



THE UNIVERSITY OF BRITISH COLUMBIA

Applied Statistics and Data Science Group

Department of Statistics

Our Experience as Statistical Consultants

Carolyn Taylor, Nikolas Krstic and Biljana Jonoska Stojkova

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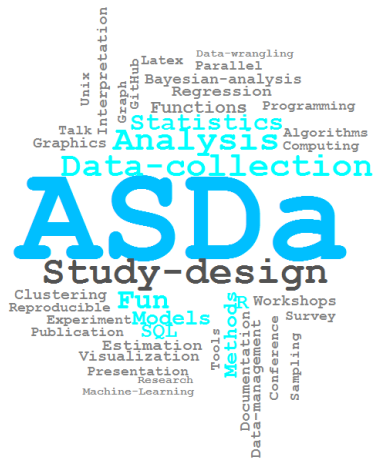
UBC Statistics

asda@stat.ubc.ca

March 1st, 2022

- 1 Business model
- 2 Advertising
- 3 Network
- 4 Job satisfaction
- 5 Consulting steps
- 6 Ethics
- 7 Skills
- 8 Challenges

About ASDa



About ASDa - cont.

ASDa in the UBC Department of Statistics provides statistical consulting services, participates in collaborative research and provides tailored education on statistical concepts and analytics tools. Our services involve:

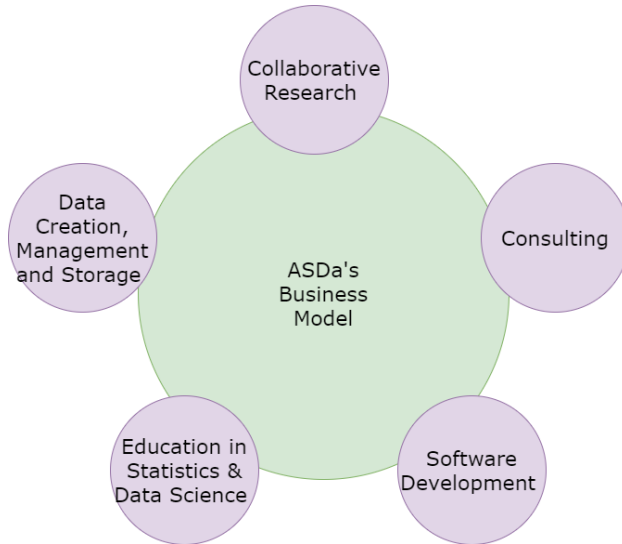
- Improve statistical aspects of grant proposals
- Clean and wrangle data
- Conduct statistical analysis through data visualization exploration, modeling and interpretation
- Develop interactive software tools
- Fill specific gaps in client's skill sets
- Provide statistical training through webinars and hands-on workshops.

Business model

Executive summary Toward Expanding SCARL - Nov. 24th 2015

SCARL intends to become the widely recognized statistical and data science experts at UBC. We envision our future as a self-supporting unit, with a wide range of clients and partners in both academia and industry, and able to help at every level of the data learning process. Towards this goal, we plan to take the following key steps:

Business model: Types of Services



Business development activities

- Leverage social media to promote ASDa services
- Optimize the website search
- Determine expertise gaps
- Improve operational practices
- Strengthen ties with Statistics faculty
- Expand our client base
- Provide workshops and short courses
- Collaborate with other analytics groups
- Participate in various data science related activities.

Advertising

Advertising

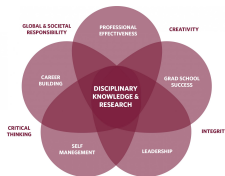
- Expand social media presence through Twitter, LinkedIn, etc.
- Communicate with each UBC department through Graduate Pathways of Success program
- Discuss access to further assistance at the webinars, workshops and SOS meetings
- Keep the ASDa website up-to-date
- Identify opportunities or events in which ASDa can participate
- Identify funding opportunities on campus to develop new programs for training UBC graduate students



Network

R workshops and webinars throughout the academic year

- ASDa was awarded with grant funding from the UBC Sciences Strategic Innovation Fund to develop series of webinars on advanced statistical modeling, reproducible research and to offer extended SOS consultations to FoS graduate students
- ASDa partners with Graduate Pathways for Success to offer webinars on statistical concepts



Data Science For Social Good (DSSG)

- ASDa partners with the Data Science Institute to provide training and mentorship to the DSSG
 - Summer fellowships open to graduate and undergraduate UBC students to apply data science to social problems.



Historical Long term collaborations

- Beenomics (Leonard Foster)
- Kinesiology (Guy Faulkner)
- Vancouver Summer Program
- Michael Smith Labs
- Ecoscope/Life Sciences Institute

Current Long term collaborations

- FPInnovations, forest products research company, 13 year contract with ASDa and 10 year CRD Grant with Stats Department
- Medical research MS MRI Group
- Data Science Institute
- Graduate Pathways to Success
- Office of the Provost and Vice President, Research and International
- Faculty of Dentistry
- Faculty of Medicine
- Faculty of Forestry
- Orthopaedics (Kelly A. Lefavre)

Job satisfaction

Job satisfaction

- Lots of variety, get to play in everyone else's back yard
- Help and educate in better data and analysis practices, often one-at-a-time
- Long term collaborations, oversee projects from inception to completion, develop familiar relationships
- Improve research towards successful publication, sometimes comes with the bonus of co-authorship
- Always learning, work with other analysis experts

Getting involved with ASDa

Benefits of being a junior consultant - asda@stat.ubc.ca

- Flexible schedule
 - You can say No
 - Meetings are scheduled
 - within two weeks for SOS program, or
 - few months in advance for MSA program
- Friendly learning environment
- Opportunity to work with other statisticians in the Department
- Chance to explore if you really like statistical consulting
- Real work experience
 - You can ask ASDa members for a work reference
- Socialization during the COVID-19 restrictions

Consulting steps

“A good statistical consultant takes time to learn about the project and refrains from giving quick answers to informal inquiries.” – Consulting (2003)

At ASDa we value taking time to learn about the project

Consulting steps - cont.

- 1 Understand the data and research questions during the initial meeting
- 2 Determine the suitable statistical methodology to answer the research question
- 3 Conduct comprehensive analysis
- 4 Write a report
- 5 Communicate the results, explain the provided statistical methodology and potential limitations of the study and interpret findings

Ethics

Professional and Scientific ethics promotes integrity of data analysis and conclusions - AMSTAT (2018)

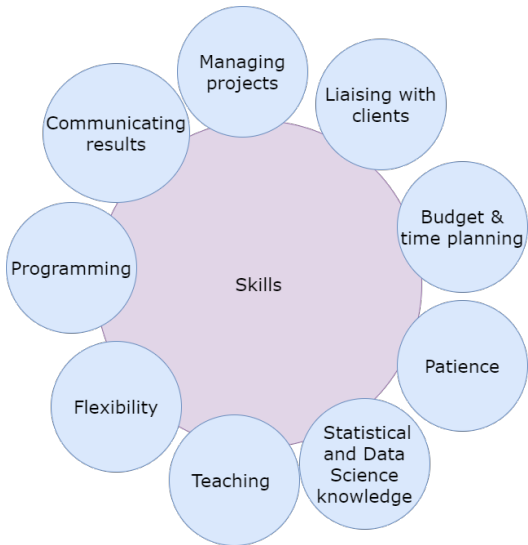


Skills

Key Skills and How They Connect

- Statistical Knowledge
- Communication
- Problem Solving
- Patience
- Teaching Skills
- Management Skills (Time, Organization)
- Flexibility/Adaptability
- Programming

Skills - continued



Attributes of a Statistical Consultant - Consulting (2003)

- ① Has a good general knowledge of statistics, and keeps up-to-date with the current literature
- ② Is a good problem solver with a sincere desire to solve real problems
- ③ Has excellent written and oral communication skills
- ④ Is a good listener who asks probing, relevant questions
- ⑤ Is able to meet deadlines while producing high-quality work
- ⑥ Is comfortable to work with

Attributes of a Statistical Consultant - Consulting (2003) - Cont.

- 7 Is flexible with respect to schedules and changing needs
- 8 Is patient with clients who have little statistical knowledge
- 9 Has a willingness to learn about the project's subject area to better tackle project challenges
- 10 Understands the resource constraints
- 11 Shows respect for statistical and research ethics

Challenges

Challenges (McCulloch (1985), Davidson (2010))

- Many difficulties arose from a failure of the consultant and the client to establish a common set of goals for consulting
- Successful consultations had a clear idea of the purpose and limits of their consulting and were able to communicate their ideas effectively
- The greatest challenge to effective consulting originates from the consultant's attitude, expectations, and goals rather than from client or project deficiencies

Challenges - cont.

- 1 Communication - many challenges are a result from a failure to align the expectations from both sides.
- 2 Treatment of the statistical consultant as a clerk/technician as opposed to a scientist
- 3 Rushed inquiries with unreasonable deadlines
- 4 Co-authorship and acknowledgments on publications
- 5 Fee-for-service model in academic setting - majority of our challenges stem from trying to help researchers with small budgets
- 6 Liaising with clients who think about statistics as a black box

Biljana's Challenging scenario

An example of low budget and high expectations

- A client came in for sample size calculation for a grant proposal
- They had 4 projects and budget for only 2.5 hours. Their expectations were that we will do the calculations, generate plots and explanations for the calculations; all in 2.5 hours!
- We gave them everything, tables and plots of sample size calculations, but they were angry because I was asking too many questions during the meeting, thus preventing me from communicating the results with them
- They asked to talk with my supervisor, and after they calmed down, they followed up on the results we provided. They took our advice and few months later informed us that they got the grant. They also admitted that they were just starting to learn how to collaborate with a statistician.

Biljana's Positive scenario

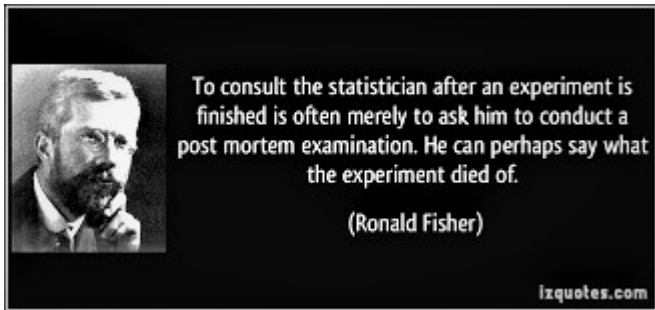
An example of collaborative research

- A client came in for sample size calculation for a grant proposal
- The client is a non-researcher who tries to do research
- After experiencing grant application rejection due to the lack of statistical details
- Aware that they will have to pay out of pocket
- Knew that this will take some hours of work
- Appreciative of all the work I did for them
- Offered to me to serve as their co-investigator
- I took the offer and the grant was approved
- They collected the data, I conducted comprehensive analysis, and manuscript is in the final stages of revisions before submission.

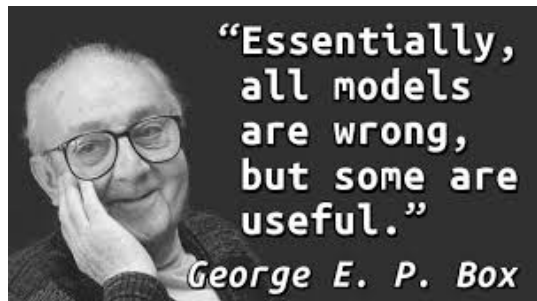
Solutions to some of the challenges: Align the expectations in advance Derr (2000)

- 1 What is the role of the statistician?
- 2 How will the team communicate?
- 3 What is expected to be delivered?
- 4 What are the deadlines?
- 5 What is the budget?
- 6 What are acceptable statistical practices?
- 7 What are the ownership rights?
- 8 When is the participation of the statistician finished?

Some of the quotes we use for teaching clients



Some of the quotes we use for teaching clients - cont.



References

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