

Statistics Teaching, Aptitude and Training (STAT) Act of 2011

Excerpt: P. 2-6.

"The Congress finds the following:

- (1) Statistical literacy, the understanding and use of the language and tools of statistics, is vital for United States citizens in an era of intense global competition and growing reliance on data, because of a statistically literate individual's ability to—
 - (A) ask and evaluate critical questions about the design of a study and the appropriateness of the conclusions drawn from a study;
 - (B) distinguish arguments based on data and evidence from arguments based on anecdotes;
 - (C) recognize and interpret different representations of data in context; and
 - (D) formulate questions that can be addressed with data, collect and organize relevant data, and draw appropriate statistical conclusions.
- (2) Statistical literacy is essential for both effective citizenship and personal well-being because of the everyday need to—
 - (A) interpret and synthesize data displays and summaries, such as polls, surveys, and study outcomes; and
 - (B) critically evaluate claims based on data— (i) as a consumer of the news media; (ii) in making medical decisions; and (iii) in making financial decisions, such as decisions related to a mortgage or a car repair.
- (3) Statistics provides tools for describing variability and uncertainty to support making informed decisions, both large and small. A foundation in statistical thinking helps individuals to evaluate risks and weigh the likelihood of various outcomes.
- (4) Statistical literacy provides tools for dealing with uncertainty. There is uncertainty in virtually every situation and number individuals face, but statistical literacy enables individuals to make rational decisions in the face of uncertainty.
- (5) Statistical concepts are important for the study of mathematics, the natural sciences, and the social sciences. In mathematics, statistical literacy provides applications and real-life illustrations of the importance of mathematics, which motivates students for deeper learning. In the natural sciences and the social sciences, statistical problem-solving teaches a framework for the scientific process and an understanding of data and their limitations.
- (6) Effective statistical literacy education in elementary and secondary school would—
 - (A) produce graduates better equipped with the skills necessary to compete in the workforce of the 21st century, with its burgeoning growth of and dependence on data;
 - (B) enhance student learning and problem solving skills across disciplines; and
 - (C) equip students with knowledge needed to be responsible and engaged citizens.
- (7) Room exists for significant improvement in statistics education because of the following factors:
 - (A) While national mathematics standards and benchmarks from organizations such as Achieve, the College Board, and the National Council for Teachers of Mathematics support data analysis and probability as essential components of mathematics education, many elementary and secondary school teachers have not received the necessary training at the appropriate level to teach statistical literacy in their classrooms.
 - (B) Most State guidelines include statistics and probability, but the topic tends to be skipped because of the lack of teacher preparation and proper emphasis on the topic in State assessments.
 - (C) While some students do take a course in statistics, sound statistical reasoning skills take time for students to develop and cannot be honed in a single course. Foundational statistical

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- concepts should be introduced and nurtured in the elementary grades and strengthened and expanded throughout the middle school and high school grades and in postsecondary courses.
- (D) Teacher training programs at institutions of higher education for pre-service mathematics and science teachers and professional development programs designed to reach in-service mathematics and science teachers do not yet include statistical concepts and pedagogy at the appropriate level.
 - (E) Teachers do not yet have access to materials supported by statistics education research."