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National Institute of Health (NIH) Funding Patterns in Schools of Nursing: Who is funding nursing science research?

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Abstract

Background—Developing the next generation of nurse researchers must be a priority to advance the discipline's science. A comprehensive description of the current federally - funded research is useful for understanding the research enterprise in Schools of Nursing.

Purpose—To describe the past 5 years of National Institute of Health (NIH) funding patterns in US Schools of Nursing.

Method—Data were extracted from NIH RePORTER for years 2014–2018. The total number of award types (F, K, R, U, P and T) granted to a School of Nursing in the US was summarized and organized by Institute. Grants were then characterized according to whether the Principal Investigator had a nursing degree (yes or no). Finally, the total funding from each NIH Institute/Center that was awarded to a School of Nursing was assessed.

Findings—Nearly 50% of the National Institute of Nursing Research's (NINR) extramural budget is awarded through grants to Schools of Nursing in the US. NINR funds 80% of training grants and >70% of Center grants, which support the education and infrastructure for research, respectively, at Schools of Nursing. Among top ranked research-intensive Nursing Schools, awards to non-nurse Principal Investigators (PIs) averaged 34.5% across all years. The percentage of NIH funds awarded to non-nurse PIs ranged from 0% at 3 Schools to as high as 97% at 1 School of Nursing. Over the past 5 years, the following Institutes have consistently been the largest funders (total dollars) to Schools of Nursing: NINR, National Institute of Aging, National Institute of Minority and Health Disparities, National Cancer Institute and National Institute of Child Health and Human Development.

Conclusion—These findings highlight the current funding streams for Schools of Nursing as well as opportunities for expansion. Preparing a cadre of nurse scientists who can generate new knowledge to advance our health care is critical to the success of our profession and to ensuring the health of the people for whom we provide care.

At a time when a tsunami- like wave of retirements is occurring among nurse faculty, developing the next generation of nurse researchers is a priority to sustain the discipline's

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science (Dreher, Smith Glasgow, Cornelius, & Bhattacharya, 2012). For nursing to remain at the forefront of new knowledge development, nurse scientists capable of conducting independent research must be developed and the number expanded (Reid Ponte, Hayman, Berry, & Cooley, 2015). Hypothesis-generating and intervention-testing research is critical to building the science that underpins nursing practice (Abdellah & Levine, 1965). Yet, maintaining a research-intensive environment in a school of nursing is challenging at best. (Andrews, Corbett, Dail, & Pinto, 2019) To name a few, there are challenges in recruiting and maintaining productive research faculty, the financial costs associated with obtaining funding (Kulage et al., 2015), and balancing the critical need for teaching that often competes with research productivity (Smeltzer et al., 2014).

Related to the above is that while the research-focused doctoral programs awarding a terminal PhD degree are critical to preparing a cadre of nurse scientists who are capable of generating new knowledge to advance the science (American Association of Colleges of Nursing, 2006), the capacity of doctoral programs for successfully training competitive nursing scientists is inconsistent (Anderson, 2000; Kim, McKenna, & Ketefian, 2006) because of differences in resources and the competencies of the faculty (Potempa, Redman, & Anderson, 2008). As currently structured, many PhD programs in nursing may not have the capacity to prepare students to lead innovative scientific research aligned with the national priorities for health sciences research (Henly et al., 2015). For example, in a recent review of PhD programs, findings suggest that nursing PhD programs are continuing to implement curricula better suited to the past (Wyman & Henly, 2015). In response, there are now recommendations for nursing curricula to include emerging areas of science and technological advances in data collection and capture, storage, retrieval, and analysis, specifically incorporating advances in biological sciences, biophysical and imaging technology, informatics technology and computing, mathematical/statistical modeling, and engineering for point-of-care technologies (Dunbar-Jacob, 2013; Wyman & Henly, 2015). Other recommendations for excellence suggest the inclusion of research training to expose PhD students to team science to prepare graduates to effectively engage with interdisciplinary colleagues to conduct cutting-edge nursing research and compete successfully for precious research resources. (American Association of Colleges of Nursing (AACN), 2010)

It is well recognized that at the forefront of nursing is the need to increase scientific discoveries that improve health outcomes for the populations that we serve. A registered nurse who conducts research has the potential to uncover new information that can underpin practice. Therefore, sustaining and expanding the research enterprise in Schools of nursing must be a priority (Berkowitz, 2015). To better understand the current funding landscape in the US, this paper seeks to describe the success of nurse scientists and Schools of nursing in obtaining funding to support research. Little attention has been paid to current funding patterns in Schools of nursing, and funding patterns can elucidate scientific expertise in our discipline as well as gaps in our workforce. As such, the purpose of this paper is to describe the current National Institute of Health (NIH) funding patterns in US Schools of nursing over the past 5 years. To achieve this goal, this paper seeks to address the following three aims:

1. Describe the total number and amount (\$) of grants awarded to Schools of Nursing over the past 5 years and the percentage of grants funded by the NINR.
2. Compare the number and award amounts of grants to nurse and non-nurse PIs at the top funded schools of Nursing over the past 5 years.
3. Assess the total funding by each NIH Institute/ Center to Schools of Nursing and the % of the total Institute/ Centers' budget that is being awarded to Schools of Nursing over the past 5 years.

Methods

Data were extracted from the NIH RePORTER database, a database publicly accessible at <https://exporter.nih.gov/>. The search was limited to Schools Nursing (Organization Type) and to NIH (vs. AHRQ, CDC) funding from 2014–2018. NIH is the largest federal funder of biomedical research and so this can provide a global snapshot of the current funding patterns. Further, complete data on AHRQ and CDC grants is not available through a public website. NIH RePORTER lists the total number of grants awarded to Schools of Nursing and ranks each School of Nursing by number of awards and dollar amount. Following this, data were downloaded for all grants awarded to Schools of Nursing in the years: FY14–FY18. Total NIH funding was summed for all grants awarded in each fiscal year. The data were then segregated by activity code and specifically categorized as a Research Grant (R- and U-series), Training Grant (F- and T- series), Center Grant (P-series), or a Career Development Grant (K-series).

F-series and T-series grants both provide research training opportunities to trainees at the undergraduate, graduate and post-doctoral levels. F-series grants, fellowship awards, are aimed at individual researchers and T-series grants, training awards, are secured by senior investigators and trainees are selected by the investigator to be supported through the training grant. Similar to the F-series, pre-doctoral and post-doctoral trainees can be supported through a T-series grant.

Program project/center grants are large, multi-project efforts that generally include a diverse array of research activities. A P01 grant is a multidisciplinary, center with a basic theme. P20 grants are exploratory grants to support planning for new programs, expansion or modification of existing resources, and feasibility studies to explore various approaches to the development of interdisciplinary programs. P30 is a Center Core Grant to support shared resources and facilities for categorical research by several investigators from different disciplines who provide a multidisciplinary approach to a joint research effort or from the same discipline who focus on a common research problem. Finally, a P60 grant funds a comprehensive center to support a multipurpose unit designed to bring together into a common focus divergent but related facility within a given community. Research career development awards (K-series) provide research training opportunities to trainees at the postdoctoral, early and mid-career stages.

Each grant was then further categorized by Institute/ Center. For each grant type, the total number awarded to Schools of Nursing in each year was calculated. The percentage of each

award type funded by the NINR was also calculated by dividing the total number of grants funded by NINR by the total number of grants funded for each grant type.

Figure 1 illustrates how to decipher the NIH grant number and Table 1 lists the acronyms, full names and codes for each NIH Institute/ Center. The guidelines above were used to categorize each grant awarded to Schools of Nursing from FY14-18. A research assistant reviewed the categorization of the data to ensure that it was consistent with the author's coding.

Results

The total number of grants awarded to Schools of Nursing increased by 11% from FY14 to FY18 (Table 2). The total amount of funding awarded to Schools of Nursing remained relatively consistent in FY14-16. On the other hand, there was a considerable increase of 10.2% from FY16-FY17 and an even larger increase of 12.9% from FY17 to FY18. In sum, the total amount of funding (\$) increased by 28.5% over the past 5 years. The total dollars awarded to the top-funded school of nursing has varied considerably with the highest total dollar amount of \$14,010,457 in FY15 at UCSF but almost half that amount, \$7,829,770 in the following year, FY16 at Emory University.

Over the past 5 years, of those Schools of nursing who received NIH funding, the total number of grants ranged from 386–444, and the total number of awards per school ranged from 1 – 31, with total funding ranging from \$2,573 to \$13,218,555. The total number of Schools who received NIH awards ranged from 63 (FY14) to 70 (FY18), an 11% increase in the number of Schools receiving a NIH award. Awards were comprised of: training (F, T), career development (K), center (P), research grants (cooperative (U) and research (R)) types of awards. Most of the awards across all years were R-series awards. Of R and U-series awards, NINR funded between 30.8 –39.4% of these types of awards.

Training (F,T) and Career Development (K) Awards

F-series grants awarded to Schools of Nursing in FY14 and FY15 were almost exclusively funded by NINR. Whereas in FY18, only 77.2% of these awards were funded by NINR. At the same time there was a 24.1% decrease in the total number of F-series awards to Schools of Nursing from FY14 to FY18. The total number of T-series grants has remained relatively stable with between 24–27 grants being awarded in any given year. In FY16, 96.2% of T-series grants were funded by NINR and in FY17 and FY18 only 80% were funded by NINR. Overall, across all years, nearly 80% or greater of all NIH support for training is funded through NINR.

The total number of K-awards increased by 43.2% from FY14-FY18. At the same time the total number of K-awards funded by NINR was nearly the same across each year: 24 in FY14 and FY15, 21 in FY16, 23 in FY17 and 26 in FY18. - In FY18, the following Institutes awarded K-awards to Schools of Nursing: NIA (N=8), NIDA (N=4), NIMH (N=3), NCI (N=3), NHLBI (N=2), NIAAA (N=1), NIAID (N=1), NIDDK (N=1), and NIEHS (N=1). Of the twenty-four K-awards from these Institutes, half were awarded to non-nurse PIs.

Program Project/Center Grants (P series)

From FY14-FY18, Schools of Nursing were award P01, P20, P30, and P60 types of Center grants. The total number of Center grants has ranged from a total of 13–20 across all Schools of Nursing with no clear inflection point over time. On the other hand, the percentage of Center grants funded by NINR increased by 111%.

Top NIH Funded Nursing Schools in the US—In the past 5 years, 15 Schools of Nursing have reached the rank of top 10 in NIH awards. On average, across all 15 Schools over 5 years, 34.5% (range 28.9% - 38%) of NIH funding was award to a non-nurse PI. Of these Schools, the number of non-nurse awardees receiving NIH funding has ranged from 0–97% of the total grants awarded. Table 3 illustrates the total funding amount, rank and % of funds awarded to a non-nurse PI at each School of Nursing over the past 5 years. There are some trends within Schools, but no apparent cross-school funding patterns are evident (Figure 2), suggesting such trends may be idiosyncratic to each school. For example, the University of Utah and John Hopkins University had only nurse-PI led projects in FY14 and FY14,15, respectively and have since seen a steady increase in the number of non-nurse PI funded projects. Likewise, UCSF, Emory, the University of Washington and UCLA have consistently had a percentage (25%, 36%, 52.5%, 30%) of grants led by non-nurse PIs. Although, the percentage has roughly doubled (56%, 48%, 74.6%, 54%) across the 5-year study period. The Universities of Pennsylvania and Michigan saw a spike in non-nurse PI funded projects in FY16. AT THE SAME TIME, there are Schools who consistently have very few (<10%) non-nurse PI funded NIH grants (e.g. Columbia University and Case Western Reserve University) and other Schools of Nursing who consistently have greater than 50% of their NIH funded projects led by non-nurse PIs (e.g. New York University, University of Washington).

Institutes Awarding Grants to Schools of Nursing

Table 4 illustrates the number of awards and total funding awarded to Schools of Nursing from FY14-18 by each Institute and Center at the NIH. Additionally, Table 2 presents each Institute/ Center's total extramural budget and the percentage of their budget that was awarded to a School of Nursing. NINR has consistently been the largest, both in total dollars and total awards, grantor to Schools of Nursing. In fact, 45–50% of the NINR extramural budget was awarded to Schools of Nursing over the past 5 years. NIA was the second largest funder of total dollars and number of awards to Schools of Nursing in FY17 and FY18, but the total number of awards and total dollar amount was approximately 1/4 of the NINR grants. Over the past 5 years, the following Institutes have consistently been the largest funders (total dollars) to Schools of Nursing: NINR, NIA, NIMHD, NCI and NICHD. At the same time, in the past 5 years, NEI and NCATs have not awarded any grants to Schools of Nursing. Further, NLM did not award any grants in FY18 and NIBIB did not award any grants in FY17 and FY18 to a School of Nursing.

Discussion

Over the past 5 years, NINR has funded about half of the total research awarded US Schools of Nursing. Of this, the percentage of Center grants funded by NINR has more than doubled

over the past 5 years. Although center grants provide infrastructure to Schools of Nursing and promote thematic skills and expertise, to the extent that these Centers are confined to the mission of NINR, the expertise and research support at Schools of Nursing may thus be limited. Moreover, from FY14-16, NINR was nearly the exclusive funder of training programs to Schools of Nursing, suggesting further potential for scientific entrenchment. In the past 2 years, there has been a slight downward trend in this pattern with closer to 80% of training programs at Schools of Nursing being funded through NINR. Funded training programs through non-NINR Institutes/ Centers may provide training for pre-doctoral and post-doctoral trainees who are then better prepared to compete for cross-Institute NIH funding. If additional and more varied funding streams were tapped to educate future nurse scientists, perhaps pre-doctoral and post-doctoral students would have more scientifically diverse training. This may also allow our pre-doctoral and post-doctoral students to be more competitive for seeking funding from Institutes and centers other than NINR once they graduate. The relationship between receiving training funded through a F- or T-series award through NINR and how this translates into future success to secure NIH funding was not within the scope of this paper but warrants further study. In addition, the influence of non-nurse scientists as mentors for F or T-series fellows should also be explored.

Related to the above, over the past 5 years, nearly 50% of the NINR extramural budget was awarded to Schools of Nursing. While NINR may remain the predominant funder for Schools of Nursing in the US, nurse scientists must expand their capacity to secure funding from Institutes other than NINR. For example, given the budgets of the NHLBI, NCI and NIAID, there is clearly an opportunity to expand and seek funding from them.

In addition to the Institutes (i.e. NHLBI, NCI and NIAID) with largest budgets in the NIH, consideration of Institutes, such as NIAMS, NINDS and NLM, from which Nursing Schools have not received consistent funding over the past 5 years is an opportunity for expansion. For instance, in the case of NINDS, no Schools of nursing were awarded grants from this Institute. Yet, nurses provide care and understand the needs of persons who are affected by neurological disorders and stroke and so it should be part of our larger vision as nurse leaders to equip our next generation of nurse scientists to study the questions that are most relevant to our patients. Similarly, even though informatics is a core-competency and focus of nursing education, currently, in FY18 NLM did not fund any grants to Schools of Nursing. This is not surprising because few nursing students and scientists are taught to work with big data and instead nurses rely on other health professionals. (Marion E Broome & Fairman, 2018) This information can be used to inform whether emerging nurse scientists in Schools of Nursing have the opportunity to learn the content, gain the skills and become experts in domains that can be funded by the NIH Institutes and use this information to better prepare the next generation of nurse scientists.

Close attention should be paid to the current award of NIH grants to non-nurse PIs in Schools of Nursing. Among top ranked research-intensive Nursing Schools, awards to non-nurse PIs were as high as 97% over the past 5 years. Hiring of non-nurse PIs at Schools of Nursing needs to be carefully considered in light of the growing shortage of nurse researchers. Since developing junior faculty members into successful nurse scientists requires protected time for research, start-up funds, salary support in summer, and

significant time investment in mentoring by senior faculty (Marion E Broome & Fairman, 2018), Schools of Nursing may be more likely to hire non-nurse faculty because they are more likely to be successful at securing NIH funding. If this is the case, then Schools of Nursing need to determine if there is training and education that needs to be included in our PhD and post-doctoral programs so that nurse PIs are better equipped to compete for NIH funding.

At the same time, non-nurse faculty in Schools of Nursing conduct research that is relevant and necessary to the practice of nursing and the inclusion of non-nurse faculty supports interdisciplinary efforts. However, further consideration of the need for balance between nurse PIs and non-nurse PIs and a careful assessment of Schools of Nursing where more NIH grants are awarded to non-nurses than to nurses. A bifurcated faculty structure in which all PhD prepared nurses are responsible for teaching and all non-nurse PhD faculty bring in research funding creates a structure where PhD prepared nurses cannot become successful academic leaders (McBride, 2019), because their work does not comprise teaching, research, service and scholarship.(Marion E. Broome, 2012) Careful attention should be paid to assure that non-nurse PIs are not only hired to bring in NIH dollars to increase rank, but are in fact contributing to the advancement of nursing science.

As the current generation of nurse scientists retires, training the next generation is imperative to sustain our discipline. To achieve this goal, Nursing PhD programs must sustain excellence and relevance and develop a diverse community of nurse scientists. Additionally, cross-institutional and interdisciplinary collaboration is critical as emerging areas of science need to be integrated into our doctoral training programs (Villarruel & Fairman, 2015). Despite the Future of Nursing Report recommendation to double the number of nurses with a doctorate by 2020 (Nursing, 2011), caution should be paid to filling the gap in our nursing academic workforce by truncating the time and rigor and quality of PhD training programs. This has the potential to result in nurse scientists who are ill-prepared to lead scientific advances and compete with their non-nurse peers for NIH funding. Additionally, the structure of our PhD programs may need to be more closely aligned with those of our peer disciplines, both in terms of overall length and structure. For example, a study of US nursing PhD alumni demonstrated that graduates, attended classroom-based programs, who had worked as research assistants and worked no more than 12 hours/ week as a nurse during their PhD education, were more likely to have successful publication records and receive external funding than graduates who did not have these experiences (Ellenbecker, Nwosu, Zhang, & Leveille, 2017). Many nurses have not received training and education that is comparable to their peers in other disciplines. For example, current initiatives through the RWJF foundation provide financial support for nurses to complete their PhD degree in 3 years.(Robert Wood Johnson Foundation, 2019) In comparison, the median number of years to doctorate is 6 years.(Kang, 2017) A 3 year deficit in training time brings into question the ability for a PhD prepared nurse to compensate for the training, skills and experiences acquired by their non-nurse peers. This begs the question as to whether this short-term fix has long-term consequences for the development of nurse scientists.

Another key to successful preparation of nurse scientists is post-doctoral education. Effective postdoctoral programs build on foundational skills and knowledge acquired through pre-doctoral studies, and provide newly prepared PhDs with concentrated time, resources, and support required to advance research skills and launch and sustain independent research careers (Conn, 2005; Wood, 2002; Wysocki, 1998). Evidence of the effectiveness of postdoctoral training was provided by NINR, which reported that nurses who complete an NINR-supported postdoctoral program are more successful in obtaining future research grant funding than peers who apply but do not complete such training (Sigmon & Grady, 2001). Similarly, receiving a postdoctoral training resulted in approximately one additional publication over the next five years as compared to peers who did not receive post-doctoral training (Jacob & Lefgren, 2011). Despite the effectiveness of postdoctoral training in building a pipeline of successful nurse scientists, only a small minority of nurse PhD program graduates obtain post-doctoral training. In 2018, there were 802 PhD graduates and only 112 enrolled in post-doctoral training.(American Association of Colleges of Nursing (AACN), 2019) By comparison in 2017, there were 796 PhD graduates and 120 enrolled in post-doctoral training (American Association of Colleges of Nursing (AACN), 2018). Of the small cadre of nurse PhD graduates each year approximately 15% enroll in a post-doctoral training program. Findings on the low rates of post-doctoral training among doctorally prepared nurses coupled with the staggeringly high rates of non-nurse led NIH studies in the School of Nursing point to the need for new models for encouraging nurse PHD graduates to obtain additional training so that they can successfully build their own program of research. Preparing a cadre of nurse scientists who can generate new knowledge to advance our health care is critical to the success of our profession and to ensuring the health of the people for whom we provide care.

Limitations

All data were extracted from NIH reporter and assumed to be accurate based on government reporting standards. Second, if a multiple PI (MPI) grant exists, the contact PI institution will be credited for the NIH award. So, in the case of a MPI plan where the contact PI is not in a School of Nursing, the entire award appears to be credited to the contact PI Institution and Department. The analysis was also limited by PIs reporting of their degree status. In reviewing CVs and online profiles, there was an assumption that anyone who listed a RN license or BSN or MSN degree to be accurate and degree and licensure verification through the State licensing boards or the degree granting institutions did not occur. Another limitation is that this study was limited to Schools of Nursing and there are several nurse scientists who are the PI of NIH awards in Schools and Departments outside of Nursing. Further study is warranted to understand how the profiles of these nurse scientists compare to those in Schools of Nursing. Finally, this analysis did not include a comparative group of another applied science, predominated by females, to help shed light on patterns and trends in the academic research environment.

Conclusion

Academic nursing is at a pivotal moment in our discipline as retirements soar, the number of nurses who enter PhD programs remains flat and the funding environment becomes

increasingly competitive. These findings highlight the current funding streams for Schools of Nursing as well as opportunities for expansion. There are implications from these findings for identifying the educational and training need of nurse scientists to ensure the sustainability of our disciplines' science. Careful attention should be paid to the gaps in our emerging scientists' knowledge and training to ensure that our future nurse scientists can make important contributions to the delivery of healthcare and improving patient outcomes.

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Highlights

- Nearly 50% of the National Institute of Nursing Research's (NINR) extramural budget is awarded through grants to Schools of Nursing in the US.
- NINR funds 80% of training grants and >70% of Center grants, which support the education and infrastructure for research, respectively, at Schools of Nursing.
- Among top ranked research-intensive Nursing Schools, awards to non-nurse Principal Investigators averaged 34.5% across all years.
- The percentage of NIH funds awarded to non-nurse Principal Investigators ranged from 0% at 3 Schools to as high as 97% at 1 School of Nursing.

<u>Application Type</u>	<u>Activity Code</u>	<u>Institute Code (IC)</u>	<u>Serial Number</u>	<u>Support Year</u>	<u>Other Suffixes</u>
1	R01	CA	654321	01	A1

Figure 1.

Deciphering NIH Grant Numbers available through the NIH website

Figure 2.
% NIH AWARDS at Schools of Nursing led by a non-nurse PI BY YEAR

Table 1.

National Institute of Health (NIH) Institute/ Center acronym, full name and code

Acronym	Full Name	Code
FIC	John E. Fogarty International Center	TW
NCATS	National Center for Advancing Translational Sciences (NCATS)	TR
NCCIH	National Center for Complementary and Integrative Health	AT
NCI	National Cancer Institute	CA
NEI	National Eye Institute	EY
NHGRI	National Human Genome Research Institute	HG
NHLBI	National Heart, Lung, and Blood Institute	HL
NIA	National Institute on Aging	AG
NIAAA	National Institute on Alcohol Abuse and Alcoholism	AA
NIAID	National Institute of Allergy and Infectious Diseases	AI
NIAMS	National Institute of Arthritis and Musculoskeletal and Skin Diseases	AR
NIBIB	National Institute of Biomedical Imaging and Bioengineering	EB
NICHHD	Eunice Kennedy Shriver National Institute of Child Health and Human Development	HD
NIDA	National Institute on Drug Abuse	DA
NIDCD	National Institute on Deafness and Other Communication Disorders	DC
NIDCR	National Institute of Dental and Craniofacial Research	DE
NIDDK	National Institute of Diabetes and Digestive and Kidney Diseases	DK
NIEHS	National Institute of Environmental Health Sciences	ES
NIGMS	National Institute of General Medical Sciences	GM
NIMH	National Institute of Mental Health	MH
NIMHD	National Institute on Minority Health and Health Disparities	MD
NINDS	National Institute of Neurological Disorders and Stroke	NS
NINR	National Institute of Nursing Research	NR
NLM	National Library of Medicine	LM

Table 2.

Overview of NIH Grants and Funding Mechanisms to Schools of Nursing FY14-18

	FY14	FY15	FY16	FY17	FY18
Total Number of Grants	400	386	400	438	444
Total Number of Schools who received NIH funding	63	66	69	67	70
Number of Awards per School (Range)	1–26	1–28	1–27	1–31	1–27
Total NIH funding to Schools of Nursing	\$133,532,047	\$135,391,339	\$137,967,423	\$151,998,248	\$171,560,204
Total Funding by School (Range)	\$2,573 - \$10,149,031	\$27,989 - \$14,010,457	\$1 - \$7,829,770	\$21,0939,324,875	\$149,541 - \$13,218,555
# Research Awards (R and U) [% funded by NINR]	259 (39.4)	244 (38.9)	258 (32.9)	279 (30.8)	299 (34.4)
# Institutional Training Awards (T) [% funded by NINR]	27 (88.9)	24 (95.8)	26 (96.2)	25 (80)	25 (80)
# Individual Training Awards (F) [% funded by NINR]	58 (94.8)	51 (96.1)	54 (88.9)	54 (81.5)	44 (77.2)
# Career Awards (K) [% funded by NINR]	37 (64.9)	42 (57.1)	40 (52.5)	43 (53.5)	53 (49.1)
# Center (P) [% funded by NINR]	16 (56.3)	17 (52.9)	19 (73.7)	13 (76.9)	20 (70)

Table 3.

Top Ranked Schools of Nursing by Total NIH Funding, Rank and % non-Nurse PI NIH funding

School of Nursing	FY14				FY15				FY16				FY17				FY18			
	Rank NIH\$	Total Funding	% non-Nurse PI NIH Funding	Rank NIH\$	Total Funding	% non-Nurse PI NIH Funding	Rank NIH\$	Total Funding	Rank NIH\$	Total Funding	% non-Nurse PI NIH Funding	Rank NIH\$	Total Funding	Rank NIH\$	Total Funding	% non-Nurse PI NIH Funding	Rank NIH\$	Total Funding	Rank NIH\$	% non-Nurse PI NIH Funding
Penn	8	5975295	5163217	13.6	6	5928951	5004466	15.6	2	7565890	4064463	46.3	1	9324875	5832257	37.5	1	13352127	9245726	30.8
UCS F	1	10149031	7564171	25.5	1	14010457	7035700	49.8	3	7273200	4407992	39.4	2	8835590	5374881	39.2	2	9115251	3996811	56.2
Emory U	11	3818746	2416678	36.7	4	6508794	4483974	31.1	1	7829770	4252394	45.7	4	7877737	4880980	38	3	8974147	4643355	48.3
Pitt	6	6299076	5012049	20.4	10	4399347	3444660	21.7	7	5477083	4584449	16.3	6	7327422	6125370	16.4	4	8853753	7395394	16.5
NYU	3	6656806	2071778	68.9	8	5374570	1889416	64.8	10	4672902	130664	97.2	11	4874497	1232160	74.7	5	8207207	3596737	56.2
Columbia U	17	2506751	2352413	6.2	16	2886035	2721820	5.7	11	4512132	4172571	7.5	5	7430108	6260081	15.7	6	8133087	8069549	1
U of Was hington	4	5762143	2735974	52.5	7	5889372	2332191	60.4	5	6405970	2720439	57.5	3	8075904	2720923	66.3	7	7676095	1948996	74.6
Duke University	9	4327395	3163749	26.9	9	4856086	4023775	17.1	4	6471139	5440942	15.9	10	4933823	4318900	12.5	8	5173656	4222090	18.4
U Michigan	18	2502606	1948178	22.2	12	3893460	1771524	54.5	12	4477102	1698724	62.1	8	5317251	2618930	50.7	9	5065951	3544920	30
John Hopkins	5	6323211	6323211	0	3	6827126	6827126	0	6	5899204	4019128	31.9	12	4807222	3283928	31.7	10	4909639	3556783	27.6
Case Western Reserve	22	1946095	1857804	4.5	14	3142162	3142162	0	14	4105909	3907784	4.8	7	5555062	4828706	13.1	11	4870788	4670788	4.1
UIC	2	7442939	4316301	42	11	4161439	2018298	51.5	8	5222651	2635630	49.5	9	5060445	2171026	57.1	12	4524797	2297128	49.2
U Maryland Baltimore	10	3828731	3014381	21.3	21	1990913	1990913	0	13	4472650	3974343	11.1	15	4120631	2862834	30.5	16	3816195	2533680	33.6
UCL A	7	6191737	3713236	40	5	6204293	4287166	30.9	9	5089493	3525192	30.7	24	2440612	1651526	32.3	20	2953371	1361001	53.9
U Utah	16	2640445	2640445	0	2	7022879	6293003	10.4	18	2793942	1464564	47.6	23	2513295	1823908	27.4	26	2223023	749653	66.3

Table 4.

Number of Awards and Total Funding to Schools of Nursing by NIH Institute/ Center (FY14-18)

Institute/ Center	FY14			FY15			FY16			FY17			FY18		
	SON Awards	SON funding	%	SON Awards	SON funding	%	SON Awards	SON funding	%	SON Awards	SON funding	%	SON Awards	SON funding	%
NINR	213	\$56,761,827	50	203	\$56,209,185	49.6	190	\$54,011,824	6.5	199	\$54,198,006	45.2	193	\$64,342,872	48.7
NIMHD	14	\$6,872,750	2.6	15	\$7,016,979	3	10	\$8,844,192	3.7	24	\$14,334,324	5.8	22	\$14,088,636	5.4
NLM	1	\$682,028	1.4	1	\$520,655	0.9	2	\$966,995	1.4	2	\$530,470	0.7	0	\$0	0
NIDA	21	\$10,113,639	1.2	20	\$8,807,328	1	21	\$8,904,828	1	20	\$8,302,775	0.9	18	\$8,760,779	0.9
FIC	3	\$677,898	1	3	\$639,845	0.8	2	\$501,601	0.7	2	\$501,901	0.7	2	\$412,600	0.5
NICHD	20	\$6,821,003	0.7	26	\$8,777,265	0.8	32	\$10,795,210	0.9	33	\$12,446,187	1.2	27	\$10,696,028	1
NIA	18	\$6,980,164	0.7	20	\$6,883,400	0.7	35	\$12,160,740	0.9	47	\$17,674,562	1	58	\$22,705,963	1.1
NCCIH	3	\$614,499	0.6	3	\$879,448	0.9	4	\$1,381,001	1.2	4	\$827,627	0.7	4	\$1,088,207	0.9
NCI	35	\$14,804,347	0.5	35	\$17,147,307	0.5	33	\$12,913,691	0.4	33	\$12,021,070	0.3	35	\$12,920,860	0.4
NIMH	15	\$5,262,285	0.4	10	\$4,201,580	0.4	15	\$5,824,229	0.5	17	\$6,325,438	0.5	18	\$7,492,155	0.5
NHLBI	17	\$9,720,483	0.4	13	\$5,475,991	0.2	12	\$6,197,784	0.2	17	\$8,854,678	0.3	16	\$9,276,787	0.3
NIDDK	13	\$5,098,840	0.3	12	\$4,094,236	0.3	12	\$3,909,851	0.2	10	\$3,684,507	0.2	9	\$2,871,141	0.2
NIDCD	2	\$967,787	0.3	2	\$739,992	0.2	1	\$264,350	0.1	1	\$264,350	0.1	1	\$194,375	0.1
NIBIB	2	\$811,901	0.3	3	\$6,345,342	1.9	3	\$370,159	0.1	0	\$0	0	0	\$0	0
NIEHS	5	\$972,166	0.2	4	\$1,840,587	0.4	4	\$1,680,938	0.3	3	\$1,612,180	0.3	7	\$2,388,928	0.5
NIAMS	2	\$536,916	0.1	1	\$169,975	0	1	\$337,526	0.1	3	\$1,300,787	0.3	3	\$915,770	0.2
NINDS	3	\$1,119,058	0.1	2	\$1,030,628	0.1	2	\$633,456	0	3	\$354,396	0	2	\$848,034	0.04
NIDCR	1	\$242,036	0.1	1	\$679,628	0.2	3	\$1,383,098	0.5	2	\$1,147,830	0.4	3	\$1,880,552	0.6
NIGMS	7	\$1,813,392	0.1	7	\$1,649,913	0.1	7	\$1,539,821	0.1	3	\$560,955	0	3	\$531,094	0.02
NIAID	4	\$2,410,151	0.1	4	\$2,033,220	0.1	5	\$2,182,506	0.1	8	\$4,239,492	0.1	8	\$4,470,661	0.1
NHGRI	1	\$248,877	0.1	1	\$248,835	0.1	1	\$248,885	0.1	0	\$0	0	0	\$0	0
NIAAA	0	\$0	0	0	\$0	0	3	\$1,141,697	0.3	5	\$1,322,655	0.4	8	\$3,703,388	1
OD	0	\$0	0	0	\$0	0	2	\$1,773,041	0.3	2	\$1,494,058	0.2	2	\$1,737,194	0.2