ASA Scientific and Public Affairs Committee Guidance on Statistical Evidence Program Evaluation

"Conventional Standards of Statistical Significance": Ensuring strong statistical evidence of evaluation

Background:

The Family First Prevention Services Act (H.R. 5456, S.3065), recently passed by the U.S. House of Representatives, contains the specific statistical phrase "conventional standards of statistical significance." While, the American Statistical Association (ASA) is pleased with the trend toward evidence-based policymaking at the federal level, the ASA Scientific and Public Affairs Committee is concerned by potential interpretations of this specific technical language in this bill (on which overall the ASA is neutral on the policies therein.) We understand that the bill's writers did not intend a narrow range of statistical evidence, but the committee is concerned the language could be interpreted in such a way that restricts a wide range of powerful statistical advances that could be brought to bear.

A recent statement on the most common measure of statistical significance, the *p*-value by the ASA helps to provide context for the concern for the bill's technical phrasing. The ASA became so concerned over the broad use of the p-value as a definitive test of statistical significance in recent decades that it issued a statement on p-values and their context, process, and purpose. This statement, which has been widely read by both the statistical and larger scientific community, contains the first explicit recommendations on statistical methodology and use in the ASA's 177 year history. In part, the statement reads, "Scientific conclusions and business or policy decisions should not be based only on whether a p-value passes a specific threshold." There are many other factors to consider when making such decisions, such as experimental design, model assumptions, sample size, and effect size.

The committee interprets the language, "conventional standards of statistical significance," as referring to methods developed in the early 20th century and taught in an introductory statistic class. We understand policymakers may not interpret it that way but we would like to make clear other language—e.g., widely-accepted standards of statistical evidence—would make clear that modern and powerful statistical methods could be brought to bear in evaluation.

Recommendation:

The ASA believes that statistical evidence is essential to policymaking. We would like to reemphasize our appreciation of the efforts to include it in recent legislation, and hope to see more in the future. However, given the advances in statistics and statistical evidence, we recommend using language to take advantage of the current widely-accepted evidence. Such language could include the following:

- “Widely accepted methods of statistical evidence”
- “Rigorous methods of statistical evidence"