The culture of open scholarship

Karl Broman

Biostatistics & Medical Informatics Univ. Wisconsin–Madison

kbroman.org Slides: bit.ly/broman2023



These are slides for a 10-15 min talk on open scholarship for the Big 10 Academic Alliance libraries, in Jan 2023.

Slides (pdf): https://kbroman.org/Talk_Big10Libs/oa2023.pdf

Slides with notes (pdf): $https://kbroman.org/Talk_Big10Libs/oa2023_notes.pdf$

Source: https://github.com/kbroman/Talk_Big10Libs

open access open source open science

About me

- ► Applied statistician working in genetics
- ► Co-author on 170 papers and 1 book
- ► Reviewer for 90 different journals
- Formerly
 - Associate editor and Senior editor at Genetics
 - Associate editor at Biostatistics
 - Associate editor at Journal of the Americal Statistical Association
 - Academic editor at PeerJ
 - Editorial Board member of BMC Biology

kbroman.org/broman_cv.pdf

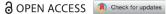
I thought I should say a bit about my experience with the publication process.

My research spans genetics and statistics, but the majority of my publications are in the genetics or biology literature; I only have a couple of papers in statistics journals.

I've reviewed for a lot of different journals, and I spent a decade as an editor for the society journal, Genetics.

THE AMERICAN STATISTICIAN 2018, VOL. 72, NO. 1, 2-10 https://doi.org/10.1080/00031305.2017.1375989







Data Organization in Spreadsheets

Karl W. Broman^a and Kara H. Woo^b

^aDepartment of Biostatistics & Medical Informatics, University of Wisconsin-Madison, Madison, WI; bInformation School, University of Washington,

ABSTRACT

Spreadsheets are widely used software tools for data entry, storage, analysis, and visualization. Focusing on the data entry and storage aspects, this article offers practical recommendations for organizing spreadsheet data to reduce errors and ease later analyses. The basic principles are: be consistent, write dates like YYYY-MM-DD, do not leave any cells empty, put just one thing in a cell, organize the data as a single rectangle (with subjects as rows and variables as columns, and with a single header row), create a data dictionary, do not include calculations in the raw data files, do not use font color or highlighting as data, choose good names for things, make backups, use data validation to avoid data entry errors, and save the data in plain text files.

ARTICLE HISTORY

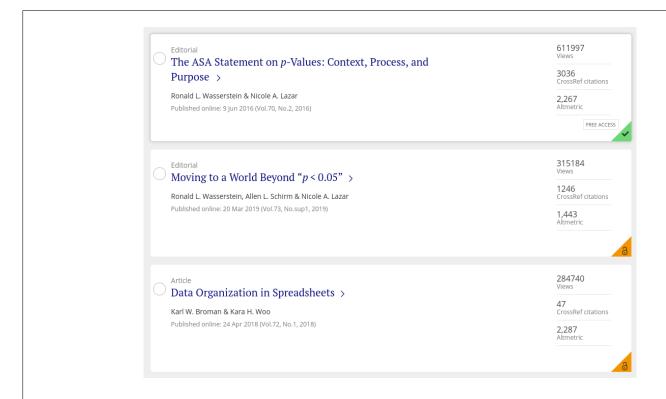
Received June 2017 Revised August 2017

KEYWORDS

Data management; Data organization; Microsoft Excel; Spreadsheets

doi.org/gdz6cm

	A	В	С	D	E	F	G
1							
2	Date	11/3/14					
3	Days on diet	126					
4	Mouse #	43					
5	sex	f					
6	experiment		values			mean	SD
7	control		0.186	0.191	1.081	0.49	0.52
8	treatment A		7.414	1.468	2.254	3.71	3.23
9	treatment B		9.811	9.259	11.296	10.12	1.05
10							
11	fold change		values			mean	SD
12	treatment A		15.26	3.02	4.64	7.64	6.65
13	treatment B		20.19	19.05	23.24	20.83	2.17





That's where "Data Organization in Spreadsheets" - @kara_woo and @kwbroman's 2017 paper in @AmstatNews comes in. It lays out a crisp set of best practices for avoiding common errors, upping your CVS catastrophe game to really powerful mistakes!

tandfonline.com/doi/full/10.10...

5/

11:51 AM · Oct 14, 2020 · Twitter Web App

26 Retweets 5 Quote Tweets 103 Likes

bit.ly/3TRWuYj

data organization organizing data in spreadsheets

My collaborators sometimes ask me, "In what form would you like the data?" My response is always, "In its current form!" If the data need to be reformatted, it's much better for me to write a script than for them to do a bunch of cut-and-paste. I'm a strong proponent of data analysts being able to handle any data files they might receive

But in many cases, I have to spend **a lot** of time writing scripts to rearrange the layout of the data. And how would you like your data analysts to spend their time? Reorganizing data, or really analyzing data?

Most of my collaborators enter and store their data in spreadsheets, and mostly Microsoft Excel. Before starting to enter data into a spreadsheet, it's good to spend some time thinking about the layout. The way that you organize the data in spreadsheets can have a big impact on your data analyst's quality of life.

This is a tutorial on that topic: how to organize data in spreadsheets. For complex, high-dimensional data, it may be better to use a formal database. But for many projects, spreadsheets are perfectly fine. But data in spreadsheets can be pretty and easy to work with, or they can be a sloppy mess requiring serious downstream reorganization efforts. We want to avoid the latter.

I don't think these ideas come naturally to anyone. So if you're not happy with the structure of your current data files, don't despair! And also don't apply tedious and potentially error-prone hand-editing to revise the arrangement. Rather, apply these principles when designing the layout for your next dataset, to help make analyses easier.

- Be consistent.
- Write dates as YYYY-MM-DD.
- · Fill in all of the cells.

kbroman.org/dataorg



NOT PEER-REVIEWED

Data organization in spreadsheets

Karl W. Broman *
Department of Biostatistics & Medical Informatics, University of Wisconsin-Madison and Kara H. Woo
Information School, University of Washington

September 11, 2018

Abstract

Spreadsheets are widely used software tools for data entry, storage, analysis, and visualization. Focusing on the data entry and storage aspects, this paper offers practical recommendations for organizing spreadsheet data to reduce errors and ease later analyses. The basic principles are: be consistent, write dates like YYYY-MM-DD, don't leave any cells empty, put just one thing in a cell, organize the data as a single rectangle (with subjects as rows and variables as columns, and with a single header

doi.org/10.7287/peerj.preprints.3183v2

INVOICE

INVOICE NUMBER: 943345712

INVOICE DATE: 10/06/2017

TAX INVOICE

YOUR TAX REF:

CUSTOMER NUMBER: 3551015

Please quote your customer number on all correspondence

TERMS: Payable in 30 Days



PAID

INVOICE TO:
Biostatistics & Medical Informatics
University of Wisconsin-Madison
Biostatistics & Medical Informatics
2126 Genetics-Biotechnology
Center
425 Henry Mall
MADISON WI 53706
UNITED STATES OF AMERICA

DESPATCH TO:
Mr Karl Broman
Biostatistics & Medical Informatics
University of Wisconsin-Madison
2126 Genetics-Biotechnology
Center
425 Henry Mall
MADISON WI 53706
UNITED STATES OF AMERICA

OUR REF:

OUR TAX REF: 04-3801744

ORDER NUMBER: 4490118 CUSTOMER ORDER: 10.1080/00031305.2017.137598 9

ORDER REF.	QTY	ISBN/ISSN	TITLE	UNIT PRICE	DISC	NET VALUE	TAX	TAX %
T&F iOpen Access Fee	1	1537-2731	The American Statistician Online	2,950.00	0.00%	2,950.00	0.00	



bit.ly/3sIRtVY

Lessons

- ► Continued attachment to journal articles
- $\blacktriangleright \ \, \mathsf{Open} \; \mathsf{access} \longrightarrow \mathsf{more} \; \mathsf{readers} \\$

What has changed?

- ► Rise of preprints in biology
- ► Rise of *Nature Communications*
- ► PubMed Central: expansion, with no embargo
- ► Emphasis on computational reproducibility

What hasn't changed?

- ► Attachment to Impact Factor
- ► Attachment to Science, Nature, and Cell
- ► Researchers don't read much

The journal Genetics recently sent out a newsletter that included an announcement of new associate editors. The bio for one of them had "...including more than 30 articles in Nature, Science, Cell, and Nature Genetics."

Barriers to OA

- ► Most scientists don't seem to care
- ► Cost