

Quiz Followup / ASA Statement

Today we'll discuss the pop quiz you took before break; for each question, you'll discuss in your groups and then we'll come together and discuss as a large group.

Quiz Results: For reference, here is the percent I marked "right" for each question. Some of the questions I was looking for something quite specific. For #9, there were four things.

1) 96%, 2) 63%, 3) 13% 4) 91% / 35% / 41% / 65% 5) 90%
6) 57% / 84% / 50% / 95% 7) 27%, 8) 52%, 9) 60–85%, 10) 90%

From the ASA statement on p -values, March 2016:

<http://dx.doi.org/10.1080/00031305.2016.1154108>

1. P -values can indicate how incompatible the data are with a specified statistical model.
2. P -values do not measure the probability that the studied hypothesis is true, or the probability that the data were produced by random chance alone.
3. Scientific conclusions and business or policy decisions should not be based only on whether a p -value passes a specific threshold.
4. Proper inference requires full reporting and transparency.
5. A p -value, or statistical significance, does not measure the size of an effect or the importance of a result.
6. By itself, a p -value does not provide a good measure of evidence regarding a model or hypothesis.

"Good statistical practice, as an essential component of good scientific practice, emphasizes principles of good study design and conduct, a variety of numerical and graphical summaries of data, understanding of the phenomenon under study, interpretation of results in context, complete reporting and proper logical and quantitative understanding of what data summaries mean. No single index should substitute for scientific reasoning."

Fisher: Here's an excerpt from a related 1929 Fisher article

<https://digital.library.adelaide.edu.au/dspace/bitstream/2440/15204/1/79.pdf>

"An observation is judged significant, if it would rarely have been produced, in the absence of a real cause of the kind we are seeking. It is a common practice to judge a result significant, if it is of such a magnitude that it would have been produced by chance not more frequently than once in twenty trials. This is an arbitrary, but convenient, level of significance for the practical investigator, but it does not mean that he allows himself to be deceived once in every twenty experiments. The test of significance only tells him what to ignore, namely all experiments in which significant results are not obtained. He should only claim that a phenomenon is experimentally demonstrable when he knows how to design an experiment so that it will rarely fail to give a significant result. Consequently, isolated significant results which he does not know how to reproduce are left in suspense pending further investigation."

Homework 8, due Mon March 27

For each one marked wrong or missing, please correct your answer on a new sheet and explain the correct answer. Staple this new sheet to your original quiz and turn in together.

Name: _____

What was the most interesting thing we discussed today about these statistical concepts and/or how to explain them to others?

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