Template_Rmd

Victor Huang

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Part 1: explanation of the variables and the parameters of the population:

nSims: Number of simulations
N: Population size
n: Sample size
y: Population generated from N(theta,sigma2)
theta: Mean of y
sigma2: Variance of y
Y: Sample selected without replacement from y
theta_bar: Mean of the sample
theta_var: Variance of Monte Carlo Draws

Part 2: Presenting the findings

	x
Expected_Mean	theta
Expected_Variance	(N-n)/(N*n)*sigma2

```
## \begin{table}
## \caption{\label{tab:unnamed-chunk-4}Sample Output}
##
## \centering
## \begin{tabular}[t]{lrr}
## \toprule
##   & sampleMean & sampleVar\\
## \midrule
## Observed & 1.996285 & 0.0098873\\
## Theorethical & 2.000000 & 0.0099000\\
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{lr}
## \toprule
##   & x\\
## \midrule
## nSims & 10000\\
## theta & 2\\
## sigma2 & 1\\
## N & 10000\\
## n & 100\\
```

```
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{ll}
## \toprule
##   & x\\
## \midrule
## Expected\_Mean & theta\\
## Expected\_Variance & (N-n)/(N*n)*sigma2\\
## \bottomrule
## \end{tabular}
## \end{table}
##
## \begin{table}
## \caption{\label{tab:unnamed-chunk-4}Sample Output}
##
## \centering
## \begin{tabular}[t]{lrr}
## \toprule
##   & sampleMean & sampleVar\\
## \midrule
## Observed & 2.011785 & 0.0008935\\
## Theorethical & 2.000000 & 0.0009000\\
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{lr}
## \toprule
##   & x\\
## \midrule
## nSims & 10000\\
## theta & 2\\
## sigma2 & 1\\
## N & 10000\\
## n & 1000\\
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{ll}
## \toprule
##   & x\\
## \midrule
## Expected\_Mean & theta\\
## Expected\_Variance & (N-n)/(N*n)*sigma2\\
## \bottomrule
## \end{tabular}
## \end{table}
##
## \begin{table}
## \caption{\label{tab:unnamed-chunk-4}Sample Output}
##
## \centering
## \begin{tabular}[t]{lrr}
## \toprule
```

```
##   & sampleMean & sampleVar\\
## \midrule
## Observed & 2.016552 & 9.68e-05\\
## Theorethical & 2.000000 & 1.00e-04\\
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{lr}
## \toprule
##   & x\\
## \midrule
## nSims & 10000\\
## theta & 2\\
## sigma2 & 1\\
## N & 10000\\
## n & 5000\\
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{ll}
## \toprule
##   & x\\
## \midrule
## Expected\_Mean & theta\\
## Expected\_Variance & (N-n)/(N*n)*sigma2\\
## \bottomrule
## \end{tabular}
## \end{table}
##
## \begin{table}
## \caption{\label{tab:unnamed-chunk-4}Sample Output}
##
## \centering
## \begin{tabular}[t]{lrr}
## \toprule
##   & sampleMean & sampleVar\\
## \midrule
## Observed & 1.998986 & 1.12e-05\\
## Theorethical & 2.000000 & 1.11e-05\\
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{lr}
## \toprule
##   & x\\
## \midrule
## nSims & 10000\\
## theta & 2\\
## sigma2 & 1\\
## N & 10000\\
## n & 9000\\
## \bottomrule
## \end{tabular}
## \centering
```

```
## \begin{tabular}[t]{ll}
## \toprule
##   & x\\
## \midrule
## Expected\_Mean & theta\\
## Expected\_Variance & (N-n)/(N*n)*sigma2\\
## \bottomrule
## \end{tabular}
## \end{table}
##
## \begin{table}
## \caption{\label{tab:unnamed-chunk-4}Sample Output}
##
## \centering
## \begin{tabular}[t]{lrr}
## \toprule
##   & sampleMean & sampleVar\\
## \midrule
## Observed & 1.998392 & 1e-06\\
## Theorethical & 2.000000 & 1e-06\\
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{lr}
## \toprule
##   & x\\
## \midrule
## nSims & 10000\\
## theta & 2\\
## sigma2 & 1\\
## N & 10000\\
## n & 9900\\
## \bottomrule
## \end{tabular}
## \centering
## \begin{tabular}[t]{ll}
## \toprule
##   & x\\
## \midrule
## Expected\_Mean & theta\\
## Expected\_Variance & (N-n)/(N*n)*sigma2\\
## \bottomrule
## \end{tabular}
## \end{table}
```