Monte Carlo Simulations for Regression with Attribute

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The underlying model is

We first generate a population where

|  |  |  |
| --- | --- | --- |
| Parameter | meaning | Values |
|  | Population size | 10,000 |
| β | Regression coefficient | 2 |
|  | Variance of | 1 |

In the simulation, we draw a sample of the pairs. Each observation is drawn with probability We then add a new error to the dependent variable

We then estimate as the regression coefficient for each sample. We collect across simulations and when done compute . (It will also be useful to report how long the simulation took.)

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| --- | --- | --- |
| Parameter | meaning | Values |
|  | Probability an observation is sampled | 0.01,0.10,0.50,0.90.0.99 |
|  | Variance of | 0, 1, 2 |

Define , define

Theoretical value for

Note that this simplifies to