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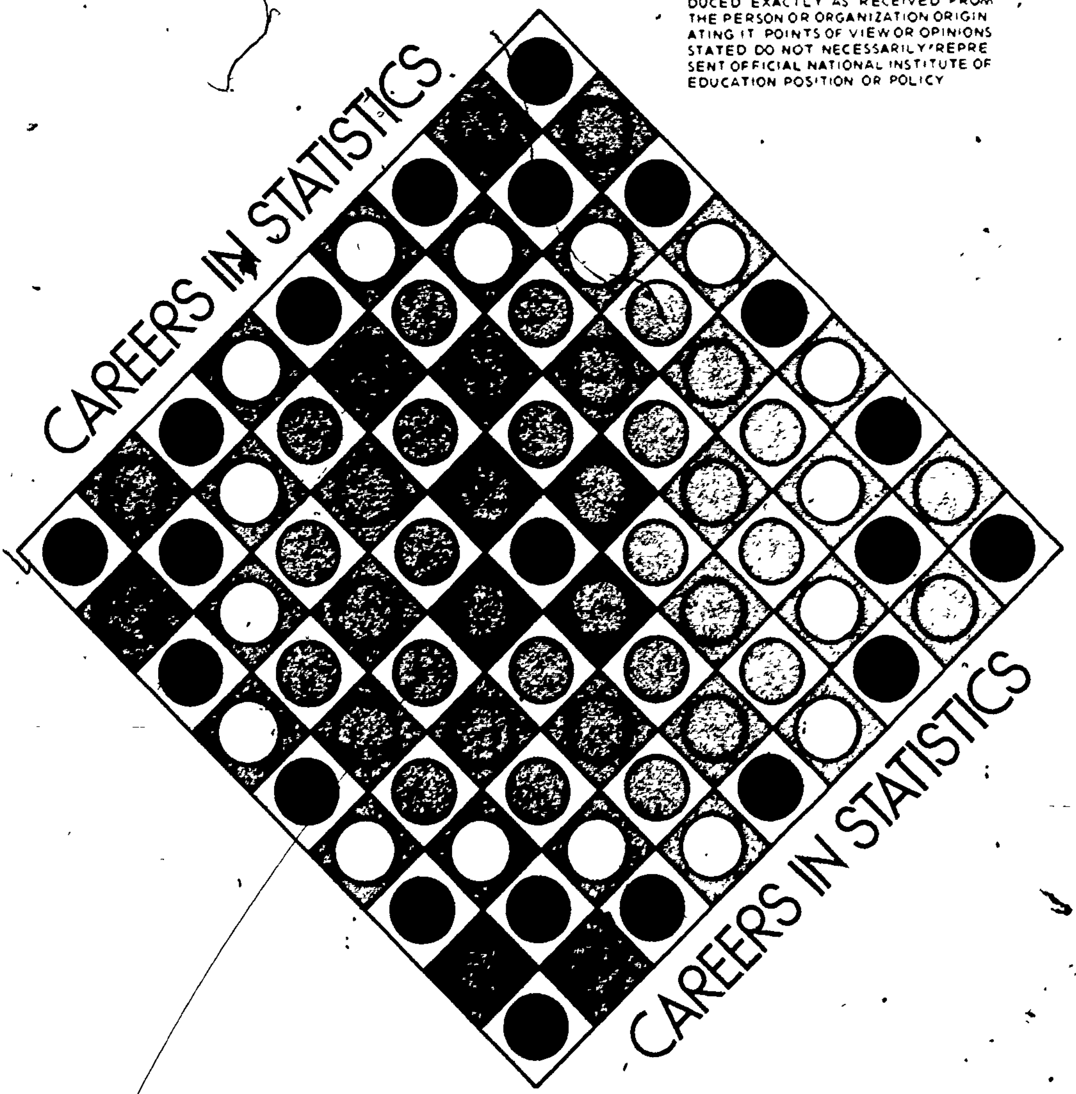
ABSTRACT

This pamphlet was designed to describe occupations in the area of statistics to high school students. A variety of applications of statistical techniques in the solution to ecological, political, and biological problems are described briefly. General opportunities for statisticians in ten professional areas are listed, and many others are mentioned. The educational and training requirements necessary for entering the field are discussed, and addresses for sources of further information are listed. Names and addresses of universities in the United States and Canada which offer degrees in statistics are provided. (SD)


CAREERS IN STATISTICS
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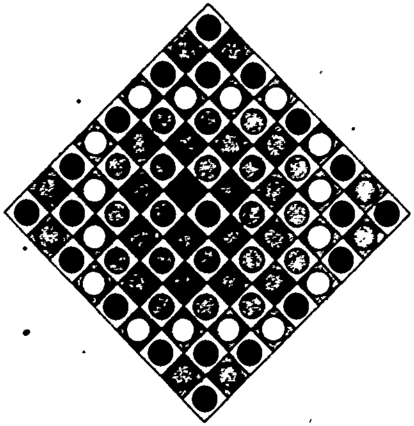


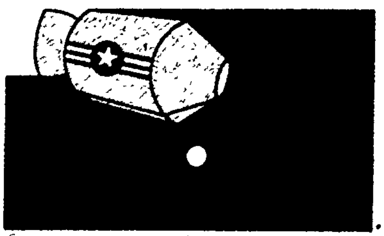
contents

the world of statistics

The world is full of problems. To solve most of these problems we need information. But, what kind? How much? And after we get it all, what do we do with it? The statistician deals with numerical information—data. His job is to match the data with the problem, to figure out what to collect and how, and to make sense—sense that other people can understand—of all these numbers. When these are good numbers—well collected—without biases and distortions, he's on his way to solving the problem.

How do we go about collecting meaningful data? How do we analyze, present and interpret data once they are collected? When we talk about these questions, we're talking about the *world of statistics*.

Some observations are quick and inexpensive, such as taking a reading from a clinical thermometer. Others, like evaluating the



disease resistance of a new variety of corn or the toxicity of a new pesticide, could take years and thousands of dollars. So sometimes we must be content with only a small amount, or sample, of all the information we would like. We would still be waiting to send our first man into outer space if we had to test every last piece of equipment until it wore out.

When we can only get a sample we must be sure that it will tell us what we need to know. This takes planning, designing and testing, and here's where the statistician comes into the picture. For example, if we have a fixed budget and wish to estimate employment on a national scale, do we sample 100 households in each of 50 cities or 50 households in each of 100 cities? As we cover more cities our costs go up and our coverage per city goes down. Since we are estimating national employment would we be better off sampling more households in the big cities than in the small ones? The statistician, using probability theory, can tell us how to get the most information for the money we have to spend.

Statistical research has made great progress in helping to understand this type of problem. The methods developed help the social scientist, the economist, the engineer and many others to do their jobs more effectively.

what do statisticians do?

For many people the word "statistics" brings visions of zig-zag graphs, batting averages, passes completed—all the tabulations on the sports pages or columns of figures in the business section of newspapers. This is only one kind of statistics; the statistician today does far more than construct and examine graphs and tables. He or she must develop a greater understanding of the origins of data, their possible meanings, and especially their accuracy. Knowing that Council Bluffs, Iowa had 60,348 inhabitants in 1970 is not enough. How was the count made? Did it include students temporarily away at school? Or those students temporarily living there during the school year? How about the newborn babies in the hospital? Did the enumerators do their job well? Important decisions, such as who gets what amount of Federal funds in revenue sharing, depend upon the answers to these questions.

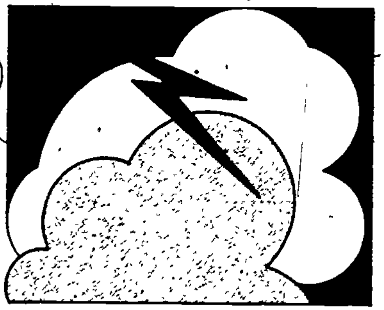
U.S. Government statisticians conduct Censuses of Population, Housing, Manufactures, and Agriculture. Compilations are made of sales, production, inventories, payrolls, and other internal industrial and business data. These statistics tell the alert business manager how his industry is growing, how his company is growing in relation to the industry, and what plans he should make for future expansion. Government officials could not function without this information; planning would come to a standstill.

The statistician also helps the manager make wise decisions. When a food chain, for example, considers opening a new branch of a supermarket, it turns to the statistician to help find the best location. Sample surveys help determine the prospects for success, by measuring such items as population concentrations, income levels of potential customers, the availability of transportation, the needs of the community and existing competition. The expert interpretation of these data puts the statistician right at the heart of the final decision.

Central to the work of many statisticians is the use of computers. Statistical calculations that once took weeks of labor can now be done on a high-speed electronic computer in a few seconds. Some statisticians use the computer to analyze data. Others use it to help solve thorny statistical problems whose mathematical complexity might otherwise be overwhelming Almost all agree that what the test tube is to the chemist, the modern computer is to the statistician.

Statistics is a changing field with new methods being generated constantly. The user of statistical techniques regularly has more and better tools at hand to help solve his problems.

There seems to be no limit to the areas of challenge to the statistician. Let's look at some specific examples of statistical problems, in widely ranging fields.



Modifying the Weather

In the not too distant future man may be able to control the weather. In fact, by seeding clouds with chemicals, scientists are currently attempting to dissipate potential hurricanes before they reach disaster proportions.

Recently, a large contingent of U.S. Naval vessels and Air Force planes gathered in the Caribbean, under the scientific direction of a meteorologist, to test the effects of seeding clouds with silver iodide. Statistical methods were crucial in determining the proper design of the experiment. Earlier trials carried out on a smaller scale had been sharply criticized because the meteorological scientist may have subconsciously picked those clouds for seeding that were likely to grow and precipitate anyway. To counteract this criticism, a statistician with the National Bureau of Standards constructed a randomized design: first a cloud would be chosen for observation; then a sealed envelope would be opened to learn whether that particular cloud was to be seeded or not. The design was arranged so that about two out of every three clouds were seeded. The physics of precipitation is complicated and, as yet, not well understood. The randomized experiment, however, played an important role in insuring the objectivity and accuracy of these meteorological tests.

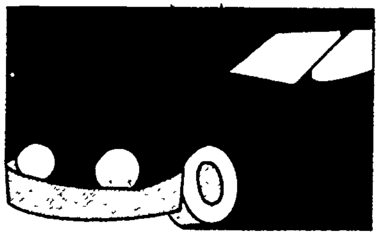
In addition to its value in designing the experiment itself, statistics was vital to the analysis of the data gathered. A Weather Bureau statistician supervised the analysis, helping to reach the conclusion that seeded clouds do grow larger, and these larger clouds presumably produce increased rainfall.

Now political scientists, working with statisticians, will have to determine the circumstances under which increased. rainfall is really desired by the community. Farmers may want it during a particular time of the year while vacationers and resort owners may not.

The Energy Crisis—Natural Gas and Oil Wells

America is facing a shortage of energy. Both Canada and the United States see their domestic oil resources dwindling at a time when demand is increasing, especially for non-polluting sources of energy. Here are two examples of how statisticians are helping in the search for sources of energy.

Natural gas is relatively pollution-free, and therefore a vital resource. But how much is there, and where is it? To discover the extent of our actual energy reserves the United States National Gas Survey carried out a statistical sampling experiment in which gas fields in every gas producing region in the U.S. were carefully examined. This was an immense task. Each field had to be examined by a team composed of a reservoir engineer and a geologist. There are almost 10,000 economically producible gas fields in the continental U.S. If every field had to be examined it would have taken roughly 900 team years. That's 9 years for 100 teams of 2 individuals! Accordingly, the project's statisticians designed a sampling experiment balancing time and



cost against accuracy of measurement of the characteristics of the totality of U.S. gas fields. By judiciously selecting the sample and the means of analyzing it, they helped to develop procedures for valid gas reserve estimation.

While most *oil fields* are small, the bulk of the world's oil is concentrated in a few very large fields. Before large amounts of money are spent exploring for petroleum in a geological basin, it is essential to describe the relative frequency with which such large fields appear in the basin.

The Alberta (Canada) Oil and Gas Commission sponsored an ambitious program to gather and analyze data from about 24,000 exploratory wells drilled in Alberta. Data from these wells were systematically coded and put onto magnetic computer tape. After establishing an operational definition of an oil field, geologists and statisticians working together analyzed the data and came up with a mathematical function (a "model") that closely approximates the relative frequencies of sizes of fields. This model yielded a plausible answer to the question. Are giant oil fields geologically unique? Since the frequencies of both large and small fields were well approximated by the same model, the investigators concluded that all oil fields could be considered as common members of a single population. Hence, there is no reason to consider large fields as "freakish."

Such studies provide important clues in the search for oil and gas. Many large oil and gas companies are presently undertaking similar studies, employing full-time statisticians to help carry them out.

Testing the Polio Vaccine

Many readers of this booklet may be too young to know the panic felt by parents each summer when the poliomyelitis season arrived with its threat to strike children with death or paralysis. In fact, relatively few children were its victims, but the fear was there.

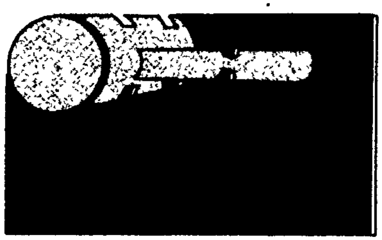
Considerable hope and excitement were evident therefore when, in 1954, over one million public school children were chosen to participate in the largest *controlled* public health experiment in the history of the United States. The study was intended to determine the effectiveness of a vaccine—the Salk vaccine—as a protection against polio.

A key part of the study involved 400,000 children, half of them to receive the vaccine, and the other a harmless salt solution. The selection was random; each child could have received either solution. Such extensive testing was required because the number of children visibly affected by polio were few and because its incidence varied widely from year to year. Only a very large sample would reliably reveal whether the vaccine was effective.

Fewer than 200 cases of polio occurred among the 400,000 children. The rate of paralysis, however, was three times greater among the children who received the salt solution than among those who received the vaccine. This showed the effectiveness of the vaccine. Statisticians had pressed for a controlled experiment of substantial proportions, and had successfully applied various statistical methods in evaluating the possible effects of chance fluctuations on the relatively small numbers of polio cases and deaths.

Women Jurors

In a well-publicized court case



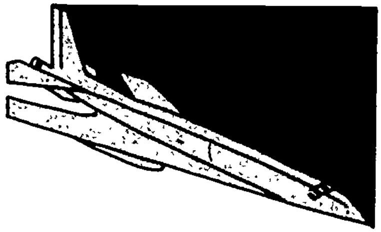
in Massachusetts, Dr. Spock, the author of a famous book on child care, and several others were initially convicted of conspiracy in connection with advocating draft evasion during the Vietnam War. During the trial the defense argued that the absence of women on the jury hurt the defendants. Might this absence have occurred by chance?

A statistician with legal training undertook a special investigation for the defense. He examined jury lists over a two and one-half year period in the court district, and found some surprising evidence. The judge who tried the conspiracy case regularly had a lower proportion of women on his jury lists than the other six judges in the district. A variety of statistical tests showed that it was close to impossible for such differences to have occurred by chance.

The conviction was eventually set aside on other grounds. Yet, the statistician's investigation did have some impact. Individuals are now assigned at random to the jury lists in all federal courts

The SST: Flying Into Danger?

A Supersonic Transport (SST) has been built by Great Britain and France. Should the United States build a fleet of these? Does the SST present a health hazard? The SST will fly so high as to disturb the ozone blanket over the earth,



permitting more ultraviolet radiation to reach the earth's surface and the people on it. Skin cancer (including a fatal form, melanoma) is said to be related to ultraviolet radiation. (Doctors have long suspected that there is more skin cancer in people living closer to the equator. The closer to the equator, the more intense the ultraviolet radiation.)

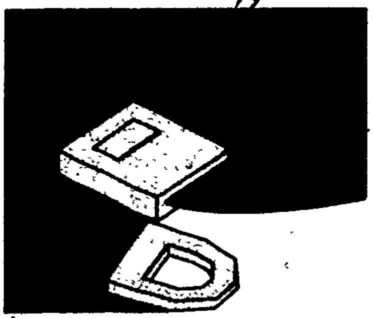
Statisticians at the National Cancer Institute and several other government agencies were called upon to:

a. find out if the relationship between ultraviolet radiation and skin cancer was really true, and
b. find out how much change in skin cancer would be likely to come about with each unit change in ultraviolet intensity, and relate this to ozone and the size of the SST fleets.

They discovered that ultraviolet measurements around the world were not very good, nor were there really good field data on the relationships of changes in ultraviolet radiation to changes in ozone. The ozone measuring instruments were expensive, and so a plan had to be developed for proper nationwide spacing of the few ozone instruments, to coincide with the placing of ultraviolet radiation measuring instruments, and with skin cancer reporting districts. Through cooperation among the National Oceanic and Atmospheric Administration (the meteorologists), the Department of Transportation (people interested in the SST) and the National Cancer Institute (people studying skin cancer) a measurement program has been set up, and some answers are on their way. So far one conclusion has been reached by the statisticians examining the data: deaths from melanoma appear to be related to the latitude at which they occur.

Seatbelts

All automobiles sold in Canada and the United States are now made with seatbelts. Unquestionably the use of seatbelts reduces serious injury and death in motor vehicle accidents. But the use of seatbelts is disappointingly low, despite the obvious benefits. In 1971, the Ontario Department of Transport carried out a seat-belt education program in a set of elementary schools in Toronto to teach the children the benefits of seatbelts use not only for themselves, but for the whole family. Statisticians on the Department's research staff planned how the program would be carried out and also designed a study to evaluate the program's effectiveness.



Effectiveness was measured by the increased use of belts by the parents since the children themselves were too young to drive. The statisticians also decided, after careful consideration, not to undertake a before-treatment survey but to use a control. Half of the children in the schools would get the training; the other half would not.

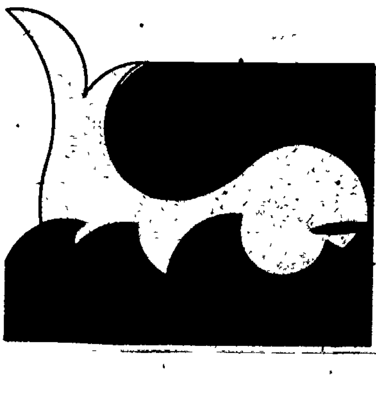
They learned two basic facts from the survey: (1) the use of seatbelts could be increased through special education programs and (2) this increase could not be maintained. After six months seatbelt use dropped to where it was before the training.

Follow-up evaluations are an important aspect of effective statistical application.

Vanishing Whales

In the 1950's scientists associated with the International Whaling Commission went on a hunt—not to kill whales, but to count them. The idea was to estimate the number of blue and fin whales remaining in the world. Samples of whales of each type were located, and small metal cylinders were then fired into the thick layer of fat which a whale has under its skin. The marked whales were free to roam and intermingle with the remaining unmarked whales. Whaling factory ships from around the world captured whales and reported to the Commission the numbers of marked and unmarked whales which they captured.

This approach, sometimes called the *mark-recapture method,* is a simple and reliable measuring technique. Statisticians working for the Commission using this method in conjunction with a variety of other statistical techniques found that there may be as few as 1000 blue whales left in all of the Southern Hemisphere. As a result, the International Whaling Commission banned the taking of blue whales to prevent this species from becoming extinct.



The same statistical methods have been applied to the sampling and counting of other animals, such as deer, wolves, and rabbits, and have been used by demographers—scientists involved with human population studies—in India to estimate the number of births and deaths in various regions of the country.

opportunities and the challenge of the future

The person interested in a career in statistics naturally gives some thought to what the future holds for the profession. Some of the diverse fields in which statistical methodology has had extensive application are:

ACTUARIAL SCIENCE: determining premium rates for different insurance risks; designing pension plans for private and public groups; measuring effectiveness of loss prevention and loss control programs; . . .

AGRICULTURE AND FISHERIES: developing superior varieties of grain; increasing egg and milk production; assessing the effectiveness and potential dangers of pesticides; management and allocation of natural fishery resources; . . .

BIOLOGY: exploring the interactions of species with their environment; creating theoretical models of the nervous system; studying genetical evolution; . . .

BUSINESS: estimating the volume of retail sales; designing inventory control systems; producing auditing and accounting procedures; improving working conditions in industrial plants; assessing the market for new products; . . .

ECONOMICS: measuring indicators such as volume of trade, size of labor force, and standard of living; analyzing consumer behavior; . . .

ENGINEERING: working out safer systems of flight control for airports; improving product design and testing product performance; determining reliability and maintainability; . . .

HEALTH AND MEDICINE: developing and testing new drugs; delivering improved medical care; preventing, diagnosing, and treating disease; . . .

PSYCHOLOGY: measuring learning ability, intelligence, and personality characteristics; creating psychological scales and other measurement tools; studying normal and abnormal behavior; . . .

QUALITY CONTROL: determining techniques for evaluation of quality through adequate sampling; in-process control; consumer surveys and experimental design in product development; . . .

SOCIOLOGY: testing theories about social systems; designing and conducting sample surveys to study social attitudes; exploring cross-cultural differences; studying the growth of human populations; . . .

In all of these areas, and many others, statisticians work closely with other scientists and researchers to develop new statistical techniques, adapt existing techniques, design experiments, and direct the analysis of surveys and retrospective studies.

These aspects of statistical work will surely continue, and new areas of application are constantly opening up for the enterprising statistician. Anthropology, archeology, history, library science, law and public policy are among the many disciplines providing new avenues for statistical inquiry. Statisticians are presently expanding their role in the development of components of computer systems, and in the equally important evaluation of computer system performance.

The federal governments of both Canada and the United States employ professional statisticians at various levels of responsibility and policy making. In the United States, statisticians play a vital role in the activities of the Department of Commerce (e.g., the National Bureau of Standards and the Bureau of the Census), Department of Defense, Department of Health, Education and Welfare (e.g., the National Institutes of Health), the Department of the Interior, the Environmental Protection Agency, and in the Office of Management and Budget, the Bureau of Labor Statistics and many other agencies. In Canada, statisticians employed by the federal government engage in similar activities, and many work for Statistics Canada, a special agency in charge of the collection and interpretation of economic and social data. At state, provincial, and local levels statistical experts help solve problems concerning the environment, urbanization, finance, transportation, and public health.

Increasingly, the legal profession is turning to statisticians to help weigh evidence and assess reasonable doubt. As concerned citizens continue to press for equal rights and opportunities, statisticians will be needed to help formulate and then measure criteria for such equality. Protecting consumer rights, preserving the environment and searching for and evaluating new sources of energy are other fertile fields for statisticians who want to make direct contributions to improving the quality of life.

Universities employ many statisticians not only as faculty in Departments of Statistics, Mathematics, Biostatistics, Biomathematics, Management Science, and Operations Research, but also in various capacities with Departments of Economics, History, Biology, Genetics, Computer Science, Engineering, Psychology, Sociology, and Anthropology, and Schools of Business, Medicine, Education, Dentistry, and Public Health.

Statisticians today often engage in private consulting practice, with clients from industry as well as from all levels of government. This may be where the most money may be earned in the statistical profession, for there are statisticians with experience and a talent for consulting who earn more than $50,000 per year.

The salary rates in scientific fields change so rapidly and constantly that any precise figures will soon be out of date. Yet some idea of financial rewards may be given. A young statistician with a bachelor's degree beginning work at the U.S. Bureau of the Census in January 1974 was eligible for a salary of over $8,000 (Grade GS-5). Other federal government positions, requiring advanced degrees and increased responsibilities, pay substantially more. There are statisticians earning $36,000 per year, the top salary for federal employees, with many important added fringe benefits. Starting academic year salaries for Ph.D.'s in college or university positions are typically above $12,000 and the median salary for doctoral degree-holders working at colleges and universities is $20,000.

In private employment the statistician will work in such diverse industries as electronics, chemical, pharmaceutical, auto, manufacturing, transportation and many others. He may be in banking, insurance, public opinion sampling or marketing. Here starting salaries for statisticians with a bachelor's degree range between $8,000 and $10,000 depending upon the individual's qualifications and the nature of the position. A Ph.D. may well start at a salary of $18,000 to $20,000.

Statistics is an exacting profession, but its rewards are commensurate with its demands. Statisticians enjoy prestige, a good income, pride in their work, and the satisfaction of contributing to the well-being of others.

education and training

Statisticians come from all over the academic horizon. Many have received undergraduate training not merely in mathematics but in the biological, physical, and social sciences. One ingredient common to all such training is a strong interest in the analysis of data. For graduate work in statistics, students should have a good background of calculus and matrix algebra as well as a knowledge of computer programming.

Currently many different types of graduate and professional training programs in statistics are available at major universities throughout Canada and the United States. Some of those in mathematical statistics emphasize theoretical topics, with a curriculum tied to graduate programs in mathematics. A career in mathematical

statistics usually requires an undergraduate major in mathematics.

Other training programs emphasize the application of statistics. These are often tied to the health and biological sciences, to education, to the social sciences, or to the physical and engineering sciences. They stress methods of collecting and interpreting data, but they do include training in applied mathematics and probability. Broad interests and wide-ranging curiosity are qualities leading to successful careers in applied statistics.

where to begin your statistical career

Today most professional statisticians receive the major part of their statistical training at the graduate level, although many universities and colleges do offer an undergraduate major in the subject. In many undergraduate programs, such as mathematics, computer science, business and economics, and most of the biological and social sciences, students may carry statistics as a minor.

The background of students entering a graduate statistics program will typically be that of a science or mathematics major, although some programs will accept business or education majors who are quantitatively oriented. (See the list of colleges and universities which currently offer undergraduate and graduate programs in statistics.) Information on statistical training institutes outside North America may be obtained from the following: International Statistical Institute, 428 Prinses Beatrixlaan, Voorburg, Netherlands; Inter-American Statistical Institute, 1725 Eye Street, N.W., Washington, D. C. 20006.

There are excellent jobs for persons with a bachelor's degree in statistics either as a major or minor subject. Experience with computer programming is especially helpful. Major corporations and most government agencies continually look for talented individuals with this level of education.

Since even greater job opportunities are open to those with advanced training, many undergraduate statistics majors proceed directly to a graduate program, working either toward a Master's degree or a Doctorate in statistics. In addition, undergraduate statistics majors do graduate work in business, education, economics, biology, or other fields where statistical training is greatly valued.

where can you get more information?

The broad range of statistical application in areas such as business, finance, government, industry, medicine, and science is examined in *Statistics: A Guide to the Unknown*, edited by Judith Tanur and published by Holden-Day (1972). This book was assembled by the Joint Committee on the Curriculum in Statistics and Probability of the American Statistical Association and the National Council of Teachers of Mathematics.

Another source which provides information on historical development and application of statistics is the *International Encyclopedia of the Social Sciences*, published by the Macmillan Company and the Free Press (1968).

This brochure was prepared under the auspices of COPSS (Committee of Presidents of Statistical Societies), the American Statistical Association, the Biometric Society (Eastern and Western North American Regions), and the Institute of Mathematical Statistics. To learn more about membership in these societies and their activities, write to the addresses given below.

The American Statistical Association

Founded on November 27, 1839, the ASA is one of the oldest professional organizations in the United States. It has over 10,000 members and is open to anyone interested in statistics, theoretical or applied, regardless of subject matter interest or particular formal education.

Virtually every major advance in statistical methodology has been reflected in the pages of the Association's *Journal*, received by members of the Association, together with *The American Statistician* and the *Newsletter*. A fourth Journal, *Technometrics*, is cosponsored by the American Society for Quality Control. The Association has held annual meetings each year since it was founded.

More information on the ASA may be obtained from the Executive Director, Dr. Fred C. Leone, The American Statistical Association, 806 15th Street, N.W., Washington, D. C. 20005.

The Institute of Mathematical Statistics

IMS was organized in 1935, has 3,000 members and is a professional society of international scope devoted to the development, dissemination and application of statistics and probability. Its activities include circulation of its official journals, *The Annals of Statistics, The Annals of Probability* and the *IMS Bulletin*, the holding of international, national and regional meetings and summer research institutes.

Inquiries concerning membership should be directed to the Treasurer, Dr. Robert M. Elashoff, Medical Research Bldg. IV—Room 131, University of California, San Francisco, California 94122.

The Biometric Society

The Biometric Society is an international society for the advancement of quantitative biological science through mathematical and statistical techniques. It was organized in 1947 and has over 1800 North American members. *Biometrics* is the Society's official journal.

Information about the field of biometry can be obtained from Dr. Foster B. Cady, Biometrics Unit, Warren Hall, Cornell University, Ithaca, New York 14850.

In addition to the three statistical organizations listed above, many statisticians belong to related societies whose members use statistical methods to a considerable extent in their professional work. Some of these societies are listed below for those who seek further information about programs, activities, and membership.

AMERICAN ASSOCIATION FOR PUBLIC OPINION RESEARCH
817 Broadway
New York, N. Y. 10003

AMERICAN SOCIETY FOR QUALITY CONTROL
161 West Wisconsin Avenue
Milwaukee, Wisconsin 53203

CASUALTY ACTUARIAL SOCIETY
200 East 42nd Street
New York, N. Y. 10017

ECONOMETRIC SOCIETY
Department of Economics
Yale University
New Haven, Conn. 06520

THE INSTITUTE OF MANAGEMENT SCIENCES
146 Westminster Street
Providence, R I 02903

OPERATIONS RESEARCH SOCIETY OF AMERICA
428 E. Preston Street
Baltimore, Md. 21202

POPULATION ASSOCIATION OF AMERICA
P.O. Box 14182
Benjamin Franklin Station
Washington, D. C. 20044

PSYCHOMETRIC SOCIETY
Dr. Charles Lewis
Psychology Department
University of Illinois
Champaign, Ill. 61820

SOCIETY OF ACTUARIES
208 South LaSalle Street
Chicago, Illinois 60604

u.s. and canadian schools offering degrees in statistics

(and Departments
with Statistics Concentration)

(This list was compiled September 1973. Queries concerning programs should be directed to the school.)

ALABAMA

University of Alabama
University, Alabama 35486
Department of Statistics

ARIZONA

University of Arizona
Tucson, Arizona 85721
Department of Hydrology and Water Resources

ARKANSAS

University of Arkansas
Fayetteville, Arkansas 72701
Statistics Studies

CALIFORNIA

California Polytechnic State University
San Luis Obispo, California 93407
Computer Science and Statistics Department

California State University
Fresno, California 93710
Department of Mathematics

California State University
Fullerton, California 92634
Department of Quantitative Methods

California State University
Hayward, California 94542
Department of Statistics

California State University
Los Angeles, California 90032
Department of Economics and Statistics

California State University
Northridge, California 91324
Department of Health Science
Department of Management Science

California State University
San Diego, California 92115
Department of Mathematics

Loma Linda University
Loma Linda, California 92373
Department of Biostatistics and Epidemiology

Pomona College
Claremont, California 91711
Mathematics Department

Stanford University
Stanford, California 94305
Department of Statistics

University of California
Berkeley, California 94720
Department of Statistics

University of California
Davis, California 95616
Department of Mathematics

University of California
Los Angeles, California 90024
Biostatistics Division
Department of Biomathematics
Department of Management

University of California
Riverside, California 92502
Department of Statistics

CANADA

See entries by Province following Wyoming

COLORADO

Colorado State University
Fort Collins, Colorado 80521
Department of Statistics

University of Colorado
Boulder, Colorado 80302
Department of Mathematics
University of Denver
Denver, Colorado 80210
Division of Accounting and Quantitative Methods

CONNECTICUT

University of Connecticut
Storrs, Connecticut 06268
Department of Statistics
Yale University
New Haven, Connecticut 06520
Department of Statistics
Department of Epidemiology and Public Health

DISTRICT OF COLUMBIA

American University
Washington, D. C. 20016
Department of Mathematics and Statistics
George Washington University
Washington, D. C. 20006
Department of Statistics

FLORIDA

Florida State University
Tallahassee, Florida 32306
Department of Statistics
Florida Technological University
Orlando, Florida 32816
Department of Mathematical Sciences
University of Florida
Gainesville, Florida 32601
Department of Statistics

GEORGIA

Emory University
Atlanta, Georgia 30322
Department of Statistics and Biometry

ILLINOIS

University of Chicago
Chicago, Illinois 60637
Department of Statistics
University of Illinois
Urbana, Illinois 61801
Department of Mathematics
Northern Illinois University
DeKalb, Illinois 60115
Department of Mathematical Sciences

INDIANA

Ball State University
Muncie, Indiana 47306
Department of Mathematical Sciences
Indiana University
Bloomington, Indiana 47401
Department of Mathematics
Purdue University
W. Lafayette, Indiana 47907
Department of Statistics

IOWA

Drake University
Des Moines, Iowa 50311
College of Business Administration
Iowa State University
Ames, Iowa 50010
Department of Statistics
University of Iowa
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