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43 Statistics There were two widely divergent influences on the early development of statistical methods. Statistics had a mother who was dedicated to keeping orderly records of governmental units (state and statistics come from the same Latin root status) and a gentlemanly gambling father who relied on mathematics to increase his skill at playing the odds in games of chance. The influence of the mother on the offspring, statistics, is represented by counting, measuring, describing, tabulating, ordering, and the taking of censuses -- all of which led to modern descriptive statistics. From the influence of the father came modern inferential statistics, which is based squarely on theories of probability. Descriptive statistics involves tabulating, depicting and describing collections of data. These data may be quantitative such as measures of height, intelligence or grade level -- variables that are characterized by an underlying continuum -- or the data may represent qualitative variables, such as sex, college major or personality type. Large masses of data must generally undergo a process of summarization or reduction before they are comprehensible. Descriptive statistics is a tool for describing or summarizing or reducing to comprehensible form the properties of an otherwise unwieldy mass of data. Inferential statistics is a formalized body of methods for solving another class of problems that present great difficulties for the unaided human mind. This

general class of problems characteristically involve attempts to make predictions using a sample of observations. For example, a school superintendent wishes to determine the proportion of children in a large school system who come to school without breakfast, have been vaccinated for flu, or whatever. Having a little knowledge of statistics, the superintendent would know that it is unnecessary and inefficient to question each child: the proportion for the entire district could be estimated fairly accurately from a sample of as few as 100 children. Thus, the purpose of inferential statistics is to predict or estimate characteristics of a population from a knowledge of the characteristics of only a sample of the population.

统计学 统计方法的早期发展受到两种截然不同的影响。统计学有一个"母亲"，她致力于井井有条地记录政府机构的文件(国家和统计学这两个词源于同一个拉丁语词根，status)，还有一个有绅士般的赌博"父亲"，他依靠数学来提高赌技，以便在几率的游戏中取胜。"母亲"对其子女统计学的影响表现在计数、测量、描述、制表、归类和人口普查。所有这些导致了现代描述统计学的诞生。由于"父亲"的影响则产生了完全基于概率论原理的现代推理统计学。描述统计学涉及对所收集数据的制表、制图和描述。这些数据可以是数量性的数据，如高度、智商、或者是层级性的数据--具有连续性的变量--或数据也可以代表性质变量，如性别、大学专业或性格类型等等。数量庞大的数据通常必须经过概括或删减的程序才能为人所理解。描述统计学就是这样一个工具，它对极其庞杂的数据进行描述、概括或删减，使其变成能为人理解的东西。推理统计学是一套已定形了的方法体系，它解决的是光凭人脑极难解决的

另一类问题。这类问题的显著特点是试图通过取样调查来作出预测。例如，有一位教育督察想知道在一个庞大的学校系统中，不吃早饭就上学的学生、已经做过防感冒免疫的学生，或其它任何类型的学生占多大比例。若具备一些统计学的知识，这位督察应明白，询问每个孩子是没有必要而且没有效率的，只要用100个孩子为样本，他就可以相当精确地得出这些孩子占整个学区的比例了。因此，推理统计学的目的就是通过了解一个群体中一些样本的特性，从而对整个群体的特性进行推测和估算。100Test 下载频道开通，各类考试题目直接下载。详细请访问 www.100test.com