# Community Tech for Place-Based Change

## Reactivating public space using co-created tech solutions in Brownsville, Brooklyn.


NYC Office of Technology & Innovation
NYC EDC
New York City DOT
NYC Mayor's Office of Criminal Justice
Brownsville Community Justice Center
Peoples Culture
Anyways Here's The Thing

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NYC Office of Technology & Innovation
NYC Economic Development Corporation
NYC Department of Transport
NYC Mayor's Office of Criminal Justice
Brownsville Community Justice Center
Peoples Culture
Anyways Here's The Thing

Cover Images: Peoples Culture, LLC
*Pictured: Adrian Richardson, BCJC Tech/Innovation Lab Associate and Ville-Illuminate the Block youth lead*



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# Community Tech Board Members

**Brownsville Community Technology Advisory Board**

| Name | Organization |
|---|---|
| Keith Tubbs | Assembly Member Latrice Walker |
| Anthony Collins | Bloc Bully IT Solutions/Collins Creative Consulting |
| Jimmi Brevil | Brooklyn Community Board #16 |
| Erica Mateo | Brownsville Community Justice Center |
| James Brodick | Brownsville Community Justice Center |
| Layman Lee | Brownsville Partnership |
| Mary Tobin | Brownsville Partnership |
| LaShawn Allen Muhammad | Central Brooklyn Economic Development Corporation |
| Jaydell Howard | DOHMH Neighborhood Action Center |
| Pernell S. Brice, III | Dream Big Foundation |
| Samuel Walker | Engineering for Kids |
| Clinton Dyer | Legal Hand/Brownsville Community Justice Center |
| Quardean Lewis-Allen | Made in Brownsville |
| Daren Duffie | Made in Brownsville |
| Jamar Smith | Made in Brownsville |
| Markel Jordan | Made in Brownsville |
| Nakisha Evans | Office of Workforce Partnerships at C.U.N.Y. |
| Nicholas Pilarski | Peoples Culture |
| Jesse Gericke | Pitkin Ave BID |
| Daniel Murphy | Pitkin Avenue BID |
| Mark Tanis | Pitkin Avenue BID |
| Lloyd Cambridge | Progress Playbook |
| Raul Rothblatt | Senator Jesse Hamilton |
| Jonathan Kronert | Senator Jesse Hamilton |
| Duane Kinnon | The Kinnon Group/Friends of Brownsville Parks |
| Stephany Garcia | The Knowledge House |
| Lennie Carter | TruCircle |
| Johnnymae Robinson | What About the Children |



# Challenge Winners

## Brownsville Community Justice Center

The Brownsville Community Justice Center (the Justice Center ) works to reduce crime and incarceration and increase public safety. We develop innovative, place-based strategies for community resilience building, healing, and economic vitality. The Justice Center aims to support community healing and mobility out of poverty to lead to long-term sustainable community-driven change.

## The Brownsville Partnership

The Brownsville Partnership engages residents and partner organizations from many sectors in measurably improving the health, safety, and economic prosperity of the Brownsville neighborhood of Brooklyn. The Partnership builds on Brownsville's considerable strengths to find solutions to its most pressing challenges. It is coordinated by Community Solutions, a nonprofit that works nationally to help communities end homelessness and change the conditions that make people vulnerable to future homelessness.

## Peoples Culture

Peoples Culture is an arts and placemaking collective focused on advanced XR storytelling for policy advocacy using co-creation. This work aims to re-imagine shared narratives through collaborative art-making practices, embracing technology as a way to create connections to places and people, spanning diverse contexts and topics. Peoples Culture partnered with the Brownsville community and the Brownsville Community Justice Center to establish (2015-present) the Brownsville Technology Lab/Brownsville Neighborhood Innovation Lab using technology as a tool for place-based neighborhood change.

## Anyways Here's The Thing

Anyways Here's The Thing is a Brooklyn, NY based creative technology studio with a focus on user experience and interaction design. From gestural to body movements to traditional tangible mediums, Anyways' work has utilized multiple forms of control to provide sensory experiences that span from simple LEDs to video walls to AR/VR.

# Agency Partners

## Mayor's Office of the Chief Technology Officer

Our mission is to ensure that technology is inclusive, accessible, human-centered, and works for all New Yorkers. We view technology as a critical tool for making New York City the fairest big city in America. Our work is organized around four pillars: Universal Broadband, Inclusive Innovation, Digital Services, and Emerging Tech & Society; advancing laws, rules, and plans that promote the public good and protect New Yorkers' digital rights.

| | |
|---|---|
| Oscar Romero | Director of Inclusive Innovation & International Cooperation |
| Paul Rothman | Director of Smart Cities and IoT Lab |
| Ayesha Issadeen | Senior Advisor for Multimedia Design |
| Shanna Crumley | Senior Innovation Advisor |
| Priya Shrinivasan | Director of Policy, Standards, and Legal Affairs |
| Nicole Vogt | MOCTO Fellow |
| Larisa Lustik | MOCTO Fellow |
| Eduardo Valdez | MOCTO Fellow |
| Julianna Galvão | MOCTO Fellow |
| Liliana Avila | MOCTO Fellow |
| Jessica Copi | MOCTO Fellow |
| Adriana Lasso-Harrier | MOCTO Fellow |


### Acknowledgements:

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Youssef Kalad
Lindsey-Paige McCloy
Chi Nguyen
Mark Johnson


## New York City Economic Development Corporation

New York City Economic Development Corporation is a mission-driven, non-profit organization that creates shared prosperity across New York City by strengthening neighborhoods and growing good jobs. NYCEDC works with and for communities to provide them with the resources they need to thrive, and invests in projects that increase sustainability, support job growth, develop talent, and spark innovation to strengthen the City's competitive advantage.

| | |
|---|---|
| Sander Dolder | Senior Vice President |
| Jonathan Lane | Vice President |
| Nicholas Kraus | Senior Project Manager |

## Mayor's Office of Criminal Justice

The Mayor's Office of Criminal Justice works with New Yorkers, law enforcement, the courts, other City agencies, non-profits and foundations to ensure that each part of the public safety system works well and works together so that every New Yorker is safe and treated fairly.

| | |
|---|---|
| Tamara Greenfield | Tamara Greenfield, Deputy Executive Director, Office of Neighborhood Safety |


### Acknowledgements:

Emmanuel Oni
Ifeoma Ebo


## NYC Department of Transportation

The New York City Department of Transportation's (NYC DOT) mission is to provide for the safe, efficient, and environmentally responsible movement of people and goods in the City of New York and to maintain and enhance the transportation infrastructure crucial to the economic vitality and quality of life of our primary customers, City residents.

| | |
|---|---|
| Neil Gagliardi | Director of Design Review |


### Acknowledgements:

Christina Yoo

Betsy Jacobson


## The NYC Mayor's Fund to advance New York City

The Mayor's Fund and its partners advance initiatives that improve the lives of New Yorkers from all walks of life and across all five boroughs. In particular, the Mayor's Fund has made strategic investments to promote mental health services for all New Yorkers, increase workforce development opportunities for young New Yorkers, and meet the needs of New York City's diverse immigrant community. In building partnerships, the Mayor's Fund seeks to seed promising, evidence-based models; evaluate the efficacy of new programs and policies; bring innovative solutions to scale; and respond to the emerging needs of the city.

| | |
|---|---|
| Sophie Pauze | Strategic Partnerships |
| Irfan Ahmed | Chief of Staff |

# Acronyms

| | |
|---|---|
| **BCJC** | Brownsville Community Justice Center |
| **DOT** | NYC Department of Transportation |
| **HPD** | Community-Based Organization |
| **MOCTO** | Mayor's Office of the Chief Technology Officer |
| **MOCJ** | Mayor's Office of Criminal Justice |
| **NYCHA** | New York City Housing Authority |
| **NYCEDC** | New York City Economic Development Corporation |
| **STE(A)M** | Science, Technology, Engineering, Arts, and Mathematics |
| **XR** | Extended Reality |

# Executive Summary

In Spring 2017 NYCx Co-Labs, formerly known as Neighborhood Innovation Labs, inaugurated the Brownsville Community Technology Board with the participation of 25 community members representing 18 organizations. Throughout the spring and summer the board gathered to identify community needs. After eight community workshops and three public forums, two issues were selected as the priority challenges: Waste Management and Safety at Night.

In October 2017, The NYC Department of Transportation, The NYC Mayor's Office of Criminal Justice, New York City Economic Development Corporation (NYCEDC), and NYC Mayor's Office of the Chief Technology Officer (MOCTO) launched the NYCx Co-Labs Safe and Thriving Nighttime Corridors Challenge. The team received 35 applications, including from startups in the Urban Tech NYC network, large corporations (AT&T, Intel, G&E), teams at leading academic institutions (MIT, Harvard, Columbia), and local orgs/technologists, and foreign companies.

The goal of the challenge was to address the following outcomes:

- Enhance the experience and use of public spaces at night
- Increase nighttime activity in neighborhood corridors
- Help to unlock Brownsville's nighttime activity and cultural life

The Brownsville Community Justice Center (the Justice Center) in partnership with Peoples Culture presented the project Ville-luminate the Block, and Anyways Here's the Thing presented Nightlight. Both initiatives were selected as the two winners of the competition to increase safety in public spaces at night through education, multimedia design, projection mapping, XR storytelling, pedestrian sensor technology to culturally activate the built environment through smart lighting.

In December 2019 the Justice Center installed the equipment of the two winners of the Safe and Thriving Night Time Corridors Challenge in Osborne Plaza and along Belmont Avenue in Brownsville, Brooklyn. This included a premier LM3X 3D projection mapping system installed on a light pole in Osborne Plaza and Belmont Avenue, and seven GFCI receptacles with LED light strips installed on five poles along Belmont Avenue. The Justice Center inaugurated the safe and thriving nighttime corridor pilots at their Open House. As of 2022, the projection mapping system and the light strips continue to be utilized in the Brownsville community.

## Program Outcomes

The NYCx Co-Labs open innovation challenge served as a framework to leverage public investment: $40,000 ($20,000 for each pilot) to attract private and philanthropic resources to community needs.

Thanks to a generous donation of $200,000 USD from BNY Mellon Foundation in 2018 and 2019, the partnership was able to advance the Justice Center's Young Innovator Program which included a series of events to expose youth to the tech used in the pilot and a training program tailored to the pilot for youth in the community.

The NYCx Co-Labs framework provided both a platform for community members, as well as a broad network of government agencies, which ultimately reduced risks for private investment. That generated a 5:1 ratio of private:public dollars investment in community needs.

The Brownsville Tech Lab (Tech Lab) was originally established in 2015 as a community-led project that attempts to fabricate technological innovations in design, narrative storytelling, and economic development to challenge, redefine, and document historicized community problems. Its formation was process oriented using a co-creation ethic, relying on lived experiences as a form of expertise to drive positive change.[1] Co-created by Brownsville youth, the Brownsville Community Justice Center (the Justice Center ), and Peoples Culture, the Tech Lab has produced large-scale works that aim to shape community change through interactive place-based strategies.

The Tech Lab has been further advanced through City support since 2017 as the Brownsville Neighborhood Innovation Lab (the Tech Lab/Innovation Lab). New tech education programs for Brownsville youth to focus and learn about STEM concepts are part of a new Young Innovators Program, supported through generous funds from the BNY Mellon Foundation. The Innovators Program encompasses both the **Young Innovators Series** and the **Young Innovators Academy**, two programs that engage youth and young adults in tech education rooted in neighborhood issues. The Young Innovators Series focuses on exposing youth to STEM concepts through hands-on engagement. The Young Innovators Academy focuses on career development and mentorship while also leveraging youth talent and skills to develop tech-based solutions to community challenges.

Over the course of the NYCx Co-Labs Safe and Thriving Nighttime Corridors Challenge period, the Tech Lab/Innovation Lab and the Young Innovators Program has engaged over 500 Brownsville youth in tech education, developed and piloted a 3D projection lighting installation on the Belmont Avenue Corridor and coded and programmed heat-sensored LED light strips to be installed on lamp posts to track pedestrian traffic along Belmont Avenue. This helped to maintain existing programming and projects at the Justice Center including its young women's empowerment brand through the Tech and Arts track, Neighborhood Hub space, and its interactive immersive games and education models, which ad-

[1] From the forthcoming *Reimagining Reality: A Brownsville Story: Reconstituting spatial histories through co-created, technological innovation* by Peoples Culture and the Brownsville Community Justice Center.

dresses and provides youth-led solutions for community violence.

Since the Tech Lab/Innovation Lab's original inception in 2015, youth participants presented at the MAS Arts Summit in New York City (2017), annual Stavros Niarchos Foundation International Conference on Philanthropy, Disruption Conference in Athens, Greece (2018), MIT's Collective Wisdom Symposium (2018), Immersive Media Summit at John Hopkins University (2018), Afro-Futures Festival at the Institute For the Future (2018), the Camden International Film Festival (2019), among many other Brownsville-based and the Justice Center hosted events.

In total, these efforts served the following:

- 500 youth participated in at least one workshop in community events
- 55 participants enrolled in the Young Innovators Academy program administered by the Brownsville Community Justice Center
- 90% graduation rate (50 participants completed the Young Innovators Academy)

The two pilots, Ville-luminate the Block and Nightlight, have demonstrated to be useful as education tools allowing youth to learn valuable skills on coding, filmmaking, video and sound editing, 3D modeling, and basic circuit design. Both the 3D projection mapping system and the LED lights allow youth to interact with the urban space, and take ownership of public spaces as they learn.

Throughout the course of the pilot and continuing through today, the Ville-Luminate the Block 3D projection mapping system runs on an automated system and can be regularly updated in response to community desired projection needs. When running at night, there has been increased nighttime activity in Osborn Plaza and along Belmont Avenue. The Nightlight installation has been assessing the usage of the sidewalks along Belmont Avenue through motion activated sensors, which are triggered by activity and its data stored in the cloud.

PHOTOS // PEOPLES CULTURE, LLC

Top: Brownsville Tech Lab/Innovation Lab associates building computers for the Lab space (2015);

Bottom: The BCJC and Peoples Culture team (left-right: Jasmine Bowie, Sarah Bassett, Nicholas Pilarski, Ray Graham, Adrian Richardson) speaking at MIT's Collective Wisdom Symposium (2018)

PHOTO (OPPOSITE) // PEOPLES CULTURE, LLC

Community showing of the Brownsville Tech/Innovation Lab and Peoples Culture "Fireflies: A Brownsville Story" VR game (2017)

# Summary of Recommendations:

# Community Tech for Place-Based Change in Brownsville

| Recommendation | Rationale | Initiatives | Anticipated Outcomes | Responsibility |
|---|---|---|---|---|
| **Technology Equity:** Address Engagement Gaps with the City | | | | |
| **Reframe Authorship of the Smart City.** Democratize technology for community-led authorship of smart city investments. | Utilize the creativity and skill of Brownsville youth to inform planning decisions. The focus should be on reframing investment in the "smart city" where individuals from the neighborhood are the authors of shaping their community, not embedded algorithms determining what the community should be. This serves to transition away from the historic implications of top-down decision-making in Brownsville and elsewhere to foster community-driven change. | Establish "Young Innovators NYCx City Liaison Group" sponsored by MOCTO, composed of Young Innovators Academy graduates, who participate in City government planning processes for their neighborhood. | New York City led innovations in planning frameworks and alignment with OneNYC 2050 goals that prioritize co-created practices and technology-community frameworks; Alignment with OneNYC 2050 goals to provide equity in job training and workforce development pipelines, including for STEM related fields for Brownsville youth as a way to overcome issues of neighborhood safety; Establishment of community-invested economic development. | City Council, Mayor, CTO |
| **Prioritize and Promote the Citizen-Designer.** Identify opportunities to replicate the Brownsville Tech Lab/Innovation Lab foundations from Brownsville in other neighborhoods across New York City to build a generation of citizen-designers. | Promote Brownsville's community held intellectual understanding and work focused on using interactive technology and computational media to inform placemaking strategies and community-led economic development. | Develop long-term planning and funding frameworks that scale to the existing Young Innovators Academy. Funds should specifically be made available to other neighborhoods to hire youth as ambassadors to train, share experiences, and provide support for other place-based technology programs. | Alignment with OneNYC 2050 goals to provide equity in job training and workforce development pipelines for tech-involved Brownsville youth as a way to overcome issues of neighborhood safety; Promotion of Brownsville youth as emerging New York City leaders and technology-community advocates; Replicable City-sponsored program for youth innovation and economic development. | CTO, City Council, Mayor |

| Recommendation | Rationale | Initiatives | Anticipated Outcomes | Responsibility |
|---|---|---|---|---|
| **Provide Equity-Based Marketing for Public Tech Infrastructure.** Address perceptions of surveillance through co-creation practices and city-wide guidance. | Address perceptions of surveillance through co-creation practices. Many communities are by-standers to new tech innovation being installed in their neighborhood. Engaging community creators, stakeholders, and leadership in directing the purpose of the equipment being installed can save long term costs from tampering and opposition This is essential for communities -such as Brownsville - who associate some physical forms of technology with a history of being surveilled. | Create a guidebook for sharing technology in the public realm. This should outline best practices for sharing and installing physical technology in a community. The guidebook should include marketing, branding, communication, and lessons learned (both community and agency/organization). The intended audience should be planners, engineers, politicians, artists, organizations, and communities. | Increased awareness City-wide of tech-surveillance perception and methods to address these concerns; Improvement in buy-in and trust between community and City-sponsored tech programs. | CTO, City Council, Mayor, Community Organizations |
| **Data Protection:** Build a Foundation of Trust | | | | |
| Protect Community Data as a Counter-Surveillance Act. Historic and systemic surveillance of vulnerable communities with high-crime rates, such as Brownsville, should have greater protections in smart city data collection. | Encourage inclusion of community members in defining where data collection and distribution is useful for community needs in sponsored projects and/or neighborhood policing informed by smart city technology. By community members selecting which aspects of data are “open” in smart city data collection we reduce risks of creating a culture of surveillance. | All protocols and data collection instruments for projects where a unique identity is generated, community members must voluntarily enroll in a method deemed appropriate by the IRB.<br>Data collected from projects will remain anonymous when at all possible; however, if any unique identifying data is collected these data sets will be de-identified so they are confidential and stored separately from any identifying information.<br>Data shared with researchers, the state, and participating community members/organizations will be de-identified, aggregated, and shared without identifying information.<br>Any data collected of youth will come in compliance with the Children’s Internet Protection Act (2011) and will include parental/ guardian consent forms. | There is an abundance of studies that show perceptions of increased digital surveillance leads to civic distrust. Additionally, as cities become “smart” digital and physical surveillance interfaces will inevitably overlap. By de-identified data generated by community-supported content (or following appropriate guidelines when data collection is deemed mutually beneficial between individuals and broader systems) foundational trust is created between communities and city-sponsored technology initiatives. Alignment with NYC Mayor’s Action Plan for Neighborhood Safety. | City Council, Mayor |

| Recommendation | Rationale | Initiatives | Anticipated Outcomes | Responsibility |
|---|---|---|---|---|
| **Policy Innovation:** Update Existing Policy to Reflect Tech Innovation | | | | |
| **Redefine Public Art to Support Tech Innovation.** Expand the definition of public art in New York City to incorporate the changing landscape and use of technology to symbolize culture, community, and innovation. | To keep pace with shifts in technology, incorporate new forms of public art including 2D, 3D, XR projections and innovations in lighting design. Considerations such as use of words and safety across roadways are to be incorporated into final recommendations. | Update New York City code interpretation to allow for projection/projection mapping and/or innovative lighting to serve as a form of public art. | New York City as a leader in incorporating technology and its innovations into regulatory frameworks (e.g., code updates); Allowable accesses | City Council, Mayor, City agencies (TBD) |
| **Co-Create Innovations in Governance.** Work in partnership with City agencies to build coalitions that support innovation and change. | In response to changing needs of communities, public art, and technology, work with City agencies to expand what is possible in order to create and implement innovative projects, tailored to community needs. | Build a coalition of change makers between City agencies, community members, advocates, and other leaders/supporters that push for innovation in governance processes with specific focus on including flexible permitting processes and allowable permits for community-tailored projects.<br>Create an interagency working group, inclusive of ConEd, DOITT and other relevant franchisees and utilities,to discuss demands of technological innovations and formulate strategies and tactics and government procedures and processes that can affect necessary changes/updates and upgrades | New York City as a leader in incorporating technology and its innovations into governance processes; Leadership in permitting; Alignment with OneNYC 2050 goals to create design solutions for public safety through neighborhood activation | City Council, Mayor, City agencies (CTO, DOITT, DOT, DDC, EDC, PDC) |

| Recommendation | Rationale | Initiatives | Anticipated Outcomes | Responsibility |
|---|---|---|---|---|
| **Funding and Maintenance Revision:** Build Budgets and Maintenance Plans in Response to Community Need | | | | |
| **Embed Iterative Frameworks in Funding Programs.** Support the practice of co-creation within the City's development, funding, and planning practices. | Match the temporal nature of co-created project development in response to complex politics, social dynamics, and spatial justice barriers often omnipresent within community development. Funding technological innovations should respond to industry standard costs in order to be competitive and prevent embedded inequalities in access to equipment and barriers to planning processes. | Increase available project funds and timelines for completion of city-sponsored projects to support and respond to the iterative nature of co-authored projects, context-specific needs, and cost of innovative tech solutions. | City leadership in best practices that support and invest in co-creation; Alignment with OneNYC 2050 goals to create design solutions for public safety through neighborhood activation; Stability and continuity in community-focused economic development for long-term success. | City Council, Mayor, City agencies (TBD) |
| **Provide Operation and Maintenance to Reinforce Program Longevity.** Enhance the long-term success of innovation through operation and maintenance support funds. | Technological innovation in physical space - such as use of a 3D projection mapping system and lighting or extend reality (XR) technology - requires not only start-up funds, but monies specific to operation and maintenance. This allows for continuity between start-up costs and long-term implementation success. | A post-pilot continuity fund and series of support opportunities (i.e., access to City agency support) should be included as part of each pilot program or City-sponsored community project. | Return on City investments are bolstered; Encourages community buy-in as a result of longer-term City support. | Mayor, City agencies (TBD) |

# Introduction

The NYCx Co-Labs: Safe & Thriving Nighttime Corridors Challenge emerged from a participatory design process led by the Brownsville Community Technology Board, which included 25 community members from 18 local organizations in Brownsville. After eight community workshops and three public forums held throughout the spring and summer of 2017,  the issue of safety at night was identified as a top community priority.

As a result, The NYC Mayor's Office of the Chief Technology Officer, The NYC Economic Development Corporation, The NYC Mayor's Office of Criminal Justice and the NYC Department of Transportation partnered to launch the following challenge:

**How might we encourage more people to enjoy, navigate, and use Brownsville's public spaces at night?**

The workshops and participatory sessions revealed the Brownsville community's preoccupation with safety. A 2016 community survey, designed and conducted by the Brownsville Community Justice Center (the Justice Center), The Youth Design Center (formerly known as Made in Brownsville), and NYC Small Business Services found that having more people navigating, enjoying, and activating Brownsville's public spaces after 7pm was perceived to have an impact in reducing crime, reducing the need for enforcement actions, and accelerating commercial and cultural opportunities in Brownsville.

According to the same survey, 45 percent of people reported feeling "not very safe" or "not at all safe" during nighttime hours on one of the neighborhood's three main commercial corridors, Belmont Avenue and its adjoining Osborne Plaza.

Brownsville residents reported a few factors that influence their lack of nighttime space usage:

- Businesses and restaurants mostly close around 7pm.
- Few options exist for cultural or community activities at night.
- Many corridors feel unsafe due to emptiness, light levels, and crime.
- Historic perceptions of safety along Belmont Avenue.

Businesses also face constraints when choosing when to be open. Some would like to stay open later, but there often are not enough customers to make staying open later worthwhile.

Smart city approaches, such as interactive streetscape amenities, responsive services, and creative use of infrastructure to provide additional services, present opportunities to use technology to help increase the perception in Brownsville's commercial corridors at night. Important to the Brownsville community through this process was to make sure the community designs and owns local smart city approaches to circumvent top-down planning historically common in the neighborhood.

In October 2017, after launching the NYCx Co-Labs Safe and Thriving Nighttime Corridors Challenge in conjunction with the NYC Department of Transportation, The NYC Mayor's Office of Criminal Justice, New York City Economic Development Corporation (NYCEDC), NYC Mayor's Office of the Chief Technology Officer (MOCTO) selected two challenge winners: Ville-luminate the Block by Brownsville Community Justice Center and Peoples Culture and Nightlight by Anyways Here's The Thing. Both projects used a creative approach to placemaking, lighting, and multimedia storytelling to propel nighttime activation and safe nighttime use of outdoor spaces.

> **Residents need to be centered as the experts on their own neighborhoods to creatively lead designs and activation of public space. Brightening up neighborhoods with creative lighting and community programming addresses a critical programming gap that leaves many communities with dark empty streets, locked parks, and high crime rates at night.**
>
> Tamara Greenfield, Deputy Executive Director, Office of Neighborhood Safety

## The City's vision on safety at night in public spaces

At the neighborhood-level, this challenge welcomed proposals for tools and approaches that support our partners in Brownsville as they work toward their goal of zero assaults, zero arrests, zero crashes and zero vacancies. By increasing safe nighttime activity in Brownsville, the hope was to support the economy of the neighborhood by providing better economic conditions for entrepreneurs and small businesses, helping to create jobs in the community.

This challenge also supported several of the goals and objectives laid out by the City's OneNYC 2050 Plan. In this Plan, the city names access to recreational space--particularly for youth--as a top priority for supporting thriving NYC neighborhoods. Shared cultural spaces, such as parks, libraries, art venues, and plazas "enrich neighborhood life," and foment "civic engagement, interaction with neighbors, economic development, and community revitalization." (OneNYC 2050) Activation of spaces that prioritize pedestrian safety and use are of particular importance.

OneNYC 2050 also advocates for the inclusion of community members in neighborhood policing. The Plan maintains that "[r]ates of violence are lower in urban neighborhoods with high collective efficacy" and that access to safe public spaces that promote mingling and celebration is an essential component of neighborhood safety. The Plan calls for the creation of design solutions for public safety through neighborhood activation, which this pilot falls under.

Finally, this pilot furthers OneNYC 2050's goals for health equity. In the Plan, social determinants of health such as education, income inequality, and neighborhood safety are named as factors that impact health equity for New Yorkers. The Safe and Thriving Nighttime Corridors pilot tackled issues of equity in job training and education for Brownsville youth as a way to overcome issues of neighborhood safety.

## Community Overview

Brownsville is a neighborhood of approximately 116,334[2] people located in 1.9 square miles in the eastern portion of Brooklyn. Brownsville is a deeply entrepreneurial community with many vibrant civic, social, and community organizations. Despite this, residents continue to recover from decades of planned disinvestment and government-sanctioned segregation along racial and economic lines, facing significant challenges in nearly every domain of well-being. Many households are economically insecure, health and education outcomes are poor relative to the rest of New York City and Brooklyn, and housing quality and conditions in the community are often not conducive for healthy development. Some Brownsville residents suffer from cycles of violence and trauma and many struggle to find work. Nearly 21,000 of Brownsville residents live in public housing, the highest concentration in the United States. Brownsville is the second poorest neighborhood in Brooklyn and the eighth poorest in NYC with 28.2 percent of its residents living below the national poverty level, 16 percent unemployed, and 56 percent suffering from rent burden, based on the Poverty Rate Index from NYC Opportunity.[3,4]

[2] Brownsville-Ocean Hill PUMA (2019); US Census

[3] "New York City Government Measure 2005-2016: An Annual Report from the Office of the Mayor." https://www1.nyc.gov/assets/opportunity/pdf/18_poverty_measure_report.pdf. Accessed March 12, 2019.

[4] King L, Hinterland K, Dragan KL, Driver CR, Harris TG, Gwynn RC, Linos N, Barbot O, Bassett MT. Community Health Profiles 2015, Brooklyn Community District 16: Brownsville; 2015; 40(59):1-16.

While the Brownsville neighborhood is focused on redefining traditional stereotypes of violence and poverty, understanding the community by the numbers[5] is important as a foundation to recognizing the dedication and long-term effort of to place-based investments.

- Of the total population, 71.4 percent were Black, 22.5 percent were Hispanic,and 3.15 percent were White.[6]
- The median age was 25.2 of native-born residents and 31.6 of all residents living in the neighborhood.
- The median household income was $28,315, significantly below the New York City median of more than $60,000 and the national average of more than $55,000.
- Nearly 34.1 percent[7] of Brownsville's residents live below the federal poverty line, including over 14,000 people who lived in deep poverty. The national average is 14 percent.
- Over a quarter of residents age 25 and older lacked a high school diploma and another 37 percent had only a high school diploma.
- More than one-third, 36 percent, of all households in Brownsville were families living in NYCHA developments, representing over half, 52 percent, of all families in Brownsville.
- The Brownsville-Ocean Hill community district had the third highest number of families entering homeless shelters in Brooklyn.
- The incarceration rate for adults, 16 years and older,in Brownsville-Ocean Hill was 348 incarcerations per 100,000 adult residents.
- Youth detention admissions from Brownsville-OceanHill represented 15 percent of Brooklyn youth detentions (161 out of 1,041), despite representing less than 5 percent of the borough's child population.
- The average life expectancy was 74 years old, the lowest in New York City.
- The infant mortality rate was significantly higher in Brownsville at a rate of 6.1 deaths per 1,000 babies born, higher than Brooklyn.

[5] Data from Center for Court Innovation (2015), the Citizens' Committee for Children, Brownsville Community Asset Mapping (2017), and the United States Census, American Community Survey data (2016-2017).

[6] Brownsville-Ocean Hill PUMA (2019); US Census.

[7] According to the 2019 poverty rate for Brownsville-Ocean Hill PUMA (US Census and Data USA, 2019); A 2.25 percent decrease over two years.

## Brownsville's Tech Solutions for Place-Based Change

The Brownsville Tech Lab (Tech Lab) was originally established in 2015 as a community-led project that attempts to fabricate technological innovations in design, narrative storytelling, and economic development to challenge, redefine, and document historicized community problems. Its formation was process oriented, using a co-creation ethic and relying on lived experiences as a form of expertise to drive positive change.[8] Co-created by Brownsville youth, the Brownsville Community Justice Center (the Justice Center), and Peoples Culture, the Tech Lab has produced large-scale works that aim to shape community change through interactive place-based strategies using emerging technology.


PHOTO // PEOPLES CULTURE, LLC

Brownsville Tech/Innovation Lab associates showcasing the launch of the "BCJC Live" AR app (2016)

[8] From the forthcoming *Reimagining Reality: A Brownsville Story: Reconstituting spatial histories through co-created, technological innovation* by Peoples Culture and the Brownsville Community Justice Center.



The Tech Lab has been further advanced through City support since 2017 as the Brownsville Neighborhood Innovation Lab (the Tech Lab/Innovation Lab). New tech education programs for Brownsville youth to focus and learn about STEM concepts are part of a new Young Innovators Program, supported through generous funds from the BNY Mellon Foundation.

The NYCx Co-Labs: Safe & Thriving Nighttime Corridors Challenge (Nighttime Challenge) in 2017 further advanced tech solutions for place-based change by supporting the Young Innovators Program to engage over 500 Brownsville youth in tech education. In addition to the coding and programming skills youth learned through the Nighttime Challenge, Ville-Luminate (see Case Study 1, following) and Nightlight (see Case Study 2, following), some of the Justice Center's existing programming and projects were able to be maintained. This included its young women's empowerment brand through the Tech and Arts track, Neighborhood Hub space, and its interactive immersive games and education models, which addresses and provides youth-led solutions for community violence.

PHOTO // PEOPLES CULTURE, LLC

Left-Right: Tech/Innovation Lab associates Candace Richards, Ray Graham, and Adrian Richardson presenting at the Stavros Niarchos Foundation International Conference on Philanthropy, Disruption Conference in Athens, Greece (2018)

These investments have collectively allowed youth to benefit from tech partnerships, build visibility of community innovation, and bring new community-led investments to Brownsville.

Since the Tech Lab's original inception in 2015, youth participants have presented their work at the MAS Arts Summit in New York City (2017), Stavros Niarchos Foundation International Conference on Philanthropy, Disruption Conference in Athens, Greece (2018), MIT's Collective Wisdom Co-Creation Symposium (2018), Immersive Media Summit Conference at John Hopkins University (2018), AfroFutures Festival at the Institute For the Future (2018), the Camden International Film Festival (2019), among many Brownsville-based and Justice Center-hosted events.

### Programs of Significance: Tech Programs Supporting Neighborhood-led Investment

#### Young Innovators Program (ongoing)

The Young Innovators Program encompasses both the Young Innovators Series (the Series) and the Young Innovators Academy (the Academy), two programs that engage youth and young adults in tech education rooted in neighborhood issues. The Series focuses on exposing youth to STEM concepts through hands-on engagement. This includes interactive activities, demonstrations, and experiments at community events throughout Brownsville, ranging from drop-in workshops,

demos, and access to makerspace. The Series has attracted more than 500 middle school youth through two large-scale community events since 2018. The Academy focuses on career development and mentorship while also leveraging youth talent and skills to develop tech-based solutions to community challenges. This programming has played an integral role in the Justice Center's placemaking and neighborhood planning projects, which supports community healing by forging strong connections between individuals and their environments and capitalizing on existing resources to create public spaces that foster community well-being. The program connects to the activities and technologies of the Young Innovators Series programming in Brownsville, while also expanding opportunities to solve neighborhood issues through youth-driven tech solutions. The Academy is an intensive sixteen-week skill development and professional training program that uses project-based learning to teach the foundations of product design and application development.

### Neighborhood Hub (ongoing)

In November 2018, the Justice Center accomplished its longstanding goal of opening a Neighborhood Hub (Hub) on Belmont Avenue to support community healing and mobility out of poverty. The Hub space, informed by the vision and research of Young Innovators alumni, was built as a co-working space to facilitate opportunities for youth who are receiving training in the Tech Lab and entrepreneurship programs. This allows them to apply their technology and coding skills to support local businesses and social ventures in Brownsville. The Hub also serves as a networking space for individuals interested in collaborating in projects as they relate to technology. To support this work, the Hub offers free training in application development, website, and graphic design, as well as open access to hardware and software. As a makerspace, the Justice Center has partnered with The Youth Design Center (formerly known as Made in Brownsville). As a retail space, the Hub allows youth entrepreneurs to gain hands-on business operation experience while offering a prime storefront location on Belmont Avenue to showcase their works.

### Sisterhood Summit Symposium (ongoing)

The Sisterhood Summit Symposium is a day-long forum, aimed at connecting Brownsville girls to women of color influencers, trailblazer's, entrepreneurs, political figures and activist across the nation, in an effort to increase participants' access to representation of women in industries where they are traditionally under-represented, as well as to combat the isolation young women in Brownsville face. Participants focused on their intersection of racial and gender identity, self-esteem, holistic wellness and financial capacity building. During the empowerment symposium, four members of the Young Innovators Program developed and facilitated two youth-led conversations on technology and social media. Participants shared the work they have accomplished through the SAFElab program and discussed ways in which tech innovation can be used to problem solve issues impacting community violence. There were 69 people in attendance.


PHOTO // PEOPLES CULTURE, LLC

Nicholas Pilarski (Peoples Culture) and Jon Bryant (BCJC Tech/Innovation Lab Associate) exhibiting the "BCJC Live" app at NYC MAS Arts (2017)

PHOTOS (OPPOSITE) // PEOPLES CULTURE, LLC

Production of the Brownsville Tech/Innovation Lab and Peoples Culture "Fireflies: A Brownsville Story" VR immersive game (2015-ongoing)

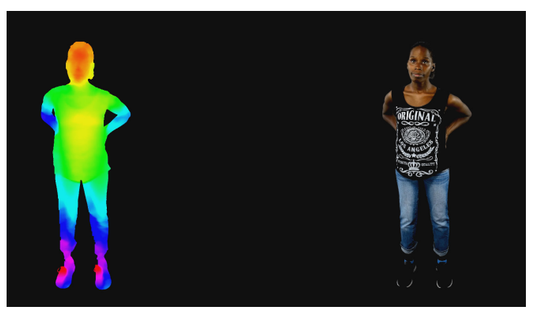


### Be on Belmont (ongoing)

Be On Belmont is part of the Belmont Revitalization Project and the Justice Center's efforts to restore a crime-ridden retail corridor into a striving business district that promotes positive pedestrian activity and strong community. It is a Multi-Block Street festival that promotes the use of streets as public space as well as a way to increase positive pro-social activity and pedestrian foot traffic to the Belmont business corridor. The annual event aims to push innovation through highlighting Brownsville's community-led arts, performances, and music. Youth have displayed VR games, AR apps, new pedestrian traffic tracking techniques, indoor peacemaking methods, transformative justice practices to transform public spaces marked by trauma, and connected local entrepreneurs and artists to economic education/activity. The Ville-Luminate the Block and Nightlight projects were launched during the Be On Belmont event in 2019 in partnership with the Department of Transportation, Mayor's Office of Criminal Justice and The Mayor's office of the Chief Technology Officer.

### B LIVE (ongoing)

B LIVE Music + Arts Festival engages youth ages 13-24 in an intensive seven-week social enterprise training that creates viable economic opportunities for youth who are interested in technology, entrepreneurship, and the arts, but who have historically been marginalized from opportunities in these sectors. Key concepts include political education, youth organizing, and community planning, while working in areas including arts entrepreneurship; DJ'ing and music production; virtual and augmented technology; and event planning and marketing. The festival's success has shown that B Live not only serves as a vehicle for economic empowerment, but also as a catalyst for re-imagining interactions with community spaces that are associated with narratives of trauma, violence, and disinvestment.




## Projects of Significance:
## Immersive Media and Tech Entrepreneurship Influencing Place-based Change

### Fireflies: A Brownsville Story VR Docu-Game (2015-ongoing)

To address the intensity of community violence, the Fireflies, A Brownsville Story (Fireflies) is a co-created "docu-game," where residents navigate Brownsville in a way that combines traditional ethnography with cutting-edge immersive technology. The goal is to foster understand-

ing and connection between youth fragmented by real-world conflict, allowing for community members to engage in dialogue to identify shared dreams and goals for the community. Considered one of the largest interactive, oral histories of its kind, Fireflies was (and is) developed by more than fifty Brownsville youth and over one hundred community members who built computers, programmed the game design, captured community interviews through 3D volumetric video, authored the game script, and music design. Key partnerships established with premier tech companies include Unity, Scatter (DepthKit), and Mantel.

### Shero Brunch (ongoing)

The Shero Brunch is an annual women's empowerment event that celebrates the young women of the Young Innovators Program and honors the phenomenal women in the community who have made an impact on participants' lives and in the larger Brownsville community. Participants were able to share the projects they worked on throughout the program cycle including their empowerment brand. Over the course of 8-months, participants engaged in youth-led technology (Tech Lab) and music production (Girls Who Spin DJ Collective) programs.

### Self-Care Social (ongoing)

The Self Care Social is an empowerment mixer aimed at cultivating a safe space for girls to explore the intersections of their identities, forge life-long bonds with other girls from their community, while introducing practical approaches to self-care through interactive activities and workshops. The Self Care Social is the ultimate cultural celebration of sisterhood and radical self-love. Participants were provided with tools and resources to cultivate self-care in their personal lives, as well as create a shared vision on ways they as young women can maintain their physical and emotional well-being beyond our safe space. There were 98 people in attendance.

### Quality of Public Life on Belmont Ave (2018)

The Justice Center  partnered with the Gehl Institute to gather baseline data on the quality of public life on Belmont Avenue. Youth participants and staff members engaged in an intensive training  with the Gehl Institute in this process, utilizing several measurement tools to gauge pedestrian traffic on the corridor, consulting ethnographic studies surrounding how residents utilize public space, as well as conducting community surveys to gauge residents' perceptions of the Belmont corridor. This data will be used to measure the impact of the Ville-Luminate Lighting Project on increasing positive pedestrian traffic and enticing businesses to stay open later.

### SAFELab (2017)

Youth in the Young Innovators Program partnered with SAFElab, a tech incubator housed at Columbia University that focuses on leveraging technology and social media to reduce youth violence. SAFElab  recognizes youth as community experts and collaborates with them to develop technology tools that focus on youth experiences with social media. The Young  Innovators supported the development of interactive digital games, apps, and immersive  learning modules based on youth expertise, creativity, and inspiration. SAFElab partners with ICE Lab and Teaching Systems Lab at MIT on this project. SAFElab is facilitating  weekly workshops for 10 participants, giving them the opportunity to gain tech skills such as game design, content development, storyboarding, research, social media use,  privacy, and computer programming. In May, participants' work was featured in the A&E documentary Secret Life of a Gang Girl: Untold Story. Through the Justice Center's work with SAFElab, there is opportunity for continued partnerships to build pipelines for program graduates to pursue further education at Columbia University.

### BCJC Live AR App (2016-2017)

Creating "Brownsville owned stores in digital space," youth looked for ways to open storefronts along Belmont Avenue after being denied business loan applications. The BCJC Live app was created to act as a virtual prototype for local development and entrepreneurship in under-utilized public areas and business corridors. The app, ideas, implementation, and works featured galleries co-created by and for youth who have been historically left out of discourses around development, economics, and technology. Available on both IOS and Android, markers are posted on vacant or boarded-up storefronts along Belmont Avenue. The application reads these markers, opening up a seller's virtual shop where patrons are able to purchase merchandise through the app directly. This forces users to be aware of the "possibilities of space" by making them go to the geolocations versus a truly virtual store. Additionally, by virtualizing storefronts, local business owners from the community who lack access to capital are able to launch local businesses and reduce barriers to entry for community-led economic development. The BCJC Live AR App premiered in 2017 at a B Live event and was also showcased at the MAS Arts Summit in New York City.



PHOTOS // PEOPLES CULTURE, LLC

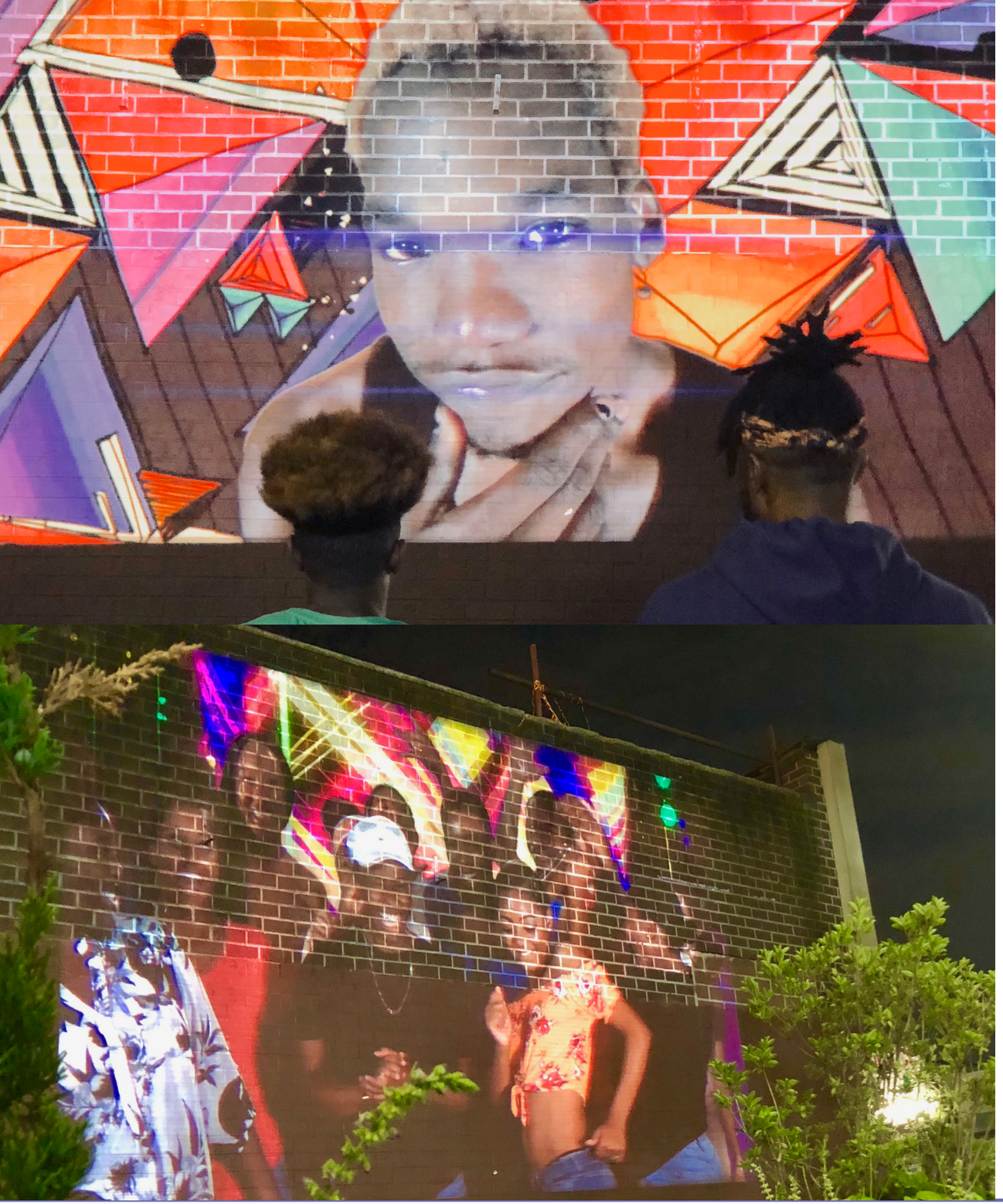
The Brownsville Tech/Innovation Lab and Peoples Culture "BCJC Live" app (2017)

### Solar-powered smart waste and recycling system (2016-2017)

To improve the quality, usefulness and cleanliness of Osborn Plaza for the general public, waste collection and recycling had to be considered along with the aesthetics of the plaza. To help conceal, contain, and reduce the impact of the waste, solar-powered smart waste compactors and recycling bins were installed. The bins themselves are wrapped with Justice Center information, with the colors and font to match other plaza furniture which helps blend the waste collection in with the rest of the plaza. The solar-power helps power two additional features. First, it runs a compactor which allows for the bin to hold a high capacity of waste before it needs to be maintained. This is perfect for long weekends when maintenance is not always available, and for large events so that the bins do not need to be emptied during a function which are both important to the success of events and programming of the plaza. Secondly the solar-power connects the bins to the cloud where it can communicate with maintenance on when it is full. This helps reduce the need for daily maintenance and allows them to concentrate on other projects, and respond as needed.

CASE STUDY 1

# Ville-Illuminate the Block



**“We’re here, and we’re not going anywhere. People see me as a stereotype they want to change, but I have thoughts and feelings, I have a light that I think no one sees.”**

Adrian Richardson, a Brownsville resident and Tech Lab/Innovation Lab participant discussing the process of making Ville-Luminate the Block, 2018.

In collaboration with The Mayor’s Office of the Chief Technology Officer (MOCTO), NYC Mayor’s Office of Criminal Justice (MOCJ), New York City Economic Development Corporation and the Department of Transportation (DOT), the city launched the NYCx Co-Lab Challenge to seek creative technology solutions for the neighborhood of Brownsville. Proposals were reviewed based on their ability to enhance the experience and use of public spaces at night, increase nighttime activity in neighborhood corridors, and help unlock Brownsville’s nighttime activity and cultural life. Ville-luminate the Block is a collaboration between the Brownsville Partnership, the Brownsville Community Justice Center, and Peoples Culture. NYCx Co-Labs sponsored and supported these partnerships to implement the Ville-luminate the Block project.

The pilot centered local youth in the design and installation of premier LM3X 3D projection mapping system to showcase community-created art, computational design, and multimedia projects. The project utilizes MadMapper, Isadora, Unity 3d and custom software to create 3D projection mapping and interactive projection to light the Osborn Plaza and the Justice Center building along Belmont Avenue. Participants have worked to address the lack of lighting in the corridor in the hopes of increasing positive pedestrian traffic and entice businesses to stay open later for greater economic impact.

In addition to training the youth to use the relevant technology, they were also trained in design and storytelling methods to share their stories and experiences through computational design and worldbuilding. This multifaceted creative and technological solution aimed to enhance the experience and use of public space at night. It also aspired to increase nighttime activity, increase perceptions of public safety, and reinforce the positive momentum of changemakers and creatives in the community to animate Belmont into a hub for thriving businesses and cultural activity. The projections are easily adaptable to serve the corridor’s needs: they could be used to highlight a local businesses or community event, as well as to showcase community-created art and digital design projects.

PHOTOS (OPPOSITE) // PEOPLES CULTURE, LLC

The Brownsville Tech/Innovation Lab and Peoples Culture “Ville-Luminate the Block” NYCx Co-Lab Challenge initial pilot (2018)

## Pilot Theory of Change

Osborne Street Plaza, known today as a community public space where residents gather and organize, has been known in its past as a place of trauma and historic issues around safety. Perpendicular to Belmont Avenue, the Plaza is adjacent to the Justice Center and has been fitted with seating areas, lighting, trash receptacles, and a mural designed and painted by Brownsville youth. In an ongoing effort to activate the space and highlight activity along Belmont Avenue, the Safe & Thriving Nighttime Corridors Challenge was a response to the community’s call to action.

Conceptually, Ville-Luminate the Block project represents the idea that the “light in Brownsville” has never truly gone out, developing a form of public art that represents the artistic brilliance and dreams of the Brownsville community.

The pilot was implemented in collaboration with the Justice Center's youth-led technology and place-based initiatives. Youth interns identified and developed content for the projection mapping, designed the concept of the 3D projected art, installed the 3D projection mapping system on the Osborn Street Plaza, and developed processes for community involvement and space activation. Over a period from June 2018-December 2019, youth conducted research, engaged the community, and gathered resident feedback, designed and adjusted the project model, and implemented the project.

Tech Lab/Innovation Lab participants designed and installed a festoon light installation and 3D projection system over the Osborn Street Plaza, and corresponding light installations on participating storefronts on the Belmont Corridor. Working with Sarah Bassett and Nicholas Pilarski of Peoples Culture, who provided artistic direction and technical training, Brownsville youth designed an installation responsive to sensor-monitored pedestrian traffic, and custom designed artwork. The festoon lighting system was programmed to change colors and patterns, forming a visual beacon that could be seen from above by residents living in adjacent developments and pedestrians along Belmont – attracting activity and encouraging socialization in the plaza. Additionally, the 3D projection system provided increased lighting on the Belmont Corridor, showcased youth and community design, and activated the space with interactive features. When an individual walked within a certain proximity to the projection, or when a certain number of individuals entered the plaza, it would shift brightness, color, or images. The projections were easily adaptable to serve the corridor's needs – showcasing community created art and digital design projects. As of 2022, they continue to activate Osborne Street Plaza and Belmont Avenue.

**Villuminate the Block "project[s] the dreams of what the space can be onto the plaza itself."**

Destinee Rowe, a Brownsville resident and Tech Lab/Innovation Lab associate discussing the process of making Ville-Luminate the Block, 2018.

## Pilot Timeline

| | |
|---|---|
| **Community Identifies Safety as Focus Area** | 2016-2017 |
| **Safe & Thriving Nighttime Corridors Challenge Awarded** | Winter 2018 |
| **Projection Content Development with Youth & Tech Training; Coordination with City Agencies** | Spring-Summer 2018 |
| **Ville-Luminate the Block Pilot Installation** | August 2018 |
| **Projection Content Development with Youth & Tech Training; Coordination with City Agencies** | 2018-2019 |
| **Ville-Luminate the Block Installation** | December 2019 |
| **Operation and Ongoing Installation** | 2019-Present |



## About Pilot Winners

### The Brownsville Community Justice Center (Justice Center)

The Justice Center, an initiative of the Center for Court Innovation, was founded as a public/private partnership between the NYS Unified Court System and the Fund for the City of New York. The Center creates operating programs to test new ideas and solve problems, performs original research to determine what works, and provides expert assistance to justice reformers around the world.

The Justice Center is a multi-faceted initiative that seeks to prevent crime by investing in local youth and improving the physical landscape of the neighborhood. The Justice Center also seeks to forge better responses after crime occurs, offering meaningful alternatives to incarceration. Integral in carrying out the design and implementation of this project will be the Justice Center's Tech Lab/Innovation Lab, a youth-led augmented and virtual reality incubator space that provides training in cutting edge industry standard technologies, connections to employment, and local economic development and reinvestment within Brownsville.

### Peoples Culture

Peoples Culture is an arts and placemaking collective focused on advanced XR storytelling for policy advocacy using co-creation. This work aims to reimagine shared narratives through collaborative art-making practices, embracing technology as a way to create connections to places and people. Peoples Culture partnered with the Justice Center in 2015 to start the Brownsville Technology Lab/Neighborhood Innovation Lab. The team is a partner with the Justice Center on Brownsville tech-based projects, including B LIVE and the BCJC Live AR app, and provide technology curriculum for the Tech Lab/Innovation Lab. Peoples Culture are leading the development of the Fireflies: A Brownsville Story VR docu-game in partnership with the Justice Center and have also created a toolkit for the planning and implementation of Ville-Luminate the Block projection mapping system.

**Team Members**

Kevin Rivero, Development Coordinator at Community Solutions International, Inc.

Layman Lee, Neighborhood Development and Placemaking Manager

Jasmine Bowie, BCJC, Deputy Director

Ionna Jimenez, BCJC, Associate Director of Placemaking & Workforce Development

Peta-Gaye, BCJC, Manager, Operations and Logistics

Sarah Bassett, Peoples Culture, Director of Urbanism

Nicholas Pilarski, Peoples Culture, Artistic Director

**BCJC, Tech Lab Associates:**

Adrian Richardson, BCJC, Tech Lab Associate

Destinee Rowe, BCJC, Tech Lab Associate

Ray Graham, BCJC, Tech Lab Associate

John Bryant, BCJC, Tech Lab Associate

Darren Duffie, BCJC, Tech Lab Associate

Tommy Feliciano, BCJC, Tech Lab Associate

Mikala Greenidge, BCJC, Tech Lab Associate

Tahliyah Griffin, BCJC, Tech Lab Associate

Reuben Johnson, BCJC, Tech Lab Associate

Marcus Peoples, BCJC, Tech Lab Associate

Neveah Rios, BCJC, Tech Lab Associate

Starquan Stevenson, BCJC, Tech Lab Associate

## High-level Output & Outcome Indicators

| Deliverable | Description | Output Indicator | |
|---|---|---|---|
| Youth Engagement | Youth involved in the Tech Lab/Innovation and the Young Innovators Program | Number of youth participants since the pilot launched in 2018 | 500 |
| Industry Engagement | Engagement with industry experts during production | Number of experts engaged since the pilot launched in 2018 | 8 |
| City Engagement | NYCx Co-Labs Safe and Thriving Corridors Meeting & Coordination with City agencies | Number of meetings | 32 |
| Local Businesses Engaged | Businesses engaged located along Belmont Avenue | Number of businesses engaged | 12 |
| Activity Analysis | Metric-based activity analyses include: light metering, pedestrian counts, and surveys to determine usage and perceptions of safety | Number of metric-based activity analyses completed | 4 |
| Community Feedback | Community feedback provided on projection design and content | Number of community feedback sessions | 3 |
| Projection Mapping Curriculum Development | Development of tailored projection mapping curriculum | Number of program-based curriculum, tailored to projection mapping | 5 |

| Outcome Deliverables | Outcome Anticipated |
|---|---|
| Increase nighttime activity along Belmont Avenue and in Osborne Street Plaza | Brownsville developed creative content and enhanced, interactive lighting experience encourages residents to use Belmont Ave. and Osborne St. Plaza as a community destination during evening and nighttime hours |
| Increase perception of safety along Belmont Avenue and in Osborne Street Plaza | With more pedestrian activity in the area both along/surrounding Belmont Ave. and Osborne St. Plaza, community members feel safer and are more apt to activate the space after business close for the day |

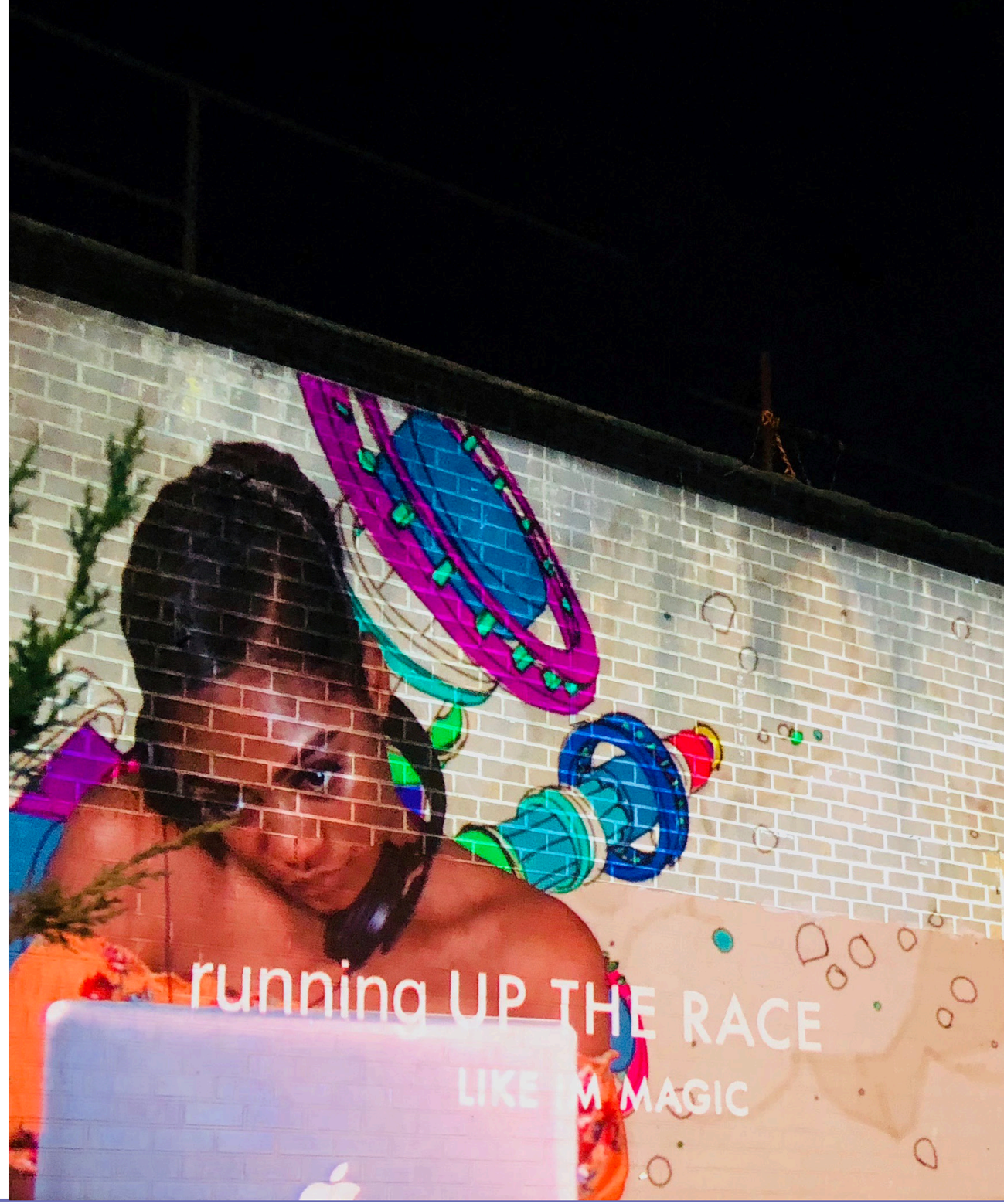



PHOTO (OPPOSITE) // PEOPLES CULTURE, LLC

The Brownsville Tech/Innovation Lab and Peoples Culture "Ville-Luminate the Block" NYCx Co-Lab Challenge initial launch pilot (2018)

## Pilot Co-Design

Ville-luminate the Block reflects the drivers of the community through a rigorous participatory and co-created process. Brownsville youth, with the support of the Justice Center and Peoples Culture, led the design and tech process. Belmont Avenue businesses were also participants in the lighting installation. The projections were used to showcase community-created art and digital design projects. A social media campaign invited residents and businesses alike to be involved, and the B Live app, a project which uses augmented reality to imagine alternative community development strategies, spark entrepreneurship, and support community ownership, was used to boost involvement.

The Justice Center engaged over 500 young people yearly. At the time of the project, there were two cohorts of young people in place. In addition to the Tech Lab/Innovation Lab, youth focused on self authorship by designing, documenting and assembling narratives using mixed media (video, sound, animation, performance, and writing), and built from this work to define the features of positive placemaking interventions.

After multiple prototypes and trials with other projection systems, the LM3X (formerly Lumitrix) T2 series offered the ability to create professional video using 3D projections for permanent outdoor installation, with 6000 ANSI Lm, 20000 lamp life, remote Internet access, and humidity/dust/tamper resistant encasements.

The project was designed in several phases, each phase focusing on a different aspect of the Ville-luminate the Block project. Phase 1 included community engagement, research, and design. Phase 2 included youth training, content development, project promotion, as well as securing the permits needed to implement the project. Finally, Phase 3 included the plan for ongoing maintenance and sustainability of the project and hardware.

### Phase 1: Community Engagement, Research, and Project Design

During the initial project kick-off in 2018, the Justice Center recruited 10 youth interns to participate in a one-month community engagement and planning process. The interns developed and executed a public realm and placemaking survey to gain feedback on the project design, current nighttime activity on the corridor, and perceptions of public safety. Additionally, the interns conducted observations of usage of the public space according to a framework that they were trained in with support from MOCTO and its partners.

The Justice Center conducted a light meter survey to gauge community perceptions around the appropriate brightness level for the installation.

The Justice Center coordinated one community feedback session for youth interns to present their design to the community at large.

### Phase 2a: Youth Training, Content Development, and Project Promotion

A six-week intensive training at the Justice Center was conducted with Brownsville youth to learn and teach how to install the technology and develop XR (extended reality) content. Peoples Culture developed a six and 10-week curriculum for teaching the coding, multimedia design, 3D modeling, fabrication, creative design, and installation for the 3D projection mapping system. Youth interns applied concepts of creative arts-based placemaking, as well as furthered skills in graphic design, cinematography, 3d design, coding, and adapting new technologies. They specifically learned software programs including DaVinci Resolve, MadMapper, Photoshop, visual programming, Unity 3d, Isadora, and operation of the LM3X (formerly Lumitrix) projection mapping system.



The Justice Center and Peoples Culture programmed the technology to display interactive projections during agreed upon times with City agency partners, after consultation with community stakeholders. The projection system showcased youth and community art and design.

Three community events were organized by the Justice Center to promote the Ville-luminate the Block project: the first event focused on project introduction and initial feedback, the second event focused on a demo and lighting-level survey, and the third event celebrated the project unveiling. Each event engaged a minimum of 500 community members.

### Phase 2b: Securing permits and agreements

The Justice Center sought approval from DOT to amend the amenities list of their existing maintenance agreement with DOT to include the physical hardware that needed to be installed in the ground surface of Osborn Street Plaza. Peoples Culture developed location diagrams and specification drawings to secure the DOT approval necessary for installation of hardware components on DOT street lights. A series of meetings between the Justice Center, Peoples Culture, and DOT over a nine-month period was used to develop, coordinate, and confirm the location and placement specifications of the 3D projection mapping system.

### Phase 2c: Physical Installation

The Justice Center hired a bucket-truck and an in-house electrician to physically install and mount the 3D projection mapping system on two designated light poles in accordance with DOT specifications. Peoples Culture worked with the Justice Center and Tech Lab/Innovation Lab participants via masterclasses on the installation and programming of the 3D projection mapping system. The LM3X (formerly Lumitrix) projection mapping system (T2 series) are professional video projectors designed for permanent outdoor installation, with 6000 ANSI Lm, 20000 lamp life, remote Internet access, and humidity/dust/tamper resistant encasements. Peoples Culture programmed with Tech Lab/Innovation Lab participants the motion depth-cameras consisting of multiple sensors and the installation directly onto the ground surface at Osborn Plaza in an encasement that is weather and tamper resistant. The sensors powered the interactivity of the projected content.

### Phase 3: Maintenance and Plan for Sustainability

Ville-luminate the Block is operated, maintained, and monitored by the Justice Center. They currently maintain Osborn Street Plaza, which includes a robust sanitation and programming schedule throughout the year. Installation maintenance was included in the daily operations of the Plaza, and included any necessary maintenance needs by the Justice Center's Street Team, as well as support with application troubleshooting by the Tech Lab/Innovation Lab. Peoples Culture continues to work with the Justice Center and Tech Lab/Innovation Lab participants to provide support for the 3D projection mapping system installed on the light poles. The Justice Center ensures the installation is continuously active using a custom-coded, automated projection schedule developed by Peoples Culture. Additionally, the Justice Center coordinates twice-monthly special events to draw residents to the installation and engage community partners.

The Justice Center developed a toolkit containing best practices and findings from the project implementation process. The toolkit included specs of the equipment used, descriptions of the electricity and infrastructure required, event programming and photo documentation. It also included images and video taken throughout the process, a summary of the community observa-

tions and feedback, and descriptions of all pre-installation outreach activities.

For long-term implementation, Peoples Culture created a curriculum series focused on the design-deployment pipelines of the projection mapping system as well as a user training guide for running and managing the technology.

The Justice Center ensures that Tech Lab/Innovation Lab participants have the appropriate training, certifications, and workforce development to act as consultants to other neighborhoods who may want to implement a similar project.

## Pilot Deployment

On Saturday, August 25, 2018, participants launched the pilot of the Ville-Luminate the Block project at the 4th annual Be On Belmont street festival series, with more than 400 residents and visitors in attendance.

In August 2019 during the 5th annual Be On Belmont street festival series, the projection mapping system - installed on light poles in Osborne Street Plaza and one along Belmont Avenue - was unveiled. The event had more than 500 residents and visitors in attendance.

The 3D projection mapping system installed in Osborne Street Plaza and Belmont Avenue continues to remain active as of 2022.

The Osborne Street Plaza is undergoing capital renovations to turn the interim plaza into a permanent public space that will include a mix of stationary to immovable seating, small scale gardens, open space for public events and activities as well as a kiosk that can house a small business vendor. The capital renovations are scheduled to begin in Fall 2023. The Justice Center and Peoples Culture have been working with all the City agencies involved in the NYCx Co-Labs partnership to acquire the necessary approvals to permanently mount the 3D projection mapping system in Osborn Plaza using a kiosk or similar installation. This will allow for ease of permitting with NYCDOT as well as ongoing maintenance of the 3D projection mapping system for the Justice Center.


PHOTO (OPPOSITE) // BCJC
NYCx Co-Lab Challenge (2018)

CASE STUDY 2

# Nightlight

## About Nightlight

One of the winning proposals of the NYCx Co-Lab Challenge, Nightlight was a collaboration between Anyways, Here's the Thing, a creative Brooklyn-based studio, the Justice Center, and NYCx Co-Labs.

Nightlight mounted programmable Light-emitting Diode (LED) strips and sensors on 5 (five) existing street light poles along Belmont Avenue. The sensors detect pedestrian presence and, in response, the LED strips are programmed to produce animated patterns with varying color and brightness. This light difference subtly indicates the presence of pedestrians and alters the qualities of a space along the Belmont streetscape.

Anyways, Here's The Thing also collaborated with youth from the Justice Center's Tech Lab/Innovation Lab to assist with the programming and coding.

## About Pilot Winner

Anyways, Here's the Thing (AHTT) is a creative studio based in Brooklyn, NY. AHTT is a hybrid design/technology service studio creating design & production across platforms. They specialize in interactive installation design, digital storytelling on emerging platforms, enhancing experience design through technology, and more. In their work, the poetic qualities of an emotional element and tangible materials are treated as equally important as cutting-edge technology. They believe technology does not need to stand out as the face of a project; an enjoyable moment does.

**Team Members**

Henry Lam,

Tyler Henry

Geyao Zhang

Nitcha Tothong

Yunfei Xiang

Luobin Wang

Chenghan Kuan

## About the Pilot Project

In response to the NYCx Co-Lab Challenge for Safe and Thriving Nighttime Corridors, Anyways Here's the Thing deployed a networked and responsive Internet of Things (IoT) system of decorative lighting that serves as indicators of human presence and pedestrian traffic. They call this system: Nightlight.

On the technology side, Anyways, Here's the Thing deployed a series of nodes mounted to light poles along Belmont Avenue. The nodes are part of an interconnected mesh network. In addition to each node having a set of LED strips for visual and decorative output, every node has sensors to detect ambient light levels and human movement. The information captured at each of these nodes is recorded in a centralized location. From there, instructions are relayed to other relevant nodes in the network. Using these instructions, the LED strips of each of the corresponding poles and its neighbors illuminate in a preprogrammed pattern based on the detected movement.

The LED's visual effect for pedestrians along the roadway and sidewalks of Belmont are indicators of other human presence. These subtle indicators allow for people to feel at ease, knowing they are not alone on the street at night. This increases the perception of public safety and reinforces the use of Belmont Avenue at night.

## Pilot Theory of Change

Anyways chose to address the challenges of low light levels, crime, and empty commercial corridors by making the pedestrian space more inviting and active through responsive functional and decorative street lighting. First, existing street lights were retrofitted with low color temperature (2700K-3000K) LED lamps that allow for better color rendering and warmer ambient light. This provides a more flattering illumination of people, businesses, residences, and the night time cityscape. Second, existing street lamps posts were augmented with programmable, networked, decorative LED light bars. Through passive sensors, these light bars would respond to passing pedestrians, turning the entire streetscape into a subtly animated light experience as a creative supplement to the functional street lighting system. The animation, based on simple transitions of hue and luminance, would create an active, responsive atmosphere, capable of highlighting the presence of pedestrians in the space while also livening the atmosphere of the area when there is low traffic.

The LED's visual effect for pedestrians along the roadway and sidewalks of Belmont Avenue are indicators of other human presence. These subtle indicators allow for people to feel at ease because they know they are not alone on the street at night. This increases the perception of public safety and reinforces the use of Belmont at night.

## Pilot Co-Design

Along with capturing data via an IoT mesh network and the use of decorative LED lights, Anyways engaged the community through the teaching and training of the use of their system. Anyways collaborated with the Brownsville Community Justice Center's Innovation Lab as a place to connect with community members and Brownsville youth to teach the use of Raspberry Pi (a small open source modular computer) and programming and coding in Python (a programming language) in a series of linear workshops. This allowed trained participants to directly access and program the lighting system to use their own lighting sequences and parameters, and in turn train others.

Cohort 2 of the Young Innovators Academy worked with Anyways Here's the Thing to augment the existing street lamp posts along the Belmont Avenue corridor with programmable, networked, decorative LED light strips that respond to passing pedestrians with fluctuating radiance. As pedestrians pass under the lamps, the lights will shine brighter and trigger other nearby lights, creating wave-like effects. The animations, which will also be triggered by external data such as bus arrival times at the nearest bus stop, will create an active, responsive atmosphere that subtly indicates the presence of activity, and reinforces the use of Belmont Avenue after dark. The Young Innovators worked with Anyways Here's the Thing to design their own lighting choreographies, as well as learn coding to program the lighting system.

**Phase 1: Software and Hardware Development**

Anyways, Here's the Thing worked on a number of software and hardware products to set up the lighting system, as well as a data collection system.

This included a client/server communication protocol for aggregating sensor data, and instruction distribution written in Python.

The lighting programming library included a Python library for easy command and lighting sequence configuration.

This process included user testing, as well as testing the mesh framework and the lighting programming library.

**Phase 2: Deployment**

Anyways was responsible for making ready all electronics, enclosures, lighting, and cabling, to be handed off the hardware to the DOT for installation. Anyways was on site during the installation to provide support. The hardware was equipped with infrared sensors that captured anonymized movement.

**Phase 3: Community Engagement**

Anyways developed a curriculum of combined lecture and lab instruction for the Brownsville youth to introduce Raspberry Pi and Python, which allowed participants to program LED light sequences and displays.

The curriculum covered the following topic areas:

Design basics:

color, animation, the psychological in color, light as medium in design and art (case studies), Color mixing RGB-CMYK.

Basic electronics:

what's circuit, LED, Parallel and series circuit, how breadboard works, digital and analog electronics.

Basics of Python Coding

Python on Pi.

Structured coding basics (conditional statements and loops).

Through this classroom instruction, Anyways helped to promote science, technology, engineering, art, and math (STEAM) fields of study.

## Pilot Deployment

### Youth Education

Anyways engaged the local neighborhood youth associated with the Justice Center 's Tech Lab/ Innovative Lab by way of developing a curriculum of combined lectures and lab instructions to introduce the programming technology. Anyways administered a minimum of 24 hours of lecture, lab instructions, and creative workshops so youth could ultimately modify the code to change the output and visual effect. These included weekend workshops and/or evening classes. Anyways involved youth in the Measuring and Documentation phase.

### Software and Hardware Development

Anyways attended meetings with DOT and relevant agencies to introduce the project and discuss design parameters. Then, they built the underlying software. This software integrated the coding modifications created as part of the Youth Education phase. Prior to the light installation, Anyways developed and submitted design documents, specifications, fabrication, and installation drawings of all hardware to DOT, so that any comments or concerns on the part of DOT could be addressed prior to installation.

Anyways procured all equipment necessary for the successful installation. This may include, but is not limited to the passive infrared sensor, weatherproof LED strips, and cabling.

### Installation and De-Installation Support

The Justice Center in partnership with MOCJ, DOT, NYCEDC and MOCTO hired a bucket-truck and an in-house electrician to physically install the LED strips and sensors on street light poles. The contractor was responsible for the following support:

- Installing a temporary demonstration along Belmont Avenue to user-test the software and hardware. This initial test was not to be installed on street light poles, instead, the contractor provided the temporary support and power source. This demonstration was observed by MOCTO, DOT, and other relevant agencies.
- Coordinate with DOT to oversee the installation of a second demonstration on a street light pole. This may or may not be located along Belmont Avenue.

Based on the two above mentioned demonstrations, Anyways incorporated or addressed to DOT's sole satisfaction any design changes.



## Data Insights

In order to assess pedestrian activity in the Belmont neighborhood, and along Belmont avenue, data was collected to better inform the impact of technological innovation. Data was collected from four primary sources:

1. Five pedestrian count sensors installed by MOCTO in the Belmont corridor in 2019, which take readings in 15-minute intervals.
2. Local climatological data from NOAA on hourly precipitation and temperature from the monitoring station at JFK International Airport between October 2019 and September 2021
3. Daily sunset times for the Belmont corridor latitude and longitude coordinates collected from the sunrise-sunset.org API between October 2019 and September 2021
4. Outcomes from the Public Space Public Life Survey, hosted by Gehl Institute and conducted by Brownsville youth, between August and September 2018. The Survey focused on measuring how people move through or stay in the built environment, with a focus on pedestrian and cyclist counts, age and gender counts, and stationary activity counts. This was conducted to better understand public life in Brownsville.

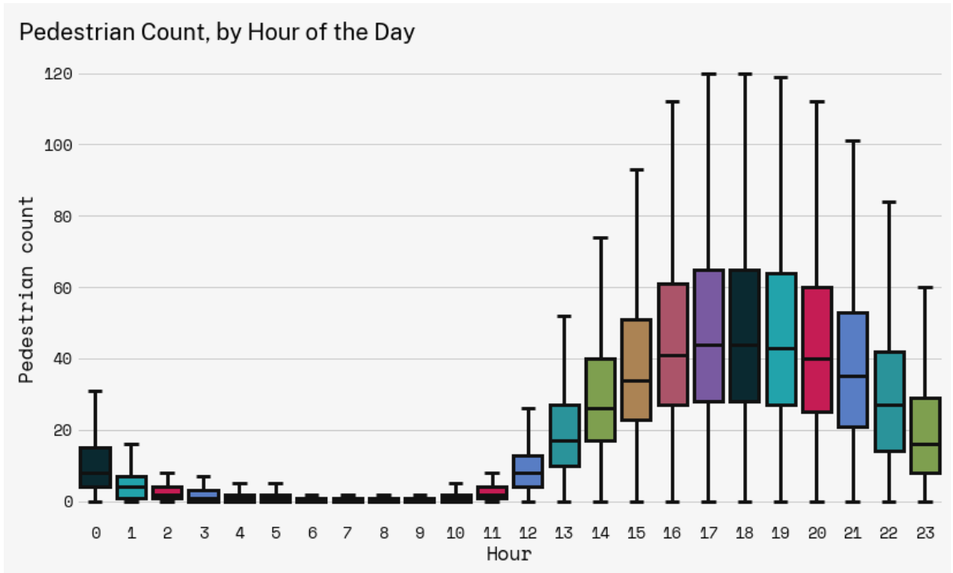
Pedestrian count data was then analyzed based on different seasonal trends (by month, day of week, week of year, and time of day). In addition, the Gehl survey data was pre-processed for analysis. The team also merged NOAA data with pedestrian count data in 1-hour increments to explore correlations between temperature vs. pedestrian counts and inches of rain vs. pedestrian counts.

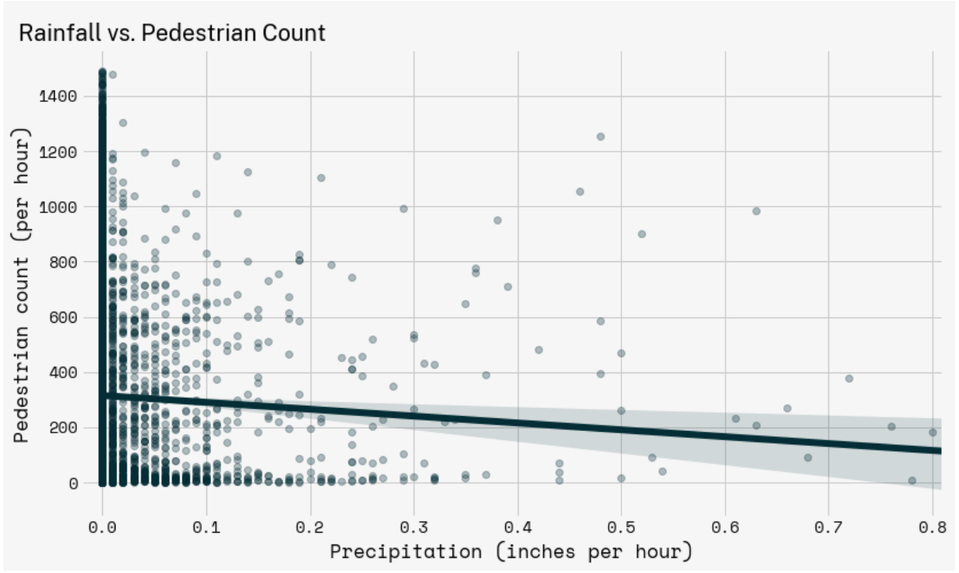
Ideally, the pedestrian count sensor data could have been used to assess trends around activity after dark if they had been installed prior to the introduction of new lights on Belmont, to directly assess the effect of installing lights on nighttime pedestrian activity. Since the impact cannot be assessed in this way, it was theorized that comparing pedestrian counts around a narrow time window prior to and after sunsets would allow a proxy to be used for the impact of reduced light levels on pedestrian activity. In order to account for the fact that sunset times shift each season, the pedestrian count reading timestamps was re-scaled to be converted to the number of minutes relative to each day's sunset times, and filtered the data to a more narrow two-hour bound before and after sunset. This subset of the data was used to build the "Pedestrian Counts Before and After Sunsets" chart.

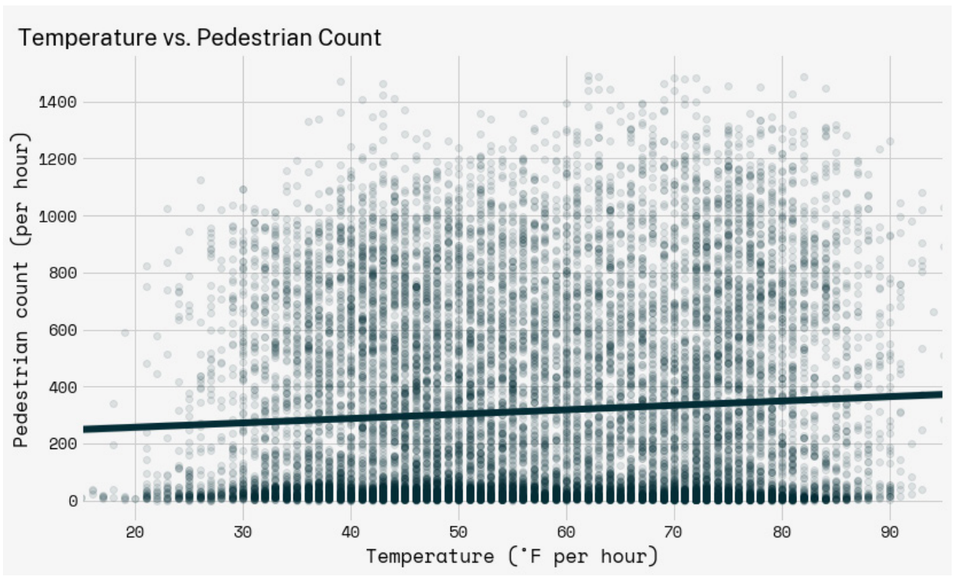
The following provides graphical representations of pedestrian activity in Brownsville, along Belmont Avenue, according to the data collected and compiled. As a general outcome prior to lighting interventions from the Safe & Thriving Nighttime Corridors Challenge, it can be determined that pedestrian activity remained higher during daylight hours, warmer seasons, and milder weather.

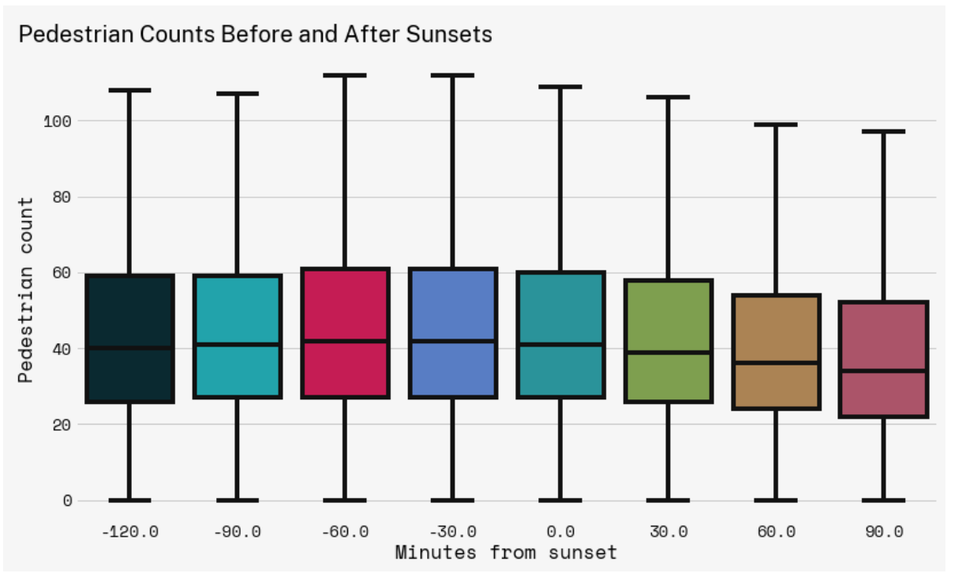
Activity according to age and gender track with general neighborhood demographic trends, with a higher rate of women and children who remain active along the corridor.

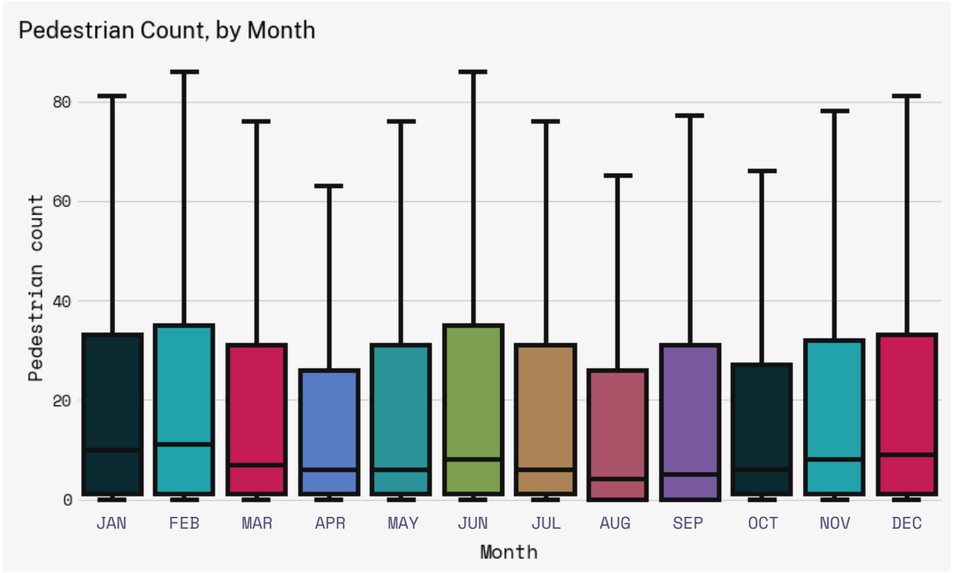
Bicycle activity remained high on thoroughfares alone, which may signal that cycling as a transportation mode is used most by those commuting (see Chart X). In general, there is strong correlation between pedestrian activity and business operation, indicating an opportunity for interventions that promote safe, nighttime pedestrian activity. Additionally, pedestrians trend toward activities focused on staying-in-place using various forms of seating, which could support the development of more vibrant places that invite people to stay longer.

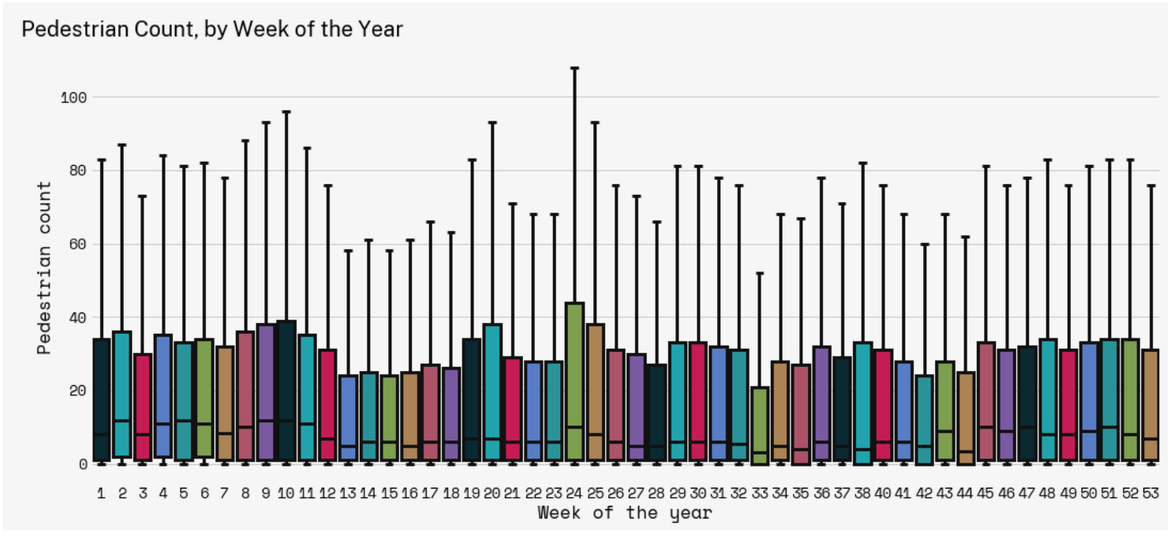

Pedestrian Count, by Hour of the Day
Pedestrian count
Hour
0
20
40
60
80
100
120
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

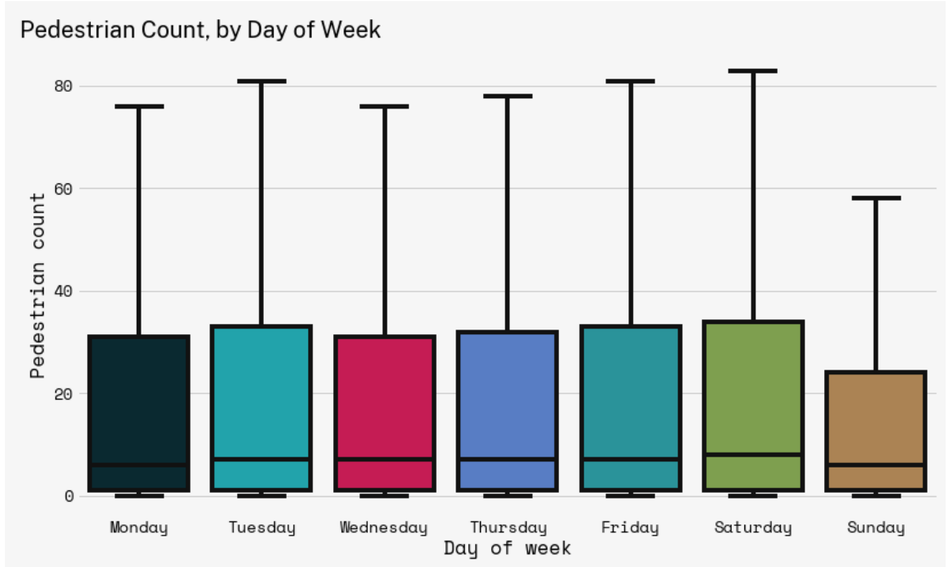

Rainfall vs. Pedestrian Count
Pedestrian count (per hour)
Precipitation (inches per hour)
0
200
400
600
800
1000
1200
1400
0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8

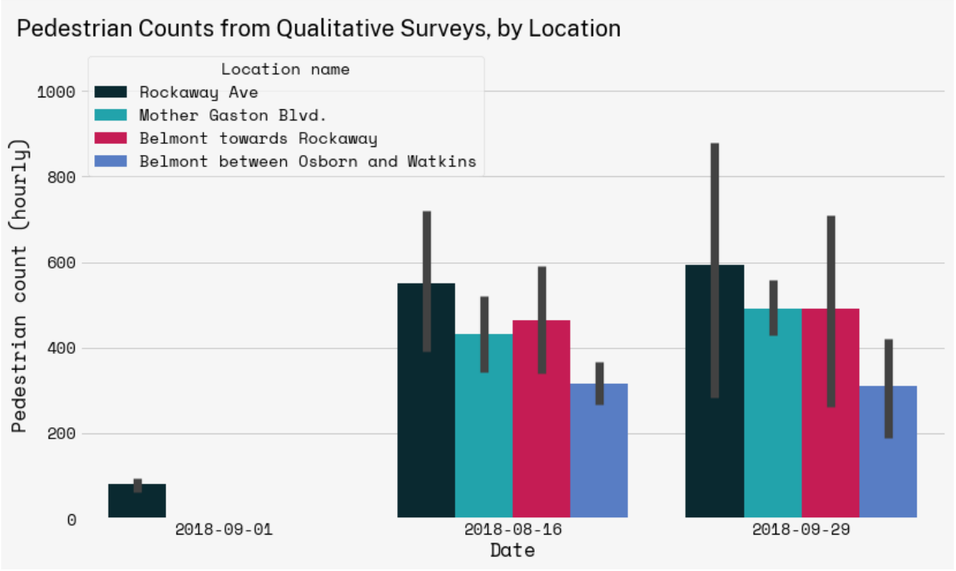

Temperature vs. Pedestrian Count
Pedestrian count (per hour)
Temperature (°F per hour)
0
200
400
600
800
1000
1200
1400
20 30 40 50 60 70 80 90

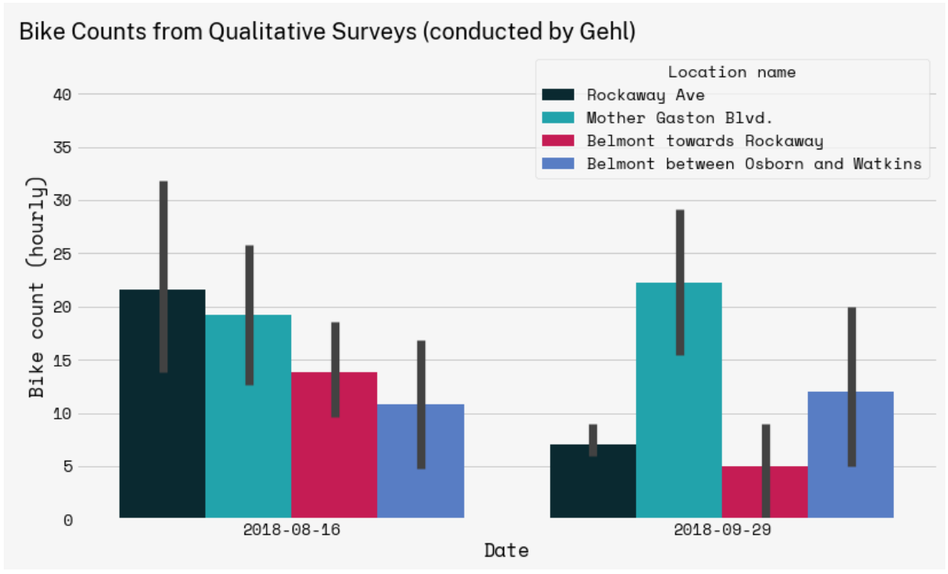

Pedestrian Counts Before and After Sunsets
Pedestrian count
Minutes from sunset
0
20
40
60
80
100
-120.0 -90.0 -60.0 -30.0 0.0 30.0 60.0 90.0

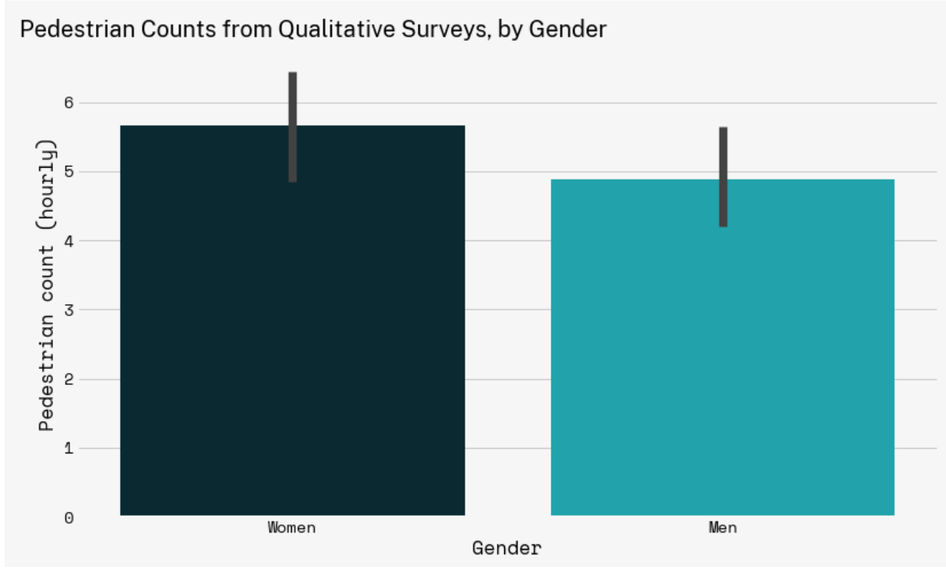

Pedestrian Count, by Month
Pedestrian count
0
20
40
60
80
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEP
OCT
NOV
DEC
Month

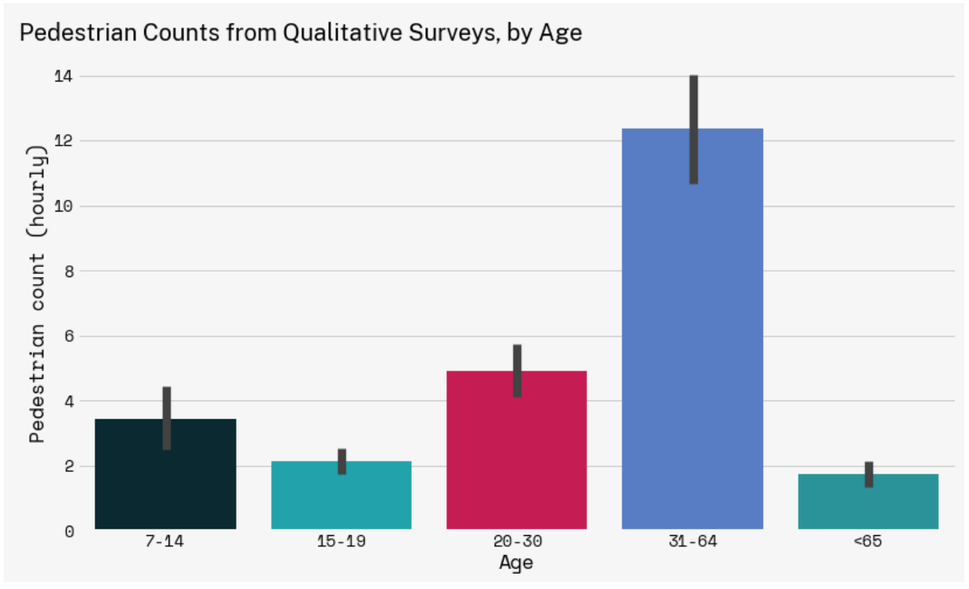

Pedestrian Count, by Week of the Year
Pedestrian count
0
20
40
60
80
100
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 40 41 42 43 44 45 46 47 48 49 50 51 52 53
Week of the year

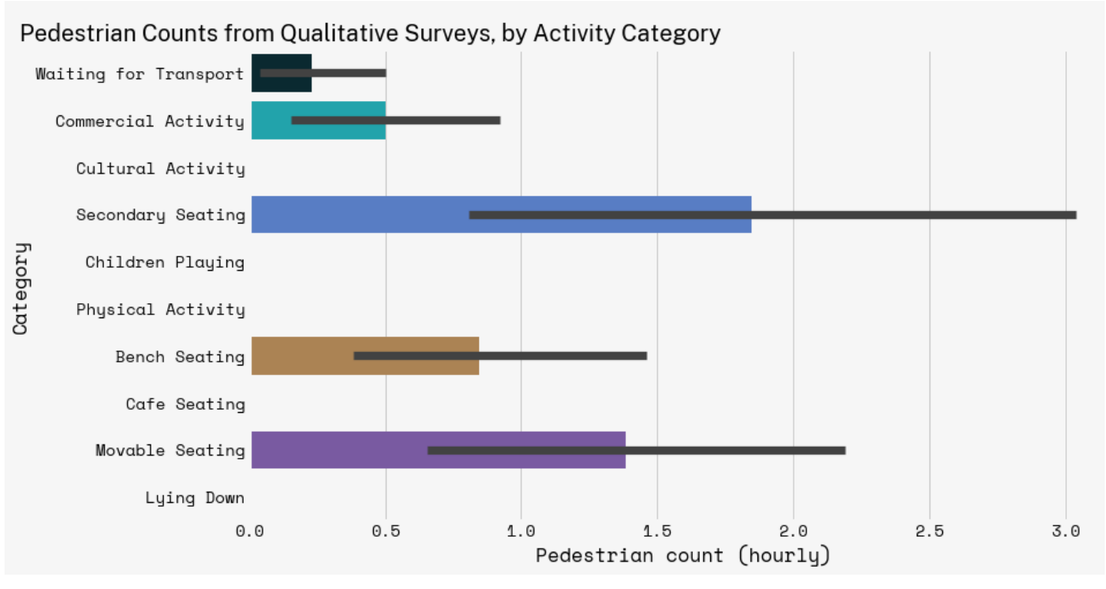

Pedestrian Count, by Day of Week
Pedestrian count
0
20
40
60
80
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
Day of week


Pedestrian Counts from Qualitative Surveys, by Location
Location name
Rockaway Ave
Mother Gaston Blvd.
Belmont towards Rockaway
Belmont between Osborn and Watkins
Pedestrian count (hourly)
0
200
400
600
800
1000
2018-09-01
2018-08-16
2018-09-29
Date


Bike Counts from Qualitative Surveys (conducted by Gehl)
Location name
Rockaway Ave
Mother Gaston Blvd.
Belmont towards Rockaway
Belmont between Osborn and Watkins
Bike count (hourly)
0
5
10
15
20
25
30
35
40
2018-08-16
2018-09-29
Date


Pedestrian Counts from Qualitative Surveys, by Gender
Pedestrian count (hourly)
0
1
2
3
4
5
6
Women
Men
Gender


Pedestrian Counts from Qualitative Surveys, by Age
Pedestrian count (hourly)
0
2
4
6
8
10
12
14
7-14
15-19
20-30
31-64
<65
Age


Pedestrian Counts from Qualitative Surveys, by Activity Category
Waiting for Transport
Commercial Activity
Cultural Activity
Secondary Seating
Children Playing
Physical Activity
Bench Seating
Cafe Seating
Movable Seating
Lying Down
Category
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Pedestrian count (hourly)

# Safe & Thriving Nighttime Corridors: Lessons Learned

Since the spring of 2018 the NYCx Co-Labs Safe and Thriving Nighttime Corridors Challenge has served as a platform for the Brownsville Community Tech Board as well as NYC Agencies to attract investments to pressing Brownsville needs.

Below are a series of lessons learned from the process of implementing tech-enabled initiatives, career development programs, community events, and capacity building for community based organizations in the Brownsville community with the project partners, Brownsville Community Justice Center, Peoples Culture, and Anyways Here's the Thing.

## Agency through placemaking: Brownsville voices taking back Brownsville public spaces

Placemaking, an approach that focuses on defining and strengthening the connection between public space and residents, is an integral component of ensuring inclusivity and equity are built into a city. "By recognizing and developing the positive potential of their public spaces, cities can enhance safety and security, create economic opportunity, improve public health, create diverse public environments, and build democracy" (Project for Public Spaces/UN Habitat, 2012).

For the Brownsville Community Tech board it was a priority to make sure that tech-enabled solutions would contribute to the ways in which Brownsville residents took advantage of their public spaces.[9]

[9] From the forthcoming *Reimagining Reality: A Brownsville Story: Reconstituting spatial histories through co-created, technological innovation* by Peoples Culture and the Brownsville Community Justice Center.

**"Such an approach meant to change the script regarding the role of technology and safety, by moving away from surveillance, crime predictability and policy enforcement towards community ownership and youth education."**

Oscar J. Romero Jr, Director of Inclusive Innovation & International Cooperation, NYC Office of Technology and Innovation.

Placemaking through community events, and community-led transformations of the urban space were identified as key strategies to increase safety. Placemaking melds the practicality of urban planning with community relationship-building and places emphasis on problem solving through creative practice (Stern 2014).

The process of building livable and welcoming neighborhoods extends beyond traditional urban policy areas such as housing or transportation. Urban design - or the process of crafting how an urban space feels or is used by citizens - is an equally important consideration. Lighting design, the sensory experience of a space, opportunities to sit or gather, and opportunities to walk and cycle are all elements that contribute to the security of a space (Gehl Institute, 2017). Pedestrian lighting is a design element that is particularly important. Research has shown that daylight increases pedestrian activity by 62%, and cycling by 38% (Uttley, Fotios, 2017). Bright lights do make people feel safer, and feeling safe will promote use - particularly for vulnerable groups (Fotios & Castleton, 2016). Most compellingly, a 2019 randomized experiment in New York City found that nighttime outdoor crime dropped by 36 percent in areas that were randomly assigned more lighting (Chalfin et. al, 2019). Road and pedestrian lighting is therefore an important investment.

Local leaders can build support, sense of purpose, and project efficacy by incorporating multiple and diverse voices early on. However, it is essential that community members are not aren't merely informed as a method of involvement, but actually allowed active participation and project control (Arnstein, 1969). On projects that focus on safety or security, collective participation and the cooperation of neighbors willing to work together has been shown to improve safety in neighborhoods and reduce violence (Sampson, Raudenbush, and Earls, 1997).

In response to community feedback, the scope of the NYCx Co-Labs Safe and Thriving Nighttime Corridors was expanded to include removing barriers to opportunity and education as a way to promote safety for youth. From the very beginning of the pilot program, community engagement and placemaking was an integral component of our process.

The NYCx Co-Labs Safe and Thriving Nighttime Corridors Challenge started with a basic premise: **if youth feel represented in their public spaces, how will this affect the environment they live in?** The creative placemaking and tactical urbanism practices incorporated into this pilot were an essential component of strategy and engagement design.

The pilot program also incorporated elements of tactical urbanism, a low-cost, grassroots urbanist approach that empowers citizens to take charge of their spaces in order to affect long-term change (Tactical Urbanism Guide). An action-centered and accessible practice at its core, tactical urbanism has been shown to be particularly effective at catalyzing change in distressed communities (Harrison, S. 2016).

Relatedly, this pilot gave youth the platform to explore the connection between their identities and their neighborhood through a creative and artistic process. Not only is making young people "active partners in crime prevention" a key element of fighting crime, but art is also an important and therapeutic tool for justice-involved populations (National Crime Prevention Council, 1996). Art has been used as a tool for public safety for almost a century, and is frequently employed in therapy, career training, and in activism (Yahner et al, 2015, Urban Institute).

Art, and by extension creative or artistic placemaking activities, hold particular importance for both youth and justice-involved populations. Research has shown that avenues for self-expression and the opportunity of identity reclamation are important for justice-involved populations, a process that can be explored through art (Wolf and Wolf 2012). The Safe and Thriving Nighttime Corridors Pilot incorporated these same modes of creative placemaking and artistry to give teens the platform to tell the stories of their own identities and their hopes for their neighborhood.

### Lessons Learned:

1. **Youth (and, by extension, citizens) need to have agency over their neighborhood narrative.** Often, the narratives about a place are extended to the people who live there as well. Youth in Brownsville are well aware of the negative and harmful narratives about their neighborhood's safety and opportunity. They are also determined to prove these narratives false. Not only were youth able to talk about their hopes or visions for Brownsville, they were actively able to represent these visions and shape their environment through creative placemaking. This is the first and most fundamental step in a participatory design process.
2. **Youth (and, by extension, citizens) need to "see themselves" in their neighborhoods.** This pilot gave teens the platform to quite literally showcase their visions of themselves and/or their neighborhood right onto the built environment of Brownsville. The images that teens coded, photographed, and/or designed in workshops were then projected upon buildings in Brownsville. Teens and other residents were able to then see their visions of themselves and their neighborhood reflected back to them.
3. **Incorporate a nighttime element into public art programming.** Too many public art programs are dependent upon daylight or daytime activity, leaving a large gap for potential engagement and participation. The unique timing of the public art installations was part of the draw for Brownsville citizens. Public art organizers should keep in mind the high capacity for community building, economic activity, or other indicators of success that nighttime programming may bring.

## Community Driven Pivoting: Flexibility & Feedback

The NYC Mayor's Office of Chief Technology Officer kicked off the Brownsville NYCx Co-Labs challenge with an event of 25 participants representing 18 different organizations. After 8 community workshops and 3 public forums, the theme of nighttime safety was chosen.

In response to community feedback, the scope of the NYCx Co-Labs Safe and Thriving Nighttime Corridors was expanded to include removing barriers to opportunity and education as a way to promote safety for youth. From the very beginning of the pilot program, community engagement and placemaking was an integral component of the process.

### Lessons Learned:

1. **Flexibility within projects is critical when enacting community-conscious change.** Even though the theme of nighttime safety was chosen early on in the primary phases of engagement, the objectives of the project were slightly altered in response to community feedback. The shift of focus that prioritized pathways to career development as a mode of creating safety was not only deeply important to youth, parents, and community leaders, but ensured that impact lasted after the completion of the project.
2. **While work is ongoing, build out a knowledge base that allows for the project to be replicated in the future.** Although challenge winners have been selected and the first series of educational workshops have concluded, this project has sparked further community goals. The Brownsville Community Justice Center plans to continue holding these workshops in subsequent years. We also will be able to use the model to expand this pilot to other areas of the city.

## Innovation in Government

Community members were not the only group whose support was needed to advance the Safe and Thriving Nighttime Corridors pilot. Buy-in and cooperation from other city agencies was essential to project implementation. Several sticking points were encountered in three areas: the institutional level, the cultural practice level, and the regulatory level.

After choosing two challenge winners who had pitched project ideas that focused on projection and artistic lighting, it became clear that we would need to collaborate with Street Lighting and DOT to arrange permits for putting a projector on street poles. Institutionally, no such permit or precedence of making such a permit existed, an issue which significantly delayed project implementation.

Eventually, a permit was written and submitted to DOT. The permit was then approved. Part of the hesitance or lack of precedence for a permit was related to both regulation and cultural practice. Agency officials expressed concern that the projector was too valuable, posing a risk for theft after installation. There was also concern that the projection mapping system might cause accidents due to light interference with traffic, opening the city up to liability.. Furthermore, there are also regulations in place against projecting images or statements upon buildings in NYC, which have roots in the 2008 Occupy Wall Street movement. These concerns were addressed by moving the projectors from the original intended location on rooftops to DOT owned light poles and the use of a projection mapping system that provided safety and tamper-resistance in the design of the equipment.

Working in tandem with other agencies on a project that had very little precedent taught the project team valuable lessons on innovation in government. Not only were these lessons applied to the project, they helped ensure the pilot was implemented and completed successfully. Importantly, these lessons will be applied to future Co-Labs challenges as well.

### Lessons Learned:

1. **Identify key players who you will need support from early on.** Every agency, department, and partner organization has a key person or persons who will be able to help you get where you need to go. These are people who have the power to brainstorm solutions or even change old rules that no longer are serving the public. Gain buy-in from these key players early on, in the very beginning of a project.
2. **Build coalitions that are willing to push for change.** No matter how innovative or compelling a project idea may be, it cannot be accomplished if only one agency is pushing for it. A broad coalition of agencies, community members, advocates, and other leaders/supporters who are vocal about change and unafraid to push for it will be integral to project success.
3. **There is no such thing as an ecosystem that invites innovation.** Government is built to be methodical and risk averse. This metic-

ulous quality of government is beneficial in that it is a system of checks and balances that often keeps citizens safe. However, this same system does not easily invite innovation. Within government, your ability to be successful on innovation projects is dependent on your ability to convince people to make change.

## Safety through Opportunity & Education

Brownsville community leaders were vocal about the link between neighborhood crime and a lack of educational or career opportunities for Brownsville youth. The community's economic indicators show disproportionate levels of poverty within Brownsville. Twenty-one percent of Brownsville's residents have a Bachelor's degree or higher (compared to 43 percent of NYC residents overall). Similarly, 14 percent of Brownsville residents are unemployed, higher than the city average of 9 percent. The majority (57 percent) of Brownsville's renters are rent-burdened, meaning that they pay 30 percent or more of their household income on rent (Community Health Profiles, 2018). Brownsville has the second-highest incarceration rate and the highest injury assault rate in the city (Community Health Profiles, 2015).

This demonstrated link between conflict/crime and poverty is well-supported by a wealth of academic research, with many scholars in agreement that economic hardship can cause conflict or crime within a community (Bloomberg et. al, 2002; Braithwaite et. al, 2014; Flango et. al, 1976; Imran et. al, 2018). The most common types of crime in the United States -- theft, larceny, and burglary -- all indicate economic distress (Pew Research, 2020).

Researchers have shown that both education and employment have an effect on crime rates. A study by Lochner & Moretti (2004), which measured changes in state compulsory schooling laws and their relationship to crime rates, found that "schooling significantly reduces the probability of incarceration and arrest." One study from the Prison Policy Initiative and VOCAL-NY, which focused on New York City, found that neighborhoods with high incarceration rates also had lower 5th grade math scores (Prison Policy Initiative & VOCAL-NY, 2020).

Availability of employment opportunities also influence crime. Adults with steady and adequate income generated through a meaningful job that allows them the opportunity to develop creative skill sets are less likely to commit crimes. (Allan & Steffensmeier, 1989 ; Sampson & Laub, 1993 ; Shover, 1996 ; Uggen, 1999) For youth in particular, employment mentoring programs that prepare them for the labor market have been shown to have a positive impact on a young person's academic and personal development. Studies of summer youth employment programs in New York City, Boston, and Chicago all found positive effects of these programs, including higher school attendance, fewer arraignments for violent (-35 percent) and property crimes (-57 percent), and even decreased mortality rates(-20 percent) (S. Heller et al 2017, AS Modestino 2017).

In a recent study by the National Innovation Service and the NYC Mayor's Office of Criminal Justice, residents who live in areas with high rates of violence - including Brownsville - were asked what they need to be safe and thrive. Residents overwhelmingly identified safety as economic, articulating the connection between disinvestment and feeling unsafe, as well as the ability of residents to meet economic needs and build secure lives (M. Buxton et al 2021).



### Lessons Learned:

1. **Technology should be used as a tool in an educational process, but not as a means to an end.** An essential objective of this pilot was that youth participants gained foundational skills in coding, multimedia, 3D modeling, and basic circuit design. While technology was central to their education, the resulting educational or career opportunities that could be gained upon completing the program were the main goal.

2. **Career development programs for youth should focus on building skills that are both economically relevant and creative.** This pilot program's educational curriculum focused on building foundational skills in STEAM (science, technology, engineering, arts, and mathematics). Through hands-on learning, students were prepared to continue career pathways in economically relevant and sustainable STEM fields, while also sharpening their artistic and creative skills.

## Reclaiming tech for co-existence

Digital tools are used globally in security and policing, most often applied to efforts of crime prediction or deterrence. Here in NYC, the New York Police Department employs a cache of digital tools to address issues of security. At the forefront is a network of over 15,000 surveillance cameras, which are used both for routine surveillance as well as facial-recognition searches. Drones, x-ray vans, Stingrays (cellphone surveillance devices), and Shotspotter (a third-party platform that can detect the location of gunshots) are also employed (NYCLU, 2021).

While these tools can be beneficial in preventing crime, researchers, advocates, and community members have spoken up about potentially harmful applications. Facial recognition software has been shown to be less accurate based on race and gender. Research has shown that facial recognition AI works best in recognizing lighter-skinned men, while darker-skinned females are the group most at risk of misclassification (Klare et.al, 2012). One study found that facial recognition AI had an error rate of almost 35 percent when classifying darker-skinned women, while that error rate was only 0.8 percent for lighter-skinner men (Buolamwini & Gebru, 2018). Recent reporting also demonstrates trends of over-policing in Black neighborhoods throughout the city, with Black New Yorkers twice as likely to be stopped by police (Scrivener et. al, 2020). This trend is demonstrated in digital policing as well, as surveillance tools are more likely to be placed in non-white neighborhoods. 8000 surveillance cameras are located in Brooklyn – over half of the NYPD's total network (Wired, 2021).

Technology can be applied in ways that are inclusive and human-centered. When asked what makes safety, "residents see sustained community safety as possible only through Black and Brown community ownership and power, and in particular, the power to direct community investments." (Bruxton et. al 2021). Throughout the Safety at Night pilot, the project team specifically chose to reclaim and change the script of tech in safety by embracing it as a tool for artistic expression, career development, neighborhood enhancement, and ultimately, community power.

> **"Technology is definitely a viable vehicle that can transform public safety issues: whether it is around lighting or creation of projection spaces, our community is safer now."**

-Jasmine Bowie, Executive Director of Brownsville Community Justice Center

Lessons Learned:

1. **Expand uses of technology to placemaking.** As discussed, technology's use in security has historically played a role in surveillance, crime prediction, and policy enforcement. Such types of frameworks assume an association between the usage of space and crime. These pilots instead depart from the assumption that spaces can be taken and shaped by their communities. Leveraging technology to support the process of creating community ownership instead encourages residents to use their spaces rather than assuming that people in such communities will commit crimes that ought to be prevented or recorded.
2. **Technology is one piece of a crime prevention toolkit.** While lighting installations, or technology in and of itself, is not the solution to solve issues of safety, technology can be a tool within a more complex process. Addressing access to opportunity, ownership of public space, and representation of community/self within a physical environment has been shown to make public spaces safer.

# Recommendations:

# Community Tech for Place-Based Change in Brownsville

| Recommendation | Rationale | Initiatives | Anticipated Outcomes | Responsibility |
|---|---|---|---|---|
| **Technology Equity:** Address Engagement Gaps with the City | | | | |
| **Reframe Authorship of the Smart City.** Democratize technology for community-led authorship of smart city investments. | Utilize the creativity and skill of Brownsville youth to inform planning decisions. The focus should be on reframing investment in the "smart city" where individuals from the neighborhood are the authors of shaping their community, not embedded algorithms determining what the community should be. This serves to transition away from the historic implications of top-down decision-making in Brownsville and elsewhere to foster community-driven change. | Establish "Young Innovators NYCx City Liaison Group" sponsored by MOCTO, composed of Young Innovators Academy graduates, who participate in City government planning processes for their neighborhood. | New York City led innovations in planning frameworks and alignment with OneNYC 2050 goals that prioritize co-created practices and technology-community frameworks; Alignment with OneNYC 2050 goals to provide equity in job training and workforce development pipelines, including for STEM related fields for Brownsville youth as a way to overcome issues of neighborhood safety; Establishment of community-invested economic development. | City Council, Mayor, CTO |
| **Prioritize and Promote the Citizen-Designer.** Identify opportunities to replicate the Brownsville Tech Lab/Innovation Lab foundations from Brownsville in other neighborhoods across New York City to build a generation of citizen-designers. | Promote Brownsville's community held intellectual understanding and work focused on using interactive technology and computational media to inform placemaking strategies and community-led economic development. | Develop long-term planning and funding frameworks that scale to the existing Young Innovators Academy. Funds should specifically be made available to other neighborhoods to hire youth as ambassadors to train, share experiences, and provide support for other place-based technology programs. | Alignment with OneNYC 2050 goals to provide equity in job training and workforce development pipelines for tech-involved Brownsville youth as a way to overcome issues of neighborhood safety; Promotion of Brownsville youth as emerging New York City leaders and technology-community advocates; Replicable City-sponsored program for youth innovation and economic development. | CTO, City Council, Mayor |

| Recommendation | Rationale | Initiatives | Anticipated Outcomes | Responsibility |
|---|---|---|---|---|
| **Provide Equity-Based Marketing for Public Tech Infrastructure.** Address perceptions of surveillance through co-creation practices and city-wide guidance. | Address perceptions of surveillance through co-creation practices. Many communities are by-standers to new tech innovation being installed in their neighborhood. Engaging community creators, stakeholders, and leadership in directing the purpose of the equipment being installed can save long term costs from tampering and opposition This is essential for communities -such as Brownsville - who associate some physical forms of technology with a history of being surveilled. | Create a guidebook for sharing technology in the public realm. This should outline best practices for sharing and installing physical technology in a community. The guidebook should include marketing, branding, communication, and lessons learned (both community and agency/organization). The intended audience should be planners, engineers, politicians, artists, organizations, and communities. | Increased awareness City-wide of tech-surveillance perception and methods to address these concerns; Improvement in buy-in and trust between community and City-sponsored tech programs. | CTO, City Council, Mayor, Community Organizations |
| **Data Protection:** Build a Foundation of Trust | | | | |
| Protect Community Data as a Counter-Surveillance Act. Historic and systemic surveillance of vulnerable communities with high-crime rates, such as Brownsville, should have greater protections in smart city data collection. | Encourage inclusion of community members in defining where data collection and distribution is useful for community needs in sponsored projects and/or neighborhood policing informed by smart city technology. By community members selecting which aspects of data are “open” in smart city data collection we reduce risks of creating a culture of surveillance. | All protocols and data collection instruments for projects where a unique identity is generated, community members must voluntarily enroll in a method deemed appropriate by the IRB.<br>Data collected from projects will remain anonymous when at all possible; however, if any unique identifying data is collected these data sets will be de-identified so they are confidential and stored separately from any identifying information.<br>Data shared with researchers, the state, and participating community members/organizations will be de-identified, aggregated, and shared without identifying information.<br>Any data collected of youth will come in compliance with the Children’s Internet Protection Act (2011) and will include parental/ guardian consent forms. | There is an abundance of studies that show perceptions of increased digital surveillance leads to civic distrust. Additionally, as cities become “smart” digital and physical surveillance interfaces will inevitably overlap. By de-identified data generated by community-supported content (or following appropriate guidelines when data collection is deemed mutually beneficial between individuals and broader systems) foundational trust is created between communities and city-sponsored technology initiatives. Alignment with NYC Mayor’s Action Plan for Neighborhood Safety. | City Council, Mayor |

| Recommendation | Rationale | Initiatives | Anticipated Outcomes | Responsibility |
|---|---|---|---|---|
| **Policy Innovation:** Update Existing Policy to Reflect Tech Innovation | | | | |
| **Redefine Public Art to Support Tech Innovation.** Expand the definition of public art in New York City to incorporate the changing landscape and use of technology to symbolize culture, community, and innovation. | To keep pace with shifts in technology, incorporate new forms of public art including 2D, 3D, XR projections and innovations in lighting design. Considerations such as use of words and safety across roadways are to be incorporated into final recommendations. | Update New York City code interpretation to allow for projection/projection mapping and/or innovative lighting to serve as a form of public art. | New York City as a leader in incorporating technology and its innovations into regulatory frameworks (e.g., code updates); Allowable accesses | City Council, Mayor, City agencies (TBD) |
| **Co-Create Innovations in Governance.** Work in partnership with City agencies to build coalitions that support innovation and change. | In response to changing needs of communities, public art, and technology, work with City agencies to expand what is possible in order to create and implement innovative projects, tailored to community needs. | Build a coalition of change makers between City agencies, community members, advocates, and other leaders/supporters that push for innovation in governance processes with specific focus on including flexible permitting processes and allowable permits for community-tailored projects.<br>Create an interagency working group, inclusive of ConEd, DOITT and other relevant franchisees and utilities,to discuss demands of technological innovations and formulate strategies and tactics and government procedures and processes that can affect necessary changes/updates and upgrades | New York City as a leader in incorporating technology and its innovations into governance processes; Leadership in permitting; Alignment with OneNYC 2050 goals to create design solutions for public safety through neighborhood activation | City Council, Mayor, City agencies (CTO, DOITT, DOT, DDC, EDC, PDC) |

| Recommendation | Rationale | Initiatives | Anticipated Outcomes | Responsibility |
|---|---|---|---|---|
| **Funding and Maintenances:** Build Budgets and Maintenance Plans in Response to Community Need | | | | |
| **Embed Iterative Frameworks in Funding Programs.** Support the practice of co-creation within the City's development, funding, and planning practices. | Match the temporal nature of co-created project development in response to complex politics, social dynamics, and spatial justice barriers often omnipresent within community development. Funding technological innovations should respond to industry standard costs in order to be competitive and prevent embedded inequalities in access to equipment and barriers to planning processes. | Increase available project funds and timelines for completion of city-sponsored projects to support and respond to the iterative nature of co-authored projects, context-specific needs, and cost of innovative tech solutions. | City leadership in best practices that support and invest in co-creation; Alignment with OneNYC 2050 goals to create design solutions for public safety through neighborhood activation; Stability and continuity in community-focused economic development for long-term success. | City Council, Mayor, City agencies (TBD) |
| **Provide Operation and Maintenance to Reinforce Program Longevity.** Enhance the long-term success of innovation through operation and maintenance support funds. | Technological innovation in physical space - such as use of a 3D projection mapping system and lighting or extend reality (XR) technology - requires not only start-up funds, but monies specific to operation and maintenance. This allows for continuity between start-up costs and long-term implementation success. | A post-pilot continuity fund and series of support opportunities (i.e., access to City agency support) should be included as part of each pilot program or City-sponsored community project. | Return on City investments are bolstered; Encourages community buy-in as a result of longer-term City support. | Mayor, City agencies (TBD) |

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