

ASA p-value principles task:

Review each of the six principles listed below. For each of them:

- a. Honestly answer to what extent you accept the principle.
- b. List the specific topics/examples in your relevant intro courses that illustrates the principle.

AFTER you've made a first pass through all of the principles, read Table 3 of "Content Audit for p-value Principles in Introductory Statistics" as a comparison. Fill in any additional topics that you are reminded of.

Principles from the 2017 ASA statement on p-values:

1. p-values can indicate how incompatible the data are with a specified statistical model.

- a) **Agree:** *Although simulation-based inference doesn't really rely on traditional models.*
- b) *Topics (i) via Sensitivity/Specificity and false positives, (ii) general inference examples/rejecting H_0*

2. p-values do not measure the probability that the studied hypothesis is true, or the probability that data were produced by random chance alone.

- A) **Agree** *this is a reasonable statement, since we don't know the underlying truth*
- B) *Emphasize to students that a p-value is simply one piece of information/evidence in favor or against a hypothesis - NOT the definitive truth*

3. Scientific conclusions and business or policy decisions should not be based only on whether a p-value passes a specific threshold.

Agree

- i) *Emphasize that in repeated sampling, results may not be repeated.*
- ii) *Point out difference between statistical significance and actual significance in terms of effectiveness, practicality, profitability, etc.*
- iii) *Sleep apnea example: results were statistically significant (# of sleep apnea episodes were reduced) but patients still exhibited same level of illness*

4. Proper inference requires full reporting and transparency.

Agree

- i) *Have students examine a scientific research article to check for statistical soundness/completeness (methods etc)*
- ii) *Student presentations on student-collected data*
*** importance of covariance*

5. A p-value or statistical significance does not measure the size of an effect or the importance of a result.

Agree

- i) p-value is a probability, not a quantification of effect size/importance

6. By itself, a p-value does not provide a good measure of evidence regarding a model or hypothesis.

