Walking for Life:
Addressing Health in Champaign’s Pedestrian Plan

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I undertook this project for practical reasons, hoping to take advantage of good timing, study a topic that matched my interests, and contribute to a planning process aimed to improve the quality of life in Champaign, Illinois. A traumatic health situation, the 2014 polar vortex, and series of interviews with concerned community health professionals made me realize that working for complete, accessible, and well-maintained pedestrian systems is more than a practicality. High quality pedestrian networks are essential elements for life in a safe and healthy community.

I would like to extend a special thanks to the Champaign-Urbana professionals who shared their time and perspectives, the City of Champaign Planning and Development Department who gave me the opportunity to become involved with their Pedestrian Plan process, my colleagues and friends in the Department of Urban and Regional Planning whose conversations and feedback were invaluable to this work, and to my wife, Jenny who literally helped me get back on my feet this semester. Without your contributions and support, this project would not have been possible.

Best wishes whichever path(s) you take,

Tyler Zwagerman
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Introduction

This project was completed for the purpose of providing recommendations for the City of Champaign Planning and Development Department for how the Walk Champaign pedestrian plan might address community health. A stated goal of the Walk Champaign plan is to “promote health and wellness for residents by improving the walkability of the community” (City of Champaign, 2014). This document highlights the connection between walkability and health and incorporates the perspectives of local professionals in the fields related to health and wellness to compile recommendations for what a healthy walking environment in Champaign would look like as well as how Champaign might get there.

This project has three major components:

1. **Literature review** - describes the relationship between health, walkability, and pedestrian plans

   The review found that the threat of obesity, risk of pedestrian collisions, the quality of mental health, frequency of community interaction, and integrity of the environment are all linked to the walkability of community pedestrian networks. Safety, accessibility, connectivity, and comfort are hallmarks of a high quality pedestrian network. Many
areas within Champaign are deficient of these characteristics. This indicates that a meaningful opportunity exists for Walk Champaign to plan for a healthier future.

2. **Interview process** - incorporates perspectives regarding how community health might be addressed through Walk Champaign

Interviews and responses gathered from twenty Champaign-Urbana professionals further articulated the need to approach pedestrian planning as a public health issue. Areas of consensus among the participant responses were combined into a vision for a healthy pedestrian network for Champaign.

**Healthy Pedestrian Network Vision**

- It is complete and well-maintained
- Ensures access for all users
- Reduces risk and severity of injury
- Connects to essential destinations
- Supports a city-wide walking culture

Analysis of responses also led to common suggestions regarding City policies, programs, priorities and specific projects which could effectively address health in the pedestrian plan.

3. **Application** - describes recommendations and includes details regarding purpose, structure, location and implementation

The existing pedestrian network in Champaign may be viewed as both a health asset and a health challenge. Champaign has a vibrant walkable core and several areas with complete pedestrian networks that offer safe access to a wide variety of nearby destinations. At the same time, Champaign has an abundance of areas designed to accommodate automobile traffic rather than pedestrians. Huge swaths of the community are deficient of sidewalks, street lights, and safe pedestrian crossings. These conditions create safety hazards for walkers and result in community barriers that limit access and discourage physical activity.
activity.

The application section of this document serves as a starting point to address these deficiencies and create a healthier walking environment for the community. Recommendations reflect the priorities of Champaign-Urbana health professionals with details regarding both city-wide and site-specific actions for addressing health through the Pedestrian Plan. Implementation feasibility of recommendations is discussed as well. Significant variation between recommended projects suggests many near-term and long-term opportunities to address health in Champaign’s pedestrian network. Twenty recommendations are explained in detail.

The recommendations in the application component represent concrete next steps that the Walk Champaign process may incorporate to address health, but the conversation started though this project may also be of value. Health impacts of development decisions are well documented, suggesting the need for future collaboration between planning and community health fields. The precedent, process, and network of participating health professionals in this project may serve as an asset in future Champaign planning processes.
Literature Review: Health, Walkability, & Pedestrian Plans

Mounting evidence suggests that community health outcomes are influenced strongly by the characteristics of their built environments. Many peer-reviewed publications have described the relationship between built environments and health in the last ten years, but none have taken a comprehensive approach in surveying the role that walkability plays in people’s health. Existing publications summarize academic studies that reveal the benefits of walkable communities, but miss the mark making a compelling case for communities to leverage walking as means to plan for health. Readers of this piece will better understand existing health threats posed by the built environment in the US and the role that planning for walking can play in mitigating them.

This review develops a case for prioritizing health in the *Walk Champaign* pedestrian plan. It identifies the health costs of auto-centric environments and summarizes the role that walk-friendly design plays in promoting healthy communities.

The review incorporates nationwide findings on walkability and health, but also relies on reports of health conditions at the local level. It summarizes health prioritization in existing pedestrian plans and informs a model for a healthy pedestrian network.

The Costs of Auto-centric Urban Design

The health costs that are associated with the design modern American cities are staggering. Today eight out of ten of the leading causes of death in America are associated with the quality of built environments (*Fort Collins, 2011*), and sprawling design continues to take a toll on both the social and environmental health of our communities. The evidence suggests that health, safety, and quality of life hinge on how easy or difficult environments make it for people be active, eat well, and build relationships. Fortunately, because built environments have been engineered by humans, they can also be redesigned to promote healthier outcomes. With Champaign’s pedestrian plan process under way, now is a great time to evaluate whether the way our community is built helps or hinders health outcomes and to suggest local “fixes” that will promote safety, physical activity, and improved access for residents.

This review evaluates the scope of health problems associated with the built environment and the means by which walking may address these problems. Only by first examining and
understanding the relationship between walkability and health can a process hope to prioritize for healthy outcomes. Although the description of health costs below is not comprehensive, the chosen topics of inactivity, safety, social, and environmental costs directly related the quality of walking environments.

**Inactivity Costs**

Since the middle of the twentieth century, American society has experienced a gradual removal of physical activity from daily life. Increases in automobile use and design of auto-centric communities have contributed to more sedentary lifestyles. Today 38 percent of American adults fail to even take a ten minute walk during a typical week (McHenry County, 2013). The health threat of inactivity has been amplified by way of convenient access to poor nutrition and jobs that increasingly demand time spent in front of television, mobile devices and computer monitors. Today less than half of American adults and only 35 percent of high school students report meeting the CDC’s Guide to Community Preventive Services recommendations for moderate and vigorous physical activity (US Department of Health and Human Services, 2013). Indicative of declining physical activity, only 15 percent of children walk to school today compared to 50 percent in 1969. (Pierce, 2009) Over the same period the incidence of children taking medication for hyperactivity has skyrocketed. In Champaign only 48.6 percent of adult residents report getting the recommended 30 minutes of physical activity per day (CUPHD, 2011).

The resulting rise in obesity across the United States and in Illinois has led to serious health consequences for millions. In the 1970’s one in ten Americans were classified obese according to their body mass index. Today two out of every three American adults twenty years or older are overweight or obese (Flegal, 2010). In terms of weight, the average American adult is 17-19 pounds heavier today compared to the average American in the 1970’s (Speck, 2012). In some respects, this is a uniquely American problem. The obesity rate in the US is over ten percent higher than any other developed nation in the world (CDC, 2012). As a result, many Americans are faced with the associated conditions of heart disease, stroke, hypertension, type II diabetes, and certain kinds of cancer. In Illinois, where the obesity rate is 28.7 percent, 29 percent of...
adults have high blood pressure, 8.7 percent are diabetic, and 9 percent suffer from asthma (CDC, 2014a). Even more alarming, rates of childhood obesity have tripled since the late 1970’s in the US (CDC, 2010a). Projecting into the future, one third of children are likely to become diabetic in their lifetime (Speck, 2012). Obese children are not only more likely to become obese adults, but also are more likely to suffer from asthma, sleep apnea, and emotional distress. The healthcare cost of obesity and physical inactivity is estimated in the hundreds of billions of dollars (CDC, 2012) in the US where 75 percent of medical costs are spent on chronic disease (Chester County, 2013). The loss of quality and years of life is staggering as well. The 300,000 deaths per year resulting from weight (McHenry, 2013) is now greater than the number of Americans killed by smoking (Speck, 40).

Closer to home, the 2011 Champaign County Community Health Plan identified obesity as “Force of Change” in the community (CUPHD, 2011). Less than half of the county’s population reported being at a healthy weight and obesity was cited as the number one personal health concern in a 2008 county survey (CUPHD, 2011). Further, each of the top three leading causes of death in Champaign County (heart disease, cancer, and chronic respiratory diseases) is associated with excessive weight (CUPHD, 2011). In addition to obesity, cancer and diabetes were most frequently cited by residents as top health concerns. Lack of sidewalks, lack of access to parks, and lack of access to fresh foods were reported as barriers to combating obesity (CUPHD, 2011). Community health survey responses indicate that Champaign residents agree that the built environment plays an important role in the quality of community. Surveyed residents listed sidewalks, crosswalks, street lighting, and slow traffic speed among high and very high neighborhood priorities (CUPHD, 2011).

Safety Costs

The sprawling built environment of busy roads, parking lots, and dangerous intersections has also taken its toll by way of traffic accidents. Auto-dominant areas with long blocks, multiple lanes and ample parking have created “no walking zones” in our cities (Speck, 2012). The problem is that some people walk anyway by necessity. Car crashes are among the greatest threats to physical health in the United States. Vehicle to vehicle collisions (as well as crashes with bicycles and pedestrians) account for tens of thousands of deaths each year and remain the leading cause of death for children and young adults (CDC, 2011). Vehicular collisions with pedestrians account for over ten percent of all traffic fatalities in the United States (Pedestrian and Bicycle Information Center, 2010). Because in many parts of our communities, efficient traffic flow is prioritized over pedestrian safety, wide streets are designed to move traffic quickly but create health hazards for those on foot. Serious pedestrian injuries and fatalities are most common among children and elderly populations who are most vulnerable to speeding traffic (CDC, 2014b). Wide turning radii, complex traffic controls, multiple driveways, and lack of lighting all compound dangers for walkers. On average, multiple pedestrian fatalities are included in the over 40 deaths a year in Champaign county caused by accidents (CUPHD, 2011).
Not surprisingly, even perceived safety threats from vehicles are keeping people from walking for utility and recreation. In many American cities, including Champaign, residents in adjacent neighborhoods and blocks are cut off from one another by major arterial roads and pedestrian networks lack pathways of connectivity for those without access to cars. The noise and speed of traffic deters residents from making trips on foot and from allowing their children to venture far from home. People are not likely to walk if they feel unprotected. Busy corridors like Neil Street and Prospect Avenue in Champaign are particularly uncomfortable along blocks that lack physical buffers planted with trees and grass. Unmaintained pedestrian facilities can also deter their use and decrease perceptions of safety. These damaged sidewalks and crossings present additional safety hazards. Falls due to tripping hazards and ice create health risks for thousands of Americans each year. For example, more than 9,000 falls each year result from older adults tripping on curbs (CDC, 2014b). Although ADA transition plans typically require “universal design” standards in sidewalk construction, older sidewalk networks like Champaign’s continue to have curbed crossings that present both access and safety issues for many pedestrians.

**Social Costs**

In addition to safety concerns and reduced physical activity, decreased quality of life may be a consequence of poor urban design for many Americans. Because health has long been defined as a state of complete physical, mental, and social well-being, the social costs of poor pedestrian environments should also be considered among health concerns. In a given day Americans may work, shop, eat, drink, learn, recreate, worship, convene, visit, celebrate, and sleep among other activities. Unfortunately, most Americans cannot do not have proximate access to all of these things via a safe and comfortable walking environment. As a result, some residents in Champaign and elsewhere miss valuable opportunities to get outside, to meet neighbors, or to shop at local businesses. Even complete neighborhoods with schools, public institutions, parks, and shopping destinations can seem inaccessible when high traffic or an inadequate pedestrian network discourages residents from going out on walk.
The economic cost of unwalkable environments is significant in Champaign. The cost to both families and businesses adds financial stress which can threaten community health. Car dependence burdens families by requiring autos for access to primary destinations like jobs, shops, transit hubs, libraries, and parks. Families that rely on multiple cars for daily needs may spend more on transportation than housing. Even the average American family that drives today is likely to spend at least 20 percent of their budget on transportation costs (Lutz, 2010). When families spend more on their cars, they have less disposable income to spend their money locally. Conversely, residents in walkable neighborhoods are more likely to patronize local businesses which result in lively local retail and dining business. This trend holds true in Champaign where the walkable neighborhoods of Campustown and Downtown are among the most culturally and economically vibrant destinations in the area. The businesses in these areas attract walkers and those who park nearby, but they are also noticed by the vehicles driving through since drivers instinctively slow down where streets are narrowed and pedestrian traffic is higher. Champaign’s neighborhood commercial centers may be missing out on the benefits of foot traffic due to auto-oriented design, lack of pedestrian facilities, and lack of mixed uses and densities that tend to bolster walk share.

The strength of communities may be best measured by the strength of relationships between residents and the strength of their involvement in their neighborhoods. The more time that residents spend driving, parking, and maintaining their vehicles, the less time they have to volunteer, invest in relationships, develop a hobby, or support a community organization. Face time and hands on work is important for both social interaction and innovation. In the US, the rate of vehicle miles traveled has increased at least eight times the pace of the US population since 1983 (Duany et al, 2010) suggesting a huge time opportunity cost. Unfortunately, the excess time spent stuck in traffic has also been shown to increase chances of heart attacks, stress, and rage (Frumkin et al, 2004). While cities have public spaces that are meant to encourage activity, many of the designs for parks, plazas, and public spaces are not effective. Modern designs have often created huge sweeping open spaces that offer little protection from the elements and few points of interest for pedestrians. Environments that have less broad open space, more diversity of uses and architecture, and increased tree canopies are associated with increased levels of walking and social capital. Applying the human-scaled concept to the Champaign context, it is far more inviting it is to walk along the paths of the University of Illinois’ main quad versus strolling across the vast expanses of the University of Illinois’ newer south quadrangle.
Some of the social costs of auto-centric environments are less obvious. One subtle cost of car-dependence may be increased levels of crime. Because some neighborhoods lack walkable built environments, they also lack the “eyes on the street” that have been shown to discourage criminals from committing offenses. In neighborhoods with lower rates of walking and higher levels of crime, some groups (especially seniors, children, and adolescent females) may be discouraged from walking altogether because they perceive their neighborhoods to be unsafe. While built environments alone are not responsible for crime, design of public spaces, lighting, and presence and quality of sidewalk are contributing factors.

Evidence from literature suggests there are additional equity issues to consider as well. The quality of life cost in unwalkable neighborhoods is most expressly felt by the young, the elderly, economically disadvantaged and disabled populations. For many members of these groups, driving a car is not an option. Areas that are not walkable significantly decrease independence for individuals in these groups who may lack access to places of work, shopping, worship, and social interaction. Feelings of isolation and depression are more common among these groups in the homogenous auto-centric areas (Leyden, 2003). Complete, walkable neighborhoods were a standard for American cities until the height of the auto age. Reinvesting in walkable urban design in the twenty first century may pay the greatest dividends for those who cannot drive by creating opportunities for everyone to access and engage with their local community.

**Environmental Costs**

Auto-centric environments also exact a high environmental toll as emissions, roadways, and parking lots contribute to climate change, consume natural habitats, create continuous loud noise, pollute the air with particulate matter, and increase the quantity of runoff into urban and suburban watersheds. Construction of roadways and parking lots has been linked to increased number of drivers and distance driven, yet cities and counties around the US continue to add pavement. Today parking consumes more acres in American cities than anything else (Betz, 2010). The overabundance of roadways and parking (an estimated 500 million empty spaces) consume huge tracts of land while simultaneously increasing urban heat island effects and storm water runoff. Highway construction has also enabled land consuming commercial strips and low-density sprawl style residential development. While improved technology makes energy efficient buildings a possibility in the 21st century, efficiency gains are often negated by siting of new efficient buildings on urban fringes which demand greater driving distances for access. Even fuel efficient hybrid vehicles, which pollute less per mile, may result in a wash for the environment since their operators actually drive more miles. The lowest levels of emissions per capita are not found in areas with highest rates of technology adoption, but those that are the most compact and walkable.
Prioritizing cars in right of way design has produced many urban and suburban corridors that are void of trees. Trees are often removed from designs because they are seen by engineers as “fixed hazardous objects” which are likely to increase severity of a crash for drivers that lose control. The effect for the residents that frequent these corridors is an environment that feels less safe, less inviting for physical activity, and lacks opportunities for contact with nature. Treeless corridors have been proven to decrease safety, even for drivers. Lack of trees is associated with increased numbers and severity of injuries (Dumbaugh, 2005).

Auto-oriented design is also associated with larger block size. These large blocks decrease potential interruptions for traffic flow, but encourage high speed and decrease connectivity for walkers. The result is decreased walking mode share and increased reliance on automobiles. The resulting increases in vehicle miles travelled in the US in recent decades is speeding climate change and decreasing air quality in many communities. Rates of asthma across the US have spiked in recent decades and 14 people die from Asthma attacks each day (Wasik, 2009).

The Role Walkable Pedestrian Networks in Addressing Health

The health threats that we face as a community cannot be addressed by advances in medical science alone. The quality of a community’s Pedestrian network has emerged as an important determinant for increasing physical activity, improving mental health, strengthening communities, promoting safety and access to healthy food.

Health outcomes ultimately hinge on the behaviors that individuals choose, but planning for (and building) healthy environments is recognized as a primary means for preventing chronic diseases related to physical inactivity (Frumkin et al, 2011). When environments welcome individuals to commute actively, walk for recreation, and take advantage of transit system, healthy behaviors follow. When convenient and comfortable, many people chose to make walking, stair climbing, or biking part of their daily routine. Moderate intensity exercise that occurs in between destinations is less costly than a “health club” machine, but has the same benefits. In a well-documented example from Portland Oregon, a fourfold increase in bike lanes increased bicycle traffic by four times over a twenty year period (Sallis, Millstein and Carlson, 2011). While individuals must choose to exercise or choose healthy food, community environments can make these choices easier. It is, however, important to note that
comprehensive approaches through infrastructure, encouragement, enforcement, and education have been most effective in changing behaviors.

With respect to Champaign, a healthier pedestrian environment will include a more complete network of sidewalks, crossings, and trails as well as access to recreational spaces, healthy food options, and safe and welcoming public spaces. A healthy pedestrian network in Champaign will also prioritize facilities for children, the elderly, and among poor or racial minority areas where the health, safety, and access needs of walkers are in high demand. Focusing attention on Champaign’s pedestrian network creates an opportunity to improve an “upstream” factor for promoting health (Frumkin, 2011). A high quality pedestrian network is a vital preventative measure for reducing BMI (body mass index), restoring psychological well-being, and strengthening community ties within Champaign.

**Walkability and Physical Activity**

Physical activity can help prevent many physical and mental health conditions. In addition to decreasing the risk of being overweight and suffering from chronic conditions related to obesity, higher levels of physical activity have been shown to increase length and quality of life and decrease risk for osteoporosis, falling, and depression (Sallis, Millstein and Carlson, 2011). Individuals who exercise regularly were also found to have 14 percent reduced health insurance claims and spent 30 percent fewer days in the hospital compared to sedentary people (McHenry, 2013). Health professionals recommend walking as an easy way to get moderate exercise and stay physically active. Walking for just a mile and a half per day has been shown to result in a 30 percent decreased risk of heart disease, stroke, and diabetes (Fort Collins, 2011). Because over a quarter of trips made by cars are one mile or less, Americans have many opportunities replace a drive with a walk. Opting for the bus is another way to work exercise into daily routines. Transit users average 19 minutes more physical activity per day than the rest of us (Fort Collins, 2011).

Distance of trips is only one factor for encouraging walking. The quality of walking environments also plays a major role.
Although Americans would like to walk more and drive less, lack of facilities and poor urban design are cited as the primary reasons they walk less (Planning for Better Health-Green Belt Alliance, 2014). Suburban-style development with disconnected subdivisions, high traffic arterial roads, discourages physical activity among most groups (Chester County, 2013). Safer and more inviting spaces can increase physical activity by as much as 35 percent (CDC, 2010b). Areas that are attractive, pleasant, interesting and have enjoyable scenery are positively associated with walking and physical activity. Trees along streets which offer shade, protection, and contact with nature have been shown to increase walking. Areas with interesting architecture and a variety of shopping and dining options also increase physical activity (Speck, 2012). Litter, graffiti, stray dogs, and lack of lighting have been shown to deter physical activity by creating the perception that an area is unsafe (Bauman and Bull, 2007). This evidence highlights the importance of creating a safe, well-lit and well maintained pedestrian network in Champaign.

When compared to other physical amenities in pedestrian networks and parks, the existence of the path itself has the strongest association with physical activity (Shores and West, 2010). A Canadian study found that residents there were sixty five percent more likely to walk when sidewalks were present (City of Ottawa, 2013). Network connectivity (the ability to reach destinations) and the mix of uses also play significant roles in the physical activity of adults. Children and adolescents, however, are more likely to walk, run, and play in areas that are residential only. Walkable access to quality, safe, and open green spaces increases physical activity levels for all groups (Kent, Thompson, and Jalaludin, 2011).

Grid street patterns that decrease distance between destinations encourage walking between destinations. Destinations with half a mile also increase physical activity (Klingerman et al., 2007). Champaign is fortunate to have a historic walkable pedestrian grid and many neighborhoods where residents live in close proximity to schools, parks, and businesses. Even when living in seemingly walkable grid networks, however, low income and minority groups are more likely to be physically inactive and suffer from obesity. Poor perceived safety as a result of crime, lack of sidewalk maintenance, litter and debris is more likely to deter walkers in minority neighborhoods (Cutts et al., 2009). Champaign’s approach in evaluating and improving pedestrian infrastructure should proceed with sensitivity to issues of equity and health.

**Walkability and Mental Health**

While the role that walkable communities play in physical health is common
knowledge, walking also results in mental health benefits. Pedestrian networks that encourage residents to get outdoors for a walk have been found to reduce stress, restore attention, and even combat depression. Because walking is the most natural motion in human existence, it is reasonable to infer that the human brain may be at its most comfortable state during this activity.

The busy nature of urban environments and the demands of full schedules are enough to leave many people feeling stressed and exhausted. Traffic congestion, work deadlines, and constant electronic communication can be frustrating and overwhelming. Fortunately, exposure to the outdoors (particularly with natural elements) has been shown to allow for recovery from stress and anxiety. A regular habit of walking through a neighborhood walk on a tree-lined street has positive short and long-term health benefits, including higher reported senses of well-being and increased quality of life (Sullivan and Chang, 2011).

Studies have also confirmed that one’s ability to pay attention can also be restored by way of taking a walk in an area with natural elements (Kaplan, 1995). Walkable access to natural settings has been shown to be crucial for overall mental health (Speck, 2012). Though we may not all be able to access a park during the work day, many Champaign residents benefit from having proximity to pleasant streets and walking corridors which have the potential to allow our brains to recover as scenery gently draws our attention during a walk. Stimulating environments with interesting architectural features, trees, and varied human activities are more likely to get us out the door. Walking outside has been shown to increase our ability to concentrate, reason (these results were of particular significance among children with attention deficit disorders), and even to reduce human tendencies for aggression and violence (Sullivan and Chang, 2011).

Environments that encourage walking promote experience with fresh air, new views, nature, and other people. Getting outside on a walk as a means to escape from places that are crowded and noisy has also been linked to prevention and treating depression (Sullivan and Chang, 2011). The evidence for this mental health benefits of walking has already found its way into the Ottawa, Ontario Pedestrian Plan which cites decreases in anxiety and depression among
the benefits of walkable built environments (Ottawa, 2013). Contact with trees alone has been linked to an increased sense of peace and quiet, satisfaction with home life, and increased physical activity (Sullivan and Chang, 2011). The evidence relating taking a walk and feelings of vigor and vitality is also strong (Ryan, 2010).

**Walkability and Strong Communities**

In Champaign, walking has a significant role to play beyond individual health outcomes. Walkability has been linked to the strength and resilience of communities. Strong communities are characterized by close relationships, high levels of community involvement, environmental sustainability, and economic stability. Communities built for walking are likely to support each of these elements and increase the quality of life and health outcomes of residents.

In walkable neighborhoods, incidental opportunity to meet and interact with other people is higher. In such neighborhoods, it is not only more likely that people will bump into their neighbors while on their way to a local destination, but also more likely that neighbors will get to know one another, look out for one another, and develop neighborhood organizations. The American Planning Association has identified the significant role that neighborhood walkability plays in social ties, interaction, and overall wellbeing (APA, 2006). More walkable communities have been shown to increase social capital. Social capital is a term used to describe the resources that individuals can access through their connections to a social group. Measures of neighborhood trust and willingness to help one another out are positively associated with neighborhood walkability (Lund, 2002). This trust between neighbors creates a sense of belonging that has been linked to improved health outcomes (Kawachi et al., 1997). Higher levels of social cohesion lower mortality and reduce risk for depression.

Pedestrian-oriented environments also increase the opportunity to invest in the public spaces and business that are sometimes called third places (neither home, nor work) (Oldenberg, 1989). Residents in walkable neighborhoods report a stronger sense of community, while civic life and community involvement decreases with longer commute times (Putnam, 2000). Informal encounters can occur anywhere in a pedestrian-friendly neighborhood (sidewalks, transit platforms, parks, plazas etc.), but people do not interact at the same level in areas that are perceived as unsafe (Kent, Thompson, and Jalaludin, 2011). High levels of neighborhood upkeep, as a result, are associated with social capital.

Walkable environments are especially important for creating opportunities for interaction and social network development among vulnerable populations. Walkable networks increase independence, mobility, and quality of life for seniors, children/adolescents, and other populations that do not have access to automobiles for transportation. The Bellingham, Washington Pedestrian Plan highlights the increased walkable access for youth as an opportunity for additional physical activity and chances to “explore their neighborhoods” (City of Bellingham, 2012).
The economic benefits to healthy walking environments for communities are also well documented. Areas with walkable destinations tend to vibrant and economically viable year round (think Green Street or Downtown Champaign). Furthermore, banks and insurers are also increasingly aware of neighborhood “livability”. In the recent decline of the housing market, the places that best held their values were areas that offered walking, local parks, retail, and transit (Jackson, 2011). Studies have also shown that property values are positively associated with increased walkability. Homes that receive higher Walk Scores have been able to sell at higher prices because incoming families value the decreased transportation cost and convenience associated with walkability. On average, buyers are willing to pay at least $500 more with each point of increase on the 1-100 Walk Score walkability scale (Cortright, 2009). Buyers without children are more likely to prefer walkable neighborhoods because these neighborhoods are more likely to offer an appealing live, work, play combination. Walkable areas offer a consumer choice to people who like the independence of living car free.

In many US cities, walkable districts with mixed uses have become the anchors of economic activity and growth. Proximity between residences, supermarkets, schools, shopping, parks, and cultural destinations is a great selling point for communities and for businesses seeking to attract talented professionals. Along these lines, walkability may be both a quality of life indicator and economic development strategy to attract new residents and business investment.

Evidence also suggests that investment in standard pedestrian infrastructure may be cost-effective compared to expenditures on roadways. Upfront costs to create sidewalks and multi-use paths are a mere fraction of costs for roadway projects. Walkable retrofitting of entire communities may be completed at a lower cost than just one highway interchange development. Pedestrian infrastructure also lasts much longer than roadways (recommended sidewalk replacement rates are about 75-80 years) (City of Champaign, 2005). Construction of bicycle and pedestrian infrastructure has also been shown to create more jobs versus roadway projects which depend on heavy machinery (Springfield Area Transportation Study, 2012). Of course the greatest economic benefits of pedestrian-friendly environments are accrued via promotion of healthy behaviors, increased access for the walking population, and decreased reliance on cars. The reduction in vehicle miles traveled as a result of increased walking trips improves air quality, reduces congestion on streets, and increases visibility and safety for other walkers and bikers. Despite the strong economic case for walkability, local governments often budget more for road snow removal than pedestrian projects (Fox News 55/27, 2014) (City of Champaign, 2005).
Walkability & Injury Prevention

Injuries to pedestrians, although usually unintentional, are not accidents. They occur for identifiable reasons, and many can be prevented through modification of the built environment. As a major cause of death and disability, injuries have been identified along with physical activity, nutrition, and mental health as a public health priority (Sleet, Naumann, Rudd, 2011).

It is estimated that 3.2 million Americans have been killed by car crashes since the start of the twentieth century (Siegel, 2010), and every American has a 0.5 percent chance of being killed in an auto wreck. The US fatality rate of 14.5 deaths per 100,000 is over double the rate in Germany and nearly three times that fatality rate in the UK where there are 5.3 deaths per 100,000 attributed to car crashes (Drive and Stay Alive, 2014). Car collisions with pedestrians result in over 4,000 deaths each year. Of the Americans killed each year, over half were killed along arterial streets that were designed for the efficient movement of cars at high speed (Plumer, 2012). As it turns out, speed is the greatest threat to pedestrian safety. At 20 mph five percent of collisions result in death for pedestrians while at 40 mph, pedestrians die 85 percent of the time (NCHRP, 2004). This being the case, why don’t American drivers slow down? The truth is that streets are designed for efficient levels of service for motor vehicles and not for pedestrian safety. People tend to drive as fast as they feel comfortable and the wide lanes of road corridors and wide turns at intersections encourage speed. Addition of elements like on-street parking, trees, shorter blocks, and narrower lanes (all of which make speeding drivers less comfortable) have been shown to decrease speed even when posted speed limits have not changed. Some communities in the US and the UK have also adopted “20’s plenty” campaigns to lower local road speed limits which put pedestrian safety before speed (20’s Plenty for Us, 2014).

Unfortunately, while pedestrian fatalities typically account for ten to fifteen percent of all vehicle-related deaths each year, only about one percent of available federal transportation dollars are spent on pedestrian and bicycle facilities each year (Alliance for Walking and Biking,
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The lion’s share of transportation funding is spent on highways and other roads, while public transit also receives a sizeable share. Communities that prioritize pedestrian movement have greatly reduced pedestrian injuries and fatalities resulting in great variances in pedestrian safety. Per mile traveled on foot, pedestrians in the United States are five times more likely to be killed by a car than pedestrians in the Netherlands and three times more likely to be killed than pedestrians in Germany (Pucher and Dijkstra, 2003). Addition of safe pedestrian infrastructure along collector and arterial streets, in school zones, near transit, and in high pedestrian activity areas is a good place to start for safety.

Pedestrian populations in the United States do not share the safety risks of walking evenly. Of the 68 thousand injuries were sustained by Americans in 2006, children and the elderly were more vulnerable than other groups to sustain serious bodily harm. People over 65 were also five times more likely to be killed when hit compared to the population as a whole (APA, 2006). In a recent AARP poll 40 percent of older adults say they do not have adequate sidewalks in their neighborhoods and 47 percent say they cannot cross their main roads safely (Planning for Better Health-Green Belt Alliance, 2014). These findings indicate that construction of safe pedestrian facilities and crossings in proximity to vulnerable populations is crucial. Presence of sidewalks alone have been shown to decrease crashes by between 65 and 89 percent (City of Ottawa, 2013). Child Safety Zones in Chicago have employed a speed reduction approach that combines high visibility crosswalks, refuge islands, and curb extensions with speed feedback and ticket cameras (City of Chicago, 2014). Unfortunately, despite the increased vulnerability of youths and the elderly, many schools and senior living facilities continue to be built on the edge of communities, a practice, which according to the American Planning Association, increases pedestrian safety risk (APA, 2006).

Walkable neighborhoods are likely to invite increases in walkers and bicycle riders. Increased volumes have been shown to increase pedestrian visibility and safety (Speck, 2012). Further, improved walkability may also decrease the chances for drinking and driving (drinking and walking is also a hazardous activity, though less likely to harm others). Injury prevention is best achieved when walkable communities slow traffic down, separate pedestrians from vehicles, and make crossings highly visible. Common means for safer networks include additional sidewalk facilities, pedestrian safety zones, illumination and traffic signals at crossings, small roundabouts, speed humps, and road diets. Education and enforcement strategies are also employed concurrently with environmental changes to promote appropriate pedestrian and driver decisions.

Walkability and Nutrition

In the fight against obesity, there is no bigger predictor for community outcomes than access to balanced nutrition. There is a clear link between exposure to healthy food options and healthy eating. Today 30 percent of Americans are food insecure, meaning they cannot afford, or do not have access to healthy foods (A place at The Table, 2012). Income is a major factor in food
security, but proximity to healthy food is also important. When full service grocery stores, farmers markets, and community gardens are located nearby with convenient pedestrian access, people of all ages are more likely to consume fresh fruits and vegetables (Kent, Thompson, and Jalaludin, 2011). Nearly 24 percent of Americans live in areas classified as food deserts because they lack these options (Jacobson and Silverbush, 2012). While most residents in Champaign live in relative proximity to healthy food options, “lack of access to fresh foods” continued to be listed as a barrier to healthy diets in the Champaign Urbana Public Health Department’s 2011 Community Health Plan (CUHPD, 2011). Even where residents live relatively close to grocery stores, busy traffic corridors, lack of sidewalks, and unsafe crossings may discourage residents without cars from making trips for fresh foods. While individuals bear the ultimate responsibility for their nutritional decisions, communities can make healthy nutrition choices easier by engineering safe routes of access from homes to grocers.

Pedestrian access to food is even more essential for populations that do not or cannot drive. In Champaign populations with reduced automobile access include children, college and university students, low income populations, those with physical and mental disabilities, and a growing group of elderly residents. For elderly residents in Champaign, continued walkable access to groceries could mean the ability to age in place with dignity, versus losing measures of independence. As access to a healthy diet is vital to quality of life, pedestrian facilities between grocery stores and resident populations will be prioritized as will key transit stops in the vicinity of these stores.

**Demographic trends and walking**

Across the United States trends suggest that the number of people walking has increased significantly over the last five to eight years (CDC, 2012). Walking and other forms of active transportation are gaining significant ground with young people and retirees. Today 23 percent of teenagers do not get a driver’s license and many teens prioritize mobile electronic devices as necessities over cars. Today drivers in their 20’s account for only 13.7 percent of total vehicle miles traveled (VMT) compared with making up 20.8 percent of VMT during the Quad Day traffic, University of Illinois
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1990’s (Speck, 2012). Aging members of the baby boomer generation are seeking more walkable communities as well. Walk-friendly areas offer easy access and social interaction for boomers looking to age in place. With 1.5 million Americans turning 65 each year over the next dozen years (Leinburger, 2009), the market for attracting this large and affluent (often recreation-oriented) group of older people is ripe. For these and other segments of the population, walkability of a community is seen as a major quality of life issue and can make or break a decision to move to or stay in a community.

Champaign’s population is uniquely reliant on walking. Across the United States only 1.5 percent of trips are made on foot (Speck, 2012), but the walking mode share in Champaign is already 12.1 percent (US Census, 2012). The percentage mode share in Champaign is bolstered by the growing student body of the University of Illinois with many students living within walking distance of classes and shopping opportunities in Campustown. While similar percentages of walkers have been estimated for other college towns, Champaign’s large walk share should not be overlooked. Almost twice the proportion of residents in Champaign walk to work compared to Chicago (6.4 percent mode share) and Champaign even has a larger percentage of walking public than New York City which boasts 10.3 percent of its population commuting on foot.

With much of Champaign’s population already walking, planners and elected officials in the community will benefit from prioritizing safe and comfortable walking environments that will serve the existing demand and attract new residents and visitors. Investing in walking infrastructure and developing in a manner that makes destinations walkable is a logical response to both current and projected demographic realities. Conversely, failure to allocate sufficient resources to walking would represent a missed opportunity to develop a public good and raise the quality of life for current and future Champaign residents.

Pedestrian Plans and Public Health

Urban Planning and Public Health have strong historic ties. Both disciplines developed in the late nineteenth and early twentieth centuries for the purpose of improving urban living conditions that were dangerous and deplorable. Application of both planning and public health recommendations supported increased life spans in the US which are now over 30 years longer than they were in 1900. The disciplines drifted apart for many decades in the twentieth century, but the declining health outcomes of Americans by the end of the century realigned planners and public health professionals to address the issue of unhealthy built environments. By the late 1990’s CDC experts were demanding further research on the role that environments play in health outcomes, with specific emphasis on obesity. Since that time, numerous studies confirmed the quality of living environments significantly impact health outcomes.
During the last 15 years, research has linked obesity, chronic disease, accidents, and common cancers to built environment characteristics. Unfortunately, most comprehensive and transportation planning efforts at the municipal level have failed to prioritize health as a planning outcome. This review will not attempt to examine the way that health has been incorporated in across the board in planning processes, but it will summarize the recent trends of health approaches in pedestrian plans.

For most pedestrian plans developed in last decade, the health of a community is not listed as a primary goal. Some pedestrian plans remain organized around traffic engineering principles like level of service. These plans, which are often prepared by state and county transportation organizations often rely on identifying areas of greatest pedestrian use in order to allocate resources and efficiently identify where projects may yield the greatest cost-benefit ratio (improving safety for the most people at the lowest investment cost). The outcomes of these pedestrian plans are often lists of prioritized engineering projects that can be placed on the county or municipality capital improvements program. Decreased congestion and safety are typically well articulated goals in transportation oriented plans, but overall community health and quality of life are not often well developed. More space in traffic engineering style plans is devoted to specifications around specific site improvements, and less space is used on development of a vision for promoting walking in communities.

The most frequent style of pedestrian plan drafted and adopted by municipalities across the US in recent years develops a stronger vision for walking in communities and emphasizes a variety quality of life outcomes. Safety, environmental quality, economic vitality, recreational access, community welfare, and complete facilities are frequently stated along with health among the plan goals. In some plans health is not stated as a goal, but rather listed as a benefit of investing in pedestrian systems. Most plans include recommendations for improving the pedestrian network that fall under the categories of the four E’s: engineering, education, encouragement, and enforcement. Creating complete pedestrian networks is great for the livability of communities, but because many plans fail to acknowledge the health impacts of their decisions, they may miss an opportunity to provide the greatest benefit to their communities.
A growing number of pedestrian plans are making health a top priority and even an organizing principal in recent years. These plans take time to explain the health problems their communities are facing and the links to auto-centric designs. They typically emphasize how safe and comfortable walking environments mitigate health threats and describe the health goals of their plans explicitly. Pedestrian plan recommendations in health-oriented processes often include health impacts along with general safety, connectivity, and economic cost-benefit measures in prioritizing infrastructure projects. The 2012 Chicago Pedestrian Plan incorporates health into its vision statement and has recognized health as one of the plan’s core principles along with safety, connectivity, and livability (City of Chicago, 2012). The 2011 Fort Collins Pedestrian Plan includes a chapter on the health benefits of walkable communities and links recommendations to health outcomes (City of Fort Collins, 2011). Increasingly, some plans are applying health checklists (Blue Cross Blue Shield, 2007) to ensure that their plan processes don’t miss opportunities to promote healthy community outcomes. Some plans are even organized around Health Impact Assessments. These plans, like the one in Robbinsville, North Carolina follow public health protocols in screening and scoping health issues, assessing strengths and weaknesses of potential actions, and monitoring implemented projects to determine impacts on health (Town of Robbinsville, 39).

The health focus of pedestrian plans has piggy-backed on research findings that continue to build the case between health and built environments. Planning for walkable communities increasingly relies on collaboration between traditional planning entities and public health departments, hospitals, and active living organizations. Public health funds are supporting research, planning processes, and infrastructure projects that create safe and healthy spaces for walkers. The plan and implementation of the aforementioned Child Safety Zones project in Chicago is an example of a CDC initiative aimed at improving walkability. That project is part of the CDC’s greater Health Resources in Action campaign which aims to save lives by decreasing automobile speeds in cities across the US (Health Resources in Action, 2013). Public health investment in pedestrian safety and walkability at the state and district levels is also gaining momentum. Providing further evidence, the Walk Champaign plan has been developed in part through funding of the of Illinois Department of Public Health’s We Choose Health initiative.
Designing for a Walking Champaign – What does a Healthy Walking Environment Look Like?

The connection between walking and health is strong. Physical activity, mental health, community health, safety, and food access are all impacted by the walkability of neighborhoods. The City of Champaign should continue to strive to create healthy places—places in which people can grow up, live, work, play, study, pray, and age in ways that allow people to feel safe, thrive, and can reach their full potential (Frumkin, 2011).

Walk-friendly communities have adopted many strategies that include infrastructure retrofits, pedestrian-oriented policies, as well as education and encouragement efforts to get more people walking. Specific recommendations for promoting health in Walk Champaign will not be discussed here, but remaining portions of this section will identify some of the most commonly cited characteristics of health walking environments in the reviewed literature.

A healthy community walking environment supports:

1. **Equitable Access** – Infrastructure allows walking to be a viable option everywhere in the community. Development of a complete pedestrian network should prioritize the needs of vulnerable populations and those who rely most on walking. Sidewalks, trails, and crossings should be prioritized in neighborhoods with high concentrations of senior citizens, children, low-income residents, and disabled populations. Areas with high concentrations of chronic health conditions should also guide infrastructure investment across the community. Equitable networks should be ADA compliant and well maintained to promote access for pedestrians that depend on wheelchairs, strollers, walkers, and other forms of assistance to move throughout the community.

2. **Reduced Speed & Pedestrian Safety** – Vehicle collisions continue to pose a major threat to the health of the walking public. Speed reduction techniques are the most frequently cited means for reducing number and severity of injuries caused by vehicle-pedestrian collisions. A combination of engineering and enforcement strategies can reduce comfortable maximum speeds for drivers and
increase compliance. Facilities throughout the community should be complete and be designed for the safety of walkers rather than the comfort of drivers. Sidewalks should be found on all streets, but where neighborhood retrofits are necessary, arterial and collector streets should be prioritized. Right of ways should include buffers between traffic and pedestrians that may consist of a parkway, streetlights, or parked cars. Crossings will promote safety by increasing visibility of pedestrians. Signalized crossings should be found at regular intervals along busy roads to discourage dangerous dashing behavior.

3. **Comfort and Interest** – Designs of pedestrian facilities and land use policies should promote human scaled uses and architecture. Huge parking lots and gigantic storefronts designed for cars intimidate and discourage walking. Smaller scaled and mixed-use corridors with window fronts, benches, and changing streetscapes invite pedestrians to explore neighborhoods, shop locally, and be more physically active. When sidewalks and walking pathways have directional signage, drinking fountains, trash cans, and public art they become places in and of themselves. Trees and green spaces along walking routes increase comfort by providing shade and shelter, while creating opportunity to spend time in natural settings that have been shown to restore mental health.

4. **Crime Prevention** – People are more likely to walk in high visibility environments where others are likely to walk as well. Built environments should be designed to decrease crime and increase perceptions of safety. Installation of lighting along pedestrian corridors makes it easier for walkers to see potential threats while simultaneously discouraging criminal activity. Maintenance of sidewalks and pathways also impacts perceptions of safety. Well-maintained paths are litter-free, devoid of cracks and tripping hazards, and cleared of snow and debris.
5. **Essential Connections** – Healthy pedestrian networks must connect the walking public comfortably to all of the destinations one might need on a daily basis. Facilities should be prioritized near transit stops, schools, places of employment, shopping destinations, and trails/recreation areas. Walkable connections to health care facilities, grocery stores, pharmacies, and parks should be near the top of the list as these elements of the community are inextricably linked to health outcomes.

6. **Walking Culture** – In a community where over 12 percent of the population already commutes by foot, it is clear that some momentum for walking already exists in Champaign. To further increase awareness of walkers, decrease vehicle collisions, promote benefits of walking, and increase mode share, community leaders and organizations should make a concerted effort that combines education, encouragement, and enforcement strategies. The choices to walk or make safe pedestrian and driving decisions will become easier if the community raises the profile of pedestrians and invests in positive behaviors.

### From Literature to Decision Making

The preceding review presents a compelling case for why pedestrian plans should prioritize for community health. Accommodating needs and comfort of pedestrians yields significant health benefits. If *Walk Champaign* wants to make good on its goal of promoting health and wellness for residents, understanding the relationship between walking and health is only a first step. The findings from existing literature alone should not inform decisions that are specific to the Champaign, Illinois context.

In order to effectively address local health concerns to program, policy, and project decisions, the City of Champaign may benefit from a deeper understanding of the current conditions in Champaign’s pedestrian network that are hindering health outcomes. This project aims to help Champaign better scope local health challenges and opportunities through interviews with local professionals in health-related fields. These professionals provide context-specific perspectives...
on how Champaign might address issues of physical activity, equitable access, pedestrian safety, and walking culture most effectively.

In the following portions of this document, professional opinions are compared with findings from this literature review to provide informed recommendations to address health through the Walk Champaign process. Because Champaign's budget for pedestrian projects is limited, one aim of the plan should be to prioritize projects and actions that are most likely to yield health benefits for the community (preferably at lower financial cost). The characteristics of healthy walking environments identified above were compared with the health priorities found during the interview process to create a vision for a healthy Champaign walking network. Decisions and project proposals may then be vetted depending on how well they support Champaign’s healthy network vision.
Professional Interviews

Purpose: Informing the existing Walk Champaign Process

The planning process for Walk Champaign began in 2013 with the stated goals of identifying strengths and needs of the existing network and establishing a vision for Champaign’s pedestrian system in order to promote the health and wellness of residents. The vision that the plan adopts will be used to establish priorities for the plan and to identify improvement projects which will be recommended to the Champaign Public Works Department. Since the summer of 2013 the Walk Champaign plan team has gathered public input through community events and a detailed survey and used available resources to thoroughly investigate existing conditions of the pedestrian network in Champaign. During the spring of 2014, the plan team is convening meetings to refine the vision and identify projects and policies that will support it. These meetings aim to incorporate concerns raised through public feedback gathered in the 2013 Walk Champaign surveys and neighborhood “walkabouts” and to gather input from the City departments that will be responsible for implementing solutions. Production of a community-wide working list of pedestrian project, policy, and program priorities has been identified as a major outcome for the spring process.

The departments that are working most closely with the plan team during the prioritization meetings are the Public Works Department, Planning and Development Department, Police Department, and Neighborhood Services Department. Additional external involvement from IDOT, MTD and Champaign Parks Department is also likely.

The reason professional interviews are being incorporated into this project is to ensure that the community health perspective has been gathered and considered as part of the Walk Champaign prioritization process. With health and wellness among the plan’s stated goals, it is crucial that professional opinions from health related fields are part of the conversation. Along with findings from relevant literature on walkability and health, the recommendations of local
experts can help ensure that Champaign’s investments are effectively addressing challenges to yield the greatest health impact for residents.

It is worth noting, however, that that professionals sought for the study are not the only experts in the field of pedestrian planning and health. Because everyone in Champaign is a pedestrian each day (whether they walk, run, move with mobility aides, or roll), all residents have a valuable perspective regarding how to address health through walking environments. Unfortunately, given the constraints of time and capacity, this project could not and did not attempt to gather the perspective of the greater Champaign population.

**Methodology and Participants**

Potential professional contributors were identified in fields of urban planning, landscape architecture, the Champaign Parks Department, public health, kinesiology and community health, healthcare, wellness coordination, community services, and health advocacy. These fields were chosen because each offers a unique perspective on the role that environments play in health and how the pedestrian plan in Champaign might work to prioritize for health. 32 professionals were contacted in early March of 2014 via an email explaining the *Walk Champaign* process and the project. 20 professionals were able to participate as part of the project. Twelve were interviewed in-person, while three interviews were conducted over the phone and five participants responded to questions via email. In-person and phone interviews lasted between 30 and 60 minutes and were guided by ten questions regarding health and walkable environments in Champaign. All responses were collected between March 4th and April 4th of 2014.

**Questions**

The following questions were included in all of the interviews:

1. Why does the quality of a walking environment matter for community health?
2. Whose health is impacted by walkability? Are some groups of people more impacted than others?
3. Pedestrian Plans have proliferated across the country in the last 10 years. Is this a fad, or will walkability remain important ten years from now? 30 years from now?
4. Safety of pedestrians (from motor vehicle collisions) is a major health priority and perceived safety is crucial for getting more people walking. What do you see as Champaign’s greatest obstacle (s) in achieving a safe pedestrian environment?
5. Apart from pedestrian safety, what do you believe are the necessary characteristics of a walkable neighborhood?
6. Both Campustown and Downtown were cited in the recent *Walk Champaign* survey as walk-friendly neighborhoods. Most Champaign neighborhoods, however, present many challenges for the walking public. Do you believe it possible to retrofit unwelcoming environments to encourage walking in the future? Explain.
7. How can Champaign increase its mode share of walkers who commute to work or school on foot?
8. How can Champaign increase the number of people who walk for exercise, fresh air, to shop, dine, get out with the kids/dog, etc.?
9. Describe a pedestrian infrastructure project that would have the potential to improve walkability and promote health in Champaign. Where should the City invest for the greatest health impact?

10. What policies or programs should the City of Champaign adopt / implement in order to promote pedestrian activity in our community?

While the email responses were obtained word for word, the responses to questions in-person and over the phone were summarized in real-time by hand. Because these interviews were not recorded by audio or video, precise transcriptions were not included as part of the project. Each professional who was interviewed for the project was asked whether or not she/he would be willing to have their name acknowledged in the project report, given that they would not be attached to specific comments or quotations. Professionals were also asked before each interview to state their professional title and details regarding how if and how long they have been Champaign residents. Participating professionals, including titles and residency, are listed below.

**Participants**

**Chris Bock**
Registered Nurse and Board Member of Carle Wellness Committee
Carle Foundation Hospital
Life-long Central Illinois resident, Mahomet Illinois resident

**Wojtek Jan Chodzko-Zajko**
Professor of Kinesiology & Community Health, Head of Department of Kinesiology and Community Health
University of Illinois at Urbana-Champaign
15 year Champaign resident

**Mary Edwards**
Professor of Urban and Regional Planning
University of Illinois at Urbana-Champaign
12 year Champaign resident

**Steve Furrow**
Wellness Coordinator
Carle Foundation Hospital, Carle Physicians Group
Forsythe, Illinois resident

**Michele Guerra**
Director of Campus Wellness Center
University of Illinois at Urbana-Champaign
18 year Champaign-Urbana resident

**Lena Haan**
Master of Public Health Program Coordinator, Clinical instructor
University of Illinois at Urbana-Champaign
6 year Champaign resident
Bonnie Hemrick  
Wellness Educator, Visiting Research Specialist  
Parkland College, University of Illinois at Urbana-Champaign  
8 year Champaign resident

Cynthia Hoyle  
Chair of Champaign-Urbana Safe Routes to School, Planning Consultant  
Champaign-Urbana Mass Transit District  
13 year Urbana resident

Nikki Hillier  
Wellness and Health Promotion Program Coordinator  
Champaign-Urbana Public Health District  
15 year Champaign resident

Tara McCauley  
Special Projects Coordinator  
Champaign-Urbana Public Health District  
15 year Champaign resident

Ashlee McLaughlin  
Project Lead, Long Range Transportation Plan  
Champaign County Regional Planning Commission  
8 year Urbana resident

Brandon Meline  
Health Director  
Champaign Urbana Public Health Department  
17 year Champaign resident

Rebecca Nathanson  
Planner  
Champaign-Urbana Mass Transit District  
3 year Urbana resident

Linda O’Gorman  
Physical Therapist  
Carle Foundation Hospital  
8 year Urbana resident

Hadley Ravencroft  
Advocacy Coordinator  
PACE Incorporated Center for Independent Living  
Champaign-Urbana resident
Jermaine Raymer  
Reintegration Specialist  
Pace Incorporated Center for Independent Living  
5 year Champaign resident

John Ruffin  
Neighborhood Services Coordinator  
City of Champaign, Neighborhood Services Department  
3 year Champaign resident

Kerri Spear  
Neighborhood Programs Manager  
City of Champaign, Neighborhood Services Department  
20+ year Champaign resident

Bill Sullivan  
Professor of Landscape Architecture  
University of Illinois at Urbana-Champaign  
22 year Urbana resident

Andrew Weiss  
Park Planner, Landscape Architect  
Champaign Park District  
10 year Champaign-Urbana resident

Responses

Participant responses were grouped under categories associated with the ten questions that guided each interview (or were emailed to participants at the start of the project). Topics 1-5 include specific responses to the first five questions (See page 2 above). Topics 6-11 below draw from responses to the second half of the guiding questions but are grouped according to the following:

6. General recommendations for infrastructure  
7. Policies and Enforcement ideas  
8. Education and Encouragement ideas  
9. Specific corridor recommendations  
10. Specific crossing recommendations  
11. Specific connectivity recommendations

These topics provided the opportunities to aggregate both general and specific recommendations for infrastructure, policies, and programs that may be applied in order to improve community health through Champaign’s pedestrian plan. Although the responses are grouped by topic, they are not recorded in a specific order. Also, the number of responses listed under each of the 11 topics is not consistent. As an example, while nearly everyone shared a perspective regarding the connection between walking environments and health, only nine individuals shared recommendations related to crossing project ideas. Not all respondents gave suggestions regarding each topic. Some participants felt unqualified to answer certain questions, and others noted that some questions were difficult to answer “on the spot”.

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The responses from all interviews were recorded informally and main ideas and specific recommendations were written down during the discussions. The responses are paraphrased in this document and combined into sentences to increase readability versus the bullet points, arrows, and short hand that were recorded with the written initial record. The full text is found in the appendix of this document and is based on the responses of the individuals participating. The core content of participant responses remains intact and only tangential conversation was omitted.

Names and positions of respondents are not attached to the specific responses. Because each of the individuals interviewed was sought out because their professional expertise is connected to public health or population mobility, each comment represents a thoughtful professional perspective. Attaching names or titles to these perspectives was determined to be unnecessary since the aim of the project is not focused on comparing the respective opinions of planners, healthcare providers, public health officials, professors, or mobility advocates.

For the full text of responses gathered for the project see appendix a.

Findings

The 18 documented sets of participant responses (two of the interviews were conducted with two professionals at a time) were analyzed in order to determine commonalities and points of consensus. While divergent individual perspectives were recorded, trends emerged as well. The common themes for each topic are summarized below. The number of participants in agreement is indicated in the parentheses. Common themes were then used to determine overall recommendations for addressing community health through the Walk Champaign pedestrian plan.

Walking environments and community health

- Walkable environments increase opportunities for physical activity (17)
- Walkable environments impact ease of use, increasing access for the population (9)
- Walkable environments improve safety perceptions and outcomes (8)
- Walkable environments are likely increase sustainability and decrease pollution (5)
- Walkable environments improve mental health outcomes (4)
- Walkable environments increase social interaction (4)
Importance of walking environments for target groups versus the overall population

- Everyone’s health is impacted by the quality of walking environments (11)
- Seniors may rely even more so on walking environments (11)
- Low-income populations rely heavily on walking environments (8)
- Children and adolescents especially rely on walking environments (6)
- Transit riders rely on quality walking environments (5)
- Disabled populations depend on walking environments (3)
Anticipated trend for pedestrian planning

- Pedestrian planning is gaining momentum and will likely become more of a priority in decades to come. A lag exists between knowledge of how pedestrian environments improve health and application (6)
- Pedestrian planning will continue because our communities have a long way to go to address infrastructure deficiencies (6)
- Pedestrian planning should continue because obesity and lack of physical activity present long-term major health challenges for the population (4)
- Walking is a fundamental human trait and planning for it is crucial. It has been discussed for decades and will continue to be a priority in the future (3)

Elements that improve safety and perceived safety

- Separation from traffic (often parkway buffers) (10)
- Street lighting (10)
- A complete and well-maintained sidewalk network (10)
- Reduced speed and traffic calming (5)
- Crosswalks with appropriate treatments (5)
- Increased education and enforcement regarding pedestrian and driver behavior (3)
- Appropriate signage for increased pedestrian visibility (3)

Elements that improve comfort or make walking enjoyable

- Abundance of trees and green space (12)
- Destinations in walking distance (10)
- Trails and parks (7)
- Streetscape features (benches, trash bins, decorative lighting, flower islands) (5)
- Signage to mark direction to destinations and distance (3)
Infrastructure priorities

- Complete the sidewalk network, starting with gap infill along busy roads and near commercial centers (13)
- Connections to existing destinations (businesses, schools, parks, bus routes) and creation of new neighborhood destinations (7)
- Expanding street lighting into neighborhoods that lack it (5)
- Safe and comfortable crossings (4)
- Wayfinding signage should highlight existing walking routes (3)
- Bridge and underpass areas at interstate and railroad corridors (3)

Policies and Enforcement

- Revise and enforce Champaign’s snow removal ordinance (10)
- Consider active transportation costs related to school siting and schools of choice. Additionally consider how these can be mitigated (5)
- Enforcement of drivers and pedestrian behavior should be focused on distracted drivers/walkers and failure to yield. Enforcement should prioritize for vulnerability of users (4)
- Existing parking ordinances may encourage driving. Parking lots create barriers for walkers (3)
- Champaign’s complete streets policy should be applied to more corridors (3)
- Eliminate sidewalk waivers for developers. All new development should be logically connected to the existing sidewalk network (2)

Education and Encouragement Programs and Approach

- Adopt an education campaign to advertise the benefits of walking to the public (10)
- Create a walking events calendar with year-round activities (8)
- Support programs that encourage walking to school, walking to work, and walking to destinations. Examples include CU Safe Routes to School, Smart Trips, Snow Angel shoveling program, and employer wellness challenges (7)
Corridor Project Ideas

- Improve walkability of the North Prospect corridor (4)
- Improve gaps in the Neil Street corridor and near Marketplace Mall (4)
- The Bradley Avenue corridor is not walkable and could be a road diet candidate (3)
- Sidewalk gaps along bus routes and near centers of employment need to be addressed first (3)

Crossing Project Ideas

- Interstate crossings at I-74 need to be redesigned to promote safe passage (4)
- Large intersections should be retrofitted with pedestrian refuge islands and pedestrian countdown signals when possible (3)
- Railroad crossings and underpasses should be redesigned for comfort and safety (3)
Connection Project Ideas

- Wayfinding signage should connect pedestrians to destinations and indicate comfortable routes and distance (7)
- Approaches to destinations (shopping areas, schools, transit stops) should be prioritized (6)
- Completing and emphasizing connections to parks could encourage increased physical activity and social interaction (4)

Recommendation Summary

The month-long interview process for this report yielded a wide variety of professional perspectives on several topics relating walkable environments and health in Champaign. The set of guiding questions elicited details from participants regarding the impact that walking environments have on health, characteristics of a healthy walking environment, and recommendations for approaches Champaign can take to address health in its pedestrian plan.
Respondents overwhelmingly linked healthy walking environments to increased physical activity, and also acknowledged benefits of equitable access, decreased pollution, improved mental health outcomes and increased levels of social interaction.

Professionals were asked who pedestrian networks should serve and what a safe and inviting walking environment looks like. Their responses suggest priority characteristics for a healthy Champaign pedestrian system. Respondents described a healthy walking environment as one which:

1. **Serves the needs of all users**, especially those that depend on the walking network for daily necessities
2. **Has a complete network of well-maintained paths** that are separated from traffic and connected with appropriate crosswalk treatments
3. **Reduces injury risk** through adequate street lighting and decreased traffic speeds
4. Gives residents **walkable access to multiple destinations** including green spaces, businesses, and transit connections within walking distance
5. **Supports a community culture of walking** through policies, enforcement, education and encouragement initiatives
These five characteristics are representative of areas of significant consensus among respondents. Participating professionals determined that everyone’s health is impacted by walkability, but that populations that lack the option of automobile transportation may be most impacted. Complete sidewalk networks, along with separation from traffic and adequate street lighting were most frequently cited safety characteristics in the responses, with reduced speed and crosswalks following. Destinations and trees represented additional components of walkable neighborhoods most frequently cited. Several respondents incorporated suggestions for how to build momentum for walking Champaign through a variety of means, which is reflected in the “culture of walking” characteristic.

The respondents recommended a variety of actions for promoting a healthier walking environment in Champaign including infrastructure projects, policies, and programs. The following lists include ideas that were specifically articulated by respondents and reflect respondents’ vision for a healthy walking environment.

Some of the city-wide recommendations were suggested by over half of participating professionals, and all of the city-wide recommendations were suggested by at least three professionals. The details of the recommendations were also informed by the literature review.

**City-wide actions**

- City Council should review and revise Champaign’s existing snow ordinance.
- Invest in a public awareness program to encourage walking and responsible travel behaviors.
- Adopt a wayfinding signage system to provide direction and distance to destinations.
- Create a calendar of Walk Champaign events. Walks with the Major, Winter Walks, and Walk to Work Day are model examples.
- Support and expand CU Safe Routes to School programs for Unit 4 Schools.
- Prioritize sidewalk gap infill along bus routes, major streets, and in shopping areas. Connections to transit are crucial.
- Address street lighting gaps, especially along busy roads.
- Prioritize projects for areas with high proportions of high-reliance users like seniors, children, low-income residents, and people with disabilities.
- Identify corridors to retrofit in compliance with Complete Streets policy.
- Promote development of neighborhood parks and businesses.
- Mandate direct “to the door” pedestrian connections for new development.

Most of the site-specific recommendations were specifically mentioned by multiple professionals. Other site projects are included here because they were recommended by one professional, but were found to support the project priorities of the group. For example, the connections to Hessel and Dodds Park were only explicitly mentioned once, but supported by several professionals who emphasized prioritizing connections to parks.
Site-specific projects

- Dodds Park trail connection to Mattis Avenue
- Hessel Park mid-block crossing improvement at Kirby Avenue
- Country Fair Apartments gap infill and mid-block crossing to transit hub
- I-74 bridge and interchange solution: partner with IDOT for bridge retrofits
- Canadian National railroad underpass improvements
- Corridor retrofit for Prospect Avenue between Bradley Avenue and Bloomington Avenue
- Sidewalk gap infill and corridor retrofit for Neil Street extending from downtown to the south. Ideally extend retrofit to St. Mary’s Road
- Corridor retrofit for Bradley Avenue. A road diet and railroad crossing improvements would increase comfort and decrease speed
- Sidewalk gap infill in the area surrounding Marketplace Mall
Comparison to research literature and further discussion

The characteristics of healthy walking environments described by participating professionals had four (out of five) areas of significant overlap with the characteristics of healthy walking environments summarized from existing research literature. Similar recommendations were made regarding the populations that most rely on walking, the role that walking environments play in decreasing pedestrian collisions, the importance of prioritizing connections to essential destinations, and the need to promote responsible behavior though creating a walking culture. The high level of agreement between health professionals and the literature suggests that equity, safety, direct access, and public acceptance for walkers are all crucial for a healthy pedestrian network in Champaign.

The figure below highlights where the priority characteristics identified for a healthy walking environment align with a healthy walking network principles from the literature review.

**Recommendation Comparison for Healthy Walking Environments:**
*Project Respondents and Research Literature*

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Literature Review</th>
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<tr>
<td>Serves needs of all users</td>
<td>Equitable access</td>
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<td>Reduced injury risk</td>
<td>Reduced speed &amp; pedestrian safety</td>
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<td>Walkable access to destinations</td>
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<td>Community culture of walking</td>
<td>Walking Culture</td>
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<td>Complete network of well-maintained paths</td>
<td>Comfort and interest</td>
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<td></td>
<td>Crime prevention</td>
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</table>

Participants (on the whole) diverged from the literature by not emphasizing personal security and crime prevention. Research suggests that well-maintained and well-lit areas are crucial for encouraging walking and that the perceived insecurity of an area can be a major deterrent to walking. Respondents tended to focused on poor maintenance and lighting as potential contributors to tripping or collisions. Respondents also differed from the literature by emphasizing the goal of a complete sidewalk network for health versus focusing on comfortable and interesting urban design.

The responses also suggest that participants were split with regard to emphasis on reduced traffic speed in pedestrian plans. Research suggests that engineering environments to discourage speeding is an effective way to decrease both frequency and severity of pedestrian injuries. Less than half or respondents recommended speed reduction in their responses. Most emphasized the importance of complete sidewalk networks rather than traffic calming approaches for streets.
Discussion

The areas of agreement between the research literature and the participants create a strong case for adopting those characteristics as health priorities for *Walk Champaign*. The areas of distinction are valuable as well. The lessons from the divergent research recommendations both relate to the importance of perceived experiences. The literature diverges in emphasizing comfortable walking experiences. If individuals are not comfortable in their environment or they feel like the environment is not designed for walking, they will avoid walking there. As a result, the presence of basic pedestrian facilities (like sidewalks and crosswalks) alone is not likely to induce usage unless the rest of the environment also supports walking.

The lesson from the respondents' standalone characteristic of a complete network is that paths designated for walking should connect pedestrians to all major destinations in a community. According to this view, if there are places that people need to get to in Champaign, walking will be part of the equation. People walk (or walk and take transit) for necessities like employment, shopping, and medical care regardless of the quality of the surrounding environment. In accordance, every neighborhood in Champaign should include walking facilities.

While both lessons are valid for promoting health in any community, the prioritization of respondents reflects the lack of a basic need for safe walking access that lacks in many parts of Champaign. Almost all professionals discussed seeing and knowing individuals who rely on walking for transportation regardless of weather or surroundings. A complete and well-maintained environment is also likely to address many barriers and areas of discomfort for pedestrians and would likely increase the number of pedestrians on sidewalks. Additional pedestrians utilizing a complete network in Champaign would likely deter criminal activity by increasing the number of eyes on the street.

The priority characteristics found in professional responses also correspond with those expressed in a recent (April 8, 2014) *Walk Champaign* prioritization meeting. Participants present at the meeting included representatives from Champaign's Planning and Development Department, Public Works Department, Neighborhood Services Department, and Police Department. Those at the meeting ranked eleven potential pedestrian plan goals as a starting point for creating a prioritization vision. The goals that received the highest average rankings were:

- Supporting utilitarian walking to transit, work, and shopping
- Improving pedestrian environments near k-12 schools
- Reducing collisions at signalized intersections
- Reducing collisions in between signalized intersections

These top goals imply a common understanding among many local health professionals and City of Champaign employees that walking to destinations is crucial and that the pedestrian plan should promote safe travel routes for all users, all across Champaign.
The summative findings of this project indicate that *Walk Champaign* should address health by creating a pedestrian network that:

- It is complete and well-maintained
- Ensures access for all users
- Reduces risk and severity of injury
- Connects to essential destinations
- Supports a city-wide walking culture
Application of Health Recommendations in *Walk Champaign*

**Vision for Health**
The recommendations determined by this project reflect a vision for addressing health through Champaign’s pedestrian plan. The vision resulted from both the ideas of local health and planning professionals as well as the evidence from existing research on health and walkability.

*Champaign supports a complete and well-maintained pedestrian network which provides access for all users, reduces risk of injury, connects to essential destinations, and supports community walking culture.*

**Application**
The remainder of this report describes specific recommendations for how the City of Champaign can support this vision through a combination of policy, program, and project approaches. Approaches are grouped as city-wide and site-specific recommendations. Descriptions of each recommendation will include the following:
• Reasoning behind the recommendation
• Key elements of the approach
• Examples where similar approaches have been implemented
• Location(s) targeted by the approach
• Anticipated role in achieving the Walk Champaign vision for health

City-wide Recommendations

1. **Revise the existing snow removal ordinance**

   - The municipal code for the City of Champaign (Sec. 30-812. Removing Snow from Sidewalks and Other Areas) requires the removal of snow from sidewalks only in front of multifamily buildings and designated University District and Downtown district areas when there is at least two inches of accumulation or ice build-up. Responsible parties have 48 hours from the time of a snow removal declaration by the Champaign Director of Public Works (Champaign, 2014).

   The webpage explaining the existing ordinance states its goal “is to maintain accessibility for the general public who rely on our sidewalk system to carry out daily activities.” The existing ordinance fails to maintain the quality of the sidewalk environment for many Champaign residents, increases risk for injury, decreases connectivity, and may inhibit the access of normally mobile individuals during the winter months.

   - A revised ordinance should mandate city-wide sidewalk snow removal to make sure residents throughout the community have access to essential destinations. A revised ordinance should also be enforced on a shorter time-frame and promote a program that organizes neighbors to shovel walks for those who are unable.

   - Examples from comparable communities like Evanston, IL and Madison, WI require sidewalk clearance of all public sidewalks for any snow or ice and shorter time frames for enforcement. Madison also enforces tighter standards for
businesses, recognizing the need for walkable access to destinations when it snows. See appendix b for details.

- **Supports: a complete & well-maintained network, access for all users, reduced injury risk, connections to destinations, and a walking culture**

2. **Prioritize for areas with high-reliance users like seniors, children, low-income residents, and people with disabilities**

- Project participants and existing literature were in agreement that quality walking environments are important for all populations, but crucial for groups that do not have access to automobiles as a transportation choice. Identifying areas in Champaign where high-reliance users reside creates an opportunity to ensure safe access for groups that rely on the pedestrian network the most. These high-reliance groups are currently the most likely to be involved in pedestrian collisions and (for low-income, elderly, and disability populations) are at among the highest risk for chronic health conditions linked to poor quality built environments.

- Data on the proportion of seniors (ages 65+), children (ages 5-17), low-income residents (living below the federal poverty level), and residents with disabilities was retrieved from U.S. Census American Community Survey five-year estimates for each of the 21 census tracts in the City of Champaign. Data regarding the proportion of the population living at or below Federal poverty standards is notably skewed within many tracts by University of Illinois students. While most are dependents of higher income parents who live elsewhere, students also walk and take transit at higher rates than most groups, still suggesting reliance. Data for estimated transportation mode share of walkers and transit riders was also incorporated into the analysis. This data was added to estimate demand for walking infrastructure and incorporate those who ambulate to and from bus routes.

   Census tracts were ranked in each category from 1 to 21 after proportions were compared to others in the City of Champaign. Overall reliance on pedestrian network was calculated by finding the sum of each of the category rankings. See the table and the map on the following pages for details.
Population Reliance on the Pedestrian Network

- Far North Champaign
- Garden Hills
- Spalding Park
- Douglass Park
- Country Fair
- Centennial Park
- Morisseys Park / Fox Drive
- Far South Champaign

Legend:
- Highest Reliance
- High Reliance
- Low Reliance

Walking For Life: Addressing Health in Champaign’s Pedestrian Plan
## Walking For Life: Addressing Health in Champaign's Pedestrian Plan

### Reliance on the Pedestrian Network by Census Tract, Champaign, Illinois

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<th>City of Champaign</th>
<th>Census Tract</th>
<th>Percent Living Below the Federal Poverty Level (% Rank)</th>
<th>Percent Children (under 18) (% Rank)</th>
<th>Percent Seniors (65 and over) (% Rank)</th>
<th>Percent with Disability (%) Rank</th>
<th>Percent Commuting by Walking and/or Transit (%) Rank</th>
<th>Percent in Poverty Level under Federal Poverty Level (%) Rank</th>
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When prioritizing for projects, Champaign’s pedestrian plan would better serve the needs of the community by giving additional “points” to projects that are located in or would have significant impact on census tracts with high-reliance populations.

- Other communities have combined reliance data with data regarding chronic health conditions to determine priority areas for projects. The Nashville, TN Metropolitan Planning Organization applied an analysis of High Health Impact areas with populations likely to have highest rates of health disparity and less access to personal transportation as part of their 2009 Bicycle and Pedestrian study (Nashville, 2009).

- Populations the Champaign neighborhoods of Garden Hills, Douglass Park, Country Fair, and Centennial were found to have the greatest proportion of “high reliance users”.

- **Supports: access for all users, reduced injury risk**

3. **Invest in a public awareness campaign to promote walking and safety**

- Project and policy changes alone are not likely to change walking and driving behaviors in Champaign. A public awareness program highlighting the multiple benefits associated with walking lacks in Champaign. Residents are bombarded with images and messages promoting automobile ownership and fast food restaurants, but they see relatively few regarding healthy behaviors or responsible citizenship. As budgets
allow, City of Champaign public service campaigns should not only encourage people to drive slower, but also to walk (or bike) more frequently.

- A combination approach of social media, print sources, billboards, radio, and television messages could promote walking, inform residents about walkable community events, highlight pedestrian projects, and praise the multiple benefits of walking.

- Champaign-Urbana Mass Transit District is a local leader with regard to advertising for use of public service. Their comprehensive advertising campaigns incorporate social media efforts, bus advertising, billboards, and local television marketing. (CUMTD, 2014) Champaign might also be able to build upon previous CDC efforts to promote walking as physical activity like their 2002-2006 VERB campaign which targeted adolescents (CDC, 2010). Champaign-Urbana Public Health District is also a logical awareness campaign partner.

- **Supports: walking culture**

4. **Wayfinding signage providing direction and distance to destinations**

- Pedestrians in Champaign currently lack directional cues to help them navigate and walk to destinations. Wayfinding signage would highlight distances and directions to attractions and offerings for both residents and visitors.

- Wayfinding systems are typically composed of a combination of smaller directional signs and larger informational signs which often include maps. In Champaign signs could direct pedestrians to parks, shopping areas, athletic facilities and cultural attractions. Wayfinding in Champaign could also distinguish neighborhoods and may also highlight historical buildings and schools. Wayfinding signage here could be scaled for easy visibility from automobiles or pedestrians alone. Some professionals encouraged creation of pedestrian walking route maps as a helpful accompaniment.

- Wayfinding systems are currently implemented in many communities across the county, and are often centered on specific districts, like downtowns. Many Midwestern communities have recently invested in way-finding including Des Moines, IA, the Quad Cities, and Bloomington, IN (Corbin Design, 2014).

- A wayfinding planning process should incorporate feedback from residents about which destinations should be
highlighted and the scale of investment preferred. A city-wide system would encourage walking to destinations in all Champaign neighborhoods.

- **Supports: walking culture, connections to destinations**

5. *Walk Champaign* events

- A year-round calendar of walk-friendly events should be prepared by highlighting existing events and adding a few more for the expressed purpose of promoting walking in Champaign. Events create an opportunity for people to socialize, celebrate walking/healthy habits, and build momentum for future investment in walkability.

- Existing events like the Taste of Champaign, Boneyard Arts festival, and CU days in Douglass Park cater to the walking public already and the addition of events like a Walk to Work Day, Walks with the Mayor, Winter Walks, or Open Streets could be added to the schedule. The events should be catalogued and combined into a calendar that could be posted on the City of Champaign website and distributed throughout the community.

- Many cities across the country, including Chicago, promote citizen participation in National Walk to Work day which takes place the first Friday of April every year. The City of Riverside, CA invites residents to Walk with the Mayor events which occur on Saturday mornings every two months, all year long. In Alberta, Canada 110,000 people participated in Winter Walk Day, registering and logging distance walked on February 5th of 2014 (SHAPE, 2014). Development of “open streets” events would provide additional opportunities to encourage residents to walk, play, and generally be active. These events temporarily close a section of street to automobile traffic so the spaces can be enjoyed by other users. Minneapolis, MN has six events scheduled for the summer of 2014 (City of Minneapolis, 2014).
• Additional events could be located throughout Champaign neighborhoods, near central areas, or at existing park facilities.

• **Supports: walking culture**

6. **Support and Expand CU Safe Routes to School Project work for Unit 4 Schools**

• Champaign-Urbana Safe Routes to School (CUSRTS) project is the local chapter of a national campaign to improve safety on walking and bicycling routes to school and to encourage children and families to travel between home and school using these modes. CUSRTS promotes safe active transportation to school though community events, infrastructure planning, incentive programs, and resources for parents and kids. CUSRTS has successfully launched programs and mapped safe walking routes for all applicable Urbana Public Schools facilities, but not all schools in Champaign (CUSRTS, 2014).

• Collaborate with decision-makers at Champaign Unit 4 schools to prioritize for implementation of CUSRTS programming and prioritize for pedestrian infrastructure fixes recommended by CUSRTS near Champaign schools. Champaign middle schools should receive additional attention from Unit 4 and the City regarding pedestrian networks as parents may be more likely to let their older children walk to school.

• Structure for collaboration and planning exists between Unit 4 staff, parents, the City of Champaign, and CUSRTS leadership exists, but level of commitment from some parties is lacking. In Champaign schools like South Side Elementary stakeholders have shown greater commitment and found SRTS to be a great resource planning for safer active trips to and from school.

• **Supports: walking culture, connections to destinations, reduced injury risk, and access to all users**
7. Sidewalk gap infill along bus routes, major streets, and in shopping areas

- Some of Champaign’s arterial streets, transit stops, and commercial centers lack sidewalk infrastructure which creates obstacles for users and compromises their safe access to destinations. The strength of Champaign’s pedestrian network and the health of its residents would be improved through prioritizing sidewalk infill in these areas.

- All arterial and collector streets, as well as bus routes and walking routes to major shopping destinations should be analyzed for the presence of sidewalk gaps. The existing City sidewalk gap program should be amended to prioritize sidewalk gaps along arterials and those near commercial areas. As written, the existing gap program is not concerned with surrounding uses and only addresses gaps that are one block length or less (City of Champaign, 2005).

- In Portland, OR the Portland Bureau of Transportation identified about ten miles of priority sidewalk infill projects with an emphasis on sidewalk infill along arterial streets. The priority gaps ranged from 0.1 to over 1 mile in length and were identified with the expressed purpose of promoting active transportation (City of Portland, 2014). Champaign should identify a similar priority sidewalk gap list and address projects as funding becomes available.

- Sidewalk gap infill is important across the network. The following gaps represent an abbreviated list of some important missing sidewalks and connections.

  - Springfield Avenue, between Mattis Avenue and Russel Street
  - Springfield Avenue, between Duncan Road and Kaufman Park
  - Springfield Avenue, approaching and passing under I-57
  - Mattis Avenue, north of Anthony Drive
  - Mattis Avenue, between Springfield Avenue and Clark Street
  - Kirby Avenue, approaching and crossing I-57
  - Windsor Road, approaching and crossing I-57
  - Bradley Avenue, approaching and crossing I-57
  - Neil Street between Stadium Drive and Windsor Road
  - Neil Street between Edgebrook drive and Town Center Boulevard
  - Prospect Avenue between Kirby Avenue and Armory Avenue
  - Prospect Avenue between Union Street and White Street
  - Entrances to Marketplace Mall (driveway and parking lots)
• Supports: Complete & well-maintained network, access for all users, reduced injury risk, connections to destinations, and a walking culture

8. Street lighting gap installation at intersections, bridges, along bus routes, and major streets

• Some of Champaign’s arterial streets, transit stops, bridges and intersections lack street lights which compromises safe access to destinations. While Champaign’s adopted Manual of Practice for public infrastructure includes lighting standards for all streets and intersections, many areas of the community lack appropriate levels of lighting and some neighborhood have almost no street lights (City of Champaign, 2014). The strength of Champaign’s pedestrian network and health of its residents would be improved through prioritizing streetlight installation in these areas.

• All arterial and collector streets, as well as bus routes, bridges and walking routes to major destinations should be assessed for the presence of street lighting. Areas lacking lighting should be identified and prioritized based on the amount and speed of vehicle traffic as well as pedestrian demand attributed to adjacent land uses. Lighting should be installed to improve safety as budgets allow.
• Several cities have adopted streetlight specific policies and master plans. The 2006 Salt Lake City Street Lighting Master Plan and policy requires developers to install street lighting in new projects and promotes lighting upgrades during road reconstruction. Salt Lake City has a traffic safety lighting program which publically funds installation of lights at intersections of local streets. The plan acknowledges the importance of lighting as a means for reduced collisions and crime prevention and intentionally installs lighting to illuminate sidewalks as well as roadways (Salt Lake City, 2006).

• The need for street light installation exists in neighborhoods across Champaign. This project will not attempt to address the breadth of gaps that exist in lighting in the community. It is worth noting however, that street light gaps at all I-57 arterial bridge and underpass crossings present a significant danger to any bicycle or pedestrian traffic that may cross in the evening, morning, or during adverse weather conditions. Additional arterial lighting gaps exist along portions of south and north Mattis Avenue, north Market Street, Windsor Road, Kirby Avenue and Duncan Road. Many of these locations were cited in Champaign’s 2008 Transportation Plan as “rural roadways serving urban development” (City of Champaign, 2008).

• **Supports: Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations, and a walking culture**

9. **Apply the existing Complete Streets policy to additional Champaign corridors**

• Champaign’s existing transportation plan has adopted a multimodal focus with recommended standards for new streets which include facilities for pedestrians, bicycles, transit and automobiles. Since the plan was adopted in 2008, the City of Champaign has applied a portion of its transportation budget toward re-stripping of existing roadways for additional bike lanes. The increase in multimodal opportunities is encouraging, but additional investment for more comprehensive complete streets retrofits would increase the comfort of walkers through narrowed lanes and reduced speeds of vehicles.
The Pedestrian Plan should create a list of potential complete streets projects that may implemented as future funding allows. The policy recommendations would be most appropriately applied to existing collector and minor arterial streets. Expanding complete streets networks would improve safety and connectivity for the walking public. Resurfacing and reconstruction projects offer a cost effective time to implement complete streets designs.

Many cities have prioritized lists of future projects that direct the reconstruction of streets to meet complete streets standards. Seattle, WA even maintains a complete streets webpage that allows the public to keep tabs on complete streets projects that are underway (Seattle, 2014).

Champaign only recently adopted a complete street policy via a 2008 declaration, and there remains significant work to be done to accommodate the needs of all users along many corridors. The following streets represent a potential list of candidates for complete street retrofits and/or road diets. A study should prioritize opportunities based on appropriate factors including traffic volume, street classification, sidewalk condition, crosswalks, transit facilities, and parking restrictions, and recommendations from the existing transportation plan.

- Bradley Avenue between Carver Drive and Prospect Avenue
- Church Street west of State Street
- University Avenue west of State Street
- Springfield between Wright Street and Russel Street
- Green Street west of Neil Street
- Neil Street between Downtown Champaign and Marketplace Mall
- McKinley Avenue between Clark Park and Bloomington Road
- Country Fair Drive between John Street and Park Court
- Kenwood Drive between Springfield Avenue and Kirby Avenue
- John Street extending west to Duncan Road
- Duncan Road
- Fox Drive between State Street and Windsor Road

• **Supports:** Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations, and a walking culture

10. **Revise zoning and development standards to create walkable shopping and recreation choices**

• Champaign has some great examples of neighborhood commercial centers that shorten automobile trips and serve as spaces to build social ties with neighbors. Unfortunately, much of the development pattern that has been prevalent in the community in recent decades has resulted in the increased scale of homogenous development for residential and commercial uses. Addition or revision of current zoning maps to include mixed use zoning designations or additional neighborhood commercial development would increase walkable access to destinations in homogenous areas. Furthermore, the promotion of small scale neighborhood parks, playgrounds, and public spaces will ensure recreation choices within walking distance for more Champaign residents.

• Champaign’s Planning and Development Department could lead a process with neighborhood stakeholders to identify potential “up-zoning” locations within some of Champaign’s most homogenous
residential areas. Revision of subdivision regulations to require mixed-use or neighborhood commercial development as part of large proposals would also increase the number of walkable destinations in new Champaign neighborhoods. The City should also collaborate with the Champaign Parks Department to increase the prevalence of neighborhood parks, playgrounds, and plazas. Rather than prioritizing for acreage of open space or park land, Champaign should promote recreational destinations within a quarter mile radius of residents.

- Communities around the country have taken a variety of approaches to support the development of additional neighborhood centers. Colorado Springs, CO added mixed-use zoning categories to its land use designations and created a Mixed-Use Development Design Manual that with details and illustrations of the City’s adopted standards. The Manual’s standards include required connections between new development and the existing pedestrian network (Colorado Springs, 2004).

- Professional respondents indicated the importance of walkable destinations for improving walking share and frequency throughout Champaign. Areas with greatest need for walkable destinations include some core and post-war neighborhoods like Clark Park and the Centennial area, but developments on the periphery (especially west of I-57) are the most likely to lack destinations.

- **Supports: Access for all users, connections to destinations**

11. **Require development to connect directly to Champaign’s pedestrian network**

- The City of Champaign’s standards for development require the creation of sidewalks along public rights or way, but lack requirements for connecting the development itself to Champaign’s pedestrian system. As a result, subdivisions and commercial centers have been built without logical connections for pedestrians. People who need to get to destinations often have to walk without a path along driveways and through parking lots to reach destinations, increasing risk of collision and decreasing level of comfort.

- Champaign should revise development standards to require a direct separated path for pedestrians to access the new development safely from the public right of way to the door. Large developments like major retail centers and subdivisions should have multiple connections to the pedestrian network to increase connectivity and promote active transportation to and from destinations. Standards for the quality and design of these connections should
include details about paths, lighting, and shade trees. Champaign currently addresses pedestrian connectivity in select urban neighborhood districts, but requirements should be applied to all development.

- Development design standards have been adopted by many cities across the US to ensure logical and safe pedestrian connectivity. In 2013, Austin Texas adopted site development standards that promote pedestrian-friendly environments through regulating building setbacks, sidewalk design, path connectivity, parking design, and shade (Austin, 2013).

- Connectivity between the public right of way, private business, and residential developments presents a challenge for users throughout Champaign. Revision of City standards would improve walkable access to new destinations. The Champaign Planning and Development Department should also investigate strategies to retrofit safe connections to existing destinations.

- **Supports: Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations, and a walking culture**

### Site Specific Recommendations

Descriptions of each will include the following:

- Reasoning behind the recommendation
- Key elements of the approach
- Location(s) targeted by the approach
- Anticipated role in achieving the *Walk Champaign* vision for health

#### 1. Sidewalk infill between Dodds Park trail and Mattis Avenue

- The large trail system that runs from Dodds Park to the Centennial neighborhood lacks a logical connection to Mattis Avenue. Pedestrians walking from the Nearby Garden Hills neighborhood must either access Dodds Park and the nearby Eddie Albert Community Garden by automobile, or walk several hundred feet through grass/in a roadway that connects Mattis Avenue to Parkland College. The gap discourages active transportation and recreation and should be addressed through collaboration between the City of Champaign and the Champaign Park District.
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- The project would require construction of a sidewalk connection between the Olympic Tribute and Laborers Memorial and the sidewalk along Mattis Avenue.

- **Supports:** Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations

2. **Hessel Park mid-block crossing at Kirby**

- Hessel Park is a great neighborhood walking destination and one of the most heavily trafficked parks in Champaign. Unfortunately, the lack of a safe crossing at Kirby Avenue on the south end of the park results in many pedestrians dodging traffic and hurrying across the right of way. The need for a mid-block crossing here is compounded by the presence of an apartment complex south of Kirby Avenue and a transit stop that is also located south of the Park. The current conditions are dangerous and may deter some pedestrians from accessing the park entirely.

- A mid-block crossing treatment with high visibility signage, lighting, and a pedestrian refuge island would be ideal for this location. The City should create a
well-designed mid-block crossing here to improve walking access to a major public recreational asset. A treatment here might also serve as an example for additional future mid-block crossing projects.

- **Supports:** Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations

3. **Country Fair Apartments gap infill and mid-block crossing to transit hub**

- The Country Fair Drive area has a high number of destinations within walking distance of many residents in multifamily residential units. Unfortunately, this part of Champaign was designed without requirements for sidewalks and connections to businesses and few pedestrian facilities exist. This project would create a complete pedestrian network along Country Fair Drive and a safer crossing opportunity for residents seeking access to nearby transit hubs and the businesses in the Country Fair commercial development.
• Sidewalks along both sides of the right of way along Country Fair drive would address an existing gap and increase safe connectivity to destinations from Country Fair Apartments. A midblock crossing with appropriate signage, lighting, and crosswalk paint would increase visibility for pedestrians crossing Country Fair Drive. A clearly marked pedestrian route between the apartments and the transit hub to the east would increase walkable access to both local and community destinations.

• **Supports:** Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations

4. **I-74 bridge and interchange solution**

• The major Champaign interchanges at Interstate 74 present key connectivity challenges for Champaign pedestrians and bicyclists. The bridge overpasses at both Prospect Avenue and Neil Street only have sidewalks on their east sides and the existing sidewalks abut directly to the roadbed. Bridge approaches also have sidewalks on only one side as well, but evidence from clear “goat paths” indicates that pedestrians are walking along both sides of the right of way. Difficult intersections are located to the north and south of each...
interchange as well, increasing the discomfort of users. The current status of these crossings inhibits the use of active transportation modes to reach major commercial destinations (Marketplace Mall and North Prospect Avenue) and fails to provide safe access for current users. The proposed siting of a new Champaign High School north of the interchanges creates greater urgency for a redesign.

- The City of Champaign should prioritize the redesign and reconstruction of these interchanges to accommodate pedestrians and bicycles along with automobile traffic. Because the design and maintenance of these interchanges falls under Illinois Department of Transportation jurisdiction, Planning and Development Department staff and City officials should communicate details regarding existing challenges and suggested solutions to IDOT in a timely manner. Separated pedestrian and bicycle facilities on both sides of the bridge should be prioritized along with improved crossing treatments to reduce risk of injury for pedestrians at points of conflict with fast moving traffic. Collaboration on these projects could serve to spearhead a number of potential project opportunities with IDOT, which maintains several state routes in the city.

- **Supports:** Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations
5. **Canadian National Railroad underpass improvements**

- Running north to south through the City of Champaign, the Canadian National Railroad (Formerly the Illinois Central Railroad) elevated line creates a barrier for pedestrians and motorized traffic moving east to west. Ten underpasses in the City of Champaign create opportunities for traffic to pass below the line (nine are open to vehicles, and one is a dedicated pedestrian underpass). The quality of these underpasses varies significantly. Some underpasses are inviting and safely separate pedestrians from traffic, but others are hazardous and unappealing. *Walk Champaign* should identify high priority underpass improvement projects and standards for future underpass projects to follow.

- Staff should rank each underpass for the quality of common elements like separation from traffic, lighting, bridge infrastructure quality, and aesthetics. Difficult underpasses like those at Green Street and St. Mary’s Road should be addressed first, while upgrades for other underpasses could be identified to move them from “good” to “great”. The City should collaborate with Canadian National to better understand jurisdictional issues and potential funding opportunities for maintenance and redesign. The age and structural integrity of some underpasses may warrant financial and engineering support from the railroad.
• Supports: Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations

6. Corridor retrofit for Prospect Avenue between Bradley Avenue and Bloomington Road

• Many professionals interviewed for this project noted the entire north Prospect Avenue commercial corridor presents challenges that should be addressed through the Walk Champaign plan. Compared to sections of the corridor that extend north of Interstate 74, pedestrian facilities on this stretch of Prospect Avenue are insufficient and dangerous. Existing sidewalk facilities along this portion of prospect are immediately adjacent to the roadbed which offers pedestrians little protection from traffic and makes walking very uncomfortable. A retrofit project to create a protective buffer between pedestrians and automobile traffic and reduction of curb cuts and driveway conflicts would greatly improve safety and comfort.

• This stretch of roadway falls under IDOT jurisdiction which means that any redesign will need to be prepared through collaboration between the City and IDOT staff. Champaign should identify specific challenges created by this corridor, secure funding sources to support pedestrian facility upgrades and prepare details regarding potential solutions or design elements the City would like to see.

• Supports: Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations
7. **Sidewalk gap infill & corridor retrofit for Neil Street between downtown to St. Mary's Road**

- This corridor was identified by several interviewed professionals as an area to improve because of the lack of Pedestrian facilities along the east side of Neil Street south of Stadium Drive as well as the discomfort and inadequacy of facilities between downtown Champaign and Stadium Drive. The addition of sidewalks along the east side of Neil Street would improve connectivity and safety for pedestrians accessing businesses along the corridor. Installation of improved pedestrian crossing treatments at intersections and construction of pedestrian refuge islands would make crossing more safe and comfortable for users. Addition or widening of buffers between the sidewalk and the roadbed would protect pedestrians and may reduce traffic speeds if lane widths were narrowed to accommodate them.

- This stretch of roadway falls under IDOT jurisdiction which means that any redesign will need to be prepared through collaboration between the City and IDOT staff. Champaign should identify specific challenges created by this corridor, secure funding sources to support pedestrian facility upgrades and prepare details regarding potential solutions or design elements the City would like to see.

- **Supports:** Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations
8. Corridor retrofit for Bradley Avenue between Carver Drive and Neil Street

- Bradley Avenue is classified as a minor arterial in North Champaign, but along this stretch it often feels more like a major thoroughfare due to very large intersections and high traffic speeds. Professionals interviewed for this project noted that pedestrian facilities along Bradley Avenue are typically present, but not always adequate. The poor maintenance of the at-grade pedestrian crossing of the Canadian National Railroad, narrow buffers between sidewalks and the roadbed, and low-intensity crossing treatments increase pedestrian safety risks and decrease comfort.

- Champaign staff should identify specific challenges created by this stretch of Bradley corridor and determine specific project elements necessary to mitigate these challenges. Potential improvements could be a road diet, improved crossing treatments, and midblock connections. This stretch of Bradley Avenue is predominantly residential, so a redesign process should include input from neighborhood residents. The preferred retrofit scenario could then be incorporated into the Pedestrian Plan and implemented as funds come available.

- **Supports:** Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations
9. **Sidewalk gap infill in the area surrounding Marketplace Mall**

- Marketplace Mall was cited by several respondents as an area of high pedestrian traffic that lacks complete pedestrian facilities. Champaign residents who travel to Marketplace Mall by foot or by bicycle find that the existing infrastructure does not offer safe or comfortable passage to the numerous destinations in the area. Sidewalk Gap infill should be completed by the City of Champaign in this area with public sidewalks being constructed on both sides of the street.

- Priority sidewalk gaps in the area include those along Neil Street, Town Center Boulevard, and Marketview Drive. These arterials should serve as fundamental routes of connectivity in the area. Planning and Development staff should also find ways to improve the road to door pedestrian connectivity to private commercial developments in the area, especially Marketplace Mall. Businesses in the area may be willing to partner with the City to invest in pedestrian infrastructure that ensures safe travel routes for all employees and potential customers.

- **Supports:** Complete and well-maintained network, access for all users, reduced injury risk, connections to destinations
Ease of Implementation for Proposed Site-specific Projects

Potential construction costs vary significantly among the proposed projects. Materials and labor costs to make necessary sidewalk improvements around Marketplace mall, for example, are much higher than those associated with connections to Hessel and Dodds Parks. Several other factors also impact the feasibility of the proposed projects including jurisdictional boundaries, perceived community benefit, and political will.

In the following section, the projects have been ranked from easiest to most difficult to implement. Funding and partnerships to complete these and other long-term infrastructure recommendations may ebb and flow in the coming years and decades. Maintaining a working list of projects with details regarding their implementation needs should be valuable from a planning and public works standpoint. As funding opportunities do arise, City officials can quickly identify projects and move to address potential implementation obstacles.

Easiest

1. Hessel Park mid-block crossing at Kirby Avenue ★★★★★
   - Single jurisdiction (City of Champaign)
   - Infrastructure costs for mid-block treatments cost under six figures, and sometimes under five figures depending on design
   - Implementation responsibility: Champaign Public Works Department
   - Connections to Parks are logical as a means to improve quality of life. This project would be relatively easy to gain support for and could be incorporated into the annual Capital Improvement Plan.

2. Dodds Park trail connection to Mattis Avenue ★★★★★
   - Two jurisdictions (City of Champaign, and Champaign Park District)
   - Infrastructure costs for sidewalk extension of about 575 feet will likely be in the tens of thousands of dollars. Costs could get a bit higher with crossing treatment improvements at Mattis Avenue
   - Implementation responsibility: Parks Department or Champaign Public Works, depending upon the agreement
   - Connections to Parks are logical as a means to improve quality of life. This project would be relatively easy to gain support for and Champaign’s costs could be incorporated into the annual Capital Improvement Plan.

Moderately Easy

3. Country Fair Apartments gap infill and mid-block crossing to transit hub ★★★
   - Single jurisdiction (City of Champaign)
   - Infrastructure costs for mid-block treatments cost under six figures, and sometimes under five figures depending on design. Costs for over 1,300 feet of sidewalk necessary (even if only one side of the road is complete) would be significant, however.
   - Implementation responsibility: Champaign Public Works Department
Connections to Transit are logical as a means to improve safety and access. This project would be relatively easy to gain support for and could be incorporated into the City's annual Capital Improvement Plan.

**Moderately Difficult**

4. Corridor retrofitting for Bradley Avenue. A road diet and railroad crossing improvements would increase comfort and decrease speed ★★

- Single jurisdiction (City of Champaign)
- Infrastructure costs for a corridor retrofit east of Neil could be sizable, but the overall cost would range significantly depending on the treatment. Some cost for improved pedestrian crossing at the railroad track may be recoverable from Canadian National Railroad. Costs for high visibility treatments, a road diet to increase buffers, decorative lighting, or bike lane striping could be significant.
- Implementation responsibility: Champaign Public Works Department
- Corridor retrofits that are perceived to benefit one area of the community to a greater degree than others are difficult to garner support for. Also, high costs for a variety of improvements could not feasibly be incorporated into the existing budget. A long-term area specific project fund would likely need to be developed if proposed changes are significant. The existing *Building Green Street* project is an example of a corridor retrofit with long-term funding.

5. Canadian National railroad underpass improvements ★★

- Multiple jurisdictions (City of Champaign and Canadian National Railroad)
- Infrastructure costs for railroad underpasses could be sizable. Structural changes, lighting, and aesthetic changes may add up to six figure costs (or higher) for each underpass. One difficult underpass will be addressed in the existing *Building Green Street* Project (*City of Champaign, 2014*), but several others are in need of attention, with St. Mary's road being the most dangerous for pedestrians. Discussion with Canadian National regarding funding would be necessary in advance. Reference to the recent Logan Street underpass redesign could be helpful.
- Implementation responsibility: Champaign Public Works Department, or a consulted engineering firm (with project approval from Canadian National)
- Connections under Champaign's rail lines are important for safe east/west mobility of pedestrians. Underpass improvement projects may also provide a chance to showcase Champaign because underpasses are essentially gateways between neighborhoods. The high cost of these improvements would likely require a unique project funding stream.

6. Interstate-74 bridge and interchange solution ★★

- Multiple jurisdiction (City of Champaign for approaches, and IDOT for the bridge)
- Infrastructure costs for bridge improvements and retrofits are very expensive. The creation of a complete and physically separated sidewalk path over both I-74
bridges as well as retrofits to adjacent on ramp and off ramp intersections are likely to run into the millions. Funding for this project may require cost sharing between IDOT, Champaign, and potential Federal grant dollars for active transportation infrastructure.

- Implementation responsibility: IDOT, Champaign Public Works Department, and consulted engineering firms.
- Connections to employment and shopping destinations are logical as a means to improve safety and access. The "goat paths" and high necessity of these areas as connection points is likely to bolster necessary political support to improve these crossings. In all likelihood, completion of this project will require both a long term partnership with IDOT and political support from Champaign decision-makers who would also need to secure funding.

7. Sidewalk gap infill in the area surrounding Marketplace Mall ★★★

- Multiple jurisdictions (City of Champaign and surrounding private land owners)
- Thousands of feet of sidewalk are missing along both the public and private streets in the area which would require a significant retrofitting budget to remedy. This project is more implementable if done in a step by step fashion, choosing priority gaps along public right of way, and finding approaches to incentivize businesses to make private pedestrian path connections for the shoppers and employees that need to access their locations.
- Implementation responsibility: Champaign Public Works Department, potentially the companies that own Marketplace Mall or adjacent developments.
- If done in a piecemeal fashion, work on this project could be incorporated into the Champaign's Capital Improvement Plan. Because of the number of existing gaps in the network north of I-74, it is likely that this infill will continue over the course of decades unless Champaign's funding prioritization for pedestrian projects changes significantly.

Most difficult

8. Sidewalk gap infill and corridor retrofit for Neil Street extending from downtown to the south, extending at least to St. Mary's Road ★

- Multiple Jurisdictions (City of Champaign and IDOT)
- Infrastructure costs for a Neil Street retrofit are likely to be very expensive with a basic sidewalk accommodation. Thousands of feet of sidewalk are missing along the east side of Neil Street and conflicts with existing structures and driveways could increase costs. Major buffer improvements or aesthetic overhauls would likely cost millions of dollars. Funding for this project may require cost sharing between IDOT and Champaign.
- Implementation responsibility: IDOT, Champaign Public Works Department, and consulted engineering firms.
- Corridor retrofits that are perceived to benefit one area of the community to a greater degree than others are difficult to garner support for. Because Neil is in close proximity to downtown and campustown, however, extension of quality streetscape and a complete sidewalk network is logical. The high costs for a
variety of improvements could not feasibly be incorporated into the existing budget. A long-term area specific project fund may need to be developed if proposed changes are significant.

9. Corridor retrofitting for Prospect Avenue between Bradley Avenue and Bloomington Avenue

- Multiple jurisdictions (City of Champaign and IDOT)
- Safety and comfort improvements along the proposed retrofit portions Prospect are likely to be very expensive. Creation of a sidewalk buffer zone, addition of trees, reduction driveway conflicts, and improvement of the railroad crossing alone are likely to cost millions of dollars. Redesign and construction of dangerous intersections like Bloomington and Prospect and Bradley and Prospect may cost millions more. Funding for this project may require cost sharing between IDOT and Champaign
- Implementation responsibility: IDOT, Champaign Public Works Department, and consulted engineering firms.
- Corridor retrofits that are perceived to benefit one area of the community to a greater degree than other areas are difficult to garner support for. Prospect Avenue's proximity to North Champaign shopping and role as an entry point to the city may improve the chances of this project being seen as a priority by decision makers. The high costs for a variety of improvements could not feasibly be incorporated into the existing budget. A long-term area specific project fund may need to be developed if proposed changes are significant.
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Appendix

a. Recorded Responses

Walkable Environments and Health

1. Walking environments and community health
   - Mental health benefits are associated with safe, protected spaces. Protection from wind, clear sidewalks, and areas designed for walking create opportunities for people to walk. These environments may combat seasonal affective disorder. Environments designed for walking can also encourage physical activity, may lead to decreased levels of obesity.

   - Safe walking environments create easy opportunities for people to build physical activity into their everyday lives meet CDC recommended 150 minutes of moderate to vigorous physical activity per week. This reduces risk for many chronic conditions, has been found to prevent other diseases, and has major psychological benefits as well.

   - Empirical evidence suggests that built environments that support walking increase levels of physical activity and strengthen the social fabric of communities through increased numbers of relationships and increased civic participation. These environments help people reach the 10,000 recommended steps per day which helps lengthen life span and increase life quality. Other co-benefits include improved environmental quality which comes from reduced reliance on automobiles.

   - Obesity is a huge health problem in our community. Increased physical activity (even 5 to 10 minutes per day can have a health impact) is an important means for combating both adult and childhood obesity. Walking is a physical activity that is easy for individuals to incorporate into their daily routines. Environments conducive to walking make it easy for people to incorporate walking as part of their day and also increase opportunities for social interactions.

   - Walking environments impact health in a number of ways. Levels of physical activity are linked to the quality of walking environments and pedestrian infrastructure has major impacts on injuries and fatalities resulting from automobile collisions with walkers. Environments designed for walking also result in less air and water pollution associated with automobile use and are crucial for psycho-social health. Places that encourage walking create opportunities to build relationships which decreases isolation (especially among seniors), creates a sense of community, and increases social capital and civic engagement.

   - For the population to incorporate the recommended 30 minutes of moderate to vigorous physical activity into their routine, walking is the easiest exercise to do. Quality of the environment can either promote or deter walking. Factors like neighborhood safety and security also play a big role as determinants of walking behavior. Cars create huge environmental burdens for US communities. Resource consumption and pollution from automobiles contribute to asthma and inactivity (along with related chronic diseases) and walking environments make it easier for individuals to make a more sustainable choice.
- Comfortable walking environments increase physical activity, promote pedestrian safety, and decrease environmental degradation. These are all important for healthy communities.

- Walking environments have the potential to increase physical activity every day for everyone which may lead to a number of improved health outcomes. Auto-centric environments have the opposite effect on physical activity and serve to exclude access to those without cars. An environment’s impact on access is also a health and equity issue.

- Environmental conditions like safety, traffic, and crime have huge impacts on the amount of walking that individuals do. Americans are not getting enough physical activity. Even when populations have convenient access to health and recreation venues, most will not use them. Environments that are comfortable to walk in offer physical activity that is equitable and cheap.

- Environments either create negative or positive health outcomes. Lacking healthy environments, individuals who might walk are likely to find it easier to make unhealthy decisions for fear of collisions. Physical activity is likely to increase in environments that are designed for walking.

- Environments that are designed for walking increase physical activity by making it easy to walk for utility or exercise. When some individuals are active, others tend to join in and momentum builds. Daily walking creates a base for a healthy lifestyle.

- Research suggests that walkable, mixed use neighborhoods are likely to increase levels of physical activity and decrease levels of obesity among residents. If environments are comfortable to walk in they create opportunities to incorporate more physical activity into daily routines and into recreational walks. Over the past several decades, Americans have engineered most of physical activity out of our lives with cars to drive and electric appliances to complete most of our chores. Healthy walking environments, along with access to balanced nutrition, are essential for combating obesity.

- Good pedestrian infrastructure is necessary to make walking simple and unthreatening. We (as a society) are less active than ever before and at the same time our communities’ sidewalk network has lots of gaps. There is significant interest in walking groups, but surveys suggest that the greatest barrier to participating in one of these groups at Parkland College is finding time to work scheduled walks into their day. Comfortable walking environments throughout the community give residents the opportunity to walk whenever they have time, or to incorporate short walks into their daily routine.

- The relationship between quality walking environments and health may not be clear. The evidence appears to be a bit counter-intuitive. While one would assume that more walking tends to lead to healthier body weights, I will submit visual evidence to suggest that people who depend on public transport for their main source of commuting tend to be heavier.

- Quality walking environments encourage families and individuals to not only walk to a destination but also walk for exercise, mental health/well-being and relationship-building purposes.

- I think safety is a big issue when it comes to quality. If walking infrastructure, like sidewalks, are not contiguous or in bad condition it can be a big deterrent for people to walk and get regular physical activity. It’s not good for anyone if people have to walk in the street or if a wheelchair gets stuck in the mud or if an elderly person falls and gets an injury. We have also heard comments from the public...
about not feeling safe if there aren’t enough streetlights – and for a region that has fewer than 12 hours of daylight for 6 months out of the year, lighting is a big deal. Obesity is one of the biggest health issues in our community (both on its own and because it leads to various other health problems) and physical activity is a huge indicator for obesity.

- People are mobile – even with the increase in online social and economic interaction, people still go places for various reasons. Mobility takes up a decent part of our day as humans and impacts our quality of life. It just makes good sense to utilize active modes of transportation to be mobile and get physical activity/be healthier at the same time.

- Walking is one of the best forms of physical activity for all ages—no special equipment, you can do it anywhere, lots of health benefits and a low drop-out rate, in contrast to many other types of exercise.

2. Importance of walking environments for target groups versus total population

- Environment has the biggest behavioral impact on individuals who may lack motivation to exercise on their own. Comfortable environments make walking more appealing to everyone. It is something everyone can do. Impacts are increasingly important for middle-aged populations who are seeking an exercise alternative to jogging or going to the gym.

- Quality walking environments are crucial to the health of the entire population, not any particular group. In the US we have lost walking as a mode of transportation and engineered our environments for automobiles. This is an issue for everyone.

- Walking environments are important across all population segments, but low income populations face the greatest health risks and are more likely to walk than most groups. Mixed-use development and walking infrastructure should be a requirement of any new development.

- The quality of a walking environment impacts anyone that either chooses to or has to walk in a given area. Those who do not have a choice, and must walk may be most impacted. The groups that cannot drive and depend on transit are greatly impacted by the walking environment.

- Level of walkability in an environment is most impactful to those that cannot drive. The young, the old, the handicapped, people of color and immigrants are more likely to be non-drivers. Also, trends among young people suggest that future generations will buy fewer cars and drive fewer miles.

- Low income populations are likely most impacted by the quality of walking environments. These groups are burdened by spending a greater proportion of their income on automobiles and typically have less time for leisure and recreation than higher earners. Obesity rates are an issue across the population, but are highest among low-income populations.

- Everyone’s health is impacted by walkability. This is true across spectrums of income and age. Kids, seniors, and those transitioning from driving may be even more impacted however, because driving is not an option for them.

- Walking is something that everyone does (or rolling/ambulating) so everyone is impacted. Those whose health is most impacted by environments, however, are those who must walk because they
lack car access (seniors, low-income groups) and those privileged groups that have spare time in their schedules to walk or run for recreation. For those without cars walking is a necessity while those who walk for exercise may see walking as hobby. In this vein, certain exercise shoes, clothing, and technology worn by walkers and runners may distinguish this privilege.

- Everyone’s health is impacted by walkability. It is universal. This also includes those who roll. Kids, older adults, those without the ability to walk, and the less affluent may be especially impacted, however, since they may lack motorized alternatives.

- Everyone walks (or rolls or walks with an aid) to some degree, but the health of those who walk for necessity is more likely to be impacted by walking environments. People who have lower socio-economic status are more likely to walk and take public transit to fulfill their needs. Anyone without an automobile in Champaign (kids, senior citizens, those with disabilities) may also be impacted to a larger degree by their environment.

- Seniors depend most on walking as a means to reach physical activity goals. Parents and children are also likely to benefit from good walking environments which create opportunities for physical activity, family time, and neighborhood interactions.

- The quality of walking environments is most likely to impact the health of residents who do not have the choice to drive a car to accommodate their daily and weekly needs. Economically disadvantaged populations, seniors, and others without the option of a car may be most impacted.

- The quality of a walking environment is most likely to impact individuals who are too busy or don’t have access to recreation centers to “work out”. Older populations and middle-aged populations are typically more impacted as these are the groups that routinely cite walking as part of their exercise routine.

- The population who depends most on public transportation tends to use the public right of ways (sidewalks) most often in their daily lives. The walking this group does tends to be more out of necessity, and therefore the condition of the network is less likely to alter walking behaviors much since they need to walk regardless. While this group uses pedestrian infrastructure at high levels, the impact on health related to the quality of pedestrian networks is unclear.

- All groups are impacted the quality of pedestrian networks. Individuals may choose to jog/run while families may push strollers or walk while the little ones ride bikes. Others may choose to walk their dog for exercise while seniors may wish to stay active by walking. My grandfather turns 91 in a few months and still walks approximately a mile every morning to his coffee shop.

- I don’t know if the health of any one group is more impacted than another by walking environments. Obviously physical activity is important for health at all stages of life, though children (not sure what ages off the top of my head) require more daily physical activity and on top of that, the health of people at young ages is an indicator for their future health as they get older. So I guess I just answered, children’s health may be most impacted.

- I would think that the elderly really benefit from high quality walking environments, because walking is such an easy way to stay physically active.
- Everyone’s health can be improved by walking. First, though, it is important, in my opinion, to define “walking.” As a person with disabilities who can use many assistive devices (canes, forearm crutches, walkers, manual and power wheelchairs, the assistance of another person) to “walk,” I want to make sure that I and my health are included in any walking environment. Even when using these above devices to ambulate, I burn calories, raise my heart rate, and improve my lung capacity. If I can bear weight and use corresponding devices, I strengthen muscles and bones, improve blood circulation, etc. Make a conscious effort to maintain awareness that people with disabilities also enjoy walking and improving their health—the walking just may take on a different form than traditionally thought of by some people.

3. Anticipated trend for pedestrian planning
   - Pedestrian planning should not be going anywhere because it is helping to address obesity which is a serious health issue likely to continue over the long-term. We should keep planning for walking.

   - Challenges of our current environment are substantial. Lifestyle is choices are one way to address these challenges, but prevention measures through improving built environments are not going anywhere. Local control is a major challenge in the US as some communities seek to address pedestrian environments and others lag. Significant change will require a popular movement and leadership across levels of government. Cross-cutting policies changes have been successful in improving environments through ADA legislation, so this is not impossible.

   - Planning and designing for walk-friendly communities still has a long way to go in the US. Universal acceptance of the connection between the built environment and health is not yet accepted among decision makers (though it is among social scientists) and certainly still not prioritized with funding. We have a long way to go.

   - Focus and planning for pedestrian environments is likely to increase in decades to come. Obesity is not going anywhere in the near term, and investing in walking environments now is an efficient means to address it. Forward thinking businesses should also promote walking since physically active employees are less likely to have health problems (contributing to higher insurance premiums) and are more productive versus less active colleagues.

   - Regional efforts and awareness of issues regarding walkability of environments is increasing with time. Organizational participation in pedestrian planning varies and collaboration between local organizations and jurisdictions presents a challenge. The Fiscal Impact Analysis of building and maintaining larger road networks is not sustainable and so pedestrian, bicycle, and transit investment is looking more attractive. There is a lag time professionally between adoption of complete streets visions and implementation. 20 years from now we are likely to see greater infrastructure changes.

   - Attitudes and policies are beginning to prioritize for pedestrians. With more supportive infrastructure for walking it is likely that healthier behaviors will follow and sole reliance on the automobile may decline. From a public health perspective, pedestrian (and bicycle) planning will continue to be an issue until a complete active transportation network is achieved.

   - Pedestrian planning (and bike planning) is slowly building momentum. Culture change is slow, however, as we move to more of a European model for transportation options. Community respect for walkers and bicycle riders is increasing and infrastructure change is beginning to follow. Major
changes have already occurred in big cities with regard to road diets, complete streets, and promotion of biking and walking.

- Planning for pedestrian systems is not a fad and is not happening fast enough. The US is a giant market and changes in transportation and infrastructure priorities take a long time, but momentum for walking and biking is increasing. Social awareness regarding the connection between the built environment and health has increased, but transportation funding is necessary to link destinations together in complete pedestrian networks.

- In the 1970’s health and wellness campaigns focused on individual responsibility as the main determinant of health behavior change. For a couple of decades, however, evidence has suggested that the environmental context of interpersonal relationships, community, and policies that surround individuals are huge determinants of behavior as well. Many environments currently create barriers to healthy behavior (not just walking, but smoking, food access, and healthcare). Addressing environments for healthy behavior is a long-term issue.

- Right now walking (and biking) have gained priority among some planners and public health professionals over auto-centric environments, but it will take a long time to “undo the damage” done by the pedestrian-free environments that were built during much of the twentieth century.

- Pedestrian planning needs to be a priority for many years to come. Obesity is still an epidemic in Champaign and it is important that decision-makers be intentional about addressing the known contributors (one being walking environments). Obesity is a major factor at the root of many health issues. Rising census counts at Carle and increased prevalence of morbidly obese individuals needed treatment has led to expanded facilities and created need for new equipment to accommodate the obese hospital population. We should address this issue at all fronts.

- Pedestrian planning is heading in the right direction in this area and elsewhere in the US, but infrastructure changes and retrofits likely have decades to go. Momentum is building for creating walk-friendly communities, but it will take a long time to address decades of building with prioritization for the automobile. Funding for these infrastructure fixes is still not the top priority for transportation investment at the federal, state, or local levels and public health funding grants have been inconsistent.

- Hopefully prioritizing for walking remains a focus in the long run. Research has shown that incorporating walking into daily life activities is crucial for health. Thinking and talking about walking as a health issue is becoming common knowledge and people are beginning to “vote with their feet” and move to places that are more walkable.

- While there is ample evidence that people who develop certain habits (healthy eating, exercise, etc.) as kids tend toward keeping those habits as adults, activities such as walking may not fall in line with this trend. The effectiveness of pedestrian planning in promoting health remains unclear.

- Walking was important but just not as planned for in the past. I remember doing this with my mom when I was a child 25-30 years ago.

- I think it will definitely remain important, at least for the next 30 years. Not only because physical activity will remain important but also because urbanization and more compact development (which facilitate walking) are trends that are not yet slowing down. I think it would take a pretty major
cultural shift (massive nuclear explosion or ozone incident that prevented people from being outside breathing air) to make walking unpopular.

- Pedestrian planning is likely to become even more important during coming decades than it is today.

- There are many users that are underserved by the pedestrian environment. It may take a lot of time to accommodate the needs of people who may use English as a second language, people with disabilities (with vision or hearing loss, or with cognitive disabilities, etc.), and people who are over the age of 60 who may use assisted devices.

Characteristics of healthy walking environments

4. Elements that improve safety and perceived safety

- Paths should exist, be separated from traffic, and be well maintained without tripping hazards. Appropriate driving behavior needs to be enforced to combat excessive traffic speeds and distracted driving (especially texting and driving). Areas should be attractive and well-maintained to decrease perceptions of crime.

- The relationship between safety and perceived safety and walking activity is a complicated one. Safety from both traffic and crime generally increased, but perceptions of safety have decreased (media plays a role). Complete sidewalk networks along arterials, especially those that serve commercial districts (like Marketplace Mall) are crucial. Barriers from traffic and increased lighting / and “eyes on the street” are also likely to increase perceived safety.

- Dedicated areas for walkers, bikers, and drivers are important for increasing safety by reducing conflicts. Lighting also plays a role in shaping perceptions of safety, especially among women and vulnerable users. Crosswalks that are clearly delineated also increase safety and perceptions of safety.

- Safe walking environments include paths that are separated from traffic with tree-lined buffers and are well lit and well maintained. Perceptions of personal safety increase with good maintenance and landscapes that include plants and flowers. Safe walking environments are also those with lots of social interaction, neighborhood watches, and people looking out for one another. Crosswalks and pedestrian countdown signals promote safe crossing of busy streets.

- Decreased speeds and increased safety possible though road redesign. Physical measures for traffic calming like road diets are more effective than signs alone. Safety for pedestrians is improved by physical buffers (including street-scaping and trees) and wider sidewalks. One-way roads increase speeds. Safe environments also require better education regarding sharing of the road.

- Sidewalks that are separated from traffic either with guard rails, streetscapes, or grass and tree buffers increase safety for those who walk along roads. Crossings with decreased distances, pedestrian refuges, and countdown timers reduce risk of collision. Decreased speed through street design and traffic calming treatments (like flashing beacons and obvious signage) can help reduce frequency and severity of collisions.

- Perceived safety is improved through street lighting. Unfortunately, because lights in Champaign cost around $7,500, it is easier to require lights in a build out than to retrofit neighborhoods. Signage that
promotes walking and biking to destinations also makes people feel more safe and confident because the City is legitimizing their mode of transportation.

- Separated spaces that are free from automobile conflicts are important for safety. Road diets, bulb-outs, and “stop for pedestrian” signage slow traffic. Corridors that are free from cars altogether throughout Champaign may be the safest of all.

- Based on the CDC’s walkability audit tool physical features of a healthy pedestrian environment include well maintained and wide sidewalks with level surfaces, reduced chance for conflicts with cars (and bicycles), adequately marked crosswalks, and sizeable buffers from traffic. Communities where road and path users are well educated with regard to sharing the road and behavior is enforced would increase safety as well.

- Adequate street lighting, sidewalk facilities, traffic parkway buffers, appropriate signage are crucial physical features for safe pedestrian environments. Crosswalks (with appropriate levels of treatment), especially across busy arterial streets create safe passage across traffic barriers in Champaign.

- Neighborhoods with smooth surfaces (preferably sidewalks), narrow streets to reduce speeds, and light traffic feel safe to walk in. Separated multiuse paths reduce chances of potential collisions and street lighting would increase safety in the evening and early morning.

- Safe walking environments have complete facilities, street lighting to increase personal safety and deter crime, as well as sufficient traffic calming measures to reduce speeds of automobiles.

- A walking environment that is safe has complete facilities (sidewalks), that are well-maintained and clear of snow and debris (snow really limits physical activity). Lighting can also improve safety and perceived safety by extending lines of sight after dark and deterring crime.

- Healthy walking environments are linked to destinations, have fairly smooth surfaces, are fairly clear of tree limbs and other obstructions, and include fairly good street lighting.

- A challenge regarding the safety of Champaign’s pedestrian network is that the population is constantly changing and unfamiliar with their surroundings when driving (i.e. one way streets) and the “car vs. man” challenge that can lead to injury. Making sure pedestrians understand that even when you do have the right away, you won’t win if the vehicle breaks the law and hits you. Serious injury or death is not a winning solution. This is true with college students but even adults. Also, walking/biking/running while wearing ear buds or texting can be almost as dangerous as driving.

- People all over the urbanized area talk mostly about infrastructure with regard to safe walking environments. Sidewalk conditions, continuity, and lighting. I also think bus transit plays into this as well in the sense that it isn’t reasonable to expect people in residential areas to walk 45 minutes to get to the nearest supermarket, but they could walk to a bus stop that takes them there in 10 minutes if the sidewalk infrastructure is good to the bus stop and the busses are affordable and run at convenient frequencies etc. Buses are also considered an active mode of transportation in the sense that people who take buses walk more (something like 8 more minutes a day on average) than people who drive cars since they have to walk to the bus stop and walk again from the bus to their final destination.
Champaign’s biggest challenge in making safe pedestrian environments is finding the funding to make all the fixes that we know will improve safety.

A safe and healthy walking environment is one that is accessible to all of the members in the community—not just to those who are avid bike riders, commute to work/school on the local Mass Transit, or pay Transit fees in their student tuition and fees. Community also means people of low income, those who may use English as a second language, people with disabilities (with vision or hearing loss, or with cognitive disabilities, etc.), people who are over the age of 60, etc. This means that characteristics of a healthy walking environment include ADA compliant access, clear, clean paths, lighting, benches, green space, protection from noise, and separation from traffic.

5. **Elements that improve comfort or make walking enjoyable**
   - Landscapes with greenery, flowers, water features, and wildlife attract attention gently and help people relax as they walk. Environments with lots of people walking are also more enjoyable and comfortable.

   - Green space and recreation opportunities should be made accessible in all neighborhoods (local parks vs. community large scale space), and traffic speeds should be decreased. Connections to walkable destinations are crucial as well. People want to walk to local shopping and restaurants.

   - Trees are crucial for drawing people out to walk. They are better than medium or tall shrubs which limit sight distances and decrease perceptions of safety. Low-level green plants are also important for drawing people out. An effective strategy for incorporating these elements may be to emphasize bio-swales and green infrastructure as part of a storm-water management approach. These projects have co-benefits of producing attracting environments for walking and interaction while reducing run off and improving environmental quality along road corridors.

   - Destinations within walking distance are definitely appealing. Multiuse trails and walking paths are important and park spaces with water, trees, green spaces and wildlife attract walkers as well. Well maintained water fountains, benches (especially for buses), restrooms, and dog waste bags make spaces more comfortable as well.

   - Connectivity between where people live and destinations they use gives a walk purpose and increases enjoyment. Well-maintained paths that are free of litter and are connected to attractions through way-finding signage would also make walks more comfortable. Also, the presence of other walkers makes walking more interesting, inviting, and secure.

   - Decreased conflicts with cars and increased contact with trees/ natural settings and access to lots of destinations make walking more enjoyable. Mile markers and destination signage make it easier for pedestrians to explore their community by foot. Trees create refuge from hot sunshine, strong winds, and quickly changing precipitation events.

   - Mixed-use neighborhoods with residential shopping districts, grocery stores, and recreation opportunities embedded in residential areas make walking more convenient and attractive. Walking is also more convenient where driving and parking is less convenient. Less parking lots and narrower roadways indicate a more comfortable place to walk. Thoughtfully created walking experiences are attractive (landscaped well) and scaled to pedestrians.
Connections to multiple uses and destinations make environments more comfortable (and useful) for walking. Increased numbers of people and multi-use separated pathways (like Meadowbrook Park in Urbana) are also important elements for comfortable spaces. The Boneyard detention basin project makes a good start as a connection between destination areas, but lacks a direct path.

Walking environments that are clean, well-maintained, and have shade trees increase comfort and provide shade from heat. Decreased car traffic, fewer avenues for conflict with cards, and decreased noise levels also make areas more attractive for walking.

In addition to feeling safe, an environment is inviting for walkers if sidewalks are wide, green areas are present (trees, landscaping), and connections to destinations are clear and within walking distance. Parks that include paths away from roads are often comfortable spaces for walking.

Enjoyable walking environments have paths further away from traffic; have natural scenery, and connections to multiple destinations / points of interest. Welcoming walking environments would have signage to point to destinations and crossing treatments with refuge islands at busy streets.

Inviting walking environments are found near destinations, contain trees and green space, and are connected to parks with multiple recreational uses. Paths in these environments have lots of amenities (drinking fountains, lighting, benches, etc.)

Walkable neighborhoods have parks, green spaces, and trails that are well maintained and convenient to access. Dog-friendly parks with disposal bags and waste bins may also make spaces more inviting. Allerton Park (Monticello, IL), Centennial Park, and Meadowbrook Park (Urbana) are good examples of comfortable places to walk.

When walking for transportation, I likely want a direct route for efficiency. However, if I am walking for pleasure/exercise, then I want a route that might be scenic and/or aromatic and less concerned about efficiency. I may want to meander because I do not want to get bored by doing laps, so almost the opposite of efficiency.

Functional and inviting walking environments have connections to other active modes of transportation since walking can’t necessarily get you everywhere you need to go. It also helps to have destinations to get to – smaller commercial establishments within residential areas and recreation spaces (parks, trails) as well as other public spaces where people like to spend time or congregate (nature preserve, community center, movie theater).

Destinations are the most important elements in making neighborhoods walkable. People will walk if they have a place to go.

Accessibility features, good lighting, benches to sit on every once in a while, green space, quiet, hopefully away from traffic patterns if possible, and cleanliness increase comfort for the whole population, but are crucial for some users.

Approaches to get more people walking in Champaign

6. Infrastructure priorities

Walking For Life: Addressing Health in Champaign’s Pedestrian Plan
- Make an effort to increase perceived personal safety. Street lighting should be a city-wide service. Walking paths and trails that feel safe and are separated from traffic are most likely to increase physical activity. If they are connected to community recreation areas, they may be even more effective.

- Arterial sidewalk gaps should be addressed early on. Facilities should form continuous networks in order to encourage walking or cycling. Park and walk/ride/transit locations could decrease auto trips and increase physical activity. Trails and green space access should be available in all neighborhoods. Cannot impose infrastructure in a population that does not want it. Update pedestrian crossing signals to give pedestrian lead time and decrease potential conflicts from turning traffic.

- Complete sidewalk networks that are separated from traffic should be a baseline requirement along arterials. Creating additional islands for pedestrian refuge and road diets are potential approaches to retrofit auto-centric areas. Crossing treatments are crucial in general for safe walking. Mixed-use development and prioritization of infrastructure around transit stops is important. Future school siting should place higher weight on the negative social impacts of fringe locations. Kids lose opportunities to walk, bike, be social, and create healthy neighborhood fabrics. Park and dog park siting in existing neighborhoods would be another means to promote community interaction and activity.

- Sidewalk facilities should be created, at a minimum, along busy roads.

- Sidewalk gaps and connections to destinations should be a priority. Suitable buffers between walkers and traffic as well as pedestrian-scaled lighting could improve safety and comfort along arterials. ADA compliance and benches are crucial to populations who have to walk and should be accommodated. Low income neighborhoods should be prioritized for walking infrastructure due to increase health risk and reduced access to cars.

- Major destination areas should be prioritized for new pedestrian infrastructure. Areas with lots of shopping, schools, and bridges (Neil/Prospect and interstate 74 for example) are places with lots of walkers but existing gaps. Traffic calming infrastructure should be in place in these areas as well. Low-income neighborhoods should also be prioritized for projects. Increase of treatments at crossings would raise awareness and visibility regarding pedestrians and reduced parking where feasible could encourage alternative modes of transportation (as evidenced by campus parking restrictions).

- Sidewalk gaps along major streets should be prioritized first. Land use in existing neighborhoods and new development should promote neighborhood commercial centers. Streets that lead to neighborhood amenities should be addressed before typical neighborhood roads.

- Improve connections to and amenities at mass transit stops in shopping areas and along major roads (benches and shelters). This will acknowledge the weather and the stigma associated with walking or busing in these locations. New development should mandate paths that connect logically to the existing pedestrian network. The City should not waive sidewalks as part of development strategies. The interstates and railroad create major barriers in Champaign. Infrastructure should prioritize to mitigate these. Trails and pathways are highly demanded, but a connected trail network lacks. A “spine” of bicycle and pedestrian paths should exist through the middle of the community. Lighting serves to both enhance safety and create an aesthetic design that can be followed by pedestrians.
- Sidewalks should be provided at a minimum along arterials, but investment decisions should also reflect what the public is saying. Basic infrastructure needs to exist in order to get more people walking. If possible, find out what the priorities are in each neighborhood in Champaign.

- Separate paths for walking (sidewalks) should be present along all roads and be separated from traffic by curb and buffer areas. Pedestrian bridges may encourage easier connections where feasible. A “baseline” of an ADA compliant complete sidewalk network with way finding signage and easy connections to destinations is important for increasing walking in Champaign.

- Retrofitting auto-centric arterials and shopping areas for safer and more comfortable walking is essential for people who must walk. Missing sidewalks and connections in these areas are present both a public health issue and an equity issue. Crossings at major roads should prioritize pedestrian movement with signals and high impact lighting that increase pedestrian visibility.

- Major roads and collector roads should be outfitted as complete streets to accommodate all users versus favoring automobile traffic. Walking routes should be identified and built with sidewalks where lacking to make direct connections between residents and Champaign destinations. Pedestrian routes should be visible via wayfinding signage and comfortable for all types of users.

- Paths or sidewalks should be constructed where gaps exist or connections to school, work, and other destinations are illogical. Infrastructure should be maintained and additional lighting (maybe even security cameras) should be installed where security is a concern.

- It’s incredibly difficult and expensive to retrofit, and in the absence of being on the way to key areas and having a certain number of pedestrians (not sure what the number is, but pretty sure that it’s fairly obvious to most people), I believe that retrofitting an area doesn’t meet cost-benefit rationale. Also as Champaign grows, zoning is an important tool for increasing walking. Mixed-use developments, they can create neighborhoods which have destinations. If getting people to walk for exercise is the ultimate goal, getting them used to walking to a neighborhood store can move them down the path.

- Infrastructure priorities should include: taking care of uneven sidewalks, widening sidewalks (you should be able to walk 2 people acrosscomfortably in order to encourage conversation), constructing sidewalks where they are lacking, signage for drivers to be aware of crosswalks, dog refuse bag stations in strategic locations (Champaign Park District has some in the parks), signage for pedestrians (where are you, what distance to the next key point, interesting facts about the neighborhood you are walking through, what neighborhood association/neighborhood watch are you walking through, etc.) All of this must be budgeted though, and not approached with a “one size fits all” mentality. Working with neighbors/stakeholders to determine what they want and what they might contribute would be helpful. Projects should be prioritized where there is the greatest density (people) or where there are least amount of cars per capita. This might be in lower-income neighborhoods.

- Focus on connectivity to destinations with pedestrian infrastructure. Priorities should include network continuity, well-maintained sidewalks, and street lighting. Connections to bus routes, parks, shopping centers, schools and employment centers should also be prioritized.

- Sidewalks should be fixed and improved and lighting can be improved—but adding destinations within walking distance for residents is more challenging since many uses have been zoned and developed in segregated areas. Access to more parks and more destinations could encourage more
walking. Also, Champaign should focus on existing destinations and improve the areas around them. Pedestrians should be welcomed to shopping areas and parks with completer, well-maintained sidewalks and safe, comfortable crossings.

7. Policies and Enforcement
   - Snow removal policies should be enforced in areas in place and be extended at a minimum to all areas along busy streets and bus routes. Speed limits should be enforced and perhaps lowered in residential neighborhoods and especially near playgrounds and parks. A 30 mph limit is too high for residential streets, 20 mph is more appropriate, just like what we see in school zones currently.

   - Snow shoveling should be enforced and encouraged. Strong enforcement of bicycle or pedestrian policies not feasible or desirable if driven by zealous outliers. Real change requires a popular movement like the one that occurred in the Netherlands in the 1960’s. Presence of enforcement and city officials in park spaces could increase senses of security as would campaigns that reduce the prevalence of pan handlers in Champaign’s business districts.

   - The limited reach and lacking of enforcement around sidewalk snow shoveling is unacceptable. Revise ordinances and enforcement approach.

   - Sidewalk maintenance standards that reduce tripping hazards should be better enforced and snow removal should be prioritized everywhere that people depend on sidewalks for transportation and exercise. Parking policy requiring spots for development could be revised to decrease allotment of spots per unit which could encourage more use of alternative modes of transportation.

   - City departments should enforce sidewalk clearance ordinances. Removal of bushes, debris, and snow should be enforced rigorously. Also, why do we have and enforce rules on mowing grass (an aesthetic issue) when sidewalk snow removal (a quality of life issue) is not required city-wide in Champaign? Application of the “snow angel” program in Champaign could encourage greater participation and aid residents who are physically unable to shovel sidewalks. Yielding enforcement should also favor pedestrians who are more vulnerable users versus motorists.

   - School siting and schools of choice in Champaign are not currently placing enough value on the community health benefits associated with a school-age population that walks and bikes to school. These decisions / policies should be re-evaluated with higher weight toward health impacts.

   - Consistency with regard to enforcement is important (traffic, snow removal, sidewalk maintenance). Approaches to new residential developments should require logical interconnectivity with existing pedestrian networks. Pedestrian networks in the 75+ residential developments in Champaign in the last 20 years were not designed for city-wide connectivity. Existing policy for sidewalk gap infill is insufficient. City needs to consider a revised ordinance that would help address gaps more quickly. Funding for sidewalks could be increased as a proportion of transportation infrastructure spending.

   - Sidewalk standards for new developments should not be compromised. Complete streets policy should be further applied and potential areas for road diets and new dedicated pathways identified. Policies that enforce safe driving behavior and slow down traffic should be adopted.

   - Enforcement campaigns should address all categories of distracted transportation (biking, walking, and automobiles) in targeted “sting” operations. Create disincentives for parking by increasing the
cost of parking tickets ($10.00 fines are not a deterrent) and convert existing public lots to developable spaces.

- City ordinances should mandate connections to the doors of businesses from public sidewalk networks. Driveways and parking lots should not have to be navigated without clear (preferably protected) paths to businesses. These should be enforced retroactively if possible to correct existing inaccessibility.

- Enforcement of failure to yield to pedestrians (especially in high pedestrian activity areas like downtown, campus, and schools) would be helpful for increasing safety for walkers. Driving behavior should be enforced (as the priority) along with walking and bicycling. Enforcement at crossings is most logical.

- Apply complete streets policies to existing roadways that provide access to areas of shopping and employment. It is inequitable to maintain designs that discourage/exclude the many residents that do not drive. The Parks Department should consider extended lighting hours for parks and trails. Developing more park and ride options could increase carpooling, biking, and walking portions of commutes. Revise and enforce Champaign’s sidewalk snow removal policy.

- Champaign should revise and enforce its policy concerning snow removal. Whatever is currently in place is inadequate because almost all Champaign sidewalks go un-shoveled. Routine walkability assessments should address sidewalk quality, tripping hazards, and other maintenance issues.

- Revise the siting for the potential development of the new high school in the extreme northern part of the city. In locating this community center on the fringe, decision-makers are making automobile travel a requirement for the vast majority of its users. Also, expand the sidewalk snow removal policy past downtown and campus—if people get used to the fact that the sidewalks are impassable for chunks of the year, it’s going to be more difficult to get them out of their cars when they are not able to be used.

- Champaign Unit 4’s school of choice model creates challenges for children being able to walk or ride bikes to school. My son attends a school all the way across town. This model would be very difficult to change, however. Weather is also a challenge in Champaign as it can be seasonably very hot or very cold and snowy.

- Although I appreciate and agree with the goals of Schools of Choice, it is a challenge in getting more kids walking to school. Walk rates to school are much higher in Urbana simply due to neighborhood schools. Maybe more priority should be given to students within ½ mile of a school of choice (as opposed to a mile). Those within ½ mile may be more likely to walk. We should also publicize and add more “Park and Walk” areas around schools.

8. **Education and Encouragement Programs and Approach**

- Wellness programming like Carle’s CHARGE program which encourages employees to track physical activity in order to receive savings on yearly insurance costs are helpful, but need more funding in order to increase participation. Encouraging parents to have kids to walk to school is extremely difficult given perceptions about safety from traffic and crime. Organized opportunities for all ages to walk and be active are a great way to encourage residents to take advantage of existing recreational facilities. Education campaigns are helpful, but cultural change needs to come from people modeling...
walking and healthy behaviors in their neighborhoods. Community events like the marathon weekend should have greater investment throughout the calendar year.

- A public awareness campaign like the CDCs 2002-2006 VERB campaign focused on changing behaviors by educating youth about the importance of physical activity. Champaign could benefit from more of these efforts.

- An increase in dogs and babies may be the best way to increase walking for recreation. Dog walkers never quit and parents of young children get major benefits from walking or strolling with infants and young children. It calms everyone down. We need a cultural change that privileges walkers over drivers. Walkers in Champaign-Urban today may still feel like targets, but we have moved in the right direction over the last 20 years. We should do more to recognize neighbors that shovel and clear sidewalks.

- Awareness events like Bike to Work Day could be applied to walking as well. Pedometer and weight loss challenges have proven to be well received and had high participation in the Carle Hospital and Physicians Group system. These could be applied by other companies and local governments. Increased access to changing facilities, lockers, and fitness areas on site with companies would also promote walking and physical activity for employees.

- SMART trips programs might provide economic incentives (tax code benefits) for people to walk more and drive less. A year-round calendar of City events to promote walking and biking would be effective. The winter Penguin Walk in Indianapolis currently promotes winter walking there. Education on economic savings and health benefits of walking could be approached through a media campaign or competitions (like the existing bike challenge) promoted by the City. Maintaining sidewalk code enforcement to promote clear and undamaged sidewalks would go a long way in promoting walking. “Guarantee a ride” transit programs (for emergencies) and even location efficient mortgages may also encourage residents to think of walking as means of transportation.

- Walking for exercise and transportation is often related to community culture. Businesses play a role in promoting walking and physical activity among their employees. Pedestrian connections directly to important destinations including places of work and recreation areas like parks are helpful. Kids and dogs also increase walking, so create events that promote walking with the dogs or the family. One existing example to replicate is the “Hessel Park Mutt Strut”

- Seeking a walk-friendly community designation (Similar to bike friendly communities) could promote conversation and emphasis on walking infrastructure in Champaign. Education to respect walkers and increase walking share will take time, but the City has a role to play.

- Walking and driving are lifestyle behaviors. Levels of trust regarding walking in neighborhoods have eroded and people are scared to let their children walk to school. Leadership from City, media, and campaigns to promote active behaviors may all play a role in changing this, but it will not come easy.

- Social marketing campaigns may educate and encourage alternative modes of transportation. Advertisements may play a role, but events to promote walking could be hosted at parks, trails, and other walkable areas in Champaign. All City events should include transportation directions by walking, biking, and transit as well as automobiles. Safe Routes to School should be expanded across Unit 4 if possible. Pedestrian advisory councils (like one currently meeting in Urbana) may only effective if decision-makers are seeking recommendations.
- Public education regarding the health, economic, and environmental benefits of walking could encourage more residents to walk for utility or recreation. Celebrity community walks like “walk with the mayor” or other equivalents show the City is taking a proactive approach on walking and health.

- Marathon weekend is an example of an event that gets a lot of people running and walking, while creating additional awareness for health and pedestrians in Champaign. More events like that could encourage more walking and respect for pedestrians. These events could emphasize parks and other areas that are comfortable to walk in. Businesses can provide incentives and savings to employees that participate in wellness challenges using pedometers and other means to increase walking and physical activity.

- Highlight improvements when projects are completed. Celebrate walking, parks, and walkable neighborhoods through community events. Target residents and visitors with pamphlets complete with maps and walking routes that individuals can take to comfortably explore Champaign on foot. Education campaigns about sharing the road with walkers, bikers, and transit users may also help raise awareness of walking and increase its legitimacy.

- Thousands of people walk during the Illinois Marathon weekend 5k. Champaign should support a more frequent series of run/walk events to promote activity year-round. Walking groups should be promoted for both health and social benefits. These groups, like the ones organized at Parkland College create a level of accountability among participants and provide opportunities to share health education lessons and exercise as a community. Staff challenges and wellness tracking (pedometers and logs) can increase health outcomes within organizations.

- Encouraging people to walk to work is challenging. Employer incentives and programs may increase walk share. Educational campaigns about the benefits of walking with Carle/Presence assisting in this campaign. Restaurants and businesses could offer a “walk to work/walk to dinner” day each year with some type of discount to raise awareness and get people walking.

- Safe Routes to School is a great program that works with schools to establish safe walking and biking routes for students but also educates the students about how to walk and bike safely. Safe Routes to School plans also identify needed infrastructure improvements to facilitate safely walking or biking to school and managing traffic at peak hours. Since Champaign has schools-of-choice this is obviously a bit more complicated since there will probably be more kids who always have to drive or bus in.

- To increase walking in the community, Champaign should take a multi-level approach which would include: improvements to the built environment, public education and some incentives from employers. Also the City should focus on education and programming regarding walking and its benefits. One idea would be to sponsor more walks and get into the schools and do some more programming there—make it fun for the kids to walk.

- Focus advertising campaigns toward people that you want to attract to the walking environments but have not yet done so. Erase any stereotypes you may have (older people only seem to walk inside in the mall; of course Deaf people walk, but I have nothing to worry about with them) and ask someone who lives that experience (is older, is Deaf, etc.) or call PACE for assistance.

Specific Project Recommendations

Walking For Life: Addressing Health in Champaign’s Pedestrian Plan
9. **Corridors**

- Bradley Avenue and Prospect Avenue should be priorities. Also, lighting and sidewalks should be addressed first along main roads that lack them or have gaps. Road diets should be implemented to make more comfortable corridors for those who may not drive.

- Major business districts like Champaign’s Marketplace Mall should have complete sidewalk networks.

- Sidewalk gaps need to be addressed, especially along busy streets. There should be dedicated (and separated) areas for walkers, bikers, and automobile traffic when possible.

- Sidewalks would draw more users if the network was complete and benches gave users places to rest along popular routes.

- Neil Street, south of Green Street lacks sidewalks along its east side. Portions of Bradley Avenue represent good candidates for a road diet. Prospect Avenue serves as a barrier across Champaign, but Prospect at I-74 is particularly treacherous and uninviting for pedestrian activity. Investment in safer and (perhaps) more frequent crossings along prospect makes sense. North Mattis Avenue is also a scene of frequent crossings with poor pedestrian infrastructure.

- Corridors near the center city that have sidewalk gaps should be addressed as well as those leading to major destinations.

- A North Champaign trail extension including a pedestrian/bicycle bridge over I-74 between Prospect and Neil would significantly increase connectivity to major shopping and employment destinations for residents that live south and create a recreational connection to Champaign’s core from residents that live north of I-74. The potential High School siting on Olympian Drive increases feasibility. Another trail opportunity to promote would be at Spalding Park. The large park lacks a trail circuit and is in close proximity to both a middle school and a residential neighborhood.

- The busier roads near the University of Illinois Research Park do have complete sidewalk networks (e.g. St. Mary’s Road and Hazelwood Drive at the south end of campus). The St. Mary’s to Neil Street stretch is high use but dangerous. South Neil Street has an incomplete sidewalk network as well.

- Gaps should be addressed on major streets, but sidewalks one block away from main roads would also provide a more pleasant alternative route. Street lighting should be present at intersections in all Champaign neighborhoods, and ADA compliance along with wider sidewalks should be addressed though out the system.

- North Prospect Avenue is an area that has high demand for walking but feels very unsafe outside of a vehicle. Pedestrians and transit users should have safe access to places where they work or shop.

- Major shopping and activity areas should be prioritized for pedestrian improvements (North Prospect Avenue and Marketplace Mall areas). Complete facilities are necessary in these areas.

- Consider use of mass transit (MTD) along with walking since one may use both modes to arrive at your destination. It is possible that bus shelters could also serve as pedestrian safety oasis when it is raining or someone just needs a break. Water fountains along the route? May be cost prohibitive but if we are asking people to walk to work, for example, is there somewhere to get a drink of water along the way?
Champaign County Regional Planning Commission is starting a big sidewalk assessment for all 900+ miles of sidewalk in the community this spring. It will hopefully greatly improve our ability to identify areas (corridors) that need improvement and prioritize different infrastructure needs.

10. **Crossings**
- Crossing of interstates should be addressed to increase safety and comfort.
- Crossings should be clearly delineated. Pedestrian refuge islands should be prioritized along busy corridors where intersection crossing time and distance is insufficient. Further road diats would make crossing easier as well.
- Neil and Prospect bridges over I-74 are high use crossings that should be prioritized. Intersections with high foot traffic should be addressed throughout Champaign.
- Railroad crossing at Bradley Avenue creates a major barrier in North Champaign as trains there are frequent and the crossing is in disrepair (perhaps a candidate for a pedestrian overpass?). The railroad underpass between 1st street and Main Street should also be highlighted with signage and additional lighting.
- Railroad underpasses/crossings and interstate crossings should be prioritized for improvements because these represent potential barriers for pedestrians.
- Pedestrian crosswalks with visibility signage should be replaced with stop signs to alleviate confusion and decrease collisions.
- Crossings of busy streets should be more visible and offer additional opportunities for pedestrians to rest or find refuge (islands).
- Overpasses and underpasses with interstates throughout the City should be evaluated and prioritized. Key crossings are the overpasses along I-74.
- Dangerous intersections like Duncan Road and Springfield Avenue need to be addressed to some baseline standard.

11. **Connections to destinations**
- Walking paths prioritized near areas that are inviting for walking and existing recreational facilities like parks. Connections to Hessel Park, the new YMCA in west Champaign, and near Champaign Country Club are examples.
- Way-finding signage could increase the awareness of destinations and proximity throughout the community. Parks and existing trails would be a good target for this.
- Prioritize infrastructure investment around transit. People who take the bus walk more on both ends of their trips.
- Complete connections to parks and recreation amenities would increase levels of walking and jogging for exercise. An example of a logical missing connection is where the trail that runs through Dodd's Park lacks a connection to Mattis Avenue.

- Mile markers and directional signage may promote walking between Champaign destinations. Private pedestrian connections to the mall and big-box stores would make them easier to reach on foot for employees and shoppers alike. Create disincentives for driving by charging for parking or making it less convenient to drive door to door.

- Connections between buildings and amenities in Champaign could be highlighted through way-finding signage.

- Zone to promote neighborhood commercial centers and corner stores. Mixed-uses embedded in neighborhoods would promote walking.

- The railroad underpass at Green Street near Neil serves as a connection point to campus. The underpass feels temporary and dangerous with regard to personal safety and security. It should be prioritized for an update.

- Connections to parks should be highlighted through signage and improved crossing treatments.

- Wayfinding signage could advertise nearby connections with directions and distances for walkers or bikers.

- Comfortable walking routes should be identified throughout Champaign, and should be marked with signage and mile markers. These routes should be promoted via maps and signage.

- Signage could help pedestrians connect to destinations by letting them know where they are, the distances to the next key point, and some interesting facts about the neighborhood you are walking through.

- Prioritization should be given to pedestrian infrastructure projects that provide direct connectivity to destinations and connectivity via bus routes and transit stops. An example is the lack of separated walking paths approaching the busy transit stop at Country Fair. Both zoning for mixed land use and presence sidewalk infrastructure are important for pedestrian connectivity.

- The Shops at Old Farm over on Kirby/Mattis are accessible to many, but trying to get there on Kirby is quite a challenge—the sidewalks on Kirby are a disaster and it is hard to cross the street.
b. Budgetary Impacts of Sidewalk Snow Removal Memo

Memorandum: Potential Budgetary Impacts of Sidewalk Snow Removal Ordinances

With higher than average snow totals for the 2013-2014 winter season across the United States, this season makes analysis of municipal snow removal policies especially pertinent. Although the majority of attention is paid to the costs and benefits of roadway snow removal (where the lion’s share seasonal municipal budgets are spent), analysis of sidewalk snow removal policies reveals that the combination of location, timeline, and associated fees may have impacts on the mobility of many groups of residents with subsequent effects on work productivity, shopping access, and personal health. The variation in sidewalk snow removal policy may significantly impact municipal revenue streams from sales tax, economic productivity, and fee collection. Initial findings suggest that shorter removal timelines, broader removal geography, and stricter enforcement procedures are likely to yield higher municipal revenue for cities that receive snow. An Economic Justification for Snow Removal

Sidewalk snow removal policies are often justified to ensure that all residents in communities have safe access to daily needs regardless of weather conditions. This safe access argument for sidewalk snow removal is usually explained in city ordinances and on municipal snow removal web pages in a manner similar to the following example from the City of Champaign’s website: “The goal of ordinance is to maintain accessibility for the general public who rely on our sidewalk system to carry out their daily activities.” (City of Champaign, 2014)

Some cities go further by explaining how sidewalk snow removal is an equity issue, crucial for children, the elderly, the disabled, and those who do not have automobile access. For every community that receives significant snowfall, however, the economic need for sidewalk snow removal is also substantial.

When the mobility of large portions of the population is hindered, people are less likely to access the retail and restaurants where they typically spend money. The municipal cost in lost sales tax revenue may be significant, especially if the period where snow obstructs sidewalk access drags on for weeks or months. Further, if residents resort to calling taxis or paying for deliveries, the money the extra money they spend on transportation will not be available for consumption of local goods.

Cities that lack responsive snow removal policies also inhibit residents from getting to work in a timely fashion. For those who rely on transit or simply commute on foot, icy and snowy sidewalks present a serious barrier to making it to work on a daily basis. This may hinder these individuals earning power while simultaneously limiting the productivity and competitiveness of the local businesses they work for. The reduced productivity of businesses may in turn impact profits and potential reinvestment back into the local economy.

Weeks and months of uncleared sidewalks may also harm health outcomes among all groups of users who do not want to climb snowbanks or risk falls. Reduced levels of activity associated with snow and ice may contribute to chronic health conditions like obesity, high blood pressure, heart disease, type II diabetes, and stroke. These health conditions are extremely expensive and take further tolls by reducing productivity and disposable incomes for families dealing with them. Across the US, the estimated healthcare cost from these and other related chronic conditions accounts for 75 percent of overall healthcare spending each year (Chester County, 28). For elderly individuals who try to brave snowy and icy conditions in the winter, fall risk is
also greatly increased. Broken bones and complications from falls can be incapacitating and even lead to death.

A final concern that snow removal policies may address are shrinking municipal government revenue streams. If properly enforced, local governments may bring in thousands of dollars in additional revenue from sidewalk snow ordinances. In Fort Collins, Colorado, where infractions cost $110 for property owners, the City had issued over 100 nuisance abatement fees by February 3rd of 2014, bringing over $10,000 (Dugan, 2014). Part of this revenue is spent on paying the contracted private snow removal crews, but still a net positive result. Compared to roadway snow clearance (many medium and large municipalities budget millions of dollars for road snow each winter), enforcement of sidewalk snow removal policies is a fiscal bargain. The City of Champaign budgeted $460,000 for roadway snow removal in 2013-2014, but as of Feb, 17th has spent nearly $610,000 (Fox News Illinois, 2014). Sidewalk clearance enforcement is one way to mitigate these costs during harsh winters.

**A Summary of Existing Sidewalk Snow Removal Policies**

There is significant variation among cities across Illinois the United States regarding sidewalk snow removal ordinances. Most municipalities that receive regular snowfall have an ordinance on the books requiring property owners to clear public sidewalks of snow along with vegetation and debris that may impede the path of users. The differences come with regard to the specifics for where, when, and how (if) the snow removal ordinance will be enforced.

For some communities in Illinois, enforcement of the snow removal ordinance is essentially non-existent. Both Peoria and Woodstock (a Chicago suburb) post on their snow removal web pages that they “appeal to residents to clear sidewalks”, but indicate no penalty for failing to do so (City of Peoria, City of Woodstock). These cities may have chosen to take an encouragement approach because of the difficulty and lack of effectiveness perceived in communities that do claim to enforce sidewalk snow removal.

Another tier of communities enforces their sidewalk snow removal policies selectively. In these cities (Champaign and Urbana, Illinois included) snow removal ordinances are only enforced when snow exceeds specified amounts, and only in designated areas of the community (City of Champaign, City of Urbana). These cities typically rely solely on resident complaints to locate violations and tend to have relatively lenient fines for offenders.

A final group of municipalities have applied more stringent policies and enforcement timelines that prioritize snow removal compliance at a higher level. These communities require removal of snow and ice from all public sidewalks and tend to have shorter timelines after snowfalls for which property owners may remove snow and ice. They also tend to have higher fees for violators and more robust enforcement strategies that include convenient 24 hour hotlines, online complaint taking, and routine sidewalk inspections in some areas. These communities also tend to be larger in size with Chicago, Madison, Denver, and Boston among the examples. A sample of sidewalk snow removal policies is summarized in the figure below. While the list of cities is centered on Illinois, the communities range significantly in population, annual
snowfall, and geography, drawing a small national sample.

Summary of Selected Municipal Sidewalk Snow Removal Policies

<table>
<thead>
<tr>
<th>Population</th>
<th>Annual Snowfall</th>
<th>Snowfall Enforced</th>
<th>Time to Clear</th>
<th>Locations Enforced</th>
<th>Warning</th>
<th>Fee (s)</th>
<th>Inspection Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Champaign, IL</td>
<td>82,500</td>
<td>22.8 in.</td>
<td>2 in.</td>
<td>48 hrs.</td>
<td>Downtown, campus area</td>
<td>no</td>
<td>Removal + administrative fee</td>
</tr>
<tr>
<td>Urbana, IL</td>
<td>41,300</td>
<td>23.2 in.</td>
<td>2 in.</td>
<td>24 hrs.</td>
<td>Downtown, campus area + Philo Road</td>
<td>no</td>
<td>$25 fine + removal cost + administrative fee</td>
</tr>
<tr>
<td>Bloomington, IL</td>
<td>77,700</td>
<td>21.1 in.</td>
<td>Any snow or ice</td>
<td>4 hrs. business district, residential by 10 am</td>
<td>Bussiness district</td>
<td>no</td>
<td>$25-$200 fee</td>
</tr>
<tr>
<td>Peoria, IL</td>
<td>119,700</td>
<td>25.4 in.</td>
<td>Not enforced</td>
<td>24 hrs.</td>
<td>NA</td>
<td>warning per season</td>
<td>NA</td>
</tr>
<tr>
<td>Woodstock, IL</td>
<td>24,800</td>
<td>32.7 in.</td>
<td>Not enforced</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Moline, IL</td>
<td>43,500</td>
<td>33.1 in.</td>
<td>6 in.</td>
<td>12 hrs.</td>
<td>All public sidewalks</td>
<td>no</td>
<td>Not specified</td>
</tr>
<tr>
<td>Chicago, IL</td>
<td>2,715,000</td>
<td>37.8 in.</td>
<td>Any snow or ice</td>
<td>3 hrs. if snowfall before 4pm, till 10 am if evening snow</td>
<td>All public sidewalks</td>
<td>no</td>
<td>$50 for individuals, up to $500 for businesses</td>
</tr>
<tr>
<td>Evanston, IL</td>
<td>75,400</td>
<td>29.4 in.</td>
<td>Any snow or ice</td>
<td>24 hrs.</td>
<td>All public sidewalks</td>
<td>no</td>
<td>Not specified</td>
</tr>
<tr>
<td>Madison, WI</td>
<td>240,300</td>
<td>51.6 in.</td>
<td>Any snow or ice</td>
<td>6 hrs. non-residential, 24 hrs.</td>
<td>All public sidewalks</td>
<td>One warning</td>
<td>$100-$1,000</td>
</tr>
<tr>
<td>Ann Arbor, MI</td>
<td>116,100</td>
<td>58.4 in.</td>
<td>1 in.</td>
<td>24 hrs.</td>
<td>All public sidewalks</td>
<td>24 hrs. to correct</td>
<td>$100-$1,000</td>
</tr>
<tr>
<td>Bloomington, IN</td>
<td>82,000</td>
<td>18.6 in.</td>
<td>Any snow or ice</td>
<td>Not specified</td>
<td>All public sidewalks</td>
<td>no</td>
<td>Not specified</td>
</tr>
<tr>
<td>Charlottesville, VA</td>
<td>43,500</td>
<td>17.3 in.</td>
<td>Any snow or ice</td>
<td>24 hours</td>
<td>All public sidewalks</td>
<td>One warning</td>
<td>Removal + administrative fee</td>
</tr>
<tr>
<td>Denver, CO</td>
<td>634,300</td>
<td>53.5 in.</td>
<td>Any snow or ice</td>
<td>4 hrs. business district, residential</td>
<td>All public sidewalks</td>
<td>One warning</td>
<td>$150 fine</td>
</tr>
<tr>
<td>Worcester, MA</td>
<td>182,700</td>
<td>65.6 in.</td>
<td>Any snow or ice</td>
<td>10 hrs.</td>
<td>All public sidewalks</td>
<td>no</td>
<td>$50-$200 per day and $50-$200 removal fee</td>
</tr>
<tr>
<td>Boston, MA</td>
<td>636,500</td>
<td>45.1 in.</td>
<td>Any snow or ice</td>
<td>3 hrs. of snowfall or 3 hrs. of sunrise</td>
<td>All public sidewalks</td>
<td>no</td>
<td>$20-$200 per snow event</td>
</tr>
<tr>
<td>Salt Lake City, UT</td>
<td>189,300</td>
<td>56.5 in.</td>
<td>Any snow or ice</td>
<td>24 hrs.</td>
<td>All public sidewalks</td>
<td>no</td>
<td></td>
</tr>
<tr>
<td>Rochester, NY</td>
<td>210,500</td>
<td>100.5 in.</td>
<td>Any snow or ice</td>
<td>12 hrs.</td>
<td>All public sidewalks</td>
<td>no</td>
<td>Not specified</td>
</tr>
</tbody>
</table>

Source: Municipal snow removal policy web pages (see works cited for details)

Perceived limitations of sidewalk snow removal ordinances

In case of snow and ice events, community leaders in government and business will correctly identify that clear roadways are much more important to municipal economic outcomes than sidewalks, and as a result should take municipal priority to ensure continued safe transport of commerce and consumers despite weather conditions. Some may see sidewalk policies as a threat to the roadway prioritization. Rather than threats to the status quo, however, strong sidewalk snow removal policies should be viewed as necessary additions to ensure the communities remain economically viable during and after winter precipitation. Road clearance
remains the priority which is why snowy cities spend millions each year in pre-treating, salting, and plowing of public arterials. In the auto reliant context of the U.S. clearing streets will continue to take priority via funding and enforcement. Evidence of this prioritization is clear in city snow removal ordinances that are have stricter penalties for shoveling into roadways than violations of not shoveling sidewalks. Copenhagen, Denmark is among the few global examples of cities that shovel sidewalks and bike paths first in order to promote active transportation in the compact European city (Copenhagenize, 2010).

A valid concern of community leaders thinking about adopting city-wide sidewalk snow removal policies is the potential difficulty with administration and enforcement. Since the “Great Recession” cities have slashed municipal payrolls and lost significant capacity. They may be concerned that implementation of a new policy will require significant additional manpower and resources. Many cities avoid investment of significant employee hours by relying on citizen complaints to drive enforcement. Use of already existing code enforcement departments and public works divisions may also be applied efficiently without creating new positions. The concerns over cost of implementation are best addressed by creating a strong argument for the positive impact that sidewalk snow clearance has on local budgets and quality of life. In addition to being a revenue source, enforcement may increase sales taxes, and create a safe and welcoming environment for residents and visitors alike. Communities that clear sidewalks from snow may be better perceived by potential residents who are looking to maintain active, walkable lifestyles versus communities that do not.

Another concern regarding adoption of more stringent or comprehensive sidewalk policies is that public support lacks for them. People don’t want to worry about getting tickets for unshoveled sidewalks and see stronger ordinances as another regulatory encroachment on their freedoms. Some individuals will also argue that the sidewalks are the city’s responsibility, or that they don’t use them anyway, so why should they be forced to clear them. Another common concern regards the time frame. Why should a city be able to enforce a policy for sidewalk clearance in 12 or 24 hours, when they cannot even clear the roads within that time frame? Inevitably, some members of communities will come out against stronger sidewalk snow removal ordinances. Evidence suggests, however, that more and more residents across the US would like to live in more walkable communities and are willing to pay more to do so. Studies have shown that homebuyers in the US are paying an average of $500 more per point of increase on Walk Score’s 100 point Walkability Index scale (Speck, 24). The proportion of Americans walking is also on the rise over the last decade as well. Those under 35 are choosing to walk, bike, or take transit in higher numbers while the swelling cohort of baby-boomers turned seniors are also looking for walkable age-in-place opportunities (Speck, 21). This increased desire for walkability is evidenced by the increased migration of Americans to city centers and the proliferation of pedestrian planning processes across the US. Few residents dislike the idea of more walkable, accessible, healthy, and equitable communities. Some just don’t like the idea of working harder and serving neighbors by clearing snow.

**Recommendations**

Municipalities stand to benefit from careful analysis of their existing snow removal policies. The current demands and enforcement of existing policies may have significant impact on the mobility of large proportions of community populations. Children, seniors, the disabled and low-income populations in particular may be limited in terms of access during and after winter.
storm events where strict sidewalk snow removal policies are not in place or under enforced. The associated costs of blocked sidewalks may be felt in municipal budgets from lost sales tax revenue, business productivity, decreased health outcomes, and missed collection of fees for compliance.

In order to reduce these costs, ordinances should be designed, adopted, and enforced to eliminate snow and ice barriers to the general public. Although compliance at a City-wide level may be difficult to achieve, clear sidewalks near schools, senior facilities, along collector/arterial roads, near transit lines, and in employment and retail hubs should be prioritized. City governments that enforce sidewalk clearance only in a few specific districts are missing opportunities to create access for their entire constituency and may be paying costs in lost revenue as a result.

Strong sidewalk snow removal policies exist in many communities in the US and should be used as examples regarding locations, time frames, and fees enacted to ensure clear sidewalk compliance throughout cities. These practices, along with flexibility and support for those who need support in shoveling sidewalks, will increase quality of life for residents and likely increase revenues for municipal budgets. Further study of the fiscal impacts of sidewalk snow removal ordinances is needed to create a case for which implementation procedures are the most economically effective.

Works Cited


Walking For Life: Addressing Health in Champaign's Pedestrian Plan
Walking For Life: Addressing Health in Champaign's Pedestrian Plan


c. Cost Effectiveness of Pedestrian Improvements Paper

Evaluating the Cost Effectiveness of Sidewalk, Crossing, & Lighting Treatments toward the Improvement of Health Outcomes in American Cities

Flawed Built Environments, Man-Made Epidemics, & the Role of Safe Pedestrian Systems

Since the end of the twentieth century, a growing body of research has reinforced causal relationships between aspects of the built environment and human health. The built environment includes the streets, buildings, infrastructure, and public spaces that humans have created or altered. Health is broadly defined as physical and mental well-being, but will be discussed in this paper as it relates to physical activity and injury from vehicle-pedestrian collisions. Levels of observed physical activity are closely linked with health outcomes. In particular, low levels of physical activity are associated with much higher risk for both childhood and adult obesity and related chronic health conditions like asthma, type II diabetes, stroke, sleep apnea, and heart disease. These obesity related diseases account for untold billions of dollars in medical costs and lost productivity, and also lead to decreased quality of life and premature morbidity for millions of Americans. Vehicle accidents account for a major loss of productivity from injuries and deaths in the United States each year as well. Vehicle accidents represent the leading cause of death in age groups under the age of 35 (CDC, 2011). The 4,280 pedestrian deaths caused by vehicles in 2010 accounted for 14 percent of automobile-related fatalities (Bushell et al., 2013). Nearly 60,000 pedestrians were also injured by vehicle in 2010 (Bushell et al, 2013). The auto-centric environments of cities continue to take a toll on the health and well-being of the American public.

Fortunately, the research has revealed some promising news as well. Inviting built environments that include ample sidewalks, frequent safe crossing treatments, and adequate lighting have been shown to both increase physical activity (CDC, 2010) and decrease the number of vehicle-pedestrian collisions, thereby reducing risk of injury and death. In recent years, municipal planning organizations have endorsed plans and projects that aim to create community walkability with aims to improve health outcomes. Funding for pedestrian planning projects is becoming a priority for federal, state, and local public health authorities who offer grants to localities with strategies for creating healthier networks for walkers of all ages and abilities. Unfortunately, there has been little research on which pedestrian improvements have the greatest impact on health. The aim of this study is to investigate how much common sidewalk, crossing, and lighting treatments cost compared to their estimated impact on physical activity levels of users, and their ability to decrease risk for vehicle-pedestrian collisions. The results of this study may be shared with the City of Champaign with hope of providing information that will help the planning department prioritize for health in the recommendations of the on-going Walk Champaign pedestrian plan effort.

While walking (and biking) accounts for over 12 percent of all trips, transportation budgets for pedestrian infrastructure are small when compared to investments in roadways for automobiles. In 2010, only 2 percent of federal transportation dollars were allocated to active transportation projects (Bushell, 5) and most municipalities only budgeted thousands of dollars for pedestrian network gap fill and maintenance while spending many millions on road projects. Because budgets for pedestrian infrastructure are relatively small and the potential benefits to health are
significant, it is crucial that cities appropriate funding to projects that will have the greatest health pay off.

For this study we will assume that a community has decided to make pedestrian improvements along a quarter mile (around 400 meter / 1,312 feet) corridor in their city. City officials must determine which corridor will be improved and what modification projects will be completed to promote a healthier walking environment given the City’s limited budget. In the past the City has approached pedestrian improvements in three common ways, without a specific prioritization for health. First, the City has responded to locations of vehicle-pedestrian collisions. Where collisions are frequent or have resulted in injury or death, the City has reacted by ensuring clearer lines of sight, signage, and creation of safe passage routes for pedestrians (either enhanced crossing or sidewalks). An example of this type of response is the recent installation of a HAWK signal and mid-block crossing along Bradley Avenue in Champaign which was installed after several vehicle-pedestrian collisions near the Kraft Corporation factory. Second, the City has made pedestrian improvements in areas where local residents have made complaints (City of Champaign, 2005). Sidewalk gap infill, pavement repair, lighting concerns, and safe crossing investment have applied the project “grease” to the satisfaction of “squeaky wheels” in the public. Finally, the City has made pedestrian network decisions based on traffic engineering efficiency. The City has made corridors in lower automobile traffic areas walking priorities, but avoided making significant improvements along major arterial corridors, which the City considers the domain of vehicular traffic with multiple lanes and wide turning radii. As a result, some segments of the community are quite comfortable for walking, while others remain dangerous and uninviting. City planning officials and the public works department are looking for a more prudent and proactive approach to infrastructure that will promote public health in their community.

Sidewalk Cost & Benefit

Sidewalks are a fundamental building block for every pedestrian network. They give walkers a designated and separated path to move along corridors and move from starting points to destinations. Complete, well-maintained sidewalk systems have been shown to increase use and create an outlet for what some researches describe as a latent demand for active transportation (Lee, 163). The table below summarizes the basic costs and benefits of installing sidewalk and recreational paths based on national bid-letting data for pedestrian projects. Costs are estimated median prices for the United States (Bushell et. al, 2013) and benefits include Crash Reduction Factors (CFR) which describe the percentage of expected decrease in vehicle-pedestrian collisions following implementation (UNC, 2007). Research regarding how sidewalk construction impacts physical activity among users is summarized in the final column, but has not been quantified.
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As the table illustrates, the benefits of sidewalks and pathways are significant from both a crash reduction and physical activity standpoint. Creation or improvement of sidewalks (and multi-use paths) along corridors where they are in poor condition or lacking altogether reduces the probability of vehicle-pedestrian collisions by over 70 percent. Concrete sidewalks provide the most economical choice for a pathway with regard to collisions. Brick sidewalks are more likely to be installed for their decorative qualities. Research suggests that walking is the most common form of physical activity and that complete outdoor sidewalk facilities play a significant role in promoting moderate walking. In fact, sidewalks are the most frequently used facilities for walking when compared to health/recreation centers, indoor malls, and outdoor tracks (Lee, 154). Presence of sidewalks is more likely to promote physical activity among adults than adolescents and children (USDOT, 2004). Like all groups, adolescents and children use sidewalks where they exist, but research suggests that children and young people’s walking and physical activity is less deterred by lack of sidewalks.

With regard to vigorous physical activity like speed walking, jogging, or running recreational trails have been shown to have the greatest impact (Shores, S15). Multi-use trails provide environments that are often free from vehicle interference for longer stretches and create opportunities for users to engage with green spaces and natural settings while they exercise. While multi-use trail construction is more expensive than traditional concrete sidewalks, the physical activity benefits of trails may outweigh the costs. There is not a published Crash Reduction Factor for the creation of multi-use trails because they are not typically constructed immediately adjacent to roadways. An assumption that trails reduce pedestrian crashes to some degree is logical because they take some recreational and commuter traffic away from road corridors. A growing trend in peripheral areas, however, is to build wide multi-use paths along major corridors found near the periphery of urban areas. Further study should be conducted to consider the health impact of these types of paths.

Crossing Treatment Cost & Benefit

Sidewalks segments are inadequate for pedestrian use in cities without opportunities for safe passage across streets. Pedestrian crossings provide an opportunity for walkers and other sidewalk users to navigate across streets with confidence. Adequate crossing facilities create

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Cost per quarter mile (2012 dollars)</th>
<th>Crash Reduction Factor (CRF)</th>
<th>Physical Activity Impact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concrete 5' sidewalk</td>
<td>$35,424</td>
<td>74</td>
<td>Increases in moderate physical activity in adults</td>
</tr>
<tr>
<td>Brick 5' sidewalk</td>
<td>$78,720</td>
<td>74</td>
<td>Increases in moderate physical activity in adults</td>
</tr>
<tr>
<td>8' Multi-use Asphalt trail</td>
<td>$65,250</td>
<td>NA</td>
<td>Increases moderate and vigorous physical activity in all age groups</td>
</tr>
</tbody>
</table>

designated walkways for pedestrians while providing forewarning and clear visibility for oncoming traffic. Most crossings occur at intersections, while some can be found at midblock, or even over and under roadways. Like sidewalks, crossings have been identified as a significant factor impacting both physical activity and safety from collisions (Boarnet et al., 2011). The table below summarizes the basic costs and benefits of installing crossing treatments over a hypothetical quarter-mile corridor based on national bid-letting data. Costs again are the estimated median prices for the United States and benefits include Crash Reduction Factors (CFR) and qualitative physical activity impacts.

## Crossing Treatment Improvement Costs and Benefits Summary

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Cost per quarter mile (2012 dollars) - assume 4 intersections</th>
<th>Crash Reduction Factor (CRF)</th>
<th>Physical Activity Impact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Striped/Improved Crosswalks</td>
<td>$5,440</td>
<td>25</td>
<td>Create safe path for crossing, promote PA for adults</td>
</tr>
<tr>
<td>Pedestrian Signal</td>
<td>$15,680</td>
<td>53</td>
<td>Create safe path for crossing, promote PA for adults</td>
</tr>
<tr>
<td>Two-way to Four-way Stop Signs</td>
<td>$1,760</td>
<td>47</td>
<td>NA</td>
</tr>
<tr>
<td>Double Stop Signs</td>
<td>$3,520</td>
<td>11</td>
<td>NA</td>
</tr>
<tr>
<td>Refuge Island</td>
<td>$10,800 - $28,400</td>
<td>56</td>
<td>Safe refuge promotes PA for adults</td>
</tr>
<tr>
<td>Raised Pedestrian Crossing</td>
<td>$28,440</td>
<td>8</td>
<td>NA</td>
</tr>
<tr>
<td>Flashing Beacons</td>
<td>$20,680</td>
<td>30</td>
<td>Safe path for crossing, promotes PA for adults</td>
</tr>
<tr>
<td>Pedestrian Overpass - Wood</td>
<td>$122,610</td>
<td>86</td>
<td>Significant increase in PA when associated with access to trails &amp; parks</td>
</tr>
<tr>
<td>Pedestrian Overpass - Steel</td>
<td>$191,400</td>
<td>86</td>
<td>Significant increase in PA when associated with access to trails &amp; parks</td>
</tr>
<tr>
<td>ADA ramps (8 per intersection)</td>
<td>$23,680</td>
<td>NA</td>
<td>Increases accessibility for all users, increases PA among older adults</td>
</tr>
</tbody>
</table>


The nationwide data suggest that the impact of crossing treatments on both crash reduction and physical activity is significant while prices for treatments vary greatly. Some of the treatments with the lowest costs like painted/improved crosswalks and creation of a four way stop where a two way stop exist yield significant crash reduction factors for relatively low financial investment. This low-cost health benefit from increased visibility has been lauded by
researchers who claim that higher visibility crosswalks improve behavior of both pedestrians and motorists (Srinivas et al., 2012).

Some treatments, like double stop signs and raised pedestrian crossings have proven to do very little to reduce crashes. Not surprisingly, creation of pedestrian overpasses led to the most significant crash reduction results but were very expensive to implement compared with other treatments. The capital required for pedestrian overpasses, however, is significant and would likely deter cities like Champaign from committing to these projects frequently. Investments in pedestrian signals and refuge islands, however, yield significant crash reduction factors of 53 and 56 respectively while costing less than many other treatments. These treatments are both economical and effective with regard to CRF.

The connection between physical activity and crossing facilities has not been well documented by research when compared with research that is available for sidewalks and trails. The research that is available suggests that adults are more likely to increase physical activity in areas with well-marked crosswalks, pedestrian signals, refuge islands, and flashing beacons (Lee et al, 159). These features in particular have been linked to increased activity among adults who are more likely to use crosswalks and may take longer to cross (Koepsell et. al, 2002). Pedestrian overpasses and underpasses are often connected to trail systems. Because they tend to complete and connect sections of trails, research on trail access and physical activity applies to these bridges which make trails accessible to greater proportions of the population. While Champaign does not have any true examples of exclusive pedestrian overpasses, some underpasses in the city have been well designed to promote the activity of walkers, runners, and bikers along with automobile traffic. The Logan Street railroad underpass which is located just south of the Illinois Transportation Terminal is an excellent example of an attractive underpass that encourages alternatives to driving.

**Lighting Cost & Benefit**

Lights are less clearly designated features in the pedestrian environment for two reasons. Foremost, pedestrians (in most cases) do not walk on them like they would sidewalks or crosswalks. Second, streetlights serve the purposes of many modes of transportation, illuminating corridors for cars, buses, and bicycles along with walkers. Research, however, suggests that lighting plays an important role in the health of walking networks. Well-lit areas decrease the risk of accident and injury from falls and vehicle collisions by increasing visibility for walkers as they navigate pedestrian paths and drivers who encounter them time and time again. Lighting also plays a role in decreasing the perceived safety risk for individuals who feel uncomfortable walking in the dark (Lee et al, 162). Addition of streetlights can lengthen the lines of sight for walkers, essentially increasing the opportunity for both individuals and communities to look out for one another. Because of the multiple health benefits associated with improved lighting, streetlights are cited as potential solutions more often than any other treatment in (USDOT, 2004).

Street lighting in Champaign remains a major concern among residents because many areas in the community remain unlit after dark. Residents do find street lights along major arterial and collector streets, but local street lighting is less consistent. Neighborhood streets in Campustown and Downtown are more likely to have street lighting while those further from Champaign’s center typically rely private lamp posts along residential driveways to illuminate corridors. In some Champaign neighborhoods this means that children may be walking along dark streets as they travel to the bus stop or to school, increasing the chance that these children may be struck by a vehicle.
The table below summarizes the basic costs and health benefits of providing street lighting along roadways and pedestrian networks over a hypothetical quarter-mile corridor based on national bid-letting data. Costs remain the estimated median prices for the United States and benefits include Crash Reduction Factors (CFR) and qualitative physical activity impacts. Lights in the table scenario will be presumed to be a standard distance of 400 feet apart unless otherwise noted.

<table>
<thead>
<tr>
<th>Improvement</th>
<th>Cost per quarter mile (2012 dollars)</th>
<th>Crash Reduction Factor (CRF)</th>
<th>Physical Activity Impact Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street lighting at intersections (4 intersections)</td>
<td>$14,400</td>
<td>30</td>
<td>Better perceived safety increases PA among girls, women, and older adults</td>
</tr>
<tr>
<td>Street lighting along corridor</td>
<td>$10,800</td>
<td>25</td>
<td>Better perceived safety increases PA among girls, women, and older adults</td>
</tr>
<tr>
<td>Decorative lighting along corridor</td>
<td>$18,250</td>
<td>NA</td>
<td>Increase opportunity for shopping and socializing</td>
</tr>
<tr>
<td>Overpass or underpass lighting</td>
<td>$350 - $3,400</td>
<td>59</td>
<td>NA</td>
</tr>
</tbody>
</table>


The national data and on street lights suggest that they have significant potential for increasing pedestrian safety from vehicle collisions and that lights have been shown to increase physical activity among large segments of the population. Installation of street lights at intersections and along corridors was shown to result in a moderate crash reduction factor, but has been shown in research to increase the physical activity levels of females and elderly individuals who are more likely to be concerned about personal safety when compared to boys, men, and adolescents (Chad et al, 2005). While the CRF factor for decorative lights is unknown, this type of lighting was associated with increased shopping and social activity along commercial corridors where it is typically applied. Lighting for bridges and underpasses was shown to have by far the greatest impacts prevention of collision among lighting treatments with a CRF of 59.

Findings Summary

The evidence from this review confirms the strong connection between health outcomes and the built environment by emphasizing both crash reduction potential and physical activity impacts of pedestrian infrastructure improvements. The costs and benefits of these improvements vary greatly. Some projects have been shown to be expensive and yield very little with regard to crash reduction or physical activity, while others produce noteworthy results in both pedestrian safety and activity. Because the PA impacts were not quantifiable in this case, the crash reduction factors have been summarized below for the pedestrian infrastructure investments with the highest BC ratio for the quarter mile segment used in the analysis. CRF (Crash Reduction Factor) is monetized at $1,000 per unit in the ratio. In this scenario, a CRF of 20 resulting from a $10,000 investment yields a BC ratio of 2. The actual monetary benefit of CRF units remains arguable.
Based on the above BC ratios, installation of stop signs and overpass lighting are far and away the most economical means for reducing pedestrian-vehicle collisions among the select pedestrian improvements researched. Typical pedestrian infrastructure projects trend toward the middle of the sample (sidewalks, pedestrian signals and crosswalks) while flashing beacons and pedestrian overpasses cost the most relative to their collision reduction factors. While this research is far from comprehensive, municipalities could benefit from prioritizing pedestrian improvements based on this type of health impact analysis as an alternative to common sidewalk infill protocols and ordinances that satisfy less targeted community goals.

This investigation yielded some interesting results regarding the relative benefits of pedestrian infrastructure improvements, but it has many shortcomings. This analysis did not incorporate maintenance costs for the infrastructure. Cities are interested in understand not just how much it costs to install a project, but what the project’s longevity may be and how often it needs to be repaired. For sidewalks this could entail a long-term timeframe (up to 75 years) while streetlights may need to be replaced more frequently and be more consumptive regarding continued energy costs. Furthermore, this investigation could be strengthened by the inclusion of a broader array of pedestrian infrastructure elements. The analysis only incorporated 17 out of dozens of potential treatments. The investigation could benefit as well by comparing pedestrian infrastructure project cost-benefit to other means of increasing neighborhood walkability and health. Transportation projects (road diets, transit improvements, grid systems) as well as land-use policies like increased density and mixed use are also known to increase measures of walkability and health outcomes for residents. Further research needs to be done in order to quantify the physical activity outcomes of various pedestrian infrastructure improvements. Sidewalks, trails, crossings, and lighting have all been associated with increased physical activity through research, but often through separate studies using a variety of measures. A common reliable measure for how these projects impact physical activity for pedestrians (i.e. estimated minutes of physical activity increase) in near proximities, a more realistic measure of health impact could be achieved than the qualitative results included in this investigation.

**Recommendations**

As the City of Champaign prioritizes potential projects as part of its pedestrian plan project, planners and engineers should endorse infrastructure treatments with the highest BC ratios to
reduce the risk of vehicle pedestrian collisions near high risk corridors and intersections at the lowest cost. By identifying potential projects that are likely to have significant health benefits for low cost, the City may be able to make more comprehensive improvements to the pedestrian network. Champaign’s Pedestrian Plan would also serve to benefit the health outcomes of its residents most efficiently if the projects with highest perceived impact on physical activity were prioritized in neighborhoods where the population is at greatest risk for low physical activity. These at risk neighborhoods could be identified through quantification of chronic diseases like obesity, hypertension, diabetes, stroke, asthma, and sleep apnea.

Finally, the City of Champaign (and its planning department) could benefit from keeping the conversation going on how to make the community healthier and more accessible to pedestrians even after the completion of the Pedestrian Plan process. Being a walk-friendly community not only has significant health benefits for residents, but it is a great selling point for the City and local organizations who are hoping to attract visitors and new residents to the area.

Works Cited


Walking For Life: Addressing Health in Champaign’s Pedestrian Plan