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The State of Artificial Intelligence in the Nonprofit Sector

By Jared Sheehan & Tim Sarrantonio

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Executive Summary

Our world is changing at hyper speed, and one of the leading factors is data. According to [some experts](#), data is the new oil. The world runs on data. The largest companies in the world profit on your data (e.g., Google and Facebook). Data is power, and with it comes the opportunity to experiment. We are in the dawn of the age of artificial intelligence (AI). The ability to collect, test, engineer, and industrialize data will be critical to the shaping of the story of the 21st century.

Our team at PwrDBy (pronounced: “powered by”) has been building AI for the last three years and performing analytics for a decade. We are composed of data scientists, engineers, and researchers who have worked with Fortune 100 companies, government organizations, and nonprofits of all sizes. We are excited to share the State of Artificial Intelligence in the Nonprofit Sector (SAINS) report, the largest study on nonprofit AI to date, as our first publication on our research over the last three years.

The Nonprofit Sector is unique; nonprofits capture an economic area unfulfilled by government or business. Nonprofits represent underserved or underrepresented individuals and communities. At a time when [81% of U.S. adults](#) believe they have little or no control over their personal data, artificial intelligence in the nonprofit community is distinct from the world of business or government.

This is why we need a SAINS report. The sector needs to understand the current state of one of the largest technology revolutions in recent history. To tackle such an important topic, the report is broken into sections that define various components of the current state:

1. **State of AI based on nonprofit practitioners perceptions**
2. **Current state of AI in the nonprofit sector**
3. **Major investment trends in the AI nonprofit sector**
4. **The future of AI**

Thank you for joining us on this journey. We look forward to your feedback and are excited for the future of artificial intelligence.

Sincerely,
Jared Sheehan and Tim Sarrantonio



Key Findings

1 Nonprofit practitioners are aware of AI, but have reservations

- 59% of nonprofits hear about AI from their CRM provider
- 83% of nonprofits believe an ethical framework needs to be defined before full adoption of AI in the sector

2 Nonprofit-specific AI is not widely adopted today, but it is beginning

- Most nonprofits are using well known apps (e.g., Gmail or Facebook suggestions), while nonprofit-specific AI is reaching less than 23% of nonprofits
- 73% of nonprofits believe AI innovation aligns with their beliefs and 75% believe AI makes their life easier

3 Universities are betting big on AI job needs

- \$350 million was donated to MIT to establish the Stephen A. Schwarzman College of Computing to help focus on artificial intelligence
- Rochester Institute of Technology (RIT) received \$20 million to hire faculty dedicated to cybersecurity and artificial intelligence

4 AI adoption is going to be democratized but targeted

- Low code and cost AI solutions are starting to be used by nonprofits (10% of nonprofits) but thought leaders believe more of these solutions are being created
- Immediate areas for improvements include donor categorization, routine task efficiencies, and mission-driven AI



Introduction

Artificial intelligence (AI) is changing our world on a daily basis. The world of medicine is being [industrialized by artificial intelligence](#), the data you thought you owned is being used [to manipulate elections](#), and everyone is [connected, everywhere](#). Much research has been done on the [State of Artificial Intelligence in the world](#), but less research has been completed in the nonprofit sector. The SAINS report will add to the body of nonprofit literature and accelerate artificial intelligence advancements for nonprofits.

AI is truly nascent in the nonprofit industry. As Futurus president, Nathan Chappell, notes, “The nonprofit sector is always inherently behind the private sector in technologies. Much of the lag has to do with risk aversion, which stems from being measured on a cost per dollar raised calculation.” There are significant barriers for nonprofits to build their own AI solutions, including cost, resources, and time. The same cannot be said about the technology startup world.



While technology leaders are already seeing AI mature within organizations (see above tweet suggesting that AI is so commonplace in building a startup that it no longer differentiates a company), nonprofits are just starting to get comfortable with AI. Much of the work being done in nonprofit AI is in academic research. The work being done in the nonprofit sector can be attributed to a handful of companies and a few nonprofits. These organizations can be divided into three groups:

1. Large companies focused on the for profit sector that have a nonprofit vertical (e.g., Microsoft, Salesforce, Amazon, and Google)
2. Startups trying to figure out specific use cases in the nonprofit sector (e.g., BoodleAI, Futurus, Wisely, and our team at PwrdbBy)
3. Nonprofit innovators solving core mission-based problems often aligned with AI-related ethics or security (e.g., OpenAI and the Partnership on AI)



Considering the state of the industry, it is important to understand how nonprofit AI is unique. The goal of the SAINS report is to provide a snapshot of the current state of artificial intelligence in the nonprofit sector, with a focus on practitioner perception of artificial intelligence innovation.

To accomplish this goal, the SAINS report will be broken into different views of the “current state.” We will start with a snapshot of nonprofit practitioner perceptions. Our team has gathered hundreds of responses from nonprofit practitioners to understand how people perceive AI innovation. These perceptions will be broken into adoption categories (innovators, early adopters, early majority, late majority, and laggards) with a focus on the process of innovation adoption (knowledge, persuasion, decision, implementation, confirmation).

Next we will provide a current state overview of relevant nonprofit AI. This will include a brief analysis of existing solutions and current research across key nonprofit topics, with mission and fundraising being the two most prevalent.

Third, we look to the future to identify where major investment trends in nonprofit are moving. A lot of the work around artificial intelligence is happening at universities, but there are interesting examples in health care, the environment, and fundraising.

Finally, we will provide a brief perspective on where nonprofit AI is heading. The research looks to larger macroeconomic trends both inside and outside of the nonprofit industry. Our aim is to provide predictions based on conversations with industry leaders and AI experts.



Definitions

Before diving into the State of Artificial Intelligence in the Nonprofit Sector, a few terms need to be defined. First, what is artificial intelligence? There are many definitions of **artificial intelligence**, but they all describe AI as an intelligent machine or program that acts and thinks in ways that resemble intelligent humans or animals.

Within artificial intelligence, there are a number of important terms including an **algorithm**, which is a specification of how to solve a particular problem and a **model**, which is the output of a process used to make predictions. AI is made up of algorithms and models, which are called **agents** or **programs**. AI also requires data, infrastructure, and computing power. AI has been around for a long time but is becoming more powerful today largely because computing power has improved dramatically over the last 30 years.

There are [three major subsets of AI](#) that will be mentioned:

1. **Machine Learning (ML)**: A subset of AI, machine learning uses statistical techniques to allow programs to learn from data without human intervention. This is called “training” a model. Within machine learning, there are two types of learning: supervised (or explicit input/outputs) and unsupervised (inferred inputs/outputs). Most AI today is machine learning.
2. **Reinforcement Learning (RL)**: These models are trained to reach a goal by trial and error through a reward and punishment system (or “policy”). Reinforcement learning is most commonly seen in AI-gaming where policies dictate player environments and actions.
3. **Deep Learning (DL)**: AI attempts to mirror neural networks using algorithms inspired by the human brain in order to interpret and learn from large amounts of data. This is considered the cutting edge of AI and is quite nascent across all industries.

What is important about these subsets and models is that AI is a way for computer systems to use algorithms and data to optimize for abstract problems. Engineers call these optimization models, and simply put, the goal is to have these systems perform better at things humans do well today.

Machine learning is worth calling out in more detail because it is the most commonly used AI today. As the phrase states, if a computer program is built to improve its algorithm without human input. An example is Amazon’s Alexa; each time Alexa is asked a question, it runs an algorithm and answers. It is training itself to better answer the question the next time.



However, [an article recently came out](#) where Amazon admits they have a “Wizard of Oz” on the other end of Alexa listening to what you ask, so the systems are not perfect. So most people are using ML daily, often without realizing it, so there are numerous examples.

The other important AI callout is deep learning. It is the “hottest” frontier in AI research. Deep learning has a number of associated terms, including “neural networks.” Deep learning is somewhat of a black box and requires massive amounts of data (terabytes or billions of lines of data), to the point that some thought leaders, such as Elon Musk, are very concerned about it because we do not know how the computer is training itself. If you’d like a longer history lesson on AI, please refer to pages 6-8 of this [article](#).

Next, we will define what is a **nonprofit**. According to the [National Council of Nonprofits](#):

People often use the words “nonprofit” and “tax exempt” interchangeably... The one common condition is not paying out profits (“no part of the organization’s net earnings can inure to the benefit of any private shareholder or individual”); hence the term, “nonprofit.” Section 501(c)(3) of the tax code refers to “public charities” (also known as charitable nonprofits) and “private foundations.” The tax code considers “churches and religious organizations” (which the IRS defines to include mosques, synagogues, temples, and other houses of worship) to be “public charities.”

We accept nonprofits as organizations that do not have a motive of creating profit for themselves (which is not to say value) and, as of today, does not include social enterprises (e.g., we think of PwrDBy as a social enterprise). We have excluded businesses that blur the line unless we define them as “businesses” or “for profit” and they are actively working on AI advancements for the nonprofit sector.



The Current State of AI in the Nonprofit Sector

The State of AI in the Nonprofit Sector was conducted by the PwrDBy team and is, as of now, the largest quantitative survey of the nonprofit sector with 212 respondents. Results were gathered from September to December 2019 across the nonprofit sectors (healthcare, religious, environmental, social, or other nonprofits), with a focus on leaders in the industry - whether technological or thought leaders. The study focused on individual practitioners rather than organizations based on research in the Diffusion of Innovation Theory (Rogers, 1995): “Diffusion is the process by which an innovation is communicated through certain channels over a period of time among members of a social system.” The study focused on AI as a unit of innovation to be adopted by individuals. Diffusion research centers on the settings that change the likelihood a new idea, product or process will be adopted by the members of a given cultural unit. To do this, current nonprofit practitioners or technologists who work directly with nonprofits were exclusively surveyed. As shown in Figure 1, practitioners spanned multiple roles within the nonprofit organization, with the largest roles being Fundraiser (21%) and Program Manager (19%).

Figure 1: Nonprofit Organizational Roles

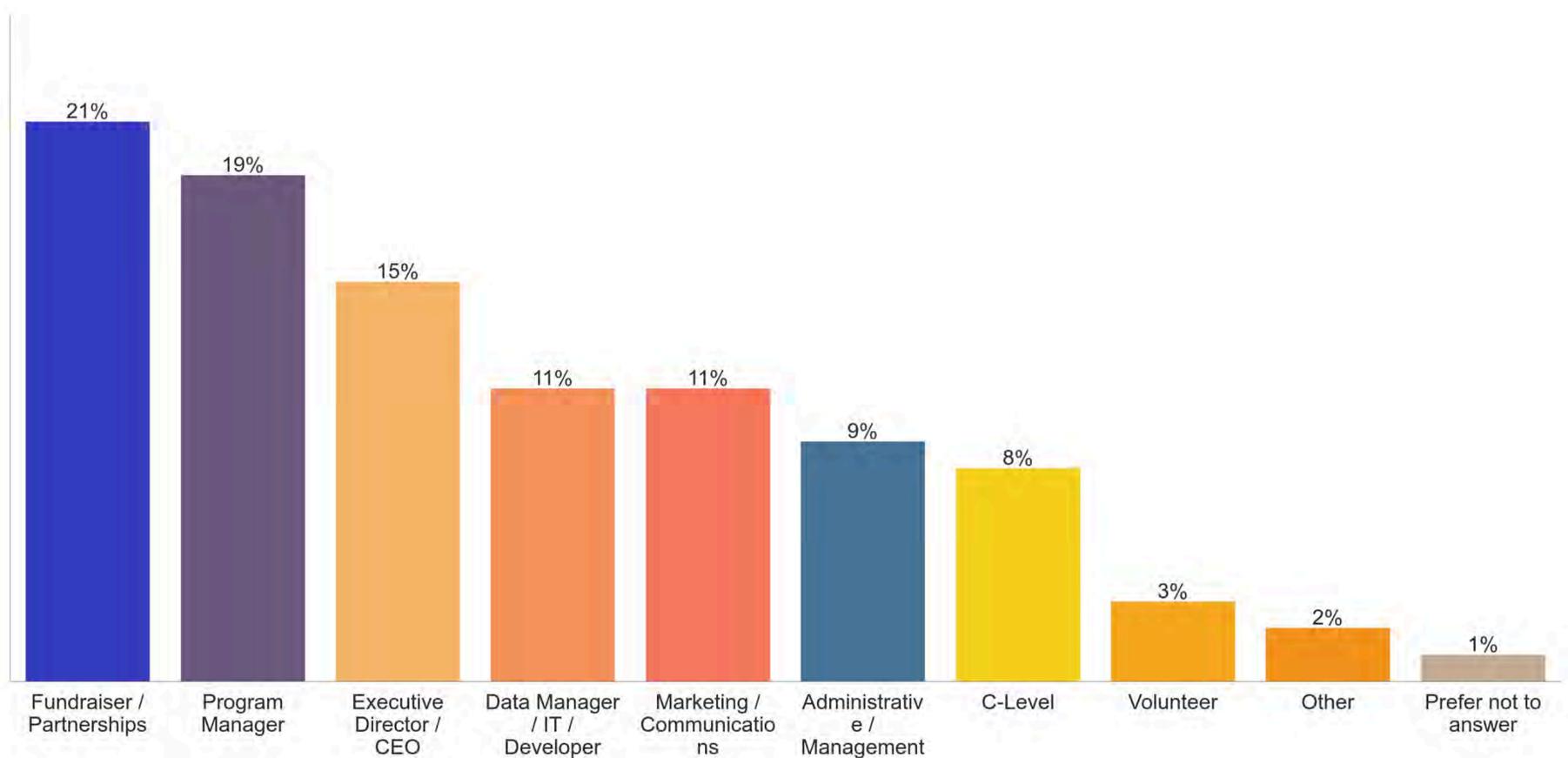
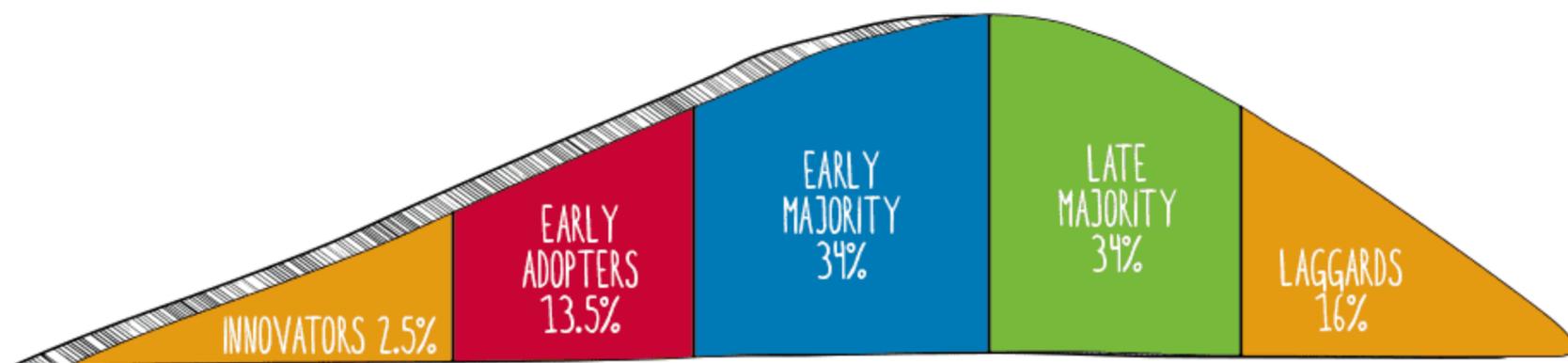


Figure 2: Diffusion of Innovation Model



ESSENTIAL MARKETING MODELS [HTTP://BIT.LY/SMARTMODELS](http://bit.ly/smartmodels)

“A person evaluates a new idea and decides whether or not to adopt it on the basis of discussions with peers who have already adopted or rejected the innovation”

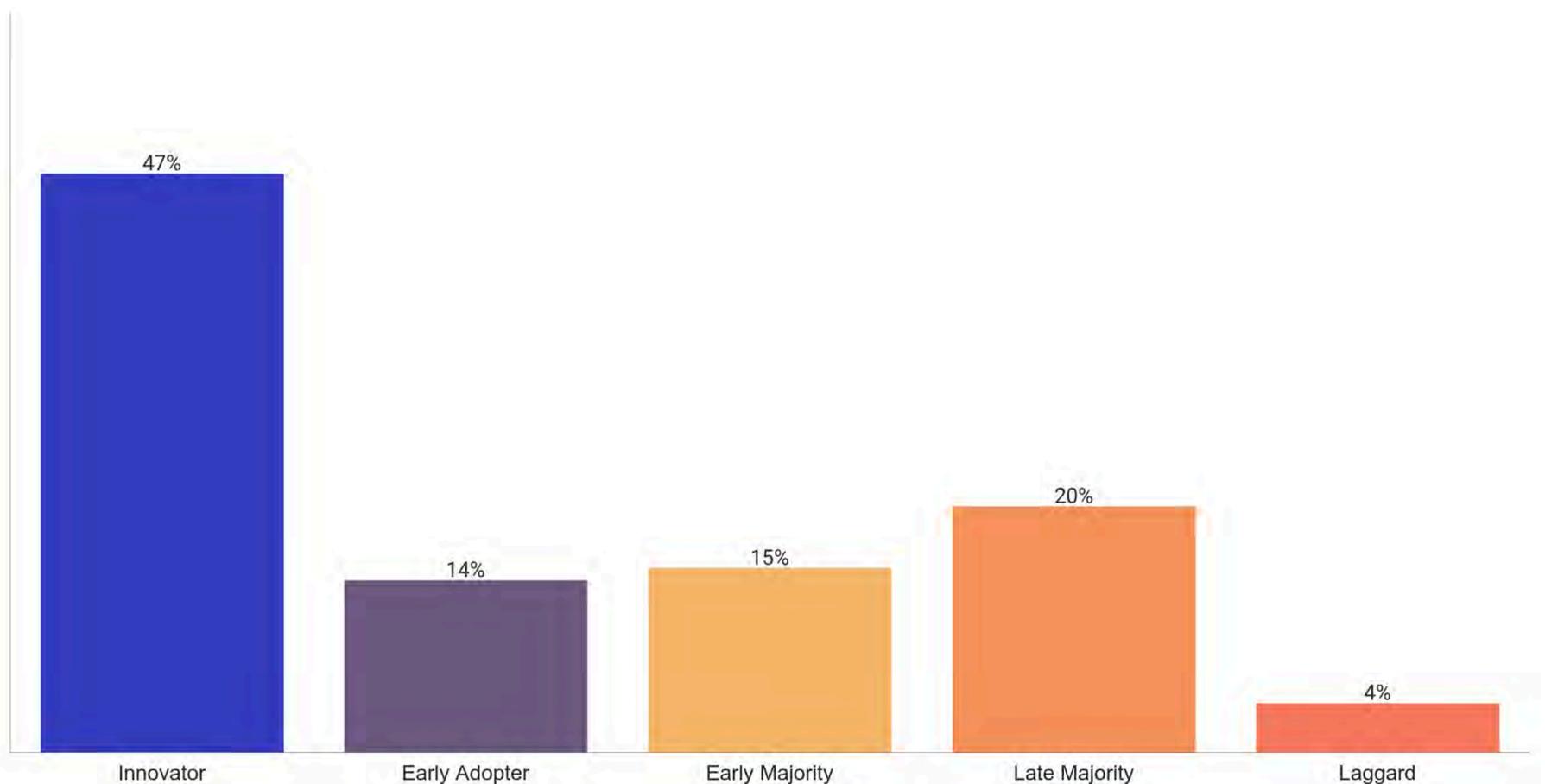
- Rogers & Singhal 1996

As shown by Figure 2, the [Diffusion of Innovation Theory](#) has five categories of individuals. These are:

1. **Innovators:** Venturesome visionaries with characteristics that include “the ability to understand complex technical information, an ability to cope with uncertainty about innovations at the time of adoption, and being able to accept setbacks when an innovation proves unsuccessful.” They typically make up 2.5% of the population.
2. **Early Adopters:** “Respected opinion leaders” who are viewed as technology evangelists and often considered the individuals to confer with before using technology. They typically make up 13.5% of the population.
3. **Early Majority:** These people are ahead of the curve and willing to invest safely. “Early Majority adopt new ideas before the average adopter.” They typically make up 34% of the population.
4. **Late Majority:** People who are skeptical but eventually adopt the innovation. They adopt once it seems safe enough to do so. They typically make up 34% of the population.
5. **Laggards:** People who are traditional, often not opinion leaders and isolated in their group, suspicious of change agents, and resistant to innovations. They typically make up 16% of the population.



Figure 3: Innovation Adopter Categories

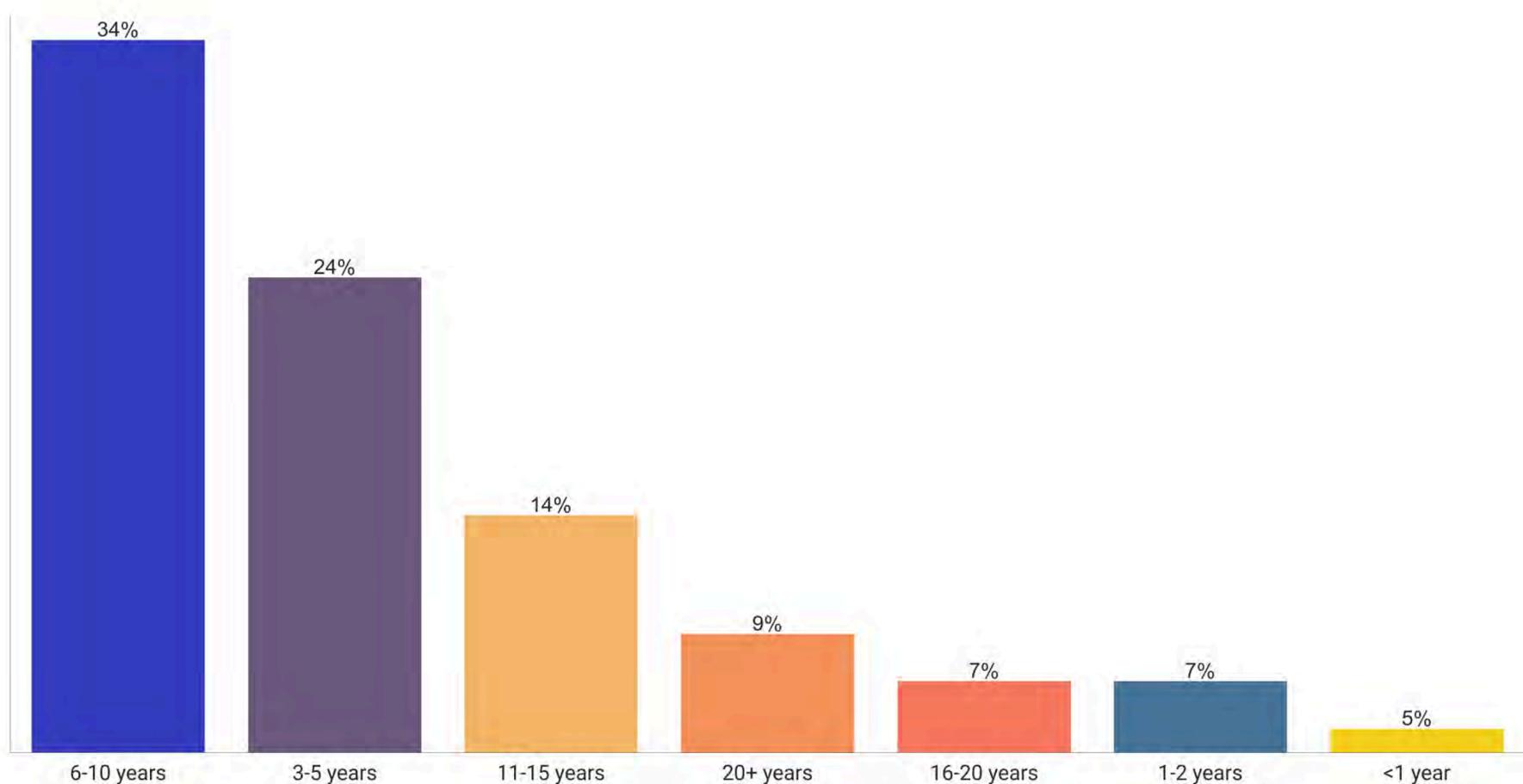


Based on survey results (Figure 3), the population skewed towards “Innovators” and away from Laggards, Early and Late Majority. This logically makes sense considering the survey was self-selecting, web-based, and all survey respondents were requested to respond online. Laggards and Late Majority are less likely to spend time online and/or may feel skeptical of such technologies and are less likely to provide their views on the subject. It also means the data provides a good perspective on where nonprofit perceptions are trending in the near future.

Oftentimes, when thinking about adopting new technology, age is used as a basis of stratification, so we requested basic age demographic information. Limited correlations were found between age and the adopter category. As expected, most respondents were in the Millennial (49%), Gen X (31%), and Baby Boomer (11%) generations, which make up the majority of the current workforce. Comparing this to the U.S. workforce, the results were indicative of the larger population with slight skew towards a younger demographic as Millennials make up 34% of the workforce, Generation X make up 31%, and Baby Boomers make up 22% based on the [Bureau of Labor Statistics](#).



Figure 4: Experience in Nonprofit Work



To ensure we included a wide spectrum of nonprofit professionals, we polled individuals with experience (Figure 4) spanning from <1 year in nonprofit (5%) to 20+ years (9%), with our longest work experience in nonprofit being 3-5 years (24%) and 6-10 years (34%), all of which were in line with expectations. Years of experience was not well correlated with adopter category.

To ensure the population was representative of the nonprofit sector, we asked respondents for their organization size. The breakdown shows the following: 24% have less than 10 employees, 27% have 11 to 50 employees, 23% have 50 to 100 employees, 11% have 100 to 500 employees, and 15% have greater than 500 employees. Using number of employees as a proxy for funds raised, these results seem representative of the nonprofit sector based on [Guidestar research](#), which noted 66% of nonprofits raise less than \$1M annually.

For more information on methodology, please see the appendix.

Results

The SAINS survey provided an incredible amount of data to understand nonprofit practitioner's perspective on artificial intelligence. The results section will provide a high level overview of the results as additional deep dives will be published throughout 2020.



At a high level, nonprofit practitioners are familiar with the concept of AI and believe AI will make their life easier. People see positive benefits from being knowledgeable in AI, but are concerned about the ethical implications of adoption; they believe AI technology is consistent with their beliefs and values but have mixed feelings about about their diverse constituents being adversely affected. AI is starting to become more prevalent, but there remain significant hurdles to widespread adoption.

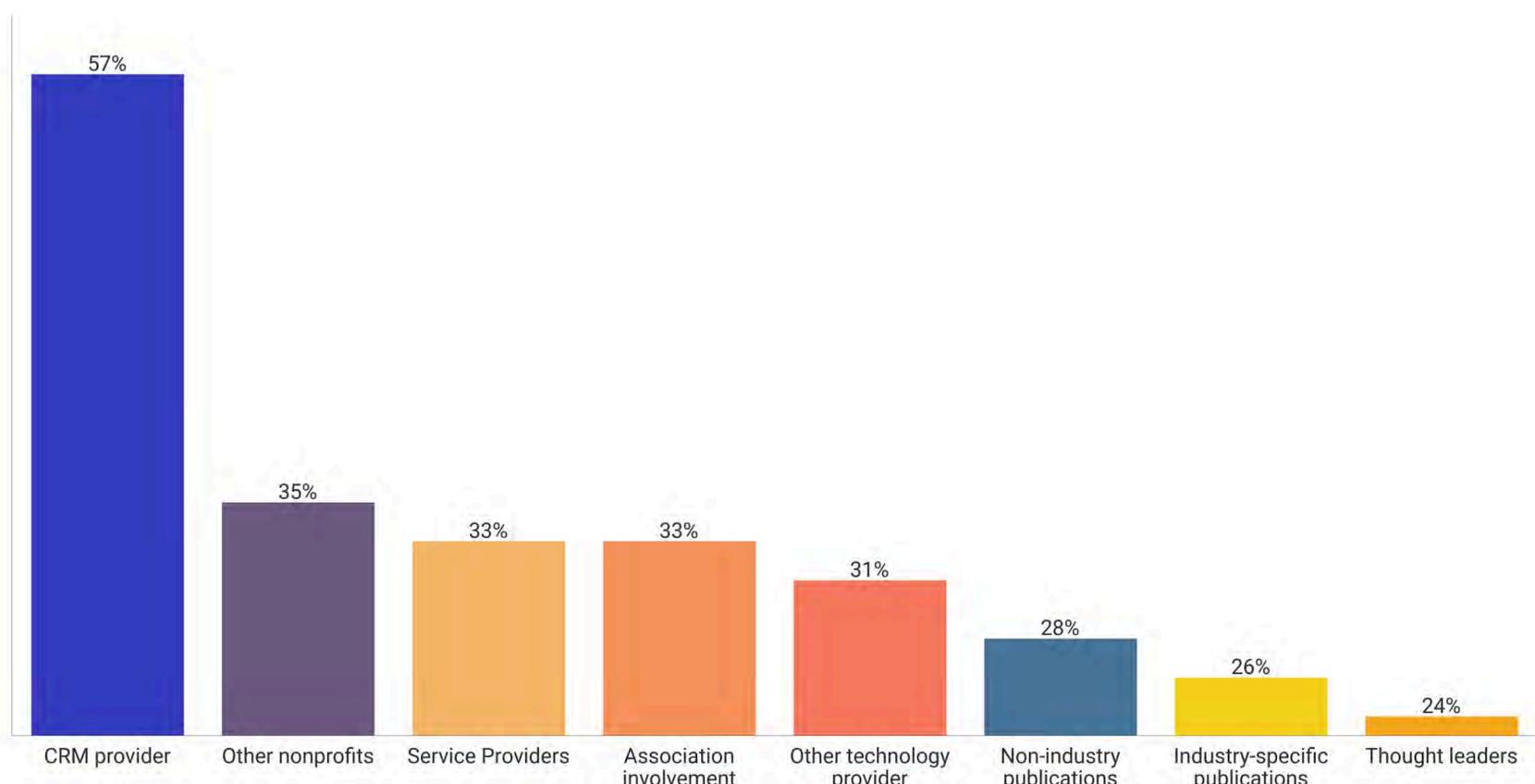
Before we dive into the results, it is important to understand the five stages of innovation adoption (Rogers, 1995):

1. **Knowledge:** Exposure and understanding
2. **Persuasion:** Forming an attitude
3. **Decision:** Commitment to adoption
4. **Implementation:** Use of technology
5. **Confirmation:** Reinforcement because of positive outcomes

Practitioners know about AI and are forming a (mostly) positive attitude toward the associated advances, but the commitment to adoption and actual implementation lags. As Nhu Te, Editor for NonProfit Pro noted, “AI has been around for decades now. We all know that the nonprofit sector is a slow adopter of technology. It is no different with AI. And while other industries have been implementing it in their operations (e.g. live chat functions), nonprofits are finally (but slowly) jumping on board and learning how AI can fit into their overall strategy.” While adoption is slower than the business world, it aligns well with public perception of AI and is more progressive than expected for the nonprofit industry.

Knowledge

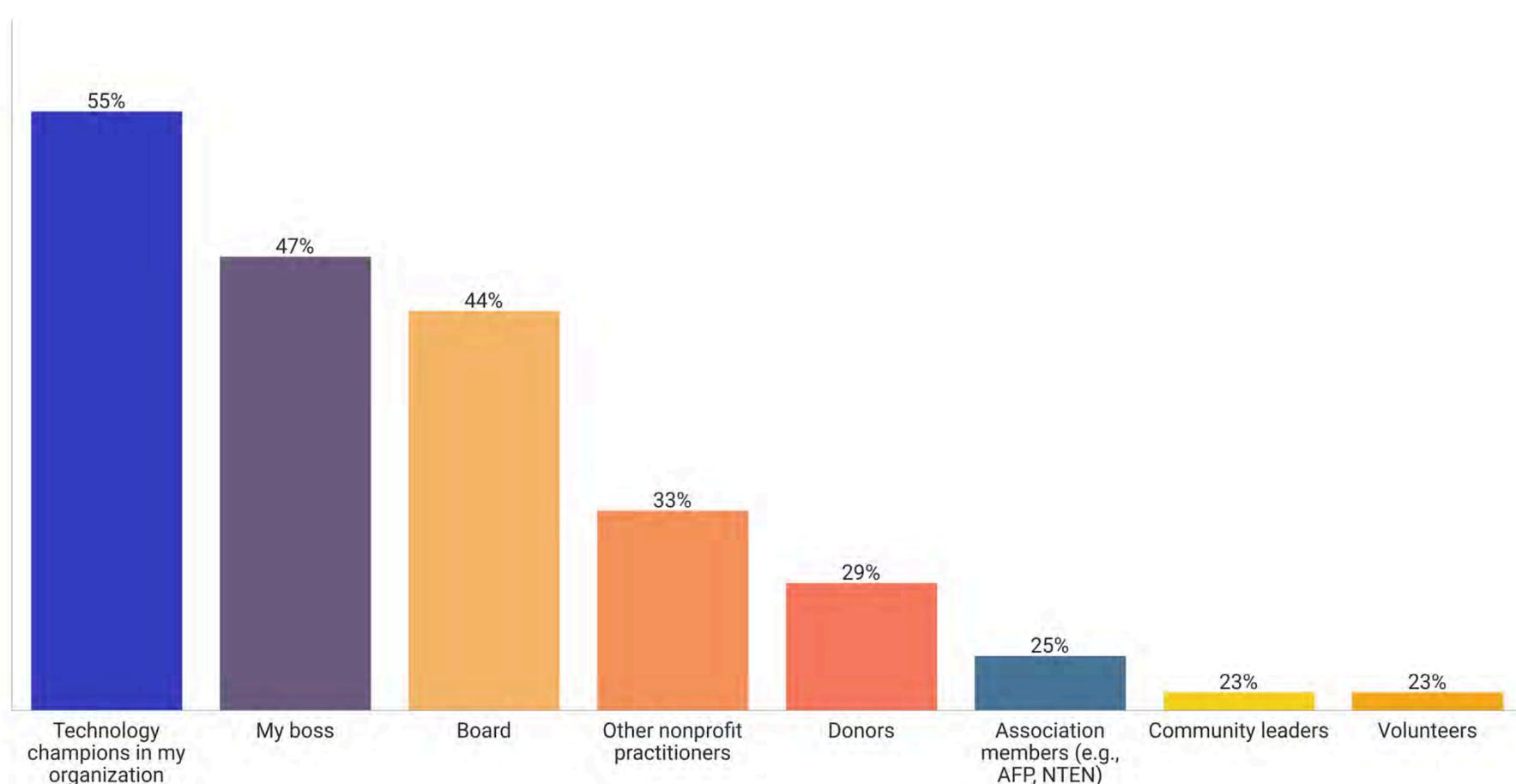
Figure 5: External Sources of AI Information



As shown in Figure 5, nonprofit practitioners are hearing about AI primarily from their CRM providers (57% of respondents). The fact that CRM providers are gatekeepers to new innovations (more than associations or publications) means that CRM providers hold power to influence decision-making when it comes to where organizations will invest.

Interestingly, Innovators and Early Adopters relied less on CRMs and more on non-industry publications and other non-CRM technology providers for knowledge. Early (66%) and Late Majority (65%) respondents relied most heavily on their CRM providers. Late Majority (59%) respondents also relied heavily on other nonprofits for AI information.

Figure 6: Individual Influences of AI Knowledge



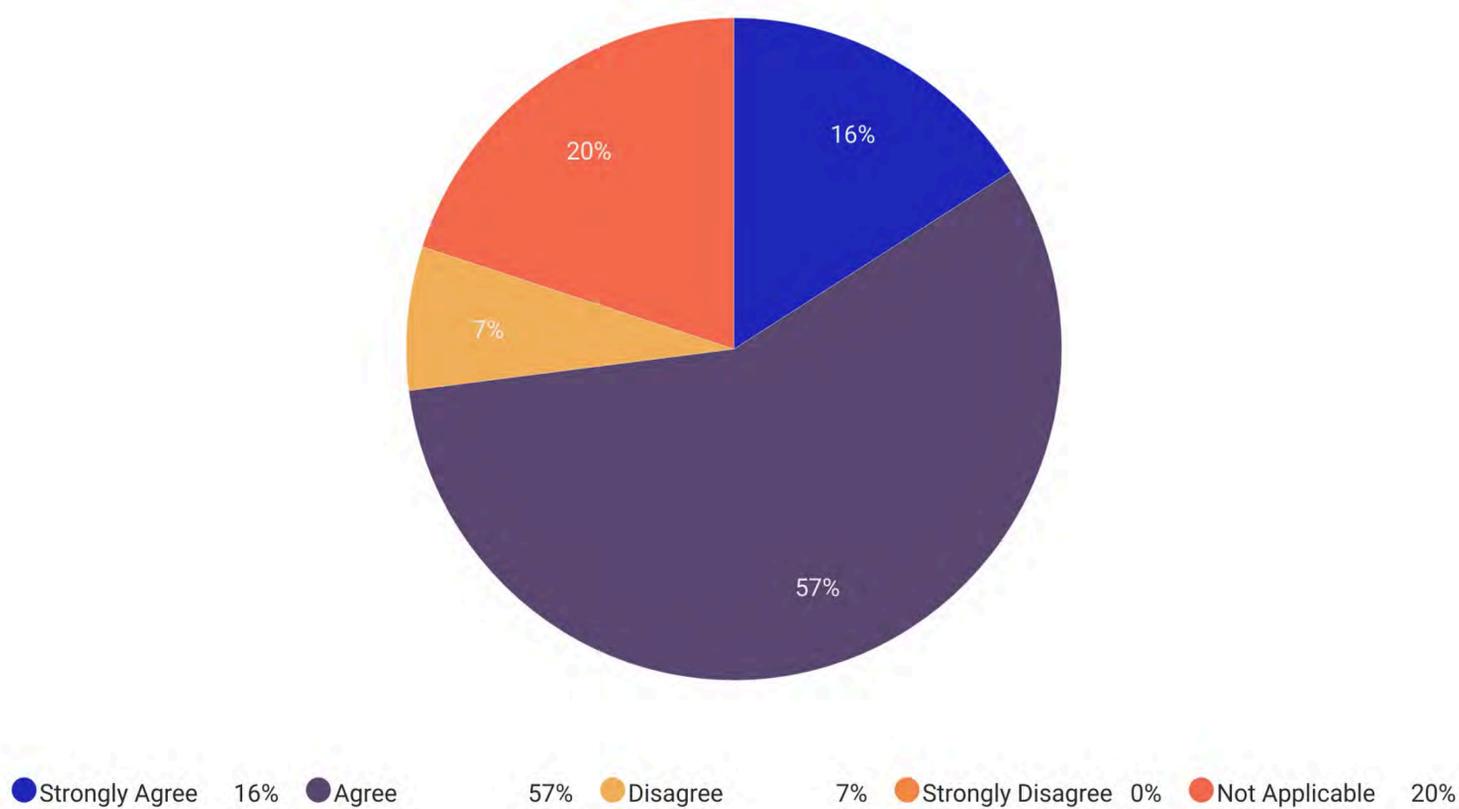
Unsurprisingly, as shown in Figure 6, individuals are hearing about AI innovations from their organizational technology champions (55% of respondents), their boss (47%), and their board (44%). AI is a hot topic right now in the technology sector, with organizations such as Facebook, Google, and others investing heavily in research and higher education organizations such as MIT creating AI-specific labs.

Laggards (89%), Early Adopters (57%), and Innovators (53%) are most likely to find out about new technologies from organizational technology champions. Late Majority (56%) respondents are most likely to hear about AI from their board.



Persuasion

Figure 7: AI Meets Existing Values & Needs

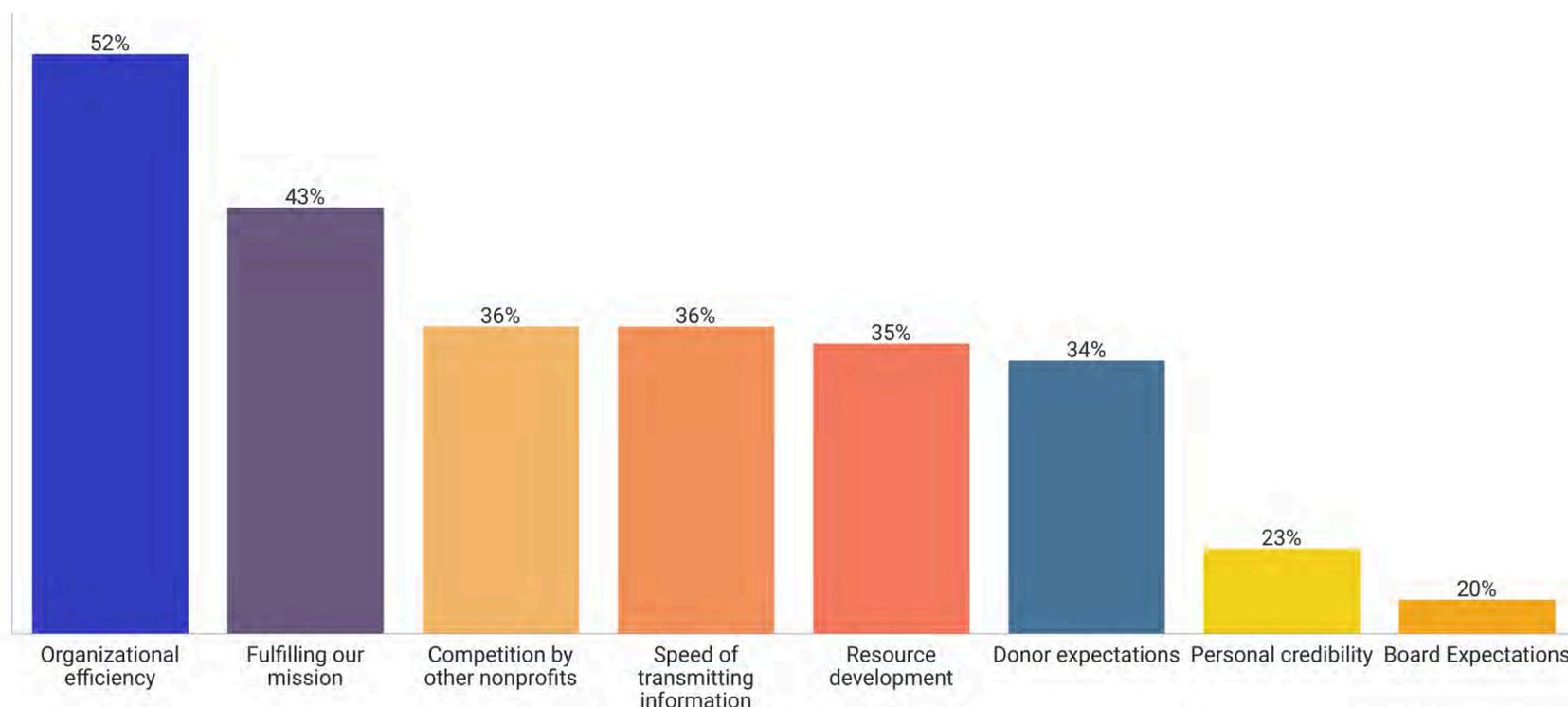


As shown in Figure 7, people think AI aligns with their values (73% of respondents). When interviewing individuals, most people cited simple AI influences such as grammar corrections, photo suggestions, or donor suggestions as ways they saw value that aligned with their life. Innovators (83%) and Early Adopters (90%) mostly agreed that AI met their needs and values. A large portion of Late Majority (48%) and Laggards (33%) respondents did not feel AI values were applicable to them (possibly from a lack of knowledge).

Comparing this data to the AAAC report on AI, 89% of practitioners believe AI can make their organizations more efficient. This is aligned with our results and points to a strong persuasion towards implementation of AI, particularly for Innovators and Early Adopters.



Figure 8: Influences for AI Innovation



In terms of influence (shown in Figure 8), respondents want AI to improve their organization's efficiency (52%) and better fulfill their mission (43%). This aligns with our review of AI technology providers putting their resources where they are best able to improve fundraising, organizational efficiency or support organizations in improving their program delivery.

Interestingly, influences for AI did not fluctuate dramatically between adopter categories. Innovators are more likely to focus on fulfilling their mission (55%) than organizational efficiency (45%). Early Adopters believe speed of transforming information (63%) was equally important to organization efficiency.

Decision



People think they need more time with AI



People believe there needs to be an ethical framework in place before wider adoption



People are scared of AI



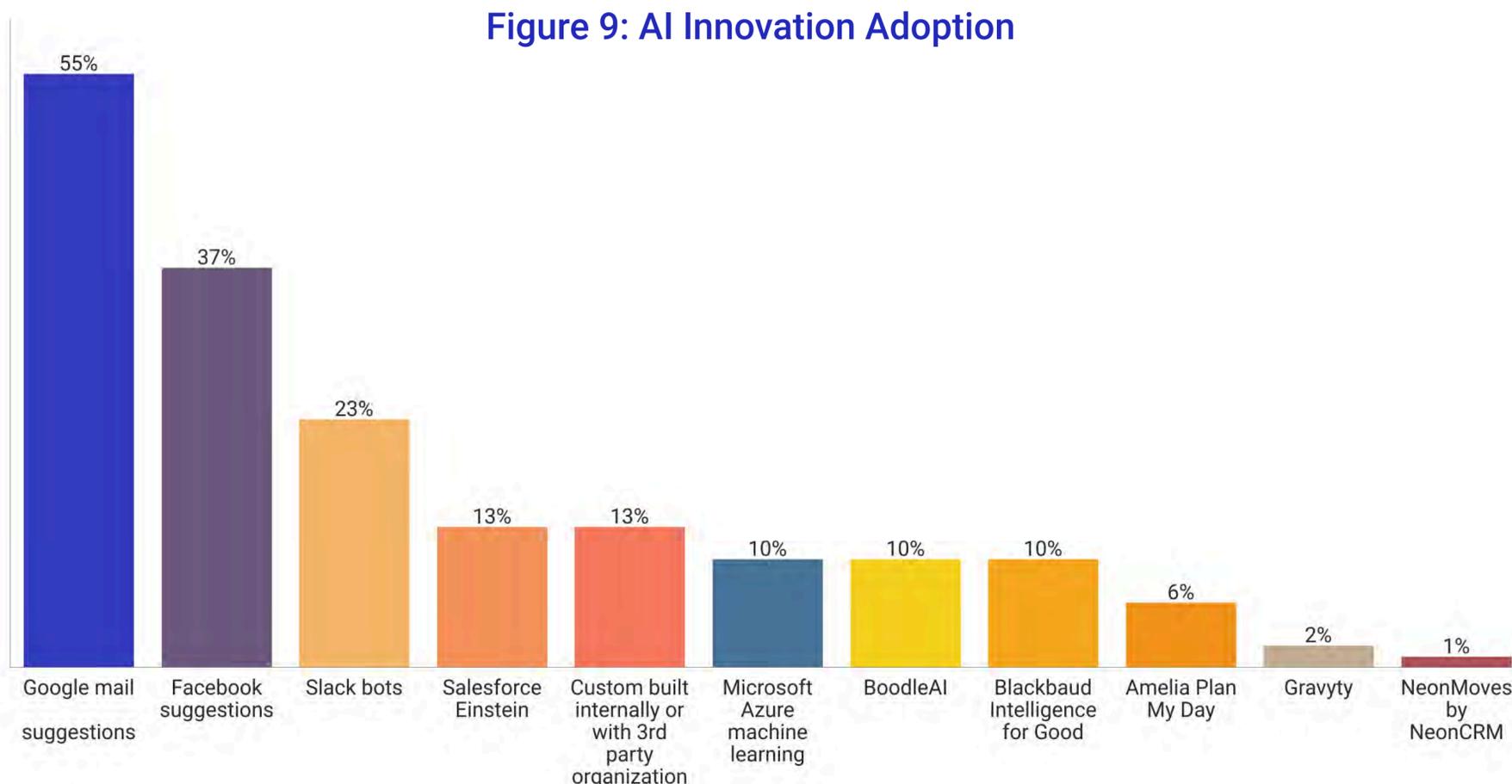
Nonprofits are reading about amazing (and scary) AI applications for companies and governments, but it seems the decision-making process for adopting AI is still very mixed. Most people believe they need more time with AI before feeling comfortable (63% of respondents) and 83% of people believe an ethical framework should be put in place before full AI adoption occurs. 52% of respondents also reported being scared of AI advancements, led by the Late Adopters (78%) and Laggards (89%) categories.

In interviewing experts across the industry, we heard from various sources that nonprofit is behind when compared to businesses. In the Diffusion of Adoption theory, the decision to use technology is a critical step and difficult to measure quantitatively. Mark Terrero of Fusion Labs noted, “I think there’s a perception that because it’s the charitable sector, there is a higher purpose that should not be influenced by mathematics and machine learning.” This is likely true for early majority, late majority, and laggards. For innovators and early adopters it is more likely that practitioners are making decisions based on the crucial value versus risk tradeoff that nonprofits take into account. In business, organizations lose money. In nonprofits, organizations lose trust, and are therefore more risk averse.

The Brookings Institute did a study on [U.S. perceptions of AI use in warfare](#) and the responses were similarly aligned with our results, with 67% wanting an AI ethics code and/or AI review board. Comparing these results to [the AAAC report](#), 87% of respondents believe it is important or highly important to use AI ethically, providing further alignment that ethics are critical for adoption in AI. The nonprofit sector is not alone in that belief; significant ethical concerns have been brought up by notable thought leaders, such as [Stephen Hawking](#) and [Bill Gates](#).

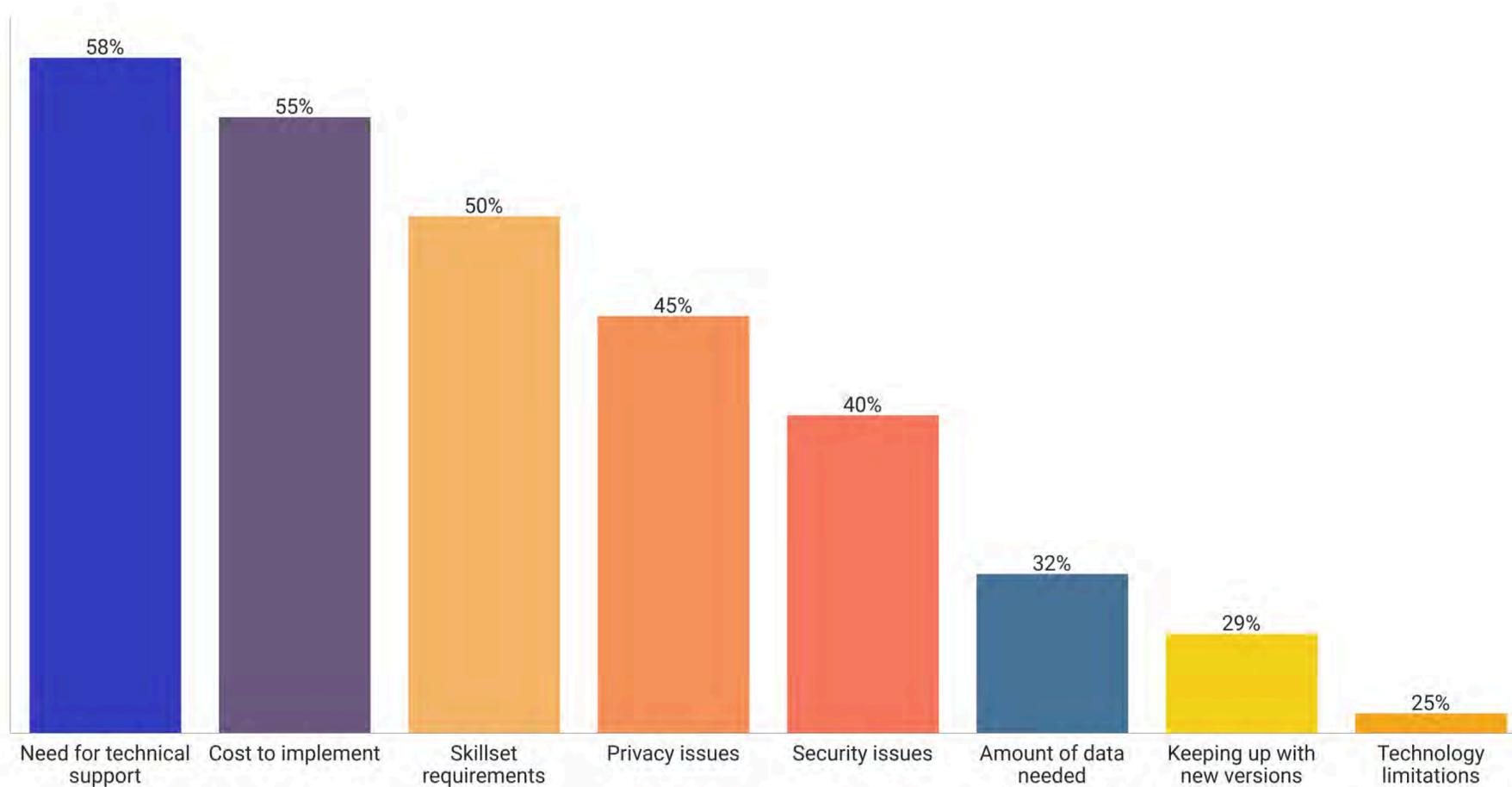
Implementation

Figure 9: AI Innovation Adoption



When it comes to the implementation of AI (shown in Figure 9), nonprofit practitioners are not quite as excited. 66% of respondents had only used 1-2 AI-based apps and, considering Google Mail suggestions (55%) and Facebook suggestions (37%) were the AI-technology frame of reference, it seems nonprofit-specific AI applications use is much lower, with a max of any single technology being used by no more than 23% of respondents.

Figure 10: Top Obstacles to Adoption



Shown in Figure 10, the largest obstacles for adoption are the need for technical support (58% of respondents) followed by cost to implement (55%) and skillset required (50%). This points to the need for technical leaders, who understand AI, to help navigate existing implementations (and is good news for consultants and technology vendors).

Comparing this information to the [AAAC report](#), 19% were reported to be implementing or deploying AI technology results. The AAAC report concludes 42% of nonprofits are “researching” with no plans of deployment in the next 12 months. This result may be high, based on the SAINS research.



Confirmation



People have seen visible results from using AI



People believe AI has made their life easier



Innovators and Early Adopters believe AI has made their life easier

It would be overzealous to derive too many conclusions on people's perspective on whether AI is helping their nonprofit currently, but there is evidence to support that practitioners believe AI is providing value. Respondents have seen visible results (68%) and believe their life is made easier by using AI (75%). Considering there are a limited number of organizations actually implementing AI today, it is too early to claim too much value on people's confirmation of value from the study.

Innovators (90%) and Early Adopters (90%) most believed AI makes their life easier. Late Majority (50%) and Laggards (56%) neither agreed nor disagreed that AI provided them value. As Eric Okimoto, BoodleAI's COO noted, "There is a huge amount of data in various platforms in terms of constituents and charitable behaviors. Applying AI is only going to make targeted engagement easier and more efficient. It's going to streamline the entire industry and help nonprofit staff focus more on relationship building rather than mundane, repetitive tasks." The survey results agree; those who are starting to implement believe solutions are providing value.



Current State of AI in the Nonprofit Sector

AI is a hot topic among regulators, startups, and investors right now. However, nonprofits are just starting to dip their toes in the water. The areas where nonprofit AI is most quickly progressing are in the blurred lines between nonprofit and for profit entities and are (unsurprisingly) driven by technology companies. In the current state snapshot, the report is broken into two major areas of AI innovation: **Mission** and **Fundraising & Marketing**. Each topic will provide a brief background along with examples of innovation.

Mission

Core to the nonprofit sector are the organizational missions - sometimes called “programs”. The organizational mission is the essence of each nonprofit and the primary reason why people donate time, money or resources. There are a few mission-focused AI projects ongoing, but AI focus is limited overall. Primary influencers of the mission-driven programs are technology companies that are already heavily invested in AI, Microsoft being the most notable example. Here is a snapshot of mission-driven activities:

Microsoft (MSFT): AI for Good - Microsoft’s AI programs underpin a major portion of the mission-driven work in the nonprofit sector. Microsoft’s President, Brad Smith, has taken a **leading voice** in focusing technology for good and is using the AI program to implement a major piece of the vision. Some interesting examples include:

- **AI for Earth:** Microsoft puts “AI technology and cloud software in the hands of those working to solve global climate issues”
 - Endangered species tracking and machine learning to track program progress and provide improved security animals
 - Illegal fishing AI to protect endangered ocean species
 - AI-based Forest management
- **AI for Accessibility:** Probably Microsoft’s most interesting work in the nonprofit AI world, their goal is “AI can empower people with disabilities with tools that support independence and productivity, as technology rapidly changes the way we live, learn, and work.” This work includes:
 - Providingtechplatforms to enable developers to build applications for people with



- Providing tech platforms to enable developers to build applications for people with disabilities
- AI applications capable of hearing, seeing, and reasoning with increasing accuracy
- Apps to narrate the world for those with vision impairment
- Pictographic apps for nonverbal children powered by AI
- Translators apps across platforms
- Accessible gaming for individuals with disabilities
- [AI for Humanitarian Action & Cultural Heritage](#): Microsoft “partners with nonprofit and humanitarian organizations working to support disaster recovery, address the needs of children, protect displaced people, and promote human rights.”
 - Photo visualization for surgical outcomes for cleft palates
 - Tracking cultural artifacts to categorize and preserve them
 - Creating immersive cultural experiences backed by AI programs

[Amazon \(AMZN\)](#): Amazon is a leader in the AI and machine learning space and is doing a number of nonprofit focused activities across its lines of business, most notably with the [Amazon Smile](#) program. However, in terms of AI, it is less clear what is the company’s dedicated program for nonprofit AI. Interesting activities include:

- [AWS for Disaster Relief](#): “The AWS Disaster Response Action Team allows customers to focus on mission-critical functions, while AWS provisions critical data and applications, transports hardware to the base of operations, and implements deployable infrastructure based on customer need.” AI-based programs are included in these examples, though it is inclusive of more activities (i.e., servers, virtual machines, hosting).
- [Imagine Grants](#): “AWS Imagine Grant Program is a public grant opportunity open to registered 501(c) nonprofit organizations in the United States who are using technology to solve the world’s most pressing challenges.” Examples include Tarjimly, which is “launching machine learning-based tools for refugees to eliminate language barriers in times of crisis, enabling matching to volunteers who speak their language and dialect.” There a dozen or so examples on their website. Compassion international is [doing facial recognition](#) for child identification using an Imagine Grant.
- [TechSoup/Nonprofit AWS credit program](#): Amazon provides \$2,000 in AWS credit for nonprofits, but charge \$175 admin fee. Nonprofits have access to all AWS AI-based technologies (which are extensive).



Google (GOOG): Google is creating an incredible amount of AI work, which is trickling into the AI for good space. Google's CEO, [Sundar Pichai](#), noted, "I think of AI as being there to enhance and help people, and if you approach it that way, I think it is incredibly useful," As for Google's actions toward nonprofit AI, it is less clear. The [AI Impact challenge](#) gave away \$25M to AI-related efforts for nonprofits. As well, Google is doing a number of initiatives focused on positive social or environmental initiatives, though the narrative is less cohesively aligned to nonprofit AI as Microsoft. Interesting activities include:

- Satellite imagery to identify illegal mining
- Air pollution tracking AI
- Deep learning to teach writing skills
- AI translate for to translate sign languages
- Fact checking of news reporting using AI
- LGBTQ chatbots via text and chat
- Crisis text lines prioritize incoming text messages using AI

OpenAI: OpenAI is a nonprofit focused on a "mission to ensure that artificial general intelligence benefits all of humanity." Their work is highly technical and focused on ensuring AI programs are not just helping large companies but the general populace. They are working with leading data scientists to provide open source platforms and training modules to any developer. OpenAI is most notable because it is run by Silicon Valley darling, [Sam Altman](#), and backed by notable thought leaders, Elon Musk and Peter Thiel.

Partnership on AI: The major AI technology players have teamed up to play more fairly with AI. This nonprofit, similar to OpenAI, is focused on determining the ethics of artificial intelligence for large companies and nonprofit institutions. They are made up of 61 nonprofits, 20 companies (mostly large technology companies), and 19 academic institutions. Their goal is to do the following:

1. Develop and share best practices
2. Advance public understanding
3. Provide an open and inclusive platform for discussion & engagement
4. Identify and foster aspirational efforts in AI for socially beneficial purposes

Amnesty International: Amnesty International created a "Troll Patrol" that is a crowdsourced AI project with Element AI with the goal of creating a database of online abuse against women. They leveraged the support of 6,500 volunteers and analyzed 288,000 tweets to determine the toxicity of online abuse against women.



The Partnership has created a list of 8 tenets to ensure AI will benefit and empower as many people as possible. This includes research, collaborations, policies, and training for organizations to ethically utilize AI.

On a smaller scale, there are a number of location-based nonprofits focused on the topic of AI. These organizations typically address technology more broadly, such as [NTEN](#) or [NetSquared](#). One local (to PwrdbY's team in Los Angeles) AI-focused nonprofit, [AI LA](#), is solely focused on the topic of AI for everybody. Similar groups are beginning to occur in [other communities](#).

Moving away from the major companies working in nonprofit impact, there are very few organizations using homegrown AI tools (13% of survey respondents). Those using AI are typically leveraging large technology platforms built by Google, Microsoft, and Amazon.

Fundraising & Marketing

Most nonprofit artificial intelligence innovation is happening in fundraising. Unsurprisingly, nonprofits need funds to support their mission and are interested in creative ways to better engage donors with less resources. AI offers opportunities to improve donor information, reduce resources, and customize donation requests. Most of the fundraising and marketing-focused AI solutions are built within or in partnership with CRM systems. Below is a list of companies and their associated AI solutions.

Blackbaud (BLKB)'s Intelligence for Good: Blackbaud is taking a combined approach to AI by building capabilities, improving analytics, and designing nonprofit specific solutions because “this conversation is so much bigger than just AI.” As of now, they have not launched an AI-specific solution but are worth mentioning because they are nonprofit-focused and publicly traded.

BoodleAI: According to Boodle's website, “boodleAI leverages proven AI/machine learning to rapidly model the untapped data sitting in your nonprofit, along with billions of third-party data points, to help you achieve significant lifts in donor acquisition, retention, and engagement rates.” They do this through Donor Affinity scoring. According to Eric Okimoto, Boodle's COO, They “apply machine learning to provide predictive analytics on donor prospects to help nonprofits better understand donors, constituents, volunteers, and fundraisers. boodleAI provides a deeper understanding into nonprofits constituents to enable nonprofits to engage with the right message via the right channel with the right ask.” Boodle has [raised \\$5M](#) to date.



Futurus Group: Driven by well-known nonprofit thought leader Nathan Chappell, Futurus leveraged work from large education and health institutions to build a model that creates “gratitude scores” to determine a donor’s likelihood of giving. Nathan provided his perspective on their work, “Futurus was created with the idea that by leveraging big data and AI technologies we can help nonprofits work smarter, not harder. With a depth of experience in deep and machine learning technologies, Futurus helps nonprofit organizations determine the best prospects to connect with, without using wealth data as a primary tool for determining affinity.” Futurus is backed by Gobel Group, who recently [raised \\$2.3M](#).

Gravyty: Gravyty provides a regular list of potential donor prospects to you via email with pre-written emails based on existing CRM data. They also provide one-on-one customer support for customers using their products. Gravyty has [raised \\$2.5M](#).

PwrdbY (*Note: we are the author of this research*): PwrdbY works with nonprofits and social enterprises to identify major issues, strategize, design, and scale products in partnership with them. Through years of working with Children’s Miracle Network Hospitals, PwrdbY built two AI-powered mobile solutions. PwrdbY has [raised \\$0.2M](#) currently. These solutions are:

- **NeonMoves:** NeonMoves leverages [NeonCRM](#) donor data to create daily lists of prospects to steward and connect. NeonMoves learns from user actions to improve the lists provided to fundraising professionals.
- **Amelia:** Amelia leverages corporate partner data from an organization’s CRM and provides geographic based route lists to more efficiently and effectively manage retail campaign teams and campaign volunteers. Amelia integrates with most major CRMs.

Salesforce (CRM) - Einstein “Einstein is a set of best-in-class platform services that bring advanced AI capabilities into the core of the Customer Success Platform, making Salesforce the world’s smartest CRM.” These services are built for for profit sales teams and customized for the [Salesforce.org foundation](#). They are:

- **Sales Cloud:** Focused on helping sales professionals move from basic CRM management to more advanced management.
- **Service Cloud:** Focused on providing AI-powered service responses to sales and service teams.
- **Marketing Cloud:** Focused on providing predictive scoring for marketing engagements (emails, etc.) for sales teams.



Wisely: Wisely focuses on major gift officer portfolio management. Its AI powered prediction engine optimizes unassigned prospects daily, helps add them to the right portfolio and then provides insight into which prospects should be contacted. As Wisely's COO, Wes Moon, noted, "[Wisely] provides gift officers the confidence to connect to prospects at the right time, with the right ask." Wisely has [raised \\$1.15M](#).



AI Investment Trends in the Nonprofit Sector

A recent analysis by the [Chronicle of Philanthropy](#) found that there has been \$583 million from donors and foundations allocated specifically for artificial intelligence projects. Open Philanthropy has established a [funding focus](#) specifically around artificial intelligence, with a \$55 million grant allocated to Georgetown University in January 2019. Furthermore, the University of Toronto is fueling the intersection of innovation and technology in Canada, with a focus on AI, with a [\\$100M gift from Gerald Schwartz and Heather Reisman](#).

There are dedicated foundations and passionate donors who have a vested interest in seeing artificial intelligence flourish in our industry. A prominent example is Microsoft co-founder, [Paul Allen](#), who willed \$125 million to the Allen Institute for Artificial Intelligence in 2018.

On the opposite side are investments around ensuring that AI is adopted in an ethical manner, such as when LinkedIn co-founder Reid Hoffman gave \$10 million to initiate the Ethics and Governance of Artificial Intelligence Fund, a collaboration between the MIT Media Lab and Harvard's Berkman Klein Center for Internet & Society.

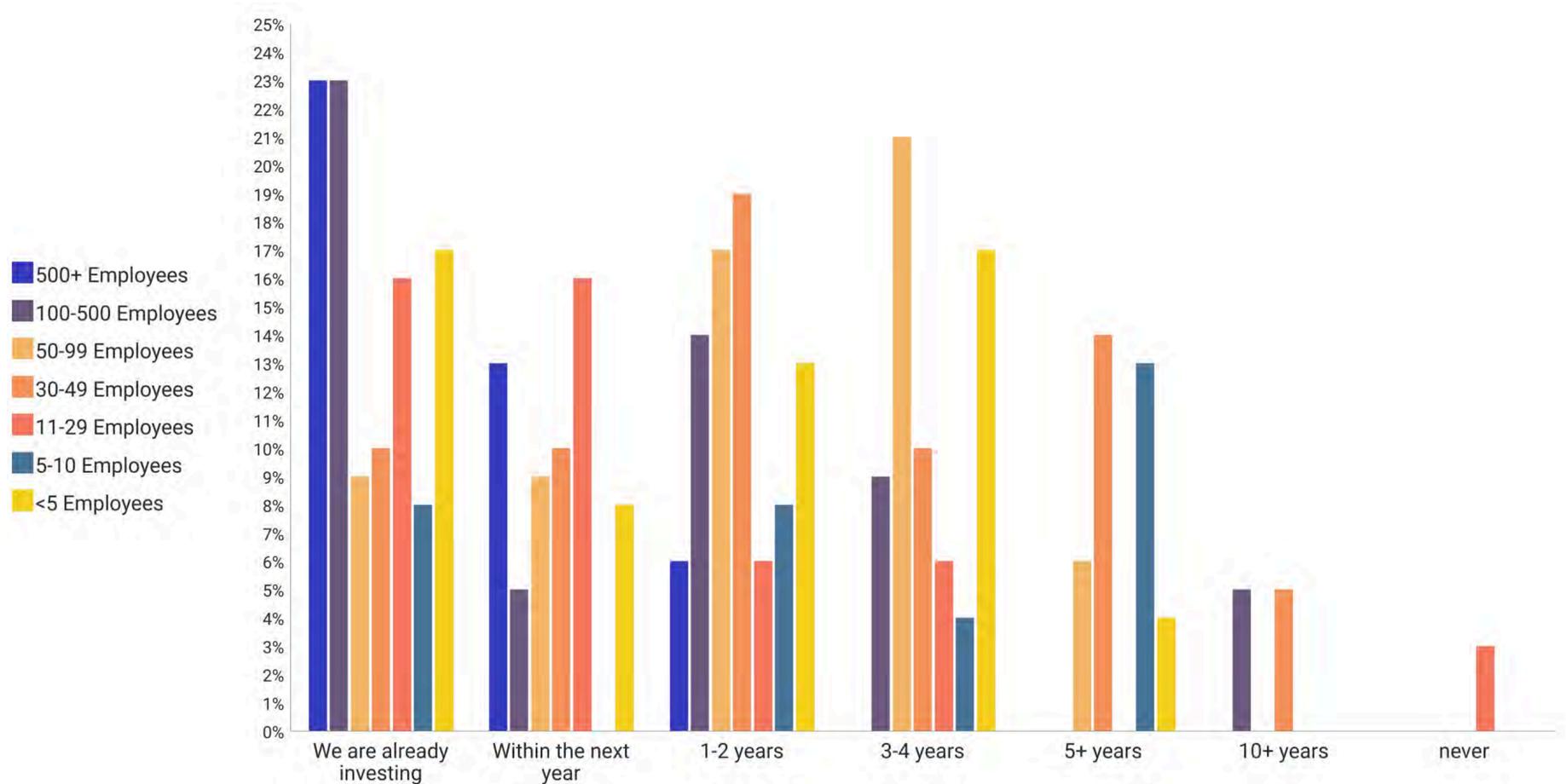
As foundations and high net worth individuals continue to invest in artificial intelligence, these initiatives will have a ripple effect throughout the rest of the sector that will influence individual adoption.

Organizational Investment

The other important trend around adoption of AI is by mission-driven organizations themselves. In the State of AI survey (shown in Figure 11), 60% of respondents of all types have already initiated plans to invest in AI, with the majority of all respondents outlining plans for investment within five years. Only a handful (1% of respondents) indicated that they have no plans for investment into AI.



Figure 11: Organizational AI Investment Timeframe



“Yesterday listened to someone who builds artificial intelligence tools for major gift officers. His brainchild is a thank-you letter produced by a robot. He even has a machine that drafts these robot-written letters with a hand-writing-style font. Artificial? Check. Intelligent?”

- Tom Ahern,
Communications
Consultant via Twitter

Traditional fundraising consultants such as Tom Ahern have [expressed skepticism](#) over the adoption of AI by fundraising organizations. There are concerns about AI taking away from core basics that an organization should be investing in when it comes to their operations.

There has also been increasing interest in adoption of artificial intelligence to address a wide variety of tasks. Much of the [investment and discussion](#) has been around leveraging artificial intelligence in either fundraising or communications, though deeper analysis of organizational impact is beginning to appear in other industry conversations.



The Future of Nonprofit AI

As with most technologies, nonprofits are excited about the possibilities of AI but worried about the downsides. As Tim Sarrantonio, Director of Strategic Partnerships at Neon One, noted in his [Ted Talk](#), nonprofits act differently from companies; where companies have profit incentive to get big and bold, nonprofits have to worry about the negative consequences of AI (e.g., race profiling) while losing some of the upside potential (e.g., profit motive). As we look toward the future of AI in the nonprofit sector, there emerges a few macro and industry specific trends.

Macro Trends

As it relates to the nonprofit sector, there are a few important macro trends affecting the industry. To learn more about non-industry specific macro trend predictions, please reference these [technology](#) and [public opinion](#) articles.

To highlight a few:

1. AI-based companies will continue to be established and investment will continue to increase in the nonprofit AI sector.
2. To fill the talent void for AI researchers and developers, a massive push will be made by universities.
3. People will increasingly raise concerns and demands for regulations around preventing AI-assisted surveillance from violating privacy and civil liberties.
4. Companies will increasingly need to prevent AI from being used to spread fake and harmful content online; if they do not, governments will force them.
5. AI-based cyber attacks will become more prevalent
6. Protecting data privacy will become increasingly important, especially among disadvantaged communities

“The world hasn’t had that many technologies that are both promising and dangerous”

- Bill Gates to [the Stanford Daily](#) on AI.



“The next 5-10 years will see significant adoption of AI technologies in the nonprofit sector. The low hanging fruit will be around making routine tasks more efficient to allow people to work smarter, not harder.”

- Nathan Chappell, Futurus Group

Nonprofit Trends

In the nonprofit industry, our future-looking predictions are more targeted. There are a few key areas for AI-growth:

1. **Mission-based AI:** While a few large players are doing some amazing things with AI-based programs, there is significant opportunity for mission-based AI technology to expand. Expect to see more programs from other large technology companies, higher education institutions, and foundations.
2. **Donor Categorization:** According to the [Fundraising Effectiveness Project](#), donor and revenue retention are in freefall. An organization’s capability to identify their most effective relationships will be critical in the coming years to address this concerning trend. Tech companies will continue improving AI models to determine the following:
 - Giving capacity: How much will someone give?
 - Giving propensity: How likely are they to give?
 - Donor affinity: Who do donors know?
 - Donor matching: How do donors connect with a cause?
 - Donor messaging: How do you personalize communication with a donor?
3. **Routine Task Efficiency:** AI will improve routine task efficiencies for organizations. Nonprofits have legacy processes they use because they are familiar. As they have better and more data, roles around routine efficiency will shift. This could be any of the following:
 - Improve recommendations for surfacing under- and over-communicated donors
 - Data cleansing



- Donor research
 - Scheduling
 - Email templates
4. **AI Access:** AI-models are still mostly being used by consultants, tech companies, or a few data scientists at large nonprofits. As AI becomes more accessible, for example low code AI programs, nonprofits will have greater access to basic AI programs to drive value. How interesting would it be to autofill half the fields in every grant form because an AI program auto-populates it?
 5. **Greater AI ethics and security focus:** Currently, there are only a handful of organizations working on AI ethics, but expect to see a larger surge of nonprofits (especially advocacy for disadvantaged groups) playing a role in shaping the ethical conversation related to AI. Nonprofits are uniquely positioned to have a voice in AI ethics. A related component is AI Security, which will become increasingly necessary as more sensitive donor data is being used to build and deliver AI.

As part of the research of this report, the team has read about a number of tech trends happening around AI ([TechSoup](#), [Ben Evans](#), [AI in Advancement](#), [BizTech](#), etc.) and talked to a number of experts (see our appreciation section). Based on our research, these trends seem more likely in the near term. There are longer term predictions to be made, such as changing the workforce based on AI, displacement of people, super intelligent AI, etc. However, AI is changing so quickly right now it is difficult to say what will happen more than a few years in the future. As Wes Moon, Wisely's COO, noted, "In 10 years perhaps the computing power available will be so significant that the human elements will also be automated - but that sounds like science fiction."

"There is a tremendous opportunity for nonprofits to crowdsource AI algorithms to overcome implicit biases. It's a unique problem the nonprofit sector could lead."

Sam Caplan, Walton Family Foundation



Conclusion

The nonprofit world is on the verge of an exciting era of artificial exploration. There are so many possibilities for AI to improve the world and for nonprofits to play a critical role in that improvement. As nonprofit practitioners, it is everyone's duty to ensure the sector and, more importantly, the world is ethically creating the future artificial intelligence. We hope this paper gives practitioners an insight into the world of AI and where things are going in the near term. Artificial intelligence is both terrifying and exciting. We look forward to riding the wave with you.

For any additional sources, questions, or comments please visit our website at pwrdbby.com or email us at hello@pwrdbby.com.

Thank you for reading!

Jared Sheehan, [Chief Executive Officer, PwrdbBy](#)

Tim Sarrantonio, [Director of Strategic Partnerships, Neon One](#)



Appendix

Being our first edition of the SAINS report, this report was a labor of love. It was also a larger undertaking than we originally thought. However, we are excited to add to the nonprofit sector knowledge base and to engage with so many thought leaders to create a unique perspective.

- Kate Bradley
- Ben Dukes
- Courtney Crockett
- Paul Ghiz
- Mark Terrero
- Eric Okimoto
- Nathan Chappell
- Erik Arnold
- Nhu Te
- Wes Moon
- Beth Kanter
- Terry Kyle
- Robin Woodward
- Sam Caplan
- Everyone who took the survey!

Methodology for the Perception Survey

Our team originally identified the concept based on our work with innovation theory working with Children’s Miracle Network Hospitals and the rollout of the In Flight mobile app. From there, a review of similar research studies pointed out that use of innovation theory could be applicable to the study of a new technology (artificial intelligence) as a framework. Everett M.

Rogers’ (1986) diffusion of innovations theory was used as a framework to study 212 nonprofit practitioners across the United States.. A web-based survey was used to collect the self-reporting data.

There are numerous ways to calculate perceptions of new technologies and innovations. Some of these include Disruption Theory, Aggregation Theory, S-Curve, etc. Diffusion of Innovation was chosen based on prior research and the academic credence for the theory over the last 30+ years.

According to Rogers, “Diffusion is the process by which an innovation is communicated through certain channels over a period of time among members of a social system”. Nonprofit practitioners are members of the social system that were studied. Innovation is described by Rogers as, “an idea, practice, or object that is perceived as new by an individual or other unit of adoption”.



Diffusion research centers on the settings which change the likelihood a new idea, product or process will be adopted by the members of a given cultural unit. This research is meant to add to the limited body of literature in the nonprofit artificial intelligence sector.

Diffusion of innovation theory provides a useful framework for studying the adoption process. Diffusion studies have found that the way targeted adopters perceive the attributes of an innovation is critical and that these perceptions account for 49–87% of the variance in whether or not they adopt (Rogers, 1995). Perceived attributes of an innovation include:

- *Relative advantage*—the degree to which an innovation is perceived as better than the idea it supersedes. The higher the perceived relative advantage, the more likely the innovation will be adopted.
- *Compatibility*—the degree to which an innovation is perceived as consistent with the existing values, past experiences and needs of potential adopters . If the innovation is perceived as an extreme change, then it will not be compatible with past experiences and is less likely to be adopted.
- *Complexity*—the degree to which an innovation is perceived as relatively difficult to understand and use. Innovations that are perceived as complex are less likely to be adopted.
- *Observability*—the degree to which the results of an innovation are visible to others. If the observed effects are perceived to be small or non-existent, then the likelihood of adoption is reduced.
- *Trialability*—the degree to which an innovation may be experimented with on a limited basis. This may include trying out parts of a program or having the opportunity to watch others using a new program. Trialability is positively related to the likelihood of adoption.

The survey was provided on a 5-Point Likert forced answer scale (1-Strongly Disagree, 2-Disagree, 3-Not Applicable, 4- Agree, and 5-Strongly Agree). For more information on the survey itself, please reach out to hello@pwrdb.com.

To ensure we were testing willingness to understand perception of innovation, we broke apart questions in key areas. These are:

- Adopter Categories - ten questions
 - Innovators - two questions
 - Early Adopters - two questions
 - Early Majority - two questions
 - Late Majority - two questions
 - Laggards - two questions
- Innovations adopted - one question



- Obstacles to adoption - one question
- Influences to adoption - one question
- Organizations that influence - one question
- Individuals who influence - one question
- Perceptions about innovations - ten questions
- Demographics - five questions

We did not specifically ask the role of the organizational respondents, but instead all requests for survey responses were done through email, LinkedIn, Twitter, and membership groups (e.g., AFP, NTEN). We reviewed the types of organizations participating. There was a slight skew to healthcare (~20%), though we have confirmed nonprofits from environmental, social, welfare, human rights, politics, and higher education.

Additionally, our team leveraged perceptions studies the Brookings Institute (2018) and AI Governance study on public perception of AI (2019).

For any additional sources, questions, or comments please visit our website at pwrdbby.com or email us at hello@pwrdbby.com.



