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ASA 2019

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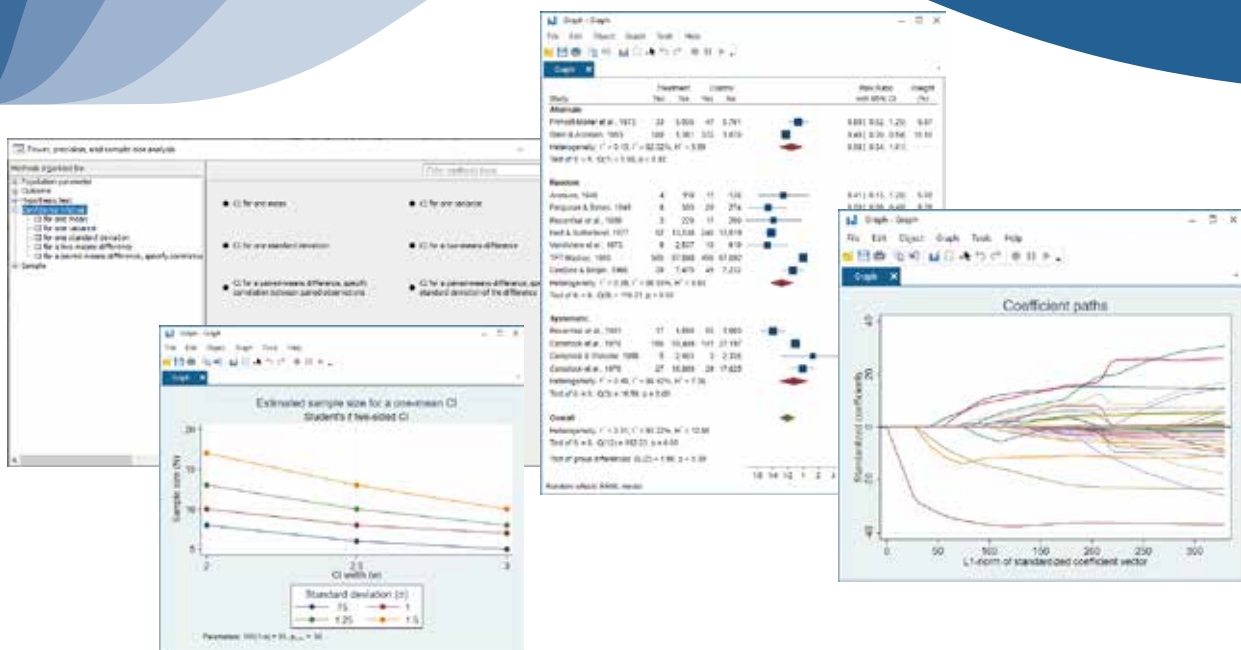
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## column

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**Effecting Change With Statistics and Data: An Interview With Statistician Talithia Williams**

STATtr@k is a column in *Amstat News* and a website geared toward people who are in a statistics program, recently graduated from a statistics program, or recently entered the job world. To read more articles like this one, visit the website at <http://stattrak.amstat.org>. If you have suggestions for future articles, or would like to submit an article, please email Megan Murphy, *Amstat News* managing editor, at [megan@amstat.org](mailto:megan@amstat.org).

- 18 **STATS4GOOD**  
**Data for Good Goes to Washington**

This column is written for those interested in learning about the world of Data for Good, where statistical analysis is dedicated to good causes that benefit our lives, our communities, and our world. If you would like to know more or have ideas for articles, contact David Corliss at [davidjcorliss@peace-work.org](mailto:davidjcorliss@peace-work.org).



# STATISTICAL IMPACT Competition



Help us identify emerging domains ripe for contributions from statisticians and areas of research, practice, or public policy where the statistical sciences have already made a substantial impact. Impact is defined as contributions that advance science, inform public policy, and/or contribute to a world in which decisions are data-driven. Had we issued this challenge 20 years ago, the winner in the emerging domains category may have been genomics. What might it be today? And what critical role will our discipline play in it?

Using publicly available data sets, teams will submit responses to the competition in either or both a significant contributions category or an emerging domain category.

Want to learn more about the upcoming **ASA Statistical Impact Competition**? Enter your name and email address on the Google form at <http://bit.ly/2LcHlkl>. You'll receive alerts about important dates, deadlines, and events!

The 2019 **Links Lecture** was awarded to **Bruce Meyer**, McCormick Foundation Professor at The University of Chicago Harris School of Public Policy, for adding important links in the progress of official statistics through research and advisory activities. Meyer's lecture is titled "Linking Data to Improve Income Statistics," and will take place October 18 at the National Academy of Sciences building, 2101 Constitution Ave., NW, Washington, DC. Visit [magazine.amstat.org](http://magazine.amstat.org) for details.

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# 'Making an Impact' in 25 Years

**T**wenty-five years ago, Leo Brieman (whom the statistics world sadly lost in 2005) delivered the 1994 commencement address, "What Is the Statistics Department 25 Years from Now?" to his statistics department at Berkeley. It's a wonderful address for many reasons, but especially for his predictions for our field ([bit.ly/30JLJeK](http://bit.ly/30JLJeK)). He was astoundingly on target. He began by reminding us about how pervasive statistics is—and yet how little many people know about what statisticians do!

The uses of statistics pervade our society. They are used and terribly misused all through the social sciences and health fields. Statistics show a link between A and B or that X causes Y. A few weeks ago, for an elementary statistics project, I began clipping articles out of *The New York Times* that involved the use of statistics. Now my desk is littered. . . . It is surprising how much the world around us depends on the use of statistics. . . . [A]sk a non-technical friend what a doctor does, or an engineer, chemist or physicist, and the answers are usually sensible. Then ask "What is it that you think a statistician does?" Strange answers come out. Probably, the most common is that a statistician is something like an actuary. . . . It's odd that even though the articles involving statistics in the newspapers far outnumber those involving say, physics or chemistry, people in general know very little about what we do.

He went on to describe the changes in statistics departments, from theory to applications:

As statistics departments separated out from mathematics, they moved away from the idea of statistics as pure mathematics and the possibility of using data crept in. Now statistics is in a flux, it has not found its own orbit yet, but powerful forces are moving it on. Money is a big force. . . . But an equally powerful force is that statisticians are finding out the real fun in interesting applied problems. Finding out something about DNA sequencing by using a Hidden Markov Model is pretty rewarding, so is participating in setting up a large AIDS experiment, or in doing image reconstruction.

Problems are getting larger and more interesting. The data and difficulties in problems such as

speech recognition, written character recognition, robotic control, are large and complex. These could be our problems. Developing methods to use the information flowing from the sensors of a robot to recognize obstacles or grasp objects is a statistical problem. So is the problem of using the data in an electrical current from a microphone to recognize words and sentences. Most of the work in these areas is currently being done by computer scientists, engineers and physical scientists, but statisticians are beginning to nibble around the edges.

What is at the core of statistics? . . . We are wizards in figuring out how to gather good information, analyze information, and draw conclusions. . . . And I think this is where we will be when our identity crisis is resolved.

Brieman predicted that today, in 2019, statisticians will be computing Fourier transforms of speech, analyzing text, working with MDs on a 10-year study of brain cancer treatments, and watching "some astronomers and Professor Stark arguing about how strongly the data [show] evidence of a Big Bang origin for the universe." (Wouldn't he be pleased to hear about Stark's appointment to the advisory board of the US Election Assistance Commission and its Special Committee on Election Security? See [bit.ly/2M6fmmt](http://bit.ly/2M6fmmt).)

The Joint Statistical Meetings (JSM) last week in Denver showcased many opportunities in which statisticians, often in collaboration with other scientists, have made an impact and will continue to do so. Might some of them have been on Brieman's list today if he were to give another commencement address?

**Forensic science:** The Center for Statistics and Applications in Forensic Evidence ([forensicstats.org](http://forensicstats.org)) is coordinating research teams for projects related to pattern and digital media evidence (e.g., fingerprints and cell phones) on the effects of interventions in forensic laboratory procedures to reduce errors in process and interpretation and effects of presentation of evidence and analyses to jurors to minimize misunderstandings. Though common, pattern evidence is not the only type of forensic evidence. Other forms of forensic evidence equally in need of validation include trace evidence such as paint;



Karen Kafadar

glass; tape; anthropological and environmental evidence such as bones, animals, and explosions; and chemical evidence such as gun-shot residue, toxicology, and drugs. Collaborations with chemists, biologists, and engineers, as well as forensic scientists, are essential for progress in this area.

**Gun violence:** The National Institute of Statistical Sciences (NISS) held an inaugural Statistics Serving Society two-day forum (honoring the memory of Ingram Olkin) titled “Gun Violence—The Statistical Issues.” More than 50 invited attendees (criminologists and statisticians from government agencies, nonprofit organizations, and universities) identified issues in data acquisition and discussed analysis methodologies and outstanding statistical issues, including measures of effectiveness of interventions and analysis of police shootings. Roundtable discussions focused on future challenges that invited the statistical community to collaborate with other researchers, laying the groundwork for interdisciplinary collaborations.

**Social networks:** A high-impact area of statistics, particularly for understanding sociological behaviors, lies in the analysis of social networks and complex social systems. Network data are noisy, with massive observational errors, requiring statistical methods to extract “signal” (mechanisms of human interactions) from “noise.” For instance, to study drug abuse behavior of adolescents, statistical analysis of social networks can lead to better inferences and more reliable prediction and monitoring of health-related behaviors. Networks of citations and collaborations among scientists can point to the discovery of intrinsic connections between different scientific subjects and research topics and quantitative assessments of mechanisms regarding human knowledge in different fields driving scientific research collaborations. Statistical analysis of networks related to social security have demonstrated valuable insights into terrorist organizations that reveal potential risks. It also raises important questions about differential privacy and how to ensure an individual’s privacy. (For more about research in this area, see, for example, “Prediction Models for Network-Linked Data” by Tianxi Li, Elizaveta Levina, and Ji Zhu in the *Annals of Applied Statistics*.)

**Medical Records:** The federal statistical system has faced multiple challenges during the past three years, particularly in resources to ensure completeness of data collection and accuracy of reporting. An important area relates to the growing opioid crisis in this country, which has put severe strains on the system through which deaths are analyzed and reported in the United States. Opioid deaths are expensive to investigate; they require autopsies and sophisticated toxicology. The reporting systems, which were already stressed, have been unable to cope with the rapidly increasing number of deaths. Jay Kadane at Carnegie Mellon University is working with Karl Williams at the Allegheny County Office of Medical Examiners in Pittsburgh to address issues with incompleteness and inaccuracies in reporting deaths due to drug overdose. Some of these issues recall the under-reporting that arose with HIV and AIDS, and with sexually transmitted diseases before that, but today’s drug overdoses involve much larger numbers and hence more difficult challenges. (For more on this problem, see “Accurate Reporting of US Opioid Deaths: Level, Type, Temporal and Geographical Comparability” by Kadane and Williams in the *Statistical Journal of the International Association for Official Statistics*.)

In what other areas can we forecast big impacts of statistical design, algorithms, and methodologies? I could not end this column any better than Leo Brieman ended his 1994 commencement address, so I’ll simply quote him (for those who never saw any of George Lucas’ *Star Wars* movies, his last line comes from the character Obi-Wan Kenobi):

So, this is what I am uniquely privileged to see, and so are you. Call me and let me know how it looks in 25 years. Be sure you get in on your share of the fun. May the force be with you.

*Editor’s Note: Donna LaLonde, Jay Kadane, Tianxi Li, and James Rosenberger contributed to this column.*



# ASA's First Survey of Master's Graduates Provides Insight Into Job Market Demand, Degree Satisfaction

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The ASA's first follow-up survey of master's graduates is complete. The results provide insights into starting salaries, hiring sectors and companies, most frequently used technical and nontechnical skills, and undergraduate training—all valuable information for current and prospective students, statistics and biostatistics departments, and new graduates.

The respondents generally fall into two categories. Of the 420 who provided their employment and enrollment status as of March 6, 2019, two-thirds were employed full time and one-quarter were enrolled full time in degree programs, as reported in Table 1. Twenty of those employed full time also reported they were enrolled as full-time students (but are only included in row one of Table 1). In this summary, we'll start with a report of those directly entering the job market.

**Table 1: Employment/Student Status**

<b>Full-Time Employed</b>	280	66.7%
<b>Student</b>	107	25.5%
<b>Part-Time Employed</b>	7	1.7%
<b>Unemployed Seeking</b>	15	3.6%
<b>Unemployed Not Seeking</b>	5	1.2%
<b>Other</b>	6	1.4%

## Employed

For the 172 full-time employees who reported their annual salary, the median was \$77,000, with those who categorized their degree in applied statistics having a higher median. As shown in Table 2, the median for females with a general statistics master's was markedly lower than for corresponding males, an important finding that requires further analysis.

The overall median salary of \$77,000 compares well with 2018 salaries projected for the broad categories of engineering, computer science, business, and math and sciences by the National Association of Colleges and Employers (NACE). See Table 3 showing the 2018 and 2019 NACE projections.

**Table 3: National Association of Colleges and Employers Salary Projections by Broad Category for Classes of 2018 and 2019 Master's Graduates**

<b>Broad Category</b>	<b>2019 Salary Projection</b>	<b>2018 Salary Projection</b>
<b>Engineering</b>	\$82,589	\$75,481
<b>Computer Science</b>	\$81,466	\$75,103
<b>Business</b>	\$77,347	\$69,756
<b>Math &amp; Sciences</b>	\$75,737	\$76,745

**Table 2: Median Salary for Full-Time Employed Overall and by Four Largest Categories (Number of Respondents in Parentheses)**

	<b>All</b>	<b>Applied Statistics</b>	<b>Biostatistics</b>	<b>Data Science</b>	<b>General Statistics</b>
<b>Median (\$)</b>	77,000 (169)	80,000 (55)	70,000 (63)	113,000 (5)	70,000 (38)
<b>Female</b>	74,000 (82)	80,000 (21)	70,000 (39)	-- (0)	64,500 (18)
<b>Male</b>	80,000 (87)	80,000 (34)	67,333 (24)	113,000 (5)	72,230 (20)

The top sectors respondents reported working in were companies/businesses (20%), four-year colleges or universities (12%), finance or banking (8%), pharmaceutical (8%), hospitals or medical facilities (8%), technology (7%), university-affiliated research institutions (7%), and insurance (6%). As shown in Table 4, there is some variation for master's discipline where hospital and medical facility is the top sector for those with a biostatistics degree.

**Table 4: Job Sectors, Including by Three Master's Disciplines Represented by Respondents**

	All	Applied Statistics	Biostatistics	General Statistics
<b>Total Count</b>	<b>230</b>	<b>73</b>	<b>88</b>	<b>53</b>
Company or business	20.4%	26.0%	13.6%	20.8%
Four-year college or university	12.2%	8.2%	15.9%	13.2%
Finance or banking	8.3%	13.7%	1.1%	9.4%
Hospital or medical facility	7.8%	1.4%	17.0%	3.8%
Pharmaceutical	7.8%	6.8%	12.5%	3.8%
Technology	7.4%	9.6%	2.3%	7.5%
University-affiliated research institute	6.5%	2.7%	13.6%	0.0%
Insurance	5.7%	5.5%	4.5%	9.4%
Government contractor	3.9%	5.5%	3.4%	3.8%
Nonprofit organization	3.5%	0.0%	3.4%	9.4%

As was the case for the ASA statistics bachelor's survey, there was tremendous diversity in the companies for whom master's graduates went to work and in their job titles. For the 180 employed respondents who provided the name of their employer, there were 165 unique names (See the supplemental materials in the online version of this article at *magazine.amstat.org*). Similarly, there were more than 130 unique—although similar—job titles. The most common were data analyst (11), biostatistician (10), data scientist (9), biostatistician I (6), statistician (6), biostatistician II (5), statistical analyst (4), and research associate (4).

Respondents were also asked the number of job offers they had at the time they accepted the position. Table 5 shows their responses, with one being the most common for the 230 who replied.

For how influential graduates felt their statistics-related master's degree was in securing their current

**Table 5: Number of Respondents**

Number of Offers	%	Count
0	4.78%	11
1	48.70%	112
2	26.52%	61
3	13.04%	30
4 or more	3.91%	16

position, 88% of respondents responded somewhat or very influential, with 66% reporting very influential. Eighty-seven percent reported being somewhat or very satisfied with their position, with 51% reporting very satisfied. Job security was another element of their position that stood out in terms of satisfaction: 89% reported feeling somewhat or very satisfied with their position in terms of job security, with 64% reporting very satisfied.

Three general themes characterized the descriptions of job search experiences and how the graduates located and secured their positions. Thirty-four percent of 173 respondents mentioned the role of online postings and websites such as LinkedIn and Indeed in helping land a job. Example responses include the following:

- “Browsed websites such as Indeed and LinkedIn; found posting for current job on LinkedIn and was offered a position within three weeks of applying.”
- “Indeed.com was helpful in locating jobs related to my field in my area. I applied to approximately 30 positions, heard back from a third of them and interviewed at 3.”

The second theme, noted by 17% of respondents, was the importance of personal and professional social networks in helping to secure a position. Example responses for this theme include the following:

- “Having previous job experience, I leveraged my network to find positions and companies to apply to.”
- “Networking, networking and networking.”

Finally, 16% of respondents also indicated they already had a position before beginning the master's program and continued on in that position after completing their degree.

The survey sought to understand the nature of the work undertaken by master's graduates. Sixty-eight percent reported solving technical problems on a daily basis, and 61% reported working on a team as often, as shown in Table 6. At least 40% of respondents reported engaging in technical writing, nontechnical writing, and project management on a weekly basis.

The most frequently used technical skills were analyzing/interpreting data and programming or systems software. Seventy-six percent reported using the former on a daily basis, while 67% reported the latter, as shown in Table 7. The next most-often-used skills—performed at least weekly by half the respondents—were statistics or advanced math, statistical model use or development, and database querying. Roughly half reported doing database management on a monthly basis. There is some variation by master's discipline for use of technical skills. For example, as shown in Table 8, for three of the top technical skills used on a daily basis, those with a biostatistics master's degree had the highest percentage of daily users.



**Table 6: Frequency of General Work Skills**

Question	Rarely or Never	Monthly	Weekly	Daily	Total
Work on a team	2.90%	5.31%	30.43%	61.35%	207
Teaching	75.12%	13.93%	5.47%	5.47%	201
Public speaking	42.65%	34.80%	17.65%	4.90%	204
Work with customers or clients	43.63%	18.14%	19.12%	19.12%	204
Manage people	71.64%	11.44%	9.95%	6.97%	201
Manage projects	22.17%	18.23%	24.14%	35.47%	203
Manage finances or budgets	84.16%	6.93%	4.46%	4.46%	202
Perform quality control	39.11%	17.82%	20.79%	22.28%	202
Solve technical problems	3.86%	10.63%	17.87%	67.63%	207
Technical writing	24.76%	29.61%	25.73%	19.90%	206
Nontechnical writing	32.51%	25.62%	23.65%	18.23%	203

**Table 7: Frequency of Research and Statistical Skills**

Question	Rarely or Never	Monthly	Weekly	Daily	Total
Use statistics or advanced math	8.17%	19.71%	27.88%	44.23%	208
Analyze and interpret data	2.90%	6.28%	14.98%	75.85%	207
Use or develop statistical models	22.44%	25.37%	16.10%	36.10%	205
Design experiments	62.87%	22.77%	9.90%	4.46%	202
Survey research	73.00%	14.50%	6.50%	6.00%	200
Programming or systems software	11.65%	9.22%	12.62%	66.50%	206
Tech support or computer administration	71.78%	15.35%	5.94%	6.93%	202
Manage databases	45.10%	18.63%	14.22%	22.06%	204
Query databases	27.94%	18.14%	18.63%	35.29%	204

**Table 8: Percent of Respondents Using Select Technical Skills Daily by Master's Discipline (Number of Respondents in Parentheses)**

	Applied Statistics (65)	Biostatistics (76)	General Statistics (43)
Analyze and interpret data	64.6%	82.9%	76.7%
Use or develop statistical models	20.0%	42.1%	39.5%
Programming or systems software	56.9%	71.1%	60.5%

The top software programs in terms of daily use were Excel (53%), R (40%), SAS (33%), and SQL (31%), as shown in Table 9. In contrast, the software programs reported to be rarely or never used in their positions were Minitab (98%), Java (94%), JMP (93%), and SPSS (93%). In the “other” category, three reported using powerbi, Spotfire, and Stata and two reported using MatLab and JavaScript. When examined by master’s discipline (as in Table 10), Excel is the most used on a daily basis for each of the top-three degree categories of the respondents. R was the second-most used for statistics and applied statistics, while SQL was second-most used for applied statistics.

**Table 9: Frequency of Statistical Programs/Software Use**

Question	Rarely or Never	Monthly	Weekly	Daily	Total
R	24.88%	21.89%	13.43%	39.80%	201
SAS	55.45%	7.43%	4.46%	32.67%	202
JMP	93.09%	4.26%	2.13%	0.53%	188
Minitab	97.89%	0.53%	1.05%	0.53%	190
SPSS	92.59%	6.35%	0.53%	0.53%	189
Python	58.46%	15.38%	9.74%	16.41%	195
Java	94.15%	4.79%	0.00%	1.06%	188
SQL	42.71%	15.10%	11.46%	30.73%	192
Tableau	78.65%	9.38%	5.73%	6.25%	192
Excel	12.50%	9.50%	25.00%	53.00%	200
Other	38.46%	7.69%	17.95%	35.90%	39

**Table 10: Percent of Respondents Using Programs/Software Packages Daily by Master's Discipline (Number of Respondents in Parentheses)**

	Applied Statistics (59)	Biostatistics (73)	General Statistics (39)
Excel	50.8	50.7	53.8
R	28.8%	42.5%	48.7%
SAS	20.3%	43.8%	25.6%
SQL	37.3%	23.3%	23.1%

Respondents were then asked to describe additional technical or nontechnical skills they perform on a weekly or daily basis. Of the 35 responses, the most frequently appearing skills were data visualization (6); data management, cleaning, or formatting (3); machine learning (3); mentoring students in statistics (3); and programming skills (2). Refer to the supplemental materials section online to see all responses.

## Students

For the graduates who were enrolled in a full-time degree program, 83 were in a doctorate program, 18 in a master's, and three in other programs. As shown in Figure 1, they were primarily studying statistics or biostatistics. Fifty-six of those in a doctorate program stayed in the same general field—statistics or biostatistics—as that of their master's degree, perhaps suggesting they were already enrolled in a doctoral program. Five of the respondents enrolled in a master's program were studying data science. The “other” categories of study were health economics and epidemiology, computational social science, mathematics, educational statistics, math finance, marketing, forest biometrics, bioinformatics, health, industrial engineering, and epidemiology.

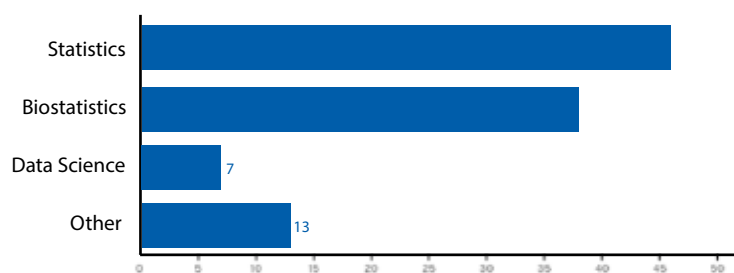


Figure 1: Field of study for master's graduates enrolled in full-time degree programs

## Reports on Master's Studies Experiences

Respondents were generally satisfied with their master's degree training. Eighty-seven percent of respondents reported they agreed or strongly agreed that their master's program prepared them to effectively analyze and interpret data critically using statistical models, with 46% strongly agreeing. Seventy-six percent agreed or strongly agreed their master's program prepared them to effectively communicate—both orally and in written form—results of statistical analyses to a variety of audiences, with 35% strongly agreeing.

Respondents were asked to comment on what they might do differently looking back at their master's education. The responses to this question varied, but one group of responses could be characterized as indicating a desire to have taken better advantage of the resources and educational opportunities available to them in the program:

- “I would take up more courses in applied statistics and data science.”

- “I would take a Bayesian class and learn more statistical techniques. Other than this, I am very satisfied.”

Another cluster of responses expressed wishing they had learned more related to coding, computer programming, and statistical/database software:

- “I would have done more programming in SAS and learned SQL and how to write macros.”
- “Do more coding learn more useful topics like machine learning algorithms.”

Finally, a number of respondents wished they had sought more experience within their industry of choice and real-world applications of their degree program:

- “I would have tried to analyze more ‘real’ [data sets] to learn how to better do that for future employment.”
- “More practice with mock real-life scenarios of statistical consultations.”

All the responses can be found in the supplemental materials online.

## Respondent Demographics

Of the 311 sharing gender, 48.2% are female, 50.5% male, and 1.3% prefer not to say. The median age of the respondents at the time of master's receipt was 27, and the average age was 29. For the 309 students providing citizenship status, 52% were US citizens, as shown in Table 11. For respondents who are not US citizens, 90 are from China; six from India; 10 from other Asian countries; eight from Africa; six from South America; and one or two from Australia, Europe, and North America. Respondents were not asked for race or ethnicity information.

Table 11: Citizenship Status of 309 Respondents

	%	Count
US citizen	52.43%	162
Non US-citizen, H1-B visa	3.56%	11
Non US-citizen, other temporary visa	29.45%	91
Non US-citizen, permanent resident status	6.15%	19
Non US-citizen, other	8.41%	26

For a comparison of how the respondent demographics of this survey compare with the overall population, we can compare the survey data with data from the National Center for Education Statistics (NCES) for the most recent year data is available (2017). [The ASA examines annually the NCES degree completion data and posts the statistics and biostatistics data at [bit.ly/StatsDegreeData](http://bit.ly/StatsDegreeData).]

There were approximately 4,000 statistics and biostatistics master's graduates in the US in 2017, so this survey had respondents from roughly 10% of the 2018 graduating class. The respondents gender makeup matches well with that of the 50% of the overall population. With statistics master's graduates outnumbering biostatistics master's graduates by more than a factor of four, biostatistics is overly represented by the respondents. US citizens and permanent residents are also over represented in this survey's respondents, since they have only accounted for 40% of the overall master's degrees in recent years.

For the 383 respondents providing the degree field for their master's, biostatistics was especially well represented, as shown in Table 12.

**Table 12: Master's Degree**

	%	Count
Biostatistics	36.03%	138
General statistics	29.77%	114
Applied statistics	27.42%	105
Mathematics, with a statistics emphasis	1.83%	7
Data science	1.57%	6

**Table 13: Bachelor's Degree Field**

<b>Mathematics</b>	24.13%	90
<b>Statistics</b>	21.18%	79
<b>Economics</b>	5.36%	20
<b>Biology</b>	4.83%	18
<b>Mathematics, with a statistics emphasis</b>	4.02%	15
<b>Biostatistics</b>	3.22%	12
<b>Finance</b>	2.95%	11
<b>Actuarial science</b>	2.68%	10
<b>Biotechnology</b>	2.41%	9
<b>Computer and information science</b>	1.88%	7
<b>Applied mathematics</b>	1.61%	6
<b>Chemistry</b>	1.61%	6
<b>Physics</b>	1.61%	6
<b>Psychology</b>	1.61%	6
<b>Electrical engineering</b>	1.34%	5
<b>Biomedical engineering</b>	1.07%	4

## Survey Basics and Logistics

The American Statistical Association contracted the Center for Evaluation and Assessment at the University of Iowa (CEA) to help develop and distribute the survey. Using the ASA's bachelor's survey as a template, CEA built the survey in Qualtrics in preparation for online distribution. The ASA provided a list of master's programs and contact information. CEA contacted these master's programs and provided them with links to the survey to be distributed to master's degree recipients.

In total, there were 463 respondents who indicated having earned a master's degree in statistics or a statistics-related field during the 2017–2018 academic year. Not all completed the entire survey.

About 211 universities with statistics and biostatistics departments across the US were contacted via email to participate in the survey. Of these universities/distinct campuses, 83 were represented in terms of respondents who reported having earned a master's degree in statistics or a statistics-related field during the 2017 – 2018 academic year.

**The supplemental materials listed below are available for download in the online version of this article at [magazine.amstat.org](http://magazine.amstat.org).**

- Questionnaire
- Participating Universities
- Job Titles
- Companies Employing Graduates
- Career Center Use
- What I Would Have Done Differently
- Advice for Current Students, Additional Comments
- Job Search Experiences
- Job Search Challenges
- Other Technical and Nontechnical Advice
- Other Experiences or Training
- Raw Data

Three-hundred-seventy-three respondents reported a remarkable 63 bachelor's degree fields, the most common being mathematics and statistics (see Table 13). Nearly 45% of the respondents had an undergraduate degree in a field other than mathematics and statistics.

The universities with the most graduates who participated in the survey were University of Michigan (24), Duke University (19), Texas A&M University (17), The George Washington University (16), Georgetown University (16), University of Kentucky (16), The University of North Carolina at Chapel Hill (16), Boston University (15), Carnegie Mellon University (14), and Columbia University (14).

## Summary

As was done for the bachelor's survey results the previous two years, departments represented by five or more respondents will receive department-specific reports. The ASA plans to repeat this survey every two years. Please send us your suggestions for the next survey. ■

# ASA DataFest™

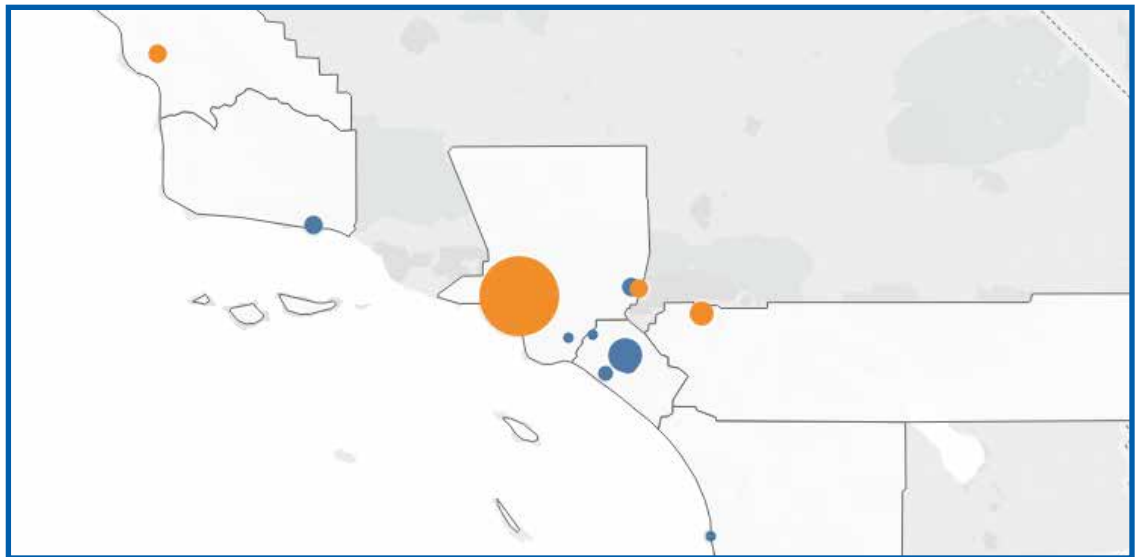
## in Southern California Attracts Hundreds

The southern California region played host to two ASA DataFests this spring. The first was at the University of California at Los Angeles (UCLA) April 5–7 and included more than 350 students from UCLA, the University of California at Riverside, University of Southern California, Pomona College, and Cal Poly San Luis Obispo (orange circles on the map). The second took place May 3–6 at Chapman University, which hosted 128 students from Chapman, Cal Poly Pomona, California State at Fullerton, California State at Long Beach, Orange Coast College, University of California at Irvine, University of California at San Diego, and University of California at Santa Barbara (blue circles on the map).

This year's data challenge came from Ming-Chang Tsai, a researcher at the Canadian Sports Institute. The data consisted of GPS and accelerometer records from every game played in the previous season by the Canadian National Women's Rugby 7 team, as well as data on daily training and medical reports.

The challenge issued was to comment on the role of fatigue on the team. The students took a variety of approaches. Many struggled with methods for using self-reported measures of such items as exertion, sleep quality, and mood with more objective medical measurements. Others chose to focus on particular players and examine the variability in their daily exertion and relationship with game play.

One of the main prizes in the Chapman University DataFest went to a team from a two-year college, which is a first. Team Memory Leak (Phuoc Do, Hector Elias, Jacob Leenerts, Ryuan Millett, and Naomi Valentin) from Orange Coast College took the Best Use of External Data. The Best Insight award at Chapman went to team git rekt (Natanael Alpay, Christina Berardi, Dylan Davis, Noah Ferrel, and Jennifer Prosinski) from Chapman University, and the Best Data Visualization award went to team Joint Distribution (Brett Galkowski, Eisah Jones, Jason Kahn, Satyam Tandon, and Shivan Vipani) from UC Irvine.



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ASA DataFest at the University of California at Los Angeles participants

Honorable mention for Best Insight at Chapman went to team Resonant Skunks (Nic Cordova, Max Haggard, Christopher Moore, and William Simmons) from Chapman University, and honorable mention for Best Data Visualization was awarded to team Deep Data (Ivy Gu, Brandon Newberg, Raymond Nguyen, Junlin Wang, and Hanwen Ye) from UC Irvine.

The Chapman judges chose to honor two additional teams for their outstanding work. Team *Top Quantile* (Anastasia Franio, Joseph Gadbois, Kristy Le, and Earl Zedd) from Cal State Long Beach were recognized for the Best Use of Statistical Software, and team *unDATAble* (Estaban Escobar, Ryan Flynn, Abram Garcia, Christine Hoogendyk, and Kevin Tsoi)—with students from both Chapman and Cal Poly Pomona—were recognized for Best Data Forensics.

The UCLA event was its largest yet, with more than 70 teams competing. Judging took place in two rounds. In the first, teams were randomly assigned to one of five rooms, and a panel of judges chose three teams from each room to promote to the final round. Fifteen teams then presented their findings a second time to a new panel of judges, who chose the finalists.

The prize for Best Insight went to the *Wild Cardinals* from UCLA (Marina Hu, Sarah Truax, Hunter Carlisle, Jonathan Chang, Devyn Fisher). Surprisingly, the members of *Wild Cardinals* had never met before DataFest, and yet functioned as a well-oiled machine. The coveted Best Visualization Award at UCLA went to team *Above Average* from Cal Poly San Luis Obispo (Nicole Hill, James Kao, Evan Shui, Jenna Landy, and Markelle Kelly). Judges awarded the Best Use of External Data prize to Pomona College's *Flock of SQLs* (Madelyn Andersen, Amy Watt, Connor Ford, Adam Rees, and Ethan Ashby). Many thought that if a prize had

been given for best team name, they would also have won that.

The UCLA judges awarded three Judges Choice awards to teams with exemplary work that didn't quite fit into the main award categories. These prizes went to team *Naive Baes* (Ambrish Parekh, Paul Boulos, Yifun Zhu, Qufei Wang, and Chelsea Lee) from USC, *The Wranglers* (Alexander Lao, Kyle Maxwell, Maxwell Blau, Charlie Liou, and Hanson Egbert) from Cal Poly San Luis Obispo, and team *99th Percentile* (Jiayu Lyu, Shiyu Ji, Yanghui Wang, Xinran Qian, and He (Iris) Yang) from UCLA.

The success of ASA DataFest depends greatly on its visiting “mentors,” who offer advice and wisdom and sometimes help students get out of ruts or debug code.

The UCLA event was organized by Linda Zanontian and the UCLA Stats Club DataFest committee, led by students Margaret Koulikova and Pashmeen Kaur. The Chapman event was organized by Michael Fahy and Madeline Bauer.

Supporters of ASA DataFest at UCLA included the UCLA Department of Statistics, UCLA Division of Physical Sciences, UCLA IS Associates, true[X], Beyond Yoga, Wolfram Language, Stickeryou.com, Subway, Brothers All Natural, Sticker Mule, and Red Bull. Supporters of the ASA DataFest at Chapman included QAD, Data Tree by First American, the Orange County/Long Beach ASA Chapter, Rogue Cloud, Chapman University Schmid College, Chapman University MLAT Lab, Concise, R Consortium, RStudio, Missing Variables, Monster Energy, and Essentia Water.

ASA DataFest is a national event held at multiple institutions throughout the United States, Canada, and Germany. This year, 41 sites hosted a DataFest, with an estimated 3,000 students participating. To learn more or get involved, visit [ww2.amstat.org/education/datafest](http://ww2.amstat.org/education/datafest). ■

# Large Attendance at African Conference, Women's Workshop

Barry D. Nussbaum

More than 200 scholars and students attended the Sixth African International Conference on Statistics in Adama, Ethiopia, in late May. The large attendance once again demonstrates the need and desire for advanced statistical research on this under-served continent.



The women's program attracted a full house.

The concept of the conference series started with Bimal Sinha and a small group of his colleague statisticians from the University of Maryland Baltimore County (UMBC). They envisioned teaming up with a cosponsoring university in Africa for local arrangements. Despite many hassles in arranging international conferences, the UMBC team took the attitude (or perhaps borrowed it from Nike) to "just do it." The resulting conferences have provided an opportunity for an African audience to listen to, mingle with, and learn from a distinguished group of international statisticians.

From a small initial conference in Senegal, the conference has grown annually as it has made its way through Ethiopia, Cameroon, South Africa, Botswana, and back to Ethiopia. Each year, the UMBC statisticians work with a university in Africa to coordinate all the logistics of the meeting. This

## A Tree Grows in Ethiopia



Arsi University in Asela, Ethiopia, was the cosponsoring university for the May 2019 Sixth African International Conference on Statistics. The conference garnered the personal interest of Duguma Debele, the university president. In fact, he proudly showed the invited international guests the new (under construction) university campus. Amidst the dirt, mud, and construction equipment, Debele had a big surprise: trees to be

permanently planted on campus in honor of the guests. As the ASA was a sponsor of the conference, there was indeed an ASA tree. In the photo are Debele and former ASA President Barry Nussbaum moments after the ASA tree was planted. The sign is cemented in place, so it is the ASA tree for the next 200 years or so.

year, Arsi University was the co-host. As a measure of their interest, Arsi's president, Duguma Debele, took a personal interest in the conference. He not only oversaw the arrangements, but personally attended sessions and had the distinguished invitees plant trees on the construction site of the expanded Arsi campus.

Achievers' Network." The idea for the workshop came from Debele in response to a request for volunteering opportunities during the conference by the spouses of many delegates. The workshop was coordinated and facilitated by Chetana Neerchal, senior accounting officer at the International Finance Corporation and a



African International Conference on Statistics attendees

Parallel to the conference, Arsi University hosted "A Workshop for Women Academics in Ethiopia: Empowering Women for Academic Leadership Through

spouse and regular attendee of the AIC series.

The three-hour workshop was inaugurated by Engedaye Eshete, president of the Ethiopian Women

Entrepreneurs Association. It was attended by more than 100 women academics (undergraduates, graduates, PhD students, professors, and a few administrative staff). The women speakers included four professors (one from Sri Lanka, one from the US, and two from Ethiopia), 1 PhD student (from Sudan/USA), and a psychologist (from a Kolkata NGO that combats women trafficking). Each presentation was followed by enthusiastic Q&As and a 20-minute session on speaking/presentation skills.



Duguma Debele, president of Arsi University, and Bimal Sinha, professor at the University of Maryland Baltimore County

In addition to providing technical talks, the conference set the stage for several African students to pursue graduate studies in the US, for faculty to arrange visiting stints at American universities, and for many to become involved in collaborative research projects. In fact, this year's UMBC coordinator, Yehenev Kifle, was originally a professor in Africa and is now on a tenure track at UMBC.

Of course, no conference would ignore local pleasures such as hand-roasted coffee freshly brewed in front of you at each meal.

In 2019, the ASA provided financial assistance for the conference, which enabled more students and educators to attend. Stay tuned for next year in Ghana! ■

## Nonclinical Biostatistics Conference a Venue for Presentation, Discussion

Steven Novick and John Kolassa, Conference Co-Chairs

One hundred thirty attendees converged on the Rutgers University campus in New Brunswick, New Jersey, to participate in the 2019 Nonclinical Biostatistics Conference June 17–19. Held for the sixth time, the biennial conference provided a venue for the presentation and discussion of scientific and statistical issues relevant to nonclinical biostatistics. Jointly organized by the ASA Biopharmaceutical Section and the Rutgers University Department of Statistics, the program featured 29 invited and contributed talks, 26 poster presenters, special sessions for graduate students, and keynote addresses delivered by ASA President Karen Kafadar and José Pinheiro, global head of statistical modeling and methodology at Janssen.

To kick off the conference, the following short courses were offered:

- An R Shiny Tutorial With Nonclinical Applications  
*Instructors: Max Kuhn and Phil Bowsher, RStudio*

- Getting It Right: Compositional Analysis of Biological Measurements  
*Instructors: Anthony Lonardo, Lonardo StatReg Associates, and Juan José Egozcue and Maribel Ortego, Universitat Politecnica de Catalunya*

The Best Nonclinical Biostatistics Paper Award was presented to Lingmin Zeng, Steven Novick, Binbing Yu, and Harry Yang for their 2019 Statistics in Biopharmaceutical Research paper, “General Framework for Equivalence Testing Over a Range of Linear Outcomes With CMC Applications.”

Two graduate students walked away with best poster awards, with first prize (\$250) going to Perceval Sondag and second prize (\$150) going to Yi Hua.

All the 2019 NCB conference oral presentations and posters are available electronically at <http://community.amstat.org/biop/events/ncb/index>. ■

### Biopharmaceutical Applied Statistics Symposium

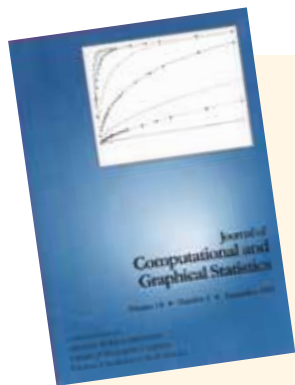
The 26th meeting of the Biopharmaceutical Applied Statistics Symposium (BASS XXVI) will be held October 21–24 at the Hilton Charlotte University Place in Charlotte, North Carolina. One-hour tutorials on diverse topics pertinent to the research, clinical development, and regulation of pharmaceuticals will be presented by speakers from academia, the pharmaceutical industry, and the US Food and Drug Administration (FDA).

BASS will also offer a poster session and short courses, and Sally Morton will deliver the keynote address. Other popular features of BASS include the reception dinner and FDA/industry/academia session.

BASS is a nonprofit entity established to support graduate studies in biostatistics. It has supported more than 50 master's or doctoral degree students in biostatistics.

For further information, visit [www.bassconference.org](http://www.bassconference.org) or contact the BASS registrar at [rewhitworth@gmail.com](mailto:rewhitworth@gmail.com) or BASS chair, Tony Segreti, at (919) 417-5181 or [segretia@bellsouth.net](mailto:segretia@bellsouth.net).





## JCGS Editor Talks About What Makes the Journal Dynamic

Tyler McCormick is an associate professor of statistics and sociology at the University of Washington. He is also a core faculty member of the Center for Statistics and the Social Sciences and a senior data science fellow at the eScience Institute.

### Where did you grow up and go to school, and what or who inspired you to be a statistician?

I grew up in North Carolina and did my undergraduate degree at Duke University. As an undergraduate, I enjoyed studying the social sciences, particularly sociology. It wasn't until I was about to graduate from Duke that I realized you could categorize my interests as "statistics." Fortunately, I had great advisers as an undergraduate who helped me come to this realization and encouraged me to pursue a statistics graduate program despite not having the typical preparation. I spent the summer after graduating at NC State University taking math courses before moving to the University of Connecticut for my master's degree and then to Columbia for my PhD.

I've been incredibly fortunate to have mentors in all of these places whose advice and support have been instrumental. My route into statistics was a bit different than for many people, which certainly presented challenges. On the other hand, though, it has helped me build collaborations and better understand the complexities of questions in social science domains.

### What sparked your interest in becoming editor of the *Journal of Computational and Graphical Statistics (JCGS)*?

I've always enjoyed reading articles in *JCGS*, and *JCGS* papers have been instrumental in my work on multiple occasions. I'm particularly drawn to the emphasis of *JCGS* on both substantial computational and/or graphical contributions and on contributions that are impactful in scientific and substantive questions. I'm humbled by the opportunity to serve our community as an editor and to work with such an amazing editorial board.

### What do you find is the most challenging part of being the *JCGS* editor?

We have to pass on many excellent papers, and that's very, very hard. The associate editors and I are always looking for opportunities to be constructive and give authors suggestions that we think will improve their work. Sometimes, despite our best efforts, we're not able to help an author get a paper to a place where it makes sense to move forward at *JCGS*.

This wasn't one of your questions, but I'd also like to mention the part of being the *JCGS* editor I've enjoyed the most. *JCGS* gets an amazing variety of papers, and being editor is an opportunity to engage deeply with papers that would otherwise be outside the scope of my normal reading list. The experience has broadened my understanding of our field and deepened my appreciation for the complexity of the problems our colleagues grapple with.

### Are there any changes you would like to implement for *JCGS*?

The journal has really flourished thanks to the previous editors. I owe a lot especially to Di Cook, the editor before me, both for making the transition into being editor really smooth and for the wonderful place the journal is in now. At the same time, our field is changing quickly, so it's important that we're always aware of how we maintain our reputation for publishing cutting-edge work that is valuable for substantive problems. One thing in particular that's a priority now is working with associate editors and referees to incorporate code and software into the review process, which was also a priority while Di was editor.

## Ten Have Symposium Focuses on Mental Health Care

The 8th Annual Thomas R. Ten Have Symposium on Statistics in Mental Health took place in New Haven, Connecticut, on May 31. It was hosted by Yale University.

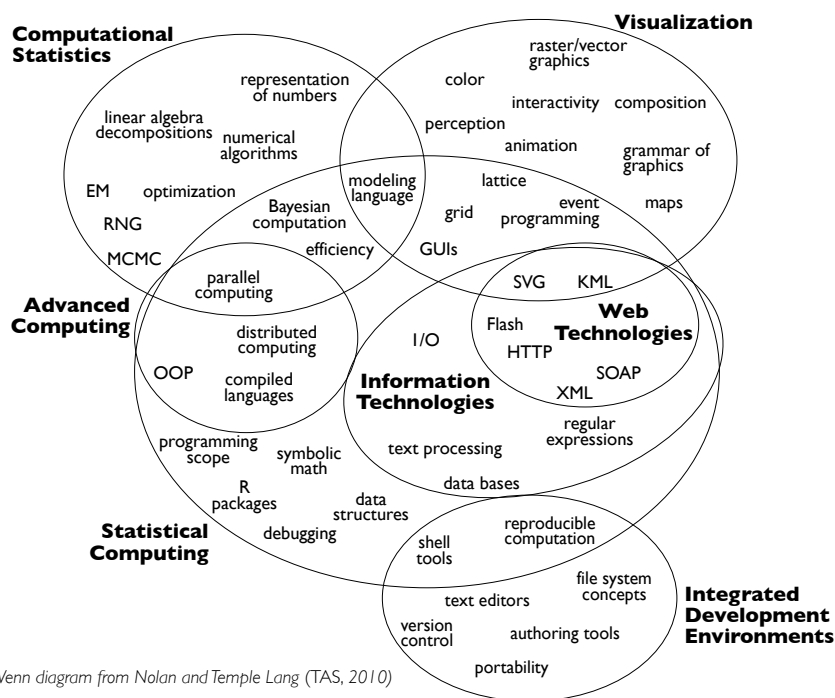
Attendees were inspired by the keynote presentation given by Adam Chekroud, a neuroscientist and founder of Spring Health, Inc. who discussed the role of data science and biostatistics in advancing mental health care delivery. After the talk, he and others noted that complementing clinical data with information about underlying mechanisms, such as neuroimaging and genomic data, might improve predictive performance.

Other invited presentations were given by Samrachana Adhikari from New York University, Kristin Linn from the University of Pennsylvania, Linda Valeri from Columbia University, and Chengan Du from Yale University. The presentations spanned topics in machine learning for prediction of rare outcomes, estimation of optimal dynamic treatment regimes, causal inference for multiple mediation analysis in schizophrenia trials, and factor analysis.

Throughout the day, several posters were presented by graduate students and post-docs motivated to improve mental health research and clinical decision-making from a variety of quantitative and clinical backgrounds. Dinner at the famous BAR restaurant in New Haven and lively discussion concluded the event.

This annual event was founded in 1999 by Thomas R. Ten Have and Eva Petkova as a forum for statisticians working in psychiatric research and, more generally, mental health research to discuss ideas about new statistical methodologies and challenges. Ten Have passed away in 2011. To honor his many statistical contributions to mental health research, the symposium was renamed the Thomas R. Ten Have Symposium on Statistics in Mental Health. ■





### Ten years after publication, what has changed? What still needs to change? What's needed to implement curricular shifts?

To further these discussions the *Journal of Statistics Education* is planning a set of themed papers to coincide with the tenth anniversary of the publication of "Computing in the Statistics Curriculum". We are inviting submissions that address the questions above and related questions.

#### TIMETABLE:

**August 1, 2019**

(call for submissions)

**October 1, 2019**

(request for submission of draft abstracts and working title to the following Google form <https://forms.gle/gygMiZV4H4iMjvaw7>)

**December 1, 2019**

(call for reviewers)

**December 15, 2019**

(deadline for submissions via the Journal of Statistics Education submission site <https://mc.manuscriptcentral.com/ujse>, please select the special issue "Computing in the Statistics and Data Science Curriculum")

**March 15, 2020**

(working deadline for initial editorial decisions)

**July, 2020**

(working deadline for final revisions)

**November, 2020**

(proposed publication date)

#### Questions?

Please contact the guest editors for the cluster of papers: **Johanna Hardin** (Pomona College) at [Jo.Hardin@pomona.edu](mailto:Jo.Hardin@pomona.edu) and **Nicholas Horton** (Amherst College) at [nhorton@amherst.edu](mailto:nhorton@amherst.edu) or **Jeffrey Witmer** (JSE Editor in Chief) at [jeff.witmer@oberlin.edu](mailto:jeff.witmer@oberlin.edu)

In 2020 it will have been 10 years since Nolan and Temple Lang's paper "Computing in the Statistics Curriculum" was published (*The American Statistician* (2010), 64(2):97-107).

In that influential paper Nolan and Temple Lang wrote:

- The nature of statistics is changing significantly with many opportunities to broaden the discipline and its impact on science and policy.
- To realize this potential, our curricula and educational culture must change. While there are opportunities for significant change in many dimensions, we focus more narrowly on computing and call for computing concepts to be integrated into the statistics curricula at all levels.
- Computational literacy and programming are as fundamental to statistical practice and research as mathematics.
- We advocate that our field needs to define statistical computing more broadly to include advancements in modern computing, beyond traditional numerical algorithms.
- Information technologies are increasingly important and should be added to the curriculum, as should the ability to reason about computational resources, work with large datasets, and perform computationally intensive tasks.
- We present an approach to teaching these topics in combination with scientific problems and modern statistical methods that focuses on ideas and skills for statistical inquiry and working with data.
- We outline the broad set of computational topics we might want students to encounter and offer ideas on how to teach them.
- We also discuss efforts to share pedagogical resources to help faculty teach this modern material (including supplemental materials).

The Nolan and Temple Lang paper has been highly cited and has prodded the statistics community to embrace computation as a foundation as important as mathematics.



STATtr@k



## Effecting Change With Statistics and Data: An Interview With Statistician Talithia Williams

**Talithia Williams** earned a BS in mathematics from Spelman College, master's degrees in mathematics from Howard University and statistics from Rice University, and a PhD in statistics from Rice University. As an associate professor of mathematics at Harvey Mudd College, she has made it her life's work to get people—students, parents, educators, and community members—more excited about the possibilities inherent in a STEM education. Learn more about her at [www.hmc.edu/mathematics/people/faculty/talithia-williams](http://www.hmc.edu/mathematics/people/faculty/talithia-williams).

An associate dean for research and experiential learning and an associate professor at Harvey Mudd College, Talithia's work doesn't stop at engaging students with statistics. She is the co-host of the new PBS series NOVA Wonders, in which researchers tackle questions about life and the cosmos with science. She recently gave a successful TED talk about how collecting and monitoring data (the beginning step to any statistical exercise) can help people make better personal health decisions. She also is developing statistical models with the World Health Organization to use statistics to predict the cataract surgical rate for countries in Africa. On top of all that, she has worked on research for NASA's Jet Propulsion Laboratory, NASA's Johnson Space Center, and the National Security Agency.

*ThisIsStatistics* had the opportunity to talk to Talithia about how statistics can positively effect change with students—in their daily lives and on a global level.

### How did you first become interested in statistics?

I was at Howard University working on a PhD in math and took mathematical statistics, followed by a biostatistics course. I thought that course was neat because we looked at the data of women who smoke during their pregnancy in correlation to low birth weight and low gestational age. That data led to the warning that is on cigarette labels, and I was amazed that you can collect data to effect big change and change policy. Just a few years ago, people didn't know the effects smoking had on infants, or the power statistics had to change policy. I started thinking more about statistics and data and transferred to a PhD in statistics at Rice University.

### Your TED talk is about using data to inform your own health and medical decisions. What statistics should we know about our own health?

I think it's helpful to know as much as we can about our health. There are many tools and resources we have to help us record that.

## How else can statistics impact our daily, personal lives?

Statistics is one of the few fields that can take us from the experiences of a single person to the collective experiences of a large group of people.

For example, if I tell you I know someone who got food poisoning from eating at a certain fast food restaurant, that might not mean much for you personally. But if I said that within the last month, 32% of people who ate at particular fast food restaurants in Atlanta, Georgia, got food poisoning, you have a better idea of how that illness may affect you. On a daily basis, we see statistics when forecasting the weather or predicting when and where hurricanes are likely to hit. With hurricanes, for example, emergency services rely on statistics to tell them when danger may occur.

## On a grander scale, how do statistics impact the world around us? Can you share an example from your own professional experience?

A lot of the work I'm doing in modeling cataracts for countries in Africa deals with how to eliminate this disease in the world. I can use statistics to determine the rate at which people develop cataracts over time, pinpointing where these people are and knowing which countries to give aid to through my statistics background. Any time we turn on the news, and the weather comes on for example, you're given a statistic that leads people to make decisions.

## How do you use statistics in your current work?

In addition to the cataract modeling, I've been looking at health data and how we can better quantify large amounts of data. I'm modeling large amounts of DNA data and I think the field is ripe because

so many companies and industries have massive amounts of information they can get their hands on. That's why my students and I help companies analyze and visualize data to make them more profitable and more effective. I've been reaching out to do more science communication with the public and to get the next generation excited about STEM and statistics. Statistics is a vehicle to share my passion for STEM with the next generation.

## What should every person know about statistics?

Statistics in general, and data in particular, allow us to collect information about the world around us and make sense of everyday facts and figures. For example, data show that around 90% of lung cancers are smoking related. While we can't say smoking causes lung cancer, we can use this information to make better decisions about our health.

## What do you think is the most important skill for someone studying statistics to have?

Perseverance and optimism. I think the field is exciting and, to make an impact in the field, you have to push through and persevere. I remember in grad school, I loved getting down and dirty with data. Other times, I had to push through the work to get to the data.

## What advice would you give students considering a statistics class?

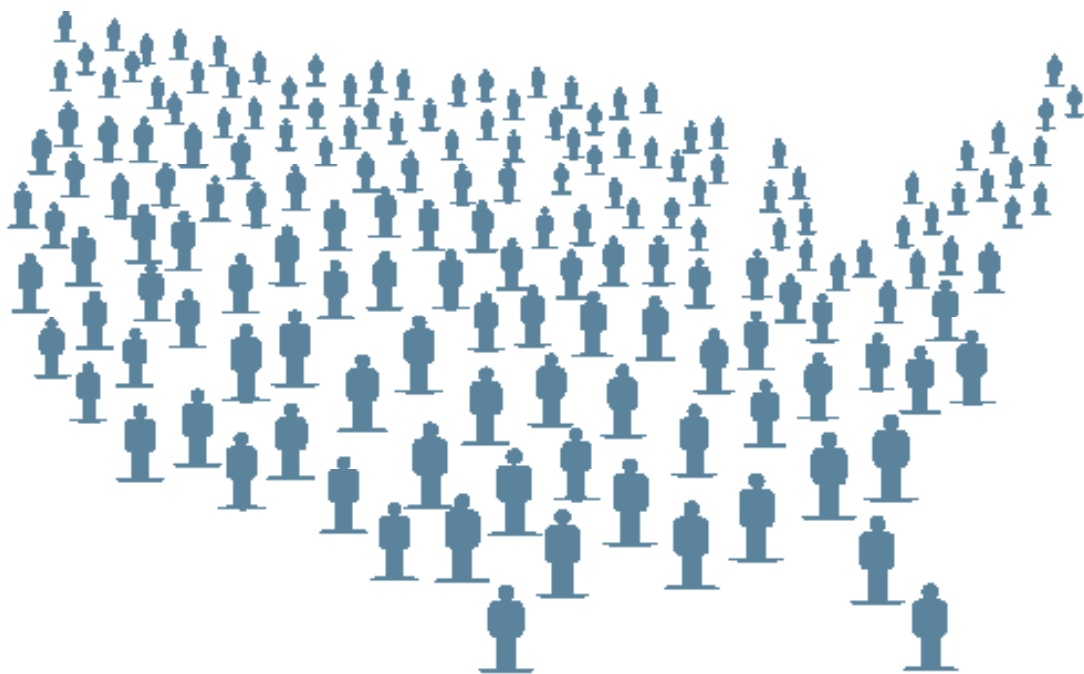
The same advice I give my students who take classes with me, which is to look at job opportunities and know that whoever can understand statistics and data science can go into any field they want to pursue and look at the data from that vantage point. That's why they should incorporate statistics courses into their graduate careers, because it will help them be better at whatever they choose to do. ■

### MORE ONLINE

Interested in learning more about what statisticians do and how statistics can help change the world? Visit [ThisIsStatistics](https://thisisstatistics.org/category/profile) at [thisisstatistics.org/category/profile](https://thisisstatistics.org/category/profile).

### EDITOR'S NOTE

This Q&A originally appeared on [ThisIsStatistics.org](https://thisisstatistics.org) on April 19, 2018.



With a PhD in statistical astrophysics, **David Corliss** leads a data science team at Fiat Chrysler. He serves on the steering committee for the Conference on Statistical Practice and is the founder of Peace-Work, a volunteer cooperative of statisticians and data scientists providing analytic support for charitable groups and applying statistical methods in issue-driven advocacy.

## STATS4GOOD

# Data for Good Goes to Washington

**D**ata for Good works through so many channels! Investigators at universities and other research institutions conduct and publish studies. Statisticians and data scientists in industry create products to make people's lives healthier and safer. Student projects make a difference today and build for the future. Professional staff at Data for Good organizations like Statistics Without Borders, DataKind, and HRDAG make a huge impact. Volunteers partner with all these organizations and work as individuals to make a difference with statistics.

Another area in which analytics has great potential for good is the government, as Data for Good workers partner with the people who make and implement programs and policies that affect everyone's lives. Legislators and their staffers, agency personnel, law enforcement, and the advocacy groups who work with them all need statistical support and guidance.

At the national level, the ASA is active in science policy and advocacy ([www.amstat.org/ASA/Science-](http://www.amstat.org/ASA/Science-Policy-and-Advocacy/home.aspx)

[Policy-and-Advocacy/home.aspx](http://www.amstat.org/ASA/Science-Policy-and-Advocacy/home.aspx)) on behalf of statistical science, analytics best practices, and the statistical community. Led by Steve Pierson, the ASA's director of science policy, the team maintains a nonpartisan voice for statistics and the statistical community, best practices in data and analytics, and data-driven decision-making in government. They provide resources for policymakers, keep ASA members up to date on policy developments affecting our work, and advocate for government research—especially through the National Institutes of Health and National Science Foundation.

ASA science and advocacy activities play a crucial role in driving understanding and adoption of sound statistical analysis, helping Data for Good make the greatest impact. As a leading advocate for best practices in data collection, management, and analysis, the policy and advocacy team serves as a lens, focusing the concerns of ASA members on issues of the day—such as proposals for moving federal agricultural research agencies out of the Washington, DC, area and adding a citizen question to the 2020 Census. In



### Statistical Action in the Public Square: Rules of the Road

- Learn which government officials affect your area of interest
- Meet with their staff and get to know them
- Ask how you can support them with statistics
- Cite reliable peer-reviewed research
- Never exaggerate statistical results

the latter case, the ASA teamed up with the American Sociological Association and Population Association of America to submit an amicus brief in the case. The Supreme Court recently decided the case by temporarily blocking the question, finding “the secretary’s failure to consider this evidence—that adding the question would harm the census count in the interest of obtaining less accurate citizenship data—provides a sufficient basis for setting the decision aside.”

Speaking as a scientist and *not* an attorney, reading the decision in the census citizenship question case gives cause for concern: It doesn’t appear to say anything about the *integrity* of the data being protected by law. When it comes to data products at least, there seems to be no legal protections against the government deliberately producing an adulterated set of goods, despite the financial harm to individuals that can result. Advocating for data quality from government agencies has become an important avenue for Data4Good activists.

More than statistics is needed to gain the maximum benefit for people and society. As scientists, we turn information into insight. As advocates, we must turn that insight into action. Among the nonmathematical “soft skills” often needed to make #data4good

more effective in the public square are effective writing and speaking and developing and leveraging relationships with elected officials, agency leaders, and their staffs. Becoming familiar with science advocacy activities from the ASA, the American Association for the Advancement of Science (AAAS), and many other organizations will provide resources needed to help further the use of science in government and support greater use of data-driven decision-making.

While ASA science policy and advocacy initiatives do much at the national level and in Washington, DC, state and local government have the same needs for careful research and statistical support in service to peoples’ needs. Working locally is also a really good way to get started and learn the process. County health departments need local breakdowns of larger studies. Local schools have the best local data and appreciate the application of statistics to find data-driven solutions but often lack the statistical resources needed to turn their data into solutions. Local and regional charities, community service organizations, social services agencies, and faith-based groups often partner with local government to meet needs in the community. Statistical skills are desperately needed to identify needs, reach out to people, and make tiny budgets do the most good. Start where you already have connections and ask how Data for Good can have the greatest impact in the community.

One interesting new opportunity is the result of the recent Supreme Court ruling on partisan gerrymandering, which found the judiciary cannot decide these issues. This is likely to further expand state-level efforts to take action. No gerrymandering happens without statistics, and so it is incumbent upon the entire statistical community to seek to use statistics to set things right. Going forward, this could be a crucial area for Data for Good.

When working on Data for Good projects in the public square, be sure to do your homework first. Find out which elected officials and agency leaders are active on the particular issue you want to address. By learning to partner with government, social service, community organizations, and other researchers, we can do even more to make the benefits of Data for Good a reality. ■



*The International Conference on Health Policy Statistics (ICHPS) has played a vital role in the dissemination of statistical methods in health policy and health services research throughout the past 20 years. In preparation for the next conference, which will take place in January 2020, we're running a series of interviews and articles about previous Health Policy Statistics Section award winners.*

## An Interview With Constantine Gatsonis

Christopher H. Schmid, Professor and Chair of Biostatistics, Brown University

Constantine Gatsonis, the Henry Ledyard Professor of Biostatistics and director of the Center for Statistical Sciences at Brown University School of Public Health, was awarded the 2015 Long-Term Excellence Award from the

Health Policy Statistics Section during the 11th International Conference on Health Policy Statistics (ICHPS) held in Providence, Rhode Island. This is a summary of an interview with his Brown colleague Christopher Schmid that appeared in *Health Services and Outcomes Research Methodology* in 2016.

Constantine was born in Velanidia Kozanis—a small village in Macedonia, Greece—and came to the US to study first at Union College and then Princeton, where he focused on mathematics and graduated in 1976. He then completed a PhD in mathematical statistics at Cornell University in 1981, writing his dissertation on decision theory. While at Cornell, Constantine became involved in statistical applications through consultations with researchers from the agricultural school and participated in the Seminar of Bayesian Inference, organized and run by Arnold Zellner through the National Bureau of Econometric Research. Connections made through this seminar with Rob Kass, Jim Hodges, and Nozer Singpurwalla and through a two-year visiting professorship at Carnegie Mellon led to the popular Case Studies in Bayesian Statistics meetings that took place at Carnegie Mellon in the 1990s and produced a series of published proceedings. These demonstrated the power of solving complex problems with Bayesian methods that flowed from fundamental advances in computation arising from new techniques such as posterior approximation and Markov Chain Monte Carlo.

Following academic appointments at Rutgers and the University of Massachusetts and a growing interest in applied statistics stimulated through work on the analysis of data from longitudinal studies of childhood depression with Marika Kovacs in Pittsburgh,

Constantine moved to Harvard to help start the department of health care policy in 1988. He wrote several influential papers while there, applying Bayesian hierarchical models in health services research studying variations in utilization, outcomes, and quality of health care. A 1997 paper in the *Journal of the American Statistical Association* with Sharon-Lise Normand and Mark Glickman established a new approach to medical provider profiling that augmented risk adjustment with methods for identifying aberrant providers through posterior predictions.

At this time, Constantine also worked with Mike Daniels to develop ordinal hierarchical models for analyzing studies of diagnostic accuracy. This enabled simultaneous modeling of location and scale parameters, accounted for clustering among readers and institutions, and incorporated external information about parameters such as disease prevalence through prior distributions. Constantine also started collaborating with Harvard faculty such as Fred Mosteller, Art Dempster, and Tom Chalmers on analyses of Medicare claims data and meta-analysis using the hierarchical modeling techniques he was pioneering. This led to methods for constructing hierarchical summary ROC curves for diagnostic tests through a series of papers with his Harvard post-doc, Carolyn Rutter, between 1995 and 2001 and to a seminal 1994 methods paper for meta-analysis of diagnostic tests led by Les Irwig, who was visiting Harvard. Through Irwig, Constantine became involved with the Cochrane Collaboration and convened a working group that developed a manual and template for conducting meta-analysis of diagnostic test studies housed in the well-known Cochrane Library. While at Harvard, Constantine also helped start the Section on Health Policy Statistics for the

ASA, serving as its first chair and co-chairing the first ICHPS, held in Boston in 1995. This led to founding the journal *Health Services and Outcomes Research Methods*, which Constantine edited for many years.

In 1995, he left Harvard to found the Center for Statistical Sciences (CSS) at Brown and start a track that later became a section in biostatistics within the department of community health in the medical school. Students soon began arriving, and the first PhD was awarded in 2005. In 2011, biostatistics became a department and, in 2013, became one of the four founding departments of the school of public health under Constantine's leadership. It serves about 60 graduate students today and is the home for a growing undergraduate major in statistics.

Almost since its beginning, the major research program at CSS has been the data coordinating center for the American College of Radiology Imaging Network (ACRIN), which eventually merged with the Eastern Cooperative Oncology Group to form ECOG-ACRIN. Constantine serves as the group statistician and leads the analysis of its NCI-funded multi-center clinical studies. These studies involve large-scale clinical trials to evaluate the efficacy of diagnostic screening tests, as well as health services investigations of their use and cost-effectiveness. Influential studies include DMIST, which established the superiority of digital mammography as compared to plain film mammography; NLST, which established that screening for early detection of lung cancer reduced overall mortality and was cost-effective; and TMIST, which is assessing the impact of tomosynthesis—three-dimensional mammography—in 165,000 women.

Recently, the center has branched out to diagnostic brain

imaging in the IDEAS study, which is looking at the impact on clinical care of testing for amyloid plaques in patients with mild cognitive impairment using a registry linked to Medicare claims data. IDEAS is also comparing health care use outcomes between those who had the test and a control group of similar patients without the test constructed from Medicare claims data. The control group is derived using sophisticated matching algorithms developed by Brown Biostatistics Professor Roe Gutman and department students.

In addition to his work at Brown, Constantine has chaired the Committee on Applied and Theoretical Statistics of the National Academy of Sciences and served on the Committee on National Statistics. He co-chaired a National Research Council committee that produced an influential 2009 report on the major scientific and organizational problems facing forensic science. It found a lack of conclusive evidence about the accuracy of many common criminal investigative tests such as the analysis of fingerprints, tire marks, ballistics, and bites. It also documented excessive variation in the practice of forensics across the US due to different rules, requirements, and qualifications. The report led to increased research funding for forensic science and spurred interest in the problems among statisticians. Constantine also served on the committee that defined comparative effectiveness research and recommended the formation of the Patient-Centered Outcomes Research Institute (PCORI). He later chaired the group that developed PCORI's guidelines for evaluating diagnostic tests.

Nowadays, Constantine continues his work in diagnostic screening and its connections to the analysis of biomarkers and medical images but focuses on the application of

### Key Publications of Constantine Gatsonis

C.A. Gatsonis. 1995. Random effects models for diagnostic test accuracy. *Academic Radiology* 2 S14–S21.

C.A. Gatsonis; Normand, S.L.; Liu, C.; and Morris, C. 1993. Geographic variation of procedure utilization: A hierarchical approach. *Medical Care* YS54–YS59.

Institute of Medicine. 2009. *Initial national priorities for comparative effectiveness research*. National Academies Press, Washington, DC.

L. Irwig; Tosteson, A.; Gatsonis, C.A.; Lau, J.; Colditz, G.; Chalmers, T.C.; and Mosteller, F. 1994. Guidelines for meta-analyses evaluating diagnostic tests. *Annals of Internal Medicine* 120, 667–676.

National Lung Screening Trial Research Team. 2011. Reduced lung cancer mortality with low-dose computed tomographic screening. *New England Journal of Medicine* 365(5), 395–409.

National Research Council. 2009. *Strengthening forensic science in the United States: A path forward*.

S.L. Normand; Glickman, M.; and Gatsonis, C.A. 1997. Statistical methods for profiling providers of medical care. Issues and applications. *Journal of the American Statistical Association* 92, 803–814.

E.D. Pisano; Gatsonis, C.A.; Hendrick, E., et al. 2005. Diagnostic performance of digital versus film mammography for breast-cancer screening. *New England Journal of Medicine* 353, 1773–1783.

C.M. Rutter and Gatsonis, C.A. 1995. Regression methods for meta-analysis of diagnostic tests. *Academic Radiology* 2, S48–S56.

C.M. Rutter and Gatsonis, C.A. 2001. A hierarchical regression approach to meta-analysis of diagnostic test accuracy evaluations. *Statistics in Medicine* 20, 2865–2884.

modern methods for big data and electronic health records in the context of causal inference. Though no longer chair of the biostatistics department at Brown, he is still focused on its role as a driving force in health data science and its close connections to health policy. ■





SDSS attendees participate in the 2019 Data Challenge.



**Kelly McConville** is an assistant professor of statistics at Reed College and was program chair for the 2019 Symposium on Data Science and Statistics. She is a survey statistician who collaborates with the US Forest Inventory and Analysis Program and the US Bureau of Labor Statistics. At Reed, she teaches a variety of statistics and data science courses.

## Diverse Voices Heard at SDSS 2019

Kelly McConville

I left SDSS 2019 excited, invigorated, and just a little bit tired. And as I reflect on my experience at SDSS, many of the usual reasons I love conferences—informative sessions and chances to make and strengthen connections—also hold true. But instead of ruminating on the usual gems, I want to focus this reflection article on the pieces of SDSS that make it unique.

For starters, I was delighted by the level of engagement by conference participants. If you think I am being hyperbolic, please understand that this program chair's reoccurring, pre-conference nightmare included a sparsely filled room and the deafening sound of silence when the session chair asked, "Any questions for the speaker?" Fortunately, participant involvement exceeded my expectations. Beyond jam-packed sessions, 34 people in 11 teams competed in the Data Challenge, 27 mentors and 27 mentees interacted at the 8 a.m. speed mentoring session, large crowds participated in the optional lunch meet-ups, and e-poster presenters found themselves with an eager audience. As poster presenter (and first-time conference goer) Miranda Rintoul put it, "During my poster presentation, I was engaged in so many back-to-back interesting conversations about my work that



SDSS attendees, including ASA President-Elect Wendy Martinez, participate in a speed mentoring session.

I had to quickly sneak off and grab a glass of water before I lost my voice!"

I was quite pleased my nightmare did not reflect reality. Instead of hearing crickets at the end of sessions, I saw audience members raising their hands and asking thoughtful questions, so much so that they often lined up at the end of sessions to continue talking with speakers.

Another unique feature of SDSS is the diversity of speakers. If you look at the 2019 conference





Kali Lacy gives a poster presentation at SDSS 2019.



SDSS program chair Kelly McConville speaks before a keynote presentation.

program, you will find speakers who identify as statisticians, software engineers, biostatisticians, computer scientists, mathematicians, data scientists, computational folklorists (okay, maybe only one of those), astronomers, and I could keep going but I think you get the idea. Hearing from people from a variety of disciplines and career paths helps us see data and how to learn from data in compelling new ways. It can also remind us of the similarities that exist across fields and help us forge new, interesting collaborations.

To this end, I would be remiss if I didn't acknowledge the hard work of the program committee in putting together such a vibrant program that really showcased the diversity of folks thinking about data.

If you missed the symposium or attended but want to revisit a talk, you are in luck. You can find many of presentations in the online program at [ww2.amstat.org/meetings/sdss/2019/onlineprogram](http://ww2.amstat.org/meetings/sdss/2019/onlineprogram). Also, Zhi Yang, one of our participants, put together a GitHub repo at <https://github.com/zhiyyang/SDSS2019> that links to many of the slides and conference materials. I know I will be coming back to these materials when my data work needs some inspiration.

Planning for SDSS 2020 is already well underway. Next year's conference will take place in Pittsburgh, Pennsylvania, from June 3–6. To receive conference updates, visit [ww2.amstat.org/meetings/sdss/2020](http://ww2.amstat.org/meetings/sdss/2020). ■

## SDSS Conference Committee Members

**Kelly McConville (Program Chair)**, Reed College

**Silas Bergen**, Winona State University

**Mine Çetinkaya-Rundel**, Duke University and RStudio

**Eric Chi**, North Carolina State University

**Jim Harner**, West Virginia University

**Stephanie Hicks**, The Johns Hopkins University

**David Hunter**, The Pennsylvania State University

**Alicia Johnson**, Macalester College

**Albert Kim**, Smith College

**Heather Kitada**, Reed College

**Stas Kolenikov**, Abt Associates

**Thomas Lee**, University of California, Davis

**Amelia McNamara**, University of St. Thomas

**Miles Ott**, Smith College

**Brad Price**, West Virginia University

**Julia Silge**, Stack Overflow

**Dennis Sun**, Cal Poly, San Luis Obispo and Google

**Raymond Wong**, Texas A&M University

**Kara Woo**, Sage Bionetworks



# ASA 2019 Statistics Poster and Project Competitions WINNERS

**The American Statistical Association is pleased to announce the winners of the 2019 ASA Data Visualization Poster Competition and Statistics Project Competition.**

First-place winners received \$300, a plaque, a plaque for their school, and grade-appropriate graphing calculators for the students and advisers provided by Texas Instruments. Second-place winners received \$200 and a plaque; third-place winners received \$100 and a plaque; and honorable mentions received plaques.

The poster and project competitions are directed by the ASA/NCTM Joint Committee on Curriculum in Statistics and Probability. The 2019 ASA Data Visualization Poster Competition leader is Jennifer Broatch (Arizona State University). Nathan Kidwell (Oaxaca Christian School in Oaxaca, Mexico) is serving as the head project competition leader, and Lynn Kidwell is serving as the associate project competition leader (Instituto Lingüístico de Verano in Oaxaca, Mexico).

K–12 posters are due every year on April 1. Projects (written reports) for grades 7–12 are due every year on June 1. Visit the competitions web page at [www.amstat.org/education/posterprojects](http://www.amstat.org/education/posterprojects) for information—including previous winners, entry forms, instructional webinars, and the rubrics used for judging the posters and projects.

## 2019 Regional Poster Competition Leaders

Students outside the regional competition areas submit their posters directly to the ASA office, which are then separately judged by the Washington Statistical Society as part of the Other Region. The best posters from each region are sent to the national judging. Information about regional poster competitions and winners is available on the individual regional poster competition websites.

### Connecticut Chapter Statistical Poster Competition

**Zhou Fan**, Yale University  
[bit.ly/CTChapterASA](https://bit.ly/CTChapterASA)

### Kansas/Western Missouri Statistics Poster Contest

**Ananda Jayawardhana**, Pittsburg State University  
[bit.ly/PittStatePosterComp](https://bit.ly/PittStatePosterComp)

### Michigan Statistics Poster Competition

**Dan Adrian**, Grand Valley State University  
<https://bit.ly/2Nf6ZC6>

### Nevada K–12 Statistics Poster Competition

**Tia Price**, Durango High School  
<http://bit.ly/2YpQGLW>

### Ohio Statistics Poster Competition

**Jerry Moreno**, John Carroll University  
[bit.ly/OHPosterComp](https://bit.ly/OHPosterComp)

### Pennsylvania Statistics Poster Competition

**Pete Skoner**, Saint Francis University  
<https://bit.ly/2Lh0RJb>

### Pullman, Washington Statistics Poster Competition

**Dean Johnson**, Washington State University  
[dean\\_johnson@wsu.edu](mailto:dean_johnson@wsu.edu)

### Washington Statistical Society Poster Competition (DC Metro Area)

**Elizabeth Petraglia**, Westat  
<https://bit.ly/2LbGIHw>

### ASA National Poster Competition

**Leader: Jennifer Broatch**, Arizona State University

**Contact: Rebecca Nichols**, ASA Director of Education, [rebecca@amstat.org](mailto:rebecca@amstat.org)  
<https://bit.ly/2LbGIHw>

### GET INVOLVED

For information about how you can start a regional poster competition or mentor students in your area, see the article appearing in the July 2011 issue of *Amstat News* at <https://bit.ly/2NN6TCZ>.

You can download a flier about the ASA poster and project competitions and other K–12 statistics education programs and resources to share with your local schools at <https://bit.ly/2zCC9S4>.

For additional information or questions regarding how to get involved in the poster or project competitions, contact ASA Director of Education Rebecca Nichols at [rebecca@amstat.org](mailto:rebecca@amstat.org).

## 2019 National Project Competition Winners

Each year, the project competition attracts a variety of submissions in which students from grades 7–12 conduct creative studies. The submission deadline for the project competition is June 1 to enable participation from high-school students who may have been preparing for the AP Statistics exam administered in mid-May. The statistical project competition is especially useful for these students because it provides them with opportunities to apply the statistical skills they have acquired throughout the school year to solve real-world problems of interest to them.

Results of the project competition, as well as a list of the judges, can be found in the August online edition of *Amstat News* at <http://magazine.amstat.org>.

# Grades K-3

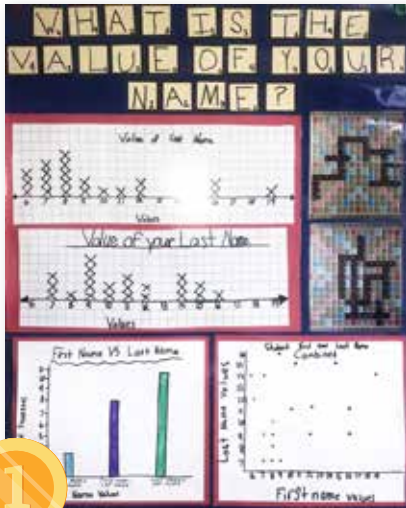
**FIRST PLACE**  
**Mrs. Spicuzza's Third-Grade Class**  
*"What Is the Value of Your Name?"*  
 Timmons Elementary School  
 Chagrin Falls, Ohio

**SECOND PLACE**  
**Michaela Hansen**  
*"Vehicles on My Block"*  
 Chansen Academy  
 Carson City, Nevada

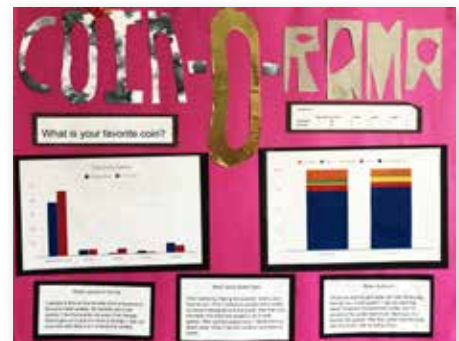
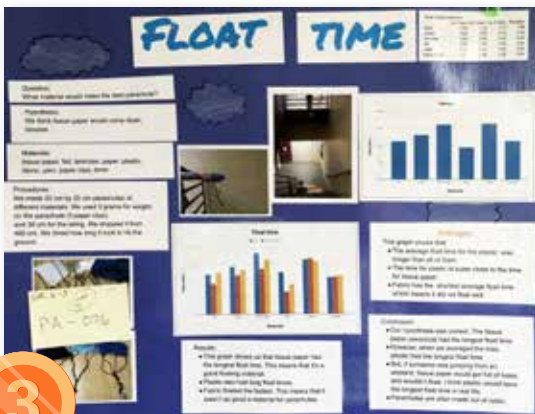
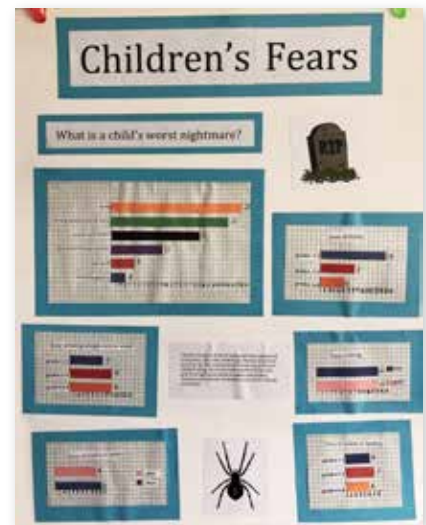
**THIRD PLACE**  
**Zander Bogust & Maxwell Lloyd**  
*"Float Time"*  
 Jacksonwald Elementary School  
 Reading, Pennsylvania

**HONORABLE MENTION**  
**George Lowry**  
*"Coin-O-Rama"*  
 The Meadows School - Lower School  
 Las Vegas, Nevada

**HONORABLE MENTION**  
**Zachariah Amador Ramos**  
*"Children's Fears"*  
 St. Mary School  
 Elyria, Ohio



## HONORABLE MENTIONS





# Grades 4-6

## 1 FIRST PLACE

**Paavani Tewari**  
*"How Does My Body Temperature Vary?"*  
 Uriah H. Lawton Elementary School  
 Ann Arbor, Michigan

## 2 SECOND PLACE

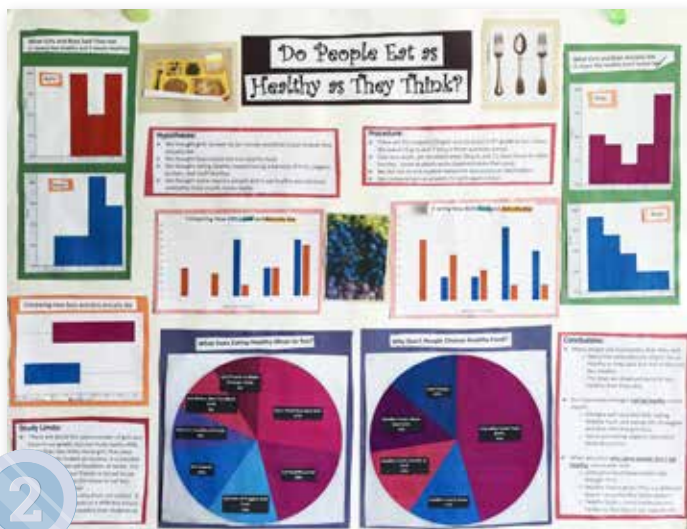
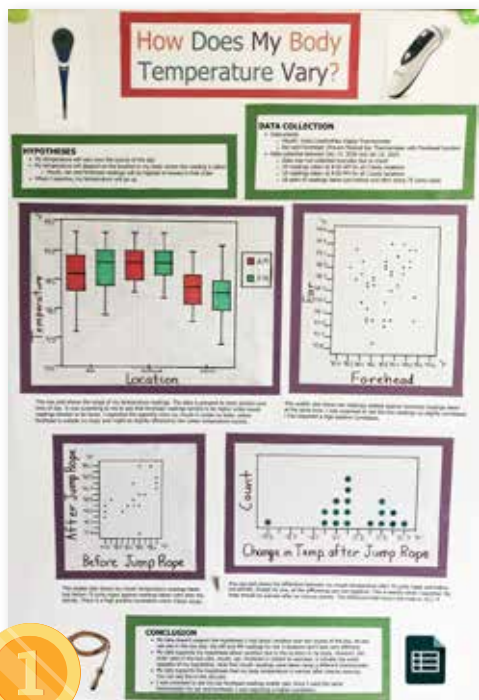
**Michelle Harrow, Rebecca Harrow, Bryn Gordon, and Hayden Makuch**  
*"Do People Eat as Healthy as They Think?"*  
 Hawken School  
 Gates Mills, Ohio

## 3 THIRD PLACE

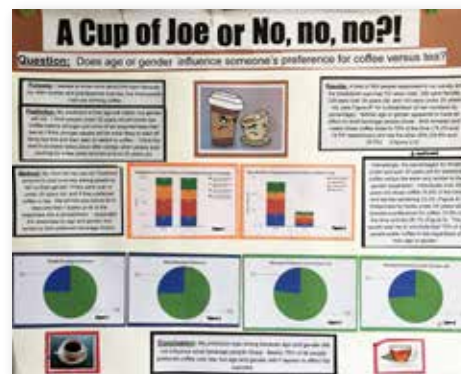
**Xander Sehgal**  
*"Are You Wearing a Helmet?"*  
 Basis PCS  
 Washington, DC

## Honorable Mention

**Calvin Hoffman**  
*"Cup of Joe or No, No, No!"*  
 Rydal Elementary School  
 Huntingdon Valley, Pennsylvania



## HONORABLE MENTION



# Grades 7-9



## FIRST PLACE

**Gabriela Montero**  
*"Shopping Online"*  
 Hawken School  
 Gates Mills, Ohio



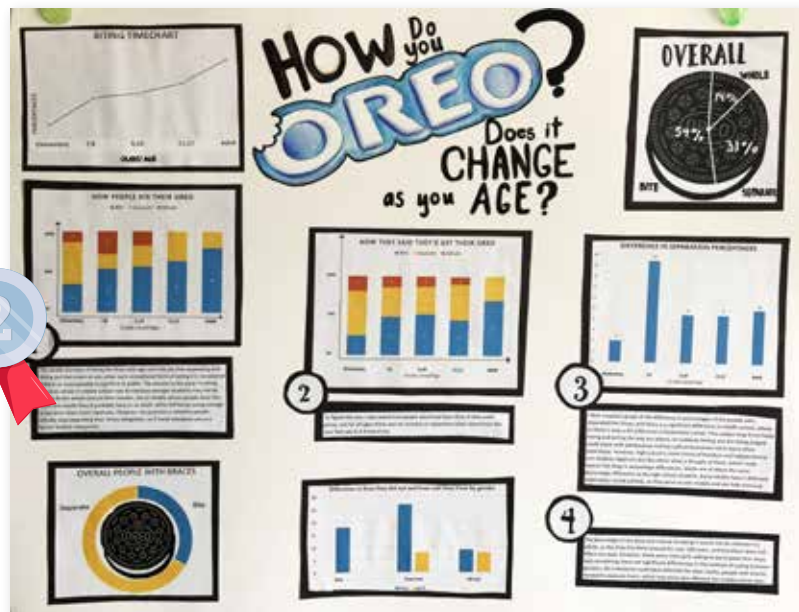
## SECOND PLACE

**Milena Fernsle**  
*"How Do You Oreo?"*  
 Hawken School  
 Gates Mills, Ohio



## THIRD PLACE

**Nandini Bhattaram**  
*"Soda Consumption: A Survey Among Middle-Schoolers"*  
 Mayfield Woods Middle School  
 Columbia, Maryland



**HONORABLE MENTION**

**Rachel Snyder**

*"Video Violence"*

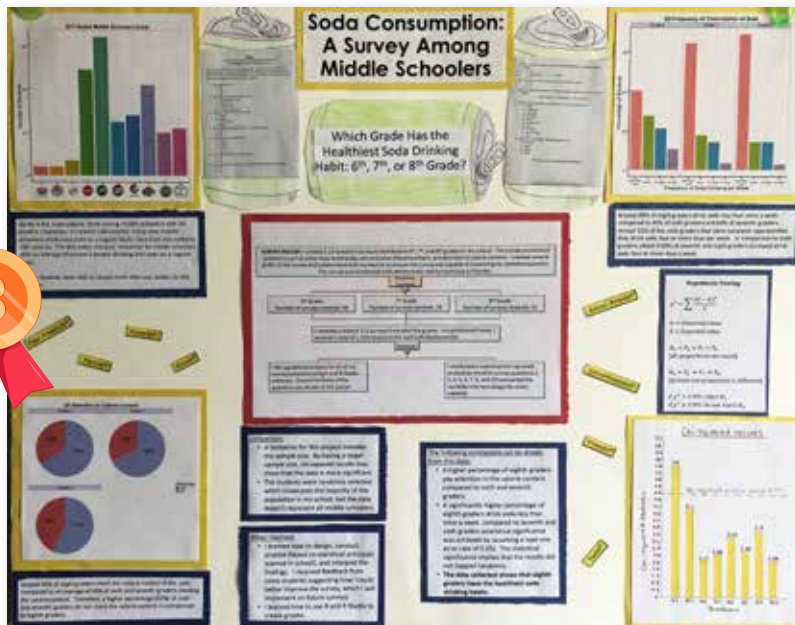
Greater Latrobe Junior High School  
Latrobe, Pennsylvania

**HONORABLE MENTION**

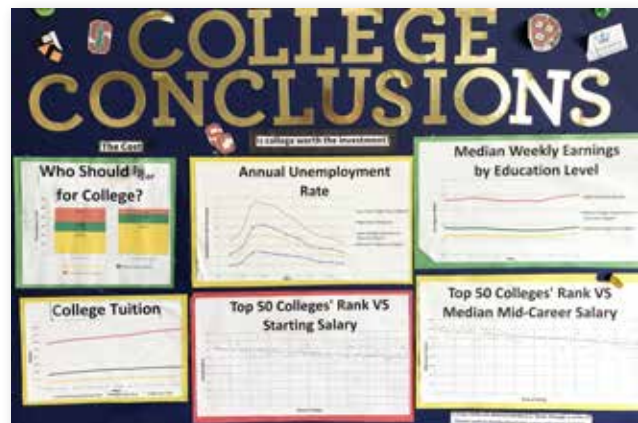
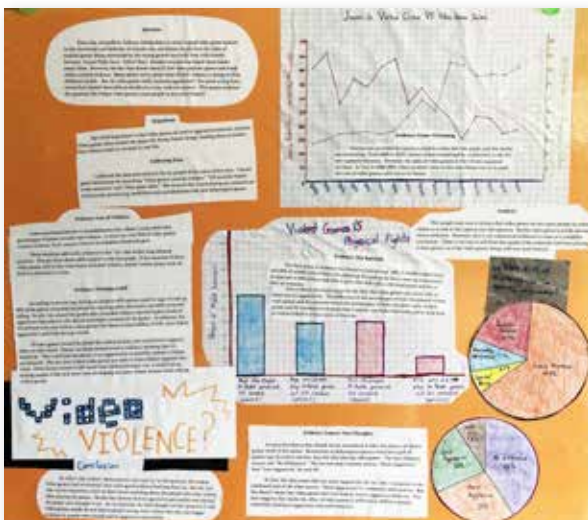
**Darena Nguyen**

*"College Conclusions"*

Hyde Park Middle School  
Las Vegas, Nevada



**HONORABLE MENTIONS**





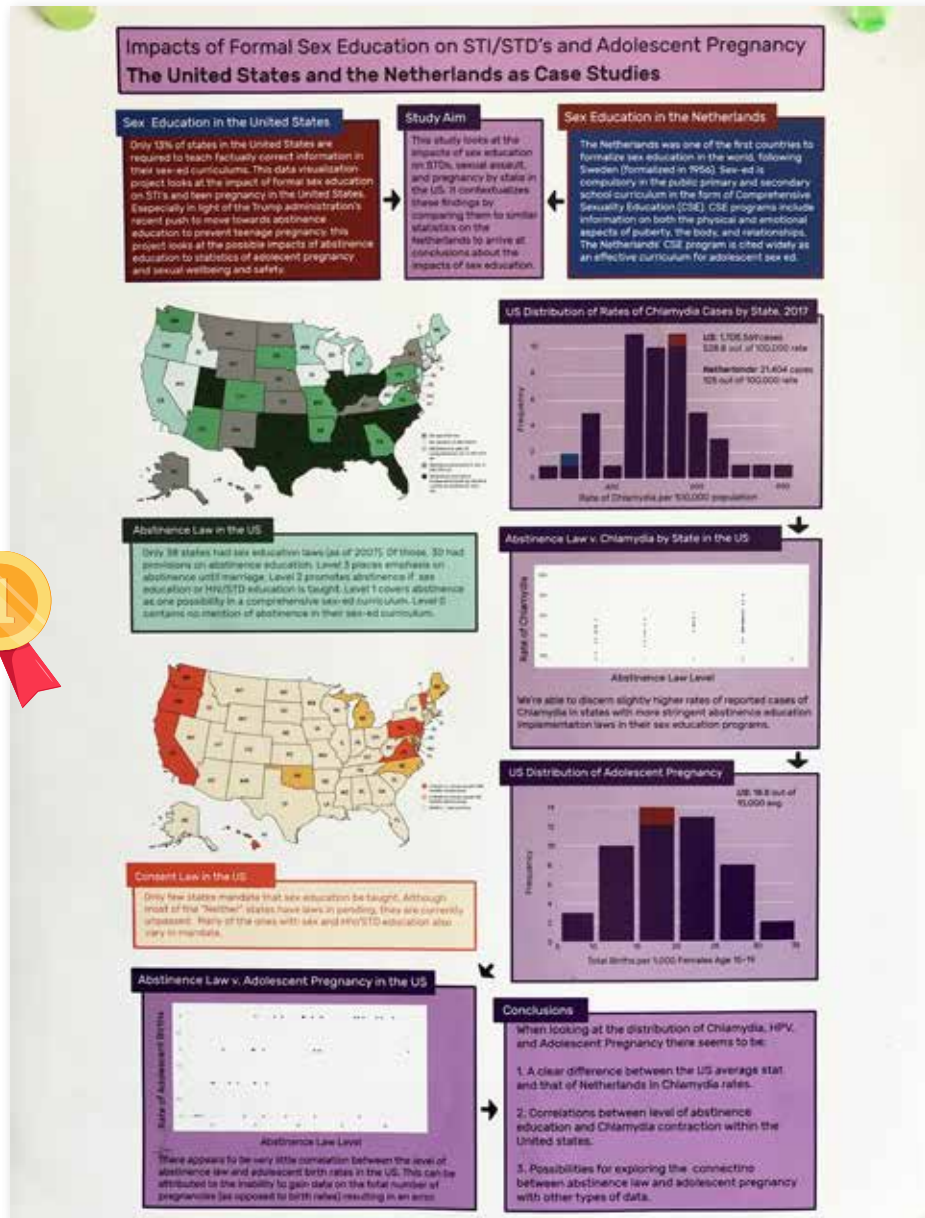
# Grades 10-12

**FIRST PLACE**

**Susan Lee**

*"Impacts of Formal Sex Education on STI/STDs and Adolescent Pregnancy"*

Phillips Academy  
Andover, Massachusetts







**SECOND PLACE**

**Cecelia Tompkins and Margaret Grant**

*"Is Political Party Inherited?"*

St. Joseph Academy  
Cleveland, Ohio

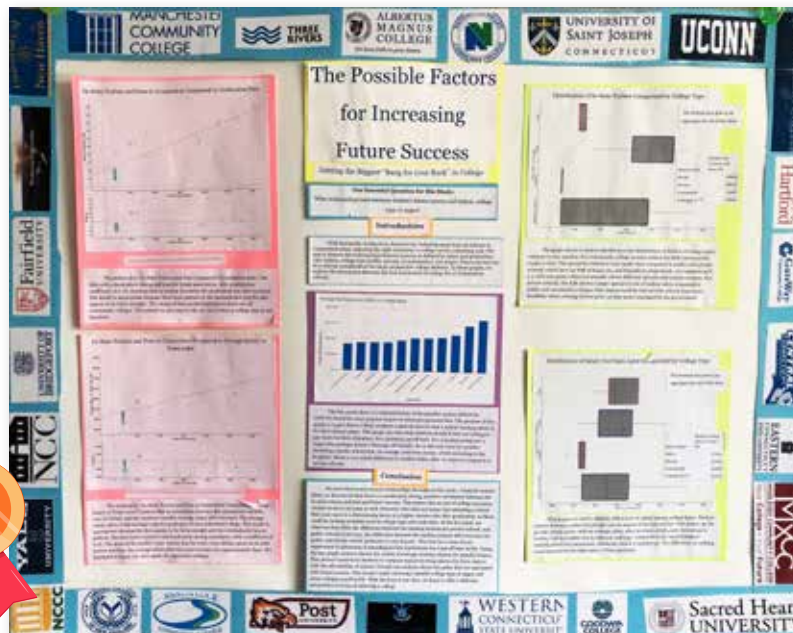
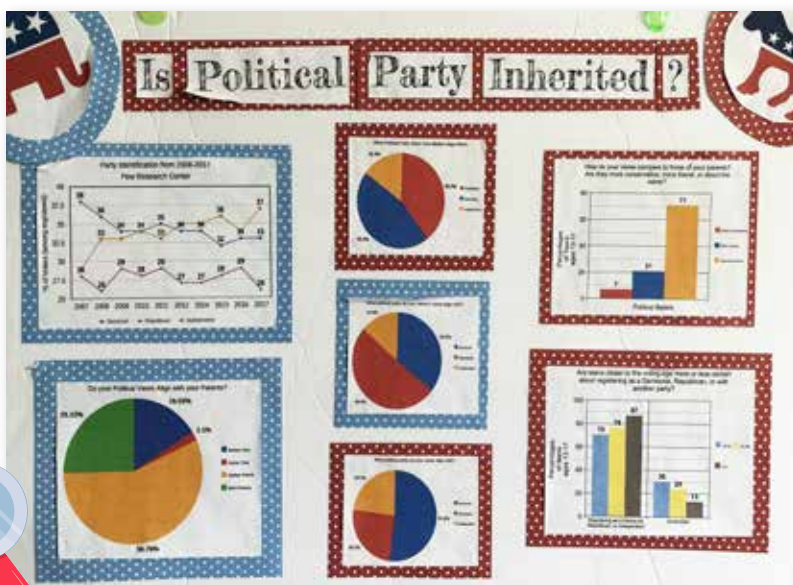


**THIRD PLACE**

**Abigail Bar, Kelley Gifford, and Amealia Maynard**

*"The Possible Factors for Increasing Future Success"*

Edwin O. Smith High School  
Storrs, Connecticut



American Statistical Association member **Laura Hildreth** joined the Institute for Defense Analyses (IDA) as a research staff member in the IDA Cost Analysis and Research Division. Hildreth earned her bachelor's degree in economics and statistics from the University of Minnesota, Morris, in 2006. She earned her master's degree in applied economics from the University of Minnesota, Twin Cities, in 2007 and her PhD in statistics from Iowa State University in 2013.

IDA is a not-for-profit corporation that operates three federally funded research and development centers in the public interest. IDA answers the most challenging US security and science policy questions with objective analysis leveraging extraordinary scientific, technical, and analytic expertise. ■

## Obituary

### Barbara Foley Wilson

Barbara Foley Wilson died peacefully, surrounded by her loving family, June 19, 2019, following a stroke in March. She is survived by her loving husband of 64 years, Paul Wilson; her three children, Patricia Tyler Wilson (David Korn), Andrea Wilson (Kerry Kornfeld), and James Wilson; and her four grandchildren.

Born into a lively Irish-Italian family in Yonkers, New York in 1934, Barbara graduated from Barnard College in 1956. She later attended Georgetown University for a master's in statistics, which she used in her role as a demographer for the Marriage and Divorce Branch of the National Center for Health

Statistics. While there, she was particularly helpful in explaining the mysteries of modern statistics to young newspaper reporters, one of whom wrote that Barbara should be declared a national treasure.

She was also well known at the Edgemoor Tennis Club for her competitive but warm-hearted doubles game. She played tennis right up to the time of her stroke at age 84.

She was loved and admired by everyone who knew her, including the neighborhood children, whom she supplied with cookies and marshmallows whenever she saw them.

A memorial service will be held later in the summer.



## How Can We Help?

We want to help you share your own news with colleagues and showcase your latest successes.

It is important to us that everyone knows about your research, recent awards, and promotions!

If you have any news you would like to share, email [megan@amstat.org](mailto:megan@amstat.org).

## Obituary

### Joseph F. Heyse



Joseph F. Heyse, one of the most respected and influential leaders in biopharmaceutical statistics, passed away May 31, 2019. He was 67.

Joe joined Merck & Co., Inc., in 1976 as a statistician supporting pre-clinical research and immediately began to have a profound influence on the

statistics profession by developing statistical methods that subsequently became industry standards.

In 1987, Joe began supporting clinical pharmaceutical research, providing technical oversight for health economics studies to support the marketing of Merck products. In 1990, he was named the director of a newly established department of health economic statistics, which furnished cost-effectiveness evaluations of all Merck products, and proceeded to become a well-recognized leader in the field of health economic statistics.

In 1993, Joe assumed responsibility for the clinical biostatistics group at Merck's Pennsylvania site—including vaccine biostatistics, which was undergoing unprecedented growth. His impact on human health in this role is best summarized by Senior Vice President of Medical Affairs Eliav Barr, who said, "Joe led the [clinical] statistics group in an era of extraordinary challenges and productivity at Merck. At that time, Merck developed vaccines against rotavirus, a leading cause of infant morbidity and mortality; human papilloma virus, which causes most cases of cervical, genital, and head/neck cancer; and varicella zoster virus, which causes chickenpox in children and often debilitating herpes zoster in adults. Each of these programs required novel, large, complicated studies to address key efficacy and safety questions. Joe's innovative spirit, keen understanding of clinical research and the underlying disease, deep fount of statistics knowledge, and can-do attitude was instrumental in the success of these studies and the subsequent availability of these vaccines. In short, his work was instrumental to the availability of vaccines that have saved hundreds of thousands of lives and prevented untold misery."

In 2009, Joe transitioned to the head of the early development statistics group at Merck, and most recently, he was in his fifth year as a scientific associate vice president and head of the biostatistics methodology research group, which provides statistical support to research design, analysis, and reporting relating to product development through the application of existing and innovative statistical methods.

Throughout his career, Joe published books and peer-reviewed journal papers extensively. John Tukey, one of the

most distinguished individuals in the field of statistics and one of Joe's earliest mentors, once noted that Joe was one of the most creative statisticians he ever met.

Joe earned his MS in statistics from Villanova University in 1975 and an MBA in economics from Temple University in 1979. He was selected to participate in the Merck Research Laboratories Doctoral Program in 1984 and earned his PhD in statistics from Temple University the following year. He was an ASA Fellow and a fellow of the American Association for the Advancement of Science (AAAS). Joe was the founding editor of *Statistics in Biopharmaceutical Research* and editor of *Statistical Methods in Medical Research*. He served as vice president and president of the Philadelphia Chapter in 1988–1989 and was the Biopharmaceutical Section program chair in 1994–1995. Joe also served on doctoral dissertation advisory committees at Temple University and the University of Maryland Baltimore County (UMBC). "I still remember his encouraging words and strong support to junior researchers. . . . He always encourages me to pursue my dream, don't wait. He is such an inspiring leader to work with and a role model for us to follow," wrote Yvonne Huang, a professor of statistics at UMBC.

In his 42 years at Merck, Joe had an extraordinary impact on human health. "Joe not only directly contributed to the successful development of dozens of pharmaceutical products, but he personally and proudly developed, mentored, coached, and collaborated with hundreds of statisticians who have, in turn, become successful drug and vaccine developers and leaders in their profession, both at Merck and in the external statistics community," said Lisa Lupinacci, associate vice president of late development statistics at Merck.

"Joe was indeed the catalyst for my career at Merck, [and] his encouragement and council for so many years have directly contributed to my professional and personal achievements. I will certainly miss Joe's generosity, coaching, inspirational stories, candor, integrity, wisdom, and humor," said Amy Gillespie, associate vice president for statistical programming at Merck.

Keaven Anderson, a distinguished scientist at Merck, recalled his interactions with Joe by noting, "His thinking always drew us into a future vision that we could not imagine on our own! I have so much to thank him for."

Joe will be remembered as a humble and kind person, who was quicker to give credit than accept it and was most willing to share his time and talents to help mentor others along the way.

Joe will be dearly missed by his wife, Lil; their daughters, Angelina and Gabby; and his many friends and colleagues at Merck and in the biopharmaceutical statistics community around the world.

# Travel Awards Available to Help Students Attend CSP

The Lingzi Lu, John Bartko, and Lester R. Curtin awards all offer registration and travel support to students attending the ASA Conference on Statistical Practice. The Curtin and Bartko awards provide \$1,000 in travel support, while the Lu award provides up to \$1,300 in travel support. Early registration for the conference opens September 30.

Applications for the Lu ([bit.ly/2y0gvUp](http://bit.ly/2y0gvUp)) and Curtin ([bit.ly/2NY7dD4](http://bit.ly/2NY7dD4)) awards should be sent by October 15 to [awards@amstat.org](mailto:awards@amstat.org) or mailed to American Statistical Association, Attn: Awards Nominations, 732 N. Washington Street, Alexandria, VA 22314-1943.

Applications for the Bartko award are due December 2 and can be found on the ASA award page at [bit.ly/2NTONGi](http://bit.ly/2NTONGi).

## Lester R. Curtin Award

Randy Curtin was a 38-year ASA member; an ASA Fellow; and a recognized expert for his work on childhood growth charts, longitudinal studies, standardized statistical software, vital statistics, and the design of complex sample health surveys.

To be eligible for the Curtin award, applicants must work in the field of health statistics (broadly defined as either applied, including public health policy, or clinical work) or be enrolled in a graduate program to prepare for such work. Preference will be given to those who have been working in the field for five or fewer years or who are still in graduate school. Submission should include the following:

- Two letters of recommendation
- A curriculum vitae
- A statement of no more than 500 words explaining the applicant's career goals, what they hope to learn by attending the conference, and how they plan to contribute to real-world applications of statistics in their field

Past chairs from the ASA Health Policy Statistics, Survey Research Methods, Biopharmaceutical, Teaching of Statistics in the Health Sciences, Mental Health Statistics, Statistics in Epidemiology, and Biometrics sections will select the award winner.

## Lingzi Lu Memorial Award

The Lingzi Lu Memorial Award was created by the ASA in partnership with the International Chinese Statistical Association in remembrance of Lingzi Lu, the first-year master's student studying statistics at Boston University who lost her life in the bombing at the Boston Marathon in April 2013.

To be eligible, applicants must be enrolled in a master's degree program in statistics or biostatistics at the time of application for the award or must have completed a master's degree in statistics or biostatistics no more than two years prior to the time of application. Submissions should include the application, two academic reference letters, a curriculum vitae, and a personal essay.

## John J. Bartko Scholarship Award

The John J. Bartko Scholarship Award, made possible through an endowment from John J. Bartko, was established to help promising young statisticians who are US citizens and in at least the second year of a master's degree program in statistics or biostatistics or who have completed such a program within two years prior to the award date.

Submissions should include an application, contact information for two references, a curriculum vitae, and a personal essay of 500 or fewer words that explains the applicant's career goals, what the applicant hopes to learn by attending the conference, and how the applicant plans to contribute to real-world applications of statistics.

For questions about these awards, contact Donna LaLonde at [DonnaL@amstat.org](mailto:DonnaL@amstat.org). ■



# chapternews

## Hawai'i

As part of the ASA continuing education program, chapters may annually apply for a traveling course (workshop) to be held in their jurisdiction. After applying in 2017, the Hawai'i Chapter was awarded Meta-Analysis and Combining the Results of Multiple Studies in 2018. With cosponsorship from the University of Hawai'i (UH) and across UH Mānoa, two workshops were held June 5–6 in the Imin Center on the UH Mānoa campus.

Brown University's Christopher H. Schmid provided the instruction. Schmid is professor and chair of biostatistics and cofounder of the Brown University School of Public Health Center for Evidence Synthesis in Health. He directs the clinical study design, epidemiology, and biostatistics core of the Rhode Island Center to Advance Translational Science, as well as the Evidence Synthesis Academy—a federally funded educational program for mid-career professionals and users of health care evidence. He is founding editor of the journal *Research Synthesis Methods*, and his research focuses on methods and applications for meta-analysis—particularly Bayesian methods—and software and predictive models derived from combining data from different sources. Schmid has been focusing his recent efforts on meta-analysis of N-of-1 studies, coauthoring consensus CONSORT reporting guidelines for N-of-1 trials and single-case designs, PRISMA guideline extensions for meta-analysis of individual participant studies and for network meta-analyses, and an Institute of Medicine report that established national standards for systematic reviews.

For more information about the event, download the workshop flier at [bit.ly/2NSdIY8](http://bit.ly/2NSdIY8). ■

## Orange County Chapter



From left: Gajanan Bhat of Spectrum Pharma, Paul Stone of Allergan PLC, Ulo Palm of Allergan PLC, Janet Wittes of Statistics Collaborative, Narimon Honarpour of Amgen, and Amy Xia of Amgen

## Orange County Holds Symposium on Drug and Device Development

The inaugural Orange County ASA biostatistics symposium was held May 3 on the Allergan campus in Irvine, California. The event drew more than 170 attendees—including statisticians from the pharmaceutical industry, medical device industry, CROs, and academia—and many graduate students. The main topic of the symposium was improving drug and device development through innovative designs.



Janet Wittes of Statistics Collaborative gave the keynote talk, titled “When Is Near-Optimality Not Good Enough?” Two clinicians—Ulo Palm of Allergan and Narimon Honarpour of Amgen—shared their experiences and discussed how statisticians can better contribute to the drug and device development process in an ever-changing industry. Eleven other presentations covered a wide range of topics such as expedited drug development pathways and their effectiveness, use of real-world data in drug and device development, adaptive design, and artificial intelligence-based diagnostic devices. The event concluded with an evening reception.

The symposium, the first to be conducted in Orange County, was a success.

# sectionnews

## Physical and Engineering Sciences

Ming Li, SPES Award Chair, and Vaneeta

Grover, Industrial Speakers Program Chair

The 2019 SPES award winners are Simon Mak, Chih-Li Sung, Xingjian Wang, Shiang-Ting Yeh, Yu-Hung Chang, V. Roshan Joseph, Vigor Yang, and C. F. Jeff Wu for their collaborative work between a group of statisticians and aerospace engineers of modeling turbulence inside a rocket engine injector.

## \$1,000 Available for University Visits

The SPES Marquardt Memorial Speakers Program facilitates visits of experienced applied statisticians to colleges and universities to give a seminar and meet with students and professors. SPES reimburses the host institution up to \$1,000 for expenses related to the visit. The speaker provides information to students about the following:

- What an applied statistician does
- How applied statisticians solve problems in science, engineering, technology, and business

- What nontechnical skills are required to be successful as an applied statistician

The Marquardt Industrial Speakers Program was established by SPES in the early 1990s to encourage careers in applied statistics. If you are an institution interested in having a speaker or a SPES member interested in being on the speakers list (or working directly with a local institution to set up a visit), contact Vaneeta Grover at [vkgrover@yahoo.com](mailto:vkgrover@yahoo.com).

## Fall Technical Conference in September

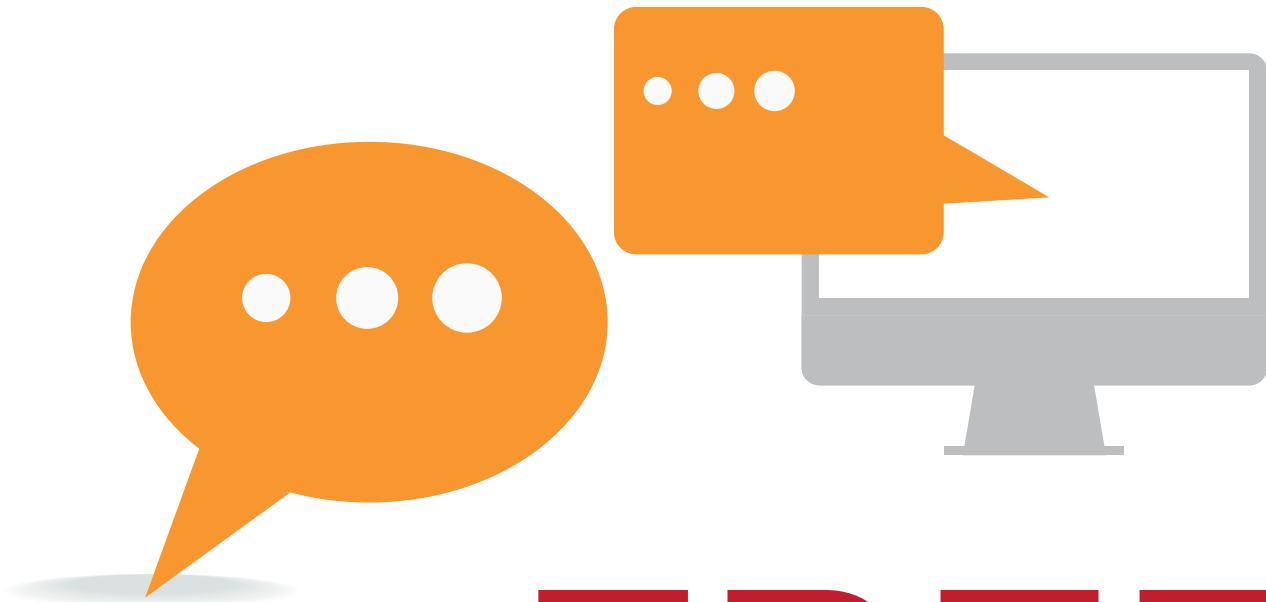
The 63rd annual Fall Technical Conference (FTC) will be held at the National Institute of Standards and Technology in Gaithersburg, Maryland, September 25–27. The FTC has long been a forum for both statistics and quality and is cosponsored by the American Society for Quality (Chemical and Process Industries Division and Statistics Division) and the American Statistical Association (Section on Physical and Engineering Sciences and Section on Quality and Productivity). The theme of this year's conference is "Statistics: Setting the

Standard for Success in Quality." For more information, visit [bit.ly/2SjCgHL](http://bit.ly/2SjCgHL). ■

## Physical and Engineering Sciences

Yajuan Si, a research assistant professor in the survey methodology program at the University of Michigan, will offer the webinar Multilevel Regression and Post-Stratification (MRP) October 10 from 1–3 p.m. MRP, adapted from hierarchical models, is an approach to modeling survey or other nonrepresentative sample data that has the potential to adjust for complex design features and nonresponse bias while performing small-area estimation. The webinar will cover the statistical concepts and practical issues in implementing MRP with real-life application examples. More information about the webinar is forthcoming at [bit.ly/2ShvpyM](http://bit.ly/2ShvpyM).

If you have ideas for a webinar you would like to develop or see offered, contact the SRMS education officer, James Wagner, [jameswag@umich.edu](mailto:jameswag@umich.edu). ■



# FREE

## Electronic Undergraduate Statistics Research Conference

The Electronic Undergraduate Statistics Research Conference (eUSR) will take place November 1.

The conference will feature talks from the Undergraduate Statistics Research Project Competition winners and sessions on graduate school and careers in statistics and data science.

Undergraduate students who want to share their work and register for the conference should submit an abstract by **October 23, 2019**. Prizes will be given for the Best Video Presentations!

**KEYNOTE ADDRESS**  
Jennifer Thompson  
Biostatistician at Devoted Health

*For details visit*

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These listings and additional information about the 65-word ads can be found at [ww2.amstat.org/ads](http://ww2.amstat.org/ads).

Employers are expected to acknowledge all responses resulting from publication of their ads.

Also, look for job ads on the ASA website at <https://jobs.amstat.org/jobseekers>.

### Massachusetts

■ The Department of Mathematical Sciences at Bentley University, located in Waltham, Massachusetts, invites applications for tenure track positions beginning Fall 2020. We seek candidates to add to our strengths in applied statistics, applied mathematics, data science and machine learning. The rank and salary will be commensurate with experience. To learn more and to apply, please go to [bit.ly/32trVOn](http://bit.ly/32trVOn). Bentley University is an Equal Opportunity Employer, building strength through diversity. The University is committed to building a community of talented students, faculty and staff who reflect the diversity of global business. We strongly encourage applications from persons from underrepresented groups, individuals with disabilities, covered veterans and those with diverse experiences and backgrounds. We strive to create a campus community that welcomes the exchange of ideas, and fosters a culture that values differences and views them as a strength in our community.

### New York

■ Syracuse University invites applications for Professor of Business Analytics at Whitman School of Management starting January 2020. This recruitment is part of an ambitious Invest Syracuse Cluster Hire Initiative in the broad area of big data and data analytics. Qualified candidates must have earned PhD in data sciences and have a distinguished record of publications and extramural funding. Apply online at [bit.ly/2YX5qiu](http://bit.ly/2YX5qiu). EOE. ■



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Applicants please upload a cover letter, a full curriculum vitae, a statement of research interests, copies of up to five recent publications, as well as the names and e-mail addresses of at least three referees to whom the applicants' consent has been given for their providing references, by January 15, 2020.

**(2) Lecturer**  
(Ref. 1900010S) (Closing date: January 15, 2020)  
Applicants should have (i) a relevant higher degree (at least at MPhil level); and (ii) a proven track record of at least 4 years in teaching statistics or closely related areas. The appointee will (a) teach undergraduate and postgraduate courses in the areas of statistics and risk management; and (b) assist in the administration of the Department. Appointment will initially be made on contract basis for up to two years commencing as soon as possible, renewable subject to performance and mutual agreement. Those who have responded to the previous advertisement for the same post are under consideration and need not reapply in this instance. Applications will be considered on a continuing basis until the post is filled.

**Application Procedure**  
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**Geoff Shaw** • @StatGeoff

**New Orleans.** I decided to go to CSP 2013 because I had never been there or attended a statistics conference before, and keep going back to both. It's great to be near so much great live music and good food, and perfect weather if the conference is in February!

**Matt Hilburn** • @CMattHilburn

**New York City.** Because it is the world's greatest city. Easy to hop on the subway after a Manha and gr

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**Kel Zou**

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**Erfan Pirbhai**

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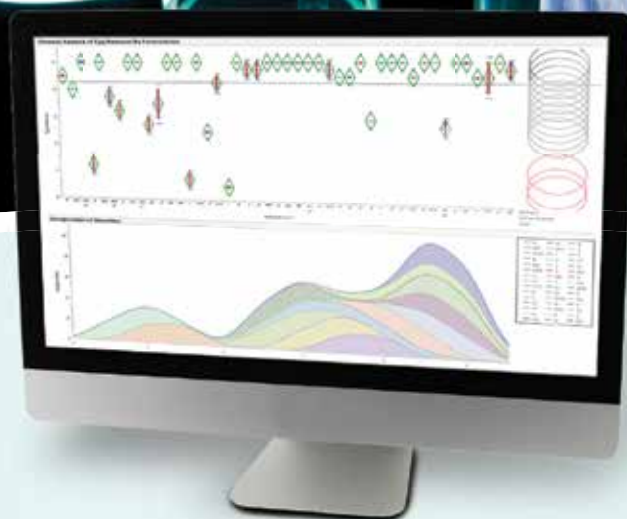
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