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Curriculum Units by Fellows of the Yale-New Haven Teachers Institute
1986 Volume V: The Measurement of Adolescents, II

Size, Error, and Confidence in The Statistics Sampler

Guide for Curriculum Unit 86.05.06
by David Howell

Here is the kind of problem I want to solve: Before I buy an ad for my new shoelaces on MTV, I want to know the percent of high school students who watch MTV more than one hour per week. Obviously I can't poll every high school student. In order, then, to predict the percent on the basis of a sample, I first need to know (a) How many high school students do I need in my sample? (b) If I want my answer accurate to plus or minus 10%, how will that affect sample size? How will that affect the confidence level? (c) I want to be very confident about my answer. I can't afford the expense of being 100% confident, though. Maybe 95% "sure" is good enough. How will that affect sample size? How will that affect accuracy?

The unit extends the eight-lesson sequence of last year's "The Statistics Sampler" by three lessons which might take from 6-15 days. A fairly detailed exploration of relationships among sample size, error tolerance, and confidence level is conducted using models, histograms, and tables. The final lesson presents two related formulas with which students can solve problems such as the one posed here.

(Recommended for all Mathematics courses, grades 7-12)

Key Words

Statistics Basic Skills Mathematics Elementary

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