[Soma S Dhavala
Gray, Mary W., "Can Statistics Tell Us What We Do Not Want To Hear?", 8 *Statistical Science* 144 (1993) ]

Someone likes to joke saying “there are three kinds of people, liars, liars and statisticians”. What happens if lawyers and courts seek the help of statisticians then, a liar testifying for another liar? May I ask? Even though this question may sound silly and anger both statisticians and lawyers alike, it still seems to find place in the court-rooms.

Mary Gray talks about the statistical fallacies and how courts & law-practitioners (ill) treat statistics as a bunch of numbers and not as science, a dangerous practice indeed. She offers advice to statisticians about the limitations of the job at hand and about what can be done and what cannot be done. She underscores the importance of saying no when the statisticians are not part of the early talks or when they don’t have enough data, since they can be held responsible under the perjury of the law (It would lead to the tragic circumstances where a statisticians needs a lawyer and not the other way round). Further, statisticians, as experts in the field of quantitative reasoning, can only claim statistical significance or insignificance but cannot claim legal significance or insignificance. That is the jurors’ job.

Gray emphasizes this point and the statistical fallacies concerned with the “45 rule” that is accepted as a rule of thumb, even the by the Supreme Court. The 45 rule, as explained by Gray and understood by me, requires that the ratio of the percentages be less than 0.45, only then that the disparity between the two groups under consideration will be considered to have occurred by a factor other than just chance. When we are learning about hypothesis tests, one is always taught about the difference between “statistically significant” vs “practically significant”. The 45 rule, to me, depending on the situation and truth, can either inflate type-I error or type-II error (at least, it does not discriminate while making an error). For example, it is known that when the sample size is extremely large, even a small difference detectable by test. For small sizes, the test might not be statistically significant but it could be practically significant. The 45-rule does the opposite of what a properly designed test would do, thereby catering to the exceptions than to the rules.

She presented many cases where statistics were incorrectly interpreted and used. These incorrect interpretations range from the frequentist definition of probability to the ever enigmatic and eluding p-value that baffles lawyers and the statisticians alike.

Having awareness for these typical scenarios helps a statistician to be prepared when he is testifying or helping a lawyer making a case. At the same time, she cautions, statisticians cannot try new methods. The reasons are somewhat obvious as any outsider would consider new methods to be unsafe. Even among statisticians, Bayesian statistics was considered as “art” and “science” and was the fodder for many intellectual wars. No wonder these methods rarely entered the court rooms.

Strong working ethics are needed for a statistician if he or she wishes to engage in “law” full activities ☺