Leap before you lag

Nonprofits with deeper data capabilities see stronger impact, transparency and decisions

Executive Report

Analytics, Cognitive computing

How IBM can help

The IBM Corporate Citizenship and Corporate Affairs (CC&CA) Impact Grants program delivers strategically designed consulting and software solutions that leverage the breadth of IBM capabilities and technologies to empower organizations as they work in our communities to overcome society's toughest challenges. This program is one of several IBM Corporate Social Responsibility initiatives which comprehensively enable the company to deliver higher value solutions to the not-for-profit sector, affect significant social issues and impact communities across the globe. Please visit CC&CA at www.ibm.com/ibm/responsibility.

Why advanced analytics are now vital for nonprofits

A convergence of trends in the nonprofit sector has created urgency to advance the current state of data and analytics use. Major funders are demanding quantified evidence of social impact. Constituents expect both transparency of operations and a digital presence. None of these is a luxury, but a requirement. Being a technology laggard could send donors in other directions and threaten future outcomes. Our newest IBM research reveals that it's more important than ever for nonprofits to effectively leapfrog analytics capabilities by using new approaches to talent, technology and partnering.

Executive summary

What are the driving motivations, emerging trends and pressing challenges that nonprofit organizations face today? What methods can they start using to accelerate their impact and achieve full potential?

Advances in technology and rapid digitization of information have made data more accessible, setting a new expectation for the collection and sharing of information. Constant connectivity has transformed the nature of interactions, resulting in pressure for nonprofits to reach constituents in new ways and communicate impact. These movements, coupled with emerging curiosity about artificial intelligence (AI), can paint an overwhelming picture on how to advance in data and analytics.

To assess the current state of data and analytics use in the nonprofit sector, IBM Corporate Citizenship and Corporate Affairs (CC&CA), in collaboration with the IBM Institute for Business Value, conducted a global study through April 2017 (see "Methodology" on page 20 for more details).

We found that organizations that are more advanced in data and analytics practices are more effective in driving performance against mission and achieving internal efficiencies. Despite the benefits of advancement, nonprofits are largely behind the curve, with 67 percent indicating they are in the preliminary stages of the analytics journey.

Respondents indicated that the nonprofit sector faces growing pressures on several fronts. In the past two years, the majority said they are increasingly pushed to advance data and analytics capabilities as part of meeting organizational objectives (see Figure 1).

78%
of nonprofits with advanced analytics capabilities reported higher effectiveness in performing their missions

74%
of nonprofit leaders cited budget as one of their top three primary barriers to advancing analytic capabilities

67%
of surveyed nonprofit leaders are in the ad hoc or hindsight stages of the "analytics journey"

To make meaningful advances, nonprofits need to commit to becoming data-driven, create a data-centered culture and collaborate effectively with partners, donors and others within their network. Organizations can begin to leapfrog ahead by:

• Capitalizing on advances in technology

• Upskilling staff

• Rationalizing use of internal and external talent

• Aligning funders to support data-driven practices

• Engaging in collaborative ecosystems.

Figure 1
Nonprofit respondents said there is increasing demand to use data and analytics for quantifying social impact

Internal pressure

76%

Competitive pressure

73%

Grantor pressure

72%
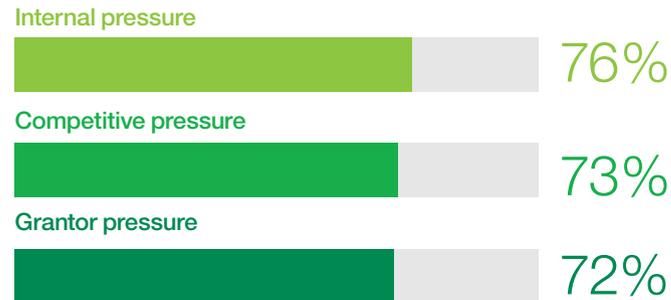
Source: IBM Institute for Business Value analysis.

The growing need for quantifiable evidence

The desire to become data-driven is not new for nonprofits, but the playing field has changed. As demand for quantifiable evidence of social impact increases, nonprofits are feeling the pressure to capture meaningful data that proves their impact and helps drive decisions.

Data has risen in importance for the nonprofit sector as organizations strive to move beyond measuring program outputs and toward demonstrating broader social impact. There is an increasing expectation not only to understand impact and operational data to derive insights, but also to predict and make informed decisions (see Figure 2 and sidebar, "Steps along the analytics journey").

Figure 2

Sixty-seven percent of nonprofits are in the preliminary stages of using data
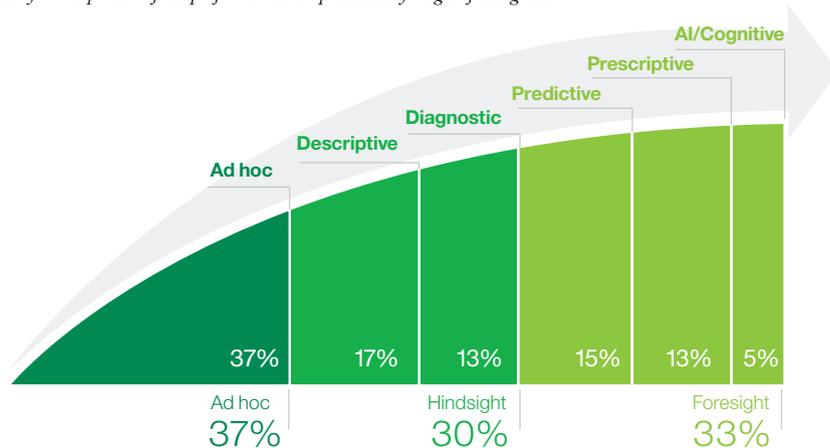
Source: IBM Institute for Business Value analysis.

Steps along the analytics journey

Ad hoc – Data collection and analysis on an as needed bases – not part of regular operations.

Descriptive – Review historical data to explain what happened in the past.

Diagnostic – Review historical data to discern trends that influence decisions.

Predictive – Use historical data to create predictive models.

Prescriptive – Use historical data to create predictive models and assess the probability of each potential outcome.

AI/Cognitive – Leverage self-learning systems to discern patterns from unstructured data.

Data-fueled analyses are driving social impact

In Washington D.C., the Association for Enterprise Opportunity used cluster analysis to quantify an undocumented market of small businesses, catalyzing its outreach to new corporate and government partners.

Fast-track into Information Technology (FIT) performed advanced analyses to uncover a high-risk student group and tailor educational programming to increase their likelihood of success.

SodateageNet established key performance indicators (KPIs) to better support its mission to decrease youth unemployment rates in Japan and better address an underserved constituent segment.

Though the pressure is mounting to advance data practices, survey results indicate the nonprofit sector largely remains in the early stages of the data journey. Healthcare-focused organizations are a notable exception and they are generally ahead of their sector counterparts in reaching the stage of foresight analytics.

Analysis of nonprofit conversations on social platforms supports this finding. While nonprofit discussions largely focus on the potential of big data, there is little conversation of actual implementation or success stories.

Former VP/CIO and current Advisor to the COO Ken Murdoch of Save the Children, a global organization focused on providing healthy futures for unserved children, recognizes the impact of these expectations. "We need to be out there and available to all donors via the various forms of social media, and more importantly, in the palm of people's hands," he said. "It has to be mobile."

George Ryan of Fast-track into Information Technology said, "If you have analytics capabilities to bolster the presentation of outcomes for beneficiaries, that puts you in a different space – where funders and government can invest more by seeing the value of their donations."

Our study shows that potential benefits from data and analytics for the nonprofit sector is not just hype. Nonprofits that have progressed farther in their analytics journey reported higher effectiveness in assessing social impact and driving measurable productivity improvements – compelling nonprofits to take action (see Figure 3).

Though nonprofits aspire to become more data-driven, progression of the sector is slow relative to the pace of technological advancement. IDC estimates global data creation to reach 163 zettabytes (or a trillion gigabytes) in 2025, which is 10x than 16.1 zettabytes of data created in 2016.[1] Opportunities to exploit data are growing exponentially. What might have been considered "advanced" a few years ago is now the expectation.

Figure 3

Respondents with more advanced analytics capabilities reported higher effectiveness than others on three important metrics
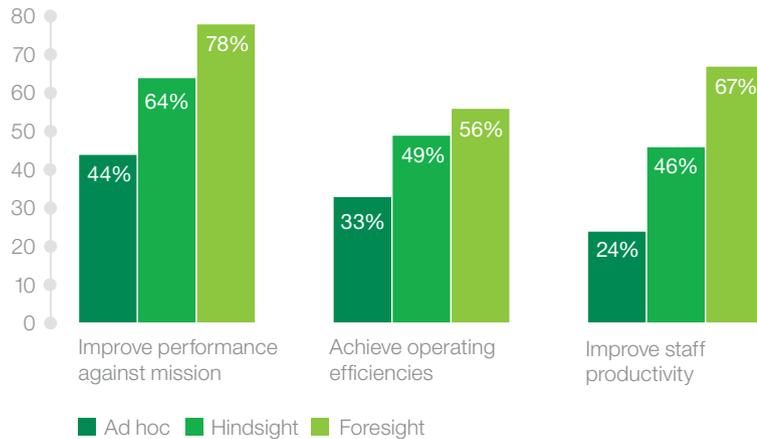
Source: IBM Institute for Business Value analysis.

Budget, technology and talent are the primary barriers for nonprofits
While these barriers are common across sectors, nuances of the nonprofit industry intensify the effects. In the private sector, market forces drive investment in data to stay competitive.[2] Conversely, nonprofits struggle with raising funds for what is considered internal overhead investments, as funding is often restricted to programmatic activities.

Budget was the number-one answer when nonprofit leaders were asked to name their top three primary barriers, named by 74 percent of respondents (see Figure 4). Budget was named by substantially more respondents than the next two most-common answers, technology (48 percent) and talent (41 percent).

Giving insight into budgetary constraints, 49 percent of respondents cited competing internal investments as the root cause, while 33 percent said investment was limited by the restrictive nature of grants. While funders increasingly demand evidence of social impact, monetary support is often not prioritized for data.

"One of our strategic goals is to diversify our revenue streams," explained Senior Vice President David Howard of Covenant House, an organization focused on homeless children and youth. "Part of our strategy is to focus more on our impact, which can create a 'Catch 22': We need to demonstrate impact to get access to some of these funding streams, but we need funding to create the infrastructure and capacity to do that work well."

Today, technology constraints make it harder for nonprofits to capture, structure and understand daunting volumes of available data. Of those that cite technology as a barrier, about half have not yet begun to pilot cloud storage or software-as-a-service (SaaS) solutions. About 20 percent are not yet considering either solution.

Talent is another notable obstacle for nonprofits as the big data revolution has created significant demand for these skills that are paid at a premium. This is driving the cost of such talent farther from nonprofits' reach. The fastest-growing roles are data scientists and advanced analysts, which are projected to see demand spike by 28 percent by 2020.[3]

Figure 4
Primary barriers to advancing data and analytics

74%	48%	41%	36%	27%	21%
Budget	Technology	Talent	Nature of data collected	Organizational structure	Cultural resistance

Root cause of budget barrier

Competing internal investments
49%

33%
Restrictive nature of grants
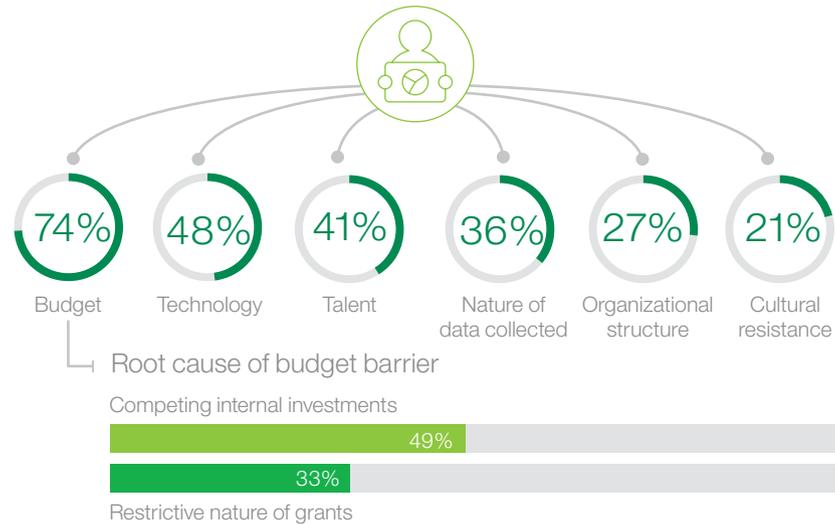
Source: IBM Institute for Business Value analysis.

Making the leap to expedite returns on analytics and data

Despite the barriers, the nonprofit sector can leapfrog ahead in data and analytics. Imagine if nonprofits could achieve the optimal balance of required skills without the budget of a Fortune 500 company. What if they could store and analyze data so affordably that board of directors' involvement could be reduced? And consider the power inherent in entering a collaborative environment that enables the group to run advanced analyses that few participants could have executed independently.

In the past, these visions may have seemed lofty. However, they are no longer outside of the realm of possibility for nonprofits that make a commitment to becoming data-driven.

Affordable opportunities to upskill staff and access freelance workers can help fill talent gaps. Technological barriers have lowered as data storage prices plummet and the accessibility of analytical tools is rising with intuitive, off-the-shelf software and open source environments. Perhaps most significantly, a new type of collaboration is emerging that can enable organizations to effectively advance, or leapfrog, analytics activities through an insights ecosystem.

Leapfrog your talent: Upskilling and outsourcing
One of the most frequently cited barriers to analytics maturity for nonprofits is the affordability of talent. Across sectors, organizations are challenged by the premiums offered for data skillsets. However, nonprofits can take advantage of trends in the market to fill existing skill gaps (see sidebar, "Tips for building data skills").

Upskill analytics talent through online resources and educational grants. There are many free and low-cost resources offering online education. Corporate grants provide educational opportunities focused on upskilling. Further, out-of-the-box SaaS tools have become more intuitive, making it easier for existing staff to perform analyses.

Many organizations see upskilling staff as essential, but leveraging pre-existing talent is not always the best course. To efficiently use allocated budget for data analytics, nonprofits must rationalize where they invest (in-house versus outsource). Contractors and freelancers can be cost-effective for nonprofits with limited analytical needs or those not requiring full-time expertise.

Take advantage of market trends to secure resources – such as the rise of the gig economy. The gig economy refers to the increased proportion of freelance workers to full-time employees. Evidence of the growth in proportion of freelance in the U.S. economy is cited in a report by the Brookings Institution that highlights the increase in activity of non-employer firms (no paid employees) across major cities,[4] while a study conducted by Upwork and the Freelancers Union found that freelancers represent 35 percent of the total workforce.[5]

While some organizations can benefit from developing a permanent internal data team, many nonprofits do not have the funds to provide a competitive wage for full-time roles. Online data talent platforms such as Experfy are growing. Traditional job posting sites are evolving with advanced matching algorithms to find the right freelance talent. Emerging competition-based marketplaces allow many people to work on a data project, while only the best outcome is paid.

Tips for building data skills

Better together. Create internal study groups or partner externally to work through tough concepts and stay on track. Gamify education through internal competition, recognizing those finishing courses and apply concepts. If you are the data pioneer, look for local meetups, LinkedIn groups or forums to discuss learnings and pitfalls.

Leverage experts. Enlist volunteers or board members to hold office hours for learner support. Engage internal experts to host training sessions to create a culture of knowledge-sharing and upskilling.

Go in with a goal. Before choosing courses, identify learning goals and planned application. Prepare a use case pertinent to your nonprofit's analytics aspirations to select the appropriate course and contextualize the content.

Timing is essential. Plan trainings or study groups when participants are in the office and can attend/coordinate with other activities. Find creative ways to make it engaging. Host a "lunch and learn," couple it with a networking session, or integrate into existing curricula.

Leapfrog your technology: Mobile, cloud, SaaS and platforms

Today, mobile technology enables nonprofits to collect digitized data and reach a broader base of constituents globally. Nonprofits foresee the trend of increasing smartphone usage[6,7] as key in today's digital marketplace: 85 percent of respondents said they will use mobile applications for constituent or donor data collection in the next two years. However, less than half indicated that they are using mobile devices or applications today (see Figure 5). Mobile data collection presents the opportunity to leapfrog for organizations that are challenged to collect data at scale and maintain quality from initial entry through digitization.

Figure 5
Mobile data collection is on the rise

	2 years ago	Now	2 years from now
Human surveyor with mobile device	12%	49%	73%
Mobile application trends	8%	42%	85%

Question: How was constituent and donor data collected two years ago, now, and how will it be done in two years?
Source: IBM Institute for Business Value analysis.

The cost and manpower associated with building data warehouses and expansive infrastructure are lowering. Pioneering enterprises that made the slow journey to analytics expertise a decade ago developed vast infrastructure that required maintenance personnel and a large energy footprint. For the resource-constrained nonprofit, today's technology can help at a fraction of the cost. Cloud storage can enable organizations to skip building a data center altogether and many corporations offer discounted storage for nonprofits.

Data platforms or repositories that allow data to be centrally stored and accessed are increasingly being adapted by nonprofits. Nonprofits reported that 44 percent used these technologies two years ago, compared to 72 percent today and 81 percent expect to use them in two years. As technology continues to advance at an unprecedented pace, central repositories can help nonprofits establish data-driven practices more seamlessly. Prioritizing data and analytics now can position organizations well to engage in more advanced practices as they are developed (see "STOP THE TRAFFIK" example).

STOP THE TRAFFIK leaps through the cloud

STOP THE TRAFFIK (STT), a human trafficking prevention organization, is leveraging low-cost digital tools to develop an accurate globalized perspective of the issue. Through its STOP APP, the nonprofit collects GPS data of trafficking hotspots and puts it in the hands of grassroots organizations to elicit frontline response and build resilient communities.

A cloud database, donated through a corporate grant, supports STT in creating immediate access to incoming data from the STOP APP. In addition, STT's data analytics resources have increased with obtaining analyst software licenses and training its volunteers. With its application in the hands of smartphone users, both tools enable STT speed to market.

According to Neil Giles, the Director of STT, "(This grant) has made us technologically more effective and efficient and a better partner for others. For some, it's been the impetus to have a serious conversation with us."

Figure 6

Nonprofits in the foresight stage use cloud computing, SaaS and shared platforms significantly more than those in the ad hoc stage
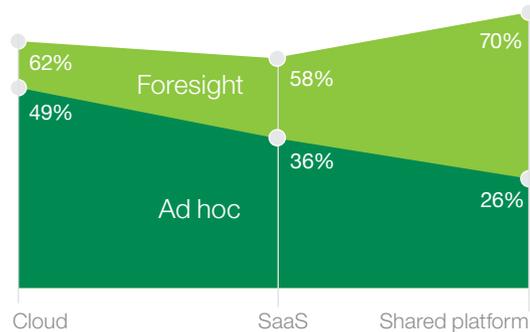
Source: IBM Institute for Business Value analysis.

There is a clear distinction in adoption of these technologies between nonprofits with advanced data practices versus those with nascent capabilities (see Figure 6).

Subscription-based analytical tools provide an affordable option to perform advanced analyses with simple user interfaces and powerful predictive capabilities. SaaS solutions offer streamlined accessibility to tools that allow users to derive data insights without advanced skillsets. Many offer subscription-based fees, lowering the cost barriers to entry. Tech giants often offer free software licenses through grant programs coupled with training.

Open source options are available for free. Training resources for open source tools exist on online platforms, and users have access to a collaborative environment to leverage existing codes and adapt. While off-the-shelf tools will not always match the organization's current infrastructure, oftentimes tools can be integrated using Application Programming Interfaces (APIs). Healthcare-focused nonprofits have made progress by using technology to reach remote beneficiaries and collect valuable data (see "Maternity Foundation" example).

Leapfrog together: Engaging data-focused donors

The nonprofit sector has traditionally been adept in establishing partnerships to help fund its missions. However, survey results demonstrated a disparity between overall funding sources for nonprofits and funding allocated toward data and analytics. Data-related funding is disproportionately sourced from the internal operating budget (see Figure 7). Organizations indicated that they are often restricted or encounter pressure to limit spending on data initiatives as it is considered overhead.

Figure 7

Funding sources are primarily earmarked for organization funding and not data-related projects, which places a burden on internal funds

Funding source	Organizational funding	Data funding
Restricted/directed grants	56%	33%
Donations/major gifts	54%	30%
Corporate partnerships	52%	33%
Government/public funding	46%	26%
Internal funds	33%	55%
Non-restricted/directed grants	23%	20%
Other	11%	8%

■ Organizational funding ■ Data funding
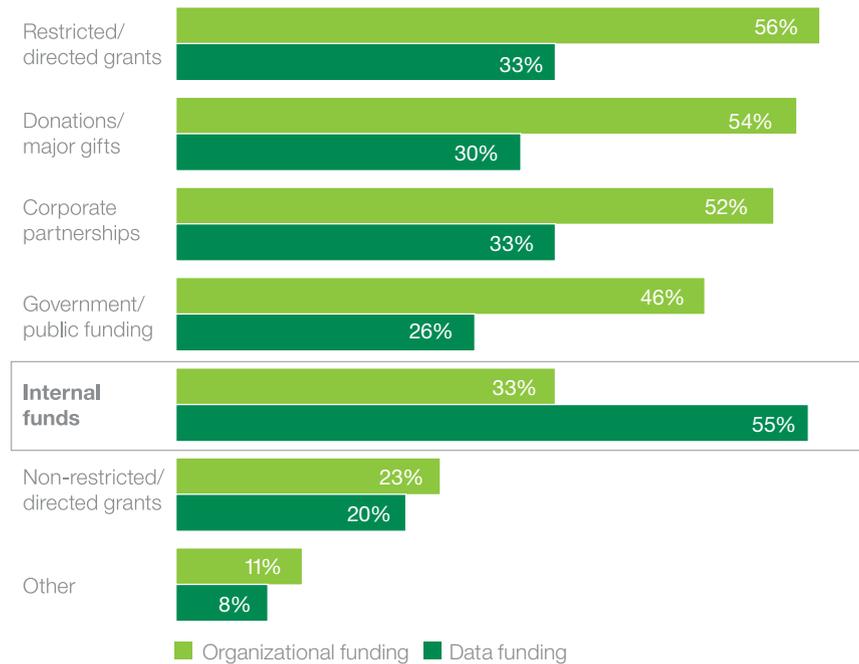
Source: IBM Institute for Business Value analysis.

Maternity Foundation analyzes mobile data with SaaS tools

Maternity Foundation (MF) is a Danish development organization, aiming to reduce maternal and newborn mortality in developing countries. MF launched its Safe Delivery mobile application to improve maternal health worldwide. According to Ida Marie Boas, Program Manager for mHealth and Monitoring & Evaluation, "There is a constant need for innovation." This requirement pushed MF to scale efforts globally and leapfrog its data analytics maturity through an affordable technological platform.

The free smartphone app is designed to help birth attendants in developing countries improve evidence-based emergency obstetric care. It also enables MF to assess health workers' real-time progress. MF will use SaaS-based tools to continue to analyze application data, document impact, inform product development and share a credible narrative with stakeholders.

The disparity highlights both the need for nonprofits to proactively build the case for data and analytics spending, as well as for grant providers to re-evaluate the percentage of grant funds earmarked for helping organization become more data-driven. The onus is not on nonprofit organizations alone to make funding available for what are becoming requisite analytics and reporting requirements to satisfy transparency demanded by donors and grant providers.

An effective tactic for nonprofits constrained by the ability to invest is to leverage donors that specifically address funding the associated operational costs. Many corporations offer in-kind donations to boost data and analytics capacity, in the form of targeted consulting support, analytics software licenses and data storage.

Nonprofits seeking to become more data-driven should look to take advantage of the expertise and influence of their supporters. Board members are a starting point, but donors can also play a role. Anne Johnson, the Head of Fundraising and Marketing at the Children's Cancer Institute of Australia, spoke of this opportunity: "A broad trend is that support can go beyond solely giving money. Today's influential donor might want to meet and become part of the team, even including an offer to perform or recruit critical skills."

Leapfrogging toward the future: The insights ecosystem
The term "ecosystem" in a business context refers to a complex web of interdependent enterprises and relationships aimed at creating and allocating business value. Ecosystems tend to be broad, potentially spanning multiple geographies and industries, including public and private institutions and consumers.[8] Operating under resource and budget constraints, nonprofits have historically been leaders in developing partnerships that drive their missions forward and broaden their reach. Capitalizing on this strength, nonprofits can form a new type of ecosystem focused on data and analytics: an insights ecosystem.

Today's technological advancements and the advent of platform based interaction have transformed the culture of collaboration and data sharing. This phenomenon opens the opportunity for nonprofits to not only establish bilateral partnerships, but to sustain the momentum by activating a new type of ecosystem with multiple participants. The Association for Enterprise Opportunity, an organization that supports small business growth in the workforce development issue area, established a precursor to the insights ecosystem through a corporate grant (see sidebar, "Association for Enterprise Opportunity: Leap together").

An insights ecosystem for nonprofits is a loose consortia of partners established to achieve scale and provide mutual support in driving a data-centered culture, sharing skills and deriving greater insights and resources. The insights ecosystem can be enabled by platform technology and facilitated by societal acceptance of collaboration among many different organizations, even from competitors to include those outside of social issue or sector. By establishing partnerships and defining unique value contributions and benefits across corporate, academic, public or competitive entities, nonprofits can more efficiently access the required expertise, support and technology to advance.

The commercial sector has already begun to see the benefits of previously implausible collaborative efforts. Novartis, a healthcare company that provides innovative solutions and pharmaceuticals, has established a multiplayer ecosystem with government, nonprofit and commercial players to improve care for chronic diseases in South Africa. They also partner with government and universities to collaboratively generate data to combat rheumatic heart disease in Zambia.[9] Competing pharmaceutical companies are visualizing the benefits of platform collaboration for drug discovery.[10]

Association for Enterprise Opportunity: Deeper insights through analytics

The Association for Enterprise Opportunity (AEO) creates economic opportunity by supporting development of strong and effective U.S. microbusiness initiatives. With a consortium of partners, AEO performed a market sizing/ segmentation analysis of 11 million records to gain a comprehensive view of small businesses based in low-wealth communities in the US. While AEO had not manipulated such a large dataset before – it was also donated – the initiative enabled it to become one of the first organizations to quantify a market of underserved entrepreneurs on a national scale. Moreover, the sizing effort was catalytic in enabling AEO to develop a platform to connect small business owners from low-wealth communities with financial institutions, and initiate conversations centered on policy change with the U.S. Department of Treasury and Congress. AEO's journey shows the importance of forging community partnerships and mutually beneficial relationships to catalyze stronger social impact.

Covenant House: Becoming data-driven

Covenant House International (CHI) is a global organization providing services to runaway, homeless and trafficked youth across 30 cities in six countries. It uses a centralized data management platform to capture demographics and client history, service delivery and outcomes data for young people receiving services.

To increase tool adoption within its federation, CHI uses online forums to share best practices, dashboards to track data quality and a learning collaborative. Learning consists of online and in-person training, and engages all levels of staff from executive leadership to frontline youth advisors.

One goal is to drive a cultural shift, partly through program administrators and "data champions," self-anointed culture carriers who are passionate about data. According to David Howard, Senior Vice President of Research, Evaluation & Learning, "One of the holy grails in this work is finding strategies that make data relevant and informative to the front-line staff. To be able to show specific data to a worker and demonstrate that it can inform their practice is truly powerful."

Crowdsourcing and the "sharing economy" demonstrate emerging cultural receptiveness to collaboration beyond an organization's walls. Hesitancy to share personal data is diminishing. A New York University Stern professor quotes a recent study on the rise of consumer data sharing in the commercial sector, "Instead of fearing sharing data, we should feel comfortable with it – and even start getting excited about it."[11]

Ruth Dearnley, CEO of STOP THE TRAFFIK called for radically redefining nonprofit collaboration. "It has to be about systemic disruption. The landscape is very different from when we started out ten years ago; now, we are considering how to incubate different players from very diverse areas into a unified team."

Like many commercial trends that trickle their way into the public sector, new types of data oriented ecosystems will increase in relevance as nonprofits embrace open source, recognize value in collaboration and seek larger more inclusive data sets. The shifting culture opens new possibilities for nonprofit innovation and can bridge the gap for sourcing data via sharing agreements between organizations. Raw data within or across issue areas can be shared on a central platform, where participants can learn from and build on each other's insights and algorithms (see Covenant House example). The common thread that can motivate unconventional partnerships is the desire to make measurable progress in resolving social issues.

Models for ecosystems of this nature are beginning to emerge in the social sector. A three-year EU-funded project, Decentralised Citizen Owned Data Ecosystem (DECODE), is launching a pilot in partnership with 13 agencies across the EU to release a mobile application to 1,000 citizens in Barcelona and Amsterdam. In this pilot, data stored on a shared platform will be shared with government and organizations to improve the cities. This alleviates the burden of data collection for organizations.[12]

Collaborative insight ecosystems hold enormous potential, but creating an effective network of data-driven partners can be tricky. The benefit of collaboration is only evident when the value and contribution of each participant is clearly defined. The key is to reach a mutually beneficial agreement including donors that can fund the ecosystem itself, provide donated datasets or support in an advisory capacity. Potential contributions and participants of a self-governing insight ecosystem are shown in Figure 8.

Figure 8
Partners, expected benefits and contributions to an insight ecosystem

Computing power
Businesses
Nonprofits
Best practices
Data sets
Donors
Insights ecosystem
Universities
Communication
Analytical skills
Volunteers
Government
Algorithms
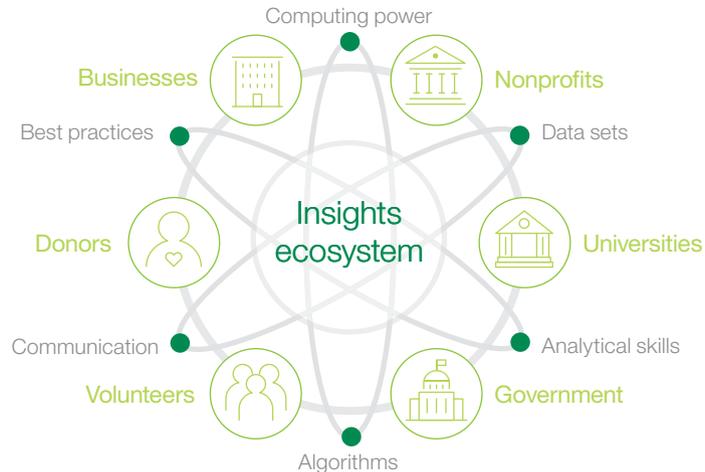
Source: IBM Institute for Business Value analysis.

Related IBV executive reports

Ezry, Raphael, Dr. Michael Haydock, Bruce Tyler and Rebecca Shockley. "Analytics: Dawn of the cognitive era - How early adopters have raised the bar for data-driven insights." October 2016. https://www.ibm.com/business/value/2016analytics

Palmarini, Nicola, Rebecca Wu and Sheila Zinck. "Loneliness and the aging population: How businesses and governments can address a looming crisis." May 2017. https://www.ibm.com/business/value/loneliness

Davidson, Steven, Edward Giesen, Martin Harmer and Anthony Marshall. "In or out? Succeeding in the ecosystem economy." July 2017. https://www.ibm.com/business/value/ecosystemecon

Are you ready to take the leap?

- How will you negotiate for a higher percentage of monitoring and evaluation funding within grant awards? In what ways can you address the funding disparity between organization funding and data funding?

- What is your plan to use data and analytics to improve operating efficiency, staff productivity and performance against mission?

- How are you evaluating possible external partnerships to gain or advance your organization's data and analytics capabilities?

- Where will you look for funding support that aligns with your organization on the value of data? How will you prioritize specific grants to advance your data and analytics efforts?

How to start now

Ultimately, nonprofits must align leadership support and advocate for a data-driven culture internally to make meaningful progress along the journey.

Commit to becoming data-driven

- Set clear goals with defined expected return and strategic plan.

- Define actionable metrics accepted throughout organizational levels.

- Seek internal and external agreement on the priority of data, including alignment with funders.

- Invest in the requisite technology that facilitates data collection, storage or sharing.

Create the culture

- Empower the workforce by encouraging ownership.

- Educate and nurture curiosity, lift champions and provide opportunities to upskill.

- Communicate frequent playbacks of metrics and successes.

Collaborate, don't go it alone

- Ask other data-driven organizations or partners for guidance.

- Crowdsource and collaborate to overcome hurdles.

- Begin to establish an insight ecosystem.

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IBM Institute for Business Value

The IBM Institute for Business Value (IBV), part of IBM Global Business Services, develops fact-based, strategic insights for senior business executives on critical public and private sector issues.

Methodology

We surveyed leaders and employees of 330 nonprofit organizations in 34 countries across 11 social issue areas, covering a range of sizes and operating budgets/revenue. We also interviewed senior leaders of nonprofit organizations and IBM experts worldwide that included delivery consultants, and analytics and public sector subject matter experts. Watson Analytics for Social Media was used to validate trends in the nonprofit data analytics space.

Notes and sources

1   IDC White Paper, sponsored by Seagate. Data Age 2025. April 2017. http://www.seagate.com/www-content/our-story/trends/files/Seagate-WP-DataAge2025-March-2017.pdf

2   Ezry, Raphael, Dr. Michael Haydock, Bruce Tyler and Rebecca Shockley. "Analytics: Dawn of the cognitive era - How early adopters have raised the bar for data-driven insights." IBM Institute for Business Value. October 2016. https://www-01.ibm.com/common/ssi/cgi-bin/ssialias?htmlfid=GBE03773USEN

3   Columbus, Louis. "IBM Predicts Demand For Data Scientists Will Soar 28% By 2020" Forbes. May 13, 2017. https://www.forbes.com/sites/louiscolumbus/2017/05/13/ibm-predicts-demand-for-data-scientists-will-soar-28-by-2020/#4ed7e3a97e3b

4   Hathaway, Ian and Mark Muro. "Tracking the Gig Economy: New Numbers" Brookings. October 13, 2016. https://www.brookings.edu/research/tracking-the-gig-economy-new-numbers/

5   "Freelancing in America 2016." The Freelancers Union and Upwork. October 2016. https://www.upwork.com/i/freelancing-in-america/2016/

6   Poushter, Jacob. "Smartphone Ownership and Internet Usage Continues to Climb in Emerging Economies." PEW Research Center. February 2016. http://www.pewglobal.org/2016/02/22/smartphone-ownership-and-internet-usage-continues-to-climb-in-emerging-economies/

7   "4G Smartphones to Surpass 1 Billion Mark in Shipments for 2016 as Emerging Markets Play Catch Up, According to IDC" IDC. November 2016. https://www.idc.com/getdoc.jsp?containerId=prUS41962716&utm_source=Triggermail&utm_medium=email&utm_campaign=Post%20Blast%20%28bii-apps-and-platforms%29:%20Tech%20companies%20face%20added%20scrutiny%20%E2%80%94%20Emerging%20markets%20catch%20up%20with%204G%20adoption%20%E2%80%94%20Huawei%20lands%20victory%20in%20race%20for%205G%20standards&utm_term=BII%20List%20Mobile%20ALL

8   Davidson, Steven, Edward Giesen, Martin Harner and Anthony Marshall. "In or out? Succeeding in the ecosystem economy." IBM Institute for Business Value. July 2017. https://www.ibm.com/business/value/ecosystemecon

9   "Africarise: Focusing on Patients, Fueling Growth." Novartis 2014. https://www.novartis.com/sites/www.novartis.com/files/novartis-brochure-africa.pdf

10 Mitwalli, Ahmed, Jeremy Brann, and Kirsten Fischer. "Pharmaceutical R&D ecosystem: How emerging business technologies will enable a new model for clinical trials" Canopy. 2013. https://www.ciosummits.com/Pharma.pdf

11 Ghose, Anindya "When Push Comes to Shove, How Quickly Will You Give Up Data for Convenience." Quartz. May 2017. https://qz.com/973578/data-privacy-doesnt-seem-to-be-a-concern-for-mobile-users-willing-to-swap-it-for-convenience/

12 Reynolds, Matt. "Citizens give up data in blockchain project to improve cities." New Scientist. May 2017. https://www.newscientist.com/article/2131950-citizens-give-up-data-in-blockchain-project-to-improve-cities/