September 2016 • Issue #471

AMSTATNEWS

The Membership Magazine of the American Statistical Association • *http://magazine.amstat.org*

Mentoring

Influential Mentors

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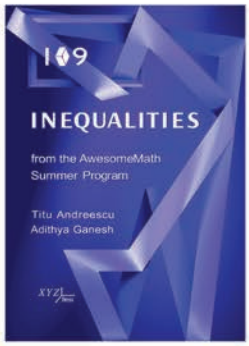
Mentoring Programs

AMERICAN MATHEMATICAL SOCIETY

New Books from the AMS



109 Inequalities from the AwesomeMath Summer Program

Titu Andreescu, *University of Texas at Dallas, Richardson, TX*, and **Adithya Ganesh**, *Stanford University, CA*

Explore the theory and techniques involved in proving algebraic inequalities.

A publication of XYZ Press. Distributed in North America by the American Mathematical Society.

XYZ Series, Volume 16; 2015; 203 pages; Hardcover; ISBN: 978-0-9885622-8-8; List US$59.95; AMS members US$47.96; Order code XYZ/16

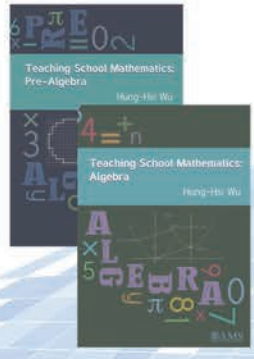
The Case of Academician Nikolai Nikolaevich Luzin

Sergei S. Demidov, *Russian Academy of Sciences, Moscow, Russia and* **Boris V. Lëvshin**, *Editors*

Translated by Roger Cooke

This book chronicles the 1936 attack on mathematician Nikolai Nikolaevich Luzin during the USSR campaign to "Sovietize" all sciences.

History of Mathematics, Volume 43; 2016; 416 pages; Hardcover; ISBN: 978-1-4704-2608-8; List US$59; AMS members US$47.20; Order code HMATH/43



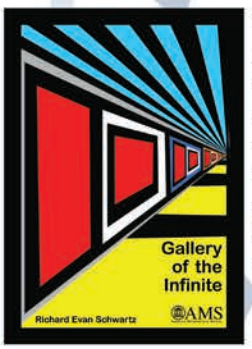
Teaching School Mathematics: From Pre-Algebra to Algebra

Hung-Hsi Wu, *University of California, Berkeley, CA*

This two-volume set includes a systematic exposition of a major part of the mathematics of grades 5–9 (excluding statistics) written specifically for Common-Core era teachers.

Parts 1 and 2 available for individual sale.

Set: 2016; approximately 667 pages; Hardcover; ISBN: 978-1-4704-3000-9; List US$90; AMS members US$72; Order code MBK/98/99

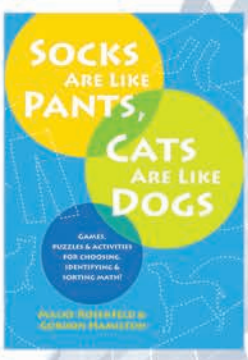


Gallery of the Infinite

Richard Evan Schwartz, *Brown University, Providence, RI*

This book is a mathematician's unique view of the infinitely many sizes of infinity.

2016; 187 pages; Softcover; ISBN: 978-1-4704-2557-9; List US$29; AMS members US$23.20; Order code MBK/97



Socks Are Like Pants, Cats Are Like Dogs

Games, Puzzles & Activities for Choosing, Identifying & Sorting Math!

Malke Rosenfeld and **Gordon Hamilton**

"Mathematical thinking and calculating are two different things. Of the two, the former skill is far more important to develop than the latter, especially today, when electronic calculators and computers are everywhere. Young children, who may know nothing of calculating, can be remarkably good at mathematical thinking. They do it naturally in their play. The puzzles in this book are meant to be approached playfully, and they help children build upon their natural capacities for mathematical thought."

–Peter Gray, Research Professor, Boston College, and author of "Free to Learn: Why Releasing the Instinct to Play Will Make Our Children Happier, More Self-Reliant, and Better Students for Life"

Explore the mathematics of choosing, identifying, and sorting through a diverse collection of math games, puzzles, and activities.

A publication of Delta Stream Media, an imprint of Natural Math. Distributed in North America by the American Mathematical Society.

Natural Math Series, Volume 4; 2016; 84 pages; Softcover; ISBN: 978-0-9776939-0-0; List US$15; AMS members US$12; Order code NMATH/4

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American Statistical Association

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.

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Mentoring in a Box is a list of resources offered by the Committee on Applied Statisticians. To access the mentoring clearinghouse list, log in to ASA Members Only at *www.amstat.org/membersonly*. See the centerfold in this issue for details or download the flier at *www.amstat.org/membership/pdfs.ingFlyer.pdf.*

Mentoring

The ASA has many mentoring programs—too many to print in this special issue, in fact. So, we have added the following special opportunities to the *Amstat News* website:

Biopharm Mentoring Program
Finding a mentor has its challenges and, keeping that in mind, the Biopharmaceutical Section initiated this mentoring program to facilitate networking opportunities and support the professional development of its members. *http://magazine.amstat.org/blog/2016/09/01/biopharm_mentoring*

Member Get a Member Program
Mentor a member with the ASA's Member Get a Member Campaign. *http://magazine.amstat.org/blog/2016/09/01/mgmcampaign*

The JSM Diversity Workshop and Program
The ASA Committee on Minorities in Statistics has offered one of two concomitant programs every year at the Joint Statistical Meetings. These programs are often spoken of interchangeably, as the core objectives of fostering enduring mentoring relationships and preparing statisticians of diverse backgrounds for career success are a common thread. *http://magazine.amstat.org/blog/2016/09/01/jsmdiversity*

ASA Mentoring Award
This award honors those people recognized by their colleagues for their sustained efforts over a long period supporting the work and developing the careers of statisticians. *http://magazine.amstat.org/blog/2016/09/01/asa-mentoring-award*

mentoring programs

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STATtr@k

In 2016, 19 statistics students were awarded graduate research fellowships from the National Science Foundation. On STAT*tr@k* this month, six of those fellows offer advice for applying to the program. **The deadline to submit full proposals is October 28.** Be sure you read *http://stattrak.amstat.org* for information.

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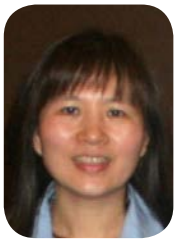
Whoa! Statisticians Put Second City to Shame with **Improv Performance** at JSM 2016

Wendy Lou, Rob Santos, and Donna LaLonde

This month's President's Invited Column provides an update on the two media initiatives described by ASA Vice President Rob Santos in this space in July. The highlight is a description of an experiential training workshop held at the Joint Statistical Meetings (JSM) for the Statistical Media Ambassadors program. The program is modeled (with permission) after a similar program launched almost three years ago by the Royal Statistical Society (RSS) in the UK. The RSS's first training program is described here: *http://bit.ly/2bqIh1Y*, and information about their second cohort is given here: *http://bit.ly/1TvYC3l*. As noted by RSS, the idea of the program is "to increase the number of statisticians that the society [RSS or ASA] could call on to help respond to requests from the press and elsewhere for experts who would be able to explain stats in a concise and accurate way." As described below, the ASA media initiatives are being shaped by two working groups led by board members Wendy Lou and Rob Santos, with help from ASA Director of Strategic Initiatives and Outreach Donna LaLonde.

Jessica Utts



Wendy Lou

Donna LaLonde

Rob Santos

Who would have guessed? The American Statistical Association is chock-full of talented improv performers. And it's likely (with probability approaching 1) that one of them is you! Why is this important? Let us explain.

As statisticians, one of the most important roles we play is that of a communicator. We are often in situations where complex statistical concepts, insights, and their limitations need to be explained in simple terms. Okay, when was the last time you were at a party or other social event and you received silence plus a blank or confusing stare from someone after explaining what you do for a living? That is the classic situation in which simple talk can go a long way.

Increasing numbers of us are being approached by journalists for media interviews, quotes, and explanations regarding curious or surprising study results. For others, their jobs require that they be available for blogs, public events, and other forums where articulation of science in everyday language is key. However, most us are not trained in the ways of media communication, and those of us who already serve in this role could well benefit from more formal training to 'up our game.' Thus was borne ASA President Jessica Utts' initiative—Ambassador and Media Training.

The Ambassador and Media Initiative represents two integrated workgroups:

- **The Statistical Media Ambassadors Roundtable Working Group.** This group is developing a program to train a small, rotating cadre of senior, media-experienced statisticians who will be available to take media requests in their areas of expertise whenever the ASA is approached by a journalist. Training will hone quick-messaging, improvised storytelling, and the finer techniques associated with oral and visual media interviews. The

From left: John Bailer, Jeri Mulrow, and Barry Nussbaum tell their photo stories with just a blank piece of paper.

Jessica Utts explains the ASA's Ambassador and Media Training Initiative during her 2016 President's Address at JSM, available for viewing at *ww2.amstat.org/meetings/jsm/2016/webcasts/index.cfm*.

ASA media ambassadors will agree to a period of service and undergo training prior to the start of their term, and they will also assist with training the next cohort before rotating off. (See *http://bit.ly/2bxWutk*.)

• **The Media Training for Statisticians Working Group.** This group is designing a two-day training geared toward the novice, rather than the media-experienced statistician, although both would benefit. It will cover the basics of media interactions, including both written and oral/visual communications with journalists and the public. Content will include messaging, creating 'sound bites,' statistical storytelling, blogging, journalist email exchanges, and oral/visual basic skills development. (See *http://bit.ly/2bJtqOt*.)

Statistical Media Ambassador Pilot Training at JSM 2016

So what does this have to do with improv and JSM? The Statistical Media Ambassador training program was piloted at JSM 2016 in Chicago. The pilot training was designed and conducted by the Alan Alda Center for Communicating Science, a part of Stony Brook University's School of Journalism. It involved a full day of experiential learning that included small- and large-group exercises highlighting the value of improvisation and risk taking (i.e., letting yourself go) in telling your statistical story to a nontechnical audience that cares mainly about the bottom line and its implications for the world.

For instance, we engaged in a group exercise in which John McGready posed as a 7-year-old playing on the floor while Arlene Ash explained a statistical concept using simple language and metaphors. Arlene had to let go, put herself in John's shoes, and keep him interested and engaged while venturing away from the usual academic explanations and risking difficult questions in the process (see photo).

Another activity centered on telling a photo story with just a blank piece of paper, describing it with such detail and infectious enthusiasm that the audience could 'see' the pictures (see photo).

Such techniques go a long way in getting statisticians to understand that, when it comes to media interviews and interactions with journalists, they need to be their natural selves—not stodgy scientists—and show their passion when explaining scientific concepts that are so much a part of their careers and lives.

Arlene Ash and John McGready have fun with their improv in which Ash tries to explain a scientific concept to a 7-year-old McGready.

The Statistical Media Ambassador training was piloted at JSM, and the full program is expected to be initiated in 2017. If you are interested in serving as an ASA Statistical Media Ambassador, be on the lookout for the solicitation of applicants in *Amstat News* and other ASA venues.

Media Pilot Training at ASA Headquarters in November 2016

The Media Training Working Group will pilot a two-day training this fall at ASA headquarters in Alexandria, Virginia. The ASA is using partner Sense About Science to help design and conduct the training, which will include the basics of public engagement, discourse, and outreach. Sessions will cover knowing your audience and distilling your message. Both written (blogs, editorials, email exchanges with journalists) and oral/visual communications with the media (radio, video) will be treated.

The ASA is soliciting applicants to participate in this training. There is no fee for participation, and a small number of travel stipends is available for out-of-towners. The pilot training is scheduled for November 15–16. We seek participants that span the broad membership of the ASA: commercial, government, nonprofit, and academic members; early, mid-career, and senior statisticians; graduate students, academic appointees, etc. We need your participation to generate much-needed feedback for refining the program. Visit the ASA website and ASA Community for more information.

Our Reflection

Thinking back to the improv-infused Statistical Media Ambassador pilot training, it is hard not to smile. The experience left us as different people than when we started. Improv can be a humbling, yet rewarding, experience. More than anything, we left the training with a realization that even though scientific facts matter, they often go in a listener's one ear and out the other. Stories, on the other hand, stay with us always. Perhaps it's built into our DNA/human roots, but there is magic and magnetism in storytelling that is unique to human communication. We as statisticians can promote our field, our careers, our organizations, and our society by ultimately just being ourselves and telling the story of statistics as we see it. So please think about joining us on a journey to establish your own 'media creds' through the ASA's upcoming media training programs! ■

Interview with **Doug Zahn**

Eric Vance

Photo by Sara Davidson, ASA Graphic Designer/Production Coordinator

Doug Zahn and Eric Vance August 1, 2016, at the Joint Statistical Meetings in Chicago, Illinois

Doug Zahn—recipient of the 2016 ASA Mentoring Award—earned his PhD in statistics from Harvard University in 1970. He was an assistant, associate, full professor and now professor emeritus of statistics at Florida State University (FSU), with a visiting stint at Harvard from 1978–1979. A few of his projects include writing a book about systematically improving statistical practice; participating in former ASA President Bob Rodriguez' Personal Skills Development initiative by conducting workshops on statistical consulting and collaboration for JSM 2014–2016; consulting and coaching several young statisticians; enjoying retirement with his sons and their wives, his wife, Andrea, and their friends; and gardening.

Eric Vance, associate professor of applied mathematics and director of the Laboratory for Interdisciplinary Statistical Analysis (LISA) at the University of Colorado, Boulder, asked mentor Doug Zahn the following questions:

Eric Vance, left, and Doug Zahn participate in "The Extraordinary Power of Statistical Collaboration" August 1, 2016, at the Joint Statistical Meetings in Chicago, Illinois.

Why do you think you won the mentoring award?

I have been mentoring students and peers since graduate school in the late 1960s. Through the years, I have learned about relationships, statistical thinking, and statistical consulting. I have sought to apply these concepts to my mentoring practice and, thereby, systematically increase my effectiveness as a mentor.

I have been blessed with wonderful mentees over the years, several of whom were generous enough to write amazing letters in support of my nomination for the ASA Mentoring Award. I am deeply grateful to each and every one of these individuals, both for their nomination letters and for all they have taught me over the years.

What is your philosophy on mentoring?

When asked to be a mentor, I now ask four questions before our first meeting:

1) What do you hope to accomplish in your career and life?

2) How can I help?

3) When and how frequently shall we meet?

4) How shall we meet? Phone, Google Hangouts, or in some other way? Are you interested in working with me?

If the person is still interested in working with me, I invite her or him to develop a "working relationship" with me. In this relationship, we both agree to be honest with each other. In addition, my commitment is to treat each mentee with respect by her or his standards and work with her or him collaboratively. It takes time to develop a level of trust such that we are each confident these agreements and commitments will be honored. As we build this trust, it is important for us to regularly review our goals for the relationship to verify they are aligned. If we discover we do not have aligned goals, I will not pursue a mentoring relationship with this person.

The definition of statistical thinking that I use has the following three components:

1) All work is done in systems of interconnected processes.

2) There is variation in all processes.

3) The key to success is to identify and reduce unwanted variation.

Statistical thinking can definitely be applied to the work done in mentoring.

A mentee meets with a mentor to seek advice, among other things. Thus, this meeting is a "consultation," as defined by the online Oxford dictionaries: *a meeting with an expert or professional such as a medical doctor in order to seek advice.* I apply all I have learned about statistical consulting over the years to my mentoring practice to mentor as effectively as I can and systematically improve my mentoring process.

Any advice for would-be mentors?

Examine your career goals and existing commitments before agreeing to become a mentor. Mentoring is both time-consuming and intense. Be clear with yourself about the types of mentees with whom you are willing to work.

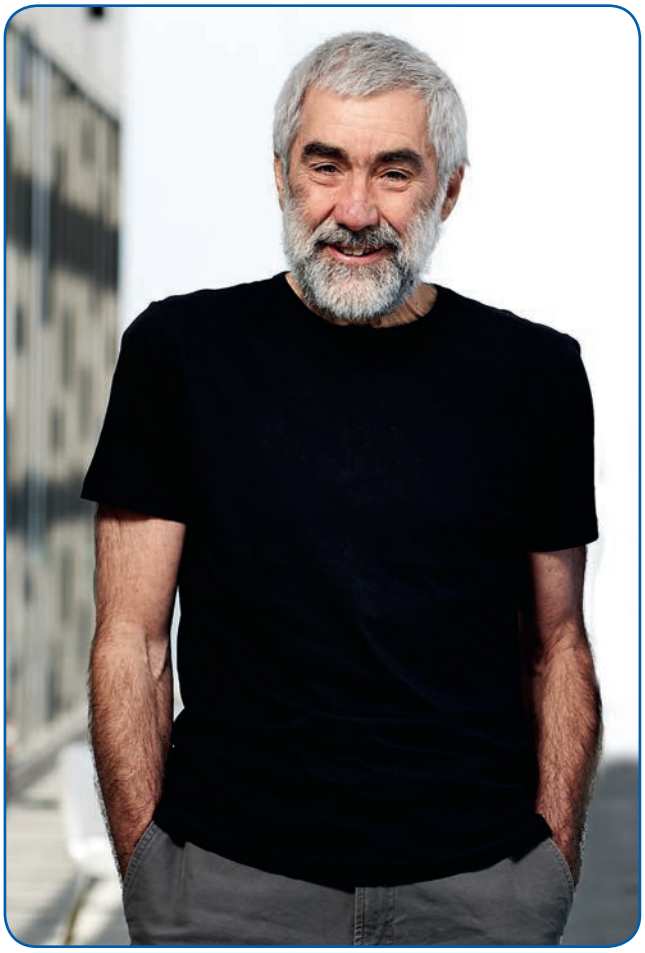
Any advice for would-be mentees?

Examine your career goals and existing commitments before seeking a mentor. Being mentored is both time-consuming and intense. Be clear with yourself about the types of mentors with whom you are willing to work. ■

MORE ONLINE
Check out an extended interview Eric Vance conducted in 2014 with Doug Zahn in the ASA Statistical Consulting Section newsletter, *http://bit.ly/2b3UGt3.*

Interview with **Terry Speed**

Jean Yang



Terry Speed

Jean Yang, professor at the University of Sydney School of Mathematics and Statistics interviews her mentor, Terry Speed.

Tell us a little about your research interests and university life before your PhD.

At school and as an undergraduate, I always had broad interests, but I wouldn't call them research interests, just interests. The usual stuff: how, why, when, and where. Science, art, literature, some sociopolitical things (e.g., concerning the death penalty [against]). I was unfocused.

How did you become interested in statistics? Did you always want to pursue a study in mathematics or statistics?

I started university wanting to do medicine. My interest in medicine came from being a sickly kid who spent a great deal of time at home and in hospitals, and hence I had a lot of first-hand experience with the medical world. In university, I aimed for medical research, not medical practice, because I lacked the "bedside manner." For me, in the late 1950s, bedside manner included lying to the patient. I saw it first-hand with a school friend who died of leukemia. Everyone kept encouraging her to think she would get better, while letting us—her schoolmates—know she was dying. That seemed unfair to me then, and still does.

I lasted one term in my combined science-medicine course before giving up the medicine goal and switching to science only. That involved adding another math course, not dropping anything. I call that failure #1, as it was a change in direction; I'd gotten my goals wrong.

In the second year, I dropped chemistry and physics, and in my third year, genetics, after which I found myself doing just mathematics and statistics. For the next 10 years or so, these two played a roughly equal part in my life.

There was a period during my (part-time) PhD when I thought I might become a high-school mathematics teacher, and so I got trained for that, but ended up not pursuing it, (failure #2). In that 10 years, I tried research in pure maths (failure #3), probability theory (failure #4), and theoretical statistics (failure #5), after which I had a 4.5-year spell in science management (failure #6).

By the time I arrived at Berkeley, I was a statistician with an interest in all applications, including biology, and most particularly, genetics. As I have said elsewhere, fail early, fail often.

Who was your PhD thesis adviser, and who are the academics who influence you the most in your statistical thinking?

My PhD adviser was Peter Derrick Finch. He was a very good researcher in probability, statistics, and mathematics. He did not have a PhD, and was rather proud of that. He had broad interests and got bees in his bonnet—he followed his passions, rather than sticking to one area. I share a few, but not all, of his qualities, though whether the sharing is association or causation we'll leave to another time.

Other academics who influenced me were people who got me interested in particular topics: MJD White and PA Parsons for genetics; Evan J. Williams for Fisherian statistics; Gordon B. Preston

for algebra; Emanuel Strzelecki for functional analysis; K. R. Parthasarathy for things like Lie groups; EJ (Ted) Hannan for stochastic processes; and Dev Basu for critical thinking about classical statistical inference. Dev became a Bayesian, but I resisted, though conceding the validity of many of his arguments.

Behind these live people were four remote geniuses who influenced me at a distance in time and space: John von Neumann (1903–1957); R. A. Fisher (1989–1962) and Norbert Weiner (1894–1964); and Andrey Kolmogorov (1903–1987).

At Berkeley, you were involved as an expert in O.J. Simpson's trial. Would you describe how you became involved, and had you been interested in forensics before?

I got involved in the Simpson case because I was asked and I said yes. I did so because I believe in innocence until proven guilty and that the prosecution has to prove its case beyond a reasonable doubt. I was asked because I was known to be critical of the way in which statistics was used in DNA forensics, and I still am. This is not the place to explain why in detail, but let me just mention that I find it hard to see meaning or justice in the so-called "match probabilities" of 1 in 1,020 still being presented to courts, when there are between 109 and 1010 people on the planet and the calculation omits any consideration of lab errors such as sample contamination, mislabeling, or the like—errors which are regularly found to occur.

I have had a long-standing interest in the legal treatment of evidence, and in criminology more generally. Fifty years ago, I was an expert witness in a murder trial in Melbourne—that of Ronald Ryan. There, the issue was geometry, the trajectory of a bullet fired during a prison escape. I was asked then because other, more senior mathematicians in the city had said no. Belief in the rights of defendants wasn't widespread then and still isn't. Ryan was the last person executed in Australia, and I look forward to the day that can be said about someone in the USA.

Research and Career

Who are/were your mentor(s) at different stages of your career, and what is the most significant lesson you took away from your mentor(s).

Although I am now a big believer in mentoring, I'm embarrassed to say I wasn't conscious of it playing much of a role in my research career. Maybe I'm down playing it, and if so, apologies to all my mentors out there—if you are still alive! Of course I learned an enormous amount from my collaborators and students, but it seems odd to call them mentors. Mostly, I felt I was trying hard to catch up or keep up with people at the same time as [I was] trying to keep being myself. Perhaps it is just that 50+ years ago, mentoring wasn't the big deal it is now. Either way, I can't recount a significant lesson … but then I've always felt I am a slow learner. Maybe a lesson is on the way.

Do you believe in strong involvement or ties with the industry? How should an academic go about achieving this?

I have always had a great interest in and respect for industry. As an undergrad, I had a summer job at ICI in Melbourne and learned a lot from the work of George Box, written when he was at ICI in the UK just over a decade earlier. As an academic, I've always liked to forge links with government and industry statisticians, in part because they employ our graduates, in part because they have problems we can sometimes help solve, and in part because I'm curious about how our discipline gets used in what I like to call the "real world," distinct from the "imaginary world" of academia.

While in Perth, I used to take my students out to field experiments laid out by statisticians from the then department of agriculture. It was fun walking around a Latin square or a split plot experiment of fruit trees, and later we would analyze the previous year's data.

On one occasion, I went up in a very small plane with someone from the local bureau of census who was checking dwellings in remote rural areas for his master list. The idea was that the pilot would swoop down, making a low pass above each possible housing unit, to determine whether it was occupied. My brown paper bag saw a lot of action on that trip, and I concluded I didn't have the stomach for census work.

How do you achieve it? Be interested and respectful. Show your interest and respect.

Interdisciplinary Research

What motivated you to change from statistics (analysis of variance) to genetics and bioinformatics? Was there an event, a memorial project, or a collaboration that sparked or marked the beginning of your transition?

I fell in love with genetics (including DNA) in my first biology course in 1961 and have never deserted her. In 1963, I wrote an undergraduate

Professor Jean Yang is an applied statistician with expertise in translational bioinformatics. She was awarded the 2015 Moran Medal in Statistics from the Australian Academy in recognition of her work on developing methods for molecular data arising in cutting-edge biological and medical research.

honors thesis on R. A. Fisher's work on the survival of a single mutant gene. There has been no event, and no transition. If, like me, you were a statistician interested in genetics and DNA in the 1970s and 1980s, then with no further effort on your part, you became labeled a bioinformatician. I like to think I didn't find bioinformatics; it found me.

You must find interdisciplinary research and applied statistics rewarding; however, can you comment on the challenges and dangers for transitioning into interdisciplinary research?

I have written three or four *IMS Bulletin* columns about this topic, so I refer readers to them. Keyword: interdisciplinary! Of course interdisciplinary work is the ideal refuge for someone who likes to avoid being pigeon-holed, and I am certainly like that. You can always be too mathematical for the biologists and too biological for the mathematicians. More seriously, I do like to try to bridge these disciplines and be comprehensible to both if I can.

In addition to bridging the disciplines between biology and mathematics, what is your opinion about encouraging more collaboration between mathematics and statistics?

This is a tricky issue. Not surprisingly, many—perhaps most—mathematicians see the mathematics in statistics as pretty low level and uninteresting—as mathematics—and I think they are right. We can go a long way with ancient notions such as Taylor expansions. But, of course, some more recent developments in mathematics can have a big impact on statistics, or the analysis of data more generally. I think wavelets are a great example, and more recently, compressed sensing. I suppose my view is that formal collaboration between the two disciplines doesn't seem necessary unless a well-defined statistical problem definitely reduces to a well-defined mathematical problem. More generally, I see the goals of mathematicians and statisticians as different.

You mentioned to me once you will always give anyone on campus an hour of your time. That stuck in my mind. Do you ever find such things taking too much of your time?

People sometimes say to me, "Thanks for talking/listening to me—you must be so busy. …" To that, I occasionally reply, "If I wasn't talking/listening to people like you, I wouldn't be busy." So no, it never takes up too much time; it's what I should be doing with my time. The rest is noise (a phrase I like).

I have witnessed you working with a large number of collaborators. Can you describe how it is working with so many people? Do you ever find you lose track of your project?

I have broad interests. I'm curious and restless and will try anything (once). As a result, I usually (always?) say yes when someone asks for help. Do I ever lose track? Frequently. I usually have to begin resumed discussions with collaborators by going back to square two.

Have you had any difficult collaborators, and what is your strategy with them?

If a collaborator is a pain, I might find myself very busy with other collaborators and have trouble responding to them quickly. But as a pain myself, I have a pretty high tolerance for pain, so it happens less than you might think.

It is often a fine line between collaborative research and consulting. Do you have any suggestions for how to strike a balance between collaborative research and consulting?

Balance is a concept I've enjoyed studying in experimental design, but it's never been a strong point in my personal or professional life. Plus, I don't like giving advice, so I'll let readers find their own (im)balance here. No suggestions, apart from do lots of both!

There is a surge in demand for "data scientists." Do you see this as the same demand for statisticians?

This question and the next are hard to answer briefly. I think the answer to the first has to be no, for if statisticians were delivering precisely what those demanding data scientists want, the demand would indeed be for statisticians. But it is definitely not. To that extent, statisticians have missed some of the boats. Having said that, it is clear to me that much of what is being sought in data scientists can be supplied by statisticians with the right training and attitude. There are misunderstandings on both sides about what statistics and statisticians can and should do, but there are certainly many things we don't do, at least not to the extent needed in many problems. Of course, many of these relate to computing, but some are about roles.

What is your opinion about how the restructuring and emergence of data science courses affect statistics as a discipline?

I see it as a necessary correction for our community.

There is no doubt in my mind that there are real and important issues here, mixed in with the usual human characteristics of exaggeration (hype), oversimplifying, competition for resources (turf battles), and so on. We just have to hang in there, argue our case, concede, and correct our failings, knowing that our discipline is a very important part of what is needed, even if it is not everything.

Recently, you have campaigned for women in academia, and I heard WEHI is starting a child care center. Can you tell us why this is important for you?

I think it goes back to my spending a large amount of my childhood at home with my mum. Plus, I have three sisters. So I had plenty of opportunity when young to see the world from the viewpoint of girls and women. I noticed quite early on that "It's harder for girls," [which is also] the title of a book and a short story by the Australian writer Gavin Casey that I read as a kid. Putting this together with the fact that working for social justice was a feature of our household and that I married a feminist, you get a male feminist.

At school, I was occasionally top of the class in one thing (e.g., arithmetic or mathematics), but a girl would sweep the field in everything else. So I never got any sense that girls were academically less capable than boys—more the contrary. When I saw how all this worked out later on in girls' careers, I couldn't help but be struck by the injustice of it all. My main regret is being slow to embrace this cause.

Mentoring

I saw you have an *IMS Bulletin* column about mentoring. How important is mentoring in statistics or interdisciplinary research? Do you believe the role of mentoring has increased in its importance over the last 40–50 years?

I do think mentoring is important, not just in statistics or interdisciplinary research, but in most occupations. The world is now a tougher place than it was when I was younger. I came of age in an era when we didn't need to think about jobs; we just graduated and chose from among several reasonable options. So I definitely agree that the role of mentoring has increased in importance over the last 40–50 years (i.e., over my career). I think it has come with the increasing corporatization of universities and research institutes and the increasing professionalization of disciplines like ours. Failing, drifting, being a jack-of-all trades, things like that, are not encouraged these days. Having career plans, getting guidance, avoiding mistakes, this is how it is. To avoid sounding too much like an old fool, I'll stop here, but let me repeat: Mentoring is important, especially for women and other groups under-represented in senior roles in academia and elsewhere. White males have been mentoring white males for millennia in Western society; it's so common it is unconscious. But as soon as someone different from the norm comes along—a woman rocket scientist or brain surgeon—the need is greater and the opportunities are fewer.

I understand you don't like to give advice, but is there any discussion or something you would encourage postdocs to consider regarding their careers?

Talk to lots of people, but don't do what they recommend. In particular, read my article, "Never Ask for or Give Advice, Make Mistakes, Accept Mediocrity, Enthuse." (*www.crcnetbase.com/doi/abs/10.1201/b16720-57*)

What do you believe is the most pressing question in bioinformatics or statistics today? If you were a graduate student or ECR today, what research area would be the most fascinating for you?

I've always hated being asked, "What are the big questions in …," so I tend to reply, "I work on little questions, topics of no consequence." See above: contrary. See also my column "How to Do Research." I do think I tend to think about unfashionable things, perhaps unconsciously avoiding competition. As for what will be the most fascinating research area for me today, as you know, I'm currently obsessed with removing unwanted variation using negative controls. It's not going to be solved completely any time soon. But, of course, other things catch my fancy: heterogeneity, evolution, single cells, many cells, tissues, organisms … Who knows when one of these will become an obsession.

I have enjoyed reading your columns in the IMS Bulletin. What motivates the various topics in that column?

My motivation mainly comes from listening and talking to people, though some comes from my personal obsessions. I'm interested in small and occasionally not-so-small issues that slip through the cracks: history, trends, the unspoken, the unspeakable. Oscar Wilde called fox hunting "the unspeakable in pursuit of the uneatable." I wish I'd said that. ■

MORE ONLINE
Speed writes a column for the *IMS Bulletin*. You can read it at *http://bulletin.imstat.org/category/terences-stuff.*

Brian at OMB

Grace Medley

Jeanne E. Griffith 2013 Mentoring Award Winner Brian Harris-Kojetin and his nominator, Grace Medley

Like Madonna or Cher, Brian Harris-Kojetin is often referred to as just "Brian," as in "I have a question; let's call Brian." No one ever asks which Brian, because for those of us in the federal statistical system, there is only one Brian. Brian Harris-Kojetin, aka "Brian at OMB" (U.S. Office of Management and Budget). And even though Brian is now deputy director of the Committee on National Statistics (CNSTAT) at the National Academy of Sciences, I'm not sure "Brian at CNSTAT" will ever catch on quite the same way.

I've known Brian for more than 10 years now. I met him when I was a graduate student in the Joint Program in Survey Methodology. One of my fellow students had an internship with "Brian at OMB," so we all got to know Brian and, before long, I was taking care of his dog whenever he and his wife, Lauren, traveled. Since then, I have worked with him on several interagency workgroups and served with him as an ASA Government Statistics Section officer and a detailee to the OMB.

Many of these collaborations were because Brian saw a need and not so gently persuaded me to join the cause. In talking to others in the field, I find I am not alone when I attribute many of my choices and opportunities to Brian. As a colleague at OMB stated, "Brian doesn't formally supervise staff, but he has no trouble finding folks to mentor. Brian has the innate ability to establish relationships with many individuals in a variety of roles and is able to see how they can benefit from and help to address needs of the federal statistical community at the same time." In other words, Brian has led many of us through the wilderness of survey production and statistical research and has not only made our work better, but made each of us better along the way.

Brian is originally from Edina, Minnesota, and holds a BA from the University of Denver in psychology and religious studies. His PhD is in social psychology with a minor in statistics from the University of Minnesota. He will tell you he can't imagine what his life and career would be like without the incredible people who have mentored him in college and in the federal statistical system.

His enthusiasm for empirical research and statistics was instilled and cultivated by a mentor in his senior year at Denver. Bernard (Bernie) Spilka set high expectations for Brian. Before long, they were poring over SPSS printouts, co-authoring professional conference presentations, and publishing journal articles. Bernie introduced Brian to prominent researchers and made him feel part of the professional community. To Brian, Bernie was the mentor who inspired him to help others and give them opportunities to grow and thrive like he had been given.

After graduate school, Brian expected to be an academic—teaching psychology, statistics, and research methods at a small liberal arts college—but he couldn't imagine being at the couple of colleges where he received offers. So, he applied for a job at the Bureau of Labor Statistics (BLS) while at a conference in Washington, DC, and talked to Clyde

Tucker, who had just assumed leadership of the Behavioral Science Research Center at BLS.

Brian worked with Clyde on a variety of projects, looking at nonresponse and other data quality issues in BLS household surveys. He credits Clyde with giving him the opportunities that shaped his career in the federal statistical system and paid dividends later. Brian was impressed by Clyde's vision of what a survey program should be doing and his ability to pull together the data to make the case for improvements. Clyde also didn't give up, even when he encountered considerable resistance.

In addition to nonresponse research they did together, Clyde included Brian on interagency teams to work with colleagues from the U.S. Census Bureau and on a Federal Committee on Statistical Methodology (FCSM) subcommittee on measuring sources of error in surveys. Clyde also brought Brian in on a test he was doing on race and ethnicity questions that would inform the OMB's revised standards for data on race and ethnicity. After analyzing and writing those results, Clyde sent Brian on a detail to the Census Bureau to help with the Race and Ethnic Targeted Test they had conducted. Through these projects, Brian met Katherine Wallman, chief statistician of the United States at OMB.

Thinking perhaps it was time for a change and that he should try something in the private sector, Brian took a job at Arbitron, but distinctly recalls "being at an ASA conference and seeing Katherine Wallman, and she came over to me and said that she heard I was leaving, but that she hoped I would consider coming back to the federal statistical system sometime. I must have said 'sure,' but I was mostly thinking, 'Wow, Katherine Wallman remembers me.'"

Three years later, Clyde told Brian there was an opening at OMB, so he took a look at it and it seemed like the perfect fit. Brian decided to apply and see if Katherine still remembered him. Of course she did, and she hired him.

Brian describes Katherine as an incredible role model. "I remember sitting in her office on so many occasions, meeting with so many people, and watching her charm people who came in with the most negative initial views on one hand, and other

Jeanne E. Griffith 2013 Mentoring Award Winner Brian Harris-Kojetin and his nominator, Shelly Martinez

times, gently (but not too gently) schooling others who were not cooperating and acting in the interests of the whole system." Brian tried to internalize these skills for handling people and situations because it was becoming clear to him how vital personal relationships and collaboration across agencies is to the functioning of the federal statistical system.

As a senior statistician in the Statistical and Science Policy Office at OMB, Brian found many more opportunities. He was the staff lead on many important issues, including standards for statistical surveys, preparing "OMB clearance packages," survey nonresponse, survey respondent incentives, and guidance on the Confidential Information Protection and Statistical Efficiency Act of 2002. Brian also chaired the FCSM, served as the desk officer for the Bureau of Labor Statistics and demographic programs of the U.S. Census Bureau, and reviewed countless surveys across nearly every federal agency. He was elected an ASA fellow in 2008 for his contributions to the federal statistical system.

Brian's position at OMB provided him with the ability to see across the federal statistical community and identify mid-career staff to teach, coach, and mentor about their role in that community. Whether it was a new position, detail, or interagency committee, he often identified connections between interests and individuals and helped them connect successfully. His goal was to help people see beyond the walls of their cubicles and agencies.

While Brian interacted with many of us through his official job and tasks, it was often the smaller moments that transformed him from mild-mannered

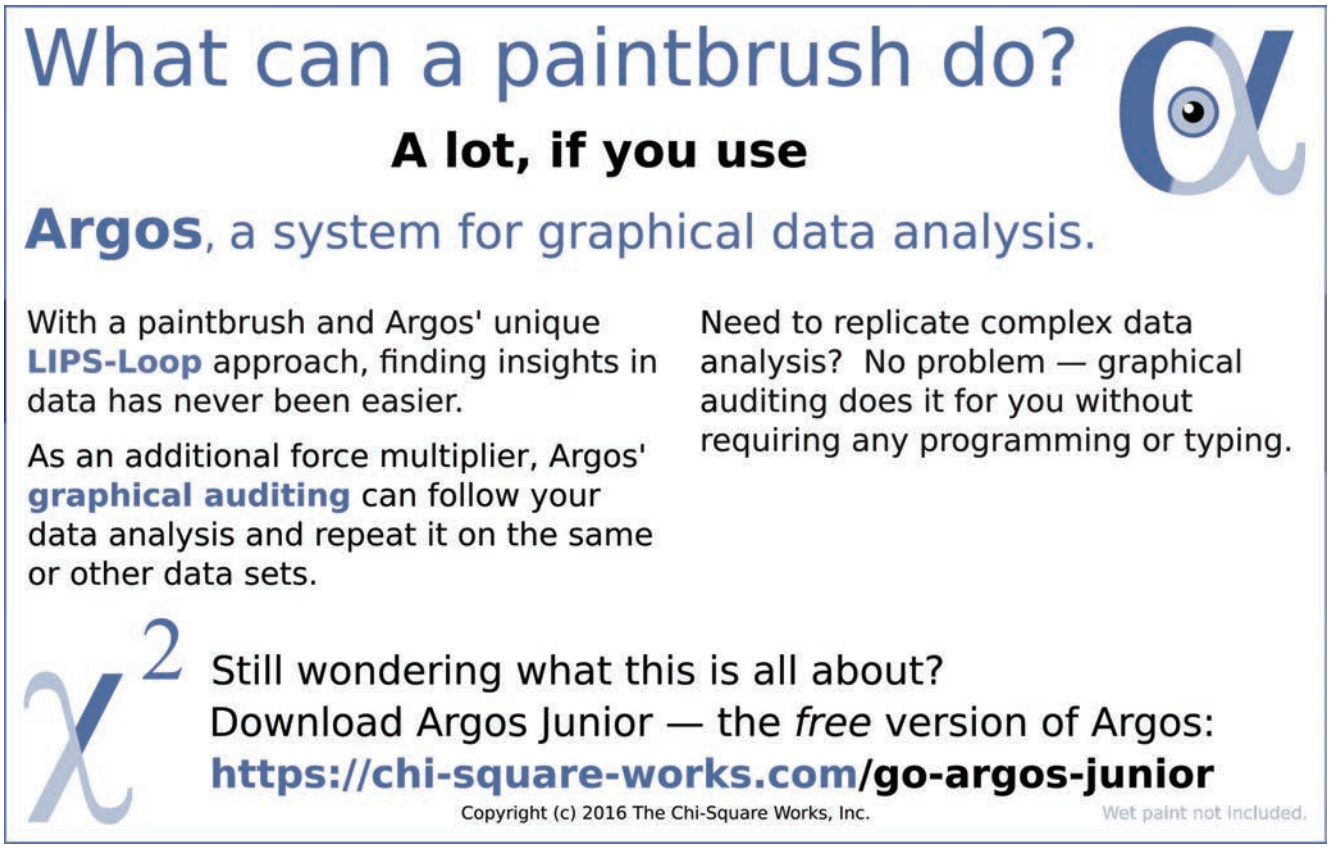
MORE ONLINE
In 2013, both Grace Medley and Shelly Martinez nominated Brian Harris-Kojetin to receive the Jeanne E. Griffith Mentoring award. Read about the award ceremony at *http://magazine.amstat.org/blog/2013/10/01/griffith-award.*

OMB desk officer into "Brian at OMB." Brian is a strong leader and a good listener. He genuinely cares about the information collected and the people who collect it. He is also honest and a tireless fighter and master of political navigation. I think many can point to a time when Brian told them either individually or collectively to suck it up and do the work right. While we may have begrudged him at the time, he was right. The work we do each day matters, and doing it right is important.

Recently, Brian embarked on another step in his career as deputy director of CNSTAT, where he is the study director for the Panel on Improving Federal Statistics for Policy and Social Science Research Using Multiple Data Sources and State-of-the-Art Estimation Methods, which is chaired by Bob Groves. He is excited about the opportunity to continue working with his colleagues in the federal statistical system and with the many experts who volunteer to help improve programs and foster innovation and change.

In 2013, Brian received the Jeanne E. Griffith Mentoring award, an annual award presented by the ASA Government and Social Statistical Section that honors individuals who encourage mentoring of junior staff in the statistical community. As his OMB colleagues and I worked on his nomination packet, I was struck by how effortless his mentoring was because it's integral to his personality. It's just what he does.

His example is one of dedication and hard work, and he reminds each of us not only of why survey research is important, but also why we are an important part of survey research. At the award ceremony, I was struck by how genuinely touched he was by the award and by how much he had received from his mentoring experiences. It was clear that, for Brian, mentoring both personally and professionally is a two-way street. ■



Interview with **Mary Gray**

Nawar M. Shara

Nawar M. Shara, associate professor of medicine at Georgetown University, interviewed her mentor, Mary Gray, professor in the department of mathematics and statistics at American University.

Mary Gray

Nawar: Where did you go to school, and how did you become interested in statistics?

Mary: I earned my undergraduate from Hastings College in Hastings, Nebraska—my hometown. A small town by anybody else's standards, but a large town by Nebraska standards. Between undergraduate school and graduate school, I received a Fulbright grant to spend a year in Germany. This really changed my life, producing an international perspective that had not existed before. After my graduate study in Germany, I earned a PhD from the University of Kansas and got married.

My husband had earned a PhD two months earlier, also in mathematics, but from the University of California at Los Angeles. When we moved to Berkeley, where he was offered an appointment at the University of California, I had to look for a job in the vicinity. This was 1964, when women looked for jobs in the vicinity of their husbands—back then, you wouldn't consider making it the other way around. So, I taught at what was called Cal State Hayward at the time and then became Cali State East Bay.

Up until that time, I had never thought of there being much discrimination against woman or thought women needed any special help. It is true, the first day I walked into a graduate topology class, the instructor said, "What are you doing here? You are taking a position that could be available to a man." But, all that did was convince me to do really well in topology.

When I was looking for a job in California, I never realized how much discrimination there was; I just thought I would be hired to be a mathematician. Then I met two women mathematicians at the University of California at Berkeley: Julia Robinson and Emma Lehman. Both were faculty wives whose husbands had appointments at Berkeley, but they could not get jobs there or go into the faculty club because there was an anti-nepotism rule.

Robinson was finally given a regular appointment at the University of California at Berkeley, but only after she was elected to the National Academy of Sciences (NAS). That showed me there was a real issue concerning discrimination, and I knew then that people would need encouragement. That is how I became interested in solving possible discrimination problems—particularly for women and minorities in the sciences.

Soon it became obvious that it was not only a problem of respecting women, but there was also a substantial problem respecting minorities, so the first thing I did after moving to DC was establish a program—funded by the Sloan Foundation—that would help women and minorities earn PhDs in math. Many of those who participated in this program came from historically black colleges and universities, but also from smaller schools where there was no assistance for going onto graduate school. We needed to see where they were in their background and design a program to get them where they needed to be in order to benefit from the PhD programs they were in. My first experience was establishing this program.

I also observed there were few women when I went to national meetings of the math societies. Now, this had its advantages. For instance, you did not have to wait in a queue for the rest room. But I decided we really needed to do something about this and that it was the responsibility of the profession as a whole to encourage woman and minorities. So I went to a council meeting of the American Mathematical Society (AMS) to point this out. The president of the society said, "There is a gentlemen's agreement that only members of the council could get in." I replied, "I'm not a gentleman," and got into the meeting. There, I pointed out that all the mathematical professions needed to encourage women and minorities.

So I started my own organization with the help of six women and a few men—The Association for Women in Mathematics. I ran that for several years off a card table in my office, in my bedroom, with some help from my husband.

So the idea was trying to get a valuable organization going with enough women so you did not feel like you were the only person. Eventually, I was elected as the vice president of the AMS because many people were dissatisfied with their efforts to promote women and minorities and to work on general issues of social concern—from anti-war to poverty. I decided after that I had done about all I could do with the society and that too many mathematicians simply did not understand the issues. They had a self-satisfied sort of notion that only people like them could be mathematicians.

That is when I got interested in doing statistics.

I was asked to do some work on issues of the race and gender composition of people who had been selected as White House Fellows. That work made me interested in using statistics to actually try to improve situations for people. In other words, I found that when you use statistics, it can have an immediate effect. As a mathematician, I'd always felt that while the theorems might be beautiful, it would be 300 years before they had any effect on society, whereas one could improve society by working in statistics. So I got involved in a series of human rights cases for Amnesty International and other organizations within the scientific community to help get mathematicians and other scientists around the world out of prisons.

I continued to work with the Association for Women in Mathematics (AWM), which became a successful organization and helps women with scholarships and travel grants. One such event we helped with is called Sonya Kovalevskaya Day. Sonya was the first major Russian female mathematician, and we celebrate her day by supporting events that help introduce high-school girls to mathematics and statistics as a community. We have Sonya Day events at American University.

Her day is also celebrated throughout the country. Local students, sometimes girls only, spend the day on the college campus doing mathematics, listening to talks, engaging in activities, and so forth. It is an effort to reach girls at the age they are sometimes driven away from mathematics because they perceive it as something that is not feminine or is isolating, or that girls are not supposed to be good at. All those things that one has to keep working at constantly, providing encouragement, being there with somebody who needs to talk or designing activities. I think being there and being willing to talk is the biggest contribution I or most anybody else can make to young girls who need help. This in particular is true, not only to a women, but minorities as well.

Many of my students who earned PhDs with me are minorities who ended up with successful careers. Some of them are retired now, but they all studied mathematics or statistics. Every now and then, I get a message from one of them asking for advice about this or that or telling me they are going to be in Washington and want to talk. Sometimes, they are considering changing their career emphasis; sometimes they are seeking tenure or advancement. Since I came to American University in 1968, I have a group of students who keep coming back. They are good friends, but also people I can share ideas with. A few of them I have actually published things with.

But still, statistics seemed more productive—from a changing society point of view—than mathematics seemed. I worked with the Caucus for Women in Statistics, and it is the same sort of thing as the AWM. The difference between mathematics and statistics, though, in my opinion, is the statistics community as a whole is much more welcoming to women. There is also a much higher percentage of women with PhDs in statistics than there is in mathematics. It is probably because the job opportunities for woman in statistics are so much broader—in government and in industry, as well as in academia. Academia is probably one of the worst places for sex discrimination and probably race discrimination, although I cannot speak for having experienced either.

In professional groups, whenever we have a big meeting, we always manage to have some activities that focus on careers for women and balancing one's lifestyle commitments or techniques to reach goals. It is an ongoing problem, not only in the United States but also abroad. So I also help international students, as well as minority students. It has been very rewarding because the students I have had have all been very hard working, very dedicated, and very, very bright and very, very productive. It has been a pleasure to work with those who care and who are willing to put in the effort to achieve their goals.

Nawar: How important is the role of a mentor in someone's early decisions in life?

Mary: I think, from what I know from other people, it is essential because people do not always have their own resources to fall back on. Some are able to achieve without any external help, but for many, it is a feeling or a sense of isolation and a lack of willingness for people to judge them on merits. If people are being judged on their race or sex, it can be very disheartening and they really need a mentor to help them realize their own worth. But the main thing a mentor needs to do is help a person see what they can do on their own.

Nawar: What are some of the challenges mentors and mentees face along the way?

Mary: It is a big responsibility. I had a student who was an undergraduate come back to see me this summer and the first thing he said was I changed his life. It is not the first time I have heard that. I had to think what a terrific responsibility it is to have someone say that to you. It has an effect and all you can do is hope the effect is positive, because you are probably not going to hear if it is not. Frequently, we hear that it is and, as I said, I feel that is a great responsibility. People achieve things on their own, but if I am able to help encourage them do so, it is a great feeling. But there is a sense that you need to help people understand what they are able to do themselves and see that they achieve as best as they want to.

Nawar: Well, I can repeat that you did change my life, Dr. Gray, for the better of course. As a statistician and a lawyer, how would you say those two disciplines helped you become the mentor you are?

Mary: What we talk about is a two-sided brain. I do not really think there is a two-sided brain, but unfortunately, people operate as if there were a two-sided brain. I mean there is a two-sided brain, obviously, but functionally you cannot separate your actions into reason and emotion. It does not work that way. You have to be able to see problems in a broad perspective so you can see solutions in a broad perspective.

That is the reason I like looking at both statistics and the law, because you do have to take a broad point of view and you do have to resolve conflicting ways of going about things to try to come up with a resolution that works both statistically and legally. I think it is a great help in helping people solve problems, but also in thinking of new ways to use their skills so they are not stuck in the traditional line as a lawyer and traditional line as a statistician.

For instance, you might end up working in something like public health or human rights, or something like prison reform. There are all sorts of things that, once you have looked at the numbers and once you have looked at the law, come together.

Nawar: You are the founder of the Association for Women in Mathematics and a recipient of the Presidential Award for Excellence in Science, Engineering, and Mathematics Mentoring. You also earned honorary degrees. How would you say mentoring helped fulfill your passion and mission?

Mary: Well there are people who can do things totally on their own, but I cannot. I rely on interacting with people to feel good about what I am doing. It is very important to have a productive relationship with other people so you can share ideas and perspectives and get somewhere with it so you can see actual solutions. I played a very substantial role in pension reform, and that was achieved because I saw the problems people were having from a very different perspective and was able to apply both statistics and law to make a major breakthrough. I think the contacts you have and the empathy you develop for other people leads you to work on problems you might not otherwise work on.

Nawar: Are the issues you have encountered in mentoring women 20 years ago different than the issues you face now?

Mary: Well there are certainly differences from the legal point of view; women have more legal rights now, but it is harder to exercise the legal rights they have, I think, than it was previously. Partly because

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To read more about Gray, visit the college of arts and sciences page at the American University website, *www.american.edu/cas/faculty/mgray.cfm* or read about her many achievements on Wikipedia: *https://en.wikipedia.org/wiki/Mary_W._Gray.*

the expectations are higher. When I was starting out, you would find women who gave up easily because women were not really expected to get a PhD—so women would drop out of a program. Once you remove some of the different expectations, then you would look at men and women in much the same way when you are talking about careers. Responsibilities like child care and the difficulties of maintaining a home life as well as a career should be the same for women and men, but society does not make it the same. We are making progress legally, but the legal progress will not do any good unless you have along with it a societal belief. Women and men share the same range of abilities—some are great, some are not so great. Both men and women share a range of expectations, a range of skills. What distinguishes men and women is not that women are more compassionate or men are more self-confident, but rather that individuals have different viewpoints and talents.

Nawar: **How would you describe yourself as a mentor? I hear from others how you are a mentor (including from my husband). How would you describe yourself as a mentor?**

Mary: Well, I am certain that the description from people I have mentored varies greatly from one person to another. It depends on the stage of their career and where I have encountered people. I don't know that I can make any general statements, but I think of myself as trying to have people see a broad range of perspectives for themselves and to help them make the choice that's going to be the best for them. If that means working harder, then I think it is important to tell them that.

Nawar: **So can I say how I see you as a mentor?**

Mary: Sure!

Nawar: I think you come across as very tough, but at the same time, you care a lot and you are very invested in the success of your mentees. You do not give a fish; you teach how to fish. That is an English proverb I learned at a very young age. It is much easier for mentors to give the fish at some point, and mentees prefer that, especially when they are struggling. But in the long run, I think it's much more rewarding if you teach your mentees to work harder early on, because it gets easier later on in life.

Mary: That is probably why you are a good mentor yourself.

Nawar: **What are the most important skills you tried to develop in your mentees as part of your mentorship plan, if any?**

Mary: Well, I think recognizing a mentee's possibilities and what it will take to realize a mentee's possibilities is what a mentee is looking for. So, instituting some realistic appraisal and being willing to work hard to achieve it.

I think, with respect to you, the first challenge was finding you. I had been looking to find someone from Syria who would be a good candidate for a program I was in charge of and I saw a number of people who would have loved to come and have an opportunity to do what you eventually did. But, it was clear they did not have the persistence, ability, or willingness to make sacrifices that might be necessary. So it was a challenge to find you, and once I did, it was a challenge to be sure you did not get discouraged every time things did not go as wonderfully as they might have. I think that is what it is really about. With you, I knew you would be able to respond to whatever the challenge was.

Nawar: **You were awarded the 1994 mentor award for lifetime achievement from the American Association for the Advancement of Science. Can you tell me what that meant to you?**

Mary: That was early encouragement, before some of the other recognition that I eventually achieved, but I think the important part about that was that AAAS put mentoring among the category of things they thought were important for scientists. It was not something that was just sort of in the back, that they did not bother to talk about. Instead, they made a big thing about mentoring and nurturing and how they are an important aspect of being a scientist. I think that's the encouragement needed to keep at it. If a professional society gives you recognition, it is in a sense telling you that what you have been doing is important, so you are right to keep on doing it.

It is important to know that white males need mentoring, as well, and I consider that not only an obligation, but a joy. You know, I could think of a number of people who are very proud because of what they have done, and I hope that I helped with their achievements. When I see all the people I am still in contact with in both this country and around the world … I hope to get other scientists to think about human rights issues, so, for example, I have worked with scientists extensively in Brazil on

human rights issues and in other countries. I think that is important, you know, mentoring is universal.

Nawar: Mentoring is universal.

Mary: Maintaining contacts is essential. Establishing an Association for Women in Mathematics is an example. At one time just recently, we were talking about recruiting students for a master's degree program and I could think of four or five colleges where ex-students serve as either a department chair or dean or head of National Science Foundation–funded programs about mentoring. In that collection of people, there were white males, there were minorities, and there were women. And they were all mentoring themselves.

Nawar: Do you think mentoring is for certain people, and not for everybody?

Mary: Well, I think it's for everyone to give it a try, but I think it's also important for people to realize that, in some cases, if it's not something they should be doing, it's probably not good for either of them or the people who they are trying to mentor. Either because they are too prescriptive, which I have seen happen, or they want too much to tell people what they should be doing, or because they do not care enough, or they do not invest themselves in the process. You cannot be a very good mentor on either end of the spectrum. If it turns out that is not one of your strengths, you should get out of it.

Nawar: So, in your opinion, what is a measure of success of a mentor/mentee relationship?

Mary: I don't think you will ever know because, you know, it is a lifetime thing and the immediate measure of success is where the mentor feels good about it and the mentee feels good about it, but also as they achieve at least the major portion of his or her goals. It could be something in much longer terms, so it is hard to say in any given period whether mentoring has been successful.

Nawar: Would you say mentoring young women in science is always different than mentoring young men? If so, why?

Mary: Well, it is different because their problems are different. With men, you sometimes see a lack of self-assurance, but it is not very common, whereas, with women, a lack of self-confidence often makes them limit the potential they can see for themselves. So, again, it is not women have it and men do not; however, a lack of self-confidence is more predominant among women than among men. The sense of responsibility for other people also is different. It exists in some men and in some women, but not in all men and all women, but I think generally a woman thinks more about how to impact others, but again there is a vast overlap. ■

Participate in a VOTER ID STUDY

Followers of election news will see that voter ID laws are a hot topic. Several courts have found they unconstitutionally restrict voting rights, based on demographics showing the laws would disproportionately affect minority voters and thus, absent evidence of voter fraud, cannot be justified.

Except for studies by statistics students in the 2014 election, there is little to show the actual impact—that is, how many have the laws kept from voting? Results from Dallas, Philadelphia, and Northern Virginia showed about 2% of potential voters were turned away from the polls because they lacked appropriate IDs, adversely affecting low-income and minority potential voters.

Many states still have restrictive laws—laws that may keep hundreds of thousands of those otherwise eligible from voting … or maybe not. You can be part of gathering the data. It is relatively easy to do.

Faculty or students in a survey sampling course can create a sample design based on census data for the economic and racial composition of precincts. Students in statistics classes at all levels can conduct the interviews at the sample precincts, asking "Did you come here to vote? Were you able to vote? If not, why not?" Gender, ethnicity, and age can be observational variables. Depending on the expertise of the students, analyses can vary from simple t-tests to logistic regression. Results could influence the future of voter IDs.

But if all this seems too complex, just pick some convenient precincts and involve students in gathering data. It's a great way to engender enthusiasm and appreciation for the role of statistics in public policy. Make the project part of your course this fall. For more information, a draft report, and a planning packet, contact Mary Gray at *mgray@american.edu.*

What Is **Mentoring,** and Why Is It a Good Thing?

Terry Speed

This originally appeared in the October issue of the *IMS Bulletin* under Terry Speed's column, "Terence's Stuff." It is reprinted here with permission.

Previously in this column, I've written briefly about women mentoring other women, highlighted mentoring as important for achieving gender equity, mentioned the possibility of choosing the wrong mentor, said that mentors can help you improve your speaking and writing, and that they should support you if you want to quit. I've assumed that readers know the answer to my opening question, but I now realize that was a bad assumption. Mentoring is an activity that has many forms, and people do not automatically appreciate its diversity or its potential for doing good.

Recently I participated in the 2015 JSM mentoring program as a mentor, and I also attended a mentoring workshop for new and seasoned mentors and mentees, both organized by the ASA Committee on Applied Statisticians as part of the ASA President's Initiative on Mentoring. This committee has been tackling mentoring for about three years. They have implemented several mentoring programs for applied statisticians, helped ASA sections and chapters implement their own mentoring programs, and have produced a number of valuable resources, available to ASA members at the ASA Mentoring Clearinghouse. Among other things, they have a single sheet entitled DIY Mentorship (*www.amstat.org/membership/pdfs/MentoringFlyer.pdf*), and a 40-page set of tools for developing a mentorship program for applied statisticians called Mentoring in a Box. There is more available on their website, and of course more still on the wider web.

Traditional mentoring has been defined as "a relationship between an older, more experienced mentor and a younger, less experienced protégé (mentee) for the purpose of helping and developing the protégé's career." This is frequently thought of as a one-way transfer of information and advice from the mentor to the mentee. Called the instrumental view of mentoring, the unidirectional approach is the one many people automatically adopt when asked to be mentors. However, there is also the developmental view, where the personal growth and self-esteem of the mentee are addressed, at the same time as helping them understand and meet their institutional expectations for career development.

The one-way view is too limited, for in a good mentoring relationship there are clear benefits to the mentor as well as the mentee. Mentors increase their understanding of the challenges facing their younger colleagues, they can get a sense of satisfaction and fulfilment from mentoring, and may even experience greater career success themselves as a result. Furthermore, there is no need for the relationship to be simply instrumental or developmental. Perhaps the best view is that the mentor-mentee relationship is one of reciprocal growth and development, located at the position on the instrumental–developmental continuum that best suits the current needs of the mentee.

The developmental view raises another important aspect of mentoring: working towards institutional change. It's fine for a senior colleague to use their knowledge and experience to help a younger one meet the requirements for achieving some career goal, such as tenure, within a given institutional context. But what if that context is inhospitable, the requirements outdated or the goal unachievable? Think of a woman in an otherwise all-male department, or a person of color in an otherwise all-white department, or an applied statistician in a highly theoretical department that values only papers in the *Annals* or *JASA*. Good mentors don't content themselves with helping their mentees fit into the existing framework, but instead recognize the need for change in the way things are done, and push for it. It can also be valuable to collect the experiences of groups of mentors and mentees after a period of interaction in the same institution, to learn where it might be failing its younger people. In this way mentoring can be an important catalyst for change.

Mentoring comes in many forms, and need not be one-on-one face-to-face interaction. Mentoring can be remote (email, Skype). Group mentoring, with one mentor and several mentees, can be very fruitful. Peer mentoring, where individuals at a similar stage in their careers meet in a group, can be extraordinarily rewarding. There's nothing quite as liberating as finding out that others share your hopes and fears, and will discuss their strategies for career development or career change. It is fine to have more than one mentor, for example, one with whom to discuss teaching, another to help you with your research, and a third for helping you get tenure. What matters, as all the guides will tell you, is having a clear and mutual understanding about the goals of your mentoring relationship and the time commitment involved. The DIY Mentorship document I mentioned earlier tells us that mentoring has a finite life cycle, roughly this: Establish rapport ➞Identify directions ➞ Make progress ➞ Move on. ■

Mentoring Using Motivational Interviewing: One Path to Becoming a QUALITY MENTOR

Notes from a CSP talk of a similar name by Mary Kwasny

Mary Kwasny realized she was leaning more toward being a mentor than a mentee about the same time she realized progressive lenses (bifocals) were a fabulous invention. While her main focus (pun intended) is on being a great collaborator and teacher, she quickly realized great mentoring was vital to ensuring the sustainability of the profession. She is always happy to share her thoughts on the balance she found between the Socratic method and 'shoulder to cry on,' but also warns this is a work in progress and apologizes to her prior mentees, who may not have benefited from this current research.

Colleen Stiles-Shields jokes that she enjoys multidisciplinary work so much that she decided to become multidisciplinary herself. She is a licensed clinical social worker and doctoral candidate in clinical psychology, who recently defended her dissertation on mobile apps for depression. She has been mentored by a variety of talented psychologists, social workers, engineers, and statisticians (in particular, Mary Kwasny).

Lately, there has been much ado about mentoring. Perhaps it is just that I have entered that mid-late phase in my career where one is more prone to be asked to be a mentor, or perhaps it is because the literature has become replete with results from surveys that conclude that employees want mentoring.

I believe changes in the workforce that have many benefits have also spurred the need for mentorship. When people used to work at the same company for most of their working lives, the company was responsible for training and promotion. Now, as the workplace has become more volatile, mentorship becomes more important as a means toward professional development.

There are several forms mentoring can take. I serve on the Mentor Development Academy at Northwestern University Feinberg School of Medicine. This program focuses on guiding residents, fellows, or junior faculty through productive work experiences, promotion, and possible tenure, with the ultimate goal of increasing productivity and retention.

While these are great goals for mentorship programs within an organization, they may not serve well for mentorship programs within a profession.

Personally, I like the idea of the mentorship programs at the Joint Statistical Meetings (JSM) or the ASA's Conference on Statistical Practice (CSP), aiming at sustaining the profession and focusing on bringing the best out of our more junior colleagues.

With this noble goal in mind, I started to examine different mentorship techniques and tools, looking at both my own and others' experiences, as well as researching materials that were available for mentoring in medical schools and mentorship as a whole.

As part of the Mentor Development Academy, we offer roundtable experiences to discuss mentoring skills. Again, these tend to 1) focus on good communication skills, assessing understanding and aligning expectations, and 2) have the overarching goals of getting mentees to be productive and engage in discussions to ensure this productivity is the "right" type to achieve promotion and tenure.

For example, for a great teacher who loves to spend time in the classroom, but will only be promoted with first author publications, mentoring would focus on ensuring her efforts in and out of the classroom are steered toward activities that can lead to publication.

Within that context, I asked a senior mentor, "What makes a good mentor?" The reply was almost an instantaneous "active listening." When I returned to my desk, I reached out to one of my behavioral psychology collaborators, explained my original query, and asked, "What makes a good active listener?" Her response was to go research motivational interviewing. Then, I ordered the third edition of *Motivational Interviewing* by William Miller and Stephen Rollnick.

In the interim 24 hours, courtesy of Amazon Prime, I pretty much convinced myself I wasn't sure what I was researching anymore, so I picked up my old Greek notes and went to the first use of the term "mentor." For those who were not as lucky as I to take Homeric Greek and translate (poorly) the *Odyssey*: Mentor was a friend of Odysseus. Odysseus left to fight the Trojan War and asked Mentor to **watch over** his son, Telemachus. Athena wanted to **counsel and incite** Telemachus to fend off suitors of Penelope, so she disguised herself as Mentor

to meet with him. Mentor **introduces** Telemachus to king Nestor, from whom he learns to behave as a son and heir of a great king. From this story, I saw three key particulars for mentoring: beneficence, encouragement, and assistance with networking.

Motivational interviewing (MI), I later learned, was a counseling approach, in part developed by clinical psychologists in the late 1980s. Originally evolving from experiences in the treatment of problem drinkers, MI is now used to help patients move toward behavior change across a variety of behavioral health concerns. The layperson's definition is that MI is a collaborative conversation style for strengthening a person's own motivation and commitment to change. The key words of this approach are equality, understanding, and empowering. The key aspects of the MI spirit are the following:

Absolute worth—prizing the inherent worth and potential of every human being

Accurate empathy (*watch over?*)—an active interest in an effort to understand the other's internal perspective

Autonomy support (*counsel?*)—honoring and respecting each person's irrevocable right and capacity for self-direction

Affirmation (*incite/network?*)—to seek and acknowledge the person's strengths and efforts

Now, while I am not suggesting mentees have the same issues as problem drinkers, I believe mentees do have *ambivalence about changes,* and hence are seeking mentorship. It is addressing this ambivalence that is similar to a counselor-client relationship. There are (at least) two extremes as to how a mentor might approach the relationship. On the one hand, a mentor can be distant and engage minimally with a mentee, serving more or less as a checkpoint. On the other hand, a mentor can be overly eager and "advisorial." That is, if a mentee were to pose an idea such as "I'm thinking about going back to school to get my PhD," an eager [possibly academic] mentor might recall how great an experience that was for her career, consider the current structure of academia and the limits a master's degree may pose, and start giving advice about how to get into a top school or talk about how much more freedom a PhD might give the mentee.

However, the mentee may have many possible reasons for thinking about getting a PhD that have little to do with the actual training a PhD program may provide. Perhaps the mentee liked the structure of taking courses, compared to a current work situation, which may be remedied by taking a few courses. Perhaps he wants to learn a few new techniques for data analysis, which may be addressed by webinars or continuing education courses. Perhaps he feels he would have more independence with a PhD, which may be alleviated by switching work environments or looking into PStat® accreditation.

Without taking the time to learn about what the *intrinsic motivation* is to go back to school, a mentor may completely miss the mark in helping her mentee. Assessing motivation and ambivalence can promote optimal mentoring.

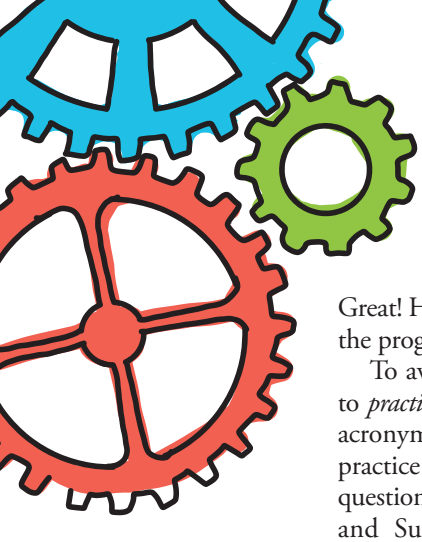
There are four processes in MI: engaging, focusing, evoking, and planning. Here, I will define each of these processes and the pitfalls to avoid, or skills to improve the mentor's ability to use these processes. MI is a process in itself. I have found that being cognizant of these processes has helped me become a better mentor, but I know I am far from being a certified motivational interviewer. I have asked Colleen Stiles-Shields, a licensed clinical social worker and doctoral candidate in clinical psychology, to ensure that these definitions are consistent with MI theory, as she was the collaborator who turned me in that direction.

Engagement

Many of us, at some point, have engaged in collaborations with investigators. Most successful collaborations start with establishing a helpful connection and working relationship. The same is true with mentoring. There are two common pitfalls in engagement to avoid—and that many statisticians are at risk of making. The first is assessing.

In consultations, assessing may be a good thing (e.g., What is your research question? What data do you want to collect?). The problem with assessing too much in mentoring is that it leads to a passive role of the mentee. Indeed, in over-assessing, a question-answer pattern typically occurs. This increases the feeling of a hierarchy (i.e., the mentor is the questioner and the mentee must provide acceptable answers) and decreases the odds of any in-depth exploration of mentee issues.

The second pitfall is premature focus. Many times, we are under time pressure and hope to identify a problem, help solve it, and move on. With mentoring, the discovery of the issue at hand is mostly to be done *by the mentee* through hearing himself talk about issues. The goal you hear might not be the real issue (e.g., "Oh, you want to go back to graduate school?



Great! Here is a site that describes the programs!").

To avoid these pitfalls, it helps to *practice reflective* listening. One acronym to help describe that practice is OARS (Open-ended questions, Affirming, Reflecting, and Summarizing). The acronym, itself, has been used as a metaphor for the style: One has the power to move and gently steer a ship with an oar, but it is far removed from the power of a motor. OARS are great techniques for mentoring, as well as many other types of collaborating.

Open-ended questions help create an atmosphere of interest. It is difficult for many people to meet and connect with strangers. When we are intimidated, it is easy to answer simple questions … simply. The more adept you become at asking questions that "expect" more than a short answer, the more you become a conversation starter. A simple change from "Where did you go to school?" to "Tell me about your experience in school." turns a simple question into a larger opportunity to start a discussion.

Once the conversation starts, genuine *affirmations* can help build rapport. Recall situations in which you felt you were rambling, but someone chimed in, "That's great. What happened next?" It shows you are not only listening, but engaged in the story. This is slightly different than reflecting.

Reflective listening is key to this whole process. In its simplicity, you are rephrasing what you just heard while probing for more information. Reflective listening might be "simple," where you simply restate the issue to learn more about it: "So you want to go back to school." Or, it can be more complex. For example, a mentor can choose to use a double-sided reflection, in which she acknowledges the mentee's current conflict(s) and pairs it with statements the mentee has made in the past. In light of a mentee's concerns over going back to school, a mentor might reflect, "On the one hand, you're worried about how much time and money school will cost, while on the other you think the long-term benefits of going back to school align well with your career goals." By reflective listening, you can really explore what you believe to be conflicts between desires and beliefs.

Summarizing can help in mentoring and collaborative situations. Essentially, it is similar to reflective listening, but summarizing might be better used to complete part of a conversation, or even a meeting. Summarizing what the issues are that led a mentee to mentoring, or summarizing goals the mentee hopes to achieve or the ground rules to the mentoring relationship (e.g., when to meet, how often to meet, how best to contact), can be useful to both parties to ensure the mentor heard what the mentee said and the mentee said what the mentee meant!

Focusing

The process of becoming clear about path and direction is known as focusing. One of the ideas from the Mentor Development Academy is to have the mentee set an agenda for each meeting. While for an adviser-type relationship, this might be sufficient, it might be useful in a mentoring relationship to also include the mentee's hopes, fears, expectations, and concerns. If a mentee has many goals, helping him prioritize those goals can lead to more productive interactions. If the mentee is unsure about goals, reflective listening can help define a set of finite options.

Once a list of finite objectives exists, "agenda mapping" can be a good tool to use to help prioritize goals. This can include actual visual aids—as in jotting down all possible options and agreeing on priorities—or simply an open discussion with a clear summary. Once clear focus exists, the process can continue to evolve.

Evoking

Perhaps the hardest part of mentoring is to evoke. Most mentees (most people) have some degree of ambivalence about making changes. As a mentor, it is important to not get ahead of the mentee's readiness for change. To assess how ambivalent the mentee is, it is important to listen to what he says. If most of what he says is about desire, ability, reasons, or needs for changing, then he is still in preparation for change. At this point, you want to use reflective questions to encourage this contemplation and preparation for change: Why do you need to change? What are your reasons for changing?

Moving ahead to mobilizing this change is not appropriate because the mentee simply is not ready. The key is for the motivation to come from the mentee—not the mentor. To move toward the mobilizing phase, ask the mentee to quantify his importance for the change. Follow up by asking why the importance is not lower. This, ideally, will evoke why change is important to the mentee.

Query extremes: What will happen if you don't do this? What will happen if you do make the change? In three years, what do you think things will

be like if you change? Was this something on your radar three years ago? Remember, people are more committed to what they actually hear themselves say.

When the mentee is close to being ready to mobilize, help him identify and affirm his strengths. Review his past successes, brainstorm a few "hows," reframe failures, and start hypothetical thinking (e.g., "You've done really well at X in the past. How could you use that skill here?"). In moving toward change, it is important to maintain equipoise. Otherwise, you can easily become a cheerleader or problem solver. But you will be a much more effective mentor if you lead the mentee toward *his* solution and have *him* identify it.

Planning

Once the mentee reaches the stage of planning for change, MI tools can help strengthen the commitment to the plan and offer support throughout the process. It is important to continually confirm the goal with the mentee (it could certainly change, and it remains important that the mentor and mentee are still talking about the same goal). Help the mentee develop options to reach his goal, or have him troubleshoot possible barriers to what he may believe is a clear plan. Being a resource to help the mentee network is fine, but having him make the contact is vital to his professional growth.

MI can be a powerful tool in becoming a better mentor. Knowing the full story as to why a person is seeking mentorship can only help strengthen the bond between mentor and mentee. Understanding goals and fears and evoking solutions from a mentee lead to empowering him in that interaction. The one "downside" to this idea is that success of a program is hard to measure objectively. In the Mentor Development Academy, success relates to retention, promotion, and tenure. In a professional mentor situation, the personal decisions one makes for their "best" self may be to change employment, which may be seen as a failure from a corporate perspective. If only happiness and self-fulfillment could be objectively measured!

I have had many mentoring relationships—some good, some bad. Some of my mentors had no idea I considered them mentors, nor did they "try" to be one necessarily. Usually it was a "random" conversation that led me to think about a change I wanted to make, ambivalence in making it, and then "what do you think"-type conversations with others when I was ready to make them.

The ASA mentoring programs at CSP and JSM offer a great opportunity to make connections with others. If you are a senior-level statistician, consider mentoring a mid- or junior-level statistician. If you are a mid-career statistician, consider mentoring a junior-level statistician. Junior statisticians can start getting involved in ASA programs (JSM docents, chapter or section leadership positions) to help build their experiences so they can become mentors in a few years.

Mentoring truly is one way by which we can sustain and grow our profession—and quality mentoring can ensure we are all in our best positions to help anchor that growth. ■

On Academic Mentoring

Murali Haran is professor of statistics at Penn State. He earned his PhD from the University of Minnesota School of Statistics. His research includes statistical computing, spatial models, and applications in climate science and infectious diseases. He has advised more than a dozen graduate students and scores of undergraduates. He also has chaired the PSU statistics undergraduate program for four years.

David Hunter is the head of the department of statistics at Penn State, where he has been on the faculty since earning his PhD from the University of Michigan in 1999. He was the chair of Penn State's undergraduate program for a decade prior to becoming department head in 2012. His research on mixture models, models for networks, and computational statistics has helped eight PhD advisees complete their dissertations.

The positive outcomes of good mentoring are undeniable. It can enable a successful and satisfying experience not only during the mentorship, but for a long time thereafter, once the mentee embarks on a career. From the mentor's perspective, a successful advising relationship can lead to great rewards, both tangible and intangible, including a lasting, positive relationship with the mentee, future mutually beneficial productivity, and the personal satisfaction one can derive from a job well done.

We think most academics would agree with these statements, yet, in our experience, it is typical that little effort is made to provide mentors with the tools needed to mentor successfully. One might ask whether it is possible to "teach" someone to be a good mentor any more than it is possible to teach someone to be a nice person. However, we believe effective mentoring is a skill that can be honed by anyone who is genuinely interested in doing so.

There are many levels of mentoring, from guiding a graduate student's dissertation to advising undergraduates to helping junior faculty members adjust to academic life. For this brief article, we mostly write about graduate student advising, but much of what we describe applies more generally. Here are a few principles based on our personal experiences, both as mentors and mentees.

Individualized Approaches

It is rare that two students can be mentored in exactly the same way. It is therefore critical to pay attention to the individual's interests, capabilities, and personality. For example, a student who is independent and thrives when she is given space to be creative should not be micromanaged. On the other hand, a student who needs guidance should be provided with adequate structure. Of course, as academics, we are trained to be experts in our subject, not experts in reading people. But our point is that one's outlook on mentoring need not be rigid; it is okay to tailor the approach to the student, to try new ideas, to improvise.

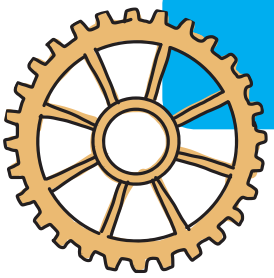
There will be some basic tenets you find are unwilling to change (many of our own will become clear in the paragraphs below), but approaching mentoring with an eye toward flexibility encourages reflection about the process itself, which can only lead to better results.

Role Modeling

Do not lose sight of the fact that part of the mentor's job is to help the mentee understand the role of a mentor. After all, today's advisees become tomorrow's advisers! Thus, one's mentoring impact—good or bad—can be passed down through multiple academic generations. This effect is particularly strong when one's advisees are at the start of their careers and have not yet formed strong individualized opinions about mentoring (or read enough *Amstat News* articles on the subject!).

Availability and Proactivity

You must make yourself available to your advisees. Of course, for you to get work done, you cannot be available at all times. But if you have regular times when you are available and make your availabilities clear to your students, that will play a major role in



their knowing that you care and are interested in helping. Yet it is typically not enough to merely let your students know you are available for meetings; you must often actively initiate conversations with them. Except in cases of unusually self-motivated advisees, scheduling regular meetings is crucial, and occasionally dropping an unsolicited, neutral inquiry (how are things going?)—either by email or in person—can be beneficial.

Focus on the Work

Try to keep the mentoring relationship almost entirely about the work you are engaged in, avoiding the temptation to offer advice on topics unrelated to the work. (This is especially relevant for grad advising.) What we mean is that it is not unusual for advisers to say things like, "My student is not good at selling his work; he needs to become bolder." Or, "She is quite arrogant; I need to put her in her place." Instead of actually trying to change the student's personality, it is best to actually focus on how the student's talks or writing are not hitting the right note.

For instance, if you get your student to communicate clearly, he will end up marketing his work better. If the student is problematic in one-on-one interactions, clearly stating exactly what needs to change in those interactions is more valuable than telling the student how to change his personality. This works better both in terms of minimizing conflict and actually getting the student to change a behavior. Focusing on the work also helps avoid making things too personal (see next point).

Boundaries

While it is prudent to recognize that a student's personal life may have an impact on her academic life, it is also important to respect the boundary between the personal and the professional. The relationship between a student and an adviser is not a relationship of equals; the adviser is in a position of power relative to the student. It is therefore vital to keep any personal discussions strictly cordial, if not avoiding them altogether. When in doubt, err on the side of keeping the personal out of the conversation, and direct involvement in the personal lives of one's advisees should really be avoided. It is absolutely possible to be a nurturing, caring mentor while avoiding roles beyond academics.

Empowerment

Remind the mentee that she has more power than she may realize. Mentees often feel like they are powerless, especially if they have received funding from their adviser. Remind students that they always have a choice and can look for a different adviser if things do not seem to be working out.

> Do not lose sight of the fact that part of the mentor's job is to help the mentee understand the role of a mentor.

Learning from Experience

Discuss your mentoring with your peers! No matter how experienced you are, it is often well worth talking to a colleague, senior or junior, about new ideas, tricky mentoring situations, or anecdotes about approaches that worked well (it is worth seeking good mentors for the mentoring process). It is also helpful to be deliberate about learning from past experience; one can learn from past students as well as from their own experience as a mentee. For instance, if you feel you did not read as extensively on your research area as you should have while you were a PhD student, your "mentoring reminders" document could have a template on how to read and summarize papers. This is something you could share routinely with your new students while regularly suggesting new papers for them to read.

High Standards and Kindness Are Compatible

We believe being kind is an essential quality of any good adviser. Furthermore, while it is also important to maintain high standards, this is not incompatible with being kind to the student. For instance, if your student's simulation study or theoretical results are not as thorough as you would like, it may be the case that you will not let him take the next step in his graduate career (e.g., delaying his thesis proposal); however, you should provide lots of guidance, resources, and encouragement all along.

In general, patience is a virtue for a good mentor. On the rare occasion it appears the student is unlikely to ever meet the high standards you set, working hard to help the student figure out alternatives to the path she has chosen may actually be the kind approach. ■

Peer-to-Peer Mentoring:
How It Fits into the Statistics Living Learning Community at Purdue

Mark Daniel Ward is an associate professor of statistics at Purdue University, where he has been on the faculty since 2007. He is also a Purdue alumnus with a PhD in mathematics and specialization in computational science. His research is in probabilistic, combinatorial, and analytic techniques for the analysis of algorithms and data structures.

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The Statistics Living Learning Community (STAT-LLC) launched at Purdue University in August 2014. This program is funded by a $1.5 million grant through the National Science Foundation's Mentoring Through Critical Transition Points in the Mathematical Sciences program. In Purdue statistics, we have unified the undergraduate academic, research, residential life, and professional development programs for a cohort of 20 sophomores per year. Our program will have 100 sophomores involved altogether, over the life of the five-year grant. (We have one of the largest undergraduate statistics programs in the United States, so we plan to expand the number of students involved in the STAT-LLC in the future.)

When students apply to the program, they are still in their first year of college. In general, universities provide a broad spectrum of activities to help students navigate the transition from high school to the first year of college. Only a fraction of those activities seem to be discipline-based (or connected with a discipline at all). Many first-year activities are geared toward professional development, acclimation to the university, and perhaps a brief introduction to career possibilities in a discipline. That makes sense when we recognize that many first-year students have not (yet) settled on a major program of study or career choice, nor are they (yet) taking courses in the core of their discipline.

During the sophomore year, students are tackling the core courses in their major. For those of us in statistics departments, this often means students are studying probability theory, statistical theory, and/or data analysis. They also are searching for their first research experiences with a faculty mentor. They are applying for internships and trying to find their niche in the statistics discipline or one of its many areas of application.

Goals

Some key goals for our department, in launching the STAT-LLC, have been to bolster the students' self-confidence, improve their understanding of the statistical materials and tools learned in class, broaden their view of the discipline, and have some fun along the way. We have hopefully begun to accomplish several of these goals.

In large part, we have been able to do this by inter-relating the seemingly disparate aspects of the sophomore year college experience. The peer mentoring aspect—as students support and uplift each other—has been a crucial part of this new effort. The students do a magnificent job of helping each other through many of the experiences that would be much more challenging if faced alone.

Sophomores often experience the "sophomore slump" to various degrees. To clarify, this is not just a regression toward the mean. The sophomore slump (in this context) refers to the fact that universities typically have fewer resources devoted to sophomores than first-year students, and students tend to have lower performance during their second year than their first year of college. For example, Dan Berrett observed in a May 11, 2012, *Chronicle of Higher Education* article that only "13% [of four-year institutions nationwide] offered seminars to sophomores and juniors. More than 90% provided seminars to freshmen and seniors."

By creating a much more welcoming environment for our undergraduate students, our department hopes to retain more females, minorities, persons with disabilities, first-generation students, etc.

Criteria

The only criteria for students to be admitted to the STAT-LLC are that they complete the third semester of calculus before the start of their sophomore year. This requirement is necessary so students satisfy the prerequisite for the probability course they take during the first semester of their sophomore year. The students do not need to have any particular knowledge of computing languages or environments. We introduce students to all of the necessary material in the courses.

Also, the students do not need to be pursuing a major in statistics. They simply need to have an interest in learning more about statistics and data analysis, particularly how the tools from these areas will be helpful and relevant in their own chosen majors of study—and in their professional careers after college.

The Statistics Living Learning Community class of 2014 from Purdue University

Our Approach

The support of peers, staff, and faculty can help alleviate some of the sophomore slump. With this in mind, we have created a supportive environment at Purdue. Aspects of the STAT-LLC include the following:

I. We register all the STAT-LLC students in the same sections of their courses in probability and data analysis (fall) and statistical theory (spring). These courses are the most fundamental in the statistics major. In particular, probability theory is a prerequisite for almost all the rest of the coursework in the major. Our intention is to use this method of block-registration so students feel more like a cohort, facing the same challenges and reaping similar rewards. The probability and data analysis courses are both team oriented. The students work together every day on problem solving (in the probability course) and data-oriented projects (in the data analysis course). The team-oriented structure of the courses encourages students to communicate with their peers constantly about the tasks at hand.

II. The students all take a one-credit per semester professional development seminar. It takes place one time per week. Guest speakers include successful alumni, staff who support diversity initiatives on campus, scholarship and study abroad coordinators, practicing statisticians from various industries, and current graduate students in statistics.

III. The students all live on the same floor of the same residence hall. This living arrangement naturally induces a great deal of camaraderie. I serve as the faculty fellow for the floor, which means I work with the resident assistant to plan activities for the students. We have coordinated movie nights, pumpkin carvings, study breaks, excursions, etc. I eat regularly in the residence hall with the students. My wife and five children periodically join us, and occasionally the students eat dinner at our home, as well. Last month, roughly half of the students in the STAT-LLC spent the weekend camping at Mississinewa Lake (an Indiana State Park) with my family and me. We camped in tents, cooked food on the grill throughout the weekend, hiked, and survived a torrential downpour. The residential life events enable the students to feel more at home during their sophomore year of college. Moreover, the students get to know my family and me in a less formal environment, so they can better understand how a scientist can manage to have a research-oriented career and (at the same time) a family life. This makes the path to a career in statistics seem more feasible.

IV. Unlike many undergraduate research experiences that last for an eight-week or 10-week summer session, each of the students in the STAT-LLC has a 12-month research experience with a faculty mentor, starting in August at the beginning of the sophomore year and lasting through August of the junior year. The students pick the projects they work on, including their own faculty mentor. We have several dozen available projects already predefined and outlined

Outreach

I would be delighted to help other statistics departments establish similar programs with some combination of academics, research, residential life, and professional development. Students appreciate anything faculty and staff can do with regard to unifying these aspects of the undergraduate experience … especially during their sophomore year. I would love to see many universities start their own living learning communities in statistics and am dedicated to helping partners start their own initiatives. Please feel welcome to contact me at *mdw@purdue.edu*.

The STAT-LLC has recently been discussed in the context of new initiatives in data science across the country. See the article "Data Science in the Statistics Curricula: Preparing Students to 'Think with Data,'" by J. Hardin, R. Hoerl, N. J. Horton, D. Nolan, B. Baumer, O. Hall-Holt, P. Murrell, R. Peng, P. Roback, D. Temple Lang, and M. D. Ward, *The American Statistician*, volume 69 (2015), 343–353.

(contributed by faculty drawn from throughout the university system). We also welcome new projects according to the needs of the students. We selected research projects for which data analysis is a key aspect of the investigation; the faculty member has experience working as a mentor; and the faculty member has a research team the sophomore can get involved in. This way, the students have layers of mentoring from peer undergraduate students, as well as graduate students, postdocs, and faculty members (in addition to the primary faculty mentor).

Another unique aspect of our program is that we introduce the students to the need to work with very large data sets at an early point in their careers. This leads to a paradigm shift in the students' thinking, as they work with data sets that are too large to open (for instance) in a spreadsheet. They need to learn how to use R, visualization, pattern matching, SQL, UNIX shell, and XML parsing with an emphasis on how to use such tools in tandem. As the students become more familiar with the tools necessary for dealing with large data, they are better prepared for the data-driven methods of discovery they need in their research projects, as well as in graduate school and the workforce.

Outcomes

As a key outcome of having participated in the STAT-LLC, the students will better understand how statistics and data analysis are used and, in particular, how these tools better prepare them for potential future careers. Since the students have research projects from a variety of disciplines—with many faculty mentors—they learn from each other about the different approaches to scientific problems and the different ways in which statistical tools are leveraged by faculty within different areas of expertise.

The peer mentoring aspect of the STAT-LLC environment is central to our success. Sophomores often feel "abandoned," "forgotten," and "invisible to the institution." These are all actual phrases used in the literature about the sophomore year experience nationwide. In contrast, in the STAT-LLC, our students commiserate with each other while studying for courses and completing research tasks. They learn they are not alone in their struggles and uncertainties. Friendships help bolster the students' self-confidence in their ability to become budding early-career scientists, particularly statisticians, mathematicians, data analysts, biologists, health care professionals, consultants, policy analysts, and atmospheric scientists.

Students also have the freedom to (occasionally) fail in various tasks, but not to be defeated by the failure. Moreover, they feel the freedom to change their career direction without feeling they have let themselves or their families down. For instance, one student aspired to be an actuary before joining the STAT-LLC in 2014, but then worked with a professor of atmospheric science and had a research experience in Denali National Park and an internship at Procter and Gamble. The student is now considering a career as a data analyst. Another student was determined to join the military after college, but after participating in the STAT-LLC, decided to take graduate courses and will soon apply for graduate school, with plans to become a scientist or consultant.

Loran Carleton Parker (our evaluator for the grant) and I plan to write a paper in the near future with preliminary results of the first few years of the STAT-LLC. Informally, we are delighted to share some of the outcomes based on student feedback. Among the 20 student participants in the STAT-LLC for the 2015–2016 year, the students' understanding of research increased significantly, according to a pre/post survey in which the students self-reported on their experience. There were significant gains in more than half the indicators in the evaluation. In particular, students reported an increased understanding of the following:

- How to plan and conduct a research project
- The nature of the job of a researcher
- The research process
- A research paper/journal article
- Following and documenting a research procedure
- Observing and collecting data
- Organizing data into a spreadsheet

The Statistics Living Learning Community (STAT-LLC) class of 2015 from Purdue University

- Statistically analyzing data using computer software
- Writing the results of an experiment/research
- Orally communicating the results of research projects
- Preparing research for poster presentation and publication

Overall, 85% of the participants rated their research experiences as very valuable or extremely valuable. Students also reported an increased understanding of how statistics is applied in interdisciplinary ways. They emphasized an improved understanding of what to expect in both graduate school and their future career opportunities. Regarding their undergraduate experience, they reported significant gains in working with others in studying, meeting other students with similar interests, locating campus resources, etc. Loran told me that, during her focus group interviews with the students, they repeatedly emphasized how they greatly benefitted from living and learning in a community-oriented environment.

At the end of the 2015–2016 academic year, I was selected as the Most Outstanding Faculty in this year's university-wide Favorite Faculty program. I interpreted this as a sign of success for the whole department of statistics at Purdue University and for our many partners across campus who have helped make the Statistics Living Learning Program such a success. ■

MORE ONLINE
For more information about Purdue's Statistics Living Learning Community, please see *http://llc.stat.purdue.edu*. All the materials developed for this initiative are freely available there.

The Department of Statistics at Texas A&M University
Invites Nominations for the
Emanuel & Carol Parzen Prize for Statistical Innovation

STATISTICS
TEXAS A&M UNIVERSITY

To promote the dissemination of statistical innovation, the Emanuel and Carol Parzen Prize for Statistical Innovation is awarded in even numbered years to a North American statistician whose outstanding research contributions include innovations that have had impact on practice and whose Ph.D. degree is at least 25 years old. The Parzen Prize is awarded by the Department of Statistics at Texas A&M University and is selected by the members of the Parzen Prize Committee (consisting of three internal faculty members and two external faculty members). The prize consists of an honorarium of $1000 and travel to College Station to present a lecture at the ceremony.

Nominations for the 2016 Parzen Prize should include a letter describing the nominee's outstanding contributions to high impact innovative research in statistics, a current curriculum vita, and two supporting letters. Nominations should be submitted by August 15, 2016 to the Chair of the 2016 Parzen Prize Committee:

Professor Thomas Wehrly
Department of Statistics
Texas A&M University
3143 TAMU
College Station, Texas 77843-3143.

For more information on the Parzen Prize, please visit our website at www.stat.tamu.edu/events/parzenprize/index.html.

Who Inspires You?

Who inspired you to be a statistician? Have you ever had a mentor? We asked some of our members these questions and here is how they responded.

Amelia McNamara

Visiting Assistant Professor in Statistical and Data Sciences

MassMutual Faculty Fellow

Smith College

What or who inspired you to be a statistician/data scientist?

I've had a nonlinear educational path, but I've always been interested in methods of communication. Statistics is really just a way to communicate about data. When I was an undergraduate, I attended one of the Explorations in Statistics Research workshops organized by Deb Nolan and Duncan Temple Lang and was hooked by the way they presented statistics as a problem solving method. Mark Hansen was there, and I was inspired by the artistic ways he was using data.

Name a few specific skills you need to do your job.

As a professor, I need to be able to explain complicated ideas simply and (ideally) in several ways. There's also a component of time management—it's easy to pour all my time into teaching, but I also need to be a productive researcher. In terms of practicing statistics, I think computing is one of the most important skills, as well as a strong helping of critical thinking. You can usually iterate to a solution if you know how to try something, consider whether it makes sense, and edit accordingly.

What is the most exciting part of your job?

I love being able to expose students to the excitement of statistics and data analysis. I also weirdly enjoy debugging R code, and I get plenty of opportunities to do that as my students work on projects or my colleagues come to me with questions. Finally, I love exposing things in data that I hadn't thought of before. As Tukey said, "The greatest value of a picture is when it forces us to notice what we never expected to see."

Have you ever had a mentor? If so, what role did mentoring play in your career?

My strongest mentor is Chad Higdon-Topaz, an applied mathematician at my alma mater, Macalester. He has helped me through all the major life milestones I've encountered in the past 10 years. He got me interested in math as a way to reason about the world, introduced me to original research, advised me on my undergraduate capstone project, helped me apply to graduate school and pick a program, talked me through problems I had in graduate school many times, read my job applications when I was applying to faculty positions, and helped me decide between offers and negotiate with institutions.

Have you ever mentored anyone? If so, what did you learn?

Since I'm just starting out, I haven't had much opportunity to act as a mentor. However, it is very satisfying to hear from students who enjoyed my classes or got into great opportunities I wrote recommendation letters for.

What advice would you give to young statisticians just beginning their careers?

Find data that inspires you. The easiest way to learn tools (statistical, computational, or physical) is to be motivated by questions you want to answer. Statisticians typically do not generate data, which can be both a strength and a weakness. A strength because it allows us to be flexible and work in many problem areas, but a weakness because sometimes we can get divorced from reality. If you have a passion for a certain type of data, that will help guide you.

Why did you join the ASA, and why have you stayed a member?

I joined in graduate school and have enjoyed all the publications. I'm a member of the Statistical Graphics, Statistical Computing, and Statistical Education sections and appreciate the interesting conversation on the email lists. I'm also subscribed to *Amstat News, CHANCE,* and *Significance* and love looking through for interesting perspectives—one particular favorite is the article "I know I'm right!" from the August 2013 issue of *Significance.*

What do you enjoy doing in your spare time?

I read a lot of fiction. Some authors I love are Haruki Murakami, Neil Gaiman, and Zadie Smith. I've also been a dancer my entire life, starting with classical ballet training at age 3. By now, I've tried almost every dance style you can imagine, although my favorite is hip hop.

Name one or two favorite blogs or books you have read and would recommend to others.

I read *www.simplystatistics.org* and *www.flowingdata.com* to keep on top of the statistics and data viz world. I'm also a huge fan of the Not So Standard Deviations podcast by Roger Peng and Hilary Parker. ■

Greg Matthews

Assistant Professor, Department of Mathematics and Statistics

Loyola University Chicago

Twitter: @statsinthewild

What or who inspired you to be a statistician/data scientist?

"This isn't the life I chose, rather the life that chose me." ~ Jay-Z

I remember being a kid, maybe 9 years old, and collecting weather data by hand in notebooks three times a day: before school, after school, before bed. Temperature data, barometric pressure, what the clouds looked like, etc. So I guess I've always been excited about data.

In high school, I always liked math and I knew I wanted to do something with it as a career. When I started college, I was an actuarial science major, though I quickly realized that wasn't the career path that was right for me. Toward the end of my undergraduate years at WPI (Worcester Polytechnic Institute), I was lucky enough to get to do my major qualifying project (known at WPI as the MQP) on ranking sports teams and players using a Bradley-Terry model. That's really when I fell in love with statistics, thanks to professors like Carlos Morales, Jayson Wilbur, and Andrew Swift. This led me to spend two more years pursuing an MS in applied statistics at WPI.

Name a few specific skills you need to do your job?

Being able to write code is absolutely critical. I write code almost every single day. I prefer R, but Python is also a very useful language for statistical analysis.

I once told my high-school English teacher I didn't need to know how to write well because I was just going to do math for a living. That is a leading contender for "dumbest thing teenage Greg ever said." Being able to write and communicate coherently is a skill that everyone absolutely needs in any field, and it's particularly important in academia.

What is the most exciting part of your job?

This is a difficult question because this job that I currently have is more or less my dream job. I absolutely love it.

I really enjoy waking up every day and exploring questions I find interesting. I get to decide what projects I work on, and I love that about my job. It's also very exciting when a student I have taught gets a job.

Have you ever had a mentor? If so, what role did mentoring play in your career?

Yes. I would say I have had a mentor at every level of my career. When I was a master's student, Jayson Wilbur helped me a lot about deciding on my future and what my options were. When I spent two years in industry at Brookstone doing predictive analytics, I worked with a statistician, Peter Cook, who was highly influential in my development as a professional statistician. Then, when I returned to do my PhD, my adviser, Ofer Harel, helped me every step of the way, from pursuing my PhD, doing my post-doc, and as I started my career as a professor. We still regularly talk about the next steps in my career, and I can't ever thank him enough.

Have you ever mentored anyone? If so, what did you learn?

I don't think I have ever officially mentored anyone, but I suppose some of the people who I consider mentors of mine may not have viewed themselves in those terms either … so maybe?

What advice would you give to young statisticians just beginning their careers?

Learn to write code in as many languages as possible (R, Python, SAS, etc.). Practice writing. A good way to practice writing is to start a blog. Write about whatever you think is interesting.

Why did you join the ASA, and why have you stayed a member?

I joined and have stayed a member of the ASA because I support their mission. I enjoy access to the ASA's magazines such as *CHANCE* and *Significance.*

What do you enjoy doing in your spare time?

I've been making digital/data art for the past three or four years, and since moving to Chicago, I've been able to show my art all around the city. Also, this year with JSM in Chicago, I am organizing a data art show for JSM that hopefully becomes a regular tradition.

I also like writing on my blog and, within the past year, I've started taking improv classes at the Second City Theater.

Name one or two favorite blogs or books you have read and would recommend to others.

I love Andrew Gelman's blog: *www.andrewgelman.com.* I also read StatsByLopez regularly: *www.statsbylopez.com.*

Books:

The Lady Tasting Tea: How Statistics Revolutionized Science in the Twentieth Century, by David Salsburg

The Sabermetric Revolution: Assessing the Growth of Analytics in Baseball, by Ben Baumer and Andrew Zimbalist. ■

Mike Mout

Program Director, State Farm Insurance (retired)

What or who inspired you to be a statistician/analyst?

I graduated from UCSD (University of California at San Diego) with a BA in math in 1970 and after a short, unsuccessful job hunt, I decided to pursue graduate work in applied mathematics. I was accepted into the University of Arkansas (Go, Razorbacks!). When I arrived there in the fall, I discovered the applied math courses were only offered every other year; however, they had just started a master's degree in stats, so I did that.

The head of the stats department (and only stats guy) was James Dunn. He left for temporary sabbatical at Stanford my second year and put me in charge of the stats consulting office. That experience and working with Jim inspired me to continue in a stats career.

Name a few specific skills you needed to do your job?

The primary skill is common sense. The ability to see what relations make sense in a project. The initial design of the analysis is crucial. Does the data collection make sense, *and* will it achieve the project goals?

The ability to learn to quickly see how variables interact in a new area to which analysis will be conducted. Of course, you need to know how to run and interpret analyses, but the key is knowing whether the results make sense and helping the client, whether internal or external, understand the results.

I don't know how many times I have seen results that are nonsense because the person running the analysis didn't look at the results with an eye to what the results mean from a practical or business point of view. More often than not, results that don't make sense are a strong indication of bad data and bad analysis. Just remember, GIGO (Garbage In, Garbage Out).

The key to avoiding this common mistake is to slog through the initial data. Too many new statisticians want to start the analysis as soon as they get a data set. EDA (exploratory data analysis) is a bore, but it is crucial. Look at the basic distributions of each variable, review the relationship with any target variables (in modeling situations). I'm not talking about data cleansing here (which is crucial). EDA should be done on clean data. This step and subject matter expertise will help identify potential new variables that add explanatory power to the final results.

Which brings up a second crucial skill. Data manipulation and data cleansing. Again, one of the more boring areas of statistics, but also a skill every new statistician has to do.

What was the most exciting part of your job?

Toward the end of my career, I was working as an independent reviewer (IR). In this role, I oversaw the development of a number of models and analyses. It allowed me to be involved in the interesting parts of the analysis, without having to do any of the "scut work," and being involved in what I consider the exciting part of the analysis. Helping with:

- Initial development of designing the analysis and data collection
- Helping identify new data sources or data transformations that had the potential to improve the results
- Looking at the results:

  —Helping understand where improvements could be made

  —Discovering serious flaws before they are incorporated into the final product

  —Helping the developer deliver and explain the final product and how that product would help them in their business goals

Have you ever had a mentor? If so, what role did mentoring play in your career?

I never really had a stats mentor. In my early years, I was the primary and only statistician. I did have a more experienced coworker who helped me a lot in presentations and interacting with clients.

Have you ever mentored anyone? If so, what did you learn?

As a manager, I had a number of subordinates who I helped in their model development skills and their presentation skills. It is surprising how important presentation is; getting team members out in front of clients is one of the best ways to get them recognized and promoted. Actually doing the analytical work is much less important to management than demonstrating how that work improves the business.

What advice would you give to young statisticians just beginning their careers?

- **Resign yourself to a year or two of cleaning up data.** This is something that has to be done, and if it is done well, you will be a better

analyst because you will learn to "know" your data. Let your data "talk to you."

- **Learn how to present analytical results so they can be understood by non-stats/non-quants.** Just about any new statistician can run analytical tools and get results. The real challenge is to interpret those results and make them meaningful to the client.
- **Be comfortable** in interactions with superiors.
- **Be honest.** If the results don't meet the goals of the analysis, don't try to sugar coat it with misleading charts and graphs. In fact, stay away from fancy visual displays (3D pie charts are one of the worst). Read *How to Lie with Statistics* for examples of bad graphics. It's an oldie, but a goodie.

Why did you join the ASA, and why have you stayed a member?

When I joined, one of the benefits was receiving copies of *JASA*, which was often critical for learning new analytical techniques. By the '90s, I had a bookcase full of *JASA* hard copies. With the internet, this is not nearly as important. Another benefit that has stayed relevant over time is monthly meetings with local statisticians.

What do you enjoy doing in your spare time?

Yard work and travel. I also belong to a local sports car club, and I enjoy occasional autocross and club drives.

Name one or two favorite blogs or books you have read and would recommend to others.

As mentioned above, *How to Lie with Statistics.* Also, blogs on novel ways to display data. ■

Kim Love

Owner and Lead Collaborator

K. R. Love Quantitative Consulting and Collaboration

What or who inspired you to be a statistician/data scientist?

As a new undergraduate, I thought I wanted to be a psychologist. When I started taking courses toward that end, I found out it wasn't quite as good a fit for me as I had imagined. In the process, though, I took an introductory statistics course and realized it was a great fit for me. I loved the idea of being able to design a study, collect information, and analyze it to solve a real problem, and it all went from there.

Name a few specific skills you need to do your job?

The ability to communicate at varying levels is probably the number-one skill that is specific to my job, relative to the wider field of statistics. Many of my clients are unfamiliar with statistical thinking and need simple explanations of complicated concepts. Next, management (including business management, budget management, and time management) was probably the skill set that presented the largest hurdle for me, because I sort of fell into it with no previous preparation at all. Of course, technical and methodological skills in statistics are a given.

What is the most exciting part of your job?

I started my own private practice this past January after five and a half years in a nontenure-track faculty position, and the most exciting part of my job right now is watching everything come together. It's very encouraging to find that many of my skills from the academic environment transferred directly to my private practice. I also love the opportunity to become involved in a new community; it has provided me with new energy to keep contributing to that community and to my clients.

Have you ever had a mentor? If so, what role did mentoring play in your career?

Yes! I have had two mentors who have been instrumental in my career. I was very fortunate to have Chris Franklin (just named the first ASA K–12 Statistical Ambassador) down the hall from me at my former institution. As a longtime leader in statistics education, she provided me with an outstanding model for how nontenure-track faculty can grow to have an extensive impact on the national statistics community.

I was also introduced to Doug Zahn (Zahn & Associates) a few years ago, and he was and continues to be extremely generous with his time. He gave me a new perspective on communication and collaboration—not just with clients, but with my students and colleagues as well. I learned from him how to evaluate and improve my own collaborative abilities.

Have you ever mentored anyone? If so, what did you learn?

Yes. I have participated in the CSP Mentoring Program twice, which gave me some brief interactions with up-and-coming

... [T]alk to other statisticians who do what they want to do, attend workshops and presentations in that area, and learn what skills and resources are necessary on a regular basis.

statisticians. Additionally, as the associate director of the consulting center at my former institution, I also mentored my students on a regular basis to help them become collaborative statisticians in their own right. While I hope to have many more mentoring experiences, I think there are two things I have learned that I can share now:

- I usually learn at least as much from those experiences as my mentees.
- Mentoring is not about handing out rules and the "right" way of doing things—mentoring is about sharing experiences and being available to others as they find paths to their own goals.

What advice would you give to young statisticians just beginning their careers?

Do be realistic about your career, but don't be afraid to make big moves. I am glad I did not try to start my own practice immediately after finishing my degree, because I personally didn't have the experience, skills, or resources to do what I do now. On the other hand, any career transition typically comes with a sense of anxiety or hesitancy, and it's hard to know when it's the right time.

I would suggest that anyone hoping to work in a particular area or type of position talk to other statisticians who do what they want to do, attend workshops and presentations in that area, and learn what skills and resources are necessary on a regular basis. Evaluate your situation realistically, and when you are ready, go for it!

Why did you join the ASA, and why have you stayed a member?

I joined the ASA as a graduate student in statistics at Virginia Tech, which was strongly encouraged by the department. I stayed a member because the ASA has been a great resource for staying in touch with a larger community of statisticians. Through conferences and other member activities, I have connected with colleagues across the U.S. and Canada whom I likely would not have met through other venues. I've taken advantage of conferences like JSM and CSP to present my work, and also served the consulting community through participation in the executive committee of the ASA's Statistical Consulting Section. Even though I am currently working for myself as a private consultant, I have an extensive network of statisticians to whom I am connected through the ASA.

What do you enjoy doing in your spare time?

I haven't had much spare time in recent months, but I do try to find time to participate in extracurricular activities related to my statistical practice. For example, in addition to the ASA activities I already mentioned, I became a first-time reader for the AP Statistics exam this year. Beyond that, it has always been important to me to make time for my family (dog included) and close friends. As much as I love what I do, everyone needs the occasional break so they can come back refreshed.

Name one or two favorite blogs or books you have read and would recommend to others.

One blog with a concept I really enjoy is overseen by Karen Grace-Martin at *www.theanalysisfactor.com.* The blog is very general and often written by guest authors with varying areas of expertise; entries are very readable and helpful to folks looking to deepen their understanding of specific concepts, extend their programming abilities, etc. As for books, I will name an old favorite: *How to Lie with Statistics* by Darrell Huff. For those not familiar with this classic, the point of the book is to help readers understand the deceptive ways data can be gathered and presented, intentionally or through carelessness. It serves as a reminder to me that my work as a statistical collaborator is not done in a vacuum, and that there are real and sometimes extensive implications of the work I do, whether for one individual (my client) or many (the larger research community and its beneficiaries). ■

Irene B. Helenowski

Biostatistician

Northwestern University
Department of Preventive Medicine

Twitter: @Orderofthedimen

What or who inspired you to be a statistician/data scientist?

From the time I was in high school, I was interested in biomedical research, particularly in the data analysis part. Then in college, I took my first statistics class and absolutely loved it; it was there that I learned about the need for biostatisticians and how they can help other investigators in the medical field.

Name a few specific skills you need to do your job.

I have done a lot with mixed effects models, survival analysis, and meta-analysis. I am also doing research with multiple imputation, which was the basis of my imputation.

What is the most exciting part of your job?

Coming up with a methodology that can make the investigator happy and answer his or her question.

Have you ever had a mentor? If so, what role did mentoring play in your career?

I have been very fortunate to have had many mentors throughout my career, including Michael Newton, Christina Kendziorski, Jason Fine, and Brian Yandell from when I was pursuing my MS from the University of Wisconsin; Hakan Demirtas, Sally Freels, and Don Hedeker when I was at the University of Illinois - Chicago for my doctorate; and of course, many wonderful colleagues where I work at Northwestern, including Alfred Rademaker, Borko Jovanovic, and Joan Chmiel.

Have you ever mentored anyone? If so, what did you learn?

I have volunteered with Project Exploration, a Chicago-based organization to help encourage interest in the sciences among minority youths. Particularly, I have given presentations involving statistical topics at Frederick Funston grade school here in Chicago to 5th- through 8th-grade girls as part of their Sisters 4 Science program. I have learned a lot from my experience from the girls arising from questions they have regarding my daily activities.

What advice would you give to young statisticians just beginning their careers?

Be open to new topics and keep learning on the job. And most of all, to not be afraid to ask questions whenever you need help or whenever you think you can see a unique solution to a problem that an investigator might have.

Why did you join the ASA, and why have you stayed a member?

I was interested in attending the Joint Statistical Meetings after completing my master's in Wisconsin and joined when registering. I definitely have benefitted from remaining a member since then and look for the ASA as a resource in finding information on other meetings, the current whereabouts of prominent statisticians and news about their latest work, and ideas on how to spread awareness of statistics among the general public.

What do you enjoy doing in your spare time?

I enjoy writing, in fact, and have written an *Order of the Dimensions* trilogy related to the multiverse theory where the characters live vastly different lives, depending on the dimension they live in. It's funny because I began writing it to do something unrelated to my field, but the more I developed the story, the more I found that principles of theoretical physics can also be intertwined with elements of statistics. I'm also writing some poetry and a series of fairy tales.

Name one or two favorite blogs or books you have read and would recommend to others.

I have recently read and truly liked Dennis Higgins' *Pennies from Across the Veil*. It's a work of fiction about a young couple where the wife becomes diagnosed with cancer. Working in the field, I was especially drawn to the story and led me all the more to hope for finding ways in which my work can help those affected by this disease and their loved ones in the future.

Since beginning to write, I have also networked with some incredible authors, including Sophie Bowns, Joe Pranaitis, Margaux Sky, Marilyn Tomlins, and Kelli Landon. ■

Aubrey Dale Magoun

Professor Emeritus, University of Louisiana

Owner of the consulting firm Applied Research and Analysis, Inc.

What or who inspired you to be a statistician/data scientist?

Lonnie Bennett, my undergraduate mentor at the University of Louisiana in Monroe.

Name a few specific skills you need to do your job?

Full knowledge of SAS, JMP, and SPSS, as well as knowledge of MS-Access and other databases

What is the most exciting part of your job?

Learning from data. The role of the statistician is to let the data lead the researcher to the meaning and not let the biased interpretation influence the analysis of the data.

Have you ever mentored anyone? If so, what did you learn?

Yes, I have had many doctoral-level students in pharmacy in which I have mentored and assisted in their dissertation research. As a statistician, you get to learn much about the other fields.

What advice would you give to young statisticians just beginning their careers?

I like to tell my students that statistics is very much like the "CSI" of data science. We follow the clues, which the data provides us.

Why did you join the ASA, and why have you stayed a member?

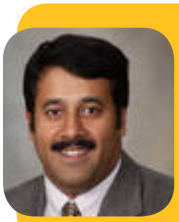
I was invited to join by Lonnie Bennett and have enjoyed the learning experience the ASA has to offer.

What do you enjoy doing in your spare time?

Playing bridge, golfing, and touring our great nation and our immediate neighbors: Canada, the adjacent islands, and Mexico.

Name one or two favorite blogs or books you have read and would recommend to others.

I would go back and read the writings of Sir R. A. Fisher. His knowledge was vast and newcomers to our profession could learn a great deal from him. ■



Jay Mandrekar

Professor of Biostatistics and Neurology, Department of Health Sciences Research

Director, Biostatistics Core

Mayo Clinic

What or who inspired you to be a statistician/data scientist?

Applied projects as part of biostatistics coursework during my master's/PhD program

Name a few specific skills you need to do your job?

Collaboration, communication skills, teamwork, multi-tasking, time management, and willingness to work under tight deadlines

What is the most exciting part of your job?

Being part of research that has direct impact on patient and health care

Have you ever had a mentor? If so, what role did mentoring play in your career?

[I had] many mentors within and outside of institution, starting with my advisers in my master's and PhD programs. Mentoring helped me keep focused and work hard toward my goals.

Have you ever mentored anyone? If so, what did you learn?

I have been a formal and informal mentor to statisticians and clinical residents/fellows. It taught me how to motivate others and help them achieve success.

What advice would you give to young statisticians just beginning their careers?

Attend statistical meetings, present and network whenever you can. Take advantage of mentoring resources offered.

Why did you join the ASA, and why have you stayed a member?

Opportunity to network and keep up to date with the latest research, particularly application of statistics to the field of medicine/health care

What do you enjoy doing in your spare time?

Traveling, reading health and fitness magazines, listening to music. ■

The Jeanne E. Griffith Mentoring Award

Jeanne Griffith Mentoring Award Committee

The Jeanne E. Griffith Mentoring Award was established in 2002 as a tribute to Jeanne Griffith's work of more than 25 years in the federal statistical system. The award is meant to encourage mentoring of junior statisticians in federal, state, or local government. In 2009, the Government Statistics Section began managing the award. In line with its mission, eligibility for the award was expanded to include the mentoring of all government statisticians (federal, state, and local). The award includes a plaque and $1,000 honorarium.

Griffith was a well-known statistician having served in many positions in the federal government, including director of the Division of Science Resources Studies at the National Science Foundation and acting commissioner and associate commissioner for data development and longitudinal studies at the National Center for Education Statistics. In June 2001, she received the Roger Herriot Award for Innovation in Federal Statistics. She died of cancer in August of 2001. At the Roger Herriot Award ceremony, Griffith demonstrated her dedication to mentoring the growth of her staff with the following remarks:

But one of the most rewarding aspects for me, I believe, was the opportunity to promote the creative activities and energies among my staff. It is very special to get an award for innovation, because this is, in my mind, essentially an award for management excellence. Innovation is something that your staff creates when you allow them. I know it happens all the time in the federal government, because I have seen all of you here today innovate in countless ways for many years. I have marveled at how when you get to know people, to trust them, to learn to trust their judgment and to support them, you can see the results clearly, quickly, and with great personal reward. I have benefited in my career because of the actions of the people who worked with and for me; without them, I know with complete certainty that I would not be standing before you here today.

We will never know how many statisticians Griffith mentored or how many more statisticians have been mentored in turn by the ones she mentored. The recipients of the award are contemporary examples of the work Griffith demonstrated during her life.

If you think your career has been advanced by a mentor, consider nominating that person for the Jeanne E. Griffith Mentoring Award. Preparing the nomination package provides you the opportunity to think about the mentoring you have received and an opportunity to thank the person who has helped you develop your professional skills and advance in your career.

Nominations should be prepared in the form of a letter or memorandum, which should summarize the nominee's actions that support and encourage the professional development of junior staff in the federal, state, or local statistical community. The package should include up to six supporting letters. The deadline for submitting the package is in early April. The exact date can be found on the ASA website early in the year.

The nomination package should be mailed to the Jeanne E. Griffith Mentoring Award Committee, c/o The American Statistical Association, 732 N. Washington St., Alexandria, VA 22314-1943 or emailed to *rick@amstat.org*.

Award arrangements are coordinated by the Jeanne E. Griffith Mentoring Award Selection Committee. New members of this committee are selected by the chair of the Government Statistics Section (GSS), and the GSS Executive Board provides oversight of the committee. The selection committee is responsible for the logistics of the award and the selection of the awardees. Committee members are Kevin Cecco (co-chair), Anna Nevius (co-chair), Skip Vecchia, William Mockovak, Brian Harris-Kojetin, Joy Sharp, and Andy Orlin. ■

MORE ONLINE
Please visit *http://magazine.amstat.org* to view the list of recent Griffith Award honorees

Obituary
D.V. Gokhale

Professor emeritus D.V. Gokhale passed away on February 27, 2016, just a few days shy of his 80th birthday. A campus memorial service will be held at the University of California at Riverside November 4 at 4:30 p.m. If you are interested in attending the campus memorial service and/or writing a tribute to be placed in a book for D.V.'s family, please fill out and submit the response form at *https://ucrbsgsac.wufoo.com/forms/mlllvsb0myfotn*.

Washington Statistical Society Builds Community Through Mentoring

Mark Otto

In September 2014, David Morganstein requested time at the Washington Statistical Society's (WSS's) board meeting to propose they start a mentoring program. At the time, he was president-elect of the ASA, and mentoring would become one of his presidential initiatives the next year. I joined the meeting to make the board aware of resources the Committee on Applied Statisticians (CAS) developed to start mentoring programs. For my efforts, I was asked to chair an ad hoc committee to develop a proposal for a mentoring program. Morganstein and the WSS president participated in all the monthly calls. High-level support and involvement was crucial for the success of the program.

But why have such a program? It takes a lot of organization and asks a lot of its members. The WSS gives discount memberships to students. Some graduate programs even give ASA and chapter memberships to their students, but after most students started working, they didn't keep up their memberships. Mentoring might help their transition into work and retain students as active chapter members.

Mentoring should help at any stage of a career. Sastry Pantula (2010 ASA president) is an example of how an established statistician maintained contact with his mentors while mentoring younger professionals. He kept up contact with his mentors from Iowa State as he became head of the North Carolina State Statistics Department and, while deciding on becoming ASA treasurer, he asked for their advice. Sastry mentored three students at a time outside an elevator at JSM. I mentored a Harvard post-doc that had already mentored two undergrads before she left graduate school. Mid-career statisticians could easily be both mentees and mentors. One of the goals of the WSS is to develop the next generation of statisticians. Mentoring can provide one-on-one support for achieving that goal. Morganstein put it succinctly: Mentoring can build community.

It's Been Done Before

In its third year of a mentoring initiative, the CAS researched past ASA section and chapter mentoring efforts—most lasting only two years. The CAS ran its own program for two years. Eric Vance of Virginia Tech and a CAS member ran mentoring programs (*http://magazine.amstat.org/blog/2015/02/01/prescornerfeb_2015*) for the Conference on Statistical Practice and Joint Statistical Meetings. The CAS developed a clearinghouse of mentoring resources (*http://community.amstat.org/cas/mentoring1/resources1*), a do-it-yourself mentoring guide (*http://bit.ly/2aNd853*), and a guide for organizations called Mentoring in a Box. The WSS Mentoring Committee chose the in-a-box template. There was still a lot of work to do to adapt the program to the chapter and get it up and running. The WSS president suggested they set a modest goal of matching 10 pairs.

In December, the board accepted the proposal, committing three years to develop the program, and formed a four-person committee to do the pilot. The committee had three months to prepare and create the advertising, welcome materials, a web page, and online application form. Once the notices went out, the program had to be up and running. The committee accepted applications for the next three months, took a month to match pairs who then committed to working together for six months, and finally planned a short evaluation survey to learn what to do better the next time. The WSS Board was informed of the committee's progress and the results were reported back.

Off and Running

Announcements for the program were put in the January 2015 chapter news section of *Amstat News.* Even though the committee purposely sent a similar notice to the *Washington Statistical Society Newsletter*, the editor published a month early so the committee had to rush the mentoring program page and online application form, as well as send outreach emails to local university graduate programs a month ahead of schedule.

Almost all WSS mentees were graduate students or in their first years of work. Also, because they advertised in a national newsletter, there were three mentee requests from elsewhere in North America, including one in Saskatchewan. The

other two, one from Florida State and another from the University of California at Davis joined the WSS to be in the program.

While mentees were eager to join the pilot program, mentors didn't volunteer. The committee needed to actively recruit mentors through emails and personal calls. Morganstein single-handedly enlisted 20 ASA fellows who were also WSS members. The committee made cold calls from the ASA online membership directory, searching for WSS members in areas mentees requested. They later learned that mentors had to be recruited in all the other CAS programs.

The committee exceeded its goal by matching 22 mentor-mentee pairs. Four more mentees wanted to join the program during the six-month formal mentoring period, and four more pairs were matched after the initial deadline. After hearing Morganstein's talk, "Paying It Forward" (*http://bit.ly/2bjpEMm*), another mentor volunteered to participate. In the CAS Mentoring in a Box system, it's important to have a champion—someone to advocate for the program. Morganstein not only filled that role, he also contributed to all the discussion and helped out in rough spots.

During the formal six-month mentoring period, the committee sent out two reminders about where pairs should be in their mentoring relationship. Most participants wanted more guidance, but two did not like the structured, goal-oriented CAS approach and would have preferred more informal relationship building. While most pairs benefitted from their mentoring experience, one mentee did not follow through after the first meeting, another mentee did not want to continue after getting a job just outside the metro area, and a third did not connect with her mentee because she was a nonstatistician in a statistical agency.

Wrap Up

At the end of the formal period, the committee sent out an evaluations survey and received 15 out of 44 possible responses—12 from mentors and three from mentees. Most liked the program and are continuing to work together on their own. They found meeting and sharing experiences most important. A couple mentors helped their mentees edit their résumés. Others found, or even made special networking experiences for, their mentees.

Mentees appreciated having someone to reach out to for advice, getting a broader context on what to expect in their jobs. One mentee thought she benefitted from advice outside her small office.

A few mentors found the mentees' narrow focus on jobs discouraging, and one thought it difficult to bridge cultural gaps. Even though chapters, especially those as concentrated as the WSS, can pair people within the same proximity to each other, most communicated by phone and email.

Lessons Learned

The board committed to supporting the program for three years. It will take at least that long to make the program run smoothly so it is viable over a longer period of time. What can the committee do to improve the pilot? While the committee wants to attract mentees in all stages of their careers, most in the pilot program were students. Many mentors could not start working until September because their student mentees were out of the country. The committee will match the program to the next school year.

The committee also mismatched a few pairs—something that was obvious after their first meeting. Committee members need to follow up with calls to work out any matching problems and immediately support both our mentors and mentees. A more complicated, refined matching process probably would not help. Also, the committee would not match mentees after the deadline; it is too much work for the committee.

There should be more follow-up notices to guide pairs through the mentoring life cycle. This should be guidance without quashing the unique relationship pairs are building with each other.

Finally, mentors might need some perspective on working with other cultures.

The pairs asked for more opening and closing events where everyone could meet. One mentee even wanted to rotate mentors to have a wider networking experience. The committee might try an opening mentoring workshop where mentors and mentees announce topics they would like to talk about. Groups would come together based on interest for 15 minutes, then regroup, letting pairs form from that experience. The goal is to integrate mentoring into the fabric of the WSS, not only formally but also informally.

Finally, the committee could ask the mentees to become mentors. The mentees now know a lot about the mentoring experience and will find mentoring can be enriching, too. Keeping the mentees might lead to a fuller statistical career and active membership in the WSS. ■

MORE ONLINE
Please visit *http://magazine.amstat.org/* to view the many other mentoring programs ASA has to offer.

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.

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 *http://magazine.amstat.org/advertising*

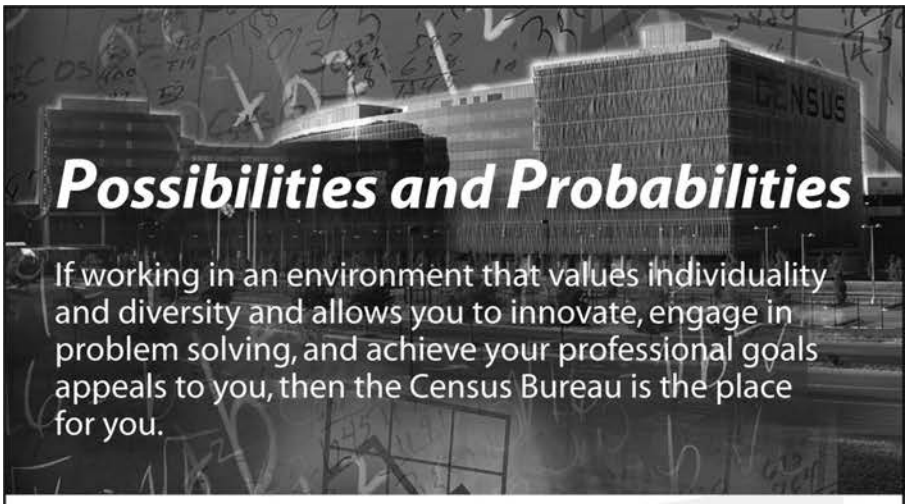
Also, look for job ads on the ASA website at *www.amstat.org/jobweb.*

Florida

■ Assistant, associate, or full professor. University of Florida is recruiting two tenure-track assistant, associate, or full professor-level positions within the department of biostatistics, administered by College of Medicine and College of Public Health and Health Professions. Qualifications include a doctoral degree in biostatistics or related quantitative discipline and demonstrated excellence in research, teaching, and service. Application review ongoing. Please apply at *explore.jobs.ufl.edu/cw/en-us/job/498114.* The University of Florida is an equal opportunity institution dedicated to building a broadly diverse and inclusive faculty and staff. Hiring is contingent upon eligibility to work in the U.S. Searches are conducted in accordance with Florida's Sunshine Law.

Maryland

■ Data Management Services, Inc., at NCI-Frederick invites applications for a R statistician/data scientist. Required: PhD in biostatistics, statistics, or related field; demonstrated expertise in R, RStudio, and R package development; strong oral and writing communication skills. Candidates will work closely



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- Publish research papers and technical documentation of your work

Requirements

- U.S. citizenship
- Bachelor's, Master's or Ph.D with at least 24 semester hours in math and statistics (see website for more specifics on required coursework)

Apply at www.census.gov, click on Jobs@census, Headquarters and NPC Employment Opportunities, Mathematical Statistician

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with the director, statistical consulting, in performing cancer and AIDS research. Details are available at *www.dmsinc.com.* EOE.

Massachusetts

■ Massachusetts General Hospital Obstetrics and Gynecology Department is seeking a reproductive epidemiologist or statistician (PhD, ScD, or equivalent) to join the department as a core member of the department's research efforts. Principal duties: act as a resource for investigators in the department assisting with study planning and data analysis. Full job description and online application: *https://partners.taleo.net/careersection/ex/jobdetail.ftl?job=3021227.* Applications accepted until the position is filled. We are an equal opportunity employer. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability status, protected veteran status,

UNIVERSITY OF NOTRE DAME

Department of Applied and Computational Mathematics and Statistics

Assistant, Associate or Full Professor of Statistics

The Department of Applied and Computational Mathematics and Statistics (ACMS) at the University of Notre Dame has two statistics positions at ranks from tenure-track assistant professor to tenured professor level to fill this year. Preference will be given to applicants whose research includes multi-disciplinary collaborations.

ACMS includes research groups in applied mathematics, statistics and computational science. ACMS offers a Bachelor of Science, a doctoral degree, a research master's degree, and a professional master's degree. ACMS is a department in the College of Science.

The successful statistics applicants must have a doctorate in statistics, biostatistics, or a closely related field, and a record of success in both research and teaching. The teaching load in ACMS is three courses per year, and the positions begin in August 2017. We will begin reviewing completed applications October 1, and continue accepting applications through December 1.

Applications, including a cover letter, curriculum vitae, research and teaching statements, and if the application is for a tenure-level position, teaching evaluations from the past three years should be filed through https://apply.interfolio.com/36235. Applicants should also arrange for at least three letters of recommendation to be submitted through the Interfolio system. These letters should address the applicant's research accomplishments and supply evidence that the applicant has the ability to communicate articulately and teach effectively. Applicants are invited to contact the Department Chair, Andrew Sommese, at sommese@nd.edu, at any time.

Notre Dame is an equal opportunity employer, and we particularly welcome applications from women and minority candidates.

acms.nd.edu

or any other characteristic protected by law.

■ Amherst College invites applications for a position as a lecturer in statistics, with an appointment to begin in July 2017. We seek candidates who are passionate about teaching statistics to undergraduates. This is a full-time, three-year appointment, with multi-year renewal contingent on successful review. Renewal is based on teaching and the other responsibilities of the lecturer. The position description can be found at *www.amherst.edu/academiclife/dean_faculty/faculty_hiring/employment.* Amherst College is an equal opportunity employer and encourages women, persons of color, and persons with disabilities to apply. The college is committed to enriching its educational experience and its culture through the diversity of its faculty, administration, and staff.

■ Tenure-track assistant/associate professor, mathematical sciences. Bentley University, a private business university outside Boston, invites applications for two full-time positions in applied statistics or related fields for fall 2017. Bentley offers degrees in mathematical sciences, actuarial science, MS in business analytics, and a business PhD. Doctoral degree required in applied statistics or a related field by fall 2017. Interested applicants visit *jobs.bentley.edu/postings/2070.* Bentley University is an Equal Opportunity Employer, building strength through diversity.

North Carolina

■ The Department of Biostatistical Sciences (DBS), Wake Forest School of Medicine, Winston-Salem, NC, invites applications for tenure-track assistant or associate professor positions. A vibrant unit with 24 faculty, DBS has an extramural funding record including geriatrics, cardiovascular disease, diabetes, women's health, population genetics, and cancer control. PhD in biostatistics, statistics, informatics, or related field with experience collaborating with medical or public health professionals preferred. *www.phs.wakehealth.edu/public/jobs.cfm.* EOE.

Perelman School of Medicine
University of Pennsylvania

UNIVERSITY OF PENNSYLVANIA
PERELMAN SCHOOL OF MEDICINE

Full/Associate Professor of Biostatistics

The Department of Biostatistics and Epidemiology seeks highly qualified candidates for a standing faculty positions at the Full/Associate Professor level in the clinician-educator (non-tenure) track. A doctoral degree in biostatistics or statistics is required.

Applicants with expertise in statistical methods used in health services research, clinical trials and/or translational science who have outstanding productivity in both methodological and collaborative research are especially encouraged to apply. Candidates are expected to have a strong commitment to teaching. Primary teaching responsibilities include participation in departmental PhD and MS training programs.

Review of applications will begin on September 30, 2016 and continue until the positions are filled. The expected start date is July 2017 or later, pending the availability of funds.

We seek candidates who embrace and reflect diversity in the broadest sense. The University of Pennsylvania is an affirmative action/equal opportunity employer. Minorities/women/individuals with disabilities/protected veterans are encouraged to apply.

Apply for this position online at:
https://www.med.upenn.edu/apps/faculty_ad/index.php/d4363

Statistician Positions at the RAND Corporation

The RAND Corporation is a nonprofit institution that helps improve policy and decisionmaking through research and analysis. RAND is committed to the public interest, and disseminates its findings and recommendations through peer-reviewed articles and policy reports. Researchers at RAND apply expertise in their respective fields and sophisticated analytical tools to pressing issues in a wide variety of areas, including health, education, national security, labor, justice, the environment, and more.

Statisticians at RAND have many exciting opportunities to advance policy research by collaborating on multidisciplinary project teams, developing statistical methods, and leading research projects. There are also opportunities to teach at the Pardee RAND Graduate School. Our group of fourteen Ph.D. statisticians and eleven master's-level statisticians provides a collegial and stimulating environment.

Candidates should have strong theoretical training, a genuine interest in applied statistics, and excellent oral and written communication skills. We seek both recent graduates and experienced statisticians with substantial publication records and extensive applied experience. Location options include Santa Monica, CA (RAND's headquarters), Pittsburgh, PA, and Washington, DC. Applicants should apply online at www.rand.org/jobs/id4194. Please submit a cover letter, CV, statement of research interests and consulting experience, and writing sample. Graduate transcripts (if degree received after 2013) and three letters of recommendation should be sent to Lou_Mariano@rand.org or to RAND Corporation, Attn: Lou Mariano, Head, Statistics Group, 1200 S. Hayes St., Arlington, VA 22202 USA. Review of applications will begin in mid-October; complete applications received by December 15, 2016, will receive priority consideration.

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Arthur and Helen Geoffrion Professor of Practice – Cornell University, Ithaca, NY

Cornell is a community of scholars, known for intellectual rigor and engaged in deep and broad research, teaching tomorrow's thought leaders to think otherwise, care for others, and create and disseminate knowledge with a public purpose.

Cornell University's School of Operations Research and Information Engineering (ORIE) seeks to fill the newly endowed Arthur and Helen Geoffrion Professor of Practice. The primary responsibility is to further ORIE's leading role in advancing the analytical, methodological, and modeling tools of operations research together with the potential of "big data" and the information revolution. The central role is to facilitate applied research relationships with various organizations seeking Operations Research expertise, connecting ORIE faculty and students, especially Ph.D. students, with such initiatives. The position will also entail teaching responsibilities in support of the broader goal of enriching the breadth of students' exposure to applications of OR in society today.

This position is non-tenure track and is envisaged to have a term of three to five years. The position is renewable upon mutual agreement. Requisite is a strong interest in the broad mission of the School, exceptional potential for leadership in Operations Research practice and education, and an ability and willingness to teach at all levels of the program. We seek individuals that have experience in developing and implementing Operations Research tools within a broad range of industrial settings. Salary will be appropriate to qualifications and engineering school norms.

Cornell ORIE is a diverse group of high-quality researchers and educators interested in probability, optimization, statistics, simulation, and a wide array of applications such as e- commerce, supply chains, scheduling, manufacturing, transportation systems, health care, financial engineering, service systems and network science. We value mathematical and technical depth and innovation, and experience with applications and practice. Ideal candidates will have correspondingly broad experience and interests.

Please apply online at **https://academicjobsonline.org/ajo/jobs/7374**

with a cover letter, CV, a statement of relevant experience, and at least three reference letters. All applications completed by October 1, 2016 will receive full consideration, but candidates are urged to submit all required material as soon as possible; applications received after October 1, 2016 will continue to be reviewed on an ongoing basis until the position is filled.

ORIE and the College of Engineering at Cornell embrace diversity and seek candidates who can contribute to a welcoming climate for students of all races and genders. Cornell University seeks to meet the needs of dual career couples, has a Dual Career program, and is a member of the Upstate New York Higher Education Recruitment Consortium to assist with dual career searches. Visit **http://www.unyherc.org/home/** to see positions available in higher education in the upstate New York area.

Find us online at http://hr.cornell.edu/jobs or
Facebook.com/CornellCareers

Cornell University is an innovative Ivy League university and a great place to work. Our inclusive community of scholars, students and staff impart an uncommon sense of larger purpose and contribute creative ideas to further the university's mission of teaching, discovery and engagement. Located in Ithaca, NY, Cornell's far-flung global presence includes the medical college's campuses on the Upper East Side of Manhattan and in Doha, Qatar, as well as the new CornellNYC Tech campus to be built on Roosevelt Island in the heart of New York City.

Diversity and Inclusion are a part of Cornell University's heritage.
We're an employer and educator recognized for valuingAA/EEO, Protected Veterans, and Individuals with Disabilities.

ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

Faculty Position in Statistics

at the Ecole polytechnique fédérale de Lausanne (EPFL)

The School of Basic Sciences at EPFL invites applications for a **tenure-track assistant professor in statistics**. We seek candidates in all areas of modern statistical methodology, theory, and computation and their interface with the emerging theme of data science.

The position will be part of the Institute of Mathematics, and is associated with EPFL's new initiative in data science. Depending on the research interests of the successful candidate, there will be opportunities for integration within EPFL's Data Science Centre. Joint appointments with an allied field, such as computer and communications sciences, are also a possibility.

We seek candidates with an outstanding research record and the capacity to direct high quality research. We also expect a strong commitment to excellence in teaching at all levels.

Substantial start-up resources and research infrastructure will be made available.

Applications including a letter of motivation, curriculum vitae, publication list, concise statement of research and teaching interests, as well as the names and addresses (including email) of at least five referees and should be submitted in pdf format via the website:

https://academicjobsonline.org/ajo/jobs/7452

The evaluation process will begin immediately. Applications submitted prior to **November 1st, 2016** will be guaranteed consideration.

For additional information, please contact:
Professor Philippe Michel
Chair of the Mathematics Hiring Committee
Email: mathhiring2017@epfl.ch
Please include the tag "[MATHStat2017]" in the subject field of your email.

The School of Basic Sciences actively aims to increase the presence of women amongst its faculty, and female candidates are strongly encouraged to apply.

■ Department of biostatistics and bioinformatics at Duke University seeking candidates for faculty position to work with Duke Clinical Research Institute with expertise in comparative effectiveness. Required: PhD degree in biostatistics, bioinformatics, or related field; experience in development and application of methodology for comparative effectiveness research; and experience as collaborating statistician on variety of study designs. Application and complete description found at *https://academicjobsonline.org/ajo/jobs/7475*. Duke University is an AA/EOE employer.

■ Department of biostatistics and bioinformatics at Duke University seeking candidates for faculty position to work with Duke Clinical Research Institute with expertise in machine learning. Required: PhD degree in biostatistics, bioinformatics, or related field; experience in development and application of machine learning methodologies; and experience as collaborating statistician on variety of study designs. Application and complete description found at *https://academicjobsonline.org/ajo/jobs/7474*. Duke University is an AA/EOE employer.

Nationwide

■ RAND Corporation is seeking PhD statisticians for exciting opportunities to collaborate on multidisciplinary public policy research projects. Openings exist for recent graduates and experienced statisticians. For details, go to *www.rand.org/statistics*. Applications received by December 15, 2016, will receive priority. Applications must be submitted online following the instructions at *www.rand.org/jobs/id4194*. Send questions to *Lou_Mariano@rand.org*. EOE M/F/Vet/Disabled. ■

Visit the ASA's JobWeb for more job listings

www.amstat.org/jobweb

Perelman School of Medicine
University of Pennsylvania

UNIVERSITY OF PENNSYLVANIA PERELMAN SCHOOL OF MEDICINE

Assistant Professor of Biostatistics

The Department of Biostatistics and Epidemiology seeks candidates for standing faculty positions at the Assistant Professor level in either the clinician-educator (non-tenure) track or tenure track. A doctoral degree in biostatistics or statistics is required. The expected start date is July 2017 or later, pending the availability of funds.

Applicants with outstanding productivity in both methodological and collaborative research are especially encouraged to apply. Candidates for both tracks are expected to have a strong commitment to teaching.

We seek candidates who embrace and reflect diversity in the broadest sense. The University of Pennsylvania is an EOE. Minorities/women/individuals with disabilities/protected veterans are encouraged to apply.

Apply for these positions online at:

Clinician Educator track:
https://www.med.upenn.edu/apps/faculty_ad/index.php/d4360

Tenure Track: ***https://www.med.upenn.edu/apps/faculty_ad/index.php/d4361***

St. Jude Children's Research Hospital
ALSAC • Danny Thomas, Founder

BIOSTATISTICS FACULTY
Memphis, TN

The Department of Biostatistics at St. Jude Children's Research Hospital (www.stjude.org/biostatistics) invites applications for three faculty positions at the Assistant or Associate Member (Professor) level depending upon qualifications. Candidates must have a PhD in Biostatistics or Statistics and a record of peer-reviewed publications showing evidence of (for Assistant Member, a potential of) productive methodological research.

For the 1st position, preference will be given to candidates with experience and statistical research interests in designing and conducting clinical trials and a commitment to collaborative research with clinical and laboratory investigators. Experience and/or interest in Systems Biology, Statistical Genomics or Bioinformatics are also highly desirable.

For the 2nd position, preference will be given to candidates with statistical research interests in Survival Analysis, Longitudinal Analysis or Multivariate Analysis and a commitment to collaborative research with clinical investigators. Experience in designing and conducting epidemiological studies is highly desirable.

For the 3rd position, preference will be given to candidates with statistical research interests in developing qualitative and quantitative methods in health outcomes research, which includes but not limited to, epidemiological studies, psychosocial studies and studies in health economics. Experience in designing clinical trials/therapeutic interventions and developing infrastructure for conducting collaborative international trials, particularly with the countries that have limited resources, is highly desirable. Continued independent statistical research motivated by biomedical collaborations is expected of the successful applicant.

The Department staff includes thirteen faculty positions, two post-doctoral fellows, twenty-two master's level biostatisticians, eight computer scientists and support staff. Applicants must demonstrate excellent oral and written communications skills and be proficient in computing. Compensation is very competitive and commensurate with experience. **Send letter of interest, CV, and have three reference letters sent to: kumar.srivastava@stjude.org or Dr. Deo Kumar Srivastava, Interim Chair, Dept. of Biostatistics, St. Jude Children's Research Hospital, 262 Danny Thomas Place, Memphis, TN 38105-3678.**

Chair, Department of Biostatistics Graduate School of Public Health

University of Pittsburgh

The University of Pittsburgh Graduate School of Public Health is accepting applications for the position of tenured Professor & Chair of the Department of Biostatistics.

The Chair is a full-time tenured faculty position. Candidates must have a distinguished record of research, teaching, publication, service and academic accomplishments that meet the criteria for appointment at the tenured professor level, including an advanced degree in statistics, biostatistics or another quantitative science.

The ideal candidate will possess:

- A strategic vision for short-term and long-term development of the Department that supports the goals of the Graduate School of Public Health and the University
- The ability to maintain and develop a vigorous program of independent biostatistics research for the advancement of biomedical and public health sciences
- A commitment to the advancement of public health and medicine through externally funded collaborative and interdisciplinary research in the areas of basic biomedical science and discovery, systems biology, precision medicine, novel and traditional clinical trials, comparative effectiveness, disease modeling, and population health
- Advanced knowledge in biostatistics educational programs for students and applied health researchers
- A successful track record in effective professional leadership and management

Salary is competitive and will be commensurate with experience and qualifications. Desired start date is July 1, 2017. Review of applications will begin immediately and continue until the position is filled with applications received by November 1 receiving full consideration. Candidates should submit a letter of application stating professional accomplishments; curriculum vitae; and the names, mailing addresses, e-mail addresses, and telephone numbers of five professional references. Applications and nominations may be submitted electronically and/or by mail and should be sent to:

Derek C. Angus, MD, MPH
Chair, Biostatistics Chair Search Committee
c/o Mary Brady

University of Pittsburgh
Graduate School of Public Health
Office of the Dean, A600 Crabtree Hall
130 DeSoto Street

Pittsburgh, PA 15261
bradym1@pitt.edu
EEO/AA/M/F/Vets/Disabled

The Department of Biostatistics was founded in 1949 and is one of seven departments in the Graduate School of Public Health. The Department houses 22 primary faculty with extensive research portfolios, is home to highly competitive MS and PhD educational programs, and supports prominent research centers such as the Comparative Effectiveness Research Center, the NRG Oncology Cooperative Group Biostatistical Center, and the Center for Occupational Biostatistics and Epidemiology. Annual extramural funding is ~$11 million.

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On the ASA Community, our online community coordinator—Lara Harmon—asked, "Which historical figures inspire you? Whether statistician or no, what qualities did they possess that you try to bring to your own work?"

We included some of the answers here. To read more, visit the ASA Community at *http://bit.ly/2asVeaM*. (You will have to log in.)

Greenhouse

One of my statistics heroes is **Samuel Greenhouse** from whom I took a course in biostatistics while in grad school at The George Washington University. Aside from his thoroughly engaging teaching style, I was always moved by his humanity in discussing the tough decisions that had to be made in clinical settings—interacting with doctors, for example, about implementing or delaying early-stopping rules for clinical trials.

Rachel Braun
Melvin J. Berman Hebrew Academy

WHO IS YOUR HERO? Share your hero with us on social media. Be sure to tag @AmstatNews. **We'll post more next month!**

Any list of heroic statisticians should include **E.J. Gumbel,** who risked his life reporting statistics on mob violence and terrorism in Weimar, Germany. When they started burning books in Heidelberg in 1933, the first manuscripts put on the fire were the writings of E.J. Gumbel, who had already escaped. Here's a statement from one admiring fan:

"I respect [Gumbel] even more as a person. His political activity and his publications are sustained by a lofty ethos … [He is] inspired by an uncompromising sense of justice. Men like him are indispensable if we are ever to build a sound political framework for our society." ~ Albert Einstein, 1930

Also, **Graciela Bevacqua** of the Argentine National Institute of Statistics and Census, prosecuted in 2011 for sticking by her numbers.

Michael Beck

Hypatia of Alexandria. Her death marks the end of the classical era; ultimately, she was physically ripped to pieces by an angry mob because she refused to violate her own commitment to intellectual integrity. Hypatia was a brilliant philosopher, mathematician, astronomer, and educator. Her father was the head of the Library of Alexandria, and it was he who instilled in his daughter a love of Greek intellectual virtue. By all accounts, she was brilliant, beautiful, and a fiercely independent thinker.

Hypatia

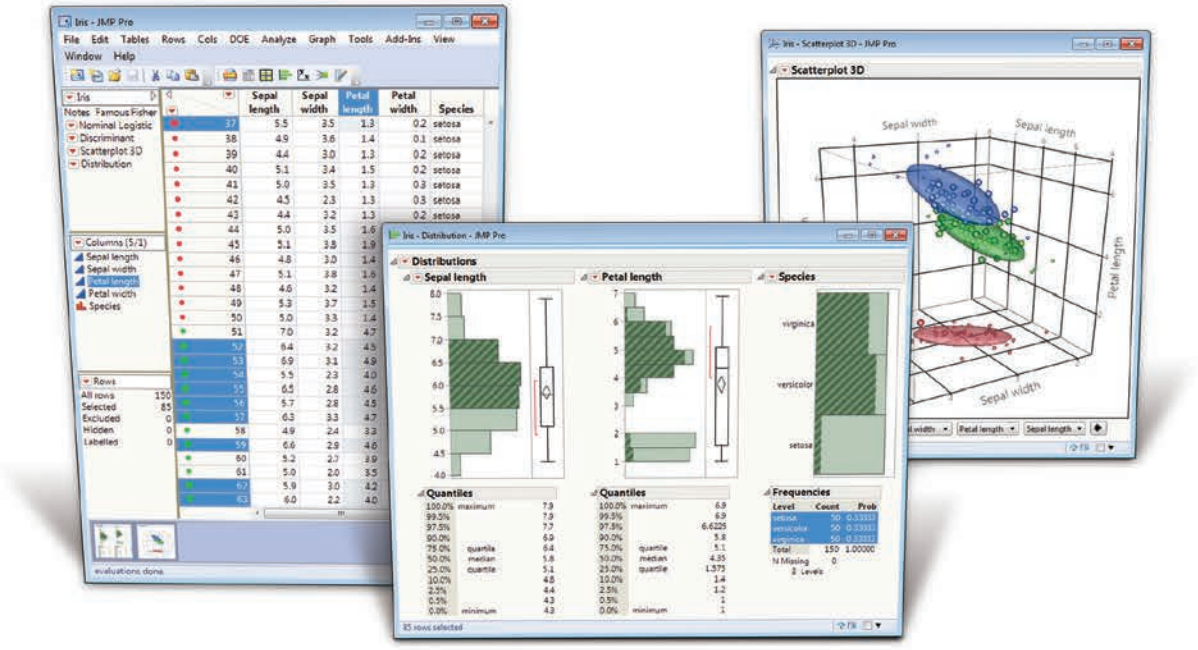
Jamie Farren
West Texas A&M University

In my case, I consider **John Tukey** as my hero for inventing simple, yet elegant and complete, graphical descriptions of data and for demystifying a lot of analysis methods.

Nestor Rohowsky
Integrated Data Consultation Svcs., Inc.

It has to be **Alan Turing.** I've just finished reading The Enigma, and his contribution to the Allied war campaign was, frankly, immense. He accomplished so many impressive things, despite living in a society that reviled him (he was a homosexual during the unlawfulness of the practice in Great Britain). His Cambridge Fellowship dissertation was an independent proof of the Central Limit Theorem (which was a novel result in his time), the first proof in the mathematical community, only having been published a few years before, unbeknownst to Turing.

Colin Coe



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Statistics

The release of SAS/STAT® 14.1 brings you more statistical techniques for your data analysis.

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