

Figure 1.2. STATISTICS: A Guide to the Unknown. Second Edition

Judith M. Tanur, Editor, Wadsworth & Brooks/Cole, Monterey, CA, 1985, pp. xiii-xix

For students who would like to explore the wide range of areas where statistical methods have been applied, a useful starting point is the book whose table of contents is reprinted in this Figure.

Part one OUR BIOLOGIC WORLD – STAYING WELL OR GETTING BETTER

*The Biggest Public Health Experiment Ever: The 1954 Field Trial of the Salk Poliomyelitis Vaccine.

*Safety of Anesthetics.

Drug Screening: The Never-Ending Search for New and Better Drugs.

Setting Dosage Levels.

How Frequently Do Innovations Succeed in Surgery and Anesthesia?

– GETTING SICK AND DYING

Statistics, Scientific Method, and Smoking.

Deathday and Birthday: An Unexpected Connection.

Epidemics.

– PEOPLE AND ANIMALS

*Does Inheritance Matter in Disease?

*The Plight of the Whales.

*The Importance of Being Human.

Part two OUR POLITICAL WORLD – GOVERNMENT INFLUENCES PEOPLE

How Well Do Social Innovations Work?

Parking Tickets and Missing Women: Statistics and the Law.

Size of Police Force versus Crime.

*Measuring the Effects of Social Innovations by Means of Time Series.

Do Speed Limits Reduce Traffic Accidents?

– PEOPLE INFLUENCE GOVERNMENT

*Election Night on Television.

Opinion Polling in a Democracy.

Registration and Voting.

Part three OUR SOCIAL WORLD – COMMUNICATING WITH OTHERS

*Deciding Authorship.

Adverbs Multiply Adjectives.

*The Meaning of Words.

*The Sizes of Things.

– PEOPLE AT WORK

*How Accountants Save Money by Sampling.

The Use of Subjective Probability Methods in Estimating Demand.

*Preliminary Evaluation of a New Food Product.

Making Things Right.

Part three OUR SOCIAL WORLD – PEOPLE AT SCHOOL AND PLAY

Calibrating College Board Scores.

*Statistics, Sports, and Some Other Things.

Varieties of Military Leadership.

– COUNTING PEOPLE AND THEIR GOODS

*The Consumer Price Index.

*How to Count Better: Using Statistics to Improve the Census.

Information for the Nation from a Sample Survey.

– FORECASTING POPULATION AND THE ECONOMY

How Crowded Will We Become?

Early Warning Signals for the Economy.

Statistics for Public Financial Policy.

– MEASURING SEGREGATION AND INEQUALITY

Measuring Racial Integration Potentials.

Census Statistics in the Public Service.

Measuring Sociopolitical Inequality.

Part four OUR PHYSICAL WORLD – THE STATES OF NATURE

Cloud Seeding and Rainmaking.

Looking Through Rocks.

The Probability of Rain.

*Statistics, the Sun, and the Stars.

– MODERN MACHINES

Information, Simulation, and Production: Some Applications of Statistics to Computing.

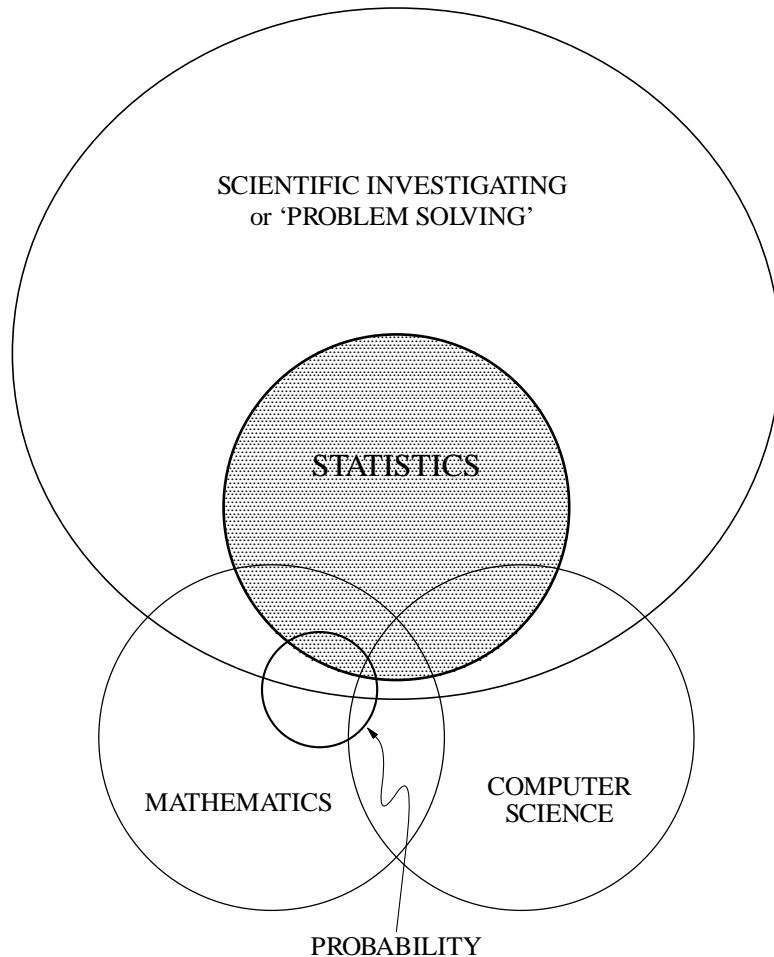
Striving for Reliability.

Statistics and Probability Applied to Antiaircraft Fire in World War II.

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NOTE: The 1989 Third Edition of this book is *shorter* than the Second Edition – it contains 29 articles instead of 46. The 16 articles *common* to the two Editions are indicated by an asterisk (*).

Figure 1.3. STATISTICS: Relationships to Other Areas and Reasons for Studying It



Statistics (as data-based investigating) lies wholly within the broader area of scientific investigating, and it overlaps with (*i.e.*, makes use of) both mathematics and computer science.

Scientific investigating here is to be taken in a *broad* sense, and so includes data-based investigating in medicine and engineering, for example; such activity in engineering is often called ‘problem solving’.

Probability is a sub-area of mathematics; statistics makes use of some parts of probability as, at times, does scientific investigating.

<p>Why study Statistics?</p>	<p>Skills Teaching statistical methods, which are important for both employment <i>and</i> everyday life.</p> <p>Relevance Examples of the benefits which result from using statistical methods are found in a variety of ‘real-world’ situations.</p> <p>Mathematical techniques An example is stochastic modelling to quantify uncertainty in data-based answers to questions. Implementation of statistical methods is closely tied to the effective use of computers.</p> <p>General principles The fundamental concern of statistics is that data-based investigating yield, with minimum expenditure of resources, answers which are likely (close to) correct. Statistics deals with an area of knowledge relevant to the ‘basic core of civilization’.</p>	<p>Why does a university offer courses in Statistics?</p>
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For a university education viewed from a historical perspective, the characteristics in the central panel *increase in importance* from the first (Skills) to the fourth (General principles).

SUGGESTION FOR FURTHER READING:

Paulos, J.A.: *INNUMERACY: Mathematical Illiteracy and Its Consequences*. Vintage Books, New York, 1990.