What Do Statisticians Do?

The world is becoming quantitative. More and more professions, from the everyday to the exotic, depend on data and numerical reasoning.

Data are not just numbers, but numbers that carry information about a specific setting and need to be interpreted in that setting. With the growth in the use of data comes a growing demand for the services of statisticians, who are experts in the following:

- Producing trustworthy data
- Analyzing data to make their meaning clear
- Drawing practical conclusions from data

Examples of Statistics Careers

Medicine
The search for improved medical treatments rests on careful experiments that compare promising new treatments with the current state of the art. Statisticians work with medical teams to design experiments and analyze the complex data they produce.

Environment

Studies of the environment require data on the abundance and location of plants and animals, on the spread of pollution from its sources, and on the possible effects of changes in human activities. The data are often incomplete or uncertain, but statisticians can help uncover their meaning.

Industry

The future of many industries and their employees depends on improvement in the quality of goods and services and the efficiency with which they are produced and delivered. Improvement should be based on data, rather than guesswork. More companies are installing elaborate systems to collect and act on data to better serve their customers.

Government Surveys

How many people are unemployed this month? What do we export to China, and what do we import? Are rates of violent crime increasing or decreasing? The government wants data on issues such as these to guide policy, and government statistics agencies provide them by surveys of households and businesses.

Market Research

Are consumer tastes in television programs changing? What are promising locations for a new retail outlet? Market researchers use both government data and their own surveys to answer questions such as these. Statisticians design the elaborate surveys that gather data for both public and private use.
What Is Statistics?

Statistics is the science of learning from data, and of measuring, controlling, and communicating uncertainty; and it thereby provides the navigation essential for controlling the course of scientific and societal advances (Davidian, M. and Louis, T. A., 10.1126/science.1218685).

Statisticians apply statistical thinking and methods to a wide variety of scientific, social, and business endeavors in such areas as astronomy, biology, education, economics, engineering, genetics, marketing, medicine, psychology, public health, sports, among many. "The best thing about being a statistician is that you get to play in everyone else's backyard." (John Tukey, Bell Labs, Princeton University)

Many economic, social, political, and military decisions cannot be made without statistical techniques, such as the design of experiments to gain federal approval of a newly manufactured drug.

Job Characteristics

- Use data to solve problems in a wide variety of fields
- Apply mathematical and statistical knowledge to social, economic, medical, political, and ecological problems
- Work individually and/or as part of an interdisciplinary team
- Travel to consult with other professionals or attend conferences, seminars, and continuing education activities
- Advance the frontiers of statistics, mathematics, and probability through education and research

*If you enjoy any of these, a career in statistics may be right for you!*

Statisticians provide crucial guidance in determining what information is reliable and which predictions can be trusted. They often help search for clues to the solution of a scientific mystery and sometimes keep investigators from being misled by false impressions.

Share:
A career in statistics may be right for you if you enjoy any of these:

- Advancing the frontiers of scientific knowledge and providing data-driven support for decision-making.
- Collaborating with other professionals in the community to learn from each other and share knowledge.
- Applying statistical and quantitative knowledge to solve social, economic, and environmental problems.
- Using data to solve problems in a wide variety of fields.

**JOB CHARACTERISTICS**

- Salary (median): $81,740
- Employment growth (5 years): 33%
- Education: Master's degree
- Skills: Critical thinking, mathematics, statistical analysis
- Industry sectors: Health services, government, insurance

**WHAT WE DO**

- Collect and analyze data
- Develop statistical models and make inferences
- Interpret data and communicate results

**WHAT EMPLOYERS SAY**

- "Statistics is a field that combines data and theory to help answer questions.
- "Statistics is a fundamental tool in any research endeavor."
HOW TO BECOME A STATISTICIAN

Consulting

and other quantitative fields. The undergraduate degree in statistics is also valuable for those pursuing careers in business, finance, and government. The program emphasizes the application of statistical methods in various fields, including economics, finance, and government. The primary focus is on developing a strong foundation in statistical theory and methodology.

Employment Outlook

The field of statistics offers a wide range of career opportunities in both the public and private sectors. Graduates may find employment in government agencies, research institutions, and the pharmaceutical industry. Opportunities are available in academic and non-academic settings, including universities, hospitals, and businesses. The median annual wage for statisticians is approximately $83,560.

In High School

Take all of the statistics, mathematics, science, computer, and English courses your high school offers. This will give you a strong foundation in these critical subjects. Consider pursuing a minor in statistics to further enhance your understanding of the field. Additionally, participating in extracurricular activities, such as science fairs or math clubs, can help you develop problem-solving and critical thinking skills. These skills are essential for success in the field of statistics.
PROFILES OF FAMOUS STATISTICIANS

John Tukey (1915-2000) applied mathematics and information processing to a computer.

Sir Ronald A. Fisher (1890-1962) studied astronomy.

W. Edwards Deming (1900-93) was a pioneer of quality control and was best known for his work in post-world war II Japan.

David Harold Blackwell (1919-) was a professor at UC Berkeley.

Florence Nightingale (1820-1910) was a member of the Royal Statistical Society and one of the first people to collect statistical data in the field of health policy in the 19th century Britain. Her work saved the lives of countless British soldiers.

Frederick Mosteller (1927-) devoted much energy over his lifetime to statistical problems that will occur in future decades.
American Statistical Association

To order any of the above publications or to obtain more information on-

www.amstat.org/jobs

A listing of current jobs in statistical fields can be found at-

www.amstat.org/jobs

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