NCI Analyses: Productivity and Funding Trends

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Questions to Answer for NCI

Productivity
• What are the productivity trends for NCI-funded investigators?

Early Stage Investigators
• How is funding changing over time for early-, mid-, and late-career NCI investigators?

Newly Funded and Competing Renewal R01s
• To what degree is NCI R01 funding turning over?
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Assessing Research Productivity

• Over the last several years, the NIH (OD and ICs) has increasingly become interested in assessing research productivity using bibliometrics
  • NIH and NIGMS have reported diminishing return on investment with increased direct costs

• We wanted to assess productivity of NCI-funded researchers using bibliometrics
  • We learned how the NIH and other ICs were collecting data, performing their analyses, and using available analytical tools

• We evaluated bibliometric productivity of NCI R01 funded researchers, recognizing that
  • These measures have caveats
    • Linking a publication to a grant (and subsequently a PI) has a number of challenges
  • These measures do not capture the impact of the full breadth of NCI-funded research
NIH-Wide Data: Incremental Research Output According to Extent of Grant Support

Annual Weighted RCR
Based on >71,000 scientists supported 1996-2014

Lauer et al. 2017  bioRxiv 142554, data from: http://biorxiv.org/content/early/2017/05/29/142554
At High GSI, NCI Productivity Continues to Increase

NCI RPGs
Annual Weighted RCR
Based on ~14,000 scientists supported 1996-2014

Non-NCI RPGs
Annual Weighted RCR
Based on ~57,000 scientists supported 1996-2014
Publications and Citations Increase with Number of NCI R01s per Investigator*

- Black line is linear regression (trend line) through the medians
- Red line is line of proportionality

*Funded in FY2011
Publications and Citations Increase with Number of NCI R01s per Investigator

• The trend lines suggest greater productivity than expected from investigators with more than one R01

• Very few investigators (<1%) hold ≥ 4 R01s
  • Data are similar for the last 5 years
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Funding Trends Over Time by Age: NCI RPG Investigators

Data from OER SARB
Funding Trends Over Time by Age: NCI RPG Investigators

All age groups are increasing over this period except for under 40 group

Total number of NCI-funded RPG investigators
- FY 1990: 2212
- FY 2003: 3671
- FY 2016: 4700

Data from OER SARB
Funding Trends Over Time by Age: NCI RPG Investigators

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Turnover of NCI R01s is greater than non-NCI R01s

- Percent of competing R01 awards that are competing renewals is lower for NCI as compared to non-NCI
- Additionally, success rate of competing renewals at NCI is lower than non-NCI (25% vs. 36% in FY 2014)

Data Source: https://report.nih.gov/fundingfacts/fundingfacts.aspx
Summary

• Productivity of NCI investigators increases with number of RPGs
  • As assessed by bibliometric analyses
  • A broader set of measures are necessary to truly assess productivity of the breadth of research being performed by NCI-funded investigators

• The number of NCI-funded investigators under 40 declined from 1990 to 2016

• Turnover of NCI R01s is greater than non-NCI R01s
Questions?

CRS, NCI Senior Analysts
• Dr. Melissa Antman
• Dr. Grace Liou

OER Statistical Analysis and Reporting Branch
• Provided NIH age related data

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