*Chapter One notes* ***for Agri-food research***

Summary from page 38

*Binary variables are yes/no questions, sets of which can be summarized as proportions.*

The classic binary variable in agri-food research is “this thing has/has not had the treatment applied”.

Most often in agri-food research we have different categories and levels that exceed two (a binary variable is a special case of a categorical variable that has two levels).

*Positive or negative framing of proportions can change their emotional impact.*

Think of covid 19 vaccine side effects. Is the percentage or total number of people getting blood clots more shocking? Depends on what you are arguing!

In agri-food research this is still relevant. Think about the bad apples data (see github data folders). If the total count of bad apples is all that matters, then the browning doesn’t look like much of problem. But if a few bad apples rot many others or put consumers off (assuming even a few consumers will make a fuss that others listen to) then low proportions of counts both make a difference.

*Relative risks tend to convey an exaggerated importance, and absolute risks should be provided for clarity.*

What is the absolute of catching COVID 19 from someone that is vaccinated compared to someone that is not?

What is the absolute risk that bins of apples in cold storage will go bad if you use a certain spray, instead of something else?

*Expected frequencies promote understanding and an appropriate sense of importance.*

Usually people do deal with “frequencies” better than analogous “probabilities”.

As scientists we only need to answer specific questions within the context of our carefully crafted “research questions”. Presentation of results is still an issue, however (what would the newspaper say about your latest publication on the risks of getting sick from rice that was left unrefrigerated for such-and-such hours, for example?).

*Odds ratios arise from scientific studies but should not be used for general communication. Graphics need to be chosen with care and awareness of their impact.*

End users of research are not just other researchers. For example, perhaps in food tech bacteria counts and food safety risks need to be communicated to consumers; and in ag you often need to “**extend**” results to farmers in order to “have an impact”.