Sampling and Estimation - Exercise 2

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Exercise 2.A

Estimation under a stratified design

- Download the ESS for Sweden and Denmark (round 5)
- Import data to R and combine the two datasets
- Define a `survey` object (stratified design)
- Calculate the combined total for the tv consumption (`tvtot`) and compare it with the totals in Sweden and Denmark

Exercise 2.B

- Load the `survey` package and the `api` datasets.

```
library(survey)
data(api)
```

- The dataset `apistrat` is a sample of schools from `apipop` stratified by `stype`. Assuming the selection within the strata was done by SRS, define a `svydesign` a survey object and calculate a point and variance estimate for the mean of `api00`.
- Using `stype` again as a stratification variable try different allocations for stratified sample. Calculate the allocation of a sample of 60 schools from `apipop` using equal, proportional and optimal allocation. The proportional allocation should be proportional to the number of schools within the strata and the optimal alloaction should be optimal with regard to `api99`.

Exercise 2.B

- Select a StrSRS from `apipop` for each allocation.
- Estimate again the mean of `api00` from all three samples and compare the results.