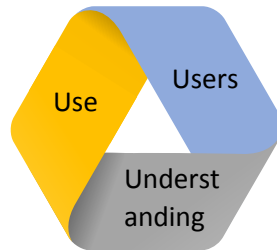


## Simple Covid Statistics are Not Always Simple

So, you have some great statistics to present. Congratulations! To improve your chance of positively influencing your audience you might want to think about the three interlinked U's of Users, Use and Understanding.



What **use** do you imagine for your insights?

Which **users** will you help?

What **understanding** do they (or you) have of the matters involved?

### Use:

Foremost in your presentation is to think of the action you hope your statistics will inspire. No action, no point. Inspire and enable the action. Users will need to see the need for action and may need help knowing how to act, even if it is just confirmation of what they were doing anyway.

This is tricky with a topic like Covid 19 because different groups have different opportunities for action, so different uses. Thus, if your intended use is too general or too specific it may be mismatched to your users - see below.

### Users:

It helps to think about what different user groups there might be. For Covid 19, groups might be: people in care homes, retirees, working families, single people, children, keyworkers, policymakers, scientists, etc. Is your message particularly relevant or not relevant to any of these? Make a choice of user group, then tune your use thinking to that group.

If your users are fairly homogeneous and open to the use or action you imagine, your work is easier. You want to justify the benefits and help them feel empowered to actively use your information. Make this as easy as possible.

If your group includes individuals with a bias against your message, your work is uphill. You need to build trust. You might temper what you ask them to do. It may help to look at things from their point of view and try to convince them your message is compatible with their values and way of seeing the world. This might include starting with consequences that they would not support and by showing how this can be avoided.

Successful politicians make this all look easy. They have listened to their audience and use their language. They have succinct messages and use stories which tap into their audience's own imagination, bringing in an emotional element to their logical messages.

### Understanding

Professionalism requires actuaries to be knowledgeable about the subject of their analysis or else seek help from experts. There is also an explicit or implied duty to ensure information is understood by users.

Given that "all models are wrong" it helps to ensure that yours is useful.

Consider what was not modelled and how this might affect conclusions. Also, was there information missing that could materially affect conclusions? What is dynamic about the situation that users should take account of? What makes it difficult to extrapolate your conclusions into the future? If there is public interest at stake, these are critical issues.

Besides our own understanding of the domain and of the modelling, how your user audience makes sense of the world is important. Examples are: What are their social values, how do they like to learn and engage, how do they think: logically? With stories? Following analysis? Fitting in with peers? Or something else?

### Application

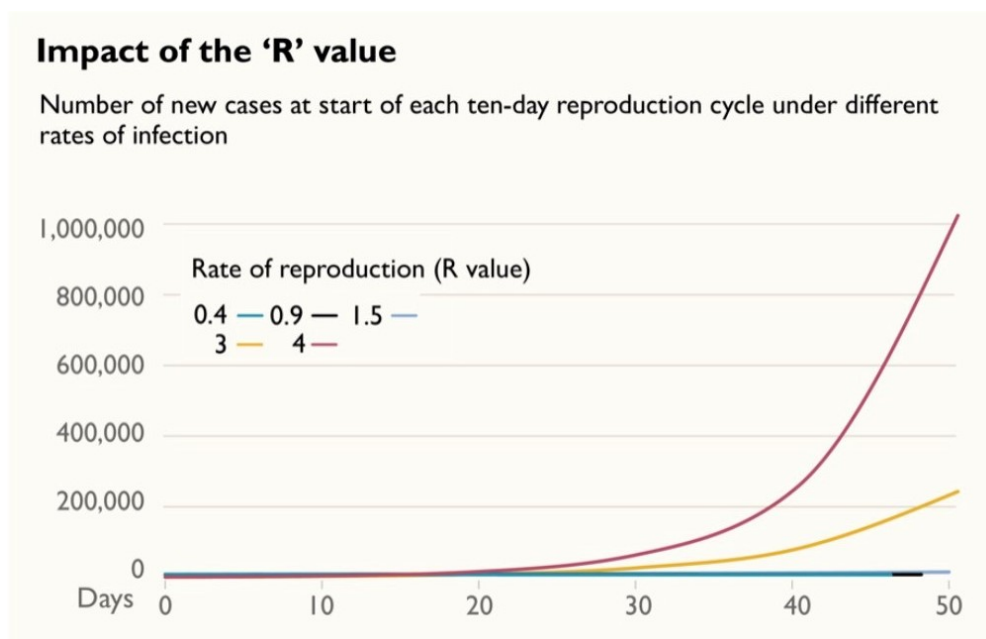
I had intended to explain a simple diagram about 'R' Values, which relate to the rate at which diseases spread. If 'R' is below 1, then a disease will eventually stop spreading. The more it exceeds 1, the more likely it is to spread out of control.

I quickly realised I had taken on too much - I am no expert in Covid modelling, and Covid is fast evolving and very complex to model and thus explain.

I went to a friend, Heidi Whitlow, who has been following Covid modelling more closely for advice. She asked "Why are they using 10 day intervals when most people get the virus 3-5 days after exposure?" and reminded me of things like: different groups having different exposure intensity and health risks; super-spreaders; asymptomatic people, and a host of unanswered medical questions. As ever, it really helps to have a second viewpoint.

Alternately I could have tried to identify experts elsewhere with a greater understanding. If we are not the expert, we can try to access the expert to explain the model and help develop the message.

Below is the chart I took as an example.



Readers unfamiliar with the science behind R might interpret this diagram to conclude that things are only bad at R values of 3 or 4, but an R of 1.5 is OK. This could lead them to choose to ignore safety measures. Their Use has not been thought through.

The confusion comes because the chart does not relate the R value to current infection levels since it starts with a single infected person, rather than current infected population figures. It also does not give any context for subgroups. An R of 1.1 amongst a high mortality group may be much worse than 1.5 for healthy students. And averages can hide what is happening in important subgroups. Users and their Understanding are involved here.

A more useful chart might put things in terms of “overwhelm the health system”: How many unchecked days of spreading would it take to overwhelm the NHS if R was at different values? Or how many care home deaths would r values running from 0.9 to 1.5 for their carers bring?

### Conclusion

Next time you have statistics to share, especially if they are not your usual product, elicit help to ensure you understand the information, the users and their context and what use (or misuse) they may put them to. Consider sharing it with a subgroup of your intended audience to check the impact and messaging. Your duty to do this goes up with the potential for good or ill of your message, but please persevere as the role you are taking is important.