



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 and what we are planning for the future.

Please keep an eye on our website for more details on upcoming events.

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✍ Coming Events ✍



Our **Annual Meeting** will take place in the North this coming Fall; stay tuned for announcements of this and other events. Also, see **The President's Corner** below.

Four NV-ASA Executive Committee positions will come up for election in the fall of 2019: President, Northern Vice President, Secretary, and Chapter Representative. Debra Stiver, Past President, serves as chair of the nominating committee. She is happy to provide information on officer positions and elections and can be reached at stiver@unr.edu. Look for announcements as we move closer to the 2019 Annual Meeting.



Elections

Deb Stiver



The 2018 NV-ASA Executive Committee election results were announced at the Annual Meeting held at

UNLV October 13, 2018. Approximately 30% of eligible voters cast ballots for the Treasurer position. NV-ASA welcomes its newest board member, Treasurer Alejandra Livingston. Alejandra holds double Masters' Degrees in Economics and Business Administration. Her involvement in the field of statistics began during her graduate school years, when she tutored students and taught principles of statistics courses. After graduation, Alejandra worked for the State of Nevada Division of Aging Services as a lead grants analyst, providing oversight of various federal statistical reporting programs and developing program impacts. Alejandra also worked as a senior consultant for Intertech Services Corporation, conducting quantitative research studies in economic development and health care and forecasting student populations for select rural districts. In addition to her statistical skills, Alejandra has nine years of experience administering multimillion-dollar grant funded accounts, reconciling revenues and expenses, preparing invoices, and producing financial reports. Alejandra currently works as an Economist III for the Nevada Department of Corrections, where she produces statistical information, produces planning documents, conducts statistical studies, produces population and capacity forecasts, and plays a key role during the legislative session and the budget preparation process. NV-ASA, which she joined in 2006, has been a great resource for Alejandra and she loves to be of service. Her experience managing money and working in the field of public sector Statistics makes her a strong candidate for the Treasurer position. Alejandra will hold the treasurer's office from January 1, 2019 through December 31, 2020.

The other open office on the 2018 ballot was the Southern Nevada Vice President. No candidates were nominated for the office and the position remains open at this time. ∞



The President's Corner

Alicia Chancellor Hansen



Greetings to Members and Friends of the Nevada Chapter of the American Statistical Association! Happy 2019! As this new year begins, it is my pleasure to welcome our incoming Chapter Treasurer, Alejandra Livingston! Alejandra has previously served as Chapter

Secretary and Northern Vice President. I also want to send a huge "THANK YOU!" to our outgoing officers, Charles Davis and Chris Tong! Charles has served the Chapter as Southern Vice President for many years, organizing events that connect statisticians from academia, private industry, and government. As Treasurer, Chris put a great deal of effort into bringing order to the Chapter's finances throughout his term. I can't say enough about their willingness, and that of the new and continuing officers, to volunteer their time and energy to assist our Chapter! Currently, the Southern Vice President position is vacant. Do you know someone who would be interested in helping to organize events in Southern Nevada? If so, please contact me or Deb Stiver, Past President and Election Committee Chair, at achansen@sbcglobal.net or stiver@unr.edu.

I have greatly enjoyed participating in events hosted by the Chapter, for many years. This year we are hoping to hold additional events that will spark your interest. We are making plans to hold 4 events in Northern Nevada in 2019, including a Dinner Speaker, Career Day, Mixer, and our Fall Symposium and Annual Meeting. Plans for events in the South are also underway. Please note also that the UNLV Department of Mathematical Sciences is hosting a seminar this week! More information on that is available in the UNLV News Section of this Newsletter. We hope you will join us for at least one of these events! Stay tuned for more information!

We appreciate your interest in and support for our Chapter. We hope to see you at a Chapter event soon!

Fall Symposium 2018

Our Fall Symposium with Annual Meeting took place Saturday, October 13 on the UNLV campus, co-sponsored by the UNLV Department of Mathematical Sciences, with additional funding provided by the National ASA.

Morning Session

Our keynote speaker was **Karen Kafadar**. Dr. Kafadar is Commonwealth Professor and Chair of Statistics at the University of Virginia, and is the 2019 President of the National ASA. Her career has involved positions with the Statistical Engineering Division at NIST, the Biometry Branch at Hewlett Packard, the National Cancer Institute, and the Department of Mathematics at the University of Colorado-Denver. She has been editor of *JASA Reviews* and *Technometrics* and is Editor-in-Chief of the *Annals of Applied Statistics*. Her title was **Statistical Issues in Evaluating Screening for Disease**. She discussed the special challenges occurring in constructing randomized trials attempting to evaluate the risks and benefits of medical screening procedures. She

reported that the benefits outweigh the risks for some, but not all, of screening procedures in common use.

In the morning we also heard from **Mira Han** of the School of Life Sciences, UNLV and the Nevada Institute of Personalized Medicine. Her title was **Uncertainty in quantifying the transcription of repeat elements in the genome**. The uncertainty results from having multiple equally well mapped positions in the genome for a single read; however, heuristic aligners do not report all possible mapping positions. Current state-of-the-art methods rely on the Expectation-Maximization (EM) algorithm to account for the uncertainty in multi-mapped reads. By studying the mappability of certain lengths of reads, one can gain some estimate on all possible mappings regardless of what the aligner reports, and can use known estimation methods for EM algorithms to estimate the variance in the total number of reads mapping to a repeat element.

Chad Cross, currently with the Department of Radiation Oncology of the School of Medicine and the School of Community Health Sciences at UNLV closed out the morning session with a talk titled **UNLV School of Medicine: Research Overview**, in which he provided an overview of the new School of Medicine (SOM), the types of projects currently underway among the various departments within the SOM, and some ideas about providing statistical consultation within the context of academic medicine. The UNLV SOM was established in 2014 and admitted the first cohort of students in Fall 2017. The research mission of the SOM is "to create a culture of scientific inquiry which leads to data-driven research that fosters new discoveries and cures for diseases". Serving this mission requires broad expertise in biostatistics. Chad shared some of his current research projects in cardiology, oncology, internal medicine, OB-GYN, surgery, pediatrics, family medicine, and psychiatry. He also presented 10 observations aimed at students in attendance who may wish to collaborate in medical research, including "most collaborators have no training in research or statistics, but some are enthusiastic", "datasets range from amazingly small to enormous", "you need to learn how to communicate effectively across disciplines", and "you need to be spectacularly 'fast on your feet'". Additionally, he presented an open call for those who may be interested in providing some paid statistical support to medical students; those interested may contact Dr. Dale Netski (dale.netski@unlv.edu), who facilitates research in Graduate Medical Education at the SOM.

Afternoon Session

The afternoon session featured five UNLV students presenting talks on work related to the medical research theme of the day.

Benazir Rowe spoke on **Bayesian Variable Selection for Genome-Wide Association Studies**. The talk discussed new methods in Genome wide Association Studies (GWAS) which allow researchers to find genes that are correlated with common diseases. The new Bayesian framework allows one to incorporate more parameters into the association model. Those parameters are the facts we already know about a certain disease, such as known hereditary patterns and whether a few genes explain most the difference or many genes have relatively tiny effects. The goal is to make GWAS more precise through incorporation of already discovered knowledge of the disease.

Bowen Liu spoke on **The Association Between High Sensitivity C-Reactive Protein and Risk of Fracture: A Meta-Analysis**. Meta-analysis is a statistical synthesis of data and results from separate but similar studies. This study combines the hazard ratios (HRs) reported from different studies related to C-Reactive Protein (CRP) and risk of fracture. By using inverse-variance method, study results were combined to obtain a summary overall HR of 1.11, with corresponding CI (1.05, 1.17). The HR is statistically significant, which implies that high level of CRP is associated with a significant increased risk of fracture. In addition, sensitivity analyses were conducted to check if such result is robust under different inclusion criteria for studies.

Marvin Javier spoke on **The Practice of Ranked Set Sampling**. This method produces estimators with lower variance than their simple random sampling counterparts. This advantage comes in exchange for needing to screen n^2 units for a sample of size n . This talk introduced the method of rank set sampling and ways for reducing the number of units screened, including the new method of k -tuple partially rank-ordered set sampling.

Sharang Chaudhry spoke on **A Bayesian Self-Selection Method for Delineating White Fiber Tracts**. Identifying an unknown number of white matter tracts using diffusion-weighted MRI measurements can be viewed as a statistical model selection and estimation problem. This talk presents a novel Bayesian scheme that performs these tasks simultaneously by using customizable prior and proposal distributions. Potentially, the most significant original aspect of this scheme is that users can set a prior level of spatial separation between fibers, allowing more crossing paths to be detected when desired or a lower number to potentially detect only robust nerve tracts, to provide estimation specific to a given region of interest. The scheme is implemented over nested representations of the ball-and-stick model, and its performance is demonstrated using both simulated and in-vivo data.

Michael Schwob spoke on **Sparsity-based Estimation of Intravoxel Neural Architecture**. By determining the amount and direction of neural pathways (white matter), one can better understand neurodegenerative diseases and traumatic brain injuries. This presentation discussed a statistical approach to resolving white matter within the brain using diffusion MRI data. After constructing a dictionary given an excessive nerve amount, the proposed method removes unlikely nerve endings on the surface of small regions within the human brain. After the removal of unlikely nerve endings, one can obtain a relatively accurate estimate of both direction and concentration of neural pathways.

This was followed by our brief annual business meeting.

UNLV News

The Department of Mathematical Sciences (DMS) held a statistics seminar on Friday, February 8, 11:30-12:30 in CBC C-221. Dr. **Petros Hadjicostas** of the DMS spoke on **Right-Invariant Generalized Metrics Applied to Rank Correlation Coefficients**, joint work with Dongyang Cheng. His abstract: “In this talk, we investigate properties of rank correlation coefficients that can be derived from right-invariant generalized metrics on the symmetric group. We present some new inequalities involving different generalized metrics. If there is time available, using the Hausdorff generalized metric, we may show how to construct circular rank correlation coefficients from regular rank correlation coefficients.” Σ

UNR News

Colin Grudzien joined the UNR Department of Mathematics and Statistics in Spring 2019. He received his PhD in Mathematics in 2016 from UNC Chapel Hill with a focus on Applied Dynamical Systems. Prior to joining the faculty at UNR, Colin was a research assistant at Los Alamos National Laboratory and a postdoc at the Nansen Environmental and Remote Sensing Center in Norway. Colin's research interests include Bayesian inference and uncertainty quantification in physical systems, and applications in modeling climate and the electric grid.



Andrey Sarantsev is a new Assistant Professor of Statistics in the Department of Mathematics and Statistics. He received his PhD in Mathematics in 2015 from the



University of Washington, Seattle. Prior to joining the faculty at UNR, he was a Visiting Assistant Professor at the Department of Statistics and Applied Probability, University of California, Santa Barbara.

Brandon Koch is a new Assistant Professor of Biostatistics in the School of Community Health Sciences. He earned his BS in Mathematics at the University of Nevada, Reno in 2013, and completed his PhD in Biostatistics at the University of Minnesota in 2018. His current research interests are in causal inference and machine learning.



An ASA student chapter at UNR was approved in January 2019. The president is Zoe Haskell, a PhD student in Statistics and Data Science at UNR.

From the UNR libraries: “We are excited to be offering students and early career researchers a new service called Data Wranglers. Our expert graduate student Data Wranglers are offering one-on-one and group consultations to help with statistical software and data analysis. There is an easy-to-use portal to book an appointment online at your convenience. The Data Wranglers will meet with you in the DataWorks Lab in @One (first floor of the Knowledge Center) or in the DataWorks South Lab (in the DeLaMare Library) to help you learn about data analysis software, statistics, and even help get you started with your data projects. Currently, the Data Wrangler program supports Stata, SPSS, R programming, and can also help with more general data and statistics inquiries. While Data Wranglers cannot hold your hand through the entire research process, this is a great place to start learning about how to use the advanced features of statistical software available to help you analyze your research data. Data Wranglers are also available for on-demand workshops and can even come into UNR classrooms and present as a guest speaker. We are currently looking to add an additional Data Wrangler to our team. If you know a UNR graduate student who would be a good fit for this role, or if you have further questions about the program and the services we are offering, please contact Mitch Winterman mwinterman@unr.edu.”

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Book Reviews

Alicia Chancellor Hansen

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Have you heard of the Sir Cumference Book Series? This youth series, currently consisting of 10 titles, puts a fun spin on various mathematical topics. In Sir Cumference and the Off-the Charts Dessert, a friendly competition between two bakers to create a special treat

for the Harvest Faire leads them to experiment with various ways to record and display data. After an initial failed attempt by each baker, Pia of Chartres develops a pie chart and Bart Graf creates a bar chart. My kids loved the entertaining story employing puns and rhymes to show how much fun data and statistics can be! I recommend you check it out! Ω

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Also

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Also check out <https://blog.desmos.com/articles/whats-going-on-in-this-graph/>, a collaboration between the ASA, the New York Times, and Desmos, with particular appeal toward K-12 math and statistics education.

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Joining NV-ASA!

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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, the cost is \$10 per year (\$2 for student members of the national ASA). Otherwise, it is \$20 per year (\$10 for members of the national ASA). One can become a Life Member for \$100. You can join NV-ASA when you renew your national ASA membership (or join for the first time); this can be done on-line at www.amstat.org/asa/community/chapters. Otherwise, whether a national ASA member or not, you can join through PayPal on our website or by contacting our Treasurer Alejandra Livingston. Any way you do it, please obtain an information form from our website, complete it, and send it to the address listed on the form. (The form is being updated and an e-version created; please be patient!)

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. *

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NV-ASA Officers & Others

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Voting officers are

President:	Alicia Chancellor Hansen (2018-2019)
Past President:	Debra Stiver (2016-2019)
Northern Vice President:	Glenn Waddell Jr. (2018-2019)

Southern Vice President: (vacant)
Secretary: Mihye Ahn (2018-2019)
Treasurer: Alejandra Livingston (2019- 2020)
Chapter Representative: Chad Cross (2018-2019)

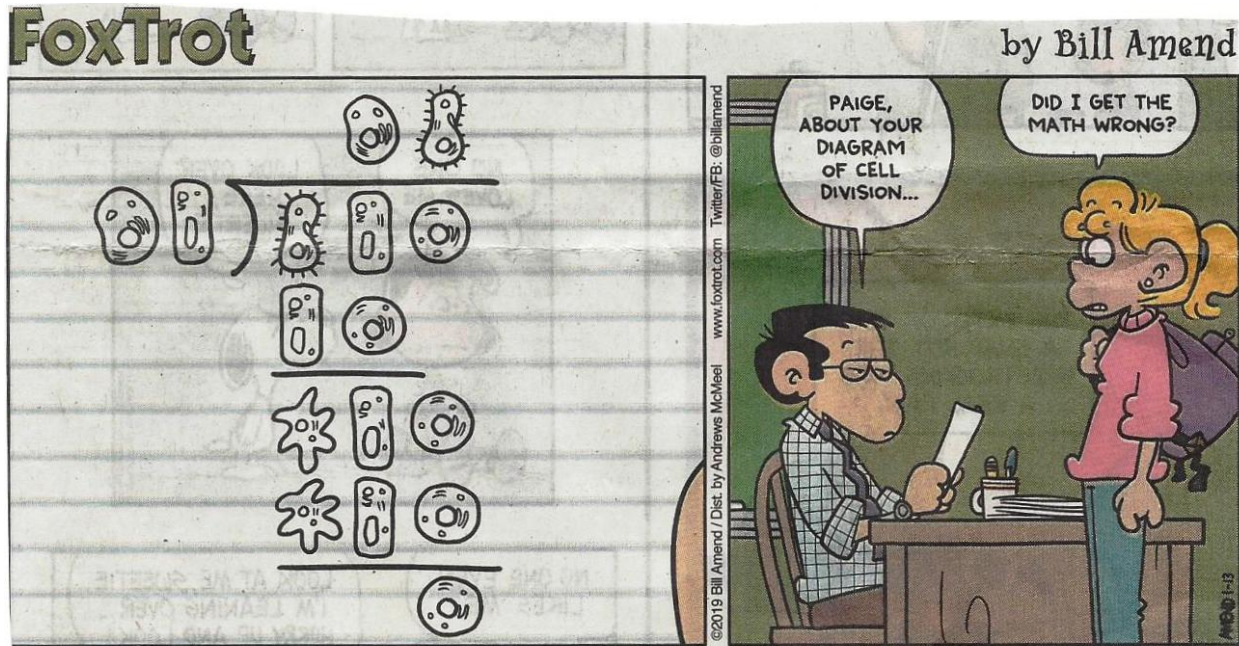
Also involved are
Webmaster: Alicia Chancellor Hansen
Poster Competition Lead Tia Maria Price
Newsletter Editor: Charles Davis

For contact information, please see our website; you can find it through www.amstat.org/ASA [Community/Chapters](#). Our address for regular mail is NV-ASA, PO Box 3311, Sparks, NV 89432-3311.



Puzzles

The following appeared in the Las Vegas Review Journal in January, 2019. Can you find single-digit positive integers to substitute for the symbols to make the division work? (Obviously $\textcircled{0} = 0$.) If this is possible, is there only one way? If impossible, how do you know?



And this is from the February 2019 issue of *Reader's Digest*, called "Sum-Thing Special". Each letter from A to H has one of the following eight values, and no two letters have the same value.

1 3 5 6 7 10 13 16

Which number goes with which letter to make all of these equations true?

$$F + D = H$$

$$\mathbf{G} + \mathbf{C} = \mathbf{A}$$

$$F + B = E$$

$$C + A = D$$

$$A + H = E$$