

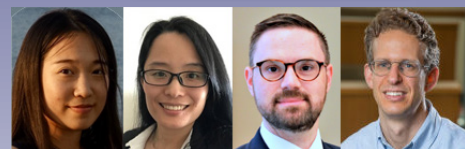
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SPRING | 2022

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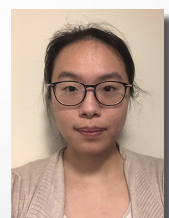
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Welcome to the Spring 2022 NISS Parameters Newsletter!

As spring flowers emerge and people are beginning to return to pre-pandemic behavior, we look forward to conferences returning in-person, SDSS in Pittsburgh in June, JSM in Washington DC in August, and ITSEW 2022 in Manchester England in September. However, we continue to sponsor virtual events, which have the advantage of simplifying logistics and reducing the time and expense of attending. Please see the upcoming events that NISS is planning, beginning this weekend with our second

annual graduate student network (GSN) work, which highlights graduate student research presentations. This virtual activity is organized by the GSN committee of our affiliates, and sponsored by P&G, our newest Industry Affiliate.

Many of our co-sponsored events can be supported by your affiliate award funds that our affiliates have available for their students and faculty. Just prior to JSM, the perennially favorite writing workshop for new researchers is again being presented in hybrid mode, virtually on Zoom for most of the activities, but we'll conclude with a Sunday morning in person presentation and panel discussion at JSM. This will also provide an opportunity for networking with the participants and mentors who are in attendance, along with the new researcher attendees from the past two years who are at JSM.

Also stay tuned for other NISS activities at JSM beginning Sunday noon, when we will be holding the affiliate luncheon for our affiliate liaisons, and Monday afternoon at the NISS reception where the Sacks Award is presented along and the Distinguished Alumni and Service Awards. This hopefully will be an opportunity to meet with old and new friends of NISS and an opportunity to meet other NISS liaisons.

This newsletter introduces you to the work of two of our newest research associates, Haley Jeppson and Ruiyi Zhang. Learn about their background and their aspirations for the work they are engaged in with our contracts at NASS and NCES under agreements with NISS.

As the world transitions from the locked down to more open interactions we are witnessing various social issues that need solution, how to implement DEI, how we address constitutional issues related to gun control and access to abortion, and others. In all these issues access to reliable data is crucial for understanding reality and the statistical sciences continue to play a vital role in addressing these matters. The Ingram Olkin Forum series, which NISS supports, is planning additional future events related to police use of force, privacy and confidential data issues, and assessing hard-to-measure data related to human trafficking.

We ask your support and suggestions for topics that require statistical innovation, topics where statistics can play a critical role in addressing the scientific questions. We also continue through our affiliate program to provide programming to link academic statisticians and data scientists with the challenges facing government agencies. To advance these goals, we have been holding monthly career fairs focusing on various industries such as pharmaceutical, insurance, government agencies.

If you are interested in learning more about our affiliate program, or any upcoming events, see our website and click on Affiliates link for the information on how to participate and the benefits of joining.

Jim Rosenberger, Director, NISS

ABOUT NISS

The National Institute of Statistical Sciences (NISS) is a national institute that delivers high-impact research in science and in public policy by leveraging the rich expertise of its staff with that of its base of affiliated organizations in academia, industry, and government. NISS works on issues where information and quantitative analysis are keys to solutions and decisions. NISS functions in three ways: as an expert advisor, as a basic researcher, and as a collaborator.

OUR MISSION

The National Institute of Statistical Sciences (NISS) is an independent research organization that serves as a neutral, objective expert in delivering research in science and public policy to its affiliates in academia, industry and government. NISS identifies, catalyzes and fosters high-impact cross-disciplinary and cross-sector research involving the statistical and data sciences.

UPCOMING EVENT: 2ND ANNUAL GRADUATE STUDENT RESEARCH CONFERENCE - NISS GRADUATE STUDENT NETWORK EVENT

May 14-15, 2022 12 - 5 pm ET

The NISS Graduate Student Network is very excited once again to announce a two-day graduate student research conference! The first conference took place in June of 2021 and was a resounding success! This second conference will be a two-day event and take place on May 14 and 15, 2021, from noon - 5 pm ET and will feature graduate student presentations, invited speakers and a social networking hour.

A special thanks to this year's sponsor Procter and Gamble (P&G), our new NISS Industry Affiliate!

Graduate Student Presentations

Graduate students have been selected to present at this conference and will present either an oral presentation or a poster presentation within the following categories:

- Original Research (their own research work),
- Literature Research (presentation of a published paper that is not authored by the presenter), or
- Literature Review (presentation on recent developments in an area -- this would be a chance to present a couple of papers to highlight recent developments in an area of interest.)

Selected oral presentations will involve a 15 minute live presentation with 5 minutes of Q&A

During the conference, a graduate student will be recognized with the best presentation award based on the content and the quality of their presentation. The award this year will be \$250 granted to each presentation winner! The awardees will also receive recognition at the NISS Reception at JSM 2022 in Washington, DC!



[Full Details and Registration](#)

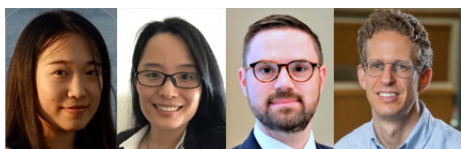
UPCOMING EVENT: TWO VIRTUAL CAREER FAIRS

Academic Departments

Wednesday, May 18, 2022 - 12 noon - 1:30 pm ET

The hiring season is over for most departments, although some still need to fill teaching positions, and may still have postdoc positions available. If you have received an offer for this fall, what advice would you like to have as you start your first year in the job. What should your priorities be – getting those publications sent out, perfecting your teaching, accepting service and committee assignments?

How to answer these questions? We will ask several department heads, from different types of departments, to share their advice to their new hires.



Senior statisticians and data scientists will be on hand at both career fairs to provide attendees with an inside look at the varying aspects of the work that statisticians do in these research contexts and the career opportunities available for you to consider!

Each presenter will have 20 minutes to address the following general topics:

1. What are the preferred qualifications for a position in your institution?
2. What are the potential distinguishing characteristics of candidates for a position in your institution?
3. What advice would you give to job candidates?
4. What advice would you give about how Ph.D. students or postdocs should prepare for the future?



These events are the last NISS Career Fair for the Spring of 2022 so don't forget to register soon! Not to worry, several more career fairs are in the planning phases for the Fall of 2022! Keep your eye on the list of upcoming events on the NISS website or subscribe to the NISS Newsletter for all of the details.

[More Information and Registration!](#)

Pharmaceutical Companies

Wednesday, June 15, 2022 - 12 noon - 1:30 pm ET

Interested in pursuing a career as a statistician in the pharmaceutical industry? Then you won't want to miss this career fair sponsored by NISS that will offer essential information about job opportunities for statisticians/data scientists in this specific type of research environment.

SPRING 2022 COMPETITION: NISS STATISTICALLY ACCURATE INTERACTIVE DISPLAYS ... IN GRAPHICS!

New COMPETITION Results on the Way!

The National Institute of Statistical Science sponsored a **student data visualization contest**. A contest for creating examples of how interactive data visualization techniques can be applied to enhance the data presentations in several public reports about education. Simply put, NISS is looking for *Statistically Accurate Interactive Display in Graphics -- SAID in Graphics!*

The charge was to design an innovative visualization that attracts the reader to explore the data more deeply - and helps them to do so!

THE DATA

The data for the contest is from the Digest of Education Statistics from the National Center for Education Statistics. And, there were five choices of data to select for the contest that present different types of data (including geographic and longitudinal) with different types of variables.

ELIGIBILITY

The competition was open to graduate and undergraduate students at a US or Canadian institution of higher education. Entries have been submitted either as a team of up to five students or as an individual.

THE REQUIREMENTS

The goal is to demonstrate how interactive visualization can be used to prod readers of various backgrounds to investigate substantive educational questions more deeply.

THE PRIZES

The prize for the overall winning entry is \$1000. There will also be two runner-up prizes of \$500 each: one for the entry with the best “entry point”, demonstrating how an initially static visualization can draw in viewers to interactively explore additional questions, and one for the entry that best demonstrates how the flexibility of being interactive can assist in understanding and interpreting and understanding uncertainty in the data.

CONTEST UPDATE!!

All submissions are in the hands of the judges and results will be announce in an upcoming NISS Newsletter!

DATA visualization CONTEST!

UPCOMING EVENT: NISS WRITING WORKSHOP FOR EARLY RESEARCHERS!

The National Institute of Statistical Sciences (NISS) has been hosting the Writing Workshop for Early Researchers since 2007!

Each year, in conjunction with JSM, NISS gathers a host of senior authors, editors, grant writers/reviewers—individuals who take valuable time out of their day to share their advice and experiences with a group of junior faculty and early researchers. Evidence of the value of this workshop experience can be judged by:

1) the number of experienced, senior statisticians, authors and editors that have volunteered for years on end to share their wisdom and advice and 2) the number of session contributors that were once actual participants in the workshop! It is never too late to think about who might benefit next from this workshop at JSM 2022!

Workshop Schedule Highlights

Friday, July 29th, 2022 - Zoom

Tutorial 1: Writing Well as an Act of Kindness for Our Students and Colleagues

Tutorial 2: Choosing Where to Publish

Panel 1: Statistics and Data Science Journals

Tutorial 3: Reviewing and Revising

Friday, August 5th, 2022 - Zoom

Tutorial 4: How to Write a Collaborative Paper

Panel 2: Grant Writing

Tutorial 5: Ethical Issues and Reproducibility

Happy Hour (BYOB) and hang out in the Classroom to swap email and contact information.

Sunday, August 7th, 2022 (at JSM)

Tutorial 6: How to Get Started and Avoid Writer's Block

Panel 3: Speaking from Experiences and Career Development

Networking Event Including Previous Virtual Writing Workshop Attendees from 2020 & 2021!

List of Session Speakers / Mentors confirmed for 2022!

Cheryl Eavey, Susan Ellenberg, Xuming He, Peter Imrey, Nicholas Jewell, Galin Jones, Karen Kafadar, Nicole Lazar, Shuangge Steven Ma, Edsel Pena, Donald Richards, James Rosenberger, William Rosenberger, Lingzhou Xue, and more to be confirmed!

[Registration Open! Get Involved in this Career Launching Event!](#)



MEET NEW NISS RESEARCH ASSOCIATE RUIYI ZHANG!

NISS

Ruiyi Zhang is a new NISS Research Associate who will be working with the National Agricultural Statistics Service (NASS). She received her Bachelor of Science degree in Mathematics from Nankai University in China and her Ph.D. in Statistics from Florida State University. Prior to NISS, she was a postdoctoral fellow at Center for Imaging Science of Johns Hopkins University. Her research interests include: computational statistics, computer vision, elastic shape analysis, functional data analysis and nonparametric statistics.

Why Statistics?

Ruiyi knew early on that mathematics was what she wanted to devote herself to. Her geometry teacher introduced her to the charm of math and as a result early on she spent a lot of time solving the geometric puzzles. She participated in Math Olympiads in senior high school but number theory and strategy problems were always a good challenge.

"After four years studying pure math in my undergraduate at Nankai University, I felt a little lost since I didn't fully appreciate the reasons behind learning theories such as complex analysis or PDE. So, I turned to statistics, a more applied and what I thought would be an easier field, which I have come to find was very naïve understanding."

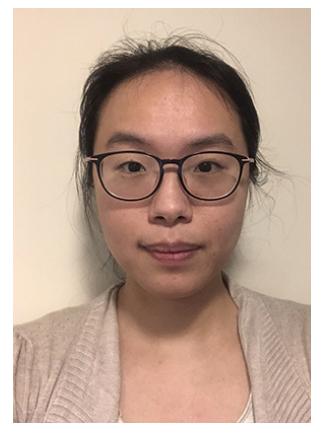
Experience in Image Analysis

Ruiyi moved on to study shape analysis with manifold theory under the instruction of Professor Anuj Srivastava at Florida State University during her PhD. This turned out to be a challenging and satisfying journey. From here she was advised to work with Professor Elie Younes at Johns Hopkins University to work on a more general field, medical image analysis, this work being immersed in applied math.

"Whereas when I applied to graduate programs, the field of statistics 'looked' more applied and easier. However, I have come to find that you can never avoid things that you try to avoid! My research during my PhD was shape analysis, which is an applied field that uses differential geometry as the main solution approach. My past research focused more on the image data, and I would like to turn to data as numbers in the future. Luckily, NISS gives me the opportunity."

Future Directions

Statistics combines Ruiyi's two favorite things together: math and coding. She likes to design algorithms with high efficiency. She once improved a code that was taking days to run so that it would complete the same task in several hours. She derives an ample sense of satisfaction as a result of these kinds of accomplishments. Ruiyi highlights "grit" as an important quality that researchers need to demonstrate.



"Research is never an easy thing, and the people who survive perhaps are just the ones who didn't give up!"

She sees her greatest challenge as how to "hang in there" when she really wants to give up! Understanding the importance of this attribute developed as a result of being trapped by a problem for a long time and getting so tired of it. She understands that the challenge is to find a way that she can step outside to look at the problem from other perspectives and find a way out.

In her spare time she likes reading novels. Gabriel García Márquez and William Somerset Maugham are her favorite authors.

Welcome to the NISS family Ruiyi!



AFFILIATES!

SEND YOUR JOB ANNOUNCEMENTS TO NISS!

A link to the Job Announcements page can be found at the bottom of every page of the NISS website! Share your announcement with other organizations associated with NISS or other visitors to our website.

<https://www.niss.org/careers>

NISS CONTINUES TO WORK TO IDENTIFY TOPICS OF INTEREST TO STATISTICIANS FROM ALL DIFFERENT SECTORS AND THEN GATHER EXPERTS TO CONTRIBUTE TO A CONVERSATION THAT HELPS TO NOT ONLY INFORM BUT ALSO PROVOKE FURTHER THINKING ON THESE TOPICS. KEEP YOUR EYE ON THE NISS WEBSITE FOR FUTURE EVENTS THAT MIGHT BE OF INTEREST TO YOU OR YOUR COLLEAGUES!

NISS RESEARCH: DATA VISUALIZATION BEST PRACTICES

Haley Jeppson (NISS Research Associate) joined NISS in October of 2021 and has been working with NCES (National Center for Education Statistics) on the Innovative Graphics for NCES Online Reports research project. The project's objective is the enhancement of graphical data displays in reports and briefs, ensuring the graphs are engaging, accessible, efficient, and statistically accurate, fostering effective data communication, and encouraging viewer engagement and navigation. This project has coalesced into a comprehensive data visualization handbook containing guidelines for best practices, tutorials, and a reference library.

Government reports face the challenge of requiring engaging and useful visualizations for diverse audiences that adhere to the agency standards. This process typically includes navigating agency style guides and recommendations, the latest statistical and visualization best practices, accessibility standards, and legal requirements, though challenges arise when simultaneously meeting these requirements. Topics of particular interest include: (1) Guidance on selecting aspect ratios to ensure important patterns and trends in statistics are clearly described and easy to see; (2) Including uncertainty; (3) Developing a flexible yet concise set of color scales suitable for various data types; and (4) Navigating 508 compliance and accessibility.

Data Visualization Best Practices

Visual content can influence how people use data and make decisions. Thus, it is crucial to provide careful and objective content and recognize when visualizations may have underlying bias, error, or even implicit bias that data creators may not be aware of. The most important visualization priority for data analysts is preserving the integrity of data without introducing features that distort or distract from their meaning.

Many years of empirical evaluation of the perception and utility of statistical graphics has culminated in a working knowledge of how to best create graphs that are easily read and understood. Much historical research is centered around cognitive principles such as preattentive features, the Gestalt principles of visual perception, and Cleveland's hierarchy of comparisons; design considerations such as the theming, background components, typography, and aspect ratio; the use of color, which includes the types of color palettes for various data, perceptual uniformity, and color blindness; and accessibility which includes compliance with WCAG (Web Content Accessibility Guidelines) and Section 508 of the Rehabilitation Act of 1973.

Active research areas include best practices for visualizing uncertainty and the complications that arise when complying with web standards and Section 508. For example, there are notable flaws in the WCAG color contrast requirements and work on a suitable solution is ongoing.

Consistent adoption of best practices enhances the translation of academic research into practice, though it is also important to consider the different purposes that motivate a data visualization and the intended audience and reach of the chart, which will influence its form and complexity. This research can guide the data visualization decisions by suggesting the more appropriate graph type, variable mappings, and use of color. For instance, considering the gestalt principles of visual perception helps take advantage of the human visual system's ability to process large amounts of visual information with relatively little effort. Understanding the principles that underlie this processing allows us to create charts that require less cognitive effort to read, freeing us to think about the content rather than the form of the chart.

This research is distilled into the NCES data visualization handbook with guidelines for enhancing data visualizations, ensuring they highlight the comparison of interest, convey the information effectively, apply color appropriately, and maintain 508 compliance. These guidelines support effective data analysis and communication throughout the education agency.

To learn more about Haley's work you might consider joining the JSM Roundtable Session (#212 - Government Statistics Section A.M. Roundtable Discussion on Tuesday, August 9, 2022 : 7:00 AM to 8:15 AM) that she, Brian Habing and Heike Hoffman will be hosting entitled, "[Combining Visualization Best Practices with Agency Standards for Statistical Graphics in Government Reports](#)".



CAREER OPPORTUNITIES AT NISS

New Research Positions at NISS beginning Spring and Summer 2022!

RESEARCH THAT MAKES A DIFFERENCE

Early career researchers at NISS have the opportunity to work with research leaders to develop innovative data science technology and statistical modeling methodology. The focus is on high impact problems, from formulation to solution, leading to implementation. Senior mentors are nationally or internationally recognized leaders in the statistical and data sciences.

NISS research makes a difference by developing innovative data science technology and statistical modeling methodology. Projects are variously located at NISS-DC, at a NISS Affiliate or NISS university-hub, or at a federal statistical agency.

NISS Research Associates are highly successful and publish and present their research regularly. As testimony to their research on high-priority challenges, NISS Research Associates continue to receive awards both for individual contributions and for work with multidisciplinary teams, especially for methodology for defining key national statistics and indicators.

NISS appointments are for one year with expectation of renewal. Positions are open for this summer. Applicants must be able to work in a multidisciplinary context and bring statistical theory and data science technology to a research team with the goal of formulating a comprehensive technical approach problem solving. For some NISS positions, US citizenship may be required.

[Read more about this position - Apply Today!](#)

MAY

Virtual Career Fair - Academic Departments

Event Date: Wednesday, May 18, 2022 - 12 noon - 1:30 pm ET
Event Type: Webinar

The hiring season is over for most departments, although some still need to fill teaching positions, and may still have postdocs positions available. If you have received an offer for this fall, what advice would you like to have as you start your first year in the job. What should your priorities be – getting those publications sent out, perfecting your teaching, accepting service and committee assignments? ... ([read more](#))

NISS Graduate Student Network - 2nd Annual Research Conference

Event Date: May 14-15, 2022 12 - 5 pm ET
Event Type: Online Conference

The NISS Graduate Student Network is very excited once again to announce a two-day graduate student research conference! The first conference took place in June of 2021 and was a resounding success! This second conference will be a two-day event and take place on May 14 and 15, 2021, from noon - 5... ([read more](#))

JUNE

Virtual Career Fair - Pharmaceutical Companies

Event Date: Wednesday, June 15, 2022 - 12 noon - 1:30 pm ET
Event Type: Webinar

The pharmaceutical industry provides interesting and challenging career and research opportunities for statisticians and data scientists. Is work in the pharmaceutical sector something that you would like to know more about? Then this session is for you! NISS hosts Career Fair sessions that focus ... ([read more](#))

ISBIS CONFERENCE 2022 on “Statistics and Data Science in Business and Industry”

Event Date: June 20-21, 2022
Event Type: Conference

The ISBIS CONFERENCE 2022 on “Statistics and Data Science in Business and Industry” will take place at University of Napoli Federico II in Naples June 20-21, 2022. The Program and Organizing Committees hope to offer the opportunity to meet in person to share perspectives on the newest developments... ([read more](#))

AUGUST

2022 NISS Writing Workshop for Junior Researchers

Event Date: August, 2022
Event Type: Workshop

Once again this very popular short course will be hosted by NISS. If you are a recent graduate of a doctoral program and want to improve your communication skills - then this event is for you! “Thanks for organizing the writing workshop! We are very glad that we attended the workshop. We learned... ([read more](#))

International Total Survey Error Workshop (ITSEW) 2022

Event Date: 31 August - 2 September, 2022
Event Location: University of Manchester, UK

Theme: “Total Error in Official Statistics: Current Practices and New Methods.” The International Total Survey Error Workshop 2022 will take place from the 31st of August through the 2nd September 2022. It will be hosted by The Cathie Marsh Institute for Social Research and The Social Statistics Department... ([read more](#))

Check the [NISS Events webpage](#)
for up to date event info!

NISS  YouTube

[Check out NISS on YouTube
for Recordings of Previous Events!](#)

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