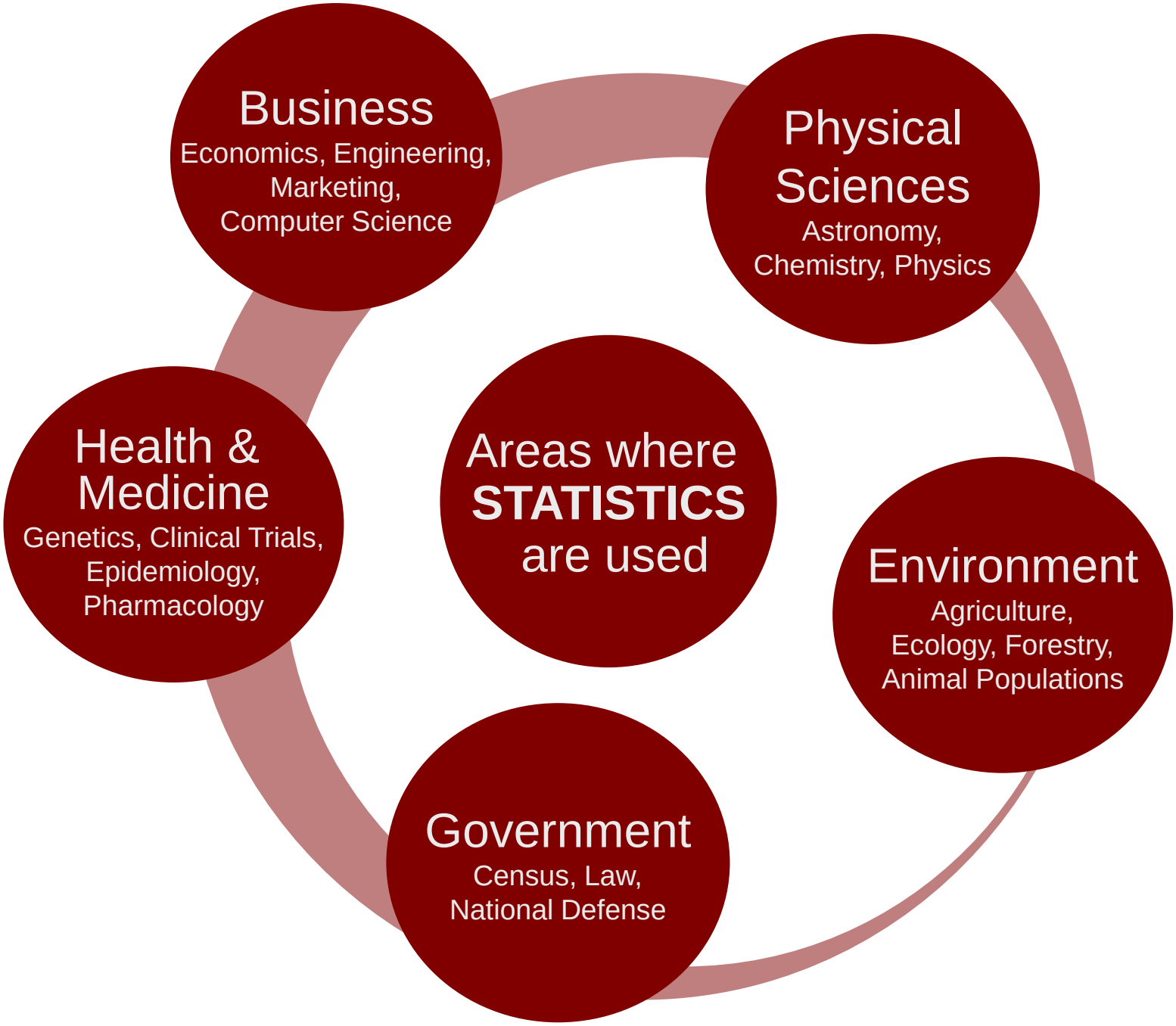
Presented by the

American Statistical Association

What Is Statistics?

- American Heritage® Dictionary: “The mathematics of the collection, organization, and interpretation of numerical data, especially the analysis of population characteristics by inference from sampling.”

- Statisticians collect and analyze data, then calculate results using a specific design. They draw conclusions and make decisions in the face of uncertainty.


Business
Economics, Engineering, Marketing, Computer Science
Physical Sciences
Astronomy, Chemistry, Physics
Health & Medicine
Genetics, Clinical Trials, Epidemiology, Pharmacology
Areas where **STATISTICS** are used
Environment
Agriculture, Ecology, Forestry, Animal Populations
Government
Census, Law, National Defense

Why Study Statistics?

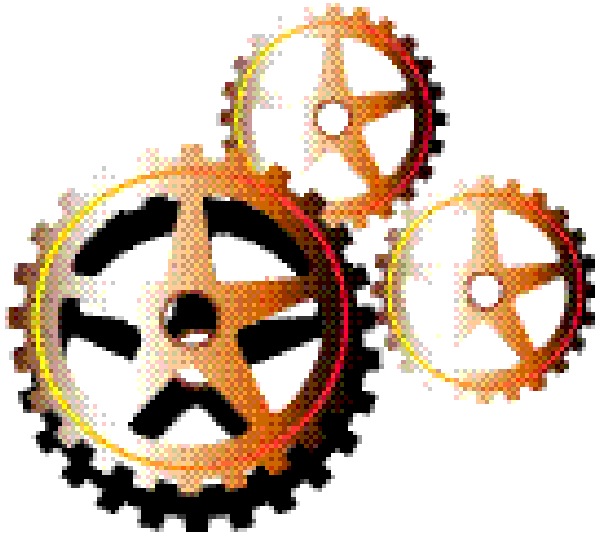
- Collecting data on subsets of the population (samples) can give valid information about the whole population.
- Knowing what has happened in the past can help answer questions about the present and future.
- Knowledge helps plan future tests, determines resource allocation, and improves quality.

What Do Statisticians Do?

- Study the safety of **nuclear power** plants
- Evaluate the environmental impact of **pollution**
- Determine the effectiveness of new **drugs**
- Estimate the U.S. **unemployment** rate
- Analyze **consumer demand** for products
- Plan and analyze **agricultural** experiments

What Can I Do With A Degree in Statistics?

Business and Industry



- **Manufacturing**
  - Build products and deliver services that satisfy consumers and increase the corporation's profit margin

Business and Industry

- **Marketing**
  - Design experiments for new products, conduct focus groups and sample surveys, and perform field experiments in test markets to determine product viability

Business and Industry

- **Engineering**
  - Make a consistent product, detect problems, minimize waste, and predict product life in electronics, chemicals, aerospace, pollution control, construction, and other industries

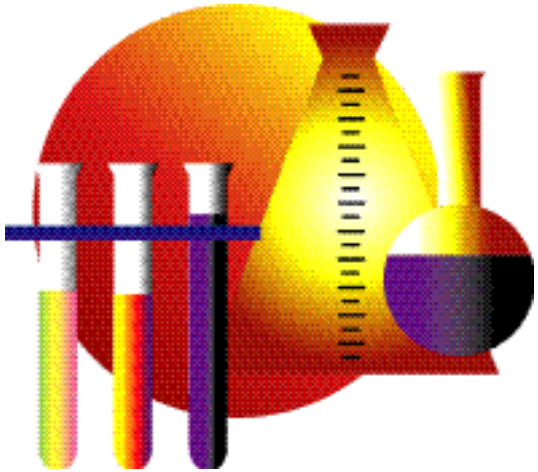
Business and Industry

- **Statistical Computing**
  - Work in software design and development, testing, quality assurance, technical support, education, marketing, and sales to develop code that is both user-friendly and sufficiently complex

“I love that statistics is very multi-disciplinary. It involves problem solving in a group environment and it involves many skills and talents. I love the ability to be a mathematician, computer scientist, teacher, quizmaster, sleuth, and devil’s advocate all rolled into one.”

Linda Quinn, Private Industrial Consultant

Health and Medicine



- **Epidemiology**
  - Work on calculating cancer incidence rates, monitor disease outbreaks, and monitor changes in health-related behaviors such as smoking and physical activity

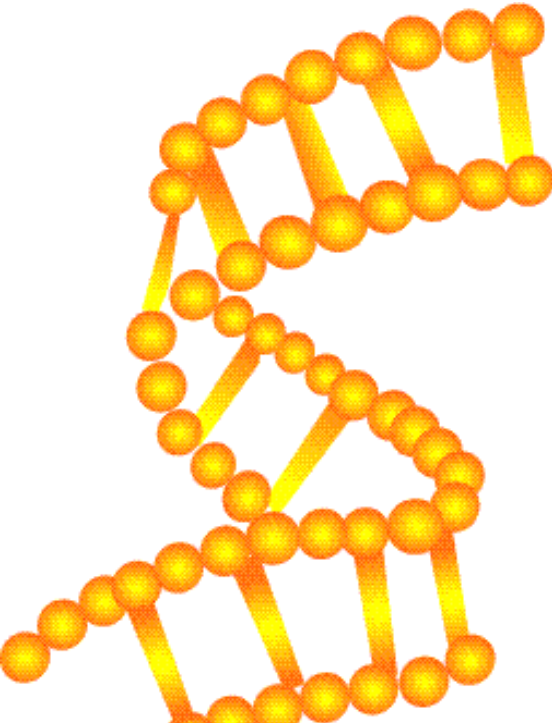
Health and Medicine

- **Public Health**
  - Prevent disease, prolong life, and promote health through organized community efforts, including sanitation, hygiene education, diagnoses, and preventative treatment

Health and Medicine

- **Pharmacology**
  - Work in drug discovery, development, approval, and marketing, to ensure the validity and accuracy of findings at all stages of the process

Health and Medicine



- **Genetics**
  - Label possible indicators of genetic abnormalities, such as birth defects and early aging, or breed desirable characteristics in plant offspring

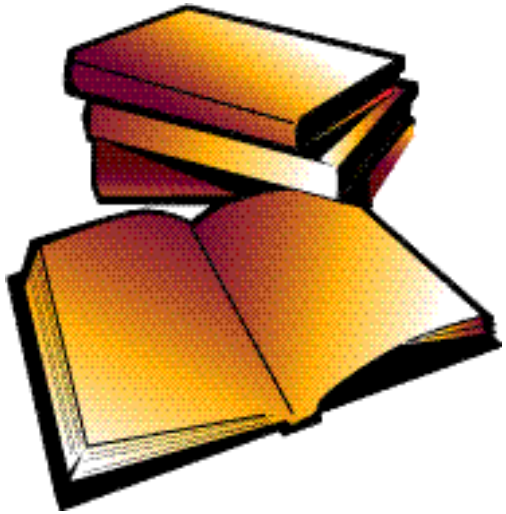
“Last year when I began applying to medical schools, the fact that I majored in statistics was always a good conversation point in interviews and made me more unique as an applicant.”

Amy Elise Derrow, Medical Student

Learning

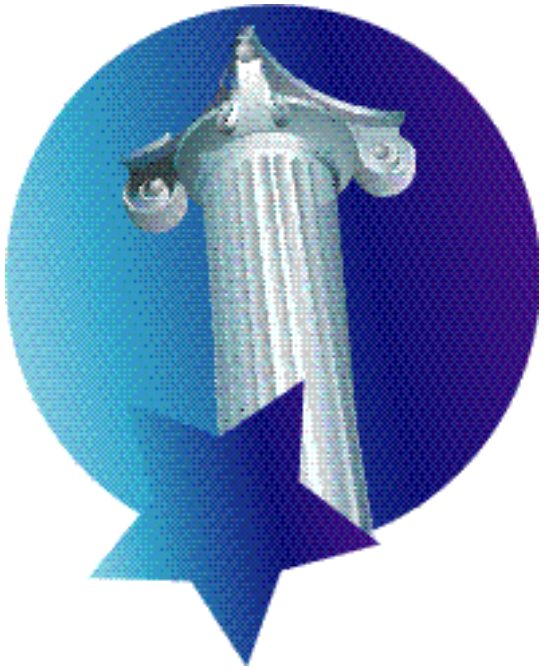
- **Education**
  - Teach K-12 through post-graduate students, assess teacher effectiveness, or develop statistical models to represent student learning

Learning



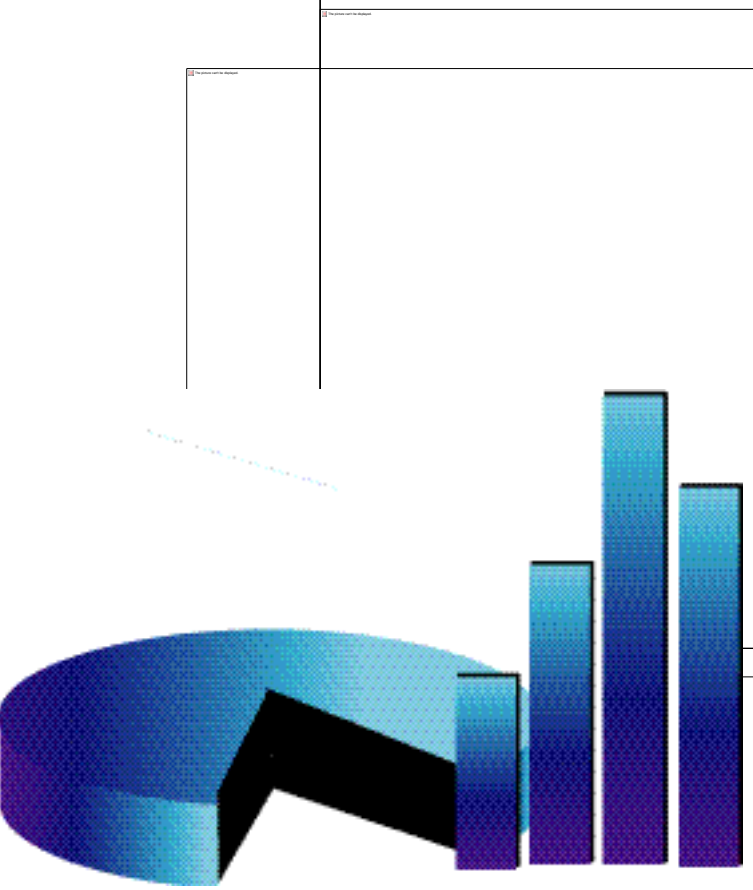
- **Science Writing & Journalism**
  - Work with mass media, universities, and corporations to produce news briefs, articles, news releases, and other reports

Research



- **Government**
  - Work in regulations for stock trading, pollution, and drug approvals, or testify in court proceedings, congressional hearings, and lobbying arguments

Research



- **Survey Methods**
  - Collect data in the social sciences, education, law, forestry, agriculture, biology, medicine, business, and e-commerce, and for the government

“I found that statistics used more reasoning and logic skills than the mathematics courses I had previously taken. The more I did statistics, the more I liked the “alternative” application of mathematics that it provided. I especially liked being able to use a lot of data and a little common sense to figure out problems.”

Tiffany T. Sundelin, Quality Control Engineer

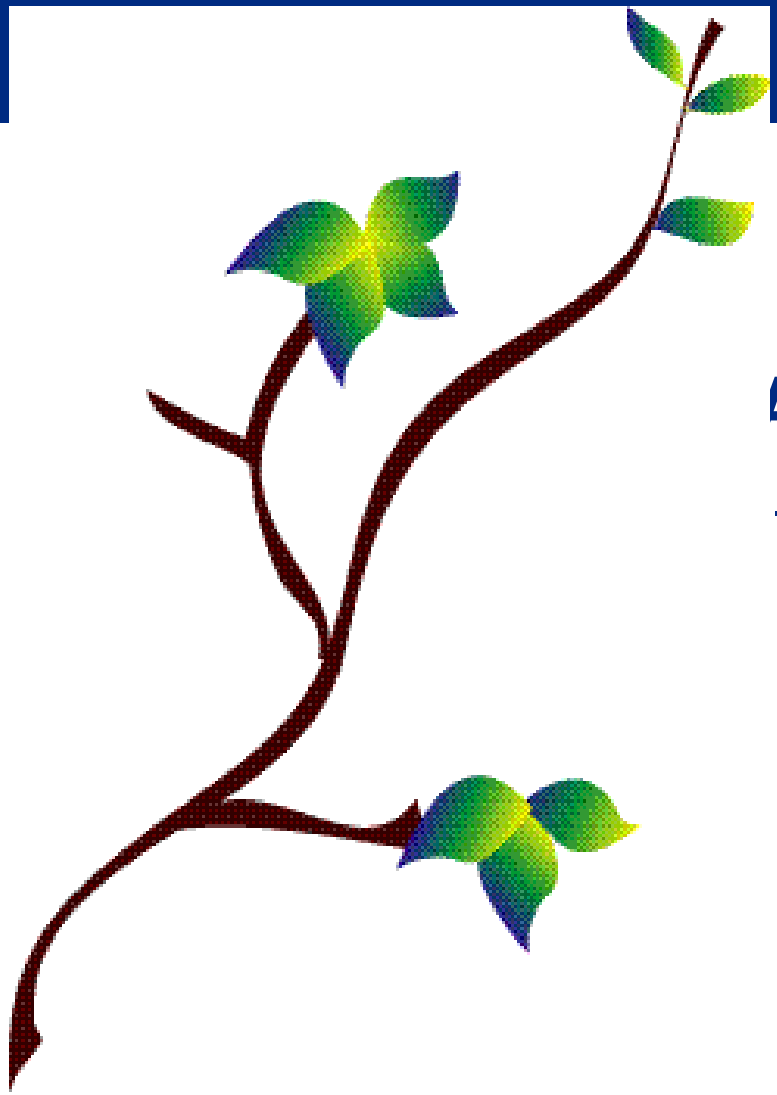
Social Statistics

- **Law**
  - Analyze data in court cases, including DNA evidence, salary discrepancies, discrimination law suits, and disease clusters

Social Statistics

- **Consulting**
  - Work on a temporary basis on a variety of projects including quality improvement, pharmaceuticals, ecology, and engineering

Natural Resources



Agriculture

- Study chemical pesticides, hydrogeology, veterinary sciences, genetics, and crop management in order to ensure optimal yield

Natural Resources

- **Ecology**
  - Address questions about the earth's natural environment, including animal populations, agricultural protections, and fertilizer and pesticide safety

“I became involved with statistics because mathematics did not provide the avenue to cross into other areas of science and continue to learn about topics that interested me. I have stayed in statistics because of the diversity that it offers and because of the rational approach it provides to seek solutions to problems.”

Dan Mowrey, Senior Research Scientist

How Do I Become A Statistician?

Education

- **High School**
  - Study statistics, mathematics, science, computer science, and English
- **College**
  - Major in statistics, applied mathematics, or a closely related field (i.e. epidemiology, engineering)
- **Post-Graduate**
  - Many career fields require a Master's degree or PhD in a specialized statistical field

Skills

- **Quantitative Skills**
  - Statistics, Mathematics, Science
- **Problem Solving Skills**
  - Analysis, Teamwork
- **Communication Skills**
  - Verbal, Written
- **Computer Programming Languages**
- **Foundation in Field of Application**

Opportunities

- **Diversity**
  - Pure Research
  - Interdisciplinary Teams
- **Advancement**
  - Experience, education, and communication skills lead to professional advancement
- **Versatility**
  - Challenging and Exciting Fields of Application

Salary Information

Source: Bureau of Labor Statistics, May 2014

Employment estimate and mean wage estimates for statisticians:

Employment	Mean hourly wage	Mean annual wage
26,970	$40.39	$84,010

Percentile wage estimates for statisticians:

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	$21.08	$28.14	$38.46	$50.44	$62.42
Annual Wage	$43.840	$58,540	$79,990	$104,910	$129,830

Salary Information

Source: Bureau of Labor Statistics, May 2014

Industries with the highest levels of employment for statisticians:

Industry	Employment	Hourly mean wage	Annual mean wage
Federal Executive Branch (OES Designation)	4,190	$48.30	$100,460
Scientific Research and Development Services	4,100	$45.74	$95,140
Management, Scientific, and Technical Consulting Services	2,030	$36.83	$76.610
Colleges, Universities, and Professional Schools	2,020	$34.50	$71,750
State Government (OES Designation)	1,830	$25.71	$53,470

Salary Information

Source: Bureau of Labor Statistics, May 2014

Industries with the highest concentration of employment for statisticians:

Industry	Employment	Hourly mean wage	Annual mean wage
Monetary Authorities-Central Bank	210	$50.63	$105.320
Scientific Research and Development Services	4,100	$45.74	$95,140
Pharmaceutical and Medicine Manufacturing	670	$44.74	$93,050
Federal Executive Branch (OES Designation)	4,190	$48.30	$100,460
Management, Scientific, and Technical Consulting Services	2,030	$36.83	$76,610

Salary Information

Source: Bureau of Labor Statistics, May 2014

Top paying Industries for statisticians:

Industry	Employment	Hourly mean wage	Annual mean wage
Wholesale Electronic Markets and Agents and Brokers	50	$56.97	$118,490
Other Information Services	Not Released	Not Released	$114,420
Drugs and Druggists' Sundries Merchant Wholesalers	140	$52.00	$108,160
Semiconductor and Other Electronic Component Manufacturing	50	$50.92	$105,900
Navigational, Measuring, Electromedical, and Control Instruments Manufacturing	60	$50.74	$105,540

About the ASA

- Career Services
  - Salary Reports, Job Ads, Articles
- Education
  - Continuing Education, Workshops, Seminars
- Awards and Honors
  - Scholarships, Fellowships
- Meetings
  - Joint Statistical Meetings, Local Meetings
- Publications
  - Journals, Magazines, Research Guides

Contact the ASA for more information:

ATTN: Customer Service
732 North Washington Street
Alexandria, VA 22314

Phone: (703) 684-1221
FAX: (703) 684-2037

Email: asainfo@*amstat.org*
Web: *www.amstat.org*