Central Avenue in Albuquerque's International District

Health in All Policies

Central Avenue in Albuquerque's International District: Health In All Policies

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Editor/Contributor

Joanne McEntire, J. McEntire, LLC.
Heather Ailes, H Ailes Design
Kyra Ryan, Place Matters Contractor

Contributing Partners

Albuquerque ACHIEVE Program
Bernalillo County Community Health Council
Bernalillo County Environmental Health
City of Albuquerque Planning Department
City of Albuquerque Police Department
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For more information about Place Matters, or to contact us, see our website:

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I. Executive Summary and Key Findings

Executive Summary

This document uses the principles of Health Impact Assessment to consider the health-related impacts of development on Central Avenue in Albuquerque's International District.

The purpose of this project is to examine how Central Avenue and its immediate environment influences the health of residents and visitors. While diseases like diabetes and heart disease are prevalent in the International District, we are limited in our ability to measure reductions in rates of chronic disease that might result from changes to the built environment that invite more healthful behaviors like walking, cycling, and healthy eating. But we recognized that crashes involving pedestrians and crime also affect health and can be addressed through street design and land use policy. Improvements in these areas have the potential to create a more inviting street environment that encourages walking, cycling and shopping. In striving to decrease pedestrian crashes and crime, we can affect long term health and improve quality of life in the International District.

The study team considered how the existing urban environment affects traffic crashes involving pedestrians and crime. Our literature review showed that features of the sidewalk, street, buildings, and vacant lots can influence human behavior and affect real and perceived vulnerabil-

Principles of a Health Impact Assessment (HIA)

Screening *Determines the need and value of an HIA*

Scoping *Determines which health impacts to evaluate, the methods for analysis, and the work plan for completing the assessment*

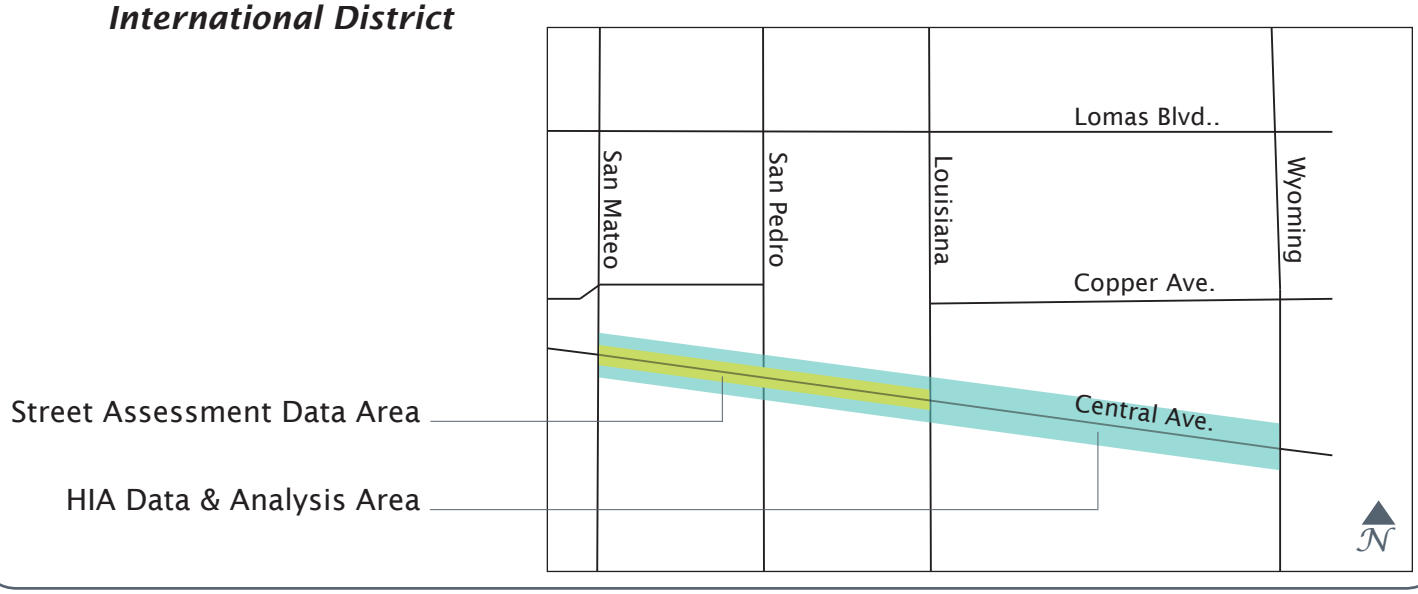
Assessment *Provides a profile of existing health conditions and an evaluation of potential health impacts*

Recommendations *Provides strategies to manage identified adverse health impacts*

Reporting *Includes development of the HIA report and communication of findings and recommendations*

Monitoring *Tracks impacts on decision-making processes and the decision, as well as impacts of the decision on health determinants*

Map 1: Health Impact Assessment Area, Central Avenue in Albuquerque's International District



Recommendations and the description of current conditions in this work are based on literature review, primary data collected in the study area and secondary data assembled by the HIA team.

HIA Project Schedule

March & April 2011: *Central Ave. street assessment*

July 2011: *Key informant interviews*

October 2011– January 2012: *Assemble secondary data*

Spring/Summer 2012: *Final document preparation*

It is our hope that the City of Albuquerque and residents of the International District will take our findings and recommendations into account as they create the International District Sector Plan and all related projects and policies.

Selected Key Findings: Central Ave in the International District

- approximately 10,000 people live within 1/2 mile of Central between San Mateo and Louisiana
- high volumes of car and pedestrian traffic

ity to crime and accidents. Based on a combination of our literature review, primary data collected by our team and contractors, and secondary data assembled by our team, we describe the current conditions on Central Avenue in the International District and make recommendations on how those conditions can be improved to reduce crime and accidents.

In order to gather data and develop recommendations, we conducted a street assessment along Central Avenue in March and April, 2011. We then conducted key informant interviews in July, 2011. Secondary data was assembled between October, 2011 and January, 2012, and final document preparation occurred in the Spring and Summer of 2012.

The data and analysis in this report are specific to Central Avenue between San Mateo Boulevard and Wyoming Boulevard. The street assessment was limited to a one-mile section of Central Avenue between San Mateo Blvd. and Louisiana Blvd.. See *Map 1* on page 1.

The partners in this process are listed in the introduction, Section III, along with a description of their roles.

This document is not a Health Impact Assessment of the International District Sector Development Plan. Instead, this is a health-in-all-policies document, bringing a deeper consideration of the future impacts of development on health and looking for ways to minimize negative impacts on health while maximizing features of the environment that enable people to enjoy healthy behavior. It is our hope that the City of Albuquerque and residents of the International District will take our findings and recommendations into account as they create the International District Sector Plan and all related projects and policies.

Key Findings

Through our key informant interviews, we found that people who frequent the area on foot and by bus or bicycle are concerned about their safety in terms of crime and accidents. Our study shows that Central Avenue and its immediate environs contribute negatively to rates of crime and traffic accidents in the International District.

We observed the following key findings:

1) The street segment we studied experiences very high volumes of car and pedestrian traffic.

2) Hot spots for crime seem to correspond to the intersections at Central and San Mateo and Central and Louisiana. These intersections have the highest bus loadings and alightings (average 94 bus alightings per hour).

3) Residents and pedestrians experience insecurity and lack of safety as a result of observed and suspected criminal activity.

4.) Lighting for pedestrians is inadequate. Street lights do not work, are dim, flashing, or not optimally located for pedestrians.

5) While there is little residential land use facing central, approximately 10,000 people live within a 1/2 mile of Central Avenue between San Mateo and Louisiana.

6) Few intersections have marked cross walks. Paint is worn, not easily seen, and doesn't follow current standards.

7) There are an average of 12 pedestrian involved crashes each year between San Mateo and Wyoming and, on average, one fatality per year.

8) While studies do not indicate excessive average speeds in the area, the high crash rates indicate the need for improved design of streets (traffic calming) and law enforcement presence.

9) People unsafely cross Central Avenue between California St. and Indiana St. to get to Expo New Mexico.

10) Sidewalk design and obstructions—including frequent driveway cuts—discourage walking as a mode of transport.

11) A high proportion (27%) of lots are vacant or have closed or abandoned businesses.

12) The eastern end of the study area experiences higher quality of life crime and violent crime while the western end has higher property crime (see maps p. 39).

13) Most bus stops are not covered and most do not have their own lighting, instead receiving incidental light from street lights or other sources.

14) Most signage is human-scaled (not large bill boards), but signs advertising alcohol or tobacco near convenience stores were observed.

15) Walking on Central Avenue in the study area is not a pleasant experience: a high volume of traffic produces noise and exhaust, lighting is inadequate at night, and businesses that do not have windows on the street diminish the sense of safety. There is little shade or landscaping and long stretches have high fences or walls adjacent to the sidewalk.

Key Findings continued:

- 27% of lots are vacant or have closed or abandoned businesses
- walking is discouraged by sidewalk design and obstructions
- pedestrian lighting is inadequate
- few marked crosswalks at intersections
- few bus stops are covered and most lack their own lighting
- Central & San Mateo and Central & Louisiana are hot spots for crime
- an average of 12 pedestrian involved crashes occur each year between San Mateo and Wyoming
- in the same area, an average of one fatal crash per year

What's it like to take a walk along Central Avenue in the International District?

Lots of traffic produces noise and exhaust, lighting is inadequate at night, and businesses that don't have windows on the street diminish the sense of safety. There's little shade or landscaping and long stretches have high fences or walls next to the sidewalk.

These finding are the basis for the recommendations that are in Section 7 of this document. The International District Sector Plan could set the tone for development for ten to twenty years. The land use plan that gets adopted may either enable or discourage healthful behavior. Using this study, participants in the sector plan process will be able to articulate two of the community's health goals and identify strategies that can be included in the final plan and associated, funded programs.

II. Introduction

In 2010, the City of Albuquerque began preparation of a Sector Development Plan for the International District. A Sector Development Plan describes the City's vision, informed by local stakeholders, of how future development should be shaped in the area.

Health-in-All Policies Document Goals

Foster recognition that the environments in which we live, work, and play influence our ability to adopt healthy behavior.

Encouragegovernmentagencies that write plans connected to local land use planning to bring considerations of health into clearer focus.

Advocate rigorous examination of how plans and policies can be used to improve the health of the people they serve.

Local planning agencies around the country are taking steps to consider health more rigorously as they plan for future development. There is growing recognition that the environments in which we live, work, and play influence our ability to adopt healthy behavior. This is especially important in Albuquerque's International District, which has higher rates of crime and accidents than other areas of Albuquerque. If people felt safer on Central Avenue, it is highly likely that they would walk more, ride bicycles more, shop more, and create a cycle of benefits to human health and the local economy.

As stated above, because this document was prepared before the sector plan for the International District was complete, we cannot call this a Health Impact Assessment (HIA). Instead, it is a health-in-all-policies document. The policies in this case are connected to local land use planning. A study similar to this one could be done in conjunction with an economic development plan, a housing plan, or any plan a local government might undertake. It is our hope that government agencies that write plans of any kind will bring considerations of health into clearer focus and rigorously examine how their plans and polices can be used to improve the health of the people they serve.

III. Background and Screening

Background

With funding from Human Impact Project in 2010, participants in a two-day Health Impact Assessment (HIA) training chose two geographic areas to perform Health Impact

Assessment: the International District in Albuquerque's southeast quadrant and the Mountain View community in Bernalillo County's South Valley. These areas were selected because data shows these areas suffer the greatest burden of preventable diseases, including diabetes and heart disease, in the Albuquerque area. This document concerns only the International District.

The International District was selected as the focus for a Health Impact Assessment (HIA) because data shows it is one of two areas in Albuquerque that suffer the greatest burden of preventable disease.

Initially, several members of the HIA team became aware of the City Planning Department's assignment to conduct a new sector plan for the International District, when City Councilor Rey Garduño initiated a request to the city administration for a plan.

In Albuquerque, sector plans contain both policy and zoning. the zoning in the sector plan becomes the official zoning for the plan area. The City's sector plans are Rank 3 plans that must comply with the Comprehensive Plan, a Rank 1 plan. The Comprehensive Plan is the overarching document that lays out the vision for the greater geographic area and Rank 2 and Rank 3 plans are more detailed plans that fit into that overall vision. Sector plans can tailor zonging, land use and design regulations in order to preserve the character of an area, address mismatches between zoning and land use, and provide a frameword for redevelopment or new development.

In 2010, the City Planning Department began work on a new sector plan for the International District, which created the opportunity for doing an HIA along with the plan. Sector plans focus primarily on land use designations, but may also include:

- economic development
- parks and recreation
- public infrastructure
- other public aspects

The International District Healthy Communities Coalition proposed that an HIA be done along with the sector plan. Additionally, State Senator Tim Keller, who represents the International District, has sponsored legislation in recent years that would require HIA on certain legislative proposals.

The International District, a part of Albuquerque approximately two square miles in area, had not before been addressed by its own sector plan although parts of the area, including the La Mesa and Trumbull neighborhoods, had sector plans since the 1980's. City staff and a consulting firm were assigned to the plan and began work in August, 2010. Part of the rationale for the Councilor's action was the widespread recognition of crime and traffic accidents. The HIA team recognized the development of the Sector Plan as an opportunity for conducting an HIA. In September 2010 they used the city's sector planning process as a case study during the HIA training provided by Human Impact Partners.

During the screening process, the HIA team determined that the International District Sector Plan could have the

The International District Sector Plan could potentially affect—positively or negatively—environmental and social influences on health that would impact the local population.

potential to affect, positively or negatively, environmental and social determinants of health that would impact the health of the local population. Depending on where the team chose to focus, health concerns that could be addressed by an HIA were poverty, crime, diabetes, accidental death, heart disease, asthma, HIV, homicide and suicide. These health impacts might be considered in the plan without an HIA, but there was no precedent in the city's other sector plans to make recommendations on health through a structured and collaborative process such as that provided by the HIA model.

The Planning Department assigned a planner and consulting firm to the Sector Plan; the Department's Director expressed an interest in the HIA, and permitted the assigned Planner to participate in the HIA team's meetings. The team determined that the decision-making process was open to recommendations that could come from an HIA.

Screening

Screening *Determines the need and value of an HIA*

Scoping *Determines which health impacts to evaluate, the methods for analysis, and the work plan for completing the assessment*

During our screening and scoping sessions we considered health broadly, asking ourselves how the Central Avenue environment could affect behavior in ways that would reduce rates of chronic diseases like diabetes and heart disease, both of which are high among International District residents.

Crashes involving pedestrians and crime are the health impacts evaluated in this assessment.

It quickly became clear that while opportunities for exercise and access to healthy foods can improve a person's health, it would be hard to show in any time period that the recommendations in this report would lead to measurable changes in rates of chronic disease in the International District. We felt strongly that if we made the right recommendations, and if these were followed, it could result in measurable declines in crashes involving pedestrians and crime in the relatively short time period of five to ten years. Decreases in crime and crashes, we reasoned, might then create an environment in which people feel more comfortable on the street and make them more likely to walk, shop, and ride bicycles there. Measures that decrease crime and crashes can influence long term health and improve the general quality of life for International District residents and visitors.

HIA recommendations could result in measurable declines in crime and crashes involving pedestrians in the relatively short time period of five to ten years. This might create a more comfortable environment where people are more likely to walk, shop, and ride bicycles.

Partners in the HIA and their Roles

Bernalillo County Place Matters convened an HIA training session attended by over 40 people including local planning officials, public health professionals, and community

members. This training led to the decision to conduct two HIAs in the city, one of which was on Central Avenue in the International District.

Bernalillo County Office of Environmental Health and the Mid-Region Council of Governments were key partners in the HIA. Staff of the City of Albuquerque's Planning Department, the Albuquerque Police Department and the New Mexico Department of Health were primary contributors to the process and report.

Staff associated with Albuquerque ACHIEVE, Bernalillo County Community Health Council and Samaritan Counseling Center provided perspectives on the study area, and Youth Building Healthy Communities and the Fair West Fusion Youth Group participated in conducting the street assessment.

Temporary staff who represented the racial and ethnic diversity of the International District were hired to conduct key informant interviews. La Mesa Presbyterian Church provided free meeting space. Human Impact Partners provided funds for the study and the production of this document.

There were no conflicts of interest identified by the contributors to this report.

Partners in the Health-in-All Policies Process

- Bernalillo County Place Matters team
- City of Albuquerque Planning Department
- Albuquerque Police Department
- Youth Building Healthy Communities
- The Fair West Youth Group
- New Mexico Department of Health
- Albuquerque ACHIEVE
- International District Healthy Communities Coalition
- Bernalillo County Community Health Council
- Mid-Region Council of Governments

IV. Scope of the Project

Beginning in December 2010, and continuing through January and February, 2011, the HIA team used an HIA Scoping process to narrow down the focus of our work and consider factors along Central Avenue that affect low-income people, ethnic/racial minorities, youth and elderly populations, women, and people with disabilities. People meeting these descriptions are considered vulnerable and worthy of special attention. The team considered whether there are disparities in how vulnerable populations are impacted by accidents and crime in this area. We asked if changes proposed in the sector plan would positively or adversely affect vulnerable populations.

The HIA team considered how women, youth, elderly people, low-income earners, people with disabilities and ethnic/racial minorities might be affected by accidents and crime in the study area. Recommendations were made with the effects on these vulnerable populations in mind.

While the team considered many factors that influence health, we selected public safety as the main health determinant for this report. During scoping we decided that our work is not a health impact assessment because the International District Sector Plan had not been finalized at that time. Therefore, this work is about creating health in all policies. Land use policy is the policy area this work at-

Because the International District Sector Plan had not been finalized at the time this work began, it is not a health impact assessment.

This work is a **health in all policies** document, highlighting how changes to the environment created by land use policy and street design can affect rates of crime and traffic accidents.

tempts to influence. Specifically, this work highlights how modifications to the environment created by land use policy can affect the occurrence of crime and traffic accidents.

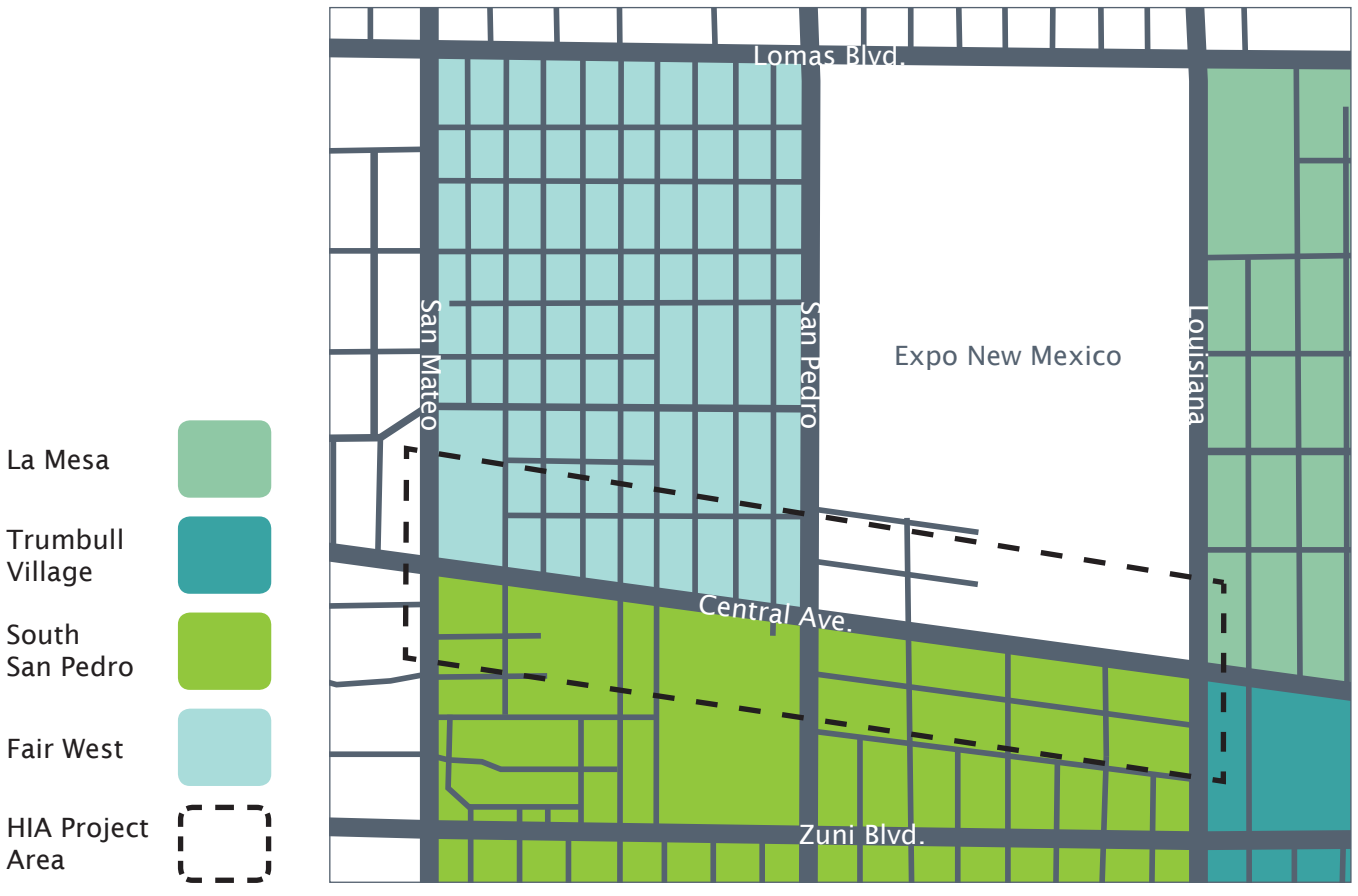
Community members who participated on the scoping team included members and leadership of two youth groups, members of a church, staff of Samaritan Counseling Center, and two residents of the International District.

The study area includes a one-mile portion of Central Avenue between San Mateo and Louisiana, including the city block and adjacent properties to the north and south of Central Ave. The State Fairgrounds, also known as Expo New Mexico, fronts the north side of Central Avenue for approximately ½ mile. See *Map 2*.

Knowing that crashes and crime can have immediate, negative impacts on health through physical and emotional injury, the over-arching questions asked in this report are:

- What are the existing characteristics of the built environment that affect crashes with cars, pedestrians, and bicyclists?

Map 2: Study Area Neighborhoods



- What are the existing characteristics of the built environment that affect crime, and the perception of safety?

The HIA Team asked additional questions related to specific physical characteristics of the street, its sidewalks, intersections, adjacent land uses, transit stops and other features. Another six questions were related to crime and the perception of crime. For vulnerable populations, the impacts to be considered were whether specific aspects of the existing environment have positive or negative effects on them.

What are the existing characteristics of the built environment that affect crashes with cars, pedestrians, and bicyclists?

What are the existing characteristics of the built environment that affect crime, and the perception of safety?

Data Sources and Methods

The HIA Team gathered primary data in the form of a street audit and key informant interviews. Prior to these, the team hired a consultant to provide a literature review about the affects of the built environment on crime and crashes involving pedestrians. Excerpts of the literature review are provided in this report.

Street Audit

The street audit included on-site counts, qualitative descriptions, measurements, and mapping. The use of 2010 aerial photographs and ground-truthing against parcel data from the City's GIS were utilized for the location and status of vacant lots and closed businesses, and the location of parking lots. During ground truthing, the HIA team walked the sidewalks of Central Avenue in the International District to verify specific information contained in local government records. This process also generated new data with the participation of the two youth groups and HIA team members.

There were several parts to the street audit:
- Intersection inventory – for ADA compliance and safe crossing opportunities
- Street side inventory - bus stops and lighting
- Sidewalk inventory – width, driveways, and obstructions to walking
- Land use and condition of businesses along the street
- Lighting inventory at night

Elements of the Street Audit

Intersection inventory *for ADA compliance and safe crossing opportunities*

Street side inventory *bus stops and lighting*

Sidewalk inventory *width, driveways, and obstructions to walking*

Land use *and condition of businesses along the street*

Lighting inventory *at night*

Metrics

Information on the functional classification of streets, transit ridership, and traffic congestion were collected from the Mid-Region Metropolitan Planning Organization (MRMPO) at MRCOG. The data sources for excessive speeds and

their impacts were from MRCOG and City Police Department speeding ticket data. Transit shelters and their impact on perceived or actual safety is data from MRCOG, using location and description of transit stops and a literature review. Crash data was obtained from the University of New Mexico Division of Government Research in contract with the New Mexico Department of Transportation's Traffic Safety Bureau. The Mid-Region Metropolitan Planning Organization provided the analysis of the crash data.

Information on street signs and commercial signage was new information gathered by video. The data sources for alcohol establishments were current business license and state liquor license records. Crime data was generated by the Albuquerque Police Department.

The table on page 10 summarizes types and sources of data used in preparing portions of this report relevant to

Metrics	Data Sources
Locations and status of vacant lots, closed businesses, and parking lots	Aerial photos; observations by youth group members & HIA team; Albuquerque GIS maps
ADA compliance and safe crossing opportunities at intersections	Street audit conducted by the HIA team
Locations of bus stops and lighting (including side streets)	Street audit conducted by the HIA team
Width of, obstructions in, and driveways crossing sidewalks	Street audit conducted by the HIA team
Land use and condition of businesses	Street audit conducted by the HIA team
Functional classification, transit ridership, congestion	Mid-Region Metropolitan Planning Organization (MRMPO)
Traffic speeds	Mid-Region Council of Governments (MRCOG); Albuquerque Police Department speeding ticket data
Location and description of transit stops and shelters	MRCOG
Traffic collision data	UNM Division of Government Research via contract with NM Dept. of Transportation Traffic Safety Bureau); MRMPO
Visibility of street signs	Video taken by HIA team
Location of alcohol establishments	City of Albuquerque business records and State of New Mexico Liquor License records
Crime statistics	Albuquerque Police Department

current conditions affecting crime, crashes, and street quality.

Key Informant Interviews

Research on perceptions of safety utilized a key informant interview. The HIA Team members developed the key informant survey using information from the Planning Department's recent meetings on the Sector Plan, and sought opinions from people as they interacted within the International District. It was hoped that the interviews would capture a range of opinions that might not be captured in a public meeting held by a the City of Albuquerque's Planning Department . Temporary staff were hired to pilot the survey instrument and conduct the survey, which was completed in July 2011. The two men and three women conducting the survey represented the diversity of International District residents, self-identifying as Cameroonian, Native American, Latina, Chicana/Filipina/Native American, and Vietnamese.

Key informant interviews were used to collect the opinions and experiences of people who live, work and pass through the International District, but who might not participate in a public meeting or other means of public survey.

Not all key-informant interviews were conducted in the study area, but all interviews were conducted in the International District. The key informant interviews were conducted in three retail locations, an apartment complex, First Nations Health Clinic, Care Mart facility, at bus stops, and at the South San Pedro Neighborhood Association's community garden.

Some of the questions were specific to the study area and some were general to the International District. Forty-six people completed the interview. Three interviewees (6%) were between 18 and 25 years old. Twenty-seven interviewees (59%) were between the ages of 26 and 50. Sixteen (35%) were 51 or older. Twenty-five respondents were men, and twenty-one were women. Nine interviews were conducted in Vietnamese and five in Spanish, with other interviews in English. Visit www.bcplacematters.com for more information about the survey.

Who was interviewed?

- 46 people completed the interview
- 3 participants were between 18 and 25 years old
- 27 participants were between 26 and 50 years old
- 16 participants were 51 and older
- 25 interviewees were men
- 21 interviewees were women
- 9 interviews were conducted in Vietnamese
- 5 interviews were conducted in Spanish
- 32 interviews were conducted in English

V. Assessment Findings

Our research focused on health outcomes impacted by changes to the built environment that are likely to be proposed in the Sector Plan: specifically, the impact on traffic crashes, the impact on crime, and the impact on the perception of safety for people who live, work, go to school or pass through the area. This section addresses literature and research about these impacts, including impacts on

This research focuses on health outcomes impacted by changes to the environment proposed in the Internatinal District Sector Plan: impact on traffic crashes, impact on crime, and impact on the perception of safety for people in the area.

vulnerable populations; describes the existing conditions in the study area; and addresses questions put forth by the HIA team about specific physical characteristics of the area and crime and the perception of crime within the International District.

1. Literature on Transportation Safety in the US

- Traffic fatalities in the US are the sixth leading preventable cause of death.
- In the last 15 years, more than 76,000 Americans have been killed while crossing or wallking along a street in their communities.

Of all the systems that people have to navigate on a daily basis, road transport is the most complex and the most dangerous. In the United States, traffic fatalities are the sixth leading preventable cause of death. While the United States once had the second-safest transportation system in the developed world, our traffic safety record has since fallen behind every other developed country, including England, Australia, and the entirety of continental Europe (Peden et al., 2004).

In the last 15 years, more than 76,000 Americans have been killed while crossing or walking along a street in their communities (Ernst and Shoup, 2008). Across the board, the literature supports the conclusion (relevant to the HIA study area) that in dense urban areas, design treatments—such as narrow lanes, traffic-calming measures, and street trees close to the roadway—enhance a roadway's safety performance when compared to more conventional roadway designs.

Changes such as narrow lanes, traffic-calming measures and street trees close to the roadway improve safety for users.

Many high-income countries have achieved sharp reductions in crashes and casualty numbers over the past couple of decades by adopting an approach to road safety that emphasizes environment, vehicle, and road-user interventions. This "new understanding" of road injury prevention and control holds to the following principles.

- Road crash injury is largely preventable and predictable; it is a human-made problem amenable to rational analysis and countermeasure.
- Road safety is a multi-sector issue and a public health issue – all sectors, including health, need to be fully engaged in responsibility, activity and advocacy for road crash injury prevention.
- Common driving errors and common pedestrian behavior should not lead to death and serious injury – the traffic system should help users cope with increasingly demanding conditions.
- The vulnerability of the human body should be a limiting design parameter for the traffic system and speed management is central.

- Road crash injury is a social equity issue – the aim is for equal protection to all road users and motor vehicle users bear most responsibility for road injury and risk.
- Local knowledge needs to inform the implementation of local solutions (Peden et al., 2004).

Literature findings show that pedestrian-oriented environments are associated with lower crime, increased walking, and decreased obesity. A high-risk neighborhood with unsafe features such as high traffic volumes and speeds, narrow or degraded sidewalks, poorly connected streets, and poor or no lighting is likely to discourage walking as a mode of transport, thus negatively impacting physical activity levels (Dunbaugh & Rae, 2009). Transportation researchers in Miami-Dade have found that safety is enhanced by improving crosswalk markings, lighting, signs, striping, median/refugee islands, sidewalks, signals, and pavement condition and accessibility (Cevallos and McCarthy, 2011).

When a neighborhood has high traffic volumes and speeds, narrow or degraded sidewalks, poorly connected streets and poor lighting, walking is discouraged, which impacts the physical activity levels of people living, working and passing through those areas.

In the US, there has been growing recognition that walking and bicycling, or "active transportation," are critical to public health, as they increase levels of exercise leading to the reduction of obesity and associated chronic disease. Pedestrian-oriented environments are associated with lower crime, increased walking, and decreased obesity (Dunbaugh & Rae, 2009). In recent years, communities have begun to retrofit poorly designed roads to become "complete streets" – adding sidewalks and bicycle lanes, reducing crossing distances and installing trees and public art to make walking and biking safer and more inviting. Safer streets save lives and promote health, and there are now a growing number of excellent models to build on and replicate (Ernst and Shoup, 2008).

Pedestrian-oriented environments are linked with:

- lower crime
- increased walking
- decreased obesity

1.2 Literature on Vulnerable Populations

Children

National data indicate that nearly one-third of all American youth do not engage in sufficient amounts of vigorous or moderate physical activity. In 2000, 15% of children aged 6 to 11 years and 16 percent of adolescents were overweight. Since the 1960's, these numbers have quadrupled for 6- to 11-year olds and nearly tripled for adolescents (Ewing et al., 2005).

Children use and perceive the built environment differently than adults, and they are particularly vulnerable to problems arising from their use of it (Roberts et al., 1994).

A healthy built environment for children requires consideration of how they'll perceive and use the environment in ways different from adults

A healthy built environment for children requires consideration of how children will perceive and use the environment. Automobile-oriented design restricts children's independent travel and increases the danger to child pedestrians and cyclists (Wendel et al., 2008). During 2003, motor vehicle collisions killed 390 pedestrians and 130 cyclists under the age of 15 years (NHTSA, 2004).

Many states and localities have launched Safe Routes to School programs, which provide funding for infrastructure improvements to support walking and biking. "Walking and bicycling to and from school can contribute towards the development of a lifelong habit and community-wide norm of incorporating physical activity into daily routines. Children who walk to school are more physically active overall than those who travel to school by car, although the journey to school itself contributed relatively little" (SRTS, web).

Seniors

The highest rates of walking among seniors are linked to neighborhoods that have higher density, greater numbers of street intersections and green and open spaces for recreation.

A multilevel study of 56 neighborhoods revealed evidence that walking among older adults varied according to the neighborhood's built environment. The highest rate of walking (28%) was linked to neighborhoods with higher level of density, greater numbers of street intersections, and green and open spaces for recreation (Fuzhong et al., 2005).

Miami-Dade County in Florida experienced a significant number of pedestrian injuries and fatalities within the senior population. As a result, the county put special emphasis on pedestrian safety and intersection improvements. Safety was enhanced by improvements to crosswalk markings, lighting, signs, striping, median/refugee islands, sidewalks, signals, and pavement condition and accessibility (Cevallos and McCarthy, 2011).

Environmental Justice Populations

Pedestrian crashes occur more frequently in areas with large low-income and minority populations.

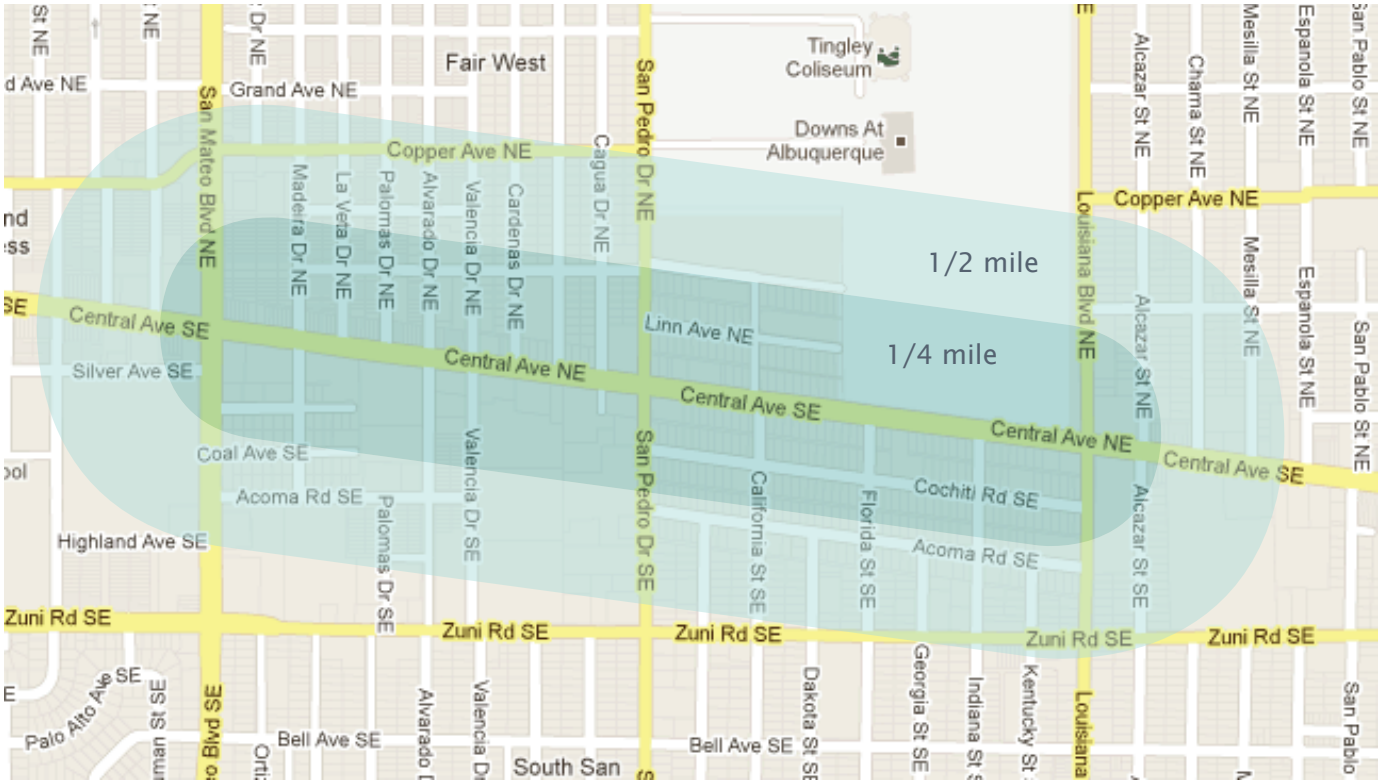
Research indicates that pedestrian crashes occur more frequently in "Environmental Justice" areas, known herein as "EJ" areas, with large low-income and minority populations (Roberts et al., 1995). Using data from four California communities, researchers learned that pedestrian injuries were greater in areas with higher youth populations, more unemployment, fewer high-income households, and greater traffic flow (LaScala et al., 2004).
The disabled, the poor and other disadvantaged groups may benefit from built environment improvements that re-

quire partnerships among urban planners, engineers, architects, developers, public health practitioners and communities (Wendel et al., 2008).

2. Existing Conditions in the Study Area Related to Accidents with Cars, Pedestrians, and Bicyclists

The population within a ¼ mile area around Central Ave. is 3,295 persons, living in 562 households. Within a ½ mile area, the population is 10,594 persons living in 2,121 households. See *Map 3*.

Map 3: HIA Study Area Population



	Total Population	# of Households	# of Blocks
Within 1/4 mile of study area	3295	562	71
Between 1/4 to 1/2 mile	7299	1559	204
Total within 1/2 mile	10,594	2121	275

2.1 Street Description

The one-mile stretch of Central Ave. in the study area has 6 lanes and is approximately 80' wide. There are medians and turn lanes, but no parking or bike lanes.

The one-mile portion of Central Avenue in the study area is a six-lane roadway with three travel lanes in each direction. It has a median and turning lanes at the major intersections. The right-of-way from curb to curb is roughly 80 feet. The sidewalks are next to the traffic lanes; there are no bike lanes or parking lanes.

The functional classification of a street refers to the role it plays in moving traffic through an area. The functional classification of Central Avenue is Principal Arterial. A principal arterial's function is to carry significant amounts of traffic across the region. Signalized intersections occur at:

- San Mateo Boulevard, principal arterial
- San Pedro Avenue, minor arterial to the north and collector to the south
- Louisiana Boulevard, principal arterial
- Alvarado, local

Central Avenue

- Average Annual Daily Traffic is 27, 350 vehicles
- 88% of traffic on Central in the International District is single occupancy vehicles
- 12% of traffic in the International District is transit vehicles
- ranked 20th in congestion out of 30 corridors in the area
- congestion is considered "minor"
- no expected increase in congestion

The traffic and crash data provided in this section covers a 2-mile segment of Central Avenue that runs through the International District (San Mateo to Wyoming Blvd..). While the HIA team conducted a street audit on the one-mile section of Central between San Mateo and Louisiana, crash data was obtained for entire the two-mile length, and references to "Central Avenue" in this chapter are for the entire two-mile segment.

The Average Annual Daily Traffic (AADT) on Central Ave. is 27,350 vehicles. Traffic on Central Avenue in the International District is 88% single occupancy vehicles and 12% transit vehicles. Central Ave. is ranked 20th in congestion out of 30 corridors in the area; the segment between San Mateo and Louisiana is the only segment that has significant traffic congestion and that congestion is considered "minor". In addition, according to 2035 projections, there is no expectation of any significant increase in congestion, largely due to the grid street network in the eastern area of Albuquerque.

2.2 Transit

Three important bus routes travel along Central Avenue, the 66, 766 and 777. These routes have the highest ridership in the region. The average weekday ridership on the routes ranges from 6,500 to 7,874 trips per day.

The local Route 66 bus offers many bus stops and runs frequently on weekdays and Saturdays, from early morning until after midnight. On Sundays, service stops at 7:30 pm. Two Rapid Ride routes serve the study area with stops at San Mateo and Louisiana only. These routes run from early morning to after 9 pm, with Sunday service ending earlier, at 6:30 pm. The transit routes provide connections between the study area and other areas of the city, via bus routes that may be picked up at San Mateo, San Pedro and Louisiana. Many transit riders disembark and walk to nearby bus stops at the San Mateo and Louisiana intersections.

Transit routes and stops greatly influence pedestrian movement as riders cross major intersections to make transit connections. It is estimated that on weekdays, over 850 people cross at Central and San Mateo, a substantial number, particularly compared to other major crossings in the study area. See *Figure 1*.

2.3 Travel to Work by Residents

The single occupant vehicle is the primary mode of transportation residents use to get to work in the two neighborhoods that are north and south of Central Ave. in the study area. However, car ownership is up to five times less in this area than it is for Albuquerque overall. Residents from one section of the South San Pedro neighborhood use transit more than city residents overall, and residents in both neighborhoods walk or use bicycles and other options more. See *Table 1*.

***Figure 1*: Daily Pedestrian Crossings in the Study Area**

Source: MRCOG, 2008

Table 1: Travel to Work by Residents

	Albuquerque	South San Pedro Neighborhood East & West		Fair West Neighborhood
Public Transit	2.0%	3.3%	2.9%	0.9%
Walk	2.1%	6.6%	0.0%	4.6%
Bike/Other	1.2%	8.1%	1.1%	5.9%
No Vehicle	2.8%	12.4%	5.4%	3.7%

American Community Survey, 2005-2009

2.4 Vehicular Crashes – Locations

Central and Louisiana has the highest rate of crashes when compared to other intersections in the study area.

Rates of fatalities and injuries in the study area were higher than the regional average for the Albuquerque Metropolitan Planning Area (AMPA), and higher than or equal to rates for the state of New Mexico. Between 2004 and 2009, the average number of crashes was 274 per year for this area. See *Table 2*.

The number of crashes increases during peak traffic hours, on weekends, and when the school day is beginning or ending. The summer months have a higher number of crashes than other seasons.

When comparing the intersections in the area with each other, the rate of crashes at major intersections (those with traffic signals) is similar, except at Louisiana, where the rate is much higher. The intersections at Louisiana and San Pedro have a high percentage of red light violations when compared to other intersections within the corridor and to the metropolitan area: 14% and 15% of the total when violations are broken down by type, respectively. See *Table 3*.

2.5 Vehicular Crashes – Types and Causal Factors

The rate of pedestrian involved crashes is up to five times greater in the study area than in the metropolitan area and the state. Crashes involving cyclists are also notably higher in the study area, when compared to rates within the state and the metropolitan area. Alcohol involved crashes within the study area also occur at higher rates than the comparison areas.

Table 2: Comparison of Crash Rates

	Central Ave. Yearly Average (2004-2009)	Central Ave. % of Total Crashes	Abq. Metro Planning Area (2008) % of Total Crashes	State of New Mexico (2009) % of Total Crashes
Fatality	2	3.3%	2.9%	0.9%
Injury	83	6.6%	0.0%	4.6%
Property Damage	189	8.1%	1.1%	5.9%

NM DOT Traffic Safety Bureau and UNM Division of Government Research

Table 3: Crashes at Intersections with Traffic Signals

	Central & San Mateo	Central & San Pedro	Central & Louisiana	Central & Pennsylvania	Central & Wyoming
Average Annual Daily Traffic (2009)	55,576	40,298	46,654	58,601	53,301
Intersection Crashes Yearly Average (2004-2009)	52	36	63	16	42
Intersection Crash Rate	0.26	0.25	0.37	0.08	0.22

NM DOT Traffic Safety Bureau and UNM Division of Government Research

Alcohol involvement in crashes is higher in the study area compared to the metropolitan area and the State, with a five to seven percent contributing factor. The number of crashes where alcohol was involved increases at certain times of day. As the day progresses from 6 am onward, there is a steady increase in the number of alcohol involved crashes. Additionally, from 6 pm to midnight the number of alcohol involved crashes increases even more significantly. See *Table 4*.

Crashes involving pedestrians were higher at the San Mateo intersection than at the four other major intersections in the study area. "Hit and run" behavior by vehicle drivers occurred in 33% of these crashes. Eighty-five percent percent of pedestrian involved crashes resulted in injuries and seven percent were fatal. See *Table 5* on page 20.

Table 4: Pedestrian, Cyclist & Alcohol Related Crashes

	Central Ave. Yearly Average (2004-2009)	Central Ave. % of Total Crashes	Abq. Metropolitan Planning Area (2008) % of Total Crashes	State of NM (2009)% of Total Crashes
Pedestrian Involved	16	6.0%	1.3%	1.1%
Bicyclist Involved	7	2.4%	1.1%	0.4%
Alcohol Involved	19	6.9%	4.3%	5.8%

NM Data: 2009 NM Traffic Crash Information, NMDOT

Table 5: Crashes Involving Pedestrians

	Central & San Mateo	Central & San Pedro	Central & Louisiana	Central & Pennsyl-vania	Central & Wyoming	Total 2004-2009	Yearly Average
Total Pedestrian Involved Crashes (2004-2009)	20	9	15	8	9	61	12.2
Fatality	1	1	2	0	0	4	.08
Injury	16	7	12	8	9	52	10.4
Property Damage	4	1	3	0	0	8	1.6
Hit and Run	6	2	4	6	2	20	4

NM DOT Traffic Safety Bureau and UNM Division of Government Research

Additional data analysis reveals that "pedestrian error" is a factor in 6% of all crashes on the corridor and driver inattention is a factor in 36% of crashes.

Crashes with bicyclists were fewer than those with pedestrians. They happened at a higher rate at the Louisiana intersection than at four other major intersections in the study area. "Hit and run" behavior by vehicle drivers occurred in 38% of these crashes and 50% of the crashes resulted in injuries. See *Table 6*.

Table 6: Crashes Involving Cyclists

	Central & San Mateo	Central & San Pedro	Central & Louisiana	Central & Pennsyl-vania	Central & Wyoming	Total 2004-2009	Yearly Average
Total Bicycle Involved Crashes (2004-2009)	4	1	8	2	3	18	3.6
Fatality	0	0	0	0	0	0	0
Injury	1	1	5	1	1	9	1.8
Property Damage	3	0	3	1	2	9	1.8
Hit and Run	2	0	5	1	1	7	1.4

NM DOT Traffic Safety Bureau and UNM Division of Government Research

3. Questions Related to Crashes and Pedestrian Safety Along Central Avenue

There are multiple factors contributing to traffic crashes. Some of these factors also contribute to crime and the perception of crime, discussed in section five. This section examines the HIA Team's questions related to crashes and pedestrian vulnerability. The questions are organized in groups related to vehicular speeds, intersections, sidewalks, streetlights, and land uses.

3.1 What is the impact of excessive speed on traffic accidents?

Traffic calming strategies reduce vehicle speed and volume and give greater emphasis to use by pedestrians, cyclists and residents.

Traffic speeds are the primary determinants of crash severity (Litman and Fitzroy 2005). An overwhelming proportion of traffic-related injuries and fatalities occur along roadways that are "dangerous by design," having been engineered for speeding cars, with little or no provision for people on foot, in wheelchairs, in strollers, or on bicycles (Ernst and Shoup 2008).

Traffic calming strategies, which are increasingly accepted by transportation professionals and urban planners, refer to design features and strategies intended to reduce vehicle traffic speeds and volumes on particular roadways, giving greater emphasis to use by pedestrians, cyclists and residents (Victoria Transport Policy Institute 2011). These strategies can range from minor modifications of individual streets to comprehensive redesigns of entire road networks. Because traffic calming measures are most often applied in conjunction with each other, it is not always possible to measure the effects of individual interventions, however data from cities that have implemented traffic calming as a whole is consistently positive.

The multiple traffic lanes and wide intersections along Central were designed primarily for cars, rather than for pedestrians or cyclists.

High operating speeds give drivers less time to react to unforeseen hazards and to people who are walking, bicycling and standing. In general, low-speed, "main street" type designs experience the lowest rates of vehicle-pedestrian crashes, while urban areas with wider travel lanes and higher operating speeds experience the highest rates. The shorter the uninterrupted length of roadway, the slower traffic will travel and the less severe crashes will be. Lower speeds profoundly impact pedestrian safety. A study in the UK showed that a pedestrian struck by a vehicle traveling forty miles per hour has an 85 percent chance of being killed. This fatality rate drops to 45 percent at thirty mph, and to 5 percent at twenty mph or less (Ewing and

Dumbaugh 2009).

A number of U.S. cities, such as Palo Alto, Santa Monica, Portland, Seattle, and New York City have implemented different versions of traffic calming programs, and report profound results. Seattle, for example, reported a 77% reduction in traffic crashes after implementing a citywide traffic-calming program (NHTSA, 2003).

Central Avenue

- Posted speed limit is 35 mph
- Average off-peak speed is 30 mph
- During afternoon rush hour, average speed is 24 mph

Traffic calming measures effectively mitigate speed, as well as crash rates. In a study in the UK, collision frequencies declined by anywhere from 8 to 100 percent when traffic calming measures were implemented. An experiment in Washington State compared rigorous traffic enforcement with traffic calming measures on two streets located near one another. Researchers found that enforcement temporarily reduced speeds by 4 mph on one street, while traffic calming permanently reduced speeds by 14 mph on the other (Ernst and Shoup, 2008.).

Speed reductions achieved through traffic calming have measurable safety benefits. A detailed meta-analysis of 33 studies found that area-wide traffic-calming programs reduce injury accidents by about 15%, with a smaller reduction on main roads of 10% (Blivk, 2001).

The 95% speed value would be a better measure of speed on Central Avenue than the average. This would require that a traffic speed study be performed. This study might inform us about the types of traffic-calming measures that could be useful on Central Avenue.

With a posted speed limit of 35 mph, the average off-peak speed on Central Ave. is roughly 30 mph with no segment having a significantly higher than average speed. For the afternoon rush hour (PM peak hour) the average speed is roughly 24 mph. The 95% speed value would be a better measure of speed on Central Avenue than the average. This would require that a traffic speed study be performed. This study might inform us about the types of traffic-calming measures that could be useful on Central Avenue.

3.2 What is the impact of poor visibility of street signs on traffic accidents?

Our literature review did not describe the impact of poor visibility of street signs on traffic accidents. Posted speed signs (35 mph) are present on both sides of the road in four different places. The posted speed signs are not obstructed.

Raised center medians and pedestrian refuges—areas that provide a safe place for people to stop when crossing a wide street—reduce crash risks to pedestrians.

3.3 What is the impact of median characteristics on pedestrian accidents?

"Raised center medians" are associated with a significantly

lower crash risk to pedestrians (Gorder 2002). Central Ave. features a raised median that physically separates the east and west travel lanes. The medians on Central Ave. are mostly concrete with some landscaping. However, only one location has a pedestrian refuge. A pedestrian refuge is an area situated within the median to provide a safe place to stop while crossing a wide street.

Central Ave. has raised medians that are mostly concrete, with some landscaping. However, only one location has a pedestrian refuge.

3.4 What is the impact of curb ramps on pedestrian access and pedestrian accidents?

The literature on the impact of curb ramps on pedestrian access was not explored. However, the HIA Team believes that persons with mobility and visual disabilities are more likely to travel on streets when accommodated by the design of street intersections and sidewalks.

The design of intersections and sidewalks should accommodate people with mobility issues and visual disabilities.

Most of the intersections have single ADA curb ramps, however many are in poor shape and some have a steep slope. There is one intersection that features double ramps, which direct pedestrians into each crosswalk. Those with single ramps are oriented toward the center of the intersection. In some cases, the walking signal button would be difficult for a person in a wheelchair to access.

Central Avenue

- Many curb ramps are in poor shape and some have a steep slope
- Single ramps are oriented toward the center of the intersection, rather than the crosswalk
- In some places, the walk signal button would be difficult for a person in a wheelchair to access

Increasing the curb radius can be especially supportive for pedestrian safety at intersections. It appears that the side streets provide an opportunity for increasing the curb radius and creating a narrower crossing for pedestrians; this may not be possible on Central unless a parking lane is added.

3.5 What is the impact of crosswalk location and characteristics on pedestrian accidents?

The literature indicates that wider sidewalks and improved crosswalks support Universal Design Objectives, which seek to accommodate the widest range of potential users, including people with disabilities and other special needs.

A crosswalk at Central and Alvarado with faded and missing paint.

One study compared five years of pedestrian crashes at one thousand marked crosswalks and one thousand matched, unmarked comparison sites. All sites in this study lacked traffic signals or stop signs on the approaches (Zegeer et al. 2002). On multilane roads with traffic volumes above twelve thousand vehicles per day (such as Central Ave.), a marked crosswalk alone, without other substantial improvements, was actually associated with higher pedestrian crash rates. However, hazards were mitigated by raised medians.

Improving Crosswalk Safety

- Beacon technology with flashing lights to warn drivers about the presence of crosswalks
- In-pavement flashing warning lights that are automatically activated when pedestrians are present
- Advance stop lines that are placed 50' before a crosswalk to ensure drivers stop well before crosswalks (the standard is 4' before crosswalks)

A pedestrian crosses Central mid-block without the aid of a crosswalk near Expo NM.

Crosswalks in the Study Area

- In the study area, the number and visibility of marked, painted crosswalks in very low.
- In some places, the walk signal button would be difficult for a person in a wheelchair to access
- Entire segments of Central, like the stretch between San Mateo and Alvarado, don't have any marked crosswalks, traffic signals or signage to alert drivers to the presence of pedestrians

Crosswalk safety can be improved with beacon technologies, which have flashing lights to warn vehicle drivers about the presence of crosswalks. St. Petersburg, FL, was the first community in the nation to install the Enhancer, a rapid-flashing rectangular beacon, which it implemented at 32 un-signalized, marked crosswalks. The beacons improved driver-yielding compliance, from the base rate of under 3%, to more than 83% (Ernst & Shoup, 2008). Research in Canada on the effectiveness of driver and pedestrian behavior modification strategies includes the use of pedestrian-activated flashing beacons at mid-block crosswalks, and crosswalks on major roads at intersections not controlled by traffic signals. Two studies of in-pavement flashing warning lights automatically activated by the presence of pedestrians have shown reductions in both vehicle speeds and conflicts at uncontrolled crossings (Hakkert et al. 2002; Prevedourous, 2001).

Another intervention to increase vehicle driver awareness of crosswalks is the "advance stop line." Placed 50 feet upstream of a crosswalk, rather than the standard four feet, these cause a higher percentage of drivers to stop well in advance of the crosswalk rather than encroaching on it. Studies of these countermeasures have demonstrated changes in behavior of motorists and/or pedestrians (Van Houten & Malenfant, 1999).

With regard to vulnerable populations, the literature review notes that people with disabilities and other special needs are best accommodated through traffic calming features such as wider sidewalks and improved crosswalks, which also support Universal Design Objectives (Victoria Transport Policy Institute, 2011).

The number and visibility of marked, painted crosswalks in the study area is very low. All the signalized intersections have painted ladder crosswalks. Other crosswalks—where crossings are legally allowed—do not have painted crosswalks, or the paint is very faint. Thus, entire segments of Central Ave, such as the one-quarter mile segment between San Mateo and Alvarado, have no marked crosswalks or traffic signals or any other signage to increase pedestrians' visibility and manage vehicle speeds.

Between San Pedro and Louisiana, pedestrians cross Central to reach the Flea Market at Expo New Mexico on the weekends. Near the corner of Florida, pedestrians frequently cross Central Avenue unsafely, without the aid of pavement markings or stoplights. California, one block west of Florida, intersects Central with a 'dog-leg' align-

ment, which creates a wide and daunting space for pedestrians to cross, with no opportunity for refuge in the middle. This type of crossing can cause conflicts with vehicular traffic.

The width of Central Ave. expands at major intersections to provide turning lanes. This creates a longer crossing distance in the crosswalk for pedestrians—longer than the width of Central Ave. at mid-block. The high level of traffic combined with long crossing distances at the intersections creates challenging conditions for pedestrians who do not start crossing at the beginning of the countdown, and for those who move slowly. Conditions are more dangerous at night, as the street lights on some corners are insufficient (see section 3.8). The countdowns on signalized crosswalks for pedestrians were not measured on Central Ave. The ADA recommendation for timed pedestrian crossings is 3.5 feet per second and other cities are utilizing a timing of 3 feet per second. This supports slower walking speeds, accommodating the widest range of users, including people on foot, with strollers or bicycles and those with disabilities.

The width of Central expands at major intersections to provide turn lanes for cars, creating a longer crossing distance for pedestrians. Conditions are more dangerous at night, as street lights on some corners are insufficient, making it less likely that drivers will be aware of pedestrians.

3.6 What is the impact of curb cuts (driveways) on walkability and increased traffic?

According to a research study, there is a direct correlation between the number of crashes and the number of access points (driveways) per mile (Gluck et al 1999).

Multiple curb cuts, or driveways, contribute to diminished traffic flow and increased crashes as vehicles cross the pedestrian's path along the sidewalk. This is particularly detrimental for a principal arterial roadway, like Central Ave., which is designed to carry a significant amount of regional traffic.

Driveways along the sidewalk create poor walking conditions due to uneven surfaces and the potential for conflict between pedestrians and turning vehicles. In some cases the change in slope is a major barrier for a person in a wheelchair. In addition, if it is very high, the "turn radius" of the driveway onto the street creates a longer crossing for the pedestrian across the driveway.

The median along Central Avenue in the study area limits left-turn movement between the intersections, so most vehicle turns into driveways are from the right. From San Mateo to San Pedro there are total of 31 curb cuts, with 16 on the north side and 15 on the south side. The length of this

Problems posed by curb cuts

- Multiple curb cuts slow traffic and increase crashes as cars cross pedestrian paths along the sidewalk
- Driveways create uneven walking surfaces, especially for those with mobility issues
- Curb cuts create the potential for conflict between people walking and cars turning

Central Avenue Curb Cuts

- 31 curb cuts between San Mateo & San Pedro, 16 on the north side & 15 on the south; an average of 62 curb cuts per mile on this section
- 36 curb cuts between San Pedro & Louisiana, 15 on the north side & 21 on the south; an average of 72 curb cuts per mile on this section

Octopus Car Wash at Central & San Mateo has two driveways near major bus stops with high pedestrian traffic.

section is 2,642 feet, with an average of 62 curb cuts per mile. From San Pedro to Louisiana there are a total of 36 curb cuts, with 15 on the north side and 21 on the south. The length of this section is 2,670 feet, with an average of 72 curb cuts per mile.

Of particular concern is the southeast corner of Central and San Mateo, where the Octopus Car Wash is located. Two wide driveways face onto Central near two bus stops that serve a high number of transit riders. The driveways that cut through the sidewalk at this point eliminate any demarcation of a pedestrian walking area.

3.7 What is the impact of condition and width of sidewalks on safe pedestrian access?

Narrow or degraded sidewalks are likely to discourage walking, both as a mode of transport and as a form of exercise.

Narrow or degraded sidewalks are among the features that are likely to discourage walking as a mode of transport, as well as recreational activity (Dunbaugh & Rae 2009). Safety is also a consideration where the sidewalk is only separated from a vehicular travel lane by a curb and gutter, especially with posted vehicular speeds of 35 mph. Landscaping, or street planting areas, can provide buffers between the motor vehicle traffic and pedestrians. Research examining the safety effects of urban streetscape improvements along five arterial roadways in downtown Toronto concluded that the addition of roadside features such as trees and concrete planters reduced crashes by 5 to 20 percent (Naderi 2009). Trees are also an asset in providing shade and can be particularly beneficial to pedestrians in cities where the "heat island" effect is significant (Dumbaugh 2005).

A fire hydrant blocks the sidewalk along Central at Cardenas.

Most of the sidewalks on Central Ave. are between 6 feet and 6 feet 8 inches wide, though local cross streets have narrower sidewalks. The recommended minimum sidewalk width by the ADA is 5 feet. Arterial streets and areas with commercial zoning and transit often call for wider sidewalks, as in the City's Comprehensive Plan and code. There is no landscaping between the sidewalk and travel lanes, so that only a curb and gutter separate pedestrians from cars.

Near a bus stop on the SW corner of San Pedro, the sidewalk along Central is in poor shape. Between San Mateo and San Pedro, there are total of 6 obstructions, 3 on each side. Two obstructions are near a busy bus stop east of San Mateo.

There are poor sidewalk conditions near the transit stop on the southwest corner of San Pedro. Between San Mateo and San Pedro there are total of six obstructions in the sidewalks, with three on each side. Two obstructions are near a busy bus stop east of San Mateo. From San Pedro to Louisiana there are a total of five obstructions, with one on the north side and four on the south side. Four are very

close to existing bus stops. Some of the obstructions include a steep slope along the sidewalk, mild heaving, cracking, or a passage narrowed by a lamp post or manhole. There are also instances of the side street sidewalk ending abruptly. At Indiana St., the bus stop itself visually obstructs traffic turning onto Central Ave., causing drivers to move into the crosswalk to see oncoming traffic. See *Map 4*.

From San Pedro to Louisiana there are a total of five obstructions, one on the north side and four on the south side. Four are very close to existing bus stops.

Map 4: Sidewalk Obstructions within the Study Area

Obstructions as described

Section 1: San Mateo to San Pedro

Section 2: San Pedro to Louisiana

3.8 What is the impact of streetlights on pedestrian safety?

Overall, lighting for pedestrians in the study area is inadequate. There are 21 lights between San Mateo and San Pedro; however, 11 of these are in the median. The other 10 are near intersections and most of these are situated in parking lots so they are not part of the public street infrastructure. There are 20 lights between San Pedro and Louisiana; 16 are in the median with the remaining four located near the Louisiana intersection in parking lots.

The lights located in the median are not bright enough to provide visibility for pedestrians on sidewalks. Only 14 streetlights illuminate sidewalks on both sides of the one-mile section of Central Ave. Many lights dim out for periods of time. See *Map 5* for street lights in the study area.

Map 5: Streetlights and Bus Stops within the Study Area

Street Light Bus Stop 50' Buffer zone for bus stop

Streetlights & Bus Stops: San Mateo to San Pedro

Streetlights & Bus Stops: San Pedro to Louisiana

50' buffer around each bus stop represents the preferred radius for lighting to avoid the fishbowl effect while providing enough light to make it safe.

3.9 What is the impact of parking lots separating sidewalks from businesses on safe pedestrian access?

Literature findings indicate that parking lots that separate sidewalks from businesses are related to criminal activity.

Parking lots that separate sidewalks from businesses are associated with criminal activity.

Within the study area, three commercial businesses provide a parking lot behind their buildings and 18 provide parking on the side. Twenty-five lots have landscaping in their parking area, and 29 have lighting in their parking

area. The remainder of the buildings in the study area have parking lots in the front, between the sidewalk and the building.

3.10 What is the impact of vacant lots and closed businesses on walkability?

A detailed study of the most contextual aspects of walkable communities, which collectively support the reduction of regional Vehicle Miles Traveled (VMT), found that density of land uses, diversity of land uses, design of the built environment, and accessibility to destinations consistently impact the distances people travel, as well as their chosen transport modes. Trip lengths are generally shorter to and from residential and non-residential locations that are more accessible, have higher densities, and/or feature mixed uses. More people choose to walk and/or use public transit in more dense, mixed-use areas (Ewing and Dumbaugh, 2009).

Fifteen lots, nearly twenty-seven percent of all properties in the study area, are abandoned or vacant parcels.

3.11 What is the impact of drive-thru businesses on traffic accidents and decreased walking?

Our literature review did not address the impact of drive-thru businesses on traffic accidents and decreased walking. This is an area for further study.

However, our observations indicated that five businesses in the study area have drive-thru service or are fast-food restaurants, adding to the auto-oriented establishments on the corridor and potentially affecting pedestrian vulnerability.

3.12 What is the impact of local alcohol establishments on traffic accidents?

While our literature review did not address the impact of local alcohol establishments on traffic accidents, we believe this is an area for further study.

We noted that nine businesses in the corridor serve alcohol; four of the nine serve alcohol to-go. Of the pedestrian involved crashes that occurred from 8 am to midnight, there is a correlation between time of day and alcohol involvement. The frequency of alcohol involvement increases between 6 pm and midnight. *Map 9* on page 38 provides their locations.

Study Area Parking Lots

- 3 businesses have parking behind their buildings
- 18 provide parking on the side
- The remainder have parking lots in front, between the sidewak and the building

A vacant building on Central Ave. between San Pedro & Louisiana.

4. Key Informant Interviews - Vehicular Accidents

Key Informant Interviews:
Accidents with Cars, Pedestrians, and Bicyclists

- 70% of interviewees reported walking or riding the bus daily in the study area
- 15% reported riding a bicycle in the area at least 1 to 2 times a week
- 22% reported being in a car accident (as driver or passenger) or having a "close call" in the International District
- 24% reported being hit by a car or "having a close call" in the District
- 20% reported that concerns about accidents influence their decision to walk, bike, or ride the bus

As described in section 4, a key informant survey collected opinions about crime and safety from people in the International District. All interviewees reported living, working, or shopping in the study area.

Seventy percent of interviewees reported walking or riding the bus in the study area daily, and 15% reported riding a bicycle in the area at least 1 to 2 times per week.

Twenty-two percent reported being in a car accident or "having a close call" with a car accident (as driver or passenger) in the International District. Twenty-four percent reported being hit by a car or "having a close call" in the district.

The key informant interviews indicated that concerns about crashes and pedestrian safety affect decisions regarding modes of transportation.

Twenty percent of interview participants reported that concerns about accidents are a factor in their decision to walk, bike, or ride the bus. More women than men reported that crime, or their perception of crime, and concerns about accidents are factor in their decision to walk, bike, or ride the bus.

5. Literature Review on Crime and the Perception of Safety

Safety and security and people's perceptions of safety and security in a neighborhood influence human health.

Considerations about the built environment

- How much and how often do residents walk or don't walk because of perceived risks?
- How does a perceived lack of safety and security affect stress levels and thus health?

How safe and secure a neighborhood is and how safe and secure it is perceived to be influence human health. A person's perception is their reality. Thus, in considering how the built environment affects safety and security, we need to consider not only the links to health that result directly from violent crime (i.e., injury and death), but also: 1) how much and how often residents walk or don't walk because of perceived risks and 2) the ways perceived lack of safety and security may affect stress levels, and thus health. Also significant are considerations of the interrelationship between "incivilities" affecting perceived safety and security--such as public intoxication, disorderly conduct, broken glass, poor lighting and abandoned buildings--and actual crime. We also examined how violence and violent crime (and its perception) disproportionately affect young people, women, low-income communities, and communities of color.

Incivilities theory first emerged in the mid 1970's and examined how certain social behaviors along with a disordered environment, or "incivilities," predict residents' overall fear. Incivilities can be physical (deteriorated, abandoned buildings, litter, graffiti, shuttered stores, trash-filled lots, abandoned cars) or social (public intoxication, begging, panhandling, homelessness).

"Incivilities theory" says that residents' fear may be predicted by a disordered environment, or "incivilities." Incivilities can be physical—litter, graffiti, deteriorated or abandoned buildings, vacant lots, abadonded cars—or they can be social—public intoxication, begging, panhandling, homelessness.

Taylor surveyed the history of the incivilities theory, its measurement and implications, and concluded that the most measurable aspect that is influenced by the perception of a disorderly environment is individual fear . He argues that the ultimate outcome of incivilities "is fear of crime, an affective state" which influences (and is influenced by) actual crime in the following way. When residents' perceptions are that they as a group are unable to manage disorder and that external agents are unwilling or incapable as well, and when incivilities go untreated over time, residents withdraw from social life. This creates opportunities for light crime, such as unsupervised groups of teenagers engaging in graffiti, which in turn invites opportunistic criminals from outside a neighborhood. This cycle causes property values to decline, with most residents moving out or intending to move out of the neighborhood (Taylor, 1999).

Researchers conducting a longitudinal study concluded that the effects of incivilities on individual fear levels are clear: Improvements to incivilities (fixing broken lighting, boarded up buildings, and problems of drunk and disorderly conduct, for example) correlate with a reduction in fear on the block level (Robinson et al., 2003).

Fear can be reduced by improving incivilities: fixing broken lighting, addressing abandoned buildings, dealing with drunk and disorderly conduct.

A national sample of 2,031 adults found that people who are afraid of being victimized walked significantly less than those not afraid. High crime rates and perceived danger tend to reduce the amount that people walk, and people living in the worst neighborhoods are 1.56 more times likely to be overweight (Loukatou-Sideris, 2006).

- People who are afraid of being victimized walk less than those who aren't afraid
- High crime rates and perceived danger reduce the amount that people walk
- People living in the worst neighborhoods are 1.56 times more likely to be overweight

Fear of crime, whether supported by actual crime statistics or not, may result in increased levels of cortisol and other stress hormones, and thus chronic illness. A study correlated living in highly segregated, high-crime areas with greater chances of developing cancer for men and women (Freeman et al., 2011). Research into incivilities—the social and physical signs of disorder in the community—suggest that perceived fears and actual crime may mutually influence each other.

Factors that contribute to crime and its perception

- Lack of surveillance opportunities by bystanders
- Absence of signs of care that give the appearance of "natural guardians" to an area

A survey of "defensible space" features and perceived safety includes these changes that have measurably increased public perception of safety:

- Creating safe territories with benches and tables in which different groups will openly use public space.
- Providing safe routes to public parks and transit stops.
- Implementing complementary strategies: policing by neighborhood groups or police, educational programs and media campaigns (i.e., anti-drug), employment, and increased social capital and social networks to oversee security of neighborhood through informal social control (Loukaitou-Sideris, 2006).

Crime and perception of safety may best be addressed by focusing on certain high crime locales or "hot spots" in an area and ensuring the safety of the most vulnerable residents (Stucky, 2009). Factors that contribute to crime and its perception include the lack of surveillance opportunities by bystanders and an absence of signs of care that give the appearance of "natural guardians" to an area. While it is easier for criminals to commit crimes on major streets in part because there are more escape routes, crime occurs when the built environment is disorderly, or replete with "incivilities." Attending to the features of the built environment in real and perceived "hot spots"—lighting, appearance of buildings, landscaping, number of driveways, etc.—can have an effect on reducing individual resident fears (potentially increasing their physical activity) and will also have a ripple effect on safety and security in surrounding areas.

Addressing features of the built environment, such as lighting, landscaping, appearance of buildings, number of driveways, etc., in real and perceived "hot spots" can reduce people's fears which may increase their physical activity. It will also have a ripple effect on safety and security in surrounding areas.

5.1 Literature on Vulnerable Populations, Crime and Perceptions of Safety

Understanding which groups are most impacted and most afraid and how their fear constrains them are important steps in addressing improvements that will benefit the population as a whole. Age, race, class, cultural background, sexual orientation, prior victimization, and being disabled or differently-abled influence people's measured level of fear (Loukaitou-Sideris, 2006).

Age, race, class, cultural background, sexual orientation, prior victimization, and being disabled or differently-abled are all factors that influence people's level of fear.

In a national study of women with children in 20 cities, obesity prevalence was significantly associated with perceived neighborhood safety. After adjusting for sociodemographic factors, the prevalence of obesity was 9 percentage points higher among women in the least safe neighborhoods compared with those in the safest areas.

In that study, neighborhood safety was scaled based on responses to the following: how often respondents saw people loitering, drug or alcohol activity, gangs, or disorderly groups of youth or adults (Burdette et al., 2006).

Certain ethnic groups who live in high crime neighborhoods are disproportionately affected by the presence and perception of crime (Clancy et al., 2001). Surveys and focus group studies of minority women living in poor neighborhoods found that many were reluctant to venture from their own porch out of fear for their safety (Evenson et al., 2002; Eyler et al., 1998; Thompson et al., 2002; Wilbur et al., 2002; Young et al., 2002).

Children are also constrained by fear and perceptions of safety. Only a small minority of children walk or bike to school (Transportation Research Board, 2002). Many parents restrict their children from walking outside because of real crime and fear for their safety based on perceptions of crime (Jones, 2000; Jutras, 2003).

Vulnerable Populations, Crime and Perceptions of Safety

- In the least safe neighborhoods, prevalence of obesity among women is 9 percentage points higher than in the safest areas
- Certain ethnic groups who live in high crime neighborhoods are disproportionately affected by the presence and perception of crime
- Many parents restrict their children from walking outside because of real crime and fear for their safety based on perceptions of crime

6. Existing Conditions Related to Crime and the Perception of Safety

An analysis of crime in the International District between March 2008 and September 2011 categorized three types: property crime, violent crime, and quality of life crime. The crime maps in this report represent police calls, not convictions or arrests. The locations of the incidents were mapped and are shown here as "density maps." Darker colors on the map represent locations with a higher probability that the specified type of crime will occur, based on the numbers of actual crimes reported.

The maps shown in this section also cover a larger area than the HIA team's study area, representing data about Central Ave. from San Mateo on the east to Wyoming on the west.

According to the Albuquerque Police Department, Property crime is highest on Wednesday and is most likely to occur between 7 am and 6 pm. Violent crime in the area is highest on Monday and Saturdays. Throughout the week, violent crime is more likely to occur between 7 pm and 2 am. Quality of life crimes occur at the highest rate on Friday and Saturday and are most likely to occur from 4 pm to 7 pm and from 11 pm to midnight. The maps indicate that the area south of Central Ave. experiences more crime than the northern portion.

Crime in the International District

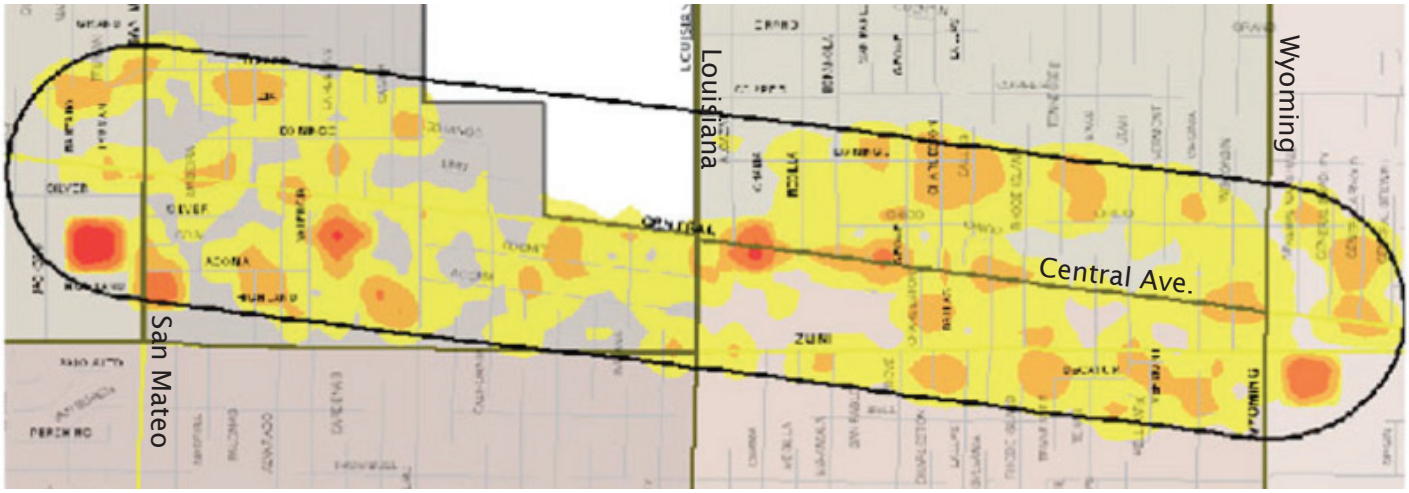
- Property crime is highest on Wednesdays and is most likely to occur between 7 am and 6 pm
- Violent crime is most likely to occur between 7 pm and 2 am and is highest on Mondays and Saturdays
- Quality of life crime is highest on Fridays and Saturdays and most likely occurs from 4 pm to 7 pm and from 11 pm to mignight

6.1 Property Crime

Property crime includes auto burglary, auto theft, commercial burglary, and residential burglary. Much of Central Ave. and its immediate environs have low levels of property crime. Moderate levels appear on several blocks between San Mateo and Valencia. The highest density of incidents in the HIA team's study area occurred at Cardenas and Cochiti, one block south of Central, and in two shopping centers on San Mateo, south of Central. These latter property crimes were greatest in the daytime, when stores in the shopping centers are open. See *Map 6*.

Map 6: Property Crime

Darker colors on the map represent locations with a higher probability that property crime will occur, based on the numbers of actual crimes reported.



Albuquerque Police Department

6.2 Violent Crime

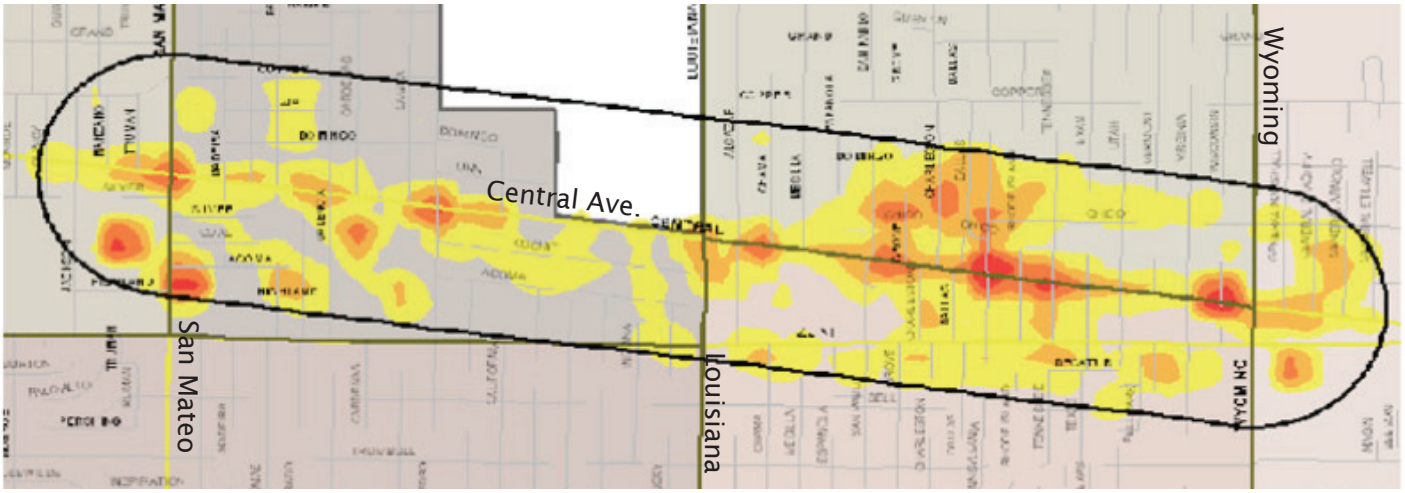
Portions of the corridor and its immediate environs experience low levels of violent crime. However, moderate levels appear on several blocks on Central between San Mateo and San Pedro, increasing to high levels where Central intersects with San Mateo and San Pedro. High levels also appear at Cochiti and Cardenas. Very high levels of reported incidents occurred in the two shopping centers near San Mateo south of Central. Violent crime peaks between 7 pm to 2 am. See *Map 7*.

6.3 Quality of Life Crime

The majority of the corridor and most of its adjacent environment experience low levels of quality of life crime,

Map 7: Violent Crime

Darker colors on the map represent locations with a higher probability that violent crime will occur, based on the numbers of actual crimes reported.

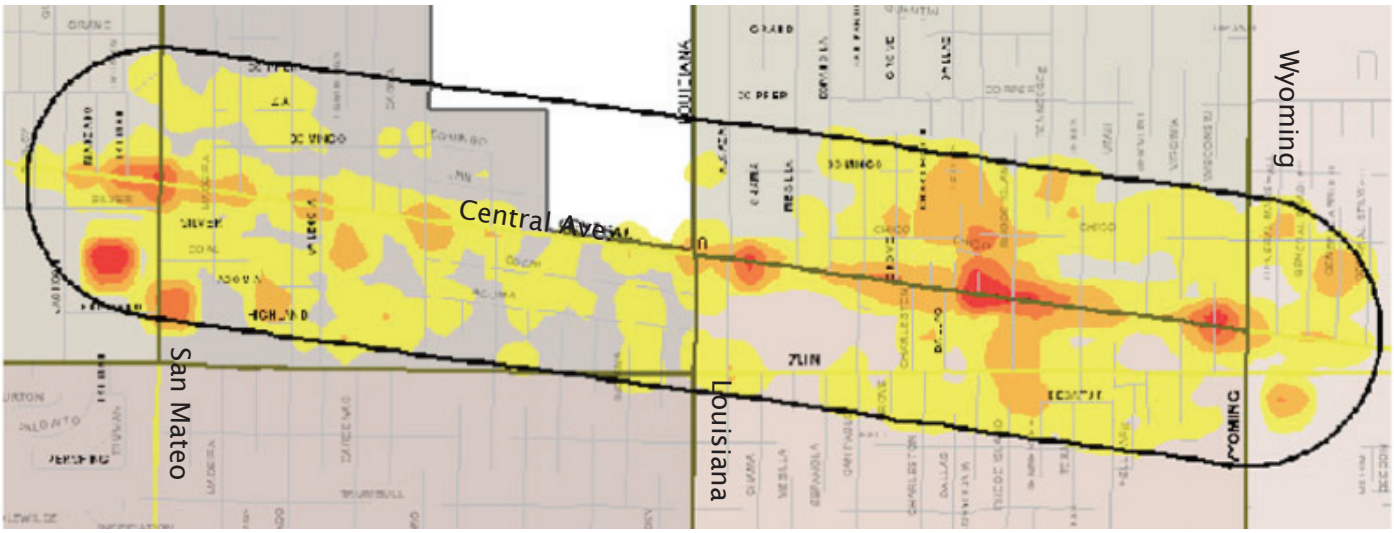


Albuquerque Police Department

which includes drunk and disorderly conduct and larceny. Moderate levels appear on several blocks on Central between San Mateo and San Pedro, increasing to high levels at San Mateo. High and very high levels also appear at the two shopping centers on San Mateo south of Central. Quality of life incidents were highest from 4 pm to 7 pm and 11 pm to midnight. See *Map 8.*

Map 8: Quality of Life Crime

Darker colors on the map represent locations with a higher probability that quality of life crime will occur, based on the numbers of actual crimes reported.



Albuquerque Police Department

7. Research Questions Related to Crime and the Perception of Safety

There are six indicators selected by the study team to describe this scoping category. They are streetlights, "eyes on the street," vacant lots and closed businesses, the presence of alcohol establishments and the quality of transit stops and shelters.

7.1 What is the impact of streetlights on criminal activity?

Improved lighting increases public perception of safety when accompanied by other changes to the built environment.

Improved lighting increases public perception of safety when accompanied by other changes that form "defensible spaces" (Loukaitou-Sideris, 2006). One feature of the built environment that strongly impacts safety is "high refuge," which refers to areas where criminals might hide (Zelinka and Brennan, 2001). Streetlights, as well as other forms of lighting, would impact the degree of "high refuge" in an area.

A study in Sarasota , Florida, on the effects of the Crime Prevention through Environmental Design (CPTED) approach indicates that there was a smaller increase in narcotics crimes in areas where CPTED principles were implemented, compared to areas of the city where they were not. CPTED standards suggest that interventions with multiple components, including changes to the environment such as increasing visibility inside and outside a business, good exterior and interior lighting, and limiting access and escape routes to a building. Sarasota adopted a zoning ordinance that required all developments in a certain area to be reviewed for concordance with CPTED principles. It was recommended that outside lighting be installed and maintained for building entrances, walkways, and parking lots (Carter et al., 2003).

In the study area, only 14 streetlights provide illumination for sidewalks on both sides of the 1-mile section of Central Ave. Many lights dim out for periods of time. Overall, street lighting is inadequate.

As noted in section 3.8, streetlights are limited on sidewalk areas. Overall, only 14 streetlights illuminate sidewalks on both sides of Central Ave. in the study area. Many lights dim out for periods of time. Overall the lighting is inadequate. See *Map 5* on page 28 for streetlights in the area.

7.2 What is the impact of "eyes on the street" on crime?

"Eyes on the street" is the idea that crime can be reduced by maximizing the visibility of people, parking lots and building entrances by adding doors and windows that look out on public spaces, creating pedestrian-friendly sidewalks and streets, and using lighting that helps bystanders observe their environment.

Many authors posit a correlation between mixed use zoning and crime prevention due to more "eyes on the street" and greater social cohesion. One survey of 30 years of literature on "defensible space" features and perceived safety considered the importance of lighting, good visibility, outdoor places to sit, the direct relationship of buildings

to the street, and territorial symbols such as neighborhood watch signs, alarm signs, and home personalization signs (Loukaitou-Sideris, 2006). The collective findings on changes that have measurably increased public perception of safety includes windows and storefronts that face the street and sidewalk, bus stations placed where shop owners or residents can oversee them, and the removal of features that block sight lines.

Forty three businesses in the study area have windows that face the street. Sixteen have direct pedestrian access from the sidewalk.

Forty three businesses in the study area have windows that face the street. Sixteen businesses have direct pedestrian access from the sidewalk, a positive aspect of the built environment for this area.

7.3 What is the impact of vacant lots and closed businesses on perception of safety?

One change that increases public perception of safety is eliminating "bad neighbors," defined as abandoned buildings, liquor stores, seedy motels, bars, check cashing businesses, pawn shops, adult bookstores and movie theaters, that generate crime and give a neighborhood a bad reputation (Loukaitou-Sideris, 2006).

Public perceptions of safety can be increased by eliminating "bad neighbors," such as abandoned buildings, liquor stores, seedy motels, bars, check cashing businesses, pawn shops, adult bookstores and movie theaters, that generate crime and give a neighborhood a bad reputation.

Nearly twenty-seven percent (15 lots) of all properties in the study area are abandoned or vacant parcels.

7.4 What is the impact of alcohol establishments on crime?

Violence associated with liquor stores and bars tends to occur at higher rates in "socially disorganized and economically depressed" areas. The absence of liquor outlets in these same areas correlates with a reduction in crime. One neighborhood coalition that successfully shut down nearly 200 liquor stores documented an average 27% reduction in crime within a four-block radius of each liquor outlet (Gruenwald and Remer, 2006).

Almost 27% of all properties (15 lots) in the study area are abandoned or vacant.

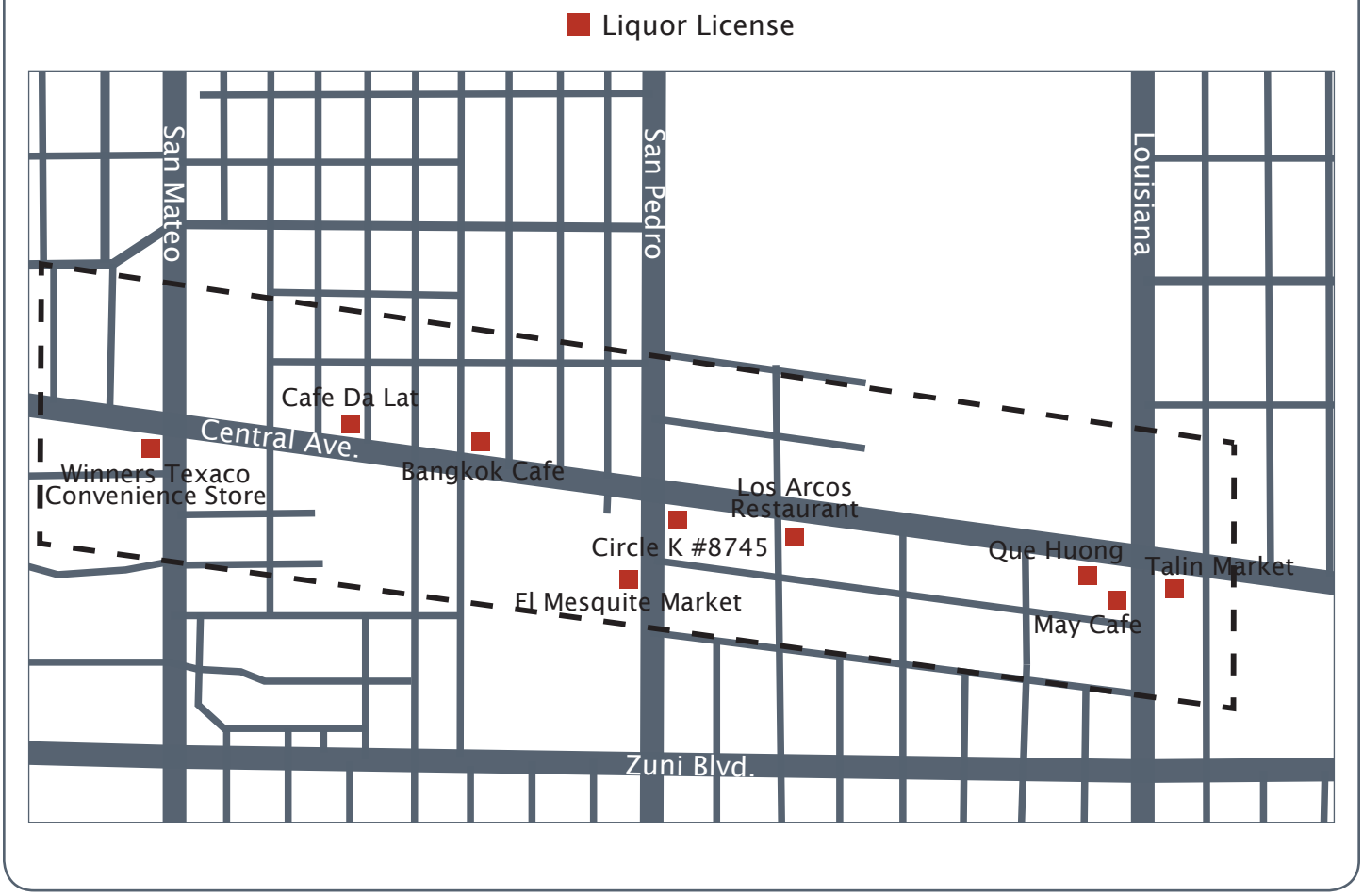
A study conducted in Philadelphia found that the risk of being shot doubled in areas of high versus low numbers of liquor stores, and the risk of being fatally shot was 4.19 times higher in these areas. Non-drinkers were 2.29 times more likely to be injured in areas with a high density of liquor stores, as opposed to low density (Branas et al., 2009).

The first longitudinal study of proximity to and density of off-premise alcohol sales outlets was based in 581 zip codes in California. The study concluded that a 10% increase in the numbers of off-premise alcohol outlets and

bars was related to between a 1.67% to 2.06% increase in violent crime rates. According to the study, for every 6 outlets, there was one additional violent assault and at least one overnight stay in the hospital (Gruenewald and Remer, 2006).

Within the study area, there are nine businesses serving alcohol. Four of the nine are off-premise alcohol outlets, serving alcohol to-go. See *Map 9.*

Map 9: Businesses with Liquor Licenses in the Study Area



7.5 What is the impact of transit stops & shelters on perceived or actual safety regarding use of public transportation?

As noted in section 7.2, facilitating "eyes on the street" includes the strategic location of transit facilities so that they are within view or near places where shop owners or residents can oversee them (Loukaitou-Sideris, 2006). Protecting access routes to transit stops is also noted as a recommendation.

Aesthetics, safety, and easy access to nearby facilities are important to whether people feel safe at bus stops (Pikora, 2003). Multiple empirical studies of transit stations cite "darkness, desolation, lack of opportunities for informal surveillance by general public or residents of surrounding establishments, lack of maintenance and poor environmental quality" as being associated with greater fear, which results in less usage of transit (Loukatou-Sideris 2009). While lighting helps create a sense of safety at bus stops, there is a problem with the "fishbowl effect," which occurs when the bus stop is brightly lit but the area surrounding it remains dark, leading those waiting at the stop to feel vulnerable (Loukaitou-Sideris, 2006).

With regard to vulnerable population groups, findings conclude that older adults have significant fear of public spaces, especially at bus stops (Brownson et al., 2001). However, a 2002 study by the California DOT found that gender is the biggest factor in fear of victimization at transit stops. Overall, women are found to be afraid both of overly enclosed and overly open spaces (Loukaitou-Sideris, 2006). An empirical study of 135 public transport systems around the country, including Albuquerque's, found a mismatch between the emphasis of transit systems on increased technology for surveillance and what women themselves needed to feel less afraid, such as better design of bus stops and parking lots (Loukatou-Sideris and Fink, 2009).

A 50' buffer around each bus stop is the preferred radius for lighting that balances the "fishbowl" effect—the experience of being visible and potentially vulnerable at the bus stop while the surrounding area is dark—while providing enough lighting to make it safe.

Two Rapid Ride transit routes offer stops at San Mateo and Louisiana. These stops pick up 30 to 35% of the ridership along the route as a whole. The Rapid Ride bus stops feature large bus shelters with interior lighting and digital updates on bus arrival times.

The local Route 66 service provides bus stops at ten intersections, posted with signs and the occasional bench. Several stops have been improved with shelters between 2009 and 2011. However, there are old bus stop signs still in place along the route, marking points at which the buses no longer stop and potentially creating confusion for riders. See *Map 5* on page 28 for bus stops in the study area.

People are less likely to use transit when they feel afraid. Aesthetics, safety and easy access to nearby facilities are all important features in making people feel safe at bus stops.

A bus stop for the 66 route on Central has benches but no shelter.

A Rapid Ride stop with shelter & digital sign on Louisiana at Central.

Rapid Ride Transit

- The 766 and 777 bus routes have stops in the International District at San Mateo and at Louisiana
- These stops pick up 30-35% of ridership along those routes as a whole
- Rapid Ride bus stops feature large shelters with interior lighting and digital signs updating bus arrival times

7.6 What is the impact of commercial signage on the perception of safety?

Our literature review did not explore the potential effects of commercial signage on crime and perception of safety. This is an area for further study. However, a wide array of signs with various sizes, location types, ages, and designs can be considered as a likely contributor to a disordered environment and messages on these signs may contribute as well.

8. Key Informant Interviews - Crime

The key informant interviews showed that crime and accidents are both a real and perceived threat for people in the International District. Twenty percent of respondents said they either do not feel safe or sometimes do not feel safe in the area during the daytime. Eighty-seven percent reported being in the area at night; of those, 45 percent reported not feeling safe.

Thirty-nine percent (18 persons) reported that they or a family member was a victim of crime in the International District in the past year. They were victimized by burglary or robbery, assault, vandalism, other types of crime, and auto theft, in declining order. Forty-one percent (19 persons) were witness to a crime in the International District in the past year. Crimes witnessed were assault, other types of crime, burglary or robbery, and vandalism.

More women than men reported that they were victims of crime in the past 12 months and that they feel unsafe in the area both during the day and at night. Overall, 37 percent of respondents reported that crime or their perception of crime was a factor in their decision to walk, bike or ride the bus in the International District.

One of the four business persons surveyed said their business had been the victim of a hold-up in the past 12 months. During the key informant interviews, business people were asked open-ended questions about solutions to crime in the International District and ways to improve business. When asked, "What do you think can be done to reduce crime in the International District?" business persons responded with the following suggestions: increase the number of pedestrians, increase police presence, maintain law enforcement, provide more security, impose stricter jail sentences, and provide assistance to drug addicts.

Key Informant Interviews: Crime

- 20% of interviewees said they do not feel safe or sometimes do not feel safe in the area during daytime
- 87% reported being in the area at night; of those, 45% reported not feeling safe
- 39% reported that they or a family member was a victim of a crime in the International District in the past year
- 41% reported witnessing a crime in the District in the past year
- 37% reported that crime or their perception of crime affected their decision to walk, bike or ride the bus in the District

Responses from Local Business Owners

Business owners recommended increasing pedestrians in the area, increasing police presence and maintaining law enforcement to reduce crime and improve business.

Other suggestions included providing more security, imposing stricter jail sentences and providing assistance to drug addicts.

VI. Recommendations

"Because health and health risks are determined by multiple causes, efforts to effect behavioral, environmental, and social change must be multi-dimensional or multisectoral." (Green & Kreuter 2009)

General Development Recommendations

1. Obtain funding for a complete redesign of Central Avenue between San Mateo and Louisiana using a Complete Street approach.

2. Assure that existing street lights are working and add street lights where needed.

3. Increase police presence and enforcement of traffic laws.

4. Seek environmental and zoning changes that will encourage multi-use and small business development, building upon the re-branding of the International District.

5. Redesign and expand bus stops to accommodate large peak flows, and to be safer and more comfortable.

6. Redevelop vacant land into public space.

7. More people choose to walk and/or use public transit in more dense, mixed-use areas, therefore mixed-income and mixed-used development should be included in the City zoning code and encouraged in the Sector Plan.

8. New development should be constructed to increase windows and "eyes on the street."

9. Clean up vacant and abandoned properties, including empty lots, to increase sense of safety.

10. Based on the expressed wishes of a substantial segment of the community, it is important to limit future development of carry-out alcohol establishments in the area.

11. Increase public art along this section of Central Ave./ Route 66 to reduce or mitigate incivilities.

General Recommendations

Find funding for a complete redesign of Central Avenue between San Mateo & Louisiana.

Ensure existing street lights work and add street lights where needed.

Increase police presence and enforcement of traffic laws.

Encourage multiuse and small business development through environmental and zoning changes, to build on International District re-branding.

Redesign and expand bus stops for large peak flows, safety and comfort.

Redevelop vacant land into public space.

Mixed-use development should be encouraged through the Sector Plan and City zoning code.

New development should be constructed to increase windows and "eyes on the street."

Clean up vacant and abandoned properties

Increase public art along this section of Central Ave.

Improvements to the Physical Environment

AMENITIES: Add benches and tables, where appropriate, in various locations throughout the area. This improves "eyes on the street," contributing to perceived and/or actual safety.

BUS STOPS: Light all bus stops adequately. Light the areas surrounding bus stops to reduce the "fish bowl" effect and increase the sense of safety.

Recommendations for improvements to the physical environment

- Add benches and tables throughout the area, where appropriate
- Light all bus stops and surrounding areas
- Improve crosswalk visibility
- Add a midblock crosswalk with a blinking light near California and Central to prevent illegal and dangerous pedestrian crossings.
- Eliminate driveways that are not in use and improve uneven surfaces through re-design of curb cuts
- Widen sidewalks and redesign corners with a wider radius and bidirectional ramps.

CROSSWALKS: All crosswalks should have very clear striping. Advance stop lines and increased crossing time at signalized intersections would improve walkability and assist vulnerable pedestrian populations. Given the traffic level of both vehicles and pedestrians, beacon technology needs to be implemented with a pedestrian activated beacon at mid-block across from NM Expo. Alternatively, a midblock crosswalk with a blinking light near California and Central would prevent illegal and dangerous pedestrian crossings. In-pavement flashing warning lights may be considered for all crossings.

CURB-CUTS: Redesign intersections with curb cuts that comply with current ADA standards. Driveways that are not in use should be eliminated and converted to sidewalks, thus providing more level surfaces for pedestrian travel. Mitigation of uneven surfaces through re-design of driveways or expansion of sidewalk width should be encouraged.

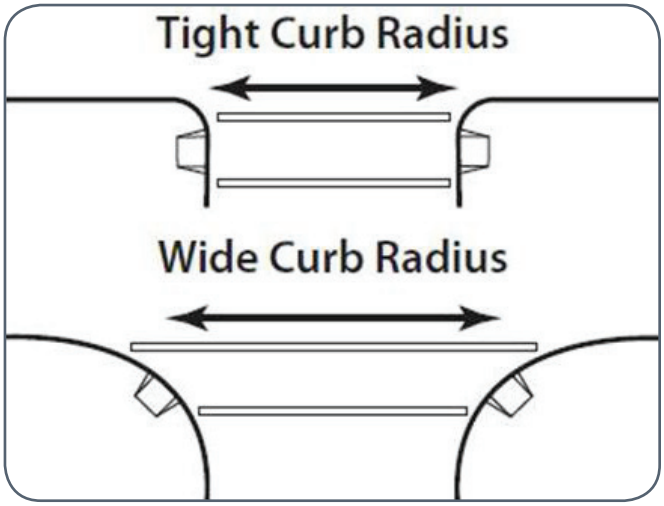
CURB-RAMPS: Corners should be redesigned with bidirectional ramps and a tighter curb radius. Ramps should comply with ADA regulations. This design would use two ramps to lead people in the right direction at crossings, instead of having one ramp that leads a person to the middle of the intersection. See *Figure 2*. If each corner is built with a tighter radius it has the effect of slowing down turning traffic and providing a shorter crossing distance for pedestrians. See *Figure 3*.

LIGHTING: Lighting should be increased to improve safety. New and converted lighting should promote a sense of safety and the character of "East Central Avenue," to build

Figure 2: Bidirectional Ramps

Two ramps at each corner lead pedestrians directly into the crosswalks.

Figure 3: Curb Radii



A tighter curb radius forces cars to turn more slowly and shortens the crossing distance, creating safer conditions for pedestrians.

upon the sense of identity for the International District. Since there are a considerable number of residents who utilize side streets, lighting should also be upgraded on blocks that are perpendicular to Central Ave.

MEDIANS: Keep all raised medians and introduce pedestrian refuge areas for all crossings.

PARKING LOTS: Commercial properties with parking lots located in front of the building are not a positive contributing factor in the area. Future planning guidelines should restrict parking between businesses and the street.

SIDEWALKS: Increase sidewalk width and create buffers between motor vehicle traffic and pedestrians. Buffers may be a combination of trees and planters, with an emphasis on trees because of heat island effect, as well as areas with street furniture. Options to irrigate planting areas with stormwater runoff flowing from sidewalks and the street will increase as green infrastructure becomes a recognized strategy to mitigate flooding while beautifying streets.

TRAFFIC CALMING: Since traffic accidents often have multiple causes, a comprehensive traffic calming approach may be the most effective action. We recommend changing the posted speed to 30 mph. Many of the recommendations here could be developed as a unified Traffic Calming strategy for Central Ave.

Improvements in Central Avenue's street design, associated with land use and zoning codes, should have a positive effect on local business by providing more foot traffic while having a simultaneous affect on resident's health through exercise associated with walking. Our recommendations would be beneficial for the entire two-mile length of Central Ave. within the International District.

Recommendations *continued*

- Improve lighting to promote a sense of safety, including on blocks that are perpendicular to Central Ave.
- Introduce pedestrian refuge areas for all crossings while maintaining already raised medians
- Redesign and expand bus stops for large peak flows, safety and comfort.
- Increase sidewalk width
- Create buffers using trees and planter to separate pedestrians and vehicle traffic
- Reduce the posted traffic speed to 30mph

Improvements to Central Avenue's street design can have a positive effect on local businesses while improving resident's health by increasing opportunities for walking.

VII. Reporting

One of the steps of Health Impact Assessment is Reporting. In this step, the findings and recommendations from the HIA are distributed amongst stakeholders and decision makers. The data and analysis provided by this health-in-all-polices document can support community members in their participation in the City's ongoing planning process.

In order to report the findings and recommendations of this report, Bernalillo County Place Matters (BCPM) may issue a press release, hold public meetings, and meet with planners and elected officials to distribute and discuss

this study.

This project may generate interest from the local news media, the University of New Mexico School of Architecture and Planning, and the larger public health and planning communities that BCPM is connected to. BCPM will leverage the experience gained through our HIA and health-in-all-policies activities to spread the word about the growing field of HIA and demonstrate the need for cooperation between health oriented agencies and planning agencies. We hope this document will add value to the local planning process in a way that the City planning office can embrace and incorporate into later iterations of planning studies.

VIII. Monitoring and evaluation

While no formal evaluation of this health-in-all-policies work is scheduled, the recommendations made here can be monitored as to whether they have been adopted, in part or in their entirety. The success or failure of this work can be evaluated by the extent to which these recommendations influence the future development of Central Avenue in the International District.

IX. Conclusion

The recommendations and findings presented here can contribute positively to the development of the International District and reduce crime and crashes involving pedestrians.

We believe that changes in the environment that reduce crime and crashes also help promote physical activity and improve the local economy.

Changes proposed by the International District Sector plan can have a measurable effect on crashes and crime in the International District. Changes to the area can make it more safe or less safe. We believe the findings and recommendations in this report can contribute positively to the development of the International District and result in reductions in crime and crashes involving pedestrians. While this report did not explore the potential for our recommendations to affect chronic diseases like heart disease, obesity, and diabetes, we believe that changes in the environment that reduce crime and crashes help to create an environment that promotes physical activity and improves the local economy. If local government considers health in all of the policies it creates, the healthy choice can become the easy choice for the people of Albuquerque.

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