

University of Tennessee
Office of Research & Engagement

Quarterly Research Activity Report Q2 FY18

Cumulative for July 1, 2017 – December 31, 2017



As the United Nations reports a record number of people forced from home, a UT honors student is taking a new look at refugee policies in the United States and abroad. **Hera Jay Brown**, senior in three university honors programs, has studied with internationally recognized scholars, concentrating on the reasons that refugees become displaced and how they are governed in new countries.



THE UNIVERSITY OF
TENNESSEE
KNOXVILLE

OFFICE OF RESEARCH &
ENGAGEMENT

A Message from the AVCRD

The University of Tennessee, Knoxville recorded increases across several metrics in the second quarter of fiscal year 2018 (Q2 FY18). Proposal dollars requested remained on a steady rise, awarded dollars improved since the first quarter, and dollars spent on Research and Development (R&D) exceeded expectations.

While the total number of proposals submitted in the first two quarters of FY18 is slightly down (a 6 percent decrease), the total amount requested (\$328 million) represents a bold increase of 21 percent when compared to the first two quarters of FY17 (table 1, fig. 1 and fig.2). This increase is contributed to the stable positive trend demonstrated by the Tickle College of Engineering (TCE) and to the significant increases in the proposal amounts requested by the College of Nursing, and Research Centers and Institutes in Q1-Q2 FY18 (fig.9). In addition, there were 45 proposals submitted requesting amounts of \$1 million or larger in the first two quarters of FY18. The total amount requested by these 45 proposals was \$174 million. Thirty-six of these proposals aim to perform basic research, while the rest would provide public service.



The total award amount of \$82 million received in Q1-Q2 FY18 is down 7 percent compared to the Q1-Q2 FY17 (table 1, fig. 3). However, this amount represents a 1 percent increase over a five-year average of the amounts received in the first two quarters of the last five fiscal years (FY14-FY18). It is also noteworthy that this decrease is no longer as dramatic as it was in the end of the first quarter, when the total amount received was down 19 percent compared to last year.

Looking at the total research expenditures, all of our colleges, centers and institutes displayed substantial increases in the Q1-Q2 FY18 when compared to the Q1-Q2 FY17 (table 1, fig. 11). The total expenditure amount of \$105 million spent on R&D is 34 percent higher when compared to last year (table 1, fig. 4).

Notable Achievements

Jason Hayward and Hairong Qi from TCE's Department of Nuclear Engineering and Department of Electrical Engineering and Computer Sciences, respectively, secured a \$1 million project funded by the Department of Defense's Defense Threat Reduction Agency. The project, titled "Investigation of DETectors, Algorithms, and Systems (IDEAS) to Advance Autonomous Radiological/Nuclear Search," will focus on investigation of advanced organic scintillators, light collection in organic scintillation detectors, and advanced algorithms in an effort to develop technology to search for, locate, and characterize radiological/nuclear materials, preferably with unmanned, autonomous vehicles.

Nina Fefferman, a scientist in the Department of Ecology and Evolutionary Biology, received \$360 thousand from the National Science Foundation through Smithsonian Institute for her project "Predicting the Evolution of Vector-Borne Disease Dynamics in a Changing World." This project aims to advance an understanding of how disease transmission is affected by and evolve in response to environmental change.

Another researcher from College of Arts and Sciences, Annette Engel, received a \$260 thousand award from the National Oceanic and Atmospheric Administration through Louisiana State University to examine how seasonal and spatial shifts in salinity due to river diversions influence species composition and food web structure in both natural and created marshes.

As always, I invite your feedback on anything you would like to discuss involving the Office of Research and Engagement, your research concerns and interests, and aspirations you may have for future research activities at UT.

A handwritten signature in black ink that reads "Bruce LaMattina". The signature is fluid and cursive, with a long horizontal line extending from the end.

Bruce LaMattina
Associate Vice Chancellor for Research Development

PROPOSALS, AWARDS, & R&D EXPENDITURES: FY18 Q1-Q2 vs FY1 Q1-Q2 (Table 1)

| College/Center/Institute | Proposals Submitted | | | | Awards Received | | | | Estimated Total R&D Expenditures (HERD ¹) | |
|---|---------------------|------------------------|----------------------|-----------------------|------------------|------------------------|---------------------|-----------------------|---|-----------------------|
| | No. | % No. Incr. Over FY 17 | Amount Requested | % \$ Incr. Over FY 17 | No. ³ | % No. Incr. Over FY 17 | Amount Received | % \$ Incr. Over FY 17 | Amount Expended | % \$ Incr. Over FY 17 |
| College of Architecture and Design | 1 | 0% | \$49,920 | -1% | 2 | 0% | \$129,166 | -1% | \$646,173 | 236% |
| College of Arts and Sciences | 256 | -14% | \$64,129,254 | -19% | 207 | 0% | \$19,428,754 | -10% | \$30,045,024 | 57% |
| Haslam College of Business | 15 | 7% | \$2,106,467 | 34% | 14 | -22% | \$1,777,343 | -16% | \$5,448,498 | 45% |
| College of Communication and Information | 8 | -33% | \$998,817 | -55% | 10 | 25% | \$1,463,116 | 15% | \$1,581,037 | 99% |
| College of Education, Health, and Human Science | 39 | -33% | \$13,965,396 | -54% | 22 | 16% | \$5,056,749 | 31% | \$3,593,703 | 144% |
| Tickle College of Engineering | 316 | -3% | \$118,634,415 | 10% | 293 | -6% | \$37,754,769 | 1% | \$38,377,184 | 10% |
| College of Law | 1 | 0% | \$12,802 | 0% | 0 | N/C* | \$0 | N/C* | \$779,132 | 5715% |
| College of Nursing | 8 | -38% | \$6,120,199 | 16% | 3 | -50% | \$59,243 | 4% | \$680,507 | 318% |
| College of Social Work | 16 | -11% | \$5,524,822 | -20% | 21 | 0% | \$2,546,463 | 3% | \$631,278 | 54% |
| Research Centers and Institutes | 172 | 20% | \$110,033,740 | 317% | 181 | 2% | \$7,433,154 | -29% | \$18,719,771 | 36% |
| UT Space Institute | 26 | 0% | \$5,102,308 | 2% | 22 | 29% | \$1,429,780 | -21% | \$2,331,745 | 29% |
| Other ² | 7 | -42% | \$1,057,462 | -84% | 12 | -43% | \$4,707,744 | -35% | \$2,428,696 | 4% |
| Total | 865 | -6% | \$327,735,602 | 21% | 787 | -3% | \$81,786,280 | -7% | \$105,262,748 | 34% |

Notes

1. HERD – The Higher Education Research and Development Survey, successor to the Survey of Research and Development Expenditures at Universities and Colleges, is the primary source of information on R&D expenditures at U.S. colleges and universities.
2. Other – This field captures any research proposals, awards, and expenditures not included in the categories above.
3. The Number of Awards Received represents the cumulative number of funding award increments. One project may receive multiple funding awards.

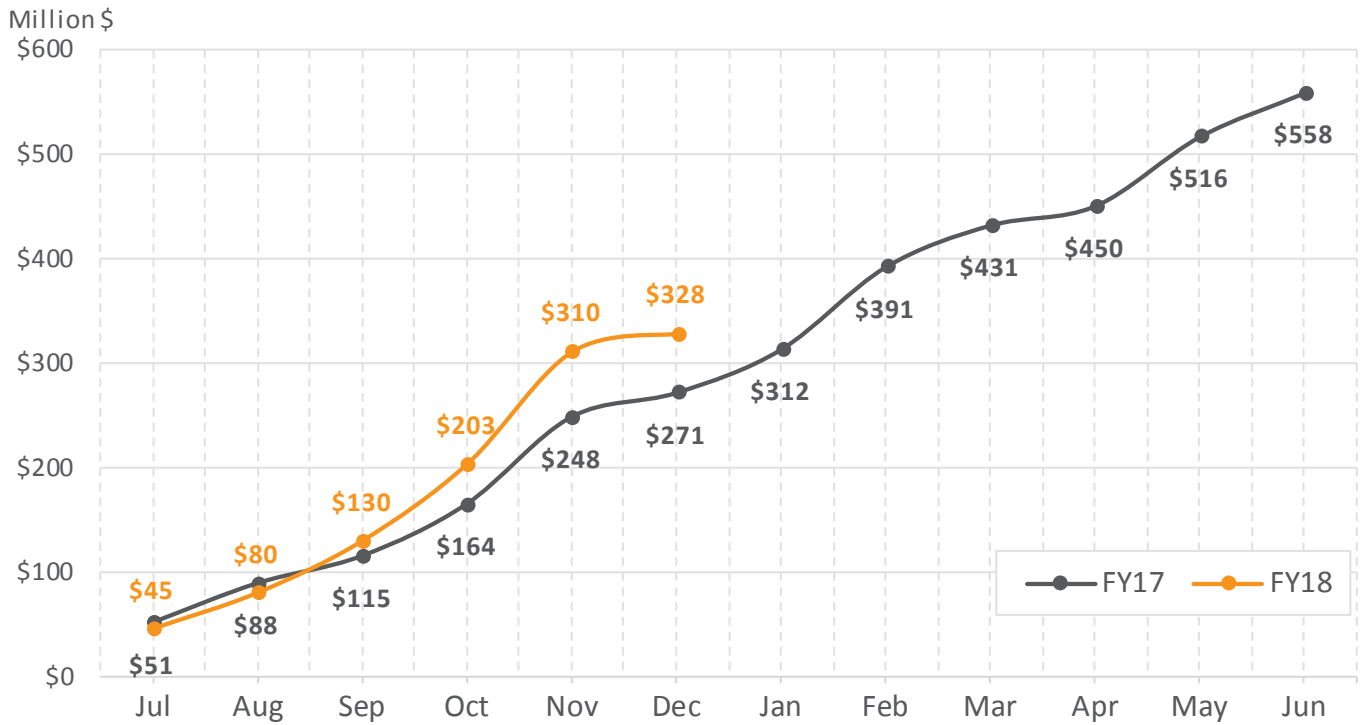
* N/C - Not Calculable

TOP 10 NEW PROJECTS: FY18 Q1-Q2 (Table 2)

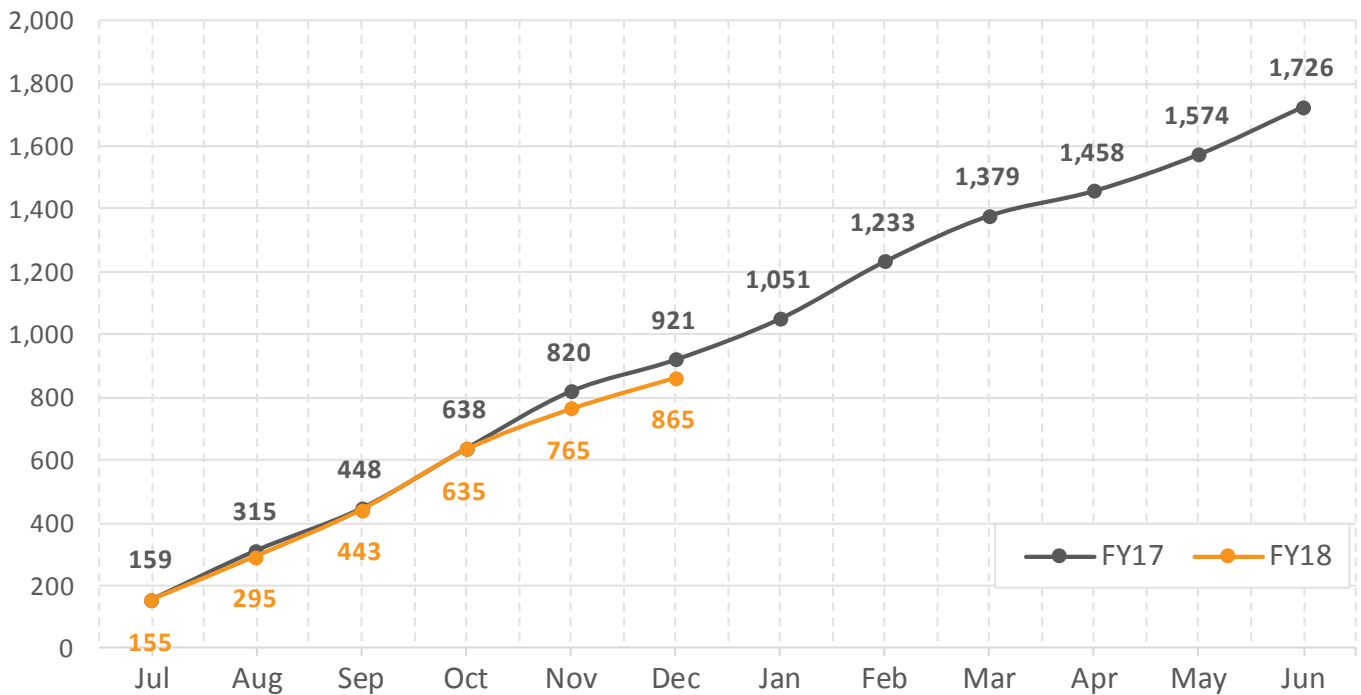
(by total anticipated dollar value)

| Investigators (Primary PI First) | Award Admin Dept | PI Home Department | Project Title | Anticipated Amount | Sponsor | Activity Type | Project Begins | Project Ends |
|--|---------------------------------|---------------------------------|--|--------------------|--|----------------|----------------|--------------|
| Everett, Jerry | Ctr for Transportation Rsch | Ctr for Transportation Rsch | Law Enforcement Liaison Administration | \$7,000,000 | Tennessee Dept. of Safety | Public Service | 10/1/2017 | 9/30/2022 |
| Wodarski, John | Ctr for Behavioral Health Rsch | Social Work | Tennessee HIV/AIDS, Related Substance Use Disorders, and Mental Disorders Services Program | \$2,491,093 | Dept. of Health-Substance Abuse and Mental Health Services | Public Service | 9/30/2017 | 9/29/2022 |
| Brewer, Ernest | CAPS Outreach Ctr | CAPS Outreach Ctr | Academic Enrichment Upward Bound 2017-2022 | \$2,148,690 | Dept. of Education | Public Service | 6/1/2017 | 5/31/2022 |
| Clarke, David | Ctr for Transportation Rsch | Ctr for Transportation Rsch | Support of Fuel Economy Information Program | \$2,135,060 | Dept. of Energy - Oak Ridge National Laboratory | Basic Research | 1/1/2018 | 6/30/2020 |
| Brewer, Ernest | CAPS Outreach Ctr | CAPS Outreach Ctr | Veterans Upward Bound 2017-2022 | \$1,667,640 | Dept. of Education | Public Service | 9/1/2017 | 8/31/2022 |
| Wirth, Brian | Nuclear Engr | Nuclear Engr | Simulation of Fission Gas in Uranium Oxide Nuclear Fuel | \$1,500,000 | Dept. of Energy -Office of Science | Basic Research | 9/15/2017 | 9/14/2022 |
| Papenbrock, Thomas | Physics | Physics | Nuclear Computational Low Energy Initiative (NUCLEI) | \$1,269,000 | Dept. of Energy -Office of Science | Basic Research | 9/1/2017 | 8/31/2022 |
| Steiner, Andrew; Crosby, Lonnie; Mezzacappa, Anthony | Physics | Physics; JICS | Towards Exascale Astrophysics of Mergers and Supernovae (TEAMS) | \$1,208,000 | Dept. of Energy -Office of Science | Basic Research | 9/1/2017 | 8/31/2022 |
| Wodarski, John; Patterson, David | Ctr for Behavioral Health Rsch | Social Work | Tennessee's Homeless Family Services in Supportive Housing | \$1,192,882 | Dept. of Health-Substance Abuse and Mental Health Services | Public Service | 9/30/2017 | 9/29/2020 |
| Hillyer, Sarah; Huffman, Ashleigh | Ctr for Sport, Peace, & Society | Ctr for Sport, Peace, & Society | Better World: Empowering Global Change Agents through Sports | \$1,130,000 | Dept. of State | Public Service | 9/1/2017 | 12/31/2018 |

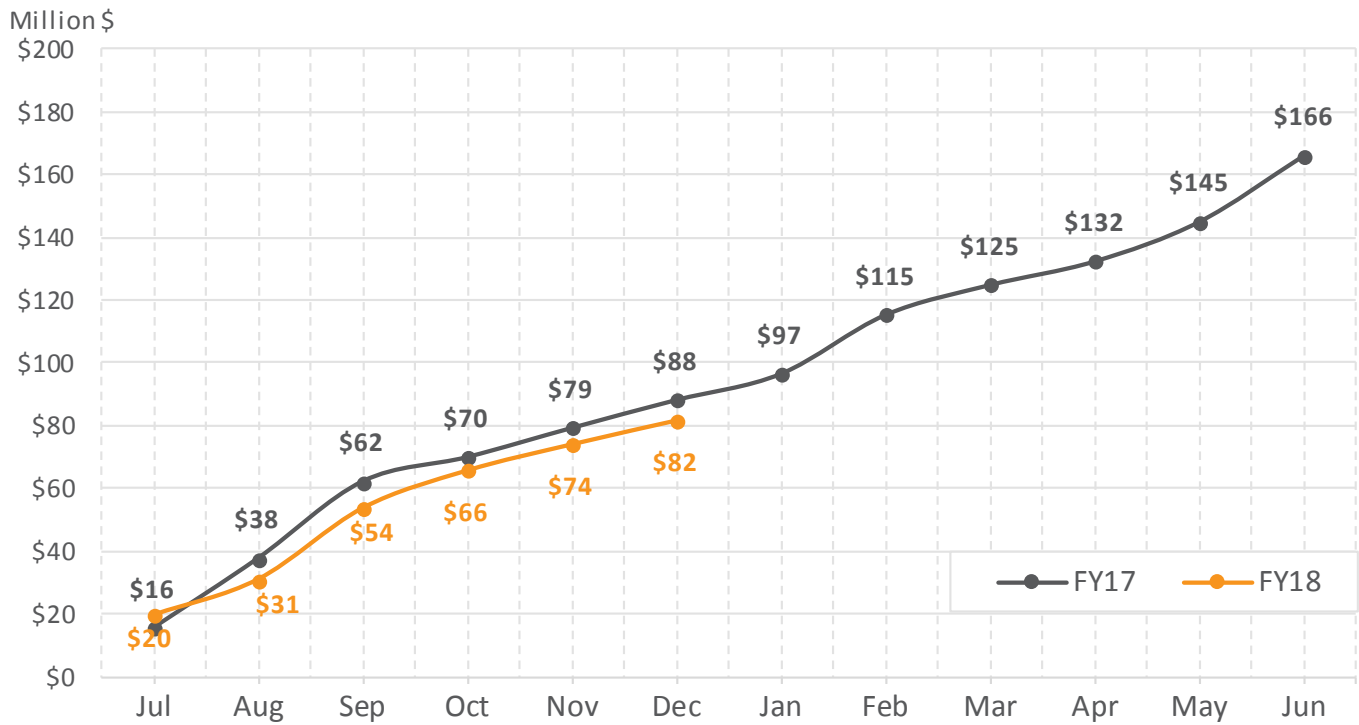
CUMULATIVE PROPOSAL AMOUNT: FY18 vs. FY17 (Figure 1)



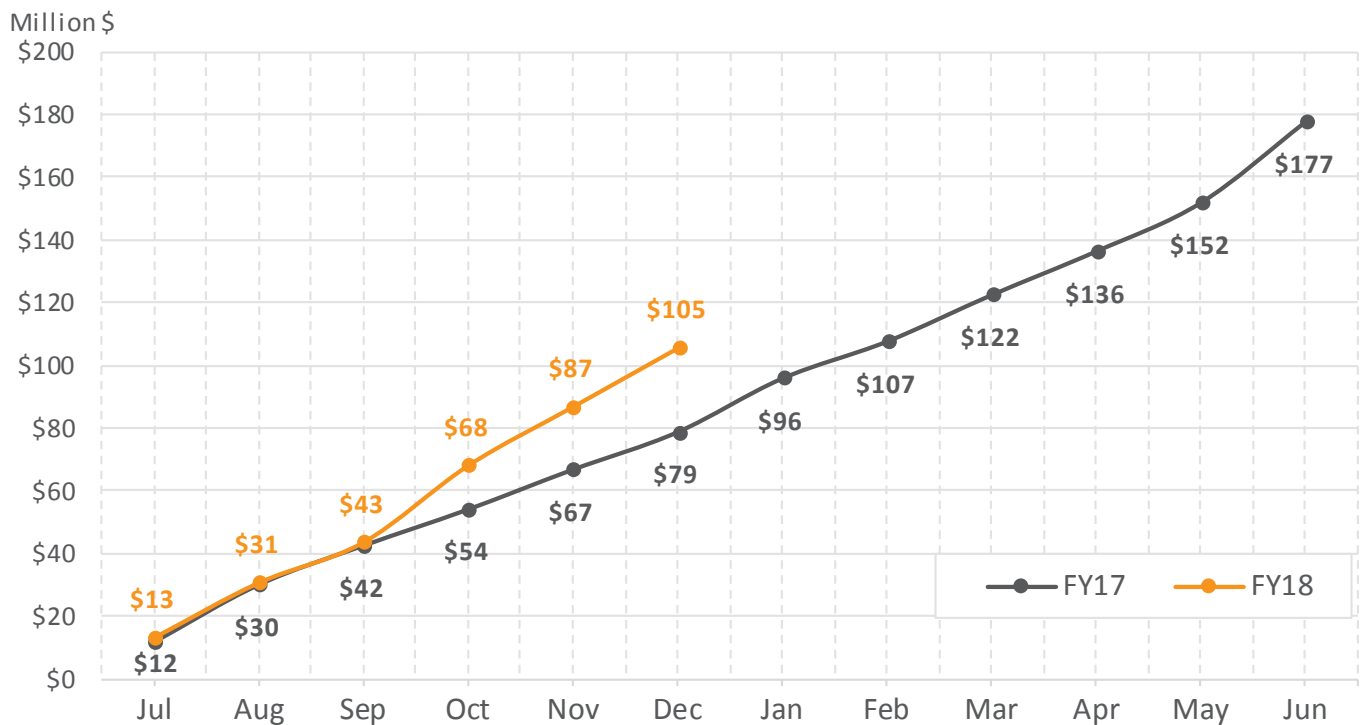
CUMULATIVE PROPOSAL COUNT: FY18 vs. FY17 (Figure 2)



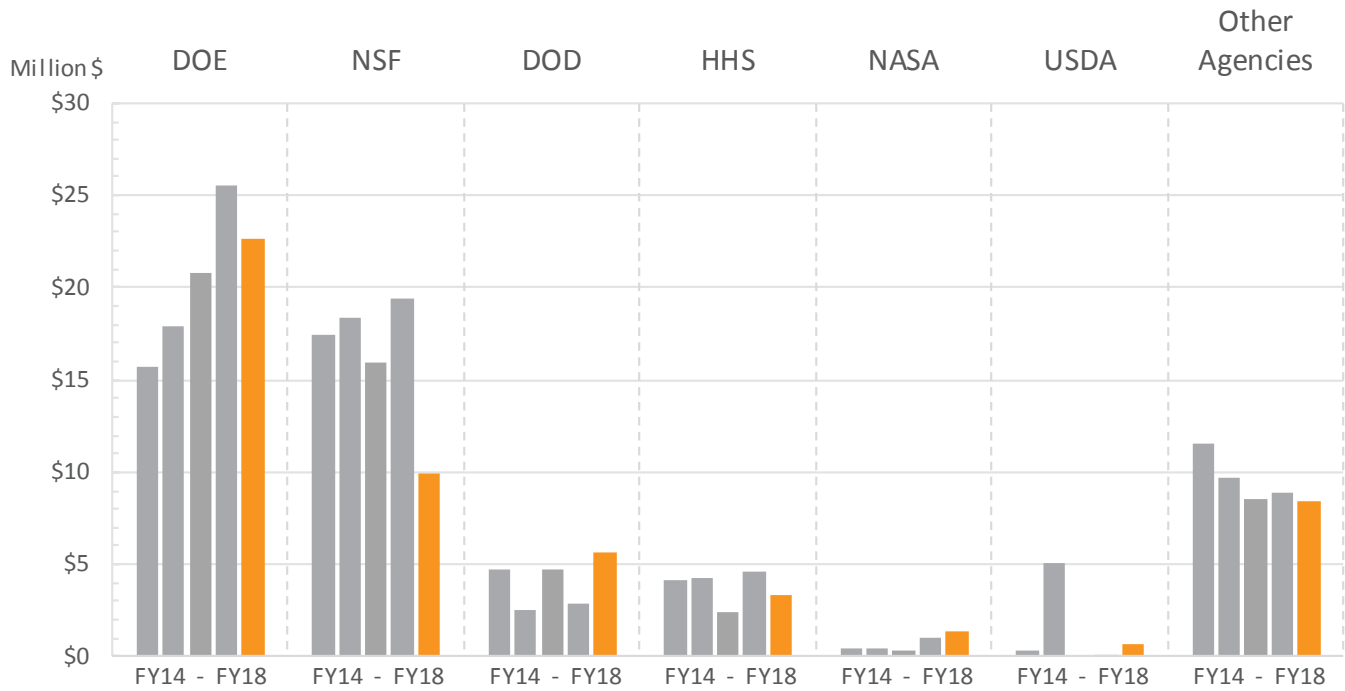
CUMULATIVE AWARD AMOUNT: FY18 vs. FY17 (Figure 3)



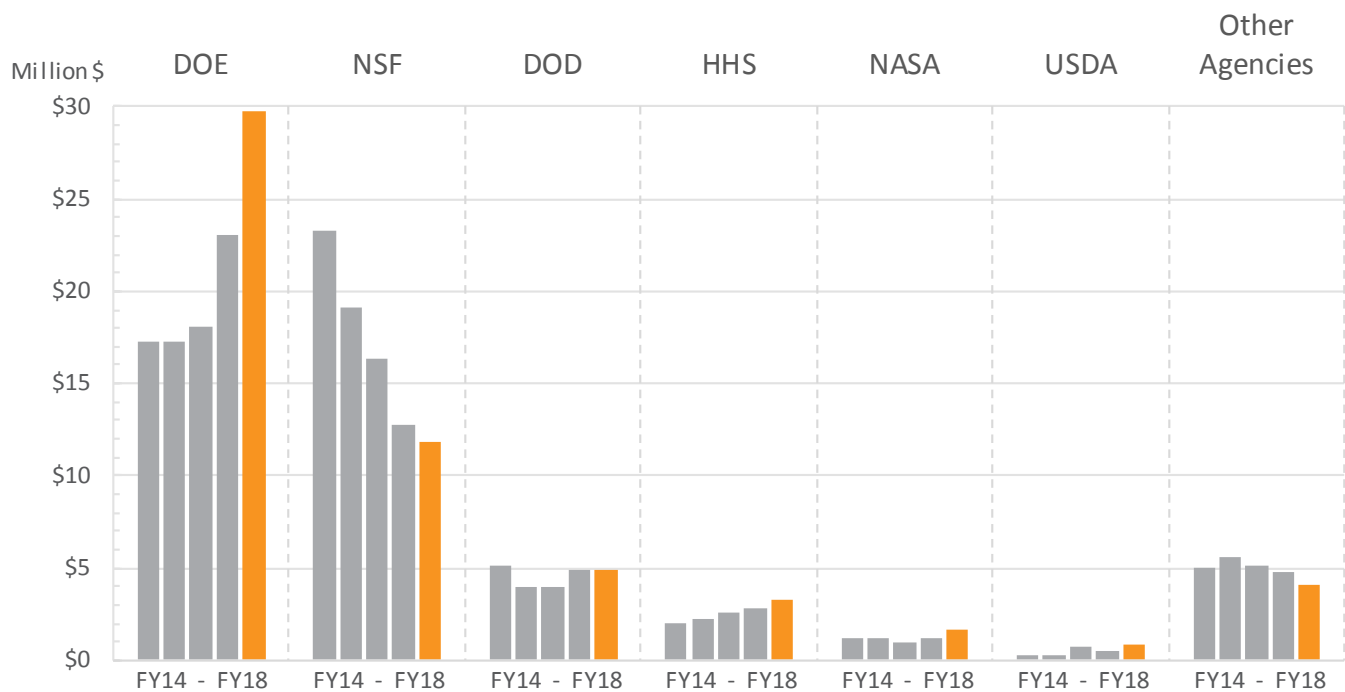
CUMULATIVE AMOUNT EXPENDED ON R&D: FY18 vs. FY17 (Figure 4)



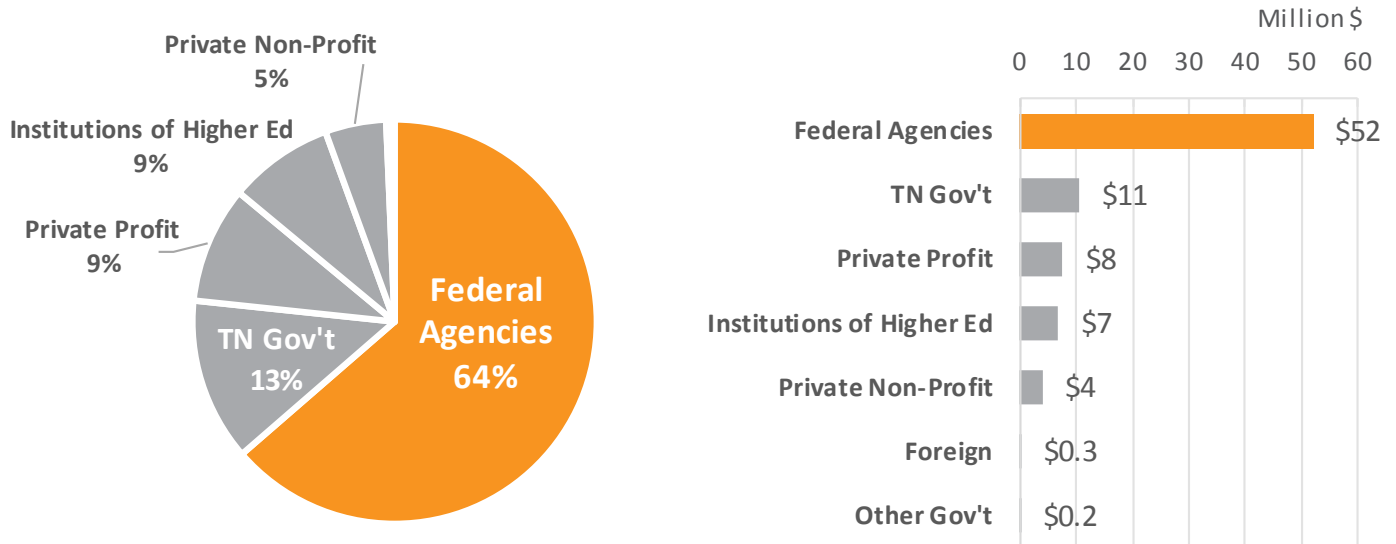
AWARDED DOLLARS BY FEDERAL AGENCY: FY14-FY18 Q1-Q2 (Figure 5)



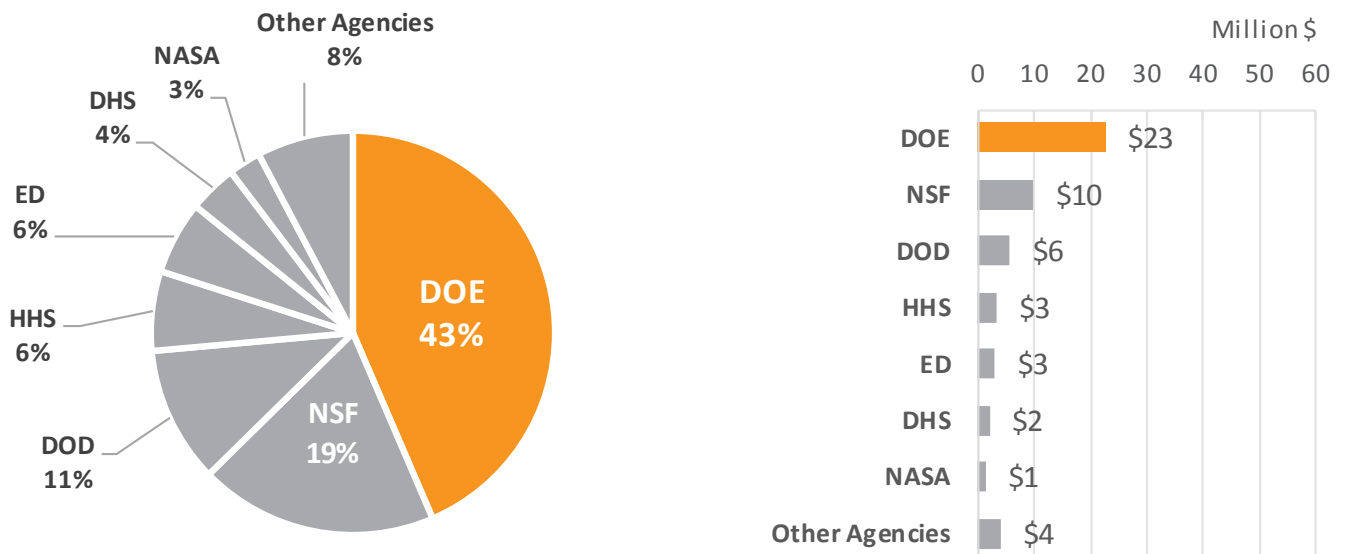
R&D EXPENDITURES BY FEDERAL AGENCY: FY14-FY18 Q1-Q2 (Figure 6)



AWARDED DOLLARS BY SOURCE: FY18 Q1-Q2 (Figure 7)

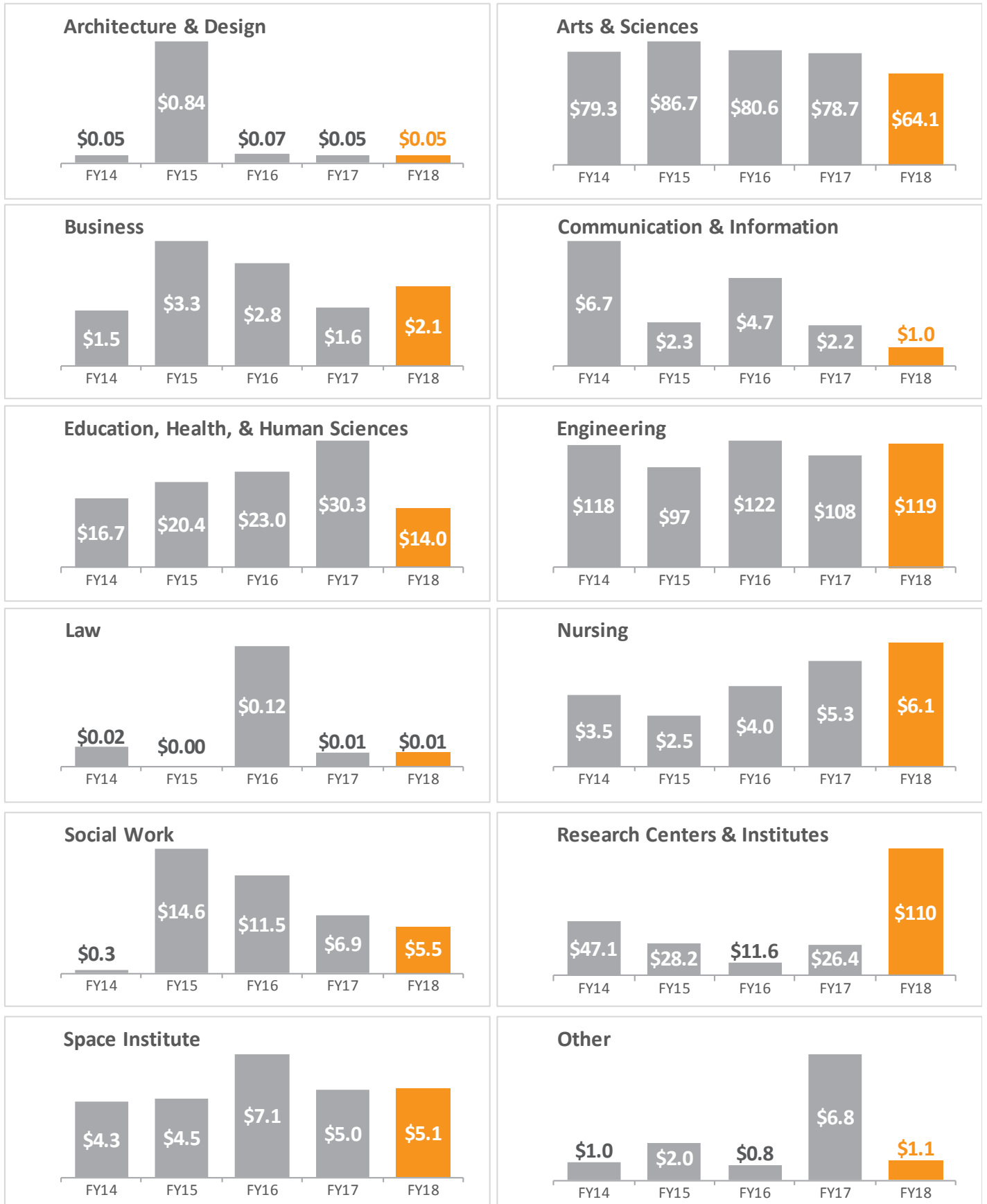


FEDERAL AWARDED DOLLARS BY AGENCY: FY18 Q1-Q2 (Figure 8)



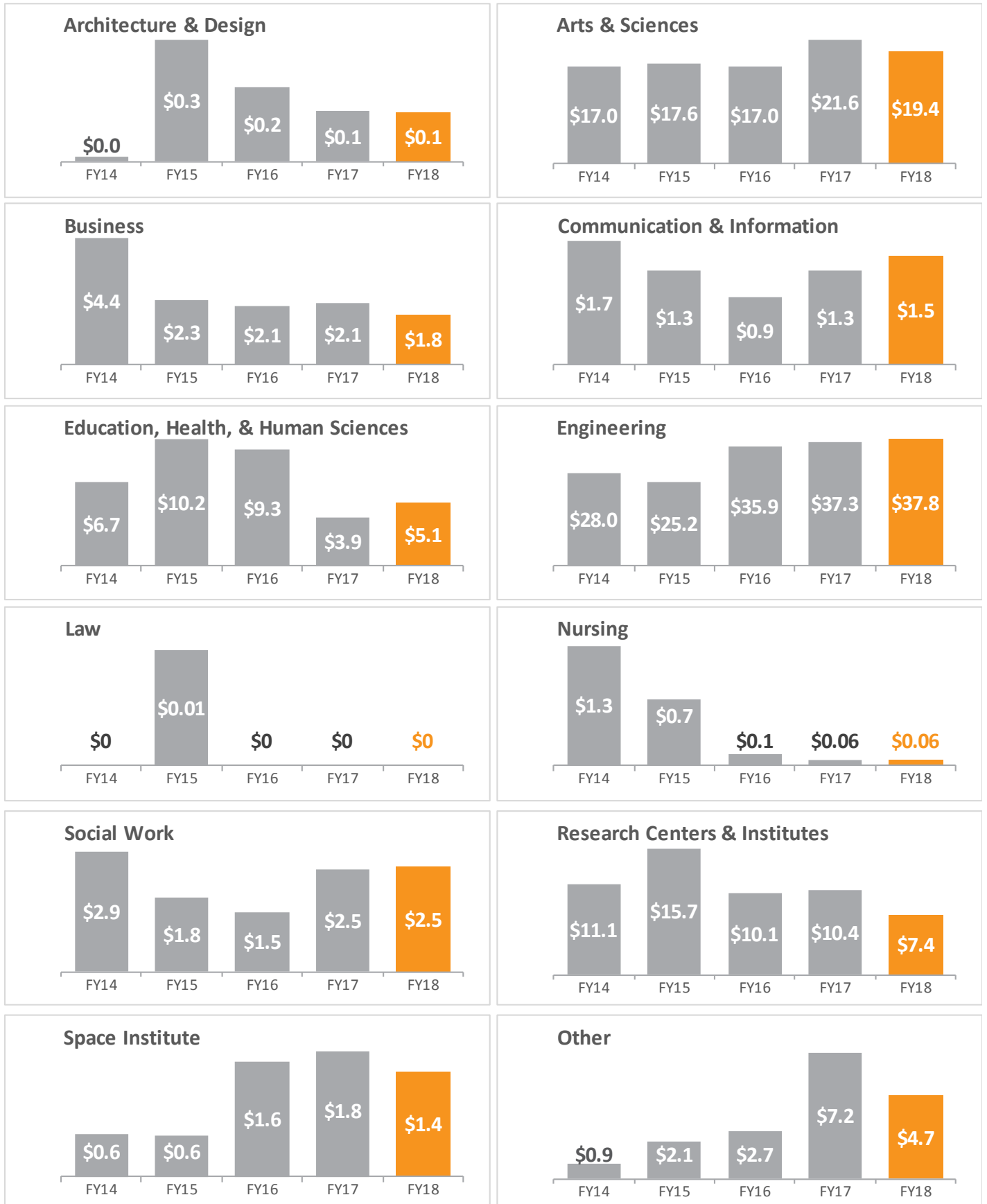
PROPOSED AMOUNT BY COLLEGE: FY14-FY18 Q1-Q2 (Figure 9)

(Dollars in Millions. Each chart has its own scale)



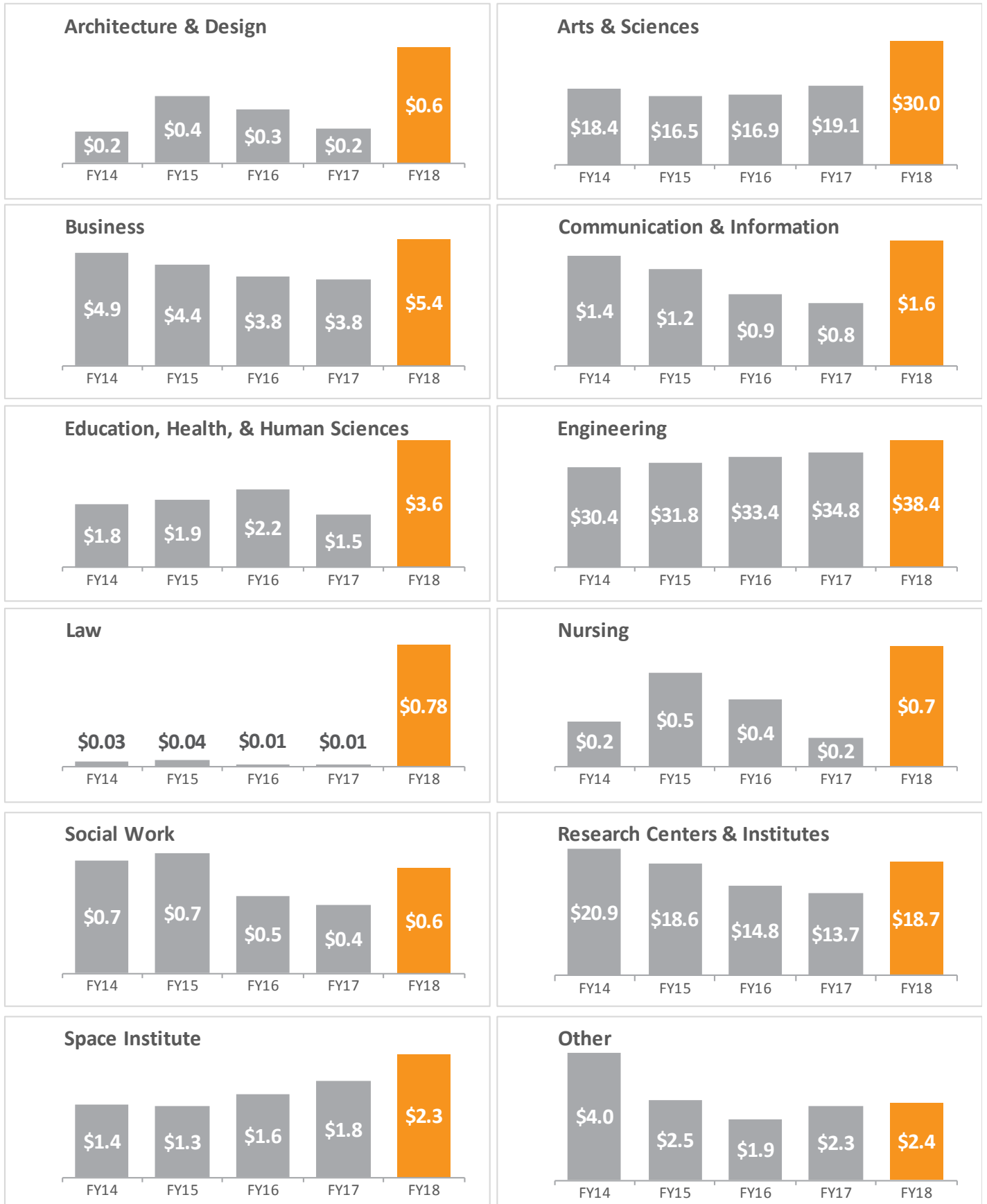
AWARDED AMOUNT BY COLLEGE: FY14-FY18 Q1-Q2 (Figure 10)

(Dollars in Millions. Each chart has its own scale)



AMOUNT EXPENDED ON R&D BY COLLEGE: FY14-FY18 Q1-Q2 (Figure 11)

(Dollars in Millions, Each chart has its own scale)



Data Notes

Each Quarterly Research Report is a cumulative fiscal year-to-date summary. Award, proposal, and expenditure data include UT Knoxville, UT Space Institute, and University Wide Administration. Data depicting colleges and research centers and institutes is presented to show trends within each unit.

Award and proposal data is collected from Cayuse SP (electronic system for routing of sponsored projects) and includes projects sponsored for Basic, Applied and Developmental research activities as well as for Public Service, Training, Instruction, Scholarship, and Fellowship activities.

R&D expenditure data is collected from the "NSF Research Survey Estimate" report provided by UT IRIS Data Warehouse. The data for this report is collected and reported according to the NSF HERD Survey and covers three R&D activities - Basic research, Applied research, and Development. These R&D activities can have following sources of funds: U.S. federal government, State and Local Government, Business, Nonprofit organizations, Institutional funds, and other sources such as funds from foreign entities and gifts designated by the donors for research. Please visit the following link to learn more about the survey and R&D definitions: <https://www.nsf.gov/statistics/srvyherd/>

To ensure consistency of the Office of Research and Engagement reports, all quarterly and annual report award selection is based on the UT Report Date (award effective date). The proposal selection is based on the Proposal Approval Date.

There are occasionally variations in the numbers reported for each quarter as information is updated into Cayuse SP and IRIS on a daily basis. The data for this report were collected on February 1st, 2018. The annual report will represent the final amounts for that fiscal year.