

# WINGSPAN IN RELATION TO HEIGHT



# Posed Hypothesis

Is there a correlation  
between an adult male's  
height and his wingspan.....



## Collected Data

Data for this hypothesis was gathered using systematic sampling.

Data was obtained by selecting every 5<sup>th</sup> Caucasian male over the age of 18 years, encountered in our place of employment. The first individual selected corresponded with patient # 2.

| #  | Height in Inches | Wingspan in Inches |
|----|------------------|--------------------|
| 1  | 67               | 67.25              |
| 2  | 67.5             | 71                 |
| 3  | 71               | 72.5               |
| 4  | 73.5             | 73.75              |
| 5  | 74               | 73.5               |
| 6  | 71.2             | 72                 |
| 7  | 66               | 67                 |
| 8  | 70               | 68.75              |
| 9  | 72               | 72.5               |
| 10 | 65.5             | 68.5               |
| 11 | 73               | 69.5               |
| 12 | 67               | 68                 |
| 13 | 70               | 70                 |
| 14 | 66               | 66.5               |
| 15 | 72               | 71.75              |
| 16 | 71               | 72                 |
| 17 | 66.75            | 68.5               |
| 18 | 73               | 70.25              |

# Statistics Summary

## Statistics for Variable 1 (Height)

### Summary Statistics:

N-18; Mean- 69.8722; Variance- 8.280654;  
Standard Deviation- 2.8776126;  
Standard Error- 0.6782598; Median- 70.5;  
Range -8.5; Minimum- 65.5; Maximum-74;  
Quartile One 67; Quartile Three 72

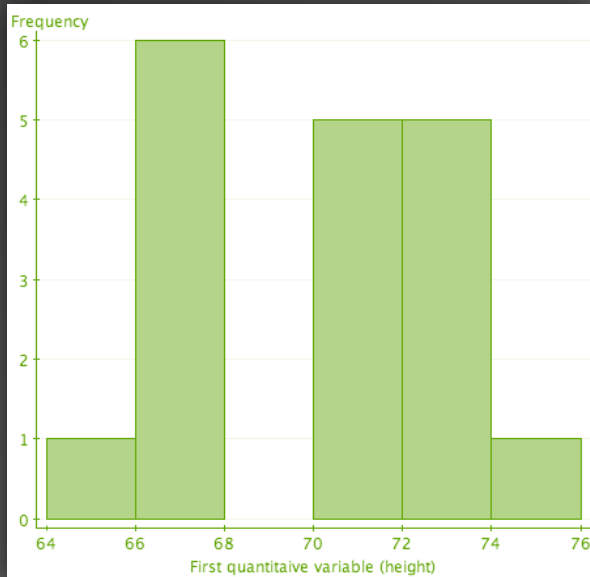
## Statistics For Variable 2 (Wingspan)

### Summary Statistics:

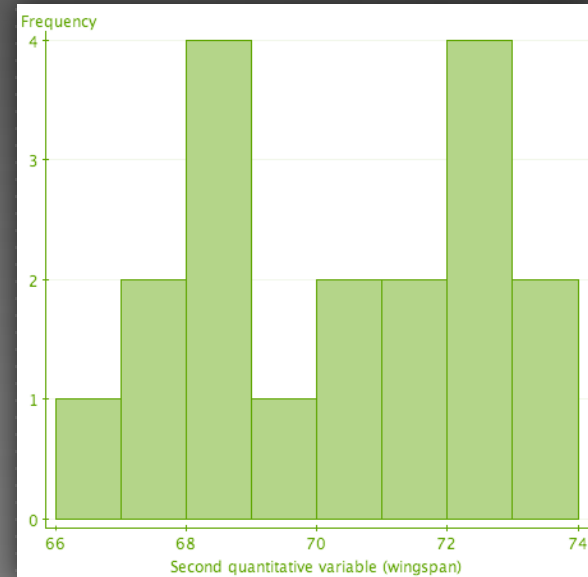
N- 18; Mean-70.18056; Variance-5.263276;  
Standard Deviation- 2.294183;  
Standard Error- 0.5407441;  
Median-70.125; Range 7.25; Minimum- 66.5;  
Maximum-73.75; Quartile One- 68.5;  
Quartile Three 72



## First quantitative variable

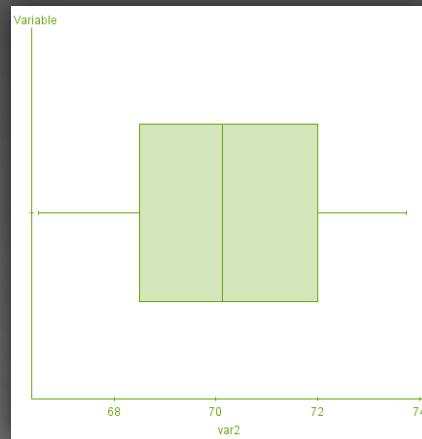
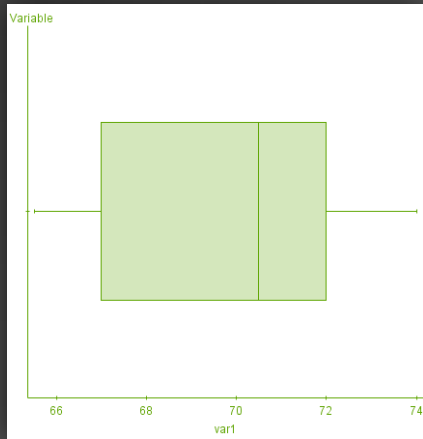


## Second quantitative variable



Looking at the Histograms for our two variables could easily give the impression that there is *not* a correlation as the graphs appear so different.

# OUTLIERS



As you can see from our boxplots showing variable 1 and variable 2 that we did not have any outliers in our data.



## Simple linear regression results:

Dependent Variable: Wingspan (inches)

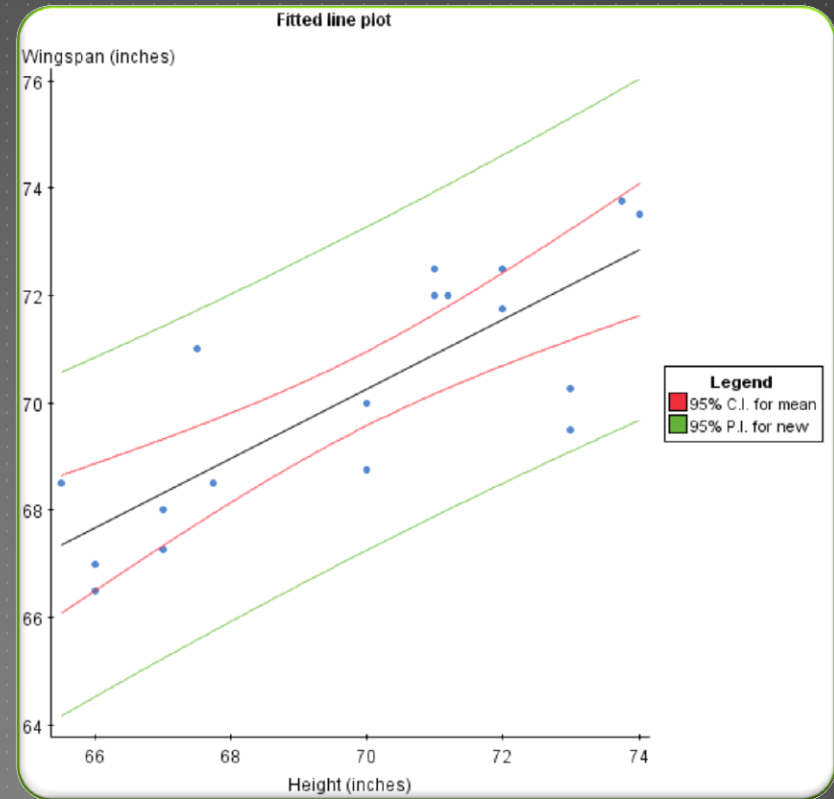
Independent Variable: Height (inches)

Sample size: 18

R (correlation coefficient) = 0.8109

Estimate of error standard deviation:  
1.3839732

The linear correlation coefficient between the height of adult Caucasian males and the wingspan of adult Caucasian males is 0.8109.



# CONCLUSION

- ▶ The critical values for correlation coefficient shows that the critical value ( $n=18$ ) is 0.468.
- ▶ Due to the fact that the correlation coefficient of  $0.8109 > 0.468$  we conclude there is a linear relation between the height of adult Caucasian males and their wingspan.

$$r = \frac{\sum XY - \frac{\sum X \sum Y}{N}}{\sqrt{(\sum X^2 - \frac{(\sum X)^2}{N})(\sum Y^2 - \frac{(\sum Y)^2}{N})}}$$



## Difficulties/Surprises encountered

Some of the difficulties we encountered included obtaining accurate measurements. The position of the patient laying in the bed made the measurement more difficult to obtain than anticipated.

One surprise encountered occurred while measuring a patient that participates in rock climbing. He is aware of a non-correlation between height and wingspan. His belief is clearly the opposite of our hypothesis. He explained that all rock climbers are aware of this. The patient then explained that when wingspan is greater than height, it creates an advantage for the rock climber.



# CONTRIBUTIONS

## Group 2

- ▶ Heidi Checketts: Added visual aides in the way of two graphs from her individual paper as well as photos and data to random slides.
- ▶ Kristen Gardner: Added visual aides to the project as well as data to the power point presentation.
- ▶ Kristi Kissell: Helped construct overall format of PowerPoint, added one graph from her individual paper as well as photos and data to random slides.
- ▶ Wendy Maxwell: Contributed two graphs from her individual paper as well as data obtained during research.
- ▶ Tyree Romero: Added two data sets from her individual paper and one visual aid to the power point presentation.
- ▶ Rikki Worthen: Helped construct overall format of PowerPoint, added visual aides in the way of one table from her individual paper as well as photos and data to random slides. Coordinated all individual additions into one completed PowerPoint.

(Each member of the group assisted in collecting data for the project. Everyone in combination helped to construct, proof-read and approve the completed PowerPoint)