

Status of Early Career Academic Cardiology, A Global Perspective

Supplementary Material

Additional Methods Details

Total National Institute of Health Research per state was extracted in the following manner at <https://projectreporter.nih.gov/reporter.cfm> website. Choose active FY 2017 projects. Make the selections in the funding mechanism in the project details section. Selections include: research project grants (non SBIR/STTR), research centers, other research related, training-individual, training-institutional, R&D contracts (non SBIR/STTR), other. Submit query. After results return, select summary by state under “data & visualize” tab. Then, choose export data to Excel option.

We modified collection of grant funding information to increase representation and reduce uncertainty in the 2016 survey. In 2013, only receiving grant as a principal investigator (PI) was counted. In 2016, this was broadened to include Co-PI and co-investigators. In 2013, the survey asked inclusion of both direct and indirect cost. The PI receives direct cost. The institution receives indirect cost. It is uncertain how much indirect cost benefited the PI. Investigators themselves may not know the indirect cost amount. Some funding agencies such as American Heart Association only allow very small to no indirect cost. Due to uncertainty, the indirect cost was not used in the 2016 survey. This methodological change did not cause differences in threshold based analysis. Obtaining a NIH K-grant level funding would have crossed >\$499K in both methods. Obtaining NIH R01 grant level funding would have crossed > \$1M in both methods. Therefore, setting a threshold at >\$499K will identify early career academic cardiologists who obtained NIH K-grant or better by both methods. The change in methodology also did not impact correlation analysis because this type of analysis determines the strength of relationship between two variables (e.g. institutional resource ranking versus early career academic cardiologist grant funding) not the absolute amounts. Thus, the change in methodology should have added early career academic cardiologists who received grant funding without being the PI while making the results comparable to the 2013 study.

Additional Results

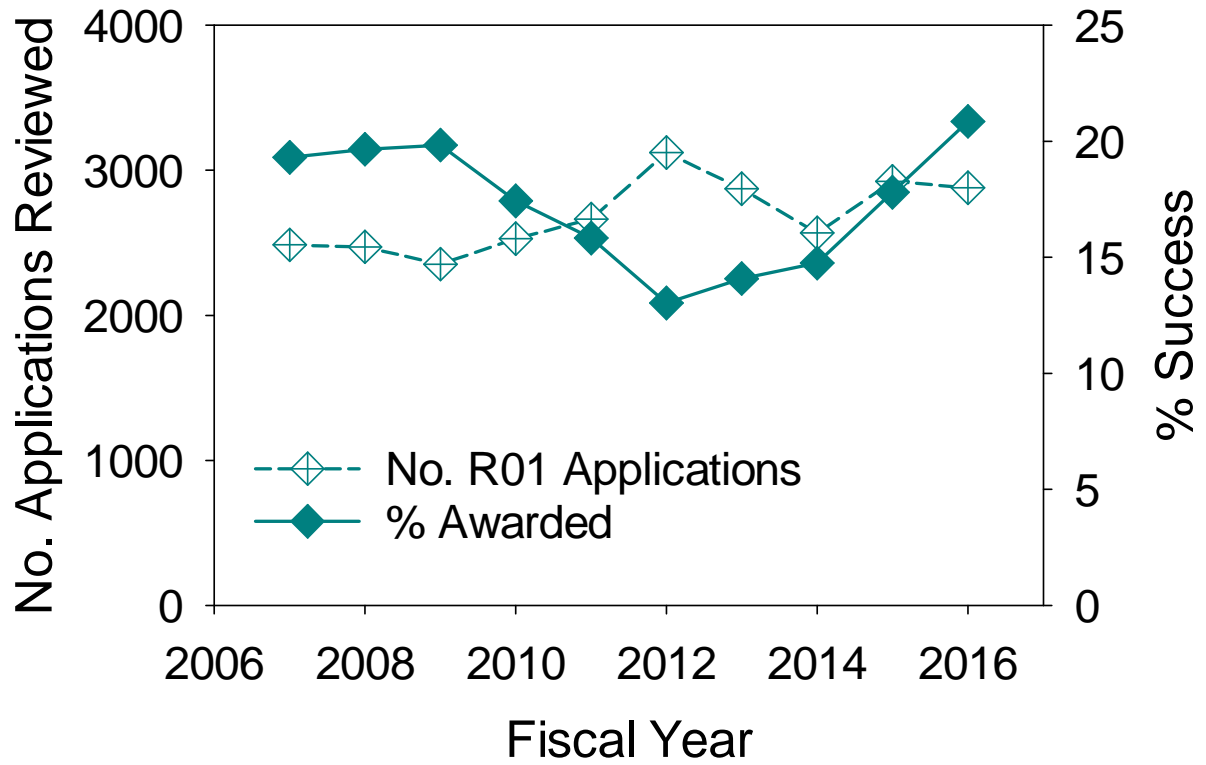


Figure S1: National Heart Lung and Blood Institute R01 Success Rates (2007-2016). Data was extracted from National Institutes of Health, Office of Extramural Research Table #206.(1)

Table S1: Total Grant Funding Reported by Early Career Academic Cardiologists in 2013

Primary Country	N	Mean	Median	Std. Deviation	Std. Error of Mean	Maximum	Sum
Unknown	12	10,833	0	37,528	10,833	130000	130,000
Canada	6	750,833	402,500	987,220	403,031	2500000	4,505,000
Germany	2	229	229	324	229	458	458
India	1	0	0	.	.	0	0
Israel	2	0	0	0	0	0	0
Japan	1	25,000	25,000	.	.	25,000	25,000
Malaysia	1	0	0	.	.	0	0
Netherlands	1	1,000,000	1,000,000	.	.	1,000,000	1,000,000
Pakistan	1	0	0	.	.	0	0
Portugal	1	0	0	.	.	0	0
United States	190	110,500	0	474,319	34,411	5,000,000	20,995,000
Overall	218	122,273	0	484,100	32,787	5,000,000	26,655,458

Table S2: Total Grant Funding Reported by Early Career Academic Cardiologists in 2016

Primary Country	N	Mean	Median	Std. Deviation	Std. Error of Mean	Maximum	Sum
Barbados	1	0	0	.	.	0	0
Brazil	2	0	0	0	0	0	0
Canada	24	48,958	0	155,773	31,797	600,000	117,5000
China	5	2,000	0	4,472	2,000	10,000	1,0000
Dominican Republic	2	0	0	0	0	0	0
Egypt	1	0	0	.	.	0	0
Germany	1	0	0	.	.	0	0
Hong Kong	1	0	0	.	.	0	0
Hungary	1	0	0	.	.	0	0
India	9	0	0	0	0	0	0
Iran(Islamic Republic Of)	1	0	0	.	.	0	0
Israel	6	0	0	0	0	0	0
Italy	1	0	0	.	.	0	0
Jamaica	1	0	0	.	.	0	0
Japan	1	0	0	.	.	0	0
Malaysia	4	0	0	0	0	0	0
Mexico	6	0	0	0	0	0	0
Nigeria	1	0	0	.	.	0	0
Pakistan	4	0	0	0	0	0	0
Russian Federation	2	0	0	0	0	0	0
Singapore	1	0	0	.	.	0	0
Spain	14	5,786	0	12,442	3,325	41,000	81,000
Taiwan	4	0	0	0	0	0	0
Thailand	2	0	0	0	0	0	0
Trinidad And Tobago	1	0	0	.	.	0	0
Turkey	14	10,714	0	40,089	10,714	15,0000	15,0000
United Kingdom	2	4,000,000	4,000,000	5,656,854	4,000,000	8,000,000	8,000,000
United States	444	73,175	0	279,817	13,280	3,050,000	32,489,635
Venezuela	2	0	0	0	0	0	0
Overall	558	75,100	0	420,645	17,807	8,000,000	41,905,635

Table S3: Reasons for Leaving Academic Cardiology

Reason	US, n=139	International, n=38
Personal compensation too low	58% *	34%
Insufficient support for career development	48%	53%
Lack of actual usable time for academics	48% *	21%
Unfair internal value (e.g. RVUs)	43% *	18%
Insufficient resources	35%	37%
Insufficient flexibility in work schedule	28%	40%
Too great of overall burden	27%	24%
Overwhelming regulatory compliance requirements	17%	13%
Unfair external competition	12%	8%
Other	9%	0%
None	5%	8%

The survey asked respondents to select one choice on likelihood of leaving academic cardiology during the next 12 months (Not likely, 2, 3, 4, extremely likely). Analysis was done on the reasons for leaving academic cardiology of US and international members who chose responses of 3 through extremely likely. Z-test was done to compare US *versus* International member proportions. * denotes $p < 0.05$.

Table S4: Cardiovascular Fellowship Programs That Has Active National Heart Lung and Blood Institute T-32 Training Grants in 2017 Federal Fiscal Year

Organization Name
BAYLOR COLLEGE OF MEDICINE
BETH ISRAEL DEACONESS MEDICAL CENTER
BOSTON CHILDRENS HOSPITAL
BRIGHAM AND WOMENS HOSPITAL
BROWN UNIVERSITY
CEDARS SINAI MEDICAL CENTER
MASSACHUSETTS GENERAL HOSPITAL
MEDICAL COLLEGE OF WISCONSIN
MEDICAL UNIVERSITY OF SOUTH CAROLINA
NEW YORK UNIVERSITY SCHOOL OF MEDICINE
OREGON HEALTH SCIENCE UNIVERSITY
RHODE ISLAND HOSPITAL
UNIVERSITY OF ALABAMA AT BIRMINGHAM
UNIVERSITY OF ARIZONA
UNIVERSITY OF CALIFORNIA SAN DIEGO
UNIVERSITY OF CALIFORNIA SAN FRANCISCO
UNIVERSITY OF CHICAGO
UNIVERSITY OF FLORIDA
UNIVERSITY OF ILLINOIS AT CHICAGO
UNIVERSITY OF KENTUCKY
UNIVERSITY OF MINNESOTA
UNIVERSITY OF ROCHESTER
UNIVERSITY OF UTAH
UNIVERSITY OF WASHINGTON
VANDERBILT UNIVERSITY
VANDERBILT UNIVERSITY MEDICAL CENTER

National Heart Lung and Blood Institute (NHLBI) active T32 training grant data was extracted from National Institutes of Health Reporter (<https://projectreporter.nih.gov>) using project type T32 and center code HL. Afterwards, the data was matched against American College of Cardiology database to identify cardiovascular disease fellowship programs that has active NHLBI T32 grant.

References

1. NIH. Table #206, Research Project Grants, Competing Applications, Awards, Success Rate and Total Funding by Application Type, NIH Institutes/Centers and Activity Code, Fiscal Years 2007-2016. In: Services HaH, editor. Bethesda MD, 2017.