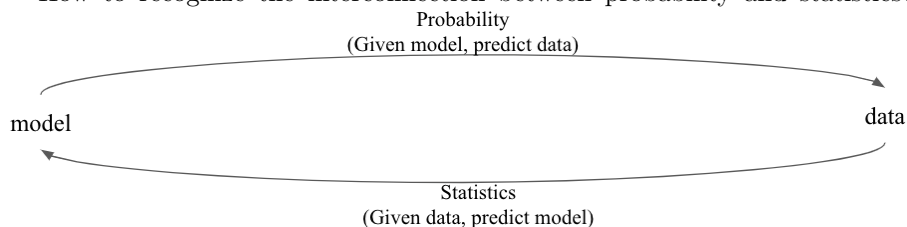


Probability and Statistics

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How to recognize the interconnection between probability and statistics?



1 Probability

In the domain of probability scenarios, we often establish a framework to represent uncertain events and then assess the likelihood of various outcomes or occurrences. This aids in conceptualizing potential data patterns. For instance,

1. Consider the scenario of summer temperatures in the UK, which are assumed to follow a Normal distribution with an average of 68°F and a standard deviation of 3.5°F . We can determine the probability that the average temperature during a randomly selected week of summer is below 65°F .

2. Another example involves the percentage of Twitter users in a population of 100 individuals. Suppose 20% of this population are active Twitter users. In a group of 100 people chosen at random, we can compute the probability of having at least 30 active Twitter users.

2 Statistics

When we delve into statistical inference problems, we examine actual sample data to conclude the underlying process that generated the data. For example,

1. Suppose we observe that the mean temperature during a randomly selected week of summer in the UK is 63°F . This prompts the question of whether there exists sufficient evidence to claim that the average summer temperature in the UK is lower than 68°F .

2. In a different context, if we find that out of a population of 100 individuals, 40 are active Twitter users, we can use this information to estimate the proportion of the entire population that consists of active Twitter users.