

Livable Communities Demonstration Account Transit-Oriented Development HIA

A HEALTH IMPACT ASSESSMENT (HIA) CONDUCTED IN
COLLABORATION WITH THE METROPOLITAN COUNCIL

Livable Communities Transit-Oriented Development HIA

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Acronyms and Abbreviations

PCP	Project Concept Plan
HIA	Health Impact Assessment
MDH	Minnesota Department of Health
Met Council	Metropolitan Council
MPO	Metropolitan Planning Organization
HiAP	Health in All Policies
TOD	Transit-oriented development
LCDA	Livable Communities Demonstration Account
MnDOT	Minnesota Department of Transportation

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1 Executive Summary

Goal: Where we live has a profound and long-lasting impact on our health. The design and assets of our neighborhoods influence our ability to access quality jobs, affordable housing, recreational opportunities, and the goods and services we require to be healthy. Transit-oriented development (TOD) is one approach to create connected, livable, and active neighborhoods where most trips can be completed by walking, biking, or public transit. The Metropolitan Council, in partnership with the Minnesota Department of Health (MDH), conducted a Health Impact Assessment (HIA) to evaluate a TOD funding program for its influence on health.

Approach: The HIA assessed seven proposed projects for their potential impact on jobs, access to goods and services, and active living. Applicants received these findings before the final applications for funding were due. The lessons learned from this process also identified new potential opportunities to further strengthen and evaluate programs at the Metropolitan Council from a health perspective.

Findings: The seven proposed projects varied widely in their goals and vision for development. While a few benefited from simple proximity to transit, most had extensive design and place-making features that explicitly promoted healthy behaviors. Even if health was not a clear objective, by following the best practice standards of TOD, each project would likely make positive impacts on the health of its residents and neighbors.

It is clear that TOD aligns closely with principles of health. As such, a health lens may be helpful for improving and evaluating TOD and other programs at the Metropolitan Council. Importantly, just as health can add value to the organization's work focused on TOD, the Metropolitan Council is well-positioned to have significant influence on the health of all Twin Cities metropolitan area residents. The Metropolitan Council is a critical ally in Minnesota's pursuit of public health and health equity.

Key Opportunities

1. Include health in any definition of equity used by the Metropolitan Council.
2. Expand consideration of biking by using bike maps and bike counts.
3. Include health metrics in the travel behavior inventory.

2 Introduction

In 2014, the Minnesota Department of Health (MDH) received a grant from the Centers for Disease Control and Prevention (CDC) to conduct Health Impact Assessments (HIA) on proposed policies, plans, or programs related to the built environment. HIA is a tool used to inform the decision-making process by identifying how a proposed policy, project, or program might influence health (for more on HIA, see section 2.4).

In order to sustain the success of this program, MDH sought strategic cross-disciplinary collaborations with key stakeholders. The Metropolitan Council (Met Council), as stewards of much of the built environment in the Twin Cities metropolitan area, was a logical partner. Further conversations identified a transit-oriented development (TOD) grant program as suitable for an HIA. This project would use a health perspective to examine the potential impacts of the TOD grant program at both the project and programmatic levels.

This report describes the scope and process of the HIA, its findings, and recommendations for the Met Council to consider. Chapter 2 describes the project in detail, including the goals, scope, and steps of the HIA. Chapter 3 includes the timeline and methods used to complete the assessment. Chapter 4 reviews the findings of the project, and Chapter 5 discusses key themes, lessons learned, and recommendations for consideration.

2.1 Metropolitan Council's LCDA-TOD grant program

Met Council is charged with leading the seven-county Twin Cities metropolitan (metro) area region in planning and development. This area encompasses the communities in Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington counties. A central challenge is to meet the housing, transportation, and economic development needs of a growing population, including underserved communities and people of all ages, in a way that creates healthy, sustainable, and livable communities. The Livable Communities Demonstration Account (LCDA) funding program catalyzes projects that not only create or enhance connections between people, housing, and jobs, but encourage innovative solutions that can be applied throughout the metro area.

Included in the LCDA program are grants specific to TOD. As the public transit network grows in the metro area, the LCDA-TOD program challenges developers to create housing projects that integrate with defined transit stations and the surrounding area. TOD promises to create more "livable" communities that feature higher housing density and access to goods and services by walking, biking, or taking transit. By living in an area with dining, entertainment, recreation, and shopping facilities, TOD encourages residents to walk and bike more and take fewer trips by car. This leads to improved health as well as reduced traffic congestion that can alleviate impacts on air quality and climate change.

Transit-Oriented Development aligns with MnDOT's SMTP

One of the goals of the Minnesota Department of Transportation's Statewide Multimodal Transportation Plan (MnDOT's SMTP) is to more efficiently move people and goods across the state. Many of these efforts focus on the trip itself, but TOD approaches this same problem from a different angle – eliminating the need for the trip.

2.2 Relationship among TOD, health, and health equity

While TOD is rooted in urban planning, its connection to health is readily apparent. Many of the goals of TOD – and the LCDA-TOD program specifically – include economic development, sustainability, and livability. *Livability* makes a neighborhood more vibrant, diverse, and connected, making the area a destination for residents and businesses. These same qualities, under a health lens, also promote physical activity, social cohesion, economic and educational opportunities, and reliable and affordable access to goods and services (such as grocery stores and clinics) for those who cannot afford a vehicle.

While health is not listed as a goal of TOD, health is significantly influenced by housing conditions, access to green space, and transportation connections to jobs, goods, and services. These influences are often referred to as social determinants of health (Figure 1, below). In this framework, **health** is not merely the absence of disease or illness, it is the ability and opportunity for people to do the things that make them healthy, productive, successful, and happy members of their communities. The ability to be healthy is not solely driven by individual choices, rather largely influenced by the social and physical environments in which we live our day-to-day lives. This includes the quality of our schools, the air we breathe, the water we drink, the safety of the communities we live in, the opportunities for education and jobs, and the laws and policies that govern our lives.

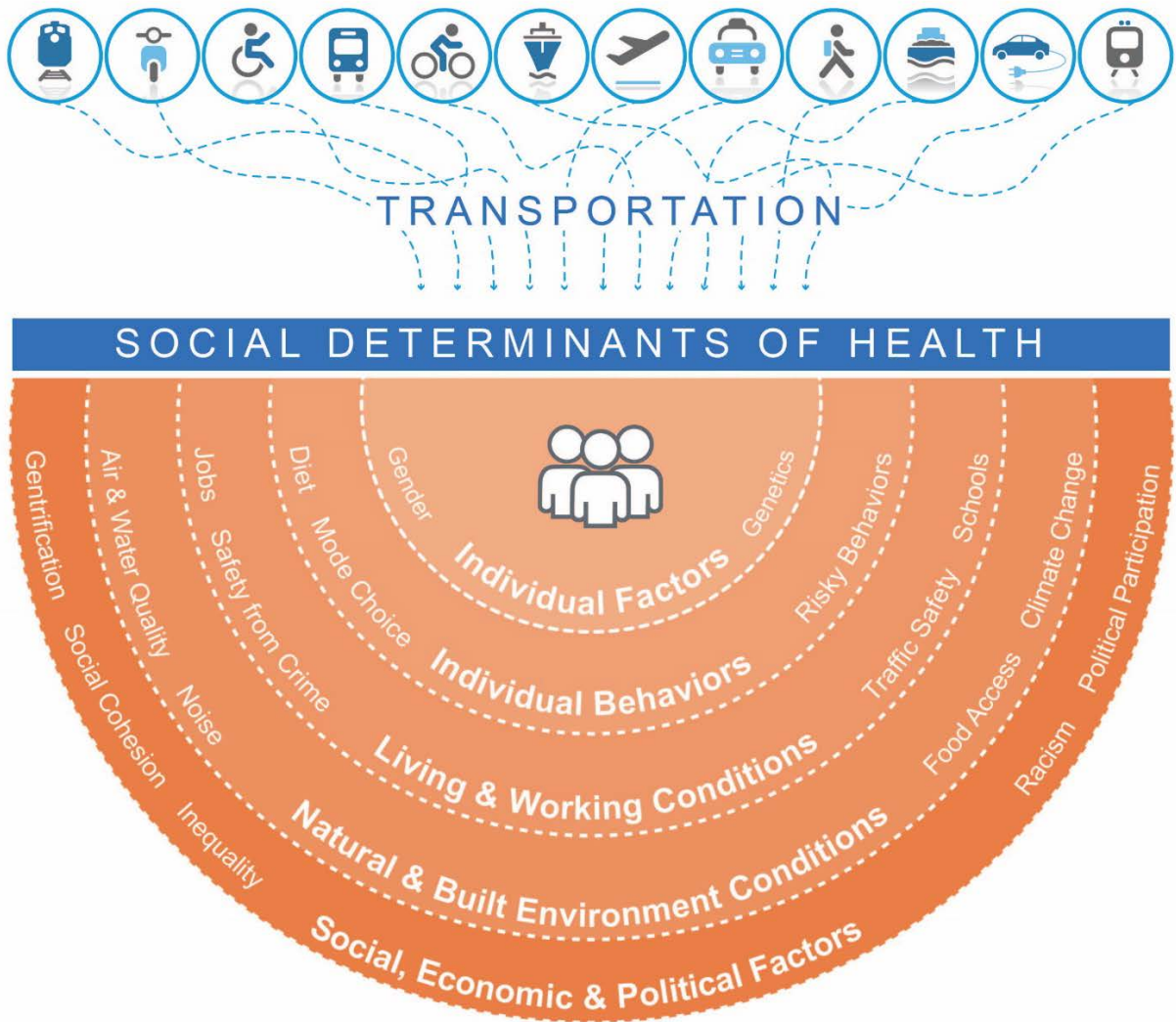


Figure 1 Social Determinants of Health, MDH 2017

Health disparities result when individual characteristics such as race, gender, income, or religion influence the distribution or access to education, jobs, housing, transportation systems, clean air and water, or other health-promoting factors. Conversely, health equity is when all people have the opportunity to reach their optimum health potential without limits imposed by structural inequities.

2.3 Project Goals

This project, a collaboration between the Met Council and MDH, seeks to identify the ways in which the LCDA-TOD grant program, as well as its funded projects, impact health. The goals of the project include the following:

1. Assess the 2015 LCDA-TOD grant applications for potential health impacts,
2. Provide feedback to applicants in order to promote healthy communities,
3. Identify potential metrics that can articulate health benefits and be used for evaluation,
4. Use the results of the application assessments to inform the LCDA-TOD grant process itself, and
5. Build the capacity of the Met Council staff to consider health implications of programs and projects.

By looking at the level of individual projects as well as the LCDA-TOD grant program as a whole, this project is positioned to inform or reaffirm both specific design features of the built environment as well as the broader policies and visions of the Met Council.

2.4 Health Impact Assessment

To achieve these goals, this project will utilize an HIA. HIA is a tool to help decision-makers better understand how a proposed policy, plan, or program may impact health. This systematic, data-driven process considers the mechanism, the magnitude and severity of impacts, and the populations most likely to be affected. It is especially helpful for policies, plans, or projects outside of the traditional public health sector. Common topics addressed by HIAs include small area plans, transportation policies, city zoning ordinances, agricultural policies, and school programs and policies. HIA is being used more commonly in the U.S., as well as Minnesota, particularly for transportation and built environment projects.

The HIA methodology includes six steps: screening, scoping, assessment, recommendations, reporting, and monitoring & evaluation (see Figure 2: Steps of an HIA). These steps ensure the HIA adds value to the decision-making process.

Figure 2 Steps of an HIA

STEPS OF AN HIA

1. **Screening**
Identify plans, projects, or policies for which an HIA would be useful.
2. **Scoping**
Identify which health effects to consider.
3. **Assessment**
Identify which people may be affected and how they may be affected.
4. **Recommendations**
Suggest changes to promote positive health effects or minimize health risks.
5. **Reporting**
Present the results to decision-makers.
6. **Monitoring and evaluating**
Determine the effect of the HIA on the decision.

Source: www.cdc.gov/healthyplaces/hia.htm

3 Methods

This section describes the determination of the need for an HIA, selection of health determinants to explore, timeline, and methods for assessing each Project Concept Plan.

3.1 Value added by HIA

While many of the principles of TOD align with health, this project presented an opportunity for two agencies to work collaboratively to determine if there were any missed opportunities to address health. This collaboration helped erode the silos that typically separate government agencies, advancing the principles of health in all policies (HiAP).

Beyond the collaboration, this HIA offered feedback to the grant applicants themselves to understand how the health-promoting principles of TOD were translated into design decisions at the project level. Finally, this project helped identify tools and metrics that Met Council staff can use to evaluate their programs from a health lens in order to demonstrate its benefits to stakeholders.

3.2 Feasibility

The decision points identified included the applicants' adoption of HIA recommendations into the final application for funding and the Met Council's on-going efforts to improve the LCDA-TOD program. This second decision point is less defined, but may include several opportunities for the Met Council to incorporate health considerations into their programs.

LIVABLE COMMUNITIES TRANSIT-ORIENTED DEVELOPMENT HIA

The LCDA-TOD program requires each applicant to submit a Project Concept Plan (PCP) that outlines the general scope of the proposed project. This allows Met Council staff to assist applicants to ensure their project meets the requirements of that specific funding program. It also provides applicants with the option to have their proposals reviewed by a third party in a design workshop to strengthen the overall quality of the proposal. This step offered the HIA team a chance to review the PCPs parallel to the review by the design workshop. While feasible, it did not come without significant methodological challenges to meet the application cycle's timeline.

It was important to communicate throughout the process that the findings of the HIA would not be used for scoring purposes and would not impact funding decisions. Applicants were not required to address any concerns identified in the HIA.

3.3 Timeline

This was a rapid HIA conducted in less than one year. The HIA began in January 2015, and MDH completed a draft report by August 2015 (see Figure 3: Timeline of the HIA). The HIA team had three months between the advisory committee's selection of health determinants and the assessment phase, and three months following the assessment to conduct monitoring and evaluation, draft recommendations on the overall LCDA-TOD program, and draft the final report. Due to the LCDA-TOD application process, MDH had only one month to review and assess the PCPs. Additionally, in order to be fair, the HIA needed to assess each PCP submitted. Until the PCPs were received, neither the number nor location of proposals would be known. Given the time constraint for assessment, a systematic process for assessing the proposals was developed ahead of time to ensure consistent review and timely completion (see section 3.6 for more details).

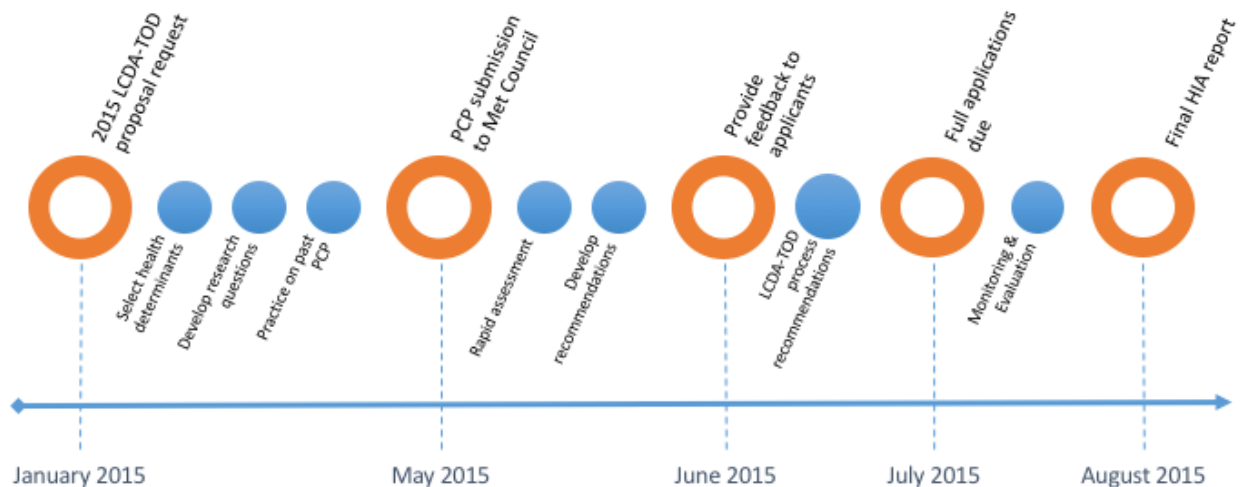


Figure 3 Timeline of the HIA (blue) and the LCDA-TOD grant process (orange).

3.4 Advisory Committee

To guide the HIA, the Met Council created an internal advisory committee comprised of staff from various programs and perspectives. This group's primary purpose was to help define the scope of the project, including the selection of priority health determinants. This group also provided feedback throughout the HIA on framing issues within the context of the grants, communicating with applicants, proposed recommendations, and project deliverables.

3.5 Selection of Priority Health Determinants

The first meeting of the advisory committee included a brief overview of the project's goals and the HIA methodology. To facilitate the discussion about TOD's connection to health, the advisory committee began by creating pathway diagrams that connected elements of TOD to short and long-term impacts and health outcomes. This exercise helped frame TOD as a health issue through its impact on the social determinants of health. The exercise also raised questions about the goals of the HIA. For example, the HIA would not attempt to detect changes in the health status of a population impacted by TOD. Rather, it would articulate the mechanism by which those changes may influence health.

As a group, the advisory committee identified common pathways and health determinants that were relevant and important to TOD. Each health determinant was discussed in terms of the value it may add to the HIA and the feasibility to assess the impacts of the determinant. Following discussion, the advisory committee voted for their top health determinants to focus the HIA: economic opportunity, active living, access to goods and services, and affordable housing. The advisory committee also emphasized the need to look at impacts on equity throughout the HIA and to not limit the assessment to only grant-funded aspects of the development projects.

Before the assessment phase began, staffing changes necessitated a narrower scope for the project. A survey of the advisory committee revealed that housing was already being considered by the Met Council, and the HIA would not add sufficient value to that discussion to warrant inclusion in the assessment phase. Thus, the final areas assessed by the HIA included economic opportunity, active living, and access to goods and services.

3.6 Project Concept Plan (PCP) Assessment

Once the priority health determinants were selected, the HIA team drafted research questions to guide the assessment. For each health determinant, an existing conditions question and a projected impact question was drafted. Because the projects were not yet known, and because the assessment was to be consistent across all PCPs, the research questions were broadly stated.

Preparations to answer these research questions began by identifying high quality data tools that were related to the selected health determinants. To ensure data would be

representative of the proposed development site, census tract level data was used when available. Data for the Twin Cities metro area were used as a reference point for census level data. A full description of the data sources was provided with each site report and can be found in Appendix I.

Due to the highly restricted timeline, it was not feasible to complete a site visit for each project. Instead, the HIA team used Google Earth and Google Streetview to assess the physical context of the neighborhood surrounding the project. While imperfect, these high resolution images were often no more than a year or two old and provided a rapid way to look at intersections, sidewalks, and proximity to major highways, schools, parks, and trail systems. For a more detailed look at the surround areas, Esri's ArcMap[®] 10.2 was used to quantify the number of bike trails and the acreage of public greenspace within one half mile of the project site.

Once the indicators and metrics were selected for inclusion and reviewed by the advisory committee, the HIA team created a template site report. This streamlined the assessment by establishing the formatting and reporting outline before the PCPs were available. The draft template, and the selected indicators and metrics, were tested and refined by assessing past PCPs. This iterative process allowed the team to understand what information would be available in the PCP and become familiar with the assessment process.

Upon receipt of the seven PCPs, each site report's template was populated with the relevant metrics within two to three days. Each reviewer then used the information provided in the PCP in conjunction with the metrics and indicators to answer the research questions of the report. At least two team members reviewed each project to ensure consistency and completeness of the assessment. The initial assessment of the seven PCPs took approximately two weeks and were completed by the HIA coordinator as well as two HIA team members working part time on the project. The final two weeks were used to develop recommendations for the applicants, present findings to the advisory committee, and make recommended changes to the language (for example, renaming "recommendations" to "points to consider" so applicants understood that they were not required to address identified issues). The final site reports included an introduction describing the project, the site-specific report, and a description of the data sources used.

At the end of May, Met Council staff provided each applicant with written feedback on their PCP. This included comments about eligibility, suggestions from the design workshop (if elected by applicant), as well as the recommendations provided in the HIA. The full site report (with introduction and data sources) was also provided.

4 Findings

4.1 Project Concept Plan (PCP) review

The findings from the individual project assessments are detailed in site reports provided to each of the applicants. Because site reports include drawings, plans, and designs that are not public, they are excluded from this report. Each site report contained three sections: a brief introduction to the HIA project, the site-specific assessment, and a description of the data sources used, including identified data gaps. Met Council staff provided these site reports to the applicants, along with the feedback traditionally provided on design and grant eligibility, approximately one month after receipt of the PCPs. While the site reports describe the impacts each site had on each of the three selected health determinants, this section summarizes observed trends across the seven projects within the context of the existing literature.

4.2 Active Living

a) Literature Review

A recent review of the literature found five factors to be associated with increased physical activity levels, all of which are common to TOD: diverse housing types, mixed land use, housing density, compact development patterns, and levels of open space (Durand, Andalib, Dunton, Wolch, and Pentz, 2011). More specifically, those who use public transit walk to and from the transit station for a median of 19 minutes per day, with 29% of users walking at least 30 minutes per day, meeting national physical activity guidelines (Besser & Dannenberg, 2005).

Being physically active is one of the most important steps that Americans of all ages can take to improve their health. It improves nearly every aspect of health. Physical activity prevents many diseases like diabetes, heart disease, some cancers, and obesity. It supports positive mental health by improving moods and a sense of well-being, as well as helping to prevent depression and anxiety. Healthy aging is also supported through physical activity by decreasing the risk of falling and bone fractures, helping manage the discomfort of arthritis, and developing and maintaining strong bones, muscles, and joints. Even small physical activity bouts of 10 to 15 minutes at a time have health benefits (U.S. Department of Health and Human Services, 2008).

Walking is an excellent way for most people to increase their physical activity. It is a powerful public health strategy for the following reasons:

- Walking is an easy way to start and maintain a physically active lifestyle.
- Walking is the most common form of physical activity for people across the country.
- Walking can service many purposes. It can be used for transportation, recreation, some occupational work, and activities of daily living.

- Making walking easier can help communities by improving safety, social cohesion, and local economies, as well as reducing air pollution (U.S. Department of Health and Human Services, 2015).

Strong evidence exists on how the built environment supports physical activity through street-scale and community-scale urban design and land use policies and practices (Guide to Community Preventive Services, 2004). Using active transportation (walking, biking and transit use) is associated with increased levels of physical activity (Ewing and Cervero, 2010; Lachapelle et al, 2011; Lachapelle and Frank, 2009; Werner and Evans, 2007; Brown and Werner, 2007; Hoehner et al, 2005; Besser and Dannenberg, 2005; Freeland et al, 2013; Greenberg, Lane and Zupan, 2005; McCormack and Shiell 2011).

TOD features of communities with higher population densities, access to destinations, mixed-use development, bus service, lower on- and off-street parking availability, and access to high quality bicycle and pedestrian infrastructure are positively associated with physical activity. Additionally, several studies show that walking to and from transit help people meet the national physical activity recommendations of 150 minutes/week of moderate-intensity physical activity (Besser and Dannenberg 2005; Freeland et al. 2013; Lachapelle et al. 2011). One national study in particular reported that people who use public transit walk an additional 21 minutes a day in going to and from transit stops or stations (Freeland et al, 2013).

b) Proposed LCDA TOD Projects

TOD may increase physical activity levels using both passive and active strategies. The latter includes access to biking and walking trails, fitness centers, or other dedicated space. This strategy would likely only affect the residents who live at the development, but could do so in meaningful, significant ways. The seven projects assessed varied widely in their approach to physical activity. Some projects were consciously oriented towards biking and walking trails while others lacked sufficient sidewalks to reach the transit station. Four of the seven proposals included access to regional bike trails, but all had access to some form of bike infrastructure. When compared to the number of workers in the area that biked or walked to work, the number of bike and pedestrian injuries were much higher for the three development sites adjacent to highways (See Figure 4). None of the developments detailed interior building designs that would encourage the use of stairs over elevators, although some included outdoor green space for gardening, play, and other recreational activities.

	injuries : bikers	injuries : pedestrian
<i>PLACE</i>	0.34	0.21
<i>University Vandalia</i>	0.09	0.08
<i>Superior Plating</i>	0.13	0.05
<i>4041 Hiawatha</i>	0.23	0.43
<i>CE Flats</i>	0.11	0.09
<i>66 West</i>	0.34	0.05
<i>Rum River</i>	0.45	0.06

Figure 4 Ratio of bicycle and pedestrian injuries in census tracts within 1/2 mile of proposed development site (Minnesota Dept. of Public Safety, 2010-2014) to number of commuters who bike or walk to work per 10,000 population over 16 years old (American Community Survey)

TOD also promotes active modes of transportation. The American College of Sports Medicine and the American Heart Association recommend 150 minutes of moderate-intensity activity in at least 10 minute bouts (Haskell et al., 2007). Among the TOD project sites assessed, most were well within a ten-minute walk of a transit station. This may not be long enough of a walk to meet national guidelines, but could still positively contribute to the accumulation of physical activity. One small study found that ten 3-minute bouts of brisk walking provided the same benefits for cardiovascular health as one 30-minute bout (Miyashita, Burns, & Stensel, 2008). As projects move further away from transit stations, it is increasingly important to include wayfinding signage that encourages walking and guides people to transit options. These impacts would largely support the residents of the development who regularly use public transit.

Finally, TOD could encourage active living by spurring developments around transit stations accessible by walking or biking. Unlike the other two strategies, this would benefit everyone who lives near or visits the transit area. Three of the proposals had committed to including commercial space, with one additional proposal considering the addition of commercial space.

4.3 Economic Opportunity

a) Literature Review

TOD features of safer and pedestrian-friendly streets, mixed land use, and access to transit are associated with economic benefits to the community (U.S. Environmental Protection Agency, 2012; U.S. Environmental Protection Agency, 2014; Smart Growth America, 2015). The economic vitality of a community contributes to the health of the residents. Benefits include neighborhood revitalization, attractive places for businesses to locate and support thriving local economies, higher levels of retail activity and employment, higher home values, and lower costs of delivering services such as utilities (U.S. Environmental Protection Agency, 2012; U.S. Environmental Protection Agency, 2014; Smart Growth America, 2015). A nationwide survey by Smart Growth America of 17 development studies concluded that dense, mixed-use developments cost 38 percent

less than conventional suburban developments on average, generating 10 times more tax revenue per acre and saving municipalities an average of 10 percent on public services such as police, ambulances, and firefighting (Smart Growth America, 2013). Providing transit options can also help create jobs. Research demonstrates that building transit, bicycle and pedestrian infrastructures create more jobs per dollar spent than building new roads (Smart Growth America, 2011; Garrett-Peltier, 2011).

Transportation choices provided through TOD can also save people money. This is particularly beneficial to those who cannot afford, or choose not to, own a vehicle as well as those who are not able to drive based on disability or age (very young and very old). People living in areas with multiple transit connections offered through TOD are likely to spend less of their income on transportation costs due to reduced use of a car (Center for Neighborhood Technology, 2010; Haas et al, 2013; Zhou and Zolnik, 2013). Owning fewer cars, or no cars, and driving them less can result in significant cost savings. The average American family spends approximately 18 percent of household income on transportation and very low-income households can spend 55 percent or more, while households with access to good transit service spend only 9 percent (Center for Transit-Oriented Development, 2009). The personal costs of owning and operating a car include the purchase price, finance fees, gas, oil, maintenance and repairs, insurance, and parking. The American Automobile Association's (AAA) annual study, "Your Driving Costs" showed in 2013 that owning and operating a car in the U.S. continues to become more expensive each year. Based on driving 15,000 miles per year and depending on type of vehicle, the cost can average \$0.61 cents per mile or \$9,722 per year (American Automobile Association, 2013). As described in this report, TOD encourages residents to walk, bike, and use transit more while taking fewer trips by car due to living in an area with dining, entertainment, recreation, and shopping facilities accessible by walking, biking, and transit. This can support improved health by shifting transportation cost savings to other health improvement costs such as food and health care.

Another economic opportunity of TOD is that increased community walkability can boost property values. However, increased property values may lead to gentrification (Kennedy and Leonard, 2001; Bates, 2013). Displacement happens when long-time neighborhood residents and businesses move from a gentrified area because of higher rents, mortgages, and property taxes. The health impact to older residents who are displaced into areas that are not as livable or walkable can result in lost mobility and independence. Similarly, displacement of long-time businesses can fracture community connections thereby negatively impacting the health of the business owners as well as community members (AARP Public Policy Institute, 2009; Centers for Disease Control and Prevention, 2013). Redeveloping communities should ensure that revitalization increases community health and stability by providing such features as affordable housing, transit services, and a range of needed goods and services within walking and bicycling distance. It is important that improvements come without displacement, especially of lower-income and older residents and families.

b) Proposed LCDA TOD Projects

The neighborhoods surrounding the proposed development sites varied widely in terms of household income, job accessibility, and cost of living. Median household income ranged from \$27,000 to \$77,500, and the proportion of families earning less than \$50,000 per year ranged from 12.6 to 64.4 percent. On the other hand, there is less variability among jobs within ½ mile, with a quarter to over half paying at least \$40,000 per year. The cost of living appears to be more consistent as well, with housing and transportation costs accounting for 36–48 percent of income across the seven neighborhoods. Finally, four of the seven sites scored at least 9 out of 10 on the Job Access Score which considers the number, variety, and accessibility of jobs in the area (*Housing + Transportation Index*).

The developments themselves would also stimulate the local economy by creating new jobs. The number of jobs added ranged widely, from two to 115 full-time equivalent (FTE) jobs, with three of the proposals adding less than six FTEs. Whether or not these jobs pay a living wage depends on the entity defining what a living wage means (for more information, see Section 5.2.2).

4.4 Access to Goods & Services

a) Literature Review

One of the primary benefits of TOD is providing people of all abilities with reliable and safe access to goods and services. This is particularly beneficial for those who rely on active transportation modes, either because they cannot afford, or choose not to, own a vehicle. Common destinations for goods and services accessed by active transportation modes includes grocery stores and restaurants, child care, post offices, banks, libraries, parks and green space, recreation facilities, health care facilities, and community and senior centers. Research has shown that, on average, people will walk about half a mile to reach a destination (Schlossberg and Agrawal, 2007; Yang and Diez-Roux, 2012). When everyday destinations are located too far away from home, walking will not be a convenient option (McCormack and Shiell, 2011; Bauman and Bull, 2007; Ewing and Cervero, 2010; Saelens and Handy, 2008). Health benefits of two specific goods and services are described below.

Access to healthy foods

Research supports that access to healthy foods in a community may play a critical role in residents' diets (Morland et al, 2002; Rose and Richards, 2004). One way TOD may directly impact health is creating a mixed-use local food environment with supermarkets, farmers markets, or community gardens in close proximity to residential areas. This may provide greater access to fresh produce and nutrient dense food, increasing the likelihood that residents will have improved nutrition and thus reduce their risk for obesity, diabetes, or other obesity-related illnesses (Morland, Wing and Diez Roux, 2002; Franco et al, 2008; Mair, Pierce and Teret, 2005).

Access to green space

Studies have found that green spaces such as parks, trails, and other open spaces improve individual health and the community-social environment (Weich et al, 2002). Access to parks that provide open and green space may protect against negative mental health outcomes by encouraging more socializing and thus foster greater social support, particularly among women (Parra et al, 2010; Fan, Das, and Chen, 2011; Leventhal and Brooks-Gunn, 2003; Truong and Ma, 2006; Maas et al, 2006). Access to green space may also provide community members with a sanctuary from stress (Stigsdotter et al, 2010; Van den Berg et al, 2010; Maas et al, 2009). Additional research suggests that the presence of trees and other vegetation may also promote community health by removing air pollutants and promoting cleaner air (Jim and Chen, 2008). By providing shade, trees also help reduce heat islands, ultra-violet light exposure, and skin cancer risk (Grant, Heisler, and Gao, 2002; Stanton et al, 2004).

b) Proposed LCDA TOD Projects

This HIA assessed each development project for its proximity to retail, grocery stores, schools, fine arts establishments, health clinics, day care facilities, and religious institutions. Four of the seven establishments had at least one of each type nearby, but one proposal lacked three of the seven establishment types. Four of the proposals have the potential to add commercial or retail space that could address gaps in the goods and services available to residents, but none of the projects offered specific information about which businesses that would include. Some projects would provide other services, or services for a particular population. For example, one development would add supportive housing and social services for homeless adults. Other developments would add gardening space that can increase local access to fresh, healthy foods.

4.5 Impact Analysis

To determine if any of the applicants had incorporated the recommendations (or *points to consider*) from the site reports, each full application was reviewed for specific mention of the HIA or any of its recommendations. Of the six applications submitted for full funding, none made specific mention of the HIA. However, no question on the application specifically asked about the potential impact of the HIA report.

To further ascertain whether the site reports had any immediate impact on the development projects, an online survey was sent to the applicants (typically staff of city development authority) and the developers associated with the project. Of the seven projects (including one that did not submit a full application), five participated in the survey.

All five respondents indicated that they had read some or all of the report and found it to be 'somewhat helpful' or 'helpful.' In particular, respondents appreciated contextual information of the neighborhood (including demographics, food deserts, access to park

space or trail amenities), the literature citations, and information about the unique health challenges of underserved communities from several perspectives.

"We appreciate that the MN Dept. of Health addresses the unique health needs of people from different backgrounds, the potential cause for some of these issues, and the strategies [our project] could use to improve the lives of everyone who lives, works, or visits near this project."

Two respondent also noted that more specific and actionable suggestions would be more helpful for the developer to improve the project. Despite the limited resources and time available to the HIA team, the site reports still appeared to be helpful to developers:

"The report presents the material in an accessible manner so that it can be used as a supplemental report for our funders and constituents to educate them about the importance of considering health impacts and equity in our development projects."

When asked if the report helped them better understand how development projects can impact health, responses were mostly positive ('Neither agree nor disagree' (n=2), 'Agree' (n=2), 'Strongly agree' (n=1)). None disagreed with the statement.

Despite the positive reception of the report, only one of the five respondents indicated that the report changed any aspect of the project's design or process. The changes include an expanded focus on healthy food and senior walkability. The project team also explored some of the commuting patterns revealed by the HIA to see whether the new affordable residences may positively affect commuting. Another respondent clarified that no changes were made because the developer had already designed the project with active transportation in mind.

Finally, one respondent offered words of encouragement to continue working on integrating health into TOD designs:

"We are so glad that the Met Council and Department of Health have undertaken this practice. As a nonprofit, we are more inclined than the typical developer to research and respond to these issues in the first place. Because we have limited resources ourselves, we had not yet gathered and presented the area data or the bibliography that the report provided and have been working from more general national data. Almost certainly, for-profit developers are not looking at most of these factors, and you are framing an important discussion."

Discussion

This chapter highlights some of the health-promoting features of the Met Council's LCDA-TOD program, as well as opportunities to continue strengthening connections to health. Section 5.3 details strategies for monitoring and evaluating TOD projects and programs from a health perspective. The challenging timeline of this project required an innovative application of the HIA methodology; section 5.4 discusses the lessons learned from this approach. The limitations of this HIA are outlined in section 5.5, and section 5.6 concludes this report.

5.1 Strengths of LCDA-TOD program

The full LCDA-TOD application makes several specific mentions of amenities and features that promote health, including:

- Connections to parks (section II-B-3)
- Equitable design features (section I-g-1)
- Multimodal transportation, including walking and biking (section II-B-1)
- Indoor smoking restrictions (section I-J-4)
- Walkability (section I-B-3).

Implementing the above TOD features can promote healthy communities. Sometimes there may be unintended consequences from TOD (such as the displacement of long-term residents), but the goals of livability, economic development, and sustainability are strongly aligned with health. The LCDA-TOD grant program already supports health by emphasizing walkability, affordable housing, and equitable access to goods and services; however, the HIA found that there are areas of opportunity to further public health within the conceptual plans. These opportunities are described below.

5.2 Areas of Opportunity

Transportation, housing, and land use have a profound impact on health, and programs such as the LCDA-TOD grants to promote developments that can positively affect health. Building off this work and the findings of the HIA, the following are suggestions for other opportunities to advance health through the Metropolitan Council's work.

5.2.1 Key Metrics & Tools

During the rapid assessments of the PCPs, the following metrics and tools were instrumental in considering the proposed development's potential impact on health. These tools focus on providing site-specific and readily available data for the development or evaluation of project proposals.

Plan for, support, and utilize bike counts as available.

As the methodology for bike counts becomes standardized, trends and patterns are emerging that can help guide development efforts. For example, sidewalk riding helps identify local areas of perceived conflict with traffic among bicyclists. Gender differences in biking may point to perceived safety or broader social influences. TOD projects can use these data to help encourage biking in the surrounding area, but bike counts are not yet available in all areas of interest. Projects in the early planning stages (such as TOD Pre-Development Resource grantees) could benefit from collecting bike counts using an automated fixed-location counter near the project site. This could provide site-specific data as well as support regional bike count efforts.

Use traffic volumes as a proxy for bike/pedestrian safety, noise, and air quality.

The Minnesota Department of Transportation (MnDOT) measures annual average daily traffic (AADT) for most of the roads in the metro area. These data can provide context to inform multiple aspects of a development. High traffic volumes can pose a risk and deterrent to bicyclists wishing to use the road. For example, high traffic volumes and a lack of bike lanes near one development site led to a high proportion of biking on the sidewalk, where bicyclists are potentially in conflict with pedestrians and less visible at intersections (Bike Walk Twin Cities, 2013). Traffic volume can also serve as a proxy measure for air quality and noise, which have strong impacts on asthma, chronic obstructive pulmonary disease, physical activity, and mental health (Brugge, Durant, & Rioux, 2007; Miles, Coutts, & Mohamadi, 2012).

Encourage developers to use tools that systematically assess for healthy design.

A collaborative effort by New York City agencies, *Active Design: Shaping the Sidewalk Experience* is a guide to creating walkable neighborhoods that are inviting and promote physical activity. While this HIA was not able to conduct site visits, this guide provides tools to both quantitatively and qualitatively assess the design of a sidewalk from the pedestrian's perspective. Using this tool in conjunction with project renderings can better articulate the proposed changes on the surrounding environment. By dividing the environment into four distinct planes (Building Wall, Ground Plane, Roadside, and Canopy), users can identify opportunities to improve the design using best practices highlighted in the report (See Figure 5).

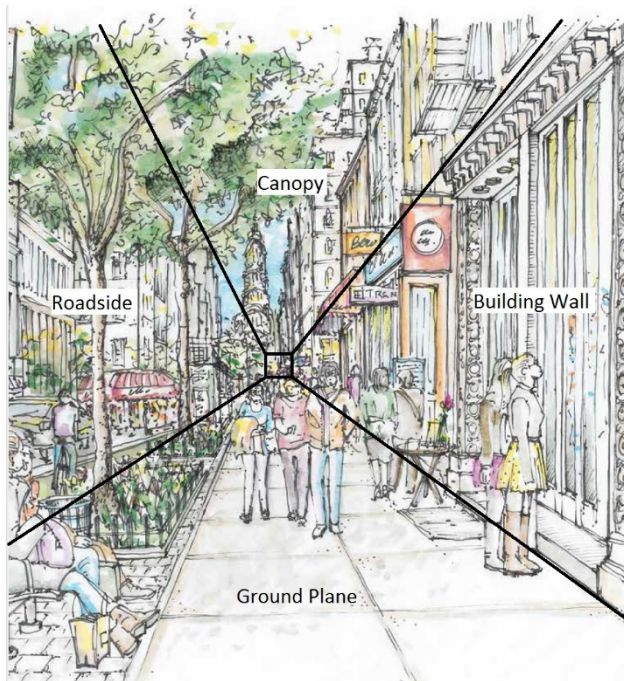


Figure 5 Sidewalk assessment of four distinct planes
Source: NYC Active Design Guidelines

Use and promote existing tools to quantify transit-accessible living wage jobs.

The LCDA-TOD program already emphasizes the importance of connecting developments to jobs. Three additional metrics can further strengthen this connection. The U.S. Census's tool *OnTheMap* allows users to calculate the proportion of jobs within a defined distance of an address (e.g. walking distance) that pay over \$40,000 annually, slightly above the Minnesota Department of Employment and Economic Development's (DEED) estimated living wage of \$37,264 (Clay, Hine, & Rohrer, 2015). Users can also select areas surrounding nearby transit stations to estimate the proportion of living wage jobs accessible by transit. The *Housing & Transportation Index* calculates the number of jobs accessible by a 30-minute transit ride as well as a Job Access Score. The latter metric is an index that considers the number, variety, and proximity of jobs. These are easily accessible tools that applicants can use when considering the addition of commercial space to a development. Among the development sites assessed, a few relied on transit-accessible job clusters as opposed to jobs in the immediate area. While too small of a sample size to generalize, these developments offer insights to health considerations. First, commuter rail serves a narrowly defined population (those who work full-time day jobs) and are too limited in service hours to provide access to other goods and services. However, access to job clusters can also help expand the number and variety of jobs available to people who live near commercial sectors dominated by just one or two types of industries (for example, restaurants and retail).

Use and promote existing tools to consider access to healthy food.

One of the challenges of TOD is to ensure all or most necessities can be met without the need for a car. This can be particularly difficult for one of the most important necessities, healthy food. Larger supermarkets are more likely to carry healthy, affordable food, but are less likely to be in low-income, African-American, or Hispanic neighborhoods (Powell, Slater, Mirtcheva, Bao, & Chaloupka, 2007). These neighborhoods frequently have more grocery stores and corner stores that are more expensive and have difficulty stocking fresh fruits and vegetable, which have shorter shelf lives. Several design decisions can help increase access to healthy food, including gardens (and rooftop gardens) and commercial space reserved for healthy food retailers, but such decisions require information on the food environment. For those with limited GIS capacity, Walkscore.com searches for grocery stores by distance. The U.S. Department of Agriculture has a mapping tool that categorizes census tracts as food deserts using multiple criteria, including distance to nearest supermarket and resident income. However, considering income on aggregate by census tract can often hide disparities. The American Community Survey (ACS) provides poverty rates by race that better reflect the economic opportunities – or barriers – to the residents who live there. Households spend more (but proportionately less) money on food when incomes rise, with the lowest income households spending 36.2% of income on food (USDA Economic Research Service, 2013).

Table 1 Indicators for selected health determinants.

Health Determinant	Metric/Indicator	Data Source
<i>Active Living</i>	Bike counts	Bike Walk Twin Cities
<i>Active Living</i>	Traffic volume	MnDOT
<i>Active Living</i>	Sidewalk assessment	NYC Active Design
<i>Economic Opportunity</i>	% jobs paying >\$40,000/year	OnTheMap (US Census)
<i>Economic Opportunity</i>	# jobs within 30 min transit ride	H&T Index
<i>Economic Opportunity</i>	Job Access Score	H&T Index
<i>Access to Goods & Services</i>	# grocery stores, ½ mile	Walkscore.com
<i>Access to Goods & Services</i>	Low food access designation	USDA
<i>Access to Goods & Services</i>	Poverty rate by race	5-year ACS (US Census)

5.2.2 Process Recommendations

Changes to the LCDA-TOD grant process can also promote health. Recognizing that changes to a statutory grant program are often difficult or contentious, the following suggestions focus on feasible changes or clarifications that add value with minimum burdens on Met Council staff or LCDA-TOD applicants. Even small changes can start conversations that lead to a greater consideration of health.

Require a bike map to be included along with a walking map.

The walking map supports multimodal transportation by considering door-to-door accessibility to destinations. Proximity may be insufficient to promote transit use, so investigations and the improvements of the routes to a bus stop or train station – including its safety, physical condition, and visual appeal – can promote active transportation and transit use. Similarly, encouraging applicants to map access to bike paths can highlight challenging intersections and gaps in the bike network, leading to innovative solutions. As biking increases in popularity throughout the metro area, safe connections between housing and dedicated bike paths can add value and appeal to a development project. Biking offers residents another mode choice that can help achieve the goals of the LCDA program.

Access to bike paths *aligns with* Met Council's Thrive 2040

One of the goals in *Thrive 2040* is to increase transportation choice by sustaining and improving a multimodal transportation system. For densely populated urban areas (consistent with TOD), *Thrive* notes that transit and biking represent significant shares of travel because it is often easier to reach destinations by those modes compared to by car.

Include public health as a demonstration quality.

The LCDA program funds projects that demonstrate innovative and new ways to meet the *Thrive MSP 2040* outcomes. In the application for funding, the demonstration qualities currently include urban design, land use, mobility, environmental design, and 'other.' Adding public health to this list strengthens the intentional application of TOD principles towards the goal of improving health. Beyond the benefit of raising awareness of TOD's potential health impacts, including public health as a demonstration quality incentivizes innovative design solutions that can be applied to multiple projects.

Align the living wage values to that of DEED's report.

As defined for the LCDA grants, a living wage is 130% of the poverty guideline for a family of four, or a full-time salary of \$31,525 according to the U.S. Department of Health and Human Services (USDHHS). The Minnesota Department of Employment and Economic Development's (DEED) 2015 *Cost of Living Study* estimated that a family of

three (one child and two parents working a combined 60 hours per week) would need to earn \$55,896, or \$37,264 for a full-time salary. Compared to the U.S. Department of Health and Human Services, this amount is 18% higher, yet deemed sufficient for a smaller family of three. This is not surprising as cost of living is often higher in urban areas, but updating the definition to align with that of DEED will provide a more precise value for calculation of living wages specific to the metro area. The six projects that submitted a full application reported a combined 232 potential full time-equivalent (FTE) jobs created (both regular and part-time, excluding construction). Of these, 42% paid a living wage according to the current definition (\$31,525), but only 37% were a living wage according to DEED's value (\$37,264). Three of the six projects would need to reduce the reported number of living wage FTE jobs created by at least 40%. Raising the definition of a living wage will favor the selection of projects that create high-paying, quality jobs.

Provide additional guidance to applicants on 'equitable design strategies.'

The Met Council defined *equitable development* in the 2040 Housing Policy Plan (2014):

Equitable development creates healthy vibrant communities of opportunity where low-income people, people of color, new immigrants, and people with disabilities participate in and benefit from systems decisions, and activities that shape their neighborhoods.

Providing additional definitions of equity and health equity (see 5.2.3, below) may further ground discussions about equitable development strategies, but examples should also be provided. In 2015 a number of community and neighborhood organizations created the Twin Cities Equitable Development Scorecard as a tool for communities and planners (see <https://metro council.org/Communities/Planning/TOD/Files/Equitable-Development-Scorecard.aspx>). Strategies include:

- community engagement and inclusive decision-making processes;
- creating public spaces;
- preserving air, water, and soil quality in the local environment;
- living wage job creation;
- childcare, job training, and other employment support; and
- publicly accessible improvements to bike and pedestrian improvements.

Other design strategies may include:

- gender-neutral bathrooms to serve transgendered or gender nonconforming individuals;
- outdoor smoking areas away from entrances and windows to reduce second hand smoke exposure among residents or visitors, particularly the elderly or children with asthma; and
- mixed market rate and affordable housing to prevent income or age-segregation.

5.2.2 Broader alignment with health

Finally, there are opportunities for the Met Council to advance public health through initiatives that extend beyond any single program.

Include health metrics in travel behavior inventory (TBI) and other travel surveys.

Local-level health indicator information is limited beyond the metro area scale. By including questions focused on health in the TBI, researchers will be better equipped to more explicitly link travel mode decisions to health outcomes. For example, these data can be used in the Integrated Transport Health Impact Model (ITHIM) to determine healthcare costs avoided if residents increased the number of minutes per week of active transportation by a set amount. A similar approach was utilized by Nashville's metropolitan planning organization and could support further collaboration with MDH, MnDOT, and other state agencies.

Include health in any definition of equity used by the Met Council.

Equity is one of the five desired outcomes that defines the regional vision put forth by the Met Council's *Thrive 2040*. Much like *TOD*, *equity* is described in terms that have clear impacts on health without specifically naming health. Since the publication of *Thrive 2040*, MDH released their 2014 report to the legislature, *Advancing Health Equity in Minnesota*. Including health in Met Council's definition of *equity* would align this definition with that of MDH and advance the mission of Health in All Policies (HiAP).

Equity aligns with Advancing Health Equity in Minnesota (MDH, 2014)

In MDH's 2014 report, health equity is defined as "a state where all persons, regardless of race, income, creed, sexual orientation, gender identification, age, or gender have the opportunity to be as healthy as they can – to reach their full 'health potential.'"

Thrive 2040 speaks to the importance to connect all residents to opportunities for success, prosperity, and quality of life.

5.3 Evaluation & Monitoring Plan

Health is complex and determined by a variety of individual, behavioral, environmental, and social factors (see Figure 1). Therefore it would be very difficult, if not impossible, to estimate the effect size of a specific TOD project's impact on the health status of its residents and community. Instead, the LCDA-TOD program can evaluate its *likely* impact on health through process evaluation while monitoring selected health indicators that are more sensitive at a local geography.

Process evaluation could examine any future changes to the LCDA-TOD grant program's application materials or processes that relate to health. This includes monitoring the recommendations in section 5.2 as well as other initiatives or opportunities related to the HIA. For discussion on lessons learned conducting a rapid HIA, see section 5.4.

Process evaluation focuses on actions initiated as a result of the HIA. These actions could take place at the program level (such as those outlined in sections 5.2.1 and 5.2.2) or at the agency level (section 5.2.3).

Outcome evaluation focuses on whether the actions had the intended effect. For example, if “equitable design features” were better defined to include specific examples (see 5.2.2), would developers be more likely to include such designs in their projects? Met Council staff could consider collecting information on healthy design features in the evaluation of the development applications, regardless of its use for scoring purposes. By comparing applications before and after any revisions, initiatives, or changes, staff can better see the resulting outcomes.

Finally, impact evaluation explores whether the immediate outcomes have any measurable impact on health. For example, do developments that create outdoor smoking areas away from doors and windows reduce the risk of asthma for its residents? It is important to note that for individual projects, such changes may not be measurable or directly attributable to the new development. However, it is still informative to monitor health at the neighborhood level. Table 2 includes three measures of health that are systematically collected at the zip code scale or larger: bike and pedestrian crashes with motor vehicles, asthma emergency department (ED) visits, and chronic obstructive pulmonary disease (COPD) hospitalizations. As TOD increases, long-term trends in these three indicators may show changes in the health of residents. Better infrastructure and engineering controls, along with fewer auto trips, can reduce bike and pedestrian crashes with motor vehicles. Fewer trips can also reduce on-road pollution and improve air quality, reducing the risk of severe asthma attacks. Data from the 2010 Hennepin County Survey of the Health of All the Populations and Environments (SHAPE) showed children from low-income families to be five times as likely to be regularly exposed to tobacco smoke (23.1% vs 4.7% for not low-income families), the leading cause of COPD. If healthy smoke-free housing and economic opportunities become more available, risk of COPD may also decline.

A more promising approach to evaluating health impacts would be to include health questions on the travel behavior inventory (see section 5.2.3, above). This would allow Met Council to correlate health status with proximity to TOD or, if location is unavailable, travel mode. To show impacts on specific developments, a survey of residents when they move in and repeated one year later may show changes in self-reported health that could be attributed in part to the development project. The Behavioral Risk Factor Surveillance System (BRFSS) and Metro SHAPE surveys include validated questions that could be included in project-specific evaluations (Table 2).

Table 2 Key health indicators.

<i>Health Indicators</i>	<i>Data Source</i>	<i>Scale</i>
<i>Bike & pedestrian crashes</i>	Department of Public Safety	Street
<i>Asthma ED visits</i>	MN Public Health Data Access Portal	Zip code
<i>Chronic Obstructive Pulmonary Disease</i>	MN Public Health Data Access Portal	Zip code
<i>No leisure physical activity</i>	Metro SHAPE	County
<i>Fair or poor general health</i>	Metro SHAPE	County
	Behavioral Risk Factor Surveillance System	Metro

5.4 Lessons Learned: Rapid HIA

Due to the limited time and resources available, rapid HIAs face distinct challenges compared to more traditional or comprehensive HIAs. However, the process of requiring less time and resources is increasing interest in the use of rapid HIA. This particular HIA presented its own challenges and lessons for practitioners.

Extensive preparation and practice can reduce lag time in the assessment phase.

In cases where the timeline is known in advance, even if the details are not available, much of the preparatory work can still be done beforehand. This can include selection of priority health determinants, selection of metrics and data sources, literature review, and development of assessment methods.

Practicing the assessment plan ahead of the assessment on a similar or past project identifies opportunities to revise or streamline the assessment and allows the practitioner to become familiar with the process and workflow. In this HIA, PCPs from past proposals were used to create, practice, and revise the assessment.

MDH applied the same assessment process to all seven projects. To keep the assessment consistent, MDH developed a template containing the pre-selected metrics, research questions, sections, and tables. An additional benefit to this approach was that it facilitated other practitioners to conduct the assessment despite limited previous involvement in the project.

As a result of these strategies, one practitioner was able to populate the seven site reports with metrics specific to each location. The template was then given to another HIA practitioner to complete the assessment. By dividing up duties, but keeping information consistent using the template, it was feasible to complete the PCP assessments within a few days of receiving the PCPs.

A multidisciplinary team is critical to bringing diverse perspectives to the assessment.

As the timeline shrinks, increased emphasis is placed on the experiences of the practitioner rather than a methodical (and time intensive) review of the literature and best practices. Working with a multidisciplinary team with a variety of backgrounds can add depth to the assessment with little additional time, provided the team is well facilitated and coordinated (a standardized template can help coordinate information).

Establish best practices and communication guidelines to stay organized.

If multiple practitioners are completing the assessment, it is critical to establish best practices and communication guidelines. This is especially important if the research questions are broadly stated and could be answered in a number of different ways. Such guidelines can cover file names and locations, citations, formatting, map and figure standards, marking questions, and reviewing completed assessments.

Set checkpoints to approve the assessment plan prior to the assessment itself.

The assessment phase of a typical HIA can often be cyclical. One finding may raise new questions, which are scoped by stakeholders and explored further by the HIA team. In this way, changes to the original process are expected and often add value. In a rapid HIA of several similar projects, consistency and time efficiency preclude such a cyclical assessment. Any changes to the template needs only to be made once; however, once the assessment begins, any additional changes need to be made to each of the individual site reports. Setting clear deadlines by which all changes must be proposed ensures stakeholders have the opportunity to add their input without creating time-intensive inefficiencies.

Start with the data available, then formulate answerable research questions.

HIAs usually begin by identifying the priority health outcomes, developing research questions (existing conditions and potential impacts), and identifying data sources and research methods that can help answer the questions. If existing data are not available, the HIA will often collect its own data via surveys, key informant interviews, focus groups, or other analysis. In a rapid HIA, original research is usually not feasible. Instead, it may be helpful to find rich data sources that address the priority health outcomes before developing the research questions. This allows the practitioner to develop questions that are feasible and answerable given the available data and tools. Once developed, a steering committee may select the research questions of greatest interest.

5.5 Limitations & Assumptions

This HIA had several limitations. First, very limited information was available to complete the assessment of each PCP. Data was limited to existing datasets and of various quality. The PCPs themselves were limited in scope to minimize the burden on the applicants, and they did not comprehensively outline the projects, so many details that could be analyzed for health impacts were generally not included in the PCP. Moreover, much of the application was specific to grant-funded activities, while the HIA examined the project as a whole.

Second, the assessment phase (including drafting recommendations, compiling the report of the PCPS, and review by Met Council staff) was just one month, so a thorough assessment, including a site visit and engagement with neighbors, was not feasible. Rather, this project sought to demonstrate the applicability of a rapid HIA and HIA tools to the TOD planning process in order to increase health considerations.

Third, the HIA lacked community input, so the recommendations and findings are not representative of the community's interests. Ideally, community development efforts should engage meaningfully with the residents of the neighborhood through all stages of a project, including consideration for its potential impact on health and wellbeing.

Fourth, establishing a baseline of health for future residents of the proposed developments was not feasible. Residents may currently live in the neighborhood or in a different neighborhood, city, or state entirely. Without describing the existing conditions, it was not possible to project changes in the health of the developments' residents.

5.6 Conclusion

The goals for this HIA were:

1. Assess the 2015 LCDA-TOD grant project's potential on impact health,
2. Provide feedback to applicants in order to promote healthy communities,
3. Identify potential project metrics that can articulate health benefits and be used for evaluation,
4. Use the results of the application assessments to inform the LCDA-TOD grant process itself, and
5. Build the capacity of the Met Council staff to consider health implications of programs and projects.

This HIA met all five goals. Each of the seven PCPs was rapidly assessed, with findings and points to consider delivered to applicants within one month. Several data sources were used, highlighting existing and accessible tools that demonstrate connections to health. The LCDA-TOD program is strongly aligned with health principles, but several opportunities for continued progress were explored. Finally, working with the Met Council has strengthened cross-discipline partnerships that advance the goals of each agency.

LIVABLE COMMUNITIES TRANSIT-ORIENTED DEVELOPMENT HIA

The intersection of health and urban development could be compared to how a roundabout functions.

Urban planners and health professionals have a tremendous opportunity to work collaboratively to shape healthier communities. This HIA, conducted collaboratively between MDH and the Met Council demonstrates this value. Specifically, this HIA found that the LCDA-TOD grant program encourages many health-promoting design aspects into new developments throughout the Twin Cities metro area. Met Council's current grant program could provide additional opportunities to positively affect health in substantial and meaningful ways. Minor revisions to the grant-funding process, evaluation of development efforts using health metrics, and increased alignment with health policies and definitions of equity have the potential to improve development projects in the Twin Cities and ultimately create healthier communities.

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