Estimating variance components in Stata

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Abstract. This article gives a brief overview of the popular methods for estimating variance components in linear models and describes several ways to obtain such estimates in Stata for various experimental designs. The article’s emphasis is on using \texttt{xtmixed} to estimate variance components. Prior to Stata 9, \texttt{loneway} could be used to estimate variance components for one-way random-effects models. For other experimental designs, variance components could be computed manually using saved results after \texttt{anova}. The latter approach is viable but requires tedious computations for complicated experimental designs. Instead, as of Stata 9, variance components are easily obtained by using \texttt{xtmixed}.

Keywords: st0095, variance components, experimental design, ANOVA, REML, ML, multilevel, random coefficients, mixed models