

The Chelsea Research Festival Model: Disseminating Research, Bridging Community and Academia, and Centering Youth

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ABSTRACT:

Background: Researchers often fail to disseminate their results to the communities they study. Meanwhile, youth in historically marginalized communities face barriers that reduce their likelihood of becoming researchers themselves.

Objectives: To bridge this research-community divide by creating the Chelsea Research Festival, an annual poster fair held at a public high school in the majority-Latinx city of Chelsea, Massachusetts.

Methods: The festival is co-planned by academics and community-based organizations. Posters may be either about Chelsea or conducted by Chelsea community members, including youth.

Lessons Learned: Buy-in from local organizations, especially the school district, has been key to success. Youth present their own posters alongside academics', and report that the experience is very meaningful. Persistence and consistency will be necessary to grow participation in the festival and engage harder-to-reach groups.

Conclusions: Community events like the Chelsea Research Festival may be a useful model for strengthening trust and engagement between academia and communities.

KEYWORDS: Youth, Community-Based Participatory Research, Health disparities, Income, Environmental Health, Dissemination, Community health partnerships, Community engagement, Community events

BACKGROUND

Academic interest in health inequalities, racial justice, and immigration has grown substantially in recent years. For example, the American Medical Association published a plan for dismantling racism in 2021,¹ the American Public Health Association encourages localities to declare racism as a public health crisis,² and funding for research related to racial inequality is trending upwards.³

However, increased efforts to study health disparities also places increased burdens on the marginalized communities in which they are studied. For example, research projects sometimes under-remunerate study participants for their time.⁴ At its worst, research is conducted by “parachute”⁵ researchers who “drop in” to a community, collect data, publish it for personal gain, and never return to share their findings. These dynamics, along with well-known instances of ethical abuses in research, foster mistrust of researchers, reluctance to participate in studies,⁶ and the underrepresentation of minoritized groups in data, thus exacerbating racial data gaps.⁷ Even as community-engaged research methods gain popularity,⁸ disseminating study results back to communities remains one of the most neglected stages of community engagement: researchers either overlook the importance of sharing research findings back to participants and their communities, lack knowledge on how to do so, or are not provided the resources to do so by their funding sources.⁹

Relatedly, members of marginalized communities are underrepresented in positions of power in academia.¹⁰ Barriers begin early in the academic pipeline: fewer students from under-resourced high schools enroll in research universities than those from wealthy schools, making them less likely to pursue research careers.¹¹ Thus, the cycle can be perpetuated, and marginalized communities may serve as objects of study without gaining equal power to decide

what to research and how,¹² and this underrepresentation creates continued difficulties in recruiting research participants from these communities.¹³

These twin, compounding issues—the limited connections between research institutions and over-studied marginalized communities, and the educational hurdles that youth experience in these communities (illustrated in Figure 1)—are the foci of an effort to bridge the gap between community and academic institutions through a “research festival” in Chelsea, Massachusetts.

Chelsea, Massachusetts

Chelsea is a small and dense city, with over 40,000 residents in just two square miles,¹⁴ abutting Boston. About 22% of its inhabitants live below the poverty line and 66% identify as Hispanic or Latino,¹⁴ although this is likely an undercount.¹⁵ Chelsea has long attracted migrants: early waves were Puerto Ricans and European Jews,¹⁵ while recent waves are Central American, with many arriving without legal documentation.¹⁶ Just 22% of residents have college degrees.¹⁴ Chelsea Public Schools’ standardized test scores are below the state’s average,¹⁷ likely due to intersecting socioeconomic factors, and has been labeled “intensely segregated” due to having a 88%-Latinx student body while neighboring whiter districts.^{18,19}

Chelsea residents have historically endured significant health and environmental injustices, suffering disproportionately from lead exposure, asthma, and lung cancer due to the polluting industries housed in and around Chelsea.^{20,21} At the same time, Chelsea is well-known for its resiliency and powerful Latinx representation. Most of Chelsea’s elected officials are people of color and immigrants, it declared itself a “sanctuary city” in 2007,²² contains a strong nonprofit sector,^{23–25} and has a decades-long history of grassroots organizing^{26–29} and activism victories.^{30,31}

Many research studies have been conducted in Chelsea. Some have gained widespread news coverage, like when hospital researchers collected blood samples on a street corner in Chelsea in April 2020, demonstrating disproportionately high rates of COVID spread,^{32,33} and when Harvard researchers studied the impacts of guaranteed income in a randomized controlled trial of Chelsea residents receiving \$400 per month.^{34,35} Some projects use participatory methods^{36,37} while others do not.³² The two community health clinics in Chelsea, the Massachusetts General Hospital Chelsea Healthcare Center (MGH Chelsea) and Beth Israel Deaconess HealthCare (BIDMC) Chelsea, also offer avenues for recruiting patients for clinical research, including national, NIH-funded trials³⁸ as well as various smaller studies.³⁹ Notably, MGH Chelsea is also home to the MGH Chelsea Community Research Program,⁴⁰ which holds monthly seminars and an annual symposium on health disparities research for MGH Chelsea affiliates, although it is open to the public.

The Chelsea Research Festival

A group of individuals, spearheaded by a Chelsea resident and doctoral student, thus identified a need to connect researchers who recruited for studies in Chelsea with the Chelsea community. The result was the Chelsea Research Festival, a research poster session held where research about Chelsea and research by Chelsea community members can be presented. Attendees come from the whole Chelsea community and include youth. The objects of the festival are threefold.

- (1) Share the results of research about Chelsea to the Chelsea community: Specifically, give Chelsea residents the opportunity to hear about the advances in health, science, and human knowledge to which they have contributed, and add their own perspectives to the results and next steps.

- (2) Expose Chelsea residents, especially middle and high school students, to career and educational paths in research, and provide them with networking opportunities.
- (3) Give community members, researchers, and organizations a forum for exchanging ideas.

The festival occurs annually in May in the local high school gymnasium. There are approximately 30 poster presentations (see Supplementary Materials for list of poster titles). Like poster sessions at academic conferences, presenting authors stand next to their poster as attendees circulate and have the opportunity to engage authors in discussion. Attendees include students from the high school, adult community members, and employees from local organizations. Youth attendees can participate in a printed scavenger hunt or bingo activity to facilitate engagement with the presenters and are offered a prize for participation. Tables from community organizations and academic groups line the periphery with information regarding accessing community resources and public health prevention topics, and may also offer interactive activities, like when Northeastern Universities researchers showed attendees how to build air quality sensors out of Legos at their table.

The remainder of this paper outlines the steps taken to plan the Chelsea Research Festival and lessons learned, so that other communities can follow this model.

METHODS

Convening the Planning Committee

In 2021, a Chelsea resident and doctoral student (author SEN) approached the leaders of the MGH Community Research Program (authors RC, AI, and JHL) with the idea of holding a community-facing event that not only featured MGH research, but also Chelsea-related research from other institutions and community members, centering the Chelsea community as the

primary audience rather than MGH employees. They enthusiastically endorsed the idea, and offered the bulk of their 2021 budget (unused due to COVID) to carry out the event.

The first year, they started by emailing Chelsea organizations to invite them to co-plan the event. Representatives joined the planning committee from Chelsea City Hall, Chelsea Public Schools, the Chelsea Housing Authority, Bunker Hill Community College Chelsea, and the nonprofit organizations La Colaborativa (focused on serving immigrants), GreenRoots (focused on environmental justice), and HarborCOV (focused on domestic violence). Today, membership on the planning committee remains open, and we continue to invite interested parties as we encounter them. Key partners added in the second and third years included BIDMC, who were so enthusiastic that they offered to cover the bulk of the 2023 budget, and Northeastern University's Solutions to Urban Pollution research team. Each year, the planning committee convenes in the fall and meets regularly via videoconference until the festival. We met for 30 minutes per week at first, but now only need to meet biweekly.

Deciding Goals and Format

Early in its first year, the planning committee agreed upon its goals and format (a poster session). We also decided upon the eligibility criteria for presenters: that their research projects had to be either (1) "about" Chelsea in some form (e.g., data was collected in Chelsea), or (2) one or more members of the research team must be a Chelsea community member (i.e., worked, studied, or lived in Chelsea). All fields of study were deemed eligible, including the humanities and social sciences, and we decided upon the Chelsea High School gymnasium as a venue. We have kept these details constant each year. Now, each fall, the planning committee selects a date and time for the festival, sets deadlines for abstract submissions and notices of acceptance, and makes key budget-related decisions such as whether to have paper or electronic posters.

Soliciting Abstracts

The planning committee creates an online abstract submission form which is open from about December to April each year. Submitters must describe how their project relates to Chelsea and if any of their presenters were Chelsea community members. We maintain a website⁴¹ and make fliers to promote the abstract solicitation, which are distributed via academic mailing lists. The planning committee encourages submissions from the community by leveraging personal relationships. We identify classes and youth groups that are already working with data, such as a high school data visualization class, GreenRoots' and La Colaborativa's youth programs, and a middle school after-school science club. Outreach to potential presenters is illustrated by Figure 2. Planning committee members with research experience visit youth groups to explain how to design research posters and give them feedback. The data visualization teacher holds a mock poster session during class to boost students' confidence in presenting, which planning committee members and school staff attend.

Reviewing Abstracts and Finalizing Posters

The planning committee reviews all abstracts as a team, sends presenters feedback (especially advice on simplifying research results for a lay audience), and are usually able to accept all submissions. There were 27 posters presented the first year (Table 1); more than half came from academia, 7 were from local organizations, and four were from groups of high schoolers. Most were health related. In 2023 and 2024, fewer local organizations presented than in 2022, partially due to some of the presenters from 2022 leaving their positions, but the number of youth posters increased. Variety in fields has also increased over time: for example, in 2022, an adult Chelsea resident presented her history research on the Black community in Chelsea, and

high schoolers presented interviews they conducted with peers about the use of racial slurs (see Supplementary File 1 for list of poster titles).

Youth are not held to the abstract submission timeline and their abstracts are not reviewed like academics'; instead, we keep in close contact with youths' adult leaders to collect information on how many posters there will be and their topics on the timeline that suits their needs.

Designing Event Flow and Activities

The team has also created a variety of educational materials that are displayed at the festival (Supplementary File 2). A poster-sized "what is research?" infographic outlines different types of data and fields of study, which are illustrated by case study infographics of Chelsea-related research projects. There are also profiles of Chelsea community members who use research in their careers .

In the weeks before the festival, the planning committee develops activities to engage youth, like the scavenger hunt and interactive activity stations described earlier. Though the 2023 festival had a keynote speaker, the planning committee ultimately decided a keynote interrupted the event flow, and we decided against including one in subsequent years.

Promoting and Holding the Festival

Event flyers are advertised on social media and city newsletters and paper flyers posted throughout the high school. We email invitations to community leaders and media outlets. Chelsea Public Schools arranges for students to be released from class so they can spend their period at the festival. In 2025, we will circulate the list of poster titles and "bingo" activity to teachers in advance so they can use them to prepare students. The 2022 festival attracted about 75 attendees, with attendance increasing each year. In 2023, the festival was held during the last

period of the school day, and another session was held in the evening for adult community members.

LESSONS LEARNED

Funding

The 2022 festival budget was approximately \$4,000, including the cost of refreshments and poster printing. Since 2023, after we began using electronic posters, the budget has been about \$9000. Though five times as costly as paper posters, electronic posters allow for researchers to embed animations and have multi-page posters, e.g., an English poster that toggles to a Spanish version (Figure 3). Generosity from academic institutions, especially MGH, BIDMC, Northeastern, and Bunker Hill Community College, as well as the Massachusetts Cultural Council,⁴² has made the festival financially possible. In addition, they supply human resources: research assistants and coordinators volunteer at the festival and help considerably with logistics. However, sustainable funding continues to be a challenge, and at the start of each year we do not know how we are going to cover our costs. We network and apply to grants relentlessly to ensure we have sufficient funding, and hope that eventually, our funding sources will be predictable.

Planning

Key to the Chelsea Research Festival's success has been its collaborative planning process with regular meetings held over nine months and involving various community stakeholders, including local nonprofits. The support of Chelsea Public Schools has been especially valuable, as they connect us to classes who may want to present. Having the event in the high school has also been important to its success, as this allows students to easily attend, and

they encourage community attendance because schools are seen as “grassroots,” community-centered locations.⁴³

Growing Community Researchers

It has been essential that researchers have been able to make themselves available to spend time supporting youth and community members with the development of their posters, in person and sometimes on short notice. Multiple teachers and nonprofit staff noted to planning committee members that presenting at the festival was meaningful for their students and the highlight of the academic year for many. They noted that some youth presenters were not necessarily “academically-oriented” students, so it was important that we provided support for youth to submit their abstracts, create their posters, and gain confidence in their presentation skills. Youth and adult community members felt empowered and proud to have an audience for their work. Similarly, individuals from research institutions said that they found it inspiring to see Chelsea youth presenting and engaging with adult attendees as confident experts.

Language Access

Given the large number of Chelsea community members who speak Spanish but not English,⁴⁴ we ensure “floating” interpreters are available at the festival. The 2023 keynote address was also interpreted into Spanish. We strongly encouraged researchers to create Spanish versions of their posters, and some, though not all, did so. Though interpretation can be costly, research festivals in communities with limited English proficiency should adopt practices like these to promote language access.

Deepening the Bidirectional Exchange

While the festival has been a success, and academic presenters have enjoyed seeing a side of Chelsea they had not previously been exposed to, we are also eager to improve it. One annual

poster session is not enough to create deep connections between the community and academic institutions. Some attendees and organizers have expressed that it is impossible to talk to all the festival presenters during the course of the event, and some presenters also wished for opportunities to have deeper, more in-depth conversations with attendees. In the future, we plan to share a contact list of all presenters to foster collaboration amongst different types of presenters, and will encourage presenters to wear name tags that say, “Ask me about...[e.g., environmental justice, being Latina in STEM, going to med school]”.

In future years we also hope to have a wider range of community-based organizations and academic institutions present. The festival is a valuable opportunity for organizations to do outreach and showcase the resources they provide to community members, and could also serve as a miniature college fair or job fair for students.

Community Outreach and Attendance

We also hope to increase attendance at the festival amongst “harder to reach” community members who may not typically attend community events. As each year passes, the festival becomes better-known in the community, leading to better attendance, and this regular, sustained presence will be crucial to its growth. It has also been difficult to balance making the event accessible to both youth and adults. Holding the festival during school hours makes it accessible to students, but not working adults. In our second year, we split the festival into two sessions—one during school and one after school. This approach is more costly and makes the presenters’ day longer, but has proven necessary to reach both audiences. Ongoing outreach and publicity efforts will be needed to grow the festival audience, including by continuing to work with the local newspaper⁴⁵ and public access television.⁴⁶

Sustainability and Future Directions

In 2024, we incorporated the Chelsea Research Festival as a 501(c)3 organization, making it easier to accept donations and pay vendors. We also hope this will facilitate success in future grant applications. In 2025, we plan to evaluate the acceptability of the festival through satisfaction surveys, and in subsequent years, through IRB-approved interviews with presenters and attendees. These data would help us understand the impact of the festival on areas such as youth's interest in research careers. Another future goal is to engage young people as co-planners and decision makers. This may enhance the festival's sustainability, as well as increase the relevance of the festival to more youth. Finally, our long-term vision is to grow this once-per-year event into year-round engagement between academia and the community, including via internship and mentorship programs for high school students interested in academic research.

CONCLUSIONS

Dissemination of research results back to affected communities is an oft-overlooked aspect of community-engaged research. The Chelsea Research Festival not only provides a platform for sharing back research findings, but it also empowers youth and community members to participate in scientific discourse. The festival can serve as a model for other communities seeking to strengthen connections between communities and the academic institutions who hope to partner with them.

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Table 1. Number of research posters for the 2021 and 2022 Chelsea Research Festivals by presenter type

	2022 festival	2023 festival	2024 festival
Academic institutions	15 (56%)	17 (52%)	12 (41%)
Government and community organizations	7 (26%)	2 (6%)	1 (3%)
Chelsea residents - youth	4 (15%)	11 (33%)	12 (41%)
Chelsea residents - adults ^a	1 (4%)	3 (9%)	4 (14%)
Total posters	27	33	29

^a This category includes researchers who presented at the festival mainly because they lived in Chelsea, and not necessarily because their research was about Chelsea, although some adult community members did conduct research about Chelsea.

Figure 1. Summary of problems addressed by Chelsea Research Festival and its goals

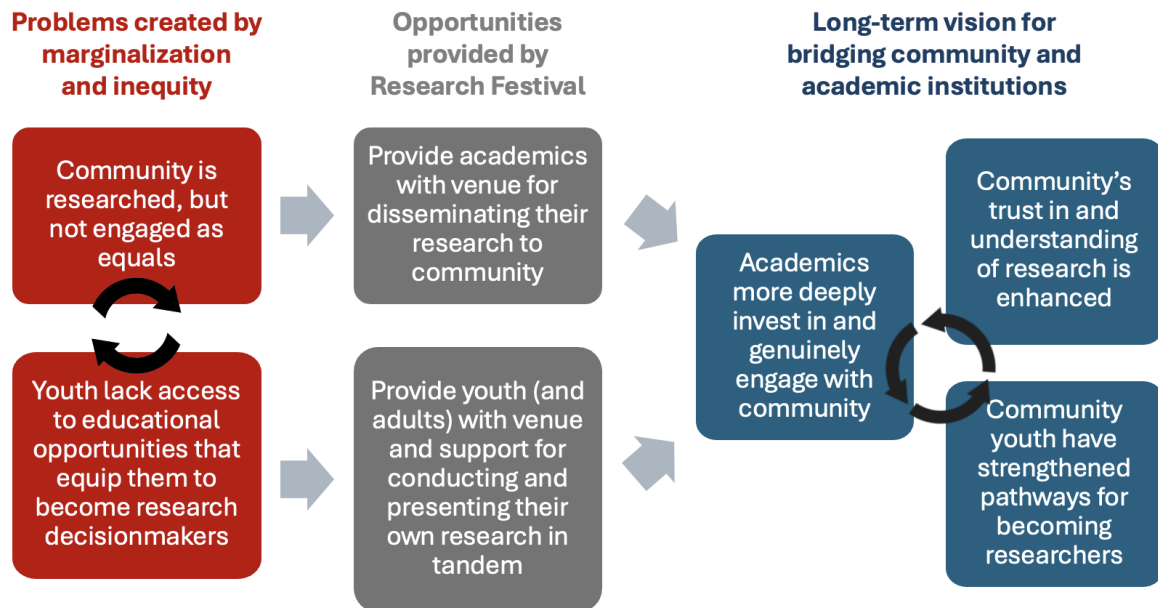


Figure 2. Outreach methods to potential presenters

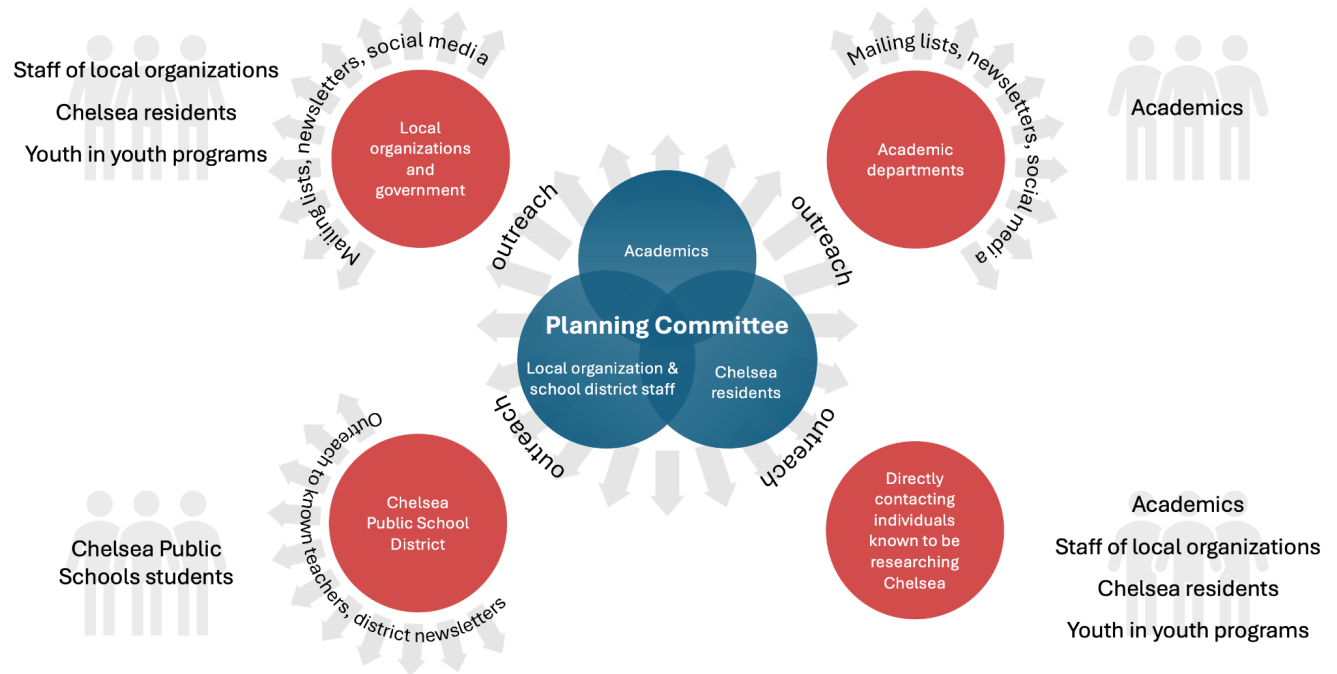


Figure 3. Presenters using electronic poster boards in 2024



Supplementary File 1: List of Poster Titles

Poster titles from 2022 Chelsea Research Festival	Presenter category
Severity of COVID-19 determines the location and frequency of SARS-CoV-2 antibody binding in Chelsea residents	Academic
Chelsea Eats	Academic
Community frequent antigen testing to monitor COVID-19 in Chelsea, MA	Academic
The Chelsea Project: Wastewater analysis to measure COVID prevalence in Chelsea	Academic
Supporting spanish-speaking family dementia caregivers with adapted stress reduction and perspective taking techniques: 3 month outcomes	Academic
Collaborative process mapping of community resources	Academic
Latino immigrant patient perspectives on trust in healthcare	Academic
The Boston Latino Aging Study (BLAST)	Academic
Evaluation of the patient experience for Massachusetts General Hospital's health-related social needs program	Academic
Screening for COVID-19: A self-administered, at-home smell test	Academic
COVID-19 testing in Chelsea: A mobile van approach	Academic
Wicked hot Mystic: Summer heat waves impact Chelsea disproportionately	Academic
C-HEAT: Chelsea and East Boston Heat Project	Academic
The impact and social response of COVID in Chelsea	Academic
Gastón Institute for Latino Community Development & Public Policy, UMass Boston	Academic
Learning about immigrant experiences in Chelsea	Government/community organization
Bunker Hill Community College students research: Chelsea's cultural assets	Government/community organization
Building energy reporting & disclosure in Chelsea	Government/community organization
Challenging stereotypes of homelessness: A review of the longest stays in HarborCOV's emergency shelter	Government/community organization
Exploring the healthcare needs and barriers of North Suffolk through the 2021-22 community health needs assessment survey	Government/community organization
The fight to breathe in Chelsea, MA	Government/community organization
Chelsea walking tours: Understanding Chelsea's past, growing relationships & skills today, envisioning the city's future	Government/community organization
Electrify all the things!	Resident - Adult
Air quality	Resident - Youth
Cost of living in Chelsea	Resident - Youth
Bathroom problems	Resident - Youth
Housing and gentrification in Chelsea: The Healthy Neighborhood study	Resident - Youth

Poster titles from 2023 Chelsea Research Festival	Presenter category
Biological differences between SARS-CoV-2 infection in pregnant and non-pregnant individuals*	Academic
The SARS-CoV-2 household transmission study*	Academic
Portable air cleaner (PAC) usage and indoor air pollution reduction	Academic
The Chelsea & East Boston Heat Study (C-HEAT): Hot spots and cool places in urban heat islands 2020-2022	Academic
Validation of a rapid COVID-19 testing device and efficacy of at home COVID-19 testing against emerging variants*	Academic
Substandard housing and the risk of COVID-19 infection and disease severity in Chelsea, MA	Academic
Can machine learning identify properties with housing code violations at a higher rate than inspector-informed prioritization?*	Academic
Researching COVID to Enhance Recovery (RECOVER)*	Academic
Building capacity of a transdiagnostic resilience training intervention for at-risk adolescents in communities	Academic
Improving communication among patients with limited English fluency and neurological illness	Academic
How can we use COVID wastewater data to inform COVID vaccination campaigns	Academic
Understanding COVID-19-related smell loss and recovery: A bilingual at-home smell test for long COVID	Academic
Understanding the impact of gender-based violence on immigrants to inform mental health programming for newly arrived families*	Academic
Assessing the unmet needs of spanish speaking family caregivers of persons living with dementia in the Greater Boston area	Academic
The high health risks of unaffordable water: An in-depth exploration of pathways from water bill burden to health-related impacts in the United States	Academic
Fear of change in Chelsea: The effects of new development on perceptions of community resilience	Academic
Chelsea Eats	Academic
Understanding economic burdens during the COVID-19 pandemic in North Suffolk through the 2021-2022 community health needs assessment survey	Government/community organization
Integrating social support coordination into Chelsea public health services	Government/community organization
Our prayer: The People's African Methodist Episcopal Church a century after the great Chelsea fire	Resident - Adult
Effects of a family strengthening program for preventing family separation in Sierra Leone	Resident - Adult
Honey, I shrunk the machine! Or, miniaturizing a thin film reflectometry tool for integration into a semiconductor wafer fab	Resident - Adult
Gentrification and its effects on minority communities*	Resident - Youth
Gentrification in Chelsea*	Resident - Youth
Should Chelsea be concerned about their students graduating?	Resident - Youth
How does ethnicity affect our lives?*	Resident - Youth
MA air pollution*	Resident - Youth
Chelsea road conditions*	Resident - Youth
Black voices: Exploring racial identity through youth interviews at La Colaborativa	Resident - Youth
Why Chelsea needs a youth center	Resident - Youth
Youth spaces in Chelsea*	Resident - Youth
Timeline of Boston University takeover of Chelsea Public Schools	Resident - Youth
Zinc deficiency as a risk factor for autism spectrum disorder	Resident - Youth

Note: Titles marked with an asterisk () may not have been the poster's final title, and are an approximation based on available information.*

Poster titles from 2024 Chelsea Research Festival	Presenter category
COVID-19 Chelsea Study: Frequent antigen testing as a way to mitigate and control COVID-19 pandemic in vulnerable communities	Academic
What's in your wastewater? Visualizing trends in COVID-19 from Chelsea wastewater data	Academic
Substandard housing and the risk of COVID-19 infection and disease severity in Chelsea, MA	Academic
Living in limbo: The deleterious effects of uncertainty on U.S. asylum seeker health and wellbeing	Academic
REACH-Español: Adapting a digital health tool to improve diabetes care among Latino adults	Academic
Improving access to autism specialty care through a community health worker specialist: A quality improvement project	Academic
The Chelsea Eats program – The effect of cash benefits on health and health care utilization	Academic
C-HEAT: Chelsea and East Boston Heat Project	Academic
The "Cool Block": A collaborative approach to reducing extreme heat	Academic
The eMERGE study at Mass General Brigham: Returning personalized disease risk reports	Academic
Household transmission of COVID-19	Academic
Breaking down barriers: A collaborative model for pediatric lead testing outreach centered on health equity, trusted partnerships, and innovation	Academic
Challenging stereotypes of homelessness: A review of the longest stays in HarborCOV's emergency shelter	Government/community organization
Electrify all the things!	Resident - Adult
Mapping early childhood activities in Chelsea	Resident - Adult
The impact of special education advocacy in Chelsea, MA	Resident - Adult
Fannie Fairweather	Resident - Adult
The attendance policy	Resident - Youth
Food waste	Resident - Youth
Youth spaces in Chelsea: How can we provide better spaces for youth in Chelsea?	Resident - Youth
Drama in high school	Resident - Youth
Tiktok's effect on attention spans	Resident - Youth
Addressing America's aging water infrastructure and ensuring clean water for all	Resident - Youth
Bathroom policy	Resident - Youth
The right high school for rising high schoolers at Chelsea, MA	Resident - Youth
Findings from a student-led survey of student priorities at Chelsea High School	Resident - Youth
Marijuana use	Resident - Youth
Dunkin Donuts	Resident - Youth
College campus cancer clusters: The story that rocked NC State	Resident - Youth