# Fundamentals of Data Science

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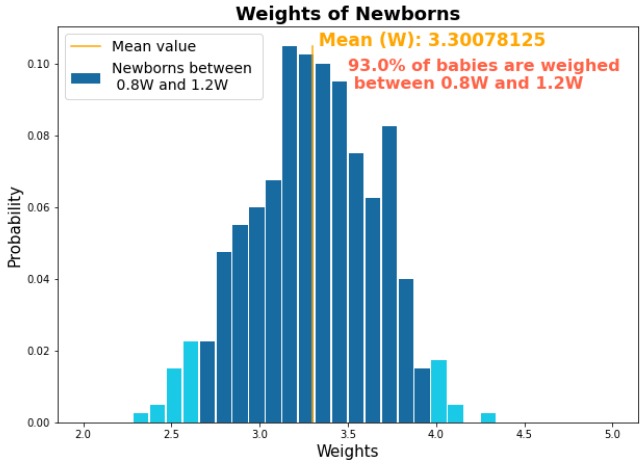


We utilised a dataset that included the weights of infants recorded over time in certain regions of Europe. The assignment's goal is to determine the average weight and value of X, which is the fraction of infants that were born weighing between 0.8 $\widetilde{W}$ and 1.2 $\widetilde{W}$ (where $\widetilde{W}$ is the distribution's average weight).

Examining the graph, we can see that it follows a normal distribution. The degree of the distribution's asymmetry is referred to as its skewness. The distribution appears to be slightly negatively skewed, according to the graph.

The mean value of a probability distribution is sometimes referred to as the expected value of the distribution. It measures the distribution's central tendency by displaying the usual value that we would expect to observe if we continually sampled from the distribution. In order to get the mean value of weights for this set of data, we utilised the following formula,

$$\widetilde{W} = \sum x_i * p_i$$

where $x_i$ represents the value of each observation, $p_i$ represents the probability that the observation occurred, and the sum is calculated across all conceivable values. Then we get the mean value as, $Mean = \widetilde{W} = 3.30078125$

Next, determine the value of X, where X is the percentage of newborns who were born weighing between 0.8 $\widetilde{W}$ and 1.2 $\widetilde{W}$. Finding the proportion of newborn infants' weights and then counting the numbers between 0.8 $\widetilde{W}$ and 1.2 $\widetilde{W}$ allow us to compute X. Alternatively, we can also use the following formula to determine the value of X.

$$X = \frac{Number\ of\ weights\ between\ 0.8\ \widetilde{W}\ and\ 1.2\ \widetilde{W}}{Total\ weights} = 0.93$$

Now, X suggests that 93% of the infants in the dataset have weights that are within a 10% narrow range of the average weight.