It is hard to believe that 2016 is almost over! As many have noted, this continues to be the era of big data and data science, particularly in the popular media, but now also in industry and academia, with formal degree programs in Data Science increasingly on offer. While there may some disagreement on the precise definition of a data scientist, it is clear that the most successful practitioners of data science possess a unique combination of analytic and computational skills. Too much reliance on one skill set, at the expense of the other, is an impediment. To this end, Statistical Computing, and its role in the creation of new computing environments, can play a key role in the data science space. Working environments that promote seamless integration of modeling and visualization tools (such as those we typically use in R) with big data and distributed computing tools (such as Hadoop, Spark, HBase, and so on) will be crucial in the ongoing evolution of data science as a discipline. There is also a need for existing algorithms and models to adapt to the computational requirements of big data.

The Computing Section presented a very successful program at the 2016 Joint Statistical Meetings in Chicago. We sponsored no less than 9 invited sessions, 4 topic-contributed sessions, and over 75 contributed talks, in addition to our involvement with the various-poster presentations. Jointly with Graphics, we honored Bill Cleveland with the Statistical Computing and Graphics Award, in recognition of his many seminal contributions to both computing and visualization. In addition, our Section was a co-sponsor of the highly successful 2016 Women in Statistics and Data Science Conference, which was held in Charlotte, NC. Preparations for JSM 2017 in Baltimore are well underway. The invited program is complete, but there is still time to submit proposals for topic-contributed sessions (by January 11) and regular contributed sessions (by February 1). Volunteers for session chairs are always welcome! The Computing Section is also co-sponsoring a 2017 Data Challenge organized by the Section on Government Statistics. Contestants will analyze a government dataset and present their findings at the JSM. Please see elsewhere in this newsletter for more information. We also plan to hold another joint Computing/Graphics Data Expo competition in 2018. Further announcements about that dataset will follow in 2017. Last, but certainly not least, I would like to thank all our 2016 Section Officers for their hard work this year, in particular our current awards chair Patrick Breheny and our outgoing newsletter editor Usha Goundarajulu. Both have contributed greatly to our successful year.

David Poole

Section Chair (2016)
Here, at the end of 2016, the popularity of data science continues to increase. Visualization is an essential component to making sense of data, whether it’s to make new discoveries or communicate findings. As a result, we’ve once again seen a high level of participation and enthusiasm in our community. Thanks to the Program Chair, speakers, organizers, and chairs of all our sessions at this year’s Joint Statistical Meetings for all of their work and for making the Graphics Section so successful.

This year we also recognized Bill Cleveland, “for his substantial contributions to Statistical Computing and Graphics, which have transformed the way statisticians work with data.” He is a world-class researcher who has made fundamental contributions to data visualization and computing. He was not only one of the first people to use the term, “data science” but he also was the first person to identify and prescribe the skill sets needed to effectively understand and analyze data. Those of us who have been fortunate enough to work and collaborate with Bill have benefitted greatly from his experience and perspective.

We are currently preparing for next year’s meeting in Baltimore. The invited papers for JSM 2017 are submitted, and the awards committees are evaluating nominations for the Student Paper Competition and the John Chambers Statistical Software award. We will once again honor the winners at our annual joint section mixer.

If you would still like to participate, it is not too late. You can submit proposals for topic-contributed sessions and poster sessions until February first. You can also volunteer to organize sessions for JSM or, if you like to be an officer, let us know which positions you’d like to hold.

Finally, I’d like to thank Michael Friendly, Naomi Robbins, Di Cook, Yihui Xie, Ken Shirley, Leanna House, Sarah Hardy, Rebecca Nugent, Stacy Lindborg, and Rick Peterson for their work as Section Officers. Also, I’d like to thank Usha Govindarajulu, the Computing Section’s Publication Officer, for the work she has done putting together the newsletters.

Michael Kane
Section on Statistical Graphics
Section Chair (2016)
Statistical Computing Program Chair Report (Wendy Martinez):

We had an interesting and varied JSM 2016 program for our members. We hope that those of you who attended the meetings found the sessions to be interesting and informative. Here is a summary of Statistical Computing at the JSM 2016. As always, thank you for supporting our profession through your contributions at the meetings!

12 proposals were submitted for invited sessions.

9 of those invited sessions were on the program.

125 contributed abstracts were submitted.

4 topic-contributed sessions were held, one of which honored Bill Cleveland.

10 contributed sessions were organized.

1 speed poster session took place.

2 round tables were conducted.

Statistical Graphics Program Chair Report (Yihui Xie):

At the 2016 Joint Statistical Meetings in Chicago, the Section on Statistical Graphics (SSG) sponsored three invited sessions:
- Recent Advances in Information Visualization
- Applied Data Visualization in Industry and Journalism
- Interactive Visualizations and Web Applications for Analytics

and three contributed sessions:
- Methods and Applications of Statistical Graphics
- Toward Better Communication of Information with Statistical Graphics
- When the Plot Is Not the End: Advances in Computing and Reasoning on Data Visualizations

In addition to the SSG program, we also worked with the Section on Statistical Computing on the Statistical Computing and Graphics Student Awards, Mixer, and the John M. Chambers Software Award. This year we had a special session for the Statistical Computing and Graphics Award, received by Bill Cleveland of Purdue University, in recognition for his substantial contributions to Statistical Computing and Graphics, which have transformed the way statisticians work with data.

Lastly I would like to welcome the incoming SSG program chair, Kenny Shirley (Amazon), and we look forward to Kenny's work on the JSM 2017 program, which I believe will be fun, since we have been thinking of inviting some pioneers in statistical graphics to share their ideas from 30-40 years ago.
Statistical Computing Program
Chair Elect Report (Eric Laber):

The computing section will sponsor 5 invited sessions including sessions on networks, reproducibility, and large-scale Bayesian computing. These sessions are going to be really exciting for 2017!!

CALL FOR VOLUNTEERS TO CHAIR CONTRIBUTED SESSIONS
For those going to the 2017 JSM, I am inviting you to serve as a contributed session chair. It is a great way to network and to support your section. To volunteer, please email me by February 1, 2017.

CALL TO SUBMIT CONTRIBUTED SESSION ABSTRACTS
We encourage you to organize a topic-contributed session or to submit a contributed abstract for the 2017 Joint Statistical Meetings (JSM). There are two types of contributed sessions: regular and topic-contributed. The submission period of proposals for topic-contributed sessions (paper or panel) opened on December 1, 2016 and will close on January 11, 2017. For more information on topic-contributed sessions, refer to the website. Note that proposals for topic-contributed sessions must be submitted online by the deadline.

TOPIC-CONTRIBUTED PAPER SESSIONS
These sessions consist of a collection of contributed talks and discussions (if desired) that share a common topic. There are three (3) format options for a Topic-Contributed paper session:

1. Five (5) papers
2. Four (4) papers and one (1) discussant
3. Three (3) papers and two (2) discussants

TOPIC-CONTRIBUTED SESSIONS
Online submission of proposes closes January 11, 2017. Accepted sessions must send abstracts to ASA by February 1, 2017.
Key Dates for JSM 2017 (check JSM 2017 website at for current information)

December 1, 2016 12:01 AM - February 1, 2017 11:59 PM
Online submission of abstracts (all except invited papers and panels)

January 11, 2017
Online submission of topic-contributed session proposals deadline

March 30, 2017 – April 18, 2017
Online abstract editing open

May 1, 2017
Registration and housing open

May 17, 2017
Draft manuscript deadline

June 1, 2017
Early registration deadline

June 2, 2017 – June 29, 2017

Statistical Computing & Statistical Graphics

Statistical Computing Program Chair Elect Report (Eric Laber) - continued:

Statistical Computing Secretary/Treasurer Report (Genevera Allen):

Membership in the joint Computing and Graphics section and the Statistical Computing section is growing, and the sections are in good financial shape.

In October 2016, the Section on Statistical Computing helped as a co-sponsor for the Women in Data Science and Statistical Conference held in Charlotte, North Carolina.

Statistical Graphics Secretary/Treasurer Report (Dianne Cook):

The Graphics section is in a healthy financial state. We would like to fund some activities to support building membership. All ideas are welcome - please email your suggestions to me or to any member of the committee.
Statistical Computing Awards Chair 
(*Patrick Breheny)*: 

The Statistical Computing and Statistical Graphics Sections of the ASA are co-sponsoring two competitions this year: the student paper competition and the John M. Chambers Statistical Software Award.

The student paper competition, which rewards original work in the area of methodological research or some other novel computing or graphical application in statistics, carries with it a cash award of $1,000. The competition is open to anyone who is a student (graduate or undergraduate) on or after September 1, 2016. This year we anticipate awarding four prizes.

The Chambers Award, in contrast to the student paper competition, is an award for the development of statistical software -- nominations must include the software, and judges try out the software to determine how useful it will prove to the statistical and scientific communities. Previous winners include Deepayan Sarkar (lattice), Hadley Wickham (ggplot), and Michael Kane (bigmemory). The award carries with it a cash prize of $1,000, and is open to anyone who is either currently a student or completed her/his last degree after January 1, 2016.

The deadline for applications for both competitions was December 15, 2016, with judging to be completed and winners chosen by January 15, 2017. Winners for both competitions will be given their awards and present their contributions in a special topic-contributed session at the 2017 Joint Statistical Meetings.
Statistical Computing Council of Sections representatives’ report
(Mine Cetinkaya-Rundel, Jonathan Lane, John Monahan):

The focus of the discussion at the Council of Sections annual business meetings at the Joint Statistics Meetings in August was increasing and better communicating the value of section membership. It was reported that only 33.7% of members belong to more than one section and that for many ASA members the benefits of belonging to a section were not obvious.

In an effort to increase awareness on section benefits the COSGB has collected bullet points from each section that summarize section activity and benefits. Sections are encouraged to feature this information on their websites as well as increase their non-JSM presence. Another topic of discussion at the meeting was generating more interest in interest groups and making them more visible to ASA members.

Other items to note:

- Computing section sponsorship of Women in Statistics and Data Science conference in an effort to increase collaboration as well as non-JSM activities. Sponsorship was used towards student travel awards.
- Working with ASA to centralize the storage of datasets used in Data Expo, will be in place by 2018 Data Expo.
R Consortium News from RStudio:

2016 was a year of growth and expansion for the R language. Although firmly anchored in the culture and practices of statistical computing, R has become an important platform for the emerging discipline of data science. In July, the IEEE Spectrum Magazine reported that its annual survey of programming languages ranked R in 5th place. R now competes with Python as a general purpose language for data science. The popularity of R is also expanding R’s user-base to include analysts not originally trained as statisticians. These new users are generally more familiar with SQL style programming, and appear to be fueling the growing interest in the “tidyverse” collection of R packages which emphasizes a consistent vocabulary of SQL-like programming constructs for data import, manipulation and visualization.

Corporate support for the R also became more apparent in 2016 as Microsoft released a new version of SQL Server with in-database support for proprietary R functions that can be accessed from open-source R environments. Corporate support also enabled the growth of the R Consortium, a nonprofit organization organized under the Linux Foundation with the mission to provide infrastructure support for the R language, the R Foundation and the R Community. The R Consortium has provides substantial funding to several projects including the R-Hub build system, the worldwide association of R-Ladies useR groups, the satRdays series of mini-conferences and more. Please note, that current call for proposals by the R Consortium is open until February 10, 2017.

The r-project itself got a new facelift in 2016. As of release 3.3.0 R’s icons are based on the new flat logo.

The collection of R packages continued to expand in 2016 with over 2,000 new packages submitted to CRAN: many of these are concerned directly with data science, machine learning and with increasing R’s visualization capabilities. trelliscope which addresses exploring and visualizing huge data sets, and sparklyr which lets R users access data and build models on Spark/Hadoop clusters are but two notable examples of R’s success in big data computing. The continued development of rmarkdown and the many new packages from ROpenSci illustrate the R Community’s commitment to reproducible research. We expect these trends to continue in 2017. Look for CRAN to exceed 10,000 packages in January.

Joseph Rickert
RStudio R Community Ambassador
R Consortium Director
Computing News from SAS:

In November 2016, SAS introduced the 14.2 release of analytical products. Highlights of SAS/STAT® 14.2 include the following:

- The new PSMATCH procedure provides propensity score analysis.
- The new CAUSALTRT procedure estimates causal treatment effects.
- The PHREG procedure now provides time-dependent ROC curves for Cox regression. See Figure 1 for an example.
- The NLIN procedure now provides ESTIMATE and CONTRAST statements.
- The SURVEYIMPUTE procedure provides two-stage fully efficient fractional imputation and fractional hot-deck imputation.
- The FREQ and SURVEYFREQ procedures provide additional agreement statistics.

In SAS/ETS® 14.2, the SPATIALREG procedure analyzes spatial econometric models for cross-sectional data. SAS/IML® 14.2 has enhanced support for in-memory data tables and lists. For other products, see highlights of the 14.2 releases.

The online documentation for the 14.2 release of analytical products now resides in a new framework called the Help Center. This documentation contains links to sample programs and to some of the videos that describe features of SAS.

SAS continues to offer free "How To" videos and training courses, including a free course titled "SAS Programming for R Users." For students, teachers, and lifelong learners, SAS has enhanced the free SAS® University Edition, which is available for Windows, Mac, and Linux systems.

To stay up to date with SAS activities throughout the year, subscribe to the bimonthly SAS Statistics and Operations Research Newsletter.
Figure 1: Nonparametric Negative Binomial Model for Count Data Fit by Using PROC GAMPL

Rick Wicklin, SAS

Notes and Acknowledgements:

The newsletter was put together by Section on Statistical Computing Publications Officer, Usha Govindarajulu, with assistance and contribution from the Chairs of both sections. Thank you to all the Chairs and Officers of both sections for their contribution to this newsletter via officer reports, news, and announcements.

If you would like to make future contributions to our newsletter or have any questions, please free to contact the publication officers or any other section officer listed on the last page of this newsletter. Thank you.
ANNOUNCEMENTS:

Data Challenge 2017

Three ASA sections (Computing, Government, and Graphics) are proud to sponsor the Data Challenge 2017 to take place at the JSM 2017 meetings. The contest is open to anyone who is interested in participating, including college students and professionals from the private or public sector. This contest challenges participants to analyze a government dataset using statistical and visualization tools and methods. There will be two award categories – Professional (one level) and Student (three levels). Award amounts will be announced later.

Contestants will present their results in a speed poster session at the JSM and must submit their abstracts to the JSM online system in the usual manner. Presenters are responsible for their own JSM registration and travel costs, and any other costs associated with JSM attendance. Group submissions are acceptable. To enter, contestants must do the following by February 1, 2017.

Submit abstract for Speed Poster session to the JSM 2017 website (Specify the Government Statistics Section (GSS) as the main sponsor. Abstraction submission starts December 1, 2016.

Forward the JSM abstract to Wendy Martinez.

The dataset for the GSS Data Challenge 2017 will be the Consumer Expenditure Survey (CE). Public Use data files and documentation (file structure, data dictionary, sample code, etc.), are available here. Contestants must use some portion of the CE data and can also combine other data sources in the analysis.

Standard tables, showing expenditures and related information for various demographic groups, are available here. An experimental table showing extremely detailed average annual expenditures and other information for all consumer units (similar to a household or family) in the U.S. is available here. For more information, see the CE homepage.

Examples of research using the CE data are also available.

Monthly Labor Review articles:

"Beyond the Numbers" series:

"Spotlight on Statistics" and other series;
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