The Impact of U.S. Highway 550 Design on Health and Safety in Cuba, New Mexico

A Health Impact Assessment

VIVA Step Into CUBA

UNM SCHOOL of MEDICINE | PREVENTION RESEARCH CENTER
Prevention & Population Sciences

What is an HIA?

Health Impact Assessment (HIA) is a set of procedures, methods and tools that estimate the effects of a policy, program or project on the health of a population. Ideally an HIA is conducted before the policy, program or project is implemented so that findings and recommendations can influence decision-making. An HIA can take a variety of different forms ranging from a "rapid" HIA that is written based on existing data and published literature to an HIA that could require months to complete and where local data is collected and analyzed to inform recommendations. The result of an HIA is evidence-based recommendations that highlight practical ways to enhance positive impacts of a proposal and minimize negative impacts on health. This HIA is a "rapid" HIA based on existing data and on research information gathered from peer reviewed published literature.

Why conduct an HIA?

This HIA provides information on how the design of U.S. Highway 550 (U.S 550) could impact the health and safety of Cuba area residents and visitors. Specifically, information is provided on the topics of highway design and pedestrian safety, physical activity, social connections and community economics.

Background on the Cuba, New Mexico area

Cuba, New Mexico is a rural community in Sandoval County, 80 miles northwest of Albuquerque. About 8,800 people live within a 35 mile radius of the Village of Cuba which serves as the commercial center of the area. About 1,700 people live within a five mile radius of the Village and 1,396 residents live within the municipal boundary[1]. The population of Cuba and the surrounding area is tri-cultural (36% Hispanic, 36% Native America, and 24% Anglo). According to the U.S. Census, people living below the poverty level within Cuba and the surrounding area ranges from 41% to 85% of the population[2]. Although exact health statistics for the community are not well documented, the Presbyterian Medical Services Cuba Health Center-the only primary care provider in the community-currently has a case management list of over 500 diabetics, many of whom live within Cuba's five mile radius. According to the New Mexico Department of Health (NM DOH), 67% of Native Americans and 61% of Hispanics in New Mexico are overweight or obese. The NM DOH Disparities report shows Native Americans in New Mexico had 2.7 times more adult obesity, 2.1 times more youth overweight, and 3.1 times more diabetes deaths than non-Hispanic whites. The figures for Hispanics were 2.3, 1.6 and 2.1, respectively.[3] In a 2001 survey of NM high school students, 14.5 % were at risk of overweight and 11.1% were overweight (with 16.4 % for American Indian students and 12.4 % for Hispanics). Compared to both Sandoval County and the state, Cuba has a higher percentage of young people: in 2000, 35% of Cuba's population was younger than 20 compared to 32% for the county and 31% for the state.

U.S. Highway 550 in Cuba

U.S. 550 is a primary route connecting Albuquerque to northwestern New Mexico and Colorado. In 2006, U.S. 550 in Cuba had a traffic count of 9,800 vehicles per day. Cuba's health clinic, post office and other essential services are located on U.S. 550. The Village of Cuba serves as the commercial center for the area. Residents from within the municipality and the surrounding areas visit mid-town Cuba regularly to retrieve their mail from the post office (there is no mail delivery service in the Cuba area), shop for food and other necessities, receive medical care, and obtain social services. Many residents of Cuba live within walking distance of the

commercial center. Most roadways used by residents to reach services and businesses on U.S. 550 do not have safe sidewalks or walkways. Additionally, U.S. 550 has no traffic lights or stop signs, only one poorly marked crosswalk and sidewalks that are not contiguous. In the winter, snow removal from the highway causes many feet of snow to get piled on sidewalks and highway shoulders, obstructing pedestrian access. Given their many challenges, taking care of basic needs is often of higher priority than living a healthy lifestyle for Cuba area residents. Although Cuba is surrounded by a beautiful natural environment for walking and hiking, Cuba is more car than pedestrian friendly and residents are very dependent on their vehicles.

The Step Into Cuba Alliance

The Step Into Cuba Alliance (the Alliance) is a broad coalition of local, state and national organizations and individuals working to promote health by increasing opportunities for physical activity in the Village of Cuba, NM (the Village). A primary goal of the Alliance is to increase the walkability of Cuba to encourage walking as a convenient and low-cost form of physical activity. One of the areas the Alliance has focused its work on is U.S. 550.

The Village and the Alliance have been working with the NM Department of Transportation (NM DOT) to explore ways in which U.S. 550 can become more pedestrian friendly. Federal funding was obtained by NM DOT for a sidewalk and lighting project along U.S. 550 in Cuba with construction on the project expected to begin in fall 2011. Applications for funding for additional safety improvements along U.S. 550 and adjoining roadways have been submitted to the Mid-Region Council of Governments (MRCOG) by the Village.

On May 28th, 2009, the Alliance, the Village of Cuba, and the U.S. National Park Service, with assistance from the University of New Mexico Prevention Research Center (UNM PRC), organized and hosted a Cuba Trails, Park and Walkability Workshop in Cuba. The purpose of the workshop was to provide an opportunity for community members and topic area experts (which included NM DOT and MRCOG staff) to join together and assess the walking and activity opportunities in the community and to provide recommendations for ways to make the community an easier and safer place to be physically active. The forty-five workshop participants divided into small groups and conducted "walking audits" throughout Cuba. The groups recorded, in writing and photographs, observations of positive and negative features of their walks and discussed recommended improvements. One group examined the features and pedestrian comfort of U.S. 550 and provided the following recommendations:

Crossing U.S. 550:

- Consider the concept of funneling pedestrians to a few crossings rather than designating many crosswalks in the Village;
    - Possible crosswalk locations suggested by workshop participants include: Cuba Post Office, Del Prado Restaurant and crossing of U.S. Highway 550 at NM Highway 126;
- Install median islands or "pedestrian refuges" when appropriate to slow traffic and increase safety for pedestrians.

Sidewalks and Safety:

- Sidewalks need to be repaired, widened to meet ADA standards and connected;
- Relocate light posts (could be accomplished when sidewalk rehabilitation takes place);
- Consider physical barriers between pedestrians and highway traffic (buffers);

- Look at other small NM towns that are bisected by U.S. highways that have successfully addressed walkability concerns.

Conducting pedestrian and bicycle traffic counts represents another way in which the Alliance and the Village have focused attention on U.S. 550. The Cuba Counting Project initiated in May 2010, provides baseline pedestrian, bicyclist and other non-motorized use of U.S. 550. Cuba residents, assisted by the UNM PRC, observed pedestrians and bicyclists crossing six locations on or near Cuba's two major roadways (U.S. 550 and N.M. 126) and in the Village of Cuba's St. Francis of Assisi Park during one week in May and one week in September 2010. Counting took place in two hour time blocks on three days each week. Over time, repeated counts will document changes in non-motorized use following the implementation of improvements to make the area safer and more attractive for pedestrians.

How does U.S. Highway 550 design impact individual and community health?

Transportation planning impacts pedestrian safety

Individuals consider many variables when deciding whether or not to walk from one place to another. Factors such as: travel distance; safety and personal security; personal comfort and attractiveness; and accessibility are all weighed when an individual considers whether or not to walk. It is well established that the built environment, or the way that roads and communities are designed, influences an individual's decision to walk[4].

Pedestrian-vehicle crashes are a serious concern with children, the elderly and people who are alcohol-impaired most at risk[5]. Pedestrian safety can be improved by road design that provides for the safety and connectivity needs of the pedestrian.

Research shows that areas with no sidewalks are most hazardous to pedestrians, and sites where sidewalks are present on both sides of the road are least hazardous.[6]

- Both the Federal Highway Administration (FHWA) and the Institute of Transportation Engineers (ITE) recommend a minimum width of 1.5 m (5 ft) for a sidewalk or walkway. This space allows two people to pass comfortably or to walk side-by-side. Sidewalks should be contiguous along both sides of a street and should be fully accessible to all pedestrians, including those in wheelchairs.[7]

- A buffer zone (between 4.5 to 6.5 ft)[8] is desirable and should be provided to separate pedestrians from the street; in rural areas, a landscape strip is often chosen.

Lack of sidewalks and high speed limits are associated with a significantly higher risk of pedestrian motor vehicle crash injuries.[9] By slowing traffic, eliminating conflicting movements, and sharpening drivers' attention, traffic calming may result in fewer collisions and because of lower speeds, when collisions do occur, they may be less serious.[10]

Additionally, speed feedback signs that provide both the speed limit on the road and an electronic display of the approaching vehicle speed measured by radar have shown to lower speeds of vehicles in rural communities.[11] [12]

Approximately 5 percent of pedestrians would die when struck by a vehicle traveling at 20mph or less. This compares with fatality rates of 40, 80 and nearly 100 percent for striking speeds of 30, 40, and 50 mph, respectively.[13] Because of the exponential relationship between speed and pedestrian injury/death, small reductions in speed translate into large reductions in risk.[14]

Higher vehicle speed leads to greater chance of pedestrian fatality[15]

Vehicle speed	Percent pedestrian fatalities
20 mph	5 percent
30 mph	40 percent
40 mph	80 percent
50 mph	100 percent

Traffic calming programs reduce traffic crash frequency and severity.[16] Studies show long-term crash and injury reductions of 15-40 percent and even greater reductions in pedestrian injuries.[17] A convenient sidewalk system that includes adequate crossing opportunities also aides in slowing overall speeds. Traffic calming such as median or pedestrian refuge areas make roadways safer for pedestrians– slows vehicle traffic, shortens crossing distances, and enhances motorist and pedestrian visibility.[18] Crossing multi-lane roadways, like U.S. 550, without median or pedestrian refuges areas, can be extremely dangerous. Pedestrians crossing an arterial without a median have a crash risk 6.48 times higher than crossing an arterial with a median. In fact, corridors that have raised medians or pedestrian refuge areas at marked crosswalks have a 46 percent reduction in pedestrian crashes; and at unmarked crosswalks, pedestrian crashes have been reduced by 39 percent.[19] Wait time for safe pedestrian crossing can deter walking as transportation. Raised medians or refuge islands can lessen the wait time for a pedestrian to identify a gap in traffic and to cross. With shorter delays, fewer risks are taken by crossing through holes in traffic flow. It has been found that on a four lane roadway with 5,000 ADT, medians can lessen pedestrian delay by 70 percent (from 41 seconds to 9 seconds).[20]

Other benefits of median islands or pedestrian refuges include[21]:

- Reduction of motor vehicle crashes by 15 percent;
- Decrease delays for motorists by over 30 percent;
- Increase capacity of roadways by over 30 percent;
- Reduction of vehicle speeds on the roadway ;
- Provides space for landscaping, community beautification and pedestrian scale lighting to illuminate walkers .

Transportation planning impacts physical activity opportunity

The staggering statistics that two-thirds of U.S. adults and almost one in three children are overweight or obese are of significant concern to the health of our nation.[22] [23] Obesity results from a complexity of individual's genetics as well as behavioral and environmental determinants. For optimal health, adults should engage in 150 minutes of moderate-intensity aerobic activity (eg. brisk walking) each week and children and adolescents should get one hour or more of physical activity each day.[24] Physical activity in bouts as short as 10 minute increments, such as walking to take care of

errands, can have health benefits.[25] Despite the fact that walking is a form of physical activity that is low cost and fairly accessible to the general population, few people walk enough to gain those benefits (strengthening the heart, preventing or controlling diabetes, controlling weight, improving mental health).[26] Just thirty minutes of moderate physical activity (for adults), such as walking most days of the week, can reduce the risk for and positively impact numerous long-term health conditions including: overweight/obesity, cardiovascular disease, diabetes, cancers, hypertension, bone and joint disease and mental health.[27]

There is increasing evidence that the physical features of streets and neighborhoods can impact rates of walking. In fact, research has shown that more and better-quality sidewalks are associated with adults engaging in higher rates of walking and meeting physical activity recommendations.[28] A pedestrian environment that is convenient and attractive encourages people to include walking in their daily lives. A review of 18 studies identified a variety of attributes of the community environment associated with walking for a particular purpose. Those attributes include: aesthetic qualities of the surroundings, convenience of facilities for walking (such as sidewalks or trails), accessibility of destinations and perceptions about traffic and busy roads.[29] Additionally, studies have shown that residents living in highly walkable neighborhoods reported about two times more walking trips per week than residents of low-walkable neighborhoods.[30] The decisions that transportation planners and engineers make can have long lasting impacts on the health of communities. The Victoria Transport Policy Institute extensively documents the need for transportation planning to consider the human health impacts of decisions knowing that decisions that plan for multimodal options can "provide significant human health benefits, resulting in reduced suffering, cost savings and increased productivity" (p. 25).[31] In addition, the Task Force on Community Preventive Services (an independent, volunteer body of public health and prevention experts that documents evidence based strategies for promoting the public's health) highlights environmental and policy approaches that are known to increase physical activity levels including the proximity and density of places for physical activity within a community.[32]

Individuals living in rural environments are known to walk less than those living in suburban environments and are more likely than urban or suburban dwellers to report barriers to physical activity (eg. fewer sidewalks, limited access to exercise facilities, lower socioeconomic support for physical activity).[33.]

Transportation planning can impact opportunity for building social connections

Walkable community design can also prevent social deterioration and isolation by providing opportunities for incidental interaction among residents. It has been documented that a lack of social networks or connections can undermine mental and physical health,[34] that residents of walkable neighborhoods have an enhanced sense of community,[35] and that walking increases social capital by promoting face-to-face interaction with neighbors. One study found that individuals living in a walkable, mixed-use neighborhood were more likely to know their neighbors, participate politically and trust others.[36]

Walking and walkable design can help build the networks of relationships that occur in public space in everyday life. It is thought that perceptions of one's neighborhood quality could play as much of a role in effecting ones behavior as the actual characteristics (eg. a sense of safety versus actual safety of the area).[37] One study showed that young people who live in an area they report having busy traffic were found to be less likely to have positive perceptions of the safety, friendliness or appearance of their community. They were also less likely to identify individuals in their community as being helpful. These findings were independent of socio-economic status of the individuals or community.[38] Additionally, it was found that those individuals from communities with considerable traffic were at risk for "traffic-induced social exclusion," (p. 357)[39] manifested in

the form of young people spending greater amounts of time inside because of perceived or real safety concerns of the youth or their parents. The implications for this are wide-reaching and could have significant impacts on young people's physical and mental health and quality of life.[40] Additionally, studies have shown that for every 10 minutes a person spends in a daily car commute, time spent in community activities falls by 10%.[41] Research has demonstrated that people who live in cohesive, integrated communities are less likely to get sick, tend to live longer and to be happier.[42]

Multi-modal roadway design can have positive impacts on community economics

Multi-modal roadway design can impact community economics in a variety of ways: from increasing pedestrian use of the roadway (and in turn, bringing more attention and financing to multimodal development) to encouraging shopping locally while on foot and saving individuals' cost on automobile maintenance. Encouraging walking as a local mode of transportation can also contribute to long term savings on medical expenses.

Community centers have tremendous potential to take advantage of their compactness and become desirable places for pedestrians. Pedestrian infrastructure that promotes walking is not only good for individuals' health, it also benefits community vitality. Walking (as opposed to driving) by shops and businesses encourages stopping and spending money within the local community. Communities and their business districts that are walkable are capturing a greater share of tourist dollars as visitors are interested in experiencing community life while shopping and dining out. Additionally, areas where visitors and residents feel a sense of community are increasingly likely to be strong economically.[43] The Village of Cuba is surrounded by beautiful scenic lands that are hiking and camping destinations for individuals living outside of the community. These individuals are likely to spend more time and money within a walkable Village compared to one that is more friendly and accessible to the automobile. Downtowns provide residents and visitors with retail, industry, tourism opportunities, and services all conveniently located.

A more walkable community impacts transportation choices and transportation costs. If an individual feels safe and comfortable walking to take care of errands, then s/he can reduce financial expenditure for automobile use and upkeep. One study showed that households in automobile-dependent communities devote 50% more to transportation than do households in communities that offer a more multimodal transportation system.[44] Moreover, various public costs for roads, parking facilities, traffic congestion, crash risk and environmental damages can be saved in a more pedestrian friendly community. Short vehicle trips tend to have high costs per vehicle mile (eg. energy consumption and pollution emissions are several times higher than average for short trips when engines are cold).[45] Consequently, community residents in Cuba who could walk from their homes to U.S. 550 if it were safe and comfortable could see considerable collective savings.

Finally, an investment in designing and constructing safe pedestrian infrastructure can contribute to providing a more health promoting environment and potentially decreasing obesity related medical expenditures. The increasing burden of obesity related medical costs can be attributed to: the rise in numbers of obese individuals, the increasing cost of treatments specific to obesity-related illnesses and a shift in the population of obesity to older individuals.[46] About $324 million is spent in NM each year on adult obesity-attributable medical expenditures.[47] It is estimated that the U.S. will spend $344 billion on health care costs attributable to obesity in 2018 if rates increase at their current levels with such expenditures accounting for more than 21 percent of the nation's direct health care spending in 2018. Alternatively, if obesity levels were to stay at their current rates, the U.S. could save approximately $820 per adult in health care costs by 2018-a savings of almost $200 billion dollars.[48]

Recommendations:

Creating a safe, convenient and attractive pedestrian system within a transportation corridor such as U.S. 550 through Cuba, allows people to use walking as a way to get to work, to school, to the store, or to walk for their health. Contiguous, well-maintained, accessible sidewalks along U.S. 550 with shade, shelter and benches can contribute to a more comfortable walking environment. Adequately spaced, safe, street crossings can make pedestrian travel safer, more convenient and efficient and thus, will enable community members to walk within the community instead of relying solely on their vehicles. A more walkable Cuba may also positively affect social connections and the community's economy.

Below are recommendations based on the evidence-based studies and peer reviewed literature summarized in this report that could increase pedestrian safety and encourage safe walking along U.S. 550 as part of an active daily lifestyle for Cuba area residents.

- Create infrastructure that provides a safe and accessible environment for pedestrians and those individuals in wheel chairs by adding or upgrading sidewalks where they are missing or in disrepair and upgrading all driveway and road crossing ramps to achieve ADA guideline standards;
- Provide a buffer (4.5 to 6.5 ft)[49] between vehicular traffic and sidewalk to increase safety and provide a more desirable walking environment;
- Provide pedestrian scale amenities to encourage safe walking such as: pedestrian scale lighting, shade and benches for comfort and resting;
- Create safe, convenient pedestrian crossings utilizing median islands or "pedestrian refuges" that are adequately spaced to accommodate pedestrian destinations along U.S. 550;
- Explore possibilities for signage (such as speed feedback signs) that would have the greatest impact to promote a safe pedestrian environment;
- Explore additional potential for traffic calming in areas most used by pedestrians along U.S. 550.

(The UNM PRC and the Step Into Cuba Alliance collaborated in writing the below two-page summary of this HIA which appeared as an insert in the May 2010 *Cuba News*, the monthly Cuba, NM newspaper).

Changes to U.S. 550 can make Cuba a healthier and safer place to live.

The Village of Cuba will soon receive funding from the New Mexico Department of Transportation (NMDOT) to improve sidewalks and lighting on U.S. 550. NMDOT is beginning to plan what the project will look like. ***There are many ways that U.S. 550 can be made safer for pedestrians and many good reasons for making it safer.***

Changes to U.S. 550 can make it safer and more inviting. There are different ways to slow traffic, to shorten the distance for people crossing the street, and to make it easier for drivers to see the people trying to cross the street. ***Here are some ways to "calm" or slow traffic down:***

SPEED FEEDBACK SIGNS tell drivers their speed (measured by radar) and the speed limit on the road.

MEDIAN ISLANDS provide a safe place in the middle of the road for people to stop and wait for traffic. If there is a median island, people do not have to wait for traffic to clear in both directions. They can cross when traffic is clear in only one direction.

"GATEWAY" SIGNS let drivers know they are leaving a rural highway and entering a community.

BULB-OUTS, OR EXTENSIONS of the sidewalk at either end of a crosswalk, make the distance people have to cross shorter and make it easier for drivers to see the people trying to cross the street.

More people walking around the U.S. 550 area in Cuba can boost the economy and add to a sense of community.

If the streets feel safe and welcoming, local residents and visitors are more likely to walk around town, stop to visit with each other, and shop in local stores.

People who live in areas where it is easy and nice to walk are more likely to be active, which can make them healthier.

Recommended sidewalk safety features for pedestrians:

- Sidewalks should be at least 5 feet across so that two people can walk side-by-side or pass each other easily.
- Sidewalks should be continuous along both sides of the highway.
- Sidewalks should be easier for everyone to use, including those in wheelchairs or pushing strollers.
- Sidewalks should have a "buffer zone" or area between the sidewalk and the roadway. This helps separate the people walking along the highway from the traffic. This space should be at least 4 feet across and could be dirt, paved, or could have plants.
- Sidewalks should have enough street lighting so that people on the sidewalk can see where they are walking and so that walkers can be seen by drivers. Lighting also helps people to see who is around them and can prevent crime.

"To improve Highway 550 would enhance the atmosphere of the community, the quality of life and the environment…the entire community would benefit. People often share with me as a council member that Cuba is beautiful but the downtown environment lacks so many upgrades such as sidewalks and lighting."

— Cuba Village Council Member and U.S. 550 business Owner

"If we had crosswalks and safe walkways, it would make a huge difference. I would love to see changes made to the highway. It's so dangerous, even just walking from my store across the street. I don't think drivers are inconsiderate or rude; they are just unaware…there are no signs to educate them. I have a child who is pre-diabetic and I would love for us to be active together here in a convenient place. My children don't play in their front yard because I'm afraid. The changes would be for the elderly, families, anyone who wants to walk — it's for everybody."

— Cuba Parent, U.S. 550 Business Owner and Resident

The Step Into Cuba Alliance, the University of New Mexico Prevention Research Center's VIVA (Village Interventions and Venues for Activity) team, and Healthy Kids Healthy Communities team worked together on this flyer. References are available from the Prevention Research Center. Contact Emily Piltch, epiltch@salud.unm.edu or (505) 272-4462. 05-06-2010.

References

[1] U.S. Census Bureau estimate for 2009 – www.factfinder.census.gov.
[2] Ibid.
[3] New Mexico Department of Health (August 2010). Racial and Ethnic Health Disparities Report Card. Available at: http://www.health.state.nm.us/plans/2010%20Racial%20and%20Ethnic%20Health%20Disparities%20Report%20Card.pdf
[4] Saelens B., Sallis J., Frank L. Environmental Correlates of Walking and Cycling: Findings From the Transportation, Urban Design, and Planning Literatures. *Annals of Behavioral Medicine*. 2003; 25(2): 80-91.
[5] Centers for Disease Control and Prevention. Injury Prevention & Control: Motor Vehicle Safety. Pedestrian Safety: Fact Sheet. http://www.cdc.gov/motorvehiclesafety/Pedestrian_Safety/factsheet.html.
[6] Campbell BJ, Zegeer CV, Huang HH, Cynecki MJ. A Review of Pedestrian Safety Research in the United States and Abroad. Chapel Hill, NC: University of North Carolina; January 2004.
[7] Pedestrian and Bicycle Information Center http://www.walkinginfo.org/engineering/roadway-sidewalks.cfm
[8] US Department of Transportation Federal Highway Administration, Pedestrian Facility Design Course NHI Course No. 142045
[9] Campbell BJ, Zegeer CV, Huang HH, Cynecki MJ. A Review of Pedestrian Safety Research in the United States and Abroad. Chapel Hill, NC: University of North Carolina; January 2004.
[10] Ewing R. Traffic Calming: State of the Practice. Washington: Institute of Transportation Engineers;1999.
[11] Traffic Calming on Main Roads Through Rural Communities Tech Brief. Feb 2009. Federal Highway Administration (FHWA) Publication No.: FHWA-HRT-08-067. www.tfhrc.gov
[12] Iowa State University Center for Transportation Research and Education. Evaluation of Gateway and Low-Cost Traffic-Calming Treatments for Major Routes in Small, Rural Communities. Final Report; November 2007.
[13] Leaf WA, Preusser DF. Literature review on vehicle travel speeds and pedestrian injuries among selected racial/ethnic groups. Washington, DC: Preusser Research Group, Inc.;1999.
[14] Anderson RW, McLean AJ, Farmer MJ,et al. Vehicle travel speeds and the incidence of fatal pedestrian crashes. Accid Anal Prev. Sep 1997;29(5):667-674.
[15] Leaf WA, Preusser DF. Literature review on vehicle travel speeds and pedestrian injuries among selected racial/ethnic groups. Washington, DC: Preusser Research Group, Inc.;1999.
[16] Litman T. Traffic Calming Benefits, Costs and Equity Impacts. Victoria, BC: Victoria Transport Policy Institute;1999.
[17] Ibid
[18] Pedestrian and Bicycle Information Center http://www.walkinginfo.org/engineering/roadway-sidewalks.cfm
[19] Safety Benefits of Raised Medians and Pedestrian Refuge Areas. FHWA Safety Programs. http://safety.fhwa.dot.gov
[20] Ibid
[21] Ibid
[22] U.S. Department of Health and Human Services. The Surgeon General's Vision for a Healthy and Fit Nation 2010. http://www.surgeongeneral.gov
[23] Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion. The Power of Prevention: Chronic disease…the public health challenge of the 21st century; 2009. http://www.cdc.gov/chronicdisease/pdf/2009-Power-of-Prevention.pdf
[24] U.S. Department of Health and Human Services. The Surgeon General's Vision for a Healthy and Fit Nation 2010. http://www.surgeongeneral.gov
[25] Centers for Disease Control and Prevention. Physical Activity for Everyone Guidelines. http://www.cdc.gov/physicalactivity/everyone/guidelines/index.html
[26] Giles-Corti B, Donovan, R. Relative Influences of Individual, Social Environment and Physical Environmental Correlates of Walking. *American Journal of Public Health*. Sep 2003;93(9):1583-1589.
[27] Centers for Disease Control and Prevention. Physical Activity and Health: the Benefits of Physical Activity. May 2010. http://www.cdc.gov/physicalactivity/everyone/health/index.html
[28] Active Living Research. Research Brief-Active Transportation: Making the Link from Transportation to Physical Activity and Obesity; Summer 2009.
[29] Owen N., Humpel N., Leslie E. et al. Understanding Environmental Influences on Walking Review and Research Agenda. Am J Prev Med. 2004;27(1): 67-76.
[30] Saelens B., Sallis J., Frank L. Environmental Correlates of Walking and Cycling: Findings From the Transportation, Urban Design, and Planning Literatures. *Annals of Behavioral Medicine*. 2003; 25(2): 80-91.
[31] Litman, T. If Health Matters: Integrating Public Health Objectives in Transportation Planning. Victoria Transport Policy Institute. June 2006.

[32] Task Force on Community Preventive Services. Recommendations to Increase Physical Activity in Communities. *Am J Prev Med*. 2002; 22(4S): 67-72.
[33] Brownson R, Hagood L, Lovegreen, S. et. al. A multilevel ecological approach to promoting walking in rural communities. *Preventive Medicine.* 2005; 41: 837-842.
[34] University of Minnesota."Building Social Capital with Comprehensive Planning and Ordinances." www.desighnforhealth.net. 2008.
[35] Lund, H. Pedestrian Environments and Sense of Community. *Journal of Planning Education and Research.* March 2002; 21 (3): 301-312.
[36] Leyden, K. Social Capital and the Built Environment: The Importance of Walkable Neighborhoods. *American Journal of Public Health.* September 2003; 93 (9): 1546-1551.
[37] Wood L., Frank L.& Giles-Corti B. Sense of community and its relationship with walking and neighborhood design. *Social Science & Medicine*. 2010; 70: 1381-1390.
[38] Mullen, E. Do you think that your local area is a good place for young people to grow up? The effects of traffic and car parking on young people's views. *Health and Place.* 2003; 9:351-360.
[39] Ibid
[40] Ibid
[41] Walk Score. http://www.walkscore.com/walking-matters.shtml
[42] House J, Landis K, Umberson D. Social Relationships and Health. *Science*. 1988; 241:540-545.
[43] Ibid.
[44] Litman, T. Economic Value of Walkability. Transportation Research Record 1828 Paper No. 03-2731.
[45] Ibid.
[46] A collaborative report from United Health Foundation, the American Public Health Association and Partnership for Prevention based on research by Kenneth E. Thorpe, PhD, Emory University. The Future Costs of Obesity: National and State Estimates of the Impact of Obesity on Direct Health Care Expenses. November 2009. http://www.nccor.org/downloads/CostofObesityReport-FINAL.pdf
[47] New Mexico Health Policy Commission. 2010 Quick Facts. December 2009. www.hpc.state.nm.us
[48] Ibid.
[48] US Department of Transportation Federal Highway Administration, Pedestrian Facility Design Course NHI Course No. 142045.

Acknowledgements: This report was compiled by the UNM Prevention Research Center as a component of the Village Interventions and Venues for Activity (VIVA) Step Into Cuba project and the Robert Wood Johnson Foundation Healthy Kids Healthy Cuba project. This report was supported in part by Cooperative Agreement Number 1U48DP001931 from the Centers for Disease Control and Prevention, Prevention Research Centers Program. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

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