

## CSPB 3022 - Kim - Introduction to Data Science Algorithms

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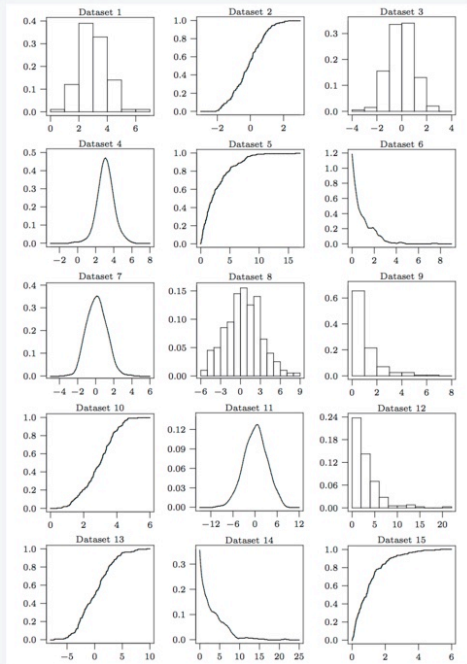
### Question 1

Not yet answered

Marked out of 10.00

Flag question

The figure displays several histograms, kernel density estimates, and empirical distribution functions. It is known that all figures correspond to datasets of size 200 that are generated from normal distributions  $N(0,1)$ ,  $N(0,9)$ , and  $N(3,1)$ , and from exponential distributions  $\text{Exp}(1)$  and  $\text{Exp}(1/3)$ . Report for each figure from which distribution the dataset has been generated.



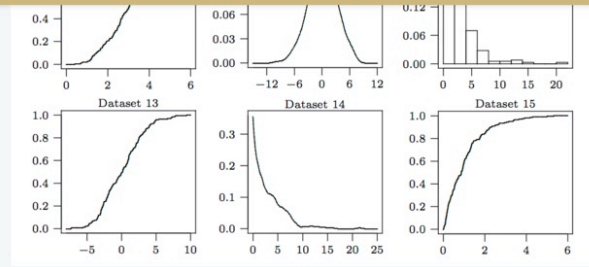
### Quiz navigation

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Drag the appropriate distributions unto the diagram below.

Dataset 1: Histogram

Dataset 2: CDF

Dataset 3: Histogram

Dataset 4: PDF

Dataset 5: CDF

Dataset 6: PDF

Dataset 7: PDF

Dataset 8: Histogram

Dataset 9: Histogram

Dataset 10: CDF

Dataset 11: PDF

Dataset 12: Histogram

Dataset 13: CDF

Dataset 14: PDF

Dataset 15: CDF

$N(3,1)$   $N(0,1)$   $\text{Exp}(1/3)$   $N(0,9)$   $\text{Exp}(1)$

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Question 2

Not yet answered

Not graded

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During the Second World War, London was hit by numerous flying bombs. The following data are from an area in South London of 36 square kilometers. The area was divided into 576 squares with sides of length 1/4 kilometer. For each of the 576 squares the number of hits was recorded. In this way we obtain a dataset  $x_1, x_2, \dots, x_{576}$ , where  $x_i$  denotes the number of hits in the  $i$ th square. The data are summarized in the following table which lists the number of squares with no hits, 1 hit, 2 hits, etc.

Number of hits	0	1	2	3	4	5	6	7
Number of Squares	229	211	93	35	7	0	0	1

An interesting question is whether London was hit in a completely random manner. In that case a Poisson distribution should fit the data.

1. If we model the dataset as the realization of a random sample from a Poisson distribution with parameter  $\mu$ , then what would you choose as an estimate for  $\mu$ ?
2. Check the fit with a Poisson distribution by comparing some of the observed relative frequencies of 0's, 1's, 2's, etc., with the corresponding probabilities for the Poisson distribution with  $\mu$  estimated as in part 1.

A

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Quiz navigation

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Coinbase-58a9f....pdf

survival\_hazard.tsv

stats-17-models....pdf

Confidence-

2018-spring\_I....ipynb

stats-19-unbiase....pdf

Show All

**Question 3**

Not yet answered

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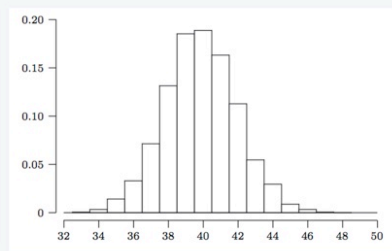
7

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The chest circumference of 5732 Scottish soldiers are shown in the histogram below, which suggests modeling the data as the realization of a random sample from a normal distribution.



- Suppose that for the dataset  $\sum x_i = 228377.2$  and  $\sum x_i^2 = 9124064$ . What would you choose as estimates for the parameters  $\mu$  and  $\sigma$  of the  $N(\mu, \sigma^2)$  distribution?
- Give an estimate for the probability that a Scottish soldier has a chest circumference between 38.5 and 42.5 inches.

Rich text editor toolbar with icons for undo, redo, bold, italic, bulleted list, numbered list, link, unlink, insert link, insert image, and a smiley face icon.

Two circular navigation buttons: a back arrow and a forward arrow.

Quiz navigation section with a grid of question numbers 1, 2, and 3. Question 3 is highlighted.

Finish attempt ...