**Standard errors from audits**

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In this paper we discuss two examples of where the author was asked to derive standard errors following audits (of funding and loans for further and higher education) based on random sampling. In both cases the sampling methods were not explicitly related to the estimators being used in the audit and some investigation was required to produce standard errors for the estimates.

In the first example, the standard error was straightforward to produce, as it was simple to show the main estimate from the audit was a form of ratio estimator. We were able to make recommendations to improve the sample in future years to make estimation more efficient (i.e. reduce the standard error without increasing the size of the sample or the cost of the audit). The impact of this work was to improve the quality of the department’s accounts and the quality of the audit.

In the second example, it was much harder to produce the standard errors at first as there was a variety of sampling methods used in different strata and in one stratum no relationship between the sampling method and the estimator. We show how a transformation of the sampled values allowed us to arrive at an answer, and then discuss how the sampling method could be improved and (briefly) whether model-based estimation would be worth pursuing in this case.

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