

Development and testing of a database of NIH research funding of AAPM members

Working group for the development of a research database (WGDRD)



Working group for funding and grantmanship (WGFG)

SYDNEY MEDICAL SCHOOL



WHY BUILD A RESEARCH DATABASE?

DATA MINING OF NIH RECORDS

TRENDS IN FUNDING OF AAPM MEMBERS

DISCUSSION & CONCLUSIONS





Background









*"The mission of the American Association of Physicists in Medicine is to advance the **science**, education and professional practice of Medical Physics"*

Critical metric for scientific activity: **research funding**

How to measure success?

WGDRD

VOTING Appointments

 <p>James A. Dwyer, PhD jdwyer@gmail.com 12/2/2015 Member</p>	 <p>Isabella Faring, PhD ifaring@stanford.edu 11/2/2015 Member</p>
 <p>Paul J. Keall, PhD paul.keall@sydney.edu.au 11/2/2015 Member</p>	 <p>Haylo B. Mihaylov, PhD lmihaylov@med.miami.edu 10/12/2015 Member</p>
 <p>Eduardo G. Moros, PhD ekmoros@protonmail.org 10/2/2015 Workgroup Chair</p>	 <p>Jeffrey H. Siewerdsen, PhD jhf_siewerdsen@jhu.edu 11/2/2015 Member</p>

*The initial project is to pursue the creation of (and then continued support for) an **AAPM-managed database of federally funded research in Medical Physics** (NIH, NSF, DOE, DOD, etc.)*

This talk

Of what use is a research database?

1. Understand the magnitude and breadth of AAPM member research activities
2. Determine trends of overall funding, and trends within specific research areas
3. Identify funding opportunities where members have been successful in the past
4. Track the success of AAPM members to specific research initiatives of the NIH
5. Understand demographics of successful researchers, identify areas with disparities
6. Identify speakers for the AAPM annual meeting and chapter meetings
7. Select reviewers for the AAPM annual meeting
8. Lobby grant-funding bodies for increased consideration of med. phys. applications
9. Perform strategic planning

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Manual review



- > Records are flagged for manual review if:
 1. They were included via inclusion criteria three
 2. The same PI_ID was matched to more than one person
 3. Different PI_IDs are matched to one person
 4. The last name is a 'danger name'

My career goal is to have a moustache like this*

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False positives and negatives

> False Positives:

- 100 PI_ID numbers selected at random, and manually reviewed
- Repeated throughout development algorithm

> False Negatives:

- Compared to a list of 99 member supplied PI_ID numbers

False Positive



False Negative



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False positives and negatives

› **False Positives:**

4% (95% CI: 1-10%)

- 100 PI_ID numbers selected at random, and manually reviewed
- Repeated throughout development algorithm

› **False Negatives:**

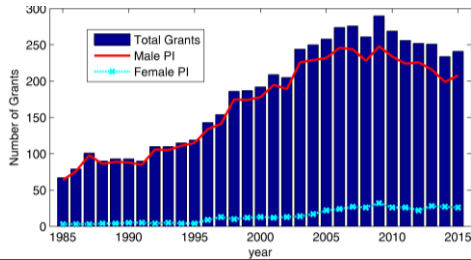
10% (95% CI: 5-18%)

- Compared to a list of 99 member supplied PI_ID numbers

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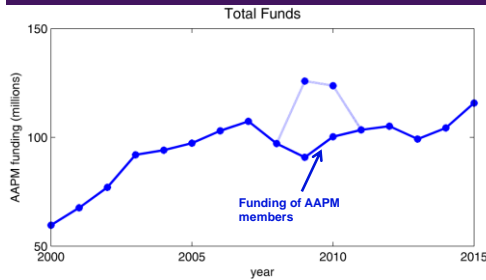
Number of grants held by AAPM members



15



Total Funds awarded to AAPM members

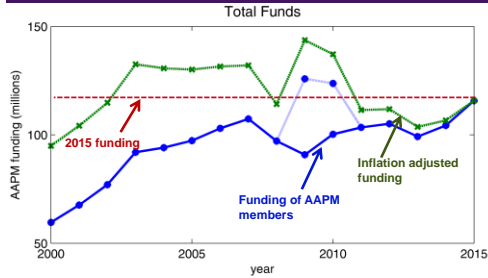


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Total Funds awarded to AAPM members

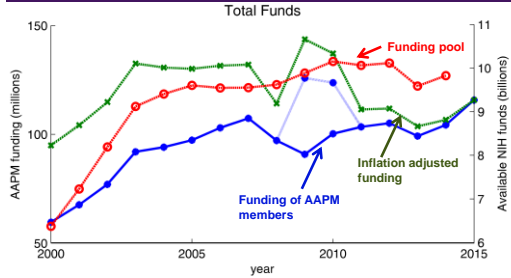
17





Total Funds awarded to AAPM members

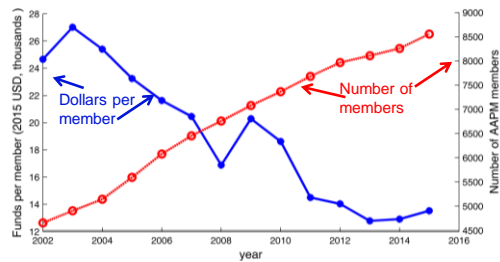
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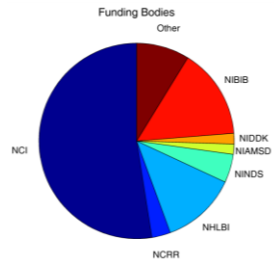
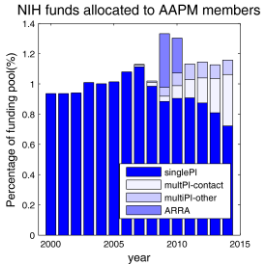
Inflation adjusted funds per member

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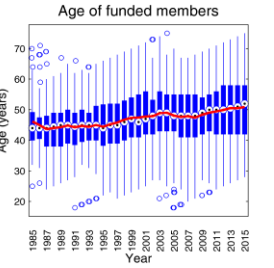
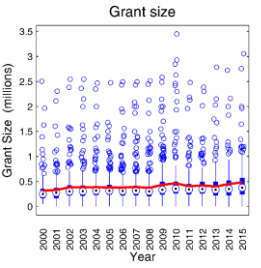
Proportional funds awarded to AAPM members



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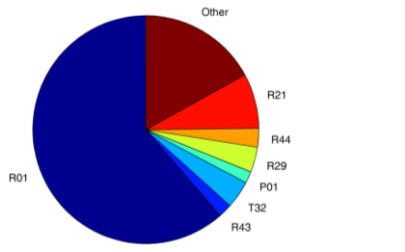
Grant size & age of members



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Funding mechanisms



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Trends in AAPM funding

- › Funding in real terms was lower in 2015 than in 2003
- › Steady growth of AAPM in same period: heavy dilution of funds/member
- › Not unique to AAPM
- › Other sources of funding (Has industry picked up the slack?)

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Funded members: **Please provide your PI_ID!!**

To find you PI_ID number:

If you have an [eRA Commons](#) Account, please log into your account and click on "Personal Profile" -> "Name and ID". Enter the eRA Person ID below. (For internal AAPM data collection purposes only.)

To enter it in AAPM website:

Members

- Change Membership Type
 - [Directory Online](#)
 - [Directory PDF](#)
 - [Member Profile](#)
- Specialty → **Funding** → Student Type
- Photo → Certification

eRA Person ID 0 (numeric field only)

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Conclusions

- > Algorithm created to mine NIH data for AAPM member records
- > Low false positive and negative rates (4%, 10%)
- > Serious decline in research capacity of AAPM on a per member basis
- > Database will be made available for download to AAPM members
- > Database and code to be maintained by members of the WGFG



"Having algorithm and having rhythm are 2 different things."
