Austin/Travis County Chronic Disease Community Health Workers - Train, Deploy and Engage Project "The HEART ATX Project"

-CCR2019 Annual Evaluation Report Year 3-

Full Project Period Report

(08/31/21-08/30/24)

Report prepared by:

UTHealth Houston School of Public Health-Austin
Andrew Springer, DrPH
Co-Principal Investigator, HEART ATX Evaluation
Associate Professor, Health Promotion & Behavioral Sciences

Sandra van den Berg, PhD
Co-Principal Investigator, HEART ATX Evaluation
Professor, Health Promotion & Behavioral Sciences

Mahima Viswanathan, MD, MPH, Evaluation Coordinator (Years 2&3),
HEART ATX Evaluation

Maria Elena Garcia, MPH
Evaluation Coordinator (Year 1)
HEART ATX Evaluation

Sana Amin, MPH
Research Assistant
HEART ATX Evaluation

Austin Public Health
Stephanie Helfman, MSPH
Program Lead, HEART ATX
Manager, Chronic Disease and Injury Prevention Program

Raisa Charles, MPH
Program Supervisor, HEART ATX
Chronic Disease and Injury Prevention Program

Sanaz Sabeti
Program Coordinator, HEART ATX
Chronic Disease and Injury Prevention Program

October 14, 2024

TABLE OF CONTENTS

EXECUTIVE SUMMARY

Purpose*:* The *HEART ATX* project was a three-year initiative funded by the Centers for Disease Control and Prevention (CCR-Grant Component B) aimed at reducing the disproportionate impact of COVID-19 on higher risk populations in the Austin/Travis County area of Texas. This report provides a summary of HEART ATX evaluation findings for the implementation of HEART ATX (August 31, 2021-August 30, 2024), including highlights, best practices, challenges, and recommendations for ongoing quality improvement.

Project Description: Hosted by Austin Public Health and delivered via a coalition of community organizations, HEART ATX aimed to improve the health of higher risk communities via: a) recruitment and training of Community Health Workers (CHWs) *(Train);* b) deployment of CHWs in clinic and community settings to support COVID-19 prevention and promotion of educational and social service resources *(Deploy);* and c) increased referral and linkages to social and health services, and implementation of chronic disease self-management classes and healthy living workshops and programs ("HL") (DEEP, PreventT2, Walk TX) *(Engage)*.

Methods: Guided by a mixed methods evaluation and the *Train, Deploy and Engage* framework, evaluation methods for assessing project delivery and related highlights, best practices, challenges, and recommendations for improvement included: CHW monthly activity tracking; annual CHW survey; and annual partner leader interview. Additionally, we assessed pre/post changes in healthy living practices among DEEP (diabetes self-management) participants. CHWs also implemented *photovoice* in Year 3 to explore how social determinants of health (SDoH) impact residents and how HEART ATX has supported resident health/well-being.

Results: ***Train****:* CHWs (n=19) enhanced their COVID-19 response knowledge and overall health promotion skills via 24 core mini-trainings and 136 community trainings. Training was cited as a key highlight by CHWs, with benefits that included strengthening CHW social networks. ***Deploy***: Up to 19 CHWs (n=12 Year 1; n=19 Year 2; n=17 Year 3) were successfully integrated into six Austin/Travis County clinic, community, and housing organizations during the project. Across the three-year period, HEART ATX CHWs implemented a high number of community outreach activities (i.e., tabling, block walking, client/patient discussions, mobile clinics, and chronic disease self-management and healthy living programs) (n=6,279) resulting in a high reach of residents in underserved areas of Austin (n=50,911 resident encounters). Highlights of COVID-19 outreach included the direct impact of CHWs' efforts (*"We helped more people to get COVID shots and delivered many testing kits"*), with best practices that included: the importance of listening to residents to address misconceptions; promoting COVID-19 vaccination by addressing SDoH; and providing onsite vaccination. Challenges included the decline in community interest in COVID-19. Based on available data from 2023, 72.5% of Travis County residents have completed their COVID-19 vaccination series***. Engage***: *Highlights* of SDoH referrals included linking residents with social resources, with best practices that included providing a 'warm hand-off' between CHWs and providers. Challenges included difficulties with resident follow up and lack of resource capacity. *HL class* highlights included the positive impact on HL practices and sense of community. Best practices included activating social networks to promote classes; challenges included the need for enhanced promotion of classes.

Lessons Learned and Conclusion: We made several enhancements with our evaluation efforts over the project period, including the addition of an annual CHW survey as well as a photovoice assessment aimed at elevating CHW voice in the evaluation, resulting in rich insights with project delivery. We also aimed to share our findings throughout the project period via periodic partner meetings, presentations at Texas Society for Public Health Education and Texas Public Health Association conferences, and a "Frames of Empowerment" event held at Austin Public Library in which CHWs shared photovoice projects. Beyond our lessons learned, the HEART ATX evaluation documented the positive overall impact of the project on the Austin/Travis County community, including: a.) an impressive delivery and reach of clinic and community-based health promotion activities across the three-year period by a small group of CHWs and organizations; b.) direct impact of HEART ATX on resident social needs (e.g., linkages to food, housing, financial support); and c.) direct impact of HL programs on healthy living practices and sense of community. Our evaluation provides further evidence of the high value CHWs add to community health promotion via their lived experience, cultural competence, and relevant community health promotion skills. Among our key findings for looking forward is the need to explore further opportunities for CHW leadership, career advancement, and sustainability, and ways to support their self-care, given the multiple hats they wear and resident demands they address in their valuable roles.

INTRODUCTION

The *Healthy, Empowered and Resilient Together ATX* project ("HEART ATX"), funded by the Centers for Disease Control and Prevention (CCR-Grant Component B) and hosted by Austin Public Health, was a three-year, clinic and community-based initiative aimed at mitigating the disproportionate impact of COVID-19 among higher risk residents of Austin/Travis County, Texas via community health worker-led health education, social/health resource referral, and delivery of chronic disease prevention and healthy living programs. This final report shares evaluation findings of the HEART ATX project for the three-year project period (8/31/21-8/30/24), including highlights, best practices, lessons learned and recommendations for ongoing project quality improvement.

PROJECT DESCRIPTION

Building from the growing body of evidence on the effectiveness of community health worker (CHW)-led health promotion[1,2] the HEART ATX project was driven by a CHW-led approach aimed at providing enhanced COVID-19 health education, social/health resource navigation, chronic disease prevention and healthy living supports for higher risk residents in Austin/Travis County. Priority populations included residents under 200% of federal poverty level, Hispanic/Latino and Black/African American communities, and residents with underlying chronic conditions based in economically underserved areas of Austin, Texas (Appendix A: Priority Areas). Foundational to our approach was the recruitment, training, and deployment of CHWs in *federally qualified health centers*, *community,* and *housing* organizations (Box A: project partners). Figure 1 presents the HEART ATX logic model, with key outcomes that included COVID-19 mitigation, linking residents with resources, and improved chronic disease self-management and health living behaviors. HEART ATX strategies were guided by the *Train/Deploy/Engage* framework:

Box A. HEART ATX Partners

- *Health Center:* CommUnityCare; UT Dell Medical School/Lonestar Circle of Care; People's Community Clinic
- *Community*: Austin Public Health (host organization)
- *Housing*: Foundation Communities; Housing Authority of City of Austin
- *Program Support*: United Way for Greater Austin
- *Evaluation Support*: UTHealth Houston School of Public Health-Austin

- ***Train***: Recruitment and training of CHWs on COVID-19 response, social service referral, chronic disease self-management/healthy living;
- ***Deploy***: Deployment of CHWs to support COVID-19 prevention and health education via a range of clinic and community settings;
- ***Engage***: Referrals for social needs; healthy living classes/ activities (e.g., diabetes prev. classes; Walk TX).

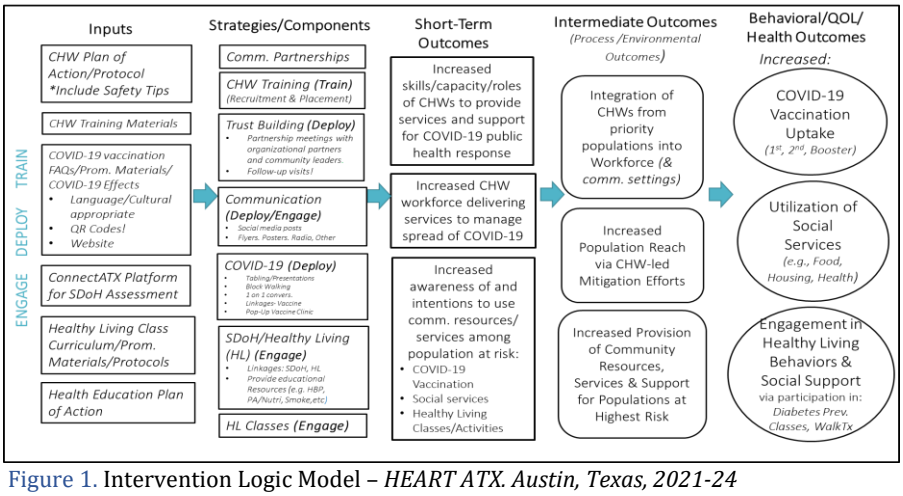


Figure 1. Intervention Logic Model – *HEART ATX. Austin, Texas, 2021-24*

[1] Kim K, Choi JS, Choi E, et al. Effects of Community-Based Health Worker Interventions to Improve Chronic Disease Management and Care among Vulnerable Populations: A Systematic Review. AJPH 2016; 106, e3_e28.
[2] Bhaumik S, Moola S, Tyagi J, *et al.* Community health workers for pandemic response: a rapid evidence synthesis *BMJ Global Health* 2020;**5:**e002769.

Co-Learning about HEART ATX

In developing and enhancing HEART ATX, project leaders created intentional spaces throughout the three-year period for ongoing learning about best practices and quality improvements with project delivery. On the evaluation side, in addition to community evaluation board meetings (~3/year) and methods to garner HEART ATX partner input (see methods below), we also implemented participatory learning activities such as "Community Facilitated Logic Model"[3] workshops with HEART ATX CHWs and organizational leaders using Padlet (virtual flipchart). This activity helped to further inform our approach and enhance the original model (Fig. 2), with valuable input that included:

- ✓ Importance of building trust with community
- ✓ Need for >1 CHW visits to each setting
- ✓ Expanded ideas for settings (e.g., libraries, day cares, super markets, schools)
- ✓ Identification of culturally relevant materials (COVID-19 flyers, safety protocols, resources)
- ✓ Emphasis on language and culture
- ✓ Social resource screening best practices

…among other enhancements.

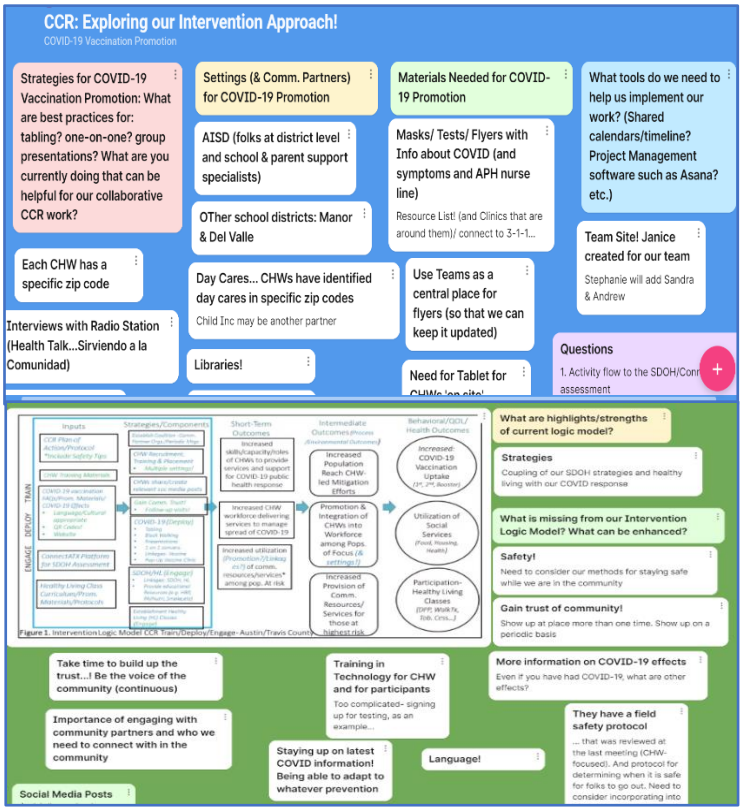


Figure 2. Community-Facilitated Logic Model sessions with HEART ATX leaders and CHW partners, *HEART ATX, Austin/Travis County, 2021-24.*

In addition to evaluation team efforts to co-learn about the delivery of HEART ATX, HEART ATX project leaders held periodic CHW meet-ups throughout the three-year period to build capacity and exchange best practices about project delivery (see "TRAIN" section below). In the following section, we share key findings from the delivery of the HEART ATX project.

EVALUATION FINDINGS - *Years 1-3*

Guided by a mixed-methods evaluation design and a community evaluation advisory board comprised of project partners, below we present key findings for the three-year implementation of HEART ATX as organized by the *Train, Deploy* and *Engage* framework. Findings explore project highlights and accomplishments (outcome evaluation orientation), and lessons learned for enhancing project delivery (process evaluation and quality improvement orientation).

TRAIN: Train Community Health Workers to ensure comprehensive acquisition and reinforcement of relevant knowledge, roles, and skills to support the COVID-19 public health response to:

- Manage outbreaks and community spread *(Strategy IR1)* and
- Align training opportunities with public health led efforts to address the underlying conditions and/or environments that increase the risk and severity of COVID-19 infections among priority populations within communities *(Strategy IR3).*

[3] Lien AD, Greenleaf JP, Lemke MK, et al. Tearless Logic Model. *Global Journal of Community Psychology Practice.* n.d.

Strategy Overview: The TRAIN component of HEART ATX focused on the recruitment and training of CHWs based in community and clinic settings to support individual/community health promotion. Specific strategies included training HEART ATX CHWs in COVID-19 response *(Strategy IR1)* and building skills to address the underlying conditions that increase risk and severity of COVID-19 infections *(Strategy IR3),* including social needs referral, chronic diseases self-management, and healthy living (Fig. 3). Trainings were delivered online and in-person via monthly mini-training sessions, hosted by Austin Public Health, and various community trainings.

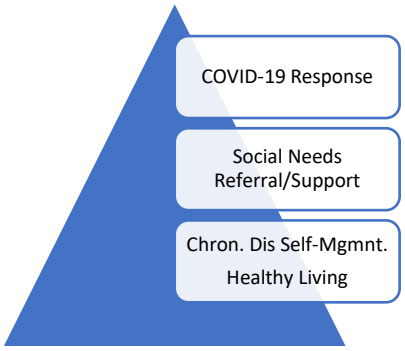


Figure 3. Core Training Areas, *HEART ATX, Austin/Travis County, Texas.*

Evaluation Guiding Questions: *What were highlights, knowledge gained, and recommendations for improvement of CHW Trainings?*

Methods: An annual CHW survey and training posttest surveys were administered with CHWs to learn more about highlights, skills gained, and recommendations for improvement. Thematic analysis was conducted to identify key themes.

Results: Across the three-year project period, CHWs grew their knowledge and skills with a variety of health and social service topics and health promotion methods in support of HEART ATX focus areas of COVID-19 response, health and social resource navigation, chronic disease self-management and healthy living, among multiple other topics such as advancing equity (Appendix B). In addition to the core mini-trainings hosted by Austin Public Health (n=24), CHWs attended 136 additional trainings throughout project, with topics that support the primary HEART ATX focus areas.

Figure 4. Highlights and Knowledge and Skills Gained from Trainings- *CHW Survey and Mini-Training Posttest- HEART ATX* (n=19 CHWs)

- *Highlights* cited by CHWs included skilled instructors, engaging learning approaches, and the opportunity to build CHW social networks, among other themes (Fig. 4).
- *Knowledge and skills gained* included specific topics such as diabetes management, and methods such as the power of storytelling, motivational interviewing (*"I learned the steps and how to talk with the people"*), and navigation to various health/social resources (Appendix B, Table 2a).
- *Recommendations for improvement* included opportunities for more active learning for some trainings *("role playing when time permits")*, alternative training delivery modes *(virtual and field-based),* and topic specific trainings (Fig. 4 and Appendix B, Table 2b).

> *"[I learned]…[h]ow to come up with solutions with community members that involve them and not just resources that I have." -HEART ATX CHW*

> *"I learned how I can better assist the community with resources from City of Austin." -HEART ATX CHW*

How Results Are Being Used/Disseminated: Training results were shared with partner organizations with the aim informing training topics and enhancing training delivery. Training sessions were identified by CHWs and organizational partner leaders as a highlight of the HEART ATX project and underscore the importance of creating spaces for co-learning and capacity building.

DEPLOY: Deploy CHWs to support: the COVID-19 public health response to manage outbreaks and spread of COVID-19 via integration of CHWs in community, health center, and housing organizations *(Strategy IR4);* delivery of messaging and education in community and clinical settings aimed at reaching priority populations in Austin/Travis County, Texas *(Strategy IR6);* and delivery of critical media messaging within stated catchment (priority) areas *(Strategy IR2).*

Strategy Overview: The HEART ATX project surpassed the original target of 13 CHWs and integrated and deployed up to 19 CHWs across the three-year period in six *health center* (n=4), *community* (n=9 CHWs), and *housing organizations* (n=6) *(Strategy IR4),* with n=12 CHWs integrated in Year 1, n=19 in Year 2, and n=17 in Year 3 (Fig. 5). In supporting the COVID-19 public health response and delivery of health education *(Strategies IR4 & IR6)*, HEART ATX CHWs engaged in a variety of health education and promotion outreach activities that included tabling, block walking, client/patient discussions/consultations, mobile clinics, and chronic disease prevention and healthy living promotion programs. These activities supported COVID-19 prevention and vaccination as well as promotion of social services resources, chronic disease prevention/self-management knowledge and skills, and healthy living supports (Walk TX program) for residents of Austin/Travis County, Texas. HEART ATX activities took place in both *clinical* (CommUnityCare, Dell Med/Lonestar Circle of Care, and People's Community Clinic- all federally qualified health centers) and *community settings* that included subsidized housing, schools, faith-based institutions, and other settings with widespread reach such as supermarkets. Complementing these activities, HEART ATX partner organizations also delivered COVID-19 and chronic disease prevention messaging via various social media platforms, including Facebook, Instagram, Twitter/X and other platforms described below *(Strategy IR2).*

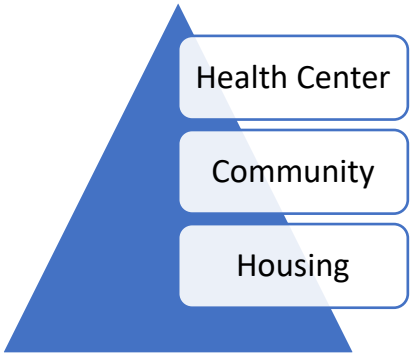


Figure 5. Core settings and partner organization sectors for CHW deployment for COVID-19 mitigation – *HEART ATX, Austin, Texas*

Evaluation Guiding Questions: *What were the highlights/accomplishments, best practices, lessons learned, and recommendations for CHW-led delivery of COVID-19 and Chronic Disease Prevention outreach activities?*

Methods:

- *CHW Monthly Activity Reports:* CHWs documented COVID-19 prevention and other health education and promotion activities as well as number of residents reached by activities.
- *CHW Annual Survey and Organizational Partner Interview*: In exploring the highlights, best practices, and lessons learned with the delivery of HEART ATX, we implemented annual semi-structured interviews with organizational partner leaders (Years 1-3), and an annual self-administered survey with CHW partners (Years 2 & 3).
- *COVID-19 vaccination data* were provided by APH Epidemiology division.

Descriptive statistical analysis (counts and %) was conducted with CHW monthly activity data; thematic analysis was conducted with qualitative data based on a deductive (guided by the interview guide) and inductive (allowing for emerging themes) approach.

Results - *DEPLOY*

HEART ATX Activity Delivery & Reach

In support of COVID-19 prevention and mitigation, HEART ATX CHWs implemented a high number of community outreach activities across the three-year period (n=6,279) (Fig. 6) that reached a high number of residents (n=50,911 resident encounters)[4] (Fig. 7).

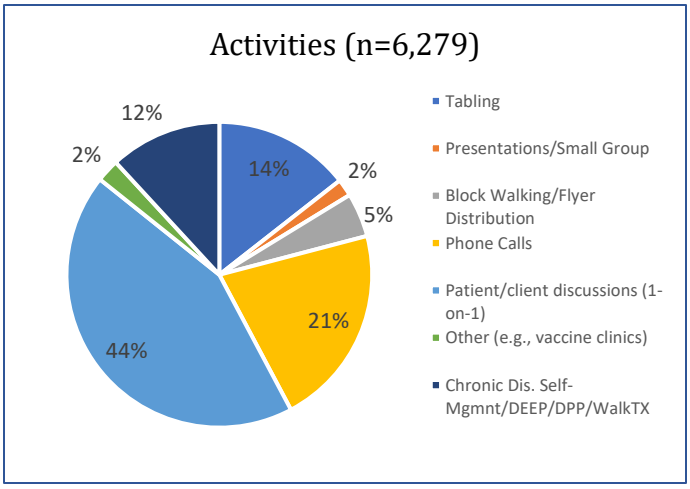


Figure 6. % Breakdown of Types of Activities Delivered, *HEART ATX, Austin, Texas, 2021-2024.*

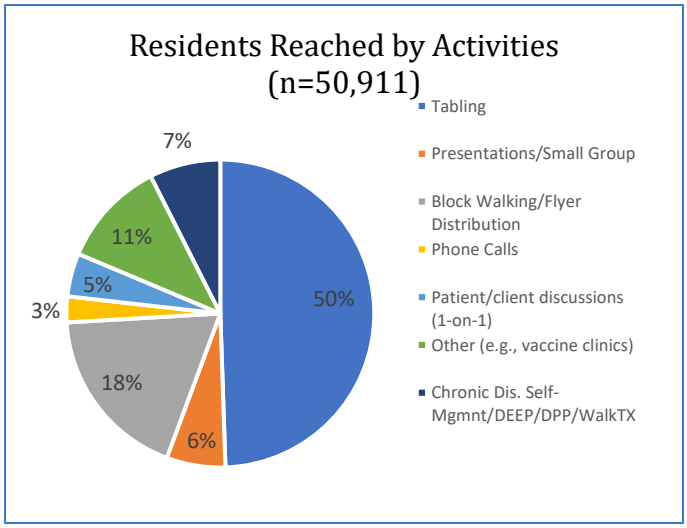


Figure 7. % Resident Encounters by Activity Type, *HEART ATX, Austin, Texas, 2021-2024.*

- *Activities Delivered:* Within the health education and promotion domain, patient/client discussions represented the activity with the highest proportion of activities (44% of activities delivered), followed by phone calls with clients/patients (21%), tabling (14%), chronic disease self-management and healthy living-related programs/activities (12%), block walking (5%), group/small group presentations, and other activities such as vaccine clinics (2% each) (Fig. 6). These activities provided key support with COVID-19 prevention and vaccination promotion, health education, social needs referral, and chronic disease prevention and healthy living promotion.

- *Resident Reach:* HEART ATX CHW-led activities reached approximately 50,911 residents[4], with tabling representing the activity with the highest reach (50% of residents reached by this activity), followed by block walking (18%), "other" (e.g., vaccine clinics/other community outreach (11%), chronic disease prevention classes (7%), presentations/small group activities (6%), and patient/client discussions (5%) (Fig. 7). Appendix C presents maps of the geographic reach of residents for years 1-3 based on Austin Public Health community activity data, which highlight the reach of HEART ATX activities with residents in priority geographic areas for the project.

- *Media Outreach:* HEART ATX delivered several campaigns that promoted COVID-19 vaccination, chronic disease prevention, and community health worker awareness. Through this project content were created for the "COVID-19 Booster", "Dear Me", and "Community Health Worker Awareness/Photovoice campaigns". Appendix D presents the unique media outreach efforts by HEART ATX that were created through this project over the 3-year grant period.

- *COVID-19 Vaccination Coverage:* Based on the latest available surveillance data from May 2023, 72.5% of Travis County eligible residents (≥6 years) have completed their primary COVID-19 vaccination series (Appendix E).

[4] This number represents the total number of resident encounters. We cannot rule out duplicate individuals included in this number as the evaluation was not budgeted or structured to collect individual names for the majority of outreach activities.

HEART ATX COVID-19 Prevention - Highlights, Best Practices, Challenges & Recommendations

Key themes for the delivery of COVID-19 prevention activities are presented in Fig. 8 (see also Appendix F, Table 1).

- *Highlights* included the positive perceived impact of CHWs' efforts (*"We helped more people to get COVID shots and delivered many testing kits"*) and the important role of trainings (*"All of the COVID trainings have helped inform me not only of the facts, but ways to deliver them to the public in a way that is not too confrontational."*).
- *Best practices* included the importance of listening to residents and building trust to dispel COVID-19 misconceptions, and addressing social needs as a vehicle to address COVID-19. Other best practices included monetary incentives and onsite COVID-19 vaccination.
- *Challenges* included the need for up-to-date information about COVID-19 and decline in community interest in COVID-19.
- *Recommendations* included increasing language access for COVID-19 information.

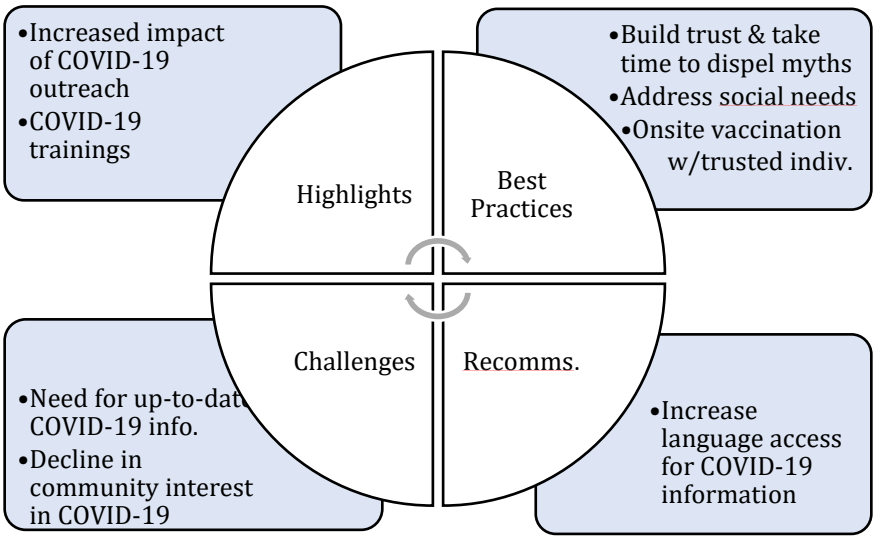


Figure 8. COVID-19 Prevention Outreach Highlights, Best Practices, Challenges, & Recommendations. *HEART ATX, Austin, TX. Years 2 & 3 (n=14 CHWs, 8 partners).*

> *"And as they establish rapport and they're helping with what they need [e.g. transportation or food], they would also bring up and discuss COVID." -Org. Leader*

How Results Are Being Used/ Disseminated: Please see the summary below on how results have been used and disseminated for the overall project.

ENGAGE: Engage Community Health Workers to help build and strengthen community resilience to mitigate the impact of COVID-19 by improving the overall health of priority populations within communities *(Strategies IR6 & IR7).*

Strategy Overview: In addition to the activities described above, HEART ATX "Engage" strategies aimed to strengthen resilience and mitigate COVID-19 impact via social determinants of health (SDoH) screening and referral, chronic disease prevention and self-management classes and workshops, and healthy living programs (Fig. 9).

- *SDoH screening/referral* was implemented by trained CHWs in clinical and community settings via one-on-one meetings using Findhelp resources and platforms such as ConnectATX.
- *Chronic disease self-management programs and workshops* and *active living programs* were delivered in community settings by trained CHWs (see Box B for types of programs).

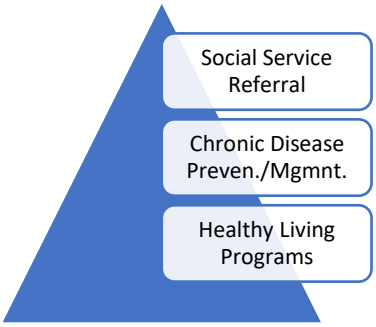


Figure 9. Core "Engage" activity domains – *HEART ATX, Austin, Texas*

Evaluation Guiding Questions: *What were the highlights/accomplishments, lessons learned, and recommendations for CHW-led social service referral and healthy living classes/activities?*

Methods:

- *SDoH screening/referral data* were based on CHW Monthly Activity Reports and ConnectATX data.
- *DEEP outcome evaluation* was based on a complete case analysis of questionnaire data collected pre and post DEEP (Year 1: n=20 complete case sample; Year 2: n=127; Year 3: n=189). Analysis consisted of paired t-tests (quant.) and thematic analysis (qualitative).
- *PreventT2/Diabetes Prevention Program* data were collected via questionnaires and physical measures of height and weight, and physical activity minutes. (Year 2: n=12, Year 3: ongoing n=9).
- *Highlights, best practices, and challenges for SDoH screening/referral and healthy living classes* were assessed via CHW Survey (Year 2: n=14 CHWs; Year 3: n=14 CHWs) and Organizational Partner Interview (n=8 partners Years 1-3), with further exploration via CHW-led photovoice assessment.

Box B. Chronic Disease Prevention & Healthy Living Programs and Activities

- *Diabetes Empowerment Education Program (DEEP)*- an 8-module diabetes self-management program (Year 1: n=40 participants; Year 2: n=263; Year 3: n=327);
- *PreventT2* - a small-group coaching program proven to delay or prevent type 2 diabetes (3 year-long series completed; n=12 participants);
- *Chronic disease self-management workshops* (Year 1: N/A; Year 2: n=81; Year 3: n=71);
- *Walk TX and More*- a 10-week program to help people move more. (Year 1: n=N/A; Year 2: n=239; Year 3: n=169).

Results - *ENGAGE*

HEART ATX Social Determinants of Health (SDoH) Screening & Referral

- *Referrals:* Across the three-year period, HEART ATX CHWs made 8,754 social needs-related referrals of residents, and 1,688 health-related referrals. Food (32%), employment/income (14%), public health insurance programs (11%), and government/legal assistance (10%) represented the top social needs referrals; healthcare-related services (27%), mental health/addiction (20%), lifestyle interventions (8%) and diabetes (7%) represented the top health-related referrals (Appendix G, Figs. 1 & 2).
- *Referral Completion:* Referral completion rates across social and health needs referrals were 36.6% in Year 1, 26.4% in Year 2, and 34.9% in Year 3. In exploring the reasons for non-completion of referrals, we analyzed available data from three of the six HEART ATX partners using ConnectATX for Years 2 and 3. Top reasons for non-completion included: "Not updated" (67.9%), "Needs client action" (10.5%), "Couldn't contact" (10.1%), and "Pending" (4.8%) (Appendix G, Fig. 3).
- *Resident Experience:* In exploring the resident experience with social/health needs referral, we conducted 17 in-depth interviews with adults who received referrals as part of HEART ATX. Key themes are presented in Box C (see also Appendix G, Box A).

Box C. Key Themes – In-Depth Interviews (n=17 adult residents, Austin, TX, 2023-24)

Highlights: Positive experience and appreciation for the support provided by CHWs; resources such as food enhance residents' budget and quality of life.

Challenges: a) Resources are not always available; b) Making too much money to qualify for resources (yet too little for rent)

Reasons for No Follow-up on Referral: Lack of: a) Time; b) Transportation; c) Eligibility; and d.) Need for longer-term support.

SDoH Referral - Highlights, Best Practices, Challenges & Recommendations

- *Highlights* of SDoH screening/referral cited by CHWs (n=14) and project partner leads (n=8) included the importance of addressing social needs as a vehicle for promoting COVID-19 vaccination and overall health; the use of Findhelp for referrals; and the direct impact CHWs have had on resident quality of life ("We managed to help several individuals avoid eviction by covering large amounts of their debts.") (Fig. 9).
- *Best practices* included the incorporation of SDoH referral across a given organization; promotion of SDoH referral via healthy living classes; providing a "warm hand-off" of patient/client (CHW and provider); and the need to build trust (Fig.9).

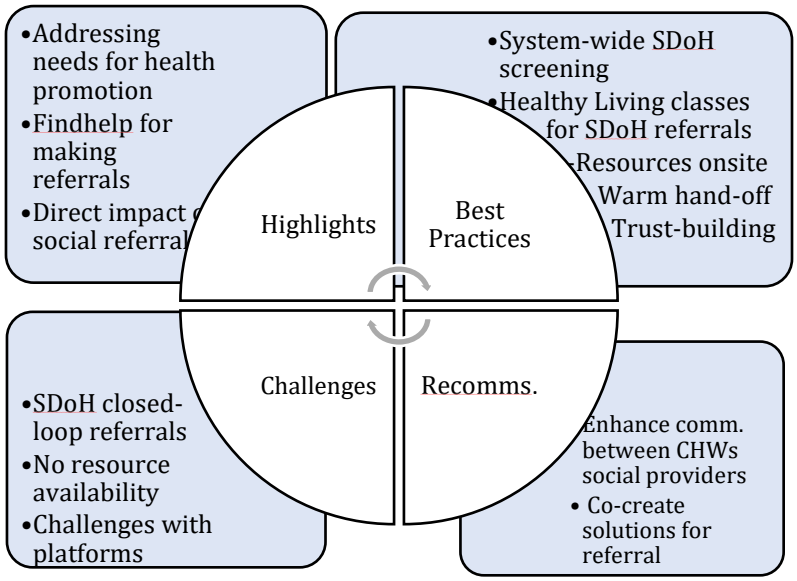


Figure 9. SDoH Screening/Referral Highlights, Best Practices, Challenges & Recommendations. *HEART ATX, Austin, TX, Years 2 & 3 (n=14 CHWs, 8 partners).*

- *Challenges* included difficulties with resident follow-up; lack of resource availability; and cumbersome screening process when working in community spaces. We also note the opportunity to enhance our HEART ATX reporting mechanisms and further align with CDC categories (Fig. 9).
- *Recommendations* included strengthening communication between CHWs and social service providers, and engaging CHWs and referral platform designers to co-create solutions for referral processes (Fig. 9) (see Appendix F, Table 2, for detail about SDoH referral).

HEART ATX Chronic Disease Prevention & Healthy Living (HL) Classes and Activities

- *DEEP Program:* For each yearly cohort, we found significant increases in DEEP participants' healthy eating behaviors, dietary self-management practices, and physical activity, and decreases in sugary drink consumption (see Fig. 10: Year 1-3 findings, and Appendix H: Years 1, 2, 3 findings and qualitative input for Year 3).

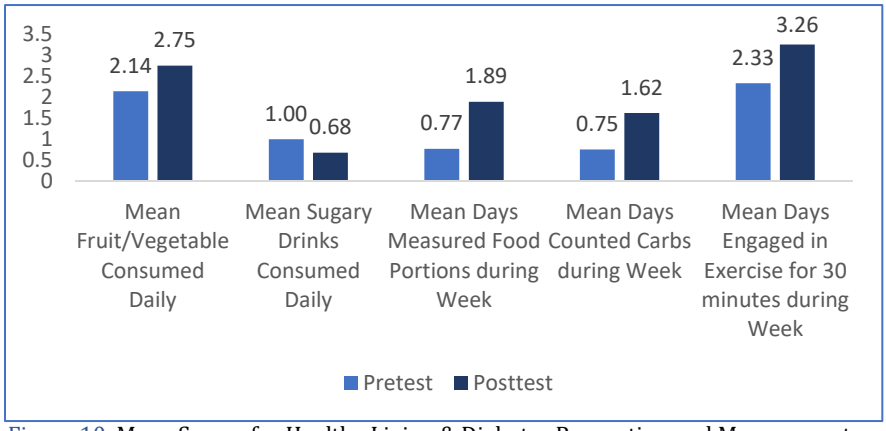


Figure 10. Mean Scores for Healthy Living & Diabetes Prevention and Management-related Practices at Pretest and Posttest among DEEP Class Adult Participants (n=336). *HEART ATX Project – Years 1- 3* (2021-24), Austin, Texas. ** p<.001 across practices*

- *PreventT2/DPP:* Among the 12 participants, we saw significant decreases in baseline body weight and ability to achieve more than the recommended 150 minutes weekly of physical activity (Appendix H: DPP findings).
- *Walk TX:* In addition to engaging 137 adults with Walk TX, the program resulted in fostering a sense of community as well as personal development. One project leader shared: "…[A]side from getting people out and partaking in physical activity and educating them, being able to grow their knowledge and helping them become self-sufficient and advocate for themselves I think has been the greatest outcome from that walking groups."

HEART ATX Healthy Living - Highlights, Best Practices, Challenges & Recommendations

- *Highlights* included increased participation in HL program in Years 2 and 3; perceived health impact *("…participants not only learn these skills, but really come out saying 'this helped my mental health'");* and HL program sense of community (Fig. 11).
- *Best practices* included having a coordinator oversee HL programs; activating social networks to promote HL programs; providing participant incentives (e.g. H20 bottles); and part. communication platforms.
- *Challenges* included barriers to class participation; need for promotion of classes; and lack of participant healthy meals skills.

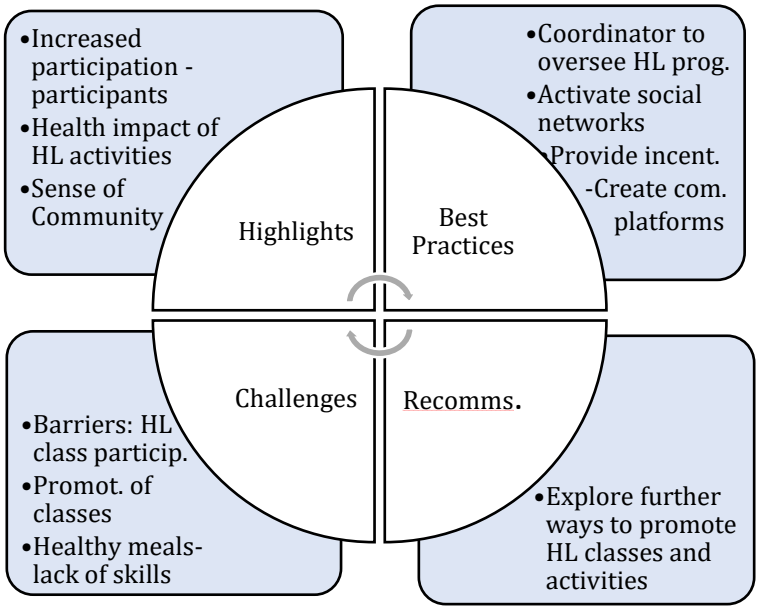


Figure 11. Social Determinants of Health (SDoH) Screening/Referral Highlights, Best Practices, Challenges & Recommendations. *HEART ATX, Austin, Texas, Years 2 & 3 (n=14 CHWs, 8 partners).*

- *Recommendations:* While participation and retention improved in Years 2 and 3, HEART ATX partners cited a need for a systematized approach to promote HL classes (see Appendix F, Table 3, for detail about HL programs).

Community Health Worker-led Photovoice Assessment

In Year 3, CHWs attended three photovoice trainings hosted by APH and UTHealth and explored *via photovoice:* 1) How do SDoH affect our community's health? 2) How do CHWs make a difference in addressing SDoH? 3) How do CHWs make a difference in promoting HL? (See Fig. 12 for example, and Appendix I for all projects). Key themes explored included:

Figure 12. Photovoice project example, *HEART ATX* (credit: Chris Mora, *HEART ATX CHW*).

Social Determinants of Health

- Economic barriers to health and well-being
- Food insecurity
- High cost of housing and adverse effects of gentrification
- Lack of cultural competence/language access
- Rethinking convenience stores for health promotion
- Transportation as a barrier to health
- The need to reduce stigmatization of marginalized communities

HEART ATX Activities and Support for Resident Health

- Meeting people where they are/bring health promotion to people.
- Connecting residents to resources (e.g. food pantries)
- Providing social support ("As a CHW, I am aware of the importance to bridge this [linguistic & cultural] divide and empower patients to navigate their health journey.")
- CHW as role model ("…I want to be a role model…that shows people how I incorporate exercise in my life.")
- Promoting health via active learning activities (e.g., using art and group-based activities)
- Fostering community conversations that lead to community action for health

DISSEMINATION OF FINDINGS & CONCLUSION

In this last section, we explore how HEART ATX findings are being used and disseminated, and summarize the key contributions of the HEART ATX project and future directions,

How Results Are Being Used: In addition to providing a platform for ongoing learning about the delivery of HEART ATX, as evaluators, we also benefitted from the rich input provided by project partners on ways to improve our evaluation approach. In response to input from Year 1 interviews with project leaders, for example, we created an annual CHW Survey (Years 1 and 2) and a photovoice assessment (Year 3)- assessments that provided needed CHW voice for the overall evaluation. In noting the challenges with social needs referral completion, we also added an in-depth interview with residents to explore further their experience with the referral process. In addition to these evaluation enhancements, input from CHW and organizational leader partners provided rich insights into the delivery of CHW-led health promotion. Challenges with the referral process, for example, have led to greater discussions with the designers of platforms such as ConnectATX and have stimulated both the creation of a proof-of-concept "TRACE" method by our evaluation team colleague (MV) that aims to help CHWs track and identify available geographically-informed resources (Appendix J), and a proposed forum to identify quality improvements with the screening platform.

How Results are Being Disseminated: We were intentional in sharing evaluation findings and reports with HEART ATX organizational partners at our periodic HEART ATX partner meetings across the three years, which included discussion and further contextualization of findings. We also presented a total of five abstracts (four posters; one oral presentation) on HEART ATX at Texas Public Health Association conference (2022, 2024) and Texas Society for Public Health Education (TSOPHE) (2023) (Appendix J). In addition to implementing a photovoice training session led by our HEART ATX CHWs and project leaders at the CHW Sustainability Summit hosted by Envision in spring 2024 in Spokane, Washington, HEART ATX partners also implemented a successful "Frames of Empowerment" end-of-project celebration at the Austin Public Library, which included a showcase of CHW photovoice projects as well as sharing of our initial findings (Appendix J).

CONCLUSION

In addition to rich learning about CHW-led community health promotion, our findings document the overall positive impact of the HEART ATX project on the Austin/Travis County community, including:

- an impressive delivery and reach of clinic and community-based health promotion activities by a small group of CHWs and partner organizations;
- positive impact of HEART ATX on resident social needs (e.g., linkages to food, housing, financial support); and
- positive impact of HEART ATX on chronic disease self-management and Walk TX programs on healthy living and sense of community.

> *"[H]aving a community and having a place to go gave them purpose [and] a feeling of community. And just being in that space really helped with the social isolation." - Org. Leader*

Findings from this community and practice-based evaluation of the HEART ATX project provide further evidence of the high value CHWs add to community health promotion via their lived experience, cultural competence, and relevant community health promotion skills. In looking forward, there is a pressing need to explore further opportunities for CHW leadership, career advancement, and sustainability within our public health workforce, as well as ways to support CHW self-care, given the multiple hats they wear and resident demands they address in their valuable roles. We explore further the highlights, best practices, challenges, and recommendations for CHW-led health promotion based on insightful input from HEART ATX CHWs and organizational partners in Appendix F, Table 4.

ACKNOWLEDGEMENTS

We express our sincere thanks to our HEART ATX organizational partners and community health workers for leading the design and implementation of the HEART ATX project, and for their multiple insights and contributions that made this evaluation possible. We also express our appreciation for our partners at United Way for Greater Austin, Jeff Cary, Matthew Dang, Jason Anderson, Alison Bentley, and Jen Freeman, who oversee the ConnectATX social/health referral platform and who provided key data support and guidance with social service referral component for three of our partner organizations. Jeneice Hall, MS, CHES, Public Health Program Coordinator – Chronic Disease & Injury for Austin Public Health, spearheaded the development of the performance measure data collection platform and approach, for which we are most grateful. We also recognize Nida Momin, MPH, who led our qualitative analysis of the DEEP program's open-ended questions for Year 3. Funding for this evaluation was made possible by the Centers for Disease Control and Prevention CCR-Grant Component B.

HEART ATX Program Leaders & Implementers

Austin Public Health
Crescencia Alvarado, Julia Beltran, Pamela Chapman, Raisa Charles, Krystal Fuentes, Patrice Hatchett, Stephanie Helfman, Leslie Imafidon. Hannah Jaramillo, Sanaz Sabeti, Lorena Sanchez, & Xiaoou Suo.

CommUnityCare Health Centers
Clarissa Banks, Carmen Cardenas, Angelica Casas, & Alma Juarez

Foundation Communities
Bianca Enriquez, Brenda Garcia, Rocio Lopez, Maria Nunez, & Rita Ortega-Wiley

Housing Authority City of Austin (HACA)
Borami Lee, Gabriela Escobedo, Alexis Henderson, Tequilla Nealy, Myra Rubalcava, & Chante Wright

People's Community Clinic
Nemesis Alvarez, Angela Bigham, Nancy Sanchez, & Cherelle VanBrakle

UT Dell Medical School/Lonestar Circle of Care
Tasha Banks, Ricardo Garay, & Chris Mora

Appendix A

Table 1. HEART ATX Priority Project Areas: Estimated Population of Eastern Crescent and Poverty Rates, 2018-2022

Zip Codes	Estimated Population	Number of Residents below 200% of Poverty Threshold	Percentage under 200% of Poverty Threshold
78617	27,006	9,697	35.9%
78702	25,124	8,375	33.3%
78719	1,500	890	59.3%
78721	10,345	3,812	36.8%
78723	36,702	11,862	32.3%
78724	27,003	11,999	44.4%
78725	9,896	2,699	27.3%
78741	45,583	20,724	45.5%
78742	1241	806	64.9%
78744	49,380	16,746	33.9%
78752	22,549	9,841	43.6%
78753	59,496	26,809	45.1%
78758	50,672	20,289	40.0%
Total	366,497	144,549	39.4%

Source: Research & Planning Division, "Travis County Poverty Brief using 2022 American Community Survey 5-Year Estimates," Travis County Health and Human Services, 2024.

Appendix B

HEART ATX Community Health Worker Training – *Years 1-3*

Table 1. COVID-19 Response Training and Mini-Training Sessions Attended by Community Health Workers (CHWs). *HEART ATX Project (8/31/21 – 8/30/24).* Austin/Travis County, Texas.

Training #	**Year 1 (2021-22)** n=12 CHWs	**Year 2 (2022-23)** n=19 CHWs	**Year 3 (2023-24)** n=17 CHWs
Core Training	COVID-19 Trainings for Community Health Workers (n=11 session	COVID-19 Training for CHWs (upon hire)	COVID-19 Training for CHWs
1	COVID-19 in Austin/Travis County Topic Domain: *COVID-19/Respiratory Conditions*	Diabetes 101 Topic Domain: *Diabetes Management*	Prosper Health Coverage Topic Domain: *Tracking/ Referral/Healthcare Access*
2	Contact Tracing for CHWS Topic Domain: *COVID-19*	Diabetes Care Management Topic Domain: *Diabetes Management*	Personal Safety Strategies for Community Outreach & Beyond Topic Domain: *Lifestyle Intervention Strategies*
3	Organizational Skills for CHWs Topic Domain: *Advancing Equity*	Mental Health/ What is NAMI? Topic Domain: *Mental Health*	Heart 101 Topic Domain: *Hypertension/Heart Disease Management*
4	Walk Texas and More Topic Domain: *Improving physical activity*	Fresh for Less/Double Up Food Bucks/Farmshare Austin Topic Domain: *Food/Healthy Food Access & Healthy Eating*	Stress Management and Self-Care for Community Health Workers Topic Domain: *Advancing Equity*
5	Effective Social Media Strategies Topic Domain: *Advancing Equity*	Motivational Interviewing as a COVID-19 strategy Topic Domain: *Lifestyle Intervention*	Immigration Topic Domain: *Government/Legal*
6	ConnectATX Topic Domain: *Advancing Equity*	Storytelling: Advocating for the Community Topic Domain: *Advancing Equity*	Mental Health Topic Domain: *Mental Health/ Addictions*
7	Addressing Social Determinants of Health Topic Domain: *Advancing Equity*	City of Austin/Austin Home Energy Topic Domain: *Housing/Shelter*	Writing Effective Success Stories Topic Domain: *Advancing Equity*
8	Stroke AHORA Topic Domain: *Hypertension and Heart Disease Management*	Working with Diverse Communities Topic Domain: *Advancing Equity*	AGE of Central Texas Topic Domain: *Working with Older Adults*

Table 2a. Synthesis of Training Session Highlights Reported by Community Health Workers (CHWs). *HEART ATX Project (8/31/21 – 8/30/24).* Austin/Travis County, Texas (n=12-19 CHWs).

Training Session Highlights: *What has been helpful with the CHW trainings?*	
Theme	**Example Quotes**
Building Social Networks	*"Discovering new resources, networking with other organizations and CHWs"*
Discovering New Community Resources to Share with Residents	• *"Trainings have been great resource for CHW to share with community"* • *"Learning the program [Farmshare] in which adults can go and learn how to farm"* • *"Resources I can refer clients to"* • *"About the SNAP benefit "Double-up" program, and that delivery is also available."*
Everything	*"All trainings have been very helpful…[D]efinitely all the trainings [have] given me more knowledge.'*
Knowledgeable Presenters and Active Learning Approaches	• *"The ice breakers, help us to learn from each other in a fun way."* • *"The presentation and knowledge (of) instructor"*
Self-Care and Professional Development as a CHW	• *"For me it has been very helpful because I'm new to the CHW world. One of the topics that was very important to me was self-care as a CHW. We sometime s forget about taking care of ourselves."* • *"…personal safety when doing outreach was helpful as a first-time community health worker. Helped me feel prepared to what to expect when being out in the community."* • *"How to handle stress, the way we think, feel and act"*
Specific Topics & Methods	• *"Immigration policy. Diabetes training. Learned more knowledge in different field."* • *"Heart 101"* • *"Mental health"* • *"Photovoice was helpful learning to let pictures speak."* • *"Tobacco, Immigration, share your story, Photovoice, know about our partners."* • *"The basics of diabetes and how to explain it to others"*

Strategies and Methods for Reaching, Supporting and Working with Community Members	• <u>*Reaching Community Members:*</u> *"The trainings have helped me to put some things into perspective. Some examples are how to reach community members."*
	• <u>*Communicating with Clients, Motivational Interviewing & Storytelling:*</u>
	  ○ *"The most helpful trainings in my opinion have been motivational interviewing and storytelling. These topics helped me to improve my communication skills in a way that improved rapport with community members. This allowed me to serve them more effectively."*
	  ○ *"The one I liked the most was 'how to communicate with other clients'"; "… I got much insight, clarification and confirmation on how to carry out motivational interviewing while working with clients"*
	  ○ *"Storytelling is so important in the work that we do so I see a lot of benefit in this topic being discussed. Facilitator great at making connection with audience"*
	  ○ *"I learned the steps and how to talk with the people"*
	• <u>*Building Trust:*</u> *"The presenter was intentional about presenting "trust" as something that was very important with working with clients and patients to help them/ us engage and connect"*
	• <u>*Co-Creating Solutions:*</u> *"How to come up with solutions with community members that involve them and not just resources that I have"*

Table 2b. Synthesis of Training Session Highlights and Recommendations for Improvement Reported by Community Health Workers (CHWs). *HEART ATX Project (8/31/21 – 8/30/24).* Austin/Travis County, Texas (n=12-19 CHWs).

Recommendations for Improvement: *What is one or more ways trainings can be improved?*	
Theme	**Example Quotes**
"Nothing"	• *"Training is great the way it is"* • *"I think they have been great; I wouldn't change them."* • *"To me all mini trainings that I have attended have been very useful and helpful. No improvement needed."*
Alternative Modes of Delivering Training *(Virtual, Field Trainings)*	• *"Find a way (possible) to do virtual sessions some of the time."* • *"Engaging in community activities outside of the building."* • *"Go to the field and collaborate in the activity about the training."*
More Co-Learning and Participatory Learning Approaches	• *"More group learning. I like being able to interact with other community health workers who have different roles or more experience."* • *"More activities to do as a whole or in groups"* • *"Make the training longer next time or include time for ice breakers."* • *"Role-playing when time permits"*
Topic-Specific Trainings	• Diabetes prevention and self-management: *"Know more about each session of the DEEP or DPP."* • Diversity and Cultural Sensitivity*: "Recently attended a diversity training that I think everyone could benefit from. We could learn about cultures who struggle with seeking help."; "Engaging in more African American health issues…".* • Mental Health: *"Mental Health Trainings"; "How to de-escalate a situation when dealing with someone who has mental health issues"* • Technology: *"How to use technology and any app that they are planning to use."*

Appendix C

HEART ATX Geographic Reach of Residents in Priority Areas

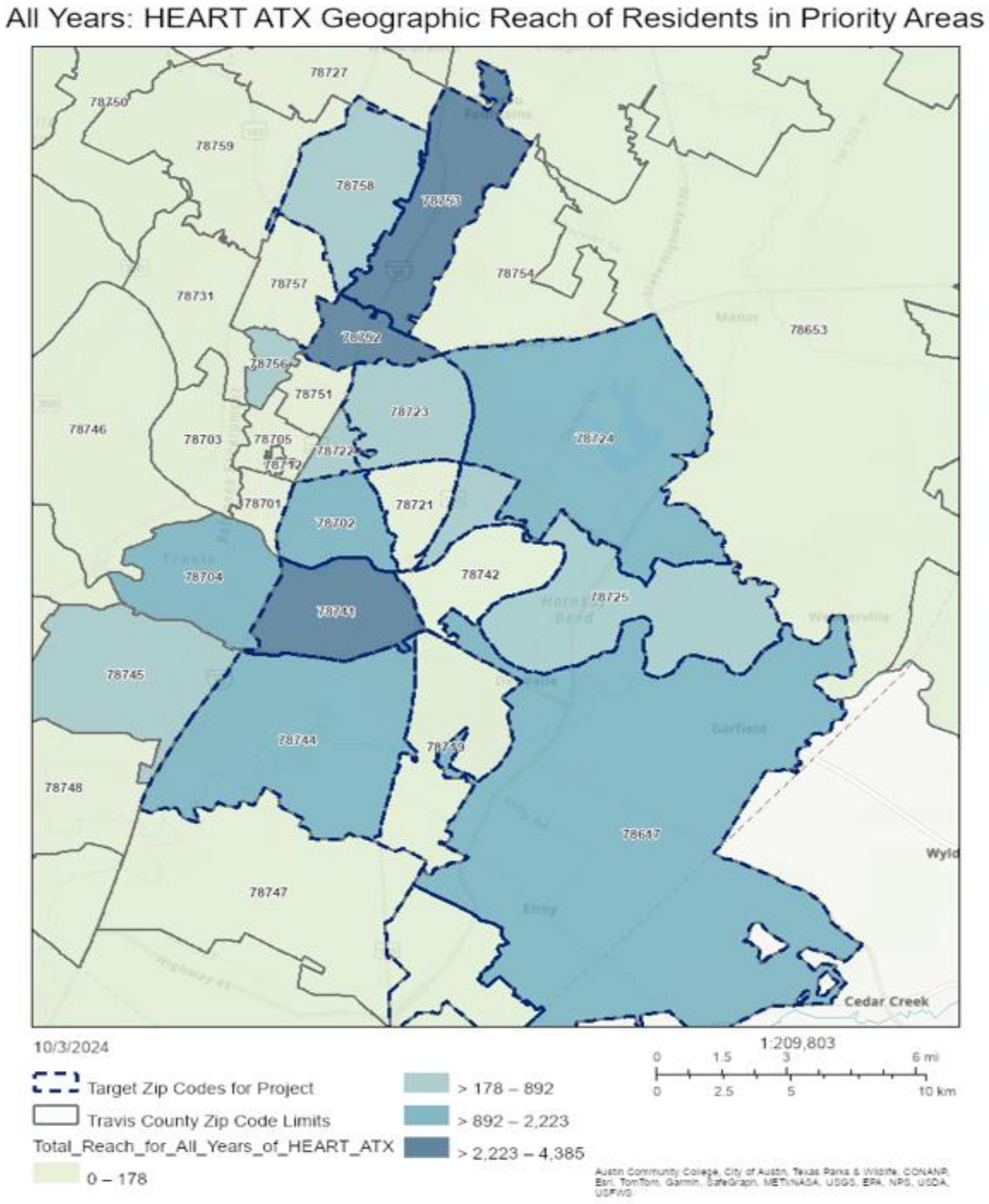


Figure 1. Geographic reach of residents with HEART ATX activities in relation to priority zip codes – Years 1-3. *HEART ATX,* Austin, Texas, 2021-24 (Data source: Austin Public Health community outreach data).

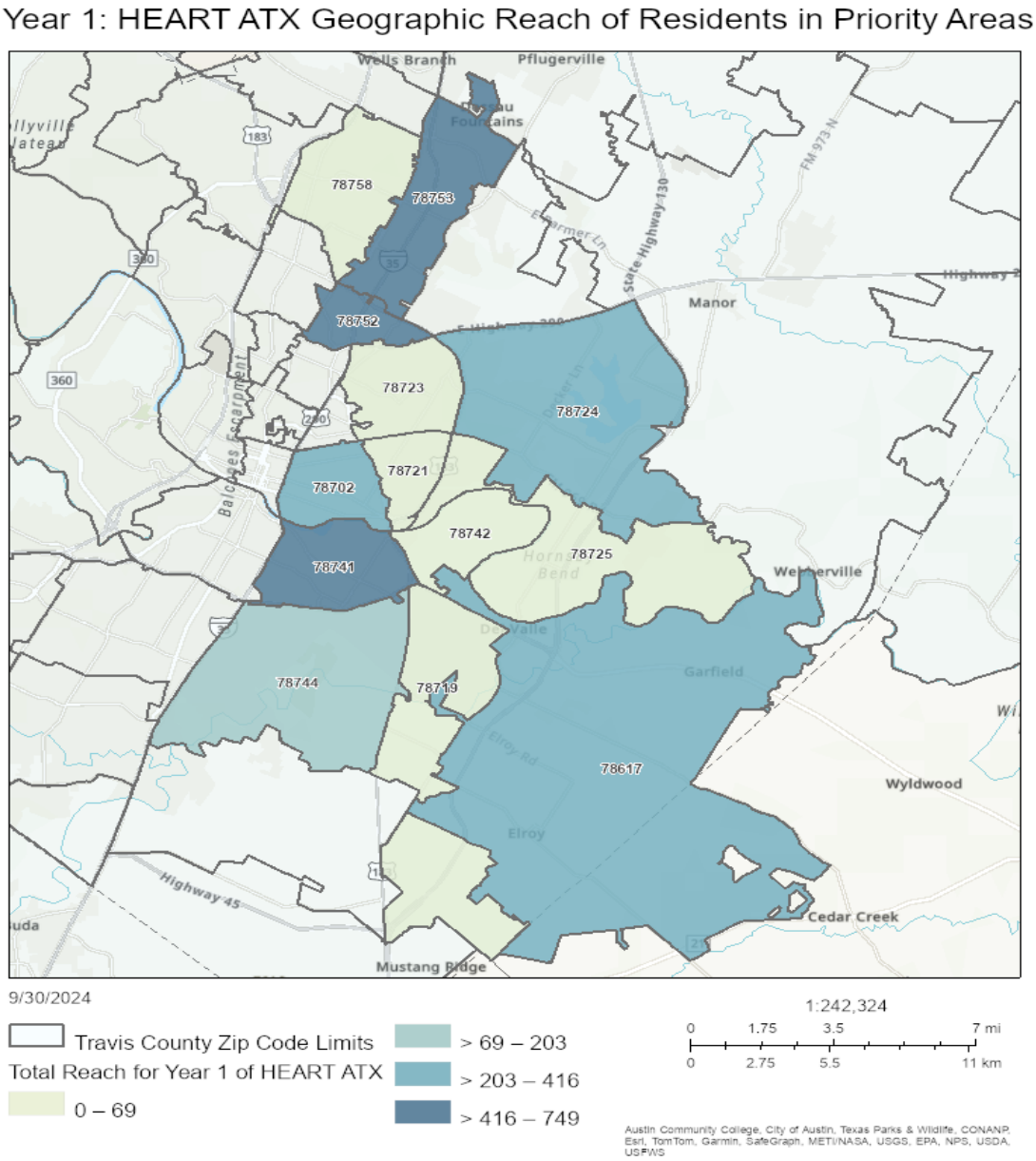


Figure 2. Geographic reach of residents with HEART ATX activities in relation to priority zip codes – Year 1. *HEART ATX,* Austin, Texas, 2021-22 (Data source: Austin Public Health community outreach data).

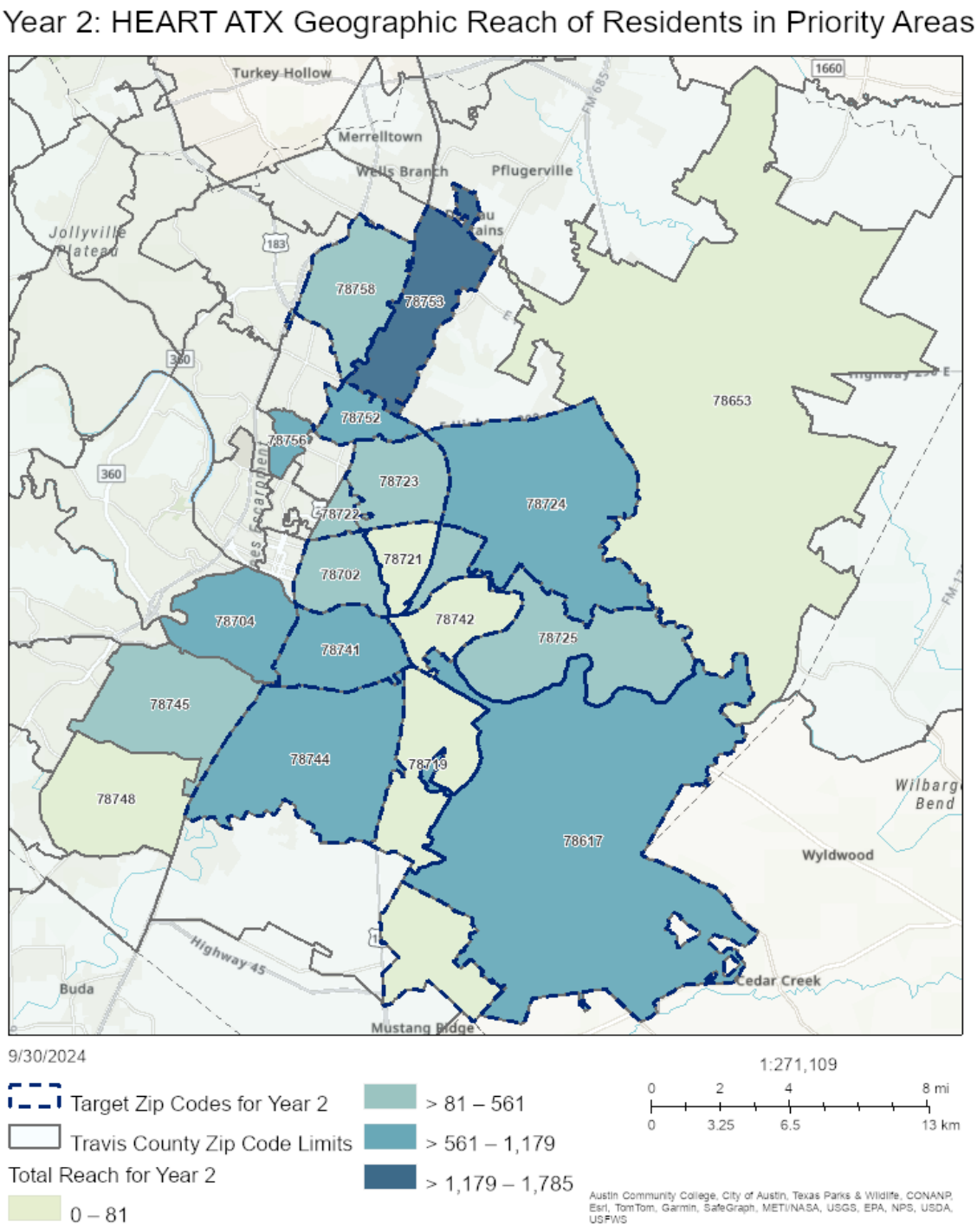


Figure 3. Geographic reach of residents with HEART ATX activities in relation to priority zip codes – Year 2. *HEART ATX,* Austin, Texas, 2022-23 (Data source: Austin Public Health community outreach data).

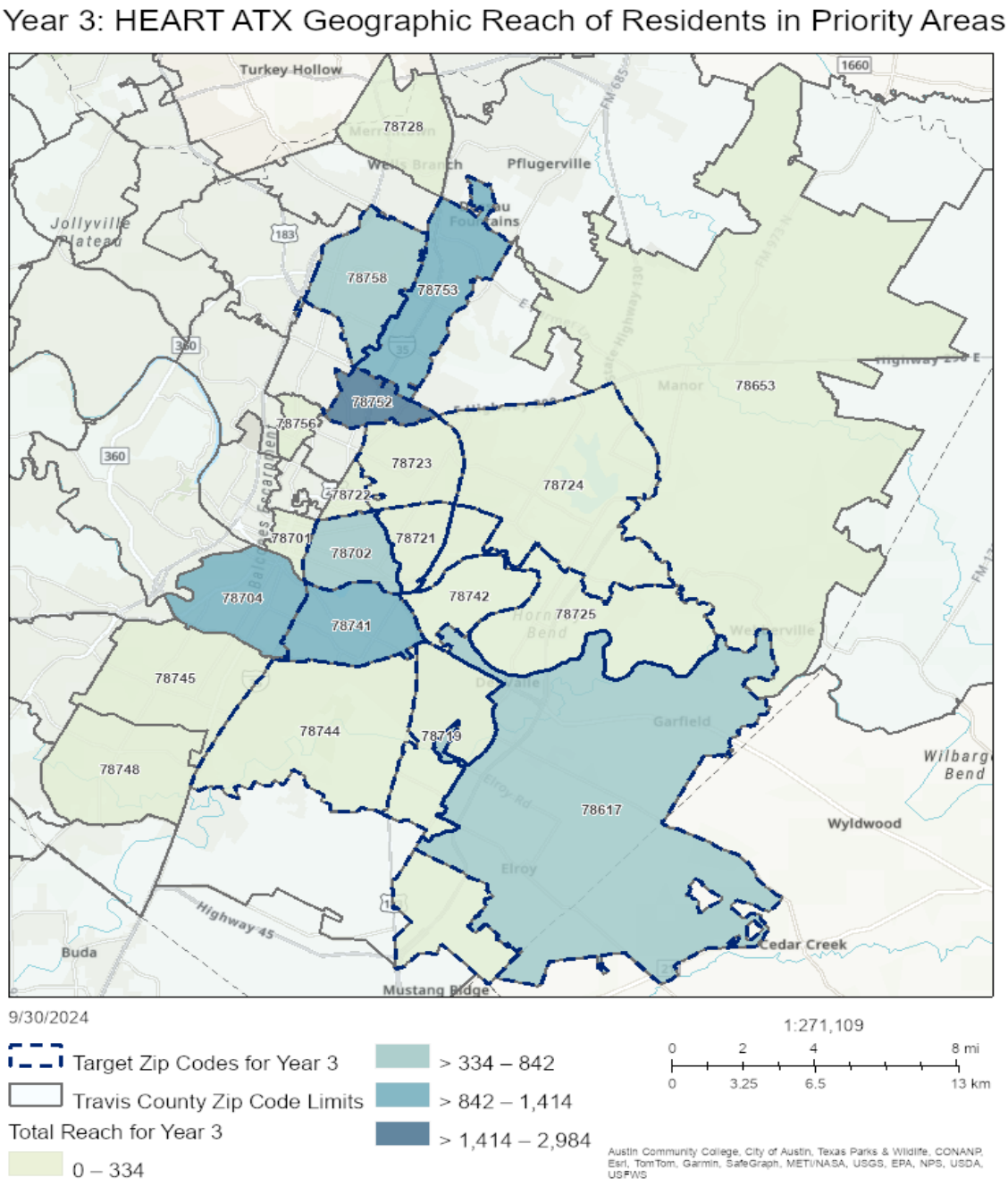


Figure 4. Geographic reach of residents with HEART ATX activities in relation to priority zip codes – Year 3. *HEART ATX,* Austin, Texas, 2023-24 (Data source: Austin Public Health community outreach data).

Appendix D

HEART ATX Campaigns (Years 1 to 3)

Dear Me Campaign

Dear Me - Nick Ready To Quit (youtube.com)

COVID-19 Booster Campaign

Videos

Get your kids vaccinated today!

Get your kids vaccinated today! (youtube.com)

¡Vacune a sus hijos hoy!

¡Vacune a sus hijos hoy! (youtube.com)

Get Boosted, Austin!

Get boosted, Austin! (youtube.com)

¡Ponte el refuerzo, Austin!

¡Ponte el refuerzo, Austin! (youtube.com)

Get Boosted, Austin! Print Ads

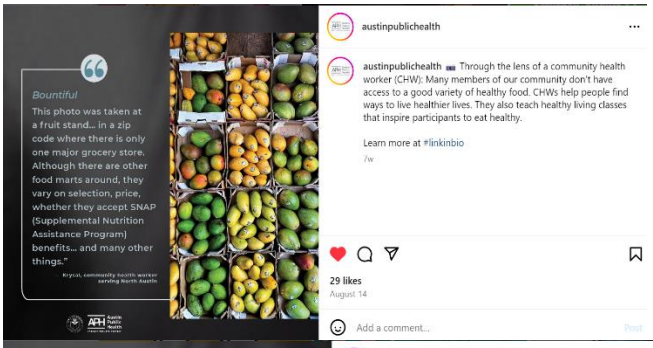
Community Health Worker Awareness Campaign

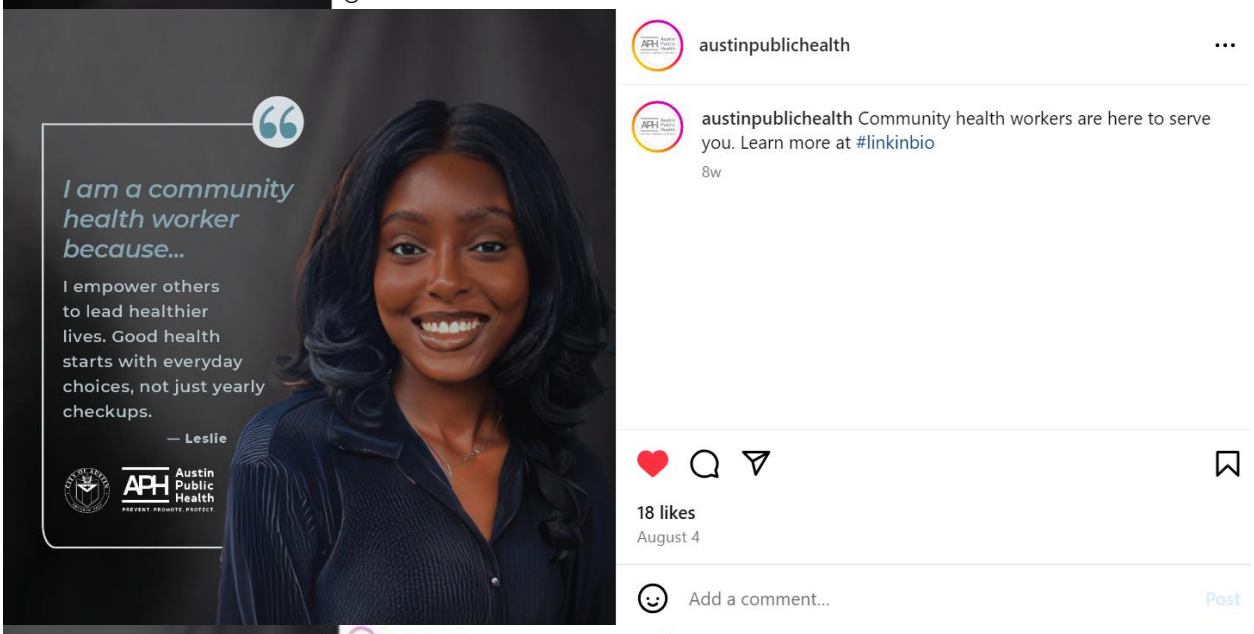
Bus Ads

austin

queen (30x96)

Social Media Posts





Appendix E

COVID-19 Vaccination Rates for Travis County and
Reach and Dose Delivered of HEART ATX COVID-19 Vaccination and Prevention Activities

Table 1: Percentage of Travis County, Texas Residents* Who Have Completed Their Primary COVID-19 Vaccination Series as of May 10, 2023.

	% Who Have Completed Primary COVID-19 Vaccination Series*
Total Travis County Residents (estimated population: 1,281,820)	72.5%
Black/African American Residents	34.4%
Hispanic/Latine Residents	50.3%
White Residents	55.2%
Asian Residents	63.7%
"Other" (262,557 residents)	*Information Not Available due to Insufficient Population Data*

*Source: Data provided by Texas Department of State Health Services and prepared by Austin Public Health. *All people eligible for vaccinations 6 months and older.*

Appendix F

Highlights, Best Practices, Challenges and
Recommendations for Improvement of the Delivery of HEART ATX (Years 2 & 3)

Table 1. COVID-19 Outreach Best Practices, Challenges, and Recommendations*, CHW Survey (n=14 CHWs) & Organizational Partner Interview (n=6 organizations; n=8 partners)* - HEART ATX Evaluation, Austin/Travis County, Texas, spring/summer 2023 & 2024 (Years 2 & 3).

THEMATIC DOMAINS & THEMES	**EXAMPLE QUOTES** *from HEART ATX Organizational Partner Leaders & Community Health Workers*
Highlights & Accomplishments	
Increased Impact of CHW-led COVID-19 Outreach	"..Our strong suit and our focus had been on our COVID-19, and outreach and education efforts. So you know, we have been doing block walking and community conversations as well as vaccination on site vaccinations at different properties throughout the grant period." "…We will have a table, me and another community health worker. We will have a table and we will bring items that we felt that our community will be able to use during this COVID. …All the things that we felt that will help our household through the pandemic and then we had information. So a lot of questions we received was, you know, I think I have covered what do I do now or if I have COVID, how long do I sit out or you know…[W]e were trying to be that in between for the clinic so they wouldn't be bombarded with just those questions." "We helped more people to get COVID-19 shots and delivered many testing kits" "Educating the community on COVID-19 vaccinations and overcoming hesitancy has been a big win." "Being able to bridge the gap and help patients schedule COVID-19 vaccinations and tests has been really impactful." "Our COVID-19 outreach and social media strategy have been pivotal. We engage with residents daily."
COVID-19 Trainings	"All of the COVID trainings have helped inform me not only of the facts, but ways to deliver [these facts] to the public in a way that is not too confrontational. I have been able to use these communication techniques with other topics aside from COVID."
Best Practice Themes	
Listening to residents to dispel misconceptions and provide COVID-19 information	"Taking the time to listen to people's beliefs and misconceptions about the vaccine and providing them with information."
Providing materials and resources at tabling events	"The clinics will do tabling at different events and like I said, we made sure we offer things that we felt that households would use and need… A lot of people felt like they weren't educated enough, and so we always had our educational materials and we was always prepared to answer questions as best as we could, you know, cause things were changing hourly minute and so…And I think we did an excellent job, with just keeping our community informed and with good products that we felt like they were used and knowing that they can reach us and we are reachable."
	"The conversations that the CHW is having with the patient were via referral but as part of the grant we had to incorporate conversations on COVID and COVID education…The easiest way for us to do it was we ramped up some of our tabling

Addressing SDoH as a vehicle to promote COVID-19 (e.g., food, transportation)	efforts, [and] they get this referral for this patient for food or transportation. And as they establish rapport and they're helping with you know what they need, they would also bring up COVID and they would discuss COVID. 'Did you know that you can get a vaccine with that' as we can schedule you. 'Did you want me to share some education with you?' You know, whatever kind of bubbled up."
	"I think with the COVID outreach and stuff we usually do that at our food pantries. That's where we get the most foot traffic. It'll be food pantries, any outreach events. Sometimes we double dip and tie that into the Connectatx assessments. And I think that's why it's been so successful to connect those two together because we already have them on the phone for a lot of these referrals that we're making."
Providing Incentives for COVID-19 Vaccination	"You know, especially now that the COVID mandate is over, making sure they're taking advantage of like those last opportunities to go ahead and get their vaccines if they haven't already, like Austin Public health is giving out $50.00 visa gift cards until they're out of supply. For that to get vaccinated. And it doesn't matter, you know, if it's the first dose or booster shots. So taking advantage of that, I think has been very beneficial to us."
Providing COVID-19 vaccinations onsite via community settings and with trusted individuals	"I think like having the onsite COVID vaccines that our properties helped because people see us they trust us, they know us. So we're able to talk to them. You know we ran into people with hesitancies and you know and just talking to people they see that their neighbors are getting it or they're bringing their kids. And so I think [people] like the familiarity of that helps….You're not just telling people, hey, go to this clinic and get a shot. You know, they wanna trust and know …the face of these people, you know, that we've also gotten vaccinated and [that] we might have had the same concerns at one point. And so you know, like we're able to ask those questions like 'why don't you wanna get it?' or 'why don't you wanna get your child vaccinated?' so that's also something beneficial that we we've been able to do.."
	"And I think just one of the most recent things that [CHW] has been working on and really I think significant for me because it's something that hasn't been done in the past is having our nurses and [clinic team] go out in the community to give COVID shots. That's not something we've ever done where our nurses go out of the clinic to do to give shots. So it is something new and exciting because…[the CHW] was able to make a difference because we actually had nurses that were able to go out and participate in these events that [the CHW] and churches put together."
	"Having vaccine clinics on site for our residents." "Engaging with the community is not only at the clinic but at food pantries has been incredibly successful."
Challenges	
The need for up-to-date COVID-19 brochures and resources with ease-of-use	"Covid- providing up to date info is crucial". "Updating [COVID-19] info for the community." "Our population got more familiar with using phones and MyChart during COVID-19, but they still need our guidance."
Decline in community interest in COVID-19 and opportunity to shift to other priority areas (e.g. Healthy Living activities)	"[W]e are actually starting to kind of wrap that up as we start to shift our focus more towards the SDOH screening and the chronic conditions classes. So that's actually going to be underway starting next week. So that's a good shift. But we had really you know focused on our outreach efforts on the COVID-19 portion and it had, you know actually surprisingly had still been very effective even with things slowing down. But just in the last you know month or two, we started to notice a dramatic decline. So it makes more sense for us to shift away from those [COVID-19] efforts."
Recommendations	
Increase language access for COVID-19 promotion	"Having more language access and appropriate material as we have many community members from Afghanistan."

Table 2. Social Determinants of Health (SDoH) Screening & Referral Best Practices, Challenges, and Recommendations*, CHW Survey (n=14 CHWs) & Organizational Partner Interview (n=6 organizations; 8 partners)* - HEART ATX Evaluation, Austin/Travis County, Texas, spring/summer 2023 & 2024 (Years 2 & 3).

THEMATIC DOMAINS & THEMES	**EXAMPLE QUOTES** *from HEART ATX Organizational Partner Leaders & Community Health Workers*
Highlights & Accomplishments	
Importance of HEART ATX focus on social needs	"So, you know, I think in in regards to the program, I think this emphasis on social needs…is really crucial. I think that there's been a lot of other programming around us that has really just kind of focused on vaccinations exclusively. And I think having a comprehensive approach to this to address other needs has been really, really important. I think that has opened the door for different discussions in different ways of doing this work."
Use of FindHelp for making referrals	"For referrals - FindHelp has been wonderful for providing resources and connecting people with local organizations."
Connecting residents to resources and direct impact on their quality of life	"Having the community health worker be able to actually help that patient, I always say is the biggest thing. It's gonna be that person get connected to what they need." "We managed to help several individuals avoid eviction by covering large amounts of their debts." "I've helped people qualify for Children's Home Initiative Program, connected individuals with medical equipment weekly, and organized food collection for patients..." "We've partnered with Gava and Farm Share Austin to provide fresh produce to 100 patients with diabetes."
Best Practice Themes	
System-wide incorporation of SDoH screening and referral	"… [A] best practice is our processes for SDOH. I'm really proud of what of what we've done as an organization. We've been administering social determinants of health assessments a little bit over seven years…[W]e're gonna make it to where any patient-facing [staff] can use Findhelp to intervene on a social determinants of health need. So if you're …a financial Screener, if you're a behavior health counselor, if you're a provider, if you're a nurse, anyone not all to the same degree or extent, the workflows vary… I think that's also intuitive, because we're a FQHC; everyone that walks through our door has some degree of social needs. Some you can give them a handout and they can follow through. Other folks need a little bit more hand holding. Other folks need some more. Wrap around services and so we're building a mechanism to be able to intervene in every single one of those tiers." "Seeing that we don't have as much technical difficulties... people have really learned like the process and how to navigate Connect ATX." (Year 3)
Healthy Living classes and activities as a vehicle to connect with residents and address social and health needs	"But during those walking groups, that's where I take the opportunity to talk about, like what events we have going on, like these chronic disease education classes, resources that they might need if they have any needs that the opportunity for them as well to kind of like mention those to me. And I just work on it throughout the week." "Whatever it is that they need, they, you know, text me, e-mail me whatever it is. That's kind of like created that connection between our department and those participants at those properties we have I believe."
Providing resources 'on site'	"We provide a lot of services. They come here for a health visit and end up with formula, diapers, food, cooking classes, transportation."

The need to build trust with residents in order to address their needs	"What I found was that many community members didn't know about available resources and were often scared to share their needs. It goes back to trust." "The part of the relationships with the patients. Yes, that part right, there is big for us, we build relationships." "We build relationships. We're here, we're present, and we make a big difference." "The personal connection we build ensures they know we're here to support them." "Motivational interviewing has been crucial for building trust."
"Warm hand-off to CHW"	"We are still in like a warm handoff where our, you know, reachable, touchable, we're here, we're present. And that makes a big difference."
Direct outreach of residents and making oneself accessible	"We conduct weekly activities...including door-to-door visits and meal distributions." "Being accessible, giving out my direct contact for quicker responses, and engaging people in real-time at community events have also been effective."
Challenges	
SDoH Closed Loop Referrals	"The SDOH work defining how we measure closed loop and all that. So I think that's just work that we still have to do as we progress through the program." "And then I think another challenge is with the follow-ups that we have to do with these Connect ATX assessments. Obviously the $10.00 gift card is a great incentive. But I think [we need a] second portion to this because there is really no like additional incentive…There's no motivation to reach back out with when we're doing our outreach, whether that be through e-mail, text, or phone calls. So that's another challenge there because that kind of just adds on to like how many more of these we have to do." "I think one of the major things that keeps us from really closing that loop is that ..the computer will [not] follow up because we don't follow up with every patient after they've after that initial phone call where the Community Health Worker helps do any initial referrals. You know what the patient's needs are, but I think you know, because we have to manually go into the Find Help platform and update that status. …I wouldn't say it's a huge thing to do, but you have to remember, and as a community health worker myself, I know I always had trouble remembering to go back and do that." "Closing loops: when we refer someone to somewhere and when call back number not working."
Lack of resource availability to address social needs of residents/patients	"Umm, because we wanna make sure that that patient gets access to what they need to be healthy to be successful to, to do the things that they need to do. But, because the resources in Austin are limited many times that we can only do what we can with what we have, right?" "And so we're finding out that our resources, they're not lasting. We'll have a good resource this week and the next day, you know, we'll get an email saying 'ohh y'all, they have shut down' and it's like God, you know, then we we're all scrambling to find another good resource….So when we hit those resources, we were expecting them to work. We're expecting them to do what they supposed to do so I could keep it moving, but if I gotta go back three times, then that resource is not helping me and it's not helping them and so we need them to be able to be approachable, reachable to when we do have a flare up like this, we can nip it in the bud and say, 'hey, hey, hey, we got some patients that's got their hands up.'" *Primary needs:* "I mean, it's always rent assistance, utility assistance and transportation.. And so now we do have a lot of patients that they're not able to make it to their appointments... They really, truly don't have any way to get here, and at this point what we can offer them as the bus pass, but sometimes they live way out in a rural area… I

	think with, like transportation in particular, as people are being pushed out of Austin, it's getting more difficult to access transportation.”.” “The biggest challenges I am facing is to help my communities and patients in finding affordable housing and stability and payments.” "The difficult part is that they need a lot of resources that are just not available. And that's, that's the hard part." "The challenge is that the need is overwhelming, and sometimes our partners also face similar challenges, impacting their ability to consistently provide resources." "The inconsistency in availability of resources like housing through partnerships can be challenging."
Challenges with SDoH referral platforms (e.g. Internet access)	“Having internet access on the tablets.” *-CHW* “It's really hard for people to use Connect-ATX.” *-CHW* “I personally had trouble with the icon tab/ Circle loop, because if I didn't pay attention on this my residence would not get the services needed.” *-CHW*
Finding a location conducive to performing SDoH screenings	“Finding a location conducive to performing the SDOH screenings that always have different people coming through.”
Staff turnover at partner organizations	"Staffing turnover at partner organizations impacts our ability to follow up on referrals."
Recommendations	
Enhance communication between CHWs/social service screeners and social service providers	“What we've seen right with Central Texas Food Bank and WIC is that we have a higher rate of those closed loops and better communication when it comes to, you know, trying to get that patient connected with those organizations and we can trust that I'm gonna tell this patient ‘Hey, WIC is gonna call you..’; ‘[the] Food Bank is gonna call you within a week or two to schedule your appointment.’” [W]ith Central TX Food Bank and WIC we have that closed loop referral, and that they could add notes on there to communicate with the Community Health Workers…So I think, you know, having better communication [with the social service provider]….” “More direct referrals to case managers that can help individuals more long term.”
Provide continued training on ConnectATX platform	“A person from [Connect] ATX to come to the site and host a meeting about ATX to inform our communities about this great resource.”

Table 3. Healthy Living Class (Prevent T2/DEEP) Best Practices, Challenges, and Recommendations, *CHW Survey (n=14 CHWs) & Organizational Partner Interview (n=6 organizations)* - HEART ATX Evaluation, Austin/Travis County, Texas, spring/summer 2023 (Year 2).

THEMATIC DOMAINS & THEMES	**EXAMPLE QUOTES** *from HEART ATX Organizational Partner Leaders & Community Health Workers*
Highlights & Accomplishments	
Increased participation and retention of participants	"Well, …[an] accomplishment for us was starting the prevent T2 classes DPP classes." "So I ran our largest walking group date so far at one of our properties. It's actually one of our smaller properties and one that's at least from my experience been harder to get participation out of. I actually started that walking group with just two participants. It expanded to six people towards the end. It's only a 40 unit properties. So to me that's still seems like very high participation. Just seeing the participants involved because a big reason why it expanded so much was the word of mouth like it got that community talking to their neighbors, really interested. And like what my role is in the organization, what I could provide for them specifically, like the chronic disease education, the access to food." "I think one of our major success is for this year is …[being] able to retain the participants, which is great because it's such a long class." "The magnitude of the classes that have been taught this year is a big increase from last year." (Year 3)
Health and social impact of Healthy Living classes and activities	*Diabetes Prevention Class:* "So just when [they are] coming back, and they're actually losing weight." *Walking Groups:* "…So it wasn't just like, aside from getting these people out and partaking in physical activity and educating them, being able to grow their knowledge and helping them become self-sufficient and advocate for themselves, I think has been the greatest outcome from that walking groups." *Walking Groups* "…[I]t wasn't fully anticipated how many of the participants would not only learn these skills but really come out of it saying 'this helped my mental health'."
Sense of community with Healthy Living classes/activities	"[H]aving a community and having a place to go gave them purpose, gave them, you know, a feeling of community as well. And just being in that space really helped with the social isolation…For us, the multiple people coming to us and then wanting to continue, they're like this was so great. We want to continue and if and if we can't provide that space now, they know each other and they can still meet and we can, you know, provide a space for them to do so. And it's been it's been really exciting to see that development." "But for now that has already been a success for its story. For us, the multiple people coming to us and then wanting to continue, they're like this was so great. We want to continue and if and if we can't provide that space now, they know each other and they can still meet and we can, you know, provide a space for them to do so. And it's been it's been really exciting to see that development."
Best Practice Themes	
Having a coordinator to oversee Diabetes Self-Management Classes	"We have included that person [Diabetes NutritionClass Coordinator] into a lot of the quality assurance or current disease classes. So that person makes sure that all the information is up to date that the CHW they're trained and they have the most [up to date] information on diabetes…I think that [has] helped with

	like the classes in terms of class retention and making sure that we're giving the participants [the best] experience."
Prioritizing vulnerable areas for Healthy Living classes	"Healthy Living Classes-targeting vulnerable areas."
Activating social networks to promote Healthy Living classes	"Using connections and relationships to find participants and being transparent to community partners about what we offer."
Providing incentives for Healthy Living Classes (Walking Groups)	"You know, and so, you know, we've like given them water bottles, we've given them cooling towels, you know, things like that, to help them, you know, hopefully encourage them to continue to keep, you know, walking and being healthy with their, you know, community."
Creating Group Texts/ Communication Platforms for Walking Group	"And you, we make group texts…So they all have each other's numbers. And they can say, 'hey, we're still gonna walk today. Let's go walking', you know. So hopefully that helps keep the group going and walking. And then, since they're doing it at the communities and around the community, that other neighbors will see that and come [and join in]."
Challenges	
Barriers to participation in Healthy Living classes (schedule and family responsibilities)	"[A challenge was providing] [a] heart health education course. We offered it all the properties again; it's for the residents in the community and I think we had little to no participation at those. I think the biggest factor was like the time offered, you know, we had to really consider the availability of these clients and what times they could actually attend, you know, because a lot of these they….There's a predominant demographic where the man is the breadwinner of the household, then the woman is the caretaker, and so that really affected, I believe, the participation in these. So for Year 2, we're doing diabetes education. We switched the timeframe to evening. It's turning out a little better. So it definitely was a lesson learned and seems to be improving. We're still running through. So we'll have like those numbers to see just how effective the change was."
Ongoing participation in healthy living activities beyond project	"And so now the idea behind The Walking group is to be able to find leaders that attend The Walking group that will continue to do it after we're done, like after the challenge is done, you know, so we encourage them to keep walking. You know, we tell them, like Rocio will tell them, I'm gonna come and check on y'all, you know, twice a month, you know, and see if y'all are still walking. Like, we wanna make sure that they're they're still, you know, going continue to do that and we can support them."
Not having enough or available class materials or promotional materials for classes	"One challenge is that we do not have enough class materials for each CHW this is important because we all have different schedules for our classes and materials are sometimes not available when we need them." "having the necessary materials for the classes."
Need for more promotion of healthy living classes	"Need more promotion of healthy living classes."
Recruiting sites to host Healthy Living classes	"Gaining sites to host Healthy Living Classes."
Lack of knowledge and skills of residents in preparing healthy meals	"Many residents lack the knowledge and resources to prepare nutritious meals."
Recommendations	
Explore further ways to promote Healthy Living classes	"Implementation of a system-Helping CHW's with a possible list of contacts/community partners for the Healthy Living Classes"

Table 4. Overall Highlights, Best Practices, Challenges, and Recommendations for CHW-led Health Promotion with HEART ATX Project. *CHW Survey (n=14 CHWs) & Organizational Partner Interview (n=6 organizations; n=8 partners)* - HEART ATX Evaluation, Austin/Travis County, Texas, spring/summer 2023 & 2024 (Years 2 & 3).

THEMATIC DOMAINS & THEMES	**EXAMPLE QUOTES** *from HEART ATX Organizational Partner Leaders & Community Health Workers*
Highlights & Accomplishments	
Increased reach and impact with addition of CHWs	"I think for this year, I think we really touched upon the increasing CHW numbers part of the grant…So we more than doubled the amount of CHW coverage on the grant." "…[O]ne of the highlights..is that we started with one [CHW] and we were fortunate, based on the great work that we did, that they gave us a second one. So I've been able to have one of these CHWs in our N region and one of these CHWs in our S region, which for us is wonderful because it just means that we can [help] more folks." "To see where, you know, it's gone from and the things that they've [CHWs] accomplished .. It's just been great to see, like, all of the wonderful things that they have they have done and been able to do during a short amount of time."
Trainings	"The trainings [have been a highlight]. It's really as a community health worker, like you're already very knowledgeable of resources, but then sometimes it's very easy to forget or you know, they kind of just sit on the back burner until someone needs them. And it's like, you know that there's a resource for this, but you can't necessarily remember. So they're really good refreshers." "I love the training that I'm receiving from people's because I've never really had this kind of official community health work training." *In-person and recorded:* "The most helpful aspects of our training are that they are now offered in person and availability to review topics via recorded videos this ensures that any topics we covered are always there as refreshers." *Types of trainings:* "The first training that I took was the diabetes one it was interesting and full of information and helpful for the classes that I need to prepare for myself." "This project has been great for the almost 3 months I've been part of this organization. One topic I enjoyed was the Mental Health classes and the Diabetic Care Program training."
Cross-Organization Partnerships and Collaboration	"Working with other organizations gives us a lot of information and knowledge sharing, helping us better understand and meet our patients' needs."
Photovoice	"I really liked the opportunity that [the Photo Voice Project] provided for our CHWs. It validated, reinforced, and provided growth opportunities for the CHWs." "Photovoice was the best highlight for my team because we worked together to present a good product."
Best Practice Themes	
Supervision of CHWs by CHWs	"Yeah, I think the important thing…is that I myself am a Community Health worker. So being able to supervise [the CHW's] work with that lens and with that understanding and what that work entails, I think has been really helpful for him. And I have to connect on that level. And so I would really wanna highlight that as something that should be a best practice, that it is supervision of community health care should also be done by Community health workers."

	"Having full time supervisor in this role who has the skills that Raisa [HEART ATX Program Supervisor] has was very important in the team feeling supported."
CHW Trainings Led by CHWs	"Having a community health worker lead and mentor others... really help them feel comfortable in the role."
Community Health Workers from the communities they serve	"[T]he CHW work is key. …[Our CHWs] are all either previous or current residents of HACA... So that has been a really huge way to leverage…their knowledge of their communities and their neighbors.... That's one of the best practice(s)… [T]hey are so inspired to be able to give back not only to [HACA] but to their own communities and to be able to help people that they felt like, hey, 'these are things I wanted to be able to change' or you know assist with and or have knowledge on and 'now I do and now I'm able to share those things' and it's a really incredible thing to see.'""
	"What I've learned is that we need more umm, African American community health workers to work their community."
Creation of formal CHW job descriptions and inclusion of CHWs in organizational chart	"We have job descriptions now for CHWs, especially for those who work directly with our residents."
CHW meet-ups and mini-trainings & fostering of social networks	"What I realized during the first year of being on the grant was I felt like the CHW didn't have as much support as they needed…That's why [these CHW meet-ups] is more like something that, yeah, they share their experiences and they're comfortable in that space…So it's something we're thinking as a network and get to know each other as well…I feel I feel like having those types of relationships can definitely strengthen the partnerships."
	"I think having the mini trainings has been an excellent way to connect with others and to share resources."
	"And a lot of the trainings at this stage that we did as part of the grant were wonderful to prepare them for those [COVID-19, social service referrals] conversations [with the community]."
	"Two of the helpful trainings for me are the mental health and self-care trainings. The trainings help solidify CHWs as a group."
	"Having outside resources speak to us, it's good to know information that we can share. This space helps us collaborate with all CHWs and work together."
	"Training and networking with other community health workers have been incredibly helpful."
Trust and relationship-building with individuals and the community	"[T]he CHW have to have that trusting rapport and relationship with the residents that they are serving so that they will be willing to have these conversations, even if it's something that they don't believe in, you know…And that goes for not just the vaccines, but also for healthy lifestyle, you know.."
	"For me, it's always that relationship building and going to meet the person where they're at. You know, we have a lot of internal referral or internal programs here, but not everybody can make it here…So we are always thinking about ways that we can actually go out into the community and do work there."
	"[Our supervisor has] always encouraged us to be more personable, you know, be with your patients. Let them see you. Let them know you and that does work, because they trust us when they know that you can't. They know you care, so you know now some of them will call me way more than I want them to."
Importance of supporting residents' own advocacy/agency	"Either you know bringing in maybe those DEEP (healthy living) classes, but then…working to advocate with them if there are issues like no sidewalks, no lighting,…feeling unsafe in your neighborhood or there's no transportation line or no bus line in your in your community. So really working with our community to also advocate for those changes that they want to see in their community, to have better health outcomes, right?"

"Warm Hand-offs"	"One of the things that that we have found to be really successful is what we call warm handoffs… CHW's in these roles are embedded within the PCP teams, so they are part of that team, and we make it easy for folks to, you know, when we say warm handoff, they send the clip or they walk into their office and like, 'hey, I have a patient and so they'll go and then produce themselves'. And so…when your provider who's someone that you trust and have rapport with brings this person and says 'They're gonna help you'. I think that has been one of the definitely one of the best practices that has worked really well for us."
Providing a toolkit or other 'hook' during tabling as a conversation starter	"I think one of the things that we're very proud of…: we created folders, but we call them toolkit, 'their toolkit'…We received a few samples and we tested them with patients and they liked them and they understood the content. They seem really happy about the lotion in there. I'm not sure why, but they really like the lotion and I especially like this tool that says OK, we know you're gonna eat fast food. We know you're gonna go to McDonald's. We know you'll go here, but if you do go can you at least eat this, and [we] would show them what they could order. So again, it's tools that they can apply…" "You gotta have a hook to get patients to come to that table. So what we'll do is here come how a conversation with me. Let me tell you about this and we'll enter you in a raffle to win this and so that's that was one of our this is gonna be one of our initiatives to kick up the table in this year."
Celebration and recognition of CHWs	"The celebration of the community health workers that we are planning to doing next week."
Challenges	
Multiple demands on CHWs and multiple hats they wear	"[W[e only have a limited amount of community health workers. So they're kind of like spread out, right. And so we would love to be able to have one at each property, but that's, you know, not something that that's feasible at the moment ..." *-Org. Leader, FC* "They [CHWs] are well integrated into these properties, but there are higher demands once they do start to establish these relationships and some of them are going to expect…all these other things of them and they're going to want to do it because they feel very passionately about the work and about helping. So they will sometimes kind of lose you know, not necessarily lose focus but veer off into these territories because as we all know, CHWs wear all the hats and they are trying to, you know, meet those needs… It does seem like they're consistently overloaded, and so I'm actually having witnessed this. I'm actually trying to kind of reign in and refocus on our priorities so that they are not feeling like they have to do all the things that they want to be doing and are being asked to do by not, not necessarily by me, but by the residents."
Need for more preparation of CHWs as teachers/ trainers	"So I think a lot of times when we do get like experienced CHWs, they're just used to doing tabling and maybe some block walking, and teaching classes is not something that they've been exposed to…So that's something that [CHW coordinators] have been working on to make sure that everybody is at the same level when it comes to teaching those classes."
Long-term sustainability and funding of CHWs	"Unfortunately for the contractors, if the grant isn't extended and we don't find another grant, that probably that money for them will dry up and they may have to find funding for those CHWs somewhere, which is unfortunate in terms of our project …And even with this funding, it's not sufficiently funded because, yeah, people need public health, and I think it the pandemic definitely showed how important public health is for our society." "And this is a part that I worry about, that the lack of sustainability for this like this, this project is a three-year project and I wonder what the discussions are continuity mean and I mentioned that because if there is a true acknowledgement

	and recognition of the value and power of Community health workers, I think that there should be also [be] a very serious conversation about continuity of this work, right? If this is good work. If this is powerful work. If this is effective work, why wouldn't this work continue? And so I really feel that it's really, really important that that there is discussions about how this work continues." "I will always say that that more sustainability and funding, it's always something that we're looking for and I'm sure that's not the first time you've heard it in these interviews. You know, it's great that this HEART ATX [project] is gonna continue for another year, but even you know after that, what does that look like right?"
Challenges with formal integration of CHWs	"Formal integration into our organization has been slow due to bureaucratic challenges like job codes and promotions."
Need for enhanced resources for CHWs	"It's hard for us to get tools. E.g. They give us a working phone and working Ipad which is so great. But I cannot use the app that more efficient in my service group. Our laptop is heavy but without a typing keyboard. Ipad is not easy to type during our outreach."
Language barriers	"I would say also language is one [challenge]. Our CHWs are bilingual, they speak Spanish and English, so we have those two languages covered. But we also have a high demographic of Arabic and Pashtu speakers in our communities. And we have, you know, some refugees coming from those countries. So, we need help with that, but we would love to be able to have more resources that offer those languages or even like printable… you know that we can print out. And those things are really hard to find unless we're actually [creating] it ourselves, which a lot of the times, that's what we're doing…The challenge that we're seeing is the kids are having to help the parents and they don't always wanna do that. They're kids, you know…It can be challenging."
Digital Literacy & Inclusion (older adults)	"…[W]e also have a great deal of families or residents that are older adults that are not familiar with these things [digital platforms] and they know how to call or text. But that would be the extent [of] what they can do with their phones. So even if you know they had a phone that's a smart phone it's not necessarily the easiest thing. So right now we're just trying to really kind of increase in level up that the digital equity and inclusion program across all the properties." "For me the use of technology with the pretest, post test, registration and connect ATX. because we provide our services to participants that came from other countries and they don't have access to technology."
Internet Connectivity	"Invest more money in the technology side of things... we struggled a lot with being able to connect in the field."
Recommendations	
CHW-Specific Recommendations	
Explore higher salary and long-term sustainability of CHWS	"I think it's been very important to, and this is where it's been challenging for us, is to provide more compensation for Community Health Workers within a system like UT's that I think is still a ways to go in terms of providing proper compensation for Community Health Workers… I think that the salary for Community Health Workers …are a little bit low at UT and so that's one of things that we're trying to work on…" "Bonuses or raise would be a great." "CHW pay should be higher than $30 an hour."
Explore further opportunities for CHW recognition, leadership and career advancement	"But you know I think it's really important to recognize the power dynamics behind that…, because that also includes Community Health Workers. We do the work, we get the experience that the trauma faced the patients directly get involved, get connected to folks. And yet if these projects simply are putting up, publish some outcomes at the end of the goal and have maybe some of us including myself present at a conference and the Community Health Workers get left behind when they actually did the work , I think that that's also not fair. And so I really would advocate

	that the Community Health Worker [is] at the frontline of showing their work, presenting their work and also advancing their careers for doing that work." "[C]ommunity Health Workers…here at the clinic, we have our role, but like our scope and the things we could do could be allowed [to do] more too… [W]e are in the community, we get to build rapport with people, especially when we're out like I mainly go to like middle school or school events, you know. [Before], I was not really ever going into the community, so I just was that person that would deliver bad news like, 'hey, your blood pressure [is too high]'. Let's do something about that, you know, and I can say I can tell the difference….But beginning this year, 2023, I actually started going out more and like meeting patients outside of the clinic… I still do think it's better to see someone face to face… When we got to their homes that we didn't realize, so it was bigger than just shots, you know, they needed better call equipment. They needed help understanding medicine and just knowing where to go when this happened and when that happened." "To continue to allow for autonomy amongst the CHW-group and to allow for CHW feedback and concerns regarding decision making in certain areas, as CHW's are the boots on the ground."
Continue to provide CHW trainings on a range of topics, provide a range of options for delivery of trainings	*Input from CHW Survey:* • Provide job-specific CHW trainings. • Provide trainings with a focus on soft skills including public speaking and effective communication. • Provide training on responding to drug overdoses and accessing aid. • Provide certified medical interpreter training. • Increase availability of live trainings. • Further training for the ConnectATX platform. • Check for comprehension after training. • Provide trainings led by medical professionals. • Include images in training presentations and reduce training time. "We still need more training... we need more empowerment, what we can do, a vision."
Spread out trainings and allow hybrid participation in trainings (in-person and virtual) and self-paced training	"..I love the meaning mini trainings and I see the absolute value in those. I wish that those could be a little bit more spread out rather than it all being kind of compacted as it happened this year…." "[I]f there could be a hybrid option where simultaneously happening you know in person and virtually I think that would really help …because we just have so many things already on our calendars that are happening. And I personally when I went to one it was great to be in the same room with everybody, but unfortunately that's just not always possible." "More accessible and user-friendly self-paced training options would be beneficial."
Embrace flexibility in delivering CHW-led activities	"Flexibility in how we conduct our work is important to adapt to our specific organizational needs."
Provide social support for CHWs and focus on their well-being	"Support the community health workers, realizing that compassion fatigue is a thing... if you can't always help people, then that's going to be something that weighs on you."
Delivery of CHW-led Health Promotion with Community	
Provide more language support to reach linguistically diverse groups	"…So, we need help with that [language support], but we would love to be able to have more resources that offer those languages or even like printable… you know that we can print out."
Organizational-Related Recommendations	

Continue to foster communication among HEART ATX partner organizations	"On our side, we were small, so I think it's very easy for us to the to do this, but I think it'd be really helpful to know how other teams are managing their workload and their job positions." "… I have no idea how other cohort other members of the cohort are doing. I don't know if they're doing more in terms of numbers. So I think that there is possibly an opportunity to that share outcomes and processes that other teams are doing as the work is happening."
Continue periodic meetings and check-ins with partner organizations	"They [partner organizations] don't really pay attention to all the due dates and everything that's in their work statements and then this year I tried my best to meet with them monthly…Now I've written into the contract for you too, that they have to meet me every month because in the same things are happening again where things aren't clear to some of them...So, you know, I think those meetings are important just to make sure everybody is like on the same page and they're gonna meet their goals." "[The Project lead] recently scheduled check-ins, and those have been helpful. So I'm glad that we were able to do those."
Provide enhanced protocols and glossary for HEART ATX project	"And then also, because there's so much going on within the program, people get confused...Like what to put into like the reporting? Like what exactly is tabling? What's [the difference] between the tabling and the health fair or an event? So I had to build a glossary for that recently just like OK, so this is what tabling is. So I think just having like those different, umm, meanings for them, I think that makes it easier for them to do outreach just because it's not just one thing that that they're doing in terms of the partners." "Understanding and standardizing reporting categories earlier would have helped."
Explore incorporation of more client/patient voice with our success stories	"…I wonder if there could be also possibility of having patient or client voices also be included on this because I think a lot of it, I think that's really powerful. I don't think that we could always just say that we were successful with our terms. I think that it should always be the community members that say if we are successful or doing powerful work. And so I think that there is space that hopefully to be able to bring in those voices and have them judge how we have done this work."
Explore additional methods to capture progress and impact of HEART ATX	"Much of the work you know is, well, many aspects of the work is probably not being captured fully in… the monthly reports that are being submitted. So all that to say that yes, some of the those monthly reports are or perhaps summarizing some of the information. But I also think that it might, there might be some information being left out."
Explore enhancement of project reporting platform	"… I don't know if there is a way to, you know, change the format formatting or the way that we do our reports and this is a small thing. The spreadsheet is very long to the side and it's just it's not very user friendly. If there was way to have it on the portal where it can be simple drop downs… That's a small thing but that would be one thing if there's room for improvement..." "I wouldn't have used Excel. I probably would have preferred Qualtrics or Survey Monkey."

Appendix G

Social and Health Needs and Services Referral
HEART ATX Years 1 – 3

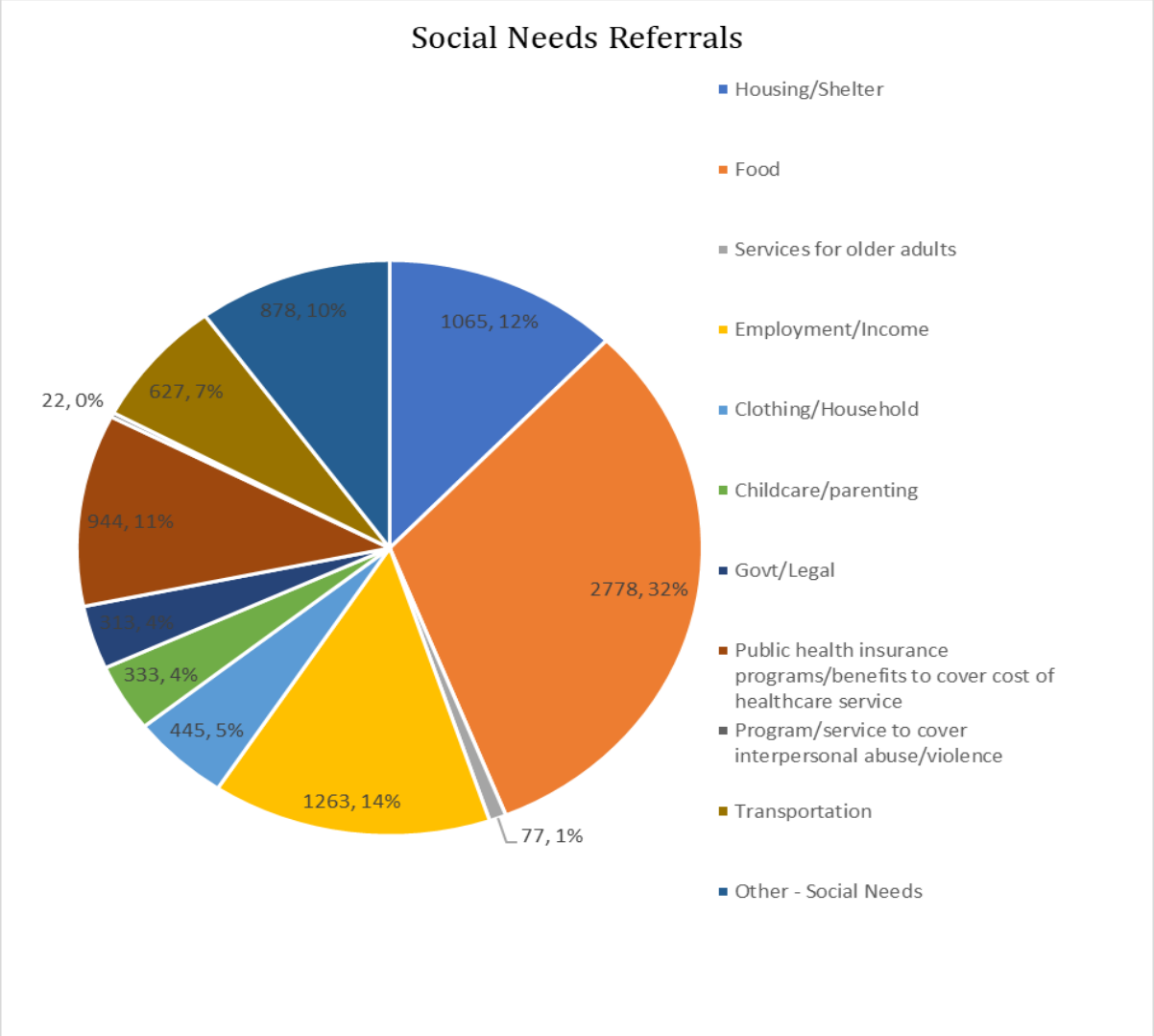


Figure 1. Total social needs referrals made by Community Health Workers for Years 1-3. *HEART ATX, Austin, Texas, August 31, 2021 – August 30, 2024.*

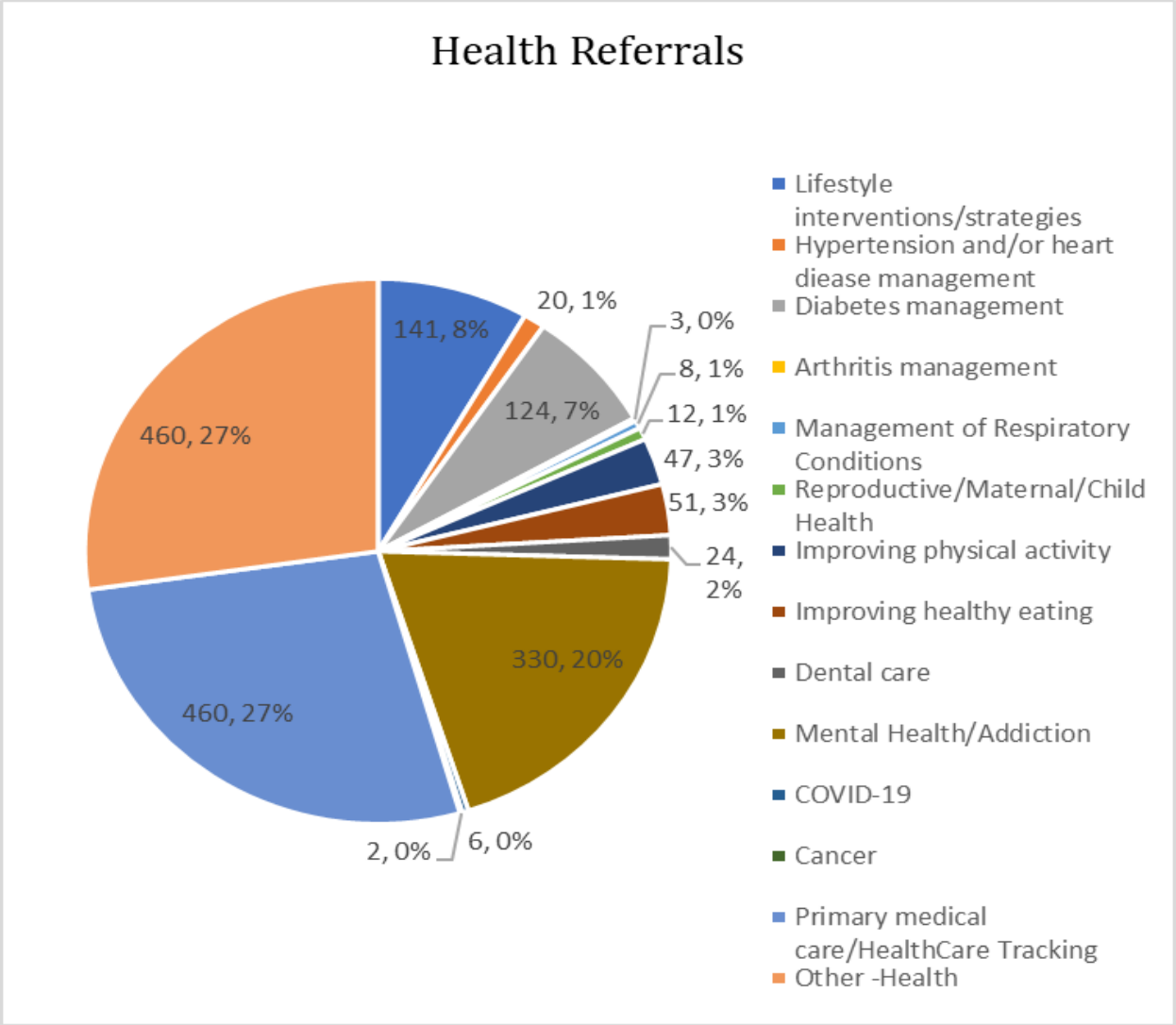


Figure 2. Total health needs referrals made by Community Health Workers for Years 1-3. *HEART ATX, Austin, Texas, August 31, 2021 – August 30, 2024.*

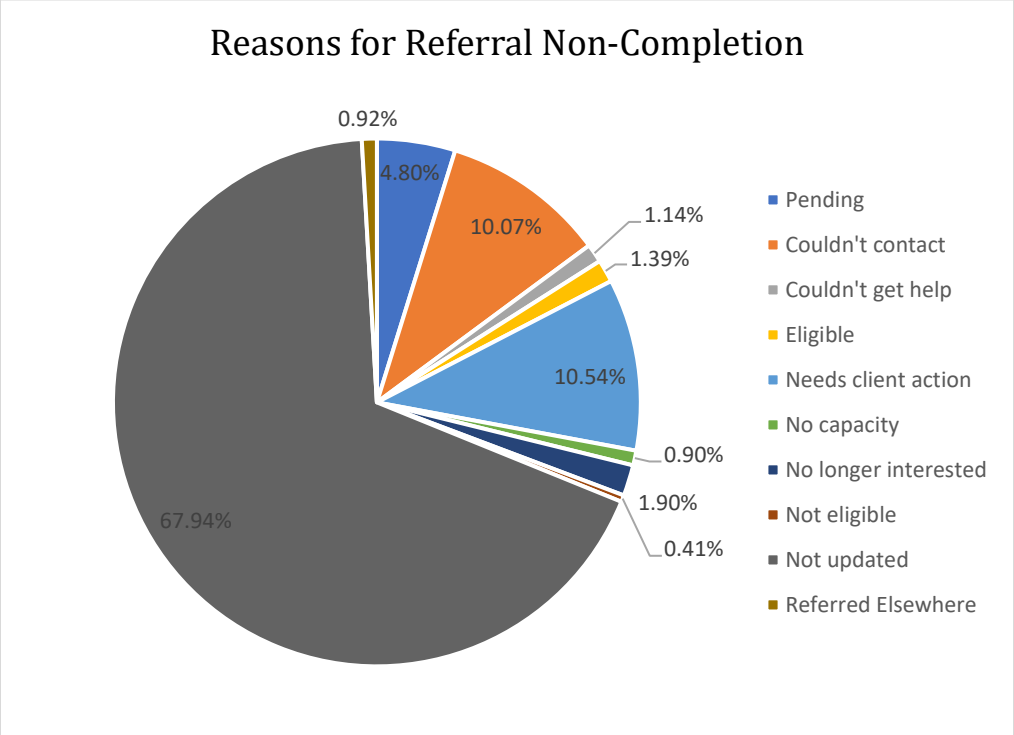


Figure 3. Percentage Breakdown of Reasons for Social/Health Needs Referral Non-Completion as based on ConnectATX data for three HEART ATX partner organizations, *HEART ATX Project, Years 2 (2022-23) and 3 (2023-24).*

Box A. ***Exploring the Social Service Referral Experience:***
In-Depth Interviews with Residents Participating in SDOH referrals

Between 2023 and 2024, the UTHealth evaluation team interviewed 17 individuals who were referred to social services by Community Health Workers (CHWs) as part of the HEART ATX project. The purpose of the interviews was to collect in-depth information about reasons for non-completion of social service referrals. The interview participants were mostly women (n=14), and their ages ranged from 25-71 years. Self-reported ethnicity was: African American/Black (n=4), Hispanic (n=3), White (n=5), multi-race (n=1), and not reported (n=4).

Overall, the participants were positive and very appreciative of the help they received from the CHWs. One mother said " I am a single parent with one child. I don't really know what I would have do without that (help of CHWs)… It is just that I am grateful for everything that they have done here." The interviewees did provide some insights in the referral process, how it could be improved and reasons for not following through with the referrals that they had received.

According to our participants, the CHW referral process works very well, and many individuals felt that the referrals were helpful in their time of need. Interviewees also mentioned their appreciation for in- person contact for the referrals. One interviewee mentioned: "The community workers, they tried to help a little, you know, they go a little bit above and beyond to try to help the community that really needs it. … and they were fun. They were nice, friendly, interactive." Other interviewees made specific comments about the location of the CHW referral process: "A lot of people here use these kinds of health fairs and whatnot to socialize and to talk, and I think it's very healthy for people, particularly people are homeless, or, you know, in this kind of living situation, to talk with people who are outside of this situation."

Improvements to the referral process focused mainly on the need for more coordination between the CHWs and the vendors (community resources). In some instances, CHWs were not made aware of changes in vendor services or hours which created some miscommunication and incorrect referrals. Additionally, sometimes the community resources ran out and were no longer available when the participant tried to access the resource (i.e. food at food pantry). A few interviewees mentioned that they needed help but were not able to access the help because they made just a bit too much money. One participant noted: "I make too much for a lot of housing authority, and like CHI and things of that nature. But yet, still, my rent is over 50% of my income."

Reasons for not following through on referrals included: not being able to go to the referred community resource because of timing (participant worked during the times the resource was open), not having enough time to wait in line (in some instances, the individual was asked to wait in line which sometimes was very long), not having transportation to get to the resource, feeling that the effort required to access the resource was not worth it (i.e. "sometimes … like you call this one place if you get referred, but then they no longer participate in the program and they send you to someone else you know, and then you can't get a hold of that person"). In some cases, individuals did not follow through with referrals because they felt they needed more help than just one time ("There's nothing they can do to help me … I haven't been able to find any programs that can help out with the rent situation. On a long-term basis, more than once a month.")

Appendix H

DEEP Program Findings (Years 1, 2 & 3),
Participant Qualitative Insights about DEEP Program (Year 3) &
DPP/PreventT2 Findings (Year 2)

DEEP Demographic Characteristics for Combined Analyses for Years 1-3 (n=336)

- *Gender Composition*: Female: 81.0%; Male: 17.3%
- *Age*: Mean: 59.6 years (SD: 17.83); Range: 20-100 years
- *Ethnic Composition*: Hispanic/Latino: 54.5%; Non-Hispanic/Latino: 45.5%.
- *Racial Composition*: Asian/Asian American (18.5%), Black/African American (14.6%), White (51.2%), Other (15.7%).
- *Language Preference*: Chinese: 15.8%; English: 44.3%; Spanish: 39.9%;

DEEP Program Findings – By Year *(see Narrative for combined analyses for Years1-3)*

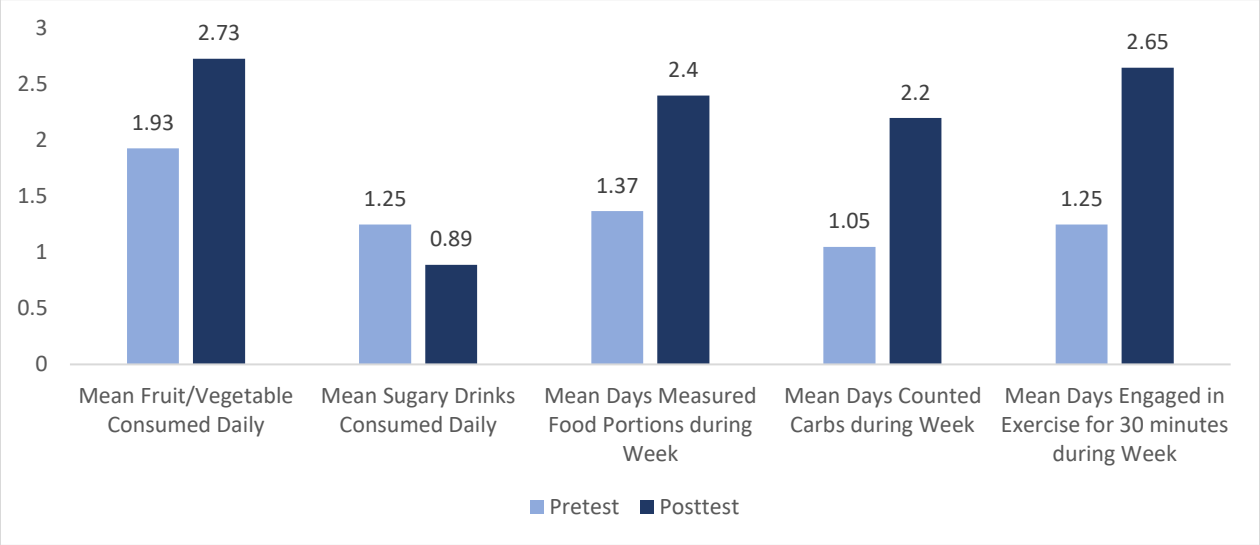


Figure 1. Mean Scores for Healthy Living & Diabetes Prevention and Management-related Practices at Pretest and Posttest among DEEP Class Adult Participants (n=20). *HEART ATX Project – Year 1 (2021-22),* Austin, Texas. * p<.05 across practices with the exception of sugary drinks, where p=.17.

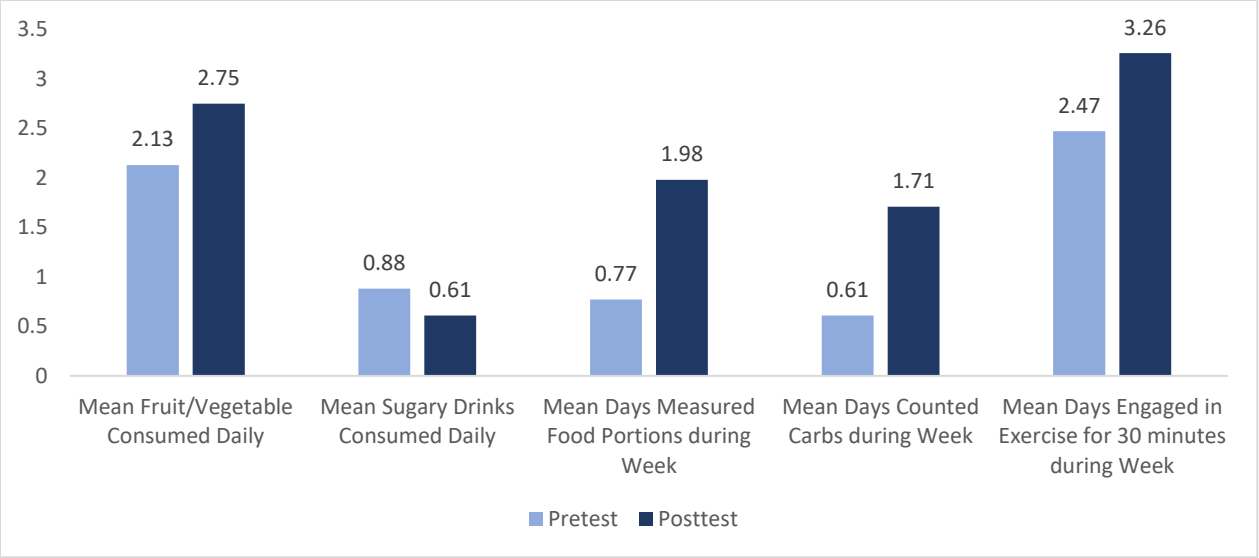


Figure 2. Mean Scores for Healthy Living & Diabetes Prevention and Management-related Practices at Pretest and Posttest among DEEP Class Adult Participants (n=127). *HEART ATX Project – Year 2 (2022-23),* Austin, Texas. ** p<.05 across practices.*

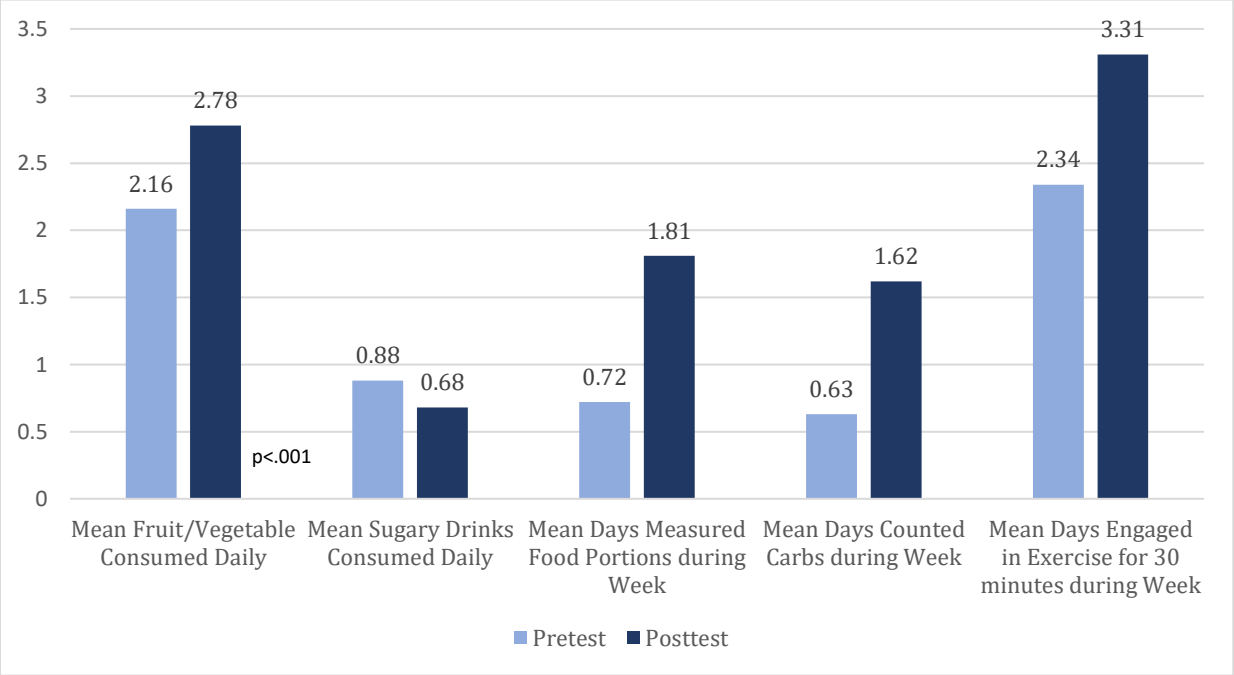


Figure 3. Mean Scores for Healthy Living & Diabetes Prevention and Management-related Practices at Pretest and Posttest among DEEP Class Adult Participants (n=189). *HEART ATX Project – Year 3* (2023-24), Austin, Texas. ** p<.05 across practices*

Thematic Maps for Open-Ended Responses- *DEEP Program Evaluation (Year 3)*

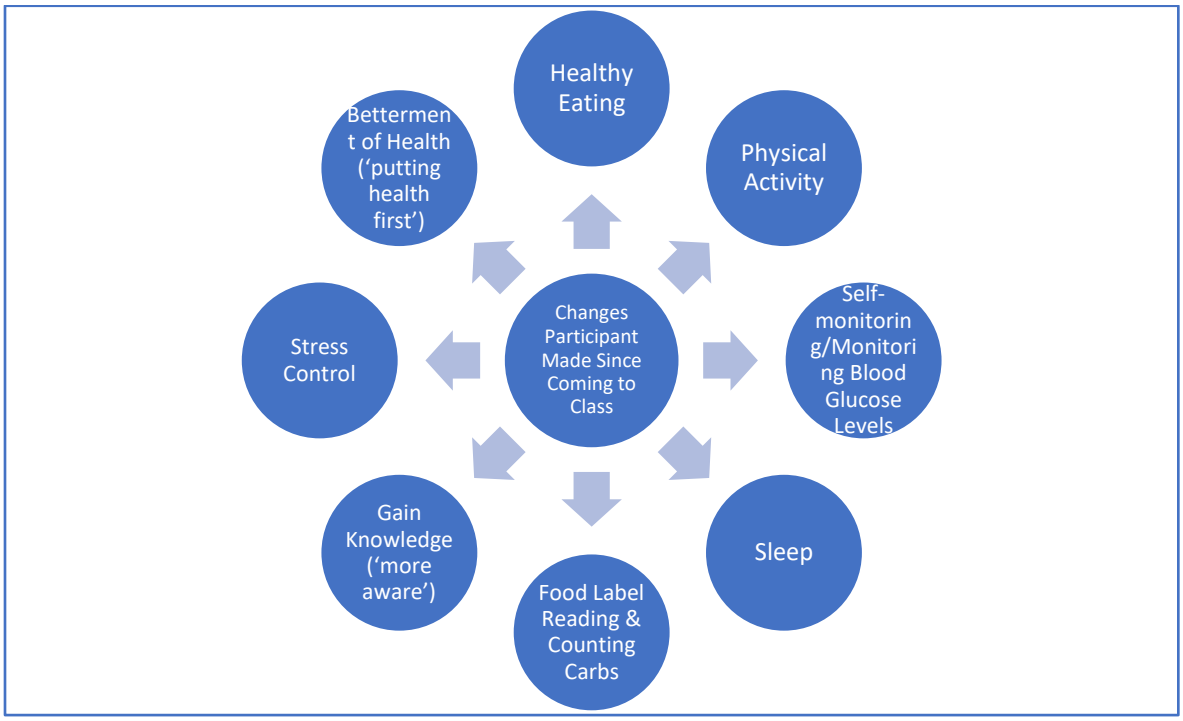


Figure 4. Changes made by participants as a result of DEEP classes. *HEART ATX Project, Austin/Travis County, Texas- Year 3 (2023-2024) (n=189 participants).*

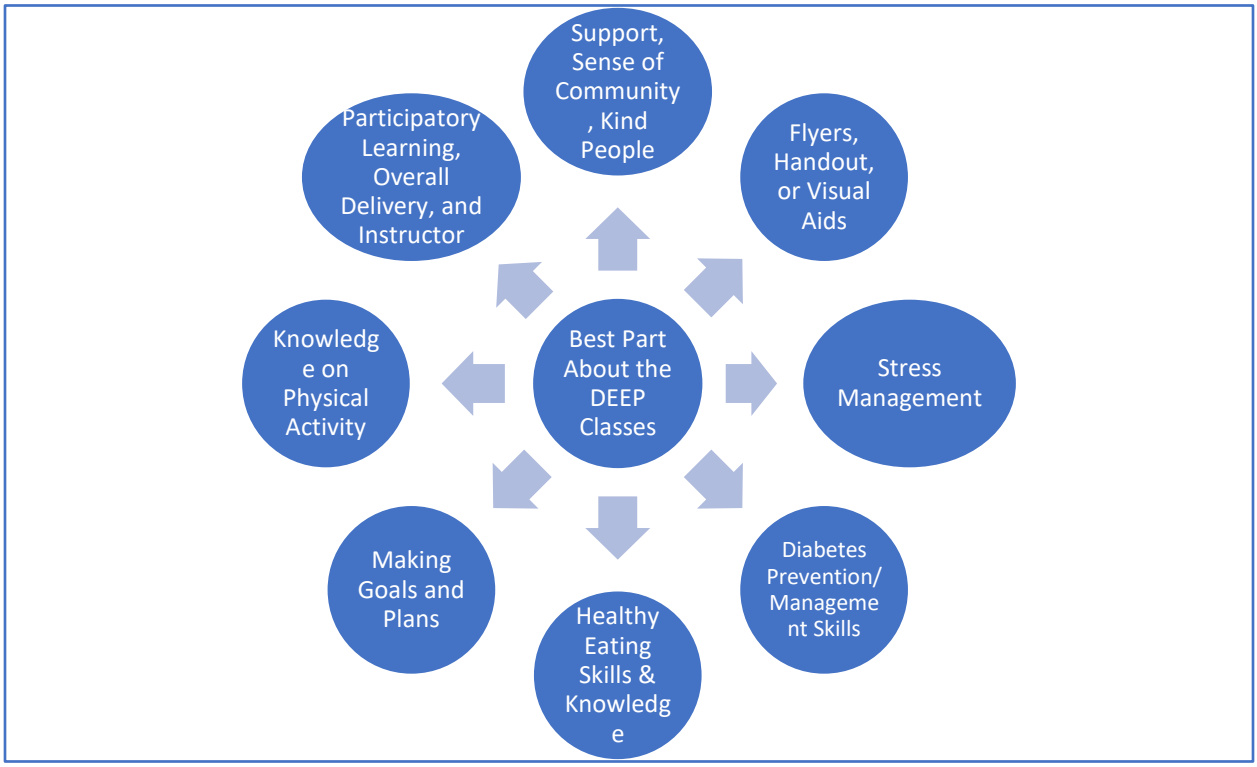


Figure 5. Best Aspects of DEEP Classes Based on Participant Responses. *HEART ATX Project, Austin/Travis County, Texas- Year 3 (2023-2024) (n=189 participants)*

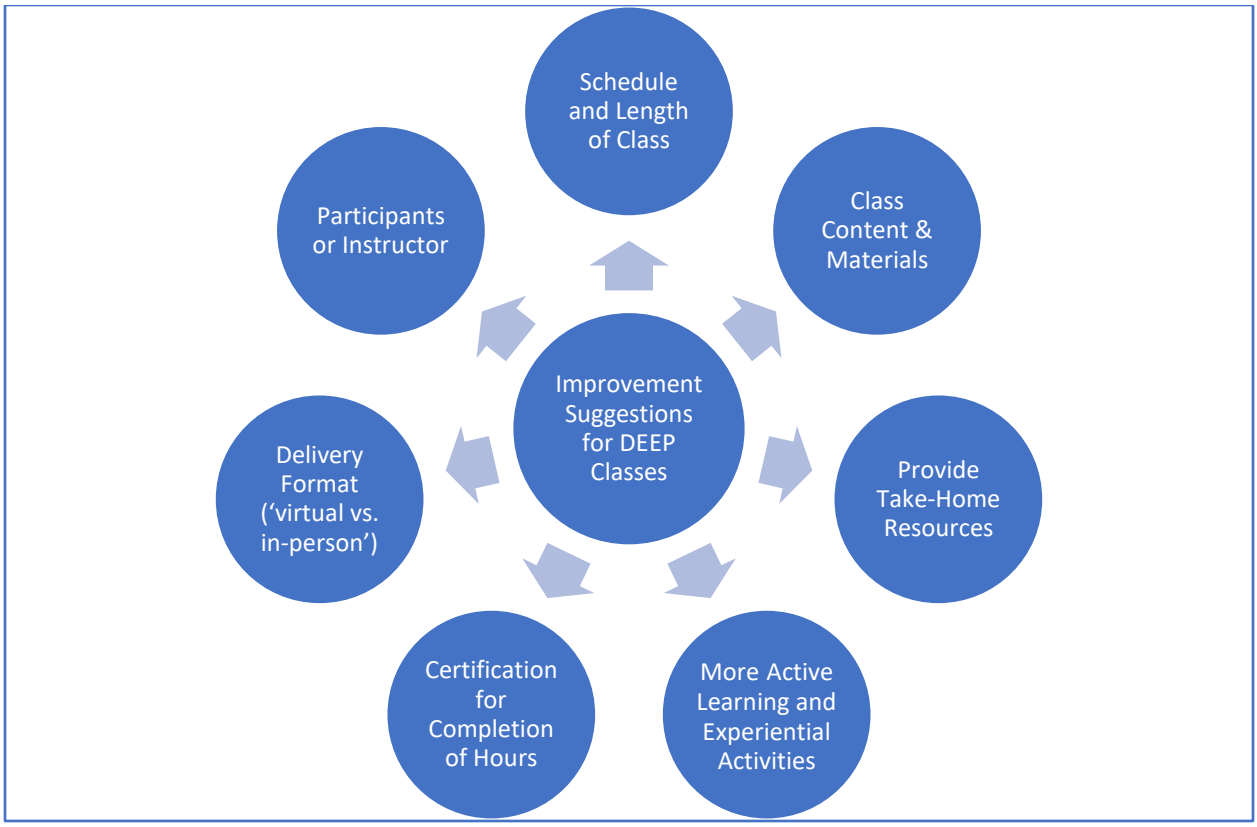


Figure 6. Improvement Suggestions for DEEP Classes Based on Participant Responses. *HEART ATX Project, Austin/Travis County, Texas- Year 3 (2023-2024)* (n=189 participants).

DPP/PreventT2 Evaluation Findings

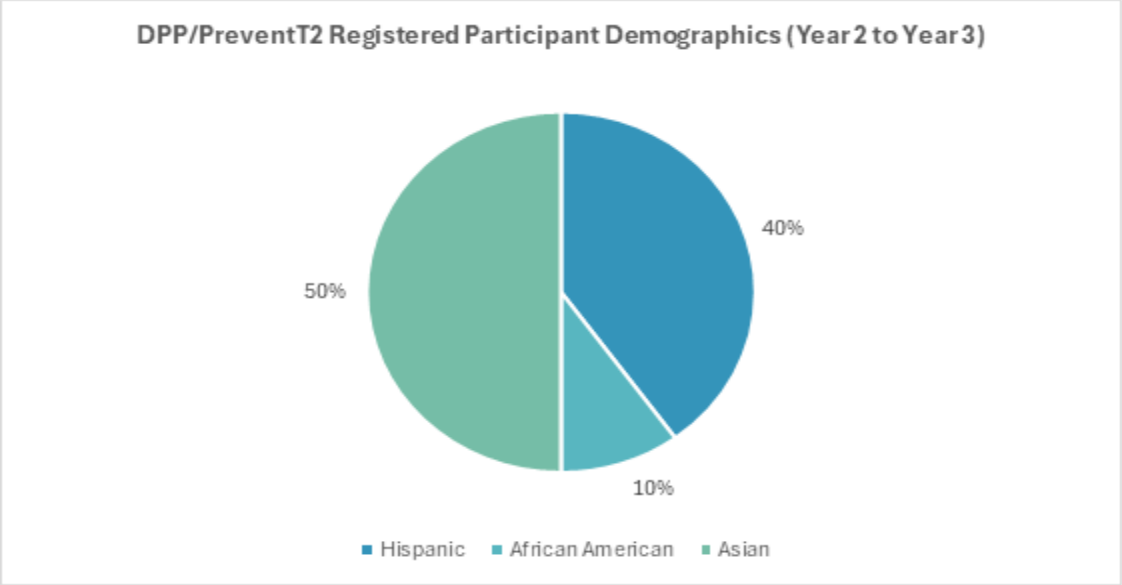


Figure 7. Racial/Ethnic composition of participants in DPP/PreventT2 program (n=12 participants). *HEART ATX, Austin, Texas* (2022-23).

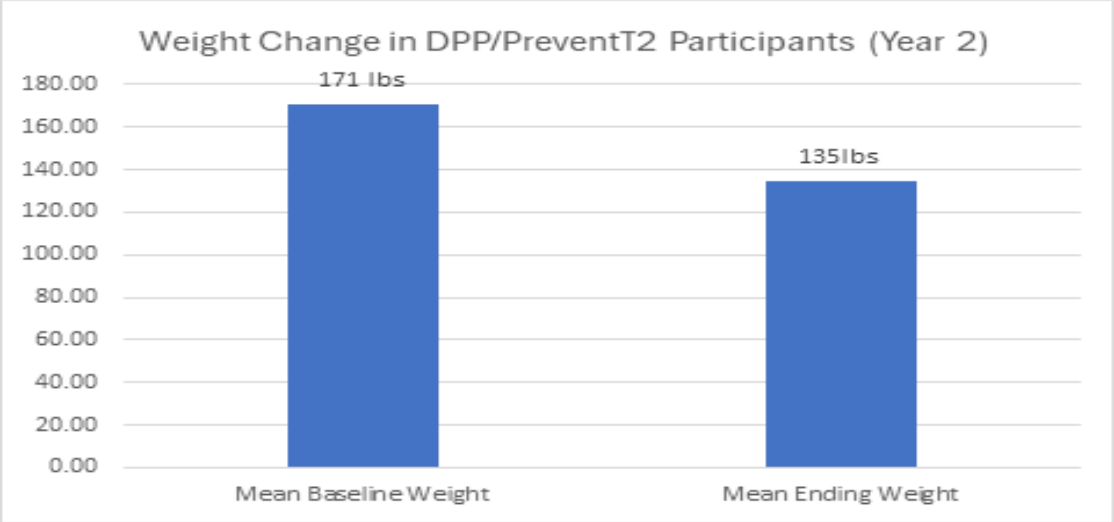


Figure 8. Changes in mean weight (lbs.) between baseline and posttest (n=12 participants). *HEART ATX, Austin, Texas* (2022-23).

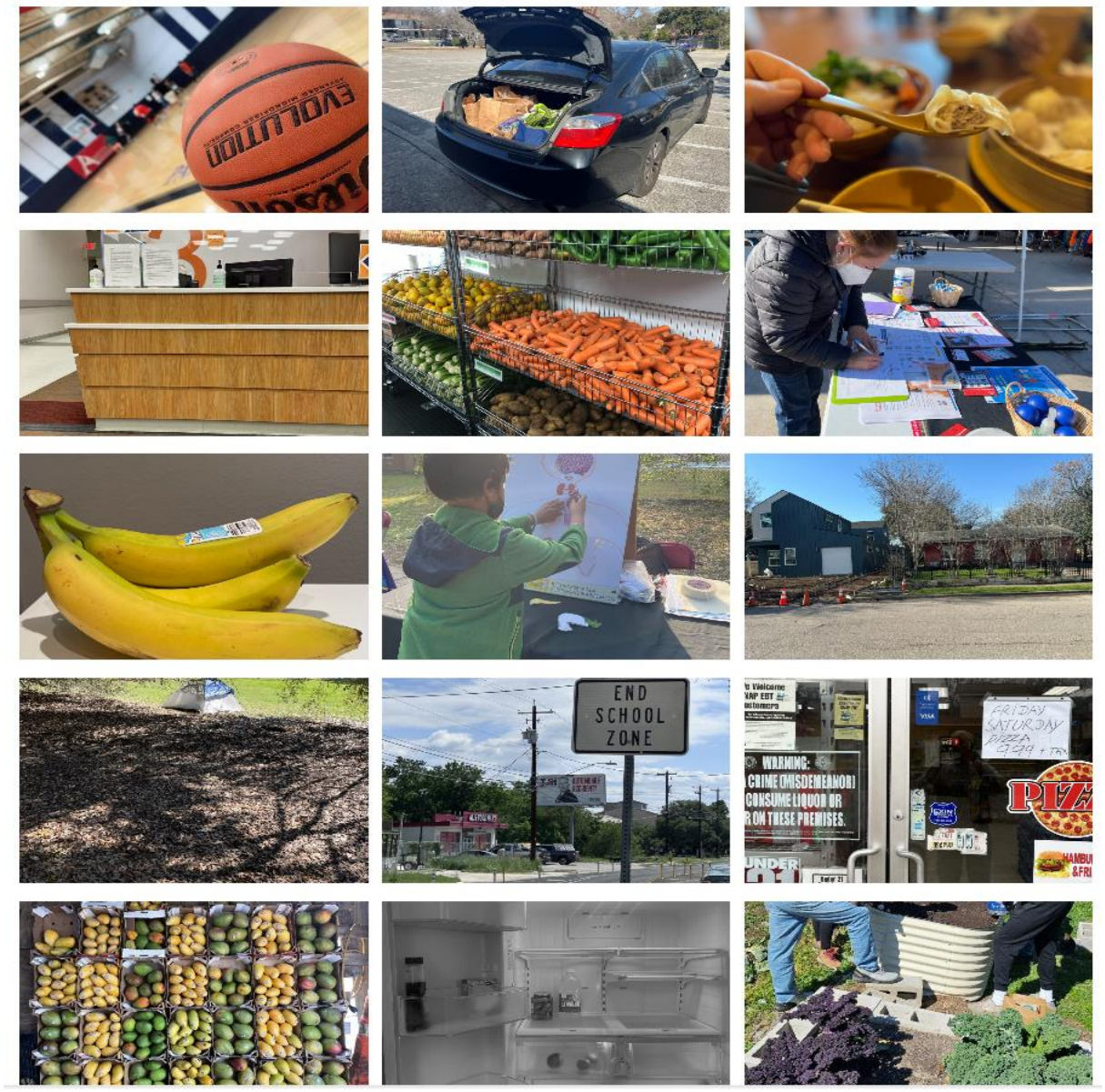
Table 1. Physical activity minutes engaged among participants (n=12) in the DPP/PreventT2 Program, *HEART ATX, Austin, Texas* (2022-23).

Physical Activity Minutes Completed by DPP/PreventT2 Participants (Year 2)		
Total Physical Activity Minutes	Mean Physical Activity Minutes/Week	Median Physical Activity Minutes/Week
14390	189.3	127.5

Appendix I

"Frames of Empowerment":
HEART ATX Community Health Worker-Led Photovoice Assessment

In the final year of the project, HEART ATX Community Health Workers explored various topics related to the HEART ATX project via photovoice (photo taking and the writing of narratives), including the social determinants of health that shape our Austin/Travis County community's health, the ways the HEART ATX project has supported our community's health, and opportunities and ideas for further advancing our community's health and well-being. Click on the link to our "Frames of Empowerment" website, hosted by Austin Public Health, to explore the photos and narratives created by the HEART ATX CHW partners.



Appendix J

-Dissemination & Sharing of HEART ATX Findings-

- HEART ATX Abstracts Presented for Oral and Poster Presentations at Texas Public Health Association Conference (2022 & 2024), Texas Society for Public Health Education (TSPHE) Conference (2023), &
- Community Sharing (Frames of Empowerment Celebration) (2024)

HEART ATX Abstract Accepted for Oral Presentation- Texas Public Health Association (2022)

Co-Learning for Community Health Worker-led Strategies to Promote COVID-19 Vaccination, Social Services Referrals, and Healthy Living in Austin, Texas:
The HEART ATX Project

Maria Elena Garcia, Stephanie Helfman, Alexandra van den Berg, Raisa Charles, Alexis Phelps, Sanaz Sabeti, Crescencia Alvarado (APH), Carmen Cardenas (CommunityCare), Ricardo Garay (DellMed), Rita Ortega-Wiley (Foundations Community), Cherelle Van Brakle, Nancy Sanchez (People's Community Clinic), Borami Chung Lee(HACA), Andrew E. Springer .

Background*:* Austin Public Health and community organizations co-facilitated HEART ATX, a Community Health Worker (CHW)-led initiative aimed at reducing disparities of COVID-19 among economically disadvantaged communities and communities of color in Austin/Travis County, Texas. We describe the HEART ATX model and report on process and outcome-related findings from Year 1 (2021-22), including reach of activities delivered and social service referrals outcomes achieved.

Methods: HEART ATX's conceptual model is organized by three domains: a) recruitment and training of CHWs *(Train);* b) deploying CHWs to support COVID-19 prevention and promotion of educational/social service resources *(Deploy), and* c) increased access to social and health services and chronic disease prevention *(Engage)*. Guided by the *Train, Deploy, and Engage* framework, the *CDC Framework for Program Evaluation*, and an evaluation advisory board, evaluation methods for Year 1 included: post-training surveys to assess CHW COVID-19 knowledge and self-efficacy; CHW monthly activity tracking form; social service referral tracking platforms; and participatory inquiry and personal interviews with partners.

Results: A total of twelve CHWs were integrated into Austin Public Health, 3 FQHCs, and 2 affordable housing organizations. HEART ATX COVID-19 mitigation and chronic disease prevention activities *(*n=898) took place across clinical and community settings, reaching n=11,216 residents in Year 1. Mass media campaigns on COVID-19 prevention delivered 2,100,429 resident impressions. Of the n=845 social service referrals made, 36.6% of social service referrals were completed (67/183), with the highest for Government/Legal Aid (72.2%), followed by Food (61.1%); Employment/Income (17.2%) and Housing (2.6%) were the lowest. Partner interviews indicated CHWs increased the *reach, amount, and quality* of COVID-19 mitigation services for patients and residents.

Conclusions: We documented a high number and reach of activities in Year 1. Key lessons learned and future directions include opportunities for *increased cross-organizational communication; standardized screening tools;* and *exploration of a long-term vision for CHWs.*
Funding: Center for Disease and Prevention CCR-Grant Component B (Host: Austin Public Health)

HEART ATX Abstracts Submitted to Texas Society for Public Health Education (TSOPHE) Annual Conference in Austin, Texas, October 2023

ABSTRACT #1

Best Practices and Quality Improvement Recommendations for Delivery of Community Health Worker-Led COVID-19 Vaccine Outreach & Promotion: The HEART ATX Project

Sana Amin* (UTSPH), Mahima Viswanathan (UTSPH), Raisa Charles (APH), Stephanie Helfman (APH), Alexandra van den Berg (UTSPH), Sanaz Sabeti (APH), Crescencia Alvarado (APH), Carmen Cardenas (CommunityCare), Ricardo Garay (DellMed), Rita Ortega-Wiley (Foundations Community), Nancy Sanchez (People's Community Clinic), Borami Chung Lee (HACA), Andrew E. Springer (UTSPH)
*Corresponding author, sana.s.amin@uth.tmc.edu

Background: HEART ATX is a 3-year study led by Austin Public Health and Community Health Workers (CHWs) addressing COVID-19 disparities in economically disadvantaged communities in Austin, Texas. Conceptual model domains include a) recruitment and training of CHWs (Train); b) deployment of CHWs to support COVID-19 prevention and vaccination (Deploy), and c) increasing screening and linkages with social services and chronic disease prevention through healthy living classes (Engage). From our co-learning initiatives, this qualitative study describes our CHW partners' best practices and quality improvement recommendations for COVID-19 Vaccine outreach and promotion.

Methods: During year 2, the CHW Survey was launched with our CHW partners (n=18) based in six health and social service organizations. This cross-sectional study was guided by a phenomenological approach to qualitative research, which aims to understand a specific experience based on the lived experiences of individuals or groups. Survey questions were primarily open-ended and explored best practices, challenges, and recommendations for improvement related. Thematic analysis was conducted by two research team members who collaborated to establish the coding technique, examine the data, and identify the final themes.

Results: The following best practices for COVID-19 vaccine outreach and promotion were identified: CHW trainings for education and support; Tabling initiatives to combat misinformation, and On-site vaccination clinics for direct access. Key themes identified for quality improvement were ensuring timely COVID-19 information dissemination while maintaining accurate COVID-19 Brochures. Opportunities for future directions include enhancing trainings by increasing the availability of in-person training and a greater variety of training topics including medical interpreter training and soft skills such as public speaking.

Conclusions: Incorporating essential CHW training, continued community-wide tabling, and on-site vaccination clinics amplify our best practices for improved COVID-19 outcomes. Supplying CHW with up-to-date COVID information and resources is required to improve these outcomes.
Funding: Center for Disease and Prevention CCR-Grant Component B (Host: Austin Public Health)

ABSTRACT #2

Best practices and Quality Improvement Recommendations for Delivery of Community Health Worker-Led Social Determinants of Health Screening and Referral: The HEART ATX Project

Mahima Viswanathan (UTSPH), Raisa Charles (APH), Stephanie Helfman (APH), Alexandra van den Berg (UTSPH), Sana Amin (UTSPH), Jeff Cary (United Way for Greater Austin), Sanaz Sabeti (APH), Crescencia Alvarado (APH), Carmen Cardenas (CommunityCare), Ricardo Garay (DellMed), Rita Ortega-Wiley (Foundations Community), Nancy Sanchez (People's Community Clinic), Borami Chung Lee (HACA), Andrew E. Springer (UTSPH)

Background: HEART ATX is a 3-year community health worker (CHW)-led initiative hosted by Austin Public Health and partners, ameliorating the disproportionate impact of COVID-19 on socioeconomically disadvantaged communities in Austin/Travis County, Texas. Core components include: a) CHW recruitment and training (Train) b) CHWs deployment for COVID-19 prevention and vaccination (Deploy) c) Increasing screening and connection with social service, health resources and chronic disease prevention (e.g. healthy living classes) (Engage) This presentation describes best practices and quality improvement recommendations for social determinants of health (SDOH) screening and social service referral, as reported by CHWs.

Methods: In Year 2, we launched a CHW Survey with CHWs (n=18) from 6 HEART ATX organizations. The qualitative cross-sectional study used a phenomenological approach based on the lived experiences of CHWs via self-administered questionnaires with open-ended questions. Thematic analysis followed an inductive approach, with qualitative analysis by 2 team researchers including co-development of codes and identification of final themes.

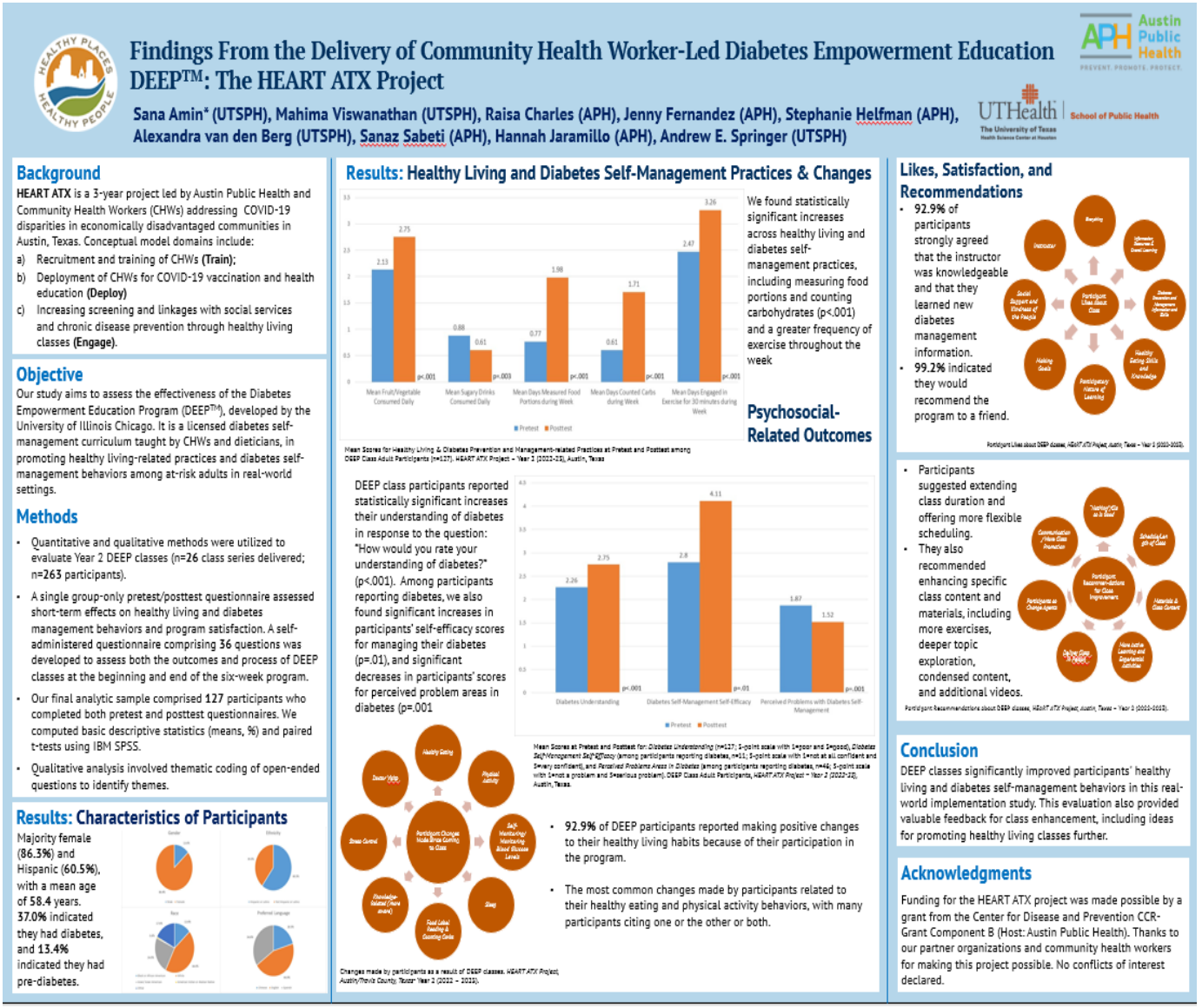
Results: Preliminary analyses identified these themes for SDOH screening/referrals:
Best practices: Collaborative multiformat training providing relevant skills, especially in mental health and online tool usage; Active community empowerment through rapport-building and successful referral loops.
Quality improvement: Technology constraints including internet access, navigating referral platforms (ConnectATX) and no screening tool uniformity between CHWs and providers; Challenges when closing referral loops, especially updated knowledge of resources available and intermediary communication with vendors; Specific performance blockers for CHWs like ambiguous job descriptions, resource limitations and training gaps; Compensation, including tenure and increased pay for CHWs.

Conclusions: A private space for screening with internet access, processes for updating resource referral information and a uniform screening tool may boost future referral loop closure. CHWs may benefit from higher performance-based compensation, algorithmic decision-making guides with standardized training for newcomers and direct contact with referral vendors.

Funding: Center for Disease and Prevention CCR-Grant Component B (Host: Austin Public Health)

Posters presented at Texas Public Health Association Conference (2024)

POSTER #1



Findings From the Delivery of Community Health Worker-Led Diabetes Empowerment Education DEEP™: The HEART ATX Project

Sana Amin* (UTSPH), Mahima Viswanathan (UTSPH), Raisa Charles (APH), Jenny Fernandez (APH), Stephanie Helfman (APH), Alexandra van den Berg (UTSPH), Sanaz Sabeti (APH), Hannah Jaramillo (APH), Andrew E. Springer (UTSPH)

Background

HEART ATX is a 3-year project led by Austin Public Health and Community Health Workers (CHWs) addressing COVID-19 disparities in economically disadvantaged communities in Austin, Texas. Conceptual model domains include:

a) Recruitment and training of CHWs **(Train)**;
b) Deployment of CHWs for COVID-19 vaccination and health education **(Deploy)**
c) Increasing screening and linkages with social services and chronic disease prevention through healthy living classes **(Engage)**.

Objective

Our study aims to assess the effectiveness of the Diabetes Empowerment Education Program (DEEP™), developed by the University of Illinois Chicago. It is a licensed diabetes self-management curriculum taught by CHWs and dieticians, in promoting healthy living-related practices and diabetes self-management behaviors among at-risk adults in real-world settings.

Methods

- Quantitative and qualitative methods were utilized to evaluate Year 2 DEEP classes (n=**26** class series delivered; n=**263** participants).
- A single group-only pretest/posttest questionnaire assessed short-term effects on healthy living and diabetes management behaviors and program satisfaction. A self-administered questionnaire comprising **36** questions was developed to assess both the outcomes and process of DEEP classes at the beginning and end of the six-week program.
- Our final analytic sample comprised **127** participants who completed both pretest and posttest questionnaires. We computed basic descriptive statistics (means, %) and paired t-tests using IBM SPSS.
- Qualitative analysis involved thematic coding of open-ended questions to identify themes.

Results: Characteristics of Participants

Majority female (**86.3%**) and Hispanic (**60.5%**), with a mean age of **58.4** years. **37.0%** indicated they had diabetes, and **13.4%** indicated they had pre-diabetes.

Results: Healthy Living and Diabetes Self-Management Practices & Changes

Mean Scores for Healthy Living & Diabetes Prevention and Management-related Practices at Pretest and Posttest among DEEP Class Adult Participants (n=127), HEART ATX Project – Year 3 (2023-23), Austin, Texas

We found statistically significant increases across healthy living and diabetes self-management practices, including measuring food portions and counting carbohydrates (p<.001) and a greater frequency of exercise throughout the week

Psychosocial-Related Outcomes

DEEP class participants reported statistically significant increases their understanding of diabetes in response to the question: "How would you rate your understanding of diabetes?" (p<.001). Among participants reporting diabetes, we also found significant increases in participants' self-efficacy scores for managing their diabetes (p=.01), and significant decreases in participants' scores for perceived problem areas in diabetes (p=.001

Mean Scores at Pretest and Posttest for *Diabetes Understanding* (n=127; 5-point scale with 1=poor and 5=good), *Diabetes Self-Management Self-Efficacy* (among participants reporting diabetes, n=31; 5-point scale with 1=not at all confident and 5=very confident), and *Perceived Problems Areas in Diabetes* (among participants reporting diabetes, n=44; 5-point scale with 1=not a problem and 5=serious problem), DEEP Class Adult Participants, HEART ATX Project – Year 3 (2022-23), Austin, Texas.

Changes made by participants as a result of DEEP classes, HEART ATX Project, Austin/Travis County, Texas- Year 3 (2022 – 2023).

- **92.9%** of DEEP participants reported making positive changes to their healthy living habits because of their participation in the program.
- The most common changes made by participants related to their healthy eating and physical activity behaviors, with many participants citing one or the other or both.

Likes, Satisfaction, and Recommendations

- **92.9%** of participants strongly agreed that the instructor was knowledgeable and that they learned new diabetes management information.
- **99.2%** indicated they would recommend the program to a friend.

Participant Likes about DEEP classes, HEART ATX Project, Austin, Texas – Year 3 (2022-2023).

- Participants suggested extending class duration and offering more flexible scheduling.
- They also recommended enhancing specific class content and materials, including more exercises, deeper topic exploration, condensed content, and additional videos.

Participant Recommendations about DEEP classes, HEART ATX Project, Austin, Texas – Year 3 (2022-2023).

Conclusion

DEEP classes significantly improved participants' healthy living and diabetes self-management behaviors in this real-world implementation study. This evaluation also provided valuable feedback for class enhancement, including ideas for promoting healthy living classes further.

Acknowledgments

Funding for the HEART ATX project was made possible by a grant from the Center for Disease and Prevention CCR-Grant Component B (Host: Austin Public Health). Thanks to our partner organizations and community health workers for making this project possible. No conflicts of interest declared.

POSTER #2

Bridging Gaps in Community Health Optimization: the Tracking Resources And Community Equity Tool (TRACE)

Mahima Viswanathan, MD, MPH[1]; Raisa Charles[2]; Stephanie Heitfman, MPH[2]; Jeffrey Cary[2]; Sana Amin, MPH[1]; Andrew Springer, DrPH[1]

[1]UT Health School of Public Health at Houston-Austin campus
[2]Austin Public Health
[3]United Way for Greater Austin
Corresponding Author: mahima.viswanathan@gmail.com

Introduction

- **TRACE** aims to optimize community health assessment and improvement planning in Austin/Travis County and beyond.
- Nearing completion for the **HEART ATX Project** (promoting COVID-19 vaccination through community health worker (CHW)-led outreach, social service referral and healthy living guidance).
- Utilizes ArcGIS technology for **real-time visualization of data** on various need areas such as poverty concentration, resource availability, and referral patterns.
- Serves as a **planning and assessment** resource for any **community-based outreach program** addressing healthcare access disparities.
- Prototype Dashboard Presentation: Potential applications for community-based intervention planning, implementation, and evaluation in social service and health referral interventions.

Objective

Developed a web-based dashboard that simultaneously visualizes:

- Geographic distribution of **HEART ATX** project Social Determinants of Health (SDOH) **screening sites**
- Surrounding **resource vendor locations/capacity**
- Some **social determinants of health**
- **Place-based** resource referral data

To support community-based public health outreach efforts in locally mitigating health care access disparities by **bridging supply and demand gaps**

Methodology

- **TRACE** utilizes a secure web-based platform to provide CHWs with access to resource data and visualizations.
- Integrated screening location and referral data from **HEART ATX** partner organizations (N=5) (beta version displays that of Austin Public Health in Year 2 and 3 of the project), social resource distribution with local availability and demand and various components of social determinants of health
- Developed the following functionalities into **TRACE**: spatial and temporal selection capability by zip codes of interest, navigation and operation hours of SDOH screening sites and resource vendor sites, and a tool to display resource distribution by the social determinants of health.
- **TRACE** was built on the Environmental Systems Research Institute ecosystem and is readily adaptable to monitor other social service/health referral interventions and their referral patterns in real-time.
- **Description of Evidence and Theory Used**: Per the **Social Determinants of Health framework**, **TRACE** integrates demographic data, historical information and community health indicators for **real-time, data-driven decision-making.** Identifying concentrated areas of poverty/need, mapping referrals and pinpointing available resources, TRACE will enhance the planning and implementation of social service/healthcare referral systems.
- **Description of Program Activities and Outcomes**: Users can track real-time referrals, assess categories and identify specific resource needs (e.g., food, housing, transportation, health service needs). Overlaying place-based referral data (e.g., food referrals in a zip code) with current resource availability, **TRACE informs planning and helps referral loop closure.**

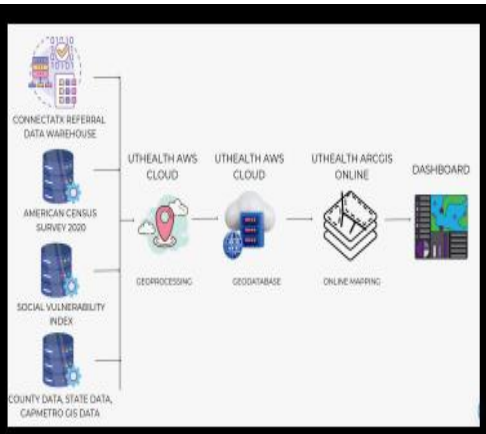


Figure 1. Dashboard workflow and technology stack. UTHealth: University of Texas Health Science Center; AWS: Amazon Web Service.

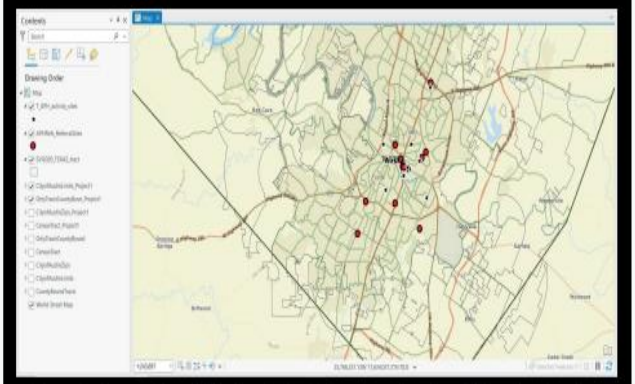


Figure 2. County-level display of APH Y2 referral and activity sites for the 15 most vulnerable grant zip codes in Austin/Travis County, on top of the Street Map showing navigation to sites. Also shown is the "Filters" function

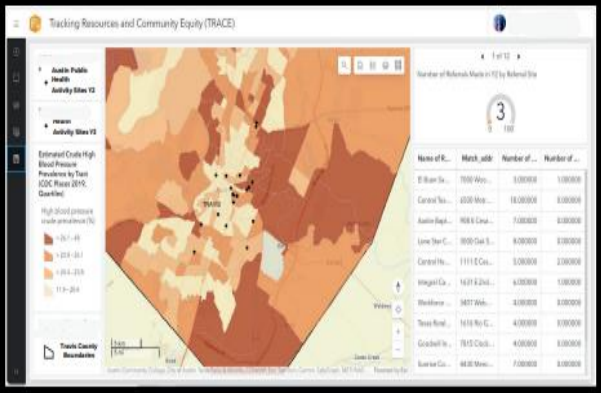


Figure 3. Tracking Resources and Community Equity Tool (TRACE) application user interface

Results

- We created the beta version of a geo-referenced database and added sociodemographic and resource referral and availability data to an ArcGIS dashboard that interactively displays Austin TX's spatiotemporal social resource distribution within the scope of the **HEART ATX** project.
- CHWs, **HEART ATX** program evaluators and public health officials can use **TRACE** to show the distribution, hours and capacity of SDOH screening sites and resource vendor locations at high geographic resolution and refine the display by selecting a combination of data features such as resource category, client zip code, or navigation routes (walkability, bus routes, etc).
- Furthermore, they can use it to scale time and space to visualize association patterns between socio economics, social vulnerability based on the Centers for Disease Control and Prevention's social vulnerability index, and rates of referral and referral completion by category. This can also be used to track trends of resource referral by category to plan future distribution and allocation of social resources
- The beta version of the system is prepared to launch to support internal reference in Year 3 of project operations.

Conclusion

- We developed a social resource referral surveillance dashboard to study **HEART ATX** SDOH referral patterns and improve referral loop closure rates.
- Incorporating web-based geospatial analysis within the social service referral process holds great potential for improving the identification of needs and delivery of resources to vulnerable communities.
- Visualizing need concentration, referral patterns and resource availability, **TRACE** represents a promising resource for adapting interventions based on dynamic community needs, contributing to resilient healthcare systems.

Recommendations for Practice

1. Advocate for integrating real-time data visualization tools in public health planning/ interventions.
2. Implement a biofeedback model for dynamic performance measurement and program evaluation.
3. Encourage collaborations between public health agencies and technology experts towards similar tools addressing specific community needs.

Acknowledgements and References

Funding for the HEART ATX project is via a Center for Disease Control and Prevention CCR Grant Component B (Host: Austin Public Health). Thanks to our partner organizations and community health workers for making this project possible. No conflicts of interest declared.

Springer AE, van den Berg AE, Viswanathan M, Amin S, Heitfman S, Charles R, Sabeti S. *Evaluation Report for Year 2: Austin/Travis County Chronic Disease Community Health Workers: Train, Deploy, Engage Project ("HEART ATX" Project).* Submitted to CDC (October 2023)

Thanks to Dr Ryan Ramphul, Asst Professor at UTHealth School of Public Health, Houston for his guidance with ArcGIS

End-of-Project community sharing of findings at Austin Public Library (2024)