

## 8.4: Reporting Results

Through the practice examples, I hope that you have realized that when conducting statistics for the social sciences, the answer is never just the number. We do the statistics to answer questions, so the final answer needs enough information to answer that question, and to let other statisticians know a little bit about the sample and the calculations.

### Reporting the Results

There's no point in designing and running an experiment and then analyzing the data if you don't tell anyone about it! So let's now talk about what you need to do when reporting your analysis. Let's practice with an example with playing cards.

#### Scenario

Imagine this scenario: After playing a game of solitaire on my phone 10 times, I found that I won 6 times. I felt like I wasn't doing well, so I found that, on average, folks win solitary 43% of the time. To conduct a t-test, I asked my ten closest friends to play solitaire 10 times and let me know how many times they won. I guess I don't have 10 close friends, because only 4 people replied back. If I found the sample mean ( $\bar{X} = .55$  (my friends and I won 55% of the time), my research hypothesis is that the sample had a higher win rate than the population ( $\bar{X} > \mu$ ). With a standard deviation (say,  $s=0.18$ ), I could conduct a t-test! We'll skip how to do that part for now, and move on to how to write up your results.

#### Write-Up

Here's a sample way to report this would be to write something like this:

*The average win rate for the five participants in the experiment was 55% ( $\bar{X} = .55$ , while the population average win rate was 43% ( $\mu = .43$ ). A one-sample t-test was conducted to test whether the sample represents the population. The results were not significant ( $t(3) = 1.49$ ,  $p > 0.05$ ), suggesting that the sample's win rate is similar to the population's win rate. This does not support the research hypothesis that the sample would have a higher win rate than the population.*

#### What to Include:

This is pretty straightforward, and hopefully it seems pretty unremarkable. That said, there's a few things that you should note about this description:

- *The statistical test is preceded by the descriptive statistics (means).* That is, I told the reader something about what the data look like before going on to do the test. In general, this is good practice: always remember that your reader doesn't know your data anywhere near as well as you do. So unless you describe it to them properly, the statistical tests won't make any sense to them, and they'll get frustrated and cry.
- *The description tells you what the research hypothesis being tested is.* To be honest, writers don't always do this, but it's often a good idea since it might be a long ways and a lot of time from when the research hypothesis was first presented. Also, notice that the research hypothesis is in words, not in maths. That's perfectly acceptable. You can describe it in symbols and mathematical notation if you like, but since most readers find words easier to read than symbols, most writers tend to describe the hypotheses using words if they can. For help knowing how to write numbers in your paragraph, check out this [page on Reporting Statistics in APA Style](#).
- *A "statistical sentence" showing the results is included.* When reporting the results of the test itself, I didn't just say that the result was no statistically significant, I included a "statistical sentence" (i.e., the dense mathematical-looking part in the parentheses), which reports all the statistical results. For the t-test, the information that gets reported is the test statistic result (that the calculated t-score was 1.49), the information about the distribution used in the test (the "t"), the Degrees of Freedom (which helps understand the sample size), and then the information about whether the result was significant or not (in this case  $p>.05$ ). The general principle is that you should always provide enough information so that the reader could check the test results themselves if they really wanted to. Writing  $t(4)=1.49$  is essentially a highly condensed way of writing "the sampling distribution of the t-test statistic with degrees of freedom of 4, and the value of the calculated t-score is 1.49". This [page on Reporting Statistics in APA Style](#) (website address: <https://my.ilstu.edu/~jhkahn/apastats.html>) also shows how to write these "statistical sentences."

- *The results are interpreted.* In addition to indicating that the result was significant, I provided an interpretation of the result (i.e., that the mean of the sample was similar to the mean of the population), and whether or not the research hypothesis was supported. If you don't include something like this, it's really hard for your reader to understand what's going on.

#### What NOT to Include:

One thing to notice is that the null hypothesis and the critical value is NOT included. That information is for you to use to make the decision, but readers *should* be able to figure out what happened by seeing the p-value, and whether it's  $p > 0.05$  or  $p < 0.05$ .

#### In Closing,

As with everything else, your overriding concern should be that you *explain* things to your reader. Always remember that the point of reporting your results is to communicate to another human being. Dr. Navarro cannot tell you just how many times I've seen the results section of a report or a thesis or even a scientific article that is just gibberish, because the writer has focused solely on making sure they've included all the numbers, and forgotten to actually communicate with the human reader.

#### Note

- *The statistical test is preceded by the descriptive statistics (means).*
- *The description tells you what the research hypothesis being tested is.*
- *A "statistical sentence" showing the results is included.*
- *The results are interpreted in relation to the research hypothesis.*

Okay, once more, with feeling! Let's do a full practice problem, with the calculations and the write-up and everything!

#### Contributors and Attributions

- Danielle Navarro (University of New South Wales)
- Dr. MO (Taft College)

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