Impacting Community Well-Being in Lafayette, Indiana, in the Midst of a Pandemic

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Cover Page Footnote
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IMPACTING COMMUNITY WELL-BEING IN LAFAYETTE, INDIANA, IN THE MIDST OF A PANDEMIC

Eli Coltin (Economics), Eric Flaningam (Industrial Engineering), Jace Newell (Industrial Engineering), Jason Ware, PhD (Honors College)

STUDENT AUTHOR BIO SKETCHES

Eli Coltin is a junior majoring in Economics Honors, Computer Science, and Data Science at Purdue University. His interest is exploring the applications of quantitative analysis on data involving quality of life and outcomes of human decisions. He has been working with Dr. Ware on researching community well-being since May 2020. In this article, he describes his experience using quantitative data analysis to research community well-being indicators.

Eric Flaningam is a senior studying industrial engineering at Purdue University. He joined the Ware Research Group in his freshman year and has been the head undergraduate researcher since the fall of his junior year. He has been involved in various projects surrounding community engagement and well-being. Some personal research includes happiness studies, quality of life studies, and how technology affects mental health. After graduation, he plans to pursue graduate studies or a career in entrepreneurship. In this article, he discusses his experience researching a youth robotics program in the midst of a pandemic.

Jace Newell is a senior at Purdue University majoring in industrial engineering and minoring in statistics and mathematics. He has been working in the Community Indicators Research Group as an undergraduate researcher since his freshman year. He plans to pursue a career in supply chain, data analytics, manufacturing, or project management. He has been involved in the Purdue, West Lafayette, and Lafayette communities for the past two and a half years. In this manuscript, he describes his experience conducting automated data processing research under Dr. Ware.

ABSTRACT

For the past five years, Dr. Jason Ware has centered community-based research and service-learning courses around local community partners’ needs as they focused collectively on community well-being issues. The nature of their work has prioritized qualitative research methods such as narrative inquiry via in-depth interviews and ethnography via immersive observations within varying service-providing institutions such as the Hartford Hub and the Hanna Community Center. COVID-19 and the constant threat of its transmission meant that Dr. Ware, his students, and their community partners had to approach their work differently. They responded with a pivot. They turned to mining large publicly accessible and proprietary data sets, such as United States Census data, Home Mortgage Disclosure Act (HMDA) data, the Homeless Management Information System (HMIS)
data, and the Polk Directory data. The pivot served as a direct response to the city of Lafayette’s need for useful data that could inform decision-making related to neighborhood revitalization, affordable housing, and homelessness intervention. This different approach impacted the co-authors’ learning and scholarly development and provided the community partners with useful data. The co-authors experienced increased autonomy in pursuing data-specific questions, extracting data, analyzing it, and visualizing it. One of the co-authors taught himself Python to import, statistically analyze, and visualize the data, and then presented the findings to the city of Lafayette. The co-author’s initial work—a pilot study—led to a scaled-up project that resulted in five significant outputs for three different community partners with a direct impact on six neighborhoods in the north end of Lafayette. Another co-author, who focused on scholarship during the pandemic, led an effort to develop a comprehensive literature review focused on the effect of community-based robotics programs on minority youth. The co-author also had presentations accepted at the local, national, and international levels while working on multiple publications.

The third co-author is partnering with the other authors to create an automated system that will support the collection, extraction, and analysis of secondary data that will facilitate sustainable data analysis into the future.

In addition to the increasing homeless population in Lafayette, Indiana, the city’s single most pressing need is to stabilize transiency among low-income residents (A. Murphy, personal communication, September 8, 2020). This concern has been particularly relevant in the north end of the city. City officials, along with various organizations, such as the Faith Community Development Corporation, are targeting six neighborhoods in the north end of Lafayette, intending to revitalize the neighborhoods and to discover what it takes to keep residents living in the area. This article tells the story of how a group of Purdue University researchers refocused their efforts to support community well-being amid the COVID-19 pandemic.

For the past five years, the Ware Research Group, along with students in Dr. Jason Ware’s well-being course, have collaborated with the Faith Community Development Corporation, Habitat for Humanity, the Hanna Community Center, the Edgelea Neighborhood Coalition, and the City of Lafayette to measure and impact community well-being. They have focused most of their work on neighborhood-level inquiry, youth development strategies, and co-creating community indicators. The purpose of their collaboration has been to collect well-being data that can inform neighborhood revitalization, affordable housing, and homelessness intervention initiatives. They have sought to co-create community indicators with north-end residents that can serve as guideposts related to the effectiveness of various quality of life projects—projects intended to make north-end neighborhoods more desirable and livable. Livable, within this context, refers to the livability of the environment, which is to say, the extent to which there are opportunities within the community and/or neighborhood(s) that help residents live a good life (Veenhoven, 2000). To further clarify, a “good life” is evaluated subjectively, and evaluation is down to specific groups (i.e., impoverished populations) and individuals. The premise is that residents are more likely to move into a neighborhood and stay if they perceive the neighborhood as livable and have a strong sense of community well-being. A strong sense of community well-being manifests variably in residents’ expressions of liking where they live, feeling safe, and taking pride in their respective communities (Gallup-Healthways Well-Being Index).

Measuring and evaluating the livability of neighborhoods and the extent to which residents perceive they are living a good life can be done using varying methodologies. The literature about this kind of work suggests that getting residents involved in the process is critical to producing sustainable results (Cahill, 2007; Phillips, 2003; Veenhoven, 2002; Wood, 2016). To this end and until recent months, Dr. Ware has chosen to inquire qualitatively using ethnographic and narrative traditions of inquiry. The Ware Research Group values the thick and rich descriptions from residents’ personal accounts and narratives about what it means to live in their respective neighborhoods (Guba & Lincoln, 1994; Jones et al., 2014; Ravitch & Carl, 2016). The idea is that these personal narratives can be aggregated and analyzed to get a sense of what shared impediments exist within specific neighborhoods and communities and the collective assets that make them healthy and livable, and that ultimately enhance residents’ community well-being.

To facilitate this work, Dr. Ware’s Research Group and students in his well-being courses have partnered with the Faith Community Development Corporation via the Hartford Hub. The Hartford Hub (The Hub) is a neighborhood center in Lafayette’s Lincoln Neighborhood (D’Aloia & Young, 2020). Dr. Ware’s undergraduate researchers have served at The Hub every week since the spring of 2017, supporting K–12 youth who participate in the after-school programming and
hosting neighborhood events that bring families together within The Hub (Francisco, 2018).

Until March 2020, the researchers’ work has included collecting ethnographic field texts about their involvement at The Hub and the ways in which neighborhood residents utilize the center (Carey et al., 2018). Researchers have intermittently participated in the monthly Lincoln Neighborhood meetings, during which they have observed the extent to which residents participate in their community and have heard firsthand some of the pressing needs in the neighborhood (Chianelli, 2019). Furthermore, the undergraduate researchers have been conducting semistructured interviews with Lincoln Neighborhood residents to collect their personal narratives about living in the area. Again, this work’s qualitative nature has been designed to include residents’ voices and prioritize their participation in understanding what it means to live in Lafayette’s north end.

Further toward this end, the Ware Research Group and students in Dr. Ware’s well-being course have partnered with the Lafayette branch of Habitat for Humanity. Still working to enhance neighborhood revitalization and affordable housing and measure community well-being qualitatively, researchers have been interviewing homeowners in Lafayette who have gone through the Habitat for Humanity build process. The purpose has been to understand the extent to which going through the build process has enhanced homeowners’ well-being in multiple domains such as purpose, financial, social, physical, but most of all community (Gallup-Healthways Well-Being Index).

Although the Edgelea neighborhood is not within the north end of Lafayette, the Ware Research Group and students in Dr. Ware’s well-being course have worked within this neighborhood to enhance community well-being. The Edgelea Neighborhood Coalition president has been working to increase residents’ participation in the coalition, so they could work collectively to improve or revitalize the neighborhood. Dr. Ware’s researchers have attempted to interview and survey 150 of the 800+ households in the neighborhood related to community well-being. They had a 20% response rate. The results from their research supported the building of a pocket park in the neighborhood, something for which most of the residents expressed a desire. The researchers’ findings suggest that not many neighborhood residents participated in the coalition but enjoyed participating in the decision-making process via the data they contributed to the park’s building process. There is a fair amount of work to be done in this neighborhood to increase residents’ participation in improving their community. Still, the researchers’ qualitative work came to an abrupt end in March 2020.

The Ware Research Group and students in Dr. Ware’s well-being course have been working on a collaborative project with the City of Lafayette since the fall of 2019. The project is titled “Good Decisions, Good Data.” The primary purpose of this collaboration is to collect and analyze data—both qualitative and quantitative—that can inform city-level initiatives targeting neighborhood revitalization, affordable housing, and homelessness intervention. Until March 2020, most of the data collected and analyzed has been qualitative.

Qualitative research, because it centers on human action and activity and often involves human participants, could not be efficiently conducted once COVID-19 began to spread in the United States. Each of the research projects described in this section of the text has been qualitative. The Ware Research Group and students in Dr. Ware’s well-being course chose to pivot to quantitative methods to continue serving and collaborating with their community partners to enhance community well-being in the Greater Lafayette area. What follows is a set of three vignettes written from the perspective of three undergraduate researchers in Dr. Ware’s research group. Within these vignettes, the co-authors articulate what they did research-wise that contributed to a quantitative pivot—an innovative response to the challenges that COVID-19 created—and the impact their work has had on them so far.

ELI’S VIGNETTE

Methodology

In May 2020, I began research with Dr. Ware in partnership with the City of Lafayette about community indicators and revitalization in the northern neighborhoods of Lafayette, Indiana. Before the spread of COVID-19, the research’s methodology depended on in-person interaction with residents, an implausible approach during a pandemic. Less than 1% of the City of Lafayette’s existing data on resident retention and community revitalization has been analyzed (Roswarski, personal communication, August 31, 2019). Therefore, the best alternative to in-person interactions for providing the city with unrealized information necessary to inform impactful decision-making was analyzing existing data.

After determining a new methodology, I leveraged my interest in applying computing for data analysis by

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opportunities, producing meaningful insights into Lafayette’s community.

**Results**

The project identified specific indicators and geographical areas of low retention, and it produced conclusions, visualizations, and statistics that the City of Lafayette could reference for information relating to neighborhood revitalization and resident retention with at-risk areas needing resources. For example, the comparative analysis showed married households and households with children lived in their homes longer than unmarried and childless households (Figure 2). These results were presented to the City of Lafayette.

**Community Impact**

This project, completed during the summer of 2020, was the impetus for multiple new projects launched in the fall of 2020, as well as several engagement products. Per the Public Purpose Institute (n.d.), engagement products are products that support mutually beneficial relationships
between higher education institutions (Purdue University) and the larger communities in which they exist (Lafayette, Indiana). Dr. Ware’s well-being course is a service-learning community-based research experience. Students in the course typically work in tandem with Dr. Ware’s research group, collecting qualitative field texts from Lafayette residents. Due to COVID-19 and the social constraints that came with it, the research element became an extension of the work completed in summer 2020. Students/researchers in the well-being course worked primarily with secondary quantitative data and created the following products that were given to the City of Lafayette and to the local branch of Habitat for Humanity to inform their collective neighborhood revitalization, affordable housing, and homelessness intervention initiatives.

**Affordable housing study.** This project provided an affordable housing profile for each neighborhood in the north end of Lafayette.

**Monon livability study.** This project provided a livability study of the Monon neighborhood.

**Habitat for Humanity—well-being study.** This project provided 12 narratives from Habitat homeowners that will be incorporated into the local Habitat’s marketing campaigns.

**Lincoln Neighborhood property conditions survey.** This project provided a mapped visual of property conditions within the Lincoln neighborhood.

**Current state of evictions study.** This project provided a profile of the current state of evictions in Lafayette, Indiana, since Governor Eric Holcomb’s state moratorium on evictions expired in August 2020 and was reinstated by the Centers for Disease Control in September 2020 in order to inform homelessness intervention.

**Community indicator automation.** This is an ongoing project focused on automating a neighborhood, housing, and homelessness data extraction, analysis, and visualization process that will continually provide the City of Lafayette with data to inform and guide their efforts in neighborhood revitalization, affordable housing, and homelessness intervention. The primary output will be the automated community indicator system and an associated data dashboard. This project and product are further discussed in Jace’s vignette later in this article.

**Student Impact**

Working with Dr. Ware through projects researching the intersection of my interests, economics and data science, I grew my understanding of the impact of quantitative analysis on community development. I transformed what
appeared on the surface as a large spreadsheet of numbers about households into tangible results that could improve the lives of those in the database. Extracting conclusions from households’ data provided a rewarding experience as I witnessed how data analysis directly applied to people’s life stories. With skills from this project, I could help lift real people out of unfavorable situations with my conclusions.

Through teaching myself Python for this project, I opened myself up to boundless amounts of new possibilities in research, projects, and classes. While I started with no Python experience, this project and other coursework gave me the skills necessary to analyze information about 3,000 households in Lafayette. This robust data analysis also allowed for better results for the community partner as they gained empirical evidence and reusable graphics applicable for negotiations with other groups in the northern neighborhoods of Lafayette about neighborhood revitalization, affordable housing, and homelessness intervention. So, my newly built skills from research quickly manifested rewarding, substantial impacts in my personal life, professional life, and my community. I plan to continue research with Dr. Ware partnered with the City of Lafayette utilizing computing to build an automated process for analyzing community indicators.

ERIC’S VIGNETTE

Methodology

I started research with Dr. Ware in the summer of 2018. However, the project I’ve been primarily focused on for the past year started in the fall of 2019. The Hanna Community Center, a minority youth center in Lafayette, Indiana, reached out to Dr. Ware and the research team, requesting an educational program for the kids at the center. They wanted a program that would provide the students with practical career skills. Dr. Ware had extensive experience with FIRST LEGO League robotics, so the research team moved forward developing FIRST LEGO League robotics teams at the Hanna Center. I asked Dr. Ware if I could lead the efforts for these teams. We set the program’s two main goals: provide the kids tangible skills and study our program’s impact on the kids. Before the COVID-19 pandemic, I led the effort to develop lesson plans, coach the teams, and research how our program was affecting the kids. To understand how our program was affecting the kids, we qualitatively observed their experiences and quantitatively marked specific skills and how those skills evolved. We used the rubric picture shown in Figure 3 to rate students’ skills at a given time.

However, when the pandemic hit, we had to pause the research project. Although the program’s first goal was now unavailable, the purpose of understanding how our program impacted the kids was still a tangible goal. So, the team decided to start researching to understand the science behind robotics programs in relation to minority youth. I led the efforts on completing a comprehensive literature review to understand the gaps in knowledge.

Results

The project’s preliminary findings were promising as the team qualitatively saw students’ technical skills, critical thinking abilities, and communication improve. Once the pandemic hit, the literature review provided some apparent gaps of knowledge in the field. Primarily, the team observed that almost all the research is done in an academic setting where minority students may not be optimally engaged. In a community-based environment, we theorize that students will be more focused and comfortable; in turn, the program will be more beneficial to the kids.

Community Impact

This empirical data, along with the literature review, will be used to design and develop sustainable youth programming at the Hanna Center that will consist of curriculum that the center’s leadership can implement on their own, as well as partner with Purdue University and Dr. Ware’s Research Group to facilitate the programming. The primary impact on the community so far has been the K–12 youths’ exposure to learning experiences outside of the formal classroom, which will hopefully

Figure 3. Rubric to rate student skills.
continue post-COVID-19 to influence their growth, development, and improved academic performance.

**Student Impact**

The project has been one of my most rewarding experiences at Purdue. Seeing kids light up when they were working with robots or one of the other activities was priceless. I also gained tangible skills I can carry with me going forward. First, learning to engage the kids was difficult, but it challenged me to get outside my comfort zone. I feel much more comfortable working with kids in the future, and that is an instrumental skill. Second, my organization skills improved.

Planning lessons each week required a significant amount of thought about how each activity would help the students grow and learn. Finally, my communication skills vastly improved because I had to be direct and precise in how I communicated to the kids. If the instructions were not clear, the whole lesson could get distracted quickly. Professionally, I have had the opportunity to present and publish this work, which has helped me improve my oral and written presentation skills. The biggest challenge I faced was learning how to work with kids, which was an entirely new and humbling experience. If I could do it again, I would spend a little more time helping students see the endgame of the project so they have a goal to work toward. I would also bring more confidence and energy when working with the kids. A few weeks into the project, I found that’s what students most enjoyed.

**JACE’S VIGNETTE**

**Methodology**

I first began my research journey in the Community Indicators Research Group with Dr. Jason Ware of the Purdue University Honors College in December 2018, my freshman year. As semesters passed, my research focus progressed from “Centering the Urban Periphery: Exploring Community Well-being Through Engagement at the Neighborhood Level” to a COVID-19-adaptive project further in line with my pursuing degree, a bachelor of science in Industrial Engineering, titled “Automated Data Processing: Making Community Indicators Possible for Lafayette, Indiana.” As the pandemic continues, our ability to remotely maintain our research presence in positively impacting the City of Lafayette is more essential than ever before.

The plan is to mitigate the current labor-intensive reality of the city’s inability to develop indicator-based

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*Figure 4. Proposed community indicators*

(economic and human needs satisfaction) projects by creating an automated system that will result in the city receiving up-to-date data and analysis that will assist them in formulating optimal decisions about existing and future community development initiatives (Figure 4).

The stakes of this project are defined by our community partners, who are also our stakeholders: urban poor residents, community and city planners, and partnered students and faculty. These populations must come together, notably in this unprecedented time, to enhance the urban poor’s quality of life.

Considerations for maintenance and upkeep are at the forefront of our exploration in developing an automated program script, where we understand the value in reproducibility of the project for years to come.

Data collection regarding the strategizing of our 16 distinct, encompassing indicators to gauge the well-being and quality of life of Lafayette’s north-end communities stemmed primarily from an array of resources including literature reviews, manuscripts, and livability studies. We will identify these indicators’ prioritization and select appropriate primary and secondary data sources to contribute to data processing. Depending on access and availability, additional viable sources include, but are not limited to, the 2020 Census, the Home Mortgage Disclosure Act, the Polk City Directory, and Homeless Management Information Systems.

Success will be measured through quantitative, numerical data values from our varied sources and qualitative (now virtual) pre- and postsurvey feedback from
residents. Our overarching goal is to generate positive change in the City of Lafayette communities by providing continuous, up-to-date recommendations for development initiatives via our extensive program script.

Despite the disruptive, ongoing effects of the pandemic, we are rising to the occasion to adapt our processes accordingly and maintain an impact on community well-being in the City of Lafayette through and through.

Results and Community Impact

As we look to the future, our automated system will enhance the community development initiatives that influence the lives of over 3,000 households in the north-end neighborhoods of Lafayette (Figure 5). We hope to release this software soon so our community partner can start using it to benefit the community of Lafayette.

Student Impact

Serving as an undergraduate researcher in the Community Indicators Research Group these past six semesters has profoundly impacted my college experience. From growing personally to taking leaps professionally, this research has shaped my college journey and will positively impact my postgraduation career.

Exploring the depths of well-being and quality of life beyond the surface level has widened my worldview and perspective into how we define happiness and success. My adoration for positivity, optimism, and cheerfulness has all but slowed down since joining the research team. Whether it is the focus of the work we are completing or the high-energy attitude of my fellow researchers, our research environment has enabled me to pursue my passions while elevating me to new heights.

The numerous professional opportunities that I have accomplished and am pursuing via this research group include the 2019 International Society for Quality-of-Life Studies 17th Annual Conference (Figure 6), 2019–2020 Office of Undergraduate Research Scholar, and the 2020 Purdue Fall Undergraduate Research Expo as well as the 2020 National Conference on Undergraduate Research, 2021 Purdue Engagement & Service-Learning Summit Student Showcase, 2021 Purdue Undergrad Research Pitch Competition, Spring 2021 Undergraduate Research Conference, Journal of Purdue Undergraduate Research publication, 2021 International Society for Quality-of-Life Studies 19th Annual Conference, and the 2021 Annual National Collegiate Honors Council Conference. These unique experiences have and will continue to develop my professional competencies further to prepare me as I begin transitioning into the workforce.

Overall, being a member of this research group has expanded my transferable skills such as problem-solving techniques, multidisciplinary teamwork, and cross-functional communication while engaging my technical prowess in the fields of data science, statistical analysis, and automated data processing.

I look forward to kick-starting my postgraduate career with the immensely enriching knowledge I’ve gained, an expansive network of undergraduate, graduate, and PhD researchers, and strengthened confidence in my ability to succeed in new environments and groups of people.

CONCLUSION

In conjunction with Dr. Ware’s work and the products he and his undergraduate students and researchers have provided, Habitat for Humanity is expanding its local focus beyond building houses to include neighborhood revitalization. The City of Lafayette is developing
initiatives to address the most pressing needs within the north end of the city. Habitat for Humanity’s mission expansion translates to an approximate 25% increase in the number of people they serve each year. The City of Lafayette’s informed efforts in neighborhood revitalization, affordable housing, and homelessness intervention serve the approximately 12,384 residents that live within the six north-end neighborhoods. These projected outcomes suggest that the pivot to primarily quantitative methodologies during the COVID-19 pandemic supports rather than hinders progress toward understanding and impacting community well-being in Lafayette. It facilitates several projects and engagement products that the City of Lafayette, Habitat for Humanity, the Faith Community Development Corporation, and the Hanna Community Center can access and begin using immediately (except the data automation project, which is not yet underway). Furthermore, this work contributes to the undergraduate co-authors’ scholarly development as they/we are presenting our findings in national and international conferences and publishing our work in at least two peer-reviewed journals. It has been a beneficial endeavor for the university, the community partners, and local Lafayette residents. More is yet to come.

REFERENCES


Figure 6. 2019 International Society for Quality-of-Life Studies 17th Annual Conference (Granada, Spain).