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The Complexities of Volunteer Data: Understanding the Limitations Ohio Nonprofits Face Tracking Volunteer Data

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ABSTRACT

Millions of Americans volunteer at nonprofit organizations every year, and nonprofits are increasingly making up a substantial portion of US economic activity. Given the significant value that volunteers contribute, it is imperative for nonprofits to track volunteer data to identify trends, guide strategic decisions, and enhance stakeholder engagement. However, volunteer tracking is more complex than it seems. Focusing on the context of the state of Ohio, we review local nonprofits and present data from Form 990 documents (an annual document all tax-exempt organizations must fill out for the IRS) to demonstrate that Ohio nonprofits often fail to capture granular volunteer data. We then dive into why nonprofits are not tracking this data precisely by comparing nonprofits with schools and businesses, arguing that the current solutions to tracking volunteer data are cost and time prohibitive despite their potential benefits. Finally, a potential solution is proposed that aims to alleviate the limitations that often coincide with tracking volunteers, which could allow nonprofits to have a cost-effective, time-efficient method of recording clean volunteer data.

Introduction

Approximately 60.7 million Americans volunteered at nonprofits organizations from September 2020 to September 2021, serving an estimated 4.1 billion hours with a staggering economic value of $122.9 billion ("Volunteering and Civic Life in America," n.d.). The nonprofit sector represents "the fastest growing sector in the economy" (Gunn, 2004) and is becoming an increasingly substantial branch of the economy, estimated to make up ten percent of US economic activity. Employee volunteering (the practice of a company sending its employees to volunteer at a charity), or EV, is also becoming a popular institution, with 90% of companies worldwide supporting employee volunteering in some manner (Rodell et al., 2016). However, as significant as nonprofit organizations are becoming, these organizations are failing to capture crucial granular data in volunteer tracking.

In the context of the state of Ohio, many nonprofit organizations round their volunteer counts when logging their data, especially on Form 990 documents (an annual document all tax-exempt organizations must fill out for the IRS). In this paper we show the extent to which this gap in data tracking exists in Ohio; dive deeper into why nonprofits are not tracking their volunteers; and explore why it could be beneficial to do so. In Section 2, we establish the importance and potential of tracking volunteer data. In Section 3, we recount an interview and various volunteering experiences, examining examples of Ohio's current solutions to volunteer data tracking. In Section 4, we present and discuss data that further displays the extent to which nonprofits struggle to track precise volunteer data. Finally, after diving into why nonprofits are facing these issues and why this data matters, we conclude by proposing a solution that aims to bridge the volunteer data tracking gap and alleviate the problem at its root causes.

Data

Private corporations track their employees' hours to ensure that they are being productive enough and being paid for their work. Although volunteers are not being paid, nonprofits can still benefit from monitoring volunteer activity and tracking relevant data. For example, grant applications and tax forms often require nonprofits to report volunteer data. Grant-making organizations oftentimes consider in-kind contributions when calculating the impact of any support provided to a charity (Gee & Meer, 2019). Tracking precise volunteer data can help a nonprofit's ability to secure funding if volunteer hours are calculated to correspond to a monetary value; this monetary value is often used as funding criteria in grant applications. In 2023, the estimated average value of one volunteer hour in Ohio was $31.18, but estimations vary by state ("Value of Volunteer Time Report," 2024). Detailed records of volunteer contributions can also be helpful for accountability to stakeholders such as donors, depending on the organization.

Additionally, nonprofits that fail to track granular volunteer data miss opportunities to analyze trends and make more data-driven operational decisions. Identifying shifts in volunteer demographics and evaluating programs with the help of data can be extremely helpful for planning and resource allocation. Understanding popular activities, common volunteer times, and the productivity of volunteers can help organizations make data-driven decisions concerning management and scheduling as well. Having more precise volunteer data can help nonprofits improve engagement strategies and increase volunteer retention, too. Reaching out to past volunteers will help nonprofits increase the number of regular volunteers they have, allowing for a more reliable and predictable stream of labor. A more reliable stream of volunteers will, in turn, improve the accuracy of data-informed predictions causing a positive feedback loop of reliable data. Moreover, improved volunteer retention allows for better management, leadership, and capacity to provide services (York, 2017).

Another, more specific way volunteer data can be used to inform decision-making is through skill matching. Cook and Burchell (2018) point out that nonprofit organizations are facing an increasingly higher demand for skills-based volunteering that utilizes the professional skills volunteers may have. However, the skills volunteers have are often not taken advantage of, meaning that "skilled professionals are undertaking painting, decorating, and other low-skilled activities rather than providing their distinct professional skills" (Cook & Burchell). Cook and Burchell claim that, especially when it comes to EV, this skills gap exists for two main reasons. First, skilled professionals tend to look forward to EV as a break from the workplace and do not see volunteering as a potential means of skill development. Second, nonprofit organizations fail to "demonstrate to employees the increased community impact resulting from the utilization of work-based professional skills" (Cook & Burchell). Increased communication between nonprofit organizations and private corporations along with improved data tracking would allow nonprofits to match skilled volunteers to skills-based service work more easily.

Methodology

Qualitative Data

Nonprofit A

To examine the issues charities face with tracking their volunteers, we interviewed a representative from a local nonprofit, which can be called Nonprofit A. Nonprofit A packages clothing to send to children and teenagers in the Greater Cincinnati area. Nonprofit A has a managerial team of just four employees, so they rely heavily on volunteers to organize and package clothes that can then be distributed to children who can benefit from them. In our interview, we learned firsthand the struggles nonprofits can face with volunteer tracking and why it can be so difficult for them to track volunteer data.

In the interview, we discussed Nonprofit A's existing solutions for tracking volunteers as well as how they make and manage corporate partnerships. The organization currently uses electronic software to track volunteers, but

they have trouble maintaining a reliable database. They emphasized that the most important volunteers to track are regular volunteers, who commit time at least once a week. One-time volunteers dominate storage space in their current, cloud-based database, and generate unnecessary expenses to pay for those who only worked one time. However, most volunteers are retired, often elderly personnel, who have trouble using modern technology to log their hours. In this case, many regular volunteers either log faulty data or simply fail to log their data entirely. Because it is cost-prohibitive to pay for extra space to store data of one-time volunteers and it is difficult to have elderly people log their hours electronically, there are too many obstacles preventing this organization from tracking volunteer data precisely and accurately.

The representative we interviewed also touched on employee volunteering, recounting an experience when a local business sent fifty employees to volunteer unannounced. A large group of volunteers such as this one is difficult for a nonprofit to manage, especially when there was no prior communication between the company and the nonprofit. From a volunteer tracking perspective, Nonprofit A could either track each individual volunteer separately, giving them access to granular data on fifty different volunteers, or they could log all fifty as a single entity to save storage space, a practice referred to as "umbrella logging." They chose to log the group as a single entity because they did not think it was worth it to log fifty individuals who will likely never volunteer there again. Further, they also mentioned that most companies do not require verification of their employees' service hours, giving the nonprofit even less incentive to log each individual.

Nonprofit B

We also volunteered with two local nonprofits that utilized different methods of tracking volunteers. The first of these, which we will call Nonprofit B, is one of the largest human services organizations in the region. This nonprofit supplies food, shelter, and many other forms of humanitarian aid to those in need, and uses a card-swipe system to track check-ins. The first time a volunteer works at Nonprofit B, they use a kiosk to log personal information and are given a key card. After volunteering for the first time, all volunteers have to do is swipe their card at the entrance to then be allowed in and start working. While this method of tracking volunteer data is relatively simple to use, it has various drawbacks.

Since we were volunteering there for the first time, we had to log information about ourselves, sign waivers, and take photos that would be put on our key cards. We had the option to register online, but volunteers can also register in person; registering beforehand does not allow volunteers to bypass the waivers and card-creation process. Furthermore, the process of registering, signing waivers, and creating a card may be difficult for people who do not know how to use technology efficiently. We also had to log the number of hours we expected to work before we went inside, meaning if we logged a false value, the nonprofit would have unreliable granular volunteer hour data. After volunteering for the first time, we would only need to swipe our cards and log our expected hours. Once inside, an employee assigned us to pair and bag latex gloves, but we could have left at any time since we had already logged our "expected" hours. Though the card swipe system is relatively easy to use, it still has shortcomings that need to be addressed for nonprofits to fully reap the benefits of tracking volunteer data.

Nonprofit C

The next nonprofit we volunteered at, Nonprofit C, was also a human services nonprofit that educates and teaches tennis to underserved children in the area. Nonprofit C only allows online registry if someone wants to volunteer. Online, there were two volunteer opportunities listed, coaching and tutoring, so we registered to be assistant coaches. When we arrived, however, there turned out to be two consecutive tennis-related opportunities and no tutoring opportunities at all. Whether this mistake is due to a scheduling error or a technical difficulty, it highlights the inattention this nonprofit gives to tracking volunteer data. This mistake does not automatically mean that the nonprofit does not care about accurately tracking volunteers or does not want to, but it could mean that they simply do not find it necessary to do so. Additionally, the supervisor did not verify any information about us or that we had even signed up to volunteer in the first place, possibly because they were grateful for any voluntary help they could get, regardless of

whether we had signed up. After looking through Nonprofit C's annual form 990 reports, we noticed that they had listed the exact same total volunteer counts for 2020, 2021, and 2022, suggesting that they either are not tracking granular volunteer data at all or are not tracking it precisely enough to report.

Form 990 Data Analysis

To further display our findings on the limitations Ohio's nonprofits face when tracking volunteer data, we conducted a review of volunteer data from Ohio's human services, public benefit, and societal benefit nonprofits. The GivingTuesday Data Commons is a network that compiles and organizes form 990 data into bulk datasets that include information about every nonprofit in the United States. Specifically, GivingTuesday's Form 990 Basic Fields dataset contains information on EINs (employee identification numbers), total volunteer counts, and total employee counts from over 3.5 million form 990 documents from 2017-2022. We filtered this dataset so that it only included data from 2022 along with the previously mentioned information we needed for this review.

We also accessed the IRS's 2022 tax-exempt organizations business master file extract for Ohio. This file contains the EINs and NTEE codes of every nonprofit in Ohio in 2022, showing data from 74,996 organizations. NTEE codes, made up of a letter and a two-digit number, are used in the US to classify nonprofits by their impact. The NTEE codes are important because the relevant data for this study is from nonprofits that rely on volunteers for the majority of their labor. While a nonprofit hospital system, for instance, may have volunteers, the hospital does not rely on service work nearly to the extent that a human services nonprofit such as Nonprofit A does. We filtered the Ohio business master file, so it only included data from 6,228 human services nonprofits, public benefit nonprofits, and societal benefit nonprofits. Nonprofits in these three classifications all have NTEE codes that begin with I, J, K, L, M, N, O, P, R, S, T, U, V, and W and all rely heavily on volunteer work as a source of labor.

To compile the final dataset, we merged the filtered datasets by EINs, so we would have a single file that contained total volunteer counts and employee counts for all relevant nonprofits that we had complete data for. In the end, we had comprehensive volunteer count data for 2,083 organizations, which was then used to create the graphs below.

The first graphs below, Figures 1 and 2, are histograms that display the distribution of volunteer and employee counts in the dataset, respectively. The counts in the figures only range from 1-100 to accentuate features of the graphs that would otherwise not have been apparent had we included outliers in the data with abnormally high volunteer and employee counts. The graphs also exclude data from nonprofits with zero volunteers and employees, to account for nonprofits that do not use volunteers. As expected, Figure 2 displays a relatively smooth, decreasing exponential curve; the number of nonprofits with each employee count decreases as counts rise. However, Figure 1 shows a curve with multiple spikes, where an abnormal amount of nonprofits logged certain volunteer counts. For example, while less than forty nonprofits logged having either nine or eleven volunteers in 2022, over seventy logged having ten. Similarly, less than five nonprofits reported having forty-nine volunteers, and none reported having fifty-one volunteers. Nonetheless, nearly forty nonprofits reported fifty volunteers. These spikes can be explained by the prominent number bias, a phenomenon where estimations of unknown values disproportionately fall on powers of ten, their halves, and their doubles (Converse & Dennis, 2018). Surely enough, the most significant spikes compared to surrounding numbers in Figure 1 occur at ten, fifty, and one hundred. There are also significant spikes at twenty-five and seventy-five, which are "coarse" values, or values that are often rounded to because they can represent a wider range of surrounding values (Converse & Dennis). For example, one thousand is coarser than nine hundred because one may round nine hundred to one thousand, but not vice versa (Converse & Dennis). To see trends similar to those seen in the observed data, view Appendixes 1 and 2. In conclusion, it is reasonable to assume that while most nonprofits are tracking their employee counts precisely, they are not tracking granular volunteer data, leading to rounded or estimated counts in reports.

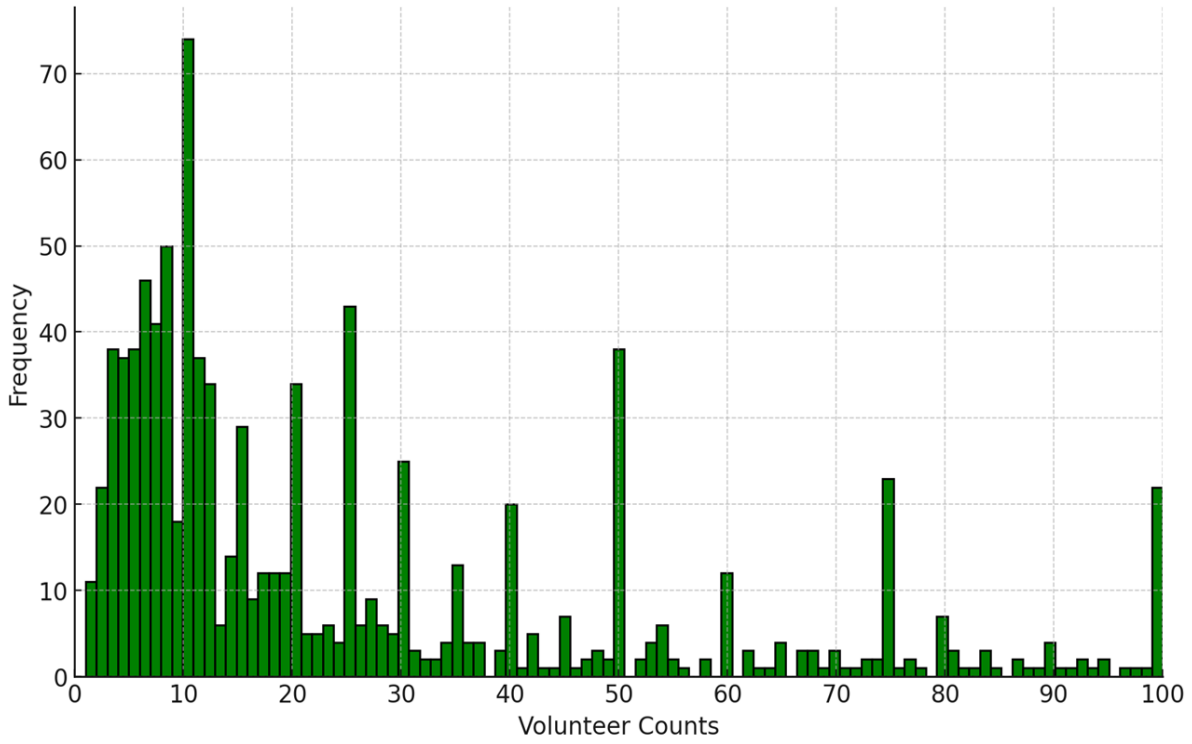

Figure 1. Distribution of 2022 Ohio Nonprofits' Volunteer Counts (1-100)

Note. Data from "Form 990 basic fields" (n.d.), GivingTuesday Data Commons, and "Exempt organizations business master file extract (EO bmf)" (2024), Internal Revenue Service. Graph generated by ChatGPT 4o.

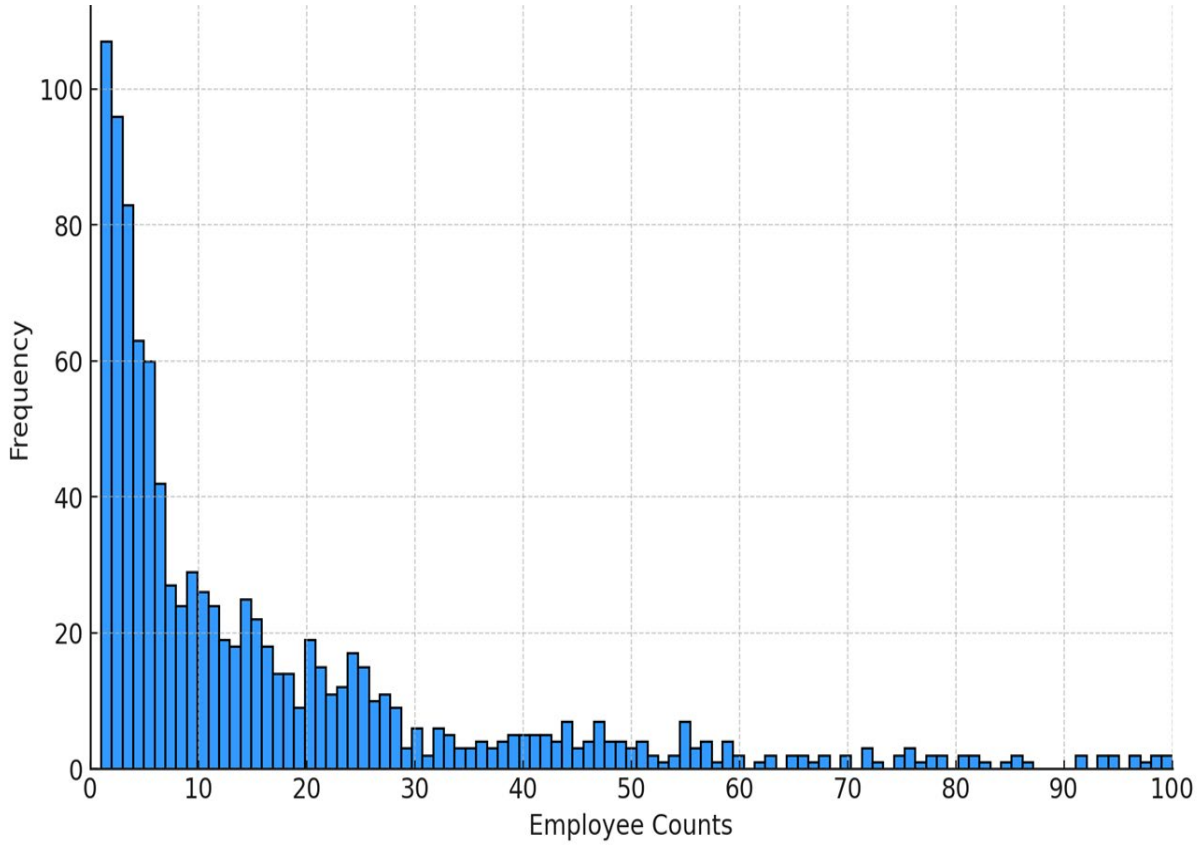

Figure 2. Distribution of 2022 Ohio Nonprofits' Employee Counts (1-100)

Note. Data from "Form 990 basic fields" (n.d.), GivingTuesday Data Commons, and "Exempt organizations business master file extract (EO bmf)" (2024), Internal Revenue Service. Graph generated by ChatGPT 4o.

Figure 3 is a bar graph that displays the percentage frequency of each ones digit from zero to nine in volunteer counts. The figure emphasizes how nonprofits tend to have to round their volunteer counts or estimate values for their counts most likely because they did not track their volunteer counts precisely enough to report an exact value. This graph excludes data from nonprofits that reported volunteer counts with one digit (zero to nine volunteers) due to the high prevalence of nonprofits with single-digit volunteer counts. Nevertheless, a disproportionate 40.0% of Ohio nonprofits still reported volunteer counts ending in zero. The graph also shows a smaller spike of 17.8% frequency at five, suggesting that some nonprofits may be rounding their volunteer counts to multiples of five, as opposed to multiples of ten. By contrast, Figure 4 shows the percentage frequency of ones digits in employee counts, excluding nonprofits that reported having zero to nine employees. Unlike the volunteer counts graph, the employees graph does not feature any significant spikes, with every ones digit appearing in between 7.56% and 12.0% of reported employee counts. The graph displays how nonprofits have more exact employee counts than volunteer counts because the range of frequencies is much smaller and there are less significant spikes on the employee's graph. Overall, the graphs make it clear that nonprofits are rounding their volunteer counts more so than their employee counts most likely because they have more reliable employee data than volunteer data.

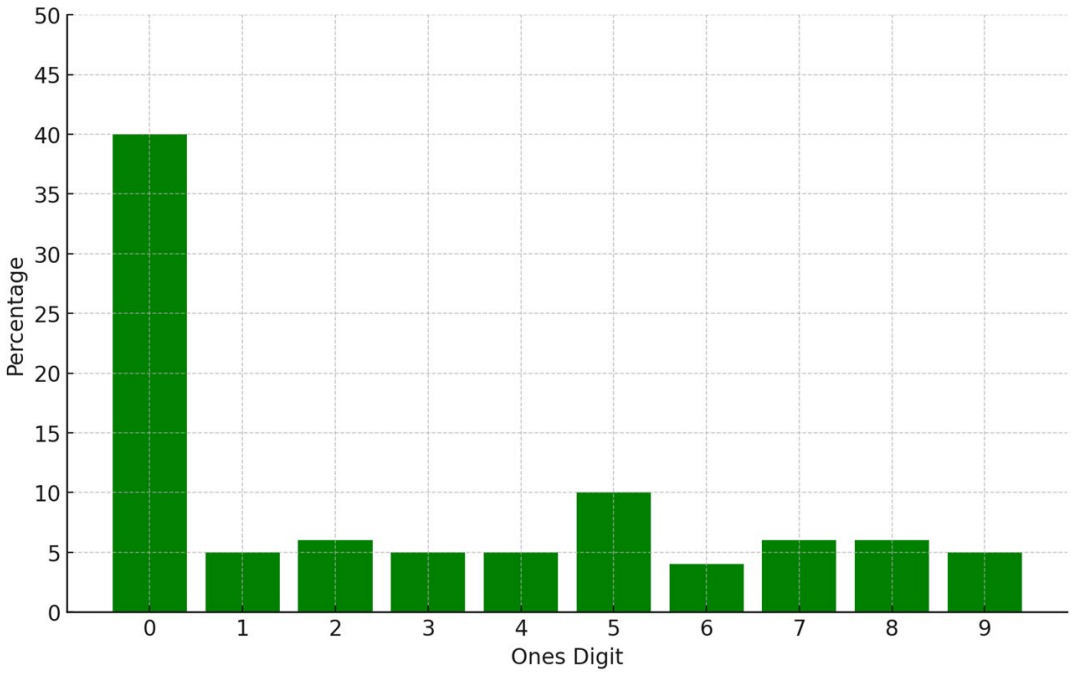

Figure 3. Frequency of Each Ones Digit in Ohio Nonprofits' 2022 Volunteer Counts

Note. Data from "Form 990 basic fields" (n.d.), GivingTuesday Data Commons, and "Exempt organizations business master file extract (EO bmf)" (2024), Internal Revenue Service. Graph generated by ChatGPT 4o.

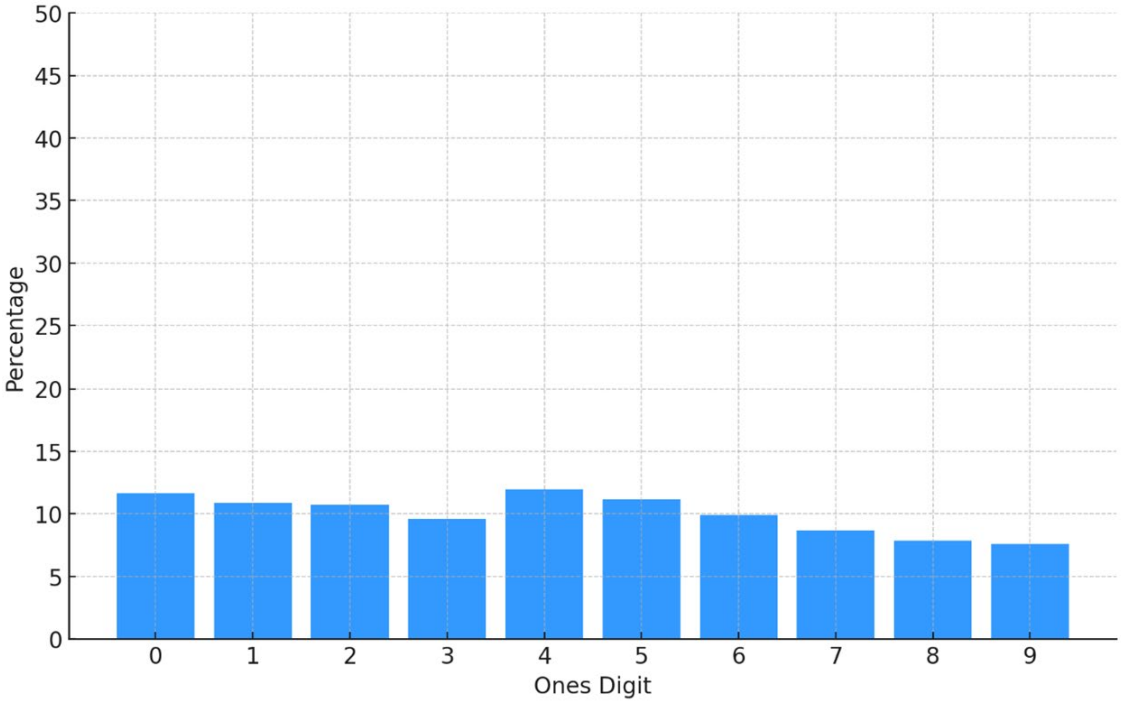

Figure 4. Frequency of Each Ones Digit in Ohio Nonprofits' 2022 Employee Counts

Note. Data from "Form 990 basic fields" (n.d.), GivingTuesday Data Commons, and "Exempt organizations business master file extract (EO bmf)" (2024), Internal Revenue Service. Graph generated by ChatGPT 4o.

Discussion

Current Practices

To explore current practices for tracking volunteer data outside the nonprofit sector, we investigated how both high schools and private corporations track student and employee volunteering, respectively. Many high schools require students to complete a specified amount of service hours to graduate, and the institution of mandated student volunteering is becoming an increasingly widespread practice. The cities of Chicago and Los Angeles, among others, enforce mandated volunteerism as a requirement for graduation from public school (Chen, 2024). Students complete these hours by volunteering at charities and nonprofits outside of school hours. To track their students' hours, schools often use software that allows students to report their own hours as they are completed. To ensure that students are not lying about their hours, some platforms require photo evidence or electronic verification. This electronic verification can either be a record of a supervisor's contact information or a message that is sent to the supervisor directly, requiring them to verify that the student has done the service work they claim they have. For example, a local school requires students to provide a photo of them doing service work, the name of their supervisor during the work, and either a phone number or email address for the supervisor so the school's service-learning director can reach out to the supervisor and confirm the student's hours.

The high school volunteer tracking system is effective for two primary reasons. First, the system requires little work from the students, the charity, and the school faculty who need to track their students' hours. Students only need to take a few minutes after completing their service hours to log them to the tracking platform, nonprofits only need to click a link in an email or answer a phone call to verify a student's hours, and school faculties only need to reach out to the charities to verify the hours when they feel it is necessary to do so. Second, the system has measures in place to verify that students are not fabricating their data. The photo provides proof that students were actually at the charity they claim to have volunteered at; requiring students to provide contact information for their supervisor encourages students to be honest out of the fear that their school will call the charity, expose them, and punish them.

Although high schools seem to be adept with tracking volunteer hours, systems that private corporations use to track their employees' volunteering are not as precise. In fact, it is difficult to determine the effectiveness and intensity of employee volunteering programs because corporate volunteers' hours are often self-reported without verification, which could lead to contaminated or unreliable data if employees inflate their hours to improve their reputation with employers (Rodell et al., 2016). Furthermore, while corporate volunteerism has been shown to have internal benefits for employees' morale and motivation, its external benefits, such as boosted employee retention and attraction, improved public legitimacy, and increased stakeholder engagement can be reaped without verifying employees' volunteer hours (Cycyota et al., 2016). Having inflated volunteer hour counts could allow companies to reap these external benefits without overspending time and money on organized corporate volunteer programs.

Potential Solution

There needs to be a solution that can alleviate the limitations with tracking volunteer data by addressing the problem's root causes. As previously discussed, the data from the graphs only includes information from organizations that specifically rely on volunteers for much of their labor, but it remains clear that many of these organizations have been rounding their volunteer counts and tracking exact employee counts. It may not seem necessary to track volunteers

since they will not be paid, and their productivity does not need to be managed by an employer. It is also clear from our interview with Nonprofit A that some nonprofits do not see the necessity in tracking volunteer data because there are too many obstacles to overcome. Even if a nonprofit wants to track volunteer data, it costs money to do so and may not be seen as a necessary expense. Furthermore, whether nonprofits commit staff to logging the data or teach people how to accurately log their own data, the current solutions for tracking, cleaning, and managing data are too costly or time-intensive to be worth their benefits (Erete et al., 2016).

To find a solution to volunteer tracking, we explored a method of logging data that is both cost-effective and simple to use, so nonprofits do not have to overcommit time and money to track this data and volunteers do not have struggles logging data. Fortunately, the technology needed to track volunteer data may already exist: NFC chip scanners can be used to track check-ins and check-outs. The model of using a phone to scan an NFC chip is preferred over a card swipe (like Nonprofit A uses) because it does not require the already-timely process of creating a card, which could be lost and need replacing multiple times. Through an NFC chip in a card or stand, volunteers can use their phones to scan themselves in and out of their volunteer work. Transactions that occur when a user scans the card would then be logged in a blockchain, as opposed to being stored in the cloud. These transactions also serve as proof that a volunteer performed their service work, which can be used by private corporations to improve the reliability of their own employee volunteering data.

This solution is cost-effective and less time-consuming from the perspective of a nonprofit because they no longer need to buy and manage storage space. Storing data in a blockchain allows the data to be decentralized and more secure; the data is stored across a network of nodes that individually update to reflect the blockchain's changes, ensuring an accurate and efficient record of transactions. The nonprofit only needs to buy the card that volunteers can scan. Nonprofits may still need to commit staff to analyzing the data to find trends and inform decisions from the data, but many of the challenges they may have faced will be mitigated (Kappelides & Johnson, 2020). Moreover, artificial intelligence models can be trained to analyze this data and predict trends.

From the perspective of the volunteers, this solution is easy to use, as they only need to scan their phones to a card. Using this system would be remarkably similar to using Apple Pay, which also functions through the use of NFC chips. A recent research report shows that 90% of US retailers accept Apple Pay ("Apple empowers businesses," 2022). Similarly, NFC chips are being used in the entertainment sector as a replacement for the traditional card scan to track tickets at arcades, demonstrating how widespread the use of NFC chips has become (Margulis et al., 2019). Volunteers will likely need to either create an account or log information about themselves before they volunteer for the first time, but the information they would need to log would be purely personal information because their check-in and check-out times will be recorded in a blockchain. In other words, users will no longer need to track their hours manually and risk logging unreliable data, because their transactions will be logged for them in an easy-to-use tracking system.

Conclusion

In this paper, we demonstrate that tracking granular volunteer data can be a new way for nonprofit organizations to get ahead of the curve. For starters, volunteer data has several implications for securing funding and promoting stakeholder engagement. Using this data to analyze trends in volunteer activity or shifts in volunteer demographics could also be crucial for planning activities and allocating various resources. Volunteer data could also be used to inform data-driven operational decisions concerning volunteer management, scheduling, program evaluations, and engagement strategies. The recent rise of EV programs will also require better planning and communication between nonprofit organizations and private companies, which will only be made more convenient with accurate volunteer data tracking.

Despite the potential benefits of tracking precise volunteer data, 2022 data from the GivingTuesday Data Commons and the Internal Revenue Service showed that nearly half of Ohio nonprofits reported volunteer counts that were multiples of ten, many of which were likely rounded or estimated values. While these organizations have exact

employee counts, as shown by the relatively even distribution of ones digits in these counts, they struggle to track precise volunteer counts. Through an interview and volunteering firsthand at local nonprofit organizations, we discovered that the complexities of tracking volunteer data stem from limitations with the current technology: solutions for tracking this data are too costly and time consuming to be worth their benefits, and the general volunteering population may not be able or know how to log clean, reliable data organizations can use.

Though this paper only focuses on nonprofits in the context of the state of Ohio, there is potential for the applications of this literature in other contexts or locations. Further analysis or corroborative research will also be crucial to demonstrate in what conditions these findings present themselves differently or similarly.

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Appendix A

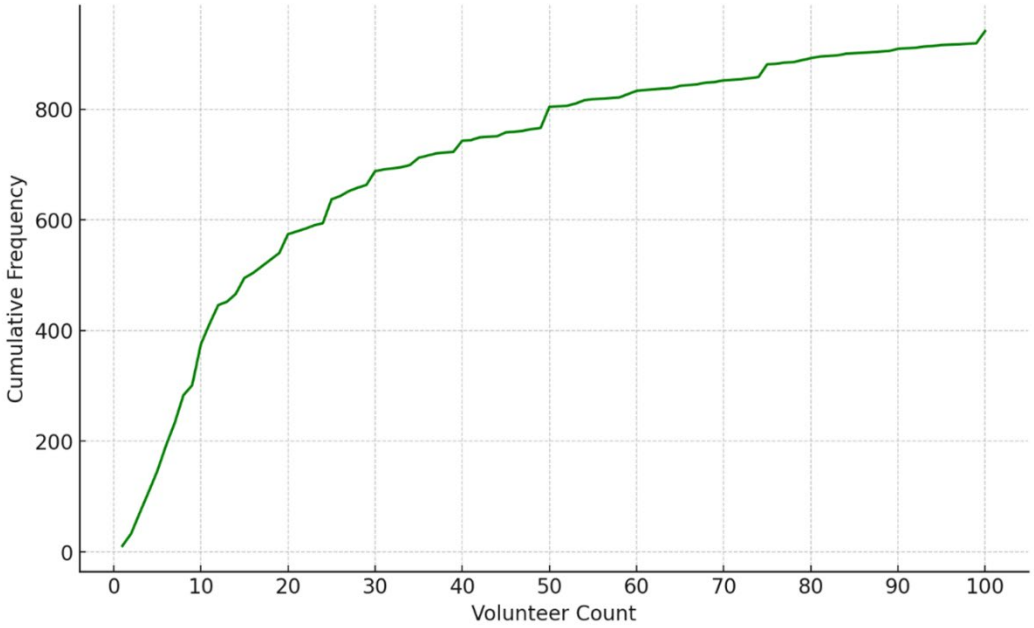

Figure 5. Cumulative Frequency of Volunteer Counts (1-100) in 2022 Ohio Nonprofits

Note. Data from "Form 990 basic fields" (n.d.), GivingTuesday Data Commons, and "Exempt organizations business master file extract (EO bmf)" (2024), Internal Revenue Service. Graph generated by ChatGPT 4o.

Appendix B

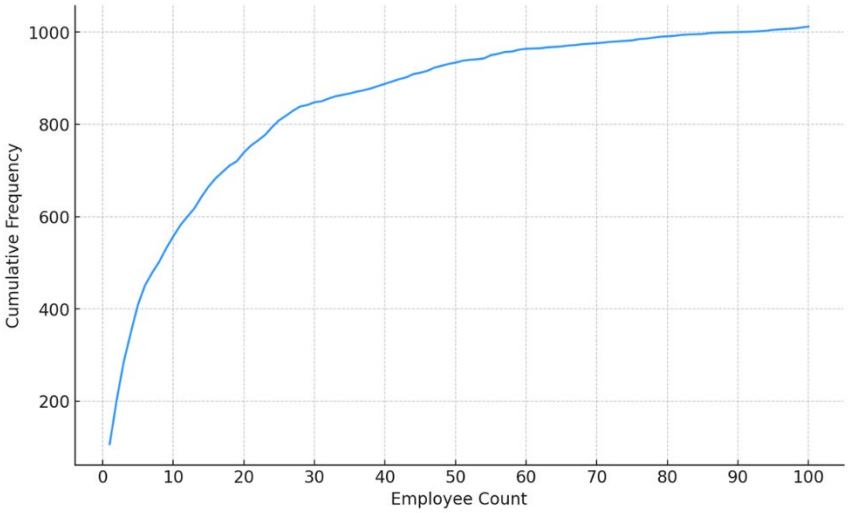

Figure 6. Cumulative Frequency of Employee Counts (1-100) in 2022 Ohio Nonprofits

Note. Data from "Form 990 basic fields" (n.d.), GivingTuesday Data Commons, and "Exempt organizations business master file extract (EO bmf)" (2024), Internal Revenue Service. Graph generated by ChatGPT 4o.