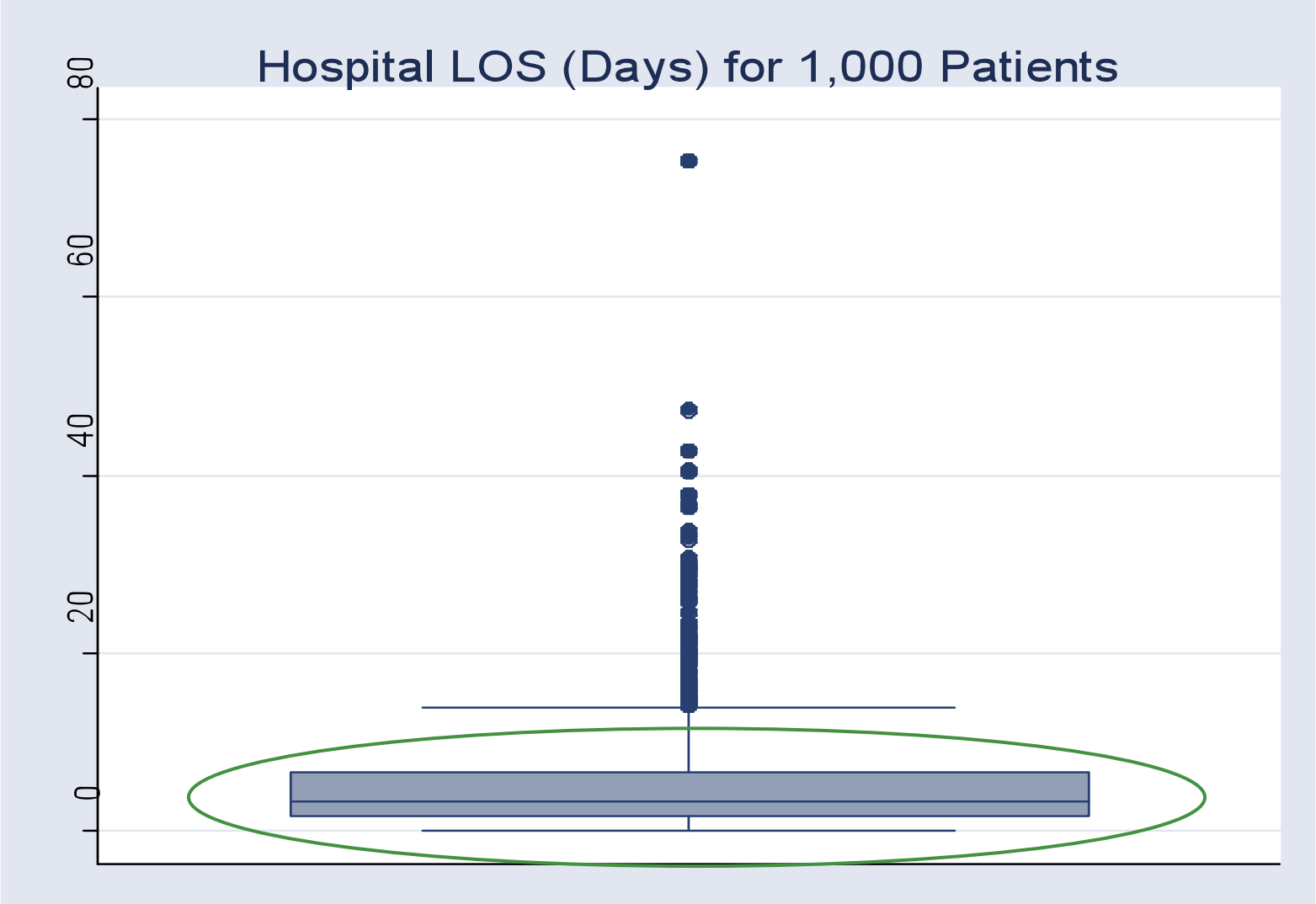
Histogram: Length of Stay



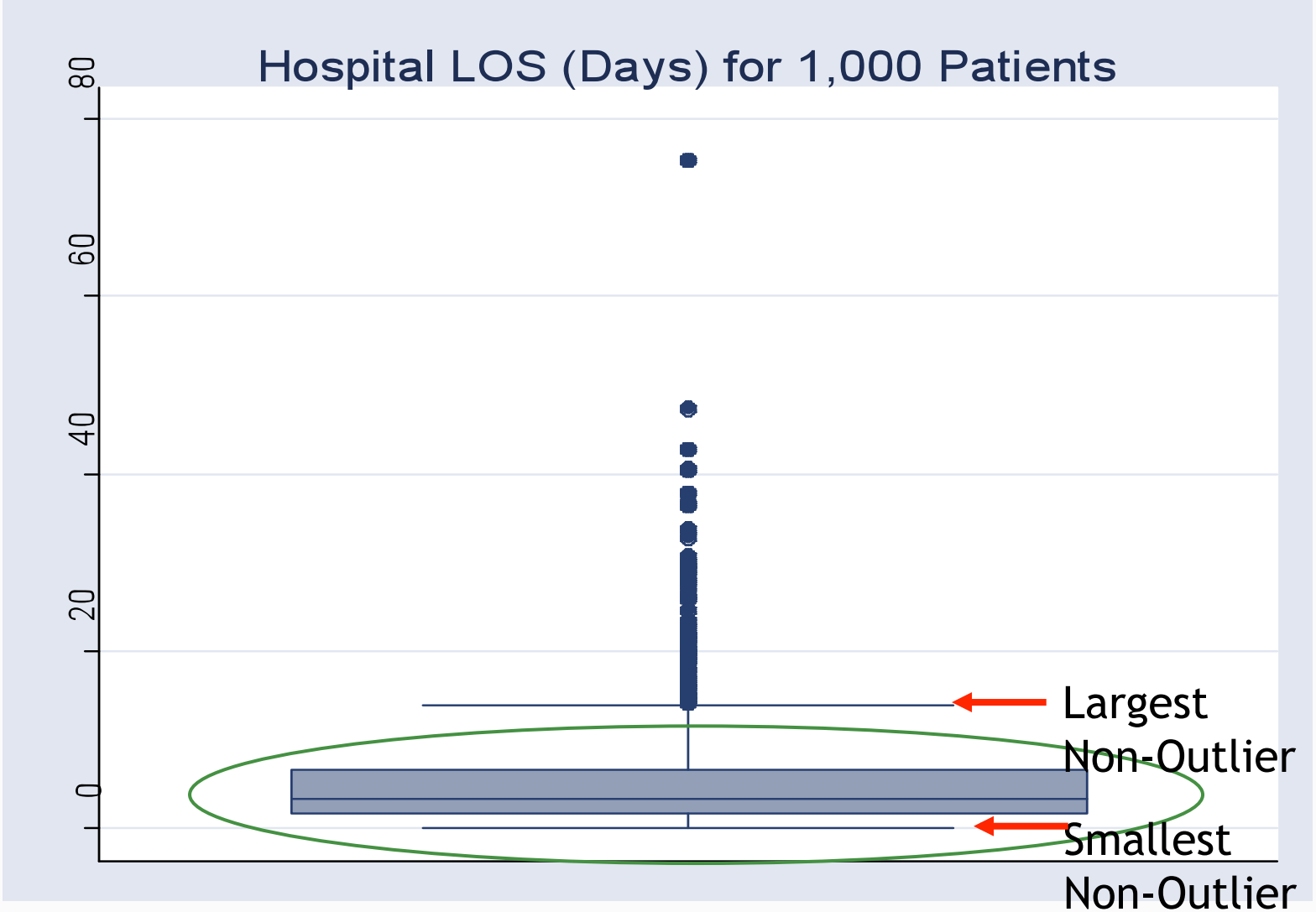
Boxplot: Length of Stay



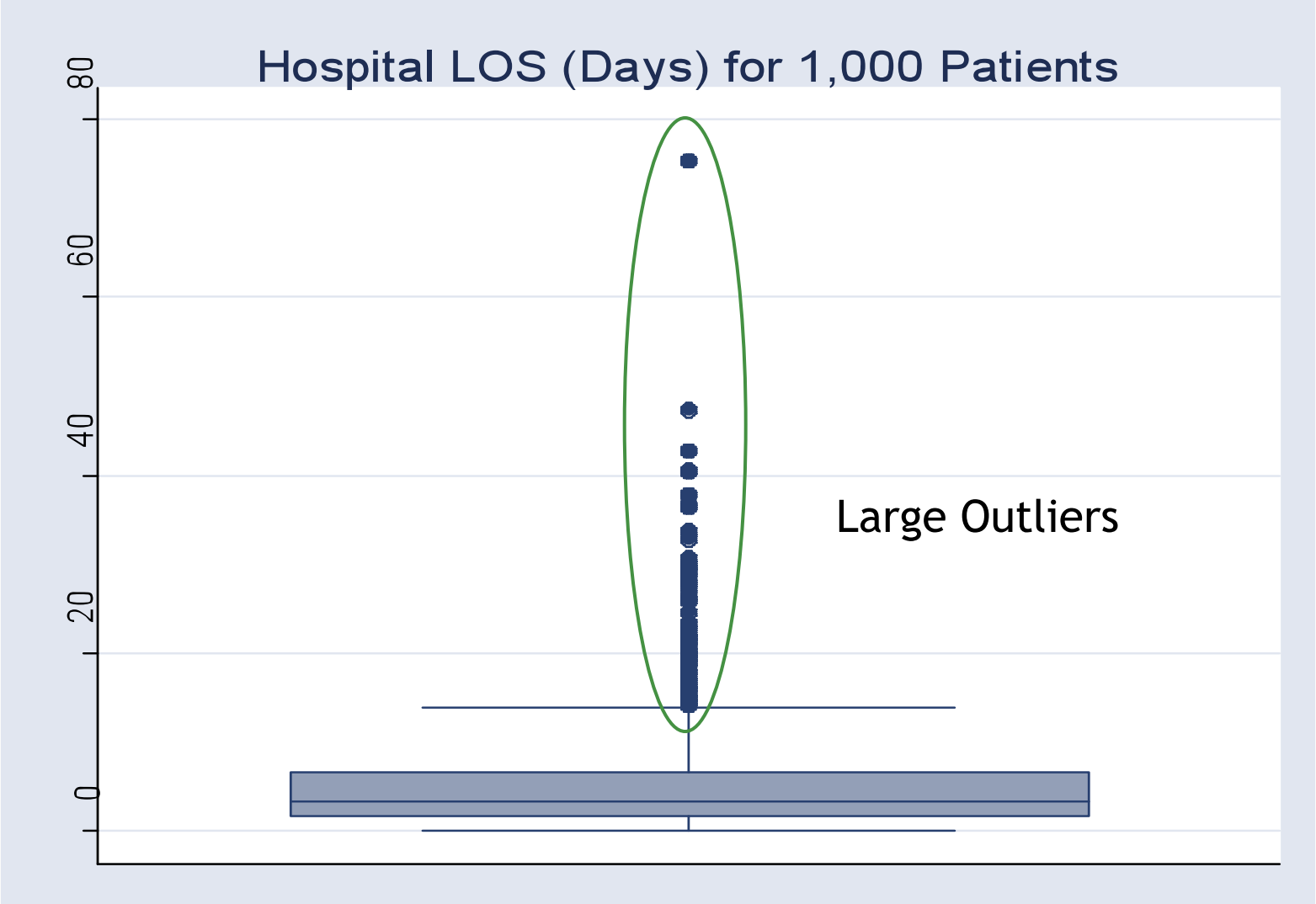
Boxplot: Length of Stay



Boxplot: Length of Stay



Boxplot: Length of Stay

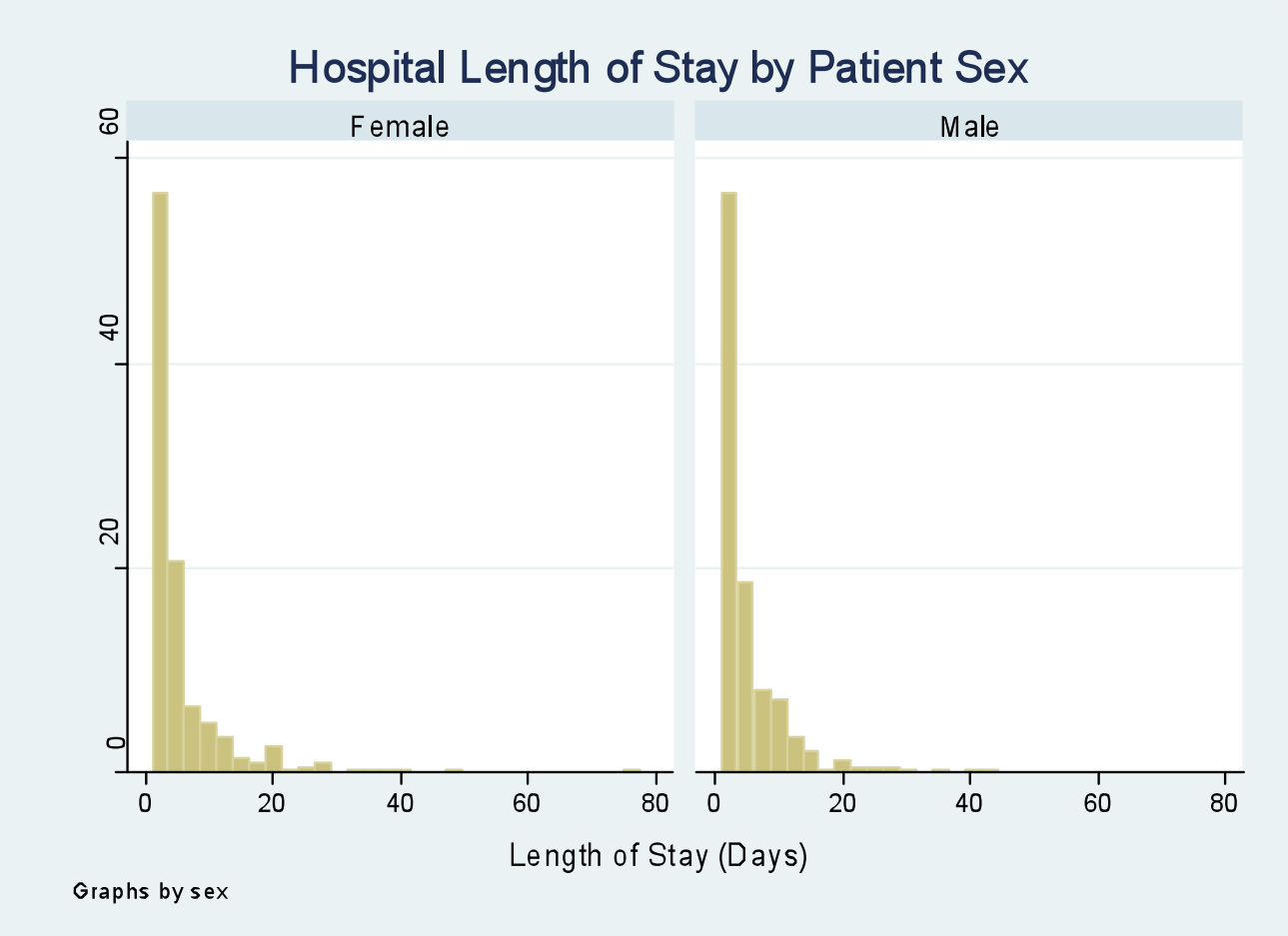


Stem and Leaf: Length of Stay

```
0*  | 11111111111111111111111111111111111111111111111111111111111111111111 ... (298)
0t  | 22222222222222222222222222222222222222222222222222222222222222222222 ... (269)
0f  | 44444444444444444444444444444444444444444444444444444444444444444444 ... (140)
0s  | 66666666666666666666666666666666666666666666666666666666666667777777 ... ( 95)
0.  | 88888888888888888888888888888888899999999999999999999999999999999999
1*  | 00000000000000000011111111111
1t  | 22222222222222222222222333333333333
1f  | 444444445555
1s  | 66666777
1.  | 8889999999
2*  | 000001111111
2t  | 2233
2f  | 455
2s  | 6677
2.  | 889999
3*  | 0
3t  | 23
3f  |
3s  | 667
3.  |
4*  | 00
4t  | 2
4f  |
4s  | 7
4.  |
5*  |
5t  |
5f  |
5s  |
5.  |
6*  |
6t  |
6f  |
6s  |
6.  |
7*  |
7t  |
7f  | 5
```

Side by Side Distribution Comparison

- Side by side histograms of length of stay for female and male patients in sample



Side by Side Distribution Comparison

- Side by side boxplots of length of stay for female and male patients in sample