WELCOME!

The Office of Portfolio Analysis (OPA)

MISSION STATEMENT

- To enhance the impact of NIH-supported research by enabling NIH research administrators and decision makers to evaluate and prioritize current, as well as emerging, areas of research

- To advance knowledge and improve human health

The Office of Portfolio Analysis (OPA)

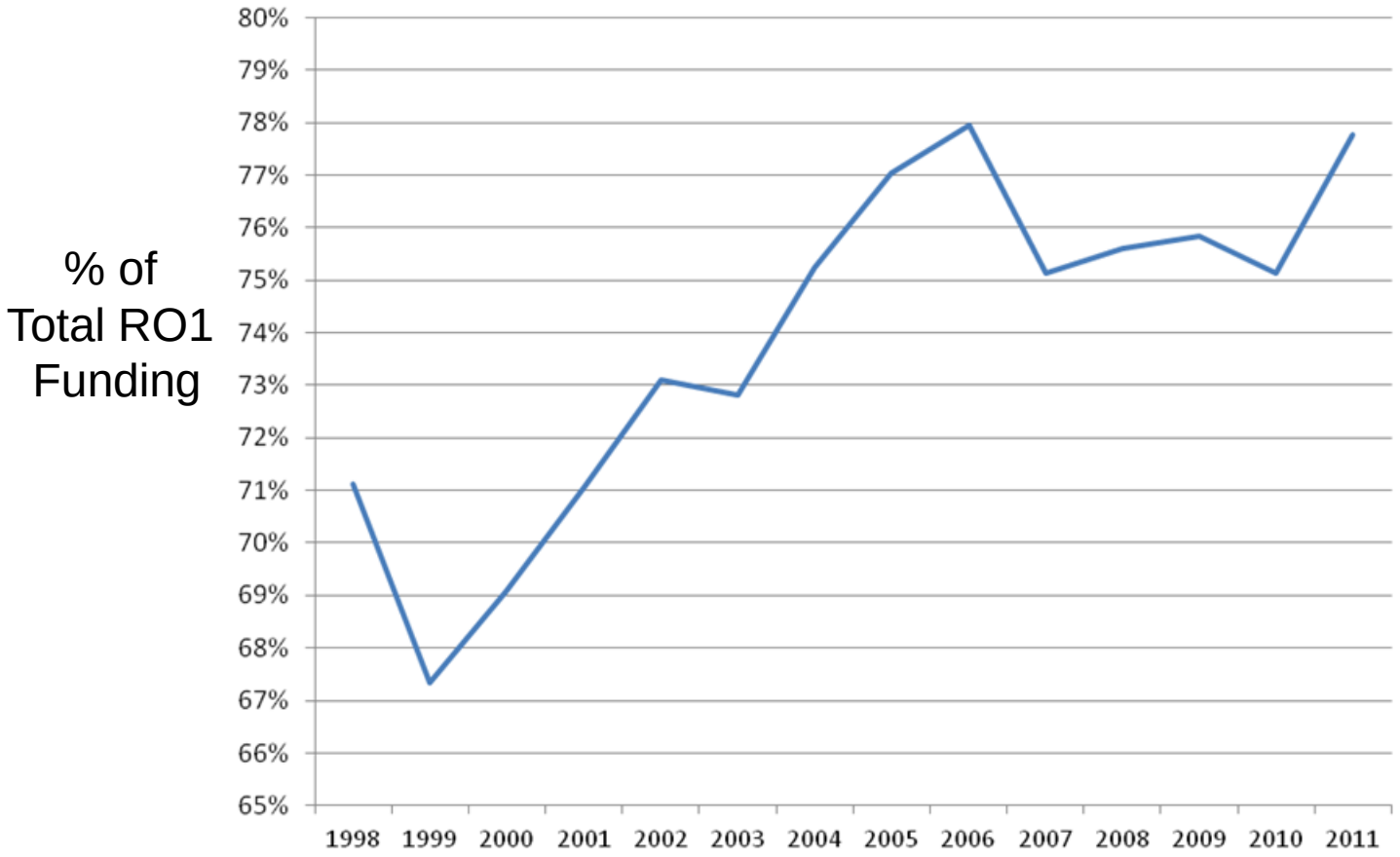
MISSION STATEMENT

- To innovate by identifying and developing new, sophisticated tools that expand and improve NIH-wide efforts in portfolio analysis

- To apply and disseminate both current and newly developed tools, including computational approaches, which are capable of analyzing a wide range of parameters of biomedical research funding and the resulting impact

- To promote trans-NIH coordination of portfolio analysis activities and enhance collaboration among all portfolio analysis stakeholders at NIH

NIH Non-Competing Commitments



Portfolio Analysis Workshop February 5-6, 2012

- >500 attendees

- Topics included:
  - Measuring impact
  - Gaps and overlap in NIH portfolios
  - Identification of emerging areas
  - Categorizing portfolios

Survey results

Highest priority:

Measuring impact	**47%**
Gaps and overlap in NIH portfolios	**30%**
Identification of emerging areas	**18%**
Categorizing portfolios	**5%**

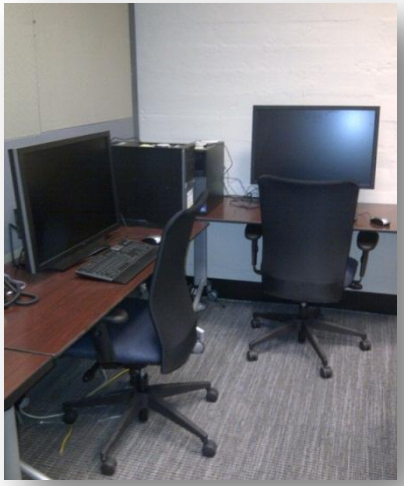
- What needs should OPA try to address?
  - Build better tools / easier to use tools
  - Provide training and support
  - Develop targeted case studies

Build better tools / easier to use tools	**65%**
Provide training and support	**50%**
Develop targeted case studies	**15%**

Some OPA Goals and Initiatives

- Train NIH staff in the use of computational methods (Fall 2012)
- Create a centralized web repository of computational tools and case studies
  - http://dpcpsi.nih.gov/portfolio_analysis/
- Consult on portfolio analysis projects
- Use outcomes of this Symposium to evaluate and continue to develop data-driven approaches to decision-making at NIH
- Encourage use of portfolio analysis as an input in NIH decision-making

OPA TOOLS LAB



More OPA Goals and Initiatives

- Identify overlap or gaps in funded research
- Identify emerging concepts, approaches, and/or fields of research
- Develop ways to measure impact
- Unique tool development
  - Hierarchical clustering tool (CIT)
  - SVM classifier (CIT)
  - Semantic portfolio analyst (NLM)
  - Endeca data cube (link the NIH grants database to patent, publication, and citation data)

A Modeler's View of NIH

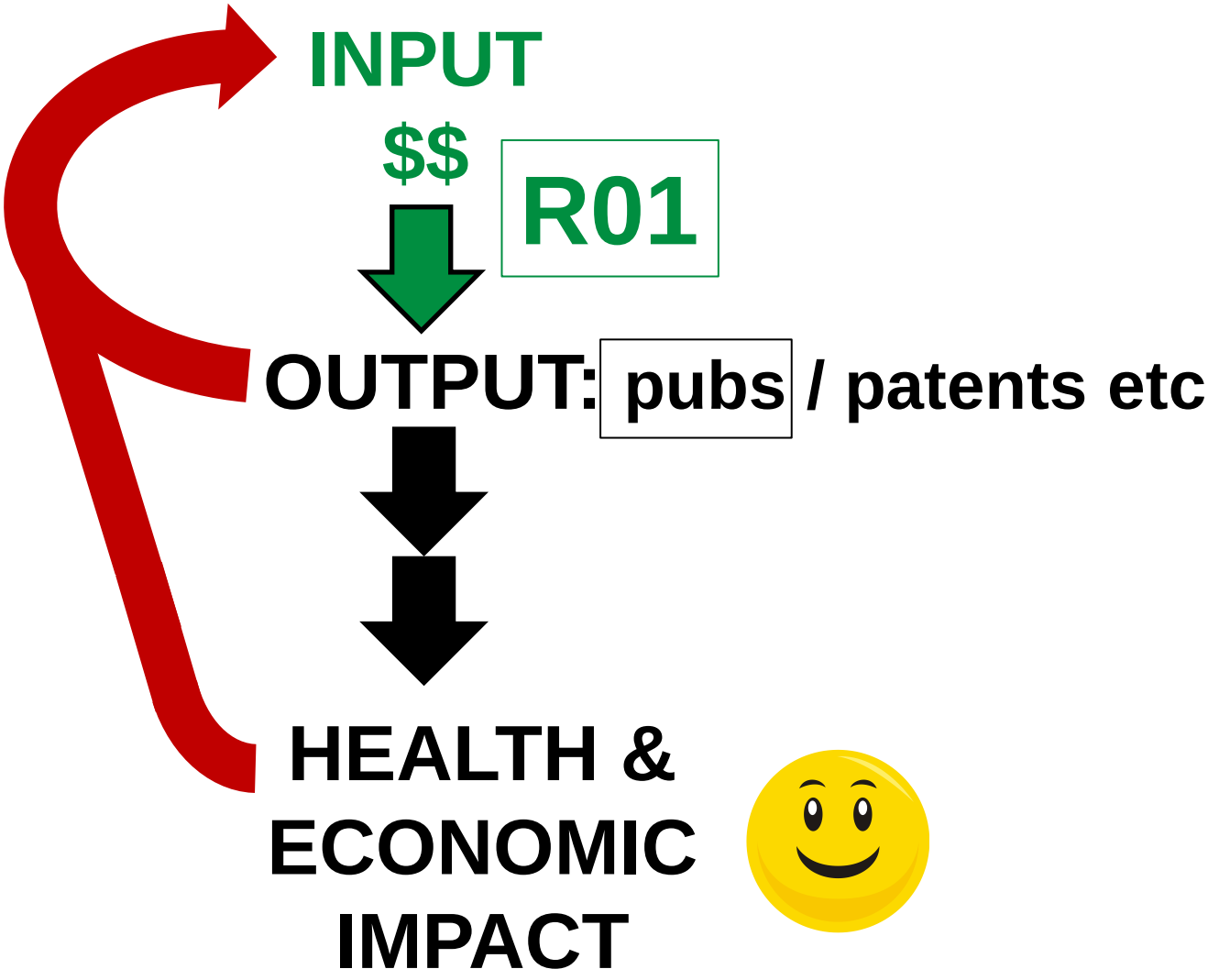
INPUT

$$

OUTPUT: pubs / patents etc

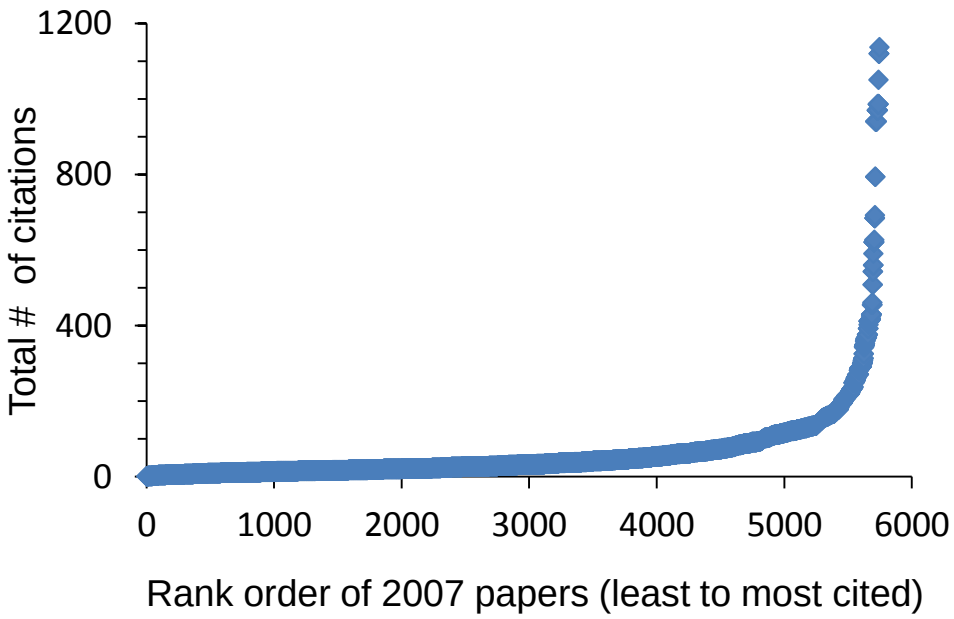
HEALTH & ECONOMIC IMPACT

A Modeler's View of NIH

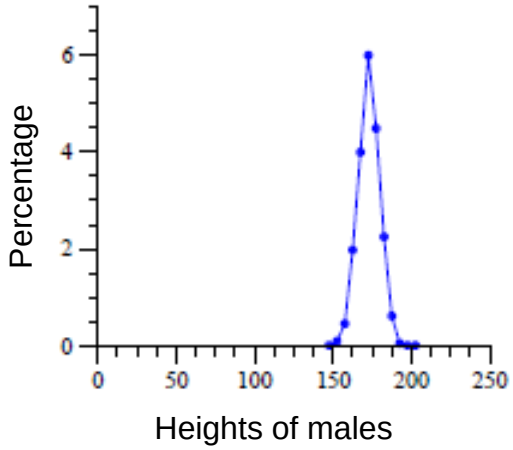


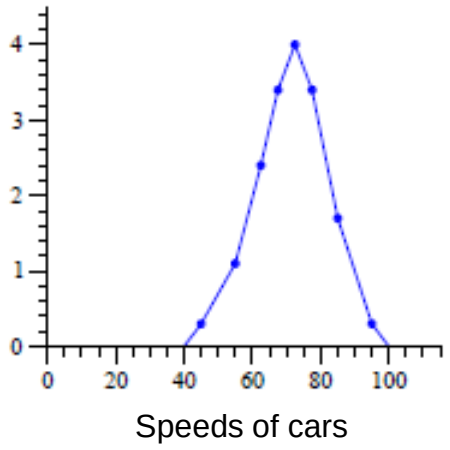
Citation Profile for 12 Selected Biomed Journals

- Four journals from each category:
  - High impact factor >25
  - Medium IF 13-17
  - Low IF 1-6
- All papers in those 12 journals in a single year: 2007
- All citations of those papers since 2007

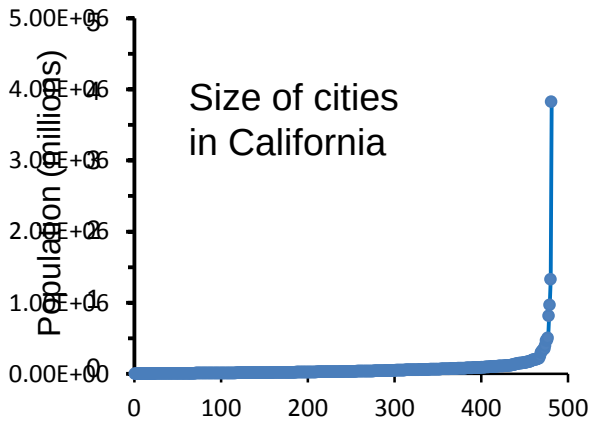


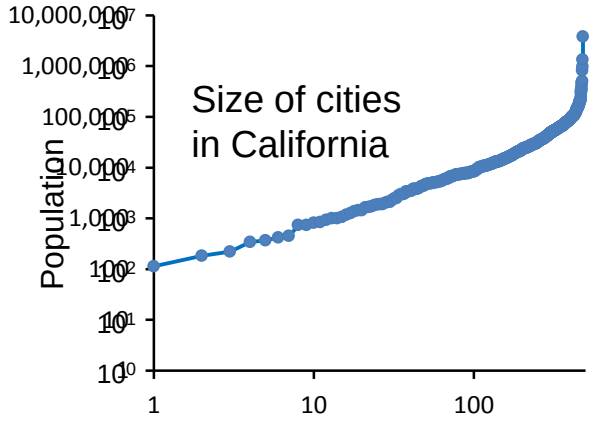
Averages Apply Only to Gaussian Distributions





Adapted from
MEJ Newman
Contemp. Physics
46:322-351 (2005)



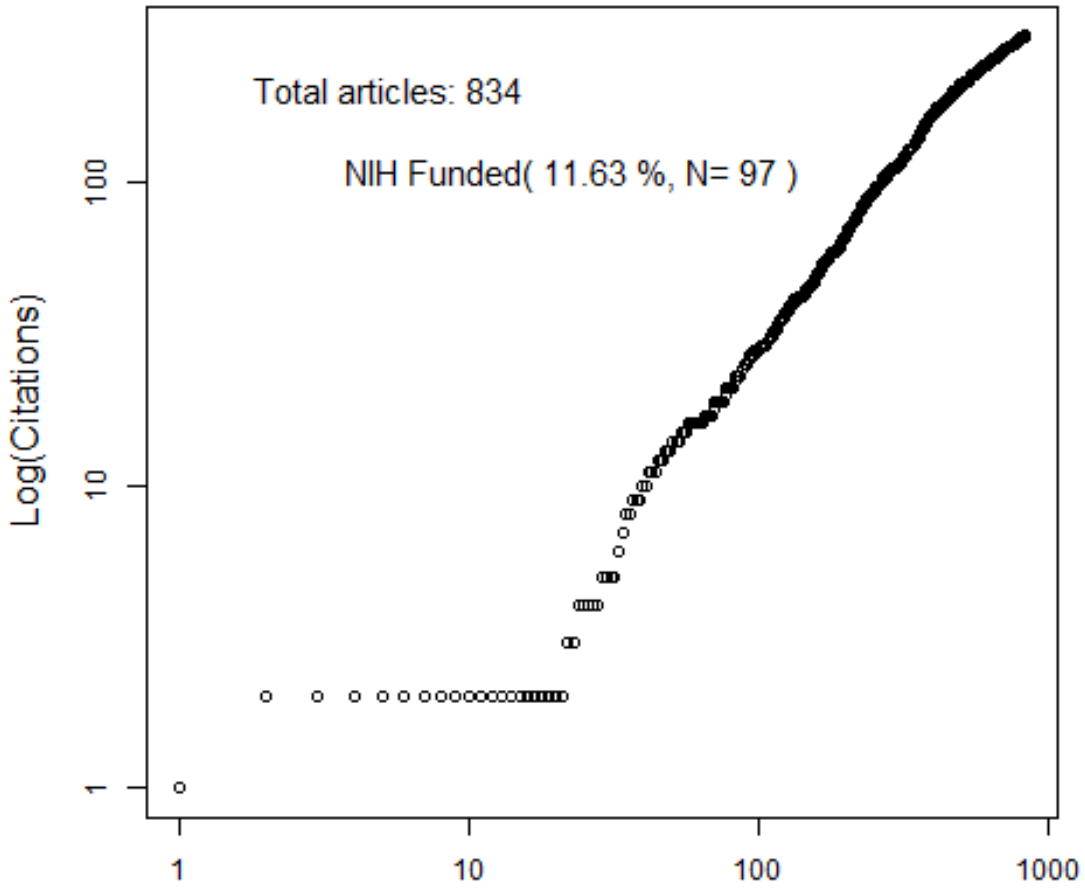


Rank order (smallest to largest)

Power law
$f(x) = Cx^{-\alpha}$
(with a tail)

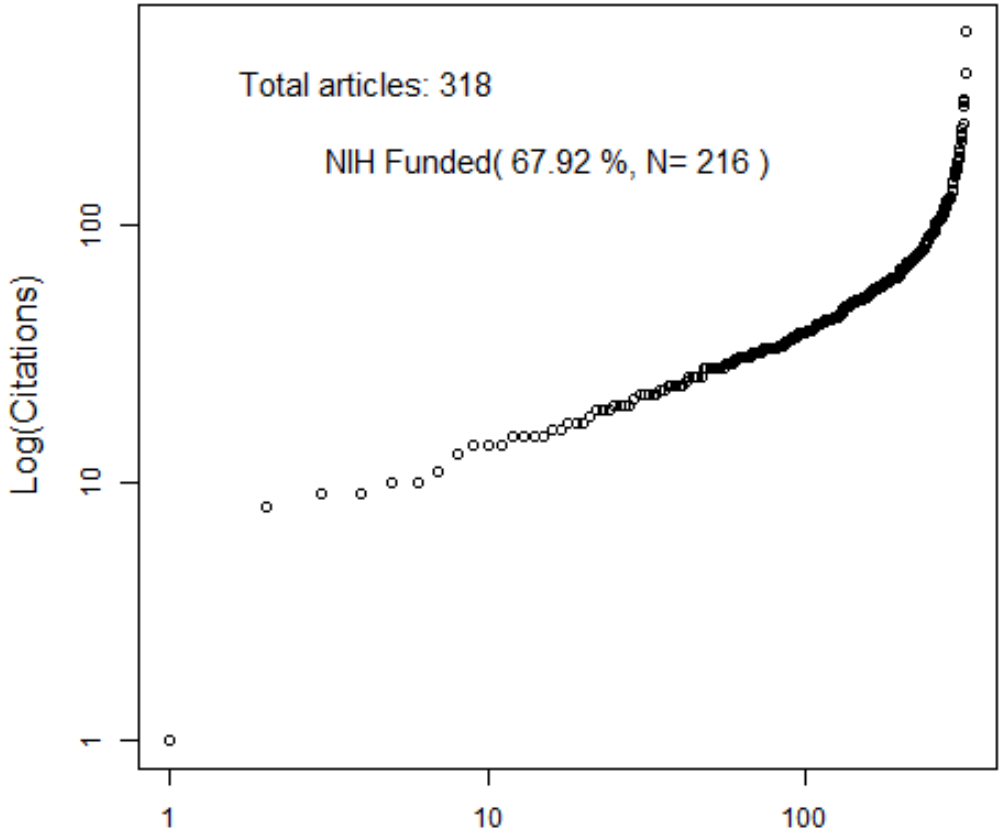
Power Law Distribution for a High IF Journal

HIGH IMPACT FACTOR JOURNAL: 2007



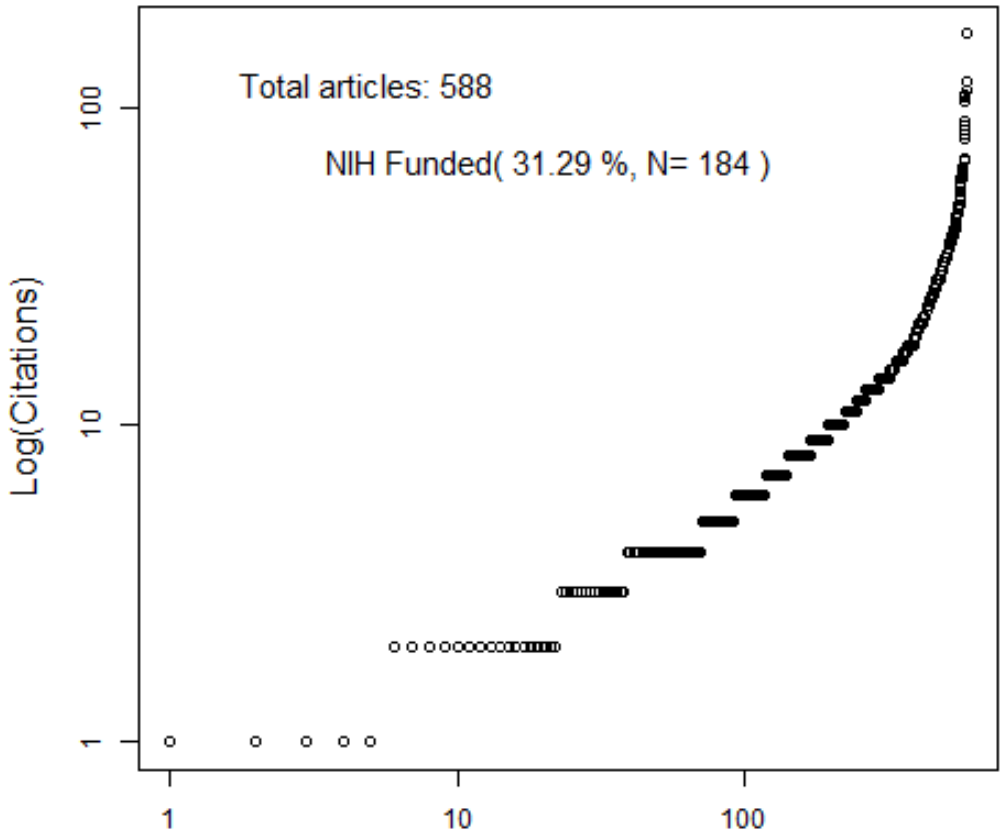
Power Law Distribution for a Medium IF Journal

MEDIUM IMPACT FACTOR JOURNAL: 2007



Power Law Distribution for a Low IF Journal

LOW IMPACT FACTOR JOURNAL: 2007



Summary

- Accurate bibliometrics must accommodate the three-log range of accumulated citations, which follow power law dynamics
- Impact factor is an unreliable indicator of the impact of papers in that journal on the field
- A more important indicator is specific to each paper: how often has it been cited?
- Citations accumulate rapidly enough to potentially influence funding decisions
- An important goal is to construct a “next gen” database, comprehensively and accurately linking NIH awards with associated patents, publications, and citations

Acknowledgments

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SYMPOSIUM

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