

Outline

- Purpose of journals
- Some popular statistical journals
- How to structure a journal article
- What makes a good journal article?
- Editorial structure of a journal
- The review process
- Submitting a paper
- Acting as a referee

Purpose of journals

Research: The mechanism by which knowledge is advanced

Journals: The main mechanism by which results of research are disseminated

Purpose of a journal article:

- **Broad:** Contribute to the progress and extent of knowledge in a discipline (or disciplines)
- **Specific:** Report on a particular, focused contribution

Purpose of journals

In Statistics: Objectives and scope of journal articles

1. Situation for which suitable methods are not available – propose such a method
2. Methods are available, but have limitations – extend, improve, relax assumptions
3. Methods are available – propose a competing one and compare, illustrate
4. An important subject-matter application involves specific issues – show how to handle these with existing or modified methods

Purpose of journals

5. Properties of existing or new procedures are not known
– work out formal theory
6. Properties of existing or new procedures are not known
– carry out extensive simulations

Often: A single journal article may address several of these

Some popular statistical journals

Journal of the American Statistical Association—Theory and Methods

- **1,2,3,5:** New, better methods for general or specific problems; theoretical properties; simulation studies of small sample properties; often, but not always, a short example
- **Audience:** Academicians, graduate students

Some popular statistical journals

Journal of the American Statistical Association—Applications and Case Studies

- **4:** Specific applications; analysis of a particular case study; new or modified existing methods; little or no theory; simulation study of properties; extensive data analysis
- **Audience:** Practicing statisticians, academicians, graduate students, researchers in other disciplines

Some popular statistical journals

Biometrics (**Regular Communications**)

- **1,2,3,5**: New, better methods for general or specific problems; some theory; simulation study of small-sample properties; **always** a motivating example
- **Audience**: Academicians, practicing statisticians, graduate students, researchers in other disciplines

Some popular statistical journals

Biometrics (**Consultant's Forum**)

- **4:** Specific applications; analysis of a particular case studies; new or modified existing methods for specific or broad application areas; little or no theory; simulation study of properties
- **Audience:** Practicing statisticians, researchers in other disciplines, academicians, graduate students

Some popular statistical journals

Annals of Statistics

- **5:** Almost exclusively **rigorous** theoretical developments
- **Audience:** Academicians, graduate students

Biometrika, Journal of the Royal Statistical Society Series B

- **1,2,3,5:** New, better methods; theoretical results (not necessarily rigorous); simulation studies; sometimes a short example
- **Audience:** Academicians, graduate students

Statistics in Medicine, Applied Statistics, Biostatistics, Environmetrics, Journal of Agricultural, Biological, and Environmental Statistics

- **1,2,3,4:** New, better methods; little or no theory; heavy emphasis a detailed, motivating example/case study; sometimes simulation studies
- **Audience:** Practicing statisticians, academicians, graduate students, researchers in other disciplines

Computational Statistics and Data Analysis, Journal of Statistical Computation and Simulation

- **6:** Simulation studies, computational methods and algorithms

How to structure a journal article

First step: Identify the appropriate outlet

- What is the message I'd like to communicate?
- Focus on theory? A general methodological challenge?
A specific application?
- Who would be most interested in my work?
- What journals tend to be read by researchers in my area and publish top work in the area?

How to structure a journal article

General considerations:

- **Length** – most journals set a space limitation
- **Scope** – given space limitations, how much can be communicated effectively **and** represent a meaningful contribution
- **Journal** – different style, conventions, content; in fact, most journals have **specific** stylistic requirements
- Study the length, scope, and style of articles in your target journal

How to structure a journal article

Length:

- **Davidian's Rule of Thumb** – no more than 20 double-spaced pages! (valid for all journals but *Annals of Statistics*)
- No more than 4 tables, 4 figures (may be exceeded for work that relies heavily on graphical display)
- Some journals will return papers that are too long to the authors without review!
- **Challenge** – how to say all you think you need to say respecting the journal's length restrictions and style

How to structure a journal article

Scope:

- Avoid the “general theory of the universe” – don’t try to pack **everything** into one paper
- Stay focused on particular aspects related to a common theme – don’t “go off on a tangent” on things that are not central to the work or message
- Accept that you cannot give a comprehensive account of the necessary background – give the reader a sense of required knowledge to appreciate your work and refer to previous literature
- **Challenge** – what to include, what to leave out

How to structure a journal article

Style:

- Most journal articles are written in the **present tense** using the **active voice** (“we” even for single-authored papers)
- References to what other authors have already done are usually in **past tense**
- References to what you did in carrying out a simulation study and analyzing data are usually in **past tense**

For example: “In this article, we propose a new method...”
“Smith and Jones (2002) developed an approach...” “We generated 1000 Monte Carlo data sets according the following scheme...” “We first plotted the data by treatment group...”

How to structure a journal article

Davidian's "recipe": One generic way to structure an article
(works for most journals)

- Abstract and keywords

1. Introduction

2. Set up problem, review other approaches

3. Main results

4. Simulation studies

5. Application

6. Discussion

- Appendices

How to structure a journal article

1. Introduction:

- Opening sentence that focuses immediately on the problem to be considered, e.g., “Longitudinal data sets are comprised...”
- First paragraph – general setting
- Next few paragraphs – what is currently known, references to key papers, limitations of what is available
 - *JASA-T&M*, *Biometrika* – write down statistical model, explain things in terms of it
 - *Biometrics*, *JASA A&CS* – refer to a specific data set that exemplifies the issue, leave notation till later

How to structure a journal article

Introduction:

- Second to last paragraph – what this paper does to address the challenges already noted; e.g. “In this paper, we...”
- Last paragraph – road map; e.g.,
“In Section 2, we describe the basic model and review previous approaches. The details of our proposed method and its properties are given in Section 3. Simulation studies demonstrating performance in finite samples are reported in Section 4, and the methods are applied to the elephant tongue data in Section 5.”

How to structure a journal article

2. Set up problem, review other approaches:

- If not done already, set up all notation, define statistical model, etc.
- **Every** symbol should be clearly defined!
- Acronyms should be defined the first time they are used; e.g., “in the case of ordinary least squares (OLS),...”
- In terms of the notation you have developed, describe relevant previous results, point out key aspects of the problem to be considered in the paper

3. Main results

- The “meat” of the paper
- Motivate and describe the steps leading to main results you wish to communicate
- State clearly any assumptions you make
- State the key results, perhaps setting them off (e.g., as Theorems)
- May be advantageous to have subsections; e.g. “Theory” “Computational considerations”
- Relegate detailed derivations or intermediate calculations to an **appendix**
- Explain the importance and significance of results in plain English

4. Simulation studies

- Numerical evidence of properties in realistic sample sizes, how new methods compare to existing ones, robustness to different conditions and violation of assumptions
- Pick situations that are representative of real life but not too complicated (e.g., similar to that of a motivating example)
- Describe exactly how you generated data, number of Monte Carlo data sets, software/hardware used
- Report important results in tables (e.g., MC bias, SD, MSE, etc.), but minimize clutter. Exclude results that may be summarized easily in words; e.g., “all four methods exhibited relative biases of less than 1% in all scenarios.”

How to structure a journal article

5. Application

- Level of detail depends on the journal
- State **specific** scientific questions to be answered and how they are formalized in terms of the statistical model
- At very least, report results (e.g., estimates, SEs) in a table so that interested readers can try to duplicate
- Recount the key steps and reasons for them in a detailed data analysis
- Figures are effective in telling the story of the data
- Summarize and interpret the results in terms of the subject-matter!

How to structure a journal article

6. Discussion

- Restate the objective of the paper
- Review the key findings
- Discuss aspects that were not addressed and need further study, identify remaining limitations

How to structure a journal article

Appendices

- Except in the case of theoretical journals, it is standard to defer details to the end of the paper in an appendix
- Refer back to equations, theorems, etc., and fill in the details

What makes a good journal article?

- All the qualities of good writing are required!
- Tell a story!
- Clear statement of objective, organization and flow, accessibility, completeness, clarity!
- Read lots of journal articles and discover for yourself!

Editorial structure of a journal

Basic premise:

- Authors submit papers to journals with the hope that they will be published
- Not all papers are useful, are correct, or advance the discipline
- Thus, journals must select worthy papers from among those submitted
- A number of individuals (generally unpaid volunteers) are chosen based on their own reputations to make the selections

Editorial structure of a journal

Editorial board: Is printed on the cover or masthead

- **Editor** or **Co-Editors** – the “heads” who receive papers and decide their fate
- **Associate Editors** – experts in particular areas who send papers to **referees** to obtain detailed opinions on merit and summarize/assimilate these
- Number of Associate Editors depends on journal

Referees: Members of the profession with expertise in the area of a paper who read it in detail and offer judgment on merit and constructive criticism

Editorial structure of a journal

Most journals: One Editor or two or more Co-Editors

- *JASA T&M* and *JASA A&CS* have separate Editors
- *Biometrics* has three equal Co-Editors
- *Biometrika* has one Editor

Editorial structure of a journal

Role of Editors:

- Receive submitted papers
- May reject (or accept, rare) a paper outright or
- Select an associate editor with requisite expertise who will, along with referees s/he selects, will read in detail and provide written critique and recommendation on whether to publish
- Make final decisions on which papers are published
- Set standards and conventions for the journal

Editorial structure of a journal

Role of Associate Editors:

- Read individual papers in detail and decide whether they merit consideration by experts to gauge contribution
- If yes, send to referees and request critiques
- If capable, serve as an additional referee
- Consolidate the opinions of the referees and offer a recommendation to the Editor (accept, revise, reject)
- Remind referees of the need for **timeliness**

Editorial structure of a journal

Role of Referees:

- Provide an informed, expert judgment on the merits of a paper in the form of written comments suitable for transmission to the authors
- Does the paper represent a genuine, useful advance in methodology, understanding, and/or novel data analysis?
- Is it correct?
- Are there ways it could be improved?
- Send a separate letter or report for the Associate Editor (not to be seen by authors) recommending rejection or publication, either in its current form or after changes/revisions are made

The review process

Usually:

- Paper is received at journal, Editor rejects outright or assigns to Associate Editor
- Associate Editor reads, assigns to referees
- Referees, Associate Editor prepare written reports and recommendations
- Associate Editor summarizes and sends to Editor
- Editor makes final decision on whether to reject, ask, for revision addressing concerns, or accept (rare). Letter sent to author(s) with decision, reports from reviewers, and (for revisions) summary of what must be done

The review process

Usually:

- If invited, authors submit revision, paper goes back to Associate Editor (may or may not return to Referees)
- Continues until all concerns addressed satisfactorily, paper is accepted, authors receive letter

Blinding:

- Almost all journals – Authors are **blinded** to identities of Associate Editor and Referees, but Associate Editor and Referees know identity of authors
- Some journals – “Double blind;” i.e., Referees are also blinded to identity of authors

Submitting a paper

Considerations:

- Examine a recent issue and note style, level of technical detail, topics in published papers
- Become familiar with the Editor(s) and Associate Editors by studying the masthead; one of the AEs will handle your paper (and thus have the major say in its fate)!
- Visit the journal's web page!
- Note the **instructions for authors** (in journal and on web page) and follow these **exactly**, including conventions on math, tables, figures, length, type size and spacing
- Virtually all journal submission is **electronic**!
- Enclose a **brief** cover letter making clear your intention and noting any conflicts of interest

Submitting a paper

If your paper is

- **Rejected** – consider the comments carefully (they are usually valid), consider addressing them and sending to another journal (sometimes suggested by the reviewers)
- **Not accepted but a revision is invited** – address the comments as best you can, prepare a point-by-point response of how you have done this, be gracious, and resubmit as soon as possible

Rarely: You may feel the reviewers are simply **wrong** or completely **misunderstood** your paper (bad writing?)

- You may write to the Editor, explain why you believe the decision was inappropriate, and ask for reconsideration
- Don't get your hopes up...

Submitting a paper

When your paper is accepted:

- Follow the specific instructions **exactly** – copyright forms, submission of files (e.g. \LaTeX source by e-mail or disk)
- You will receive **galley proofs** (typeset version of your paper as it will appear in the journal)
- Check the galley proofs carefully, answer questions from the copy editor, and return as soon as possible!

Acting as a referee

Refereeing: You may be called upon as an expert in your area to serve as a referee

- A **professional responsibility**
- A way to become involved in the editorial process and the discipline
- A way to learn about new developments in your area

Acting as a referee

Responsibilities: Offer constructive, fair, unbiased criticism

- Resist the temptation to be competitive
- Be gracious, not mean-spirited
- Do not nit-pick or rewrite, but offer general comments to help an author to improve content and value of the work and restructure the exposition