

Assignment 4

Note: You may continue to work in teams in this project, but each person must submit an original write-up. That is, it is not sufficient to produce one report per group for this assignment, although the ideas can be the same within the group.

Problem 1: Evaluation of Statistical Analysis. For this assignment, we will be applying what we have learned so far about data visualization, sampling, uncertainty, hypothesis testing, causal inference, and external validity in the context of real research. Please choose one of the following recently published research articles. Each article focuses on an important health systems issue in the Canadian context and provides simple descriptive and statistical information regarding that issue. For the article you chose, please write up the following:

- A short summary of the article, its methodology, and its conclusions (1-2 paragraphs)
- A bulleted list evaluating how the article performs on the following dimensions (roughly 1-2 paragraphs each, depending on the weight your article places on each category):
 - Data visualization
 - Sampling and quantifying uncertainty
 - Hypothesis formation and testing
 - Causal inference
 - External validity
- Suggestions on future research questions, data, or statistical methods that can be applied to the existing question. Roughly 1-2 paragraphs.

Article choices: **All articles can be found on Github.**

1. Gupta N, Balcom SA, Singh P. Looking beyond parity: Gender wage gaps and the leadership labyrinth in the Canadian healthcare management workforce. *Healthcare Management Forum*. 2023;36(1):49-54. doi:[10.1177/08404704221104435](https://doi.org/10.1177/08404704221104435)
2. Squires, J. E., et al. (2022). Inappropriate use of clinical practices in Canada: a systematic review. *CMAJ*, 194(8), E279-E296.
3. Rudoler, D., et al. (2022). Changes over time in patient visits and continuity of care among graduating cohorts of family physicians in 4 Canadian provinces. *CMAJ*, 194(48), E1639-E1646.
4. Saunders, N. R., et al Utilization of physician-based mental health care services among children and adolescents before and during the COVID-19 pandemic in Ontario, Canada. *JAMA pediatrics*, 176(4).

5. Kiciak, A., et al. (2023). Disparities in prostate cancer screening, diagnoses, management, and outcomes between Indigenous and non-Indigenous men in a universal health care system. *Cancer*, 129(18), 2864-2870.

Note that as each of these articles is published, the authors have probably thought carefully about these issues (particularly after a peer review process). However, this does not mean that the articles are perfect! You are welcome to lean on the limitations the authors themselves mention in their articles but use your own analytical skills to provide additional evaluation. You may also ignore the parts of each paper that uses methods more sophisticated than what we have covered so far in class.