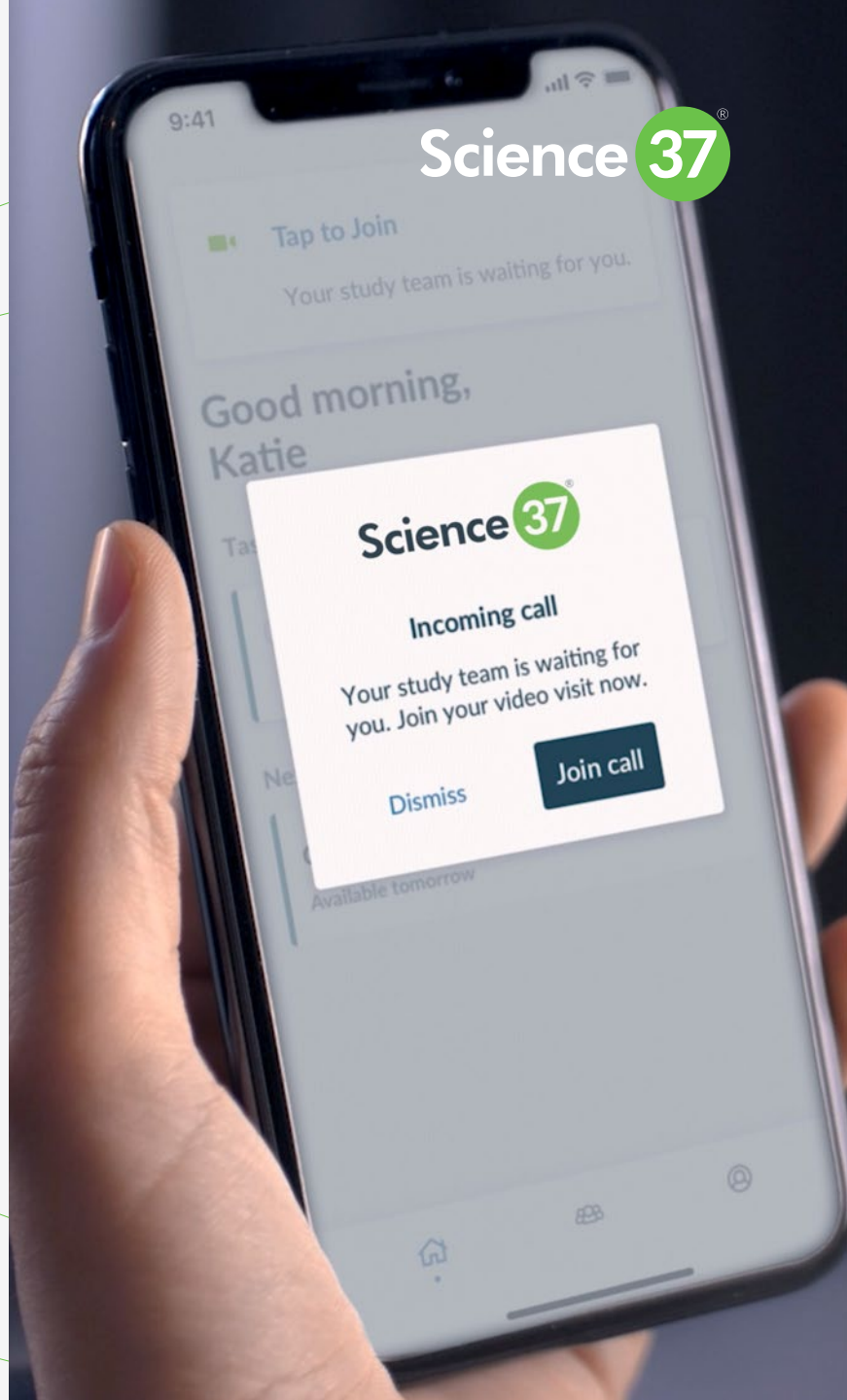
Science 37®

NOVEMBER 2021

The Clinical Trial of the Future Survey Report

Reshaping Clinical Trials in 2022

New data suggests we are approaching a milestone on the tech-enabled path to a patient-focused future



The Ongoing Disruption in Clinical Research

Science 37®

Accelerated adoption of agile clinical trials will reshape the clinical research landscape in 2022.

Clinical research is undergoing transformation at scale. The traditional, site-based model for clinical trials is flawed and outdated — it is slow, costly, and inaccessible to more than 90% of the population.

By bringing studies to the patient, decentralized clinical trials (DCTs) offer significant potential benefits — universal access to patients and providers, anywhere, faster enrollment times, higher retention rates, increased diversity, improved patient experience, and better data.

The COVID pandemic created an immediate demand for virtual alternatives to site-based studies, providing a platform for DCT to demonstrate value, build credibility and accelerate adoption.

The clinical trial of the future will not revert to traditional, site-based models, post-pandemic. Some studies will be suitable for full decentralization; the majority will comprise a unique mix of traditional and DCT elements, known as the agile clinical trial.

It is no longer a case of choosing between decentralized and traditional research; DCT is very much a non-binary approach. By designing effective combinations of both components, the agile clinical trial of the future delivers beyond DCT.

However, this evolution will bring added layers of complexity. And, since no two clinical trials are the same, a one-size-fits-all approach is not the answer. A unique set of challenges demands a unique set of solutions.

To paint the most accurate picture possible of innovation and trends in clinical research for the year ahead—and to track the rise of agile clinical trials—Science 37 surveyed research executives within trial-sponsoring organizations. This report conveys our findings.

The majority of studies will comprise a mix of traditional and DCT elements.

The Clinical Trial of the Future Survey

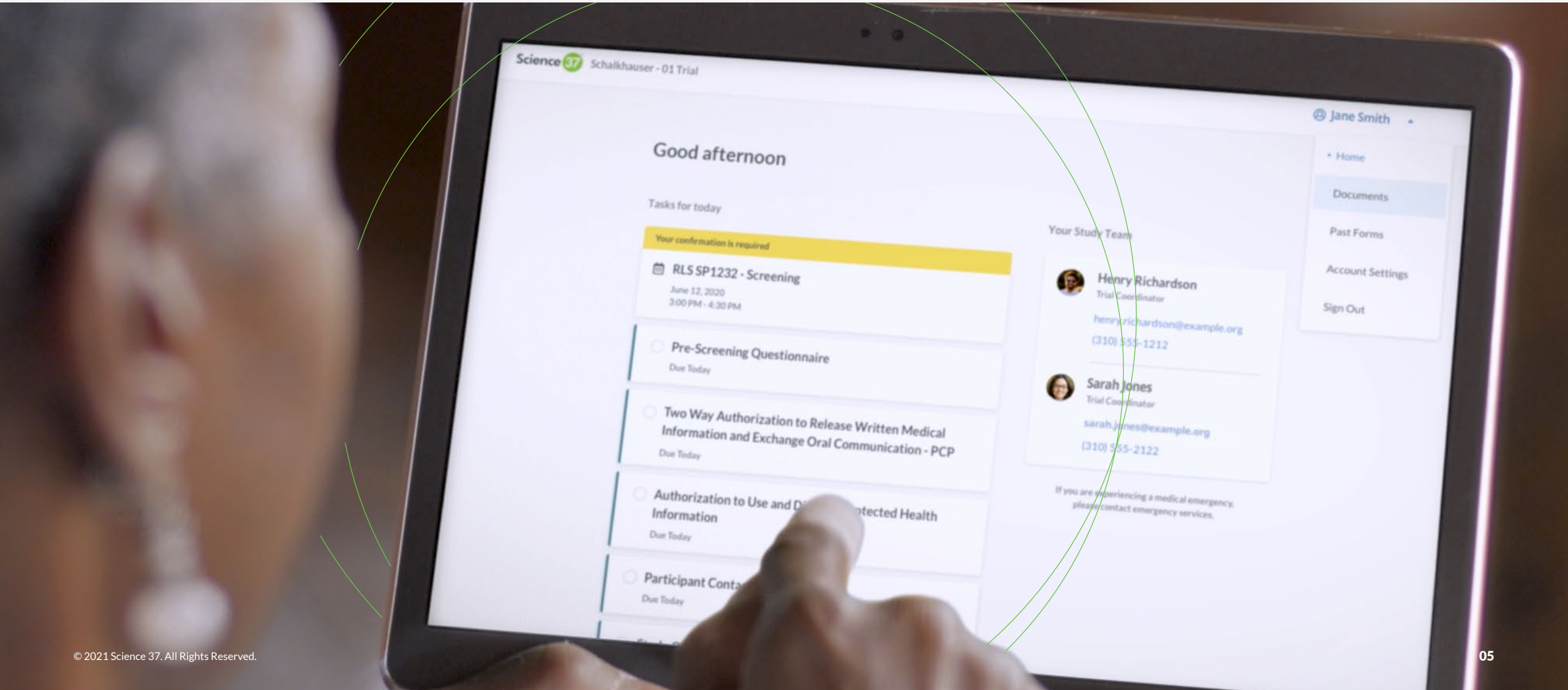
Data suggests we are approaching a milestone in the tech-led shift to a patient-focused future.

Nearly 8 out of 10 respondents expect to run a hybrid/agile clinical trial in the next 12 months.

- **A Science 37/ISR survey from earlier in 2021** revealed that 80% of biopharmaceutical executives had planned to execute a clinical trial with DCT elements in the next year, but that 60% lacked in-house DCT capabilities.
- To explore these trends in more detail, Science 37 conducted **a survey of 127 clinical trial executives** between September and October 2021.
- **63% from pharma, biotech, devices, and diagnostics;** 27% from CROs; 9% from academic institutions.
- For the first time, more respondents are planning to run **agile (hybrid) clinical trials** than traditional, site-based studies.
- Oncology, CNS, rare diseases, and immunology will see **biggest gains in DCT use.**
- Significant increases in DCT activity for **Phases 2, 3, and 4.**
- Huge increases in deployment of DCT components, especially **eConsent, telemedicine, mobile nurses, and remote sites** in hybrid model.
- **Top 3 perceived benefits** of DCT: Better patient experience, better patient retention, and faster recruitment.
- **Top 3 perceived challenges** of DCT: Integrating sites with DCT, lack of in-house capabilities, and regulatory concerns.
- Of those who have **attempted to integrate sites with DCT elements,** 48% found it to be a challenge.

For the first time, more respondents are planning to run agile clinical trials than traditional, site-based studies.

Trends, Projections, and Attitudes in DCT Adoption



DCT Adoption: Overall Trends and Projections

More respondents plan to run agile (hybrid) clinical trials in 2022 than traditional clinical trials.

We asked respondents: *What types of clinical trial activity has your organization conducted in the previous 12 months, and what does it plan to conduct over the next 12 months?*

By comparing respondents' recent clinical trial activity with their planned activity for the immediate future, we are able to build an accurate picture of trends.

The data show that there is a clear shift happening—away from traditional clinical trials and toward agile (hybrid) clinical trials.

More than three out of four (77%) of respondents expect to run a hybrid/agile clinical trial in the next 12 months, up from 59% for the previous 12 months.

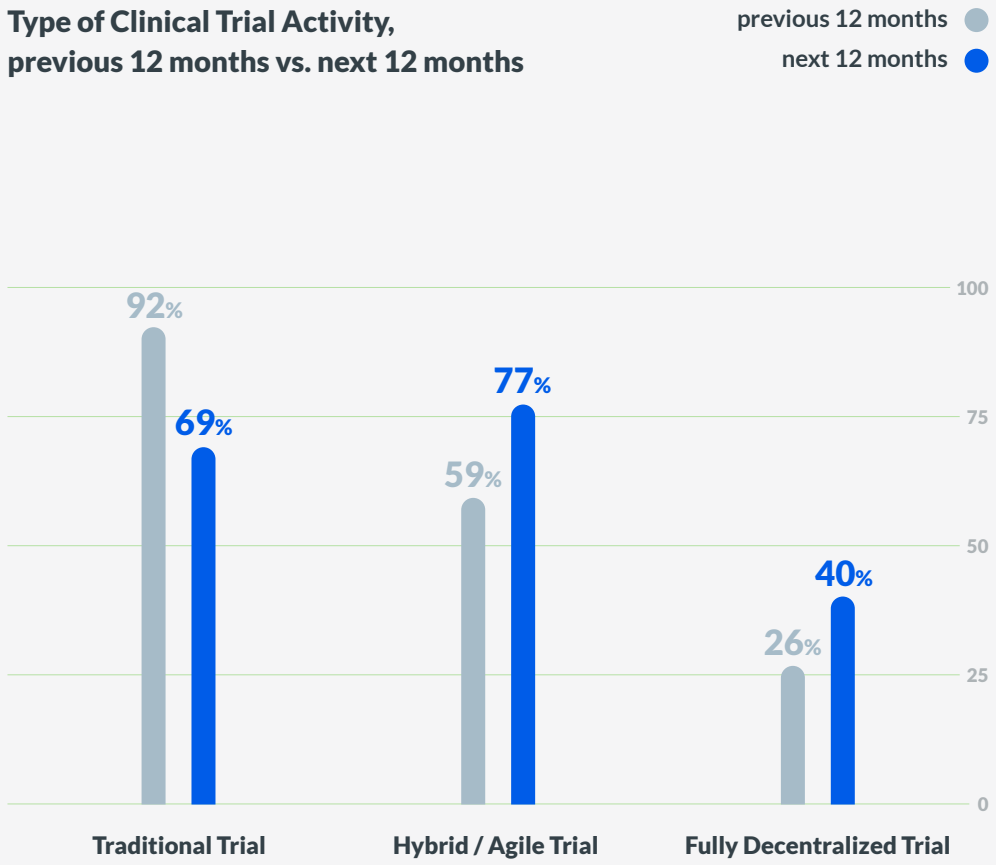
Conversely, only around two-thirds of respondents (69%) expect to run a traditional, site-based clinical trial in the next 12 months, down significantly from 92% for the previous 12 months.

So we can see that more respondents are planning to run an agile clinical trial in the year ahead than are planning to run a traditional, site-based clinical trial.

Interestingly, four out of 10 respondents are expecting to run a fully decentralized clinical trial in the next 12 months, up from one in four in the previous 12 months.

77% of respondents expect to run a hybrid/agile clinical trial in the next 12 months, up from 59% for the previous 12 months.

Type of Clinical Trial Activity, previous 12 months vs. next 12 months



DCT Activity by Therapeutic Category

Biggest increases in DCT activity in Oncology, Rare Diseases, CNS and Immunology.

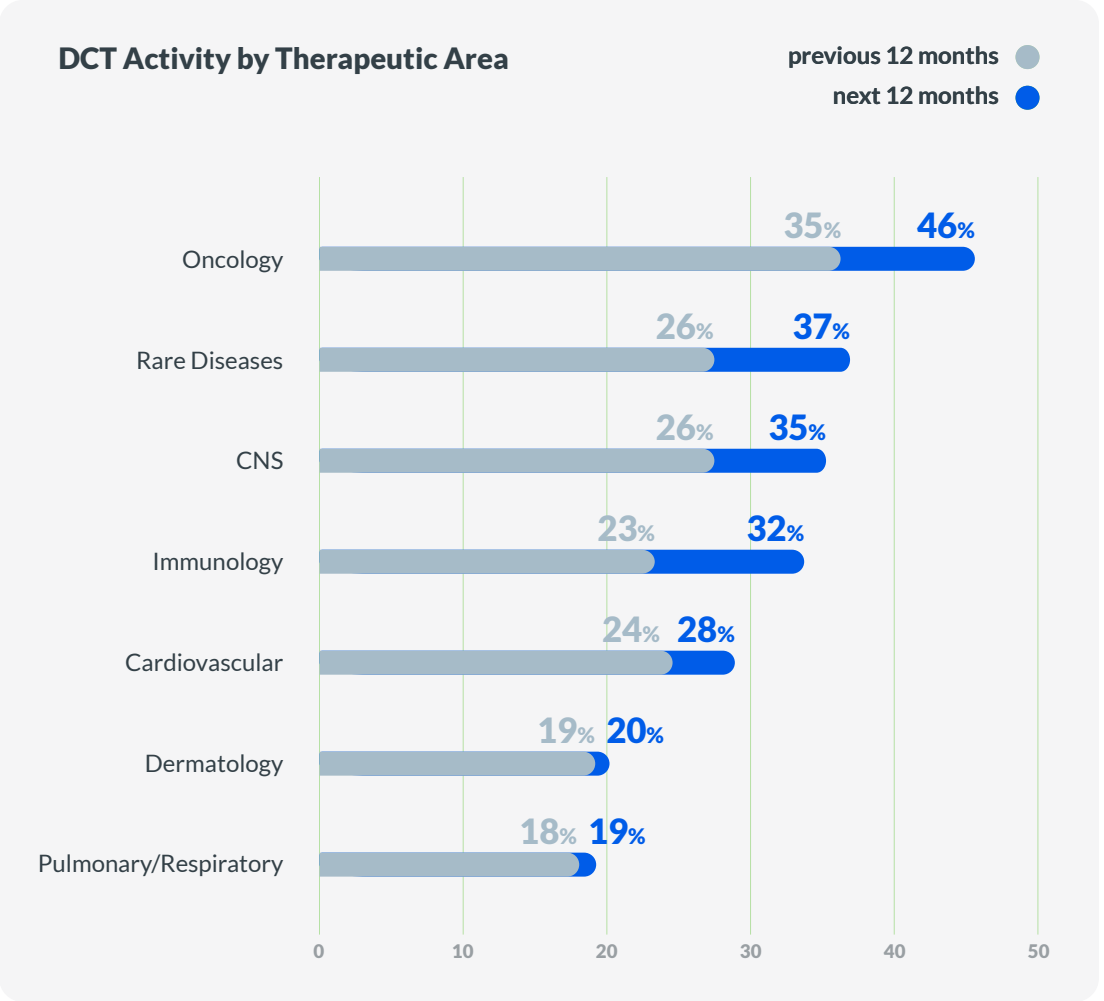
We asked respondents: *For which therapeutic areas have you conducted, or plan to conduct, clinical trials comprising DCT components?*

Again, to enable us to plot the trends, we wanted to compare respondents' recent activity with expected future activity.

The results show expected increases in DCT activity across all categories for the year ahead, with particularly significant increases in oncology, rare diseases, CNS and immunology.

In fact, 46% of respondents expect to run an oncology study featuring DCT components in the next year, vs. 35% for the previous year, making oncology the most prevalent DCT category.

Similarly, 37% of respondents expect to run a DCT study in rare diseases in the next 12 months (up from 26%), 35% in CNS (up from 26%), and 32% in immunology (up from 23%).



46% of respondents expect to run an oncology study with DCT in the next year, vs. 35% for the previous year, making it the most prevalent DCT category.

DCT Activity by Clinical Trial Phase

Marked increases in DCT adoption across Phase 2, 3 and 4 studies.

We asked respondents: *For which trial phases have you conducted, or plan to conduct, clinical trials comprising DCT components?* Again, respondents reported both activity for the previous 12 months and expected activity for the next 12 months.

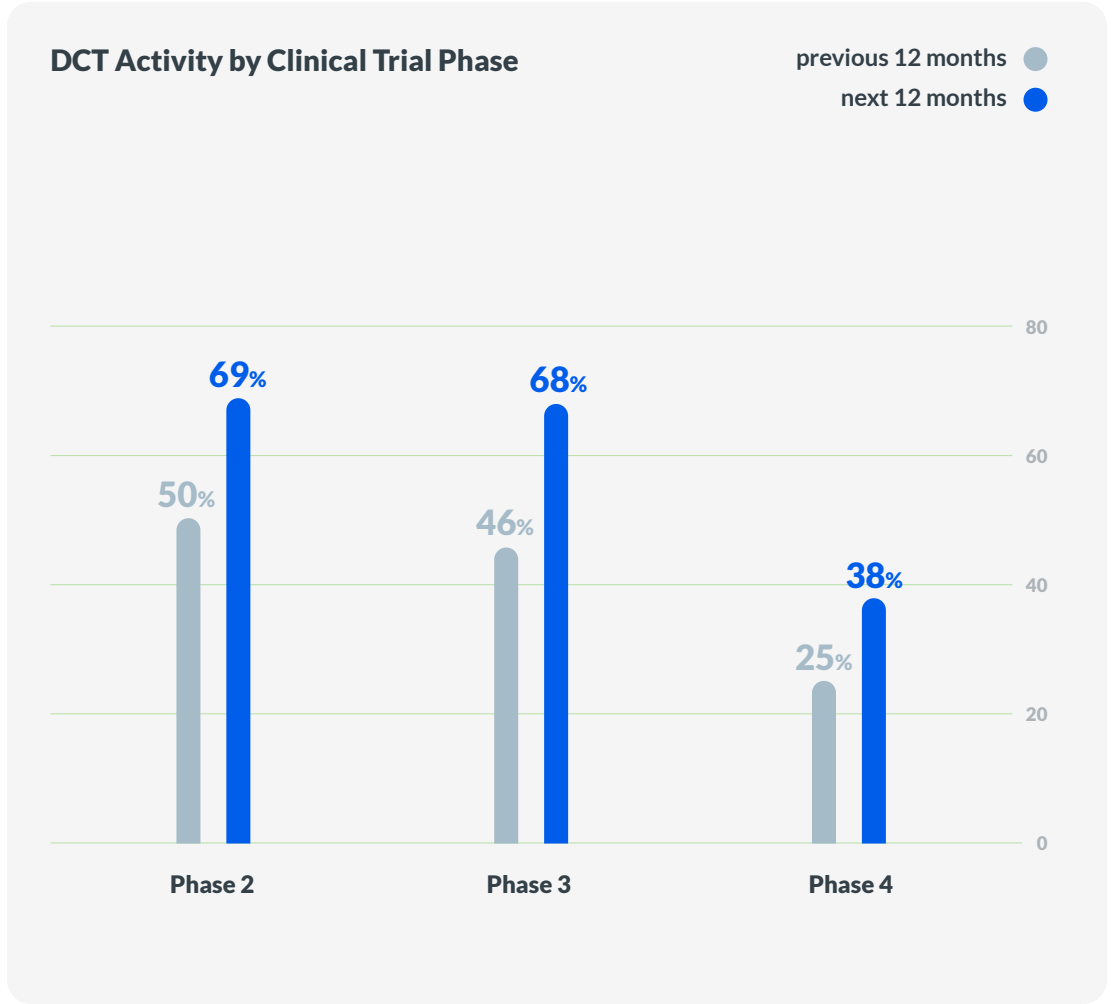
The results showed significant increases in DCT activity across phase 2, phase 3 and phase 4 studies.

For both phase 2 and phase 3 studies, more than two-thirds of respondents (69%) said they were expecting to run a trial incorporating DCT elements in the next 12 months. This was up markedly from 50% (phase 2) and 46% (phase 3) reported for the previous 12 months.

Four in 10 respondents (38%) are expecting to run a phase 4 study with DCT components in the year ahead, up from one in four for this year.

The number of respondents planning to execute a phase 1 study with DCT in the next 12 months will remain largely unchanged at just over one in three (37%).

Almost 70% of respondents expect to run a Phase 3 clinical trial with DCT elements, in 2022, up from 46%.



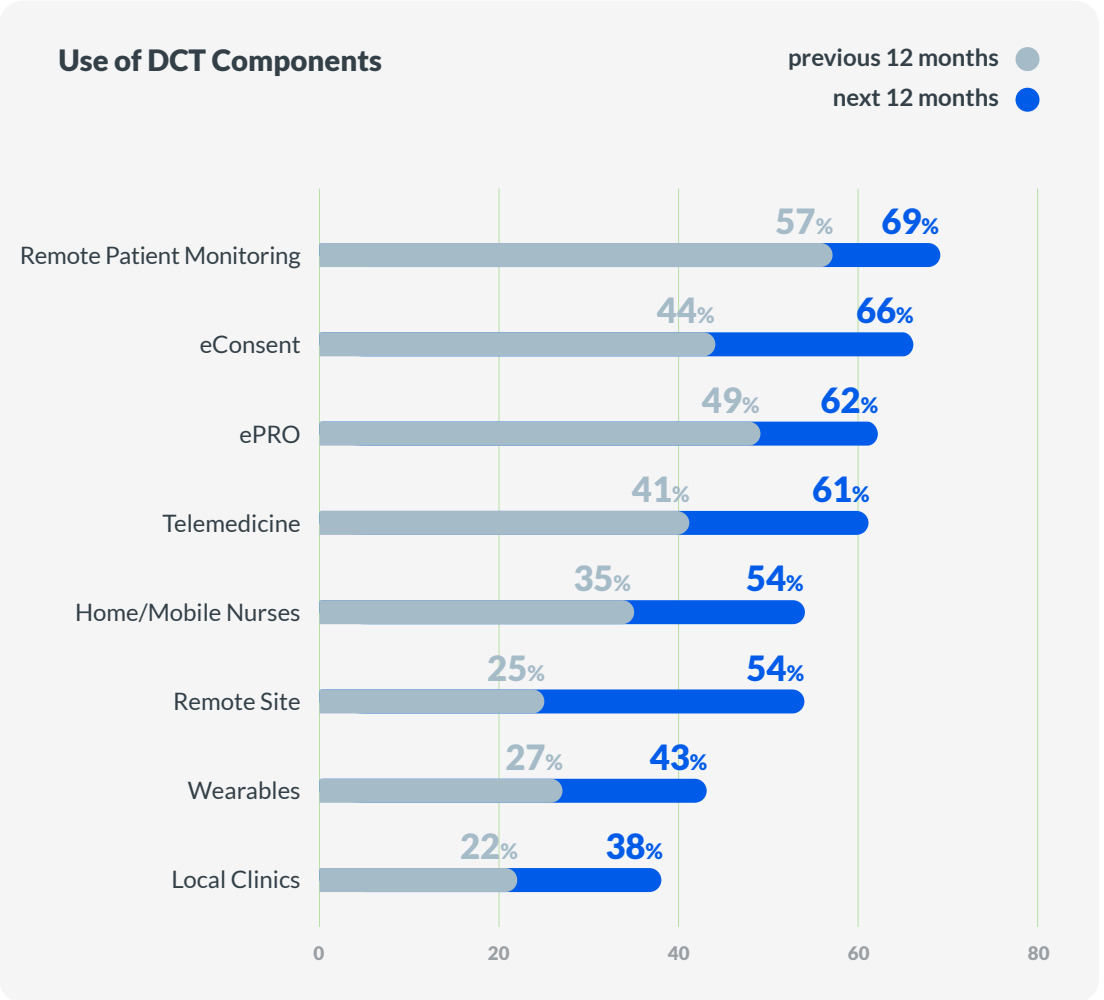
Trends in the Use of Specific DCT Components

eConsent, Telemedicine and Mobile Nursing, and Remote Sites show biggest gains.

We asked respondents: *Which DCT elements have you deployed previously and/or plan to use in future?*

The results show significant increases in the expected use of all DCT components over the next 12 months. Among the most prevalent components and biggest gainers in DCT activity:

- Seven in 10 are planning to deploy remote patient monitoring in the next 12 months, up from 57% in the previous 12 months.
- Two-thirds plan to use eConsent tools, up from 44%.
- More than six in 10 expect to deploy ePRO, up from 49%.
- A similar number (61%) expect to activate telemedicine, up from 41%.
- More than half (54%) are planning to use mobile nurses, up from one in three.
- More than four in 10 (43%) will deploy wearables in a trial, up from just one in four.



No two trials are alike.
Agility is finding the optimum mix of elements for a particular study.

Perceived Benefits of DCT

We first asked respondents about benefits:
What do you, or your organization, perceive to be the greatest benefits of incorporating DCT elements into your trial designs?
We asked them to rank seven potential benefits.

When we look at the first three rankings, we see that the top three perceived benefits are better patient experience (71%), better patient retention (70%) and faster recruitment (65%). So the emphasis is very much on the patient and on increasing efficiency.

Better patient experience garnered the most #1 rankings overall at 28%.

1st benefit

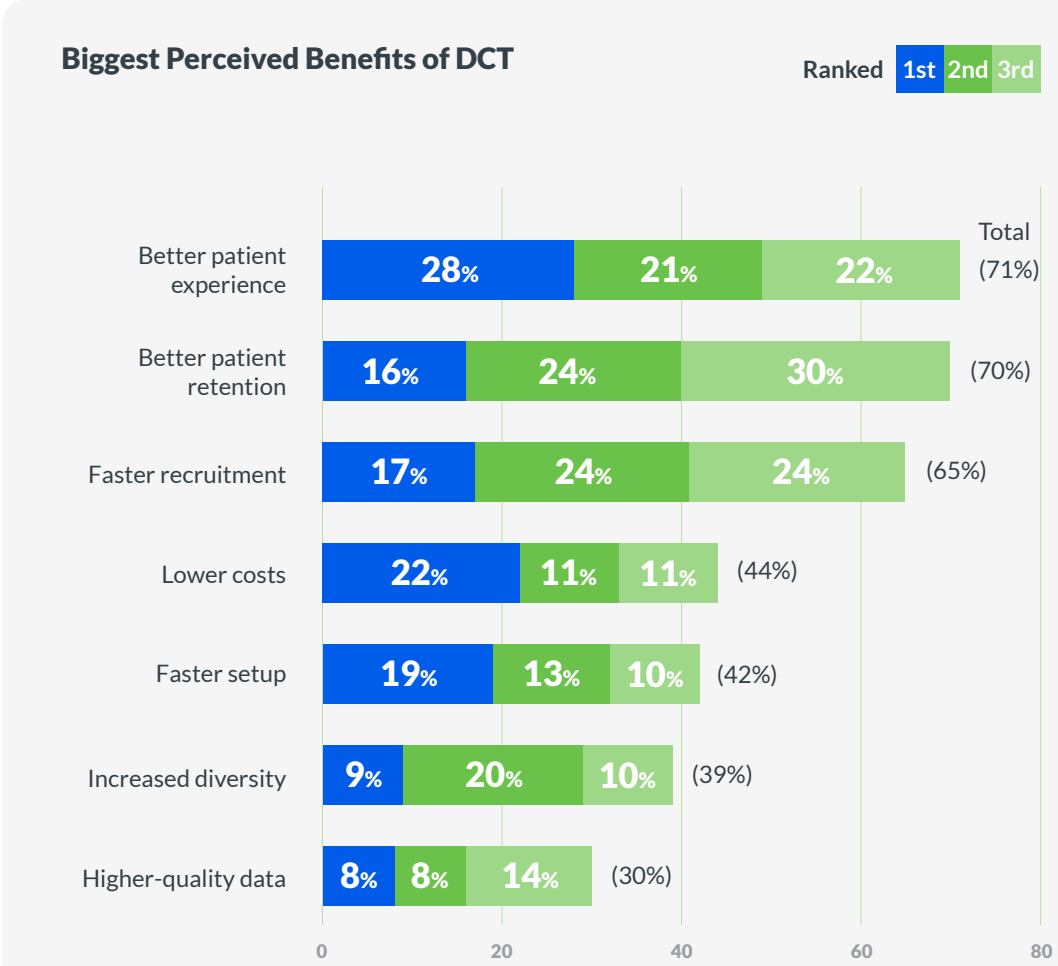
Better patient experience

2nd benefit

Better patient retention

3rd benefit

Faster recruitment



Perceived Challenges of DCT

We then asked them about challenges:
What do you, or your organization, perceive to be the greatest challenges of incorporating DCT elements into your trial designs?
Again, we asked them to rank potential challenges, this time from a list of 9 options.

When we look at the first three rankings, we see that the top three perceived challenges are integrating sites with DCT elements (69%), lack of in-house capabilities (59%) and regulatory concerns (48%).

While regulators are not offering blanket approval of plans, regulatory agencies across the globe have made it clear they want to see more DCTs. The FDA, for its part, has already issued more than 70 recommendations.

We'll look at the integration challenge in more detail in the next section.

Lack of in-house capabilities garnered the most #1 rankings overall at 32%.

Interestingly, cost does not rank highly, either as a benefit or a challenge.
So sponsors in general are neither viewing DCT as cost-saving nor as cost-prohibitive.

1st challenge

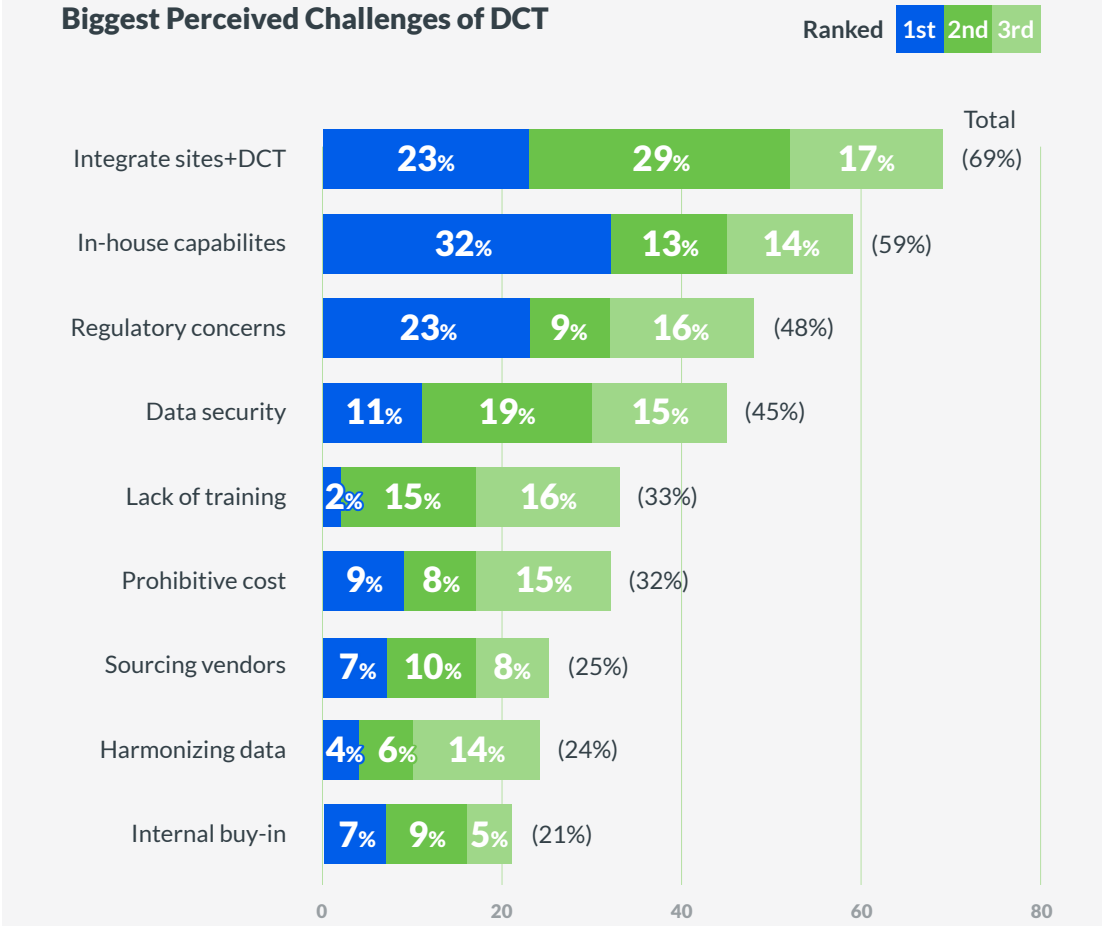
Integrating sites with DCT

2nd challenge

Lack of in-house capabilities

3rd challenge

Regulatory concerns



Integrating Traditional Sites with DCT

We asked respondents: *How would you rate your organization's experiences of integrating traditional sites with DCT components in a hybrid trial?* We offered a choice of five responses, from "seamless" to "disaster."

Almost half of respondents reported that they had found the experience to be "challenging," with an additional one in five calling it "adequate."

Only 27% described the integration process as "reasonably successful" while just two respondents called it "seamless."

Clearly, there is a learning curve associated with planning and executing a hybrid trial. It is worth bearing in mind that many of these experiences will have been part of "on-the-fly" solutions designed to rescue paused trials during the onset of COVID.

When prompted for verbatim responses, one stated: "For the DCT components implemented during the emergence of the pandemic, it was challenging because people were working quickly with new methodologies and during a time of high stress and ambiguity."

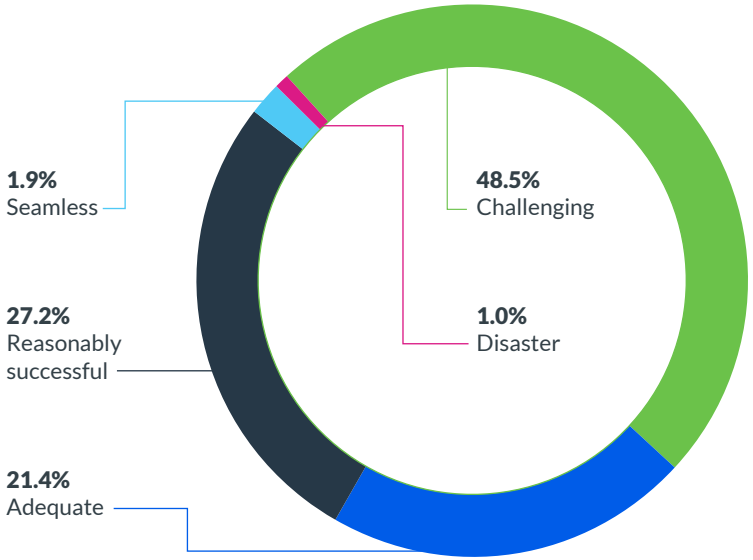
51% said they found Integration to be "seamless," "reasonably successful" or "adequate"

By planning ahead and creating an agile strategy that includes site integration and training, sponsors can avoid many of these teething problems. "Integrating DCT elements need to be by design and not retrospective," confirmed another respondent.

In an agile trial, Science 37 is able to integrate sites seamlessly via its Metasite concept, using standardized processes, consistent people and unified technology.

Several respondents also mentioned the "cultural shift" required for a successful integration. It is critical that sponsors bring sites with them on their DCT journeys.

Experiences of Integrating Sites with DCT



5 Keys to Winning with Agile Clinical Trials

The manner in which clinical research is conducted continues to evolve rapidly, with biopharmaceutical companies and CROs expanding their use of decentralized clinical trial (DCT) tools and methodologies. The most significant trend is the shift away from traditional, site-based clinical trials toward agile (or hybrid) studies.

The agile clinical trial moves fluidly between a traditional model and a fully decentralized model to be able to take advantage of the benefits for both types of research. The resulting space is more streamlined, more technology-driven, and most importantly, more patient-focused. But it is also more complex, and it will require developers to underpin studies with agile, sophisticated technology-driven solutions, uniquely configured to power each individual study.

Here are five key considerations for winning with agile clinical trials:

1

The focus remains on the patient.

While the agile clinical trial demands a technology-driven solution to run successfully, the purpose of the agile trial is to further reduce the burden on the patient and improve the trial experience for participants—which, of course, leads to benefits such as faster enrollment, better retention, greater diversity and accelerated studies overall. Our survey reveals that the top three perceived benefits of DCT are faster patient recruitment, better patient retention and better patient experience. While technology is an enabler of patient centricity, it only works well if the trial is designed around the patient journey and tailored to their unique needs.

2

The shift to agile clinical trials is real.

According to our latest survey, more organizations (77%) are expecting to run an agile/hybrid clinical trial in the next 12 months than are planning a traditional, site-based trial (69%). This is a pivotal moment and represents a significant shift from the previous 12 months when 92% of the same companies ran a traditional trial and just 59% ran a hybrid trial. We expect this gap to continue to widen moving forward, so researchers should be preparing for an agile future.

5 Keys to Winning with Agile Clinical Trials

3

No two agile studies will be the same.

Our survey shows that the next 12 months will see an increase in DCT activity across almost every therapeutic area, within every study phase beyond phase 1, and for every DCT component. The majority of these studies will comprise a mix of traditional and DCT elements, so a one-size-fits-all approach is not going to cut it. Unique sets of challenges demand unique solutions. It is critical that sponsors adopt both a rigid DCT strategy and a flexible approach to study design.

4

Bring sites with you on your DCT journey.

Agile clinical trials typically combine traditional sites with some decentralized tools and approaches, especially in areas such as oncology where certain site-based treatments and procedures may still be necessary. Our survey shows that sponsors have had mixed experiences to date of integrating sites and DCT components, with 48% having described the process as "challenging." While many of these experiences will have played out "on the fly" during the pandemic, there is clearly a learning curve in this process, and often a cultural shift. SItes will remain a critical component of most agile trials, so sponsors should make sites a key consideration of DCT strategy and trial design, with special regard to training and other requirements.

5

You're going to need a powerful operating system.

At Science 37, we are seeing that agile clinical trials are able to deliver 15x faster recruitment, 28% longer retention and 3x better diversity. But this flexible approach can create complexity and it's only possible to get these kinds of results if the trial is powered by a sophisticated, agile clinical trial operating system that is configurable to the needs of individual studies. Science 37's Operating System is underpinned by a unified, end-to-end technology platform that orchestrates workflow, generates evidence and harmonizes data. In combination with five specialized networks of patient communities, telemedicine investigators, mobile nurses, remote coordinators and connected devices, it powers the gamut of agile trial configurations, from Metasites (virtual sites) to any combination of DCT elements underpinned by the tech platform. Ultimately, the objectives of the agile clinical trial are to put the patient at the center of all studies, and to accelerate clinical research so that we can get new treatments to market faster and into the hands of those who need them most.

CONCLUSION

5 Keys to Winning with Agile Clinical Trials

Science 37®

1. The focus remains on the patient

While technology is an enabler of patient centricity, it only works if the trial is designed to meet the patient's unique needs.

2. The shift to agile clinical trials is real

More sponsors are planning to run agile (hybrid) trials in 2022 than are planning to run traditional studies.

This is not a drill.

3. No two agile studies will be the same

Unique sets of challenges demand unique solutions.

Sponsors need a robust strategy but also a flexible design approach.

4. Bring sites with you on your DCT journey

There is clearly a learning curve when integrating sites and DCT.

Sites are still important, so don't leave them behind.

5. You're going to need a powerful OS

Agile clinical trials add layers of complexity to study execution.

Make sure your operating system is up to the task.

APPENDIX

Methodology, Sample Characteristics, and Author Bio

APPENDIX

Methodology and Respondent Characteristics

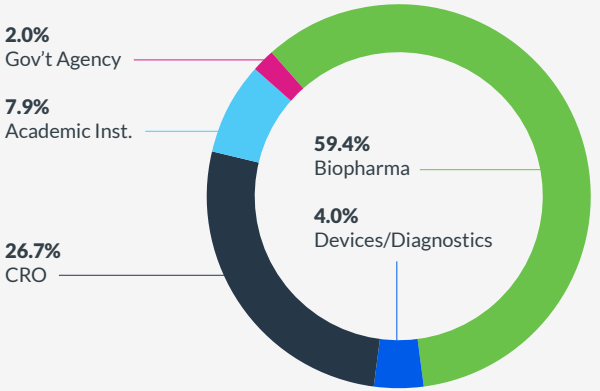
Science 37 conducted the survey online in September and October, 2021.

Respondents were targeted mainly by email, with some social media promotion. Responses were submitted via an online questionnaire.

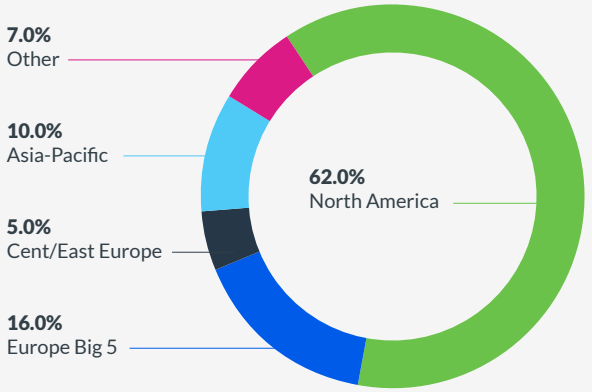
A total of 127 questionnaires was received. The margin of error for a sample of this size is 8.691 percentage points at the 95% level of confidence. Unless otherwise indicated, all percentages reported are based on the base size of 127.

Responses were analyzed by GreyHome Marketing and Research Consulting. Percentages were tested for significance at the 95% confidence level using Decision Analyst's STATS tool, Version 2.0. Additional data analysis was done using SOFA Stats 1.5.4 from Paton-Simpson & Associates Ltd.

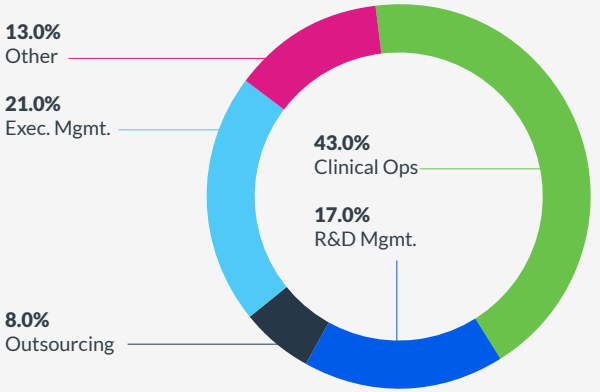
Respondents by Sector



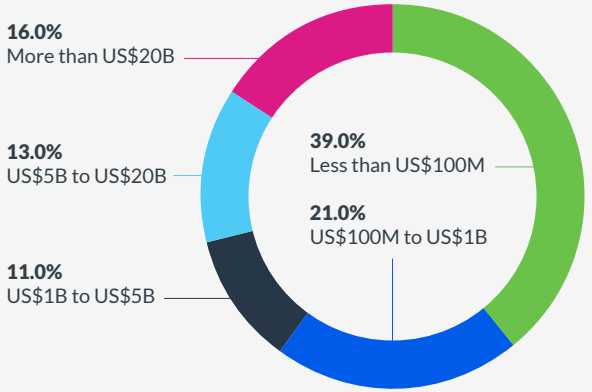
Respondents by Region



Respondents by Function



Respondents by Organization Revenue



APPENDIX

About the Author and Science 37

Drew Bustos

Chief Strategy & Marketing Officer, Science 37

An expert on innovation, design thinking, and technology, Drew currently leads Global Strategy, Marketing, Partnerships, and External Diversity for Science 37. He is actively engaged in helping drive the adoption of innovative technologies via patient-centric approaches within the life sciences industry. He has led corporate strategy, marketing, and product management throughout his career, successfully executing aggressive growth plans.

About **Science 37**

Science 37, Inc.'s (Nasdaq: SNCE) mission is to enable universal access to clinical research—making it easier for patients and providers to participate from anywhere and helping to accelerate the development of treatments that impact patient lives. As a pioneer of decentralized clinical trials, the Science 37 Clinical Trial Operating System (OS) supports today's more agile clinical research designs with its full stack, end-to-end technology platform and specialized networks of patient communities, telemedicine investigators, mobile nurses, remote coordinators and connected devices. Configurable to enable any study type, the Science 37 OS enables up to 15x faster enrollment, 28% better retention and 3x more diverse patient population with industry-leading workflow orchestration, evidence generation and data harmonization. For more information, visit https://www.science37.com.