Connexions module: m13473

What is Statistical Independence?*

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When two events¹ are statistically independent, it means that knowing whether one of them occurs makes it neither more probable nor less probable that the other occurs. In otherwards, the occurrence of one event occurs does not affect the outcome of the occurrence of the other event.

Similarly, when we assert that two random variables² are independent, we intuitively mean that knowing something about the value of one of them does not yield any information about the value of the other.

Examples:

The number of people crossing the road in one direction, has no bearing on the number of people crossing in the opposite direction. The two occurrences are therefore said to be **statistically independent** of each other.

The number appearing on the upward face of a die the first time it is thrown and that appearing on the same die the second time, are independent. e.g. the event of getting a "1" when a die is thrown and the event of getting a "1" the second time it is thrown are independent.

Exercise:

What conditions make statistical independence? Answer.³

References:

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¹http://cnx.org/content/m13476/latest/

 $^{^2 \}rm http://cnx.org/content/m13418/latest/$

 $^{^3}$ http://cnx.org/content/m13486/latest/

⁴http://en.wikipedia.org/wiki/Statistical independence