This study explores how nonprofit organizations implement information visualization in their operations. Nine nonprofit employees were interviewed to better understand how these organizations use information visualizations to make decisions, plan for the future, and communicate information insights to stakeholders.

Expertise and use of information visualization in nonprofits seems to be growing. Interestingly, some nonprofits create information visualizations and tools that foster relationships with stakeholders and spread the use of data to different levels of the organization and various partner organizations. Most nonprofits interviewed use information visualizations on some level in both internal and external organizational activities although many lack standards for creating visualizations and methods for evaluating the effectiveness of the visuals they create.

Headings:

Information Visualization

Nonprofit Organizations
NONPROFIT USE OF INFORMATION VISUALIZATION

by
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Approved by

_______________________________________
Dr. David Gotz
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**Introduction**

Public sector organizations continually strive for efficiency and effectiveness. In addition to these values, community-oriented nonprofits seek to create social impacts through mission-based work (Epstein & Yuthas 2014). They are tasked with understanding community needs, communicating with stakeholders and funders, decision-making, and problem-solving on a daily basis. The potential exists to perform these tasks more effectively and dynamically with data and information visualization techniques.

Authors define data visualization as a process that offers a visual representation of data for exploration and discussion by viewers—usually for communications or evaluation (Evergreen et al. 2013). Sometimes it is a marriage between technical computer science work and artistic composition (Kosara 2007). Others go a step further and relate visualization’s ability to help humans understand large amounts of information—“the use of computer-supported, interactive, visual representations of abstract data to amplify cognition” (Card et al. 1999; Thompson 2010; Ware 2013). This highlights the idea that some visualization techniques and visual representations of information may help nonprofits illustrate themes and patterns that would otherwise be beyond our cognitive limits.

In terms of data analysis and data visualization, non-profits face unique challenges in framing and communicating findings. Public sector organizations face
wicked problems and social issues that require care when measuring and evaluating—
sometimes the impact in these areas, like economic inequality or education, for example,
do not easily lend themselves to measurement (Kettl 2002; O’Toole 1997; Roberts
2002b; Weber and Khademian 2008). Many nonprofits also work under limited,
unpredictable budgets and the public’s increasing expectations for visual and web-based
information. These issues make data visualization both a challenge and opportunity for
nonprofits.

In the face of budget constraints, complex social problems, and an increasingly
visual society (Chang 2007), nonprofits continue to externally communicate important
issues for public and financial support. They also communicate internally to evaluate
performance and the impact of their services. Additionally, nonprofits may vary in how
they value data or their attitudes towards data-based problem-solving. This paper
explores how nonprofits use information and data visualization to enhance operations and
in turn results for their service populations.

**Research Question**

Given the opportunities and challenges for information visualization to help nonprofits
reach their goals and work toward their missions, this study seeks to answer the following
question: **How do nonprofits use information visualization tools in their operations?**
Literature Review

Nonprofit Information Needs
In terms of information visualization, it is first helpful to understand the information sharing needs of Nonprofits. They collect information about the impact of their services in order to make decisions and gauge success. At the same time they work to convey information and messages to various audiences such as clients, volunteers, as well as management and staff. They also handle increasing information requirements from public and private funders (Cutt et al. 1996; NTEN 2014). Marnie Webb writes in The Nonprofit Times:

\[
\text{It is said that information is power. Information is often the fuel that drives your nonprofit in pursuit of your mission. You need compelling information to raise funds, to do effective outreach to your stakeholders, and to reach new audiences. Chances are, you’re sitting on mountains of information, but harnessing that power of all the data can be a challenge (Webb 2001).}
\]

One article, “Data for Change” by Suzie Boss, discusses the efforts of Data Without Borders, an organization that connects statisticians and technologists to nonprofit and social change projects. Boss discusses the need for connecting data knowledge with the nonprofit world (Boss 2012). A similar organization is DataKind, which creates teams of pro bono data scientists who work with mission driven organizations to “collect, analyze, and visualize data that will help them make the world a better place” (DataKind 2014).

The existence of organizations like “DataKind” and “Data for Change” illustrate a need for data science expertise in the nonprofit world. In a recent book, “Measuring the Networked Nonprofit,” Beth Kanter and Katie Delahaye Paine advocate for data-informed nonprofits and note “an organization with a data-informed culture uses data to
help make decisions and uses measurement to continuously improve and refine its systems” (Kanter and Paine 2012, 7).

Many writers discuss that nonprofits lag behind other sectors in interpreting data—while they usually collect data in their work they do not always implement data analysis strategically (Kanter and Paine 2012; Boss 2012; Desouza and Smith 2014). Lucy Bernholz, of the Stanford Center of Philanthropy and Civil Society says “most nonprofits don’t have the resources to bring this expertise in-house but nonprofits have tons of data. They are a critical part of our collective data ecosystem” (Boss 2012). A survey by the Nonprofit Technology Network (n= 69) found the majority of respondents reported that program staff are responsible for measurement and data collection decisions—they also note that data analysis is challenging and requires expertise in research methods and social science. Other challenges from the survey included a lack of staff training on storage and sharing of data (NTEN 2014, 5). In “Big Data for Social Innovation,” Desouza and Smith (2014) write, “globally, the world’s actors are making efforts to use open data and big data to develop solutions to social problems in innovative and collaborative ways. Progress is being made, but the chasm must still be crossed. It is a challenge worth overcoming.”

There are opportunities for nonprofits to communicate data insights to their various audiences. Funders, advocates, and those that receive services from the nonprofit may be interested in how the organization creates positive impact through their services or advocacy. However, nonprofits face communications barriers when providing information to others. One author notes that nonprofits, especially smaller nonprofits, are often stretched for financial resources or extra time to complete communications projects.
This usually means research and development are not the highest priority for nonprofits (Conhaim 1996). However, the same author notes that nonprofits are “natural information providers” and that many focus on advocacy in addition to their regular services (Conhaim 1996).

In one study, “Toward a Better Understanding of Nonprofit Communication Management,” Brooke Fisher Liu interviewed 35 nonprofit communications specialists from nonprofits of different sizes. Many participants noted they implement new technology in order to increase awareness of their nonprofit (Liu 2011, 397). Participants also noted the role of politics in their communications decisions—these political influences come from working with their boards of directors and also working with governments via resource seeking or lobbying for issues (Liu 2011, 393).

Diverse audiences may also present a challenge for nonprofit communication and information sharing. For nonprofits that serve low-income and marginalized communities there is a need to communicate information effectively so individuals in these communities are both aware of the services available to them and trusting of the nonprofit.

A 2014 study, “Understanding Public Awareness of Nonprofit Organizations: exploring the awareness—confidence relationship,” surveyed over 1000 participants in a San Diego, California County to explore public attitudes towards nonprofits. While the results are not generalizable, the study found that “racial and ethnic minorities, those with lower income levels, and those not registered to vote were all more likely to have greater difficulty in identifying nonprofit organizations” (McDougle 2014, 196). The authors note “better educated and more affluent respondents had greater nonprofit awareness
possibly as a result of their having greater interactions with the nonprofit sector—whether
through volunteering for, or donating to, nonprofit organizations” (McDougle 2014, 197).
This study illustrates the need for nonprofits to convey information to individuals of all
socioeconomic levels, in particular, those that may be in need of nonprofit services.

An important, growing mode of nonprofit information sharing is social media. The
2014 M & R Benchmarks Study surveyed 53 nonprofits about online fundraising and
advocacy. The study examines mass email messages, email list size, fundraising, online
advocacy, website traffic, Facebook use, Twitter use, and mobile programs for data from
the group of nonprofits’ electronic communications. The study found “growth in social
media audiences far outpaces that of email” (M+R 2014, 38). Particularly, Facebook
audiences grew by 37% while Twitter audiences grew by 46% in comparison to 2012
measurements. This contrasts to website visitors which only grew by 16%. The 2012
Nonprofit Technology Network (NTEN) study surveyed 3,533 nonprofit respondents and
found similar measurements: nonprofit Facebook and Twitter communities grew by 30%
and 81% respectively (NTEN 2012). It seems social media will continue to be an
important platform for nonprofit information sharing and a potential environment to share
information visualizations.

Nonprofits also generate and communicate information to build resources.
Fundraising and grant proposal writing are a major part of nonprofit information needs
(Cutt et al. 1996). Another NTEN study from NTEN’s Communities of Impact project
surveyed 69 nonprofit professionals to inquire how their nonprofits engage with data.
They found that “75% of respondents said that they collect data to report back to funders.
Another 75% said that they collect data for program evaluation purposes, which is done
as either a funding requirement or a way to attract new funding” (NTEN 2013). In order to be successful in acquiring funds and grants, nonprofit employees and volunteers carefully craft messages that explain the nonprofit’s positive impacts and illustrate why the community needs the nonprofit’s services. Some authors explain nonprofits need to create compelling stories and narratives to connect with funders (Clarke 2009). Other writers connect information visualization to this idea of storytelling (Lankow et al. 2012).

**Nonprofit Organizational Use of Information Visualization**

In “Think Visual,” from Wired Magazine, Clive Thompson explains that talking through the most complex problems may not be as helpful as illustrating them: “to understand, we need pictures” (Thompson 2010). One of the methods that may help organizations not only manage information, but use data for analysis and decision making is information visualization (Morrison 2012; Simon 2014; Sviokla 2009; PricewaterhouseCooper).

One way organizations use visualization and design to convey information is through infographics. The authors of “Infographics: The Power of Visual Storytelling” note the upswing in use of infographics in recent years—necessitated by a culture that shares so much information electronically and the need to process lots of information on a daily basis. They explain, “infographics provide a format that utilizes engaging visuals that not only appeal to an audience hungry for information, but also aid in the comprehension and retention of that material” (Lankow et al. 2012, 12). The authors write with private organizations in mind. Interestingly the authors note the difference in organizations creating information visualizations for transparency and information sharing versus creating visualizations for marketing purposes. They explain that
companies have caught on to the infographic trend “and as with most marketing efforts, their goal was to use their content and design to attract attention, interest, and adoration for the company that produced them.” They explain this focus on promotion is actually a shift from the original purpose of visualization to “use visual representation to aid in the processing and comprehension of data” (Lankow et al 2012, 31).

“The Visual Organization” by Phil Simon considers information visualization in an organizational context—the uses and benefits of data visualization within the organization. He explains that for data visualization to be effective it must be intentional and part of the organizational culture (Simon 2014, 11). Visual Organizations use information visualization tools to perform a myriad of internal tasks including: helping employees understand what is happening at the organization (including what is happening in the future), discovering new insights, making better decisions, identifying underlying issues, and thinking about their data differently (Simon 2014, 118). The book provides a framework for considering four levels of visual data visualization possibilities within an organization. The most potential lies within a “level 4” organization that
collects and maintains big data and also creates interactive tools to understand the data:

John Sviokla writes pieces on data and organizations for his blog on the Harvard Business Review. He notes three benefits of data visualization to organizations:

- efficiency to convey “vast quantities of data quickly, helping a group of people come to a deeper understanding of an issue, and creating a shared view of a situation to ‘align folks on needed actions’” (Sviokla 2009).

His idea that data visualization can align people hits on an idea in organizational leadership literature that James Kouzes and Barry Posner, authors of “The Leadership Challenge” call “Inspire a Shared Vision.” “Inspire a Shared Vision” means connecting and aligning employees around a common goal or idea so everyone in the organization, and possibly external stakeholders, are on the same page in terms of goals and mission. “The Leadership Challenge,” notes “Inspire a Shared Vision” as one of the five pillars of successful organizational leadership—this concept relies on the use of organizational metaphors, language, and visuals to inspire alignment (Kouzes and Posner 2012).
Pricewaterhouse Coopers, a professional services network, annually surveys organizational leaders about their use of “big data” and other digital issues. In their report, “Gut & Gigabytes,” they note that the way organizations make decisions is changing. Specifically, “more people are involved in decision making—alongside more data” (Pricewaterhouse Coopers 2014, 7). One of their key findings based on a survey of 1,135 executives and interviews with 25 senior executives, consultants, and academics, is that “data and analysis should enhance intuition and experience.” They note that many larger companies have already incorporated big data into their decision-making processes (Pricewaterhouse Coopers, 6). In a previous 2013 survey of 1,108 executives, the firm found 26% of respondents use data visualization and specifically “those that reported revenue growth in excess of 5 percent led the pack…they planned to invest more in data visualization” (Pricewaterhouse 2013; Simon 2014). This study also reported four obstacles organizations face in terms of big data: organizations do not see the value in data visualization, they invest in gathering data but not analyzing it, there is a lack of talent, and they struggle with “insufficient systems to rapidly process information” (Pricewaterhouse 2013). In an interview with Pricewaterhouse Coopers, Jack Mackinlay, the director of visual analysis at Tableau Software noted research is an iterative process and an individual may not know what to ask the data at the beginning of a research query “so you need to have a flexible, human-centered approach to give people a maximal ability to take advantage of data in their jobs” (Morrison 2012).

Much literature on organizational effectiveness and leadership extols the use of story-telling to inspire employees and clients to action. In Bolman and Deal’s “Reframing Organizations,” the authors explain the use of stories to connect ideas across the
organization as well as create shared meaning for employees (Bolman and Deal 2003) and many authors of organizational effectiveness note the use of stories to illustrate organizational values (Schein 1992; Kouzes and Posner 2012). Information visualization as a story-telling device for organizations is not a stretch. In “Finding Better Ways to Communicate: Infographics, Environment, and Philanthropy,” David S. Beckman, the director of the Pisces Foundation, explains that while some connect the growing data visualization movement to social media and a growing amount of information, he attributes it to their ability to “combine data and story in a way that is compelling—and often fun” (Beckman 2013). He is specifically discussing infographics and notes that while they cannot substitute “detailed policy research” they can be much better than a traditional executive summary and in summarizing for new audiences. The process of creating the infographic also requires “distillation and clear thinking” about the subject matter (Beckman 2013).

Nonprofits and Information Visualization
Infographics are a prevalent marketing tool for many organizations including nonprofits. In 1992, John Hall, a student at California Polytechnic State University wrote a paper called “Infographics and Annual Reports for Nonprofit Organizations.” He surveyed participants after reading a traditional, writing intensive nonprofit annual report and after reading an infographic based annual report (Hall 1992). “The results of the survey indicated that a higher percent of the younger generation favored the infographic annual report while the older generation favored the traditional annual report in almost every instance” (Hall 1992). More than 20 years later, this study would possibly look different
today. However, the study shows that some may prefer visual communications and there may be a difference in preference due to age.

A small collection of blog posts and research papers center on nonprofit use of GIS as a visualization tool. In Nonprofit World’s article “Two Surprising Ways to Broaden Your Reach Online,” Kelley Jarrett advises nonprofits to highlight their community impact through interactive maps (Jarrett 2014). In “Hybrid power: using mashups to hitch your facts to other information,” Marnie Webb similarly advises nonprofits to transform the raw data they hold through hybrids. She explains “the hybrid concept is all about hitching your facts to other existing sources of information” (Webb 2008). She offers the example of a nonprofit using their own data about childhood asthma and overlaying it over a map. She says “the power of visualization—showing, rather than telling, your story with a map, a graph, or a timeline can have far more oomph than posting thousands of words on a website” (Webb 2008).

Nonprofits can use GIS to gain a deeper understanding about their service populations and complex place-based issues. For example, in “Using Multimethods Ethnography to Promote Quality Service and Understand Interactions Among Organizations,” Jo Anne Schneider identifies a few case studies where nonprofits used mapping to provide insights. One program in her study used mapping to visualize where program participants lived to better understand where to market services and to visually see their client base’s geographic spread (Schneider 2006, 421). Another study relied on interviews with GIS experts that work in Chicago area nonprofits and found that these organizations “have been using GIS to harness many of its benefits including assembling large amounts of diverse information, visualizing data, highlighting problems,
discovering spatial relationships, and identifying solutions. The examined organizations viewed GIS “as a useful and indispensable tool” (Kheir 2012, 295).

In Alan Morrison’s interview with Technology Forecast, he notes that Tableau’s customer base is not limited to the private sector: “I just spent a week at the Tableau Customer Conference, and people that I meet are extremely diverse. They’re not just the hardcore analysts who know about SPSS and R. They come from all different sizes of companies and nonprofits and on and on” (Morrison 2012). Much of the literature focuses on larger businesses in the private sector rather than nonprofits because these organizations are usually more resourced than community-based nonprofits. However, many of the authors mention free to low-cost information visualization tools for nonprofits (Sviokla 2009; Kanter 2013; Simon 2014).

Some private companies have made the connection between connecting information visualization with nonprofit development work. In 2011 Metasoft, the creator of Foundation Search, introduced relationship-mapping technology for its nonprofit clients. Metasoft claims the relationship mapping technology can help nonprofits “discover the hidden relationships between their donors and alumni and North American corporate and foundation directors.” This is meant to help nonprofits gain insight into their relationships and fundraising activities. “Relationship mapping features the use of graphic symbols to represent individuals and organizations and connector lines represent relationships” (Sherman 2011).

There is a gap in academic literature on nonprofit use of information visualization. There are examples of data visualizations, maps, and infographics produced by nonprofits all over the web, however, there is a lack of information about the
motivations of nonprofits in their use of these tools. For instance, do nonprofits create visuals to communicate with the public? Or, to understand information and data on an organizational-level? How do nonprofits typically evaluate or gauge success of these visual pieces? Who in the organization is responsible for creating visualizations? This paper attempts to address some of these questions.

**Methods**

**Overview**
This study is comprised of qualitative research in the form of semi-structured interviews and document analysis. These research methods were used to better understand how and why nonprofits use information visualization techniques. For the purposes of the study, information visualization will be defined as any technique on Alberto Cairo’s continuum from “The Functional Art: an introduction to information graphics and visualization.” This means the study views data visualization as any method from computer generated visualizations at the core of the model to designed and stylized visuals such as infographics in the middle of the model—both fall under the organization’s information architecture (Cairo 2013). Cairo does not distinguish computerized, technical visualizations from the more artistic ones. For better understanding of the current landscape, the study seeks information on any organizational use of information visualization from simple bar graphs to heavily designed and styled infographics.
Data Collection and Analysis
During semi-structured interviews the interviewer asked the subjects a set of predetermined, open-ended questions. The full list of interview questions can be found in APPENDIX A. Nine nonprofit professionals from nine different organizations were interviewed for their perspectives and each organization represented is a unit of analysis. The sampling of interviewees was based on purposive, expert sampling. Purposive and expert sampling allowed the researcher to speak with the most relevant nonprofits and knowledgeable people in this field. Snowball sampling was used after the first wave of interviews—this means initial interviewees provided the researcher with leads about other organizations to interview in some cases (Trochim 2006). Contact information for subject recruitment was found on public, nonprofit website (the email solicitation sent to participants is available in APPENDIX B).
Interviews were documented via note taking and took place over the phone or in person. The information gathered from the interviews was then analyzed for general themes and patterns about the use of information visualization in nonprofit organizations. Because each interviewee represents a nonprofit organization the researcher implemented precautions to maintain the anonymity of both the interview subjects and the organizations. The researcher relays general information about the size and interest area of the nonprofits but no identifying information is shared in the report.

These precautions were reviewed with participants before interviews occurred. The University of North Carolina’s Institutional Review Board (IRB) approved this study on January 20, 2015 (Study #: 14-3326). All interviewees were provided with an information form describing the goals of the study and their rights as interviewees (see APPENDIX C).

**Limitations**

Several limitations will affect this study. For instance, only nine nonprofits were studied so findings may not be generalizable to all organizations. Additionally, these nonprofits vary in their scope of work, locations, size, and other attributes. Because interviews are based on non-probability modes of sampling, there may be biases present in the researcher’s decisions to interview certain nonprofits and the leads offered from other nonprofit professionals.
Results: Themes from the Interviews

Nine employees from nine different nonprofits were interviewed to better understand how and why their organizations produce and use information visualizations. The following section highlights themes from the interviews:

Defining Information Visualization

The first question participants were asked was “How do you define Information Visualization?” Most answered broadly and focused on helping others to understand the nonprofit’s mission and digestibility of data insights. One participant specifically mentioned the distinction between information and data visualization in their response:

“Information visualization is a broader term—taking any content and putting it in a visual format—data visualization is more quantitative.” Another participant noted that they perform information visualization activities but would never call these activities “information visualization” as this phrase seems too technical for their purposes. Some Definitions of Information Visualization from Interviewees:

- “that typically means using some sort of figure or table or infographic to display information about the landscape in which we work . . . it’s generally more than written text . . . a way to summarize information in a more digestible way.”

- “I would define that as any sort of visual tool that we use to talk about what it is that we do, whether it’s pictures or graphs, infographics . . . anything that helps people understand what we do in addition to words.”

- “Anything that visually represents an issue or a concept—not just data but relationships between ideas and frameworks as well.”

- “I guess I would say it’s a way to render data in a visual, graphic way that is perhaps more digestible to people than looking at numbers or statistics or factoids.”
Guidelines and Policies for Information Visualization

Most interview participants remarked that their organizations did not have any formal policies or guidance specifically for creating information visualizations. However, three participants noted their organization’s communications or branding manual as a resource that guides visualization design in terms of font type, acceptable color choices, and other factors related to style: “the branding manual gives us a unified way of looking at and talking about ourselves—that’s how we steer all of our visualizations to apply our brand.” One participant noted the potential for creating more information visualization guidance within their organization: “there is nothing specifically guiding the data—we aren’t there by any means—infographics and mapping is still new to us and if we were to start releasing more materials publicly, like communicating more visual information to donors and that sort of thing—my hope is that then we’ll have more protocols so that the information isn’t misleading or we’ll create standards for what to include.” Another mentioned having a procedure for proofing visualizations before they are made available publicly: “anything that goes externally has to be reviewed by Research and Evaluation to ensure it makes sense and has a second set of eyes.”

Some nonprofits rely on the policies and procedures of their data sources. One environmental advocacy nonprofit relies on data from other organizations and must rely on the expertise and standards of the data source. They noted, “we generally trust the expert that gives it to us—part of the issue is we are not the experts and we have to trust the experts for scientific data.” There also appear to be culture specific rules that guide an organization’s production of information visualization because one participant mentioned that while they have no written policies, there is an unwritten rule that guides information
visualization: “we do a lot of presenting research findings, the general unwritten rule is that if it can be shown visually—do that—instead of showing it in words.”

**Evaluation**

Several participants explained that evaluating visuals, whether internal or external, for effectiveness is difficult. Three participants did note that they track particular visuals that have been posted online and their popularity by assessing social media traffic analytics, web site traffic, and Google analytics. One in particular creates a digital report every week that highlights their most popular and engaging posts. Using these measures they know that “the infographics do well” in terms of sharing.

**External Communications**

Sharing information with wide audiences is an important theme in producing visuals for nonprofit external communications. Only one participant said that their organization only creates visuals for internal purposes—the remaining eight organizations produce visuals for communicating with various external stakeholders and many note this activity is a growing part of communications work. One nonprofit in particular mainly uses visualizations for external communications purposes: “We mainly use them for external purposes to advance the mission or illustrate a point about one of our campaigns.“

Seven participants emphasized their use of infographics to help tell the story of their work or a particular set of relevant data. One participant noted their organizational need for infographics is growing: “I think we would like to do more with infographics because we have seen that it’s helpful to share information in that way . . . but we try to balance information and storytelling.” Another echoes this sentiment: “we try to incorporate the data throughout our web site and we are figuring out how to stay on top
of updating this all the time. I think using and having data on our web site has been really effective—especially on social media—the posts we have with infographics are very popular.” Both of these responses point to the shareable, social networking benefits of infographics as well. Another participant explained that infographics are trendy and there is an expectation to create them at the moment.

Two participants noted visual forms beyond infographics like artwork or mixed media designs. One organization pulls together different types of information to enhance their advocacy work for migrant farmworkers: “we care a lot about story telling—so we share their stories, quotes, photos, we do have fact sheets.” The fact sheet this participant refers to includes text, photos, stories, and even pie charts and graphs to help different audiences understand the migrant farmworker population and further their advocacy work.

Four participants in this study noted that increasingly visuals are a part of their annual reports. One organization transformed its annual report into an infographic format recently because no one was reading the traditional, text-based annual report they produced. A literacy nonprofit similarly created an infographic in place of the annual report—“it has really been useful—it was very professional and eye catching—this particular infographic is good because it compresses a lot of information into one piece—what people get from it is ‘oh this must be a professional well run organization’—it is more shareable and more likely to be read.” Another explained: “Once a year we do an annual report with a lot of visuals, we’ll compare how we did this year compared to last year, we often show a lot of our budget information, visually.” The following external communication activities were mentioned by participants:
### External Visualization Activities

<table>
<thead>
<tr>
<th>Medium</th>
<th>Benefits</th>
<th># of nonprofits that mentioned this activity</th>
</tr>
</thead>
</table>
| Infographics                   | • Story telling  
• Sharing via social media  
• Sharing with potential funders  
• Performing Advocacy          | 7                                           |
| Simple Excel Visuals           | • Sharing financial information with the public  
• Illustrating impacts of services  
• Easy to make and share        | 4                                           |
| Visual / Infographic Annual Report | • Increasing readership of annual report  
• Creating more memorable, shareable annual reports | 4                                           |
| Artwork, Factsheets with graphs, photos and tables | • Advocating for different groups and causes  
• Sharing information about a service population  
• Story telling                  | 2                                           |

*Figure 1: External visualization activities mentioned by participants*

**Fundraising**

As mentioned in the literature review, communicating with funders is an important piece of nonprofit communications. One participant explained how visuals and fundraising conversations complement each other, “we will probably end up creating more things like infographics for development purposes, I think that is sort of where we are headed with this—so many funders are interested in specific things.” They went on to say that they hope to develop one-page visuals on various topics to leave behind for potential funders with very specific interests. Another participant mentioned creating an infographic for fundraising purposes that visually illustrates where a funder’s dollar will go: “the break up of a dollar to see where the donation dollar goes--we’ve heard feedback from people that they appreciate seeing those elements.” Others create visuals to both monitor fundraising and share financial information with the public: “we generally do a lot of
excels graphs for fundraising to see if we are on track with fundraising and think about where we are. With the public we use pie charts to show our income and expenses—we like to provide that information in a way that’s accessible to others.”

**Communications with the Board**
Five of the nonprofits mentioned conveying information visually to their board of directors. For nonprofit staff, communicating with board members effectively is very important. Board members count on staff for quality information for decision-making and usually these information interactions are time limited. One participant noted that at each board meeting a chart visualization is displayed to communicate financial information to the board and help the board make informed financial decisions. Another noted that visuals help communicate information to board members which is effective because “most board members have full time jobs outside of nonprofit board work—so they have limited time.” The same participant noted they use visuals often to illustrate results of program evaluations and share these visuals with the board to provide further insight.

**Internal Decision Making & Planning**
In addition to board decisions, non-profits use information visualization to organize data and make long-term decisions about programs and services. One nonprofit that focuses on hunger uses GIS technology to map and visualize different sections of their service area: “In an effort to understand the need better we have invested in mapping technology—just in the last few years – we’ll map out where we have efforts right now and where there is the most need, we’ll also look at indicators of hunger versus the impact we have.” Other nonprofits also use visualizations to pinpoint where more work is needed or where programs can be improved. A health services nonprofit, for example,
continually updates visualizations in excel to show how many patients are served in a number of affiliate organizations along with other metrics. The resulting bar graphs and pie charts help staff understand which programs and locations need more effort and capacity. The participant from this organization created a dashboard in excel and all the members of the team can update the charts and visualize data insights by simply inputting new values into the corresponding excel tables. This person noted that because of this dashboard tool, team members can input and visualize specific information without recreating the wheel. Several participants that use visuals for decision making usually create simple minimalistic excel charts for these purposes because they are easily made and shared.

A participant from a literacy and language nonprofit explained that they use visuals in decisions about whether to spend now or later or better understand program outcomes and demographics. Another participant echoed these sentiments by explaining that visuals help their organization interpret information on “long term decisions around gauging program impact.”

One interviewee mentioned their organization’s use of concept models and logic models to visually understand program plans—both of these models use arrows and boxes to explain scenarios. The participant explained that logic models help their team understand different scenarios by illustrating and mapping inputs, outputs, and outcomes. Concept models, on the other hand, help the team think of many possible factors related to one issue. For instance if they model a person that might be in need of their services they map out “all the things that influence that person’s decisions—maybe financial issues, lack of education, the health system, fear of stigma…we look at how those things
influence what she decides to do.” The participant noted that this mapping allows the team to look at the situation more holistically rather than focusing on one piece. This exercise helps team members overcome assumptions in a given situation and understand what actions to take, barriers to remove, and possibly where to intervene in providing services.

The following internal visualization activities were mentioned by participants:

<table>
<thead>
<tr>
<th>Medium or Activity</th>
<th>Purposes</th>
<th># of nonprofits that mentioned this activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Excel Visuals</td>
<td>• Sharing financial and program information with board of directors</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>• Examining financial and program evaluation data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Understanding demographic data</td>
<td></td>
</tr>
<tr>
<td>Sharing Information Visuals with the Board of Directors</td>
<td>• Save time of board members</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>• Share financial and program performance information for decision making</td>
<td></td>
</tr>
<tr>
<td>Dashboards / Interactive Charts</td>
<td>• Pinpointing areas for program improvement</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>• Monitoring programs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Assessing community needs</td>
<td></td>
</tr>
<tr>
<td>GIS Mapping</td>
<td>• Visualizing service areas and current efforts in different service areas</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• Assessing community needs and demographics</td>
<td></td>
</tr>
<tr>
<td>Concept Models/ Logic Models</td>
<td>• Mapping out relationships between outputs and inputs</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>• Long-term program planning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Overcoming assumptions about service recipients</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Identifying barriers to providing services</td>
<td></td>
</tr>
</tbody>
</table>

Figure 2: Internal visualization activities mentioned by participants
Various Roles
Throughout the interviews several departments and positions were mentioned as creators of information visualizations. With each different role comes a unique perspective on the purpose and definition of information visualization. Some of the larger nonprofits mentioned having both a communications team or graphic design position as well as a research team or data analysis position. For instance one participant noted that the graphic designer and communication team at their organization aim to tell a story with data while the research team focuses on visuals for decision-making and financial analysis. However, in the end the two teams share information—“the communications team tries to tell a story with the data, I think we’ll use some of the same pie charts and bar graphs and things but they help people identify with it more or drive home the impact of what that data means.” Smaller nonprofits tended to have one individual responsible for information visualizations, usually a communications position, or in one case a communications intern. In another organization, even IT was involved with staff support for creating GIS visualizations. Two nonprofits also specifically mentioned employing graphic designers for these purposes.

Two participants broached the subject of training in terms of data analysis and creating visuals. One noted that more training and human resources would help: “I think it would be better if we had more tools and more training and staff resources—it’s really kinda hot right now—so we want to stay on top of the trend but we do have limited resources.” Another noted that data visualization training is already part of the workplace culture: “we send people to data visualization training—so there is a lot of thoughtfulness about how we present data.”
Three nonprofits explained that lack of training and expertise can lead to outsourcing visualization projects. One nonprofit outsourced their information visualization needs to design firms but recently hired an employee with graphic design skills to make infographics—this position mainly focuses on online marketing. This organization decided that with growing expectations for visual information and the need to make visuals faster and more cheaply—this seemed like the best option. Another noted, “we did do an infographic for our annual report—we had an outside graphic firm create it—we don’t have the capacity or knowledge to make one.” Yet another explained, “we just started thinking about doing these in house. We know we want to use them more and we want to know more about how to illustrate fun statistics rather than just showing really dry scientific data.” The following roles were mentioned by participants:

<table>
<thead>
<tr>
<th>Role</th>
<th>Perspective</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communications Employee/Team</td>
<td>Focus on story-telling with data to reach different audiences</td>
</tr>
<tr>
<td>Communications Intern</td>
<td>Provide assistance in creating visual materials</td>
</tr>
<tr>
<td>Graphic Designer</td>
<td>Use specialized design skills to share data and tell stories</td>
</tr>
<tr>
<td>Research Team/ Data Analyst</td>
<td>Focus on decision-making, financial analysis visuals</td>
</tr>
<tr>
<td>IT Team/Employee</td>
<td>Provide support with GIS or more complex visualization and data needs</td>
</tr>
<tr>
<td>Contractor</td>
<td>If resources or expertise for creating visualizations do not reside in the nonprofit a design firm or graphic designer may be hired on a project by project basis</td>
</tr>
</tbody>
</table>

*Figure 3: Roles of employees that participate in information visualization*
Generational Effects
When it comes to the responsibilities of different people in the workplace in regards to visualization, one participant has noticed that it can depend on age: “I’m going to give you the generational answer to this—I find that senior level staff who are mostly baby boomers have a good handle on the concept they want to convey in the message and rely on younger staff to create the visualization. The older staff might do a first cut at a visualization and the younger staff can create it but they are still developing professionally in terms of the work and experience.” This participant noted the generational strengths and weaknesses within each group and has noticed in the philanthropic world that baby boomers may know what message to convey, millennials can create the visuals to convey that message, and gen Xers, the generation in the middle, often provide a balance of these two worlds. This participant also noted that different generations have different expectations of the visuals presented to them – especially in terms of brevity and substance. They explained that millennials might prefer less substantive modes of communication like data visualizations: “It’s eye catching and attractive but you have to have some element that will help it sink in—the less we take in what’s written the less substance we are getting—I don’t think the single space report is the way to go either.”

Empowering Others & Partnerships
Three nonprofits mentioned organizing information to help inform their partners and affiliates. A participant from a health services nonprofit noted their organization collects and analyzes data from different communities and brings that information back to the community and partner organizations in a synthesized and usually visual form. This
means those collecting the data see the end result of the data analysis along with any new insights or implications. This participant also noted that many employees at partner organizations are not researchers—“when you can put it in a visual form, it’s another form of literacy so you can enhance communications with stakeholders.”

Others mentioned that while they are in a learning phase with information visualization, they see information visualization as a more collaborative endeavor in the future. One participant said, “we are good at using our data internally within the organization but the next step is to share that information with our partners and the facilities we work with . . . so I think coming up with ways to share that information well and in a way that is meaningful for our partners is important.” Like the above nonprofit, this participant mentioned that visualizations would help in this endeavor especially in terms of conveying information “for mixed literacy audiences and trying to make it more accessible to a lot of people.”

The same participant mentioned that sharing information with others visually meant sharing information early on with new program participants and partners, bringing visualizations of information they had collected, and walking them through the visualizations to ensure understanding. This participant noted that the results were effective and partners appreciated seeing the information they previously spent time collecting in visual form. This reinforced good data quality practices as well: “it helps you ensure data quality—an incentive to have people keep data as well—reinforcing good documentation of what’s happening.”

An education nonprofit similarly tries to connect data back to stakeholders and organizations that share its mission. This is helpful because it gives stakeholders in the
field new data insights to use in their own decision-making and advocacy. This is a positive for the nonprofit because people highly regard the materials they create—which include infographics, graphs, and other visuals—and it strengthens the relationship between the nonprofit and various stakeholders.

**Democratizing Data**
Two organizations also mentioned creating templates to help affiliate or partner organizations visualize data as needed. One education nonprofit noted, “our goal would be to make data visualizations more accessible or user friendly to affiliates so they can promote their data themselves—when we make infographics now they are in InDesign—right now the affiliates don’t understand these tools or cannot afford them—so we are thinking of ways to make data more accessible to them.”

The other organization noted that because they make infographics and use national data as well as state level affiliate data—they create customizable infographic templates so that data can be displayed in an infographic format for each state or so affiliates can input their own data into the template: “that’s why we are making customizable templates—we want to keep experimenting and keep everything consistent—we want to empower other branches of the organization to speak in data.”

Another organization actually used the phrase “the democratization of data” in terms of empowering more people in the organization to analyze and visualize data more often. This organization has a monitoring database that tracks different indicators for their various programs and has built in visual tools and dashboards that make data exploration easier for more staff members. This participant explained these activities ensure data can be viewed from different perspectives within the organization. While this
approach to data analysis may not be effective for all nonprofits, the following table outlines behaviors some nonprofits engaged to democratize data in their operations:

<table>
<thead>
<tr>
<th>Democratizing Data Nonprofit Behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Sharing data in visual form with partners, affiliates, and stakeholders</td>
</tr>
<tr>
<td>• Creating templates so employees and partners can share their data visually without design expertise</td>
</tr>
<tr>
<td>• Sharing information visuals with mixed literacy audiences</td>
</tr>
<tr>
<td>• Creating information visualizations of data results for those that collected the data</td>
</tr>
<tr>
<td>• Supplying staff with dashboards and tools so they can explore data and input their own values into visualizations</td>
</tr>
<tr>
<td>• Providing employees with training or opportunities to learn about appropriate visualization techniques so more areas of the organization can visualize data</td>
</tr>
</tbody>
</table>

*Figure 4: Democratizing Data Organizational Behaviors*

**The Visual’s Relationship with Text**
Several participants noted a distinction between a visual that supports existing text and visuals that take the place of text entirely. One participant in particular noted this distinction when defining information visualization, “I think there are a couple of ways—there is the idea of using infographics as sort of the centerpiece of conveying information, where It’s not necessarily there to accompany text and it takes the place of text itself and then there is more of the visual aid where you have a central point that’s also conveyed in the text.” Other participants mentioned text in terms of visualization as well: “it’s generally more than written text” and “anything that helps people understand what we do in addition to words.” The same participant that noted this distinction also explained that choosing to use a visual in place of words or in aid to words really depends on the audience: “I think which one you use depends on the skill set of the presenter and the
audience itself.” They go on to explain that using a visual in place of text is a better option in situations where there is less of a connection between speaker and audience.

**Information Visualization Tools**
Participants use a range of tools for creating information visualizations. Excel was noted by all participants with one organization noting they use Excel Power BI: “there is a thing, power BI, this lets us make complex and advanced data analysis—we just got it but we haven’t had formal training on it yet.” One organization mentioned GIS mapping and three organizations mentioned using Adobe Indesign and Illustrator—although one did mention that Adobe products require more training in terms of information visualization. Two organizations mentioned Piktochart for creating infographics, one in particular noted “Piktochart is an online tool with infographic template, free for certain things and we got a membership, other than that we use Indesign and Illustrator and things.”

**Growing Visual Culture**

“We are data driven organization so we want our data to be digestible—data driven is where we are going as an organization—every decision is based on data or research—whether it’s from others or data from our own research...”

Many of the participants mentioned that visualizations are overall positive and valuable and that expectations for more visuals will only increase. One in particular noted, “it is clear it is a value of the organization—we also, I think, have a pretty good reputation for the tools and resources we put out and I think we put out polished projects in general so it feels pretty essential to our work and essential to what we do and how we are adding value. So, if I think about the future of data visualization here, I think it will become even more essential.”
One nonprofit noted that the need for visuals will only increase because of shorter and shorter attention spans. Another stated, “I’m really excited that it’s taking off, visual modes of information—I’m excited to see where it’s going and that some traditional organizations are exploring these tools.” The following tables includes quotes on future hopes for information visualization:

<table>
<thead>
<tr>
<th>Quotes about the future of information visualization</th>
</tr>
</thead>
<tbody>
<tr>
<td>“I would hope things become more nuanced --connected easier--I would hope that we would use it to create really cool graphics about the community need beyond using statistics.”</td>
</tr>
<tr>
<td>“….it feels pretty essential to our work and essential to what we do and how we are adding value. So, if I think about the future of data visualization here, I think it will become even more essential.”</td>
</tr>
<tr>
<td>“we want to empower other branches of the organization to speak in data”</td>
</tr>
<tr>
<td>“my hope is that if we do more of that we’ll have protocols for that—we should have a certain standard of what to include—but usually people don’t start working on that sort of thing until you have done it for awhile.”</td>
</tr>
<tr>
<td>“I think it would be better if we had more tools and more training and staff resources—it’s really kinda hot right now—so we want to be on the trend as well but we do have limited resources—we are hoping that as we learn we can demonstrate the need before we are given additional funds and staff time”</td>
</tr>
<tr>
<td>“I’m really excited that it’s taking off, visual modes of information –I’m excited to see where it’s going to go –and that some traditional organizations are exploring these tools.”</td>
</tr>
<tr>
<td>“….just so more and more people would analyze data on a regular basis to a make more decisions—my boss calls it the democratization of data—more people able to look at their data more often—see it from their perspectives in the organization”</td>
</tr>
<tr>
<td>“I think we would like to do more with infographics because we have seen that’s helpful to share information that way…”</td>
</tr>
</tbody>
</table>

*Figure 5: Quotes about the future of information visualization*

**Discussion**

Collaborating seemed essential to the thought processes of some nonprofits interviewed during the study—whether out of necessity because data and information visualizations come from an outside source or because some nonprofits share data and visualizations
with affiliates and partners on a regular basis. For some nonprofits using visuals to relay data to stakeholders and partners, especially those collecting data in the first place, seemed positive in terms of creating better relationships and fostering the importance of data collection. This exchange of information is important to relationship building and also necessitates ensuring visuals are accurate and high quality. Overall visuals seemed helpful in fostering relationships with not only stakeholders but communicating with broad audiences because many participants mentioned that visuals such as infographics are used to address mixed literacy audiences and easily shared on social media. Although, some participants expressed concerns about how to balance substantive information, which may require more text and less visual modes of communication, with the digestibility of visuals.

This idea of “democratizing data” seems very important not only to the learning of individual employees but also organizational performance. Leadership and organizational performance literature explains that for organizations to succeed in environments with less resources and modern challenges, it is important to distribute learning and skills throughout different levels of the organization (Senge 2011). Some nonprofits are ensuring employees from different areas of the organization have the tools and training necessary to explore data visually or otherwise. One participant explains, “we want to be able to empower other branches of the organization to speak in data.” Others note they hope to see further training and tools in this area in the future. If this is the case data insights could be viewed through visual modes from different levels and perspectives in nonprofit organizations.
Likely due to lack of time and the difficulty of evaluating visuals for effectiveness, policies and evaluation criteria were limited for information visualizations. This may be a further area of research and establishment of best practices, especially in light of existing research on human perception of different visualization techniques—in particular how humans perceive quantitative values through different elements in visualizations (Shneiderman 1996; Cleveland & McGill 1985). Because some nonprofits in this study look to guidance about how to represent information in their communication or branding manual this may be a potential avenue for providing organizational standards for creating visualizations. A concern from of some organizations with many different individuals in different roles creating visuals or many partner and affiliate organizations, is consistency and standards. Some participants offered some insight on creating consistency through the branding manuals or by creating templates that can be used by different employees, partner organizations, and affiliates.

Standards and procedures to ensure information is not misleading and that visuals are used in the appropriate context is important to sharing information. The participants in the study did identify several contexts where visuals have been helpful including interactions with board members, annual reports, social media sharing, and internally for monitoring and planning purposes. Although there are some challenges, information visualizations seem to provide benefits in certain contexts and their use will likely continue to grow for many nonprofits.
Bibliography


APPENDIX A

LIST OF INTERVIEW QUESTIONS

1. How do you define information visualization?

2. Does your organization have any policies that guide data use or data/information visualization? Any tools that help with data or information visualization?

3. How do you use data insights to make decisions or problem solve?

4. Who uses data visualization at your organization? What are their roles? What tools do they use specifically?

5. What types of information does your organization try to convey with data visualization?

6. How does your organization use data visualizations externally to promote the organizational mission, publicize issues, or communicate with stakeholders? How does this help or detract?

7. Why do you use data visualizations or data visualization tools? In what types of projects or activities are you most likely to incorporate data visualization tools?

8. How does your organization plan to use data visualizations or tools in the future?

9. Where have you seen data visualization be most effective in communicating information internally or externally? How do you evaluate communications pieces that contain visualizations?

10. How are you able to use data visualization tools on a budget? Do you use free, openly available tools or pay for these tools?

11. How do you ensure data is correct in data visualizations that reach the public? Is there a process in place to ensure quality?

12. Does your organization have the human resources and expertise to meet your information visualization and data analysis needs?
APPENDIX B

EMAIL SOLICITATION

To: Nonprofit staff member email addresses

Subject: UNC study: Information Visualization and Nonprofit Work

Hello ____________________ ,

My name is Caroline Simpson and I am a graduate student in Public Administration and Library Science at UNC. I am currently conducting a study of nonprofit use of data and information visualization tools and how nonprofits use data visualization to communicate and make decisions. The purpose of the study is to better understand the opportunities and challenges nonprofits face in terms of data and information visualization. This can include any visualizations from simple graphs to GIS maps to infographics.

I am reaching out to request permission to interview you about your nonprofit’s use of information and data visualization. The interview includes about 12 questions and will take no longer than 30 minutes of your time. Interviews will be recorded and written but you may request that the interview not be recorded. Participants will not be identified in any report or publication about this study.

Interviews will occur between January and March 2015. If you would like to participate in this study please reply to this email. To participate, you will only need to sign the attached consent form. This ensures you understand the purpose of the study and your rights as an interviewee.

Thank you for taking the time to read this and let me know if you have any questions.

Best,

Researcher: Caroline A. Simpson, Masters of Library Science Student

Supervisor: Dr. David Gotz, Faculty Advisor | gotz@email.unc.edu
APPENDIX C

INFORMATION SHEET/CONSENT FORM

University of North Carolina at Chapel Hill
Consent to Participate in a Research Study
Adult Participants

Consent Form Version Date: January 5, 2014
IRB Study # 14-3326
Title of Study: Nonprofits and Information Visualization
Principal Investigator: Caroline Simpson
Principal Investigator Department: School of Information and Library Science
Principal Investigator Phone number: 8034120234
Principal Investigator Email Address: simpsoca@live.unc.edu
Faculty Advisor: David Gotz
Faculty Advisor Contact Information: (919) 962-3435

What are some general things you should know about research studies?
You are being asked to take part in a research study. To join the study is voluntary.
You may refuse to join, or you may withdraw your consent to be in the study, for any reason, without penalty.

Research studies are designed to obtain new knowledge. This new information may help people in the future. You may not receive any direct benefit from being in the research study. There also may be risks to being in research studies.

Details about this study are discussed below. It is important that you understand this information so that you can make an informed choice about being in this research study.

You will be given a copy of this consent form. You should ask the researchers named above, or staff members who may assist them, any questions you have about this study at any time.

What is the purpose of this study?
Nonprofits and foundations increasingly use data to drive funding and services. Given the opportunities and challenges for information visualization to help nonprofits reach their goals and work toward their missions, this study seeks to answer the following question: How do nonprofits use data and information visualization tools in their operations? This study explores how data visualization may aid nonprofits in communications, fundraising, and decision-making.

You are being asked to be in the study because you have knowledge or expertise about how nonprofits use data or information visualization in their operations and communications.

Are there any reasons you should not be in this study?
You should not be in this study if you are under 18 years old.
How many people will take part in this study?
There will be approximately 8 to 10 people in this research study.

How long will your part in this study last?
Only one interview is required and it will last between 30 and 40 minutes.

What will happen if you take part in the study?
Participating in this study requires filling out a consent form and participating in a 30 to 40 minute interview that includes open-ended questions about how your nonprofit organization uses information visualization.

What are the possible benefits from being in this study?
Research is designed to benefit society by gaining new knowledge. You will not benefit personally from being in this research study.

What are the possible risks or discomforts involved from being in this study?
There may be uncommon or previously unknown risks. You should report any problems to the researcher.

What if we learn about new findings or information during the study?
You will be given any new information gained during the course of the study that might affect your willingness to continue your participation.

How will information about you be protected?
Participants will not be identified in any report or publication about this study. Although every effort will be made to keep research records private, there may be times when federal or state law requires the disclosure of such records, including personal information. This is very unlikely, but if disclosure is ever required, UNC-Chapel Hill will take steps allowable by law to protect the privacy of personal information. In some cases, your information in this research study could be reviewed by representatives of the University, research sponsors, or government agencies (for example, the FDA) for purposes such as quality control or safety.

After the interview, only the principal investigator and faculty advisor will have access to your interview responses. Your responses will not be linked to any personally identifiable information or your organization’s information. In any written materials about findings, pseudonyms will be used.

Audio recordings of interviews will be transcribed for better analysis of interview responses. Audio recordings and transcripts will be kept for four months then deleted after a final research paper is completed. The recordings will be stored on USB drive and only accessed by the principal investigator. You may request to do an interview without audio recording below:

Check the line that best matches your choice:

_____ OK to record me during the study

_____ Not OK to record me during the study
If you choose to be recorded you may still ask the interviewer to stop the audio recording at any time during the interview.

**What if you want to stop before your part in the study is complete?**

You can withdraw from this study at any time, without penalty. The investigators also have the right to stop your participation at any time. This could be because you have had an unexpected reaction, or have failed to follow instructions, or because the entire study has been stopped.

**Will you receive anything for being in this study?**

You will not receive anything for being in this study.

**Will it cost you anything to be in this study?**

It will not cost you anything to be in this study.

**What if you have questions about this study?**

You have the right to ask, and have answered, any questions you may have about this research. If you have questions about the study (including payments), complaints, concerns, or if a research-related injury occurs, you should contact the researchers listed on the first page of this form.

**What if you have questions about your rights as a research participant?**

All research on human volunteers is reviewed by a committee that works to protect your rights and welfare. If you have questions or concerns about your rights as a research subject, or if you would like to obtain information or offer input, you may contact the Institutional Review Board at 919-966-3113 or by email to IRB_subjects@unc.edu.