

AS91035 Investigate a given multivariate data set using the statistical enquiry cycle

An exemplar using a sample from C@S 2013 on armspans.

This exemplar meets the requirements for a Merit

Note:

As this exemplar is available to all students, students are NOT able to use armspan as their variable for investigation in the assessment for this AS.

PROBLEM (this part will be completed in class prior to assessment and checked by your teacher).

I wonder if the year 11 girls tend to have wider armspans than the year 10 girls who participated in the 2013 Census at School survey.

The variable is armspan in centimetres.

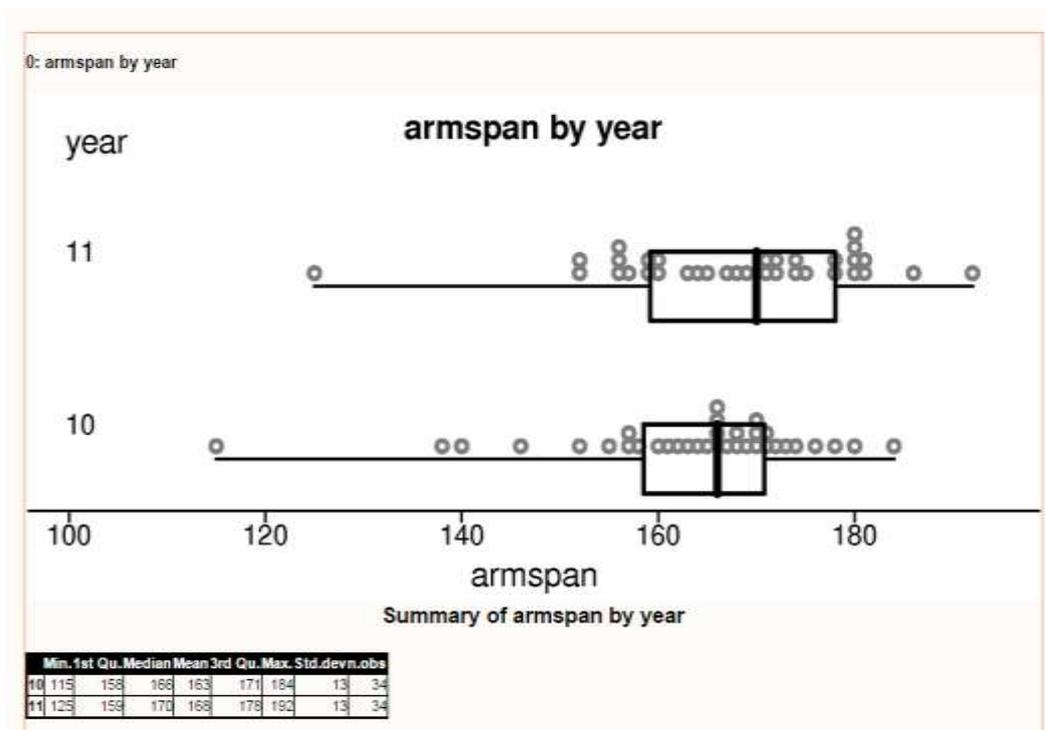
The population is Year 10 and 11 girls in the 2013 C@S database

The two groups are Year 10 girls and Year 11 girls.

The posed question from the survey asked “What is your arm span? Answer to the nearest centimetre.”

DATA:

Here is my sample data, box plot and summary statistics taken from the C@S 2013 database using Dataviewer:



ANALYSIS (I NOTICE STATEMENTS)

“At Merit and Excellence levels it is essential that students discuss features in context”

Middle:

In this sample the median for the year 11 armspans is 170cm whereas the median armspan for year 10 is 166cm. The year 11 median is 4cm bigger than the year 10 median armspan. This shows that year 11 girls have on average a longer armspan than year 10 girls in this sample.

In this sample the middle 50% of year 11 armspans are shifted slightly further up the scale than the middle 50% of year 10 armspans. This suggests that the middle 50% of year 11's have bigger armspans than the middle 50% of year 10's in this sample.

Spread:

In this sample I notice that the IQR for the year 11 armspan is 19cm whereas the IQR for the year 10 armspan is 13cm. The year 11 IQR is 6cm bigger than the year 10 IQR for armspans. This shows that the middle 50% of the year 11 girls' armspans are more varied than the year 10 girls' armspans in this sample.

CONCLUSION

I cannot make the call that the Year 11 girls who took part in the 2013 Census at School survey tend to have wider armspans than the Year 10 girls who participated in the 2013 Census at School survey.

(Note: this a direct answer to the posed question)

The evidence from the sample suggests that Year 11 girls' armspans are on average longer than the Year 10 girls' armspans.

To make the claim that the Year 11 girls' armspans tend to be longer than the Year 10 girls' armspans back in the 2013 C@S population of Year 10 and Year 11 girls for samples of sizes between 25 and 40 we use the half - three quarter rule.

For this sample the medians do not fall outside the box of the other group (the middle 50% of the data) so it cannot be claimed that year 11 girls tend to have wider armspans than the year 10 girls who participated in the 2013 Census at School survey.