

The 2015 Core Facility Benchmarking Study

Conducted by iLab Solutions

September 16, 2015

This document contains references to “iLab Solutions.” Please note that substantially all of the assets of “iLab Solutions” were acquired by Agilent Technologies in August 2016. For more information, go to www.agilent.com/chem/ilab.



Agilent Technologies

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Introduction

iLab Solutions conducted its 5th annual Core Facility Benchmarking study in February of 2015. There were over 260 responses, representing over 50 different core types from 160 institutions. The surveyed individuals directly manage core facilities, service centers, shared resources, and recharge centers at hospitals, universities, and research institutions. For this report, “core” is the general term used when referring to all of the aforementioned facility types.

This study is conducted annually in an effort to provide a better understanding of how core facilities operate, focusing on core growth and utilization, as well as the common challenges core managers face today.

- Of those surveyed, 51% of cores experienced growth in the number of customers in 2014; this is a 3% lower growth rate than in 2013.
- In 2014, 52% of core income came from customer revenue, the same as last year; revenue from institutional support was 29%.
- In 2014, core managers said they spent approximately 43 hours per month serving the customer, whereas they only spent about 15 hours per month on independent research. This is 10 hours less for each task compared to 2013.
- In 2014, managers who used electronic systems for administrative tasks spent an average of 5 and half hours (over 11%) less per month on these activities compared to those who use other means, such as manual entry and spreadsheets. Administrative tasks included tracking equipment usage, billing and invoicing, creating usage reports, managing budgets, and tracking workflow.
- 89% of cores charge different prices for varying customer types (e.g., internal, external, corporate); this is a 5% increase compared to last year’s survey.
- As with previous years, in 2014 most services performed by cores were for internal customers (68%); however, this number has decreased by about 8% from the previous year. The numbers for external academic customers remained nearly the same (11%), whereas work for those with special academic relationships and external corporate customers continue to rise (14% and 7%, respectively).
- Of cores surveyed, 64% said they adjust their rates annually, 28% adjust their rates at other time increments, and 8% said they have never adjusted their rates.
- 49% of cores said there was no tenure for core personnel at their institution, 29% said core directors have tenure, 10% said core managers have tenure, 6% of cores surveyed said technicians have tenure, and another 6% reported having other personnel eligible for tenure.
- The average number of customer labs served in 2014 is 7.62 per core FTE, down from 10 in 2013.

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- The following were cited as the top challenges for core managers:
 - Acquiring funding & managing the budget
 - Managing workload and having enough time to get the work done
 - Increasing the core's utilization

These top challenges are very similar to last year's identified challenges.

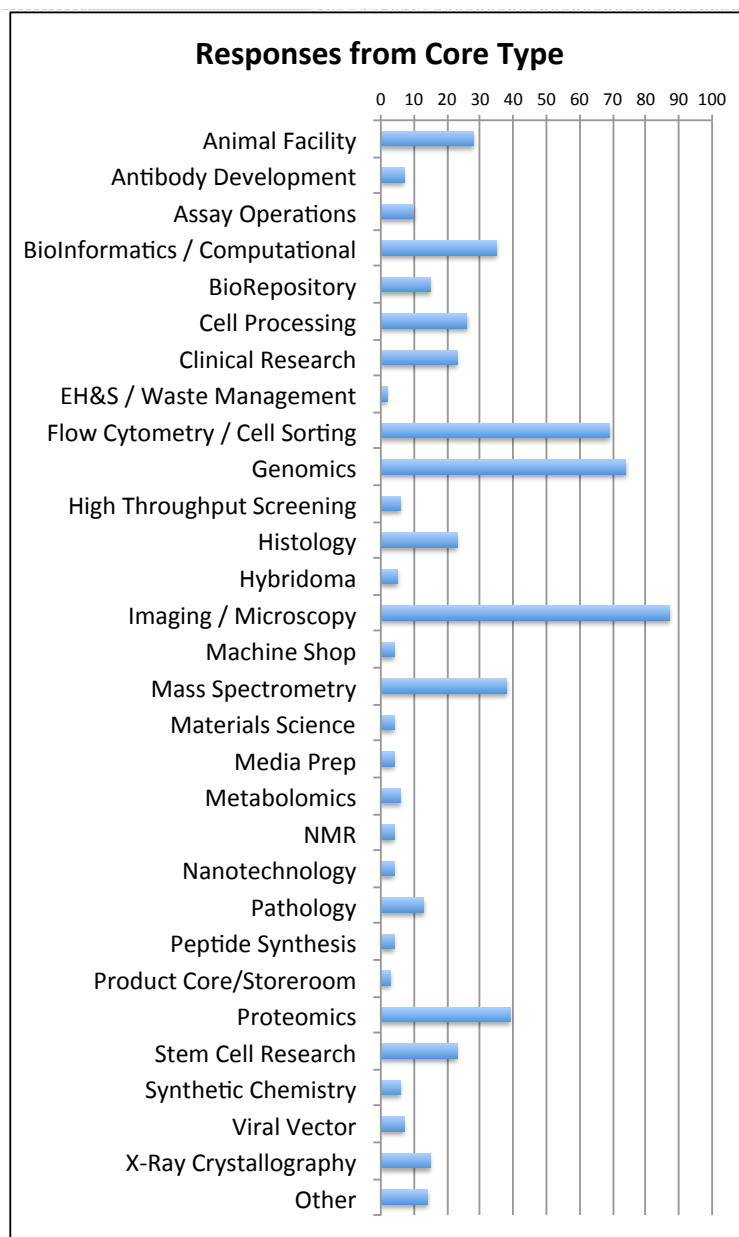
Additional challenges mentioned involve addressing questions from the administration, customer management, equipment management, institutional support, personnel management, customer recruitment, proper resources, compliance, and staying relevant.

The following pages provide an analysis of the data collected.

Distribution

iLab distributed the survey in early February, 2015 to core managers and directors at hospitals, universities and research institutes. During this time, iLab also distributed the survey through press release listing sites, social media sites, and its corporate website. Furthermore, institution administrators who became aware of the survey sent the survey to their institution core managers. The survey was open for 12 weeks. All data was compiled and the averages are presented in the following pages. The conclusions presented here may not represent any single core.

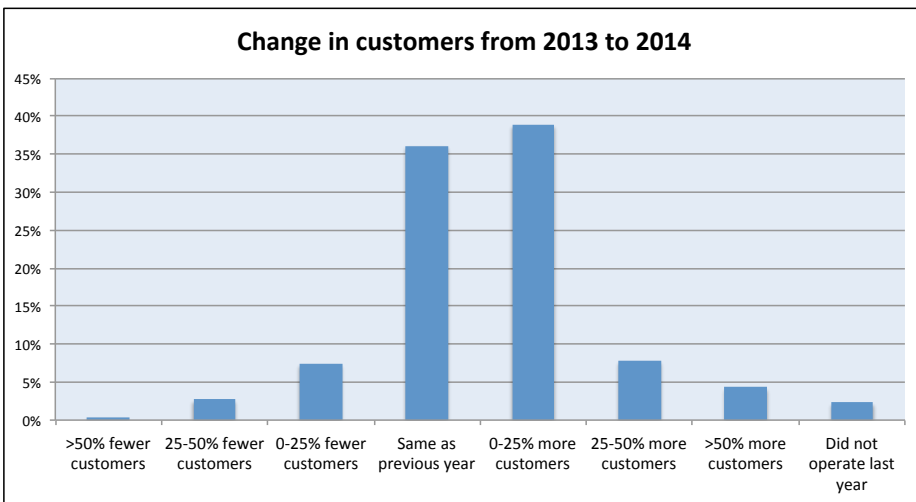
In total, **265 core managers and directors responded to the survey**. These individuals come from **160 different institutions** throughout the North American, European, and Asia Pacific regions and represent **over 50 core types**¹. 41% of respondents said they either manage cores with multiple foci or manage multiple cores, a 5% increase from last year's survey. In these cases, the responses were only counted one time for the overall survey analysis.



¹ "Other" includes cores such as Accessioning, Biocontainment, Equipment Management, Health Communication, Health Science Education, in vivo Preclinical Studies, Instrument Shop, Machine Shop, Microbiome Analysis, Molecular Biology, Optical Engineering, Protein Production and Biophysical Analysis, Radiation Lab, and Supply Center.

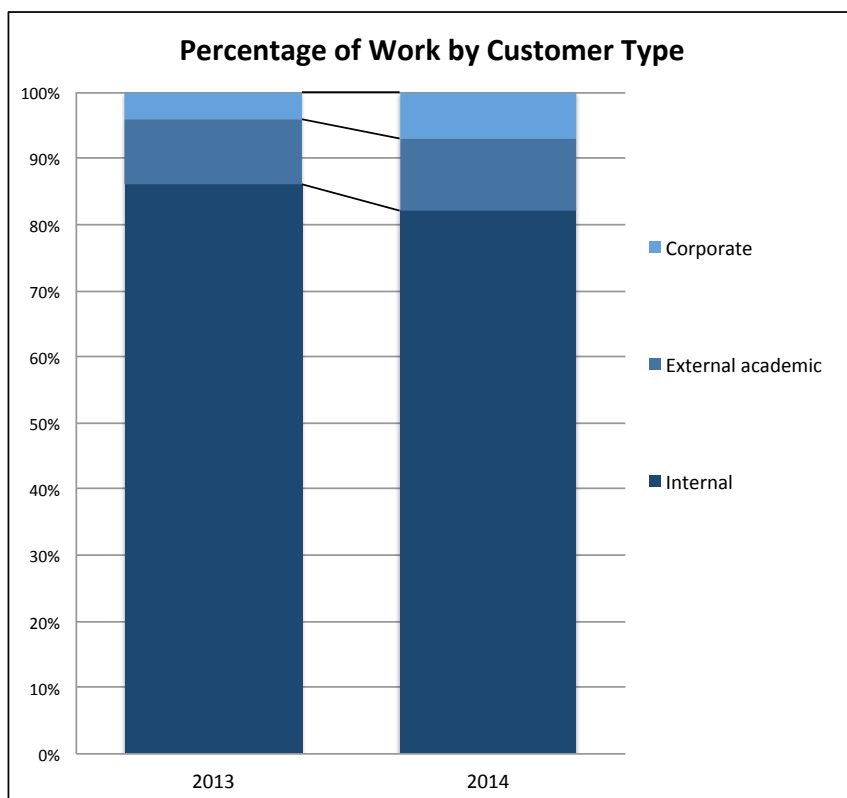
Results of Multiple Choice and Quantitative Questions

CUSTOMER GROWTH

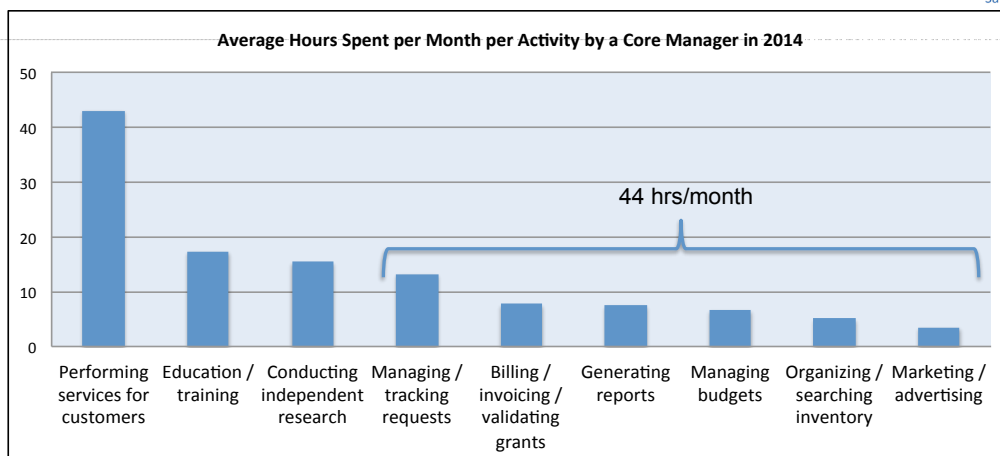


Customers: 51% of cores experienced growth in the number of customers in 2014; while 10% served fewer customers. While this growth is significant, it is the lowest rate of growth since the study's inception in 2011.

CHARGING & CORE ACTIVITIES



Customer Type: Cores most commonly serve customers internal to their institution. On average, internal customers represented 82% of the work performed in 2014 – **this is 4% lower than the previous year.** The numbers for external academic customers remained nearly the same (11%); whereas, work for those customers with special academic relationships and external corporate customers have increased (14% and 7%, respectively).



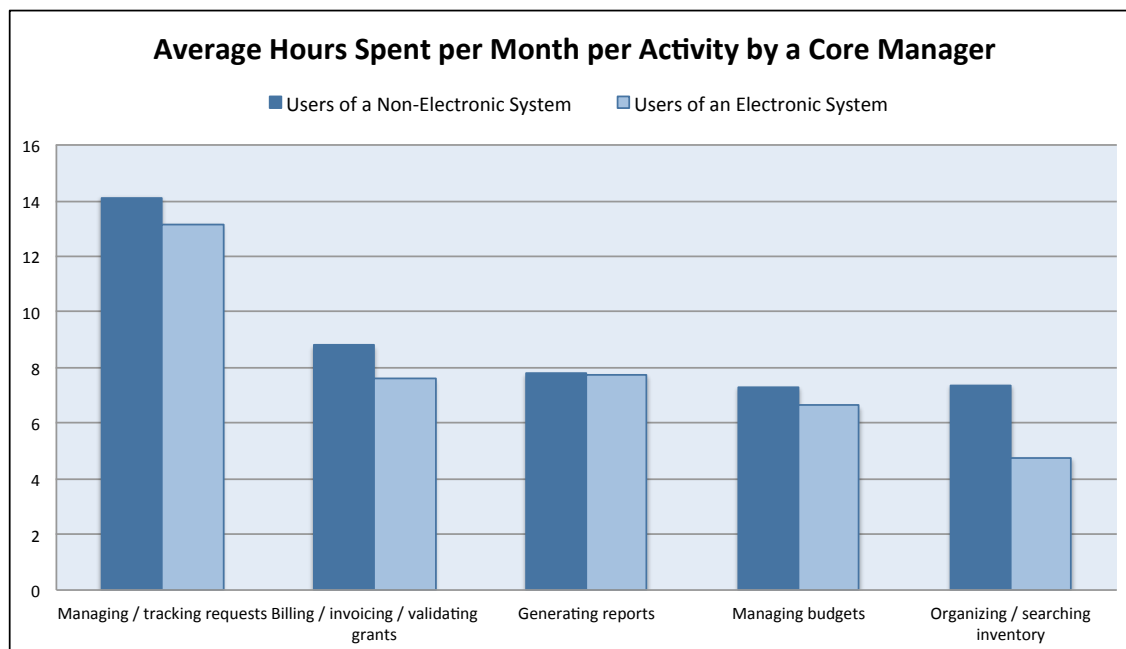
Time Spent: In 2014, Core managers reported that in 2014 the majority of their time was spent on conducting services for customers (43 hours per month). This number, along with the other tasks listed, is consistent with previous years.

OPERATIONAL TOOLS & UTILIZATION

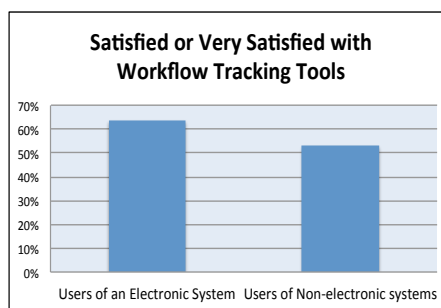
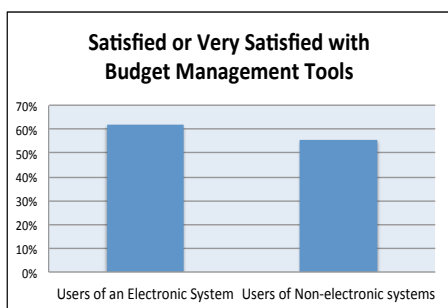
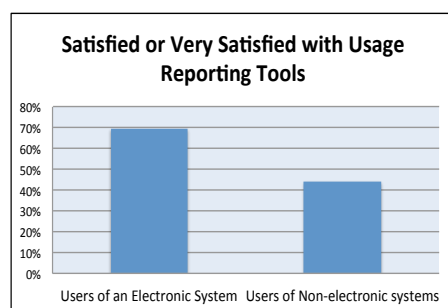
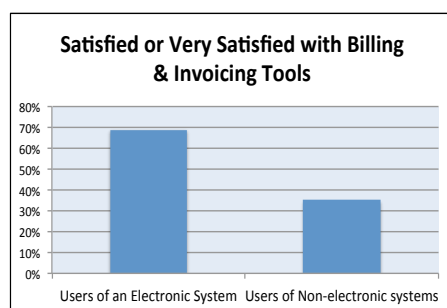
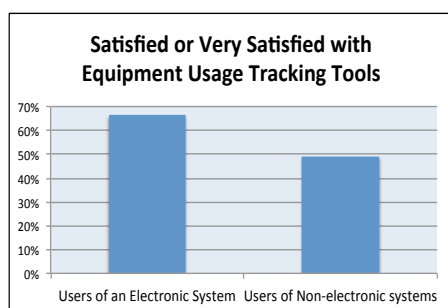
Business Tools: An electronic system is the most common tool used for tracking equipment usage and billing and invoicing. Spreadsheets are most commonly used for managing budgets and preparing usage reports, and both electronic systems and spreadsheets are frequently used for tracking workflow within the core facility.



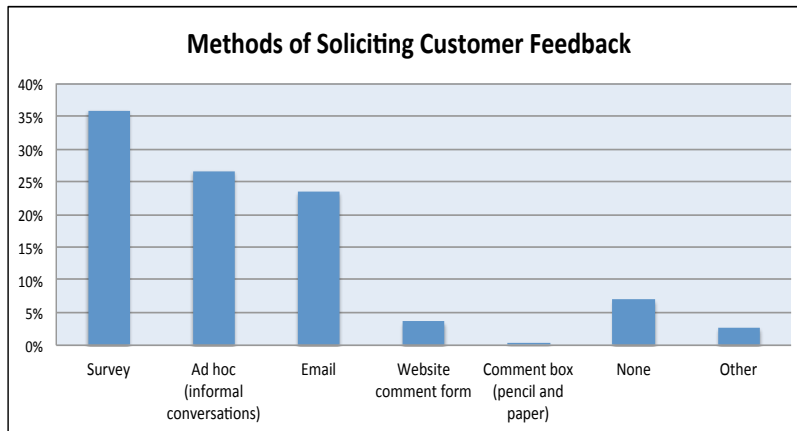
Time Spent Running the Core with Electronic Systems: The average time spent on just the administrative tasks of running a core was 44 hours per month for the full data set.



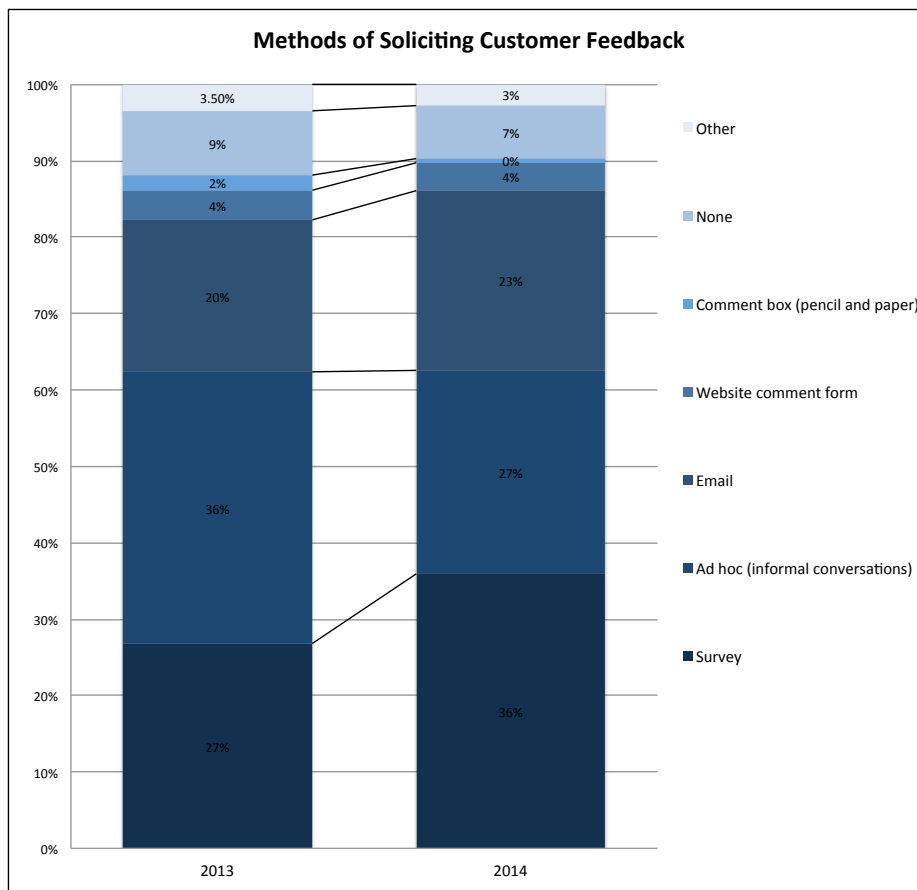
When Isolating responses of those who use an electronic system for tracking equipment usage, billing and invoicing, creating usage reports, managing budgets, and tracking workflow, the satisfaction rate was consistently higher than that of users of a non-electronic system.



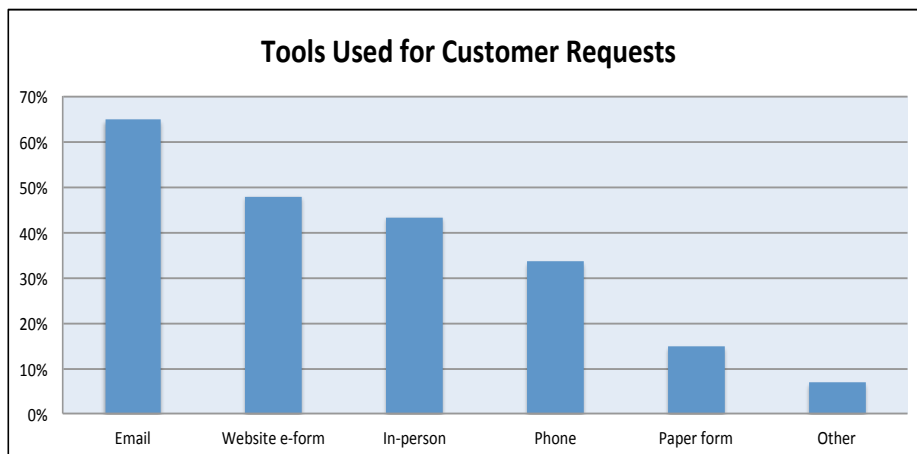
Satisfaction Rate and Time: For 2014, the pencil and paper method of soliciting feedback has nearly disappeared, as less than 1% reported using a comment box. Additionally, ad hoc fell from the most common method in 2013 at 36% to the second most common in 2014, at 26%.



Customer Feedback: Survey has risen as the top method for soliciting customer feedback (36%), followed by ad hoc (27%) and over email (23%).

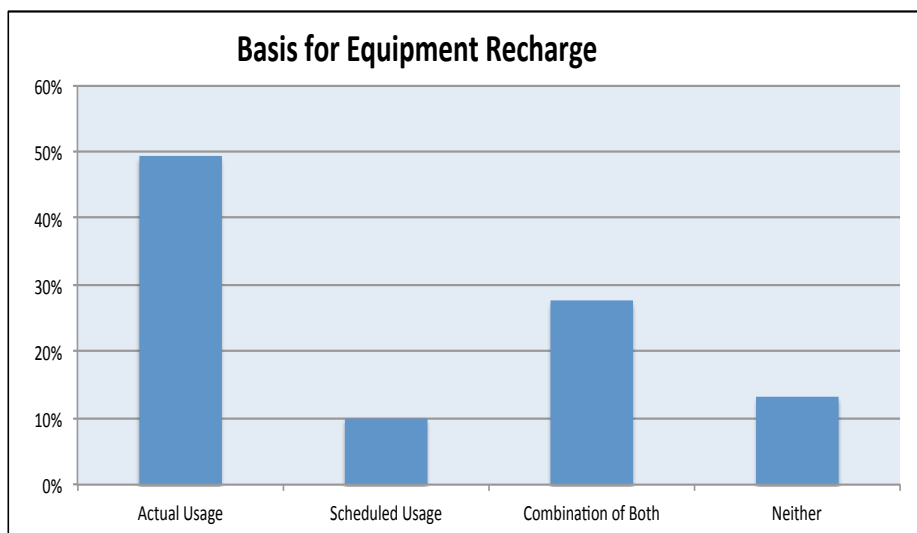


Marketing the Core: Cores tend to market their facility in numerous ways, the most common methods being word of mouth (78%) and the facility's website (77%). Other ways cores market their services include email distribution (42%), on-site posters (39%), conferences (34%), and other (8%), which includes seminars and workshops, facility tours, on-line databases, and referrals.



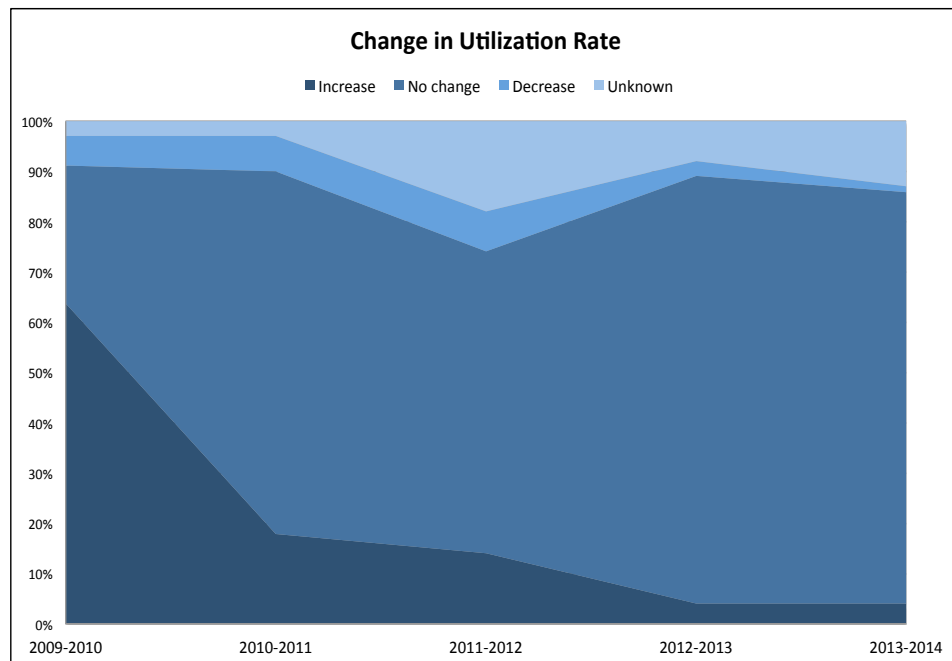
Receiving Customer Requests: On average, cores received 65% of their service requests or reservations by email. Other important methods include website e-form (48%), in-person conversations (43%), phone (33%), and in paper form (15%). These numbers have not

changed significantly from 2013.



Equipment Recharge: For equipment-based cores, 49% said they base recharge on actual equipment usage. 10% said they charge for only scheduled time, and 28% said recharge is based on a combination of actual and scheduled usage. 13% of cores surveyed said they did not charge for actual usage or reserved time. Some of

the alternatives provided were: "It is calculated into all services using the equipment," and "Cost based."

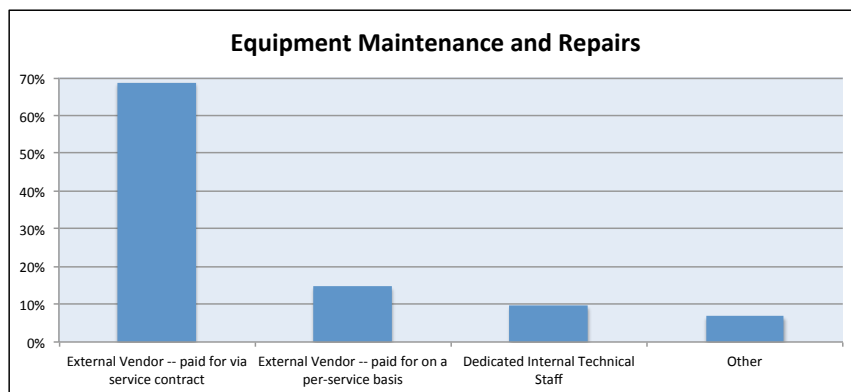


Utilization Rate:

The majority of respondents (82%) reported no change in utilization from 2013 to 2014 and a much lower percentage (4%) reported an increase of change in utilization rate. This is tied with the previous year for the lowest increase in utilization since iLab began its annual Benchmarking Study in 2011. Since the study's inception, the greatest

increase of year-to-year utilization occurred from 2009 to 2010 with a rate of 64% growth.

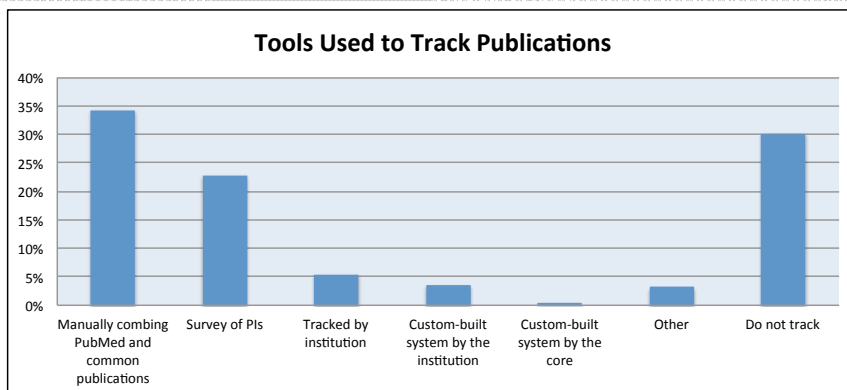
Equipment Repairs: 69% of cores surveyed use external vendors, paid via a service contract, for maintenance and repairs. 15% said they use an external vendor, paid on a per service basis. 10% said they have dedicated technical staff, and 7% said they use "other" means for maintenance, which



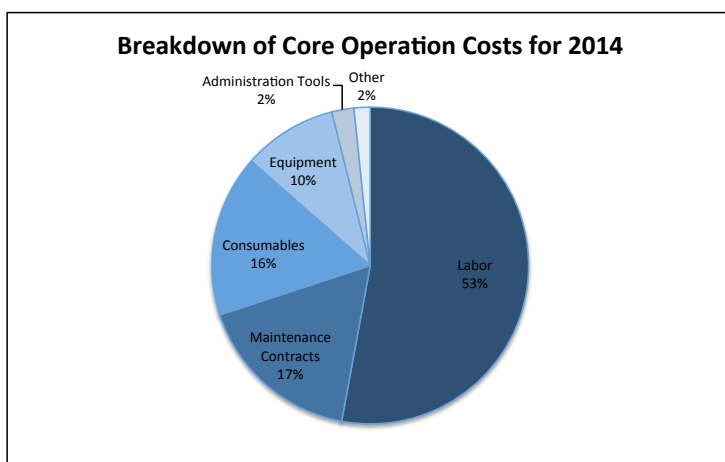
mainly included a combination of both external vendors and internal technical staff, dependent upon the equipment type. These results are nearly identical to those of 2013.

Tracking Published Research:

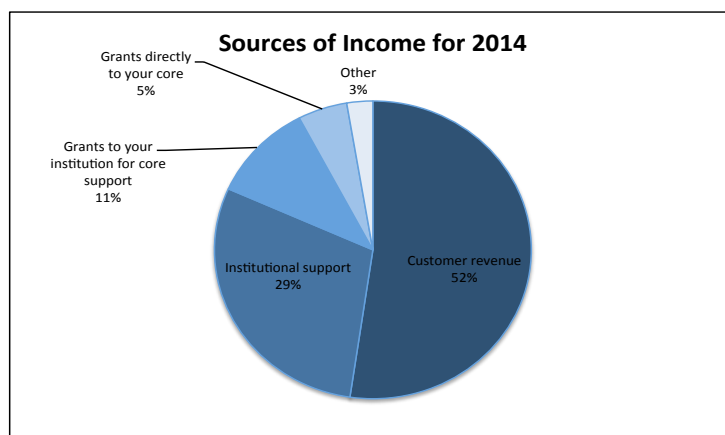
The most commonly reported methods of tracking publications are manually combing PubMed and other common publications (34%, a 6% increase) and surveying PI's (23%). 5% said their institution tracks publications for them, and 4% said they use a custom-built system to track publications. These results are similar to those of 2013. As in the previous year, 30% of respondents said they do not track research publications at this time.



FUNDING & EXPENSES



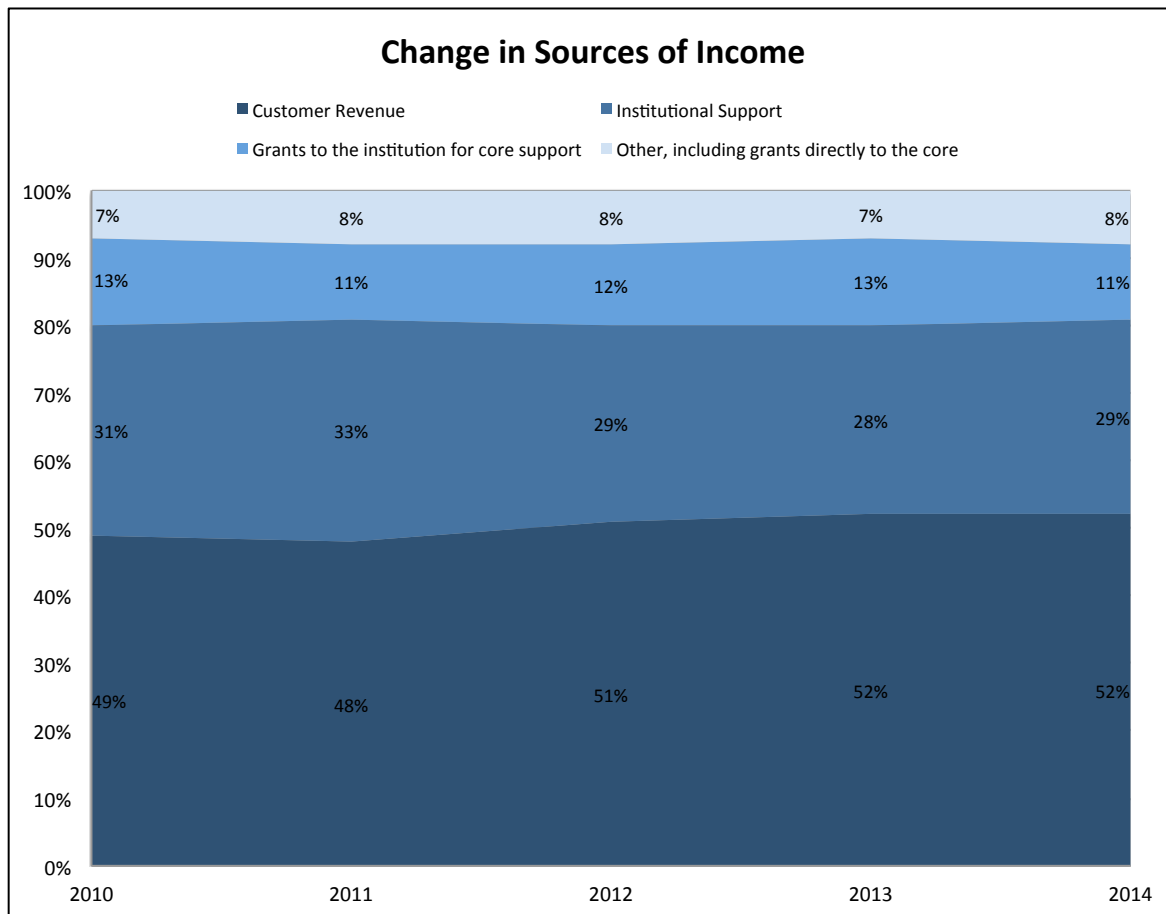
Costs: When considering total expenses² in 2014, labor was reported as the highest cost to cores, averaging 53%. This is up from 46% in 2013. In 2014 the average cost of maintenance contracts was 17%, consumables 16%, the cost of equipment was reported as 10%, and administration tools accounted for 2% of operational costs. This number is down from 4% in 2013.



Income: In 2014, the bulk of core income came from customer revenue averaging at 52%. The second most prominent revenue source was institutional support (such as subsidies) averaging at 29%. The remaining 19% of income came from grants and other funding sources.

² Capital expenses are not included in this data.

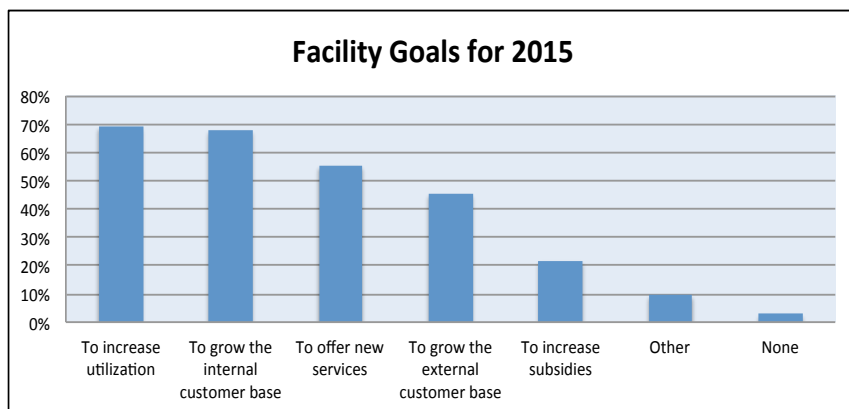
From 2011 to 2013, the reported percentage of cores' annual income that comes from customer revenue increased, whereas the percentage of institutional support declined. However, 2014 saw customer revenue plateau, while institutional support slightly increased to 29%, the same as reported in 2012.



FACILITY GOALS

Goals: Cores' top goals for their facility in 2015 are to increase utilization (69%) and grow their internal customer base (68%). Other goals reported are offering new services (55%), growing external customer base (45%), and increasing center subsidies (22%). 10% of responses cited "other" goals, which included

increasing grant funding, publishing more papers, adding new pieces of equipment, and enhancing educational offerings.



Summary of Results

When asked, “What are your biggest challenges as a core manager,” the top challenge cited was generating revenue. Core facility directors and managers continue to face the difficult responsibility of maintaining a sustainable resource that can afford new technologies to keep it on the cutting-edge of scientific research. Not only does new technology help attract new customers to a core, but it’s a necessity in the research environment. However, core managers are having an increasingly difficult time securing the necessary funds to keep their cores running smoothly. “Running it all on scarce resources,” and “Securing adequate funding” were two quotes cited in this report, among many on this topic.

According to the study, customer revenue comprises an average of 52% of a core’s income, while institutional support makes up 29%; grants and other sources of funding make up the rest. With decreased funding in research grants, cores are reliant on their two largest sources of income to make up the difference; however, 6% of core managers cited that getting support from institutional administration was an even greater challenge than generating revenue. As one core manager put it, “[My biggest challenge is] trying to convince the administration that we are worth keeping.” The viability of a core facility is reliant upon support by the institution.

One way a core can show its value is through increased usage; not to mention, this is also the most prominent way for a core to remain sustainable. Customer revenue is the highest income generator for a core and is the most likely area for growth. Core managers support this analysis. According to the study, 69% of core managers said increasing utilization was a top goal. Ways in which they would like to increase usage include “increasing internal customer base” and “offering new services.”

Each of these goals represent the need for growth among core facilities, and the recognition that funds for growth generally come from customer revenue. Core customers generally receive their funding from grants, which, as previously mentioned, are shrinking. However, in this case, it is to the core’s benefit. The need to stretch available dollars has become increasingly apparent from the researcher’s point of view. The study shows that only 10% of cores surveyed saw a decrease in their core’s utilization, despite shrinking national funding; this proves that researchers are realizing the benefits of a shared resource facility, where renting a piece of equipment, for example, is more cost effective than purchasing it. In addition, a majority of respondents (36%) saw no change in their core’s utilization in the last two years.

Although there was little change in core utilization, there was a dramatic decrease in labs served per FTE from 10 to only 7. This implies that fewer labs or researchers are vying for much needed shared services. To attract the finite grant dollars, core facilities must maintain a competitive edge by remaining abreast of the most current technological advances. However, as one manager put it, “Finding the capital to keep our facility at the cutting edge of available technology” prior to attracting the dollars to purchase the technology is something of a self-perpetuating problem.

Another such way to increase usage is simply through having more time. Time is needed to perform services, conduct trainings, and market the core’s resources, among other tasks. It is a precious resource for core managers; in fact, not having enough time to run their facilities was the second most common challenge reported.

For this issue, however, there may be a reprieve. According to the study, the use of electronic systems saved core managers time when conducting tasks such as budgeting, funding, time management, administrative work, increasing utilization, and problems with billing. These problems totaled 65% of the

top challenges core managers face today. Those with electronic systems not only cited time savings; they also reported dramatically higher satisfaction rates with regard to tools they use to run their core.

About iLab

iLab Solutions is a leader in providing web-based management services to academic research institutions, with customers that include leading NIH-funded universities, research hospitals, and independent institutes. iLab leverages a scientific advisory team comprised of active PIs with research backgrounds from Brigham & Women's Hospital, Dana-Farber Cancer Institute, EMBL, Harvard University, Huntsman Cancer Institute, Mt. Sinai School of Medicine, Stanford University, University of Melbourne, Vanderbilt University, and Yale University. The iLab leadership team includes executives with experience from ABRF, Dana-Farber Cancer Institute, Deloitte, Facebook, Genentech, Intel, IRB Barcelona, McKinsey, Microsoft, Nationwide Children's Hospital, The Ohio State University, Research Institute of Molecular Pathology, Roswell Park Cancer Institute, SAIC, and Vanderbilt University.

In March 2013 iLab signed a partnership with Vanderbilt University where the CORES software platform was developed in 2001 and updated and maintained on an ongoing basis. This partnership brings together the two most sophisticated and broadly used solutions for core facility management. Over the course of the past few years, the joint team has been incorporating the best features of the CORES software into the iLab platform, and will continue to leverage Vanderbilt's academic perspective to help guide future development.

The combined iLab/CORES solution serves 125 research institutions in twelve countries, including 32 of the top 50 recipients of NIH funding. iLab has extensive experience providing enterprise-level solutions at major research institutions. These solutions include integrations with institutional financial systems (e.g., SAP, Oracle, PeopleSoft, Lawson, Banner, IFAS, etc.) and identity management systems (e.g., Active Directory, Shibboleth, etc.). iLab's dedicated implementation team and established implementation processes supports a high adoption rate and fully trained personnel resulting in effective use of the system.

iLab offers a suite of web-based tools for academic research management. The modules available include core facility service request management, enhanced sample management functionality (including a sample processing management tool), equipment reservation and usage tracking, billing and invoicing, reporting, and lab requisitioning and spend tracking tools. In addition, iLab offers modules to support Product Cores (storeroom management), study management, and equipment lockout capabilities. Its animal management software is currently under development and will be available for wide deployment in late 2015. iLab's software interface allows each user a consolidated view of their recent activity across all modules as well as the ability to search across all equipment, services, and cores in the system.

In order to ensure stability, security, scalability, and responsiveness, iLab conducts all software development, application maintenance, deployment, and user support internally. This internally resourced approach results in a close relationship between iLab and our customers and ensures iLab can rapidly address customer needs.

Appendix A *(Details of Open-Ended Survey Responses)*

Q1. What are your biggest challenges?

1. Funding & Budget: (35% of responses)

Anticipating needs and budgeting accordingly

Balance rates that users will pay with generating sufficient revenue

Balancing budget

Breaking even financially

Budget and equipment needs

Budgeting for costs that are not covered by subsidies, like service contracts and finding ways to increase usage

Budgets and managing a lot on very little

Buying new equipment to keep up with advances in technology

Continued equipment costs

Due to budget constraints, we are only 2.5 FTE to operate this facility where 3.5 FTE at least would be needed

Equipment repair costs – we cannot afford to purchase contracts on equipment so the department is required to pay and we try to get the med school to help, but basically, we are an orphan

Finances/budget

Finding capital funding to keep our facility on the cutting edge of available technology, increasing utilization of new equipment once we are able to purchase

Finding institutional support

Finding money to update/upgrade equipment

Funding

Funding new instruments; institutional support of infrastructure and staff salaries

Generating sufficient revenue to support staff and reagents/supplies/maintenance

Getting consistent funding for equipment, personnel, and repairs. Our budget is from specific departmental/grant sources and not from the institution itself

Having enough staff to handle new requests while maintain budget expectations

Income & new staff training

Increased cost of running facility, service contracts, salaries

Increasing recovery costs

Increasing revenue with only a single employee

Lack of institutional support

Launching and funding new services requested by researchers

Managing the budget

Meeting the budget

Predicting future usage and costs

Price

Raising funds for new equipment

Rate calculation based on cost to operate

Reducing costs in 2015

Revenue

Running it all on scarce resources

Salary of the core facility technical staff who run the core on the daily basis is not from a constant source and is mostly grant funded under research

Secure adequate funding

Subsidies to keep cost down

To find money for the service contracts and to replace instruments

Upgrading instrumentation and technologies on a budget

Time Management/Administrative Tasks: (18% of responses)

Coordinating work flow

Finding time to do everything

Finding time to work on documentation materials, as well as R&D

Handling so many projects at the same time and making sure the recovery rate stays at 95% or above

Keeping up with day to day functioning of the core and trying to constantly bring new technology

Keeping up with literature and advising clients in a wide variety of fields

Keeping up with state of the art methods of cost rate analysis

Keeping workload at an even level; managing competing priorities; not knowing how to predict workload expectations

Lack of time

Maintaining stability of cost recovery

Maintaining the turnover rate for data generation

Managing expectations and enabling effective decision-making by directorate committees

Metrics reporting

Offer good services and training. Feel that sometime cannot help user because have something else to do

One of my biggest challenges is reporting utilization effectively

Project and sample tracking

Project management

Project tracking, data analysis

Time management of sample load

Time management. Customer expectation management

Time. Tons of emails and database entries. This would be enough if there also wasn't time in the labs besides all this

Tracking and managing requests

Tracking publications, educating users

Training and marketing

Workload management and keeping up to date with best practices

Increasing Utilization/Customer Base: (9% of responses)

Bringing in enough business

Finding clients

Gaining customer base

Getting customers to use equipment once the free/trial period is over, no matter how much they said they would use the equipment before purchase

Getting new customers

Getting new internal facility users

Increasing usage

Increasing usage of instruments

Increasing utilization

Low usage of some technologies

Obtaining new customers

Reaching an audience beyond our built in users at our institution

To improve usage from intra and extra-mural researchers

Utilization of core

Customers/Users: (7% of responses)

Communication with researchers

Convincing users that using controls is imperative and black magic is a no no

Customer compliance supplying needed documentation

Dealing with complaints/grant deadlines

Dealing with irrational people and customers

Education to users

Keeping customers happy

Managing customer needs

Setting expectations with customers

User education – we offer but they don't always come

Administration: (6% of responses)

Balancing multiple bosses when their priorities do not align. Academic boss vs. facility boss

Educating the senior administrators

Getting administration to understand the needs of the users

High-level administrators do not really appreciate staff's work and opinion/suggestions

Lack of information from higher ups

The director

Trying to convince the administration that we are worth keeping

Upper management

Support/Instrumentation/Maintenance: (6% of responses)

Instrument upgrades

Instrumentation

Instrumentation located outside of the core where they don't charge investigators for use

Keeping instruments functioning and up to date

Keeping the equipment running and available for the researchers

Replacing and updating instrumentation

Self-servicing maintenance

Support

Support of old equipment. Training users on old equipment.

Staffing: (6% of responses)

Justifying personnel, maintaining personnel

Keeping employees happy

Making sure the staff and users keep up with the procedures

Managing staff, hiring staff who are a good fit with the core, particularly hire end staff

Need more personnel with computer skills

Not having any help unless there is a student I can hire to help with the instrument maintenance

Personnel, morale, funding, fitting in with the organization, respect

Recruiting and retaining good staff

Retaining talented staff and low staff salaries

Billing/Other/Unique (13% of responses)

Billing

Co-workers

Cost of equipment service contracts in Canada vs. US. They are about double the cost and I can't get a straight answer from the vendors

Dealing with the institutional accountants

Doing two billing processes; one on iLab and another on ifas

Getting users to come to discuss their projects before buying all the reagents and starting the experiments

Integrating lab with analysis

Knowing who to contact when issues arise

My lab technician is not enforcing iLab with clients. He does all his work on the basis of "gentleman's agreement." I am forced to bill based on his handwritten records

Reporting from the system

Staying busy with decreasing work volumes