

## WRITING A PAPER OUTLINE FOR YOUR SCIENTIFIC RESEARCH PAPER

### A Guide and Template

#### Have you been asked to write a “paper outline”?

- This is exciting! It means you’re close to writing your paper.

#### What is a paper outline for and how should you write it?

- The main purpose of the paper outline is to help you map out your Results section—the core of your research paper. At its essence, it is a concise, ordered list of all the data and conclusions you’ll include in the Results.
- Another key purpose of the paper outline is to show you the *remaining gaps* in your data that need to be filled before you can be confident about your conclusions. Because of this powerful use-case, we recommend including experiments/analyses that you are planning to do, and clearly marking every result’s status (with written notes, or via formatting, like color-coding or italics) so you can keep track of what still needs to be done.
- It will be most useful to write the paper outline alongside creating the figures and tables.
- Note that different papers will have different numbers of Results sections and different amounts of data within each section. Organize your own paper outline based on the way papers are typically written in your field.
- We recommend starting by outlining your Results section, but you can optionally add sections for the Introduction and Discussion (or any other section of your paper) once you have a clear logical order for your Results.

#### Who is the paper outline for?

- It is primarily an organizational tool for you, and potentially a communication tool among your co-authors. It does not have to make sense to anyone else, so feel free to use shorthand and adapt the format to match your (team’s) communication style.

#### When should you write the paper outline?

- You can start writing your paper outline as early as you would like, but in general, we recommend starting to write your paper outline once you have enough data that you can at least roughly state the overall conclusion of your paper.
- Let this paper outline grow and change as your project progresses. You can even occasionally dismantle the paper outline and start from scratch—this will allow the story of your project to remain flexible, and will give you more opportunities to come up with creative connections and different versions of your paper’s story.

#### How can you get started?

- On the next page, you’ll find one version of a paper outline (a particularly structured version), which may be a good starting-point. Explanations of what to fill in for each section are indicated with blue text.
- Feel free to use this template for your own paper outline, or to simply draw inspiration from it as you create a format that works for you.

**Working Paper Outline:**  
Working Title of Your Paper

**Section One:** Write one of your major conclusions in one sentence. Make this as succinct as possible. This may end up being the title of one of your Results sub-sections.

**Rationale:** Explain the motivation behind the experiments/analyses in a few sentences. If this is the first section of your results, explain that motivation in terms of an existing gap in your research field and why it is important to fill that gap (this will be the seed for your Introduction section). If this is a later section of your results, explain the motivation as following directly from the previous section (potentially also referring to additional context from the literature).

<b>Result (Conclusion)</b>	<b>Experiment/Analysis</b>	<b>Figure/Table #</b>	<b>Status</b>
Explain in one brief sentence the main conclusion you can draw from a given experiment/analysis.	Very briefly explain the experiment and/or analysis that supports the conclusion in the previous column. Remember, the purpose of this document is to help you (and perhaps your advisor) stay on top of the emerging research “story”, so this does not need to be explained comprehensively enough to make sense to an outside reader—it just needs to be a reminder of what data you’re referring to.	By writing what figure or table you expect this result to fit in, you will start to put your results into a logical order.	Note whether the experiment/analysis is already done, in progress, or still to be done in the future. If it is still in progress or yet to be done, you may additionally note what milestone or person you are waiting on before you can complete this step.
Result 2			
Result 3			
Etc.			