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Elements in the Philosophy of Science
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PHILOSOPHY OF PROBABILITY AND STATISTICAL MODELLING

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Philosophy of Probability and Statistical Modelling

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Abstract: This Element has two main aims. The first one (Sections 1–7) is a historically informed review of the philosophy of probability. It describes recent historiography, lays out the distinction between subjective and objective notions, and concludes by applying the historical lessons to the main interpretations of probability. The second aim (Sections 8–13) focuses entirely on objective probability and advances a number of novel theses regarding its role in scientific practice. A distinction is drawn between traditional attempts to interpret chance, and a novel methodological study of its application. A radical form of pluralism is then introduced, advocating a tripartite distinction between propensities, probabilities, and frequencies. Finally, a distinction is drawn between two different applications of chance in statistical modelling which, it is argued, vindicates the overall methodological approach. The ensuing conception of objective probability in practice is the 'complex nexus of chance'.

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