Discrete Lognormal Model as an Unbiased Quantitative Measure of Scientific Performance Based on Empirical Citation Data[1] JOAO MOREIRA, XIAOHAN ZENG, LUIS AMARAL, Northwestern University — Assessing the career performance of scientists has become essential to modern science. Bibliometric indicators, like the h-index are becoming more and more decisive in evaluating grants and approving publication of articles. However, many of the more used indicators can be manipulated or falsified by publishing with very prolific researchers or self-citing papers with a certain number of citations, for instance. Accounting for these factors is possible but it introduces unwanted complexity that drives us further from the purpose of the indicator: to represent in a clear way the prestige and importance of a given scientist. Here we try to overcome this challenge. We used Thompson Reuter's Web of Science database and analyzed all the papers published until 2000 by ∼1500 researchers in the top 30 departments of seven scientific fields. We find that over 97% of them have a citation distribution that is consistent with a discrete lognormal model. This suggests that our model can be used to accurately predict the performance of a researcher. Furthermore, this predictor does not depend on the individual number of publications and is not easily "gamed" on.

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