



ENAR 2020 SPRING MEETING

WITH IMS & SECTIONS OF ASA
March 22-25, 2020
JW Marriott Nashville
Nashville, TN

PRELIMINARY PROGRAM



WELCOME

I am thrilled to welcome you to the ENAR 2020 Spring Meeting in Nashville! I would like to extend a special welcome to our first-time attendees and look forward to your return for future meetings and your future involvement in ENAR!

The ENAR 2020 Spring Meeting will be held at the JW Marriott Nashville. Nashville's foundation was built on music. It is the common thread connecting the life and soul of the city and its people. Nashville is home to the Grand Ole Opry, Ryman Auditorium, Country Music Hall of Fame, and many honkey tonks where you can enjoy great music, food and drink.

The four-day meeting, **March 22-25, 2020**, will host biostatistics students, researchers, and practitioners, from academia, government, and industry. The meeting will expose attendees to the latest developments in methods, software, and applications through the Scientific and Educational programs. The meetings also provide a great opportunity for professional networking, meeting new people, connecting job seekers with employers, and reconnecting with friends and colleagues. Our exhibitors and vendors will give you opportunities to check out the latest textbooks and see demonstrations of new software.

ENAR is committed to fostering a culture of inclusion, professionalism and civil discourse that cultivates an environment where ideas are exchanged openly and freely with mutual respect and trust. ENAR has adopted a **Meeting Conduct Policy** intended to guide all attendees at ENAR's annual Spring Meeting and attendees will be required to assent to the policy as part of registration.

The ENAR Spring Meeting is only possible through the efforts of many hard-working volunteers. Thanks to all of the volunteers for helping make the ENAR Spring Meeting a success!

SCIENTIFIC PROGRAM

Through the leadership of the Program Chair Juned Siddique (Northwestern University) and Associate Program Chair Chenguang Wang (Johns Hopkins University), and contributions from many of you, the Program Committee (consisting of 10 ASA section representatives and 4 at-large ENAR members) has assembled a diverse and exciting invited program. The sessions cover a wide range of topics, including modern graphical modeling, complex innovative clinical trial design, electronic health records data, machine learning, neuroimaging, wearable/mobile technology, data integration, causal inference, survival outcomes, spatial modeling, environmental health, and statistical modeling in Alzheimer's disease. The IMS Program Chair Sunduz Keles (University of Wisconsin, Madison) has also put together complementary sessions on causal inference with genetic data, statistical methods for single-cell omics analysis, microbiome data analysis, precision medicine, and asymmetrical statistical learning.

Poster sessions play a prominent role at the ENAR Spring Meeting, and continue to be a vital part of the program. In addition to contributed and invited posters, the ENAR 2020 Spring Meeting will continue contributed SPEED poster sessions, in which presenters give a two-minute elevator speech on the highlights of their posters. As in 2019, these speed sessions will utilize digital poster boards, giving

presenters the opportunity for more interactive posters. Monday, March 23rd will feature the thematically grouped contributed speed poster sessions. Each session will feature two invited posters from well-known researchers and will run parallel with the rest of the sessions in the scientific program. As in previous years, the regular contributed posters will be featured during the Opening Mixer on Sunday evening. This year, poster presenters will be assigned one-hour slots to be available at their poster, giving everyone a chance to view the amazing research on display. Posters in this session will be eligible to win an award as part of the popular ENAR Regional Advisory Board's poster competition!

EDUCATIONAL PROGRAM

Our educational program provides many opportunities to learn new statistical techniques, to develop new computational skills, and to discuss the latest research or career development skills with leading experts. The Educational Advisory Committee has assembled an engaging suite of short courses, tutorials and roundtables covering a wide range of topics from renowned instructors.

Short course topics include design and analysis in platform & basket trials and in SMART, multivariate meta-analysis, using NIMBLE for MCMC, working with electronic health records (EHRs), implementing Bayesian adaptive designs, and statistical networks in biology. Tutorial topics include disease risk modelling and causal inference in R, methods for geometric functional data, difference in difference studies, integrating 'omics and imaging data, and creating R packages. Roundtable luncheons provide a more focused discussion with distinguished statisticians from academia, government and industry. Topics range from reviewing and writing grants, working in government and a medical school, publishing and reviewing manuscripts, data science, and mentoring. Be sure to take a look and sign up for something interesting!

I would like to extend a special thanks to the members of the Educational Advisory Committee – Lynn Eberly (University of Minnesota), Jason Roy (Rutgers), Veera Baladandayuthapani (University of Michigan), and Haoda Fu (Eli Lilly) for their support and guidance in helping to put together an outstanding educational program.

PRESIDENTIAL INVITED ADDRESS

I am thrilled to announce that the 2020 ENAR Presidential Invited Address will be given by **Dr. Sharon-Lise Normand**. Dr. Normand is a statistician whose work has made impactful contributions to health services and regulatory policy, particularly in the areas of cardiovascular disease and mental health. Methodologically, these contributions have been accomplished via Bayesian hierarchical models and Bayesian approaches for causal inference. Her contributions have been recognized in the statistics community (ASA fellow), the medical community (American College of Cardiology fellow), and the broader scientific community (AAAS fellow).

To learn more about Dr. Normand and her Invited Address, please see page 13.

ADDITIONAL MEETING ACTIVITIES

The ENAR 2020 Spring Meeting will feature several other activities in addition to the scientific and educational programs. On Sunday, March 22nd, there will be the **Fostering Diversity in Biostatistics Workshop**, organized by Felicia R. Simpson (Winston-Salem State University) and Loni Philip Tabb, (Drexel University). Dr. Adrian Coles (Eli Lilly) will serve as this year's keynote speaker. This workshop has been very popular and impactful and registration typically fills up quickly. Please be sure to register early if you are interested in attending!

Students, recent graduates, and other young professionals should plan to attend the **Networking Mixer** on Monday evening and the Tuesday luncheon event organized by the **Council for Emerging and New Statisticians (CENS)**. These are great opportunities for our "younger" members to meet new people, learn about CENS and become more engaged with ENAR. Attendees seeking employment and prospective employers have the opportunity to connect via the **Career Placement Center**.

Tuesday evening will feature our second annual **ENAR Sponsor and Exhibitor Mixer**. You will be able to peruse the latest books and software while joining the sponsors and exhibitors for the reception in the exhibition area after the last Tuesday session. It will be a great opportunity to catch up with friends, collaborators, and colleagues. After the mixer, you will have time to walk around and dine in a great Nashville restaurant. The Local Arrangements Committee, chaired by Cindy Chen (Vanderbilt University), will provide recommendations for attendees.

We hope to see you in Nashville for the 2020 ENAR Spring Meeting!

Mike Daniels,
ENAR 2020 President





Advancing biological and life science through the development of quantitative theories and the application, development and dissemination of effective mathematical and statistical techniques.

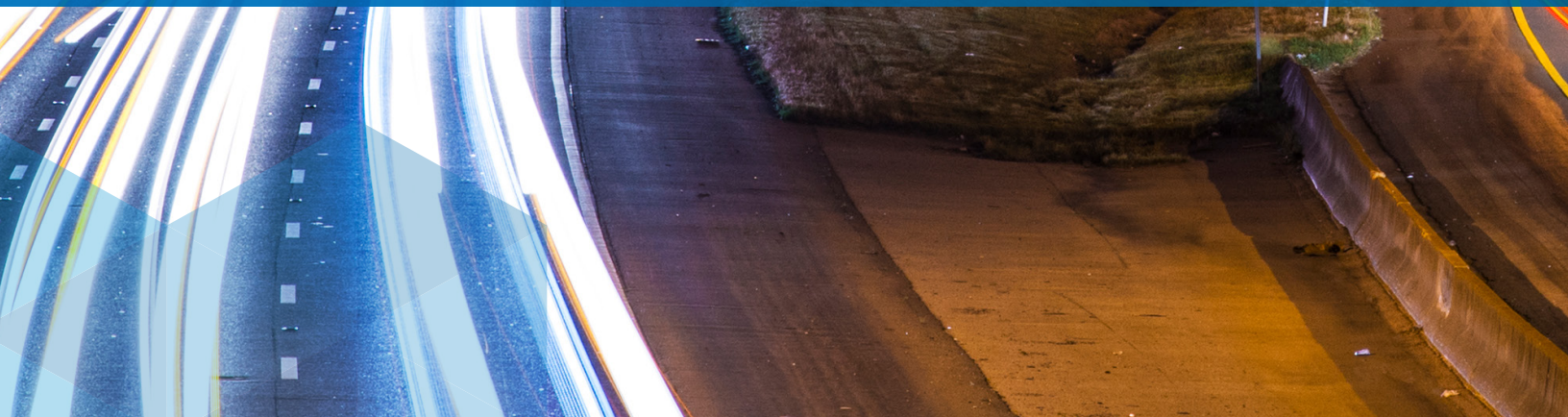


TABLE OF CONTENTS

Welcome and Overview	2	Tutorials	24
General Information	6	Roundtables	26
Code of Conduct	6	Workshop & Student Opportunities	28
Nashville Highlights	8	ENAR Distinguished Student Paper Awards	30
Special Thanks	12	CENS	32
Presidential Invited Speaker	13	Career Placement Services	34
Invited Preliminary Program	14	Family Friendly Accommodations	35
IMS Invited Preliminary Program	20	Spring Meeting Registration Form	36
Short Courses	22	ENAR Membership Application	37

ENAR 2020 Spring Meeting
With IMS & Sections of ASA
March 22-25 | JW Marriott Nashville | Nashville, TN



GENERAL INFORMATION

Location:

JW Marriott Nashville
201 8th Avenue South | Nashville, TN 37203
Phone: (615) 291-8600

<https://www.jwnashvillehotel.com>
<https://book.passkey.com/go/ENAR>

ENAR SPRING MEETING CONDUCT POLICY

As a professional organization composed of diverse individuals, ENAR is committed to fostering a culture of inclusion, professionalism and civil discourse that cultivates an environment where ideas are exchanged openly and freely with mutual respect and trust. ENAR is committed to creating a safe professional environment for participants at all stages of their careers, and especially for our more junior members. ENAR has adopted a Meeting Conduct Policy intended to guide all attendees at ENAR's annual Spring Meeting including, but not limited to, conference attendees, guests, staff, contractors, vendors, exhibitors, and participants in scientific sessions, workshops, tutorials, roundtables, short courses, tours, and other social events offered in conjunction with the ENAR Spring Meeting. Attendees of the annual Spring Meeting should expect a welcoming professional atmosphere that is free of discrimination, harassment and retaliation of any kind for any reason. All attendees of the Spring Meeting must agree to comply fully and freely with the Meeting Conduct Policy, the contents of which are subject to change at the discretion of the ENAR Executive Committee.

Inappropriate, unprofessional, or threatening behavior will not be tolerated at our meetings. This includes threatening physical or verbal interactions, deliberate intimidation, stalking, sexual images in public spaces, unauthorized or inappropriate photography or recording, inappropriate or unwanted physical contact, unwelcome sexual attention, or verbal harassment. Verbal harassment includes comments relating to race, ethnicity, religion, gender, gender identity or expression, sexual orientation, disability, veteran status, or other protected statuses, and will not be tolerated in our community.

Meeting Registration Fees:	By Jan 15	After Jan 15
ENAR/WNAR/IBS Member	\$450	\$525
ASA Member (Not a member of ENAR/WNAR/IBS)	\$600	\$675
IMS Member (Not a member of ENAR/WNAR/IBS) (\$470-\$20 IMS contribution: \$450)	\$450	\$525
Student Member	\$170	\$180
Guest (Adults and Children 13+ years old)	\$100	\$110
Non-member (of any participating society)	\$650	\$725
Student Non-member	\$200	\$210

WHAT IS INCLUDED IN THE REGISTRATION FEE?

The meeting registration fee includes all refreshment and beverages during breaks and the opening mixer. The registration fee, less a \$100 administrative fee, is refundable if written notice of cancellation is received by February 1, 2020.

SHORT COURSES

The ENAR 2020 meeting will begin with an excellent set of short courses on Sunday, March 22. Please refer to the chart included on this page for the registration fees for these Short Courses. We recommend registering in advance, since the courses close once they are full. Use either the registration form on page 36 or the electronic registration form available on the ENAR website.

Short Course Registration Fees

	By Jan 15		After Jan 15	
	Half Day	Full Day	Half Day	Full Day
Member	\$250	\$350	\$275	\$375
Non-Member	\$325	\$425	\$350	\$450

See Pages 22-23 for Short Course Details
Register for Two Half-Day Courses and Save!
Savings Information Provided on page 22

TUTORIALS

Tutorials are offered on both Monday and Tuesday and are held concurrent with the scientific program sessions. These offerings provide a presentation of a continuing education topic in a briefer time period (1 hour and 45 minutes). Fees for the tutorials are \$75 for members (\$85 after January 15, 2020) and \$85 for non-members (\$95 after January 15, 2020). The student registration fee for the tutorials is \$40 (\$50 after January 15, 2020). Be sure to register in advance, since tutorials will be closed once they are full.

ROUNDTABLE LUNCHEONS

This year, the roundtable luncheons will be held on Monday, March 23, from 12:15 to 1:30pm. Space for each roundtable is limited and pre-registration is highly recommended. The fee is \$45 per person and includes lunch. For full descriptions of the roundtable discussion topics, please refer to page 26.

NEW MEMBER RECEPTION, OPENING MIXER, AND POSTER SESSION

A new member reception will be held from 7:30 to 8:00pm on Sunday, March 22. All new ENAR members are cordially invited to attend. The Opening Mixer and Poster Session will take place from 8:00 to 11:00pm on Sunday, March 22.

COUNCIL FOR EMERGING AND NEW STATISTICIANS (CENS)

CENS is dedicated to better informing ENAR about the needs of students and recent graduates. The goal at the 2020 Spring Meeting is to improve the networking experience for all attendees. CENS will organize lunches on Tuesday, March 24, for groups of attendees, who share similar interests. The goal is to help attendees meet and network with each other. Although CENS will help to coordinate lunch at local restaurants, please note that lunch is at your own expense and CENS will not be able to cater to special dietary requirements. Closer to the meeting time, CENS will email all attendees interested in this networking event to request information to set up the groups and the lunch reservations. Students and recent graduates are especially encouraged to sign up for this networking event.

CENS MIXER

All are invited to attend the CENS mixer on Monday, March 23, from 6:30 to 7:30pm. Registration is not required – so please plan to attend!

SPONSOR & EXHIBITOR MIXER

All attendees are invited to attend the Sponsor & Exhibitor mixer on Tuesday, March 24, from 6:00 to 7:00pm. Registration is not required – so please plan to attend!

CAREER PLACEMENT SERVICES

ENAR will conduct a job placement service at the 2020 Spring Meeting. Additional information regarding the placement center is located on page 34.

ABSTRACT SUBMISSION PROCESS

Abstracts must be submitted electronically from the meeting page of the ENAR website: <https://enar.org/meetings/spring2020/>. Instructions for using the online abstract submission form are posted on the ENAR website. PAPER ABSTRACTS WILL NOT BE ACCEPTED.

MEETING REGISTRATION

You MUST register for the ENAR 2020 Spring Meeting before submitting your abstract at the ENAR Spring Meeting Registration Page of the ENAR website. The confirmation number that you receive upon completion of the meeting registration is required in order to submit an abstract.

ABSTRACT SUBMISSION DEADLINE

The deadline for all abstract submissions is 11:59 pm ET, October 15, 2019. At that time, the submission form will be taken offline and no further abstracts will be accepted.

STUDENT PAPER AWARDS DEADLINE

The deadline for submissions to the Student Paper Awards is 11:59 pm ET, October 1, 2019. Please see the student paper awards information on page 30 for more details.

NOTIFICATION

Notifications of presentation format (i.e., poster or oral), session, and time assignments will be emailed by mid-January. If you do not receive your notification by mid-January, please contact the ENAR Office at enar@enar.org.

PROGRAM OPTIONS

At the 2020 Spring Meeting, you will be able to receive the final program book via the following delivery formats:

- Mobile App – includes access to the full program book, with abstracts (available to all attendees that opt to download the app)
- Small program booklet (\$10 fee) containing all session and speaker names, session times, and locations (please refer to the registration form on page 36 and select this option when registering)

Note: The larger final program & abstract program is not printed but can be freely downloaded from the ENAR website.



HOTEL & TRANSPORTATION

JW Marriott Nashville
201 8th Avenue South | Nashville, TN 37203
Phone: (615) 291-8600

For reservations:
<https://book.passkey.com/go/ENAR>

ROOM RESERVATIONS

ENAR has negotiated a group hotel room rate of \$239 for single and double occupancy rooms. All reservations must be made by February 21, 2020. To receive this special ENAR meeting rate, you must make your reservations directly with the JW Marriott Nashville at (615) 291-8600 or (800) 320-5744 or online at <https://book.passkey.com/go/ENAR>. If reserving a room by phone be sure to mention that you are with the ENAR 2020 Spring Meeting. Please make your reservations early, as all hotel rooms are reserved on a first-come, first-served basis.

IMPORTANCE OF STAYING AT THE JW MARRIOTT NASHVILLE

Your patronage of the official ENAR Spring Meeting hotel enables us to secure the meeting space at a greatly reduced cost, which helps keep the cost of the meetings and your registration fee down. With your cooperation, ENAR will continue to be successful in negotiating good contracts for the Spring Meeting and maintaining the programs and activities you have requested.

PARKING AT THE JW MARRIOTT NASHVILLE

Valet parking is available on-site for a fee of \$42 daily, with in/out privileges. Please note the hotel does not offer self-parking on-site, however, guests may elect to self-park at off-property locations such as the Music City Center next to the hotel.

TRANSPORTATION

The JW Marriott Nashville is approximately 8 miles from the airport and is conveniently located near many public transportation options. Estimated taxi fare from the airport to the meeting hotel is approximately \$30.

Public Transportation-Route 18 is a public transportation bus system between the Airport and downtown, which costs \$2 one way.

2020 ENAR MEETING MOBILE APP

Take advantage of our Spring Meeting mobile app; accessible on your iPhone, iPad, or Android! A few of the great features on our app include:

- Access to the full program book – including scientific sessions, program schedule, and all abstracts
- Learn more about the exhibitors and locate their booths more easily
- Receive meeting updates as they happen
- See who's attending the meeting and share contact information

WELCOME TO NASHVILLE!

Named for Francis Nash, a general of the Continental Army during the American Revolutionary War, the city was founded in 1779. The city grew quickly due to its strategic location as a port on the Cumberland River and, in the 19th century, a railroad center. Nashville seceded with Tennessee during the American Civil War; in 1862 it was the first state capital in the Confederacy to fall to Union troops. After the war, the city reclaimed its position and developed a manufacturing base. Today, Nashville is known as Music City.

If cities had soundtracks, Nashville's would be like no others. It would be a mix of music's past, present and future with cuts of country, bluegrass, rock, pop, Americana, gospel, classical, jazz and blues, all blending and overlapping in perfect harmony. Live music can be heard when walking through almost any neighborhood, with open mic nights featuring talent you'd expect to pay good money to hear. The city has experienced significant growth in the last few years, as the healthcare industry and the growing appeal of tourism have led to the development of new neighborhoods and the revitalization of old ones, as well as a booming food and beer scene. You won't have any trouble filling your trip with the sights, sounds, and tastes of Nashville.

LANDMARKS AND TOURS

RYMAN AUDITORIUM

When you walk through the doors of historic Ryman Auditorium, one thing becomes clear right away: this isn't just another nightly music venue, and it's so much more than a daytime tourist stop. This place is hallowed ground. This is the exact spot where bluegrass was born—where Johnny Cash met June Carter, where souls were saved and a slice of history was nearly lost. It was right here that country music found an audience beyond its own back porch, and countless careers took off as deals were signed on napkins and paper scraps backstage. Open daily for tours and shows, right in the heart of Music City.

TENNESSEE STATE CAPITOL AND LEGISLATIVE PLAZA

Designed by architect William Strickland and built in the Greek Revival architecture style that models a Greek temple, the Tennessee State Capitol is one of 12 capitol buildings in the U.S. that does not have a dome. The Capitol sits on the hilltop site once occupied by the Holy Rosary Cathedral, which was the first Roman Catholic cathedral in Nashville. On the grounds of the Capitol are two statues of U.S. presidents: Andrew Jackson and Andrew Johnson. President James K. Polk is buried in a tomb on the Capitol grounds, along with his wife, Sarah Childress Polk. Other monuments include a Tennessee Holocaust Memorial, the Sam Davis Memorial, and Sen. Edward Ward Carmack Memorial. Across the street, check out Legislative Plaza, where you'll find a statue dedicated to the Women of the Confederacy, a monument to Tennesseans, who served in the Korean War, and to the south Vietnam Veterans Park.

TENNESSEE STATE MUSEUM

Situated on the bottom floors of the James K. Polk building downtown is the Tennessee State Museum. It depicts the history of the state of Tennessee, starting from pre-colonization and going into the 20th century. With more than 120,000 square feet (11,148 square meters) of space among three floors, the museum includes both permanent and changing exhibits that display paintings, weapons, furniture, uniforms, and battle flags from the Civil War. Larger exhibits include a painting gallery, a reproduction of a historic print shop, and a grist mill. There's also a museum store where visitors can purchase handmade crafts and Tennessee memorabilia.

THE PARTHENON

Standing as the centerpiece in Nashville's Centennial Park, the Parthenon is a full-scale replica of the Parthenon in Athens, Greece. Come inside to see the 42-foot gilded sculpture of Athena, the permanent display of American paintings from the Cowan Collection, the history of the Nashville Parthenon dating back to the 1897 Tennessee Centennial Exposition, and a variety of temporary shows and exhibitions! The entrance is located on the ground level of the East side of the building.

THE GRAND OLE OPRY

Take a trip to the historic Grand Ole Opry, located next to the Opryland Resort and Convention Center, about 20 minutes from the JW Marriot. You can take a backstage tour of the Opry's 18 themed dressing rooms, learn behind-the-scenes secrets, and just maybe step foot in "The Circle", the center of the Grand Ole Opry and the most sacred space in country music.



HISTORY & ART MUSEUMS

ANDREW JACKSON'S HERMITAGE

The Hermitage, Home of President Andrew Jackson, is one of the largest and most visited presidential homes in the United States, and recently named the #1 historic house in Tennessee. Today, The Hermitage is a 1,120-acre National Historic Landmark with more than 30 historic buildings, that welcomes some 200,000 annual visitors, including 30,000 school children, from all 50 states and many foreign countries. Visit Andrew Jackson's Hermitage to witness "The Duel: The Art of the Southern Gentleman." This 30-minute visitor experience will answer questions about dueling followed by an ACTUAL demonstration by onsite historic re-enactors. "The Duel" takes place every Thursday through Sunday throughout the day, free with paid admission. The Hermitage is about 15 miles from the JW Marriot.

BELLE MEADE PLANTATION

Belle Meade Plantation is a non-profit historic site located in Nashville. Established in 1807, Belle Meade was revered as the greatest thoroughbred stud farm in the United States. It was home to Iroquois, the first American bred horse to win the Epsom Derby and the great foundation sire, Bonnie Scotland, whose descendants include Secretariat, Seattle Slew, Native Dancer, Big Brown and California Chrome. Belle Meade was owned and operated by the Harding-Jackson family for nearly a century from 1807 until 1906. Today, their home is restored to its turn-of-the-century appearance, along with several original outbuildings. The Plantation is about 20 minutes from the JW Marriot by car.

BELMONT MANSION

Belmont Mansion is the largest house museum in Tennessee and one of a few whose history revolves around the life of a woman: Adelia Acklen. We host visitors seven days a week for tours and are open as a rental venue for weddings and events. Tours may be purchased online or at the door. Belmont Mansion, and Belmont campus, are about 10 minutes from the JW Marriot by car.

THE FRIST

If you're in the mood to view some art in a gorgeous setting, look no further than the Frist Art Museum. Situated in a classic art deco building, the museum houses a rotating schedule of exhibitions from local, regional, national, and international sources. The Frist is a family-friendly environment, with the Martin ArtQuest Gallery providing more than 30 interactive art-making stations and free admission for youth 18 and under.

PARKS

CENTENNIAL PARK (MIDTOWN)

Smack dab in the middle of the hustle and bustle of offices, restaurants, and streets, Centennial is the perfect place to take a short walk on a lunch break. It is also home to the Parthenon replica, giving people educational benefits, along with their dose of vitamin D. Its convenient location also makes it a prime spot for events and activities. It is home to several festivals, fairs, and music series. On any given weekend, the park is full of music, food, and fun. With all of this activity, it is not the best for wildlife or nature viewing, and finding a secluded, quiet spot free of frisbees or college kids may be a challenge.

BICENTENNIAL CAPITOL MALL STATE PARK (DOWNTOWN)

This 19-acre park in the heart of Nashville serves as a monument to the bicentennial celebration of the State of Tennessee. This park offers plenty of opportunities to learn about the long history of Tennessee, while having a great experience in a beautiful green space. More information on this park and many more can be found at the Tennessee State Parks website. While in the area, consider checking out the Nashville Farmer's Market, located next door to the park. It's a great spot to grab lunch or a coffee to go!

CUMBERLAND PARK (EAST NASHVILLE)

Located on the East side of the river, Cumberland Park was completely renovated to become a go-to attraction for Nashvillians. There are a lot of features in this park, including an outdoor amphitheater for events, a rock climbing wall, water features, green space for kids to play and much more. The park is a short 1.5 mile walk from the JW Marriot.

SEVIER PARK (12 SOUTH)

A small park in a growing neighborhood, Sevier Park has the best of both worlds. It's fun and lively, but hardly ever crowded! With Las Palatas and Burger Up nearby, hunger won't be an issue either. There is a small playground area and a creek down below in the shadow of the pre-Civil War Sunnyside Mansion. The mansion invites the new growth of the 12 South neighborhood in its historic front yard. This park is about 4 miles from the JW Marriot.



LOCAL CUISINE AND RESTAURANTS

(BY NEIGHBORHOOD)

Nashville's dining scene is exploding thanks to a combination of chef-driven restaurants and classic dining spots offering up Nashville Hot Chicken, barbecue, and Meat & Three fare. Below are some top local picks, organized by neighborhood. For more information, and to find your favorite flavor, check out <https://www.visitmusiccity.com/things-to-do/food-drink>. For a more in-depth look at the different neighborhoods in Nashville, visit www.nashvilleguru.com/neighborhoods.



DOWNTOWN

Home to honky tonks, live music, and more boot shops than you could ever need, Downtown Nashville is the heart of "Nashvegas" energy. With more than 60 bars and restaurants, it's hard to go wrong here if you're looking for a fun evening. For a great view, consider Acme Feed & Seed, with multiple floors of dining options and a great rooftop bar overlooking the river. If you're looking for name recognition, consider Jason Aldean's Kitchen + Rooftop Bar, or Tootsies Orchid Lounge for a slice of honky tonk history.

SOBRO ("SOUTH OF BROADWAY")

Just steps from Broadway lies the SoBro neighborhood, a quieter area with a lot of new developments. Check out Bajo Sexto Taco for a quick and tasty lunch, Martin's Bar-B-Que Joint for a classic plate of Nashville BBQ, or Tennessee Brew works for live music and delicious burgers. If you're looking for some activities to go with your meal, check out Pinewood Social, featuring vintage bowling lanes and an extensive craft cocktail selection to accompany your meal.

THE GULCH

Located just a short walk from the JW Marriot, The Gulch is a small, upscale neighborhood full of great food and shops. In particular, they're known for Arnold's Country Kitchen (the quintessential Meat & Three experience, open Monday – Friday). For an upscale dinner, consider Chauhan Ale & Masala House (Indian cuisine with a Southern flair), Sambuca (American food, live music), or Sunda (Southeast Asian cuisine, with ample seating for larger groups).

GERMANTOWN

A quiet neighborhood just north of Downtown, Germantown features brick sidewalks, ample greenery, and easy street parking in a family-friendly atmosphere. There are more than 15 dining options to be found, including casual options like Red Bicycle Coffee and Crepes and Von Elrod's Beer Hall and Kitchen (with delicious soft pretzels and an extensive German and Belgian beer list), as well as more upscale dinner options like 5th & Taylor (American cuisine, reservation required) and Geist (set in an old blacksmith shop, with upscale Southern cuisine and a champagne garden).

MIDTOWN

For an area that's a little more relaxed and less touristy, consider Midtown, located near Vanderbilt University and popular among locals and students. Here you'll find Hattie B's, one of the most popular Nashville Hot Chicken joints. If the line is long, consider other Hattie B's in the area. Consider using their order-ahead option to avoid the line! In this neighborhood you'll also find several delicious restaurants with a Southern flair, like The Row or Tavern. For a nicer meal, check out Union Common for duck fat French fries and steak, or Patterson House for a speakeasy cocktail experience.

HILLSBORO VILLAGE

The neighborhood of Hillsboro Village, conveniently located just south of Vanderbilt University campus, is a great spot to do some shopping and grab a coffee or a bite to eat. The Pancake Pantry is a favorite among visitors, but be sure to get there early to beat the line! Fido is a great spot for coffee, and serves a delicious all-day breakfast menu that's popular among Vanderbilt and Belmont students alike.

12 SOUTH

If you're in the area to check out the Belmont Mansion, walk on down to the 12 South neighborhood! The street features some great shopping (including Reese Witherspoon's boutique, Draper James) as well as excellent options for eating. Consider Frothy Monkey for coffee and breakfast favorites, Five Daughters Bakery for delicious cronuts (donuts made from layered croissant dough), or Christie Cookie Co. for a fresh-baked cookie and milk. For dinner, look no further than Edley's Bar-B-Que, with incredibly tasty pulled pork, fried pickles, and jalapeño cornbread. In the mood for lighter fare? Check out Epice Lebanese Bistro for stuffed grape leaves, lentil soup, and traditional grilled chicken and lamb skewers.

SPECIAL THANKS

Program Chair

Juned Siddique, Northwestern University

Associate Program Chair

Chenguang Wang, John Hopkins University

IMS Program Chair

Sunduz Keles, University of Wisconsin, Madison

Digital Program Coordinator

David Aaby, Northwestern University

Local Arrangements Chair

Cindy Chen, Vanderbilt University

ASA Section Representatives – Program Committee

Lei Liu, Washington University (St. Louis)
ASA Health Policy Statistics Section

Anuj Srivastava, Florida State University
ASA Statistics in Imaging Section

Zheyu Wang, Johns Hopkins University
ASA Biometrics Section

Stephine Keeton, PPD
ASA Biopharmaceutical Statistics Section

Ying Wei, Columbia University,
ASA Statistical Learning and Data Mining Section

Hongyuan Cao, University of Missouri
ASA Mental Health Statistics Section

Veronica Berrocal, University of California at Irvine
ASA Statistics in Epidemiology Section

Susmita Datta, University of Florida
ASA Statistics in Genomics and Genetics Section

Alexandra Schmidt, McGill University
ASA Statistics & the Environment Section

Donatello Telesca, UCLA
ASA Section on Bayesian Statistics

ENAR At-Large Members – Program Committee

Hwanhee Hong, Duke University

Lauren Balmert, Northwestern University

Cory Zigler, University of Texas at Austin

Jonathan Schildcrout, Vanderbilt University

ENAR Executive Committee

Sarah Ratcliffe, President

Michael Daniels, President-Elect

Jeffrey S. Morris, Past President

Brisa Sánchez, Secretary

Renee Moore, Treasurer

RECOM Chair: Sarah Ratcliffe

RAB Chair: Leslie McClure

Educational Advisory Committee

Lynn Eberly, University of Minnesota

Jason Roy, Rutgers University

Veera Baladandayuthapani, University of Michigan

Haoda Fu, Eli Lilly

2020 ENAR Student Awards

Jeffrey S. Morris, University of Pennsylvania

ENAR Fostering Diversity in Biostatistics Workshop

Felicia R. Simpson, Winston-Salem State University

Loni Philip Tabb, Drexel University

ENAR Staff

Shannon Taylor, Executive Director

Tricia Gerdon, Senior Program Manager

Leah Sibilia, Event Director

Tayler Kenney, Event Specialist

Laura Stapleton, Administrative/Membership Manager

PRESIDENTIAL INVITED SPEAKER



Sharon-Lise Normand, Ph.D.

S. James Adelstein Professor of Health Care Policy (Biostatistics)
Department of Health Care Policy, Harvard Medical School
Department of Biostatistics, Harvard T.H. Chan School of Public Health



MEDICAL PRODUCT, HEALTHCARE DELIVERY, AND ROAD SAFETY POLICIES: SEEMINGLY UNRELATED REGULATORY QUESTIONS

The evaluations of medical product effectiveness and safety, the quality of hospital care, and the safety of U.S. roadways involve the use of large, complex observational data to make policy decisions. Careful design and analysis of such data are critical given the large populations impacted. While increasing access to data of increased size and type permit, in theory, richer evaluations, study design should assume a more prominent role. This talk will describe three different policy problems: the impact of the hospital readmission reduction program, the effectiveness of seemingly similar drug eluting coronary stents, and the safety of U.S. motor carriers. Statistical issues common across these problems, including clustered data, multiple treatments, multiple outcomes, high-dimensional data, and lack of randomization, are highlighted and solutions discussed.

BIOGRAPHY

Sharon-Lise Normand is the S. James Adelstein Professor of Health Care Policy (biostatistics) in the Department of Health Care Policy at Harvard Medical School and in the Department of Biostatistics at the Harvard Chan School of Public Health. Dr. Normand earned her BSc (1984) and MSc (1985) degrees in statistics from the University of Western Ontario and her PhD (1990) in biostatistics from the University of Toronto. Dr. Normand's research focuses on the development of statistical methods for health services and regulatory policy research, primarily using Bayesian and causal inference approaches, including assessment of quality of health care, provider profiling, diffusion of medical technologies, and regulatory science. She has developed a long line of research on methods for the analysis of patterns of treatment and quality of care for patients with cardiovascular disease and with mental disorders in particular.

Dr. Normand has developed analytical approaches for comparing hospitals and physicians using outcomes and process-based measures. Since 2002, she served as director of Mass-DAC, the data-coordinating center responsible for collecting, analyzing, and reporting on the quality of care for adults discharged following a cardiac procedure from all non-federal hospitals in Massachusetts. She is serves as the director of the Medical Device Epidemiology Network (MDEpiNet) Methodology Center, a public-private partnership aimed at medical device evaluation. MDEpiNet partners with the FDA's Center for Device and Radiological Health and the Science and Infrastructure Center at Weill Cornell Medical School. Her focus is on the development of statistical approaches to active medical device surveillance, valid inferences from distributed networks, and the improvement of causal inference in the presence of high dimensional data.

On the mental health side, Dr. Normand is leading an NIMH-funded study to estimate the value of publicly funded mental health care for patients with serious mental illness. She is also undertaking an observational study to estimate causal dose "outcomes" curves in the context of understanding weight gain associated with cumulative antipsychotic drug exposure among subjects with schizophrenia for numerous different antipsychotics.

Dr. Normand was elected fellow of the American Statistical Association, fellow of the American Association for the Advancement of Science, fellow of the American College of Cardiology, and Associate Member of the Society of Thoracic Surgeons. She served as the 2010 President of the Eastern North American Region of the International Biometrics Society; was inaugural co-chair of the PCORI Methodology Committee; co-chairs a Committee on National Statistics/National Academy of Sciences panel reviewing the Safety Measurement System of the Compliance, Safety, Accountability program run by the Federal Motor Carrier Safety Administration; and served on several National Academy of Sciences Committees, including the Committee of Applied and Theoretical Statistics (CATS) focusing on the intersections of statistics and computer science for big data. Dr. Normand received ASA's Health Policy Statistics Section Long Term Excellence Award, the Outstanding Lifetime Achievement Award from the American Heart Association, the L. Adrienne Cupples Award for Excellence in Teaching, Research, and Service in Biostatistics from Boston University, and the Mosteller Statistician of the Year from the Boston Chapter of the ASA.

INVITED PRELIMINARY PROGRAM

Innovative Statistical Methods in Environmental Mixture Analysis

Organizer:

Shanshan Zhao, NIEHS/NIH

Chair:

Ling-Wan Chen, NIEHS/NIH

Speakers:

Jonathan Boss, University of Michigan

Amy Herring, Duke University

Zhen Chen, NICHD/NIH

Jason Fine, University of North Carolina – Chapel Hill

Recent advances in network meta-analysis with flexible Bayesian approaches

Organizer:

Hwanhee Hong, Duke University

Chair:

Roland Matsouaka, Duke University

Speakers:

Jing Zhang, University of Maryland School of Public Health

Sung Duk Kim, National Cancer Institute

Hwanhee Hong, Duke University

Discussant:

Christopher Schmid, Brown University

Clinical trial designs in a new era of Immunotherapy: challenges and opportunities

Organizer & Chair:

Yeonhee Park, Medical University of South Carolina

Speakers:

Gary Rosner, Johns Hopkins University

Nolan Wages, University of Virginia

J. Jack Lee, University of Texas MD Anderson Cancer Center

Jennifer Le-Rademacher, Mayo Clinic

Innovations in two-phase sampling designs with applications to EHR Data

Organizer:

Pamela Shaw, University of Pennsylvania

Chair:

Bryan Shepherd, Vanderbilt University

Speakers:

Gustavo Amorim, Vanderbilt University

Kyunghee Han, University of Pennsylvania

Richard J. Cook, University of Waterloo

Discussant:

Jianwen Cai, University of North Carolina, Chapel Hill

Flexible spatio-temporal models for environmental and ecological processes

Organizer & Chair:

Alexandra M. Schmidt, McGill University

Speakers:

Bo Li, University of Illinois at Urbana-Champaign

Amanda Hering, Baylor University

Toryn Schafer, University of Missouri

Sara Zapata-Marin, McGill University

The Three M's: Meetings, Memberships, and Money!

Organizers:

Jing Li, Indiana University

Hannah Weeks, Vanderbilt University

Chair:

Will Eagan, Purdue University

Panel Discussants:

Jeff Goldsmith, Columbia University

Donna LaLonde, American Statistical Association

Nandita Mitra, University of Pennsylvania

Sarah Ratcliffe, University of Virginia

Human microbiome studies: novel methods and new studies

Organizer:

Ni Zhao, Johns Hopkins University

Chair:

Xiang Zhan, Pennsylvania State University

Speakers:

Yijuan Hu, Emory University

Jiangxin Shi, National Cancer Institute

Shyamal Peddada, University of Pittsburgh

Ni Zhao, Johns Hopkins University

Recent advances in the uncertainty estimation and properties of Bayesian Additive Regression Trees

Organizer:

Yaoyuan Vincent Tan, Rutgers University

Chair:

Chanmin Kim, Boston University

Speakers:

Matthew Pratola, Ohio State University

Robert McCulloch, Arizona State University

Yinpu Li, Florida State University

Veronika Rockova, University of Chicago

Statistical methods for emerging data in environmental health research

Organizer & Chair:

Jenna R. Krall, George Mason University

Speakers:

Kelly Moran, Duke University

Eun Sug Park, Texas A&M Transportation Institute

Katherine B. Ensor, Rice University

Chris Gennings, Icahn School of Medicine at Mount Sinai

Modern Graphical Modeling of Complex Biomedical Systems

Organizer & Chair:

Lili Zhao, University of Michigan

Speakers:

Peter Mueller, University of Texas at Austin

Ali Shojaie, University of Washington

Christine Peterson, University of Texas MD Anderson Cancer Center

Veera Baladandayuthapani, University of Michigan

New weighting methods for causal inference

Organizer:

Roland A. Matsouaka, Duke University

Chair:

Hwanhee Hong, Duke University

Speakers:

Fan Li, Yale University

Laine Thomas, Duke University

Li Liang, University of Texas MD Anderson Cancer Center

Shu Yang, North Carolina State University

Compositional Nature of Microbiome Data: Challenges and New Methods

Organizer & Chair:

Michael Sohn, University of Rochester

Speakers:

Anna Plantinga, Williams College

Justin Silverman, Duke University

Zheng-Zheng Tang, University of Wisconsin-Madison

Discussant:

Hongzhe Li, University of Pennsylvania

Novel statistical methods for complex interval-censored survival data

Organizer & Chair:

Sedigheh Mirzaei S., St. Jude Children's Research Hospital

Speakers:

Donglin Zeng, University of North Carolina at Chapel Hill

Raji Balasubramanian, University of Massachusetts –Amherst

Qingning Zhou, University of North Carolina at Charlotte

Sharon Xiangwen Xie, University of Pennsylvania

Mentoring Throughout a Lifetime: Considerations for Mentors and Mentees at All Career Stages

Organizer:

Naomi Brownstein, Moffitt Cancer Center

Chair:

Emily Butler, GSK

Panel Discussants:

Leslie McClure, Drexel University

Brian Millen, Eli Lilly and Company

Dionne Price, FDA

Manisha Desai, Stanford University

Advances in causal inference and joint modeling with survival and complex longitudinal data

Organizer:

Zhigang Li, University of Florida

Chair:

James O'Malley, Dartmouth College

Speakers:

Limin Peng, Emory University

Huilin Li, New York University

Liangyuan Hu, Mount Sinai

Discussant:

Joseph Hogan, Brown University

INVITED PRELIMINARY PROGRAM (CONTINUED)

Distributed and Privacy-Preserving Methods for Electronic Health Records Data

Organizer:

Lu Tang, University of Pittsburgh

Chair:

Joyce Chang, University of Pittsburgh

Speakers:

Changgee Chang, University of Pennsylvania

Fang Liu, University of Notre Dame

Harrison Quick, Drexel University

Rebecca Steorts, Duke University

Causal Inference and Network Dependence: From Peer Effects to the Replication Crisis in Epidemiology

Organizer & Chair:

Corwin Zigler, University of Texas at Austin

Speakers:

Elizabeth Ogburn, Johns Hopkins University

Forrest Crawford, Yale University

Isabel Fulcher, Harvard University

Laura Forastiere, Yale University

Statistical Analysis of Tracking Data from Personal Wearable Devices

Organizer:

Jonggyu Baek, University of Massachusetts Medical School

Chair:

Peter X.K. Song, University of Michigan

Speakers:

Ian J. Barnett, University of Pennsylvania

Ekaterina Smirnova, Virginia Commonwealth University

Jiawei Bai, Johns Hopkins University

Discussant:

Ciprian Crainiceanu, Johns Hopkins University

Achieving Real-World Evidence from Real-World Data: Recent Developments and Challenges

Organizer & Chair:

Haiwen Shi, FDA

Speakers:

Lilly Yue, FDA

Warren Kibbe, Duke University

John Seeger, Optum, Inc.

Discussant:

Lisa LaVange, University of North Carolina

Integrative analysis of clinical trials and real-world evidence studies

Organizer & Chair:

Shu Yang, North Carolina State University

Speakers:

Peng Wu, Visa, Inc.

Peisong Han, University of Michigan

Lin Dong, North Carolina State University & Wells Fargo

Jiayin Zheng, Fred Hutchinson Cancer Research Center

Recent advances in joint modeling of longitudinal and survival data

Organizer:

Abdus Sattar, Case Western Reserve University School of Medicine

Chair:

Jeffrey Albert, Case Western Reserve University School of Medicine

Speakers:

Ming-Hui Chen, University of Connecticut

Sanjoy Sinha, Carleton University

Dimitris Rizopoulos, Erasmus University Medical Center

Cheng Zheng, University of Wisconsin-Milwaukee

Novel spatial modeling approaches for air pollution exposure assessment

Organizer:

Yawen Guan, University of Nebraska

Chair:

Kate Calder, The University of Texas at Austin

Speakers:

Owais Gilani, Bucknell University

Veronica Berrocal, University of California Irvine

Yawen Guan, University of Nebraska

Meredith Franklin, University of Southern California

Recent Advances in Bayesian Methods for Spatial-temporal Processes

Organizer:

Zehang Richard Li, Yale School of Public Health

Chair:

Joshua Warren, Yale School of Public Health

Speakers:

Abhirup Datta, Johns Hopkins University

Zehang Richard Li, Yale School of Public Health

Catherine Calder, University of Texas at Austin

Jon Wakefield, University of Washington

Causal inference and harmful exposures

Organizer:

Rachel Nethery, Harvard University

Chair:

Daniel Malinsky, Johns Hopkins University

Speakers:

Andreas Neophytou, Colorado State University

Rachel Nethery, Harvard University

Joseph Antonelli, University of Florida

Brooke Anderson, Colorado State University

Recent Advances and Opportunities in Large-Scale & Multi-Omic Single-Cell Data Analysis

Organizer:

Rhonda Bacher, University of Florida

Chair:

Yuchao Jiang, University of North Carolina, Chapel Hill

Speakers:

Hongkai Ji, Johns Hopkins University

Mike Love, University of North Carolina, Chapel Hill

Raphael Gottardo, Fred Hutchinson Cancer Research Center

Discussant:

Rhonda Bacher, University of Florida

Recent Approaches to Multivariate Data Analysis in the Health Sciences

Organizer:

Brian Neelon, Medical University of South Carolina

Chair:

Christopher Schmid, Brown University

Speakers:

Brian Neelon, Medical University of South Carolina

James O'Malley, Geisel School of Medicine at Dartmouth

Dongjun Chung, Medical University of South Carolina

Kuang-Yao Lee, Temple University

Statistical modeling in Alzheimer disease

Organizer:

Guoqiao (Peter) Wang, Washington University in St. Louis

Chair:

Chengjie Xiong, Washington University in St. Louis

Speakers:

Richard J Chappell, University of Wisconsin

Dandan Liu, Vanderbilt University

Barbara Wendelberger, Berry Consultants

Sheng Luo, Duke University

Human Data Interaction: Gaining an Understanding of the Data Science Pipeline

Organizer:

Lucy D'Agostino McGowan, Wake Forest University

Chair:

Jeffrey Leek, Johns Hopkins University

Speakers:

Lucy D'Agostino McGowan, Wake Forest University

Hadley Wickham, RStudio

Sean Kross, University of California San Diego

Kayla Frisoli, Carnegie Mellon University

Novel Tensor Methods for Complex Biomedical Data

Organizer & Chair:

Gen Li, Columbia University

Speakers:

Miaoyan Wang, University of Wisconsin-Madison

Eric Chi, North Carolina State University

Weining Shen, University of California, Irvine

Xuan Bi, University of Minnesota

Innovations in Statistical Neuroscience

Organizer & Chair:

Jeff Goldsmith, Columbia University

Speakers:

Damla Senturk, University of California, Los Angeles

Taki Shinohara, University of Pennsylvania

Julia Wrobel, University of Colorado, Denver

Michele Guindani, University of California, Irvine

Recent advances in neuroimaging analytics

Organizer:

Zainab Albar, Case Western Reserve University School of Medicine

Chair:

Abdus Sattar, Case Western Reserve University School of Medicine

Speakers:

Brian Caffo, Johns Hopkins University

Marina Vannucci, Rice University

Hernando Ombao, King Abdullah University of Science and Technology

Dipankar Bandyopadhyay, Virginia Commonwealth University

INVITED PRELIMINARY PROGRAM (CONTINUED)

Recent development in risk estimation and biomarker modeling with a focus in Alzheimer's disease

Organizer:

Zheyu Wang, Johns Hopkins University

Chair:

Danping Liu, National Cancer Institute

Speakers:

Sebastien Haneuse, Harvard T.H. Chan School of Public Health

Zheyu Wang, Johns Hopkins University

Chengjie Xiong, Division of Biostatistics, Department of Neurology, Washington University in St. Louis

Laurent Younes, Johns Hopkins University

Bayesian Approaches for Complex Innovative Clinical Trial Design

Organizers:

Joseph G. Ibrahim and **Matthew A. Psioda**, University of North Carolina, Chapel Hill

Chair:

Brady Nifong, University of North Carolina, Chapel Hill

Speakers:

Joseph G. Ibrahim, University of North Carolina, Chapel Hill

Kert Viele, Berry Consultants

Matthew A. Psioda, University of North Carolina, Chapel Hill

Fang Chen, SAS Institute

Bayesian Analysis in Functional Brain Imaging

Organizer & Chair:

Donatello Telesca, University of California Los Angeles

Speakers:

Jeffrey S. Morris, University of Pennsylvania

Marc Fiecas, University at Minnesota

John Shamshoian, University of California Los Angeles

Meng Li, Rice University

Current Development in Analyzing EHR and Biobank Data

Organizer & Chair:

Xue Zhong, Vanderbilt University

Speakers:

Andrey Rzhetsky, University of Chicago

Dajiang Liu, Pennsylvania State University

Leena Choi, Vanderbilt University

Zhijun Yin, Vanderbilt University

Highly Efficient Designs and Valid Analyses for Resource Constrained Studies

Organizer & Chair:

Jonathan Schildcrout, Vanderbilt University Medical Center

Speakers:

Paul Rathouz, University of Texas, Dell Medical School

Sarah Sauer, Harvard School of Public Health

Ran Tao, Vanderbilt University Medical Center

Patrick Heagerty, University of Washington

Artificial Intelligence for Prediction of Health Outcomes

Organizer:

Lihui Zhao, Northwestern University

Chair:

Lei Liu, Washington University in St. Louis

Speakers:

Qi Long, University of Pennsylvania

Jon Steingrimsson, Brown University

Balasubramanian Narasimhan, Stanford University

Lihui Zhao, Northwestern University

Using Machine Learning to Analyze Randomized Trials: Valid Estimates and Confidence Intervals Without Model Assumptions

Organizer:

Michael Rosenblum, Johns Hopkins University

Chair:

Bingkai Wang, Johns Hopkins University

Speakers:

Alex Luedtke, University of Washington

Michael R. Kosorok, University of North Carolina at Chapel Hill

Stefan Wager, Stanford University

Michael Rosenblum, Johns Hopkins University

Improving the development and validation of screening tests for rare diseases

Organizer:

Gene Pennello, Food and Drug Administration

Chair:

Norberto Pantoja-Galicia, Food and Drug Administration

Speakers:

Ruth Etzioni, Fred Hutchinson Cancer Research Center

Hormuzd Katki, National Cancer Institute

Noorie Hyun, Medical College of Wisconsin

Qing Pan, George Washington University

Bayesian Nonparametric Methods for Causal Inference and Missing Data

Organizer:

Antonio R. Linero, University of Texas at Austin

Chair:

Yinpu Li, Florida State University

Speakers:

Jason Roy, Rutgers University

Nicole Carnegie, Montana State University

Michael J. Daniels, University of Florida

Antonio R. Linero, University of Texas at Austin

Statistical Analysis of Biological Shapes

Organizer & Chair:

Anuj Srivastava, Florida State University

Speakers:

Sayan Mukherjee, Duke University

Ian Dryden, Nottingham University, UK

R. Todd Ogden, Columbia University

Sebastian Kurtek, Ohio State University

Recent Developments in Semiparametric Transformation Models

Organizer:

Chun Li, Case Western Reserve University

Chair:

Gustavo Amorim, Vanderbilt University

Speakers:

Jan De Neve, Ghent University

Bryan E. Shepherd, Vanderbilt University

Chun Li, Case Western Reserve University

Discussant:

Frank Harrell, Vanderbilt University

Innovative Statistical Approaches for High-dimensional Omic and Microbiomic Data

Organizer:

Subharup Guha, University of Florida

Chair:

Zhigang Li, University of Florida

Speakers:

Susmita Datta, University of Florida

J. Sunil Rao, University of Miami

Jyotishka Datta, University of Arkansas

Subharup Guha, University of Florida

Analysis and Integration of Large-Scale Biobank Data

Organizer & Chair:

Ryan Sun, University of Texas MD Anderson Cancer Center

Speakers:

Xihong Lin, Harvard University

Nilanjan Chatterjee, Johns Hopkins University

Manuel Rivas, Stanford University

Bhramar Mukherjee, University of Michigan

Novel methods to evaluate surrogate endpoints

Organizer:

Ludovic Trinquart, Boston University School of Public Health

Chair:

Michael LaValley, Boston University School of Public Health

Speakers:

Layla Parast, RAND Corporation

Isabelle Weir, Boston University School of Public Health

Emily Roberts, University of Michigan

Ariel Alonso Abad, Katholieke Universiteit Leuven

IMS INVITED PRELIMINARY PROGRAM

Causal Inference with Genetic Data

Organizer & Chair:

Qingyuan Zhao, University of Cambridge

Speakers:

Jingshu Wang, University of Chicago

Farhad Hormozdiari, Harvard University

Hyunseung Kang, University of Wisconsin, Madison

Luke O'Connor, Harvard University

Recent Advances in Statistical Methods for Single-Cell Omics Analysis

Organizer:

Yuchao Jiang, University of North Carolina, Chapel Hill

Chair:

Rhonda Bacher, University of Florida

Speakers:

Mengjie Chen, University of Chicago

Wei Chen, University of Pittsburgh

Yuchao Jiang, University of North Carolina, Chapel Hill

Xiang Zhou, University of Michigan

Recent Advances in Microbiome Data Analysis

Organizer:

Anru Zhang, University of Wisconsin, Madison

Chair:

Chi Zhang, Indiana University

Speakers:

Michael Wu, Fred Hutchinson Cancer Research Center

Dan Nicolae, University of Chicago

Hongyu Zhao, Yale University

Anru Zhang, University of Wisconsin, Madison

Challenges and Opportunities in Methods for Precision Medicine

Organizer:

Yingqi Zhao, Fred Hutchinson Cancer Research Center

Chair:

Xinyuan Dong, University of Washington

Speakers:

Peter Song, University of Michigan

Michele Santacatterina, Cornell University

Yingqi Zhao, Fred Hutchinson Cancer Research Center

Yuanjia Wang, Columbia University (Discussant)

High Dimensional Methods for Mechanistic Integration of Multi-type Omics

Organizer:

Qi Zhang, University of Nebraska at Lincoln

Chair:

Min Jin Ha, University of Texas MD Anderson Cancer Center

Speakers:

Xing Qiu, University of Rochester

Sunduz Keles, University of Wisconsin, Madison

Yuehua Chi, Michigan State University

Qi Zhang, University of Nebraska at Lincoln

Modern Functional Data Analysis

Organizer & Chair:

Meng Li, Rice University

Speakers:

Yehua Li, University of California, Riverside

Daniel Kowal, Rice University

Ana-Maria Staicu, North Carolina State University

Jane-Ling Wang, University of California, Davis

New Perspectives on Data Integration in Genome-wide Association Studies

Organizer:

Qiongshi Lu, University of Wisconsin, Madison

Chair:

Hyunseung Kang, University of Wisconsin, Madison

Speakers:

Jingjing Yang, Emory University

Heather Wheeler, Loyola University of Chicago

Qiongshi Lu, University of Wisconsin, Madison

Wei Pan, University of Minnesota

Asymmetrical Statistical Learning for Binary Classification

Organizer:

Jingyi Jessica, University of California, Los Angeles

Chair:

Anqi Zhao, National University of Singapore

Speakers:

Jingyi Jessica, University of California, Los Angeles

Wei Vivian Li, Rutgers University

Yang Feng, New York University

Xin Tong, University of Southern California

Advances in Statistical Modeling for Multi-omics Data Integration

Organizer:

Sunyoung Shin, University of Texas at Dallas

Chair:

Qi Zhang, University of Nebraska at Lincoln

Speakers:

Jung-Ying Tzeng, North Carolina State University

Shariq Mohammed, University of Michigan

George Tseng, University of Pittsburgh

Min Jin Ha, University of Texas MD Anderson Cancer Center



SHORT COURSES

	Short Course Registration Fees					
	By January 15			After January 15		
	Half Day	Second Half Day	Full Day	Half Day	Second Half Day	Full Day
Member	\$250	\$200	\$350	\$275	\$225	\$375
Non-Member	\$325	\$290	\$425	\$350	\$315	\$450

Sunday, March 22, 2020

SC 1.

Implementing Bayesian Adaptive Designs: From Theory to Practice

Full Day | 8:00 am – 5:00 pm

Ying Yuan, University of Texas MD Anderson Cancer Center

J. Jack Lee, University of Texas MD Anderson Cancer Center

Description: As a statistical framework, a Bayesian approach is intuitive, logical, coherent, elegant, and adaptive in nature. It is uniquely suitable for the design and analysis of clinical trials. The learning curve of Bayesian methods, however, is steep and the complexity of Bayesian computation can be intimidating. To overcome these hurdles, this short course is designed to provide an overview of Bayesian theory and its application to adaptive clinical trials. The emphasis is on implementing such designs by turning theory into practice. Easy-to-use Shiny applications and downloadable standalone programs will be introduced to facilitate the study design, conduct, and analysis of Bayesian adaptive methods. The main application areas include adaptive dose finding, adaptive toxicity and efficacy evaluation, posterior probability and predictive probability for interim monitoring of study endpoints, outcome-adaptive randomization, hierarchical models, adaptive biomarker identification and validation, multi-arm, multi-stage designs, and platform designs, etc. Bayesian adaptive designs allow flexibility in clinical trial conduct, increase study efficiency, enhance clinical trial ethics by treating more patients with more effective treatments, increase the overall success rate for drug development and can still preserve frequentist operating characteristics by controlling type I and type II error rates. Lessons learned from real trial examples and practical considerations for conducting adaptive designs will be given.

SC 2.

Practical solutions for working with electronic health records data

Full Day | 8:00 am – 5:00 pm

Rebecca Hubbard, University of Pennsylvania

Description: The widespread adoption of electronic health records (EHR) as a means of documenting medical care has created a vast resource for the study of health conditions, interventions, and outcomes in the general population. Using EHR data for research facilitates the efficient creation of large research databases, execution of pragmatic clinical trials, and study of rare diseases. Despite these advantages, there are many challenges for research conducted using EHR data. To make valid inference, statisticians must be aware of data generation, capture, and availability issues and utilize appropriate study designs and statistical analysis methods to account for these issues.

This short course will introduce participants to the basic structure of EHR data and analytic approaches to working with these data through a combination of lecture and hands-on exercises in R. The first part of the course will cover issues related to the structure and quality of EHR data,

including data types and methods for extracting variables of interest; sources of missing data; error in covariates and outcomes extracted from EHR data; and data capture considerations such as informative visit processes and medical records coding procedures. Participants will have the opportunity to explore a synthetic EHR-derived data set to gain familiarity with the structure of EHR data and data exploration and visualization tools for identifying data quality issues. In the second half of the course, we will discuss statistical methods to mitigate some of the data quality issues arising in EHR, including missing data and error in EHR-derived covariates and outcomes. R code will be provided for implementation of the presented methods, and hands-on exercises will be used to compare results of alternative approaches.

This short course is of interest to researchers without prior experience working with EHR data as well as more experienced individuals interested in learning practical solutions to some common analytic challenges. The overarching objective of this course is to provide participants with an introduction to the structure and content of EHR data as well as a set of practical tools to investigate and analyze this rich data resource.

SC 3.

Design and Analysis of Sequential, Multiple Assignment, Randomized Trials for small and large samples

Full Day | 8:00 am – 5:00 pm

Kelley Kidwell, University of Michigan

Thomas Braun, University of Michigan

Roy Tamura, University of South Florida

Description: Sequential, multiple assignment, randomized trials (SMARTs) have been implemented in oncology, drug abuse, ADHD, obesity, depression, insomnia, autism, and smoking cessation, among other areas. A SMART is a multi-stage trial design that allows for individuals to be randomized at two or more stages based on intermediate outcomes. SMART design has primarily been focused on informing the construction of dynamic treatment regimens (DTRs) or adaptive interventions. DTRs are evidence-based treatment guidelines where treatment can be altered over time based on the individual. Most SMARTs are conducted in large samples and analyzed using frequentist methods to explore potential delayed effects and treatment interactions over time to estimate and compare DTRs. More recently, Bayesian and frequentist methods have been developed to apply the SMART design in rare diseases, or more generally, small samples to find the best overall treatment sharing information across stages. Thus, a SMART design can also be used to strengthen inference on the best single treatment. The Bayesian methods developed to analyze SMART data in small samples may also be extended to find the most effective DTRs. This short course will introduce SMART design for both large and small samples. Case studies will be used as examples and R code will be provided for practice.

SC 4.

Programming with hierarchical statistical models: Using the BUGS-compatible NIMBLE system for MCMC and more

Half Day | 8:00 am – 12:00 pm

Christopher Paciorek, University of California, Berkeley

Description: NIMBLE (r-nimble.org) is a system for fitting and programming with hierarchical models in R that builds on the BUGS language for declaring models. NIMBLE provides analysts with a flexible system for using MCMC, sequential Monte Carlo, MCEM, and other techniques on user-specified models. It provides developers and methodologists with the ability to write algorithms in an R-like syntax that can be easily disseminated to users. C++ versions of models and algorithms are created for speed, but these are manipulated from R without any need for analysts or algorithm developers to program in C++. While analysts can use NIMBLE as a drop-in replacement for WinBUGS or JAGS, NIMBLE provides greatly enhanced functionality in a number of ways.

This hands-on tutorial will first show how to specify a hierarchical statistical model using BUGS syntax and fit that model using MCMC. Participants will learn how to customize the MCMC for better performance (choosing samplers and blocking schemes) and how to specify one's own statistical distributions and functions to extend the syntax of BUGS. We will demonstrate the use of NIMBLE for biostatistical methods such as semiparametric random effects models and clustering models using Bayesian nonparametric techniques. We will also demonstrate the use of NIMBLE's built-in reversible jump MCMC for variable selection and the use of NIMBLE's CAR-based spatial models.

SC 5.

Multivariate meta-analysis methods

Half Day | 1:00 pm – 5:00 pm

Haitao Chu, University of Minnesota Twin Cities**Yong Chen**, University of Pennsylvania

Description: Comparative effectiveness research aims to inform health care decisions concerning the benefits and risks of different prevention strategies, diagnostic instruments and treatment options. A meta-analysis is a statistical method that combines results of multiple independent studies to improve statistical power and to reduce certain biases compared to individual studies. Meta-analysis also has the capacity to contrast results from different studies and identify patterns and sources of disagreement among those results. The increasing number of prevention strategies, assessment instruments and treatment options for a given disease condition, as well as the rapid escalation in costs, have generated a need to simultaneously compare multiple options in clinical practice using innovative and rigorous multivariate meta-analysis methods.

This short course, co-taught by Drs. Chu and Chen who have collaborated on this topic for more than a decade, will focus on most recent developments for multivariate meta-analysis methods. This short course will offer a comprehensive overview of new approaches, modeling, and applications on multivariate meta-analysis. Specifically, this short course will discuss the contrast-based and the arm-based network meta-analysis methods for multiple treatment comparisons; network meta-analysis methods for multiple diagnostic tests; multivariate extension of network meta-analysis; and multivariate meta-analysis methods estimating complier average causal effect in randomized clinical trials with noncompliance.

Case studies will be used to illustrate the principles and statistical methods introduced in this course. R codes with real examples will also be provided. This application oriented short course should be of interest to researchers who would apply up-to-date multivariate meta-analysis methods and

who are interested in developing novel methods for multivariate meta-analysis. We anticipate that it will be well-received by an interdisciplinary scientific community, and play an important role in improving the rigor and broadening the applications of multivariate meta-analysis.

SC 6.

Statistical Network Analysis with Applications to Biology

Half Day | 8:00 am – 12:00 pm

Ali Shojaie, University of Washington**George Michailidis**, University of Florida

Description: Networks and network analysis methods are increasingly used by biomedical scientists and computational biologists to glean insight into cellular functions and mechanisms of disease propagation and initiation. While many approaches have been recently proposed, statistical and machine learning tools commonly play a key role in such analyses. This course provides a practical introduction to statistical network analysis methods for biological application. This short course will cover the following classes of methods: (i) statistical methods for network-structured data analysis; (ii) inference methods for undirected networks. The course will primarily focus on methods that are widely used in biological applications and, in particular, in the analysis of -omics data, as well as recent developments in statistical machine learning. Throughout, the emphasis will be on practical applications of network analysis methods, as well as their limitations, including validation of results and tools for reproducible research. Case studies using publicly available -omics data will be used to describe various statistical network analysis methods.

SC 7.

Trial Design and Analysis Using Multisource Exchangeability Models

Half Day | 1:00 pm – 5:00 pm

Joseph Koopmeiners, University of Minnesota**Brian Hobbs**, Cleveland Clinic**Alex Kaizer**, University of Colorado

Description: Modern biomedical applications often call statisticians to estimate the effect of a treatment or intervention in sub-groups defined by demographic, genetic, or other participant information. This results in increasingly smaller sample sizes, which reduces power. Hierarchical modeling allows sub-group specific effects to be “shrunk” together, thus borrowing strength and increasing precision. However, standard hierarchical approaches are limited because they lack the flexibility to model complex relationships between sub-groups, where some sub-groups are exchangeable, while others are not. In this short course, we discuss trial design using multi-source exchangeability models (MEMs), which provide a flexible approach to estimating sub-group-specific effects, while accounting for complex relationships between subgroups. We provide an overview of the methodology and a comparison with standard hierarchical modeling approaches. We then discuss multi-source modeling in the context of trial design, focusing specifically on platform and basket trial designs, illustrating the advantage of multi-source trial designs vs. standard designs. The ability to incorporate other adaptive elements, such as adaptive randomization, will also be discussed. Much of the course will be illustrated via the basket package in R.

TUTORIALS

Tutorial Registration Fees

	By January 15	After January 15
Member	\$75	\$85
Non-Member	\$85	\$95
Student	\$40	\$50

Monday, March 23 - Tuesday, March 24, 2020

T 1.

Statistical methods for geometric functional data

Monday, March 23 | 8:30 am – 10:15 am

Karthik Bharath, University of Nottingham, UK

Sebastian Kurtsek, The Ohio State University

Description: How can one quantify variation in Hippocampal shapes obtained from MRI images as 2D curves? How does one model intra-tumour heterogeneity using samples of pixel densities? Answers to such questions on functional data with rich geometric structure require methods that are at a nascent developmental stage, and are typically not part of the standard functional data toolbox.

In this tutorial, we shall introduce some modern statistical and computational tools for handling such functional data objects. The first part of the tutorial will focus on the representation of such data and computation of descriptive summaries such as averages and PCA, with numerous references to existing works and computing resources. The focus then moves to understanding the challenges involved in developing regression models involving such data objects. The last part of the tutorial will present an overview of the current state-of-the-art, and suggest future directions of research with a view towards inference.

T 2.

Disease Risk Modeling and Visualization using R

Monday, March 23 | 10:30 am - 12:15 pm

Paula Moraga, University of Bath, UK

Description: Disease risk models are essential to inform public health and policy. These models can be used to quantify disease burden, understand geographic and temporal patterns, identify risk factors, and measure inequalities. In this tutorial we will learn how to estimate disease risk and quantify risk factors using areal and geostatistical data. We will also create interactive maps of disease risk and risk factors, and introduce presentation options such as interactive dashboards. We will work through two disease mapping examples using data of malaria in The Gambia and cancer in Pennsylvania, USA. We will cover the following topics:

- Model disease risk in different settings,
- Manipulate and transform point, areal and raster data using spatial packages,
- Retrieve high resolution spatially referenced environmental data using the raster package,
- Fit and interpret spatial models using Integrated Nested Laplace Approximations (INLA) (<http://www.r-inla.org/>),
- Map disease risk and risk factors using leaflet (<https://rstudio.github.io/leaflet/>) and ggplot2 (<https://ggplot2.tidyverse.org/>),

The tutorial examples will focus on health applications, but the approaches covered are also applicable to other fields that use georeferenced data including epidemiology, ecology or demography. We will provide clear descriptions of the R code for data importing, manipulation, modeling and visualization, as well as the interpretation of the results. The tutorial materials are drawn from the book 'Geospatial Health Data: Modeling and Visualization with R-INLA and Shiny' by Paula Moraga (2019, Chapman & Hall/CRC Biostatistics Series).

T 3.

Integration of Genetics and Imaging Data in Scientific Studies

Monday, March 23 | 1:45 pm - 3:30 pm

Debashis Ghosh, Colorado School of Public Health

Description: In this tutorial, we will discuss issues and approaches in the consideration of combining genetics and imaging data in biological and biomedical studies. A variety of motivating examples will be described. A common life-cycle pipeline for analytics will be discussed, along with some emergent lessons that have been learned through the literature. I will also focus on the types of questions that typically asked with these data sources and the roles of regression modelling and machine learning in these contexts.

T 4.

Causal Inference Using the R TWANG Package for Mediation and Continuous Exposures

Monday, March 23 | 3:45 pm - 5:30 pm

Donna Coffman, Temple University

Description: When randomized experiments are infeasible, analysts must rely on observational data in which treatment (or exposure) is not randomly assigned (e.g., in health policy research or when determining the effects of environmental exposures). In addition, knowing the mechanisms or pathways through which a treatment works requires causal inference methods because the mediator is not randomly assigned. This tutorial aims to promote the use of causal inference methods for mediation and continuous exposures using the R twang package. The twang package recently was expanded to handle mediation and continuous exposures. We will first introduce causal mediation using the potential outcomes framework and weighting methods for estimating the causal mediation effects. We then will illustrate the implementation of gradient (or generalized) boosting models (GBM) for estimating the weights using the R twang package. Next, we will introduce the generalized propensity score (GPS) for continuous exposures. We will illustrate the implementation of GBM for estimating the GPS using the R twang package. The tutorial will provide relevant statistical background knowledge of mediation, the GPS, GBM, and weighting but will focus on implementation rather than statistical theory. Attendees should have some familiarity with propensity score analysis (e.g., for binary treatments/ exposures) and regression models, but knowledge of causal mediation, GPS, and GBM is not necessary. Attendees will be provided with the R code.

T 5.

Fundamentals of difference-in-differences studies

Tuesday, March 24 | 1:45 pm - 3:30 pm

Laura A. Hatfield, Harvard Medical School**Bret Zeldow**, Harvard Medical School

Description: A popular design in policy and economics research, difference-in-differences contrasts a treated group's pre- to post-intervention change in outcomes to an untreated comparison group's change in outcomes over the same period. The difference between the changes in the treated and comparison groups may be interpreted as the causal effect of the intervention if one assumes that the comparison group's change is a good proxy for the treated group's counterfactual change if it had not been treated. In this tutorial, we review the fundamentals of difference-in-differences studies, including key causal assumptions and ways to assess their plausibility, selection of a good comparison group, matching and regression techniques, statistical inference, and robustness checks.

T 6.

R package development

Tuesday, March 24 | 3:45 pm - 5:30 pm

John Muschelli, Johns Hopkins University

Description: The jump from R programming with scripts to packages can be quite large. We hope to answer some of the basic questions of getting you started with package development answering the questions of: How do you create a basic R package? What are some R package best practices? How do I know if I can install this package? How do I depend on other packages? The tutorial will go through a simple 2-function package and describe resources to use after the course, including the R Package Development YouTube series: <https://www.youtube.com/watch?v=79s3z0gluFU&list=PLk3B5c8ICV-T4LM0mwEyWlunlunLyEqjM&index=1>



ROUNDTABLES

Registration is required. Roundtable Registration Fee: \$45

Monday, March 23 12:15-1:30 p.m.

R 1.

Statistical positions in government

Paul Albert, National Cancer Institute

Description: The federal government provides exciting career opportunities for biostatisticians. There are positions ranging from mathematical statisticians, postdoctoral fellows, and tenure-track investigators. We will discuss these different types of positions, including the different types of work and the citizen requirements. We will discuss how to locate positions and the application/interview process. Focus will be on positions at the National Institutes of Health and the Food and Drug Administration where most government biostatisticians work.

R 2.

How Can We Improve Biostatistical Reviewing for Medical Journals?

Cynthia Garvan, University of Florida

Description: The scientific community is justifiably concerned about both the rigor and reproducibility of medical research. From Statistics Done Wrong (Reinhart, 2015) to findings from a recent National Academies of Sciences, Engineering, and Medicine workshop convened to address questions about the reproducibility of scientific research, lack of statistics education has been identified as a major culprit in the generation of poor science. Beyond a lack of statistics education for researchers, a lack of education for biostatistical reviewers is problematic. In this roundtable we will discuss steps needed to improve this vital contribution of the biostatistician to advance medical research.

R 3.

Early career mentoring: What do I do now?

Lance A. Waller, Emory University

Description: A career in the field of Biostatistics can be rewarding but also a challenge to navigate early in one's career. Some parts of the field seem to be changing quickly, others seem to stay the same. Departments and research groups grow and shrink, scientific (and funding!) priorities shift with new technology, new discoveries, and new approaches. In this roundtable, we will consider multiple issues involved with beginning a career in Biostatistics. We will discuss the different "currencies of success" associated with careers in academic, industry, and government organizations. We will discuss communication skills, funding strategies, collaboration skills, and opportunities to contribute to the field in multiple ways. Please feel free to bring questions (or send them to the facilitator beforehand) to allow the discussion to address your needs as well as these guidelines.

R 4.

Publish or Perish in Biostatistics

Geert Molenberghs, Hasselt University and KU Leuven, Belgium

Description: Like statistics and biostatistics itself, publishing in biostatistics journals is in full transition: from paper to also electronic to electronic only; what about open access? What about reproducibility and, relatedly, scientific integrity?; all of this against the background of privacy protection. Do we publish in a journal owned by a commercial publisher, in a society-owned journal, in a cooperative journal, or perhaps in no journal at all? Do we prefer a statistics or a data science journal – or is this a false dichotomy? What is the relative status of theory, theorems, methodology, modeling, data analysis, and simulations? Apart from being an author, what are the relative advantages and drawbacks of acting as referee or Associate Editor? Should we give weight to impact factors or are they ignorable?

R 5.

Understanding the NIH Grant Review Process

Scarlett L. Bellamy, Drexel University

SOLD OUT

Description: Have you ever wondered what it's like to be member of an NIH study section? Have you ever wondered about the review process for grants that you have submitted or plan to submit? In this roundtable we will discuss the NIH review process, from the perspective of a current member of Biostatistical Methods and Research Design (BMRD) Study Section. Attendees should leave the discussion with a better understanding the grant review process to better inform how they might prepare future grants or as they consider service on future study sections.

R 6.

Data Science Programs

Joel Greenhouse, Carnegie Mellon University

SOLD OUT

Description: Academic and online data science programs are popping up everywhere. Employers now post positions for data scientist and rarely for statisticians or data analyst. If statistical thinking is the bedrock of data science, how can we insure that statistics and good statistical thinking play a proper role in the training of the next generation of statistical scientist? What has your experience been with the emergence of data science at your University or your place of employment. These, as well as other participant generated questions will be the source of discussion for this roundtable.

R 7.

Being a Biostatistician in a Medical Center

Bryan E. Shepherd, Vanderbilt University Medical Center

SOLD OUT

Description: Statisticians are in great demand in medical centers. This can be both exciting and daunting. We will discuss strategies for flourishing in a medical center, from gaining respect among medical collaborators, to identifying and pursuing interesting research projects, to protecting one's time.

R 8.

How to navigate collaborative research

Andrea B. Troxel, NYU School of Medicine

Description: We will discuss best practices for working with collaborators to develop grant proposals, guidelines for effort allocation for both faculty and staff, and timelines for grant preparation. We will also discuss common roadblocks that arise, and offer tips for troubleshooting challenging situations.

R 9.

Running a Statistical Consulting Business

Alicia Y. Toledano, Biostatistics Consulting, LLC

SOLD OUT

Description: Running your own consultancy has many benefits, such as choosing your clients and projects, setting your own hours, and possibly working from home. This roundtable will focus on meeting challenges and carrying out responsibilities associated with those benefits. We will discuss making decisions related to: incorporation, using an attorney to review contracts, accounting, insurance, SOPs including for quality control, and having subcontractors and/or employees. Based on time and attendees' interests, we may also discuss one or more of: 1) Deciding what projects to undertake, with respect to areas of statistical expertise and 2) project type, such as short- or long-term; papers, grants, and/or FDA submissions; 3) How to get clients; 4) Working with clients that are not local; and 5) Ensuring your continued professional development statistically, and in soft skills like working as part of an interdisciplinary team. Come with questions and/or suggestions!



WORKSHOP & STUDENT OPPORTUNITIES

Special Opportunities for Our Student Members

PARTICIPATE IN STUDENT-FOCUSED ELEMENTS OF THE SCIENTIFIC PROGRAM:

The Sunday night mixer presents an ideal opportunity to obtain feedback on your work in our annual ENAR Poster session. This year we will conduct our fifth Poster Competition for the session. Prizes will be announced within topical areas in the Tuesday morning Presidential Invited Address session. A student winner will be selected within each topical area. Watch for details on entering the competition on the website when the meeting registration goes live.

EDUCATIONAL AND PROFESSIONAL DEVELOPMENT OPPORTUNITIES:

Be sure to take advantage of the educational offerings to be held during the meeting – short courses, tutorials, and roundtable discussions (see pages 22-27).

Don't Forget the Popular ENAR Career Placement Services!

(See page 34.)

NETWORK WITH YOUR FELLOW STUDENTS

Back by popular demand, the **Council for Emerging and New Statisticians (CENS) Mixer** will be held the evening of Monday, March 23, 2020. This is a great way to meet and greet your fellow students from other graduate programs. Don't miss this opportunity to begin building connections with your future colleagues and friends.



FOSTERING DIVERSITY IN BIostatISTICS WORKSHOP

Sunday, March 22, 2020 | 10:30am – 6:30pm

On Sunday, March 22, 2020 the Eastern North American Region (ENAR) of the International Biometric Society will be hosting a workshop entitled “Fostering Diversity in Biostatistics.” The workshop will provide a forum for discussion of important issues related to diversity and will be held at the JW Marriott in Nashville, Tennessee. Themes of the workshop will include career and training opportunities within biostatistics. The workshop will focus on connecting underrepresented minority students interested in biostatistics with professional biostatisticians in academia, government and industry.

Through panel discussions, current biostatistics graduate students as well as biostatistics professionals in academia, government, and industry will share their experiences and discuss topics such as mentoring, recruiting, and retaining students in related graduate programs.

Thus, in addition to discussion with faculty and students from undergraduate institutions, this workshop provides opportunities to network and exchange ideas with participants from various graduate schools, industry, pharmaceutical companies, and government agencies.

Additionally, this year will be the 20th Anniversary of the workshop. Due to this milestone, there will be acknowledgements and recognition of key leadership, committee members, and those who have made significant contributions to the success of this workshop through the years.

Registration is required and lunch will be provided.

To Learn More about the Workshop, Please Contact:

Felicia R. Simpson

Diversity Workshop Co-Chair
Winston-Salem State University
601 S. Martin Luther King Jr. Drive
Winston-Salem, NC 27110
Phone: (336) 750-2779
Email: griffinfr@wssu.edu

Loni Philip Tabb

Diversity Workshop Co-Chair
Drexel University
3215 Market Street
Philadelphia, PA 19104
Phone: (267) 359-6217
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Diversity Workshop Planning Committee

Danisha Baker, Naval Nuclear Lab

Scarlett Bellamy, Drexel University

Emma Benn, Mount Sinai

Portia Exum, SAS Institute Inc.

Vladimir Geneus, Eli Lilly and Company

Justine Herrera, Columbia University

Miguel Marino, Oregon Health & Science University

Reneé Moore, Emory University

Knashawn Morales, University of Pennsylvania

DISTINGUISHED STUDENT PAPER AWARDS

Apply for the 2020 ENAR Student Award Competition

ENAR DISTINGUISHED STUDENT PAPER AWARDS

Up to twenty Distinguished Student Paper Awards are given each year to assist students in presenting contributed papers at the ENAR Spring Meeting. Each winner receives a certificate, reimbursement for travel expenses up to \$650, tuition waiver for one ENAR short course of choice, and an invitation to the Monday evening ENAR President's Reception. The author of the most outstanding paper also receives the John Van Ryzin Award, which includes an additional \$500 prize.

ELIGIBILITY

To be eligible, a student must be an ENAR member, a degree candidate at an accredited institution in any term during 2019, and able to present the research during the ENAR Spring Meeting, March 22-25, 2020, in Nashville, Tennessee. Reported research should be the work of the student and relevant to biometric applications. The student must be the first (senior) author, although the manuscript can be coauthored with a faculty advisor and/or a small number of collaborators. The paper must not be published or accepted for publication at the time of submission. Previous recipients of a Distinguished Student Paper Award from any region of the International Biometric Society and students presenting papers on the 2020 invited program are not eligible.

All required materials for a Student Paper Award must be received by the ENAR Business Office, including the electronic submission of the manuscript and the abstract through www.enar.org, by 11:59 p.m. ET October 1, 2019.

REVIEW CRITERIA

Up to 20 award winners will be selected through review, blinded to authorship and institutional affiliation, by the ENAR Student Awards Committee chaired by 2019 ENAR Immediate Past President Jeffrey S. Morris.

Selection criteria will emphasize the strength of the manuscript in four areas:

- Motivation by a relevant problem;
- Methodological development or investigation relevant to the motivating problem;
- Scientifically meaningful illustration of proposed methodology;
- Clarity and style of presentation.

Submission of Student Papers

All manuscripts and supporting documentation must be submitted No Later Than 11:59 p.m. ET October 1, 2019. You are required to complete Steps 1-3. No identifying information should be included anywhere in the paper or the filename submitted online.

Only complete submissions that meet the eligibility requirements, follow the described guidelines, and are received by October 1 will be considered. (Please refer to the complete details of Submission of Student Papers below.) Manuscripts are reviewed blinded (e.g., without author or institutional identification). Please be certain the text contains no such identifying information or obvious cues.

ENAR STUDENT PAPER AWARDS GUIDELINES FOR MANUSCRIPT PREPARATION

Manuscripts should be no more than 15 pages in length, with one-inch margins, a 12-point font size, and no more than 25 lines per page, double-spaced. The submission should include a title page that gives the title, a brief abstract one paragraph in length, and keywords. Authors' names, co-authors' names, and affiliations should not be included on the title page. No identifying information should be included anywhere in the paper or the filename submitted online. References should be typed using the style of the *Biometrics* journal. There should be NO MORE THAN 6 Tables and Figures (combined) and they should be separated from the text and included at the end of the manuscript. Tables and figures, the title page with summary abstract and keywords, appendices, acknowledgments, and references are not included in the 15-page limit. Finally, your final submission should be submitted as a PDF document. Out of respect for all applicants, NO EXCEPTIONS to the eligibility criteria or submission deadlines will be made. Please read these details carefully and plan ahead!

Step 1

Electronic Submission of Manuscript by
11:59 p.m. ET October 1, 2019:

Electronic submission (PDF only) of the manuscript, please complete the form at the bottom of the page. (Please note that the submitted manuscript should include a title page with no other identifying information regarding the author.)

Step 2

Register for the ENAR 2020 Spring Meeting by 11:59 p.m. ET October 1, 2019 at <https://portal.enar.org/Events/Register.aspx?EventCode=AM2020>. Meeting registration confirmation number is required to submit the abstract.

Step 3

Electronic Submission of Abstract by
11:59 p.m. ET October 1, 2019



CENS

CENS

Council for Emerging and New Statisticians

CENS EVENTS AT ENAR 2020

CENS Sponsored Session: The Three M's: Meetings, Memberships, and Money!

This panel will educate emerging and new statisticians on how to gain more from professional meetings and associations. Topics for discussion will include the benefits of joining a professional organization, means of navigating scientific sessions at a conference, developing a professional network, and obtaining funding (e.g., travel grants/awards, scholarships).

Networking Mixer: Monday, March 23, 2020 from 6:30 - 7:30pm

All students and recent graduates are invited to attend the CENS Networking Mixer. Registration is not required - so please plan to attend!

Networking Lunch: Tuesday, March 24, 2020 from 12:30 - 1:30pm at local restaurants

CENS will organize lunches for groups of attendees that share similar interests. The goal is to help attendees meet and network with each other. Although CENS will help to coordinate lunch at local restaurants, please note that lunch is at your own expense and CENS will not be able to cater to special dietary requirements. Closer to the meeting time, CENS will email all attendees interested in this networking event to request information to set up the groups and the lunch reservations. Participants meet at the CENS table in the Exhibition Hall at 12:15 PM before walking with their assigned group to a nearby restaurant for networking and lunch! Participation is open to all meeting attendees. If you would like to participate, please select the CENS lunch option on the registration form or email CENS at enar.cens@gmail.com.

About CENS

CENS was formed in 2012 by ENAR's Regional Advisory Board (RAB) to help ENAR better address the needs of students and recent graduates. CENS is composed of 10 graduate students, post-doctoral fellows, or recent graduates, who are ENAR members. With the help of the RAB Liaison, CENS members collaborate to bring student/recent graduate concerns to the attention of RAB and ENAR; work to help ENAR better serve all students/recent graduates; advise and help implement ideas to enhance the benefits of ENAR membership and to increase awareness of the benefits of ENAR membership to students; organize a CENS sponsored session at each ENAR Spring Meeting; assist in planning events that help advance students' and recent graduates' education and careers; and contribute to the development of ENAR's social media presence.

Join CENS

We are actively recruiting new members! Each member is appointed to a 2-year term. Within CENS, three or four people are chosen to participate in the steering committee, which reports to the RAB chair. Members of the steering committee will serve an additional year on CENS. CENS members meet in person yearly at the ENAR Spring Meeting and participate in conference calls throughout the year to plan events and address issues as they arise. If you are interested in joining CENS, please email enar.cens@gmail.com.

CENS seeks to advocate for the needs and concerns of students and recent graduates in collaboration with ENAR's Regional Advisory Board. Through annual events at the ENAR Spring Meeting, CENS strives to promote the benefits of participating in the ENAR community, support the advancement of students and recent graduates, and facilitate stronger connections within the statistical community.

CAREER PLACEMENT SERVICES

Hours of Operation:

Sunday, March 22	4:00 pm – 6:30 pm
Monday, March 23	9:30 am – 4:30 pm
Tuesday, March 24	9:30 am – 3:30 pm

General Information

The ENAR Career Placement Service helps match applicants seeking employment and employers. The service includes online registration and electronic uploading and distribution of applicant and employer materials through a password-protected online web-based facility. Visit the ENAR website at <https://enar.org/meetings/spring2020/career/> to register for the placement center.

Job announcements and applicant information can be readily accessed electronically, applicant information will be opened prior to the meeting, and materials will remain available online after the meeting. ENAR provides separate large reading/planning rooms for employers and applicants to review materials, dedicated placement center personnel onsite, and optional private interview rooms available for employers. Employer and applicant reading/planning rooms are equipped with a small number of computers with internet connections, and printers. However, to make the most efficient use of the Placement Center, we recommend that participants register listings in advance of the meeting to maximize visibility, explore the database before the meeting, and, if attending, have a laptop computer on-site.

Employers

Each year numerous qualified applicants, many approaching graduation, look to the ENAR Placement Center to begin or further their careers. Organizations including government agencies, academic institutions, and private pharmaceutical firms all utilize the ENAR Career Placement Service. ENAR recognizes the value the Career Placement Service provides to members and, to make it more efficient and effective for both employers and applicants, uses an electronic registration process and an online database of applicant resumes. All registered employers will receive full access to the placement center for up to 3 company representatives, up to 4 job postings, pre-meeting access to the online applicant database of resumes, full conference registration for up to 3 representatives, and access to the employer placement center room. ENAR is also offering those organizations seeking private interview space the option to reserve a private room for interviews in 4-hour increments.

Employer Registration

The registration fee for employers includes full access for up to four position postings and up to 3 representatives, pre-meeting access to the online applicant database of resumes, up to 3 full conference registrations, and access to the employer placement center room.

Employer Resource Area: ENAR will provide internet access, laptops, and printers available in the employer resource room for viewing the applicant resume database. However, for most efficient use of the resource room, we recommend employers have on-site access to a personal laptop computer.

Interview Suites

For an additional fee, employers may reserve private interview suites each day on a first-come, first-served basis. There are a very limited number of private suites, so please reserve early.

Employer Registration Instructions, Deadlines, and Fees

ALL employers must FULLY complete an online Employer Form located at: <https://enar.org/meetings/spring2020/career/> for each position listing. Attachments may be included.

Employer Registration Fees	By Jan. 15	After Jan. 15
Employer (3 reps/ 4 job postings)	\$1,650	\$1,725
Private Interview Room (Per 4-hour increments)	\$275	n/a
Additional Representatives (Cost per person includes conference registration)	\$520	\$620
Additional Job Postings	\$150	\$250

Applicants

If you have an interest in a career in biometrics, you can utilize the ENAR Career Placement Center to get started or get ahead. Many employers attend the ENAR Spring Meeting each year seeking qualified applicants. All registered applicants may register for up to three job classification types and receive full access to the placement center applicant room and the online employer job posting database. Please note that to fully utilize the online database, we recommend applicants register in advance to maximize visibility, explore the database shortly before the meeting and, if attending, have a laptop computer on-site.

Applicant Registration

The ENAR Career Placement Center provides opportunities for qualified applicants to meet employers and learn about organizations employing biostatisticians.

Visibility to Employers

The Online Applicant database is made available to all employers prior to the opening of the placement center.

Applicant Resource Area

ENAR will have internet access, three laptops, and printers in the applicant room for viewing the employer job posting database. However, for most efficient use we recommend applicants have on-site access to a personal laptop computer.

Applicant Registration Instructions, Deadlines, and Fees

ALL applicants must FULLY complete an online Applicant Form located at: <https://enar.org/meetings/spring2020/career/> for each job classification.

Applicant Registration Fees	By Jan. 15	After Jan. 15
Regular Registration	\$60	\$85
Student Registration	\$25	\$40

Applicants PLEASE NOTE: If you are planning to interview and participate on-site you must also register for the conference and pay the meeting registration fee.

FAMILY FRIENDLY ACCOMMODATIONS

ENAR maintains a family-friendly environment. However, to help with logistics/planning, all family members/guests, who wish to enter any of the meeting space, must be formally registered. Children 12 years and under may be registered for free. All other adults and children 13+ years will require a \$100 guest registration (if registering prior to January 15) to attend any ENAR Spring Meeting event. If registering after January 15, the guest registration fee is \$110.

Child Care

Attendees with child-care needs may contact Sitter Scout (<https://www.sitter-scout.com/>) for arrangements during the ENAR Spring Meeting. Please contact Jaclyn at 860-508-766 or Cori at 802-540-0433 for arrangements.

ENAR assumes no responsibility for any child-care services and all policies are established by the child-care facility.

New Mothers Room

If you have a child and want a private space for nursing or other infant care, please visit the ENAR registration desk.



SPRING MEETING REGISTRATION FORM

PLEASE PRINT OR TYPE

First Name: MI: Last Name:

Highest Degree: ☐ Bachelors ☐ Masters ☐ Doctorate Or Medical Degree ☐ Other

Name for badge if different:

Spouse/Guest Name For Badge:

Organization:

Mailing Address, City: State: ZIP Code: Country:

Daytime Phone: E-mail:

Membership in Participating Societies (Check all that apply.)

☐ ENAR ☐ WNAR ☐ ASA ☐ IMS ☐ IBS

Cancellation Policy: Registration fees, less a \$100 administrative fee, will be refunded if written notice is received by February 1, 2020. Requests for refunds will not be honored after February 1, 2020. **No refunds will be issued for the cancellation of short courses, tutorials, or roundtables.**

Meeting Registration Fees:

Employer Registration Fees	By Jan. 15	After Jan. 15
<input type="checkbox"/> ENAR/WNAR/IBS Member	\$450	\$ 525
<input type="checkbox"/> ASA Member (not a member of ENAR/WNAR/IBS)	\$600	\$675
<input type="checkbox"/> IMS Member (\$470-\$20 IMS contribution: \$450) (not a member of ENAR/WNAR/IBS)	\$450	\$525
<input type="checkbox"/> Nonmember (in any participating society)	\$650*	\$725
<input type="checkbox"/> Student (With letter from major professor verifying status.)	\$170	\$180
<input type="checkbox"/> Nonmember Student (With letter from major professor verifying status.)	\$200	\$210
<input type="checkbox"/> Guest (Adults and Children 13+ years old)	\$100	\$110
<input type="checkbox"/> Children 12 and under	free	free

* Includes membership in ENAR through December 31, 2020

Conduct Policy

☐ I agree to comply with the ENAR Code of Conduct Policy

Short Courses

The short courses will be held on Sunday, March 22.

(Indicate the short course number)

- ☐ Member (participating society): ☐ Nonmember:
- ☐ Full Day: \$350 (\$375 after Jan 15) ☐ Full Day: \$425 (\$450 after Jan 15)
- ☐ Half Day: \$250 (\$275 after Jan 15) ☐ Half Day: \$325 (\$350 after Jan 15)
- ☐ Second Half Day: \$200 ☐ Second Half Day: \$290
(\$225 after Jan 15) (\$315 after Jan 15)

Tutorials

The tutorials will be held on Monday, March 23 & Tuesday, March 24.

	Member	Nonmember	Student
T1	<input type="checkbox"/> \$75 (\$85 after Jan 15)	<input type="checkbox"/> \$85 (\$95 after Jan 15)	<input type="checkbox"/> \$40 (\$50 after Jan 15)
T2	<input type="checkbox"/> \$75 (\$85 after Jan 15)	<input type="checkbox"/> \$85 (\$95 after Jan 15)	<input type="checkbox"/> \$40 (\$50 after Jan 15)
T3	<input type="checkbox"/> \$75 (\$85 after Jan 15)	<input type="checkbox"/> \$85 (\$95 after Jan 15)	<input type="checkbox"/> \$40 (\$50 after Jan 15)
T4	<input type="checkbox"/> \$75 (\$85 after Jan 15)	<input type="checkbox"/> \$85 (\$95 after Jan 15)	<input type="checkbox"/> \$40 (\$50 after Jan 15)
T5	<input type="checkbox"/> \$75 (\$85 after Jan 15)	<input type="checkbox"/> \$85 (\$95 after Jan 15)	<input type="checkbox"/> \$40 (\$50 after Jan 15)
T6	<input type="checkbox"/> \$75 (\$85 after Jan 15)	<input type="checkbox"/> \$85 (\$95 after Jan 15)	<input type="checkbox"/> \$40 (\$50 after Jan 15)

Roundtables

The roundtables will be held on Monday, March 23. Space is limited. Preregistration is required. Indicate the number of your 1st, 2nd, and 3rd choices:

1st:

2nd:

3rd:

Fee: ☐ \$ 45

Please make lunch vegetarian ☐ YES ☐ NO

Council for Emerging and New Statisticians (CENS) Lunch, Tuesday, March 24:

I would like to join a group of attendees for a Tuesday networking lunch (at my own expense).

☐ YES ☐ NO

Final Program Format

I would like to receive the Final Abstract Book (you MUST check one)

☐ Mobile App Only ☐ Small Program Book – \$10.00

(Note that the full Final Program & Abstract book will only be available on the ENAR website)

The personal information ("personal data") you provide on this web page is being collected with your consent, for the exclusive purpose of permitting ENAR to facilitate your registration for the ENAR 2020 Spring Meeting and to contact and bill you in connection with that event and/or your ENAR membership status. The personal data is subject to the terms of ENAR's privacy policy (<https://www.enar.org/about/policy.cfm>). A party located in the European Union or European Economic Area wishing to exercise rights under the General Data Protection Regulation (GDPR) with respect to such personal data should contact privacy@enar.org.

Membership

☐ YES, I want to renew my 2020 ENAR membership or become an ENAR member.

☐ Regular Member: \$ 140
Includes electronic access to the *Biometrics* Journal, *JABES* Journal and *Biometric Bulletin* Newsletter

☐ Regular Member: \$ 150
Includes *Biometric Bulletin* Newsletter and a print subscription of one journal (choose one):
☐ *Biometrics* Journal **or** ☐ *JABES* Journal

☐ Regular Member: \$ 160
Includes print subscriptions to *Biometrics* Journal, *JABES* Journal, and *Biometric Bulletin* Newsletter

☐ Student Member: \$ 20
Includes electronic access to the *Biometrics* Journal, *JABES* Journal and *Biometric Bulletin* Newsletter

TOTAL PAYMENT:

Form of Payment (if not registering online):

☐ Check* ☐ Money Order*

☐ Please call me to pay via credit card over the phone.

*The check or money order should be in U.S. currency, payable to ENAR.

ENAR MEMBERSHIP APPLICATION

PLEASE PRINT OR TYPE

In compliance with GDPR, a new regulation for data protection and privacy, I elect to receive email communication from ENAR regarding membership, society activities, and the Spring Meeting.

Please contact the ENAR office at enar@enar.org if you do not wish to receive email communications.

If you are located in the European Union or European Economic Area ("EEA"), you may also have certain rights under the General Data Protection Regulation ("GDPR"). The personal information ("Personal Data") you provide on this web page to register for this event is being collected with your consent, for the exclusive purpose of permitting ENAR to facilitate your registration for the ENAR 2020 Spring Meeting and to contact you with information regarding this meeting. The data may be stored or processed outside of the EU, including in the United States, on servers of ENAR. The Personal Data is subject to the terms of ENAR's Privacy Policy. Contact ENAR at enar@enar.org if you have concerns regarding your Personal Data or wish to exercise any of your rights under the GDPR.

Please Check One: ☐ New Member ☐ Renewal

First Name: MI: Last Name:

Highest Degree: ☐ Bachelors ☐ Masters ☐ Doctorate Or Medical Degree ☐ Other

Name for badge if different:

Spouse/Guest Name For Badge:

Organization:

Mailing Address, City: State: ZIP Code: Country:

Daytime Phone: E-mail:

Membership Type:

- ☐ Regular Member: \$ 140
Includes electronic access to the *Biometrics Journal*, *JABES Journal* and *Biometric Bulletin* Newsletter
- ☐ Regular Member: \$150
Includes *Biometric Bulletin* Newsletter and a print subscription of one journal (choose one):
☐ *Biometrics Journal* or ☐ *JABES Journal*
- ☐ Regular Member: \$160
Includes print subscriptions to *Biometrics Journal*, *JABES Journal*, and *Biometric Bulletin* Newsletter
- ☐ Supporting Member: \$30
- ☐ Student Member: \$20
Includes electronic access to the *Biometrics Journal*, *JABES Journal* and *Biometric Bulletin* Newsletter

I certify that is a full-time student.

Signature: Title:

A Regular Member who is a member of a Region/National Group, termed Region/Group [R], may elect to become a Supporting Member in another Region/National Group, termed Region/National Group [S]. Supporting Members will pay the International portion of the dues once and pay the additional Regional dues only to Region/National Group [S]. A Regular Member may become a Supporting Member of more than one Region or National Group. A Regular Member At-large may also become a Supporting Member in a Region/ National Group of their choice. Supporting Members may not vote or hold any office in Regions/National Groups they support.

Please Indicate Two Areas Of Interest:

- ☐ Agriculture (01) ☐ Genetics and Heredity (05)
- ☐ Animal and Veterinary Science (02) ☐ Molecular Biology and Biotechnology (06)
- ☐ Clinical Trials (03) ☐ Toxicology (07)
- ☐ Epidemiology (04)

NATURAL RESOURCES:

- ☐ Ecology (08) ☐ Forestry (11)
- ☐ Entomology (09) ☐ Wildlife (12)
- ☐ Fisheries (10)

TOTAL PAYMENT:

Form of Payment (if not registering online):

- ☐ Check* ☐ Money Order*
- ☐ Please call me to pay via credit card over the phone.

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