SILVER STATE-ISTICS

Nevada Chapter of American Statistical Association

Dear Nevada ASA Members and Friends,

Read on for information on
what our Chapter has been up to.
Please keep an eye on our website
for more details on upcoming events.

https://community.amstat.org/nevadachapter/home

Contents:

Elections

Here are the 2023 election results. Cheryl Vanier was elected President, Andrey Sarantsev was elected Northern Vice President, and Glenn Waddell was elected Secretary, all for two-year (2024-2025) terms. There was no nominee for Southern Vice President; Miguel Fudolig was elected as a write-in candidate for a one-year (2024) term. The SVP position was slated as a one-year term in order to restore the pattern of NVP and SVP two-year terms alternating in order to maintain continuity in the Executive Committee (the Secretary and Treasurer two-year terms alternate similarly).

In late 2024 the positions of Southern Vice President and Treasurer (both two years) will be open. Please consider running for an office to support our Chapter!

President's Corner
Andrey Sarantsev

I was impressed by a well-organized Annual Meeting at my home University of Nevada, Reno, especially the high quality of research presentations by UNR and UNLV graduate students and a postdoc. The PhD programs in Statistics in these two campuses are new, but they already show great results. I can only hope that the progress will continue, and our two programs will grow in renown and prowess.

Possibly later we could add talks by professors from UNR and UNLV Department of Mathematics. I am sure some faculty in Statistics, Probability, and Applied Mathematics would be happy to contribute their research to this conference alongside graduate students. Σ

Incoming President's Message
Cheryl Vanier

I'm excited to welcome you to a new year with the NV-ASA! I'm honored to be serving with a group of people who have kept this organization thriving and look forward to having you along for the ride. Some things to look forward to:

- Newsletters published regularly to keep up with new faces and ideas in the world of Nevada Statistics.
- Networking events in the north and south to meet new people in our profession.

- A summer course (if sufficient interest) to learn a new skill.
- The annual meeting in Las Vegas next fall, with a program featuring distinguished statisticians, working statisticians, and up-and-coming students.

I look forward to interacting with you this year. If you have any ideas or comments, I'd love to hear from you at cheryl.vanier@imgen-research.com.   %

2023 Fall Symposium
Statistics in Government

Our Fall Symposium took place Saturday, October 17 at UNR, with both in-person and remote participation. This event was jointly sponsored by NV-ASA, the UNR Dept of Mathematics and Statistics (Tin-Yau Tam, Chair) and the national ASA.

The morning session featured the Keynote Address by Katherine J Thompson, Vice President Elect of the national ASA and the Senior Mathematical Statistician in the Economic Directorate of the U S Census Bureau. Details of her presentation are provided below.

That was followed by a panel discussion *Government Data Kaleidoscope*, moderated by Deb Stiver. Panelists were Andrey Sarantsev, Assistant Professor at UNR and NV-ASA President, and Susan Smith, Management Consultant with Public Knowledge.

Lunch was provided for in-person attendees, during which two UNR PhD students presented their Posters.

The first afternoon session had remote presentations by UNLV graduate students G M Toufiqul Hoque, Anjal Mandan, and Linchuan Shen. Following a break there were in-person presentations by UNR post-doctoral fellow Jingxuan Yang and UNR graduate students Amos Natido and Madeleine Lohman. Details of the student presentations and posters may be found below.   λ

Keynote Address
Katherine Jenny Thompson

The title of her presentation was *Challenges in Designing and Conducting Business Surveys or*

Developing the Sample Design for the U.S. Census Bureau's New Annual Integrated Economic Survey. Katherine Thompson is the Senior Mathematical Statistician in the Economic Directorate of the U.S. Census Bureau. She began by describing the basic differences between household surveys and establishment surveys. Most methodologists are familiar with household surveys, where the sampling units are generally households and whose target population are the people within the households. Although the statistics produced by establishment surveys are heavily cited (e.g., monthly retail sales, total housing starts), there are major differences. First, the sampling units for establishment surveys are organizations, not people: examples include businesses, farms, schools, government entities, etc. Second, establishment surveys measure quantitative and qualitative data about the survey organization, in contrast to household surveys that measure some form of human characteristics, behavior, and/or opinions. Finally, the unit that provides data to an establishment survey could be the unit sampled from the frame, but is more likely to be another unit entirely (e.g., an accountant in a firm). Consequently, the sample design and data collection methods for establishment surveys differ substantively from their household counterparts.

The remainder of the talk focused on the new **Annual Integrated Economic Survey**. Ms Thompson discussed the sampling design for this survey, providing examples of unique challenges in designing a large multipurpose economic survey. As a motivating example, she presented a (fictional) diversified company that owned several hardware stores (retail sector), a warehouse (wholesale trade sector), and a hammer plant (manufacturing sector).

Contact katherine.j.thompson@census.gov for further information.   Ω

Government Data Kaleidoscope

The first presenter in this panel session was NV-ASA President Andrey Sarantsev, of the UNR Dept of Math & Stat, speaking on *Federal Economic Data Powering Financial Econometrics*. He gave us a tour of publicly available datasets that can be used to address a variety of hypotheses regarding the business/finance sector.

Then we heard from Susan Smith, a management consultant with Public Knowledge, speaking on *The Power and Potential of Administrative Data to Understand Outcomes: The Case of Child Welfare*. She started by telling us of useful characteristics of administrative data, such as public availability, full coverage of populations served, ease of time trend analysis, and particularly its availability in the human

services. She also pointed out possible challenges, including limited documentation and definitions changing in time. In 2000 a Final Rule was published in the Federal Register establishing the Child and Family Services Reviews (CFSRs) system. Susan gave examples using the data available on Nevada children entering and exiting foster care, focusing on sorts of metrics and questions that can be addressed, some challenges and pitfalls, and methods of quantifying racial and ethnic disparities.   Φ

UNLV Student Presentations

After lunch and the annual business meeting, we heard remote presentations from graduate students in the Department of Mathematical Sciences.

First was G M Toufiqul Hoque, MS student (advisor Petros Hadjicostas), speaking on *Standard Hierarchical and Non-hierarchical, and Non-standard Log-linear Models for 2x2 Tables*. He examined the use and results of various methods for analyzing contingency tables from as study cross-classifying thromboembolism and use of oral contraceptives.

Next came Anjal Mandan, PhD student (advisor Kaushik Ghosh), with *Some Contributions to Neural Imaging Methods Using dMRI Data*. He discussed issues and challenges in finding the orientation of neural fibers in the brain, and proposed approaches and methodological enhancements as well as novel proposed distributions designed to enhance the efficiency of Markov Chain Monte Carlo sampling and estimation.

Last was Linchuan Shen (advisor Amei Amei), with *Effects of Gene by Environment Interaction on Hypertension*. The aim of his study was to develop a means of detecting interactions of an environmental factor and genetic markers; he reported detecting two genes that interact with alcohol usage to influence hypertension.   Σ

UNR Student Presentations

The first UNR live presentation was given by Jingxuan Yang, a post-doctoral fellow in the Department of Mathematics & Statistics (advisors Mihye Ahn and Yinghan Chen). Her topic was *Variable Selection in Item Response Theory Models and Its Application on Education Data*. Her focus was on techniques for expanding IRT models to allow for covariates that improve on naïve backward stepwise variable selection.

Next came Amos Natido, a PhD student in the UNR DMS (advisor Tomasz Kozubowski). His topic was *Modeling Symmetric Distributions Using the Uniform-Laplace Mixture Distribution*. The target of this work is modeling symmetric data with both a pronounced peak

and long and heavy tails. He presented computational approaches using the EM algorithm for parameter estimation. Data applications involved daily change in solar power output and weekly change in treasury bill rates.

The next presentation was from Madeline Lohman (advisors Perry Williams and Paul Hurtado). Her title was *Relationships Between the Environment and Female Mallard Demographic Rates*. She was exploring observations of the population distribution of dabbling ducks (of which mallards are a sub-class) in the northern Great Plains. Spatial and temporal gradients of land use created an 'accidental experiment' to examine how changing environmental conditions might affect broad-scale population dynamics. Initial results found little relationship between environmental predictors and demographic rates for either juveniles or adults, surprisingly. She outlined possibilities for future exploration of these issues.

In addition to these presentations, during the lunch period there were poster presentations by Abraham Atsiwo and Jihyun Park (advisor Andrey Sarantsev for both). Abraham had two posters: *A Stock Market Model Based on CAPM, Market Size, Volatility and Economic Variables* and *Bootstrap Regression, Bayesian Lasso, and Variable Selection Ratio*. The former introduces a new stock market model and applies it to publicly available data from a 33-year period. The latter compares the false positive selection rates for several regression methods, using datasets with fake predictor variables introduced. Jihyun's title was *A Hybrid Model Based on Non-Gaussian Autoregressive Process and Neural Network Autoregression: Application in Bond Spread*. Her work expands the classical autoregressive models based on Gaussian error to situations where other error distributions, such as Laplace, are involved.
Φ

Poster Competition 2024

Our annual K-12 Statistics Poster Competition resumed in 2022 under the leadership of Elizabeth (Beth) Harris, math teacher at the Lied STEM Academy. Awardees in our NV competition are forwarded to the national competition. NV entrants have fared quite well in the national competition in the past.

Information about the 2024 Poster Competition will be posted on our website when it becomes available. It will also be sent to teachers/advisors who have been participants in the past.   Σ

UNR Data Science Initiative

A new Data Science Initiative has been created at UNR. Their upcoming DS Conference will take place March 7-8. See the poster attached to this Newsletter.

UNLV Statistics Seminars

The Dept of Math Sciences at UNLV will host three Statistics Seminars during Spring, 2024:

February 23: Mori Jamshidian: *Using Technology to Teach Concepts of Inference in our Introductory Statistics Courses*;

March 1: Xiaotong Shen: *Boosting Data Analytics with Synthetic Volume Expansion*; and

April 12: Siamak Noorbaloochi: title TBA.

These will be live presentations at UNLV, with Zoom access available. Contact Farhad Shokoohi (farhad.shokoohi at unlv dot edu) for details.   ∞

Introducing Miguel Fudolig

Our new Southern Vice President is Migual Fudolig, an Assistant Professor at the UNLV School of Public Health in the Epidemiology and Biostatistics department. He received his PhD in Statistics from the Univ of Nebraska-Lincoln in 2022. His current research interests include health disparities research, experimental design, applied analysis using generalized linear mixed models, data visualization, and visual inference. He is currently a faculty advisor for the UNLV Biostatistical and Epidemiological Applied Methods for Students Society (UNLV BEAMSS), a newly formed student organization that aims to engage and involve students to develop their passion for epidemiology and biostatistics through collaborative and innovative activities. Outside of academia, he enjoys hiking, traveling, drinking boba tea, and trying new food places.   ©

Outstanding Chapter Service Award
Alicia Chancellor Hansen

In 1991 the Council of Chapters established the ASA Award for Outstanding Chapter Service. This award provides Chapters with a way of acknowledging the extraordinary contributions made by a particular Chapter member. The award consists of a certificate presented at a chapter event and a listing in the JSM Awards Booklet, and their name is added to the list of award winners kept on the ASA website. Past recipients from NV-ASA are Deb Stiver in 2016 and Charles Davis in 2019. This year, for 2022, Alicia Hansen was recognized for her outstanding service to the Chapter in many roles: she has held positions as Secretary, President, and is currently Chapter Representative, as well as Webmaster. See the photo of the presentation on the next page.

Congratulations to Alicia, and thank you for all you have done for the field of Statistics in Nevada!   ≥

NV-ASA is on LinkedIn

We now have a LinkedIn page for our Chapter. Visit https://www.linkedin.com/company/nvasa. If you are already a LinkedIn member, you will go to our page directly. If not, you will need to join first. One feature is that our NVASA page will allow job postings. To do that, please contact our webmaster at the email address given on our website.   Δ

Heads or Tails?

Here's an interesting read to check out: František Bartoš: "Fair Coins Tend to Land on the Same Side They Started: Evidence from 350,757 Flips" *arXiv* (2023). Back in 2007 Persi Diaconis had an article in the *SIAM Review* on "Dynamic Bias in the Coin Toss", describing the physics of coin tossing, and concluding that due to unequal weighting around the center of the coin, there should be a slight bias, with the original side up being the ending side up around 51% of the time. Last year 48 researchers across Europe flipped coins minted in 46 countries 350,757 times, and their results agreed with Diaconis' predictions: the matching percentage was 50.8%, with standard error just under 0.1%. The bias clearly is quite minor, but curious indeed!   !!!

Joining NV-ASA!

Only a minority of the people who receive this newsletter are members of the Nevada Chapter of the American Statistical Association (NV-ASA). Dues are nominal:
for Full-time students at NV institutions - $10 per year
   (free for student members of the national ASA);
for Regular members - $20 per year
   ($10 for members of the national ASA); and
for Life Members - $200
   ($100 for members of the national ASA).

There are two ways to join NV-ASA:
- at amstat.org, while initiating or renewing your national ASA membership ; or
- at Wild Apricot (https://ncotasa.wildapricot.org/).

Why should you join? NV-ASA events provide opportunities for networking and contact with other statisticians working in a wide variety of areas in Nevada. But in addition to that, a major reason is that your dues help support the outreach activities of the NV-ASA including the K-12 Poster Competition and Career Days. Our financial needs are not great, so long as we all pitch in our modest amounts.

NV-ASA Officers & Others

Voting officers are

President:	Andrey Sarentsev	(2023)
	Cheryl Vanier	(2024-2025)
Past President:	Glenn Waddell	(2023)
	Andrey Sarentsev	(2024-2025)
Northern Vice President:	Deb Stiver	(2023)
	Andrey Sarentsev	(2024-2025)
Southern Vice President:	Hokwon Cho	(2023)
	Miguel Fudolig	(2024)
Secretary:	Cheryl Vanier	(2022-2023)
	Glenn Waddell	(2024-2025)
Treasurer:	Charles Davis	(2021-2024)
Chapter Representative:	Alicia Chancellor Hansen	(2023-2025)

Also involved are

Webmaster:	Alicia Chancellor Hansen
Poster Competition Lead:	Elizabeth Harris
Newsletter Editor:	Charles Davis

Silver State-istics welcomes news items and letters from members and friends of the NV-ASA on matters of interest to the Chapter and the profession. Manuscript or items can be sent as a Microsoft Word document, PDF, or within an e-mail.
Silver State-istics is published by the Nevada Chapter of the American Statistical Association.

For contact information, go to
https://community.amstat.org/nevadachapter/home
Our address for regular mail is
NV-ASA, PO Box 3311, Sparks, NV 89432-3311

DATA SCIENCE INITIATIVE

Climate Survey

Invest just 10-15 minutes in our survey and become a vital part of our initiative's design and customization process. **Everyone is welcome to participate and you can win one of fifty $10 Statbucks gift cards!**

To stay updated and connected with the Data Science Initiative, join our group email list.

SCAN ME

For question or greater involvement, contact us:

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INBRE

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Save the Date: March 7 & 8, 2024 - DS Conference