



# Using Laerd Statistics as a Data Analysis, Interpretation, and Reporting Tool in Agricultural Education Research



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## INTRODUCTION

- Field (2018) expressed competence in correctly interpreting data is fundamental to producing high-quality quantitative research.
- Gardenier and Resnik (2002) stated statistics misuse can come about through: (1) limited competence with the subject, (2) unintentional errors that may result due to limited competence, (3) negligence when using statistics, and (4) deliberate research misconduct.
- Johnson and Shoulders (2019) recently indicated some traditional practices passed along from one generation of agricultural education researchers to the next may negatively impact the overall rigor and quality of agricultural education scholarship.

## COSTS

- A single-user license subscription ranges in price from \$5.99 for one month's access to \$40.99 for three years' access.
- Each plan provides the same level of access.
- Faculty members can have free access to Laerd Statistics (just contact them!).

## HOW IT WORKS

- Laerd Statistics is a subscription-based statistics education resource (Lund Research Ltd, 2023a).
- Geared toward IBM® SPSS® Statistics software and provides expansive details for a wide range of both parametric and non-parametric statistical tests.
- Details for each statistical test include: (1) correctly setting up the data, (2) meeting statistical test assumptions, (3) procedures for running the statistical test, and (4) details for properly writing-up the results in a manuscript.

## IMPLICATIONS

- Useful tool for graduate students and early-career faculty still building their statistical knowledge and skill sets.
- Useful for anyone when unfamiliar with a particular type of statistical test.
- Includes a “Statistical Test Selector” that details step-by-step instructions to ensure researchers are using the appropriate data analysis procedures (Lund Research Ltd, 2023b).
- Have used Laerd Statistics to help successfully conduct several state- and national-level research projects.

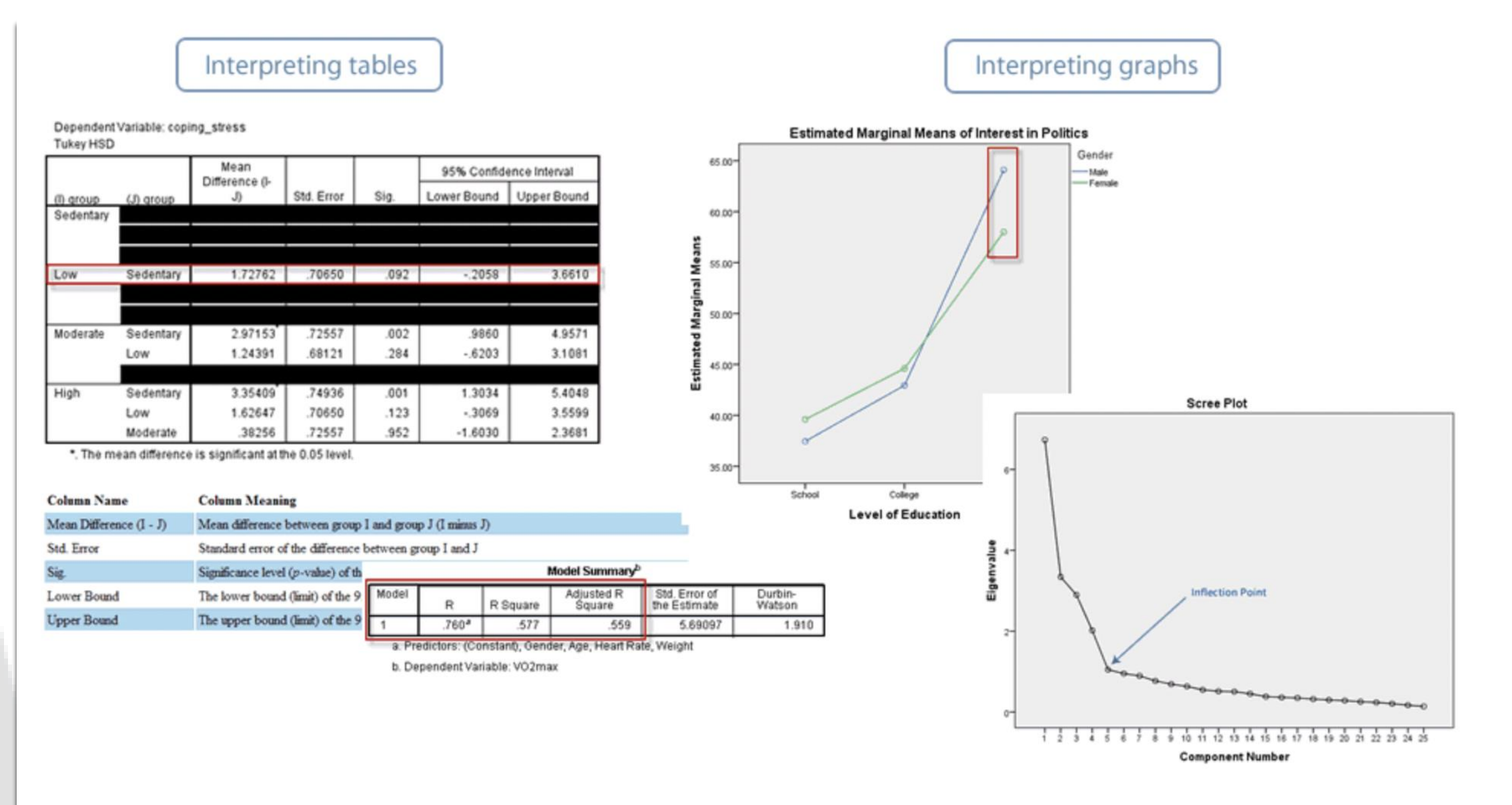
## FUTURE PLANS/ADVICE TO OTHERS

- Continue using Laerd Statistics in our scholarly endeavors for the foreseeable future.
- Plan to use with graduate students working on quantitative research studies.
- Introduce the tool in a graduate-level research methods course.

## FEATURES

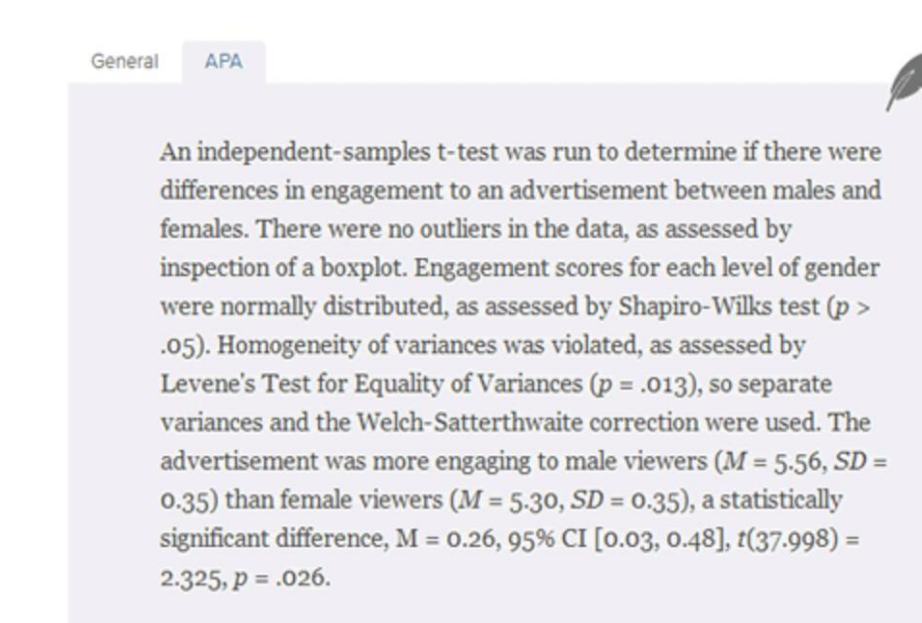
### Understanding SPSS Statistics Output

We help you to understand the tables and graphs that SPSS Statistics produces when you analyse your data. Since SPSS Statistics produces many tables of output for the typical tests you will run, we tell you which tables are relevant, and which you can ignore. For each table that is relevant to your analysis, our guides explain what each figure and number means. Where you need to interpret graphs and charts, we also explain how to do this. We illustrate the output using examples, explaining how to understand results that are statistically significant, as well as those that were not. In all our guides, we explain the output that SPSS Statistics produces using straightforward, jargon-free language, assuming that you have little or no knowledge of statistics. The purpose of our guides is to ensure that you can interpret your own results.



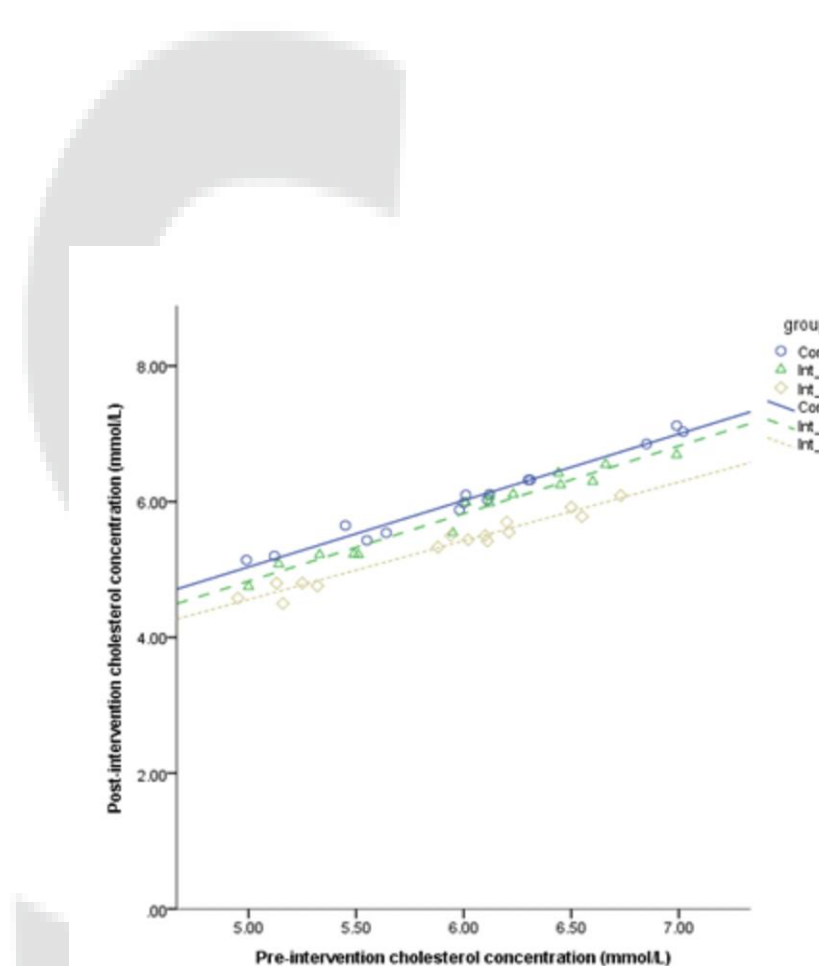
### Writing up your results

When it comes to finally writing up your results, we show you how to do this using an appropriate reporting style (i.e., the APA style or a general reporting style). We also show you how to write up the results from your assumptions tests. As you work through the various assumptions tests and SPSS Statistics procedures required to carry out a statistical test, we show you how to accurately write up each part of your output. At the end of each guide, we show you how you can bring together all your results into a single results statement.



### Presenting data in graphs and charts

You will often not only write up your results, but also illustrate your results using graphs and charts. Since producing properly labelled and formatted graphs and charts can be time consuming, we show you how to do this using SPSS Statistics. In addition to showing you how to do this for each statistical test, where appropriate, we have generic guides that will help you to create bar charts, clustered bar charts, scatterplots, grouped scatterplots and boxplots.



## REFERENCES

Field, A. (2013). *Discovering statistics using IBM SPSS Statistics: And sex and drugs and rock 'n' roll*. Sage.

Gardenier, J., & Resnik, D. (2002). The misuse of statistics: Concepts, tools, and a research agenda. *Accountability in Research: Ethics, Integrity and Policy*, 9(2), 65-74. <https://doi.org/10.1080/08989620212968>

Johnson, D. M., & Shoulders, C. W. (2019). Beyond magic words and symbols: Rethinking common practices in quantitative research. *Journal of Agricultural Education*, 60(3), 291-303. <https://doi.org/10.5032/jae.2019.03291>

Lund Research Ltd. (2023a). *About us*. <https://statistics.laerd.com/aboutus.php>

Lund Research Ltd. (2023b). *Features overview*. <https://statistics.laerd.com/features-overview.php>