Indoor Recreational Walking in Semi-Public Spaces: Assessing Demand and Design Standards

By
Catherine Marie Duffy

BFA, Painting / BFA, Graphic Design
University of Illinois, Urbana-Champaign
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Author_____
Department of Urban Studies and Planning
May 20, 2009

Certified by_____
Susan Silberberg-Robinson
Lecturer, Department of Urban Studies and Planning
Thesis Supervisor

Accepted by_____
Joseph Ferreira
Chair, MCP Committee

Abstract

Encouragement and facilitation of walking for health and community benefits has recently become an important focus in the city planning and public health fields. Urban design guidelines have increasingly highlighted pedestrian transportation and recreation as important elements for community design. Although various techniques to increase walking such as crime prevention, traffic calming and streetscape improvements have been employed in cities and towns across North America, cold, icy and snowy weather conditions as well as other factors prevent many individuals from walking year round. This thesis identifies indoor walking spaces and programs as a potential supplement to outdoor walking spaces, discusses challenges and opportunities offered by these spaces and programs and highlights potential contributions to the community-building and public realm design. An assessment of demand for indoor walking programs and a review of best practices for implementation is presented through interviews with walkers, planners, planners, architects and health professionals across the United States and Canada. The results of these interviews reveal the existence of an interest in indoor walking, especially among retired senior citizens. In general, walkers are not particular about the aesthetic design of the places available for indoor walking, but stress the importance of having access to a reliable place to walk and a need for social interaction. Discussions with space/program providers and additional research allow reveal the challenges inherent in creating indoor walking programs and offer potential solutions for implementation. Awareness of walker preferences and common program challenges can help planners determine locations for indoor walking programs and appropriate policy interventions in order to both increase the number of walkers throughout the year and enhance connectedness and pedestrian activity in communities.

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History of Walking

Walking is a natural and important part of being human. We walk for transportation – whether moving across a room or to get to work and we also walk for recreation – both as a way to relax and unwind or for exercise.

Walking for transportation is the most basic form of walking. Whatever form of travel we use, walking is a component. Whether we walk to the majority of our destinations, walk to public transit, or walk to our car, we still rely on our two feet (or walkers, wheels, or other assistance for those with disabilities) to move us about. Prior to the rise in private automobile ownership, walking was the most common travel

mode. This changed in the second half of the 20th century, when changes in land use patterns arose in response to an increase in automobile ownership. Sprawling conditions separated uses, putting our homes at a far distance from our workplaces, our shopping, our entertainment and often our friends. Although compact cities and town centers still exist, most Americans use cars as their main form of transportation. This trend continues to this day. In the last 40 years, the use of a private car to commute to work has increased in absolute numbers and in percentage mode share in every major metropolitan area in the United States (Federal Highway Administration, 2000).

Walking for recreation is the second main type of walking. Recreational walking can be further divided into the categories of walking for leisure and walking for exercise. Walking for leisure will usually involve moving at a slower pace, often with another person. The setting for leisure walking is very important. People will walk on trails or in aesthetically pleasing places to observe nature, their neighborhood, or active streetscapes. The importance of storefront windows and active streetscape is called out in numerous organizations that support pedestrian activity, such as WalkBoston, Walkable Communities and the United States Green Buildings Council. Leisure walking is also an important social activity, friends shopping together, or strolling around their neighborhood are common sights in most cities. Walking for exercise takes on a different form. The main goal of fitness walking is to burn calories and get aerobic heart-healthy exercise. Often people will walk quickly, in order to elevate their heart rate and burn more energy; paths that are level and clear of obstructions are critical, but the aesthetics of the surrounding space is less of an issue.

Walking for leisure has been a common physical activity for a long time. In the 19th century, walking for leisure began to become a more common phenomenon, especially in London, Paris and New York. The French concept of "flaneur" which refers to walking and "experiencing the city" developed around this time. Strolling or promenading after meals to stimulate digestion was a common occurrence in the 19th and 20th centuries in Western cultures, as was walking and talking as a social activity (Amato, 2004).

Figure 1: Leisure walking Source: Harper's Bazaar

Figure 2: Promenading along the river
Source: Harper's Bazaar

Walking for fitness, unlike walking for leisure, is a relatively new phenomenon that responds to our fragmented physical environments and isolation from other people and land uses. With increasing obesity rates in the Western world in the 20th century, primarily in the United States (due to an abundance of food and less physical activity), the medical field if prescribing daily exercise as an essential tool to healthy living (Office of the Surgeon General, 2007).

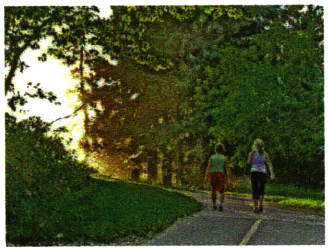

Figure 3 Walking for exercise
Source: Jocko Benoit

Walking for Health

Obesity has become an important societal concern in recent history, with many reasons for its prevalence, and many suggested solutions. Availability of healthy food, educational campaigns for healthy diets, increased popularity of organic and unprocessed foods, restrictions on trans fats, and improved food labeling are actions that counter the consumption side of obesity.

Exercise recommendations attempt to address the other side of this health epidemic. In addition to eating healthy foods, in appropriate portions, we need to be active to maintain the functioning of our cardio vascular systems. We are living longer lives, in part due to advances in modern medicine and our increased longevity makes it more important to engage in physical health maintenance and preventative measures. Regular activity is beneficial for overall physical and mental health. To achieve this, walking has been touted as one of the easiest and most important forms of exercise. Walking

regularly (30 minutes a day) has been shown to lower blood pressure, lower low-density lipoprotein (LDL) cholesterol, manage risk of Type II diabetes, manage weight and improve mood (Mayo Clinic, 2009). The practice of walking as an important component of a healthy lifestyle is valued by many professionals in a variety of different fields. Health professionals now commonly prescribe walking to patients to address a variety of health problems. Senior citizen organizations set up walking groups. Government agencies provide information, incentives and programs to help individuals find places to walk and encourage the practice. Maps, motivational posters, walkable streets and recreational trails all can help encourage walking on a daily basis. Physical activity also plays an important role in managing stress and mental health. It has been shown to reduce anxiety and depression and improve self esteem. (Fox, 1999)

Walking for Community

Walking has additional benefits, especially as viewed through the eyes of an urban planner. Walking for transportation is a great way to reduce emissions from motorized transport. It also is a critical element to maintaining safe and active streets. People like to be where other people are and the presence of people walking around town, whatever their reason, is good for the positive public perception of the community. Jane Jacobs called our attention to the importance of "eyes on the street" for the safety and well being of a neighborhood (Jacobs 1961). Providing opportunities and incentives for people to walk throughout neighborhoods adds to the number of "eyes on the street" and this improves the safety and liveliness of the community. Walkability of a neighborhood has also been shown to increase its social capital. Residents are more likely to know their neighborhoods and form closer relationships with others on the street if they perceive their neighborhood to be walkable (Leyden 2003).

A renewed interest in urban design for pedestrian transportation has occurred in the past 20 years (Vojnovic 2006). Many city planners have shifted their focus to designing compact, walkable neighborhoods, elevating the importance of pedestrian activity. Land use and transportation policy began

to be more connected as the public expressed a desire for mixed use neighborhoods and an increase in alternative transportation options. The goals of creating compact, walkable communities have shifted over the years. Environmental advocates stress the importance of these communities to reduce auto dependency, carbon foot prints and greenfield development (which can disrupt wildlife habitat). City planners additionally stress the social benefits – the allowance of increased spontaneous meetings and ease of travel to neighbors or areas with high activity. Health advocates will also highlight the correlation of increased physical activity with walkable areas. As obesity and obesity-related diseases become more prominent in our collective consciousness, the connection of urban design and physical activity is likely to feature more strongly in urban planning.

The importance of walkable communities is recognized by the majority of urban planners, notably in New Urbanists and Smart Growth Advocates. The United States Green Building Council is another advocate of walkable communities, as shown in its new certification LEED-ND (Leadership in Energy and Environmental Design – Neighborhood Development), which measures sustainable practices in neighborhood development. Through this certification process, LEED-ND highlights many techniques that encourage and facilitate walking. The organization also lists the importance of walking for health reasons and makes the connection between daily walking and healthy living (United States Green Building Council 2009).

Barriers to Walking

Walking is indeed a good, free or low cost way to maintain physical and mental health, however, motivating people to walk isn't always easy. There are many barriers to walking, and to be most effective in encouraging this form of exercise, t is important to understand how people may be motivated to walk. Some key identified barriers to walking are:

1) Unsafe conditions from traffic or crime

2) Lack of destinations

3) Unpleasant weather

4) Rough or uneven walking paths

5) Unlit areas

6) Unpleasant surrounding environment

7) Lack of time to devote to exercise or walking for transport

8) Perception of walking as a "boring" activity

Some of these barriers are directly linked to the patterns of urban design of the mid 20th century which favored designs for the automobile over designs for pedestrians (#1, #2 and #6), which can be addressed by a change in urban design guidelines and development patterns; some are the result of maintenance or community problems (#4, #5 and #6), which can be addressed through neighborhood involvement, social programs and an increased police presence; and some are the result of cultural and personal preferences or lifestyles (#3, #7 and #8), which can be the most difficult to overcome.

Indoor Walking

Planners will continue to design and plan for places that are "walkable" to the extent of designing wide sidewalks, creating destinations for people, and developing maintenance systems to keep walkways cleared for walkers. However, these things will not address some of the other issues that keep people from walking, namely, poor weather conditions and lack of time to devote to "exercise."

Health professionals and senior citizen groups often tout indoor walking as a way to exercise in cold weather, especially in northern climates. Indoor walking is also seen as an option for people who live in "unwalkable" communities. These neighborhoods may be sprawling suburbs or rural settlements. To combat the time management problem, health professionals will encourage walkers to incorporate a few extra steps over the course of their day to get the recommended amount of

exercise. Walking a little out of the way to run an errand, or circling the grocery store aisles before shopping are two easy ways to sneak in some additional exercise. People have long been creating different types of shelters from the elements. The indoor shopping mall is not a far stretch from covered arcades of the past.

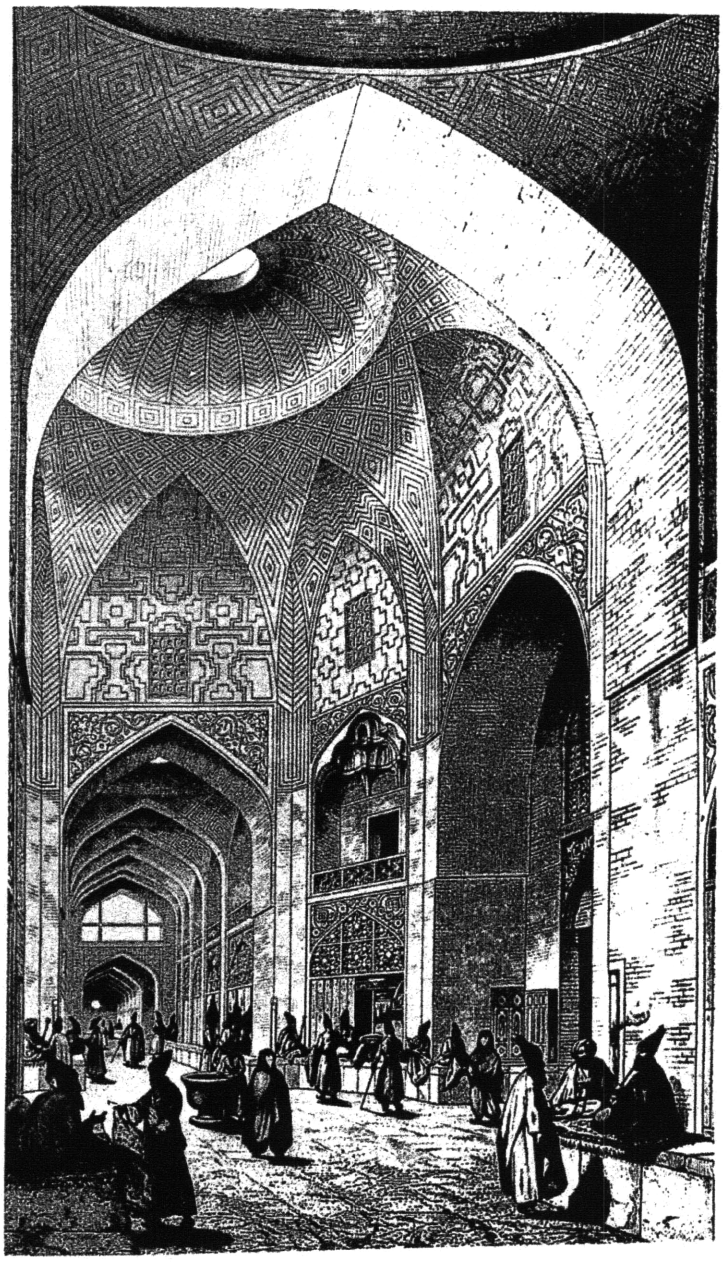

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Figure 4: Indoor bazaar Source: Johann Geist

Mall walking is likely the first image that comes to mind when thinking about indoor recreational walking, however, people walk in a variety of different buildings for exercise. Next to the

mall, elementary schools are the most popular places to walk indoors, followed by community centers, gymnasiums, and increasingly, big box stores, such as Target, as seen in case study interviews. More recently, fitness videos that incorporate walking in place with stretching and light aerobics and walking around one's home or on a treadmill have become popular walking routines.

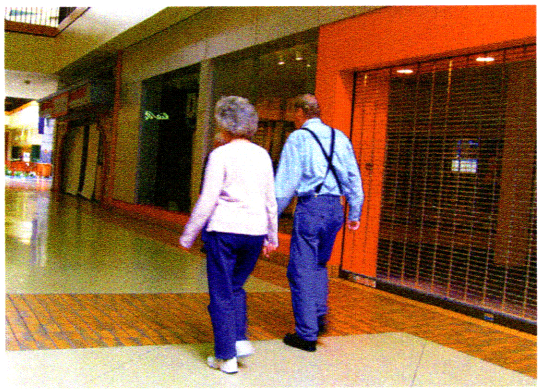


Figure 5: Early morning mall walkers
Source: Clark Westfield

Each of these types of walking comes with unique features that will benefit different groups of people with different requirements. Walking on a treadmill provides a low-impact workout with a soft surface that helps reduce strain on the knees. It also is an easy way to monitor calories lost or distance traveled while walking in a confined space. You can use the treadmill at the gym or can have one in your home or office for ease of use. Walking fitness videos can also be used within the walker's home, and can provide a fairly accurate sense of calories burned (assuming the walker adheres to the program). The motivating voice of the video instructor and the background music often help encourage the walker. These videos are also a good segue into a more vigorous exercise routine as these programs will often include squats or lunges, or other small fitness variations.

Walking in a building has an entirely different feel. For one, the walker is actually moving through space. Even when following a loop, one still has the general feeling of "getting somewhere" which can be more satisfying than walking on a treadmill. Walking through physical space has also been shown to have a stronger positive mental health impact than walking on a treadmill.

Most definitions of walking include the travel or the movement from one space to another. The notion of walking in place suggests an aerobic routine that, while mimics the motions associated with walking, is not, actually *walking*.

Health professionals and city planners are both strong advocates of walking, however, health professionals tend to care less *where* people walk than *how much* people walk. City planners, on the other hand, care very much *where* people walk. Because the presence of people on the street is so important for the well being of a community, many planners advocate for walking outdoors. City planners are responsible for creating places for walking in the public realm and building interiors are not usually considered part of the public realm. Aside from indoor shopping malls, most buildings are not designed for recreational or fitness walking. However, individuals who are motivated to walk, but not able or willing to walk in cold or rainy weather often find warm and dry indoor spaces to walk. Advocates for walking must acknowledge that in the last half century, we have grown accustomed to a new level of comfort. We require a certain temperature and humidity level, within the human comfort zone, and are often unwilling to compromise our bodily comfort for exercise. Malls traditionally have been used by walkers because they provide a comfortable temperature and good pathways. Malls are also specifically designed for leisurely pedestrian activity – as they were originally designed after a "town square." model. Walkers feel comfortable on these indoor streets, complete with places to sit, people watch and enjoy refreshments. These shopping centers, with their high ceilings, bright lights, wide corridors, storefront window displays, and comfortable amenities like bathrooms, water fountains and benches in some ways make an ideal place for people to walk indoors (Hardwick 2003).

There are problems with this model, namely that most malls are not accessible by walking or public transportation. The use of these spaces does not contribute to a network of public/privates spaces that support a vibrant community. A person typically has to drive to the mall in order to walk. For those who are active, mobile and have a car, this does not create personal challenges that those walkers who are not able to drive due to physical or financial reasons, but it is important to note that driving does require the use of energy, and at least, while we are still using polluting cars, noxious emissions. From

an environmental perspective, minimizing car dependency is an important goal.

Most malls also are only open during certain times of the day. Many malls have "mall walker hours" where the mall opens earlier than the shops, often as early as 6:00 am. This allows for walkers to walk at a quick pace around the perimeter of the mall without any conflicts with shoppers, who may walk slower, or teenagers, who walk even slower, leisurely walking around the mall as a way to "hang out" without loitering on the street.

Indoor walking programs typically exist in northern areas that have cold snowy winters. The state of Maine set up a walking coalition called *Healthy Maine Walks* which maintains a online directory of walking routes, both outdoors and indoors. Routes are uploaded by community members or citizens across Maine. Many people will move indoors to walk, both because of poor sidewalk conditions and also because of the uncomfortable weather. Seniors especially have trouble navigating slippery sidewalks and the consequences of a fall are much greater for them than for a younger person (Federal Highway Administration 2009). The large number of listed indoor walking routes indicates that there is a fairly large demand for indoor walking in Maine. Many walking spots listed include elementary schools, community centers and indoor malls (Healthy Maine Walks 2009). Maine Healthy Walks relies on the sponsors of the indoor walking programs, or walkers in the programs to post the walking sites online. The funding for the program only covers the expense of listing the spaces, as opposed to soliciting spaces for walkers or providing any support to developing new spaces, or expanding programs (Rebecca Drewett Card 2009).

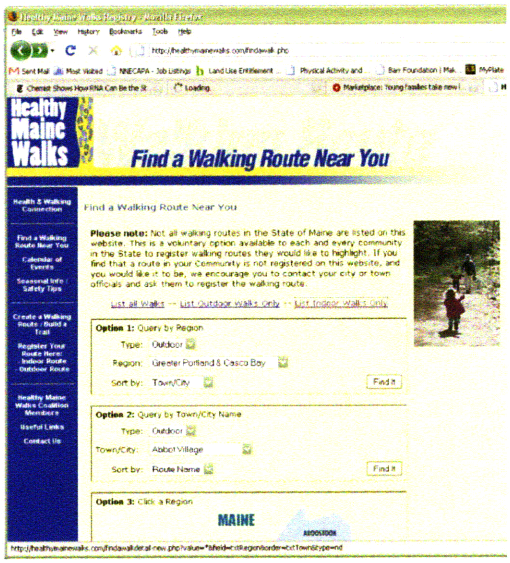


Figure 6: Healthy Maine Walks website
Source: Healthy Maine Walks

Planning, Design and Policy Implications

If walking is to be encouraged year round, and we know there is a decrease in walking activity during cold and rainy/snowy weather, a better understanding of walking habits (indoor and outdoor) is critical to inform policies and recommendations for urban design that includes indoor walking. Indoor walking, especially at malls, is an existing activity that has not been studied in depth to date. It is not enough to make general suggestions about behavioral patterns that would lead groups of people to indoor walking. Rather, we should investigate indoor walkers in order to better understand modern walking habits.

A major challenge to developing policies and guidelines for indoor walking relates to the ownership of the space. Indoor walking can take place in public, private or semi public buildings. In each case, the space is managed by different stakeholders and regularly used by different groups of people. Sharing this space presents different challenges in many different scenarios. A "one size fits all" approach cannot apply to indoor walking for this reason. Additionally, the responsibility of recommending design guidelines and policies does not naturally fall into the hands of any one particular group or profession. Is it the responsibility of architects to

ensure spaces are appealing and comfortable for walkers? Planners, to incorporate guidelines into zoning or incentives? Health professionals, to lobby developers or building owners for use of their structures? Indoor walking programs will likely incorporate expertise and guidance from a variety of stakeholders in different fields. Each stakeholder will likely have different objectives and concerns for any program and a coalition of interested parties will be necessary to effect change.

City planners, due to their interest in maintaining vibrant streetscapes may be averse to the encouragement of walking inside. In fact, initial interviews with planners and planners yielded low levels of interest. There were both questions about the planner's role in the support and development of indoor walking spaces as well as some disapproval of the concept itself. The aversion to the practice stems from a number of valid issues. One problem planners fear is the diversion of walkers from the streets to building interiors. Minneapolis' skywalks are one example of a change in building design that shifted pedestrians from an outdoor environment into an indoor one. These skywalks may provide ideal winter walking environments but they remove activity and eyes from the streets with consequences on street safety, perceived vitality of the urban environment, and negative effects on economic development and business activity (Robinson 1993). Another issue with the topic is the question of public space. Where is public space and how is it defined? As buildings are individual structures, often privately owned (aside from government or other public institutions), it may be outside the planner's jurisdiction or focus to look at indoor places for people to walk.

Recently, some interest in using building interiors for fitness has spurred among some architects, mainly those in the NYC American Institute of Architects (AIA), involved in Fit City, where architects, government agencies and academics have come together for the past three years to discuss this specific issue. Most of the focus has been related to stair climbing, but there is no reason this issue cannot be expanded to looking at interior hallways for walking. The acknowledgement of these attitudes and perceptions is important to better understand the gaps in research on indoor walking. If indoor walking is becoming an increasingly more common activity that is beneficial to the health and well being of many people, the activity should be explored and researched to develop standards and guidelines that can support and improve the activity. Negative side effects of indoor walking (such as the

diversion of outdoor walkers to indoor spaces) should be studied carefully so they may be lessened or eliminated. If indoor walking spaces are integrated into the walking network of a community, and by their existence encourage outdoor walking as well as indoor walking, there will be an overall net gain of walkers, which is a positive outcome for all.

Those interviewed from the health perspective: doctors, senior citizen representatives, and school health coordinators have largely been proponents of indoor walking. It seems that those from this group are more focused on the health of the individual, where the planners' focus is on the health of communities which then filters down to the well being of individuals. From this perspective, health professionals are more concerned about individual actions to perform an activity, rather than assessing the built environment to support places to perform that same activity.

There may be an overlap of priorities in the issue of promotion of indoor walking for health among planners and health professionals. Is the cold weather truly the impetus for indoor walking, or mall walking, or are there other factors that we are missing? In the first case study presenting herein, several of the walkers in the Burlington Mall in Burlington, Massachusetts seemed to place more importance on the mall as a central meeting place, where they could relax afterwards and drink coffee and socialize, than on the need for warmth in the winter. During spring and summer, walkers continue to walk at Burlington mall, but often in the parking lot, as the weather is more pleasant. Their reluctance to change their habit of meeting fellow walkers at a central location appears to trump any desire for aesthetics of walking route. Could community centers, more central to a wide range of seniors, open earlier, make hallways available to walkers and host coffee hours for seniors? Seniors get up early. Yet most centers, at least in the Boston metro, do not open until 8 or 9am while the mall opens at 6am. And the seniors are there in droves. Could there be programs at these centers for moms with children? Is there an overlap between the moms and seniors? Are we neglecting other population groups here? These community centers could, in theory, bring a group of people together, who may live closer to each other and who may be able to walk to their destination. Is there a large enough group of seniors to create a critical mass of people to sustain themselves at each center? In areas of lower densities, this may be more of a problem.

We know that indoor walking is a phenomenon. We know that walkable communities are healthy communities, and pedestrian activity on the street brings vitality and safety to communities. Rather than ignoring indoor walkers, planners can observe their behavior and learn from this relatively new activity in order to create a bridge between indoor walkers and outdoor walkers, in order to further enhance the walkability and connectedness of our communities and the health of our citizens.

Purpose

This thesis fills the gap in policy and literature with regard to indoor walking and planning policy and action. While planners often take on the roles of environmental and health advocates within the larger regional planning context, very little work has been done on the planner's role (among many) in indoor walking and general fitness. This thesis will investigate existing indoor walking programs, and policies and incentives designed to encourage indoor walking, with the goal of developing recommendations for policies and design guidelines that will provide an alternative walking venue for individuals discouraged by cold weather and winter conditions, but will not discourage outdoor walking activity. One goal of this research is to increase net walkers, without removing existing or potential walkers from our sidewalks and parks. Building on this goal, another important goal of this study is to make recommendations for the inclusion of indoor walking spaces into the wider walking network of a community. Expanding the definition of public realm and walkable spaces to include semi public building interiors will increase options for individuals to walk in their community. Many of these spaces are already used for this activity and can be expanded and more widely used if these programs and spaces are integrated into the outdoor walking network. The integration of these spaces will also help bridge the gap between indoor walking and outdoor walking to help create a more vibrant and connected community.

Through interviews (with walkers, planners, architects, property managers, health professionals, and other experts on the subject), building case studies, maps, and historical research, I will document the behavior of indoor walkers, compare different types of indoor walking spaces, review walking promotion policies, and make recommendations for policies and design standards that address indoor walking, and/or behaviors that apply to indoor walkers in order to a) increase net number of walkers and b) to make connections between indoor and outdoor walking. With clear connections between indoor and outdoor walking, we may be able to increase outdoor walking at the neighborhood level and also enhance the public realm. Given choices, we often tend to take the path of least resistance. We are creatures of habit, and changes in lifestyle are challenging. While planners and health professionals should continue to encourage walking on the streets of one's neighborhood, or in parks or other public spaces to help create a more active community, it is important to assess the amenities that people are looking for in these spaces. There are some overlooked patterns of behavior amongst indoor walkers that if uncovered, may help us better plan for an increase in walking, both indoors and out.

Outline of chapters:

This thesis is presented in seven chapters. Through review of literature, case studies, analysis and recommendations, it offers insight into the practice of indoor walking, its champions and future possibilities.

Review of Literature: This chapter reviews existing research on walking as it relates to physical and mental health benefits, factors contributing to ability and willingness to walk (which include environmental and lifestyle characteristics), and indoor walking specifically. There is little research on indoor walking programs specifically, so much of this thesis relies on case studies and interviews.

Methodology: This chapter outlines the methodology of research methods for this thesis. The research for this thesis relies heavily on interviews with walkers and stakeholders from a

variety of different fields. It also gives an overview of the challenges of the research and suggests areas of future study.

Case Studies: This chapter is a collection of vignettes of a variety of indoor walking programs. Covering a wide range of building typologies, locations and organizational structures, these cases describe indoor walking programs in malls, schools, community centers, big box stores, recreation centers and stairwells. The cases also include two unsuccessful programs, one in an assisted living senior care facility and another in a Head Start building.

Attitudes: This chapter contains key interviews with representative stakeholders from fields with a relationship to indoor walking. The practice of indoor walking is not "owned" by any single field, and there are many different stakeholders from the health, architecture, planning, senior citizen and policy professions who offer their opinions and expertise on the subject.

Findings: This chapter pulls lessons from the case studies and attitudes chapters to illustrate challenges, opportunities and successes of indoor walking programs. The challenges and opportunities relate to the built environment, policy and general attitudes and opinions of indoor walking as an activity.

Handbook for Indoor Walking: This chapter is a handbook of best practices for indoor walking spaces and programs based on research and analysis from this thesis. It gives an overview of policy, design and organizational strategies to provide accessible spaces for indoor walking that are available to a range of potential walkers and that connect to a community's existing or potential walking network.

Epilogue: Sample Memo to Newton Special Committee on Walking and Obesity Prevention. This is a sample memo outlining steps to implement and maintain an indoor walking program in the Chestnut Hill Mall. It recommends methods to incorporate the indoor walking space into outdoor walking spaces to connect the indoor and outdoor public realm, health programs, outreach methods and organizational structure.

Indoor spaces are being used by walkers for recreation. This thesis will explore the world of indoor walking and shed some light on the practice. Future indoor walkers and the communities they are belong to can benefit from expanded

knowledge of spaces and programs that support indoor walking. With this information, communities will be able to offer a more complete network of spaces that can support walkers year round.

2

Methodology

This thesis seeks to answer three questions:

1. *Is there a demand for indoor recreational walking spaces?*
2. *What are best designs and practices for indoor walking spaces and programs?*
3. *How can indoor walking spaces and program complement outdoor walking spaces in order to increase net walkers rather than shift outdoor walkers to indoor walking spaces?*

I first conducted an extensive review of existing literature on walking, urban design and indoor walking spaces, primarily in health, planning and architecture journals.

I interviewed a group of key individuals to answer these questions: Indoor walking program leaders, architects, urban designers, health professionals, building owners, and of course indoor walkers themselves. Interviews were conducted for the most past over the phone, and interviewees were mainly from the Northeast or Midwest areas of the United States.

Indoor walking spaces were mostly out of my travel range so I was unable to visit most of the spaces in person. I gathered urban design data from Google Earth which let me see the condition of the surrounding neighborhood, and used online photographs of spaces, or photographs supplied from my interviewees.

3

Review of Literature

Walking and health
Factors contributing to willingness and ability to walk
Indoor walking

Walking and Health

Over one third of U.S. adults are overweight or obese. Obesity can lead to numerous medical complications, such as type II diabetes, hypertension, coronary heart disease, stroke, and many others (Huston 2003). Although some genetic factors are associated with obesity, environmental factors play a large part in development of obesity, and thus offer high potential for prevention (Finley 2004). The issue is two-fold. An increase in portion sizes, and excessive amount of sugar and fat in our diets has contributed to this problem, as well as decrease in physical activity. While urban planners have little control over the first factor, our physical environment greatly influences the second. The U.S. Surgeon General recommends 30 minutes of moderate activity, which can include brisk walking, in addition to regular daily activity, five times a week, as part of a healthy lifestyle. Proper nutrition and physical activity are two important parts of maintaining a healthy lifestyle and work together to combat obesity (Siegel 1995).

Government agencies, health institutions and urban planning organizations have made efforts to promote physical activity, through programs, educational campaigns, and changes to the built environment. Organizations such as Shape Up America work to bring greater awareness of the importance of exercise

and nutrition to the general public through programs such as 1,000 Steps, which challenges individuals to walk 10,000 steps each day (which would roughly translate to the recommended amount of walking prescribed by the Surgeon General). Other organizations such as Active Living by Design, work with communities to implement facilities to increase physical activity. Active Living by Design offers consulting services and gives grants to communities to develop amenities like walking/biking trails, formation of heath and design advisory committees, and educational/promotional tools, such as walking/biking maps.

Studies have shown that walking has a positive effect on both physical and mental health (Murphy 2002), reinforcing the idea that walking is an important tool to tackle a variety of problems. How you walk is also important. Vigorous walking has been shown to be more effective than leisurely walking at improving cardiovascular health (Office of the Surgeon General 2007) and treadmill walking has been shown to have significantly lower mental health benefits than walking through a physical space.

Factors Contributing to Willingness and Ability to Walk

According to the Center for Disease Control, about one quarter of U.S. adults met the recommended levels of physical activity (2007). While the reasons for this low number are complex, it is clear that in order to increase these levels, barriers to exercise must be identified. Barriers to exercise may include lack of motivation, lack of access to exercise facilities, and time and responsibility constraints.

Walking is often recommended as an easy way to achieve the recommended level of physical activity because it does not require special equipment or a specific venue. It is free and, theoretically, can be done anywhere. Why, then, aren't we walking more?

Many studies have been conducted for the purposes of learning more about walking behavior. A comprehensive review of literature, written by Mariela Alfonzo, post-doc fellow at the

Metropolitan Institute of Virginia Tech , looks at walking through a hierarchical lens (Alfonzo 2005). According to Alfonzo, two main groups of factors contribute to ability and willingness to walk: environmental and life-cycle circumstances. Environmental factors fall into the realm of urban design, where changes to the built environment can influence walking habits. Lifestyle circumstances cover individual issues, such as psychological conditions; group issues, such as cultural connection to exercise; and regional issues, such as climate. An assessment of both groups of factors must be taken into consideration when trying to increase levels of physical activity in a community. This thesis will address both groups of factors by looking at environmental challenges for walking such as sidewalk conditions, as well as cultural or psychological factors among walkers and potential walkers such as a psychological need for peer pressure to adhere to a walking regiment.

Environmental Design

Environmental factors that affect willingness or ability to walk are often easy to identify. Neighborhood factors, such as crime, high traffic speeds and lack of walkable destinations have been shown to have a negative effect on walking (Day 2006). Organizations such as the Congress for New Urbanism and Smart Growth America highlight environmental barriers for physical activity and encourage urban design interventions such as traffic calming, increased lighting, wide sidewalks, natural surveillance, and mixed land uses to combat these barriers. The smart growth movement emphasizes the importance of physical and mental health in urban design, in addition to the ecological impacts. The awareness of the built environment's effect on society's participation in physical activity is important to identify modifications that may help encourage, rather than discourage walking and other forms of physical activity. Many organizations advocate for a varying set of urban design factors meant to encourage physical activity. These factors often overlap. The following list is taken from "Ten Keys to Walkable Communities", a guide written by Dan Burden, a nationally recognized authority on bicycle and pedestrian facilities and programs to provide guidance for planners to create walkable communities. These urban design characteristics will encourage and facilitate walking:

1) Compact, Lively Town Center (or many compact villages in larger towns or cities).

2) Many Linkages to Neighborhoods (including walkways, trails and roadways).

3) Low Speed Streets (in downtown and neighborhoods - 20-25 mph common).

4) Neighborhood Schools and Parks.

5) Public Places Packed with Children, Teenagers, Older Adults and People with Disabilities.

6) Convenient, Safe and Easy Street Crossings.

7) Inspiring and Well-Maintained Public Streets.

8) Land Use and Transportation Mutually Beneficial (includes mixed use development)

9) Celebrated Public Space and Public Life.

10) Many People Walking

The Congress for New Urbanism, Smart Growth Advocates and the USGBC all advocate similar lists of characteristics for walkable communities.

Lifestyles

Lifestyle circumstances are the second set of factors that encourage or discourage individuals to walk. Motivation tools such as pedometers have been shown to increase motivation for walking (Baker 2008). Some walking programs will offer monetary incentives as a reward for walking, however these are not shown to offer a greater incentive than informational feedback and progress measurement. Education is another key factor in promotion of walking, especially as an exercise activity. In many low income communities, exercise is often viewed as a leisurely activity associated with individuals in higher socioeconomic groups, and walking itself is not always considered to be "exercise" Dodds 2008). Timing of organized walking groups with varying work schedules and provision of

childcare can also make an impact on increasing walking group participation (Bustos 2009). Additionally, the provision of indoor walking venues can increase walking group participation. The Boston Public Health Commission Research Office implemented a five year initiative to study walking groups in Boston. Among their recommendations, calling for indoor walking venues was seen as an important step to retain walkers during the winter season (Dodds 2008).

Policy interventions have also been studied as ways to increase physical activity. Signage encouraging stair use has shown to be useful in increasing stair use, and has been adopted by many organizations to nudge people into using stairs. Increases to environmental design budgets and allowance of extended time for physical activity resulted in increases in walking, running and other forms of exercise at military bases. (Sallis 1998). The inclusion of language related to health factors in the LEED-ND rating system is an important milestone, as city and state governments are trending towards using this rating system as a standard for public projects. The recognition of environmental factors in relation to walkability will lead to the design of places that encourage walkability and other forms of physical activity.

Indoor Walking

There are few academic studies regarding indoor walking. Indoor walking is recommended by many organizations, such as the Center for Disease Control and American Association of Retired People as good alternatives to achieve the recommended levels of exercise in the winter. However, little research has been dedicated specifically to indoor walking, especially in regards to the creation of spaces for indoor walking. The limited studies available have primarily focused on older adults. A study conducted in the early 1990s looked at motivations among aging adults to participate in mall walking programs. The study concluded that social interaction with their peers was a driving force in seniors' commitment to the program, independent from medical advice. The study found that mall walking served as a routine for retired senior citizens and filled a social void felt during retirement. (Duncan 1994). The same study also looked at mental impacts from mall walking, which they found to be positive. Another study of a mall walking program in Canada showed strong positive

physical health benefits and high attendance rates during an 8-week pilot period (Culos-Reed 2008). A slightly different activity, stair-walking, was the focus of another investigation in the late 1990s, where previously sedentary women participated in a 7-week stair walking program in the U.K. As expected, the women saw positive cardiovascular health effects from the program.

If the availability of indoor walking venues can increase year-round participation in walking programs, why is this not more widely discussed as an urban design feature? If, in many communities, walking trails are only used seasonally – why not connect this outdoor network to an indoor pubic space, where individuals can walk in uncomfortable conditions?

Furthermore, the mall has been singled out as the most commonly prescribed place to walk indoors, although there are many opportunities to walk in other places. The indoor shopping mall is an easy place to imagine indoor walking because it was designed partly for that purpose. Mall interiors mimic pleasant streetscapes with wide pedestrian corridors, pedestrian scale store facades, landscaping, pedestrian furniture and amenities desirable to walkers such as eateries and restrooms. And of course, the name "mall" itself refers to a pedestrian street, reminding us of the intended user of the space. There are indoor walking programs in many other places, such as public school buildings and community centers, but these have not been studied to the extent of mall walking programs. These spaces are not designed with recreational walkers in mind, but often have wide corridors that can accommodate walkers (Hallways must be at least 6 feet wide to allow walkers to walk side by side while walking) (Burden 2009). As the numbers of indoor shopping malls decline and as the trend shifts to outdoor shopping plazas and the new "lifestyle centers," (Segal 2009), new venues for indoor walking programs will need to be found. Ideally, these venues would be public buildings, where communities can reap wider benefits of their tax dollars. Additionally, malls are often located in places inaccessible by foot or public transportation. The focus on mall walking programs thus alienates populations that are not able to access these sites. As individuals in low-income communities have disproportionate levels of obesity (Day 2006), it may be quite important to find alternative indoor walking venues in communities without malls or in more urban settings.

This thesis will help fill in some gaps in the existing research on indoor walking. It identifies indoor recreational walking as an important activity that can be beneficial for individuals and communities for physical and mental health. It also addresses the need to explore options for active living in a variety of weather conditions. City planners are increasingly designing the public realm to encourage and foster physical activity and movement but can do more to address physical activity in cold, rainy or snowy weather. Having established the importance of indoor walking and the need to incorporate it into active living plans and guidelines in a city, the thesis will also look at best practices for developing and operating indoor walking programs.

4

Cases

Burlington Mall (MA)

Three Rivers Bible Church (MI)

Maine District 11 Public Schools (ME)

Alexian Village (WI)

Waterloo Recreation Center (ON, Canada)

Head Start, Boston (MA)

Big Box Stores (Marshfield Coalition Healthy Living Partnership) (WI)

Well Walkers (IN)

Fit City (NY)

The following nine cases represent a cross section of different types of spaces that are being used for indoor walking. These were chosen to show characteristics of spaces with public and private ownership, exclusive and non-exclusive hours for indoor walkers, urban, suburban and rural areas, different functions of the buildings, and different types of management and programming. These places are all located in the northern areas of the United States, with one in Canada. It should be noted that indoor walking may also be a consideration for places with temperatures that are excessively hot, however, these were not the subject of this research.

Burlington Mall

Burlington Mall, in Burlington, MA has hosted mall walkers for over 20 years. Built in 1968, the mall has expanded twice, and is currently the second largest mall in Massachusetts. Current staff at the Burlington mall were not aware of reasons for the program's initial development, though the hosting of walkers by malls has been a popular marketing and public relations activity for the past few decades. Although it is not known when the first mall walking program started, doctors in Minnesota in the 1960s prescribed indoor walking to patients who needed exercise but did not want or were not able to walk outside (Donovan, 2002). In addition to opening the mall early, nurses from the Lahey clinic, sponsored by the mall (Simon Properties) hold complimentary blood pressure screenings every Tuesday morning from 7 am -9:30 am. This service is a popular addition to the morning walk, and Tuesdays tend to be the busiest mornings at the mall for this reason.

The mall opens its doors to walkers at 6:30 am every morning, until the shops at the mall open, mostly at 10:00 am. While walkers are allowed to walk the corridors of the mall at any time, they are encouraged to use the morning hours, in order to avoid corridor congestion. In this case, the early morning hours are a benefit for walkers, as most walkers are retired senior citizens, who are eager to have an early morning ritual. Many of them "dress to impress" wearing nice cardigans, slacks, and jewelry, and having styled hair and makeup. Many walkers look like they are going out to a luncheon, rather than for a morning workout. Most of the walkers (and there are about 40-60 everyday, except Sunday) know each other. The morning hours at the mall have become something of an "over 50 club," with walkers coming in, either alone or with a spouse, saying hello and quickly meeting up with other walkers, and getting into the flow of traffic around the perimeter of the mall. After the walk, many senior citizens stay for coffee at the Au Bon Pain, which, like the Dunkin Donuts, is open during mall walking hours. The mall walk is as important for socializing as it as for physical health. "It's our job," said one of the women I spoke with on my visit. She was part of a group of about ten walkers who were drinking coffee at the Au Bon Pain. The

group was extremely social, jovial and energetic. One group of three men relentlessly flirted with a group of three women, who were somewhat reserved (but quite happy for the attention). The three men had been walking at the mall for the past 15 years. Each lived in a town outside of Burlington, and they all drove about 15-25 minutes to get to the mall every morning, because they knew their friends were there waiting for them and they didn't want to disappoint.

This social magnet is an important factor in the popularity of the mall walking program in Burlington. The social support of mall walking has led to the longevity of the program. While it is often easy to pull people into trying a new activity, maintaining large groups of repeat participants can be much more difficult. The social magnet in the case of the Burlington mall is so strong that some senior citizens walk at the mall year round. I spoke to a few walkers who walked less at the mall during the warm weather, and walked in neighborhoods or parks near their home. However, several walkers that I spoke with (those who were having coffee) continue to go to the Burlington Mall because it is where all their friends are. Rather than walk outdoors near their homes, it is important for them to be part of a walking social group. Some of them walk outside the mall, in the parking lot, to get fresh air when the weather is warm, which was surprising as the parking lot seems like a very uncomfortable place to walk, a sea of asphalt with no real views.

Not all walkers come to the mall for a social purpose. Although the majority of walkers are senior citizens walking in groups, there is also a smaller group of women between the ages of 25 and 45 who usually walk alone. Some walkers were there with baby strollers as well. One particular woman was on a weight loss program and had been walking three times a week at the mall before going to work. She chose to walk at the mall because it was free, warm, and convenient. She enjoyed walking with other people and had a friend who would sometimes accompany her although she did not reach out to the other walkers at the mall. She was quite friendly but clearly on a mission to follow the perimeter closely in order to meet her distance goal for the morning. A full lap around the mall is equivalent to 0.85 miles and she did not want to cheat herself by avoiding corners and walking less than her goal.

Walkers at the mall had very few complaints about the program. The only two complaints were in regards to the

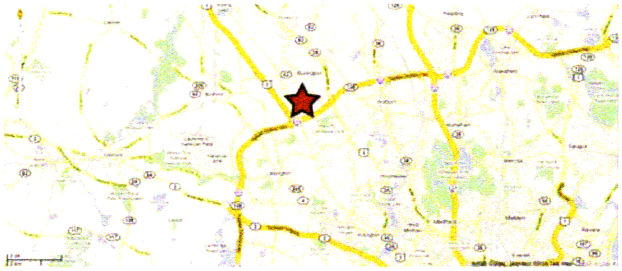
stopping of escalator service in the morning hours and the temperature on the second floor of the mall--both money saving attempts by management. There are ample stairs, as well as elevators, so the walkers' reaction to the stopping of the escalator service may have been a general opposition to any cutbacks in the program, rather than a real interest in using these amenities.

All the walkers I spoke with drove to the mall, although the Burlington mall is accessible by public transportation. This is primarily because the walkers' homes were not accessible by public transportation. Most walkers who drove said their trip was between a 5 and 20 minute drive.

The Burlington mall does not widely promote this program, though it is listed on its website. Most of the walkers heard about the program through friends, or proactively asked the mall if such a program exists. The Center for Disease Control and American Association of Retiered People encourage walkers to ask local malls or schools if an indoor walking program exists. This messages clearly put the task of information gathering on walkers. The mall marketing department was not particularly enthusiastic or knowledgeable about the program, which led me to believe it is not a key program for them The costs to the mall are minimal, as they are heating the building (at least to a minimal extent) in the morning for maintenance staff who are preparing the mall for opening and they It could be that there may not be much incentive for the mall to widely promote the program; part of the appeal of mall walking is that it is a free activity and this also implies to a certain extent that participants are not big spenders. Senior citizens are often on a fixed income and may not be tempted into large scale spending at the mall.

Burlington Mall

Burlington Mall



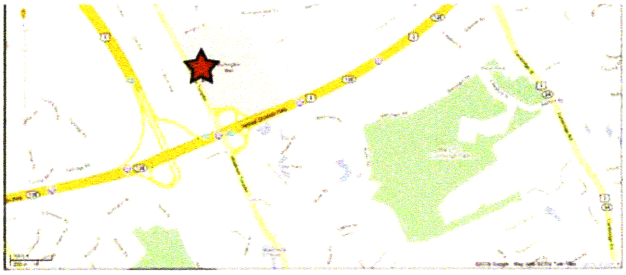


Figure 7: Burlington Mall, Burlington mall maps

Source: Google Maps

Highlights	
Management/Organization	Mall owner manages the program, health clinic sponsors blood pressure screenings
Building type	Large footprint, used for shopping
Interior design	Trails, visual displays, well lit
Programs	Weekly blood pressure screenings. Exclusive walking hours daily, year round.
Amenities	Bathrooms, water fountains, seating, café
Location and access	Inner suburb, public transportation, free parking
Outdoor connection	None (though some walkers walk in parking lot in the summer)
Successes	Strong retention of walkers
Challenges	Retention of walkers overflows into spring, summer and autumn months – encourages walkers to walk inside year round. Very few walkers walk or take transit to the mall.

Table 1: Burlington Mall highlights

Three Rivers Bible Church

In 2006, the Three Rivers Bible Church of Three Rivers, a small town near Kalamazoo, MI, started an indoor walking program in their Family Life Center. The indoor walking program is one of a variety of community events hosted by the church, including basketball games, funeral dinners, and other social and recreational programs. The programs are seen as a service to the greater community and are not closely affiliated with church services.

The building is open to walkers twice a week, on Tuesdays and Thursdays from 9:00 am to 11:00 am, November through April. The walking period is informal, with basketballs available for those interested in playing during this time. Walkers use the perimeter of the building (it takes 19 laps to equal a mile), the stairs and the balcony. A deacon of the church, Merl Fuchs, runs the program, opening the building and gathering liability waivers from the walkers. He and his wife are regular walkers and mix into the flow (in all walking programs the walkers travel in the same direction to avoid collisions, although Merl will walk in the other direction before walkers arrive just to mix it up). Fuchs stresses the importance of the church's mission to provide programs to the greater community and believes the program is a valuable asset to walkers in the region. The cold weather and icy conditions in Kalamazoo prevent most of the participants (mostly retired senior citizens) from walking in the winter months and these people greatly benefit from having space to get some physical activity. Between 10 and 20 people walk during each session and many of these loyal walkers participate regularly, even during heavy snowstorms. Mr. Fuchs volunteers his time and temperatures in the building are kept at about 60 degrees. In the past, Mr. Fuchs brought in refreshments a few times (cookies and coffee) but very few walkers were interested in them, perhaps, as he believes because most of the walkers watch their weight and didn't want an added temptation. In an attempt to keep walkers motivated, upbeat music is played during the walking sessions. Merl Fuchs chooses the music which is typically country or Christian pop (and holiday music during the respective seasons). An added benefit for walkers is the carpeted floor which buffers sound for events in the space but also provides a comfortable walking surface. Many walkers have told him that the floor makes walking easier.

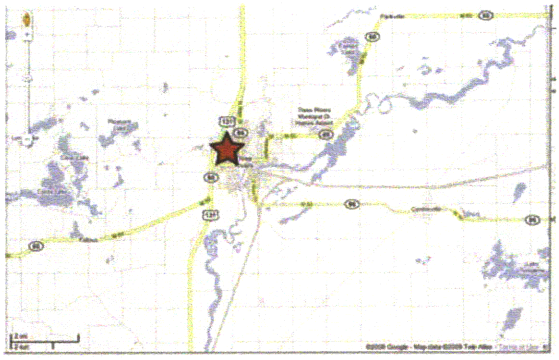
Many of the walkers come in pairs to the program, although some come alone and meet friends (some of whom met through walking here). The social factor of the program is important. According to Merl Fuchs, the participants often discuss their ailments, as they are all aging, and enjoy sharing stories including those of personal aches and pains. Weather is a key factor in the popularity of this indoor walking program. Many walkers continue to exercise in the summer although they do so closer to their own homes or in parks near their neighborhoods. The goal of the program is to provide a place for walkers in cold and snowy weather, which is why it does not continue year round. The program is open to everyone, and although participants are primarily senior citizens, younger walkers, including a group of school aged, special needs children, use the center to walk in the winter as well. Participants of the program largely learn about its existence through friends. Although the church advertised the program in a local newspaper at its onset, they have since taken a more passive approach to marketing the program. The program is running smoothly and there is not a sense of urgency to expand the program.

Everyone drives to the center to walk, as Three Rivers is primarily a rural settlement. Although there is a small town center, Three Rivers is surrounded by a rural pattern of small farms. Unless people live in the town center, it is impractical for the senior citizens to walk to this facility. This will become a problem as the population ages and will be less able to drive, especially in winter conditions. There is not a public transportation system, and the area is too sprawling to efficiently run a shuttle service.

The program is viewed as a success because there is a consistent, if small, stream of walkers in the winter months. The program is dependent on the time and efforts of a dedicated volunteer, who may not be able to work to actively expand the initiative to more days of the week or for the warmer months, or expand its programmatic elements. This may not be necessary in this case, as there seems to be a sense of satisfaction with the program.

Three Rivers Bible Church

Three Rivers Bible Church Family Center



2 mi

Family Center Interior (with walkers)

1000 ft

Figure 8: Three RIvers Bible Church Source: Maria Fuchs (photo), Google maps (maps)

Highlights	
Management/Organization	Church deacon organizes the walkers. He is also a regular walker
Building type	Small footprint, used for basketball games and community functions
Interior design	Short loop, minimal design
Programs	"Energetic" music played. Exclusive hours for walkers, twice a week, seasonally.
Amenities	Bathrooms, water fountains, basketball (some people play while others walk)
Location and access	Rural / small town center. Free parking
Outdoor connection	In walkable town center
Successes	Commitment of walkers throughout the winter.
Challenges	Walkers have to drive to the center.

Figure 9: Three Rivers Bible Church highlights

District 11 Maine Public Schools

In 2002, the Coordinated School Health Department of Maine conducted an assessment of the health of staff and students in Maine's public schools in response to concern that students were showing trends of weight gain and found that students and staff were getting insufficient amounts of exercise. Anthony Anderson, Maine's District 11 Public School Health Coordinator applied for a grant from Works by Wellness, part of Medical Care Development, a nonprofit that sponsors and supports healthy community initiatives and programs, to develop an indoor walking program in the public schools in his district. Anderson wanted to use the schools as a resource for the staff, but also for the greater community to exercise in the cold winter months without the expense of a gym membership. The grant for the program was used to pay staff and a small group of students to measure the hallways and to develop routes for people to measure their morning walk. Routes are named after fruits and vegetables, and are shown in painted murals on the school walls. Healthy messages are posted throughout the hallways, and distance markers and arrows help walkers stay on their route and keep track of their progress. There are very few additional costs to running the program; the walking hours take place at times when the school is open (teachers and staff are present) but the hallways are not widely used. There was an initial problem with maintenance, as walkers tracked snow and mud into the buildings, but the district has since developed a policy requiring walkers to change into indoor sneakers when entering the school building.

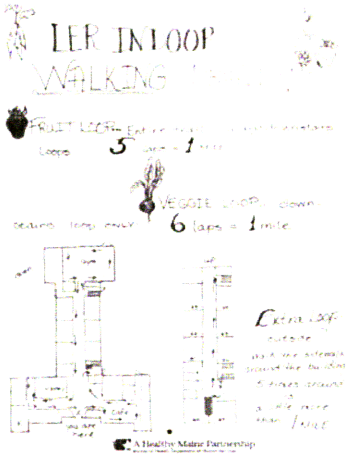
The walking program is in session November through April in seven elementary schools and one high school in central Maine. Staff can walk the hallways at any time and the hallways are open to the public from 6:00-7:30 AM in the elementary schools, and 2:30 – 4:30 pm in the high school--hours that students are not in the building. Between 10 and 50 walkers use the schools (collectively) daily throughout the winter. Walkers are greeted by a school administrator who is already at the school beginning work for the day but are not required to check in or sign a liability waiver. Anderson said there have been no problems with any of the walkers – most of them are affiliated with the school (parents / grandparents of children in the school), live in the surrounding community, or are part of a

weight loss group (Weight Watchers or TOPS [Take Off Pounds Sensibly]). There is a sense of "everyone knowing everyone else" that accompanies small communities, so there is a strong feeling of trust and safety that accompanies the public use of the buildings.

Walkers drive to the schools, as they are located in rural Maine with no access to public transportation. The program is not widely advertised but rather is marketed primarily to people affiliated with the schools This program seems to have a wider potential, despite the rural location, and more outreach may bring in more people, especially weight loss groups or senior walkers who can benefit from an indoor winter walking space.

Maine District Eleven Public Schools

Maine public school



Walking map

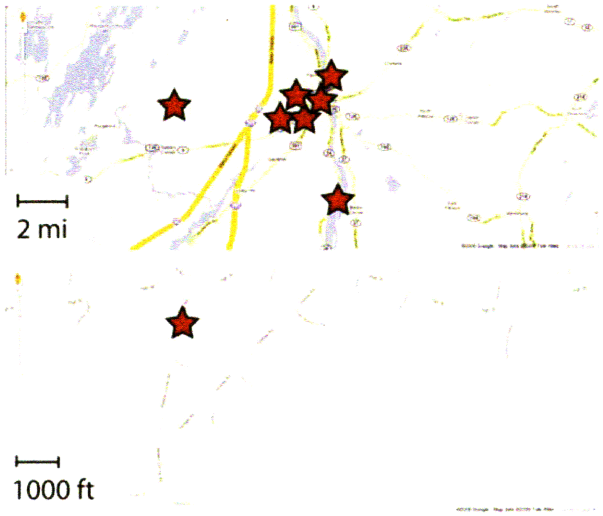


Figure 10: Maine Public school maps
Source: Anthony Anderson (drawn map), Google maps (maps)

Highlights	
Management/Organization	School heath coordinator manages the program
Building type	Trail or loop building (network of buildings)
Interior design	Trails and loops, artwork for school
Programs	Exclusive hours for walkers, every morning in the winter season
Amenities	Bathrooms, water fountains
Location and access	Rural / small town center.
Outdoor connection	Some are near fields, but mostly are in un-walkable spaces
Successes	Work with weight loss groups to bring in walkers
Challenges	Walkers have to drive to the center.

Table 2: Maine Public School highlights

Alexian Village

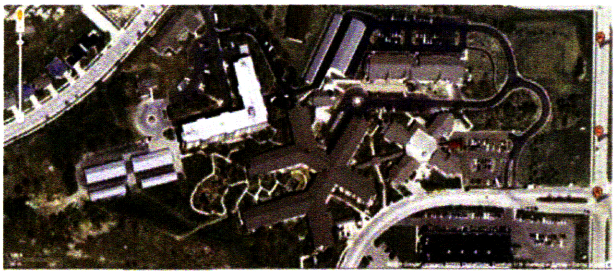
Alexian Village is a retirement community in a low density area of Milwaukee, WI, with about 400 residents and 30 (need to check) full time staff. The community consists of separate living units with varying degrees of independent living, a health center, community activies center, market, banking, and pharmacy. The community has maintained a strong focus on health and "wellness" in the village since its beginning in 1980. Exercise facilities and programs for physical and mental health are provided. However, in response to strong demand from both residents and staff, outdoor walking paths at the facility were created in 1994 during an expansion of the facility. The outdoor paths are half a mile long, and have handrails on slopes to assist elderly residents. In addition, residents can request an "emergency" button for their trips outside which enables them to call for assistance in case of a fall. The interior hallways are wide and spacious to allow for multiple people to pass easily and residents are encouraged to use these routes for exercise when they are not comfortable walking outside. Both the outdoor paths and indoor hallways are used regularly by both staff and residents for exercise. Indoor hallways are used more frequently in cold weather, or by patients that are concerned with safety (even though safety measures have been put in place).

In 2007, Alexian Village opened its hallways to outside visitors when the Northridge Mall (on an adjacent parcel) closed. The area around the mall is currently under plans for development into a mixed use community and will be renamed "Historic Granville." Existing businesses and institutions in the area have formed the "Historic Granville Corporation," with a mission to reach out to surrounding communities by offering resources and making connections to ensure a strong investment into the new developments in the area. The indoor walking program, in addition to filling a void left by the cessation of the indoor walking program at the mall, is also part of a larger marketing and public relations agenda for Alexian Village which seeks to introduce the facility to potential new residents. Walkers can visit the community in the mornings, year round, between 6:00 and 9:00 am. Complimentary coffee is served and a café offers expanded menu options to visitors. No liability form is required. However, the walks are guided, as the management does not

allow unaccompanied visitors to move freely throughout the buildings and grounds. The program has been regularly advertised in local papers. Since this initiative was announced, no one outside the Alexian community has participated in the program. Alexian Village also sponsors formal events, such as Heart Association walks, on its outdoor paths, which are much more successful.

The staff at Alexian Village do not know why the program is not successful, and I have not spoken to any former walkers at the Northridge mall to ask. The failure of this program may be due to the limited access to the facility (in the mall, people may walk freely, where at Alexian, they are part of a group and must schedule an exact time to participate). Other reasons may be related to the interior design of the facility which offers only fairly standard hallways that traverse space through semi private areas, used primarily by residents. This is in contrast to the very public nature of malls where spaces are designed to feel like outdoor plazas and streets which offer pleasant places to walk. There also may be a psychological effect, from the nature of the institution. As many mall walkers are active, retired senior citizens, they may feel uncomfortable in an assisted living facility, even one that promotes independence in living.

Alexian Village



Alexian Village with outdoor walking trail

Figure 11: Alexian village maps Source: Google maps

Highlights	
Management/Organization	Alexian village staff
Building type	Medium footprint, used by community residents and adult day care participants
Interior design	Short trails
Programs	Guided walks, offered at specific morning hours, daily, year round
Amenities	Bathrooms, water fountains, cookies
Location and access	Edge of urban area, free parking
Outdoor connection	Walking trails within the community (require guided walk)
Successes	Successful for walkers living in the community, but unsuccessful in bringing in outside walkers. Indoor / outdoor connection good for community walkers.
Challenges	For walkers outside the community: Suspected that walkers may want more freedom to walk throughout the space. Also potential psychological aversion to walking in a retirement community. Requires a car to get to the space.

Table 3: Alexian Village highlights

Waterloo Recreation Center

The Waterloo Recreation Center in Ontario_was built in 1993 as a community recreation center and provides athletic activities and event space for the greater Waterloo region. During the construction process, the project ran over budget and a planned second floor over the ice arena was not able to be built. In its place, there was enough space for a balcony, overlooking the rink. The city of Waterloo approached the community with the question of how to use the extra space and the community responded strongly in favor of creating an indoor track for running and walking. Currently, approximately 600 people use the track in the winter, and 300 people use it each day in the summer. Among the summer walkers, many are seniors who use the center year-round, due to fear from traffic and crime in their neighborhoods, or for the social interaction with other senior walkers.The track consists of six lanes, and a sprinting section. The lanes are divided by speed, although the naming of these lanes (*Slow, Walk, Run*) has caused some confusion, and will be changed this year. *Slow* lanes were meant for elderly walkers who may need assistance; *Walk* lanes were meant for people walking at a normal to brisk walk; and *Run* lanes were meant for runners. The track is surrounded by windows which offer views of nearby parks and neighboring communities. Natural lighting is offered and there is a view of the ice rink. There is a $2.75 entrance fee to use the track during regular hours in the winter, leaving it open to the public for free from 6:00 – 8:00 am every morning, and at all times in off peak season (May through October).

Retired senior citizens make up the bulk of the morning walkers and they gather in the Recreation Café at the end of their walking time for socializing. The café is extremely crowded with senior walkers until about 10:00 am. The next peak period of walking is during the lunchtime hour when employees of a nearby office park come to the track for exercise during their lunch break. This group of people makes up the largest group of walkers who actually walk to the center, rather than drive (though they primarily drive from their home to their offices), as Waterloo does not have a comprehensive public transit system. Finally, in the evening, schools and organized athletic groups will use the track for training. There

are showers and secure lockers, as well as changing rooms, which are largely used by the runners, not walkers.
There have been a number of complaints to the management regarding the walking track. Confusion over lane designations, dissatisfaction with the entry fee and disagreements over the allowance of strollers on the track are three main complaints heard from track users. A Track Marshall is stationed at the track to monitor activity during peak hours, to help prevent any collisions or other conflicts in the area, but some walkers / runners still feel this is not enough to ensure a safe and pleasant environment for all. Additionally, the track will close at times to walkers, to make space for refreshments or viewing space for events on the ice rink. While the center tries to schedule events so as not to conflict with prime walking times, there is occasionally overlap and track users feel slighted.

People use a field adjacent to the Recreation Center for sports and other activities during summer months. Runners occasionally use this space; there are very few, if any walkers, possibly due to the lack of paved paths in the field.

Despite the complaints, this program attracts a large number of people and a wider range of ages than seen in other cases in this study. Additionally, the space offers flexibility to accommodate a number of different users and different activities. The implicit senior discount (by not charging for hours that seniors are likely to use the track but the hours of 6-8am area also key hours for workers) may be a simple way to easily manage free senior admission without the hassle of identification records, however, may leave out seniors who are not available during those hours. There is also an opportunity to encourage outdoor walking in warmer weather, by providing paved trails on nearby parkland.

Waterloo Memorial Recreation Center

Waterloo Memorial Recreation Center

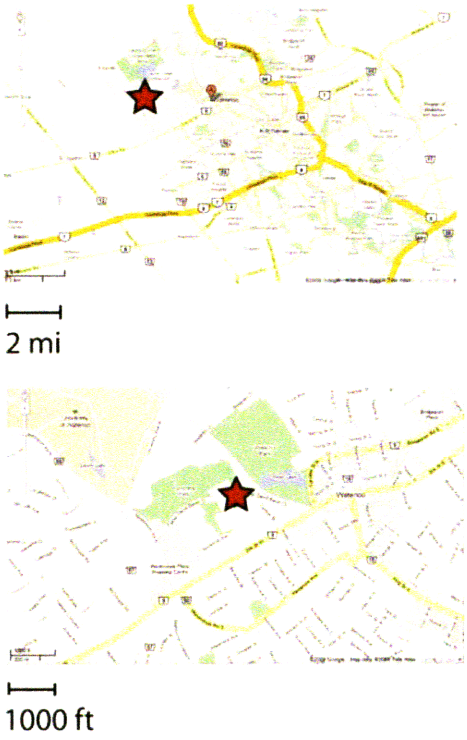


Figure 12: Waterloo Rec center maps and photos Source: Google maps (maps) Kendra Priddle (photos)

Highlights	
Management/Organization	Waterloo Recreation Center staff
Building type	Large footprint, used for sports / walking & running
Interior design	Loop
Programs	Free entry during times used by seniors, open every day, year round, with some restrictions for evening events
Amenities	Bathrooms, water fountains, locker rooms, cafe
Location and access	Edge of urban area, free parking
Outdoor connection	Next to a park, however there are no trails in the park
Successes	Brings in many walkers, both from far away and also from nearby businesses. Dedicated walkers. As indicated from number of walkers in the winter and summer, most likely does not have a detrimental effect on outdoor walkers.
Challenges	Outdoor connection is not currently strong. Other than business park users, most walkers drive to the center.

Table 4: Waterloo Rec center highlights

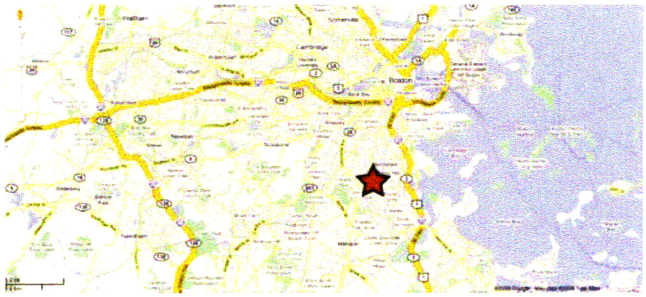
Head Start Program in Boston, MA

Patrick Healey, a Nutritionist for Uphams Health Center in Boston MA, developed an indoor walking program in 2005. This initiative, begun in conjunction with a Head Start program, provides a free option for exercise to parents of children in the Head Start program and to Head Start staff members. Parents of children in the program were encouraged to walk the hallways of the building in the evening once a week. Participants walked in a group, led by Patrick or a health center staff member around the ground floor of the building, and steps, if they were able, walking between 1.5 and 3 miles during a walking session.

In the first year of the program, about 20-30 staff members would participate in the group walks. Parents of children in the Head Start program never joined the walks and Healy was not able to determine the reason for this, though time constraints, interest in the program, lack of peer participation may be some possibilities. The program continued for another year, offering outdoor walks in the summer (which were unsuccessful), educational talks on nutrition and wellness, and snacks as incentives. When walks began, there was only one walking session per week. Feeling optimistic, Healy expanded the walking program to twice per week, at which point, participation dropped significantly. After the second year of the program, there were still no parents participating in the program, and the staff walkers had dropped to close to zero, and in the third year, the program was abandoned.

Healy conducted focus groups with staff and parents to try to uncover problems with the program as well as to indentify overlooked opportunities that would increase participation. These groups failed to reveal any useful information. Healy compared the group with successful walking programs in Boston (all outdoor) and noted that the successful programs were often built around small groups of existing walkers. When a program found a group of people who were already forming a group for a specific reason, it was easier to expand their activity into a formal walking group. It can be difficult to predict how and when individuals have time for exercise, and working off successes of existing groups can be a good start to encouraging or increasing physical activity.

Boston Head Start



Boston Head Start (to the right)

Figure 13: Head Start photo and maps Source: Google maps

Highlights	
Management/Organization	Uphams Corner Health Center led program, hosted by Headstart public building
Building type	Medium footprint, used for Headstart programs
Interior design	Loop
Programs	Guided walks, nutrition education information, guided outdoor walks, snacks
Amenities	Bathrooms, water fountains
Location and access	Urban area, public transportation
Outdoor connection	In walkable neighborhood, group lead outdoor walks in the summer
Successes	Successfully attracted staff of the building to walk. Never attracted parents of Headstart students (as was the intended audience)
Challenges	Possible time constraints of the parents of the Headstart students, guided walks may have been a negative feature for participants. Overall dwindling participation until project ceased.

Table 5: Head Start highlights

Marshfield Big Box stores (Healthy Living-Marshfield Coalition)

Healthy Lifestyles – Marshfield Coalition is a health education and promotion program affiliated with the Marshfield Clinic, a network of 40 medical centers located in Wisconsin. The goal of the program is to work with individuals, businesses and institutions in communities across Wisconsin to encourage healthy living habits, focusing largely on obesity rates. Dr. Charles MacAuley, a cardiologist at Marshfield, with the help of the Community Outreach Department at the Marshfield Clinic, formed the Healthy Lifestyles Coalition in 2001 when he noticed alarming rates of obesity and heart disease among young patients. The Coalition currently has 230 members from multiple backgrounds and institutions, and manages programs to combat obesity, such as leading walking programs, working with institutions to offer healthy choices in vending machines, managing recreational resource guides, and partnering with schools and businesses to encourage healthy habits among students and employees.

The Coalition focuses on both diet and exercise and works to "meet people where they are" in regards to these activities. By making healthy choices and activities easier, the Coalition believes it is more likely to be successful in helping community members develop healthy habits. Indoor walking in the winter is suggested as an alternative to outdoor walking, although the clinic also publishes a "winter walking guide" which details steps to dressing warmly for outdoor exercise and discusses practical techniques such as layering clothing while it gives recommendations for specific fabrics. In addition to an indoor walking program at the Wood Ridge Mall in Marshfield, big box stores such as Target, Menards and Fleet Farms Grocery stores promote indoor walking in their buildings. These stores do not have special hours for walkers (like the mall), but do suggest walking periods which align with slower shopping periods to avoid potential conflicts. The Coalition initially approached these stores with their "Take Ten" program in 2006, which lists ideas for finding small ways to bring exercise into daily activities. The initial idea for walking in big box stores was to walk for 10 minutes in the aisles of a store prior to shopping and this led to the promotion of general walking in the stores, whether or not in conjunction with shopping. A

noted difference in this program from other cases is in the measurement method for walking. In most cases in this study, walking is measured by distance while this program measures length of time for walking.

Managers of these stores are happy to host indoor walkers, at least at their current rate. Walkers are often not noticed at the stores and are not counted or registered. Employees do not treat walkers any differently than regular customers and as of now, there have been no conflicts between walkers and shoppers. The publicity, positive public image with the community, and additional traffic to the store (which could potentially result in increased sales) are all benefits to the stores, especially if walkers respect the suggested times for walking. Store employees often walk through the building on their breaks for exercise, especially in the winter months.

Marshfield's metropolitan area is home to about 30,000 people, and there is no viable public transit system. Target, Menards and Fleet Farms are all located in a shopping plaza, which, although surrounded by busy roads, are in walking distance from residential neighborhoods. The Clinic publishes this information online and distributes pamphlets to patients.

Marshfield Big Box Stores

"Take Ten" Brochure for Marshfield Big Box stores / mall

Figure 14: Marshfield Big Box stores brochure and maps
Source: Google maps (maps), Marshfield clinic (brochure)

Highlights	
Management/Organization	Marshfield clinic organizes, hosted by various private big box stores
Building type	Medium footprint, used for shopping
Interior design	Loop
Programs	None
Amenities	Bathrooms, water fountains
Location and access	Rural / strip mall, free parking
Outdoor connection	None
Successes	Embraced and educated the public on new ways of thinking about exercise (break down into ten minutes). Used unconventional space for walking.
Challenges	Possible conflicts with building users. Need to drive to location.

Table 6: Marshfield Big Box highlights

Well Walkers (Roberto Clemente Center and Whiting Walkers)

The Well Walkers Program at St. Catherine's Hospital in East Chicago is another example of a hospital-sponsored health program. This initiative, however, is run in a different way and targets a different population. The program is highly structured, with monthly meetings, health lectures, organized outdoor walks, health screenings, exercise and stretching lessons, and an incentive-based pedometer program.

The Well Walkers program grew out of the Community Outreach program in 2006 and initially began with one walking group before expanding to the four groups which exist today. Rather than building walking groups from scratch, the Well Walkers sought to expand on existing groups of walkers to improve and structure their programs. The goal of the program is to support, but not manage the walkers, and the Well Walkers representative at St. Catherine's is currently working to help the groups become more independent, while maintaining a strong program. The program is funded by the hospital, in partnership with the facilities where people walk. Each program is a little bit different, all in the East Chicago / Hammond, IN area.

The structure of the program is important for maintaining walker participation in this case. Membership and participation dropped significantly during a staff transition, when talks and organized activities were put on hold. Membership and participation rates increased once personnel issues were settled. This was a driving reason to make the groups more autonomous and less dependent on staff from St. Catherine's.

Exercise and weight loss are primary goals for participating walkers although many benefit from the socialization factor of the program. Some groups are primarily senior citizens, though others have a high number of young mothers. In other cases, the social benefits of walking were the primary incentive for walkers. In this case, other incentives, especially related to health and exercise are important to maintain active members. Talks are conducted in Spanish and English to accommodate the Spanish speaking population of the area. The pedometers

are given free to participants with membership and they are encouraged to wear them every day, keep track of number of steps taken (measured by the pedometer) and report at monthly meetings. Quarterly drawings for Walgreens gift cards are held, encouraging participation. Yearly awards for number of steps taken are also given. The yearly awards are not monetary – they are simply framed recognition certificates.
The following is a quick look at two of the four programs:

Roberto Clemente Center Walkers

Well Walkers approached the Roberto Clemente Center in 2005, with the intent to build on a group of young mothers who were gathering at the center for exercise. The Center entered a partnership with the Well Walkers and now hosts walkers in its gymnasium Monday, Wednesday and Friday from 9:00 – 10:00 am (in addition to the monthly organized walk and meeting, organized by Well Walkers). Walkers use the perimeter of the gymnasium for walking. The space design is general and uninteresting, but walkers focus on socializing while walking, which shifts their attention from their surrounding environment to the conversations at hand. Members are encouraged to walk outside during the summer months and there were conflicting opinions from staff regarding outdoor walkers. One member said the area was "not considered a 'nice area'" and that walkers would rather walk inside the facility, even in the summer. Another staff member said many walkers were women who lived nearby, and that they regularly walk throughout the neighborhood and nearby parks in the summer. Both statements may be true, and this signals a lack of knowledge of behaviors among indoor walkers (this is true for the majority of cases, not those affiliated with St. Catherine's Hospital). Many women walkers have become friends though participation in the program.

The Center organizes many other athletic events, which is why there are limited hours for walking. It is located in a fairly dense neighborhood of East Chicago, close to Lake Michigan (although there is no pedestrian access to the lake, due to railroad and highway barriers).

Whiting Walkers

The Well Walkers group approached the Whiting Community Center in 2007, after a group of mall walkers from the nearby Whitmore Mall were displaced when the mall closed. Walkers are admitted for free to the facility between 12:30 and 2:30 weekdays, and 10:00 – 12:00 on Saturdays. There are a group of between 20 and 30 consistent walkers, however, a staff member at the Center believes the number would be higher if the walking period was at a different time. When meetings and group walks were held during evening hours, there was a higher turnout. This spring, the center will begin offering evening meetings to accommodate walkers who work during the day. About 75% of current walkers are over 50 years old, but this too, is most likely due to the time of day the walking hours are offered.

Whiting is a small, dense community, and most walkers walk to the center in the winter to walk indoors. When the weather is warmer, walkers shift to a football field about eight blocks away. The center is not air conditioned in the summer, and is too hot for walkers. The walkers typically walk in pairs or small groups, and are encouraged by the center to do so for personal safety from crime. Summer walking groups meet at the Center in the summer, and walk to a nearby park. The group is semi-formal, with no real "leader", and walkers break off into small groups within the larger group. The staff member said people typically enjoy walking in the group. The previous group of walkers who walked at the Whitmore mall most likely drove to the mall, and the shift to the Community Center provides a car free option for walkers in the winter. It is unknown if walkers would choose to walk in the Community Center if the mall was still an option.

Well Walkers - Roberto Clemente Center

Roberto Clemente Center

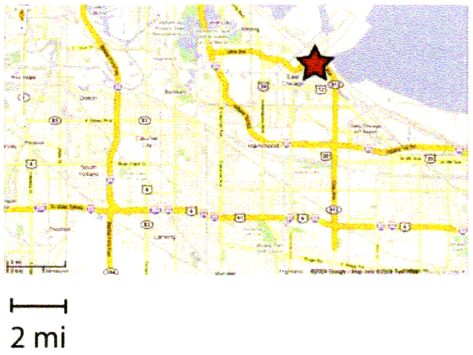


Figure 15: Roberto Clemente center maps Source: Google maps and MapsLive

Highlights	
Management/Organization	Managed by St. Catherine's Hospital, hosted by Roberto Clemente community center
Building type	Medium footprint, used for sports and community activities
Interior design	Loop
Programs	Monthly meetings with health lectures, organized outdoor walks, health screenings, exercise and stretching lessons, and an incentive-based pedometer program
Amenities	Bathrooms, water fountains
Location and access	Urban area, accessible by walking, public transit
Outdoor connection	Near walkable neighborhood, parks
Successes	Continued participation in walking pedometer program. Positive transition to outdoor space in the summer months.
Challenges	Possible safety issues in surrounding neighborhood. Interior space not ideal for walkers, due to aesthetics, walking space design

Table 7: Roberto Clemente center highlights

Well Walkers - Whiting Community Center

Whiting Community Center

Figure 16: Whiting Community center maps Source: Google maps and MapsLive

Highlights	
Management/Organization	Managed by St. Catherine's Hospital, hosted by Whiting community center
Building type	Medium footprint, used for sports and community activities
Interior design	Loop
Programs	Monthly meetings with health lectures, organized outdoor walks, health screenings, exercise and stretching lessons, and an incentive-based pedometer program
Amenities	Bathrooms, water fountains
Location and access	Urban area, accessible by walking, public transit
Outdoor connection	Near walkable neighborhood, parks
Successes	Continued participation in walking pedometer program. Positive transition to outdoor space in the summer months.
Challenges	Interior space not ideal for walkers, due to aesthetics, walking space design

Table 8: Whiting community center highlights

Fit City

The American Institute of Architects and the Built Environment Department of New York's Department of Health and Mental Hygiene developed the Fit-City initiative, which seeks to identify opportunities in buildings and cities to encourage exercise and general health of the community. In 2006 and 2007, Fit-City held two conferences, bringing together concerned citizens, architects, planners and health officials to discuss these opportunities.

The AIA Chapter of New York developed a list of recommendations for policies related to public health and the built environment. Among these were recommendations to revise code regulations for stairwells in order to accommodate more visible stairs, which have been shown to increase stair use; to change zoning restrictions to encourage walkable neighborhoods with desirable destinations; to use school buildings for exercise purposes when class is not in session; and to incorporate conditions and spaces for recreation into building design.

Many of these recommendations are in line with indoor walking programs, currently managed across the country. However, Fit-City takes a step further, to influence policy and the design of new buildings, rather than develop programs around existing facilities.

Significant changes to regulations related to stairs can increase stair use in buildings. Current barriers to fire stair use are unpleasant design and materials used in construction, placement of stairs, which are often less prominent than elevators, and barred entry onto floors from stairwells. In addition to these problems, which discourage stair use among building users, further regulations disincentivize developers from including stairwells amenable to people. Current Floor Area Ratios include stairs, leading developers to keep stairs to a minimum, both in size and quantity. By removing stairs from FAR numbers, developers may be more likely to include "convenience stairs" which are supplemental to emergency stairs and are used to move through a smaller number of floors. Fire codes also interfere with stairs, requiring stairwells to have firedoors, closed at all times, thus making stairways less visible, and less enticing to walkers. Americans with Disabilities Association regulations or recommendations can

also lead to "invisible" stairs. The ADA stresses the importance of not putting elevators in the back end of buildings, however this is in conflict with goals to encourage stair use. Putting stairs in more prominent places than elevators as well as increasing their visibility has been shown to increase stair use significantly.

Smaller changes, such as adding music and artwork to stairwells, and displaying messages in buildings encouraging stair use are also suggested as methods to increase stair activity. Signs encouraging stair use have been shown to increase stair use by 50%.

Unlike the other cases, Fit-City is less concerned with the programmatic elements of indoor walking, and more focused on physical design elements used to promote activity. These innovations can help bring indoor walking into the objectives of new building design, rather than retrofit programs into buildings designed for other purposes.

Fit-City's second conference highlighted some examples of buildings that included space for recreation into their building design. The following are two examples.

Riverside Health Center

The Riverside Health Center, a health center on New York's upper west side, is currently undergoing renovations, seeking LEED status and incorporating elements into the building to encourage active living. Wide and visible stairwells, with plants, artwork and music are designed to encourage building users and visitors to take the stairs, rather than the elevators. The NYC Department of Health and Mental Hygiene wanted the stairs to serve as an example of specific design elements useful in encouraging physical activity. Dr. Karen Lee, Deputy Director of NYC DHMH, worked with Ellen Martin of 110 Architects, using research on stair design and health to design the stairwells. They developed a list of best practices for stair design to promote activity, which Martin says she hopes to use with future clients.

The list included the following elements for stairwells:

1. Unlocked doors in the stairwell at each level

2. Transparency from the corridor (fireproof glass used on the doors)
3. Visibility from the lobby, and elevators
4. Natural light in stairwell and exterior windows
5. Design of corridor continuous into stairwell – this is a key feature, as many stairwells currently break away from the design of the rest of the interior of the building. Artwork, plants and music can be helpful additions, but are less powerful than a continuation of the normal design of the building – use of same lighting, wall color and floor materials.
6. Width of stairs at least 44 inches, allowing for comfortable passing
7. Permanent signage locating stairs
8. Incentive prompting posters and signs encouraging stair use
9. Disincentive features on elevator, such as slower door speed
10. Security cameras in stairwell
11. Shortening of maximum travel distance to staircase
12. Placement of staircase along main travel path

New York Times building

Stair design also features prominently in the New York Times building as an element designed to encourage activity within the building. The building was designed by FX Fowle, Renzo Piano Workshop and Gensler Architects, and completed in 2008. Attention was given to vertical movement throughout the space, incorporating stairs at building corners, with glass exteriors to provide a visually appealing space. A primary motivation for this design was to encourage face to face communication among staff at the NY Times. The positive side

effect of this is an increase in physical movement around the building.

Because departments were often spread out among a few floors, the client requested highly visible stairs that would increase the psychological connection between groups of people working on different floors. Stair design can be a challenge due to strict fire codes. In order to provide attractive staircases, architects have to either create accessory stairs in addition to fire stairs, or find creative methods to make fire stairs both safe and pleasant to use. FX Fowle and the rest of the team of architects worked with New York's Building Department to develop stairs that would allow for a more open flow in the stairwell and would also prevent fire spread by implementing alternative floor fire shutters on the stairwell. This type of innovation can help set precedents for other buildings, but requires additional thought and research on the part of the architect and developer.

Riverside Health Center

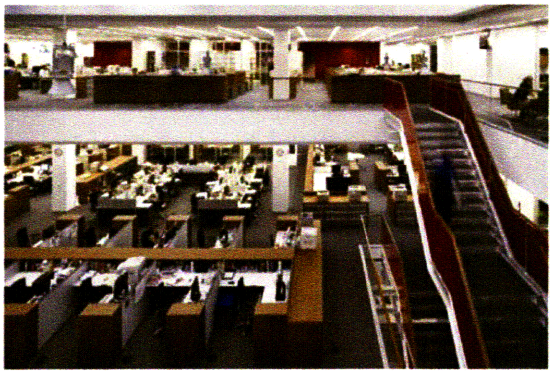
Rendering of Riverside Health Center

Figure 17: Riverside Health Center rendering and maps Source: 1100 Architect and Google maps

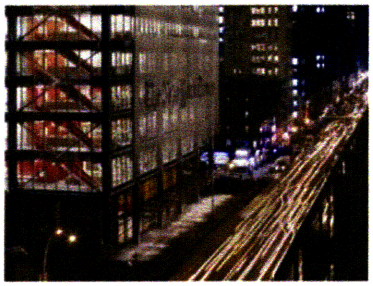
Highlights	
Management/Organization	NYC Department of Health and Mental Hygiene
Building type	Medium footprint, used for health center
Interior design	Vertical (stairs)
Programs	None
Amenities	Bathrooms, water fountains
Location and access	Urban area, accessible by walking, public transit
Outdoor connection	Near walkable neighborhood, parks
Successes	Designed building with intention of increasing stair use. Can be used as a model for other buildings
Challenges	May not be good for public programs – health centers try to minimize people not associated with the health center or patients using the space to prevent the spread of germs. Potential security issues as well.

Table 9: Riverside Health Center highlights:

New York Times Building



NY Times building accessory stairs



NY Times building periphery stairs

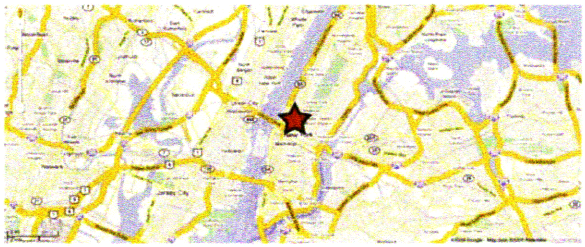


Figure 18: NY Times building photos and maps Source: FX Fowle and Google maps

Highlights	
Management/Organization	New York Times
Building type	Large footprint, used for newspaper headquarters
Interior design	Vertical (stairs)
Programs	None
Amenities	Bathrooms, water fountains
Location and access	Urban area, accessible by walking, public transit
Outdoor connection	Near walkable neighborhood, parks
Successes	Designed building with intention of increasing stair use. Can be used as a model for other buildings
Challenges	May not be good for public programs – additional walkers may disrupt workers. Potential security issues as well.

Table 10: NY Times building highlights

5

Attitudes

City Planners

Health Field

Policy

Urban Design

Mall walking advocate

The concept of using semi public space for indoor recreational walking touches stakeholders in a number of different fields, though attitudes on the activity vary by profession. I spoke with planners, health professionals, architects, urban designers, policy makers and a mall walking advocate on their views of indoor recreational walking. Although each representative had differing (though often positive) opinions of the activity through the lens of their own discipline, the majority shared a common trait – lack of ownership over the practice. Indoor recreational walking seems to be an afterthought, or an added bonus, but is never "owned" by any group. There are expert contributions to elements of indoor walking programs but no one takes responsibility to advocate or give expert opinion on indoor walking in a wholistic sense. The exceptions to this are mall walking advocates. Perhaps because the indoor mall was designed to emulate a city square, where walking is an important feature in the shopping activity, mall walking advocacy evolved naturally. Sara Donovan, the mall walking advocate interviewed for this thesis, has given advice to mall walkers as well as mall implementing walking programs, which is unique among the other professionals I spoke to, who were able to offer advice to the users of the space (the walkers) or the providers of the space (building

owners/architects) but not to both. Donovan's expertise, though in many ways more extensive than the other stakeholders, does fall short when looking at indoor recreational walking from a community planning perspective, as there is little connection between indoor and outdoor walking in her mall walking programs.

Who is responsible for promoting spaces for indoor walking? Who is responsible for managing the space? This question becomes difficult, as we are looking at public programs, in semi-public spaces. When we design walking trails in a neighborhood, there are a multitude of tools for the design, location, and promotion. Planners, cycling advocates, planners, city officials, health professionals and environmental advocates have a strong stake in the trail design and maintenance. When the trail is in the public realm, it is easy for the community to lay claim to it. If we design an "indoor trail" to encourage year-round use, complications arise in building security, liability, operational costs, and equal access. These complications can be difficult to overcome, especially while indoor walking is still a largely unstudied activity. Would there be more support for indoor walking if the subject were more widely researched? Tracking walkers nationally, with a thorough quantitative analysis of participation and commitment to a walking program would help answer some of these questions.

Because other indoor facilities used for indoor recreational walking are often spaces that are typically used for other purposes, indoor recreational walking is a secondary activity – even the walking/running track at the Waterloo Recreation Center is taken over and used as a concession area during events, displacing walkers weekly. Can we elevate the importance of indoor walking by designing the spaces specifically with walkers in mind or are the facilities adequate as they are?

The following chapter highlights attitudes from city planners, health professionals, building policy professionals, urban designers and a mall walking advocate.

City Planners

I spoke with two urban planners with expertise in pedestrian activity and found that they had similar thoughts on indoor walking programs. As planners, their primary concern is with walkers in the public realm and are worried that indoor walking places may displace outdoor walkers. Both cite problems stemming from Minneapolis's skywalks and stress the importance of the presence of walkers on the streets to maintain investment in a community, which in turn creates safer streets for pedestrians. Wendy Landman, executive director of WalkBoston, a pedestrian advocacy group in Boston says that ice and poorly maintained sidewalks are major factors in winter walking, more so than cold temperatures (at least in the Boston metropolitan area). Maintaining sidewalks in the winter and teaching people to dress properly for winter weather can help keep walkers active throughout the year, she says, as well as creating active interesting streetscapes, safe communities and low traffic speeds. She supports the concept of an indoor walking network, providing the walking programs were able to boost numbers of overall walkers without removing outdoor walkers from the community.

Dan Burden, founder of Walkable Communities expresses similar sentiments about the activity. His organization works with communities, conducting "walkability audits", consultations with communities to improve the walkability of their neighborhood or city through urban design solutions. Poor city design leads to lack of "natural walking", he says, referring to walking for transportation, and consequently recreational trails are added to communities to encourage walking. When people include walking as part of their daily routine, ideally as a main mode of transportation, there is less need for additional time devoted to exercise.

Health Field

The Healthy Lifestyles Coalition at the Marshfield Clinic was founded by cardiologist Charles McCauley, who discovered a marked increase in obesity and obesity related diseases in young patients over the past few decades. He believed it was the hospital's responsibility to promote healthy lifestyles and educate the Marshfield community about fitness and nutrition.

Darcy Vanden Elzen, a nurse responsible for the program management , advises "meeting people where they are" to exercise. According to Vanden Elzen, people are not likely to make drastic life changes but will often make small changes if they are easy and convenient. By putting visible walking trails (marked with a Healthy Lifestyles logo) in the community and encouraging people to add small ten minute walks to their daily activities, people are more likely to increase their overall physical activity. Walking inside, especially in retail establishments, makes sense in the winter because people are unwilling to go outside unless they are engaged in other activities that are important to them. If someone is willing to go to Target on a winter day, but is not willing to walk outside, why not "meet the people" in Target by encouraging them to walk up and down the aisles before they shop? The "Take Ten" campaign calls for just that – to "take ten" minutes to engage in brisk walking at least three times a day to get the daily recommended amount of physical activity. Indoor walking is an attractive option for walkers who have trouble finding the time to exercise, especially in the winter months.

Policy

Laura Manville is a policy coordinator from the New York Chapter of the American Insitute of Architects, heavily involved in the first four Fit City conferences. Increasing stair use is a main focus of the Fit City initiative through design improvements and building code changes. Designing interior spaces which encourage physical activity when first designing the building is a great way to allow for uses and programs after it is constructed. While many building owners embrace designing stairs for daily use rather than only as fire emergency egresses, some are reluctant. Cost concerns from materials and maintenance are main issues. Some building owners were also averse to stair prompts which clashed with the design and ambiance of the interiors. Custom stair prompts as part of the building's wayfinding system can be a solution for this issue. Location of elevators in a secondary place to stairs can significantly increase stair use. Energy cost reductions from reduced elevator use will also help offset the maintenance cost associated with more visibly and widely used stairs.

Policies for multiple uses of a single space can also be a tool to advocate for indoor walking programs. The United States Green Building Council's Leadership in Energy and Environmental Design-Neighborhood Development (LEED-ND) Certification gives credit for schools (or other buildings) that provide spaces for multiple uses. These uses must be in a formal agreement with a valid contract. This credit can be applied to schools that run an indoor walking program, however it must be a formal program. Joseph Clair, of the Chicago Chapter of the USGBC emphasizes the importance of the "innovation" section of LEED-ND. This section allows a building to obtain points for a program or design that addresses sustainability in a creative way. When a critical mass of applicants include the same intervention in this section, the USGBC will then consider it to be a more formalized section of its certification standard checklist. Clair also stresses the importance of measured results of a program. "We need to see the benefit of an indoor walking program before promoting it," Clair says. "Do the health benefits to the community outweigh the costs associated with operating a program (heating the building, additional maintenance an security, VMT to the space, etc)?"

Urban Design

Active Living by Design is a program founded by the Robert Wood Johnson Foundation with a mission to build a culture of active living through local and national partnerships. Mark Dessauer, communications director at Active Living by Design has not had direct experience working with communities on indoor walking programs or spaces but believes there would be a demand for such spaces and programs. On a recent consulting trip, he met a group of walkers in northern Minnesota who walked inside Target stores in cold weather (Target does not have a formal indoor walking program). The walkers lived in a rural area and had few public places to walk inside in the winter. Dessauer notes that it is important to provide places for people to walk in all kinds of weather in rural areas, not just in the winter. In many communities that he has worked with through Active Living by Design, he has observed people driving 10-20 miles to town centers with parks, sidewalks and street activity to walk. Rural areas often lack

sidewalks and roads can be dangerous, especially in cold weather.

Mall Walker Advocate

Sara Donovan, author of *Mall Walking Madness*, is the authority on walking at the mall. Her book is the singular guide on mall walking and her mall walking programs have been replicated across the country. She started walking at the mall herself after being bored with walking on the indoor track at her gym and consequently founded WalkSport America, an organization focused on promoting walking and walking clubs. She says that indoor walking programs help walkers stick to a year round routine, as many people won't walk outside because of the cold weather. Temperature is the driving reason for indoor walking, she says, although poor sidewalk conditions and safety are other factors. Mall walkers often show strong adherence to their walking routine largely because of the social aspect of walking at the mall. While this is a positive outcome from a health perspective, it is problematic for planners and urban designers, as it encourages walkers to walk inside the mall year round rather than use the mall as a supplement to outdoor walking, weather permitting. The visual interest of the mall and presence of people is a huge draw for walkers. Donovan advises walkers to find a local high school if there is no nearby mall. Schools are a good option because you can choose a route through different hallways which is more interesting than walking on a track or on a treadmill.

6

Findings:

A Summary of the Cases (Burlington Mall, Three Rivers Church, Maine Schools, Well Walkers, Marshfield Clinic, Fit City, Alexian Village, Boston Head Start, Waterloo Recreation Center)

Design

Organization and management

Programming details

Challenges

Success stories

Missed opportunities

Further research areas

Design

The cases presented in this thesis cover a broad range of building typologies, urban patterns and geographic locations. This section will identify commonalities amongst the cases and extract key lessons from the group as a whole.

Among the cases studied in this thesis, there are four degrees of association with walking to the building's purpose:

1. Space designed specifically for recreational walking (example – Waterloo indoor track),

2. Space designed for leisurely walking with another use, often shopping (example - Burlington mall)

3. Space designed for transportation walking (example – hallways of schools, stairwells) and

4. Spaces not designed for walking (example – gymnasiums).

Not counting the programmatic element of the walking programs, there is a direct relationship between the numbers of walkers in each space and the association of walking as a purpose of the space. The Waterloo indoor track has the highest number of walkers per day, followed by the Burlington mall, Maine schools, with the Three Rivers Bible Church attracting the least amount of walkers. This is not necessarily a statistically significant comparison but is an element of building design to study as research on indoor walking programs continues.

Interior Spaces

The buildings used for walking vary significantly. The Burlington mall and the Waterloo Recreation Center seem to be the most appealing places to walk, as they are spacious and have views (outdoor views in Waterloo, views of shops in the mall). School buildings seem to be the next best option, as the hallways are long, with posters and children's artwork on the walls, and it takes a while to complete a "loop" or "trail". The smaller venues, mostly in gymnasiums, are the least spatially and visually interesting and walkers need additional stimulation to prevent boredom. This may be where the socialization or programmatic factor is most important. A study on mood and exercise shows that environmental factors do not significantly contribute to mood and self efficacy among people exercising if they are over the age of 65, however, human interaction does. The opposite is true for people under the age of 65 who exercise. This finding supports the observation that most indoor walkers are retired senior citizens who are less concerned with the aesthetics of their physical environment than with human interaction. Why else would someone choose to walk in a deserted parking lot on a beautiful day as the Burlington mall walkers do in the summer?

Although environment does not make as strong an effect as socialization on senior citizens, this does not imply that interior design is not important in indoor walking – it only indicates that the condition of a building is less important for a successful program than social factors. There are instances of

people walking inside big box stores, and although I have not been able to find any significant information on this (number of walkers, age of walkers, solo walkers or walkers with partners, etc.), there were no known instances of groups larger than two using the space for walking. Big-box stores have no specific program, or organized times for walkers, and it may be cumbersome for groups of walkers to easily navigate the stores. Using big box stores for indoor walking seems ideal for an individual walker who may be looking for visual interest (Merchandising can be an art form!) but does not want to commit to specific hours and is not interested in walking with a group or not able to find a group. With the rise of big box stores, I am certain there will be a rise in individuals who seek them out for an exercise venue and these stores may be able to capitalize on this activity to both provide a valuable community resource and also to increase potential customer visits to the store.

Primary users of space

A major challenge to indoor walking is the relative importance of walking to the main activity of the host building. In many cases, the walking activity is a secondary or tertiary function of the building, and walkers can be easily displaced, permanently or temporarily. In the case of the Waterloo Recreation Center, the walking track was sometimes closed for other events, upsetting walkers. Several public schools in Wisconsin cancelled their walking program, citing lack of funding (which seems to be a poor excuse, given the low cost model in Maine), and several malls have cancelled their mall walking hours (for financial and other reasons). That indoor walking is a secondary function is not a bad thing – it allows the activity of indoor walking to occur in a variety of buildings with a variety of functions – it simply presents the challenge of hierarchy of uses. This lower level of importance may also be a reason for the "laissez faire" attitude of walking groups. Many programs simply provided a space, but do not have dedicated programming staff, and are inclined to let the walkers simply have access to the space. Walking management groups not affiliated with the host buildings were often more invested in the programs in the cases studied (Well Walkers/Roberto Clemete Center & Whiting Community Center, Healthy Living/Marshfield Coalition, Uphams Corner Medical Center/Boston Head Start). These groups also integrated a wider range of healthy activities into the walking program,

rather than simply providing a space for walking. Additionally, these groups appeared to work with more non-seniors than the other groups studied.

The Fit City initiative addressed the relative importance of physical activity within a building to other functions in its attention to stair design, and building codes related to stairs. Although their attention to stairs is to encourage people to use stairs for transportation, not necessarily recreation, the highlighting of these spaces can help provide a space for people to walk (vertically, on stairs) in urban settings where long hallways may be less available. Because stair design takes a backstage role to the rest of the interior design of most buildings, the use of these steps is discouraged – these spaces are not welcoming and in some cases, even forbidding. By incorporating these spaces into the rest of the building, walking on stairs is perceived as an important and natural activity.

Location

Another major challenge is in the location of the indoor walking venues. In all cases, the majority of walkers drove to the venue. In many cases, walkers walked outside, often in or near their neighborhood in the summer, although in some cases, such as the Burlington Mall, and the Waterloo Recreation Center, people drove to the indoor walking venue to walk year round. The main driver for walkers to continue indoor walking (or outdoor walking in the parking lot) in the Burlington mall (and likely in other year round venues) is the socialization factor – they have a routine and know their friends will be there, so they walk inside even if the weather is nice. A staff member at the Waterloo Recreation Center cites fear of crime and injury walking outside as a reason for seniors to continue their walking inside year round, however, she also noted the heavy activity of the café in the morning hours – catering to seniors, post-walking session, which indicates socialization is an important factor in drawing walkers year round as well.

Lack of indoor walking in proximity to potential walker residences is a problem if one of the goals of an indoor walking program is to increase net walking. The Burlington mall walkers are unlikely to change venues at this point as many of them have been walking there for years, however, if there had been indoor walking programs closer to their homes when the

walkers first started walking. A smaller but still viable group could gather at these spaces and an increase in outdoor walking activity may have occurred in the spring, summer and autumn seasons, as there would be a central meeting spot near a walkable neighborhood (assuming their neighborhoods are pedestrian friendly). This is highly dependent on the proximity of the venue to the homes of the residents, and the maintenance of sidewalks along their route. Despite its location, the Burlington mall has served an important purpose for its walkers – a clean, warm, large indoor walking space with coffee shops where people can consistently gather every day, walking at their own pace. The additional benefit of weekly blood pressure screenings is a bonus activity that can be expanded upon, though is not necessary for the success of the program.

The development of indoor shopping malls is currently on the decline, and many malls have closed over the past few decases. A number of these malls have had long running indoor walking programs. Two cases in this study were developed as a reaction to displaced walkers from nearby closed shopping malls. One group (Well Walkers) successfully transitioned walkers into a new venue, while the other group (Alexian Village) was unable to do so. In some ways, shopping malls, despite many having car dependent locations, are the perfect location for indoor walking. After all, these places were designed to feel like an outdoor plaza, to feel comfortable for people to stroll through, shopping, and lingering. As new outdoor malls and lifestyle centers are replacing indoor malls, indoor walkers are forced to find a new place to walk inside.

The Well Walkers group makes efforts to connect indoor walking to outdoor walking, by leading groups outside in the summer, and creating disincentives for indoor walking by not air conditioning the indoor walking space. The areas served by Well Walkers are dense with sidewalks and although certain neighborhoods have moderate crime rates, there is great potential to increase outdoor walking. Physical changes to the neighborhood, such as providing pedestrian access to the lake from the Roberto Clemente Center (the lake is a half mile away, but there is no pedestrian access due to interruption by train tracks) will help give residents better access to recreational walking places in their neighborhood. The Well Walkers are also an example of a walking program that built itself on an existing group of walkers to develop a more comprehensive program, engaging members in meetings and

working with them to encourage a wider range of healthy activities. The increase in walking activity on the street also helps deter crime and walkers may be able to work with police to increase patrol activity, especially around the center. WalkBoston, a pedestrian advocacy group in Boston, sponsored walking groups in previous years in partnership with health clinics and asked local police to patrol the area when walking groups were present. Although not a long term solution, this can help deter criminal activity and boost number of outdoor walkers. These tactics apply mainly to urban and suburban locations. Rural locations can be a challenge because the low density requires some kind of motorized transport to ensure a critical mass of walkers can reach the indoor walking space. One good solution was to location indoor walking spaces in places where walkers are already travelling to. The Healthy Lifestyles/Marshfield Clinic encourages walking indoors in places that walkers are running errands – if walkers are going to the grocery, they are encouraged to walk around the grocery store before shopping. This eliminates the need for extra driving for exercise. From an urban planning perspective, it is critical to maintain pedestrian activity on the street and not remove walkers from the public realm. Indoor walking programs and venues that connect or encourage outdoor walking may help increase physical activity both indoors and outdoors. Pilot programs that incorporate indoor and outdoor walking can draw from lessons learned in current walking programs and venues to better understand recreational walker behavior in order to design spaces that can encourage physical activity for a wide range of people.

Program Details

The extent of the programmatic elements of the walking group depends on the larger goals of the walking program. While the main goal for all walking programs is to increase physical activity, each program is slightly different – some of the cases were extremely hands-on with walkers, maintaining a relationship with them, providing wellness education and monitoring health progress, while others offered places to walk but did not keep track of walkers or offer any additional support. Some programs took a more wholistic approach, promoting healthy diets, and showing health videos, while some simply focused on the exercise component of wellness.

Not all walkers want anything more than a place to walk and it is important in any walking program to determine what the intended audience is interested in. Some walkers want to be left alone to pursue walking on their own time and at their own pace. The walkers at Burlington mall had been walking at the mall for years (some as long as 15 years) and came to the mall to meet their friends as well as to get some exercise. They were less interested in diligently walking a specific number of miles than were younger walkers at the mall. Younger walkers at the mall paid careful attention to staying close to the perimeter of the building to ensure they were walking the exact number of miles for their own exercise routine. The social activity and the routine were more important for senior walkers than the actual exercise activity and therefore a pedometer program or monitoring program may be less effective on this population than a population actively trying to lose weight.

Contrasting with the mall, the Well Walkers program lost significant membership (also in contrast to the mall, the Well Walkers have a membership program, whereas the Burlington mall is open and does not register or monitor walkers) when the management group dropped some its programming during a staff transition. Membership once again increased when contact was made with walkers, and regular meetings with lectures and pedometer contests were reinstated. Although some walkers are interested in progress measurement and feedback, group led indoor walks do not seem to be a favorable activity. This is the main distinction I found between the successful and unsuccessful programs. There is no conclusive evidence for the failure of the Alexian Village and the Head Start walking program, both of which were indoor group-led walking programs, but I believe this lack of independence among walkers was a factor.

There is a delicate balance between underprogramming and overprogramming. The level of managed programs and activities related to an indoor walking program depends on the audience, however, there are certain trends that can be seen in the cases. In the case of walkers with a primary motivation of socialization, set hours for walking allows them to adhere to a specific schedule, ensuring other walkers will also be in attendance. For walkers whose primary motivation is weight loss, performance feedback is critical. There is an increase in availability of personalized measurement tracking devices that allow people to constantly check their performance. Monitoring steps with a pedometer, or timing your walking workouts is

important for those trying to reach a specific goal. Material incentive based programs can help people reach their goals but often recognition and feedback are enough incentive for people to move forward. Insurance sponsored wellness programs often apply this tactic in order to keep people involved in health and fitness programs.

Organization and Management

Walking programs are relatively simple to run and many people walk on their own without the need for a formal group. Building on existing groups of people and expanding the reach and activities of the program is a successful method for building a strong walking program. With that in mind, walking groups often provide incentives for people to walk, such as peer support, progress measurement and feedback, and socialization, and can encourage more people to join an existing program. In some cases, the owner / manager of the building developed and manages the program. These cases, the Burlington mall, Three Rivers Bible Church, Maine District Eleven Public Schools, Alexian Village and the Waterloo Recreation Center, all have very different objectives for implementing programs with different levels of success. Among these, only the Three Rivers Bible Church has a member of the management team participating in the walks.

In most cases, community input was not taken into consideration when developing the program, with the exception of the Waterloo Recreation center, where the community was asked if they wanted an indoor walking space prior to its construction. Many of these cases want to provide a community service by allowing walkers in their buildings but maximizing the number of walkers is not a high priority. With the exception of Alexian Villages, these cases rely primarily on word-of-mouth advertising to bring new walkers to the space. In the case of Maine District Eleven Public Schools, there was a large initial push and a well planned program developed but it is not a program that commands significant attention for expansion. There is an "if it's not broke, don't fix it" attitude among most of the groups running these programs. Numbers of walkers are known generally but there are no strategies in place to increase walkers or expand program offerings. The

programs serve their purpose but are not explored for further opportunities.

It does not cost much to run a basic indoor walking program. Costs typically include heating bills, staff to monitor the building, maintenance and occasional advertising. Using a building during working hours, such as Maine's District Eleven Public Schools does not incur any additional heating bills and there is already staff present. Maintenance fees can also be minimized. A group of public schools in Wisconsin ended their indoor walking program, claiming expenses for maintenance crew, however, a well run program does not have to involve much cleanup. Maine's District Eleven Public Schools implemented an "indoor shoe" policy to avoid mud and ice tracked in from winter walkers. The Burlington Mall manages building costs by not running the escalator during mall walking hours, and keeping the heat to a minimum (as a result, most walkers walk on the first floor, where it is warmer). More involved programs that monitor walker progress, such as the Well Walkers of St. Catherine's Hospital, can incur additional expenses, such as providing pedometers, hiring dedicated staff to manage the program, providing refreshments, incentive prizes and giving public lectures (although donations and volunteer efforts can help keep these costs low as well).

Currently health institutions are strong programmatic partners for indoor walking programs. Community schools can be another great partner for such a program. Insurance companies can also contribute to this effort, especially with individual measuring methods – such as supplying pedometers to walkers. Current programs such as Health Miles help walkers keep track of their walking progress and helps people stick to a program. Increased incentive programs can help these programs. Senior centers can also be key players in indoor walking programs, either by providing a place to walk or a place to meet to walk.

Challenges

There are a number of different challenges to indoor walking programs. The main problem that needs to be addressed is the awareness and image of the activity itself. Organizations that

promote indoor walking (such as the AARP and the CDC) target walkers for information, rather than building owners, health officials or planners. There are messages to individuals to find places to walk inside on their own, but no messages to individuals or organizations who are in a position to provide spaces for people to walk inside. There are few "indoor walking advocates." – it is not understood or even acknowledged on a level that will allow programs to be replicated across the country in an organized way. Indoor fitness walking programs are not difficult to organize, however, if the benefits of the program are not known or championed, there will not be enough support to run even the simplest of programs. If health benefits of indoor walking in the winter are studied and made known, there is no reason there cannot be national standards, guidelines or recommendations for indoor walking programs across the country.

Security is another challenge. Although security was not a major issue in any of the cases studied, it may pose problems as indoor walking programs become more popular, especially if the programs take place in buildings that are largely empty except for walkers. Some indoor walking program require membership in other groups (such as America on the Move) which can help screen walkers and take some of the administrative burden off the host building or program leader.

Location is the third major challenge to indoor walking programs for two reasons. Many indoor walking spaces are currently located in places that are accessible only or mainly by driving. The Burlington mall is served by public transit, however the system does not serve most of the walkers who currently use the space. The accessibility of space by walking or transit is important in that walkers who cannot drive, due to age, ability, financial or other reasons should not be excluded from the space. It is also important from an environmental sustainability aspect, as an increase in driven miles is not a positive side effect. The second challenge with location relates to the development of habits among walkers. Mall walkers often become so accustomed to walking at the mall that they will walk at the mall even in pleasant weather because it has become their default place to walk and a central meeting spot for finding their friends and fellow walkers. If the indoor space is located in an area that has immediate access to walkable neighborhoods, parks or trails, there is a possibility that the walkers would continue to use the indoor walking space as a meeting point but would then shift to walking outside. This is

currently happening with the Well Walkers club though I am not aware of any other indoor walking programs that follow such a format.

Success Stories

Most of the cases studies were successes in their own right though none of the programs started with specific goals to attract walkers, providing no benchmark for comparison. Overall, indoor walking programs are set up as a "nice thing to do for the community" rather than a specific intervention with targeted goals for increasing health (though the Well Walkers club comes closest to this). Although there is something to learn from each of the cases, the three programs that stand out as being models to emulate are the Well Walkers club, the Burlington mall and the Waterloo Recreation Center. Each of these were successful in different ways that can be applied to different scenarios in other areas.

A major success of the Burlington mall is the dedication of its walkers and commitment to the program. Walkers come back to Burlington year after year, some having walked there for over 15 years. The consistency of its mall walking hours and the social bond between walkers has resulted in a very successful program. The mall is comfortable, reliable and provides a place to sit and socialize after walking. Walkers take ownership over the space and feel a strong connection to it.

The indoor walking track at the Waterloo recreation center has the highest number of walkers among all the cases studied. This may be because it is the only space designed solely for walking (it is also used for running, but for purposes of this research we can combine the two). It is also the only program that charges a usage fee during "peak hours" which helps run the building while allowing time for people with lower or fixed income (primarily seniors) to use the track for free. It is also one of the few places that attracts walkers who travel to the space on foot (though many walkers also drive to the center).

The Well Walkers club is the most successful at making connections between indoor and outdoor walking. This program has the most potential to work as a model for urban design guidelines for active living as it addresses both the need for

physical activity and the importance of the presence of people walking throughout neighborhood streets. It also manages weight loss and healthy living programs which have shown positive responses from walkers.

Missed Opportunities

Neighborhood schools are a big missed opportunity. There is a movement for "community schools" in which neighborhood schools provide additional services to their surrounding communities (Coalition for Community Schools 2009). One of these services could easily be indoor walking. In urban and suburban areas, they are often located within walking distance of residential areas, which have the potential for indoor walkers to walk or at least drive a short distance to the facility. They have wide hallways with different routes to walk and artwork/posters/ murals to create visual stimulation. They are public buildings and have times early in the morning or afternoon/evening when children are not in the building so the community would have an added return from their tax payments. Costs of this program are minimal. The walking program in Maine District Eleven Public Schools has been successful with little operating costs. The building is heated in the morning, as teachers and other staff are setting up. There is little added maintenance as walkers are required to bring "indoor walking shoes" which they change into once inside the building. Security and liability are two issues not covered in this case, both which can be potential problems in other scenarios. In the Maine case, walkers were not required to register, but the program manager noted that they were all "community members" and that "everyone knows everyone else." How does this translate to schools where the community is larger? If security guards are needed, sections of the school may need to be closed off for security coverage. Walking though hallways with relatively few people can be a safety problem depending on the length of the hallway. The Boston Head Start indoor walking program handled this issue by walking together through the building as a group. While this solved one issue, it creates another: walkers in many cases want the freedom to walk at their own pace, in smaller groups (often in pairs). Requiring everyone to walk together can be frustrating for walkers and can decrease the odds of the program being sustainable in the long term.

Further Research Areas

I was not able to interview a representative from a "big box" store. Although I do not have specific numbers of walkers using "big box" stores for walking, anecdotal evidence suggests that this is a widespread phenomenon occurring in Target, Walmart, Lowe's, Home Depot and other similar stores. I spoke with a few store managers who were aware of fitness walkers using their stores for exercise, but they largely did not pay much attention to these walkers and did not have any information regarding number of walkers, time of day visited or other behavioral observations. Would big box stores potentially take the same attitudes towards walkers as indoor malls? IKEA stores have interesting "trails" and could be a great place to walk – would they be willing to host walkers?

7

Handbook

Overview
Policy
Design
Operations
Getting Started

Designed to be used by community planners, developers, building owners, architects, health professionals and fitness & recreational walkers, this handbook provides an overview of the challenge in creating indoor walking programs and spaces, identifies areas of consideration, and urges advocates to treat these programs and spaces as part of a large public network of indoor and outdoor spaces and paths that contribute to a vibrant public realm and community.

Overview

Walking

There has been an increased focus on exercise as part of a healthy lifestyle in recent decades, due to an increase in obesity and obesity related diseases, as well as an ageing population that wants to remain healthy in their golden years. Walking is the simplest form of exercise, as it requires no special equipment or location, and planners and health professionals

have both promoted this as a universal exercise method. One of the largest challenges to walking can be winter weather – while there are walkers who walk through the seasons, most people do not want to walk outside when the weather is cold. This applies most to seniors, who have difficulty with both the cold weather, and icy or snowy sidewalks. How can we overcome this challenge? Many people are currently talking on this problem by walking indoors in the winter, either through a formal program, or by simply finding areas that are comfortable, and walking around these spaces.

Connected Places

From a planner's perspective, walking is key to a vibrant civic life, and moving walkers indoors can be detrimental to the life of a city. The goal, then, is not to push all walkers into an indoor walking program, but rather, to design indoor walking programs that will serve a population that is not able or willing to walk in the winter, and develop a bridge from walking indoors to walking outdoors. Indoor spaces can be part of a larger network of places for walking. Just as we design streets for one type of walking and recreational paths for another, indoor walking spaces respond to a need for walking that is currently not met. Indoor walking spaces can range in their level of openness. In some areas, the indoor space can be used at certain times of the day, while others can remain open throughout the day, providing a more public space for walkers. In an urban area, this can contribute to the permeability of the built environment, allowing walkers to find shortcuts through buildings or have places to walk through to get out of the elements. In more rural or suburban areas, indoor walking spaces can be combined with other activities to produce a more walkable place. Just as "lifestyle centers" promote walking, big box stores, movie theaters, restaurants or other places can provide a place to walk for recreation when shopping or engaging in other activities. This can be a great way to cluster uses, providing a greater mix of uses resulting in more vibrant places. An ideal program would a) be accessible to a population that can benefit from indoor walking, or that does not have other options for indoor exercise [due to financial or location reasons]; b) encourage walkers to walk outdoors in warmer weather, and also if possible, in colder weather as well; and c) be accessible by walking, or public transportation. The second point may be the most difficult to achieve as we are creatures of habit and tend to get used to certain places or routines. Clear connections to outdoor walking spaces, through

programs, education and physical access can help meet this goal.

This Handbook

This handbook draws from lessons learned in the case studies and urban design principles to establish best practices for indoor walking programs serving a range of populations, in different urban settings. These guidelines are meant to be used in conjunction with urban design guidelines focused on promoting active living and creating connected communities.

This handbook identifies best practices for designing interior spaces for walking and implementing and maintaining an indoor walking program. Indoor walking programs or spaces can be incorporated into new master plans, new buildings, or retrofitted into existing places. Each community is different and these tools provide a strong foundation for establishing indoor walking programs that can be tailored to meet unique neighborhood situations. Many successful programs have been the result of partnerships and health focused coalitions. Often groups promoting or managing indoor walking programs may not have access to spaces where people can walk and need to find "host" sites to with which to partner. As such the audience for this handbook is broad and includes walkers, health professionals, planners, architects and developers. Each of these plays different roles in the development and management of an indoor walking program, with many possible overlaps.

This chapter is divided into four sections:

1. Policy. This chapter discusses methods of increasing the importance and breadth of indoor walking programs through creating awareness and implementing regulatory and incentive measures.

2. Design. Drawing from indoor walking case studies and outdoor walking guidelines, this chapter highlights materials and specifics of building types and urban design to create indoor walking spaces that are the most beneficial to people and communities.

3. Operations. This chapter calls out different programs and organizational challenges for indoor walking

programs. It also categorizes roles of actors in an indoor walking program.

4. Getting Started. This chapter provides guidance for developing and managing an indoor walking program. It also takes a step back to recommend methods to make a community or built space amenable for future indoor walking programs.

Policy

Awareness

Regulation based strategies

Incentive based strategies

Where is our public realm? We encourage walkability and street activity but in cold and rainy / snowy weather, where can we go? The indoor shopping mall is in some ways a brilliant solution to this problem. However, indoor malls have in large part disconnected themselves from the rest of the communities they inhabit and turned completely inward, removing activity from the street. Are there ways to find indoor spaces that can help supplement active outdoor living without removing pedestrians from the street entirely? Can indoor walking spaces serve a dual role: providing all weather options for walking while contributing to a public network of places and spaces in communities? What would these spaces look like within the community? What policies would have to be in place? What players are involved in the planning, marketing, managing and maintaining of these places? Community centers can do more to provide indoor spaces for people to walk, play and socialize in cold and rainy weather. Big box stores can provide a place to walk and socialize – in a "mini mall" atmosphere. There are many other types of buildings that can offer indoor walking programs, and these types of spaces can offer a good start to providing places for walkers. And these indoor walkers apply a new use to a space that is used for another purpose and is often underutilized. These are the scraps of our urban fabric that innovative individuals make into vibrant spaces with their determination to walk and socialize in weather that would normally prevent it. A look at

existing walking programs shows that many of these cases grow up through adhoc methods and almost by chance, with little coordination between public officials, private actors and the ultimate users. What policies are needed to change attitudes toward indoor walking programs and spaces from choosing spaces because they are convenient to being thoughtfully planned and matched to create a good fit for all?

There currently are no standards or guidelines for the design and management of indoor walking programs. How can we create an environment which allows for indoor walking programs to be implemented in a natural way that properly fits into the surrounding community. This chapter will identify methods to increase awareness of indoor walking programs and elevate their importance in the fields of planning, architecture, development and healthcare. It will also look at regulation and incentive based strategies to encourage and allow for appropriate indoor walking spaces that incorporate into the greater walking network of a community.

Awareness

An important part of implementing indoor walking spaces and programs is the creation of awareness for the activity. Numerous health organizations encourage indoor walking for exercise, especially for seniors and people living in colder environments. However, the emphasis is always on the individual taking an action on his or her own. There is little emphasis on the importance of the availability and design of these spaces and it seems even less on marketing spaces and programs. It is one thing to recommend an action, it is another to recommend providing a space for that action.

Indoor walking spaces can be incorporated into city plans as part of the overall walking or recreational network. When maps are drawn of sidewalks, connections can be made to buildings that currently offer or could potentially offer space for indoor walkers. Indoor walking programs can be listed as a program to receive funding (it may not matter the amount, as long as it is an official program).

Public education and information can also be a piece of this. Many places currently post signs encouraging building users to take staircases rather than elevator (though in many of these

spaces, the receptionist or door greeter still guides visitors to the elevator rather than the stairs, indicating a need for staff training). Visual cues such as mile markers and permanent wayfinding markers can also increase awareness of the use of the space for exercise. Signage could also be expanded to suggest using the space for a more rigorous workout –"Can't take your lunchtime walk in the rain? Five laps on our stairs

Figure 19: Tile distance marker
Source: Martin LaBar

equal a mile!"

The following lists ideas to develop an awareness of indoor walking in the public realm and in industry:

Public awareness

a) Mapping
   i) Add to online maps (such as Google maps)
   ii) Publish on city map
   iii) Tourist maps
   iv) Add maps to building interior walls

b) Signage – building exteriors / interiors
   i) Universal standard "interior walkway" street sign outside the building
   ii) Interior or floor markings (create awareness among building's typical users)

c) Websites / promotional materials
   i) Building website
   ii) Partner organizations

d) Doctor "prescriptions"

e) Marketing to existing groups
   i) Weight loss groups

ii) Senior citizen groups
iii) New mother groups
iv) High school / teen groups
v) Physical therapy / physically challenged groups

f) Allow and encourage public feedback. Organizer / manager should be public and easily accessible for comments and complaints

Industry awareness

a) Handbook / guidelines for new or potential developers

b) News or information to developer / architect / planning / health professional/insurance journals and websites

c) City planners can be the main "champion" or "owner" of indoor walking, and can work to rally other interested parties.

Regulation based strategies

Regulation based strategies are types of strategies that establish regulations or standards that will results in specific outcomes. Rather than providing incentives, property owners can be required to provide spaces for activities when locating in certain areas. Building codes can be changed to encourage walking or stair climbing in all buildings, or at least in public buildings. While not all buildings are appropriate for walkers at all times, designing a building with this use in mind allows flexibility for the future. In many cases, good design for walkers does not require much additional cost, if any.

Neighborhood schools are a great place for walkers, as discussed in the next chapter. As part of a community program, all neighborhood schools can be required to host indoor walking programs during the school year in areas that receive a certain amount of snow, or fall below a certain temperature in the winter.

Private buildings with large footprints, or big box stores can also be required to host indoor walking. Technically, big box stores already host indoor walking without any formalized

programs, but they can be designed to accommodate these walkers better.

Site location and exteriors can also be an important part of creating a good indoor walking space. Many places where people walk currently have no connection to outside walking. Ideally indoor walking spaces would be in walkable neighborhoods or town centers, or places where people would walk outside when the weather is warmer. Separation of indoor and outdoor walking spaces can be a problem, as people tend to get used to one location for walking, and are likely to choose indoor walking year round, which can be detrimental for the health of their community. This situation is more complicated than many other issues involving indoor walking because it requires looking at city plans, density, walkability, and smart growth type development. Some communities may not be willing to develop in this type of pattern. In this case, an alternative solution to siting indoor walking spaces in a walkable area can be to require big box stores or other potential indoor walking places to develop an outdoor walking trail near the store to give walkers options in warmer weather. This also may be a positive element that can lead to more compact development over time.

Program policies can be useful to push people to walk outside in the winter. These can include ceasing programs in the summer, or when weather is warmer, not air conditioning the space in the summer or charging a fee for summer use.

The following is a list of regulation based strategies to increase the number and quality of indoor walking programs:

1. Create national requirements for indoor walking spaces to appear on recreational and pedestrian plans receiving federal grants or monetary support.

2. Change building fire code standards for stairwells to accommodate walkers. Specific examples may allow for alternative floor fire doors, automatic fire gates, alternative materials.

3. Require public schools to host indoor walking programs. Provide financial support for programs as part of a healthcare initiative.

4. Develop national standard signage that will be nationally recognizable and will aid in directing people to indoor walking spaces.

5. Employ park rangers who normally work in the summer to staff winter indoor walking programs.

6. Require retail buildings over a certain square footage to allow and promote indoor walkers and to provide or connect to an outdoor walking space.

Incentive based Strategies

Incentive based strategies may not look entirely different than regulation based strategies. Some regulations can also be modified so they are being adhered to on a voluntary basis. Cities can evaluate their need for indoor walking programs and provide incentives for adherence to policies and guidelines. Rather than require buildings to adhere to certain codes or design regulations (or perhaps in addition to), incentives can be used to pull building owners into creating space for indoor walkers. These incentives may include floor area ratio allowances, transfer of development rights, liability waivers, tax incentives, release from outdoor space requirements or others.

Incentives can also be used to encourage walkers to participate in the indoor walking spaces and also to use outdoor walking spaces in more comfortable weather.

Insurance companies may also be able to work with building owners to provide incentives for indoor walking programs as part of healthy living incentives. Many insurance companies provide incentives to individuals for participating in healthy activities. There may be opportunities to employers for providing spaces for employees (or the public) to walk indoors. Business parks have an opportunity here to provide a central place to walk indoors as well as outdoors. Additionally, stakeholders such as the health field and senior citizen services may want to partner with private building owners to

implement indoor walking programs, since they are likely to see the most benefit from increased walking of citizens.

Program policies can also be used to entice walkers to walk outside in the summer. These may include organized outdoor walks (often it is a good idea to use the indoor space as a central meeting space), or social functions related to outdoor walking.

The following is a list of incentives for creators of indoor walking spaces and users of indoor walking spaces:

Creators
(Architects, developers, city planners, building managers):

1. Density allowances
2. Transfer of development rights
3. Releases of liability
4. Releases of outdoor space requirements
5. Tax benefits
6. Health insurance refunds
7. Operation hour extensions
8. Advertising opportunities

Walkers:

1. Health insurance refunds / rewards
2. Monetary rewards
3. Feedback programs – health, weight loss information/tracking, mile marker signage
4. Group led outdoor walks
5. Wellness lectures
6. Free parking / transit passes
7. Gym membership discounts
8. T shirts promoting program
9. Maps to outdoor walking spaces
10. Games / scavenger hunts for outdoor walking trails (with prizes, incentives)
11. Coupons or discounts from retailers

Design

Building Type

Interior Design

Site Location

Physical design considerations consist of three elements: Building type, interior design and site location. The type of building – the size, shape and current use -- is important in determining how walkers will be received in the context of the building's usual functions and operating hours. Indoor fitness walkers are rarely the primary users of any space. How the building was designed and for whom it was designed presents specific challenges and opportunities for indoor fitness walking. The interior design of the building is equally important. Here, physical details such as widths of indoor paths (an indoor path can be a hallway, track, stairwell or perimeter of large rooms), "shape" or "pattern" of indoor paths, entrances to the street, lighting, divisions of space within the building (or ensuring harmonious use between walkers and other building users) and other such physical design features. Lessons from sidewalk, recreational path and indoor mall design can help inform the attractiveness and usability of the space for walkers.

Designing the interiors of buildings for recreational walking requires a new look at the function of walking inside buildings. Outdoor spaces such as sidewalks and paths are designed specifically for the pedestrian. Indoor spaces, with the exception of indoor malls are not designed for this purpose and the consideration of this type of activity in the design of the building will require a broad shift in thinking about the way indoor spaces are used. It also calls into question what it means to design a space for walking. Recreational paths, sidewalks, indoor malls, treadmills and indoor tracks are all designed for walkers and all look very different. Based on these models, what should indoor walking spaces look like? What conflicts, if any, occur between the design for recreational walkers in a building and other users of the space?

Site location is critical to ensure accessibility for potential walkers, reduce dependence on auto travel and make

connections to the outdoor walking network. The location of the site is especially important if the indoor walking program is to be part of a large system of walking spaces. The indoor walking space should be a part of a city and be connected to other activities, such as outdoor paths, commercial areas, or other places that attract people. The indoor walking space should not be an isolated area and should not function solely as a fitness center. Many people walk for social reasons as well as for health reasons and want to be connected to others. For this reason, it is important that indoor walking spaces are not isolated.

Building type

In theory you can walk inside any building. There are certain buildings of course that are more suitable for longer indoor walks that more closely simulate the feeling of walking outside. The larger the building footprint, the more opportunity there is for exploration and getting a feeling of getting somewhere new. While buildings of this size are a minority, there are opportunities for indoor walking in a wide variety of buildings.

The chart below identifies a list of types of buildings that may be good candidates for indoor walking programs, each with characteristics that can be helpful or pose challenges for an indoor walking space. These characteristics may be more or less important depending on the type of walkers and programs involved. The question of ownership is important for all cases, as it may be easier to convince a public building to host a public program than a privately owned building. The functional hierarchy of walking in the space is also important as it will help determine the level of design involvement or programming involvement. The higher the function of walking as a use of the space, the more likely it is an attractive space for walkers. Walkers will use the perimeter of a large gymnasium for walking, but it isn't a very interesting and engaging place to walk, so other factors such as socialization or programs will be necessary to keep walkers motivated.

This list should be used to start the process of identifying appropriate buildings for indoor walking, but it is by no means complete. Some unique spaces that are used are in factories, fashion trade buildings and even greenhouses. Every

community should look at each building as a potential space for walkers.

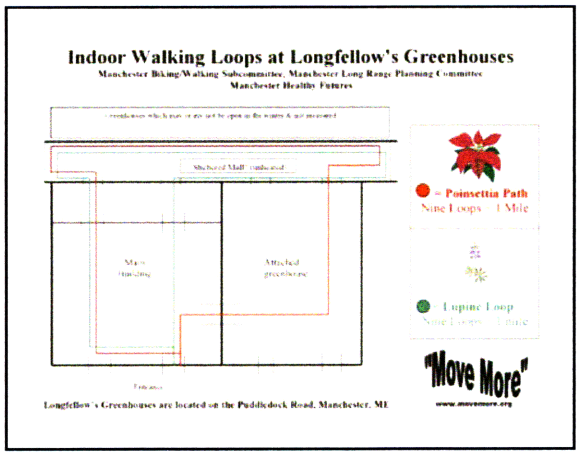


Figure 20: Greenhouse indoor walking loop
Source: Longfellow's Greenhouse

The chart following this section looks at a select group of characteristics of walking spaces. This list may not cover elements that are important for some specific walking programs, but should cover all of the most basic attributes. It is important to note both the footprint size and interior layout of the space. The footprint size matters less in making an interesting route for walkers than the interior layout. The chart uses three types of interior layout to describe common walking spaces: Trails, loops and vertical spaces. Trails refer to hallways that turn and connect to each other in ways more complicated than a simple loop. Loops refer to circuitous paths around the perimeter of a room or building. These can be incorporated with stairs to make a more interesting walk. Vertical spaces refer to stairwells.

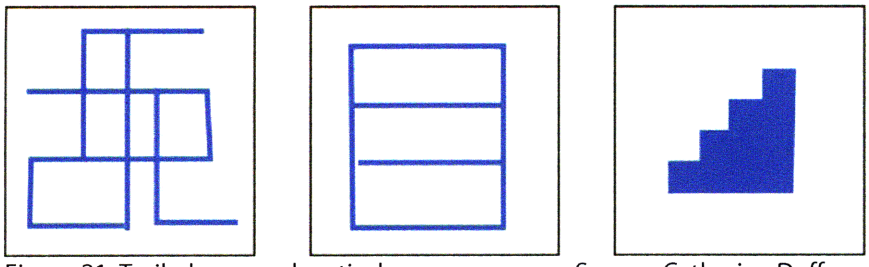


Figure 21: Trails, loops and vertical spaces Source: Catherine Duffy

The walking function hierarchy is also an important feature to note. In the chart on the following page, primary spaces refer to spaces where walking is the primary activity, such as indoor walking tracks. Seconday functions refer to indoor malls, where walking was a specific activity that the building was designed for. Tertiary functions refer to school hallways or big box stores where walking is not a primary use, but hallways or aisles have been designed for walkers. The rest are spaces that are not designed for walkers but can be used by them.

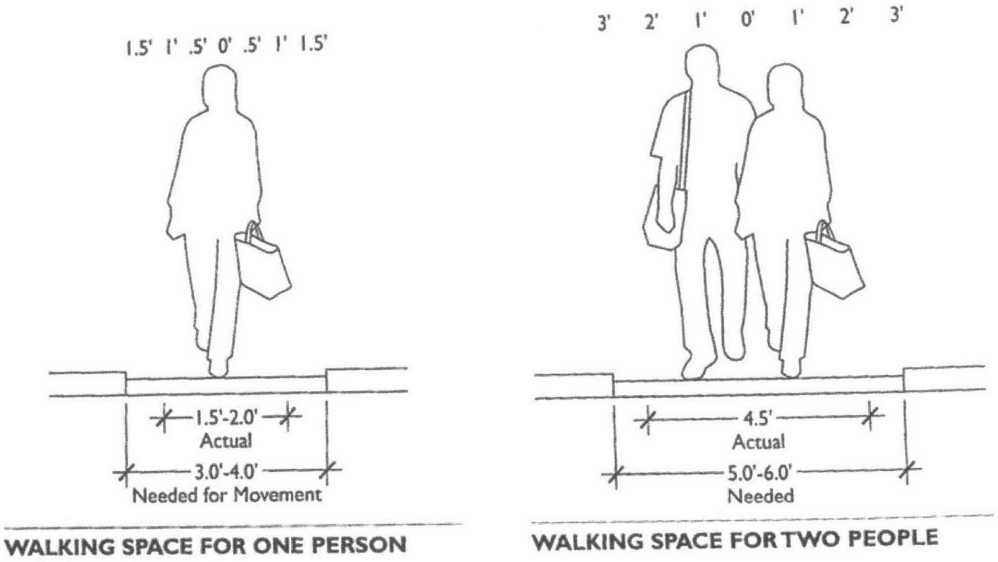
Characteristics of Walking Spaces

Building Type	Owner	Foot-print size	Main incentive	Open hours	Security present	Competing uses	Interior layout	Food or cafe	Walking function hierarchy
Indoor mall	Private	Large	Increase customer base	All day daily	Yes	Shoppers	Trails	Food court / café	Secondary
Big box	Private	Medium	Increase customer base	All day daily	Yes	Shoppers	Loop	Food court / café – inside or near	Tertiary
School	Private / public	Small / medium	Public use for public building	Restricted hours	Need security for addition al hours	Can only use when children are not in class	Loops / trails / vertical	Not usually	Tertiary
College / University	Private / public	Small / medium	Community benefit	Depends on institution	Yes	Students walking in halls	Loops / trails / vertical	Food court / café – inside or near	Tertiary
Public community center	Public	Small / medium	Community health benefit	All day – may have restricted spaces	Yes	May compete for space if walking in gymnasium	Loops / vertical	Indoor Mall	None
Private community center	Private	Small / medium	Public relations	All day – may have restricted spaces	Yes	May compete for space if walking in gymnasium	Loops / vertical	Not usually	None
Gym with indoor walking track	Private	Small / medium	Public relations	All day – may have restricted spaces	Yes	No	Loops	Not usually	Primary
Sports arena	Private	Medium / large	Public relations	Restricted timing	addition al security when walkers are present	May compete if an event is in place	Loops /vertical	Not usually	Tertiary
Movie theater	Private	Small / medium / large	Public relations	Restricted times	Yes	Allows access to theaters	Loops / vertical / trails	Not usually	None
Office building	Private	Small / medium / large	Increase health of workers	Restricted times	Yes	May disturb workers	Loops / vertical	Not usually	Tertiary
Convention center	Private	Large	Public relations	Restricted times	Yes	May disturb conventione ers	Loops / vertical / trails	Not usually	Tertiary
Hospital	Private	Small / medium / large	Community health	All day daily	Yes	May disturb patients or bring in additional germs	Loops / vertical / trails	Not usually (and if so, would	Tertiary

Interior Design

An ideal building for indoor walking would follow many of the same guidelines for an ideal outdoor walking space. Because building interiors are not designed solely for recreational / fitness walking, some compromises may need to be made to accommodate other users of the space. However these can be minor. The series of connected hallways or pathways is only possible in buildings with large footprints and it is not always possible to locate an indoor walking space near refreshments. The other guidelines should highlight small design elements that will add to the comfort of all users and should be relatively easy to implement.

It is important to consider design elements of both outdoor recreational trails and outdoor streetscapes. Both have amenities that aid in making the place suitable for pedestrians, but in different ways. Outdoor recreational trails call for softer surfaces (such as crushed rock) which is not possible in an interior (Bell 2008). Linoleum is a good option for hallways, as it is durable, nontoxic and provides a soft walking surface. Outdoor trails also call for a ten foot minimum width for non motorized users (pedestrians and cyclists), with a five foot buffer on either side. For sidewalks, six feet (unobstructed) is considered the minimum width for two people to walk comfortably side by side. Ideally there would be additional buffers and edges to six feet, but the six feet alone is acceptable. Interesting architecture and the presence of other walkers is also important for walkable streetscapes. For safety reasons, clear sightlines and proper lighting is important. Clear lines of vision, level surfaces and pleasant surroundings are considerations in designing walkable trails and sidewalks. These characteristics can be easily met in hallway design.



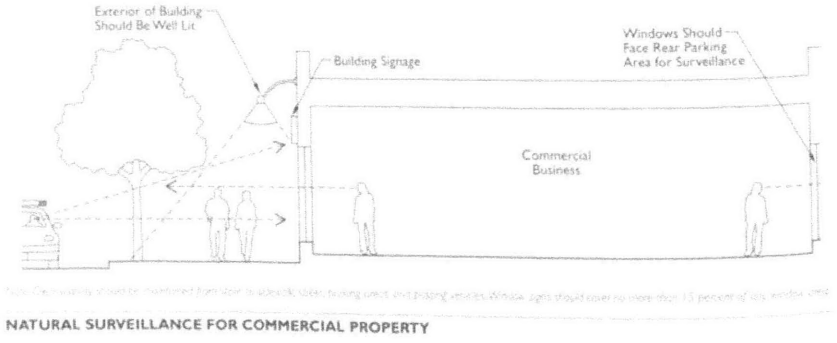


Figure 22: Walking space diagrams

Source: Dan Burden

There are likely large groups of potential indoor walkers, whose preferences of indoor walking space characteristics are unknown. We can look at interviews with existing indoor walkers and rank preferences of indoor space characteristics (generally speaking as follows): Safety, Location same as friends who walk, Availability / proximity to café / restaurant, Length of indoor trails. Indoor walkers don't explicitly express desires for better aesthetics within the space or additional amenities, but this may be because there has not been a precedent for indoor walking spaces. Sandy Welford, academic advisor for the Department of Urban Studies and Planning at MIT, walks the tunnels below MIT regularly in the winter season. She says that she has no complaints with the space (hallways are wide, feels space, allows her to mix up her routine), but if it were actually designed for indoor walking, it would not be successful. Many indoor walkers are grateful to find a space to walk in the winter, but do not make demands on the property owners to improve the space, or tailor it to meet the needs of the recreational or fitness walker. This is not to say indoor walkers would not like changes to the space to accommodate walking, only that for many, these accommodations are not seen as something they are entitled to.

Figure 23: Tunnel walkers on lunchtime walk at MIT
Source: MIT

Figure 24: Tunnel walkers on lunchtime walk at MIT Source: MIT

What type of path will walkers take once in the building? Are there mazes and interesting pathways, or are walkers restricted to perimeters of a gym? Below are the three common types of spaces people where people will walk, and the buildings that are most likely to contain them.

1. *Trails:* Trails are the most interesting type of place to walk. Trails exist in buildings with multiple wings and a large footprint. Schools are the most common place to walk that may have trails inside. These allow walkers to create new routes, cover more physical space and most closely simulate the outdoor walking experience. These are best for the solo walker or the younger walkers because the space provides some amount of interest. Trails can be challenging for security (more difficult to monitor walkers) and can also require more maintenance.

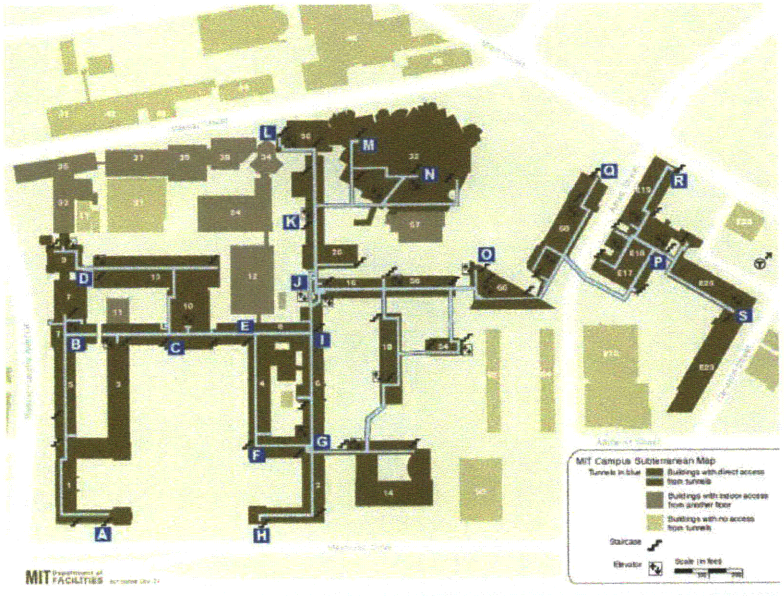


Figure 25: Tunnel walking map at MIT Source: MIT

2. *Loops:* Loops are the easiest spaces to use for indoor walking, though sadly the least interesting. Loops occur in a gymnasium, big box store or walking track. Walkers walk around for the most part in loops, which can bore many walkers. Introducing visual stimulation can help in these spaces, although many walkers use the time for socializing, which can distract the walker from the monotony of the loop route.

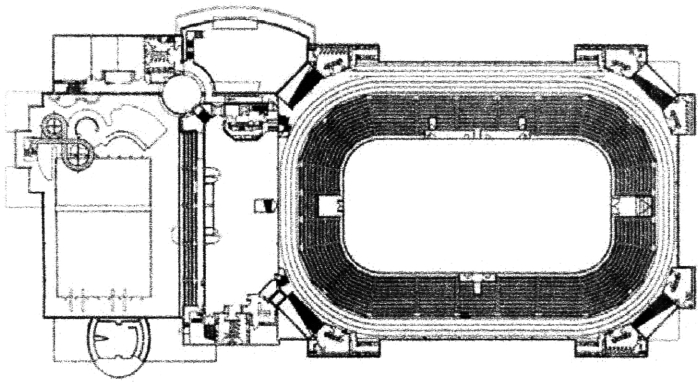


Figure 26: Waterloo Rec Center walking / running track
Source: Waterloo Rec Center

3. *Vertical:* Finding a building with a large footprint can be challenging in certain places (especially urban areas) so walkers may need to be more creative. Stairwalking is a more vigorous exercise and can be very beneficial for many walkers. Seniors or elderly walkers with knee problems may not be the best walkers to use these spaces, however, stairwalking can be a great way to lose weight among younger walkers. Lunchtime office walkers may be a large group of users for this space.

Figure 27: Stair prompt poster
Source: NYC AIA

There are many physical characteristics that should be common to both indoor and outdoor walking in designing walkable spaces within the built environment and in a parks or natural setting, such as general guidelines for widths and buffers of pathways, clear sightlines, lighting, smooth surfaces and graduated elevation. The aesthetics of these two types of spaces are very different, but are both pleasant for walkers. The difference in these two can be used in designing indoor spaces. Indoor malls and big box stores can work within the idea of a lively streetscape to develop a pleasant walking space. Indoor tracks, stairwells and school hallways can take a more minimal and calming approach to design (through color, art, plants, and lighting). The charts on the following pages highlights characteristics of walkable spaces. Table 11 shows characteristics of outdoor walkable streets and outdoor trails and shows comparable amenities appropriate for indoor walking spaces. Table 12 contains excerpts from Dan Burden's guide to walkable communities.

Characteristics of indoor and outdoor walking spaces		
Outdoor trail	**Walkable street**	**Indoor space**
Long connected loops	Connected blocks	Series of connected hallways
10 feet wide pathways	At least 6 foot wide unobstructed pathways	At least 6 foot wide unobstructed pathways
Views of nature	Active building frontage	Windows, artwork, natural light, calming colors of walls, plants, interesting visual merchandising displays (malls, big box)
Refreshments / restrooms	Refreshments / restrooms	Refreshments / restrooms (need not be onsite – just close to the building)
Street lighting	Interior lighting	Interior lighting
Emergency boxes	Emergency phones	Emergency phones
Park rangers	Security personnel	Security personnel
Surface – crushed rock or other soft surface	Surface – cement or other harder smooth surface	Surface – should be smooth, soft and durable. Linoleum and wood are two good options

Table 11: Characteristics of indoor and outdoor walking spaces:

Excerpt from a list of characteristics of a walkable community from pedestrian design expert, Dan Burden. These can be thought of when designing spaces inside.

1. **Intact town centers.** This center includes a quiet, pleasant main street with a hearty, healthy set of stores. These stores are open for business a minimum of 8 hours a day

2. **Residential densities, mixed income, mixed use.** Near the town center, and in a large town at appropriate transit locations there will be true neighborhoods. Higher densities are toward the town center and in appropriate concentrations further out. Housing includes mixed income and mixed use. A truly walkable community does not force lots of people to drive to where they work.

3. **Public space.** There are many places for people to assemble, play and associate with others within their neighborhood. The best neighborhoods have welcoming public space within 1/8th mile (700 feet) of all homes. These spaces are easily accessed by all people.

4. **Universal design.** The community has a healthy respect for people of all abilities, and has appropriate ramps, medians, refuges, crossings of driveways, sidewalks on all streets where needed, benches, shade and other basic amenities to make walking feasible and enjoyable for everyone

5. **Streets, trails are well linked.** The town has good block form, often in a grid or other highly connected pattern. Although hilly terrain calls for slightly different patterns, the linkages are still frequent. Some of the newer neighborhoods that were built to cul-de-sac or other fractured patterns are now being repaired for walking by putting in trail connectors in many places. These links are well designed so that there are many eyes on these places.

6. **Design is properly scaled** to 1/8th, 1/4 and 1/2 mile radius segments. From most homes it is possible to get to most services in ¼ mile (actual walked distance). Neighborhood elementary schools are within a ¼ mile walking radius of most homes, while high schools are accessible to most children (1 mile radius). Most important features (parks) are within 1/8th mile, and a good, well designed place to wait for a high frequency (10-20 minutes) bus is within ¼ to ½ mile.

7. **In walkable communities there are many people walking.** This sounds like a silly statement at first ... but think again. Often there are places that look walkable, but no one walks. Why? There is always a reason. Is it crime? Is it that there is no place to walk to, even though the streets and walkways are pleasant? Are the downtown stores not open convenient hours? You should be able to see a great diversity of those walking and bicycling. Some will be very young, some very old. People with disabilities will be common. Another clue, where people walk in great abundance virtually all motorists are courteous to pedestrians. It is true.

8. **Decision makers are visionary, Communicative, and forward thinking.** The town has a strong majority of leaders who "get it". Leaders know that they are not to do all the work ... but to listen and respond to the most engaged, involved, broad minded citizens. They rarely are swayed by the anti-group, they seek the opinions and involvement big brush citizens and retailers. They are purposefully changing and building policies, practices, codes and decisions to make their towns pleasant places for people ... reinvesting in the town center, disinfesting in sprawl.

Table 12: Walkable community list (excerpt) from Dan Burden

Site Location

Finding the right location is an important part of an indoor walking program. Currently most indoor walkers are dedicated walkers and committed to a specific place, often with little regard for its location. Walkers will drive 30 miles or more to an indoor space that meets their needs (some walkers bypass indoor spaces that are close to their homes for those located farther away, citing fear of unsafe malls, or desire to walk where their friends are).

The fact that the majority of indoor walkers drive to their walking location is a problem for sustainable development and pedestrian friendly communities. Although it is not always possible to locate indoor walking spaces within walking distance of walkers, it can be a goal of the program to locate the space in a location that will minimize the miles required to drive to reach the space. Should the space locate near walker residences? Community centers? This often depends on the density and the street patterns of the community in questions. For a program to be successful there should be a critical mass of walkers to ensure a feeling of safety among walkers and to create a community of walkers which for many walkers is the force that drives them to stay committed to a walking program.

When choosing a location for an indoor walking program, it is ideal to locate near cafes or public indoor places for walkers to socialize, as currently many walkers are motivated in part by a social period after walking. Proximity to open spaces and walkable neighborhoods is also an ideal characteristic of a place to site an indoor walking program so that walkers may shift from walking indoors to outdoors. Ideally, these indoor spaces should incorporate as seamlessly into the urban fabric as possible. If they are to become part of the walkable network of a city, clear connections must be made to existing walkable spaces. These spaces are already embedded in communities, with some formal programming and a little effort, these can be made known and available to the public as an asset for public health. These spaces will likely be less permeable than the covered arcades of European cities, but they can follow this framework.

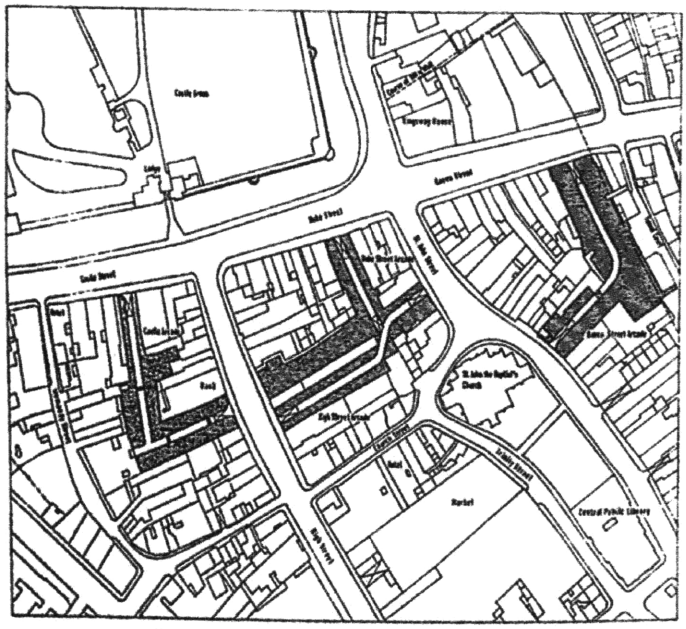
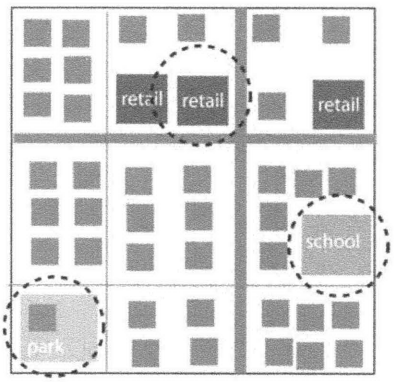


Figure 28: Covered arcades in Cardiff
Source: Margaret MacKeith

URBAN

For urban neighborhoods, there is a high enough density to support multiple numbers of indoor walking spaces. Ideally these spaces would be located near where walkers live, work or visit on a regular basis, especially areas with high concentrations of senior citizens (who make up the largest group of indoor walkers). Neighborhood schools, community centers and retail establishments (big box stores) are the most obvious candidates for this activity in an urban environment. Because building footprints are typically smaller in denser environments, opportunities to use stairs for recreational walking (or climbing) should also be identified. The areas around these indoor spaces should be assessed for walkability. Smooth wide sidewalks, safe crossings, slow moving traffic, safety from crime (either through a police presence or other means), and pleasant streetscapes are all important qualities to increase walkability. Efforts to implement a place for individuals to walk indoors can be joined with efforts to make the space around the indoor walking spaces as walkable as possible order to create a safe environment for walkers to reach

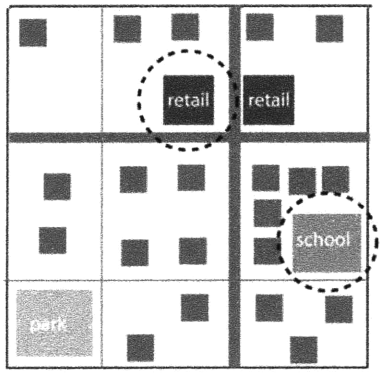
the indoor walking place and also to transition into outdoor walking in warmer weather. Wide smooth sidewalks, safe and comfortable crosswalks, a police presence (if there is crime) and street trees are all basic elements to creating a walkable space.



Urban options for indoor walking

SUBURBAN

In suburban neighborhoods, depending on density, it may be more difficult to site buildings in places that can gather a critical mass of people and remain accessible on foot. This critical mass can vary - some successful programs only see ten or so walkers a day, while others can reach into the hundreds. This largely depends on the social network of the walkers in the community and where they live. If possible, the indoor space can be located in a neighborhood, but it also can be located in a town center or space that is highly trafficked by any means of transportation. If walkers are already running errands or traveling / gathering in a certain section of the city, the indoor walking space should locate there to allow walkers to combine trips. Neighborhood schools and retail establishments (malls and big box stores) are prime candidates for this type of community. Like urban areas, spaces in proximity to the indoor walking place should be addressed to ensure they are suitable for walking. Many communities have laws which ensure that sidewalks are provided and maintained within a specified radius around elementary schools. This is a good reason to look at schools as potential indoor walking spaces.



Suburban options for indoor walking

The Case for Neighborhood Schools

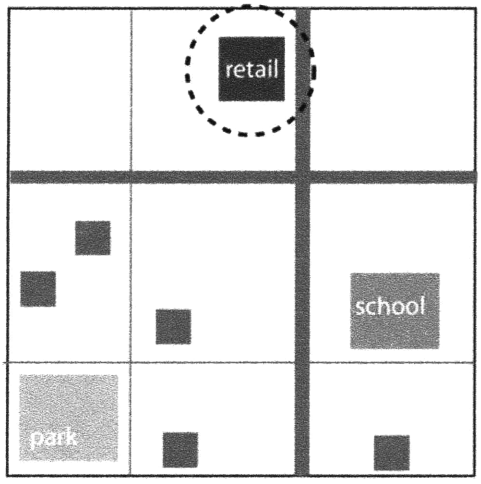
Neighborhood schools are an ideal place to host indoor walkers. They often have trailed hallways which allow walkers to vary their route. Hallways are wide enough to allow for two walkers to walk alongside each other, and for a third to pass. They also have artwork on the walls, and are pleasant enough for walkers to feel comfortable in them. They also are often located in walkable neighborhoods. Many communities require sidewalks and safe street crossings to be built within a specified radius of the school, and many families with children will locate around the school building.

Challenges to walking in schools can be security based. Walkers are likely not to be allowed to walk in the hallways when classes or afterschool programs are in session. This is most likely not a problem for retired senior citizens, who often prefer to walk in the early morning, but can be a problem for potential walkers who adhere to a different schedule.

There is an increase in interest in "community schools" which become an anchor or center for a community by providing services to the larger community. As communities adopt practices to create community schools, consideration of indoor walking programs should be considered.

RURAL

Rural walkers will need to drive or take some other form of motorized transit to an indoor space for walking (I specify motorized with the assumption that if it is too cold for walkers to walk inside, they are unlikely to ride a bike to an indoor walking space). Because of this, indoor spaces should be located in spaces that already have a high level of activity. In many cases this will be a nearby town center or retail / strip mall development. Big box stores have good potential in this area because they are a common use and often have a high level of frequent customer traffic. Many people rely on Target, Walmart, Meijer and similar stores for the majority of their shopping and travel to these places is part of a regular routine. Big box stores become good candidates for indoor walking because they are places that people are already travelling to regularly. While there may be community centers, parks and schools located in similar distances as big box stores in rural areas, stores are more likely to attract a critical mass of walkers. These stores also provide chances for the unexpected meeting of other people in the community (perhaps shopping and not walking) and an active place in general which most people enjoy. Although most people will drive to a town center in a rural area, the town center itself can be a safe and comfortable space for pedestrians, and can encourage walking



Rural options for indoor walking

The Case for Big Box Stores

Indoor malls are on the decline. Many shoppers rely on the internet or big box stores to meet their needs. Although big box stores are not laid out for walking to the degree that indoor malls take pedestrian needs into account, they often have wide aisles, attractive displays and an eating area. They are open to the public and common enough that they are within reach of many potential walkers. The Marshfield Clinic in Wisconsin takes advantage of this by encouraging community members to "Take 10" - ten minutes of walking the aisles of a store before shopping. Local retail stores like Target and Menards advertise this program and encourage walkers / shoppers to visit the stores in the morning when there are fewer customers. This type of partnership can be a new model of mallwalking. Big box stores can work with communities to develop walkable areas around the store setting the stage for denser / more pedestrian friendly development in the future.

Figure 29: IKEA floorplan
Source: Lindsay Block

Operations

People and Management

Program Details

Costs

Indoor walking spaces may be called "indoor walking programs" because there is often a programmatic element to these spaces. Very few indoor walking spaces are as public as outdoor walking spaces and most offer walking as a secondary or tertiary use. Because of this, there is always a desired element of control and management although the level of control varies. In some indoor walking spaces, time of allowable use may be the main restriction. In other cases, control may come in the form of who may use the space, time of use, even how the walkers use the space (in some spaces, walkers are required to move in groups with guides).

How walking spaces are managed and controlled is described in this "operations" section. Operations can be broken down into three sections:

1. Management. This includes who is responsible for organizing programs and who is the liason between building owners, participating partners and walkers.

2. Program details. This includes basic program details such as times when walkers can use the space and general rules of conduct, as well as more specific programming agendas. Different populations can be targeted with different programs that relate specifically to their needs.

3. Costs. This includes suggestions to lower costs for indoor walking programs. It should be noted that the costs are already often quite low.

People and Management

Recreational and fitness walking involve health professionals, planners, architects, developers, property owners, and of course, the walkers themselves.

Individuals can get involved at many stages in the development of an indoor walking space/program: Architects and developers can design buildings with indoor walking users in mind; planners can create incentives or guidelines for this activity; health officials can partner with existing appropriate building managers to host indoor walkers; walkers can search for places to walk – if the spaces are public, they can simply start walking, or work with property managers / owners to develop a more formal program.

An important note for organizers of indoor walking programs – many individuals feel less comfortable with health clinics or professionals than other groups, such as church groups (Boston STEPS Neighborwalk). Health clinics are seen as being removed from the community and can seem intrusive to some. Socializing is a primary motivation for walking and instrumental in retention of walkers, so social groups may have more success taking a leadership role in the organization of indoor walking programs.

The following charts identifies some common incentives, challenges and solutions for different actors to participate or contribute to an indoor walking program.

Incentives for multiple actors in indoor walking programs	
Actor	Incentives
Citizen walker	• Find a place to walk year round • Find a place to socialize • Find an incentive program to exercise and be healthier • Find a way to reduce health insurance premiums
Health official	• Promote healthy lifestyles in community • Reduce health care costs • Create positive public relations
City planner	• Increase walkers in the community throughout the seasons • enhance vibrancy and connectedness of communities • decrease car trips, contribute to mental and physical health of residents • encourage connections between different demographics and different users of buildings
Architect	• Design buildings that promote human activity • Create buildings that are full of life • Earn LEED credit for multi use buildings
Developer	• Incorporate development into a larger plan to increase physical activity / positive PR with community, • Create good-will with the community, increase safety of spaces through increased activity
Commercial property owner	• Increase foot traffic to the building / positive PR with community, • Increase safety
Public property manager	• Provide additional uses to the community (who ultimately pay for all public buildings through taxes) in public buildings for nominal additional costs • Promote the other uses of the building, create positive public relations

Table 13: Incentives for multiple actors in indoor walking programs

Challenges and solutions for multiple actors in indoor walking programs		
Actor	Challenges	Solutions
Citizen walker	• Finding space for program • Finding other walkers	• Inquire with other actors – property owner & managers / health officials / parks dept
Health official	• Finding time to manage a program • Not seen as a typical partner for planners, architects and developers • Knowledge of spaces to walk	• Appoint a volunteer walk leader from a citizen walking group
City planner	• Assessing demand for walking / identifying locations • Building codes that restrict indoor walking • Feeling of lack of responsibility/ownership in walking programs	• Partner with other actors – health officials / citizen walking groups and building owners to gauge interest and available space / locating indoor spaces near existing nodes of outdoor activity is usually a positive step
Architect	• Stringent building codes not allowing space for indoor walkers / walkable stairs	• May be able to get permit or variance
Developer	• Indoor walking space may add too much money	• In many cases, hallways and stairwells are sufficient – need to look at design guidelines for proper placement of spaces
Commercial property owner	• Increased maintenance from walkers • Concern about liability • Concern about security	• Walkers can remove shoes before walking / walkers can use the space when less populated (heat can be kept at a low level)
Public property manager	• Increased maintenance from walkers • Concern about liability • Concern about security	• Walkers can remove shoes before walking / walkers can use the space when less populated (heat can be kept at a low level)

Table 14: Challenges and solutions for multiple actors in indoor walking programs

Program Details

All walkers are different. Some walkers prefer an organized walk, while many walkers prefer to walk at hours of their choosing. For many walkers, the availability of a space and the expectation of meeting friends or other walkers is enough to maintain a walking routine. Additional programs may be perceived as a benefit but too much involvement can be an invasion of the walker's time and space. In many cases, walkers are happy to walk and talk to their friends. If a program is to exist, it should be voluntary and not interfere with the current free nature of the walkers. Guided walks, for example, in most of the cases studied were not popular.

Most walkers emphasize either the social aspect or the health aspect of walking (though typically both are of importance to the walker). This emphasis may determine the level of programming for an indoor walking program. If there is an emphasis on weight loss or health, more detailed programs such as pedometer counts, monthly goal meetings, health lectures, or BMI measuring may be beneficial and well received. For walkers who are more autonomous, or who are walking with the emphasis on recreational and social walking (rather than fitness), these programs may be viewed as a bonus, but may not offer additional incentive to participate. Simply offering a space to walk may be enough to incentivize individuals to walk and can go a long way in improving the health of walkers in a community without needing to engage in more detailed programs which can be time consuming.

The following is a list of suggested programs to run in conjunction with an indoor walking space.

1. *Health screenings:* Common programs are blood pressure screenings, though this can be expanded to BMI measuring, or other simple health feedback. Blood pressure screenings are especially common at malls and are often co-sponsored by local clinics.

2. *Pedometer contests:* Some walking programs will measure the steps of participating walkers in competitions. The awards can be small tokens or even simple certificates of recognition. The important aspect of pedometer contests is to provide a goal for walkers to

strive for as well to help walkers measure their progress.

3. *Lectures / health information:* Many walkers are walking to lose weight. Providing free lectures on healthy eating and exercise can be of interest to walkers. These lectures can be given by volunteers from local clinics or health centers.

4. *Retail discount or coupon programs.* Malls and big box stores can offer discounts to walkers or during exclusive walking hours.

5. *Stretching exercises:* Prior to and after walking, small group led stretching exercises can help make the walking experience more beneficial.

6. *Group outdoor walks:* Sometimes walkers need a push to start walking outside. This is not a program that is often run in current indoor walking settings, but is currently in practice at the Well Walkers Group in East Chicago, IN., and has been successful to date. Group led walks can be infrequent (once a month) but can create an event which creates some excitement about walking.

7. *Exclusive hours for walkers:* Some locations, such as schools will need to have exclusive walking hours, while others, such as malls and big box stores do not. Exclusive walking hours, or suggested walking hours can help decrease conflicts with other building users and can also narrow the window of walking times for walkers, which can contribute to the creation of a critical mass of walkers (which is favorable for walkers).

The chart on the following page compares programs to specific audiences and indoor walking locations. Some of these programs may be more appropriate for certain groups in certain places than others.

Programs, audiences and spaces

	Seniors	*Young mothers*	*Teenagers*	*Immigrants*	*Families*	*Office workers*	*Young adults*	*Mid age adults*	*Indoor shopping mall*	*Big box store*	*Interior stairwell*	*High school*	*Community center*
Blood pressure screenings	x			x		x		x	x	x			x
Pedometer contests	x	x	x	x	x	x	x	x	x	x	x	x	x
Wellness lectures	x						x	x	x			x	x
Retail discount	x	x	x	x	x	x	x	x	x	x			
Stretching	x	x		x	x				x	x		x	x
Group outdoor walks	x	x	x	x	x	x	x	x	x	x	x	x	x
Exclusive hours for targeted audience	x	x	x		x				x	x	na	na	na

Table 15: Programs, audiences and spaces

Successful indoor walking spaces may look a lot like successful outdoor walking spaces. Walking at the mall is viewed by many as much more engaging than walking on a treadmill, which does not resemble outdoor walking much at all. The chart on the following page shows degrees of resemblance to outdoor walking. This is not an indicator of how popular or successful a walking program will be, but it does call attention to the fact that some places for walking are less interesting spatially than others. Because of this, it is important to include programming or other forms of entertainment / activity to keep walkers interested.

Characteristics resembling outdoor walking			
	Most like outdoor walking	Somewhat like outdoor walking	Least like outdoor walking
Hours open	• All the time	• A few hours a day	• A few hours, a few times a week
Building footprint	• Large	• Medium	• Small
Interior layout	• Trails	• Loops	• Vertical
Amenities	• Restrooms, • Refreshments • Water fountains	• Restrooms, • Water fountains	• None
Interior design	• Interesting visual spaces, • natural lighting, • pedestrian scale lighting • Semi soft flooring • plants	• Interesting visual spaces, • pedestrian scale lighting, • plants	
Users	• Diversity of users • Stream of new users over time	• Diversity of users, but few new users	• No diversity of users

Table 16: Characteristics resembling outdoor walking

The level of effort on the part of the walking organizer can vary as well. Some very successful indoor walking programs are small and require very little effort, while others have many participants and the organizers work to recruit more walkers. The chart on the following page highlights the level of effort on the part of the organizer. Again, this is not correlated to the success of the program, it simply shows what is possible in an indoor walking program.

Level of effort for indoor walking programs			
	Most effort	Moderate effort	Least effort
Programs	• Health screenings • Pedometer program • Wellness education,	• guided indoor walks, • guided outdoor walks, • refreshments, stretching exercises, • coupons from local retailers	• No programs
Outreach	• Partner with health organization to reach a broad audience, advertise in local paper, in building, in nearby buildings	• Invite existing groups, such as walking groups, weight loss groups, social groups, etc	• Word of mouth advertising
Policy	• Develop regulations or incentives to include indoor walking in appropriate buildings – example - can require public schools to host indoor walking, or developers may receive allowances on FAR when they include indoor walking programs. • Update building codes to allow for hallways and stairwells to be amenable to walkers, while also meeting fire safety standards.	• Include indoor walking spaces in urban design guidelines • Include indoor walking spaces in recreation and pedestrian plans •	• Develop informational maps and guides of indoor and outdoor walking space
Connection to walking network	• Site buildings with indoor walking spaces in highly walkable areas • Enhance the pedestrian network around indoor walking spaces • Create visible outdoor signage directing walkers to indoor walking areas	• Find buildings in walkable areas to use for walking program	• Develop informational maps and guides of indoor and outdoor walking space

Table 17: Level of effort for indoor walking programs

Most indoor walking programs rely on "word of mouth" promotion to entice walkers. Very few indoor walking programs heavily advertise. In some ways, "Word of mouth" advertising has been a successful model for some indoor walking programs. It is a low cost way to advertise, and ensures that walkers are recruiting their friends to walk, which in turn, encourages their own walking and helps contribute to the longevity of the program. The main problem with "word of mouth" advertising is that is often only reaches a limited audience. Although the majority of indoor walkers are retired senior citizens, or middle aged women, there may be a great interest in indoor walking programs in other demographics. Outreach often involves announcements to people associated with the building, or invitations to walking or weight loss groups or organizations such as the AARP. This form of outreach has been successful because socialization is often critical to a viable indoor walking program. People will walk inside because they know their friends, or other group members will also participate. This small-scale outreach also results in keeping the users relatively small in numbers and for the most part known to others in the community, which can help make security less of a concern, but can also limit the potential to reach out in a broader sense. There is certain exclusivity to an indoor walking program that may encourage repeat users. Many mall walkers feel like they own the space during mall walker hours. Providing a space that users feel a certain amount of control over will make them more comfortable in the space and more likely to use it on a regular basis.

Organizational outreach is also important. There are some cases of organizations that both own the building used for fitness walking and organize the program, however it is more likely that indoor walking programs will consist of a partnership of different groups who manage or supply different elements of the program. For example, a community center may host walkers, a local health clinic may organize programs, and a citizen volunteer committee may act as a liaison between walkers and program officials and building managers.

Costs

Costs are likely to be very small for any indoor walking program. In some cases, the building is already in use by other people. Additional foot traffic may not make a difference in building and operational costs. If walkers require sole use (no pun intended!) of the building, steps can be taken to reduce costs such as lowering the heat.

The following are some suggestions to lower costs:

1. Encourage walkers to use building when fewer people are present (applies to malls or big box stores that may be busy and don't want to overcrowd paying customers)

2. Encourage walkers to use building when some people are present (applies to schools that have staff using building when classes are not in session)

3. Find health organization to sponsor lectures, health screenings or pedometer program.

4. Require "indoor shoes" to minimize maintenance needs for floor cleaning

5. Keep temperatures low when walkers are sole users of the building.

6. Use energy efficient for built-in cost savings

7. Liability waivers or government liability coverage

Getting Started

Organizing and implementing an indoor walking program is usually the result of partnerships among different stakeholders, including citizen walkers. Assessing demand for indoor walking, finding a space and organizing programs, outreach and a management structure can range from simple

efforts to more involved programs. An indoor walking program can be as small and simple as a walker and five of her friends walking in a neighborhood school before classes begin, or as involved as a regional mall hosting walkers at multiple times a day, with pedometer programs, wellness education and health screenings. The level of effort is not an indicator for success, rather, an indoor walking program needs to meet specific demands for an indoor exercise space based on each unique community.

Below is a table of action items to contribute to a walking program, with roles assigned to different actors. These are suggested responsibilities for each, however, roles may change in any situation. Note the overlaps. When working together, each group must decide who will take ownership of each task.

Actor	Action items to contribute to a walking program
Citizen walker	• Organize a group of walkers. Without walkers, there is no reason for a program. • Find a space. Based on the needs of the walkers, type of community and availability of buildings, choose an appropriate space. Talk to the building owner / manager about using the space and agree on guidelines for use (what times can walkers use the space? Is it seasonal? Are there rules for use? Who is liable in case of an accident?). There ideally should be a connection to outdoor walking. • Appoint a program manager. This can be a walker, building manager, health official – any number of different people. This person is responsible for ensuring the space is available for walkers, acting as a liaison between the building owner/manager and the walkers, and organizing any formal programs. • Develop programs (if any). The program manager can work with walkers, building manager and other stakeholders to determine if programming is needed. • Promote the space. There are likely many people who can benefit from the space. The program manager can work with other stakeholders to reach out to others to ensure the program is meeting the needs of walkers in the community.
Health official	• Encourage patients to walk. Without walkers, there is no reason for a program. • Find a space. Based on the needs of the walkers, type of community and availability of buildings, choose an appropriate space. Talk to the building owner / manager about using the space and agree on guidelines for use (what times can walkers use the space? Is it seasonal? Are there rules for use? Who is liable in case of an accident?). There ideally should be a connection to outdoor walking. • Appoint a program manager. This can be a walker, building manager, health official – any number of different people. This person is responsible for ensuring the space is available for walkers, acting as a liaison between the building owner/manager and the walkers, and organizing any formal programs. • Develop programs (if any). The program manager can work with walkers, building manager and other stakeholders to determine

	if programming is needed. • Promote the space. There are likely many people who can benefit from the space. The program manager can work with other stakeholders to reach out to others to ensure the program is meeting the needs of walkers in the community.
City planner	• Analyze city to identify locations for indoor walking spaces. Use the design chapter of this handbook to learn more about which spaces best fit into certain communities. • Provide incentives for private developers & business owners to include indoor walking spaces and attractive stairwells. These may include FAR allowances, TDR, liability waivers, tax incentives, or others. • Provide regulations for indoor walking spaces. These may include building code requirements related to stairwell design, or hallway design. Certain types of buildings can be required to host indoor walkers, such as schools or malls, or big box stores. • Incorporate indoor walking as a priority in active living guidelines. Indoor walking programs should be included in any active living design guidelines. They should be incorporated into the walking network and promoted and treated in the same way.
Architect	• Design spaces for walking / stair climbing in buildings. Putting windows in areas where people may walk is often beneficial to walkers. Designing hallways wide enough for two people to walk comfortable side by side, with a third person passing are also good steps. • Work with governing agencies to obtain variances or permits for designs that may not meet existing fire codes. In many places, it is possible to design stairwells that will meet the safety requirements, but not meet the code. Alternate floor fire doors are an example of such a possible variance. Educate client on design for physical activity. In many cases, the client may not be aware that it is possible to design a space to encourage physical activity. • Locate stairwells in prominent places (especially more prominent than elevators). This helps encourage daily walking on stairs. It is important to consider persons with disabilities and place the elevator in a place that is easily accessible, but not the first option to move from floor to floor.
Developer	• Include indoor walking space in developments. You may be able to work with city governments to obtain incentives such as FAR

	allowances when you include space for the public. • Locate indoor walking spaces near outdoor walking spaces and amenities such as cafes, benches, water fountains and restrooms. Indoor walking spaces will attract people and make an area livelier. Cafes and restaurants will benefit from increased business, especially in morning hours when most retired senior citizens walk.
Property owner (private or public)	• Appoint a program manager. This can be a walker, building manager, health official – any number of different people. This person is responsible for ensuring the space is available for walkers, acting as a liaison between the building owner/manager and the walkers, and organizing any formal programs. • Organize a group of walkers. Without walkers, there is no reason for a program. Working with existing groups is a good way to get participation from the beginning. • Determine scope of indoor walking program. Decide whether walkers will need exclusive hours for walking, or if walking can be done in conjunction with other activities in the building. Seasonality, fees and general conduct rules will also have to be determined. Liability release forms should be used for any walking program. Remember that walking programs do not need to be public. Although public spaces are very important and will contribute to a community's walking network, not all buildings are appropriate or amenable to public walking programs. Private buildings can use these tools to develop private indoor spaces for building users. • Develop programs (if any). The program manager can work with walkers, building manager and other stakeholders to determine if specific programming is needed. Depending on the population, pedometer challenges, health screenings, wellness education and refreshments may be popular programs. • Promote the space. There are likely many people who can benefit from the space. The program manager can work with other stakeholders to reach out to others to ensure the program is meeting the needs of walkers in the community.

Table 18: Action items to contribute to a walking program

You now should be on your way to starting an indoor walking program! This chart should help you kick start ideas, and set up a framework for developing an indoor walking program. For further information, please consult the following list of reference guides:

"Coalition for Community Schools." 19 Mar. 2009. <http://www.communityschools.org>.

Donovan, Sara. Mall Walking Madness. St. Martin's Press, 2002.

"Healthy Maine Walks." 12 Jan. 2009. <http://www.healthymainewalks.com.>

Merom, Dafna Chris Rissel, Philayrath Phongsavan, Ben J. Smith, Cathelijne Van Kemenade MScb, Wendy J. Brown and Adrian E. Bauman. "Promoting Walking with Pedometers in the Community: The Step-by-Step Trial " American Journal of Preventative Medicine 32 (2006): 290-97.

Zimring, Craig, and Anjali Joseph. "Where Active Older Adults Walk." Environment and Behavior 39 (2007): 75-105.

Epilogue: Sample memo regarding indoor walking network

Memo
To: The Newton/Brookline Special Committee on Walking and Obesity Prevention
From: Catherine Duffy, Indoor Walking Specialist
Re: Improving indoor walking at Mall at Chestnut Hill and making linkages to the neighborhood

Newton and Brookline are walkable vibrant towns, with good transportation options, well designed streets, parks and local businesses. This area is an ideal place to develop an indoor walking component to the existing outdoor network. Walking is an excellent way to stay in good physical and mental shape, however, many people find it difficult to find time to walk, or are overly challenged by winter temperatures and poorly maintained sidewalks. The Newton and Brookline communities have much to gain from the development of an indoor/outdoor walking network that addresses concerns about cold/wet weather challenges in our New England climate while capitalizing on the extensive network of housing, commercial and recreations uses served by a good public transportation network. Developing an indoor network as part of a larger walking network is a relatively new and experimental procedure. This memo outlines issues and actions to develop a successful indoor walking program. The Mall at Chestnut Hill is an excellent place to start the first indoor walking space because of its existing indoor walking program, access to residential neighborhoods, prominent senior citizen population, and transit options.

Many successful programs build on existing groups of walkers or social networks. The Mall at Chestnut Hill currently has a mall walking program with exclusive hours for mall walkers in the morning. Newton and Brookline can expand this program to be more inclusive, meet specific goals (outlined below) and develop a model program for future indoor walking spaces and networks
This memo outlines these essential considerations for the creation and maintenance of a successful indoor walking program and network:

- Partners
- Goals of program and targeted user groups
- Programs and policies to meet goals
- Outreach
- Measurement and evaluation

Partners

While the Mall at Chestnut Hill is the "place" sponsor of this program, ideally an outside group (such as the Newton / Brookline Special Committee) should manage the program. Local health centers and universities can be excellent partners for wellness campaigns. Neighborhood schools can also be good partners. Neighborhood schools can encourage students to walk at the mall for exercise. The mall can have family walking days, or teenage walking hours. Audience specific tracking can help different groups continue to use the space for walking.

Goals of program and targeted user groups.
It is important to identify goals for the mall walking program. Is the goal to help walkers lose weight? Establish a social outlet? Increase levels of health in residents? Provide exercise opportunities for students and children? These goals should be identified and a system for evaluation identified. Many existing indoor walking programs do not have established goals, which makes it difficult for organizers to improve, market, make changes or evaluate the program. In addition, it is important to determine goals for all the partners. How will surrounding communities benefit, it at all? What benefits accrue to the mall management, ownership and businesses? Goals and stakeholders will need to be reassessed after the pilot year.

Proposed goals and benefits for the Mall at Chestnut Hill Walking Program and Network (possibly to be called *The HillWalk* to refer to the network as a whole) are as follows:

1. Increase number of indoor walkers in the Mall at Chestnut Hill by 50%. Walking is important for physical and mental health reasons. Each person and their own health status is different, and therefore our goal is not to measure specific health improvements, such as lost weight, rather it is to measure the actions of the walkers.

2. Make the walking program known and accessible to individuals who can benefit most from the program (people on a limited budget who cannot afford a gym membership, seniors who are especially vulnerable to icy sidewalks, mothers with young children who need a place to walk with strollers, people born in warmer climates who may struggle more with New England winters). Children and adolescents can also benefit from this. Family days can encourage families to walk together, and there can be opportunities for adolescents to walk together as a social activity – teens can be restricted from public spaces and it is important to find a place for them.

3. Divert 50% of Mall at Chestnut Hill walkers to adjacent outdoor spaces from April to November. This is critical to maintain walkability and activity on the streets of the neighborhood. The goal is to create a porous connected realm,

with options for walkers, rather than a substitute for a fitness center.

Programs and policies to meet goals

Programs can help encourage new walkers and retain existing walkers. Many walkers, however, do not need special programs to benefit from indoor walking. Programs should be optional so they don't alienate non-participants. Timing of programs should be evaluated throughout the pilot year in order to meet the needs of the intended audience.

The following are proposed programs and policies related to the physical space and amenities of the mall, education and feedback for walkers, and connections to outdoor walking:

1. Physical space / amenities. Indoor malls are designed to be comfortable for walkers, so there are few specific interventions regarding the space itself. The following points can help address some specific needs of walkers.

    a. Indoor shoes. In the winter, some walking programs ask walkers to change into "indoor shoes" to avoid tracking in excessive snow and ice. This may be difficult to enforce with a large number of walkers, and there may not be enough space for she storage. Suggestions to change shoes can be made.

    b. Coat rack. Walkers will need a place to store winter coats (And boots if necessary – see above). A simple rack or two will suffice , depending on number of walkers.

    c. Café. Many walkers, especially retired senior citizens are motivated to stick to indoor walking programs because there is a social element. Café Vanille can open earlier, or a hallway cart can locate near common seating areas during exclusive mall walking hours. Cafes and restaurants can also serve a dual purpose as a checkpoint, or even a place to store shoes and coats – a central gathering space for walkers. It can also help walkers have a place to meet friends.

    d. Rotate directions. Indoor walkers will all walk in the same direction to avoid collisions as they stay close to the perimeter to more accurately measure walking distance. In order to ensure proper exercise of both sides of the body, the walking direction should alternate bi weekly, indicated through signage (Monday-Wednesday, clockwise and Thursday-Saturday, counter clockwise). Bi-weekly is better than alternating days, as some walkers may choose to walk on alternating days.

e. Exclusive hours. Exclusive hours currently start at 7:30 am, but should try to open at 6:00 to accommodate retired senior citizens or the pre-work crowd who may be excluded with the current later hours. This can be adjusted after the pilot year accordingly.

2. Education and Feedback. Feedback is important for walkers to stick to a routine. Incentives can be helpful, but in many cases, individuals respond just as well to feedback on personal progress as they do to material or financial incentives.

   a. Pedometer program: An optional program for walkers that measures steps taken. This program will require membership and a website that can track progress of walkers. Walkers can use free sites such as "walktracker.com." Incentive programs and contests can be built around pedometer programs that can encourage long term participation in the program. Walkers will have to register and use the same pedometer tracker for an incentive program.

   b. Distance markers and timed signage for "Take Ten" program. Malls can include visible mile markers or maps on the walls or directories to help walkers more easily gauge distances. They can also include visible clocks so walkers can measure walking by time. A successful program in Wisconsin encourages walkers to "take ten" minutes of brisk walking when running errands. The clocks can be a reminder and a tool to engage in this activity.

   c. Blood pressure, BMI or other health screenings. Blood pressure screening programs are popular at many mall walking programs. A local health center or university can sponsor this service. This may be a good program for pre-med or nursing students.

   d. Group stretching. Staging a place for pre and post walk stretching can be a valuable educational tool for walkers. Instructional posters may be enough for this activity, but a weekly stretch leader can also be a beneficial addition.

   e. Wellness education and information. Monthly lectures on wellness topics can be given by local health clinics and universities. Topics can be suggested by walkers.

   f. Mall discounts for walkers. Some malls have offered retail discounts for walkers. In some cases, this has been problematic if there are changes to offers or

unclear terms. Coupons may be best used in conjunction with a pedometer tracking program or raffle at wellness lectures.

3. Outdoor connections. Many mall walking programs retain walkers throughout the year, missing an opportunity to encourage walkers to use the outdoor walking resources around them. The mall that supports walking at the mall does not have incentive to encourage outdoor walking in warmer weather, and so an outside group must be in charge of managing the program. A group of stakeholders with different interests and expertise can come together with the common goal of encouraging walking.

4. The following policies and interventions can help divert walkers outside in the spring, summer and fall.

    a. Signage outside. A system of uniform signage can help direct walkers to indoor walking spaces, especially if outdoor walking spaces are nearby. This will be more effective once a larger network of indoor walking spaces is developed, but it is never too soon to establish this.

    b. Summer fees. The mall can charge a small fee for walkers who use the exclusive hours from May to October, discouraging the use, but not eliminating it altogether.

    c. Include on city maps / recreation spaces. Creating an awareness of the space as a recreational place is important to reach out to walkers who may not know about the space, or even the concept of walking inside.

    d. Outdoor checkpoints. The pedometer program can have an added incentive of walking outside. Some mall walking programs use a swipe checkpoint to measure walking miles. Outdoor swipe checkpoints can be used to track walkers with an electronic card who are walking outside. When used indoor, these have a "water cooler" effect which increases socialization. Outdoor checkpoints can be used for central meeting points for social walkers. Cell phone GPS applications may also be used in the future to serve the same purpose with a less expensive infrastructure.

    e. Improve outdoor pedestrian connections to the mall from local asset points. Currently the Chestnut Hill mall follows standard mall design patterns that are restrictive to pedestrians. It is important to improve the space for pedestrians to integrate into a larger

walking network. Building on existing assets and creating new connections can be beneficial for the community.

i. Improve pedestrian connection to Hammond Pond and Soule Recreation Center. The walking trails around the pond can be a valuable walking space, however the crossing at Hammond parkway is treacherous, and walking through the mall parking lot is unpleasant. In nice weather, walkers may still want to meet at the mall, as they are used to this space (and may need to drive). There fore the pedestrian connection is important. The trails may be too challenging for seniors and small children, so connections to a nearby park (Soule Recreation center) with more level paths is also important. The streets leading to this will need to shelter walkers from traffic. Walkers may also be able to use the smoother paths at the nearby cemetery, though there may be personal or cultural aversions to this.(See map)

ii. Improve pedestrian connections to adjacent residential neighborhoods, assisted living facility and transit stops, where walkers will begin their trip to the mall. (See map).

Outreach

Targeted outreach to existing groups is s great way to start. Suggested hours for walking or exclusive hours will help gain walkers, as many of them will want to walk when their peers are present. The following outreach methods should be conducted:

1. Invite existing social and activity based groups, including weight-loss groups, senior groups, young moms, high school clubs, local office employees and mall employees. These groups can also be helpful in determining effective programs or outreach methods. Some groups may already manage complementary programs that can be an asset for the indoor or outdoor walking space. These groups can be used as consultants or as cooperating managers, depending on the program.

2. Encourage doctors and health care workers to recommend indoor winter walking to patients, especially those with obesity related problems. Information flyers can be supplied to medical staff, with information and connections to outdoor walking. The Newton Wellesley and Brigham and Women's hospitals can potentially be good partners. Additionally,

Boston University may also be a good university partner, as students may be a good source of volunteers.

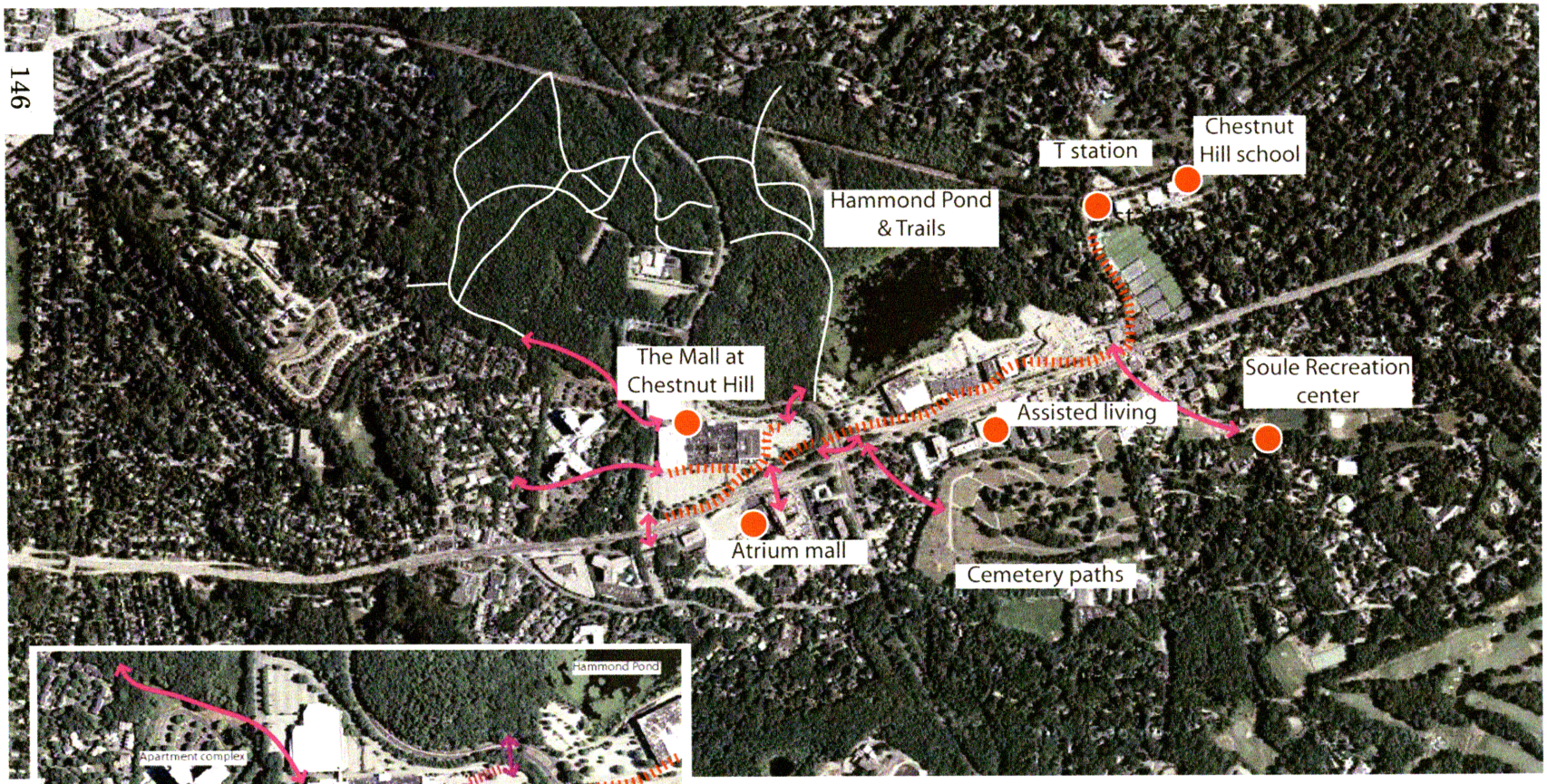
3. The Newton and Brookline public schools can incorporate walking contests or other programs into school curriculum that can be supported by the indoor/outdoor walking network. Student and family walking events can be held year round, both inside and out.

4. Signage at the mall, surrounding businesses and outdoor recreation areas can help spread the word. This can be developed in conjunction with maps and outdoor signage to create a uniform look that will become easily recognizable and alert people to indoor walking spaces.

Measurement and evaluation

It is important to evaluate the programs after the first year. Counting walkers in exclusive hours can be easy, however measuring walkers when the mall is open for shopping can be more difficult. Membership and signing in at a booth can be an effective way to measure walkers. Weekly raffles for signing in can help walkers to do this. Walkers can be given surveys for feedback (these can be electronic and part of a pedometer program). Walker groups can also have group liaisons that can gather information and feedback from participants. "Checking in" for outside walks through check in stations or by GPS can measure outdoor walkers.

These steps will be a great start to a successful indoor walking program. It will be important for the Special Committee to retain a dedicated staff member who will be in charge of programs, and to follow through with creating connections to the outdoor walking network. Indoor walking can be a great way for people to walk year round and we want to carry that activity throughout the greater community.


Hammond Pond & Trails
T station
Chestnut Hill school
The Mall at Chestnut Hill
Assisted living
Soule Recreation center
Atrium mall
Cemetery paths
Hammond Pond
Apartment complex
Residential neighborhood
Chestnut Hill Mall
Apartment complex
Improved pedestrian streets and connections - buffer from traffic and parking lot
Proposed pedestrian connections (crossing state highways will be difficult - close collaboration with the State highway department will be necessary)

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