Question:

Is the median hours of sleep of Year 11 - 13 females who did the Census at School NZ 2011 longer than the median hours of sleep of Year 11 - 13 males who did the Census at School NZ 2011?

①

I am going to use NZgrapher to get a random sample for analysis. My variable is the hours of sleep the previous night. The census is usually completed at school but I don't know which day so don't know what night it was but it shouldn't be Friday or Saturday if it is collected at school.

②

Year 11 - 13 students hours of sleep

Female

min: 7
lq: 8
med: 8.75
mean: 8.4919
uq: 9
max: 9.5
sd: 0.69367
num: 31

8.4806   9.0194

③

Male

min: 5.5
lq: 7.5
med: 8
mean: 8.1923
uq: 8.5
max: 11
sd: 1.2361
num: 39

7.7598   8.2402

Gender

Hours slept last night (hours)

Made with NZGrapher   www.mathsnz.com
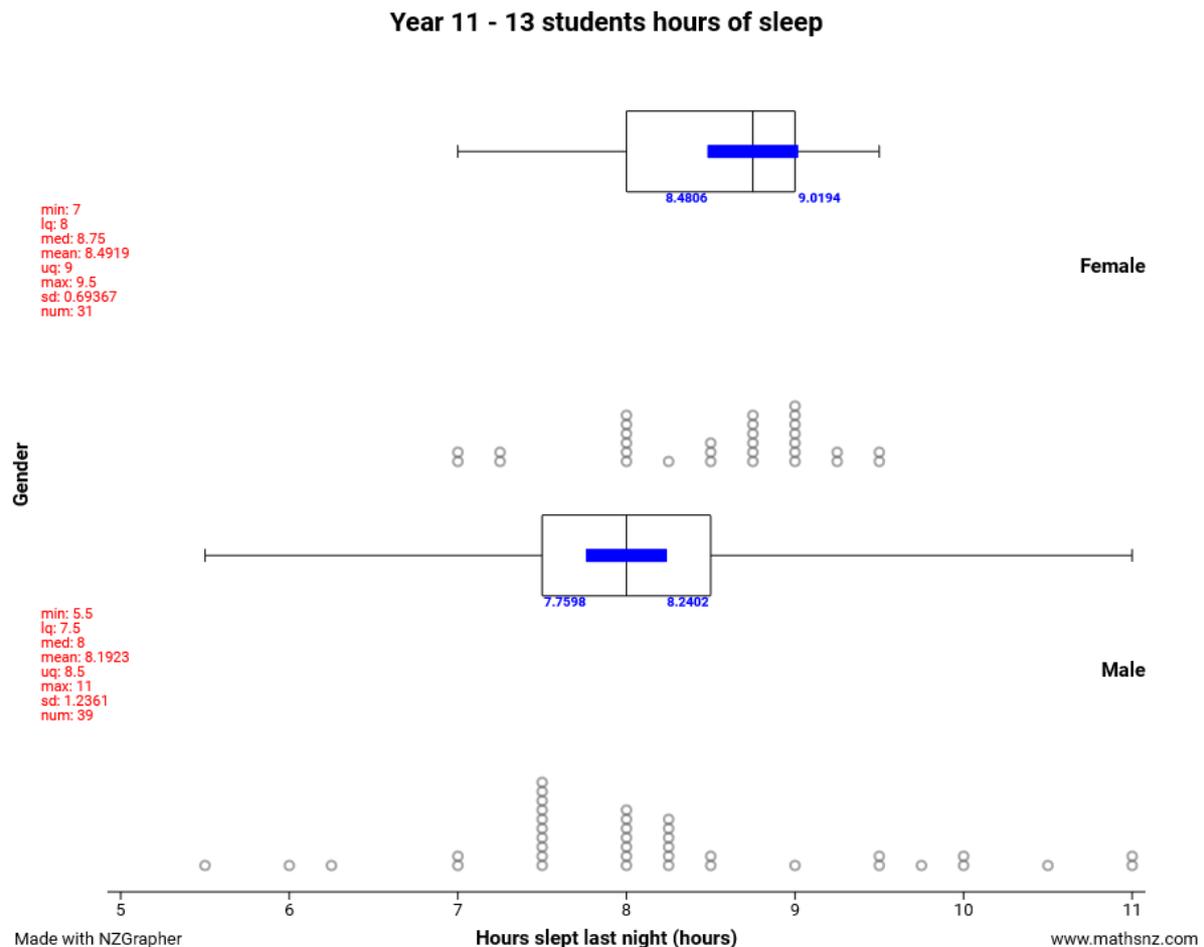
I notice in my sample that the females median hours slept (8.75 hr) is longer than the males median hours slept (8 h). That's a difference of 0.75 h.

The graph for the females hours is more squashed up than the male hours which is quite spread out but most of the male hours of sleep are between 7.5 hours and 8.5 hours. This can also be seen in the range of the male hours of sleep (5.5 h) is more than the range of the female hours of sleep.

④

The interquartile range (middle 50%) for the males in my sample is 1 hour and the interquartile range (middle 50%) for the females in my sample is also 1 hour and the boxes in the graph are the same length. This means there is the same amount of variation in the middle 50% hours of sleep for both males and females in my sample.

The middle 50% of females hours of sleep also overlaps the male hours of sleep.

One of the males in my sample only had 5.5 hours of sleep for the previous night and then there are two more males with 6 hours then 6.25 hours of sleep. This isn't much sleep but it is only what they thought they got the night before so they may have had a late night or they

may have an early morning job or sports practice. At the other end of the male graph there are some large values but these are also reasonable and as it is only one night (hours of sleep the previous night) it doesn't mean they are sleeping 11 hours every night. A different sample of males and females will have different hours of sleep to what I got so the graphs are going to look different. The median and middle 50% might be in a different place as well.

⑤

Conclusion:
The confidence intervals on the graph show where the population median should be. In the population I expect that the median hours of sleep of year 11 – 13 females to fall between 8.4806 h and 9.0194 h. For the population of year 11 - 13 males I would expect the median hours of sleep to be between 7.7598 h and 8.2402 h (the males confidence interval).

⑦

Answer Question: My question was Is the median hours of sleep of Year 11 - 13 females who did the Census at School NZ 2011 longer than the median hours of sleep of Year 11 - 13 males who did the Census at School NZ 2011? Looking at the informal confidence intervals I can make the call that the median hours of sleep the previous night of year 11 - 13 females in the Census at School NZ 2011 is longer than the median hours of sleep the previous night of year 11- 13 males in the Census at School NZ 2011.

⑥