36-617: Applied Linear Models

Organizing Empirical Papers and Reports

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Outline

- IMRAD – A canonical way to organize empirical papers & reports
  - More information on IMRAD
- From IMRAD to IDMRAD
  - The Technical Appendix
- Example: Menu Pricing in New York City
- Citations and References: ASA Style!
- General Organizational Advice
- *Read Ch 3 of Sheather for next week.*
  - Reading quiz next Monday.
  - HW02 out later today.

IMRAD – A canonical way to organize empirical papers & reports

- **Abstract**
  - ❏ Summarize I, M, R and D of paper

- **(I)introduction**
  - ❏ Why would anyone want to read this paper?
  - ❏ What questions will be addressed?

- **(M)ethods**
  - ❏ What did you do, to address these questions?

- **(R)esults**
  - ❏ What did you find?

(a)nd

- **(D)iscussion**
  - ❏ What does it all mean?
  - ❏ Typically: answer questions, discuss generalizations & limitations

More information on IMRAD…

- *How prevalent are IMRAD papers? Very…*
  Sollaci et al. (2004). The introduction, methods, results, and discussion (IMRAD) structure: a fifty-year survey. *J Med Libr Assoc 92(3),* 364—367.

- *Quick advice on IMRAD contents…*
  Aggarwal (2004). *IMRAD: What goes into each section?* (slides). http://www.jpgmonline.com/documents/author/24/2_Aggarwal_10.pdf

From IMRAD to IDMRAD…

- **Abstract**
  - Summarize I, D, M, R and D of paper

- **(I)introduction**
  - Why would anyone want to read this paper?
  - What questions will be addressed?

- **(D)ata**
  - What dataset was used for this study?
  - Typically: Variable definitions, sample size, quick summaries and initial descriptive EDA

- **(M)ethods**
  - What did you do, to address these questions?

- **(R)esults**
  - What did you find?

  (a)nd

- **(D)iscussion**
  - What does it all mean?
  - Typically: answer questions, discuss generalizations & limitations

- **Technical Appendix**
  - Technical details of carrying out the (M)ethods

The Technical Appendix

- Most statistics papers are based on lots of technical analysis.

- Most readers of the main paper won't want to see all the details, but some (me!) will want to know that you handled the details well.

- A technical appendix is a good place to collect together the analyses that contributed to the main paper, **in the order they will be presented in the paper.**

  - _NOT the order in which you did the analyses!!_

- Don't include lots of analyses not mentioned in the paper.

  - _The paper can and should cite sections of the appendix_ to show reader where the details are, for the interested reader.

- Do include text and comments in the appendix explaining why you did the analyses you did.

Menu Pricing in New York City

- Example in Sheather, pp. 5—7.

- Three "papers" based on this example

  - IMRAD paper using only EDA:
    Junker, B. (2018). *Menu pricing for a new Italian Restaurant in New York City.*

  - IDMRAD paper using only EDA:
    Junker, B. (2020a). *Menu pricing for a new Italian Restaurant in New York City. (Version 1)*

  - IDMRAD paper with EDA, regression analysis, *and technical appendix*:
    Junker, B. (2020b). *Menu pricing for a new Italian Restaurant in New York City. (Version 2)*

Citations and References: ASA Style!

- See "Reference Citations" and "The Reference List" in http://amstat.tfjournals.com/asa-style-guide/

Berk, K. N. (1978), "Comparing Subset Regression Procedures," *Technometrics, 20*, 1-6.

Bowman, M. J., and Myers, R. G. (1967), "Schooling Experience and Gains and Losses in Human Capital Through Migration" (with comments), *Journal of the American Statistical Association, 62*, 875-898.

Dixon, W. J. (ed.) (1983), *BMDP Statistical Software (Vol. 1, 3rd ed.)*, Berkeley, CA: University of California Press.

Efron, B., and Morris, C. (1977), Comment on "A Simulation Study of Alternative to Least Squares," by H. Clark and T. Schwisow, *The American Statistician, 72,* 102-109.

- I usually omit the quotes... Otherwise use this style!
- Other examples in my Menu Pricing papers...

General Organizational Advice[1]...

Table 1. A summary of the ten rules and how to tell if they are being violated.

Rule	Sign it is violated
1: Focus on one big idea	Readers cannot give 1-sentence summary.
2: Write for naive humans	Readers do not "get" the paper.
3: Use context, content, conclusion structure	Readers ask why something matters or what it means.
4: Optimize logical flow	Readers stumble on a small section of the text.
5: Abstract: Compact summary of paper	Readers cannot give the "elevator pitch" of your work after reading it.
6: Introduction: Why the paper matters	Readers show little interest in the paper.
7: Results: Why the conclusion is justified	Readers do not agree with your conclusion.
8: Discussion: Preempt criticism, give future impact	Readers are left with unanswered criticisms and/or questions on their mind.
9: Allocate time wisely (Title, abstract, figures & outlining)	Readers struggle to understand your central contribution despite your having worked hard.
10: Iterate the story (get feedback, revise and refine)	The paper's contribution is rejected by test readers, editors, or reviewers.

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