BiosRhythms

TABLE OF CONTENTS

2018 | ISSUE 30

UNC | GILLINGS SCHOOL OF GLOBAL PUBLIC HEALTH
Biostatistics

Stay Informed. Stay Connected.

📰 sph.unc.edu/bios/BiosBeat

🐦 twitter.com/UNCBiosStat

ALUMNI

The Gillings School's Alumni Association is a non-dues — based alumni organization serving more than 19,000 public health alumni around the world. We do this by helping the School develop alumni engagement activities — hosting events in the Chapel Hill area and all over the country, finding ways for alumni to connect with students and with each other, and helping to develop programming that fosters alumni connections with the School.

Update your contact information to ensure you receive event invitations and Gillings communications.

✈ sph.unc.edu/alumni-update

CONTACT

We welcome comments and feedback.

✉ bioscommunications@unc.edu

As we mark the passage of seven decades of excellence in research and education in the Department of Biostatistics the University continues to reflect on its 225th anniversary. We have endeavored in this issue to highlight noteworthy accomplishments of our faculty and students propelled by one of the top public institutions in the nation.

A primary mission of the Department of Biostatistics at the Gillings School of Global Public Health is the training and development of future leaders in biostatistics and data science who will be integral to improving human health around the globe. To this end, we launched Biostatistics 611: Introduction to Data Science and revamped Biostatistics 735: Statistical Computing, which offers students experience in machine learning and data management. In line with the Gilling School's new Master of Public Health program guidelines, the implementation of a new concentration in public health data science is also underway.

2018 was a busy year in McGavran-Greenberg. We launched dual degree and virtual classroom programs, both our faculty and students received a number of awards and honors, and we marked the retirement of two legendary researchers and educators. Dr. Suchindran and Dr. Sen have left indelible marks on our field. On top of that, this BiosRhythms contains details of fascinating research from faculty and students and explores the significance of 50 years of service from Dr. Koch. I hope you will share our excitement about our new programs, groundbreaking research, and innumerable faculty contributions.

I am frequently amazed by the many students, staff, faculty and alumni who do so much to make sure our department continues to succeed. I am grateful to have Dr. LaVange as the new Director of the Collaborative Studies Coordinating Center and Associate Chair and Dr. Cai as the Vice Chair to assist me in serving this department that has seen so much change and development. We are thrilled to announce our contract to coordinate the Hispanic Community Health Study/Study of Latinos was renewed for seven more years, and Dr. Sotres-Alvarez and Dr. Ivanova were promoted to associate professor and full professor, respectively.

Data science, the study of collecting, managing, analyzing, interpreting, and reporting data to solve problems is one of the most important endeavors of our age, and biostatistics is central to all of it. Thus the skills of biostatisticians are needed more than ever. It is truly an immense privilege to serve as chair of the Department of Biostatistics at UNC–Chapel Hill. This is an incredible department to be a part of, and I look forward to seeing what we will accomplish in the next 70 years.

Warmest Regards,

Michael R. Kosorok

Michael R. Kosorok

Ph.D. DISTINGUISHED PROFESSOR
CHAIR OF BIOSTATISTICS

From Non-Parametrics to Machine Learning and Precision Health:

UNC BIOSTATISTICS 70th ANNIVERSARY CELEBRATION OF RESEARCH, SERVICE, AND TRAINING

October 28–29, 2019

Additional info: sph.unc.edu/bios/biosbeat

Learning Evolves with Dual Degree Master's Program

Our new dual degree allows students to pursue their Master's degree alongside their Bachelor's is the culmination of years of hard work and development. First proposed in 2015, the program allows Bachelor of Science students to take Master's degree courses alongside their undergraduate courses.

Following trends in the last decade, the Bachelor of Science in Public Health program created the dual degree option to recruit talented undergraduates into the Master's program, while providing a streamlined curriculum and efficient path to two degrees. This dual BSPH/MS program identifies a coherent course of study for students to complete some of the MS degree requirements while pursuing a BSPH biostatistics degree. Students already admitted to the BSPH degree apply for admission to the dual degree in their junior year.

"The dual degree BSPH/MS program in biostatistics is an outstanding training program that provides a very strong academic foundation in mathematics, statistical theory and methods, and public health sciences by exposing students to a unique combination of technical knowledge in theory and application of statistics," Chirayath Suchindran, former Director of Graduate Admissions, said. "With this training, students will be able to participate in advanced research in medicine and public health or to pursue advanced studies in biostatistics."

Students complete each degree in its entirety, but because students can take many of the MS courses in their fourth year at Gillings, the program provides additional flexibility in course selection and may enable some students to finish both degree requirement in less than the usual time.

Officially launched in fall 2018, the program is off to a strong start. Griffin Bell, BSPH 2017 will complete the MS in Biostatistics in May 2019 under the dual program. "I believe the creation of this program is a gift to any student seeking a MS degree in biostatistics," Bell said. "The dual degree program has given me the flexibility to tailor my education to my specific interests while efficiently completing the requirements for an MS in biostatistics."

> " Our statistical practice and data science build on our proud heritage of developing innovative methods to meet the research needs of today and tomorrow.
>
> **DR. MICHAEL KOSOROK**
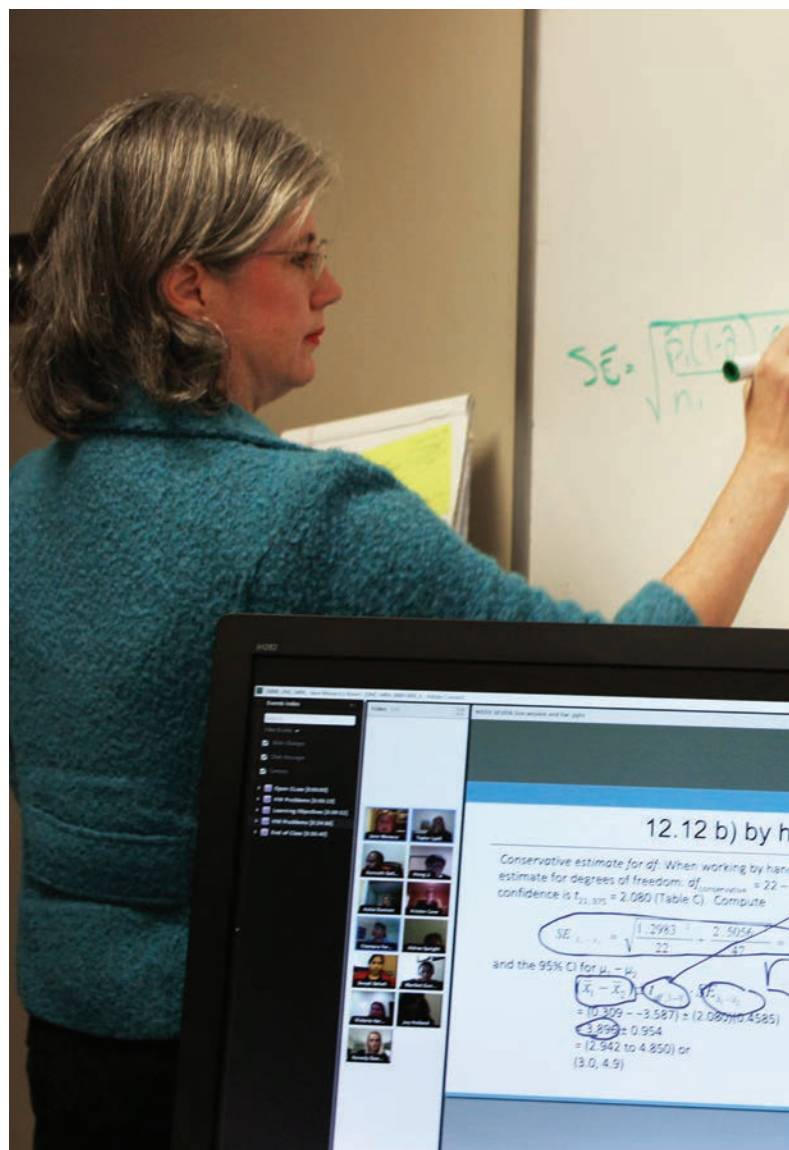
Virtual Classroom MPH@UNC Data Analysis Course

A new program debuted this past fall with a biostatistics course for MPH@UNC students. Data Analysis for Public Health (SPHG 711) offers online students an opportunity to learn about biostatistical methods, programming and data. This program appeals to working adults who are seeking a Master's in Public Health, regardless of their location.

This class is directed toward students outside of quantitative fields who may struggle with analyzing data, using statistical software, interpreting results from studies and using data to inform decisions. What makes this class unique is that it takes a different approach which combines innovative educational technology with faculty experience and expertise.

"The setup for this class allows us to get to know one another more than a typical online class would," said Elizabeth Ajazi, a Biostatistics DrPH student who is teaching one of the sections of Data Analysis. "There is a lot more interaction and feedback when everyone is brought together through the virtual classroom."
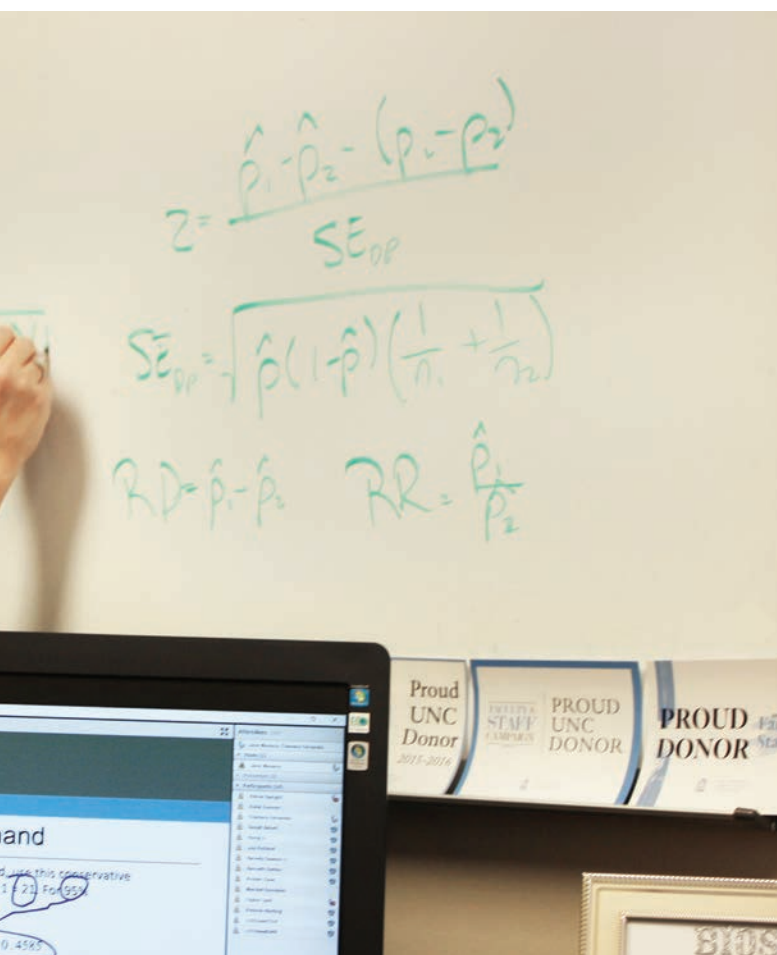
Although the Department of Biostatistics has been offering a course in biostatistics to distance students for more than a decade, this course was designed specifically for MPH students through Gillings partnership with 2U, the educational technology company that provides infrastructure for the MPH@UNC online program.

"The platform and learning management systems provided through MPH@UNC are state-of-the-art," said Jane Monaco, designer of the course and lead faculty. "The quality of the online lectures produced with our online partner are exceptional! And with only 15 students per section, the students get personal attention which is so important."

Read more about MPH@UNC information at https://onlinemph.unc.edu.

Professor Jane Monaco teaching an online course from her office.

Interested in becoming an adjunct instructor?

Instructors for 15-person sections lead weekly live sessions and grade tests and homework. Master's degree (doctoral degree is preferred) in biostatistics or similar required. For more information contact Nancy Foskey, Academic Coordinator for MPH@UNC, at nancy_foskey@unc.edu.

The Hottest Degrees

In virtually all major sectors of the global economy, employers large and small — from Google and the Gates Foundation to local startups — are clamoring for credentialed data scientists.

"I don't think there are many employers out there who are not in need of this skill set right now," says Lisa LaVange, PhD, professor and associate chair of biostatistics at UNC's Gillings School of Global Public Health. LaVange oversees the new Public Health Data Science concentration, scheduled to become part of the Gillings School's MPH program in 2019.

Until last year, LaVange directed the Office of Biostatistics in the U.S. Food and Drug Administration's Center for Drug Evaluation and Research, and in that role, had to face the data science skills shortage herself.

"More than 200 statistics reviewers worked for me at FDA, most of them with PhDs, but it wasn't enough," she says. "We needed more data scientists, because there are more data now, and so many questions we need to ask of the data."

Health-focused organizations always have needed experts in statistics and computation, but in the age of the internet, as data gathering has become ubiquitous, this need intensified. Data sets from traditional sources, such as clinical trials and population studies, are becoming larger and more complex. Many new, nontraditional sources of data exist, including electronic health records, patient registries, insurance claims databases, clinical genomic databases, even internet browsing histories and search-term trends.

"We're now in a world where everyone's data are out there, one way or another," LaVange says.

Health professionals are attempting to learn more from these data — for example, by running virtual clinical trials on integrated sets of insurance claims databases or by gathering and analyzing disease-outbreak data and broadcasting the results in real-time to clinicians or epidemiologists with mobile apps.

Moreover, the new emphasis on very large databases, distributed computing power and artificial intelligence (AI) -related analytical techniques has drawn a new type of organization — the "big tech" company — into the public health space. Google, Microsoft and Amazon all have major public health-related projects in the works.

A key problem for those wanting to make use of the new Niagara of health data is that it is often less filtered, less "clean," than traditional health data.

"You want to make inferences from some of these enormous data sets as if they were carefully collected and curated data from well-designed studies, but usually they're not," LaVange says.

Drawing useful conclusions from such data may be possible only with cutting-edge analytical approaches — thus, the enormous demand for data scientists trained in the latest methods. LaVange and her Gillings School colleagues aim to give that training to students who join the Public Health Data Science MPH program.

Read the full article about public health data science and more at https://unc.live/2NVz9lP.

> **We needed more data scientists, because there are more data now, and so many questions we need to ask of the data.**
>
> **LISA LaVANGE**

News from the CSCC

Much has changed at the Collaborative Studies Coordinating Center (CSCC) in the first year at their new location, Carolina Square. While the Center maintains some familiarity with the neighbors, Epidemiology and the Carolina Population Center, the 21st Century building has provided a more functional space and opportunity for the CSCC to grow.

The return of Lisa LaVange, BA 1974, PhD 1983, from her stint at the FDA as Director of the Office of Biostatistics in the Center for Drug Evaluation and Research was welcomed. The 2018 American Statistical Association President, Lisa LaVange now serves as a biostatistics professor, associate chair and Director of the CSCC.

"I'm thrilled to be back at Carolina, the Department of Biostatistics, and especially the CSCC." LaVange says. "At the FDA, I was frequently reminded of the many advances in public health that were made possible by great coordinating centers, such as ours. The CSCC has an excellent and unsurpassed reputation of study coordination and innovation, and I am proud to be back as its Director."

Studies operating out of the center have also experienced the opportunity to grow. The longest running CSCC study, Atherosclerosis Risk in Communities (ARIC), is in its 33rd year and continues to flourish. SubPopulations and InteRmediate Outcome Measures In COPD Study (SPIROMICS) began its fifth clinic visit, while the Hispanic Community Health Study/Study of Latinos (HCHS/SOL) was awarded a multi-year contract for a third visit. Newer studies include the Adolescent Medicine Trials Network for HIV/AIDS Interventions (ATN), the Medical Optimization of Management of Type 2 Diabetes Complicating Pregnancy (MOMPOD), and the Precision Interventions for Severe and/or Exacerbation-Prone Asthma Network (PrecISE). ATN has multiple studies currently enrolling adolescents either at-risk or living with HIV/AIDS. MOMPOD began enrolling pregnant women this past year, and PrecISE plans to begin enrolling patients with severe asthma in 2019.

The PrecISE UNC-CH biostatistics leadership team now includes Lisa LaVange, Michael Kosorok, and Anastasia Ivanova, who have been instrumental in developing the adaptive precision medicine trial design for this master protocol.

The CSCC has quickly made great use of the contemporary social spaces and conference facilities at Carolina Square, holding multiple events for studies including national steering committee meetings, receptions, and investigator and clinical training events. In addition to the fresh, open workspaces, the other near-by amenities such as lodging and restaurants, a dedicated art space, and the overall modern design of the building have instilled new vigor in both the organization and staff.

HCHS/SOL $23+ Million Contract

The CSCC was awarded a seven-year contract from the National Institutes of Health to continue its role as the Coordinating Center of the HCHS/SOL. Professor Jianwen Cai is the Principal Investigator, Epidemiology Professor Gerardo Heiss is Co-Principal Investigator, Biostatistics faculty members Daniela Sotres-Alvarez and Donglin Zeng are Co-Investigators.

The new funding will support a third examination of the HCHS/SOL cohort with an expanded set of research questions. The investigators aim to bring back at least 80 percent of the cohort for a follow-up examination that will assess changes in lifestyle factors, to identify the development of risk factors and health events, and to assess the influence of protective and adverse factors in this population.

Starting in 2008 this study measured the health status, risk factors and lifestyle habits of over 16,000 adults ages 18–74 living in Chicago, San Diego, Miami and the Bronx. Participants self-identified as being of Central American, Cuban, Dominican, Mexican, Puerto Rican, South American or "other" Hispanic/Latino background.

NIDDK Grant

Daniela Sotres-Alvarez, associate biostatistics professor housed at the Collaborative Studies Coordinating Center received a grant of $704,562 from the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK). Sotres-Alvarez will study the preconceptual health of Latinas and its association with child adiposity. Study results will be used to design better intervention studies to ensure that Hispanic/Latina women can be as healthy as possible before conceiving and that their children will be healthy and well.

Celebrating Dr. Koch's Decades of Teaching and Mentoring

In 50 years, many things can change in a person's life. In October, Professor Koch and his wife Carolyn J. Koch gathered their children, grandchildren as well as some of his university colleagues and former students in the Hill Alumni Center to reminisce his life and half-century's worth of work.

Dr. Koch launched the celebration with breakfast; many of his students know he likes a hearty breakfast. Gary kicked off the day with a warm welcome followed by friend and Chancellor Carol Folt who revealed a story of how Dr. Koch had decided to come to UNC all those years ago. Spoiler: it had to do with the weather.

In the words of biostatistics chair Michael Kosorok, Koch's impacts in the field are challenging to highlight because his accomplishments are so many and so profound. Just one of Koch's accomplishments was the creation of Quintiles, now IQVIA, a company he took from operating in a trailer to operating worldwide with partner Dennis Gillings, a former professor in the department.

The most important accomplishment highlighted through all comments at the function has been Koch's dedication to mentoring students and colleagues. Having taught over 1,000 students throughout the years at Gillings School, Koch joked that he was like an academic grandfather to chair Michael Kosorok.

Gary Koch

> "One of the most important things about this university are the people that embody the contributions to discoveries and creative enterprises that have changed the world, a deep, deep love of students, and a connection to public service. I don't know that we could have a better example of all of that than Gary Koch.
>
> **11ᵀᴴ CHANCELLOR CAROL FOLT**
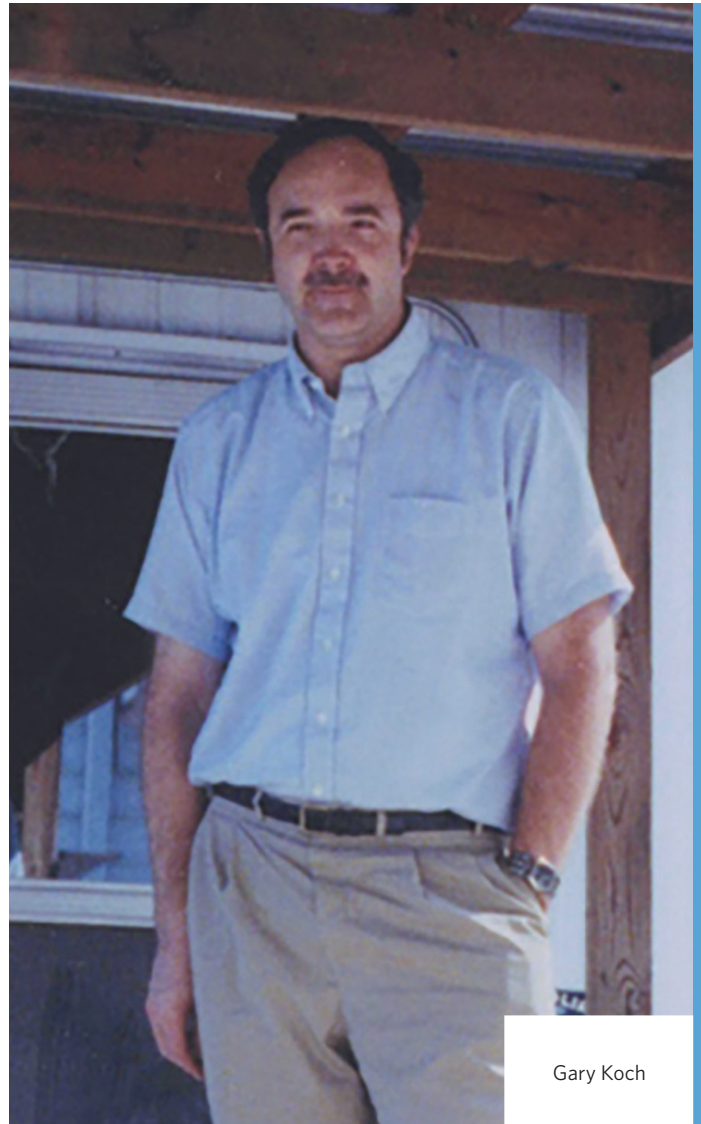
Inspired by his deep dedication to his students, Koch and his wife created The Gary G. and Carolyn J. Koch Merit Scholarship in Public Health and The Gary G. and Carolyn J. Student Travel Fund in the Gillings School of Global Public Health. As a result, the Koch family have ensured their legacy and will have a lasting impact on the field of biostatistics and the lives of many.

BiosRhythms is celebrating the Koch family's contributions to the school along with his tireless work and great

"I met Gary in 1985. I'd been in the program about a year and ever since, he's played many roles in my life. We all came together to celebrate his 50 years as a professor, but the roles that he's played in my life only started with him as a teacher. Gary has been a mentor and a dance partner for life. I can't thank him enough for everything that he's done for me, my family, my career, and for helping me to remember who I am, always."

Paula Brown Stafford

FORMER STUDENT OF DR. KOCH HIGHLIGHTED THE MANY WAYS HE WAS INFLUENTIAL IN HER LIFE AT THE OCTOBER EVENT.

accomplishments by encouraging donations to either fund the Koch family has created.

Donate

The Koch Scholarship Fund:
https://give.unc.edu/donate?f=446407&p=soph

The Koch Travel Fund:
https://give.unc.edu/donate?f=444780&p=soph

Mentor for Life

The impact Professor Koch made over the past decade on me and my career has been tremendous and typifies what he has done for so many.

Dr. Koch's vision is never confined to statistics. Gary inspired me to explore Gillings School classes outside of statistics to broaden my knowledge, and still, those insights are very useful nowadays.

Being my DrPH advisor, Gary always came to our meeting well prepared. He remembered every detail of my project, everything we had discussed, and knew exactly where we left off last meeting. Before him, no question was a stupid question, and he answered them with great patience. We all know him as a kind person and definitely not pushy. However, he always knew the perfect time to give me a little push. Also, he would spend time with me discussing my career plans and providing advice.

Without Koch's encouragements and guidance, I would never imagine myself as an FDA statistician, where I had aspired to be. Gary is not only a teacher, an advisor, but also a mentor and role model. He taught me how to be a statistician, and more importantly, he showed me how to proceed when facing difficulties in study, at work and in my life.

Hengrui Sun

MPH 2009, DRPH 2016

Professor Suchindran Connecting Students Research and the World

Professor Suchindran, MSPH 1968, PhD 1972 (hereafter Suchi) was born, raised and educated in Kerala, India until his move to Chapel Hill. Earning his first two degrees, a BSc in Mathematics and MSc in Statistics at the University of Kerala. Once in Chapel Hill, Suchi had various fellowships and studied with Mindel Sheps, famous for her mathematical modeling of human fecundity and fertility. Indeed, he became her junior protégée, inheriting her books, notes and papers, and becoming himself one of the prominent statistical demographers of the last half century, during which he taught and conducted research in our biostatistics department.

Suchi's service to the department has been legion, capped by his being Director of Admissions for two decades, working hard to find funding for students with unprecedented success for admitted doctoral students. He has probably come to know each cohort of admitted and entering students more by name than any other Gillings School professor. Suchi taught several demography courses, an online course on Introductory Statistics, along with lessons on multiple decrement life table made available by CPC. He was Co-Director and then Director of an NIH funded training program for 18 years.

A member of many Gillings School committees, Suchi worked collaboratively on research with Gillings School faculty members, Medicine and across campus, as well as contract organizations

Professor Suchindran
(far right)

such as the Research Triangle Institute. The contributions of the CPC statistical core, which Suchi was instrumental in establishing, have repeatedly been recognized by NIH's NICHD. Major projects he contributed to include the National Longitudinal Study of Adolescent Health, Measure and Evaluation (USAID), studies of obesity, HIV, family violence, cash transfers in South Africa, PTSD, remarriage and fertility, adolescent pregnancy, evaluation of family planning programs, infant mortality and fertility.

Beyond Chapel Hill, Suchi was a founding member of and President of the Triangle Area Population Society. He served on Scientific Review Committees for NIH, evaluating research, program and center grant proposals, and also reviewed proposals for NSF, the National Institute of Aging and been an external examiner for doctoral dissertations for several Indian universities. He has made over 50 presentations at professional meetings, in the US and around the world, including invited talks at Peking University, Mahidol University (Thailand), and in Taiwan, Athens, and Kerala. He was an elected fellow of the American Statistical Association in 1995.

Suchi co-authored with Dr. Namboodiri a major graduate level textbook on life tables, Life Table Techniques and Their Applications, (Academic Press, 1987), used in teaching bios students advanced skills in life tables. He authored a chapter on model life tables in the major graduate level textbook in demography, which is used in the current biostatistics course, Demographic Techniques, entitled, The Methods and Materials of Demography. Suchi made important contributions also in the areas of biological estimation parameters of human fertility from incomplete data, analysis of birth interval data, frailty survival models, complex sample survey designs, and analysis of contraceptive use dynamics.

He reviewed dozens of papers for journals, was deputy editor of Demography, associate editor of Mathematical Population Studies and Survey Methodology, and a member of the editorial boards of several other journals. With over 220 journal articles and book chapters, in a diverse range of journals ranging from statistical journals to population journals and journals in public health and medicine, Suchi has made significant contributions to science well beyond the students he met in-person.

Commemorating P.K. Sen's Impactful Career

Pranab Kumar Sen retired from Gillings School after 53 years in both biostatistics and the College of Art and Sciences' statistics department. One of the most prominent statisticians of the last half century, Sen arrived in Chapel Hill in 1965 from Calcutta University. Sen remembers the statistics academic environment in Chapel Hill as a vibrant with a galaxy of statistics giants fostering a unique, indispensable role in public health and the biomedical sciences.

Within the biostatistics department, Sen was well-known for teaching and mentoring many students. He advised 85 doctoral dissertations. He taught numerous classes in large sample theory, nonparametrics and wrote over 660 research papers in addition to several books and monographs.

"The addition of Dr. P.K. Sen to the Biostatistics faculty added competence in Mathematical Statistics and Nonparametric Statistics," said Jim Grizzle, Professor Emeritus and former department chair. "His work on sequential monitoring of Clinical Trials was the starting point of much of the subsequent development of this important statistical methodology."

Throughout his career, Sen received many honors and awards. In 1969, he was named a Fellow of the American Statistical Association (ASA), the Institute of Mathematical Statistics, and an elected member of the International Statistical Institute (1968). UNC named him the Cary C. Boshamer Distinguished


Professer Sen

Subhajit Dutta, PhD, assistant professor in the Department of Mathematics and Statistics at the Indian Institute of Technology (IIT) in Kanpur, India is the **2019 Pranab K. Sen Distinguished Visiting Professor in Biostatistics** at UNC Gillings School of Global Public Health. The professorship seeks aspiring scholars in statistical science from countries broadly defined to be "developing" with respect to their statistics and biostatistics workforce.

Professorship in Biostatistics (1982), the recipient of the McGavran Teaching Excellence Award (1996), and was the third recipient of the prestigious Senior Noether Award (1996) offered by the Nonparametrics Section of the ASA, as well as the ASA's prestigious Wilks Memorial Award (2010).

Professor Sen was also active in giving awards through the Distinguished Professorship offered in his name. "The impact of the international faculty on UNC biostatistics and statistics was overwhelming and that really inspired us to find a way to perpetuate this legacy of globalism, diversity, and inclusion," said Sen. He also established the Kalyani Sen International Student Scholarship in Biostatistics in memory of his mother. His reach and impact in academia has been international.

Professor Aluisio Pinheiro at the University of Campinas, recently shared from Brazil "…his attitude towards the students and fellow researchers is unsurpassed. He shows true concern for each person, and tries to help people in any possible way. His exceptional career and character are beacons to all of us, especially as they are both beyond our grasp."

At 81, Sen looks forward to spending time with his family, exploring statistical thinking in new directions, and pursuing lifelong interests of literature and poetry. The Sen children Devi and Ru are also Carolina alumnae.
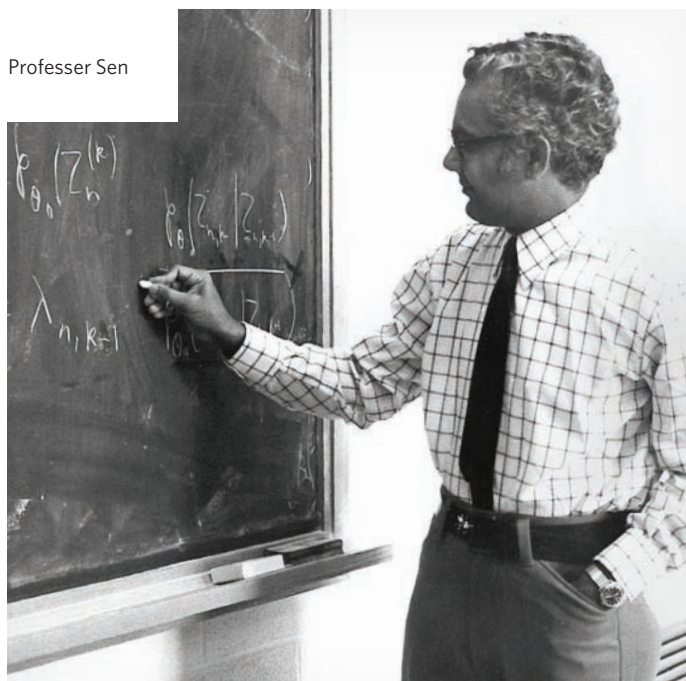
Leaders in Research

Healthier Living Through Mobile Devices

Students and faculty members at the UNC Gillings School of Global Public Health have proposed a new statistical method for developing tailored treatment data using data from mobile devices.

Study co-authors include Daniel Luckett, PhD, postdoctoral research associate in biostatistics; Anna Kahkoska, doctoral student in nutrition; Elizabeth Mayer-Davis, PhD, Cary C. Boshamer Distinguished Professor of nutrition and medicine; and Michael Kosorok, PhD, W.R. Kenan Jr. Distinguished Professor and chair of biostatistics.

Their paper, "Estimating Dynamic Treatment Regimes in Mobile Health Using V-Learning," was published online Dec. 12, 2018, in the Journal of the American Statistical Association.

The researchers hope to continue their work by putting their algorithm into a mobile app that eventually can help people with Type 1 diabetes live healthier lives.

By using mobile health, or mHealth, technologies, patient status can be monitored in real time, and data produced by the mobile technologies have great potential to inform personalized health care decisions.

Potentially, mHealth may improve the lives of people with Type 1 diabetes, who must make decisions throughout the day about when to eat, exercise or take insulin, actions which interact in complex ways to affect a patient's blood glucose levels. Recent technological advances have produced devices such as continuous glucose monitors, which track a patient's blood glucose in real time, and accelerometers, which monitor a patient's physical activity.

The Gillings School team set out to develop a statistical method that could be used in conjunction with data from continuous glucose monitors and accelerometers to help people with Type 1 diabetes better manage their disease. Using data from a previous study, they were able to show that their new method could learn strategies to help patients maintain stable glucose levels over time.

"We're very excited about Daniel's [Luckett's] work," said Mayer-Davis. "Development and application of methods to improve our understanding of variability across individuals and how to use this information to improve individual patient outcomes is a critical need in many chronic conditions.

Mayer-Davis said managing Type 1 diabetes requires maintaining healthy blood glucose concentrations all day, every day. That need compelled the type of novel approach Luckett devised.

"This is a fabulous example of how precision medicine approaches can be applied to subpopulations to improve health," Mayer-Davis said. "In other words, this is an example of how a vision of precision public health can be realized."

Working to Improve Extremely Premature Infants Lives

Evan Kwiatkowski, current Gillings School doctoral student applied his biostatistics skillset to research regarding health assessments of extremely premature infants. His co-first-authored paper, "Assessing Positive Child Health among Individuals Born Extremely Preterm" written with post-doctoral researcher Jacqueline Bangma and working with the guidance of Gillings School faculty Matthew Psioda and Rebecca Fry, the paper was published in The Journal of Pediatrics in the November 2018 issue. The published project objective involves the development of a Positive Child Health Index based on adverse outcomes and evaluates the association of that index with quality of life scores in a group of preterm children. Project findings will affect the way doctors are able to understand and predict the effects of extremely preterm birth.

- https://jpeds.com/content/aims

Improving Methods for Precision Dosage

A Gillings School team paper presents an improved method for risk prediction has a broad application in personalized medicine. Specifically, it can be used to determine optimal dosing in chronic disease management. Gillings School alumni Yunro Chung, PhD 2016, assistant professor at Arizona State University College of Health Solutions along with UNC co-authors Professors Ivanova, Hudgens and Fine are pleased the paper, "Partial likelihood estimation of isotonic proportional hazards models," was featured in the March 2018 issue of Biometrika.

- https://academic.oup.com/biomet/article/105/1/133/4695477

Using Generalized Evidence to Treat HIV

Gillings School Alumni Ashley Buchanan and Professor Michael Hudgens authored research published in by the Royal Statistical Society entitled "Generalizing Evidence from

Randomized Trials Using Inverse Probability of Sampling Weights." Featured in the fourth issue of the Journal of the Royal Statistical Society, the findings have the potential to influence the future treatment of people with HIV.

- *https://rss.onlinelibrary.wiley.com/doi/full/10.1111/rssa.12357*

Professor Zeng's Electronic Health Records Analysis Study Funded by NIH

An R01 from the National Institute of General Medical Sciences will fund "Efficient Statistical Learning Methods for Personalized Medicine Using Large Scale Biomedical Data." The proposal aims to develop novel and scalable statistical learning methods to analyze electronic health records (EHRs) and use two real-world, high-quality EHR databases for personalized medicine research. The methods will handle the non-experimental nature of data collection processes, along with heterogeneous data types, dynamic treatment sequences, and the trade-off between benefit and risk outcomes.

UNC Lineberger Developmental Research Grant

In a peer review process that drew on the expertise of more than 40 faculty members from across UNC, Lineberger selected Yuchao Jiang as a recipient of a Tier 1 Pilot Project Award. Jiang a biostatistics assistant professor with joint appointment in Genetics is also a member of UNC Lineberger. His research work, "Cross-Technology inference of Tumor Heterogeneity" was one of the 11 one-year awards of up to $50,000. Funding for the research grant is made possible by the University Cancer Research Fund, the National Cancer Institute core grant, and other sources.

NC TraCS Grants

Two Gillings School Biostatistics investigators received funding from the North Carolina Translational and Clinical Sciences Institute (NC TraCS), an organization within the UNC School of Medicine that aims to accelerate the speed with which research disseminated to individuals and communities.

Jason Fine, biostatistics professor as well as a professor of statistics and operations research (STOR) in the UNC College of Arts and Sciences. Fine, in collaboration with Shivani Reddy,

a research public health analyst at RTI International, received a grant for "Improving Cardiovascular Risk Prediction in Women." Fine also received funding from TraCS for another project, "Child-Adult Relationship Enhancement for Spanish-speaking Immigrant Families in Primary Care: Cultural Adaptation and Pilot."

Robert Agans, associate professor of biostatistics and co-director of the Carolina Survey Research Laboratory, also received funding for his project, "Supplementing RDD Telephone Surveys with RDS to Oversample Gender Minorities: A New RDD+RDS Approach."

NC TraCS, funded by an award from the National Institutes of Health's National Center for Advancing Translational Sciences, aims to accelerate clinical and translational research from health science, to discovery, to dissemination to patients and communities.

CEHS Pilot Project Program Grant

Di Wu a biostatistics assistant professor with joint appointment in the School of Dentistry was awarded a Pilot Project Program grant by the UNC Center for Environmental Health and Susceptibility (CEHS). Her research work, "Defining novel Chk2 functions in suppression of UV-induced skin carcinogenesis," examines the role of Chk2, the mouse equivalent of the human Checkpoint Kinase 2 (CHEK2), a tumor suppressor gene, as a novel suppressor of ultraviolet (UV) radiation-induced skin carcinogenesis in vivo. The pilot study hypothesizes that Chk2 has a novel role in maintaining genome stability in UV-irradiated skin cells.

Bayesian Research Publications

Matthew Psioda, assistant professor and Joseph Ibrahim, professor published three articles regarding Bayesian design. "Bayesian Clinical Trial Design Using Historical Data that Inform Treatment Effect" was published in the Oxford Academic Journal and "Bayesian Design of a Survival Trial with a Cured Fraction Using Historical Data" and "A Practical Bayesian Adaptive Design Incorporating Data from Historical Controls" were published in Statistics in Medicine. This research has the potential to impact the treatment of diseases such as melanoma and type two diabetes.

- *https://academic.oup.com/biostatistics/advance-article/doi/10.1093/biostatistics/kxy009/4935054*
- *https://onlinelibrary.wiley.com/doi/abs/10.1002/sim.7846*
- *https://onlinelibrary.wiley.com/doi/abs/10.1002/sim.7897*

Awards & Selected Honors

2018 JAMES E. GRIZZLE DISTINGUISHED ALUMNUS AWARDEE

Jonathan Gelfond

MD, PhD 2007

University of Texas Health Science Center at San Antonio

2018 BERNARD G. GREENBERG DISTINGUISHED LECTURE SERIES

James M. Robins

MD 1976

Mitchell L. and Robin LaFoley Dong Professor of Epidemiology, Harvard T. H. Chan School of Public Health

113TH PRESIDENT AMERICAN STATISTICAL ASSOCIATION

Lisa M. LaVange

PhD 1983

Presided over the 2018 Joint Statistical Meetings, Vancouver, Canada

UNIVERSITY OF MICHIGAN SCHOOL OF PUBLIC HEALTH'S 12TH DEAN & BIOSTATISTICS PROFESSOR

F. DuBois Bowman

PhD 2000

STUDENT AWARDS HONORS

- **Lukas Alexander** Phi Beta Kappa
- **Marissa Ashner** Dennis Gillings Leadership Endowment Fund
- **Anoruo Asilonu** Public Health Award
- **Anna Batorsky** Public Health Award
- **Courtney Baker** Alimni/Cole, 1958, Greene Scholarship

- **Griffin Bell** Phi Beta Kappa, Delta Omega Undergraduate Award of Excellence
- **Sam Berchuck** Best Poster Award, ENAR
- **Jameson Blount** Phi Beta Kappa
- **Sujatro Chakladar** Kalyani Sen International Student's Scholarship in Biostatistics Endowment Fund
- **Katherine Gora Combs** Public Health Service Commissioned Officers Foundation for the Advancement of Public Health Ronald Lessing Memorial Scholarship, Junior Fellow with the Joint Program in Survey Methodology completing her fellowship in the Reporting & Dissemination Branch – Assessments Division at the National Center for Education Statistics in Washington DC
- **Yifan Cui** American Statistical Association Joint Statistical Meeting – Section on Bayesian Statistical Science Student Paper Competition Winner
- **Emily Demone** Max Halperin Scholarship Fund
- **Justin DeMonte** Harry A. Guess Scholarship
- **Samveg Desai** Phi Beta Kappa
- **Rhett Dudley** Craig D. Turnbull Endowed Scholarship
- **Abigail Gancz** Phi Beta Kappa
- **Jace Gilbert** Annual Award Fund
- **Matt Gilleskie** Phi Beta Kappa
- **Jie He** Phi Beta Kappa
- **Gilson Honvoh** NIH Research Fellowship in Complementary and integrative Health
- **Byron Jaeger** ENAR Distinguished Paper Award
- **Minxin Lu** Gillings Merit Award, Mindel C. Sheps Award
- **Sean McCabe** Regina Elandt-Johnson Master's Award in Biostatistics
- **Kyra Mulder** Phi Beta Kappa
- **Yinghao Pan** Larry Kupper Dissertation Publication Award Fund
- **Arryn Panagos** Brendle Brothers Scholarship for Veterans
- **Sharath Rama** Delta Omega Undergraduate Award of Excellence
- **Paridhi Ranadive** Nguyen V. Dat Endowed Scholarship in Biostatistics
- **Angeline Sanders** Mohberg Scholarship in Biostatistics
- **Kushal Shah** Annual Award Fund

- **Yueqi (Angie) Shen** Honorable Mention, Undergraduate Statistics Research Project Competition American Statistical Association and Consortium for Advancement of Undergraduate Statistics Education (CAUSE)
- **Richard Sizelove** Bernard Greenberg Scholarship Fund
- **Michael Steffan** Fred and Pearle McCall Scholarship in Public Health
- **Briana Stephenson** ENAR Distinguished Paper Award
- **Jicpy Amador Sulbaran** Public Health Award
- **Alyssa Tan** Phi Beta Kappa
- **Ilana Trumble** Delta Omega Academic Excellence Award
- **Tamy Moraes Tsujimoto** Doutorado Pleno no Exterior (Ministry of Education of Brazil Scholarship)
- **Jin Wang** American Statistical Association Student Paper Competition, Biometrics section
- **Ann Marie Weideman** Mentor, Undergraduate Scholarship Program NIH (UGSP), Educational Travel Grant Americas Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Forum 2018
- **Kin Yau Wong** Greenberg Award Excellence in Doctoral Research, Barry H. Margolin Award Excellence in Doctoral Research
- **Sarah Wotus** Phi Beta Kappa
- **Vasyl Zhabotynsky** Gillings Dissertation Award
- **Jonathan Zhang** John & Diane Fryer Biostatistics Fellowship
- **Laura Zhou** Delta Omega Service Award
- **Joshua Zitovsky** David & Lucy Hardison Bioinformatics Scholarship

FACULTY AWARDS, HONORS AND PROMOTIONS

- **Michael Hudgens** with Yale University political scientist colleagues won the 2018 Gosnell Award for work in Political Methodology
- **Anastasia Ivanova** Delta Omega Faculty Member Award, now Professor
- **Yuchao Jiang** received a 2018 IBM Junior Faculty Development Award
- **Kathy Roggenkamp** Celebrate Teaching! Award, now Biostatistics instructor
- **Daniela Sotres-Alvarez** now Associate Professor

Alumni, Parents, Faculty, Students and Friends of Bios,

As a Biostatistics student, I recognize the great value of my Gillings School education. While here, I've been learning so much more than just how to analyze a distribution or code in SAS. We truly develop the skills necessary to change the future of public health. I am eternally grateful for the opportunities here and those I will continue to have because of this department. So, when I was called to give back, I knew I had to do something.

It was GiveUNC Day 2018, UNC's first-ever Giving Day, and I stopped by the Atrium donation table as part of my Student Government duties. As a student with a limited budget, I decided to skip my coffee order for that day, starting my journey of giving with just a $5 gift. It was moving to see many faculty and staff stop by and donate on behalf of their department or program. The sense of community that was building around this common goal of supporting the Gillings School was infectious.

Since making my small contribution, I have heard about amazing opportunities that donations like mine help provide for current and future students. They allow us to attract top-notch faculty, provide great facilities, and lead the nation as the best public school of public health. My first donation was just a drop in a very large bucket, yet I am grateful for the opportunity to pay it forward to a school and department that has given me so much.

Whether you have supported the Gillings School in the past or will reconnect now, please know your support goes toward keeping our school and our department at the forefront of solving today's leading public health challenges. State funding and tuition are simply not enough. Your generosity is the key to securing our future.

I answered the call. Will you? Please use the envelope provided here or go online to show your appreciation of the Gillings School.

Katherine Gora Combs

BIOSTATISTICS AND MUSIC MAJOR, CLASS OF 2019
CO-PRESIDENT, GILLINGS SCHOOL STUDENT GOVERNMENT ASSOCIATION

Can we list you as a donor in 2019?

To give securely online, use this [link](https://give.unc.edu/donate?p=SOPH)

What could YOUR Annual Fund gift accomplishment?

$50,000
A full-ride scholarship for one student for a year

$15,000
In-state tuition cost for one semester in a master's program

$5,000
Global experience for one Master of Public Health student

$1,000
Purchase of one standing desk for use in a study area

$250
One student's registration to the annual ENAR conference

Gifts to the Annual Fund allow us to respond quickly to the greatest needs and most promising opportunities. To make a gift please use the envelope or visit giving.unc.edu/gift/sph.

Fund codes to use:

Biostatistics Fund:
444420

Biostatistics Student Travel:
444605

Biostatistics Fellowship:
444637

Biostatistics Graduate Student Support:
444551

DEPARTMENT OF BIOSTATISTICS

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

CAMPUS BOX 7420

CHAPEL HILL, NC 27599-7420

Thank You Donors

We are immensely grateful for all the biostatistics alumni and friends whose generosity provides additional support for the Gillings School. We'd like to add your name to this list in 2019 — see the inside back cover to learn how.

- Susan Shearer Atkinson (BSPH 1982, MS 1984, PhD 1990)
- William Cudd Blackwelder (PhD 1977)
- Edward Carroll Bryant (DrPH 1983)
- Jianwen Cai
- Lisa Tomasko Dooley (MS 1991, DrPH 1997)
- Brenda Kay Edwards (PhD 1975)
- Eli Lilly & Company Foundation Matching Gifts Program
- Mr. Jerry Gray Gentry (MSPH 1969)
- George Howard (MSPH 1982, DrPH 1987) & Virginia Jackson Howard (MSPH 1982)
- Johnson & Johnson Matching Gifts
- Gary Grove Koch & Carolyn J. Koch
- Michael R. Kosorok & Pamela W. Kosorok
- Kenneth Joseph Koury (PhD 1982) & Mary Lou Koury
- Lisa Morrissey LaVange (PhD 1983) & Ben LaVange
- Danyu Lin
- Lockheed Martin Corporation Matching Gifts
- Jane Holland Monaco (MS 1998, DrPH 2003) & Thomas J. Monaco, Jr.
- Morgan Stanley Global Impact Funding Trust, Inc.
- Xumin Nie (PhD 1990) & Ming Zhong (MS 1994, PhD 2000)
- Pfizer Foundation
- Xiang Qin (MS 1999)
- Paul Joseph Rathouz (MS 1993)
- Natalie Cheung Rotelli (BSPH 1999, MPH 2003) & Matthew Rotelli
- Fredrick Seymour Whaley (MSPH 1975, PhD 1983)
- Diane Everts Yerg (MSPH 1973) & Thomas R. Yerg
- Haibo Zhou

Those listed above have given $500 or more to Biostatistics Department from July 1, 2017 to June 30, 2018.