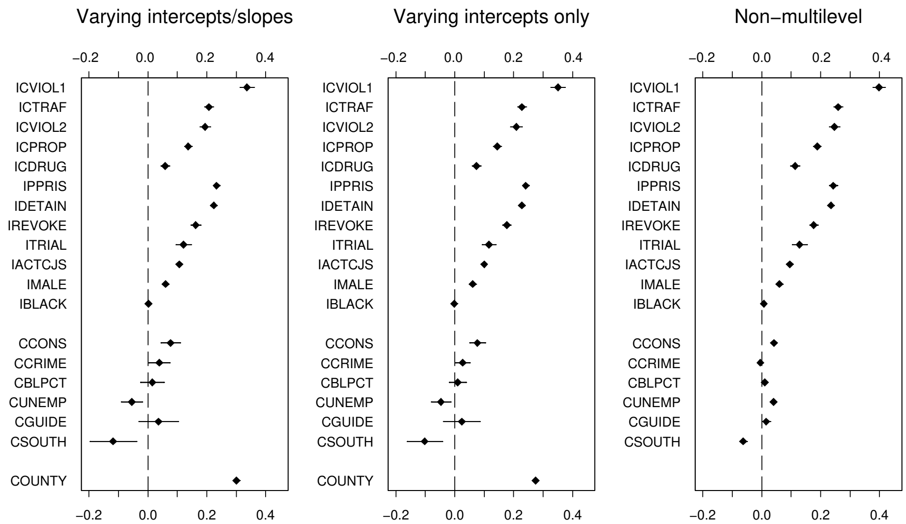

Figure 21.7 *Estimated average predictive comparisons for the probability of a prison sentence for each input variable across three models in the prison example. Horizontal lines show* ± 1 *standard-error bounds. Estimates and standard errors are very similar across the two multilevel models. However, although the individual-level comparisons are similar for the non-multilevel model, the county-level comparisons tend to be smaller in magnitude and have smaller standard errors.*

Predictive summaries in practice

Predictive comparisons, like any other automatic summary of a model, cannot be universally applicable, because the best approach in any problem must be tailored to the specifics of the application. We agree with this point but note that the overwhelming current practice in applied statistics of regression models is simply to report coefficient estimates (and standard errors), with no sense of their implications on the original scale of the data. Average predictive comparisons are not intended to be a replacement for regression coefficients; rather, they summarize a model in a way that can complement the coefficient estimates in order to make their scale more interpretable. Thus, we agree that there is no such thing as a "one size fits all" method—but that is what the current standard approach implicitly assumes.

The example illustrates the effectiveness and convenience of predictive comparisons. In this multilevel dataset with a binary outcome measure, the comparisons clarify the overall role of each individual- and group-level predictor in the presence of multiple interactions, as well as illustrate the relative size of the varying coefficients. They can also be used to understand and compare models directly, in a way that is difficult to do using logistic regression coefficients.

21.5 R^2 and explained variance

As discussed in the context of the examples in Chapters 3 and 4, it can be helpful to understand a model through R^2, the proportion of variance explained by its linear predictors. Although explained variance can be misleading (as illustrated in Figure 3.9 on page 42), it can be a useful measure of the relative importance of different sources of variation in a particular dataset. Here we discuss how to generalize R^2 to multilevel models.