

## Statistical Science In The Courtroom Statistics For Social And Behavioral Sciences

A scathing indictment of the growing role of junk science in our courtrooms. Peter W. Huber shows how time and again lawyers have used—and the courts have accepted—spurious claims by so-called expert witnesses to win astronomical judgments that have bankrupted companies, driven doctors out of practice, and deprived us all of superior technologies and effective, life-saving therapies.

Statistical Science in the Courtroom Springer Science & Business Media

When DNA profiling was first introduced into the American legal system in 1987, it was heralded as a technology that would revolutionize law enforcement. As an investigative tool, it has lived up to much of this hype—it is regularly used to track down unknown criminals, put murderers and rapists behind bars, and exonerate the innocent. Yet, this promise took ten turbulent years to be fulfilled. In *Genetic Witness*, Jay D. Aronson uncovers the dramatic early history of DNA profiling that has been obscured by the technique's recent success. He demonstrates that robust quality control and quality assurance measures were initially nonexistent, interpretation of test results was based more on assumption than empirical evidence, and the technique was susceptible to error at every stage. Most of these issues came to light only through defense challenges to what prosecutors claimed to be an infallible technology. Although this process was fraught with controversy, inefficiency, and personal antagonism, the quality of DNA evidence improved dramatically as a result. Aronson argues, however, that the dream of a perfect identification technology remains unrealized.

This publication is directed at both attorneys and statisticians to ensure they will work together successfully on the application of statistics in the law. Attorneys will learn how best to utilize the statistician's talents, while gaining an enriched understanding of the law relevant to audits, jury selection, discrimination, environmental hazards

The interpretation and evaluation of scientific evidence and its presentation in a court of law is central both to the role of the forensic scientist as an expert witness and to the interests of justice. This book aims to provide a thorough and detailed discussion of the principles and practice of evidence interpretation and evaluation by using real cases by way of illustration. The presentation is appropriate for students of forensic science or related disciplines at advanced undergraduate and master's level or for practitioners engaged in continuing professional development activity. The book is structured in three sections. The first sets the scene by describing and debating the issues around the admissibility and reliability of scientific evidence presented to the court. In the second section, the principles underpinning interpretation and evaluation are explained, including discussion of those formal statistical methods founded on Bayesian inference. The following chapters present perspectives on the evaluation and presentation of evidence in the context of a single type or class of scientific evidence, from DNA to the analysis of documents. For each, the science underpinning the analysis and interpretation of the forensic materials is explained, followed by the presentation of cases which illustrate the variety of approaches that have been taken in providing expert scientific opinion. This rigorous yet reader-friendly book reviews the state of the science on a broad range of psychological issues commonly encountered in the forensic context. The goal is to help professionals and students differentiate between supported and unsupported psychological techniques—and steer clear of those that may be misleading or legally inadmissible. Leading contributors focus on controversial issues surrounding recovered memories, projective techniques, lie detection, child witnesses, offender rehabilitation, psychopathy, violence risk assessment, and more. With a focus on real-world legal situations, the book offers guidelines for presenting scientific evidence accurately and effectively in courtroom testimony and written reports.

*Prove It With Figures* displays some of the tools of the social and statistical sciences that have been applied in the courtroom and to the study of questions of legal importance. It explains how researchers can extract the most valuable and reliable data that can conveniently be made available, and how these efforts sometimes go awry. In the tradition of Zeisel's standard work "Say It with Figures," the authors clarify, in non-technical language, some of the basic problems common to all efforts to discern cause-and-effect relationships. Designed as a textbook for law students who seek an appreciation of the power and limits of empirical methods, this is also a useful reference for lawyers, policymakers, and members of the public who would like to improve their critical understanding of the statistics presented to them. The many case histories include analyses of the death penalty, jury selection, employment discrimination, mass torts, and DNA profiling.

Uniting forensics, law, and social science in meaningful and relevant ways, *Forensic Science and the Administration of Justice*, by Kevin J. Strom and Matthew J. Hickman, is structured around current research on how forensic evidence is being used and how it is impacting the justice system. This unique book—written by nationally known scholars in the field—includes five sections that explore the demand for forensic services, the quality of forensic services, the utility of forensic services, post-conviction forensic issues, and the future role of forensic science in the administration of justice. The authors offer policy-relevant directions for both the criminal justice and forensic fields and demonstrate how the role of the crime laboratory in the American justice system is evolving in concert with technological advances as well as changing demands and competing pressures for laboratory resources.

The federal courts are seeking ways to increase the ability of judges to deal with difficult issues of scientific expert testimony. The workshop explored the new environment judges, plaintiffs, defendants, and experts face in light of "Daubert" and "Kumho," when presenting and evaluating scientific, engineering, and medical evidence.

Designed to introduce law students, law teachers, practitioners, and judges to the basic ideas of mathematical probability and statistics as they have been applied in the law, the book consists of sections of exposition followed by real-world cases and case studies in which statistical data have played a role. Readers are asked to apply the theory to the facts, to calculate results (a pocket calculator is sufficient), and to explore legal issues raised by quantitative findings, while the author's own calculations and comments are given in the back of the book. The cases and case studies reflect a broad variety of legal subjects, including antidiscrimination, mass torts, taxation, school finance, identification evidence, preventive detention, handwriting disputes, voting, environmental protection, antitrust, and the death penalty. The first edition has been used in law, statistics, and social science courses, and in 1991 was selected by the *University of Michigan Law Review* as one of the important law books of the year. This second edition includes many new problems reflecting current developments in the law, including a new chapter on epidemiology.

Examines the impact of DNA technology on issues of ethics, civil liberties, privacy, and security.

Describes ways of assessing forensic science evidence and the means of communicating the assessment to a court of law. The aim of this work is to ensure that the courts consider seriously the probability of the evidence of association.

*Forensic Science in Court: The Role of the Expert Witness* is a practical handbook aimed at forensic science students, to help them prepare as an expert witness when presenting their evidence in court. Written in a clear, accessible manner, the book guides the student through the legal process and shows them how to handle evidence, write reports without ambiguity through to the more practical aspects of what to do when appearing in court. The book also offers advice on what to expect when working with lawyers in a courtroom situation. An essential text for all students taking forensic

science courses who are required to take modules on how to present their evidence in court. The book is also an invaluable reference for any scientist requested to give an opinion in a legal context. · Integrates law and science in an easy to understand format · Inclusion of case studies throughout · Includes straightforward statistics essential for the forensic science student · An invaluable, practical textbook for anyone appearing as an expert witness in court · Unique in its approach aimed at forensic science students in a courtroom environment

Attempting to reconcile the law's need for workable rules of evidence with the views of scientific validity and reliability. What is scientific knowledge and when is it reliable? These deceptively simple questions have been the source of endless controversy. In 1993, the Supreme Court handed down a landmark ruling on the use of scientific evidence in federal courts. Federal judges may admit expert scientific evidence only if it merits the label scientific knowledge. The testimony must be scientifically reliable and valid. This book is organized around the criteria set out in the 1993 ruling. Following a general overview, the authors look at issues of fit--whether a plausible theory relates specific facts to the larger factual issues in contention; philosophical concepts such as the falsifiability of scientific claims; scientific error; reliability in science, particularly in fields such as epidemiology and toxicology; the meaning of scientific validity; peer review and the problem of boundary setting; and the risks of confusion and prejudice when presenting science to a jury. The book's conclusion attempts to reconcile the law's need for workable rules of evidence with the views of scientific validity and reliability that emerge from science and other disciplines.

This book explains the correct logical approach to analysis of forensic scientific evidence. The focus is on general methods of analysis applicable to all forms of evidence. It starts by explaining the general principles and then applies them to issues in DNA and other important forms of scientific evidence as examples. Like the first edition, the book analyses real legal cases and judgments rather than hypothetical examples and shows how the problems perceived in those cases would have been solved by a correct logical approach. The book is written to be understood both by forensic scientists preparing their evidence and by lawyers and judges who have to deal with it. The analysis is tied back both to basic scientific principles and to the principles of the law of evidence. This book will also be essential reading for law students taking evidence or forensic science papers and science students studying the application of their scientific specialisation to forensic questions.

Statistics for Lawyers presents the science of statistics in action at the cutting edge of legal problems. A series of more than 90 case studies, drawn principally from actual litigation, have been selected to illustrate important areas of the law in which statistics has played a role and to demonstrate a variety of statistical tools. Some case studies raise legal issues that are being intensely debated and lie at the edge of the law. Of particular note are problems involving toxic torts, employment discrimination, stock market manipulation, paternity, tax legislation, and drug testing. The case studies are presented in the form of legal/statistical puzzles to challenge the reader and focus discussion on the legal implications of statistical findings. The techniques range from simple averaging for the estimation of thefts from parking meters to complex logistic regression models for the demonstration of discrimination in the death penalty. Excerpts of data allow the reader to compute statistical results and an appendix contains the authors' calculations.

Expert testimony relying on scientific and other specialized evidence has come under increased scrutiny by the legal system. A trilogy of recent U.S. Supreme Court cases has assigned judges the task of assessing the relevance and reliability of proposed expert testimony. In conjunction with the Federal judiciary, the American Association for the Advancement of Science has initiated a project to provide judges indicating a need with their own expert. This concern with the proper interpretation of scientific evidence, especially that of a probabilistic nature, has also occurred in England, Australia and in several European countries.

Statistical Science in the Courtroom is a collection of articles written by statisticians and legal scholars who have been concerned with problems arising in the use of statistical evidence. A number of articles describe DNA evidence and the difficulties of properly calculating the probability that a random individual's profile would "match" that of the evidence as well as the proper way to interpret the result. In addition to the technical issues, several authors tell about their experiences in court. A few have become disenchanted with their involvement and describe the events that led them to devote less time to this application. Other articles describe the role of statistical evidence in cases concerning discrimination against minorities, product liability, environmental regulation, the appropriateness and fairness of sentences and how being involved in legal statistics has raised interesting statistical problems requiring further research.

The increasingly arcane world of DNA profiling demands that those needing to understand at least some of it must find a source of reliable and understandable information. Combining material from the successful Wiley Encyclopedia of Forensic Science with newly commissioned and updated material, the Editors have used their own extensive experience in criminal casework across the world to compile an informative guide that will provide knowledge and thought-provoking articles of interest to anyone involved or interested in the use of DNA in the forensic context. Following extensive introductory chapters covering forensic DNA profiling and forensic genetics, this comprehensive volume presents a substantial breadth of material covering: Fundamental material – including sources of DNA, validation, and accreditation Analysis and interpretation – including, extraction, quantification, amplification and interpretation of electropherograms (epgs) Evaluation – including mixtures, low template, and transfer Applications – databases, paternity and kinship, mitochondrial-DNA, wildlife DNA, single-nucleotide polymorphism, phenotyping and familial searching Court - report writing, discovery, cross examination, and current controversies With contributions from leading experts across the whole gamut of forensic science, this volume is intended to be authoritative but not authoritarian, informative but comprehensible, and comprehensive but concise. It will prove to be a valuable addition, and useful resource, for scientists, lawyers, teachers, criminologists, and judges.

An attorney and an expert in using probability in decision making describe a powerful new approach to presenting scientific evidence and cross examining expert witnesses in court. Using clear practical terms, they explain the principles of interpretation applicable to all forms of scientific evidence. These principles demonstrate how evidence should be imparted by expert witnesses as well as considered and combined with other evidence by jurors. Authentic case studies illustrate the operation of interpretation principles and how the problems which arose in these cases should have been avoided. Specific evidential areas covered include

database matching, transfer evidence, blood and DNA evidence, fingerprints, handwriting and behavioral evidence.

Handbook of Forensic Statistics is a collection of chapters by leading authorities in forensic statistics. Written for statisticians, scientists, and legal professionals having a broad range of statistical expertise, it summarizes and compares basic methods of statistical inference (frequentist, likelihoodist, and Bayesian) for trace and other evidence that links individuals to crimes, the modern history and key controversies in the field, and the psychological and legal aspects of such scientific evidence. Specific topics include uncertainty in measurements and conclusions; statistically valid statements of weight of evidence or source conclusions; admissibility and presentation of statistical findings; and the state of the art of methods (including problems and pitfalls) for collecting, analyzing, and interpreting data in such areas as forensic biology, chemistry, and pattern and impression evidence. The particular types of evidence that are discussed include DNA, latent fingerprints, firearms and toolmarks, glass, handwriting, shoeprints, and voice exemplars.

The leading resource in the statistical evaluation and interpretation of forensic evidence The third edition of Statistics and the Evaluation of Evidence for Forensic Scientists is fully updated to provide the latest research and developments in the use of statistical techniques to evaluate and interpret evidence. Courts are increasingly aware of the importance of proper evidence assessment when there is an element of uncertainty. Because of the increasing availability of data, the role of statistical and probabilistic reasoning is gaining a higher profile in criminal cases. That's why lawyers, forensic scientists, graduate students, and researchers will find this book an essential resource, one which explores how forensic evidence can be evaluated and interpreted statistically. It's written as an accessible source of information for all those with an interest in the evaluation and interpretation of forensic scientific evidence. Discusses the entire chain of reasoning—from evidence pre-assessment to court presentation; Includes material for the understanding of evidence interpretation for single and multiple trace evidence; Provides real examples and data for improved understanding. Since the first edition of this book was published in 1995, this respected series has remained a leading resource in the statistical evaluation of forensic evidence. It shares knowledge from authors in the fields of statistics and forensic science who are international experts in the area of evidence evaluation and interpretation. This book helps people to deal with uncertainty related to scientific evidence and propositions. It introduces a method of reasoning that shows how to update beliefs coherently and to act rationally. In this edition, readers can find new information on the topics of elicitation, subjective probabilities, decision analysis, and cognitive bias, all discussed in a Bayesian framework.

This title brings forensic scientists and chemists up-to-date on the latest instrumental methods for analysing trace evidence, including mass spectrometry, image analysis, DIOS-MS, ELISA characterization, statistical validation, and others. Illustrates comparative analysis of trace evidence by both old and new methods. Explains why some newer methods are superior to older, established methods. Includes chapters on analysis of DNA, ink, dyes, glitter, gun powder traces, condom trace evidence, footwear impressions, toolmark impressions, surveillance videos, glass particles, and dirt. Discusses applications such as mass spectrometry, image analysis, desorption-ionization on silicon mass spectrometry (DIOS-MS), ELISA characterization, and statistical validation.

The theory of probability grew up in gaming rooms, graduated to insurance companies, and was eventually applied by philosophers to all kinds of ordinary choices. This collection represents the best recent work on the subject and includes essays by Clark Glymour, James H. Fetzer, and Wesley C. Salmon.

The book will serve primarily as a user's manual or desk reference for the expert witness-lawyer team and secondarily as a textbook or supplemental textbook for upper level undergraduate statistics students. It starts with two articles by masters of the trade, Paul Meier and Franklin Fisher. It then explains the distinction between the Frye and Daughbert standards for expert testimony, and how these standards play out in court. The bulk of the book is concerned with individual cases ranging over a wide variety of topics, such as electronic draw poker (does it require skill to play), employment discrimination (how to tell whether an employer discriminated against older workers in deciding whom to fire), driving while black (did the New Jersey State Police disproportionately stop blacks), jury representativeness (is a jury a representative cross section of the community), juries hearing death penalty cases (are such juries biased toward a guilty verdict, and does the Supreme Court care), the civil incarceration of violent sexual offenders after having served their jail sentences (can future dangerousness be predicted), do data from multiple choice examinations support an allegation of copying, whether rental agents in an apartment complex steered African-American prospects to one part of the complex, how much tax is owed after an audit that used a random sample, whether an inventor falsified his notebook in an effort to fool the Patent Office, and whether ballots had been tampered with in an election. The book concludes with two recent English cases, one in which a woman was accused of murdering her infant sons because both died of "cot death" or "sudden death syndrome," (she was convicted, but later exonerated), and how Bayesian analyses can (or more precisely), cannot be presented in UK courts. In each study, the statistical analysis is shaped to address the relevant legal questions, and draws on whatever methods in statistics might shed light on those questions.

Philosophy has a strong presence in evidence law and the nature of evidence is a highly debated topic in both general and social epistemology; legal theorists working in the evidence law area draw on different underlying philosophical theories of knowledge, inference and probability. Core evidentiary concepts and principles, such as the presumption of innocence, standards of proof, and others, reply on moral and political philosophy for their understanding and interpretation. Written by leading scholars across the globe, this volume brings together philosophical debates on the nature and function of evidence, proof, and law of evidence. It presents a cross-disciplinary overview of central issues in the theory and methodology of legal evidence and covers a wide range of contemporary debates on topics such as truth, proof, economics, gender, and race. The volume covers different theoretical approaches to legal evidence, including the Bayesian approach, scenario theory and inference to the best explanation. Divided in to five parts, Philosophical Foundations of Evidence Law, covers different theoretical approaches to legal evidence, including the Bayesian approach, scenario theory and inference to the best explanation.

The Handbook of Probability presents an equal balance of theory and direct applications in a non-technical, yet comprehensive format so that researchers of various backgrounds can use the reference either as a primer for understanding basic probability theory or as a more advanced research tool for specific projects requiring a deeper understanding or application of probability. The wide-ranging applications of probability presented make it useful for researchers who need to make interdisciplinary connections in their work, as well as professors who teach a range of students (social sciences, education, business, behavioral sciences, etc.) and need to bring probability into greater, concrete perspective for these students.

Scores of talented and dedicated people serve the forensic science community, performing vitally important work. However, they are often constrained by lack of adequate resources, sound policies, and national support. It is clear that change and advancements, both systematic and scientific, are needed in a number of forensic science disciplines to ensure the reliability of work, establish enforceable standards, and

promote best practices with consistent application. Strengthening Forensic Science in the United States: A Path Forward provides a detailed plan for addressing these needs and suggests the creation of a new government entity, the National Institute of Forensic Science, to establish and enforce standards within the forensic science community. The benefits of improving and regulating the forensic science disciplines are clear: assisting law enforcement officials, enhancing homeland security, and reducing the risk of wrongful conviction and exoneration. Strengthening Forensic Science in the United States gives a full account of what is needed to advance the forensic science disciplines, including upgrading of systems and organizational structures, better training, widespread adoption of uniform and enforceable best practices, and mandatory certification and accreditation programs. While this book provides an essential call-to-action for congress and policy makers, it also serves as a vital tool for law enforcement agencies, criminal prosecutors and attorneys, and forensic science educators.

In the wrong hands, math can be deadly. Even the simplest numbers can become powerful forces when manipulated by politicians or the media, but in the case of the law, your liberty -- and your life -- can depend on the right calculation. In *Math on Trial*, mathematicians Leila Schneps and Coralie Colmez describe ten trials spanning from the nineteenth century to today, in which mathematical arguments were used -- and disastrously misused -- as evidence. They tell the stories of Sally Clark, who was accused of murdering her children by a doctor with a faulty sense of calculation; of nineteenth-century tycoon Hetty Green, whose dispute over her aunt's will became a signal case in the forensic use of mathematics; and of the case of Amanda Knox, in which a judge's misunderstanding of probability led him to discount critical evidence -- which might have kept her in jail. Offering a fresh angle on cases from the nineteenth-century Dreyfus affair to the murder trial of Dutch nurse Lucia de Berk, Schneps and Colmez show how the improper application of mathematical concepts can mean the difference between walking free and life in prison. A colorful narrative of mathematical abuse, *Math on Trial* blends courtroom drama, history, and math to show that legal expertise isn't always enough to prove a person innocent.

This book outlines Bayesian statistical analysis in great detail, from the development of a model through the process of making statistical inference. The key feature of this book is that it covers models that are most commonly used in social science research - including the linear regression model, generalized linear models, hierarchical models, and multivariate regression models - and it thoroughly develops each real-data example in painstaking detail.

Students in the sciences, economics, social sciences, and medicine take an introductory statistics course. And yet statistics can be notoriously difficult for instructors to teach and for students to learn. To help overcome these challenges, Gelman and Nolan have put together this fascinating and thought-provoking book. Based on years of teaching experience the book provides a wealth of demonstrations, activities, examples, and projects that involve active student participation. Part I of the book presents a large selection of activities for introductory statistics courses and has chapters such as 'First week of class'— with exercises to break the ice and get students talking; then descriptive statistics, graphics, linear regression, data collection (sampling and experimentation), probability, inference, and statistical communication. Part II gives tips on what works and what doesn't, how to set up effective demonstrations, how to encourage students to participate in class and to work effectively in group projects. Course plans for introductory statistics, statistics for social scientists, and communication and graphics are provided. Part III presents material for more advanced courses on topics such as decision theory, Bayesian statistics, sampling, and data science.

Consideration was given to more advanced theoretical approaches and novel applications of reliability to ensure that topics having a futuristic impact were specifically included. The entries have been categorized into seven parts, each emphasizing a theme that seems poised for the future development of reliability as an academic discipline with relevance. The topics, when linked with utility theory, constitute the science base of risk analysis.

This book presents an analysis including the impact of more than fifteen federal statutes-ranging from the Civil Rights Act of 1866 to the Fair and Accurate Credit Transactions Act-on the banking.

The Reference Manual on Scientific Evidence, Third Edition, assists judges in managing cases involving complex scientific and technical evidence by describing the basic tenets of key scientific fields from which legal evidence is typically derived and by providing examples of cases in which that evidence has been used. First published in 1994 by the Federal Judicial Center, the Reference Manual on Scientific Evidence has been relied upon in the legal and academic communities and is often cited by various courts and others. Judges faced with disputes over the admissibility of scientific and technical evidence refer to the manual to help them better understand and evaluate the relevance, reliability and usefulness of the evidence being proffered. The manual is not intended to tell judges what is good science and what is not. Instead, it serves to help judges identify issues on which experts are likely to differ and to guide the inquiry of the court in seeking an informed resolution of the conflict. The core of the manual consists of a series of chapters (reference guides) on various scientific topics, each authored by an expert in that field. The topics have been chosen by an oversight committee because of their complexity and frequency in litigation. Each chapter is intended to provide a general overview of the topic in lay terms, identifying issues that will be useful to judges and others in the legal profession. They are written for a non-technical audience and are not intended as exhaustive presentations of the topic. Rather, the chapters seek to provide judges with the basic information in an area of science, to allow them to have an informed conversation with the experts and attorneys.

Statistical methodology plays a key role in ensuring that DNA evidence is collected, interpreted, analyzed and presented correctly. With the recent advances in computer technology, this methodology is more complex than ever before. There are a growing number of books in the area but none are devoted to the computational analysis of evidence. This book presents the methodology of statistical DNA forensics with an emphasis on the use of computational techniques to analyze and interpret forensic evidence.

A valuable guide to a successful career as a statistician *A Career in Statistics: Beyond the Numbers* prepares readers for careers in statistics by emphasizing essential concepts and practices beyond the technical tools provided in standard courses and texts. This insider's guide from internationally recognized applied statisticians helps readers decide whether a career in statistics is right for them, provides hands-on guidance on how to prepare for such a career, and shows how to succeed on the job. The book provides non-technical guidance for a successful career. The authors' extensive industrial experience is supplemented by insights from contributing authors from government and academia, Carol Joyce Blumberg, Leonard M. Gaines, Lynne B. Hare, William Q. Meeker, and Josef Schmee. Following an introductory chapter that provides an overview of the field, the authors discuss the various dimensions of a career in applied statistics in three succinct parts: *The Work of a Statistician* describes the day-to-day activities of applied statisticians in business and industry, official government, and various other application areas, highlighting the work environment and major on-the-job challenges *Preparing for a Successful Career in Statistics* describes the personal traits that characterize successful statisticians, the education that they need to acquire, and approaches for securing the right job *Building a Successful Career as a Statistician* offers practical guidance for addressing key challenges that statisticians face on the job, such as project initiation and execution, effective communication, publicizing successes, ethical considerations, and gathering good data; alternative career paths are also described The book concludes with an in-depth examination of careers for statisticians

in academia as well as tips to help them stay on top of their field throughout their careers. Each chapter includes thought-provoking discussion questions and a Major Takeaways section that outlines key concepts. Real-world examples illustrate key points, and an FTP site provides additional information on selected topics. A Career in Statistics is an invaluable guide for individuals who are considering or have decided on a career in statistics as well as for statisticians already on the job who want to accelerate their path to success. It also serves as a suitable book for courses on statistical consulting, statistical practice, and statistics in the workplace at the undergraduate and graduate levels.

Matching DNA samples from crime scenes and suspects is rapidly becoming a key source of evidence for use in our justice system. DNA Technology in Forensic Science offers recommendations for resolving crucial questions that are emerging as DNA typing becomes more widespread. The volume addresses key issues: Quality and reliability in DNA typing, including the introduction of new technologies, problems of standardization, and approaches to certification. DNA typing in the courtroom, including issues of population genetics, levels of understanding among judges and juries, and admissibility. Societal issues, such as privacy of DNA data, storage of samples and data, and the rights of defendants to quality testing technology. Combining this original volume with the new update--The Evaluation of Forensic DNA Evidence--provides the complete, up-to-date picture of this highly important and visible topic. This volume offers important guidance to anyone working with this emerging law enforcement tool: policymakers, specialists in criminal law, forensic scientists, geneticists, researchers, faculty, and students.

In 1992 the National Research Council issued DNA Technology in Forensic Science, a book that documented the state of the art in this emerging field. Recently, this volume was brought to worldwide attention in the murder trial of celebrity O. J. Simpson. The Evaluation of Forensic DNA Evidence reports on developments in population genetics and statistics since the original volume was published. The committee comments on statements in the original book that proved controversial or that have been misapplied in the courts. This volume offers recommendations for handling DNA samples, performing calculations, and other aspects of using DNA as a forensic tool--modifying some recommendations presented in the 1992 volume. The update addresses two major areas: Determination of DNA profiles. The committee considers how laboratory errors (particularly false matches) can arise, how errors might be reduced, and how to take into account the fact that the error rate can never be reduced to zero. Interpretation of a finding that the DNA profile of a suspect or victim matches the evidence DNA. The committee addresses controversies in population genetics, exploring the problems that arise from the mixture of groups and subgroups in the American population and how this substructure can be accounted for in calculating frequencies. This volume examines statistical issues in interpreting frequencies as probabilities, including adjustments when a suspect is found through a database search. The committee includes a detailed discussion of what its recommendations would mean in the courtroom, with numerous case citations. By resolving several remaining issues in the evaluation of this increasingly important area of forensic evidence, this technical update will be important to forensic scientists and population geneticists--and helpful to attorneys, judges, and others who need to understand DNA and the law. Anyone working in laboratories and in the courts or anyone studying this issue should own this book.

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