

Case 1: “After the Fact” Co-author?

As a professional statistician, you are called by a colleague to examine and “bless” a biomedical experimental report. You are urged to do it quickly because the report has already been submitted and accepted for publication in a prestigious journal in the author’s field. One of the reviewers, however, had suggested that a quick review by a statistician might be in order. To your horror, the report appears to be utter statistical nonsense. The data were not sampled according to any plan, but rather were drawn from various similar experiments done for different purposes. There is no reason to assume the observations were random or independent within or among data sets. There was no definition of how many data points had been originally available or how those used had been selected. The scatter plots within the paper were plainly skewed, but the computer statistical tests which had been run would have presumed a normal distribution. You explain gently that the statistical work is not an asset to the paper and could prove embarrassing to the author and the institution if published. You suggest that he eliminate the statistical portions and describe his work based on the qualitative reasoning which he obviously used. Initially very angry, he calms down and says, “I’ll leave the contents alone, but I will add you as a coauthor. How’s that?”

How do you reply? How is your reply conditioned by the relative power positions you may hold? If you are unable to reach an accommodation with the author, under what conditions, if any, would you write to the journal editor to preclude publication? Under what conditions, if any, would you decline to comment on the paper yourself, but refer the author to another colleague whose statistical expertise you consider to be so minimal that he or she might approve the paper as written?

<http://www.amstat.org/committees/ethics/asacase1.html>

Case 2: Uncounted Data from the Scintillation Counter

The following case was borrowed from materials for the Third Intercollegiate Ethics Bowl (1997), prepared by the Center for the Study of Ethics in the Professions at Illinois Institute of Technology. Used with permission.

Armstrong is a first year graduate student, working in a molecular biology laboratory. She has great admiration for Hayes, who is just finishing his thesis work. He seems to have a golden touch in the laboratory. His experiments produce clean data, with scatter consistently less than or equal to theoretical predictions. Because his experiments seldom need to be repeated, Hayes has produced a thesis full of fascinating and demonstrably correct results. The laboratory has already followed up on several of these with success. One day Armstrong notices Hayes leaving the scintillation counter and can't help noticing he has 80 vials. This barely registers in her subconscious until later in the day he shows her his experimental results with 40 data points. When she asks about the missing points, he explains that it is standard practice to eliminate outliers from the analysis. He goes on to mention that the scintillation counter is a scientific instrument that frequently produces murky readings distorted by many different kinds of factors. The more Armstrong thinks about this, the more distraught she becomes. A week later she summons up her courage and tells her story to the professor in whose lab she and Hayes work. He seems uninterested and irritated. He hoped she had come to present him her experimental results, which she hasn't done for months.

What, should Armstrong do next, if anything, and why? Would it make a difference if she noticed the discrepancy while reviewing a draft paper for publication? Would it make a difference whether she was to be a co-author on the paper? Would it make a difference if she were not a student, but a professor of statistics in a different department of the same university? Would it make a difference if she and Hayes were professional colleagues in a cancer research laboratory? Would it make a difference if she were Hayes' advisor or mentor?

<http://www.amstat.org/committees/ethics/asacase2.html>

Case 3: Ethics of Data Quality

A large company serves both government and private clients. During normal operations, it collects a huge amount of data which is unavailable anywhere else. These data are used internally and also used to meet information requests from clients, the media, researchers, and the general public. The data are shared with government agencies. In some uses, the data have significant social impact.

A statistician who meets requests for information based on this data is concerned because there are no control processes in place to assure uniform quality of the data. There are no audit procedures by which any particular counts or compilations could be verified independently. She feels that, on the whole, the data are probably “pretty good” but are likely to vary widely in quality from one data set to another. She has proposed creation of a statistical services group, which would institute data quality standards and procedures, as well as improve the availability of analytic products using these data. Her proposal has been applauded by management but perpetually left unfunded.

Colleagues with whom the statistician has discussed this matter point out that thousands of data sets lacking data quality standards exist and are widely used. They also point out that even where data quality control standards are in place, it can take years or decades to identify and resolve specific data quality problems. Still, the individual involved is highly uncomfortable ethically with her role in preparing compilations and reports on this data. She does not want her professional reputation on the line with such products given that the recipients do not know what they are getting. She is considering adding a disclaimer to each data product to inform customers about the lack of data quality control. She is also very tempted to resolve the issue by taking other available employment.

You are a close friend of this person, and she has asked for your advice. You are not employed by the same organization and do not know its internal politics or culture. Still, she values your judgment highly, especially in matters of professional ethics. Your advice is quite likely to be the deciding factor in her decision about what course to take.

What issues of statistical ethics are involved here? What would you advise this statistician to do? Does your advice change depending on the data subject matter, say demography versus transportation or product safety data, utility services usage versus public health-related data? Does your advice depend on the individual’s level of responsibility in the organization, say technician versus middle management versus executive?

<http://www.amstat.org/committees/ethics/asacase3.html>

Name: _____

Describe something we talked about today that was either new to you or of particular interest, or perhaps something you have further questions about.
