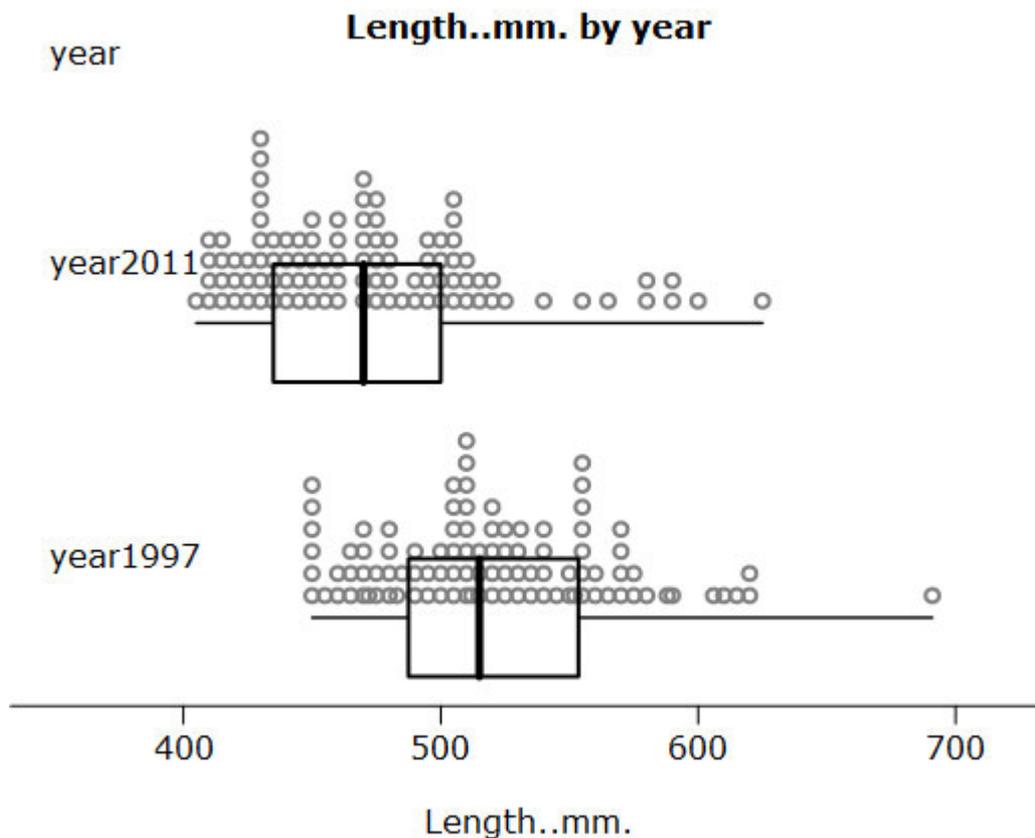The local paper has been full of stories about Lake Taupo being polluted and the trout fishing not being so good because the fish are smaller than they used to be. I am going to investigate this by looking at the data I have been given of trout caught in Lake Taupo in 1997 and 2011. I wonder if trout tend to be shorter in 2011 than in 1997?

(1)

Length..mm. by year

year

year2011

(2)

year1997

400   500   600   700

Length..mm.

I can see from the graph that trout are not on average as long in 2011 as in 1997. This is shown by the middle line in the boxes, and the middle line for 1997 is further up the graph with a higher value. If you look in the table this is agreed because the median in 1997 was 515mm and it is now only 470mm. This agrees with the report in the local paper which reported that the lake is becoming more polluted and therefore the fish are becoming smaller.

(4)

(8)

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Summary of Length..mm. by year
        Min. 1st Qu. Median  Mean 3rd Qu. Max. Std.dev Sample.Size
year1997 450    487.5    515 520.8   553.5  691  45.780          99
year2011 405    435.0    470 471.9   500.0  625  47.086         100
```

(3)

The middle 50% of spread is about the same for both years. You can see this on the graph because the boxes are about the same length. The table says that in 1997 the box went from

(4)

553.5 to 487.5 which is 66mm and in 2011 it went from 500 to 435 which is 65mm. These are almost the same. So the variation in trout length is about the same for both years.

⑥

Both years have long right tails with a big spread of trout of longer lengths. I can see this as the dots are spread out to the right for both years. In 2011 the right tail goes from 500 to 625 (125mm) and in 1997 it goes from 553.5 to 691 (137.5mm). In both years the spread of trout lengths at the longer end is quite big.

⑥

There is one very long fish in 1997 with a length of 691mm. This is much longer than the next one which is about 620mm. Perhaps someone measured that one wrongly. I don't know whether this is the case or not so I left it in the data set.

In conclusion my sample shows that trout tended to be longer in 1997 than 2011. I can say this of the value of the DBM/OVS ratio. The DBM is 45 and the OVS is 118.5. The ratio is 45/118.5 = 0.38. This is bigger than 0.2. So for all trout in Lake Taupo, they tended to be longer in 1997 than in 2011, so my investigation says the same as the local paper.

⑦
⑥
⑤