June 2016 • Issue #468

AMSTATNEWS

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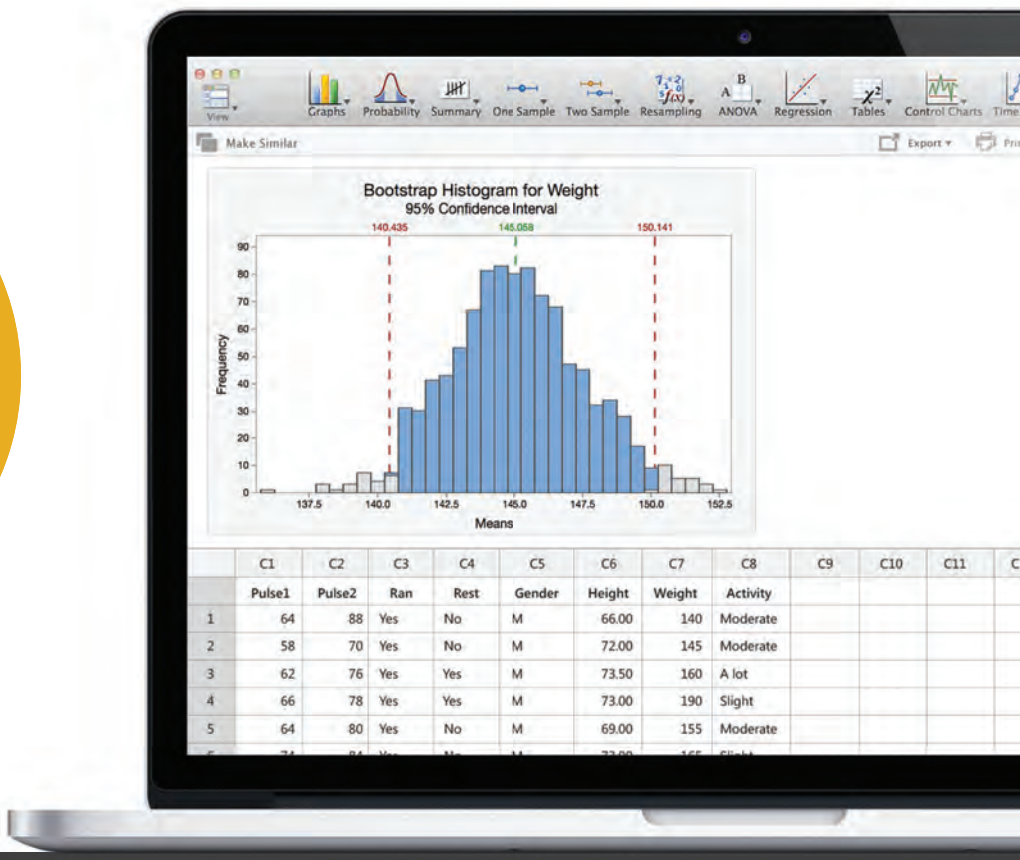

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11
	Pulse1	Pulse2	Ran	Rest	Gender	Height	Weight	Activity			
1	64	88	Yes	No	M	66.00	140	Moderate			
2	58	70	Yes	No	M	72.00	145	Moderate			
3	62	76	Yes	Yes	M	73.50	160	A lot			
4	66	78	Yes	Yes	M	73.00	190	Slight			
5	64	80	Yes	No	M	69.00	155	Moderate			

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AMSTATNEWS

JUNE 2016 • ISSUE #468

Amstat News welcomes news items and letters from readers on matters of interest to the association and the profession. Address correspondence to Managing Editor, *Amstat News,* American Statistical Association, 732 North Washington Street, Alexandria VA 22314-1943 USA, or email *amstat@amstat.org*. Items must be received by the first day of the preceding month to ensure appearance in the next issue (for example, June 1 for the July issue). Material can be sent as a Microsoft Word document, PDF, or within an email. Articles will be edited for space. Accompanying artwork will be accepted in graphics file formats only (.jpg, etc.), minimum 300 dpi. No material in WordPerfect will be accepted.

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The American Statistical Association is the world's largest community of statisticians. The ASA supports excellence in the development, application, and dissemination of statistical science through meetings, publications, membership services, education, accreditation, and advocacy. Our members serve in industry, government, and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare.

features

George Mason team members at the 2016 DC DataFest. See Page 12

columns

STAT*tr@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*.

This column is written to inform ASA members about what the ASA is doing to promote the inclusion of statistics in policymaking and the funding of statistics research. To suggest science policy topics for the ASA to address, contact ASA Director of Science Policy Steve Pierson at *pierson@amstat.org*.

Online Articles

The following articles in this issue can be found online at *http://magazine.amstat.org*.

In an effort to better emphasize the unique interdisciplinary nature of statistics and its foundational role in the data science field, **the ASA's Statistical Learning and Data Mining Section has changed its name to the Statistical Learning and Data Science Section**. The name change is the latest in a series of steps the ASA is taking to solidify a relationship between statistics and data science. To read about what the ASA has changed, visit *http://magazine.amstat.org/blog/2016/06/01/datascience-2*.

Ronald LaPorte and Ismail Serageldin are concerned about the limited scientific publications from Arabic and African countries, so they established the Research Methods Library of Alexandria and are in need of material. **Please look up at your bookshelf. Are there any books you have not opened in five years?** Wouldn't they be of far more benefit teaching young researchers in Arabic and African countries than collecting dust? Write to LaPorte at *ronaldlaporte@gmail.com* to identify the best virtual materials, donate your little-used statistics books and lectures, and improve statistical literacy in developing countries. For details, see "Send Books, Combat 'Stataphobia'" at *http://magazine.amstat.org*.

Next Month …

We'll have the results of the ASA election and a call for proposals for JSM 2017, as well as an interview with 1996 ASA President Lynne Billard.

departments

member news

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Florence Nightingale: Modern-Day Lessons and Legacies

It was a coincidence that led to the topic of this month's President's Corner. I had been thinking about writing a column about the legendary Florence Nightingale (1820–1910), partly to honor women in statistics and partly because I find personal histories compelling. But a search for her name on the ASA website revealed several existing and accessible articles about her life and work. What could I add that isn't covered by the biography (*http://bit.ly/2d74Xa8*) of her on the ASA's site, the much-visited page (*http://bit.ly/1Uxe9Dj*) about her at *thisisstatistics.org*, and the *Science News (http://bit.ly/1s7sOcn)* article by Excellence in Statistical Reporting Award winner Julie Reymeyer, all of which discuss Nightingale's fascinating life and her contributions to statistics?

And then the coincidence happened. I met Barbara Dossey, who had accompanied her husband to a conference in Portugal at which he and I were both invited speakers. I discovered Dossey is an internationally recognized Nightingale scholar. And I learned about the Nightingale Initiative for Global Health (NIGH), founded in 2004 by a small group of Nightingale scholars—including Dossey, who currently serves on its board of directors.

This chance meeting renewed my interest in learning and writing about Florence Nightingale. I decided to interview Dossey to see what she could add to our understanding of the enigmatic Nightingale and to learn more about NIGH. As I delved deeper into Nightingale's work, philosophy, and life, I realized part of her

Florence Nightingale

legacy includes powerful lessons relevant to statisticians today. So before presenting the interview with Dossey, I offer here some inspirational quotes from statisticians writing about Nightingale over almost a century.

In 1916 in *JASA*, Edwin Kopf provided a graphic illustration of Nightingale's ability to communicate the meaning of raw statistics:

> In writing to Sir John McNeill, she said "[I]t is as criminal to have a mortality of 17, 19, and 20 per thousand in the Line, Artillery and Guards, when that in civilian life is only 11 per 1,000, as it would be to take 1,100 men out upon Salisbury Plain and shoot them." (Kopf, 1916, p. 390).

In 1920 (also in *JASA*), Nutting and Kopf chided statisticians of the day for wasting time on purposeless statistical exercises and recommended that students and practitioners of statistics emulate Nightingale, a lesson that still resonates today:

> "Statistics for statisticians" were, to [Nightingale's] mind, an abomination. Analysis of tabulated facts on sanitation and on the conduct of public affairs were to her a lever for overcoming the inertia of the legislative mind, of smugly buttressed officialdom, and of an amorphous public conscience… A survey of statistical activity in America today [1920] would perhaps show that much of our effort is aimless. There is laborious and expensive endeavor to produce ponderous tomes, and then feverish activity to find a market for the product. (Nutting and Kopf, 1920, p. 651)

Throughout accounts of Nightingale's thinking about statistics is found the message articulated by Karl Pearson, quoted by Smith (1996) in his Royal Statistical Society presidential address:

> [Florence Nightingale] held that the universe—including human communities—was evolved in accordance with a divine plan… But to understand God's thoughts, she held that we must study statistics, for these are the measure of his purpose. Thus, the study of statistics was for her a religious duty. (Smith, 1996, p. 380)

And in 2015, Henry Lynn commented on what Nightingale can teach us about the importance of curiosity in data science:

> She was a problem identifier, a problem decoder, and also a problem solver. Her publications were not meant to be accolades for display but propaganda for a crusade against impediments to

Jessica Utts

MORE ONLINE
You can also take a minute to listen to Nightingale's inspiring voice (age 70), recorded on the Edison wax cylinder on July 30, 1890, at *http://bit.ly/1nuS1DS*.

Larry and Barbara Dossey at Embley Park, the family home of Florence Nightingale, near Hampshire, England

> holistic health… Data scientists will need such inquisitive zeal to go beyond routine analyses in order to reveal the hidden story behind petabytes of data. (Lynn, 2015)

And now I turn to my interview with Barbara Dossey.

Q: How would you describe Florence Nightingale?
Dossey: Nightingale, best known as the founder of modern, secular nursing, was also a mystic, visionary, educator, environmentalist, statistician, politician, networker, and social reformer. She worked till the end of her life, dying at age 90 in 1910.

Q: What was the basis of Nightingale's passionate commitment to statistics?
Dossey: Nightingale saw herself as a fellow worker with God, and her passionate commitment to statistics was based on her faith in a God of order, who created a world that ran by law. Her statistical analyses taught her the importance of the environment[al], biological, social, and cultural impacts on health, or illness and disease, and treatment and other outcomes.

Q: Some statisticians may be puzzled, or even distressed, by the mention of God and statistics in the same sentence. How did Nightingale define God?
Dossey: Her definition of God, in her own words, was: "What do we mean by 'God'? All we can say is that we recognize a power superior to our own; that we recognize this power as exercised by wise and good will." She saw statistics as a way to help her follow God's creative work.

Q: What was Florence Nightingale's formal education, and did it include statistics?
Dossey: Nightingale received a classical Cambridge home education from her father, since women were not permitted to attend universities in the 1840s and 1850s. In her 20s, she began to read England and other countries' blue books on health, illness, and disease and assembled her own vast "database" that led to her later research and publications. She spoke and read five additional languages (i.e., French, German, Italian, Latin, and Greek). She also insisted that a mathematician tutor her. Born into the "upper ten thousand" richest families in England, her family wanted her to marry into wealth and high society. She refused and made a conscious choice to serve God through social action.

Q: Can you give some examples of Nightingale's use of statistics?
Dossey: Nightingale's commitment to statistics spanned her entire working life, from 1856 into the 1890s. She left 14,000 letters and 200 publications in the archives, with the majority in the archives at the British Library, Wellcome Institute Library, London General Record Office, Claydon House, and Royal Army History Museum. She pioneered army and military statistics, nursing and health outcomes statistics, health policy, hospital design, and environmental policy at the local, national, and global levels. She came to prominence during the Crimean War (1854–1856) with her Army Royal Commission work. Her pioneering statistical displays included polar area charts to show death per month from disease, wounds, and other causes. William Farr, the leading medical statistician, worked with her on her data analysis. For an example, see *http://bit.ly/1s7sOcn*.

Q: Did Nightingale have a mentor in statistics, and what was the impact?
Dossey: Nightingale's main mentor was L.A.J. Quetelet, head of Belgium's central statistical agency and an expert on the collection of official statistics and probability theory. Quetelet wanted to understand the statistical laws underlying social phenomena. He solved her great dilemma of how to reconcile a universe run by law, and she referred to this as social research—the investigation of God's laws. Using Quetelet's methods, she thought social laws could be stated in exact numerical results.

Q: What was Nightingale approach to statistics, and what were some of the consequences?
Dossey: Nightingale had a holistic, integrative approach to gathering and analyzing data. She would use good data and, when not available, she designed her own questionnaires and sent them to physicians, army officials, politicians, and others who could collect good data. She referred to her statistics as her "business" and her work in it as her "must." Based on her own foundational experience with battlefield conditions, Nightingale was the one who,

behind the scenes, drafted the official British position papers—first presented as a series of Geneva Conventions—that directly led to establishing the International Red Cross, then the League of Nations, and, later, the United Nations. In 1858, Nightingale was the first woman to be elected a fellow of the Royal Statistical Society for her work on army and hospital statistics and hospital sanitation reform. She was given an honorary membership in the American Statistical Association in 1874.

Q: How did Nightingale view nursing?
Dossey: Nightingale believed that nursing was a very high calling, and that nurses could be in service to others and to God without taking religious vows. She also advocated that nursing was a complement to medicine—that nursing and medicine were two distinct entities. Nightingale developed nursing into an art and science of caring for individuals. She also sought to cure millions by addressing the causes and conditions of illness and injury—both community-wide and globally.

Q: What would Nightingale have to say about nurses today, related to research and statistics?
Dossey: In the 1870s, Nightingale began to write that "it would take 150 years for the world to see the kind of nursing I envision…" Nightingale would be thrilled that today's nurses are carrying forward her mission through both quantitative and qualitative research. Statistics is taught in undergraduate and graduate nursing education. In 1993, the National Institute of Nursing Research (NINR) was established to promote and improve the health of individuals, families, and communities. It is also preparing nurse scientists for work with interdisciplinary colleagues at the local, national, and global levels. See *www.ninr.nih.gov*.

Q: Tell us about your work with the Nightingale Initiative for Global Health (NIGH).
Dossey: The Nightingale Initiative for Global Health is a grassroots-to-global movement, created in Florence Nightingale's name, to keep her flame alive in the 21st century. NIGH's interrelated twin mandates are to increase public concern for global health issues and to inform, engage, and empower nurses, midwives, and concerned citizens to participate in this advocacy. Since NIGH's founding in 2004, the "Nightingale Declaration for a Healthy World" remains our original credo for everything we develop. See *www.nighvision.net/nightingale-declaration.html.*

Q: What is the significance of the 2020 Florence Nightingale Bicentenary of her birth, and what will NIGH's 2020 focus be?
Dossey: The 2020 Florence Nightingale Bicentenary will celebrate her birth and global impact on health, healthcare reform, and research throughout the world. NIGH will have a transmedia campaign, and one aspect is to create educational opportunities and integrative STEM learning opportunities for K–12, as well as a broad range of experiences, events, and interactive activities for a worldwide global audience. The United Nations has a mandate to achieve 17 sustainable development goals (SDGs) by 2030. A major focus for NIGH will be the UN SDGs. Nightingale is the perfect image for improving the health of humanity. See *www.nighvision.net/2020-vision--the-un-sdgs.html.*

Q: One of the UN SDGs for 2030 is "Good Health and Well-Being." Did Nightingale focus on teaching good health and well-being?
Dossey: Anticipating the wider interconnected concerns we see today, she called for better conditions for women, children, the poor, and [the] hungry and for better education programs for marginalized people. She identified what we now call "environmental health determinants" such as clean air, water, food, and houses and "social health determinants" such as family and community relationships, literacy, education, and employment—all now identified as UN SDGs.

Q: How many nurses and midwives are there globally? What might be their impact on health by 2020 and leading up to 2030?
Dossey: What if today's 3.4 million nurses in the U.S., 20+ million nurses and midwives globally, and concerned citizens could be engaged and empowered to become champions for the broader health of humanity like Nightingale? Nightingale specifically called for nurses and midwives' voices to be heard, reminding us "You must form public opinion!" We can focus our collective callings for the sake of 21st-century health care and for related global social, ecological, and human rights issues. Nightingale passed this vision on to nurses, midwives, and concerned citizens—to remember who we are, what we can do, who we care for, and why. Now it is up to us to share this vision, as she did, with our world.

ASA Joins IEEE, ACM for Data Science, Advanced Analytics Conference

2016 KEYNOTE SPEAKERS
David Donoho, professor of statistics at Stanford University, and **Yoshua Bengio,** full professor in the department of computer science and operations research at the Université de Montréal

In recognition of statistics being one of three foundational areas of data science, the ASA is cosponsoring the 2016 IEEE/ACM International Conference on Data Science and Advanced Analytics (DSAA'2016, *www.ualberta.ca/~dsaa16*) October 17–19, 2016, in Montréal. Founded in 2014 by the Institute of Electrical and Electronic Engineers (IEEE) Computational Intelligence Society (CIS) and the Association for Computing Machinery (ACM) Special Interest Group on Knowledge Discovery from Data (SIGKDD), the conference provides a premier forum for researchers, industry practitioners, and Big Data users to exchange ideas and participate in top-level discussions about the best practices of applications and the latest theoretical developments in data science and analytics.

The ASA's sponsorship of DSAA'2016 marks the first time statistical and computing/information science societies have teamed up to conduct a data science conference and promote disciplinary development in data science.

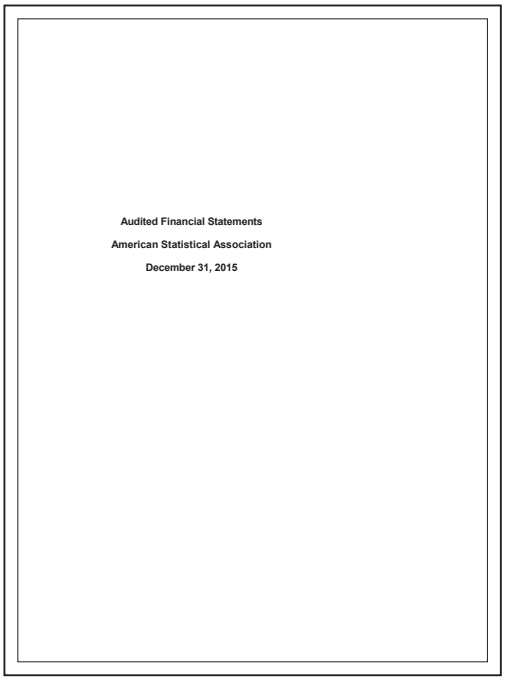
"The interdisciplinary nature of statistics blends well with the burgeoning field of data science, and together they can foster innovation to help solve some of society's most pressing challenges," said ASA President Jessica Utts. "The ASA is excited to collaborate with IEEE and ACM to bring together some of the world's foremost thought leaders and executives, creating a robust platform and agenda that can harness the possibilities of data-driven scientific discovery. The collaboration will strengthen the expertise of highly qualified statisticians and data scientists who are in great demand from the private sector, government, educational institutions, and nonprofit entities, alike."

"Data science creates a unique opportunity to promote interdisciplinary and systematic development of science, technology, engineering, and economy," said Longbing Cao, chair of the DSAA'2016 Steering Committee and IEEE Task Force on Data Science and Advanced Analytics. "DSAA aims to be a key supporter and enabler in the era of data science and analytics. The sponsorship and engagement of the ASA to DSAA'2016, jointly with IEEE and ACM, forms a strategic force to significantly upgrade the respective development and paradigm shifting through the collaborations between statisticians, computing scientists, and data professionals."

The inaugural DSAA conference took place in 2014 in Shanghai and was followed by a second conference in Paris last year. DSAA features an interdisciplinary positioning and emphasizes statistics as a core component in its topics of interest, keynote addresses, sessions about trends and controversies, panel discussions, tutorials, and other special sessions.

Last fall, CIS representatives invited the ASA to recommend keynote speakers, panelists, and session chairs for DSAA'2016. Receptive to CIS's outreach, the ASA engaged in further discussions, which led to the ASA Board of Directors' widespread approval for ASA becoming an official DSAA'2016 sponsor. ■

2015 Audit Report for the American Statistical Association



Audited Financial Statements

American Statistical Association

December 31, 2015

American Statistical Association

Contents

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Independent Auditor's Report

To the Board of Directors
American Statistical Association

Report on the Financial Statements

We have audited the accompanying financial statements of American Statistical Association (the Association), which comprise the statement of financial position as of December 31, 2015, and the related statements of activities and cash flows for the year then ended, and the related notes to the financial statements. The financial statements as of and for the year ended December 31, 2014, were audited by other auditors whose report thereon, dated March 23, 2015, expressed an unmodified opinion on those statements.

Management's Responsibility for the Financial Statements

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

Auditor's Responsibility

Our responsibility is to express an opinion on these financial statements based on our audit. We conducted our audit in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit involves performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Association's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Association's internal control. Accordingly, we express no such opinion. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of the financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

Opinion

In our opinion, the 2015 financial statements referred to above present fairly, in all material respects, the financial position of American Statistical Association as of December 31, 2015 and the changes in its net assets and its cash flows for the year then ended in conformity with accounting principles generally accepted in the United States of America.

Tate & Tryon

Washington, DC
March 21, 2016

American Statistical Association

Statements of Financial Position

December 31,	2015	2014
Assets		
Cash and cash equivalents	$ **634,412**	$ 473,303
Investments	**16,407,403**	16,605,389
Accounts receivable, net	**647,424**	471,698
Prepaid expenses	**356,099**	244,420
Equity in joint venture	**68,474**	33,713
Bond issuance costs, net	**82,410**	89,047
Property and equipment, net	**7,215,895**	7,475,866
Total assets	$ **25,412,117**	$ 25,393,436
Liabilities and Net Assets		
Liabilities		
Accounts payable and accrued expenses	$ **876,771**	$ 809,609
Due to joint venture	**95,043**	35,061
Deferred revenue	**2,214,480**	2,214,249
Capital lease	**26,050**	65,125
Bonds payable	**4,643,720**	4,950,845
Total liabilities	**7,856,064**	8,074,889
Net assets		
Unrestricted - undesignated	**14,730,268**	14,522,912
Unrestricted - designated	**1,431,304**	1,387,545
Total unrestricted net assets	**16,161,572**	15,910,457
Temporarily restricted	**607,455**	646,064
Permanently restricted	**787,026**	762,026
Total net assets	**17,556,053**	17,318,547
Total liabilities and net assets	$ **25,412,117**	$ 25,393,436

See accompanying notes to the financial statements.

American Statistical Association

Statements of Activities
Years Ended December 31, 2015 and 2014

	2015					2014				
	Unrestricted Undesignated	Unrestricted Designated	Temporarily Restricted	Permanently Restricted	Total	Unrestricted Undesignated	Unrestricted Designated	Temporarily Restricted	Permanently Restricted	Total
Operating Activities										
Revenue and Support										
Meetings	$ 3,327,707	$ -	$ -	$ -	$ 3,327,707	3,208,204	$ -	$ -	$ -	$ 3,208,204
Membership	2,158,313	-	-		2,158,313	2,117,865				2,117,865
Publications	1,886,538				1,886,538	1,951,188				1,951,188
Special projects	688,214		86,982	25,000	800,196	721,567		64,204	150,130	935,901
Section income	77,226	727,453			804,679	67,092	588,101			655,193
Education	423,883	9,061	-		432,944	424,345	6,345	-		430,690
Administration	674,543				674,543	365,084				365,084
Grants and awards	227,651				227,651	143,499				143,499
Net assets released from restrictions	43,298		(43,298)		-	52,344		(52,344)		-
Total operating revenue and support	9,507,373	736,514	43,684	25,000	10,312,571	9,051,188	594,446	11,860	150,130	9,807,624
Expense										
Program Services										
Meetings	2,100,041				2,100,041	2,262,848				2,262,848
Membership	832,227				832,227	788,009				788,009
Publications	1,219,969				1,219,969	1,287,286				1,287,286
Special projects	1,994,488				1,994,488	1,877,800				1,877,800
Section expenses	91,013	688,692			779,705	69,774	576,957			646,731
Education	408,576	4,063			412,639	423,661	1,630			425,291
Grants and awards	223,517				223,517	157,206				157,206
Total program services	6,869,831	692,755	-	-	7,562,586	6,866,584	578,587	-	-	7,445,171
Supporting services										
Management and general	1,266,644				1,266,644	1,246,283				1,246,283
Fundraising	264,198				264,198	152,594				152,594
Total supporting services	1,530,842	-	-	-	1,530,842	1,398,877	-	-	-	1,398,877
Total expense	8,400,673	692,755	-	-	9,093,428	8,265,461	578,587	-	-	8,844,048
Change in net assets from operating activities	1,106,700	43,759	43,684	25,000	1,219,143	785,727	15,859	11,860	150,130	963,576
Nonoperating Activities										
Unrealized (losses) gains on investments	(899,344)	-	(82,293)	-	(981,637)	520,994	-	45,267	-	566,261
Change in net assets	207,356	43,759	(38,609)	25,000	237,506	1,306,721	15,859	57,127	150,130	1,529,837
Net assets, beginning of year	14,522,912	1,387,545	646,064	762,026	17,318,547	13,216,191	1,371,686	588,937	611,896	15,788,710
Net assets, end of year	$ 14,730,268	$ 1,431,304	$ 607,455	$ 787,026	$ 17,556,053	$ 14,522,912	$ 1,387,545	$ 646,064	$ 762,026	$ 17,318,547

See accompanying notes to the financial statements.

American Statistical Association

Statements of Cash Flows

Year Ended December 31,	2015	2014
Cash flows from operating activities		
Change in net assets	$ 237,506	$ 1,529,837
Adjustments to reconcile change in net assets to net cash provided by operating activities:		
Depreciation and amortization	320,013	307,336
Amortization of bond issuance costs	6,637	6,637
Change in allowance for doubtful receivables	14,000	(4,170)
Equity in earnings from joint venture	(34,761)	(37,037)
Contributions restricted for investment in perpetuity	(25,000)	(150,130)
Unrealized and realized losses (gains) on investments	505,625	(737,990)
Changes in assets and liabilities:		
Accounts receivable	(189,726)	77,983
Prepaid expenses	(111,679)	(65,413)
Accounts payable and accrued expenses	67,162	(113,302)
Deferred revenue	231	(99,303)
Total adjustments	552,502	(815,389)
Net cash provided by operating activities	790,008	714,448
Cash Flows From Investing Activities		
Purchases of investments	(1,009,690)	(3,067,349)
Proceeds from sale of investments	702,051	2,653,688
Purchases of property and equipment	(60,042)	(27,731)
Net cash used in investing activities	(367,681)	(441,392)
Cash Flows From Financing Activities		
Principal payment on bonds payable	(307,125)	(298,803)
Principal payments on capital lease obligations	(39,075)	(13,017)
Contributions restricted for investment in perpetuity	25,000	150,130
Equity distribution from joint venture	-	279,375
Due to/(from) joint venture, net	59,982	(416,291)
Net cash used in financing activities	(261,218)	(298,606)
Net increase (decrease) in cash and cash equivalents	161,109	(25,550)
Cash and cash equivalents, beginning of year	473,303	498,853
Cash and cash equivalents, end of year	$ 634,412	$ 473,303
Supplemental disclosure of cash flow information:		
Income taxes	$ 75,000	$ 75,000
Interest paid	$ 133,404	$ 141,860
Supplemental Schedule of Noncash Investing and Financing Activities		
Equipment acquired under capital lease	$ -	$ 78,142

See accompanying notes to the financial statements.

American Statistical Association

Notes to Financial Statements

A. Organization and Summary of Significant Accounting Policies

Organization: The American Statistical Association (the Association) was founded in 1839 and incorporated in 1841 under the not-for-profit laws of the Commonwealth of Massachusetts as a professional association serving statisticians and all individuals interested in the study and/or application of statistics. The Association's objectives are to foster statistics and its applications, to promote unity and effectiveness of effort among all concerned with statistical problems, and to increase the contribution of statistics to human welfare. The Association conducts meetings, produces publications devoted to statistical methodology and its applications, makes available information concerning the science of statistics and its contributions, cooperates with organizations in the advancement of statistics, stimulates research, promotes high professional standards and integrity in the application of statistics to problems of science and of public policy, fosters education in statistics, and, in general, makes statistics of service to science and society.

Basis of presentation: The Association is required to report information regarding its financial position and activities according to three classes of net assets: unrestricted net assets, temporarily restricted net assets, and permanently restricted net assets.

Basis of accounting: The financial statements are prepared on the accrual basis of accounting. Revenue is recognized when earned and expense when the obligation is incurred.

Use of estimates: The preparation of financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect certain reported amounts and disclosures. Actual results could differ from estimates.

Cash and cash equivalents: For financial statement purposes, all highly-liquid investments with a maturity of three months or less at the time of purchase are considered to be cash equivalents, except for money market funds held in the investment portfolio. Cash and cash equivalents also consists of funds held in a bank account on behalf of a joint venture.

Accounts receivable: Accounts receivable consist of amounts due from the sale of subscriptions, publications, and conferences. Accounts receivable are presented net of an allowance for doubtful accounts. The allowance for doubtful accounts is provided based upon management's judgment, including such factors as prior collection history and type of receivable. As of December 31, 2015 and 2014, the allowance for doubtful accounts was $20,548 and $6,548, respectively. The Association writes-off receivables when they become uncollectible, and payments subsequently received on such receivables are credited to the allowance for doubtful accounts.

Equity in joint venture: The Association has an investment in a joint venture to produce a journal called Technometrics. The Association accounts for its investment using the equity method due to its lack of control over the joint venture. Under the equity method, the original investment is recorded at cost and adjusted by the Association's share of undistributed earnings or losses of the joint venture. No distributions were received during the year ended December 31, 2015. A distribution in the amount of $279,375 was received during the year ended December 31, 2014.

Bond issuance costs: The Association paid certain customary fees as required to refinance the note used to finance the acquisition of its new headquarters. These fees have been capitalized and are being amortized over the term of the bonds. Amortization expense was $6,637 for both of the years ended December 31, 2015 and December 31, 2014.

A. Organization and Summary of Significant Accounting Policies - Continued

Capital lease: The Association has a 24-month capital lease agreement for equipment, which expires during 2016. At December 31, 2015, accumulated depreciation related to the leased equipment was $52,096. Lease payments totaling $26,050 will be made during the year ended December 31, 2016.

Net assets: Net assets are classified as unrestricted, temporarily restricted, or permanently restricted based on the existence or absence of donor-imposed restrictions. A description of each net asset group is as follows:

Unrestricted, undesignated net assets: Net assets whose use is not restricted by donors or internally designated for other uses.

Board designated net assets: Board designated net assets consist of accumulated, unspent unrestricted funds to be used for various section activities and board approved projects.

Temporarily restricted net assets: Net assets subject to donor-imposed stipulations that may be met by actions of the Association and/or passage of time.

Permanently restricted net assets: Net assets subject to donor-imposed stipulations that are to be maintained permanently by the Association. Generally, the donors of these assets permit the Association to use all or part of the income on related investments for general or specific purposes and prohibit the use of principal.

Revenue recognition: Membership dues are recognized ratably over the applicable membership period to which they apply. Payments for memberships, subscription sales, product sales, or services to be rendered and received in advance are deferred to the appropriate period

Publication revenue is recognized upon delivery of the material.

All donor-restricted revenue is reported as an increase in temporarily or permanently restricted net assets, depending on the nature of the restriction. When a restriction expires (that is, when a stipulated time restriction ends or purpose restriction is accomplished), temporarily restricted net assets are reclassified to unrestricted net assets and reported in the statement of activities as net assets released from restrictions.

Functional allocation of expenses: The costs of providing various programs and supporting services have been summarized on a functional basis in the statement of activities. Accordingly, certain costs have been allocated among the programs and supporting services benefited.

A description of the Association's programs and supporting services is as follows:

Meetings: The Association provides for various meetings and workshops that serve as a forum for the latest developments in statistical theory and application. These meetings offer a concentrated opportunity for the exchange of ideas and discussion of research findings among colleges.

Membership: Costs related to member service maintenance.

Publications: The Association produces various publications and magazines. These publications represent the Association's commitment to the ongoing enhancement of statistical education and the public's understanding of statistics.

A. Organization and Summary of Significant Accounting Policies - Continued

Special projects: Represent various projects undertaken to further statistics among the public. This includes expenses for various awards presented, which increase the visibility of statistics and its methods with the general public, including science policy, various statistical outreach programs, and a public awareness campaign.

Section expenses: Represent the Association's organization in groups by professional subject matter. These sections facilitate professional interchanges and research opportunities in statistics.

Education: The Association offers a wide range of continuing education opportunities, which represent a forum for emerging statistics research. These programs include workshops, lectures, and expenses related to the production and sale of educational materials. Additionally, the Association advocates and provides materials for statistics education at the K-12, community college undergraduate, and graduate levels, and provides leadership in the education community about statistics and data science.

Grants and awards: Represent expenses related to providing advice and technical assistance, which enhance statistical education through the support of federal, state, and local government agencies.

Management and general: Includes the functions necessary to secure proper administrative functioning of the Board of Directors, maintain an adequate working environment, and manage financial and budgetary responsibilities of the Association.

Fundraising: The expenditures associated with the Association's fundraising activities mainly consist of staff compensation and other costs associated with inducing potential donors to contribute to the Association's programs.

Income taxes: The Association is generally exempt from Federal income taxes under the provisions of Section 501(c)(3) of the Internal Revenue Code. In addition, the Association has been classified as an organization that is not a private foundation under Section 509(a)(2) of the Internal Revenue Code. However, the Association is required to report unrelated business income to the Internal Revenue Service and the state of Virginia, as well as pay certain other taxes to local jurisdictions. The Association incurred approximately $112,000 and $108,000 in income tax expense on unrelated business income related to net income earned on advertising sales for the years ended December 31, 2015 and 2014, respectively.

Measure of operations: The Association does not include unrealized gains and losses in the change in net assets from operating activities.

Subsequent events: Subsequent events have been evaluated through March 21, 2016, which is the date the financial statements were available to be issued.

B. Concentrations

Credit risk: The Association maintains demand deposits with commercial banks and money market funds with financial institutions. At times, certain balances held within these accounts may not be fully guaranteed or insured by the U.S. federal government. The uninsured portions of cash and money market accounts are backed solely by the assets of the underlying institution. As such, the failure of an underlying institution could result in financial loss to the Association.

B. Concentrations - Continued

Market value risk: The Association also invests funds in various marketable securities. Such investments are exposed to market and credit risks. Thus, the Association's investments may be subject to significant fluctuations in fair value. As a result, the investment balances reported in the accompanying financial statements may not be reflective of the portfolio's value during subsequent periods.

C. Investments and Fair Value Measurements

In accordance with generally accepted accounting principles, the Association uses the following prioritized input levels to measure fair value. The input levels used for valuing investments are not necessarily an indication of risk.

Level 1 – Observable inputs that reflect quoted prices for identical assets or liabilities in active markets, such as stock quotes;

Level 2 – Includes inputs other than level 1 that are directly or indirectly observable in the marketplace, such as yield curves or other market data;

Level 3 – Unobservable inputs which reflect the reporting entity's assessment of the assumptions that market participants would use in pricing the asset or liability, including assumptions about risk such as bid/ask spreads and liquidity discounts.

Investments valued using Level 1 inputs include mutual funds, the fair values for which were based on quoted prices for identical assets in active markets.

Investments recorded at cost include money market funds. Investments at cost are not required to be classified in one of the levels prescribed by the fair value hierarchy.

The following is a summary of investments, all of which were valued using Level 1 inputs or at cost, at December 31,:

	2015	2014
Investments, at fair value		
Mutual funds - equities	$ 10,030,619	$ 10,183,123
Mutual funds - fixed income	6,212,314	6,131,697
Investments, at cost		
Money market funds	164,470	290,569
	$ 16,407,403	**$ 16,605,389**

C. Investments and Fair Value Measurements - Continued

Investment income, exclusive of amounts held in cash accounts, consists of the following for the years ended December 31,:

	2015	2014
Unrealized (loss) gains	$ (981,637)	$ 566,261
Interest and dividends	347,381	326,885
Realized gains	476,012	171,729
Investment fees	(65,397)	(63,226)
	$ (223,641)	**$ 1,001,649**

D. Property and Equipment

Property and equipment are stated at cost and depreciated on a straight-line basis over the estimated useful lives of the assets: 30 years for the building and improvements and 3 to 5 years for furniture and fixtures, equipment, and software. Equipment purchased through capital leases is amortized based on the straight-line method over the lesser of the estimated useful life of the equipment or the life of the lease. The Association capitalizes all property and equipment purchased with a cost of $5,000 or more.

Property and equipment consists of the following at December 31,:

	2015	2014
Building and improvements	$ 8,514,420	$ 8,514,420
Furniture and fixtures	211,869	211,869
Office equipment	124,630	124,630
Software	261,385	215,579
Computer equipment	166,321	152,086
Leased equipment	78,142	78,142
Land	1,286,000	1,286,000
	10,642,767	10,582,726
Less: accumulated depreciation	(3,426,872)	(3,106,860)
	$ 7,215,895	**$ 7,475,866**

E. JOINT VENTURE

The following schedule presents summarized financial information from the joint venture, in which the Association has a 60% equity ownership, as of and for the years ended December, 31:

	2015	2014
Condensed income statement information		
Revenues	$ 120,768	$ 120,515
Expenses	62,833	64,326
Net income	**$ 57,935**	**$ 56,189**
Condensed balance sheet information		
Total assets	$ 137,006	$ 74,944
Total liabilities	22,883	18,755
Net equity	**$ 114,123**	**$ 56,189**

The Association also has a maintenance agreement with the joint venture in which it provides management and collection services, office space, and editorial and administrative support. Amounts due to the joint venture as of December 31, 2015 and 2014 were $95,043 and $35,061. Maintenance agreement revenue earned by the Association was $32,872 and $32,530 for the years ended December 31, 2015 and 2014, respectively.

F. BONDS PAYABLE

On August 1, 2005, the Association entered into an agreement with the Industrial Development Authority of the City of Alexandria to issue $6,500,000 of Industrial Development Revenue Bonds (the Bonds) on behalf of the Association to finance the purchase and renovation of a new headquarters building. During the year ended December 31, 2013, the Association refinanced its outstanding Industrial Development Revenue Bonds (the Bonds) that were due to mature on May 31, 2030. The Association paid the balance due on the Revenue Bonds and issued Revenue Refunding Bonds (the Bonds) for $5,396,000 with SunTrust Bank, the holder of the Bonds, which have a maturity date of August 1, 2030. The Bonds are callable on May 1, 2028, by the bondholder with 120 days' notice. Interest on the Bonds is calculated at a fixed rate of 2.75%. The Bonds are collateralized by the land and building owned by the Association. In connection with the Bonds, the Association must be in compliance with certain specified covenants.

Interest expense incurred for the years ended December 31, 2015 and 2014, was $133,404 and $141,860, respectively. Annual principal payments on the bonds at December 31, 2015, are due in future years as follows:

2016	$ 316,401
2017	325,213
2018	334,270
2019	343,579
2020	353,147
2021 - 2028	2,971,110
	$ 4,643,720

G. TEMPORARILY RESTRICTED NET ASSETS

Temporarily restricted net assets were available at December 31, 2015, for the following purposes, and net assets were released from restriction by incurring expenses satisfying the restricted purpose as follows:

	Balance December 31, 2014	Restricted Contributions	Investment Loss	Released	Balance December 31, 2015
Cox Scholarship	$ 131,655	$ 555	$ (1,737)	$ (2,031)	$ 128,442
Waksberg Award	78,926	-	(1,066)	-	77,860
Youden Award	59,115	-	(1,565)	(1,991)	55,559
Deming Lecture Fund	43,447	-	(1,426)	(3,245)	38,776
EC Bryant Award	35,992	-	(1,298)	-	34,694
Griffith Award	32,964	4,750	(488)	(3,155)	34,071
Wray Smith Scholarship Fund	33,319	-	(422)	(1,000)	31,897
Bernard Harris Fund	31,585	-	(427)	-	31,158
Dixon Award	29,177	-	(376)	(633)	28,168
MG Natrella Scholarship Fund	29,106	-	(352)	(1,000)	27,754
Noether Memorial	37,074	-	(2,992)	(8,201)	25,881
Chambers Award (ACM)	21,854	-	(250)	(1,500)	20,104
Wilks Memorial	15,666	-	(801)	(1,695)	13,170
Marquardt Memorial	12,752	-	(523)	(121)	12,108
Karl E. Peace Award	11,734	-	(590)	(1,021)	10,123
Lester R. Curtin Award	10,643	-	(472)	(986)	9,185
Other Restricted Funds	-	8,467	-	-	8,467
Martha Aliaga Scholarship Fund	8,205	-	(81)	(1,300)	6,824
Waller Fund	8,677	-	(678)	(2,009)	5,990
Lingzi Lu Award	5,409	2,555	(618)	(1,529)	5,817
International Prize in Statistics	-	732	-	-	732
Bartko Award	-	1,191	(516)	-	675
Judea Pearl Prize	5,000	5,000	-	(10,000)	-
Sirken Award	3,764	-	(1,883)	(1,881)	-
	$ 646,064	**$ 23,250**	**$ (18,561)**	**$ (43,298)**	**$ 607,455**

G. TEMPORARILY RESTRICTED NET ASSETS - CONTINUED

Temporarily restricted net assets were available at December 31, 2014, for the following purposes, and net assets were released from restriction by incurring expenses satisfying the restricted purpose as follows:

	Balance December 31, 2013	Restricted Contributions	Investment Income	Released	Balance December 31, 2014
Cox Scholarship	$ 125,562	$ -	$ 8,121	$ (2,028)	$ 131,655
Waksberg Award	77,886	-	5,040	(4,000)	78,926
Youden Award	54,393	-	7,448	(2,726)	59,115
Deming Lecture Fund	39,608	-	6,872	(3,033)	43,447
Griffith Award	28,825	5,500	1,913	(3,274)	32,964
Wray Smith Scholarship Fund	32,238	-	2,081	(1,000)	33,319
EC Bryant Award	32,517	-	5,975	(2,500)	35,992
Noether Memorial	30,620	-	15,274	(8,820)	37,074
Bernard Harris Fund	14,901	15,100	1,584	-	31,585
Dixon Award	27,881	-	1,803	(507)	29,177
MG Natrella Scholarship Fund	28,311	-	1,795	(1,000)	29,106
Chambers Award (ACM)	21,471	-	1,383	(1,000)	21,854
Wilks Memorial	13,427	-	3,911	(1,672)	15,666
Marquardt Memorial	10,378	-	2,374	-	12,752
Karl E. Peace Award	9,166	-	2,792	(224)	11,734
Lester R. Curtin Award	8,582	-	2,168	(107)	10,643
Waller Fund	7,325	-	3,373	(2,021)	8,677
Martha Aliaga Scholarship Fund	8,183	-	522	(500)	8,205
Lingzi Lu Award	2,663	-	2,753	(7)	5,409
Judea Pearl Prize	15,000	-	-	(10,000)	5,000
Sirken Award	-	-	3,764	-	3,764
Promoting Statistics Fund	-	4,505	-	(4,505)	-
Access to Statistics Fund	-	2,870	-	(2,870)	-
Excellence in Statistics Fund	-	550	-	(550)	-
	$ 588,937	**$ 28,525**	**$ 80,946**	**$ (52,344)**	**$ 646,064**

H. ENDOWMENT

The Association's endowment funds have been established for the purpose of awards and grants supporting education and research in the field of statistics. The Association's policies for making appropriations for expenditures are to follow the directives of the donors and to comply with the regulations in the state laws for endowments. Under accounting principles generally accepted in the United States of America, net assets associated with endowment funds are classified and reported based on the existence or absence of donor-imposed restrictions.

Though management of the Association has not conducted a formal analysis of its compliance with the Uniform Prudent Management of Institutional Funds Act (UPMIFA), it has established policies regarding the preservation, investment and expenditure of permanently restricted net assets. Consistent with generally accepted accounting principles management believes that permanently restricted funds require the preservation of the fair value of the gifts, and that earnings on those funds should be classified in accordance with the donor's stipulations, if any, as either temporarily restricted or unrestricted.

H. ENDOWMENT - CONTINUED

In accordance with UPMIFA, the Association considers the following factors in making a determination to appropriate or accumulate donor-restricted funds: (1) duration and preservation of the fund; (2) purposes of the Association and the donor-restricted endowment fund; (3) general economic conditions; (4) possible effect of inflation and deflation; (5) expected total return from income and the appreciation or depreciation of investments; (6) other resources of the Association; (7) investment policies of the Association.

The Association has adopted investment and spending policies for endowment assets that attempt to provide a predictable stream of funding to programs supported by its endowment while seeking to maintain purchasing power of the endowment assets. All earnings of the endowment are reflected as temporarily restricted net assets until appropriated for expenditure based on donor restrictions by the various Committees of the Association. The Board of Directors has assigned a Committee to each program for the purposes of selecting and recommending individuals for awards or grants.

From time to time, the fair value of assets associated with individual donor-restricted endowment funds may fall below the level that the donor or UPMIFA requires the Association to retain as a fund of perpetual duration. In accordance with GAAP, deficiencies of this nature that are reported in unrestricted net assets were $3,890 and $0 as of December 31, 2015 and 2014, respectively.

Endowment net assets consisted of the following at December 31,:

	2015			
	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
Noether Memorial Fund	$ -	$ 25,881	$ 206,506	$ 232,387
Sirken Award	(3,890)	-	150,000	146,110
Deming Lecture Fund		38,776	67,275	106,051
Youden Award		55,559	61,082	116,641
EC Bryant Fund		34,694	60,000	94,694
Wilks Memorial Fund		13,170	47,143	60,313
Waller Fund		5,990	45,000	50,990
Lingzi Lu Fund		5,817	39,770	45,587
Karl E. Peace Award		10,123	34,000	44,123
Marquardt Memorial Fund		12,108	26,250	38,358
Lester R. Curtin Award		9,185	25,000	34,185
Bartko Award		675	25,000	25,675
	$ (3,890)	**$ 211,978**	**$ 787,026**	**$ 995,114**

American Statistical Association

Notes to Financial Statements

H. Endowment - Continued

	2014			
	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
Noether Memorial Fund	$ -	$ 37,074	$ 206,506	$ 243,580
Sirken Award		3,764	150,000	153,764
Deming Lecture Fund		43,447	67,275	110,722
Youden Award		59,115	61,082	120,197
EC Bryant Fund		35,992	60,000	95,992
Wilks Memorial Fund		15,666	47,143	62,809
Waller Fund		8,677	45,000	53,677
Lingzi Lu Fund		5,409	39,770	45,179
Karl E. Peace Award		11,734	34,000	45,734
Marquardt Memorial Fund		12,752	26,250	39,002
Lester R. Curtin Award		10,643	25,000	35,643
	$ -	$ 244,273	$ 762,026	$ 1,006,299

For the years ended December 31, 2015 and 2014, the Association had the following endowment-related activities:

	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
Endowment assets, January 1, 2015	$ -	$ 244,273	$ 762,026	$ 1,006,299
Contributions	-	3,746	25,000	28,746
Net appreciation and income	(3,890)	(13,362)	-	(17,252)
Appropriation of endowment assets for expenditure	-	(22,679)	-	(22,679)
Endowment assets, December 31, 2015	$ (3,890)	$ 211,978	$ 787,026	$ 995,114

	Unrestricted	Temporarily Restricted	Permanently Restricted	Total
Endowment assets, January 1, 2014	$ -	$ 200,586	$ 611,896	$ 812,482
Contributions	-	-	150,130	150,130
Net appreciation and income	-	65,686	-	65,686
Appropriation of endowment assets for expenditure	-	(21,999)	-	(21,999)
Endowment assets, December 31, 2014	$ -	$ 244,273	$ 762,026	$ 1,006,299

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American Statistical Association

Notes to Financial Statements

I. Retirement Plans

The Association has a 401(k) profit sharing plan and a money purchase plan. Both plans cover substantially all full-time employees from date of hire. Under the terms of the 401(k) profit sharing plan, the Association will match 100% of the participating employee's contributions, up to 3% of the employee's salary. Under the terms of the money purchase plan, the Association contributes 6% of an eligible employee's compensation to the plan. Contribution expense to the plans is as follows for the years ended December 31:

	2015	2014
Money purchase plan	$ 187,226	$ 175,756
401(k) profit sharing plan	89,610	82,107
	$ 276,836	$ 257,863

J. Commitments and Contingencies

Hotel space: The Association reserves hotel space for its conventions several years in advance. The contracts stipulate the number of rooms to be reserved and the time period for which they are to be reserved. As of the date of this report, contracts for hotel space had been entered into through 2020. However, due to the numerous variables involved, the Association's potential liability under these contracts cannot be determined.

Legal matters: From time to time, the Association may be subject to various legal proceedings, which are incidental to the ordinary course of business. In the opinion of management, there are no material legal proceedings to which the Association is a party.

Employment agreement: The Association has an employment agreement with its Executive Director, whereby, if the Association were to terminate the agreement without cause, the Association would be required to make certain payments to the Executive Director. The latest extension of the agreement is set to end in August 2018 unless further extended.

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STAFF SPOTLIGHT

Jill Talley

Hello to all in the statistics world. I'm Jill Talley, and I recently joined the ASA as its public relations manager. While I'm new to statistics, I'm no stranger to the field of communications. Before the ASA, I worked in public policy communications for a trade organization that sought to expand nutritious health habits among students in the K–12 community. In the decade before that, I made a career working for associations, professional membership societies, and nonprofit patient advocacy organizations. I had the great fortune to work alongside subject-matter experts in areas such as food safety, mental health, cardiovascular care, and transportation and community development.

Talley

I graduated college in 2001, and though I didn't quite know what I'd be doing professionally, I knew I didn't want to return home to rural Pennsylvania and its cows, rainy days, and lack of economic opportunity. (Funny thing is, I now enjoy visiting for its refuge, peace and quiet, and, of course, my grandmother's homemade cooking—a talent I did not inherit.) Since graduating, however, I've been able to give a voice to issues and causes that improve the quality of life for some of society's forgotten and under-represented populations.

I'm mom to a busy four-year-old son, Joel, who, with his special needs, has taught me to walk slower and cherish life's little moments. When I'm not at work, you'll find me pacing the aisles of the grocery store, running circles on the playground, and lamenting my lack of a green thumb in the flower and vegetable gardens.

In the few weeks I've been at the ASA, I've read some intriguing articles about what statisticians do. Although my work behind the scenes likely won't translate into the development of a new statistical model or identification of a new planet, that's okay. I am excited to play a role in getting the message out about all the exciting ways statistics contributes to the world around us. ■

George Mason team members (from left) Vinh Mai, Sam Brady, Amen Houenouvi, Mo Abouissa, and Leanna Moron receive certificates for participation and for winning Best Visualization at the 2016 DC DataFest.

DC DataFest: George Mason's ASA Chapter Wins 'Best Visualization' Award

Leanna Moron, George Mason University

MORE ONLINE
View the GMU student chapter website at *http://gmuamstat.weebly.com*. Find out more about DataFest at *www.amstat.org/education/datafest*.

Five students from George Mason University's American Statistical Association Chapter attended the 2016 DC DataFest April 8–10. The weekend-long competition encourages undergraduate students from a variety of disciplines to find innovative ways to analyze Big Data.

The team included **Mo Abouissa**, a senior majoring in information systems and operations management with a minor in data analysis; **Sam Brady**, a junior majoring in computer science; **Amen Houenouvi**, a senior majoring in economics with a minor in data analysis; **Vinh Mai**, a sophomore majoring in economics with minors in mathematics and data analysis; and **Leanna Moron**, a junior majoring in human development and family science with a minor in statistics. Moron is also the founder/president of George Mason's ASA Chapter.

"DataFest gave me a chance to use skills I've learned in both my statistics and computer science courses and to better understand the work of a real-world data scientist," says Brady.

"As an aspiring data scientist, DataFest has taught me what skills are most in-demand right now in the field of data science. I am more motivated than ever to contribute more to the field," says Houenouvi.

Undergraduate students do the work at DataFest, but graduate students, faculty, and industry professionals are available throughout the weekend for assistance. After two days of intense data wrangling, analysis, and presentation design, each team is allowed no more than five minutes and two or three slides to impress a panel of judges.

Judges gave awards for Best Insight, Best Visualization, and Best Use of Outside Data. This year's judges included Stephanie Eckman from RTI International, Joy Hackenbracht from Pew Trusts, Michael Sinclair from Mathematica Policy Research, Celeste Stone from American Institutes for Research, and Rick Valliant from the University of Michigan and University of Maryland's Joint Program in Survey Methodology.

To keep up with George Mason's ASA chapter, contact *gmuamstat@gmail.com*. ■

ASA LEADERS REMINISCE

Jonas Ellenberg

In the 18th installment of the Amstat News *series of interviews with ASA presidents and executive directors, we feature a discussion with 1999 ASA President Jonas Ellenberg.*

Q You began your education by studying economics and eventually moved into statistics. What motivated you to change disciplines?

A My family business background, steeped in the New York City 7th Avenue textile trade, led me to the Wharton School at the University of Pennsylvania as an undergraduate. I chose statistics as a major, as I had always enjoyed math. Wanting to earn extra money while at Penn, I signed on to the University of Pennsylvania Periodic Health Examination project under the tutelage of Stanley Schor. The project was designed to evaluate the ability of longitudinal exams to detect undiagnosed cardiovascular and malignant diseases in corporate executives and the predictive ability of clinical and laboratory tests to quantify lethality of disease. The study was exclusively male since, at the time, the concept of female executives was incorrectly considered by many as an oxymoron. This experience introduced me to the application of statistics to medicine. You can find details in the article "Periodic Health Examination. Nature and Distribution of Newly Discovered Disease in Executives" in volume 172 of the *Journal of the American Medical Association*.

Q W. G. Cochran served as your thesis advisor at Harvard. What was his general approach to working with students on their thesis research? Does any single lesson you learned from him endure in your memory?

A Cochran was both British and in the forefront of biostatistics when I entered the math stat department at Harvard. This and the fact that I had never taken advanced calculus or above prior to entry made me quite intimidated and [put me] in catch-up mode with my cohort. In spite of his warm, welcoming, and cozy demeanor, I was afraid of him and reluctant to 'pester' him with issues on my thesis—a test for outliers in multivariate regression. As a result, it was only after major milestones in my work that I felt comfortable meeting with him. This, of course, was a great error on my part,

Jonas H. Ellenberg earned his BSc in economics from the University of Pennsylvania's Wharton School in 1963, his AM in mathematical statistics from Harvard University in 1964, and his PhD in mathematical statistics from Harvard University in 1970. He joined the biostatistics faculty at the University of Pennsylvania in the fall of 2004 as professor of biostatistics and associate dean for research program development in the school of medicine.

Ellenberg's collaborative research has focused on neurological diseases, and more recently, HIV/AIDS and cardiovascular disease. He spent 26 years at the National Institute of Neurological Diseases and Stroke, NIH, with 11 of those as chief of the biometry branch.

With medical colleagues, Ellenberg performed extensive analyses of the Collaborative Perinatal Project, a longitudinal study intended to identify the etiology of serious childhood neurological illnesses and conditions. In addition to major medical findings related to causes of cerebral palsy and the significance of febrile seizures, this collaborative work led to important methodological insights regarding the conduct of longitudinal research, particularly relating to selection bias and generalizability of study results.

Ellenberg recently completed his leadership of the Clarification of Optimal Anticoagulation through Genetics, or COAG, study, which evaluated the use of genetic-guided dosing of Warfarin for use in anticoagulation, and the Prematurity and Respiratory Outcomes, or PROP, a structured follow-up study of very premature infants to assess pulmonary function. From 1995 to 2004, he served as vice president of Westat, Inc., and headed its biostatistics group. His collaborative research during this period focused on HIV in adolescents.

Ellenberg is an elected fellow of the ASA, Society for Clinical Trials, and AAAS, as well as an elected member of the International Statistical Institute. He served as president of the American Statistical Association in 1999 and the International Biometric Society in 1988. He is now professor emeritus in the department of biostatistics and epidemiology at the Perelman School of Medicine, University of Pennsylvania.

and while it served as a lasting lesson about self-confidence and assertiveness, it was my great loss to not have worked with him closely.

Q Beginning in the late 1970s, you and Karin Nelson published an extensive series of papers out of the National Institutes of Health (NIH) on the etiology of neurologic disorders in children. What impact did these results have on your career and the medical community?

A My first position out of graduate school was at the then-named National Institute for Neurological Diseases and Blindness, now the National Institute for Neurological Diseases and Stroke, or NINDS. These results were the beginning of about 25 years of collaboration with Karin Nelson, a major pediatric neurological scientist and close colleague, as well as other medical colleagues on the evaluation of prenatal, perinatal, and early developmental risk factors for cerebral palsy and convulsive disorders from the Collaborative Perinatal Project, or CPP, database that recruited participants from 1959 through 1965.

First a digression to talk about the CPP. In the CPP, approximately 54,000 pregnant women admitted to 12 selected hospitals across the United States were followed through pregnancy, and their offspring were followed through seven years of life. The large longitudinal data set on the women and their children's detailed examinations over years of life was, at the time, extraordinary. One element that highlights the meticulous and insightful planning of the CPP was the inclusion of a CPP nurse in the delivery room who was responsible only for capturing the critical data during delivery and birth. Using the data from the CPP, our collaborations forced the rethinking of many established medical paradigms.

Now on my data analytic involvement. My involvement with the CPP data analysis was in the early '70s, and this was my first encounter with very large longitudinal data sets and the unique statistical issues they presented. Setting the stage in which we worked then: data were entered manually on punch cards, and lugging around 11 x 14-inch continuous computer printouts was a charm of yesteryear. Both the speed of computers and the availability of software to implement the then-new and ground-breaking statistical methodological developments were relatively primitive. The privacy of patient medical records in panel studies mostly relied on the integrity of investigators. Such protections were later codified into law by the HIPAA legislation in 1996.

COMING UP
Please return to this column next month, when we will feature an interview with 1996 American Statistical Association President Lynne Billard.

The general research, which began with the papers you ask about, led to the conclusion that cerebral palsy, which at that time was widely believed to be due to problems during labor and delivery, was in fact due largely to factors occurring prior to labor and delivery—thereby upsetting the large cadre of lawyers whose incomes sprang from litigation against obstetricians for bad pregnancy outcomes.

At the time, the conventional wisdom was that fetal loss of oxygen, or asphyxia, during labor and delivery caused brain damage that was highly related to cerebral palsy—read *caused*. The data supporting this wisdom was generated largely from retrospective studies with highly selected samples and heterogeneous definitions of both putative risk factors and outcomes. A perhaps natural, but in hindsight, inappropriate response to this conventional wisdom was the increased use of C-sections and the introduction and rapid growth of the use of electronic fetal monitoring during labor. Both of these expensive actions were justified by the perceived need to prevent asphyxia and the eventual outcome of CP. Also note that C-sections are not without risk.

In the area of convulsive disorders, we showed that a febrile seizure, a convulsion occurring in the presence of very high fever with a fairly common occurrence in infancy—approximately 1 in 20 children—was not a risk factor for epilepsy, seizure disorders, or mental retardation, except in a very small and well-defined subset of children. This subset consisted of those children who were neurologically abnormal prior to their first febrile seizure, had a family history of seizures, or had a first complex febrile seizure. This result called into question the then-common practice of treating all children with febrile seizures with neuroactive drugs such as phenobarbital, or Pb, for extended periods—as long as two years—to prevent further seizures. Pb was not a benign drug in children; it causes hyperactivity—it is not calming, as it is in adults—so was not the best thing for children who were going through the terrible twos. These findings in observational data, while highly concerning, required confirmation, so we persuaded the institute leaders to provide funding for a randomized trial to study the efficacy and safety of Pb in the prevention of febrile seizures. The clinical trial results showed, first and somewhat surprisingly, that Pb actually did not prevent febrile seizures and, second, and just as importantly, that after a year of treatment, the children receiving Pb had lower IQ scores than the children who had had the good fortune to be assigned to receive the placebo.

On a personal note, my mother, who had expected me to go into business like my father and uncles,

never understood what I did for a living. When asked what her son was up to, she just reported that he "worked for the government." When our results on febrile seizures were reported by Gina Kolata and appeared above the fold on the front page of *The New York Times* on February 8, 1990—right next to the article describing the fall of the Soviet Union, which had occurred the day before—she received numerous excited phone calls from everyone she knew in New York City. After that, she still didn't understand what I did for a living, but recognized that I might be doing something worthwhile, even though I wasn't "in business."

With regard to the impact on the medical community, our febrile seizures research showed that these events are basically benign for all but a tiny subgroup of children who have them, and that this subgroup can be readily identified. In addition, our clinical trial showed that active medical treatment was both ineffective and harmful with respect to its serious cognitive side effects. Despite this hard evidence and the replication of our results over the years, it took almost two decades before these results were incorporated as part and parcel of standard of care in the management of febrile seizures.

The impact of our results on the etiology of cerebral palsy is interesting. Investigators continue to proffer data that are claimed to be contradictory to the CPP findings in terms of the putative increased risk of cerebral palsy related to labor and delivery issues (e.g., asphyxia). However, these new results use the same questionable design approaches as the older studies. C-section rates and the use of electronic fetal monitoring, or EFM, have both increased despite the lack of evidence for their effectiveness in preventing harm; many would say their increased use reflects a *defensive medicine* practice to combat potential malpractice suits that continue to arise following the delivery of an infant with cerebral palsy. Despite the routine use of EFM and the increase in nonmedically required C-sections, the rate of cerebral palsy has not decreased over time. The litigation against obstetricians continues, although perhaps less frequently, due to the Supreme Court decision on *Daubert v. Merrell Dow Pharmaceuticals, Inc.* disallowing evidence based on 'junk' science into the courtroom.

This CPP observational database was extraordinary for its time, and is so even today. An attempted sequel—the National Children's Study, or NCS—was a recent multi-billion-dollar effort to reinvent the CPP with a focus on the impact of environmental factors on childhood development. It was authorized by the Children's Health Act of 2000 and undertaken with a goal of developing a randomized approach to sampling pregnant women that would have allowed the most reliable conclusions. Ultimately, the NIH leadership decided to close the study, commenting at *www.nichd.nih.gov/research/NCS/Pages/default.aspx* that "… When recruitment ended in July 2013, the Vanguard Pilot Study had enrolled approximately 5,000 children in 40 locations across the country. The planned NCS Main Study would have followed 100,000 children from before birth to age 21. However, the NIH director decided to close the NCS on December 12, 2014, following the advice of an expert review group."

Mike O'Fallon, left, with Jonas Ellenberg

I began with great hopes and expectations for the NCS and was a great supporter, and even an early-stage contractor—note that my contractual role was not continued by the NCS during a re-envisioning of the study. I later served three years on and then resigned from the NCS Advisory Board, or NCSAB, after a polite but somewhat rocky tenure related to study design issues. My resignation from NCSAB was reported in *Science* in March of 2012: "In an email dated 16 March, the University of Pennsylvania's Jonas Ellenberg submitted his resignation to NCS Director Steven Hirschfeld at the National Institute of Child Health and Development, or NICHD. His note contains no explanation but says: 'I strongly urge that the NCS be reviewed a second time by the Institute of Medicine, since I believe that the current NICHD view of the NCS does not reflect the parameters of study design reviewed and endorsed by the IOM in 2008.' The reference is to an IOM report that

commended NCS's plan to recruit pregnant women living in a statistical sample of about 100 U.S. counties." I should mention that this was to be my first and only mention of any sort in *Science*.

Q In addition to statistical expertise, what other skills did you need to succeed in leadership positions at the NIH's Neurology Institute and Westat? Did you feel adequately prepared, and if not, what did you do to develop these additional skills?

A Biostatisticians often work within organizational structures that may not fully recognize the benefits of statistical collaboration, and as such may not accord organizational stature, resources, or recognition to our input. With the exception of Westat, with its focus on the statistical arena, I have always worked within medical hierarchies. Winning over both leadership and my medical and other nonstatistical colleagues was often difficult, and I did not feel well prepared for this aspect of statistical collaboration by my doctoral training in mathematical statistics. What worked well for me in many circumstances was to use examples in demonstrating the worth/value of statistical input, in contrast to making arguments based on abstract statistical paradigms. I developed, from the literature and from my own experience, a series of examples of completed studies with poor statistical design that resulted in the waste of resources—both human and monetary—and/or resulted in less-than-useful conclusions. This approach tended to be more persuasive than arguments from basic statistical principles.

What I remember about mid-level leadership at NIH came in two arenas. The first was staffing. I knew that support of junior colleagues was of paramount importance and also provided major gratification. My two final hires, Paul Albert and Lisa McShane, were wonderful colleagues who have both made and continue to make extraordinary contributions to statistical and medical science—unfortunately for NINDS, in other NIH institutes.

The second arena was dealing with resources, both staff positions and funding for our research. I took the approach in lobbying for both resources of being honest and direct about our potential accomplishments and projecting expenses as exactly as possible, allowing for the possibility of exceeding or missing goals in both areas. I can't say this was an enormously successful approach, but it seemed to provide the branch with the resources it needed.

Q What were the highs and lows of your term as president of the ASA?

A I was delighted to be able to follow through with an initiative undertaken during my presidency of the International Biometric Society in 1988 and 1989 to make the *Journal of Agricultural, Biological, and Environmental Statistics* a reality—primarily through Linda Young's efforts. The IBS did not then have the resources to maintain this journal on its own; it seemed to me important for the ASA to support a journal that could report innovative applied work in important scientific areas that would probably not find a home in more theoretical journals such as *JASA* and *Biometrics*.

Less substantively, I am also pleased that my initiation of wearing formal attire at the Tuesday evening JSM session has been taken up by most ASA presidents since. I wanted a visible way to express the statistical community's acknowledgements of the year's awardees, particularly the newly elected fellows of the ASA.

With benefit of hindsight, I wish I had put more emphasis on what is now an element in the ASA Strategic Plan under education strategies: Develop and implement a plan to influence the inclusion of statistical thinking in science and computer science. In considering our professional involvement in genetics and data mining and other new areas of science, I believe the following questions remain:

- Are the current organizational homes for either statistical genetics or data mining appropriate for attaining high-quality statistical input as true collaborators; or in the extreme, is statistical thinking in these areas considered merely a technical assist on an as-needed basis? I note in this regard a current headline on the ASA website stating that according to Careercast.com, "the best job of 2016 is data scientist, while statistician comes in at number two." Why isn't data science a subgroup of statistics?

- Is our profession in a position to aggressively lay claim to and lead the collaborative development in new areas such as these? This is neither a new concern nor one that is being ignored by the profession. In discussion with colleagues, there is the strong belief that we must be present for these emerging team science domains, especially for statistical design, inferential framework, and analytical methods that investigate confounding and causality. ■

Career Development Committee: What It Has Done for You Lately

Monica Johnston, Career Development Committee Chair

The ASA Committee on Career Development (CCD) exists to serve ASA members. Whether you're an early-career, mid-career, late-career, or retired member, the CCD provides resources relevant to you at each stage of your career. Access to these resources is one of the many benefits of ASA membership.

What does CCD provide?

We organize professional development sessions for JSM, giving members an opportunity to learn from experienced statisticians about career decisions and the impact those decisions have on their careers. Through sponsorship of other sessions at JSM, we support ASA committees, sections, and other groups who want to provide career support for subsets of statisticians such as postdoctoral statistics students, applied statisticians, women statisticians, consultants, and statisticians with a master's degree.

What will CCD do at JSM 2016?

The CCD has arranged a career panel session for JSM 2016. The session, Career Development: Power Careers in Statistics, is free, but registration is required so the ASA staff can reserve a room large enough for the audience. Last year's panel presented to a standing-room-only crowd! Watch for details under Professional Development in the JSM 2016 registration information.

Additionally, we're co-sponsoring two invited sessions and sponsoring one topic-contributed session. We are co-sponsoring, with the Caucus for Women in Statistics, Extraordinary Impact of Statistics and, with the Joint Committee on Women in the Mathematical Sciences, Effective Self-Promotion to Advance Your Career in Statistics. We're sponsoring the topic-contributed session The NISS Postdoctoral Program: Success Stories. Details of these sessions will be available in the online program at *www.amstat.org/meetings/jsm/2016/onlineprogram*.

Please stop by our Information Table in the JSM registration area! Gather information, ask a question, grab a snack, and leave us with your suggestions for future career development programs.

What's next for CCD?

Currently, we are exploring interest in webinars about professional mobility for statisticians. We'll review opinions and suggestions from those who stop by our information table at JSM 2016 and obtain input from other committees.

In April 2016, we submitted results of our career satisfaction survey of ASA members to the ASA Board. We hope results will assist the ASA as it considers career development needs of members. We look forward to reporting outcomes in future *Amstat News* issues. We also plan to develop CCD programs based on the outcomes of the survey and input from people who leave suggestions at our information table at JSM 2016.

If you have comments or suggestions, please contact Monica L. Johnston through the ASA Community at *http://community.amstat.org/home*. ■

Abstracts Wanted for 2017 Nonparametrics Conference

A conference in honor of P.K. Sen and Dana Quade on nonparametrics in modern biomedical and clinical sciences will be held in Chapel Hill, North Carolina, October 16–17, 2017.

The goal of the conference is to bring together scholars, researchers, educators, students, and professionals interested in this area of statistics. Individuals are invited to submit an abstract by January 15, 2017. A complete paper is expected by July 15, 2017. Possible topics include the following:

- Nonparametrics in drug development and biopharmaceutical research
- Nonparametrics in bio-environmental studies
- Nonparametrics in bioinformatics
- Nonparametrics in QTL and multifactor genetics
- Nonparametrics in biostatistics core courses teaching and practice

Conference organizers intend to publish a volume of selected papers in early 2018.

For more information, contact Gary Koch at *bcl@bios.unc.edu* or Ibrahim Salama at *isalama@nccu.edu*.

Meet John Phillips, Associate Commissioner of the Office of Research, Evaluation, and Statistics

Amstat News *invited John Phillips—associate commissioner of the Office of Research, Evaluation, and Statistics—to respond to the following questions so readers could learn more about him and the agency he leads.*

John W. R. Phillips joined the Social Security Administration as associate commissioner of the Office of Research, Evaluation, and Statistics in February. Prior to joining SSA, he served as chief of the Population and Social Processes Branch of the National Institute on Aging, leading an extramural research program and serving as a federal project scientist for the U.S. Health and Retirement Study. Phillips earned a PhD in economics from Syracuse University and completed a postdoctoral fellowship at the University of Pennsylvania.

What about this position appealed to you?

The position captures the elements that motivated my career choices to date. The Office of Research, Evaluation, and Statistics (ORES) is a federal statistical unit within the Social Security Administration responsible for the production and dissemination of research and data on Social Security programs. I began my federal career 17 years ago as an economist in a division within ORES, so the opportunity to return in a leadership role was an exciting opportunity for me. Over my career at SSA and the National Institutes of Health, I worked to develop research and data that contribute to better understanding the mechanisms that influence the welfare of older Americans. It seems like a great fit.

Describe the top 2–3 priorities you have for ORES.

Two critical priorities for our agency are to educate the public about Social Security programs and to accelerate the use of data-driven decision making. ORES plays important roles in supporting these objectives. Our statisticians and researchers collaborate with our information resources team to produce publications reporting information about important aspects of the program. Trends in applications and benefits, changes in international social insurance policy, and the relationship between earnings and mortality are a few examples. Our data team produces extracts of administrative data to support analysis conducted by federal and academic researchers using protocols intended to manage disclosure risk. My intention is to continue to encourage and publish meritorious research through our intramural and extramural programs, expand our capability to conduct research using administrative records while protecting confidentiality, and build the evidence base to support both policy making and education of the public about our programs.

What do you see as your biggest challenge(s) for ORES?

Changes in technology are providing new opportunities to conduct research and share data while also producing new challenges to protect it. Effective data sharing expands the pool of researchers conducting both novel analyses and replication studies. We need to evaluate new opportunities and partnerships to enhance the quality of and access to research data while enhancing effective protections from inappropriate disclosures. Further, new data management and visualization techniques can fundamentally change the way we organize, share, and use program records for research. Managing our desire to do more to improve data for research in the current budget environment is a big challenge.

What kind of support from the broader statistical community do you look for?

Being a federal statistical unit has benefits, including belonging to a network of other federal statistical units with excellent leadership. For example, I have had the opportunity to meet with the agency representatives from the Interagency Council on Statistical Policy (ICSP). The participants bring a wealth of statistical experience and share many of the same objectives as ORES. I hope to continue to engage groups of statistical experts such as ICSP and the National Academies of Sciences Committee on National Statistics to learn the best strategies to achieve the statistical objectives of ORES.

Prior to your tenure, what do you see as the biggest recent accomplishment of ORES?

ORES has accomplished a great deal in recent times. Our research unit has produced important findings about the social determinants of health, and our grant program has published award-winning research on saving. Our statistical, international, and publication teams combine to produce a significant number of valuable online publications a year. Our data team produces important extracts supporting social research on our programs, such as the administrative data linkage to the Health and Retirement Study. All these accomplishments contribute to our objectives to educate the public about Social Security programs and to accelerate the use of data-driven decision making. That said, a significant accomplishment for ORES would be our relatively recent designation as an official statistical agency by OMB in 2009. The designation both affords the enhanced confidentiality protections to data the agency acquires for exclusively statistical purposes and connects SSA to a valuable network of federal statistical units. ■

National Alliance Offers Opportunities for Undergraduates

Alliance mentors Gerard Buskes, Carmen Wright, and Donald Cole at the 2012 Field of Dreams Conference in Phoenix, Arizona

The National Alliance for Doctoral Studies in the Mathematical Sciences (*www.mathalliance.org*) is a model for increasing participation and inclusion of U.S. students in doctoral programs in the mathematical and statistical sciences. It is a partnership of faculty working together to mentor students who are preparing for, applying to, and entering graduate school, and subsequently graduating with a PhD.

The partnership includes faculty from primarily undergraduate institutions, many minority serving, as well as faculty from graduate programs in the math sciences. The goal of the alliance is to *"be sure that every under-represented or underserved American student with the talent and the ambition has the opportunity to earn a doctoral degree in a math science."* The alliance is committed to building a community of students, faculty, and staff who will work together to transform the field of mathematical sciences.

Programmatically, the alliance offers several opportunities for undergraduate students. The offerings include the F-GAP (Facilitated Graduate Admissions Process) program, a monthly newsletter that includes undergraduate research opportunities and job postings, and the cornerstone of the alliance—the annual Field of Dreams (FoD) Conference. The FoD introduces potential graduate students to programs in the mathematical sciences at alliance schools, as well as professional opportunities in these fields. Scholars spend time with faculty mentors from the alliance schools, receive advice about their graduate school applications, and attend seminars on graduate school preparations and expectations. Additionally, faculty mentors from undergraduate programs and graduate mentors have opportunities to network.

The math alliance is led by a board of directors chaired by Philip Kutzko of the University of Iowa Department of Mathematics. He was the founding director of the alliance and has won numerous awards for mentoring and his efforts to increase diversity. The alliance has been housed at the University of Iowa since its inception, but moved to the department of mathematics at Purdue University on April 1. David Goldberg will be the executive director and take over the administrative leadership, assisted by associate director Edray Goins. Goldberg and Goins, with the rest of the Purdue team, will ensure the programmatic functions continue to help serve the alliance students and mentors.

The math alliance is hoping to bring on many more graduate program groups (GPGs)—PhD-granting departments in the math sciences that have a strong commitment to expanding the diversity in our field. Currently, there are 32 GPGs, of which four are in statistics, five are in biostatistics, one is in educational measurement, and the remaining are in math. To become a GPG, a department needs the following:

- Substantial buy-in by the senior faculty for minority doctoral education
- A strong mentoring program instituted for all graduate students
- The willingness to assess the culture and practices of the graduate program in the context of increasing numbers of U.S. and especially under-represented minority students

There will be a meeting of the statistics initiative of the math alliance during the Joint Statistical Meetings in Chicago. Look for information in the JSM program or contact Leslie McClure, initiative chair and member of the math alliance board, at *lam439@drexel.edu*. ■

STAT*tr@k*

Surviving Graduate School: What Happens in Session Stays in Session

Kimberly F. Sellers, K. Nicole Meyer, Maria A. Terres, Samantha Tyner, and Kaitlin Woo

This article about a session that took place during the Women in Statistics Conference in 2014 ran in Volume 27 of CHANCE *magazine.*

With nearly 100 students attending the 2014 conference, there was no better way to kick off Celebrating Women in Statistics than with a panel titled "Surviving Graduate School." Panelists K. Nicole Meyer, Kaitlin Woo, Maria Terres, and Samantha Tyner shared their experiences and insights with audience members. Kimberly Sellers, a Georgetown University faculty member, moderated.

The success of this panel would be determined by how comfortable the panelists and audience were discussing frustrations, anxieties, and personal situations. To ensure an open and frank discussion, Sellers started the session stressing, "What happens in the session stays in the session."

With this assurance, audience members in various stages of graduate study discussed with the panelists a broad range of topics, including deciding between master's and PhD programs, how to work through frustrations in one's chosen program, selecting a research adviser, and developing a dissertation—start to finish.

Discussion flowed freely, often drifting into more sensitive questions and topics. Panelists and audience members offered insight to those in need of proactive approaches to deal with difficult situations. Not only did the session provide mental and emotional release for attendees, but also talking with other female students allowed everyone to recognize commonality in their experiences across institutions, giving credence to the notion of strength in numbers.

Diverse discussion topics offered opportunities for reflection and advice from the panelists about life lessons and making graduate school a rewarding experience, such as the following:

Have a life outside of graduate school

Graduate school can easily consume one's life in a way that evolves into feeling overwhelmed, alone, and burned out. Panelists suggested putting boundaries on graduate school—allowing time to enjoy hobbies, family, and friends outside of the graduate program.

Stay true to yourself

Going to graduate school and staying there is a personal decision, but opinions and judgments from others spew forth regularly. Take time to understand the commitment this process requires and don't be afraid to evaluate and possibly change your

Second WSDS Again Embraces Knowing Your Power

Dalene Stangl, Jiayang Sun, and Donna LaLonde

The ASA will host a second round of Celebrating Women in Statistics and Data Science October 20–22, in Charlotte, North Carolina (Page 26 and *ww2.amstat.org/meetings/wsds/2016*). The conference targets participants in career stages from undergraduate students through senior leader in academia, industry, and government.

The second conference will carry the same theme as the first, "Know Your Power." Central to the conference is women sharing transformative moments in their lives, explaining how those moments affected their careers, and demonstrating how these individual moments lead to improvements in the stature of women in the field.

The conference will include two short courses, one on communication and the other on reproducibility in data science. There will also be a workshop, "Empowering Women with Self-Defense Skills Using R." Panels on leadership, mentoring, career navigation, and choosing research topics will abound. And there will be research talks covering topological data analysis, fusion learning, 'omics data analysis, machine learning, crowdsourcing, Big Data analytics, and graphical computation, to name just a few. Keynote speakers include Bin Yu, Stacy Lindborg, Wendy Martinez, and Cynthia Clark.

Questions about the conference may be sent to *meetings@amstat.org*. Register early! Participation is limited to the first 500 registrants.

Author Bios

Nicole Meyer earned her bachelor's and master's degrees from Georgetown University and completed her doctoral work with Michelle Lacey at Tulane University in 2013. Her research interests are biostatistics, stochastic models for biological processes, and epidemiology. She is an assistant professor in the department of mathematics and statistics at South Alabama University.

Kimberly Sellers is an associate professor of mathematics and statistics. She held previous faculty positions at Carnegie Mellon University and the University of Pennsylvania. Her areas of interest and expertise are in generalized statistical methods involving count data that contain data dispersion and in image analysis techniques, particularly low-level analyses including preprocessing, normalization, feature detection, and alignment.

Maria A. Terres earned her PhD in statistical science at Duke University. She is a postdoctoral research scholar at North Carolina State University working with Montserrat Fuentes. Her research focuses on spatial-temporal modeling for environmental and ecological applications. As a graduate student at Duke, she was awarded the James B. Duke Fellowship and the 2014 Dean's Award for Excellence in Teaching.

Samantha Tyner graduated from Augustana College in Illinois in 2012 with a BA in math, economics, and French. She is currently in the statistics PhD program at Iowa State University and works as a research assistant with Iowa State's Institute for Transportation. Her research interests include statistical graphics and networks.

environment, if necessary. As you prepare to complete your graduate training, faculty and students alike will offer opinions about what you should do as a career. Understand that these opinions, while perhaps genuine, will contain personal bias. It is important to seek the advice of people outside your institution and outside academia who can offer you broader perspectives on career options. The ultimate decision remains yours. Listen carefully, but accept cautiously the advice of others. Keep their opinions in context and try not to become overly swayed by them.

MORE ONLINE
Nearly 300 participants joined together at the inaugural conference in May 2014 to share areas of technical expertise, as well as career stories of disappointment and triumph. A video of highlights is available at *http://bit.ly/1T4cPST*.

Get your master's degree en route to the PhD

More and more students are entering directly into PhD programs from a baccalaureate degree, and these graduate programs offer a (usually rather simple) means to obtain the master's degree upon completion of the qualifying examinations. It is a good idea to complete this requirement so you have the degree to your credit. Sometimes, life events can derail, postpone, or slow down graduate school pursuits. Having the master's degree under your belt offers added security.

Establish a support network

Create a network that supports you intellectually and emotionally, such as older/past students, advisers, and other faculty advocates. Remember, if you are struggling in some way, then others probably are too, and it will help to talk about it in a safe space with those you trust. It is useful to learn from older students who have gone through the same hurdles in the program. Knowing others experienced the same concerns/anxieties and were successful can boost your own perseverance and confidence. Older students are particularly helpful with sharing course and qualifying exam materials to supplement your studies and in offering feedback on various departmental matters concerning students and the graduate school process particular to your department. Having a support network that extends outside of your department can also help you remember to have a life outside of graduate school.

Find an adviser with a compatible personality and working style

For some panelists, this was of utmost importance. A conflict-ridden student-adviser relationship can make the research process lengthy and painful and the dissertation completion and graduation feel elusive. Panelists advised due diligence in familiarizing one's self with faculty research interests and papers before meeting with them to discuss advising relationships.

Be prepared for anything

Unfortunately, female students continue to experience sexism in their graduate programs and the broader academic environment. While sometimes subtle, audience and panel members agreed that these experiences are nonetheless disturbing and painful. Revealed events included professors over-explaining or dumbing down concepts to

Kaitlin Woo graduated from Georgetown University in 2011 with a BS in math and earned a master's degree in biostatistics from the University of Pennsylvania in 2013. She is a research biostatistician at Memorial Sloan Kettering Cancer Center in New York City, where she analyzes data from phase I and II clinical trials and retrospective studies.

Panelists K. Nicole Meyer (University of South Alabama), Kaitlin Woo (Memorial Sloan Kettering Cancer Center), Maria Terres (Duke University), and Samantha Tyner (Iowa State University) share their graduate school experiences with the audience.

female students and fellow male students ignoring suggestions made by their female counterparts but listening when the same suggestion is made later by a male student. Just as frustrating to students was reporting their concerns to peers or faculty, only to have them brushed off with excusatory responses such as, "Don't worry about it, it's just a cultural difference."

Overcome dissertation intimidation

A good deal of discussion focused on transitioning from coursework to research, including how to determine one's research interests and getting started in research. The idea of writing a dissertation was abstract to many audience members, leaving them unsure of how to proceed. Panelists encouraged students to break down the process into several steps, rather than consuming themselves with the idea of the finished product. One first-step suggestion was to read and summarize previous and related thus gaining context surrounding the dissertation research idea. This includes trying to determine any drawbacks associated with these methods or works as they may help to motivate your research idea. The summaries will prove helpful later in formulating the literature review for the dissertation. Another suggestion was to create an agenda of daily, weekly, and monthly tasks to stay organized and to keep progress going daily. This proves helpful not only in your progress, but also in preparing for meetings with your research adviser and providing an agenda for research meetings.

Use social media

Some panelists encouraged using Twitter as a tool to learn about current research and to stay connected with people met at conferences or related events. Further, an active presence on Twitter can be used to complement the usual sources for internship and job announcements, such as word of mouth and university job boards. There is an active statistics community on Twitter with many opportunities to learn from others in the field. LinkedIn is also a great resource for networking and the job search. Employers and recruiters, particularly in industry, are present on LinkedIn and may contact you if they see your profile and consider you a desirable candidate. The site is also a good tool for exploring different companies and job opportunities, even when you are not actively searching. The graduate student panel succeeded in creating an environment for honest and open discussion about female graduate student experiences. Actively addressing concerns made the audience feel more empowered and energized as they returned to their respective institutions. Suggestions for future panel discussions included how to address sexism without offending or alienating either the offender or oneself and how to navigate graduate school as an atypical student, such as students who are older, married, mothers, or caregivers to elderly relatives.

The diverse panel demonstrated that female graduate students take many forms, yet all can be successful in their respective pursuits. ■

SCIENCE POLICY

DHHS Administration for Children and Families Uses Rigorous Evaluation

This month's guest columnist—Naomi Goldstein, deputy assistant secretary for planning, research, and evaluation at the U.S. Department of Health and Human Services Administration for Children and Families—writes about her agency's evaluation policy. This piece is part of an Amstat News series spotlighting the federal government's work to better integrate evidence and rigorous evaluation into budget, management, and policy decisions.

*—**Steve Pierson**, ASA Director of Science Policy*

Naomi Goldstein joined the Administration for Children and Families in 2000 and became deputy assistant secretary in 2015. She earned her bachelor's in philosophy from Yale University, her master's from the Kennedy School of Government, and her PhD in public policy from Harvard University. For more about Goldstein, visit *www.acf.hhs.gov/about/leadership/naomi-goldstein.*

The Administration for Children and Families (ACF) is a division of the U.S. Department of Health and Human Services that oversees programs for low-income and vulnerable populations such as the Head Start early education program, the Temporary Assistance for Needy Families program, child welfare and protective services, and many more.

ACF's mission is to foster health and well-being through the compassionate and effective delivery of human services. ACF and its Office of Planning, Research, and Evaluation (OPRE) have a long history of rigorous evaluation drawing on academic traditions, primarily in economics and psychology. It is ACF's policy to integrate both use of existing evidence and opportunities for further learning into all our activities. Where an evidence base is lacking, we build evidence through strong evaluations. Where evidence exists, we use it.

Our research and evaluation activities cover a range of types of studies, codified in a *Common Framework for Research and Evaluation* (*http://1.usa.gov/1VVYTjO*). Our work includes measurement development, nationally representative surveys such as the National Incidence Study of Child Abuse and Neglect and the National Survey of Early Care and Education, design and testing of service innovations, and impact studies such as the Mother and Infant Home Visiting Program Evaluation and the Employment Retention and Advancement project.

In 2012, ACF established an evaluation policy (*http://1.usa.gov/1YqtFPz*) to formalize our commitment to learning and outline a few guiding principles. We built on existing policies of other agencies and private organizations. Developing the policy required us to clarify our goals and principles. Having the policy has helped keep these goals and principles in the forefront. It can orient new employees and help make these goals and principles part of the shared set of values and assumptions across our agency. The policy has gained some external attention, as well. For example, the Department of Labor adopted a similar policy in 2013. Also, a chapter in the Analytical Perspectives volume of the FY 2017 president's budget proposal cited the policy and adopted much of its content.

The policy covers five principles: rigor, relevance, transparency, independence, and ethics. Under the principle of rigor, the policy states that ACF is committed to using the most rigorous methods that are appropriate to the evaluation questions and feasible within budget and other constraints. Rigor is not restricted to impact evaluations, but is also necessary in implementation or process evaluations, descriptive studies, outcome evaluations, and formative evaluations. Both qualitative and quantitative approaches. Rigor requires ensuring that inferences about cause and effect are well founded (internal validity); requires clarity about the populations, settings, or circumstances to which results can be generalized (external validity); and requires the use of measures that accurately capture the intended information (measurement reliability and validity).

In assessing the effects of programs or services, ACF evaluations will use methods that isolate to the greatest extent possible the impacts of the programs or services from other influences such as trends over time, geographic variation, or pre-existing differences between participants and non-participants. For such causal questions, experimental approaches are preferred.

When experimental approaches are not feasible, high-quality quasi-experiments offer an alternative.

Achieving rigor requires that we recruit and maintain an evaluation workforce with training and experience appropriate for planning and overseeing a rigorous evaluation portfolio. To accomplish this, we aim to recruit staff with advanced degrees and experience in a range of relevant disciplines such as program evaluation, policy analysis, economics, sociology, and child development. And we provide professional development opportunities so staff can keep their skills current.

Under the principle of relevance, the policy emphasizes the importance of strong partnerships among evaluation staff, program staff, policy makers and service providers. Policy makers and practitioners should have the opportunity to influence evaluation priorities to meet their interests and needs. Planning for research and evaluation should be integrated with planning for new initiatives. It is also important for evaluators to disseminate findings in ways that are accessible and useful to policy makers and practitioners.

Under the principle of transparency, ACF is committed to making information about planned and ongoing evaluations easily accessible, including descriptions of the evaluation questions, planned methods, and expected timeline for reporting results. Further, we will release evaluation results regardless of the findings. Evaluation reports will describe the methods used, including strengths and weaknesses, and discuss the generalizability of the findings. Evaluation reports will present comprehensive results, including favorable, unfavorable, and null findings. ACF will release evaluation results timely and archive evaluation data for secondary use by interested researchers.

Under the principle of independence, ACF's evaluation policy confirms our commitment to preserve objectivity through insulating evaluation functions from undue influence and from both the appearance and reality of bias.

Finally, under the principle of ethics, ACF is committed to conducting evaluations to safeguard the dignity, rights, safety, and privacy of participants through complying with both the spirit and the letter of relevant requirements, such as regulations governing research involving human subjects.

There are many obstacles to carrying out high-quality research and evaluation in a complex bureaucratic and political context. This core set of principles helps keep our work on track. In addition, we rely on the expertise and capacity of other sectors, including academia and private contracting firms—and on the standards set by organizations like the American Statistical Association. ■

The National Survey of Child and Adolescent Well-Being (NSCAW)

The National Survey of Child and Adolescent Well-Being (NSCAW) is an example of a nationally representative study sponsored by OPRE. It is a longitudinal study of children and families who have been the subjects of investigation by Child Protective Services. The study collects first-hand reports from children, parents, and other caregivers, as well as reports from caseworkers and teachers and data from administrative records. NSCAW examines child and family well-being outcomes in detail and seeks to relate those outcomes to experiences with the child welfare system and to family characteristics, community environment, and other factors. Data are archived for secondary use at the National Data Archive on Child Abuse and Neglect.

Behavioral Interventions to Advance Self-Sufficiency (BIAS)

As an example of an experimental approach, OPRE's Behavioral Interventions to Advance Self-Sufficiency (BIAS) project has conducted 15 randomized trials in seven states. This project is the first major effort to use a behavioral economics lens to examine programs that serve poor and vulnerable families in the United States. Unlike many of our studies that examine substantial interventions aimed at influencing long-term outcomes, BIAS focuses on relatively small, inexpensive adjustments to practices meant to influence proximate outcomes such as participation in services or submission of required forms to continue receiving benefits. In 11 of the 15 trials, adjustments such as extra reminders or more simplified, personalized letters yielded significant impacts on outcomes of interest.

Women in Statistics and Data Science

A Conference to Empower

Amy Farris, ASA Director of Membership Development and Marketing, and Donna LaLonde, ASA Director of Strategic Initiatives and Outreach

The American Statistical Association is pleased to announce the Conference for Women in Statistics and Data Science (WSDS), to be held October 20–22 in Charlotte, North Carolina. WSDS 2016 will bring hundreds of statistical practitioners and data scientists together in celebration of women in statistics and data science.

The focus of this conference is to empower women statisticians, biostatisticians, and data scientists by exchanging ideas and presenting technical talks on important, modern, and cutting-edge research; discussing how to establish fruitful multidisciplinary collaborations; and showcasing the accomplishments of successful women professionals.

With leaders from academia, government, and industry, this conference is aimed at encouraging women to enter and stay in these critical fields. The conference environment will be unique and conducive to women sharing and growing their knowledge, influence, and community. Senior, mid-level, and junior stars representing industrial, academic, and government communities will unite to present their life's work and share their perspectives on the role of women in today's statistics and data science fields.

The two-and-a-half-day conference will include multiple parallel technical sessions providing participants with the opportunity to learn about novel approaches and innovations addressing the challenges of Big Data. The technical sessions will be complemented by career development sessions for all stages of participants, leadership development sessions, and formal and informal mentoring sessions.

Registration opens June 2, and the housing deadline is September 20. Conference registration ends October 4.

This year's featured speakers are Cynthia Clark, Stacy Lindborg, Wendy Martinez, and Bin Yu. Here, they reflect on their long careers, share advice for the future, and discuss the topic they plan to talk about at WSDS. Stacy Lindborg was unavailable for the Q&A.

MORE ONLINE
Learn more about the conference and register today at *ww2.amstat.org/wsds.*

October 20–22 • Charlotte, North Carolina

Cynthia Clark

National Agricultural Statistics Service Administrator (retired)

What or who inspired you to become a statistician?

I did not have a directed goal to study statistics, specifically. I was an undergraduate mathematics major at a liberal arts college for women. I did have an undergraduate calculus-based probability and statistics course. However, my goal was to be a college professor. After earning my bachelor's degree, I received a Danforth Scholarship for graduate study directed toward teaching mathematics. While in that program, I took a course in econometrics that I really enjoyed. Afterward, I was offered a three-year position as an instructor in the mathematics department at the University of Denver. Realizing I would be limited to teaching calculus unless I had a doctoral degree, I began doctoral studies in mathematics first at the University of Colorado and then—when my husband accepted a position as an associate professor in the Drake University Law School—at Iowa State University in Ames, Iowa. During my first year there as a graduate student, it became clear that there were very few academic positions in mathematics departments, and that a doctoral degree in mathematics might not be a ticket for an academic position.

I realized that the knowledge I had gained from the graduate mathematics courses I had taken was applicable to other fields, so I decided to go shopping for a department at Iowa State where I might pursue my goal of teaching college students. I first went to the computer science department. That was the only time in my career when I felt I was discriminated against as a woman. The department chair was going to make it very difficult for me to be a student in his department. I felt that, as a mother of three preschool children (who was commuting 40 miles from Des Moines to Ames to attend classes), I did not need to face the challenges he was describing. I approached the chair of the statistics department, Professor Bancroft, who was very welcoming. In fact, I could enter without any examination, would have already fulfilled the required mathematics courses, and only needed a statistical methods class, which did not have to be taken before I enrolled in graduate statistics courses. While a student at ISU, my goal continued to be seeking an academic position, now in a statistics department. Only when my husband accepted a position with the Treasury Department in Washington, DC, did I pursue non-academic positions as a statistician. It was not until much later in my career that I recognized how fortunate I was to have found the highly rated ISU Statistics Department.

Clark

Reflecting on your career, what is the most important lesson you've learned?

It is hard to pinpoint one lesson. However, in whatever field of endeavor you choose, you need to always continue to learn. My goal has been to improve whatever I am doing or have responsibility for. I set high standards for myself and those who work with me. Much of my career has been as a manager or leader. Early on, I learned there were many work-related problems I did not, myself, have the knowledge or skill to solve. So I had to find others with the desired skills who I trusted to give me knowledgeable advice. As an organizational leader, I often sought advice from multiple individuals who had a diversity of views. I also learned that, as a manager, you always should have more than one person on a project—either working collaboratively or as a back-up in case one of the individuals is no longer able to be on the project. Even senior statisticians should have an individual who reviews their conclusions and work. Succeeding in meeting these challenges requires skill working with people, so that is probably the most important skill to acquire.

Looking to the future, what project are you most excited about?

I recently retired—for the fourth time. I do not plan to commit to another full-time paid or volunteer position. What I am doing is offering my services in an advisory role. I am presently on the boards of the Council of Professional Associations for Federal Statistics, the National Academy of Science's Panel on Re-engineering the Census Bureau's Economic Surveys, the Laboratory for Interdisciplinary Statistical Analysis (LISA 2020), and our homeowner's association. I am a member of the Statistics' Canada Methodology Advisory Committee and the Washington Statistical Society's ASA Fellows Committee.

Additionally, I have the opportunity to see my six children and 20 grandchildren more frequently and spend time with them. My husband and I are currently planning a late summer trip with a college-bound grandson to Spain (his choice to use his

knowledge of Spanish on the trip). I will continue to pursue my interest in family history, hoping to prepare some biographies of my ancestors. I gained an interest in early Mormon history in a recent 18-month full-time volunteer position in Nauvoo, Illinois, and am currently on a research team with a chaired professor at the University of Virginia adding my knowledge of Hancock County property and geography to her project team.

What advice would you offer an undergraduate statistics major?

One of the things I love about statistics is that I have gained knowledge in many other fields of statistical application as I have studied and applied statistics. You might want to consider a second substantive field as an undergraduate or explore many fields to have a general knowledge of their approach to knowledge and learning. Also, writing and communication skills are very important. Do everything you can to become an excellent technical writer. Working on teams is part of most positions, so honing your skills as a team member is good advice.

What will be the focus of your talk?

I plan to talk about leaving a legacy. What will your legacy be as an individual, a woman, a spouse, a parent, a statistician, a member of society? How do I want to be known or remembered? How do I direct my life now to fulfill that dream?

Wendy Martinez

Mathematical Statistics Research Center Director, Bureau of Labor Statistics

Martinez

What or who inspired you to become a statistician?

It was the early 1990s, and I just completed my master's degree in aerospace engineering from The George Washington University. I started a new job working as an engineer at the Naval Surface Warfare Center in Dahlgren, Virginia, and my mentor was Carey Priebe (The Johns Hopkins University), who was finishing his PhD in statistics from George Mason University. He told me about a new program they had in computational sciences and informatics, where one of the tracks was in computational statistics. It was an interdisciplinary program that seemed to fit well with my educational background in engineering, mathematics, and physics. Also, statistical methods were at the core of the applications we were working on for the Navy. So, I took the plunge and embarked on a career in statistics.

Reflecting on your career, what is the most important lesson you've learned?

I learned it is important to engage in work that one can be enthusiastic about. Therefore, we should not be afraid to try new things in order to remain passionate about our profession. We may not know a lot about a topic at first, but we can learn. So, do not let fear stop you from doing something new and exciting in the vast and ever-changing field of statistics and data science.

Looking to the future, what project are you most excited about?

For the past 10 years or so, I have been interested in the statistical analysis of unstructured text. I started working at the Bureau of Labor Statistics around four years ago, and I found that many offices have many opportunities to use this rich information resource. So, I have been advancing the use of text analysis in surveys and from alternative data sources.

What advice would you offer an undergraduate statistics major?

My advice would be to find a topic in statistics that interests you and learn all you can about it. By their very nature, statistics and data science are interdisciplinary, in my opinion. So, I recommend taking additional classes and electives outside mainstream statistics to expand your knowledge. For example, having a background in computer science, artificial intelligence, computational linguistics, mathematical modeling, and/or data mining would provide a useful skill set for a new statistician.

What will be the focus of your talk?

My talk will focus on Big Data in the federal government and some related grand challenges faced by statistical agencies. I plan on talking about some of my experiences with Big Data over the past 10 years, starting with my time at the Office of Naval Research and ending with my current position at the Bureau of Labor Statistics. I will provide several research challenges to help motivate statisticians and data scientists working in this exciting area.

Bin Yu

Department of Statistics and Department of Electrical Engineering & Computer Science
Chancellor's Professor, University of California at Berkeley

You have a joint appointment in the departments of statistics and electrical engineering and computer science. How did you become involved in interdisciplinary work?

First of all, a big part of interdisciplinary research is to work with many other people, a number of whom are scientists. Getting to know them and learning science from them are the most exciting and rewarding parts of interdisciplinary research for me, especially when there is good synergy at both scientific and personal levels. To honor their contributions, I mention below names of all my main collaborators, including students and postdocs in the past years.

When I was a PhD student at Berkeley in the late '80s working with Terry Speed and Lucien Le Cam, as a pioneer of statistical bioinformatics, Terry was beginning to collaborate with biologists on biological problems in a serious way. Many of my friends were Terry's students working on bioinformatics, as well. They were sitting in an upper-division basic genetics course and I sat in with them. I was going to all the talks on bioinformatics and picking up stuff along the way. In the summer of my fourth year, I worked on lipoprotein data with Ron Krauss at Lawrence Berkeley National Laboratory under Terry's supervision. We used EM algorithm to find different sub-populations of patients with different HDL and LHL profiles, and it was my first interdisciplinary project, although my thesis work was theoretical and on empirical processes and information theory. The part of the thesis on information theory was actually interdisciplinary already, but theoretical. After my PhD, I was introduced to the information theory community by Jorma Rissanene, an IBM fellow and inventor of MDL (Minimum Description Length Principle). Jorma was my third PhD adviser in some sense, since he came to Berkeley every month and worked with me and Terry. I was awed by both the beauty and usefulness of Shannon's Information Theory. I became an active member of the information theory community and was welcomed there. I got to know other information theoreticians such as Tom Cover, Jacob Ziv, Imre Csiszar, and Sergio Verdu. This information theory theoretical interdisciplinary connection prepared me to get into signal processing later.

That summer work with Ron happened because I had an interest in applied work, since I reasoned that most of the good and creative ideas in statistics seemed to have come from solving real problems at the boundary of statistics and other fields. Before the summer, I had been reading Fisher with Terry and taking his applied statistics classes. He was wonderful as a mentor or adviser—going to the library with me, inviting me to lunch at his house every Saturday, and telling me about all his applied statistics projects—and answering my questions about them. I picked up from him a lot of "data wisdom"—a term I have coined for the essential elements of applied statistics in a web article at a Big Data website, obdms.org (*www.odbms.org/2015/04/data-wisdom-for-data-science*). Then Terry provided the opportunity with Ron in that summer. I was paid by Ron as an RA. Many years later, Ron got in touch to find statistical expertise for his current job at Oakland Children's Hospital and I introduced my colleague Haiyan Huang to him. They are still working together.

After my PhD, I went to Wisconsin-Madison as an assistant professor. One reason for this choice was to be influenced by George Box or the empirical style of English statistics. Unfortunately, I did not get to interact much with George since he was retired when I got there. I did look for opportunities to do interdisciplinary, but nothing panned out.

I returned to Berkeley in the fall of 1993. Around 1995, I attended a Neyman seminar by Martin Vetterli on wavelet signal processing. I thought it was really cool and talked to him after the seminar. He graciously invited me to attend his weekly group meeting and introduced me to his former student, Antonio Ortega, with whom I wrote my paper on wavelet image compression. My first student, Grace Chang, was joint with Martin.

In later years, I was at Bell Labs from 1998–2000 and worked on network tomography with colleagues Jin Cao and Scott Vander Wiel and low-delay and low-complexity speech compression with Gerald Schuller and Dawei Huang. Then, I engaged in remote sensing research with colleagues Amy Braverman, Eugene Clothiaux, Ming Jiang, my student Tao Shi, my joint student Xin Jiang with Ming, and postdoc Ethan Anderes for cloud detection at the polar regions. For the aerosol retrieval project based on multi-angle

Yu

MORE ONLINE
To read more about Bin Yu, see the interview she did with her student Tao Shi at *http://bit.ly/1ZBSiJn*. You can also read her presidential address, "Let Us Own Data Science," which she gave at the Institute of Mathematical Statistics Annual Meeting in 2014 (*http://bit.ly/1qbVQ8Z*).

"Follow your passion and learn how to learn on your own, since you need skills to realize your passion. You cannot learn all the skills in college that are needed in the future, since science and technology move very fast."

satellite (MISR) images, I worked with Yang Liu, my Berkeley student Nancy Wang, and postdoc Taesup Moon.

My more recent interdisciplinary experience is described below after the next question.

Reflecting on your career, what is the most important lesson you've learned?

Hold oneself up to one's own values and standards.

Looking to the future, what project are you most excited about?

That is a hard question, since I have at least four projects I am very excited about. They are also very different, so I can't order them—that won't do justice to them. If I may, I would like to say something about all of them.

First is a long-term collaboration with Berkeley neuroscientist Jack Gallant's lab on understanding a challenging visual cortex area V4 using deep learning or convolutional neural network (CNN) with my students Reza Abbasi, Yuansi Chen, and Adam Bloniarz. We are writing a paper called "Artificial Neurons Meet Real Neurons: Pattern Selectivity of V4."

The second is also a long-term collaboration with biologists Erwin Frise and Sue Celniker of Lawrence Berkeley National Lab (LBNL) that uses novel spatial gene expression data to understand how organs are formed in the modern organism Drosophila with my students Siqi Wu and Karl Kumbier and former postdocs Antony Joseph and Siva Balakrishnan. We also work with Wei Xu's computer science team at Tshinghua University to scale up the computations by building upon open-source platforms Spark and Fiji. This is my favorite data science project since it represents an iterative knowledge discovery process that is complete with wet-lab knockout experiments, statistical and machine learning methodology development, and software development for other groups to go after heterogeneous building blocks hidden in their data, spatial or not. This project also motivated exciting theoretical work on dictionary learning. The theoretical study has made us go back to practice for the next step of devising uncertainty measures. It would not have been possible without my amazing student, Siqi Wu.

The third is a collaboration with computational biologist Ben Brown of LBNL to discover nonlinear interactions between biomolecules using iterative Random Forests (iRF). We are writing a paper with our joint postdoc Sumanta Basu. This project has motivated new theoretical nonlinear regression models that we put into a proposal.

The last is a beginning project with my Berkeley colleagues Jas Sekhon and Peter Bickel on heterogeneous effect estimation in causal inference and precision medicine. This project is powered by graduate students, Soeren Kuenzel, and Rebecca Barter.

We are also using random forests here, so good synergy with the third project at the methodological level. By the way, all the projects use state-of-the-art nonlinear methods CNN or RF or dictionary learning, which are at the frontier of statistics and machine learning as causal inference's mixing with machine learning.

What advice would you offer an undergraduate statistics major?

Follow your passion and learn how to learn on your own, since you need skills to realize your passion.

You cannot learn all the skills in college that are needed in the future, since science and technology move very fast.

What will be the focus of your talk?

I have not made the final plan yet, but I think I will speak about the fruit fly project, discuss my understanding of how good research comes about, and share lessons learned as a woman scientist engaged in interdisciplinary and theoretical research for decades. ■

Be a Better Statistician with Professional Development at JSM

Rick Peterson, ASA Professional Development & Chapters and Sections Manager

Professional Development (PD) is a fundamental component of the professional life of statisticians, and it increases the value of their contributions to society. PD is the process of improving and broadening the knowledge, skill, and personal qualities needed to be successful in the practice of statistics. The Professional Development Program at JSM boasts 30 continuing education courses, 12 computer technology workshops, and four personal skills development offerings.

The continuing education courses cover a breadth of topics such as Bayesian methods, clinical trials, data mining, longitudinal and continuous data, and survey methods. New courses this year include a primer to web scraping, a hands-on introduction to Rcpp, and statistical analysis of network data. Courses are offered in two-day, one-day, and half-day formats during the Saturday, Sunday, Monday, and Tuesday of JSM. This year's two-day course is "Introduction to Bayesian Methods, Computation, and Modeling," to be presented by Joseph Ibrahim. Other distinguished faculty members include Garrett Fitzmaurice, Wayne Fuller, Christy Chuang-Stein, Richard De Veaux, Alan Agresti, and Donald Rubin.

Computer technology workshops are overviews of software applications on a variety of methodologies such as data mining, small-area estimation, and clinical trials. Featured software providers this year are Cytel, Salford Systems, SAS, and Stata. The workshops are an hour and forty-five minutes in length and are on the Wednesday of JSM.

It is important for statisticians to be proficient in "soft skills" to collaborate with internal colleagues and decision makers and external clients. To complement the traditional courses in the PD program, he ASA now offers personal skills development workshops and panel discussions. Featured this year are three full-day workshops: *Effective Collaboration, Preparing Statisticians for Leadership: How to See the Big Picture and Have More Influence,* and *Effective Presentations for Statisticians: Success = (PD)2.* Additionally, there is a two-hour panel on Sunday that is free to all JSM attendees: *Career Development: Power Careers in Statistics.*

Register for any of the above when you register for JSM. If you have already registered for JSM, you can go back and add them on. If you have any question about the Professional Development Program, email Rick Peterson at *rick@amstat.org.* ■

Support the WSDS Conference

WSDS 2016 will bring together hundreds of statisticians and data scientists in Charlotte, North Carolina, this fall. This conference will highlight the achievements and career interests of women in statistics and data science. Women representing industry, academia, and government—who are at all stages in their careers, from graduate students to experienced leaders—will present their work and share their perspectives on the role of women in statistics and data science.

Become a WSDS sponsor and show your support of women in the statistics and data science communities.

All sponsors are recognized in the conference materials, including the website, program, and signage, as well as in *Amstat News*, reaching more than 19,000 members of the ASA. In addition, academic sponsors at the silver level or higher receive two complimentary student registrations to the meeting.

Sponsorship levels are the following:

Platinum - $10,000

Gold - $5,000

Silver - $2,500

Bronze - $1,000

See ***ww2.amstat.org/wsds*** for a list of sponsorship opportunities and detailed information about both exhibiting and sponsorship and the specific benefits of each sponsorship level.

CHICAGO
in an Afternoon (or Evening)

Mary Jeanne Kwasny, Northwestern University

JSM is in Chicago this year. It happens about once every 20 years, so Chicago statisticians are absolutely giddy! There is tons to do in Chicago, but here are a few ideas for shorter trips/outings in and around the city for you and your family or friends either before JSM, after the sessions, or when you just want to take a break to let some really good ideas sink in.

Chicago is walking friendly—especially near the lake (Grant and Millennium parks). If you are not going far, Divvy Bikes are also a great way to get around. The bus and train ("L" for elevated, as the first trains were elevated around the Loop and still are) lines can be great modes of transportation. For longer trips, consider renting or borrowing a car—the city has Uber, Lyft, and several car-sharing programs such as Zipcar.

If you want to stay in the downtown area, there is plenty to do. Grant and Millennium parks have many free activities throughout the summer. The Grant Park Music Festival in Millennium Park has free activities and concerts on most Wednesday, Friday, and Saturday nights. Friday, July 29, and Saturday, July 30, it will be moved to other venues to make way for Lollapalooza. However, Jay Pritzker Pavilion will host Rachmaninoff Rhapsody Wednesday, August 3. The Family Fun tent has a pre-concert lecture at 5:30; the concert is from 6:30 p.m. to 8:00 p.m. If you are still here on Friday, August 5, Mozart Mass in C Minor will be the event.

If classical music isn't your beat, then the Millennium Park Music Series might be more interesting. Monday, August 1, will showcase Jose Volzales (Swedish indie folk singer) and Tall Heights (vocal harmony with folk-inspired cello and acoustic guitar), while Thursday, August 4, will see Sinkane (solo artist who blends krautrock, free jazz, and funk rock with Sudanese pop) and Mark de Clive-Lowe (a veteran of the UK's broken beat movement, blending jazz, electronic dance music, funk, and percussion-heavy music) at the Pritzker Pavilion.

We don't just have music; we have movies, too! Tuesday, August 2, the 1961 award-winning adaptation of *West Side Story* will be shown at the Pritzker Pavilion.

Of course, just wandering around the parks is fun, too. Buckingham Fountain is a major Chicago landmark. It runs daily from 8:00 a.m. until 11:00 p.m., with a water display every 20 minutes. Beginning at dusk, it is also lit up. The final display begins at 10:35 p.m. There are many public art exhibits around Grant Park, as well.

The Art Institute of Chicago (on the west side of the park) has miniature rooms among other classic

works of art from Renoir to O'Keefe. The modern art wing is new since the last JSM in Chicago—and it is linked to the new Pritzker Pavilion by way of Nichols Bridgeway. Then, you can take Gehry's BP Pedestrian Bridge over to Maggie Daley Park, where you can find a rock wall and many other fun things to do. Or go west (away from the lake) over to Cloud Gate, otherwise known as "the bean."

You can find just about any tour for what you like—there are Segway, walking, boat, bike, trolley, or bus tours focused on architecture, food, chocolate, cupcakes, coffee, bars, the 1893 world's fair, or mob hangouts. Or try something different—a smartphone-guided city scavenger hunt!

The Chicago River and Navy Pier have many attractions in the summer. If you want to watch fun for a cause, August 4 is the Windy City Rubber Ducky Derby. Support Special Olympics Illinois by adopting a duck, and then come watch a giant dump truck dump thousands of rubber ducks into the Chicago River! For more information, see *www.duckrace.com/chicago*.

We have fireworks! Navy Pier lights up the night with fireworks on Wednesday at 9:30 p.m. and Saturday at 10:15 p.m. all summer. There is much to do at Navy Pier, and it is a short walk (under Lake Shore Drive) from the Sheraton Hotel. The Chicago Children's Museum, Crystal Gardens, Shakespeare Theater, food, and shopping can all be found here. Consider taking a ride on the new 196-foot Ferris Wheel, playing miniature golf, or riding a carousel.

What's the point of visiting a city on a great lake without enjoying a boat ride? The Chicago Architecture Foundation runs a river boat tour that is informative and fun as it takes advantage of views from the river (and/or lake) and the cooler breezes those waterways afford. Want to hit the boats, but not necessarily be lectured to after hours of sessions? Not to worry, there are boat rides just for fun! Wendella Boats have some that leave the river, and you can pick from speedboats to more luxury liners out on Navy Pier that head out for dinner and fireworks cruises.

Museum Campus—including the Adler Planetarium, the Field Museum of Natural History, and the Shedd Aquarium—is a great place to spend a day or afternoon. It is on the southeast end of Grant Park (closer to the convention center). There are plenty of hands-on exhibits. See how much you would weigh on Mars, or check out one of the Skyshows at the planetarium. Meet Sue, the T-Rex, or look at the gem rooms in the Field Museum. Over at the Shedd, you can meet the new dolphin (born April 18 at 25 pounds) and other animals in the Oceanarium, and maybe even see a show at the 4D theater.

A little further north of the downtown area, you will find Lincoln Park. This neighborhood contains the Lincoln Park Zoo, Lincoln Park Conservatory, an outdoor theater, a rowing canal, the Chicago History Museum, the Peggy Notebaert Nature Museum, the Alfred Caldwell Lily Pool, the North Pond Nature Sanctuary, North Avenue Beach, playing fields, and prominent statues of General Ulysses S. Grant and Abraham Lincoln (interestingly, there are no statues of Grant in Grant Park). The Lincoln Park Zoo is one of the oldest zoos in the country, as well as one of the few free ones! It hosts all the usual lions and tigers and bears (not the football team—those guys play just south of McCormick Place in Soldier Field). It is truly an experience to look up at a giraffe and see the John Hancock Building in the background.

When you are in the city where skyscrapers were born, it's nice to get a bird's-eye view. Although many tourists go to the Willis (Sears) Tower for great views and glass boxes, I would not ignore the John Hancock's

CHICAGO CITY GUIDE
Be sure to check your attendee bag for our pull-out map with a selection of Chicago's attractions and restaurants.

views. Nearby to the John Hancock, you will find some nice restaurants, as well as Water Tower Place (shopping and food) and the old Chicago Pumping Station (one of the few structures that survived the Chicago fire). This part of Michigan Avenue is referred to as the "Magnificent Mile," and once you walk down it, there will be little doubt as to why.

If you want, hop a cab or take a ride on the #6 or #2 bus south to Hyde Park and check out The University of Chicago, the site of the first controlled nuclear reaction, Oriental Institute, Smart Museum of Art, DuSable Museum of African American History, and one of my favorites: the Museum of Science and Industry (MSI). The MSI is a fun place for the family. How can it not be with exhibits like "Numbers in Nature: A Mirror Maze" and "Brick by Brick," and interactive Lego exhibit? The museum also houses a U-505 submarine, a coal mine, flight and ride simulators in the Henry Crown Space Center, a tornado, a baby chick hatchery, trains, and Yesterday's Main Street.

Hungry for hamburger, hamburger, hamburgers? Chips, no fries? We have the original Billy Goat Tavern right under Michigan Avenue north of the river. See the location made famous not only on Saturday Night Live by John Belushi, but also by the owner for cursing the Chicago Cubs when the team would not let him take his goat into the game.

Blue Man Group has been here for a while—as has Second City Comedy Club (breeding ground for comedians who wind up on SNL). Kingston Mines can't be beat for blues, but keep an eye on the time. It is open until 4 or 5 in the morning, so staying until closing is not the best idea if you are attending a roundtable at 7:00 or sessions at 8:30!

Chicago is widely known for having great food. In the mood for ethnic food? And by "ethnic," I mean just about any ethnicity you can imagine! Many cities have Chinatowns, but we have new and old sections of Chinatown, Koreatown, Greektown, Ukrainian Village, and many more neighborhoods. Check out DNA info Chicago at *http://dnain.fo/1DbFjm5*. The site lists the best restaurants (as rated by Yelp!) for African-American, Polish, Irish, Mexican, Assyrian, Swedish, Puerto Rican, Ukrainian, Chinese, or Greek.

Want to get a baseball game in? JSM just missed the crosstown classic, but the Cubs are playing the Mariners July 29–31 and the Marlins Aug 1–3. The Sox are away until August 5, when they play Baltimore.

Can't get enough statistics? Believe it or not, every Tuesday night is Chi Hack Night! Every week, there is a 10–15-minute presentation by a government agency, nonprofit, company, or group that has made use of open data or built a civic technology application. The goal of these presentations is to showcase the different uses and opportunities, as well as challenges and successes, in the civic technology movement. After the presentation, the format of the event is similar to that of a hackathon, where breakout groups self-organize to work on civic apps, discuss policies and their implications, learn technical skills, and network with a welcoming and diverse community at the intersection of technology and government (6–10 p.m. on the 8th Floor of the Merchandise Mart).

These are just some ideas for short trips around Chicago. Really! I just found an indoor skydiving place in Lincoln Park. I know what I'm doing Thursday night! ■

On the Road—From Chicago

MORE ONLINE
Read about more trips outside of Chicago at *http://magazine.amstat.org/blog/2016/06/01/outside-chicago.*

If you are planning to extend your trip to Chicago, there are many activities within a few hours' drive of the city.

North

The **Chicago Botanic Garden** is actually not in Chicago. Head *north* a bit up to Glencoe and you'll find a 385-acre living plant museum with more than 25 display gardens. Just a little farther north is **Highland Park**—a quaint town with nice houses, including **Frank Lloyd Wright's Willits House**. It is mostly known for being the summer home to the Chicago Symphony Orchestra at Ravinia, however. Check to see if there are any tickets left. It is fun to sit on the lawn and picnic while listening to the music.

Northwest

There are plenty of things to do *northwest* of the city. See where Hillary grew up in **Park Ridge** (renamed Rodham Corner), or see the site of the first McDonald's Hamburgers in **Desplaines**. **Woodstock** is about 60 miles out. You may have heard about it, and heard about it, and heard about it from Bill Murray's movie *Groundhog Day*.

A little farther away is **Lake Geneva, Wisconsin**, which is a popular vacation spot for folks from Milwaukee and Chicago. It was also a haven for infamous folks like Al Capone and Hugh Hefner.

Milwaukee is 93 miles from Chicago, where you can see the **Harley-Davidson Museum**, the **Milwaukee Art Museum**,

Miller Park (Brewers are playing the Braves August 8–11), the **Pabst Mansion**, and the **Basilica of St. Josaphat**.

For a longer trip north, the **Wisconsin Dells** is a great family vacation spot. Named "waterpark of the world," the Dells are always hopping! If you want to go to the Dells, but stay in a quieter area, check out **Baraboo, Wisconsin**—Home of **Circus World Museum** and a short drive from **Frank Lloyd Wright's Taliesin** home.

North by northwest

North by northwest (the upper corner of Illinois near Iowa and Wisconsin) is a lovely area. **Apple River Canyon State Park** has wonderful hiking trails, and just west of there is the city of **Galena**. With wineries, **Blaum Bros. Distilling Company**, and **Ulysses S. Grant's home**, it is an amazing historical area that many overlook.

West

Illinois has more **Frank Lloyd Wright homes** than any other state. You can see several houses, the **Unity Temple**, and his Oak Park home and studio in **Oak Park/River Forest**, the first suburb *west* of Chicago. There are tours of the Wright home and studio that are really interesting. Also, one of North America's four continental divides runs through Oak Park, separating the **St. Lawrence River** watershed from the **Mississippi** watershed.

Farther west in **Lisle**, you will find the **Morton Arboretum**. Covering 1,700 acres and including native wetlands and restored prairie, you should allow plenty of time to study trees from around the globe at the onsite library or in person. You can also just take a long hike.

A bit farther west is the **Fox River Valley**, where you can canoe or take river steamboat rides, or simply explore charming boutiques in **Geneva** and a family-run winery in **Oswego**. The **Kane County Cougars**, a minor league baseball team, is just on the east side of Geneva. They are at home July 30–August 2.

Southwest

Drive *southwest* for about 100 miles and you'll find **Starved Rock National Park**, just outside the village of **Utica**. This is a beautiful place to hike, canoe, or kayak—or even go horseback riding. The park is on the **Illinois River**, in an area once home to the **Illiniwek**, **Ottawa**, and **Pottawatomie**. There are gorgeous waterfalls, 18 canyons, and more than 13 miles of trails. It is the most popular of Illinois state parks, hosting more than 2 million visitors annually.

Get your kicks on **Route 66**! The famous Will Rogers Highway runs from Chicago all the way to Santa Monica, California. Through Illinois, you can visit the city of **Joliet** and see landmarks such as the **Route 66 Visitor's Center**, the **Chicagoland Speedway**, **Joliet Prison**, the first **Dairy Queen**, and the **Rialto Square Theater**.

South by southwest

Travel on Route 66 *south by southwest* for about 200 miles to reach **Springfield**, the capital of Illinois. Here, you will find **Lincoln's home**, the **Lincoln Presidential Library**, **Lincoln's Tomb**, the **Dana-Thomas house** (another Wright design), and the **Old State Capitol**.

South by southeast

South by southeast, you can drive just over the Illinois border to find **Indiana Dunes State Park**. The **Indiana-Michigan** (referred to as Michiana) shoreline is a great place to enjoy sand dunes, swim, or just relax in a summertown type atmosphere. Be careful around here, as you can be in or out of CDT/EDT zones.

There are also wine tours of southwest Michigan. Yep, we have wineries here. Not necessarily Napa Valley–worthy, but pretty good swill from a local perspective, as the lake provides moderate temperatures.

East

It would be hard to go due *east* from Chicago, as the lake (really, it's a lake) is on the east side. So we will end the compass tour here. ■

MORE ONLINE
For more information about daytrips and suburbs, or the history of Chicago in general, check out Geoffrey Baer's collection of videos at WTTW (*http://video.wttw.com/show/geoffrey-baer-tours*). Currently, there are 26 videos.

Extraordinary Impact of Statistics: A Special JSM Invited Session

Jiayang Sun, Helen Zhang, Jessica Kohlschmidt, and Monica Johnston

The invited session Extraordinary Impact of Statistics, organized by the Caucus for Women in Statistics, will take place at the Joint Statistical Meetings at 4 p.m. on July 31 and will feature four distinguished leaders in statistics. The following four speakers will talk about important statistical ideas and pivotal roles that statistics and statisticians have played in scientific discovery and social progress, as well as emerging challenges to statistics:

David Siegmund, the John T. and Sigrid Banks Professor of Statistics at Stanford University, will review important ideas in statistics. He has humbly titled his talk as "A Short History of Statistical Ideas."

Heike Hofmann, professor of statistics from Iowa State University, will give a talk titled "Cutting-Edge Research in Modern Statistical Sciences: Modern Tools and Impact in Data Science."

Sally Morton, professor and chair of biostatistics at the University of Pittsburgh and soon-to-be dean of the Virginia Tech College of Science, will give the talk "Women in Statistics: Past, Present, and Future."

The discussant will be **Xiao-Li Meng**, dean of the Harvard University Graduate School of Arts and Sciences. He will provide a discussion, along with new insights, lessons learned, and unique perspectives, in his usual enlightening style.

For more information about the Caucus of Women in Statistics, visit *cwstat.org* or email *support@cwstat.org*.

This special session was organized by the Caucus for Women in Statistics and is cosponsored by the ASA Committee on Career Development and the Joint Committee on Women in the Mathematical Sciences.

REGISTRATION FORM

2016 ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop

September 28–30, 2016 • Marriott Wardman Park—Washington, DC

www.amstat.org/meetings/biopharmworkshop/2016

1. Print or type all information and retain a copy for your records.
2. Use a separate form for each registrant.
3. Mail form with payment to BIOP2016 Registration, 732 N. Washington Street, Alexandria VA 22314. Fax form (credit card payment only) to (703) 684-2037.
4. Registration form must be received by August 30, 2016, to be processed at the reduced rate. Purchase orders will not be accepted.
   ASA Federal ID #53-0204661

Forms received without payment will not be processed.

ATTENDEE INFORMATION

ASA ID # (if known)

Name

Preferred Name for Badge (if other than first name)

Organization

Address

City State/Province ZIP/Postal Code

Country (non-U.S.)

Phone

Email

MEAL PREFERENCE

Lunch on Thursday, September 29, is included with your workshop registration.

Please indicate the table number (see back of form) for your 1st, 2nd, and 3rd choices. 1st_____ 2nd_____ 3rd_____

❑ *Lunch only* ❑ *Not attending lunch*

Select one of the following menu options: ❑ *Regular* ❑ *Vegetarian*

IN CASE OF EMERGENCY, list the name and phone number of the person we should contact (remains confidential).

Emergency Contact's Name _____

Telephone Number _____

❑ Please update my ASA customer contact information with this contact information.

❑ Please exclude my name from the conference attendee roster that will appear on the conference website.

This meeting is ADA accessible.

❑ Please check here if you need special services due to a disability or have food allergies/restrictions and attach a statement regarding your needs.

CANCELLATION POLICY

Cancellations received by August 30 will be refunded, less a $25 processing fee and less a $10 processing fee for each short course. Cancellations received from August 30 to September 19 will be refunded, less a $50 processing fee and less a $15 processing fee for each short course. Requests for refunds received after September 19 will not be honored. All cancellations must be made in writing to ***ASAInfo@amstat.org***, via fax to (703) 684-2037, or mailed to BIOP2016 Registration, 732 N. Washington Street, Alexandria VA 22314.

REGISTRATION FEE (required)

	By August 30	August 31 –September 19	
Registrant	$335	$360	$_____
Academic (nonstudent)	$240	$265	$_____
Biopharm Section Member	$250	$275	$_____
Government Employee	$150	$175	$_____
Student	$130	$155	$_____

SHORT COURSES Wednesday, September 28

$105 each before August 30; $110 each August 31–September 19

8:30 a.m.–12:00 p.m.

❑ SC1: Writing Clinical Trial Simulators, Scott Berry, Berry Consultants; Anna McGlothin, Berry Consultants $_____

❑ SC2: Bayesian Biopharmaceutical Applications Using SAS®, Fang Chen, SAS Institute; Guanghan Liu, Merck $_____

❑ SC3: An Overview of Methods to Assess Data Integrity in Clinical Trials, Richard Zink, SAS Institute; Marc Buyse, IDDI; Paul Schuette, FDA $_____

❑ SC4: Statistical Methods and Software for Multivariate Meta-Analysis, Haitao Chu, University of Minnesota; Yong Chen, University of Pennsylvania $_____

1:30 p.m.–5:00 p.m.

❑ SC5: Introduction to Clinical Trial Optimization to Enable Better Decision Making, Alex Dmitrienko, Quintiles $_____

❑ SC6: Use of Biomarkers for Surrogacy and Personalized Treatment Selection, Tianxi Cai, Harvard School of Public Health; Layla Parast, RAND Corp. $_____

❑ SC7: Structured Benefit-Risk Evaluation and Emergent Issues, Weili He, Merck; Qi Jiang, Amgen; John Scott, CBER FDA $_____

❑ SC8: Design and Statistical Analysis of Biosimilars, Shein-Chung Chow, Duke University $_____

TOTAL $_____

PAYMENT

❑ Check/money order payable to the American Statistical Association (in U.S. dollars on U.S. bank)

Credit Card: ❑ American Express ❑ Discover ❑ MasterCard ❑ VISA

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2016 ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop
Roundtable Luncheon Topics Thursday, September 29

Adaptive Design

TL1 Multi-Arm Multi-Stage (MAMS) Designs in Clinical Drug Development, Cyrus Mehta, Cytel Inc.

TL2 Sequential Parallel Comparison Design (SPCD) for Trials with High Placebo Response, Anastasia Ivanova, The University of North Carolina at Chapel Hill

Bayesian Design

TL3 Using Expert Elicitation to Support Decision Making in Drug Development: Are You Sceptical or Enthusiastic? Timothy Mo, GlaxoSmithKline

Big Data

TL4 Challenges Facing Observational Studies Based on Rare Disease Registry Data, Mohammad Bsharat, Vertex Pharmaceuticals

TL5 Utilizing Real-World Data (RWD) to Produce Real-World Evidence in Support of Regulatory Decisions, Coen Bernaards, Genentech, Inc.

Bioequivalence, Generics, and Biosimilars

TL6 Statistical Considerations in Trial Design and Sample Size Estimation for Assessing Biosimilarity and Interchangeability, Shuhong Zhao, Inventiv Health

Biomarkers

TL7 Clinical Development of Predictive Biomarkers, Glen Laird, Sanofi Pharmaceuticals

TL8 Multistage Adaptive Biomarker-Directed Design for Randomized Clinical Trials, Zhong Gao, CBER/FDA

Combination Products

TL9 Combination Products as Medical Tests, Bipasa Biswas, FDA

TL10 Design of Drug Combination Studies in Oncology, Sergei Leonov, ICON Clinical Research

Comparative Effectiveness

TL11 Successive Binomial Probability Computation Function, Sunday Oyelowo, Waziri Umaru Federal Umaru Federal Polytechnic Birnin Kebbi

TL12 Investigator Assesement vs. Blinded Adjudecation of Clinical Endpoints, Andrei Breazna, Pfizer Inc.

Dose Selection

TL13 Understanding the Dose-Response Relationship in Practice, Melanie Lai-Shan Chan, Eli Lilly and Company

DSMB/Interim Analysis/Advisory Committee

TL14 Preparing Effective Interim Reports for a Data-Monitoring Committee, Melissa Schultz, University of Wisconsin

Early Phase /Pre-Clinical Trials

TL15 Two Commonly Used Study Designs in a Phase I Oncology Study: Modified Continual Reassessment Method (mCRM) vs. Accelerated Titration Design, Kyounghwa Bae, Janssen R&D

Meta-Analysis

TL16 Comparing Efficacy and Survivals of Initial Treatments for Elderly Patients with Newly Diagnosed Multiple Myeloma: A Bayesian Network Meta-Analysis of Randomized Controlled Trials, Colin He, Orient Health Care

Missing Data

TL17 Implementations of Tipping Point Analysis in Assessing Impact of Missing Data, Susan Wang, Boehringer-Ingelheim

TL18 On Estimands of Sensitivity Analysis Models for Longitudinal Clinical Trials with Missing Data, Guanghan Liu, Merck & Co. Inc.

TL19 Analytic Approaches to Handling Missing Data in Observational Studies, William Hawkes, Quintiles RWLPR

TL20 Missing Values: Is There a Difference Between 'Do Not Know' or 'Choose Not to Answer' and Responses Left Missing, and Should These Responses Be Treated Differently?, Tammy Massie, National Institutes of Health

TL21 Missing Data: Can More Be Done During the Conduct of a Clinical Trial to Limit Missing Data?, Rosanne Lane, Janssen Research & Development, LLC

Modeling and Simulations

TL22 Bias Correction Method for a Misclassified Binary Outcome in the Presence of a Gold Standard, Dewi Rahardja, DOD\WHS

TL23 Prediction of Medication Adherence Using Different Predictors (Medical and Rx Claim-Based Attributes, Socioeconomic Attributes, etc.), Ogi Asparouhov, LexisNexis Risk Solutions Health Care

TL24 Applications of Multidimensional Time Model for Probability Cumulative Function to Biopharmaceutical Industry, Michael Fundator, National Academies, DBASSE

TL25 Setting a Priori Phase 2 to 3 Go/No-Go Decision Criteria, Ih Chang, Biogen

Multiple Tests

TL26 The Closure Principle Revisited, Dror Rom, Prosoft Clinical

Multi-Regional Clinical Trials

TL27 Challenges on Design and Analysis of Multi-Regional Clinical Trials, Weining Robieson, AbbVie

Observational Studies

TL28 A Novel Cluster Randomized Pragmatic Research Study Design for Evaluating Interventions, U. Vijapurkar, Janssen

TL29 Propensity Score Model Development: Please Share Your Experience and Lessons Learned, Jie (Jack) Zhou, FDA/CDRH

Oncology

TL30 Endpoints in Oncology: Overall Survival (OS), PFS, and Overall Response Rate (ORR), Yanqiong Zhang, Vertex; Helen Zhou, GSK

TL31 Statistical Challenges in Immuno-Oncology Drug Development, Feng Xiao, Medimmune

TL32 Oncology: Imaging Endpoints in Clinical Trials, Grace-Hyun Kim, University of California at Los Angeles

Other

TL33 Challenges and Potential Solutions in Study Design and Analysis of Pediatric Studies, Ying Li, Eli Lilly and Company

TL34 Crossover and the Accelerated Approval Process, Jonathan Siegel, Bayer HealthCare Pharmaceuticals Inc.

TL35 Frailty Models in Analyzing Recurrent Events in the Presence of a Terminal Event, Chul Ahn, FDA/CDRH

TL36 Statistical Issues in n-of-1 Trials, Emelita de Leon-Wong, Novella Clinical, a Quintiles Company

Role of Statisticians

TL37 Writing Contracts, Philip Lavin, Lavin Consulting LLC

Safety

TL38 Blinded Safety Assessment, Sammy Yuan, Merck

Study Endpoints/Patient-Reported Outcomes

TL39 CDRH Patient-Reported Outcomes (PRO) Working Group, Pablo Bonangelino, FDA/CDRH/OSB

TL40 Protocol Deviation in the Clinical Trial, Zhiheng Xu, FDA/CDRH

TL41 Cognitive Function Assessment: Challenges in Analysis and Interpretation of Outcomes, Kim Cooper, Janssen

TL42 Composite Endpoints in Randomized Trials, Cynthia DeSouza, Vertex Pharmaceuticals

TL43 Psychometric Methods for the Development, Evaluation, and Interpretation of Clinical Outcome Assessments, Cheryl Coon, Outcometrix; Stacie Hudgens, Clinical Outcomes Solutions

Subgroup Analysis

TL44 Targeted Subgroup Identification in Clinical Trials, Isaac Nuamah, Janssen

Therapeutic Area-Specific Topic

TL45 Radiological Progression in Rheumatoid Arthritis: Design and Analysis of Clinical Trials, Bei Zhou, Janssen

TL46 Use of Propensity Score Stratification in Nonrandomized Studies, Vandana Mukhi, FDA/CDRH/OSB

TL47 Organizing a Therapeutic Area Scientific Working Group for Alzheimer's, Hong Liu-Seifert, Eli Lilly and Company

Vaccines

TL48 Trial Designs for Outbreaks of Emerging Infectious Diseases, Amelia Horne, FDA

Bartko

John Bartko was recently named to the Virginia Tech College of Science Hall of Distinction.

According to Lay Nam Chang, dean of the college of science, "Induction into the Science Hall of Distinction honors those individuals who best embody the college's goal of enhancing the well-being and development of communities, the commonwealth, the nation, and the world."

The honor is one of many Bartko has received throughout his career as a statistician. He served for 33 years with the United States Public Health Service Commissioned Corps and was stationed at the National Institutes of Health National Institute of Mental Health. He retired in 1995 with the rank of captain.

His contributions to the corps continued after retirement. In 2000, he became a founder of the Commissioned Corps Music Ensemble, the first time the corps formalized a volunteer musical group, becoming the "Surgeon General's Own."

Bartko has been a member of the ASA for more than 50 years. He is a fellow, a PStat® accredited statistician, and past statistical editor of the *American Journal of Psychiatry*.

This past year, Bartko acted on the ASA's commitment of ensuring excellence by providing a scholarship so students and early-career statisticians will be able to actively participate in the professional community.

What many don't know is that Bartko's heritage is Slovak, which he speaks, and he has traveled to the Slovak Republic seven times, twice when it was communist. He is a woodworker and a licensed radio amateur, W3JJB.

Read more about Bartko and his scholarship at *http://bit.ly/1YoxZi9*. To find out more about the Virginia Tech College of Science Hall of Distinction, visit *http://bit.ly/1rIuhWc*. ■

Longtime ASA members **G. Jogesh Babu** and **Eric D. Feigelson** of Pennsylvania State University and **Joseph M. Hilbe** of Arizona State University were recently awarded the International Astrostatistics Association (IAA) Outstanding Contributions to Astrostatistics medal, the top award given to members of the global astrostatistics and astroinformatics community by the IAA. All three also were elected IAA fellows, as was another longtime ASA member and fellow, **David van Dyk** of Imperial College, London.

In 2012, Feigelson and Hilbe founded the Astrostatistics and Astroinformatics Portal (ASAIP), sponsored by the department of astronomy and astrophysics at Penn State. The portal was intended to be the IAA website, as well as a site that could be shared with other astrostatistical interest groups and anyone with an interest in astrostatistics. Today, the site has some 900 members and contains information about almost every article, book, and resource related to astrostatistics in the general sense of including astroinformatics.

The IAA was founded as an independent scientific association for astrostatistics and astroinformatics in 2012, developing from the International Statistical Institute astrostatistics committee and network. The goal of the association from its outset has been to foster collaboration between statisticians and astronomers. It also has a goal of encouraging the production of educational books, articles, white papers, and tutorials in statistics for the benefit of the astronomical community. ■

Rebecca W. Doerge, the Trent and Judith Anderson Distinguished Professor of Statistics and President's Fellow for Big Data and Simulation at Purdue, has been awarded Fellow of American Council of Education (ACE) for 2016–2017. Each university nominates only one candidate who shows promise of being an academic leader for ACE fellowship. Visit *www.acenet.edu/news-room/Pages/ACE-Fellows-Class-of-2016-17.aspx* to read the entire list of fellows. ■

Obituaries

Benedetto Bongiorno

Benedetto Bongiorno passed away March 30, 2016. He was born on May 19, 1938, in New York, New York, to Antonio and Brigida Bongiorno.

Benedetto graduated from La Salle Academy and then Fordham University with a BS in accountancy. He went on to forge a distinguished career in public accounting with his own firm in New York and Boston, merging into J.K. Lasser, then Touche Ross. Ultimately, he served as the national director of real estate for Deloitte and Touche after the final merger. Benedetto was an established expert in real estate accounting and auditing and, for the past several years, led both the research and consulting efforts of Natural Decision Systems, Inc., in the areas of accounting, auditing, and internal control, advising private companies as well as national, regional, and local accounting firms.

Benedetto authored the original version of the *Real Estate Accounting & Reporting Manual*, published in 1988 by Warren, Gorham, and Lamont; *Audit of Real Estate Transactions 1996 Miller GAAS Guide*, published by Harcourt Brace & Co.; and the *Accountants Handbook, Real Estate Section 12th Edition*, published by Wiley in 2013, along with numerous articles and training courses.

Over his long career, he was a lecturer at a wide variety of professional and academic conferences and, in 2010, he received patents in the system and method of continuous assurance in both internal control and audit.

To read more about Benedetto, visit *http://bit.ly/27hKxxP*. ■

Connie Borror

Borror

Connie M. Borror, the first woman to earn American Society for Quality's (ASQ) Shewhart Medal, passed away April 10, 2016, in Phoenix, Arizona. She was 49 years old.

Connie was a professor in the division of mathematical and natural sciences at Arizona State University West. She earned her PhD in industrial engineering from Arizona State University and joined the division of mathematical and natural sciences in 2005. Connie was a fellow of the ASA and ASQ and an editor of the journal *Quality Engineering*, as well as a former director of the certificate in statistics program and co-director of the Committee on Statistics at ASU. She was awarded the Shewhart Medal in 2016.

In lieu of flowers, please consider a donation to youcaring.com (*www.youcaring.com/connie-borror-554372*) to help defray the cost of her medical and funeral expenses.

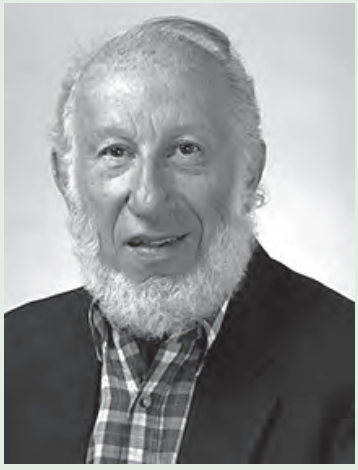
To read more about Connie's life, visit *http://bit.ly/1rIuDfv*. ■

Ingram Olkin

Ingram Olkin of Stanford University passed away on April 28.

Born in 1924, Olkin was a mentor, friend, role model, leader, and legend in the statistical community and beyond. Indeed, many of those whose lives he touched gathered at JSM 2014 in Boston to enthusiastically celebrate his birthday.

In a January 2015 *Amstat News* article, he expressed no regrets: "I was blessed in my career. I had good mentors and colleagues and super students. It's not clear to me what I could have done differently to improve on any of those because it is your teachers,



Olkin

colleagues, and students—your friends—who become important in your life. I've been fortunate to have a super group in each of those categories."

The statistical community was blessed many times over by Olkin's extensive influence and presence. The ASA leadership and staff extend their condolences to his family.

Read more about Ingram's life at *http://bit.ly/1yc2jSQ*. There is also a topic, "Remembering Ingram Olkin," on the ASA Community website. Drop in and leave a memory at *http://community.amstat.org/home*. ■

John Robert Reeder

John Robert Reeder, a statistics professor at American River College and Sierra College, Sacramento, passed away March 1, 2016.

John was born in Peoria, Illinois. His father, Bart, was an iron-worker and his mom, Bernice, was a school teacher and portrait photographer. After his father died when he was three, his mother and her sister, Lil, raised John and his brother, Richard, in Chillicothe, Illinois.

John graduated from Bradley University with a bachelor's and master's degree in math, and then finished two years toward his doctorate in statistics from the University of Minnesota.

For 22 years, John was also an Air Force pilot and pilot instructor.

To read John's complete obituary, visit *http://bit.ly/1X50y5p*. ■

James Ware

Submitted by David Hunter, Harvard Medical School

James H. Ware, the Frederick Mosteller Professor of Biostatistics and associate dean for clinical and translational science at the Harvard Chan School, passed away April 26 after a long battle with cancer.

Jim was dean for academic affairs at the school from 1990–2009, including serving as acting dean in 1997–1998.

Jim had a longstanding interest in studies of pulmonary and cardiovascular disease, and it is no exaggeration to say his research efforts have helped save thousands—if not millions—of lives. From 1980 to 1995, he was a co-investigator in the landmark Six Cities Study of Air Pollution and Health, which has had a profound effect on Clean Air Act regulations in the U.S. and efforts to limit air pollution around the world.

He was internationally recognized for his publications on the design and analysis of longitudinal and multi-level physiologic, clinical, and biological studies and on methodologic issues in clinical trials research. He served as a statistical consultant to the *New England Journal of Medicine* for more than 20 years. He was also senior statistician for randomized trials of strategies for protecting the brain during surgical repair of transposition of the great arteries in infants, chelation therapy for lead-exposed children and, more recently,

Ware

research examining vitamin D supplementation to prevent development of diabetes and the role of sleep apnea in diabetes.

After concluding his service as dean for academic affairs, Jim returned to research and teaching. Since 2008, he served as director of the biostatistics program at the Harvard Center for Clinical and Translational Science.

Jim had a great dedication to helping students, both undergraduate and graduate students—literally taking his work home with him between 1996–2003, when he and his wife, Janice Ware, served as masters of Cabot House at Harvard College.

In addition to his wife, Jim is survived by his daughter, Cameron Ware; his son, Jake Ware; Jake's wife, Siu Ping Chin Feman; and his sister, Elaine Mansfield.

To read more about Jim's life, visit the memoriam page on Harvard's website at *www.hsph.harvard.edu/james-ware*. ■

ASA San Antonio Chapter Vice President Joel Michalek (left) presents the Don Owen Award to Clifford Spiegelman for his outstanding contributions to research, statistical consultation, and service to the statistical community.

Clifford Spiegelman Honored with 2016 Don Owen Award

The 2016 Don Owen Award, given by the San Antonio Chapter, was presented to Clifford Spiegelman April 8 during the 36th annual Conference of Texas Statisticians, which was held at Trinity University in San Antonio, Texas. Spiegelman was nominated by H. Joseph Newton, senior professor of statistics and former dean of science at Texas A&M University.

Spiegelman is a professor in the department of statistics at Texas A&M University in College Station, Texas. He earned his doctoral degree in statistics from Northwestern University in 1976; taught at Florida State, Northwestern, and The Johns Hopkins University; and served as a scientist at the National Bureau of Standards for nine years before joining Texas A&M in 1987.

Spiegelman has authored or co-authored approximately 100 refereed papers—at least 50 in a variety of major statistics journals, including *Annals of Statistics, Technometrics, The American Statistician, Journal of the American Statistical Association, Journal of the Royal Statistical Society C, Biometrika*, and *Econometrica*. He also has published papers in *Philosophical Transactions of the Royal Society London A* and *Proceedings of the National Academy of Sciences*. Reflecting the breadth of applications among his scholarly activities, five of his papers are in environmental journals, 20 in engineering and science journals, and 21 in transportation journals. His work includes the development of statistical methods in errors-in-both-variables regression, nonparametric calibration, and semiparametric density estimation.

Spiegelman also has made contributions to forensics in the chemical analysis of JFK assassination bullet lots and transportation with a Bayesian approach for improved pavement performance prediction. He has served as expert witness in numerous trials pertaining to statistical issues and consulted with many federal laboratories—including Los Alamos National Laboratory, Pacific Northwest National Laboratory, the National Cancer Institute, and the National Institute of Standards—on statistical aspects of the physical sciences.

The San Antonio Chapter is proud to honor Clifford Spiegelman for his excellence in research, statistical consultation, and service to the statistical community.

The Don Owen Award is presented annually by the ASA San Antonio Chapter and sponsored by the Taylor & Francis Group. ■

sectionnews

Biometrics

Edited by Sheng Luo, Biometrics Section Publications Officer

It's time to start thinking about invited sessions for next year's Joint Statistical Meetings, which will be held July 29 to August 3 in Baltimore, Maryland. Anyone who is interested in organizing an invited session or who has ideas for one should contact the section's 2017 program chair, Barbara Englehardt, at *bee@princeton.edu*.

A typical invited session consists of three 30-minute talks followed by a 10-minute invited discussion and 10 minutes of floor discussion. However, other formats are possible. The 2016 program is a good source for examples.

The most mature ideas will have an advantage in competing for the limited number of slots, so it's best to have your ideas in final form by the middle of June. The Biometrics Section will have at least four invited sessions, but we will be able to compete for additional slots if we generate enough good ideas.

It's also time to submit ideas for short courses to our 2016–2017 continuing education chair, Rosemarie Mick, at *rmick@upenn.edu*.

For more information about the section's role in JSM 2016, visit *http://bit.ly/1WtpsN2*.

Funding Awarded

The Biometrics Section recently awarded funding to Diana Miglioretti as a representative of the Radiological Society of North America (RSNA) biostatistics faculty to attend the RSNA Clinical Trials Workshop in January 2017. The workshop presents an opportunity for RSNA biostatistics faculty members to mentor and train a biostatistician in the relevant methodology and art of collaborating with radiologists and imaging specialists.

For more information about the grant, visit *http://stattrak.amstat.org/2016/04/01/biometrics-apr16*. ■

Biopharmaceutical

The Biopharmaceutical Section is pleased to announce the 2016 Mentoring Program for the enhanced benefit of its members. This program was successfully initiated in 2014, and we are now inviting more Biopharmaceutical Section members to participate.

Networking can be challenging, but it is beneficial. Meeting others in our profession can help us quickly learn the ropes, improve our careers, and contribute to the

sectionnews

statistical profession. Finding a mentor has its challenges and, keeping that in mind, the Biopharmaceutical Section has created a mentoring program based on the mentoring blueprint created by the Committee on Applied Statisticians. More than 60 people participated in our mentoring program in 2014 and 2015. Here are testimonials from past participants:

- Mentor **Allison Florance** said that the ASA Biopharmaceutical Section "*did a great job in matching me to a mentee. It has been a win-win for both of us!*"
- Mentee **Nobuhle Mpofu** said "*the biopharmaceutical mentoring program has proved to be invaluable to me. Through my countless conversations with my mentor, I chose to focus on a thesis topic that is of high interest to me, and yet highly relevant to [the] pharmaceutical industry and other settings.*"

The goal of this program is to help members enrich their professional experience through achieving personal and professional goals. This may occur through the sharing of knowledge and experience between a professional practitioner and someone entering statistics. A constructive mentorship relationship can take many forms and may occur at any stage of one's career, with benefits for both the mentor and mentee. We will provide hands-on resources for mentors and mentees to facilitate their interactions. Information related to the mentoring activities and additional resources for mentors and mentees is available at *http://community.amstat.org/biop/aboutus/subcom/mentoring*.

We are looking for mentors and mentees for the 2016–2017 mentoring program. Are you interested in becoming a mentor to a statistician and helping fellow biopharmaceutical statisticians? Are you a potential mentee, or can you nominate a statistician who may be looking for a mentorship program? If so, please email your contact information to *biopharmmentoring@gmail.com* with "Biopharmaceutical Section Mentoring Program" in the subject line. Also, send a résumé to help us match mentors and mentees by June 22.

For further information, contact Yue Shentu at *yue_shentu@merck.com*, Amarjot Kaur at *amarjot_kaur@merck.com*, Juliet Ndukum at *jpntsang@yahoo.com*, or Janelle Charles at *Janelle.Charles@fda.hhs.gov*. ■

Quality and Productivity

The Quality and Productivity (Q&P) section is sponsoring the following topic-contributed and contributed sessions at the Joint Statistical Meetings this year:

- Statistical Issues in Large-Scale Quality Control Systems, organized by Emmanuel Yashchin, IBM Research
- Maintenance, Monitoring, and Inference: Different Aspects of Reliability Modeling in Industrial Applications, organized by Ananda Sen, University of Michigan
- Reliability, Degradation, and Competing Risks, chaired by Ming Li, REANCON
- Improvements in Quality Assurance and Statistical Process Control, chaired by Erin Tanenbaum, NORC at the University of Chicago

Attendees are encouraged to use the online program to search for Q&P sessions throughout the meeting. The Q&P section also works closely with the Section on Physical and Engineering Sciences (SPES) to co-sponsor sessions of interest to both sections. In these situations, you will see Q&P listed as a co-sponsor in the online program, which contains more sessions than what is listed above. ■

Professional Opportunity listings may not exceed 65 words, plus equal opportunity information. The deadline for their receipt is the 20th of the month two months prior to when the ad is to be published (e.g., May 20 for the July issue). Ads will be published in the next available issue following receipt.

Listings are shown alphabetically by state, followed by international listings. Vacancy listings may include the institutional name and address or be identified by number, as desired.

Professional Opportunities vacancies also will be published on the ASA's website (*www.amstat.org*). Vacancy listings will appear on the website for the entire calendar month. Ads may not be placed for publication in the magazine only; all ads will be published both electronically and in print.

Rates: $320 for nonprofit organizations (with proof of nonprofit status), $475 for all others. Member discounts are not given. For display and online advertising rates, go to *www.amstat.org/ads*.

Listings will be invoiced following publication. All payments should be made to the American Statistical Association. All material should be sent to *Amstat News*, 732 North Washington Street, Alexandria, VA 22314-1943; fax (703) 684-2036; email *advertise@amstat.org*.

Employers are expected to acknowledge all responses resulting from publication of their ads. Personnel advertising is accepted with the understanding that the advertiser does not discriminate among applicants on the basis of race, sex, religion, age, color, national origin, handicap, or sexual orientation.

Also, look for job ads on the ASA website at *www.amstat.org/jobweb*.

District of Columbia

■ Assistant/Associate Research Professor. Basic Duties: Co-investigator on existing multi-center study providing direction in design, conduct, analysis, and publication of results; grant administration; advising students and teaching. Basic Qualifications: Applicants must have doctorate in statistics/biostatistics, or epidemiology with strong credentials in statistical methodology. Review of applications is ongoing until the position is filled. For application instructions go to: *www.bsc.gwu.edu* George Washington University is an EOE/AA.

Florida

■ The Robert Stempel College of Public Health & Social Work at Florida International University is accepting applications for a tenure-earning associate/full professor/chair position in the department of biostatistics. Qualified candidates are encouraged to apply to Job Opening ID #511221 at *facultycareers.fiu.edu*. FIU is a member of the State University System of Florida and an Equal Opportunity, Equal Access Affirmative Action Employer. Florida International University is an Equal Opportunity, Equal Access Affirmative Action Employer.

Idaho

■ Assistant Professor, Statistics (7599). Full-time, nine-month, tenure track starting August 2016. Key Responsibilities: Teaching advanced and undergraduate courses in statistics, active research, and participation in the curricular oversight of the undergraduate statistics program. Minimum Qualifications: PhD in statistics, biostatistics or related field completed by contract starting date, quality teaching ability, ability performing productive research program, and potential for interdisciplinary collaboration. Apply online: *jobs.isu.edu* Idaho State University is an EOE/AA.

Missouri

■ Monsanto is seeking geospatial analytics scientist for its Biotechnology Trail Testing organization. This position will engage in analysis of multi-layered geospatial data for trait characterization including modeling of genotype x trait interaction with environmental factors. A master's degree or higher in statistics, biostatistics, mathematics, engineering, computer science or related discipline with research in geospatial analytics is required. Requisition 1075G. Apply at *https://jobs.monsanto.com/job/st.louis/geospatial-analytics-scientist/769/1835803*. Monsanto is an equal Opportunity employer. We value a diverse combination of ideas, perspectives and cultures. All qualified applicants will receive consideration for employment without regard to among other things, race, religion, color, national origin, age, sex, sexual orientation, gender identity, gender expression, status as a protected veteran, or status as a qualified individual with a disability.

New York

■ The College Board, the national educational organization, is conducting a search for a senior assessment specialist who will assist in the development of new assessments and related

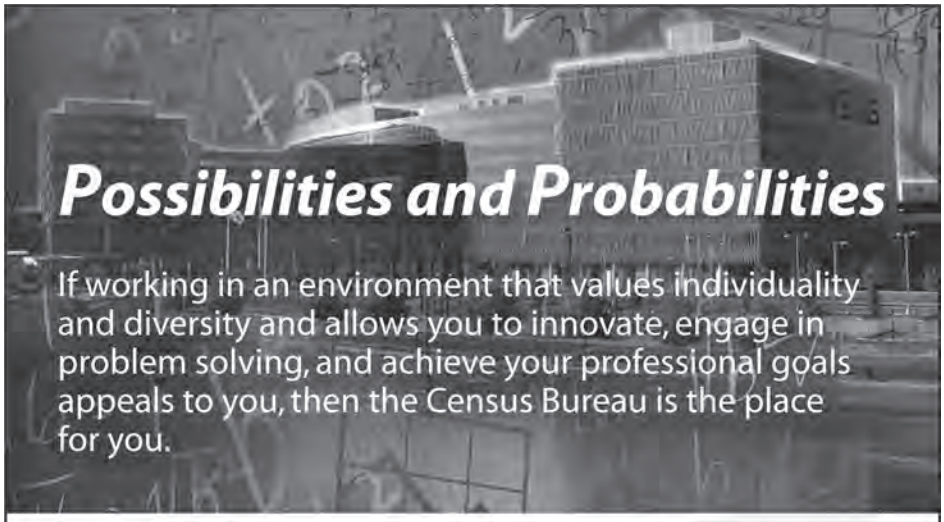
products that support significant segments of the organization with respect to math assessment. This position reports to a senior director and is resident in either our New York City, Chicago, or Iowa City office. Apply Here: *www.Click2apply.net/7cxmvrnpk8*. EOE.

Pennsylvania

■ University of the Sciences, Assistant Professor of Statistics/Tenure-Track, Job Description Summary: Statistics Position at the University of the Sciences, Tenure Track, begins August 15, 2016. The department of mathematics, physics, and statistics at the University of the Sciences (USciences) invites applications for a tenure-track assistant professor position in statistics starting Fall 2016. Qualified candidates may be considered for higher ranks. Apply here: *www.Click2apply.net/bv88zm6mrn.* EOE.

Washington

■ Two-year postdoctoral position in biostatistics available at the University of Washington in Seattle, WA. Expected to work at the National Alzheimer's Coordinating Center (NACC). PhD in statistics, biostatistics. Strong theoretical, computational, communication skills, and interest in dementia research are highly desired. To apply, submit CV, copies of transcripts, published papers (maximum of three), and three letters of reference to: Maggie Dean, NACC Research Administrator, *connorm@uw.edu.* University of Washington is an EOE. ■



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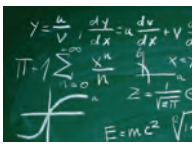


Here are signs you are a math major: *http://bit.ly/1ssoPYa.*

Taking a cue from the ASA's Twitter feed, what advice would you give your past self about getting to where you are now in your field? (Or another way of thinking about it: What advice would you give to people who'd like to be where you are now and are still earlier on in their career or education?)

Here is what a few of our members shared on the ASA Community:

"This may be preaching to the choir, but GET INVOLVED IN THE ASA—Chapters and/or Sections are usually looking for new recruits for officers, and the connections you can make are INVALUABLE! Additionally, if where you are employed does not automatically provide funding for you to go to JSM/Other meetings … this can be another reason to use to argue for the support to go!

If you don't get nominated or elected to an office, volunteer to serve on some committee or in some other capacity. If you volunteer and don't hear from the Chair—follow-up! Don't assume that they would not want you! It is more than likely that your request came at a time they were not anticipating volunteers and your email got mislaid! (I believe I have been at both ends of that occurring—and apologize to anyone I did not reply to!)

Lastly … sorry, self … plaid is just not your color. :-)"

Mary Kwasny
Associate Professor
Northwestern University

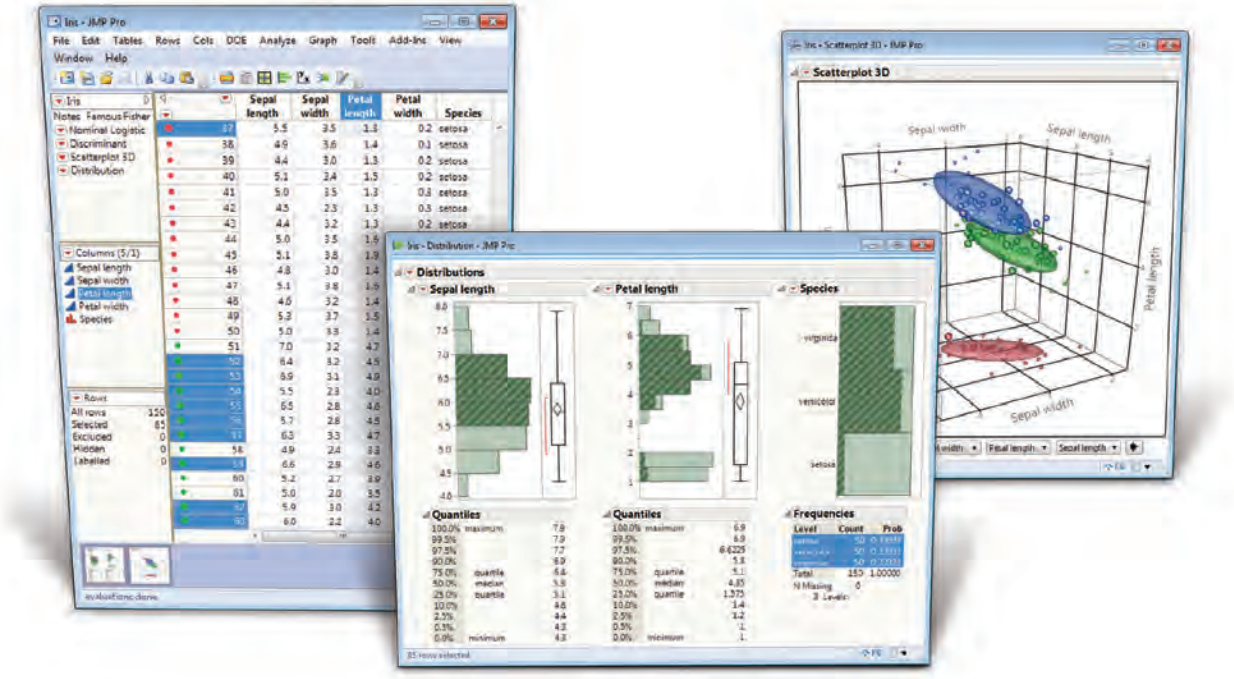
"Always be on the look out for new opportunities. Don't wait until you get laid off to look for a new job unless you are more than just content with your current position. Don't settle."

Michael L. Mouti
Senior Consultant/Owner
MIKS & Assoc.

"My recommendation for a younger me would have been to take more risks, take chances. I think I stayed too long in every job I held for the fear of change or the fear of failure at something new. However, when you take those risks and chances, you can soar! Even if you fail, you learn from it and move forward."

Terry Shelton
Department of Transportation

Share your advice for your past self on the ASA Community:
community.amstat.org or http://bit.ly/1Tbd66u



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