



Distributed Cloud: Technology's Next Act

This survey was conducted and produced by ClearPath Strategies,
a strategic consulting and research firm, and commissioned by Akamai.



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Executive Summary

Digital transformation is a continual, non-linear process. It did not begin with centralized public and private cloud, nor will it end there. Leading organizations leveraged cloud to deliver more value to their customers, more efficiently and more quickly than ever.

Digital transformation persists; challenges evolve; opportunities emerge. With this progression, complexity and demands both increase, sometimes dramatically. Today, while traditional cloud provides a foundation, it now falls short of what leading organizations require. On the one hand, escalating costs and performance limitations impose ceilings on organizations' abilities to excel with yesterday's cloud infrastructure. On the other hand, software architecture and customer expectations demand more than organizations' infrastructures can deliver.

Organizations today need more from their cloud infrastructure, and distributed cloud can deliver it. Leading organizations are increasingly turning to distributed cloud as an addition to or replacement for their existing cloud footprint. A more distributed cloud model emerges as a game-changer for these organizations because it offers superior scalability, flexibility, performance, and workload security segmentation. They correctly view distributed cloud not as a replacement for traditional cloud, but as a force multiplier for the next era of digital transformation.



Introduction



Evolution is a process. While there are momentary pinnacles, there is no real endpoint for as long as the process is allowed to continue. We can view digital transformation in the same way. Broadly available public and private cloud ushered in an era of digital transformation that saw companies become more efficient, provide more value to their customers, and fundamentally reshape their IT strategies. It would be a mistake, however, to assume digital transformation ended with the broad adoption of cloud.

The evolutionary process marches on. Software becomes less monolithic, and infrastructure necessarily becomes more flexible and dynamic. The accompanying challenges—security perhaps first among equals—become more complex. In the past few years, the already astounding amount of available data exploded, and now generative AI promises to increase organizations’ leverage over more of it.

All of this is happening at an ever-faster pace. Whereas the previous decade was marked by increases in developer productivity, the next decade will be defined by increases in the ability to deliver more value to customers in real time. Real-time apps, real-time data, leveraged by generative AI in real time. Reliable. Performant. Secure.

This is an epic undertaking. The complexity is extreme. Traditional cloud¹ alone doesn’t cut it and actually creates some specific pains. Organizations are already familiar with the explosion of cloud costs associated with the explosion of data and have begun seeking alternatives, including repatriation, or bringing the data back in-house.² But repatriation is not the solution to the evolutionary pressures organizations face to provide more value, faster, at less cost.

Let us be clear. We are not arguing “The Death of the Hyperscalers.” But times change. Needs change. Opportunities change. And right now, organizational needs and opportunities point to creating greater capacity for handling segmented, data-intensive applications. And with existing infrastructure, many organizations find themselves running up against barriers of insufficient scalability, performance, and—increasingly—workload security, at ever-higher costs for modern distributed applications.

To address these challenges, more and more companies are discovering the benefits of a more distributed cloud model.³ Distributed cloud is a game-changer. It provides superior scalability, flexibility, and performance while enabling workload security segmentation, a requirement of modern, distributed applications. Distributed cloud is not a replacement for traditional cloud, but it can be an optimizer for the next era.

¹ If we can even use that term! We of course mean the cloud of the 2010s, of the hyperscalers AWS, Azure, and Google Cloud.

² See: <https://a16z.com/the-cloud-killed-infrastructure-long-live-infrastructure/>, and <https://www.forbes.com/sites/forbestechcouncil/2023/04/18/the-rise-of-cloud-repatriation-why-companies-are-bringing-data-in-house> The most common reasons for repatriation are cost, storage needs, better control, and internal policies.

³ Distributed cloud is the practice of decentralizing cloud resources and services to be physically closer to the data source or user, while still being managed centrally.



Distributed cloud: A modern solution to modern needs



Applications today are not monolithic. Modern, segmented applications that are broken down into smaller, interdependent workloads and services provide many advantages. Flexibility, ease of optimization, faster iteration, improved scalability, and resilience, to name just a few. However, these advantages come at a cost, including complexity of management, latency concerns, data management concerns, and an increased security attack surface area.

Large, centralized clouds provided a launchpad for organizations to forge new paths in software development. And as software development has evolved, so too have the infrastructure needs. The solution from these traditional cloud providers is often a solution for the average or a more traditional workload. They are too general, too inflexible, their services insufficiently rich. The very growth that centralized clouds enabled now requires something new, something more fit for purpose. Organizations need more specialized infrastructure for certain workloads.⁴ For example, workloads that are latency-sensitive and need to be localized need cloud and networking infrastructure. Compute and storage alone lack the requisite global distribution and connectivity.

In our recent survey⁵ of Information Technology Decision Makers (ITDMs), the most important organizational priority for cloud was to reduce IT infrastructure costs, signaling a growing recognition that addressing the costs of cloud infrastructure is a critical concern, and underscoring the desire to reduce dependency on hyperscalers who often come with hefty price tags. Within the existing cloud-based ecosystems heavily reliant on hyperscalers, native solutions to these problems are increasingly insufficient.

In a variety of situations, traditional cloud architecture generally experiences optimization issues when attempting to accommodate modern, agile, and decentralized apps. This is in part because many hyperscalers do not specialize in content delivery and edge computing, and are not focused on individual workload performance and security in a way organizations increasingly require. We need a more fine-tuned approach.

Enter distributed cloud. Distributed cloud is the practice of decentralizing cloud resources and services to be physically closer to the data source or user, while still being managed centrally.

⁴ See: <https://a16z.com/the-cloud-killed-infrastructure-long-live-infrastructure/> and <https://www.forbes.com/sites/delltechnologies/2022/10/27/why-workload-placement-is-the-key-to-a-strong-it-foundation/?sh=74a758eb5936>

⁵ We surveyed 425 tech leaders across 4 global regions from 8/31/23-9/20/23. For full methodology, see the Methodology section at end of report.





We surveyed 425 tech leaders from August 31st, 2023 to September 20th, 2023. For full methodology, see the Methodology section at end of report.

Distributed cloud offers a wide array of advantages for companies looking to modernize and stay competitive. According to our ITDM survey, tech leaders recognize the utility of distributed cloud in particular for big data and analytics use cases (56%) and AI/ML workloads (47%), especially as they are prioritizing incorporating even more AI/ML into their operational strategies and hoping to leverage more value from their data. And it's not just tech leaders. A study among software developers⁶ identified similar patterns with that audience.

For these use cases, the technical capabilities of distributed cloud infrastructure are paramount. Distributed cloud solutions provide companies with the ability to process and analyze massive volumes of data quickly and efficiently, thanks to their geographically dispersed regions and powerful computing resources. Instead of scaling inefficiently (“Can someone explain why we’re adding resources in US-West for customers in India?”), workloads that need scalability and performance are served better by being distributed in many locations. This geographical diversity also enhances data redundancy and fault tolerance, ensuring data availability and business continuity even in the face of hardware failures or unforeseen disasters.

The application of distributed cloud becomes even more essential in the deployment of AI. When we think of AI, the first part is training. The sheer volume of data, compute, and storage required at this stage lends itself to centralized cloud. Once you’ve trained the model, however, you have to execute it. This inference function does not have the

same storage or compute requirements. The workload is smaller. As a result, you can prioritize latency, resilience, workload security, and other attributes, which improve the overall performance and customer experience.

And the benefits of distributed cloud don’t stop with AI use cases. Online gaming relies on low-latency, high-performance infrastructure. Distributed cloud can reduce lag, ensuring a better gaming experience and enabling global multiplayer games. Retailers can use distributed cloud for inventory management, point-of-sale systems, and customer engagement. Streaming services, content production, and interactive media can also benefit from distributed cloud to ensure high-quality, low-latency content delivery to users worldwide. And it can also process and analyze data generated by IoT devices at the edge.

Our tech leader survey also points out how distributed cloud users recognize their advantages across myriad use cases:

Real-time applications: 49% of North American participants, 45% of those from EMEA, and 40% of participants from the APAC region recognize the potential advantages of distributed cloud for real-time apps such as gaming and financial transactions.

Big data and analytics: Big data and analytics: 64% of participants from the APAC region, 57% of North American participants, 56% from the EMEA region, and 48% from Latin America acknowledge the benefits of distributed cloud for big data and analytics use cases.

Remote workforce support: 49% of participants from the APAC region, 45% from Latin America, 43% of North American participants, and 40% from the EMEA region highlight the significance of distributed cloud to remote workforce support.

Bottom line: Distributed cloud is versatile across industries, improving efficiency, scalability, and the overall quality of applications and services.

⁶ See: <https://marketing-assets.us-east-1.linodeobjects.com/Developer%20Perceptions%20of%20Distributed%20Cloud.pdf>



Beyond modern application use cases, distributed cloud provides additional benefits. Specifically, tech leaders report that it streamlines the task of managing multiple cloud environments, simplifying resource management. Over a third of those surveyed say one of the primary benefits of distributed cloud is its flexibility in scaling at different geographical locations. This benefit is felt even more by participants from the EMEA region (40%) and from the APAC region (37%). Distributed cloud also delivers scalability and cost optimization without sacrificing security, which gives these tech leaders a competitive edge in their approach to cloud management. About 40% of tech leaders say they are currently leveraging security and compliance tools, and over half have implemented security protocols across various cloud providers. In an open-ended question for tech leaders who state they are planning to increase their usage of distributed cloud in the next year, 33% cite security and reliability as the primary reasons for the increased use.

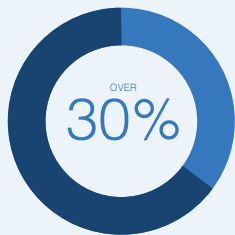
Among the most important of these benefits is workload segmentation for robust security. According to our tech leader study, security and compliance are the primary tipping points for switching to distributed cloud. This perception is generally understood, and it aligns with the robust security and redundancy features inherent to distributed cloud. Of those who cite increased security as an outcome of switching to distributed cloud, 71% say distributed cloud provides better visibility into security issues locally, 66% say it provides more granular control over data and access to resources, and 58% say it provides redundancy and failover capabilities across multiple locations.

It is important that this infrastructure can be protected in a variety of ways that augment dedicated security tools. By leveraging software-defined microsegmentation, organizations can protect distributed cloud infrastructure within the same UI, and with the same policy engine from which they protect the rest of their infrastructure. They can enforce policy that aligns with business logic and pervades across distributed cloud, on-premises data centers, end users, devices, and more. Security is all-encompassing and requires more than just protecting servers in a rack.

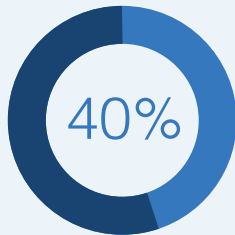
In many cases, these use cases do not often require wholesale migration. On the contrary, centralized cloud will remain a critical feature of infrastructure for “base-load” compute workloads – it will continue to do the heavy lifting. But more workloads will move toward the edge – especially in areas like media, gaming, and commerce where latency and location are critical – residing at the best fit along a continuum of cloud.

The integration potential of distributed cloud within existing hybrid and multi-cloud environments is well-documented.⁷ With a reasonable amount of effort, tech leaders can enjoy profound benefits from distributed cloud.

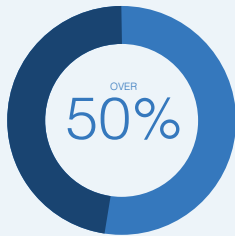
Tech leaders and distributed cloud



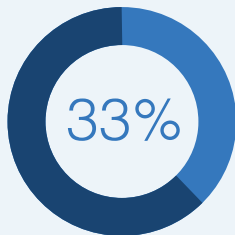
of tech leaders surveyed cite flexibility in scaling at different geographical locations as a primary benefit



of tech leaders currently leverage security and compliance tools



of tech leaders have implemented security protocols across various cloud providers



of tech leaders cite security and reliability as primary reasons for increased usage of distributed cloud

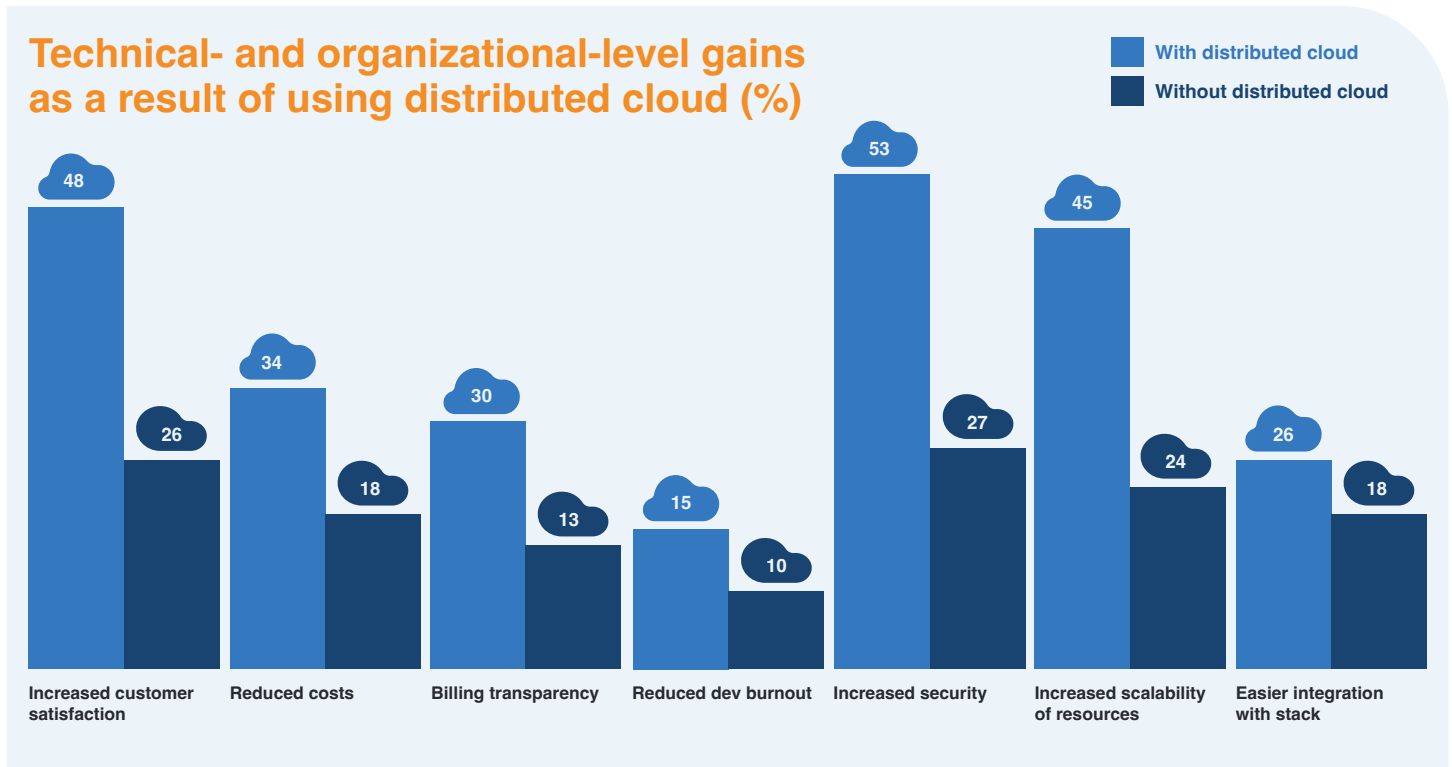
⁷ <https://www.intelligentcomp.com/2021/06/understanding-multi-cloud-hybrid-cloud-distributed-cloud.html>





Leading companies are winning with distributed cloud

Tech leaders at organizations heavily leveraging distributed cloud⁸ as a mission-critical component of their IT strategy report meaningful advantages over their peers.



These organizations have made distributed cloud a core feature of their IT strategy (100% indicate distributed cloud is mission critical to their IT strategy), and it's paying off. Which is why they plan to use more. 100% of these tech leaders say they plan to use much more distributed cloud in the next year.

Naturally, not all distributed cloud vendors are created equal. A significant share of tech leaders look to the hyperscalers to provide “distributed cloud” services, but mostly these are simply independent regions or virtual private clouds that require customers to design and implement their own connectivity and routing, and not true distributed cloud⁹. The native solution is tempting, but not compelling. The requirements of scale and security demand a more robust solution.

⁸ Distributed cloud is the practice of decentralizing cloud resources and services to be physically closer to the data source or user, while still being managed centrally.

⁹ We surveyed 425 tech leaders across 4 global regions from August 31, 2023, until September 20, 2023. For full methodology, see the Methodology section at end of report.



The centralized cloud model was built for the challenges customers faced a decade ago, not the challenges they'll face over the next decade. It was built to do heavy lifting at a time when all we needed was massive compute in massive data centers. Today, workloads need to be placed closer to the end user...and that means operating the cloud more like a network than a mainframe. A cloud that looks a lot more like the modern Internet than dial-up browsing.

The future requires creating a cloud that is connected, regardless of where a server or a workload lives. And the companies with the networks, scale, security, experience, and track record of trust to make that possible are few and far between. It is rarefied air.

Who is using distributed cloud? Some tech leaders have already embraced distributed cloud and integrated it fully into their IT strategy¹⁰. They represent a cross-section of industries, though distributed cloud tends to fit the requirements and capabilities of enterprise in particular (61% are organizations with 1k-10k FTEs; 41% have \$1B+ annual revenue). We also find a broader and deeper commitment to distributed cloud among Software / Technology organizations (43% of those who say distributed cloud is mission critical). Perhaps as a result, they are more likely to see distributed cloud as an easy choice. They already operate hybrid and multi-cloud environments (66%) and are more likely to use edge computing (55% vs 48%). Correlated to that, they are more likely to have engaged in application management across different cloud environments (58% vs 44%) and have already built strategies for load balancing, failover, and data sync across multiple cloud environments (62% vs 48%). The integration potential of distributed cloud within existing hybrid and multi-cloud environments is well-documented. With a reasonable amount of effort, tech leaders can enjoy profound benefits from distributed cloud.

¹⁰ We surveyed 425 tech leaders across 4 global regions from August 31st, 2023 to September 20th, 2023. For full methodology, see Methodology section at end of report.





Finding a winning distributed cloud provider

As with most technology decisions, choosing the right distributed cloud¹¹ provider is a matter of ensuring they meet your specific needs. For many tech leaders, hyperscalers will be a sufficient choice, for now. Hyperscalers are convenient. There are native options that will be good enough. They got us to where we are today. They'll continue to play an important role, especially where heavy, power-hungry compute power is required. And for some companies, that platform-centric cloud model—those walled gardens—is enough.

But the centralized design of traditional cloud providers wasn't designed for the distributed world we're entering. They'll coexist with distributed cloud providers doing the work at the edge, in much the same way legacy software companies coexist with today's successful SaaS companies.

For most tech leaders heading into the next era of cloud, however, they need to optimize for secure workload performance, at scale. They will build on modern cloud infrastructure while realizing cost savings without sacrificing performance. They will have secure workload performance everywhere, every time, and be able to deliver experiences closer to their customers wherever they connect. A distributed cloud option that does this with low friction is the winning choice.

So is distributed cloud right for your organization? Should you use existing vendors, or do you need to consider distributed cloud for your bespoke requirements?

Tech leaders considering if distributed cloud makes sense for their organization should consider the following questions:

- 1 What are your requirements for performance, reliability, and security? Are you able to meet those today?**
- 2 Will your existing infrastructure meet the additional demands for real-time data and generative AI applications?**
- 3 How do you expect the design and deployment of your applications to evolve in the near future?**
- 4 Will you need to deploy workloads across multiple locations and geographies to provide a better user experience? How important is having decentralized cloud compute regions with redundant, low-latency connectivity to your cloud strategy?**
- 5 How important is scalability of your workloads? Are you running into any issues with workload scalability today?**
- 6 Is application portability a concern? Data portability? Do you worry about vendor lock-in?**
- 7 What considerations will you need to prioritize when it comes to seamless integrations across your existing tech stack?**
- 8 Is cloud cost optimization a priority? How are you optimizing your costs?**
- 9 How will you address data governance and compliance? Are there specific regulatory requirements or standards that will need to be considered?**
- 10 How will you manage the complexity of hybrid or multi-cloud environments? Do you expect challenges in ensuring a cohesive infrastructure?**

¹¹ Distributed cloud is the practice of decentralizing cloud resources and services to be physically closer to the data source or user, while still being managed centrally.



Conclusion



As modern applications shift from monolithic to smaller, interconnected components, organizations' infrastructure needs shift as well. The increased complexity, latency concerns, and attack surface area for security threats imply a need for more specialized infrastructure solutions compared to a generalized traditional cloud solution.

Distributed cloud has emerged as a solution to these modern, evolving needs. Today's applications demand a balance between decentralized and centralized control. By bringing cloud resources closer to the user, distributed cloud addresses the requirements of today's applications, providing enhanced performance, security, and scalability. While the hyperscalers remain important for certain workloads, organizations leaning into distributed cloud are poised to gain a competitive edge through increased satisfaction, cost-efficiency, and advanced technical capabilities.

The path toward the next era of cloud computing involves carefully evaluating the needs and requirements of your organization. With the right approach, organizations can harness the full potential of distributed cloud while still benefiting from the strengths of the hyperscalers. In today's landscape, agility and efficiency are paramount. Distributed cloud offers a clear path forward, aligning cloud resources with the needs of modern applications, and paving the way for better performance, security, and innovation.



Research methodology



This survey was conducted and produced by ClearPath Strategies (www.clearpath-strategies.com), a strategic consulting and research firm, and commissioned by Akamai. Following are the firm's research notes for this survey.

Respondent selection

The survey included 425 respondents sourced from a leading global online panel provider. They were selected from the panel based on geographic and role-based quotas, as well as screening questions based on role in IT, decision-making role, company size, and how long they have been in IT. Selected respondents were further screened based on self-reported IT knowledge and attentiveness to survey questions.

Role quotas

The survey divided respondents into four broad roles: CIO/CTO 39%, IT Leadership 43%, IT Manager 11%, and Line of Business leadership 7%. Respondents were asked to select which role—from a list of 18 options—most closely described their primary responsibility, even if no one was quite right or even if they performed more than one of these roles. Answers were consolidated into those four broad roles.

Geographic quotas

The survey included respondents from 15 different countries. We combine these broadly into four regions: North America (20%; US and Canada), Europe (26%; UK, Finland, Denmark, Norway, Sweden, France, Ireland, and Germany), Latin America (27%; Mexico, Brazil), and Asia (27%; China, Japan, India).

Industry

Although no industry-level quotas were deployed, we monitored the data to ensure that no single industry was over-represented in the data. The final breakdown of respondents by industry is as follows: IT (software products & services, SaaS) 38%, e-Commerce and Retail 17%, Data Analytics/Business Intelligence Products & Services 9%, Telecommunications & Networks 9%, Financial Services & Banking 6%, Business Consulting, Legal Services, HR & Recruitment Services 4%, Health, Medical Biotechnology, & Pharmaceuticals 4%, Machine-Learning or Artificial Intelligence 3%, Transportation & Logistics 3%, Gaming 2%, Energy 2%, Government & Defense 1%, Media 1%.



Respondent screens

Potential respondents were screened out on several criteria:

- **Role:** All respondents were required to indicate that they were responsible for or had influence in evaluating and/or selecting IT solutions, including infrastructure, cloud, platforms, services, or software for their organization.
- **Company size:** All respondents must self-report that their companies have a minimum of 500 employees. All potential respondents from smaller companies were excluded. In total, the survey includes 18% from companies with 500-999 employees, 37% from companies with 1,000 to 4,999 employees, 21% from companies with 5,000 to 9,999 employees, 9% from companies with 10,000 to 24,999 employees, 7% from companies with 25,000 to 49,000 employees, and 9% from companies with 50,000 or more employees.
- **Time in IT:** Respondents must have spent a minimum of 3 managing, planning, or purchasing software services or infrastructure in order to qualify for the survey. In total, 28% of respondents have spent 3-5 years in this role, 39% spent 6-10 years in this role, 21% have spent 11-15 years in this role, and 12% have spent 16 years or more in this role.
- **Information level:** In our experience, it is possible to have “qualifying respondents” who nevertheless prove to have too little information or knowledge about the space to provide useful data from which to draw insights. We therefore apply an “information” screen to respondents as well. Specifically, we ask whether or not respondents could explain certain terms to their colleagues if asked to do so. In order to qualify for this survey, a respondent must say “yes” to this question for the term “cloud computing.”
- **“Attention” level:** It is easy for respondents to speed through surveys or not pay enough attention to provide useful data. We make an effort to exclude these respondents as well, as they provide generally less useful data. In this survey, respondents were screened out for “attention” reasons if they said they could explain the made-up term “Greenfield as a Service (GaaS)” to a colleague in the same question used for the Information Screen noted above.

A note on margin of error

It is technically impossible and improper to list a margin of error for a survey of this type. The respondents for this sample were drawn from an online panel with an unknown relationship to the total universe, about which we also do not know the true demographics. As such, the exact representativeness of this, or any similarly produced sample, is unknown.

