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IN THIS ISSUE:

- [ASA Releases Statistical Education of Teachers Report](#)
- [Statistics: Is This Big Data's Biggest Hurdle?](#)
- [The World of Statistics Activities Calendar](#)
- [Participating Organization News Roundup From:](#)
 - International
 - Canada
 - United States
 - Joint Statistical Meetings
- [National Statistical Organization News Roundup From:](#)
 - Palestine
 - Romania
 - Cayman Islands
- [Join the World of Statistics](#)
- [Follow Us on Twitter & Facebook](#)
- [Guide to Contributing to The World of Statistics is Available](#)

ASA RELEASES STATISTICAL EDUCATION OF TEACHERS REPORT

The American Statistical Association (ASA) has issued the [Statistical Education of Teachers \(SET\) Report](#), which calls on mathematicians, statisticians, mathematics educators and statistics educators to collaborate to prepare pre-K-12 teachers to teach intellectually demanding statistics courses in their classrooms.

SET was commissioned by the ASA to clarify the recommendations for teacher statistical preparation in the Conference Board of the Mathematical Sciences [Mathematical Education of Teachers II](#) report. The ASA's SET report, which also is an indispensable resource stakeholders can use to guide statistics instruction preparation of current and future teachers, was developed by a team of statistics and education experts chaired by Christine A. Franklin, senior statistics lecturer at the University of Georgia.

This focus on preparing teachers to teach statistics courses—especially in grades 6-12—was precipitated by the adoption of the Common Core State Standards (CCSS), the country's first national educational

standards, by 43 states and similar other state standards. The CCSM Mathematics and related standards place heavy emphasis on statistics and probability.

“Effective implementation of the rigorous CCSM and related state standards depends to a large extent on the teachers who will bring them to life in the classroom,” says Franklin. “The SET report offers recommendations for the statistical preparation and professional development of those teachers. Its recommendations will help teachers understand how statistical concepts are interconnected and their connections to other areas of mathematics.”

The SET Report uses the [ASA Pre-K-12 GAISE Framework](#) as the structure for outlining the content and conceptual understanding teachers need to know in assisting their students to develop vital statistical reasoning skills. Because statistics is mostly taught in mathematics classes at the pre-college level, it is particularly important that teachers be aware of the differences between the disciplines. As such, the SET report facilitates the understanding of key topics such as what sets statistics apart as a discipline distinct from mathematics, the difference between statistical and mathematical reasoning, and the role of probability in statistical reasoning.

In addition to clarifying MET II’s recommendations, the SET Report also does the following: addresses the professional development of teachers, highlights the differences between statistics and mathematics that have important implications for teaching and learning, illustrates the statistical problem-solving process across levels of development, and makes pedagogical recommendations of particular relevance to statistics, including the use of technology and the role of teacher assessment. SET’s chapters cover the following broad topics:

- Chapter 1 outlines the motivation for the report
- Chapter 2 presents six recommendations regarding what statistics teachers need to know and the shared responsibility for the statistical education of teachers
- Chapter 3 describes CCSS’s mathematics requirements from a statistical perspective
- Chapters 4-6 provide recommendations to those responsible for teacher preparation or professional development of elementary-, middle- and high-school teachers
- Chapter 7 describes assessing teacher statistical knowledge, Chapter 8 provides a brief review of research, and Chapter 9 presents a history of statistics in grades Pre-K-12.

SET is intended for everyone in the United States and around the world involved in the statistical education of teachers, both the initial preparation of prospective teachers and the professional development of practicing teachers. Its three main audiences are:

- Mathematicians and statisticians who are faculty members at two- and four-year colleges and teach courses taken by prospective and practicing teachers
- Mathematics and statistics education faculty members within colleges of education, mathematics or statistics departments who typically are responsible for the pedagogical education of mathematics and statistics teachers

- Educational administrators and policymakers at the national, state, school district and collegiate levels

“The dramatic increase in statistical content at the pre-college level demands a coordinated effort to improve the preparation of pre-service teachers and to provide professional development for teachers trained before the implementation of the new standards,” said Franklin. “The ASA’s SET report is the definitive blueprint for this collaborative undertaking.”

In an increasingly data-driven society, statistical literacy is becoming an essential competency for informed citizens to make everyday decisions based on data—whether following media coverage of current events, making personal financial decisions, assessing health risks or using statistical reasoning in the workplace.

“SET is a groundbreaking report that can support teacher educators with preparing school-level teachers in statistics. In our data-centric world, it is now a must that all students be statistically literate. For this to happen, our teachers, who are the key to student success, must also become statistically literate,” Franklin said summing up the SET Report’s purpose.

STATISTICS: IS THIS BIG DATA’S BIGGEST HURDLE?

We recently came across an article with that intriguing headline on the Business2Community website. It is a powerfully written examination of the role of statistics in Big Data and society by Bob E. Hayes, who is the chief research officer of [AnalyticsWeek](#) and president of [Business Over Broadway](#).

In the article, Hayes writes: “Statistics is considered to be one of the three primary pillars of the field of data science (the other two are content domain knowledge and computer science skills). While content domain expertise provides the context through which you identify the relevant questions to ask, computer science skills help you get access to the relevant data and prepare them for analysis, statistics helps you interrogate that data to provide answers to your questions.”

He goes on to say: “To get value from the data, you need to make sense of it, do something with it. How you do that is through statistics and applying statistical thinking to your data. Statistics is a way of helping people get value from their data. As the number of things that get quantified (e.g., data) continues to grow, so will the value of statistics.”

[We encourage you to take a couple minutes to read this outstanding article.](#)

THE WORLD OF STATISTICS APRIL ACTIVITIES CALENDAR

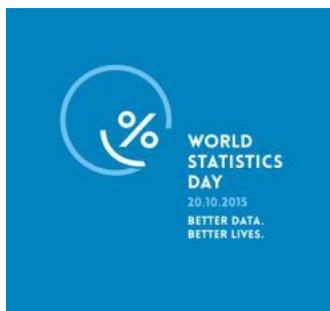
Following are The World of Statistics participating organization-sponsored events and activities around the world scheduled for May. [Click here](#) to see the complete 2015 calendar. Remember to submit your organization’s events for the calendar by [using this convenient form](#).

- **May 8-10, 2015** — [4th Workshop on Biostatistics and Bioinformatics](#); National Science Foundation, Institute of Mathematical Statistics, International Chinese Statistical Association, and Georgia State University Department of Mathematics and Statistics; Atlanta, Georgia, USA
- **May 11-12, 2015** — [2015 Bernard G. Greenberg Distinguished Lecture Series](#), University of North Carolina Gillings School of Global Public Health, Chapel Hill, North Carolina, USA
- **May 12-14, 2015** — [Fifth Session of the OIC Statistical Commission](#); Statistical, Economic and Social Research and Training Centre for Islamic Countries and the Islamic Development Bank; Ankara, Turkey
- **May 15-17, 2015** — [Seymour Sherman Lecture and Conference Probability and Statistical Physics](#), Indiana University and National Science Foundation, Bloomington, Indiana, USA
- **May 19-20, 2015** — [Modern Modeling Methods \(M³\) Conference](#), University of Connecticut Neag School of Education, Storrs, Connecticut
- **May 19-22, 2015** — [6th BAYES2015 Workshop](#), International Society for Bayesian Analysis and Royal Statistical Society, Basel, Switzerland
- **May 20-25, 2015** — [Spring Research Conference: Bridging Statistics Research and Application to Foster Innovation](#), American Statistical Association Section on Physical and Engineering Sciences and Institute of Mathematical Statistics, Cincinnati, Ohio, USA
- **May 26-29, 2015** — [UT Summer Statistics Institute](#), University of Texas Department of Statistics and Data Sciences, Austin, Texas, USA
- **May 28-29, 2015** — [Statistical Methods in Imaging](#), American Statistical Association Section on Statistics in Imaging and the Department of Biostatistics at the University of Michigan, Ann Arbor, Michigan, USA
- **May 28-30, 2015** — [2015 United States Conference on Teaching Statistics \(USCOTS\): Making Connections](#), Consortium for the Advancement of Undergraduate Statistics Education (CAUSE), State College, Pennsylvania, USA
- **May 29, 2015** — [36th Spring Symposium: The Role of Big Data in Pharma](#), New Jersey Chapter of the American Statistical Association, Piscataway, New Jersey, USA

PARTICIPATING ORGANIZATION NEWS & EVENTS

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

International—To mark World Statistics Day later this year, *Significance* magazine will devote its October issue to articles that highlight the important contributions statistics is making in different parts of the world. It plans to publish one article from each of the main geographic regions: North America, South America, Europe, the Middle East, Africa, and Asia.

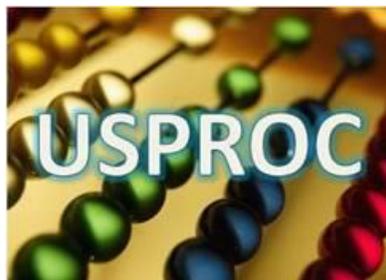


significance
statistics making sense

“We are particularly keen that articles published about the developing world do not fall into the ‘bad news’ trap—that is, focusing only on stories of war, death, disease, poverty, and natural disasters,” says Editor Brian Tarran. Instead, the magazine is seeking tales of interesting work and novel applications of statistics from parts of the planet too often overlooked by the media, he adds. Please send article ideas or recommendations for potential contributors to Tarran at b.tarran@rss.org.uk.

World Statistics Day 2015 will be celebrated October 20. The event is being organized globally the United Nations Statistics Division. [Go to its website](#) to learn more about the event and be sure to go back periodically for updated information.

International—Here’s a quick reminder about the Consortium for the Advancement of Undergraduate Statistics Education’s (CAUSE) sixth annual Undergraduate Statistics Project Competition (USPROC). The USPROC encourages the development of data analysis skills, enhance presentation skills and recognize outstanding work by undergraduate statistics students. Cash prizes of \$250 will be awarded to the winners of each competition—the [Undergraduate Statistics Research Project Competition](#) and the [Undergraduate Statistics Research Project Competition](#). Both competitions are open to statistics students worldwide. The submission deadline is May 31. Winners will be announced during the summer. [Visit the competition website](#) for additional details, contact information and a link to submit project(s).



Canada—Statistics is a hot field in Canada, too, says a major business publication in that country. In an article titled “[Canada’s Best Jobs 2015: Statistician & Actuary](#)”, *Canadian Business* wrote the following about the field:

“The explosion of data produced by the digital economy has [led to a surging need](#) for specialists able to pull business insights out of terabyte-sized databases. If you have a head for numbers, this quickly developing field likely has a use for your talents. Though traditional fields like finance and insurance are still destinations, data scientists are finding their skills in demand in communications, retail, natural resources, and many more fields besides.”

An accompanying article titled “[How the age of Big Data made statistics the hottest job around](#)” sheds more light on the ascent of statistics in the country.

United States—For those considering a career in data science, a new website has been launched that will help them wade through the field and its new and growing educational options. The [Masters in Data Science website](#) is the complete guide and resource for anyone interested in pursuing an education and a career in data science. The site features a [comprehensive directory of master’s degree programs in](#)

[data science](#) (and interdisciplinary programs in related specialties) and [entertaining and history-rich discussions](#) of the uses of data science in various industries. The site also is linked to by many prominent organizations in the industry. For example, it is listed as a resource by the [American Statistical Association](#), National Institutes of Health, International Technology and Engineering Educators Association, and [DataScienceCentral.com](#) and in the higher education community by Yale University, University of California, Berkeley and many others.

Joint Statistical Meetings—The [National Institute of Statistical Science](#), [American Statistical Association](#), and [Institute of Mathematical Statistics](#) are conducting a writing workshop for junior researchers (subject to availability of funds) August 9 and 12 at the Joint Statistical Meetings 2015 in Seattle. The workshop's goal is to provide instruction to up-and-coming statisticians for writing journal articles and grant proposals.



Mentors will be former journal editors and program officers, who will critique a portion of a participant's submitted material. Individual feedback will be provided as part of the opening session and participants will be expected to prepare a revision in response. The workshop will open with a one-day session of general instruction in effective writing techniques. It will continue August 12 with a half-day session for participants whose native language is not English and close with discussion and debriefing at a follow-up lunch.

[Click here to learn more about this JSM learning opportunity.](#)

United States—The media's attention on all things statistics careers is continuing here. Recently, [Fortune magazine ranked the best graduate degrees for jobs](#) in the U.S. in 2015. Three statistics-related degrees were listed in the top 10. Those are:

- #1: PhD in Statistics
- #2: Master's in Biostatistics
- #9: Master's in Statistics

Statistician is a rising field, the article contends, because of the following three factors on which the ranking is based:

- Long-term outlook for job growth. The article looked at the [Bureau of Labor Statistics'](#) latest Employment Projections data (2012-2022). Average rate of employment growth for all

occupations is 10%, making anything higher a fast-growing field. The growth rate for statistics is 27%.

- Median salaries, at mid-career or at 10 years in (based on the three jobs most commonly associated with each degree).
- Job satisfaction scores: the percentage of degree-holders who said they were “highly satisfied” in surveys. Job-growth outlook and salary were double-weighted.

United States—The Center for Biostatistics, in collaboration with the Department of Population Health Science and Policy, at the Icahn School of Medicine at Mount Sinai (ISMMS) in New York City is launching a new master’s of science in biostatistics program. This new program is designed to prepare individuals for a career as data analysts and applied statisticians in the biomedical sciences. It will appeal to students whose goal is to work as a biostatistician in a clinical, research or industry setting or as a stepping stone to pursue a doctoral degree in biostatistics or epidemiology.



The distinctive design of this one-year, full-time master’s program allows for rigorous and comprehensive didactic training in fundamental skills required for conducting high-quality clinical and translational research. The curriculum emphasizes strong quantitative training, critical thinking skills, and practical strategies for addressing complex challenges of novel, clinical research. Additionally, the small cohort size of approximately five to 10 students ensures each student has the opportunity for excellent mentorship and individualized attention from the Center for Biostatistics faculty.

Applications for enrollment this fall are currently being accepted. [Click here to learn more about the program and to apply.](#)

NATIONAL STATISTICAL ORGANIZATION: NEWS & EVENTS

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

Palestine—The Palestinian Central Bureau of Statistics (PCBS) is organizing an international conference focusing on official statistics that will be conducted October 20-22 in Ramallah. The primary objective of the event, which will open on World Statistics Day 2015, is to bring proper attention within the national statistics system on the data revolution and its impact on the use of official statistics as well as the importance of being current on developments at the national, regional and international levels. The conference’s secondary objectives are:

- Launching the regional Code of Practices
- Identifying data visualization products for core national issues such as women, children, poverty and other concerns
- Establishing sustainable development indicators

More information will be posted to [the PCBS website](#).

Romania—The third International Conference New Challenges for Statistical Software—The Use of R in Official Statistics, dedicated to the use of R Project in Romania, was held April 23-24 in Bucharest. The conference was initiated by the “R-omanian R team” in April 2013. The second conference was held in March 2014 with participants from the United Kingdom, Austria, Netherlands, Hungary, Serbia and Romania.

This year’s conference drew participants from Austria, Colombia, Germany, Hungary, Italy, Latvia, Malaysia, Netherlands, Poland, Serbia, Slovak Republic, Slovenia, United Kingdom, United States and Romania. The quality of the works presented, high research activity carried out by the authors, and the results are strong points of reference that Romania is on the map of “useRs”. The conference was an opportunity to develop new ideas and cooperation in the field of official statistics and academia. The event exemplifies the significant role of the National Institute of Statistics in official statistics. The R-omanian R team and the conference organizers thank all participants for sharing their experiences and knowledge.



The Use of R in Official Statistics conference attendees pose for a group photo.

Cayman Islands—The Economic and Statistics Office recently announced its annual Labour Force Survey will go to a new twice-yearly schedule to provide a more accurate picture of the national economy. The survey, which had been conducted annually every October, now also will be carried out in April each year. The survey collects data on unemployment, demographics and employment details by industry.

Finance Minister Marco Archer said the biannual survey is expected to present a more accurate picture of employment in the country as it takes into account the seasonality of employment opportunities.

Economic and Statistics Office Director Maria Zingapan noted the additional survey in April will cost \$40,000 to \$45,000 each year.



ECONOMICS AND STATISTICS OFFICE
Government of the Cayman Islands

The most recent survey, conducted last October 2014 and released in March, revealed the population hit a record high of 58,000. It identified nearly 40,000 people in the labor force and the national unemployment rate had hit its lowest point—4.7 percent—since the beginning of the global recession.

The statistics office hires temporary employees to conduct fieldwork for the labor surveys, which involve questions about employment, including salary, hours worked and industry, and basic demographic information such as age, immigration status and education level. Interviewers visit 1,400 randomly selected households in a month across all three islands.

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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