Module 3.3

Univariate Random Numbers

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Introduction

- Introduce random number generation
- Illustrate graphically
  - Uniform distribution
    - Numeric
    - Integer
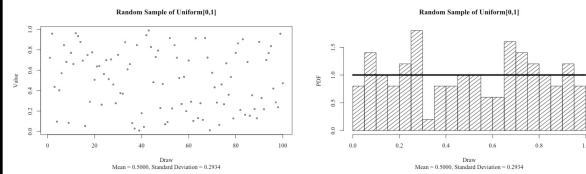 - Normal distribution
  - Bernoulli distribution

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Uniform U[0,1]

Figure 3.3.1. Random sample illustrations of a uniform distribution with limits of zero and one
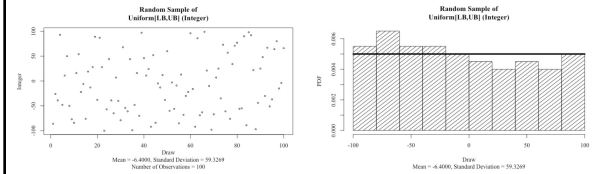

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Uniform Integer U[−100,100]

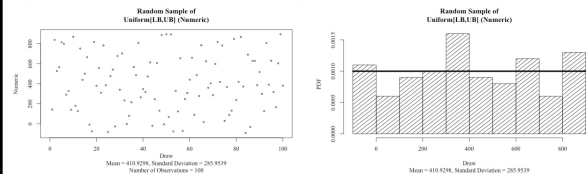*Figure 3.3.2. Random sample illustrations of a uniform integer distribution with limits of −100 and 100*

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Uniform Real U[-100,900]

Figure 3.3.3. Random sample illustrations of a uniform real distribution with limits of −100 and 900

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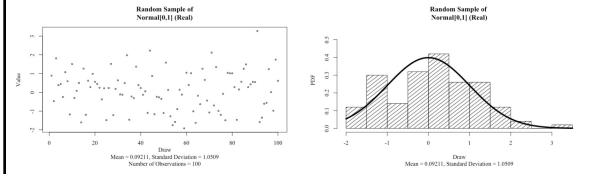# Normal N(0,1)

Figure 3.3.4. Random sample illustrations of a normal distribution with mean 0 and standard deviation 1
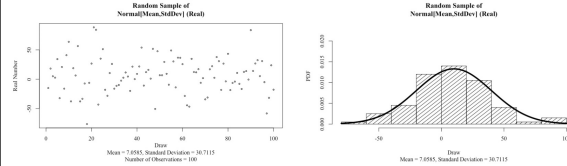

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Normal N(10,30)

Figure 3.3.5. Random sample illustrations of a normal distribution with mean 10 and standard deviation 30

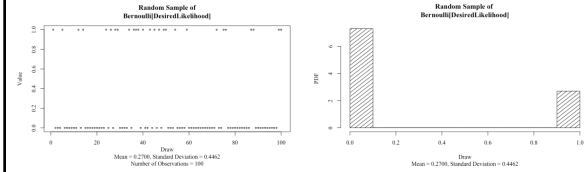Random Sample of
Normal[Mean,StdDev] (Real)

Random Sample of
Normal[Mean,StdDev] (Real)

Mean = 7.0585, Standard Deviation = 30.7115
Number of Observations = 100

Mean = 7.0585, Standard Deviation = 30.7115

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Bernoulli (25)

Figure 3.3.6. Random sample illustrations of a Bernoulli distribution with the desired likelihood of 25%

Random Sample of
Bernoulli[DesiredLikelihood]

Random Sample of
Bernoulli[DesiredLikelihood]

Mean = 0.2700, Standard Deviation = 0.4462
Number of Observations = 100

Mean = 0.2700, Standard Deviation = 0.4462

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Summary

- Introduced random number generation
- Illustrated graphically
  - Uniform distribution
    - Numeric
    - Integer
  - Normal distribution
  - Bernoulli distribution
- Explored large sample properties

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