WORKSHOP 2

Introduction to making a call using
box plots.

Aims of the Session

- Appreciating sampling variability.

- Considering shift and overlap.

- Making a call.

- Justifying the call.

Investigative questions.

- *Do the heights of Karekare College boys tend to be greater than the heights of Karekare College girls?*

- *Do Karekare College students who walk to school tend to get there faster than Karekare College students who take the bus?*

- Handout sets of box plots.

Exploring the graphs

- Explore one question at a time.

- What do you notice?

- What is similar? What is different?

- Write descriptive statements about what you notice.

Overall message - situation 1

- Heights graphs.

- Collect ideas from the group.
- What is similar across the samples?
- What is different across the samples?

Overall message - situation 1

- In all the samples the boxes overlap by a lot.

- Sometimes the boys' box is to the right (higher) and sometimes the girls' box is the the right (higher).

- Sometimes the boys' median is higher, sometimes the girls' median is higher, sometimes they are the same.

- The medians are always within the overlap of the two boxes.

Overall message - situation 1

- The message is inconsistent, the different samples give different messages.

- I am not sure what is happening back in the populations.

- I can't say if boys tend to be taller than girls or if girls tend to be taller than boys.

Overall message - situation 2

- Time to school graphs.

- Collect ideas from the group.
- What is similar across the samples?
- What is different across the samples?

Overall message - situation 2

- In all samples the bus box is further to the right than the walk bus.

- Sometimes the boxes overlap, sometimes they do not, when they overlap it is only by a small amount.

- The bus median is always higher than the walk median.

- In all cases at least one median is outside the overlap of the two boxes.

Overall message - situation 2

- The message is consistent, the samples are giving the same message.

- I am fairly confident that back in the populations the time it takes to get to school by bus will tend to be longer than the time it takes to walk to school.

Reinforcing the message

- Show the two movies.

- Raise hands to indicate which median is higher.

- Eg boys higher - right hand; girls higher (boys lower) - left hand

Working through the conclusion

- Using their example from workshop 1.

- Write the conclusion.
  - I would claim that …
  - Explain why you have made this conclusion.
  - Is my conclusion consistent with …

Working through the conclusion

- **I would claim that …**
    - Confirming the question
    - I am unable to make a call…
    - …back in the two populations
- **Explain why you have made this conclusion.**
    - Shift, overlap, position of the median, another sample
- **Is my conclusion consistent with…**
    - Does it confirm/not confirm…

Examples: Iron data

- Handout 1
- Show short video clip

- Boys and girls
- Premature and non-premature
- Formula fed and high cows milk intake

Examples: Iron data

- Predict the population distributions.

- Work through each example.

- Complete description for middle 50% and then complete the conclusion.

Working through the conclusion

- I would claim that …
  - Confirming the question
  - I am unable to make a call…
  - … back in the two populations
- Explain why you have made this conclusion.
  - Shift, overlap, position of the median, another sample
- Is my conclusion consistent with…
  - Does it confirm/not confirm…

Wrap Up

- Appreciating sampling variability.

- Considering shift and overlap.

- Making a call.

- Justifying the call.