

# Adjusting for Unequal Selection Probability in Multilevel Models: A Comparison of Software Packages

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## **Abstract**

Most surveys collect data using complex sampling plans involving selection of both clusters and individuals with unequal probability of selection. Research in methods of using multilevel modeling (MLM) procedures to analyze such data is relatively new. Often sampling weights based on selection probabilities of individuals are used to estimate population-based models. However, sampling weights used for estimating multilevel models need to be constructed differently than weights used for single-level (population-average) models. This paper compares the capabilities of several MLM software programs that can

be used for analyzing data collected with a complex sampling plan. We illustrate how the weights for multilevel models can be constructed from population average weights. Finally, we use data from the National Longitudinal Survey of Adolescents to compare the results from several of these packages.