

# Common Mistakes in Statistical and Methodological Practices in Sport Management Research

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# Introduction

- ▶ Sport Management Research
  - ▶ better understand and enhance the governance, marketing, finance, and administration of sports organizations and events
  - ▶ encompasses a broad range of topics (leadership, consumer behavior, sponsorship policy, and organizational effectiveness)
  - ▶ evidence-based decisions are supported by high-quality research
  - ▶ high demand for rigorous academic research to address particular issues posed by the growing sports industry

# Introduction

- ▶ Concerns in Research Quality
  - ▶ despite the significance of sport management research, there are rising concerns of statistical and methodological procedures
  - ▶ typical errors such as misuse of statistical tests and multiple comparisons without replacement, inadequate reporting of effect sizes, misinterpretation of p-values, and an over-reliance on the null hypothesis significance testing will endanger the reliability of the findings
  - ▶ to guarantee that the discipline generates reliable and significant knowledge, these problems underscore the necessity of increased awareness and adoption of best practices in research design, data processing, and reporting

# Purpose in the Study

## ► Identification

- misuse of statistical tests: researchers frequently utilize statistical tests that are inappropriate for the type of data they are studying
- misuse of multiple comparisons without replacement: conducting multiple comparisons without proper correction increases the risk of Type I errors, leading to false positives
- inadequate sample sizes: many studies have insufficient sample sizes, leading to a lack of statistical power
- inadequate reporting of effect sizes: the practical significance of the data is limited because many studies do not give effect sizes
- misinterpretation of results: confusing correlation with causation and an over-reliance on p-values
- over-reliance on the null hypothesis: concentration on disproving the null hypothesis while ignoring the results' usefulness

# Purpose in the Study

- ▶ Importance of Addressing These Issues
  - ▶ improved research reliability: researchers can ensure their investigations yield more accurate and trustworthy results by fixing these errors. this keeps false conclusions from influencing the development of theories and real-world applications in sport management
  - ▶ increased validity: appropriate statistical analysis and sound methodological procedures support the internal and external validity of studies, guaranteeing that the conclusions are accurate based on the data and applicable in different settings
  - ▶ enhancing research credibility: resolving these problems makes the field more credible by encouraging more thorough and reliable research, which is essential for the development of sport management as a scientific subject

# Research Objectives

- ▶ the primary objective is to direct researchers by identifying common mistakes and recommending best practices
- ▶ the lack of standardized statistical procedures in sport management research is one of the needs for this study
- ▶ raise overall quality and credibility of sport management after addressing methodological flaws by promoting it
- ▶ understand the difference between practical and statistical significance

# Frequent Statistical and Methodological Errors

- ▶ Misuse of Statistical Tests
  - ▶ invalid use of statistical tests that are not suited for the data
  - ▶ using parametric tests prior to fulfilling the required presumptions
- ▶ Misinterpreting Statistical Results
  - ▶ confusing the concept of 'correlation' with 'causation'
  - ▶ rejecting/fail to reject the null hypothesis when there is insufficient evidence to support a conclusion
- ▶ Importance of Using Correct Statistical Tests
  - ▶ fit the data to the best statistical results

# Frequent Statistical and Methodological Errors

- ▶ Sample Sizes
  - ▶ various research falls short of adequate sample sizes, resulting in statistical tests that are under powered
  - ▶ results may lack generalized and statistical significance
- ▶ Importance of Adequate Sample Sizes
  - ▶ explain how to perform power analysis to calculate the necessary sample size
  - ▶ explain how the sample size affects statistical significance and how it affects findings
- ▶ Over-reliance on the Null Hypothesis
  - ▶ rejecting/failing to reject the null hypothesis without taking into account its practical implications
  - ▶ p-values are overemphasized, they are the main and only measure of the success of a study



# Future Studies for Sport Management Researchers

- ▶ Limitations of the Study
  - ▶ qualitative nature is based of examples rather than on quantitative assessment of literature
  - ▶ certain suggestions may not be appropriately applied in every study setting, but is something to take a closer look at
- ▶ Recommendations for Future Practices
  - ▶ improve research quality by figuring out how findings may boost the rigor of sport management research right away
  - ▶ adopt best practices by encouraging the application of recommended changes in continuing studies

# Practical Implications for Sport Management Researchers

- ▶ enhance research quality by determining how results can immediately improve sport management research's rigor
- ▶ embrace best practices by motivating the use of suggested modifications in ongoing research
- ▶ encourage data openness by making sure that all statistical procedures and judgments are thoroughly recorded and disclosed
- ▶ increase the generalizability of your research by using sufficient sample sizes
- ▶ improve decision-making by using practical and statistical significance in addition to p-values

# Future Directions

- ▶ examine the frequency of statistical errors in various journals using a systematic review or meta-analysis
- ▶ create training initiatives by designing seminars or classes to help researchers advance their statistical knowledge
- ▶ create a statistical criteria of goals before starting an experiment
- ▶ promote cooperation between statisticians and sport management researchers
- ▶ maybe use sophisticated statistical techniques to better handle complex data structures

# Conclusion

- ▶ the statistical and methodological rigor in sport management research must be improved
- ▶ it is important to follow the rules of statistics in order to prevent future common mistakes in the field of sport management research in physical education and exercise science
- ▶ it takes ongoing training in appropriate statistical methods to lower errors and improve the rigor of research
- ▶ correcting the common mistakes will increase the reliability of sport management study findings