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HEALTH IN ALL POLICIES IN DENVER, CO: MOVING FROM PLANS TO EQUITABLE DEVELOPMENT OUTCOMES

Gretchen Armijo, AICP, LEED, AP; Maggie Kauffman, MPH

Abstract:

The City of Denver's Departments of Public Health and Environment and Community Planning and Development have worked together using Health Impact Assessments (HIA) and Health in All Policies (HiAP) frameworks to formalize using a health equity lens for city planning and resource prioritization. Previous land use and transportation planners did not consider health or equity impacts on future growth and development. HIAs and a health-focused approach were initiated with neighborhood planning and expanded into the Blueprint Denver plan for land use and transportation. The Neighborhood Equity Index was also developed to help city agencies prioritize financial and programmatic resources to be more equitable. Lessons learned from the process include the need to develop relationships across organizations, more data and mapping can inform policy decisions and the need for health and equity champions inside and outside of organizations.



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Introduction

Health Impact Assessment (HIA) and Health in All Policies (HiAP) have been used widely in the last decade in the U.S. to bring health research and evidence into civic decision-making. Over 400 HIAs have been conducted in the U.S. over the past 20 years to inform policy making in areas including housing, education, labor and employment, criminal justice, natural resources and energy, climate change, and the built environment. HiAP is a collaborative approach to improving a community by incorporating health, sustainability and equity considerations into decision-making across government agencies and policy areas (Change Lab Solutions, 2015). HIA and HiAP are different in that HIA is used to assess a single proposed decision and its potential impact on health; whereas HiAP is an approach that uses multiple strategies, including HIA, to integrate health into governmental decision-making processes (National Association of County and City Health Officials, 2012). While HIA has always included an analysis of health equity – the differences in the distribution of health impacts across groups of people – HiAP has more recently included the consideration of not only health equity, but economic, social, environmental, and racial equity, among others (Public Health Institute, 2019).

This article will explore the ways in which the City of Denver’s Departments of Public Health and Environment (DDPHE) and Community Planning and Development (CPD) have worked together using HIA and HiAP frameworks to formalize how a health equity lens is incorporated into city planning and resource prioritization.

HIA 1.0: Evolving Use of HIAs in Denver

In Denver, CO, like many other cities, land use and transportation planners typically have not considered the health or equity impacts of future growth and development. Planning and zoning were initially used in the 1800s to protect public health through

separation of nuisance uses, but since then the focus changed to regulatory protection of public and private property rights.

Even in plans drafted within the last 10 years in Denver, ‘public health’ was defined in plans to include anything from building bike lanes to replacing dead street trees to promoting urban gardens. While these actions ultimately contribute to good health, there was no examination of the health status of residents as a group, the existing environmental conditions in specific communities, and any disparities in health or exposures experienced by certain groups. Therefore, the recommendations were not targeted to solving specific health issues that may have been historic and place-based.

In 2013, a Denver City Councilperson organized Council support for a budget priority that all new neighborhood plans include a health impact assessment to better understand the impacts that the built environment had on health. She represented the North Denver council district, which was home to heavy industry, freight rail, highways, and residents who experienced higher-than-average serious health conditions that they attributed to their polluted environment.

Globeville Elyria Swansea HIA

Over the next 2 years, DDPHE and CPD partnered to simultaneously conduct the [Globeville Elyria Swansea Health Impact Assessment](#), with the [Globeville Neighborhood Plan](#) and [Elyria Swansea Neighborhood Plan](#). For the first time, planning for the future growth of these neighborhoods included specific strategies to address the negative health impacts of growth and development. For example, reducing exposure to poor air quality, noise, and odors from industry and highways, rerouting trucks out of residential areas to reduce pollution and crashes, and building a safe crossing over the railroad tracks to the elementary school.

Westwood HIA

The successful partnership between DDPHE and CPD resulted in a second comprehensive [HIA](#) conducted to inform the next neighborhood plan, the [Westwood Neighborhood Plan](#). The Westwood neighborhood was mainly residential and had little environmental pollution, yet residents had no grocery store or recreation center and were surrounded by two high-speed state highways. They also had one of the largest populations of children and youth in the City, who showed early signs of poor health, including obesity. *The Westwood Neighborhood Plan* included recommendations identified through the HIA process that could improve health, such as prioritizing the construction of a new recreation center, slowing speeds on the ‘main street’ of the neighborhood, and adding a range of housing types to accommodate families and ‘aging in place’.

HIA 2.0: Neighborhood Planning with Health and Equity

Following these two neighborhood-specific HIAs conducted between 2013-2015, City Council, city staff and community members concluded that the HIAs had been successful in adding health considerations, awareness and strategies to neighborhood planning. The Globeville Elyria Swansea and Westwood HIAs allowed city agencies beyond public health to see the direct connections between planning, public works services, parks and recreation services and health. These two HIAs provided a basis of understanding for the health impacts of any project a city conducts, and because community input was a critical part of the HIA process, the health impacts included in the HIA were validated by both quantitative and qualitative data. However, HIAs are time and resource intensive, and there was no way to conduct a comprehensive HIA for every neighborhood in Denver.

Previously, neighborhood planning had occurred on an ad-hoc basis in reaction to specific development

pressures. Some neighborhoods had never received a formal plan. As Denver continued to grow rapidly and involuntary displacement, uneven development, and lack of access to services grew across the city, it was clear that the neighborhood planning process needed a new approach. CPD needed to accelerate neighborhood planning in order to give timely policy guidance to the Denver City Council about local redevelopment and public investment, while also prioritizing areas of the city that were experiencing the most inequity as a result of uneven growth and investment. This urgent need led to the development of the [Neighborhood Planning Initiative \(NPI\)](#), a ten-year endeavor that will update all neighborhood plans across the city. There are 78 neighborhoods in Denver, so the City developed a systematic way to prioritize neighborhoods that were most in need of an updated plan and work through the priority list over ten years. Neighborhoods were grouped together into small planning areas, which allowed for 100% coverage of the city over about ten years while still keeping planning areas small enough to allow for resident input and neighborhood-specific recommendations. This prioritization process was the foundation of the partnership between CPD and DDPHE staff to consider health and equity in neighborhood planning, and the Denver Neighborhood Equity Index was developed to help prioritize the plans based on indicators of health and economic opportunity.

Neighborhood Planning Initiative and the Denver Neighborhood Equity Index

After the NPI process was created, city agencies worked together to agree on how to prioritize the planning areas. This process took place in three steps. Step 1) Each neighborhood was ranked in terms of planning need by considering quantitative indicators related to:

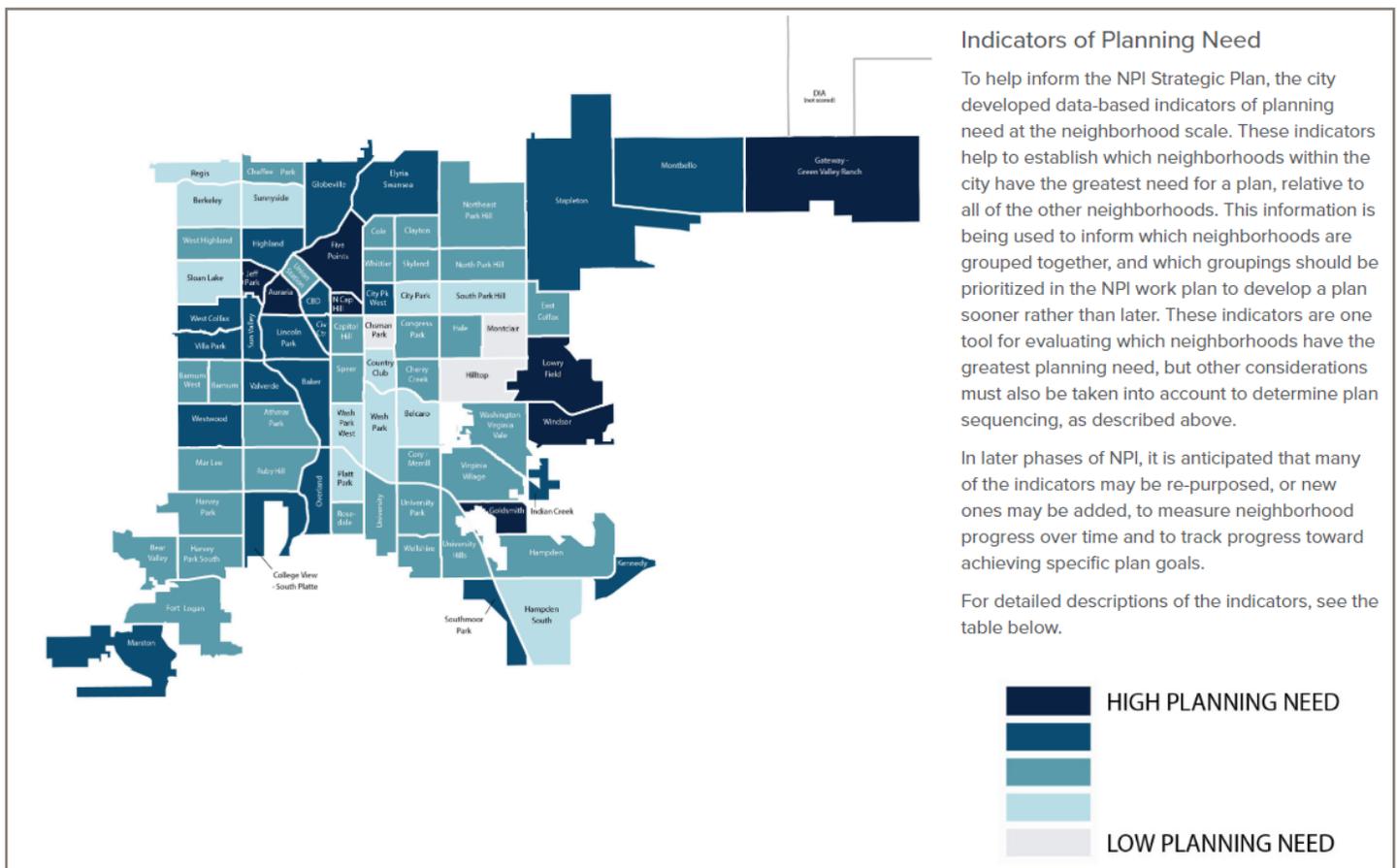
- Livability
- Investment
- Policy and Regulation
- Economy
- Demographics

Step 2) After considering indicators in each of the areas above to prioritize individual neighborhoods, CPD then defined the neighborhood planning areas based on the following criteria:

- Shared histories, issues, and aspirations
- Built environment and natural features
- Planning need

- Character, context, and development patterns
- Major destinations (institutions, amenities, shopping districts)
- Common infrastructure (major roads, drainage)
- Geographic size and population
- Councilmember and public input
- Avoiding splitting neighborhood boundaries into different planning areas to maintain ability to track data and trends over time

Figure 1: Neighborhood Planning Need



Measuring health equity requires inclusion of not only health outcome indicators, but a combination of health, socioeconomic, and other environmental factors to paint a more complete picture of the environment people face in their everyday lives that can promote, or hinder, opportunity and a high quality of life. These factors can include economic and housing stability, educational opportunities, safety, and access to necessary goods and services.

With new demand for neighborhood-specific plans and given that Denver is a city with strong neighborhood identity, DDPHE developed an index in 2017 to help illustrate health equity at the neighborhood level. DDPHE quantified health equity-related factors in each neighborhood, which were considered in the Livability section of neighborhood ranking in the NPI. The [Neighborhood Equity Index](#) was developed to help city agencies prioritize financial and programmatic resources to more equitably serve the City and County of Denver. It takes into account issues of the built environment in addition to traditional public health data around morbidity, mortality, and social determinants of health. Given the inclusion of built environment indicators alongside traditional public health surveillance indicators, The Neighborhood Equity Index is particularly useful for planning and geographic prioritization.

The Neighborhood Equity Index is divided into five sub-category areas and consists of seven total indicators:

1. Socio Economic Factors
 - a. Poverty – measured by Median Household Income
 - b. Education – measured by Percent Population (25+ years) with a High School Diploma or Equivalent
2. Built Environment Factors
 - a. Access to Food – measured by Percent of Living Units within ¼ Mile Walk to a Full-Service Grocery Store
 - b. Access to Parks – measured by Percent of Living Units within ¼ Mile Walk of a Quality Park
3. Access to Care
 - a. Prenatal Care – measured by Percent of Women that Receive Prenatal Care in the First Trimester of Pregnancy
4. Morbidity
 - a. Childhood Obesity – measured by Percent of Children 2-17 Years that are Considered Obese (based on BMI greater than 25)
5. Mortality
 - a. Average Life Expectancy

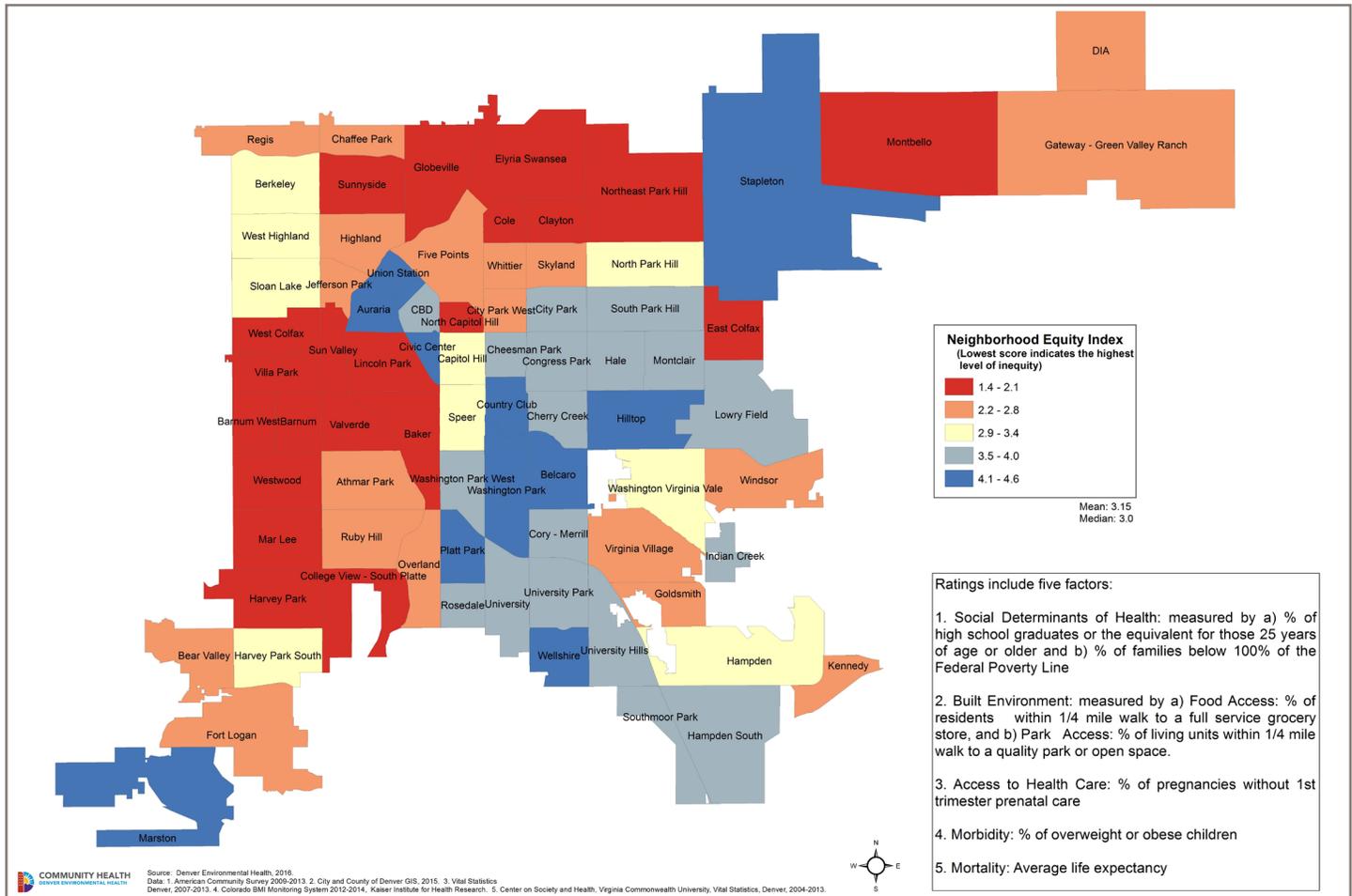
While some indicators were available at a neighborhood level geography, others were available at the Census Tract level and had to be aggregated into neighborhoods. Each of the 78 Denver neighborhoods were ranked according to each indicator measure, and then grouped into four equal groups. The ranking and grouping process allowed for each indicator to score in the same direction, where a lower group number indicated more inequity, and a higher group number indicated less inequity. Once each neighborhood received a group number for each indicator, the group numbers for indicators in the same sub-category were averaged to create the Socioeconomic, Built Environment, Access to Care, Morbidity, and Mortality scores (note that sub-categories with only one indicator were not averaged). Finally, the sub-index scores were averaged to create an overall equity score for each neighborhood. While many of the indicators in the sub-indices come from secondary sources, the built environment indicators were developed by the City and County of Denver to try to illustrate the relationship between the built environment, health, and equity.

While it is clear there are many factors contributing to inequities across the City of Denver that are not included in the equity index, the index still provides valuable information about what kinds of interventions and programs to prioritize in particular

areas, as well as which city agencies should be engaged in those interventions in order to be most effective. Not only does the equity index give a comprehensive picture of inequities across the city, but it also provides an opportunity to begin to understand what might be driving health inequities in particular neighborhoods by allowing users to drill down to sub-index scores. For example, if a neighborhood scores a 1 in the built environment sub-score (even if the overall index score is a 3), it's an indication that poor access to green space and healthy food may be disproportionately driving health

inequity in that neighborhood. Further, it helps justify the need for public health, public works, city planning, and parks and recreation to work together to improve access to those resources, whether through changes in mobility opportunities, acquisition of available land for park space, or education about healthy eating and active living. This type of strategic prioritization and partnership has helped the City of Denver be more efficient with limited resources, as well as more effective in working with community, using shared messaging and setting common goals.

Figure 4: Denver Neighborhood Equity Index



The Index has also allowed for internal alignment in the way agencies across the City of Denver look at and consider equity in their plans and programs. Health equity considerations were formally integrated into the way neighborhood planning areas were prioritized for the NPI, as well as integrated into [Blueprint Denver](#), the comprehensive planning framework the each NPI plan is nested under. With each step toward formalizing equity considerations into city planning and partnership in Denver, DDPHE has played a more significant role in informing the way that health equity is incorporated into planning. Since the development of the Neighborhood Equity Index and its incorporation into Blueprint Denver, health equity and equity measurement has been an immediate conversation at the beginning of new city plans and projects. DDPHE staff helped author a chapter on quality of life in the Far Northeast Denver Neighborhood Plan, the first NPI plan to be adopted, lifting up the way the built environment and other social determinants of health connect planning recommendations and health outcomes. Each subsequent NPI plan will include a quality of life chapter with input from DDPHE staff. DDPHE has partnered with the CPD planning teams to explore existing conditions, prioritize which specific conditions may be driving health inequities, and write recommendations, both infrastructure and policy related, that could help improve health outcomes through built environment change.

Considering Equity in Other City Plans and Projects

Below are several examples of the way DDPHE, CPD, and other city agencies have worked together in formally incorporate health equity into city projects and plans.

Denveright Comprehensive Plans

The Neighborhood Equity Index served as a catalyst for the City to explore deeper issues of inequity across City investment and development policies. From 2017-2019, Denver embarked

on a comprehensive update of its Citywide plans governing land use, transportation, parks and mobility (known as [Denverite](#)). Through this extensive planning effort, community stakeholders and City staff realized that ‘business as usual’ land use planning had not only not improved conditions for the worst-off communities, but had perhaps contributed to more significant gentrification, involuntary displacement, and greater inequity. After decades of increasing racial diversity, Denver saw a reversal of those gains over the past 10 years, with fewer racial minority groups in the City. This analysis led to the formation of a “Blueprint Denver Equity Subcommittee” to review the draft plans through an equity lens. The subcommittee hired an equity expert to educate the team and help lead review of the plans. The results led to changes in many of the recommendations to avoid unintended consequences affecting the most at-risk communities and improve access to opportunities for those most locked out. For example, the initial concentration of future economic development along existing ‘centers’ and ‘corridors’ left out some areas already with the lowest access to opportunity. Also, the recommendations to create a range of housing types and price points was strengthened to give decisionmakers the levers they needed to add more affordable housing in Denver. Finally, equity data and analysis were explicitly built in to other city processes such as budgeting and development permitting, or equitable development would not occur.

Vision Zero

The Neighborhood Equity Index map was also used to inform [Denver’s Vision Zero planning](#). In considering equity for changes to the built environment, DDPHE also developed a High Injury Road Network map to help illustrate where most of the traffic injuries occur. When used as a complement to equity indicators, DDPHE was able to highlight ‘Communities of

Concern', or areas of Denver that scored low on socioeconomic indicators and were in closest proximity to a high injury roadway.

Safe Routes to School

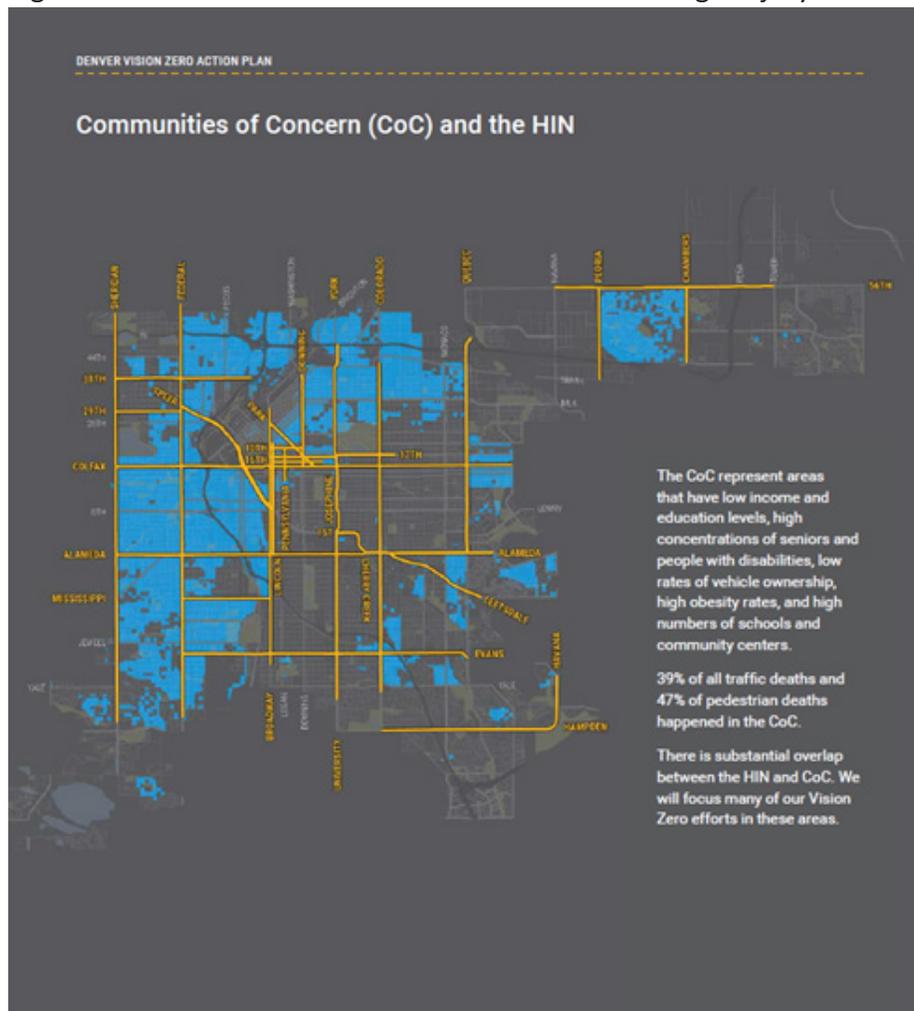
The 'Communities of Concern' data layer is also used by [Denver's Safe Routes to School](#) program as a method of deciding where to prioritize infrastructure changes around schools. Importantly, the prioritization work occurs in

partnership with Denver Public Works, ensuring that the conversation around health and equity related to the built environment spreads throughout City agencies.

Elevate Denver Bond Program

In 2017, Denver voters approved a 10-year, \$937 million bond fund to pay for over [500 Citywide infrastructure projects](#). The Neighborhood Equity Index, along with other datasets, was used to help decision-makers prioritize projects for bond funding.

Figure 5: Denver Communities of Concern and the High-Injury Network



Where are We Now?

Over the last seven years, from the first HIA conducted by the city to inform neighborhood planning to today’s integration of ‘HIA 2.0’ into city plans, projects and processes, it is important to consider questions such as: How did we do? Has health improved? Has equity improved?

Seven Years In: What We Know

In the Globeville and Elyria Swansea neighborhoods, an HIA was used by the community to inform many decision points after the neighborhood-specific plans were adopted. Of the 36 recommendations in the HIA, about 75% are either completed or in process. Many of these are related to built

environment improvements such as street redesign and connectivity, additional pedestrian infrastructure, a mix of land uses, and reduction or mitigation of environmental pollution. Some recommendations are changes to City processes, such as licensing and permitting for marijuana businesses, while other spurred improvements to community engagement such as increasing Spanish language outreach. The HIA also helped lead to the settlement of a lawsuit between the state transportation department and the North Denver neighborhoods in 2019, with \$550,000 allocated for a health study of residents to better understand environmental impacts on health. Ideally the study will be able to select some longtime community residents to get a true picture of changes in health and equity.

Figure 6: CDC Recommendation for Combined Built Environment Approaches to Increase Physical Activity



(CDC, 2019)

The Westwood HIA was completed in 2016 and recommended many built environment changes to improve health. As a result of strong community demand for a recreation center, the Elevate Denver Bond Program included funding for a new recreation center in the neighborhood, a \$37.5 million project that will likely lead to increases in physical activity, employment, green space, community pride and potentially decreases in criminal activity. Some pocket parks are being developed as of 2019, and additional funding was procured to complete streetscape improvements on the main street in the neighborhood to slow traffic and increase pedestrian activity. The Westwood HIA also helped to elevate Vision Zero program activities in Westwood, including addressing speeding and fatalities on the state highways bordering the neighborhood. Finally, a number of the HIA recommendations were included in the process of drafting Blueprint Denver, the citywide land use and transportation plan adopted in 2019.

Both HIAs and both neighborhood plans supported increased creation of mixed land uses, residential density, parks and recreation, and pedestrian and bicycle infrastructure. According to [The Guide to Community Preventive Services](#), combining activity-friendly routes with everyday destinations has been shown to lead to increased physical activity (CDC, 2019) This can help mitigate the higher rates of obesity and diabetes that residents of both planning areas experience.

What We Don't Know

In terms of changes to health outcomes of residents, it is too early to see those changes show up in the data yet because changes to the built environment and changes in population health take time. In addition, a confounding factor was discovered that may make it hard to measure future changes in health. As neighborhoods receive new attention and investment, gentrification and involuntary

displacement have taken root. Demographic data show that over the last 5 years, the Globeville neighborhood became whiter and richer (American Community Survey, 2017), indicating that the once predominantly Hispanic, lower income neighborhood has had an influx of White, middle-upper class residents move in, and longtime residents move out. Whether that demographic shift is due to increasing cost of living in the City of Denver, changes in employment, or other reasons, it is expected that health and socioeconomic data will show 'improvements' in factors such as child obesity, diabetes, education attainment, income, and employment. However, those improvements are likely due to the shift in population demographics rather than a true improvement in the health of residents experiencing inequity and poor health outcomes because *different people* are being measured. A true measure of change would need to consider the same people and indicators that were measured before and after the HIA was conducted. This type of approach would require studying populations longitudinally across geographic boundaries.

Health outcomes in Westwood may not have changed after only 3 years. However, the Westwood community saw the displacement that occurred in the Globeville and Elyria Swansea Neighborhoods after new planning and investment activities, and to their credit, they organized and fought for protections to reduce such displacement. In response to these efforts as well as more organized advocacy from groups throughout Denver, new city programs were created to help low-income homeowners pay for rising property taxes, and residents are pushing back on plans to dramatically increase density which they feel will further drive up property values. With such protections in place, measurement of health and equity outcomes in Westwood may actually include largely the same group of residents who were there before the changes took place, which would show a much more accurate picture of long-term changes in health and equity.

Lessons Learned

The evolution of HIA and HiAP in Denver has yielded a number of lessons learned for City staff. While the lessons themselves are similar to other HIA and HiAP case studies, the context of how each of these lessons learned have played out in Denver may help give specificity to other municipalities and health departments working to formalize health and equity considerations and cross-sector partnerships.

1. *Developing relationships across organizations is key to building partnerships and collaboration*

In Denver's case, DDPHE built a new relationship with CPD through two comprehensive HIAs and neighborhood plans. By the time the Citywide plans were initiated, that relationship was already in place, and public health had a seat at the table. It is important to start building relationships early, even on a small project or initiative, so that mutual trust is in place when significant opportunities arise to collaborate.

2. *Data and mapping are needed to inform policy*

One of the biggest lessons learned is that data do not have to be complicated to be powerful. The Neighborhood Equity Index is a relatively simple index, made up of only seven indicators. Yet, because it was mapped at the neighborhood level, a geographic unit that almost every person in Denver can relate to, it has a powerful impact on the way City agencies continue to work together to make planning and implementation more coordinated. Further, using datasets that are relatively simple makes explaining their meaning to those who aren't data savvy more straight forward, meaning that the message lands more effectively with decision makers; that certain populations in the city experience more inequities than others and that City resources

should be prioritized to serve those populations and neighborhoods so that we all may advance as a city and have improved quality of life. The neighborhood equity index has provided a relatively simple way for DDPHE to begin the conversation around equity at many different tables, often leading to deeper and more complex conversations specific to the project or geography in question.

3. *It is important to build capacity of stakeholders to advocate for the consideration of health and equity in planning and decision making*

Public health staff can't be the only ones advocating for health and equity. It takes engineers, planners, City council staff, housing officers, etc., to all normalize health and equity discussions and expectations in everyday City work. Public health can build capacity by offering in-house trainings or workshops to staff so that when a decision point arises, there are already advocates in place throughout the organization.

4. *Getting health and equity into plans or projects is not enough; they must be built into decision making processes in order to have staying power*

A budget is an expression of values. How, where and on whom a municipality spends its money shows what it values most. Health and equity need to be considered and quantified as part of the budgeting process, just like other factors; if not, other priorities will take precedence.

5. *You need health and equity champions both inside and outside the organization*

One Denver City councilperson championed HIAs as a new tool to highlight health inequities almost a decade ago. Her championship

elevated health and equity as legitimate concerns for decision makers to consider, not just responding to the loudest voices in the community. By the time the Citywide and neighborhood plans were initiated, other Council people, community members, and other city staff were aware and vocal about including health and equity in the planning process.

6. *Implementation plans are necessary*

Entities need to be clearly designated as accountable for plan implementation, including City departments or community organizations. Plan recommendations should use standard language for easier tracking and implementation. Also, standard performance or outcome metrics should be selected across as many plans as possible to standardize progress reporting.

An Example of Lessons Learned in Data from City Staff

In addition to simplifying datasets, it has also been helpful to standardize, as best as possible, what data and conditions are analyzed in every city plan. Through the first NPI plans, DDPHE has begun to develop a standard set of indicators to look at in the very beginning to understand the existing conditions in any given neighborhood. This is not to say we do not consider neighborhood specific issues as well, but the standard set allows us to compare across neighborhoods, making the data more relative. For example, if we know the average rate of emergency department use for youth asthma across the city, and for neighborhoods surrounding a planning area, it gives a much better picture of whether youth asthma should be a factor that a particular plan focuses on. We try to focus on factors that are modifiable through built environment and infrastructure change for the standard set, but also add in indicators around access to medical care and health outcomes. Though we don't expect to see short-term change in health outcomes, understanding which health outcomes are concerns in specific planning areas often helps inform which built environment changes to recommend and implement.

7. *Finally, timing is everything: "Luck is what happens when preparation meets opportunity"*

The first two HIAs and the support that was built from those processes laid the groundwork

for the acceptance of health and equity in other City plans, projects and processes in Denver. Be on the lookout for possible intervention points to partner to add health and equity considerations: it might be as small as a plan for a new trail or bikeway, a chance to collaborate on a grant application for infrastructure that also considers health, or as large as a 20-year comprehensive planning

effort to guide land use, housing, and transportation into the future. Look for those 'lucky' windows of opportunity.

Next steps in Denver

As DDPHE continues to learn from ongoing work and partnerships, there are a number of actions that can be taken to help further the existing efforts to include health and equity considerations in all city plans and projects.

1. *Add more data and maps to public website for wide accessibility*

After publishing the Neighborhood Equity

Index, it is clear that we need to continue to make health and health equity data more available and accessible. DDPHE plans to continue to add ready-to-use maps, raw datasets, story maps, and topic-specific data products to their website going forward so

that the conversation and momentum around addressing health inequities does not slow down. Further, it is hoped that these data products will be put into the context of equity and be easily understandable for any audience.

2. *Continue to embed health and equity into City processes*

In 2019, DDPHE added health and equity criteria to their internal budget prioritization process, requiring that all budget requesters answered a series of questions about unintended consequences and what specific populations their work would impact. The intention is to expand these criteria to the Citywide budgeting process starting in 2020. Also, with the wider availability of neighborhood-level health and equity data, the intention is to use this to inform processes such as zoning, licensing and permitting, and rules for community input into public hearings.

3. *Add progress reporting on health and equity metrics to public website*

Regular reporting and transparency about progress in meeting (or not meeting) the metrics will serve to build trust and hold decisionmakers accountable to the public.

4. *Explore health and equity differences beyond geographic boundaries*

DDPHE has explored geographic areas of Denver through the neighborhood planning initiative and other neighborhood-based projects. As DDPHE continues to consider displacement and gentrification, it is important to start to understand changes in specific populations that exist beyond geographic boundaries. While neighborhood-specific historical inequities may still be present in the built environment and burden of disease, looking more closely at socioeconomic status and race and ethnicity clearly shows neighborhoods populations are changing. As neighborhoods continue to shift, we must be careful to not leave behind those being displaced, meaning we need to think beyond neighborhood boundaries and start to follow changes in specific populations in order to best prioritize resources and programming.

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CORRESPONDING AUTHOR

Gretchen Armijo, AICP, LEED, AP
Norris Design
1101 Bannock Street
Denver, CO 80204
gaarmijo@live.com

CHLA Staff:

Editor-in-Chief
Cynthia Stone, DrPH, RN, Professor, Richard M. Fairbanks School of Public Health, Indiana University-Purdue University Indianapolis

Journal Manager
Angela Evertsen, BA, Richard M. Fairbanks School of Public Health, Indiana University-Purdue University Indianapolis

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