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Thou Shalt Not Sit With Statisticians

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*Thou shalt not sit
With statisticians nor commit
A social science.*

- W H Auden, *Under Which Lyre* (1948)

Introduction

We have all heard a lot about statistics recently – and had a lot of time to dwell on them. We have heard about the risks of making international comparisons; the comparative advantages of logarithmic versus linear scales; and the importance of good and representative data.

For lawyers, two questions arise. Can valid predictions about individual cases be made using statistics? Can statistics alone be used to prove causation?

This article aims to show that the answers to those questions are, respectively, ‘yes’ and ‘no’, with a particular focus on the coronial jurisdiction by reference to two recent cases: *R (Chidlow) -v- HM Senior Coroner for Blackpool and Fylde* [2019] Inquest LR 93 and *R (Smith) -v- HM Assistant Coroner for North West Wales* [2020] EWHC 781 (Admin).

Using Statistics to Make Predictions

Not long after Auden wrote the lines above, Darrell Huff wrote *How to Lie with Statistics* (1954). Provocative as the title may be, it makes a serious point. The statistical process involves turning experience into (necessarily imperfect) data, then using that data to draw conclusions or make predictions. As Nate Silver put it in *The Signal and the Noise* (2012):

The numbers have no way of speaking for themselves. We speak for them. We imbue them with meaning.

Statistics, then, are always to some extent constructed on the basis of judgements.

A further problem arises when statistics are used to make predictions – so-called ‘predictive analytics’. In *The Art of Statistics* (2019), Professor Sir David Spiegelhalter discussed a predictive model called Predict 2.1, which looks at the expected benefit of various adjuvant therapies to suppress secondary tumour formation after breast cancer surgery:

Predict 2.1 is not perfect, and the figures [from the model] can only be used as ballpark guides for an individual: they are what we would expect to happen to women who match the features included in the algorithm, and additional factors should be taken into account for a specific woman.

This difficulty – drawing valid conclusions about an individual using a statistical model – comes to the fore when statistics are deployed to prove causation in legal proceedings.

Statistics and the Law

In *Wardlaw -v- Farrar* [2004] PIQR P19, Brooke LJ opined as follows at [35]:

While judges are of course entitled to place such weight on statistical evidence as is appropriate, they must not blind themselves to the effect of other evidence which might put a particular patient in a particular category, regardless of the general probabilities.

This focus on individual characteristics accords with Professor Spiegelhalter’s advice above.

Indeed, the problems with statistical evidence have been considered at the highest level of authority. In *Gregg -v- Scott* [2005] 2 AC 176, Lord Nicholls of Birkenhead explained them in this way at [28]:

Statistical evidence ... is not strictly a guide to what would have happened in one particular case. Statistics record retrospectively what happened to other patients in more or less comparable situations. They reveal trends of outcome. They are general in nature. The different way other patients responded in a similar position says nothing about how the claimant would have responded. Statistics do not show whether the claimant patient would have conformed to the trend or been an exception from it. They are an imperfect means of assessing outcomes even of groups of patients undergoing treatment, let alone a means of providing an accurate assessment of the position of one individual patient.

And at [111] in the same case, Lord Hope of Craighead said this:

Statistics may act as a guide. In some cases they may be the only guide that it is available. But they are no more than a guide to that which must be proved. This is because the claim is personal to the individual. It is the effect of the injury on his own prospects of survival that sounds in damages, not the effect which injuries of that type may have on the population generally.

Both Lord Nicholls and Lord Hope dissented as to the result in *Gregg -v- Scott*, but their exposition of the status of statistics was consistent with the approach of Lord Phillips of Worth Matravers MR in the majority. Lord Phillips opined that that the statistical model in evidence “*was a very inadequate tool for assessing the effect of the delay in treatment on Mr Gregg’s process and prognosis*”: see [157] (and see generally [147]-[159]).

It is thus fair to say that the courts have generally been cautious in adopting statistical evidence to prove facts on the balance of probabilities: for an example in a different context, namely epidemiological evidence in industrial disease cases, see *Sienkiewicz -v- Greif (UK) Ltd* [2011] 2 AC 229.

Coroners, Statistics and Causation

Following *R (Tainton) -v- HM Senior Coroner for Preston and West Lancashire* [2016] 4 WLR 157, it is now well-established that in considering causation, it must be asked whether, on the balance of probabilities, the conduct in question more than minimally, negligibly or trivially contributed to the deceased’s death.

It is also well-established, following *R (Secretary of State for Justice) -v- HM Deputy Coroner for the Eastern District of West Yorkshire* [2012] EWHC 1634 (Admin), that when determining what conclusions or findings to leave to the jury, the coroner must apply the so-called ‘Galbraith Plus’ test. First, the coroner must ask whether there is evidence upon which the jury properly directed could properly reach the particular finding (applying *R -v- Galbraith* (1981) 73 Cr App R 124). Secondly, the coroner must consider whether it would be safe for the jury to reach the conclusion or finding upon the evidence.

In *R (Chidlow)*, the Divisional Court examined the role of statistics in coronial findings about causation in individual cases and set out a number of principles.

The deceased in that case fell ill and suffered a cardiac arrest during an admitted period of delay before an ambulance arrived. Expert evidence at the inquest was to the effect that, had paramedics arrived earlier, the deceased would, on the balance of probabilities, have survived. This opinion was based on statistical evidence from a number of studies. The coroner held, however, that it was not safe to leave the issue of causation to the jury because the deceased’s cause of death was unascertained.

By judicial review proceedings, the deceased's brother sought to quash that decision. The issue was whether causation could be proved by statistical evidence as to the prospects that the deceased might have survived had he received expert treatment in good time.

At [38]-[52], Pepperall J (with whom Hickinbottom LJ agreed) reviewed the authorities before drawing a number of conclusions at [52]. Insofar as relevant:

In considering whether it is safe to leave ... an issue to the jury, a coroner must have regard to all relevant evidence. In addition to evidence relating to the particular deceased and the circumstances of his or her death, that may include general statistical evidence drawn from population data such as the rate of survival in a particular group.

*Such general statistical evidence alone is, however, unlikely to be sufficient. For example, even where the rate is over 50%, a raw survival rate for the group into which (without the relevant event or omission) the deceased is said to fall is unlikely to be sufficient because, without evidence supporting the proposition derived from the population data, a jury could not safely conclude that he or she would have fallen into the category of survivors. As Croom-Johnson LJ put it [in *Hotson -v- East Berkshire Area Health Authority* [1987] 1 AC 750, 769B], being a figure in a statistic does not of itself prove causation.*

In most cases, there will be other evidence as to whether the deceased probably would or would not have fallen in the group of survivors. Where there is apparently credible additional evidence of causation which, if accepted, together with the general statistical evidence could properly lead the jury to find on the balance of probabilities that the event or omission more than minimally, negligibly or trivially contributed to death then it will usually be proper and safe to leave causation to the jury.

Applying those principles at [60]-[63], Pepperall J rejected the submission that the evidence as to causation amounted to "nothing more than statistics." The expert had considered the deceased's medical records, the post-mortem findings and other evidence relating specifically to the deceased's case. He did not seek to prove that the deceased was simply "a figure in a statistic"; rather, he had given careful consideration to the possible causes of death and the prospects of successful treatment in the deceased's case.

Accordingly, the coroner "fell into error in concluding that the lack of a clear cause of death prevented the jury from being able to consider the possible causal effect of the delay in treatment." The question of causation ought to have been left to the jury at stage 2 of the Galbraith Plus test. A fresh inquest was ordered.

The recent case of *R (Smith)* fell on the other side of the line. The deceased in that case was found hanging by the neck from a bannister at her home address. In the weeks prior to her death, she had been under the care of her local mental health team. The coroner obtained an independent report from a consultant forensic psychiatrist, who was highly critical of the care provided to the deceased.

In oral evidence, the forensic psychiatrist stated that the deceased's death "*was not only predictable but preventable*" and that "*over 99% of [patients] do not go on to kill themselves in the coming few years*": see [39].

The coroner referred to *Chidlow* and held that she was not satisfied on the balance of probabilities that the deceased's death could have been prevented.

In the Administrative Court, Griffiths J (delivering the judgment of the court, which also comprised Dingemans LJ and the Chief Coroner) noted at [62] that the forensic psychiatrist's "*use of statistics was couched in very general terms, which made it particularly difficult to use them confidently in [the deceased's] case*". In other words, there was nothing to enable the coroner to safely conclude that the deceased would have fallen into the (statistical) category of survivors.

A distinction was also drawn at [63] between cases such as *Chidlow* about what ought to be left to a jury and cases such as *Smith* about what verdict or conclusion is open to the tribunal (the jury or the coroner sitting alone) once seized of the question.

As *Smith* was a case in the second category, the relevant question was whether the coroner's decision was irrational in its failure to accept the forensic psychiatrist's evidence about causation of death. At [70], the Administrative Court held that the coroner's conclusion "*was rational and securely based on the whole of her careful evidential enquiry.*"

Various other challenges to the coroner's decision having also failed, the application for judicial review in *Smith* was dismissed.

Conclusion

It is suggested that a number of practical conclusions may be drawn from the above:

- It is possible to use statistics to prove causation in a particular case. But statistics alone are not enough.

- There must be some evidence showing that the relevant person would have fallen into a particular category – that is, some evidence linking the general (the statistical) to the specific (the individual).
- As noted by the editors of *Clerk & Lindsell on Torts* (22nd edition) at paragraph 2-30: “*Proof of causation is almost invariably about a burden of persuasion, and sometimes statistics can be highly persuasive, when used appropriately.*”
- In the coronial context, where stage 1 of the Galbraith Plus test is met on the above basis, it will usually be proper to leave the question to the jury under stage 2.

Postscript: was W H Auden right?

In *Under Which Lyre*, Auden was addressing graduates at Harvard University and admonishing the trend of treating people as anything other than unique individuals.

This is good advice, too, for lawyers dealing with medical negligence and coronial matters. The appropriate use of statistics must always involve an evidential link between the model and the individual.

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