

**NEW FOR 2023**



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SURVEY RESULTS

# State of the Laboratory Information Systems Industry

Trends in Satisfaction, Reliability, Interoperability, and Security

## Executive Summary

This research report provides survey-based data to uncover laboratory information systems (LIS) market trends. The study explores satisfaction with different vendors' LIS solutions, as well as views on the reliability, scalability, security, and interoperability of each laboratory's current LIS. This is the second year that XiFin, Inc. has conducted this research and builds on the results from the 2021 research report.

### KEY FINDINGS:

- ▶ Of 18 technology vendors and custom/homegrown LIS, 16% of survey respondents indicated they are unsatisfied or highly unsatisfied with their organization's current LIS. This finding was fairly consistent across technology vendors and laboratory types.
- ▶ One of the areas in which responders were the most dissatisfied with their organization's current LIS was its ability to meet test-specific needs.
- ▶ Twenty percent (20%) of responders indicated their current LIS does not offer a robust analytic solution. Another 30% said they do not know if a robust analytic solution is offered with their current LIS.
- ▶ Seventeen percent (17%) of responders indicated their current LIS has reliability issues.
- ▶ Twenty-two percent (22%) of responders stated their current LIS does not integrate well with other systems.
- ▶ More than one-quarter of respondents (27%) reported being unsure about the security of their organization's LIS and 3% stated their LIS has known security vulnerabilities.
- ▶ More than one-quarter of respondents (28%) reported being unsure whether their organization is operating on the current version of their LIS software. Another 16% reported not being on the current version.

## Methodology

In the fourth quarter of 2022, XiFin, Inc. surveyed laboratories around the U.S. through an online survey. Respondents represented a variety of laboratories and associated organizations including but not limited to:

- ▶ Anatomic pathology
- ▶ Clinical pathology
- ▶ Molecular diagnostics
- ▶ Reference laboratory
- ▶ Genomics
- ▶ Hospital outreach program or outpatient laboratory
- ▶ Pain management clinic or toxicology laboratory
- ▶ Biopharma research laboratory

Each respondent was asked a series of questions covering topics such as LIS satisfaction, reliability, scalability, security, and interoperability. As expected, many respondents represented a laboratory that performs multiple types of diagnostic tests.

New for this year, a survey question was added on the current use of or plans to add digital pathology.

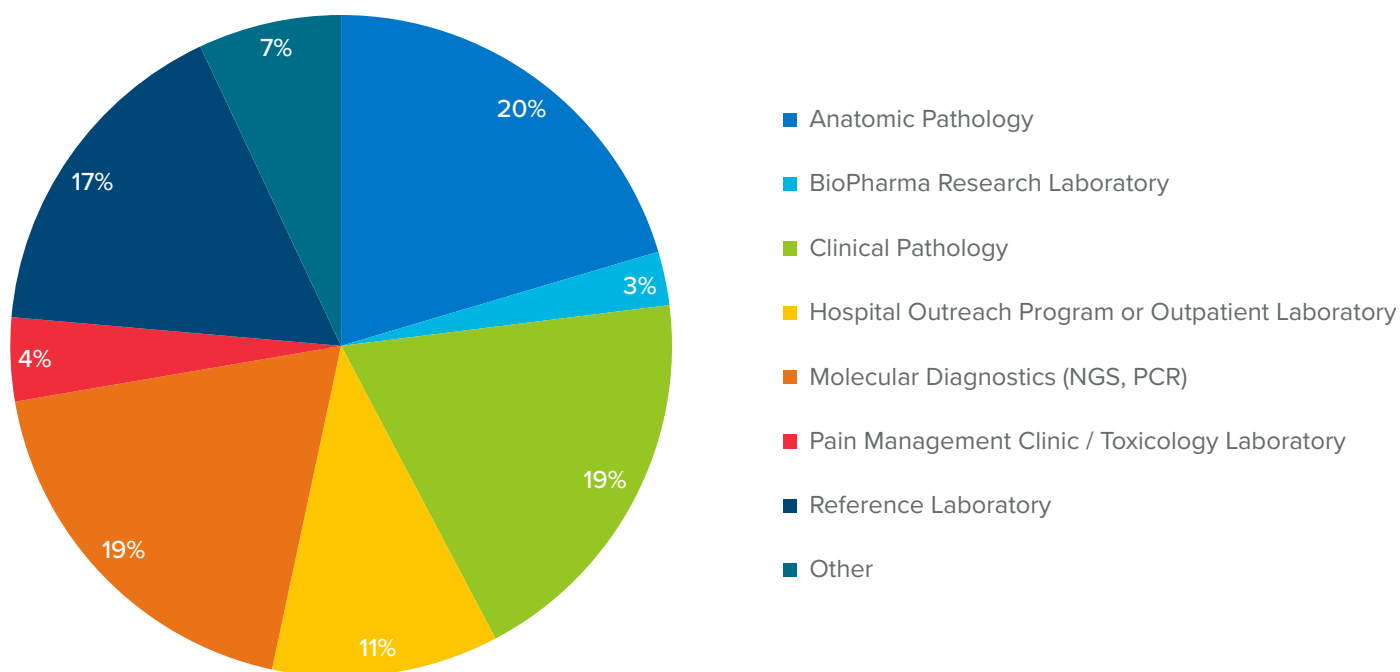
### RESEARCH SAMPLE SIZE

There were a total of 188 respondents that fully completed the 2022 survey, compared to only 98 who responded to the 2021 survey. An additional 8 people started the survey but did not complete it. Their responses were counted for the questions they completed. If an organization used more than one LIS or performed more than one type of testing, respondents were able to respond on each separately, so the total number of response for some questions exceeds 196 responses.

## Respondent Demographics

Organization Description: Respondents Represent  
Broad Array of Organizations

*Which of the following describes your organization?  
(select all that apply) n = 343*



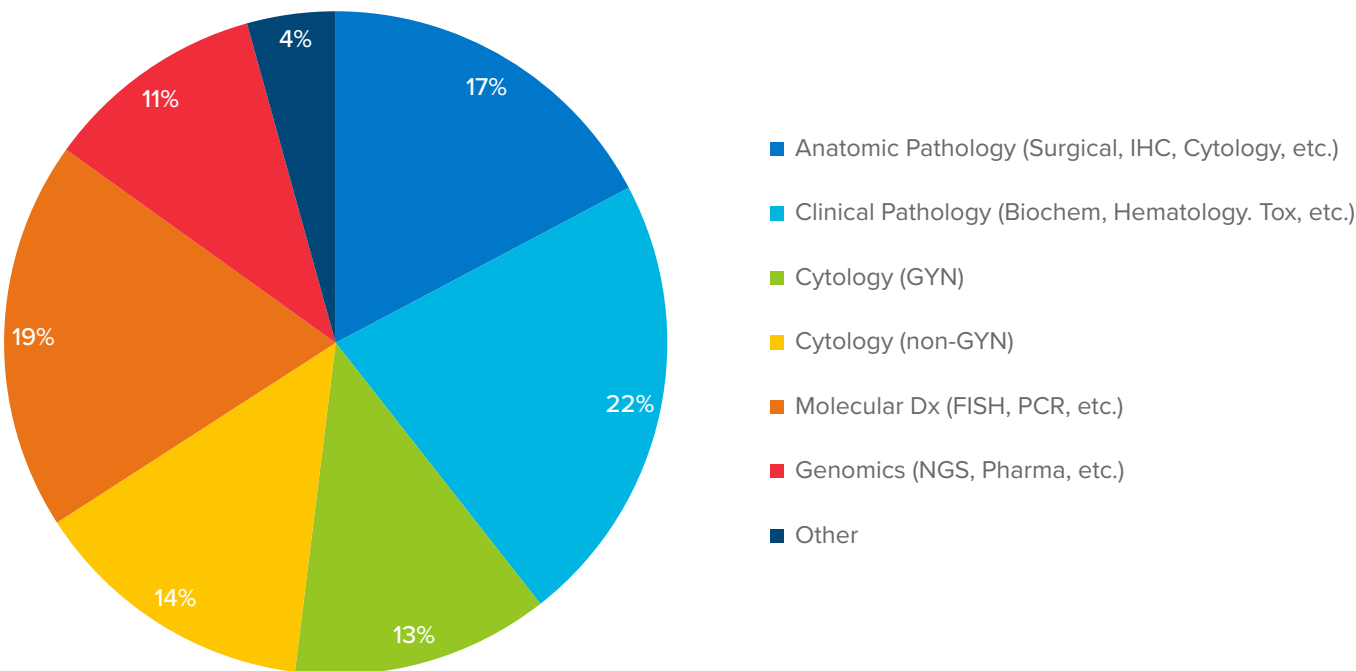
*\*Examples of "Other" include:*

- ▶ Cardiac/Cardiovascular
- ▶ COVID
- ▶ Liquid Biopsy
- ▶ Rapid Diagnostics

# Respondent Demographics

*Types of Testing Performed: Broad Array of Respondents*

*Please indicate which types of testing your laboratory performs (select all that apply). n = 510*



## Number of Tests Performed Annually

# ANNUAL TEST PERFORMED	% OF RESPONDERS
<100,000 tests	35%
100,000–199,999	13%
200,000–349,999	10%
350,000–499,999	6%
500,000–749,999	8%
750,000 or more	28%

The majority of responding organizations were either relatively small (fewer than 100,000 tests per year) or quite large (750,000 tests per year or more). n = 194

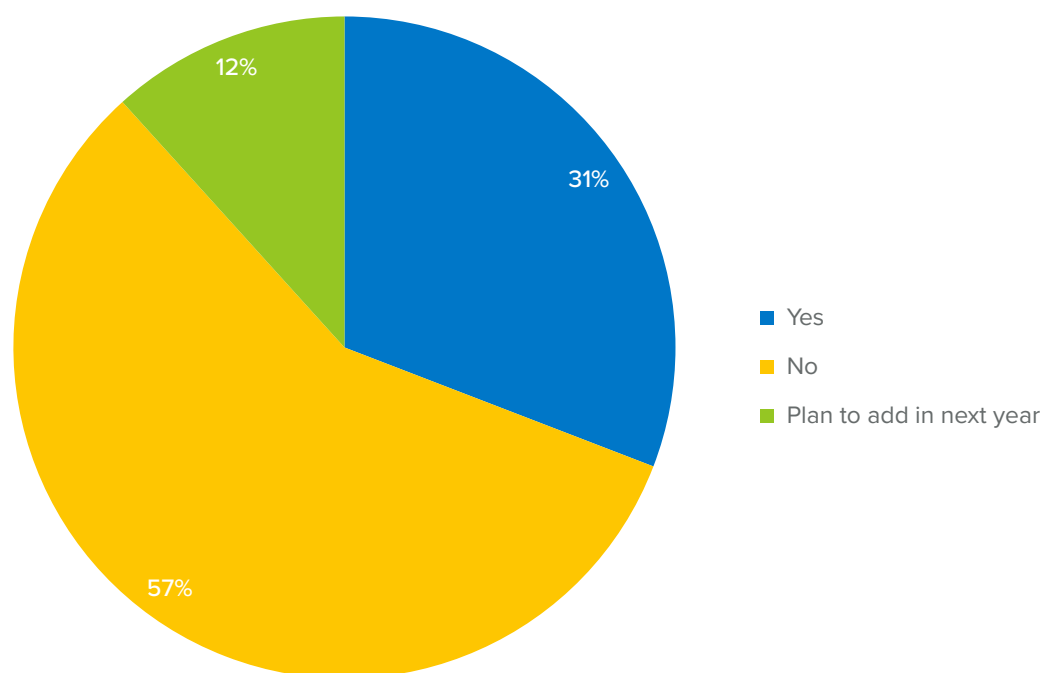
## Digital Pathology

Does your laboratory use digital pathology?

n = 188

The renewed interest and uptick in digital pathology led us to include a question about it in this year's survey. It is one of the industry's highest areas of interest and adoption. The College of American Pathologists (CAP), worked with the American Medical Association (AMA) CPT Editorial Panel to successfully launch thirteen new digital pathology add-on codes effective January 1, 2023.

An Advocacy Update, posted on May 16, 2023, on CAP's website, states that Centers for Medicare & Medicaid (CMS) allows pathologists and lab personnel the ability to review Digital Slides remotely. This is a result of the COVID-19 public health emergency that ended May 11, 2023. CMS updated its guidance to allow pathologists the ability to review digital slides and data remotely if they meet specific criteria.



Source: <https://www.cap.org/advocacy/latest-news-and-practice-data/may-16-2023#.ZGQ1T-TrR7s>

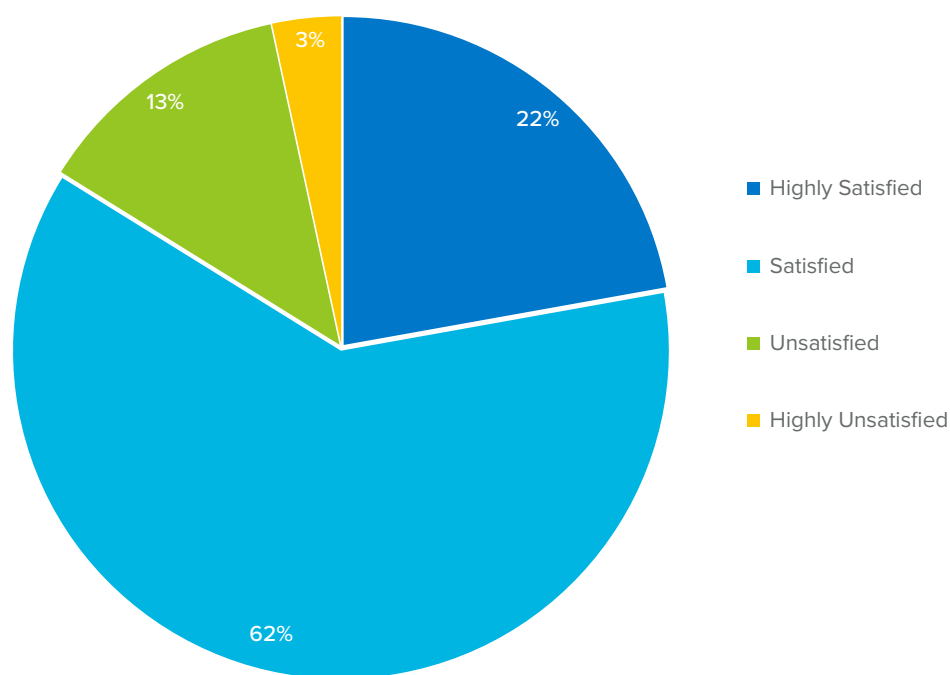
# Satisfaction

## Groupings for Capabilities

*Please indicate your level of satisfaction with the Laboratory Information System (LIS) your organization is currently using.*

n = 266

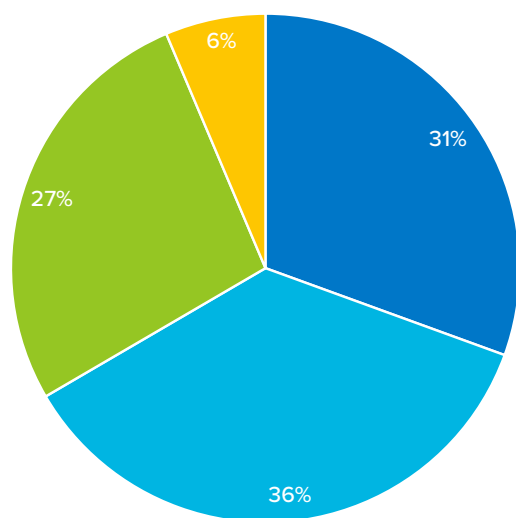
- ▶ Only 22% of those surveyed expressed a high level of satisfaction with their existing LIS
- ▶ Another 62% said they are satisfied
- ▶ 13% of respondents reported being unsatisfied, with an additional 3% stating they were highly unsatisfied



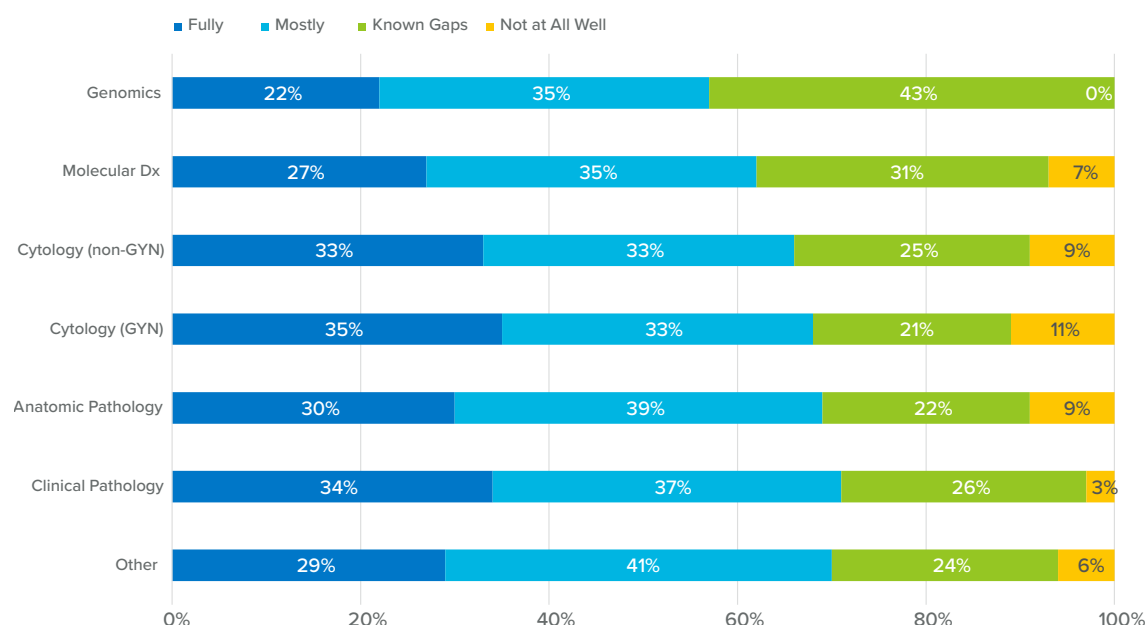
# Satisfaction

## Support for Testing Needs

Please indicate how well your LIS supports the needs of your specific testing. n = 454



- ▶ Thirty-one percent (31%) of respondents stated their LIS fully supports their testing needs.
- ▶ Another 36% said their LIS mostly meets their testing-specific needs.
- ▶ More than one in four (27%) indicated there are known gaps in the LIS's ability to meet their testing needs.
- ▶ 6% responded their LIS didn't support their testing needs at all well.



As labs expand, they may attempt to conduct new types of test on an LIS that is not equipped for them, leading to dissatisfaction. This problem can be remedied by integrating a configurable, supplementary LIS with the primary one.

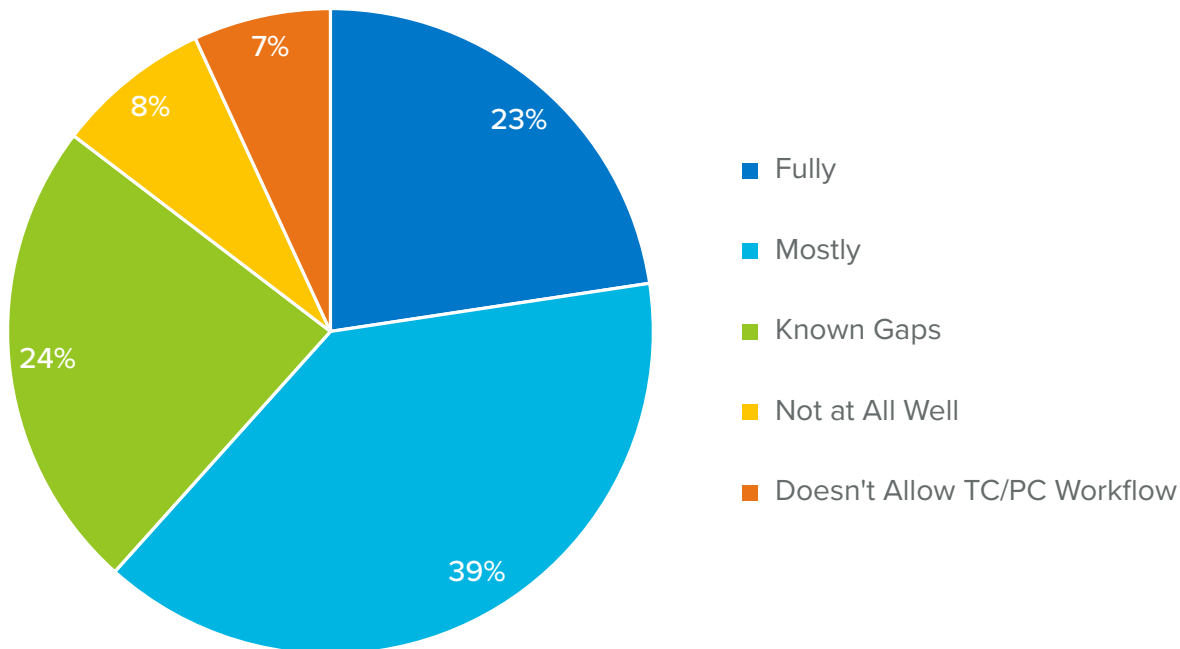


# Satisfaction

## Support for TC/PC Workflow

*Please indicate how well your LIS handles all aspects of TC/PC workflow. n = 451*

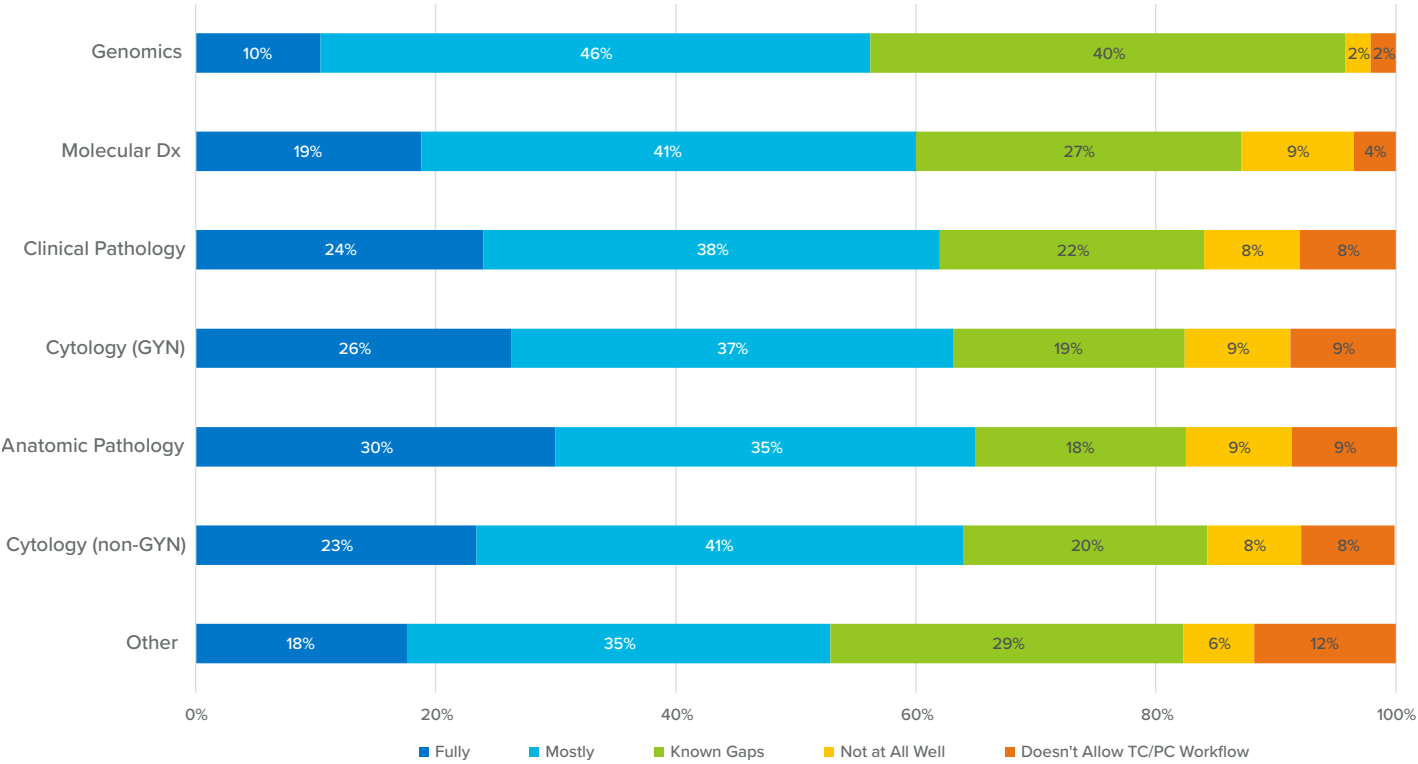
- ▶ Twenty-three percent (23%) of respondents stated their LIS fully supports all aspects of TC/PC workflow.
- ▶ Another 39% said their LIS mostly meets their TC/PC workflow needs.
- ▶ Almost one-quarter (24%) of survey responders indicated there are known gaps in the LIS's ability to meet their TC/PC workflow needs.
- ▶ Eight percent (8%) responded their LIS didn't support their TC/PC workflow needs at all well.
- ▶ Finally, 7% of responders stated that their current LIS doesn't allow TC/PC workflow.



# Satisfaction

## Ability of Current LIS to Handle All Aspects of TC/PC Workflow

n = 451



# Satisfaction

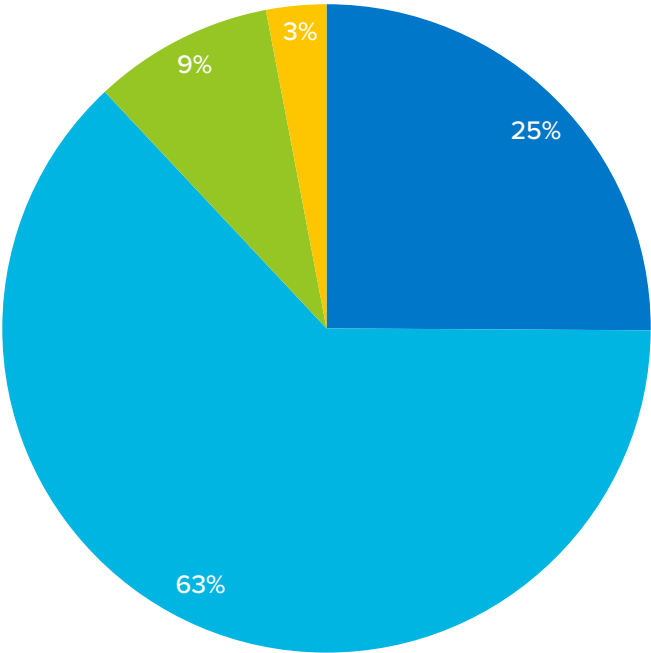
For research analysis purposes, the LIS vendors were categorized into the following groups:

HOSPITAL/EHR-BASED	CLINICAL	MOLECULAR DIAGNOSTIC
<ul style="list-style-type: none"> <li>▶ Allscripts</li> <li>▶ Cerner</li> <li>▶ Epic</li> <li>▶ MediTech</li> <li>▶ Sunquest</li> </ul>	<ul style="list-style-type: none"> <li>▶ CGM LABDAQ</li> <li>▶ Computer Trust Group (WinSURGE) (also in AP)</li> <li>▶ LAB/HEX</li> <li>▶ Labsoft/Labnet</li> <li>▶ Labware</li> <li>▶ Ligolab (also in AP)</li> <li>▶ NetLIMS (also in AP)</li> <li>▶ NetSoft (InteliPath) (also in AP)</li> <li>▶ Orchard</li> <li>▶ Pathagility (also in AP)</li> <li>▶ Sapio Exemplar</li> </ul>	<ul style="list-style-type: none"> <li>▶ Molecular Diagnostic</li> <li>▶ Star LIMS</li> <li>▶ Horizon</li> <li>▶ CSS Avalon</li> <li>▶ Ovation</li> </ul>
ANATOMIC PATHOLOGY	MULTI-SPECIALTY	CUSTOM/HOMEGROWN
<ul style="list-style-type: none"> <li>▶ AP Easy</li> <li>▶ Aspyra (CyberPATH)</li> <li>▶ Computer Trust Group (WinSURGE) (also in Clinical)</li> <li>▶ Ligolab (also in Clinical)</li> <li>▶ NetLIMS (also in Clinical)</li> <li>▶ NetSoft (InteliPath) (also in Clinical)</li> <li>▶ Novopath</li> <li>▶ Pathagility (also in Clinical)</li> </ul>	<ul style="list-style-type: none"> <li>▶ SCC Soft</li> <li>▶ XiFin LIS</li> </ul>	

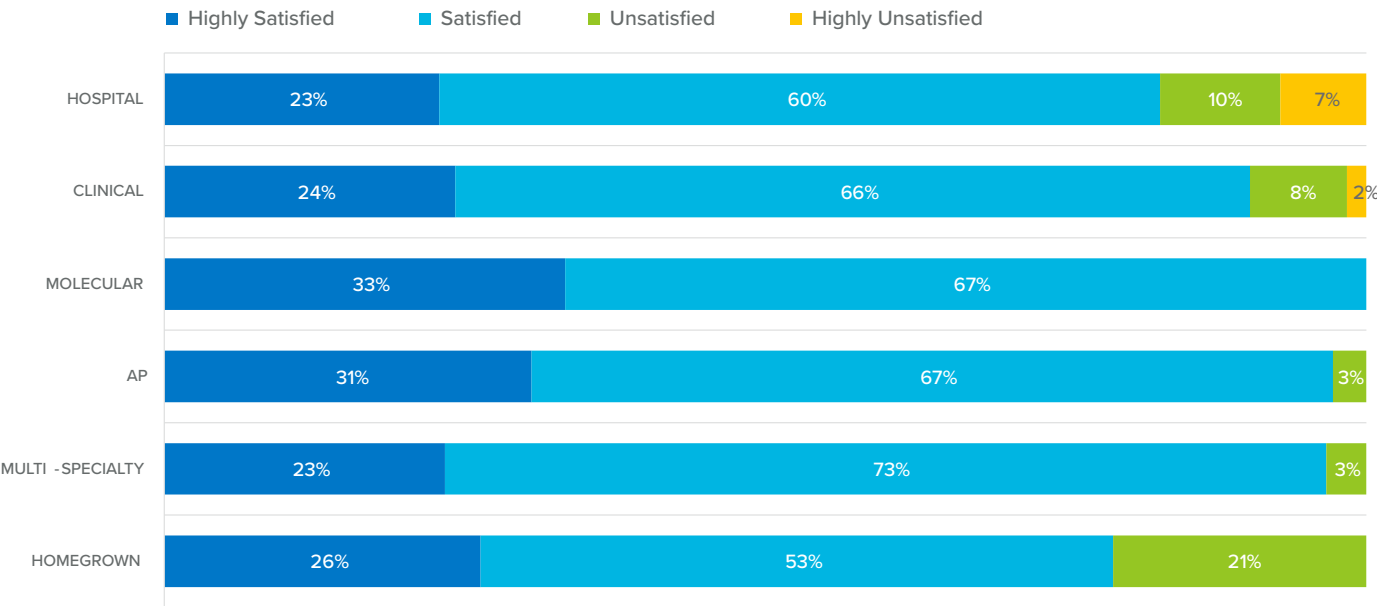
# Satisfaction

## LIS patient reports

Please indicate your satisfaction with the patient reports produced by your LIS. n = 266



- ▶ One quarter (25%) of respondents stated they are highly satisfied with the patient reports provided by their current LIS.
- ▶ Another 63% reported they were satisfied.
- ▶ 9% overall stated they were unsatisfied with their LIS patient reports, with 3% reporting highly unsatisfied.

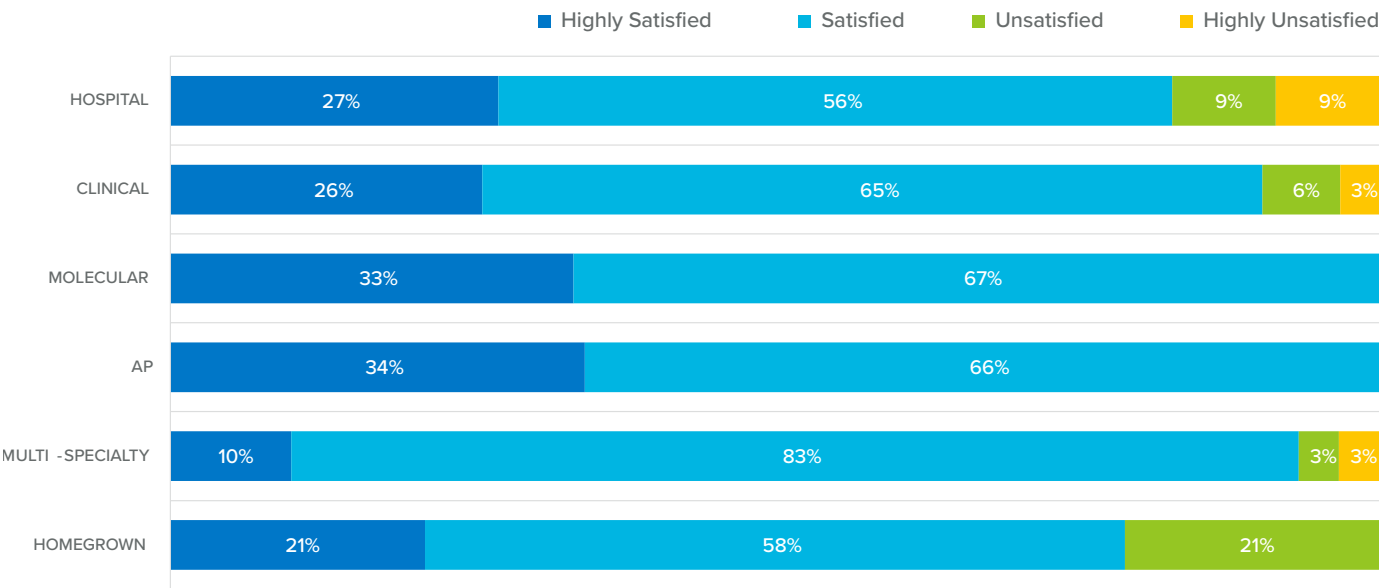
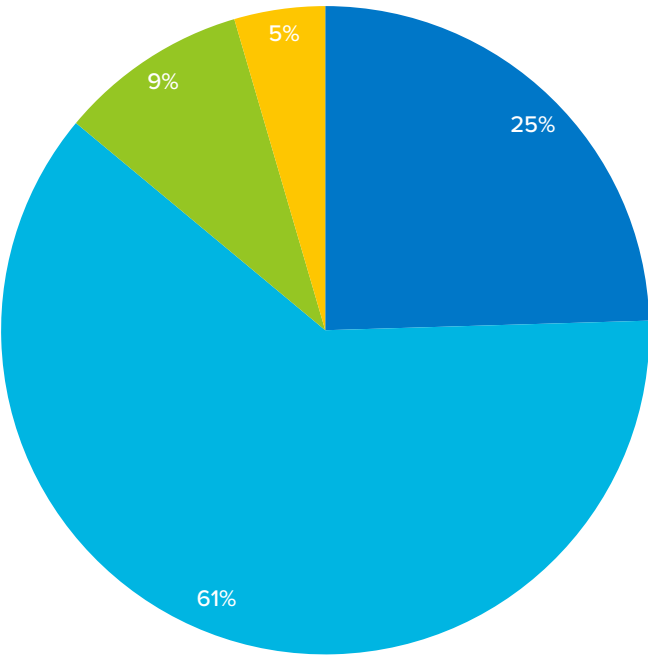


# Satisfaction

## LIS management reports

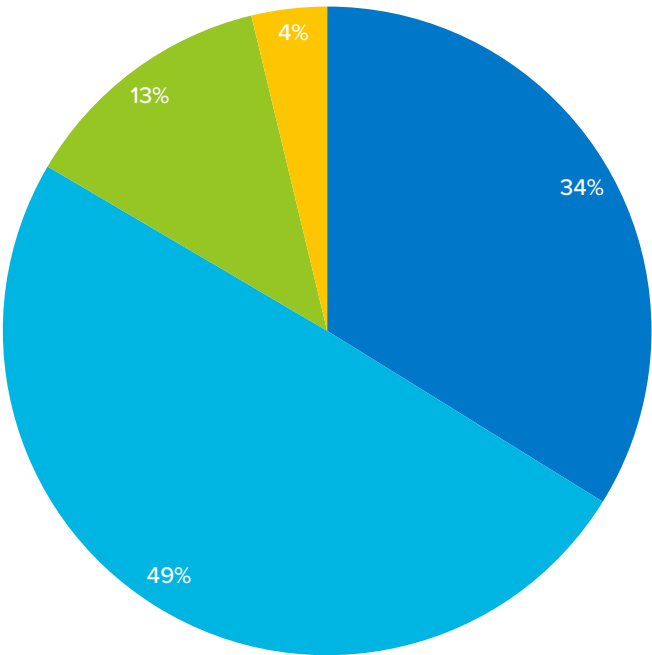
Please indicate your satisfaction with the management reports produced by your LIS? n = 265

- ▶ 25% of all respondents indicated a high level of satisfaction with their LIS management reports.
- ▶ 61% reported they were satisfied.
- ▶ 9% stated they were unsatisfied with their LIS management reports and 5% indicated they were highly unsatisfied with the management reports available through their LIS.
- ▶ Laboratories using hospital/EHR-based LIS are the most dissatisfied with both patient reports and management reports.

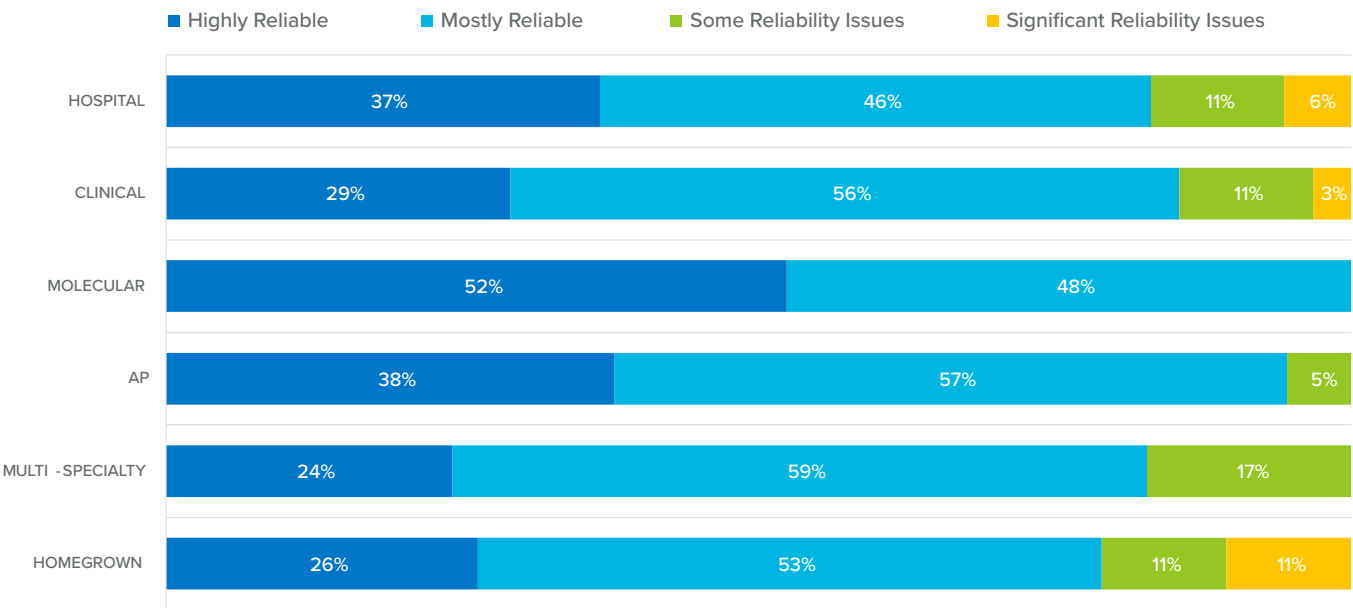


# Reliability

Please indicate the reliability of your LIS. n = 232



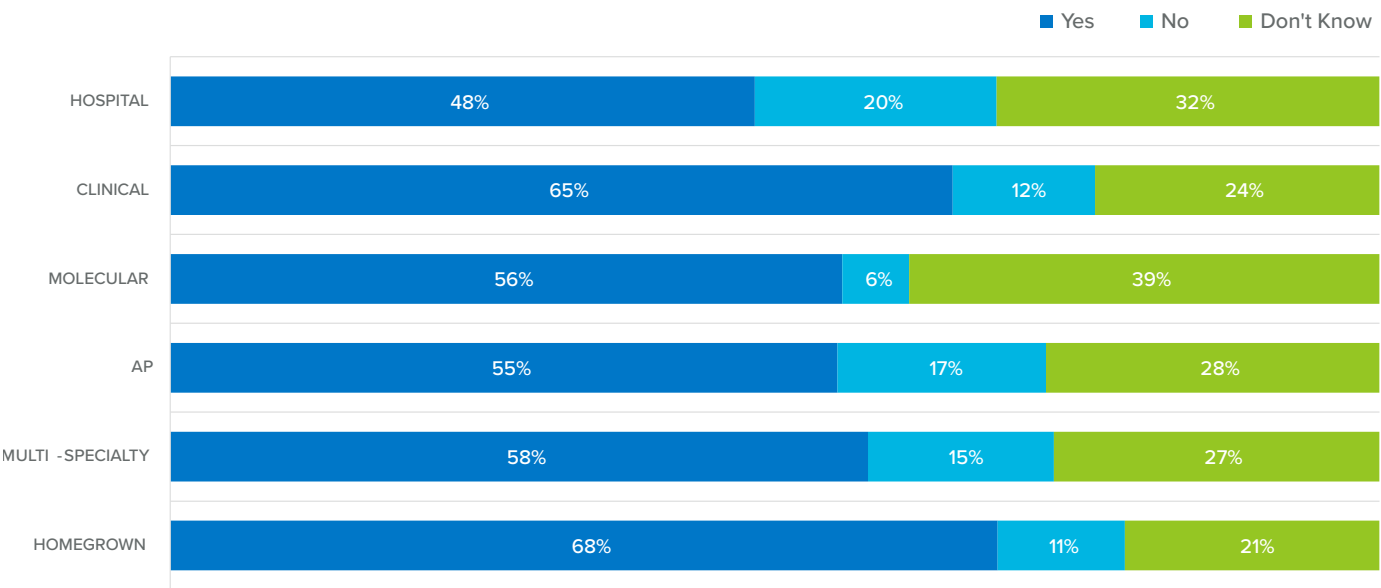
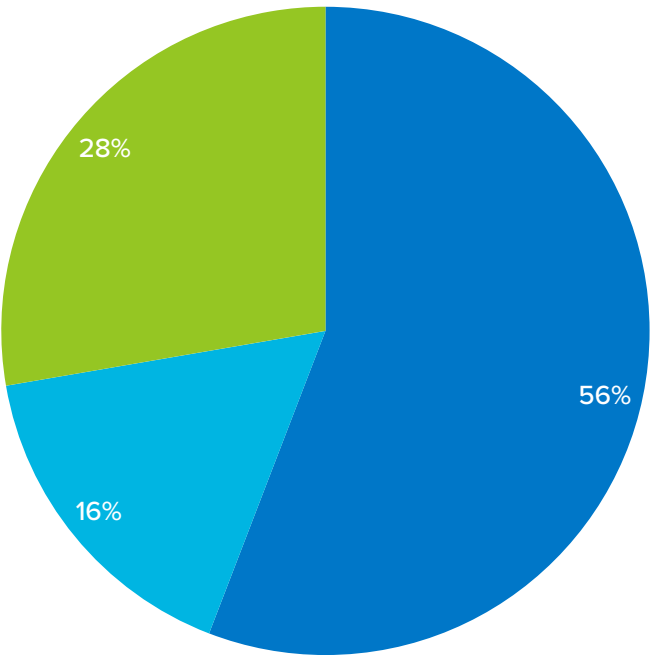
- ▶ 34% indicated highly reliable
- ▶ 49% reported mostly reliable
- ▶ 17% of organizations use a system with some (13%) or significant (4%) reliability issues.
- ▶ This year, more responders with homegrown/custom LIS reported reliability issues (22% this year versus 11% in 2021 reported some or significant reliability issues).



# Up To Date LIS Software

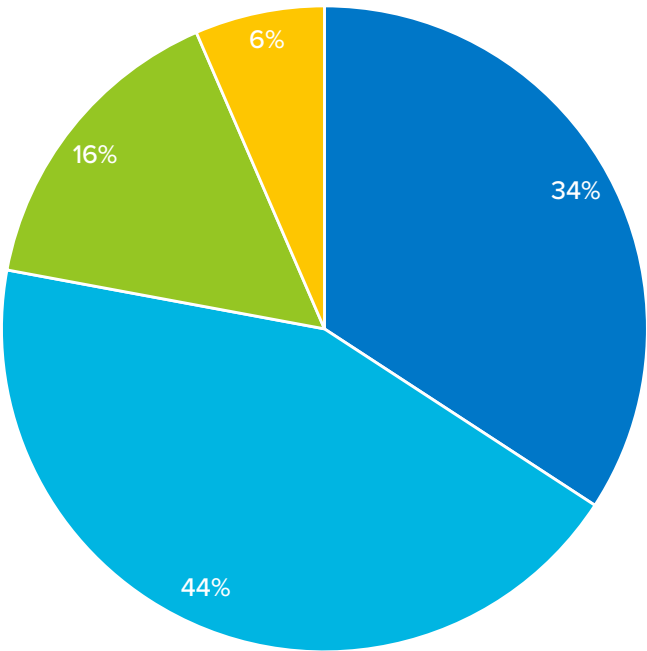
Is your organization operating on the most current version of your LIS software? n = 231

- ▶ 16% stated that their organization is NOT using the most current version of their LIS software.
- ▶ 28% stated they did not know whether the organization was on the current software version.
- ▶ There are numerous organizations that are failing to utilize the full range of capabilities offered by their systems.

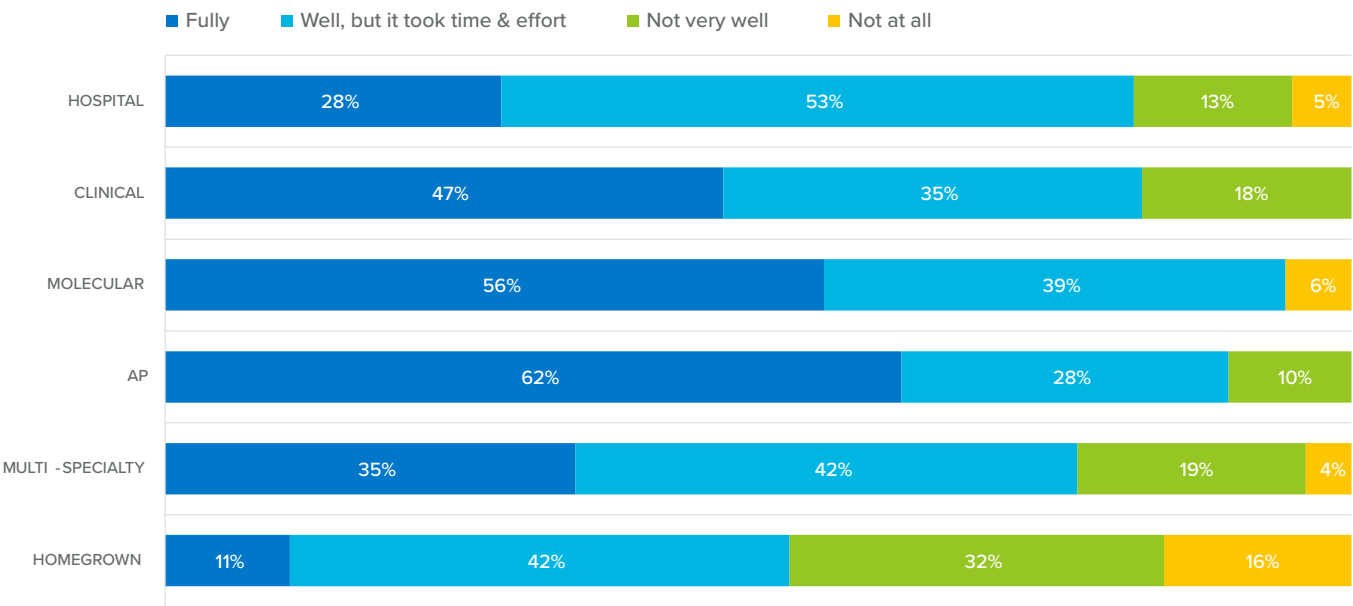


# LIS Integration

How well does your LIS integrate with other systems (e.g., EMRs/EHRs, RCM, devices, etc.)? n = 231



- ▶ 34% of respondents stated that their LIS integrates fully.
- ▶ 44% stated that their LIS integrates well, but it took time and effort to get there.
- ▶ 22% of respondents answered that their organization’s LIS was not very well (16%) or not at all well (6%) integrated with other systems.
- ▶ This year, more responders with homegrown/custom LIS reported issues with integration to other systems (48% reporting systems that do not integrate very well or at all well, compared against 21% in 2021).

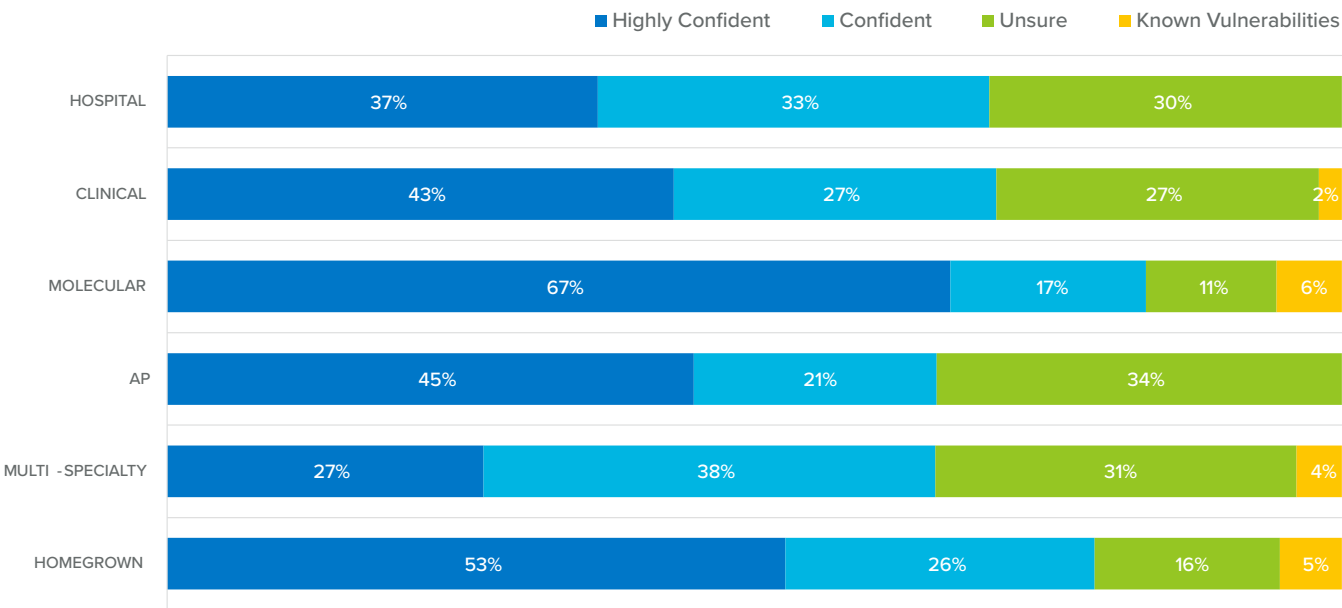
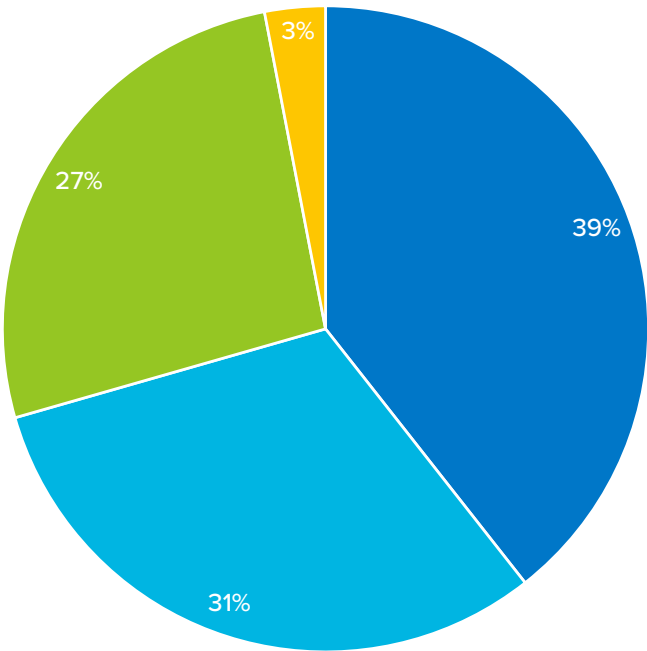




# LIS Security

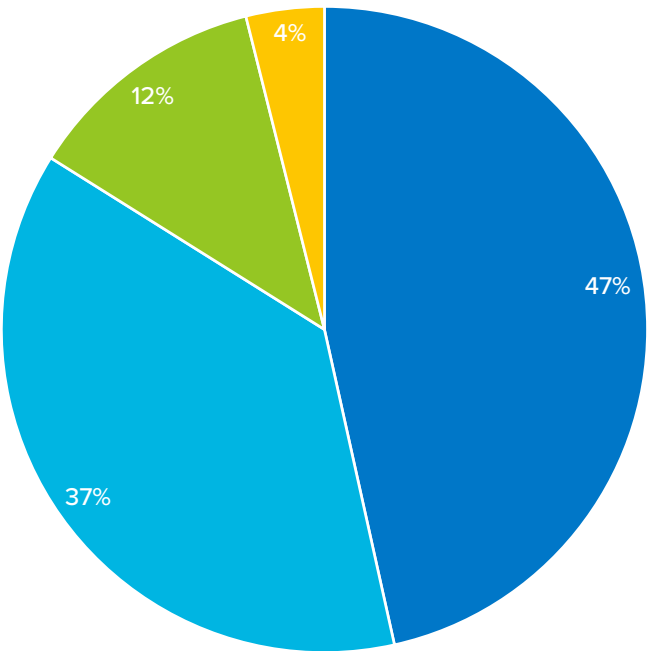
How confident are you that your current LIS is secure (e.g., from ransomware, virus attacks, etc.)? n = 231

- ▶ While 39% reported they are highly confident and another 31% reported they were confident, almost one-third (30%) of respondents stated that were either unsure in the security of their LIS (27%) or that their LIS has known security vulnerabilities (3%).
- ▶ This is an alarming finding given the volume of healthcare data on the dark web and the recent trends regarding ransomware attacks on healthcare-related entities.
- ▶ This year, more respondents reported known security vulnerabilities in their current LIS than last year, particularly among respondents from molecular diagnostics and clinical laboratories.

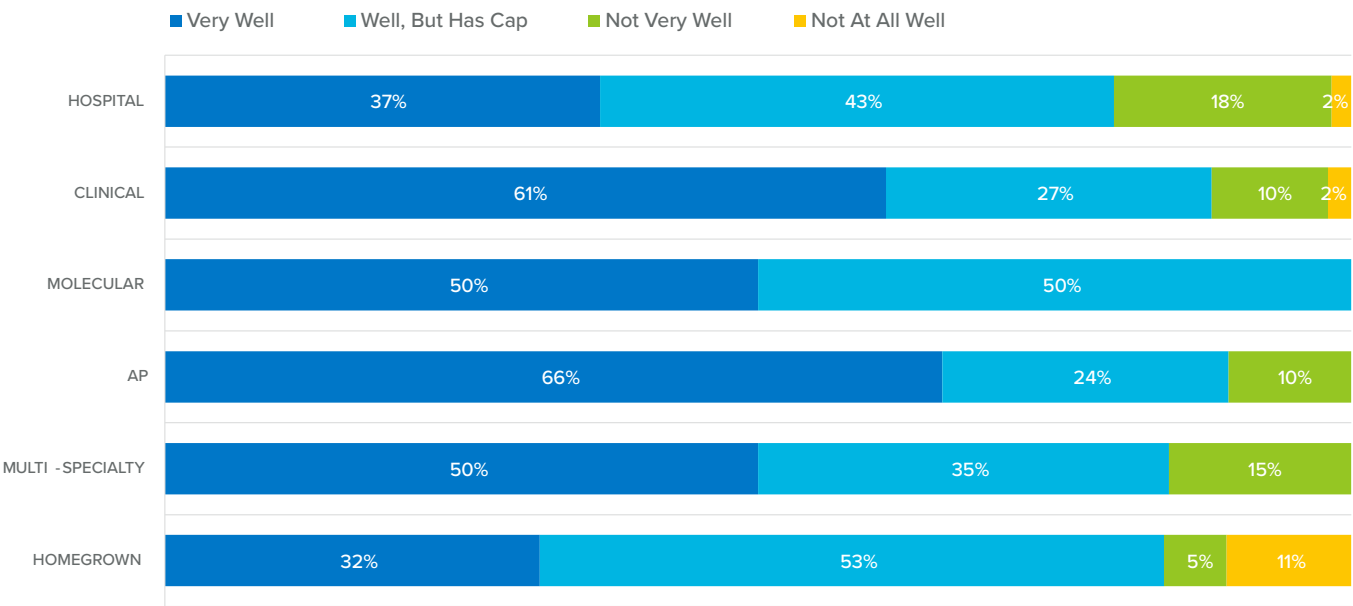


# LIS Scalability

How well does your current LIS scale to keep up with your growth?  
n =230



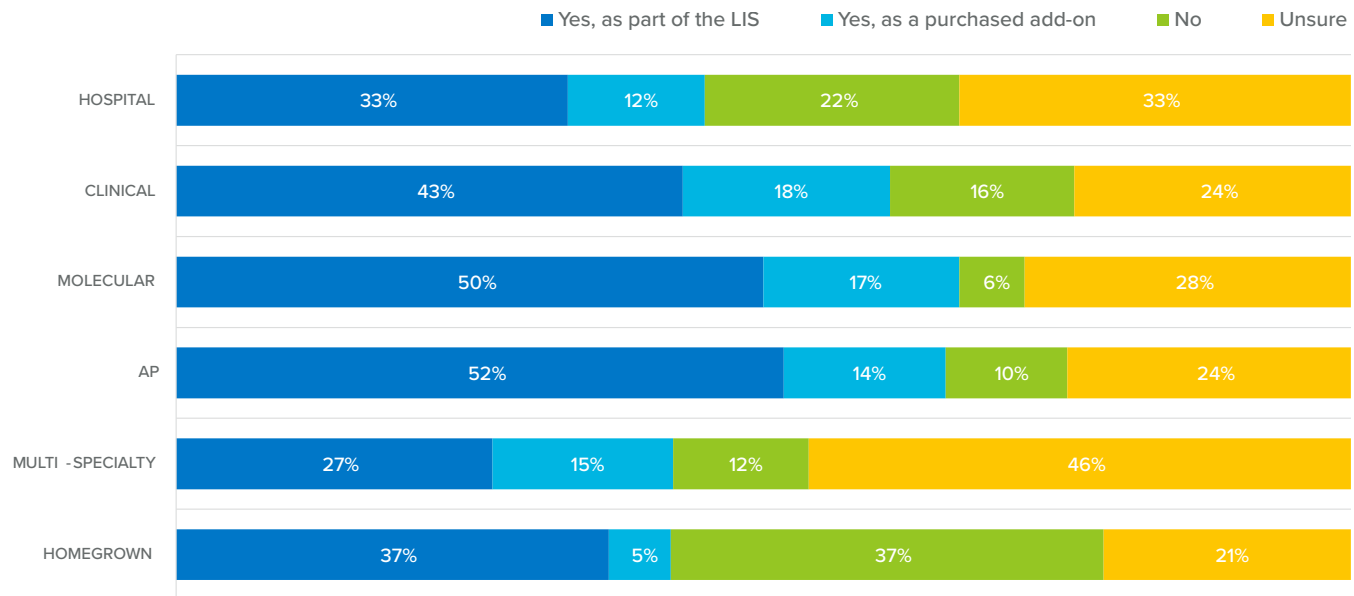
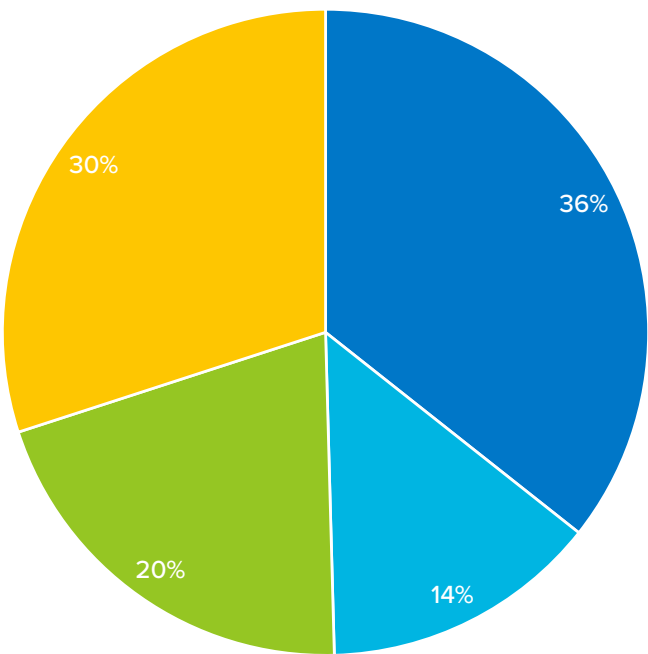
- ▶ 47% of respondents stated that their organization’s LIS scales well and can keep up with its growth.
- ▶ 37% stated that their organization’s LIS scales to keep up with near-term growth but has a ceiling.
- ▶ The final 16% of respondents reported that their LIS doesn’t scale very well (12%) or scales not at all well (4%).
- ▶ In this year’s survey, laboratories using hospital/EHR-based LIS and homegrown/custom LIS are the most dissatisfied when it comes to how well their current LIS can scale to keep up with growth.



# LIS Analytics

Does your current LIS have a robust analytics solution? n = 230

- ▶ 36% said their LIS offers a robust analytics solution as part of the LIS.
- ▶ 20% stated their LIS does not offer a robust analytics solution.
- ▶ 14% reported having purchased an add-on analytics solution.
- ▶ The final 30% stated that they were unsure as to whether their LIS offers a robust analytics solution.

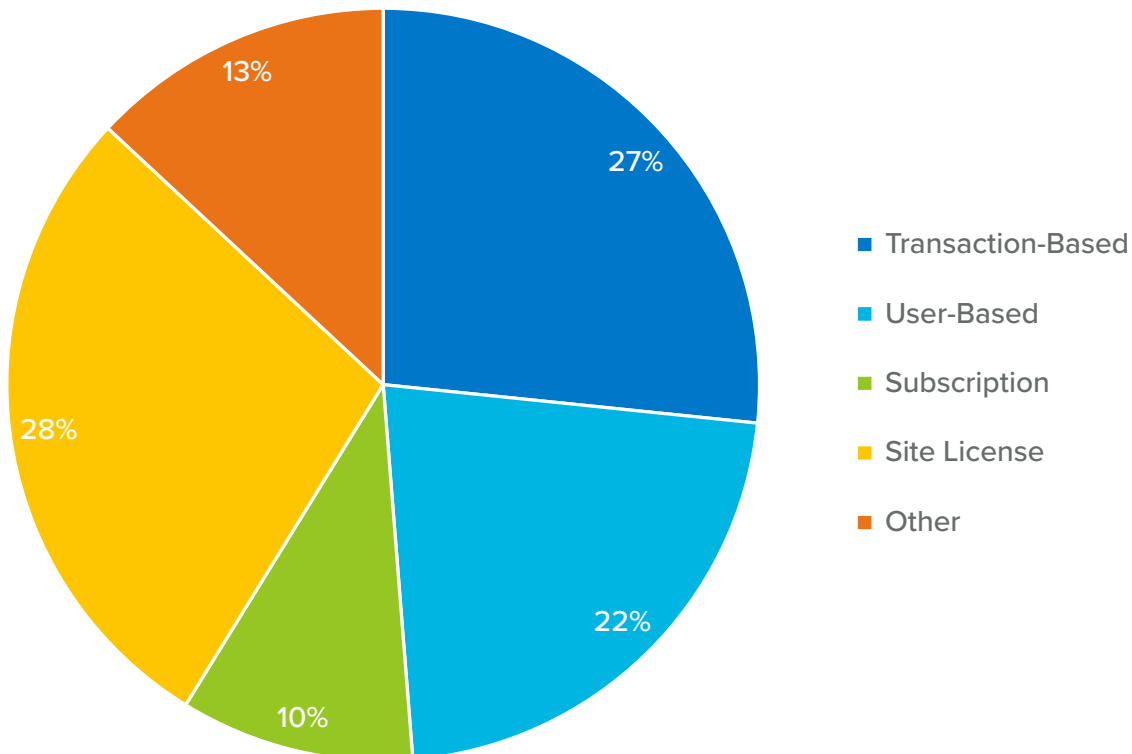


XiFin sees robust data and analytics as one of the most important capabilities in an LIS. How can an organization deeply understand their business (both financially and operationally) without such analytic capabilities?

## LIS Pricing Model

What is your LIS pricing model? n = 199

- ▶ 27% Transaction-Based
- ▶ 22% User-Based
- ▶ 10% Subscription
- ▶ 28% Site License
- ▶ 13% Other



## LIS Average Annual Cost

*On average, what does your organization pay annually for your LIS?*

n = 133

AVERAGE ANNUAL COST (\$)	% OF RESPONDERS
49,999 or less	17%
50,000–99,999	8%
100,000–149,999	5%
150,000–249,999	4%
250,000 or more	6%
Unsure	60%

## LIS Implementation Cost

*Approximately how much did your organization pay to install/ implement your LIS?* n = 133

IMPLEMENTATION COST (\$)	% OF RESPONDERS
24,999 or less	13%
25,000–99,999	9%
100,000–149,999	4%
150,000–199,999	1%
200,000–249,999	1%
250,000 or more	14%
Unsure	58%

# Factors

## Factors that may cause consideration to add or change an LIS

*What factors would make you consider changing or adding an LIS?*

This was an open-ended question.

- ▶ Better product/technology/features
- ▶ Better dashboards/innovative reporting/data analytics/data mining
- ▶ Compatibility across system/infrastructure
- ▶ Changes in testing performed
- ▶ Ease of use/ease of order entry
- ▶ Performance
- ▶ Integration
- ▶ Scalability/keep up with volume growth
- ▶ Speed
- ▶ Reliability/lack of downtime
- ▶ Physician portal
- ▶ Tracking of specimens and supplies
- ▶ Compatible with microphotographs
- ▶ Interface with laboratory equipment
- ▶ Better service for patients
- ▶ Security
- ▶ New benefits
- ▶ More efficient workflows
- ▶ Quality control
- ▶ Cost
- ▶ Online ordering
- ▶ Adaptability
- ▶ Customer service
- ▶ Flexibility to configure final report

## Moving Forward

*We urge you to reach out to us to learn more about how XiFin LIS can better support your goals if you:*

- ▶ *Are unsatisfied with your current LIS*
- ▶ *Aren't sure if your current LIS is running on the latest operating version*
- ▶ *Have known gaps in your current LIS's ability to meet your organization's near or long term testing needs*
- ▶ *Aren't confident of the security of your current LIS*

**[www.XiFin.com/LISREPORT](http://www.XiFin.com/LISREPORT)**

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