

Davidson Parks, Recreation, and Public Spaces Master Plan

Appendix A: Health Impact Assessment

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Overview

This appendix presents the findings of the Health Impact Assessment (HIA) completed as part of the planning process for the Davidson Parks, Recreation, and Public Spaces Master Plan. The HIA includes a definition of health and the seven dimensions of wellness; an overview of the relationship between parks and recreational opportunities and each dimension of wellness; baseline health and possible indicators for measuring wellness outcomes; and strategies for improving Davidson's parks and recreation system to have a larger positive health impact.

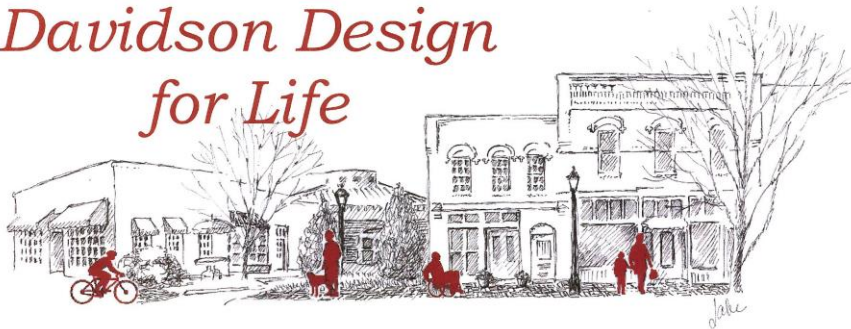
The following are the main findings of the HIA:

- There are multiple dimensions to health and wellness (physical, environmental, emotional, social, intellectual, spiritual, and occupational); parks and recreational programs can have an immense impact on both an individual's health and a population's health.
- The seven dimensions of health are interrelated and influence the ability to attain wellness in other dimensions. For example, being physically fit can lead to higher self-esteem and improved emotional and social health.
- Time spent in, interacting with, and viewing nature contributes positively to all seven dimensions of wellness.
- Parks serve multiple purposes for individuals and communities including providing: a safe, accessible, and affordable place for physical activity; environmental services including contributing to habitat protection and air, water, and soil quality; an escape from the stress of daily life; a place for social gathering, spiritual restoration, and mental recharge; opportunities for job creation and economic revitalization; and places where people of all ages and abilities can feel welcome.
- By offering a wide variety of affordable recreational programs for all ages, abilities, and interests, parks and recreation departments can improve a multitude of dimension combinations to varying degrees based on the type and intensity of the program and the characteristics of the participant. For example a summer-long, trail-building and hiking course for at-risk teenagers can contribute to all seven dimensions of their health and potentially be a life-changing event.
- Public spaces not typically considered as part of a parks and recreation planning process—streetscapes, public buildings and facilities, vacant spaces between buildings, view sheds—can offer services similar to parks and should be included within the plan.
- Greenways are becoming more prominent as part of parks and recreation planning as they are seen a linear parks and active transportation corridors that allow people to get to work, run errands or simply access the park via an active mode rather than driving.
- Increasing opportunities for volunteers, particularly older adults, to help patrol parks and greenways can help alleviate safety concerns, put additional eyes on the ground, and offer the volunteers more opportunities for social interaction and physical activity.

The following are the main recommendations of the HIA:

- Continue to work with partners to preserve natural areas and provide views and opportunities for everyone to be immersed in and receive the multitude of health benefits associated with being in nature.
- When planning for park development, balance: the need of habitat and natural area preservation with public access for all; the availability of organized sports fields and places for quiet contemplation or self-led activities such as hiking or mountain biking; the potential for overcrowding with the safety of park users and desire to use the space and resources efficiently; permitted park uses with the recreational needs of the surrounding community; and the potential for economic development with the environmental and social impacts on surrounding neighborhoods and long-range opportunities for trail-oriented development.
- Continue to partner with a multitude of organizations and members of the Davidson community to offer a variety of programs that provide opportunities to enhance the seven dimensions of wellness for all ages, abilities, and interests.
- Offer opportunities for all ages and abilities to volunteer with the parks and recreation department and encourage a broad range of community engagement opportunities within the master planning process.
- Whenever possible, be sure that parks, recreational programs, and public spaces are accessible (physically and fiscally) to all—regardless of age, ability, interests, or income.
- Establish baseline metrics of how parks, recreational programs, and public spaces are impacted the seven dimensions of wellness within Davidson and track progress in positively impacting the physical, environmental, social, emotional, intellectual, occupational, and spiritual wellness of Davidson citizens.

Davidson Design for Life



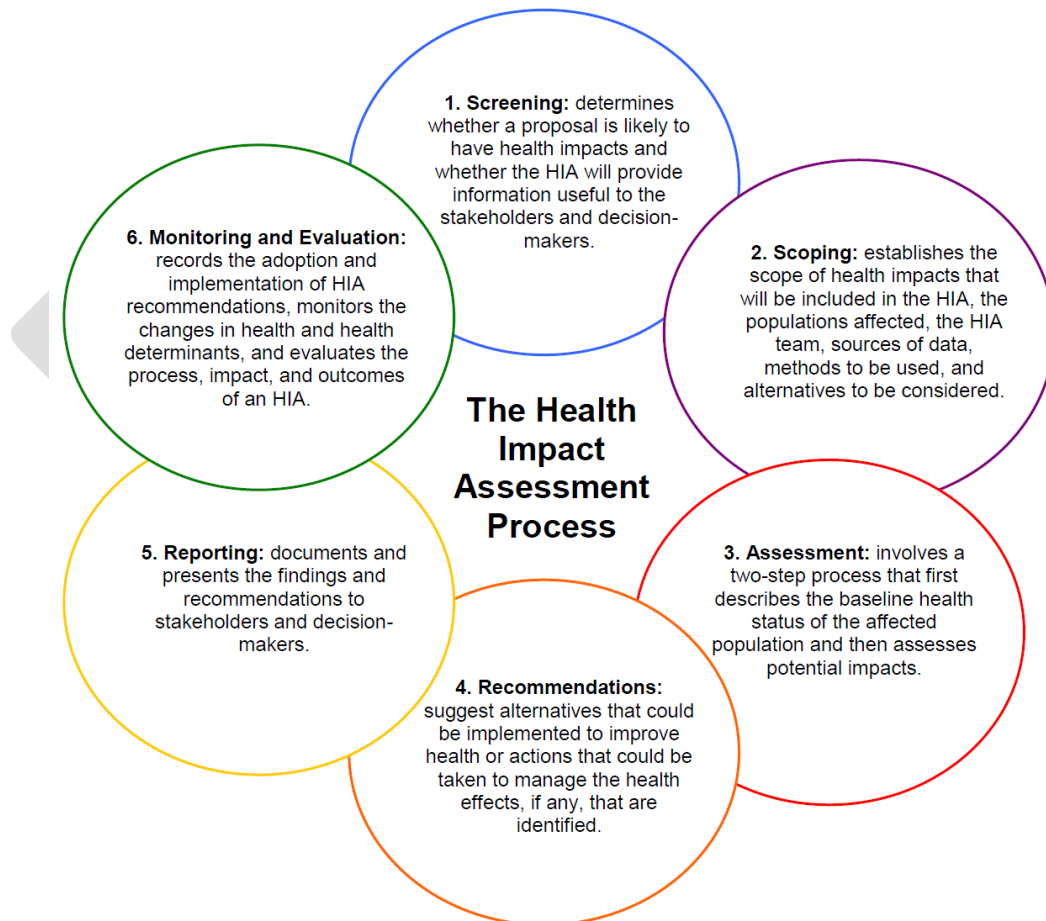
Davidson Design for Life (DD4L) is an initiative of the Town of Davidson, North Carolina to foster healthy community design through the use of health impact assessments (HIA), public participation, and collaborative efforts in Davidson, the Charlotte-Mecklenburg region, and North Carolina. DD4L's mission is "To help Davidson be a community that is healthy today and even healthier tomorrow while serving as a model for other small towns by implementing healthy design." For more information on the DD4L initiative, HIAs, or this project please go to www.healthimpactnc.org.

Health Impact Assessment

According to the Centers for Disease Control and Prevention (CDC), the way we design and build our communities can affect our health.ⁱ Health Impact Assessments (HIA) can be used to integrate healthy community design and evidence-based health strategies into parks and recreation decisions and community planning. The Town of Davidson has included an HIA as part of the Davidson Parks, Recreation, and Public Spaces Master Plan to broaden the health considerations typically considered within recreational planning (physical activity and environmental health) to include all seven dimensions of wellness (physical, environmental, emotional, intellectual, social, spiritual, and occupational).

Health Impact Assessment (HIA) is a process used to estimate potential positive and negative health impacts of a proposed policy, plan, program or project on the community.ⁱⁱ This is accomplished through a combination of quantitative and/or qualitative methods and community engagement. At the conclusion of an HIA, recommendations are made to decision-makers to enhance the positive health implications of a decision and manage any negative health outcomes that may occur. The diagram below outlines the six steps to HIA: Screening, Scoping, Assessment, Recommendations, Reporting, and Monitoring and Evaluation.

Figure 1: Health Impact Assessment Process



Health and Wellness

The World Health Organization defines health as “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.”ⁱⁱⁱ Using this holistic definition of health implies that to improve the health of a population, the social determinants of health (the conditions in which people are born, grow, live, work and age, shaped by the distribution of money, power and resources at global, national and local levels) must be considered and addressed to promote health and wellness for all.^{iv}

Wellness is much more than physical health, exercise or nutrition. It is the full integration of states of physical, mental, and spiritual well-being. The model used by the Davidson Parks and Recreation Department includes physical, environmental, emotional, intellectual, social, spiritual, and occupational wellness. Each of these seven dimensions act and interact in a way that contributes to our own quality of life and parks and recreational programs play a significant role in creating a quality of life that promotes the health of Davidson’s citizens.

Figure 2: Elements of Wellness



Physical Wellness

Physical wellness involves aspects of life that are necessary to keep yourself in top condition and capable of doing daily activities without undue fatigue or physical stress.^v Optimal physical wellness is developed through the combination of beneficial physical activity/exercise and healthy eating habits. Elemental components of physical wellness include building muscular strength and endurance, cardiovascular strength and endurance, and flexibility.

Physical wellness is also concerned with developing personal responsibility for your own health care, such as caring for minor illnesses and knowing when to seek professional medical attention. Developing physical wellness empowers you to monitor your own vital signs and understand your body's warning signs. You'll understand and appreciate the relationship between sound nutrition and how your body performs. The physical benefits of looking good and feeling well most often lead to psychological benefits of enhanced self-esteem, self-control, determination, and a sense of direction.

The Relationship between Parks and Recreation and Physical Wellness

- Parks can provide a safe and affordable place to be physically active for all ages, ethnicities, and abilities.^{vi}
- A variety of recreational programs can offer instruction and equipment for being physically active in multiple ways to serve different interests.^{vii}
- Community gardens, kitchens, and markets can increase access to fruits and vegetables and promote good nutrition.^{viii}
- Instructional programs on gardening, composting, canning, cooking, label-reading, and offering balanced meals can promote good nutrition.^{ix}
- Providing water fountains and limiting vending options within parks and recreational buildings can encourage adequate hydration while being physically active and limit consumption of high calorie drinks and snacks.^x
- Medical screenings, health fairs, and courses tailored for disease prevention or management can provide information and promote physical wellness.^{xi}
- Preserving views of nature and providing opportunities to be in nature, have been shown to reduce stress and violence, and improve healing times from disease and surgery.^{xii}
- Recreational programs contribute to youth development and reduction in risky behavior such as drug use and sex.^{xiii}
- Proximity to parks can lead to increased use of parks by older adults and has been linked to a longer lifespan.^{xiv xvxi}
- Parks allow a variety of culturally-based physical activity programs and events to be conducted due to the flexibility of space and being within the public realm.^{xvii}

Recommendations and Health Benefits of Combining Physical Activity and Good Nutrition

For Children, the Centers for Disease Control and Prevention Recommends:

- 1 hour of physical activity each day with the majority of the activity being aerobic activity (i.e. walking or running) on at least 3 of the days, muscle strengthening activities (i.e. gymnastics or push-ups) on at least 3 days, and bone strengthening activities (i.e. jumping rope or running) at least 3 days of the week.

For Adults, the Centers for Disease Control and Prevention Recommends:

- 2 hours and 30 minutes (150 minutes) of moderate intensity aerobic activity (i.e., brisk walking) every week and muscle-strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

OR

- 1 hour and 15 minutes (75 minutes) of vigorous-intensity aerobic activity (i.e., jogging or running) every week and muscle-strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

OR

- An equivalent mix of moderate and vigorous intensity aerobic activity and muscle-strengthening activities on 2 or more days a week that work all major muscle groups (legs, hips, back, abdomen, chest, shoulders, and arms).

For Children and Adults, the Centers for Disease Control and Prevention Recommends:

- Consume a diet rich in fruits and vegetables, whole grains, and fat-free and low-fat dairy products for those over the age of 2.
- Limit the intake of solid fats, cholesterol, sodium, added sugars, and refined grains.

Health Benefits of Being Physically Active and Eating Nutritious Foods

- Physical activity is associated with reduced risk of being overweight or obese, strengthened bones and muscles, improved mental health and mood, and a reduced risk of cardiovascular disease, diabetes and metabolic syndrome, and some cancers.
- Health eating is associated with reduced risk of being overweight or obese, having micronutrient deficiencies, and many diseases, including several leading causes of death: heart disease, cancer, stroke, and diabetes.
- Healthy eating in childhood and adolescence is important for proper growth and development, and can prevent health problems such as obesity, cavities, iron deficiency, and osteoporosis.
- Combining physical activity and good nutrition for older adults can prevent diseases and improve balance, overall well-being, and cognitive function.

Sources:

<http://www.cdc.gov/physicalactivity/everyone/guidelines/children.html>, <http://www.cdc.gov/physicalactivity/everyone/guidelines/adults.html>,
<http://www.cdc.gov/healthyyouth/nutrition/facts.htm>, <http://www.cdc.gov/physicalactivity/everyone/health/index.html>
<http://www.nia.nih.gov/health/publication/exercise-physical-activity#.UnupU9jAEI>

Baseline Health and Possible Indicators of Parks and Recreation Impact on Physical Wellness

- Physical activity levels (percent meeting recommendations, physically inactive)
- Fruit and vegetable consumption (percent meeting recommendations, no daily consumption, median daily consumption)
- Obesity levels (percent overweight or obese)
- Disease prevalence (diabetes, cardiovascular disease, cancer)
- Teen pregnancy rates
- Number, type, and attendance of programs offered
- Number, types, and facilities included within park system
- Number of park users and ways using parks, trails, and greenways
- Connectivity of parks into surrounding uses (access points, routes to park from specific destinations)
- Public spaces that link destinations and serve physical activity needs (sidewalks, bike lanes, greenways, community gardens, school playgrounds, etc.)

Typical baseline health data (i.e. Behavioral Risk Factor Surveillance System, Child Health Assessment and Monitoring Program, Vital Statistics) is not available at the geographic scale of the Town of Davidson. As part of the community engagement and monitoring efforts within the Parks, Recreation, and Public Spaces Master Plan process, a survey, voluntary health screening, and participant evaluation could be used to capture this baseline data in 2014 and track progress on reaching plan goals. Other methods that could be used to track progress include: intercept surveys of park users, direct observation of park usage, tracking program attendance and program evaluations, monitoring facility maintenance and improvements, and mapping safe routes to parks and facilities.

Recommendations for Improving Physical Wellness through Parks and Recreation

- Work with neighborhood watch groups, friends of the park program, public works and the police department to make sure that parks are well-maintained and safe.
- Establish all parks as a drug-, alcohol-, and smoke-free areas with posted hours of use and types of activities allowed within the park.
- Offer a sliding scale, senior rates, and scholarships for park programs so that those with limited incomes can participate.
- Partner with medical and social service providers to distribute park prescriptions (prescriptions to be more physically active, commonly accompanied by a list of park programs, a map of parks or walking routes, or different ways to work physical activity into daily routines).
- Survey members of the community (representing all ages, ethnicities, and abilities) and partner with instructors or other organizations to offer a variety of programs, organized sports, classes, and facilities based on the interests of the community.
- Help identify, analyze, promote, and coordinate the various community gardens and markets available within Davidson, especially in an effort to increase access to fruits and vegetables, and promote physical activity through gardening.

- Include water fountains and bathrooms in plans for future parks, and encourage program participants, and greenway or park users to bring water.
- Work with schools and other partners to offer youth development programs (organized sports, art classes, scouts, skill-building activities, volunteer opportunities, etc.) especially following the school day.
- Partner with the planning department and developers to make sure that neighborhood parks are available in areas with high concentrations of youth, older adults, or low-income populations.
- Work with the planning department, hospitals, nursing homes, retirement communities, and rehabilitation centers to make sure that natural buffers and areas are preserved around these buildings and views of nature are available from the majority of rooms.
- Participate in health fairs and partner with health professionals to offer programs focusing on preventing and managing disease such as diabetes or cardiovascular disease.
- Carefully monitor animal (pet/owner) behaviors in parks to ensure other users feel safe and enact policies for proper control of animals, if necessary.
- Balance the need for larger parks for athletic fields, nature preservation, or hiking system with the greater access provided by smaller neighborhood parks, community gardens, and playgrounds.
- Design preventive maintenance programs to keep facilities in working order so parks, recreation facilities and greenways are not perceived as a hazard (e.g. fixing root heaves along greenways or walkways in parks to reduce the risk of trips/falls).

Figure 3: Images of Physical Wellness



Environmental Wellness

Environmental Wellness is the realization of our innate connection to nature and our ability to recognize our own responsibility for the quality of the air, the water, and the land that surrounds us.^{xviii} The ability to make a positive impact on the quality of the environment—be it our homes, our communities or our planet—contributes to our Environmental Wellness. Protecting yourself from environmental hazards and minimizing the negative impact of your behavior on the environment are also central elements. Examples of environmental threats include air pollution, ultraviolet radiation from sunlight, chemicals, noise, water pollution, and second-hand smoke.

The Relationship between Parks and Recreation and Environmental Wellness

- Access to Nature:
 - Parks can preserve natural areas, especially in rapidly-urbanizing regions, allowing public access to forests, lakes, rivers, streams, grasslands, wetlands, etc.^{xix}
 - Parks can serve as important wildlife habitat and corridors, especially for migrating animal populations.^{xx}
 - Parks surrounding water bodies can be used to allow public access for water activities such as swimming, kayaking, canoeing, fishing etc. Preserved lands and additional instruction can be used to help protect water quality and establish regulations so that these activities are safe.^{xxi}
 - Being in and viewing nature have been associated with faster healing times and disease management, reduced levels of violence, as well as improved concentration, mood, and behavior.^{xxii}
 - Parks in urban settings can emulate nature by providing created spaces that increase educational and interactive opportunities.^{xxiii}
- Air Quality:
 - The trees preserved within a park or along a street can improve air quality through air pollution removal, carbon storage and removal, and temperature reduction.^{xxiv}
 - Improved air quality and reduced heat island effect and high ozone days can reduce the likelihood and severity of asthma attacks, respiratory disease, and heart attacks.^{xxv}
 - Community gardens can also capture carbon and provide local food sources reducing the air pollution associated with the shipping of produce and the amount of insecticides commonly used in large-scale commercial farming.^{xxvi}
 - Parks and recreational facilities should be a smoke-free environment to reduce exposure to secondhand smoke—especially for youth who respire more frequently than adults while being physically active.^{xxvii}
- Water Quality:
 - Parks can be used to provide buffers along waterways and filter out pollutants, protecting water quality for drinking, fishing, and swimming, and reducing sedimentation.^{xxviii}
 - Parks also provide natural storm water management measures, allowing ground waters to be recharged and flooding likelihood and severity to be reduced.^{xxix}

- Natural areas and parks are also preferable in flood zones to other uses such as housing, industrial, or commercial buildings (less property damage and risk of loss of life in major flood events).^{xxx}
- Soil Quality:
 - Quality agricultural lands can be protected through recreational easements and establishing demonstration farms.^{xxxii}
 - Soils should be tested prior to establishing community gardens or edible landscaping to determine if raised garden beds with a protective layer are necessary.^{xxxii}
 - Composting can be taught and used at demonstration gardens to improve soil quality.
^{xxxiii}

Baseline Health and Possible Indicators of Parks and Recreation Impact on Environmental Wellness

- Air quality measures (high ozone days, days of non-attainment)
- Acres of land preserved either under easement or through government ownership for parks or greenways (percentage of total land area, ratio of preserved versus developed, per capita, percentage of population within a half mile, percentage of population within a quarter mile)
- Tree canopy (street trees and within parks/undeveloped lands)
- Water quality measures (days closed due to bacteria or algae blooms, chemical testing, macro invertebrates, sedimentation measures)
- Soil quality measures (acres of prime agriculture land, brownfields, heavy metals etc.)
- Enrollment in nature appreciation and agricultural programs
- Park usage especially for hiking, nature viewing, kayaking, canoeing, fishing, etc.
- Participant interviews or surveys in regards to mood, school performance, behavior, etc.
- Asthma rates, emergency room visits and missed days from school due to asthma
- Number of people volunteering with a community garden and their vegetable/fruit consumption
- Number of people learning to compost (amount of composting), or participating in some other form of urban agriculture (edible landscaping, potted gardens, chicken coops, beehives, etc.)

Recommendations for Improving Environmental Wellness through Parks and Recreation

- Balance natural preservation needs (i.e. sensitive habitat preservation, large tracts of land needed) with the need to have access to parks and natural areas (i.e. trail development, smaller neighborhood parks).
- Identify major wildlife corridors and water quality preservation areas and prioritize the preservation of those areas either through zoning, easement, or ownership.
- Offer programs to teach people about nature, conservation and ways to appreciate nature (i.e. how to fish, canoe/kayak, hike, camp, etc.)
- Partner with Davidson Lands Conservancy, EcoDavidson, Davidson College, the North Carolina Cooperative Extension, etc. to establish baseline data and to track progress in preserving natural areas, protecting tree canopy, testing soil, air, and water quality, etc.

- Incorporate demonstration gardens, composting sites, and edible landscaping within park site plans.
- Work with the planning and public works departments to ensure that public spaces (schools, streetscapes, medians, public squares, neighborhoods, etc.) include pockets of greenery such as street trees, flowers, grass, old shade trees, etc.
- Establish, post, and work with neighborhood groups and the police department to enforce a “no smoking/tobacco use policy” within all public parks, greenways, and facilities.
- Partner with the planning department and livability board to establish and enforce policies for tree canopy protection, riparian buffer protection, urban agriculture opportunities, agricultural lands preservation, public lake access etc.
- Work with public works department to maintain natural features, particularly in a wet, humid climate, so they don’t overcome existing features within parks, open spaces and greenways.

Figure 4: Images of Environmental Wellness



Emotional Wellness

Emotional Wellness is the ability to understand ourselves and cope with the challenges life can bring.^{xxxiv} The ability to acknowledge and share feelings of anger, fear, sadness, stress, hope, love, joy and happiness in a productive manner contributes to our Emotional Wellness. It also involves being attentive to your thoughts, feelings, and behaviors, whether positive or negative. Emotional Wellness implies the ability to: be aware of and accept our feelings, rather than deny them; have an optimistic approach to life; express feelings freely and manage feelings effectively; express emotions appropriately; adjust to change; cope with stress in a healthy way; and enjoy life despite its occasional disappointments and frustrations. Emotional Wellness is essential to developing meaningful relationships with others.

The Relationship between Parks and Recreation and Emotional Wellness

- Access to green views and the environment has been shown to improve cognitive functioning, impulse control, resilience to stressful life events, and overall mental health (i.e. reduction in anxiety, depression, etc.). Studies have also shown that low nature access is associated with increases in attention deficit and hyperactivity disorders (ADHD), clinical depression, stress, and anxiety.^{xxxv}
- By providing free access to recreational opportunities and green space, parks have been linked to reducing stress and generally improving health especially for low-income populations.^{xxxvi}
- Social interactions produced by offering recreational programs or making places available for people to casually meet are linked to an increased network of social support for an individual, a feeling of self-determination, and a greater ability to cope with stress.^{xxxvii}
- The completion of youth development or fitness programs offered through recreation departments can contribute to an individual's feelings of self-worth, improved self-image, and an ability to interact socially with others and resolve conflict.^{xxxviii}
- Well maintained and frequently-populated parks within low-income neighborhoods can improve perceptions of neighborhood safety and provide opportunities for civic mindedness and empowerment as members of the neighborhood "take back" the park.^{xxxix}
- By providing greenways and walking trails as part of a multi-modal transportation network, parks and recreation can increase the number of travel choices available to people and their feeling of control over their travel decisions.^{xl}
- Art programs and viewing art has been linked to emotional wellness related to self-expression and self-esteem, reduction of symptoms of anxiety and depression, and providing opportunities to have supportive social contact.^{xli}

Baseline Health and Possible Indicators of Parks and Recreation Impact on Emotional Wellness

- Chronic and acute stress measures (14, 10, and 4 item Perceived Stress Scale)
- Measures of depression (Center for Epidemiologic Studies Depression Scale)
- Overall mental health indicators (Behavioral Risk Factor Surveillance System)
- Perception of safety within neighborhoods and parks

- Acres of land preserved either under easement or through government ownership for parks or greenways (percentage of total land area, ratio of preserved versus developed, per capita, percentage of population within a half mile, percentage of population within a quarter mile)
- Tree canopy (street trees and within parks/undeveloped lands)
- Number and size of green spaces within neighborhoods, commercial, office, and industrial spaces
- Number, type, and attendance of programs offered
- Documentation and evaluation of community involvement within the park planning process, creation, updating, and maintenance.
- Participant interviews or surveys in regard to mood, school performance, behavior, etc.

Recommendations for Improving Emotional Wellness through Parks and Recreation

- Preserve green views and natural areas and provide access to these areas and public art for everyone regardless of age, socio economic status, or abilities.
- Partner with parents, schools, Davidson Lands Conservancy, and others to offer programs for youth (especially youth with mental disorders or behavioral issues) to be immersed in nature and to play outdoors.
- Work with the planning department to make sure that green areas are protected within residential, commercial, industrial, and office developments so that residents and employees will have spaces to escape stressful situations and socialize.
- Offer a variety of affordable programs for youth and adults to serve varying interests and provide an opportunity for all citizens to connect with others and continue to learn and develop skills throughout their lives.
- Involve those living around existing or planned parks in the planning process, updating activities and maintenance of the park so that they have a feeling of ownership of the park, empowerment, civic-mindedness and social connectedness.
- Use greenways to connect existing and planned parks and transportation networks to increase the number of safe travel options available and make it possible to bike or walk to popular destinations and recreational areas.

Figure 5: Images of Emotional Wellness



Intellectual Wellness

Intellectual Wellness is the ability to open our minds to new ideas and experiences that can be applied to personal decisions, group interaction and community betterment.^{xiii} The desire to learn new concepts, improve skills and seek challenges in pursuit of lifelong learning contributes to our Intellectual Wellness. An intellectually well person: cherishes mental growth and stimulation; is involved in intellectual and cultural activities; explores issues related to problem solving, creativity, and learning; pursues personal interests such as reading books, magazines, and newspapers to keep abreast of current issues; and is engaged in the exploration of new ideas, hobbies, creative endeavors, and understandings.

The Relationship between Parks and Recreation and Intellectual Wellness

- Recreational programs such as classes on gardening, composting, nature, nutrition, art, sports, etc. can stimulate the interests of participants, engage them in new hobbies, and teach them new skills.
- Informational kiosks in parks can teach park users about natural features within the park, area history, how to properly use park equipment, healthy lifestyle choices, etc.
- Features within a park such as a demonstration garden, musical station, pond, etc. can be used for self-instruction or as part of a course.
- Spending time in natural areas or viewing nature has been shown to reduce mental fatigue, restore attention, and increase effectiveness for working adults and undergraduate students.^{xliii}^{xliv}
- Walks in nature and regularly-scheduled outdoor afterschool activities have been shown to increase attention in children with attention deficit hyperactivity disorder (ADHD).^{xlv}
- Parks increase opportunities for institutions such as schools, colleges, other continuing education programs and conferences held within the town to offer specialized courses and subject-specific instruction in a natural setting.^{xlvi}

Baseline Health and Possible Indicators of Parks and Recreation Impact on Intellectual Wellness

- Evaluations after programs to see what participants learned.
- Number of programs offered that teach a skill or area of interest and the number of participants in each program.
- Observation of how often informational kiosks are used.
- Number of features within parks that can be used for instructional purposes and observations of use both through self-instruction and as part of a recreational program.
- Performance measures and interviews with employers who have implemented measures to increase access to nature—windows with views, walking trails on their campus, outdoor seating, etc.
- Performance measures and interviews with parents and teachers of children with ADHD and other behavioral issues following increased access to nature such as views of nature, having a fish tank in a classroom, playing outside, or walking on trails.

Recommendations for Improving Intellectual Wellness through Parks and Recreation

- Survey citizens on their interests and partner with others to offer a variety of recreational programs to meet these interests.
- Partner with hospitals, the Davidson Lands Conservancy, Davidson Historical Society and others to provide informational kiosks or signs along greenways, throughout town, and within parks.
- Offer features within parks that can be used for instructional purposes, such as demonstration gardens, traffic villages, and learning stations.
- Partner with the Davidson Planning Department, Davidson Public Works Department, major employers, Davidson College, Davidson Lands Conservancy, and others to preserve natural areas and encourage viewing, interacting with, and receiving instruction on nature.
- Partner with schools, colleges, continuing education programs, day care facilities, after school programs, senior services, and lifelong learning programs to offer outdoor activities and instructional time spent within nature.

Figure 6: Images of Intellectual Wellness



Traffic Village: A traffic village or children's traffic village is a park in which children can learn the rules of the road. Children of a minimum age are allowed to use bicycles or pedal-powered cars to navigate the streets and operate according to traffic laws.

Typically, traffic villages are scaled-down versions of real street networks, with the lane and street-width proportional to the smaller vehicles. Often they include operating traffic signals and during busy times are even staffed with traffic police.

One of the intentions of the traffic village is to improve awareness of traffic safety among school-aged children. Many traffic villages enable children to gain hands-on experience crossing streets and with bicycle or other pedestrian safety challenges in a highly controlled environment devoid of actual motor vehicles.

Social Wellness

Social Wellness is the ability to relate to, interact with, and connect with other people in our world.^{xlvii} It involves using good communication skills, having meaningful relationships, respecting yourself and others, and creating a support system that includes family members and friends. Social Wellness follows these tenets: it is better to contribute to the common welfare of our community than to think only of ourselves; and it is better to live in harmony with others and our environment than to live in conflict with them. Our ability to establish and maintain positive relationships with family, friends, and co-workers contributes to our Social Wellness.

The Relationship between Parks and Recreation and Social Wellness

- By offering opportunities for people to connect to nature and each other, parks have been shown to reduce feelings of isolation and self-centeredness and to produce an increased willingness to connect with others, a greater sense of community, and feelings of generosity, trust, and civic-mindedness.^{xlviii}
- Parks and recreational programs can contribute to improved health equity by providing free or reduced-price access to recreational, social, and stress-reducing opportunities for low-income individuals and families.^{xlix}
- Neighborhoods (including low-income neighborhoods) with well-maintained and monitored parks and green space have lower rates of crime, greater perceptions of safety, and lower rates of social disorder (graffiti, abandoned properties, litter, public drinking, broken windows, traffic, etc.).¹
- Views of vegetation in highly-populated housing have been linked to reduced levels of aggression and violence among residents.ⁱⁱ
- Youth who participate in extracurricular activities following school are less likely to participate in risky behaviors such as drug use or sexual activity.ⁱⁱⁱ
- Older adults who volunteer with environmental programs and are regular users of parks and greenways have been shown to have reduced levels of depression, are more physically active, and have better self-reported health.ⁱⁱⁱⁱ

Baseline Health and Possible Indicators of Parks and Recreation Impact on Social Wellness

- Acres of land preserved either under easement or through government ownership for parks or greenways (percentage of total land area, ratio of preserved versus developed, per capita, percentage of population within a half mile, percentage of population within a quarter mile)
- Tree canopy (street trees and within parks/undeveloped lands)
- Level of volunteerism within the community (especially for environmental programs)
- Enrollment in recreational programs especially by low income individuals and families
- Crime reports especially in parks and low-income neighborhoods
- Self-reported adolescent behaviors (Youth Risk Behavior Surveillance System) such as alcohol consumption, drug use, sexual activity
- Teen pregnancy rates

- Surveys and interviews of participants in recreational programs focused on connections made and relationships formed through recreational programs

Recommendations for Improving Social Wellness through Parks and Recreation

- Work with Davidson Lands Conservancy, Davidson Planning Department, Davidson Public Works Department, Davidson Livability Board, and property owners to reserve natural areas and views of vegetation.
- Offer reduced-price or scholarships for recreational programs for low-income individuals and families.
- Engage residents within the park planning process and establish friends of the park programs to encourage ownership, use, and user-surveillance of parks.
- Partner with Davidson Public Works, Davidson Police, and neighborhood watch groups, friends of the park, and park users to make sure that parks are well maintained and monitored.
- Work with schools, parents, and childcare providers to offer extracurricular activities especially during the hours between school dismissal and the return of parental supervision.
- Increase areas with adjustable seating, natural views or artwork in public spaces throughout Davidson to encourage social interaction.
- Offer volunteer opportunities to help with recreational programs, park maintenance, trail creation, overall department operations, etc.

Figure 7 Images of Social Wellness



Spiritual Wellness

Spiritual Wellness is the ability to establish peace and harmony in our lives.^{liv} It is a personal matter involving values and beliefs that provide a purpose in our lives. While different individuals may have different views of what spiritualism is, it is generally considered to be the search for meaning and purpose in human existence, leading one to strive for a state of harmony with oneself and others while working to balance inner needs with the rest of the world. Spiritual Wellness follows the following tenets: it is better to ponder the meaning of life for ourselves and to be tolerant of the beliefs of others than to close our minds and become intolerant; and it is better to live each day in a way that is consistent with our values and beliefs than to do otherwise and feel untrue to ourselves. The ability to develop congruency between values and actions and to realize a common purpose that binds creation together contributes to our Spiritual Wellness.

Spiritual health has been defined as “a high level of faith, hope, and commitment in relation to a well-defined worldview or belief system that provides a sense of meaning and purpose to existence in general, and that offers an ethical path to personal fulfillment which includes connectedness with self, others, and a higher power or larger reality.”^{lv}

The Relationship between Parks and Recreation and Spiritual Wellness

- Spiritual wellness has been linked to physical and mental health including recovery from addiction, teen sexual activity, depression, eating disorders, breast cancer, length of survival with AIDS, and other health behaviors.^{lvi}
- Spiritual wellness and the identification of a higher purpose in life can serve as reasoning for improving health behaviors.^{lvii}
- Leisure activities—in particular those that fall into the areas of personal development activities such as reading for personal growth, holistic exercises such as tai chi and yoga, cultural activities, faith-based activities, outdoor activities, and hobbies—are associated with higher levels of spiritual wellness.^{lviii}
- Parks and natural environments have a great spiritual meaning and represent a strong sense of place for many people typically associated with memories of special times spent outdoors (i.e. family outings, major life events, escapes from stressful times, etc.) or historically/culturally significant places.^{lix, lx}
- Recreation can strengthen a person’s identity and help them define who they are by allowing them to be themselves and express their personality. For example, it is becoming more common for a person to identify himself/herself by the activities that he/she participates in (i.e. hiker, swimmer, soccer player, etc.)^{lxi}
- The principles of land stewardship and serving others are found in many religions; parks and recreation programs can offer opportunities for both.
- Opportunities for play—music, art, dancing, and laughter—can encompass and express spirituality.^{lxii}

- Relaxing recreational activities (reading, sitting, taking a walk in nature) have been linked to spiritual wellness and a park can be appreciated for its serene, quiet, private and “spiritual” qualities assuming that it is not over populated.^{lxiii, lxiv}

Baseline Health and Possible Indicators of Parks and Recreation Impact on Spiritual Wellness

- Number of and attendance of programs with a spiritual element such as yoga classes, meditation programs, support groups etc.
- Interviews and surveys with church leaders to identify and evaluate potential park uses, programs, and partnership opportunities.
- Number of and use of meditation gardens and outdoor labyrinths constructed.
- Interviews with those who have attended support groups about the role of parks and recreation in overcoming addiction, coping with grief or depression, and managing a disease.
- Teen pregnancy and drug use (Youth Behavioral Risk Factor Surveillance System)
- User surveys and observation of activities taking place within the park.
- Greenway linkages to shared use spaces, particularly Community Life Centers offered by some churches and other religious organizations.

Recommendations for Improving Spiritual Wellness through Parks and Recreation

- Provide information to and connect churches interested in developing meditation gardens or outdoor prayer labyrinths.
- Work with churches to develop shared use agreements and provide open spaces or public facilities for yoga classes, church gatherings, discussions on spiritual wellness, or support/prayer groups to meet.
- Partner with Davidson Lands Conservancy and local churches to preserve and provide public access to local water bodies and wilderness areas for individual reflection, ceremonies, and social gatherings.
- Offer classes on yoga, gardening, relaxation and meditation techniques, art, dancing, music, singing, running, stress management and finding a work/life balance, etc.
- Be mindful of parks becoming over-congested, especially during times when there are no scheduled events and a person could be coming to the park to seek solitude and serenity.

Figure 8: Images of Spiritual Wellness



Occupational Wellness

Occupational Wellness is the ability to get personal fulfillment from our jobs or our chosen career fields while still maintaining balance between work and leisure time in our lives.^{lxv} It focuses on our search for a calling and involves exploring various career options and finding where we fit. It also involves addressing workplace stress and building relationships with co-workers. Because what we do for a living encompasses so much of our time, it is important for our overall well-being to do what we love and love what we do. When people are doing what they were meant to do: they deepen their sense of meaning and purpose; contribute their unique gifts, skills, and talents in a personally meaningful and rewarding way; and convey their values through their involvement in activities that are gratifying for them. Our desire to contribute in our careers to make a positive impact on the organizations we work in and to society as a whole leads to Occupational Wellness.

The Relationship between Parks and Recreation and Occupational Wellness

- The development process of parks, trails, and greenways can create short and long-term jobs for landscape architects, planners, engineers, construction teams, etc. For example, the building of trails creates more jobs per dollar than any other type of transportation infrastructure construction.^{lxvi}
- Recreational programs can generate jobs for instructors and program coordinators.
- The maintenance and operation of parks and facilities can generate jobs.
- Increased economic development around trails and greenways (especially regional systems that attract tourists) can revitalize areas, spawning small service-oriented and retail businesses, and creating substantial job growth and local spending. For example the “Trail Towns” along the Great Allegheny Passage (formerly mining and railroad towns) have capitalized on the 700,000 annual trips along the trail with trail users spending over \$40 million and generating \$7.5 million in wages every year with 54 new or expanded businesses hiring 83 new jobs in these small towns.^{lxvii}
- Quality parks and recreation systems attract young professionals in high-tech professions (knowledge workers) and retirees with disposable income or GRAMPIES (Growing [number of] Retired Active Moneyed People in Excellent Shape). Increases in these two population groups encourage additional high tech industry development and supporting services to be created.^{lxviii}
- Recreational programs can offer classes in skill development that can lead to career advancement especially in low income, youth, women, and minority populations.
- Increased municipal revenue due to higher property values surrounding a park or greenway can be used to pay for park creation or improvement and to hire additional staff.^{lxix}
- Other government savings from parks and recreational programs include: improved health and lower health costs, lower criminal activity and public safety costs, the creation of productive, tax-paying citizens from at-risk youth, and environmental services such as storm water management and carbon sequestration.^{lxx}
- Employers can improve the health and wellbeing of their employees by: providing views of nature or incorporating greenery within their office buildings, providing a trail network or park

on their property, locating their business along a greenway, and encouraging active commutes and outdoor recreation breaks throughout the day.

- Office buildings located near parks and along greenways are shown to have higher occupancy rates than other business locations.^{lxxi}

Baseline Health and Possible Indicators of Parks and Recreation Impact on Occupational Wellness

- Economic development and job growth associated with park, greenway, and trail development
- Trends in property values along parks and greenways
- Interviews and surveys of employers regarding recreation services offered to employees, participation in those programs, job performance, absenteeism, and reasons for locating their business in Davidson or along a greenway.
- Number of tourists using the regional trail system and spending within Davidson (food, hotels, purchases at local shops especially bicycle/athletic clothing shops)
- Number of career skill-building courses available and attendance
- Changes in municipal revenue and expenses associated with health, public safety, and environmental services.

Recommendations for Improving Occupational Wellness through Parks and Recreation

- Partner with employers and economic development entities (Lake Norman Chamber of Commerce/ Davidson Community and Economic Development program) to identify the potential economic benefits of additional trail, park, and greenway development and to track actual impact on local economies and unemployment levels.
- Develop additional parks and offer additional park programs as funding allows; generating additional jobs.
- Work with schools and local nonprofits to offer youth development and career building programs with income-based discounts.
- Partner with the planning department and employers to encourage offering natural views and recreational opportunities within larger business campuses.
- Work with the planning department to develop zoning and development standards around parks and greenways to encourage and allow for Trail-oriented Development.

Figure 9: Images of Occupational Wellness



Images

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