

Healthy Planning in Pasadena:
A Health Impact Assessment in Harris County, Texas

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HEALTHY PLANNING IN PASADENA: A HEALTH IMPACT ASSESSMENT EXECUTIVE SUMMARY

WHAT IS A HEALTH IMPACT ASSESSMENT (HIA)?

A HIA is a tool to help inform decision makers about the health impacts of proposed policies, programs, or projects and identify solutions to reduce any negative health effects and optimize beneficial health outcomes. The systematic process typically involves six steps and uses a variety of data sources, including input from stakeholders and community members.

WHO PERFORMED THIS HIA?

In partnership with the City of Pasadena's (COP) Planning Department through a memorandum of understanding, Harris County Public Health received support through a grant from the Health Impact Project, a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts, with funding from the Episcopal Health Foundation on June 23, 2015 to conduct this HIA.

WHY WAS A HIA PERFORMED?

Pasadena has experienced about a five percent population growth since 2000. While the city has continued to grow in population size, the code of ordinances has led to a resulting built environment that is less than advantageous for its community members in terms of health. The city's planning department is proposing a number of updates to residential ordinances. An update to the current design standards for the four ordinances was determined to potentially have long-term impacts on the built environment in Pasadena. This includes improvements to the walkability of the community, which could ultimately result in short- and long-term health impacts among Pasadena residents. This HIA sought to identify the potential health impacts of the proposed ordinance updates, as well as identify specific opportunities to maximize health benefits of the proposed updates.

WHO MAY BE IMPACTED BY THE ORDINANCE UPDATES?

The proposed subdivision ordinance updates have the potential to impact a broad range of Pasadena community members. Specifically, as these updates could change the quantity and quality of multi-family housing in the city, particularly "middle housing," it is anticipated that certain groups may be impacted more than others. This includes households that are financially burdened due to housing costs, especially given the fact that 51% of households are renting in Pasadena. For example, low- and middle-income households, the aging population who are on a fixed income, and young adults and young families.

WHAT METHODS WERE USED IN THIS HIA?

The HIA Team utilized a mixed methods approach to evaluate the potential health impacts of the proposed subdivision ordinance updates. The assessment consisted of the following components: (1) a systematic literature review; (2) analysis of existing built environment and health conditions; (3) consultation with experts and stakeholders; (4) analysis of existing land use features and vacant properties.

WHAT ARE THE MAIN HIA FINDINGS?

The subdivision ordinance updates are anticipated to have a number of positive long-term health impacts, with few negative health impacts. However, the extent of the positive health impacts is likely to be limited without additional efforts to improve the built environment in Pasadena. This applies to the following key findings:

- The ordinance updates have the potential to increase density from using vacant lots to build residential properties (e.g., multi-family housing). This is predicted to result in the following main health outcomes: increased physical activity and

other various health outcomes, both positive and negative (e.g., related to respiratory and mental health). Concentrated poverty is also a potential outcome associated with density, especially if Pasadena does not take additional measures to ensure minimal grouping of low-income residents into one concentrated area. These types of areas have been found to have poorer healthy food options, a less developed urban infrastructure, and higher crime rates, which leads to lower income values for the community and the surrounding areas.

- The reduction of vacant lots is predicted to lead to a decrease in unsanitary conditions (i.e., nuisances) and unsafe environments, including a potential decrease in negative neighborhood aesthetics, which can influence perceived community safety, and decreased financial strain on the community.
- The ordinance updates have the potential to reduce the number of barriers to developers, such as variance requests, thus potentially leading to an increase in housing options and increased housing security in Pasadena. An increase in housing security for residents has a myriad of potential positive health outcomes.

WHAT SHOULD PASADENA DO TO ENHANCE OR MANAGE THESE HEALTH IMPACTS?

In order to enhance the potential positive health outcomes and mitigate any potential negative outcomes, the HIA Team recommends that adoption and implementation of additional standards or guidelines be considered. This could include: (1) additional updates to other ordinances that can bolster the anticipated benefits of the currently proposed updates; (2) partnering with public works to develop complementary street design standards; (3) city incentive and rebate programs (e.g., incentives for developers); and/or (4) plans (e.g., comprehensive city plan) be considered along with strategic stakeholder and community engagement to assist in development of the plans.

WITHIN THE EXISTING ORDINANCE UPDATES, THE HIA TEAM ALSO RECOMMENDS THE PLANNING DEPARTMENT CONSIDER:

- Addressing existing or future concerns related to concentrating low-income housing. The planning department should consider working with the City of Pasadena Police Department to implement a Crime Prevention through Environmental Design (CPTED) program at multi-family housing developments. The Blue Star Multi-Housing Program in Houston is an example of a similar program in the region.
- Ensuring a new housing development to be constructed away from Superfund sites or other known environmental hazards (e.g., freeways or other large roadways or channels with heavy traffic) to help minimize negative health effects, such as asthma hospitalizations especially among young children, risk of adverse pregnancy outcomes, and childhood cancers.
- Opportunities to partner with other entities to convert vacant lots to other land use types, such as green space or pocket parks, mixed land use developments, or commercial property. This could further lead to reductions in nuisance abatement, which could save the city costs for this service, as well as increase in property values, added tax base for the city, and improve positive perceptions of the community. Health benefits from these improvements could lead to more active transportation and recreational physical activity, which has many long-term health benefits (e.g., improved cardiovascular health, lower obesity and diabetes rates).
- A more thorough assessment of housing gaps in the community may be necessary to develop impactful strategies and plans to address current housing insecurity. For example, the planning department should consider working with community development to complete an assessment and ensure this is a piece of any future comprehensive planning for the city.
- Explicitly allow for a wide array of middle housing developments, including auxiliary housing, within design standards and/or through the ordinances. Removing barriers to developing middle housing (i.e., maximum parking requirements) could help incentivize these kinds of housing developments.
- Encouraging the development of quality multi-family and single family housing projects by meeting with potential developers to discuss human-scale design approaches that comply with the new design standards.
- Including community members in the planning process prior to implementing district overlays, whether it be through community meetings or community representation in the development of design standards for the neighborhood.

INTRODUCTION & BACKGROUND

GOAL OF THE CITY OF PASADENA HEALTH IMPACT ASSESSMENT

The goal of this HIA is to help inform decision makers on the potential health impacts of proposed residential ordinance updates for the City of Pasadena (COP) in Harris County, Texas.

WHAT IS A HEALTH IMPACT ASSESSMENT (HIA)?

A HIA is a tool to help inform decision makers about the health impacts of proposed policies, programs, or projects and identify solutions to reduce any negative health effects and optimize beneficial health outcomes. The systematic process typically involves six steps and uses a variety of data sources, including input from stakeholders and community members (Figure 1).

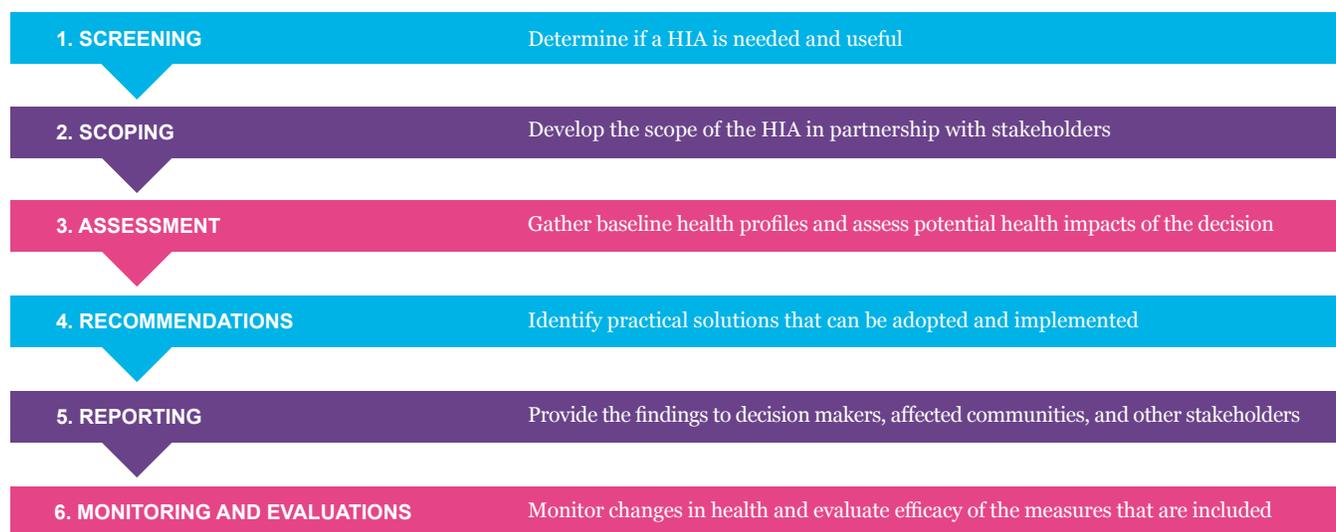


Figure 1

Health Impact Assessment Process

Source: Adapted from the Health Impact Project, HIA Process: <http://www.pewtrusts.org/en/projects/health-impact-project/health-impact-assessment/hia-process>

HOW TO READ THIS REPORT

The sections of this report are reflective of the steps of HIA which allows the reader to understand the overall approach of the HIA. Section one and two discuss the process and outcomes of screening and scoping, respectively. Section three, Assessment, reviews the baseline data and analyses conducted, and section four, Findings and Recommendations, review the outcomes of the assessment phase as they relate to the ordinance updates. The report concludes with Next Steps for the City of Pasadena.

**TABLE 1: DEFINITIONS APPLICABLE TO THE PASADENA HIA
IN HARRIS COUNTY, TEXAS, 2015-16ⁱ**

ACCESSIBLE/ ACCESSIBILITY	Accessibility refers to a person’s overall ability to reach goods, services, activities, and destinations, and thus, the time and money that people and businesses must devote to transportation. ¹
ACTIVE TRANSPORTATION	Active transportation is any self-propelled, human-powered mode of transportation, such as walking or bicycling. See also Non-motorized transport.
BUILT ENVIRONMENT	The buildings, roads, utilities, homes, fixtures, parks and all other man-made entities that form the physical characteristics of a community.
CONNECTIVITY	The ease of travel between two points. The degree to which streets or areas are interconnected and easily accessible to one another. An example of high connectivity would be a dense grid pattern in a downtown area.
COST-BURDENED (HOUSING)	Cost-burdened families are those who spend more than 30% of their income on housing. ²
INCIDENCE (INCIDENCE RATE)	Occurrence of new cases of disease or injury in a population over a certain amount of time. ³
MIDDLE HOUSING	Housing that is considered “in-between” single family houses and multi-family buildings, including duplexes, row houses, apartment and bungalow courts, stacked flats, and cottage clusters. ⁴ Middle housing buildings are usually built at the same scale as single family houses.
MIXED LAND USE	A range of complementary land uses in the same area, including shops, residences, employment communities, recreational facilities, parks, and open space. ⁵ In the literature review conducted for this HIA, mixed land use was defined as the number of points of interest in close proximity (between 400m and 1600m) to the home. Points of interest were commonly defined as institutional (e.g., church, library, post office, bank), maintenance (e.g., grocery store, convenience store, pharmacy), eating out (e.g., bakery, pizza, ice cream, take out), and leisure (e.g., health club, bookstore, bar, theater, video rental). ⁶
MOBILITY	Mobility refers to the ability to move easily and safely for all modes of transportation (e.g., walking, biking, riding bus or rail) and for people of all abilities (e.g., older adults, children, and people with disabilities).
MULTI-FAMILY HOUSING	Residential buildings that contain units built stacked or side-by-side that do not have a ground-to-roof wall and/or have common facilities, such as attics, basements, plumbing, etc. ⁷ In the City of Pasadena in Harris County, Texas, any building with four or more units is designated as multi-family.
NON-MOTORIZED TRANSPORT	Walking, cycling, and their variants. Non-motorized transportation tends to be more affordable and resource-efficient than alternative forms of transportation and recreation. ⁸
POINT OF INTEREST	Frequented or desirable destinations within a neighborhood, such as schools, recreational facilities, stores, places of worship, etc.
SOCIAL DETERMINANT OF HEALTH	Conditions in the environment in which people are born, live, work, play, learn, worship, and age that have an effect on multiple health, functioning, and quality-of-life outcomes and risks. ⁹
SPECIAL CHARACTER DISTRICTS	Special character districts, as they are referred to in this report, are a type of overlay district that identify existing built environment and design features in a particular neighborhood and extend those neighborhood characteristics in the form of design standards or guidelines. ⁱⁱ
VARIANCE REQUEST	A deviation from a particular development requirement for a property requires a variance request from that regulation. ¹⁰

ⁱ Unless otherwise indicated, definitions listed in this table were obtained from the Centers for Disease Control and Prevention: Healthy Places Terminology.¹¹

ⁱⁱ The definition of special character districts is based on discussions with City of Pasadena staff and contractors.

1. SCREENING

In early 2015, Harris County Public Health engaged the City of Pasadena's Planning Department and learned the department was about to initiate a funding request for and execution of creating a comprehensive city plan for Pasadena. Under this intention, it was determined that a potential HIA would be timely to explicitly consider the health implications of the plan. Subsequently, however, mobilization of funding for the comprehensive plan did not transpire. The planning department then decided to invest in updating and rewriting a number of city ordinances that could potentially change how the city's built environment transforms over the next decades, especially in response to a growing population. The City of Pasadena's staff will draft these ordinance updates which will then go through an approval process. If approved by the planning commission, they will be presented to Pasadena City Council, who has the decision making power to formally change the code.

Like many cities in the Houston-Harris County area, Pasadena has experienced substantial population growth in the past few decades.¹² While the city has reached its geographical extent for growth with no remaining land for annexation¹³, many vacant and underutilized properties can be found throughout the city. The ordinances identified for the update include:

- Parking-related sections from Chapter 9, Article I
- Landscaping of nonresidential sites from Chapter 9, Article X
- Other articles pertaining to residential design standards and land use

Based on conversations with planning department staff, there are a number of goals related to updating these ordinances:

- Initiate codified approaches to creating quality built environments
- Reduce the need for variances to build residential housing developments
- Increase the diversity of housing types in the city
- Contribute to a built environment which enhances quality of life for Pasadena Citizens

Through the HIA screening process, a number of benefits to completing the HIA were considered:

- Health was not currently a part of the discussion regarding the ordinance updates, which made this an opportunity to consider the possible long-term effects of changing policies that will guide the built environment in the city for years to come.
- The timeline for the ordinance updates was within the timeframe of this HIA, with the process beginning late in 2015 and going in front of planning commission in early 2017.
- Healthy Living Matters (HLM), another HCPH initiative, began working with the City of Pasadena in 2012 to initiate built environment improvements and healthy living initiatives. The HIA Team would be able to build upon these existing relationships created through HLM and further develop ties with the city and its planning staff. Additionally, the HIA Team would be able to strategically build momentum to inform healthy community design initiatives in the Pasadena area through the HLM initiative, among other built environmental efforts (e.g., the BUILD Health Challenge).¹⁴

ABOUT PASADENA

The City of Pasadena, Texas is located just south of the Port of Houston and Houston's Ship Channel. With approximately 150,000 residents, Pasadena is the second largest municipality in Harris County and, after the City of Houston, the second largest municipality in Texas without land-use zoning. Geographic proximity to 2 of the 4 largest refineries in the United States and the petrochemical complex along the Houston Ship Channel means that those living and working in Pasadena are at increased risk for a number of chronic health conditions. A Health Impact Assessment can help to identify the multiple factors influencing health outcomes in the City of Pasadena.

Coupled with the goals identified by Pasadena, as well as the other benefits to conducting a HIA, the HIA Team determined the ordinances being considered for rewriting in Pasadena could have the potential to shape the built environment of the city for decades. If passed, they could have a significant impact on the health outcomes of the population.

2. SCOPING

The HIA Team worked with the planning department and other key stakeholders from July to December 2015 to complete the scoping phase of the HIA. In talks with city staff as part of the scoping phase, the HIA Team specifically determined that the design standards and regulations pertaining to residential development ordinances would be the timeliest ordinance and the ordinance that may have the greatest impact on health. Given the ordinance updates could potentially have a significant impact on long-range planning, the HIA Team outlined three main goals for the assessment:

- Inform the planning department about the potential health impacts, both positive and negative, that could result from the adoption and implementation of subdivision and landscaping ordinance updates.
- Provide the planning department with recommendations to minimize any potential negative health consequences and outline opportunities to enhance the design standards for redevelopment (e.g., adaptive reuse, infill) that best promote a healthy built environment and subsequent long-term health outcomes for Pasadena residents.
- Engage key staff across the city’s governmental departments to educate on the HIA process and build consensus for health considerations in the ordinance update process.

As a result of achieving these goals, the HIA Team anticipated the following outcomes:

- The HIA contributes to changes that may mitigate health risks and optimize beneficial health impacts.
- The HIA contributes to changes that may reduce health inequities and inequities in the social and environmental determinants of health.

OVERVIEW OF PASADENA’S RESIDENTIAL ORDINANCES

The City of Pasadena currently has four different ordinances used to regulate residential development within the city. The four ordinances are: (1) Basic Subdivision Ordinance, (2) Townhouse Subdivision Ordinance, (3) Patio Home Subdivision Ordinance, and (4) Multi-Family Dwelling Development Ordinance. Each ordinance outlines design standards for each type of residential development. The design standards include regulations for streets and alleys that serve the development, utilities and drainage, pedestrian infrastructure, dimensions and layout of blocks and lots, setback requirements, open space requirements, and parking requirements. The new ordinance will be condensed into one section with an outline of design standards and additional elements governing location of housing and opportunities for special character districts.

Pasadena’s Planning Department has identified a need to update the ordinances, which were originally written in the 1970s, to better address the needs of a changing population, market forces, and the shift from predominately greenfield development to infill development. The ordinance updates are seen as a necessary step to establishing a more coordinated approach for long-range planning. City officials and staff are concerned about the limitations in attracting new development given the current ordinances make infill and redevelopment difficult. This is a concern since there is a pressing need for a greater variety of housing options (e.g., auxiliary dwellings, variations of existing multi-family housing) and an increased density of housing for a diverse and growing population.

It is important to note that a number of limitations of working within the ordinance re-write process were identified by the

GREENFIELD VS. INFILL DEVELOPMENT

- Greenfield development refers to a type of development that occurs on outlying vacant land which previously served as open space or agricultural land.
- Infill development refers to development that occurs on unused and/or underutilized properties within existing built-up areas of a city or community.

HIA Team. Specifically, very little of the process included clear opportunities for community input outside of the planning commission and city council meetings, which are open to the public. Additionally, with changes to city leadership anticipated in summer 2017, it is likely decision makers will change. As with any assessment of the built environment, it is also important to recognize the difficulty in determining clear causal or direct linkages to health outcomes, therefore, intermediate behaviors (which can ultimately lead to a change in long-term health outcomes) were utilized when necessary to assess potential health impacts.

KEY HEALTH AND SAFETY ISSUES IN PASADENA

Seven key informant interviews conducted during the scoping phase of the HIA were integral in identifying and prioritizing the health and safety issues in Pasadena. The key informants included community leaders, local content experts, and City of Pasadena decision makers. The wordcloud (Figure 2) was developed from responses to the question, “what are the most important health and safety issues that need to be addressed in your community?”¹⁵ Additional input was gathered during the scoping phase from a series of community mapping sessions conducted with Neighborhood Centers, Inc. and Air Alliance Houston (more detailed information in the ‘Community Mapping in Pasadena’ call out box). From the issues identified in the key informant interviews, meetings with planning staff, community mapping, coalition meetings, and the scientific evidence base, the HIA Team drafted a health pathway (Figure 3) that includes four domains: (1) project components, (2) proximal impacts, (3) intermediate outcomes, and (4) health outcomes. The HIA Team systematically considered the paths that most closely aligned and/or were associated with the scope of the HIA, including the specific design standard categories within the ordinance updates. Other sections in the ordinance updates that could have an impact on health, such as incentivizing land use types or redevelopment, were also considered for inclusion in the assessment. Health issues were prioritized for the assessment based on a combination of the following: (1) stakeholder prioritization of identified health and safety issues in Pasadena (Table 2); (2) existing research-based evidence; and (3) data availability for health issues in the target area.



Figure 2

Word Cloud summarizing responses from key informant interviews of City of Pasadena officials, when asked “What are the most important health and safety issues that need to be addressed in your community?”

COMMUNITY MAPPING IN PASADENA

In November 2015, the HIA Team, along with Neighborhood Centers, Inc. (NCI) and Air Alliance Houston held three, half-day community mapping sessions with 14 Pasadena community members. These sessions were focused on identifying community ‘treasures’ (i.e., assets) and challenges. Participants used area maps to locate assets and challenges based on pre-determined and agreed upon categories (see categories of assets and challenges below).

Given the process of updating ordinances is internal to Pasadena’s Planning Department and Planning Commission, community engagement for the HIA relied upon the opportunity to engage community alongside NCI and Air Alliance; therefore, the sessions focused more on goals set by the partner organizations (e.g., air quality). While air quality and related health outcomes (e.g., cancer and asthma) were discussed at length by the group, other key community issues arose during the discussions. These included the following:

- **Vehicular traffic and unsafe streets** without traffic calming or sufficient sidewalks
- Lack of **public transportation opportunities**
- **Need for recycling and play space** at apartment complexes
- **Lack of green space** and trees in the city
- Need for **more jobs in the community** through redevelopment in places, such as the vacant mall
- **Perception of safety** in community parks related to **pride of neighborhood**

CATEGORIES OF ASSETS AND CHALLENGES

Assets: education, health, economic opportunity, places of worship, places for play, and housing

Challenges: pollutants (air, water, noise), traffic/congestion, and unsafe pedestrian access

Considering the HIA goals and the limited opportunities for any additional greenfield development, the HIA Team focused on specific elements of the proposed ordinance updates that would potentially have a health impact. Specifically, the following three components were assessed:

- **Change in distance required between new multi-family and existing multi-family.** Currently any new multi-family housing development with four to 50 units or those with over 50 units must be 1,000 or 2,500 feet from existing multi-family developments with 20 or more units, respectively. The update will remove this as a barrier, reducing the burden to developers insofar that a variance request will no longer be necessary to build multi-family housing.
- **Updated design standards for all residential developments to allow for human-scale street environments.** A number of design standards are being updated to increase green space within multi-family developments, allowing developers to create more spatially diverse and engaging urban fabric and street scape, and overall create more pedestrian-friendly environments. The current design standards do not encourage, and in some instances restrict, such design features.
- **New allowance for the development of special character districts.** The ordinance will make it legal to create special character district overlays for existing neighborhoods and communities, which will set design standards for new and retrofitted developments to align with the existing built environment character in a given area.

Figure 3

Health Pathway of Potential Associated Benefits with Pasadena’s Proposed Ordinance Revisions, Harris County, Texas, 2015-16¹⁶

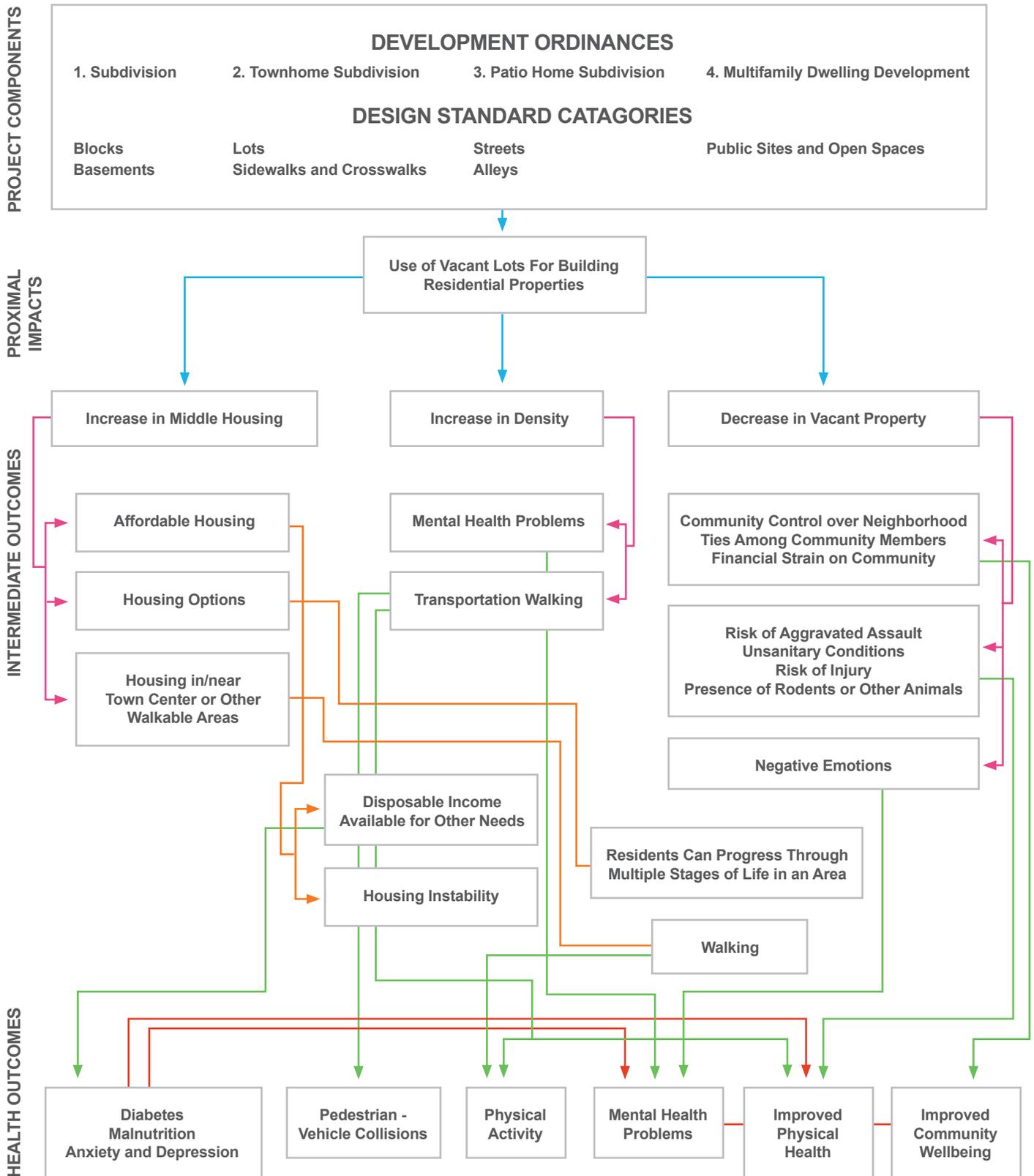


TABLE 2. HEALTH AND SAFETY ISSUES IDENTIFIED FROM KEY INFORMANT INTERVIEWS IN THE CITY OF PASADENA IN HARRIS COUNTY, TEXAS, 2015-16ⁱ

SOCIAL DETERMINANTS OF HEALTH	EXPOSURE	HEALTH OUTCOMES
<ul style="list-style-type: none"> • Poverty • Unemployment • Language barriers • Cultural norms • Legal status • Transient population • Lack of education 	<ul style="list-style-type: none"> • Proximity to petrochemical industry and ship channel • Unsafe street environments, including nuisances (e.g., high weeds, dumping, mosquitos) • Poor diet • Historical urban form • Age of infrastructure • Unsupervised children and youth • Domestic Violence • Drug and Alcohol Abuse • Lack of physical activity • Not enough access to quality health care/medical homes • Stress 	<ul style="list-style-type: none"> • Respiratory Disease/Asthma • Mental Health/Stress • Hypertension/ Cardiovascular Disease • Obesity • Diabetes • Teenage Pregnancy (was not analyzed in this HIA)

ⁱ Health and safety issues identified by stakeholders were placed into 3 categories by HIA project staff: (1) Social Determinants of Health, (2) Exposures, and (3) Health Outcomes. This categorization helped inform the health pathways and health outcomes of interest for the assessment.

POPULATIONS MOST IMPACTED

The updates to the ordinance are likely to impact Pasadena residents who are in need of different housing types, such as multi-family dwellings and auxiliary or accessory dwellings (e.g., garage apartments or alley houses). Planning staff have expressed that they would like to make independent living accessible across the life-span, to both young and older adult populations in Pasadena. This includes young families, young adults, and older adults, such as baby boomers who may want to age in place. Additionally, any policy decisions being made which may change the quality or quantity of housing types has the potential to impact the population, which is considered to be cost-burdened due to housing costs (households spending more than 30% of income on housing). Over half of households in Pasadena who are renters fall into this category.

3. ASSESSMENT

The HIA Team utilized a mixed methods approach to evaluate how the changes to the ordinances may impact health among community members in Pasadena. The following components were utilized to assess the major changes being proposed as part of the ordinance updates: (1) a systematic literature review; (2) analysis of existing built environment and health conditions; (3) consultation with experts and stakeholders; (4) analysis of existing land use features and vacant properties. For detailed methodology, please refer to Appendix E. The assessment is divided into two sections:

- Existing health, environment, and built environment conditions in Pasadena; and
- Potential health impacts associated with each of the components of the proposed ordinance updates.

EXISTING HEALTH, ENVIRONMENT, AND BUILT ENVIRONMENT CONDITIONS

Chronic diseases continue to contribute to a majority of the leading causes of death in the United States (U.S.). In 2010, seven out of the ten leading causes of death in the U.S. were due to chronic diseases,¹⁷ with heart disease remaining the number one cause of death since 1921.¹⁸ Similar statistics apply for Texas, Harris County, and Pasadena. In 2013, the leading causes of death in Harris County and Texas were heart disease, cancer, chronic lower respiratory diseases, stroke, accidents, Alzheimer’s disease, diabetes, septicemia, kidney disease, and flu/pneumonia.¹⁹ In Pasadena, eight of the ten leading causes of death were similar to those of Harris County and Texas, with the exception of suicide and homicide replacing Alzheimer’s disease and flu/pneumonia, respectively (Table 3).

TABLE 3. LEADING CAUSES OF DEATH IN PASADENA, TEXAS, 2001-2008ⁱ

1	Heart Disease	26.2%
2	Cancer	22.2%
3	Accidents	5.9%
4	Stroke	5.5%
5	Chronic Lower Respiratory Disease	4.7%
6	Diabetes	3.9%
7	Septicemia	2.2%
8	Suicide	2.1%
9	Kidney-Related Diseases ⁱⁱ	1.8%
10	Homicide	1.4%
	<i>All Other Causes</i>	24.1%
TOTAL		100%

ⁱ Texas Department of State Health Services, Center for Health Statistics, 2001-2008 average age-adjusted rates.

ⁱⁱ Kidney-related diseases refers to nephritis, nephrotic syndrome, and nephrosis.

Overall, the residents of Pasadena experience a similar or greater disease burden compared to residents in Harris County (Figure 4). Overweight and obesity (BMI ≥ 25) affects the majority (66%) of adults 18 years and older in Pasadena, and is three percent higher than the rest of Harris County (nationally, 71% of adults ages 20+ are overweight or obese).²⁰ Pasadena also has slightly higher rates of diabetes, asthma, and symptoms of poor mental health than Harris County (Figure 4). Causes of premature death, which refers to the years of potential life lost before the age 65,²¹ in Texas in 2010 were: death by accident, malignant neoplasms, diseases of the heart, certain conditions originating in the perinatal period, suicide, and homicide.²² The overall life expectancy for Texas residents in 2010 was 78.1 years (75.7 for males and 80.5 for females), which is similar to the national average.²³

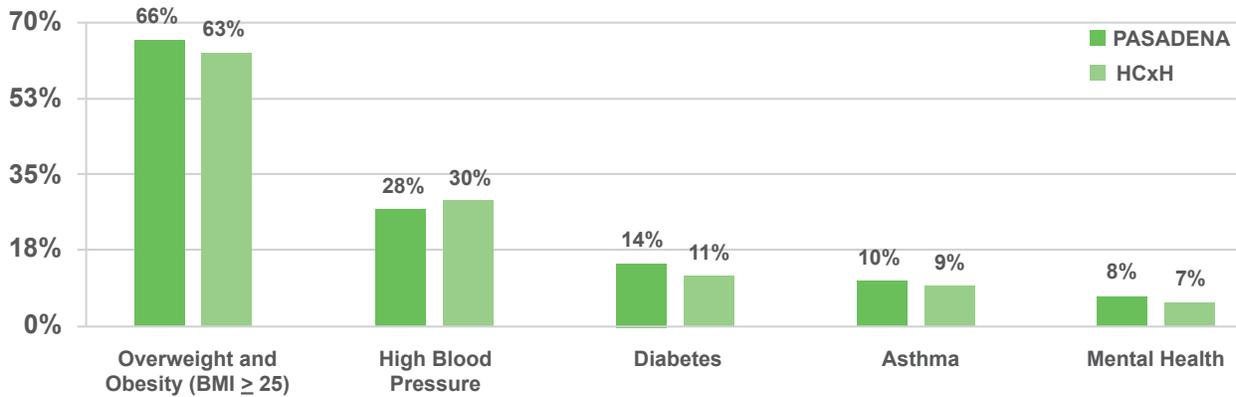


Figure 4
Percentage of Adults (ages 18+) with a Chronic Disease in Pasadena and HCxH, Texas 2010ⁱ

ⁱ Health of Houston Survey, 2010, University of Texas, School of Public Health

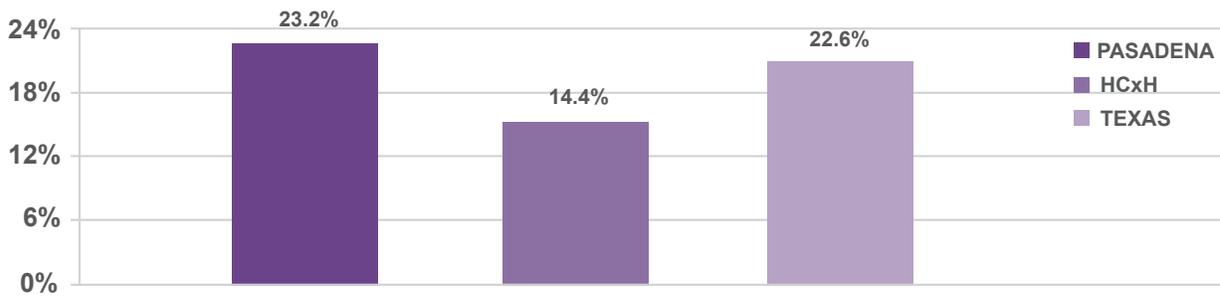


Figure 5
Self-Reported Health Status in Pasadena, HCxHⁱ, and Texas, 2004-2010^{ii,iii}

ⁱ HCxH= Harris County, excluding the City of Houston

ⁱⁱ Percentage of adults (18+) who reported being in fair or poor health

ⁱⁱⁱ Texas Behavioral Risk Factor Surveillance System, 2004-2010

Pasadena had a much higher percentage of adults 18 years and older who reported fair or poor health compared to Harris County, excluding the City of Houston (HCxH): 23.2% vs. 14.4% (Figure 5; Appendix A, Community Health Profile). Pasadena fared slightly better than HCxH with a higher percentage of adults who reported engaging in physical activity for at least 30 minutes, five or more times per week, but it had a lower percentage of adults who reported consuming five or more servings of fruits and vegetables per day (Figure 6; Appendix A, Community Health Profile).

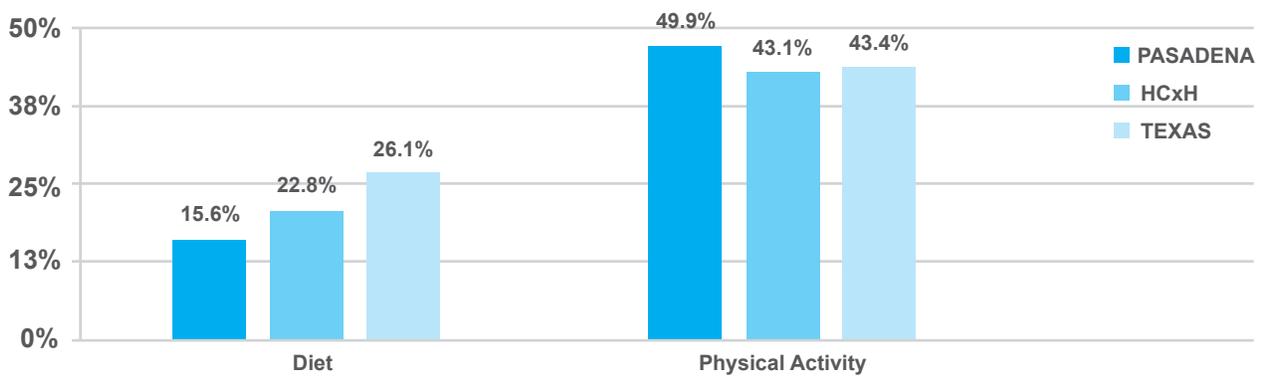


Figure 6

Dietⁱ and Physical Activityⁱⁱ in Pasadena, HCxHⁱⁱⁱ, and Texas, 2004-2010^{iv}

ⁱ Percent of adults (18+) who report consuming 5+ servings of fruits & vegetables per day
ⁱⁱ Percent of adults (18+) who report engaging in physical activity for at least 30 minutes, 5 or more times per week
ⁱⁱⁱ HCxH = Harris County, excluding the City of Houston
^{iv} Texas Behavioral Risk Factor Surveillance System, 2004-2010

HEALTH INEQUITIES IN PASADENA

Factors that exacerbate poor health, such as health insurance status, poverty, and education level, are generally worse in Pasadena than in Houston. In the City of Houston 28.4% of adults are uninsured, compared to 32.4% in Pasadena (Figure 7). However, current estimates may vary due to health insurance mandates enacted as part of the Affordable Care Act (ACA) in 2010. Regardless, 21.7% of Pasadena residents live below the federal poverty level (Figure 8) and have lower educational attainment compared to HCxH, Houston, and Texas (Figure 9). Poverty can lead to a number of risk factors that result in poor health outcomes, such as housing instability²⁴ and higher uninsured rates.²⁵

Individuals experiencing poverty have been shown to greatly rely on public transportation, especially to access healthcare services and other life necessities.²⁶ In Pasadena, 43% of the population has one vehicle or less per household (Figure 10). In other words, a large portion of the population in Pasadena may have a greater dependence on public assistance programs for transportation (e.g., shuttle services or mobile care services) since there is currently no public transportation available in the city to access basic services, goods, and amenities.

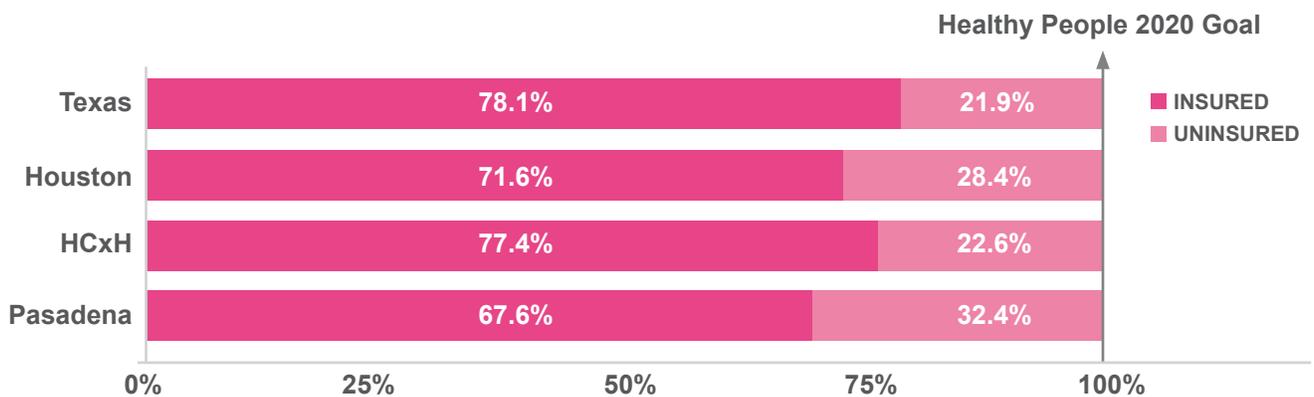


Figure 7

Insurance Status in Pasadena, Houston, HCxHⁱ, and Texas, 2010^{ii-v}

ⁱ HCxH = Harris County, excluding the City of Houston
ⁱⁱ Percent of individuals (18+) with and without insurance coverage.
ⁱⁱⁱ Health of Houston Survey, 2010, University of Texas, School of Public Health,
^{iv} The Pasadena community is currently identified as a health professional shortage area. Federally designated Health Professional Shortage Areas (HPSAs) lack a sufficient ratio of primary medical care, dental or mental health providers to the population. More information can be found at: www.hrsa.gov/shortage.
^v HP 2020 Goal: 10-year national objectives for improving the health of all Americans, launched on December 2010.

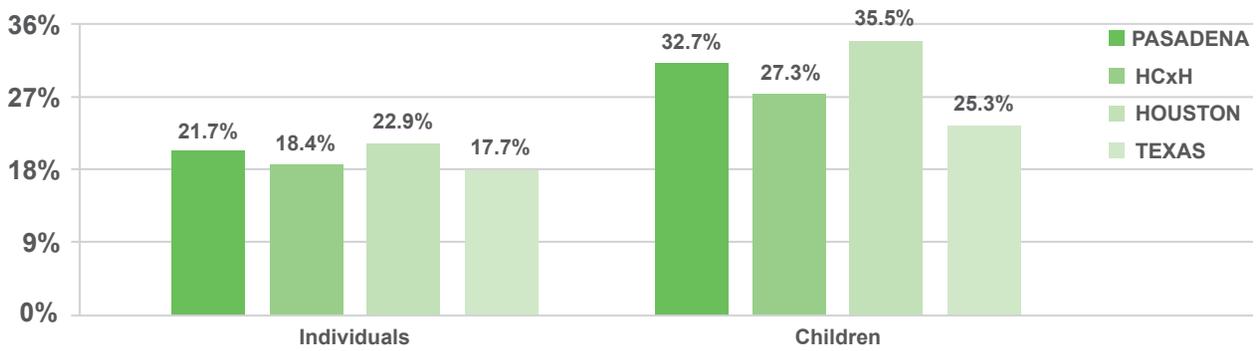


Figure 8

Poverty Level in Pasadena, Houston, HCxHⁱ, and Texas, 2014^{ii,iii}

ⁱ HCxH = Harris County, excluding the City of Houston

ⁱⁱ Percent of individuals (all ages) and children (<18) living below the federal poverty level : \$11,670-\$40,090 for family of size 1-8, (U.S. Department of Health and Human Services, 2014)

ⁱⁱⁱ United States Census Bureau. (2014). American Community Survey (ACS). Accessed on October 20, 2016. Retrieved from <https://www.census.gov/programs-surveys/acs/>

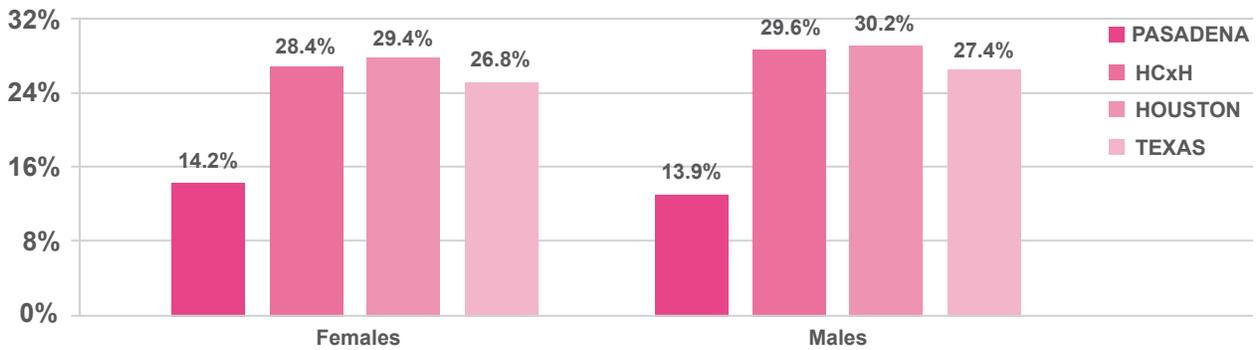


Figure 9

Education Level by Gender, in Pasadena, Houston, HCxHⁱ, and Texas, 2014^{ii,iii}

ⁱ HCxH = Harris County, excluding the City of Houston

ⁱⁱ Percent of population age 25+ with a four year college degree or higher

ⁱⁱⁱ United States Census Bureau. (2014). American Community Survey (ACS). Accessed on October 20, 2016. Retrieved from <https://www.census.gov/programs-surveys/acs/>

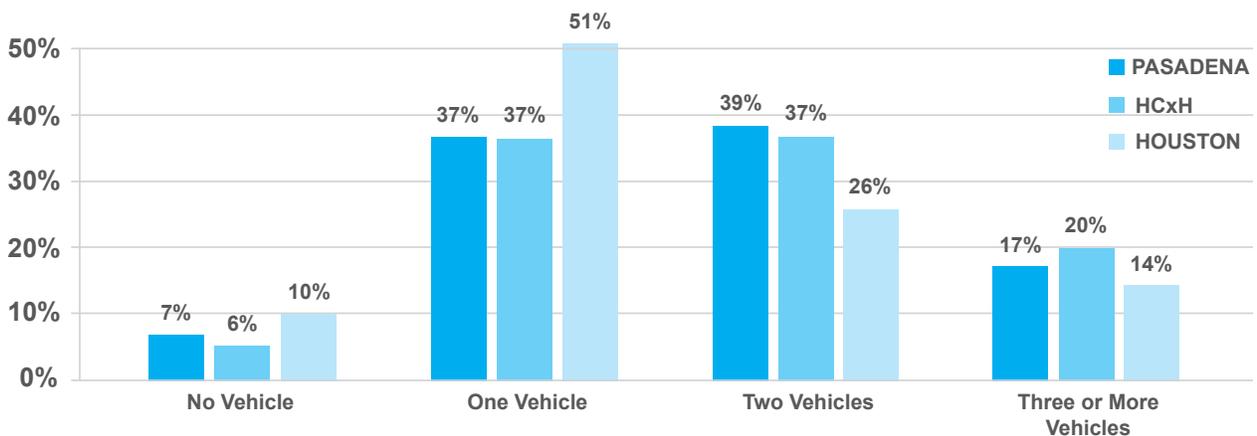


Figure 10

Number of Cars Available per Household in Pasadena, Houston, and HCxHⁱ, 2014^{ii,iii}

ⁱ HCxH = Harris County, excluding the City of Houston

ⁱⁱ Percentage of households with no vehicles, 1 vehicle, 2 vehicles, and 3 or more vehicles.

ⁱⁱⁱ United States Census Bureau. (2014). American Community Survey (ACS). Accessed on October 20, 2016. Retrieved from <https://www.census.gov/programs-surveys/acs/>

AIR QUALITY

Poor air quality is a cause of inferior respiratory health and cardiovascular disease, as well as a barrier to physical activity. The Centers for Disease Control and Prevention (CDC) reports that pollutants resulting from transportation are one of the main contributors to poor air quality.²⁷ Specifically, particulate matter (PM10 and PM2.5) has been found to be associated with increased asthma symptoms and increased Chronic Obstructive Pulmonary Disease (COPD) hospitalizations and mortality.^{28,29} In Pasadena, the percent of residents that reported having asthma in 2010 was 10%, compared to 9% in Harris County (Figure 4). A study of air quality along the Houston Ship Channel determined there were high air pollution levels of benzene and 1,3-butadiene, which are well-known human carcinogens.³⁰ The study also found that children along the Ship Channel had 1.56 times the rate of acute lymphocytic leukemia compared to children not living along the Ship Channel.

For this HIA, validated air monitoring data was obtained from the Texas Commission on Environmental Quality (TCEQ) for 5 monitoring sites near Pasadena in the absence of any sites located within the geographical boundaries for the city. The HIA Team selected nine compounds of interest³¹ that are known in the scientific literature to be linked to several adverse health outcomes, including acute respiratory distress and odor. Table 4a summarizes the annual average measurement and the range of one-hour average measurements for each compound at each monitoring site, as well as the reference Effects Screening Levels (ESL) established by TCEQ. Annual averages never exceeded the long-term ESL, above which health effects are expected to occur as a result of the exposure. All 1-hour measurements also remained below the short term ESL, with the exception of the Milby Park location, where the short term ESL for 1,3-butadiene and for styrene both exceeded once each. These two short term ESL's are odor based, so an odor may be detected near these monitoring sites, but no acute health effects are expected.

TABLE 4A. AMBIENT POLLUTANT MEASUREMENTS AT PROXY AIR MONITORING SITES FOR PASADENA, TEXAS IN 2015 (ONE-HOUR AVERAGES IN PARTS PER BILLION (PPB))ⁱ

AIR MONITOR SITE NAME	1,3 BUTADIENE (PPB)	BENZENE (PPB)	ETHYLBENZENE (PPB)	STYRENE (PPB)	TOLUENE (PPB)	M/P XYLENE (PPB)	O-XYLENE (PPB)
LONG-(SHORT-) TERM ESLⁱⁱ	4.5 (230)	1.4 (54)	135 (6000)	33 (25)	330 (1200)	84 (1020)	42 (510)
CESAR CHAVEZ	0.19 (0-25.10)	0.29 (0-4.75)	0.05 (0-2.06)	0.05 (0-1.69)	0.68 (0.06-23.16)	0.28 (0-7.84)	0.10 (0-2.23)
CLINTON	0.15 (0-8.04)	0.28 (0-31.00)	0.11 (0-11.64)	0.05 (0-1.69)	0.66 (0.01-59.01)	0.35 (0-49.21)	0.12 (0-14.12)
DEER PARK	0.06 (0-1.98)	0.28 (0-7.86)	0.04 (0-2.93)	0.01 (0-1.74)	0.40 (0-47.65)	0.14 (0-12.00)	0.05 (0-3.61)
GALENA PARK	0.41 (0-202.66)	0.91 (0.03-26.01)	0.12 (0-2.41)	0.06 (0-2.25)	1.00 (0.08-22.09)	0.36 (0.03-5.47)	0.12 (0-2.96)
MILBY PARK	0.95 (0-842.40) ⁱⁱⁱ	0.24 (0-13.52)	0.08 (0-6.13)	0.29 (0-41.13) ³	0.50 (0-66.11)	0.25 (0.01-25.09)	0.08 (0-7.75)

ⁱ Values are annual mean (range) in parts per billion (ppb).

ⁱⁱ Effects Screening Levels (ESL). Long-term indicates annual averaging period. Short-term indicates 1-hour averaging period. Last updated by Texas Commission on Environmental Quality (TCEQ), September 30, 2015.

ⁱⁱⁱ Number of hours in exceedance: 1,3-Butadiene=1 hour; Styrene=1 hour.

**TABLE 4B. AMBIENT POLLUTANT MEASUREMENTS
AT PROXY AIR MONITORING SITES FOR PASADENA IN 2015ⁱ**

AIR MONITOR SITE NAME	OZONE (PPB) ⁱⁱ	PM 2.5 (UG/M3) ⁱⁱ
NAAQS ANNUAL (SHORT) ⁱⁱⁱ	-- (125)	12 (35)
CESAR CHAVEZ	--	--
CLINTON	21.69 (-0.47-122.55)	11.96 (3.3-29.5)
DEER PARK	24.02 (-0.41-117.64)	9.01 (3.3-25.7)
GALENA PARK	--	--
MILBY PARK	--	--

ⁱ Values are annual mean (range).

ⁱⁱ Ozone measurements are 1-hour averages measured in parts per billion (ppb). PM 2.5 measurements are 24-hour averages and measured in µg/m3.

ⁱⁱⁱ National Ambient Air Quality Standards (NAAQS). Annual average standard not established for ozone. Short-term averaging time is 1-hour for ozone and 24-hour for PM 2.5.

INCOME AND HOUSING

Median household income in 2014 dollars in Pasadena was \$46,585, lower than the Harris County median of \$53,822 and roughly equivalent to the City of Houston median of \$45,728.³² In 2014, the median price of an owner occupied housing unit in Pasadena was \$101,000. Harris County (\$133,400) and City of Houston (\$125,400) had a much higher median home price in 2014.

There are a total of 54,380 housing units in the City of Pasadena. Forty-four percent of the housing units are renter-occupied. Two-thirds (66.8%) of renters pay \$500-\$999 per month for rent, while 8% pay less than \$500 per month; still, according to the information provided in the census data, 51% of households in the City of Pasadena spend more than 30% of their household income on rent. These households are classified by the U.S. Department of Housing and Urban Development as being cost-burdened, meaning these households likely have reduced income available for other basic needs. The zip codes 77502 and 77504 have the highest cost-burdened household percentage (57.2%) among all zip codes in the city.³³ Harris County Housing Authority offers the Housing Choice Voucher (HCV) Program, which allows low-income families to rent quality housing in the private market via federal funds provided by the U.S. Department of Housing and Urban Development.³⁴

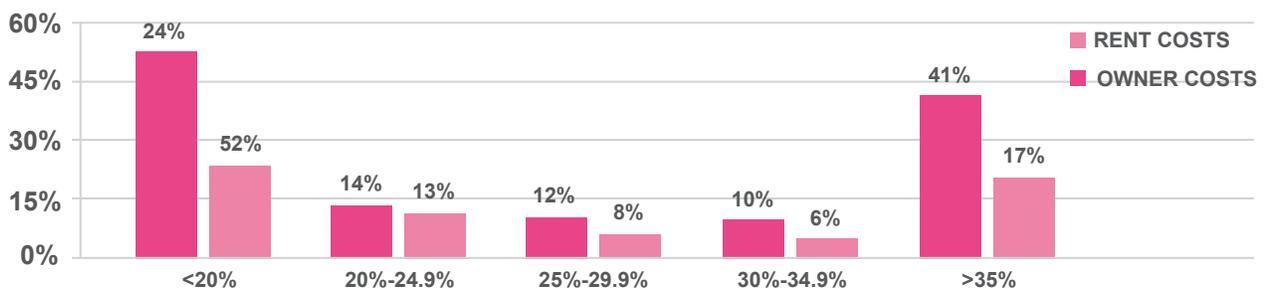


Figure 11

Gross Housing Cost as a Percentage of Household Income in Pasadena, TX

ⁱ HCxH = Harris County, excluding the City of Houston

ⁱⁱ Health of Houston Survey, 2010, University of Texas, School of Public Health

Approximately 38% percent of households in Pasadena are eligible for the same program (administered by City of Pasadena), however, it is currently at capacity according to City of Pasadena Community Development staff. Availability or absence of additional rent assistance programs are contingent upon federal or private funding sources at any given time.

Regarding home ownership, approximately 50% of owner-occupied housing is valued at less than \$100,000. In addition, 23% of households with a mortgage spend thirty percent or more of their total income on housing costs (Figure 11). Thus, these households are cost-burdened. On the other hand, 10.3% of households without existing mortgage payments (i.e., those who are no longer paying a mortgage on their house) are also considered to have a housing cost burden due to remaining costs associated with owning a home (e.g., insurance and taxes).

Pasadena is comparable to the City of Houston and Harris County in both mortgage and renter proportions of households considered to be cost-burdened. Pasadena has a slightly higher proportion of renters paying more than 30% of total income on housing, but a lower proportion of owners paying more than 30% of their total income on a monthly mortgage. Available data do not include the percentage of households paying more than 50% of total income on housing, so the percentage of severely cost-burdened households is not known.³⁵

EXISTING LAND USE

In Pasadena, 25.5% of the area is devoted to sole residential use. Of this area, 85.6% is devoted to single family homes, while only 11.3% are devoted to multi-family homes or condos. All residential land is primarily on the north side of the city, which contributes to a high population density in this area. There is also a considerable amount of commercial (9.1%) and industrial (13%) areas, which are mostly located in the northernmost end of Pasadena. Southern Pasadena is mostly devoted to open space, industrial uses, and farms. Despite the fact that the city is a non-zoned municipality, the commercial areas are mostly distributed along arterial roads, segregated from the residential areas. Land listed by the Houston-Galveston Area Council (H-GAC) as vacant (at 100%) was 820 acres or 2.7% of all land.

Since over 42% of Pasadena households have one or no car, segregated land use can cause transportation burdens for those individuals and families. The considerable amount of industrial land within Pasadena situated adjacent to the north of the city boundaries is also a concern as the petrochemical industry in this area is associated with poor respiratory health due to environmental exposures (see air quality section, page 18).

VACANT LOT ANALYSIS FOR RESIDENTIAL DEVELOPMENT

Based on Harris County Appraisal District (HCAD) data, currently within the city boundaries, there are a total of 1,491 vacant lots taking up 1.72% of the land. The sizes of the vacant lots vary from 0.006 to 18.99 acres. More than two-thirds (71.1%) of the vacant lots are smaller than 0.22 acres, which is the current minimum legal lot size for a 4-unit multi-family structure, based on Pasadena's Planning Code. Four hundred and ten of the vacant lots are 0.22 to 2.78 acres in size and are a size viable for a 4 to 50 unit multi-family structure. These lots are mostly distributed throughout Pasadena and concentrated north of Fairmont Parkway. Taking into consideration the requirement that requires new multi-family structures to be 1,000 feet away from existing 20+ unit multi-family structures, 283 out of 410 vacant lots qualify as potential multi-family structures. In addition, 21 vacant lots are larger than 2.79 acres, which should be able to accommodate 50+ unit multi-family structures based on the current size of multi-family housing in Pasadena. Excluding those that fall within 2,500 feet from other 20+ unit multi-family structures due to the distance requirement, only seven out of the 21 lots qualify for 50+ unit multi-family structures. Based on input from City of Pasadena staff and observational data collected by the HIA Team, few of these are in locations that are likely to be developed for multi-family structures, and only two are located in or near census tracts that are not at risk of having a concentration of poverty.

**TABLE 5. NUMBER OF VACANT LOTS DEVELOPABLE BY HOUSING TYPE
IN PASADENA, HARRIS COUNTY, TEXAS, 2015-16**

	WITHOUT DISTANCE RESTRICTIONS	WITH DISTANCE RESTRICTIONS
Typical Middle Housing, Small (less than 4 units) or Single Family Housing ⁱ	35 ⁱ	N/A
Typical Middle Housing, mid-size (5-12 units)	529 ⁱⁱ	361
Pasadena Middle Housing (5-12 units) with Unit per Acre Restrictions ⁱⁱⁱ	190	137
Multi-Family Housing (4-50 units) ^{iv}	410 ^{iv}	283 ^v
Multi-Family Housing (50+ Units)	21 ^{vi}	7 ^{vii}

ⁱ 0.16-0.26 acre lot; no distance or size restrictions applied
ⁱⁱ 0.16-0.52 acre lot
ⁱⁱⁱ 0.28-0.67 acre lot; based on 18 units per acre limit
^{iv} 0.22-2.79 acre lot
^v 0.22-2.79 acre lot; at least 1,000 feet from other multi-family of 20+
^{vi} More than 2.78 acres
^{vii} More than 2.78 acres; at least 2,500 feet away from existing 20+ unit multi-family structures

The vacant lot analysis also considered the lot size necessary for middle housing developments, as an increase of available middle housing was identified as a potential outcome of reducing the requirements related to distances between multi-family housing developments. Middle housing is a type of multi-family housing that is between single family and mid-rise apartment buildings, with a residential unit density in the range of 16 to 35 units per acre.³⁶ For typical mid-size middle housing (5 to 12 units), there are 529 vacant lots available in Pasadena that are 0.16 to 0.52 acres. After taking into account the Pasadena multi-family requirements (18 units per acre limit and distance restrictions), only 137 out of the 529 vacant lots would be available for 5 to 12-unit middle housing structures.

Most of the small to medium (0.16-2.79 acres) available vacant lots are located in north Pasadena. This area also has the highest population density and percent of the population below the federal poverty level. Table 5 lists the results of the vacant lot size analysis (see Appendix B for a series of maps depicting the distribution of these categories of vacant lots). This analysis helped determine the extent to which the new ordinance will likely impact the built environment in Pasadena, especially in the short-term.

4. FINDINGS AND RECOMMENDATIONS

It is anticipated that adoption of the ordinance updates and the resulting changes to the built environment may impact health both positively and negatively for Pasadena community members. The possible impact on health outcomes was determined by examining a number of potential intermediate outcomes related to the increased use of vacant lots for residential developments (Figure 3). Additionally, the impacts of updating design standards and the allowance of creating neighborhood character districts were considered; however, fewer direct health outcomes were able to be assessed (see Call-Out Box 1).

The following sections detail how these changes may impact the health outcomes of Pasadena community members and offers guidance on how to mitigate potential negative health impacts.

USE OF VACANT LOTS FOR BUILDING RESIDENTIAL PROPERTIES

It is anticipated that the distance required between new multi-family and existing multi-family will be decreased in the new residential ordinance. Currently any new multi-family housing development with 4 to 50 units or those with over 50 units must be 1,000 or 2,500 feet from existing multi-family developments with 20 or more units, respectively. The update will remove this as a barrier, reducing the burden to developers insofar that a variance request will no longer be necessary to build multi-family housing.

Updating this component of the ordinance to be less restrictive may lead to three main results: (1) an increase in residential density, (2) a decrease in vacant properties, and (3) an increase in housing options. Each of these results has been demonstrated through the scientific and practice-based literature to be contributing factors leading to a number of physical and mental health outcomes (Figure 3). Additional factors will be needed concurrently with the proposed updates in order to realize the full potential benefits of these results. The reach of changing this ordinance may be minimal as outcomes depend on the extent to which private developers act on the decreased regulation. The three main results are expanded upon further here.

I. INCREASE IN RESIDENTIAL DENSITY

Summary Health Impact Statement. Using vacant lots to build residential properties can result in an increase in density. Increasing residential density can result in a number of health impacts, including increased walking for transportation, concentration of poverty, and various outcomes related to respiratory and mental health (Figure 12). However, it is unlikely that the extent to which any such increase in density will significantly increase concentration of poverty for Pasadena neighborhoods. Still, efforts to monitor these outcomes should be made and steps for mitigation are included in the Recommendations section of this report.

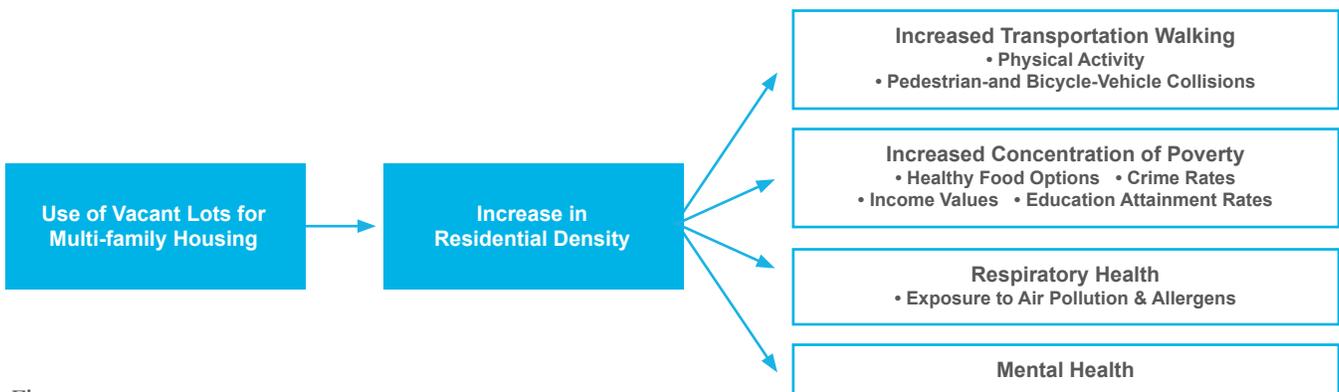


Figure 12

Health pathway for the association between density and transportation walking, concentration of poverty, respiratory health, and mental health.

CONCENTRATION OF POVERTY AND DENSITY

Concern for concentrating large multi-family housing developments has been one of the main reasons for not changing this ordinance in the past. Concentrated poverty, as defined by the U.S. Census, includes census tracts where 40% or more of the population are below the federal poverty line. Indeed, research suggests that when the housing market groups all low-income residents into one concentrated area, these types of areas have been found to have poorer healthy food options, a less developed urban infrastructure, and higher crime rates, which leads to lower income values for the low-income community, as well as the surrounding areas.³⁷ The children of these high concentration low-income communities also have much lower education attainment rates, although many studies have shown that these same children improve their education attainment when they move to communities with less highly concentrated poverty.³⁸

However, it is not likely that the existing conditions allow for such concentration in Pasadena. Findings from the vacant lot assessment conducted for this HIA revealed there are 21 large lots with the acreage needed to develop 50+ unit multi-family housing in Pasadena. Only two of these are located within or near the census tracts with concentrated poverty (more than 40% of the population living under the federal poverty level) (see Appendix B, Figure B-5). It is unlikely a single development will be the sole contributor to a concentration of poverty, albeit mid-sized multi-family developments built in an area with existing low-income housing may contribute to a trend in similar developments located in that same area, resulting in the negative associated health impacts. There are four times as many mid-sized vacant lots available for middle housing if the distance restrictions are removed from the requirements (93 to 410). Any middle housing developments of these lots may lead to more available housing to middle-income families (see section iii. Increase in Housing Options, page 28).

PHYSICAL ACTIVITY AND DENSITY

Increased density can also lead to positive health outcomes related to active transportation. In a literature review of the association between density and health, researchers found that there is a strong evidence base supporting the association between increased residential density, mixed land use, and increased transport walking among all ages.³⁹ Active transport increases levels of physical activity,⁴⁰ and physical activity is associated with a number of positive health outcomes, such as regulating energy fat balance and maintaining a healthy body weight,^{41,42} decreasing blood pressure and preventing hypertension,^{43,44} and contributing to a reduced risk for Type 2 diabetes and cardiovascular disease.⁴⁵ However, achieving these health outcomes also requires diet-related changes, which are also strongly influenced by the built environment. Conversely, low-density cities that are dependent on cars discourage active living and instead encourage a sedentary lifestyle. Increased density can also affect road traffic mortality. Previous evidence has shown that denser cities have decreased vehicle fatality rates, excluding pedestrians, compared to sprawling cities.⁴⁶ This could be due to the shorter trip distances, fewer vehicle miles travelled, and greater reliance on walking in dense cities. However, high density cities with mixed land use may mean greater numbers of pedestrians and bicyclists and potentially a greater risk of injury to these groups if proper crash reduction factors are not properly implemented.

AIR QUALITY AND DENSITY

Air quality may also be of concern as it relates to increasing walking and biking trips and dense housing. Pasadena is a car-centric city and is in close proximity to petrochemical industry. Thus, if an increase in density leads to an increase in active transportation, respiratory health may be at risk due to exposure to air pollution and allergens. There is evidence of an association between exposure to air pollution and numerous negative health effects, such as childhood asthma onset, exacerbation of asthma, non-asthmatic respiratory symptoms, cardiovascular and all-cause mortality, compromised lung function, and restricted physical activity.⁴⁷ In some cases, denser housing and crowding may also increase residents' exposure to allergens, such as those produced by cockroaches, dust mites, and pets, and thereby increase their asthma risk; however, it was outside the scope of this assessment to determine if this is of particular concern for housing in Pasadena.

KEY COMMUNITY INDICATORS - PHYSICAL ACTIVITY AND OBESITY

- ~50% of Pasadena adults reported engaging in activity for at least 30 minutes, 5+ times per week.
- 30% of Pasadena adults reported a BMI of 30 or greater, higher than Texas and HCxH.
- There were 163 pedestrian-vehicle collisions and 113 bicycle-vehicle collisions in Pasadena between the years 2007-2015.

Higher density housing can have various effects on the mental health of its residents, depending on the design and location of the housing.⁴⁸ Noise can lead to stress in residents of higher density housing. The location, construction, and insulation of the building can all affect the amount of noise from outside and between neighbors that residents can hear. In addition,

MENTAL HEALTH AND DENSITY

Higher density housing can have various effects on the mental health of its residents, depending on the design and location of the housing.⁴⁸ Noise can lead to stress in residents of higher density housing. The location, construction, and insulation of the building can all affect the amount of noise from outside and between neighbors that residents can hear. In addition,

though some of the evidence supports the association between poorer mental health and living in high-rise housing compared to living in low-rise or single-detached houses, it does not sufficiently control for confounders. However, evidence still suggests that living in higher density housing may impact residents' mental health status, depending on who else lives in the building and their socioeconomic status, which floor they live on, and the amount of social interactions and support they receive.⁴⁹

The location of housing can also influence mental health.⁵⁰ Living in areas that expose residents to environmental stressors, such as air pollution or noise, or areas that are unattractive or have limited access to resources and services can negatively impact mental health. Neighborhood satisfaction, which can affect mental health, appears to be related to features that encourage pedestrian activity, decrease dependency on automobiles, decrease traffic volume, create opportunities for neighbor interactions, and increase neighborhood aesthetic appeal. Lastly, greater housing density and population density can increase the incidence of crime.⁵¹ Crime and fear of crime can negatively affect mental health through increasing anxiety and feelings of helplessness, decreasing participation in social or physical activities, and decreasing feelings of personal control. Neighborhood aesthetics, which is also associated with crime and fear of crime are discussed in Call-Out Box 1.

KEY COMMUNITY INDICATORS - AIR QUALITY

- In 2010, 10% of Pasadena residents reported having asthma.
- A previous study showed high levels of pollution along the Houston Ship Channel, the northern most boundary of the City of Pasadena.
- Air quality was a top concern for community members during the community mapping sessions.

RECOMMENDATIONS

To address existing or future concerns related to concentrated low-income housing and mental health outcomes related to poor housing environments, the planning department can consider the following recommendations:

- Partner with Pasadena's Police Department to implement a Crime Prevention through Environmental Design Program at multi-family housing developments. The Blue Star Multi-Housing Program in Houston may serve as an example program in the region.⁵²
- Consider only allowing new multi-family housing developments to be constructed away from Superfund sites (e.g., through adoption of buffers) (see Appendix B, Figure B-12 and Appendix C) and other places with environmental hazards (e.g., freeways or other large arterials with heavy traffic) to help minimize negative health effects, such as asthma hospitalizations, risk of adverse pregnancy outcomes, and childhood cancers.⁵³
- Create opportunities for mixed land use development (not solely multi-family housing), by adding amenities and services within an accessible walking range to housing, especially areas identified with fewer cars per household. Mixed land use increases local business and economic development,⁵⁴ and can enhance the vitality and perceived safety of an area by encouraging more people to walk in public spaces.

II. DECREASE IN VACANT PROPERTIES

Summary Health Impact Statement. Vacant lots can be a public health nuisance and have been found to be associated with unsanitary conditions, unsafe environments, negative neighborhood aesthetic (perceived safety), and financial strain on the community.^{55,56} Research suggests that decreasing the presence of vacant properties can reduce risk of injury and aggravated assault and decrease neighborhood nuisance (Figure 13).

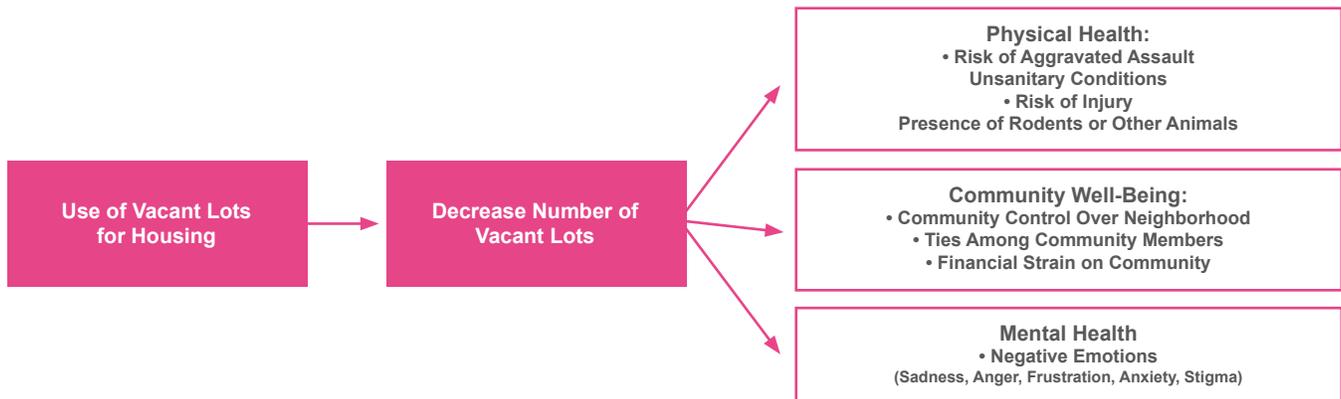


Figure 13

Health pathway for the association between vacant lots and physical health, mental health, and community well-being

PHYSICAL HEALTH AND VACANT PROPERTIES

Risk of injury and aggravated assault, neighborhood nuisances, and exposure to unsanitary conditions have all been shown to be related to the presence of vacant properties. One study found that vacant lots often lead to unsanitary conditions and the possibility of injury from hypodermic needles, sharp objects, debris, or fires.⁵⁷ In addition, Branas, Rubin, and Guo (2013) found that, after adjusting for demographic and socioeconomic variables, there was an association between vacant properties and the risk of aggravated assault. Trash build-up, overgrowth, and vacancy could also contribute to the presence of rodents and other animals that could present health hazards, as well as increase the need for neighborhood nuisance abatement.⁵⁸

MENTAL HEALTH, COMMUNITY WELL-BEING AND VACANT PROPERTIES

Decreasing the presence of vacant properties can also improve mental health. Vacant land can lead to residents experiencing various negative emotions, such as sadness, depression, anger, frustration, and anxiety.⁵⁹ Some may also feel stigma associated with living in such a neighborhood. Vacant land can also have an impact on community well-being, including a fracturing of ties among community members, concerns about safety and crime, and a loss of community control over the neighborhood, which can stem from vacant land undermining efforts to improve or maintain the

KEY COMMUNITY INDICATORS – CRIME AND NEIGHBORHOOD NUISANCE

- Though the number of violent crimes in Pasadena has held relatively constant since the year 2000, violent crime, especially aggravated assault and robbery, are a significant threat to health.
- Community members and city staff identified nuisance abatement as an issue, especially in large multi-family residences. Vacant properties were not discussed.

neighborhood, contributing to feelings of helplessness.⁶⁰ Foo and colleagues (2013) also found that neighborhoods with a high number of vacant properties were associated with disorder, arson, and a lack of neighborhood pride. Another potential effect is the resulting financial strain on the community, which can result from decreased property values of homes, increased home owners' insurance costs, or the prevention of new neighborhood economic investments.^{61,62}

RECOMMENDATIONS

Not all vacant properties will be converted to housing. The planning department should consider opportunities to partner with other entities to convert some vacant lots to other land use types, such as green space or pocket parks, mixed land use developments, and/or commercial developments. This could lead to further community improvements (e.g., reducing the need for nuisance abatement, increased property values, and added tax base for the city).

KEY COMMUNITY INDICATORS—MENTAL HEALTH AND COMMUNITY WELL-BEING

- Almost 10% of adults in Pasadena reported having mental health problems in the year 2010.
- Mental health, especially for children and youth, was discussed as a community health concern in a number of key informant interviews.

III. INCREASE IN HOUSING OPTIONS

Summary Health Impact Statement. Reducing the number of barriers for developers to build new multi-family housing near existing multi-family housing could lead to an increase of housing options in Pasadena. The vacant lot analysis identified housing types that fall into the middle housing category as most likely to be viable for development and are not likely to contribute to concentration of low-income housing. Increasing the number of housing options (e.g., middle housing) may result in a number of positive health outcomes (Figure 14).

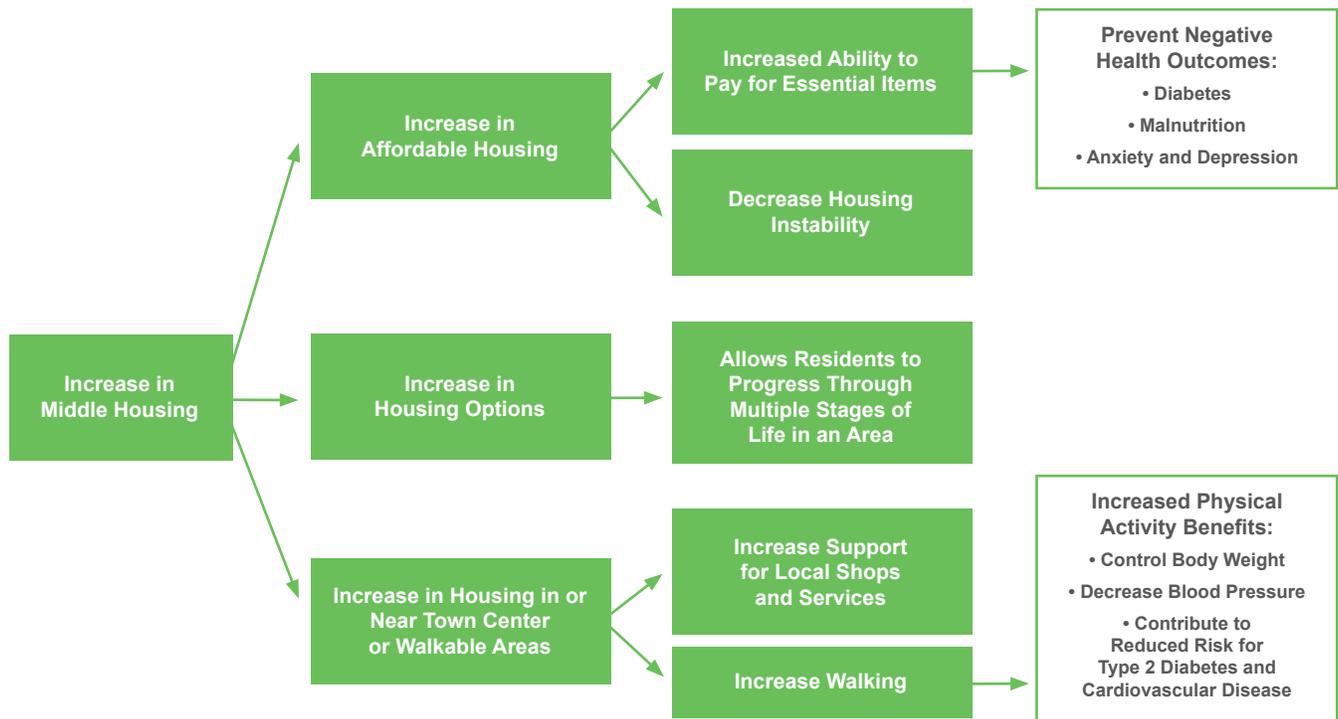


Figure 14

Health pathway for the association between increased housing options/middle housing and health

Removing some of the barriers to developers and builders regarding multi-family housing may increase the likelihood that additional housing is created in Pasadena. From the vacant lot analysis, it was determined that the majority of lots available to developers and builders would be sufficient for building middle housing (which typically includes multi-family housing with 4-12 units) but not for large multi-family housing (i.e. large apartment complexes). Middle housing developments traditionally attract middle-income families and not low-income families, therefore, it is not anticipated that a concentration of poverty will be a result of removing such a barrier; however, it could be a contributing factor in census tracts that already are considered to have, or are near the threshold of having, a concentration of poverty, (see section i. Increase in Residential Density). Lastly, lot sizes would also readily accommodate town homes which also fall into the category of middle housing but not multi-family housing.

There are numerous benefits associated with middle housing and increasing affordable housing options; for example:

- Middle housing has the potential to be more affordable to build, and to buy or rent.^{63,64}
- Affordable housing can help alleviate the number of trade-offs that some individuals or families make while deciding which essential items they can afford, such as food, rent, or medical care, or having to choose between paying for affordable versus quality housing.⁶⁵ Reducing housing instability enables people to pay for essential items which can prevent negative health outcomes, such as diabetes, malnutrition, anxiety, and depression.
- A mix of middle housing types can be blended into neighborhoods and encourage a range of socioeconomic households in an area.⁶⁶

Due to the land-efficient nature of middle housing, it provides opportunities for people to live in inner neighborhoods where land is scarce and the demand is high.⁶⁷ This allows residents to be in close proximity to town center areas with easy access to restaurants, shops, and other amenities. This helps support local shops and

KEY COMMUNITY INDICATORS - HOUSING

- Approximately half of renters in Pasadena pay 30% or more of their household income on rent.
- Approximately 23% of owners in Pasadena pay 30% or more of their household income on costs associated with home ownership.

THE MISSING MIDDLE

The most typical housing types found in cities today are either single family homes or mid-rise multi-family apartment complexes. The missing middle refers to housing types in between these bookends of the housing market.⁶⁸ Middle housing types fill a gap that is currently not being met by housing markets in most U.S. cities.

Attainable housing is needed by the two largest population groups in the U.S. – the baby boomers and millennials.⁶⁹ Fewer are purchasing homes, and while there are still demands for both single family and mid-rise multi-family, needs are growing for quality homes to rent and buy outside of the existing market.

Missing Middle Housing Types:

- | | | |
|------------------------------------|-----------------------|------------------|
| • Duplex; side-by-side and stacked | • Bungalows | • Carriage House |
| • Fourplex | • Small Multiplex | • Townhomes |
| • Courtyard Apartments | • Mixed-use/Live-Work | |

RECOMMENDATIONS

The HIA Team recommends the planning department take additional steps to encourage developers to build middle housing. This includes allowing for auxiliary dwellings, increasing the unit per acre requirements, and removing barriers such as minimum parking requirements. As it stands, it is not clear if this will be part of the ordinance update, but it would allow for more vacant properties to accommodate middle housing developments. A more thorough assessment of housing gaps in the community may be necessary to develop or adapt effective strategies and plans to address the current insecurity. The planning department may consider working with community development to complete an assessment.

OTHER BUILT ENVIRONMENT OUTCOMES OF THE ORDINANCE UPDATES

It is anticipated that updates to design standards and allowing for neighborhood character overlays could positively impact health outcomes in the City of Pasadena if certain approaches are taken.

HUMAN-SCALE ENVIRONMENTS

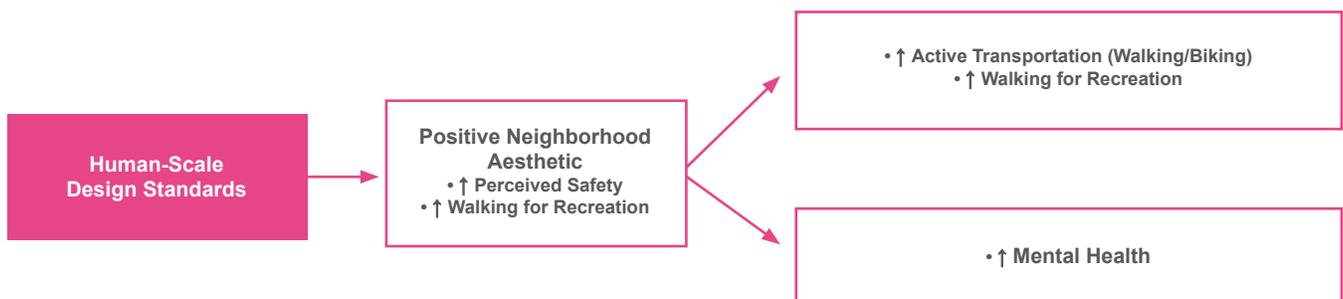
Changing the design standards related to residential buildings with the goal of creating a human-scale environment could lead to an increase in active transportation. Planning or building for the human scale means “providing good city spaces for pedestrians that take into account the possibilities and limitations dictated by the human body”.⁷⁰ Approaches to this could include increasing green space within multi-family residential developments (with equal distribution), allowing developers to design more spatially diverse and engaging features in new developments, and creating environments that are friendlier to pedestrians which could be achieved in a number of ways.

Health Impacts: Potential health impacts of creating human-scale environments include the increase in likelihood of walking mainly due to a positive neighborhood aesthetic. “Neighborhood aesthetics” refers to a resident’s perceptions of a neighborhood’s attractiveness and safety. While this concept is measured slightly differently across studies, many concluded that neighborhood perceptions are one of the more influential factors that increase the likelihood of walking and its associated health benefits.^{71,72,73}

Extent of Impact: While the design standards will allow for new features, they will not mandate them; therefore, it is difficult to determine the extent of impact. The 21 lots considered viable for large multi-family developments (more than 50 units) would have the biggest impact if a human-scale design approach was implemented by a developer. Additionally, re-developed properties would likely be positively impacted if utilized for residential developments (multi-family, single-family, middle housing properties, etc.). Such changes to design standards would only have an impact in single-family residential areas over a long period of time and with additional efforts made by the public works department.

RECOMMENDATIONS:

- By sharing information with developers on quality, human-scale design approaches that comply with the new design standards, the planning department can encourage the development of quality multi-family housing projects.
- The planning department can work with public works to develop complementary human-scale street standards for the City of Pasadena.



Health pathway for the association between vacant lots and physical health, mental health, and community well-being

NEIGHBORHOOD CHARACTER DISTRICT OVERLAYS

The ordinance will make it legal to create special character overlays within existing neighborhoods and communities. These character districts will add an additional layer of guidance for new or re-developments for a given area complementary to the existing urban form.

Health Impact: It is clear the built environment impacts health outcomes over time; however, it is unclear, without more specific overlay design standards, just how a neighborhood character district overlay would benefit or detract from health. An overlay of additional design standards would work to govern how a neighborhood continues to develop. With an existing built environment that is health detracting, especially in regards to active transportation, an overlay district has the potential to amplify these design elements, exacerbating poor health outcomes. Conversely, an overlay district also has the ability to encourage built environment elements that would encourage healthier behaviors.

Extent of Impact: Without examining specific design standard overlays for a given neighborhood character district, it is difficult to determine the extent of impact, positive or negative. It is likely that any impacts would be incremental in nature as no large new developments are likely to be built on the existing viable land.

RECOMMENDATIONS:

- Prior to implementing district overlays, the city planning staff should consider implicitly including community members in the planning process, whether it be through community meetings or community representation in the development of design standards for the neighborhood.
- There are also opportunities to set community goals, such as the 20-minute neighborhood approach, which has the potential to reduce risk factors for non-communicable diseases.⁷⁴ In 20-minute neighborhoods, amenities and services can be safely reached through active transportation or by public transit.
- Consider adopting pedestrian-oriented or human-scale design standards for any district overlay enacted.
- Monitor and evaluate outcomes over time to assess for any issues related to displacement of the population in a given neighborhood.



CONCLUSIONS

The Pasadena Planning Department's ordinance updates have the ability to have both short- and long-term health impacts. The extent to which the positive health impacts outlined in this HIA come to fruition is likely to be limited without additional efforts to improve Pasadena's built environment. To enhance the potential positive health outcomes and mitigate any negative outcomes, the HIA Team recommends additional strategies (e.g., additional ordinance updates, working closely with public works, and economic development for implementation), programs (e.g., incentives for developers), and/or plans (e.g., comprehensive city plan) be considered with strategic stakeholder and community involvement throughout the process. This will encourage a healthy future for all Pasadena residents for decades to come.

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