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Breakout Group #5

Institutional bridge support: How to maintain productive physician-investigators during funding lapses

November 12, 2015
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Don Rockey

AAMC
Tomorrow's Doctors, Tomorrow's Cures®

Measuring Academic Medicine's Investment in Medical Research

Learn
Serve
Lead

Bridge Funding Findings

September 11, 2015

Association of American Medical Colleges

About the study

- Goal: to determine the full institutional investment in biomedical research.
- The AAMC partnered with business office and research leaders at US medical schools, and Huron Consulting Group to develop a data collection tool that defines and facilitates **consistent reporting** across major categories of investment.
- Full report at aamc.org/initiatives/research
- **Institutions support $0.53 for every dollar of funded research received.**

About the data collection tool

The survey tool supports uniform reporting of:

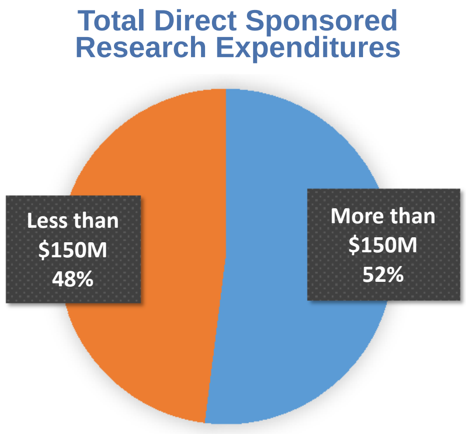
- Sponsored program direct, indirect and total costs;
- Related institutional direct and indirect costs.

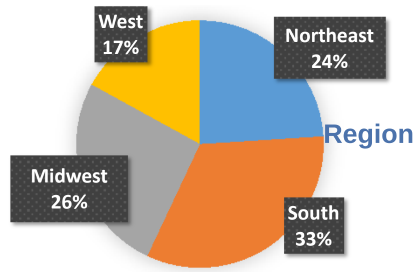
Data collected: institutional 2013 Fiscal Year

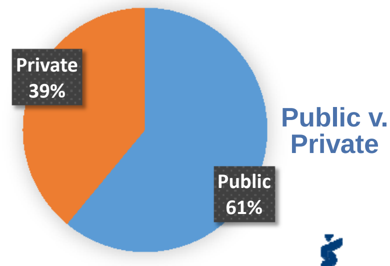
Sponsored program investments were also reported by source type:

- Federal-NIH
- Other Federal
- State and Local government
- Industry/Corporate
- Foundation/Not-for-profit
- Incoming subawards and subcontracts
- Other

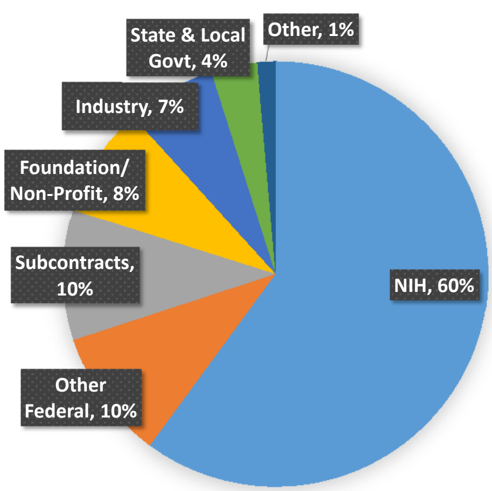
Characteristics of participating institutions







Sponsored Research Expenditures by Sponsor Type

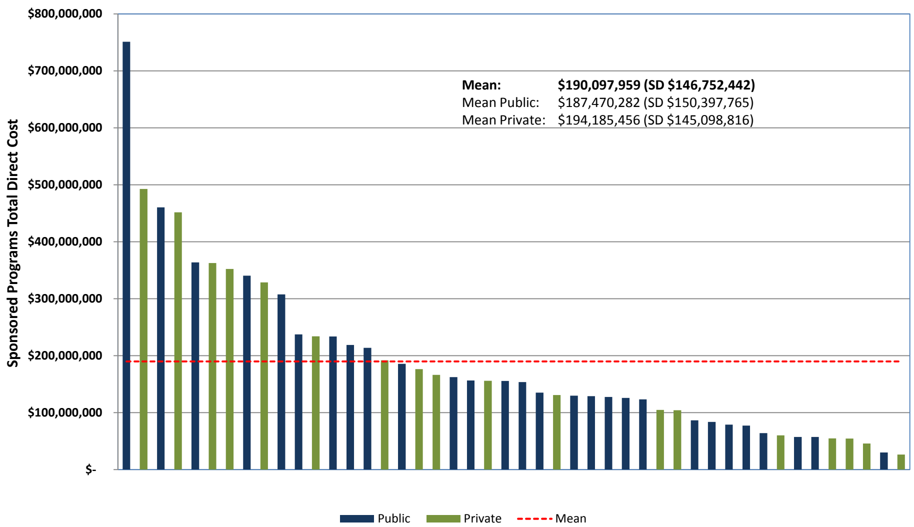


Average in thousands

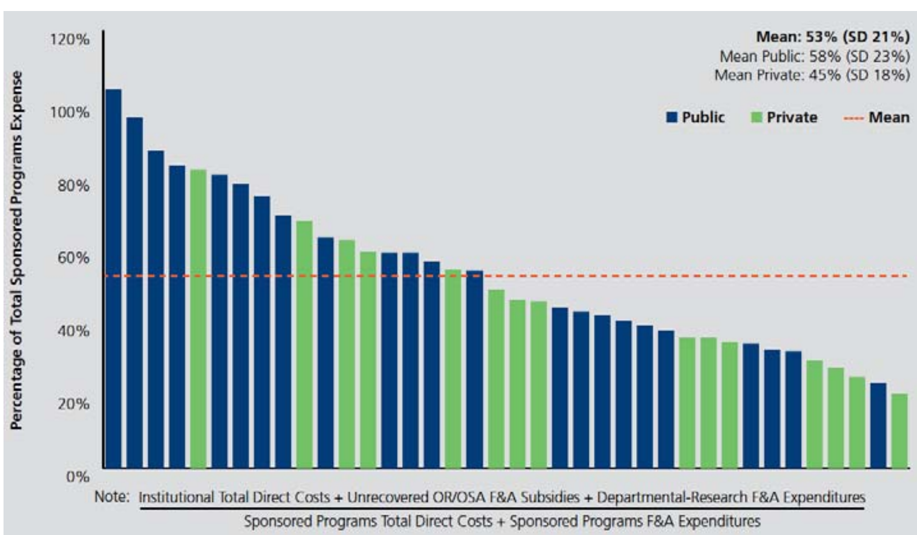
NIH	$146,980
Other Federal	$21,729
Subcontracts	$23,549
Foundation/ Non-Profit	$20,607
Industry/ Corporate	$17,481
State & Local Government	$7,423
Other	$4,093
Total	$240,024

Totals includes direct and indirect (F&A) expenditures by sponsor type.

Sponsored Research Total Direct Cost



Institutional Support as a % of Sponsored Programs Expense



Bridge Funding

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Definition of bridge funding used in study

A structured form of research support, which could include a formalized application for these funds, a defined amount of support, and the timeframe over which the funds may be used.

Bridge funding provides support for researchers who have promising lines of inquiry but due to the highly competitive nature of research funding, have temporarily lost support.

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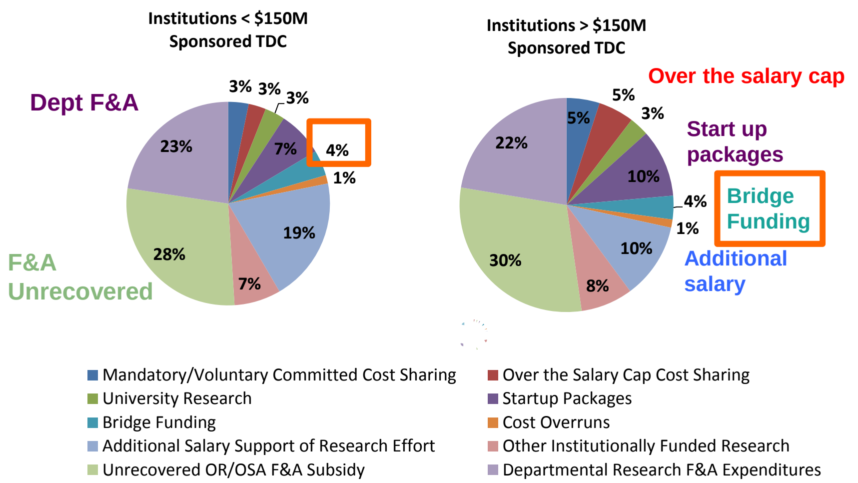
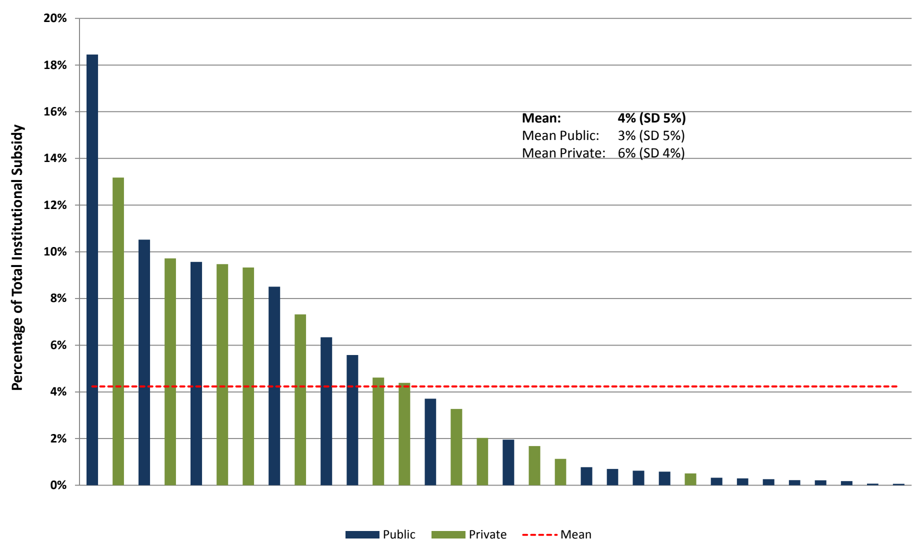
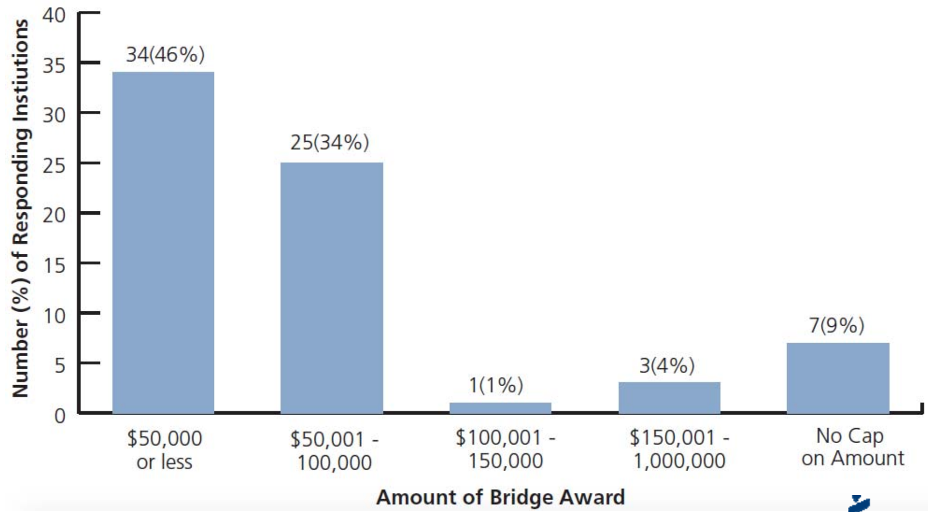
Institutional Research Expenditures by Category



Bridge Funding Percentage of Total Institutional Investment



Individual Bridge Awards:
US Medical Schools Reporting Bridge Funding (n=74)*



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Average Bridge Funding by Research Intensity in $ Millions

Institutional Expenditure	Institutions < $150 Million Sponsored TDC		Institutions > $150 Million Sponsored TDC		All Institutions	
	Mean	SD	Mean	SD	Mean	SD
Bridge Funding	2.8	4.2	5.1	6.0	4.0	5.3
Total Institutional Expenditures	69	36	149	65	111	66
Total Sample Size	18	18	20	20	38	38

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Physician-Scientists

- In 2012, physician-scientists comprised 1.5% of the total physician workforce
- In 2002, 14,531 and in 2012, there were 13,717
- During the 5-year period 2008-2012, approximately 8,000 MDs held NIH RPG awards
- This workforce is shrinking, aging and includes a small proportion of women and racial/ethnic minorities

From the Physician-Scientist Workforce Working Group Report, June 2014

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Physician-Scientists

- Takes longer than ever to become independent
  - Age at 1st R01 = 44 MD, 45 MD/PhD
- If the average career of a physician-scientist is 30 years, it is estimated that about 1,000 individuals will need to enter the pipeline each year to maintain a steady state (assuming 50% will not succeed)

From the Physician-Scientist Workforce Working Group Report, June 2014

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K to R Bridging

- More than 80 percent of K program recipients (1999-2008) have applied for RPGs.
  – Of those who applied, approximately 60% were successful, for an overall K to R rate of 54%.
- In 2012, the award rate for MDs or MD/PhDs with a prior R01 was 23%.

From the Physician-Scientist Workforce Working Group Report, June 2014

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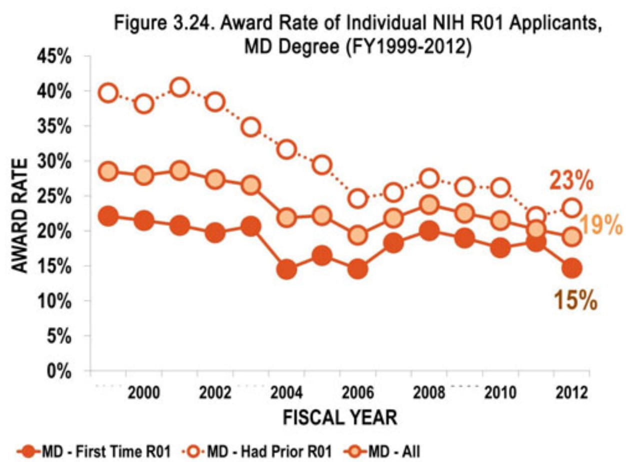
Funding Rate for R Awards



From the Physician-Scientist Workforce Working Group Report, June 2014

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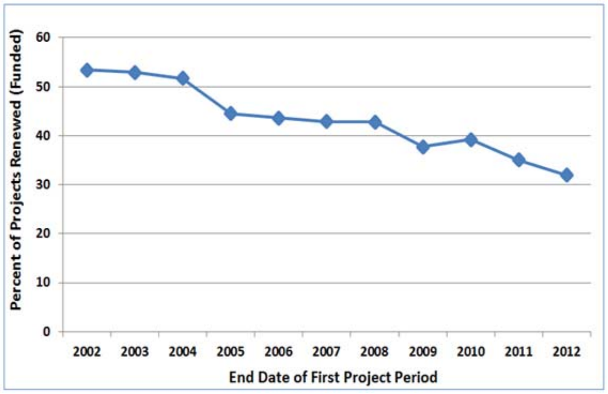
R to R Transition

- **Renewal of R01 has declined substantially over the last 10 years**



http://loop.nigms.nih.gov/2015/02/examining-the-first-competing-renewal-rates-of-new-nigms-investigators/
"Examining the First Competing Renewal Rates of New NIGMS Investigators"

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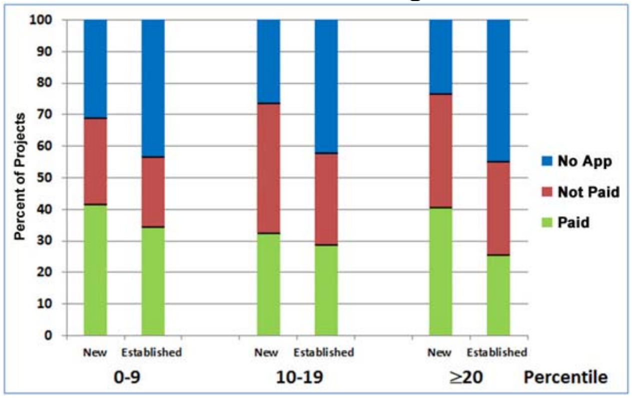
R to R Transition – Renewal History

- Those renewing R grants are typically more successful than new investigators, but…



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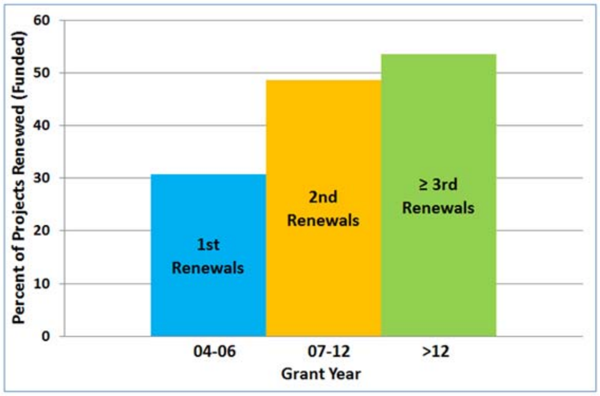
R to R Transition

- **Experience helps!**



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"Examining the First Competing Renewal Rates of New NIGMS Investigators"

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Discussion Topics

- What are best practices nationally?
  - Are these adequate?
- Specific programs for the K to R phase?
- What about R to R?
- How does one handle the established investigator who has "run out the string"?

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ACADEMIC MEDICINE INVESTMENT IN MEDICAL RESEARCH: TECHNICAL REPORT

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This is a publication of the Association of American Medical Colleges. The AAMC serves and leads the academic medicine community to improve the health of all. www.aamc.org.

Questions about the contents of this publication may be directed to Alexander Ommaya, D.Sc., Senior Director, Clinical Effectiveness and Implementation Research, Association of American Medical Colleges (akommaya@aamc.org).

Huron Consulting Group assisted the AAMC in designing the survey instrument and analyzing the final results of this report.

Contents

Executive Summary

Medical research has improved the health of Americans, fueled the economy, and spurred innovation. Such advances have been possible because of investments by federal, state, and local government, industry, foundations, and academic institutions. More than half of National Institutes of Health (NIH) extramural funding—roughly $13 billion in FY 2014—supports researchers in the nation's medical schools and teaching hospitals.

Academic medical centers are committed to preserving the tripartite missions of academic medicine: education, patient care, and research. The flow of revenue and funds for these three enterprises is unique to individual institutions. Data from FY 2013 indicate that grants and contracts account for 26% of the total revenue that supports medical school programs and activities.[1] This proportion is second only to revenue received from clinical operations.[2] To cover both direct and indirect costs, academic medical centers must subsidize these funds with their own investment. The full extent of this investment has not been well characterized—until now.

To measure the comprehensive investment of academic medicine in research, the Association of American Medical Colleges (AAMC) partnered with business office and research leaders at U.S. medical schools and engaged Huron Consulting Group (Huron) to develop a survey tool that allows consistent reporting of the investment in medical research across medical schools. The survey tool provides (1) a measure of the overall institutional investment for every extramural dollar received for research and (2) the distribution of institutional investment across subcategories.

Forty-six institutions collaborated with the AAMC and Huron on this effort. These institutions each received between $26 million and $751 million in external funding (total direct costs, or TDC) for medical research in 2013. The average medical school investment was an additional $0.53 for each dollar of sponsored research received. This accounted for an average investment of $111 million per medical school.

1 LCME Part I-A Annual Medical School Financial Questionnaire (AFQ), FY2013. Prepared by the Association of American Medical Colleges, June 2014. https://www.aamc.org/download/381714/data/fy2013_medical_school_financial_tables.pdf. Accessed June 1, 2015.

2 Association of American Medical Colleges. 2015. Academic Medicine Investment in Medical Research. Washington, DC. https://members.aamc.org/eweb/upload/Academic%20Medicine%20Investment%20in%20Medical%20Research.pdf. Accessed July 20, 2015.

This technical report presents data that supplement results summarized in the AAMC *Academic Medicine Investment in Medical Research* main report. The Results section here describes details relating to the metrics derived from the survey results, including results that are stratified by public and private institutions and by research intensity. The report also includes an Additional Metrics and Graphs section, with frequency charts showing distributions of the results from the survey, such as sponsored programs expense by sponsor type, institutional investment, and facilities and administrative (F&A) recovery rate by sponsor type.

Methodology

On November 1, 2013, the AAMC convened a group of eight principal business officers and four deans of research from 12 accredited U.S. medical schools and representatives from Huron. This group designed the Investment in Research Survey Tool and developed definitions and instructions for the survey instrument. On April 2, 2014, the survey was distributed to a pilot group of 12 institutions represented by the people who were at the November meeting. Eleven institutions responded to the survey by June 26, 2014, and provided additional feedback about the survey instrument and definitions.

On August 1, 2014, the updated survey was distributed to 57 institutions (including the 12 pilot institutions). Responses were received from 46 institutions by November 1, 2014. The overall response rate for all participants was 81%. As survey responses were received, Huron contacted respondents to discuss data accuracy and methods of reporting. Eight institutions reported incomplete data because of limitations in data reporting from their financial systems. Therefore, the information from these institutions could not be included in the reported results.

Institutional-research expenditures were calculated by summing total direct costs of institution-funded research, unrecovered F&A subsidies related to organized research and other sponsored activities, and F&A subsidies related to the institutional subsidy of direct research expenditures.

Results

The primary finding is that the average medical school investment applied to externally supported research programs was $0.53 for each dollar of sponsored research received. This accounted for an average investment of $111 million, with a 95% confidence interval between $90 million and $132 million per medical school.

More than half of the investment, $0.27 for every dollar of sponsored research expended at a medical school, is related to F&A costs of the institution not reimbursed by sponsors (Table 1). Overall, the largest institutional expenditures were incurred to cover unreimbursed F&A costs, with an average of $0.15 going to support unreimbursed indirect costs from extramural funds and $0.12 going to support F&A costs associated with intramural funds provided by the institution. As indicated in Figures 13 and 14 in the Additional Metrics and Graphs section, there was a mean of 31% (range from 2% to 63%) for the unreimbursed organized research and other sponsored activities (OR/OSA) F&A subsidies portion of the total institutional investment, and a mean of 21% (range, 3% to 34%) for the departmental-research F&A expenditures portion of the total institutional investment.

Table 1. Institutional F&A Investment	Institutional Expenditures	
	Total Institutional F&A Expenditures	Total Institutional F&A Expenditures Expressed as Per Dollar of Sponsored Programs Dollars Received
Average	**$56,060,001**	**$0.27**
95% Confidence Interval	± $10,440,571	± $0.04
Sample Size	38	38

A large portion of the investment, $0.21 for every dollar of sponsored research expended at a medical school, is related to salary costs (Table 2). Additional salary support of the research effort, which is salary that is charged to discretionary-type funding (and not charged to sponsored funds or other specified institutional funding mechanisms), was the largest component of this portion of the investment, averaging $0.09, or 15% of the total institutional investment. As indicated in Figure 11, additional salary support of the research effort had a mean of 15%, with values ranging from 0% to 37% of the total institutional investment.

Start-up funding and bridge funding, which traditionally consist predominantly of salary costs, averaged 9% and 4%, respectively (Figures 8 and 9). Mandatory/voluntary committed and over-the-salary-cap cost sharing each averaged 5% (Figures 5 and 6). Although the mean for over-the-salary-cap cost sharing was 5% of the total institutional investment, one institution reported over-the-salary-cap cost sharing at 30% of their institutional investment (Figure 6). Federal funding made up 89% of this institution's sponsored-research portfolio, compared with a mean of 70%. Given that salary caps are generally imposed by federal sponsors, this may explain this institution's high salary-cap cost-sharing investment.

Components of the salary investment are comparable across public and private institutions and research intensity, with the largest variance seen in the additional salary support of the research-effort category (Figure 11). For this component, public institutions averaged $0.11, or 16% of the total investment, while private institutions averaged $0.06, or 12% of the total investment. Institutions with less than $150 million in sponsored-research total direct costs averaged $0.13, or 19% of the total investment, while institutions with more than $150 million in sponsored-research total direct costs averaged $0.06, or 10% of the total investment (Figure 15).

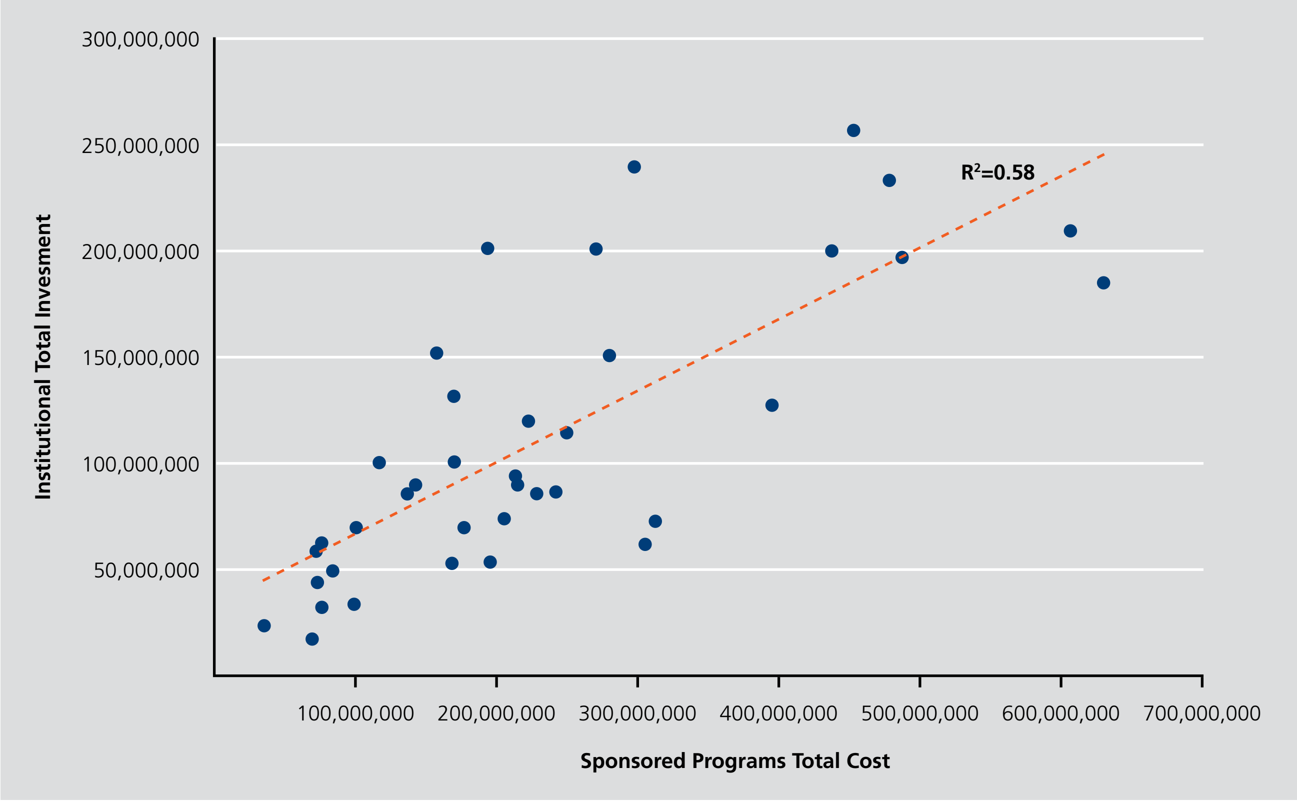
Table 2. Institutional Salary Expenditures*	Institutional Expenditures	
	Total Institutional Salary Expenditures	Total Institutional Salary Expenditures Expressed as Per Dollar of Sponsored Programs Dollars Received*
Average	**$40,257,593**	**$0.21**
95% Confidence Interval	± $10,282,462	± $0.04
Sample Size	30	30

* Institutional salary expenditures consist of mandatory/voluntary committed cost sharing, over-the-salary-cap cost sharing, start-up funding, bridge funding, and additional salary support of the research effort.

Results were generally comparable for the remaining components of the investment. However, as indicated in Figure 10, cost overruns at one institution made up 19% of its institutional investment—well above the mean of 2%. This institution separately budgets and accounts for cost overruns but does not track many of the other direct institutional investment categories reported in the survey. Therefore, the overall institutional investment may be understated, with cost overruns making up the majority of the direct institutional investment reported.

As Figure 1 indicates, there is a positive relationship between sponsored-research support and institutional investment. This means that as an institution incurs additional sponsored programs expense, additional institutional investment in the research enterprise is needed.

Figure 1: Bivariate Analysis—Institutional Total Investment versus Sponsored Programs Total Cost



Conclusion

There is a positive linear relationship between sponsored programs total cost and institutional total investment (Figure 1). Institutions with less than $150 million in sponsored programs total direct costs spend a proportionally greater percentage of institutional-research expenditures on additional salary support than institutions with more than $150 million in sponsored programs total direct costs (19% versus 10%). The other measured categories are generally comparable across public and private institutions and research intensity. For all survey respondents, the largest proportion of sponsored research is supported by NIH. NIH also provides the largest proportion of support for facilities and administrative (F&A) costs. These results indicate that medical schools make substantial investments in medical research, including unrecovered F&A costs related to sponsored programs, departmental-research F&A, salary support, and additional areas of support.

Additional Metrics and Graphs

Figure 2: Sponsored Programs Expense by Sponsor Type

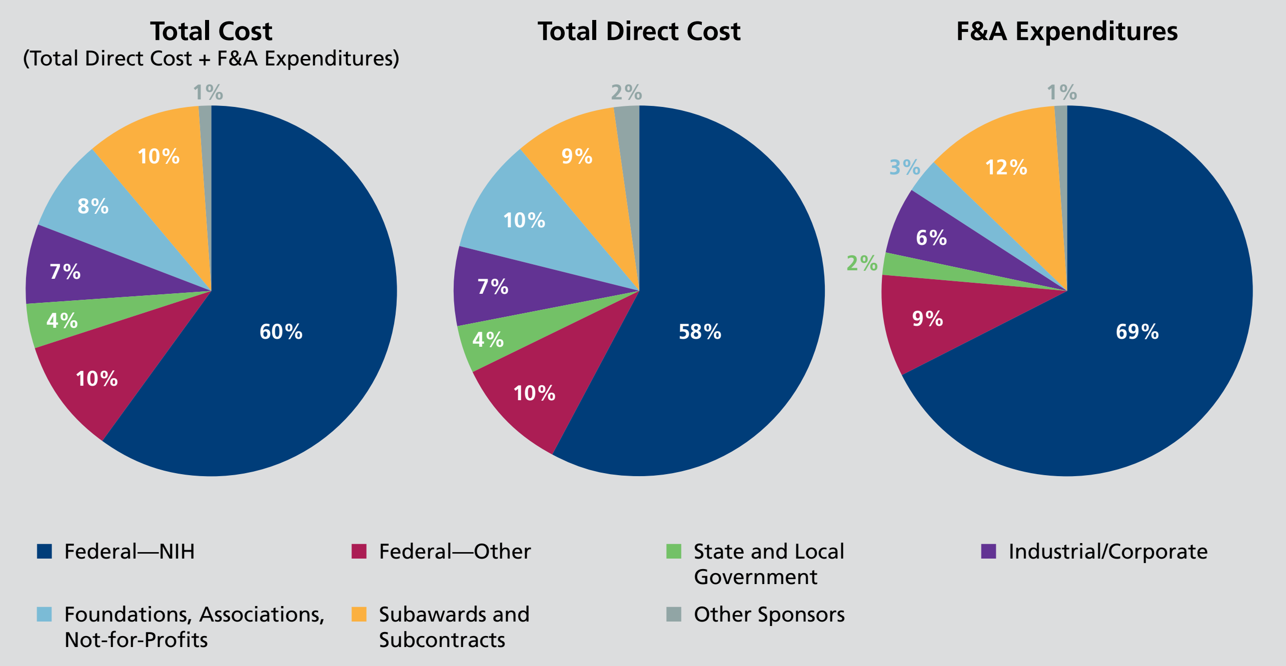


Table 3: Sponsored Programs Mean Expense

Sponsor Type	Institutions < $150 Million Sponsored TDC		Institutions > $150 Million Sponsored TDC		All Institutions	
	Mean	SD	Mean	SD	Mean	SD
Total Cost (Total Direct Cost + F&A Expenditures)						
NIH	$69,046,642	$38,769,163	$224,912,972	$107,019,904	$146,979,807	$111,990,466
Other Federal	12,176,792	9,558,089	31,280,337	33,060,627	21,728,565	25,907,514
State and Local Government	4,738,226	4,999,838	10,236,238	13,530,379	7,423,301	10,363,817
Industrial/Corporate	6,456,233	4,316,963	28,506,326	32,402,269	17,481,279	25,401,588
Foundation/ Not-for-Profit	9,798,762	9,972,567	31,414,244	19,070,013	20,606,503	18,585,577
Subaward/Subcontracts	10,753,454	6,201,169	36,345,298	17,066,406	23,549,376	18,126,406
Other Sponsors	1,134,421	2,619,116	7,052,191	11,964,012	4,093,306	9,063,000
Total Sponsored	**$112,061,974**	**$48,971,782**	**$362,422,634**	**$183,463,467**	**$240,024,089**	**$184,370,209**
Total Sample Size	**22**	**22**	**23**	**23**	**45**	**45**
Total Direct Cost						
NIH	$50,078,436	$26,095,241	$165,096,749	$79,103,582	$107,587,592	$82,295,348
Other Federal	9,871,632	7,961,622	25,321,363	27,776,660	17,596,497	21,642,829
State and Local Government	4,159,788	4,567,577	8,984,035	11,562,916	6,515,816	8,947,189
Industrial/Corporate	5,159,791	3,652,285	22,833,992	28,764,381	13,996,891	22,128,773
Foundation/ Not-for-Profit	9,209,487	9,878,395	28,869,499	17,520,154	19,039,493	17,210,158
Subaward/Subcontracts	7,992,554	4,709,609	26,248,003	12,458,314	17,120,279	13,110,269
Other Sponsors	954,776	2,118,271	5,707,971	10,033,724	3,331,373	7,558,974
Total Sponsored	**$85,920,277**	**$35,715,704**	**$285,594,167**	**$145,170,116**	**$190,097,959**	**$146,752,442**
Total Sample Size	**22**	**22**	**24**	**24**	**46**	**46**
F&A Expenditures						
NIH	$18,968,206	$13,562,866	$59,816,223	$28,610,148	$39,392,214	$30,271,021
Other Federal	2,305,160	1,887,660	5,958,974	5,486,581	4,132,067	4,454,363
State and Local Government	578,437	1,044,827	1,252,203	2,382,339	907,486	1,834,284
Industrial/Corporate	1,296,442	823,708	5,672,334	4,147,546	3,484,388	3,690,655
Foundation/ Not-for-Profit	589,274	421,910	2,544,745	1,797,002	1,567,010	1,624,933
Subaward/Subcontracts	2,760,900	1,866,391	10,097,294	5,042,733	6,429,097	5,280,866
Other Sponsors	128,081	484,539	979,158	1,835,107	563,076	1,407,469
Total Sponsored	**$26,141,696**	**$15,686,269**	**$84,429,554**	**$41,728,402**	**$55,933,268**	**$43,084,921**
Total Sample Size	**22**	**22**	**23**	**23**	**45**	**45**

Note: Total sponsored expenditures may be different from the total of the expenditures per category because the sample size may be different between categories.

Figure 3: Sponsored Programs Total Direct Cost

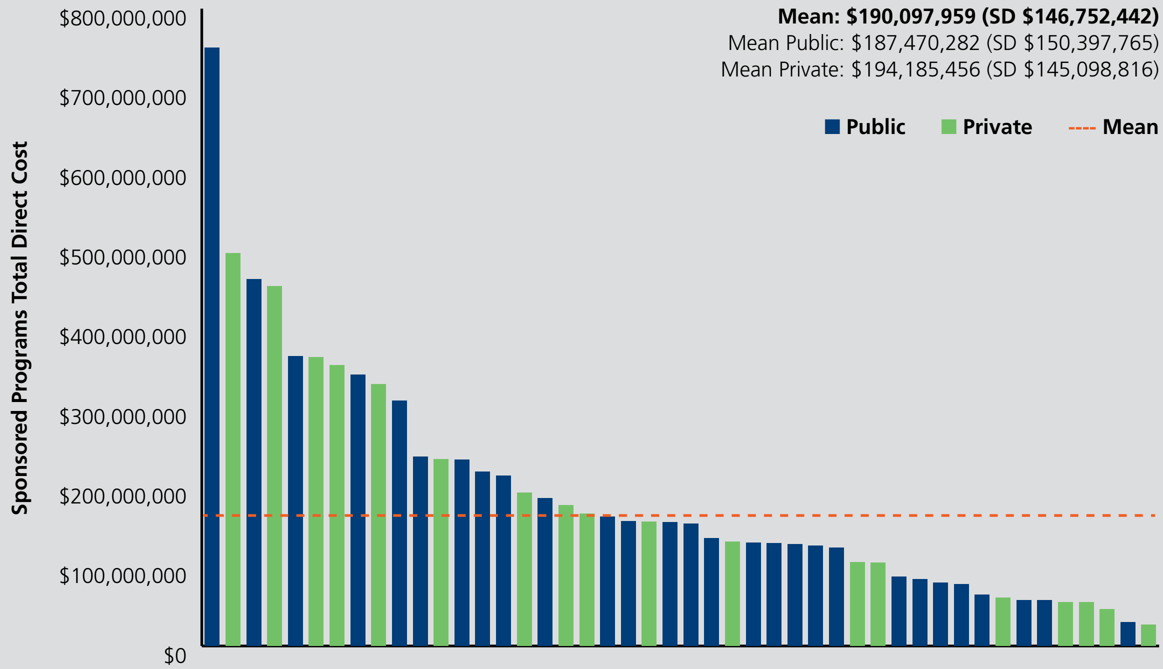
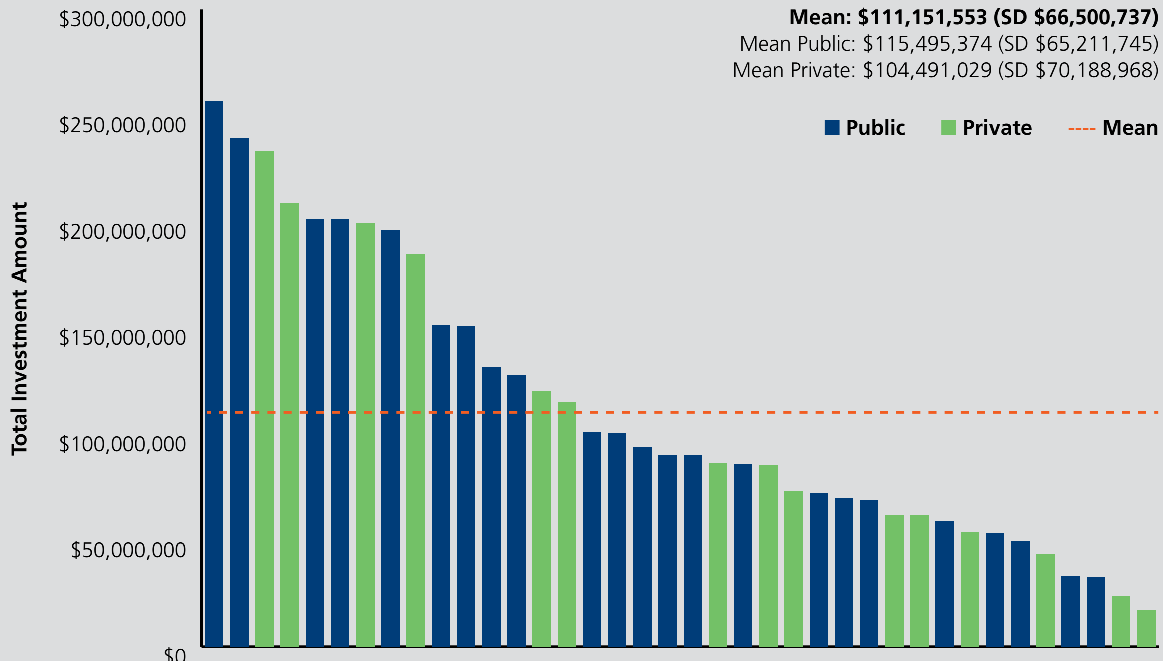
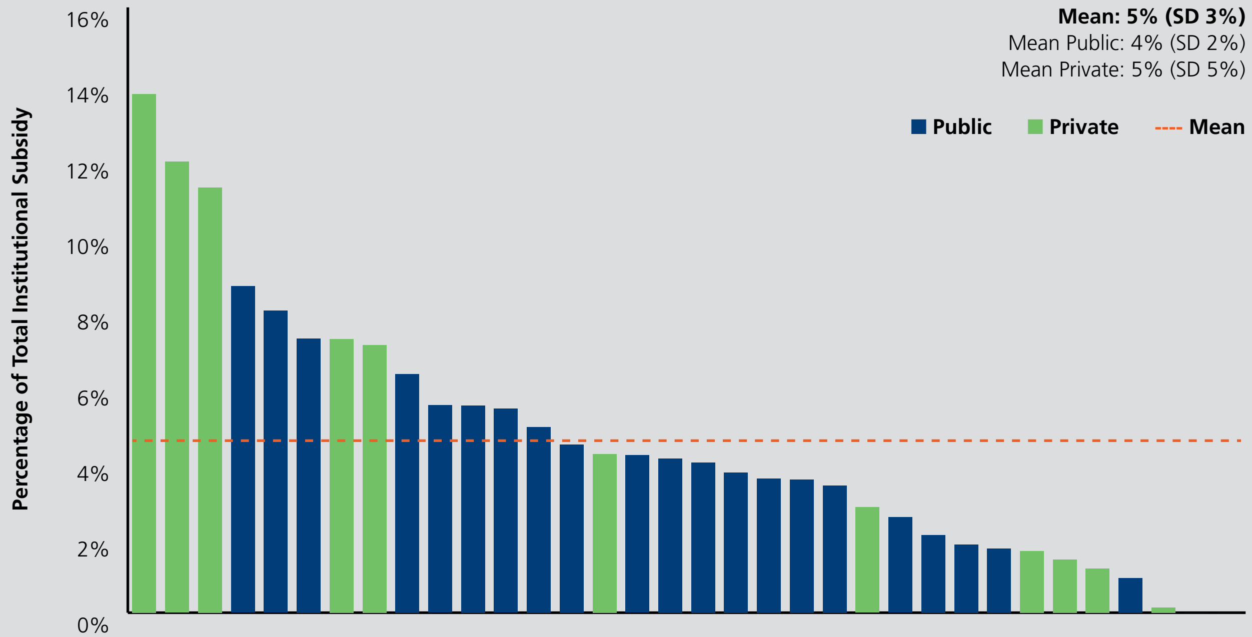


Figure 4: Total Institutional Investment



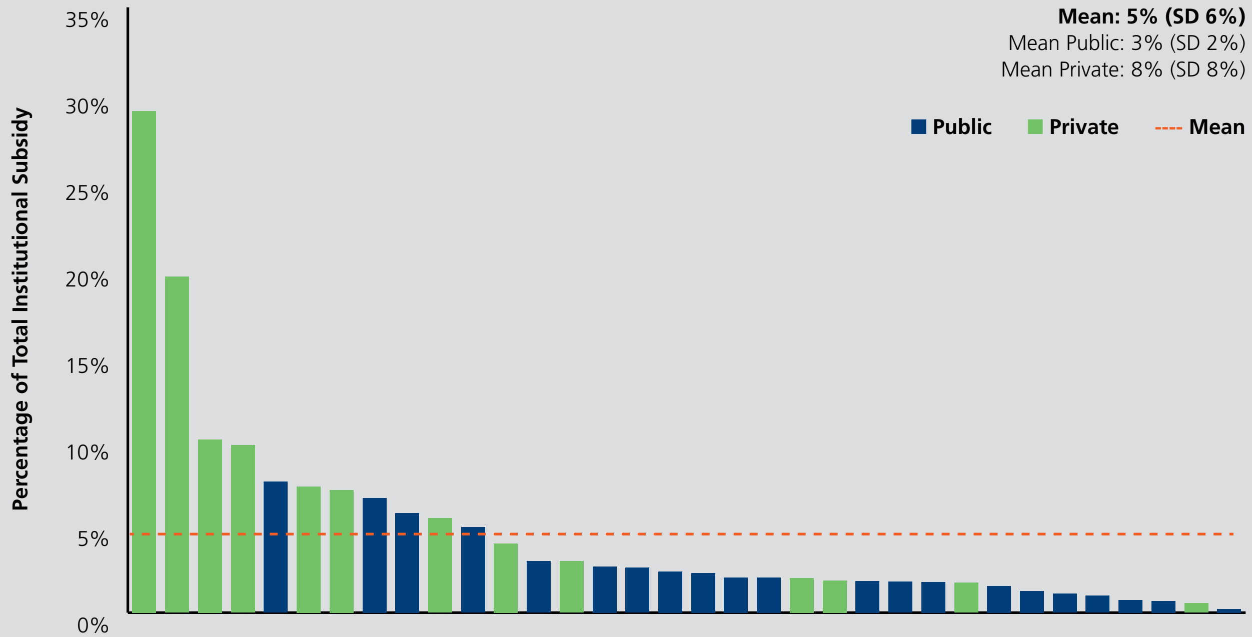
Note: Total Investment Amount = Institutional Total Direct Costs + Unrecovered OR/OSA F&A Subsidies + Departmental-Research F&A Expenditures

Figure 5: Mandatory/Voluntary Committed Cost-Sharing Percentage of Total Institutional Investment



Note: $\dfrac{\text{Mandatory/Voluntary Committed Cost-Sharing Total Direct Costs}}{\text{Institutional Total Direct Costs + Unrecovered OR/OSA F\&A Subsidies + Departmental-Research F\&A Expenditures}}$

Figure 6: Over-the-Salary-Cap Cost-Sharing Percentage of Total Institutional Investment



Note: $\dfrac{\text{Over the Salary-Cap Cost-Sharing Total Direct Costs}}{\text{Institutional Total Direct Costs + Unrecovered OR/OSA F\&A Subsidies + Departmental-Research F\&A Expenditures}}$

Figure 7: University-Research Percentage of Total Institutional Investment

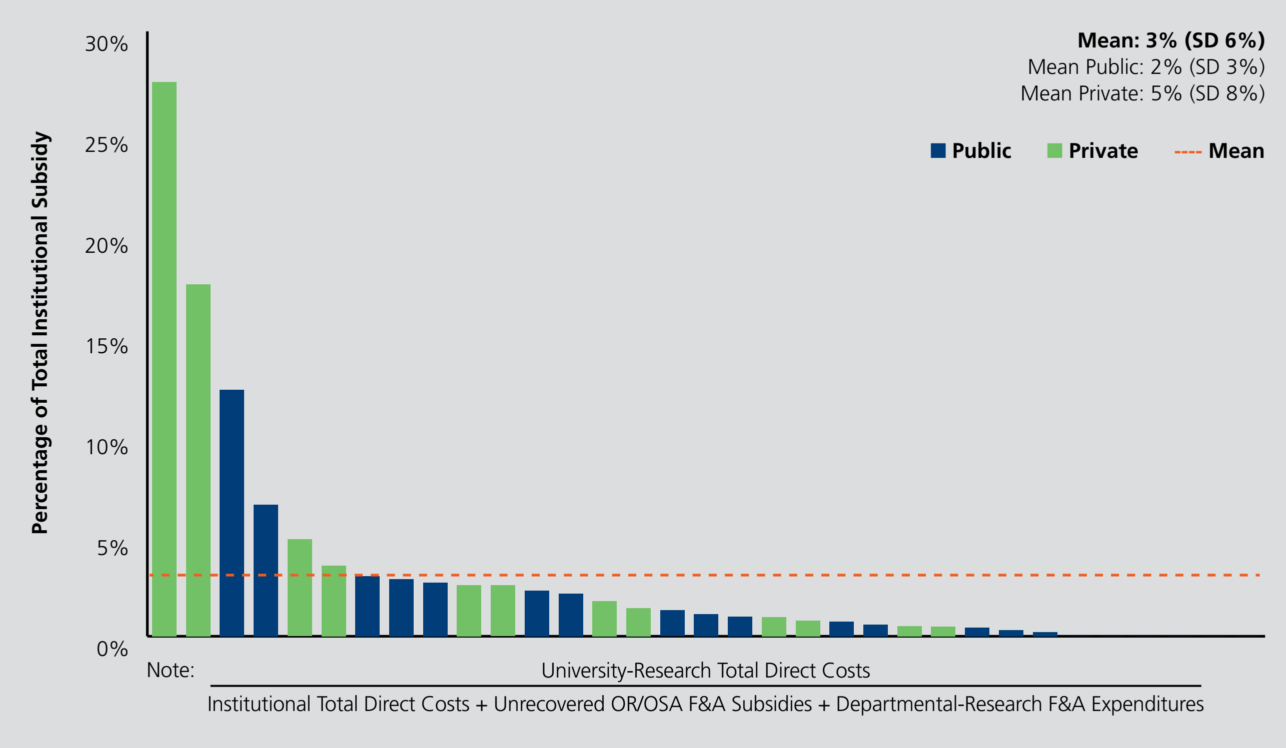


Figure 8: Start-Up–Funding Percentage of Total Institutional Investment

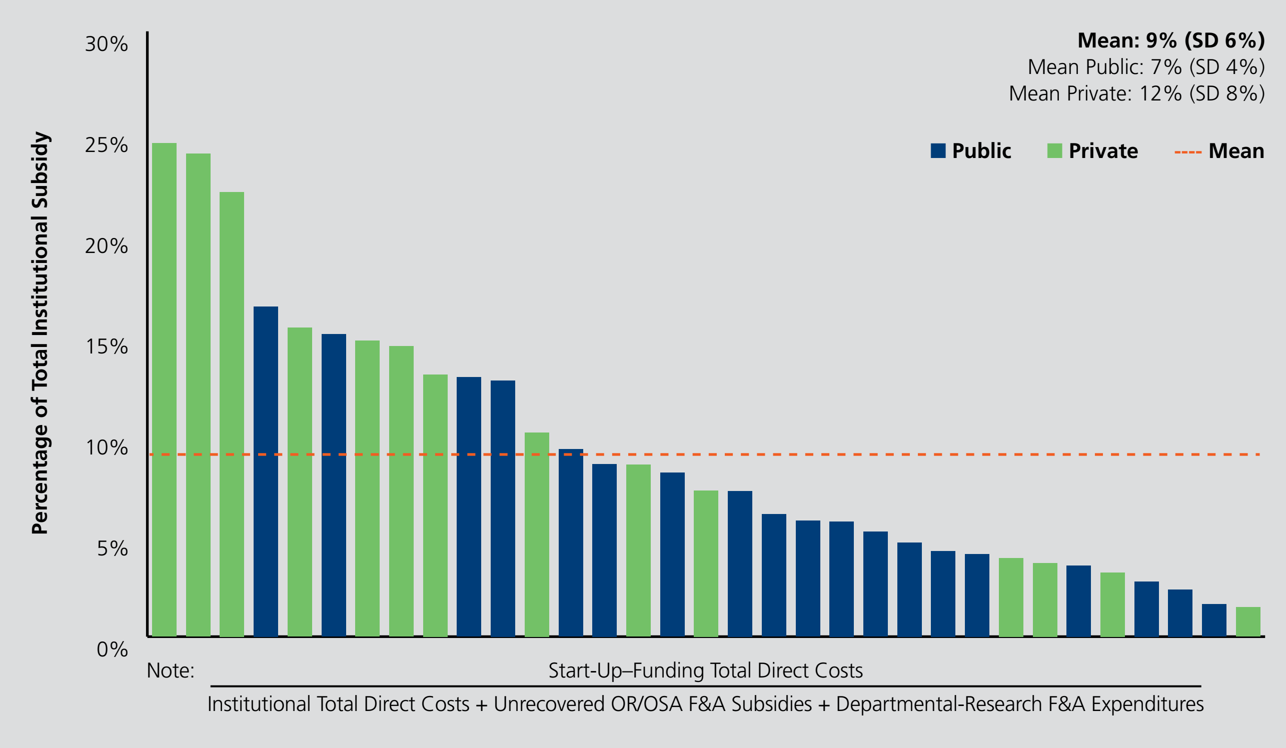
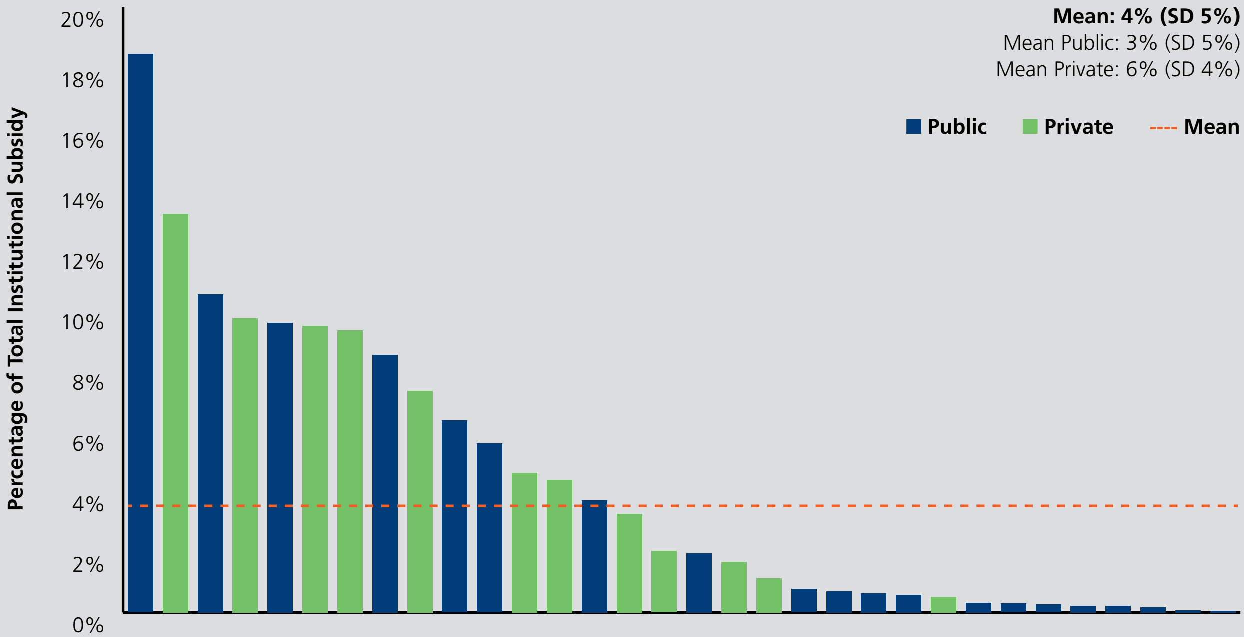
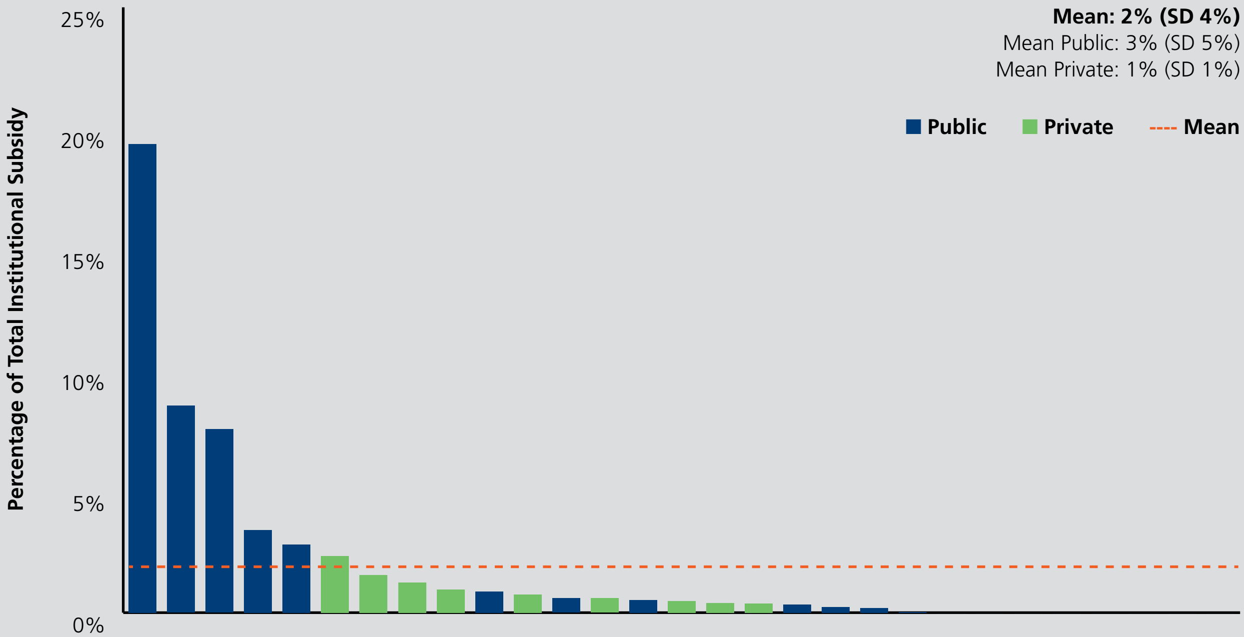


Figure 9: Bridge-Funding Percentage of Total Institutional Investment



Note: $\dfrac{\text{Bridge-Funding Total Direct Costs}}{\text{Institutional Total Direct Costs + Unrecovered OR/OSA F\&A Subsidies + Departmental-Research F\&A Expenditures}}$

Figure 10: Cost-Overrun Percentage of Total Institutional Investment



Note: $\dfrac{\text{Cost-Overrun Total Direct Costs}}{\text{Institutional Total Direct Costs + Unrecovered OR/OSA F\&A Subsidies + Departmental-Research F\&A Expenditures}}$

Figure 11: Additional-Research-Salary Percentage of Total Institutional Investment

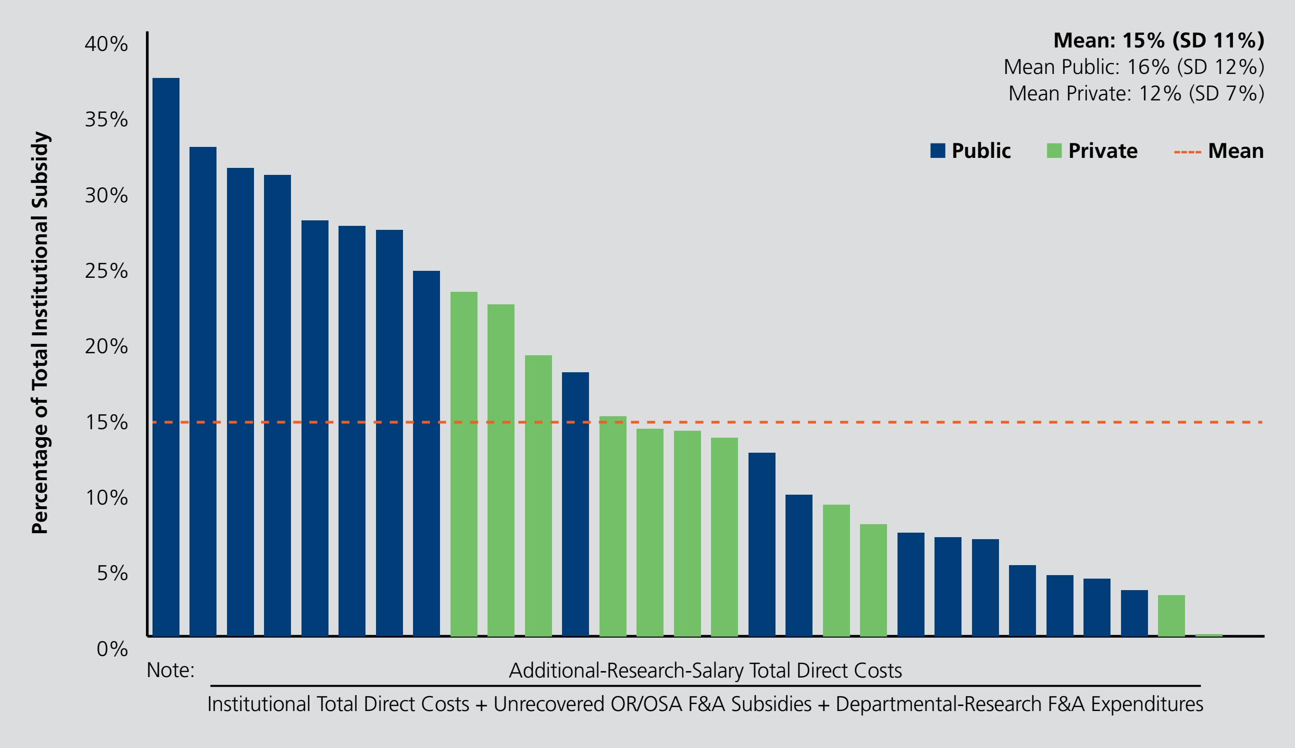


Figure 12: Other-Institutional-Research Percentage of Total Institutional Investment

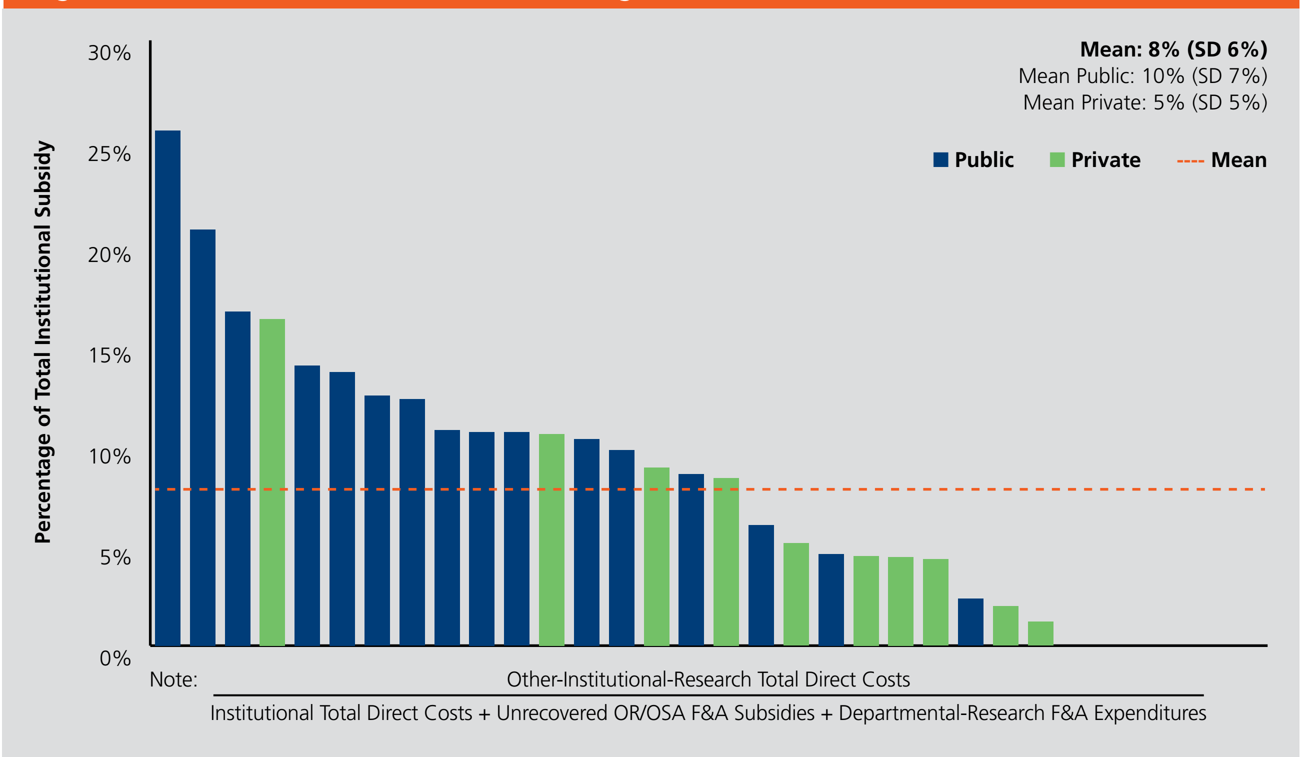
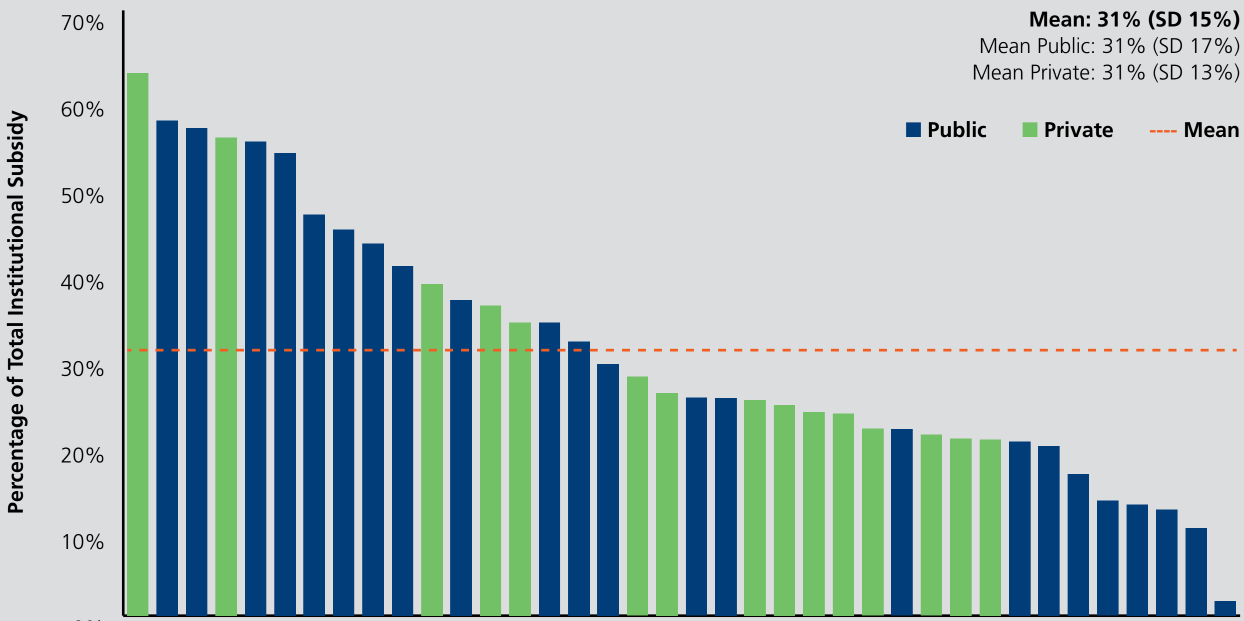
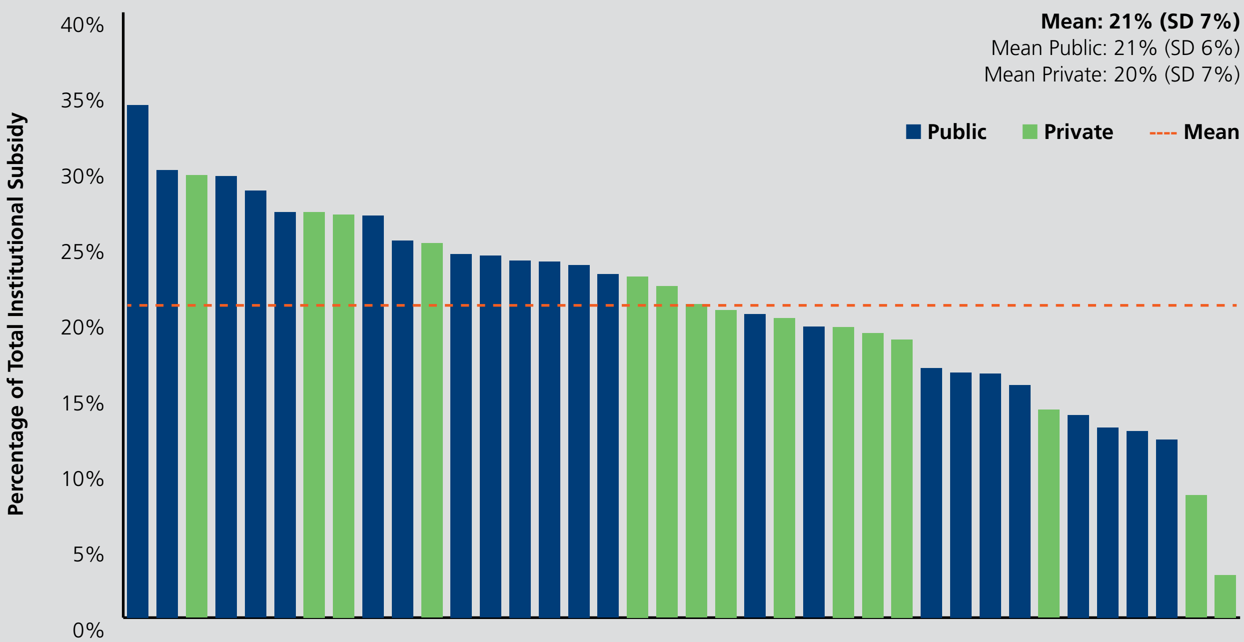


Figure 13: Unrecovered Organized Research and Other Sponsored Activities F&A Subsidies Percentage of Total Institutional Investment



Note: Unrecovered OR/OSA F&A Subsidies / Institutional Total Direct Costs + Unrecovered OR/OSA F&A Subsidies + Departmental-Research F&A Expenditures

Figure 14: Departmental-Research F&A Expenditures Percentage of Total Institutional Investment



Note: Departmental-Research F&A Expenditures / Institutional Total Direct Costs + Unrecovered OR/OSA F&A Subsidies + Departmental-Research F&A Expenditures

Figure 15: Institutional-Research Expenditures by Category

Institutional Expenditure Category	Institutions < $150 Million Sponsored TDC		Institutions > $150 Million Sponsored TDC		All Institutions	
	Mean	SD	Mean	SD	Mean	SD
Mandatory/Voluntary Committed Cost Sharing	$2,231,102	$1,839,489	$7,147,669	$6,282,805	$4,878,484	$5,334,309
Over-the-Salary-Cap Cost Sharing	1,913,608	1,529,504	7,733,679	6,449,711	5,114,647	5,658,415
University Research	2,210,684	5,391,777	4,251,558	7,710,615	3,258,701	6,672,655
Start-up Packages	4,965,460	4,676,897	14,660,198	13,491,399	9,681,819	11,000,981
Bridge Funding	2,803,434	4,246,547	5,137,115	6,031,706	4,001,811	5,301,388
Cost Overruns	907,487	1,838,641	1,763,152	3,252,890	1,410,819	2,758,029
Additional Salary Support of Research Effort	13,626,422	14,523,790	16,433,587	18,459,411	14,942,281	16,272,222
Other Institutionally Funded Research	5,095,569	5,745,026	11,249,160	9,394,742	8,079,128	8,223,663
Unrecovered OR/OSA F&A Subsidies	19,586,549	13,583,775	42,829,883	25,663,843	31,819,883	23,692,300
Departmental-Research F&A Expenditures	15,558,780	11,077,629	32,053,322	20,891,879	24,240,118	18,713,040
Total Institutional Expenditures	**$69,237,092**	**$36,171,992**	**$148,874,569**	**$65,413,880**	**$111,151,553**	**$66,500,737**
Total Sample Size	**18**	**18**	**20**	**20**	**38**	**38**

Note: Total institutional expenditures may be different from the total of the expenditures per category because the sample size may be different between categories.

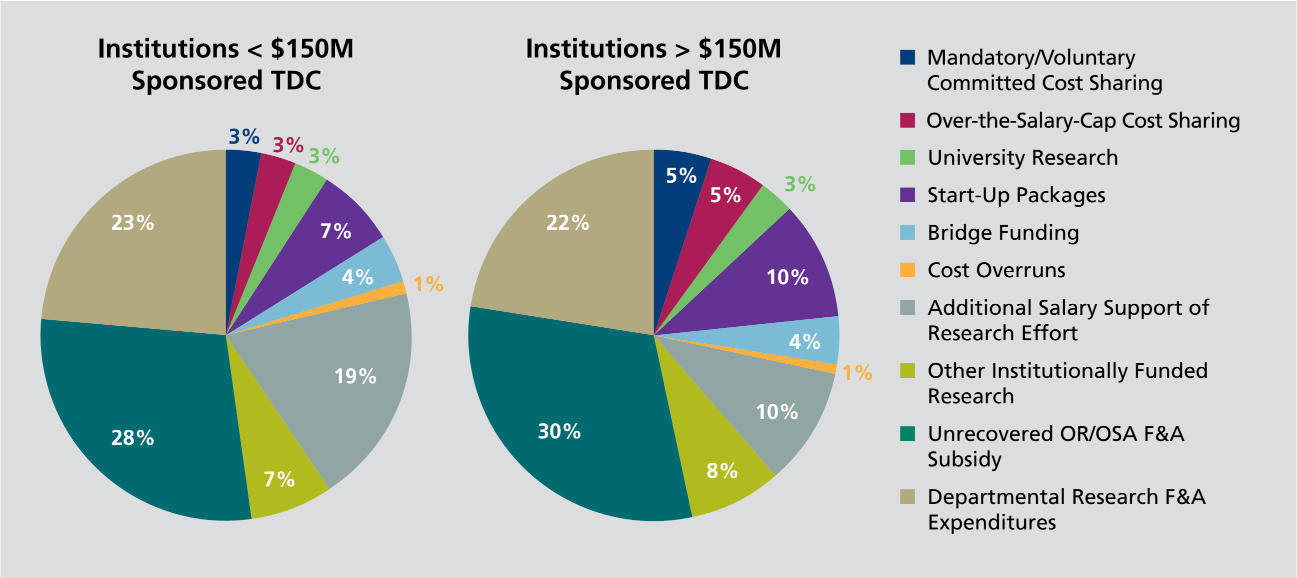
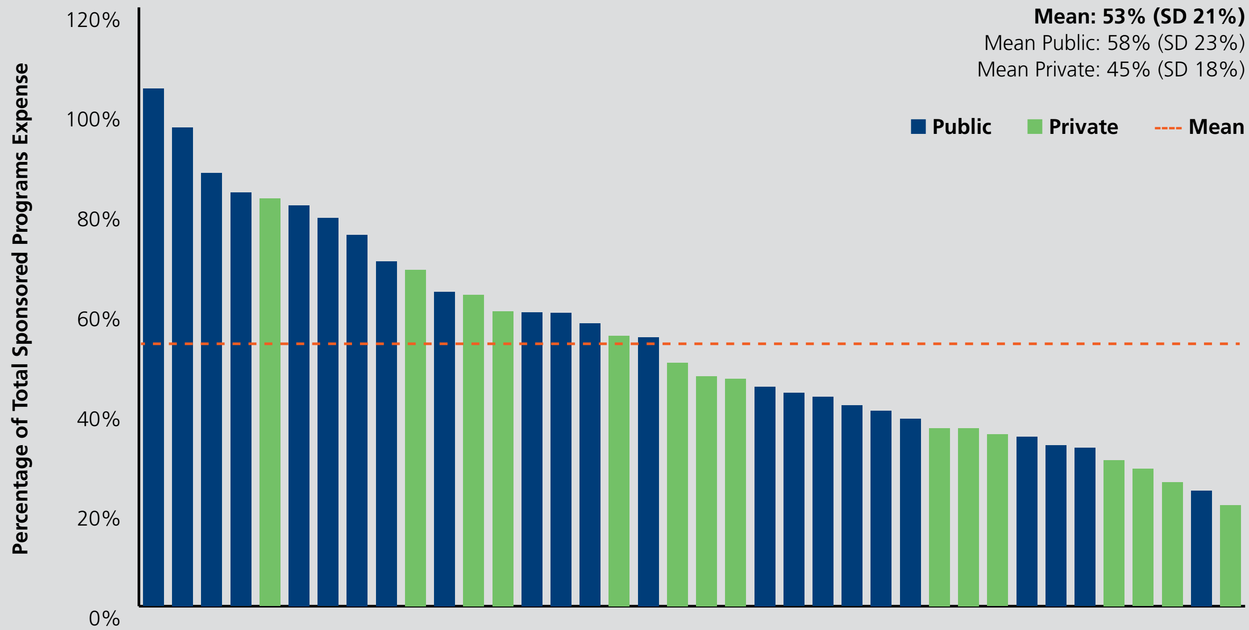
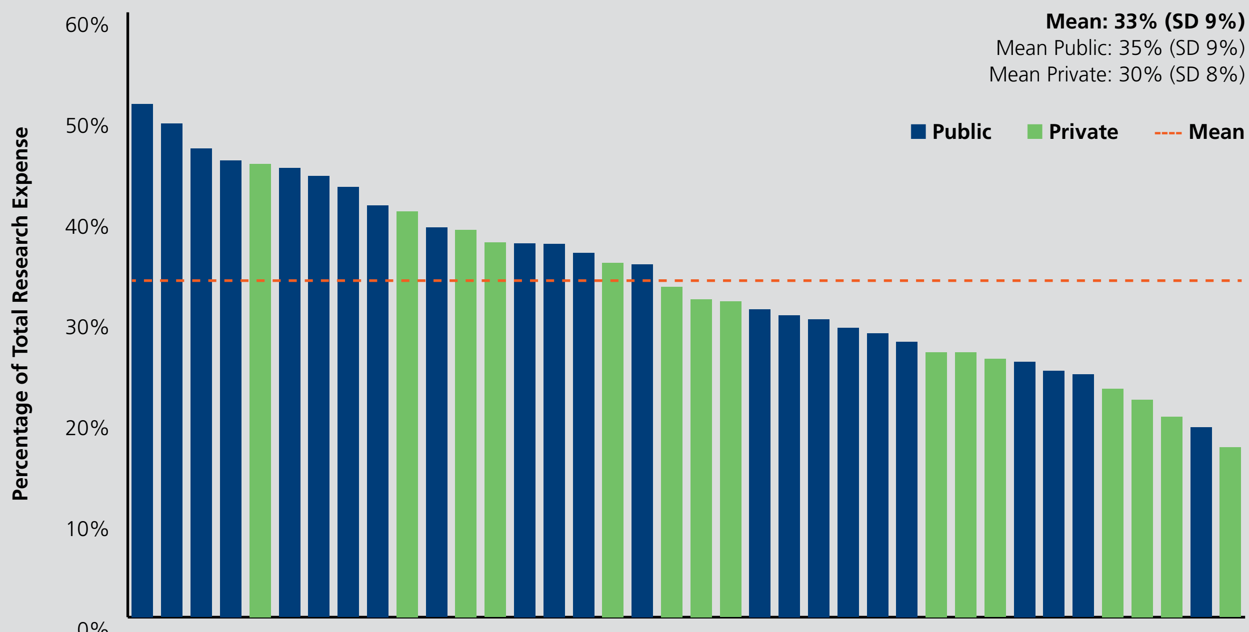


Figure 16: Institutional Research as a Percentage of Sponsored Programs Expense



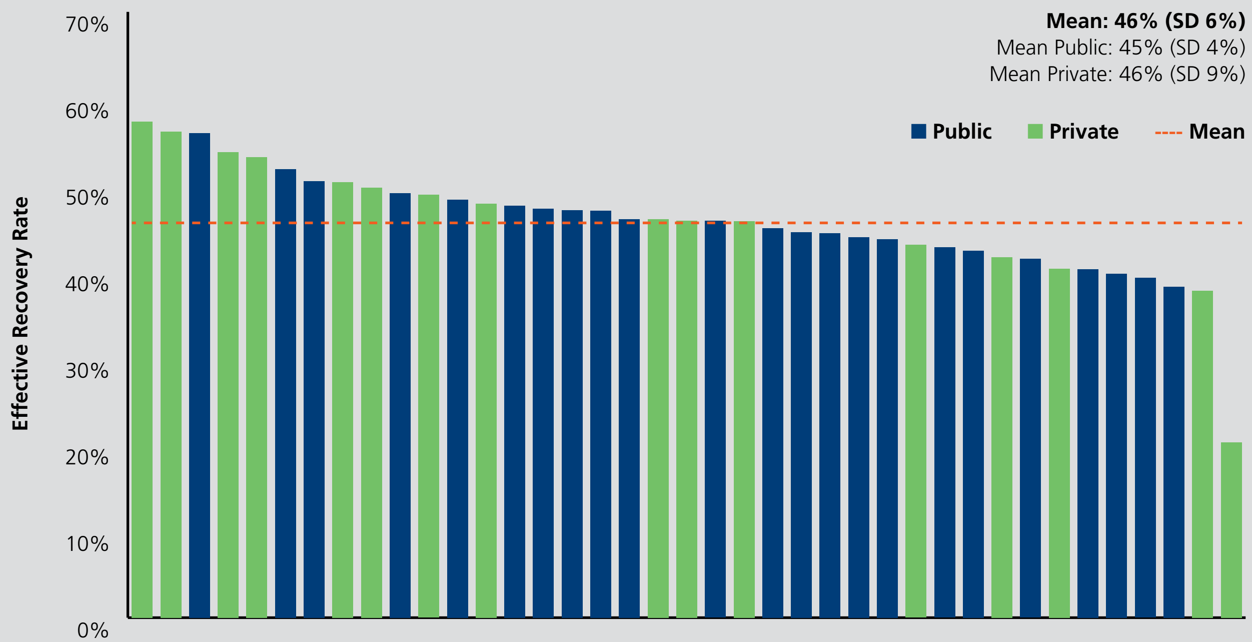
Note: $\dfrac{\text{Institutional Total Direct Costs + Unrecovered OR/OSA F\&A Subsidies + Departmental-Research F\&A Expenditures}}{\text{Sponsored Programs Total Direct Costs + Sponsored Programs F\&A Expenditures}}$

Figure 17: Institutional-Research Percentage of Total Research



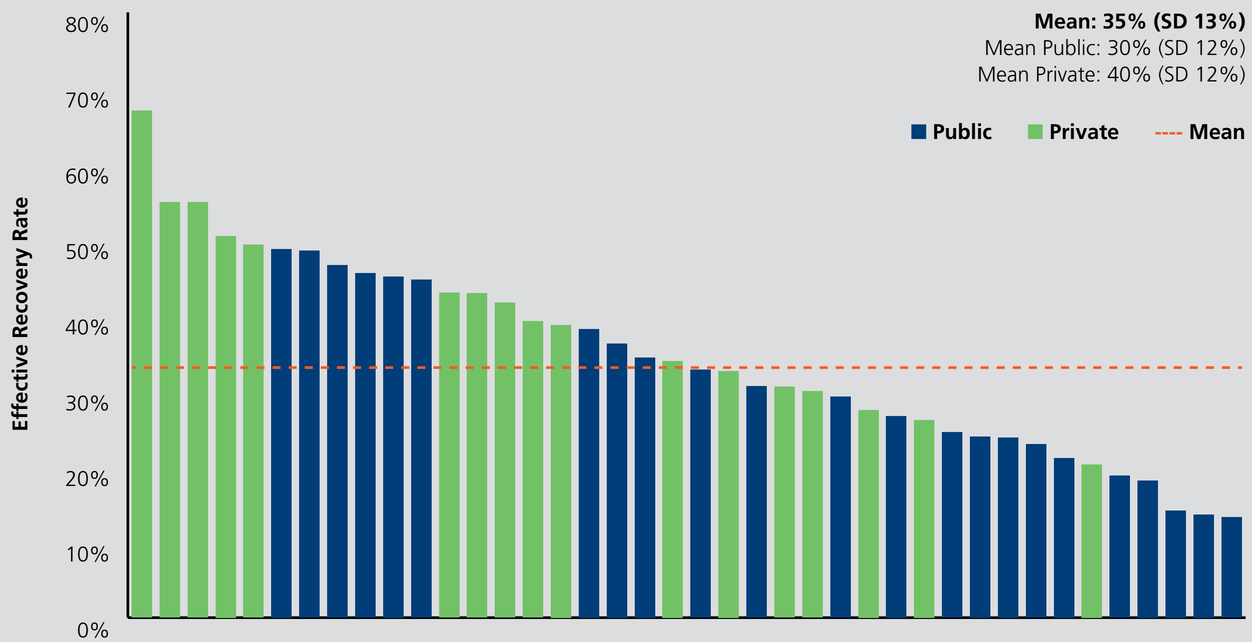
Note: $\dfrac{\text{Institutional Total Direct Costs + Unrecovered OR/OSA F\&A Subsidies + Departmental-Research F\&A Expenditures}}{\text{Sponsored Programs Total Direct Costs + Sponsored Programs F\&A Expenditures + Institutional Total Direct Costs + Unrecovered OR/OSA F\&A Subsidies + Departmental-Research F\&A Expenditures}}$

Figure 18: NIH Effective F&A Recovery Rate



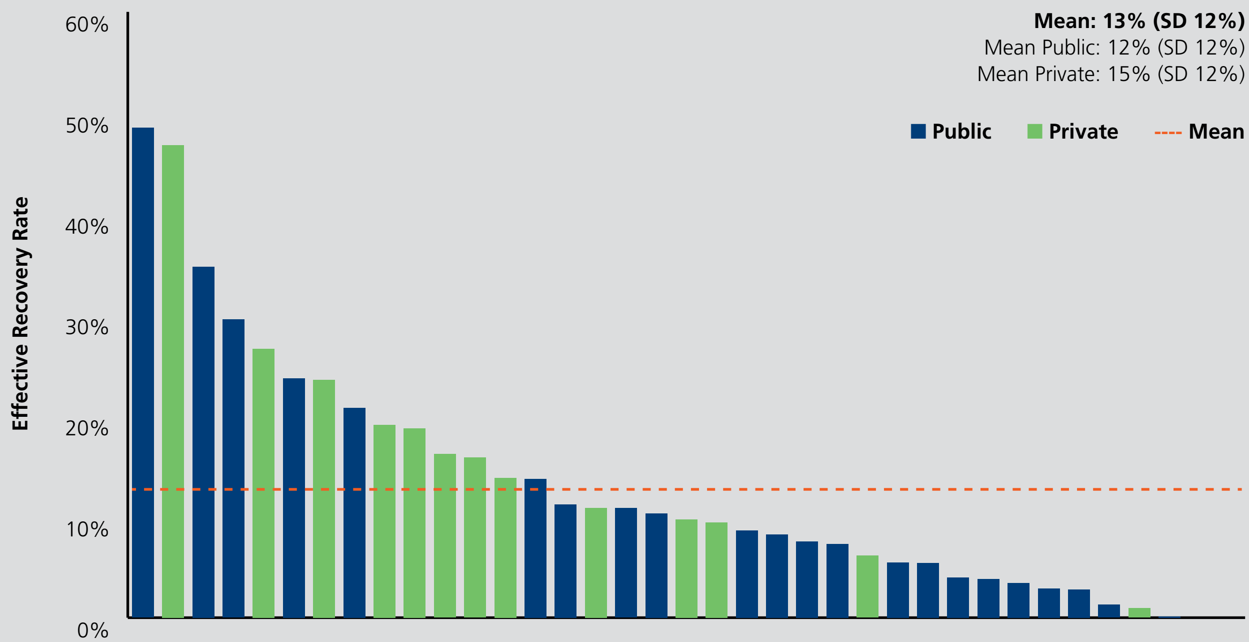
Note: $\frac{\text{NIH F\&A Expenditures}}{\text{NIH Modified Total Direct Costs}}$

Figure 19: Other Federal Effective F&A Recovery Rate



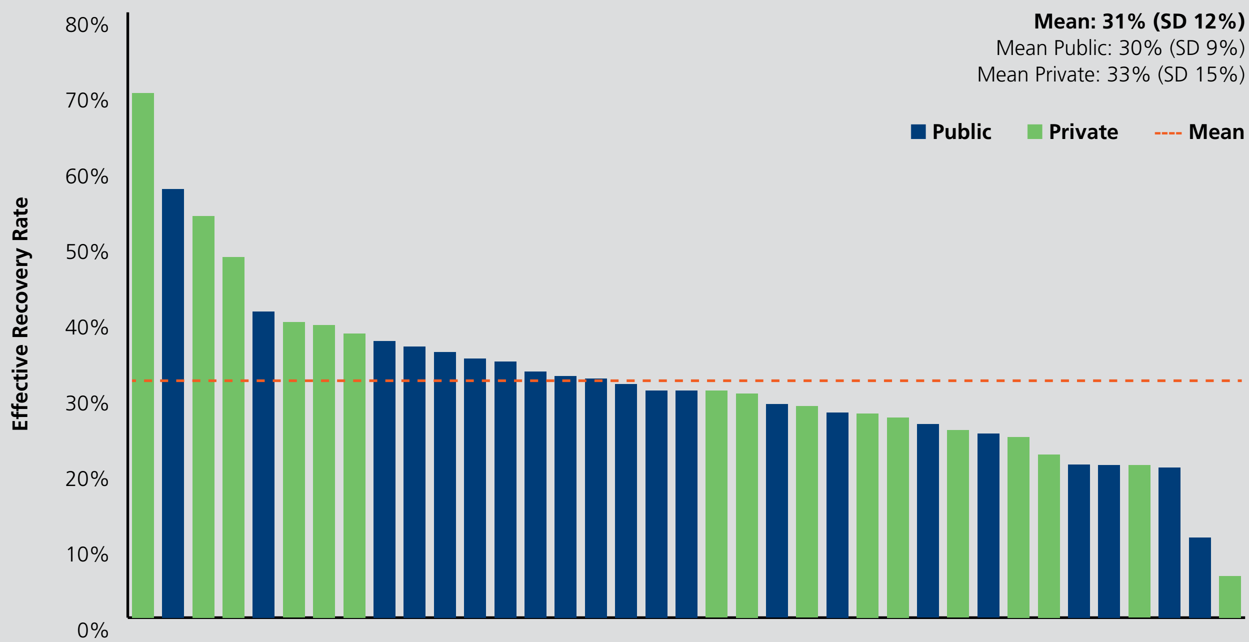
Note: $\frac{\text{Other Federal F\&A Expenditures}}{\text{Other Federal Modified Total Direct Costs}}$

Figure 20: State and Local Government Effective F&A Recovery Rate



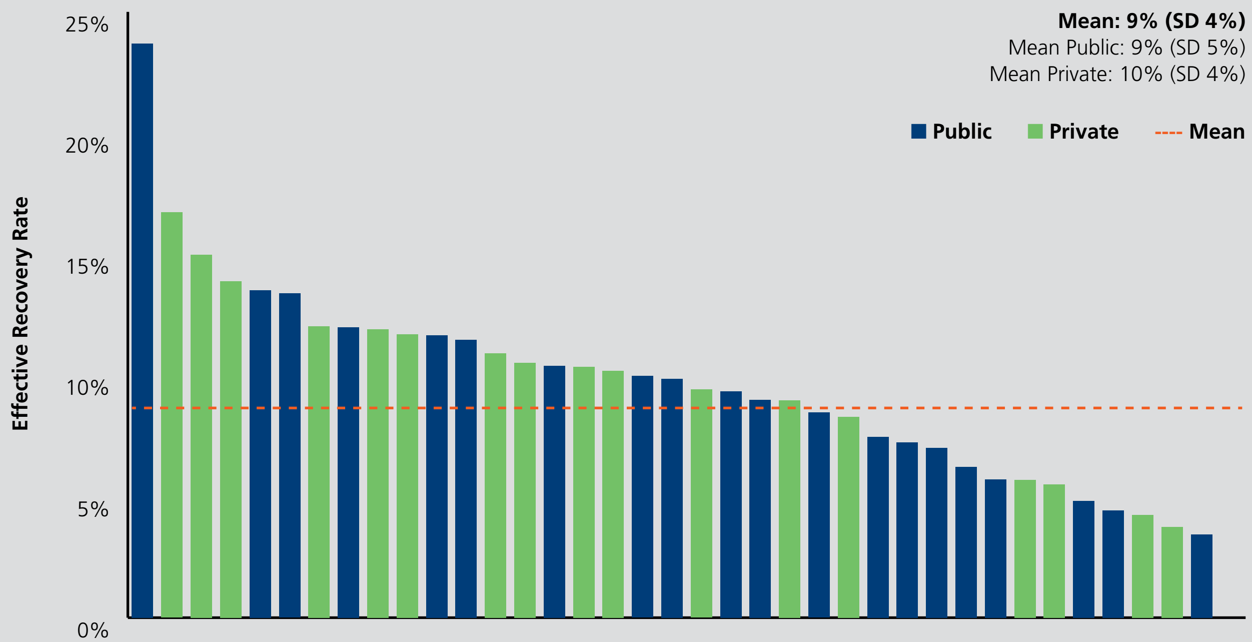
Note: State and Local Government F&A Expenditures / State and Local Government Modified Total Direct Costs

Figure 21: Industrial/Corporate Effective F&A Recovery Rate



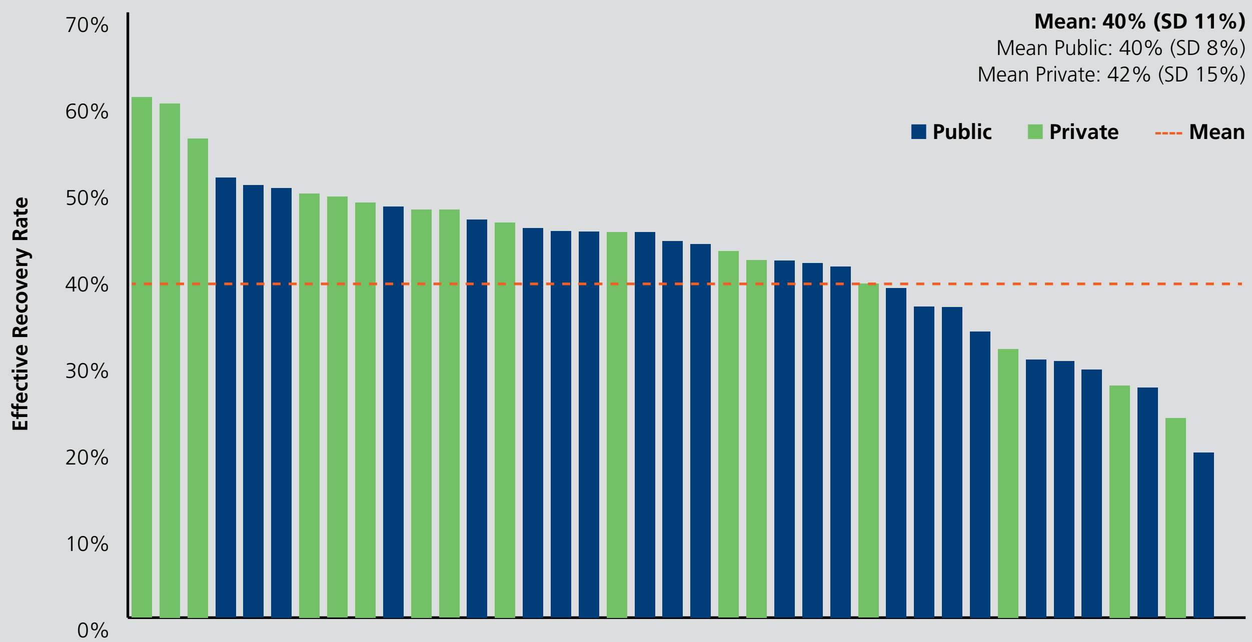
Note: Industrial/Corporate F&A Expenditures / Industrial/Corporate Modified Total Direct Costs

Figure 22: Foundation/Not-for-Profit Effective F&A Recovery Rate



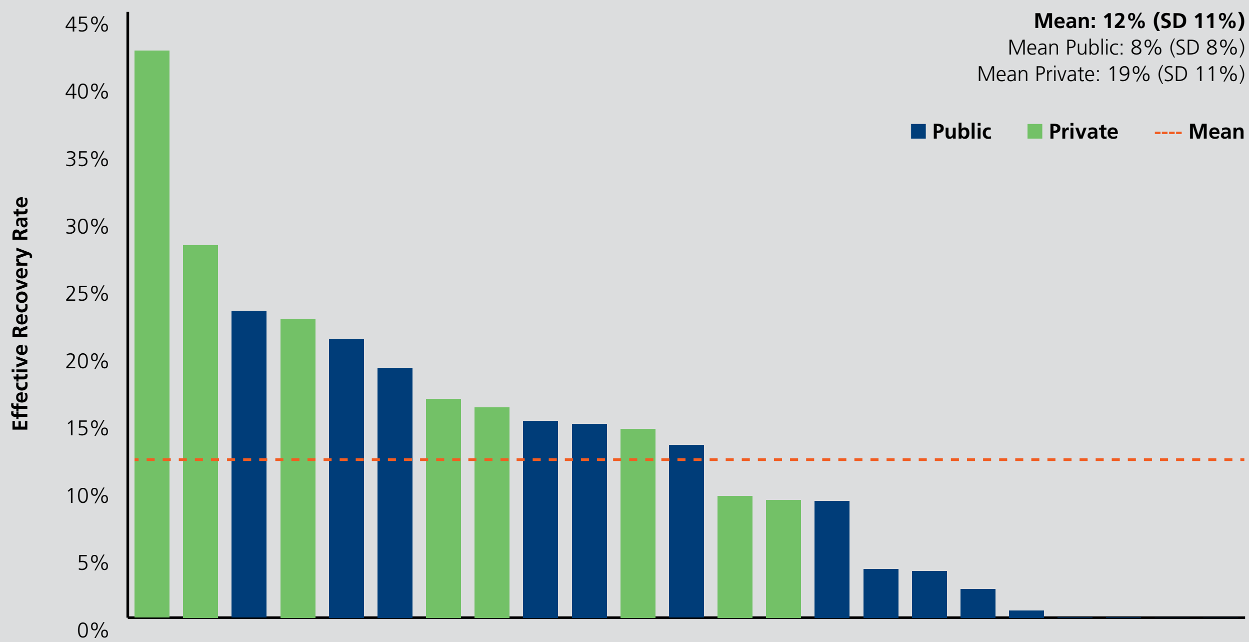
Note: $\frac{\text{Foundation/Not-for-Profit F\&A Expenditures}}{\text{Foundation/Not-for-Profit Modified Total Direct Costs}}$

Figure 23: Subaward and Subcontract Effective F&A Recovery Rate



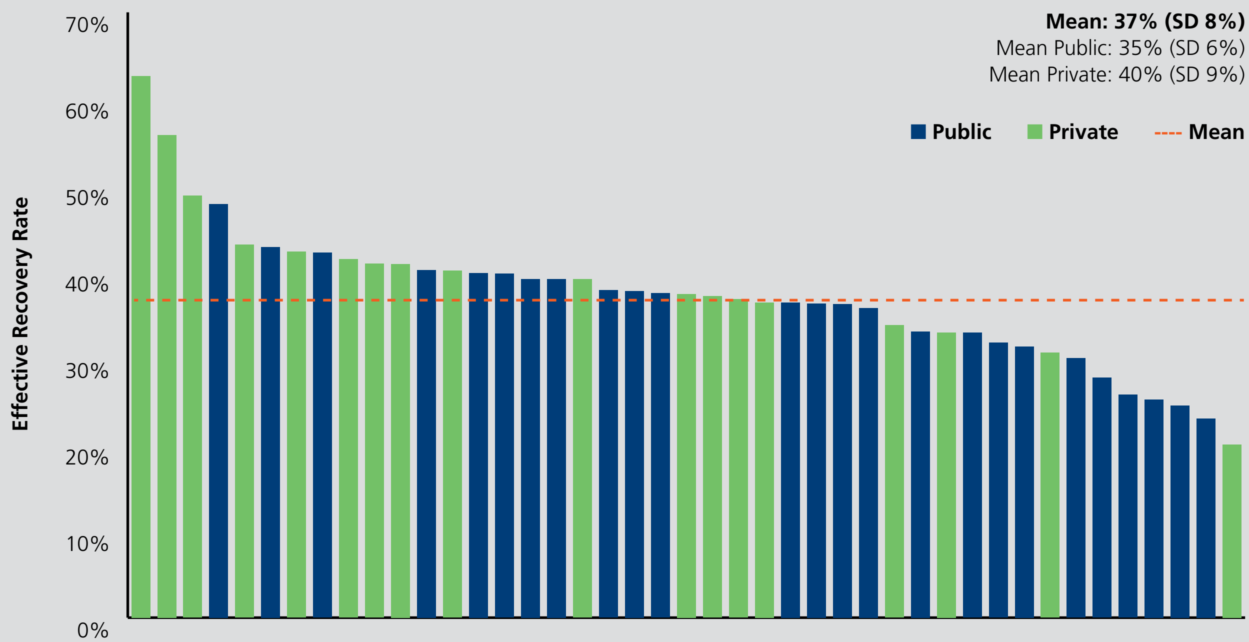
Note: $\frac{\text{Subaward and Subcontract F\&A Expenditures}}{\text{Subaward and Subcontract Modified Total Direct Costs}}$

Figure 24: Other-Sponsor Effective F&A Recovery Rate



Note: $\frac{\text{Other-Sponsor F\&A Expenditures}}{\text{Other-Sponsor Modified Total Direct Costs}}$

Figure 25: Overall Effective F&A Recovery Rate



Note: $\frac{\text{Total Sponsored Programs F\&A Expenditures}}{\text{Total Sponsored Programs Modified Total Direct Costs}}$

DEFINITIONS

additional salary support of research effort. Additional direct-cost salary expenditures from institutional accounts used in support of internally funded research efforts.

bridge funding. A structured form of research support, which could include a formalized application for these funds, a defined amount of support, and the timeframe over which the funds may be used. Bridge funding provides support for researchers who have promising lines of inquiry but due to the highly competitive nature of research funding, have temporarily lost support.

cost sharing (mandatory and voluntary committed). Direct-cost expenditures associated with cost sharing required by the terms of the project (mandatory) and cost sharing that is not required but is documented and quantified in the proposal and becomes mandatory when the proposal is accepted (voluntary committed).

departmental-research F&A expenditures. Facilities and administrative (F&A) expenditures related to the research classified as departmental research reported on the survey. These departmental-research expenditures include start-up packages, bridge funding, additional salary support for research effort, and other institutionally funded research.

facilities and administrative (F&A), or indirect, costs. Costs that are not directly related to an individual research project but are essential to support the research endeavor. These F&A charges include costs of buildings (operations, maintenance, and depreciation), equipment depreciation, information systems, environmental health and safety, and grant management and other support costs.

institutional-research expenditures. Calculated by adding institution-funded-research total direct cost (TDC), unrecovered F&A subsidies related to organized research and other sponsored activities, and additional F&A subsidies related to the institutional subsidy of direct research expenditures.

organized research (OR). All research and development activities of an institution that are separately budgeted and accounted for. Includes sponsored research, which is sponsored by federal and nonfederal agencies and organizations, as well as university research, which is separately budgeted and accounted for by the institution under an internal application of institutional funds.

other institutionally funded research. Institutional direct-cost research expenditures that have not been reported elsewhere on the survey. May include specialized service facility (SSF) and recharge-center subsidies, costs of operating core research facilities, and unreimbursed graduate student stipends or tuition payments.

other sponsored activities (OSA). Programs and projects financed by federal and nonfederal agencies and organizations that involve the performance of work other than instruction and organized research. Examples of such programs and projects are health service projects and community service programs.

over-the-salary-cap cost share. Direct-cost expenditures associated with cost sharing that occurred due to exceeding sponsor-imposed salary caps, such as the National Institutes of Health (NIH) salary cap, on all sponsored programs types.

overruns. Direct-cost expenditures from institutional accounts used to fund cost overruns on sponsored programs as a result of overspending on individual awards. They include expenditures where funds have been moved during the current year from a sponsored account to an institutionally funded account.

sponsored programs expenditures. Calculated by adding sponsored programs TDC and sponsored programs F&A expenditures.

start-up packages. Direct-cost expenditures from institutional funds associated with recruiting or attracting new researchers to the institution, including start-up costs.

university research. Direct-cost expenditures associated with activities that meet the Office of Management of Budget (OMB) uniform guidance definition of university research: all research and development activities that are separately budgeted and accounted for by the institution under an internal application of institutional funds. These funds are typically awarded through an internal proposal submission and evaluation process.

unrecovered OR/OSA F&A subsidies. The gap between the F&A expenditures in support of sponsored programs at an institution and the amount reimbursed by sponsors.

Analysis IN BRIEF

Volume 13, Number 1
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Association of American Medical Colleges

An Assessment of Bridge Funding in U.S. Medical Schools

New discoveries and medical breakthroughs from biomedical research depend on sustained support from the federal government or other external sources. In a fiscal environment where the National Institutes of Health (NIH) budget has fallen by close to 20 percent after inflation, competition for dwindling dollars in federal grants has increased markedly.[1] Some of the most successful career investigators with highly rated peer-reviewed projects have experienced sudden interruptions in funding, as success rates for research project grant applications and funding have declined.[2] In addition, the number of investigators experiencing an interruption or termination in their research funding is expected to increase, as further budget cuts for funding of biomedical research are likely.[3] Whether an institution's research program conducts $600 million or $60 million in NIH-sponsored research, the increased risk in interruption or cessation of competitive research projects can devastate established programs, leading to dislocation of faculty, trainees, and staff, and a delay or loss of medical breakthroughs.

Bridge funding is one mechanism whereby academic institutions can provide support during lapses in federal funding to investigators with high-quality research projects who are likely to regain funding in the near future. While bridge funds are not intended to fully replace or offset external sources, they can help in the short run to sustain some elements of a research project and prevent disruption and loss of momentum that could take decades to regain.

The U.S. LCME-accredited medical schools perform approximately 55 percent of all NIH extramural research, including nearly 28,000 research project grants and more than $12 billion annually.[4] This *Analysis in Brief* explores how these institutions bridge investigators who experience an interruption in funding. Information about the scope and variability of bridge funding policies designed to address these risks across medical centers may assist deans and other leaders of biomedical research programs in determining whether to implement or revise bridge funding programs at their own institutions.

Methodology

The data in this AIB come from two sources. First, in 2012, we fielded an email survey to research deans who are members of the AAMC Group on Research Advancement and Development (123 U.S. medical schools[5]). The survey elicited information about whether an institution has a bridge funding policy, what the criteria for receiving bridge funds are, what the amounts and limits of bridge awards are, and whether the school limits the number of bridge funding awards. The survey also included an open-ended question regarding other aspects of the institutions' bridge funding policies that the research deans considered notable.

Second, to analyze the details of these programs further, we reviewed the public Web sites of the 49 institutions that post bridge funding policies on publicly accessible Web sites.[6] Each site was examined at length for specific details complementing general information sought in the survey questions: for example, if bridge policies limit awards to an individual principal investigator (PI) or to an individual research project, or if bridge awards are split between institutional and departmental funds.

We collected survey information from 74 of 123 institutions (60 percent response rate), and reviewed the 49 Web sites where current policies were posted.

Results

Sixty-seven (91 percent) of the 74 institutions that responded to the survey had a formal bridge funding policy.[7] In 59 (80 percent) of the participating institutions, bridge award amounts were limited to $100,000 or less (see Figure). Respondents indicated other ways that institutions limit awards (e.g., per PI or per project). Survey results suggest that three main criteria are used to assess eligibility for bridge funding: the scientific merit of the project (determined by peer review score and/or an institutional award committee), the track record of the principal investigator, and financial considerations such as the need to retain key research support personnel.

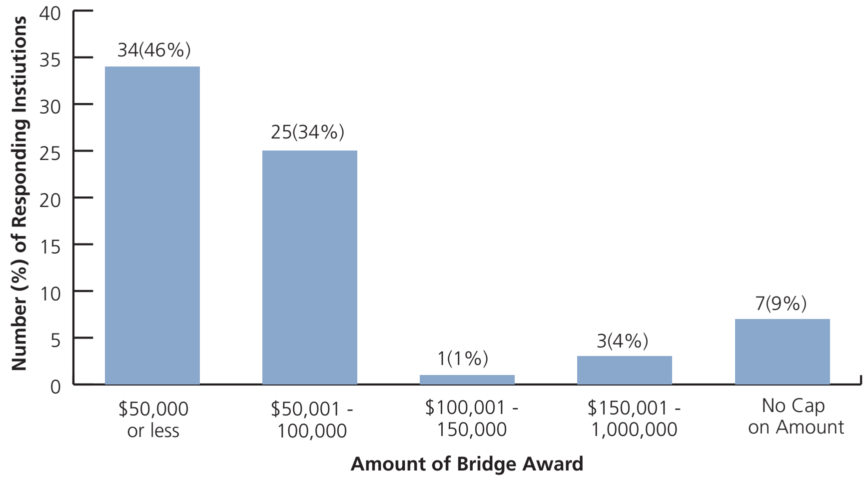
1 http://nihrecord.od.nih.gov/newsletters/2012/07_06_2012/story1.htm
2 Initial overall success rates of NIH funding across all institutes for competing continuation of research project grants have declined from 51 to 32 percent (in 2002 and 2011, respectively); for competing continuation research project grant applications resubmitted after an initial rejection, the success rate has declined from 53 to 45 percent during the same time period. See: http://report.nih.gov/success_rates/index.aspx (Table 210)
3 See, for example, testimony by F. Collins, M.D., director, NIH: Fiscal Year 2013 Budget Request before the Senate Subcommittee on Labor—HHS—Education Appropriations. http://www.nih.gov/about/director/budgetrequest/fy2013_collins_senate.pdf
4 Information on NIH awards is available at: http://report.nih.gov/. Information on NIH awards specific to medical schools is consolidated at: http://www.brimr.org/NIH_Awards/2010/NIH_Awards_2010.htm
5 "GRAND" provides a forum for sharing information on issues guiding research at medical schools and teaching hospitals. At the time of the survey, 123 AAMC-member medical schools had designated representatives to GRAND.
6 Forty-two of these institutions responded to the email survey confirming that the posted policies were current. Seven institutions did not respond, but given the prominence of these sites on publicly available Web pages, they were also presumed to be current.
7 We refer to bridge funding "policies" generally. Some respondents also refer variously to bridge funding programs or guidelines. Bridge funding policies, programs, or guidelines are mainly intended for full-time tenured, tenure track, or research track faculty who are PIs on national extramural grants with an active submission of an external grant application.

Of the 49 institutions posting policies on their Web sites, 22 report limits on how often a single PI can receive a bridge award. The period of eligibility ranged from every 12 to 18 months (12 institutions), to every three to five years (six institutions), to one award per career (four institutions). Institutions also place limits on what aspects of a project bridge funds will cover. Thirty-two allow bridge funds to be used for research personnel, supplies, and animal care, while only 17 allow monies to be used for the salary of the PI.

While our initial questions asked about the monetary amount or limit of awards, it became clear that the contribution may be divided between the institution and individual departments. Twenty-seven institutions require the PI's department to provide matching funds to those given by the institution. Two of these institutions require bridge funding recipients to acknowledge and credit the institution for its support in any publication resulting from the supported research. All institutions require that bridge funding cease as soon as sponsored funding becomes available, and unused funds returned.[8]

Some responses and Web sites offer information regarding the actual success of these programs in sustaining ongoing research. Three institutions reported total dollar investments in bridge programs ($1.28 million, $2.2 million, and $8 million, respectively) and their calculations of the total dollar amount for research project grants that were externally funded after the investigators received the bridge funding ($14.6 million, $30.7 million, and $78 million, respectively). Of five institutions reporting overall success rates for their respective bridge funding programs, an average of 63 percent of bridged investigators subsequently received extramural funding for the most recent year available (2010 or 2011).

Figure: Individual Bridge Award Amounts among U.S. Medical Schools Reporting Bridge Funding Programs (n=74)*



* Four schools did not report on bridge award amounts

Discussion

Medical schools consider bridge support an important strategy to help sustain research programs, as demonstrated by the presence of a formal bridge funding policy or program at most participating institutions. However, even vigorous bridge funding programs cannot adequately make up for the dwindling NIH budget in sustaining biomedical research. Moreover, deeper cuts to all federal domestic discretionary spending, including NIH's budget, are widely anticipated.[9] These cuts would likely occur during other proposed reductions that would affect clinical revenue—a major source of institutional funds available for bridge programs. The prospect of decreases in funding for graduate medical education, disproportionate share payments, and uncompensated care reimbursements, will not only weaken these important, socially beneficial programs, but also will imperil the capacity of academic medical centers to provide bridge funds for temporarily maintaining research programs.

These budgetary constraints place increasing pressure on institutions to make difficult choices about how they allocate funds to support research. Bridge funding can provide one testable strategy for institutions to invest in researchers with meritorious track records. It is a mechanism through which funds go directly to a PI to provide interim support for a high-quality research program with some degree of flexibility until grant funding is regained. While bridge funding only provides modest and temporary support for otherwise competitive research projects, it could save valuable research programs. In this analysis, only a few institutions spontaneously reported the success of their programs in bridging gaps between periods of external grant support; however, their results suggest that bridge funding may be a cost-effective mechanism to help sustain research, if only as a temporary lifeline. In these fiscally perilous times, where institutions are having to make difficult choices about allocations of funds, evaluation of the bridge funding program to determine the return on investment may offer guidance in future investments.

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8 Four institutions' posted policies indicate that faculty should pay back the funds they receive using the indirect cost reimbursements generated by the newly funded grant.

9 Mann S. Sequestration could have wide-ranging implications for medical schools, teaching hospitals. AAMC Reporter. 2012. Available at: https://www.aamc.org/newsroom/reporter/october2012/308502/sequestration.html.