

SOUTH CENTRAL NEIGHBORHOODS TRANSIT HEALTH IMPACT ASSESSMENT



This project is supported by a grant from the Health Impact Project, a collaboration of the Robert Wood Johnson Foundation and The Pew Charitable Trusts, through the Arizona Department of Health Services. The opinions expressed are those of the authors and do not necessarily reflect the views of the Health Impact Project, Robert Wood Johnson Foundation or The Pew Charitable Trusts.

ACKNOWLEDGEMENTS

South Central Neighborhoods Transit Health Impact Assessment (SCNTHIA) began in August 2013 and the Final Report was issued January 2015. Many individuals and organizations provided energy and expertise.

First, the authors wish to thank the numerous residents and neighbors within the SCNTHIA study area who participated in surveys, focus groups, key informant interviews and walking assessments. Their participation was critical for the project's success.

Funding was provided by a generous grant from the Health Impact Project through the Arizona Department of Health Services. Bethany Rogerson and Jerry Spegman of the Health Impact Project, a collaboration between the Robert Wood Johnson Foundation and The Pew Charitable Trusts, provided expertise, technical assistance, perspective and critical observations throughout the process. The SCNTHIA project team appreciates the opportunities afforded by the Health Impact Project and its team members.

The Arizona Alliance for Livable Communities works to advance health considerations in decision-making. The authors thank the members of the AALC for their commitment and dedication to providing technical assistance and review throughout this project.

The Insight Committee (Community Advisory Group) deserves special recognition. They are:

Community Residents

Rosie Lopez

George Young; South Mountain Village Planning Committee

Community Based Organizations

Margot Cordova; Friendly House

Lupe Dominguez; St. Catherine's Catholic Church

Darren Chapman; TigerMountain Foundation

Eva Olivas; Phoenix Revitalization Corporation

Diane McCoy; Rosa Chacon; Raising Special Kids

Carrie Wallinger; Chicanos por la Causa

Dean Brennan; Project for Livable Communities

Health Care or Health Services

Valentina Hernandez; Mountain Park Community Health Center

Betty Mathis; Wesley Community Health Center

Amy Prestanski; Scottsdale Healthcare and John C. Lincoln Health Network

Foundations

C.J. Eisenbarth-Hager; St. Luke's Health Initiatives

Francesca Montoya; Raza Development Fund

Public or Governmental Organizations

Adriana Perez; Arizona State University

Cynthia Melde, Michele Scanze, Deborah Robinson, Anissa Jonovich; Arizona Department of Health Services

The **SCNTHIA sub-contractors** were full partners in this HIA and contributed immeasurably

Monica Parsai, Aimee Sitzler; Saguaro Evaluations Group, LLC

Kim Steele, Ernesto Fonseca, Brian Fellows; The Elemental Group, LLC

Mia Stier, Ian Dowdy; Sonoran Institute

Valley Metro staff provided consistent support and cooperation, and they were all good sports

Amanda Luecker

Sonya Pastor La Sota

Terry Gruver

Robert Forrest

Additional data provided by

Phil Cummings; Maricopa County Air Quality Department

Kerry Wilcoxon; City of Phoenix Street Transportation Department

Special thanks to Jane Pearson, Val Iverson, and Patrick McNamara for additional insight into the housing section of the report.

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ABBREVIATIONS USED

ACA - Affordable Care Act (aka PPAC and Obama Care)

AA - Alternatives Analysis

ADOT - Arizona Department of Transportation

AHCCCS - Arizona Health Care Cost Containment System

AALC - Arizona Alliance for Livable Communities

ASTHO - Association of State & Territorial Health Officials

ASU - Arizona State University

CDC - United States Centers for Disease Control & Prevention

CDFI - Community Development Financial Institutions

COP - City of Phoenix

CPLC - Chicanos por la Causa

CYSHCN - Children or Youth with Special Health Care Needs

DEC - Disability Empowerment Center

EAF - Elderly Assistance Fund

EPA - Environmental Protection Agency

HCT - High Capacity Transit

HIA - Health Impact Assessment

HIP2 - Health in Policy & Practice Collaborative

HUD - U.S. Department of Housing & Urban Development

IC - Insight Committee

KI - Key Informant

KII - Key Informant Interview

LCC - Livable Communities Collaborative

LIHTC - Low Income Housing Tax Credits

LLC - Limited Liability Corporation

LPA - Locally Preferred Alternative

LRT - Light Rail Transit

MAG - Maricopa Association of Governments

MC - Maricopa County, Arizona
MCDPH - Maricopa County Department of Public Health
MPO - Metropolitan Planning Organization
NAAQS - National Ambient Air Quality Standards
Pew - The Pew Charitable Trusts
PHX - Phoenix
PPACA - The Patient Protection and Affordable Care Act (aka ACA or Obama Care)
QAP - Qualified Allocations Plan
RWJF - Robert Wood Johnson Foundation
SCNTHIA - South Central Neighborhoods Transit Health Impact Assessment
SI - Sonoran Institute
SIP - State Air Quality Implementation Plan
SLHI - St. Luke's Health Initiatives
TIGER - Transportation Investment Generating Economic Recovery
TIP - Transportation Improvement Program
TMF - TigerMountain Foundation
US or U.S. - United States
VM - Valley Metro & Valley Metro Rail, Inc.
WHO - World Health Organization

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EXECUTIVE SUMMARY

A community's health depends on the quality of its environment, including safety, jobs, housing, and education. Having access to healthy food, safe places to play, and health care services is also important—and public transit can positively influence all of them. The City of Phoenix and Valley Metro propose to extend the existing Light Rail Transit System to connect South Central and South Phoenix neighborhoods with downtown Phoenix and its many destination and transit options. The Maricopa County Department of Public Health, the Arizona Department of Health Services, and the Arizona Alliance for Livable Communities conducted a health impact assessment (HIA) from August 2013 to January 2015 to examine the conditions that support and impact public health within the proposed transit corridor.

Health Impact Assessment: A Community-Driven Process

A health impact assessment (HIA) is a public health tool that helps decision-makers consider the health effects of a proposed project, policy, or plan. Multiple methods are used to assess the existing conditions of affected communities and the potential health impacts of proposed changes in order to develop actionable recommendations for decision-makers. The six-step process involves extensive community involvement.

Project Methodology

A community advisory group consisting of dedicated local residents and representatives of local organizations—the Insight Committee—provided guidance for the health impact assessment (HIA). Using a Social Determinants of Health model, the Insight Committee found that the transit corridor's greatest impacts to the health of the community came through six critical "pathways to health." The study's research questions and methods were built within these pathways.

- ◇ Pathway #1 – Landscape/Shade/Security. An environment supportive of healthy living needs to be safe and inviting for the public. The intense Arizona sun and the urban heat island affect in Phoenix limit active living.
- ◇ Pathway #2 – Transportation Costs. A major transit project may alter transportation costs. Examine the impact on cost and its relationship to health.
- ◇ Pathway #3 – Business and Employment. Equitable opportunity to good jobs is a key factor of prosperity and health. Explore how changing transportation opportunities might impact income, health insurance, and health care.
- ◇ Pathway #4 – Housing. A healthy family needs quality and safe housing within their budget. Major transit projects can influence housing conditions and social cohesion among residents.
- ◇ Pathway #5 – Access to healthy food, safe places to play, and health care. Increasing transit options can improve access and public health.

- ◇ Pathway #6 – Active Transportation. How the environment supports walking, cycling, and access to transit, collectively known as Active Transportation, affects physical activity and health.

While the health impacts on all residents were considered, the HIA focused on the unique needs of pregnant women; families with children or youth with special health care needs; and adults with chronic conditions (including developmental, physical, and sensory disabilities). Additionally, the HIA relied on published research, surveys, focus groups, epidemiologic analysis, walkability assessments and key informant interviews to inform its recommendations.

Key Findings

Residents in the study area were more likely to be non-White and/or Hispanic, low-income, and transit dependent. Comparisons between the study area and the greater Phoenix Metro Area revealed current disparate health outcomes in the study area.

Enhanced public transportation options in the study area could yield:

- ◇ Improved outcomes in pregnancy
- ◇ Fewer violent deaths
- ◇ Decline in all-cause mortality
- ◇ Lower rates of chronic diseases

The south central neighborhoods of Phoenix boast many of the elements to become a thriving, healthy, vibrant and robust community: a diverse and rich culture; strong and varied institutions; and pride and dignity. However, the community's disparate health status is especially distressing, particularly for specific groups with unique health conditions. Research shows that increased access to public transportation can have positive economic and environmental impacts; however, other than safety or liability concerns, health implications for affected communities are rarely examined.

The proposed transit corridor was found to have particular implications for:

- ◇ pregnancy and birth outcomes;
- ◇ chronic diseases;
- ◇ physical activity;
- ◇ nutrition;
- ◇ stress and mental health;
- ◇ social cohesion;
- ◇ housing;
- ◇ injuries; and
- ◇ access to employment, recreation, healthy food, and health care services.

This HIA indicates that the health and well-being of study area residents will improve if consideration is given to the recommendations developed by the Insight Committee.

Recommendations

After considering all data from published research and community assessment, the Insight Committee and project partners identified 41 specific recommendations for improving community health. (Refer to the full report for the complete details on each recommendation.) Recommendations are predominantly directed to Valley Metro and the City of Phoenix Public Transit Department, but also the Departments of Street Transportation, Parks and Recreation, Neighborhood Services, Police, and Housing. Additionally, recommendations target local community based organizations and businesses, the State of Arizona, and Maricopa County.

Each recommendation includes: 1) an “owner,” the agency or organization involved in the decision-making; and 2) the best timeframe for consideration. Thirty-three recommendations have a consideration date in 2015, and many of those have extended implementation dates. Valley Metro is expected to complete their Environmental Assessment in 2016 and pending project and funding approval, construction would not begin until 2018 or thereafter.

Some of the implementation awaits construction; however, consideration of most recommendations can begin immediately.

Pathway #1 - Landscape/Shade/Safety

Number	Recommendation	Timeframe	Owner
1.1	Improve lighting at transit stops.	2015	PHX*
1.2	Improve pedestrian/bicyclist lighting.	2015	PHX
1.3	Improve walkability & bikeability.	2015	PHX
1.4	Increase shade.	2015	PHX
1.5	Expand cooling centers.	2015	PHX
1.6	Implement complete streets.	2015	PHX
1.7	Mitigate heat retention at transit stops.	2015	PHX
1.8	Reduce and remove stray dogs.	2015	MC
1.9	Improve prominence of 911 emergency call buttons/alarms.	2015	VM

Pathway #2 - Household Transportation Costs

Number	Recommendation	Timeframe	Owner
2.1	Facilitate reimbursement of transportation costs for AHCCCS members.	2015	AHCCCS
2.2	Use hospital community benefit investments for transit.	2015	Private**
2.3	Expand use of Employee Pass Program.	2015	VM
2.4	Promote use of Valley Metro Reduced Fare Program for those with disabilities.	2015	VM
2.5	Expand categorical eligibility for Reduced Fare Program.	2015	VM
2.6	Offer discounted unlimited ridership passes in longer durations (3-month, 6-month, and/or 1-year.)	2015	VM

* PHX is the umbrella jurisdiction for the City of Phoenix Departments of Public Transit, Street Transportation, Housing, Parks and Recreation, Neighborhood Services, and Police.

** Private is used when there is no public entity with ownership.

Pathway #3 - Business and Employment

Number	Recommendation	Timeframe	Owner
3.1	Support business retention and development along light rail transit corridor.	~2016	VM
3.2	Enhance business with public art during construction.	~2016	VM
3.3	Improve walking paths during construction.	~2016	VM
3.4	Promote community events during construction.	~2016	VM

Pathway #4 - Housing

Number	Recommendation	Timeframe	Owner
4.1	Prioritize Transit-Oriented Development in U.S. HUD 5-Year Consolidated Plan.	2015	AZ
4.2	Adopt the Walkable Urban Code overlay for the South Central light rail transit corridor.	2015	PHX
4.3	Prioritize low-income housing tax credits in the Qualified Allocation Plan for development along transit corridors with highly walkable or bikeable neighborhoods.	2015	PHX
4.4	Consider a property tax cap for low-income residents and property owners along the light rail transit corridor; tax credits for rental properties that provide affordable housing.	2015	MC
4.5	Increase resident input for updates to the Qualified Allocations Plan.	2015	AZ
4.6	Promote Valley Metro Reduced Fare Program through rental property owners.	2015	VM

Pathway #5 - Access to Services & Resources

Number	Recommendation	Timeframe	Owner
5.1	Encourage medical practice location along light rail corridor.	2015	Private
5.2	Re-establish the Valley Metro Disability Advisory Council.	2015	VM
5.3	Study additional neighborhood circulator routes.	2015	PHX
5.4	Recruit healthy food providers to become WIC vendors.	2015	AZ
5.5	Recruit farmers markets that accept SNAP benefits.	2015	AZ
5.6	Explore funding to support development of healthy food retailers.	2015	AZ
5.7	Improve and expand park infrastructure.	2015	PHX
5.8	Establish Safe Routes to School programs from transit to schools.	2015	MAG
5.9	Strengthen community engagement in transit level-service plans.	2015	PHX
5.10	Explore shared-use agreements to improve access to safe playgrounds.	2015	PHX

Pathway #6 - Active Transportation

Number	Recommendation	Timeframe	Owner
6.1	Improve rider experience for transit-users that are disabled through transit design.	2015	VM
6.2	Enhance transit training for disability case managers.	2015	VM
6.3	Improve maps and signage.	2015	PHX
6.4	Install user-friendly, ADA accessible Ticket Vending Machines at all light rail stations.	2015	VM
6.5	Implement bike share hub locations near light rail stations.	2015	PHX
6.6	Redesign new light rail cars or retrofit existing ones to support cold grocery storage.	2015	VM

INTRODUCTION

Health, Redefined

Good health helps people thrive and succeed. Thanks in large part to groundbreaking research and practices in the fields of public health and health care, the United States has seen many dramatic improvements in health over the past century. Since 1900, life expectancy in the U.S. has increased by nearly thirty years; vaccines have eradicated diseases such as polio and smallpox; antibiotics have mitigated the severity of bacterial infections; and advances in sanitation have dramatically decreased illness and death related to food safety and hygiene.¹ While communicable diseases have decreased, lifestyle-related non-communicable diseases have risen. Since the early 1980s, the rate of obesity in America has tripled, accompanied by a legion of chronic diseases (notably heart disease, stroke, diabetes, respiratory disease, and cancer) related to diet, physical activity, and other environmental factors.²

Social Determinants of Health

In order to accomplish the challenging task of reversing the trend of chronic disease, the World Health Organization (WHO) stresses that we must first recognize health as a “state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”³

Through this lens, addressing health requires a focus beyond the consequences of personal choice. The various conditions, in which people live, learn, work, play, and receive care – conditions known as the “social determinants of health” - greatly influence those personal behaviors. By focusing on this wider spectrum, health becomes a common denominator considered across all professional and social sectors. See figure 1. It exposes the reality that all decisions, spanning education to economic stability to the built environment, inevitably produce downstream effects that impact health.⁴ Recognizing that individual and community health depend on these decisions is critical to maintaining a healthy and productive community. This framework illustrates the root causes of disease and poor health, and reveals new opportunities for traditional and non-traditional stakeholders to assure conditions in which all people can be healthy.

In response, both the Maricopa County Department of Public Health⁵ and the Arizona Department of Health Services⁶ have emphasized the importance of addressing chronic disease through policy, systems and environmental changes within the community.

Figure #1

Social Determinants of Health Spectrum



Source: Human Impact Partners, 2010.

Health Impact Assessment

Actively considering the potential health impacts of any planning decision is critical. A scientific and community-driven process called health impact assessment (HIA) can inform a planning process. HIA follows a series of tested steps that are used to predict the health impacts and formulate recommendations to better inform a proposed policy, project, or plan. The methodology distinguishes itself through its commitment toward stakeholder and community engagement and its advocacy for health equity among all populations. Stakeholders can be consumers, providers, community members and associations, and other groups directly impacted by the decision.

To date, over 300 HIAs have been completed in the U.S., informing decisions related to education, housing, agriculture, transportation, community design and more.⁷ As stated by the Health Impact Project, a national leader in the practice of HIA:

“[HIA] offers practical recommendations for ways to minimize risks and capitalize on opportunities to improve health. HIA gives federal, tribal, state and local legislators, public agencies and other decision makers the information they need to advance smarter policies today to help build safe, thriving communities tomorrow.”⁸

The HIA methodology is comprised of six (often iterative) steps: screening; scoping; assessment; recommendations; reporting; and monitoring and evaluation.⁹ The time to complete a HIA varies depending on the needs of the assessment. A comprehensive project can take several months to a year, while a rapid, or “desktop”, HIA can be completed in a week or month. Aside from additional time, comprehensive HIAs involve more extensive methods of community engagement and outreach.

1. Screening

Prior to performing a HIA, the necessity, feasibility, and receptivity of the project must be determined. Practitioners must ascertain whether they have the capacity to conduct the HIA and if decision-makers are amenable to considering the results of the HIA. A viable project must a) provide new information to an initiative that is likely to impact health; and b) inform a proposed initiative, which, by definition, has not yet been implemented or ultimately decided.

2. Scoping

A stakeholder advisory group is formed based on the screening. Once screening has demonstrated that a HIA is appropriate for the proposed project, stakeholders consider the project strategically:

- ◇ Pathways between the project (or policy or program) and likely health impacts are identified.
- ◇ Specific research questions and the methods and mechanisms to answer those questions – the scope of the project – are determined.

The scoping phase defines the “who, what, where, why, and how” of the HIA and proposes objectives for the HIA. Stakeholder involvement is critical as it provides insight into how the proposed project will affect disparate communities.

3. Assessment

During the assessment phase, practitioners and community stakeholders utilize qualitative and quantitative research methodologies (e.g., literature reviews, focus groups, surveys, community meetings) to calculate baselines for, and future impacts to, each indicator chosen during the scoping phase. The assessment phase depicts both positive and negative impacts in an impartial manner.

4. Recommendations

Findings from the assessment inform the creation of actionable recommendations, which seek to improve public health and mitigate potentially unfavorable health consequences that may stem from the proposed initiative. The recommendations also specify the organizations responsible for carrying out the action items and the indicators of successful implementation of the recommendation.

5. Reporting

During the reporting phase, the assessment and recommendations are conveyed to decision-makers, stakeholders, and community members to solicit feedback. Responses from all parties are then used to craft a final HIA report for dissemination to decision-makers, stakeholders, and additional outreach partners.

6. Monitoring and Evaluation

Evaluation of an HIA involves analysis of a) the HIA process as it was conducted; b) its impact on decision-making; and c) any health outcomes related to the HIA and its recommendations. Indicators used in the HIA are monitored in order to evaluate the HIA.

Health Impact Assessment in Arizona

HIA is a relatively new tool in the state of Arizona. The Arizona Department of Health Services (ADHS) received a \$15,000 grant from the Association of State & Territorial Health Officials (ASTHO) in 2010. ADHS partnered with the Maricopa County Department of Health Services (MCDPH) to form a collaborative organization with participation from the Arizona Department of Transportation (ADOT), the ASU School of Geographic Sciences and Urban Planning, and the Sonoran Institute. This group established itself as Health in Policy & Practice (HIP2) and completed or provided input to the Tempe Modern Streetcar HIA (2012), the Sycamore (Light Rail) Station HIA (2012), the Coffelt-Lamoreaux Housing Redevelopment HIA (2013) and the Madison Heights Affordable Housing HIA (2014). Reinvent Phoenix, funded by the U.S. Department of Housing and Urban Development (HUD), went through a four-step process similar to a HIA to develop recommendations for a more livable, transit oriented, and sustainable Phoenix along the existing LRT route. Most recently, the Mohave County Department of Public Health completed an HIA on the Rotary Park Expansion in Bullhead City (2014). In total, there are fifteen HIAs completed or in process in Arizona.

HIP² has recently merged with the Livable Communities Coalition, an advocacy group that has focused on healthy community design principles within jurisdictional general plans. The merged organization is called the Arizona Alliance for Livable Communities (AALC). In addition to conducting HIAs, AALC has provided HIA or healthy community design training to more than 300 people, and made presentations to planners, transportation professionals, and public health professionals.

The Intersection of Transportation & Health

Decisions regarding development of transportation systems directly affect individual and community health, although considerations around health (except for safety concerns and liability) are seldom broached in transportation planning. The current American transportation system was designed to transport goods and people across vast distances as quickly and efficiently as possible. Over time, as cities grew, so did the demand for personal vehicles and high-speed arterials; hence the development of the interstate highway system and the social norm of a two-car-garage. These conditions are prevalent in the Phoenix Metro Area where urban planners and developers designed cities with the car as the main source of urban mobility. Many older neighborhoods lack sidewalks and in some cases are completely isolated from cities' downtowns. However, this type of urban design has been changing over the past 20 years and while the current system continues to meet its original intent, there is growing public demand for transportation modes that support compact urban development. Walking, bicycling, and using mass transit – modes of transit that declined with the proliferation of the single-occupancy vehicle – are now being championed by younger workers and families demanding life's amenities close at hand.¹⁰

From a public health perspective, this transition in transportation demand has favorable consequences. Walking, bicycling, and public transit require a greater amount of physical effort by the user. Research shows that individuals who regularly use public transportation are less likely to be sedentary or obese as compared to individuals that are automobile-dependent.¹¹ In addition to supporting healthy behaviors, accessible, dependable and affordable transportation options provide easier access to health-related resources. Be it the local grocery store with fresh produce, or the nearest healthcare provider, community members require multiple transit options to reach them. The uncontested negative consequences of today's auto-centric reliance are especially hard on underserved populations. A family that does not have accessible, dependable, and affordable transportation might struggle to travel for work, receive health care, or buy healthy food. In addition, those with challenging health conditions and restricted means, including limited income and disabilities that hinder mobility, are often hit hardest. This reality exemplifies the importance of considering how health is impacted during transportation planning.

SCNTHIA PROJECT & STUDY AREA OVERVIEW

The South Central Neighborhoods Transit Health Impact Assessment (SCNTHIA) examines a proposed high capacity transit corridor connecting the neighborhoods of South and Central Phoenix with downtown and the existing light rail train (LRT) system.

Background

Valley Metro (VM) is the regional transportation planning authority and works with the Maricopa Association of Governments (MAG) – the designated regional metropolitan planning organization - and its 32 member cities, towns and tribal nations to develop and operate a regional public transit system. Valley Metro operates one hundred local and express bus routes, para-transit dial-a-ride, neighborhood circulators, rural routes, vanpool service, online car and vanpool matching service, and 20-plus miles of Light Rail.¹²

In 2002, Valley Metro Rail, Inc., a nonprofit, public corporation was formed and charged with the design, construction and operation of the region’s 57-mile high-capacity transit system. Valley Metro Rail, Inc. board member cities include Phoenix, Tempe, Mesa, Glendale and Chandler. This Board establishes overall policies and provides general oversight of the agency and its responsibilities. NOTE: For the purposes of this document, we will refer to both Valley Metro and Valley Metro Rail, Inc. as Valley Metro, or VM.

In 1985, Maricopa County voters approved Proposition 300, a ½-cent sales tax primarily for freeway building that also included a portion as “seed money for regional transit service expansion.”¹³ It expired at the end of 2005. MAG’s 2003 Regional Transportation Plan provided the basis for Proposition 400 in November 2004, when Maricopa County voters passed a 20-year ½-cent sales tax extension for the expiring Proposition 300 to fund transportation projects through 2025. According to the National Highway Cooperative Research Board:

“The original 1985 tax was almost entirely devoted to the construction of new freeways within the county, funding projects on the Maricopa County Association of Governments’ (MAG) Regional Transportation Plan (RTP). The 2004 extension continued to fund projects on this long-range plan, but the types of projects funded were changed. Funding was allocated to the new construction of or improvement to existing freeways and highways (56.2 percent), improvements to arterial streets (10.5 percent), **and to transit (33.3 percent).**”¹⁴ [emphasis added]

The transit element included 57.7 miles of light rail transit (LRT). This plan did not include the South Central Neighborhoods LRT extension; therefore it will require a new revenue stream. Currently, the City of Phoenix has appointed a Citizens Committee on the Future of Phoenix Transportation to study transportation needs and funding and offer recommendations to the city council.

The initial 20-mile LRT corridor opened in December 2008 with 28 stations and 9 park-and-rides. It was built entirely in-street using a train-only track and traffic signals to allow trains to safely move through the cities of Phoenix, Tempe and Mesa. The \$1.4 billion cost covered by a variety of local, regional and federal funding sources:

- ◇ \$587 million federal New Starts grant;
- ◇ \$566 million from the cities of Phoenix, Tempe and Mesa;
- ◇ \$199 million from the county-wide Proposition 400 sales tax; and
- ◇ \$59 million from federal Congestion Mitigation and Air Quality funding.¹⁵

The first 20-plus-mile system and route selection was based upon:

- ◇ highest demonstrated bus ridership;
- ◇ highest employment concentrations;
- ◇ good residential base;
- ◇ high student population;
- ◇ highest concentration of special event facilities; and
- ◇ potential for connections to other cities.

The existing LRT system has been highly successful. First year ridership projections were exceeded by about a third (see Table 1 and Figure 2).

Note that each month of first year operations exceeded the projected average daily ridership for all three categories; weekdays, Saturdays, and Sunday/Holidays. Valley Metro recorded an average of 43,827 passengers per weekday in FY 2014.¹⁶

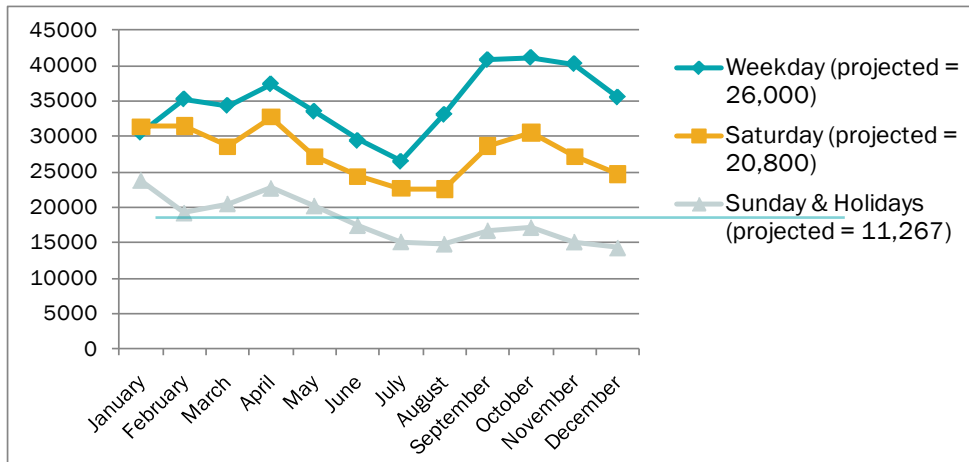
Table #1 Projected vs. Actual Average Daily Ridership, Jan-Dec 2009

	Projection	Actual Ridership	Above Projections
Weekday	26,000	34,809	33.9%
Saturday	20,800	27,672	33.0%
Sunday/Holidays	11,267	18,110	60.7%

Source: Valley Metro.

Figure #2

Average Daily Valley Metro Light Rail Transit Ridership 2009



Source: Valley Metro.

In Maricopa County, there is renewed interest in compact, livable urban design that supports high connectivity between housing, services, commerce, education, worship and recreation. The City of Phoenix is revising its General Plan and the revision process (online public input, exhibits, hundreds of presentations) has exemplified wide support for this focus on connectivity. The City of Phoenix General Plan (public comment draft at the time of this writing) casts a new vision:

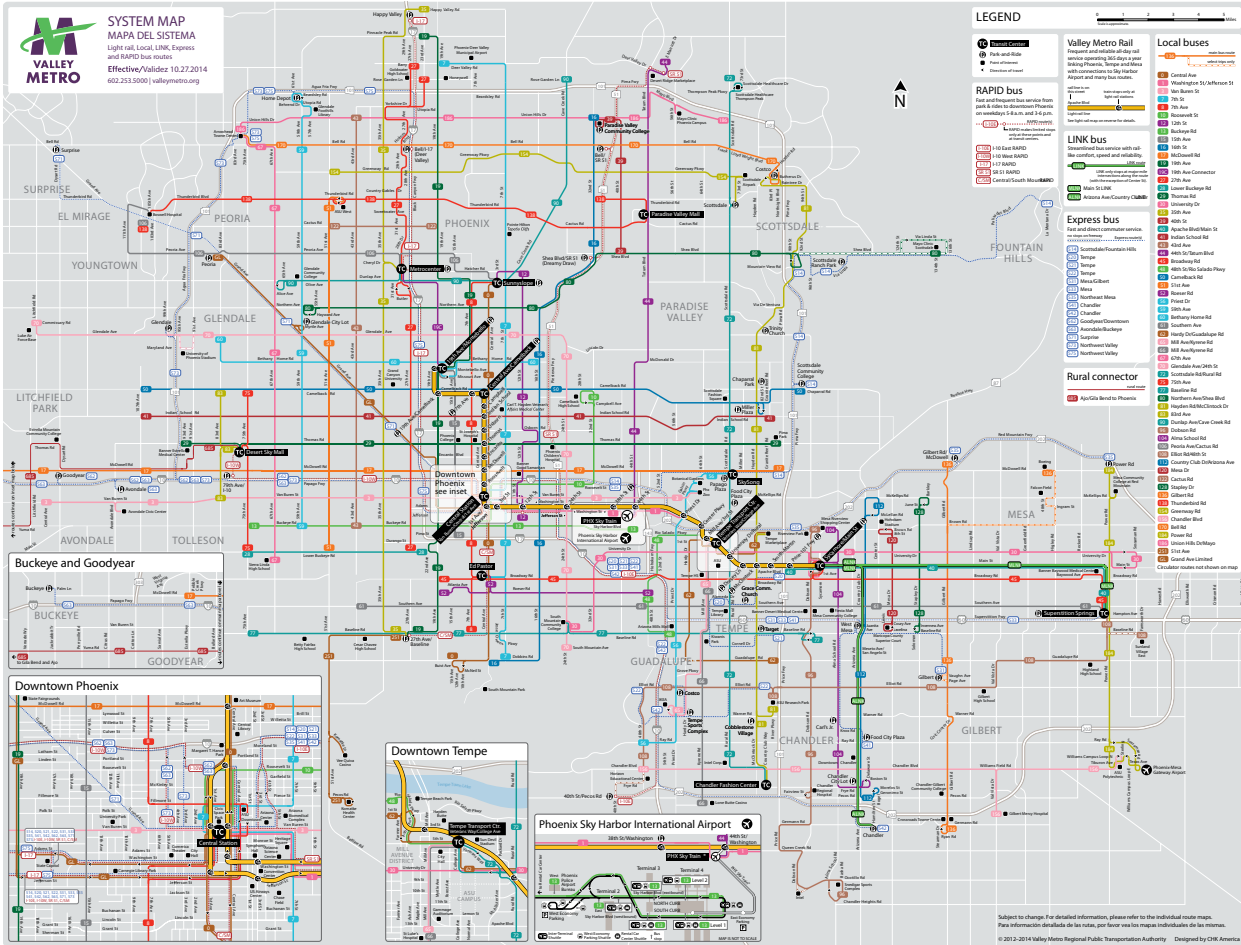
“Phoenix will continue to be like no other city in the world. A place steeped in history, defined by its beautiful desert landscape, activated by unique neighborhoods and businesses and embodied by a pervading sense of opportunity and equity. Phoenix will become an even greater city by building on its existing wealth of assets and by enhancing residents’ opportunities to connect to these assets and each other. By becoming a more “connected” city, Phoenix residents will benefit with enhanced levels of prosperity, improved health and a thriving natural environment. Bringing the great people and places of this flourishing desert metropolis together is what will solidify Phoenix’s identity as the Connected Oasis.”¹⁷

In furtherance of this vision, in July 2014, the Phoenix City Council approved two Complete Streets ordinances – thereby creating a Complete Streets Advisory Board and establishing principles for ordinance implementation. These were strong moves in support for multi-modal transportation in Phoenix. On September 12, 2014, the Phoenix Public Transit Department announced that it would receive a \$1.6 million Transportation Investment Generating Economic Recovery (TIGER) program grant from the U.S. Department of Transportation to “...support planning, environmental

assessment, and conceptual engineering for the South Central transit corridor.”¹⁸ The Phoenix City Council also approved a financing plan for the South Central Corridor to be included in the Regional Transportation Plan, but the financing plan will require an extension of City of Phoenix Transit 2000, a proposition that was passed in March 2000, and federal capital funding participation. The Transit 2000 plan, funded through a 4/10 percent sales tax, has financed local bus, bus rapid transit, dial-a-ride (para-transit) and light rail transit, among others. Thirty-Four percent of Transit 2000 was designated to support the first miles of LRT within Phoenix.

Map #1

Valley Metro System Map



Source: Valley Metro.

South Central Phoenix High Capacity Transit Corridor and Study Area

Valley Metro is completing a 24-month Alternatives Analysis (AA) study of the South Central Phoenix Corridor, a high capacity transit corridor connecting downtown and South Central Phoenix. An AA evaluates several high-capacity transit options, including light rail, bus rapid transit, and modern streetcar, to determine which transit mode and route serves the community best. It is the start of a process that will ultimately lead to an application for federal funding. The Valley Metro South Central

Corridor study area is bound by 7th Avenue on the west, 7th Street on the east, Washington Street on the north, and Baseline Road on the south. The total area is 13.29 square miles.

A milestone in the AA process came in August 2014, when the Valley Metro Board of Directors approved the South Central Locally Preferred Alternative (LPA) with authorization to proceed with the Maricopa Association of Governments Regional Transportation Plan amendment process.

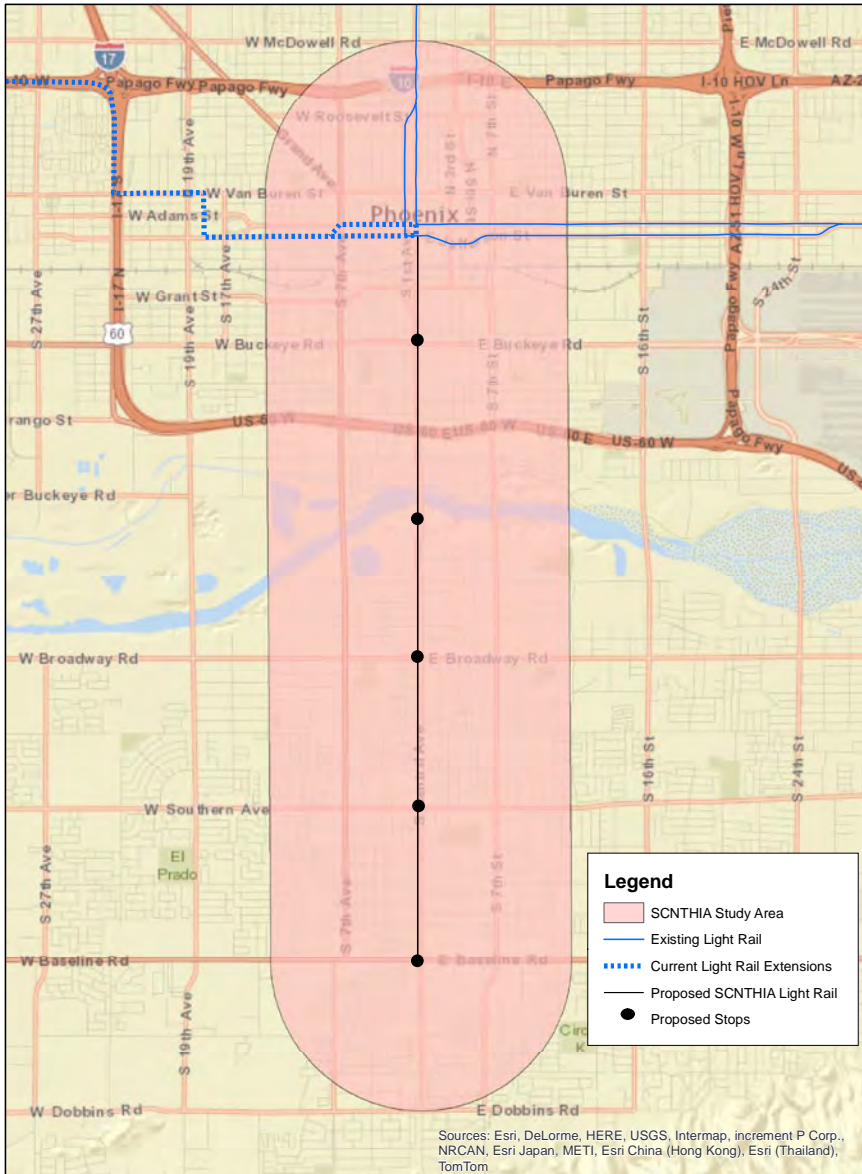
The LPA is a light rail transit corridor that would extend light rail from the existing downtown station at the intersection of Central Avenue and Jefferson Street south to the intersection of Central Ave and Baseline Road with five station locations identified and an additional three stations for further study.

VM projects daily boardings of 11,100 riders for the LRT South Central Corridor.¹⁹

The study area for the SCNTHIA project includes an approximately one-mile buffer zone surrounding the proposed light rail line, thus spanning from McDowell Road to the north and Dobbins Road to the south, and 15th Avenue to the west and 16th Street to the east. This study area is larger than Valley Metro used in their Alternatives Analysis. The likelihood of the LRT corridor to change development patterns with implications for access to health services, healthy food, recreation and other government services drove the decision to include a larger distance away from the proposed corridor. The SCNTHIA project team determined that 7th Street and 7th Avenue might experience exceptional development.

Map #2

SCNTHIA Study Area



HELPFUL TO KNOW

Phoenix has a well-developed street-grid system. Central Avenue runs North-South and splits the downtown area. North-South roads are numbered: roads to the WEST of Central Avenue receive the Avenue or Drive designation; while roads to the EAST of Central Avenue receive the Street or Place designation. Hence, 15th Avenue is West of Central, while 16th Street is East of Central. West-East Roads have other common names, such as names of Presidents (e.g. Jefferson and Washington Streets) in the downtown area. The arterials are approximately on one-mile grids. Also, the Salt River flows east to west and splits the study area in half between Buckeye and Broadway Roads.

Source: Maricopa County Department of Public Health.

Project Timeline and Screening Criteria

Multiple factors made Valley Metro’s proposed light rail extension in Phoenix’s South Central Corridor a worthy candidate for a HIA project. The timing of the project allowed adequate time to conduct the study and present the recommendations to the relevant agencies. In addition, the project had potentially large health impacts on a population with disparate health.

Transportation infrastructure that meets the needs of the community can play an integral role in bolstering levels of physical activity and connecting residents to resources such as grocery stores and healthcare facilities. While previous construction and extension of light rail in Phoenix and its surrounding areas had implications on the health and well-being of residents, the proposed South Central LRT would serve a primarily lower-income, ethnically diverse, underserved geographic area.

The Arizona Alliance for Livable Communities (AALC), which has focused on HIA development throughout Arizona, determined that Valley Metro’s proposed light rail extension into South Phoenix was a strong candidate for HIA. AALC submitted its proposal to VM, who agreed to participate in the SCNTHIA Project. VM may attach elements of the final SCNTHIA report to their Environmental Assessment.

Existing Conditions

The SCNTHIA project examined the existing conditions of the study area using readily available public health data. Here are selected data and findings (additional data is available in Appendices G and H).

Demographics and Income

Summary of Demographic Findings – study area compared to Maricopa County overall:

- ◇ Residents from the study area are younger.
- ◇ Household sizes in the study area are larger.
- ◇ Residents are much more likely to be Hispanic or non-white.
- ◇ Residents have substantially lower incomes.
- ◇ Residents are much more likely to rely on public transit.

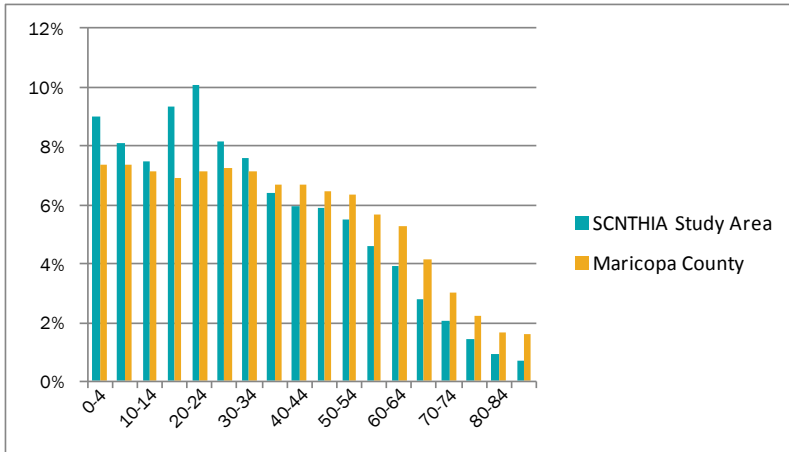
Table #2**Selected Demographics**

	SCNTHIA Study Area	Maricopa County	Arizona	U.S.
Total Population	58,782	3,892,551	6,553,255	313,914,040
Median Age (from 2010 census)	28.7	34.6	36.6	37.4
Total Population in Households	91.38%	98.63%	6,403,988	305,885,362
Total Households	18,183	1,439,675	2,392,168	115,969,540
Average Household Size	2.95	2.67	2.68	2.62
Average Family Size	3.86	3.25	3.29	3.25
Total Housing Units	21,775	1,662,937	2,871,486	132,452,249
Renter Occupied Housing Units	62.40%	37.97%	37.40%	36.10%
Median Household Income	\$21,747	\$53,289	\$47,826	\$51,371
Average Household Income	\$34,789	\$68,636	\$64,841	\$71,317
Per Capita Income	\$13,719	\$25,860	\$24,600	\$27,319
Does not own or lease any vehicle ("transit dependent")	27.82%	12.22%	7.00%	9.20%

Source: ESRI Business Analyst Online, Current Year Estimates, 2012.

Figure #3

Population by Age, 2012

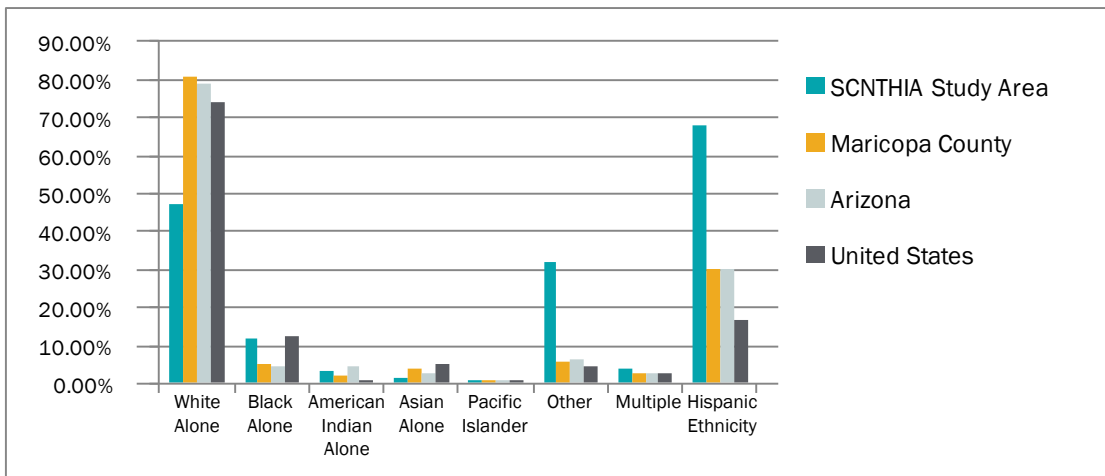


Source: ESRI Business Analyst Online, 2012.

While about one in four (25.3 percent) Maricopa County residents are under the age of eighteen years, 29.7 percent of study area residents are younger than 18 years (Nationally, the percentage is 23.2 percent).

Figure #4

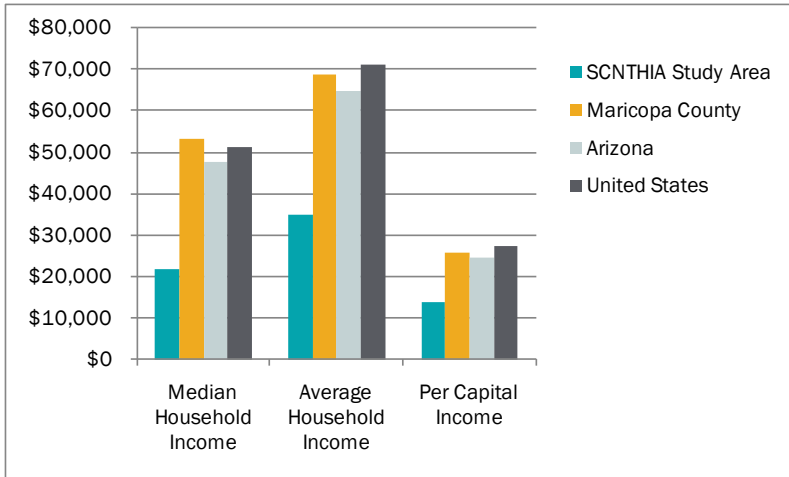
Population by Race/Ethnicity, 2012



Source: ESRI Business Analyst Online, 2012.

Figure #5

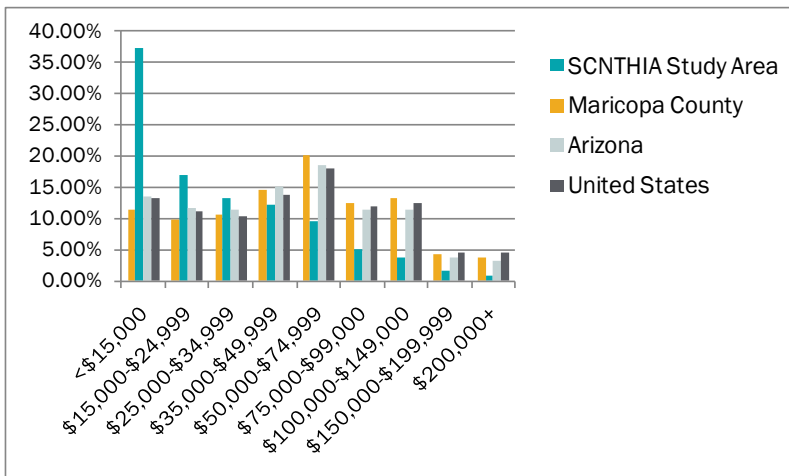
Median Household Income, 2012



Source: ESRI Business Analyst Online, U.S. Census Bureau 2012.

Figure #6

Distribution of Household Income, 2012

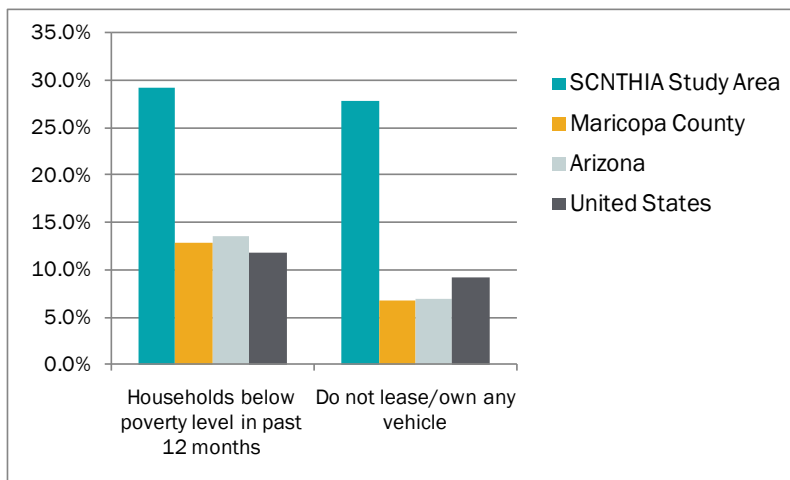


Source: ESRI Business Analyst Online, U.S. Census Bureau 2012.

The income indicators clearly demonstrate that residents in the study area have disparate incomes. The median income of residents within the SCNTHIA study area is less than 41 percent of the Maricopa County median income (Figure 4). While Arizona incomes fall below national levels, Maricopa County as a whole has higher incomes than all of Arizona (Figure 5). Twenty-Nine percent of residents in the study area fall below the federal poverty level compared to 13 percent in all of Maricopa County (Figure 6). In 2012, 16.7 percent of all Americans lived in poverty,²⁰ so the poverty rate within the study area is high compared with both the county and the country. Residents in the study area are also highly transit dependent; 28 percent within the study area do not own or lease a car compared to 12% in the county as a whole. This group is considered “transit-dependent” (Table 2).

Figure #7

Economic Indicators (Poverty, Transit Dependency), 2012



Source: ESRI Business Analyst Online, U.S. Census Bureau 2012.

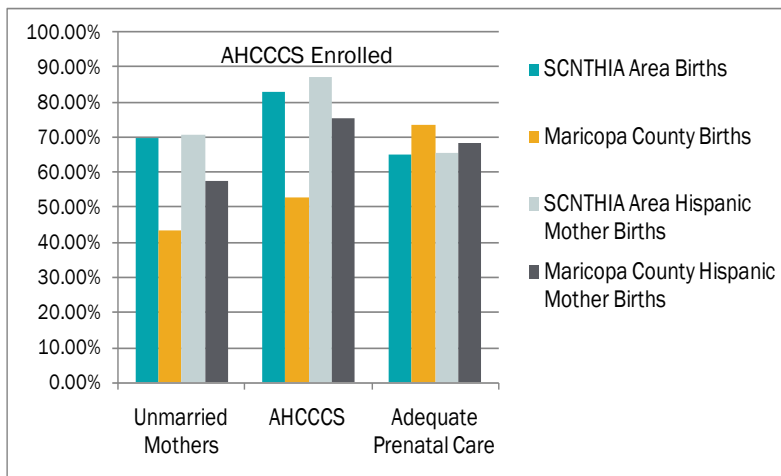
Pregnancy and Birth

Summary of Pregnancy and Birth Findings – study area compared to Maricopa County overall:

- ◇ Pregnant women and infants from the study area use hospitals closest to the study area.
- ◇ Births among residents of the study area are more likely to be to:
 - * unmarried women;
 - * Hispanic women;
 - * women on AHCCCS ; and
 - * women with inadequate prenatal care.
- ◇ Births to study area residents are more likely to result in:
 - * low-birth weight;
 - * premature deliveries; and
 - * higher rates of infant mortality.
- ◇ Residents have a high rate of publicly funded births, but poorer birth outcomes.

Nearly 83 percent of births to study area residents were publically funded in 2011; only 52.9 percent of births countywide were publically funded (Figure 8).²¹

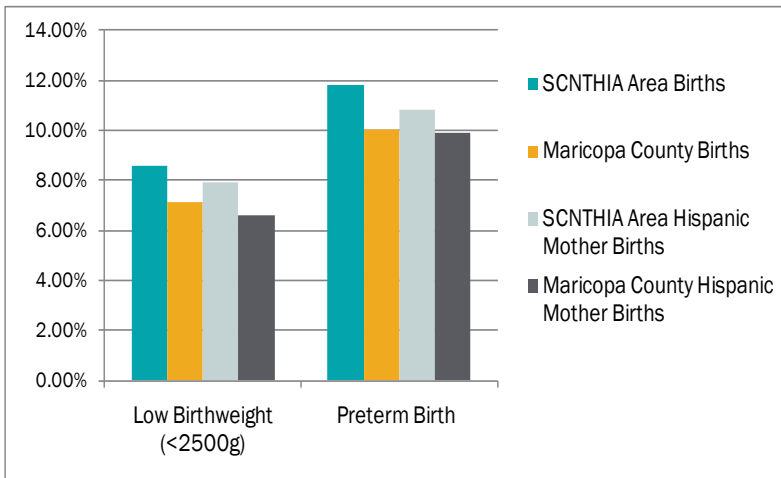
Figure #8 Pregnancy Characteristics, 2009-2011



Source: ESRI Business Analyst Online, U.S. Census Bureau 2012.

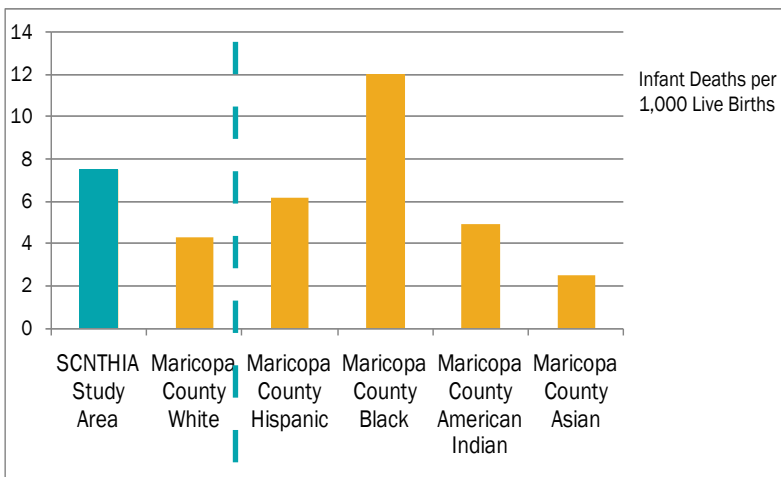
Figures 8 and 9 show overall poorer birth outcomes (low birth weight, preterm birth, and infant mortality) among SCNTHIA study area residents than for Maricopa County residents.

Figure #9 Birth Outcomes, 2009-2011



Source: ADHS Birth Certificates.

Figure #10 Infant Mortality, 2009-2011



Source: Maricopa County Department of Public Health.

African-Americans experienced the highest infant mortality of all races/ethnicities in Maricopa County. Except for Hispanics, the number of infant deaths in the study area is too low to make comparisons.

Table #3 Local Hospitals Used for Deliveries by SCNTHIA Study Area Residents, 2009-2011

Top 3 Hospitals Utilized by Residents	Number of Total Encounters	% of Total Encounters
Banner Good Samaritan Medical Center	1,381	43%
St. Joseph's Hospital	700	22%
Maricopa Medical Center	480	15%

Source: ADHS, Birth Certificates.

The three hospitals cited in Table 3 for newborn deliveries are in order of proximity to the core of the study area. Not surprisingly, women delivered babies in the hospitals closest to the study area.

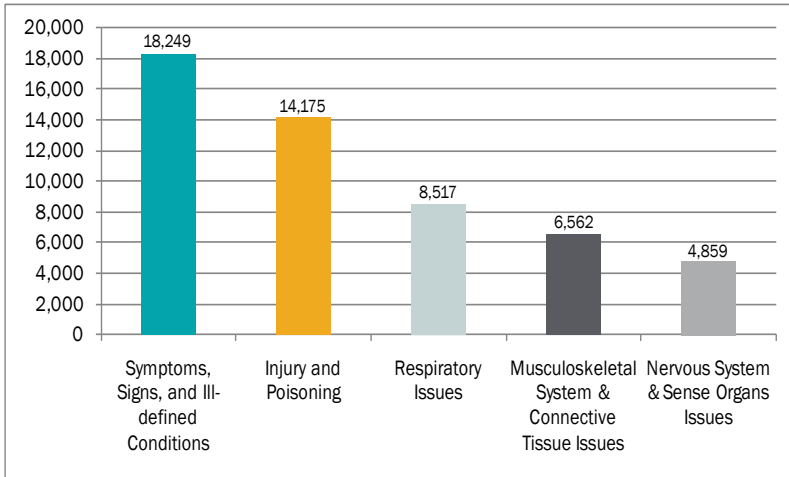
Hospitals and Health

Summary of findings around health and hospital usage – study area compared to Maricopa County overall:

- ◇ Residents in the study area have higher rates for heart disease, cancer, respiratory ailments and diabetes;
- ◇ Residents have higher rates of violent death, especially unintentional overdose, motor vehicle accidents, and homicide;
- ◇ Residents have higher all-cause mortality; and
- ◇ One positive factor, there does not appear to be a higher rate of suicide.

Figure #11

Leading Reasons for Hospital Emergency Room Encounters by SCNTHIA Study Area Residents, 2009-2011

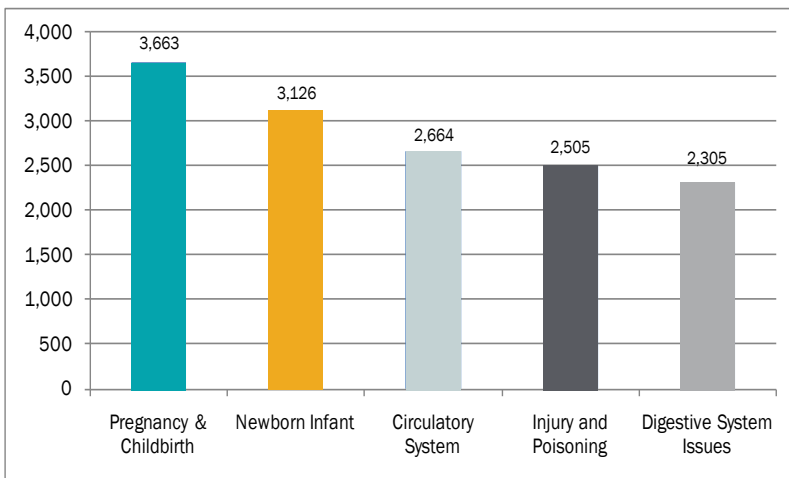


Source: ADHS, Hospital Discharge Data, Maricopa County Residents.

Respiratory issues include asthma and bronchitis; musculoskeletal includes arthritis and osteoporosis; and the nervous system includes Alzheimer’s, Parkinson’s and other chronic diseases (Figure 11). Reproductive and infant conditions were the leading cause of hospital encounters (Figure 12).

Figure #12

Leading Reasons for Hospital Inpatient Encounters by SCNTHIA Study Area Residents, 2009-2011



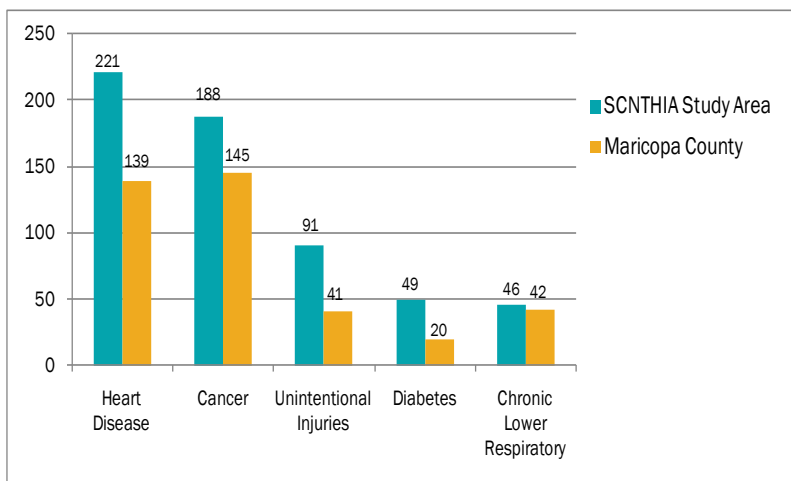
Source: ADHS, Hospital Discharge Data, Maricopa County Residents.

There were 1,010 total deaths in the study area during the three year period 2009 - 2011. Heart disease, cancer, violence, and injury appear to be much higher in the study area. The all cause age-adjusted death rate was 34 percent higher in the study area than in Maricopa County:

- ◇ Maricopa County: 647.9 deaths per 100,000 residents
- ◇ Study Area: 869.4 deaths per 100,000 residents

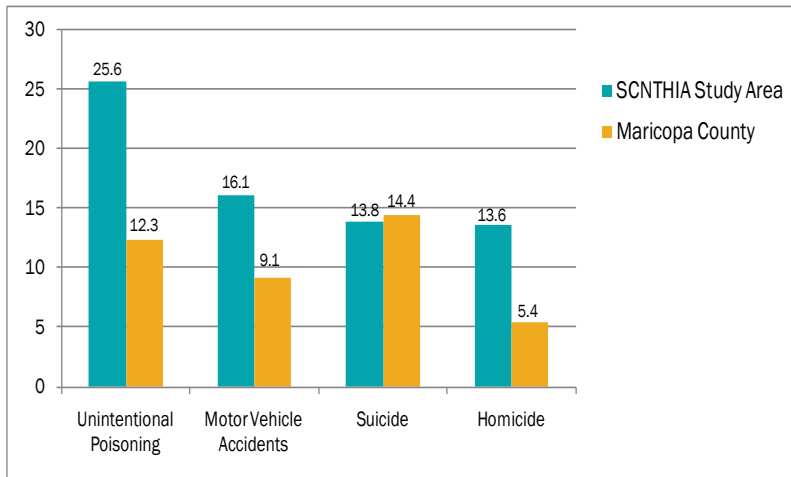
Residents of the SCNTHIA study area also saw much higher mortality compared to Maricopa County overall (Figure 13). Except for Suicide, SCNTHIA study area residents had higher death rates for non-natural and violent deaths compared to Maricopa County overall (Figures 13 and 14).

Figure #13 Leading Causes of Death, 2009-2011



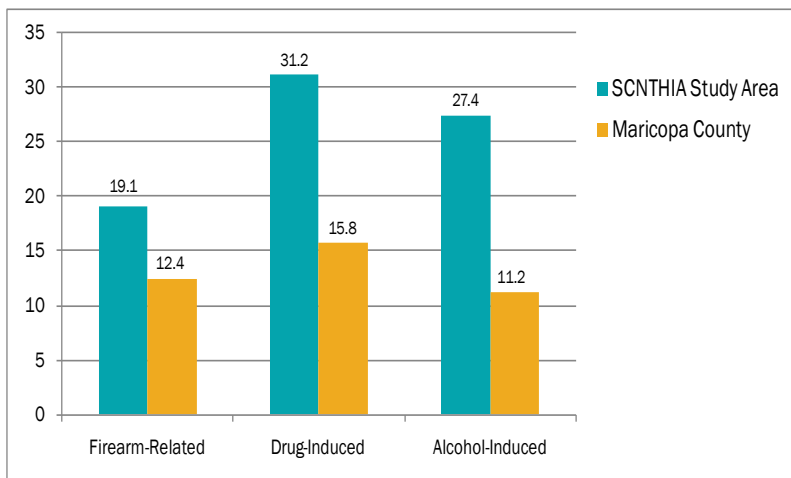
Source: ADHS Vital Statistics (Death Certificates).

Figure #14 Leading Causes of Non-Natural Death, 2009-2011



Source: ADHS Vital Statistics (Death Certificates).

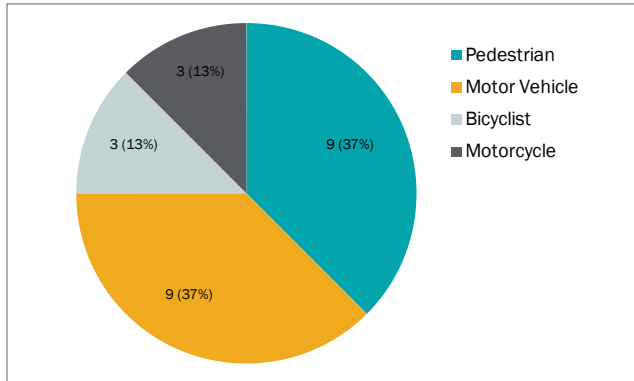
Figure #15 Violence- and Substance- Related Causes of Death, 2009-2011



Source: ADHS Vital Statistics (Death Certificates).

Figure #16

SCNTHIA Motor Vehicle Occupant, Pedestrian & Bicyclist Deaths, 2009-2011



Source: ADHS Vital Statistics (Death Certificates), Maricopa County Residents.

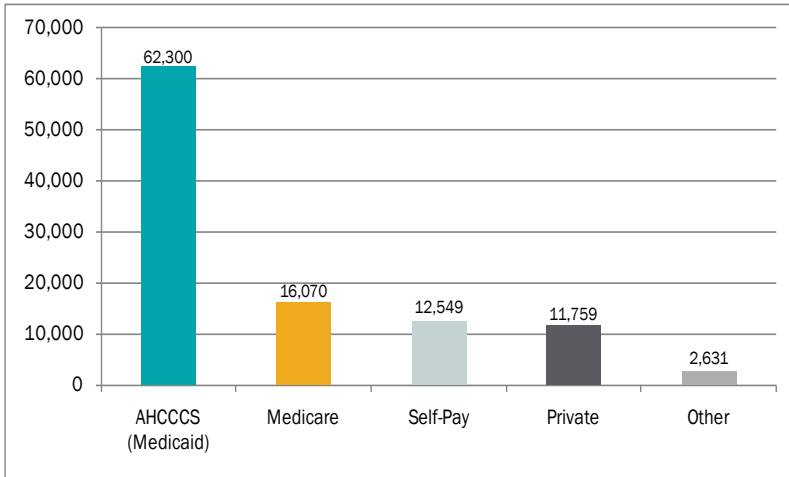
Among study area residents, there were:

- ◇ 105,299 total hospital encounters;
- ◇ 26,573 inpatient stays; and
- ◇ 78,726 emergency department visits.

Seventy-four percent of study area hospital encounters were publicly funded (59 percent and 15 percent were covered by AHCCCS/Medicaid and Medicare respectively.) This compares with 54 percent of hospital encounters county-wide funded through AHCCCS/Medicaid and Medicare.

Figure #17

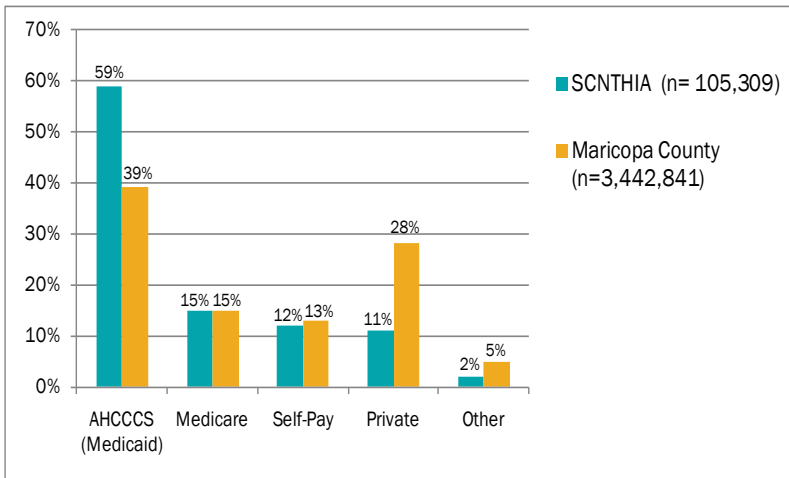
SCNTHIA Resident Hospital Encounters by Frequency of Payer Type, 2009-2011



Source: ADHS Hospital Discharge Data.

Figure #18

Hospital Encounters by Percent of Payer Type, 2009-2011



Source: ADHS Hospital Discharge Data.

Table #4**SCNTHIA Resident Hospital Encounters, 2009-2011**

Top 5 Hospitals Utilized by Residents	Number of Total Encounters	% of Total Encounters
Banner Good Samaritan Medical Center	26,070	24%
St. Joseph's Hospital	25,611	24%
Maricopa Medical Center	16,673	15%
Phoenix Children's Hospital	10,423	9%
St Luke's Medical Center	8,256	8%

Source: ADHS, Hospital Discharge Data.

It is important to note that only St. Luke's Medical Center, a medical/surgical hospital, is within the study area boundaries. The other hospitals are all north/northeast of the study area. In general, people use the hospitals that are closest to them.

Study area residents, compared with all of Maricopa County, were poorer, younger, have larger households and families, were more likely to be non-white and/or Hispanic, have worse health outcomes, and are more likely to rely on public transit.

Other Potential Vulnerable Areas

There were a total of seven heat-related deaths in the 2009-2011, providing a crude death rate of 4.0/100,000 in the study area, versus 0.7/100,000 for all of Maricopa County. Heat-related mortality appears to be much higher in the study area. Additionally, Medicaid pays for a high proportion of hospital services for residents of the study area. This finding is consistent with the income data.

HELPFUL TO KNOW

A crude death rate is the number of conditions, such as illness or death, in a given number of persons. It is a useful tool to compare the impact of conditions on different populations.

Screening Summary – Health Impact Assessment Screen

The SCNTHIA project is an opportunity to inform decision-making around the design, construction, function and maintenance of not only the proposed South-Central light rail extension, but also the transit network, streets, and the general environment of the study area - an area that faces unique social and economic challenges.

Study area residents, compared with all of Maricopa County, were poorer, younger, have larger households and families, were more likely to be an ethnic minority, have worse health outcomes, and more likely to rely on public transit.

During Valley Metro's initial analysis of transit technology and alignment options related to the South Central Corridor project, the agency based decision-making on input received from the community, which overwhelmingly supported the development of light rail transit on the Central Avenue alignment. The HIA process continued to gather valuable community input surrounding the project's more intricate planning details. Valley Metro's Environmental Assessment (EA) will follow the National Environmental Policy Act and its subsequent regulations, to be a concise statement of the environmental impacts of the proposed LRT development and operation. The EA will then be reviewed by the Federal Transit Administration which either issues a Finding of No Significant Impact (expected) or requires a full Environmental Impact Assessment and Statement (unexpected). Undertaking the SCNTHIA project strengthens the agency's planning approach by bringing a high level of additional community engagement and analysis. Through the HIA process, Valley Metro and other agencies involved in decision-making and project implementation are better able to incorporate a broad perspective that actively considers the social, economic, and environmental influences that impact the health of community residents. The hope is that decision-makers will continue to seek this wider perspective as future transportation projects are implemented throughout the county.

Screening proposed projects to determine if an HIA is appropriate requires its filtering among multiple conditions. Table 5 shows the screening questions asked to ascertain whether the SCNTHIA project was feasible and appropriate.

Table #5**HIA Screening Summary**

Is a Health Impact Assessment Appropriate?	
Conditions to Consider	Rationale
The timeline for the proposed HIA project must be conducive for a comprehensive assessment.	The proposed HIA would be a comprehensive assessment beginning September 2013 and culminating in Fall 2014. A HIA should be scalable within this timeframe.
HIA must be conducted on a project with a high likelihood of producing significant health outcomes.	The proposed South Central LRT Corridor will fundamentally change the transit options in the study area, with implications for the residents on levels of physical activity, access to resources and services such as healthy food and health care, housing and substantial community redevelopment.
HIA project must have a high potential impact on groups of people that have unique health challenges.	Research has documented unique challenges for particular priority populations within the study area. These populations include families with youth that possess special health care needs, adults with chronic conditions, and pregnant women. In addition, residents in the study area are generally more likely to have lower incomes and possess less access to health care services.
Proposed project must primarily affect a community that has disproportionately lower health status.	Residents of the study area are known to have lower rates of private medical insurance coverage, higher rates of chronic disease, generally poorer health outcomes, and less access to health care services.
Established expectation of promising receptivity of recommendations by decision-makers.	Valley Metro has consented to assist with the HIA project and to consider its findings in the design and development of the proposed corridor.

Source: ADHS, Hospital Discharge Data.

PROJECT SCOPING

Scoping is the process of establishing the research questions to be answered and determining the methodology to address those research questions. The community advisory group – the Insight Committee – drove this process with technical input using available public health and other data sources to establish a picture of the existing conditions (refer to the SCNTHIA Project and Study Area Overview chapter for existing conditions data collected). Scoping creates objectives for the HIA and outlines the steps of the HIA process by asking:

- ◇ What health effects should the HIA address?
- ◇ What concerns have stakeholders expressed about the pending decision?
- ◇ Who will be affected by the policy or project, and how?²²

The Insight Committee

During the scoping phase, MCDPH convened the project’s Insight Committee (IC) with representation from community leaders within the Central City South and South Phoenix neighborhoods. They represented various public and private agencies that regularly interact with sub-sectors of the community that experience disparate health and income.

Insight Committee members were identified by key agencies and organizations involved in the study area. A broad representation, including participants on the Valley Metro Community Advisory Group who were already familiar with the proposed corridor, was sought in addition to persons that could represent sub-populations with special concerns. From the many invitations and outreach, a core team of eleven members was identified.

Insight Committee members represented these stakeholders:

- ◇ Community Residents: Individuals living in the study area who advocate for community development.
- ◇ Friendly House: Since 1920, Friendly House has served the citizens of Arizona and those seeking to become citizens, by providing the tools, training and support needed to attain sustaining, self-sufficiency. Friendly Houses’ comprehensive programs include: workforce development; adult education; elderly care; youth education; family and immigration services; and mentoring. <http://www.friendlyhouse.org/>
- ◇ Mountain Park Health Center (MPHC): MPHC works with the communities it serves to sustain and improve health by providing affordable primary care. <http://mountainparkhealth.org>
- ◇ Phoenix Revitalization Corporation (PRC): PRC is a non-profit community development corporation dedicated to the revitalization of neighborhoods by facilitating community improvement projects, and the maintenance and creation of low-income and workforce

housing. An emphasis is placed on the revitalization of Central City South, a community located immediately south of the Phoenix Downtown Business District and the Arizona State Capitol Mall. <http://phxrevitalization.org/aboutus.htm>

◇ Raza Development Fund (RDF): RDF is the largest National Hispanic Community Development Financial Institutions (CDFI) loan fund in the country. The mission of RDF is to create financing solutions that increase opportunities for the Latino community and low-income families in the areas of affordable housing, education, and health care. <http://razafund.org>

◇ South Mountain Village Planning Committee (SMVPC): SMVPC guides the physical development of the city by preserving historic sites, planning what can be built where, and ensuring safe construction of buildings and infrastructure. A host of advisory and governing bodies of residents as well as elected officials provide oversight as the city grows and needs arise. The process is governed through development and enforcement of city codes and ordinances. <https://www.phoenix.gov/pdd/pz/south-mountain-village-planning-committee>

◇ St. Luke's Health Initiatives (SLHI): SLHI's mission is to inform, connect and support efforts to improve the health of individuals and communities in Arizona. SLHI has long provided leadership to be a catalyst for positive change. <http://slhi.org>

◇ TigerMountain Foundation (TMF): TMF empowers community through initiatives that include on the job development, landscaping and community gardens, TMF audio, visual and performance arts, community service and a spirit of volunteering. <http://www.tigermountainfoundation.org>

◇ Chicano Por La Causa (CPLC): CPLC is a statewide community development corporation committed to building stronger, healthier communities as a lead advocate, coalition builder, and direct service provider. CPLC promotes positive change and self-sufficiency to enhance the quality of life. <http://cplc.org>

◇ St. Catherine of Siena Roman Catholic Church: This faith based institute is located in the study area. <http://stcatherinephoenix.org>

◇ Raising Special Kids: Raising Special Kids exists to improve the lives of children with disabilities, from birth to age 26, by providing support, training, information, and individual assistance so families can become effective advocates for their children. <http://raisingspecialkids.org>

◇ Wesley Community & Health Center: Wesley Community & Health Center is a Valley of the Sun United Way Primary Partner and a National Mission Institution of the United Methodist Church. <http://www.wesleycenterphx.org>

From the beginning of the SCNTHIA project, the Insight Committee (IC) participated fully and demonstrated a high level of engagement in the process. Their participation commenced with an orientation during which they received a) background about Valley Metro’s proposed South Central LRT extension; b) training on the HIA process; c) data regarding the area’s existing health conditions; and d) a briefing on the social determinants of health in the study area.

Pathway Diagram Development

In order to prepare the IC members for scoping, they participated in a facilitated “Tree” Exercise” proposed by other HIA practitioners.²³ The IC listed several disease outcomes prevalent in their community. Using this exercise, IC members identified diseases/health conditions; resulting behaviors and practices; and the social, economic, and political determinants that influence the behaviors they described.

The Tree Exercise influenced the development of SCNTHIA’s Project Pathway Diagram. The IC members identified two direct and immediate outcomes reflective of the broad economic and access to transit related effects of Valley Metro’s proposed project. These immediate outcomes resulted in the development of six primary categories, or pathways, that eventually impact the health of the community residents:

1. Landscape/shade structures that impact heat related morbidity and mortality;
2. Household transportation costs, which affect household income, insurance status, and mobility;
3. Employment/entrepreneurship that has repercussions on poverty, insurance, and community safety;
4. Housing, which relates to stress and social cohesion;
5. Access to resources and services, specifically health services, healthy food, and recreation; and
6. Active Transportation, automobile usage and transit ridership, including bicycling and walking that impact injury and physical activity.

Pathway Omissions

Two outcomes raised by the IC were ultimately not included in the pathway diagram or scope as identified below: air quality and crime. Construction of the LRT corridor will require Federal Transit Administration monies. The Environmental Protection Agency (EPA) transportation conformity rule²⁴ establishes the criteria and procedures for determining whether transportation plans, transportation improvement programs (TIPs), and federally funded or approved highway and transit projects are consistent with (“conform to”) state air quality goals. Transportation conformity

is required under Clean Air Act²⁵ to ensure that federally supported highway and transit project activities are consistent with (“conform to”) the purpose of a state air quality implementation plan (SIP). Conformity to the purpose of the SIP means that “transportation activities will not cause or contribute to new air quality violations, worsen existing violations, or delay timely attainment of the relevant national ambient air quality standards (NAAQS) or required interim milestones... Conformity applies to transportation activities in nonattainment and maintenance areas for transportation-related pollutants, including PM2.5 and PM10.”²⁶

Valley Metro will need to demonstrate that the project will not increase air pollution. Valley Metro will expend substantial resources to conduct complex air quality modeling. For this reason, SCNTHIA did not investigate air quality as a pathway variable, except to note the rates of asthma and pulmonary illness.

The SCNTHIA Team was unable to collect relevant crime data from the City of Phoenix. Crime data collected from the City of Tempe (where the initial 20-mile LRT system travels) could not be geographically coded to its proximity to the light rail. SCNTHIA did consider safety and relevant input from both IC members and through its data collection (especially focus groups and walkability audits), but did not include crime data collected from law enforcement. Therefore, crime was changed to “safety” in the pathway diagram.

Vulnerable Populations

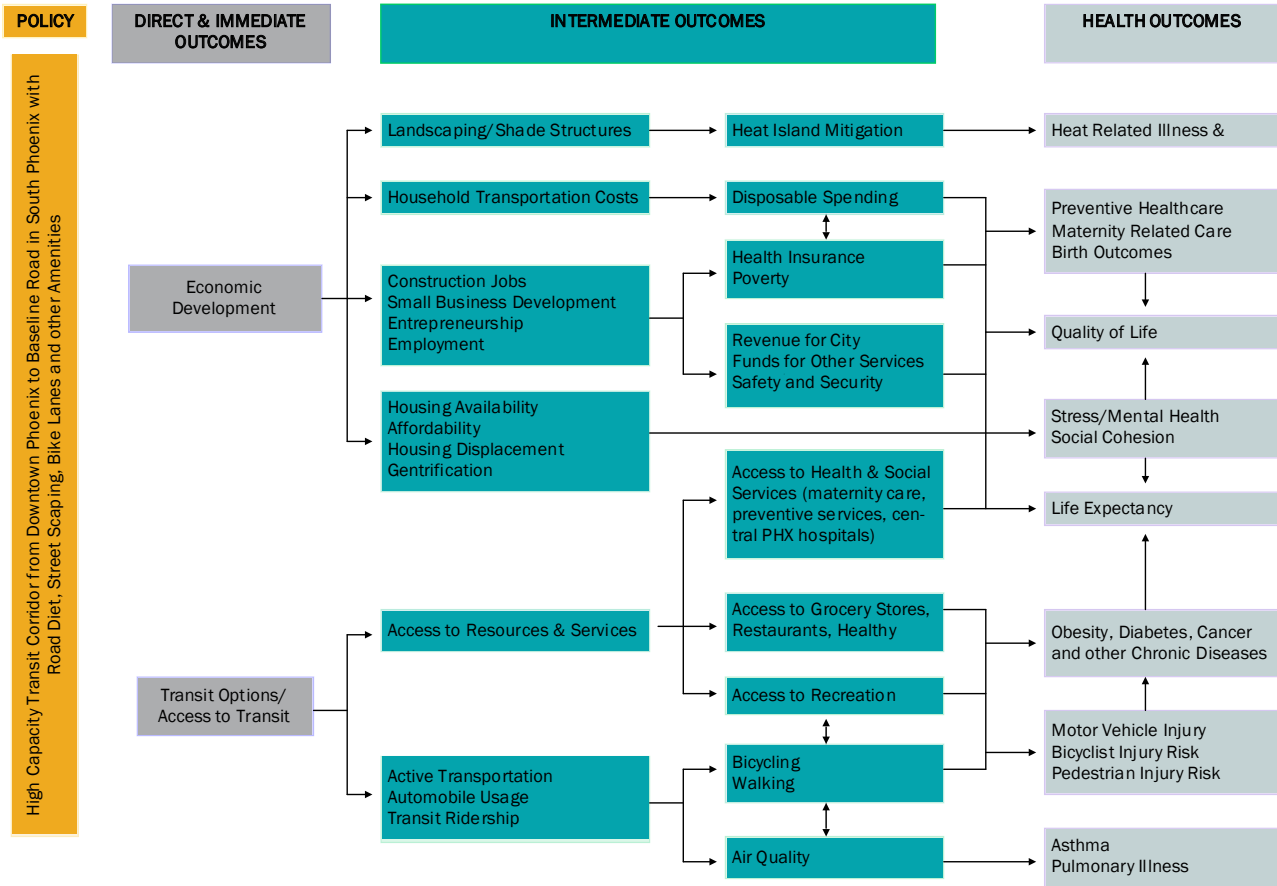
The IC identified sub-groups that might experience greater impacts from the LRT, including seniors, undocumented persons, visitors/tourists, unemployed persons, people of color, people with English as their second language, veterans, homeless, and school children.

Previous MCDPH-commissioned projects highlighted transportation challenges facing families with children/youth with special health care needs (CYSHCN)²⁷, and MCDPH receives funding from the Arizona Department of Health Services to include CYSHCN in projects related to policy, systems, and environmental changes. The SCNTHIA project team classified the following sub-groups as priority populations, those who would be most affected by the proposed transit project:

- ◇ Families with children/youth with special health care needs;
- ◇ Adults with chronic conditions (including developmental, physical, and sensory disabilities); and
- ◇ Pregnant women

Figure #19 SCNTHIA Pathway Diagram

**SOUTH CENTRAL NEIGHBORHOODS TRANSIT HEALTH IMPACT ASSESSMENT
PATHWAY DIAGRAM**



Source: Maricopa County Department of Public Health

Development of Research Questions

The IC committee participated in a rotational table exercise to develop a scoping worksheet. Small groups of participants rotated through four tables, each time building on the work of the previous groups. When complete, the facilitators reviewed the results of all cohorts. The full list of research questions addressed is included in Appendix A.

The facilitators collected input on these questions:

- ◇ What are the existing conditions of health determinants and health outcomes?
- ◇ What are the potential impacts on health determinants and health outcomes?
- ◇ What are the indicators?
- ◇ What are the data sources?
- ◇ What methodology might be used?
- ◇ What priority (high, medium, or low) should be ascribed to the research questions?

The four tables were:

1. Landscaping/Shade, Automobile Usage/Transit Ridership;
2. Construction/Small Business Development/Employment and Household Transportation Costs;
3. Housing; and
4. Access to Services.

Assessment Methodologies

The IC and SCNTHIA project team selected a variety of assessment methodologies including:

- ◇ literature review;
- ◇ epidemiologic reviews of multiple data sources/secondary data review;
- ◇ focus groups;
- ◇ key informant interviews;
- ◇ surveys; and
- ◇ walkability assessments.

These methodologies were selected in order to capitalize on the most current and accurate data sources and to incorporate the voice of the community. Data tools that were utilized to gather information ranged from those familiar to public health to ones that have never before been accessed by MCDDPH public health epidemiologists. Examples of the latter include Valley Metro studies and data from City of Phoenix departments including injury data.

Saguaro Evaluations Group, LLC. and The Elemental Group, LLC. collaborated to complete the focus groups, the majority of the key informant interviews, walking assessments, and many of the surveys. Four focus groups with each of the three target population groups were conducted, in addition to 20 key informant interviews and 300 surveys collected at community events, by organizations in the study area, and via the internet. Findings were returned to the IC for review and then used to develop and report on recommendations. Protocols for the focus groups, surveys, key informant interviews and walkability assessments are included in Appendix D.

KEY INFORMANT INTERVIEWS

20 Key Informants were interviewed:

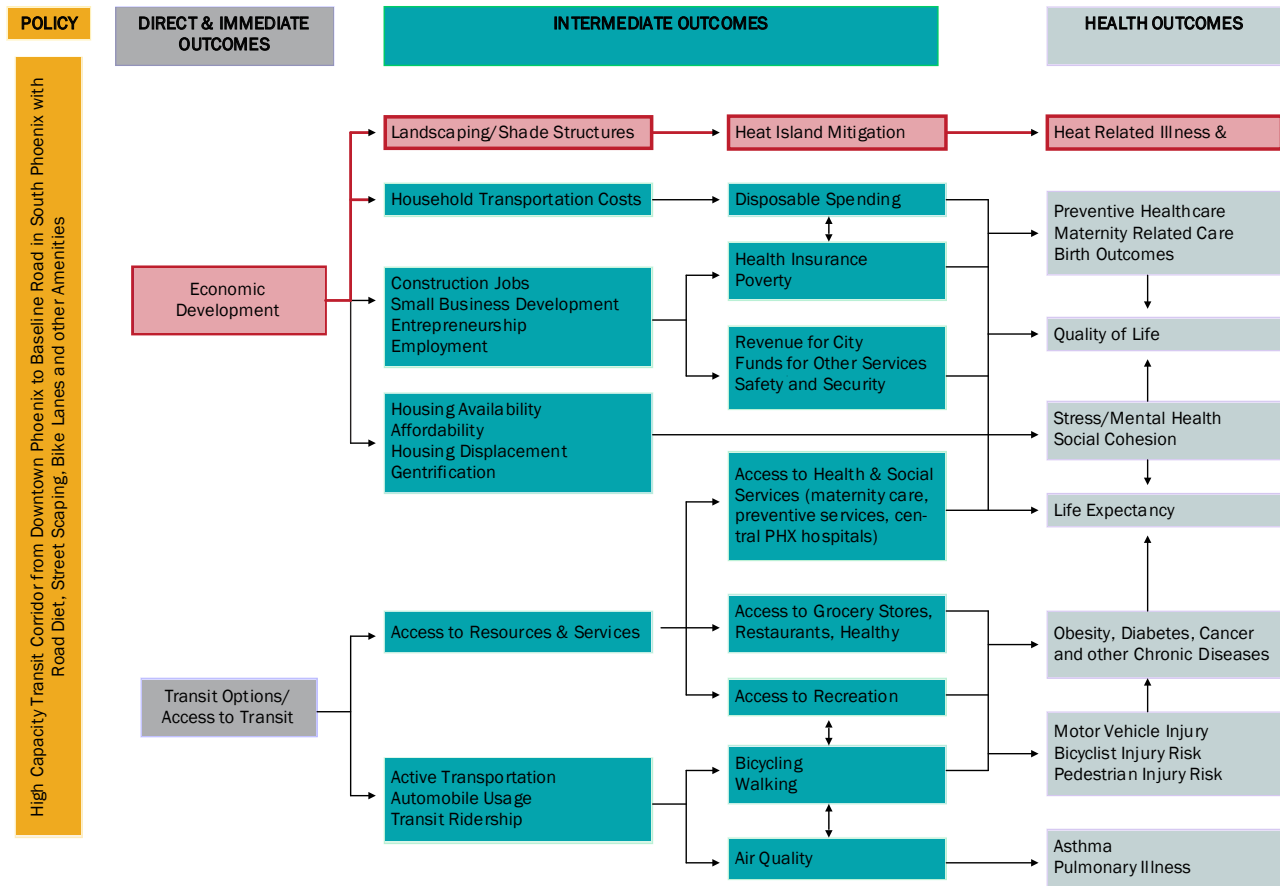
- ◇ 2 Chronic disease and disabilities managers/case managers
- ◇ 1 Local farmer
- ◇ 1 Supermarket manager
- ◇ 2 Business owners in the proposed area
- ◇ 2 Business owners in the completed area
- ◇ 1 City of Phoenix Parks and Recreation representative
- ◇ 1 Certified mobility specialist from a local non-profit agency
- ◇ 1 School principal from a local school
- ◇ 1 WIC supervisor
- ◇ 8 Adults with disabilities

PATHWAY #1 – LANDSCAPING/SHADE STRUCTURES/SAFETY

Landscaping, shade structures, and safety are all elements of a pleasant, urban walk. In the Phoenix summer heat, however, they are much more than just pleasantries. Getting to and from transit can be brutal in the heat for even the healthiest people. The IC drew a clear pathway from the proposed project towards heat related illnesses and death (see Figure 19), especially for the vulnerable populations. Upon completion of the South Central Transit Corridor extension, anticipation of modifications to the design of both light rail stations and areas that surround them should help to mitigate the urban heat island effect, which has caused the average night time temperature in Phoenix, Arizona to increase by nine degrees over the past decade.

Figure #20 Landscape/Shade/Safety Pathway Diagram

SOUTH CENTRAL NEIGHBORHOODS TRANSIT HEALTH IMPACT ASSESSMENT PATHWAY DIAGRAM



Source: Maricopa County Department of Public Health

How Landscaping, Shade, and Safety Impact Heat Related Illness

Transit facilities lacking adequate shade increase the risk of exposure to sun and heat-related illnesses, particularly for riders with chronic and existing health conditions. Transportation facilities that incorporate landscaping, adequate lighting and shade, open space, and artwork can provide the added value of scenic and social areas as well as an enhanced perception of safety.²⁸ Maximizing the use of walkways and spaces surrounding transit facilities can also contribute to social cohesion. In addition, one's sense of pride and emotional connection to the community is largely dependent on the aesthetics of the environment.^{29 30} Neighborhoods perceived as disorderly by residents are also perceived to be dangerous whether it is true or not.^{31 32} Consequently, the aesthetic and physical qualities of the built environment affect resident behaviors and attitudes.³³ Studies show that neighborhood connectivity and a sense of security are linked with improved health outcomes.³⁴ In fact, a recent study of more than 64,700 births revealed a significant relationship between living in greener, shaded spaces and healthier birth outcomes – fuller term pregnancies and babies with healthier birth weights - even after controlling for resident income.³⁵

URBAN HEAT ISLAND EFFECT

The urban heat island effect refers to the occurrence of hotter temperatures in urban areas as compared to rural or suburban areas due to more buildings and roads, which hold heat, and less vegetation and trees, which cool the surrounding area.

The walkability of neighborhoods surrounding fixed-route transit also factors into whether people are more apt to use light rail and/or the bus.³⁶ The quality of the pedestrian environment has been found to be especially important at the origination point: if the traveler's street is pedestrian friendly, the traveler is more likely to

walk to the light rail stop.³⁷ A variety of factors determine the walkability of an area, including both individual perceptions³⁸ and actual infrastructure. The factors most important for accessing public transportation, especially among people commuting to work, include safety, aesthetics, traffic signal length, the presence of other people, retail shops, and places to sit.^{39 40} Additional aspects of the built environment that would encourage older persons to use public transportation include the presence of median islands with pedestrian refuges, improved user-activated signal crossings, traffic calming features such as narrower streets and lower speed limits and accessible pathways connecting to transit stops.⁴¹ Not surprisingly, the presence of continuous, high-quality sidewalks between point of origin and transit stops leads to a higher probability that people will walk.⁴² When given the choice between taking a short route that has a poor pedestrian environment or a longer route that was more pedestrian friendly, transit riders often chose the longer route.⁴³ Routes featuring adequate lighting, streets that separate traffic from pedestrians, continuous and undamaged sidewalks, low speed limits, and landscaping were chosen more frequently than less appealing routes. It is also worth noting that walking through wide, open areas is linked with a

reduction in pedestrian comfort.⁴⁴ This is particularly relevant for many Phoenix neighborhoods that have an abundance of vacant lots or expansive parking lots.

For older riders, daytime temperatures as well as nighttime darkness often limit public transit use.⁴⁵ In Phoenix, excessive heat is a particular concern. The study area environment largely consists of areas paved with asphalt. In comparison with other landscape materials such as turf-grass, decomposed granite, concrete or bare soil, asphalt's ability to store heat results in much higher surface temperatures.⁴⁶ Different landscape typologies also vary significantly in summer surface temperatures with xeric landscapes – drip-irrigated with decomposed granite mulch, desert-adapted trees and shrubs - being the warmest after asphalt covered areas.^{47 48} Furthermore, open areas without vegetation lead to higher daytime and nighttime temperatures due to the lack of shade and urban heat island effect.⁴⁹ The study area includes a preponderance of both landscape types. Adding vegetation to these neighborhoods would have a substantial cooling effect across all landscape types: shaded surfaces are on average 11 degrees (F) cooler.⁵⁰ Increasing plantings in the study area may be accomplished with little additional watering, especially when coupled with appropriate landscape maintenance and pruning.^{51 52} Additionally, the creation of small, public parks throughout the community may help mitigate heat effects and reduce resident exposure.^{53 54}

Assessment and Findings

Prior to SCNTHIA, focus group research with parents of CYSHCN demonstrated transportation as a top challenge for this population. Some shared difficulties in accessing specialists. For some parents, the regulation of their CYSHCN's body temperature is critical. Quality shade, cold water availability, and mitigation of high heat are not luxuries to this, or any, population; they have clear health implications.⁵⁵

SCNTHIA supplemented the results from those prior focus groups by conducting research with the two other priority populations (pregnant women and adults with chronic conditions and diseases). Heat and sun exposure were top concerns of all three priority populations. Focus group participants worried about possible dehydration of small children, pregnant women and older adults as well as possible medication interactions from prolonged sun or heat exposure. They requested more shade at bus stops, future light rail platforms, and in their neighborhoods to prevent prolonged sun and heat exposure.

Key findings from the focus groups

People do not feel safe in their neighborhood for variety of reasons, including stray dogs, crime, gangs including motorcycle gangs, and lack of streetlights.

Participants shared their preferences that LRT stops would incorporate the following elements:

- ◇ Shade
- ◇ Light
- ◇ Security
- ◇ Raised Platforms
- ◇ Drinking Water
- ◇ Restrooms
- ◇ Enforcement of No-Smoking Ordinances

Between May and July 2014, eight individuals with a range of disabilities were interviewed by the SCNTHIA project team; each interview lasted between 90 and 120 minutes. Overall, the key informant interviews (KIIs) sought to:

- ◇ Assess how people with disabilities currently use the public transportation system;
- ◇ Determine if existing public transportation meets their needs in terms of offering a safe, affordable service linking a full range of destinations; and
- ◇ Evaluate whether existing transportation infrastructure – bus shelters, light rail stops, sidewalks, crosswalks, etc. - is adequate for people with disabilities and chronic conditions.

Case managers of adults with chronic conditions and adults with disabilities who participated in KIIs asserted that the farther their clients have to walk to reach a transit stop, the less likely they are to use public transportation. Moreover, KIIs revealed that the closer families with CYSHCN or adults with chronic conditions and/or disabilities live to the light rail, the more engaged they are in their community, and they report a better quality of life. Interviewees also echoed focus group participants' concerns regarding sun and heat exposure for adults with chronic conditions and/or disabilities, and CYSHCN.

According to three of the interviewees, current bus shelter seating is adequate; however, two people noted that when multiple wheelchair riders are waiting for the bus, the space is very cramped. Lighting is a problem for three of the interviewees; so much so that two of them refrain from riding the bus after dark.

Light rail stations and surrounding sidewalks

Although it took one interviewee a long time to feel at ease accessing the LRT stations, all eight of the disability-related interviewees are comfortable getting to and from the stations on their own, and they all responded positively about the conditions of the LRT stations noting that they are usually clean, and offer adequate shade and lighting. Three of the five LRT riders requested more

security at night both at the stations and on the trains. A female interviewee stated she requires assistance at night strictly because the stations seem dangerous and she feels vulnerable on her own. However, no one cited poor sidewalk conditions in the immediate vicinity of the existing light rail stations. The walkability assessments of the proposed LRT stations revealed a different situation. The arterials and streets leading to the proposed LRT stations were in worse condition than those surrounding the existing LRT stations.

The 314 surveys collected at community events and online gathered a tremendous amount of information regarding safety. Surveys indicated that:

- ◇ 24 percent (n=76) reported feeling somewhat to very unsafe in their neighborhoods.
- ◇ 47 percent (n=148) believe that people in their neighborhood do not go out at night due to crime.
- ◇ 29 percent (n=91) reported that gangs are a serious issue in their neighborhood.
- ◇ 22 percent (n=69) reported that children in their neighborhood are not safe.
- ◇ 42 percent (n=131) reported that stray dogs are a safety concern in their neighborhood.
- ◇ 44 percent (n=139) said that people in their neighborhood are afraid of guns.

Walkability Audit

Valley Metro identified five intersections along South Central Avenue as possible future LRT stops: 1) at Lincoln Street; 2) at Buckeye Road; 3) at Broadway Road, 4) at Southern Avenue; and 5) at Baseline Road. Accordingly, residents audited the areas surrounding each intersection, evaluating the walkability of the built environment in terms of shade, condition and existence of sidewalks, safety, and comfort. Twenty area residents and five ASU graduate students performed the audit. Participation by individuals living in the surrounding neighborhoods brought important local knowledge to the study such as conditions beyond the existing physical setting that might impede walking.

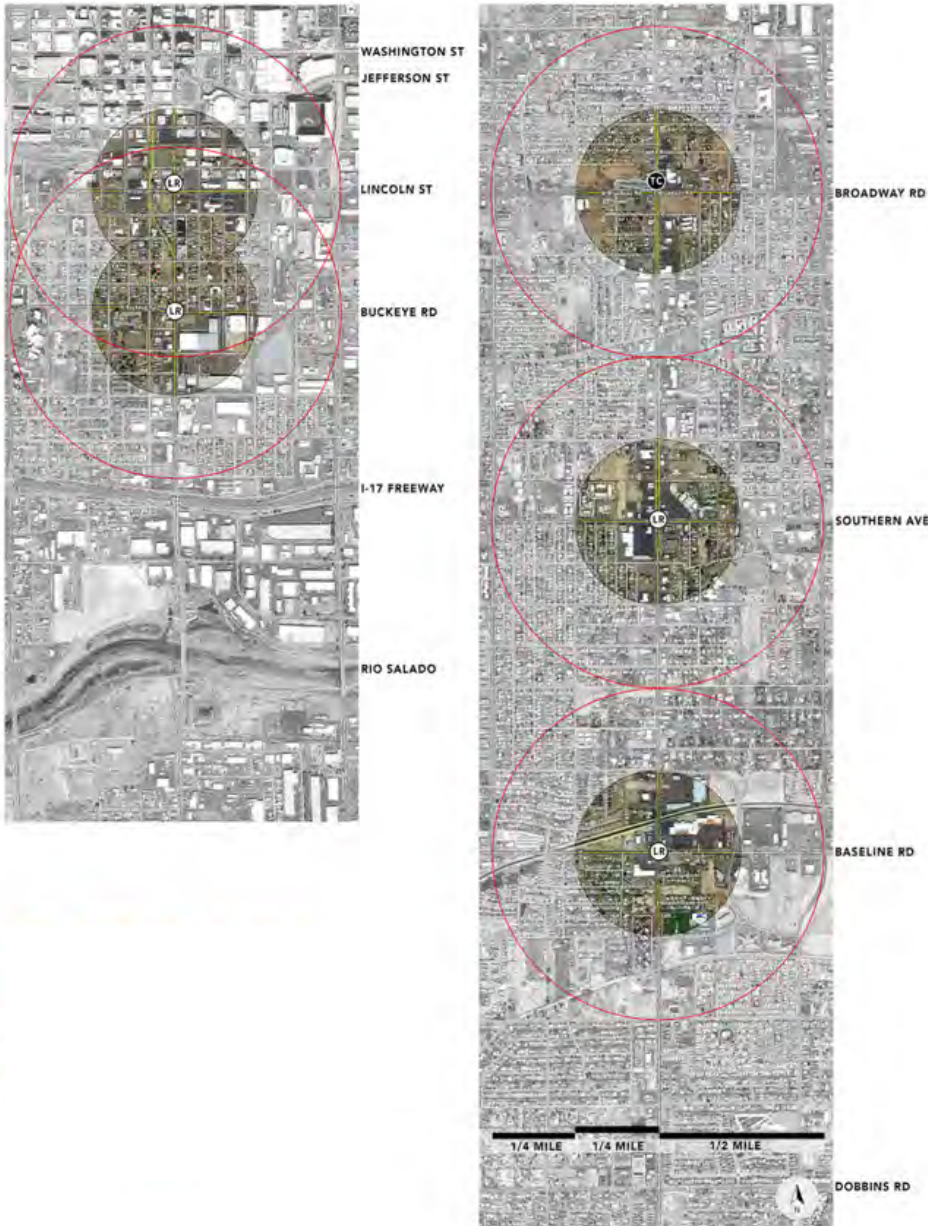
Key findings for the walkability audits of all five intersections:

- ◇ General unpleasantness while walking
- ◇ Insufficient shade along sidewalks and at bus stops
- ◇ No water fountains available
- ◇ Inadequate lighting
- ◇ Stray or unleashed dogs
- ◇ Inferior or non-existent sidewalks, including discontinuous sidewalks
- ◇ Feeling that area is unsafe for walking, especially at night
- ◇ Messy alleys
- ◇ Insufficient number of crosswalks encourage pedestrians to cross mid-block

Given that heat-related deaths appear to be elevated within the study area, the absence of drinking water and shade, especially at bus stops and along sidewalks, is a substantial barrier to walkability. Additional discussion of the issue can be found in Pathway #6 – Active Transportation. The full walkability report by The Elemental Group, LLC, is included in Appendix F. The data below are excerpted from that report.

Map #3

SCNTHIA Walkability Sites

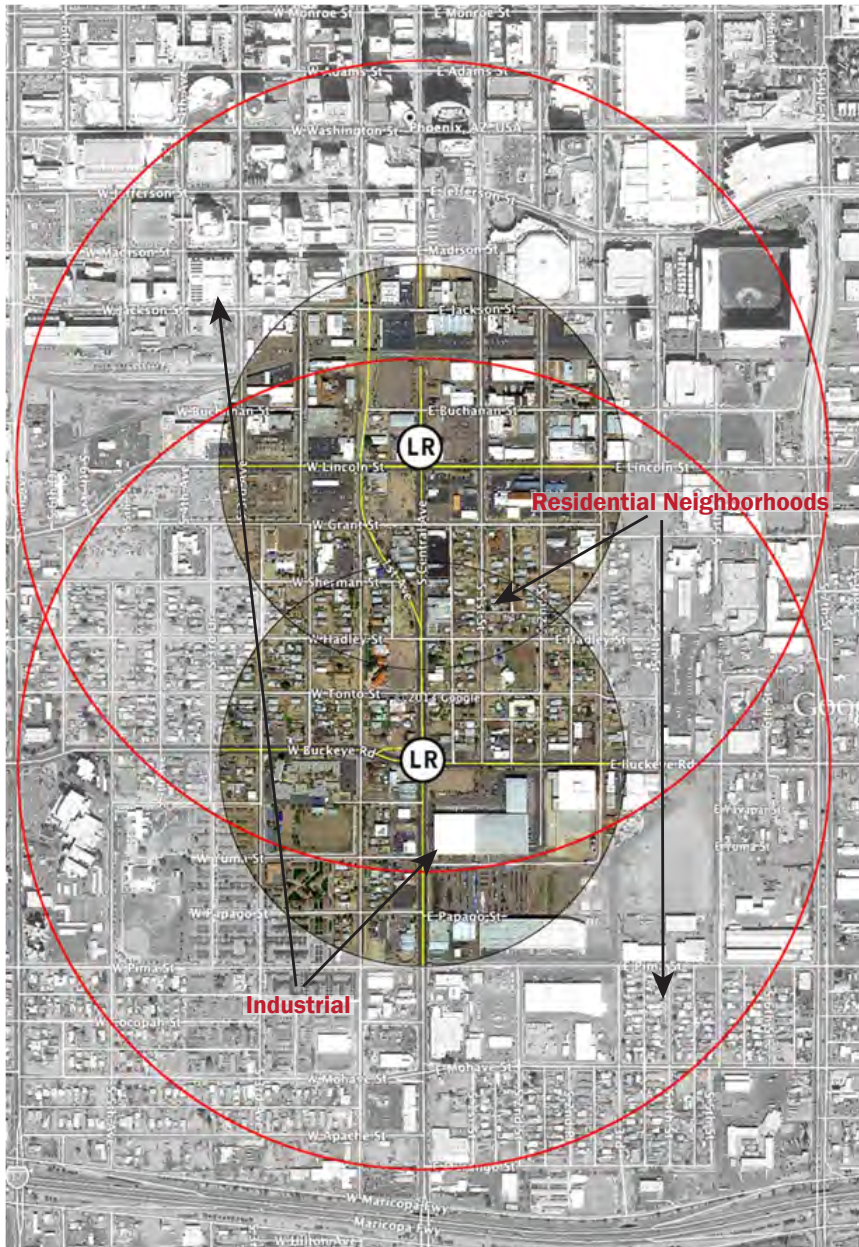


This map demonstrates the relationship of proposed LRT stations to each other with walkability assessment sites highlighted. The following maps provide more detail for the intersections and neighborhood characteristics. Refer to Appendix F (Walking Audit Report), for more detail and analysis.

Source: Google Maps, Maricopa County Department of Public Health.

Map #4

Walkability of Proposed Light Rail Stations at Lincoln Street and Buckeye Road

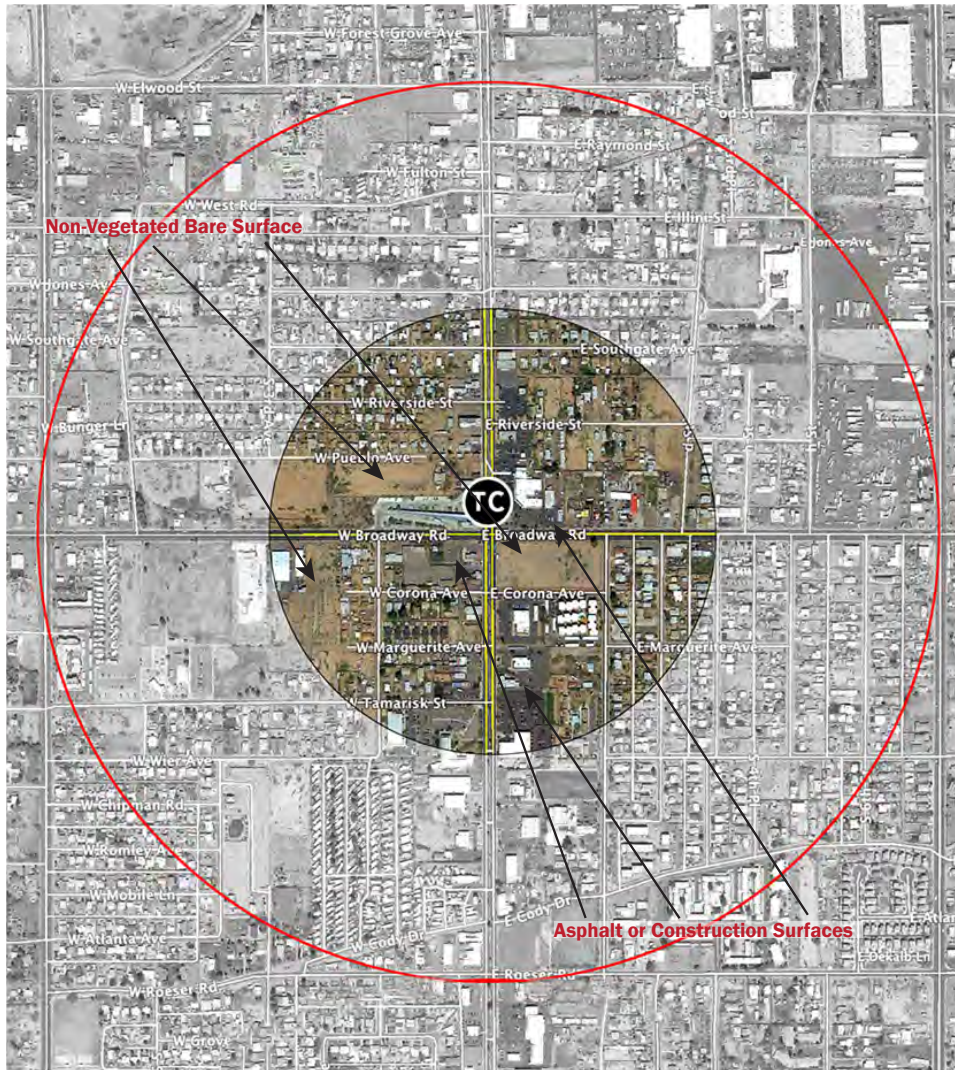


Proposed LRT stations at Lincoln and First Avenue (or Central Avenue; the final routing is for this segment is not determined as of this report) and at Buckeye and Central Avenue, with ½ mile radius and streets in yellow where walkability was assessed. Note, both neighborhoods and industrial facilities are located in or near these sites.

Source: Google Maps, Maricopa County Department of Public Health.

Map #5

Walkability of Proposed Light Rail Station at Broadway Road

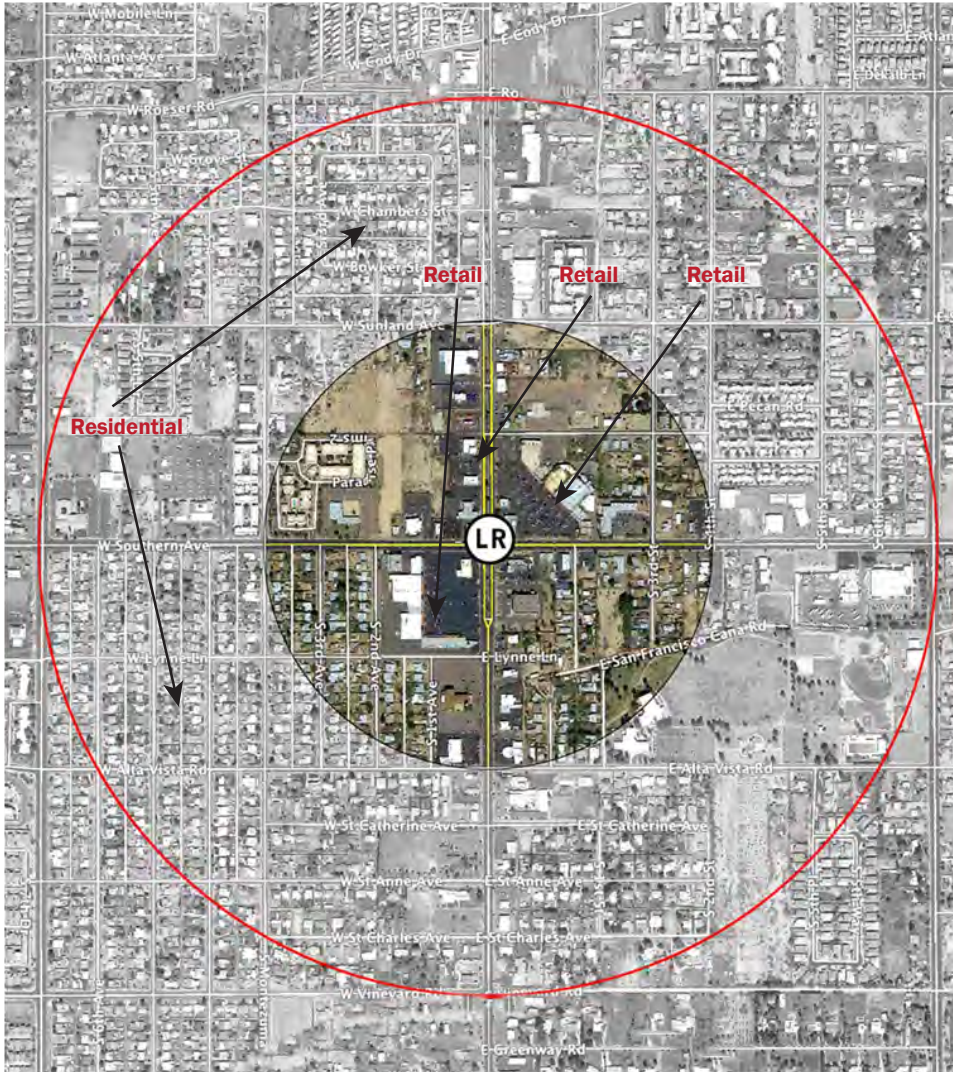


The Broadway and Central Avenue proposed LRT station at the Ed Pastor Transit Center is set amidst large areas of un-vegetated ground covering. This major transit hub serves bus routes 0, 7, 8 and 52.

Source: Google Maps, Maricopa County Department of Public Health.

Map #6

Walkability of Proposed Light Rail Station at Southern Avenue



The proposed LRT at Southern and Central Avenue would serve the surrounding shopping and strip malls and residential neighborhoods. The landscaped medians north and south of Southern Avenue help somewhat to alleviate the urban heat island effect caused by the asphalt surfaces common in these areas. Nearby amenities include a branch public library and community center.

Source: Google Maps, Maricopa County Department of Public Health.

Map #7

Walkability of Proposed Light Rail Station at Baseline Road

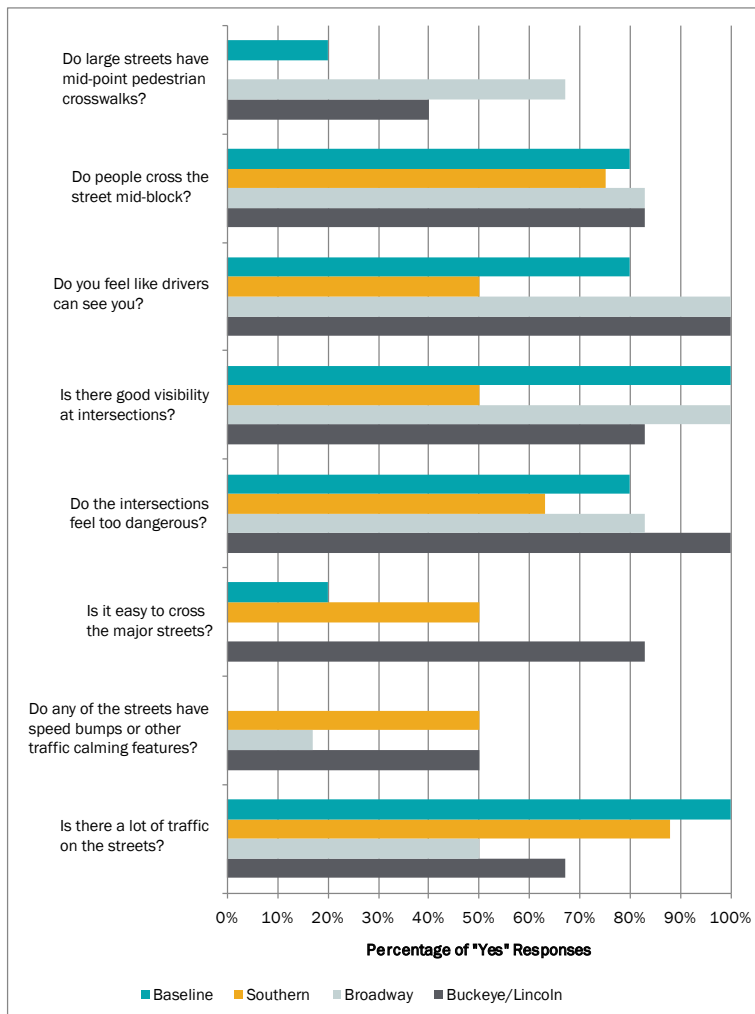


The Baseline and Central Avenue site, the Southern terminus of the LRT South Central Extension, includes nearby facilities such as the Mountain Park Community Health Center. The Western Canal slices through the area. The area retains a mix of residential with more vegetated areas, and shopping and parking lots with asphalt surfaces.

Source: Google Maps, Maricopa County Department of Public Health.

While resident auditors found good visibility at all proposed LRT station sites except Southern, most found the intersections too dangerous, and without traffic calming features. Broadway is a case in point. While auditors indicated that they could see well and that drivers could see them, no one responded that it was “easy” to cross the major streets. Other than Broadway and Central, the sites lack mid-block pedestrian crosswalks, rendering the streets in the area difficult for pedestrians to cross. At every site people were noted to cross mid-block.

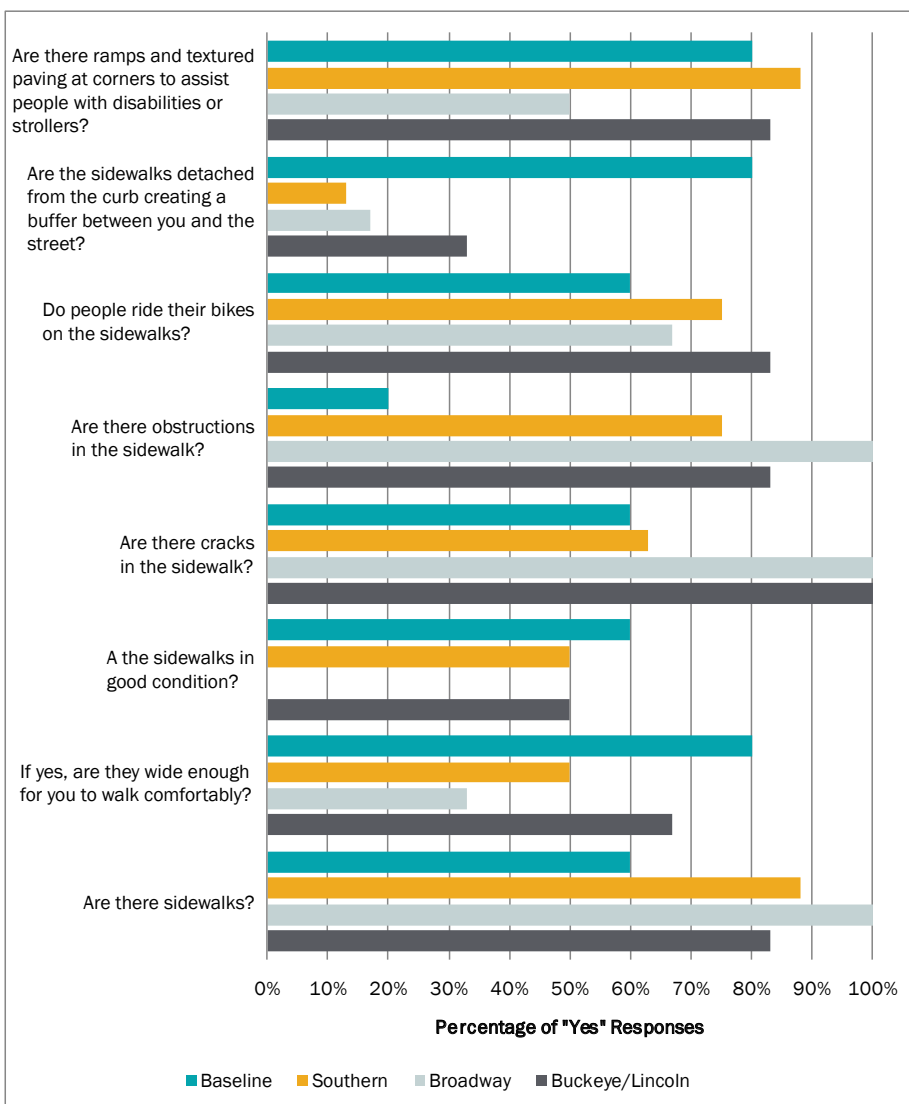
Figure #21 Walkability Audit Street Characteristics



Source: Maricopa County Department of Public Health

Even where sidewalks existed, their quality was poor. The auditors at the Broadway site unanimously indicated that the sidewalks had substantial cracks that would prove difficult for wheelchairs, strollers, and walkers (see Figure 22). Half of the auditors noted that sidewalks are not continuous. Only at Baseline Road did auditors find sidewalks with a landscape buffer between the road and the sidewalk, comparatively few obstructions, and wide enough to comfortably walk.

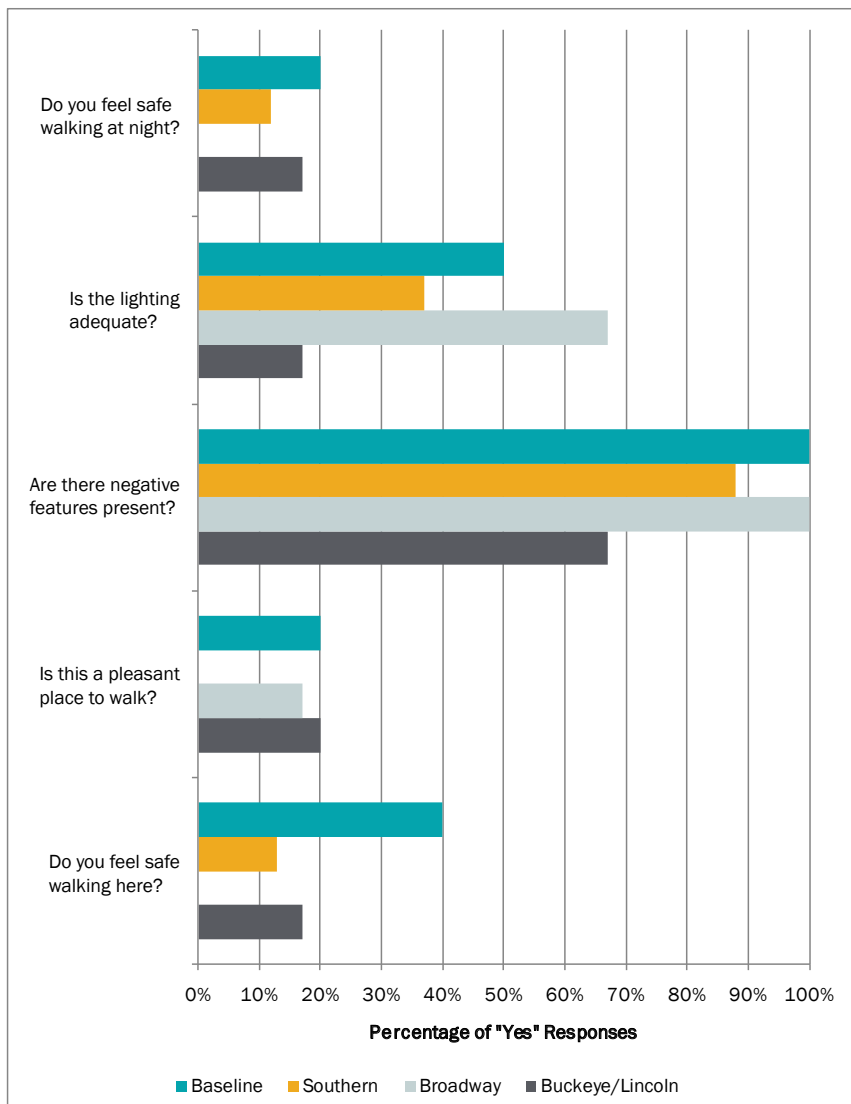
Figure #22 Walkability Audit Sidewalk Characteristics



Source: Maricopa County Department of Public Health

Perhaps the most compelling findings of the audit were the widespread lack of perceived safety, impression that the sites were unpleasant, absence of adequate lighting, and that no site was without negative features. Most auditors indicated there was insufficient shade and drinking water was unavailable (data not shown in graph).

Figure #23 Walkability Audit General Overview



Source: Maricopa County Department of Public Health

Unleashed and stray dogs were a noted nuisance and public health threat. The Coffelt- Lamoreaux Housing HIA located at the southwest corner of Buckeye Road and 19th Avenue, just outside of the SCNTHIA study area, similarly identified stray dogs as problematic.⁵⁶ Other research currently being conducted at the MCDPH is looking at the association, if any, between stray dogs and dog bites with mortgage foreclosure. That data is not presently available. The Maricopa County Department of Animal Care & Control responds to stray or vicious dog reports (they do not pick up cats). The Phoenix Street Transportation Department will pick up dead animals in public roadways.

The number of bites per year from January, 2011 until April, 2014 is shown in Table 6. Note that this data is from a slightly larger area than the SCNTHIA study area as shown on Map 8. North of where Interstate-17 runs east/west there appear to be three areas with clusters of bites: 1) West Buckeye; 2) East Washington/Jefferson; and 3) West Washington/Jefferson. South of the Salt River the reported bites are a bit more evenly distributed.

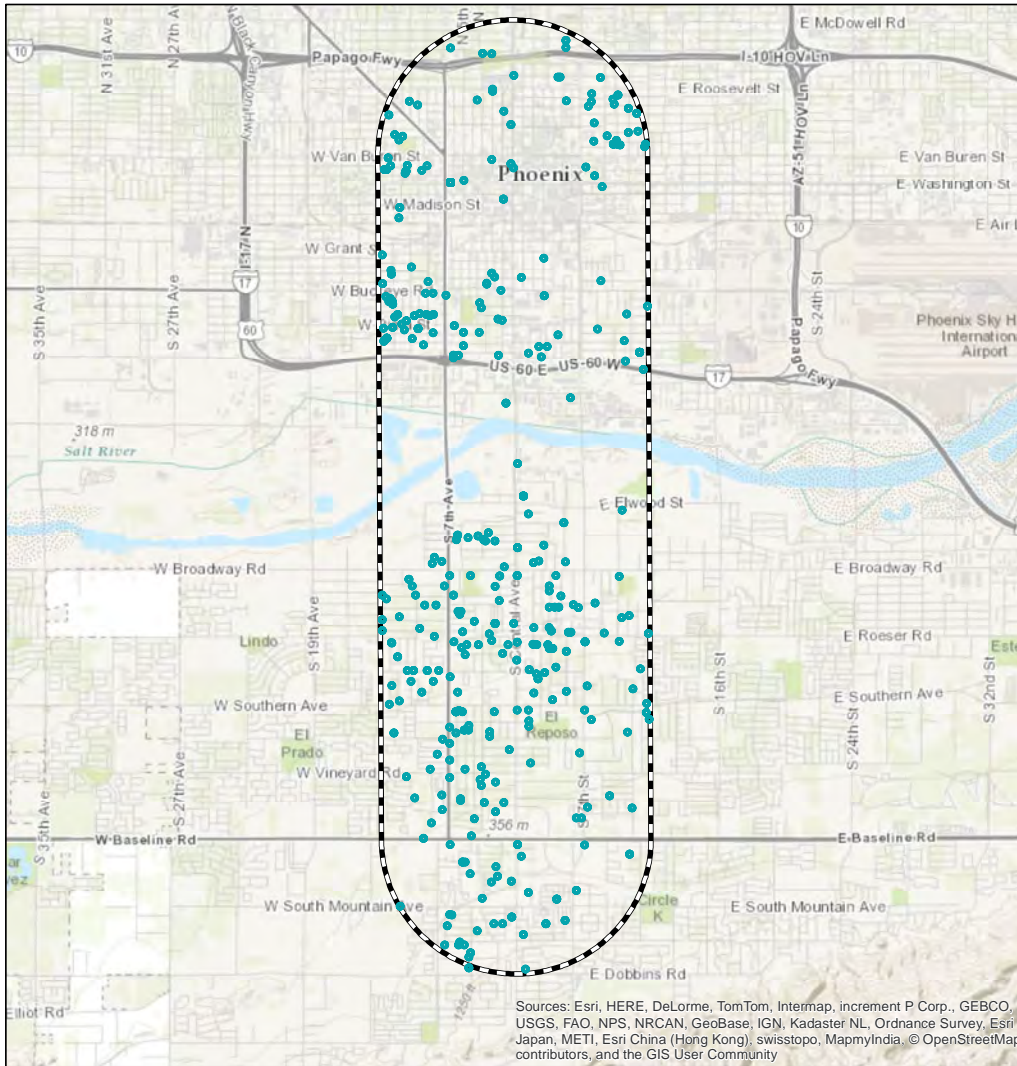
Table #6 Dog Bites in SCNTHIA Study Area

Year	Number of bites
2011	280
2012	274
2013	276
2014 (January-April only)	99
Total	929

Source: ADHS, Hospital Discharge Data.

Map #8

Dog Bites in the SCNTHIA Study Area



Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

Source: Maricopa County Animal Care and Control.

Opportunities with Complete Streets

With the recent adoption of a City of Phoenix Complete Streets Ordinance (refer to SCNTHIA Project & Study Area Overview chapter) the Complete Streets Advisory Board will be working with city staff to develop performance measures, guidelines, standards, and a list of prioritized projects. All of these items will be part of the Complete Streets toolbox. The recent TIGER Planning Grant to the City of Phoenix for the South Central Avenue Corridor will also include corridor development to complete street standards and provide stronger connections from the adjoining neighborhoods via the intersecting streets. City staff is also evaluating the street infrastructure and connectivity in the South Downtown Area between 7th Avenue, 7th Street, Buckeye Road and Jefferson Street, a sub-area of the larger Phoenix Comprehensive Downtown Transportation Study Area. Recommendations and focus improvement areas are being developed that may tie nicely into this HIA.

In conjunction with Complete Streets and the Reinvent Phoenix project, City of Phoenix staff will work with other departments and utility companies to minimize requirements for utility clearance to improve opportunities for shade in the street environment. This has been very problematic thus far as exemplified through the First Street Streetscape Study⁵⁷ where required 10' clearance between tree planting and utilities has all but eliminated some opportunities for shade.

Recommendations

There are nine recommendations to address landscaping, shade, and safety surrounding the South Central transit corridor that involve The City of Phoenix, Valley Metro, Maricopa Association of Governments and Maricopa County Animal Care and Control. The recommendations primarily address improvements to and the prioritization of infrastructure that helps to support a healthier and safer built environment. Agencies in bold reflect primary agency/agencies to address or otherwise implement the recommendation.

Recommendation #1.1

Install extensive, improved lighting features (such as LED and solar lighting) at, and around all bus stops and proposed light rail stations to enhance levels of safety, visibility, and perception of comfort.

Summary/justification: SCNTHIA research indicates that community members did not like to leave the house at night due to a high perception of crime. Some of the key informants who are disabled refrained from riding the bus at night because of inadequate lighting features. People often ride the bus to reach light rail connections and lighting features at bus stations become as important as at the LRT stations. Valley Metro has already realized the benefits of installing LED lighting at Tempe light rail stations, thus increasing the likelihood of installing the enhanced lighting features in the South Central Corridor. This should serve to improve the actual and perceived levels of safety.

Reductions in levels of injuries and related safety data should be seen using hospital emergency room visits.

Indicator: Number of Valley Metro light rail stations that incorporate improved lighting features.

Agencies/Organizations: City of Phoenix Departments of Public Transit and Street Transportation; and Valley Metro.

Timeframe for Consideration: Phase in immediately for existing transit stops.

Recommendation #1.2

Install extensive, solar powered LED lighting features along pedestrian and bicycle routes throughout the study area.

Summary/justification: Key informants expressed consensus that walking areas were not sufficiently lit and that the community did not feel safe walking at night. Enhanced lighting surrounding the South Central Corridor will not only function to give residents safer access to public transit, but will also foster more physical activity within the community.

Indicator: Number of additional lighting features installed along streets in study area.

Agencies/Organizations: The City of Phoenix Street Transportation Department.

Timeframe for Consideration: Phase in immediately.

Recommendation #1.3

Incorporate walkability and bikeability awareness and education efforts into the City of Phoenix Bicycle Master Plan and future Pedestrian Master Plan.

Summary/justification: In areas such as Central City South and South Phoenix that currently lack adequate bicycle and pedestrian infrastructure and facilities, awareness and education efforts will help to orient residents to the future changes in infrastructure that will be incorporated through the City's planning efforts.

Indicator: Number of walkability and bikeability awareness and education efforts that are incorporated into both the Bicycle and Pedestrian Master Plans.

Agencies/Organizations: City of Phoenix Departments of Street Transportation; Parks and Recreation and Public Transit; Arizona Alliance for Livable Communities; and Maricopa Association of Governments.

Timeframe for Consideration: During revisions of the City of Phoenix Bicycle and Pedestrian Master Plan. Incorporation into Complete Streets Advisory Board in 2015.

Recommendation #1.4

Explore unique opportunities to increase shade with entities such as community-based organizations and businesses to meet and exceed City of Phoenix Tree and Shade Master Plan goal of 25 percent canopy coverage by 2025.

Summary/justification: The City of Phoenix has set forth the goal of 25 percent shade canopy coverage for the city by 2025. Since the project's walkability assessments indicated a severe lack of quality shade approaching zero percent within the South Central Corridor Study area – a largely transit dependent area – finding unique opportunities to increase canopy coverage along the corridor will enhance the well-being of the residents.

Indicator: Percent canopy coverage increase within the study area as indicated by City of Phoenix Tree and Shade Master Plan.

Agencies/Organizations: City of Phoenix Departments of Parks & Recreation and; Street Transportation; Valley Metro; community-based organizations; and local businesses.

Timeframe for Consideration: Immediate study area phase-in according to existing plan.

Recommendation #1.5

Explore partnerships with local businesses to fund expanded construction of cooling centers that utilize solar powered fans/misters/water fountains at existing and future light rail stations and bus stops.

Summary/justification: Extreme temperatures greatly affect individuals who are transit dependent. More cooling centers can help to mitigate the negative consequences of extended heat exposure.

Indicator: Number of new cooling centers retro-fitted/constructed along existing and future light rail stations and bus stops.

Agencies/Organizations: City of Phoenix Street Transportation Department; Valley Metro; businesses; and community groups.

Timeframe for Consideration: Immediately for existing stops, and included in future stops during construction phase.

Recommendation #1.6

Prioritize implementation of the Phoenix Complete Streets Policy in and near the study area to incorporate healthy design elements including, but not limited to: traffic calming; speed limit reduction; road diets; safe street crossings; bicycle lanes and protected bicycle lanes; wide sidewalks; shade; and way finding signage. Include these amenities in budget proposals.

Summary/justification: The construction of the South Central Corridor presents a timely opportunity to implement improvements to existing roads and transportation infrastructure using the recently adopted City of Phoenix Complete Streets Ordinance, which provides guidelines for healthy design elements that are safe and welcoming for all users. Existing roads and transportation infrastructure can be made safer for not only car drivers, but also for pedestrians, bicyclists and individuals with disabilities.

Indicator: Number of proposed and implemented projects in and near the study area (measured in miles) prioritized by the City of Phoenix Complete Streets Advisory Board that incorporate healthy design elements.

Agencies/Organizations: City of Phoenix Street Transportation Department; Valley Metro; City of Phoenix Public Transit; and Maricopa Association of Governments, Arizona Alliance for Livable Communities; and Arizona Partnership for Healthy Communities.

Timeframe for Consideration: 2015.

Recommendation #1.7

Utilize alternative building materials and structures for light rail stations and bus stops that help to mitigate heat retention.

Summary/justification: The building materials used on existing light rail stations tend to retain excessive heat. Use of alternative building materials for light rail stations, bus stops, and other shade structures will provide a more comfortable environment for transit users during hotter temperatures.

Indicator: Number of light rail stations and bus stops in the study area that incorporate alternative building materials.

Agencies/Organizations: City of Phoenix Public Transit and Street Transportation Departments; and Valley Metro.

Timeframe for Consideration: Immediate for renovation of transit stops.

Recommendation #1.8

Enforce rules for unleashed and stray dogs and enhance education efforts for responsible dog ownership. Consider other evidence-based measures to control stray animals. Work with residents to provide instruction as to how to report loose dogs.

Summary/justification: Forty-two percent of those surveyed indicated that stray dogs were a safety concern in their neighborhood. Data collected through Maricopa County Animal Care and Control indicates a high incidence of dog bites in the South Central Corridor study area. Dogs-at-large

violations, dog bites, and education and prevention are already provided through the Maricopa County Animal Care and Control, the City of Phoenix Department of Neighborhood Services, and the Phoenix Police Department.

Indicator: Number of unleashed and/or stray dogs identified during each reporting cycle (by month) and bite data.

Agencies/Organizations: Maricopa County Animal Care and Control; City of Phoenix Code Enforcement Office (Department of Neighborhood Services); City of Phoenix Police Department; and community groups.

Timeframe for Consideration: 2015.

Recommendation #1.9

Install 911 emergency panic call buttons, sirens and lights at proposed station platforms and on trains.

Summary/Justification: Some residents expressed significant fear of crime within their community. SCNTHIA data showed this level of insecurity was especially pronounced among those in the priority populations. Although there are emergency call buttons on the trains and the station platforms, the study participants found them to be relatively inconspicuous. Easily accessible emergency call buttons mitigate the insecurity felt by the priority populations and in fact, all transit users. A more comfortable, secure trip is a key requirement to increasing the use of public transit and thereby the levels of active transportation throughout the study area.

Indicator: Improved visibility of 911 emergency call buttons on platforms and trains.

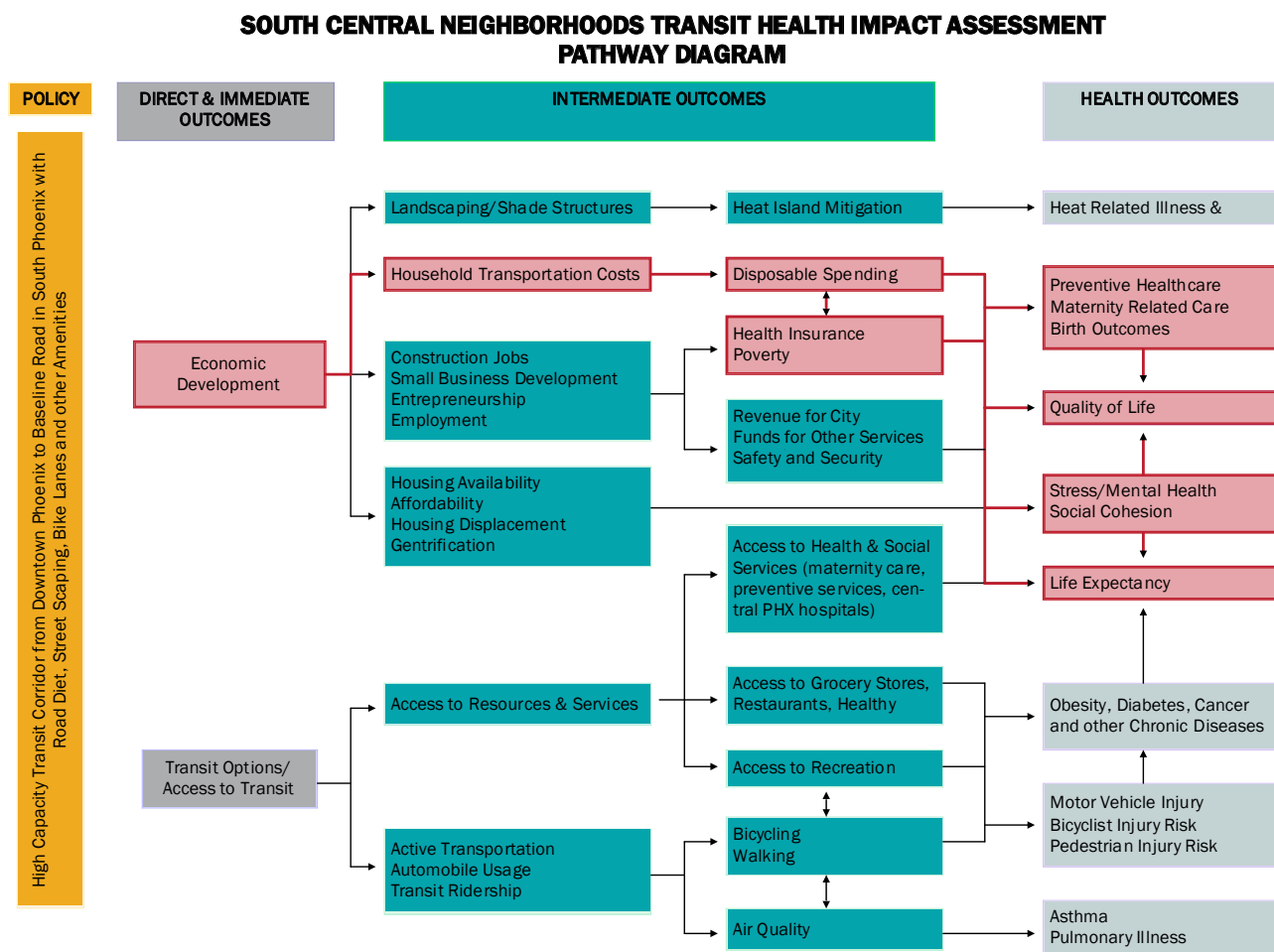
Agencies/Organizations: Valley Metro; City of Phoenix Department of Public Transit; community advocates for impacted priority populations.

Timeframe for Consideration: Immediately for new trains and phase in for existing LRT stations.

PATHWAY #2 - HOUSEHOLD TRANSPORTATION COSTS

Among the ways that a South Central Phoenix LRT corridor could change lives of residents in the study area is its effect on household transportation costs. By freeing up funds normally spent on transportation, a family might be able to spend more on health care service, with clear implications related to chronic disease, social-community health, and health care related services (see Figure 24). Completion of the South Central Transit Corridor extension and the expansion of transportation options should drive household transportation costs down, or at least stay the same.

Figure #24 Household Transportation Costs Pathway Diagram



Source: Maricopa County Department of Public Health

The high transportation costs within the study area were found to be a barrier to accessing healthy food and healthcare services, education, and employment. Feedback from survey respondents, focus group participants, key informants, Valley Metro research and U.S. Census Bureau data (e.g., American Community Survey) were used to assess the impact of household transportation costs on residents. The assessment revealed that:

- ◇ The cost of transportation is a burden for a substantial number of residents, especially those that are disabled with lower incomes, and those with multiple children.
- ◇ Although eligible for reduced fares, disabled residents on small fixed incomes still found difficulty affording transit passes.
- ◇ Many residents receive transportation assistance, although some had difficulty understanding procedures to receive reduced fare cards or to effectively navigate the transit system.
- ◇ Community-based agencies, some employers and public programs provide additional transit cost assistance programs for some residents, and those among the priority populations receive additional transit assistance from their healthcare providers.

Assessment and Findings

Among the top 20 U.S. urban cities with the highest transit ridership, individuals who switched from driving to using public transit saved an average of \$9,795 over the course of the year. This averaged \$816 per month in household savings, as individuals living or working in and around downtown business districts can spend up to \$2,000 a year in parking alone.⁵⁸

In the SCNTHIA Study Area, according to projections based on Consumer Expenditure Surveys (U.S.; Census Bureau), households spend slightly more than \$1,600 annually in gasoline costs,⁵⁹ and among SCNTHIA surveyed respondents, 42 percent (n=132) reported having recent trouble in the past year affording transportation. This comes as no surprise given the large percentage of participants that reported living under Federal Poverty Level (2014).⁶⁰ Forty-eight percent of respondents (n=153) reported yearly incomes of less than \$15,000; of these, 23 percent (n=35) live in two-person families and 33 percent (n=51) live in three-person or larger families. As expected, families with larger incomes are better able to afford transportation.

The cost of transportation is a more acute problem among almost a quarter of survey respondents (24 percent; n=76) who reported having a physical, mental, or emotional diagnosis that limits their mobility. 58 percent (n=42) reported having trouble affording transportation in the last year compared to 36 percent (n=86) of respondents without disabilities. One possible explanation is that 75 percent (n=57) of mobility-impaired residents earned less than \$15,000 a year.

Similar to SCNTHIA survey data, a large portion of the focus group participants – SCNTHIA’s priority populations - expressed difficulties affording transportation costs, especially among those

households with multiple children and/or frequent health appointments. Several transit-dependent participants shared stories about missing or deferring doctor appointments or having to switch medical care providers because they could not afford the transportation.

Focus group participants and key informants also discussed community resources that support people with transportation needs. Some agencies provide bus passes and/or taxi reimbursement for people attending their programs; other agencies transport individuals from their homes to programs and back. A couple of supermarkets offer van transportation to clients living within certain distance.

Among survey participants, the average household transportation cost was estimated to be \$36 per week; \$1,872 per year. Based on the sample's aggregated household income of \$28,000 per year, transportation costs represent "only" 6.7 percent of the annual household income. As a whole, Arizona residents spent approximately 15.9 percent of their household income on transportation during 2011-2012, which was comparable to the national average of 19 percent.⁶¹

This appears to be a conflict. Less income spent on transportation by the study area population (compared to the rest of Arizona) indicates transportation affordability and greater utilization of public transit within the study area. However, our sample population may have spent less of their income on transportation costs due to the following reasons:

◇ Transportation cost assistance: It is likely that a large number of respondents participated in some type of transit cost assistance program. Forty-eight percent of the sample (n=153) reported a household income of less than \$15,000 per year, making many income-eligible for Arizona's version of Medicaid, Arizona Health Care Cost Containment System (AHCCCS), which provides transportation assistance for medical visits.⁶² Thirty-two percent (n=101) of the sample were 60 years of age or older, and therefore eligible for reduced transit fares and/or the Dial-A-Ride program offered for seniors.⁶³ In addition, the chronic conditions that periodically limit mobility of 24 percent of participants (n=76) might qualify them for assistance based on their disability.

Transportation cost assistance also extends to businesses that compensate employees for using public transit. Maricopa County is a "non-attainment" county for particulate matter, meaning that the air does not meet Environmental Protection Agency standards. In response, state statute provides for a Trip Reduction Program and collects data from employers that have at least 50 employees. A fuller description of the Trip Reduction Program can be found in Pathway #3 – Business and Employment. Some employers, as does Maricopa County itself, may provide reimbursement for bus passes or other mechanisms to encourage alternative modes of transportation. Respondents were probably not likely to include that cost into their Household Transportation Costs estimate.

◇ Walkers/bikers: As many as 10 percent of participants (n=31) reported either walking or biking to work. In 2010, American Community Survey data shows that out of 2.6 million workers in Arizona, 58,000 workers (about two percent) commute by walking, and 25,000 workers (less than one percent) commute by bicycling.⁶⁴ Due to the high representation of low-income households among SCNTHIA survey respondents, it may be that many participants choose to pay for transportation solely on an as needed or emergency-basis.

◇ Household income was a strong predictor of bus ridership. A greater percentage of participants with a household income of less than \$15,000 per year reported riding the bus three or more times a week (64 percent; n=97) compared to persons with a household income of over \$50,000 per year (20 percent; n=31). Similarly, a greater number of participants with lower annual incomes experienced mobility limitations as compared to higher annual household incomes (38 percent; n=56 with less than \$15,000/year versus 10 percent; n=3 with over \$50,000/year). Together, this may be reflected in lower transportation expenses.

Although Valley Metro offers a reduced Local Bus/LINK/Light Rail Fare 31-day pass for people with disabilities, this option remains too expensive for three of the eight disabled key informants who ride the bus. As one key informant interviewee noted, his/her income is limited to Supplemental Social Security (SSI), which amounts to \$721 per month. Even the seemingly nominal fee of \$32 per month for the pass is substantial on this rider's budget. The other three informants qualified for a Platinum Pass, which provides transit travel at no cost. All three informants were a bit unclear as to how they qualified for the pass, but were exceedingly happy to have it.

Accessibility

A common theme among focus group participants was their unfamiliarity with navigating the transportation system - how to find information about schedules, routes, and costs; where to purchase passes; and whether bus passes could be used to access the light rail and vice versa. Intimidation of the processes alone can be enough to prevent people from using the bus and light rail systems.⁶⁵ These findings contrast those from survey participants who seemed to be more knowledgeable on and/or experienced in finding bus information. Almost 18 percent of survey participants (n=56) shared that they find bus schedule information and ticket cost online; 13 percent (n=41) find the information at the bus stop, and 11 percent (n=32) in local stores. Participants also found bus information by asking friends or calling Valley Metro, among other ways.

Affordability

Light rail and bus passes are transferable, meaning the same pass can be used to access both the bus and light rail. Multi-day bus passes (7-day, 15-day, and 31-day) must be purchased at a metro fare sales location. Among other locations, metro fares are sold at community level venues such as, Circle K gas stations, Walgreens pharmacies, and Valley Metro Outlet/Transit Centers. Bus passengers may find the nearest metro fare sales location by going to the Valley Metro website.

All-day and single-ride bus passes may be purchased on the bus, but cost \$2.00 more than if purchased at a metro fare sales location. Additionally, payment kiosks located on the bus do not provide change and only accept \$1, \$2, \$5 bills and/or U.S. coins (up to 20 coins per transaction). Pass options and pricing are listed in Table 7.

Table #7 Valley Metro Bus and Light Rail Fare Schedule

Fare Type	Bus/Light Rail	
	Rate	Reduced Rate
Single-ride	\$2.00/\$4.00*	\$1.00
All-day	\$4.00/\$6.00*	\$2.00
7-day	\$20.00	\$10.00
15-day	\$33.00	\$16.50
31-day	\$64.00	\$32.00
*\$2.00 fee added when purchased on bus. Note: bus pass can be used for light rail trips and vice versa.		

Source: Valley Metro.

Several focus group participants discussed an overall inconvenience with having to purchase bus passes at a specified location. They expressed frustration about the \$2 up-charge when purchasing an all-day pass on the bus. Participants discussed the added burden of having to carry exact change. They indicated how over time, additional costs quickly accrued due to these challenges.

In response to these barriers, one participant suggested Valley Metro offer passes in six-month, one-year, and/or two-year increments, similar to student or employee pass programs, and create an EZ pass program where transit cards would connect to an individual/household’s account and bill passengers by their number of rides. This program would be similar to the East Valley RideChoice program available in Chandler, Fountain Hills, Gilbert, Mesa, and Tempe, Arizona, which provides a pre-paid fare card to people with disabilities to use with participating taxis.⁶⁶

Table 7 compares regular and reduced bus/light rail rates. Proof of eligibility is required to receive reduced rates. This requires a Valley Metro Reduced Fare ID Card and/or Driver’s License, State ID card, school student ID, or Medicare card. An application, along with proof of one’s disability (e.g., SSI papers/medical records), and a \$5 fee must be submitted via mail in order to receive the Reduced Fare ID Card. Some key informants see this as a “nuisance fee.”

Public Transit Assistance Programs

Youth aged five and under ride for free. Valley Metro also offers reduced bus and light rail rates for:

- ◇ Persons with disabilities
- ◇ Seniors ages 65 and older
- ◇ Medicare cardholders
- ◇ Youth ages 6 to 18 years

Focus group participants stated they received free transit passes from their medical/social service providers. Key informant case managers confirmed that many of their clients did as well, although, the type of assistance varied by provider. Influencing a provider's ability to offer transportation assistance depended largely on the knowledge and resourcefulness of case managers, as well as funding sources of the agency. Many focus group participants complained about recent reductions to their assistance. For most, their medical and social service providers used to offer free 7-day or 31-day passes. Recently, however, it seemed that many providers switched to providing one-day passes instead. Participants spoke about how these changes made it more difficult to afford transportation to their appointments, resulting in more missed appointments.

Cover Arizona

Cover Arizona (www.coveraz.org) is an informational web site designed for community partners engaged in outreach and enrollment assistance for Medicaid and the federal health insurance Marketplace in Arizona. The Cover Arizona website is a collaborative effort engaging more than 600 organizations throughout the state of Arizona.⁶⁷ Similarly, FindHelpPHX.org provides online referral assistance, including transportation assistance, throughout Maricopa County.⁶⁸

Arizona's Health Care Cost Containment System

Arizona's Health Care Cost Containment System (AHCCCS) plans provide transportation to recipients for doctors' appointments. Of all focus group participants, mothers with young children were most likely to receive AHCCCS-initiated transportation for their child's medical appointments. A few mothers spoke about challenges related to this coverage such as having to schedule transportation a week in advance, making it difficult to utilize in cases of emergencies.

Homeless Program

Nonprofit service providers and governmental agencies providing community/social services to homeless persons (i.e., those who lack regular nighttime residence, live in a shelter, or are fleeing domestic violence) may purchase discounted (by half) passes for homeless clients.⁷⁰ The passes must be given without cost to homeless clients. It is unknown how many focus group and survey participants received free passes through this program.

Dial-A-Ride

Few participants in the adults with chronic conditions focus group reported that they took advantage of the Dial-a-Ride program. This para-transit program is a shared-ride service offering pick-up and delivery for seniors over 65 and people of any age who find it difficult to access public transportation due to a disability.⁷¹ Riders must call 1-14 days in advance to schedule their trip. Fares vary by service area and by distance traveled. To be eligible, all riders must show proof of age and/or disability.

Non-Profit Transportation Programs

When participants were asked about the different non-profit transportation options utilized to get to and from their medical appointments, they mentioned some of the following agencies/programs:

- ◇ ComTrans
- ◇ Safe Wing
- ◇ Hope Medical Transportation
- ◇ Valley MedTrans Medical Transport (VMT)

Recommendations

There are five recommendations focused on the affordability of transportation that involve Valley Metro, various healthcare providers and systems, and the Chamber of Commerce/Businesses. The recommendations address outreach and education to both residents and healthcare providers and systems, and expand reduced fare eligible conditions.

Recommendation #2.1

AHCCCS and Medicare should expand education and outreach to healthcare recipients on how to utilize their available benefits to offset medical-related transportation costs.

Summary Justification: There were clear indications that people with chronic conditions often miss or defer healthcare because they either cannot afford transportation or do not understand how to access public transit. Both AHCCCS and Medicare provide transportation to healthcare appointments. Working with providers and systems to help customers/clients gain better access no-cost transportation for their appointments would especially aide those with chronic conditions and low incomes.

Indicator: Amount spent for medical appointment transportation among AHCCCS and Medicare clients.

Agencies/Organizations: Cover Arizona already works with multiple healthcare providers, community-based organizations, and healthcare systems conducting outreach and education

campaigns through its multiple partners. Valley Metro could provide coordinated support with their outreach efforts to boost ridership.

Timeframe for Consideration: 2015 and ongoing.

Recommendation #2.2

Hospital community benefit programs should obtain bus/light rail vouchers or participate in the Valley Metro's Internal Transit Outlet program in order to subsidize transportation costs for patients and visitors of their facilities that rely on transit.

Summary Justification: The Patient Protection and Affordable Care Act (PPACA or ACA) requires that nonprofit hospitals and healthcare systems must assess the needs of the community and invest profits into "community benefits". These non-profits could use a portion of their required community benefit contributions towards deferring their clients' costs for transportation to medical appointments. This would benefit individuals with chronic or other conditions who are not otherwise AHCCCS or Medicare eligible.

Indicator: Hospitals or healthcare systems that contribute community benefits designations towards transportation for customers/clients.

Agencies/Organizations: Local nonprofit hospital and healthcare systems would lead in considering this designation. Valley Metro would be supportive as to technical details or business processes to be used.

Timeframe for Consideration: 2015

Recommendation #2.3

Continue to market the Valley Metro Employer Pass Program (Platinum Card and the Internal Transit Option) to employers within study area.

Summary Justification: Low-income persons are at higher risk of having problems affording transportation. For low-income workers, a greater percentage of income is utilized for transportation. Encouraging businesses to provide commuter benefits (e.g., transit assistance, and infrastructure to support active transportation/biking and walking) should reduce the financial burden transportation costs place on these low-income workers.

Indicator: Number of employers and workers within study area that participate in Valley Metro's Employer Pass Program.

Agencies/Organizations: Valley Metro should collaborate with businesses and business support organizations (e.g., Arizona Small Business Association and Chamber of Commerce) to encourage local businesses to consider and offer commuter benefits to its workers.

Timeframe for Consideration: 2015 and ongoing.

Recommendation #2.4

Expand the promotion and education of the Valley Metro Reduced Fare Program and provide Reduced Fare ID card application assistance for those with disabilities.

Summary Justification: Most SCNTHIA KII respondents and focus group participants with disabilities demonstrated confusion about how to navigate transit assistance (and often the entire transit system). Valley Metro has a mobility assistance center that helps people learn how to ride transit, including para-transit, bus, and light rail. Providing ease of eligibility determination will help those needing assistance to access healthcare, healthy food, and employment.

Indicator: Number of enrollees from the study area in the reduced fare program.

Agencies/Organizations: Valley Metro to consider an agreement with an area nonprofit that can provide application assistance.

Timeframe for Consideration: 2015 and ongoing.

Recommendation #2.5

Expand categorical eligibility of Valley Metro Reduced Fare Program to include:

- ◇ Parents/caregivers of adults/youth/children with special health care needs;
- ◇ Persons enrolled in AHCCCS, women enrolled in the WIC, and persons enrolled in the SNAP; and
- ◇ Pregnant women.

Summary Justification: In addition to the mobility challenges faced by those among the SCNTHIA priority populations, they must contend with increased expenses related to healthcare appointments. The Reduced Fare Program is a proven way to provide added transportation cost relief to improve health. These three sub-populations possess many similar characteristics to those populations that are currently eligible for reduce fare.

Indicator: Categorical eligibility expansion.

Agencies/Organizations: Valley Metro has authority for expanding categorical eligibility.

Timeframe for Consideration: 2015.

Recommendation 2.6

Offer discounted unlimited ridership passes in longer durations (3-month, 6-month and/or 1-year).

Summary Justification: Several survey and focus group participants noted the inconvenience of acquiring passes. Being able to purchase them in the longer durations would reduce the inconvenience for those that are able to afford the greater purchase price.

Indicator: Long-term, discounted passes offered.

Agencies/Organizations: Valley Metro.

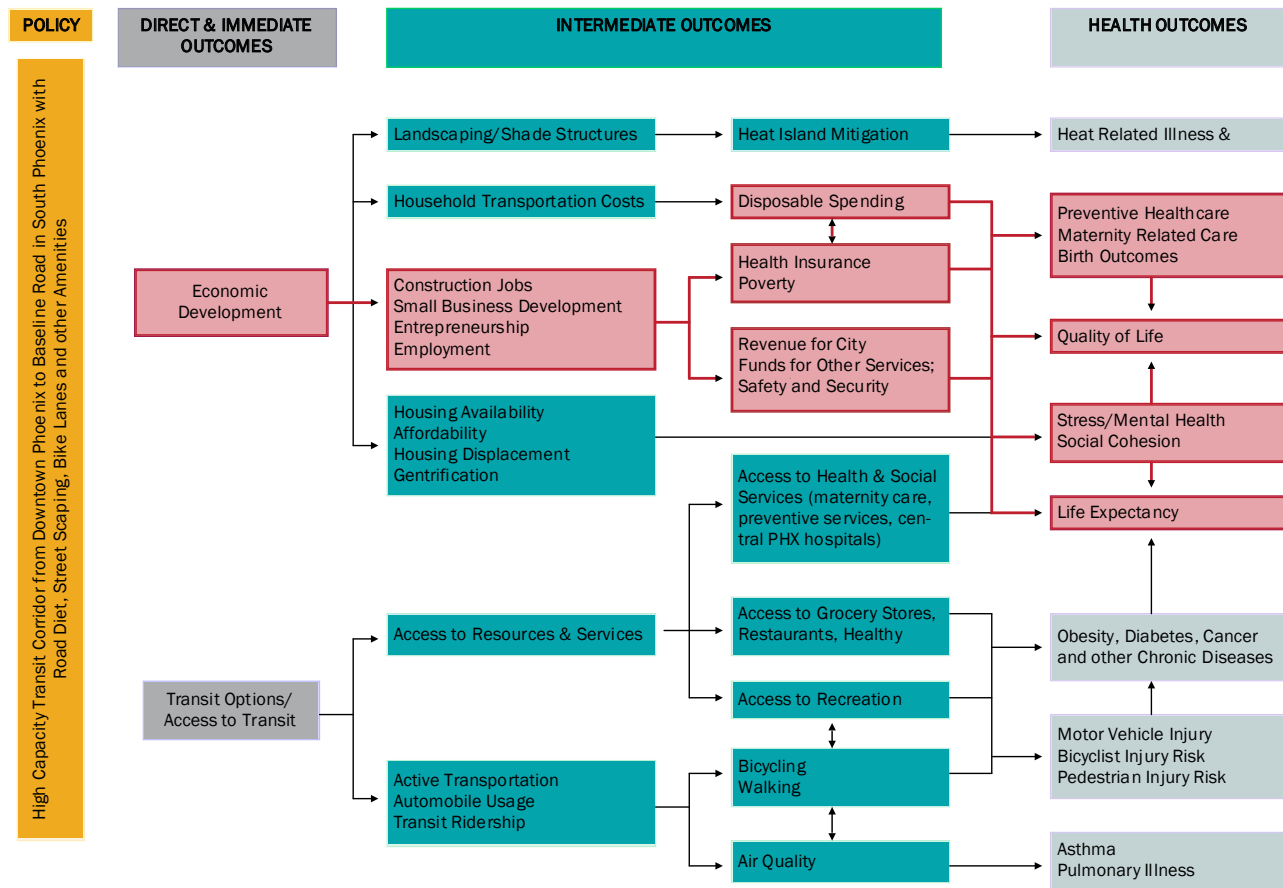
Timeframe for Consideration: 2015.

PATHWAY # 3 - CONSTRUCTION/BUSINESS DEVELOPMENT/EMPLOYMENT

The economic health of a community requires employment opportunities that support families. Based on the existing LRT corridor, the proposed LRT corridor should provide additional opportunities. Economic development impacts will include direct and intermediate health outcomes from project construction, business development, and employment, affecting household income, health insurance, and safety. The impact of this LRT extension might create both positive and negative health outcomes for residents, employees and employers. A healthier economy would spur creation of jobs, ideally some that will offer medical insurance benefits, preventive health care, and improve the quality of life of employees.

Figure #25 Construction/Business Development/Employment Pathway Diagram

SOUTH CENTRAL NEIGHBORHOODS TRANSIT HEALTH IMPACT ASSESSMENT PATHWAY DIAGRAM



Source: Maricopa County Department of Public Health

Public transportation provides economic opportunities and drives community growth and revitalization. According to the American Public Transportation Association, every \$1 invested in public transportation generates approximately \$4 in economic returns.⁷² Business growth can have a cyclical effect whereby demand can attract highly educated and skilled workers to the community, further stimulating the economy, and reducing neighborhood crime. Residents are then more likely to take part in activities outside the home, leading to greater civic engagement and community unity.⁷³

A full economic analysis of the proposed LRT corridor is beyond the scope of this HIA. Nonetheless, similar to the other pathways, employment conditions were explored using demographic data, surveys, key informant interviews and focus groups. The experiences of employers and workers along the existing LRT were reviewed to make predictions for the proposed South Central Phoenix LRT corridor.

Key Findings

- ◇ Unemployment in the study area is substantially higher than the county and state unemployment.
- ◇ The business community is concerned about the impact the construction phase will have on their revenues.
- ◇ Male respondents walked or rode a bike to work far more often than women, but even men did not walk or bike in high numbers.
- ◇ The larger employers are clustered in the study area's northern downtown district.
- ◇ People with disabilities feel less safe in their neighborhoods than people without disabilities and there is added safety concern over the disruption of construction.

Assessment Construction

Key informant interviews with two small business owners along the existing light rail corridor revealed that while one owner experienced a loss in revenue, the other saw an increase in revenue during LRT construction (note that we do not attribute cause and effect here). Additionally, one business owner stated public relations support and on-going communication provided by Valley Metro was very helpful and should continue to be offered to businesses located along future light rail extensions.

Key Informant Interviews from businesses located along the proposed South Central transit corridor thought ultimately their business would increase once light rail is in place; however, they expressed concern over losing revenue and customers during construction due to lack of access. During the construction phase, businesses along transit corridors are at greater risk of losing business and revenues due to increased traffic congestion, limited parking, pollution, and noise.⁷⁴ Additionally, subsequent business development spurred by completion of a light rail extension can also increase

competition and property values, potentially jeopardizing the survival of small family-owned businesses and businesses that cater to specific populations.⁷⁵

One small business owner worried that loss of revenue during LRT construction would force closure of the business before the light rail becomes operable. Another business owner requested to be informed about marketing plans and opportunities from Valley Metro throughout construction. The owner stated that many small businesses are unable to pay for advertising, and could benefit from free promotion from Valley Metro. Valley Metro already provides outreach and advertising support and other business services to support employers during construction through their Commute Solutions program.⁷⁶

Employment

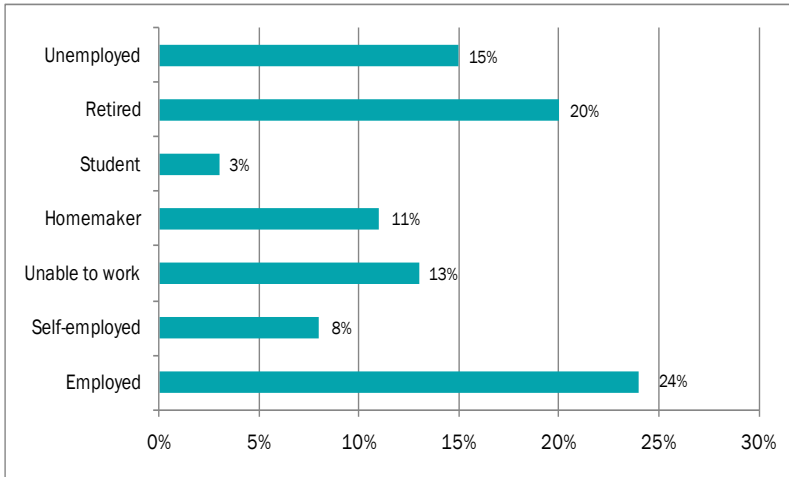
At current wage rates, \$1 billion invested nationally in public transportation annually produces 21,800 jobs per year. Jobs directly resulting from transit projects are associated with manufacturing, construction, and the operation of equipment and facilities. These positions may attract large groups of low-skilled and unemployed residents. As a result, cities begin to see reductions in unemployment rates and households begin to accrue higher incomes.

When transportation projects improve the reliability and efficiency of services, riders can experience savings in time and stress. Shorter travel and wait times, as well as predictable schedules, enhance worker productivity and job stability. Service improvements to transit cleanliness, spatial capacity, and safety can enhance the quality of riders' experiences. Positive commute experiences not only make for a stronger workforce, but they increase the likelihood that shoppers will utilize transit to access commercial areas. Consequently, businesses generate greater revenues.

Figure 26 shows the employment status of the respondents at the time of the SCNTHIA survey, January through April 2014. In August of 2014, the unemployment rates in Maricopa County and the whole of Arizona were 6.2 percent and 7.3 percent respectively.⁷⁷ The 15 percent (n=50) unemployment rate recorded by survey respondents in the study area is substantially higher.

There was little to no difference found in the gender of respondents who reported being employed (25 percent male; n=26 vs. 25 percent female; n=48); unemployed (15 percent male; n=15 vs. 17 percent female; n=32); or retired (22 percent male; n=23 vs. 20 percent female; n=39). A larger percentage of females surveyed were students (45 percent female; n=8 vs. 2 percent male; n=2) and homemakers (18 percent female; n=32 vs. 1 percent male; n=1). Whereas a larger percentage of males surveyed were self-employed (11 percent male, n=11 vs. 7 percent female, n=13) or unable to work (21 percent male; n=21 vs. 7 percent female; n=13).

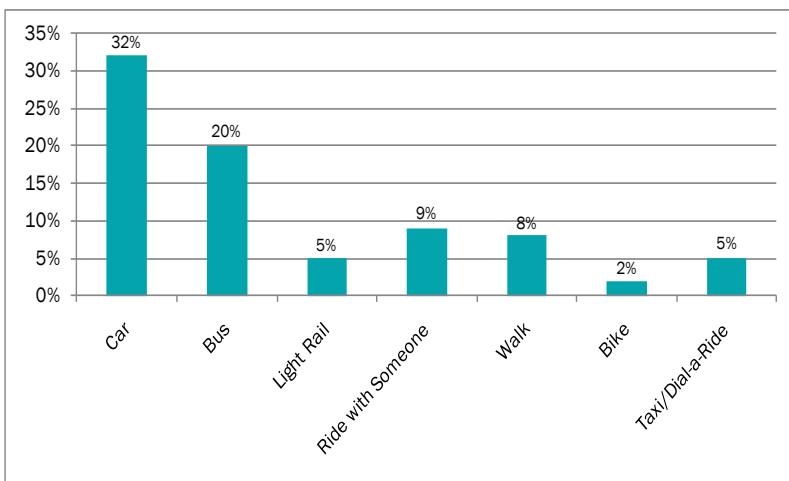
Figure #26 SCNTHIA Survey Respondent Employment Status



Source: Maricopa County Department of Public Health.

Of the survey participants who were employed, the majority (32 percent; n=25) used cars as their primary mode of transportation, followed by bus (20 percent; n=15). See Figure 27 for other modes of transportation used to travel to work. Notably, the rates of active transportation to work was very high, with more than one of three (35 percent) using public transit, walking or bicycling.

Figure #27 SCNTHIA Survey Respondent Mode of Transportation to Work



Source: Maricopa County Department of Public Health.

Female survey participants were slightly more likely to drive to work (33 percent female; n=63 vs. 29 percent male; n=30). While male survey respondents were more likely to use an alternative form of transportation to get to work including walking (13 percent male; n=13, 6 percent female; n=12), bus (25 percent male; n=26, 18 percent female; n=34), light rail (8 percent male; n=8, 5 percent female; n=9), or bike (5 percent male; n=5, 0 percent female).

Focus group participants discussed a common desire to see revitalization along the Central Avenue corridor. In particular, participants want more medical providers, especially specialists, to be located on the proposed light rail extension (refer to Pathway #5 on Access to Services for more details). Across the focus groups, participants shared they felt the light rail would bring more job security to the area by reducing commute times and providing a more consistent travel schedule.

Few businesses reported employing people who live in the same neighborhood as the business. The majority of organizations interviewed had employees coming from all across the Phoenix metropolitan area. Mixed forms of transportation including car, bike, walking, light rail, and bus were used by employees with car being the most common.

According to the informants from the two small business located along the existing light rail corridor, one business lost an employee and the other business hired many employees since the light rail opened. Neither business reported having employee retention or recruitment challenges. No medical benefits were offered to employees at either business. Employer-sponsored health insurance may not influence retention in all cases.

Travel Reduction Program

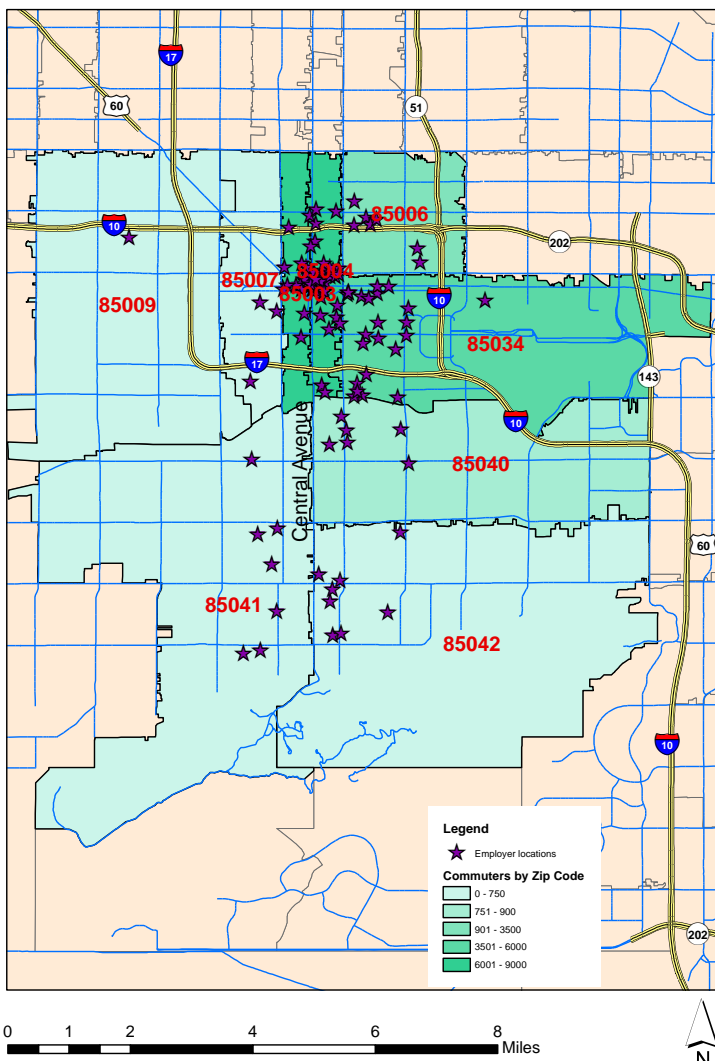
Under court order, Maricopa County Department of Air Quality monitors air particulates, carbon monoxide, and ozone. Travel Reduction Programs (TRP) are authorized in Arizona Revised Statute, Title 49, Article 8 – Travel Reduction Programs.⁷⁸ Employers with at least 50 employees and schools are asked to reduce single occupant vehicle (SOV) trips and/or miles traveled to the work site by 10 percent for a total of five years, and then five percent for three additional years, or until a 60 percent rate of SOV travel is reached. Progress is tracked through an annual commute survey of employer/school sites. The results of the survey are used to develop an annual plan that commits the employer or school to implementing and documenting various strategies to reduce SOV trips or miles.

In reviewing TRP data for employers (with at least 50 employees) within the study area, most of these large employers were in the northern part of the study area (north of the Salt River and Watkins Street), between 7th Avenue and 16th Street (see Map 9). The residences of most employees of these larger employers were clustered within these northern zip codes. Surprisingly, comparatively fewer employees lived in zip codes south of Broadway. This might simply imply much higher density of the downtown areas surrounding the existing LRT corridor, or it might imply that

fewer residents of South Phoenix work for these larger employers. The density of larger employers in the downtown area, along with the density of housing, provides a natural advantage to employers to comply with the TRP. This study is unable to make a determination, but it is clear that a LRT corridor linking South Phoenix to downtown might provide for much better access to jobs among larger employers.

Map #9

Commuters by Zip Code



Source: Maricopa County Department of Public Health.

Neighborhood Safety and Cohesion

The intermediate outcome from the third pathway included two components: safety and cohesion. Perceptions of neighborhood safety were mixed. Of the survey respondents, 24 percent (n=76) reported feeling very unsafe to somewhat safe in their neighborhoods and 22 percent (n=69) reported children not being safe. Almost half of participants (47 percent; n=148) believed people in their neighborhoods do not go out at night due to crime, and 29 percent (n=91) reported gangs are a serious issue in their neighborhood. Forty-two percent (n=131) reported stray dogs are a safety concern in their neighborhood, and 44 percent (n=139) said people in their neighborhood are afraid that guns are too prevalent in their community.

In addition to sense of safety, participants were asked questions concerning neighborhood cohesion. Perceived cohesion is a predictor of good health and sense of wellbeing. Correlations of cohesion and safety show a significant but not very strong correlation (high cohesion-high sense of safety) (.407, $p > .000$, 2-tailed). These findings suggest people who trust and interact with their neighbors also feel safer in their neighborhood.

A lower percentage of people with disabilities felt safe in their neighborhood as compared to people without disabilities. Of the 76 survey respondents who reported having a physical, mental, or emotional diagnosis that limits their mobility, 60 percent (n=38) felt somewhat safe to very safe in their neighborhoods compared to 78 percent (n=150) of respondents without disabilities. Those who reported disabilities also noted safety concerns during the construction phase of the light rail extension.

Focus group participants' safety concerns included stray dogs, crime, gangs, and lack of streetlights. Regarding transit visibility, focus group participants created a list of preferable safety features for light rail stations: 1) shade; 2) light; 3) security (e.g., cameras or security personnel); 4) raised platforms; 5) benches; and 6) water fountains. Additionally, participants shared concerns regarding excessive traffic speed around light rail stations and challenges crossing streets. These concerns have been included into recommendations that span multiple pathways.

Findings from Key Informant Interviews with case managers serving target populations support focus group findings. KII interviewees shared concerns over lack of shade, light, and water at transit stops. Moreover, they echoed fears from adults with disabilities and/or chronic conditions and families with children and youth with special health care needs about traffic speed and crossing streets safely.

Recommendations

There are four recommendations for the business and employment pathway, including those designed to help existing businesses along the construction route.

Recommendation #3.1

Provide guidance and assistance for existing business retention and new business development along light rail extension.

Summary Justification: Several SCNTHIA respondents and participants in key informant interviews emphasized the importance of sustaining existing businesses and encouraging new businesses during construction of the light rail expansion.

Indicator: Number of new and existing businesses along the light rail extension that receive business assistance.

Agencies/Organization: Valley Metro Transit Oriented Development working group; Valley Metro Business Assistance Program; City of Phoenix; South Mountain Chamber of Commerce.

Timeframe for Consideration: Completion of the Environmental Analysis phase in 2016.

Recommendation #3.2

Work with community organizations and schools to produce and display public art during construction to enhance pedestrian and business activity.

Summary Justification: With safety, community, and social cohesion implications of the proposed light rail extension, SCNTHIA respondents addressed the importance of community engagement during the light rail expansion. Organizing art displays along the construction site, assists in creating beauty and calmness in the midst heavy construction.

Indicator: Number of community organizations and schools that participate in construction phase art programs.

Agencies/Organizations: South Mountain Chamber of Commerce; Valley Metro Business Assistance Program; Arts Programs within Roosevelt and Phoenix Elementary School Districts.

Timeframe for Consideration: Completion of Environmental Analysis phase in 2016.

Recommendation #3.3

Provide walkable/safe travel paths along the construction area, especially for special needs populations (walkers, wheelchairs, strollers).

Summary Justification: People with special needs and who are dependent on walking devices need a safe path to be mobile as well as to continue patronizing local businesses during the light rail expansion.

Indicator: Number of miles of walkable/safe travel paths along light rail construction.

Agencies/Organizations: Valley Metro; and City of Phoenix Public Transit Department and Street Transportation Department.

Timeframe for Consideration: Completion of the Environmental Assessment phase in 2016.

Recommendation #3.4

Provide community-gathering events during light rail construction (e.g., Ciclovía/open street/play street).

Summary Justification: SCNTHIA respondents expressed the significance of community morale and social cohesion through community events along the light rail construction.

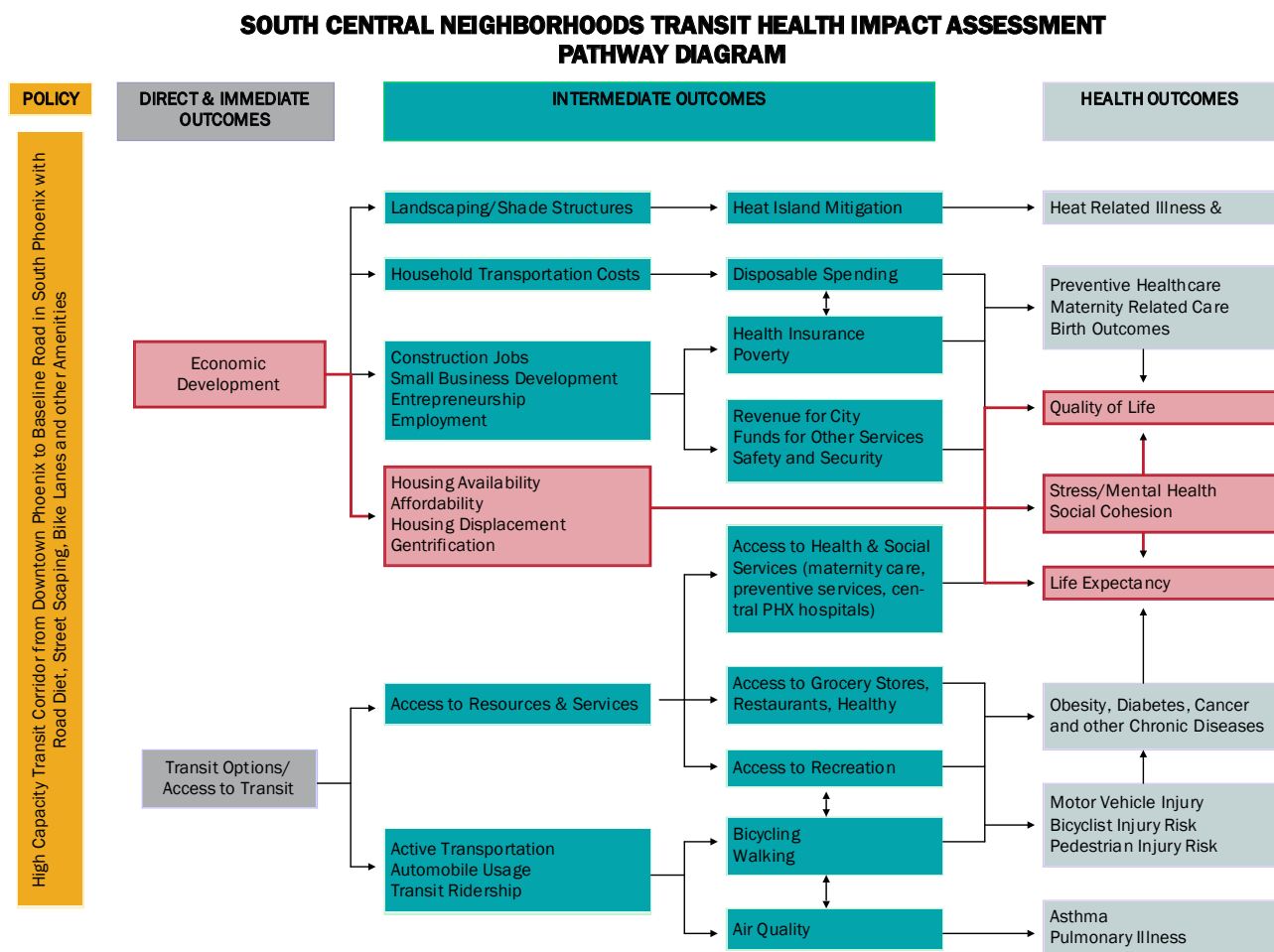
Agencies/Organizations: Valley Metro; businesses; schools; South Mountain Chamber of Commerce; churches; and neighborhood organizations.

Timeframe for Consideration: Completion of Environmental Assessment phase in 2016.

PATHWAY #4 – HOUSING AVAILABILITY, AFFORDABILITY, DISPLACEMENT & GENTRIFICATION

The economic impacts of major transportation and development projects can potentially affect housing in multiple ways with broader implications for quality of life, stress/mental health, social cohesion and life expectancy. Better access to services, education and employment should make housing choices near LRT more desirable. Yet, should this desirability result in higher rents or home prices, might lower income residents be squeezed out of the market resulting in displacement and gentrification?

Figure #28 Housing Pathway Diagram



Source: Maricopa County Department of Public Health

Key Findings

- ◇ Housing Matters: Research documents the important role that quality, affordable housing plays in the health of residents.
- ◇ There are existing resources and programs to assist low-income residents.

Assessment

It is generally accepted that proximity to rail transit does increase property values in areas where opportunities for employment, commerce, and recreation become more accessible.⁷⁹ Property values are more likely to rise in residential areas located a quarter to a half a mile from transit stations,⁸⁰ although noise, traffic and pollution can also suppress property values. It is clear that

accessibility to public transit does not necessarily mean that property values will rise.⁸¹ Together factors such as business development, the value of public transit, type of housing, walkability, and length of travel time “interact to create an environment for which the housing market is set.”⁸² As Wardrip notes: “..., the research suggests that although public transit can give rise to higher housing prices even in weak markets, a new transit line in such a market may not have the same impact as it would in a region where housing is in high demand.”⁸³

GENTRIFICATION

Gentrification is the transformation of neighborhoods from low value to high value, sometimes displacing long-time or low-income residents, and can occur at a small or large scale. (Source: CDC Health Topics on Gentrification)

Business Development

Rail transit does not guarantee new businesses and housing will develop along the corridor. Rather, transit and city planners are advised to build partnerships with policymakers to establish financial incentives and pro-growth policies (e.g., density bonuses, reduced parking, assistance with land assembly) encouraging development.

Developers are keen to supportive policies. The City of Phoenix Planning and Development Department plans for transit-oriented-development (TOD) near LRT platforms. The TOD overlay districts along the existing LRT corridor (currently zoned TOD-1 and TOD-2) are being replaced with a “walkable urban code” (WU Code), which at the time of writing is in the draft form.⁸⁴ As part of the Reinvent PHX project scope of work, the new WU Code is being prepared for the five Transit Districts (Gateway, Eastlake-Garfield, Midtown, Uptown, and Solano) along the Light Rail Corridor. It is reasonable to anticipate that this zoning approach will apply to the South Central LRT corridor.

Value of Transit & Type of Housing

Moderate and low-income residents place a higher value on the accessibility of rail transit compared to more affluent homeowners who tend to rely on cars.⁸⁵ For this reason, apartments and condominiums in close proximity to rail stations tend to see larger increases in property values compared to single-family homes located further away from transit stations. Many Millennials (i.e., Americans born in the 1980s or 1990s) want access to high capacity transit.

In the study area, there are 21,775 housing units with over 62.5 percent being renter-occupied compared to approximately 38 percent renter-occupied housing units for all of Maricopa County (2012 data).⁸⁶ It is therefore possible that overall property values as a result of proximity to LRT might be higher in the study area, but this was not investigated for this study. Households in the study area are younger, yet larger and with lower incomes; suggesting that affordable housing remains critical and needs to be included while planning for a LRT corridor.

Table #8 Household Demographics, 2012

Summary	2012 SCNTIA Study Area	2012 Maricopa County
Population	58,782	3,892,551
Households	18,183	1,439,672
Average Household Size	2.95	2.67
Owner Occupied Housing Units (%)	37.5%	62.0%
Renter Occupied Housing Units (%)	62.5%	38.0%
Median Age	28.7	34.6*

Source: ESRI Business Analyst Online, Current Year Estimates, 2012.

Housing Equity and Resources for Equity

Attention must also be given to housing equity. Before the Phoenix area housing market began to collapse in 2007, property values across the state increased, which dramatically increased property taxes in some areas. Rapidly rising tax rates can become a fair housing issue. When property values increase, areas designated for low and moderate-income housing may no longer be affordable to their target populations, thereby limiting housing options, leading to displacement and gentrification. As a result, neighborhoods may experience economic segregation.

Increases to property values cannot always be assumed. If precautions are not taken to protect residents from nuisances associated with rail transit (e.g., noise, visual intrusion), housing located

within the surrounding corridor may suffer losses to property values.⁸⁷ Extra attention should be given to minimizing the negative impacts of rail transit, especially for communities who may be disparately impacted. Valley Metro’s Environmental Assessment should provide alternatives to minimize these nuisances. This HIA did not investigate changes in property values within the study area.

There are two programs that address rising property taxes within Maricopa County for elderly taxpayers: the Senior Valuation Protection Program (SVPP) and the Elderly Assistance Fund (EAF). The SVPP freezes the full cash value of a primary residence owned by an individual age 65 years and above based on income. The EAF reduces the property tax of qualified taxpayers—those with limited income, live within an organized school district, and have enrolled in the SVPP.⁸⁸ In 2014, there were 10,088 parcels throughout Maricopa County that received a total of \$ 2,313,602 in reduced property taxes as a result of the EAF.⁸⁹

At the state level, the Arizona Department of Housing (ADOH) administers the Low-Income Housing Tax Credit (LIHTC) program “to promote the development of affordable rental housing for low-income individuals and families”⁹⁰ and has played a significant role in creating thousands of affordable housing units throughout Arizona. Rather than a direct subsidy, the LIHTC program encourages investment of private capital in the development of rental housing by providing a dollar-for-dollar credit against the federal income tax liability of the owner (developer or investor) of a low-income housing development. Tax credits are awarded for specific developments pursuant to ADOH’s LIHTC Qualified Allocation Plan.⁹¹ There are 452 units supported through the LIHTC program within the study area.⁹²

The Sustainable Communities Collaborative (SCC) is a unique non-profit partnership powered by a privately financed fund that has been investing and creating synergy from multi-sectoral partnerships for transit-oriented development along the existing LRT corridor with “...a mix of housing starts, new community healthcare centers, entrepreneurial start-ups, pedestrian and bicycle friendly neighborhoods, eclectic retail and restaurants, and artistic centered community development...”⁹³ In June 2011, the SCC announced the Sustainable Communities Fund, a combined \$20 million of private investment from two key partners: Local Initiatives Support Corp (LISC) and Raza Development Fund (RDF).

Between 2008 and 2015 there were 5,320 rental housing units built or redeveloped within a half-mile of the existing LRT system through Phoenix, Tempe, and Mesa. Of these, 69 percent were “market-rate” and 31 percent were “affordable”.⁹⁴ The SCF was responsible for the development of 721 of these housing units, and 848 units were developed using the LIHTC. Some units utilized both funding sources. The SCF funded market rate housing as well.

According to LISC-Phoenix, there is considerable unmet demand for both market-rate and affordable rental units along the existing LRT. Projections forecast a 98 percent unmet demand for affordable housing versus a 73 percent for market-rate housing. In the study area there are 1,217 units of affordable housing within one-half mile of a proposed LRT station.⁹⁵

Social Cohesion and Health

Displacement and relocation can cause profound stress and emotional turmoil. Change, especially for long-term residents, can result in anxiety and depression. Ethnic/racial minorities, who tend to live in homogenous communities, may be forced to leave family. They may also experience greater discrimination in their new neighborhood. Non-English speakers may have a more difficult time navigating new environments and services. Displaced families previously satisfied with schools or childcare may have difficulties emulating their original situation. Also impacted are those whose physical health can be strained due to the intensive labor of a move. When businesses and people leave a neighborhood, remaining residents may lose social supports and services essential to their health and well-being.⁹⁶

Chronic stress can result from relocation and lead to serious health consequences such as poor exercise and eating routines, obesity, cardiovascular disease, diabetes, and lower life expectancies. Long transit waits and travel times due to relocation can contribute to chronic stress, sleep deprivation, and poorer job/school performance. Frequent tardiness, missed days of work, and poorer job performance can cause job instability, resulting in lower wages, increased stress, higher blood pressure, loss of health insurance, and greater risk for mental illnesses.⁹⁷

Social support networks help individuals cope with emotional and physical distress, leading to better health outcomes.⁹⁸ In addition to strong, reciprocal relations, social cohesion depends on interrelated factors including a sense of belonging, pride in one's surroundings, satisfaction with opportunities for civic participation and socialization, and acceptance of diversity.⁹⁹

An increase in pedestrian activity is a strong predictor of social cohesion,¹⁰⁰ which in turn indicates a vibrant and robust neighborhood. Transportation projects that connect neighborhoods with opportunities for socialization and recreation can enhance social cohesion; however, transportation projects with grade separated roads (i.e., roads that cross one another at different elevations) can also disrupt social cohesion by creating physical and psychological barriers within a neighborhood¹⁰¹

HOUSING DESIGNATIONS

Market Rate refers to properties that are rented or owned by people who pay market rent to lease the property or paid market value when they bought the property. There is no subsidy for the housing.

Affordable refers to properties that were originally built using a tax subsidy and are now required to provide below-market rents for low-income people, persons with disabilities, and/or seniors.

that may prevent residents from crossing the street to visit neighbors, friends, or frequented amenities such as parks or local shops. The proposed Valley Metro LRT extension would place tracks into an existing street, therefore the light rail tracks should not create another barrier. In fact, adding light rail also often entails adding new crosswalks, adding/replacing sidewalks, and upgrading traffic signals all of which could improve circulation and perceived cohesion. Transportation planners need to be careful not to isolate certain groups within the study area, as isolation can have devastating repercussions particularly for populations who traditionally rely on greater social support: the elderly, persons with disabilities, ethnic/racial minorities, non-English speakers, working class families, and single parents.¹⁰²

Focus group and survey findings related to social cohesion suggest some neighborhoods may foster a greater sense of community than others, and that sense of community was largely dependent on perceptions of neighborhood safety. About 6 in 10 survey participants felt that neighborhood residents were familiar with one another (61 percent; n=192) and were willing to help each other (61 percent; n=192). Fewer participants (57 percent; n=180) felt neighbors get along with one another, and even less (51 percent; n=161) believed their neighbors could be trusted. Slightly over half (53 percent; n=167) reported that people in their neighborhood participate in school, faith, or other activities together. Residents who reported living in the neighborhood for longer time also perceived a greater sense of cohesion

The majority of focus group participants knew their neighbors by name, but rarely engaged with them on a more meaningful level. Neighborhoods with a greater sense of community were usually those where residents shared commonalities such as having children, belonging to the same senior living center, sharing similar public transit schedules and commutes, or utilizing the same community pool/facilities. Similar to the literature,¹⁰³ a few participants suggested the more they engaged in outdoor activities (e.g., grilling, talking to neighbors at transit stops, and using the community pool), the more likely they were to build substantial community relations. In general, participants reported that these commonalities would make it hard for them to move out from their neighborhood.

Key informant interviews with case managers indicated that clients living in South Central Phoenix have an “admirable sense of community” and feel connected to their neighbors. Interviewees gave many examples of clients attending health fairs and other local events.

Recommendations

There are six recommendations to support affordable housing, housing availability, and minimize displacement of current residents and/or gentrification through zoning, outreach and tax incentives. The recommendations would involve the U.S. Department of Housing and Urban Development (HUD), City of Phoenix Housing and Planning and Development Departments, the

Arizona Department of Housing, the Maricopa County Board of Supervisors, and the Arizona Multi-Housing Association. These organizations have a clear leadership role in addressing the conditions supportive of affordable housing by convening organizations and advocates to implement these recommendations. Only recommendation #4.6 directly requires involvement of Valley Metro.

Recommendation #4.1

Prioritize affordable mixed-used, mixed-income, higher density housing development along transit corridors already included in the current U.S. Department of Housing and Urban Development (HUD) and the Arizona Department of Housing's Five Year Consolidated Plan.

Summary Justification: Research shows that improved access to services, employment and education supports healthy and vibrant neighborhoods. Yet, landlords might seek to increase resident housing costs when the proposed LRT corridor is completed and improved access is realized, displacing low-income residents through gentrification or upscale development. HUD and the State of Arizona can support affordable housing through the next annually updated Five Year Consolidated Plan.

Indicator: HUD prioritization/implementation of affordable housing near transit corridors.

Agencies/Organizations: U.S. Department of Housing and Urban Development; Arizona Department of Housing; and Phoenix Housing Department

Timeframe for Consideration: 2015; the Five Year Consolidated Plan is updated annually.

Recommendation #4.2

Adopt the Transit-Oriented Development (TOD) overlay district (or the Walkable Urban [WU] Code when complete) for the South Central Transit Corridor.

Summary Justification: TOD Overlay Zoning Districts have been adopted for the existing portions of the light rail system in Phoenix and a similar approach should be applied in South Phoenix. The TOD overlays put in place additional zoning requirements that encourage new development projects to respond to the unique land use opportunities that result from the construction of the light rail line. The TOD opportunities are particularly focused in those areas adjacent to and surrounding the light rail stations. A TOD Overlay/WU Code for the South Central light rail line should incorporate an extensive public outreach process involving residents, property owners, business owners, and employees.

Indicator: Adoption of a TOD Overlay District or WU Code for South Central Avenue.

Agencies/Organizations: City of Phoenix Department of Planning and Development.

Timeframe for Consideration: 2015.

Recommendation #4.3

Include in the Qualified Allocation Plan a general goal of prioritizing the allocation of tax credits to developments along transit corridors and highly walkable/bikeable neighborhoods.

Summary Justification: Residents with low-incomes are more likely to be transit dependent. The Qualified Allocation Plan (QAP) determines how Low-Income Housing Tax Credits are applied. There is significant unmet need for affordable housing and both the state and city can target the use of those Low-Income Housing Tax Credits to neighborhoods that allow for safe and efficient active transportation.

Indicator: Inclusion of new general goal within the QAP that supports transit-oriented development.

Agencies/Organizations: Arizona Department of Housing; Phoenix Housing Department.

Timeframe for Consideration: 2015. The Arizona Department of Housing, at its discretion, may make changes to the QAP.

Recommendation #4.4

To minimize displacement, explore a property tax freeze or cap for existing low-income homeowners whose home values may increase upon LRT corridor completion; and provide tax incentives to rental properties to maintain the number of low income units available.

Summary Justification: Low or fixed-income homeowners might be at higher risk for displacement should property taxes increase because of gentrification and housing market dynamics. More than 10,000 low-income seniors in Maricopa County benefited from more than \$2.3 Million in tax assistance through the Elderly Assistance Fund (EAF). The Maricopa County Board of Supervisors should consider a similar program that includes all low-income homeowners. Note that this may require legislative action.

Indicator: Establishment of property tax freeze/cap for low income homeowners.

Agencies/Organizations: Maricopa County Board of Supervisors.

Timeframe for Consideration: Prior to construction ~ 2018.

Recommendation #4.5

Enhance outreach to transit dependent communities for input on annual updates of the Qualified Allocation Plan to help prioritize the allocation of funding within the Low Income Tax Credit Program.

Summary Justification: The Qualified Allocation Plan determines how Low-Income Housing Tax

Credits are applied. There is currently no community input process required for changes to the Qualified Action Plan. Community input into the plan would strengthen the overall goal to apply the credits in a manner that best reflects resident wishes.

Indicator: Implementation of outreach to transit dependent communities. Inclusion of community input process.

Agencies/Organizations: Arizona Department of Housing; and Phoenix Housing Department.

Timeframe for Consideration: 2015. The Arizona Department of Housing, at its discretion, may make changes to the QAP.

Recommendation #4.6

Engage rental property owners, especially those providing housing to low-income tenants, to promote the Valley Metro Reduced Fare Program.

Summary Justification: The Valley Metro Reduced Fare Program provides 50 percent discounts on the full fare for qualified individuals (refer to Pathway #2 – Household Transportation Costs). Conducting outreach to rental property owners to encourage eligible individuals to apply to the Reduced Fare Program would support residents in their housing unit. Note that this recommendation does not need to be restricted to the study area.

Indicator: Enrollment in Reduced Fare Program.

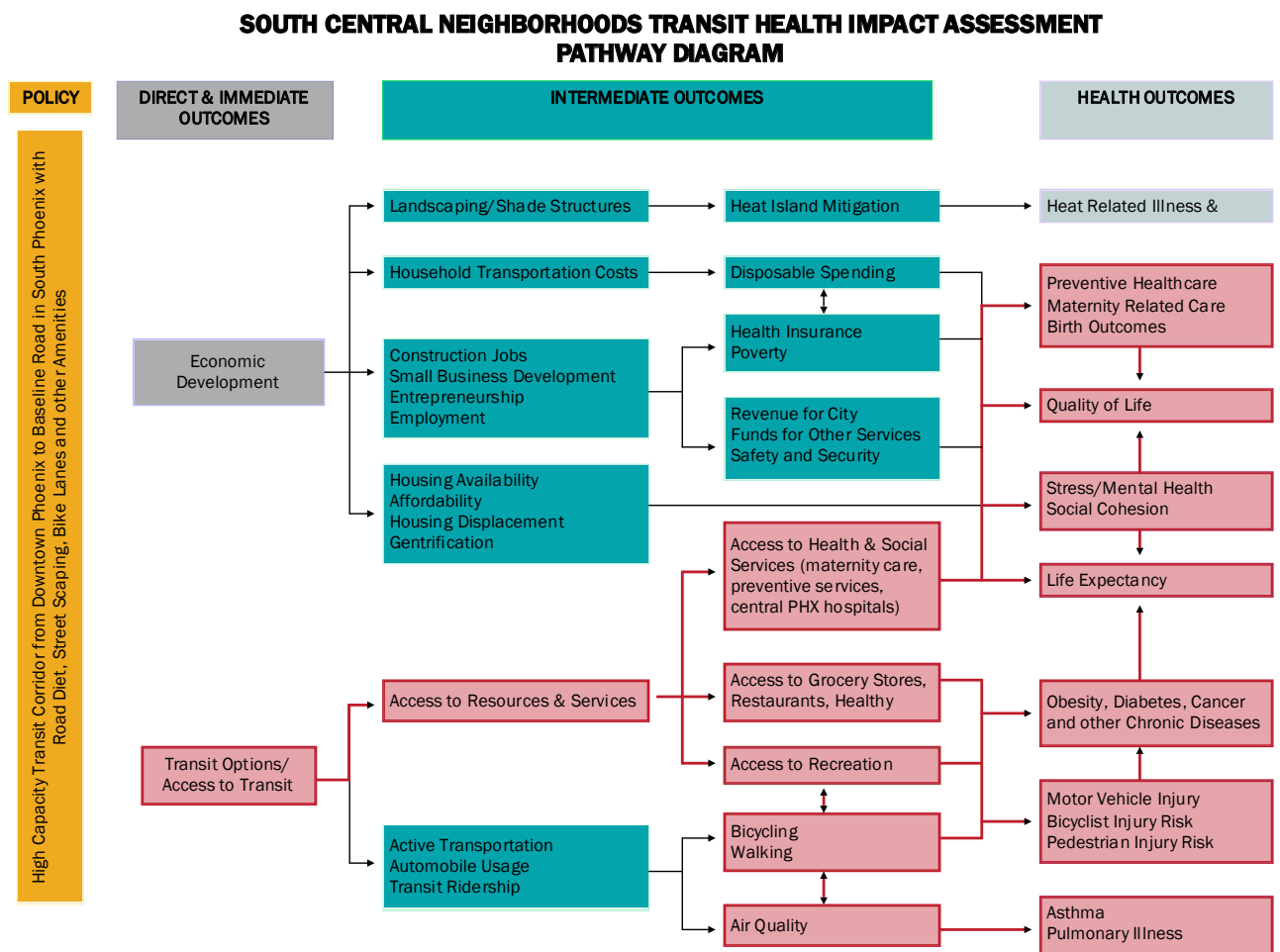
Agencies/Organizations: Valley Metro; Arizona Department of Housing; and Arizona Multi-Housing Association.

Timeframe for Consideration: 2015.

PATHWAY #5 – ACCESS TO RESOURCES AND SERVICES

Intuitively, the proposed project should alter residents' access to healthcare and social services, healthy food and recreation and other amenities, all impacting quality of life, mental health, social cohesion, life expectancy, chronic disease, and risk for injury and asthma and pulmonary illness.

Figure #29 Access to Resources and Services Pathway Diagram



Source: Maricopa County Department of Public Health

Inequitable access to healthcare, healthy foods, and safe spaces contributes to health disparities for many residents of low-income neighborhoods.¹⁰⁴ Investment in reliable public transit, walkable and bike-friendly communities, healthcare, healthy food and safe recreation facilities will not only improve community health, but will also save costs related to medical services and health care transportation.¹⁰⁵

Key Findings

- ◇ Many survey respondents use public transit for health care appointments;
- ◇ Many health care specialty providers that respondents use are not located along the proposed LRT;
- ◇ Transit-dependent participants avoided medical attention during the summer months because of the intense heat;
- ◇ Healthy food access was variable throughout the study area;
- ◇ Transit-dependent participants would use LRT to access additional healthy food options;
- ◇ There are multiple neighborhoods that do not have access to a public park or safe place to play;
- ◇ The proposed LRT corridor would improve access to health care services and healthy food. The corridor would marginally improve access to safe places to play.

Assessment

Health Care Services

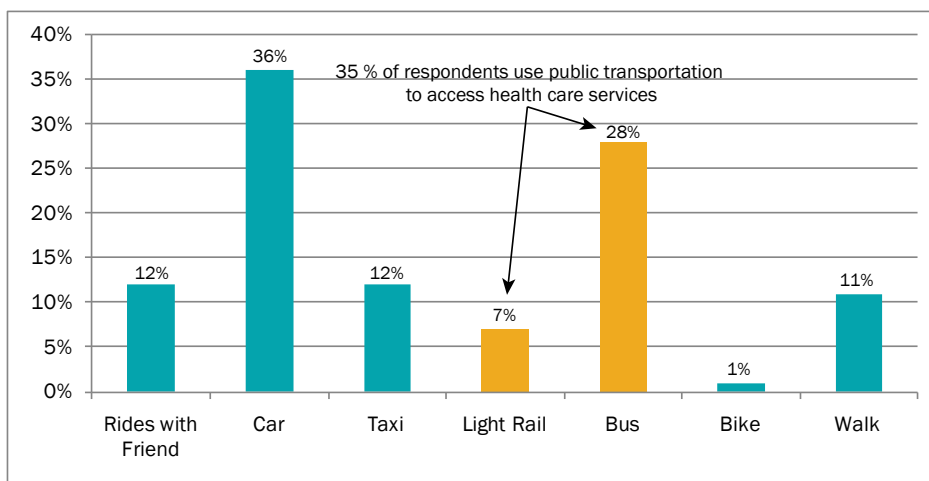
Regular access to health care improves health outcomes because people are able to identify and treat illnesses before symptoms escalate.¹⁰⁶ When transit-dependent riders travel long distances, make multiple bus transfers, and experience inconsistent service, they are more likely to miss appointments, delay care, and forego medications/vaccinations.¹⁰⁷ This results in an overreliance on emergency departments, higher rates of preventable illness, shorter lifespan, and loss of productivity in the workplace – all of which contribute to higher health care costs.¹⁰⁸

Mountain Park Community Health Center, Wesley Community & Health Center, and the three Maricopa Integrated Health System clinics are the major full service community health centers in the study area. There are additional “specialty” clinics offering services such as family planning, pregnancy testing, HIV/STD related services, and chemical dependency and recovery services. No hospitals are located within the study area, although St. Joseph’s Hospital & Medical Center, Banner Good Samaritan Medical Center, and Maricopa Medical Center are not far outside the study area.

Survey participants utilized mixed forms of transportation to access health services, with slightly more survey respondents using their car to access health services (36 percent; n=113) than public transit (bus=28 percent; n=88, light rail=7 percent; n=22). Figure 30 compares the various modes of transportation used get to and from health care services.

According to many focus group participants, the type of transportation used to access health care services largely depends on the time and urgency of appointments. For example, early morning and urgent appointments are not as conducive to bus schedules or routes with multiple transfers; therefore, transit-dependent participants were more likely to pay out of pocket for taxis, rely on transportation assistance programs (e.g., taxis/shuttles), or seek assistance from family/friends.

Figure #30 Mode of Transportation Used to Access Health Care Services by Respondents



Source: Maricopa County Department of Public Health

Participants who used the bus to access medical appointments indicated that inconsistencies of bus arrivals often caused them to miss or arrive late to appointments. In order to prevent such occurrences, several participants allowed approximately an extra hour for delays. Medical appointments became all-day events, thus discouraging routine or preventive health visits. Public transportation was especially burdensome to people sensitive to the heat or to those whose side effects from prescription medications are exacerbated by the sun. Most transit-dependent participants avoided medical attention during the summer months because of the intense heat.

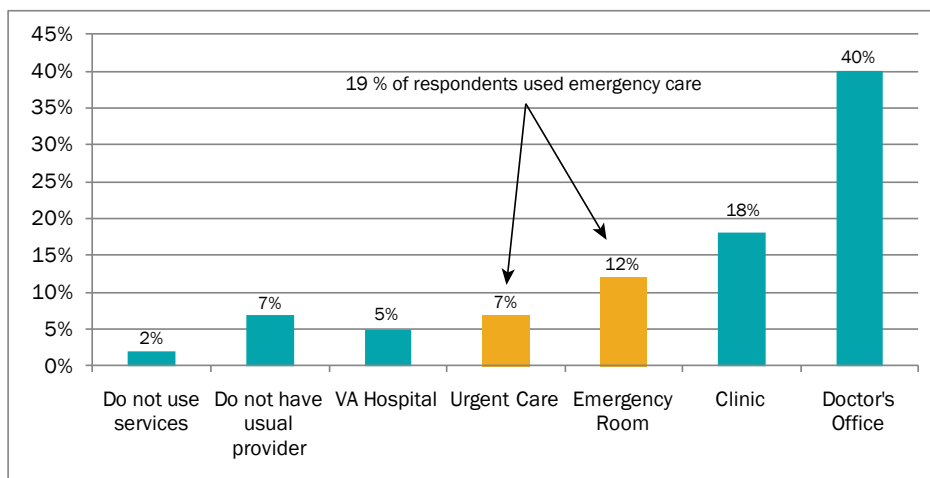
Transportation assistance also presented additional challenges. A few participants in the focus group that included the adults with chronic conditions found Dial-a-Ride confusing and not wheelchair friendly. A couple of the participants complained about the inconvenience of scheduling door-to-door services, due to the advance notice required to do so.

Although many key informants indicated they or their clients would use the LRT extension to access healthcare services, most participants said their providers would not be directly accessible along the proposed corridor route. Rather, many discussed possibilities for attracting greater services and providers into the area once the LRT was implemented.

Case manager key informants working with the target populations reinforced focus group findings regarding mixed transportation used for healthcare appointments. One case manager stated that his clients were more likely to pay for a taxi to take them to medical appointments rather than use public transit as a way to maintain personal dignity by avoiding being sweaty for a physical exam. Another informant stated clients rely heavily on family or friends for rides to health care appointments. Key informants gave examples of clients missing a medical appointment due to lack of understanding about how public transportation works and fear of using it.

The majority of survey respondents (40 percent; n=126) indicated they receive medical services at a doctor's office (see Figure 31). Accessed services seemed to be dispersed throughout the Central Phoenix geographic area, and sometimes further, with no consistent pattern except that large medical campuses such as St. Joseph's Medical Center and Maricopa Integrated Health System were often mentioned during discussions.

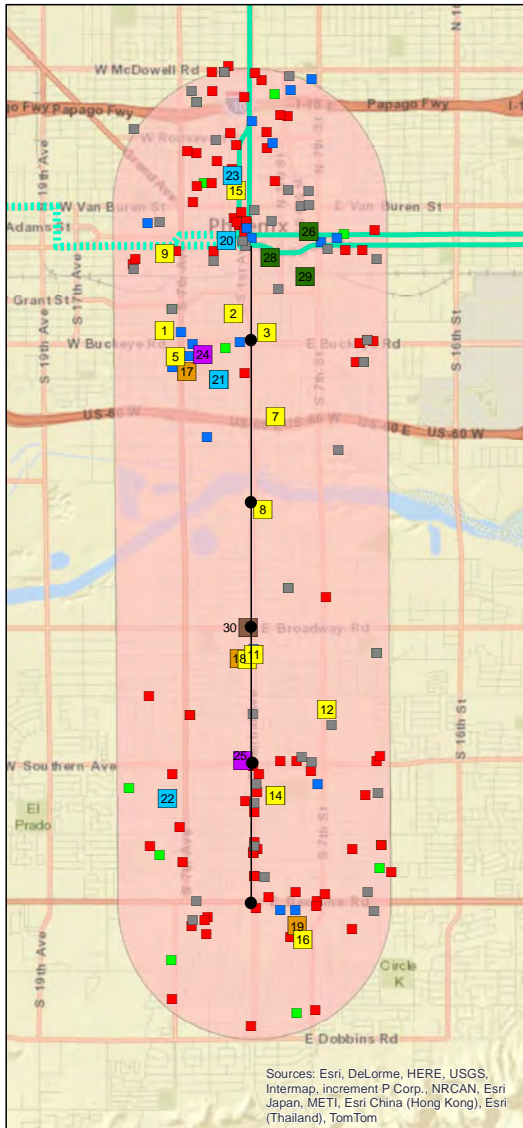
Figure #31 Health Care Services Used by Respondents



Source: Maricopa County Department of Public Health

Map #10

Community Facilities and Services



Legend

- SCNTHIA Study Area
- Existing Light Rail
- Current Light Rail Extensions
- Proposed SCNTHIA Light Rail
- Proposed Stops
- Elementary Schools
- Community Facility
- Medical Facility
- Affordable Family Housing
- Library
- Cultural/Recreational
- Civic
- Multi-Specialty Complexes
- Provider Facility
- Individual Providers

1. Vernell Coleman Recreational Center
2. Friendly House
3. Phoenix Day
4. Senior Opportunities West Senior Center
5. Central Phoenix Family Services Center
6. Marcos de Niza Senior Center
7. Friendly House Academia Del Pueblo
8. Rio Salado Audubon Center
9. Society of St. Vincent de Paul
10. Travis L. Williams Family Service Center
11. Arizona Department of Economic Security
12. South Phoenix Youth Center
13. South Mountain Senior Center
14. South Mountain Community Center
15. Downtown Lincoln Family YMCA
16. Vista de la Montana
17. Phoenix Memorial Hospital
18. Maricopa Integrated Health
19. Jesse Owens Urgent Care
20. Hope VI Matthew Henson Housing
21. Marcos de Niza Family Housing
22. Foothills Villiage Family Housing
23. Lofts at Filmore Family Housing
24. City of Phoenix Harmon Branch
25. City of Phoenix Ocotillo Branch
26. Arizona Science Center
27. Phoenix Convention Center
28. U.S. Airways Center
29. Chase Field
30. Ed Pastor Transit Center

Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

Sources: City of Phoenix, Valley Metro, National Providers Index



Source: Maricopa County Department of Public Health.

Healthy Food

Proximity to nutritious foods directly correlates to lower body mass index (a measure of one's body fat), and decreased likelihood of diabetes and other diet-related diseases.¹⁰⁹ Residents of low-income communities often face multiple challenges accessing healthy foods: a scarcity of full-service grocery stores; increased dependence on public transit;¹¹⁰ and an overabundance of convenience stores and fast food restaurants.¹¹¹

Within the study area, there are five full service grocery stores; all south of the Salt River (see Map 11). Four of these stores lie along the east-west running Southern Road or Baseline Road, and three of these stores are sited near proposed LRT stations on/near Central Avenue. Except for the most extreme southern parts of the study area, there appears to be good access to full-service grocery stores south of the Salt River. The USDA Food Access Research Atlas identifies the northern section of the study area as a Low Income-Low Access area (meaning that one mile is considered to be "far" from a supermarket).¹¹² Refer to text box for important discussion.

In addition, there are two stores located within ½ mile of the study area boundaries; one south of the Salt River and one north of the study area. While all of the grocery stores accept SNAP (Special Nutrition Assistance Program – formerly Food Stamps) and WIC (Special Supplemental Nutrition Program for Women, Infants and Children), there are neighborhoods without access to a vendor that accepts these program benefits.

Although there are no full-service grocery stores in Central Phoenix (north of the Salt River), the only farmers' market in the study area is located on Central and Pierce Street – the Downtown Phoenix Farmers' Market. It is open weekends only and is a vibrant, robust event. The City of Phoenix requires a Special Use Permit for all Farmers' Markets on a public Right-of-Way. This permit requires a minimum of three months and a non-refundable \$400 fee.¹¹³

"FOOD DESERT"

The term "Food Desert" is ubiquitous in food access literature and among well-intentioned individuals and organizations working earnestly to improve access to healthy food throughout the United States.

However, Phoenix is within the Sonoran Desert, a vast and beautiful landscape that supports diverse life, has captured the imagination of many and has sustained many cultures over thousands of years. Yet, it is a fragile landscape that faces modern threats on many fronts and without defenders will erode in quality. This would be a catastrophe.

The continued use of the term Food Desert to depict an area that does not provide healthy nutrition and sustenance only further supports the wrong and damaging notion that a desert is an empty wasteland without redeeming qualities and with nothing worth saving.

The USDA has renamed their Food Desert Locator the Food Access Research Atlas. The authors applaud that shift, and respectfully urge a retreat from the use of the more derogatory term by all advocates seeking equity in healthy food access.

There is a lot of contention surrounding community and school gardens; many go untended once the original enthusiasm wanes. There are three or four community gardens within the study area and several school gardens. TigerMountain Foundation (TMF) is a nonprofit proponent of community gardens that operates four gardens in the general South Phoenix area. The TMF Executive Director participated in this HIA as a member of the Insight Committee. While supermarkets, a farmers' market, and multiple community gardens are currently accessible to residents of the study area, a developing Food Policy Council within the Greater Phoenix area is available to assess healthy food access, make policy and other recommendations, and provide advocacy that could further improve access.

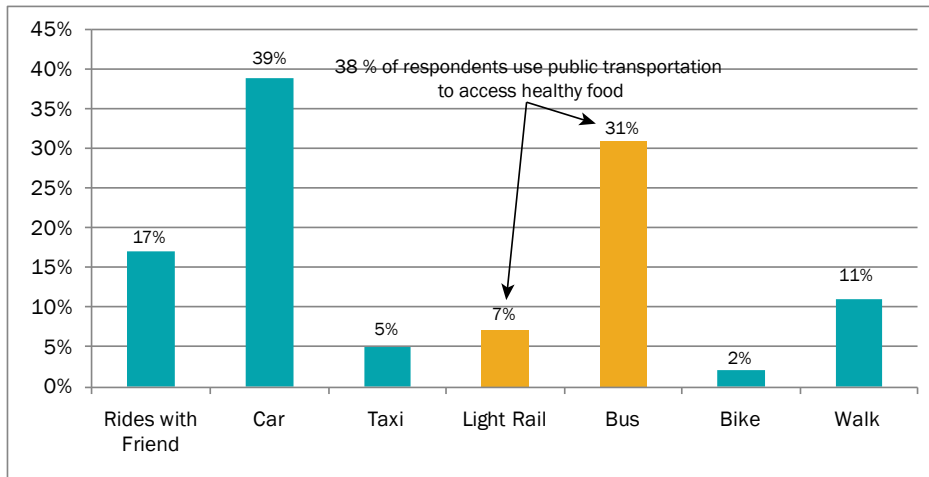
The majority of survey and focus group participants (31 percent; n=97) reported purchasing healthy foods from a combination of venues. See Table 9 for respondents' primary location to purchase healthy foods. Very few, if any, participants reported shopping at local farmers' markets or at food markets such as Sprouts, AJ's Fine Foods, Whole Foods, and Trader Joe's. Although not asked, it is likely due to the lack of those stores in the area and the higher costs for food.

Table #9 Full-Service Grocery Stores Used by Respondents

Full-Service Grocery Stores	Percentage of Respondents
Fry's	21 percent
Food City	17 percent
Ranch Market	8 percent
Wal-Mart	6 percent
Safeway	4 percent
*31 percent of respondents utilize a combination of food providers listed above	

Source: Maricopa County Department of Public Health.

Survey respondents were asked to identify the modes of transportation utilized to access healthy foods. The greatest percentage of respondents used a car (39 percent; n=122), followed by bus (31 percent; n=97). See Figure 32 for comparisons of transportation modes to access healthy foods.

Figure #32**Mode of Transportation Used to Access Healthy Food**

Source: Maricopa County Department of Public Health

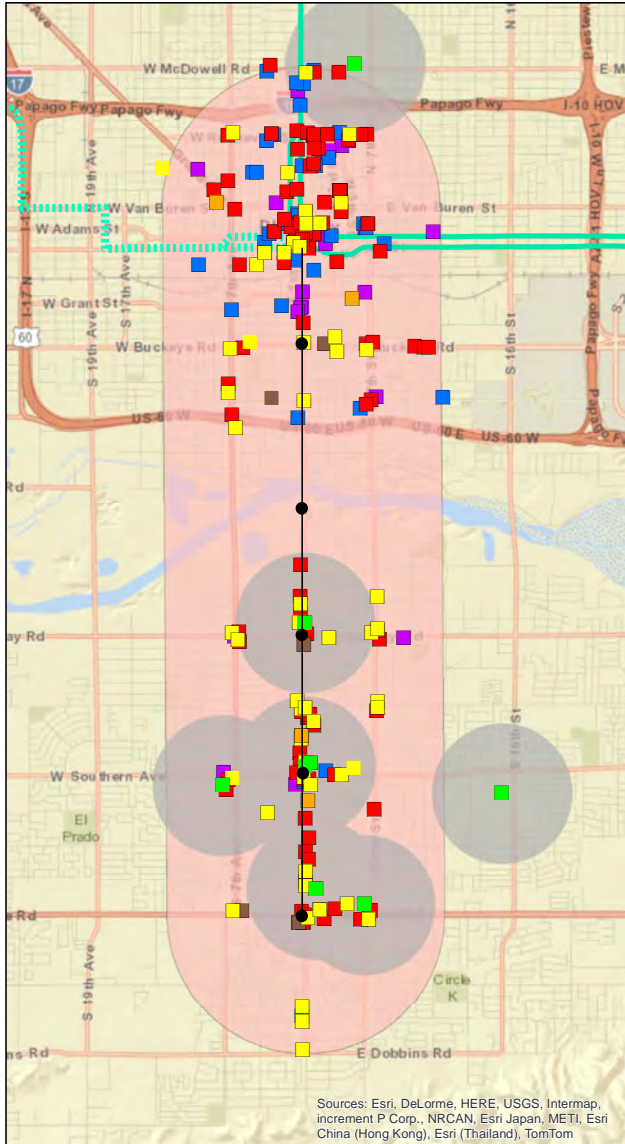
Similar to the survey respondents, many focus group participants said they, too, preferred to drive to healthy food locations, as many felt other modes of transportation (e.g., public transit, walking/biking) were too stressful, physically taxing, and/or time consuming. A large number of transit-dependent participants said they would rather carpool or shop at supermarkets with shuttles than rely on public transportation. Several participants said they purposely shop at Food City (7th Ave & Southern) because this location provides a free shuttle to patrons who spend \$25 or more in a single visit.

Several focus group participants, particularly those who depend on bus service, expressed great enthusiasm for the LRT proposal because it would provide direct access to Fry's (7th Street & Baseline). Some participants discussed having to make one or two bus transfers in order to access nutritious foods, but said the proposed LRT extension would make their food shopping more convenient.

Findings from case manager key informant interviews suggested food insecurity was prevalent among many of their clients in the South Central Phoenix neighborhoods. According to these professionals, the demand for free or reduced food programs outweighed the supply, resulting in many families and children going hungry. Moreover, key informants suggested that balanced meals served on-site at some locations, such as congregate meal sites were the only healthy foods consumed by many clients. Several key informants suggested transportation time and costs might compound food insecurity especially for single-parent working families and adults with chronic conditions or disabilities.

Map #11

Public Food Establishments and .5 Mile Grocery Store Radius



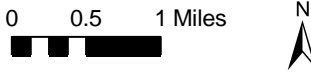
Legend

- SCNTIA Study Area
- Existing Light Rail
- Current Light Rail Extensions
- Proposed SCNTIA Light Rail
- Proposed Stops
- Full Grocery Store (7)
- Retail Food (57)
- Eating & Dining (68)
- Fast Food (109)
- Bars/Liquor Sales (24)
- Meat Market (5)
- Bakery (4)
- Public Market/Garden (5)
- Public Dining Service (3)
- Registered WIC Vendor
- 0.5 Mile Grocery Store Radius

*Note: Map Includes all Grocery Stores within a 0.5 mile radius of the study area.

Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

Sources: City of Phoenix, Valley Metro, Environmental Services



Source: Maricopa County Department of Public Health.

Parks & Recreation

Simply having access to parks and recreation does not necessarily mean residents will utilize such services.¹¹⁴ Individuals are more likely to visit parks and recreation facilities that are aesthetically appealing, have clean rest areas, incorporate a balance of sun/shade, and provide family-friendly amenities such as picnic areas, trails, playgrounds, and athletic courts/fields. Unfortunately, disparities in park distribution and park quality exist across communities, particularly in low-income neighborhoods.^{115 116} Perceived level of safety also impacts park and recreation usage. When residents witness signs of disorder in neighborhoods such as graffiti tagging, litter, and vandalism, they are less likely to utilize those neighborhood parks and spaces. Although public transit may increase access to parks and recreation facilities that are farther away, until issues such as maintenance and perceived safety are addressed in parks that are within a close proximity to residents, they are likely to seek safer places with more diverse amenities or to not recreate at all. Note that for this HIA the quality of existing city parks was not assessed.

There are 22 public parks within or adjacent to the study area, although not all are equipped with playgrounds. Most of the parks are clustered north of the Salt River and in the downtown area (see Map 12). There are neighborhoods within the southern study area that are not within ½ mile of a public park. Furthermore, some neighborhoods that are within the ½ mile radius of a park may require crossing a minor or major arterial road. This area of town is within the Roosevelt School District. Overlaying district properties in the southern region of the study area (see Map 13) provides much more park access, should the school properties be shared with the community. A health impact assessment, funded through the Health Impact Project and conducted through the Maricopa County Department of Public Health, is separately investigating the open access of Roosevelt School District properties.

Almost one quarter of survey respondents (24 percent, n=76) reported having a physical, mental or emotional diagnosis that limits their mobility and almost a quarter of these respondents (24 percent; n=18) reported going to the park, community center, or recreation center almost every day. Of all the focus group participants, parents with children were the most likely to seek out parks and other places of recreation. Participants were less interested in using public transit to access parks and outdoor spaces than to access places of employment and commerce. Case manager key informants echoed difficulties encouraging seniors and adults with disabilities to utilize outdoor spaces. Still, many mothers in the focus groups felt parks were essential because they provided children with safe spaces to play with other children. One mother said she used parks to host her children's birthday parties and organize large family gatherings. Other parents said parks provided opportunities for their children to engage in organized sports.

The accessibility of indoor community centers, such as those at Kiwanis Park (located in Tempe, 8.5 miles east on Baseline from Central Avenue), or facilities with outdoor lighting, such as those

at Cesar Chavez Park (located in Phoenix, 4 miles west on Baseline from Central Avenue), was important to many participants. The South Mountain YMCA branch, an amenity that many other areas of greater Phoenix enjoy, was recently sold and will no longer be available as a community center. These spaces allowed youth to engage in physical activities and to interact with other youth in summer months despite the intense heat. However, some parents explained that the cost of sports and recreational activities at such centers/parks was not affordable for many families.

Several residents felt parks in their direct neighborhoods lacked essential amenities such as fully functioning bathrooms, kid-friendly playgrounds, or snack bars. They preferred to travel long distances via public transportation to access more amenable parks such as Chaparral Park or McCormick-Stillman Railroad Park in Scottsdale (both more than 17 miles from the Ed Pastor Transit Center) or Kiwanis Park in Tempe. Families sought these parks as opposed to South Central Phoenix neighborhood parks because they included amenities such as walking paths, beautiful scenery, green spaces, skateboard spaces, recreational centers, multiple athletic courts and fields, picnic tables, and shaded playgrounds.

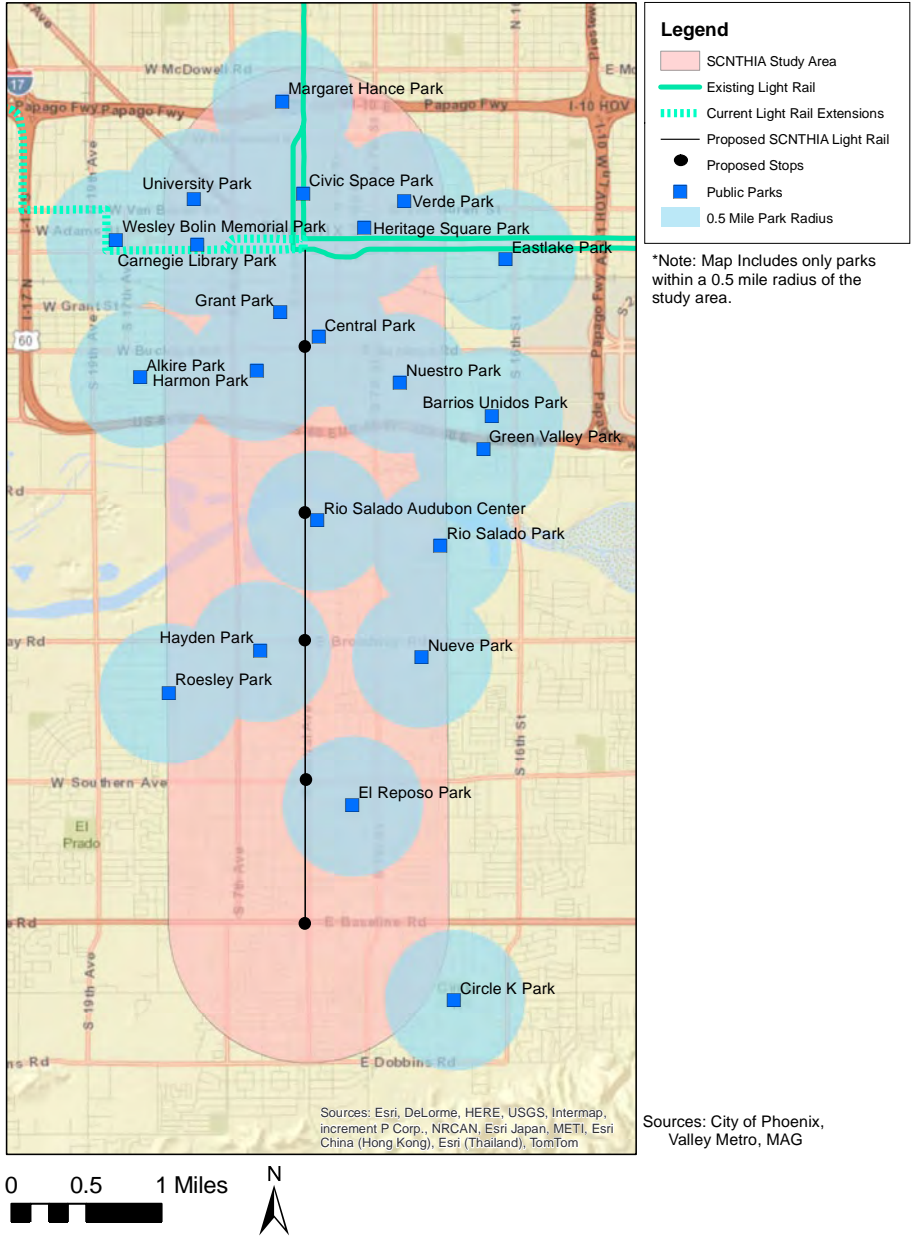
Another major concern among parents was park safety. In neighborhoods with visible crime (drugs, graffiti tagging, gangs) parents were more hesitant to allow their children to play at neighborhood parks and public open space areas. Heavy traffic and high rates of speed also prevented many parents from allowing their children to play in the streets.

The number of days in a week of travel varies considerably between disabled key informants, ranging from once a week for one individual to more than once a day for others. Several of the key informants use a combination of transportation types to reach their various destinations: 50 percent ride both the bus and light rail to go shopping, reach their volunteer jobs, visit the doctor or other health care appointments and/or participate in leisure activities. Four (50 percent) of the interviewees require assistance when traveling: for one person, the bus driver provides assistance with accessing the lift; family and friends provide assistance for the other three.

At least one Insight Committee member is strongly advocating that Valley Metro directly service two park amenities that are within or adjacent to the study area; the Nina Mason Pulliam Rio Salado Audubon Center on the south “shore” of the Salt River, and South Mountain Park that is outside of the study area boundaries but accessible south of Dobbins Road on Central Avenue. Both offer trails and infrastructure to support healthy, fun, family-friendly activities. Valley Metro has recently changed their proposed station locations to remove the Watkins Street station and add the stop at the Audubon Center. An extension south of Baseline Road to South Mountain Park is not considered for this phase of a South Central Phoenix LRT corridor. Currently, the Route 0 bus route services both the Rio Salado Audubon Center and South Mountain Park.

Map #12

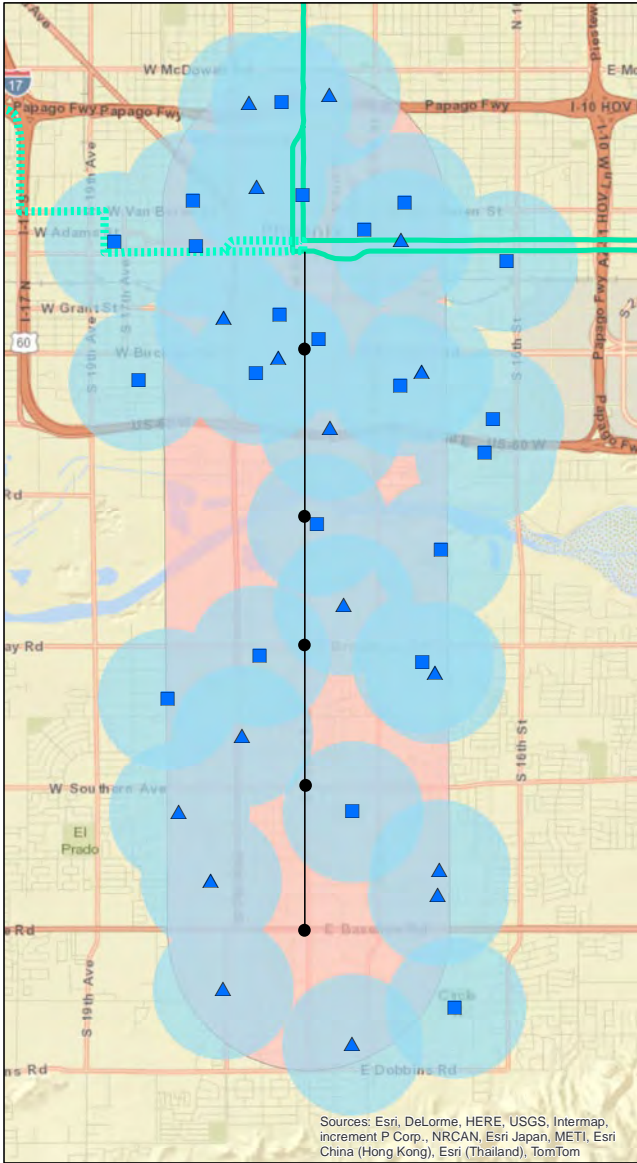
Public Parks with .5 Mile Radius



Source: Maricopa County Department of Public Health.

Map #13

Public Parks and Elementary Schools with .5 Mile Radius



Legend

- SCNTIA Study Area
- Existing Light Rail
- Current Light Rail Extensions
- Proposed SCNTIA Light Rail
- Proposed Stops
- Public Parks
- Elementary School
- 0.5 Mile Park Radius
- .05 Mile School Radius

*Note: Map Includes only parks within a 0.5 mile radius of the study area.

Sources: Esri, DeLorme, HERE, USGS, Intermap, increment P Corp., NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom

Sources: City of Phoenix, MAG, Valley Metro, AZ Dept. Education



Source: Maricopa County Department of Public Health.

Recommendations

There are ten recommendations to address access to resources and services surrounding the South Central transit corridor that involve The City of Phoenix, Valley Metro, Maricopa Association of Governments, local school districts, and various community based agencies. The recommendations primarily speak to methods of providing residents with better access to health services, healthy and affordable food and opportunities for safe recreation.

Recommendation #5.1

Encourage and incentivize medical practices (especially specialists) that accept AHCCCS to locate along the light rail.

Summary/justification: Community residents explained that even the extension of light rail would not provide them with direct access to their current medical providers, especially specialists. Therefore, they suggested that a greater number of providers move into their community.

Indicator: Number of medical practices that locate along light rail.

Agencies/Organizations: Hospital and Health care Systems; Arizona Medical Association; Arizona Osteopathic Medical Association; and Arizona Alliance for Community Health Centers.

Timeframe for Consideration: After construction.

Recommendation #5.2

Valley Metro should re-establish its Disability Advisory Council to develop recommendations to address the special needs for persons with disabilities.

Summary/justification: Although Valley Metro successfully meets the federal ADA requirements, there are often hidden barriers that individuals with disabilities face while utilizing public transit. Re-establishing this council will allow for true community engagement and the identification and focus on addressing these barriers.

Indicator: Enactment of a Disability Advisory Council for Valley Metro.

Agencies/Organizations: Valley Metro.

Timeframe for Consideration: 2015.

Recommendation #5.3

Conduct a feasibility study and initiate a pilot project for a Neighborhood Circulator route in the South Central/South Mountain corridor between grocery stores, light rail stations, and residential areas.

Summary/justification: Valley Metro and Phoenix Public Transit offer free neighborhood circulators, mini-buses that travel in both directions on set routes, in many parts of town. The development of the new South Central Corridor presents an opportunity to incorporate a circulator that can connect neighborhood residents to key locations such as light rail stations and grocery stores.

Indicator: Completed feasibility study. Initiation of pilot project.

Agencies/Organizations: City of Phoenix Public Transit and Street Transportation Departments; and Valley Metro.

Timeframe for Consideration: 2015.

Recommendation #5.4

Conduct outreach to food vendors in the study area to help them become authorized WIC grocery vendors.

Summary/justification: Helping existing grocery and convenience stores qualify and register as WIC vendors will help increase the availability to healthy, affordable food to community residents enrolled in the WIC program.

Indicator: Number of WIC authorized grocery vendors in the study area.

Agencies/Organizations: Arizona Department of Health Services-Office of Nutrition & Physical Activity.

Timeframe for Consideration: 2015.

Recommendation #5.5

Encourage and provide incentives for new farmers' markets that accept SNAP benefits to locate in the study area's low supermarket access areas.

Summary/justification: The study area currently lacks farmers' markets that provide fresh, local produce to residents. Accessible farmers' markets can help to fill the gaps between visits to grocery stores for residents who travel sizable distances to access full service grocery stores. Many farmers' markets in the Phoenix area have Electronic Benefits Transfer machines onsite that allow for individuals to purchase their produce with SNAP dollars. The City of Phoenix could offer incentives to farmers' markets that accept SNAP by reducing or eliminating the fee for the use permit.

Indicator: Number of newly established farmers' markets that accept SNAP in the study area.

Agencies/Organizations: Arizona Department of Health Services-Bureau of Nutrition & Physical Activity; Arizona Department of Economic Security; Arizona Department of Agriculture; and City of

Phoenix Parks & Recreation and Planning & Development Departments.

Timeframe for Consideration: Immediately through construction.

Recommendation #5.6

Actively explore funding (e.g., Healthy Food Financing Initiative; Healthy Store Program) to open more grocery stores/supermarkets and/or encourage smaller convenience stores that offer fresh produce within the study area’s lower supermarket access areas – especially near transit stops.

Summary/justification: There are currently over 100 fast food restaurants in the study area compared to seven full service grocery stores. The abundance of convenience stores in the area also presents an opportunity to provide easily accessible produce to residents - as long as the stores are stocking and promoting healthy items. There needs to be a more equitable number of healthy, affordable retail food outlets, especially near transit stops, within the study area. These outlets will provide greater access to fresh produce and other nutritional items that support a healthy lifestyle in the community.

Indicator: Number of new grocery stores/supermarkets or smaller convenience stores that offer fresh produce within first year of light rail.

Agencies/Organizations: Maricopa County Food Systems Coalition; Arizona Department of Health Services Bureau of Nutrition & Physical Activity; St. Luke’s Health Initiatives; and Valley of the Sun United Way.

Timeframe for Consideration: ~2016.

Recommendation #5.7

Actively explore funding opportunities to improve, enhance, and add to existing park equipment and infrastructure to increase recreational opportunities, community safety and personal well-being.

Summary/justification: Many residents reported local parks did not provide the amenities and the sense of safety that parks in other less underserved areas of Phoenix provided. By improving existing park equipment to provide more park amenities and increasing the sense of safety, community residents will not have to travel as far to parks – which will allow for them to engage in more regular physical activity and provide them with safe spaces to gather together.

Indicator: Number of grants applied for and number of funded projects to improve and expand parks.

Agencies/Organizations: City of Phoenix Parks and Recreation Department; Roosevelt School District; and Phoenix Elementary School District.

Timeframe for Consideration: ~2016.

Recommendation #5.8

Establish Safe Routes to School projects from key light rail stations to safely link transit riding students from their homes to nearby schools and playgrounds.

Summary/justification: Safe Routes to School programs seek to provide a safe, convenient, and fun way for children to bike or walk to and from school. Once light rail is extended into the South Central Corridor, these programs expand to study area students utilizing public transit during a portion of their commute.

Indicator: Number of Safe Routes to School routes implemented along light rail; and change in the number of students utilizing active transportation to get to school.

Agencies/Organizations: Maricopa County SafeKids Coalition; Maricopa Association of Governments; Roosevelt Elementary School District; Phoenix Elementary School District; City of Phoenix.

Timeframe for Consideration: Next Safe Routes to School funding cycle ~ 2016.

Recommendation #5.9

Strengthen community engagement plans and protocols to engage neighborhood residents in the review of bus level of service modifications in the study area.

Summary/justification: With the changes in levels of bus service that may occur during the extension of the South Central Corridor, it is important to have robust efforts to garner genuine community input on all decision-making. Even small changes to bus routes and operations can affect a large number of individuals in this largely transit-dependent community.

Indicator: Inclusion of engagement plans/protocols for service reduction considerations.

Agencies/Organizations: Valley Metro; and Phoenix Transit Department.

Timeframe for Consideration: 2015.

Recommendation #5.10

Investigate the feasibility of shared-use agreements to open playgrounds and other school facilities as community recreation and gathering spaces.

Summary/justification: Since portions of the study area lack access to recreation and funding to build new, safe recreation facilities can be scarce; shared-use agreements, which open or broaden access to school facilities such as playgrounds, gyms, fields, courts, and tracks for community use, can present opportunities for the community to recreate and to gather together. A number of the schools suited for the Safe Routes to School program may also be good candidates for shared use.

Indicator: Number of schools that implement shared-use agreements.

Agencies/Organizations: Phoenix Parks and Recreation Department; Roosevelt School District; and Phoenix Elementary School District.

Timeframe for Consideration: 2015.

PATHWAY #6 - ACTIVE TRANSPORTATION

Valley Metro and the City of Phoenix need high levels of transit ridership for any new extension to the existing system, and there is significant analysis conducted through the Alternative Analysis process to quantify ridership levels. From a public health perspective, there are health benefits for transit riders. Commuting using transit is an “active transportation” mode, along with bicycling and walking. “The Surgeon General recommends that adults participate in ≥ 30 minutes of physical activity daily. However, nearly half of American adults do not meet these guidelines.”¹¹⁷ Nationally, white transit riders spend an average of 19 minutes each day walking to and from transit stops, and 29 percent of Hispanics and people without a high school degree get almost all of their recommended 30 minutes of daily moderate exercise simply walking to and from transit stops.¹¹⁸

Ridership is more likely to increase when transportation projects create safe opportunities to walk and/or bike to public transit facilities.¹¹⁹ Increased ridership takes more automobiles off the road, leading to less traffic congestion, fewer car accidents, and more time for activities such as exercise, socialization, and sleep.¹²⁰ Environments conducive to walking and cycling encourage physical exercise, healthy lifestyles, and social interaction.¹²¹ Cities such as Boulder, Los Angeles, New Haven, and San Francisco can serve as models for multimodal transportation systems.

For people 65 years and over, the ability to complete many activities of daily living hinges on maintaining mobility independence. Defined here as the trip rate of all travel modes, mobility encompasses driving, walking, biking, using public transportation, and other transportation options such as special community services and taxis.¹²² As people age, their access to the range of travel modes changes, often resulting in decreased opportunities to participate in community life. The implications of this are significant: older persons constrained by lack of transportation options often experience a decline in their quality of life and deterioration in lifestyle.^{123 124} Given the rapid rise in recent years of the number of people over 65, finding appropriate solutions for maintaining and expanding mobility for this population is increasingly important.

Recently published studies found that elderly individuals who have transitioned from a two-person to a single-person household demonstrate reduced rates of outdoor mobility, especially walking. To assist older people in maintaining mobility as they transition through stressful life events “...society must put more effort into offering good walking conditions, since (a) walking seems to be the most important mode of transport for outdoor mobility and (b) walking is valued almost as high as a car after becoming alone in the household.”¹²⁵ Indeed, people over 65 are more apt to walk than take public transportation mainly because available transit systems are unable to meet the needs of non-working older people.¹²⁶ For non-driving older persons, transit options range from conventional public transportation (buses, light rail) to para-transit and taxis to walking. Unfortunately, substantial barriers exist for each of these modes. For example, public para-transit access tends to

be limited due to restrictive eligibility requirements that disqualify older persons. Increasing public transportation options may lead to increased ridership among older persons, especially for those who have used public transit at some level throughout their lives. A recent survey conducted with 40 older adults (65 years and older) in the Phoenix Metro Area showed that 23 percent rely on buses as their primary mode of transportation while nine percent regularly use light rail.¹²⁷ Overall “public transportation and transit-oriented development provide basic mobility and accessibility, particularly for physically and economically disadvantaged people, such as people with disabilities and lower-income seniors.”¹²⁸ Given the importance of special transport services for people to maintain increased activity levels, “society...needs to invest in the provision of [special transport services] to keep the most vulnerable group of people mobile when other modes of transport are no longer a reality.”¹²⁹

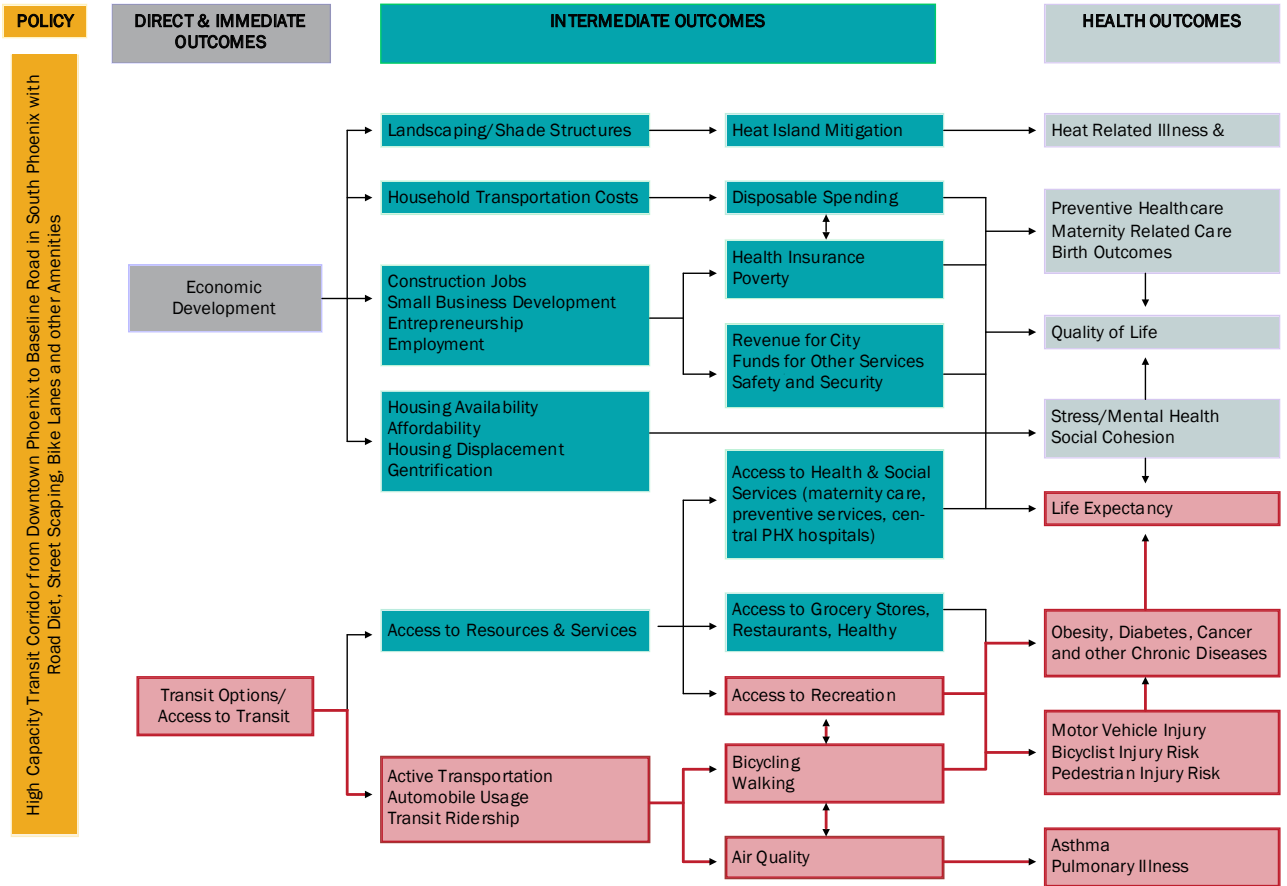
Although, the impact on air quality was not considered for this HIA, reducing automobile trips through improved transit options should positively impact air quality. The result of more physical activity through the utilization of active transportation options and reduced automobile usage have clear implications for chronic disease prevention (diabetes, obesity, cancer) and reduced asthma hospitalizations. Yet, with more people engaging in active transportation, pedestrian and bicyclist accidents could increase in the short term. On the plus side, it has been shown that over time as the number of pedestrians and cyclists increase, the number of deadly incidents and serious injuries decrease substantially.¹³⁰

Understanding the broad benefits of increasing high quality public transport options is the beginning of a successful transportation corridor. Further, understanding the needs and desires of individuals with chronic conditions or other special healthcare needs is essential for the development of an inclusive and efficient light rail system for all groups. For these reasons, the overall transit experience for people of all abilities is important to promoting active transportation. Transit dependence should not require individuals of advanced age, or those with disabilities or chronic conditions to compromise their safety, comfort, lifestyle, or health.

Note: Walkability assessments, a key part to understanding how people travel to transit stops were discussed in Pathway #1.

Figure #33 Active Transportation Pathway Diagram

**SOUTH CENTRAL NEIGHBORHOODS TRANSIT HEALTH IMPACT ASSESSMENT
PATHWAY DIAGRAM**



Source: Maricopa County Department of Public Health

Key Findings

- ◇ A high number of residents that rely on public transit.
- ◇ There are gaps in public transit for many residents.

Assessment

Valley Metro's Tier 1 Evaluation Report summarizes transit dependency in the South Central Corridor:

"...the relatively low level of household automobile ownership and the above-average incidence of poverty, minority, and the under driving age populations suggest a highly transit-dependent population in the South Central Corridor."¹³¹

For the proposed South Central Corridor, Valley Metro projects 11,100 people using the LRT extension daily of which 4,453 are people currently using other bus transit and 764 are riders that are transit-dependent but currently use other transportation.¹³²

Current Transportation Modes

Across all travel destinations, more survey respondents (33 percent; n=104) used a car as their primary mode of transportation compared to 23 percent of respondents (n=72) who primarily used the bus. Nevertheless, over half (51 percent; n=67 percent) reported using the bus three or more times a week.

Of those surveyed, 50 percent reported not having a working car in their household (n=158). The U.S. Census Bureau's 2012 estimate was that 28.7 percent of households did not own a car (refer back to SCNTHIA Project & Study Area Overview chapter). Adults who self-reported having a physical, mental, or emotional disability were even less likely to own a car (67 percent; n=51). Figure K compares the number of working cars by number of adults living in a household.

There seemed to be a mix of focus group participants who did not own a car and those who owned a car yet preferred public transportation as their primary mode of travel. Many focus group participants reported increased stress from driving as the major reason they preferred public transit, citing traffic congestion, parking limitations, and the high risk of accidents as reasons. Conversely, they acknowledged that driving was more physically comfortable than public transportation.

Only a small percentage of survey participants reported traveling by bike, with the highest percentage being three percent (n=9) who reported riding a bike to parks/recreation. When comparing biking riding by gender, only five percent or fewer males and even fewer females (less than or equal to 3 percent) reported biking to any of the following places: work, grocery, doctor, recreation/park, school, and visit family. Respondents were not asked if they own a bicycle.

All of the key informants who are disabled use public transportation routinely; indeed, for 75 percent (n=6) of the interviewees, public transportation is their primary mode of transportation. For the remaining 25 percent (n=2), carpooling with family members is the main form of travel. The interviewees utilize all forms of public transportation: 75 percent (n=6) use the bus routinely; 71 percent (n=5) use light rail; 38 percent (n=3) use the ABIL shuttle to conduct some of their volunteer work; 25 percent (n=2) use taxis; and 75 percent (n=6) use Dial-a-Ride. For 25 percent (n=2) interviewees, Dial-a-Ride is their primary form of transportation. All but one key informant utilizes carpools.

Of the eight key informants who are disabled, seven reported lack of transportation as a reason for not traveling. Further exploration suggests that for these individuals, the “lack” of transportation does not mean strictly that service is nonexistent, but rather that the existing service is, in some instances, severely lacking, making travel very difficult or impossible. The reasons cited for not being able to travel on public transportation include the following:

- ◇ Dial-a-Ride’s punctuality problem results in riders being routinely late.
- ◇ The lack of timely connections between modalities severely limits employment options; in order for one individual to be on time for a job, the location of employment must be within vicinity of a direct bus line or light rail.
- ◇ A shortage of routes restricts interviewees travel destinations: Mesa and Chandler were singled out as not having adequate service.
- ◇ Buses are too infrequent on weekends limiting interviewees’ ability to travel within reasonable timeframes.
- ◇ Some routes stop too early and interviewees would be stranded.
- ◇ Lack of adequate security on buses, light rail, and at bus shelters and light rail stations makes it too dangerous to travel at night. This was especially true for the women.
- ◇ The requirement to transfer at municipal boundaries when traveling on Dial-a-Ride is too difficult; often there is a long wait time before the other Dial-a-Ride vehicle arrives.

Evaluation of Bus Infrastructure and Service

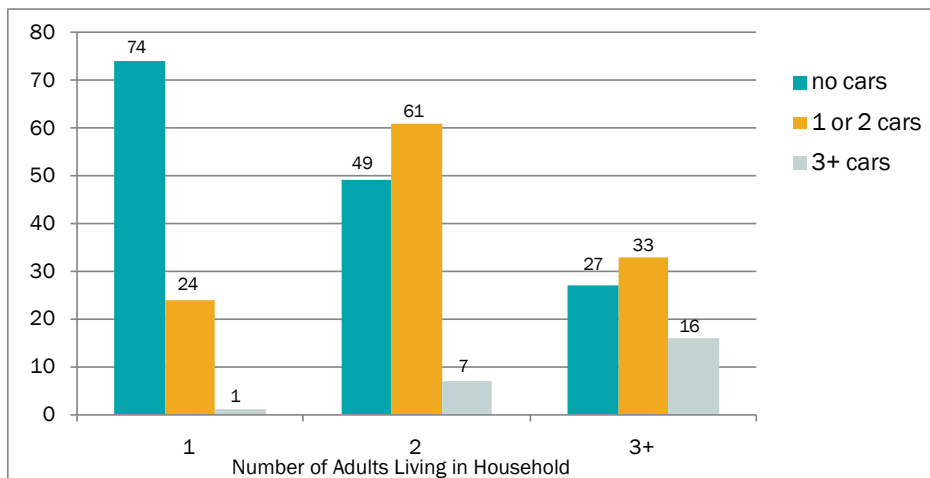
Survey findings suggest most participants live outside transit routes, having to walk several blocks to the nearest bus stop. For example, 73 percent of survey participants (n=232) live 10 or more blocks from the nearest bus stop compared to eight percent (n=24) who live less than five blocks from a bus stop. By contrast, an overwhelming majority of adults who self-reported having a physical, mental, or emotional disability (91 percent; n=68) indicated that they live five or more blocks from a bus stop; 67 percent of them (n=51) reported taking the bus three or more times a week. Despite the high frequency of ridership among participants with disabilities, 66 percent

(n=49) said they found riding the bus stressful. There were, however, focus group respondents (representatives of the priority populations) that preferred the bus over driving because of the lower stress levels (see further discussion about transit experiences below.)

Bus stop proximity reported by SCNTHIA survey participants contradicts data from Valley Metro and The City of Phoenix. Valley Metro operates 16 bus routes that pass into or through the SCNTHIA study-area, and the City of Phoenix considers this area among the most highly serviced by transit, and marked by high ridership throughout. Most of these routes run along the minor and major arterial roads. These major arterials make a roughly one mile grid system of streets. There are two possible reasons to explain how nearly three of every four survey respondents could reportedly live farther than 10 blocks from a bus stop:

1. Residents that walk to the bus stop might miscalculate distance. Phoenix is a challenging place to walk (refer to walkability assessment), so it is possible that they live closer to the stops, yet feel like they walk 10 or more blocks. In addition, those who are not disabled rely on buses less and therefore don't make the walk to a bus stop as frequently and therefore may be prone to miscalculation of the distance.
2. Housing costs for residences closer to arterials may be higher. This HIA did not investigate housing costs to confirm that housing is more expensive nearer the bus routes. Yet, considering the focus populations of the study, they may very well live farther from an arterial if it is cheaper. As an explanation, however, this seems unlikely.

Figure #34 Number of Survey Respondents with Working Cars by Number of Adults Living in a Household



Source: Maricopa County Department of Public Health

Similar to survey findings, the majority of focus group participants shared a wide range of responses regarding how far or long they had to walk to access the bus. Participants reported walking distances between a couple of blocks and a mile and walking times of 10 to 30 minutes. When walking to the transit stops, participants, especially pregnant women, adults with chronic conditions, and people with disabilities, said they were concerned about the lack of shade and the long distance.

Bus Experience - Key Informants

Of the 75 percent of key informants who report riding the bus frequently, 25 percent (n=2) ride the bus three to five times a week and 38 percent (n=3) ride the bus daily. For one interviewee, the number trips on the bus each week can fluctuate from once a week to daily, depending on his schedule. Two interviewees stated that although they used to ride the bus routinely, they no longer do because as their disabilities have become more severe, they felt less secure on the bus. Both now rely on Dial-a-Ride for transportation. Four of the interviewees received some form of training for riding the bus: two took part in Valley Metro's ADA certification program so they would qualify for the Platinum Pass.

When asked whether they enjoyed riding the bus, the six bus-riding interviewees were split 50/50; three found it generally enjoyable and three found it unpleasant. For the former, the bus was viewed as convenient with friendly drivers who often provide needed assistance. For the latter, long waits, lack of punctuality, and the presence of inebriated passengers add up to a less than positive experience. For one person, concerns regarding punctuality produce a significant amount of anxiety, making the daily commute to work (paid employment) an emotional challenge. Communication can impact a rider's level of comfort and safety on the bus system. Sixty-six percent (n=4) of the bus-riding key informants agreed that there are some issues regarding the legibility of signs, routes, and maps at bus stops. The print is too small for two informants to read: one relies on texting to learn route information and the other resorts to calling daily since texting is too confusing. Two other riders pointed to graffiti and other markings on signs that obscure the information. All four suggested larger print would be helpful. When asked about the legibility of safety information, 66 percent (n=4) found it easy to understand. One person noted never seeing any safety information on buses or bus stops and another has only been told about seatbelts. All six of the regular bus riders are able to communicate with the drivers most of the time. Despite most drivers being unaware of any specific needs this group of riders might have, the interviewees reported that drivers are often helpful.

For 33 percent (n=2) of the key informant bus riders, a direct connection is available to their destinations. The remaining 66 percent (n=4) transfer regularly. None of these riders finds the act of transferring between buses or between the bus and light rail challenging. However, the lengthy waits they frequently endure between rides pose a significant problem. This was particularly the

case for transfers from the bus to light rail: all four riders noted that cross-modal routes are poorly timed. Typically an informant will be exiting light rail only to see the bus he or she needs pulling away resulting in a 30 minute wait for the next bus. These long and frequent waits negatively impact their ability to travel within reasonable timeframes.

For the three informants who use wheelchairs, the bus riding experience varies depending on time of day and type of bus. Wheelchairs must be anchored while on the bus. During peak travel times when the buses are full and all of the wheelchair anchors are taken, the three wheelchair-riding informants report having to wait an additional 30 minutes for another bus. All three find this waiting difficult for a host of reasons including reaching their destination late, spending too much time in the heat, and pushing their ride time into the evening when they all feel less secure.

Additionally, the informants rely on the driver to hook and unhook the anchor for them. During busy travel times, all three have felt rushed to get off the bus. Sometimes they perceive the driver is impatient, but more often it is the other passengers who become impatient and irritated. For one informant, the pressure to hurry has resulted in falling off the ramp. This interviewee pointed out that the newer ramp design is more dangerous to use and requires more time and space for lining up the wheelchair. This design flaw merits review. Further complicating wheelchair access to the bus is the tendency for drivers stopping at crowded stops to not pull close enough to the curb, resulting in a tenuously placed ramp. Understandably, the informant feels unsafe navigating the ramp.

When asked if the bus runs as often as they would like, the six interviewees had a variety of responses: yes, mostly (1 rider); yes, but only on weekdays and only in Phoenix and Tempe (1 rider); yes, but “only if I know the schedule and plan ahead” (1 rider); and no, too infrequent (3 riders). All of the riders commented on long waits in the summer being particularly problematic.

Evaluation of Light Rail Infrastructure and Service

Of the eight adults with disabilities who participated in the key informant interviews, 63 percent (n=5) ride the light rail. Of the remaining three informants, 25 percent (n=2) rely solely on Dial-a-Ride and 12 percent (n=1) rides the bus to and from work only, choosing to carpool with family members for all other travel. For the five informants who ride the light rail, one uses it once a week, two use it three to five times week, and two use it at least once a day.

Light Rail Experience

The consensus across all focus groups and key informant interviewees was that the light rail was more accessible and easier to use than the bus. Numerous focus group participants expressed preference for the light rail because it was consistent, arrived at frequent intervals, had fewer stops and less overall travel time, and had passes available for purchase at all stops. In general, adults

with chronic conditions and physical and/or developmental disabilities reported easier travels on the light rail than on the bus; they felt the light rail was more spacious and consequently easier for people in wheelchairs to navigate. These participants also felt the intercom on the light rail was easier to understand. Mothers with infants and children also preferred the light rail because it was easier to manage strollers.

In general, all five key informants that regularly ride light rail enjoy the experience, noting that not only is it more reliable than the bus, but it is also fast, clean, quiet, and seems to have fewer inebriated passengers. One informant reported feeling more independent on light rail than on the bus because wheelchairs do not need to be anchored on light rail, eliminating the need to notify the driver when entering or exiting. For another wheelchair rider however, the lack of anchoring creates a sense of instability. Three of the interviewees took Valley Metro's travel training to learn how to use light rail.

All five of the key informants who use light rail routinely make transfers. As noted above, the more infrequent bus service often means waiting 30 minutes or more for the bus after disembarking from the light rail. All five of these informants routinely visit the Disability Empowerment Center (DEC) located at 5025 E Washington Street in Phoenix. The lack of a light rail station in front of the DEC requires them to transfer from light rail to bus. Given the long wait times, one wheelchair rider has decided that motoring the mile-plus distance in his wheelchair is preferable to waiting in the intense heat. All five requested a station in front of the DEC.

Due to the level surface, accessing light rail is much easier than the bus for all five informants. When asked if they ever felt rushed when entering or exiting the light rail cars, only one person said they did not. One person responded that it depends on the driver: some will wait for him/her to get off while others will not. Another person cited the need to move quickly before the doors close and another expressed frustration that sometimes other passengers will not move out of the way. Two interviewees (one wheelchair rider and one with a different mobility disability) mentioned that passengers often will not vacate the seats set aside for people with disabilities. It was noted that often these passengers are seniors and, in the view of one of the informants, seem to think that qualifies them as disabled. As a result, the wheelchair-riding informant is left to sit in the doorway.

Three of the light rail riders found the posted schedules, maps and safety information easier to read and understand compared with the bus system. One person noted that given the lack of complexity in the routes it makes sense that the information is more straightforward. One informant who has a significant visual impairment relies strictly on texting for all public transportation information. All of the informants said the recorded information is easy to understand. Only one interviewee cited any interaction with light rail drivers; others felt that drivers could not see them and therefore were unable to readily assist them with any specific needs.

Evaluation of Para-Transit Infrastructure and Service

For two informants, para-transit is their primary means of transportation. For one of these individuals, the limitations of para-transit restrict his/her ability to travel: before this person's disability worsened, he/she used the bus and traveled all over the Valley. This is not feasible with para-transit.

The cost of using para-transit is prohibitive for many of the informants. One person is able to use para-transit only because a friend pays for the monthly pass. Two informants stated that the \$4 one-way fare is reasonable but still limits how frequently they can use the service.

Para-transit services are utilized by 88 percent of the key informants with disabilities (7 of the 8 interviewees). Most appreciate the service but cite excessive wait times as a substantial drawback. Interviewees report waiting up to 30 minutes for the van to arrive, routinely reaching their destinations either 30 minutes early or 30 minutes late, and driving all over the city to pick-up and drop-off other passengers. Travelling across municipal boundaries on para-transit is even more difficult. Typically, transfers to the para-transit service from the adjacent city (usually Phoenix) result in an additional wait. One person claims they were once left waiting for a pickup for over two hours because of a scheduling mix-up on the part of para-transit.

Para-Transit Experience

Experiences with drivers vary among informants; some drivers meet the client at the front door while others wait and meet the client curbside at the van. One informant dislikes the tendency for drivers to use the van's backup horn to call her out. Similarly, informants report differences in drivers' behavior upon reaching their destination or returning home; some drivers walk clients to the door only if asked, other drivers always escort clients to the door of their destination. Significantly, only the visually impaired informant with reports having driver assistance at all stages of a trip.

Although the informants found the drivers to be generally sensitive to their needs, one person reported being sexually harassed by a driver. A formal complaint resulted in the driver being removed from that route. Another interviewee expressed frustration that drivers will not wait for longer than five minutes after arriving at his/her home.

Evaluation of Walking and Bicycling Environment

Although 70 percent of survey participants (n=221) stated they enjoy walking in their neighborhoods, a large number of focus group participants expressed the following safety concerns preventing them from walking, especially at night.

Poor street lighting was frequently discussed during all the focus groups, specifically participants were concerned about the safety of walking in their neighborhoods at night. Waiting alone at transit stops and walking home in the dark made women especially fearful of using public transportation

after sunset. These concerns were compounded by the large number of stray dogs and potholes in sidewalks/streets, which are more difficult to see in the dark. It was common for transit-dependent participants, particularly women, to report limiting their social life or time outside the home after sunset.

Poorly maintained sidewalks and/or the absence of sidewalks are commonplace in most South Phoenix neighborhoods, as reported by numerous focus group participants. Unleveled sidewalks with large cracks, holes, and missing links increase residents' risk for injury and unnecessarily force people into the street making them more vulnerable to auto-pedestrian accidents. Adults in wheelchairs expressed frustration regarding sidewalk conditions that directly influenced their mobility. One person spoke of an incident where his girlfriend, who uses a wheelchair, could not escape harassment by a group of men on the street because of a missing link in the sidewalk. As a result, he now escorts her or makes sure she has a companion every time she travels in her neighborhood.

Stray and unleashed dogs seemed to be a unanimous concern among focus group participants. For many participants, the presence of stray dogs diminished their sense of safety. Several participants feared being attacked or having their children attacked. Some parents said they prevent their children from playing outside in front of the house due to the dangers stray dogs pose. Parents of CYSHCN shared they felt their children were even more vulnerable to dog bites or attacks. Other participants spoke about the possibility of contracting a disease if bitten. The stress and fear was enough to prevent some participants from walking to and from transit stops. Refer to Pathway #1 for further discussion around dogs.

The visibility of crime was another reason focus group participants were hesitant to venture into the community. Across all focus groups, participants spoke of visible drug and alcohol use in their neighborhoods. Some shared stories about drugs sold to teenagers and children. Gangs, theft, and vandalism were frequently mentioned. Many participants knew someone or they themselves had been victimized. A few participants discussed the importance of increased police presence and the need to actively advocate for an increase in the number of officers patrolling in the community.

In addition to increases in noise and congestion, some participants said they had difficulties crossing the street and walking on the sidewalks due to construction in their community. Participants were frustrated when construction projects lasted longer than expected and were occurring in multiple locations throughout the community.

Overall, participants felt the persistence of excessive speeding made them and their children vulnerable to pedestrian-automobile accidents. Many participants pointed out the problem occurred on residential streets and in school zones, not just on arterials. Some participants, especially those

with physical disabilities, were hesitant to cross at crosswalks because cars and busses often failed to stop. A few neighborhoods had four-way intersections without stop signs that increase fear of crossing the street. Another participant shared stories about how cars would repeatedly ride up on the same pedestrian island because drivers were texting and driving.

Pedestrian & Bicyclist Safety

Pedestrian safety is a concern for individuals who walk to transit locations. Each year in Phoenix 512 pedestrians are hit; 471 pedestrians are injured; and 37 pedestrians are killed. Within a year, pedestrian crashes account for approximately two percent of all motor vehicle crashes, but account for 33 percent of all fatal crashes.

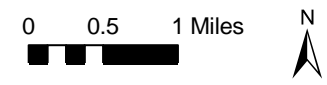
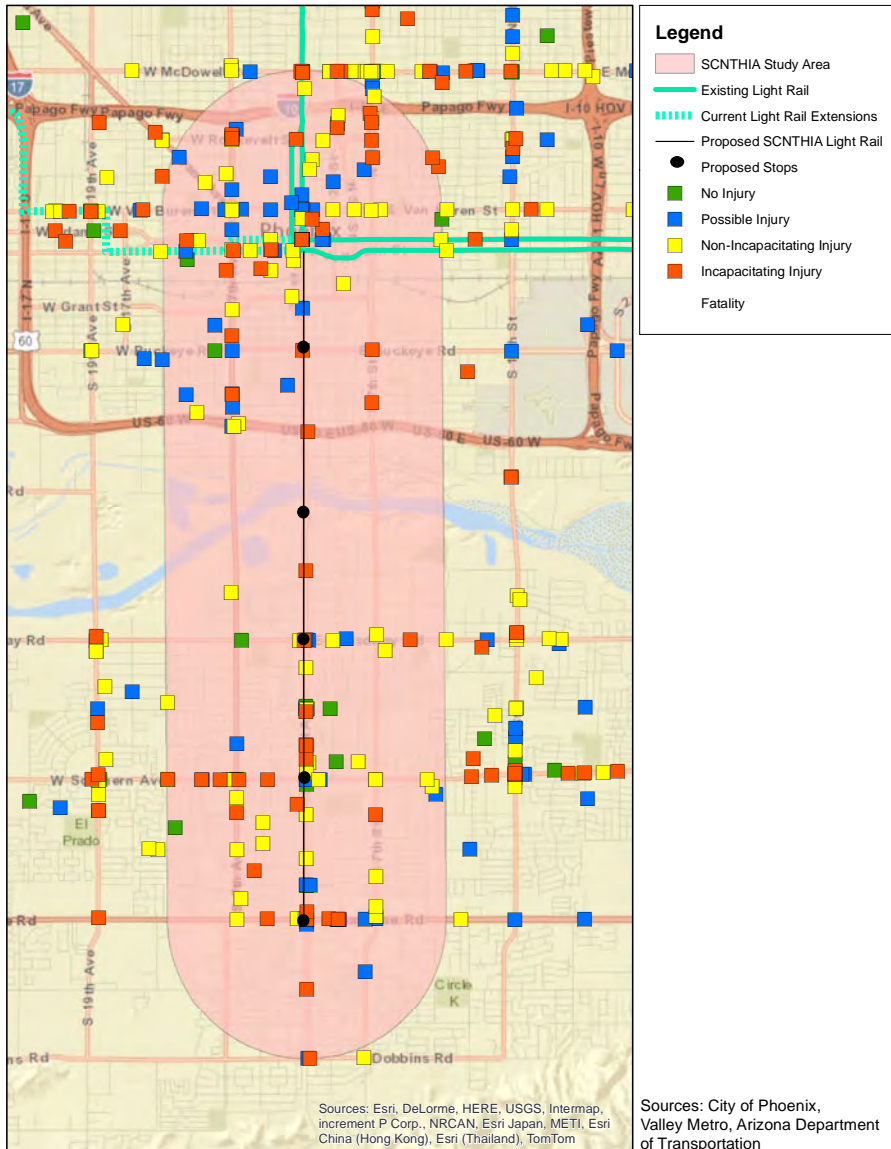
In 2012, while nearly 75 percent of all pedestrian-motor vehicle crashes occurred within 150 feet of an intersection, just over 60 percent of all fatal pedestrian crashes occurred outside of the intersection. Thirty-four percent were struck at signalized crossings, 11 percent were struck at stop signs, 26 percent were hit while crossing mid-block; and 6 percent were hit at driveways. Map 14 shows the pedestrian/motor vehicle crashes in the study-area from 2009 through 2012.

A previous study of the Gateway District (Reinvent PHX), which is near – but does not include - the SCNTHIA study area found that bicycle injuries are most common between 3:00 PM – 6:00 PM and March and April are the highest incidence months.¹³³ Map 15 shows the bicycle/motor vehicle crashes in the study area from 2009 through 2012.

By 2020, the City of Phoenix is committed to reducing pedestrian crashes, injuries, and deaths by 50 percent through targeted interventions at intersections and mid-block locations. The City of Phoenix can achieve their pedestrian and bicycle safety goals through the implementation of the Phoenix Complete Streets Policy and the Pedestrian Safety Action Plan. In addition to improving safety, these documents will foster a healthy and safe environment for all.

Map #14

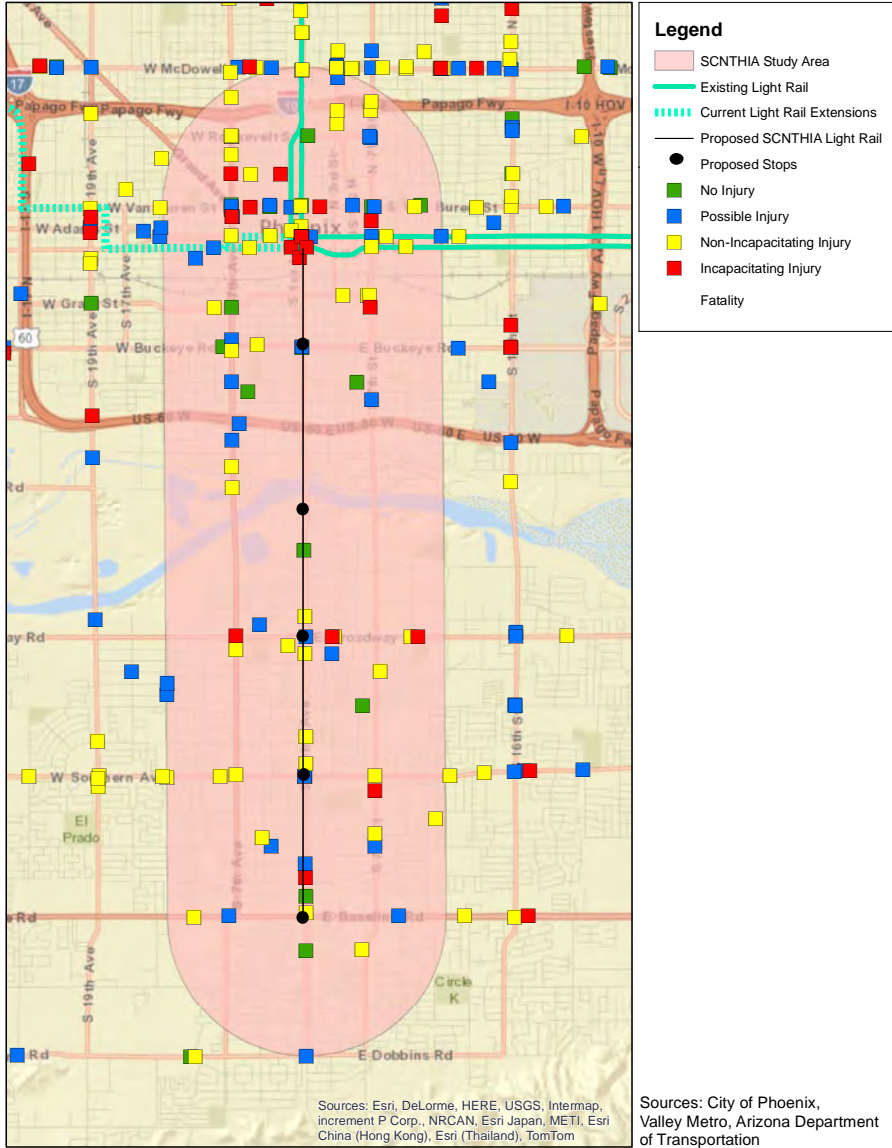
SCNTHIA Study Area Collision Map - Pedestrian/Motor Vehicle, 2009-2012



Source: Maricopa County Department of Public Health.

Map #15

SCNTHIA Study Area Collision Map - Bicycle/Motor Vehicle, 2009-2012



Source: Maricopa County Department of Public Health.

Recommendations

Recommendation #6.1

Address the needs of individuals with disabilities by removing the folding seats in light rail cars to provide better and more consistent wheelchair space. Enhance and promote signage within the designated handicapped/disabled areas of light rail cars to raise riders' awareness of the rules regarding use of the designated areas. Expand disability empowerment training for Valley Metro Security Officers to better enforce public transit policies regarding passengers with disabilities (i.e., making sure riders give up seats to those with disabilities).

Summary Justification: Focus groups revealed that individuals with special health care needs and/or riders that are dependent on wheelchairs, strollers, or walkers benefit from a designated area in which they can travel. Eliminating the folding seats prevents commuters from occupying the intended space.

Indicator: Number and size of visible disability signs per train; percentage of security officers that receive disability empowerment training; and removal of folding seats from trains.

Agencies/Organization: Valley Metro; Transit Security; and City of Phoenix Public Transit Department.

Timeframe for Consideration: Immediately and ongoing.

Recommendation #6.2

Provide enhanced education to case managers of local organizations on how to navigate the light rail and transit system.

Summary Justification: SCNTHIA survey respondents and key informant interview participants expressed the usefulness of education on navigating public transit. Better-informed case managers can teach people with special health care needs, and all people in general, how to navigate the light rail and the transit system. People need more information on routes, pricing, and integrating bus with LRT.

Indicator: Number of case manager institutions that Valley Metro contacts to distribute navigation education.

Agencies/Organizations: Disability Empowerment Center; other providers of services to the disabled; and Valley Metro.

Timeframe for Consideration: Immediately and ongoing.

Recommendation #6.3

Incorporate enhanced maps and signage for pedestrians and bicyclists at existing and new light rail stops to direct transit riders to local destinations (i.e., hospitals, landmarks, streets). Include nearby landmarks or amenities in the audio announcements at LRT stations.

Summary Justification: SCNTHIA respondents and key informant interviews pointed out the importance knowing where to go through signage and audio announcements.

Indicator: Number of light rail stations and trains featuring enhanced maps and signage.

Agencies/Organizations: Valley Metro; and City of Phoenix Street Transportation Department.

Timeframe for Consideration: 2015.

Recommendation #6.4

Install user-friendly, ADA-accessible ticket vending machines at all light rail stations.

Summary Justification: SCNTHIA respondents expressed concern regarding the ease of use of ticket vending machines for people with disabilities. Not all of Valley Metro's stations are equipped with user-friendly, ADA-accessible ticket purchasing.

Indicator: Number of stations with user-friendly, ADA-accessible ticket purchasing.

Agencies/Organizations: Valley Metro.

Timeframe for Consideration: Phase in beginning 2015.

Recommendation #6.5

Implement bike share hub locations near light rail stations.

Summary Justification: SCNTHIA respondents support the GRiD bike share program. Once implemented in Phoenix, it will benefit the South Central Corridor as an additional mode of travel along the light rail.

Indicator: Number of bike share hub locations along light rail extension.

Agencies/Organizations:

GRiD Bike Share; and City of Phoenix Street Transportation Department

Timeframe for Consideration: 2015.

Recommendation: #6.6

Investigate additional storage in new light rail car design, especially for cold storage. Retrofit existing light rail cars or investigate alternative methods to assist riders, especially parents, caregivers, and individuals with special needs, in transporting groceries.

Summary Justification: SCNTHIA respondents and focus groups participants expressed the desire to keep groceries cold during their commute and/or improved methods of transporting groceries.

Indicator: Documented consideration of additional storage space in new light rail car design.

Agencies/Organizations: Valley Metro.

Timeframe for Consideration: 2015.

FINAL RECOMMENDATIONS

There are 41 recommendations throughout the six pathways. Each recommendation includes justification, agencies or organizations involved, and the timeframe for consideration. All but eight of the recommendations have a consideration date in 2015, although many of those have extended implementation dates. Valley Metro is expected to complete their Environmental Analysis in 2016. Construction, assuming the project is approved and receives funding, would not begin until 2018 or thereafter. While implementation of some of the recommendations must wait for construction, consideration of most recommendations can begin immediately.

The Insight Committee (IC) recommendations were developed after reviewing the research questions and assessing compiled data. The IC engaged in a group process to identify potential recommendations. This list was refined by the SCNTHIA project team based on strength of the data and magnitude of the impact. This revised list was sent to IC members over a six-week period. Each week a new pathway and supporting data were disseminated, giving each IC member one week to review the set of recommendations and complete an online survey. For each recommendation, the IC members were asked whether they support the recommendation and whether the indicator is the best indicator to use. They then rated each recommendation and indicator based on impact and feasibility (high, medium or low). Each recommendation then received a blended score to determine those that garnered the most support of the IC members. The indicators for each recommendation were reviewed one final time by IC members and stakeholders. Table D presents the compiled recommendations of the SCNTHIA Insight Committee.

Pathway #1 - Landscape/Shade/Safety

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
1.1	Install extensive, improved lighting features (such as LED and solar lighting) at, and around all bus stops and proposed light rail stations to enhance levels of safety, visibility, and perception of comfort.	Number of Valley Metro light rail stations that incorporate improved lighting features. Timeframe: 2015	City of Phoenix Street Transportation Department and Public Transit Department; Valley Metro
1.2	Install extensive, solar powered LED lighting features along pedestrian and bicycle routes throughout the study area.	Number of additional lighting features installed along streets in study area. Timeframe: 2015	City of Phoenix Street Transportation Department
1.3	Incorporate walkability and bikeability awareness and education efforts into the City of Phoenix Bicycle Master Plan and future Pedestrian Master Plan.	Number of walkability and bikeability awareness and education efforts that are incorporated into both the Bicycle and Pedestrian Master Plans.	City of Phoenix Street Transportation Department and Parks and Recreation and Public Transportation Department; Arizona Alliance for Livable Communities; Maricopa Association of Governments
1.4	Explore unique opportunities to increase shade with entities such as community-based organizations and businesses to meet and exceed City of Phoenix Tree and Shade Master Plan goal of 25 percent canopy coverage by 2025.	Percent canopy coverage increase within the study area as indicated by City of Phoenix Tree and Shade Master Plan. Timeframe: 2015	City of Phoenix Departments of Parks and Recreation and, Street Transportation, and Public Transit; Valley Metro Rail; community-based organizations; local businesses

Pathway #1 - Landscape/Shade/Safety - continued

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
1.5	Explore partnerships with local businesses to fund expanded construction of cooling centers at light rail stations that utilize solar powered fans and misters, and improve and maintain water fountains along existing and future stations.	Number of new cooling centers retro-fitted/constructed along existing and future light rail stops. Timeframe: 2015	City of Phoenix Public Transit Department and Street Transportation Department; Valley Metro Rail; businesses
1.6	Prioritize implementation of the Phoenix Complete Streets Policy in and near the study area to incorporate healthy design elements including, but not limited to: traffic calming; speed limit reduction; road diets; safe street crossings; bicycle lanes and protected bicycle lanes; wide sidewalks; shade; and way finding signage. Include these amenities in budget proposals.	Number of proposed and implemented projects in and near the study area (measured in miles) prioritized by the City of Phoenix Complete Streets Advisory Board that incorporate healthy design elements. Timeframe: 2015	City of Phoenix Street Transportation Department; Valley Metro Rail; City of Phoenix Public Transit Department; and Maricopa Association of Governments; Arizona Alliance for Livable Communities; and Arizona Partnership for Healthy Communities
1.7	Utilize alternative building materials and structures for light rail stations and bus stops that help to mitigate heat retention.	Number of light rail stations and bus stops in the study area that incorporate alternative building materials. Timeframe: 2015	City of Phoenix Department of Public Transit and Street Transportation Department; Valley Metro Rail

Pathway #1 - Landscape/Shade/Safety - continued

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
1.8	Enforce rules for unleashed and stray dogs and enhance education efforts for responsible dog ownership. Consider other evidence-based measures to control stray animals. Work with residents to provide instruction as to how to report loose dogs.	Number of unleashed and/or stray dogs identified during each reporting cycle (by month) and bite data. Timeframe: 2015	Maricopa County Animal Care & Control; City of Phoenix Code Enforcement Office (Department of Neighborhood Services); City of Phoenix Police Department; community groups
1.9	Install 911 emergency panic call buttons, sirens and lights at proposed station platforms and on trains.	Improved visibility of 911 emergency call buttons on platforms and trains. Timeframe: 2015	Valley Metro Rail; City of Phoenix Department of Public Transit; community advocates for impacted priority populations

Pathway #2 - Household Transportation Costs

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
2.1	AHCCCS and Medicare should expand education and outreach to healthcare recipients on how to utilize their available benefits to offset medical-related transportation costs.	Amount spent for medical appointment transportation among AHCCCS and Medicare clients. Timeframe: 2015	AHCCCS; Center for Medicare and Medicaid Services; CoverAZ; Healthcare Providers and Systems
2.2	Hospital community benefit programs should obtain bus/light rail vouchers or participate in the Valley Metro's Internal Transit Outlet program in order to subsidize transportation costs for patients and visitors of their facilities that rely on transit.	Hospitals or healthcare systems that contribute community benefits designations towards transportation for customers/clients. Timeframe: 2015	Local Hospital/ Healthcare Systems that participate in the Valley Metro's Internal Transit Outlet program; Valley Metro
2.3	Continue to market the Valley Metro Employer Pass Program (Platinum Card and the Internal Transit Option) to employers within study area.	Number of employers and workers within study area that participate in Valley Metro's Employer Pass Program. Timeframe: 2015	Valley Metro; South Mountain Chamber of Commerce
2.4	Expand the promotion and education of the Valley Metro Reduced Fare Program and provide Reduced Fare ID card application assistance for those with disabilities.	Categorical eligibility expansion. Timeframe: 2015	Valley Metro; AHCCCS; and Center for Medicare and Medicaid Services

Pathway #2 - Household Transportation Costs

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
2.5	Expand categorical eligibility of Valley Metro Reduced Fare Program to include: <ul style="list-style-type: none">• Parents/caregivers of adults/youth/children with special health care needs;• Persons enrolled in AHCCCS, women enrolled in the WIC, and persons enrolled in the SNAP; and• Pregnant women.	Categorical eligibility expansion. Timeframe: 2015	Valley Metro
2.6	Offer discounted unlimited ridership passes in longer durations (3-month, 6-month and/or 1-year).	Long-term, discounted passes offered. Timeframe: 2015	Valley Metro

Pathway #3 - Business and Employment

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
3.1	Provide guidance and assistance for existing business retention and new business development along light rail extension.	Number of new and existing businesses along the light rail extension that receive business assistance. Timeframe: 2016-2017	Valley Metro Transit Oriented Development working group and Valley Metro Business Assistance Program; City of Phoenix; South Mountain Chamber of Commerce
3.2	Work with community organizations and schools to produce and display public art during construction to enhance pedestrian and business activity.	Number of community organizations and schools that participate in construction phase art programs. Timeframe: 2016-2017	South Mountain Chamber of Commerce; Valley Metro Business Assistance Program; Arts Programs within Roosevelt and Phoenix Elementary School Districts
3.3	Provide walkable/safe travel paths along the construction area, especially for special needs populations (walkers, wheelchairs, strollers).	Number of miles of walkable/safe travel paths along light rail construction. Timeframe: 2016-2017	Valley Metro Rail; City of Phoenix Public Transit Department and Street Transportation Department

Pathway #3 - Business and Employment - continued

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
3.4	Provide community-gathering events during light rail construction (e.g., Ciclovía/open street/play street).	Number of attendees and level of participation at the community gathering events held during construction phase. Timeframe: 2016-2017	Valley Metro Rail, businesses; schools; South Mountain Chamber of Commerce; churches; neighborhood organizations

Pathway #4 - Housing

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
4.1	Prioritize affordable mixed-used, mixed-income, higher density housing development along transit corridors already included in the current U.S. Department of Housing and Urban Development (HUD) and the Arizona Department of Housing's Five Year Consolidated Plan.	HUD prioritization/implementation of affordable housing near transit corridors. Timeframe: 2015	City of Phoenix Department of Housing; Arizona Department of Housing; U.S. Department of Housing & Urban Development
4.2	Adopt the Transit-Oriented Development (TOD) overlay district (or the Walkable Urban [WU] Code when complete) for the South Central Transit Corridor.	Adoption of a TOD Overlay District or WU Code for South Central Avenue. Timeframe: 2015	City of Phoenix Planning and Development Department
4.3	Include in the Qualified Allocation Plan a general goal of prioritizing the allocation of tax credits to developments along transit corridors and highly walkable/bikeable neighborhoods.	Inclusion of new general goal within the QAP that supports transit-oriented development. Timeframe: 2015	City of Phoenix Department of Housing; Arizona Department of Housing

Pathway #4 - Housing - continued

Number	Recommendation	Indicator/Timeframe for Consideration	Agency Responsible*
4.4	To minimize displacement, explore a property tax freeze or cap for existing low-income homeowners whose home values may increase upon LRT corridor completion; and provide tax incentives to rental properties to maintain the number of low income units available.	Establishment of property tax freeze/cap for low income homeowners. Timeframe: ~2018	Maricopa County Board of Supervisors
4.5	Enhance outreach to transit dependent communities for input on annual updates of the Qualified Allocation Plan to help prioritize the allocation of funding within the Low Income Tax Credit Program.	Implementation of outreach to transit dependent communities. Inclusion of community input process. Timeframe: 2015	Arizona Department of Housing; City of Phoenix Department of Housing
4.6	Engage rental property owners, especially those providing housing to low-income tenants, to promote the Valley Metro Reduced Fare Program.	Enrollment in Reduced Fare Program. Timeframe: 2015	Arizona Multihousing Association; Valley Metro; Arizona Department of Housing

Pathway #5 - Access to Services & Resources

Number	Recommendation	Indicator/ Timeframe for Consideration	Agency Responsible*
5.1	Encourage and incentivize medical practices (especially specialists) that accept AHCCCS to locate along the light rail.	Number of medical practices that locate along light rail. Timeframe: ~after construction	Hospital and Healthcare Systems; Arizona Medical Association; Arizona Osteopathic Medical Association; andThe Arizona Alliance for Community Health Centers
5.2	Valley Metro should re-establish its Disability Advisory Council to develop recommendations to address the special needs for persons with disabilities.	Enactment of a Disability Advisory Council for Valley Metro. Timeframe: 2015	Valley Metro
5.3	Conduct a feasibility study and initiate a pilot project for a Neighborhood Circulator route in the South Central/South Mountain corridor between grocery stores, light rail stations, and residential areas.	Completed feasibility study. Initiation of pilot project. Timeframe: 2015	City of Phoenix Public Transit and Street Transportation Departments; and Valley Metro
5.4	Conduct outreach to food vendors in the study area to help them become authorized WIC grocery vendors.	Number of WIC authorized grocery vendors in the study area. Timeframe: 2015	Arizona Department of Health Services-Bureau of Nutrition & Physical Activity

Pathway #5 - Access to Services & Resources - continued

Number	Recommendation	Indicator/ Timeframe for Consideration	Agency Responsible*
5.5	Encourage and provide incentives for new farmers' markets that accept SNAP benefits to locate in the study area's low supermarket access areas.	Number of newly established farmers' markets that accept SNAP in the study area. Timeframe: 2015	Arizona Department of Health Services-Bureau of Nutrition & Physical Activity; Arizona Department of Economic Security; Arizona Department of Agriculture; and City of Phoenix Parks & Recreation and Planning & Development Departments
5.6	Actively explore funding (e.g., Healthy Food Financing Initiative; Healthy Store Program) to open more grocery stores/supermarkets and/or encourage smaller convenience stores that offer fresh produce within the study area's lower supermarket access areas – especially near transit stops.	Number of new grocery stores/supermarkets or smaller convenience stores that offer fresh produce within first year of light rail. Timeframe: ~2016	Maricopa County Food Systems Coalition; Arizona Department of Health Services Bureau of Nutrition & Physical Activity; St. Luke's Health Initiatives; and Valley of the Sun United Way

Pathway #5 - Access to Services & Resources - continued

Number	Recommendation	Indicator/ Timeframe for Consideration	Agency Responsible*
5.7	Actively explore funding opportunities to improve, enhance, and add to existing park equipment and infrastructure to increase recreational opportunities, community safety and personal well-being.	Number of grants applied for and number of funded projects to improve and expand parks. Timeframe: ~2016	City of Phoenix Parks and Recreation Department; Roosevelt Elementary School District; Phoenix Elementary School District
5.8	Establish Safe Routes to School projects from key light rail stations to safely link transit riding students from their homes to nearby schools and playgrounds.	Number of Safe Routes to School routes implemented along light rail; and change in the number of students utilizing active transportation to get to school. Timeframe: ~2016	Maricopa County SafeKids Coalition; Maricopa Association of Governments; Roosevelt Elementary School District; Phoenix Elementary School District, City of Phoenix

Pathway #5 - Access to Services & Resources - continued

Number	Recommendation	Indicator/ Timeframe for Consideration	Agency Responsible*
5.9	Strengthen community engagement plans and protocols to engage neighborhood residents in the review of bus level of service modifications in the study area.	Inclusion of engagement plans/ protocols for service reduction considerations. Timeframe: 2015	City of Phoenix Department of Public Transit Department and Valley Metro
5.10	Investigate the feasibility of shared-use agreements to open playgrounds and other school facilities as community recreation and gathering spaces.	Number of schools that implement shared-use agreements. Timeframe: 2015	City of Phoenix Parks and Recreation Department; Roosevelt School District; Phoenix Elementary School District

Pathway #6 - Active Transportation

Number	Recommendation	Indicator/ Timeframe for Consideration	Agency Responsible*
6.1	Address the needs of individuals with disabilities by removing the folding seats in light rail cars to provide better and more consistent wheelchair space. Enhance and promote signage within the designated handicapped/disabled areas of light rail cars to raise riders' awareness of the rules regarding use of the designated areas. Expand disability empowerment training for Valley Metro Security Officers to better enforce public transit policies regarding passengers with disabilities (i.e., making sure riders give up seats to those with disabilities).	Number and size of visible disability signs per train; percentage of security officers that receive disability empowerment training; and removal of folding seats from trains. Timeframe: 2015	Valley Metro; Transit Security; City of Phoenix Public Transit Department
6.2	Provide enhanced education to case managers of local organizations on how to navigate the light rail and transit system.	Number of case manager institutions that Valley Metro contacts to distribute navigation education. Timeframe: 2015	Disability Empowerment Center and other providers of services to the disabled community; Valley Metro
6.3	Incorporate enhanced maps and signage for pedestrians and bicyclists at existing and new light rail stops to direct transit riders to local destinations (i.e., hospitals, landmarks, streets). Include nearby landmarks or amenities in the audio announcements at LRT stations.	Number of light rail stations and trains featuring enhanced maps and signage. Timeframe: 2015	Valley Metro; City of Phoenix Street Transportation Department

Pathway #6 - Active Transportation - continued

Number	Recommendation	Indicator/ Timeframe for Consideration	Agency Responsible*
6.4	Install user-friendly, ADA-accessible ticket vending machines at all light rail stations.	Number of stations with user-friendly, ADA-accessible ticket purchasing. Timeframe: 2015	Valley Metro
6.5	Implement bike share hub locations near light rail stations.	Number of bike share hub locations along light rail extension. Timeframe: 2015	GRiD Bike Share; City of Phoenix Street Transportation Department
6.6	Investigate additional storage in new light rail car design, especially for cold storage. Retrofit existing light rail cars or investigate alternative methods to assist riders, especially parents, caregivers, and individuals with special needs, in transporting groceries.	Documented consideration of additional storage space in new light rail car design. Timeframe: 2015	Valley Metro

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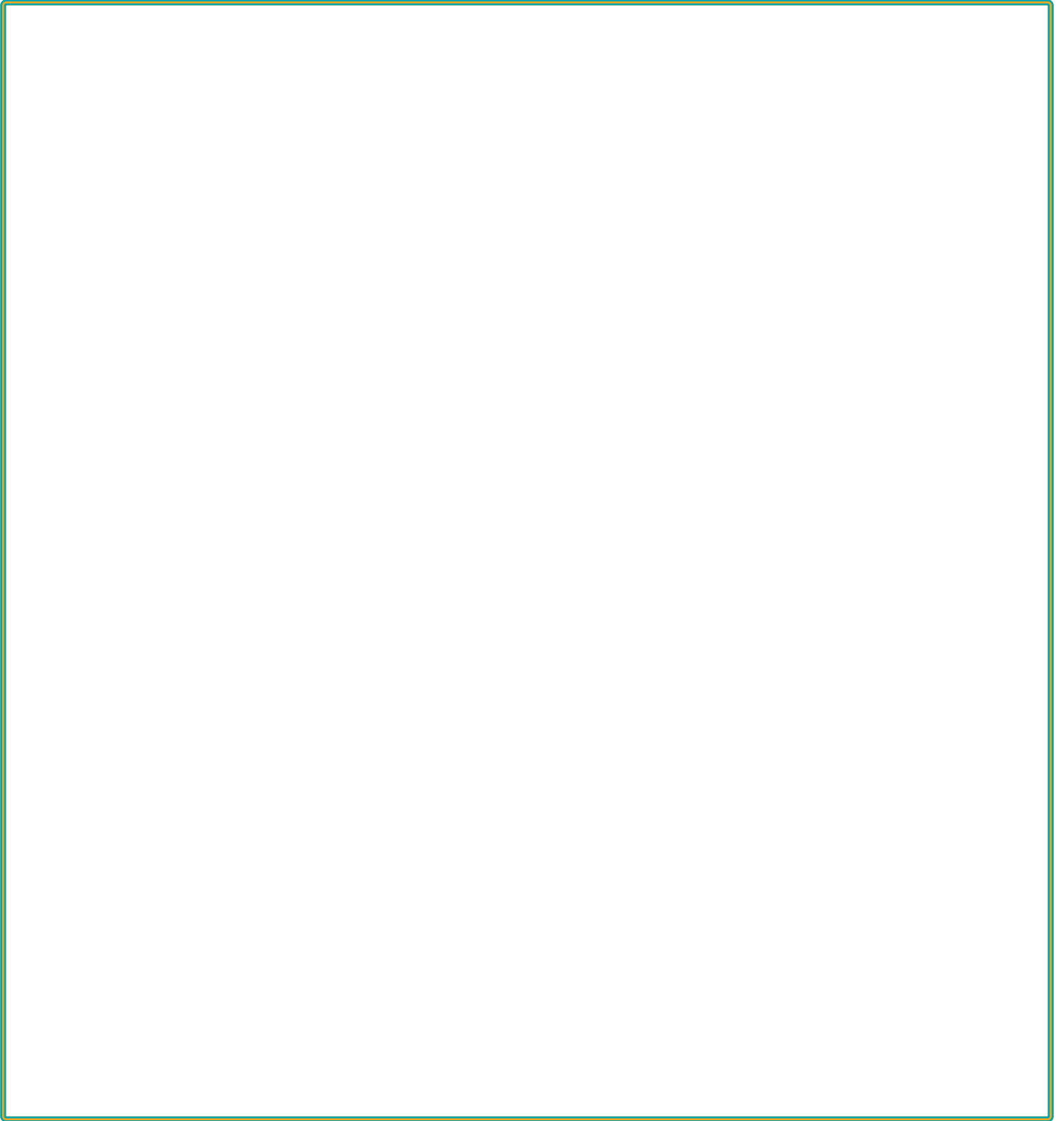
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