



Camden Health Equity Visualization Initiative (CHEDVI)

REPORT

Prepared for Urban Innovation Fund

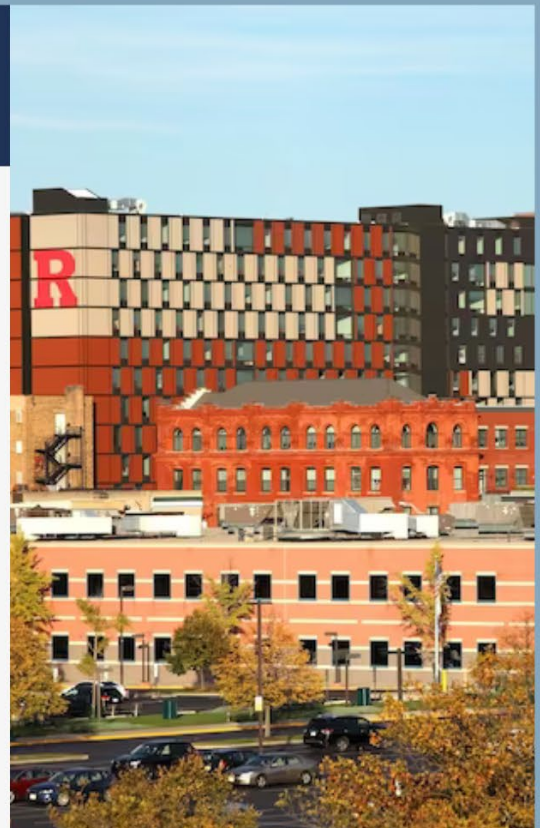
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EXECUTIVE SUMMARY

The **Camden Health Equity Data Visualization Initiative (CHEDVI)** was conceptualized in response to the health realities faced by residents of Camden City, New Jersey. This reality is characterized by a prevalence of poverty, environmental hazards, food insecurity, and lack of access to quality healthcare. Research shows that Camden reflects some of the most severe social and health inequities in the state and the nation. The CHEDVI project which is funded by the Rutgers Camden Division of Diversity, Inclusion, and Community Engagement (Urban Innovation Fund) was designed both as a research and to create a dynamic, community-informed data platform that would visualize, analyze, and communicate the health realities and disparities, further providing stakeholders with actionable insights to support policy, intervention, research and resource allocation.

Project Goals:

- To identify and map disparities in health outcomes and social determinants of health (SDOH) across Camden's 19 census tracts.
- To build an interactive platform that visualizes health and environmental data at the neighborhood level.
- To engage local stakeholders, including the Camden Coalition of Healthcare Providers, in co-designing tools that inform policy and support community wellness through engagement.
- To empower community organizations, residents, and institutions interested in leveraging data on the City of Camden.
- To generate insights and scalable models for future replication in other urban centers.

To achieve this, research was done using variables across public health (e.g., diabetes, mental distress, obesity), SDOH (e.g., income, food access, air quality, insurance coverage), and demographic datasets using the U.S. Census, CDC, NJDOH, USDA, and community-engaged feedback. We conducted spatial analyses and correlation modeling to show significant relationships among variables. Visualized spatial disparities using Python. This work was done in partnership with the Camden Coalition to align data outputs with local needs, which provided stakeholder feedback sessions and will support the adoption of the platform.

Key Outcomes & Impact:

- Identified High-Risk Zones by mapping hotspots for chronic disease (e.g., obesity >51% in Centerville, diabetes >22% in Dudley) and revealed overlapping burdens of health affordability, food insecurity, and economic hardship.
- Revealed Strong Correlations, including food insecurity and obesity (+0.59), unemployment and mental distress (+0.72), and pollution and asthma (+0.68), supporting the hypothesis that intersecting SDOH drives poor health outcomes.
- Enhanced Policy Relevance: Policy dashboards and tailored recommendations were created, highlighting potential interventions in housing affordability, food accessibility, healthcare access expansion, and community-based care.
- A viable MVP website to visualize and gain insights into this work is being developed.

- Research on CHEDVI was accepted and presented at national conferences, providing opportunities with funders, policy leaders, and academic institutions for feedback and scale-up opportunities. Furthermore, two academic publishable papers are being developed from this work.
- While the CHEDVI platform is still under progressive development, the platform has drawn attention from leaders at the City Health Dashboard (New York University), National Fair Housing Alliance, and potential local policymakers, who recognized its utility and scalability.

CHEDVI provides an innovative, interdisciplinary model for how data science, public health, and urban planning can be used to empower communities. By making data visual, localized, and actionable, CHEDVI bridges the gap between abstract health statistics and community realities. It empowers residents, communities, and decision-makers to advocate for targeted interventions and build more resilient systems of care.

With this foundation in place, CHEDVI will be sustained by adoption and expansion. We have established opportunities for this to be adapted into a course, giving opportunities to include integrating more variables (housing, education, homelessness) and building a system to integrate other solutions for the City. Discussions are also underway to fund and pilot these next stages, potentially adopting CHEDVI into a standard tool for community health across Camden County and South Jersey.

FINDINGS & OUTCOMES

Camden County, and particularly the City of Camden, consistently ranks among the lowest counties in New Jersey across nearly all public health indicators, especially in terms of health behaviors, health outcomes, and access to care. According to data from the County Health Rankings, Camden County ranks in the bottom quartile for adult obesity, premature death, preventable hospital stays, physical inactivity, mental health distress, insurance coverage, and environmental quality

The disparity is even more when one isolates data for the City of Camden, which underperforms compared not only to New Jersey's state average but also to other similarly sized urban counties across the Northeast. For instance, while New Jersey's average uninsured rate is ~10%, Camden City's is nearly 27%, and diabetes prevalence is 18%, almost double the national average in some tracts.

Disparities in Social Determinants of Health (SDOH) (City of Camden/County/NJ)

The City of Camden displays significantly worse outcomes across nearly all key Social Determinants of Health (SDOH) compared to both Camden County as a whole and the broader New Jersey state average. These disparities span income, employment, education, housing, and food access, and they exhibit profound variation even across neighborhoods within Camden.

Table 1.1 Comparison of Social Determinants of Health (Camden City/ Camden County/ NJ)

Indicator	Camden City	Camden County Avg.	NJ State Avg.
Median Household Income	\$34,700	\$77,245	\$97,126
Unemployment Rate	13.14%	5.9%	4.3%
Adults Without High School	>51.9% in some tracts	~15%	~10.8%
SNAP Usage (Food Assistance)	>70% in neighborhoods	~18%	~11%
Overcrowded Housing Units	Up to 17.3%	<3%	<2.5%
Rent Burdened Households	>45%	~31%	~27%

These disparities are a lagging indicator of these realities; Camden City's values are 2–4 times worse than county and state averages. The County Health Rankings & Roadmaps program by the Robert Wood Johnson Foundation also shows that Camden County ranks in the bottom quartile for health behaviors (e.g., smoking, physical inactivity, poor nutrition), and neighborhood-level disparities compound these issues. Low income affects food choices, physical activity, and access to medical care. Overcrowding and substandard housing contribute to stress, asthma, and communicable diseases. Educational disparities directly impact health literacy, employment prospects, and engagement with healthcare systems.

Disparities in Health Outcomes (City of Camden / Camden County / New Jersey)

Compared to Camden County and the state of New Jersey, City of Camden exhibits significantly worse health outcomes. These include high rates of chronic illnesses such as diabetes, obesity, asthma, high blood pressure, and mental health disorders.

Table 1.2 Comparison of Health Outcomes (Camden City/ Camden County/ NJ)

Health Outcome	Camden City	Camden County (Est.)	NJ State (Est.)
Diabetes Prevalence among Adults	18%	~11%	~9%
Obesity Rate among adults	44.3%	~28%	~25%
Asthma Prevalence among Adults	12.3%	~8%	~7%
Mental Distress among Adults	21.9%	~13%	~12%
High Blood Pressure among adults	40.4%	~31%	~28%
Depression (Adults)	18.4%	~11%	~10%

The city's population bears a disproportionate burden of chronic diseases, with rates higher than the county and state averages. These disparities reflect cumulative disadvantages tied to social determinants like poverty, environmental exposure, housing instability, and limited access to preventive care. The city's obesity rate (44.3%) is nearly double the state average, correlating with food insecurity and lack of safe recreational spaces. The high blood pressure rate (40.4%) underscores chronic stress from housing instability, unemployment, and poor diet. Asthma prevalence (12.3%) reflects proximity to industrial zones and poor air quality, particularly in neighborhoods like Cooper Poynt and Cramer Hill.

Demographic and Structural Health in Camden

The City of Camden has rich cultural, racial, and economic diversity across its neighborhoods. The city's population is approximately 71,799, of which 41.3% are Black or African American, 36.56% identifying as Hispanic, concentrated primarily in north-central and northeastern neighborhoods, with only 8.9% White and other smaller groups like Asian (1.79%) and Native populations (<1%). The population distribution is uneven; densely populated areas like Stockton (6,529) contrast starkly with sparsely populated zones such as Waterfront South (918). The median age skew is younger, with 25–34-year-olds accounting for 14.1% of the population, and only 0.86% aged 85 and older.

It also reflects sharp geographic disparities in household income (ranges from \$12,109 (Bergen Square) to \$58,980 (Beideman)), unemployment (as high as 34.2% in Bergen Square, while some neighborhoods like Dudley maintain rates below 5%), educational attainment (Only 48.07% of residents have completed high school; in neighborhoods like Cooper Grant this figure rises to 90.55%, while in Cramer Hill it drops to just 25.47%), housing (overcrowded conditions are evident in up to 17.3% of homes in Dudley, while entire neighborhoods like Liberty Park report 0% overcrowding), median rent (varies from \$659 in Cooper Poynt to \$1,479 in Gateway).

Social Determinants of Health in the City of Camden

Social determinants of health (SDOH) have been well documented and recognized as having foundational influences on health outcomes. These shape the environment in which individuals live and work, further impacting almost every aspect of health. These determinants pertain to social and economic conditions that underlie people's everyday life, health affordability, food security, and health behaviors.

The median gross rent in Camden City ranges from \$659 to \$1,479, reflecting significant disparities in housing affordability. These variations can be attributed to differences in neighborhood amenities, housing quality, and socioeconomic status. The wide range in rent prices underscores the stark contrast between more affluent neighborhoods and those that are economically disadvantaged. In neighborhoods like Dudley, overcrowding exceeds 17%. This is much higher than the citywide average of 3.24% and indicates that a substantial portion of the population in these areas is living in substandard housing conditions, where multiple families or individuals are forced to share small living spaces. Overcrowded housing can exacerbate health issues such as respiratory problems, mental distress, and the spread of infectious diseases.

Areas like Waterfront South (81.58) and Centerville (77.96) have very low food access scores, indicating that many residents face significant barriers to obtaining affordable, healthy food. These neighborhoods are classified as food deserts, meaning residents have limited access to grocery stores that offer fresh produce, whole grains, and other nutritious foods. In these areas, the lack of food access contributes directly to poor nutrition, which is a major driver of chronic diseases like diabetes, obesity, and hypertension.

The disparity in median rents across Camden City reveals the direct link between housing affordability and health outcomes. High housing costs can lead to housing instability, forcing families into overcrowded or poorly maintained homes, which can negatively impact both physical and mental health. The low food

access scores in neighborhoods like Waterfront South and Centerville reveal the urgent need to address food insecurity in Camden. Limited access to nutritious food contributes to diet-related chronic conditions such as obesity, diabetes, and heart disease. Food deserts disproportionately affect low-income communities, limiting their ability to maintain healthy diets and manage chronic conditions effectively.

Health Behaviors Analysis of the City of Camden

There is a notable disparity in healthcare management behavior in the City of Camden, particularly in terms of dentist and doctor visit rates. While approximately 76.1% of the adult population in Camden visits a doctor for a check-up each year, significant variation exists across neighborhoods. The neighborhoods with the highest rates of doctor visits include Parkside (80%), Centerville (79.6%), and Liberty Park (78.3%), while neighborhoods like Cramer Hill (71.5%), Beideman (73.4%), and Dudley (73.5%) have the lowest rates. Similarly, only 40.4% of Camden residents visited a dentist in the last year, with neighborhoods such as Cooper Grant (51.9%), Beideman (46.7%), and Fairview (46.5%) showing the highest dental visit rates, and neighborhoods like Cramer Hill (30.2%) and Centerville (30.4%) exhibiting the lowest.

Also, the lack of physical activity and lack of health insurance by residents in the City of Camden is highly correlated with socioeconomic factors such as income, education, and neighborhood characteristics. In the City of Camden, 42.3% of adults report having no leisure-time physical activity, with neighborhoods such as Pyne Point (52.3%), Centerville (51.6%), and Cramer Hill (50.9%) exhibiting the highest rates of physical inactivity. In terms of insurance, 26.9% of adults are uninsured, with some neighborhoods like Cramer Hill (39.9%), Pyne Point (36.1%), and Dudley (34.2%) reporting significantly higher percentages of uninsured residents compared to other parts of the city.

The disparities in doctor and dentist visit rates reflect significant barriers to healthcare access, particularly for residents in lower-income and under-resourced neighborhoods. These barriers may include a lack of health insurance, limited transportation options, economic strain, and limited availability of healthcare providers. These low rates of physical activity and high levels of uninsured residents indicate that chronic conditions like obesity, diabetes, and hypertension may be more prevalent in these neighborhoods.

Health Outcomes in the City of Camden

Depression and mental distress are significant public health concerns in Camden, with up to 25.6% of adults in high-burden areas reporting mental distress. Neighborhoods like Cramer Hill (25.6%), Centerville (25.5%), and Liberty Park (24.9%) have particularly high rates of mental health struggles, indicating that a substantial portion of the adult population is experiencing emotional and psychological distress. This prevalence is considerably higher than the citywide average of 21.9%.

High blood pressure and asthma are also common health issues in Camden, with 40.4% of adults experiencing high blood pressure and 12.3% suffering from asthma. These conditions are disproportionately concentrated in certain neighborhoods. For example, the prevalence of high blood pressure is especially high in Dudley (48.7%) and Cramer Hill (48.5%), while asthma is more common in neighborhoods like Cooper Poynt (14.3%) and Cramer Hill (14.1%). The clustering of these health conditions in specific neighborhoods suggests a complex interaction between environmental, socioeconomic, and healthcare access.

These high rates of depression and mental distress in Camden are concerning, particularly because mental health issues can significantly worsen chronic conditions like hypertension, asthma, and diabetes. Mental distress can lead to poor health behaviors (e.g., lack of physical activity, poor diet, smoking), lower engagement with healthcare, and difficulty managing chronic diseases. The clustering of high blood pressure and asthma in certain neighborhoods indicates that these conditions are not randomly distributed but are linked to specific environmental, social, and economic factors.

SDOH & Health Outcomes

The correlation between social determinants of health (SDOH) and chronic disease supports the growing research that health outcomes are not solely a biological or genetic issue, but also one that is shaped by the social environment. The conditions in which people live, such as their income level, housing quality, access to education, and food availability, play a pivotal role in determining their long-term health outcomes.

Neighborhoods in Camden with low income, overcrowded housing, poor food access, and limited educational attainment tend to have disproportionately high rates of poor health outcomes. For example, neighborhoods like Cramer Hill, Dudley, and Centerville, which exhibit low median household incomes, high rates of overcrowding, and poor food access, also show elevated levels of chronic conditions such as high blood pressure (e.g., 48.5% in Cramer Hill) and asthma (e.g., 14.1% in Cramer Hill). Additionally, the neighborhoods with the lowest educational attainment, such as Cramer Hill (25.47%) and Pyne Point (36.94%), are also areas where health outcomes, particularly chronic disease, are more prevalent.

Key Correlations:

- **Income & Health:** Low-income neighborhoods face multiple intersecting barriers that contribute to poor health outcomes, such as limited access to healthcare, substandard housing, and food insecurity. Income inequality can create disparities in the availability of healthcare services, preventative care, and access to healthy food, leading to higher rates of chronic illness. Neighborhoods such as Bergen Square (\$12,109 median income) show a high prevalence of diabetes (15.7%) and high blood pressure (40.4%) in adults.
- **Overcrowding & Health:** Overcrowded living conditions contribute to a range of health problems, including respiratory illnesses (such as asthma), infectious diseases, and mental distress. These issues are exacerbated by the psychological stress that comes with overcrowded living conditions, further compounding physical health risks. Overcrowding, which is prevalent in neighborhoods like Dudley (17.3%), is linked with poor living conditions that increase exposure to asthma and mental health stressors.
- **Food Access & Health:** Low food access leads to poor nutrition, which is a significant risk factor for chronic diseases such as obesity, diabetes, and hypertension. These conditions are exacerbated in food deserts where affordable, nutritious food options are scarce, and residents are left with processed foods that contribute to poor health outcomes. Poor food access, particularly in neighborhoods like Waterfront South (81.58) and Centerville (77.96), is associated with poor nutrition, which contributes to obesity, diabetes, and cardiovascular diseases.

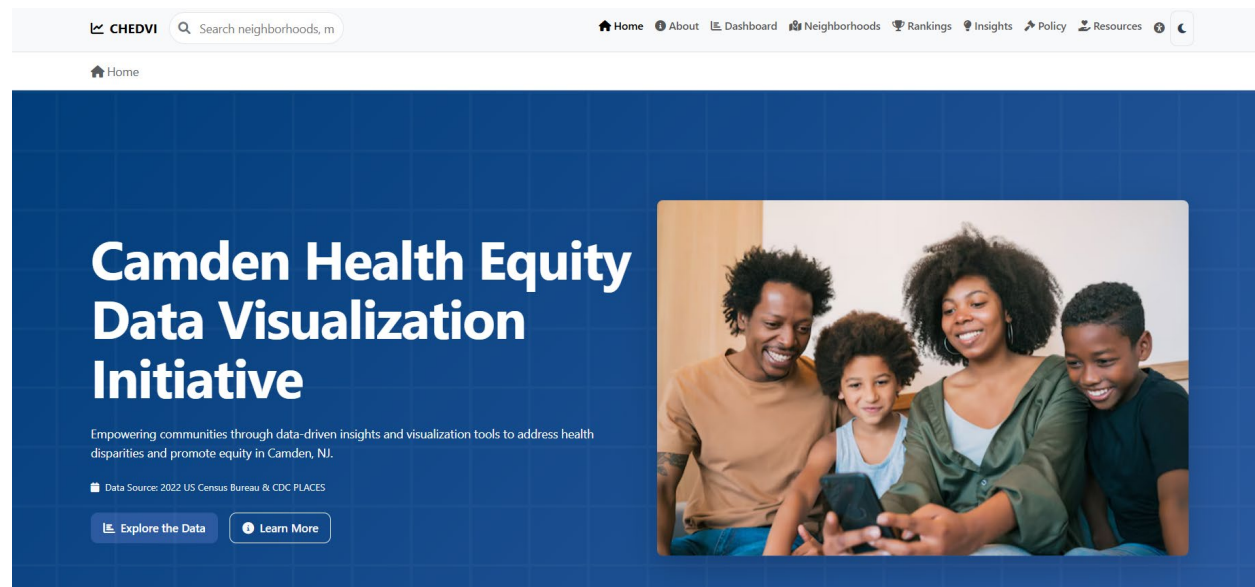
- **Education & Health:** Low levels of educational attainment are associated with lower health literacy, which negatively affects individuals' ability to understand and manage chronic conditions effectively. Education can empower individuals to make healthier lifestyle choices, seek medical attention when necessary, and engage in chronic disease prevention and management programs.

These findings reveal a deeply unequal health landscape in the City of Camden, one that is shaped not just by individual choices but by complex structural conditions. These conditions, including low income, overcrowded housing, limited food access, inadequate education, and lack of healthcare coverage, drive the disparities in chronic disease, mental distress, and overall health outcomes. However, there also exists a wealth of opportunities hidden within these disparities, offering a path forward for addressing these systemic inequities.

Through CHEDVI, Camden can reshape its health trajectory. CHEDVI empowers local governments, healthcare providers, community organizations, and policymakers to take informed, proactive steps. The data enables early identification of high-risk neighborhoods and individuals and offers solutions tailored to specific community needs, ensuring that investments are directed to the areas where they can have the greatest impact. The platform allows for targeted interventions that address the root causes of health disparities, whether improving housing conditions to reduce overcrowding, expanding access to healthy food to combat food deserts, or launching community-based programs to integrate mental health services with better health outcomes.

The CHEDVI Platform: [CHEDVI Platform](#)

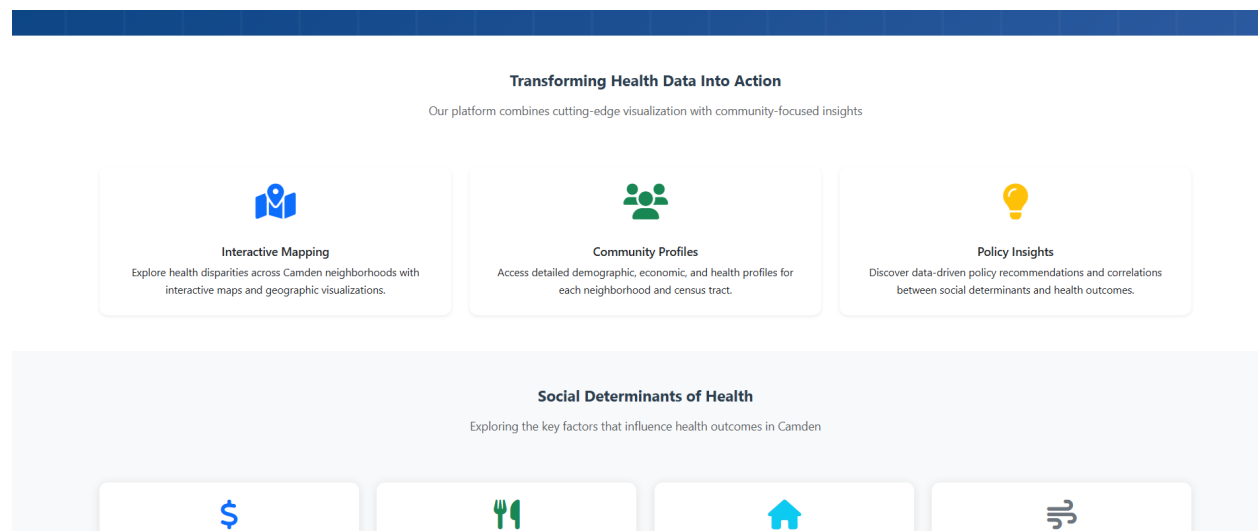
The **CHEDVI platform** is being developed and is presently in its functional MVP (Minimum Viable Product) stage. The platform provides an interactive user experience, enabling stakeholders to explore and engage with the data collected on the City of Camden.



Screenshots of the CHEDVI platform

Key features of the CHEDVI include:

- **Interactive Maps:** The platform includes dynamic, geo-spatially visualized data maps that allow users to explore Camden's neighborhoods through the lens of Social Determinants of Health (SDOH), chronic disease prevalence, healthcare access, and other key indicators. These maps offer neighborhood-level data to inform both community engagement and policy development.
- **Neighborhood Ranking:** CHEDVI's neighborhood ranking tool compares key metrics across Camden's neighborhoods, providing users with a clear understanding of the areas in greatest need of intervention and enabling data-driven decision-making.
- **Policy Recommendations:** Based on the data inputs and patterns identified in CHEDVI, the platform generates tailored policy recommendations for improving health outcomes in Camden. These recommendations are designed to guide local government and other stakeholders in implementing strategic interventions that address the root causes of health inequities, such as improving housing, expanding healthcare access, and addressing food insecurity.
- **Insights and Community Resources:** The platform also offers in-depth insights into the complex relationships between SDOH and health outcomes, shedding light on both challenges and opportunities for intervention. Furthermore, CHEDVI connects residents, organizations, and stakeholders with local resources, ensuring that those most in need are equipped with the tools, services, and support they require to improve their health and well-being.



This MVP is a significant milestone in the development of CHEDVI, providing an accessible, user-friendly platform that can be expanded with further features, data integration, and functionalities to continue supporting Camden's public health transformation.

Academic Presentations

The development of **CHEDVI** has also fostered meaningful engagement within the academic and public health communities. The research underpinning the platform was accepted for presentations at two highly regarded conferences:

- **International Conference on Urban Affairs (ICUA):** Our topic, "Health Disparities in Urban Centers: A GIS-Based Study of Camden, New Jersey," was accepted for presentation at the Urban Affairs Association conference. This presentation was intended to provide an in-depth look at how **CHEDVI** can be used as a tool for urban health planning.
- **Society for Prevention Research (SPR) Conference:** Our presentation, 'Leveraging GIS and Data Science to Map Health Disparities: A Community-Driven Analysis of Social Determinants and Chronic Disease in Camden, NJ,' showed the platform's ability to integrate **prevention science** with **community-based health interventions**, emphasizing **early detection and prevention** of chronic diseases. By showcasing **CHEDVI**, we demonstrated how the platform could help stakeholders identify at-risk neighborhoods, enabling them to implement preventive health measures in neighborhoods that are most vulnerable to chronic health conditions.



Poster Presentation for CHEDVI at the Society for Prevention Research Conference

COMMUNITY ENGAGEMENT, SUSTAINABILITY & GROWTH

As we continue to expand and develop **CHEDVI** work, the following steps will be taken to ensure its sustainability and growth. We aim to improve the platform's functionality, broaden its scope, and solidify its dual use as a tool for both academic research and community health improvement.

Our next steps include, but are not limited to the following:

A. Platform Expansion: The next major milestone for **CHEDVI** is the expansion of the platform's data variables. We will incorporate additional data related to economic opportunity, healthcare access, social capital, education, transportation access, and environmental factors to provide a more holistic view of the social determinants that influence health outcomes.

B. Adoption within the Public Policy Program: **CHEDVI** has been accepted for adoption within a course in the **Public Policy Program** at Rutgers University, Camden, an opportunity to integrate the platform into **academic curricula**. With this, students will be tasked with maintaining and updating the data on the platform, which will not only keep the information current but also give them hands-on experience, ensuring that the work remains a resource for policymakers, community organizations, and researchers.

C. Academic Research: In addition to the conference presentations, the research for **CHEDVI** is being developed into research papers and will be submitted for publication in journals in public health, urban planning, and prevention science. The goal is to further validate the use and solidify **CHEDVI**'s credibility in the academic community and its potential in public health research.

D. Community Engagement: **CHEDVI** is collaborating with our community partners, **the Camden Coalition**, to engage with the health organizations and the community. These meetings with Camden residents, community leaders, and healthcare providers will help validate the platform's usefulness and identify areas for improvement. Feedback gathered from these groups will inform updates to the platform, ensuring that it aligns with the community's priorities and stakeholder needs.

E. Partner with Policy Developers to Inform and Shape Health Policies: One critical part of this work is the policy recommendation piece. We will actively work with policy developers and local government agencies to leverage **CHEDVI** for informing and shaping public health and community policies. **CHEDVI** will help policymakers identify which neighborhoods are at the highest risk of health crises and suggest targeted policy interventions.

MEDIA

A. Media recognition of our project by Rutgers Camden

[Link to the article](#)

