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Trusted Answers

Shared Resource Facility Market Analysis

Author

Noelle Strubczewski,
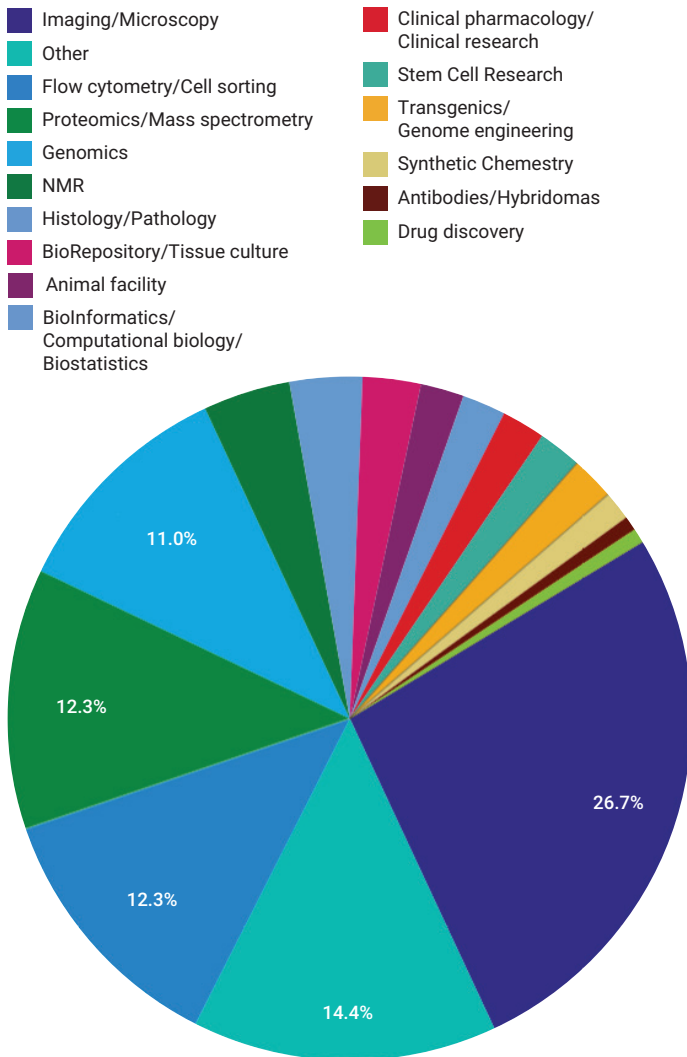Senior Laboratory Operations
Consultant

Executive summary

In early 2019, Agilent CrossLab conducted its 9th annual core facility management benchmarking study. There were 244 responses representing over 50 different core types from over 100 institutions across the United States. The surveyed individuals directly manage cores, service centers, shared facilities, and recharge centers at hospitals, universities, and research institutions. For this report, "cores" is the general term used when referring to these facility types.

The Academic Core Facility Benchmarking study is conducted annually to provide a better understanding of how core facilities operate, focusing on core growth and utilization, financials, human resources, and overall performance.

- Most institutions, 66%, have their shared resource facilities structured with an overarching central administration, however 34% do not have this structure.

- 68.9% of the institutions provide active internal subsidies to their cores, 12.6% provide passive internal subsidization, and 18.5% do not provide subsidization.

- On average, internal customers represented 57% of the work performed in 2018. This is 15% lower than the previous year.

- Labor was reported as the highest cost to cores, averaging 50%. This is slightly down from 53% in 2017 and 2016.

- The average reported retention rate was 93.1%. On average, shared resource facilities were staffed for approximately 57 hours per week, with an average of 3.2 employees per core.

- The most common methods for marketing the core was using the facility's website (100%) and core facility tours (72.5%).

- 57% of cores experienced growth in the number of total unique customers in 2018. This is 1% lower than in last year's study.

Distribution

There were respondents from 15 different technologies. Imaging/Microscopy was the highest respondent with 26.7%. Flow Cytometry/Cell Sorting and Proteomics/Mass Spectrometry cores followed at 12.3% each and Genomics followed closely at 11.0%. The remaining categories: NMR, Histology/Pathology, BioRepository/Tissue Culture, Animal Facility, BioInformatics/Computational Biology/Biostatistics, Clinical Pharmacology/Clinical Research, Stem Cell Research, Transgenics/Genome Engineering, Synthetic Chemistry, Antibodies/Hybridomas, and Drug Discovery all had 4.1% or less respondents to the survey.

- Imaging/Microscopy
- Other
- Flow cytometry/Cell sorting
- Proteomics/Mass spectrometry
- Genomics
- NMR
- Histology/Pathology
- BioRepository/Tissue culture
- Animal facility
- BioInformatics/Computational biology/Biostatistics
- Clinical pharmacology/Clinical research
- Stem Cell Research
- Transgenics/Genome engineering
- Synthetic Chemestry
- Antibodies/Hybridomas
- Drug discovery

Across the US, 24.4% of respondents were located within the Midwest, 23.1% were from the West, 22.6% were from the Northeast, 17.9% were from the Southwest and the remaining 12% were located within the South.

Response by region
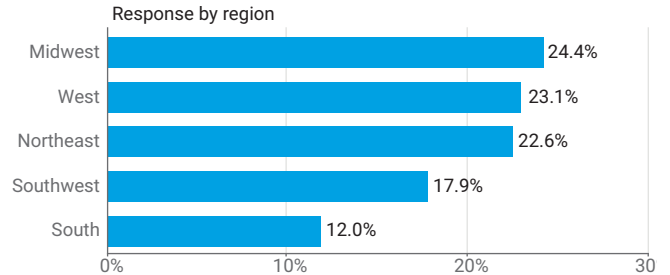
The majority of respondents, 52.2%, work at institutions of "mid-size"- that being 500 to 2,000 full time faculty. "Large" institutions, or full-time faculty of 2,000+, made up 25.8%, and "small" institutions, or full-time faculty of 0 to 500, rounded out the remaining 20%.

Response by number of full-time faculty
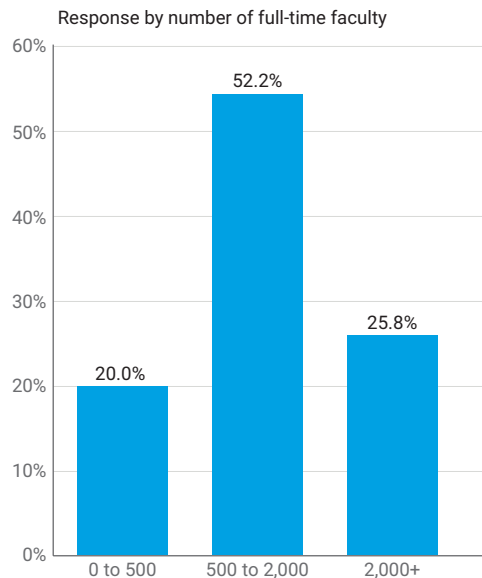
Of those surveyed, 44.2% defined their core as Equipment/Instrumentation Centric, which means they provide assisted and unassisted use of scientific equipment. 37.4% reported their core as Service centric which means they provide a portfolio of scientific support services. The remaining 18.4% reported their core as an equal mix of the two above business models.

Response by business model
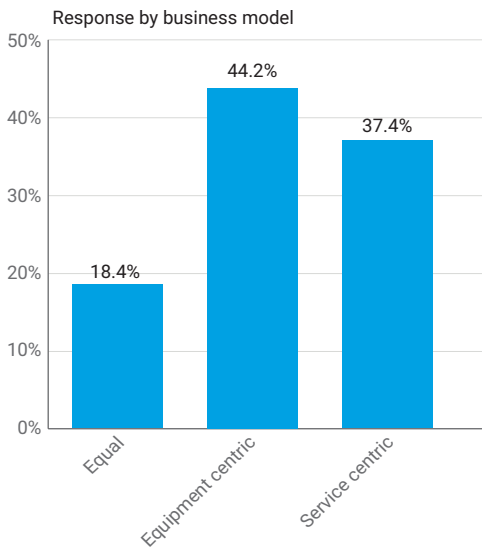
Most cores, 37.4%, reported their business as being in operation for 11 to 20 years. 35.4% of cores have been in business for 20 or more years, 17.7% of cores have been in business for 6 to 10 years, and 9.5% of cores are new to the business with only 0 to 5 years of operation.

Response by years of operation
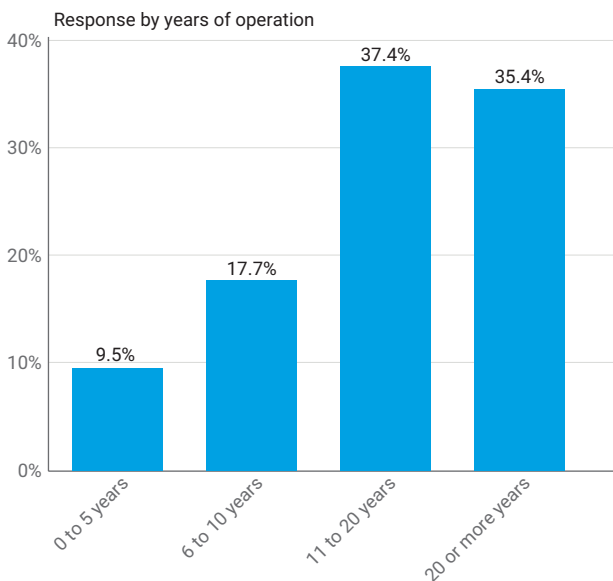
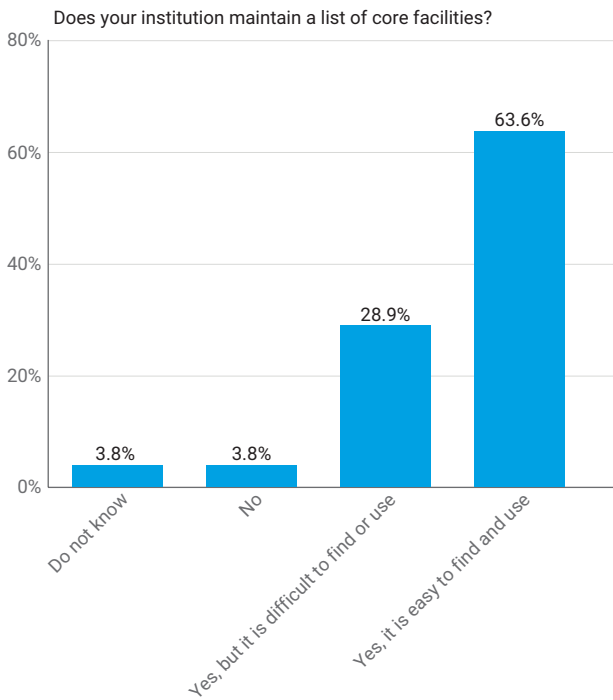# Institutional support of shared resource facilities

Central administration

Most institutions, 66%, have their shared resource facilities structured with an overarching central administration, however 34% do not have this structure. This structure impacted the number of hours that were spent on administrative task hours. In institutions that had a central administration structure, managers typically spent 39 hours per month on these tasks versus institutions that did not have central administration, and typically spent 44.7 hours per month on administrative tasks.

Impact of central admin on administrative task hours
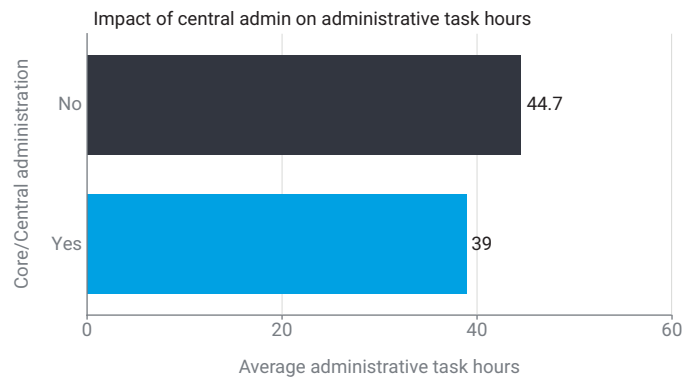
Core facility listing

Most institutions, 63.6%, support their shared resource facilities by maintaining a list of core facilities, and ensuring that it is easy to find and use. Unfortunately, the remaining 36.4% of institutions either maintain one but it is not easy to use, do not maintain one, or the respondents were unsure.

Does your institution maintain a list of core facilities?

Response	Percentage
Do not know	3.8%
No	3.8%
Yes, but it is difficult to find or use	28.9%
Yes, it is easy to find and use	63.6%

Level of institutional subsidization

Active internal subsidy is defined as one where the institution has internal funding to support the core facility. Allowable costs could be, but are not limited to salaries or overhead costs. A passive internal subsidy is defined as one where the institution allows deficits to accrue. The same pattern emerged again, where 68.9% of the institutions provide active internal subsidies to their cores, 12.6% provide passive internal subsidization, and 18.5% do not provide subsidization.

Based on these three data points, it appears that consistently 2/3 of institutions are actively using their own infrastructure to support and encourage the success of their shared resource facilities.
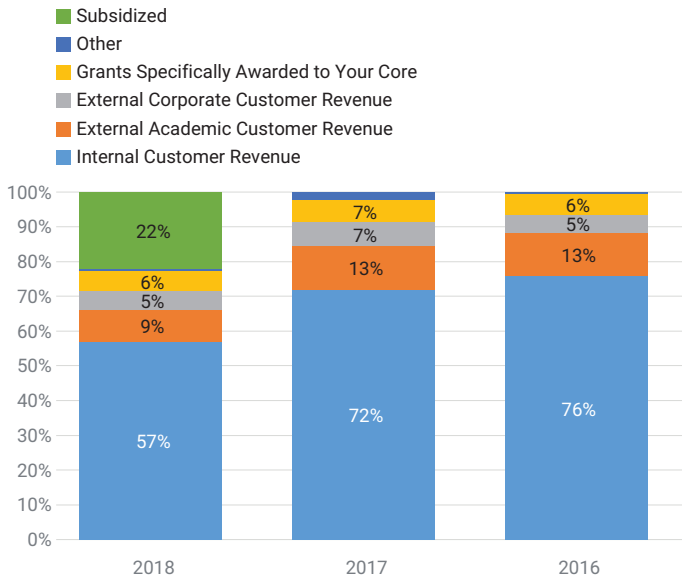
Level of subsidization provided by institution

- Active internal subsidy
- No subsidization
- Passive internal subsidy

Category	Percentage
Active internal subsidy	68.9%
No subsidization	18.5%
Passive internal subsidy	12.6%
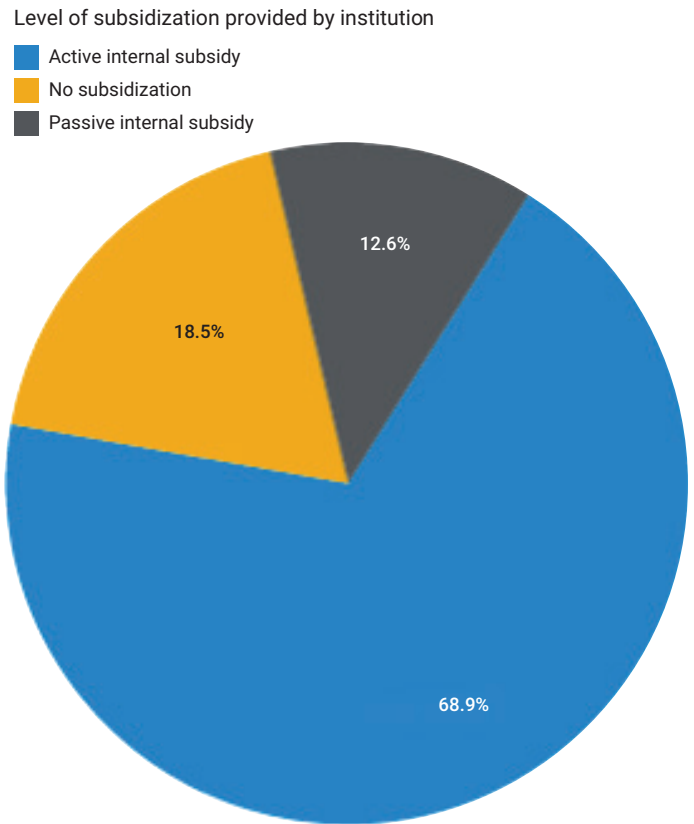
Financial analysis

Customer type

Cores most commonly serve customers internal to their institution. On average, internal customers represented 57% of the work performed in 2018. This is 15% lower than the previous year. External academic customers decreased from 13 to 9% while external corporate customer revenue also decreased from 7 to 5%. Grants specifically awarded to the cores also decreased from 7 to 6%.

Note: New this year was surveying individuals on the percent subsidization received from their institution. We will continue to gather this data point to see year-over-year impacts.
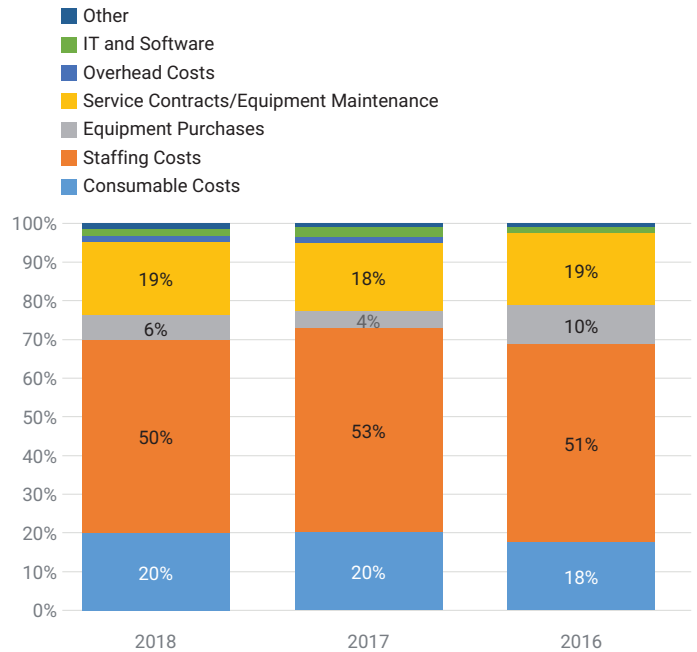
Percentage of Revenue by Source

- 🟩 Subsidized
- 🟦 Other
- 🟨 Grants Specifically Awarded to Your Core
- ⬜ External Corporate Customer Revenue
- 🟧 External Academic Customer Revenue
- 🟦 Internal Customer Revenue

	2018	2017	2016
Subsidized	22%		
Grants	6%	7%	6%
External Corporate	5%	7%	5%
External Academic	9%	13%	13%
Internal	57%	72%	76%

Expense type

When considering total expenses in 2018, labor was reported as the highest cost to cores, averaging 50%. This is slightly down from 53% in 2017 and 2016. In 2018, the average cost of maintenance contracts was 19%, consumables were 20%, the cost of equipment was reported as 6%, and IT and software was 1.8%. Overhead costs were reported as 1.4%, with any remaining costs listed as other at 1.4%. Overall, core expenses seem to be relatively stable, year over year, with slight changes in some categories, but no trends can be seen.

Percentage of Expense by Type

- 🟦 Other
- 🟩 IT and Software
- 🟦 Overhead Costs
- 🟨 Service Contracts/Equipment Maintenance
- ⬜ Equipment Purchases
- 🟧 Staffing Costs
- 🟦 Consumable Costs

|	2018	2017	2016
Service Contracts	19%	18%	19%
Equipment Purchases	6%	4%	10%
Staffing Costs	50%	53%	51%
Consumable Costs	20%	20%	18%

Sponsored funds

The percent of revenue that was derived from sponsored funds was examined by years of operation. The newest cores, those in operation for 0 to 5 years, had a median percent sponsored funds of 50%. The remaining cores had a median percent sponsored funds of ~85%, regardless of how many years they had been in business.

The following three graphs examine the recovery rate, or rate at which expenses of the core are recovered from revenue collected by the core, by three different dimensions: institution size, years of operation, and core business model.

**Sponsored funds percent of revenue by years of operation**
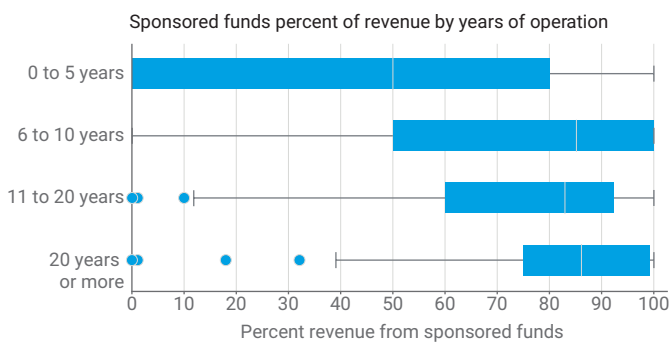
Recovery rate by institution size

In examining the recovery rate by institution size, the highest average recovery rate, 100%, was attributed to both institutions with 2,000 or more full time faculty and 500 to 2,000 full time faculty. Institutions with 0 to 500 full time faculty averaged a 91% recovery rate.

Recovery rate by institution size
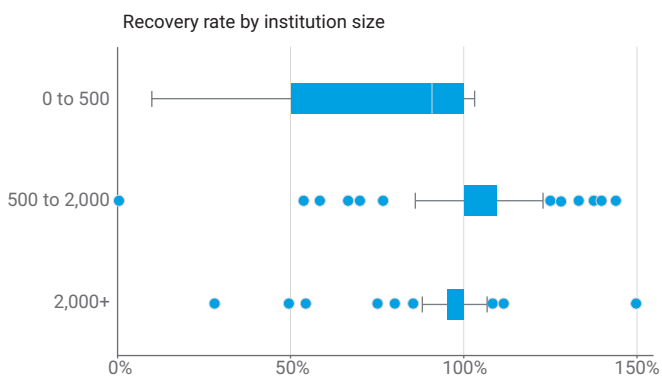
Recovery rate by business model

When examining the recovery rate by business model, all three business models had a median recovery rate of 100%.

Recovery rate by business model
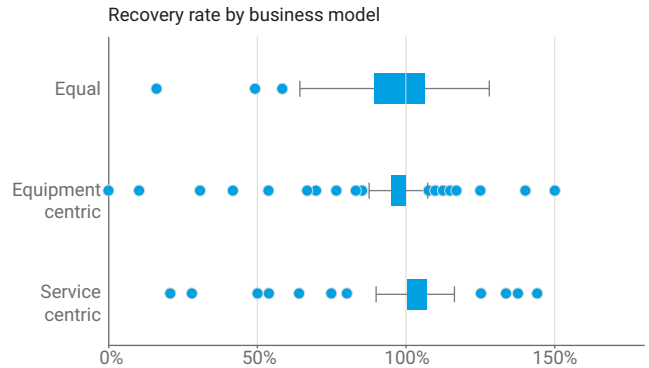
Recovery rate by years of operation

Lastly, we examined the recovery rate based on years of operation. Cores that had been in business for anywhere from 6 to 20 or more years had a median recovery rate of 100%. The remaining category, 0 to 5 years, had a recovery rate of 83%. Paired with last year's data as well, this seems to indicate that cores may hit a "sweet spot" of efficiency when they are in business from 6 to 20 years.

Recovery rate by years of operation

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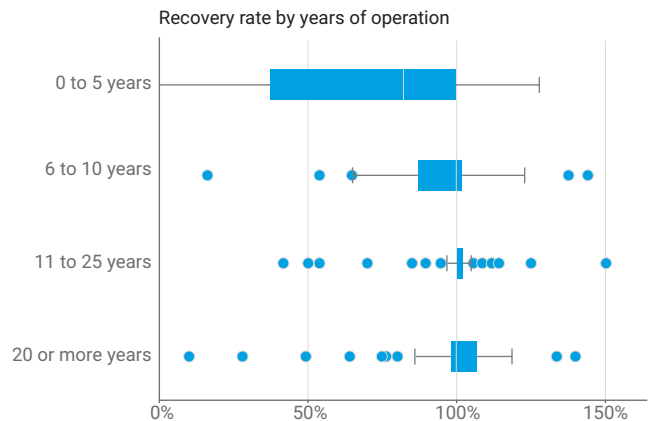
Human resources

The average reported retention rate was 93.1%. On average, shared resource facilities were staffed for approximately 57 hours per week, with an average of 3.2 employees per core. As far as benefits offered to their employees, 34% of cores offered continuing education opportunities, and 84.8% of cores offered publication opportunities. Additionally, in welcoming their staff to the team, 39% of cores had established onboarding programs.

Salary compensation data for each geographical region were collected and compared to normalize the data for cost of living impact. The following table shows the results.

Average Annual Salaries (USD)	Technician	Lab/Core Manager	Core Director/ Central Admin	Staff Scientist	Facility Manager/ Admin
Northeast	48,875	78,875	124,855	76,143	110,396
Midwest	46,346	72,333	108,508	64,638	115,500
West	49,800	80,364	111,545	86,250	110,000
Southwest	37,754	74,630	96,345	61,589	63,857
South	48,000	75,453	84,857	79,400	115,333

Years of experience data for positions were collected and compared by Business Model. The following table summarizes the data.

Average Years of Experience	Technician	Lab/Core Manager	Core Director/ Central Admin	Staff Scientist	Facility Manager/ Admin
Service Centric	3.5	8.5	12.1	5.0	6.4
Equipment Centric	2.3	8.0	8.9	5.3	6.4
Equal Mix	2.6	4.6	8.0	3.7	7.3

Only 33% of institutions have established core-specific job families and descriptions when hiring personnel in core facilities.

Marketing and customer growth

Marketing the core

Cores tend to market their facility in numerous ways, the most common methods being the facility's website (100%) and core facility tour (72.5%). Other ways cores market their services include email (58.8%), posters/fliers (57.3%), internal information session (56.5%), conferences (43.5%), off-campus network/event (25.2%), online listing (22.1%), sponsorship (13.7%), industry journal (3.1%), and other (14.5%), which includes seminars and workshops, and social media. Since 2014, using the facility website to market the core has been the top method.

Methods used to market the core
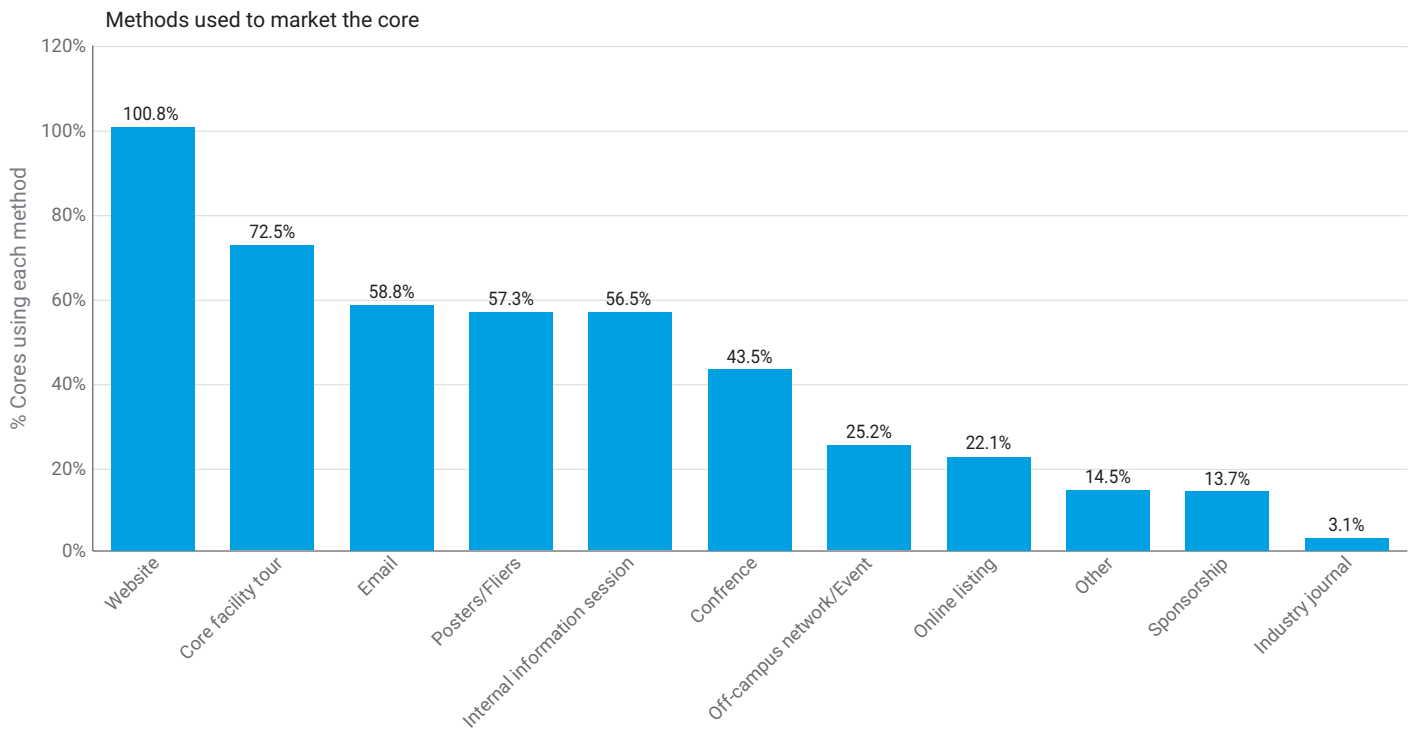
## Delivering a satisfaction survey

Core managers were asked whether they delivered a satisfaction survey, and if so, when. Nearly half, 48.9%, of respondents deliver a satisfaction survey, with 43.5% sent annually, and 5.4% after services are rendered. The remaining 51.1% do not administer a satisfaction survey to their customers.

- 🟧 No
- 🟦 Yes, annually
- ⬛ Yes, after services rendered
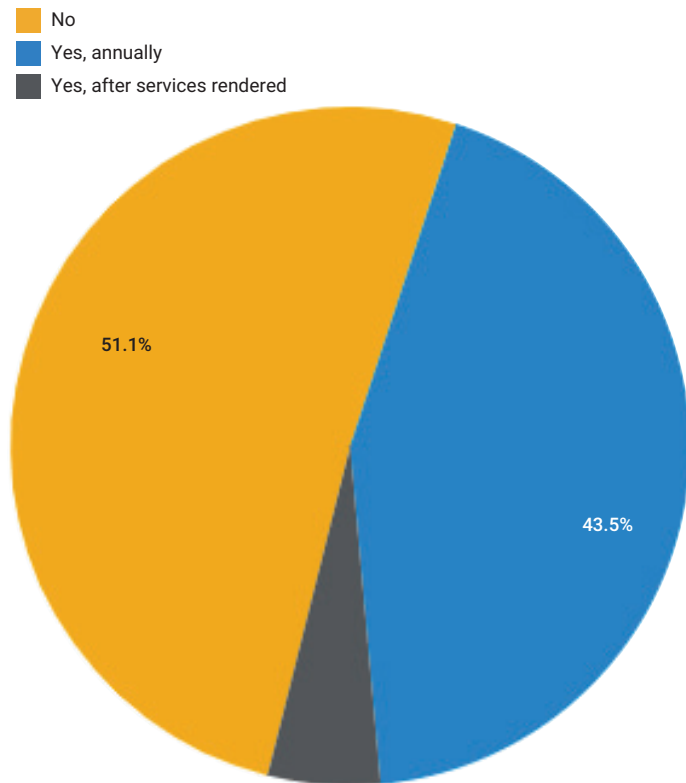

Administrative management

Tracking published research

The most commonly reported methods of tracking publications are manually combing PubMed and other common publications (45.5%) and surveying PI's (18.9%). 6.1% said their institutions track publications for them, and 2.3% said they use a custom-built system to track publications. 21.2% of respondents said they do not track research publications, this is an increase over the previous year.

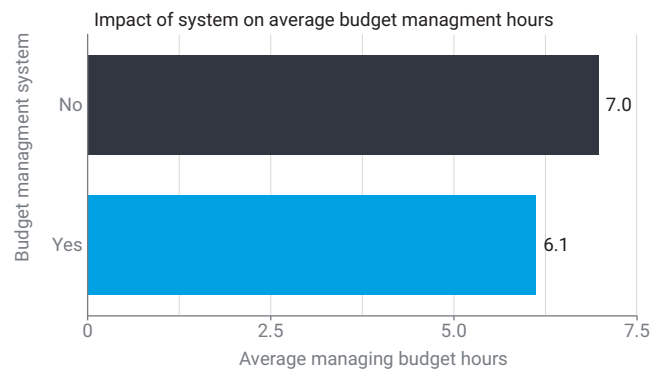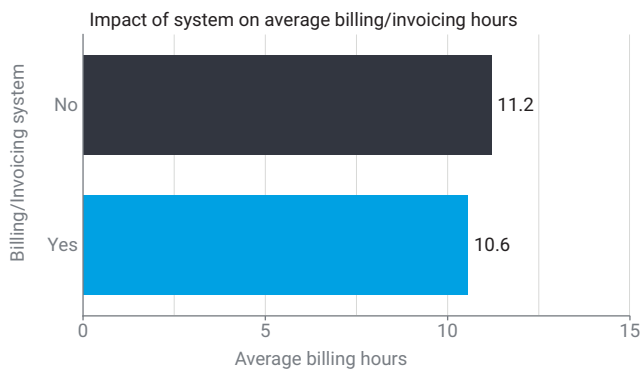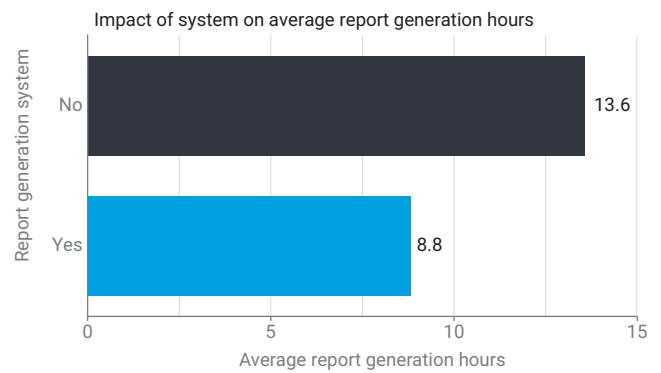Tools used to track publications
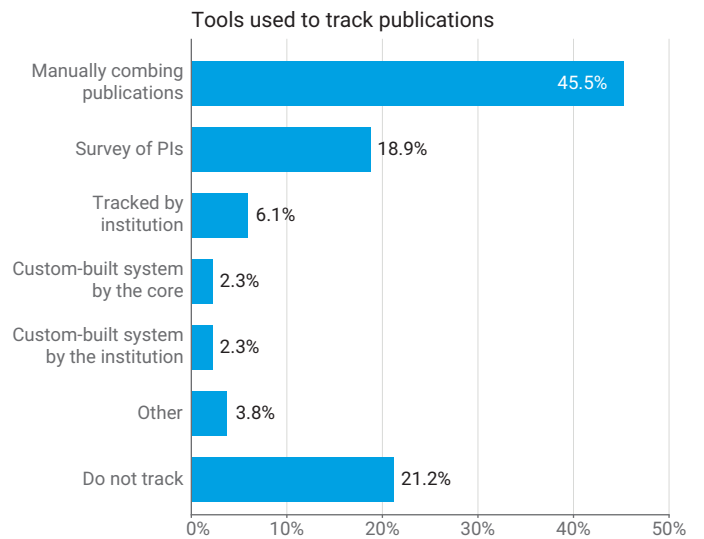
Customers

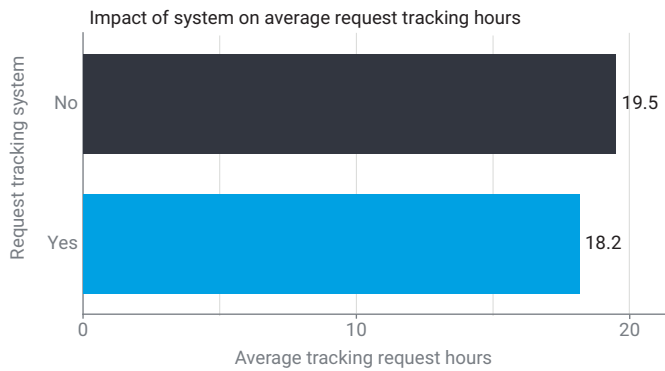57% of cores experienced growth in the number of total unique customers in 2018. This is 1% lower than in last year's study. This has remained largely consistent over the past seven years. Additionally, 51% of cores experienced growth in the number of new customers to their core in 2018. Typically, 50 to 60% of cores experienced some type of growth over the past year.

Change in customers from 2017 to 2018
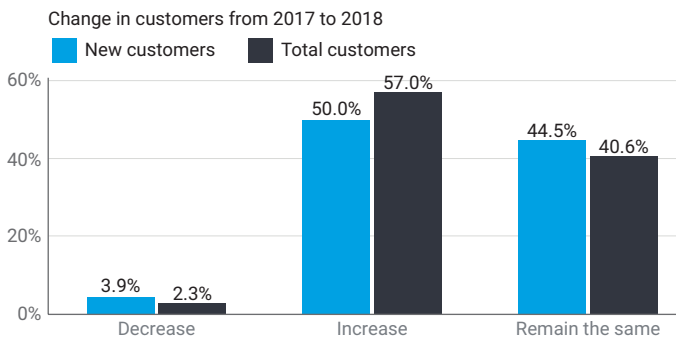
Time spent on administrative tasks

The impact of having an electronic system on hours spent per month performing administrative tasks was examined. For all tasks examined, using an electronic system reduced the number of hours spent monthly-tracking requests, generating reports, billing/invoicing, and budget management. Having an electronic system to perform these tasks reduced the time spent each month by 1.3, 4.8, 0.6, and 0.9 hours respectively.

Respondents were asked whether they have used Lean Six Sigma or Process Improvement methods to improve the efficiency of their laboratory, and 90% had not. Additionally, they were asked whether cores were using external laboratories for testing, perhaps in an effort to alleviate work load. 87% of cores were not using this business practice, while 13% were. This increased 5% from last year.

Impact of system on average request tracking hours

No — 19.5
Yes — 18.2

Average tracking request hours
Request tracking system

Impact of system on average report generation hours

No — 13.6
Yes — 8.8

Average report generation hours
Report generation system

Impact of system on average billing/invoicing hours

No — 11.2
Yes — 10.6

Average billing hours
Billing/Invoicing system

Impact of system on average budget managment hours

No — 7.0
Yes — 6.1

Average managing budget hours
Budget managment system

Summary

In analyzing the 2018 data, many similar trends of 2017 were seen: marketing approaches, customer make-up and expense distribution were all comparable, if not the same, as the previous year.

General institutional support of shared resource facilities remained largely the same compared to 2018, with approximately 2/3 of institutions providing some level of support to help their shared resource facilities achieve success.

In 2018, of the academic cores that participated, 22% or $21.4M of a total $97.5M in revenue was subsidized by their institution, either passively or actively. Active subsidization is defined as one where the institution has internal funding to support the core facility. Allowable costs could be, but are not limited to, salaries or overhead costs. A passive internal subsidy is defined as one where the institution allows deficits to accrue. 75% of subsidization revenue was active. As this was our first year tracking the exact amounts of subsidization revenue, it is hard to draw too many conclusions. However, it will be interesting to see how the institutional subsidization profile develops over the coming years, and what impacts it may have on other metrics.

Two factors that contribute to higher efficiency are using an electronic system to manage administrative tasks and having a central administration overseeing core facilities at an institution. Both attributes reduced hours spent on administrative tasks monthly, which allowed cores to focus on revenue generating tasks instead.

We will continue to examine ways that institutions can support their cores to achieve success, as well as what cores can do to better support themselves. Overall, with smart marketing, effective tools, and institutional support, cores can be relatively self-sufficient and see success.

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