A guide to preparing an effective pre-analysis plan (PAP)

Some fields, such as economics, occasionally distinguish between preregistrations and pre-analysis plans. We use the term pre-analysis plan (PAP) in this document.

More educational materials here

Lab² Metalab for better science

What is a PAP?

A pre-analysis plan (PAP) is a publicly documented, time-stamped plan summarizing a study's design and hypotheses before the data are collected (e.g. for first-hand data such as experimental) or getting access to the final dataset (e.g. panel studies). It establishes an unalterable record, promoting transparency in research by allowing others to evaluate a study's final report in light of the intended research plan.

Why consider preparing a PAP?

A PAP helps strengthen research integrity by reducing unintended flexibility throughout the research process. Key benefits:

- Improved transparency and reduced Type I errors.
- Clearer evidential value of findings
- Refined research questions and study designs
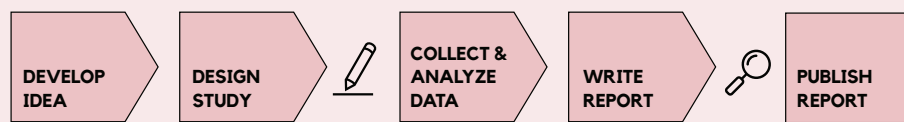- Establishing priority for ideas by securing the initial research plan

A PAP clarifies research intentions, outlines key outcomes and statistical methods, and reduces the potential for unplanned adjustments.
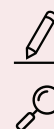
What to include in your PAP?

Checklist based on JPE Microeconomics Guidelines

- ☐ Research Questions & Hypotheses
- ☐ Sample
- ☐ Design Details
- ☐ Pilot and existing data
- ☐ Data Sources & Variables
- ☐ Statistical Approach
- ☐ Statistical Methods
- ☐ Sequencing of Analyses
- ☐ Ethics: Timeline & Milestones

Path for a preregistered study

Credits: Adapted from Henderson, E. L. (2022)

✏️ Preregistration / PAP
🔍 Peer Review

What is a Registered Report (RR)?

RRs build on the idea of PAPs (or preregistration) by combining early study planning with a journal's commitment to publish. In this two-stage article format, the study protocol—including the research question, rationale, methods, and analysis plan—is reviewed before data collection begins. If the study protocol is approved through a peer review, journals may offer "in-principle acceptance," which can help ensure publication based on adherence to the planned protocol, regardless of study results.

Why Registered Reports (RR)?

RRs emphasize rigorous planning over study outcomes, addressing common research challenges:

Preventing Publication Bias: The decision to publish is based on the quality of the research question and methods, not results.

Appropriate Statistical Power: RRs typically require justified sample sizes and a-priori power analysis.

Preventing p-Hacking: Pre-specified statistical tests and methods can reduce the influence of data-driven analyses.
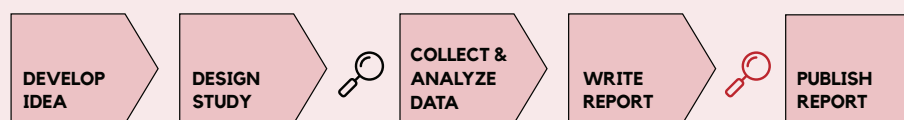
Mitigating HARKing: Pre-established hypotheses may help prevent "hypothesizing after results are known."

Journals accepting RRs

Scan QR for
more information
or visit www.labsquare.net

Path for a RR-based study

Credits: Adapted from Henderson, E. L. (2022)

🔍 Stage 1: **Peer Review**
🔍 Stage 2: **Peer Review**