WHAT IS BIOSTATISTICS?

Biostatistics is the application of statistics to a wide range of topics in biology, medicine and public health.

BUT WHAT DOES THAT REALLY MEAN?

It means that Biostatisticians use mathematics, computer science, and computational biology to answer questions and solve problems in biology, medicine and public health.

The world is continually increasing its output of data, biostatisticians train to use - and analyze - that data effectively. Biostatisticians play a key role in the design, conduct, and analysis of research studies and they develop new methods to address emerging problems.

As a career, statisticians were recently ranked #3 among the best occupations in the US according to JobsRated.com. The profession was featured in a New York Times article “For Today’s Graduate, Just One Word: Statistics.”
Improved medical treatments and devices rely on careful experiments that compare promising new methods with current techniques. Biostatisticians work on clinical trials and other experiments to formulate scientific questions, determine appropriate sampling techniques, coordinate data collection procedures, and carry out statistical analyses.

Statistics has been used in human genetics to create automated methods of labeling possible indicators of genetic abnormalities, such as birth defects and early aging. Genetics also has been used in breeding to produce desirable characteristics in offspring. Using complex statistical models, statisticians aid in formulating sound decisions by sorting out the environmental effects from the genetic.

Epidemiological statisticians work on projects such as calculating cancer incidence rates or the rates of chronic and infectious diseases; monitoring and reporting on disease outbreaks; and monitoring changes in health-related behaviors, such as smoking and physical activity. Fields of practice include pharmacoepidemiology and nutritional, environmental, genetic, and social epidemiology.

Career opportunities abound in the field of biostatistics throughout academia, industry and government. Examples include the pharmaceutical industry, the chemical industry, medical research centers, schools of public health, medical schools and government agencies such as the National Institutes of Health, Centers for Disease Control and Prevention, National Center for Health Statistics, state and local health departments, and the World Health Organization.
Master of Science (MS)
The MS program generally takes two years to complete and includes a sequence of courses in basic statistical theory and methods, research design and data analysis. All MS students take a minor in a field of application other than biostatistics.

Admission Requirements
- Undergraduate degree in statistics, mathematics, computer science, or one of the physical, biological, or social sciences
- At least a B average (on a 4.0 system) in prior academic work
- Requires calculus and linear algebra
- Satisfactory score on Graduate Records Exam (GRE)

Master of Public Health (MPH)
The MPH in biostatistics is a basic professional degree in public health with concentration in biostatistics. The majority of full-time students take approximately 18 to 24 months to complete the degree. Requirements of the MPH degree are: completion of coursework; a planned, supervised and evaluated practice experience; and a culminating experience demonstrating a substantial knowledge of public health.

Admission Requirements
- Should have strong interest in public health applications and in quantitative methods
- Satisfactory score on GRE

Doctor of Philosophy (PhD)
The PhD program requires at least two additional years beyond the master level program. All UTSPH PhD students must complete a minimum of 48 credits. The PhD program emphasizes advanced statistical theory and application, statistical consulting, and independent research. All PhD students are required to choose one minor and one area of breadth in fields of application other than biostatistics.

Admission Requirements
- Bachelor’s degree in mathematics or statistics or MS degree in the theory and applications of biostatistics, mathematics, statistics, or equivalent is required
- Requires calculus and linear algebra
- Satisfactory score on GRE

Minors and Breadth
Minors for all degree programs can be selected from the Health Promotion and Behavioral Sciences, Environmental and Occupational Health Sciences, Epidemiology and Disease Control, and/or Management, Policy and Community Health Divisions.

In addition to courses at UTSPH, a wide variety of courses are available through cross registration with other schools and institutions in the Texas Medical Center as well as Rice University and the University of Houston.
Biostatistics faculty members conduct research in:

- Statistical genetics applications of statistical methods to bioinformatics
- Occupational and environmental exposures in the etiology of adult leukemia
- Inter-uterine growth through ultrasound measurement
- Analysis of infant mortality in developing countries
- Queueing models for emergency medical services
- Stochastic modeling of movement through the health care system
- Health effects of air pollution
- Analysis of health services utilization and health care technology assessment

The Coordinating Center for Clinical Trials

The CCCT conducts large scale multi-center controlled clinical trials and small scale clinical trials. The goal of the Center is to conduct clinical trials to study the efficacy of appropriate interventions. The CCCT participates in trial design, collection, data management, reporting, analysis and interpretation of study findings.

Current CCCT research areas are:

- Cardiovascular cell therapy research
- Parkinson’s disease
- Early treatment of retinopathy of prematurity
- Antihypertensive and lipid lowering treatment to prevent heart attack
- Early treatment of acute spinal cord injury

Computing Power

UTSPH operates its own computer facility dedicated to research and education. Networks of servers support UNIX-based systems and Windows-based systems for simulation. A wide variety of state-of-the-art statistical software is available to students and Wi-Fi is also available on campus. Computer Services staff are available to aid students in using the equipment, the various analytical and data management software packages, and the large library of health information research databases.
There are over 20 full-time faculty members in the Biostatistics Division. Faculty members from other UTSPH divisions and outside institutions with joint appointments also participate in teaching.

**Autism Spectrum Disorders**

**Bayesian statistics**

**Analytic Issues in Multicenter Studies**

**Continuous time stochastic processes**

**Demography**

**Cost-Effectiveness Analysis**

**Early detection of disease**

**Graphical Models**

**Longitudinal analysis**

**High-dimensional data mining**

**Mixture Models**

**Nonparametric methods**

**Operations research modeling of health systems**

**Optical technologies**

**Parkinson's disease**

**Spatial statistics**

**Pharmacokinetic modeling**

**Polychotomous logistic regression analysis**

**Statistical genomics and genetics**

**Statistical learning methodology and applications**

**Statistical methods for handling missing data**

**Statistical methods to account for the uncertainty due to measurement error**

**Survival analysis**

**Univariate and multivariate survival analysis**

Find out more at [www.sph.uth.tmc.edu](http://www.sph.uth.tmc.edu).
The UT School of Public Health wants to give you every opportunity to make the costs of a graduate program more affordable. Scholarships, traineeships, fellowships, school employment and other forms of student financial assistance are available. Most scholarships and traineeships allow out-of-state students to qualify for in-state tuition.

**FUNDING OPPORTUNITIES**

**Training Grant Program**
- $20,969 per year stipend plus tuition

**Dean’s Scholarship Program**
- $5,000 per year stipend

**Teaching Assistantships**
- $20,000 per year stipend

**Research Assistantships**
- $15,000 per year stipend

**Merit Scholarship**
- $1,500 per year

* US citizen or non-citizen nationals and foreign nationals who possess a visa permitting permanent residence in the United States.

** No citizenship required.

* Provides eligibility for in-state tuition (paid by student).

There are also many student opportunities for part-time positions in the Texas Medical Center.

Jumping into a graduate program can be a significant financial commitment. Fortunately, tuition at The University of Texas School of Public Health is the lowest among the top SPH schools and is a great value for your money.
ABOUT THE UNIVERSITY OF TEXAS SCHOOL OF PUBLIC HEALTH

For over 40 years, The University of Texas School of Public Health has been making health happen by protecting and transforming the health of people in Texas, across the nation and around the world. With six campuses throughout the state, the school has established a strong reputation as a leader in public health.

In addition to being nationally ranked, UTSPH is the #1 ranked doctoral program in health promotion and health education and is a premier program for students interested in biostatistics, genetics, epidemiology and disease prevention.

The School has four divisions of study: Biostatistics; Epidemiology; Human Genetics and Environmental Sciences; Management, Policy and Community Health; and Health Promotion and Behavioral Sciences which train students in the five core disciplines of public health. Through 14 research centers and a leading role in a University Institute, UTSPH focuses on the specialized and diverse research needs in the many areas of public health. The school offers state-of-the-art Interactive Television and online classes as options to on-campus learning at all campus locations.

For more information visit www.sph.uth.tmc.edu.
The University of Texas
School of Public Health

Houston • Austin • Brownsville
Dallas • El Paso • San Antonio

www.sph.uth.tmc.edu/bios

Biostatistics

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