



October 5, 2015
Volume 2, Issue 10

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ASA ISSUES STATEMENT ON ROLE OF STATISTICS IN DATA SCIENCE

[In a policy statement issued last week](#), the American Statistical Association (ASA) stated statistics is “foundational to data science”—along with database management and distributed and parallel systems—and its use in this emerging field empowers researchers to extract knowledge and obtain better results from Big Data and other analytics projects.

The statement also encourages “maximum and multifaceted collaboration” between statisticians and data scientists to maximize the full potential of Big Data and data science.

“Through this statement, the ASA and its membership acknowledge that data science encompasses more than statistics, but at the same time also recognize that statistical science plays a critical role in the fast-growing field,” said ASA President David R. Morganstein, who is director of the statistical staff for Westat, Inc. “It is our hope the statement will reinforce the relationship of statistics to data science and further foster mutually collaborative relationships among all key contributors in data science.”

The ASA statement acknowledges the lack of consensus on what constitutes data science, but notes the following essential role of each of the three computer science and statistics professional communities that are foundational to the field:

- **Database Management**, which enables transformation, conglomeration, and organization of data resources
- **Statistics and Machine Learning**, which convert data into knowledge
- **Distributed and Parallel Systems**, which provide the computational infrastructure to carry out data analysis

“At its most fundamental level, we view data science as a mutually beneficial collaboration among these three professional communities, complemented with significant interactions with numerous related disciplines,” says the ASA statement.

It continues by elaborating on the key role of statistics in the data science field: “Framing questions statistically allows researchers to leverage data resources to extract knowledge and obtain better answers. The central dogma of statistical inference, that there is a component of randomness in data, enables researchers to formulate questions in terms of underlying processes and to quantify uncertainty in their answers. A statistical framework allows researchers to distinguish between causation and correlation and thus to identify interventions that will cause changes in outcomes. It also allows them to establish methods for prediction and estimation, to quantify their degree of certainty, and to do all of this using algorithms that exhibit predictable and reproducible behavior. In this way, statistical methods aim to focus attention on findings that can be reproduced by other researchers with different data resources. Simply put, statistical methods allow researchers to accumulate knowledge.”



Promoting the Practice and Profession of Statistics

The statement also calls on the ASA membership to expand the cooperative relationships already in place among data science practitioners: “For statisticians to help meet the statistical challenges faced by data scientists requires a sustained and substantial collaborative effort with researchers with expertise in data organization and in the flow and distribution of computation. Statisticians must engage them, learn from them, teach them and work with them. Engagement must occur at all levels: with individuals, groups of researchers, academic departments and the [data science] profession as a whole.”

New problem-solving strategies are needed to develop “soup-to-nuts” pipelines that start with managing raw data and end with user-friendly efficient implementations of principled statistical methods and the communication of substantive results. Engendering these next-generation strategies will be fostered from the ground up in data science and statistics programs at colleges and universities across the country, explains the statement.

“Statistical education and training must continue to evolve—the next generation of statistical professionals needs a broader skill set and must be more able to engage with database and distributed systems experts. While capacity is increasing within existing and innovative new degree programs, more is needed to meet the massive expected demand. The next generation must include more researchers with skills that cross the traditional boundaries of statistics, databases and distributed systems; there will be an ever-increasing demand for such ‘multi-lingual’ experts,” concludes the statement.

[In a blog entry directed to the membership](#), ASA Executive Director Ronald L. Wasserstein outlined the association’s plans to facilitate further collaboration between statisticians and other data scientists and its ongoing activities.

USING STATISTICS EVIDENCE-BASED HEALTH CARE DECISION-MAKING IN PAKISTAN

By Dr Abu Zar Taizai

The need for having knowledge of statistics and a grasp of its concepts is more important for doctors and public health specialists than any other professional in the world. That’s because businessmen deal with money or products that if lost can be recovered or at least compensated through insurance. In medicine, a life—our most precious possession in the world—can neither be replaced nor recovered once it is lost.

In 1990, I graduated with a doctorate in medicine from Khyber Medical College in Peshawar, Pakistan. Today, I care for patients in the private and public sectors. Each morning, I attend to my government duties, which mostly consist of caring for patients in public health clinics. In contrast to private clinicians, we are responsible for the health care planning of the whole district, which consists of 1.2 million people. My district is Nowshera—one of the largest districts of the Khyber Pakhtunkhwa province.



This is how I became interested in statistics. When I was recruited as coordinator for a national health care program, my responsibilities included supervising approximately 450 Lady Health Workers (LHWs) who worked to provide basic care to the district residents. I also supervised Lady Health Supervisors (LHSs) who managed the LHWs and reported to me on a monthly basis. One LHS supervised a group of

20 LHWs while one LHW provided care to 2,000 people. Despite this ratio, there still were areas in the district that were uncovered by the LHWs. We reported these areas in percentages. We also had to report actual demand for the LHWs kits. We also were planning to visit each LHW in a two-month period and all LHSs monthly. These visits meticulously were calculated as follows: we had only four days for the field each week and all months do not having equal numbers of days, so accordingly we used elementary statistics to achieve our goals. So, two LHSs were visited and almost 13 LHWs were visited during each field working day.

In 2010, I was promoted to coordinator of the Nowshera District Health Information System (DHIS). In this role, I distributed medicines and other logistics to two big hospitals: the Emergency Satellite Complex Hospital in Pabbi, a relatively smaller tehsil headquarters hospital, and the Nowshera District Headquarters Hospital (DHQH). The medical and other supplies I received from the province were distributing among these hospitals using the following ratio: one-third to the smaller Pabbi hospital and two-thirds to the larger Nowshera DHQH. Afterward, I received repeated complaints from Pabbi hospital administrators that it had received insufficient medicines and other supplies. I decided to visit the hospital to calculate the daily average demand of its Outpatient Department (OPD), which was 750 patients per day. I next went to Nowshera DHQH to determine the daily average demand for its OPD, which was 500 patients per day. For the first time I realized the smaller hospital had a greater caseload and my assumption was incorrect that the smaller hospital would need less medical supplies. By collecting evidence and applying the basic statistical procedures of mean or average, the problem was resolved permanently.

My job also requires collecting data about diseases, deaths and available human resources from all the health facilities in Nowshera District. These facilities included one tehsil-level hospital, one district-level hospital, two civilian hospitals, seven rural health centers, 31 basic health units, one sub-health unit, 10 civilian dispensaries, and two mother-and-child centers. For instance, I determine the proportion of diseases present in the district. On the basis of this data analysis, I decide where to conduct anti-mosquitos sprays—a decision based on the locations of the highest number of malaria cases. I also must decide where to conduct water purification projects and personal hygiene training sessions based on the highest number of diarrheal cases reported during a one-month period. This methodology also was adapted for determining the amount of medicines supplies provided to each district health facility and the disease outbreak threshold at which to initiate an investigation by public health specialists. We also use random cluster samples from various areas of the district to infer the coverage of the whole population of Nowshera District after an anti-Polio campaign is completed.

In summary, statistics is helping us to make decisions on the basis of the evidence and also saves time by allowing us to take samples to determine the coverage of the entire population in Nowshera District.

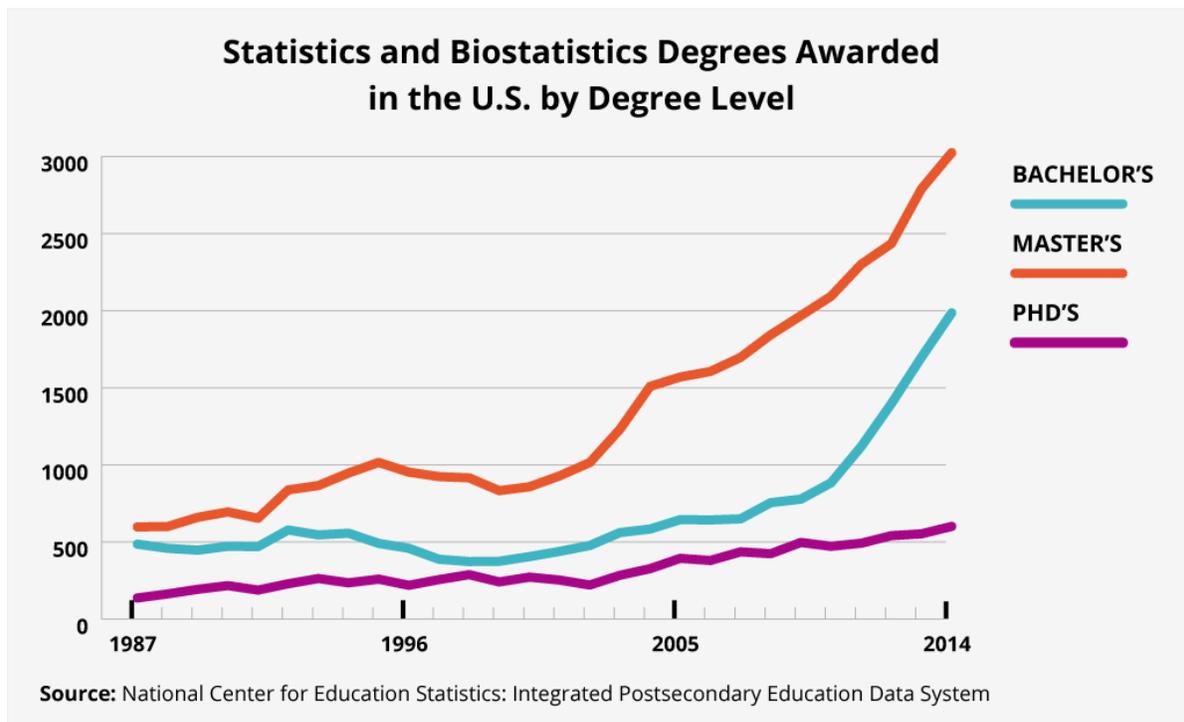
MORE STUDENTS EARNING STATISTICS DEGREES; NOT ENOUGH TO MEET SURGING DEMAND

Statistics is one of the fastest-growing degrees in the United States, but the growth may not be enough to satisfy the high demand for statisticians in technology, consumer products, health care, government,

manufacturing and other areas of the economy, an analysis conducted by the American Statistical Association (ASA) finds.

Data recently released by the National Center for Education Statistics shows bachelor's degrees in statistics grew 17% from 2013 to 2014. This marks 15 consecutive years the number of undergraduates in statistics has risen, increasing by more than 300% since the 1990s. For comparison, the number of undergraduates earning science and engineering degrees grew by 72% over the same period.

From 2000 to 2014, master's and doctorate degrees in statistics also grew significantly at 260% and 132%, respectively.



Yet demand for statisticians is likely to continue to outpace this growth. In a [2011 report](#), McKinsey Global Institute stated a “significant constraint on realizing value from Big Data will be a shortage of talent, particularly of people with deep expertise in statistics and machine learning,” and predicted a potential shortage in the U.S. of 140,000 to 190,000 workers with deep analytical skills by the year 2018. It also warned of an additional shortage of 1.5 million managers and analysts who can use the analytical output of Big Data for decision-making.

Total employment for statisticians has grown from 28,000 positions in 2010 to [85,000 in 2014](#), Bureau of Labor Statistics (BLS) data show. In addition, BLS projects job growth for statisticians will increase [27% between 2012 and 2022](#), outpacing the projected 11% rate for all other occupations. These figures may be conservative because they do not include the many jobs that require substantial expertise in statistics, such as data scientist and market research analyst, all of which are contributing to the demand for statisticians or professionals with some expertise in statistics.

The number of graduates in statistics each year—approximately 2,000 bachelor’s degrees, 3,000 master’s degrees and 575 doctorate degrees—seems unlikely to match this demand.

ASA President David R. Morganstein explains, “We’re entering an era of tremendous growth in the profession of statistics that is not unlike the growth of computing professionals in the 1960s and 1970s. At that time, software engineers and programmers were still relatively rare, but grew quickly and steadily as computing became something every large company needed to remain competitive. We’re seeing a similar trajectory in statistics. Advances in computing, technology and Big Data continue to raise the demand for statisticians.”

This dynamic has led many colleges and universities to expand existing programs. Harvard University, for example, has seen enrollments in its statistics department courses more than double since 2005. Joe Blitzstein, Harvard University co-director of undergraduate studies and professor of statistics, says enrollment in his course, Stat 110, has increased six fold since 2005. “More and more employers are recognizing the invaluable skills of statisticians in today’s data-intensive world. More and more students are realizing the power and versatility of a statistics degree or training for pursuing a wide range of careers, from data science and finance to health and the environment,” says Blitzstein.

Brigham Young University retooled its program in response to increased demand for statisticians. Today, it offers three undergraduate degrees in statistics: one that prepares students for graduate work, one for actuarial careers and one for applied statistics geared toward jobs in Big Data that require courses in programming. Statistics department chair Dennis Tolley says the number of matriculating students has more than doubled over the last six years and employer participation in career fairs at the school has roughly quadrupled.

The number of universities granting degrees in statistics also has grown, increasing by 50% for bachelor’s degrees and 20% for master’s degrees from 2003 to 2014. For the first time, degrees in data science are being offered. Six universities recently established such programs, including the University of Michigan and the University of California, Irvine.

Statisticians and data scientists also are earning strong wages, another indicator of high demand. [BLS data reveal](#) the mean annual salary for statisticians is \$84,010 and tops six figures in many metro areas such as Raleigh, North Carolina (\$103,900); Bethesda, Maryland (\$109,280); and Silicon Valley, California (\$150,390). A [2014 report](#) by recruitment firm Burtch Works reports the median salary for data scientists was \$80,000 for those with less than three years experience and \$150,000 for those with nine or more year’s experience.

Many other sources are also recognizing the increasing demand for statisticians. Last year, [LinkedIn](#) named “statistical analysis and data mining” one of the “hottest skills that got people hired.” In addition, job site [CareerCast](#) and advocacy organization [Young Invincibles](#) recently named statistics in separate reports one of the best careers for millennials based on factors like pay, growth and job satisfaction.

Says Morganstein: “The growth in statistics represents a substantial and potentially historic transformation in our profession. We’re evolving from a field that traditionally has been relatively small to one that is increasingly visible throughout business and society.”

SPECIAL WORLD STATISTICS DAY 2015 ISSUE COMING OCTOBER 20

The *News From The World of Statistics* will be publishing a special issue October 20 in recognition of World Statistics Day 2015. For the issue, we are soliciting stories from participants in The World of Statistics about the worldwide celebration.

Specifically, we invite you and your organization to submit stories focused on the following two themes:

1. An article about the activity or activities you and/or your organization are planning for World Statistics Day
2. An article explaining why the [goals of World Statistics Day](#) are important to you and/or your organization

The best stories in each theme category—along with the author’s byline and photo and his/her organization’s logo—will be featured as the lead articles in the special October 20 issue. All relevant submitted articles will be included in the special issue.

To ensure your or your organization’s article is included in the World Statistics Day special issue, please submit it by 12 a.m. October 15 (U.S. Eastern Standard Time). Email the article to Jeff Myers (jeffrey@amstat.org); email questions to Myers as well.

THE WORLD OF STATISTICS ACTIVITIES CALENDAR

Following are The World of Statistics participating organization-sponsored events and activities around the world scheduled for October. [Click here](#) to see the complete 2015 calendar. Remember to submit your organization’s events for the calendar by [using this convenient form](#). And, start sending us your 2016 activities and events [using the same form](#).

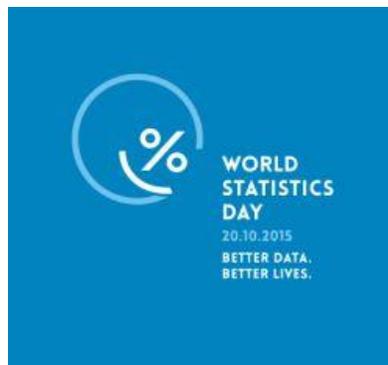
- **October 7-9, 2015** — [11th International Conference on Health Policy Statistics](#), Health Policy Statistics Section of the American Statistical Association, Providence, Rhode Island, USA
- **October 8, 2015** — [A Flexible Framework for Treatment Scoring in Biomedical Studies](#), Department of Biostatistics of the University at Buffalo School of Public Health & Health Professions, Buffalo, New York
- **October 8-9, 2015** — [59th annual Fall Technical Conference](#), American Society for Quality and American Statistical Association, Houston, Texas, USA
- **October 9-11, 2015** — [Teachers Stats Conference: STAKAN 2015](#), Czech Statistical Society and Slovak Statistical and Demographical Society, Soláň, Czech Republic

- **October 13-15, 2015** — [5th OECD World Forum on Statistics, Knowledge and Policy: Transforming Policy, Changing Lives](#); Organisation for Economic Cooperation and Development (OECD) and Mexican National Statistical Institute (INEGI); Guadalajara, Mexico
- **October 20, 2015** — [World Statistics Day in Switzerland](#), Swiss Statistical Society, Olten, Switzerland
- **October 20, 2015** — [World Statistics Day Celebration: Talks and Networking](#), Swiss Statistical Society, Olten, Switzerland
- **October 20-22, 2015** — [1st Open Russian Statistical Congress](#); Russian Association of Statisticians, Federal State Statistics Service and Novosibirsk State University of Economics and Management; Novosibirsk, Russia
- **October 22-23, 2015** — [6th National Conference on Medical Statistics: MedStat 2015](#); Catholic University Faculty of Health, Slovak Statistical and Demographical Society, Institute of Medical Biology, Comenius University Genetics and Clinical Genetics Faculty of Medicine, University of Ss. Cyril and Methodius in Trnava Institute the Physiotherapy, Balneology and Therapeutic Rehabilitation, and Central Military Hospital; Ružomberok, Slovakia
- **October 28-30, 2015** — [Jamaica Statistics Symposium and Pre-Conference Workshop 2015: “Statistics in Support of Policy”](#), Jamaica Statistics Symposium, Kingston, Jamaica
- **October 29-31, 2015** — [6th Annual Stevens Conference on High Frequency Finance and Analytics](#), Stevens Institute of Technology and CME Group Foundation, Hoboken, New Jersey, USA

PARTICIPATING ORGANIZATION NEWS & EVENTS

Following is the latest news and information from statistical organizations participating in The World of Statistics:

World Statistics Day 2015—In a letter to heads of state, the Secretary-General of the United Nations, Mr. Ban Ki-moon, invited governments around the world to lend their full and timely support to make the 2015 World Statistics Day a success and encouraged them to share with the global community their plans in relation to this celebration.



The secretary-general pointed out in his letter that “statistics are critical for evidence-based decision making across all cultural and historical backgrounds of countries and irrespective of their level of

development.” He also noted that, by [designating 20 October 2015 as World Statistic Day](#) under the general theme “Better data, better lives,” the United Nations General Assembly “acknowledged the fundamental importance of sustainable national statistical capacity to produce reliable and timely statistics and indicators.” The [General Assembly](#) is the main deliberative, policymaking and representative organ of the United Nations.

In his message to all heads of state, the Secretary-General underlined that “solid data are an indispensable basis for informed policy formulation and for monitoring the post-2015 development agenda at the national, regional and international levels.” This aspect has particular significance today, as countries are finalizing more than two years of preparations which will culminate next month in the United Nations [summit](#) for the adoption of the post-2015 development agenda, making a clear call for “quality, accessible, timely and reliable disaggregated data... to help with the measurement of progress and to ensure no one is left behind.”

A rundown of planned World Statistics Day 2015 activities and recent news announcements are posted to the event’s website. [Check out the site](#) to learn about the events that will be conducted in your country.

Africa—Solution Exchange for the African Statistical Community is a service provided to the professional community of African statisticians and other professionals providing or using the statistical information needed to effectively plan, manage, monitor and assess the performance of Africa’s national, regional and interregional development efforts.

Solution Exchange is a United Nations-sponsored peer-to-peer facilitation service for professionals having similar interests and concerns (“Communities of Practice”), tapping their knowledge and experience towards the common objective of problem-solving. Through Solution Exchange, colleagues from diverse organizations and backgrounds help each other address the day-to-day issues they face, increasing the effectiveness of their individual and collective efforts. Having a Solution Exchange for the African Statistical Community will promote interaction and knowledge-sharing among members.



Issues Covered

Solution Exchange for the African Statistical Community addresses the following issues that relate to ensuring relevant, accurate, timely and consistent statistics for the nations of Africa:

- Statistical data collection strategies and systems – censuses; surveys; administrative data collection systems
- Statistical topics – civil registration and vital statistics; economic statistics and national accounts; demographic and social statistics; employment and informal sector; gender statistics; development indicators
- Institutional and infrastructure requirements
- Training and certification of statistical professionals
- Statistical indicators, definitions, standards, classification and standard-setting
- Data processing and analysis methodologies; data management and dissemination
- Statistical products – statistical bulletins and reports
- Statistical coordination and harmonization initiatives
- Introducing the Data Revolution for Africa; the African Data Consensus; Open Data initiatives

Who Should Join?

The following participants in this community are professionals from Africa and elsewhere who produce, use or are interested in African statistics:

- Statisticians working in governmental and intergovernmental organizations
- Policy researchers, academicians and trainers focusing on statistical issues
- Staff of NGOs, consulting firms and other private sector companies with statistical expertise
- Officials of foundations and donors sponsors of statistical initiatives
- Members of statistical societies and professional associations
- Other professionals in fields related to statistical collection and analysis

Who are The Leaders?

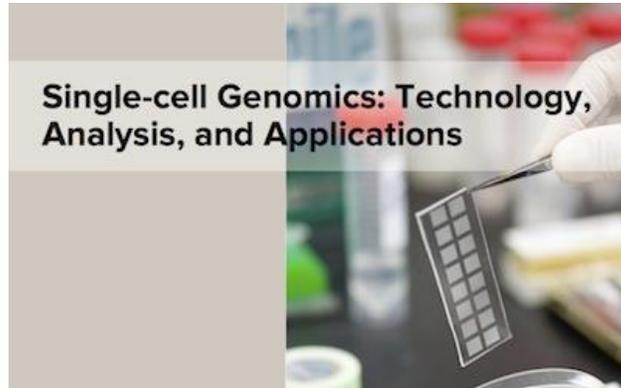
Solution Exchange for the African Statistical Community falls under the overall purview of the Statistical Commission for Africa. Its oversight body is an advisory board whose members are drawn from the statistical commission as well as nongovernmental organizations and community-based organizations, donors, academic and research institutes, and the private sector. The African Centre for Statistics is the convener.

Your Invitation to Join

Organizers believe this is a great opportunity for professionals working in African statistics in to come together, albeit virtually, to exchange solutions and ideas to address the challenges of the struggling African statistics. To join the community, [click here](#) and complete and submit the form. For more information, send an email to the organizers at facilitator-stat-rf@solutionexchange-un.net.

United States—The Program in Quantitative Genomics at the Harvard School of Public Health will host its 9th conference themed “[Single-cell Genomics: Technology, Analysis, and Applications](#)” November 5-6 in Boston, Massachusetts.

Single-cell genomics is an exciting new field with many biological and medical applications. The ability to quantify genomic, transcriptomic and epigenomic information at the single-cell resolution has provided great potential for systematic characterization of the cellular heterogeneity associated with developmental and environmental perturbations and diseases.



At the conference, a diverse group of scientists will discuss the state-of-art of single-cell genomics and its applications to biomedical research and public health. The conference will focus on the following three topics:

- Session I: Emerging technologies for genome-scale single-cell analysis
- Session II: Computational methods for analyzing single-cell genomic data
- Session III: Applications of single-cell technologies in human health and diseases

[Keynote speakers](#) are Michael Elowitz, professor of biology, bioengineering and applied physics at the California Institute of Technology; Sten Linnarsson, associate professor of medical biochemistry and biophysics at the Karolinska Institutet in Sweden; and Barbara Wold, professor of molecular biology at the California Institute of Technology.

The conference schedule also includes time for scientific presentations and a poster session and reception for submitted abstracts. Three abstracts will be selected for “Stellar Abstract Awards” and presented as 15-minute platform talks. Each of these honored speakers will receive an award of up to \$500 for travel assistance or other conference expenses.

For more information such as the conference agenda and registration [go to the event website](#).

Uzbekistan—The Department of Probability Theory and Mathematical Statistics at the National University of Uzbekistan will host its third Scientific Practical Conference October 16-17. Themed “Statistics and Its Applications,” the conference is dedicated to the World Statistics Day, which will be observed worldwide October 20. For more information, [visit the conference website](#).

Ethiopia—The [Department of Epidemiology and Biostatistics](#) at the University of Gondar, in cooperation with Belgium’s Hasselt University, has finalized a master’s of public health (MPH) in biostatistics program. The new program will be part of the university’s College of Medicine and Health Sciences.

In addition to the doctoral statisticians recently added to the department staff, world-famous biostatisticians from Hasselt University will offer the graduate-level courses. The program's major objective is to train professionals in biostatistics with world-class competence that enables them to apply the knowledge and skill they acquire on research geared toward health and health-related problems.



The program is designed to:

- Produce competent professionals who have expert skills, experience and knowledge of statistics, health, mathematics and computer software to analyze large data sets
- Alleviate the severe shortage of biostatisticians who have the skills to identify public-health problems and formulate the scientific questions to be answered, determine the appropriate sampling techniques, coordinate data collection procedures and carry out statistical analyses to answer scientific questions
- Ensure the systems and methods of designing the health sector in the country are based on evidence-based decision through planning, data analysis, modeling and projections, and associated documentation, and ensuring all these are in line with the strategic development goals of the country and stakeholders
- Produce biostatisticians who can work with a research team or researchers and have the skills required to develop new algorithms, statistical techniques and visualization approaches so workgroups and stakeholders can implement the findings
- Enable students who will be trained through this program to work as academics in the biomedical field, analyzing the effects of treatments, environmental conditions and other factors on living things
- Produce (eventually) the human resource having special knowledge and skill for integrating various concerned disciplines and practitioners working together for the same goal of improving the health of the national and continental community

Applicants should have a minimum first degree in statistics, mathematics, medical- or health-science-related field, health informatics, psychology, sociology, economics or biology.

United States—The Fifth Seattle Symposium in Biostatistics, sponsored by the University of Washington School of Public Health's Biostatistics Department, will be held November 21-24. Themed "Biomarkers for Diagnosis, Prognosis and Therapy Guidance," the symposium will feature an exciting lineup of keynote addresses, invited talks and panels that will highlight the recent advances in development and

discovery of candidate biomarkers based on high dimensional omics data; the role of biomarkers for diagnosis, prognosis and personalized treatment; and regulatory and ethical considerations. It also will include outstanding short courses on various aspects of biomarkers and -omics data. For additional information, including the [program](#), list of [speakers](#) and [registration](#), [visit the event website](#).

International—The 4th biannual [International Conference on Sub-National Measurement and Economic Analysis of Tourism](#) (MOVE2015) will be conducted November 18-20 in San Juan, Puerto Rico.

Themed “Towards a Set of UNWTO Guidelines,” the conference is organized by the Puerto Rico Tourism Authority within the conceptual framework of The International Network on Regional Economics, Mobility and Tourism (INRouTe) and in collaboration with the United Nations World Tourism Organization (UNWTO).

MOVE2015 will address topics aligned with INRouTe’s work. INRouTe, an initiative promoted by UNWTO, is dedicated to advancing policy-oriented measurement and analysis of tourism in order to provide operational guidance to entities involved in sub-national tourism destinations.



The first two days of the conference will concentrate on the following topics, which are [INRouTe](#)’s focus:

- Tourism and Territory: taking sub-national tourism seriously
- Tourism and the Environmental Dimension: the complexity of operationalizing a policy concept such as sustainable tourism
- TSA as the Foundation for a Regional TSA: Measurement and economic analysis at sub-national levels

The last day hosts the Puerto Rico UNWTO Tourism Forum during which strategic planning, sustainability, cultural tourism and innovation will be the key topics.

In sum, three days of enriching conversations are planned, which is why organizers invite you to participate with your expertise.

Currently, international benchmarking of destinations at sub-national levels is unavailable. Some of the reasons are the complexity of measuring and economically analyzing tourism as well as counting with rigorous frameworks and procedures developed following international standards on tourism statistics.

Several renowned experts will address MOVE2015, including the following individuals:

- Ivo Havinga, assistant director of the United Nations Statistics Division
- Adela Moreda, tourism lead specialist at the Inter-American Development Bank
- Oliver Herrmann, director of the tourism statistics unit at the United Nations World Tourism Organization (UNWTO)
- Carlos Vogeler, regional director for the Americas at UNWTO
- Ingrid Rivera, director of the Puerto Rico Tourism Company
- Antonio Massieu, chair of INRouTe
- Mara Manente of the International Center of Studies on the Tourist Economy (CISSET)
- Aurkene Alzua, Executive Director of the Centre for Cooperative Research in Tourism (CICtourGUNE)
- Max Munday, director of the Welsh Economy Research Unit at University of Cardiff

The 2008 adaptation of UN-recommended international standards to sub-national levels has been promoted by UNWTO through the creation of INRouTe, which acts as a private, nonprofit organization. This 4th edition of the MOVE international conference will present a sneak preview of the general guidelines on Measurement and Economic Analysis of Tourism at Subnational Levels that UNWTO will submit to a worldwide consultation in 2016.

By participating in MOVE2015, you will be among the first statistical professionals who discuss these guidelines with key international experts and UNWTO immediately before the worldwide consultation is launched.

More information about MOVE2015, including the program and registration, is available on the [conference website](#).

JOIN THE WORLD OF STATISTICS

If your organization or an organization you know of isn't yet participating in The World of Statistics, encourage them to join today. Joining is easy; just ask a representative of the group to go to www.worldofstatistics.org and click on the "Join" icon on the top right-hand side of the homepage to become an official participating organization in The World of Statistics. Participation is valuable and is absolutely free!

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