

Institute of Education Sciences
National Center for Education Statistics

COMPARING REGRESSION COEFFICIENTS BETWEEN MODELS:
CONCEPTS AND ILLUSTRATIVE EXAMPLES

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EXECUTIVE SUMMARY

One of the most common statistical procedures in quantitative social science research is to examine the association between a key predictor, X , and an outcome, Y , before and after adjusting for another predictor, Z . If the absolute value of that coefficient is reduced after adding Z , they infer that Z explains, at least in part, the relationship between X and Y . The general issue at hand, then, is "comparing regression coefficients between models." The inferential issues involved in such comparisons have arisen frequently in data analyses contracted by the National Center for Educational Statistics (NCES). Concerned about the possible subjectivity associated with comparisons using the "eyeball" method, NCES charged the National Institute of Statistical Sciences (NISS) with convening a panel of technical experts to consult with NCES on advice for contractors analyzing NCES data.

The panel met in-person at NISS in October, 1996, to consider these issues, and a sub-group of participants volunteered to serve on a Task Force to write this report. The report is restricted to the case of a continuous or approximately continuous outcome as a first step in establishing standards. The procedures recommended apply when there is no statistical interaction between X and Z . Examples are used to illustrate how to test for such interactions and how to compare coefficients across models when no such interactions are found.

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