Supplementary material for CHI SIG on Transparent Statistics in HCI

Matthew Kay, Steve Haroz, Shion Guha, Pierre Dragicevic

Abstract. Transparent statistics is a philosophy of statistical reporting whose purpose is scientific advancement rather than persuasion. We propose a SIG to discuss problems and limitations in statistical practices in HCI and options for moving the field towards clearer and more reliable ways of writing about experiments.

Background of Organizers

Matthew Kay is a PhD candidate in Computer Science & Engineering at the University of Washington. He studies the design of user-facing uncertainty in everyday sensing and prediction, such as personal informatics systems for health and applications for real-time transit prediction. He has also published work advancing the use of Bayesian statistics in VIS (InfoVis 2015) and CHI (CHI 2016). His website is: http://www.mjskay.com.

Steve Haroz is a postdoctoral research fellow in the Psychology Department at Northwestern University. He researches how the brain perceives and understands visually displayed information, and he has experience with the experiment design and statistical practices in both computer science and psychology. Steve also maintains a list of InfoVis publications which include statistically analyzed quantitative experiments: steveh.co/experiments

Shion Guha is a doctoral candidate of information science at Cornell University. He studies facets of boundary negotiation in social networks such as privacy, surveillance and deception. This puts him at the intersection of HCI, CSCW and computational social science. He also contributes to methodological HCI research especially in the context of mixed methods research. He can be found online at: https://www.cs.cornell.edu/~sguha/

Pierre Dragicevic is a permanent research scientist at Inria since 2007, and studies information visualization (infovis) and human-computer interaction. He is interested in reforming statistical practice in HCI and infovis, with a focus on replacing dichotomous testing with estimation thinking. He gives regular talks (e.g., at the BELIV 2014 biannual workshop) and publishes papers (alt.CHI '14, Chapter in upcoming Springer Book on Modern Statistical Methods for HCI) on the topic. He also maintains a Web page with reading material: www.aviz.fr/badstats

Communities to which this SIG will be of interest

We believe this SIG will be of interest to the following communities:

- Researchers and students who have some experience in conducting and analyzing user studies and endorse the values of transparent statistics in HCI. They may be interested in how they can **help advance statistical practice** in HCI and in how they can help shape new standards of practice for statistical communication in the field.
- Researchers and students whose primary focus is not statistics but who (perhaps begrudgingly) need to conduct studies and do statistics to validate/evaluate the output of their research. Such researchers are found across CHI and related communities (CSCW, Ubicomp, UIST, VIS, CogSci, etc.), and may include computer scientists, designers, psychologists, or e-health researchers. They are mostly concerned about **getting their ideas published** and having impact in real-world systems, all topics we aim to discuss.
- Researchers and students who are interested in educating themselves and **improving their methods** of statistical analysis and reporting. This group overlaps strongly with the previous ones.
- Researchers and students who are interested in **building new tools** to support more effective statistical analysis and communication in HCI. This group may want to know what kinds of approaches make transparent statistics possible, and how tools might help improve statistics in the field.
- Practitioners, who are interested in how to **make the most of empirical HCI research**.
- Experts from other disciplines, who may be interested in sharing their expertise with the CHI community: psychologists, statisticians, methodologists, and medical researchers.

Assumed attendee background

We hope to attract students, researchers and practitioners spanning the CHI communities outlined above (CSCW, Ubicomp, UIST, VIS, CogSci, etc.), statisticians or researchers with a strong background in statistics, as well as tool builders. Because our goal is both to have conversations that shape the future of statistical communication and to begin the process of education, we will not assume all attendees have a strong statistical background. However, this SIG is not intended to be a statistics tutorial; rather, we plan to explain the limitations of current practices, provide a brief overview of transparent statistics, and provide a set of resources for those who wish to learn more.

Approach for organizing and presenting the SIG

We aim to have 30 minutes of short talks given by the organizers followed by 50 minutes of discussion. Part of the goal of these talks will be to give attendees some common background on transparent statistics, as well as to seed the discussion period. The talks will be organized around the themes and discussion ideas presented in the extended abstract for our SIG:

- 5 min: Short introduction to this SIG
- 5 min: Pierre Dragicevic: NHST and the limits of dichotomous testing
- 5 min: Matthew Kay: Bayesian methods and practical significance
- 5 min: Steve Haroz: Generalizability and open data

- 5 min: Shion Guha: Training and education
- 5 min: How to move forward, list of possible questions

For more details of these topics, see our extended abstract submission.

Plan to attract attendees

We represent and have contacts in a diverse set of communities related to our proposal, including VIS (Dragicevic, Haroz, Kay), UIST (Dragicevic), social computing and CSCW (Guha), UbiComp (Kay), psychology and cognitive science (Haroz), e-health (Kay), and statistics (Guha). Using our combined professional and social networks, we will reach out to attract attendees via:

- Social media (Facebook, Twitter, Foursquare)
- Spreading the word at CSCW in March
- Community and departmental mailing lists (e.g. CHI, SOUPS, Cornell, Northwestern, UW, INRIA, cognitive science)

Primary contact

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