



The Before and After: Analyzing Pre and Post Surveys in Excel

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At the time of this publication, Miriam E. Delphin-Rittmon, Ph.D, served as Assistant Secretary for Mental Health and Substance Use in the U.S. Department of Health and Human Services and the Administrator of the Substance Abuse and Mental Health Services Administration.

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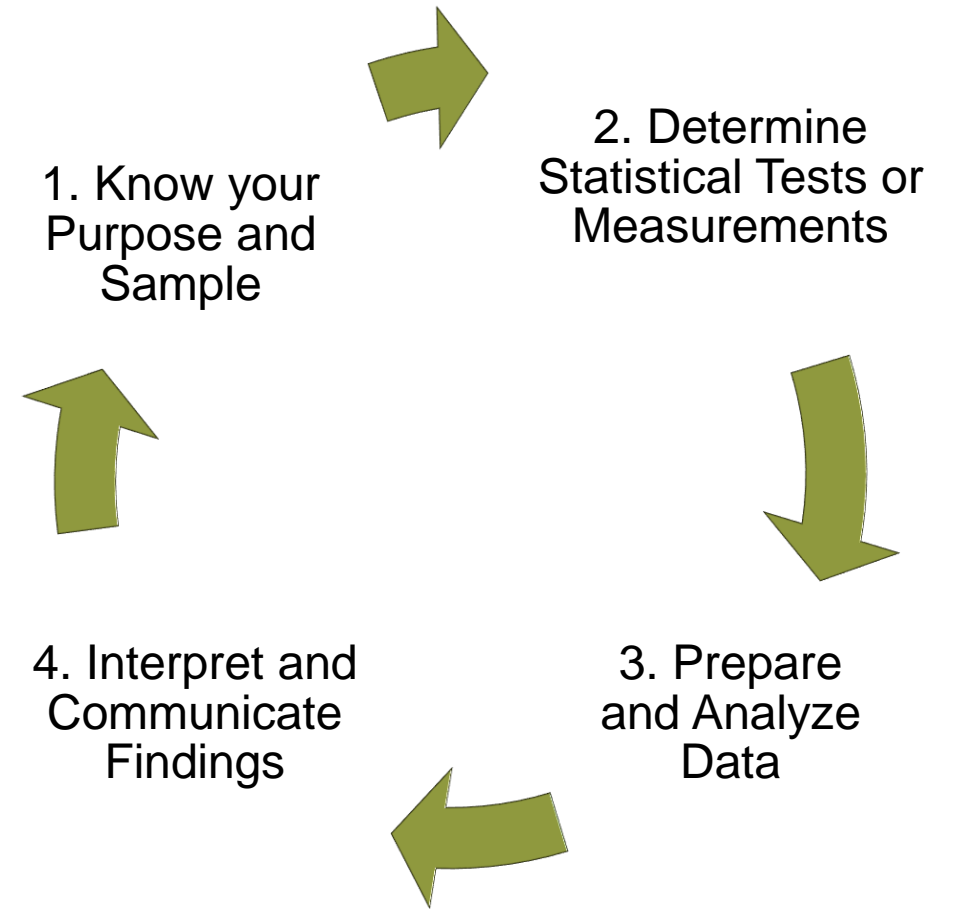
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Learning Objectives

- Apply a step-by-step process to set up a pre- and post-test database in Excel.
- Use Excel to analyze pre- and post-test survey outcomes.

4-Step Pre and Post Analysis Process



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Our Roadmap Today

- ✓ Introductions
- ✓ Why look at changes in pre and post?
- ✓ Using the 4-step pre and post process
- ✓ Setting up and analyzing data in Excel
- ✓ What's the pre-post story?
- ✓ Communicating the results
- ✓ Q&A
- ✓ Evaluation



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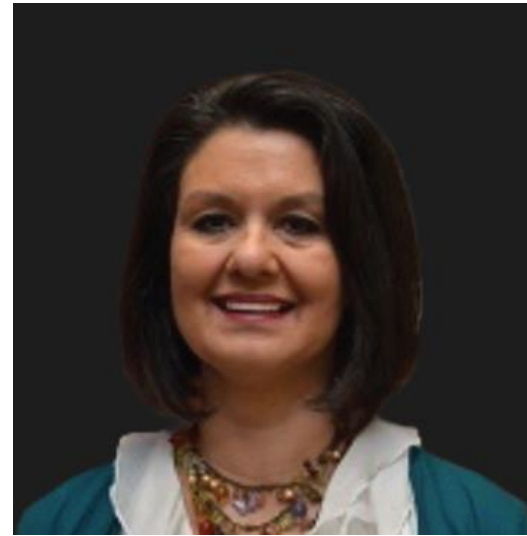
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Let's Discuss!

Why do you think it is essential for prevention professionals to examine pre and post data?



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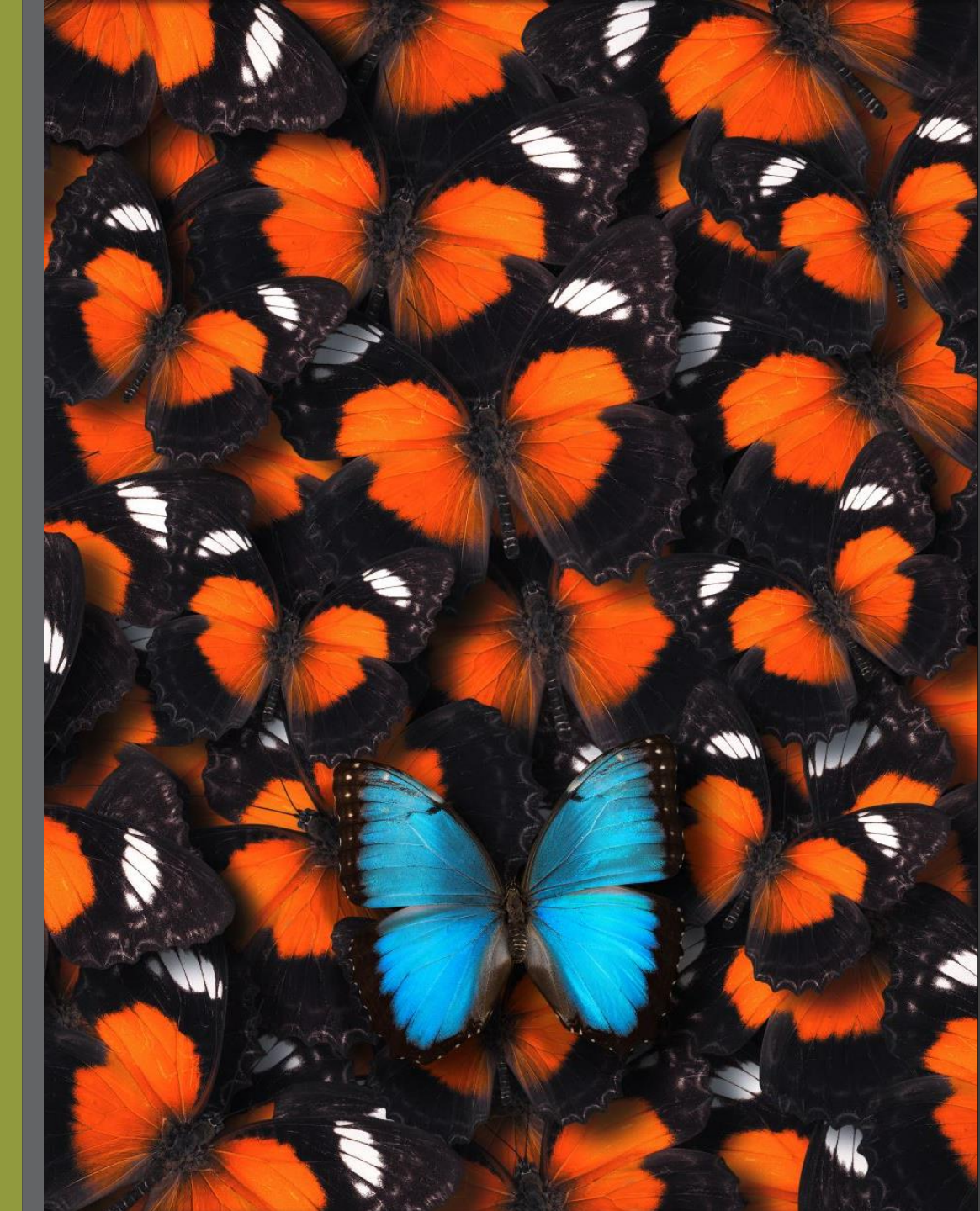
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Related IC&RC Applied Prevention Specialist Competencies





What are we looking at in pre and post tests?

- » Difference in outcomes for individual change
- » Difference in outcomes across the group

The Benefits

- » Demonstrate impact to funders
- » Suggest improvements for continued efforts
- » Seek support for continuing the program
- » Gather information on the approach that can be shared with others
- » Help determine if an approach would be appropriate to replicate in other locations with similar needs

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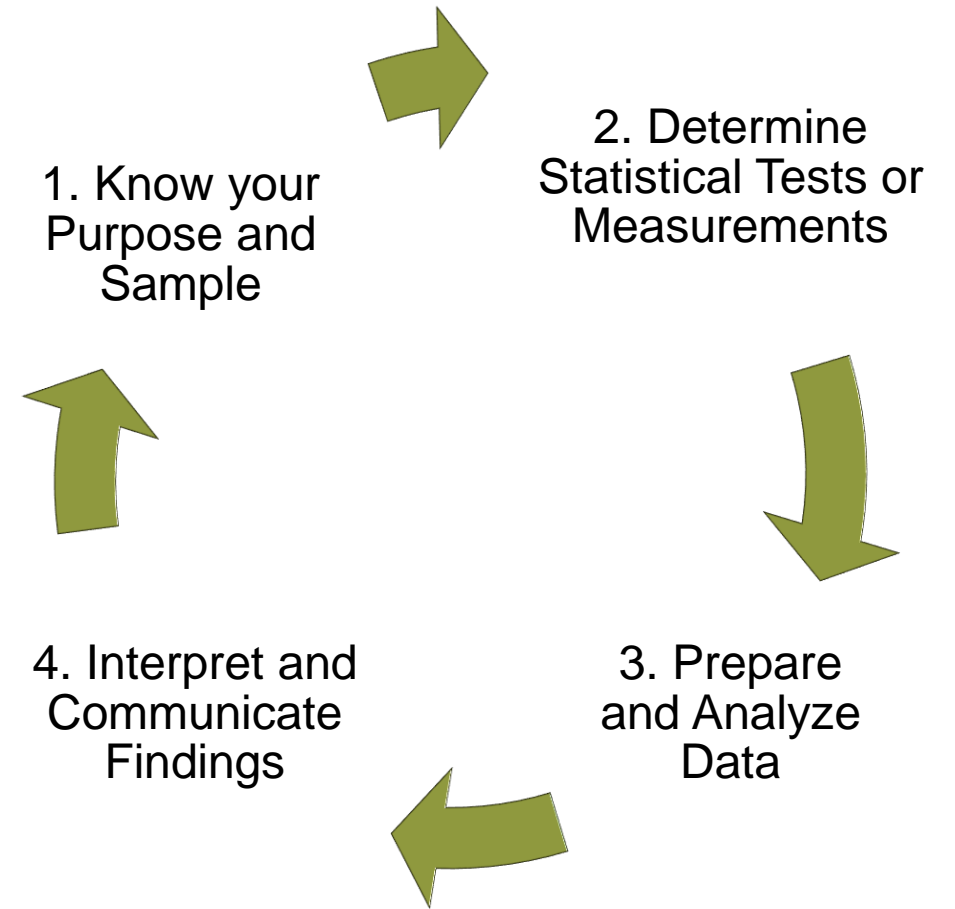
steps



4-Step Process

- » Know your purpose and sample
- » Determine statistical tests or measurements
- » Prepare and analyze data
- » Interpret and communicate findings

4-Step Pre and Post Analysis Process



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1. Know Your Purpose and Sample



What does the program hope to achieve? What are the intended outcomes? Refer to logic model.



Are the participants in the pre and post test sample the same?



Is there a way to match the pre and post survey for the participant?

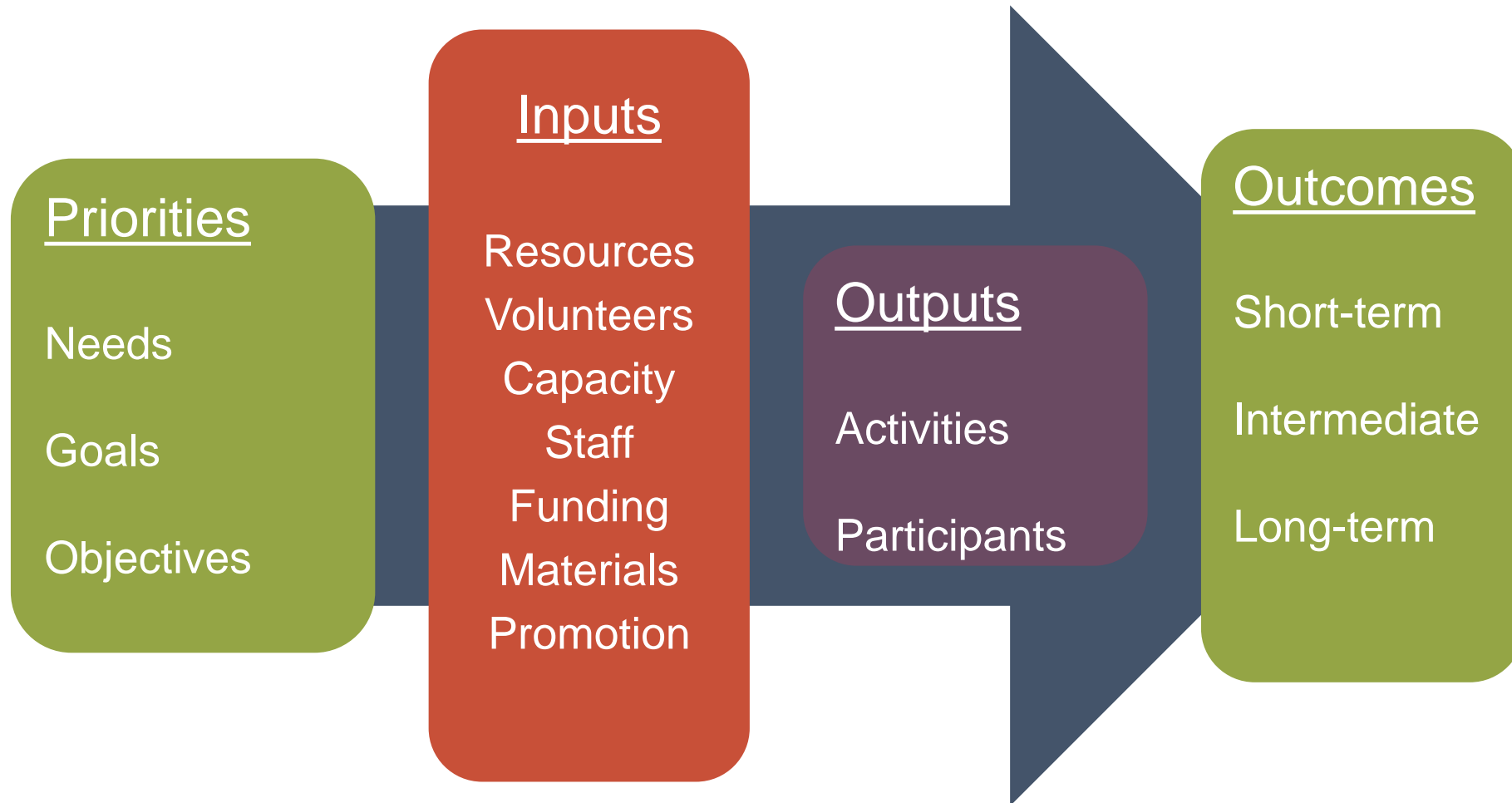


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Using the Logic Model



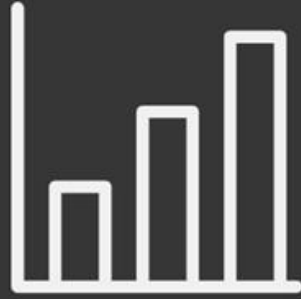
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2. Determine Appropriate Statistical Tests or Measurements



Comparing Statistical Tests

“Statistical tests are a way of mathematically determining whether two sets of data are significantly different from each other.” --Shrutika Sirisilla



Terms to Know in Step 2

1. **Mean:** the average of numbers or scores.
2. **T-test:** tells you how if there are significant differences between group means. It lets you know if those differences in means could have happened by chance.
3. **Paired T-test (Matched Samples T-test):** participants are the same for the pre-test and post-test. There is a way to match the data from pre to post.
4. **Un-paired T-test (Unmatched Samples T-test):** participants are not the same in the pre and post test. Typically two different samples that are being compared.



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Examples from the Field

» keepin' it REAL adaptation in Guatemala City

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6520179/>

» Parenting Program to Prevent Substance Use among Latino Youth

<https://journals.sagepub.com/doi/abs/10.4278/ajhp.110204-ARB-52>

3. Prepare and Analyze Data

- » Tips for setting up data and variables in Excel
- » Data Analysis Toolpak in Excel
- » Go beyond percent change

Prevention
Professionals' Scores
Before and After Exam
Prep Course

Q: What was your exam score?



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Terms to Know in Step 3

1. **P-value:** P stands for probability and measures how likely it is that any observed difference between groups is due to chance.
2. **Null hypothesis:** states that there is no relationship between the two variables being studied (one variable does not affect the other).
3. **Alternative hypothesis:** states that the independent variable did affect the dependent variable, and the results are significant in terms of supporting the theory being investigated (i.e., not due to chance).



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P-value Interpretation: What does this mean?

A p-value less than or equal to your significance level (typically ≤ 0.05) is statistically significant.

- » In prevention, this means what we did is working! Our outcomes are not due to random chance. We reject the null hypothesis and accept the alternative hypothesis (a relationship between the variables exists).

P-value Interpretation: What does this mean?

A p-value greater than your significance level (typically > 0.05) is not statistically significant.

- » In prevention, this means what we did may not be working to get to our outcomes! We would need to take a hard look at whether we want to continue investing money and time in the intervention.
- » In statistical language, this indicates strong evidence for the null hypothesis (no relationship between the variables).

Live Demo



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4. Interpret and Communicate Findings

- » Use charts effectively- minimize clutter
- » Make them care about the findings
- » Appropriate data visualizations for audience
- » What about your logic model?



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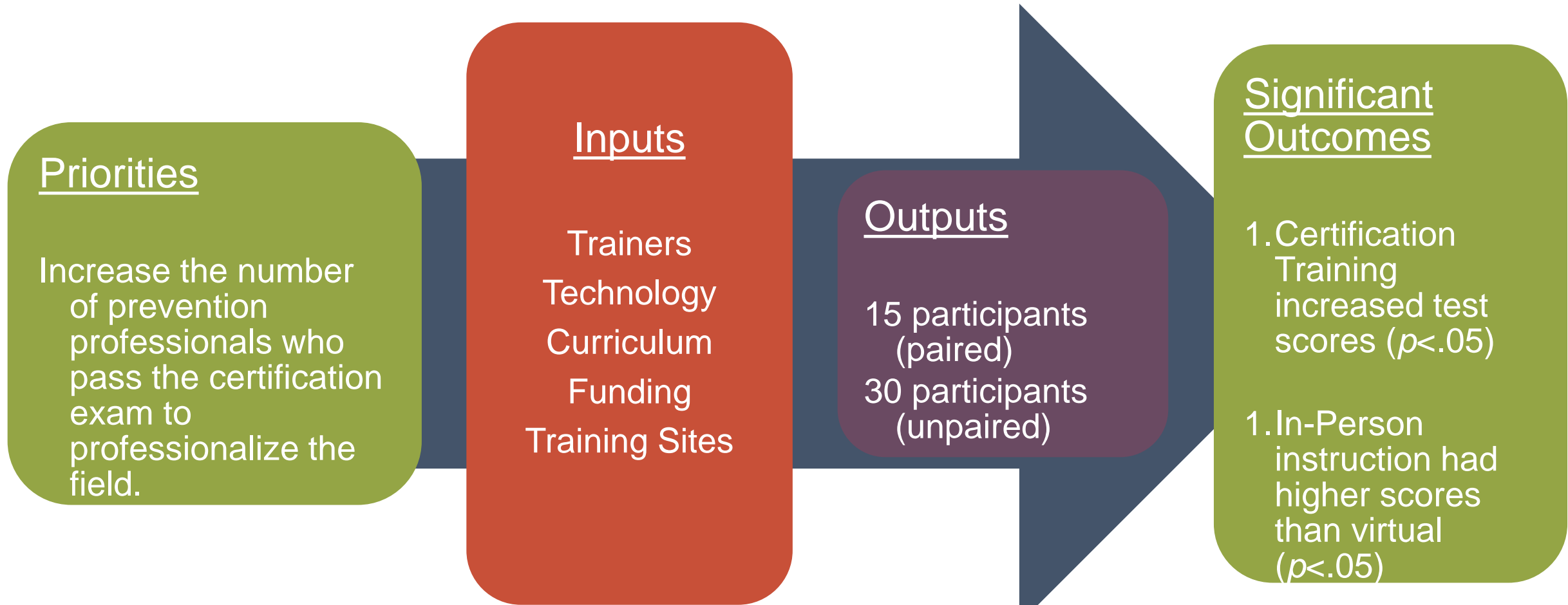




sharpening
the
message



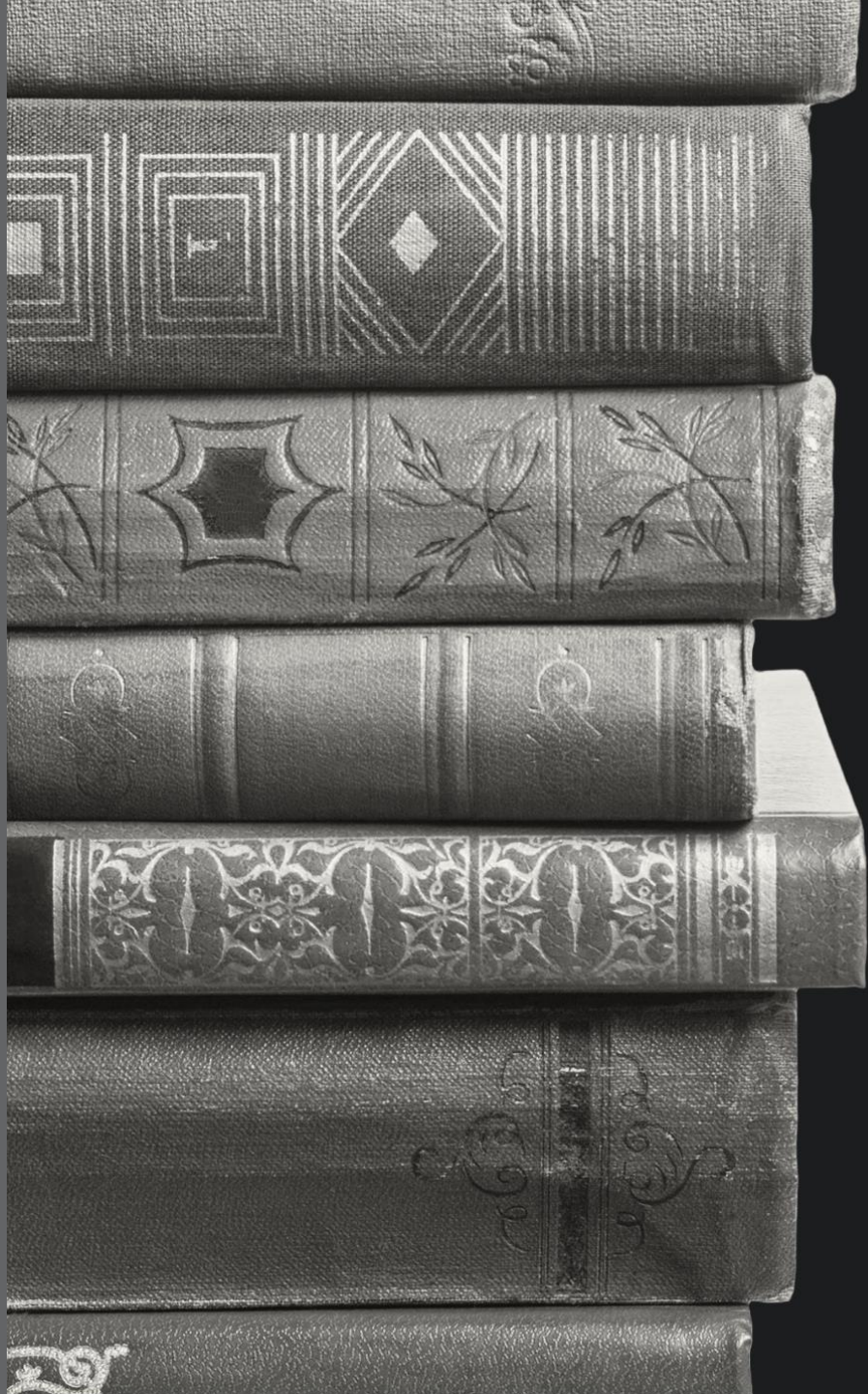
Using the Logic Model to Share the Story



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what's

the

story?

wrapping up



Let's hear from you!
What are your questions?



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For further questions, contact:

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Resources

Ditching the Discomfort with Data: 5-Part Series

<https://pttcnetwork.org/centers/south-southwest-pttc/ditching-discomfort-data-5-part-series>

A Data Story- Visualizing with Purpose in Excel

<https://pttcnetwork.org/centers/south-southwest-pttc/product/data-story-visualizing-purpose-excel>

Choosing the Right Statistical Test - Types & Examples

<https://www.scribbr.com/statistics/statistical-tests/>



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Resources

Data Visualization Checklist

http://stephanieevergreen.com/wp-content/uploads/2017/03/DataVizChecklist_May2016.pdf

P-Value And Statistical Significance: What It Is & Why It Matters

<https://www.simplypsychology.org/p-value.html>



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