Verde Valley Master Transportation Plan

Health Impact Assessment

Arizona Department of Health Services

Yavapai County Community Health Services

PLANet
planning, policy, design

November 9, 2015

Acknowledgments

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1. Summary

HIA PURPOSE AND GOALS

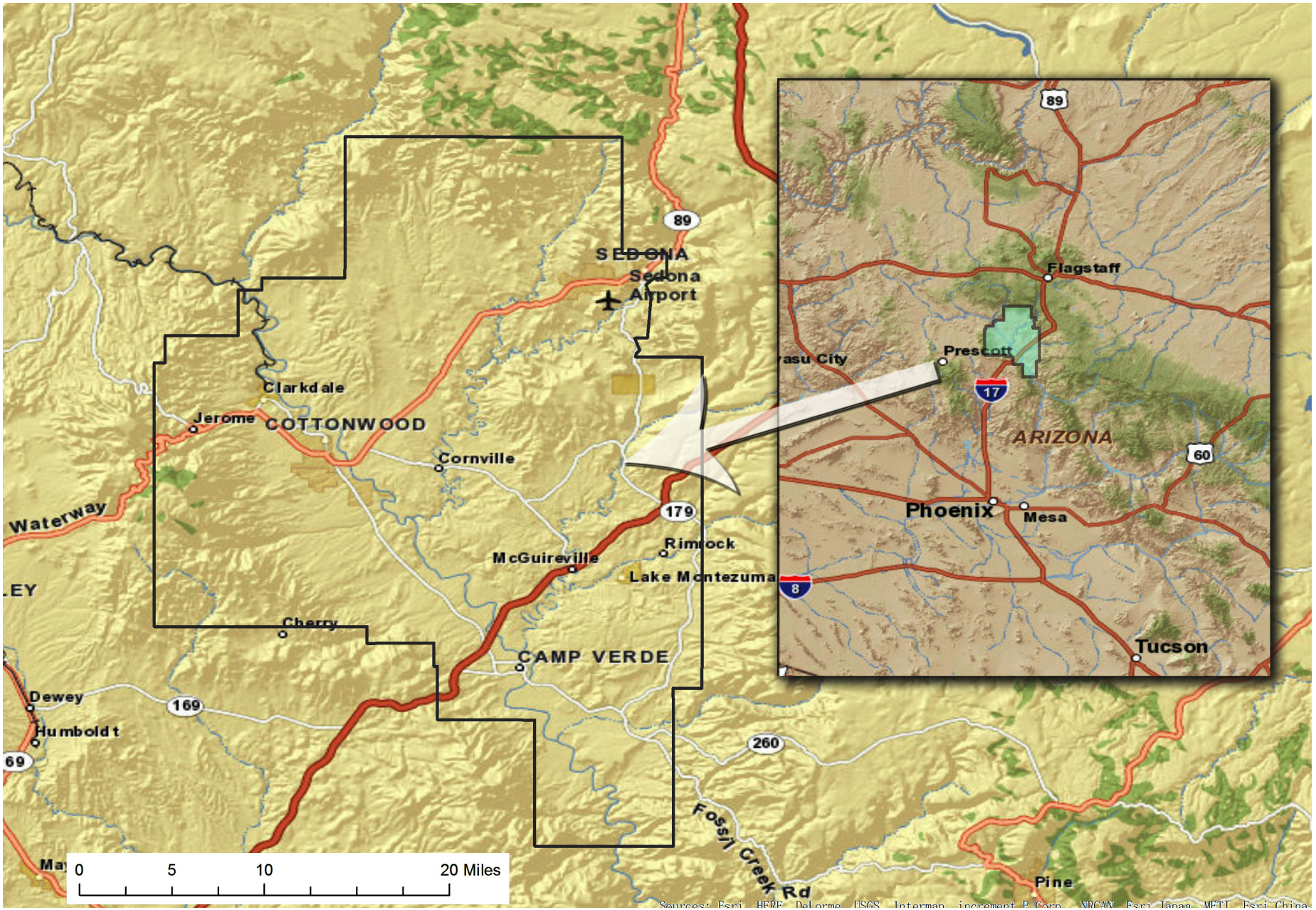
This Health Impact Assessment evaluates the health impacts that would result from transportation improvements recommended in the Verde Valley Master Transportation Plan (VVMTP) that is being developed through the Arizona Department of Transportation (ADOT) Planning Assistance for Rural Areas (PARA) program. (Figure e1: Project Context Map). The VVMTP is an update to the 2009 Verde Valley Master Transportation Study. The 2009 Transportation Study was completed during a high growth and income period in the region. As a result of the 2008-2012 recession, the region recognizes that many of the recommendations in the 2009 Transportation Study are no longer feasible and it initiated the VVMTP to update the 2009 Transportation Study and identify realistic solutions to the current and future mobility needs of the region.

The VVMTP is a high level planning document that will identify overall transportation challenges and potential solutions and not specific facility designs. This HIA focuses on the overall types of transportation facilities that could support healthy lifestyles and provide healthy transportation options for the Verde Valley.

OBJECTIVES OF THIS HIA

- The primary objective of this HIA is to provide information to the Arizona Department of Transportation and the jurisdictions in the Verde Valley about healthy transportation options and the health impacts of potential transportation improvements recommended through the Planning Assistance to Rural Areas Program.
- A secondary objective of the HIA was to build community partnerships and support for health-relevant transportation recommendations.
- A third objective of this HIA was to raise community awareness about the relationship between health and transportation.

Figure e1: Project Context Map



HIA TEAM AND SPONSORSHIP

The team conducting the Health Impact Assessment included:

- Anissa Jonovich, Healthy Community Design Manager, Arizona Department of Health Services Project Manager
- Paul Katan, M.A., Health Policy Manager, Yavapai County Community Health Services Project Lead
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This Health Impact Assessment was developed in partnership with the Arizona Department of Transportation PARA. The HIA is funded by the Arizona Department of Health Services (ADHS) with a grant from the Centers for Disease Control and Prevention-National Center for Environmental Health under grant number 1UE1H001193-01.

SUMMARY OF FINDINGS

Providing bicycle, pedestrian and transit facilities within the Verde Valley will provide healthy transportation options for the community. The Verde Valley is an older community with some towns that have high levels of poverty or large percentages of the population without cars. The Verde Valley also has a high number of disabled persons living in group homes. Transit and mobility solutions that enable these populations to access health care, jobs, and community institutions will result in better overall community health.

RECOMMENDATIONS

PROVIDE BICYCLE FACILITIES THROUGHOUT THE VERDE VALLEY, ESPECIALLY ALONG SR89A BETWEEN COTTONWOOD AND CAMP VERDE AND BETWEEN SEDONA AND CORNVILLE.

Many people at public meetings stated that bicycle facilities are needed along SR89A. Bicycling is a form of transportation that can be used by people to travel longer distances than could be accomplished by walking. Older residents in the Verde Valley are healthier than in many other areas, and there is an active bicycling community. Bicycling facilities can be used to improve the levels of physical activity, reducing obesity and obesity related chronic diseases as well as provide a transportation option to those without access to a vehicle.

PROVIDE PEDESTRIAN FACILITIES THROUGHOUT THE VERDE VALLEY, ESPECIALLY ALONG SR89A BETWEEN COTTONWOOD AND CAMP VERDE AND BETWEEN SEDONA AND CORNVILLE.

Yavapai County has a high percentage of older residents, and County residents identified physical activity as an important health issues. Pedestrian facilities will provide options for those without cars and enable residents to safely increase their level of physical activity by walking to nearby destinations.

Pedestrian facilities will also aid in mobility options for the disabled, and potentially make it easier for them to be independent and access transit.

Pedestrian facilities are also important for people who take transit. Providing safe, comfortable, and convenient facilities connecting hospitals and commercial areas to residents can result in healthier communities and enable people to live healthy lifestyles.

PROVIDE MARKED PEDESTRIAN CROSSWALKS IN COMMERCIAL AREAS AND BUSY INTERSECTIONS INCREASES PEDESTRIAN SAFETY AND REDUCES COLLISIONS BETWEEN PEOPLE AND VEHICLES.

Many of the commercial areas and health facilities are on SR89A or on SR197. These roadways have high volumes of traffic and higher speeds. Providing safe areas for people to walk may make it more comfortable for pedestrians. As a result, more people may walk, increasing levels of physical activity.

Increase transit service so that it serves and connects all Verde Valley communities. Ensure that communities with the lowest rates of vehicle ownership, such as Cornville and communities with a high percentage of disabled residents, such as Cottonwood, are included in transit routes connecting it to hospitals, shopping, schools, and employment.

Yavapai county has high numbers of older residents, disabled residents who use transit, and also has people within each community without access to vehicles. Transit is important for providing access to health care, community services, and social activities.

PUBLIC ENGAGEMENT

The public and stakeholder engagement activities for this HIA were planned so that they could occur alongside those of the VVTMP. Public and stakeholder engagement activities were coordinated through including the HIA project team in the VVTMP's Project Management Team (PMT) meetings. This resulted in coordinated presentations and outrach materials. For example, the HIA on-line survey QR code was included in the VVTMP public meeting advertisements, and presentations about the HIA were incorporated into VVTMP presentations at public and stakeholder meetings. This coordination enhanced both projects and also resulted in information sharing between the two projects.

In addition to ideas and comments collected at public meetings, additional public and stakeholder engagement activities were conducted by the HIA team. These included an online community engagement tool and leveraging community collaborations that prioritize health and transportation. It is worth noting that our use of community collaborations for stakeholder engagement created an additional mechanism public engagement.

2. About

THE PROJECT

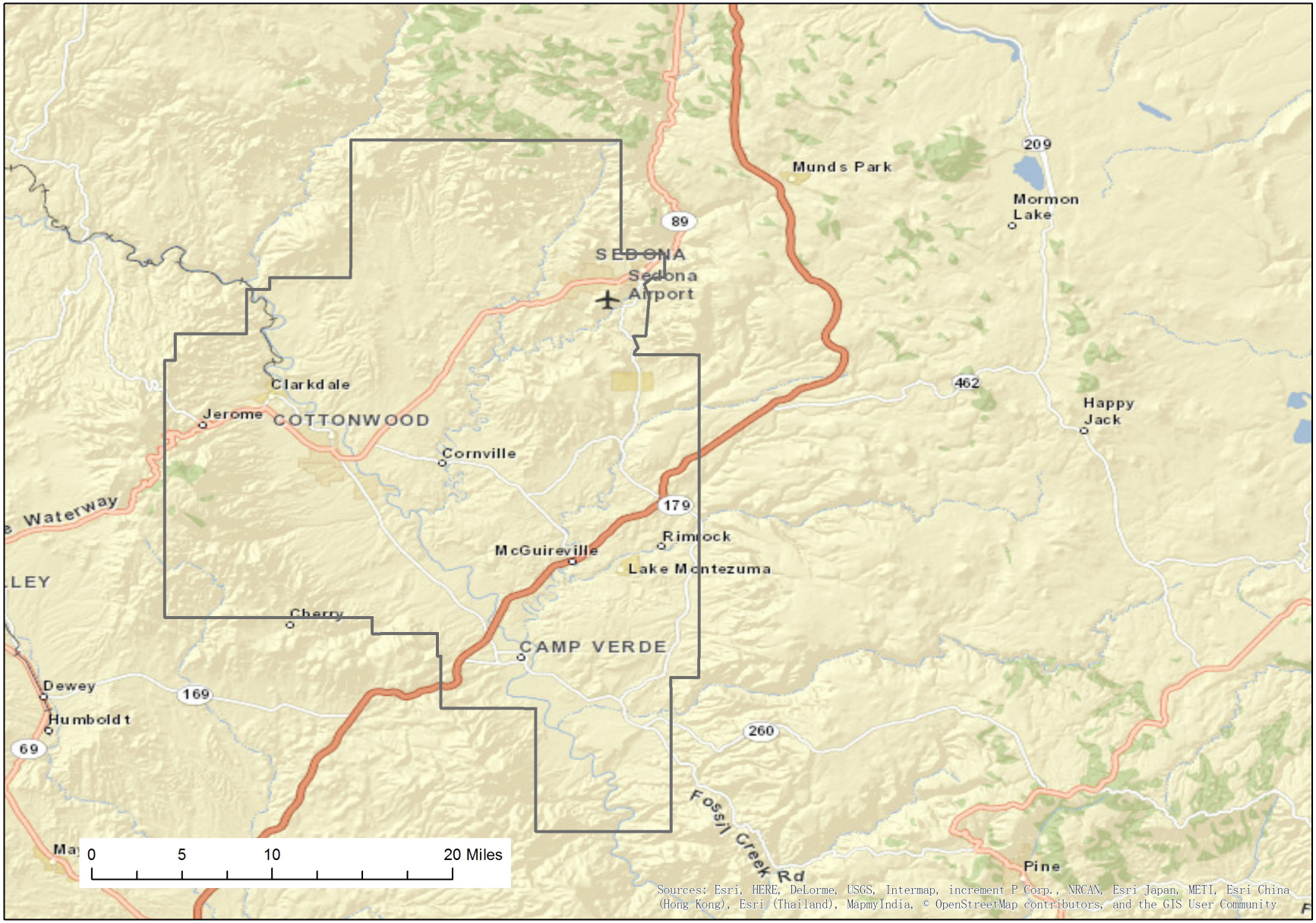
This project evaluates the health impacts that would result from transportation improvements recommended in the Verde Valley Master Transportation Plan (VVMTP). The VVMTP is an update to the 2009 Verde Valley Master Transportation Study and addresses immediate and long term transportation needs in the Verde Valley. The Verde Valley includes the communities of Clarkdale, Cottonwood, Sedona, Jerome, Lake Montezuma, Cornville, Oak Creek, Verde Village and portions of the Yavapai-Apache Nation (Figure 1: Verde Valley).

The VVMTP will provide recommendations to:

- Establish a vision for an efficient, seamless transportation system that links communities in the Verde Valley by all modes of transportation.
- Enhance mobility and improve safety
- Support planned land use and future growth
- Address safety and operational needs of the transportation/roadway system
- Promote economic growth and community livability [1].

The Health Impact Assessment will provide additional input regarding the potential impacts of a variety of transportation facilities (e.g., bicycle lanes, transit, and pedestrian facilities) on public and individual health.

Figure 1: Verde Valley

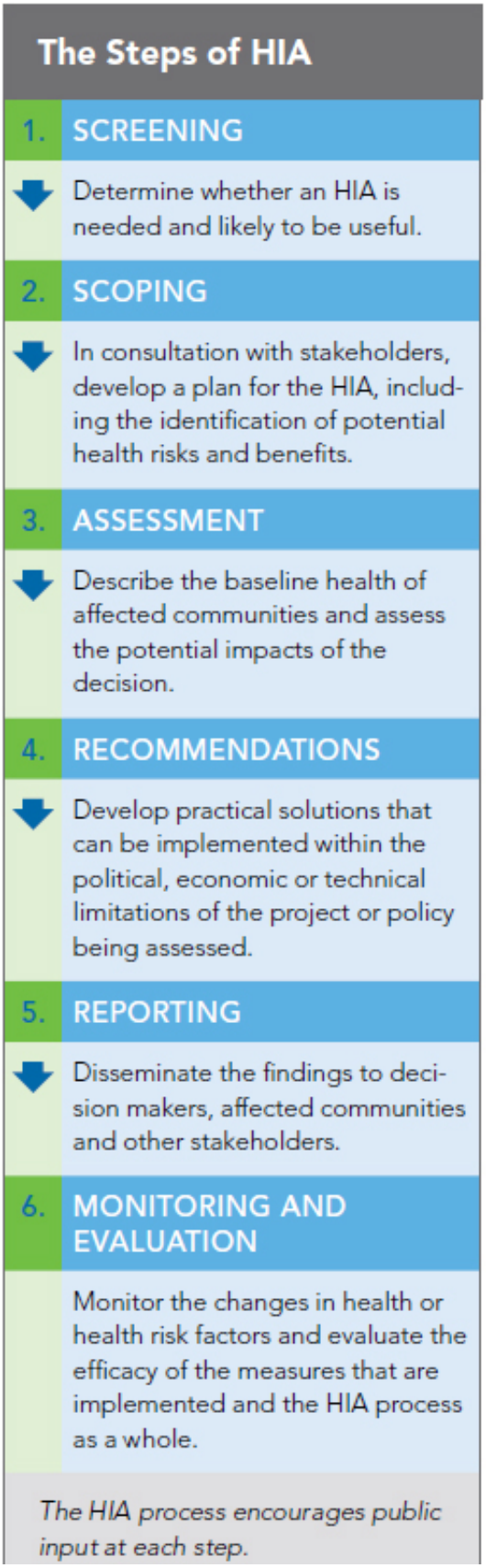


HEALTH IMPACT ASSESSMENTS (HIAs)

A Health Impact Assessment (HIA) helps communities and others make informed choices about improving public health through community policies and design.

By conducting a HIA, a community can leverage the health benefits of a proposed plan, policy, program, or project by objectively evaluating the potential health impacts or outcomes before it is built or implemented. An HIA can provide recommendations to increase positive health outcomes and minimize adverse health outcomes. The HIA process brings public health issues to the attention of persons who make decisions about areas that fall outside of traditional public health arenas, such as transportation or land use[2].

The National Research Council[2] defines HIA as "a systematic process that uses an array of data sources and analytic methods, and considers input from stakeholders to determine the potential effects of a proposed policy, plan, program, or project on the health of a population and the distribution of those effects within the population. HIA provides recommendations on monitoring and managing those effects.[3]"



Source: The HIA Process. August 26, 2014. The Pew Charitable Trusts. http://www.pewtrusts.org/en/about/news-room/news/2014/08/28/the-hia-process

THE HIA PROCESS

The HIA process includes six steps:

- Screening
- Scoping
- Assessment
- Recommendations
- Reporting
- Monitoring and Evaluation

Screening is the first step of the process. During the screening process, a determination is made if the project is related to the determinants of health and if conducting an HIA will have value to decision makers. Information about determinants of health is located in the Screening chapter of this Assessment.

Scoping identifies the determinants of health and specific health topics that will be addressed in the HIA, and identifies data sources available to conduct the HIA. During scoping, the types and extent of the public engagement process are also outlined in a public engagement plan. The public engagement plan for this HIA is located in
Appendix B.

The **Assessment** phase of an HIA is where the baseline health indicators related to the project or policy are described and where the potential health effects of the proposed project or policy are identified.

Recommendations are specific actions included in the HIA that could benefit community health with regards to the proposed project or policy.

Reporting includes activities to inform the community of the HIA recommendations and process.

The **Monitoring and Evaluation** section includes information on ways the process could have been improved, and potential indicators that could be used to monitor the impact of the project and recommendations.

THE RELATIONSHIP OF HEALTH TO TRANSPORTATION

Research links transportation to public and individual health.

On balance, the literature shows that regular physical activity:

- Decreases the risks of cardiovascular disease, colon cancer, and diabetes;
- Maintains muscle strength and joint structure and function;
- Is necessary for normal skeletal development during childhood;
- May relieve depression, anxiety, and other mental illnesses;
- Along with appropriate dietary patterns, may lower obesity levels.

Transportation systems influence our level of physical activity in the following three ways:

1.. Mode choice and trip frequency
Rural roadway networks are based in farm to market roads, or state and federal highways that are designed to quickly move people and goods between large population centers. Historically, rural roadways do not include pedestrian facilities, except when passing through historic town centers. In the book titled "True West[4]", the importance of roadways that respect natural terrain and topography is emphasized. These Roadways are often narrower, and take into the context of the natural and built environment are recommended. Sometimes, these more context-sensitive roadways were designed without pedestrians and cyclists in mind. As a result, rural transportation facilities often do not provide a variety of safe transportation options.

2. **Streets can be designed to facilitate either automobile travel or non-motorized travel**.
Streets that are wide, smooth, and straight encourage automobile travel at fast speeds and discourage travel by foot or bicycle. Conversely, streets that are narrow and irregular discourage automobile travel at high speeds.

Source: Robert Wood Johnson Foundation. Better Transportation = Healthier Lives

Additionally, streets that incorporate pedestrian and bicycle facilities (bike lanes, sidewalks, crosswalks, etc.) and that are calmed (i.e., streets that contain traffic-slowing obstacles and devices) are believed to facilitate more walking and bicycling. In the United States, street design has been dominated by the desire to facilitate the smooth flow of automobile traffic, resulting in design standards for streets that encourage driving and discourage walking and biking.

3. **Transportation systems can increase walking and biking**
Including separate, dedicated bicycle and pedestrian facilities such as bike paths and walking trails can encourage changes in individual behavior and result in an increase in physical activity[5].

4. **The availability of transit can result in an increase in physical activity.**
The availability of transit can increase physical activity and provide access to a wider range of services. A 2005 study of 3312 transit users among the 105,942 adult respondents to the 2001 National Household Travel Survey found that walking to and from public transportation can help physically inactive populations, especially low-income and minority groups, attain the recommended level of daily physical activity. Increased access to public transit may help promote and maintain active lifestyles[6].

3. Screening

INTRODUCTION

Screening is the first phase of a Health Impact Assessment (HIA). During this phase, the value of examining the impact of a proposed project or policy is assessed. The assessment is based on the extent to which the proposal could impact determinants of health. Using the findings of the Screening, a determination is made whether or not to conduct a HIA.

SCREENING SUMMARY

SIGNIFICANCE AND VALUE

The strong relationship between health and transportation provided an incentive for the Arizona Department of Health Services (ADHS) to partner with ADOT through the PARA[7] program to select projects that could potentially benefit from an HIA. The Verde Valley Master Transportation Plan was selected as an HIA candidate because this Master Plan will identify transportation improvements that will affect physical activity and determinants of health within a rural community.

The relationship between transportation and community health is strong. In 2012, the U.S. Department of Transportation Federal Highway Administration (FHWA) formed a Health in Transportation Working Group to:

- Develop a common understanding of health in transportation;
- Identify aspects of existing USDOT programs that relate to health;
- Address stakeholders health-related concerns and communicate these concerns within the agency.

In August 2014, the FHWA Working Group completed its beta testing of a checklist to incorporate public health considerations into the traditional steps in corridor planning. (Figure 2: FHWA Working Group Framework.) This checklist incorporates many of the steps of HIAs.

Figure 2: FHWA Working Group Framework

The Framework, developed by FHWA, will help to incorporate public health considerations into the traditional steps in corridor planning. The framework includes many of the same steps as HIA. Source: FHWA Health and Transportation Corridor Planning Framework Fact Sheet. http://www.fhwa.dot.gov/planning/health_in_transportation/research_efforts/framework_fact_sheet/index.cfm

Providing new transportation facilities and enhancements to existing transportation networks in the Verde Valley will affect the following determinants of health:

- Transportation options - Enhancements to existing transportation facilities and new transportation facilities can provide additional mobility options for residents and visitors to this area.
- Physical environment - Transportation is a key determinant of land use, and making towns and cities within the Verde Valley more walkable may result in more pedestrian-oriented developments.
- Natural environment. Transportation improvements and new facilities could also increase access to open spaces that are a hallmark of this area, as well as to healthcare facilities and places to buy healthy food.

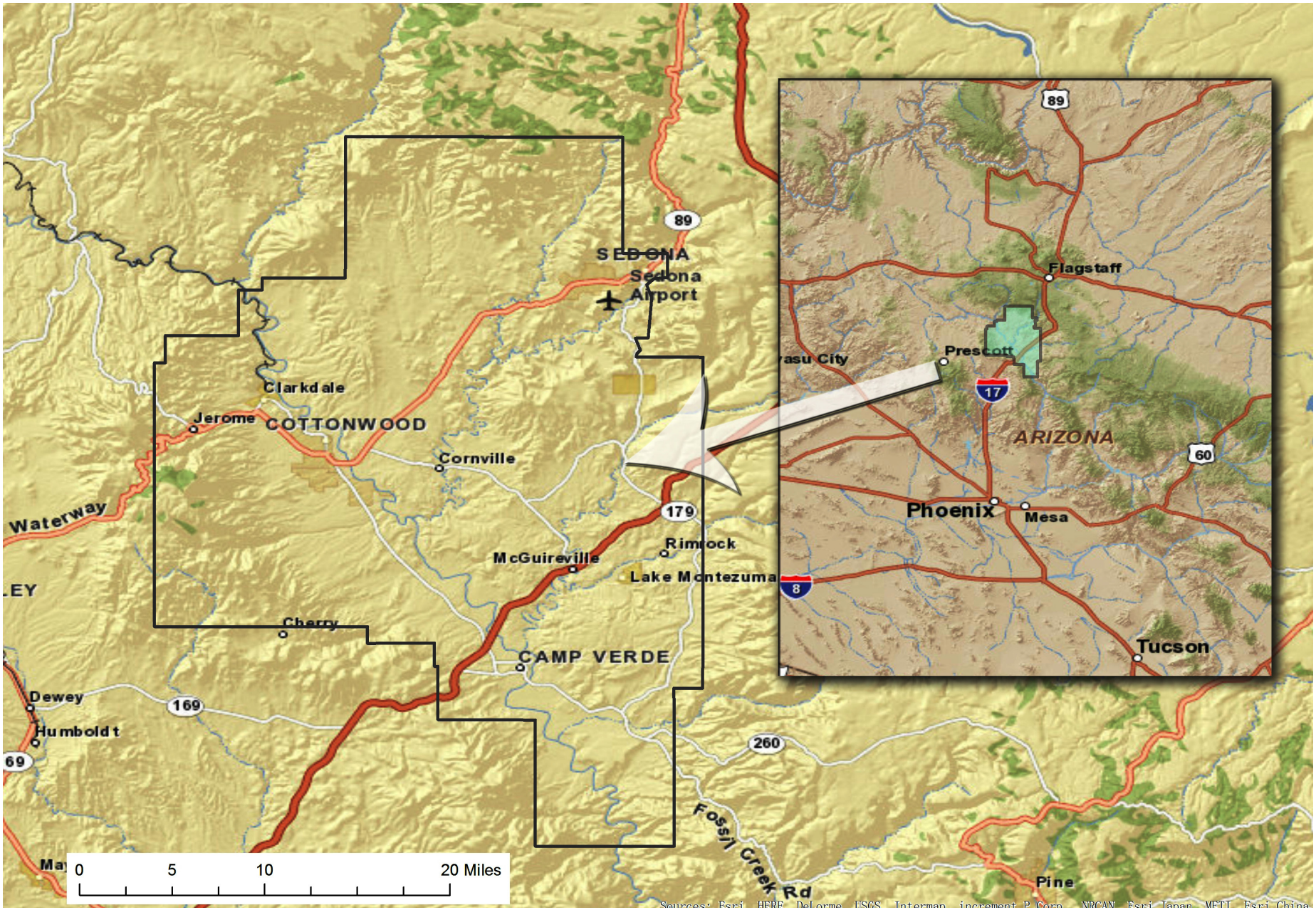
CONTEXT

The Verde Valley is located in Central Arizona, approximately 100 miles north of Metropolitan Phoenix. Situated along the scenic Verde River, the Verde Valley incorporates portions of the Coconino and Prescott National Forest and the following incorporated and unincorporated communities[8]. (Figure 3: Project Context Map.)

Town of Camp Verde

Established in 1865 as the first military post in the area, Camp Verde is the earliest community in the Verde Valley thus providing the Town with a long and rich history. Described as the gateway to the Verde Valley, Camp Verde is located at the junction of I-17 (principal route via Phoenix to Flagstaff) and SR 260 (scenic route to the Mogollon Rim in the eastern portion of the State). Starting in 2001, the Town initiated the redevelopment of their historic downtown, by installing thematic streetscape to preserve and enhance the historic character of Camp Verde and to promote economic activity.

Figure 3: Project Context Map



Town of Clarkdale

Founded by the United Verde Copper to provide housing and services to their employees, Clarkdale is an early example of a planned community. Clarkdale's historic Downtown Business District is recognized as a Historic District on the National Register of Historic Places. Originally the rail line for the United Verde Copper, the Verde Canyon Railroad now is a major tourist attraction that gives travelers a four-hour scenic tour of the Sycamore Canyon Wilderness Area. Northeast of Clarkdale is the Tuzigoot National Monument, an 800 year old Sinagua pueblo, that attracts over 74,000 visitors a year.

City of Cottonwood

Located along the Verde River, Cottonwood was named for the regal cottonwood trees lining the river's valley. Following mining developments in nearby Jerome and Clarkdale, Cottonwood was established as an alternative to the company owned mining towns and increasingly became the region's commercial center. As one of the economic hubs of the Verde Valley, Cottonwood serves as the Verde Valley's center of retail, commercial, medical, educational, and government services.

Town of Jerome

Located on top of Cleopatra Hill, between Prescott and Clarkdale, Jerome was originally established in 1876 as a copper mining camp. Located next to what was once the largest copper mine in Arizona, Jerome was once the largest city in the Arizona territory. When the Phelps Dodge Mine closed in 1953, Jerome was called the world's "biggest ghost city". Designated as a National Historic District, Jerome now is a thriving artist community with a wide variety of antique shops, art galleries, and boutiques.

City of Sedona

Often referred to as the "most beautiful place in America", Sedona is surrounded by spectacular red rock formations and canyons along Oak Creek. Incorporated in 1988, Sedona is divided between Coconino and Yavapai counties with resident's having local control. Due to the cities' majestic landscape, it has become one of the largest tourist destinations in Arizona. According to the cities' visitor bureau, Sedona attracts nearly 4 million visitors per year. Major tourist attractions in Sedona include the Oak Creek Canyon, Slide Rock State Park, Chapel of the Holy Cross, and countless recreational hiking trails.

DETERMINANTS OF HEALTH

Different organizations engaged in promoting health nationally and internationally have different ways of describing what factors determine health. While these descriptions differ, they all generally focus on three general categories: physical environment; social environment; and individual behaviors. To a large extent, individual behavior is influenced by physical and social determinants.

The World Health Organization (WHO) broadly describes nine determinants of community and individual health. (Figure 4: WHO Determinants of Community and Individual Health). These are:

- Social and Economic Environment
- Built Environment
- Income and Social Status
- Genetics
- Social Support Networks
- Individual Characteristics and Behaviors
- The Physical Environment
- Health Services
- Gender

Figure 4: World Health Organization Determinants Of Community & Individual Health

The Social and Economic Environment - Availability and access to community organizations and employment affects all aspects of our physical and mental health.

The Built Environment - How we live affects our health. Communities designed to encourage physical activity result in lower rates of obesity and diseases related to physical inactivity. Physical activity increases the production of certain hormones and chemicals that have been shown to prevent depression and other mental illnesses. Communities that are designed to encourage interactions between their residents also help to foster a sense of community. A sense of community has been found to increase individual well-being. Communities that are designed to be safe can prevent accidents that can cause personal injuries.

Income and Social Status - Higher income and social status are linked to better health. The greater the gap between the richest and poorest people, the greater the differences in health.

Genetics - Inheritance plays a part in determining lifespan, healthiness and the likelihood of developing certain illnesses. Personal behavior and coping skills – balanced eating, keeping active, smoking, drinking, and how we deal with life's stresses and challenges all affect health.

Social Support Networks – Greater support from families, friends and communities is linked to better health. Culture - customs and traditions, and the beliefs of the family and community all affect health.

Individual Characteristics & Behaviors - How a person behaves has a direct impact on individual and community health. A person that engages in high risk activities can endanger the health of themselves and others.

The Physical Environment – Safe water and clean air, healthy workplaces, safe houses, communities and roads all contribute to good health. Employment and working conditions – people in employment are healthier, particularly those who have more control over their working conditions.

Education- Low education levels are linked with poor health, more stress and lower self-confidence.

Health services - Access and use of services that prevent and treat disease influences health

Gender - Men and women suffer from different types of diseases at different ages.

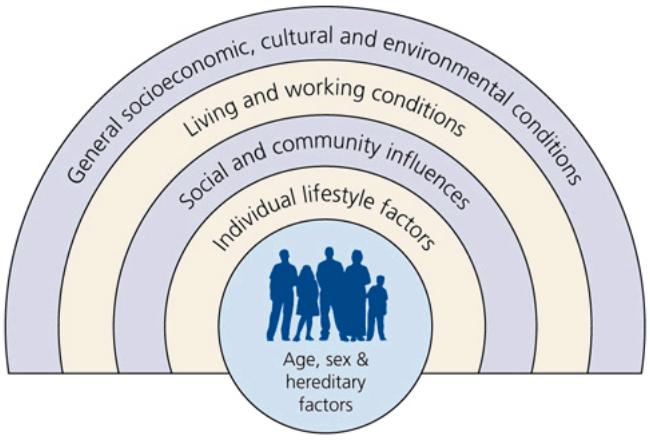
SOURCE: World Health Organization. Health Impact Assessment. http://www.who.int/hia/evidence/doh/en/ Access Date: June 19, 2015.

Healthy People 20203, operating under the auspices of the National Institute of Health Office of Disease Prevention and Health Promotion identifies two categories of health determinants of health: physical and social. Transportation options is identified as a social determinant of health. Other directly related social determinants of health identified by Healthy People 2020 are access to educational, economic, and job opportunities and health care services.

Healthy People 2020 physical determinants of health include the natural environment, such as green space (e.g., trees and grass) or weather (e.g., climate change), built environment, such as buildings, sidewalks, bike lanes, and roads, and physical barriers[9]. (Figure 5: Healthy People 2020 Social Determinants of Health)The Verde Valley is known world wide for its natural environment (Red Rocks of Sedona, Verde River, and unparalleled open spaces). It includes historic, pedestrian downtowns and new, auto oriented developments. There is a vocal and active bicycling community representing the Verde Valley. The Master Transportation Plan will impact access to Verde Valley natural resources, the provision and location of bicycling, transit , and pedestrian facilities and, potentially, the quality of the pedestrian environment in downtowns and commercial areas.

The Centers for Disease Control (CDC) defines determinants of health, as factors that may be biological, socioeconomic, psychosocial, behavioral, or social in nature[10]. The CDC identifies five general areas including:

- Biology and genetics. Individual behavior. Examples: alcohol use, injection drug use (needles), unprotected sex, and smoking
- Social environment. Examples: discrimination, income, and gender
- Physical environment. Examples: where a person lives and crowding conditions
- Health services. Examples: Access to quality health care and having or not having health insurance.



Source: GlobalHealthHub.org. http://www.globalhealthhub.org/2011/07/18/sdhdeterminants/

Figure 5: Healthy People 2020 Social Determinants of Health

- Availability of resources to meet daily needs (e.g., safe housing and local food markets)
- Access to educational, economic, and job opportunities
- Access to health care services
- Quality of education and job training
- Availability of community-based resources in support of community living and opportunities for recreational and leisure-time activities
- Transportation options
- Public safety
- Social support
- Social norms and attitudes (e.g., discrimination, racism, and distrust of government)
- Exposure to crime, violence, and social disorder (e.g., presence of trash and lack of cooperation in a community)
- Socioeconomic conditions (e.g., concentrated poverty and the stressful conditions that accompany it)
- Residential segregation
- Language/Literacy
- Access to mass media and emerging technologies (e.g., cell phones, the Internet, and social media)
- Culture

Physical Determinants of Health

- Natural environment, such as green space (e.g., trees and grass) or weather (e.g., climate change)
- Built environment, such as buildings, sidewalks, bike lanes, and roads
- Worksites, schools, and recreational settings
- Housing and community design
- Exposure to toxic substances and other physical hazards
- Physical barriers, especially for people with disabilities
- Aesthetic elements (e.g., good lighting, trees, and benches)

Source: Healthy People 2020. Determinants of Health. http://www.healthypeople.gov/2020/about/foundation-health-measures/Determinants-of-Health. Access Date: June 22, 2015

The Master Transportation will affect access to health care. The major medical providers to the Verde Valley are all located on State Roads that are part of this study or less than 1/2 mile from state roads that will be considered in this study. These include the Verde Valley Medical Clinic (on SR89A(, the Sedona Verde Valley Medical Clinic - Village of Oak Creek (on SR179), the EntireCare Rehabilitation & Sports Medicine and Verde Valley Medical Center's Camp Verde Health Center (on Finnie Flat Road, 1/2 mile north of SR260). SR260, SR89A and SR179 all pass through historic downtowns (Cottonwood, Jerome, Sedona, Lake Montezuma). Design changes and facilities recommended by the Master Transportation Plan for these roadways will impact the quality of the physical environment through which they pass, and impact opportunities for healthy transportation and physical activity.

RELATIONSHIP OF THE MASTER TRANSPORTATION PLAN TO DETERMINANTS OF HEALTH

The Verde Valley is a diverse community connected by local and state roads. Interstate 17 between Flagstaff and Phoenix is a significant motorized north-south transportation corridor that bisects the area. Access to local services, however, is via SR260, SR89A and SR179 and other state and local roads that cross I-17 and connect the cities, towns, and county subdivisions that form the Verde Valley. The Master Transportation Plan will focus on these connecting roadways and include recommendations for enhancing access and connectivity within the Verde Valley.

This project would have an effect on the following Determinants of Health:

Transportation Options - The Master Transportation Plan will identify opportunities to enhance existing non-motorized, and motorized (including transit) transportation networks and relieve congestion. These recommendations could include adding roadway capacity and connecting bicycle and pedestrian networks. Better transportation access may also increase access to health care.

Access to Healthcare, Jobs, Economic Opportunities, and Education - The Master Transportation Plan will identify opportunities to enhance mobility within the Valley and make destinations within the Verde Valley Community more accessible. The Verde Valley economy is very tourism based. Enhanced access to the assets of the Verde Valley will support local businesses and potentially increase employment. Enhanced access can also make health care services more convenient to local residents.

Social and Economic Environment - Each of the cities, towns, and county subdivisions within the Verde Valley have a unique character. Connecting these areas will enable residents to access the social activities and natural resources within each of these areas.

Individual Characteristics and Behaviors - Providing better access to natural resources and providing facilities where people can more safely walk, bicycle, or use transit can impact individual mobility choices and result in behavior changes where people choose health transportation options.

EFFECT ON VULNERABLE POPULATIONS

Recommendations developed as part of this Master Transportation Plan will impact mobility and access options for the disabled, low income, and senior citizen populations.

he Verde Valley tourism economy relies on a service economy. Service jobs are generally those that provide some of the lowest incomes. Sixteen percent of the Verde Valley lives in poverty[11], as compared to 13 percent in Yavapai County[12]. Low income individuals frequently have limited transportation options and rely more on public transportation options.

One third of all persons in poverty in Yavapai County are disabled. Transit is crucial to independent mobility for many disabled people.

The Verde Valley has long been a retirement community. While some cities, notably Cottonwood, have growing younger populations most other communities are known as affordable retirement locations. As people age, access to health care becomes more important and single occupancy vehicle mobility options decline. This Master Transportation Plan will address transit and could impact access to health care, healthy food, and community services.

The Verde Valley includes community and private colleges. Education is directly correlated to income. Enhancing access to educational institutions could impact incomes. Elder learning is important to keep older people engaged and mentally acute. Improving access to educational institutions could help to prevent mental decline associated with aging.

DETERMINATION OF HEALTH IMPACT ASSESSMENT RELEVANCE

A Health Impact Assessment (HIA) is warranted for this project. The Master Transportation Plan will affect several factors that are identified as determinants of health by multiple organizations and consequently, could influence the overall health of key populations including the elderly and service workers. These factors include transportation options, the built environment, and access to healthcare, jobs, and economic opportunities and education. (FIGURE 6: Arizona Health in Policy and Practice HIA Screening Criteria)

Figure 6: Arizona Health in Policy and Practice HIA Screening Criteria		
Criteria	Response	Discussion
TIER I		
Is there a specific decision being made	Yes	PARAs identify future State ad potential future local transportation improvements for a particular area.
Policy Area	Transportation Policy Area	
Proposal Status	Awarded and Active	The PARA was awarded to the Verde Valley Metropolitan Planning Association (MPO)
Proposal Timing	The PARA will start in January of 2015. Planned Completion is Dec. 2015/ Jan. 2016.	The HIA time frame is from February 2015 through August 2015. This timeframe will provide an opportunity for the HIA to provide input to the final PARA recommendations.
Potential Health Impacts (Initial Screening)	Yes	The Verde Valley is a rural area with high numbers of older residents and a higher than county wide percent of persons in poverty. The area is highly auto dependent. The initial focus of the Master Transportation Plan is to assess the recommendations of a prior Master Transportation Plan that was developed prior to the widespread consideration of health and its relationship to transportation and during times of high growth and increasing revenues. Conducting a Health Impact Assessment will introduce other considerations into this transportation plan in addition to vehicular congestion relief.

Figure 6: Arizona Health in Policy and Practice HIA Screening Criteria		
Criteria	Response	Discussion
Impact on health disparities	Yes	Rural communities typically have less healthy transportation options. People without cars often have limited access to healthcare, healthy eating options, employment, and education.
Local vs. State	State	This is a State funded project that focuses on State funded roadways.
Discretion of Stakeholder Group	Guidance	The PARA includes a Technical Advisory Committee that will drive the decision-making process.
TIER II		
Receptivity of decision makers	High	ADOT and the county department of health area partners in this pilot effort.
Partners exist to help with HIA	Yes	This HIA will be prepared in partnership with Yavapai County Department of Health and the consultant developing the PARA. ADOT and the PARA consultant understand that this process will rely on some data prepared through the PARA process, and that community meetings will be coordinated. The County has committed to ensuring the participation of other key health-related stakeholders.
Potential for systemic and/or institutional change	Potentially	It is possible that more education regarding the health impacts of transportation facilities could result in healthy transportation options receiving higher priority in the Master Transportation Plan.

4. Scoping

INTRODUCTION

This chapter establishes the framework for understanding the scope of this assessment. In this chapter, information sources for the Verde Valley and its communities are identified, and a Pathway Diagram is presented. The Pathway Diagram helps determine the range of health related topics relevant to the Master Transportation Plan that will be evaluated in this assessment. This chapter also identifies specific groups that will be included in the Assessment process and the specific outreach techniques that will be used to engage them.

RELEVANCE OF THIS PROJECT TO COMMUNITY HEALTH

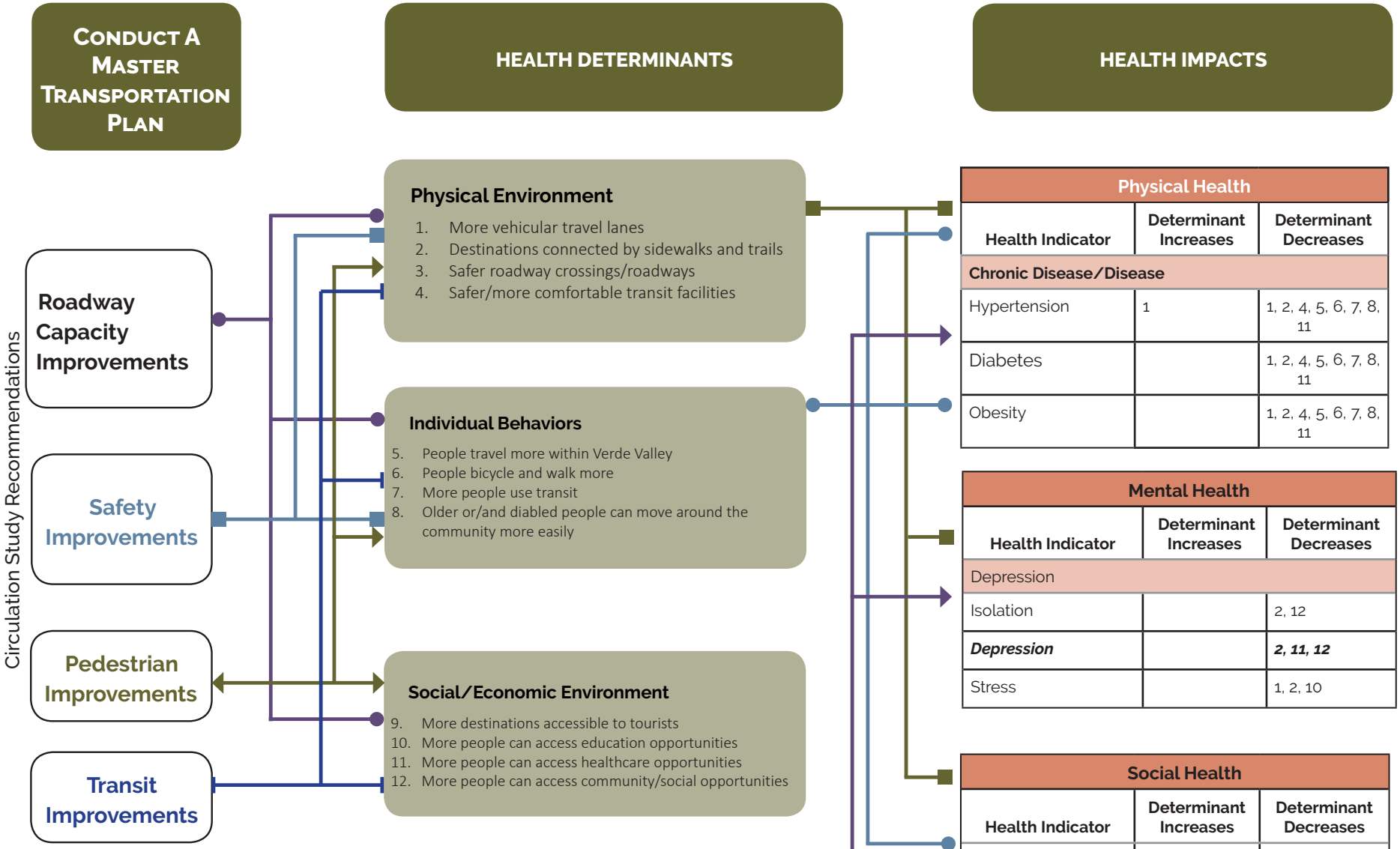
The Master Transportation Plan will include a variety of recommendations that will influence community health. At public meetings held throughout the Verde Valley, community members identified how transportation options could impact specific health determinants. These determinants were then connected to key health indicators using a Pathway Diagram. (Figure 7: Pathway Diagram and Figure 8: Pathway Explanation Table.)

About Pathway Diagrams

A Pathway Diagram maps out the causal pathways by which health effects might occur. In general, this approach describes effects directly related to the proposal (such as changes in air emissions) and traces them to health determinants (such as air quality) and finally to health outcomes (such as asthma). The first step in the framework is typically a determinant of health, such as air pollution, traffic, employment, or noise. Logic frameworks can be used as part of stakeholder engagement to develop a shared understanding of how a project will develop and the outcomes that can be expected.

Source: Improving Health in the United States: The Role of Health Impact Assessment. National Research Council (US) Committee on Health Impact Assessment.
Washington (DC): National Academies Press (US); 2011. http://www.ncbi.nlm.nih.gov/books/NBK83540/. Access Date: June 25, 2015.

Figure 7: Pathway Diagram



Physical Health

Health Indicator	Determinant Increases	Determinant Decreases
Chronic Disease/Disease		
Hypertension	1	1, 2, 4, 5, 6, 7, 8, 11
Diabetes		1, 2, 4, 5, 6, 7, 8, 11
Obesity		1, 2, 4, 5, 6, 7, 8, 11

Mental Health

Health Indicator	Determinant Increases	Determinant Decreases
Depression		
Isolation		2, 12
Depression		***2, 11, 12***
Stress		1, 2, 10

Social Health

Health Indicator	Determinant Increases	Determinant Decreases
Education	2, 4, 8, 10	
Culture/ Community	2, 4, 5, 8, 12	
Economic Activity	1, 2, 4, 5, 8, 9	1

Figure 8: Pathway Explanation Table		
PATHWAY	**DETERMINANT**	**DESCRIPTION**
1	Physical Environment - More Vehicular Travel Lanes	• Making it more convenient to drive may result in people walking less. It also may reduce stress associated with traffic congestion. Higher speeds, associated with less congestion may increase injuries from accidents. • Improving access to communities within the Verde Valley may increase their visibility to tourists, and result in more people who are driving through this area stopping to shop in local businesses. . • Reducing congestion could make people more willing to travel for education and other community services throughout the Verde Valley, reducing isolation.
2	Physical Environment - Destinations Connected By Transit, Sidewalks And Trails	• This could result in more people walking instead of driving to destinations within the Verde Valley, and help reduce the occurrence of chronic disease. It could also provide healthy options for residents and tourists to access natural resources. • Making it easier to travel by bicycle and foot may help to revitalize or further stimulate some smaller downtowns and town centers within the Verde Valley. It may also may make it easier to access jobs, resulting in increased incomes. • Providing non-motorized transportation options would allow people who do not drive to access education and other community services throughout the Verde Valley, reducing isolation and potentially increasing incomes.
3	Physical Environment - Safer Roadway Crossings/Roadways	• Less people are injured due to crashes between vehicles, vehicles and pedestrians, and vehicles and bicycles. • People perceive walking and bicycling as safer, and engage in this activity more
4	Physical Environment - Safer/More Comfortable Transit Facilities	More people take transit, resulting in more physical activity and better access to services and healthcare.
5	Individual Behaviors - People travel more within Verde Valley	People within the Verde Valley Communities become more connected, reducing social isolation.

Figure 8: Pathway Explanation Table		
PATHWAY	**DETERMINANT**	**DESCRIPTION**
6	Individual Behaviors - People bicycle and walk more	More people walking and bicycling could increase the levels of physical activity, resulting in lower rates of obesity related chronic disease. Exercise is also associated with elevations in mood.
7	Individual Behaviors - More People Use Transit	More people have regular access to services in other communities. More employment, higher incomes, less depression. More access to health care, healthy food, less obesity and obesity related chronic disease. This could result in less people shopping locally, and impact local businesses.
9	Individual Behaviors - Older People And/ Or Disabled Can Move Around The Community More Easily	More ability to move around the community, less social isolation and depression, less alcohol/substance abuse. More community cohesion.
10	Social/Economic Environment - More destinations accessible to tourists	Local businesses do better, more employment, higher incomes.
11	Social/Economic Environment More people can access education opportunities	Less social isolation, people get better jobs, higher incomes.
12	Social/Economic Environment More people can access healthcare opportunities	Better individual health, more information about healthy lifestyles and behaviors.
13	Social/Economic Environment More people can access community/social opportunities	Less social isolation, less mental disease related to social isolation (depression, substance abuse).

The direct benefits from the Master Transportation Plan recommendations impact the physical, social and economic environments. These impacts are directly an outcome of improvements to roadway safety, actions to reduce congestion, and new transportation facilities that could be recommended by the Master Transportation Plan.

HEALTH OUTCOMES

The Physical Environment, Social Environment and Individual Behavior health determinants are connected to the following health outcomes:

- Physical Health
- Obesity
- Chronic Disease
- Hypertension (blood pressure)
- Mental Health
- Suicide
- Substance Abuse
- Depression
- Social Health
- Sense of Community
- Economic Development

Based on the Pathway Diagram, recommendations included in a Master Transportation Plan could affect the physical, mental and social health of residents in the Verde Valley. The potential affects on health are broadly outlined below.

PHYSICAL HEALTH

Chronic Diseases are long-lasting conditions that can be controlled but not cured and include, but are not limited to diseases such as diabetes, obesity and overweight, hypertension (high blood pressure) and heart disease. As described by the Centers for Disease Control, chronic disease is the leading cause of death and disability in the United States. The CDC reports that half of all adults suffer from chronic diseases, and that seven of the top causes of death in the United States are due to chronic disease[13].

Transportation facilities that provide healthy mobility options can result in increases in physical activity. Increased physical activity is directly correlated with reductions in chronic obesity-related disease including hypertension, diabetes, and heart disease.

MENTAL HEALTH

The strongest evidence suggests that physical activity and exercise probably alleviate some symptoms associated with mild to moderate depression. The evidence also suggests that physical activity and exercise might provide a beneficial adjunct for alcoholism and substance abuse programs; improve self-image, social skills, and cognitive functioning; reduce the symptoms of anxiety; and alter aspects of coronary-prone (Type A) behavior and physiological response to stressors[14].

SOCIAL HEALTH

By providing access to community institutions and education, residents can be more connected to their community and to opportunities for social interaction. Reductions in social isolation and contribute to positive mental health. Individuals who lack social connections or report frequent feelings of loneliness tend to suffer higher rates of morbidity and mortality, as well as infection, depression, and cognitive decline, and social isolation may pose a particularly severe risk for older adults. Older adults are more likely to experience bereavement and develop health problems, both of which may increase their need for social support and companionship. As a result, social isolation may be particularly deleterious for older adults. Indeed, research indicates that older adults who experience one or another aspect of isolation have been found to be at greater risk for all-cause mortality, increased morbidity, depression, and cognitive decline [15].

ECONOMIC HEALTH

Providing a variety of connections that also support recreational activities for visitors, in particular bicycling and walking, will support tourism within these areas as well as provide healthy transportation options for local residents. In June 2013, Arizona Department of Transportation released a report, An Economic Impact Study of Bicycling in Arizona: Out of State Bicycle Tourists and Exports (PDF), which focused on the impacts from out-of-state cyclists traveling to Arizona for events, guided tours, races, and training camps. The study documented $57 million in retail sales and 721 jobs created across the state[16].

SPECIFIC HEALTH OUTCOMES EVALUATED IN THIS ASSESSMENT

The Master Transportation Plan will include high level recommendations to reduce congestion and provide mobility options within the Verde Valley. As a result, health areas of focus will be general, and address outcomes associated with chronic diseases such as obesity, diabetes, heart disease, and hypertension, social isolation, and access to healthcare.

DATA RESOURCES

Most social, demographic, and health data sources are only available for all of Yavapai County. some specific data is available for incorporated places within the County. This HIA relies on the Yavapai County Community Health Services (YCCHS) to provide the primary data resources used in this report. These include:

The following data sources were identified for this project:

- U.S. Census 2010 data
- American Community Survey Data
- Robert Wood Johnson Foundation County Health Rankings and Road Maps
- Arizona Behavioral Risk Factor Surveillance Survey System
- Arizona Department of Health Services Health Status and Vital Statistics 2013 report
- Centers for Disease Control Reports on Health
- Yavapai County Community Health Services 2012 Community Health Assessment
- Yavapai Regional Medical Center 2013 Community Health Needs Assessment
- Verde Valley Medical Center 2012 PRC Community Health Needs Assessment
- Public Available Studies on Health

PUBLIC ENGAGEMENT

Public engagement for the HIA paralleled the VVTMP process, as well as creating additional opportunities for input. As part of the VVTMP, the HIA team provided HIA information and garnered public input at three public meetings, in Sedona, Cottonwood and Camp Verde. The HIA team utilized three presentation boards and invited attendees to place stickers to identify health –related transportation concerns. Attendees were also invited to provide written feedback and elaborate on areas of concern. Feedback from the public meetings were compiled, used to determine the HIA's scope and to inform its recommendations.

An online resource was also provided to garner public input. Members of the public were invited to share their perspective at: vvhia.mysidewalk.com. The mysidewalk© page was promoted throughout the VVTMP process and by the stakeholders mentioned below. Feedback from the mysidewalk© page was compiled and used to determine the HIA's scope and to inform its recommendations.

HIA Stakeholder engagement leveraged that of the Transportation Master Plan's meetings, as well as two community collaborations that prioritize transportation and health in the Verde Valley. Stakeholder surveys were conducted for the VVTMP and included HIA relevant questions and responses. The surveys were shared with the HIA team and mined for input. The input was compiled and used to help determine the HIA' scope.

The NACOG Verde Valley Mobility Coordination Council served as a stakeholder group for the HIA. A presentation about the HIA was included in at a monthly meeting, where members of the council were invited to provide input that informed the HIA's scope. Members were also invited to provide feedback via email and the My Sidewalk page. The members of the council consist of Health and human service providers—many of whom are also stakeholders for the VVTMP. Their monthly meetings provided an additional opportunity to engage stakeholders.

Yavapai County's Community Health Improvement Partners also served as a stakeholder group for the HIA. A presentation about the HIA was included as part of the group's quarterly meeting, where partners were also invited to provide input that informed the HIA scope. Members were also invited to provide feedback via email and the My Sidewalk page This group is a collaboration that includes health, social and human service providers from across the county. The partners meet quarterly (both in the Verde Valley and Prescott Quad-Cities regions) to further the county's health improvement goals (outlined in the CHIP). Transit, active transportation and conducting Health Impact Assessments are all current goals in Yavapai County's health improvement plan. In addition to serving as stakeholders for the HIA, the Partners also acted as a conduit for public engagement—engaging clients, many of whom are members of vulnerable populations with limited transportation choice.

Regular updates on the progress of this Health Impact Assessment were provided to the Arizona Alliance for Livable Communities (AALC). AALC is a stakeholder group of health agencies and other entities working to raise awareness about the relationship between community design and health in Arizona.

Public engagement is detailed in the public engagement plan located in Appendix B. The Master Transportation Plan Technical Advisory Committee served as the Steering Committee for this project.

TIME FRAMES AND POTENTIAL USEFULNESS OF THIS HIA

This HIA will be used to inform the recommendations and priorities of the Verde Valley Master Transportation Plan and potentially, to support grant requests and healthy transportation partnerships within the Verde Valley. The partnerships formed through this HIA will assist the Verde Valley Communities to implement and monitor the recommendations of this HIA.

5. Assessment

INTRODUCTION

The Assessment includes data and findings that generally describe current health challenges facing the Verde Valley, and how the recommendations of the Master Transportation Plan could affect community health.

SOCIO-ECONOMIC OVERVIEW

YAVAPAI COUNTY

Yavapai County, located near the center of the U.S. state of Arizona, has a population of 218,844[17]. The county seat is Prescott.

Yavapai County residents are significantly older than the overall county and state populations. The median age of Yavapai county residents is 49.2 years old while the median age of Arizona residents is 35.9 years old. Twenty four percent of the 2010 population in Yavapai County is over 65 years old, compared with 14 percent of Arizona's population[18].

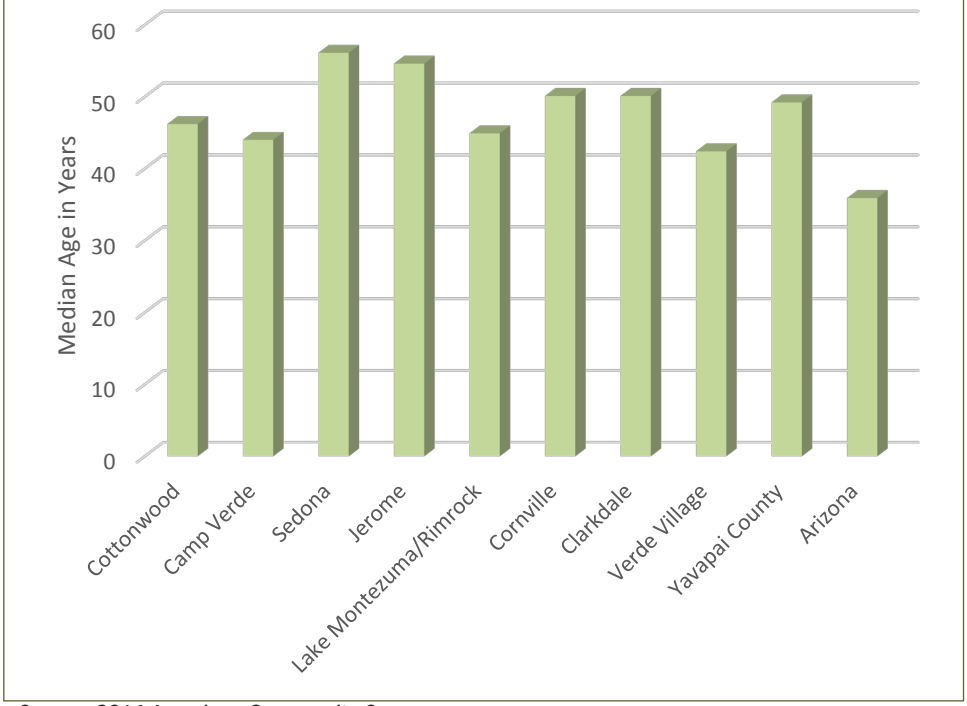
Heads of households in Yavapai County (39.3 percent) are much more likely to be over 65 years old than the State of Arizona (26.4%). Over 17% of all Yavapai County householders who live alone are over 65 years old, as compared to 11 percent of Arizona householders living alone. Fifty nine percent of all Yavapai County households include one or more member over the age of 60, as compared to 31 percent of all Arizona households[19]. This is important because older residents are less likely to drive, and the high number of householders over age 65 living alone indicates that many residents do not have others in their household to drive them places.

Yavapai County has almost twice the rate of persons under age 65 (13 percent) with disabilities as does the State of Arizona (eight percent)[20]. The county's median household income is 86 percent of Arizona's household income[21].

VERDE VALLEY

The Verde Valley is located the northeast part of Yavapai County. The 2013 U.S. Census estimates Verde Valley includes 67,184 residents, about one-third of the Yavapai County population[22]. Twenty four percent of Verde Valley residents are over 65 years old, comparable to the county as a whole. (Figure 9 Median Age - Verde Valley Communities, Yavapai County, and State).

Figure 9: Median Age - Verde Valley Communities, Yavapai County, and State



Source: 2014 American Community Survey

The median age of Verde Valley residents and all of the Verde Valley communities ranges from 49 to 56 years old, and is higher than the average of Arizona residents (40 years old).

Minority populations account for 21.7 percent of the study area population, which may reflect the presence of the Yavapai Apache community within the boundaries of Camp Verde. The study area poverty rate is 15.7 percent[22], higher than that of Yavapai County (13 percent) and slightly lower than Arizona as a whole (17.9%).

The 2010 census reports that 12.4% of the study area population is mobility limited; twice more than the rate of the state. While data is not available for the Verde Valley, Figure XY: Percent of Population with ambulatory difficulties shows that Yavapai County has the third highest percentage of population with Ambulatory difficulties of all counties in Arizona[23].

The Yavapai County over 65 years of age population has the second lowest rate of ambulatory difficulties of all counties in Arizona, indicating that older Yavapai County residents are mobile and able to access non-motorized transportation modes. This implies that bicycle and pedestrian facilities, if provided, can be used by this population.

VERDE VALLEY COMMUNITIES

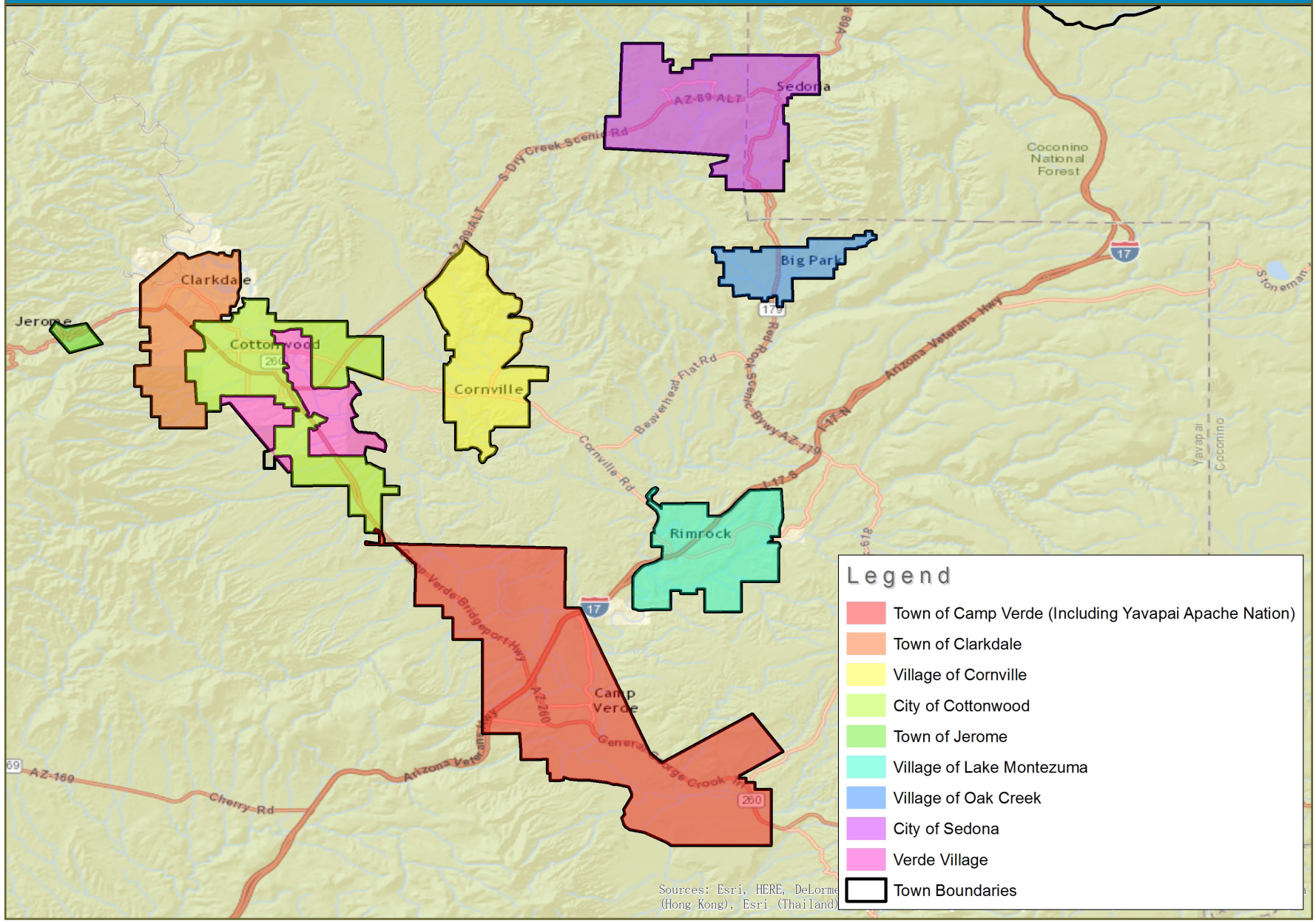
The communities in the Verde Valley are aligned between SR260, and the Verde River. SR 260 follows the Verde River and crosses Interstate 17, the main north-south transportation artery in Northern Arizona. Most of the Verde Valley communities are west of Interstate 17, with the exception of Lake Montezuma (Rimrock) and Camp Verde, which are bisected by Interstate. The availability of socio-economic and health information for each community within the Verde Valley is varied based on the size of the community. A summary of available socio-economic and other data for each of the Verde Valley communities is below. (Figure 10: Verde Valley Communities.) Data provided below for each of the Verde Valley Communities is the U.S. Census American Fact Finder.

Verde Village

Verde Village is the largest community in the Verde Valley, and accounts for 17 percent of the total population in the Verde Valley. Originally developed in the 1970's as a retirement community outside of Cottonwood, Verde Village now is the youngest community in the Verde Valley with a median age of 49 years. The Verde Village household size is 2.57, the largest of all the Verde Valley communities, Yavapai County, and Arizona as a whole. While median household income in Verde Village is below that for the state, it is slightly higher than the median income for Yavapai County as a whole and the community has the second lowest poverty rate of all the Verde Valley Communities. Verde Valley's poverty rate is also lower than that of Yavapai County and Arizona as a whole. More Verde Village households include children under age 18 than any other Verde Valley Community. With the exception of Cornville, Verde Village also has the fewest number of households with one resident over age 65, and the fewest number of over sixty five year old single person households.

Eight and one half of the Verde Village population reported being disabled in the 2010 census; which represents a lower percent than in Yavapai County (12.8 percent) and higher than Arizona (7 percent). This is significant because mobility is a significant challenge for those with disabilities, and a larger percentage of people with all disabilities at all ages are less likely to drive than the non-disabled population[25]. However, because the community has lower rates of poverty than the region, county, and state, it is likely that many residents have access to personal vehicles. This is generally supported by the 2013 American Community Survey, which estimates three percent of Verde Valley residents own no vehicles and 14 percent have one vehicle, resulting in the number of cars per household rates in this area being among the highest in the study area. The Cottonwood paratransit program includes portions of the Verde Village.

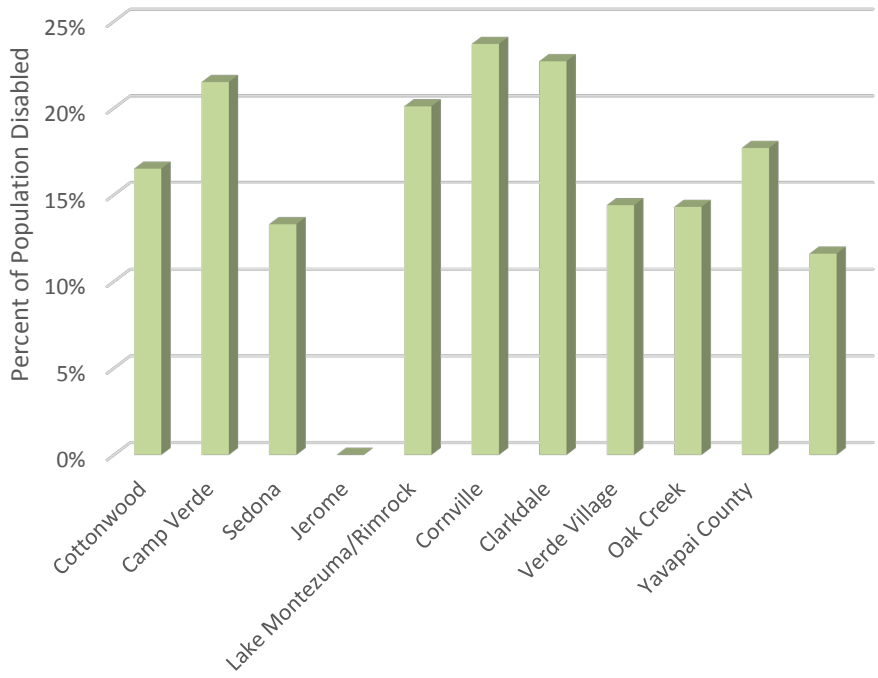
Figure 10: Verde Valley Communities



Cottonwood

The second largest community in the Verde Valley is the City of Cottonwood. Cottonwood is contiguous to Verde Village and provides most of the commercial services for Verde Village residents. It is also adjacent to Clarkdale's southern border and lies along both sides of 89A. Combined with Verde Village, Cottonwood accounts for over one-third of the total Verde Valley residents. Twenty six percent of Cottonwood residents are over age 65, and Cottonwood and Clarkdale have the second highest percentage of over 65 years old residents in the Verde Valley (Sedona is has the largest percentage of over age 65 residents). Cottonwood also has the highest percentage of residents over age 65 who live alone, and the third highest percentage of Verde Valley households with a member of age 65. The city's poverty rate is higher than that of all but three of the eight Verde Valley communities, and higher than Yavapai County and Arizona as a whole. Cottonwood has the highest percent of disabled population (11.4 percent), and offers a paratransit program.(Figure 11: Percent of Population Disabled)

Figure 11: Percent of Population Disabled

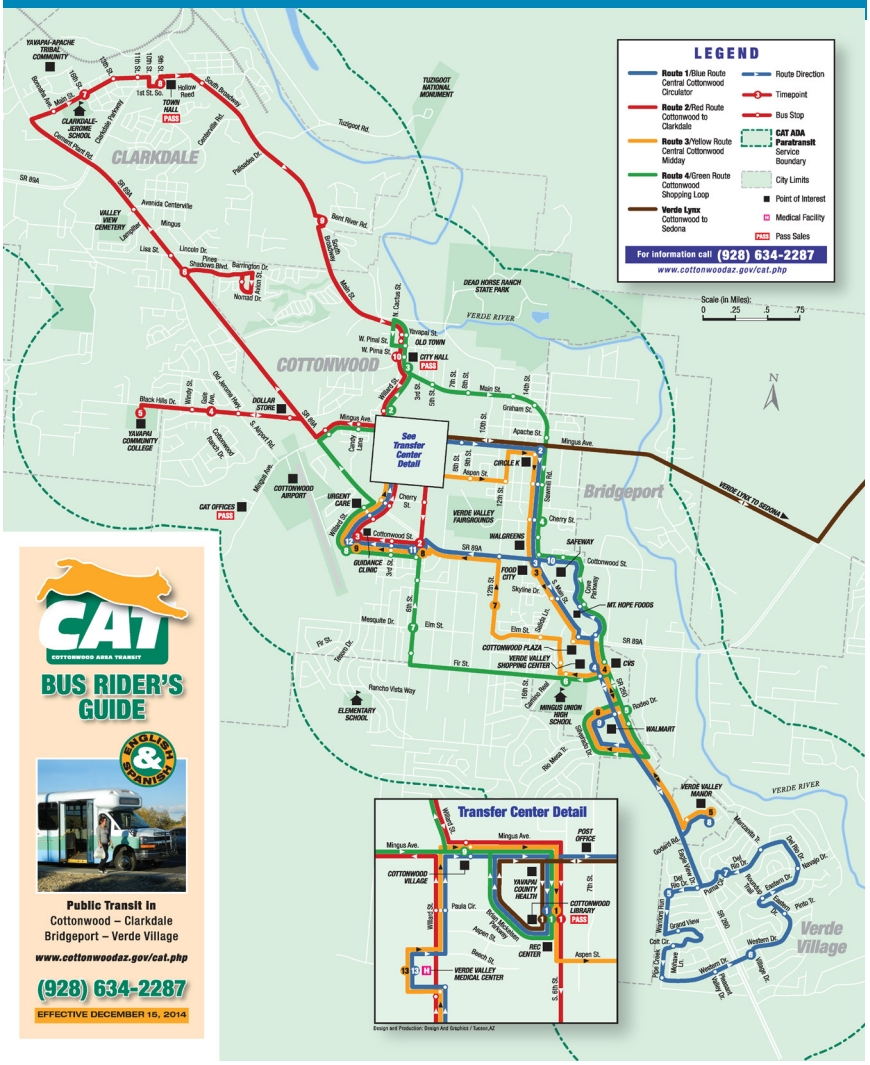


Source: American Community Survey 2013. U.S. Census.

According to the 2014 American Community Survey, Cottonwood has the second highest percentage of residents that do not have access own a car (7 percent) of all the Verde Valley Communities. Transit service is available in Cottonwood. (Figure 12: Cottonwood Area Transit (CAT) Service Area.)

Northern Arizona Healthcare, the parent corporation of Flagstaff Medical Center, operates the Verde Valley Medical Center (VVMC) in Cottonwood. The VVMC campus is located along SR89A, and offers a wide range of services in several areas, such as cancer care, cardiology, emergency services, home and hospice care, maternity services, orthopedics, medical imaging, pulmonary and neurophysiology, rehabilitation, and social and surgical services[26]. With the VVMC - Sedona Campus, and the Camp Verde Campus, the VVMC is the primary and largest health care provider in the Verde Valley.

Figure 12 Cottonwood Area Transit (CAT) Service Area.



Source: Cottonwood Area Transit website. Access date October 15, 2015.

Camp Verde

Camp Verde accounts for 16 percent of the Yavapai County Population. Camp Verde lies on both sides of Interstate 17 and SR89A. Camp Verde percentage of population over age 65 is 20 percent. Camp Verde is the second poorest communities in the Verde Valley (the portion of the Yavapai Apache in the Verde Valley Study area is poorer) and the US Census reports that 25% of Camp Verde residents lived in poverty from 2009-2013. Three percent of the population does not own a vehicle. The 2009-2013 census reported median income for Camp Verde residents is the second lowest of all Verde Valley Communities ($38,871). The percent disabled population in Camp Verde is the lowest of all Verde Valley communities for which data was available, and is lower than Yavapai County.

Clarkdale

Clarkdale is a small community located on the northern border of Cottonwood along SR98A. Clarkdale accounts for six percent of the total Verde Valley population. Clarkdale and Cottonwood have the second highest percent of over age 65 population in the Verde Valley, and a smaller

household size than that of Yavapai County and five of the nine separate Verde Valley communities. The city's median household income is the third highest in the Verde Valley[27]. The U.S. Census reports that 11 percent of Clarkdale residents lived in poverty from 2009-2013, the lowest of all Verde Valley Communities. While a much smaller percentage of Clarkdale's over 65 years old population lives alone (13 percent) than Cottonwood (22 percent), the percent of households with one member over age 65 (40 percent) or under age 18 (23 percent) is similar to Cottonwood.

Sedona

Sedona is the northernmost Verde Valley Community. Sedona lies at the intersection of SR89A and SR179, the Red Rock Scenic Byway. In addition to the city's 10,000 residents, between two and four million people visit the city every year; and the city's lodging industry is substantial. Due to the city's location as a luxury resort destination and it's world class setting, property values and cost of living is high. Many people who work in Sedona live in other Verde Valley Communities. Because the lodging industry employs large numbers of service workers, who are typically at the lowest end of the pay scale, the city has the highest poverty rate of all Verde Valley communities (29 percent), and a higher rate of poverty than Yavapai County and Arizona. This is significant because lower income households typically spend more on transportation than urban households[28] and typically have less transportation options than urban households. In Sedona, the Verde Valley Lynx transit service connects central Cottonwood with the major employers in Sedona along 89A and northern portions of SR 179. The city also has the highest percentage of residents over age 65, the highest percent of households with one member over age 65, and the second highest percent of residents over age 65 living alone (22 percent) of all Verde Valley communities. According to the US Census, nine percent of Sedona residents are disabled. Sedona does not offer a paratransit program. This is significant because as people age, they become more dependent on transit and other mobility options. Additionally, healthy transportation options that include walking are especially important to this age group to strengthen muscles that prevent falls.

The red rocks of Sedona make it a worldwide tourist destination.

Northern Arizona Healthcare operates the VVMC - Sedona Campus in Sedona. The 43-acre campus on State Route 89A in West Sedona was opened in 1995 and offers 24/7 emergency care, advanced cancer services, heart and vascular specialists, and two primary care offices staffed with board-certified internal medicine physicians and a pediatrician[29].

Sedona is also believed by many to have healing energy, and the city is home to almost 30 alternative health practitioners and clinics.

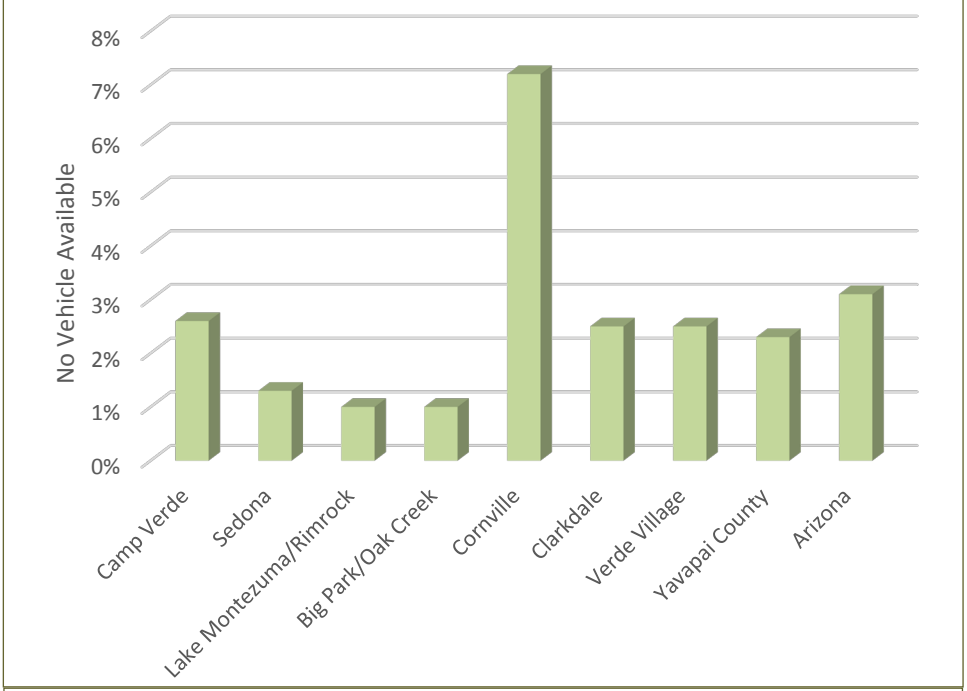
Oak Creek (Big Park)

Oak Creek borders Sedona to the south. Oak Creek is located along SR179 and is a gateway community for Sedona. Oak Creek is a largely residential community with tourist related services located along SR179. Oak Creek is a wealthy community, with a median household income of $60,845 well above that of Arizona, Yavapai County and all the Verde Valley Communities. Less than ten percent of Oak Creek residents live in poverty, substantially less than other Verde Valley communities, Yavapai County, and Arizona. Almost 20 percent of Oak Creek residents are over age 65 and live alone; and half of Oak Creek households are include someone over age 65. Oak Creek has the lowest number of households with one member under age 18 (18 percent) of all the Verde Valley communities.

Cornville

Cornville is the most rural community in the Verde valley. It lies between the southern Verde Valley Communities of Clarkdale, Cottonwood, Verde Village and Camp Verde and the northern Verde Valley Community of Sedona. Cornville is the poorest community in the Verde Valley, and with the exception of Jerome, Cornville is the smallest community in the Verde Valley. Cornville has the largest number of residents with no access to a vehcile for work (Figure 12: Percent of Households with No Vehicle Available.) Cornville residents living in poverty account for 18 percent of the population; slightly higher than Yavapai County (15.8 percent) and close to Arizona as a whole (17.9 percent). Other communities, including Cottonwood, Camp Verde, Sedona, and Jerome have higher median incomes and higher percentages of residents living in poverty. This suggest that within these communities, there is a stark difference between higher and lower income residents while in Cornville, income disparities are not as severe as in these communities.

Figure 12: Percent of Households with No Vehicle Available



Source: American Community Survey 2013

Jerome

Located atop Mingus Mountain, Jerome is an historic mining community. Over the past few decades, artists have re-occupied and renovated many of the historic homes and buildings, and opened galleries, restaurants, and shops. Because it is historic, Jerome is the most walk-able community in the Verde Valley. Less than a one hour drive from Sedona, and within three hours of Prescott (another large, Arizona tourist destination) Jerome is popular among tourists. The population of Jerome is 444 people, making it the smallest Verde Valley community. However, almost 50,000 people visited Jerome State Park in 2013. The park is at the entry to Jerome, and captures a portion of the tourists visiting the town. No statistics are available on the number of disabled people living in Jerome. The percent of residents under age 65 is similar to that of Arizona, about half of that for Yavapai County and lower than all the other Verde Valley Communities.

Household size in Jerome is 1.75, the lowest of all Verde Valley Communities and lower than Yavapai County and Arizona. It has the third highest poverty rate of all Verde Valley communities. The low family size and lower percentage of residents under age 65 indicates that Jerome residents are younger, and have few children. This is also supported by the fact that no healthcare, supermarket, or school facilities are located in Jerome; and residents typically use facilities "down the hill" in nearby Cottonwood.

Lake Montezuma

Lake Montezuma is partially separated from other Verde Valley Communities by the I-17 and the east fork of the Verde River. Accounting for seven percent of the Verde Valley population, this unincorporated area is a younger community with the largest number of households with a member under age 18 of all Verde Valley Communities. The median age of Lake Montezuma residents is also the lowest of all Verde Valley communities except Camp Verde. Incomes of Lake Montezuma residents fall in the middle rage for Verde Valley Communities, and with the exception of Oak Creek, Clarkdale and Verde Village, Lake Montezuma has the lowest percentage of residents living in poverty.

Yavapai Apache Nation*

The Yavapai-Apache Nation includes 2,440 total enrolled tribal members and over 750 residents living (December 2014 numbers) in the Verde Valley. The Nation accounts for approximately two percent of the total study area population. Approximately half of the Yavapai Apache within the portion of the Nation in study area live in poverty. The median income for tribal members living within the Nation and the study area is $27,600, about 65 percent of the county median income and 55% of Arizona median income. Slightly more than 40 percent of all households within the Yavapai Apache Nation within the study area include members over age 65, and about 20 percent of all Yavapai Apache Nation within the study area are intergenerational households.

HEALTH REPORTING

Most health data is available at a county level. In addition to the Verde Valley, Yavapai County includes the city of Prescott (population 40,598) and the town of Prescott Valley (population 41,075)[30] . Prescott Valley is substantially younger than the Verde Valley (19 percent of population over 65 years old); and Prescott is slightly older than the Verde Valley (31 percent of the population over age 65). Poverty levels in both community are about 15 percent, making this area somewhat wealthier than most of the Verde Valley Communities. Because these communities account for 39 percent of Yavapai County (as opposed to the study area which accounts for 30 percent), county health data should be considered as potentially weighted by these areas. Studies have shown that lower incomes are associated with higher rates of obesity[31] and poorer overall health.

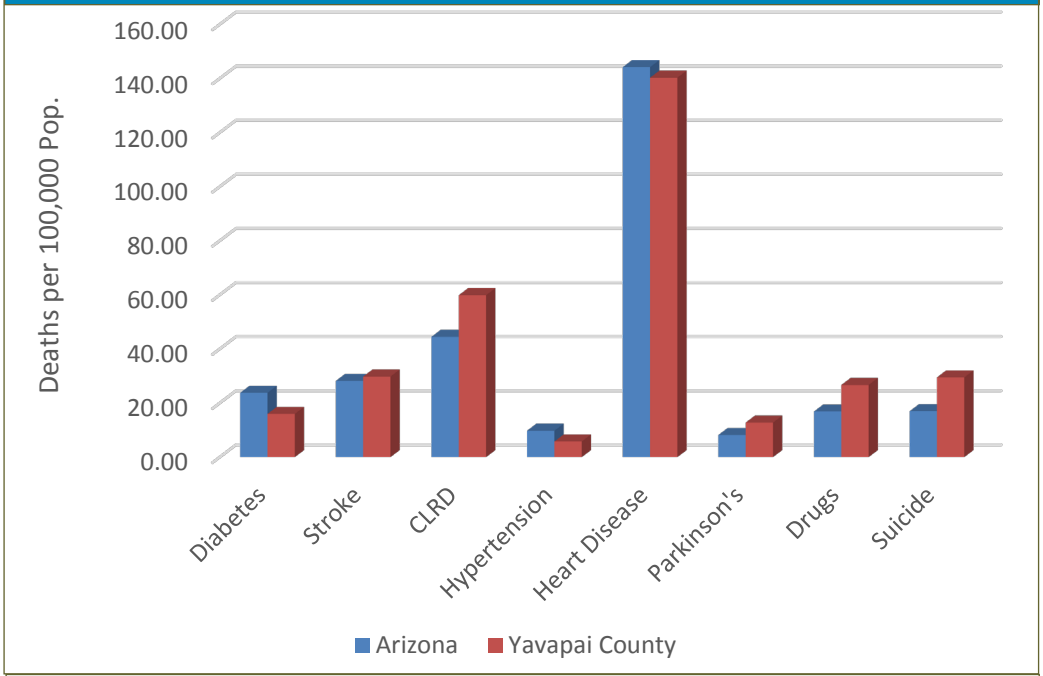
MORTALITY

Yavapai County ranks fifth of all Arizona counties for all causes of death. (Figure 13: Deaths per 100,000 Population - Yavapai County and Arizona.) This may be related to the relatively older median age of Yavapai County residents. . The highest cause of death in Yavapai County is Parkinson's disease, and the county has a higher rate of death from Parkinson's disease than the State . While the exact causes of Parkinson's disease are unknown, it has not been found to be a chronic obesity related disease. However, the Parkinson's Disease Foundation states regular exercise or physical therapy is crucial for:

- Maintaining and improving mobility, flexibility, balance, range of motion
- Easing Parkinson's Disease secondary symptoms such as depression and constipation

According to David Lehman, Ph.D., P.T., and Mark Hirsch, Ph.D., " In addition to helping with movement, researchers now believe that exercise may influence the progression of Parkinson's disease. Most of this research is based on animal models of Parkinson's, but some of the findings may apply to humans[32] ."

Figure 13: Deaths per 100,000 Population - Yavapai County and Arizona



Source: Arizona Department of Health Services. Community Profiles Dashboard. Access date: October 15, 2015.

Other causes of death in Yavapai County that are related to healthy lifestyles and physical activity include Heart Disease, hypertension, COPD, and stroke. (Figure XY: Deaths per 100,000 Population - Yavapai County and Arizona.) While the county has a higher rate of death due to stroke than Arizona, it has a lower rate of death from this cause than eight other Arizona Counties.
Deaths from Chronic Lower Respiratory Diseases (CRLD) is significantly higher than Arizona, and Yavapai County ranks third among Arizona counties for this cause of death. These diseases include emphysema, bronchitis, and Chronic Obstructive Pulmonary Diseases (COPD). The county also ranks higher than most other counties for death from suicide and drugs. (Figure 14: Yavapai County Mortality Factors per 100,000 Persons).

The county ranks 4th of all Arizona Counties for Suicide and death from drug abuse, and the rate of death from these factors in Yavapai county is higher than the state. Part of this may be due to the presence of a large drug rehab economy in Prescott evidenced by over 30 behavioral health facilities within the Verde Valley[33]. The 2012 Yavapai County Community Health Assessment reports that residents identified drug and alcohol abuse as the leading behavioral health concerns, followed by depression.

Figure 14: Yavapai County Mortality Factors per 100,000 Persons (2013)

Yavapai County	Indicator	Per 100,000	Rank in AZ	Main Cause
Mortality	All Death	773	5	
	Chronic Lower Respiratory Diseases	59.9	3	Tobacco smoke, outdoor air pollution (WHO, 2015)
	Diabetes	16.0	13	Genetics, obesity
	Stroke	28.2	8	Age, high blood pressure, diabetes, smoking. (National Institute of Health)
	Hypertension	9.8	9	Obesity, lack of physical activity, alcohol. (NIH)
	Heart Disease	140.3	7	Smoking, hypertension (high blood pressure), diabetes, high cholesterol (NIH)
	Drug-Related		3	Mental illness, depression, social factors
	Suicide		4	Depression, mental illness, social factors
	Parkinson's Disease	12.8	1	Genetics/Environment. Could be mitigated by physical exercise (Parkinson's Disease Foundation, 2015)

Source: AZDHS Community Profiles Dashboard. Access date October 13, 2015.

MORBIDITY

Overall, Yavapai County falls within the middle to low range for chronic illnesses and illnesses related to physical activity and individual behavior. It is among the lowest of all Arizona Counties for illnesses caused by uncontrolled diabetes, and close to the middle of all Arizona counties for illness due to Diabetes. While the county does not have a comparatively large percent of obese population, it ranks fourth of all Arizona counties for diseases due to hypertension. (Figure 15: Yavapai County Morbidity Factors per 100,000 Persons.)

Figure 15: Yavapai County Morbidity Factors per 100,000 Persons (2013)

Mobidity Factor	Rate per 100,000 Persons		Rank (All Counties)	Causes
	Arizona	Yavapai County		
COPD	299.50	316.4	5	Smoking, breathing in secondhand smoke, irritants, or chemicals (NIH)
Diabetes	20.10	15.60	13	Genetics, obesity (National Diabetes Foundation)
Complications from Diabetes	83.10	101.40	7	Genetics, obesity (National Diabetes Foundation)
Hypertension	299.50	316.40	4	Obesity, lack of physical activity, alcohol. (NIH)
Congestive Heart Failure	53.70	24.20	9	Heart disease, hypertension (high blood pressure) (NIH)
Drugs	289.30	112.80	11	Mental illness, depression, social factors, genetics
Alcohol	2,889.30	495.10	8	Depression, mental illness, social factors, genetics
Chronic Diseases (arthritis, obesity, cancer)	4,503.70	5,685.80	6	Obesity, smoking, lack of physical activity, high cholesterol, alcohol (NIH)

Source: Arizona Department of Health Services Community Profiles Dashboard. Access date: October 15, 2o15.

OBESITY

Yavapai County has relatively lower obesity rates than most rural Arizona counties with the exception of Santa Cruz and Cochise Counties. Maricopa, Pima, and Coconino Counties all include large urban populations and constitute the majority of population in the State. Obesity is more prevalent in rural areas and studies have found that obesity remained significantly higher among rural compared to urban adults controlling for demographic, diet, and physical activity variables[34].

Physical activity

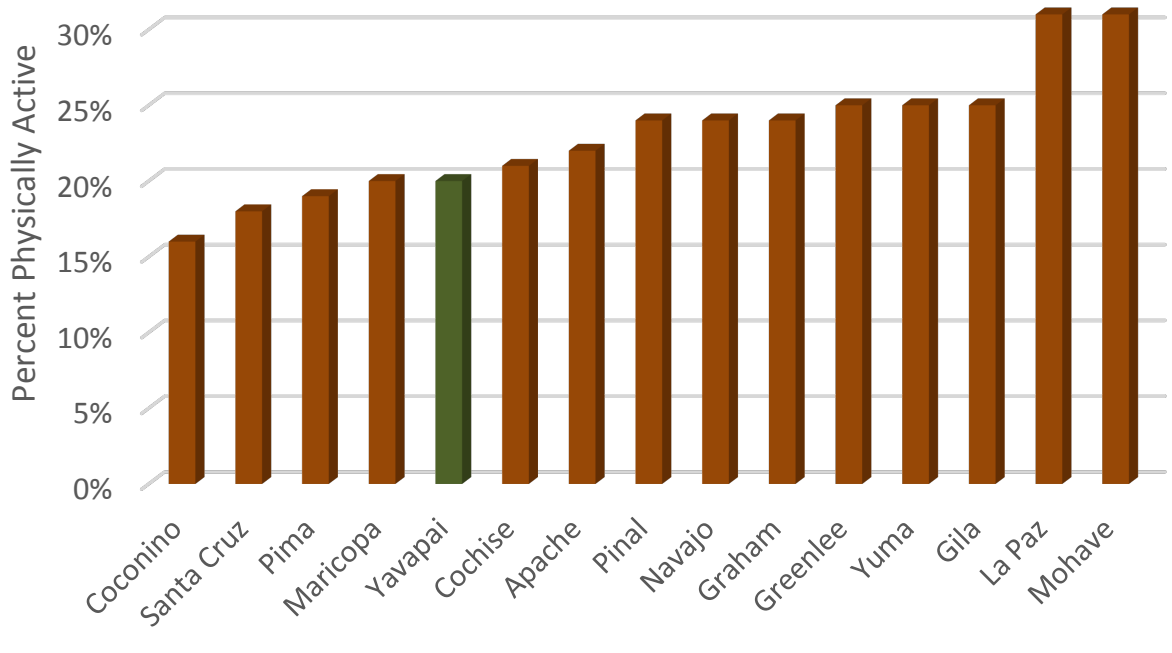
Although the county has lower rates of obesity than other rural Arizona counties, residents are inactive. Only 20 percent of Yavapai County residents report no leisure-time physical activity. This is significant as the study area has a high percentage of older people and studies have shown that a decline in physical activity is related to age due to fears of physical injury[35] This is correlated by the 2012 Yavapai County Community Health Survey, which found that 90% of survey respondents reported at least light physical exercise regularly. The survey also found that lower income groups reported higher levels of inactivity. Respondents to the survey stated that physical activity was the third most important health issue and the fifth most important community health issue. (Figure 16: Most Important these Healthy People 2020 Issues) Examples of physical activities provided include running, calisthenics, golf, gardening, or walking for exercise. These findings demonstrate that bicycle and pedestrian facilities are likely to be used by residents. Additionally, Yavapai County has an active cycling and hiking community. (Figure 17: Physical Activity: Arizona Counties.)

Figure 16: Most Important these Healthy People 2020 Issues

Issue	To you personally (%)	In Yavapai County (%)
Access to affordable insurance	63.6	71.4
Access to a regular doctor	55.1	59.7
Physical activity	45.3	25.3
Access to dental care	40.1	40.6
Obesity	22.6	27.1

Source: 2012 Yavapai County Community Health Assessment

Figure 17: Physical Activity: Arizona Counties

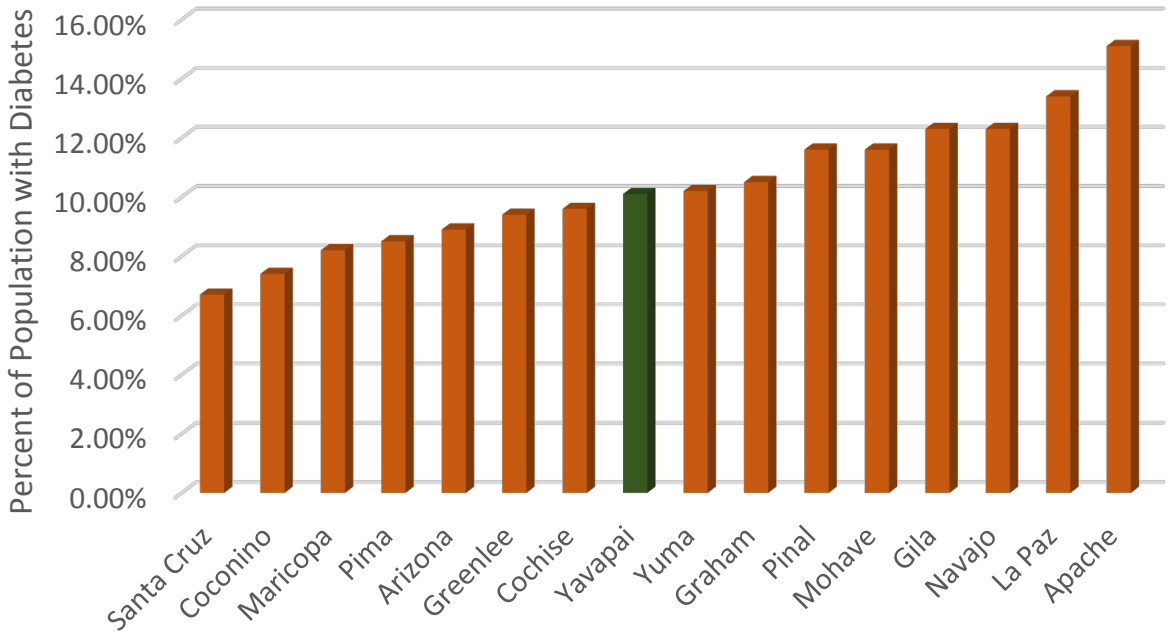


Source: Robert Wood Johnson Foundation County Rankings and Roadmaps.
Access date: October 15, 2015.

Diabetes

Correlated with the county's obesity rate is it's rate of diabetes. Yavapai county has a lower rate of uncontrolled diabetes than most Arizona counties, but a higher rate of complications due to diabetes than most Arizona Counties. (Figure 18: Occurrence of Diabetes: Arizona Counties.) Type 2 diabetes is the most common form of diabetes. In Type 2 Diabetes, the body either doesn't make enough insulin or can't use its own insulin as well as it should. The risk of having Type 2 diabetes increases as a person gets older. The cause of Type 2 Diabetes is largely unknown, but genetics and lifestyle clearly play roles. Type 2 diabetes has been linked to obesity, genetic risk factors, and inactivity. Some racial and ethnic groups are at higher risk for Type 2 diabetes. These include American Indians, African Americans, Hispanics/Latinos, Asian Americans and Pacific Islanders. There is no known way to cure Type 2 diabetes, but it can be controlled by keeping the level of glucose (sugar) in the blood within a normal range[36].

Figure 18: Occurrence of Diabetes: Arizona Counties



Source: Robert Wood Johnson Foundation County Rankings and Roadmaps.
Access date: October 15, 2015.

HEART DISEASE/HYPERTENSION

Yavapai county has a relative low rate of hypertension than most Arizona counties, and a slightly higher than median rate of congestive heart failure. These cardiovascular diseases are caused by smoking, high amounts of certain fats and cholesterol in the blood, high blood pressure (which can be caused by obesity and stress), diabetes, and blood vessel inflamation[37].

DEVELOPMENTAL DISABILITIES

Over 50 group homes for the developmentally disabled are located with the Verde Valley, and account for 85 percent of all the group homes for the developmentally disabled in the County. This is significant because independence is important to those with developmental disabilities, and many of these individuals do not drive. In a 2007 FHWA funded University of Minnesota Study exploring the transportation needs of adults with developmental disabilities, found that that more than half of developmentally disable adults live in group homes, while about a quarter live with relatives. Despite not living independently, many (40 percent) consider themselves independent travelers, and 70 percent reported that the mode of transportation they used was their choice. About half of the trips these adults took were work related, with recreational and shopping trips cited as well. More than half of the sampled population worked every day, while recreation occurred at least once a week for about two-thirds of the population.

About 30 percent reported being unable to make trips they wanted to make, and about 46 percent were unable to make trips they needed to make.
Walking, public transit, and dial-a-ride were listed as the primary modes of transportation the participants used to meet their transportation needs[37].

FOOD ENVIRONMENT

The RJWF County Health Food Environment estimates that 12 percent of Yavapai County residents have limited access to healthy foods; and 17% are food insecure. This ranking is based on factors such as access and proximity to a grocery store; number of food stores and restaurants; expenditures on fast foods; food and nutrition assistance program participation; food prices; food taxes; and availability of local foods.

HEALTH FACTORS CONSIDERED IN THIS ASSESSMENT

Based on the above research, the following factors were determined to be relevant to the Verde Valley Master Transportation Study

Physical Health

- Cardiovascular/ Cerebrovascular Disease
  - Hypertension
  - Obesity
  - Diabetes
- Access to Healthcare

Mental Health

- Drug Abuse
- Alcohol Abuse
- Suicide

Social Health

- Access to employment

POTENTIAL PUBLIC HEALTH IMPACTS OF MASTER TRANSPORTATION STUDY RECOMMENDATIONS

PEDESTRIAN AND BICYCLE FACILITIES

The Master Transportation Study study will address the potential for improvements to the pedestrian network. Because there are a higher number of physically active residents than the State in Yavapai County, and a higher number of residents over sixty five, pedestrian improvements are likely to be used and can contribute to further reductions in obesity related diseases. Physical activity can also be used to manage other diseases, such as Parkinson's disease, which has the highest occurrence of all Arizona Counties in Yavapai County.

Furthermore, while transit is important to people with disabilities, the most significant transportation problems for the disabled are barriers in the pedestrian environment, which far outnumber reported problems with transit or paratransit modes[39].

TRANSIT IMPROVEMENTS

The Master Transportation Study will include recommendations regarding potential transit routes. The 2014 National Rural Transit Fact book reports that 7% of all rural transit trips nationally are for medical purposes[39]. A large percentage of the Verde Valley residents are older and there are residents that are disabled. Providing transit to access health as well as other services is important. Therese McMillian, acting FTA chief stated in a March, 2015 blog post that about 3.6 million Americans miss or delay medical appointments every year because they lack a ride to the doctor and public transportation is key to making health care accessible and potentially lowering those costs. She futher stated that creating reliable options for patients to get to medical appointments can reduce hospital stays as well as ensure that people from all backgrounds stay healthy[40].

The Transit Fact Book also states that in rural areas, 12 percent of all transit trips are taken for recreational reasons. Providing transit could help reduce isolation and the effects of isolation, which include depression. Reducing depression may impact the rate of suicide, alcohol, and drug abuse.

A positive correlation between Transit Availability and Transit use exists within rural areas studied as in the National Transit Fact Book. Enhancing bus stops might also increase the number of people willing to take transit. This could increase physical activity because people would either walk from transit to their destination, and studies have shown that people who walk to transit meet
.
The 2014 National Rural Transit Fact statistics on National Transit Livability show that while transit is often further and less available in rural communities, the ratio of people taking transit to it's availability in rural areas is actually almost two times higher than it is in urban areas; despite the fact that rural areas have a higher percentage of vehicle availability. (Figure 19: National Transit Livability Statistics and Ratio of Transit Availability to Transit Use.) This speaks to the importance of transit in rural areas, and reflect that while transit may not be as available to people in rural areas, it is as important to them as a mode of transit.

Transit is also important to people with disabilities.

ROADWAY CAPACITY IMPROVEMENTS

The Study will also include recommendations to improve the efficiency and capacity of roadways in the Verde Valley. While improvements to roadway capacity are important, the health benefits of bicycling, walking, and especially transit for this community in particular should be considered when developing project priorities. Additionally, should they be warranted in areas of high pedestrian activity, traffic calming could be considered.

Providing street lighting at places people walk and traffic calming measures can also help reduce speeds and enhance driver awareness. High speed and high volume roadways are intimidating to pedestrians, and especially intimidating to those with physical disabilities or who may not be as agile as younger pedestrians. Slowing traffic and illuminating some roadways may encourage older pedestrians or people with disabilities to walk more. The Federal Highways Administration (FHWA) states," a more permanent way to reinforce the need to reduce speed is to change the look and feel of the road by installing traffic calming treatments that communicate to drivers that the function of the roadway is changing[41]". The FHWA evaluated a variety of traffic calming tools on rural roadways where there was limited police enforcement. The study found that speed tables, speed feedback signs, vertical markers that narrowed travel lanes, and speed limit markings with a red background on the street were most effective in reducing speeds.

Figure 19: National Transit Livability Statistics

	Transit Availability	Transit Accessibility	Transit Use	Transit Use to Availability	Transit Desirability	Transit to Work	Vehicle Availability
National	57%	6:06	20%	0.35	5%	3%	94%
MSA-City Center	86%	5:15	28%	0.33	8%	4%	87%
MSA-Suburban	66%	6:36	15%	0.23	5%	4%	96%
MSA-Rural	22%	8:24	9%	0.41	2%	3%	98%
Small Urban	37%	5:55	10%	0.27	1%	4%	94%
Rural	13%	8:11	9%	0.69	0%	3%	97%

*Source: National 2014 Transit Fact Book, PLAN*et*

COMMUNITY PRIORITIES

A website and public meetings were used to solicit public comments during the HIA process. The website was advertised with fliers that were distributed at public meetings and via email to key stakeholders. Visitors to the website were asked to share their ideas about healthy transportation. Response to the website was poor. However, the website did provide some input on resident's interest in transit services to connect the Verde Valley communities. Community meetings were held in three locations within the Verde Valley. Residents stated they had an interest in increasing region-wide transit connectivity in Camp Verde, and placing bicycle lanes along SR89A.

6. RECOMMENDATIONS

INTRODUCTION

This chapter includes recommendations regarding healthy transportation considerations for the Verde Valley Master Transportation Study relevant to individual and community health.

RECOMMENDATIONS

Overall, the study recommendations will help make transportation in the Verde Valley healthier and contribute to an increase in important health determinants including physical activity, mobility options, and a reduction in social isolation. (Figure 19:Recommendations).

Recommendations contained in the Master Transportation Plan mostly pertain to actions that could be undertaken by ADOT. This HIA includes recommendations that could be implemented by ADOT and other entities, including the Verde Valley Communities, the county, private developers, or the Verde Valley Metropolitan Planning Organization (VVMPO).

Figure 20: Recommendations

PATHWAY/ HEALTH DETERMINANT	RECOMMENDATION	RATIONALE
3, 9, 10, 11, 13, 14	Provide bicycle facilities throughout the Verde Valley, especially along SR89A between Cottonwood and Camp Verde and between Sedona and Cornville	Many people at public meetings stated that bicycle facilities are needed along SR89A. Bicycling is a form of transportation that can be used by people to travel longer distances than could be accomplished by walking. Older residents in the Verde Valley are healthier than in many other areas, and there is an active bicycling community. Bicycling facilities can be used to improve the levels of physical activity, reducing obesity and obesity related chronic diseases as well as provide a transportation option to those without access to a vehicle.

Figure 20: Recommendations		
PATHWAY/ HEALTH DETERMINANT	**RECOMMENDATION**	**RATIONALE**
3, 9, 10, 11, 13, 14	Provide pedestrian facilities throughout the Verde Valley, especially along SR89A between Cottonwood and Camp Verde and between Sedona and Cornville.	Yavapai County has a high percentage of older residents, and County residents identified physical activity as an important health issues. Pedestrian facilities will provide options for those without cars and enable residents to safely increase their level of physical activity by walking to nearby destinations. Pedestrian facilities will also aid in mobility options for the disabled, and potentially make it easier for them to be independent and access transit. Pedestrian facilities are also important for people who take transit. Providing safe, comfortable, and convenient facilities connecting hospitals and commercial areas to residents can result in healthier communities and enable people to live healthy lifestyles.
5, 7, 13, 14	Provide marked pedestrian crosswalks in commercial areas and busy intersections	Increases pedestrian safety and reduces collisions between people and vehicles. Many of the commercial areas and health facilities are on SR89A or on SR197. These roadways have high volumes of traffic and higher speeds. Providing safe areas for people to walk may make it more comfortable for pedestrians. As a result, more people may walk, increasing levels of physical activity.

Figure 20: Recommendations		
PATHWAY/ HEALTH DETERMINANT	**RECOMMENDATION**	**RATIONALE**
5, 6, 11, 13, 14	Increase transit service so that it serves and connects all Verde Valley communities. Ensure that communities with the lowest rates of vehicle ownership, such as Cornville and communities with a high percentage of disabled residents, such as Cottonwood, are included in transit routes connecting it to hospitals, shopping, schools, and employment.	Yavapai county has high numbers of older residents, disabled residents who use transit, and also has people within each community without access to vehicles. Transit is important for providing access to health care, community services, and social activities.

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6. Reporting

INTRODUCTION

This chapter describes how the results of this assessment are disseminated to entities that will be responsible for implementation of the Verde Valley Master Transportation Plan. The primary mode to report the results of this study includes presentations to the PARA Technical Advisory Committee and other entities.

PRESENTATIONS

Presentations related to this study are shown in (Figure 21: Reporting). In addition, a web page soliciting input was created. The most effective forms of outreach were the face-to-face surveys and one-on-one meetings.

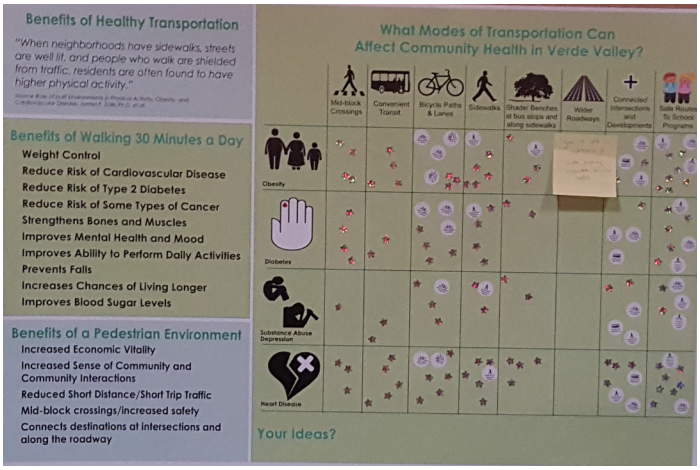
Figure 21: Reporting

Entity	Date(s)	Reporting By	Presented Topics
Verde Valley Mobility Coordinating Council	May 13, 2015	Yavapai County Community Health Services	Overview of VVTMP HIA and discussion of proposed scope
Verde Valley Technical Advisory Committee	July 7, 2015	Yavapai County Community Health Services	Benefits of Physical Activity/ Healthy Transportation Options
Public Meeting - Cottonwood	July 15, 2015	PLAN*et	Benefits of Physical Activity/ Healthy Transportation Options
Public Meeting - Camp Verde	July 16, 2015	Yavapai County Department of Health	Benefits of Physical Activity/ Healthy Transportation Options
Public Meeting - Sedona	July 17, 2015	Yavapai County Community Health Services	Benefits of Health

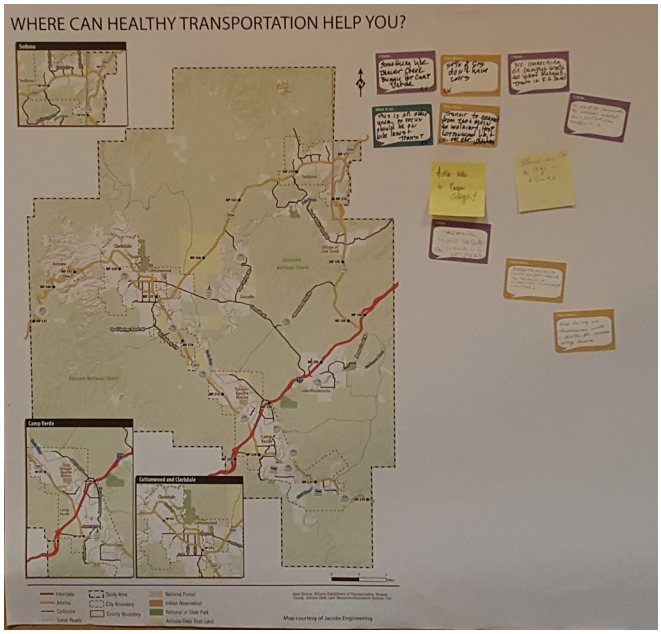
Figure 21: Reporting			
Entity	**Date(s)**	**Reporting By**	**Presented Topics**
NACOG Verde Valley Sub-region Transportation Committee	July 22, 2015	Yavapai County Community Health Services	Overview of HIAs and introduction to VVTMP HIA
Community Health Improvement Partners (Verde Valley)	August 19, 2015	Yavapai County Community Health Services	Overview Of Vvtmp Hia And Discussion Of Proposed Scope

This HIA will be presented to the Verde Valley Transportation Planning Organization with the presentation of the Master Transportation Plan. Because VVTPO is not a regulatory agency, it does not adopt plans for the region. Instead, each jurisdiction in the Verde Valley can adopt the HIA independently. To encourage adoption of this HIA by the region, Yavapai County Community Health Services staff will present the HIA for consideration to each jurisdiction.

To promote the recommendations of this HIA, YCCHS staff will present it to the Verde Valley Mobility Coordinating Council and Community Health Improvement Partners. If possible, these presentations will be provided before presentations to county or municipal decision making bodies and may lead to input that further informs HIA recommendations.



Public Comments provided about healthy transportation at meeting held in Sedona, Verde Valley, and Cottonwood.



6. Monitoring and Evaluation

IMPLEMENTATION ENTITIES

The primary entity responsible for transportation improvements in Ganado and Burnside are ADOT through the Apache District II, and the Navajo Department of Transportation (NDOT). Some funding for Dial-A-Ride could come through the Northern Arizona Council of Governments (NACOG) or various Navajo Nation Departments. These entities are included in the Area Traffic Circulation Study Stakeholder Committee.

PUBLIC COMMENTS

At public meetings and through the website for this HIA community members provided the following comments on maps and charts:

- Provide bicycle lanes along 89A and along SR260
- Provide Transit in Verde Valley and Sedona
- Transit to connect SR260 and Main Street to library, recreation center, and WalMart in Cottonwood
- Cottonwood is an older community; focus should be on transit and bike lanes
- Provide transit like the Beaver Creek Buggy for Camp Verde
- Connect the Yavapai Community College Campus to other communities via transit and connect trails from the National Forest to the college.

Figure 21: Implementation Responsibility And Timing					
Pathway	**Recommendation**	**Indicator**	**Responsible Entity**	**Implementation Methodology**	**Timing**
3, 9, 10, 11, 13, 14	Provide pedestrian and bicycle facilities throughout the Verde Valley	Census statistics regarding people using transit.	VVMPO or County Health Department	Monitor yearly	Upon Adoption of Master Transportation Plan
5, 7, 13, 14	Provide marked pedestrian crosswalks in commercial areas and busy intersections	Pedestrian activity in commercial areas.	Pedestrian counts at key intersections or commercial areas.	VVMPO or County Health Department	Upon adoption of Master Transportation Plan
5, 6, 11, 13, 14	Increase transit service so that it serves all Verde Valley communities, especially in Cornville.	Transit Ridership counts	CATS	Yearly	Upon adoption of Transportation Master Plan

INTRODUCTION

This chapter includes identification of indicators that can be used to monitor and evaluate implementation of HIA recommendations; and an discussion of the efficacy of the HIA process.

IMPLEMENTATION RESPONSIBILITY AND TIMING

Figure 21: Implementation Responsibility and Timing identifies indicators that can be used to measure the efficacy of recommendations contained in this HIA, the entities that could collect data for the indicator, and how the data could be collected (implementation methodology).

It is understood that many of these recommendations are dependent on funding. However, monitoring to evaluate the impacts of these recommendations should be started now, so changes in community health can be measured.

IMPACT EVALUATION

As an HIA is implemented, and if baseline information is established, it can be monitored and over time, the effectiveness of its recommendations can be evaluated. At the conclusion of an HIA, the assessment process can be also be evaluated.

MEETING OBJECTIVES OF HIA

The primary objective of this HIA was to provide information to the Arizona Department of Transportation and the jurisdictions in the Verde Valley about healthy transportation options and the health impacts of potential transportation improvements recommended through the Planning Assistance to Rural Areas Program. This objective was met.

A secondary objective of the HIA was to build community partnerships and support for health-relevant transportation recommendations. This objective has been partially met. For example, this HIA emphasizes the importance of transit, which is an important element of the PARA. It also recommends that the region's bicycle system be connected, which will be addressed in the Master Transportation Plan.

A third objective of this HIA was to raise community awareness about the relationship between health and transportation. This objective was met. At the public meetings many residents discussed the importance of transportation options to their individual health.

ACCEPTANCE OF RECOMMENDATIONS

Due to timing considerations between the development of the HIA and the development of recommendations for the PARA, the recommendations of this HIA are vague, and not based on recommendations from the Master Transportation Plan.

OTHER IMPACTS/OUTCOMES

Through presentations of this HIA to entities and agencies in the region, transportation stakeholders, health, and human services providers have become more aware of the value of conducting HIAs as part of the decision making process. In many cases, stakeholders only knew about HIAs through classes or word of mouth. Participation in this process provided first-hand experience where stakeholders could experience the value of this process.

Participation in this HIA process by YCCHS and other entities has increased the capacity for conducing future HIAs in this region.

PROCESS EVALUATION

RESOURCES

This HIA was funded by the Arizona Department of Health Services through a CDC grant. This HIA was part of a pilot project to evaluate A rapid HIA process was used to develop this HIA. The HIA was conducted towards the end of the school year. The determination to conduct this HIA was made by the Arizona Department of Health Services.

The HIA was conducted by a consultant working with ADOT and its consultants as they developed the Master Transportation Plan for the Verde Valley. The circulation study timing dictated the timing of this project. Working with the PARA consultant provided some information about mobility that was not considered by the consultant.

AVAILABILITY AND QUALITY OF DATA

There is limited health data available for Verde Valley Communities. When possible, data specific to each of the communities was used, supplemented with county wide data. The 2012 Yavapai County Community Health Assessment provided helpful information.

PUBLIC ENGAGEMENT

Public meetings were attended to varying degrees, dependent on location.

FORMULATION OF RECOMMENDATIONS

Recommendations for this assessment are broad and were forumulated without knowledge of the recommendations in the Master Transportation Plan.

The recommendations in this HIA will be delivered to decision makers through the Project Management Team, the Technical Advisory Committee, and a presentations at various community groups identified by the County Health Department.

PROCESS EFFICACY

No documentation or surveys were conducted to formally assess the effectiveness of the HIA process.

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   PARA funds are limited to planning applications and may not be used for the design or construction of transportation facilities. PARA funds may be applied to address a broad range of planning issues related to roadway and non-motorized transportation modes. Funds may also be applied to studies dedicated solely to the planning of public transportation services, for planning studies that address the needs of multiple jurisdictions, or for needs that are limited to neighborhoods within jurisdictions.

   Each year, jurisdictions are selected to participate in the PARA program based on applications submitted to ADOT. This project is funded through a The Planning Assistance for Rural Areas (PARA) program is sponsored by the Arizona Department of Transportation Multimodal Planning Division (MPD) and provides federal funds to assist tribal governments and counties, cities and towns located outside Transportation Management Area (TMA) planning boundaries with multimodal transportation planning needs.

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Appendix A:
The Relationship Between Health and Transportation

Physical activity is a key determinant of health. The move active an individual, the less likely she or he is to experience chronic obesity related diseases. The CDC states that physical activity doesn't need to be very strenuous for an individual to reap significant health benefits. Even small increases in light to moderate activity, equivalent to walking for about 30 minutes a day, will produce measurable benefits among those who are least active. One of the easiest ways to increase how much we walk is to change our travel behavior from automobile dependent to automobile-independent.

Over the past decades, community and transportation planners have begun to focus on the symbiotic relationship between community design and transportation. This focus has resulted in a shift from communities that offered few mobility choices to communities that provide non-motorized, transit-based, and automobile options. According to the Center for Disease Control and Prevention (CDC), Physical activity also helps you stay at a healthy weight, reduce stress, sleep better, and feel better overall, according to U.S. Health and Human Services guidelines. This is important because the National Health Interview Survey indicates that 53 percent of adult men and 64 percent of adult women never get more than 10 minutes of vigorous physical activity per week.

Communities that provide safe., convenient, and comfortable options transportation choices enable people to choose a transportation mode that is appropriate to trip distance and other conditions, such as weather, time allotted for the trip, and the surrounding environment. Studies have shown that communities that offer healthy transportation options correlate with lower rates of obesity and other chronic disease.

A 2009 Robert Wood Johnson Foundation study [1] on the link between transportation, physical activity and obesity includes these findings:

- Most studies of children and adlolescents indicate that walking or bicycling to school is related to higher physical activity
- More and better-quality sidewalks are associated with adults having both higher rates of walking and of meeting physical activity recommendations, and with a lower likelihood of being overweight. Similarly, the presence of bicycle lanes and paths is positively related to cycling,65 and to more adults meeting physical activity recommendations.

- A survey of more than 11,500 participants in 11 countries found that residents of neighborhoods with sidewalks on most streets were 47 percent more likely to get moderate-to-vigorous physical activity at least five days per week for at least 30 minutes each day than were residents of neighborhoods with sidewalks on few or no streets. A review of 16 studies found that people who reported having access to sidewalks were 20 percent more likely to be physically active than those reporting no access to sidewalks.
- The health benefits of regular physical activity are far-reaching: reduced risk of coronary heart disease, stroke, diabetes, and other chronic diseases; lower health care costs; and improved quality of life for people of all ages. Regular exercise provides the opportunity for health benefits for older adults such as a stronger heart, a more positive mental outlook, and an increased chance of remaining indefinitely independent—a benefit that will become increasingly important as our population ages in the coming years.
- Building multi-use trails can lead to short- and long-term increases in walking and cycling... Furthermore, trails have been shown to be particularly beneficial in promoting physical activity among women and people in lower-income areas.
- With few exceptions, living near trails or having trails in one's neighborhood has been associated with people being 50 percent more likely to meet physical activity guidelines and 73 percent to 80 percent more likely to bicycle. In a nationally representative study, individuals who reported using trails at least once per week were twice as likely to meet physical activity recommendations as were those who reported using trails rarely or never.
- In a sample of pre-adolescent girls, proximity to trails was related to 4.8 percent more physical activity and a 1.4 percent lower body mass index.

The study concludes that:

- A substantial body of research shows that certain aspects of the transportation infrastructure—public transit, greenways and trails, sidewalks and safe street crossings near schools, bicycle paths, traffic–calming devices, and sidewalks that connect schools and homes to destinations—are associated with more walking and bicycling, greater physical activity and lower obesity rates.
- Beyond improving local travel options, transportation infrastructure investments that support physical activity can result in increased recreational opportunities, improvements to individuals' health and decreased health care costs. n In combination with infrastructure investments, programs that raise awareness and complement pedestrian and bicycle facilities are promising options for supporting physical activity. Specifically, Safe Routes to School programs and the management of traffic in local neighborhoods and around schools have been shown to affect physical activity among children, adolescents and adults.
- Fast vehicle traffic is a significant barrier and danger to bicyclists and pedestrians. Measures to slow down traffic and to help pedestrians negotiate busy streets can be effective in increasing physical activity and improving safety.
- Addressing the decades–long decline in walking and bicycling for transportation requires changing the physical characteristics of our communities. Federal, state and local policies and funding that support the type of infrastructure investments and programs identified in this brief can help slow and perhaps even reverse this decline.

NOTES:

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Appendix B:
About Chronic Disease

HEART DISEASE

The term "Heart Disease" encompasses several conditions of the heart. In the United States, coronary artery disease is the most common ailment of the heart, frequently causing heart attack, failure and arrhythmias (Centers for Disease Control and Prevention [CDC], 2009). Coronary artery disease is caused when cholesterol is deposited along the walls of the coronary arteries (the arteries which supply blood to the heart), creating a build up of plaque and narrowing the blood supply available to the heart (Centers for Disease Control and Prevention [CDC], 2013). As the buildup of plaque continues and the heart muscle continues to get insufficient blood supply, the heart will eventually stop pumping, which is commonly called a heart attack (Centers for Disease Control and Prevention [CDC], 2013).

Most heart disease can be prevented by eating a healthy, high fiber diet, consisting of plenty of fruits and vegetables, and foods low in sodium and saturated fat. Another equally important component to the prevention of heart disease is regular physical activity. Those engaging in the recommended 2.5 hours of physical activity per week will have a significantly lower risk of developing heart disease.

Source: Centers for Disease Control and Prevention [CDC], 2013

BMI

A healthy body weight is determined by ratio between height and weight, also called Body Mass Index (BMI.) A normal or healthy BMI for adults falls within a range of 18.5 – 24.9%. Adults with a BMI in the range of 25-29.9% are classified as overweight and those with a BMI of greater than 30% are classified as obese. BMI for youth is calculated as Obese individuals have a much higher risk for heart disease, stroke, type 2 diabetes and some types of preventable cancer. The aforementioned chronic health conditions are considered some of the leading causes of preventable death in the United States. Obesity and the resulting health conditions cost $147 billion annually according to figures amassed in 2008. An individual's likelihood of becoming obese is influenced by three main factors: genetic characteristics, individual behaviors and their living and work environments.

Because weight and height change during growth and development, as does their relation to body fatness, a child's BMI must be interpreted relative to other children of the same sex and age.

Source: (Centers for Disease Control and Prevention [CDC], 2014)

DIABETES

In the United States, diabetes is the seventh leading cause of death and is responsible for a myriad of other health problems. Complications from diabetes include, neuropathy (nerve damage), problems with the eyes/blindness, heart disease, kidney disease, high blood pressure, stroke and lower extremity amputation (Centers for Disease Control and Prevention [CDC], 2015) (American Diabetes Association, N.D.). 9.3% of the population in the United States, or 29.1 million people currently have diabetes, with 8.1 % being undiagnosed and unaware of their condition.

Source: Centers for Disease Control and Prevention [CDC], 2014).

HYPERTENSION

Hypertension is often called the "silent killer" because it has no obvious warning signs or symptoms (Centers for Disease Control and Prevention [CDC], 2015). Gila County residents have more than twice the morbidity rate for Hypertension than any other county in the state. According to 2013 data, Gila County has 610.7 hypertensive residents per 100,000 persons, in comparison with the Arizona state average of 299.5 residents per 100,000

Source: Arizona Department of Health Services [ADHS], Bureau of Public Health Statistics, 2013

Appendix C:
Stakeholder Engagement Plan

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HEALTH IMPACT ASSESSMENT
FINAL STAKEHOLDER ENGAGEMENT PLAN
VERDE VALLEY PARA

HIA Stage	Stakeholder Engagement Activities	Format/ Methodology	Purpose/ Desired Outcome	Desired Participants	Proposed Date
Process Oversight *The oversight process is intended to be used throughout all the stages of the HIA*	• Regular project meetings • Monthly project updates	• Telephonic every other week • Written, provided with invoice	• Ongoing project communication	• AZDCS • Miami USD • Consultant	• Ongoing
Screening *Deciding whether an HIA is needed, feasible, and relevant*	• Collaborate with PARA TAC • Determine level of interest in HIA within the community • Determine if the County/City has capacity to support/provide data for HIA • Examine opportunities for coordination with other, ongoing efforts • Reach out other Healthcare Providers within Yavapai County	• Regular PMT team meetings • Attend TAC Meeting and ask them to participate in HIA Steering Committee and who else should participate • Contact Yavapai County Health Services to determine level of participation • Explore ways to communicate appropriate to the community	• Increase awareness of the benefits of an HIA • Expand the number of stakeholders to be more inclusive • Assess level of effort based on available data • Assess best and most effective outreach methodology • Engage potential entities that can assist in implementation of the HIA recommendations • Provide input into the Verde Valley PARA Recommendations	• PARA TAC • Yavapai County Community Health Services (YCCHS) • NACOG Area Agency on Aging • CYMPO TAC • VV TPO • VV Cyclists Coalition • School Districts?	• Before first TAC Steering Committee Meetings

HIA Stage	Stakeholder Engagement Activities	Format/ Methodology	Purpose/ Desired Outcome	Desired Participants	Proposed Date
Scoping *Deciding which health impacts to evaluate and evaluation methodology*	• Attend a meeting of the PARA TAC to identify health issues that could be affected proposed improvements • Solicit input from the community about important health issues • Coordinate with stakeholders to identify opportunities for collaboration/interface/ coordination • Research other studies to determine key health issues that might not be apparent to the community • Reach out to the community through website and through internet based resources	• Enhance the PARA TAC with stakeholders who can provide a community health perspective • Present information to the PARA TAC on the relationship between community health and community design • Facilitate a guided exercise at a PARA TAC to identify potential health considerations associated with proposed transportation improvements • Provide information via internet-based sources to the community about the relationship between community health and community design • Solicit ideas through internet based resources about the potential health considerations relative to mobility	• Educate the community about the relationship between community design and health • Develop community interest in the HIA • Develop potential support for conducting the HIA • Educate the Community about the benefits of an HIA • Promote civic activity and pride • Promote partnerships	• PARA TAC • Yavapai County Community Health Services (YCCHS) • Community Health Improvement Partners (led by YCCHS) • NACOG Area Agency on Aging and Local Mobility Coordination Committee • VV TPO • Verde Valley Medical Center (VVMC)(part of Northern Arizona Health Care) • VV Cyclists Coalition • Cottonwood Oak Creek, Sedona Oak Creek and Beaver Creek School Districts	• Conduct at Second Stakeholder Meeting or through independent meeting or through focus groups?

HIA Stage	Stakeholder Engagement Activities	Format/ Methodology	Purpose/ Desired Outcome	Desired Participants	Proposed Date
Assessment *Using data, research and analysis to determine the magnitude and direction of potential health impact; offering recommendations to improve health conditions*	• Collaborate with other HIAs to identify best practices for analysis • Work with local Councils of Government, hospitals, Health Departments to analyze data and verify data sources • Reach out to schools, senior centers and clinics to provide data and other resources • Solicit input on Assessment from Steering Committee	• Email • Outreach through Steering Committee • Review other HIAs conducted in the region and state. • Research websites provided by State, Pew Trust, Collaborate with Alliance for Livable Communities (ALC) • Walk Score • Use GIS to determine potentially affected communities within walking distance of identified roadways	• Document intuitive expectations with fact • Provide documentation for use to solicit grants and other funding • Build fact based support for the connection between physical activity and health that is directly related to the community	• Consultant • TAC • YCCHS	• Develop data resources and assessment prior to 2nd or 3rd TAC Meeting; Present Assessment at TAC
Recommendations *Providing recommendations to manage the identified health impacts*	• Integrate ideas provided by Steering Committee and Community through outreach • Test ideas with Steering Committee and through outreach	• Presentation at Steering Committee Meeting	• Solicit feedback on recommendations and refine them for inclusion in PARA • Develop support for recommendations and potentially identify options for implementation	• TAC • ADOT • AZDHS • PLAN*et • YCCHS	• Solicit recommendations at TAC • Present recommendations for comment at TAC

HIA Stage	Stakeholder Engagement Activities	Format/ Methodology	Purpose/ Desired Outcome	Desired Participants	Proposed Date
Reporting and Communication *Sharing the results, recommendations*	• Provide to PARA consultant for integration into PARA • Provide to ADOT • Provide to ADHS • Provide a copy of the report to ADHS, YDCH	• Digital Report	• Increase awareness if the connection between physical activity and community mobility options	• TAC • ADOT • ADHS • YCCHS • VVMPO	• Upon delivery of final product
Monitoring *Tracking how the HIA affects the decision and its outcomes*	• Track implementation through CIPs • Meet with PARA program leaders	• In person presentation at Town Council and Chamber of Commerce Meetings • Potentially Present to State Transportation Board • Face to face discussion on opportunities for enhanced coordination	• Transportation decisions informed by health considerations	• ADOT • ADHS • YDCH • VVTPO	• Ongoing