

<<多元数据分析>>

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## <<多元数据分析>>

### 内容概要

《多元数据分析（英文版）（第7版）》是一本面向应用的经典多元数据分析教材，自1979年出版第1版至今，深受读者好评。

《多元数据分析（英文版）（第7版）》循序渐进地介绍了各种多元统计分析方法，并通过丰富的实例演示了这些方法的应用。

书中不仅涵盖多元数据分析的基本方法，而且还介绍了一些新方法，如结构方程建模和偏最小二乘法等。

## <<多元数据分析>>

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作者：（美国）海尔（Joseph F.Hair.Jr.）（美国）William C.Black（美国）Barry J.Babin 等海尔（Joseph F Hair, Jr.），于1971年获得佛罗里达大学市场营销博士学位.现为肯尼索州立大学市场营销系教授。

他出版了四十多本书，包括《Marketing》、《Marketing Essentials》等。

他是美国市场营销协会、市场营销科学学会、西南市场营销协会和南方市场营销学会委员。

2004年他被美国市场营销科学学会授予杰出教育奖，2007年被市场管理协会授予创新性市场营销人才

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William C.Black，于1980年获得德州大学奥斯汀分校博士学位，现为路易斯安那州立大学工商管理学院市场营销系教授。

他的研究兴趣包括多元统计、应用信息技术，以及与电子商务相关的市场原理的进展。

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他曾两次获得Drexel大学优秀教师奖，并获得过《Journal of Personal Selling & Sales Management》杰出评论奖、Drexel大学商学院科研成就奖等。

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## 章节摘录

版权页：插图：Missing data are termed missing at random (MAR) if the missing values of Y depend on X, but not on Y. In other words, the observed Y values represent a random sample of the actual Y values for each value of X, but the observed data for Y do not necessarily represent a truly random sample of all Y values. Even though the missing data process is random in the sample, its values are not generalizable to the population. Most often, the data are missing randomly within subgroups, but differ in levels between subgroups. The researcher must determine the factors determining the subgroups and the varying levels between groups. For example, assume that we know the gender of respondents (the X variable) and are asking about household income (the Y variable). We find that the missing data are random for both males and females but occur at a much higher frequency for males than females. Even though the missing data process is operating in a random manner within the gender variable, any remedy applied to the missing data will still reflect the missing data process because gender affects the ultimate distribution of the household income values. A higher level of randomness is termed missing completely at random (MCAR). In these instances the observed values of Y are truly a random sample of all Y values, with no underlying process that lends bias to the observed data. In simple terms, the cases with missing data are indistinguishable from cases with complete data. From our earlier example, this situation would be shown by the fact that the missing data for household income were randomly missing in equal proportions for both males and females. In this missing data process, any of the remedies can be applied without making allowances for the impact of any other variable or missing data process.

Diagnostic Tests for Levels of Randomness. As previously noted, the researcher must ascertain whether the missing data process occurs in a completely random manner. When the data set is small, the researcher may be able to visually see such patterns or perform a set of simple calculations (such as in our simple example at the beginning of the chapter). However, as sample size and the number of variables increases, so does the need for empirical diagnostic tests. Some statistical programs add techniques specifically designed for missing data analysis (e.g., Missing Value Analysis in SPSS), which generally include one or both diagnostic tests. The first diagnostic assesses the missing data process of a single variable Y by forming two groups: observations with missing data for Y and those with valid values of Y. Statistical tests are then performed to determine whether significant differences exist between the two groups on other variables of interest. Significant differences indicate the possibility of a nonrandom missing data process. Let us use our earlier example of household income and gender. We would first form two groups of respondents, those with missing data on the household income question and those who answered the question. We would then compare the percentages of gender for each group. If one gender (e.g., males) was found in greater proportion in the missing data group, we would suspect a nonrandom missing data process. If the variable being compared is metric (e.g., an attitude or perception) instead of categorical (gender), then t-tests are performed to determine the statistical significance of the difference in the variable's mean between the two groups. The researcher should examine a number of variables to see whether any consistent pattern emerges. Remember that some differences will occur by chance, but either a large number or a systematic pattern of differences may indicate an underlying nonrandom pattern. A second approach is an overall test of randomness that determines whether the missing data can be classified as MCAR.

## <<多元数据分析>>

### 编辑推荐

《多元数据分析(英文版)(第7版)》特色：以循序渐进方式（流水线方式）组织内容：在内容组织上，各章集中概述一个论题，每章均从基础开始并讨论应用。

后面各章逐步深入。

扩展各种方法应用：对"经验法则"给出解释，包括像样本容量这类重要问题。

重新组织结构方程建模这一重要内容，包括结构方程建模概述、验证-性因素分析、估计和检验结构模型的相关问题，以及验证性因素分析和结构方程建模的一些高级主题，如检验更高阶因子模型、群组模型、调节变量与中间变量。

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