Next-Generation Sequencing

SURVEY RESULTS

October 2013

CONDUCTED BY:

Bio·IT World

Bio-ITWorld.com

Study Background & Purpose

In October 2013, Bio-IT World conducted a survey within the biotechnology and pharmaceutical sector on Next Generation Sequencing. The purpose of the study was to explore Next Generation Sequencing platforms, software, cloud technologies and the challenges faced by those in the industry.

With 232 respondents, the study is projected to carry a margin-of-error under 2%.

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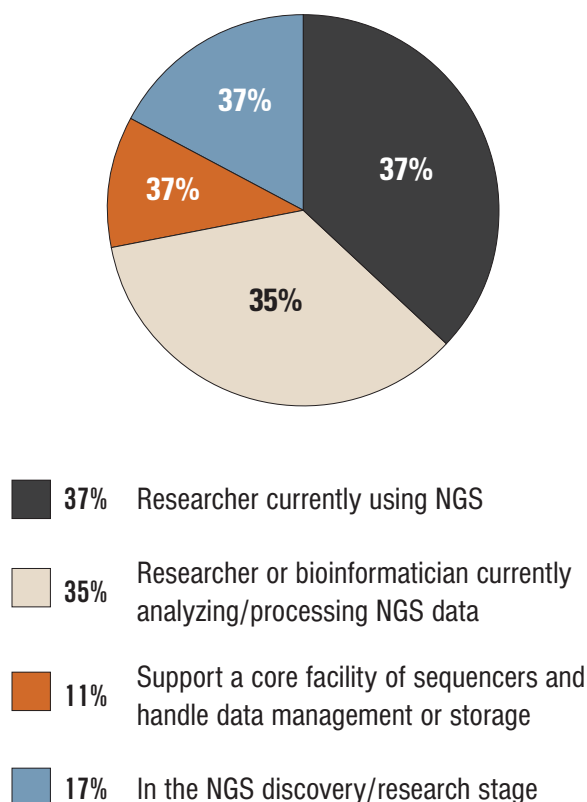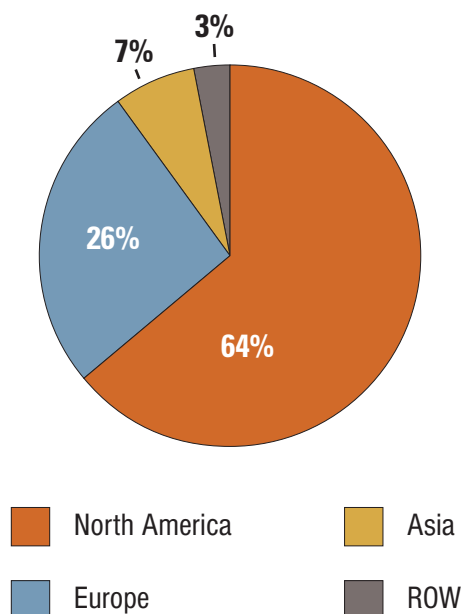
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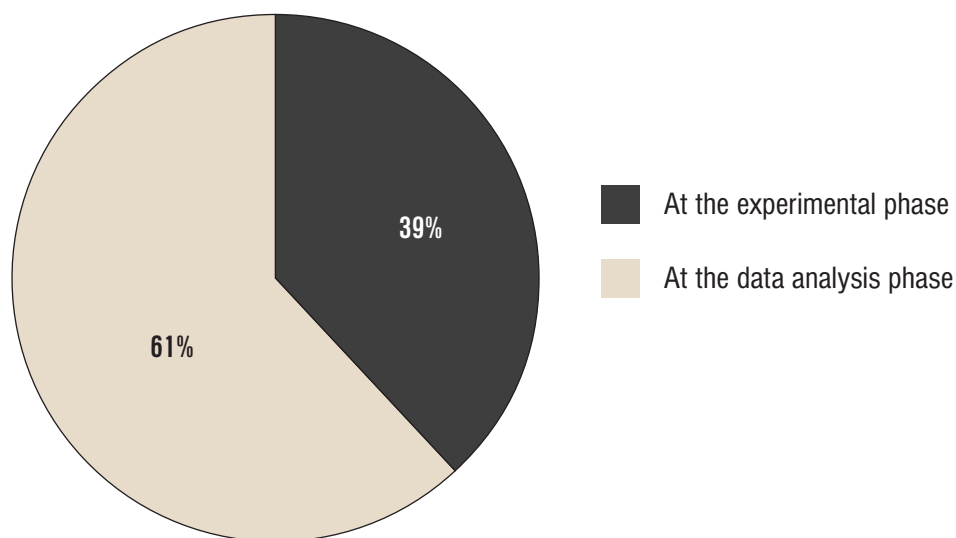- Free Industry Whitepapers, Podcasts and Webinars
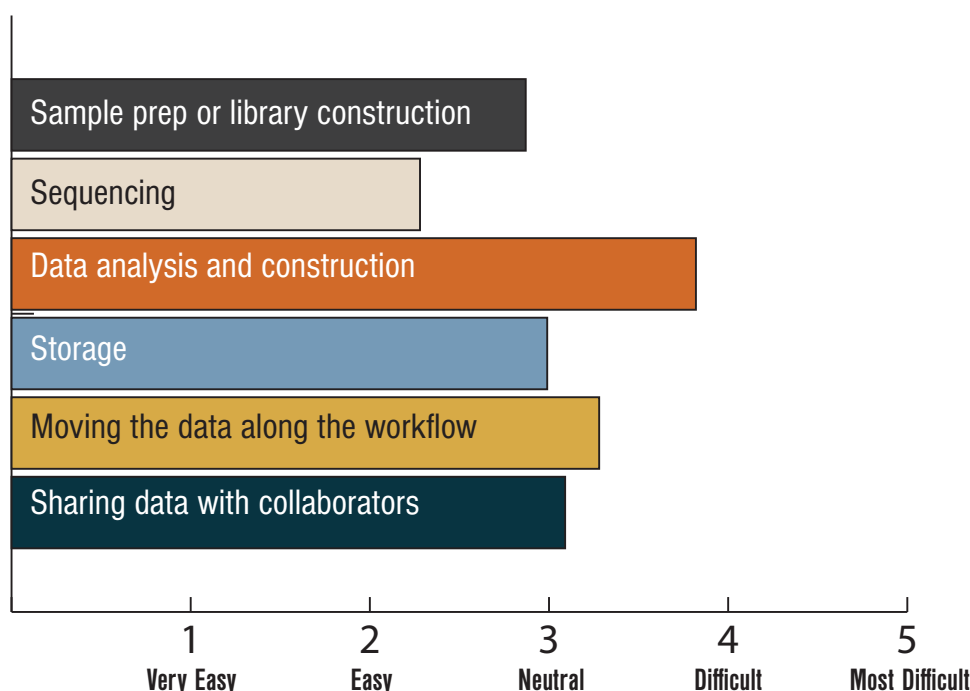- Market Survey Results
- Complimentary Newsletters

Study Demographics

- North America
- Europe
- Asia
- ROW

64% — North America
26% — Europe
7% — Asia
3% — ROW

- **37%** Researcher currently using NGS
- **35%** Researcher or bioinformatician currently analyzing/processing NGS data
- **11%** Support a core facility of sequencers and handle data management or storage
- **17%** In the NGS discovery/research stage

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Which of the following describes the phase your research is in?

- ■ At the experimental phase
- ■ At the data analysis phase

39%

61%

Ranked in order of difficulty, with 5 being the most difficult, please define the most challenging processes you face within your NGS workflow.

Sample prep or library construction

Sequencing

Data analysis and construction

Storage

Moving the data along the workflow

Sharing data with collaborators

| 1 | 2 | 3 | 4 | 5 |
| Very Easy | Easy | Neutral | Difficult | Most Difficult |

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What are the challenges of NGS moving to the clinic?

Respondents were allowed to select more than one answer.

Response	Percentage
Data Management	**52.9%**
Data Storage	**45.2%**
Analytics	**54.3%**
Inadequate Mutation Databases	**33.9%**
High costs	**33.0%**
Training	**37.6%**
Security	**28.5%**
Compliance issues	**31.7%**
Cost	**26.2%**
Physician buy-in	**28.1%**
Other (please specify)	**7.2%**

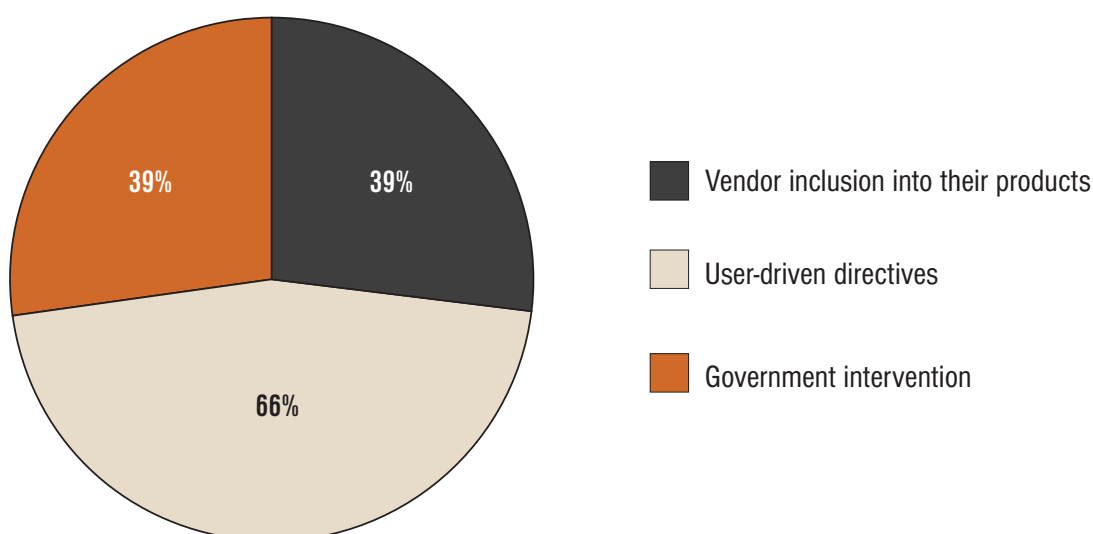## How can we develop a real industry reference point for better data management in conducting future NGS experimentation?

Respondents were allowed to select more than one answer.

- **Vendor inclusion into their products** — 39%
- **User-driven directives** — 66%
- **Government intervention** — 39%

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How long do you personally believe NGS data needs to be stored?

Research Data	
Indefinitely	30%
Over 10 years	13%
Over 5 years	22%
2-5 years	23%
Under 2 years	12%

Clinical Data	
Indefinitely	41%
Over 10 years	24%
Over 5 years	17%
2-5 years	14%
Under 2 years	4%

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What single event do you feel could most negatively impact the future of NGS

Pie chart values: 4%, 6%, 24%, 15%, 4%, 5%, 14%, 6%, 13%, 8%

Legend:
- Migration of sequencing to big sequencing centers from smaller labs
- Lack of industry standards
- Budget cuts in NIH funding
- Unplanned, or overrun costs
- Lack of qualified scientists
- Lack of qualified analysts
- Inadequate data visualization tools
- Poor data management
- High storage costs
- Other
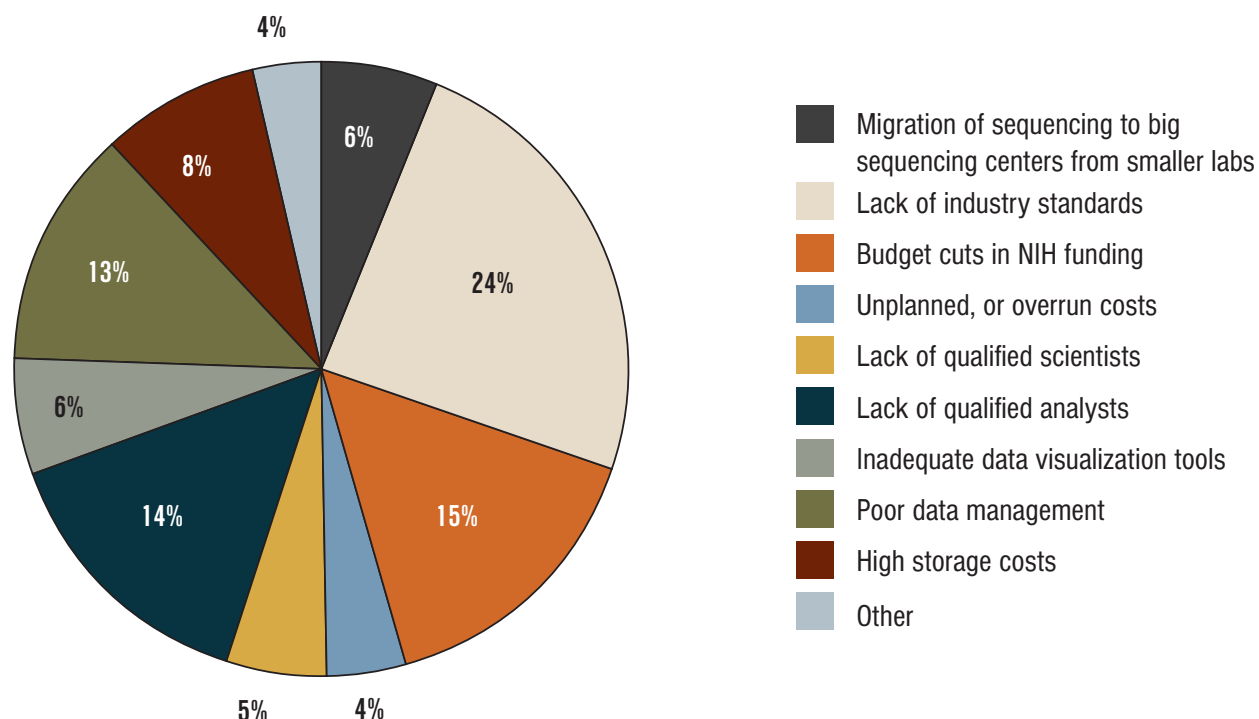
Do you own, or support one of the following NGS platforms?

Pie chart values: 6%, 12%, 61%, 8%, 1.4%, 11%

Legend:
- Life Technologies
- Illumina
- Roche/454
- PacBio
- Unsure
- Other

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Next-Generation Sequencing Survey
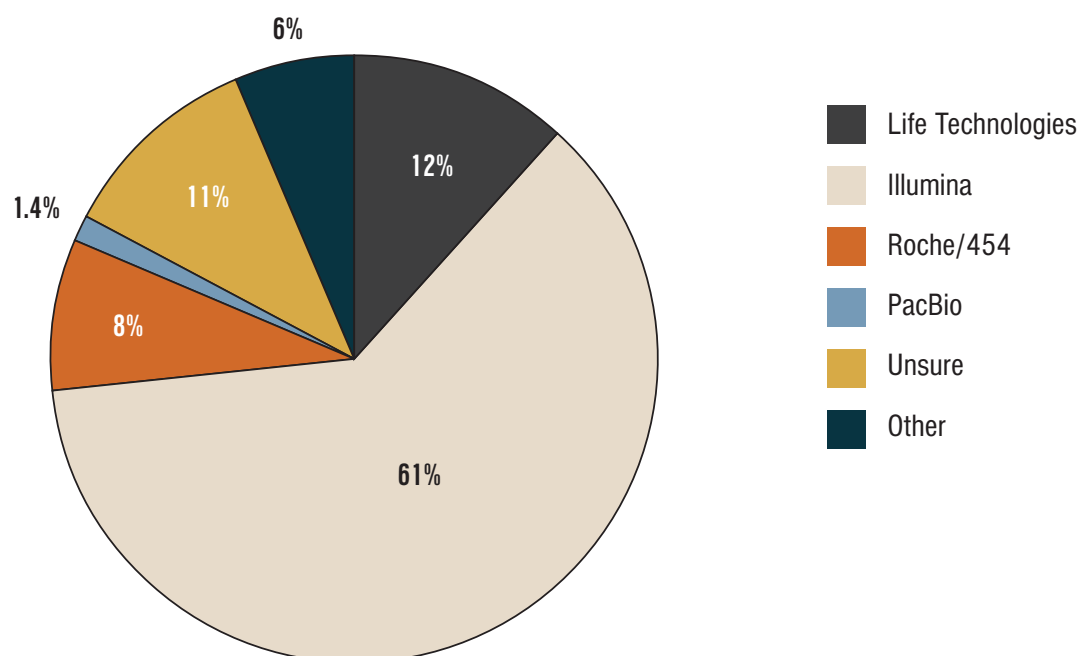
For Life Technology platform users, which system do you use?*

- Ion Torrent — 85%
- SOLiD 3
- SOLiD 4 — 8%
- SOLiD 5500 — 4%
- Unsure — 4%
- Other — 8%
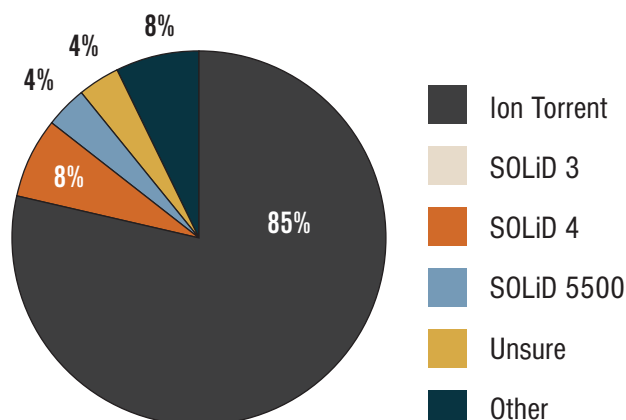
For Illumina platform users, which system do you use?*

Product	Percentage
GA	2.2%
GA II	5.8%
GA IIx	18.0%
GA2	0.7%
Genome Analyzer	1.4%
Genome Analyzer II	6.5%
Genome Analyzer IIx	6.5%
HiScanSQ	4.3%
HiSeq	36.2%
HiSeq 2000	48.6%
iScan	2.2%
Omni Express Plus	2.2%
Solexa	4.3%
Seq II	0.0%
Unsure	1.4%
Other	18.1%

For Roche/454 platform users, which system do you use?*

- GS FLX Titanium — 63%
- GS Junior — 47%
- Microbeta — 5%
- Titanium — 10%
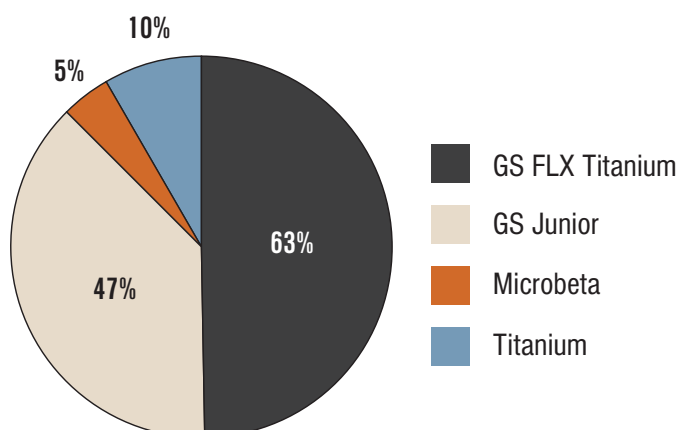
For PacBio platform users, which system do you use?*

- SMRT Sequencing — 100%
- Unsure
- Other
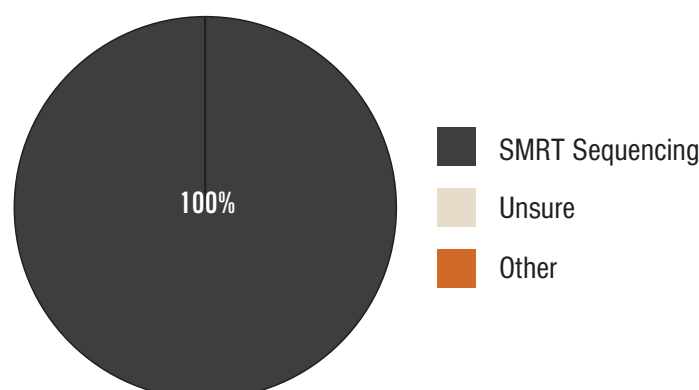
Respondents were allowed to select more than one answer.

In the area of NGS software, please rate your satisfaction with current products available in the following categories based on ability to support your research demands:

Category	
Genome assembly	
Single molecule sequencing systems	
High-throughput sequencing	
Re-sequencing	
Sequence Data Management	
Single molecule analysis	
Pre-analysis	
Comparative analysis	
Follow-up analysis	
LIMS	
Pipeline	
Visualization	

1 — Extremely Unsatisfied
2 — Unsatisfied
3 — Neutral
4 — Satisfied
5 — Extremely Satisfied
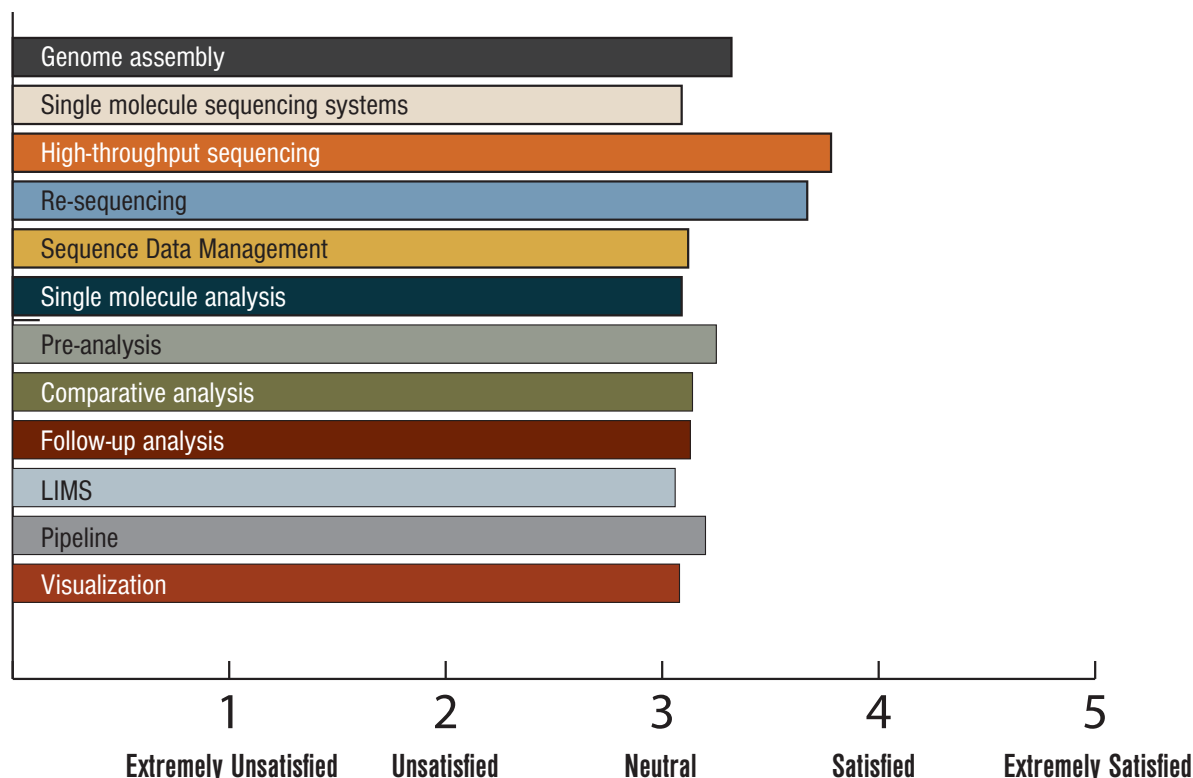
Is your current computer infrastructure (servers/storage/etc.) adequate enough to support today's needs for NGS?

- Yes — 50%
- No — 34%
- Unsure — 16%
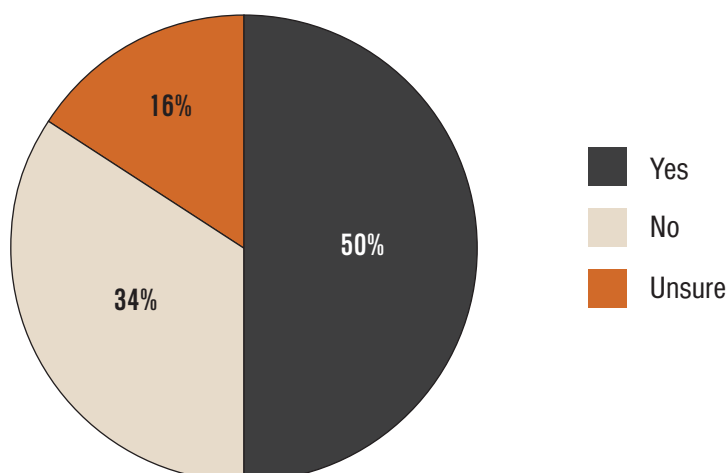
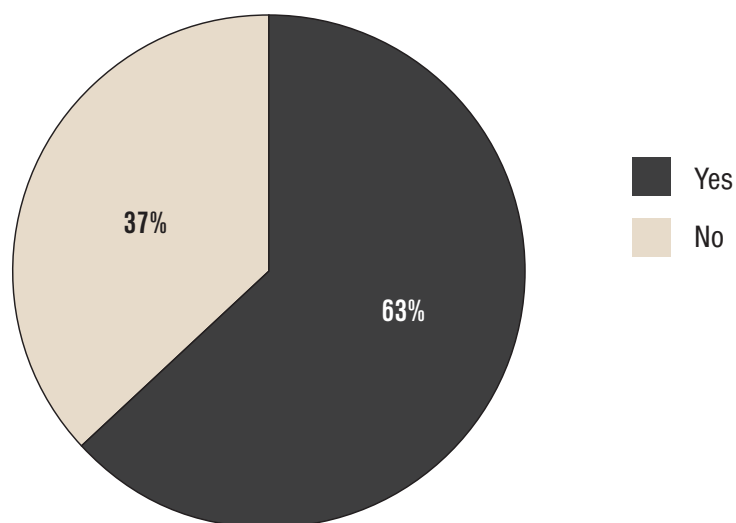## Are you considering using cloud technologies for NGS data analysis/sharing?

37%

63%

■ Yes

□ No

When are you considering using cloud technologies?

10%

48%

42%

■ Within the coming year

□ Within the coming 2-3 years

■ Other
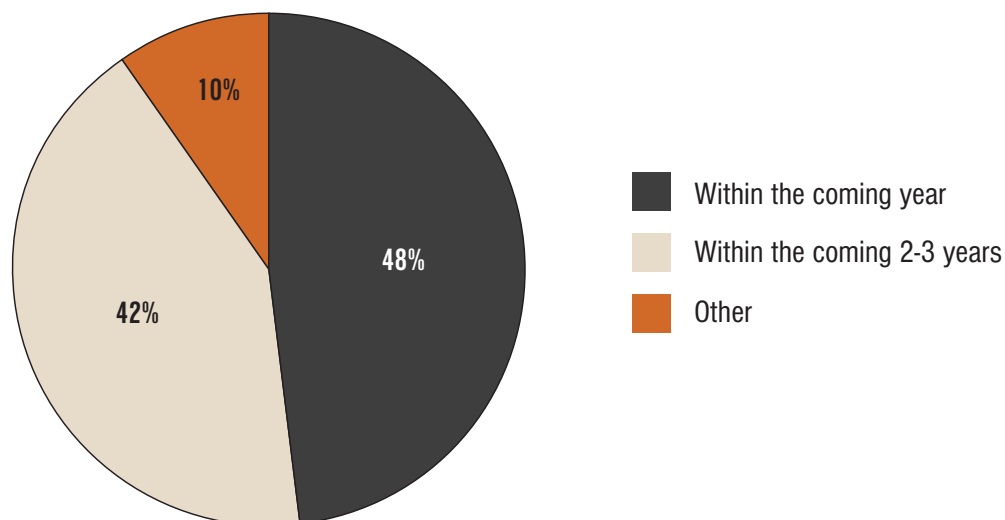
What are the hurdles to embracing cloud computing/storage?

Respondents were allowed to select more than one answer.

- Cost
- Availability
- Knowledge
- Not advanced enough
- Data Transfer Issues
- Security
- Internal resources
- Other

4%
20%
51%
60%
21%
46%
25%
14%
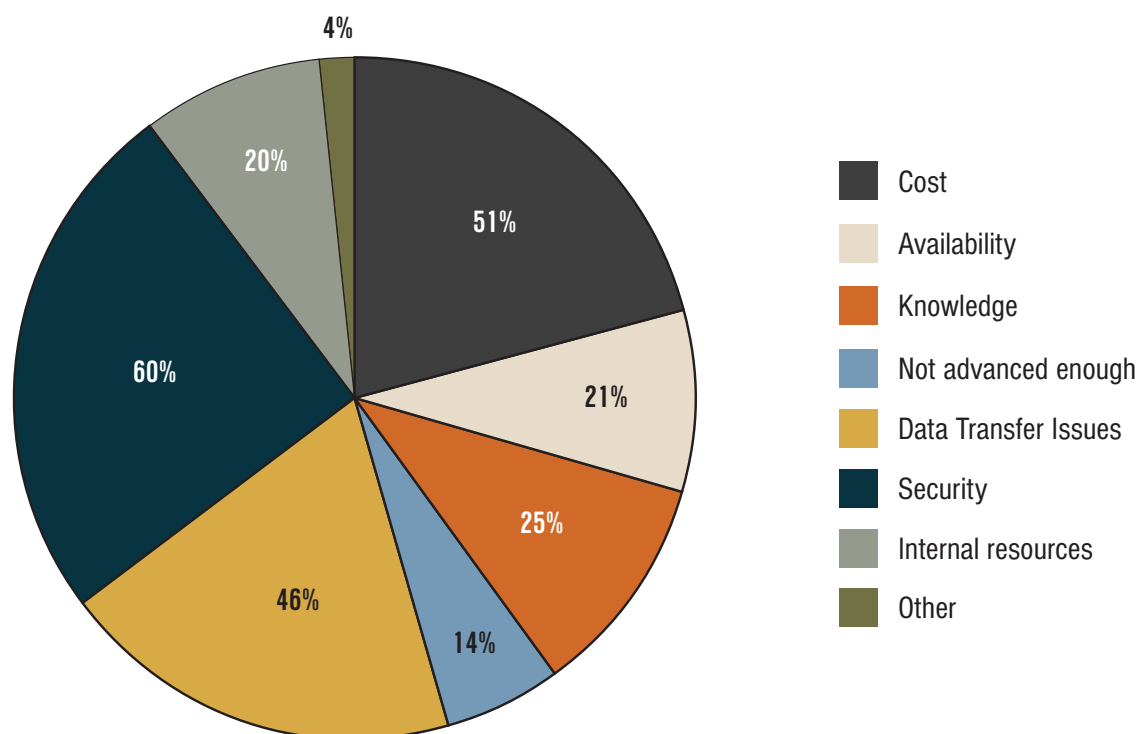
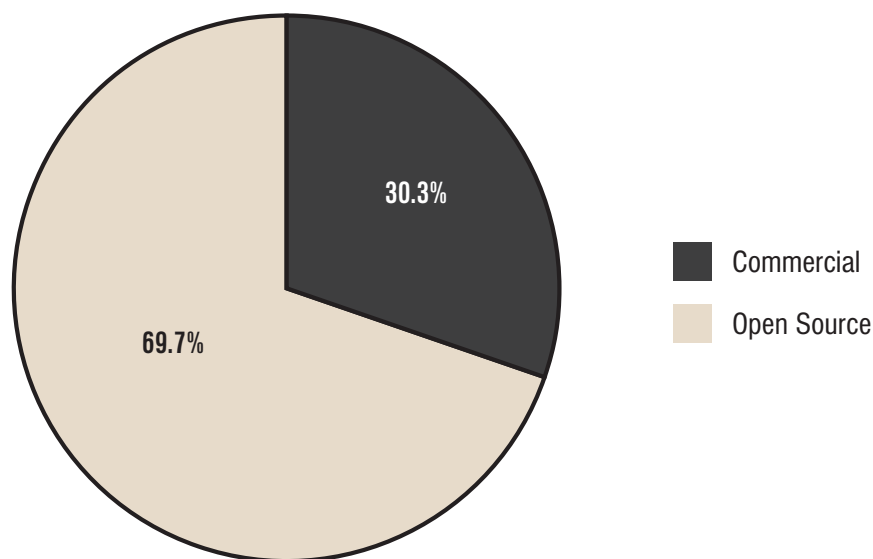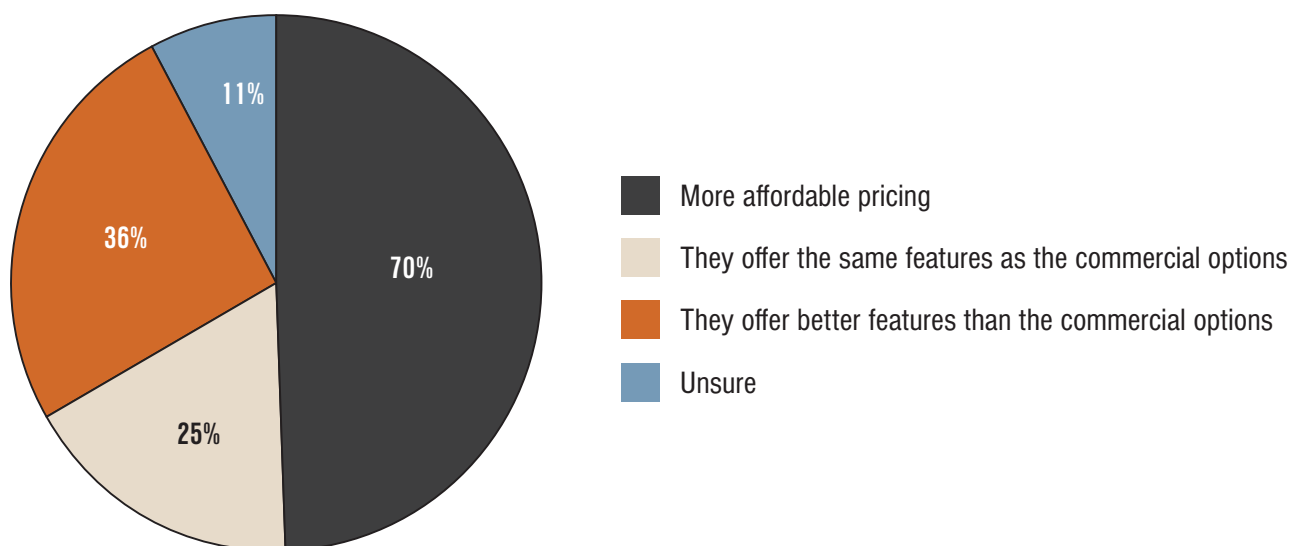## Does your organization prefer commercial or open-source NGS software solutions?

- 30.3% Commercial
- 69.7% Open Source

If open-source, what are your reasons for choosing an open-source NGS software solution?

Respondents were allowed to select more than one answer.

- 70% More affordable pricing
- 25% They offer the same features as the commercial options
- 36% They offer better features than the commercial options
- 11% Unsure

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Are you satisfied with the lowered cost, higher output, and integrated offerings coming from NGS platform products today?

- Yes — 51%
- No — 31%
- Unsure — 18%
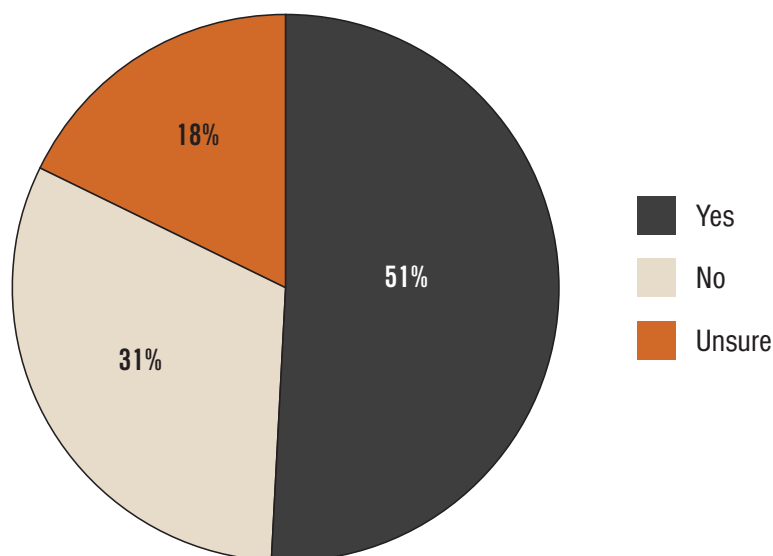
How much of your overall NGS work is conducted within your organization, vs. using an outside service?

- Under 25% done in-house — 18%
- Under 50% done in-house — 14%
- Under 75% done in-house — 7%
- Over 75% done in-house — 19%
- 100% done in-house — 42%
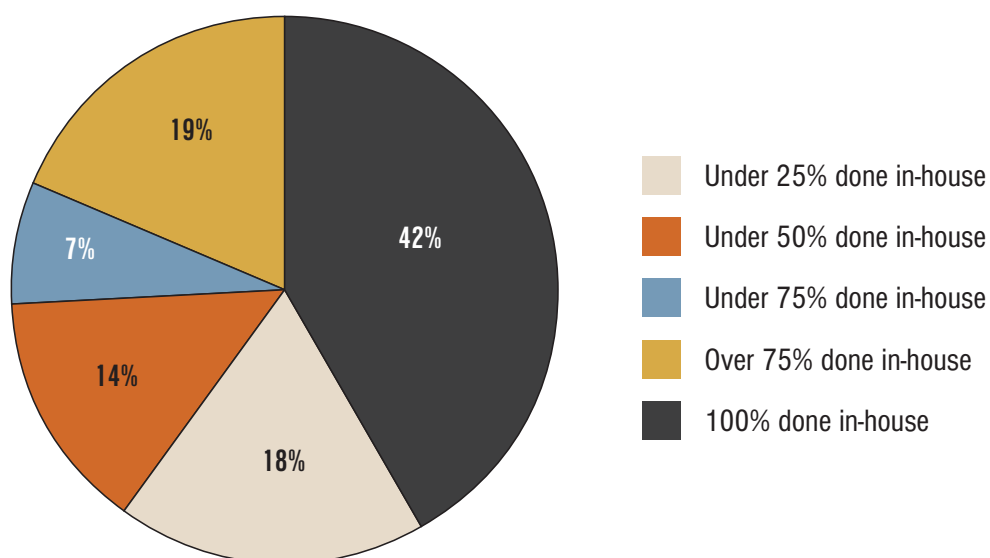
Are you currently planning to outsource NGS?

- Yes — 10%
- No — 90%
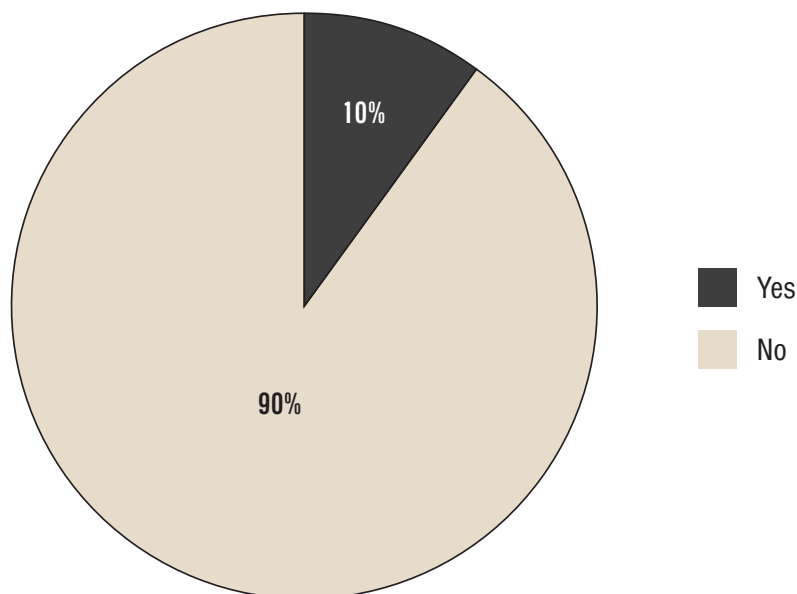
How concerned are you about security issues with cloud based NGS solutions?

- Not at all — 10%
- Mildly — 33%
- Reasonably — 41%
- Very — 16%

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