

# R4

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## 1 Unbiased Estimation

For sampling without replacement, is  $\bar{X}^2$  an unbiased estimator for  $\mu^2$ ? If not, what is the bias?

## 2 joint distribution

Let  $P$  have a uniform distribution on  $[0, 1]$ , and, conditional on  $P = p$ , let  $X$  have a Bernoulli distribution with parameter  $p$ . Find the conditional distribution of  $P$  given  $X$ .