Healthy Neighborhoods for a Healthy Detroit

Health Impact Assessment of the Strategic Framework to Regenerate Detroit

APPENDICES

DETROIT URC
COMMUNITY - ACADEMIC URBAN RESEARCH CENTER

D-HIA Steering Committee

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The full report can be found at http://www.detroiturc.org/affiliated-partners/hia-detroit.html.

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Abbreviations and acronyms

BRTF ..... Detroit Blight Removal Task Force
CBPR ..... Community-Based Participatory Research
DFC ..... Detroit Future City
D-HIA ..... Healthy Detroit - Health Impact Assessment
DWP ..... Detroit Works Project
Detroit URC ..... Detroit Community-Academic Urban Research Center
HIA ..... Health Impact Assessment
HV ..... High Vacancy
MV ..... Moderate Vacancy
LV ..... Low Vacancy
SC ..... D-HIA Steering Committee
SF ..... Strategic Framework
SRA ..... Strategic Renewal Approach
WHO ..... World Health Organization

Definitions

Blight: Detroit's definition of blighted and abandoned is any property characterized as open, dangerous and vacant.

Appendix A: Screening Phase Issue Selection Matrix

The following issues were considered during the screening phase as potential focus for the HIA:

1. International Bridge: Mitigation of impact of bridge construction, operation, and maintenance.
2. Complete Streets: A proposed citywide ordinance
3. Greenways: Implementation of proposed plans to develop the greenways.
4. Detroit Water & Sewage Plant: Facility upgrade planning required by federal law. The HIA would examine the impact on the host community.
5. Removal of Key Pedestrian Bridges during Widening of I94: Implementation planning and remediation.
6. Detroit Master Plan for Non-motorized Transportation: Implementation options
7. Detroit Works Project: Cumulative plan impacts on local neighborhoods
8. Land Assembly/Disposition: Impact of major vacant land assembly, acquisition, and disposition decisions on local neighborhoods.

To select and focus on an issue for the HIA, the planning group adapted the Human Impact Partners' sample HIA Screening Worksheet[1] to include the following considerations:

- Issue of concern and importance to the community
- Proposed project, plan, or policy
- Decision makers
- Timing of the decision relative to time for carrying out an HIA
- Potential to inform and have an impact on the decision, including whether health is being considered
- Potential benefit of the HIA both locally and beyond
- Fit with the Detroit URC mission and capacity
- Synergy with existing projects of the Detroit URC, affiliated partnerships, and potential HIA partners
- Potential collaborators
- Existing data available and implications for other decision making
- Additional information needed
- Other considerations

The team completed the selection worksheet/matrix for each of the issues being considered for the HIA, and used the document to analyze and select the HIA focus during the screening process.

[1] Human Impact Partners n.d.

Appendix B: HIA method

Who is Involved

D-HIA was a collaborative, multidisciplinary partnership made up of community, city, and academic institutions (see Table 1). D-HIA was an affiliated partnership the Detroit Urban Research Center (Detroit URC) and was guided by community-based participatory research principles to ensure equitable participation of partners in all aspects of the project, particularly those who will be most impacted by the plan/project/policy. D-HIA included four community-based organizations, a regional data firm, the local health department, an international HIA expert, and faculty in public health and urban planning.

Table 1: D-HIA Partner Organizations

Organization	Sector / Expertise
Data Driven Detroit, Director Emeritus	Data
Detroit Hispanic Development Corporation	Community based organization
Detroiters Working for Environmental Justice	Community based organization Environment
Eastside Community Network (formerly Warren/Conner Development Coalition), LEAP	Community based organization Neighborhood-based land use planning
Green Door Initiative	Community based organization Environment; job development
Institute for Population Health	Healthcare, public health
University of Michigan School of Public Health	Academic Public health
University of Michigan Urban and Regional Planning Program	Academic Urban planning
Ben Cave Associates Ltd	HIA Technical Assistance provider

D-HIA organizational structure included both a SC (described below) and a broader informal network that provided periodic feedback and linkages to different constituencies. UM-based and Detroit-based partners included residents, planners, data specialists, community-based organizations, government officials, and academics.

D-HIA was further informed by the Detroit URC Board. The Detroit URC is a community-based participatory research (CBPR) partnership that involves Detroit community-based and health service organizations, and academic researchers at the University of Michigan. Since 1995, the Detroit URC and its affiliated partnerships have been working to understand and address health inequities in Detroit. Detroit URC partners have longstanding relationships with community organizations, policymakers, city and state officials, funders, and businesses, and several Detroit URC partners are actively engaged in aspects of the DWP/DFC. Half of D-HIA partner organizations are also members of the Detroit URC Board, which considered progress of and provided input to the HIA at monthly board meetings. Throughout all phases of the HIA (described below), D-HIA engaged with these entities.

Funding

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D-HIA Steering Committee

The SC had primary responsibility for planning and carrying out the HIA together with the project team, providing regular direction and input throughout the process. The SC is composed of representatives of the partner organizations. D-HIA SC members are leaders in their fields and have been engaged in citywide and neighborhood-based planning initiatives. Four members had formal roles in the DFC implementation community engagement process throughout the project.

The project provided additional support for enhanced roles of three partner organizations. Two community SC members served as Community Policy Specialists to engage key stakeholders, further develop recommendations, and meet with decision-makers to integrate the HIA into city planning, and to identify strategies to enhance implementation of the recommendations. The data organization provided additional data linking and analysis.

The SC met quarterly, with phone conferencing and electronic communications between meetings. SC meetings were also attended by staff, student research assistants, and others working on specific aspects of the HIA, as appropriate. Table 2 sets out the members of the HIA Steering Committee and their organizational affiliation during the HIA (individuals with an * are no longer affiliated with the listed organization), and those who also attended SC meetings.

Table 2: HIA Steering Committee membership

HIA Steering Committee:	Representing:	Role in DFC:
Kurt Metzger	Data Driven Detroit, Director Emeritus	Data
Angela G. Reyes	Detroit Hispanic Development Corporation	Process Leader, Implementation Steering Committee
Alisha Opperman*	Eastside Community Network (formerly Warren/Conner Development Coalition), Lower Eastside Action Plan (LEAP)	Local planning
Guy O. Williams	Detroiters Working for Environmental Justice	Process Leader, Implementation Steering Committee
Donele Wilkins	Green Door Initiative	Advisory Task Force
Leseliey Welch*, succeeded by Chinwe Obianwu*	Institute for Population Health	
Chris Coombe, Amy J. Schulz, Barbara A. Israel	University of Michigan School of Public Health	
Margaret Dewar	University of Michigan Urban and Regional Planning Program	
Ben Cave, Technical adviser	Ben Cave Associates Ltd.	

Also attending HIA Steering Group meetings:
URC and Affiliated Project Staff (e.g. Communications Specialist, Project Managers)
Student Research Assistants, Persons working on special projects (e.g., RWJF Clinical Scholars, interns)

The SC was the main decision-making body of the HIA. All decisions regarding the HIA were made according to operating norms agreed upon by the SC. The SC monitored progress, provided

direction to adjust course, interpreted findings, and developed recommendations. Draft reports and communications were reviewed by the SC.

The D-HIA Steering Committee (SC) had clear terms of reference, including purpose, guiding principles, operating norms and defined lines of accountability. These are set out in Table 3

Table 3: Terms of reference for the HIA Steering Committee

Item *adapted from(Harris et al., 2007)*[2]	D-HIA
1. the values, assumptions, goals, aims, purpose and functions of the HIA	1. To carry out the goals of the HIA 2. To identify the potential significant effects of DFC proposals to redistribute city services and infrastructure. 3. To identify strategies for improving health and reducing health inequities. 4. To strengthen relationships across sectors and build capacity for considering health in decision-making.
2. agreement on definitions, for example 'health' and 'health equity'	**Health** is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity[3]. **Health disparity** is a difference among groups in measures of health. **Health equity** is the absence of systematic disparities in health (or in the major social determinants of health) between groups with different social advantage/disadvantage (e.g. wealth, power, prestige).
3. the standards by which the HIA will be judged	Quality assurance standards for HIA[4] Practice standards for HIA[5]
4. an outline of the project plan including deadlines	Distributed at SC meetings
5. the membership of the steering committee together with an explicit description of the roles and responsibilities of members	Membership • Partners • Policy Specialists • Data Driven Detroit • Technical Assistance Provider Attending • Staff, Research Assistants
6. the number of group meetings to be held	Meetings to be held every 6-8 weeks initially, and then quarterly, plus: • HIA Training May 8, 2013 • HIA Scoping workshop May 9, 2013
7. the nature and frequency of the project team's feedback to the HIA Steering Committee	Feedback through SC meetings, email, and individual consultations. Reports issued to steering group for comment & critique at each stage.
8. any conditions associated with production and publication of findings and outputs (for example journal articles and media releases) including intellectual property, confidentiality agreements, copyright and publication	Draft reports and communications to be reviewed by Steering Committee according to CBPR guiding principles and operating norms. Draft reports to be reviewed by Health Impact Project staff.
9. the budget and source of funding	Funding from Health Impact Project $80,000 plus technical assistance (March 2013-October 2015); CARSS $50,000 (July 2012 – June 2013).
10. how to deal with conflict and/or disagreement	According to CBPR guiding principles and operating norms agreed upon by Steering Committee.

[2] Harris et al. 2007.
[3] World Health Organization n.d.
[4] Fredsgaard, Cave, and Bond 2009.
[5] Bhatia et al. 2010.

In the first year of the HIA process, the SC met every six to eight weeks, with phone conferencing and electronic communications between meetings. In the second year the SC met quarterly. SC meetings were also attended by staff, student research assistants, and others working on specific aspects of the HIA, as appropriate.

Screening

Screening determines the need for, and value of, an HIA, including whether an HIA is likely to be the best way to ensure health and equity issues are address appropriately in a given situation. The IAIA (International Association for Impact Assessment) defines the screening stage as deciding what scale, if any, HIA is required[6].

This step was carried out by an initial "guidance group" made up of the following Steering Committee (SC) members—Chris Coombe, Barbara Israel, Angela Reyes, Amy Schulz—and HIA consultant Ben Cave. The initial HIA guidance group researched a number of policies under consideration, met with city and community leaders, and used a screening tool for assessing the need and value of conducting an HIA. The guidance group compiled an HIA Issue Selection Matrix as part of the screening process (Appendix A). Members participated in community forums held by DWP and other organizations being considered for the HIA. Although many of the issues under consideration were site- or project-specific and therefore more amenable to an HIA, such as the complete streets ordinance, the group felt that the "elephant in the room" which would impact all future decisions was the larger proposal to shrink or "rightsize" Detroit. Therefore, the group decided to conduct a strategic HIA of the larger overarching Detroit Works Project plan that was still being developed. In April 2012, UM guidance group members organized an expert panel event on HIA and follow-up training/planning workshop in Detroit facilitated by Ben Cave that was a transition to the scoping phase.

Stakeholder involvement in Screening included:

- meetings of the preliminary planning group which was later expanded to form the Steering Committee
- discussion at Detroit URC board meetings
- consultation with city planners and DWP leadership
- phone and in-person meetings with community and organization leaders
- participation in community forums held by DWP and other organizations on issues being considered for the HIA
- training and planning

Scoping

This stage provided a credible, impartial and defensible analysis of the coverage of health to date in the DFC and established the factors on which the HIA would concentrate, for example[7]:

- decision alternatives to be evaluated;
- potential health impacts of the decision to be considered in the HIA;
- populations to be evaluated, including vulnerable populations defined by place, income, race, gender, or age;

[6] Quigley et al. 2006.
[7] et al. 2011.

- demographic, geographical and temporal boundaries for impact analysis;
- research questions, data sources, and analytic methods for analysis;
- timelines;
- draft plans for reporting and communications, monitoring, and evaluation; and
- participant roles and responsibilities

Scoping was carried out through a series of meetings of the HIA Steering Committee and meetings with other key stakeholders. The scope of the HIA was also informed by a review of previous HIAs, an initial literature review, consideration of DFC data and reports, and participation in DFC community engagement bodies and forums. As DFC strategies developed into actual projects (demolition, public lighting), the scope expanded.

Scoping Approach

Stakeholder engagement during scoping involved meetings and discussion among all D-HIA partners, stakeholder input gathered at community forums held by DWP, participation in "community conversations" on the DFC framework, one-on-one consultations with key leaders and activists, and meetings with four Detroit area funders. SC members continue to put the HIA on the agendas of a number of other organizations and initiatives in which they are involved. SC members identified the sectors that should be engaged in the HIA, prioritized individuals to contact, and begun making contacts (See Table 3). In addition, two SC members are Process Leaders for the DWP/DFC and have organized and facilitated a number of community meetings which provided an avenue for addressing the impacts of the framework.

In May, 2013, we invited seventy five people representing a wide range of business, community-based organization, neighborhood, government, academic, and philanthropic institutions were invited to attend an HIA training workshop focused on the D-HIA. Thirty-eight people attended and others asked to be informed or involved in some way. A resource webpage and online communications system was developed to share information and enhance engagement in the HIA.

A training/planning workshop held the day following the training was attended by the SC, additional key stakeholders, and project staff as part of the scoping process (20 participants).

The scoping of the HIA was conducted by the SC with the assistance of staff and student Research Assistants, with guidance by HIA consultant, Ben Cave. The steps were:

- Reviewed alternative proposals being considered for the DWP strategic framework and identified aims and objectives for the HIA.
- Participated in community conversations and other public forums held by DWP/DFC to identify alternative proposals and whether health was considered
- Developed a pathways model of impacts of proposed redistribution of infrastructure and city services
- Conducted preliminary literature reviews based on the pathways
- Identified priority questions that the HIA will address, health outcomes, and vulnerable groups through a process of developing scenarios (April 2012 workshop)
- Identified key stakeholders to involve and developed a plan for engaging others in the HIA
- Secured funding for the D-HIA (CARSS July 2012, Health Impact Project January 2013)
- Brought health into discussions of DWP/DFC by SC members who are Process Leaders
- Met with community members, DFC leaders, and other key stakeholders to specify DFC proposals, identify decision-makers, and further identify major implications of the proposals

- Held an invited, day-long HIA workshop with key stakeholders to increase knowledge of HIA and engagement in D-HIA, carried out by Ben Cave (May 2013)
- Participated in a facilitated, day-long scoping workshop to look at in-depth at issues facing the HIA team at this stage (May 2013)

Several important proposals or domains were scoped out because: the issue was already receiving considerable attention and hence, the HIA was unlikely to add value (e.g., transportation, economic development, urban farming); the timeframe for decision-making was inappropriate or uncertain; or an HIA would be unlikely to impact decision making.

Assessment

Assessment provides a review of the evidence, a profile of existing health and neighborhood conditions, and an evaluation of potential health and equity impacts. The assessment stage included: identifying health effects to be assessed; preparing a profile of existing conditions including health status of the population and particular groups; and careful consideration of the evidence regarding the likely effects on health.

Assessment Phase Engagement

During the assessment phase the D-HIA Steering Committee drew upon relationships with a wide range of stakeholders to:

- identify and prioritize research questions, and further refine the scope
- identify and gain access to existing sources of evidence on current conditions and potential health effects
- develop and modify the pathways diagrams
- meet with key stakeholders and decision-makers to address specific research questions
- analyze and interpret findings

Findings were shared with different constituencies (i.e., policy makers, community residents, business, government, academia) through meetings and presentations, and recommendations were developed throughout the project and informed community conversations and decision-makers. A particular challenge of this HIA has been the fluid and dynamic nature of policy-making in Detroit. Thus the proposals, decision making bodies, authority, and individuals responsible for policy have all been subject to change during this period.

As noted, two members of the D-HIA Steering Committee were Process Leaders for the DFC. The Process Leaders are a select group of community leaders who guided, directed and implemented the civic engagement process during the Detroit Works Long Term Planning process and in 2014 were appointed to the DFC Implementation Steering Committee. As such, these two D-HIA SC members continuously integrated HIA questions and findings with community concerns and DFC decision making. In addition, SC members are involved in multiple venues in which they sought to integrate health considerations raised by the HIA process in an ongoing way.

Evidence and Methods

The HIA used both quantitative and qualitative evidence to provide a basis to inform decision making, drawing primarily on existing data. Data gathering dove-tailed with existing DFC community engagement forums and meetings of local planning efforts (e.g., Lower East Side Action Plan-LEAP). To describe the baseline health and contextual factors and to predict potential health effects of the

DWP proposal, we reviewed the literature, drew upon existing evidence, collected additional qualitative data through consultation and participation with stakeholders, and qualitatively examined potential health effects of the DFC proposal under a set of "what if" scenarios. For example, we overlaid maps of vacancy zones and health outcomes to suggest the potential health effects of HV residents moving to "better" or "worse" neighborhood conditions.

Potential health impacts were characterized according to their importance (direction and extent) and likelihood. Findings from the assessment will be shared with, and comment and critique invited from the Detroit URC Board, SC partner organizations, extended networks, members of the public, and policy-makers.

The evidence base was developed using the following sources:

- Existing data: A substantial amount of data at multiple levels, including parcel level, is available through DFC and Data Driven Detroit. Summary health data are available on request from the state health department. However, except for mortality, most health outcome data is limited to ZIP code. We reviewed summaries of participant comments recorded during DWP/DFC and other community forums.
- Peer-reviewed literature: We conducted an extensive review of academic and peer-reviewed literature on health change associated with, for example, economic decline, neighborhood disinvestment, and relocation to identify the range of potential health effects that can be expected. We looked at literature on cities whose populations are declining.
- Grey literature: DWP policy audits, reports, presentations, and news media from Detroit and the metro region, as well from other urban areas that have experienced substantial population loss were reviewed. Relevant HIAs were reviewed.
- Consultation: Group and individual meetings with community leaders, meetings with residents, and attending community forums enabled us to further characterize potential health effects, ensuring that the assessment was informed by people's lived experience and their understanding of potential changes.

To ensure that different types of data (e.g., health, demographic) are temporally congruent for calculating rates and statistics, the HIA used population data from both the American Community Survey (2007-2011) and 2010 Census. Hence the total population numbers in the report are greater than those from the 2010 Census alone.

Drawing upon the expertise of Data Driven Detroit and other affiliated partners, and to the extent possible, the HIA linked Detroit health determinants and health outcomes data at small area levels to provide a benchmark that can be used by various entities for future assessment and monitoring.

Literature Review

We included in the literature review: relevant HIAs for both their literature reviews and their findings; review articles and bibliographies by content area; and gray and peer reviewed literature as needed to update and fill in or identify gaps. We created a bibliographic database of 325 HIAs and gray literature relevant to D-HIA with annotations for internal use to assist our team in the assessment. We further created a publicly available reference library in Zotero that contains about 500 references from our literature review: https://www.zotero.org/search/q/D-HIA/type/group.

The literature review was organized in four parts by the impacts on community-level determinants of health: 1) neighborhood stability, density, and integrity; 2) neighborhood safety; 3) environmental conditions and exposures (physical); and 4) health care services and access. An additional impact area, displacement/relocation/gentrification, was integrated throughout with an emphasis on equity. We drafted a bulleted 5 page summary of key findings relevant to the Detroit HIA. Based on review and feedback from the Steering Committee, the questions and pathway diagram were modified.

In addition to the literature review, the HIA was informed by substantial media coverage, reports, commentary, social media, newsletters, and public forums. Since the HIA was initiated there has been considerable attention to Detroit in both national and international news. The HIA Steering Committee members and our networks widely shared such information.

Methods and Data

The table in Appendix E: details data sources and methods, briefly described below.

Geographic Boundary Data
The geographic boundaries of the HIA are defined by the DFC framework zone labeled "high vacancy (HV)." Framework zones (e.g., high, moderate, low vacancy residential) were created by DFC as a typology of physical and market characteristics that are seen as indicators of existing and anticipated vacancy. The zones are intended to shape and guide land use planning and policy over the next 50 years. Each framework zone is not a contiguous area and there is substantial variability among neighborhoods within zones. This presents challenges for characterizing, analyzing, and comparing zones. Because zones are not previously established areas (e.g., neighborhood, administrative area), there were no health profiles to draw from for the HIA. To carry out the HIA, DFC leadership provided block level shapefiles of the vacancy zones in 2013, and Data Driven Detroit converted the shapefiles to census blocks and created a demographic profile of the zones. These data are now publicly available from the Data Driven Detroit Open Data portal (http://portal.datadrivendetroit.org/datasets/55368c3aa17840c9be64d1f999b8375f_0).

Socio-Demographic Data
Demographic and socioeconomic data are from Census 2010 and American Community Survey 2007-2011. Data Driven Detroit created profiles that were used in subsequent analyses. In order to ensure temporal correspondence between census data and health outcomes, which are averaged over multiple years, the data profiles include 2007-2011 ACS.

Neighborhood Characteristics (intermediate determinants of health)
Data on vacancy and condition of buildings are from two sets of parcel data that are now publicly available online – Detroit Parcel Data (Data Driven Detroit, 2009) and Motor City Mapping (2014). Crime and homicide data are from the Detroit Police Department.

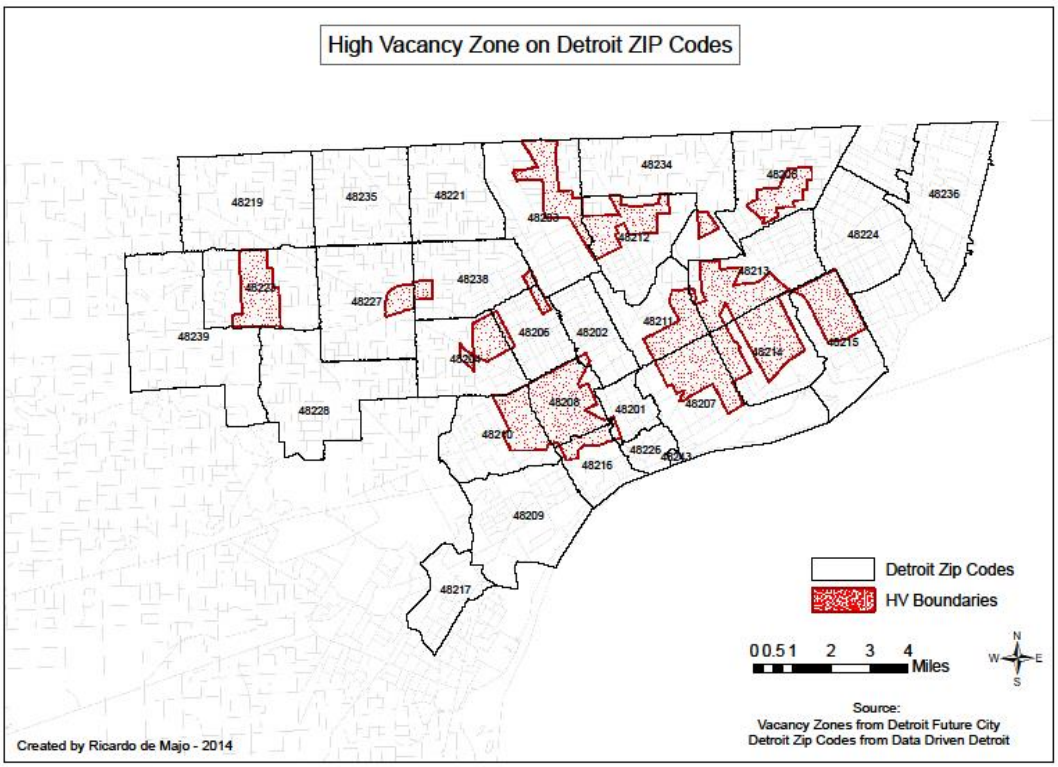
Health Data
Birth and death data are from the Michigan Department of Community Health (MDCH) Vital Statistics division. With the exception of lead poisoning and cancer data, Detroit morbidity datasets are not publicly available for geographic areas smaller than ZIP code, which do not correspond with

vacancy zone geography (see Figure 1). Further, morbidity data must be purchased from the Michigan Health and Hospital Association (MHHA) at great cost which was not budgeted. We attempted to secure data from those entities that have purchased it (Michigan and Detroit health departments), but MHHA data agreements prohibit open sharing (see Recommendation 13). For several health outcomes critical to the HIA (asthma, mental health), we used publicly available summary tables by ZIP code. We secured lead poisoning data from MDCH Data Warehouse, Healthy Homes and Lead Poisoning Prevention Program, and cancer incidence statistics from MDCH Cancer Surveillance Program.

Methods

Methods of analysis for each type of data are described in the table in Appendix E:. The lack of access to health data at the scale of the Framework Zones was a major challenge. Figure 1 is a map of Detroit that overlays the High Vacancy zones on ZIP codes, with the underlying census block groups faintly outlined. It illustrates the lack of correspondence between the two scales and the difficulty doing assessment on disease outcomes. Only ZIP code 48208 is predominantly high vacancy.

Figure 1: Detroit ZIP Codes and High Vacancy Zone



Recommendations

The recommendations stage identified strategies to address health impacts, including maximize health benefits and manage adverse health impacts. D-HIA formulated recommendations for the decision makers based on best available evidence, including strategies successfully used elsewhere.

The SC developed recommendations in an iterative process based on the assessment, community meetings, and input from partner organizations. Community meetings in conjunction with DFC and other planning initiatives were a source of recommendations throughout. Draft recommendations will be circulated to Detroit URC Board and other affiliated organizations and initiatives for feedback. UM and Detroit-based partners will meet with DFC leadership and city decision-makers to discuss findings and recommendations.

As part of their ongoing roles in Detroit, members of the D-HIA SC will continue to communicate findings with decision makers to reinforce the value of evidence based recommendations and to support the implementation of recommendations in the HIA.

Feedback, reporting, dissemination, and advocating adoption

Because D-HIA used a CBPR approach, feedback and reporting were integrated throughout the project in an iterative process. As authority for decisions changed substantially during the period of the HIA, D-HIA had to shift the audience and decision targets substantially. SC members were engaged in both DFC and in multiple other venues in which they are both reporting and getting feedback about the HIA. Thus communicating findings and advocating recommendations has been integrated in ongoing relationships with past and current decision makers.

D-HIA and Detroit URC partners have longstanding relationships with community organizations, policymakers, city and state officials, funders, and businesses, and will disseminate the HIA report widely through these networks in accessible formats, including fact sheets/briefs aimed at different audiences, and posting of the report on the Detroit URC website. The Community Policy Specialists will facilitate widespread dissemination and meet with key stakeholders and decision-makers and advocate adoption. All partners will identify strategies to advance implementation of recommendations. Throughout, we will enhance community and academic partners' capacity to use HIA and strengthen cross-sector collaboration.

Monitoring and evaluation

This stage tracks impacts on the decision making process to assess whether recommendations were adopted, and provides various ongoing entities with means to facilitate monitoring long-term health and equity outcomes of the DFC implementation. The recommendations include a number of strategies to be used by existing entities (e.g., DFC, City government, the local health department, community-based organizations and planning initiatives such as LEAP) to monitor and evaluate the potential impacts of DFC implementation and the extent to which the HIA recommendations are adopted. D-HIA SC and Detroit URC Board members are involved in these entities and will continue to integrate the HIA in their work. Further, D-HIA will identify organizations and initiatives with the means and/or responsibility to monitor recommendations and longer-term health and equity outcomes moving forward. In addition, we are developing a citywide project to establish an urban equity planning tool for which we are seeking funding that would include indicators identified in the HIA.

Appendix C: D-HIA Stakeholder Engagement List

D-HIA met formally and informally with many stakeholders from public, private, and non-profit sectors over the period of 2012 – 2014. We wish to thank them for their insights that helped to inform both the process and content of the HIA. The following list indicates the organization with which the individuals were affiliated at the time, and may not represent their current position. Further, their listing here does not imply that they endorse or agree with the findings presented in this report.

Stakeholder Engagement 2012 – 2014

Table 4 Stakeholder Contacts 2012 - 2014

First Last Name	Organization	Sector*
Malik Goodwin	Detroit Economic Growth Corporation	Business
Kathleen Wendler	Southwest Detroit Business Association	Business
	Detroit Blight Authority	Business
Melissa Dittmer	Rock Ventures LLC	Business
Craig Donnelly	Detroit Revitalization Fellows Program	Business
Rhonda Anderson	Sierra Club	CBO
Khalil Ligon	Detroit Neighborhood Partnership East-Warren/Conner Development Coalition	CBO
Simone Sagovac	Southwest Detroit Environmental Vision	CBO
Sarida Scott	Community Development Advocates of Detroit	CBO
Alisha Opperman	Detroit Neighborhood Partnership East-Warren/Conner Development Coalition	CBO
Sandra Yu	Detroiters Working for Environmental Justice	CBO
Sherita Smith	Eastside Community Network	CBO
Norman Bent	Consortium of Latino Agencies	CBO
Kimberly Hill	Detroiters Working for Environmental Justice, DCAC	CBO
Kirk Mayes	Brightmoor Alliance	CBO
Chris Moran	Michigan Community Resources	CBO
Shamyle Nesfield	Michigan Community Resources	CBO
Dennis Nordmoe	Urban Neighborhood Initiative	CBO
Todd Scott	Michigan Trails & Greenways Alliance	CBO
Kathy Stott	Southwest Detroit Environmental Vision	CBO
Tiffany Tononi	Urban Neighborhood Initiative	CBO
Sandra Turner-Handy	Michigan Environmental Council	CBO
Malik Yakini	Black Community Food Security Network	CBO
Guy Williams	Detroiters Working for Environmental Justice, DFC	CBO, DFC
Angela Reyes	Detroit Hispanic Development Corporation, DFC	CBO, DFC
Donele Wilkins	Green Door Initiative	CBO, DWP
Kathryn Lynch-Underwood	City of Detroit Planning Commission	City
James Ribbron	Detroit Zoning Board	City
Ray Scott	Detroit Environmental Affiars Department	City

Eric Smith	BSE	City
Marja Winters	Detroit Works Project, Planning & Development Dept.	City Planning
Rob Anderson	Planning & Development Dept.	City Planning
Karla Henderson	Detroit Works Project, Planning & Development Dept.	City planning
Gregory Moots	Detroit Planning Commission	City Planning
Madhavi Reddy	CDAD, Doing Development Differently in Detroit	Community Development
Aaron Goodman	Community Development Advocates of Detroit (CDAD)	Community Development
Dave Law	Joy-Southfield Community Development Center	Community Development, Healthcare
Kurt Metzger	Data Driven Detroit	Data
Erica Raleigh	Data Driven Detroit	Data
Katie Disalvo	Skillman Foundation	Philanthropy
Katie Hirono	Pew Charitable Trusts	Philanthropy
Wendy Jackson	Kresge Foundation	FPhilanthropy
Harvey Hollins	Urban Agenda, Governor's office	Government
Regina Royan	Detroit Land Bank Authority, Dept. Health & Wellness Promotion	Government, HD
Sheryl Weir	Michigan Department of Community Health	HD
Leseliey Welch	Institute for Population Health	HD
Renee Canady	Ingham County Health Department	HD
Chris Allen	Detroit Wayne County Health Authority	HD
Chinwe Obianwu	Institute for Population Health	HD
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Jessie Kimbrough-Sugick	UM Health System	Healthcare
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Ben Cave	Ben Cave Associates Ltd	HIA
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Dan Kinkead	Detroit Future City	Planning
Ken Cockrell	Detroit Future City	Planning
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Rashida Tlaib	Michigan House of Representatives	Government
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Barbara Israel	UM School of Public Health	Public Health
Amy Schulz	UM School of Public Health	Public Health
Myra Tetteh	Food & Fitness Collaborative, UM SPH	Public Health
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Patricia Koman	UM School of Public Health	Public Health
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* CBO = Community-Based Organization; DFC = Detroit Future City; DWP = Detroit Works Project; HD = Health Department		

Appendix D: Specific Questions: Neighborhood Stability, Neighborhood Safety, Environmental Conditions 5/7/13

The following document is a list of questions generated by Steering Committee members and the technical team during the scoping stage. The questions were developed from the initial literature review and pathway diagram, and were used to identify potential sources of data and to inform further review of the evidence for the HIA. Availability of data was considered in order to further narrowing of the scope of the HIA and the list of questions to consider.

Neighborhood Stability

Social Ties and Networks

Social Support, Network Resources, Friendship/Kin Ties, Informal vs. Formal

- What are the current sources of formal and informal social support that residents draw upon (extended family, neighbors, community based organizations, faith groups, etc.)?
- How do residents utilize social ties (e.g. job referrals, childcare, etc.)?
- Are these local or geographically dispersed across the city?
- How will relocation affect both the number and quality of social ties and resources?
- What are anticipated barriers (psychosocial and physical) in reknitting preexisting social ties?
- What are the effects of strains on social ties for housing and finances?

Social Isolation

- To what degree are neighborhoods currently socially isolated?
- How does amount of vacancy affect contact with neighbors and neighborhood level businesses, resources, and institutions?
- Are residents currently knowledgeable about or utilize locally available resources?
- Will moves from low to high occupancy areas reduce the amount of social isolation?
- What is needed to connect residents to resources who move to new neighborhoods?

Social cohesion, community capacity, social and civic participation, efficacy

- What organizations are residents currently members of and how will relocation potentially change ability to be involved in community decisions?
- What is the current extent of political involvement within the community?
- How can institutions and organizations in receiving communities integrate new residents?
- What are the mechanisms to garner community involvement in the decision-making process and where are there opportunities for dialogue?
- Do residents feel they have a say in what happens to their neighborhood?
- Do neighbors trust each other and work together to solve community problems?

Community identity

- What are the key historical contexts and collective memories of communities, especially those concerning equity (e.g. urban renewal, redlining)?
- How do residents define their neighborhood both geographically and socially?
- How do residents perceive relocation?
- What are the current normative behaviors found in the community and how do they currently affect health?
- Are there any areas of Detroit that residents would be particularly apprehensive to relocate to?

- What are potential cultural barriers for integration in new communities?
- How do residents define equity and what do their ideal scenarios for the DFC look like?

Quality and Livability

Environmental and Housing Exposures

- What are current housing conditions in the neighborhood and potential hazards?
- What is the extent of overcrowding?
- Do residents currently have adequate heating and cooling?
- Are there rodent/roaches/other vector problems?
- Does the neighborhood have a canine or feline problem?
- What kinds of toxic exposures are present within the home?
- If residents move, how to insure that housing conditions are the same or better than current?
- What will the impact of potential moves have on housing costs?
- How will the effects of increasing housing costs change the share allocated for other basic needs?
- What is the extent of demolishment in the neighborhood and how does the process affect residents (i.e. exposure to dust, debris, glass, noise, etc.)?
- How satisfied are residents with their current dwellings (interior design, amount of sunlight, etc.)?
- What are current unmet housing needs?

Blight/Physical Disorder

- How do residents currently perceive the neighborhood?
- What is the extent of physical disorder (trash, graffiti, drug paraphernalia)?
- How many vacant/abandoned houses are in the neighborhood?
- Are substandard or uninhabitable houses being rented out?
- What is the extent of squatting in the neighborhood?
- Are there currently any barriers in place to restrict access to abandoned houses, particularly vulnerable individuals such as children?

Access to services/amenities

- What are the current service needs of high vacancy neighborhoods?
- How do residents currently deal with service reductions (trash, water, lighting, etc.)?
- What are the local businesses that residents of the neighborhood utilize?
- How far are residents located from existing commercial areas?
- What does the food environment look like/how do residents access healthy food/what are typical sources of food?
- What is the extent of food insecurity within the neighborhood?
- Where do residents currently access medical care?
- What transportation services do residents have access to?
- What is the current degree of walkability?
- What will the effects of relocation be on residential institutions such as half-way homes, shelters, etc.?
- What will be the impacts on homelessness?
- What are potential changes to the way health and social services are utilized/procured?
- Do receiving neighborhoods have adequate resources to service incoming residents and their various (specialized) needs?

Public Resources and Infrastructure

- What is the current amount of green space and access to parks within the neighborhood?
- Where do residents go for physical activity?
- How do residents access computers/internet (digital divide)?
- How far are libraries and other cultural institutions and what are their current use levels?

Property Value and Investment

- What are current market rates/values of homes in both existing and proposed relocation neighborhoods?
- What are baseline housing characteristics such as type of structure (apartment/house), owner or renter occupied, etc.?
- What are current levels of housing (in)security, rates of mobility/moving?
- Would residents rather relocate to suburbs?
- What are the effects of relocation on the intergenerational transmission of assets? What do residents think is adequate monetary compensation for relocation?
- How might relocation affect taxes, insurance, and other associated housing costs?
- How do residents currently access financial resources such as banks/mortgage companies/loans?

Neighborhood Income Composition/Concentrated Poverty

- What are the baseline financial characteristics of neighborhoods regarding employment, number of families below poverty line, and types of public benefits utilized?
- How will relocation affect access to public benefits, both in proximity to offices and whether new communities accept EBT/Section 8 vouchers?
- How to integrate unhoused individuals in the relocation process?
- What will happen to residents of public housing?
- What are current rates of foreclosures, number of sub-prime loans, refinancing, and predatory lending practices?
- What will typical moving costs be and who will be responsible?
- What additional financial burdens will relocation cause?
- How will moving strain/stress social ties and resources?
- How will relocation affect commutes to jobs amongst those employed?

Racial/Ethnic Composition

- What are the differences in current neighborhood racial composition/racial segregation and receiving communities?
- What cultural differences might arise between current and receiving residents?
- Will relocation increase exposure to racism?

School Proximity

- How will relocation affect access to schools?
- Will it trigger school closures? What is the tipping point?
- What are the effects of school closures on class size?

Neighborhood Safety

Blight and Vacancy Levels

- How will decreasing investment in low density neighborhoods affect blight? How might increased blight affect other neighborhood issues?
- What is the current housing vacancy rate? Are these clustered in certain geographical areas?
- How will the redistribution of city services affect vacancy levels? How will these levels differ in different neighborhoods?
- Will any one of the changes in city services (lighting, water, etc.) have a greater impact on vacancy levels than other changes?
- Is the level of vacancy in one's neighborhood associated with a desire to move?
- If individuals decide to move, what are the projected impacts for the people staying in those neighborhoods now with increasing levels of vacancy?

- What are the potential health impacts for residents remaining in high vacancy areas? How do these impacts differ based on neighborhood/geographic location?

Gang and drug activity

- What do the gang/drug issues look like currently? Where, if at all, are they concentrated?
- How will the redistribution of city services affect gang activity? How will it differ in different neighborhoods?
- If individuals decide to move, how would that affect people who stay in their neighborhoods in terms of gang/drug activity?
- How will relocation affect both the frequency and severity of gang/drug activity? Will relocation have any other effects on gang/drug activity?
- What are the potential health impacts for residents remaining in neighborhoods with high levels of gang/drug activity? Are there aspects of the framework that may exacerbate current gang/drug activity?
- Will the redistribution of police protection services affect frequency of gang/drug activity?

Property crime

- What are the current property crime rates? Where are they concentrated?
- How will the redistribution of city services affect property crime rates? How will it differ in different neighborhoods?
- What are potential health impacts for residents remaining in areas with high/increasing rates of property crime? Are certain residents more vulnerable to negative health impacts resulting from property crime? (e.g. senior citizens?)
- Will the redistribution of police protection services affect property crime rates in certain areas and how will it affect those individuals living in those areas?

Violent crime

- How many violent crimes occur per 1000 people?
- What is the concentration of homicides?
- Will any of the changes in city services affect violent crimes the most? Or is the combined impact of these changes stronger than any one individually?
- How will violent crimes change if residents from low density areas to high density areas?
- How will violent crimes change if residents remain in low density areas?

Walkable streets, safe routes to school, and safe parks

- What is the physical condition of streets and sidewalks? Of parks?
- What are residents' perceptions of streets and parks in their neighborhood? How safe do they feel using these spaces during the day? At night?
- How will the redistribution of city services affect the physical condition of streets, sidewalks, and parks? How will it affect residents' perceptions of these places?
- How often do residents use public spaces (streets, sidewalks, parks) for physical activity (i.e. walking, jogging, biking) and how will the redistribution of city services affect physical activity levels for those that stay in their neighborhood?
- What percentage of students walk to school? What percentage of students are driven to school?
- How would a redistribution of city services affect the number of students who walk to school? What impact will this have on levels of physical activity?
- How safe do students currently feel walking to school? How would this potentially change in the future?
- What do routes to school look like now in terms of blight, vacant houses, and lighting? How might this change after a redistribution of city services and how would it affect the students' safety?

Police and fire protection

- What is the average current police and fire fighter response time? How does this differ geographically?

- What is the current police and fire fighter coverage area?
- If residents in high vacancy areas decide to stay, what is the estimated police and fire fighter response time?

Environmental Conditions

Housing quality

Access to heat, cooling electricity

- What are potential contaminants found within homes located in both HV and LV neighborhood such as lead-based paint, asbestos, etc.?
- How do current ways to mitigate inadequate levels of heat and cooling contribute to exposure to pollutants (such as using ovens as heat, burning firewood inside the home, etc.)?
- What are potential hazards that may cause injury within the home?
- How might financial resources affect the ability to make repairs and how might not fixing problems in the home increase exposure to pollution or injury?
- What exposures within homes that could be potentially moved into need to be addressed within LV areas?
- How accessible are cooling centers for more vulnerable residents (i.e. senior citizens) and how might this change in the future?
- Will people continue to live in houses that are not connected to sewer, water, or electricity? What would be the attendant health risks?

Environmental quality

Air quality

- What are potential sources of pollution in both current and receiving neighborhoods that compromise air quality?
- Where are areas of high traffic density/busy roadways/freeways?
- Where are residents in close proximity to industrial sites/incinerators?
- Where are the highest air toxin levels distributed?
- Given the current state of air quality, what areas/neighborhoods of the city have the lowest levels of pollution?
- Since exposure to air pollution is associated with increased hospitalization, how will access to hospitals or obtaining other medical care and medication change?
- What are the economic impacts of exposure to compromised air (i.e. hospitalizations)?

Land and water safety

- What are current lead levels in the water?
- Are there lead pipes that need to be replaced and will this happen within the framework? If certain pipes are not replaced, how might this affect residents who do not relocate?
- Given increased attention to the urban agriculture movement, how might fruits and vegetables grown in contaminated soil affect health?

Active/former industrial sites

- Are there any manufacturing plants within LV areas that residents might be at risk of moving near?
- What are potential sources of exposure to hazardous wastes such as lead?
- How might increased demolition increase exposure to lead?

Truck/commercial traffic

- How will transportation increase with more residents moving from HV areas to LV areas and what will the effect be on increased air pollution?
- What will be the effect of relocation on current public transportation routes?
- What will be the effect of the new light rail system on exposure to pollutants?

School location

- What is the relationship between exposure to pollutants and school location?
- Will relocation disproportionately place youth in schools with known contaminants?
- Since students already live far away from schools, how will relocation increase commute times or make traveling to school more difficult?
- How will the plan to invest in industrial zones in certain geographic areas affect the air quality near schools?
- How many schools are currently located near industrial sites?
- How many schools are currently located near major roads?
- How will the plan to invest in industrial zones in certain geographic areas affect the air quality near schools?

Food access & quality

- What are current unmet food needs?
- Where can residents obtain healthy food, how far are these locations from their home, and what are potential barriers to access?
- Where are fast-food restaurants located?
- How can access to healthy foods be increased?
- What is the quality of fruits and vegetables and where can they be found?
- How expensive is it to buy healthy food and how does this compare to other regions in metro-Detroit?
- How to help already financially compromised families obtain healthy food? Where is the degree of alcohol availability in current and receiving neighborhoods?
- How will access to EBT vendors change?
- What is the current state of the quality of the food environment, including potential exposure to dangerous/expired products, unsanitary environment/violations of health code?
- What is the concentration of community gardens? Farmer's markets?
- Is there a high concentration of food grown in contaminated soil?
- What is the quality of the soil?
- How will the redistribution of city services affect soil quality?

New non-residential development

- What are current and proposed roadways/freight networks/trucking routes and how might moving affect proximity to these known air pollutants?

How will the framework balance non-residential development with residential development in the same geographical area? (i.e. industrial and residential within SW Detroit)

Appendix E: Data, Geography, Data Sources, Methods

Socio-demographic Data			
Data – Indicators	Geography	Data Source / Years	Methods
Population	Zones	Census 2010; 2007-2011 ACS	To correspond with pre-2010 health outcomes, both Census 2010 and ACS data were used
Sex (M, F)		Census 2010; 2007-2011 ACS	
Race and ethnicity (W,B,Other; Hisp)		Census 2010; 2007-2011 ACS	
Age (<5, <19, >65)		Census 2010; 2007-2011 ACS	
Median age		Census 2010; 2007-2011 ACS	
Households (female headed, HH living alone)		Census 2010; 2007-2011 ACS	
Average household size		Census 2010; 2007-2011 ACS	
Median household income		Census 2010; 2007-2011 ACS	
Household income (categ-<$25,000)		Census 2010; 2007-2011 ACS	
Education (% less than HS)		Census 2010; 2007-2011 ACS	
Percent below poverty level		Census 2010; 2007-2011 ACS	
Neighborhood Characteristics			
Neighborhood stability indicators			
Percent of city's total land area	Zones, BG	Census 2010, 2007-2011 ACS; DFC (pre 2012)	
% housing vacancy (ave.)	Zones, BG	Motor City Mapping, Data Driven Detroit, Enhanced Data, http://portal.datadrivendetroit.org/ http://d3.d3.opendata.arcgis.com/datasets/80f30d7f6683441cacef62574a22d8a9_0 https://www.motorcitymapping.org/#t=overview&s=detroit&f=all	
% residential parcels vacant (ave.)	Zones, BG	Motor City Mapping	
% residential parcels publicly owned and vacant	Zones, BG	Motor City Mapping	
Population density/residents per sq. mi.	Zones, BG	Motor City Mapping	
Occupied housing units	Zones, BG	Motor City Mapping	
Vacant housing units	Zones, BG	Motor City Mapping	
Blighted housing (suggest demolition)	Zones, BG	Motor City Mapping D3 data portal	
Ave. housing condition (poor+suggest demolition)	Zones, BG	Motor City Mapping D3 data portal	

Owners (tenancy, occupied housing)	Zones, BG	Census 2010; 2007-2011 ACS	
Renters	Zones, BG	Census 2010; 2007-2011 ACS	
Blighted housing (suggest demolition)	Zones, BG	Motor City Mapping D3 data portal	
Ave. housing condition (poor+suggest demolition)	Zones, BG	Motor City Mapping D3 data portal	
% pre-1950 housing*	Zones, BG	Sources: US Census Bureau, Census 2010 (Pre-1950 Housing, Pre-1978 Housing and County Populations) and American Community Survey 2010 5-year estimates (Detroit population);	
% pre-1978 housing (lead exposure)	Zones, BG	Census 2010 Housing	
Median housing value	Zones, BG	Census 2010 Housing	
Neighborhood safety indicators			
Number of blighted properties		Motor City Mapping	
Property crime		Detroit Police Department	
Violent crime		Detroit Police Department	
Number of homicides – location of body	geocoded	2012 (all years available) http://detroitdata.org/dataset/detroit-homicides	Count by zone Counts – map by points
Homicide rate among residents	BG	Mortality 2010-11, 2009-2011 MDCH Vital Statistics-death files	
Crime data		Detroit Police Department, Claudia Walters (UM Dearborn), Erica Raleigh (D3)	
Health Outcomes			
Mortality (Deaths)	Geography	Data Source/ Years	Methods
All-cause mortality ICD-10	13-digit tract BG(2010) Lat-longit Geocoded	2009 – 2011 MDCH Vital Statistics-death files	2010-2011 (2010 BG) Rates are per 100,000 population. Age-adjusted rates are calculated using the direct method of standardization with the U.S. 2000 standard population.
Heart disease I00-I09,I11,I13,I20-I51 Stroke I60-I69		2009 – 2011 MDCH Vital Statistics-death files	
Cancer death rate C00-C97		2009 – 2011 MDCH Vital Statistics-death files	
Chronic lower respiratory disease (asthma, bronchitis, COPD) J40-47		2009 – 2011 MDCH Vital Statistics-death files	

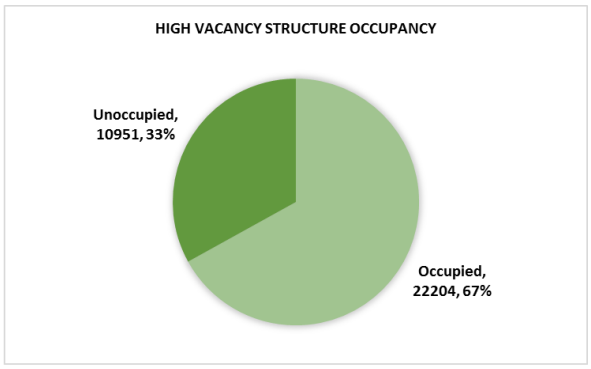
Accidents - Fatal injuries (unintentional V01-X59,Y85-Y86)		2009 – 2011 MDCH Vital Statistics-death files, http://www.mdch.state.mi.us/CHI/Fatal/trends/inj_lead/LHDs/INJ09.html	
Homicide *U01-*U02,X85-Y09,Y87.1		2009 – 2011 MDCH Vital Statistics-death files	
Youth death rate accident+homicide+suicide		2009 – 2011 MDCH Vital Statistics-death files	Age groups: 10-19, 10-24, 15-19, 15-24
Youth leading causes of death		2009 – 2011 MDCH Vital Statistics-death files	Age groups: 10-19, 10-24, 15-19, 15-24
Morbidity			
All-cause hospitalization morbidity ICD-9	ZIP code	Michigan Inpatient Database from the Michigan Health and Hospital Association (MHHA). Hospital discharge data,	
All hospitalizations	ZIP code	Michigan Health & Hospital Association	
Cancer incidence (ICD-O 10) Numbers and age adjusted incidence rates	Zones from Block groups (summary table)	2006-2009 MDCH Cancer Surveillance Program	Zones: counts and age-adjusted rates for all, 4 leading sites using pop estimates for 2006-09
Low birthweight (need to calculate from birth data)	Tract (2010) Lat-longit Geocoded	2009 – 2011 MDCH Vital Statistics Live birth files IPH birth codebook	<2,500 grams (very low is <1,500 grams)
Childhood Lead poisoning (elevated BLL) % of children less than 6 years of age tested and confirmed with BLL >= 5 ug/dL, >10ug/dL is	Block group	2007 – 2012 MDCH Data Warehouse (children tested) From MDCH Healthy Homes and Lead Poisoning Prevention Program	% EBLL is calculated as: Number of Children w/EBLL divided by (Number of Children Tested minus Children w/elevated capillary tests, not confirmed by venous)
Mental health hospitalization (inpatient/outpatient)	ZIP code	2010 – 2013 MHHA	Summary table # per year, ave., ACS pop estim., 3 yr ave rate, 2012 rate per 1000
Asthma hospitalization – all Asthma hospitalization – children Asthma hospitalization – adults	ZIP code	2008 – 2010 MHHA	Table: #, rate per 10,000 3 year running average. Note: this is

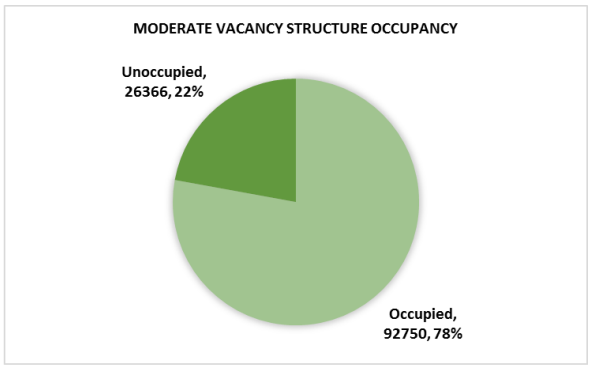
			number of hospitalizations, not # of persons with asthma
Homicides – bodies found	Address where found	http://detroitdata.org/dataset/detroit-homicides Homicides in Detroit for 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011 and 2012. Includes name, age, race, gender, date, address found and manner of death. Information provided by the Detroit Police Department.	Age distribution of homicides – all, by zone Below from mortality data: [Homicide rates by all and 3 age groups: 0-9, 10-24, 25 and over Homicide rates age 10-24 by zones]
Homelessness	ZIP code	Homeless Action Network (see Table 11), http://detroitdata.org/dataset/2011-homeless-population/resource/23286c4e-aa33-4504-8d0a-1788fbd03fd4	Percentage received services based on ZIP code of last residence 2011.
Child health / Youth well-being		Lead poisoning Death rate by accident+homicide+suicide	

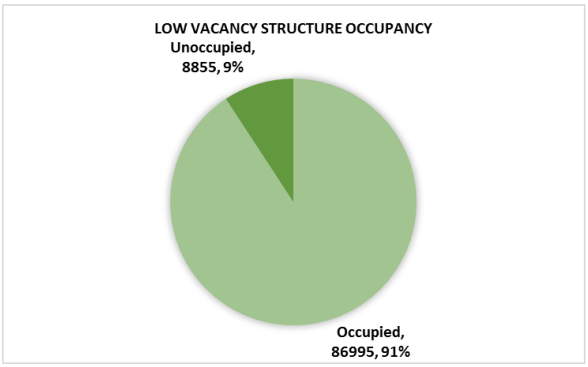
Appendix F: Additional Data on Existing Conditions

This section contains data that are referenced in the main report but not displayed there.

Figure 2: Structure Occupancy by Framework Zone, 2014

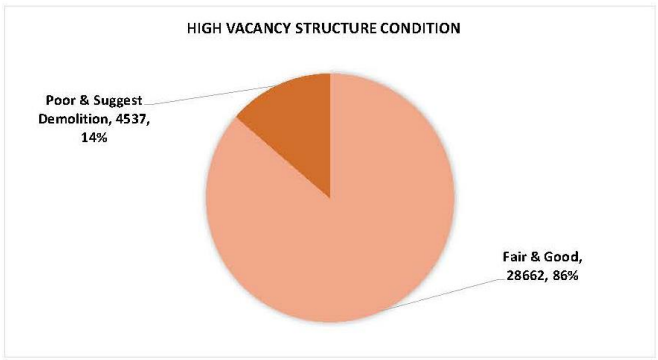


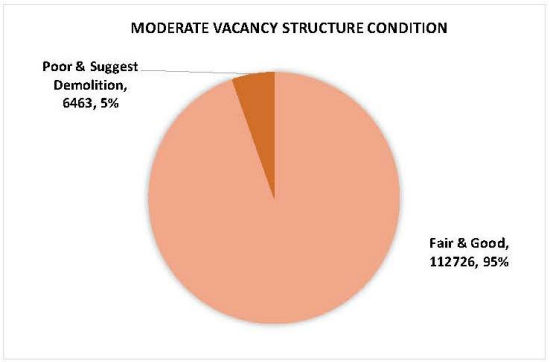


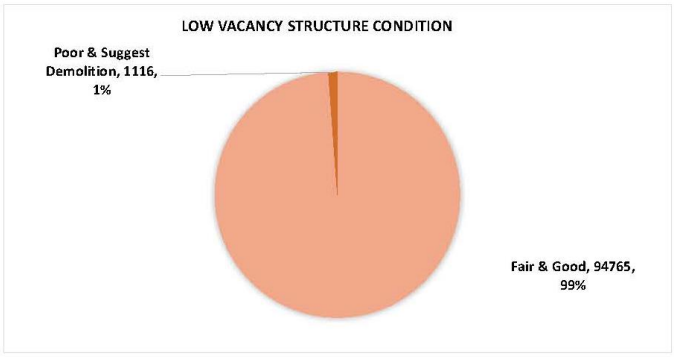


Source: Motor City Mapping, 2014

Figure 3: Structure Condition by Framework Zone, 2014





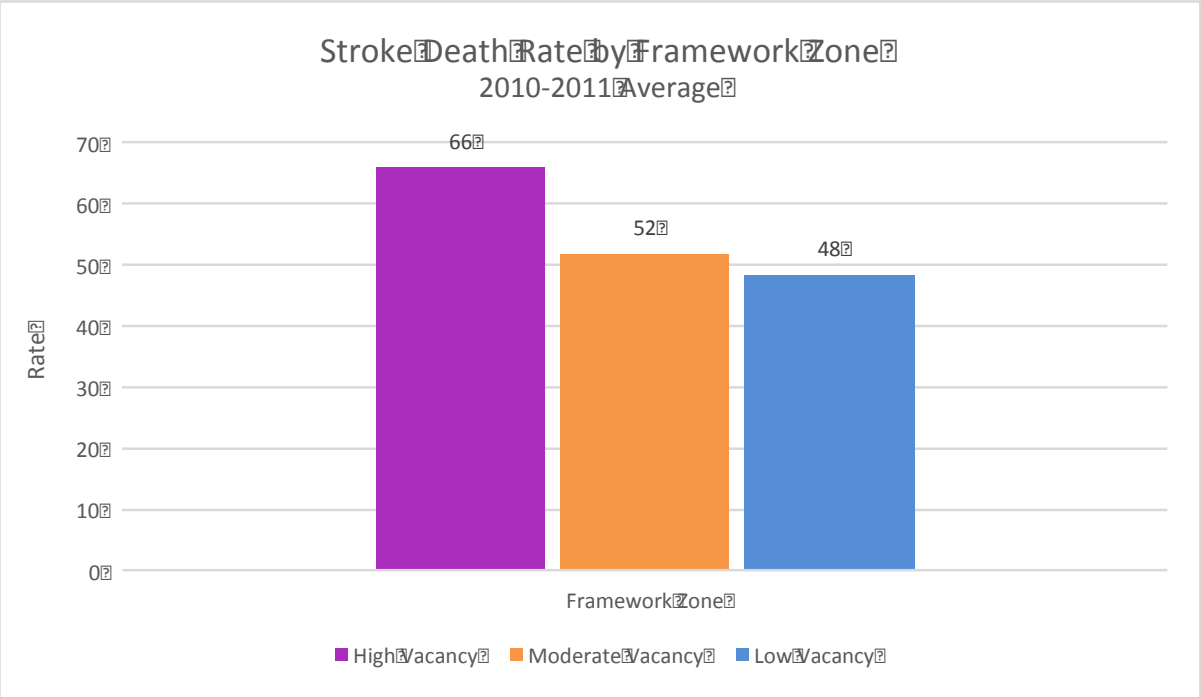


Source: Motor City Mapping, 2014

Stroke Mortality

The high vacancy zone has the highest rate of stoke death compare to the other framework zones, with 66 deaths per 100,000 people for years 2010-2011 (Figure 13). All 3 zones exceed the national stroke death rate of 38.5 for those years.

Figure 4: Stroke Death Rate by Framework Zone

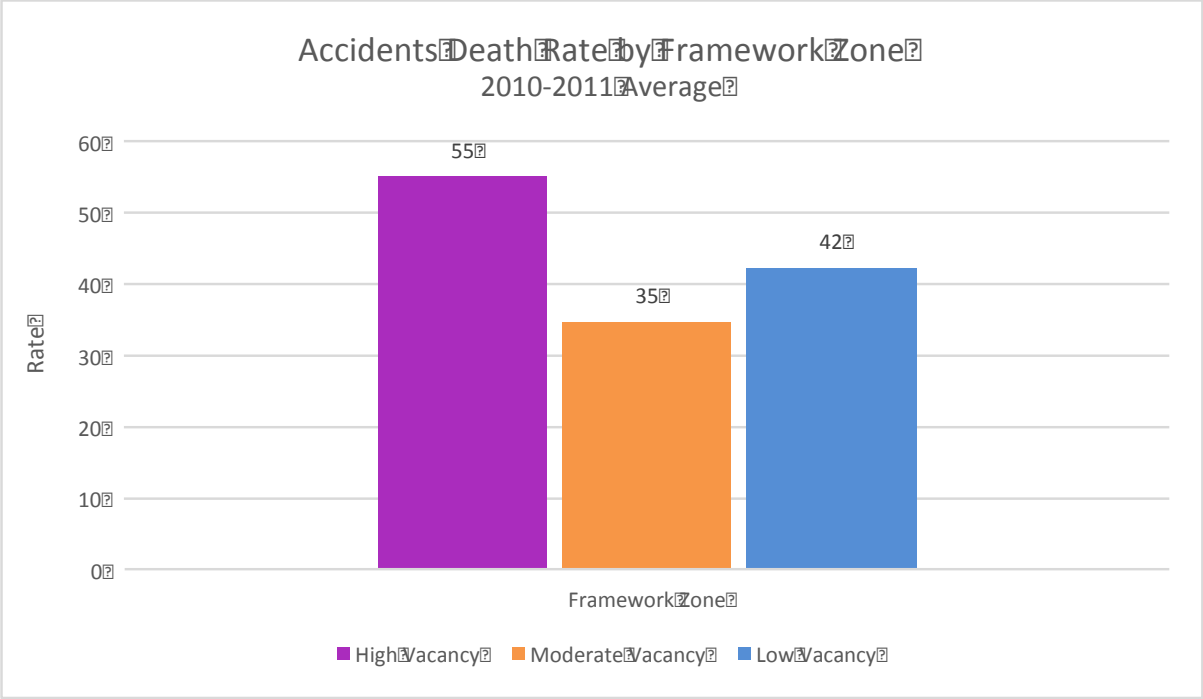


Note: Rates are per 100,000 population. Age-adjusted rates are calculated using the direct method of standardization with the U.S. 2000 standard population

Unintentional Injury

The high vacancy zone has the highest rate of death due to accidents compared to the other framework zones, with 55 deaths per 100,000 people (Figure 13 below). This is substantially higher than the national death rate of 38.

Figure 5: Accidents/Unintentional Injuries Death Rate by Framework Zone

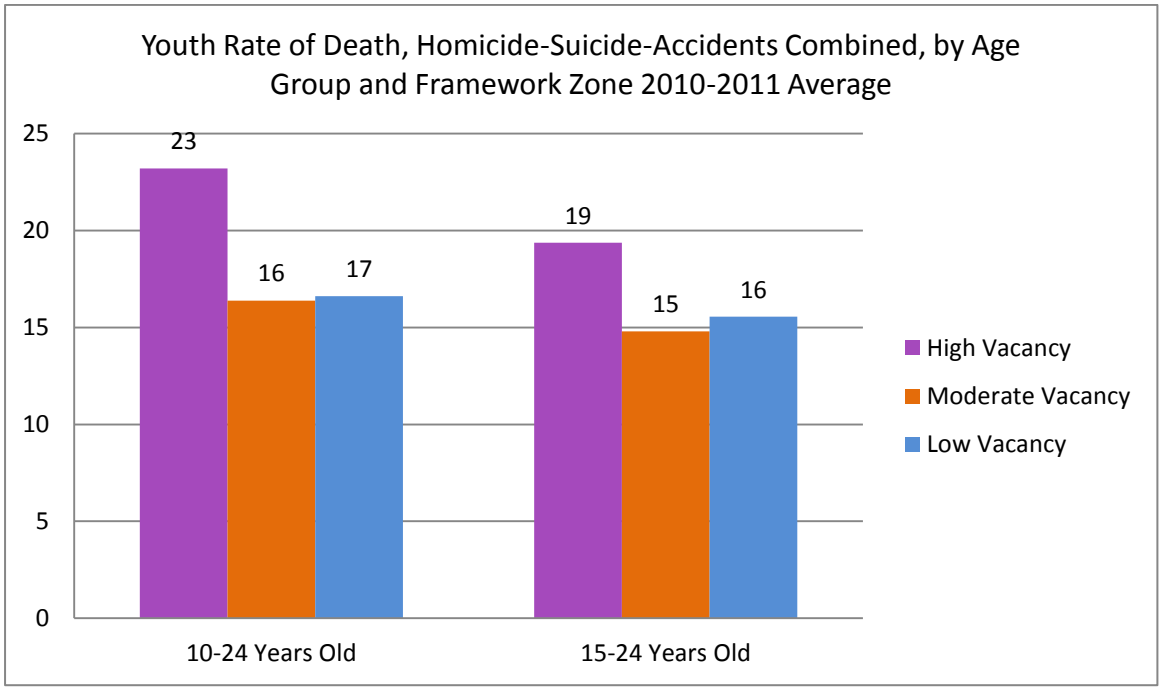


Note: Rates are per 100,000 population. Age-adjusted rates are calculated using the direct method of standardization with the U.S. 2000 standard population

Youth death rate

Figure 15 shows the youth mortality rates for homicide, suicide, and accidents combined averaged over years 2010 and 2011. The high vacancy zone has the highest rate of death among 10-24 year olds and 15-24 year olds compared the other framework zones.

Figure 6: Youth Death Rate by Framework Zone

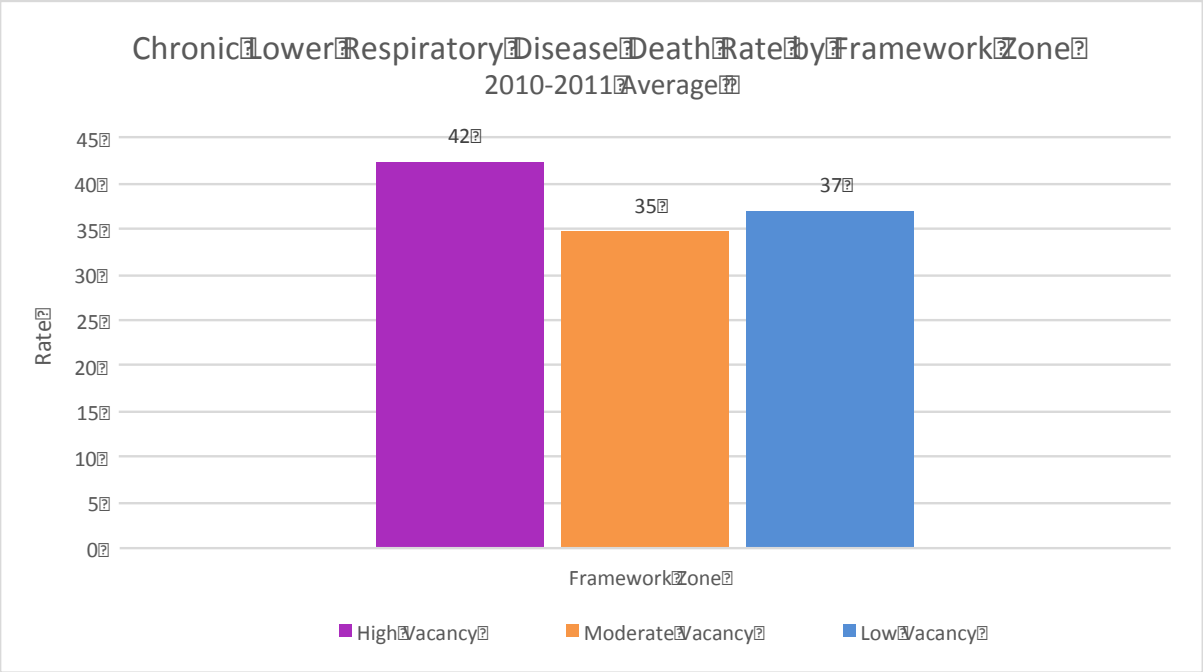


Note: Rates are per 100,000 population.

Chronic Lower Respiratory Disease

Chronic lower respiratory disease (CLRD) includes asthma, bronchitis, and chronic obstructive pulmonary disease. CLRD is the fifth leading cause of death in Detroit and the fourth leading cause of death nationally. Figure 15 shows the mortality rate for chronic lower respiratory disease among the 3 vacancy zones between 2010 and 2011. The HV zone has the highest rate of death compared to the other framework zones, with 42 deaths per 100,000 people (MDCH Vital Statistics). This is the same as national death rate.

Figure 7: Chronic Lower Respiratory Disease Death Rate by Framework Zone



Note: Rates are per 100,000 population. Age-adjusted rates are calculated using the direct method of standardization with the U.S. 2000 standard population.

Asthma

Asthma is a chronic inflammatory disorder of the airways that accounts for a quarter of all emergency room visits in the US each year and is the most common chronic condition among children. Asthma is known to be associated with air pollutants.[8] Hospitalization can disrupt daily life and incur financial burdens on families. The asthma hospitalization rate for Detroit in 2012 was 43.9 per 10,000[9] – over three times the statewide rate of 13.7 per 10,000. Because asthma morbidity data are only publicly available by ZIP code, we are unable to present or estimate by vacancy zones, which are determined by census block groups. Table 9 shows the asthma hospitalization rate among the total population (per 10,000) by Detroit ZIP codes.

[8] Li et al. 2011.
[9] Division for Vital Records and Health Statistics n.d.

Table 5: Asthma Hospitalization Rate by Detroit ZIP code

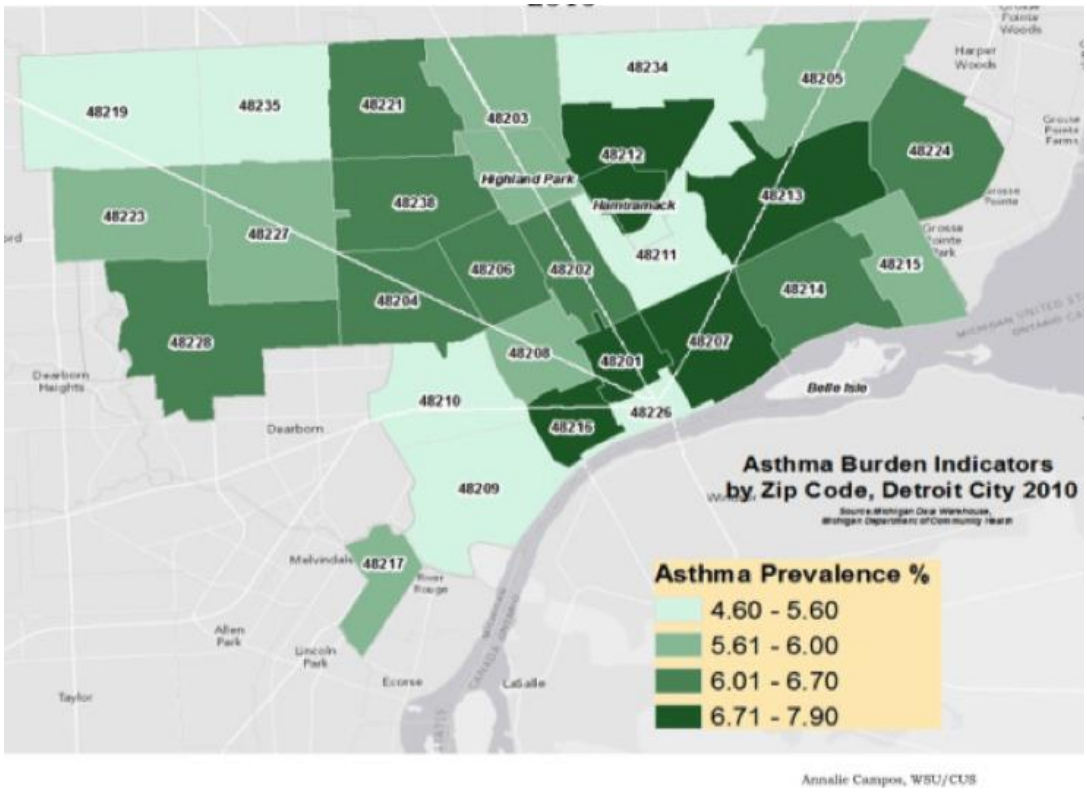
Zip code	Count	Population	Rate	LCL	UCL
48201	254	37329	72.5	62.8	82.1
48202	290	48501	71.7	63.2	80.2
48203	546	82635	64.7	59.2	70.3
48204	537	81543	66.9	61.1	72.7
48205	802	129171	65.4	60.5	70.2
48206	455	64035	71.3	64.6	78
48207	369	58626	59	52.6	65.4
48208	207	29835	74.2	63.7	84.6
48209	283	94899	30.6	26.7	34.4
48210	335	91455	43.5	38.5	48.5
48211	94	20721	46.7	37	56.5
48212	402	114474	36.7	32.9	40.5
48213	651	80880	82.8	76.3	89.4
48214	533	65988	80.6	73.4	87.7
48215	329	39399	87.2	77.5	97
48216	58	16506	36.7	26.9	46.6
48217	111	23898	47.6	38.3	56.8
48219	659	136683	49.5	45.6	53.4
48221	421	112422	37.8	34.1	41.5
48223	332	73794	45.6	40.6	50.7
48224	675	130059	56.4	51.8	60.9
48226	54	15288	53.7	29.5	77.9

Per 10,000, by Detroit Zip code, 2008-2010.
Source: Institute for Population Health. LCL = Lower confidence level. UPL = Upper confidence level.

The severity of asthma in a population can be measured by the rate of *persistent asthma*, which is a measure made up of frequency of medication prescriptions and hospital visits. Figure 8 shows a map of persistent asthma prevalence rates for children under 18 years of age enrolled in Medicaid in 2010 for each ZIP code in

Detroit. The persistent asthma prevalence rate ranged from 4.6 percent to 7.9 percent. The citywide rate was 6 percent. Five ZIP codes recorded the highest rates (6.71%-7.9%) among all 27 ZIP codes. These five ZIP codes are: 48201, 48207, 48212, 48213, and 48216.

Figure 8: Prevalence of Persistent Asthma by ZIP Code in Detroit (2010)



Source: Accessed 11-9-14) http://drawingdetroit.wordpress.com/2012/07/09/detroit-asthma-rates-compared-to-state-national-levels/

Lead

Detroit had more than half of the state's total share of childhood lead poisoning cases in 2012 (2012 Annual Data Report on Blood Lead Levels, 2013). The highest rates of lead poisoning are found among children living in the high vacancy areas. Between 2010 - 2013 an average of 28.5% of children under age 6 living in High vacancy areas who were tested had lead poisoning (BLL>5 µg/dL). Table 6 shows that among those children under age 6 who were tested between 2010 - 2013, those living in the high vacancy areas were considerably more likely to have elevated blood lead levels than those living in moderate and low vacancy zones.

Table 6: Childhood Lead Poisoning by Framework Zone

Lead Poisoning				
	High Vacancy	**Moderate Vacancy**	**Low Vacancy**	**Detroit**
Lead poisoning under age 6 (BLL>5) % of those tested *Number 4 years 2010-2013*	28.5% 3,256	17.7% 7,997	9.7% 2,499	8.5% 14,266
Total # children under age 5 *(not comparable, for reference only)*	6,740	26,145	16,519	51,917

Source: MDCH Data Warehouse, Lead Specimen table, 3/14/2014

Mental Health

Citywide mental health data are based on inpatient/outpatient hospitalizations with a primary diagnosis of psychoses, and are only publicly available by zip code. Table 10 shows the number and rate of mental health hospitalizations by ZIP code between 2010 and 2012. The ZIP codes with the highest rates of mental health hospitalization include 48201 (Greater Downtown), with 19.7 hospitalizations per 1,000 people, and 48217 (Southwest – Delray), with 10 hospitalizations per 1,000 people (Michigan Health and Hospital Association). These areas have rates that are 2-4 times the statewide rate of 4.7 per 1,000.

Table 7: Mental Health Hospitalizations by ZIP Code in Detroit (2010-2012)

Zip Code	Pop. 2010	Count	Rate
48201	12,814	217	19.7
48202	16,603	143	8.8
48203*	28,409	0	0.0
48204	27,997	187	6.7
48205	44,045	256	6.1
48206	21,954	161	7.2
48207	20,252	174	8.7
48208	10,234	86	8.5
48209	32,262	119	3.5
48210	31,017	108	3.5
48211	7,082	33	5.2
48212**	39,038	0	0.0
48213	27,712	180	6.3
48214	22,759	143	6.3
48215	13,565	82	5.6
48216	5,645	45	8.8
48217	8,210	81	10.0
48219	46,931	280	5.8
48221	38,727	205	5.1
48223	25,336	138	5.7
48224	44,439	264	5.8
48226	5,302	34	6.5
48227	45,380	312	6.6
48228	52,130	282	5.3
48234	36,140	199	5.5
48235	45,063	308	6.7
48238	31,743	192	5.8
Total	**740,789**	**4,229**	**5.7**

Source: Michigan Hospital Association 3-Year Average, Rate per 1,000. Summary table prepared by the Institute for Population Health.
Note:
Two zip codes include cities other than Detroit:
*48203= Detroit (63%), Highland Park (37%);
**48212= Detroit (68%), Hamtramck (32%).

Neighborhood Stability and Integrity

Table 8: Detroit Works Project Civic Engagement Feedback Survey

Detroit Works Project Civic Engagement Feedback to Multiple Choice Questions (various 2011-2012)	
What is the most damaging impact of population loss in your neighborhood? (Response count 794)	
• Increase in blight	39.7%
• Paying more for less effective services	31.4%
• Diminished sense of community	25.4%
• No impact	3.5%
What is the best way to reverse the city's projected population loss? (Response count 944)	
• Retain existing residents	4.3%
• Attract new residents	5.2%
• Both retain and attract residents	90.5%
What is your neighborhood's most important asset?	
• Sense of Community	35.1%
• Location	24.9%
• Housing	24.4%
• Access to recreational and cultural opportunities	15.6%
What should be done first to make neighborhoods stronger? (Response Count 815)	
• Repopulate stable neighborhoods	47.5%
• Spread resources to neighborhoods across the city	40.1%
• Disinvest in declining neighborhoods	12.4%
Which of the following services is most important to your quality of life? (Response Count 920)	
• Public Safety	64.7%
• Public Health	13.2%
• Mass Transit	9.6%
• Parks and Recreation	7.9%
• Public Lighting	4.7%
How should the city target its financial resources? (Response Count 910)	
• Opportunities for greatest return on investment	41.5%
• Areas of greatest need	30.3%
• Traditionally strong neighborhoods	25.1%
• Downtown	3.1%

Table 9: Community Perceptions Survey, Lower Eastside Action Plan

Lower Eastside Action Plan, Phase I (2011): Future Direction Survey (N=1,069); *Perceptions Survey (N=3,002)	
Incentives for Relocation (Percentage of people who ranked each option 1st or 2nd)	
• A residence in similar or better physical condition than my current residence	30%
• A substitute residence with equal or less mortgage debt/rent as my current residence	28%
• Fair compensation for my current residence/moving expenses	27%
• A job in close proximity to the neighborhood	15%
Neighborhood Amenity Ranking (Percentage of people who ranked each option 1st or 2nd)	
• A more stable neighborhood that is better than the one I live in	37%
• Live near shopping I can walk to	26%
• A neighborhood where I already know people	21%

• Live near a park	16%
Support for New Residents	
• Strongly support the idea	59%
• Somewhat support the idea	20%
• Strongly oppose the idea	4%
• Don't know	12%
Largest Concern over New Residents	
• Impact on neighborhood safety	37%
• Impact on the community	20%
• Impact on overall neighborhood appearance	17%
• Other	26%
Are you willing to move, if so where?	
• I would not consider moving	37%
• A neighborhood close to where I live now	20%
• Only a certain neighborhood	10%
• Outside of Detroit	13%
• Anywhere in Detroit: it doesn't matter	8%
• I don't know	12%
Reasons for not moving	
• I have great friends here and strong ties to the community	29%
• My house is paid for	22%
• I am emotionally attached to my home	20%
• Other	11%
• Concerns about unfamiliar neighborhood	10%
• I work near here	8%
***What do you like MOST about your neighborhood?**	
• Sense of Community	22%
• Parks	14%
• Access to Transportation	13%
• Schools	11%
***What do you like LEAST about your neighborhood?**	
• Safety	22%
• Neighborhood Appearance	15%
• City Services	14%
• Sense of community	10%

Homelessness

Table 10 shows the number and percent of homeless residents in Detroit seeking services in 2011. The ZIP codes with the highest percentage of homeless residents seeking services include 48201, Greater Downtown (13.6%), and 48203 (8.2%). It should be noted that ZIP code 48203 is divided between Detroit and Highland Park, with 63% in Detroit and 37% in Highland Park (Homeless Action Network).

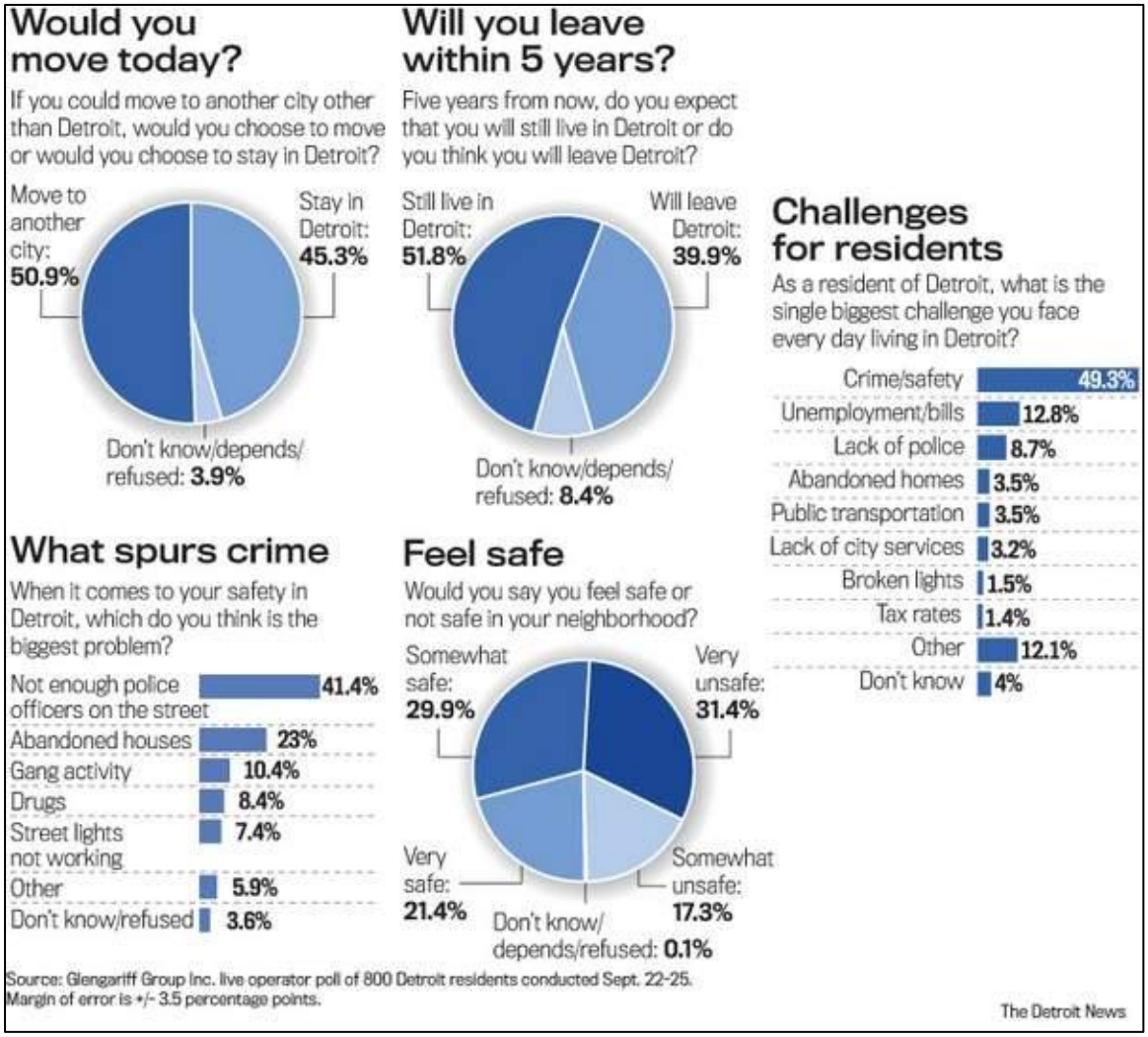
Table 10: Percentage of Homeless Seeking Services by ZIP Code in Detroit (2011)

ZIP Code	Number	Percent*
48201	2598	13.6%
48202	943	4.9%
48203*	1560	8.2%
48204	526	2.8%
48205	679	3.6%
48206	710	3.7%
48207	436	2.3%
48208	662	3.5%
48209	216	1.1%
48210	236	1.2%
48211	123	0.6%
48212**	223	1.2%
48213	771	4.0%
48214	703	3.7%
48215	331	1.7%
48216	163	0.9%
48217	98	0.5%
48219	767	4.0%
48221	519	2.7%
48223	320	1.7%
48224	518	2.7%
48226	193	1.0%
48227	789	4.1%
48228	674	3.5%
48234	457	2.4%
48235	508	2.7%
48238	684	3.6%
Total	**16,407**	**85.93%**

Source: Homeless Action Network. Number and % of all people served by network member organizations, by ZIP code of last residence.
Note: Two zip codes include cities other than Detroit: *48203= Detroit (63%), Highland Park (37%); **48212= Detroit (68%), Hamtramck (32%)

Safety

Figure 9: Telephone Survey of Detroit Residents Regarding Moving, Safety, and Challenges, 2012



Source: http://www.detroitnews.com/article/20121009/metro01/210090369

The report cited is based on an 800-sample telephone survey of Detroit residents conducted in 2012 by the Glengariff Group, commissioned by the Detroit News, and funded by the Thompson Foundation. Among respondents, 35% were contacted by cell phone and 65% were contacted by land-line. The survey has a margin of error of plus or minus 3 percentage points.

Table 11: Violent & Property Crime Data by DFC Zones - (First Quarter 2010)

Violent & Property Crime Data by DFC Zones - (First Quarter 2010)								
DFC Zone	Population	# of Houses	# of Occupied Houses	# of Vacant Houses	# of Violent Crimes	# of Property Crimes	# of Violent Offenses by 10000 people	# of Property Offenses by 10000 people
High Vacancy	83,836	43,928	30,850	13,078	579	1,407	69	168
Moderate Vacanc	310,884	149,444	110,338	39,106	1,606	4,243	52	136
Low Vacancy	245,878	112,333	94,141	18,192	996	3,394	41	138
Detroit	713,777	349,170	269,445	79,725	3,689	11,287	52	158

Source: Detroit Police Department
Compiled by Erica Raleigh, Data Driven Detroit

Table 12: Detroit Homicides 2012 by DFC Zones

Detroit Homicides 2012 by DFC Zones			
DFC ZONE	Population	# of Homicides	# of Homicides by 10000 people
High Vacancy	84,110	78	9
Moderate Vacancy	315,944	157	5
Low Vacancy	251,136	93	4
Detroit	701,375	343	5

Source:
Population data is from ACS 2008-2012
Homicide data is from the Detroit Police Department,
accessed at http://detroitdata.org/dataset/detroit-homicides (2012)

Vulnerable and Disproportionately Affected Populations

High vacancy neighborhoods are more likely to be low income than medium or low vacancy neighborhoods, and thus affected differently. Those groups who may be particularly vulnerable include elderly, children, low income, and both renters and homeowners.

Approximately 10% of Detroit residents are over 65. Relocation can be expected to affect health depending on contextual factors such as housing conditions pre and post move, proximity to healthcare, effects on social networks, and how the move is perceived. Approximately 31% of residents are under age 18, and 34% of families with related children under 18 have incomes below the poverty level. Families may experience improved housing or educational opportunities, changes in housing costs, or encounter different peer networks with positive or negative health implications.

Figure 10: Detroit Population by Block Group

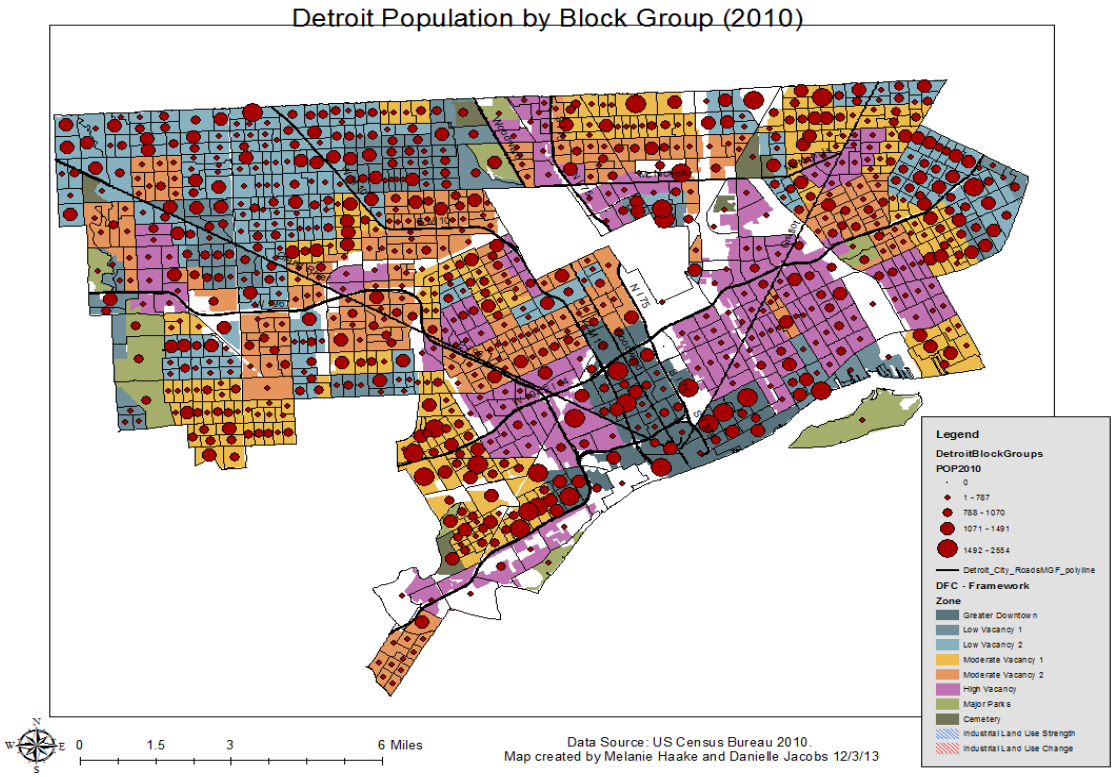


Figure 11: Detroit Population by Block Group, Southwest and Downtown

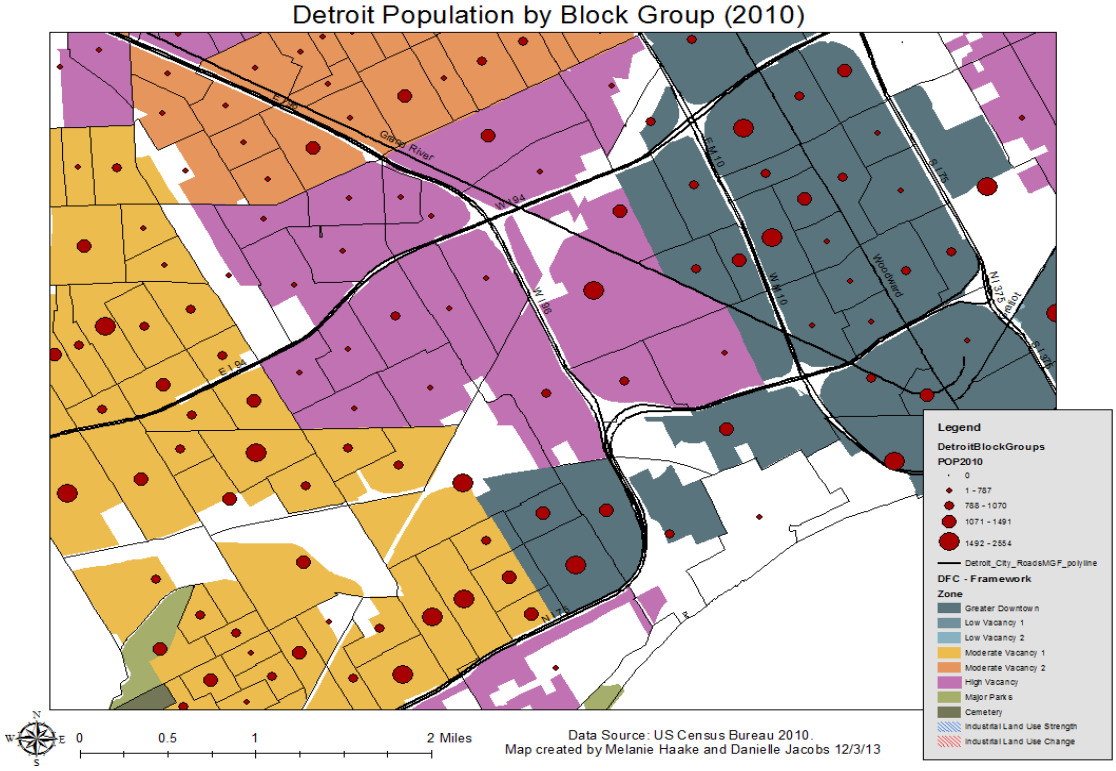


Figure 12: Number of People Over 65 per Block Group in Detroit, Zoomed

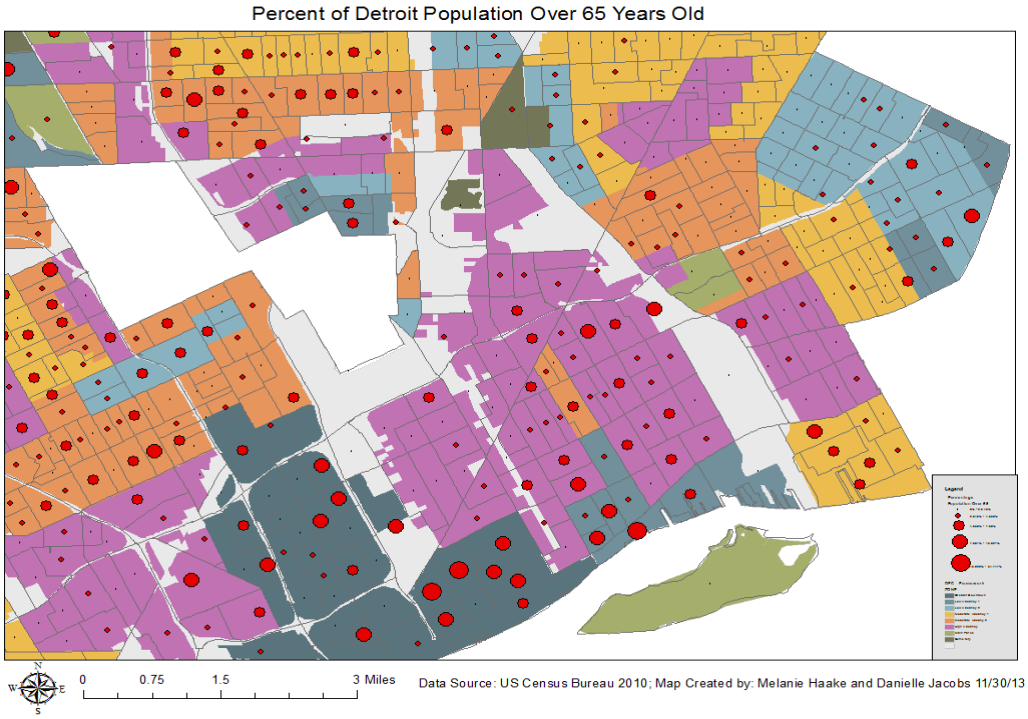


Figure 13: Number of People Over 65 per Block Group In Detroit

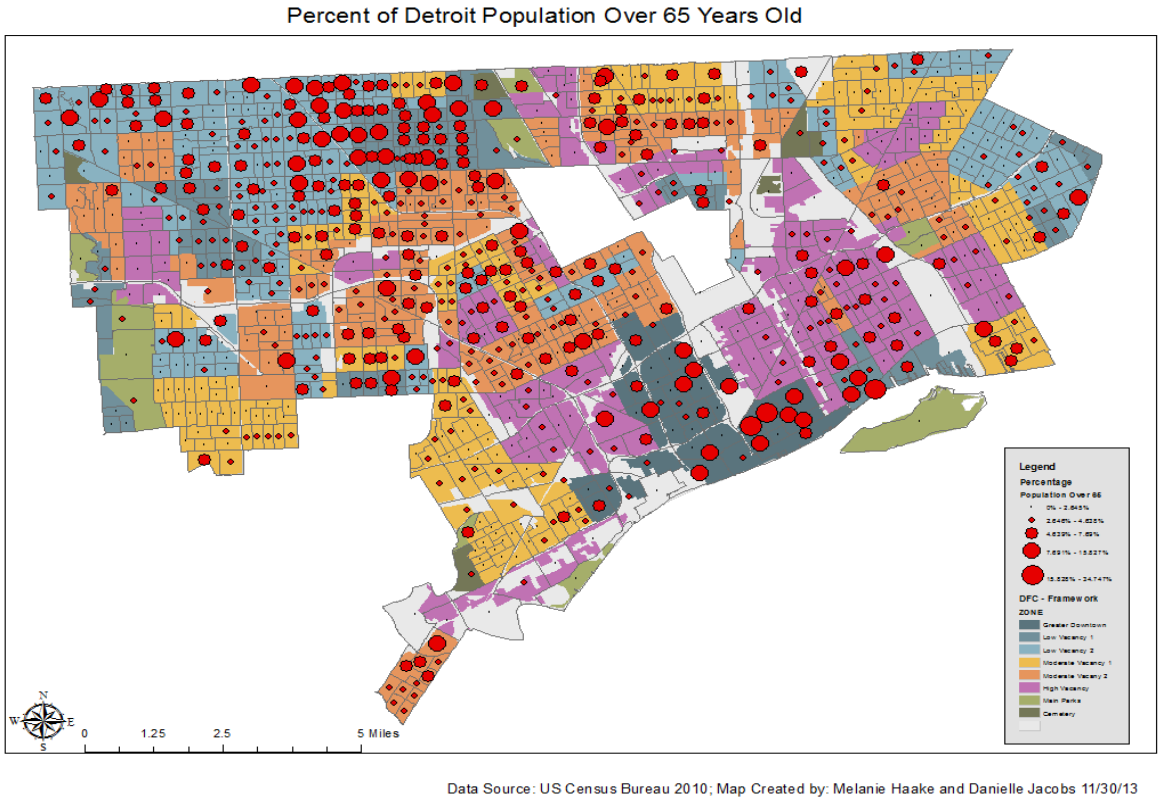
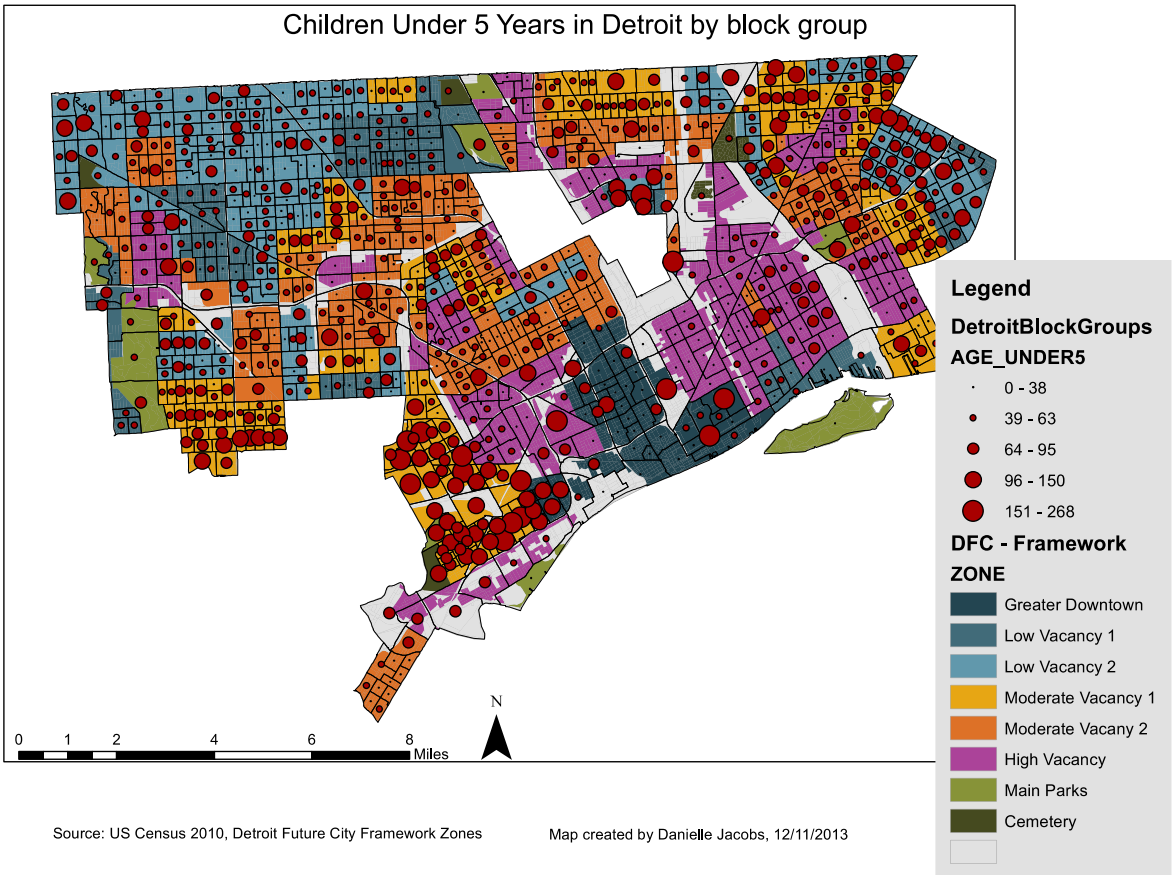


Figure 14: Number of Children Under Age 5 per Block Group in Detroit



Appendix G: Master Demographics Table

	Greater Downtown		High Vacancy		Moderate Vacancy		Low Vacancy		Detroit Total	
GENDER										
Total Population	**49,006**		**94,696**		**333,269**		**265,587**		**742,558**	
Male	24,037	49.0%	46,333	48.9%	159,158	47.8%	121,907	45.9%	351,435	47.3%
Female	24,969	51.0%	48,363	51.1%	174,111	52.2%	143,680	54.1%	391,123	52.7%
AGE										
Under 5 years	2,513	5.1%	6,740	7.1%	26,145	7.8%	16,519	6.2%	51,917	7.0%
5 to 9 years	2,054	4.2%	6,304	6.7%	25,526	7.7%	17,593	6.6%	51,477	6.9%
10 to 14 years	1,907	3.9%	6,511	6.9%	26,698	8.0%	19,810	7.5%	54,926	7.4%
15 to 19 years	3,510	7.2%	8,713	9.2%	32,418	9.7%	23,829	9.0%	68,470	9.2%
20 to 24 years	5,291	10.8%	7,331	7.7%	25,656	7.7%	17,838	6.7%	56,116	7.6%
25 to 29 years	4,642	9.5%	5,717	6.0%	20,827	6.2%	14,209	5.4%	45,395	6.1%
30 to 34 years	3,335	6.8%	5,350	5.6%	20,603	6.2%	14,857	5.6%	44,145	5.9%
35 to 39 years	2,935	6.0%	5,907	6.2%	22,257	6.7%	17,506	6.6%	48,605	6.5%
40 to 44 years	2,750	5.6%	6,108	6.5%	21,316	6.4%	17,792	6.7%	47,966	6.5%
45 to 49 years	3,117	6.4%	6,660	7.0%	21,477	6.4%	17,754	6.7%	49,008	6.6%
50 to 54 years	3,799	7.8%	7,370	7.8%	22,621	6.8%	19,626	7.4%	53,416	7.2%
55 to 59 years	3,770	7.7%	6,008	6.3%	19,074	5.7%	18,520	7.0%	47,372	6.4%
60 to 64 years	3,187	6.5%	4,475	4.7%	14,709	4.4%	16,164	6.1%	38,535	5.2%
65 to 69 years	2,121	4.3%	3,007	3.2%	10,030	3.0%	11,095	4.2%	26,253	3.5%
70 to 74 years	1,387	2.8%	2,456	2.6%	7,404	2.2%	7,524	2.8%	18,771	2.5%
75 to 79 years	1,103	2.3%	2,228	2.4%	6,382	1.9%	6,058	2.3%	15,771	2.1%
80 to 84 years	795	1.6%	1,901	2.0%	5,187	1.6%	4,644	1.7%	12,527	1.7%
85 years and over	790	1.6%	1,910	2.0%	4,939	1.5%	4,249	1.6%	11,888	1.6%
RACE										
Total Population	**49,006**		**94,696**		**333,269**		**265,587**		**742,558**	
White	10,089	20.6%	7,284	7.7%	42,772	12.8%	16,726	6.3%	76,871	10.4%
Black or African American	34,364	70.1%	82,518	87.1%	262,419	78.7%	238,479	89.8%	617,780	83.2%
American Indian / Alaska Native	255	0.5%	328	0.3%	1,440	0.4%	645	0.2%	2,668	0.4%
Asian alone	1,563	3.2%	629	0.7%	1,564	0.5%	3,954	1.5%	7,710	1.0%
Native Hawaiian / Other Pacific Islander	5	0.0%	18	0.0%	63	0.0%	32	0.0%	118	0.0%
Some Other Race	1,293	2.6%	2,163	2.3%	16,721	5.0%	723	0.3%	20,900	2.8%
Two or More Races	1,437	2.9%	1,756	1.9%	8,290	2.5%	5,028	1.9%	16,511	2.2%
Hispanic or Latino	3,467	7.1%	4,379	4.6%	37,048	11.1%	2,441	0.9%	47,335	6.4%
Not Hispanic or Latino	45,539	92.9%	90,317	95.4%	296,221	88.9%	263,146	99.1%	695,223	93.6%
White	8,438	17.2%	5,784	6.1%	27,003	8.1%	16,204	6.1%	57,429	7.7%
Black or African American	34,066	69.5%	82,036	86.6%	260,497	78.2%	237,431	89.4%	614,030	82.7%
Asian alone	204	0.4%	267	0.3%	906	0.3%	602	0.2%	1,979	0.3%
American Indian / Alaska Native	1,546	3.2%	615	0.6%	1,495	0.4%	3,929	1.5%	7,585	1.0%
Native Hawaiian / Other Pacific Islander	5	0.0%	11	0.0%	37	0.0%	27	0.0%	80	0.0%
Some Other Race	67	0.1%	135	0.1%	452	0.1%	354	0.1%	1,008	0.1%
Two or More Races	1,213	2.5%	1,469	1.6%	5,831	1.7%	4,599	1.7%	13,112	1.8%

HOUSEHOLDS										
Total Households	**25,925**		**34,953**		**117,870**		**101,598**		**280,346**	
Family households:	8,247	31.8%	20,207	57.8%	75,839	64.3%	65,275	64.2%	169,568	60.5%
Husband-wife family	2,686	10.4%	5,109	14.6%	25,543	21.7%	26,863	26.4%	60,201	21.5%
Male householder, no wife present	911	3.5%	2,999	8.6%	10,247	8.7%	7,123	7.0%	21,280	7.6%
Female householder, no husband present	4,650	17.9%	12,099	34.6%	40,049	34.0%	31,289	30.8%	88,087	31.4%
Nonfamily households	17,678	68.2%	14,746	42.2%	42,031	35.7%	36,323	35.8%	110,778	39.5%
Householder living alone	15,303	59.0%	12,603	36.1%	35,751	30.3%	31,690	31.2%	95,347	34.0%
Householder not living alone	2,375	9.2%	2,143	6.1%	6,280	5.3%	4,633	4.6%	15,431	5.5%
INCOME										
Total Households	**23,802**		**34,274**		**115,800**		**101,287**		**275,163**	
Less than $10,000	7,251	30.5%	9,372	27.3%	24,029	20.8%	13,795	13.6%	54,447	19.8%
$10,000 to $14,999	2,796	11.7%	4,087	11.9%	11,963	10.3%	7,962	7.9%	26,808	9.7%
$15,000 to $19,999	2,005	8.4%	3,408	9.9%	10,418	9.0%	7,177	7.1%	23,008	8.4%
$20,000 to $24,999	1,639	6.9%	2,627	7.7%	9,414	8.1%	7,339	7.2%	21,019	7.6%
$25,000 to $29,999	1,374	5.8%	2,247	6.6%	8,789	7.6%	6,969	6.9%	19,379	7.0%
$30,000 to $34,999	1,161	4.9%	2,407	7.0%	7,189	6.2%	5,893	5.8%	16,650	6.1%
$35,000 to $39,999	1,058	4.4%	2,129	6.2%	6,296	5.4%	5,639	5.6%	15,122	5.5%
$40,000 to $44,999	882	3.7%	1,465	4.3%	5,795	5.0%	5,559	5.5%	13,701	5.0%
$45,000 to $49,999	779	3.3%	1,034	3.0%	4,887	4.2%	4,372	4.3%	11,072	4.0%
$50,000 to $59,999	1,089	4.6%	1,636	4.8%	7,916	6.8%	7,647	7.5%	18,288	6.6%
$60,000 to $74,999	1,304	5.5%	1,539	4.5%	7,111	6.1%	8,517	8.4%	18,471	6.7%
$75,000 to $99,999	1,030	4.3%	1,245	3.6%	6,027	5.2%	9,770	9.6%	18,072	6.6%
$100,000 to $124,999	604	2.5%	661	1.9%	3,190	2.8%	4,970	4.9%	9,425	3.4%
$125,000 to $149,999	234	1.0%	230	0.7%	1,451	1.3%	2,510	2.5%	4,425	1.6%
$150,000 to $199,999	284	1.2%	134	0.4%	909	0.8%	1,848	1.8%	3,175	1.2%
$200,000 or more	312	1.3%	53	0.2%	416	0.4%	1,320	1.3%	2,101	0.8%
Median Household Income		$19,623		$20,514		$26,181		$36,338		$28,173
EDUCATION										
Population 25 years and over	**31,560**		**61,034**		**204,118**		**177,348**		**474,060**	
Less than High school graduate	6,210	19.7%	18,747	30.7%	54,442	26.7%	28,660	16.2%	108,059	22.8%
High school graduate, GED, or alternative	8,539	27.1%	22,259	36.5%	72,404	35.5%	55,002	31.0%	158,204	33.4%
Some college, less than 1 year	1,978	6.3%	3,777	6.2%	14,590	7.1%	13,089	7.4%	33,434	7.1%
Some college, 1 or more years, no degree	5,716	18.1%	9,597	15.7%	34,980	17.1%	36,542	20.6%	86,835	18.3%
Associate's degree	1,601	5.1%	3,175	5.2%	11,528	5.6%	13,140	7.4%	29,444	6.2%
Bachelor's degree	3,647	11.6%	2,394	3.9%	10,708	5.2%	17,978	10.1%	34,727	7.3%
Master's degree	2,282	7.2%	725	1.2%	4,405	2.2%	10,015	5.6%	17,427	3.7%
Professional school degree	997	3.2%	267	0.4%	686	0.3%	1,755	1.0%	3,705	0.8%
Doctorate degree	590	1.9%	93	0.2%	375	0.2%	1,167	0.7%	2,225	0.5%
HOUSING										
Total Housing Units	**33,156**		**49,648**		**159,501**		**121,618**		**363,923**	
Occupied	25,925	78.2%	34,953	70.4%	117,870	73.9%	101,598	83.5%	280,346	77.0%
Owner	4,375	16.9%	15,304	43.8%	60,339	51.2%	63,592	62.6%	143,610	51.2%
Renter	21,550	83.1%	19,649	56.2%	57,531	48.8%	38,006	37.4%	136,736	48.8%
Vacant	7,231	21.8%	14,695	29.6%	41,631	26.1%	20,020	16.5%	83,577	23.0%

Appendix H: Literature Review Findings

This HIA was based on an extensive review of the published evidence that links the provision of city systems and infrastructure to four main neighborhood determinants of health and ultimately health. The review begins with infrastructure and city services, then addresses the four central research questions of the HIA at the neighborhood-level, as detailed in the pathway model: neighborhood stability and integrity; neighborhood safety; environmental conditions and exposures; and displacement, relocation, and gentrification. In addition, we take a closer look at two aspects of infrastructure/city services – public lighting, and demolition as blight elimination strategy. Each section provides a description of the determinant of health, a summary listing of key findings from the literature review, and a more detailed review of the literature with citations that provided the evidence base from which the summary points were derived.

1 Infrastructure and City Services

Infrastructure and City Services refer to the fundamental facilities and systems that sustain the physical functioning of a city. The basic infrastructure and public services that a city provides (e.g., power, water, sanitation, roads, lights, police and fire protection) are the foundations of urban neighborhoods and have a profound impact on health. Lack of access to basic needs such as water, electricity, and heat, are defining characteristics of substandard and unstable housing conditions, and hence have a substantial impact on day to day life of people and the neighborhoods in which they live.

Summary of Key Findings

- City services and infrastructure form the most basic preventative interventions against disease and the promotion of population-wide health.
- The quality, quantity, and diversity of institutions that address needs and support accomplishment of daily routine activities are important for health.
- Neighborhoods with high poverty suffer from inadequate access and quality of city services.
- Spending and services are more likely to be cut in poor neighborhoods leading to declines in urban infrastructure, the physical environment, and quality of life that are known to impact health adversely in those neighborhoods.
- Inadequate or poor city services including street maintenance and waste removal are usually associated with neighborhoods characterized by high residential turnover, poverty, and high percentages of minorities.
- Homes in locations with perceived health or environmental risks have consistently maintained lower property values.
- Increased financial burden from energy costs leads to trade-offs on expenditures for food, health care, and rent, and use of dangerous alternative heat sources such as ovens.

There is substantial evidence that infrastructure and city services have direct and indirect impacts on health and well-being, including: mortality, heart disease, asthma, injuries, mental health, cancer, and child well-being. The beginnings of public health as a field are rooted in the sanitary movement,

and city services and infrastructure form the most basic preventative interventions against disease and the promotion of population-wide health. Lack of access to basic needs such as water, electricity, and heat, are defining characteristics of substandard and unstable housing conditions. Inadequate or poor city services including street maintenance and waste removal are also usually associated with neighborhoods characterized by high residential turnover, poverty, and high percentages of minorities[10]. Furthermore, spending and services are more likely to be cut in poor neighborhoods, which in turn leads to declines in urban infrastructure, the physical environment, and quality of life[11].

One HIA assessed potential reductions in the Massachusetts low-income energy assistance program [12]. Reducing the amount of subsidies increases the financial burden on already limited household budgets, leading to tradeoffs on expenditures for household necessities, food, medical or dental care, and rent or mortgage payments. For example, when forced to decide between "heat or eat" options, the impact of utilities on health can compromise child growth. Strategies to mitigate high electricity and heating bills can lead to dangerous alternative heat sources such as using ovens or stoves.

Evidence linking the reduction in infrastructure and city services with neighborhood stability and density is largely missing from the literature, and few HIAs to date have focused on the health impacts of city services and infrastructure, other than transportation. While there is evidence that neighborhoods with high poverty suffer from inadequate access and quality of city services, it remains unclear whether these lead to further rates of population decline within neighborhoods that in turn affect stability. Further, the causal direction between reduced city services and population loss are not so straightforward as each acts as a feedback mechanism on one another. In other words, reductions in amount or quality of services can lead to lower residential satisfaction prompting those able to leave to move. This in turn leads to population decline that provides the justification for reducing or cutting essential infrastructure.

2 Neighborhood Stability and Integrity

Neighborhood Stability and Integrity refers to the social fabric of the neighborhood and the related built environment that supports and sustains a community. Some refer to these factors as "livability." It includes how long people have lived there, social networks and support, social cohesion, the ability to get things done, and the density and proximity of neighbors. The literature was reviewed in the following domains:

- Social networks, social support, social isolation, and social capital
- Community identity and sense of community
- Social cohesion
- Collective efficacy and community control
- Neighborhood stability, population density, and population loss

Adverse aspects of the social environment that affect neighborhood safety, such as violence, crime, and discrimination, were included in the neighborhood safety pathway for carrying out the HIA.

[10] Wallace and Wallace 1998a.
[11] Wallace and Wallace 2011.
[12] Child Health Impact Working Group 2007.

Summary of Key Findings

Social Networks, Cohesion, and Collective Efficacy

- High levels of social support and social networks are positively associated with multiple health outcomes, and individuals with poor social ties are at increased risk for poor physical and mental health.
- Social ties and networks can also be detrimental to health by: exposure to stress, conflict, and disease; normalizing adverse health behaviors such as substance abuse and poor eating habits; depleting emotional and material resources in the care of others; or reinforcing powerlessness and dependency.
- Residents of communities with high levels of collective efficacy, that is, a belief in the group's ability to take action to achieve a common end, live longer and are healthier physically and mentally.
- Collective efficacy consistently has the strongest relationship to health compared to other aspects of neighborhoods.
- Collective efficacy can be undermined due to high crime rates, vandalism, and high levels of physical disorder such as litter and graffiti.
- Community participation in social and political decision-making is associated with increased collective efficacy and social cohesion, improved safety/security, improved housing adequacy, secure livelihoods, access to health care, limited exposure to occupational hazards, and improved environmental quality.
- Taken together, social networks, social cohesion, collective efficacy, and community identity are tightly interwoven determinants of health that are each affected by neighborhood level structural determinants such as poverty.
- Sense of community, community resilience, and place attachment promote successful community redevelopment.
- Engaging community members in advance of land use projects can help planners identify public infrastructure concerns and needs.
- Land use policies have the potential to harm social cohesion if displacement or "actions that indirectly lead to neighborhood disinvestment" are allowed to happen.

Stability and Population Density

- Residential stability at both individual and neighborhoods levels is associated with better physical and mental health, but may be detrimental to health in low-income neighborhoods with few affluent or middle-income households.
- Density can potentially increase socially interaction. Places of contact increase opportunities for social interaction thereby strengthening social ties and networks. Conversely, the loss of public spaces is associated with declines in social capital.
- Spatial clustering has been found to promote walking and bicycling and to increase frequency of visits to places that promote social interaction. Research also links walkable neighborhoods, access to retail, and short commutes to better physical, mental, and social health.
- Land use patterns that encourage neighborhood interaction and a sense of community have been shown not only to reduce crime, but also create a sense of community safety and security.

- Travel time and access to transportation affect access to health care for vulnerable populations such as the elderly, disabled, teens, and low-income families.
- There is a gap in the literature of studies that link reduction in utilities with neighborhood stability and density.

2.1 Health impacts of Social Networks and Social Support

Social networks are the social relationships and ties that an individual has access to[13]. Social networks shape the flow of resources and dissemination of information (social support) that in turn determine access to opportunities and shape both social and health outcomes [14]. For example, social networks are important for employment opportunities[15]. In addition, more socially integrated individuals have lower mortality compared to more isolated individuals[16]. Greater social integration has been shown to predict survival from heart attacks, lower risk for cancer recurrence, less depression and anxiety, and less severe cognitive decline among aging individuals[17]. In addition, social connectedness has been shown to be effective in fighting off infectious disease, from HIV/AIDS to the common cold[18].

Social support is the perceived and actual resources that individuals are able to obtain through their social network. These supportive resources include emotional, tangible, informational, and belonging. There is a substantial body of evidence on the beneficial effects of social support on mental and physical health[19]. Early work found that social support was associated with better and quicker recovery after hospitalization for heart disease[20]. Support, perceived or provided, can buffer stressful situations, prevent feelings of isolation, and contribute to self-esteem.[21] In addition, social support has been shown to reduce psychological distress, depression, and anxiety[22]. In one study, people with self-reported severe lack of social support were 2.19 times more likely to report fair or poor health than people who did not lack social support.[23] In an intervention study in Detroit, walking groups that provided peer support and promoted leadership and social cohesion reduced cardiovascular disease risk factors including blood pressure, cholesterol, blood glucose, and weight. Some improvements lasted beyond the 8 week intervention period and some groups became self-sustaining.[24]

Health Impacts of Social Isolation

[13] Berkman 1984.
[14] Ali and Lindström 2006; Berkman and Glass 2000.
[15] Goetz 2003.
[16] Berkman and Glass 2000; Berkman and Syme 1979.
[17] Cohen, Underwood, and Gottlieb 2000a.
[18] Cohen S et al. 1997.
[19] Heaney and Israel 2008.
[20] Fontana et al. 1989.
[21] Cohen, Underwood, and Gottlieb 2000b.
[22] Kawachi and Berkman 2001.
[23] Berkman and Kawachi 2000.
[24] Schulz et al. 2015.

The flip side of social interaction is isolation, which is strongly associated with illness. Individuals with poor social ties are at increased risk for poor physical and mental health[25]. Once ill, socially isolated individuals are two to five times more likely to die than those with strong social networks[26]. Another study found that individuals lacking social ties were 1.9-3.1 times more likely to die compared with others who reported more contacts[27]. In addition to interpersonal isolation, entire neighborhoods can be socially isolated from other parts of a city, due to processes of racial and economic segregation. As shown in an HIA examining the impacts of public housing relocation, segregated neighborhoods are often marginalized in political decision-making and underrepresented in tenant's associations[28].

However, social ties and networks can also be detrimental to health by: exposure to stress, conflict, and disease; by normalizing adverse health behaviors such as substance abuse and poor eating habits; and by depleting emotional and material resources in the care of others[29].

Health Impacts of Social Capital

Relatedly, social capital is a collective resource stemming from the structure of social relationships between individuals and groups that facilitates achievement of specific goals and the exchange of resources and information. There is a substantial body of evidence that links social capital to better overall physical and mental health,[30] and conversely that lack of social capital can impair health[31]. Social capital is also associated with reduced infant mortality and an increased likelihood of receiving prenatal care [32]. One study found that, overall, neighborhood social capital was associated with lower neighborhood death rates. The authors noted that investing in social capital alone as a public health measure is insufficient without attending to inequalities in access to human and financial capital as well.[33] A study examining deaths during the 1995 Chicago heat wave found that mortality was linked to differences in individual relationships and supportive neighborhood institutions. Specifically, a neighborhood with low levels of social capital had a mortality rate 10 times the rate of a neighborhood of similar income with higher levels of social capital.[34]

Density, defined by the number of people living within a given area, has been found to be correlated with social capital, with larger places typically having less social capital[35]. In addition, components of the built environment have also been shown to affect levels of social capital[36]. Inclusion of certain architectural features such as stoops, porches, and communal gathering spaces can potentially increase social interaction[37]. For example, declines in social capital have been attributed to loss of public spaces including parks and other green spaces in addition to third spaces such as cafes and

[25] Hawe et al. 2000; Kawachi 1999.
[26] Berkman and Glass 2000.
[27] Berkman and Syme 1979.
[28] UC Berkeley Health Impact Group 2009.
[29] Cohen, Underwood, and Gottlieb 2000a.
[30] Lin n.d.
[31] Aslund, Starrin, and Nilsson 2010.
[32] Harpham, Grant, and Thomas 2002.
[33] Lochner et al. 2003.
[34] Klinenberg 2002.
[35] Putnam 2000.
[36] Lavin et al. 2006.
[37] Leyden 2003; Ross et al. 2011.

bookstores[38]. One HIA, which surveyed places where residents run into each other, found that courtyards and shopping locally were the most frequently cited places of contact[39]. These places increase opportunities for social interaction thereby strengthening social ties and networks, and may also allow cross-cultural and racial contacts that have been shown to reduce prejudice. The quality of the built environment and not just the presence of physical spaces also impacts social networks.

One HIA found that land use policies have the potential to harm social cohesion if displacement or "actions that indirectly lead to neighborhood disinvestment" are allowed to happen[40].

2.2 Health Impacts of Community Identity and Sense of Community

Community identity can be informally defined as the degree to which a group of people with some common factor define themselves similarly and ascribe to membership within the group. More formally, community identity is defined along six broad elements including its physical boundaries, distinctiveness, identification, orientation towards the group, evaluation of quality of community life, and evaluation of community functioning[41]. A related concept that preceded social capital, sense of community, refers to a feeling of belonging, that members matter, and a shared faith in members' needs being met by shared commitment[42]. While research examining the direct connection between community identity and health are nascent, some studies have found that sense of community is strongly correlated with walking for recreation and important for adolescent development and well-being[43]. Further, sense of community and place attachment have been shown to be integral components of successful community redevelopment and participation of residents within the decision making process[44].

Collective efficacy and community identity are also contingent upon housing stability. The HOPE VI HIA found that people who lived in the complex longer were more likely to participate, with an additional year of residence increasing the odds of participating by 5% and residential tenure increasing the likelihood of attending tenant meetings[45].

2.3 Health Impacts of Social Cohesion

Social cohesion is another dimension of the social environment that refers to the degree to which individuals get along and participate in civic activities and collective events together. Trust, degree of conflict, and inclusivity within a neighborhood are important determinants of social cohesion. Neighborhoods in which residents feel social cohesiveness toward their neighbors (through mutual trust and exchanges of aid) tend to have lower mortality rates compared to neighborhoods that do not have strong social bonds.[46] Barriers to social cohesion can be based on social characteristics such as race or class, but also can be physical in nature as was the case in the Atlanta Beltline project, which found opportunities to reknit social cohesion based on eliminating the physical barrier of a rail

[38] Baum and Palmer 2002; Bedimo-Rung, Mowen, and Cohen 2005; Ewing and Kreutzer 2006; Leyden 2003.
[39] UC Berkeley Health Impact Group 2009.
[40] Ibid.
[41] Puddifoot 1995.
[42] McMillan and Chavis 1986.
[43] Dannenberg et al. 2003; Ewing and Kreutzer 2006; Morrow 2000.
[44] Brown, Perkins, and Brown 2003; Chavis and Wandersman 1990; Perkins et al. 1990; Zautra, Hall, and Murray 2008.
[45] UC Berkeley Health Impact Group 2009.
[46] Lochner et al. 2003.

corridor[47]. Witnessing and experiencing community violence can cause long-term behavioral and emotional problems in youth.[48] Community violence also impacts the perceived safety of a neighborhood, inhibiting social interactions and adversely affecting social cohesion.[49]

2.4 Health Impacts of Collective Efficacy and Community Control

Collective efficacy refers to the ability of a community to realize common goals and enforce informal social controls and norms[50]. In the context of neighborhoods, social controls dictate acceptable uses of space and govern actions that occur within commonly shared areas. For example, collective efficacy refers to whether a community is willing or able to intervene if a teenager was caught vandalizing property. In the context of health, social controls determine what health behaviors (either health promoting or negating) are acceptable. Collective efficacy can refer to responses due to an acute crisis (such as a political decision) or more mundane everyday tasks that promote the greater good of the community (such as picking up a neighbor's mail while away or keeping an extra set of keys at a local business). There is a substantial body of evidence that people living in communities with high levels of collective efficacy live longer and are healthier physically and mentally[51]. Collective efficacy can be undermined due to high crime rates, vandalism, and high levels of physical disorder such as litter and graffiti, but the strongest predictors of collective efficacy are residential stability and concentrated affluence more so than poverty or racial composition[52]. Land use patterns that encourage neighborhood interaction and a sense of community have been shown not only to reduce crime, but also create a sense of community safety and security.[53] Evaluations of Crime Prevention Through Environmental Design (CPTED) strategies have shown a 30-84% reduction in robberies, depending upon how many CPTED components were implemented.[54] Increasing self-efficacy is a key to encouraging behavior change of all kinds, and being involved in community and political organizations that are able to win on issues teaches self-efficacy.[55] Lastly, a review of the literature on the social and physical environments of neighborhoods found that collective efficacy consistently has the strongest relationship to health compared to other aspects of neighborhoods[56].

Community participation in social and political decision-making (measured by voter turnout, volunteerism) is associated with increased collective efficacy and social cohesion, improved safety/security, improved housing adequacy, secure livelihoods, access to health care, limited exposure to occupational hazards, and improved environmental quality [57]. In addition, group membership is associated with lower adult and infant mortality and lower risk of death from

[47] Ross 2007.
[48] Perez-Smith, Albus, and Weist 2001; Ozer and MacDonald 2006.
[49] Fullilove et al. 1998.
[50] Sampson, Raudenbush, and Earls 1997.
[51] Berkman and Syme 1979; Berkman et al. 2000; Brummett et al. 2001; House, Landis, and Umberson 1988; Kaplan et al. 1988; Kawachi and Berkman 2001; Kawachi 1999; Leyden 2003; Seeman and Syme 1987; Seeman 1996.
[52] Sampson, Morenoff, and Earls 1999.
[53] Calhoun and National Crime Prevention Council 2002.
[54] Casteel and Peek-Asa 2000.
[55] Bandura 1997.
[56] Sampson, Morenoff, and Gannon-Rowley 2002.
[57] Browning, Dietz, and Feinberg 2004; Carr 2003; Cummins et al. 2005; Kim and Kawachi 2006; Sampson, Raudenbush, and Earls 1997.

coronary heart disease and cancer, with one study finding that one standard deviation increase in group membership decreased mortality by 83.2 individuals per 100,000[58].

Of particular concern to the DFC, the HOPE VI HIA in San Francisco [59] found that engaging community members in advance of land use projects can help planners identify public infrastructure concerns and needs. In addition, the Right to the City Alliance reported that public housing residents in New York City facing relocation felt they had insufficient power to shape decisions about where they ended up[60]. Lastly, a study examining redevelopment in Baltimore found that despite high levels of social capital, the ability of residents to get their interests on the table in decision making processes was undermined by their disconnection to the institutional and political environment.[61] Respondents reported feelings of stress from wondering whether their block would be redeveloped next and if they would be able to stay.

2.5 Health Impacts of Neighborhood (In)Stability and Population Density

Density

Population density refers to the number of individuals in a population per unit of living space – usually the number of residents per square mile. Population density is the primary metric on which neighborhoods are labeled high or low vacancy within DFC. Density also can refer to various components of the built environment within a neighborhood, including occupied housing units, businesses, access to green space, and community based organizations.

The DFC, drawing upon much of the shrinking cities recommendations, involves increasing geographic clustering of individuals, which is premised on evidence that increasing population density provides a host of social benefits. Having more people in close proximity with each other is hypothesized to increase opportunities for social interaction and contact. In addition, a critical mass of people can provide what Jane Jacobs[62] called "eyes on the street," which serve an important function in community policing and the maintenance of safety. However, increased population density can also negatively affect social outcomes.

The context in which density occurs must be taken into consideration. Research that dates back to the first studies of urban environments in the 1920s in Chicago found that increased density created a sense of alienation. A 2004 study found that less population density has positive impacts on quality of life, pointing to potential deleterious effects of residential crowding[63]. While dense populations offer more opportunities for social interaction, on the other hand the quality of ties can often be improved within smaller communities. This may depend on the extent of density, the quality and types of relationships within the community, and the extent to which social groups are spatially

[58] Kreuter and Lezin 2002.
[59] 2009.
[60] Right to the City Alliance 2010.
[61] Gomez and Muntaner 2005.
[62] 1992.
[63] Cramer, Torgersen, and Kringlen 2004.

concentrated and isolated, for example, racial segregation, high levels of poverty, and social disorganization[64].

Related to the current situation in Detroit, Wallace and Wallace [65] have written extensively on the effects of planned shrinkage and benign neglect that led to the destruction of the South Bronx and their attendant health impacts and social disruption. Planned shrinkage refers to the withdrawal of essential services in neighborhoods that were labeled dying. Focusing on fire services, Wallace and Wallace show how reductions in fire companies were systematically responsible for the burning down of the South Bronx and the ensuing housing abandonment and vacant lots that arose. They further document the massive internal migration into nearby areas that resulted in tuberculosis outbreaks, spread of HIV/AIDS, violence, and other chronic health outcomes due to contacts with new social networks. The authors argue that communities and neighborhoods are ecosystems, and damaging one community can have a ripple effect on others within a system.

It is important to recognize that neighborhood decline is not a natural process but rather the result of specific policies[66]. Nationwide, the foreclosure crisis from the mid-2000s on compounded the economic and population loss underway, causing a surge in vacancies, blight and physical deterioration of properties, declining tax revenues, and rising public costs.

Since 2005 there have been 139,000 tax and mortgage foreclosures in Detroit. Foreclosures are a major contributor to instability, displacing people from intact homes that are quickly vandalized. Those at highest risk of foreclosure are elderly and those with young children, and 80% of those foreclosed have faced a severe hardship in the past year such as medical problems and job loss. Tax foreclosed homes revert to public ownership, and the Wayne County Treasurer's Office auctions properties as a means of collecting unpaid taxes and relieving the burden of owning and maintaining vacant properties. Of the estimated 30,000 tax foreclosed houses to be sold at auction in fall 2015, a third are currently occupied. 81% of homes auctioned since 2010 sold for $5,000 or less. Houses are often vandalized by scrapping within weeks of becoming vacant, further destabilizing neighborhoods and contributing to homelessness. More than half of foreclosed homes are blighted and many are set for demolition[67].

2.6 Summary of Health Impacts of Neighborhood Stability and Integrity

Taken together, social networks, social cohesion, collective efficacy, and community identity are all tightly interwoven determinants of health that are each affected by structural determinants on the neighborhood level such as poverty, economic and racial segregation, neighborhood stability, and population density and loss. Health-protective aspects of the social fabric can be harmed or depleted by poor physical and structural conditions of neighborhoods, as well as by displacement and relocation of residents. Neighborhood-based social ties can both buffer against and reinforce negative aspects of social environment, such as crime and violence. Interventions that build social

[64] Wilson 1987.
[65] 2011.
[66] Metzger 2000.
[67] Kurth and MacDonald 2015.

support and group cohesion can improve health in Detroit. Relocation may lead to improved social ties in the new neighborhoods and/or disruption of ties in the old neighborhood.

Poor families and neighborhoods have disproportionately suffered from decreased social capital due to policies of land use, such as the urban renewal programs of the 1960s that resulted in dislocations that led to severed social ties and connections to both individuals and institutions[68]. Some of the effects of displacement on social networks include changes in residents' contact information; creating physical distance; diminishing face-to-face interactions of neighbors, taking away informal childcare or transportation arrangements among neighbors; and moving residents away from supportive services like food pantries, job training services, and youth programs[69].

[68] Saegert and Winkel 1998.
[69] Curley 2010; Kleit and Manzo 2006.

3 Neighborhood Safety

Neighborhood Safety refers primarily to the physical and social conditions that affect public safety of an area, and the potential health impacts of those conditions. Given the current conditions in the HV neighborhoods, the HIA focused on the impact of reduced/limited infrastructure renewal on *unsafe conditions*, in particular blight and vacancy, violent crime, and fear of crime. These conditions have a cumulative effect which may not be adequately captured in the literature. Evidence of the health impact of neighborhood safety that is specifically related to public lighting and demolition is summarized in more detail in each of those sections below (6 and 7).

Summary of Key Findings

- Neighborhoods experiencing disproportionate foreclosure are subject to increasing blight as many properties are left vacant and neglected.
- Blight and vacancy levels are associated with increased fear of crime, poor physical and mental health outcomes, and decreased physical activity.
- Living in neighborhoods with high rates of crime is associated with negative mental health outcomes, including depression, post-traumatic stress disorder, and substance abuse.
- Violent crime and fear of crime are associated with negative mental and physical health impacts, including obesity, high blood pressure, and increased risk for cardiovascular disease.
- Fear of crime is consistently associated with conditions in the physical environment, and to some extent with factors in the social environment such as social cohesion.
- Studies of increased lighting show increased perceptions of safety, but mixed effects on crime rates.
- Evidence for an association between vacancy and blight and types of crime is mixed.
- Tree canopy correlates with reduced crime rates.

3.1 Health Impacts of Blight

Less Physical Activity

Growing research suggests that the physical condition of a neighborhood is associated with physical activity. Recent evidence from Detroit supports the claim that the physical neighborhood environment is associated with physical activity. One Detroit study found that middle-aged and older adults who live in neighborhoods with a poor physical environment (i.e. poor house upkeep, heavy car traffic, vacant lots, air pollution, litter, etc.) reported less physical activity than younger residents.[70] Similar evidence shows that people are more physically active when the sidewalks are in better condition.[71,72] In addition, in a study done in three Detroit neighborhoods, residents living in well-connected street networks reported higher levels of walking as compared to those in less connected neighborhoods.[73] Finally, one study done outside of the U.S. shows that people who live in residential areas with higher amounts of incivilities (i.e. graffiti, litter, and dog mess) are 50% less likely to be physically active and 50% more likely to be overweight or obese than those who live in areas with higher levels of greenery and less litter.[74]

[70] Kwarteng et al. 2013.
[71] Ibid.
[72] Schulz et al. 2013.
[73] Wineman et al. 2014.
[74] Ellaway, Macintyre, and Bonnefoy 2005.

Poor Physical and Mental Health

Vacant and blighted land also contributes to poor physical and mental health. One study done in Philadelphia, a city with a high vacancy rate, found that residents noticed unsanitary conditions and the potential for injury in their neighborhood. Many people commented on the quantity of stray animals, hypodermic needles, debris, sharp objects, and drug addicts near vacant land. As a response, many reported negative emotions, such as sadness, depression, anxiety, and frustration. Some residents expressed sadness and depression from the trash buildup around their neighborhood. Others showed anxiety over their children playing near vacant land, fearful that their child will prick him/herself on a needle or witness violence.[75]

Increased Perception of Violence

The presence of blight and abandoned properties is sometimes associated with increased violence, drug use, and fear of crime.[76] In Oakland, California, the foreclosure crisis led to an increase in unmaintained vacant properties, which has contributed to an increase in violence, drug use, and fear among neighborhood residents. In-depth interviews with 388 residents found that 43% of residents reported an increase in the amount of drug activity in their neighborhood over the past two years, 39% reported an increase in neighborhood violence, and 47% did not feel their neighborhood is a safe place to live in the years following the foreclosure crisis.[77] [78]

Increased Crimes of Certain Types

While the perception of violence may increase, there is limited evidence that blight leads to an actual increase in crimes. A recent study in Detroit found that the prevalence of abandoned, blighted, and dangerous properties was marginally associated with overall crime and with an increase in drug crimes. Investigators also looked at the implications that neighborhood deterioration would have on crime rates and found that crime rates changed in a nonlinear fashion. Their model suggests that crime will rise rapidly during the initial stages of decline, will later slow down, and in the final states of deterioration and vacancy, will increase again. This finding is stronger for violent crimes. This research also found that a higher proportion of vacant houses (in contrast to blighted houses) was associated with higher rates of burglary and drug crime, but lower rates of larceny[79]. These findings may have implications on the high vacancy neighborhoods in Detroit.

3.2 Health Impacts of Violent Crime

Poor Mental Health

Living in an area with high rates of violent crime is associated with mental health impacts such as post-traumatic stress disorder (PTSD), depression, and substance abuse. A study with over 4,000 women across the U.S. concluded that women who experienced a crime were more likely to have

[75] Garvin et al. 2013.
[76] Phillips et al. n.d.
[77] Ibid.
[78] Raleigh and Galster 2013.
[79] Ibid.

PTSD than women who did not experience a crime. Women who received threats against their life or who suffered injuries as a result of the crime were also more likely to suffer from PTSD than other women. PTSD was highest among women who experienced physical assault and rape.[80]

In addition, a study with over 4,000 adolescents across the country found that both male and female adolescents who experienced or witnessed acts of violence were at a greater risk of suffering from PTSD, depression, and substance abuse.[81] Finally, a study with over 5,000 people between the ages of 50 and 74 found that people living in neighborhoods with more crime and who perceived their neighborhood as unsafe were more likely to have higher levels of depressive symptoms.[82]

Poor Physical Health

Violent and non-violent crimes are also associated with greater rates of obesity or other obesity-related diseases. In fact, a study at the county-level shows that walkable areas with low crime rates tend to have more people with lower body mass indices (BMIs) than less walkable, more crime ridden areas. Lifelong residents living in less walkable, high-crime areas tend to have more weight-related chronic disease and lower self-reported ratings of health. The effect of high crime rates has an even stronger effect on women's health as compared to men, with a higher likelihood of women suffering from diabetes and high blood pressure.[83] Another study of low-income women found that higher robbery rates were associated with higher BMIs and increased risk for cardiovascular heart disease.[84]

3.3 Health Impacts of Fear of Crime:

While fear is not as life-threatening as experiencing a violent crime, fear can impact individuals on many levels on a daily basis, disrupting quality of life and overall well-being. The following section explores the health impacts of fear of crime.

Less Physical Activity

Many studies show that people who perceive their neighborhood as safe are more likely to engage in physical activity and walk at greater rates. Researchers in Boston used surveys and pedometers to study the association between safety perception and physical activity among people in low-income urban areas. They found that women who reported feeling unsafe at night took fewer steps throughout the day than men who felt unsafe at night.[85] Similarly, the Centers for Disease Control and Prevention (CDC) analyzed data from the Behavioral Risk Factor Surveillance System and found that people who perceived their neighborhood as unsafe were less likely to be physically active. As expected, those who felt they lived in a safe neighborhood were more likely to be physically active. These findings were more pronounced among women over age 65, indicating that older women are the least likely to walk outside if they do not feel safe.[86] A review of the evidence on the link

[80] Perez-Smith, Albus, and Weist 2001.
[81] Kilpatrick et al. 2003.
[82] Wilson-Genderson and Pruchno 2013.
[83] Doyle et al. 2006.
[84] Mobley et al. 2006.
[85] Bennett et al. 2007.
[86] Centers for Disease Control and Prevention (CDC) 1999.

between fear, perception of neighborhood safety, and physical activity notes that some research shows an ambiguous relationship between safety and inactivity, but that studies focusing on women, children, and the elderly have more consistently shown a stronger link between feeling safe and engaging in physical activity.[87]

The CDC reports a number of benefits of staying physically active. Those who meet the recommendations of either 150 minutes per week of moderate-intensity aerobic activity, 75 minutes per week of vigorous intensity aerobic activity, or an equivalent combination of the two have a lower risk of cardiovascular disease, stroke, and type-2 diabetes. Moreover, regular physical activity can lead to a lower blood pressure and a healthier cholesterol level. Furthermore, it can even reduce the risk of developing colon cancer and breast cancer. Finally, physical activity can improve one's mental health and overall mood[88].

[87] Loukaitou-Sideris 2006.
[88] Centers for Disease Control and Prevention (CDC) 2011.

4 Environmental Conditions

Environmental Conditions refers primarily to the physical environment, such as air, water, soil, and also includes features of the built environment that impact health, such as the condition of housing stock. During the scoping process, the HIA focused more narrowly on the pathways related to blighted buildings, demolition as a strategy to remove them, and vacant land (both before and after demolition). The literature review looked at evidence on the effects of blight and demolition on the physical environment and health through exposure to contaminants in soil, air, and water. These findings are in section 7 on Demolition. The condition, extent, and use of vacant land also contribute to climate change-related health impacts. The complete literature review includes many areas which were subsequently scoped out of the HIA. Below is a summary of the relevant evidence synthesized from the complete review of the literature, which can be obtained on request.

Summary of Key Findings

- Environmental issues that impact health include the number of brownfield sites, the high metal content in the soil, elevated lead exposure, especially in children and high rates of asthma associated with identified air toxins and particles that are emitted by automotive (e.g., diesel) and industrial sources.
- Environmental air quality is associated with multiple health outcomes, including asthma, cardiovascular disease, and hypertension.
- The majority of schools in the two most polluted deciles of Michigan were located in the more polluted parts of their respective school districts, compounding the pollution burdens for students attending those schools.
- Schools located in the areas of highest toxic air concentration were more likely to have students with lower attendance rates and scores on achievement tests.
- Due to climate change, there is a projected increase in extreme heat events which can result in heat-related mortalities. Elderly, infirm, young children, and low-income populations are most vulnerable to heat waves.
- Trees and vegetation offer protection against extreme heat events; increase oxygen production and reduce levels of smog, thereby improving air quality; and improve water quality and storm water management and flood control.
- Living in areas with high levels of greenery is associated with increased physical activity and lower rates of obesity.

4.1 Access to Healthcare and Healthcare Utilization

In developing the scope of the HIA, *healthcare access* was included on the Environmental Conditions pathway because the physical environment, that is, where people live and the proximity of healthcare services to residential neighborhoods, may impact the accessibility and utilization of services. Further, reducing the provision of city services and infrastructure in high vacancy neighborhoods may affect health and healthcare utilization in other ways, from decreasing neighborhood stability and cohesion to raising environmental health risks. Healthcare services can encompass a wide range of care including, but not limited to, primary care, subspecialty care, emergency/urgent care, hospitalizations, mental health, dental care, and pharmacy use. D-HIA used previous HIAs, peer-reviewed literature, lay press articles, and personal communication to develop a pathway diagram. Key terms in our searches included: healthcare access, healthcare utilization, healthcare, shrinking cities, blight, and reduction of city services. The key findings were incorporated

in relevant sections of the literature review in the main report, rather than reported under the Environmental Conditions section.

Summary of Key Findings

- Travel time and access to transportation affect access to care for vulnerable populations such as the elderly, disabled, teens, and low-income families.
- Loss of income or increased expenses (e.g., housing costs) can result in financially burdened individuals forgoing medical care that can lead to negative health outcomes.
- Living in areas with high levels of greenery is associated with increased physical activity and lower rates of obesity.
- Reduction of city services and resulting displacement may put residents at risk for homelessness which is associated with increased emergency care and hospital utilization.

Changes in the provision of city services could lead to residents having difficulties maintaining employment and therefore in maintaining healthcare benefits. Without healthcare benefits, residents may find it difficult to access healthcare, and this can have an impact on access for acute medical needs and longer-term impacts on access to preventative services to promote overall health and longevity.[89] Not only may a change in benefits affect healthcare access and utilization but change or loss of employment could lead to loss of income, which is also associated with an increased risk of forgoing of medical care[90].

"Rebuilding Neighborhoods, Restoring Health: A report on the impact of foreclosures on public health", an HIA done in Alameda County, CA, conducted a survey of residents and found that a 30% of respondents reported that a loss of income resulted in forgoing medical care. Thus loss of income could lead to a variety of health trade-offs, and one of the first that is sacrificed is medical care. Among the elderly, especially, this tradeoff can lead to an increase in adverse events including emergency department visits and hospitalizations[91]. In addition, change in city services, can particularly affect access for elderly, teens, the disabled, and low-income families who may rely on city-based support to seek out healthcare (patient choice HIA).

4.1.1.1 Impacts of displacement and relocation on healthcare access and utilization

A reduction in the provision of city services such as public lighting, water, electricity, and street maintenance may force residents out of their current neighborhoods and housing. Displacement may lead to a loss of usual sources of medical care and increased emergency or urgent care use. For example, an HIA on foreclosures reported that 40% of respondents identified a usual source of medical care in the neighborhood (foreclosures2.pdf (Rebuilding Neighborhoods, Restoring Health: A report on the impact of foreclosures on public health")). Thus, displacement may lead to a loss of usual source of care for many Detroit residents.

Displacement could also lead to longer travel times for medical care and a loss of existing support systems. The Patient Choice HIA cites that longer travel distances may affect care for elderly and disabled persons who may not be able endure long distance travel. In addition, many elderly and disabled may rely upon their existing neighborhood support systems to access medical care.

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[90] Bhatia and Katz 2001.
[91] Tamblyn et al. 2001.

Non-English speaking and ethnic minority populations could experience a disproportionately negative impact on access to culturally competent medical care (Hope IV to HOPE SF HIA). Many federally qualified health centers (FQHC), such as Community Health and Social Services Center (CHASS) in Southwest Detroit, may experience a decrease in government funding sinceFQHC funding is based on the ability to document need for primary care services in their area (http://bphc.hrsa.gov/about/requirements/index.html). Relocation of residents may lead to a reduction in the population served by both public and private providers, leading to relocation or potential dissolution of FQHCs serving vulnerable populations. The Patient Choice HIA cites the importance of culturally appropriate care, and for those individuals who currently receive this, displacement may lead to a loss of proximity to culturally and age-appropriate health resources.

Reduction in city services and eventual displacement of residents from their homes puts families at risk for homelessness[92]. Thus, the provision of affordable housing options is an important strategy for prevention of homelessness. Data from San Francisco has shown that prolonged periods of homelessness are associated with increased emergency department utilization and hospital admissions.[93] Additionally, residents may move to poorer housing in neighborhoods with fewer community resources. This could lead to increased health services use due to poor access to heat, cooling, electricity, food, land safety, and poor air quality. These kinds of exposures can lead to increases in disease burden felt by residents. They may experience dust exposure from demolitions, increase in rodent burden, crime, accidents, injury, stress, fear, and social isolation, and subsequently more use of healthcare services.

4.1.1.2 Potential health benefits of relocation

There may be benefits to relocation. If occupants move from areas with poor city infrastructure to improved infrastructure and greener built environments, this could lead to better health. The South Lincoln Denver HIA study cites the following, “A European study found that residents in areas with high levels of greenery had three times the likelihood of being more physically active, and a 40% lower occurrence of being overweight and obese than in similar areas with low levels of greenery.” If relocated individuals move to areas with improved environmental conditions and neighborhood safety, then this may improve disease burden of preventable non-communicable diseases including cardiovascular disease, asthma, and diabetes.

Relocation could improve access to care if there are more health resources in their new neighborhoods. Relocated residents may experience an ease of finding needed healthcare services leading to a decrease in emergency and urgent care use, and an increase in primary care use. Residents may relocate to neighborhoods with better neighborhood cohesion, stability and housing, thus decreasing crime, fear, injuries, and accidents.

4.1.2 Assessment of potential/predicted impacts on healthcare and services access

Displacement

- Displacement may lead to loss of usual source of care and increase in emergency/urgent care use
- Displacement may lead to worse housing conditions which will disproportionately affect health and access of vulnerable populations, specifically children, elderly, and disabled

[92] Fertig and Reingold 2007.

- Displacement may lead to lack of culturally and age-appropriate health resources
- Homelessness is associated with increased emergency department utilization and hospital admissions

Relocation

- If relocated individuals move to areas with improved environmental conditions and neighborhood safety; this may improve disease burden
- Relocation could potentially improve access to care
- Relocation of population could negatively affect health service providers, both public and private, by reducing population in catchment area (FQHCs).

City Services

- If there is a change in city service-related employment or employment status this may lead to change in health benefits that could affect health utilization
- Loss of income is associated with forgoing of medical care, including medical visits, preventive services, and medication/health supplies
- Loss of existing city-based support system could impede healthcare access for elderly and disabled

4.1.3 Limitations of Assessment of Healthcare Access and Utilization

The main limitation to this assessment is the difficulty in obtaining data on healthcare use by Detroit residents. The Chief Medical Executive for the State of Michigan, Dr. Matt Davis, states, "There are no uniform publicly accessible resources that would inform us about where residents of the city of Detroit seek their healthcare."[94] Without data sources to inform current use, it is difficult to predict future use.

[94] Davis 2014.

5 Displacement, Relocation, and Gentrification

Displacement, Relocation, and Gentrification refers to three interrelated effects and processes of neighborhood change that result in changes in the make-up of neighborhood. Displacement and relocation refer to the movement or removal of residents or businesses from a home or neighborhood, typically due to changing housing and economic conditions such as redevelopment, or, conversely, from widespread foreclosures and continuing disinvestment. Gentrification is "the process by which higher income households displace lower income residents of a neighborhood, changing the essential character and flavor of that neighborhood"[95]. Increasing property values and higher costs of living and doing business can result in displacement of original residents. Those particularly vulnerable to displacement are renters, elderly, and people of color. The level and type of investments in infrastructure and city services can impact the quality of neighborhoods, driving the process of either gentrification or further decline, both of which can result in displacement of existing residents. The impacts of relocation on health and well-being depend on whether it is voluntary or involuntary, and affect those being relocated, those who remain, and those who live in the areas where people relocate to.

Summary of Key Findings

Displacement and Relocation

- Relocation and involuntary displacement can cause or contribute to mental stress, loss of supportive social networks, costly school and job relocations, and increased risk for homelessness, substandard housing and overcrowding. Health effects are more adverse when the relocation is forced.[96]
- Inadequate services and infrastructure (e.g., water, heat) and displacement may put residents at risk for homelessness, which is associated with poor health outcomes as well as increased emergency care and hospital utilization.
- Widespread foreclosures due to high-risk lending and tax-reversion are a major contributor to displacement, instability, vacancy, and blight. More than one-in-three homes in Detroit were foreclosed from 2005 – 2014, with 102,000 tax foreclosures alone from 2007 - 2014.
- Studies on the effects of foreclosures include: financial instability and lasting impacts on wealth that could potentially affect multiple generations; adverse health outcomes because of the instability following removal/eviction and the disruption of a community's social ties and access to key institutions; and homelessness.
- Hard-to-house populations including the elderly, large families, people with disabilities, those who have been arrested or incarcerated, and have poor credit histories, are particularly vulnerable to homelessness and housing insecurity.
- Increased mobility at childhood was strongly associated with adverse childhood events such as abuse, neglect, household dysfunction, smoking, suicide. Odds of health risks for adolescents with high mobility during childhood ranged from a 1.3 times higher risk for smoking to a 2.5 times higher risk for suicide.[97]
- Increased mobility in childhood (moving 3 or more times by the age of 7) resulted in a 36% increased risk of developing depression. [98]
- Increased mobility at childhood correlated to academic delay in children, school suspensions, emotional and behavioral problems. [99]

[95] Kennedy and Leonard 2001.
[96] Guzman, Bhatia, and Durazo 2005.
[97] Dong et al. 2005.
[98] Gilman et al. 2003.
[99] Cooper 2001.

- Neighborhood change can be stressful for long-time residents who feel unable to control the events surrounding them which can have negative mental and physical health repercussions.
- One HIA found that land use policies have the potential to harm social cohesion if displacement or "actions that indirectly lead to neighborhood disinvestment" are allowed to happen.
- In national tracking studies of public housing residents relocated from redevelopment sites, fewer than 10% had returned to newly remodeled housing.
- Programs to relocate public housing residents from high poverty neighborhoods (MTO) or to revitalize public housing through demolition (HOPE VI) have shown mixed or little social and health benefit[100].
- Neighborhoods experiencing disproportionate foreclosure are subject to increasing blight as many properties are left vacant and neglected.
- There is mixed and conflicting evidence of the health effects of housing improvements, such as rehousing and area regeneration, on health and social outcomes.[101]
- Loss of social networks may counteract satisfaction with improved housing conditions.

Gentrification

- Influx of economically stable households may stimulate improvements that have beneficial effects for the neighborhood as a whole and those who currently live there, including improved infrastructure, health-promoting resources, and amenities.
- Gentrification can impact health by increased cost-burden on both households who remain and on those who move out, due to relocation costs.
- Increased expenses for current residents (e.g., higher cost for rents, property taxes, local amenities and services) can result in financially burdened individuals forgoing medical care that can lead to negative health outcomes.
- Gentrification can exacerbate racial segregation and discrimination in the housing market.[102]
- Black/African American households who are displaced are more likely to find themselves in neighborhoods with fewer health-promoting resources and/or lower quality amenities.
- As more lower-income residents get displaced, the concentration of poverty in other areas becomes more likely.
- Specific neighborhoods and the city as a whole may experience change of historical, cultural, and racial character and identity.
- Heightened tensions between old and new residents may result from and exacerbate inequities.

5.1 Health Impacts of Displacement and Relocation

Previous research shows that residential relocation has inconsistent impacts on health status.[103] Despite these inconsistencies, there is substantial evidence that poor housing is a leading determinant of health inequalities in the United States.[104] Unmet housing needs can be particularly harmful on the health of low-income and vulnerable populations.[105]

Involuntary relocation contributes to feelings of anger, depression, isolation, and hopeless. There may be feelings of lack of control regarding an involuntary move or anger and a lack of control

[100] Galster and Zobel 1998.
[101] Thomson, Petticrew, and Douglas 2003.
[102] Wyly and Hammel 2004.
[103] Curtis, Cave, and Coutis 2002.
[104] Hood 2005.
[105] Bhatia 2005.

associated with the price and quality of new housing.[106] Changes in current housing costs may lead to financial constraints in other areas such as food, medicine, and/or health care. Relocation may lead to interruption of social support networks, and decreased walkability/daily mobility and interactions. Lack of mobility and social interaction may lead to increased feelings of hopelessness, suicide, and other mental health problems. Isolation tends to decrease access to healthy lifestyles and behaviors and could potentially increase negative health outcomes such as high blood pressure, diabetes, obesity, child and elderly neglect, and unintentional injuries.

Case Study: MTO, HOPE VI

MTO was a program that sought to move tenants in public housing to low-poverty neighborhoods by providing rental assistance (Section 8) only in eligible neighborhoods and housing counseling in five cities: Baltimore, Boston, Chicago, Los Angeles, and New York City). HOPE VI on the other hand was a program meant to revitalize public housing projects by demolishing high rises and turning them into low-rise mixed income communities. The program's goals of increasing safety and decreasing social isolation through design, while in principle were meant to increase quality of life, in fact harmed many residents. Many residents were displaced indefinitely and many of the new residential units developed for middle and upper income residents exclusively or had minimal provisions for original residents. A national tracking study found that only 14-19% of residents had eventually returned [107]

Analyses of these programs have found mixed evidence regarding the actual social and health benefits conferred to individuals who left disadvantaged and racially segregated neighborhoods. Further, many studies show that destination neighborhoods were not much different than the original contexts they left.

Criticism of both programs is extensive within the social science literature, particularly their effects on displacement and trickle down effects[108]. Neoliberal policies that seek to regain the value of inner cities by redeveloping them, do so under the guise that new opportunities for commerce, entertainment, and culture will somehow trickle down to benefit original residents[109]. Moreover, social pathological views blame the victim rather than recognizing that social outcomes in impoverished neighborhoods are the result of institutionalized racism. Rather than address the root causes of poverty and inequality, policy solutions that displace and demolish, disrupt communities by failing to understand that these places have value.

Health Impacts of MTO and HOPE VI

The main pathways through which MTO and HOPE VI affect health that have been investigated are the disruption of social ties, the psychological distress caused by relocation, and on child education outcomes.

Place Attachment

[106] University of Minnesota n.d.
[107] Buron et al. 2002.
[108] Galster and Zobel 1998.
[109] Crump 2002.

Displacement can threaten mental health due to personal connections to place that are made up of: attachment ("mutual caretaking bond between a person and a beloved place"); familiarity ("processes by which people develop detailed cognitive knowledge of their environs"); and identity ("extraction of a sense of self based on the places in which one passes one's life") [110]. Disrupting these connections can be understood through a process of grieving, which Fried [111] documented in interviews with displaced residents in the West End of Boston, who described their feelings in similar ways to patients who have lost a loved one. The blurring of lines between individuals and places or the extension of self in place points to the function of neighborhoods as a space where meaning is derived and created. By extension, threats to one's environment are understood as direct threats to self and feeling that one's place is devalued by others can be internalized and compromise self-worth[112].

Place attachment is defined as the bond created between the interaction of people and places. One of the major effects of displacement caused by HOPE VI was its impact on the place attachment residents had formed to their housing complexes over time. Since these places were overgeneralized as dysfunctional, policy makers missed the richness and diversity of these places and the importance that residents put on place in spite of the negative circumstances. A qualitative study found that a majority of residents of a public housing site (64%) said that they thought of their place of residence as a good place to live, citing that the community provided a sense of belonging, mutual assistance, material exchange, and a sense of security[113]. In addition, another study found that negative neighborhood characteristics as measured through decreased social support, low levels of collective efficacy, fear of crime, and social disorder, do not explain lower levels of place attachment[114]. They also found that place attachment can vary by individual characteristics, with older residents and those with longer tenure in the complex expressing more feelings of attachment. These findings point to the limitations of classifying communities solely by indicators of social disorder and that even in the most dysfunctional communities, residents find value and attachment.

The attachment to place can be seen as a protective coping mechanism, particularly in communities that are stigmatized. One study investigating residential dissatisfaction and desire to leave a neighborhood found that place attachment was a key determinant of those deciding not to move [115]. Instead, residents found ways to deal with neighborhood problems or adapted by withdrawing from the neighborhood or avoiding particular places. While the latter finding can increase the potential for social isolation, it also reinforces the importance of place attachment in the face of neighborhood decline. Social capital is also a function of place attachment, with place attachment predicting higher levels of social capital[116].

[110] Fullilove 1996.
[111] 1963.
[112] Fullilove 1996.
[113] Manzo, Kleit, and Couch 2008.
[114] Tester et al. 2011.
[115] Land and Doff 2010.
[116] Curley 2010.

A review of the health impacts of HOPE VI found a 14% increase in reporting health as poor or fair and a 10% increase in reporting an illness after relocation[117]. Other researchers investigating HOPE VI have also confirmed worsening health profiles caused by relocation[118].

Similar contexts to MTO have corroborated the findings that moving to higher SES neighborhoods can have positive mental health impacts such as reductions in anxiety[119]. However, many scholars point out these improvements are small and due to decreases in exposure to contexts where violence and disorder are commonplace.

A review of the evidence on the effects of housing regeneration and relocation programs found mixed and conflicting evidence on health and social outcomes, with benefits of improved housing (reduced exposure to mold, lead) being counteracted by disruption of social networks and other detrimental effects of relocation[120].

Social Networks and Relocation

Relocation has important impacts on individuals' existing social networks and ties. Investigating the impacts of HOPE VI, Clampet-Lundquist [121] found that those displaced suffered a net loss of neighborhood friends and overall narrowing of social networks. In addition, many reported staying to themselves to avoid potential conflict with neighbors, thereby decreasing opportunities to generate new ties. In another study investigating the impact on adolescent's social networks, Clampet-Lundquist [122] found that the loss of intergenerational and institutional ties were particularly important for youth, which provided organized activities. However, other researchers argue that social networks are flexible and resilient and over time can be regenerated[123]. While some investigators point out that "draining" ties from previous communities can be damaging, others argue that the complexity of relationships cannot be reduced into binaries of good and bad.

Social Cohesion and Relocation

A quasi-experimental study that examined a neighborhood mobility program similar to MTO, found that movers were more likely to get off welfare and reported higher levels of social cohesion and less disorder but had similar levels of health and weaker social ties than those who stayed [124].

Health Impact of Stigma Due to Neighborhood Reputation

Reputation and neighborhood stigma can also exert effects on individual mental health. One study found that after controlling for neighborhood satisfaction and attachment, perceived neighborhood reputation was a significant predictor of moving intention[125]. Stigma can affect health by causing stress through exposure to prejudice and racism. Feeling that your neighborhood has a bad reputation is associated with fair or poor self-reports of health status and decreased life

[117] Keene and Geronimus 2011.
[118] Manjarrez, Popkin, and Guernsey 2007.
[119] Casciano and Massey 2012.
[120] Thomson, Petticrew, and Douglas 2003.
[121] 2004.
[122] 2007.
[123] Kleit 2010.
[124] Fauth, Leventhal, and Brooks-Gunn 2004.
[125] Permentier, Ham, and Bolt 2009.

satisfaction[126]. Further, the stigma of place can also follow you, as was found in an ethnographic study that followed Chicago public housing residents who were displaced by HOPE VI and encountered resistance from their new communities[127]. Displaced residents adopted strategies of defensive othering (by attempting to differentiate themselves from other former public housing residents) and isolating themselves from the new community to avoid stigma. This finding is particularly pertinent to the DFC, if residents of low vacancy communities oppose newcomers based on their race or class status. Part of the success of the DFC is contingent upon the assumption that movers will be seamlessly integrated within an existing community.

5.2 Health Impacts of Gentrification

Voluntary or Involuntary, Leaving or Remaining

There are differences within and among communities in how particular groups view relocation, and impacts vary by age (elderly, children), race and ethnicity, and income. Further, the health impacts of relocation depend on whether it is voluntary or involuntary. In a study examining a diverse public housing project slated for demolition in Minneapolis-Saint Paul, cultural differences and past historical treatment affected how Southeast Asian immigrant and African-American residents reacted towards demolition[128]. Southeast Asian families greatly opposed demolition because they were most likely to benefit from the spatial concentration of services provided within the public housing complex. On the other hand, African-American residents did not oppose demolition per se as long as the site was not redeveloped for others due to their previous experience with urban renewal.

Many community members fear that redevelopment will lead to gentrification and displacement. Evans and Shaw (2004) find that creative clusters may cause too much success, leading to large increases in property values and loss of the existing community. Research has found that redevelopment can raise rents, forcing original residents to spend too much of their income on housing or live in substandard or overcrowded conditions in order to remain [129]. Other challenges caused by displacement include attempting to find housing under limited financial resources and a discriminatory rental market. [130]. As more lower-income residents get displaced, the concentration of poverty in other areas becomes more likely.

A recent HIA examined the impacts of urban development policy on gentrification and displacement, and potential public health consequences on neighborhoods and residents[131]. Gentrification can contribute to health inequities, as Black/African American households who are displaced are more likely to find themselves in neighborhoods with fewer health-promoting resources and/or lower quality amenities[132].

[126] Kelaher et al. 2010.
[127] Keene, Padilla, and Geronimus 2010; Keene and Padilla 2010.
[128] Goetz 2000.
[129] Ellen, Mijanovich, and Dillman 2001; Haas et al. 2006; Lipman 2006.
[130] Human Impact Partners, Advancement Project, and National People's Action 2012.
[131] Causa Justa::Just Cause 2015.
[132] Beyers et al. 2008.

As previously described, the Steering Committee decided during scoping that in addition to the overall health impact assessment of the DFC strategic renewal approach, the HIA would take a more focused look at two more specific proposals being implemented - Public Lighting and Demolition for Blight Removal. Thus, a more detailed literature review was conducted on these two areas, which includes findings in the major domains/pathways reviewed above (stability and integrity, safety, displacement and relocation, and environmental conditions). The results are presented here.

6 Public Lighting

Public Lighting refers to a city's street lighting system. Public street lighting serves as an important contribution to neighborhood safety as well as a determinant of health. A large evidence base indicates that increased lighting is associated with improved safety perceptions,[133,134,135] fewer police calls,[136] increased nighttime foot traffic,[137] and an increase in community pride and confidence.[138] These improvements in neighborhood safety have positive health impacts, such as increased physical activity, greater social interaction, and a reduction in fear, which can lead to lower obesity rates and improved mental health. Without appropriate lighting, neighborhoods are vulnerable to reduced neighborhood safety and negative health impacts. This section explores the impacts that both a reduction and an increase in public lighting have on health.

Summary of Key Findings

- Presence of street lighting is consistently associated with overall perceptions of safety, and has been associated with fewer police calls and community pride and confidence.
- Increased lighting led to reduced fear of being robbed or attacked, and to more walking outside, particularly among young and elderly women.
- Pedestrian scale lighting improves pedestrian safety and quality.
- Stationary and walking pedestrians felt safer when light was in their immediate surroundings, as opposed to the road ahead, and when they noted many possibilities for escape.
- Improved public lighting is a sign of community investment and of neighborhood stability, which can lead to increased feelings of community pride.
- Little research has documented the effects of a reduction in public lighting.
- The evidence is mixed that more public lighting will reduce crime.

6.1 Street Lighting and Reduction in Crime (mixed evidence)

Some research suggests that the presence of public lighting is associated with less crime, but the evidence is mixed. A systematic review found that improved street lighting led to significant overall reductions in crime in several cities located in the United States and England. The types of crimes

[133] Haans and de Kort 2012.
[134] Herbert and Davidson 1994.
[135] Painter 1996.
[136] Quinet and Nunn 1998.
[137] Herbert and Davidson 1994.
[138] Farrington and Welsh 2002.

included robbery, burglary, assault, property crime, and violent crime. Although crime decreased overall, several cities within the review did not experience crime reduction.[139]

On the other hand, an extensive research study in London found no evidence to support the idea that increased street lighting reduces crime rates. The London Borough of Wandsworth maintained a detailed database of about 100,000 crimes occurring one year before and one year after the installation of 3,500 street lights, and matched the crimes with the locations of street lights. Although some areas and some crime types did show reductions in crime rates at night, the overall effect was little to no reduction in crime.[140]

6.2 Street Lighting and Improved Perception of Safety among Women and Elderly

While the impact on crime rates is not certain, the presence of public lighting has consistently been shown to improve the perception of overall safety, especially among women and the elderly. A large-scale evaluation and a review of public lighting impacts demonstrate that increased lighting contributes to less fear of crime and improved overall sense of safety.[141, 142] In a comparative study of two cities in the U.K with similar features to Detroit, in that both experienced moderate population decline, economic change, and restructuring, researchers found that installation of new street lighting led to an increase in perceived safety as demonstrated by pre and post interviews and surveys.[143] Moreover, people felt that safety had improved for women and the elderly.[144] In a large street light study in London, while they did not find an association between lighting and crime, they did find that street lights contributed to an increased sense of safety among women walking alone at night.[145] In addition, a study done in North London found that increased lighting reduced fear of physical attack among men and women. In their survey conducted twelve months after the lighting installation, elderly residents showed a 77% reduction in fear of being robbed and a 65% reduction in fear of being assaulted.[146] While the impact of street lighting can reduce fear of crime among all residents, women and the elderly often sense a larger improvement than less vulnerable residents.

Finally, the placement of lighting serves an important role in increasing safety perceptions. In fact, stationary and walking pedestrians felt safer when light was in their immediate surroundings as opposed to the road ahead. People also felt safer when they noted many possibilities for escape.[147] While simply increasing the lighting in a neighborhood can increase safety perceptions, understanding where to place public lighting can maximize its safety benefits.

6.3 Street Lighting and Fewer Police Calls

Increased lighting has been shown to reduce the total number of police calls made in the neighborhood. In several Indianapolis neighborhoods, the majority of areas that received more

[143] Herbert and Davidson 1994.
[144] Ibid.
[145] Atkins, Husain, and Storey 1991.
[146] Painter 1996.
[147] Haans and de Kort 2012.

public lighting had a reduction in total police calls after lighting installation. The most clear cut decline in police calls after lighting installation occurred at all three intersections under analysis.[148]

6.4 Street Lighting and Increased Nighttime Foot Traffic

Several studies have demonstrated that an increase in street lighting led to an increase in pedestrian traffic at night. In a study that focused on three separate streets that were poorly lit and showed signs of disorderly behavior, litter, dilapidated property, and dogs roaming unrestrained, an increase in public lighting led to an increase in the number of people using the streets in the evening.[149] Similarly, one study showed that increased lighting led to greater perceptions of safety as well as an increase in the number of people walking outside past 9:00pm. The effect was even more pronounced for young and elderly women.[150]

6.5 Street Lighting and Increase in Community Pride and Confidence

Increased public lighting can also be seen as a cause of increased community pride and confidence. In one systematic review, authors found that daytime and nighttime crime decreased by the same amount after an increase in public lighting, and they suggested that this is due to an increase in neighborhood pride. They suggest that neighborhood pride increased because improved public lighting is a sign of community investment and of neighborhood stability, which can lead to increased feelings of community pride. In conclusion, they note that public lighting improves surveillance and visibility that may deter potential offenders, but due to the equal reduction in daytime and nighttime crime, they posit that investments in public lighting can serve as a cause for increased community pride.[151]

6.6 Limitations and Gaps in Evidence of Public Lighting

Several limitations exist in finding evidence of the effects of public lighting. Most published studies on the relationship between public lighting and its relationship to crime were done outside of the United States. Due to differences in the social, economic, and racial makeup of these other countries (i.e., England and The Netherlands), we need to be cautious in generalizing these findings. Moreover, while increased public lighting has been shown to reduce fear of crime, other neighborhood-level factors contribute to fear of crime as well. It is important to further analyze why certain areas remain targets for high crime activities, especially after dark, because street lighting is not the only factor associated with neighborhood safety.

Furthermore, relying on a decrease in the number of police calls as an indicator of less crime may be a limited measurement.[152] The variable, fewer police calls, is not necessarily an indicator of neighborhood crime because many crimes go unreported, and some police calls are unrelated to crime. An increase in police calls may mean that more people care about and are engaged in the safety of their neighborhood, which may have nothing to do with actual crime rates. Conversely, in some areas residents may not call police because they are not confident that police will respond or that police response may harm rather than benefit the neighborhood. The context surrounding the number of police calls should be examined in order to determine what motivates people to call the police.

[148] Quinet and Nunn 1998.
[149] Painter 1996.
[150] Herbert and Davidson 1994.
[151] Farrington and Welsh 2002.
[152] Quinet and Nunn 1998.

Several gaps exist as well in the public lighting literature. While a wide range of evidence exists to show the effects of increased public lighting, few studies have focused on the decommission of public lighting throughout a neighborhood. Due to the potential infrastructure changes and the "planned shrinkage" in Detroit, it would be beneficial to have more literature on the effects of delayed public lighting so that the literature more closely resembles the Detroit context.

One difficulty of employing further research is the unethical nature of carrying out a randomized control trial of reducing public lighting in some neighborhoods over others. Observational studies could feasibly assess the impacts of reduced lighting, but the key is to know when public lighting will be distributed so that researchers can study baseline conditions before the installation of lighting.

7 Demolition as Blight Removal Strategy

Demolition as Blight Removal Strategy refers to the widespread use of demolition as the means to remove blighted and vacant houses, either singly or across an entire area. Large-scale demolition has historically been used in urban renewal to clear areas for new development. Other strategies to address blight include selective demolition, rehabilitation, preservation, and rebuilding. The literature review focused on health impacts of demolition related to the social environment, relocation and displacement, neighborhood safety, exposure to environmental pollutants both from existing housing stock and the process of demolition, and changes in land use and socioeconomic structure of an area.

Summary of Key Findings

- Blight and vacant land are associated with trash build-up and unsanitary conditions, stray animals, increased violence, drug activity, and fear, and contribute to poor physical and mental health outcomes.
- Living in substandard housing is associated with negative physical and mental health outcomes in children and adults.
- Demolitions are associated with increases in lead dust fall, higher blood lead levels in children, and release of other contaminants into air and soil (e.g., mercury, asbestos).
- Large amounts of lead-contaminated dust are generated from housing demolition, but can be controlled using simple dust suppression and other practices ("responsible demolition") to protect the public health.
- Widespread demolition has contributed to racial segregation and disruption of social networks.
- Few studies have examined whether demolition affects the mental and physical health of residents living near the demolition process.
- There is a lack of research on the social and health impacts of demolition rather than focusing on physical aspect of abandoned and vacant housing.
- One study found community concerns about lack of notification, safety, risks from resulting vacant land, the impact of demolition rather than rebuilding, and community involvement in planning and decision-making.
- Widespread demolition can result in large areas without tree canopy; unmaintained growth of weeds can contribute to seasonal allergies.
- Trees and vegetation offer protection against extreme heat events; increase oxygen production and reduce levels of smog, thereby improving air quality; improve water quality; and aid in storm water management and flood control.
- Tree canopy correlates with reduced crime rates.
- Demolition projects are associated with a spatial migration of crime.

7.1 Blight Clearance and Urban Renewal

Demolition of older homes and reduction of city services, such as fire services, has played a major role in many urban revitalization plans throughout the country[153]. Historically, demolitions have aided in removing blighted buildings and clearing "slums" to make room for new developments. New York City is a prime example of how demolitions were used during the urban renewal process. In New York City between 1945 and 1965, urban renewal efforts that were labeled "humanitarian and reformist" resulted in the displacement of between one hundred and two hundred thousand

[153] Egan et al. 2013.

individuals, the majority of whom were poor, minority residents[154]. These slum clearance programs resulted in family displacement, community disorganization, and a loss of community institutions such as churches, social clubs, and small factories. Often, as a result, residents had to move to worse living conditions than they had lived in originally. However, starting in 1969, New York City carried out policies of "planned shrinkage," or reducing city services such as fire fighters in poor neighborhoods, which often resulted in far worse effects than the slum clearances of the previous two decades[155]. While not much research has studied the removal of city services from poor neighborhoods, Wallace and Wallace note that due to shrinkage policies, several ethnic groups moved to the suburbs and millions of people were displaced, likely due to a lack of new housing being built during this period.[156]

In *The City After Abandonment*, Margaret Dewar and June Manning Thomas bring in various authors to discuss what happens to cities after abandonment, what makes a difference in what cities become after abandonment, and what urban planners and policymakers' roles might be in a city after undergoing population loss. Regarding the large-scale demolition in Detroit, Chapter Three notes that demolishing vacant buildings does not actually change the structural forces that caused Detroit's decline. The chapter goes on to highlight some examples of how art and citizen participation have brought life to vacant spaces in Detroit. A nonprofit organization, Motor City Blight Busters, engages the community in "stabilizing and revitalizing neighborhoods" by either carrying out demolition, renovating and building new homes, or beautifying vacant spaces into community gathering spaces[157]. Art is one mechanism through which to engage community residents and to offer to ways to think about Detroit's future.

7.2 Increased Displacement and Racial Segregation

Urban renewal projects that demolish large areas of buildings do not merely alter the physical landscape of a city. These projects inevitably reshape the demographic, social, and political landscape as well. A study examining the effects of public housing demolition on racial segregation found patterns of increased gentrification, poverty redistribution throughout cities, and heightened racial segregation[158]. The findings offer evidence that the potential impacts of the blight removal strategy in Detroit have wider regional impacts. This study found compelling evidence to support the notion that when low-income residents are forcibly dislocated from (public) housing projects through state-funded gentrification programs, they tend to move to nearby areas that are similarly economically disadvantaged and thus do not benefit from any of the benefits of gentrification (e.g. increased city services, reduced crime).[159]

These demolition projects also have a pattern of perpetuating racial segregation throughout cities. The same study found that low-income residents are rarely able to return to their original places of residence, with a return rate of only about 14-25%, largely due to unaffordable housing, more rigorous management tenant-screening standards, and the fact that after residents have been displaced once, they will often avoid a second displacement. The study examined the effects of

[154] Wallace and Wallace 1998b.
[155] Ibid.
[156] Wallace and Wallace 1998c.
[157] Dewar and Thomas 2013.
[158] Goetz 2011.
[159] Ibid.

"direct displacement" and "indirect displacement." One finding was that demolition projects in housing structures that predominantly housed African Americans were more likely to come down, or have a completed demolition than in housing with a more integrated population.[160] Negative mental health impacts include feelings of isolation in new, foreign neighborhoods without a sense of community.[161,162]

Disruption of Daily Life

Demolition projects associated with urban renewal often take place in low-income neighborhoods where residents may continue to live near construction sites throughout a demolition and its aftermath. During these urban renewal construction and deconstruction projects, neighboring residents may face a disruption in their daily routines that relate to loud noise for extended periods of time, heavier traffic, disruptions in public transit lines, and a general sense of discomfort that may occur when one's familiar landscape rapidly changes. However, having kin and neighbor social support during the process of urban renewal can help improve residents' mental health.[163]

Due to the potential for demolitions to cause various disruptions to daily life, community residents often voice concerns about the demolition process. In a study about community concerns regarding demolitions for an urban redevelopment project in Baltimore, residents expressed various worries about the impact it would have on their lives. Their main concerns centered around lack of notification, safety, accumulation of trash, and disinvestment. Many residents expressed frustration that city officials were tearing down houses instead of rebuilding them.[164] Residents, such as those from Baltimore, often feel deep concerns about demolitions in their neighborhood due to the historic association of demolitions with urban renewal programs, the social disruptions they may cause, and the environmental exposures they may produce.

7.3 Increased Crime

Demolition projects are also associated with the spatial migration of crime. A study in an urban area looked at how the location of crime hot spots, specifically for assault, drug arrests, and prostitution, were associated with demolition activity, and found that crime moved towards the edges of the city limits as well as into the first ring suburbs within a five year period.[165] This finding has important regional implications for the metro-Detroit area as demolitions continue.

7.4 Increased Environmental Health Risks for Adults and Children

The quality of the air we breathe in our communities, as well as inside our homes, workplaces and schools, can significantly affect our health. The US Environmental Protection Agency regulates air pollutants considered harmful to public health through the National Ambient Air Quality Standard (NAAQS). The six principal or "criteria" pollutants include carbon monoxide, lead, nitrogen dioxide, ozone, particle matter (PM2.5 and PM10) and sulfur dioxide. There are a variety of sources that emit these pollutants, including motor vehicles, waste incineration and certain manufacturing/industrial processes.

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[160] Ibid.
[161] Curley, "Draining or Gaining?"
[162] Greenbaum et al. 2008.
[163] Cheung and Leung 2012.
[164] Bowie, Farfel, and Moran 2005.
[165] Frazier, Bagchi-Sen, and Knight 2013.

Public health research consistently demonstrates that proximity to high traffic density or flow results in reduced lung function and increased asthma hospitalizations, asthma symptoms, bronchitis symptoms, and medical visits. Additionally, children appear to be the most sensitive to these negative health effects, along with the elderly and those with asthma. This section seeks to understand the environmental health risks associated with large-scale demolition. There is concern that demolition poses serious short-term environmental health impacts, such as lead and other toxic exposures.

Demolitions and Lead Poisoning

In the U.S., lead poisoning disproportionately impacts low-income and minority residents, due in large part to the fact that lower purchasing power means that lower income individuals are more likely to live in older buildings with lead-based paint. Recent projects in cities point to another potential source of aggravated lead exposure: concentrated demolition projects in cities. Several studies note that demolition and debris removal leads to increased lead dust fall levels throughout the neighborhood, especially on streets and alleys.[166, 167, 168, 169] Large amounts of lead-contaminated dust fall are generated during demolition, and can settle on exterior surfaces and become a pathway of lead exposure in small children if they play near the demolition sites. Several studies have found that demolition carried out using "responsible demolition" methods, such as dust suppression through spraying, can reduce contamination to protect public health.[170]

The main routes of exposure to anthropogenic (human made) lead are through leaded gasoline and lead-based paint. While lead was banned from gasoline in 1986 and from paint in 1978, lead is highly immobile in soils, which is why concern about soil contamination persists[171]. An estimated 24 million US housing units contain significant amounts of lead and urban soils are considered sinks for anthropogenic lead[172]. In urban soil, lead levels correlate strongly with traffic patterns, and lead is found in soil adjacent to roadways[173]. The built environment shapes exposure and recent research has shown that individual features (e.g. buildings, roads) and broader features (e.g. age of housing stock, distance to road networks) significantly influence the distribution of lead in urban soil[174].

Children who are exposed to demolition projects are more likely to have higher blood lead levels than children not exposed to demolition projects. In fact, children exposed to multiple demolition projects within a single census tract in St. Louis, Missouri had substantially higher blood lead levels than children not exposed to demolition projects.[175] Unsurprisingly, children with multiple exposures to demolition sites had higher lead levels than children with just one exposure. Lead exposure from demolition seems to most heavily impact those exposed within 100 meters of a demolition site,

[166] Farfel et al. 2003.
[167] Mucha et al., "Lead Dustfall from Demolition of Scattered Site Family Housing."
[168] Jacobs et al. 2002.
[169] Farfel et al. 2005.
[170] Jacobs et al. 2013.
[171] Finster, Gray, and Binns 2004.
[172] Schwarz et al. 2012.
[173] Ibid.
[174] Ibid.
[175] Rabito et al. 2007a.

though other factors may influence exposure, such as wind patterns, the height of demolished buildings, and the proximity of residents to buildings during the demolition period.[176]

Lead exposure, no matter the quantity, is a public health concern because it can affect almost every organ and system in the body. The CDC considers a blood lead level (BLL) of 10 micrograms of lead per deciliter of blood (µg/dL) or greater to be elevated and to require individualized case management. However, recent studies suggest that adverse health effects exist in children with blood lead levels less than 10 µg/dL[177]. Lead poisoning can cause learning disabilities, behavioral problems, and at very high levels, seizures, coma, and even death. Lead exposure is a serious concern for children because they have higher intake rates of soil, dust, food, water, air, and paint than adults due to them being more likely to play in dirt and put their hands and other objects in their mouth. Moreover, their smaller bodies will absorb a larger proportion of lead than adults[178]. Other effects include decreased cognitive functioning (as measured by arithmetic and reading scores), a negative association between blood lead levels and child growth (via measurements of head circumference and height), and delayed puberty in girls[179]. A recent study in Detroit found that children who had blood lead levels greater than 10 µg/dL before age six were likely to have poor academic achievement in elementary and middle school. This study also found that children with blood lead levels between 1-5 µg/dL and 6-10 µg/dL still performed worse academically than children with less than or equal to 1 µg/dL, suggesting that even small traces of lead can cause academic achievement problems.[180]

Demolitions and PM2.5

There is substantial evidence that links airborne particulate matter to health outcomes. Demolition activities create dust that may increase ambient air levels of particulate matter. Where PM2.5 levels are already high, demolition may increase ambient levels of PM2.5 above levels that are considered safe. Motor vehicle emissions, power plants, and refineries are the predominant sources of fine particulate air pollution (PM2.5). Several large-scale studies demonstrate that increased exposure to PM2.5 is associated with detrimental cardiovascular outcomes, including increased risk of death from ischemic heart disease, higher blood pressure, and coronary artery calcification[181]. One study conducted in Detroit found that short-term increases in PM2.5 were associated with acute increases in systolic blood pressure, an effect that was magnified within communities that had higher levels of PM2.5 exposure[182]. Additionally, not only does an increase in the levels of ambient particles precipitate symptoms of asthma, but also increases in emergency room visits and hospitalizations for asthma[183].

[176] Rabito et al. 2007b.
[177] CDC n.d.
[178] EPA 2013.
[179] Child Health Impact Working Group 2007.
[180] Zhang et al. 2013.
[181] Simkhovich, Kleinman, and Kloner 2008; Delfino 2002; Healths Effects Institute 2009.
[182] Dvonch et al. 2009.
[183] Romieu et al. 1995; Schwartz 1994.

Other Toxic and Cumulative Exposures

While lead and PM2.5 exposure represent potential health concerns of demolition activities, demolition projects may release other toxic chemicals into the environment, including cadmium (found in batteries), mercury (found in fluorescent lamps), hydrochloroflurocarbon (found in air conditioning units), arsenic, chromium, pentachlorophenol, creosote, and lindane (found in treated woods), PAH (found in chimney soot), and asbestos. Researchers found that many of these materials may be released into the environment as a result of demolition activities.[184]

Finally, while demolitions cause lead and toxic waste exposures in most cities, it is important to note that these potential exposures would happen on top of existing pollution and toxic conditions already found in Detroit. Currently, Detroit's eastside and southwest side contain multiple sources of pollution, including automobile plants, industrial facilities, and the Ambassador Bridge. In particular, southwest Detroit contains a disproportionate number of industrial facilities, and toxic emissions emanate from iron/steel manufacturing, coke ovens, chemical plants, refineries, and sewage sludge incineration. The Ambassador Bridge is located adjacent to southwest Detroit and has daily traffic volumes of over 100,000 vehicles a day[185]. If demolitions occur in areas near these existing pollution sources, adults and children residing nearby may suffer from cumulative exposures.

[184] Roussat et al. 2008.
[185] Hammond et al. 2008.

Appendix I: D-HIA Project Description

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Healthy Neighborhoods for a Healthy Detroit: Health Impact Assessment

D-HIA Partners:

- Data Driven Detroit
- Detroit Hispanic Development Corporation
- Detroit Neighborhood Partnership East –Warren/ Conner Development Coalition
- Detroiters Working for Environmental Justice
- Green Door Initiative
- Institute for Population Health
- University of Michigan School of Public Health
- University of Michigan Urban and Regional Planning Program
- Ben Cave Associates Ltd

Healthy Neighborhoods for a Healthy Detroit (D-HIA) is a community-academic partnership conducting a Health Impact Assessment (HIA) that will look at how the Detroit Future City (DFC) strategic framework may affect the health of people living in Detroit, and will also recommend ways to protect health. **Specifically, the D-HIA will highlight health in decisions regarding how city services and infrastructure are maintained.**

The DFC is a guide for short- and long-term decision-making in Detroit related to economic growth, land use, neighborhoods, and city systems and infrastructure. A key strategy of the DFC is to redistribute city service and infrastructure investments—such as street lighting, waste , roads, and blight reduction—toward more populated parts of the city.

The D-HIA will look closely at the plan's potential impact on **health outcomes such as heart disease, violence, and asthma** through changes in neighborhood stability, social support, housing, environmental conditions, and safety, particularly for the **nearly 90,000 people living in high vacancy areas.**

For example, greater investments in areas that are more populated may stabilize neighborhoods and improve safety. However, reduced investment in less populated neighborhoods may create further social and environmental health risks for people who live there.

The D-HIA will work with a broad range of groups to strengthen relationships between residents, city planners, and academic institutions, and to build capacity for including health in future decision-making for Detroit. **The HIA will recommend strategies to protect and improve the health of the people of Detroit.**

Detroit Community-Academic Urban Research Center

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