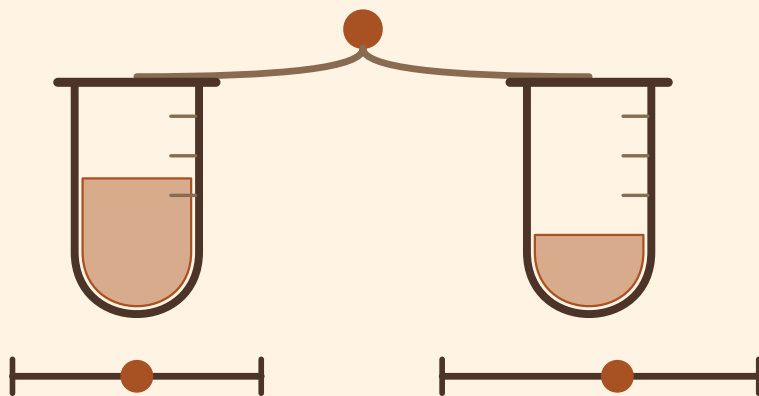




BUSINESS AND CUSTOMER ANALYTICS

# Write Experiment Readouts with Clear Limits

Explain binary outcomes, uncertainty and decision thresholds without overstating evidence



**Sanjaay Gowda T S**

FREE SAMPLE / INTRODUCTION + CHAPTER 1 / EDITION 1.0.0

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# About this free sample

## Write Experiment Readouts with Clear Limits

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Run examples in a separate working folder using the supplied synthetic data. Review inputs and calculations before adapting the techniques to real operations. Model software, service access, subscriptions, ongoing updates and consulting are not included.

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This free sample contains the introduction and Chapter 1 only. The closing link opens the complete guide. The companion project and worked solutions are supplied with the complete ebook.

# Start here

An experiment readout is a decision document supported by a design and a calculation. A positive percentage is not enough. The reader needs to know who was assigned, what was measured, whether the data is usable, how large the difference is and what uncertainty remains. A useful readout can recommend further learning when the evidence does not yet support a confident operational decision.

The worked case is Willow Checkout, a fictional service testing a simpler completion message. Each arm contains one thousand synthetic participants. The control has 120 successes and treatment has 145. Every organization, count, scenario and proposed action in this book is teaching material. No real experiment, customer outcome or production performance is claimed.

This book focuses on a fixed two-arm comparison with one binary outcome per independent participant. The companion reports arm rates, absolute and relative differences, Wilson intervals for each arm and a separately labeled normal approximation for the difference when counts meet a simple teaching guard. It does not perform randomization, sample-size planning, sequential adjustment, clustered analysis, sample-ratio testing or multiple-testing correction.

You will write an experiment contract, inspect data quality, calculate effects, explain uncertainty, review guardrails and produce a bounded decision. The optional tool requires Python 3.10 or later and uses the standard library. It runs locally without paid services or network requests. Keep the original fixture unchanged and use copies for exercises.

The final artifacts are a frozen design note, a data-quality checklist, a reproducible summary and a short decision paragraph. The exercises deliberately ask about evidence the calculator cannot supply. A correct formula cannot repair biased assignment, invalid units or a changed outcome definition. Independent human statistical, technical and assistive-technology review is pending. Use appropriate statistical expertise for consequential real experiments rather than treating this compact teaching tool as a complete experimentation platform.

# 1. Write the experiment contract

## Start with the choice

Willow Checkout wants to decide whether a simplified completion message deserves a controlled rollout. The intended outcome is successful completion of a defined task. The treatment is a particular message version. A clear contract links that treatment to the question and the eventual choice, while preserving the possibility that the result will be inconclusive or reveal a problem.

Write the hypothesis before seeing results. In the teaching design, the team expects clearer wording to help participants complete the task, but records that expectation as a hypothesis. A directional expectation does not make every favorable difference meaningful. The contract should name the smallest effect that would matter operationally and the guardrails that must remain acceptable.

## Freeze the main analysis choices

Record the assignment unit, eligibility criteria, primary binary outcome, exposure window, analysis time and exclusion rules. State whether the design is fixed-duration or uses an approved sequential method. The companion assumes a fixed analysis and supplies no protection against repeatedly checking results and stopping at a favorable moment. That limit belongs in the design note rather than in a hidden code comment.

Keep the treatment specific. If the test changes message wording, page layout and payment options together, the effect describes the package. It cannot identify the contribution of the wording alone. A bundled treatment may be a valid product decision, but the readout must not credit one component without a design that distinguishes it.

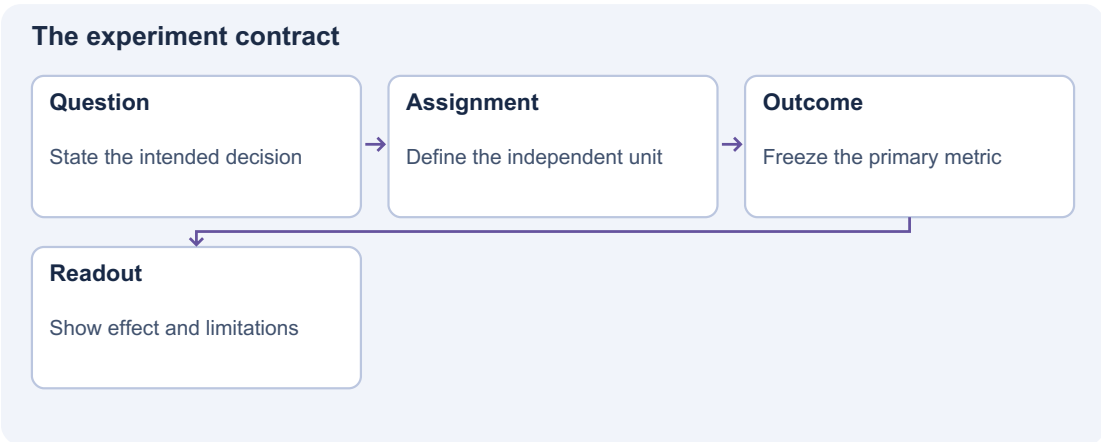


Figure 1. Question, assignment, outcome and readout form an experiment contract that precedes the calculation.

## Define a decision rule without promising a result

A practical rule can say that the owner will consider effect size, uncertainty, data quality and guardrails before choosing rollout, further study or no change. The rule does not need to automate the decision. It should prevent the team from inventing a new criterion after seeing which result looks most attractive.

Record the owner and review participants. Product, operations, analytics and accessibility perspectives may identify different consequences of the message. Their responsibilities should be clear before analysis. A decision meeting works better when it evaluates a frozen question than when it negotiates what the experiment was meant to prove after the numbers are visible.

### Exercise 1: draft the design note

Write six fields for the teaching experiment contract. Include the treatment version, primary outcome and fixed analysis time. Add one possible result that would lead to further learning rather than immediate rollout. Explain why a favorable observed difference does not by itself satisfy the contract.

## Continue with the full guide

This free sample ends after the introduction and Chapter 1. The complete guide contains nine teaching chapters, worked exercise solutions, primary references and a separate Python companion project. The full PDF, reflowable EPUB and project files are supplied together.

Use the complete guide to work through the remaining exercises and inspect the supplied examples. The companion code and fictional data are separately MIT licensed; the complete ebook has the single-reader terms described on its product page.

The examples are teaching fixtures, not production customer results. Independent human technical, editorial and assistive-technology reader review remains pending. Software access, subscriptions, consulting and guaranteed results are not included.

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