

Statistical Critique

Sonia Smith

Nightingale College

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Professor Mark Larsen

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Introduction and Purpose

Healthcare provision in correctional facilities is a growing area of concern. In these settings, limited access to healthcare personnel tends to result in delayed treatment, reduced quality of care, and increased risk for inmates with ongoing health needs. The article under review is *The Impact of COVID-19 Pandemic and Operational Challenges, Impacts, and Lessons Learned: A Multi-Methods Study of U.S. Prison Systems* by Novisky et al. (2023). The COVID-19 pandemic posed unprecedented challenges to correctional facilities across the United States, necessitating rapid adaptations in operations and staffing. Novisky et al. (2023) conducted a multi-method study to examine how the pandemic changed prison operations and influenced the daily work of prison staff. The study's quantitative component involved administering a survey to 31 state correctional agencies to capture the systemic impacts of the pandemic on prison operations. The following critique focuses on the statistical aspects of the quantitative component and evaluates the use of theory, research questions, research design, data analysis, presentation of results, discussion, conclusions, ethical considerations, and overall statistical quality.

Use of Theory to Guide Statistical Analysis

The authors employed the bounded rationality framework to guide their analysis, acknowledging that decision-makers operate under constraints that limit their ability to process information and make optimal choices (Novisky et al., 2023). This theoretical lens is particularly suitable for understanding the complex and constrained environment of correctional facilities during a public health crisis. However, the application of this theory in guiding statistical analyses is not explicitly detailed in the article. While the theory provides a contextual backdrop,

its influence on the selection of variables, formulation of hypotheses, or interpretation of statistical findings is not clearly articulated as it should be (Kim et al., 2022). To improve the integration of theory and statistical analysis, the authors could have explicitly linked the constructions of bounded rationality to specific variables measured in the survey (Kim et al., 2022). For example, they might have operationalized aspects of bounded rationality, information overload, or time constraints, and examined their statistical relationships with decision-making outcomes in prison operations.

Use of Questions and Hypotheses in Statistical Analysis

The study's objectives are clearly stated, focusing on examining the operational challenges and adaptations in U.S. prison systems during the COVID-19 pandemic (Novisky et al., 2023). However, the article does not present specific research questions or hypotheses guiding the quantitative analysis. The absence of explicit hypotheses can affect the ability to evaluate the directionality and specificity of the statistical tests conducted (Kim et al., 2022). For instance, null and alternative statements can be used to anchor their statistical testing (Kim et al., 2022). This oversight adversely affects clarity regarding the direction and expectations of the analysis. This means that without defined hypotheses, the interpretation of non-significant results becomes vague. Readers are left to infer the intent of the comparison. For improvement, the authors could have formulated clear and testable hypotheses to enhance the rigor of the statistical analysis (Kim et al., 2022). For example, a hypothesis that prisons with higher staff absenteeism rates experienced greater disruptions in inmate programming during the pandemic could be statistically tested, as that would have provided more insightful results.

Research Design and Its Influence on Statistical Choices

The study utilizes a cross-sectional survey design, collecting data from 31 state correctional agencies in April 2021 (Novisky et al., 2023). This design is appropriate for capturing a snapshot of operational challenges during a specific period of the pandemic. The authors report using descriptive statistics to summarize the data, which is appropriate for the study's exploratory nature (Novisky et al., 2023). However, the article lacks information on the statistical decision-making process, for example, criteria for variable selection, handling of missing data, or justification for the use of specific statistical techniques. Further improvement could be achieved by providing a more detailed account of the statistical decision-making process, thereby enhancing transparency and reproducibility (Kim et al., 2022). For example, the authors would have explained how variables were selected for analysis, how missing data were addressed, and why specific statistical tests were chosen, thereby strengthening methodological rigor.

Presentation of Data Analysis Results

The results are presented using descriptive statistics, including frequencies and percentages, to summarize responses from the correction agencies (Novisky et al., 2023). Tables are used effectively to display data, enhancing reader comprehension. However, the presentation lacks inferential statistical analyses, for example, correlations or regressions, which could provide deeper insights into the relationships between variables (Kim et al., 2022). The presentation of the data analysis results could have been improved by incorporating inferential statistics, as noted by Kim et al. (2022), thereby enabling examination of associations between variables, such as the relationship between staff absenteeism and the implementation of COVID-

19 mitigation strategies. This would provide a better understanding of the factors that influence operational challenges during the pandemic.

Discussion, Summary, and Conclusions

The discussion section successfully contextualizes the findings within the broader challenges faced by correctional facilities during the pandemic. The authors show the strain on daily operations, particularly in staffing, public health policy implementation, and the maintenance of correctional programming (Novisky et al., 2023). They also discuss the implications for future crisis management in correctional settings. However, the discussion could benefit from a more detailed interpretation of the statistical findings, linking them to the theoretical framework and study objectives (Kim et al., 2022). The discussion, summary, and conclusions can be improved by providing a more thorough interpretation of the statistical results, including potential explanations for observed patterns and their alignment with the bounded rationality framework, thereby increasing the depth of the discussion (Kim et al., 2022). Also, discussing the limitations of statistical analyses would provide a more balanced perspective.

Ethical Guidelines in Statistical Practice

Ethical approval for the study was obtained, and patient confidentiality was maintained (Novisky et al., 2023). Ethical statistical practice also involves transparency, complete reporting of findings, and avoidance of misleading interpretations. The study adheres to these ethical guidelines by obtaining approval from the Institutional Review Board and ensuring that participants provide informed consent (Novisky et al., 2023). The authors maintain the confidentiality and anonymity of participants in correctional agencies (Novisky et al., 2023). However, the article does not discuss ethical considerations specific to statistical practice, such

as data integrity, potential biases, or the limitations of self-reported data (Kim et al., 2023). The article's ethical guidelines can be improved by addressing considerations related to statistical practice, such as potential response bias in self-reported data. Taking steps to mitigate this bias would help strengthen the study's ethical rigor. It would also have been beneficial to discuss the data's limitations and their implications for the validity of the findings, as this would provide a more comprehensive ethical perspective.

Overall Quality of Statistical Reporting and Interpretation

The study offers valuable insights into the operational challenges faced by U.S. prison systems during the COVID-19 pandemic (Novisky et al., 2023). The use of descriptive statistics helps to capture the data collected from correctional agencies accurately. However, the absence of inferential statistical analyses limits the depth of the findings (Kim et al., 2023). Furthermore, the lack of explicit research questions or hypotheses, as well as the limited discussion of statistical decision-making processes and ethical considerations in statistical practice, can detract from the study's overall statistical quality (Kim et al., 2023). As a result, while the study provides important contributions to understanding the impact of the COVID-19 pandemic on prison operations, improving the statistical rigor through the inclusion of inferential analyses, explicit hypotheses, detailed methodological explanations, and discussions of ethical considerations in statistical practice would significantly improve the quality and applicability of the research findings (Kim et al., 2023). To this end, with improvements in theoretical framing, hypothesis formulation, ethical transparency, and statistical reporting, the findings could be far more compelling and impactful.

Conclusion

This article addresses a relevant healthcare question by examining the impact of COVID-19 and the operational challenges it has presented in the country's prison systems (Novisky et al., 2023). While the study applies suitable statistical methods and presents data with reasonable clarity, it falls short in several key areas. These include the absence of a guiding theory, undefined hypotheses, and limited discussion of effect sizes (Kim et al., 2023). Addressing these issues would improve the quality and credibility of the research. Overall, the study makes a valuable contribution but requires more careful statistical framing and ethical reflection to support its conclusions with greater confidence.

References

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