

Using Data & Technology to Link Boston Youth to Jobs

OLIVIA ARENA
KATHRYN L.S. PETTIT

JUNE 2018



From 2014 to 2018, the Civic Tech and Data Collaborative brought together local government officials, civic technologists, and community data organizations across seven communities to explore how to harness data and technology to benefit low-income residents. Three national organizations with local networks—Living Cities, Code for America, and the National Neighborhood Indicators Partnership—guided the initiative. To provide real-world examples and lessons for the field, local collaboratives in Boston, St. Louis, and Washington, DC, created products that use data and technology in new ways to improve services or programs in their cities.



For more information on the Civic Tech & Data Collaborative visit livingcities.org/CTDC

Summer employment encourages youth to develop workforce skills, increase postsecondary aspirations, establish new networks, and engage with their communities; these impacts were pronounced for youth of color.¹ In 2013, Boston mayor Marty Walsh announced his commitment to placing 10,000 youths in summer jobs, with a target of 3,000 through the city-run SuccessLink program.² SuccessLink provides Boston youth with summer jobs in city agencies or local nonprofits. At that time, its application and placement process was largely manual, was cumbersome for youth, and required weeks of staff time to complete.

To address these challenges, partners from across Boston along with youth representatives collaborated to redesign several key program elements of SuccessLink and develop the [Youth Jobs Platform](#). The team developed a creative algorithm for matching youth to desired jobs and a system to notify applicants of matches via email and text message. They also updated the previous application form to be mobile-friendly. The Youth Jobs Platform demonstrated that tailoring services to meet the needs of youth results in higher participation and frees up staff for program enhancements. The new system also allowed staff real-time access to program data and enabled youth to monitor their status throughout the application process.

Assembling Local Talent and Resources

The Civic Tech and Data Collaborative opportunity brought together organizations interested in using technology to improve opportunities for youth. The Metropolitan Area Planning Council (MAPC), the regional planning agency and a member of the National Neighborhood Indicators Partnership, took the lead on the Civic Tech and Data Collaborative national project proposal. The city was represented by the Division of Youth Engagement and Employment (DYEE), the agency administering the SuccessLink program, and the Department of Innovation and Technology (DoIT), a national leader in municipal use of technology. The local volunteer-led Code for America brigade, Code for Boston, also participated in the proposal, with the intent of leveraging its ability to take on civic tech projects and its access to volunteer technologists. Personal relationships facilitated the brigade's involvement. One brigade cochair was a MAPC staff member, and the other cochair was well known to MAPC staff and a staff member in the Massachusetts state government Digital Services Division.

During the initial project planning, the team overcame several hurdles. The first was rethinking the implementation plan from the proposal. SuccessLink provided a core city

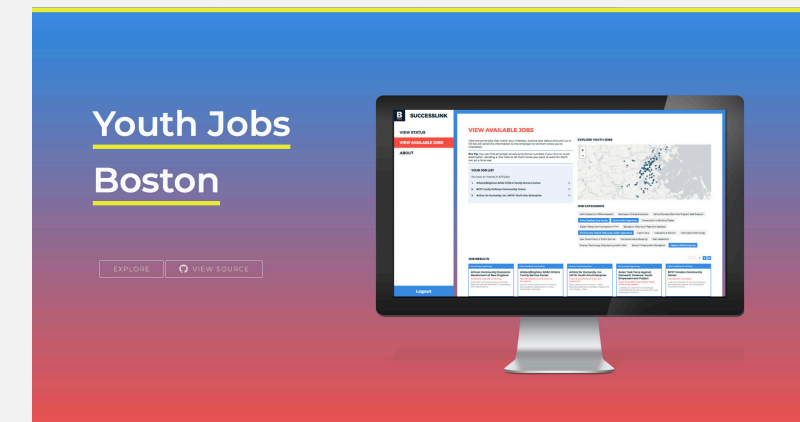
service and had a strict timetable for the call for application and job assignments. The project required intensive time with the city agency to understand the operations. Given these factors, MAPC decided to hire a full-time paid developer to be responsible for the design and coding instead of volunteers as initially planned. Code for Boston leadership still contributed significantly by offering advice on the workplan, timeline, and position description. Staff transitions and vacancies slowed the progress after the planning phase. Project managers at MAPC and DYEE left their organizations, and MAPC had difficulty attracting qualified applicants for the developer position. Ultimately, MAPC recruited project leadership from the national office of Code for America and a full-time web developer from Code for Boston.

Fulfilling the challenge from the national project to raise matching funds, the Boston team received a \$200,000 grant from the Boston office of BNY Mellon after a staff member from the bank read about the project in the Boston Globe. The project aligned with the bank's interest in workforce development and in youth employment. The project's relatively short timespan and the responsive and committed partners solidified BNY Mellon's decision to invest.

Working with Government Programs & Technology

SuccessLink's rigid program schedule guided the plans for tool development. DYEE announces its summer youth employment opportunities each spring, and youth begin applying in anticipation of a summer start date.³ Any changes to the process or systems for the 2016 season needed to be developed and tested before the spring announcement. The Boston team divided the work into two phases to introduce technology and data innovations within this timeline. The first phase focused on improving the internal workflow for DYEE staff by creating an algorithm for matching students to jobs and automating the SuccessLink process for notifying youth about job offers. After the first summer, the second phase centered on redesigning the online application interface for the 2017 season and updating the notifications to include texting.

In the first phase, the team ran into challenges related to technology and data collection. MAPC accessed data needed for the initial matching algorithm through existing city application program interfaces (APIs), but those lacked documentation. Additionally, the team had difficulty integrating the legacy government systems with new open-source technology to pilot the new matching and notification systems. MAPC's experience as a



regional planning agency providing technical assistance to the Boston metropolitan area's 101 cities and towns helped it work with city staff to find solutions to problems and bridge old and new technology.

Creating a system that relied on digital application data for the matching process revealed areas for system improvement. During testing, MAPC staff realized that the DYEE data collection system led to inaccurate or incomplete information in some fields that affected the matching process. Previously, these errors did not affect program operations because staff could manually resolve data problems.

Introducing Youth-Centered Innovations

DYEE and MAPC followed human-centered design principles in developing the Youth Jobs Platform. The team used a variety of techniques: stakeholder and user interviews with the city, youth focus groups, brainstorming, and others.⁴ Twelve youths hired through the city's Youth Jobs Platform participated in weekly meetings to help enhance the user experience. Over the course of the project, they weighed in on the development of the back-end and front-end systems.

To create an algorithm for matching youth to jobs, MAPC consulted with education experts from the Massachusetts Institute of Technology (MIT) to adapt a method designed for school choice lotteries. The university model was refined with input from youth participants. For example, some youth team members valued having a job that aligned with their interests over a job near their home. To incorporate this insight, MAPC worked with youth to develop an "interest score" to measure how well open jobs corresponded to their preferences and added a question on the application for youth to indicate whether job proximity or interest areas was more important.

MAPC staff improved other inputs to the model, including adding data on public transit travel times. They also reviewed the equity implications of the factors used in the matching process. In prior years, the process prioritized placing applicants in jobs accessible to their homes, which put those who lived in areas with few job opportunities at a disadvantage. The final algorithm took geographic equity of opportunity into account to more fairly offer all youth job opportunities.⁵

In the first phase, the team also moved from notifying participants via phone call to sending the information by email with the goal of shifting staff time to other program operations. After thorough testing, the team piloted the new algorithm and notification systems with a small subset of participants in the first year.



IMPROVING THE EXPERIENCE FOR YOUTH, END-TO-END

Designing appropriate technology for youth didn't stop with considering the preferences young people have, the team also investigated communications patterns of this particular demographic. Researching communication patterns revealed that teens primarily use text over email to communicate: in 2015, Pew reported that 55% of teens text message as a form of communication with friends every day, almost twice as much as speaking in person or by phone, and nearly 6x's as more frequently as emailing socially.

The team pivoted away from emailing youth offers toward a text-driven strategy. What we saw was outstanding: acceptance rates without human intervention shot up and the overall number of teens hired, fared well too.

MAPC used the results of the tests in the second phase of development for the 2017 program. After learning that youth were more responsive to texting than email, the team changed the communication strategy, which increased the number of fully processed applications. The second phase also included a refined algorithm and a redesigned public face of the application process, including a mobile-friendly application form. The final Youth Jobs Platform also provided stakeholders in the SuccessLink program customized views of the data they needed. Drawing from the same real-time data, DYEE could oversee the internal workflow, students could look up their application status, and employers could see candidates for their jobs.

The design improvements saved time and increased the application completion rate. Before making digital offers, staff spent, on average, 15 minutes per offer over the phone. Offering jobs to youth digitally—emailing offers and texting reminders—saved city staff approximately 95 days, or 19 work weeks, in 2017.

The completion rate for applicants entering the job placement system doubled from 30 percent in 2016 to 60 percent in 2017.

The number of youths hired increased 20%.⁶

“The algorithm refinements and a user-friendly interface for youth, job providers, and staff has proved to be a monumental shift in how we do youth employment for the city, and we are eager to continue working with the technology community to streamline current practices to reduce any barriers and elevate our work.”

– Rashad Cope, Director

Division of Youth Engagement & Employment, Boston Centers for Youth & Families at City of Boston

Plans for Sustainability

The Civic Tech and Data Collaborative funding allowed the city to partner with MAPC to develop a proof of concept for how data and technology could enhance youth services. At the completion of the project, MAPC handed off the Youth Jobs Platform to a dedicated product team to embed the product into the official DoIT portfolio. Moving forward, DYEE staff hope to consolidate the three technology systems used to manage the SuccessLink program - the Youth Jobs Platform plus two legacy systems - so all operations will use one platform. In addition, they have started conversations with groups outside of the city government that run three other summer employment programs about the possibility of creating a single entry point for youth applicants.

Both DYEE and MAPC came away from the collaboration appreciating the benefits of cross-sector collaboration. DYEE learned how using data and technology in new ways contributes to a more efficient and effective program. The new interface for DYEE managers makes data accessible to track program operations, regularly assess performance measures, and evaluate the Youth Jobs Platform’s impact on DYEE services from one summer to the next. The Civic Tech and Data Collaborative project also provided MAPC seed funding for dedicated experimentation with technology. By hiring management and a second developer, MAPC formalized a strong digital services team. This capacity will enable them to expand civic tech work in Boston and other towns in the Boston area.

Lessons Learned and Advice for Other Cities

The Boston Civic Tech and Data Collaborative experience offers lessons for other cities interested in leveraging data and technology to revamp resident service programs. Developing civic technology applications or platforms must be paired with a deep understanding of public systems. In designing for governments, partners and civic tech developers should start by working with the domain experts to understand program goals and structure. Early process mapping would help teams identify formal and informal processes and the point people who are central to key steps along the way.

Additionally, project managers should recognize that agency staff must prioritize smooth program operations and answer to many internal and external constituencies. DYEE program staff are accountable for placing thousands of youth in summer jobs within the city and at local employers. The SuccessLink program had to meet the program's employment goals while accommodating the diverse needs of city departments, local employers, and youth applicants. But even with these requirements and a compressed timeline, user-centered design principles helped the team stay focused on the youth benefiting from the program and paid off in a better product for all parties.

While external partners should adapt to government constraints, more city governments should take the risk of experimenting with technology or data improvements. Partnering with other sectors introduces new perspectives on how to improve services. The process may spark further ideas or note areas for enhancements. For example, MAPC's digital services director noted that to further bolster enrollment, the process could reduce the number of documents required before hiring youth.

The cross-sector project teams should bring in people with specialized skills to fill knowledge gaps. Rather than the stereotypical roles of coding or hosting a hackathon, Code for Boston leadership helped advise on the initial project staffing and workplan. The brigade also served as a pipeline for MAPC's recruitment of civic tech talent. Producing the algorithm for SuccessLink's matching process would have been much more difficult without the aid of MIT researchers. Cities that would like to tap this kind of expertise will need to invest time to build relationships among local governments, community data organizations, academic centers, and civic technologists.

The Boston Youth Jobs Platform brought together public, civic, and academic organizations to improve SuccessLink's data quality, streamline workflow, and help city staff adopt modern technology. As a result, more Boston youth gained experience in summer jobs, contributing to Mayor Walsh's employment goals. More broadly, the participating organizations are better equipped to envision how civic tech and data can help them tackle new challenges across sectors.

NOTES

1. Northeastern University College of Social Sciences and the Humanities, School of Public Policy and Urban Affairs, "What Are the Benefits of Summer Youth Employment Programs? Professor Modestino Answers," news release, April 6, 2017, <https://www.northeastern.edu/cssh/policyschool/2017/04/what-are-the-benefits-of-summer-youth-employment-programs-professor-modestino-answers/>.
2. City of Boston. "Youth Enrolled in Boston's Summer Jobs Program Attend Youth Enrichment Day," news release, July 6, 2017, <https://www.boston.gov/news/youth-enrolled-bostons-summer-jobs-program-attend-youth-enrichment-day>.
3. "SuccessLink Summer Jobs Program," City of Boston, last updated February 20, 2018, <https://www.boston.gov/departments/boston-centers-youth-families/successlink-summer-jobs-program>.
4. The methods come from 18F methods and human-centered design frameworks. See "Method Cards," 18F, accessed March 7, 2018, <https://methods.18f.gov/>.
5. Project Manager, Alicia Rouault writes more about the mechanics of the matching algorithm. See Alicia Rouault, "Meeting Youth Where They're At," Medium (blog), accessed April 4, 2018, <https://medium.com/@arouault/meeting-youth-where-theyre-at-7509965bad85>.
6. Rouault, "Meeting Youth."

Olivia Arena is a research assistant and Kathryn L.S. Pettit is a principal research associate in the Metropolitan Housing and Communities Policy Center at the Urban Institute. Pettit also directs the National Neighborhood Indicators Partnership.

The authors appreciate Alicia Rouault and Tim Reardon for providing information through project updates and presentations. Deron Jackson, Tierra Lyons, and Rashad Cope from the Boston Division of Youth Engagement and Employment also offered insights from local government. Leah Hendey of the Urban Institute and Elizabeth Reynoso of Living Cities offered valuable feedback on earlier drafts of the brief. An additional thanks to Crystal Li, Katie Baskett, and Megan McGlinchey for synthesizing materials from the project's two-year span, offering input on drafts, and supporting the project teams. None of this would have been possible without the support of the John D. and Catherine T. MacArthur Foundation, specifically our program officer Craig Howard, who provided encouragement along the way, and Alaina Harkness, who conceived the original idea in her previous position there.

ABOUT THE NATIONAL PARTNERS



Living Cities harnesses the collective power of 18 of the world's largest foundations and financial institutions to develop and scale new approaches for creating opportunities for low-income people, particularly people of color, and improving the cities where they live. Its investments, applied research, networks, and convenings catalyze fresh thinking and combine support for innovative, local approaches with real-time sharing of learning to accelerate adoption in more places. Additional information can be found at www.livingcities.org.



The nonprofit Urban Institute is a leading research organization dedicated to developing evidence-based insights that improve people's lives and strengthen communities. For 50 years, Urban has been the trusted source for rigorous analysis of complex social and economic issues; strategic advice to policy-makers, philanthropists, and practitioners; and new, promising ideas that expand opportunities for all. Our work inspires effective decisions that advance fairness and enhance the well-being of people and places.



Coordinated by the Urban Institute, the National Neighborhood Indicators Partnership (NNIP) consists of independent organizations in 32 cities that share mission to help community stakeholders use neighborhood data for better decisionmaking, with a focus on assisting organizations and residents in low-income communities.



Code for America is a national nonprofit that believes government can work for the people, by the people, in the 21st century. We organize a network of people who build technology to further local governments' priorities of creating healthy, prosperous, and safe communities. Our goal: government services that are simple, effective, and easy to use, for everyone.

This brief was supported by the John D. and Catherine T. MacArthur Foundation. The views expressed are those of the authors and do not necessarily represent those of the Civic Tech and Data Collaborative partner organizations or the Urban Institute, its trustees, or its funders. Funders do not determine research findings or the insights and recommendations of Urban experts. Further information on the Urban Institute's funding principles is available at urban.org/aboutus/our-funding/funding-principles.