Top tips to statisticians communicating through the media, especially in the time of COVID-19

Kevin McConway (The Open University)* and

David Spiegelhalter (University of Cambridge)**

Introduction

The coronavirus pandemic has brought an unprecedented demand from the media for statistical commentary. Whereas a trip to a studio for a radio or TV interview was once an exciting novelty for a statistician, the seller's market over the pandemic means that many requests have to be turned down, and the rest fitted in with family life at home.

While it is always gratifying to be wanted, we have personally faced many challenges in our media work, and here we try to distil our experiences into a list of tips. These are aimed at statisticians who are willing to engage with the media, and who would like to avoid making all the mistakes that we have although, even if you absorb our nuggets of wisdom, things will still go wrong (see #9).

We start with some selected points taught to anyone dealing with the media, then get onto specific issues for statisticians, and finish off with some comments on relationships with journalists.

General tips for dealing with the media

1. **Get media training**

They will go through essential matters such as understanding the format of the interview (for radio-TV), pre-record or live, solo or with someone else, and so on. They will emphasise the crucial importance of careful preparation for interviews: get the main points clear (3 or 4 maybe), write a rough script, prepare good phrases, think of what questions you might be asked, practise answers. For audio-only interviews, you can have the 'script' open in front of you, and during the pandemic the novel experience has been online TV interviews, in which you may be able to have some notes positioned just underneath the camera, but you still need to try and look directly at the lens as much as possible.

2. **Don't be lured out of your comfort zone**

Crucially, prepare the phrases you can use when you are asked something outside your area of expertise. Even if the topics have been agreed with the journalist or researcher beforehand, the interviewer will ask what they feel like at the time — Nick Robinson on the Today programme is notorious for adding rogue questions. Be friendly and not defensive: "Great question, but not my job: you will have to ask a psychologist/modeller/brain-surgeon

etc.”. One of us has had to beg a live radio interviewer to ask questions we could actually answer.

But if you’re not being asked about the issues you do want to talk about, make sure you get them in, even if the link is a bit tenuous.

3. **Beware of ‘just a chat’.**

Never ever ever talk to a print journalist on the phone without checking whether it is on or off-the-record — it is remarkably easy to forget to ask. If they say it is on-the-record, or if you forget to ask and they don’t say, they will be writing down or recording every word, and so be extremely careful and cautious in your replies. After some bad experiences, we have found it is better to ask for the questions in an email and then prepare written answers. But don’t expect to see the story before publication, although we have found that recently journalists have more willing to check the quotes they want to use, perhaps to keep in our good books. In the end it’s their story, not yours.

Sometimes journalists want to speak to you to find out how to develop their story, which is fine, but beware of any that already know exactly what they want to say, and they just want a quote from you to back that up. Be wary if they keep asking you to say the same thing in different words, since they can pick out unrepresentative quotes from what you said. One of us was asked in August 2020 to pre-record for ITV News about why case rates were going up but (at the time) hospitalisations were not. The interviewer, however, mainly wanted to talk about whether the pandemic was worsening, which was far from clear at the time. The interviewer asked essentially the same question several times, the statistician answered with provisos and caveats, and eventually appeared in the news programme in a very brief extract using the version with the fewest caveats.

If you sense you are being set up, it’s fine just to politely end the interview. Beware of journalistic charm, and identify those you can trust. And if you are misrepresented, complain loudly (see later).

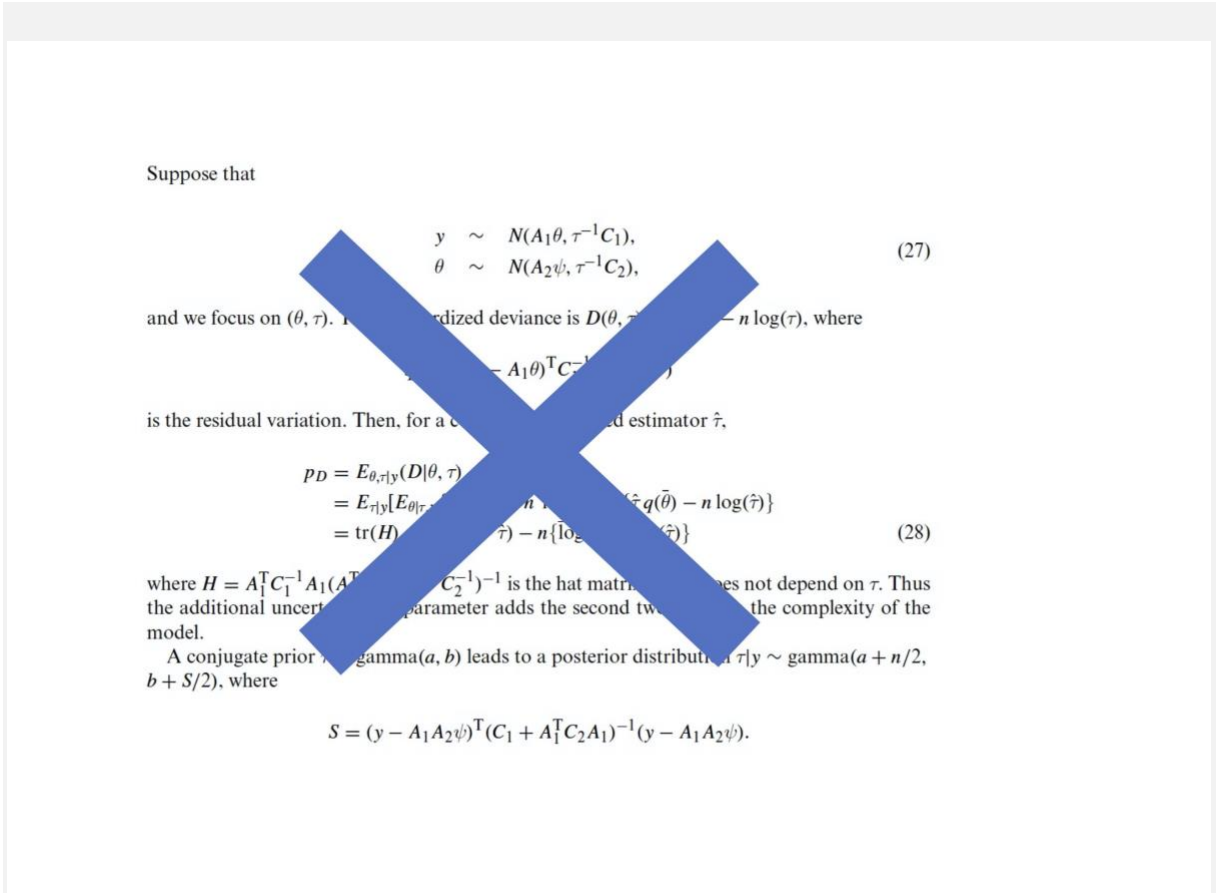
Particular poin**ts for statisticians**

4. **Sound human**

Most people find statistical discussion very challenging, but they will love you if you make them feel they newly understand something. Try to sound human, empathetic, and bring in personal perspective when possible: for example, we’ve talked about our own position in the priority queue for a vaccine. Always use specific examples rather than generalities. Journalists like specific personal examples (“Mr Bloggs of Leicester, aged 66, said…”) for good reasons — it involves people and keeps them interested. They’ll use these examples anyway, so why not give them ones that *you* choose.

5. **Keep off the (statistical) jargon**

Statisticians have to be really careful never to use terms such as confidence intervals, P-values, statistical significance, effect size — in fact everything we use when talking to each other. Practise carefully how you will explain these terms — perhaps assume you are talking to a rather innumerate relation. For example we would never use the term 'sensitivity' in an interview, but instead talk about the proportion of people with the disease who get a positive test. The interviewer might use jargon anyway (which they may not understand) but still keep off it.



Suppose that

$$\begin{aligned} y &\sim N(A_1\theta, \tau^{-1}C_1), \\ \theta &\sim N(A_2\psi, \tau^{-1}C_2), \end{aligned} \tag{27}$$

and we focus on (θ, τ). [illegible]rdized deviance is $D(\theta, \tau) = [illegible] - n\log(\tau)$, where

[illegible] $- A_1\theta)^{\mathrm{T}}C^{-1}$ [illegible]

is the residual variation. Then, for a [illegible]d estimator $\hat{\tau}$,

$$\begin{aligned} p_D &= E_{\theta,\tau|y}(D|\theta,\tau) \\ &= E_{\tau|y}[E_{\theta|\tau} [illegible] \hat{\tau} q(\bar{\theta}) - n\log(\hat{\tau})\} \\ &= \mathrm{tr}(H) [illegible] \hat{\tau}) - n\{\log [illegible] (\hat{\tau})\} \end{aligned} \tag{28}$$

where $H = A_1^{\mathrm{T}}C_1^{-1}A_1(A^{\mathrm{T}}$ [illegible] $C_2^{-1})^{-1}$ is the hat matri[illegible]es not depend on τ. Thus the additional uncert[illegible]parameter adds the second tw[illegible] the complexity of the model.

A conjugate prior [illegible] gamma(a, b) leads to a posterior distributi[illegible] $\tau|y \sim$ gamma$(a + n/2, b + S/2)$, where

$$S = (y - A_1A_2\psi)^{\mathrm{T}}(C_1 + A_1^{\mathrm{T}}C_2A_1)^{-1}(y - A_1A_2\psi).$$

Best to avoid this kind of statistical explanation!

6. **Being a statistician means that you must know every number…**

Of course it doesn't, but many journalists will expect you to know every number by heart! Best to have a few choice ones ready — in the pandemic this involves knowing the rough basic stats of cases, hospitalisations, deaths, vaccine efficacy, and so on. But use actual numbers very sparingly, and even then in rough magnitudes. Nobody needs three significant figures.

7. Keep the nit-picking under control

Statisticians are trained to be ultra-critical, expecting to point out the weaknesses in any discussion of evidence and to emphasise uncertainty. But this can easily come across wrongly, because the interviewer/journalist/audience haven't learned to distinguish between lack of evidence for *X* and evidence that *X* is false. Face masks are a classic example: we try to pre-empt misunderstanding by using statements like "The lack of strong evidence for the benefits of face-masks doesn't mean they are a waste of time. It's just that there isn't (yet) enough evidence to know their effect."

8. **Don't be pulled into someone else's argument**

Many discussions about Covid have become polarised and politicised. Statisticians are generally not on either side in a controversy, but just want to improve understanding, and possibly call out misuse of evidence. This is often recognised and valued by journalists — though some would prefer to set up a (real or imagined) conflict and get you to join in on one side. For example, criticism of the way graphs were used as part of the justification of lockdown can easily be interpreted as meaning you don't support lockdown.

This can happen in unexpected ways — for example we commented on misuse of a statistical argument in a preprint about infectiousness of children from a prominent German team, and were catapulted into a major row in the German media and on Twitter that went on for weeks. Strangely, the points we made were treated first as if we were supporters of one side of a major political argument, and later as if we were supporters of the other side. But we weren't taking sides of that kind at all.

9. **You'll get things wrong. Don't agonise about that**

Be prepared to fail, again and again, but keep going and it will get better. Getting the right tone and delivery takes time and practice — you have to develop your own style. As a detail, remember that if you hear yourself saying something that doesn't sound right in a pre-record interview, it's OK to stop in the middle of a sentence and answer again. Statisticians are trained to worry about making factual errors, and they do matter, but usually a small technical mistake matters less in the media than in your normal work. It will usually be forgotten about in a few days, even if over-pedantic colleagues comment on it. (OK, Twitter has a long memory, and things can be dredged up months or years later, so be careful. But Twitter is a nasty place and people understand that's what goes on.)

10. **Don't try and go it alone — work with others**

It can be very rewarding to work with the media, but it can also be pretty draining at times. Don't feel that you always have to deal with everything on your own. It can be very helpful to

make links to other statisticians, or other colleagues that you can bounce ideas off. Over many years the two of us have intermittently worked together, and discussed how we work with journalists and we've found that very useful in developing good ways to get things across, or just to have someone to sound off to about the latest experience.

After an interview, get someone to give a diplomatic analysis of the strengths and weaknesses of what you have done (our partners are very good at this). Get ready for the disappointment that, unless they are desperately interested, audiences tend not to recall any details at all — they just remember how you made them feel. A 'critical friend' who isn't a statistician might be particularly able to help with this aspect, and also to comment on things you've written with an eye to how much sense they make to a non-expert.

One organisation that may be able to provide support for your media communications is the Science Media Centre, an independent press office that mediates between scientists, including statisticians, and the media to make good scientific evidence and evaluation more accessible to everyone. We've both been working with them for many years, and they provide information on how you can work with them.

Finally, on relationships with the media

11. **Make friends with journalists ….**

If you want to have continuing impact, you have to cultivate personal relationships with journalists, which makes it more likely that they'll listen seriously to what you have to say, treat you with genuine respect, and perhaps even share quotes before publication. And you can ask them for feedback. There's a price to pay for that — being phoned or emailed at all hours — and of course you can say no to their requests, but it does help to explain why.

12. **…. but don't be shy about complaining**

If you feel you have been badly treated, complain. Loudly and repeatedly if necessary. A standard problem is being mis-represented either in a headline (which is usually not written by the journalist but a sub-editor), or in what could be called a 'gist-quote' — when a journalist ascribes a quote to you that you did not actually say, but that they think expresses things better than you did! It may seem extraordinary that this is considered acceptable journalism: sometimes it can work in your favour, but commonly the words ascribed to you either misrepresent or exaggerate your carefully-weighed opinions. For example, a misunderstanding led to a headline "*Your risk of dying is NO different this year — despite coronavirus epidemic, says expert*". DJS was that 'expert', but got the headline changed within an hour or so.

It is crucial to spot this early, say from an online version, and act fast by explaining politely, probably to your original journalist contact to begin with, that it needs changing

immediately. If the response is slow, then say you will contact the editor and if necessary the press regulator. This tends to work. But choose your battles: it is only worth complaining if there is a serious problem.

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Statisticians have a vital role in explaining numbers and evidence. They tend not to have strong personal agendas apart from wanting things to be clear and open, but they come down hard on selection or manipulation of evidence. The media love all this, and so do the public. So we need more statisticians to get out there, put their heads above the parapet, make mistakes and learn from them, and improve the communication of lessons learned from data. We hope this list has not put you off, and instead will encourage you to engage with the media.

* Professor Kevin McConway is Emeritus Professor of Applied Statistics at the Open University. He was a Vice-President of the Royal Statistical Society from 2012 to 2015, and is currently a trustee and member of the Advisory Committee of the Science Media Centre. Email kevin.mcconway@open.ac.uk Twitter @kjm2

** Professor Sir David Spiegelhalter is Chairman of the Winton Centre for Risk and Evidence Communication and Fellow of Churchill College in the University of Cambridge, having recently retired from his position as Winton Professor of Public Understanding of Risk. He was President of the Royal Statistical Society from 2017 to 2018. Email david@statslab.cam.ac.uk Twitter @d_spiegel

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