Project Two of MTH 657

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In this project, we simulates Example 3.6.5’s values for X, and for Y given X, and thus for two-dimensional (X,Y) pairs. The project also extends this example to a third dimension.

In the book’s 3.5.6, it calculates the marginal p.d.f. of Y first in order to get the conditional p.d.f. of X given Y. Then it applies Bayes’ Formula to compute the conditional p.d.f. of X given Y.

Date in the simulations:

X Y X|Y bin range Z Z|X Z|Y



The average of Y is 0.74416, and the standard deviation of Y is 0.22705

The average of Z is 0.877387, and the standard deviation of Z is 0.144605

The histogram of X values

The histogram of Y values

The histogram of Y|X values

The histogram of Z|X values

The histogram of Z|Y values

Conclusion: Through these graphs, we can tell that the simulations are successful.