



**A Tribute to Danny Kaplan
Recipient of the 2017
CAUSE/USCOTS
Lifetime Achievement Award**

USCOTS '17



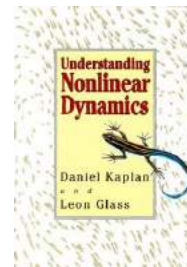
SHOW ME THE DATA!

Danny Kaplan's career gives concrete meaning to the theme of the 2017 USCOTS: "Show Me the Data!"



April 22, 2017

Danny Kaplan's connection to Macalester College began with a swarm of tadpoles. He and Leon Glass used them on the cover of their book on nonlinear dynamics, and our colleague, Stan Wagon, recognized it as a simple but brilliant form of data visualization that simultaneously shows direction, velocity, and flow. From this connection, our department made a genius hire and brought Danny into our combined mathematics, statistics, and computer science department, even though his degrees are not in any of those areas.



Danny's impact on our department and our institution is difficult to overstate. He was the driving force behind building our statistics and applied math programs, and he made important contributions to the computer science and theoretical math majors. These are now among the most popular, and fastest growing, majors at Macalester. Danny designed innovative and forward looking classes that now form the foundation of our program. These include courses in Epidemiology, Statistical Modeling, Applied Multivariable Calculus, Statistical Programming and Machine Learning, and Computational Linear Algebra. All of our majors take these courses, and more than half of the Macalester student body takes them. Other courses, including as CS I, Linear Algebra, Differential Equations, and the entire Calculus sequence, have been substantially influenced by Danny's presence in our department.

I team taught several of the first instances of these courses with Danny and witnessed his teaching and course development first hand. Danny has faith in the ability of students to learn big ideas that are beyond the scope of what is normally taught in a course at that level. He gets students working on applied examples with real data on a large scale using professional tools. He teaches the importance of computation and an attention to numerical subtleties. He values modeling, visualization, and communication. He seems to have an infinite supply of compelling examples and memorable stories. He uses the historical development of ideas in his teaching, and engages students on the social, political, economic, artistic, and ethical impact of their work. He uses cutting-edge methods; sometimes they are even developed and implemented at midnight the night before they are introduced, making for an exciting adventure for his students and co-teachers!

Danny and I were hired into tenure-track positions at Macalester in the same year, and it has been my good fortune and privilege to work as his colleague and friend these past 21 years. His impact on the trajectory of my own career has been enormous. All of my courses are more creative, interesting, computational, data-driven, and pertinent because of him.

This lifetime achievement award is greatly deserved. At Macalester, we will miss Danny's creativity, mentorship, leadership, good humor, and friendship.

Sincerely,

Congratulations on winning the CAUSE Lifetime Achievement Award. You have made such a positive impact on college statistics, and this award is richly deserved. It has been wonderful to be in the Twin Cities statistics community with you. You fostered such a supportive community here, and it made a tremendous difference for me as I started to teach statistics at the college level for the first time. I really enjoyed getting to learn from you during the RStudio workshop. What I learned there has helped me so much, that I can't even imagine how I would be teaching statistics without that experience. Thank you for all that you do!

MILES OTT



Danny,

I first met you at USCOTS in 2005 but I feel like I have known you forever. You have felt more like a brother and friend than a colleague. However, as a colleague I have learned from and greatly benefited from working with you. You have introduced me to amazing people and we have had memorable discussions arguing and brainstorming where I have walked away energized and full of ideas. Thank you for your many contributions to Statistics Education and for hosting Stat Chat at Macalester all these years. And thank you for inspiring me with your critical mind and courageous spirit.

With great affection

JOAN GARFIELD



What's going on
with this weird
SAT dataset!
...o

Dear Prof. Kaplan:

Thanks for your help with
my project and recommendation letter!

..

- Jing Wen.



I worked with Danny many times developing curriculum, joint teaching, participating in workshops. Every single time the experience was intellectually thrilling and a great joy. Even better, Danny's a wonderful, friendly, caring person. Danny is like no one else I know. It has been my privilege to count him as my friend.

DAN FLATH

I had the great fortune of meeting Danny over a decade ago through Joan Garfield, when they, with Julie Legler, started the Stat Chat meetings of statistics instructors in the Minneapolis/St. Paul, MN metropolitan area. Because of Danny I was tricked into learning R as he and Andy Zieffler persuaded me to put on an R workshop in the spring of 2009. I had been intending to learn R and incorporate it into my teaching for some time, but having to prepare workshop sessions, with the support of Danny and Andy, finally got me to take the leap. And I am very thankful for that friendly nudge as I have been using R to both teach statistics and analyze data ever since. Danny has "nudged" many of us to think about statistics from new and different perspectives: modeling, computing, data wrangling, simulations, multivariate data sets, reproducibility, and many more. But, the things I appreciate most about Danny are his genuine and contagious enthusiasm for ideas, the generosity of time he invests in sharing his ideas, and the wit and humor he brings to his unique perspective on teaching and learning statistics. Congratulations on achieving this well-deserved honor, and wishing you the best in your future pursuits, wherever they may take you.

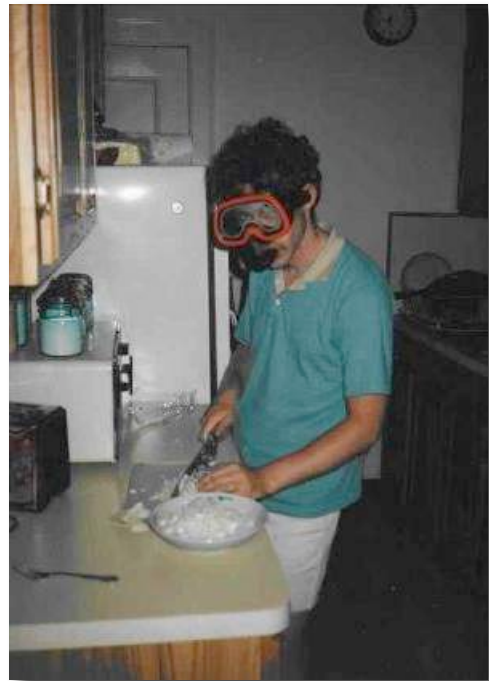
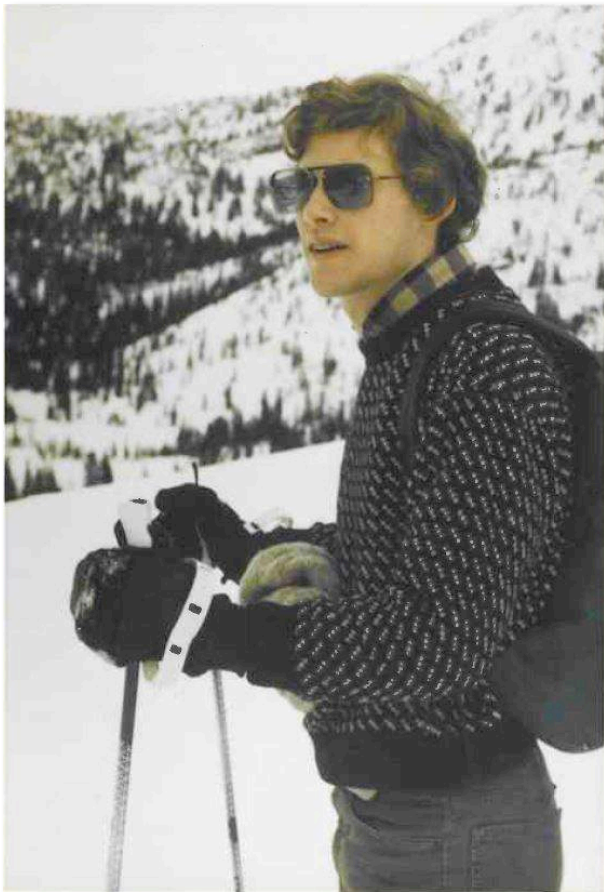
BOB deIMAS

Congratulations on receiving this well-deserved award! Your brilliance and fresh perspective have benefited statistics educators and the field of statistics over this past decade and your contributions are sure to continue to influence many for the years to come. Your longstanding dedication to Stat Chats is a testament to your commitment to Statistics education. I have felt privileged to be a colleague of yours and I have appreciated your support professionally and personally. Your work has enriched the life of so many of your colleagues. You are well-deserving of this honor.

JULIE LEGLER

Congratulations, Danny - very well-deserved!

PAUL ROBACK

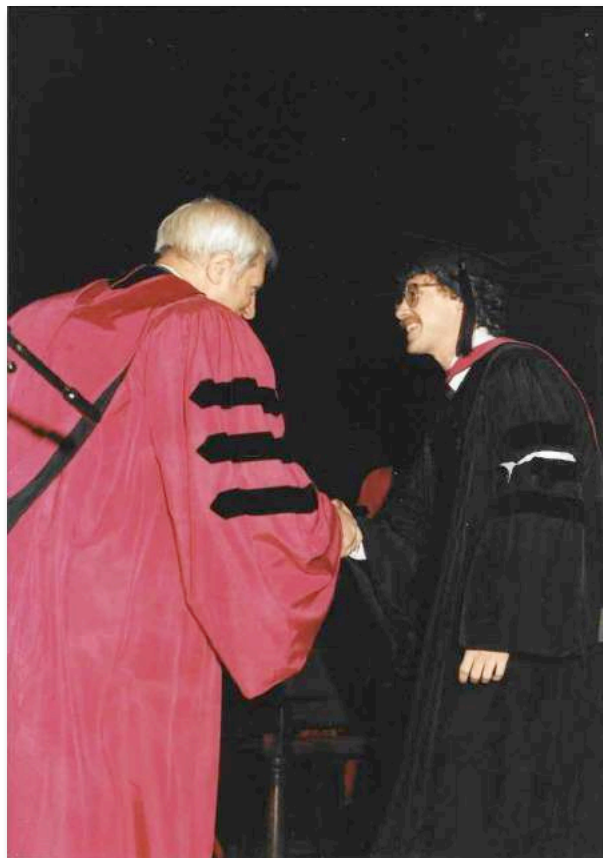


Congratulations Danny on this acknowledgement of your tremendous efforts over many years to enhance statistics education. I still remember with delight the "field exercise" you setup in the hallways of the UT Conference Center in 2000 to illustrate ideas of random walks during one of our short courses. Course participants remarked that this was one of the most innovative learning experiences they had ever been exposed to and I'm certain there are thousands of others who have benefited from your expertise and careful exposition in many texts. Mazel tov!

LOU GROSS

Congratulations, Danny, on winning this well-deserved award! You are a profound asset to our profession and an inspiration to junior faculty like me. I am deeply grateful for all of the time and effort you have put into thinking about how to teach statistics, and your willingness to share these thoughts with me. It's an honor to be a co-author of yours!

BEN BAUMER



Danny,

Congratulations on receiving the lifetime achievement award from the Consortium for the Advancement of Undergraduate Statistics Education. I can't imagine anyone more deserving of such an honor. As I travel to review Biology and Environmental Studies programs across the country, I haven't seen any math, stats and computer science program as outstanding as ours and I rave about it every chance I get. I place a great deal of the success for the MSCS department squarely at your feet. The move from the old statistics program to the new one, especially with the development of the statistical modeling class has had significant impacts on many Macalester students beyond those in the MSCS majors. I see students in my upper level biology classes who have had the statistical modeling class and they are truly prepared to explore the data we collect. While you haven't been the teacher for all of those students, you were the architect of the program and we see your design in every student.

While the award is focused on undergraduate education, I'd be remiss if I didn't include a comment or two on your impact on Macalester College, more broadly. Since your arrival at Mac, you've been the one person who made us all think deeply about what we value at the College and encouraged us to think about how we align our resources with those values. In my mind you single-handedly prepared the institution and especially the faculty to move to a need-award admissions policy. As a long-time member of RPC, I know that if the College had not moved in that direction we would have experienced dire economic problems. In many ways you have helped the College maintain its excellence.

Thanks for all you have done for the College and for Macalester's students. Once again, congratulations on your award.

DAN HORNBACH

I first met Danny Kaplan in 1996, as I was beginning my second year on the faculty at Macalester. It was clear to me from the start that Danny brought a keen intellect, with an uncanny ability to see right to the crux of any issue. His contributions to Macalester have been legion, and we have greatly benefited from his leadership. A renowned teacher, both at Macalester and nationally, Danny was instrumental in developing Macalester's forward-looking mathematics and statistics program, a curriculum that has garnered the attention of mathematics departments nationwide. His generous and collaborative spirit made him a critical contributor to the development and expansion of new majors and minors within his department, as well as the interdisciplinary Community and Global Health Concentration. Danny brought his leadership skills to bear on major faculty committees, but also to broad faculty deliberations. In his desire to do what was best for Macalester, he was always willing to be provocative, and I remember many faculty meetings where Danny's voice forced the faculty to reassess and grapple with their own logical inconsistencies. I have always admired Danny Kaplan, and I am grateful for what he has given to Macalester and the role model that he has been for me.

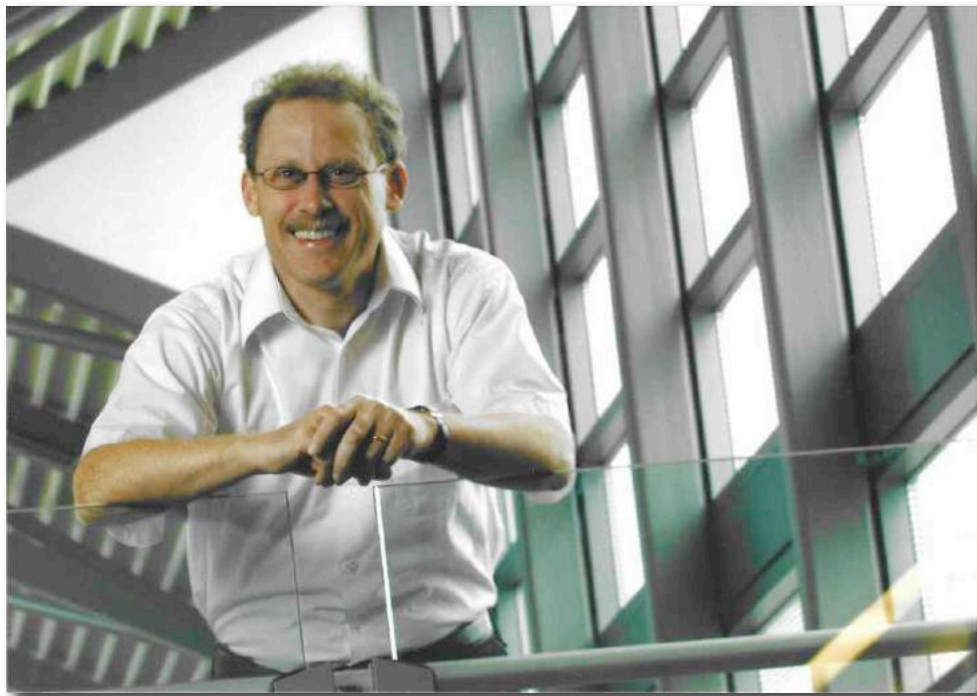
KARINE MOE



I have spent my career in academia surrounded by smart people, but only rarely have I encountered an intelligence that has struck me as truly awe-inspiring. Danny Kaplan possesses such an intelligence. Even more impressive than the breadth and depth of his knowledge--both of which are remarkable--is his fearless willingness to think outside the usual paradigms and assumptions. People like Danny are the ones who force us to reconsider the way we look at the world.

I owe a particular and personal thanks to Danny for his years of help--uncompensated and largely unrecognized--with our crucial work in admissions and financial aid. Every member of the faculty and staff is a beneficiary of Danny's efforts. In recent years we have replaced Danny with a consulting firm filled with dozens of statisticians and; I have yet to be convinced that they are doing a better job at predicting yield and developing strategy than Danny did on his own. I am not a mathematician, but by my calculation, I would estimate that one Danny Kaplan = 20 so-called 'experts.'

BRIAN ROSENBERG



Dear Danny,

I am so very pleased that you have been chosen for the CAUSE/USCOTS Lifetime Achievement Award. It is well-deserved.

You are a visionary in interdisciplinary undergraduate education and you have truly transformed the Macalester curriculum at the introductory level in all three areas represented in our joint Department of Mathematics, Statistics, and Computer Science. As a past vice president of the Mathematical Association of America, I am heartened to see you working with the MAA to share your vision with many other faculty members across the country, through the recent StatPREP award.

We have worked together for many years -- through many good times, and some very bad times. I am proud to call you a colleague, and moved to call you a friend. All my luck and love for the future, for you and your wonderful family.

KAREN SAXE



Danny,

It's easy to confuse brilliance with eccentricity. When I came to MSCS, I thought: Danny - now there is a person with ... unusual.. ideas. Over time, I saw that ideas you proposed that seemed ridiculous at the time were often just way ahead of the pack. In retrospect, it's clear that you have an amazingly keen ability to identify structural changes and identify appropriate responses, long before they play out. We have seen this in spades in our curriculum, which shows your fingerprints throughout all three disciplines, at all levels of courses. We will work to continue your tradition of reinventing our curriculum, but we will miss you dearly!

SHILAD SEN

Danny Kaplan has been a key driver and supporter of Macalester's HHMI grants over the years. In particular, our most recent grant had a focus on 'big data', in large part because of Danny's ideas, encouragement, and dedication. With colleagues Nick Horton (Amherst) and Randy Pruim (Calvin), Danny has developed and run workshops for faculty across the country to learn R/Rstudio. His enthusiasm and encouragement mean that >100 faculty in disciplines across the natural and social sciences are teaching statistics and data visualization using free software. In concert, Danny developed and taught a 1-credit data and computation fundamentals course at Macalester, open to all students with an interest in working with large data sets. Danny's tireless interest in helping students think and work quantitatively has inspired a generation of Macalester students to work confidently with data. His importance in hiring like-minded young faculty, and in creating the Data Science minor, cannot be overstated. Danny is a 'data champion' and a 'student learning champion', and I am so lucky to work with him!

KELLY MacGREGOR



When you solve a jigsaw puzzle, you start with the edge pieces because they are easy to identify by their straight borders (especially the corners). You sort the remaining pieces into color groups. Then you fill in the picture slowly and methodically, assured that you have found the unique solution. You proudly match your finished product to the picture on the box, and congratulate yourself on a job well done.

Then Danny Kaplan comes along and dutifully takes the puzzle apart so that he can solve it himself. He doesn't bother to look at the cover; he studies the individual pieces and their relations, and the system as a whole. He thinks not only about what people believe that a puzzle is, but also about what a puzzle should be. He then crafts a three-dimensional sculpture out of those pieces, creatively applying the rules that you were following blindly. The result is a jazzy improvisation of the same ingredients, an illuminating work of art.

To my favorite iconoclast: I thank you for fostering creativity, challenging conventions, and for showing us that it is possible to reformulate something old into something remarkable and new.

ANDREW BEVERIDGE

Danny has a wonderful gift of being able to defy convention and consider problems in different ways, which has led to many groundbreaking educational reforms that have positively affected many students. In addition to this, however, Danny is a kind and thoughtful colleague and mentor who is generous of his time and provided invaluable guidance and assistance in times when I really needed it. For that I am forever indebted to him.

LIBBY SHOOP

Congratulations on this very well-deserved award, Danny. I've always been inspired by your presentations and writings and especially your outside-the-box thinking. Your ideas have made me (I should say inspired me) to think more deeply about what to teach, how to teach it, and why. You've contributed a wealth of ideas to statistics education and have made very important contributions to our field. I hope you'll continue to do so for many years, and I hope that our paths will continue to cross often.

ALLAN ROSSMAN

Congratulations! Countless students, and faculty, will continue to benefit from the mosaic package, the statisticalModeling package, your books, and other resources you have created. But I tip my hat a second time to acknowledge what you have done to get statisticians to broaden their horizons and think about causal inference beyond the small (albeit important) realm of designed experiments. Many people address the question of *how* to teach, but you are in the company of a smaller group who address the more important question of *what* to teach. For that, I salute you.

JEFF WITMER



In the winter of 1996 I heard a piece on National Public Radio about a researcher at McGill who had made a connection between the mathematical theory of dynamical systems and the behavior of the heart, with possible applications to pacemakers. It sounded very intriguing. A few days later a job application by said researcher arrived in our department! I was excited as he seemed like a great fit for our College. I happened to have a visit scheduled to Montreal just after this and I visited Danny at his home there, a short distance from where I grew up. I did my best to convince him that Macalester would be a good place for him. It worked, and his contributions to our department and its program in applied math and statistics have been groundbreaking.

We have discussed many aspects of mathematics over the years, but the highlight was related to a challenging international contest in numerical analysis set by an Oxford professor who posed ten problems; he thought that a score of 50% would be quite good. Teams (up to six members) from around the world took the contest very seriously. I solved several but was also stumped by several. I mentioned the questions to Danny, and he rather quickly solved three, which included one that I had no idea how to start. Between us, we got all ten, becoming one of the 19 teams to achieve a perfect score. For me this led to a book project, a trip to Germany, and some new mathematical co-authors. Given that neither Danny nor I were professionals in numerical analysis, this was a very satisfying outcome.

I was very pleased to learn that Danny is the recipient of the 2017 CAUSE award. It is deserved for his contributions to statistics education, but our department is especially appreciative of his work throughout the applied mathematics, computer science, and statistics curriculum.

STAN WAGON

I've learned so much from you about how to make change and move the profession forward. Your efforts to bring computing into the curriculum through Project MOSAIC and related initiatives have born fruit in countless ways. You are truly an evangelist in the best sense of the world. This award reflects how much the community values your contributions.

NICK HORTON



Department of Mathematics and Statistics

North Hall
1740 Knollcrest Circle SE
Grand Rapids, MI 49546-4403



April 21, 2017

Danny,

Congratulations on a well deserved award.

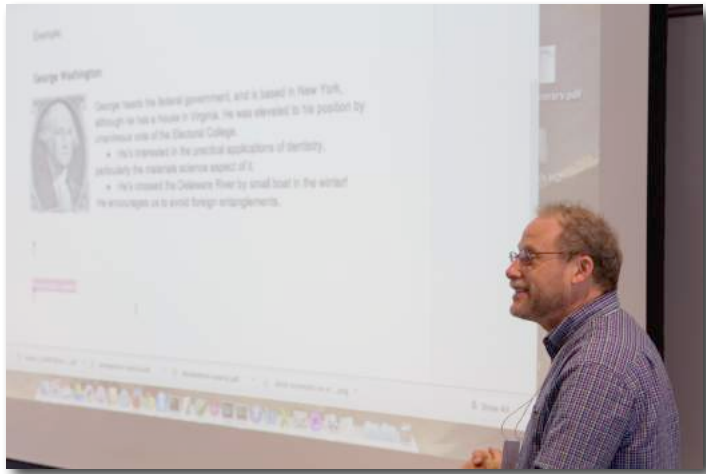
I have enjoyed so much our collaborations with Project MOSAIC, the Computation and Visualization Consortium, and the various other workshops and projects we have collaborated on. How fitting that you are receiving this award at USCOTS, the host of the first workshop we led together.

You have been a great catalyst, not just for my own work in statistics education, but for many others' as well. Keep on pushing the limits of what statistics education can do, and innovating ways to make it happen.

Congratulations again,

A handwritten signature in black ink that reads "Randall J Pruiem".

Randall J Pruiem
Professor of Mathematics and Statistics
rpruim@calvin.edu



One of my favorite times of year is when an actuary visits Beyond Mac and outlines how our students will outearn me during their first year on the job. But the blow always lessens when I remember that my job perks include a free education from Danny Kaplan. Without this, I imagine I would have endured many more years of teaching the t-test, going down the rabbit hole of arcane statistical theory, and finding this all to be of utmost importance :). Even for the points on which we might disagree, I've benefitted from being challenged to evaluate and defend my own viewpoints.

Your impact on statistical education and statistics educators (including myself) cannot be overstated. However, it's neither your innovative curriculum nor your professional leadership for which I'm most grateful. Rather, it's the value that you place on people, relationships, and creativity that have had the most profound impact on my own career and life outside statistics. I'm embarrassed to admit that it wasn't until I sat in on your Math 155 class in 2009 that I truly learned that statistics education requires more than being good at transferring information "from my brain to your brain." Rather, we must provide our students with the space to explore, be creative, and sometimes even make mistakes. Though I've given up on matching your wit in the classroom, I continually strive to provide my students with the encouragement that you provide to yours.

It is difficult to imagine an MSCS without you. But my "chin up" attitude right now is that our department, faculty, and students will all be fine, precisely because we've had the opportunity to learn from you over the years. I can never thank you enough for how generous you have been with your time, ideas, and encouragement.

ALICIA JOHNSON



Danny, I want to thank you for your leadership in statistics education. In particular, I want to thank you for your leadership in creating introductory calculus and statistics courses designed to support students from departments outside of MSCS, including biology. In the past ten years, nearly 500 of our majors have benefited from taking these classes. Knowing you, I expect that your contributions to math and statistics education will continue into your MSFEO years.

Best wishes.

MARK DAVIS



Danny – I was delighted to hear that you have been awarded the Lifetime Achievement Award from the Consortium for the Advancement of Undergraduate Statistics Education. Since your time in Montreal, it was clear to me and colleagues at McGill that you are a uniquely gifted educator. Your clarity of thought and zeal for presenting material in the most interesting way is greatly appreciated by the students and acts as a beacon for other instructors. And this brilliance as a teacher also stems from your deep understanding and research in nonlinear dynamics and the origin and analysis of complex biological dynamics. I cannot imagine a more worthy recipient of this award. Bravo!!

LEON GLASS



Dear Professor Kaplan,

I want you to know how much I appreciate all of the time and energy you put into helping me throughout my college career. You have been a great mentor to me and I very much appreciate your encouragement, support, and guidance. From my first stats class with you to my capstone, I've learned so much from you.

Once again, many thanks for all your help.

Kind Regards,

Quinn.

One of my proudest accomplishments as chair of our department was recognizing what Danny could contribute to Macalester and our department. He called me that summer before he applied for our position, I looked over his qualifications, and I immediately recognized that his unconventional preparation for a position in a math department would be ideal for building our applied math program at Mac.

Danny has not disappointed. I've admired his approach of looking for what is not working, thoughtfully proposing fixes, and then trying them out with flexibility to constantly tweak and refine what we do. He knows how to make meaningful change. Nowhere was this clearer than in the reform of our calculus/statistics sequence that he initiated. By ensuring that these courses were team-taught with many different members of our department over the two years of its development, he ensured both a better product and broad faculty acceptance.

My favorite interaction with Danny was over the development of the Quantitative Reasoning course and requirement. I learned a tremendous amount of useful statistical knowledge in the process, and I had the pleasure of seeing at first hand how he approached flexible development of this initiative. What we wound up with looks very different from the original vision, but it has preserved the essence of that vision.

I'm very sorry that obligations in DC prevent me from being present on this day of tribute. But I want to make sure, Danny, that you know how much I value your leadership and all that you have given to Macalester.

DAVID BRESSOUD

Danny Kaplan is a man who refuses to be swayed by petty politics away from principle, or from the truth revealed by data. He is a fearless defender of that which he believes in, and he is almost always totally and completely right. As a new faculty member at Macalester, I was emboldened and empowered by watching him, and I am deeply thankful for his leadership, mentorship, and devotion to the community. I cannot imagine another person more deserving of this award. Thank you, Danny.

SARAH WEST

I took a Discrete Optimization topics course from Danny. On the very first day of class, he warned us that despite all the useful techniques we would learn, the class wouldn't give any easy answers to the most important part of optimization: deciding what to optimize. Most real-world problems are multidimensional, he said, and deciding how to turn those dimensions into a single one is the hard part. This moment still sticks with me 20 years later — not just as an observation about mathematical modeling, but as good general life advice.

PAUL CANTRELL

With an inventive imagination untrammelled by statistical convention (because of a nonstandard background in engineering-economics systems followed by biomedical physics), you are virtually unrivalled for the title of “the most creative voice in statistics education.” To pervert a cliché, the box was probably invented just to give you something to think outside of. My usual reaction to a Danny take on an area or method is, “And where did that come from??!” followed by, “That’s brilliant!”

Your most important contribution is arguably as our most ambitious innovator in making advanced topics, thinking modes, and techniques in statistical data science accessible to beginning undergraduates. You have a remarkable knack for spotting the conceptual core, stripping away the unnecessary baggage and then using the power of computer software to enable the implementation of your ideas. You then generously share all of this with statistics educators everywhere through workshops as well as talks and writings.

You are entirely deserving of the 2017 USCOTS Lifetime Achievement Award.

CHRIS WILD



MOUNT HOLYOKE

Mount Holyoke College
30 College Street, South Hadley, MA 01075-6420
tel 413-538-2401 gcoobb@mholyoke.edu

George W. Cobb
Robert L. Rooke Professor of Mathematics and Statistics

Dear Danny,

I was delighted to learn that your many and major contributions have been recognized with a CAUSE Lifetime Achievement Award. Well deserved, and truly earned.

As I think about you and your award, I am struck that your indirect route to statistics, landing late after substantive contributions in biophysics and computer science, is very much in the tradition of other slow learners, scientists who came reluctantly to statistics, only in their maturity. I congratulate you not just on your achievements, but also on your upward progress. Fisher managed it. Neyman managed it. Hotelling managed it, and Tukey managed it. Now you. It's often the slower learners who make the bigger contributions.

Circuitous paths and cheeked tongues aside, in all seriousness, I truly admire and applaud your contributions to statistical thinking, its teaching, and its learning.

With high regard, heartfelt congratulations, and fond wishes,



George Cobb
April, 2017

Danny,

I have long been inspired by your contributions to Statistics Education and amazed how you simply and forthrightly align what you are doing with how you are doing it and how you show others to do the same.

Hence you're renown as an advocate for Data Science courses that model what a Data Scientist does; for an interdisciplinary modeling curriculum that models good interdisciplinary work; for modeling good teaching in how you teach teachers to teach; for thinking systematically about systematic thinking; and on and on ...

You have generously given your time, your energy, your humor, and your innovative ideas to your students and to the statistics education community. I am thrilled that you've been selected as the winner of the CAUSE/USCOTS 2017 Lifetime Achievement Award.

Congratulations!

DENNIS PEARL





**“ ‘The Rosaic’ was created by 21st century artist
Danny Kaplan as a MOSAIC with an R”**

Dear Award Committee Members,

We are writing with the purpose of nominating Daniel (Danny) Kaplan of Macalester College for the USCOTS 2017 - Lifetime Achievement Award. This nomination is being put forth by Vittorio Addona (Macalester College), Nicholas Horton (Amherst College), and Joan Garfield (University of Minnesota - Emeritus). In our letter, we outline why Danny's leadership has had a profound impact on the profession and why he is deserving of this honor.

Our packet includes additional supporting testimony from colleagues around the world which speak to Danny's impact on the teaching of college-level statistics. Danny's inspirations have not only shaped what we teach our students, but also how we use the tools at our disposal to help convey our lessons. He has played an integral part in the development of software and materials to help advance curricula in statistics and related disciplines.

At Macalester, Danny led the implementation of numerous curricular innovations: a major in Applied Mathematics & Statistics (AMS), a concentration in Community & Global Health (CGH), and a minor in Data Science (DS). Danny has worked tirelessly to build a community of statistics educators, locally, nationally, and globally. In the following, we touch on each of these contributions.

Broad impact on statistics education

Arguably Danny's most profound and lasting mark on statistics education has been the way that he teaches students in their first college statistics course. Danny challenged the longstanding status quo which was a course focused on basic probability, the Central Limit Theorem, and one- and two-sample procedures. That traditional introductory course rarely incorporated real data, and when it did, the datasets were overly simplistic (either due to a small sample size and/or a very small number of variables) to be taken seriously as a genuine attempt to answer a research question. Danny argued that, from their first encounter with statistics, students should be exposed to authentic, complex, data; after all, this is how statistics is used in client disciplines and outside of academia. Consequently, Danny developed the hugely popular *Introduction to Statistical Modeling* (ISM) course, and his now widely used book, *Statistical Modeling: A Fresh Approach*. In ISM, Danny introduces multivariate modeling early and often, and empowers students to grapple with issues like partitioning variation, confounding, multicollinearity, and causation.

To give a sense for its impact at Macalester, approximately 60% of all students take ISM. Nowadays, it may seem like these ideas are commonplace in introductory statistics courses, but this was most certainly not the case 10, or even 5, years ago. Danny was the pioneer, and driving force, behind this monumental shift in the way first-time students begin to learn about statistics.

At the same time, Danny knew that such a shift needed to be accompanied by the development of tools for instructors, and opportunities for professional development, in order to be sustainable. Convincing educators to teach introductory statistics differently was not sufficient. These teachers needed training, and they needed software to easily, and intuitively, implement the ideas put forth as crucial for students. Danny traversed the country giving countless seminars, short courses, and workshops to help instructors understand the core philosophies of ISM. Simultaneously, he partnered with Nicholas Horton and Randall Pruim to develop the *mosaic* R package and related resources for use in teaching mathematics, statistics,

computation, and modeling. *mosaic* has become a mainstay at many institutions around the world, with an estimated 50,000+ students having used it in their introductory statistics course. *mosaic* is merely one part of Danny's efforts from Project MOSAIC, an NSF funded fostering of a community of educators working to tie together aspects of quantitative work that students in science, engineering and mathematics need in their professional lives. Project MOSAIC has offered/produced many opportunities and resources for teachers, including: wiki pages of materials, workshops, books, and online courses.

Danny has undeniably been at the center of numerous endeavors to alter statistics education for the better, and make certain that tools are available for sustained progress into the future.

Programmatic innovation and curricular support

Danny is a forward thinker who sees trends before others do. While reflecting on his remarkable accomplishments, we are reminded of this quote (which Danny himself uses) by Wayne Gretzky: "I skate to where the puck is going to be, not where it has been". Indeed, Danny has demonstrated an ability to peer into the future, and help the community move in that direction. This has enabled him to be at the forefront of so many programmatic advances. We outline a few of these here.

In large part due to Danny's initiatives, Macalester College offers a concentration in Community & Global Health (CGH); an interdisciplinary minor in public health. This represents a rare opportunity for undergraduate liberal arts students to explore these interests. Danny was a visionary who saw public health as a perfect fit for the liberal arts, bringing together students and faculty from diverse disciplines, and enabling everyone to benefit from each other's expertise. As part of this work, Danny developed what we believe is the only undergraduate Epidemiology course offered at a liberal arts college. Epidemiology is the only required course for CGH (which is by far the largest interdisciplinary program at Macalester, graduating 40 seniors annually among 450-500).

With only three statisticians, and a tremendous service load, it is impossible to sustain a major solely in statistics at Macalester. Recognizing the burgeoning interest among students, however, Danny introduced a major in Applied Mathematics & Statistics (AMS). In less than a decade, AMS has become one of Macalester's largest majors, graduating 35-40 students per year. What is apparent is Danny's originality in the face of constrained resources. Combining applied mathematics and statistics allows students to: explore different areas without penalty, receive a desired credential, and customize their major experience. Danny's support of the AMS curriculum was also significant: he is responsible for the development of two innovative offerings: *Computational Linear Algebra* (a course in numerical analysis) and *Statistical Computing & Machine Learning*. AMS at Macalester College could not persist without these offerings, and would not exist at all without Danny Kaplan.

Finally, Danny has been a leader in the Data Science revolution at the undergraduate level. Macalester was one of the first liberal arts colleges to offer a minor in Data Science (DS), and it is quickly becoming one of the largest minors at the College. Danny's support of data science is evidenced in part by his creation of a *Data and Computing Fundamentals* (DCF) course. DCF allows students with limited background the opportunity to gain experience wrangling, analyzing, and interpreting "big data". As with ISM, Danny did not stop at developing a course, but partnered with Benjamin Baumer and Nicholas Horton to disseminate the work via a textbook,

Modern Data Science with R (CRC Press) and R package, *mdsr*, so that others can benefit from it.

Building a community of statistics educators


Danny has made numerous long-lasting contributions to statistics education, but he has not done so in isolation. He understands the value of establishing connections between instructors, sharing resources and expertise, and communicating experiences for others to learn from. Danny has been, for so many, the thread that binds us together.

One example of his community building efforts is *StatChat*, a monthly get-together of statistics educators from the Twin Cities and beyond, which Danny coordinated for several years. *StatChat* brought together teachers from liberal arts colleges, research universities, community colleges, and high schools to discuss statistics education research, and pedagogical strategies, but also to socialize. A friendly atmosphere was established, and this enabled individuals to network, an important component for many who were “isolated” statisticians at their own institutions. Recently, Danny has been hosting the Twin Cities R User group in order to achieve similar goals.

Another example of Danny’s outreach efforts is his recent grant, *Professional Development Emphasizing Data-Centered Resources and Pedagogies for Instructors of Undergraduate Introductory Statistics* (statPREP). This successor to Project MOSAIC was funded in conjunction with the Mathematical Association of America (MAA), the American Statistical Association (ASA), and the American Mathematical Association of Two Year Colleges (AMATYC). Recognizing that most statistics education in the U.S. is provided by mathematics faculty with little background in statistics, statPREP aims to help teachers develop data, computing, and statistical skills. statPREP will offer professional development for faculty who teach introductory statistics, it will establish regional communities to support these instructors, and it will provide a national support network comprised of statistics education experts.

We hope that we have adequately conveyed our enthusiasm for a few of Danny’s innumerable contributions to statistics education. In 2008, Danny was deservedly awarded Macalester’s annual *Excellence in Teaching* award. This academic year will be Danny’s last in the classroom, and we feel that receiving the USCOTS 2017 Lifetime Achievement Award would be a fitting end to an illustrious teaching career.

Sincerely,



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Joan Garfield, PhD
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Supporting Testimonials

I first met Danny in July 2011 at a workshop on inquiry-based statistics education at Wesleyan University. At the time, I was about to start what would be my final year of graduate school. Although I was in a math program, and my dissertation research was in theoretical computer science, I had been teaching statistics and working as a statistical analyst (for the New York Mets), and expected to teach statistics once I graduated (thus, my interest in attending the workshop). I had been using R for several years, but it was not my primary tool. Even though I worked with data extensively, most of them were in a database and had to be displayed on the web. Thus, I did far more programming in SQL and PHP than in R. Frankly, while I was growing quite fond of R's graphical capabilities, I thought it was pretty lousy for data wrangling. The base R syntax for such things was tortured!

During the workshop, Danny made several criticisms of the way that one of the presenters was teaching R syntax. Danny was concerned that the way the code was written was not reflective of the meaning of the underlying operation. He wasn't saying that the code was **wrong** -- he was arguing that the syntax being used was not expressive! This was a subtlety that I had not previously considered...ever. Reading other people's code, and even my own, was a common frustration, so the notion that there might be a better way to write code was familiar. But for me, Danny was the first person who connected the **syntax** for the operation to the operation itself. But far from an esoteric concern, his argument that this was really important -- especially when teaching students to code -- was something that has stuck with me ever since, and indeed, has become one of the self-evident truths that I have about teaching.

During the course of that workshop, and on countless occasions over the last five years, I have been continually astonished at the depth of Danny's thinking about programming and syntax. Each time, I remark about how he has clearly not only thought about such things deeply himself, but he has thought deeply about how these ideas would affect someone else trying to learn. It is this type, and depth, of thinking that makes Danny such a worthy recipient of this award. I was exposed to his thinking through the MOSAIC project, and our forthcoming book, *Modern Data Science in R*, but I'm sure that he has touched others in similar ways on countless other projects.

--- **Ben Baumer (Smith College)**

I have been incredibly lucky to have had the opportunity to collaborate with Danny on many projects over the past 10+ years. On any given project, Danny makes it seem that you are the expert and he is learning from you, when in fact, it is completely the opposite. He will not admit it, he is too humble, but Danny is brilliant. And not only in the "he's really smart at his research-niche" sort of way which is true for many folks in the professoriate, but more in the "If I have seen further, it is because I have been standing on the shoulders of giants" sort of way. The incredible thing is that Danny not only allows you to stand on his shoulders, but he helps you up. And he does this regardless of whether you are a student or colleague. He goes out of his way to help others succeed.

Danny has the creative, visionary type of mind that is rare. Couple that with his energy and you have an unstoppable force. In talking with a Macalester administrator about Danny's impending retirement, he mentioned that the College would likely need to hire 4–5 people to make up for the loss; he wasn't kidding. When working with him, this energy is contagious. You can't help but be energized and excited about things when you talk and work with Danny.

I cannot say enough good things about Danny, nor about what he has meant to the statistics education community, nor what he means to me personally. I know I am not alone when I say his support and collaboration has influenced my life as a scholar and as a statistics educator.

--- **Andrew Zieffler (University of Minnesota)**

With an inventive imagination untrammelled by statistical convention (because of his nonstandard background in engineering-economics systems followed by biomedical physics), Danny Kaplan is virtually unrivalled for the title of “the most creative voice in statistics education.” To pervert a cliché, the box was probably invented just to give Danny something to think outside of. My usual reaction to a Danny take on an area or method is, “And where did that come from??!!” followed by, “That’s brilliant!”

Danny's most important contribution is arguably our most ambitious innovator in making advanced topics, thinking modes and techniques in statistical data science accessible to beginning undergraduates. He spots the conceptual core, strips away the unnecessary baggage and uses the power of computer software to enable the implementation of his ideas. He then generously shares all of this with statistics educators everywhere through workshops as well as talks and writings.

For me, Danny's deepest and most powerful idea, repurposed from discussions in computer science, has been the idea of expressive coding in statistics education – computer code not merely as a way of telling a computer what to do, but as a way of telling yourself and others what you were doing and how. This is an entirely new paradigm that Danny brought into statistics education, using computer code as a more-accessible alternative ingredient to mathematics for statistical story-telling. It goes beyond making the coding more comprehensible to making a statistical thought process itself more comprehensible. Making this work requires a language that can facilitate it, so Danny wrote a new set of R functions. The seeds of this are in his 2007 TISE paper and it was then fleshed out in the first edition of “Statistical Modeling: A Fresh Approach”. Danny's concept and his original R functions were the forerunners of the popular mosaic package with Randy Pruim and Nick Horton and a foundation of the teaching approaches of their Project MOSAIC. Realising the full potential of this whole concept has much further to run and I'm watching developments with keen interest.

Danny Kaplan is hugely deserving of the 2017 USCOTS Lifetime Achievement Award.

--- **Chris Wild (The University of Auckland)**



*Professor, Statistics
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Computer Science*

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January 10, 2017

Dear Colleague;

I am honored to have the opportunity to write on behalf of Daniel Kaplan for the U.S. Conference On Teaching Statistics Lifetime Achievement Award. Danny is a rare, exceptionally gifted scholar who has made significant contributions to a number of fields and it is fortuitous that statistics has been among them. He has made unique connections between statistics and other fields such as mathematics and physics which have resulted in new and valuable insights in statistics and statistics education.

As an educator, his contributions are many. He has pioneered innovations in course content and pedagogy. One of Danny's many engaging class(room) demonstrations has students wandering about in an open area simulating Brownian motion. His textbook takes a fresh, innovative approach to the study of introductory statistics. His work was out of the mainstream yet it provided insights that have been adopted in a variety of more traditional settings. We have used this text in our honors level Statistics for Science course at St. Olaf College. Danny's work with technology, specifically R and RStudio, have dramatically changed and supported the teaching of statistics and research. His cutting edge contributions in this area cannot be overstated. I anticipate his work as an educator and author will make a lasting contribution to the teaching of college-level statistics.

Danny's sustained support of USCOTS nationally has contributed to its success. He has also supported statistics education on a more local level through a regional "Stat Chat". Together with Joan Garfield and me, he has organized and convened a gathering of statistics educators from across the region monthly for over a decade. These meetings were well attended drawing participation from across Minnesota and Wisconsin and sometimes Iowa. Educators exchanged ideas from their own personal experience and learned about new ideas from invited speakers. Danny has been committed to this effort, arranging to host all of these meetings at Macalester College. His dedication to this effort has continued to inspire me throughout the years.

To me, Danny's tireless energy and enthusiasm for the field have been inspiring. Danny is an outstanding candidate for the USCOTS Lifetime Achievement Award.

Sincerely,
Julie Legler
Professor, Statistics Mathematics, Statistics, and Computer Science
St. Olaf College

I was Chair of the Department of Mathematics and Computer Science at Macalester College when Danny was hired. The fact that it is now the Department of Mathematics, Statistics, and Computer Science is almost entirely his doing. He was the driving force at Macalester behind expanding our statistics offerings, developing our major in Applied Mathematics and Statistics, developing a college-wide quantitative reasoning requirement that is built around statistical reasoning, and totally revamping our introductory courses in calculus and statistics to tie the two together around an emphasis on modeling.

Others can speak to his contributions to statistics education. That's not my area of expertise, although every statistician I meet seems to be well acquainted with his contributions. I have been most impressed with what he did with our introductory calculus and statistics. The first Calculus and first Statistics courses are now offered as an articulated year-long sequence, using R throughout as the technology platform, and viewing both as introductions to modeling, first modeling dynamical systems, then statistical modeling. It is a sequence that serves our biology and economics majors particularly well and has been very effective at both demonstrating the continuity between these two courses and attracting many students into further mathematics and statistics. It is Danny's vision that has enabled Macalester to be so far out in front in terms of offering the kind of curriculum that most students need if they are to face the challenges of the 21st century.

--- **David Bressoud (Director, Conference Board of the Mathematical Sciences)**



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January 24, 2017

Dear Members of the USCOTS Lifetime Achievement Award Selection Committee:

I am writing in enthusiastic support for Danny Kaplan's nomination for the USCOTS Lifetime Achievement Award. Danny's energy, conviction, fearlessness, and unconventional thinking make him a leading voice in statistics education. More than tiny incremental improvements, Danny is often thinking about entire paradigm shifts – from being an early advocate of R throughout the curriculum, to teaching multivariate analyses in a first course, to incorporating data science ideas. Hot on a new idea, Danny is a convincing presenter and passionate advocate, while also tirelessly producing excellent materials to help others join him on his quest – from R packages to textbooks to online materials.

The field of statistics education owes Danny a big debt for helping our discipline take those first frightening steps into a world where computing and new sources of data can be harnessed to make undergraduate statistics more exciting and impactful. The local Twin Cities statistics education community also owes Danny a big debt for leading an energizing series of Stat Chats over many years. Personally, I have benefitted from many Danny Kaplan materials in my own undergraduate teaching, and even more, I have been challenged over and over again, in good ways, to rethink my teaching after interacting with Danny.

I believe Danny Kaplan is highly worthy of the USCOTS Lifetime Achievement Award, and I hope you will give him your strongest consideration.

Sincerely,

Dr. Paul Roback
Professor of Statistics
Department of Mathematics, Statistics, and Computer Science
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January 15, 2017

Dear Colleagues:

I write in strong support of Danny Kaplan's nomination for the 2017 United States Conference on Teaching Statistics Lifetime Achievement Award. I joined the Macalester faculty in 1991, served on the search committee that hired Danny, and have worked with him for twenty years. He is a terrific colleague and dear friend. He has done so much at Macalester, nationally in curriculum reform, and in our Twin Cities community organizing a monthly Stat Chat.

Danny has truly transformed the Macalester curriculum at the introductory level in all three areas represented in our joint Department of Mathematics, Statistics, and Computer Science. He has completely overhauled each introductory course—the courses we now call *Applied Multivariable Calculus I*, *Introduction to Statistical Modeling*, and *Core Concepts in Computer Science*, respectively. He has also introduced a course called *Data and Computing Fundamentals*, taken one of our other core statistics courses and re-branded and re-visioned it as *Statistical Computing and Machine Learning*, and helped shepherd our Data Science Minor into existence. I chaired the department for 6.5 years and it is unarguable to me that Danny is the single most visionary member of our outstanding department. Over my chairship, there was pressure to split up as a department; Danny's explanations of *why* we should stay together was always remarkably compelling and cogent.

Danny is a national leader in undergraduate statistics curriculum. There is his book writing, notably *Statistical Modeling: A Fresh Approach* which is changing how introductory statistics is taught in a first college course. He has also recently been awarded (as a co-PI) almost \$2 million by the NSF for StatPREP, a program that "will stimulate community transformation by increasing faculty capacity to enact curricular change by incorporating statistical analysis software and computing technology, complex data, open-ended investigations, and statistical thinking into their existing courses."

I know I am supposed to limit my comments to one page. I will do so, though it would be very easy to write page after page about his contributions. As his past chair, and longtime colleague I view Danny as a visionary in interdisciplinary undergraduate education. As a past vice president of the Mathematical Association of America, I am heartened to see him working with the MAA to share his vision with many other faculty members across the country through the StatPREP award (of which MAA is the fiscal agent).

Sincerely,

A handwritten signature in black ink that reads "Karen Saxe". The signature is written in a cursive style with a large, stylized "S" at the end.

Karen Saxe

Director, Washington Office
American Mathematical Society
1527 Eighteenth Street, NW
Washington, DC 20036
Phone: [401-455-4115](tel:401-455-4115)

Dear Lifetime Achievement Award Committee:

It is with great pleasure that I recommend Danny Kaplan for the USCOTS Lifetime Achievement Award. I have known and worked with Danny for, well, a very long time, and admire and respect him greatly. Danny has changed the way I think about teaching statistics. Here are two examples:

1) Through his book on modeling, and through discussions about his book on modeling, Danny taught me to engage my students (particularly science majors) in the context of real-life scientific investigations right away, and not after they've mastered minor technical nuances of particular statistical methods. For example, I am currently teaching statistics to life science students. Rather than ensuring that they understand the many nuances of the central limit theorem, I am beginning with real-life examples and making sure they understand how the CLT helps them with those particular problems, and making sure they understand how and why failure to satisfy the conditions of the CLT can affect conclusions they might reach in the field. This sense of fidelity to the scientific issues is a sense I owe directly to Danny.

2) I have long been inspired by Danny's ability to craft activities and explanations in concrete, understandable terms. For example, for a long while I had introducing randomization-based tests by asking students to use a deck of playing cards to model their simulation. While doing a workshop with Danny, I saw him cover the same lesson but instead using strips of paper on which, on the left he had written the group-label, and the right the observed value. Danny then asked the attendees to rip the strips in two, severing the connection between group membership and observed value. This hands-on simulation was much more visceral than shuffling cards and, more importantly, was a more direct metaphor with the randomization paradigm. I saw the attendees "get it" in a way I had never seen when I had done this with the cards, and forever after I have used strips of paper. This is a small example but, I think, is illustrative of the many other ways that Danny has conceptualized abstract issues to improve learning.

I understand that two examples hardly indicate a lifetime of achievement, even if they have had a long an enduring affect on my own teaching. But it is also worth mentioning that I think Danny has done much to help bring the study of causality to introductory statistics. I have had many conversations with Judea Pearl on the topic, but his approach is far too rarified for introductory students. As always, Danny has been able to bring this down to a nice visceral chunk and allowed me to better teach the importance of causal reasoning to my students.

Finally, Danny is a part of the Mosaic project and, while I don't know the day-to-day role he played in developing the *mosaic* R package, this package has been of great use in my own teaching and also in teaching high school students to "code" in R. I would go so far as to say that without mosaic it would not be possible to teach large numbers of high school students to analyze data with R. Thus Danny's influence reaches beyond college students in Minnesota to thousands of high school students in Los Angeles.

Sincerely,



Robert Gould, Ph.D.
Vice-chair, Undergraduate Studies
UCLA Department of Statistics
Fellow, American Statistical Association



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<http://rstudio.com>

February 6, 2017

Dear Selection Committee Members,

We write in enthusiastic support of Danny Kaplan's nomination for the USCOTS Lifetime Achievement Award. Danny has been extremely influential at the intersection of statistics, education, and technology, and richly deserves this award.

Danny has shown great insight in the ways in which technology and advancements in computational capabilities can affect how basic statistics can and should be taught. His involvement in the MOSAIC project has led to the creation of powerful and expressive tools built on a small, consistent foundation ("less volume, more creativity"). This makes it possible to teach fundamental statistics concepts without getting bogged down in mathematical machinery.

He has catalyzed the adoption of this material in introductory statistics courses around the world by coupling software, open education materials, and training for educators. Danny has spent considerable time and energy empowering other teachers. This has included chairing sections at the JSM, running summer workshops, developing software, creating re-usable materials, and writing books that help others improve their teaching.

Danny has had a strong positive influence on the development of the RStudio IDE, which is now used broadly within statistics education. He and his students were the very first users of RStudio and his feedback and suggestions led to many improvements. Danny's keen insight at the frontiers of education and technology have helped us make RStudio a better environment for teaching and learning, and his insights led directly to the development of R Markdown (a system for reproducible research) and Shiny (a system for interactive web-based R applications).

Danny Kaplan is an excellent researcher, an insightful technologist, and a kind and thoughtful educator. We could not recommend him more strongly.

Two handwritten signatures in blue ink. The first signature is 'Hadley Wickham' and the second is 'JJ Allaire'.

Hadley Wickham and JJ Allaire



The CAUSE/USCOTS Lifetime Achievement Award in statistics education is a biennial award presented at the U.S. Conference On Teaching Statistics to an individual who, over an extended period of time, has made lasting contributions with broad impact to the field of statistics education.

The award committee is made up of the Director of CAUSE, the Chair of the CAUSE Board of Directors, the Chair of the USCOTS Program Committee, and selected past winners. The 2017 committee (Chris Franklin, Dennis Pearl, Roxy Peck, Allan Rossman, Mike Shaughnessy, Jessica Utts, and Ann Watkins) presented the award to Danny Kaplan on Friday May 19th, 2017 in State College, Pennsylvania.

The final ten pages of this tribute book formed the nomination packet submitted by Victor Addona, Nick Horton, and Joan Garfield for the award committee to review.

