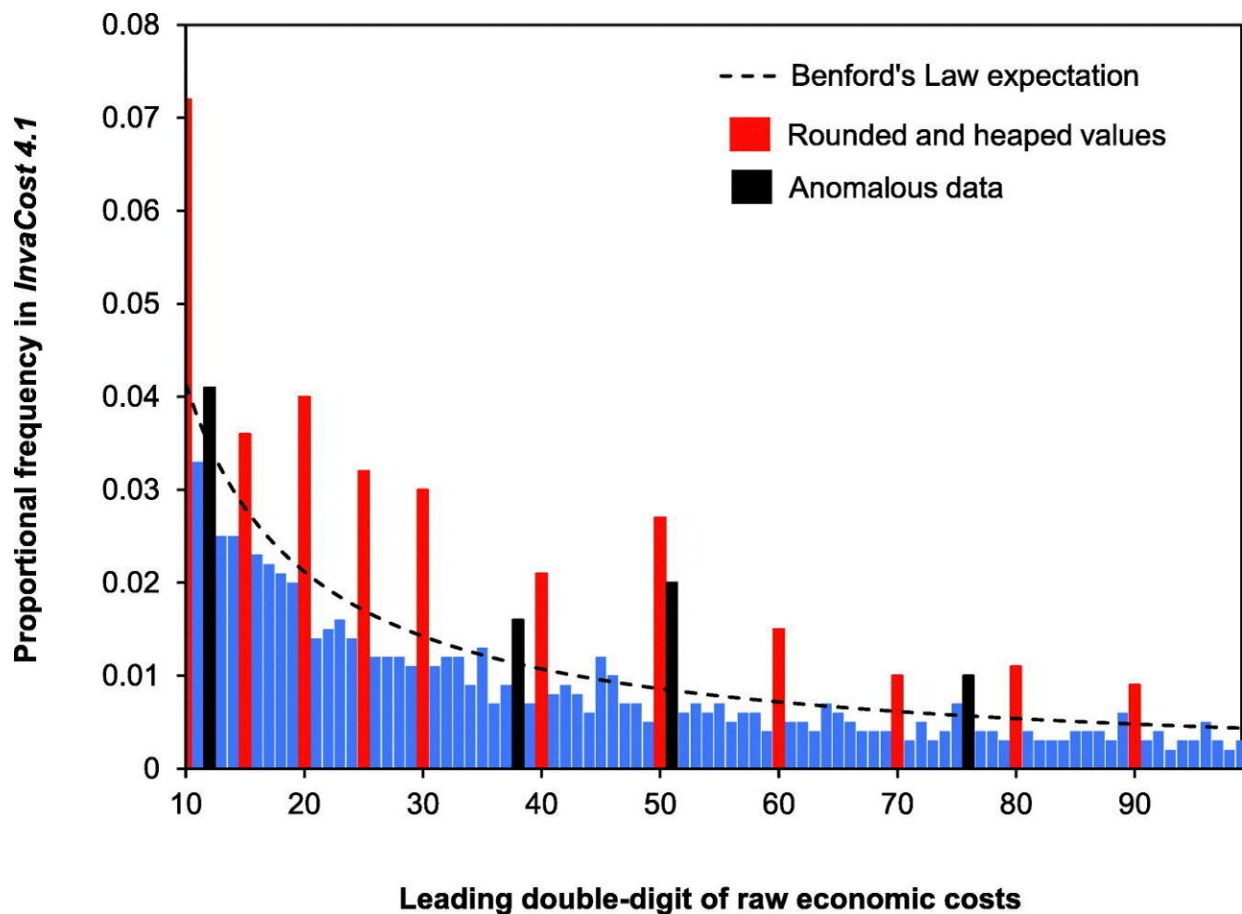


# Study highlights need for increased transparency, precision in estimation of costs associated with biological invasions

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Credit: *Science of The Total Environment* (2023). DOI: 10.1016/j.scitotenv.2023.167997

Numerous studies have analyzed the financial implications associated with the control and impact of invasive alien species. The varied methodologies employed in assessing the monetary costs, the diverse categories of costs reported, and the varying spatial scopes of these evaluations raise questions about the accuracy of the reported financial figures.

While Benford's Law has become a useful tool for scrutinizing the precision and dependability of financial data, its application to environmental cost audit data has been infrequent.

In this context, the monetary costs linked to [biological invasions](#), as documented in the InvaCost database, were analyzed by comparing the distributions of the first, second, and leading double-digits with the anticipated patterns under Benford's Law.

The findings strongly suggest a departure of reported [monetary costs](#) from Benford's Law, akin to the deviations observed in global macroeconomic data. Notably, there appeared to be a prevalent tendency to round costs upwards, and numerical clustering or heaping around specific cost values was evident.

Scrutiny of anomalous cost data entries revealed that non-peer-reviewed official government reports lacked sufficient detail on cost estimation methodologies. Despite the unquestionable high economic toll of biological invasions around the world, individual cost records often exhibited imprecision and potential inflation.

This underscores the imperative for enhanced transparency and rigor in cost reporting. Investigating whether the identified irregularities in biological invasion costs are representative of other environmental cost categories should be a priority in research efforts.

[A new study](#) published in the journal *Science of The Total Environment* demonstrates that utilizing Benford's Law to identify these anomalies should be established as a [standard practice](#) for comprehensive auditing and quality assurance of extensive environmental datasets.

These findings also underscore the absence of universally agreed-upon data standards for estimating the costs associated with managing or mitigating the impact of invasive alien species. This lack of standardization hampers the traceability and comparability of cost estimates.

A researcher of the study, Dr. Danish Ali Ahmed from Gulf University for Science and Technology (Kuwait), said, "By leveraging Benford's Law, it becomes possible to identify dubious sources, subjecting them to further scrutiny, and, if necessary, excluding them. The considerable work put into compiling reported estimates of costs linked to invasive alien species highlights the vital importance of attaining accurate values.

"This accuracy is essential to better inform policymakers and other stakeholders about the risks posed by biological invasions, emphasizing the necessity to implement strategies that diminish these threats and alleviate their consequences."

**More information:** Philip E. Hulme et al, Widespread imprecision in estimates of the economic costs of invasive alien species worldwide, *Science of The Total Environment* (2023). [DOI: 10.1016/j.scitotenv.2023.167997](#)

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