Nueces County: Priority Actions to Address Key Social Determinants of Health

Recommendations from the Project to Address Social Determinants of Health Data Integration Barriers in Nueces County, Texas

COMMUNITY RESILIENCE CENTER AT THE WATER INSTITUTE

CORPUS CHRISTI – NUECES COUNTY PUBLIC HEALTH DISTRICT

TEXAS A&M UNIVERSITY CORPUS CHRISTI | HARTE RESEARCH INSTITUTE

Corpus Christi-Nueces County Public Health District, The Community Resilience Center at The Water Institute, and the Harte Research Institute of Texas A&M University Corpus Christi

September 2025

Cover Image: Corpus Christi Skyline from above.
(Photo Credit: Trong Nguyen/Adobe Stock)

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Preface

This project sought to better understand the health disparities and vulnerabilities in at-risk communities in Nueces County, Texas that stem from social determinants of health (SDOHs). These SDOHs were also linked to climate and environmental factors, with the explicit goal of facilitating the integration of data on key SDOH, climate and environmental factors to improve health outcomes and address health disparities. With that goal in mind, the project endeavored to identify and address challenges related to such data integration, including, for example, the capacity needed to identify, access, and curate data, the lack of standardized tools for collecting data, the need to ensure data privacy, and the need for greater collaboration between healthcare providers and social service organizations.

This report is intended to support public and private health practitioners in better understanding which SDOH, climate and environmental data may be important to consider in assessing which health outcomes, as well as to guide the health communities in specific steps that can be taken to assess and integrate such data. The report also may support additional decision-makers in social service and community-based organizations, as well as in government.

The project team has previous success engaging communities and decision-makers to build and validate relationships between key factors[1-2] and used a similar process to explore and validate linkages relevant to Nueces County and its at-risk communities. This included implementing a community-based participatory research (CBPR) process with local experts and in the at-risk neighborhood of Molina. Again, the project team brings expertise in advancing CBPR, including specifically in Nueces County.[3] Finally, to help make decisions on actions that should be prioritized to facilitate the integration of SDOH, climate and environmental data into health information technology, the team brought its expertise in structured decision-making to inform a process that guided discussions and recommendations.

This report is one of four project deliverables that include:

1. **Deliverable: Priority Actions to Address Key Social Determinants of Health: Recommendations from the Project to Address Social Determinants of Health Data Integration Barriers in Nueces County, Texas**

   ***Audience*: Local and state government representatives; Corpus Christi-Nueces County Public Health District; local health and social service institutions. Purpose: Provide a succinct and high-level project overview and findings, as well as recommendations for next steps to decision-makers.**

2. Deliverable: Social Determinants of Health Data Integration Framework: Addressing Social Determinants of Health Data Integration Barriers in Nueces County, Texas

   Audience: Public and private health practitioners; social service and community-based representatives; government representatives; academia. Purpose: Guide health practitioners and other interested representatives in various options they can take to assess and integrate SDOH, climate and environmental data, including detailed steps and an assessment of tradeoffs.

3. Deliverable: Social Determinants of Health in Nueces County: Evidence for Logic Models Informed by Diverse Ways of Knowing.

   Audience: Technical experts; grant writers. Purpose: Provide detailed documentation on the evidence used to build the project's logic models, including across different ways of knowing.

4. Deliverable: Geospatial Nueces County Community Health & Environment Tool

   Audience: Health practitioners; Corpus Christi-Nueces County Public Health District; local and state government representatives; social service institutions; community-based organizations; academia; the public. Purpose: Enable visual analysis of health, SDOH, climate and environment conditions at the census tract level across Nueces County, and make all data available for download and integration. Available at: https://geored.org/

Acknowledgements

This work was funded by the Gulf Research Program of the National Academies of Sciences, Engineering, and Medicine and the Robert Wood Johnson Foundation. Funding was provided to Texas A&M University Corpus Christi (TAMUCC). The Community Resilience Center at The Water Institute led the project to understand social determinants of health (SDOH) in Nueces County and how data on SDOHs, climate and environmental factors could be better integrations into health organization. The Water Institute also served as the lead for the project's Action Committee. The Corpus Christi-Nueces County Public Health District joined the project as a funded partner, leading work to understand local health barriers and to conduct health assessments.

The results of this work are available through the project's geospatial Nueces County Community Health & Environment Tool, available at: https://geored.org/

This work would not have been possible without the project's broader team, listed below.

Project Team

Dr. Kateryna Wowk, Co-PI & Project Director, Community Resilience Center at The Water Institute
Dr. James Gibeaut, PI, Harte Research Institute, TAMUCC
Father Bruce Wilson, Co-PI, Coastal Bend Neighborhood Empowerment
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Pu Huang, Harte Research Institute, TAMUCC
Suraida Nañez-James, CEO/Founder, Gulf Research Institute
Julie Zamora, Community Health Worker and Molina Neighborhood Advancement Coach

Action Committee

This project was co-designed and guided by an Action Committee of experts. We are indebted to them for their unwavering commitment to this work. Members of the Action Committee and their associated Working Groups include:

Action Committee Working Group on Data Integration Representatives			
Organization	Representatives	Position	Interest Represented
Working Group on SDOH Logic Models			
Coastal Bend Council of Governments	Emily Martinez, MPA	Director of Regional Economic Development	Regional Government
Corpus Christi Planning Department	Annika G. Yankee	Planning Manager	City Government
Corpus Christi Metropolitan Planning Organization	Craig Casper, AICP, CTP CEP	Senior Transportation Planner	MSA Transportation
Coastal Bend Community Organizations Active in Disaster	Janna Shoe, LBSW-IPR, CRS	Chairperson	Non-Profit
Coastal Bend Air Quality Partnership	Sharon Bailey Murphy, MPA, CHMM, REM	Executive Director	Regional Non-Profit
Coastal Bend Center for Independent Living	Judy Telge, BS	Director of Development	Community-Based Organization
Keepers of the Garden	Tevin Gray, Master Gardener	Owner	Community-Based Organization
Texas Children in Nature Network	Sarah Coles, MALS, MED	Executive Director	Community-Based Organization
Esperanza de Tejas	Brianna Davis, MSW	Founder and CEO	Community-Based Organization
Gulf Reach Institute	Suraida Nañez-James, MS	Founder and CEO	Youth Leadership
Working Group on SDOH and Health Data			
Corpus Christi Nueces County Public Health District	Denzel Otokunrin, MPH	Public Health Administrator-Protection Division I Epidemiologist	Public Health
Driscoll Childrens Hospital	Beth Becker, BSN/BBA/RNC NIC/CPHQ and Lesley Martinez, MPH, CPH, CIC	Patient Safety Manager	Healthcare System
Amistad Community Health Center	Eric Baggerman, MD	CEO and Pediatrician	Healthcare System
Nueces Center for Mental Health and Intellectual Disabilities	Mark Hendrix MS, LPC	Deputy Chief Executive Officer	Healthcare System
Driscoll Health Plan	Karl Serrao, MD, FAAP, FCCM	Chief Medical Officer and Pediatric Intensivist	Health Insurance

Nueces County:
Priority Actions to Address Key Social Determinants of Health

Recommendations from the Project to Address Social Determinants of Health Data Integration Barriers in Nueces County, Texas

Corpus Christi-Nueces County Public Health District, The Community Resilience Center at The Water Institute, and the Harte Research Institute of Texas A&M University Corpus Christi

September 2025

This report summarizes the work of the Corpus Christi-Nueces County Public Health District, The Water Institute, the Harte Research Institute of Texas A&M University Corpus Christi, and additional partners, including a committed group of local experts, to better understand and address social determinants of health (SDOH) in Nueces County.

Also referred to as non-medical drivers of health, such factors have been shown to be responsible for a greater share of health outcomes than genetic factors. Assessing data on SDOH can provide a more comprehensive, holistic view of health. Further, such assessment can help identify and address the root causes of health disparities, which may stem from social, economic, and/or environmental conditions.

The project on *Addressing Social Determinants of Health Data Integration Barriers in Nueces County, Texas* sought to better understand which SDOH and environmental factors matter to health outcomes in Nueces County communities. Health outcomes of focus include those specifically known to disproportionately impact at-risk populations, namely hypertension, diabetes, obesity, asthma, and depression. In better understanding which factors impact which health outcomes, the team was enabled to identify data that can be used to assess the condition of each SDOH and environmental factor.

Finally, the team and its Action Committee of local experts co-designed products that optimally facilitate the use and integration of data across health, SDOH, and the environment.

The result of this work is the geospatial **Community Health & Environment Tool**, available on the locally owned platform Geospatial Resilient Economic Development (GeoRED) for the Coastal Bend: https://georedorg/

This document describes the tool and its functionality, while further providing a discrete set of priority actions recommended for health practitioners, government, non-profits, and more.

Recommended Actions

- **Use the Community Health & Environment Tool in decision-making** to understand the interplay of SDOH and environmental factors in impacting health outcomes.
- **Strengthen community engagement by leveraging in-person collaboration** among different sectors and empowering community-driven, community-led initiatives in at-risk communities.
- **Advance Emerging Health Areas for Investigation** by ensuring interventions address cultural factors and mental health, with a focus on cultural aspects that foster community and social cohesion.

Port Aransas, Nueces County, Texas.
(Photo Credit: Mario Hagen / Adobe Stock)

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Introduction

Texas public health reports identify a need to link health and social care by differentiating between actions taken at the individual level, which address health-impacting needs by connecting patients with social services, and actions taken at the community level, which holistically support systemic changes through, for instance, policy, infrastructure, or social systems.[4] Community level action is needed to create conditions that profoundly shape opportunities for health and well-being.[5] A foundational step is understanding relevant social determinants of health (SDOHs), which play a critical role in identifying and explaining the root causes of health disparities. SDOHs are the non-medical factors that significantly influence health outcomes. These are the conditions in which people are born, grow, live, work, and age, including factors like income, education, housing, and access to nutritious food and safe environments.[6] SDOHs can significantly exacerbate unequal exposure to climate and environmental risks in marginalized communities and amplify health disparities.[7-9]

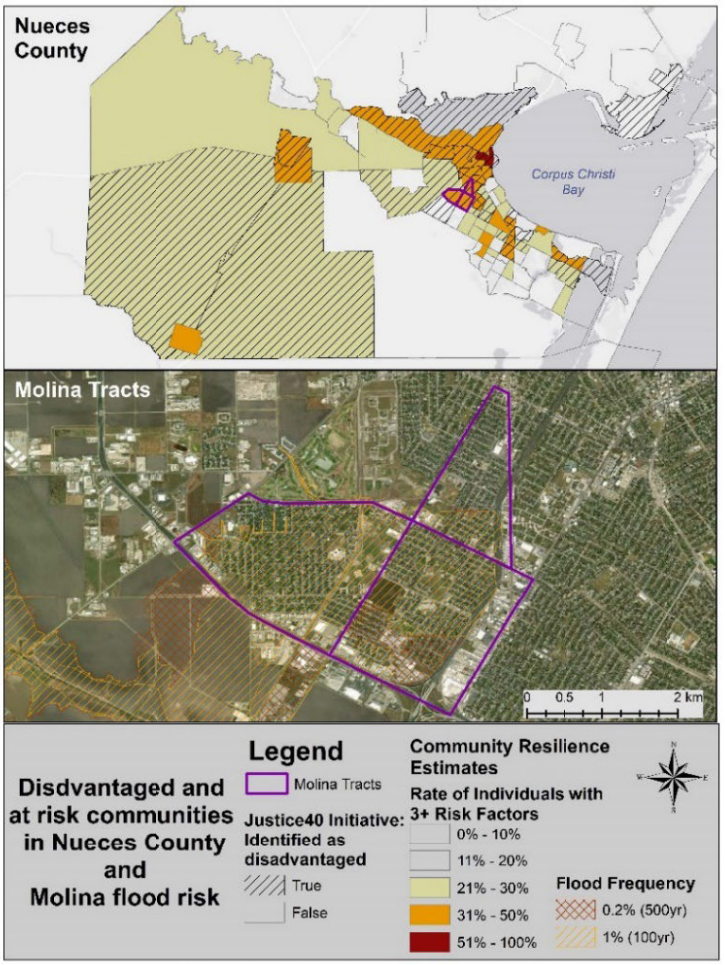
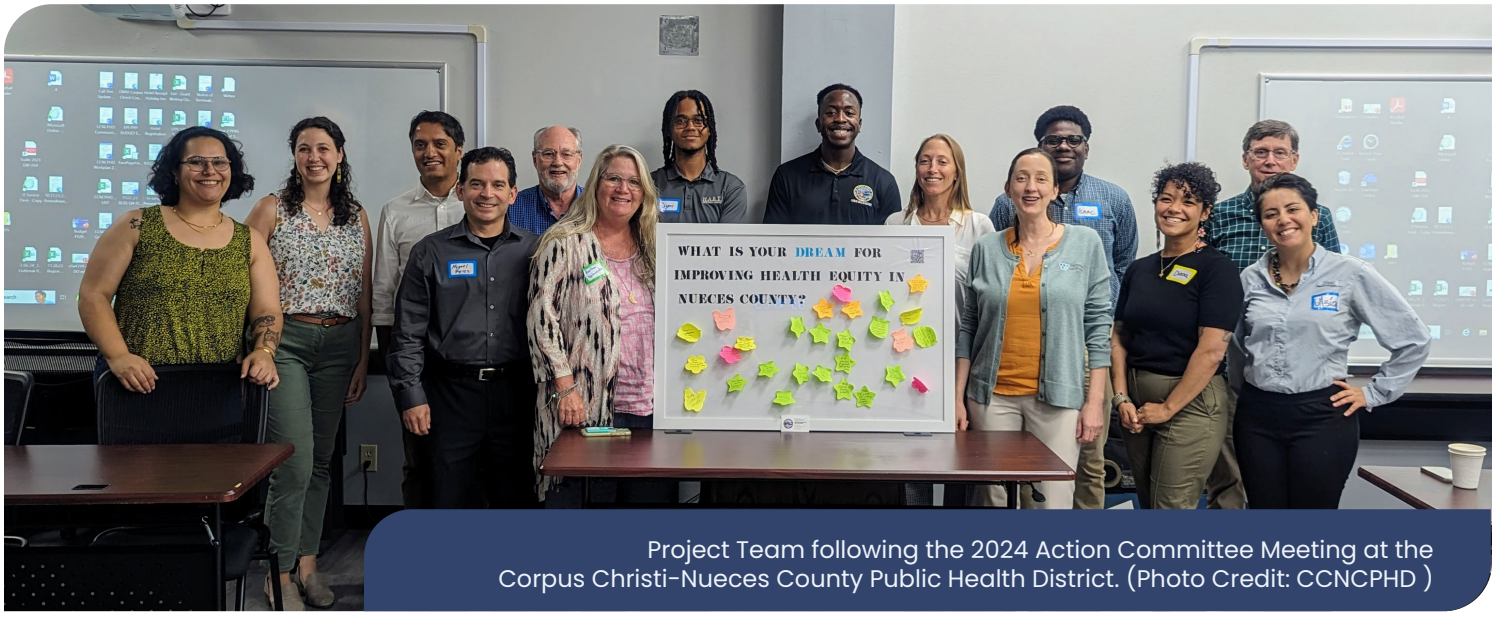


Figure 1. Map of Nueces County and the Molina Neighborhood, showing Molina as disadvantaged, with higher risk factors and significant flood risk.[10-12]



Project Team following the 2024 Action Committee Meeting at the Corpus Christi-Nueces County Public Health District. (Photo Credit: CCNCPHD)

Despite the impact SDOHs have on disparate health outcomes, understanding of how data on the conditions in which people live, grow, work and age can be, or is being, integrated with health data systems to improve health outcomes is nascent. Improving this understanding is critical, especially for communities and neighborhoods where non-medical factors may disproportionately impact well-being and quality of life. Such is the case in Nueces County, Texas, home to the City of Corpus Christi, which is ranked 9th in the nation as the most economically disadvantaged, and 6th in the nation as the highest in food insecurity.[13] Of the county's 353,178 residents, 62% are Hispanic.[14] Many of these communities, such as those in the Westside of Corpus Christi, have faced historic discrimination that has contributed to significant health disparities.[15-16] For example, in a low socio-economic status community of color, the life expectancy rate is 70 years, whereas just 10 miles away individuals of high socio-economic status can expect to live 85 years.[17] This stark difference in life expectancy becomes clearer when examining chronic diseases in specific neighborhoods, such as the Corpus Christi Westside neighborhood of Molina (census tracts 1703, 1704, 1801 and 1602, Figure 1) which has higher rates of hypertension, diabetes, obesity, asthma, and depression (Table 1).

Members of the Molina Neighborhood engaging in project. (Photo Credit: Suraida Nañez-James)

Project Goal & Factors of Focus

This project sought to better understand the health disparities and vulnerabilities in Molina and additional at-risk communities in Nueces County that stem from SDOHs. These SDOHs were also linked to climate and environmental factors, with the explicit goal of facilitating the integration of data on key SDOHs to improve health outcomes and address health disparities.

Table 1. Nueces SDOH Project Health Outcome Factors

Chronic Disease	Molina § ¥	Nueces County ¥	Texas¤	U.S.¤
Hypertension	41.5	34	32.2	32.4
Diabetes	21.5	14.7	11.5	10.9
Obesity	45.3	39.8	36.1	33.9
Asthma	9.8	9.1	8.4	9.8
Depression	22.8	22.7	18.6	20.5

§ Mean of data for tracts 1703, 1704, 1801 & 1602
¥ Data collected from CDC PLACES for 2019
¤ DATA collected from CDC Behavioral Risk Factor Surveillance System for 2021

Action Committee Working Group on SDOH Logic Models at the 2024 Action Committee meeting. (Photo Credit: Christine Hale)

Because of the importance of understanding disparities in Molina and similarly disadvantaged neighborhoods throughout the county, the five diseases with higher rates in Molina became the health outcomes of focus for the project (Table 1). These health outcome factors, as well as SDOHs, and climate and environmental factors were selected in collaboration with the project's Action Committee of local experts (see the Acknowledgements section for a full list of Action Committee members).

Table 2. SDOH and Climate and Environment Factors

SDOH Factors	**Climate (C) or Environmental (E) Factor**
Access to Greenspace [A] Accessible Housing [A] Culture [A] Disconnected Youth [N] Employment [M N] Education [M] English Proficiency [M] Food Access [N] Hardship* [M] Healthcare Access [N] Income [M N] Literacy [A] Race & Ethnicity [M] Safety [N] Transportation [A]	Heat (C) (E) Flooding (C) (E) Storm (C) (E) Particulate Matter (C) (E) Ozone (C) (E) Lead Exposure (E) Wastewater Discharge (E) Traffic

[A] SDOH added by Action Committee
[M] SDOH in Molina neighborhood
[N] SDOH in Nueces County
* Hardship combines unemployment, age, dependency, education, per capita income, crowded housing, and poverty into a single score (Christus Spohn, 2023)

Factors related to the above disparities are listed in Table 2 and include extreme heat for hypertension, food access for diabetes and obesity, and air quality for asthma. These factors also include varying links for mental health concerns, such as rising temperatures and humidity, which are associated with high levels of stress[18] and increases in emergency department visits for depression.[19] Expanding research in this area, especially among Black, Indigenous, and other People of Color (BIPOC), provides the foundation for development and promotion of evidence-based policy recommendations to galvanize systems-level change[20] for at risk communities especially vulnerable to climate and environmental factors.[21-23]

Members of the project team engaging individuals from the Molina Neighborhood. (Photo Credit: Suraida Nañez-James)

Results: Addressing Barriers on Integrating SDOH and Environmental Data

Nueces Community Health & Environmental Tool

This interdisciplinary work resulted in the geospatial Nueces Community Health & Environment Tool, data download, and data dashboard. The tool and its features were co-designed with the project's Action Committee members to ensure the products optimally support decision-making for improved health and SDOH outcomes in Nueces County.

The following provides a snapshot of data and capabilities that are included in each product. Detailed guidance aimed at health practitioners on integrating the project's products and data also can be found in the SDOH Data Integration Framework.

Guidance on using the features described below is available through the user guide for the Community Health & Environment Tool, which can be found here (https://geored.org/user-instructions/).

About the Tool

The Community Health & Environment Tool provides two geographic identifiers: Nueces County census tracts, the scale at which most of the data are provided, and city of Corpus Christi districts, an important scale to consider for city planning.

For health data, two primary datasets are provided. The Center for Disease Control PLACES data provides model-based estimates based on data from Behavioral Risk Factor Surveillance System (BRFSS), Census decennial population counts, and the American Community Survey

Dr. Katya Wowk, Project Director, speaking to the Action Committee. (Photo Credit: CCNCPHD)

5-year estimates (CDC, 2024b). These estimates are provided for all five health outcomes of focus for the project (asthma, diabetes, hypertension, obesity, and depression).

In addition, local health data were collected for this project by the Corpus Christi-Nueces County Public Health District (CCNCPHD) and incorporated into a new layer for the tool. Nearly 500 individuals from across the county participated in health assessments, which provided direct observations and locally collected screening data.* This enabled the team to capture and provide real-world measurements from individuals in the community.

* *This project was conducted under the oversight of the Texas A&M University-Corpus Christi Institutional Review Board (IRB) (IRB Number. TAMU-CC-IRB-2023-0981). Local health data included in the tool were collected and provided by the Corpus Christi-Nueces County Public Health District and thus aligned to the department's processes for maintaining confidentiality, which consists of information encryption that is password protected.*

The tool then organizes SDOH data curated for the project according to the five key SDOH domains: economic stability, education access and quality, health care access and quality, neighborhood and built environment, and social and community context.[24]

Environmental data are then included as a set of natural hazards and environmental indices, including storm tracks, flood depth and extent, flood vulnerability, storm surge, and heat. Environmental Protection Agency index factors are also offered, including the agency's indices for hazardous waste, lead paint exposure, air quality measures, superfund proximity, traffic proximity and wastewater discharge.

Finally, self-response rates from households that responded to the 2020 U.S. Census also are provided as a layer at the census tract level. It is well documented that in communities of lower socioeconomic status, survey response rates can be low – at times exceptionally low – and thus the potential for nonresponse bias may be critical to assess.[25-26] This layer provides important context to health practitioners and decision-makers alike as they consider areas and neighborhoods that may have greater need than is demonstrated through census data alone.

It is important to note that health data are displayed as a symbol, whereas SDOH and environmental data are displayed through a color gradient scheme. Thus, viewers can assess health data against different SDOH and environmental data. Figure 2 shows an example of this, were health data collected by the Corpus Christi-Nueces County Public Health District (CCNCPHD) are overlaid on the SDOH indicator of median household income.

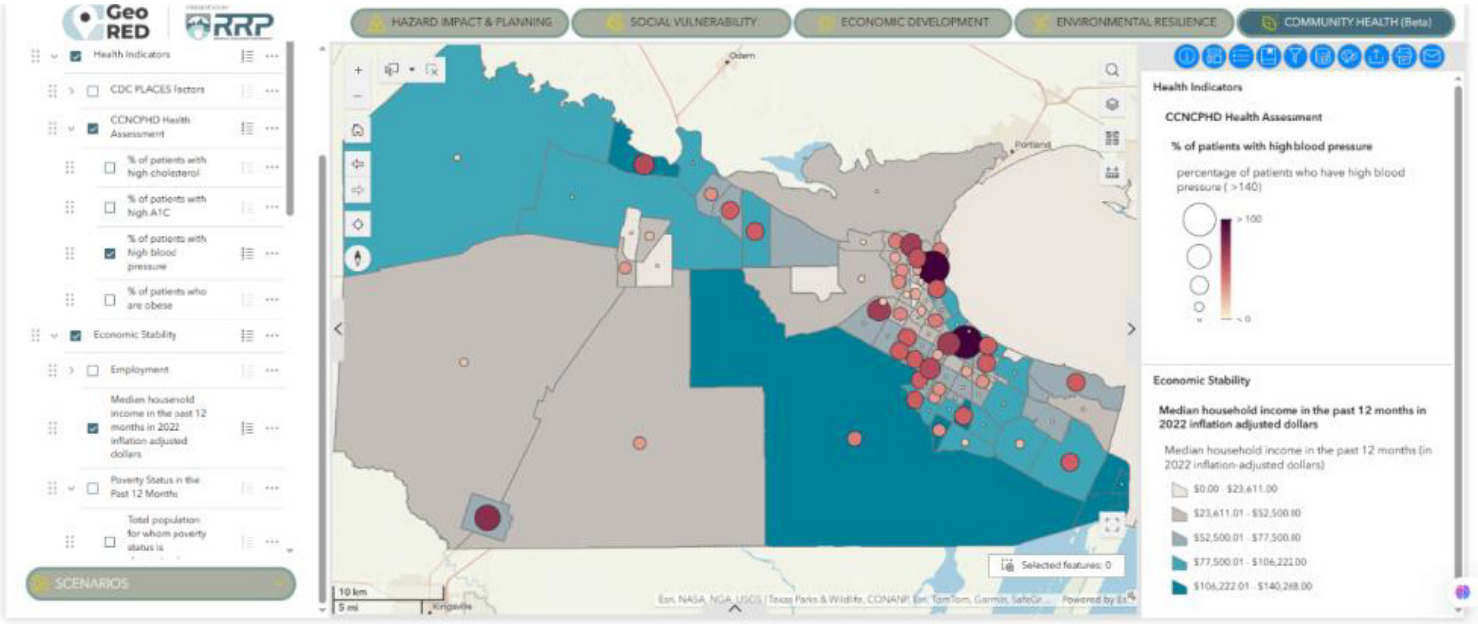


Figure 2: Community Health & Environment Tool showing health data from the CCNCPHD (proportion of individuals screened in the area with high blood pressure) against median household income across Nueces County.

Data Download

The Community Health & Environment Tool makes all data available for download such that interested users can easily access the data for integration into their own external analyses. These data could also be integrated into operational health information technology by health practitioners seeking to better understand SDOHs in the context of health outcomes (see Health Practitioners Guide: Integrating and Using SDOH Data). This is critical to supporting targeted needs assessment, improving patient referrals, and/or supporting grant writing.

Figure 3 shows a snapshot of this functionality in the tool:

- The left-hand pane are all available socioeconomic and environmental data layers.
- In the center pane, a census tract representing Molina have been highlighted by using the feature's "Point" function
- In the right-hand pane, all available data for the highlighted census tracts populates, with each dataset available for download.

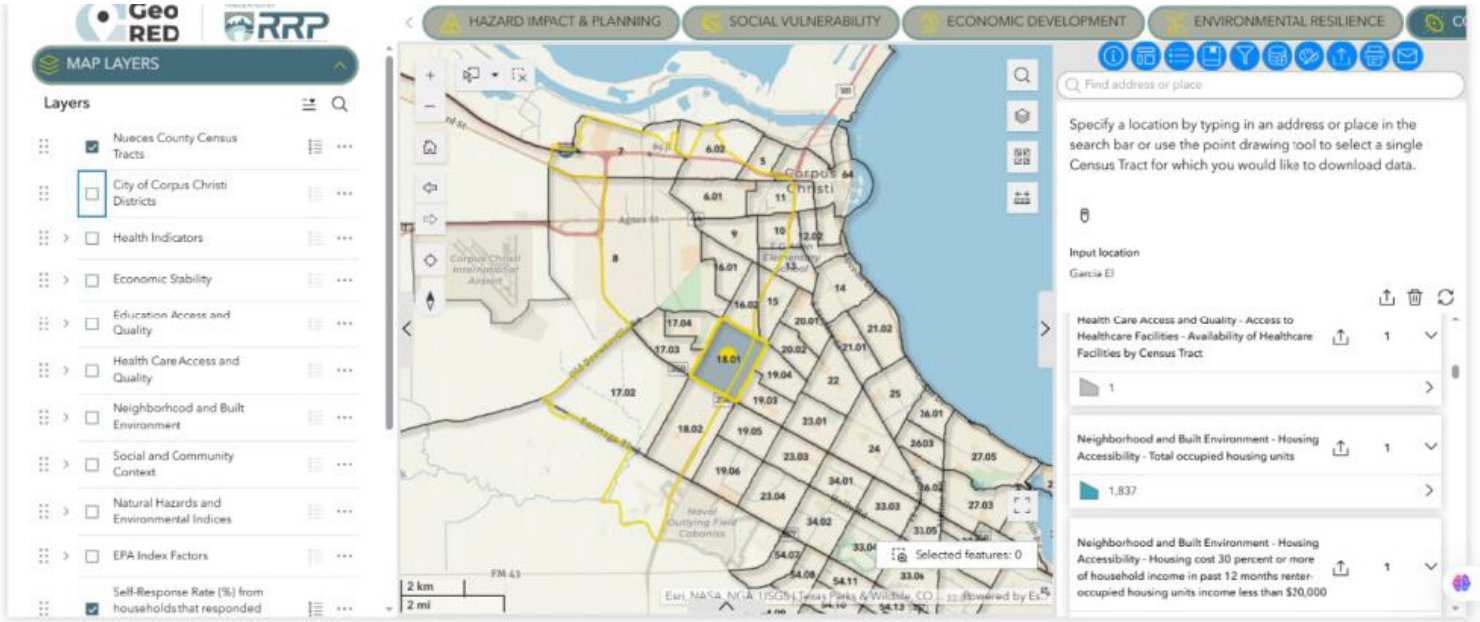


Figure 3: Community Health & Environment Tool showing a Molina neighborhood census tracts highlighted, and the data download function in the right-hand pane.

Data Dashboard

In addition to raw SDOH data, decision-makers also have a need for summary statistics provided through functions like a dashboard. Such statistics and visualizations provide depth and context for local needs assessments, for grant writing, and in general provide a snapshot across communities that can be used to better target scarce resources.

The Community Health & Environment Tool offers a dashboard as an entry point to providing summary data at the census tract level.

Currently, the dashboard provides average rates across the five diseases prioritized by the project, flooding and storm surge rates, and summary data on the tract population.

The project team envisions that in subsequent work the dashboard could be updated to support more targeted decision-making needs.

Overall, the Community Health & Environment Tool can help to ensure interventions that address health disparities are responsive to the unique needs and challenges faced by at-risk communities in Nueces County. The tool can help inform targeted needs assessments, improve referrals for enhanced patient care, and can better infuse public policy and community leaders with data they need to drive evidence-based approaches.

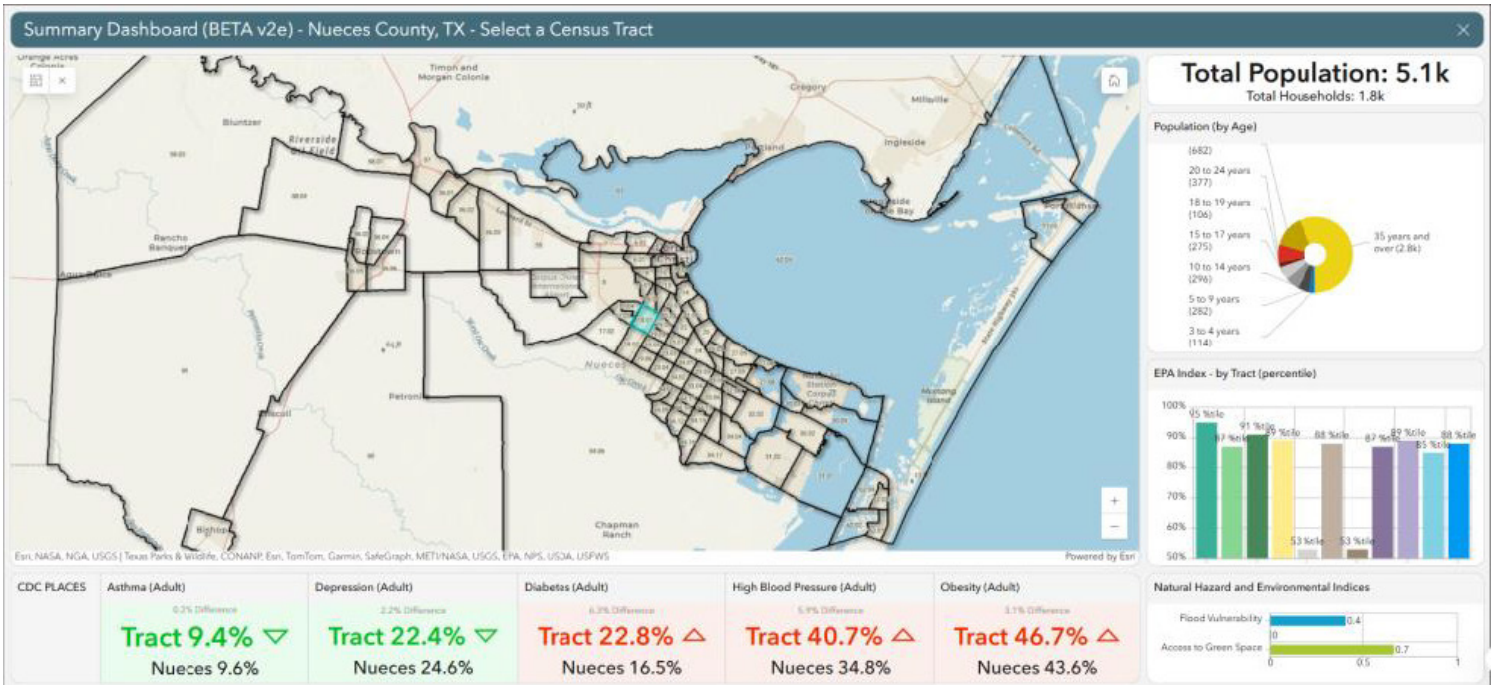


Figure 4: Tool Dashboard for Molina census tract 18.01.

Additional Products

SDOH Data Integration Framework

Because social and economic factors are responsible for a greater share of health outcomes than genetic factors[27], integrating SDOH data can provide a more comprehensive, holistic view of a patient's health, allowing practitioners to identify and address the root causes of health disparities.

Integrating and assessing such data can also help decision-makers prioritize where action is needed across SDOH domains to improve health outcomes.

However, challenges persist to such data integration, including the capacity needed to identify, access and curate SDOH, climate and environmental data, as well as the lack of standardized tools for collecting data.

The SDOH Data Integration Framework provides background and operational guidance on how health practitioners and others can address these challenges. It further provides step by step guidance on how to integrate curated data for Nueces County that is available for download through the Nueces Community Health & Environment Tool. The framework may be accessed here (link).

SDOH Logic Models

A key part of this work was its reliance on local knowledge to ground truth understanding of how SDOH, climate and environmental factors affect health outcomes in Nueces County.

The project's Action Committee Working Group on SDOH Logic Models led this work, providing tailored guidance in understanding which SDOHs impact which health outcomes.

Informed by peer-reviewed literature and state and local reports, the Logic Model Working Group used their local knowledge to identify relevant connections between specific SDOHs and health outcomes, helped the project team visualize these connections in logic models, and, where feasible, made links to local data. The models guided selection of the data that is available through the Nueces Community Health & Environment Tool.

Importantly, the models also can serve as a guide for decision-makers that are looking to investigate underlying social, economic and environmental factors that impact health outcomes in Nueces County. For each health outcome, health practitioners and others can identify specific datasets they should view in the tool when assessing social, economic and environmental impacts to health and health disparities.

For each SDOH, climate and environmental factor, the logic models identify different ways of knowing / types of evidence. This includes peer-reviewed literature, state and local assessments, local expert knowledge, community input, and statistical modeling. Each model also parses out whether the evidence identified the factor as linked to the health outcome (correlated), or driving the health outcome (causal).

These logic models are available for all five health outcomes of concern for the project. All logic models are provided in the Appendix to this report.

Remaining Challenges to Address Key SDOHs

It is important to note that much information has been gathered on the challenges of addressing SDOHs in Nueces County, which includes priority areas in need of action.[28-31] Rather than echo those assessments here, the information below focuses on the unique perspective of the interdisciplinary Action Committee that led this project. Consisting of diverse local experts representing health, social, government, non-profit and academic sectors, the project team relied on the Action Committee to assist in emphasizing those SDOH factors and related challenges that impact health yet remain to be addressed.

Their input was gathered across the two-year project and is summarized in Table 3. The input is binned into three categories: Health Factors; Sociocultural Factors; and Environmental Factors. While much input was provided, it also is important to recognize that the Action Committee did work toward a prioritized list, particularly as it relates to health factors. The Committee offered that a prioritized list of unmet needs should focus on:

- Lack of access to quality care that fits individual/community needs
- Experiential perception of how different people are treated in healthcare
- Mental health, particularly in youth
- Affordable healthcare
- Lack of affordable housing/accessible housing

Table 3: Remaining Challenges Emphasized by the Action Committee

Community Concern	
Health Factors	• *Healthcare access* • *Increase of health issues in at-risk communities* • *Lack of quality medical professionals* • *Cultural representation in health care* • *Mental health* • *Pre-teen & teen pregnancies* • *Loss of institutional and historical knowledge* • *Special needs* • *Transportation* • *Education* • *Personal beliefs and attitudes*
Socicultural Factors	• *Misinformation* • *Housing* • *Abandoned buildings* • *Transit/Transportation* • *Social media*
Environmental Factors	• *Heat or heat islands* • *Flooding* • *Wind damage* • *Transportation* • *Lack of trees* • *Safety of parks* • *No access for people with special needs to green spaces/natural areas* • *Water access* • *Water quality* • *Misinformation*

Specific Challenges for Molina

This project also set out to better understand specific SDOH factors that impact at-risk communities. The project team conducted deep engagement in Molina, where the Health District is located, to better understand which factors were perceived by residents to impact health, and why. Over the course of the project the engagement team, co-led by project team member and Molina resident Julie Zamora, held over 40 individual meetings, listening sessions and communities meetings at local churches and over food. As well, the team held two outdoor events to more formally gather community input through focused surveys. Initially, food access and food security were highlighted as key areas of concern when considering health outcomes in the community.

As engagement continued, however, it became clear that in Molina recognizing and addressing **culture and safety** as key SDOHs is important to achieving improved health outcomes.

Members of the project team engaging individuals from the Molina Neighborhood. (Photo Credit: Suraida Nañez-James)

Safety

The community perceives safety concerns and that action is needed to ensure a safe environment for families and kids to gather. For example, the need for safe and clean parks for the community to gather was noted by multiple residents. The desire for increased police patrol around parks also was noted.

Culture

The community perceives that their cultural norms, beliefs, and practices profoundly influence health behaviors, perceptions of illness, interactions with their community, and interactions with healthcare systems. For example, when healthcare is not culturally sensitive, it can lead to mistrust, misunderstanding, and poor adherence to treatment plans. Beyond interactions in the health sphere, culture is also important to a sense of belonging and pride in the neighborhood, as exemplified from these quotes gathered from the Molina community:

What is needed to improve health in your community?

- Neighbors "taking care of each other" the way we used to
- Neighbors "looking out for each other" the way we used to
- Neighbors "organizing to take care of seniors" the way we used to
- Neighbors "knowing each other again" (new and old neighbors)
- Neighbors "getting together in the park again"
- "To be closer"
- "Shared lives/fellowship"
- "Pride in our community again"

Given the importance of culture, and in particular social connectedness, to the well-being of the Molina community, this project pivoted in supporting a project to help address SDOH on-the-ground. Initially, hearing from the community that food access was a particular challenge, project leads were working with the community co-design and implement a community garden.

However, with numerous residents echoing the challenge of losing connectedness and pride in the community, the project team and residents went back to the drawing board. The team instead envisioned a documentary about Molina that could help bring the community together by instilling a sense of community pride while teaching younger generations about the history and character of the neighborhood. The team engaged a local historian and videographer and interviewed multiple residents of different backgrounds and age ranges to secure the story of Molina for current and future generations. The resulting film, *Molina: Hardships, Traditions & Resilience*, premiered at a community event in October 2025. The premier brought together over 100 residents across multiple generations and ignited community-led discussions on how to continue fostering unity and action.

Advertisement announcing the documentary on the Molina Neighborhood. (Photo Credit: Julie Zamora)

Molina resident interviewed for neighborhood documentary. (Photo Credit: Suraida Nañez-James)

Other than culture, it is also important to include that safety, encompassing physical security, emotional well-being, and a sense of belonging, is a foundational element of health to Molina residents. Without it, individuals report being exposed to chronic stress, trauma, and violence, which can lead to a host of physical and mental health issues.

Particularly in Molina, but likely in other at-risk communities in Nueces County, any effective health intervention must be culturally congruent and promote a safe, supportive environment to connect residents, empower communities, and foster a health-conscious culture.

Priority Recommendations for Action

Addressing health disparities in Nueces County requires a collaborative approach that recognizes the complex interplay of SDOH. To effectively improve community well-being, it is essential to move beyond the treatment of symptoms and also focus on the underlying social, economic, and environmental factors that drive poor health outcomes, particularly in at-risk communities.

The following recommendations are designed to provide a clear, discrete set of actionable priorities. They are informed by the Action Committee, community input and data-driven insights, aiming to offer a framework for health practitioners, government agencies, economic development organizations, non-profits, community-based organizations, and academia to work together to build a healthier future for all residents of Nueces County.

Use the Community Health & Environmental Tool

Apply the Community Health & Environment Tool to Decision-Making in Nueces: The tool should immediately be used by diverse decision-makers to better understand SDOH and environmental factors in Nueces County and how such factors may be interplaying with health.

Incorporate Local Data: Local data should be further integrated into the tool to strengthen contextualized data for local decision-making.

Strengthen Community Engagement

Leverage In-Person Engagement: Community-based organizations, city officials, and healthcare professionals should foster inter-group collaboration and ensure the tool is used effectively.

Support Community-Led Initiatives: Community initiatives to address SDOH, and especially those in at-risk areas like Molina, should be empowered through strengthening local leadership and organizations. Such initiatives must be community-driven and community-led to be successful.

Advance Emerging Health Areas for Investigation

Address Cultural Factors: Choices that impact health outcomes are influenced by cultural norms, financial constraints, and mental health. Interventions should address these factors, rather than just focusing on individual willpower. In particular, the cultural aspects that link to and/or drive health outcomes merit further investigation, and in particular those that provide a sense of community and social cohesion.

Members of the project team engaging individuals from the Molina Neighborhood.
(Photo Credit: Suraida Nañez-James)

Understand Safety Linkages: A better understanding of neighborhood safety also is needed, including the interconnection of safety with culture in impacting health outcomes through direct and indirect pathways. Residents that perceive their neighborhood to feel unsafe due to crime or violence have reported increased anxiety and mental health impacts but also have reported impacts to physical health. When residents feel unsafe, they are less likely to venture outdoors or engage in physical exercise outside their homes. This can further erode a sense of community when neighbors are unable to gather together in public spaces that are safe for families and kids.

Next Steps

This work confirmed that many of the health disparities in at-risk communities in Nueces County stem from or are influenced by SDOHs. These social and economic factors further interplay with changing environmental conditions, which can exacerbate the impact of SDOHs on health outcomes.

While challenging, this work also demonstrated the enormous will and commitment of diverse partners in the county to address identified risks. From government to health organizations to non-profits to residents and beyond, the dedication to and momentum of this group is strong.

As an immediate next step, the partnerships formed through this project should maintain their energy and cohesiveness toward addressing key SDOHs in Nueces County. Quarterly meetings, whether in-person, virtual, or a mix, can help ensure progress is not lost. In addition, there were specific ideas among Action Committee members, the project team, and residents that can immediately be pursued. For example, in Molina, discussions have continued about using the Community Health & Environment Tool to talk to the local Independent School District about joining forces to increase tree cover canopy at local schools, thereby reducing air quality and heat issues that impact asthma rates in children.

It was noted by many Action Committee partners that while the data in the tool are an excellent first step, more detailed data specific to decision-making in individual institutions are needed. A prime example of this is pediatric health data, which the project team attempted to collect but was not successful in this first phase. Also, while the tool includes rates of depression, data on additional mental health challenges in adult and pediatric populations would benefit multiple Action Committee partners. As is emphasized in the Data Integration Framework, Action Committee and other partners hold local datasets that would greatly benefit the characterization of local conditions in Nueces County. Facilitating the sharing and incorporation of these data in future updates to the tool would provide even more value of the tool to decision-making for improved health outcomes in Nueces County.

Finally, it is important to note that a key next step needed to continue guiding this work is to ensure a strong relationship between the Corpus Christi-Nueces County Public Health District and the Community Resilience Center at the Water Institute. The depth of the relationship that has grown through this project will no-doubt continue to improve outcomes in Nueces County for health, SDOH and more.

References

1. Olander, L., Shepard, C., Tallis, H., Yoskowitz, D., Coffey, K., Hale, C., Karasik, R., Mason, S., Warnell, K., Williams, L., & Wowk, K. (2020). GEMS PHASE I REPORT: OYSTER REEF RESTORATION.

2. Olander, L., Shepard, C., Tallis, H., Yoskowitz, D., & Coffey, K. (2021). GEMS Phase II Report: Coastal Restoration.

3. Wowk, K., Adams, M., & Martinez, E. (2023). Translating the complexity of disaster resilience with local leaders. Frontiers in Communication, 8, 1100265. https://doi.org/10.3389/fcomm.2023.1100265

4. THIN. (2020). Addressing Social Needs Through Integrated Healthcare and Social Care in Texas: Case Studies, Key Issues, and Recommendations to Advance Practice (Texas Health Improvement Network (THIN)) [Dataset]. OECD. https://doi.org/10.1787/27e0fc9d-en

5 Texas Health Institute. (2021). Advancing Health Equity in Nueces County Amid and Beyond the Covid-19 Pandemic Final Report. https://www.nuecesco.com/Home/Components/News/News/1365/

6. U.S. Centers for Disease Control and Prevention. (2024a). Social Determinants of Health (SDOH). https://www.cdc.gov/about/priorities/why-is-addressing-sdoh-important.html

7. Gao, C., Sanchez, K. M., & Lovinsky-Desir, S. (2023). Structural and Social Determinants of Inequitable Environmental Exposures in the United States. Clinics in Chest Medicine, 44(3), 451–467. https://doi.org/10.1016/j.ccm.2023.03.002

8. Putsoane, T., Bhanye, J. I., & Matamanda, A. (2024). Chapter 11 - Extreme weather events and health inequalities: Exploring vulnerability and resilience in marginalized communities. In L. Sivaramakrishnan, B. Dahiya, M. Sharma, S. Mookherjee, & R. Karmakar (Eds.), Developments in Environmental Science (Vol. 15, pp. 225–248). Elsevier. https://doi.org/10.1016/B978-0-443-21948-1.00011-X

9. Smith, G. S., Anjum, E., Francis, C., Deanes, L., & Acey, C. (2022). Climate Change, Environmental Disasters, and Health Inequities: The Underlying Role of Structural Inequalities. Current Environmental Health Reports, 9(1), 80–89. https://doi.org/10.1007/s40572-022-00336-w

10. Texas Water Development Board. (2022). 2022 Texas State Water Plan. https://texasstatewaterplan.org/statewide

11. U.S. Census Bureau. (2020). Nueces County, Texas—Census Bureau Search. https://data.census.gov/all?q=Nueces+County,+Texas

12. US Council on Environmental Quality. (2022). Climate and Economic Justice Screening Tool. Climate and Economic Justice Screening Tool. https://screeningtool.geoplatform.gov

13. Patel, L., Friedman, E., Johannes, S. A., Lee, S. S., O'Brien, H. G., & Schear, S. E. (2021). Air pollution as a social and structural determinant of health. The Journal of Climate Change and Health, 3, 100035. https://doi.org/10.1016/j.joclim.2021.100035

14. U.S. Census Bureau. (2020). Nueces County, Texas—Census Bureau Search. https://data.census.gov/all?q=Nueces+County,+Texas

15. Gurrola, M. A. (2015, December). Creating Community in Isolation: The History of Corpus Christi's Molina Addition, 1954-1970 [Thesis or Dissertation]. UNT Digital Library. https://digital.library.unt.edu/ark:/67531/metadc822818/m1/121/

16. Texas Health Institute. (2021). Advancing Health Equity in Nueces County Amid and Beyond the Covid-19 Pandemic Final Report. https://www.nuecesco.com/Home/Components/News/News/1365/

17. Texas Health Institute. (2021). Advancing Health Equity in Nueces County Amid and Beyond the Covid-19 Pandemic Final Report. https://www.nuecesco.com/Home/Components/News/News/1365/

References

18. Ding, N., Berry, H. L., & Bennett, C. M. (2016). The Importance of Humidity in the Relationship between Heat and Population Mental Health: Evidence from Australia. PLOS ONE, 11(10), e0164190. https://doi.org/10.1371/journal.pone.0164190

19. Vida, S., Durocher, M., Ouarda, T. B. M. J., & Gosselin, P. (2012). Relationship Between Ambient Temperature and Humidity and Visits to Mental Health Emergency Departments in Québec. Psychiatric Services, 63(11), 1150–1153. https://doi.org/10.1176/appi.ps.201100485

20. Patel, L., Friedman, E., Johannes, S. A., Lee, S. S., O'Brien, H. G., & Schear, S. E. (2021). Air pollution as a social and structural determinant of health. The Journal of Climate Change and Health, 3, 100035. https://doi.org/10.1016/j.joclim.2021.100035

21. Ailshire, J., & Brown, L. L. (2020). The Importance of Air Quality Policy for Older Adults and Diverse Communities. The Public Policy and Aging Report, 31(1), 33–37. https://doi.org/10.1093/ppar/praa03

22. Chakraborty, J., Maantay, J. A., & Brender, J. D. (2011). Disproportionate Proximity to Environmental Health Hazards: Methods, Models, and Measurement. American Journal of Public Health, 101(S1), S27–S36. https://doi.org/10.2105/AJPH.2010.300109

23. Ringquist, E. J. (1997). Equity and the Distribution of Environmental Risk: The Case of TRI Facilities. Social Science Quarterly, 78(4), 811–829.

24. Healthy People 2030 & U.S. Department of Health and Human Services. (2025). Social Determinants of Health—Healthy People 2030. https://odphp.health.gov/healthypeople/priority-areas/social-determinants-health

25. Jang, M., & Vorderstrasse, A. (2019). Socioeconomic Status and Racial or Ethnic Differences in Participation: Web-Based Survey. JMIR Research Protocols, 8(4), e11865. https://doi.org/10.2196/11865

26. Roberts, B. W., Yao, J., Trzeciak, C. J., Bezich, L. S., Mazzarelli, A., & Trzeciak, S. (2020). Income Disparities and Nonresponse Bias in Surveys of Patient Experience. Journal of General Internal Medicine, 35(7), 2217–2218. https://doi.org/10.1007/s11606-020-05677-6

27. U.S. Centers for Disease Control and Prevention. (2024a). Social Determinants of Health (SDOH). https://www.cdc.gov/about/priorities/why-is-addressing-sdoh-important.html

28. Amistad Community Health Center. (2023). Amistad Community Health Center 2023 Needs Assessment [Unpublished]. Amistad Community Health Center.

29. Christus Spohn. (2023). Community Health Needs Assessment 2023-2025. https://www.christushealth.org/connect/community/community-needs

30. Texas Health Institute. (2021). Advancing Health Equity in Nueces County Amid and Beyond the Covid-19 Pandemic Final Report. https://www.nuecesco.com/Home/Components/News/News/1365/

31. THIN. (2020). Addressing Social Needs Through Integrated Healthcare and Social Care in Texas: Case Studies, Key Issues, and Recommendations to Advance Practice (Texas Health Improvement Network (THIN)) [Dataset]. OECD. https://doi.org/10.1787/27e0fc9d-en

32. Keating, K., Wowk, K., Henkel, J. R., & Wallace, C. (2025). Social Determinants of Health in Nueces County: A Logic Model Approach Informed by Multiple Ways of Knowing. The Water Institute.

Appendix

Process for Building the SDOH Logic Models

The project team and Logic Model Working Group used diverse sources of evidence to construct the logic models, which were further informed by the Data Integration Working Group and Molina community members. The project team provided a first draft of the logic models for each health outcome (asthma, diabetes, hypertension, obesity and depression) using peer-reviewed literature as well as state and local assessments.

The Action Committee Working Groups then used their expert local knowledge to identify where they agreed relationships existed between an SDOH, climate or environmental factor and a health outcome, or where they noted such relationships were missing from the literature. Molina community members also provided feedback through surveys, which helped to identify relationships they deemed important at the community level.

Finally, the project team used SDOH data to conduct structural equation modeling, which is statistical technique that tests relationships between observed variables and unobservable, latent constructs, combining aspects of factor analysis and regression.

For each SDOH, climate and environmental factor, the logic models identify whether the evidence identified the factor as linked to the health outcome (correlated), or driving the health outcome (causal). For further information on the evidence used to build the logic models please see project's Evidence Library.[32]

Action Committee Working Group on SDOH Logic Models at the 2024 Action Committee meeting. (Photo Credit: CCNCPHD)

SDOH Logic Models

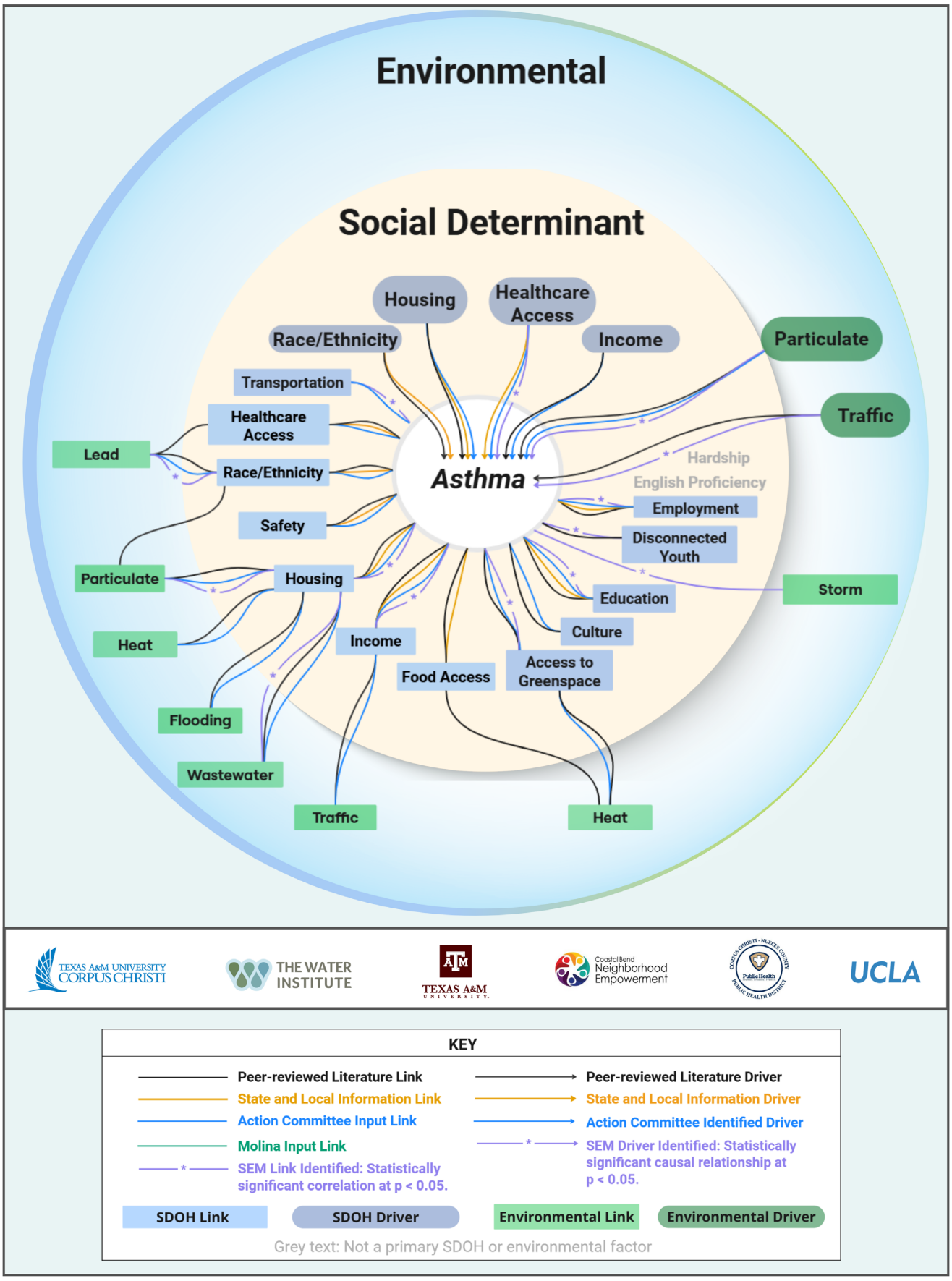


Figure 5: SDOH Logic Model for Asthma

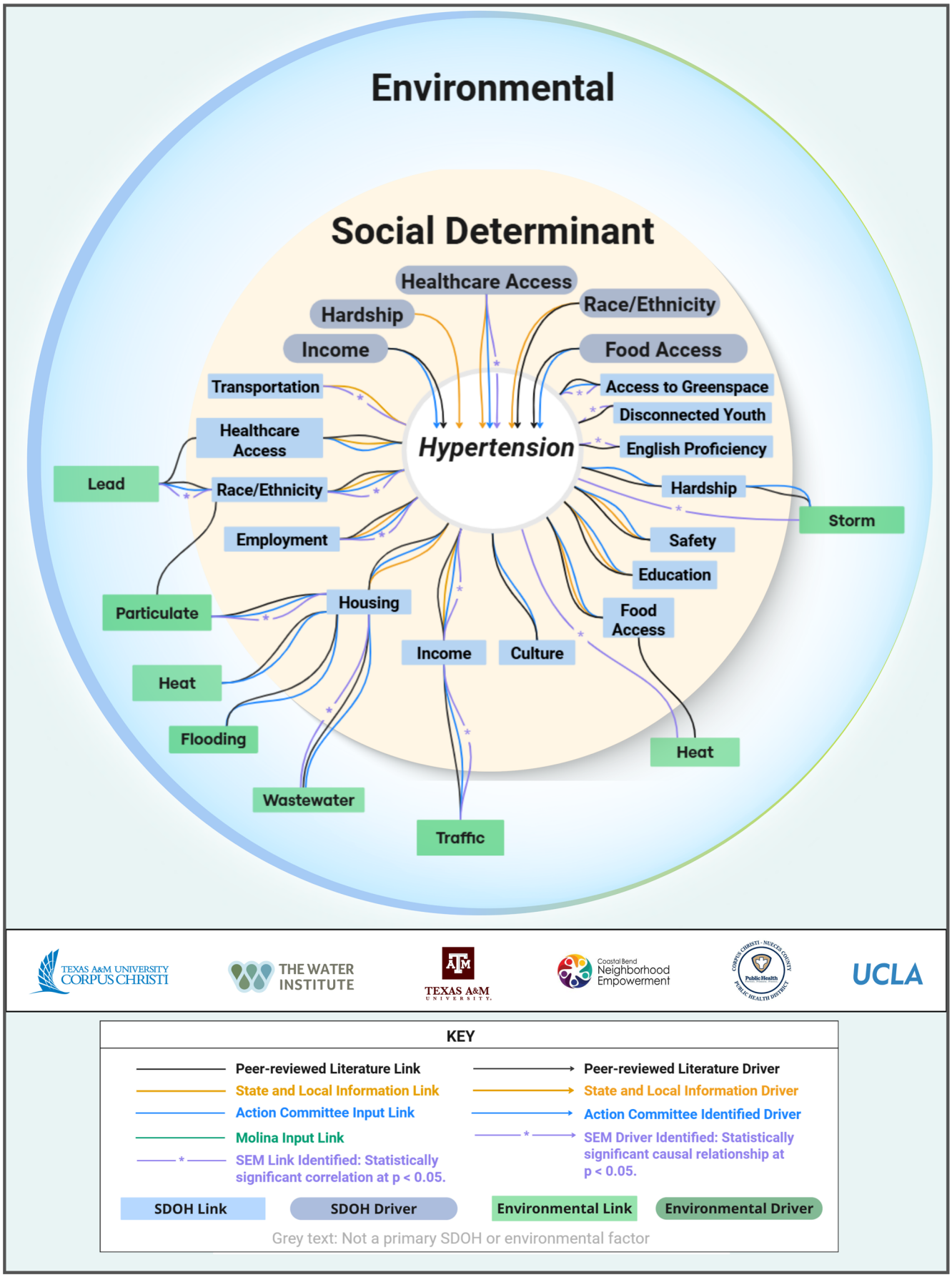


Figure 6: SDOH Logic Model for Hypertension

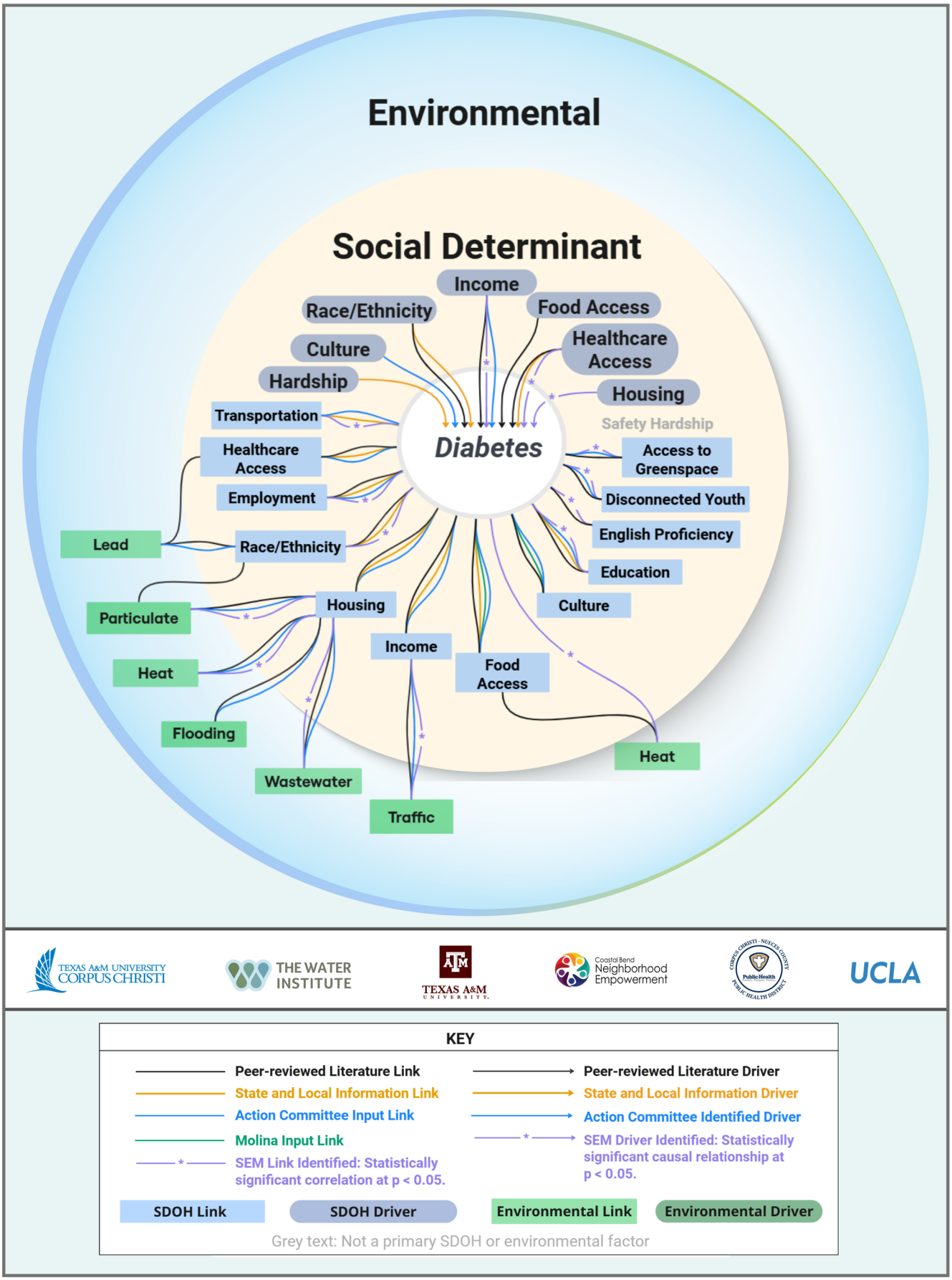


Figure 7: SDOH Logic Model for Diabetes

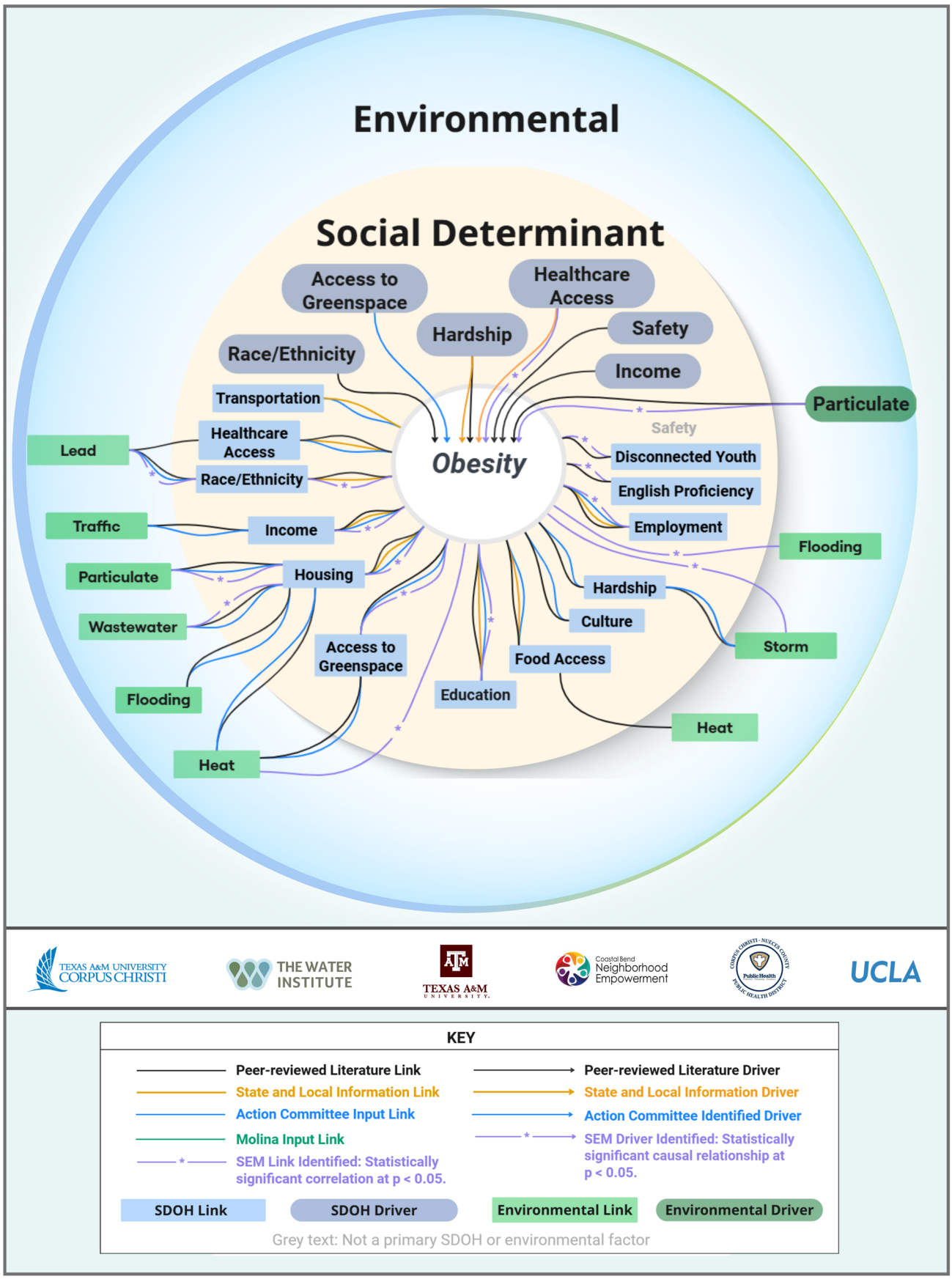


Figure 8: SDOH Logic Model for Obesity

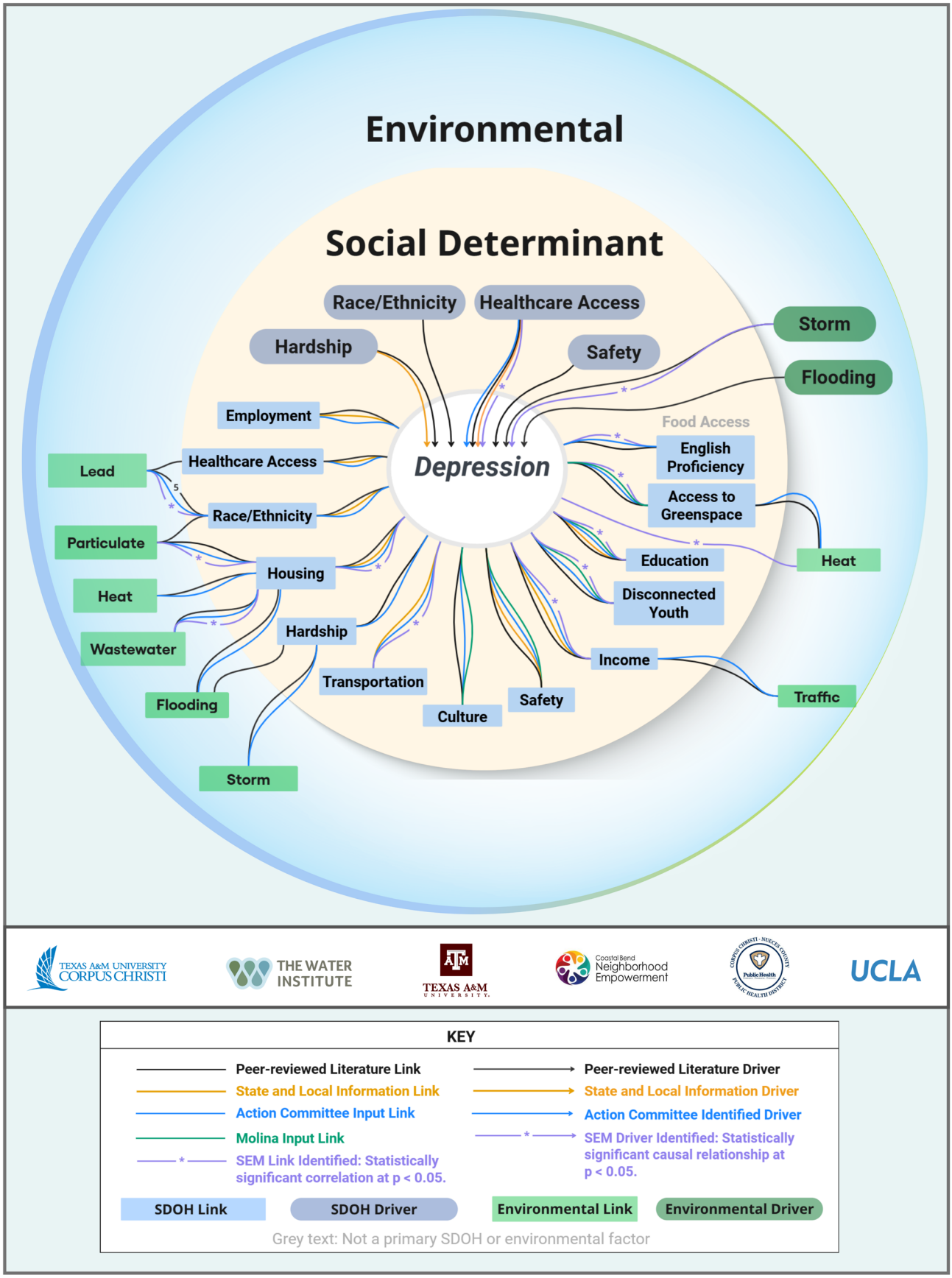


Figure 9: SDOH Logic Model for Depression

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