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Match or model? sample or entire base?

Statistical strategies in etio-, dia-, and pro-gnostic research

In earlier centuries, research design and data analysis choices were limited by the available data collection and processing capabilities. Today, with easier access to bigger data, and to regression models and other multi-variable methods, classical (calculator-based) methods are being replaced by models and other computer-intensive approaches, and 'case-base' studies (that rely on estimated denominators) by 'cohort' studies.

After setting out the estimands in each of the three genres of study, I address which statistical strategies are possible for each one, and which are more efficient and transparent. Illustrations will include statistical investigations that (i) estimate profile-specific dia- and pro-gnostic probabilities; (ii) quantify the benefits/harms of medical interventions, medical products, and cultural practices, and (iii) measure the reductions produced by cancer screening programmes.