

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 (such as Bayesian analysis and multi-level modeling)

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