

Problem: 9.4 : Gundala_9_4.m

While, considering the equation give in the question and solving it to find a point where $R=S$, considered $\hat{\theta} = \beta(1)/(1-\beta(2))$ as the point of estimate.

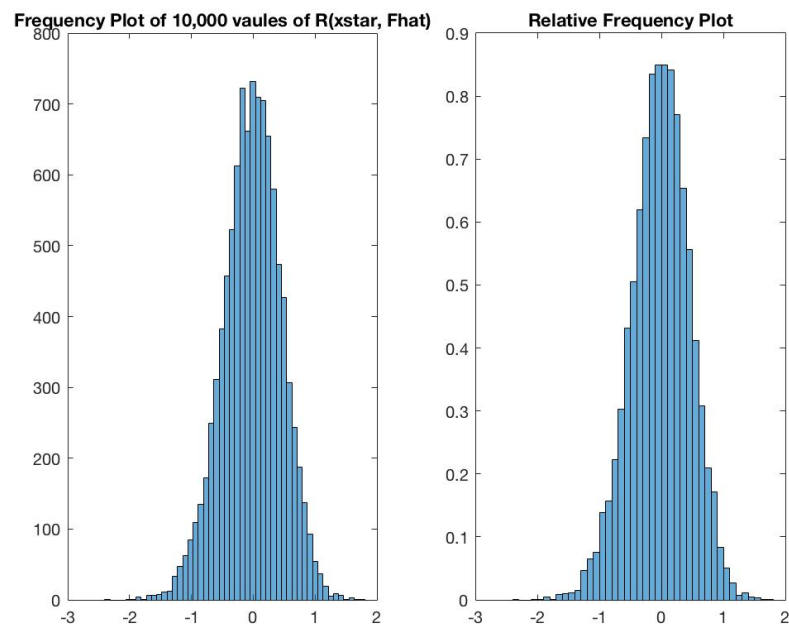
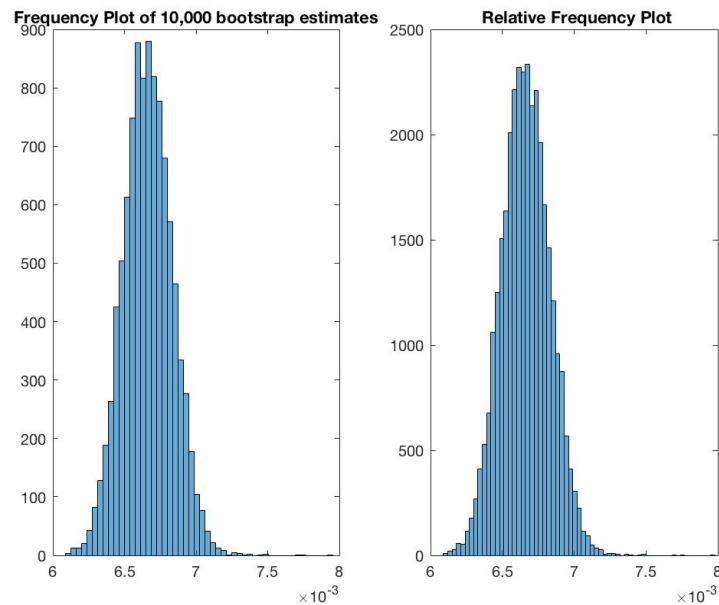
for bootstraping the cases:

Bootstrap estimate of the bias is: 0.00000417

Bias corrected bootstrap estimate is: 0.00665816

standard error for corrected estimator is: 0.00000171

95 percent C.I using the simple bootstrap percentile method is: [0.006348, 0.007008]



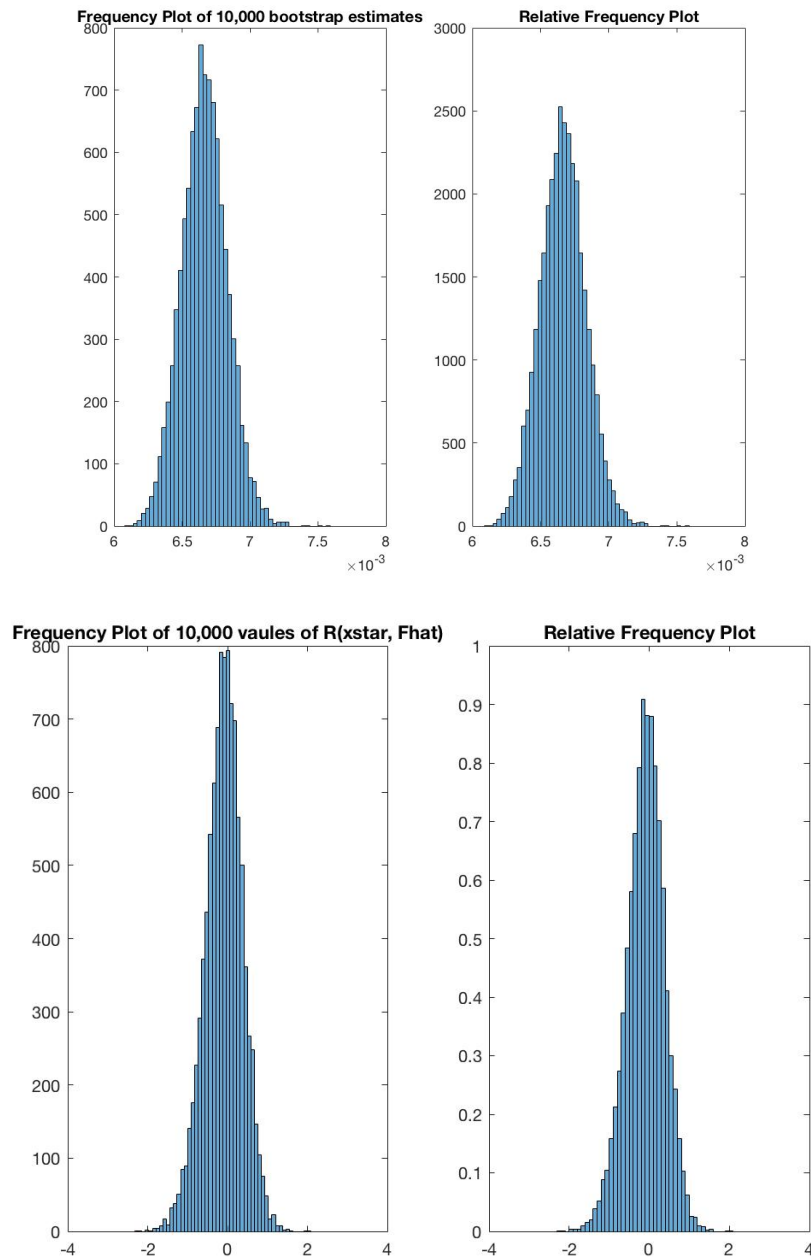
for bootstrapping the residuals:

Bootstrap estimate of the bias is: -0.00002547

Bias corrected bootstrap estimate is: 0.00671731

standard error for corrected estimator is: 0.00000168

95 percent C.I using the simple bootstrap percentile method is: [0.006341, 0.007001]



Honestly, I don't see much difference between the results of two types of bootstrapping. But, much minutely, bootstrapping the residuals gave a much closer interval for the values.

Problem 9.5: Gundala_9_5.m

- a. By using data on log scale, the following results are observed:

for Stomach Cancer

Bootstrap estimate of the bias is: 0.0006

Bias corrected bootstrap estimate is: 4.9673

standard error for corrected estimator is: 0.0033

95 percent bootstrap t C.I is: [4.233612, 5.801888]

exponentiating the t C.I is: [70.003871, 331.596172]

for Breast cancer

Bootstrap estimate of the bias is: -0.0025

Bias corrected bootstrap estimate is: 6.5611

standard error for corrected estimator is: 0.0048

95 percent bootstrap t C.I is: [4.258001, 7.415938]

exponentiating the t C.I is: [72.970037, 1652.591523]

- c. By using simple bootstrap to the logged data and exponentiating the intervals:

for Stomach Cancer

95 percent C.I using the simple bootstrap percentile method is: [75.931778, 281.53229]

for Breast cancer

95 percent C.I using the simple bootstrap percentile method is:[256.13600, 1611.58443]

By using simple bootstrap to data on original scale:

for Stomach Cancer

Bootstrap estimate of the bias is: 0.6995

Bias corrected bootstrap estimate is: 285.3005

standard error for corrected estimator is: 0.9248

95 percent C.I using the simple bootstrap percentile method is: [123.88462, 483.26923]

for Breast Cancer:

Bootstrap estimate of the bias is: -5.5218

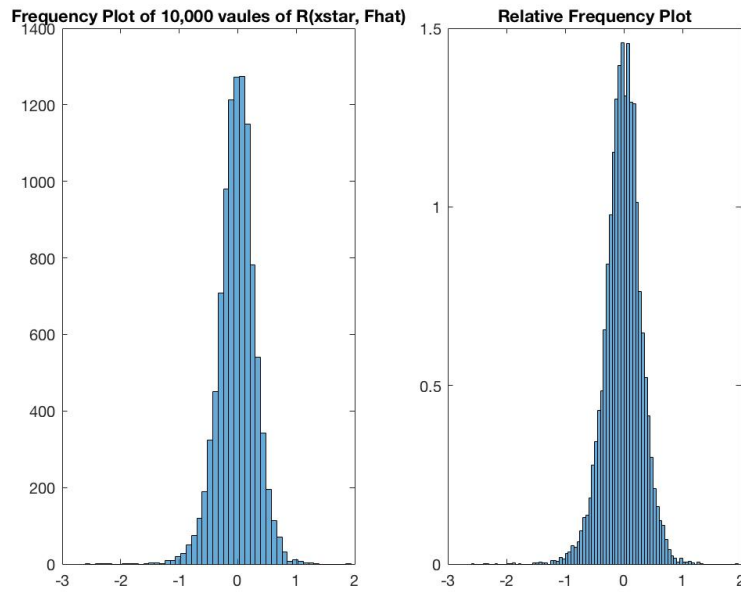
Bias corrected bootstrap estimate is: 1401.4309

standard error for corrected estimator is: 3.6126

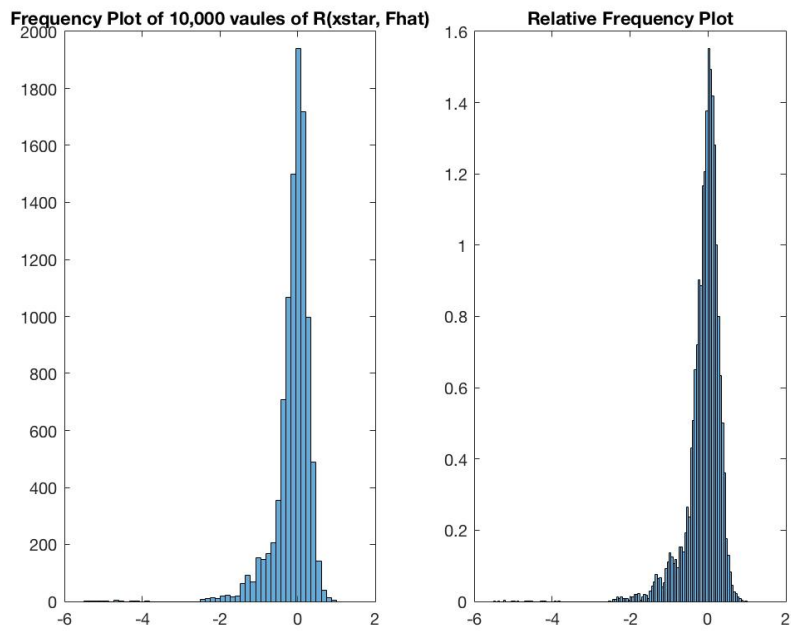
95 percent C.I using the simple bootstrap percentile method is:[742.45455, 2148.59091]

Clearly, the standard error increased very much by incorporating the methods asked in 9.5.c. And so, the confidence intervals deviated a lot from the reliable results from 9.5.a. There are many outliers on the right.

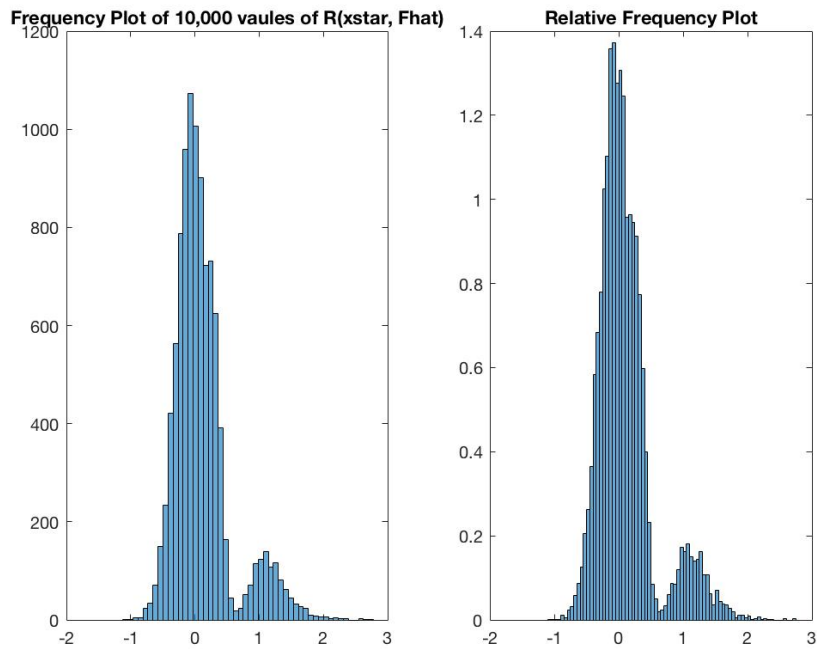
Frequency plots for bootstrap t method on Stomach Cancer 9.5.a



Frequency plots for simple bootstrap on Stomach cancer 9.5.c



Frequency plots for bootstrap t method on Breast Cancer 9.5.a



Frequency plots for simple bootstrap on Stomach cancer 9.5.c

