From: Statistical Society of Australia
To: Marie-Louise Rankin
Subject: Stats Matters & Events
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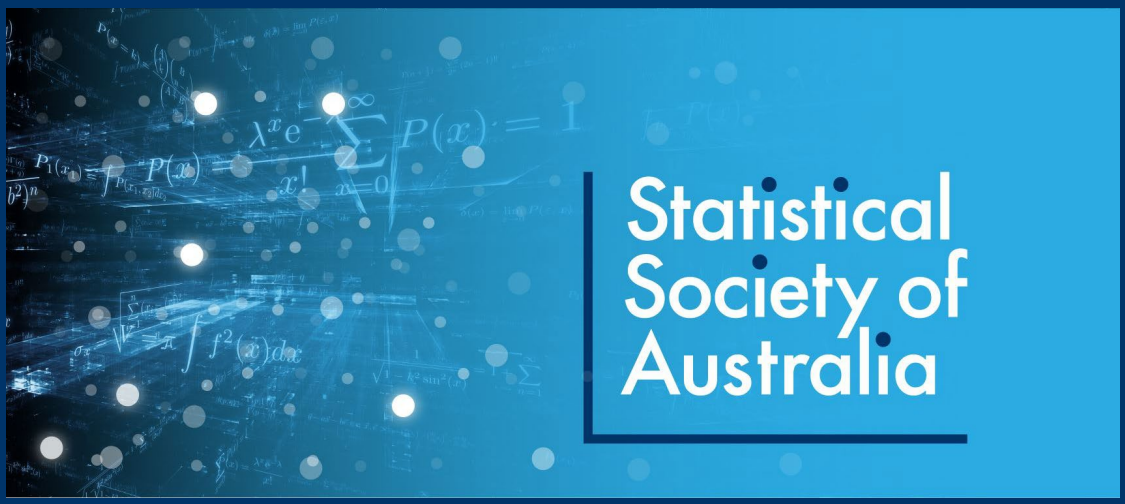

STATS MATTERS & EVENTS

22 February 2024

Dear Marie-Louise,

Even after having worked for SSA for so many years, some subjects of statistical research still surprise me. This week I found a fascinating article about a statistical study on family estrangement. Who knew that family estrangement could be quantified?

The article "Statistics That Tell the Story of Family Estrangement" (website *Psychology Today*) discusses the long-standing lack of attention given to the topic of family estrangement, particularly sibling cutoffs, in psychological research. It highlights the shame and difficulty associated with discussing estrangement, as well as societal norms that prioritise family unity. Australian Social Worker Dr Kylie Agllias, an expert in the field, describes family estrangement as complex and often traumatic.

"Family estrangement is larger than conflict and more complicated than betrayal. It is entwined in contradictory beliefs, values, behaviors and goals and is the result of at least one member of the family considering reconciliation impossible and/or undesirable. The cessation of familial relations, whether that involves rejection or deciding to leave, can be an inordinately traumatising experience." she is quoted to say.

They say: “You can pick your friends, but you can’t pick your family.” However, they also say: “Blood is thicker than water.”

Just because people are born into the same family doesn’t mean that they will be lifelong friends. Even those of us who thought they had an indestructible bond with certain family members may be faced with a situation where life and circumstances have changed the person we once felt close to, where life has eroded what used to be a special bond. Many of us have such a story to tell, though often we choose not to talk about it, because there is a certain stigma attached to walking away from a family member.

The article also mentions “Stand Alone”, an organisation focused on supporting those experiencing family estrangement, and highlights key findings from their research, including reasons for estrangement, variations in its duration and common experiences among estranged individuals.

Stand Alone's most notable study within the past decade involved a collaboration with Dr Lucy Blake from the Centre of Family Research at the University of Cambridge in England. This research gathered data from 807 participants, predominantly from the United Kingdom, United States, Canada and Australia, who self-identified as experiencing estrangement from either their entire family or a significant family member, including parents, siblings, or children.

The study found that key factors contributing to estrangement include mismatched expectations, clashes of personality or values, emotional abuse and traumatic events. Factors that could contribute to better relationships are a more positive, respectful, understanding and loving attitude by family members, as well as loved ones showing more interest, being less judgmental and making more of an effort to stay in contact.

I would think that treating others with kindness and respect applies to everybody – family and friends alike.

Marie-Louise Rankin
Executive Officer

Read newsletter in your browser

In this newsletter:

Analysing the analysers: Exploring statistical methods in meta-analysis of interrupted time series studies

DNA analysis reveals chromosomal disorders in prehistoric societies

Unveiling missing data manipulation: the ethical quandary in research

Flight of decline: Global warning for migratory species

SSA events

Other events

Current Job Vacancies

Analysing the analysers: Exploring statistical methods in meta-analysis of interrupted time series studies

Several members of SSA were involved in a study published recently in the BMC Medical Research Methodology volume 24, Article number: 31 (2024) “Comparison of statistical methods used to meta-analyse results from interrupted time series studies: an empirical study”.

Co-authors Elizabeth Korevaar, Simon L. Turner, Andrew B. Forbes, Amalia Karahalios, Monica Taljaard & Joanne E. McKenzie, examine various statistical methods used in meta-analysis of Interrupted Time Series (ITS) studies. ITS is a design for assessing public health interventions or exposures when randomization is impractical. The authors compared different statistical approaches using real-world ITS data obtained from published meta-analyses.

Key points from the study include:

- Data from 17 meta-analyses, comprising 282 ITS studies mainly focusing on public health interruptions, were analysed.
- Two ITS estimation methods were applied and the results were subjected to fixed-effect and four random-effects meta-analysis methods.
- Overall, the choice of meta-analysis method did not significantly affect meta-analytic effect estimates, standard errors, or between-study variances.
- However, differences in meta-analytic effect estimates and standard errors were observed across different ITS analysis methods.
- The width of confidence intervals and p-values for meta-analytic effect estimates varied depending on the confidence interval method and ITS analysis method used.

The study concludes that while meta-analysis methods generally produced consistent results, the choice of statistical method could impact interpretations and conclusions. It suggests that statistical methods are not interchangeable in practice, emphasising the importance of careful consideration when selecting the appropriate method for meta-analysis.

Read the full article here.

Attention all AStat Accredited Members!

We highly recommend that you check your membership profile in the SSA website from time to time, and update your contact details and area(s) of expertise. You get to choose which details come up when someone does a search in our Directory of Accredited Statisticians. Why not do a search for yourself and see what comes up?

Many of you have chosen for your contact details to remain hidden. If this is not intentional, please change the settings in the profile or ask me to change them for you.

On another note, we just added a new item as an option to add to your profile: "Available for Statistical Consultancy."

You can access your membership profile here.

Not yet accredited? Click here to find out how to change that.

DNA analysis reveals chromosomal disorders in prehistoric societies

An international research team utilised ancient DNA analysis to uncover instances of chromosomal disorders, including potential cases of Down syndrome and Edwards syndrome, in prehistoric human societies. They identified six cases of Down syndrome and one case of Edwards syndrome in ancient populations from Spain, Bulgaria, Finland and Greece dating back as far as 4,500 years. The study revealed that these individuals were buried with care and often with special grave goods, suggesting they were valued members of their societies.

Led by Dr Adam "Ben" Rohrlach, a statistician from the University of Adelaide's School of Mathematical Sciences, and Dr Kay Prüfer of the Max Planck Institute for Evolutionary Anthropology, the research involved screening DNA from approximately 10,000 ancient humans using a new statistical model, enabling the detection of autosomal trisomies efficiently. The findings shed light on the presence and treatment of individuals with chromosomal disorders in ancient societies and were published in Nature Communications.

Read the full article on the AAAS and EurekAlert website here.

Unveiling missing data manipulation: the ethical quandary in research

How to deal with missing data? In his article “How (not) to deal with missing data: An economist’s take on a controversial study”, economics professor Gary Smith, Pomona College, discusses the problematic approach to dealing with missing data in research.

He tells the story of economists Almas Heshmati and Mike Tsionas, who filled in extensive missing data gaps during their research on green innovations in 27 countries during the years 1990 through 2018, without disclosing this in their paper.

When asked, one of the co-authors admitted that the gaps had been filled using Excel’s autofill function. He was quoted to say: “We used (forward and) backward trend imputations to replace the few missing unit values….using 2, 3, or 4 observed units before or after the missing units.” Some of the data gaps relating to one country were filled by copying and pasting data from next country in line, or the country listed prior!

Smith’s article delves into the extensive use of imputed data, the arbitrary nature of the imputation process and the questionable methods used to handle missing observations. It criticises the lack of transparency in the study's methodology, highlighting the potential bias introduced by imputation and the implications for the validity of the research findings.

Overall, the article warns against the misuse of imputation techniques in research and stresses the importance of transparency and ethical conduct in handling missing data. It suggests that the controversial study might have faced greater scrutiny or even rejection if the extent of imputation had been disclosed during the peer review process.

Read the full article on the "Retraction Watch" website and leave comments here.

Flight of decline: Global warning for migratory species

The first State of the World’s Migratory Species report, published on 12 February 2024 by the Convention on the Conservation of Migratory Species of Wild Animals (CMS), reveals the shocking state of our wildlife. The world’s migratory species of animals are in decline and the global extinction risk is increasing.

Dr Joseph Ogutu, Senior Statistician, University of Hohenheim, Germany, provides a brief analysis of the report in “The Conversation” on 13 February 2024. He explains nearly half of the migratory species in need of protection are experiencing further declines, with over one-fifth facing extinction. Notably, 97% of migratory fish species are now threatened with extinction, largely due to overfishing.

Dr Ogutu goes on to say that the report emphasises the destruction and fragmentation of habitats as a significant threat to migratory species, particularly in regions like Africa where agriculture and development have encroached upon natural habitats. This habitat loss has serious consequences for various species, including apex predators like cheetahs and lions.

Migratory species play crucial roles in ecosystems by redistributing nutrients, aiding in pollination and contributing to carbon cycling. Protecting these species is essential not only for biodiversity but also for the overall health of the planet. The report calls for global cooperation to restore and protect habitats, expand protected areas, reduce illegal activities, mitigate climate change impacts and address environmental pollution. It serves as a vital blueprint for conserving migratory species and preserving the phenomenon of migration itself. Read the full article here.

Of you are interested in the animal behaviour, you may enjoy this recording of a conversation between Leila Sloman of the American Mathematical Society with Dr Outi Tervo, a senior scientist at the Greenland Institute for Natural Resources. Dr Tervo explains how mathematics is used to study narwhal foraging and diving behavior - and how that data helps influence marine vessel speed limits.

Mentioned in previous newsletters:

Election of Executive Members

Members are advised that the Executive positions of Secretary and Treasurer will become vacant at the Society’s Central Council Annual General Meeting in 2024.

Members of SSA are invited to submit nominations for the two positions to be vacated. Nominations must be in writing and signed by the nominator(s), and must be accompanied by a written and signed statement from the nominee accepting the nomination. Nominations should be submitted to the SSA President (president@statsoc.org.au) or to a Branch President before 1 May 2024.

Doug Shaw, Secretary

The Tjanpi Award for best Student paper in Environmental Statistics

Nominations are now being accepted for the 2023 Tjanpi Award, the annual student prize for best student paper in environmental statistics, sponsored by the SSA Environmental Statistics Section. To be eligible a student must be:

- An author of a paper that has been accepted during 2023, having made a substantial contribution to the work
- A student as of 30 June 2023
- A current member of the SSA and the Environmental Statistics Section

The winner will receive $500 and will be asked to present in an invited session on environmental statistics at the next annual stats conference.

Please submit your nominations to eo@statsoc.org.au (self-nominations welcome), with Tjanpi Award submission in the header, by 5 PM AEDT Friday 1st March 2024, including:

- Full name, institution

- Paper, as one pdf file.

- Letter of support from supervisor or other academic at the institution, confirming student status of applicant and describing the student's role in the paper.

David Warton
Chair, Environmental Statistics Section

Central Australian landscape dominated by Tjanpi, photo by Sara Winter

Tjanpi is the Pitjantjatjara word for Triodia, a spiny tussock-forming grass that dominates the vegetation across more than 20% of Australia's land mass. It is a long-lived plant that makes deep roots and can withstand the hardiest of conditions. It can grow over decades into characteristic ring formations three metres in diameter. As a source of food and shelter, Tjanpi is fundamental to life in some of Australia's most extreme conditions, being central to highly diverse ecosystems dominated by termites and ants, as well as reptiles, birds and small mammals. It has also been traditionally used by Indigenous people for a range of purposes, including building shelters, making an adhesive resin, basket weaving, fishing and using its seeds as a food source.

Tjanpi is an analogy for the Environmental Statistics student award – because the development and application of appropriate statistical techniques is fundamental to good environmental research, and our hope is that the recipient of this award will grow over the coming decades to become central to a diverse range of interesting research endeavours!

SSA Events

Statistical Consulting Network Monthly Meet-Up

23 February 2024, 12:30 PM – 1:30 PM AEDT, held online

Come along with your thinking cap, maybe a problem, and some lunch!

The Statistical Consulting Network invites you to their monthly meet-up, a virtual lunchtime meeting where statisticians help each other out with problems that they aren't sure how to deal with. This virtual meeting is held on Zoom at lunchtime on the last Friday of each month, 12:30-1:30 PM (AEDT). We start each meet-up with announcements, or occasionally a special topic discussion, then discuss problems that attendees have brought along with them.

We also have a Slack workspace where members of the consulting network can communicate between meetings, or post problems or relevant materials they would like to discuss during a meeting.

Zoom link

Password: 660145

Slack Workspace link

Other events

Assessing the risk of bias in studies evaluating the effects of interventions and of exposures

21 Mar 2024 (AEDT) – 22 Mar 2024 (AEDT), Ground Floor Conference

Rooms, Monash University, School of Public Health and Preventive Medicine, 553 St Kilda Road, Melbourne

Professor Julian Higgins, University of Bristol, will be leading this two-day (in-person) workshop, providing a unique opportunity to learn from the lead developer of the risk of bias tools. The course is designed for those undertaking systematic reviews, synthesizing evidence for guidelines, or generally interested in how to appraise studies. For registration information, please see here.

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If you have news from the Australian statistical community to share in Stats Matters and Events, please get in touch with us! We love getting feedback too.

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