

**Appendix E  
Trends and Demographic Analysis**

**Demographics Report for the 2014-2019 PA Outdoor  
Recreation Plan  
and  
Evaluating Existing National/State Data to Inform the  
2014-2019 PA Outdoor Recreation Plan**



Submitted to:

The Pennsylvania Department of  
Conservation and Natural Resources

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# Demographics Report for the 2014-2018 PA Outdoor Recreation Plan



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## **Introduction**

### Effects of Changing Demographics

Changes in population characteristics such as growth, density, and ethnicity have profound effects on people's recreational behavior and the provision of recreational services and facilities. Variation in population size and density can mean more or less visitor demand, crowding, waiting, and conflict. Changes in ethnicity, age, and gender can lead to changes in recreational behaviors (e.g., passive or active and group or individual activities) and landscape preferences (e.g., well-maintained or wilder landscapes). As examples, Hispanics generally prefer more group and family-based activities and tables, grills, and other facilities that support these. African Americans generally prefer well-maintained landscapes and team rather than individual sports. And woman, especially women with children, generally prefer group activities and well maintained, secure landscapes. Of course, there are exceptions to these generalities.

### Aggregated Data

The U.S. Census and other data sources provide demographic information at different levels of aggregation from blocks and block groups to states. Except for Pittsburgh and Philadelphia, the information discussed in this section is aggregated at the county and state levels. Care should be taken when interpreting and using aggregated data. As examples, a large senior facility in a block of young family homes can confound any analysis and use of age data and large population growth in counties reported as percentages can be a result of low base numbers at the beginning of the period in question (e.g., an ethnic population grew from 40 to 120 people or 200 percent). Also, census information groups all ethnic groups (cultural or national characteristics) together. As an example, Mexican and Puerto Rican are grouped together under the category Hispanic. Although these ethnic groups can share recreational characteristics, there can be differences as well. A key to interpreting and using aggregated demographic data is to have a good understanding of a locale and its placed-based process of community.

### Type of Demographic Information

Demographic variables discussed in this section include population growth, ethnic growth, population density (people/square mile), population movement, urbanization and land conversion, family structure and annual family income, and age. The greatest amount of data was drawn from the 2000 to 2010 U.S. Census and other U.S. Census Bureau information. Although projections are provided for some variables, they do not consider unexpected occurrences such as economic recession and extreme weather. Also, populations projects examined for this document did not consider projections for industrial expansion, housing, medical breakthrough and other economic variables.

## **Demographic Propositions for Pennsylvania**

After review of U.S. Census Bureau data and a number of recreational and other studies, this section provides a number of propositions about demographics trends for Pennsylvania.

### Population Growth and Density

a) Although slower than the U.S., the state's population will continue to grow except in some rural and urban northern and western counties which will continue to lose population. Except for Centre County, and a few other outliers, the state's population will continue to be centered in an area encompassing east and south central counties. Increased population and population density could affect provision of recreational services and facilities including more crowding, waiting, conflict, and demand for visitation.

b) A larger portion of the state's population growth will continue to be either foreign born, or citizens born outside the country. Some areas of the state, including cities and rural areas with employment possibilities, will become more diverse as all ethnic groups, especially Hispanic, are projected to grow. As described in a number of studies, changing ethnic populations and increases in ethnic populations and population densities are most likely to cause changes in recreational behaviors, facilities, services, strategies for outreach and interpretation, strategies for employment, fee strategies, and needs for grants and technical assistance. Growing ethnic populations could cause increased conflict over recreational use, policy, and governance and lead to questions surrounding environmental justice and other social issues associated with the fair provision of recreation.

### Land Conversion

a) Although, ethnic population densities are projected to grow in urban areas, and population densities will remain high in existing cities, Pennsylvania's population will continue to shift to Townships of the Second Class, especially residential growth in northeastern and south central border counties associated with Baltimore, Washington D.C., and New York City.

b) Urbanization and land conversion will continue especially in northeast and south central counties. A number of reports including the 2003 Pennsylvania Brooking Report, *Back to Prosperity: A Competitive Agenda for Renewing Pennsylvania* have discussed the large amount of agricultural and other landscapes converted to developed land with a corresponding small population growth; a definition of sprawl and scattered development. Increased land conversion may cause the update of land use planning and regulatory policy including the use of more stringent municipal zoning and subdivision and land development ordinances. This type of landscape ecology may also increase the use of referendum and bond issues and other tools (e.g., transfer of development rights) employed to preserve open space, greenways, riparian areas, and other green infrastructure associated with recreation. It may lead to increased capacity through partnerships between municipalities and between municipalities, nonprofits, and business in an attempt to

plan and finance the purchase and administration of open space and other recreational areas in competitive real estate markets. There may be increased public conflict and concern and associated involvement in land use issues as “special” or “favorite” landscapes are developed.

### Age

The aging of Pennsylvania’s population will continue and by 2030 about 23 percent of the state’s population will be Baby Boomers over 65. A smaller portion of these older people will retire in the traditional sense as the “new old” are expected to live longer and live more independent lives as they age. In general, the population of the state is older in north and western counties and younger in south central. Older people have a number of characteristics important to recreation including health concerns, more deliberate behavior, higher levels of fear of crime, and greater interest in plant and animal life. An aging population would most likely cause increased access to and use of free time, changes in the type of preferred recreation, a need for more localized recreation, and changes in outreach strategies, transportation, and other important recreational services.

### Family Structure

a) Due to decreased birth rates and households with less children, increased single parent households, increased number of working parents, slightly decreased marriage rates, slightly increased divorce rates, and the aging of the state’s population, some have projected that family structure will change from the traditional “nuclear family” to single parent, couples without children, and other structures. These changes could affect the type of family groups visiting recreational facilities, the time households have for recreation, and make local recreation more important.

b) With increased independence due to better salaries and workplace roles and the fact that woman live older than men in an aging population, the role of women could become more active in shaping recreational policy and choices at the municipal and other levels.

c) Although median family income has increased in the state, some rural and urban areas will continue to have lower median family income and higher unemployment rates. In terms of the share of total available income the economic distance between “haves” and “have-nots” will continue to increase. These economic realities could cause disparities within and between municipal residents about the type, quality, and quantity of recreation and where people are able to participate in high quality recreation. This trend may marginalize some people from higher quality recreation, lead to increased recreational conflict, cause reevaluation of entrance fee strategies, increase the need for state grants and technical assistance, and increase the need for transportation and other services that can lower the marginalization of lower income people. Recreation close to the home may be very important in some places, especially with any economic downturn. Any economic disparity in the provision of recreation would have environmental justice realities if some people are provided

more, higher quality, and safer recreation services and facilities than others in the same or even bordering municipalities.

d) Families having less children and children becoming more disconnected from nature could interact to cause changes in outreach and engagement strategies and recreational activities aimed at youth. Perhaps there will be opportunities to connect the state's aging Baby Boomers with youth in recreational settings and activities.

### Municipal Capacity

Although some municipalities simply choose to budget more or less for recreation, other Pennsylvania municipalities will continue to have problems funding recreation activities and facilities. Efforts to increase funding and administrative capacity should impact tax and fee strategies, the formation of multimunicipal and other partnerships, and the continued need for state grants and technical assistance.

### Philadelphia and Pittsburgh

Although Pittsburgh lost population and Philadelphia's population slightly increased between 2000 and 2010, three trends seems apparent: 1) the number and density of the Hispanic populations will continue to grow, b) the median age will continue to decline at some rate, and c) these cities will continue to have large African American populations. As described in other cities and studies, younger people of increased diversity will affect the types of desired recreational behavior and landscapes.

### Marcellus Shale

The impacts of the Marcellus Shale industry on Pennsylvania demographics over the longer-term may change due to a number of variables including the price of gas per 1,000 British Thermal Units, the nature of the activity (e.g., drilling or refinement), the transient nature of the labor force, and the enactment of any type of extraction tax by the state. Many researchers think that there is no current evidence (e.g., increases in the number of issued driver licenses or in school enrollment) that the industry has caused "skyrocketing" residential population growth in state counties. Bradford, Susquehanna, Tioga, Washington, Lycoming, and Greene counties may have more Marcellus Shale activity than other Pennsylvania counties.

## **Discussion of Demographics Effecting Pennsylvania Recreation**

### Population Growth and Density and Land Conversion

Between 2000 and 2010, the population of the United States grew from 281,421,906 to 310,384,000, about 29,000,000 people. During the same time period, Pennsylvania's population grew from 12,281,054 to 12,702,379, about 421,325 people. The state's population grew, but slower than the U.S. (3.4 percent compared to 9.7 percent). The state grew faster than Ohio (1.6 percent), New York (2.1 percent), and West Virginia (2.5 percent) and slower than New Jersey (4.5 percent)

and Maryland (9.0 percent), but was comparable to the 3.2 percent average growth rate of the U.S. Northeast Region.

In Pennsylvania, the number of annual deaths is approaching the number of births and a larger part of the state's population growth in the last decade has been from international migration from other countries, not just other states. Between 2005 and 2012, about 30 percent of the population growth was made-up of people born outside of the United States. But, the percent increase in population in this group was about 63 percent compared to 3.3 percent for those born in Pennsylvania and 12.4 percent for those born outside the state. Between 2006 and 2010, about 30 percent of the population growth was made-up of Whites from Maryland, New York, and other border states. Except for Forest and Centre Counties, Pennsylvania's population growth was centered in the east and south central counties. In the 2010 U.S. Census, Forest, Pike, Monroe, Franklin, Chester, York, Centre, Lehigh, Northampton, and Adams were the fastest growing counties. When considering the two fastest growing counties, the population growth in Forest County was due to the construction of a correctional facility leaving Pike at 23.9 percent as the fastest growing county in the traditional sense. Pennsylvania counties with the most population were Philadelphia, Allegheny, Montgomery, Bucks, Delaware, Lancaster, Chester, York, Berks, and Westmorland. Fifty-two percent or 6,598,000 of the state's population were found in these counties.

About 3.5 million people or 27 percent of the state's population lived in Pennsylvania's rural counties and between 2000 and 2010 the population of rural counties grew by about 2 percent. Rural population growth was not even with rural populations growing in the east and declining in the north and west. The slowest growing counties were Cameron (67<sup>th</sup>), Elk, Fayette, Beaver, Cambria, McKean, Greene, Armstrong, Warren, Allegheny, and Venango (57<sup>th</sup>). All these counties lost population between 2000 and 2010. In fact, many rural counties have lost population since the 1980s and 29 Pennsylvania counties continued to loss population between 2000 and 2010. Twenty-five of these counties were in the rural north and northwestern part of state.

Between 2010 and 2030, the state's population is projected to grow 7.4 percent from 12,281,054 to 13,190,400, about 909,346 people. If population growth continues to follow trends found in the 2005 to 2012 census data, a large portion of this new population will be either foreign born or U.S. citizens born out of the country. Except for the growth of ethnic populations in Pennsylvania cities, future population growth is expected to continue to be centered in the state's east and south central counties. The fastest growing counties are projected to be Pike (103 percent), Susquehanna, Monroe, Forest, Chester, Wayne, Cumberland, Berks, Northampton, York, and Adams (26 percent). The projected slowest growing counties are Wyoming, (-26.6 percent), Warren, Indiana, Elk, Cambria, Beaver, Blair, Clinton, McKean, Venango (-13 percent).

Pennsylvania's average population density is about 284 people/square mile. The highest population density is in Philadelphia County with 11,800 people/square mile and the lowest in Cameron County with 12.83 people/square mile. Increases in ethnic populations and population densities are projected for Philadelphia, Lehigh, and Lancaster counties and population densities in existing cities will remain high at greater than 1500 people/square mile. In contrast, residential growth, especially in border counties associated with Baltimore, Washington D.C., and New York City, has and is expected to continue to shift to Townships of the Second Class. Between 2000 and 2010, the State's township population grew by 7.4 percent or 491,050 people for a total of 7,098,200 or 56 percent of the state's total population.

Another measure of the velocity, amount, and density of population growth is the number and location of housing units built. In 2010, there were 1.6 million housing units in rural Pennsylvania counties and 3.9 in urban. Although the 2008 economic recession drastically slowed the number of new residential building permits and housing starts, between 2000 and 2010 rural housing units increased by 87,000 (6 percent) and urban 230,000 (6 percent). Similar to other population trends, the greatest increase in housing units occurred in the eastern and south central counties of the state, with slower growth in north and west counties. The following is an example of the sprawled/scattered nature of residential development found in the state. Between 1992 and 2005, urban land development increased by 131 percent from about 1.2 million acres in 1992 to almost 2.8 million in 2005. During the same time period the state's population grew by 4.5 percent. The southeast region of the state has experienced the greatest percentage of conversion and loss in acres of both forests and agricultural land.

### Ethnic Populations

The reality of past, and most likely future, population growth in Pennsylvania is that larger portions of new people will be either foreign born or U.S. citizens born outside of the county (e.g., Puerto Rico). Between 2000 and 2010, the state's White population growth decreased -.7 percent or 77,915 people. During the same time period, the state's ethnic population grew 33 percent from 1,958,599 to 2,607,727 people. In 2010, one of five Pennsylvanians was in an ethnic group. Between 2000 and 2010, rural ethnic populations grew from 161,046 to 260,300 for a total of 8 percent of the population in the state's rural counties. When looking at youth, there was a growing population of children under five in all ethnic groups compared to -10 percent decline in the population growth of white children under five.

The fastest growing ethnic group in the state was Hispanic which grew 83 percent from 325,572 people to a total of 719,660. This population represented about 5.7 percent of the state's population in 2010 and one out of eighteen Pennsylvanians was Hispanic. Puerto Ricans are the largest Hispanic group with 366,082 people (50 percent) and Mexicans are second with 129,568 people (18 percent). Between 2000 and 2010, the fastest growing Hispanic populations were found in Forest (597 percent), Luzerne (479 percent), Clearfield, Lackawanna, Franklin, Carbon,

Schuylkill, Monroe, Fulton, Wyoming, Wayne (124 percent), and Montgomery (124 percent). The largest Hispanic populations were found in Philadelphia, Lehigh, Berks, and Lancaster counties.

Between 2000 and 2010, the state's African American population grew 12 percent from 1,224,612 to 1,377,689 people. In 2010, African Americans were the largest ethnic group in the state representing 10.4 percent of the population and one out of nine Pennsylvanians was African American. Other ethnic populations including Asian grew 60 percent from 346,163 to 572,239 people.

Between 2010 and 2030, the White population is projected to grow by less than one percent, while the Hispanic population is projected to grow 184 percent, to a total of 8.5 percent of the state's population. The African American population is projected to grow 26.6 percent and will remain the state's largest ethnic population. In fact, all other ethnic populations are projected to grow from 2010 to 2030. Given these growth rates, no ethnic population is projected to become the majority population in Pennsylvania by 2030.

### Age

According to the 2010 U.S. Census, Pennsylvania was one of the country's oldest states with 15.4 percent of the population 65 and over; Florida had 17.3 percent. At 27 percent, Pennsylvania also had one of the highest percentages of Baby Boomers in its population. In both the U.S. and Pennsylvania the percentage of people age 65 and over is increasing. In 2010, the median U.S. age was 36.8 compared to 35.3 in 2000. In 2010, the median Pennsylvania age was 40.1 compared to 38 in 2000. In 2010, there were 1,959,307 Pennsylvanians age 65 and over; about 15 percent of the population. The oldest Pennsylvania county was Sullivan with a median age of 50, the youngest Centre with a median age of 29. In general, younger populations were found in the state's south and east counties with older populations in the north and west.

By 2030, people over 65 are projected to grow to 23 percent of the state's population. Because of an older population base, this projection is somewhat higher for rural Pennsylvania; about 25 percent. Until 2030, Baby Boomers in the 65-75 age range will dominate older Pennsylvanians. A greater percentage of those over 65 will be female. In fact, woman had a higher median age than men for all ethnic groups in the last census. In 2010, elderly females were two and a half times more likely to live alone compared to elderly males. In 2010, about forty-five percent of people over 65 lived alone and 72 percent were females. Between 2000 and 2010, the percentage of older people living alone increased 3 percent or by 17,251 people.

### Family Structure

Due to decreased birth rates and households with less children, increased single parent households, increased number of working parents, slightly decreased marriage rates (53 percent in 2005 and 48 percent in 2012), slightly increased divorce rates (8.7 percent in 2005 and 9.5 percent in 2012), the aging of the state's

population, and a changing role of women in society, some anticipate the traditional structure of the American Family to shift in the next 20 years. In 2010, there were fewer people living in the traditional “Nuclear Family.”

The average size of households continues to decrease with fewer families with children and less children in families. Between 2000 and 2010, the share of married couples families raising children declined by -12 percent or 124,004 families. In 2010, the share of single family parent homes raising children increased by 12 percent or 45,520 and women were three times more likely to head single parent households than men. Also, the number of male and male and female and female unmarried partner households increased. Self-reported male and male household increased about 45 percent from 10,492 in 2000 to 15,192 in 2010. Female and female partner households increased about 72 percent from 10,674 in 2000 to 18,410 in 2010.

Between 2000 and 2012, the unadjusted median annual family income in Pennsylvania increased 32 percent from \$49,184 to \$65, 109. This increase, and increases in per capita income, were not even across the state and Chester, Bucks, and Montgomery counties had the highest family income while Forest and Fayette had the lowest. When looking at 2011 per capita income, the median personal income in rural counties was \$34,521 or \$10,676 less than urban counties. Lower per capita personal income can also be found in portions of the state’s cities and other urban areas. In addition to fairly large differences in family and per capita income between rural and urban counties, the share of the total available income going to the top one percent of Americans is growing. In 2007, the state’s poverty rate was 11.6 percent and in 2012 the poverty rate in both rural and urban Pennsylvania was about 13 percent. In 2012, seasonally adjusted unemployment rate in rural Pennsylvania was 8.1 percent. The urban rate was 8.0 percent.

#### Municipal Capacity

In 2008, 44.5 percent of Pennsylvania municipalities were operating in a deficit including more than half of the state’s cities. In 2010, 19 municipalities were classified as Act 47 distressed communities.

#### Pittsburgh and Philadelphia

Between 2000 and 2010, Pittsburgh lost African American and older people and gained Hispanic and younger people. The city may trend to become more diverse and younger. Between 2000 and 2010, Pittsburgh’s population declined by -9 percent or 28,859 people. The African American population declined by -12 percent or 11,040 people, but still made-up 26 percent of the city’s population. The Hispanic population grew by 57 percent or 2,539 people.

The number of people over 65 declined by -23 percent or 12,883 people and the median age also declined from 35.5 to 33.2. The total number of occupied housing units declined by -5 percent to 7,522 units.

Between 200 and 2010, Philadelphia had a dramatic increase in Hispanic populations and a decrease in older people. Like Pittsburgh, Philadelphia may become more diverse and younger. Between 2000 and 2010, Philadelphia's population grew by 1 percent or 8,456 people. This was the city's first population increase since 1950. The African American population grew by 1 percent or 6,015 people and was 43 percent of the city's total population. The Hispanic population grew by 46 percent or 58,683 people. The number of people over 65 declined by -13 percent or 24,413 people and the median age also declined from 34.2 to 33.5. The total number of occupied housing units grew 2 percent or by 9,665 units.

### Marcellus Shale

The impacts of the Marcellus Shale industry on Pennsylvania demographics over the longer-term will vary by the level of gas reserves in the state, demand for gas, the amount of gas being produced in other regions of the country and world, the price of gas per 1,000 British Thermal Units, the nature of the activity (e.g., drilling or refinement), the transient nature of the labor force, and any extraction tax placed on the industry. The amount of Pennsylvania gas reserves has been estimated at between 35 and 400 trillion cubic feet. At the current drilling and production rate, the reserve of gas could support the industry for about 20 years or well over the next few centuries. Because of direct connections with market conditions, the velocity of drilling and secondary industries is difficult to predict. As an example, the number of wells drilled in January and October of 2010 exceeded the total wells drilled in 2008 and 2009 combined.

Questions remain about whether the industry has and will continue to cause increased population growth in Pennsylvania municipalities and counties; especially those associated with secondary industries such as gas refinement and well service. Based on results of driver license issuance and school enrollment, some researchers think that there is no current evidence that the industry has caused longer-term residential population growth in any counties of the state; especially "skyrocketing" population growth associated with economic "Booms". Besides population growth, other demographic trends that may be associated with the Marcellus Shale Industry in mostly rural counties include increased employment and per capita income, a growing younger population of workers, increased construction of housing units, increased demand on parks and other community services, and a growing population and density of ethnic workers in some areas. Bradford, Susquehanna, Tioga, Washington, Lycoming, and Greene counties may have more Marcellus Shale activity than other Pennsylvania counties. It should be noted that population projections examined for this document did not consider projections for industrial expansion, housing, medical breakthrough, and other economic variables.

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# Evaluating Existing National/State Data to Inform the 2014-2019 PA Outdoor Recreation Plan



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## **Introduction**

In this report, relevant data sources and reports will be reviewed and summarized in an effort to help inform the 2014-2019 Pennsylvania State Comprehensive Outdoor Recreation Plan (SCORP). This report is organized around the five important outdoor recreation related themes identified by the Technical Advisory Committee at previous planning meetings: Trends & Technology, Recreation Infrastructure, Tourism/Economic Development, Health & Wellness, and Local Parks and Recreation. Each theme will be briefly introduced and described, followed by a synthesis of relevant research data/findings that inform or substantiate each theme.

To develop this synthesis, a number of different sources were reviewed. These sources included: national datasets on outdoor recreation participation, technical reports prepared for government agencies, peer-reviewed journal articles, census data, and non-profit studies focusing on outdoor recreation. Particular consideration was given to sources published after the last PA SCORP was released (i.e. 2009). At the end of this report, a brief recommendation on the utility of “for-pay” Pennsylvania outdoor recreation secondary data is provided.

## **Trends**

For the 2014 plan, there was a need to get a pulse on outdoor recreation trends currently being observed within the state and throughout the country. In addition to changing demographics (addressed above), other trends include general outdoor recreation participation, barriers to participation, and the prevalence of new activities. The following review identifies trends that are relevant to outdoor recreation in Pennsylvania.

Two major national surveys provide insight into outdoor recreation participation trends within the United States. Since 1998, the Outdoor Foundation has published an annual outdoor recreation participation report that helps the outdoor industry, public agencies, and community organization better understand the trends in outdoor recreation participation (N=42,363). This data is based on a national panel. Another, separate survey led by researchers at the USDA Forest Service, is the National Survey on Recreation and the Environment (NSRE). This surveillance survey began in 1960 and utilizes phone interviews with a general population of Americans to understand their outdoor recreation participation and behaviors (N=97,000)

According to 2014 Outdoor Foundation Topline report, the number of outdoor recreation participants grew by 4.8 million people from 2009-2013. The number of total outdoor outings increased from 10.1 billion excursions in 2009 to 12.1 billion excursions in 2013 (Outdoor Foundation, 2014). The NSRE echoes this estimated

growth by illustrating that from 2000 and 2009 participation in outdoor recreation activities has grown 7.5%, and the total number of activity days has increased by 32%. According to these national data sources, outdoor recreation participation is increasing, but much of this increase is due to population growth.

Based on the 2013 Outdoor Recreation Participation Report, within the Mid-Atlantic Region (consisting of Pennsylvania, New York, and New Jersey), 47% of residents participate in outdoor recreation (Outdoor Foundation, 2013). Compared to the other regions considered in the study, the Mid-Atlantic region ranks sixth out of nine in participation rate. In total, the Mid-Atlantic accounts for 13% of United States outdoor recreation participants.

### Walking

The NSRE states that walking is the most popular outdoor activity with 85% of the American population participating (200 million people). The Outdoor Foundation did not include walking as an outdoor recreation activity. Instead, it is considered a “crossover” activity. In Outdoor Foundation study, 53% of outdoor participants enjoy walking for fitness (Outdoor Foundation, 2013). Without walking as a choice, the Outdoor Foundation found that the most popular outdoor recreation activity was running (both road and trail) as measured by the number of participants and the number of annual outings (19%). These results are generally consistent with the prior SCORP resident survey (N=2,648) which found walking to be the activity with the highest participation rates (84%), with jogging listed as the 13<sup>th</sup> most popular (21%) (Graefe, Mowen, Trauntvein, & Covelli, 2009).

### Adventure Racing and Nature-Based Activities

Nationally, the fastest growing outdoor recreation activities include adventure racing (alternative endurance events such as mud runs) growing by 211% over the past five years, as well as triathlons (both non-traditional and traditional) which increased 199% and 174% respectively over the past five years (Outdoor Foundation, 2013). There is also growth in the overall category of nature-based activities that fall under “viewing and photographing nature.” According to NSRE trend data, these activities include: viewing birds (22.8%), other wildlife besides birds (25.4%), wildflowers/trees (29.4%), natural scenery (17.9%) and fish (21.4%; Cordell, 2012). Cordell argues that while “traditional” forms of outdoor recreation, such as hunting and fishing have been declining; these other viewing and photographing nature activities have increased dramatically.

### First-Time Participants

Newer forms of outdoor recreation are experiencing the most gains among first-time participants, whereas traditional outdoor recreation activities have the fewest first-time participants. The most popular new activity engaged in by first-time participants was stand up paddling, with 56% of users identified as first time participants (Outdoor Foundation, 2013). Boardsailing and windsurfing also experienced a significant influx of first time participants with 42%. Triathlons (non-traditional and traditional) both experienced an influx of first time users (38% and

37% respectively). By contrast, the traditional activities of fishing and hiking experienced the lowest percentages of users identified as first time participants (both at 6%; Outdoor Foundation, 2013).

### Projected Trends in Participation

According to NSRE data, the activities projected to grow fastest in per capita participation over the next 50 years are developed (commercial) skiing (20 to 50 percent), undeveloped (backcountry) skiing (9 to 31 percent), challenge activities (6 to 18 percent), equestrian activities (3 to 19 percent), and motorized water activities (-3 to 15 percent). The activities projected to decline in per capita participation are visiting primitive areas (0 to -5 percent), motorized off-road activities (0 to -18 percent), motorized snow activities (2 to -11 percent), hunting (-22 to -31 percent), fishing (-3 to -10 percent), and floating activities (3 to -11 percent). All other outdoor recreation activities considered are projected to remain stable or grow insignificantly (Bowker & Askew, 2012).

### Youth Participation

The NSRE addresses youth outdoor recreation participation and states that, contrary to popular belief, America's youth does spend quite a lot of time outdoors. Approximately 64% of youth ages 6 to 19 reported spending two or more hours outdoors on a typical weekday. This percentage jumps to over 75% on weekend days. The top five activities that youth (ages 6 to 19) participate in were "playing or hanging out outdoors" (82%), biking, jogging, walking, skate boarding, etc. (80%), use of electronic devices (54%), team sports (50%), and reading, studying etc. (44%) (Cordell, 2012). The Outdoor Foundation reports the top five most popular outdoor activities among youth ages 6-17 were bike riding (27%), running (24%), camping (20%), fishing (20%), and hiking (12%; Outdoor Foundation, 2013).

However, participation in outdoor recreation was shown to be different among different groups of young people. Outdoor recreation participation in adolescent boys (ages 13 to 17) rose three percent in the past two years (to 69%), whereas adolescent girls (ages 13 to 17) declined four percent in the last two years (to 51%). Perceived constraints to outdoor recreation help explain why youth did not participate in outdoor recreation activities. Youths (6-12) and adolescents (13-17) who do not participate in outdoor recreation both reported "lack of interest" as keeping them from participating in outdoor activities (40% and 48% respectively). The most significant barrier for outdoor recreation participation for young adults (18-24) was a lack of time. From the overall sample of respondents ages 6 and up, not being interested (37%), not having time (26%), and not having the skills/abilities (21%) were the top three reasons why respondents did not participate in outdoor recreation activities (Outdoor Foundation, 2013).

### Diverse Populations

A noticeable lack of diversity in outdoor recreation participants is a reason for concern moving forward. Consistent with previous reports, outdoor participation was highest among Caucasians and lowest among African Americans. Across all age

groups, Caucasians participated in outdoor recreation more than Hispanics, African Americans, and Asian/Pacific Islanders. Most notably, 64% of Caucasians ages 13 to 17 participated in outdoor recreation while only 46% of African Americans, 53% Hispanics, and 58% Asian/Pacific Islanders of the same age group participated. As the report concludes, “there is vast diversity among outdoor recreation opportunities, but much less diversity among the outdoor participants themselves.” (Outdoor Foundation, 2013 p.4).

### Public Land Visitation

Public lands are highly important for the recreation opportunities they provide. The percentage of the population that visited recreation and historic sites on public land is significant in both the East (60% of annual days) and the West (69% of annual days; Cordell, 2012). In Pennsylvania, public lands (comprised of local/county, state and federal lands) account for 78% of away-from home outdoor recreation (Graefe, Mowen, Trauntvein, & Covelli, 2009). Within “public lands,” local/community parks and recreation areas were the most prevalent places where outdoor recreation occurred (accounting for 43%), followed by state recreation areas (27%) and federal recreation areas (8%) (Graefe, Mowen, Trauntvein, & Covelli, 2009). New evidence from the 2014 Pennsylvania SCORP Resident Survey indicates that the percentage of time spent at local outdoor recreation areas is even higher (50%). This data suggests that public lands are very significant in that they provide areas for citizens to participate in outdoor recreation.

Visitation to public lands has varied over the past ten years and depend on the type of public land (NPS, USFW, BLM, USFS, and State Parks). The National Park Service and The Bureau of Land Management visitation has remained relatively stable, The US Fish Wildlife Service visitation has steadily increased, and The USDA Forest Service visitation has decreased. State park visitation had increased from 1992 to 2000, declined until 2005, increased through 2008, and dipped again in 2009. In Pennsylvania, state park visitation has fluctuated only slightly over the same time period with moderate increases and decreases in attendance. Over the past ten years, the average attendance has hovered around 36.5 million visits. In that time period, the highest level of visitation occurred in 2009 with around 38.7 million visits and the lowest occurred in 2008 with 34.1 million visits. In 2013, Pennsylvania State Parks received 37.5 million visits (DCNR, 2014). These Pennsylvania-specific State Park visitation statistics differ from NSRE’s findings that state park visitation increased until 2008 and then declined in 2009.

### Conclusion

In summary, national and state level trend data can inform future investments and promotional strategies. These trends indicate where we have been, where we are now, and where we are going as a field. Being conscious of trends in outdoor recreation is very important to “positioning the field” in a way that ensures our future relevancy of outdoor recreation within people’s lives.



Research firm eMarketer has assembled data on the average time spent per day with media by US adults (18+ years of age). Their findings indicate that US adults spend 5 hours 16 minutes on computer/mobile devices and 4 hours 31 minutes with TV (eMarketer, 2013). Digital media was broken out between computer use and mobile device (phone and tablet) use. US adults spent an average of 2 hours 19 minutes on a computer and 2 hours 21 minutes on mobile devices. The increase in mobile device use has helped computer/mobile use surpass TV use for the first time (eMarketer, 2013). Considering the amount of people that have access to digital technology, and the amount of time spent engaged with them, it is clear that digital technology has become a staple of modern society. More than that, it has become a primary leisure activity for many Americans.

With the growing popularity of digital media, traditional forms of outdoor recreation/leisure behaviors are being set aside. Two scholars in particular have indicated that there is evidence for a “fundamental and pervasive shift away from outdoor recreation” (Pergams & Zaradic, 2006, 2008). This decline in outdoor recreation participation (defined as per capita visits to outdoor recreation areas) is negatively correlated with an increasing amount of time spent playing video games, watching TV, and surfing the Internet. These studies highlight the commonly held position that technology acts as a detractor from outdoor recreation participation. In this sense, technology is often seen as a direct competitor to outdoor recreation.

The digital technology era is only beginning; it is the job of outdoor recreation providers to adapt to this new reality. Technology could potentially be a powerful tool to connect people to nature and outdoor recreation. Through the Internet, a plethora of information is now readily available about outdoor recreation activities and destinations. In a report prepared for the National Park Service entitled “Digital Natives, Analog Parks,” Dr. William Kornblum found that young adult New Yorkers were most likely to explore internet sources to learn about new activities or parks than any other information source (Kornblum, 2009). According to [trafficestimate.com](http://trafficestimate.com), the National Park Service Website ([nps.gov](http://nps.gov)) has received over 3.1 million visitors during February of 2014. This represents a 5.3% increase from February of last year. In the summer months (June-September), that number jumps to over 4 million visitors per month. Research firm comScore ranked [nps.gov](http://nps.gov) as the 10<sup>th</sup> most visited Federal Government website (comScore, 2009). More relevant to Pennsylvania, it is estimated that DCNR’s website ([dcnr.state.pa.us](http://dcnr.state.pa.us)) received over 3 million visits during February 2014 (using: [trafficestimate.com](http://trafficestimate.com)). It is clear that webpages are a primary way that outdoor recreationists learn about and plan their trips.

Digital technology and outdoor recreation clearly has both positive and negative impacts on participation in outdoor recreation. In a recent survey, the Outdoor Foundation attempted to better understand the role of technology within outdoor recreation from the perspective of young people. The Outdoor Foundation study, entitled “Technology + Social Media: an Outdoor Nation Special Report,” uncovered both positive and negative effects high tech tools have on the outdoor experience.

Positive effects include: the use of iPods and MP3 players to listen to music while running, the use of GPS for exploring new areas while remaining safer in the outdoors, and access to information like maps while using mobile phones. The study goes on to suggest ideas for incorporating technology into the outdoor recreation experience. These ideas include, geocaching, twitter/Facebook groups, text message scavenger hunts, and others (Outdoor Foundation, 2012).

Technology has positive practical applications to outdoor recreation participation as well. For example, there are great applications for the use of technology in communicating environmental related concepts. The use of podcast technology has been shown as a cost-effective way to communicate environmental education and interpretive concepts to park visitors (Henker & Brown, 2011). Guided cell phone tours are now commonplace at many US National Park Units (Grand Canyon NP, Minuteman Missile NHS, San Francisco Maritime NHP, among others). Site-specific tablet and mobile apps have also been developed to provide information about natural and cultural resources at a specific site. An example is from the Audubon Center at Francis Beidler Forest in South Carolina (see: [beidlerforest.audubon.org](http://beidlerforest.audubon.org)). In this light, digital technology can be seen as a compliment to the outdoor recreation experience.

As has been noted before, the use of technology within outdoor recreation is not without potential negative impacts. The Outdoor Foundation special report identified some of these negative effects as overreliance and over absorption with GPS devices, iPods and MP3s shut out natural sounds, and mobile phones “take away from the feeling of being out in nature, cut off from everything...” (Outdoor Foundation, 2012, p.9). These findings imply that the restorative benefits of nature-connection that have long been inherent within outdoor recreation participation are being whittled away by the excessive use of digital technology.

Author and journalist Richard Louv, would agree with these sentiments. In his seminal book, *Last Child in the Woods*, Louv describes his belief that people, especially children, are suffering from what he calls a “nature deficit disorder” (Louv, 2005). Louv believes that our society is becoming more and more dependent on screen media and less connected to the outdoors. Drawing from case studies and social/psychological research, Louv makes his case that our society needs to value the role that natural places play in our physical, mental, emotional, and development well-being. As a testament to this burgeoning movement, Louv founded the *Children & Nature Network* whose mission is to connect children, families and communities to nature through innovative ideas, evidence-based resources, as well as support broad-based collaboration and grassroots leadership.

Also noted in the literature is that virtual reality, the use of a computer generated 3D environments, could pose a threat to outdoor recreation and tourism. Virtual reality could be viewed as a substitute for the actual recreation/tourism experience. For example, instead of physically visiting the Grand Canyon, a visitor can virtually experience the Grand Canyon from the comfort of their home. More than that,

instead of investing the time and money to physically travel to the Grand Canyon, a virtual visitor could fly through it, take a plunge into the Colorado River, climb on the crumbly canyon walls, and then simply disconnect from the virtual reality apparatus in time for dinner. The seemingly limitless experience of virtual reality tourism could prove to be a serious competitor to outdoor recreation participation. This competition has the potential to result in a decline in actual outdoor recreation participation, along with the loss of support for conserving the environments in which outdoor recreation occurs (i.e. parks and protected areas; Guttentag, 2010).

Outdoor recreation and technology have been, and forever will be, linked together. It is the job of parks and recreation providers to understand the increasing digitization of our society. This requires flexibility on the part of park and recreation providers to use technology to create additional opportunities for connection to the outdoors as well as using it to foster a stewardship ethic. In the reality of parks and recreation administration, governmental agencies often have less flexibility in developing new strategies to utilize emerging trends that serve their demographic. In this case, digital technology is THE rapidly emerging trend. As park and recreation agency managers work within a slow-moving, closed bureaucratic system with layers of accountability (Crompton, 2008), there is a need for non-governmental agencies and park/forest “friends groups” to step forward and utilize digital technology in a way that can better connect recreation participants to outdoor settings through online content/conversations (Mowen & Havitz, In Press).

## **Recreation Infrastructure**

To adequately meet the needs of the public, park and recreation agencies need facilities that are safe, accessible, and desirable. Unfortunately, with the reality of tight organizational/agency budgets, it is difficult for parks and recreation providers to build and/or maintain facilities to adequately serve their constituencies. In this section, a brief overview of recreation infrastructure in Pennsylvania and the United States will be given based on applicable datasets.

In 2010, the Pennsylvania Department of Conservation & Natural Resources (DCNR) and the Pennsylvania Recreation & Park Society (PRPS) hosted more than 100 parks and recreation professionals from across Pennsylvania to gather state-of-the-art information from practitioners about current trends in the field, identify new opportunities and partnerships, and develop an action plan to improve local park and recreation services. One of the 10 Leadership Summit actions was to establish a diverse, partner driven Urban Parks Leadership Team to craft targeted strategies for Pennsylvania’s urban areas. To better understand the unique needs of urban areas, in 2012, DCNR and PRPS launched the Urban Recreation Initiative. At the six sponsored focus groups, , urban park and recreation managers identified maintenance problems as the biggest issue in managing their parks. Managers cited the lack of staff, lack of budget, lack of know-how, lack of priority, and the merger of parks into public works departments as all contributing to the difficulty of maintaining parks. The neglect of maintenance projects has also led to a drawdown

in capital improvement projects. Another frequent comment was that parks and recreation organizations were under significant pressure to pursue grant funding, but did not possess the ability to support the improvements proposed in the grant application (DCNR, 2013a).

Currently, DCNR maintains 4,700 buildings, 3,720 miles of roads, 842 bridges, 180 boat launches, 121 dams, and much more. Considering this sizable infrastructure portfolio, funding is required to maintain these structures. It is estimated that \$1 billion is needed to address infrastructure and maintenance needs within PA's State Park and State Forest system (Hess, 2013). In 2014, Governor Corbett announced the *Enhance Penn's Woods* initiative that will invest more than \$200 million in facilities such as campgrounds, trails, boat access, and land acquisition. Taking place during the 2013-2015 fiscal years, this investment represents the largest short-term funding commitment to state park and forest infrastructure in the history of the commonwealth (DNCR, 2013b).

The need for additional funding for recreation infrastructure in Pennsylvania is also echoed throughout the country. For example, Walls et al. (2009) conducted a survey of every State Park director in the United States. This report, entitled *Current Challenges, Funding, and Popularity Trends in State Parks: Responses to a Survey of Park Directors*, showed that 64% of State Park directors agreed that insufficient funds for capital expenditures and construction of new facilities was either a major challenge or a huge issue (with only 6% stating that it was not a challenge). Additionally, 74% of State Park directors believed that insufficient funding for operation and maintenance was either a major challenge or huge issue (with only a single state park director saying this issue was not a challenge). When asked if they felt complaints from citizens about park conditions were a challenge, 64% responded that it was a minor challenge (with only 11 percent saying this was not a challenge). Overall 78% stated that their single greatest challenge was either insufficient funds for operation/maintenance of parks (50%), or insufficient funds for capital expenditures and construction (28%; Walls et al., 2009).

According to the American Society of Civil Engineers (ASCE), in 2014 Pennsylvania received an over grade of "C-." This grade is comprised of twelve different categories including: bridges, dams, roads, and parks. The ASCE gave Pennsylvania's parks infrastructure a "B-." This makes it tied for second (with hazardous waste) behind rail infrastructure (ASCE, 2014).

On the national level, a lack of funding is leading to the decline in outdoor recreation infrastructure. In the most recent report card for America's infrastructure, ASCE (2013) gives public parks and recreation infrastructure in the US an overall grade of "C-." This ranked 5<sup>th</sup> when compared to the sixteen infrastructure related categories. This "acceptable" rating is not without its shortcomings. The ASCE points out that park authorities are being stretched to maintain their existing facilities, let alone increase services for growing populations (ASCE, 2013). The Trust for Public Land's

Center for City Park Excellence also reported that cities are saddled with a reported \$5.8 billion in deferred repairs and improvements (Trust for Public Land, 2011).

Deferred maintenance is a particular concern for the National Park Service. According to the National Parks Conservation Association, the current NPS maintenance backlog is \$12 billion (NPCA, 2013). The NPCA and the National Park Hospitality Association collaborated to develop 16 strategies that will enable the national park system to face increasing challenges related to maintaining the quality of park facilities and ranger services, a diminished capacity to protect and maintain existing resources and restrictions in the ability to relate our parks to all Americans” (p. 2). Some of these ideas include: enhancing park experiences through fees, expanded visitor services through concessioners, the utilization of tax monies from oil, gas and other mineral production on federal lands and waters, expansion of guest donation efforts, energy savings and utilities, and special fundraising event (NPCA & NPHA, 2013).

Similar to the NPS, the US Forest Service has accumulated a substantial maintenance backlog of \$5.3 billion. Sixty-percent of this total is related to deficient forest roads (ASCE, 2013). The US Army Corps of Engineers is the largest provider of water-based outdoor recreation in the nation hosting 370 million recreation visits annually (USACE, 2014). In the face of continued funding cuts and growing public use, both agencies had to develop strategic plans that address funding for recreation infrastructure and maintenance (ASCE, 2013).

In a recent study, Mowen, Hickerson, and Kaczynski (2013) looked at how local and state investments of park rehabilitation projects can enhance community and user benefits (Mowen, Hickerson, & Kaczynski, 2013). Their study of a natural experiment at Cedar Creek Parkway in Allentown showed that when a local park resource received capital investments, users perceived that they visited more frequently, stayed longer at the park, engaged in higher levels of moderate physical activity levels, and, most importantly, perceived increases in park quality and overall satisfaction compared to the pre-renovation period and compared to a comparison park with no renovations. This study presented evidence that investment in park renovations can have a positive influence on visitors and the community. These impacts were illustrated to justify the monetary state and local investments it took to renovate this park.

### **Tourism/Economic Development**

Not only does outdoor recreation provide important physical, mental, and developmental benefits, it also provides tangible economic impacts to the areas in which it occurs. These financial benefits serve as a justification for future funding from governmental sources through their positive return on investment figures. Outlined below are summaries of Pennsylvania-specific studies that have attempted to monetarily quantify the economic contribution of outdoor recreation services and participation.

In 2012, DCNR commissioned the Pennsylvania Visitor Use Monitoring project to better understand the characteristics, behaviors, expenditures, attitudes, and evaluations of visitors to Pennsylvania State Parks and State Forests. This multi-year study was designed to answer broad questions such as: Who are our visitors? and What are our visitors looking for out of their State Park/State Forest experiences? Though the study is still on-going, Year 1 and Year 2 survey results are available for both the State Park and State Forest data (Graefe et al., 2013; Mowen, et al., 2013). Included in these reports are economic and expenditure questions that provide more insight into the economic impact of our State Parks and State Forests.

In Year 1, surveying was completed at Bald Eagle, Cherry Springs, Hyner Run, Kettle Creek, Lyman Run, and Sinnemahoning State Parks. Additionally, surveying was completed in the Sproul and Susquehannock State Forests. The average trip expenditures for all visitors to all six Year 1 State Park visitors was \$123.95. The average trip expenditures for all visitors to the Sproul State Forest was \$80.51 and the average trip expenditures for all visitors to the Susquehannock State Forest was \$206.81. In Year 2, surveying was completed at Keystone, Laurel Hill, Ohiopyle, Tobyhanna, Jacobsburg, and Promised Land State Parks. Additionally, surveying was completed in the Delaware and Forbes State Forests. The average trip expenditures for all visitors to all six Year 2 State Parks was \$187.21. The average trip expenditures for all visitors to the Delaware State Forest was \$87.43 and the average trip expenditures for all visitors to the Forbes State Forest was \$88.88. These findings illustrate that both Parks and Forests contribute to the economic vitality of the communities surrounding these lands as well as Pennsylvania as a whole.

In February 2012, DCNR and Penn State released a document entitled: *The Economic Significance and Impact of Pennsylvania State Parks: An updated assessment of 2010 park visitor spending on the state and local economy* (Mowen, Graefe, Trauntvein, & Stynes, 2012). This study served as an update to a previous analysis on the economic impact of Pennsylvania State Parks. Key findings showed that Pennsylvania State Parks hosted \$37.9 million visitors who spent \$859 million on their trips. Direct contribution of visitor spending to the state economy was \$628.7 million in sales and 9,435 jobs. The study found that the income return (value added) was that, for every dollar invested in Pennsylvania State Parks from the General Fund in 2010, \$12.41 of income is returned to the state economy. This level of return was higher than previous estimates based increased visitation over the initial report. Similar to the PA-VUM reports, the purchase of gas represented the largest percentage of visitor spending.

The Rails-to-Trails Conservancy has conducted a number of visitor use and economic impact studies on rail-trails in Pennsylvania. A recent study focused on the D & L Trail in southeastern Pennsylvania (Knoch, 2012). From the study, the researchers concluded that survey respondents spent an average of \$425.12 on hard goods such as clothing, shoes, bicycles, and accessories. Additionally, survey

respondents spent an average of \$33.49 per visit on soft goods (such as food and beverage). Finally, of those who indicated they had overnight stays while visiting the trail (69.4%), the average lodging expense was \$132.36 per night, with an average stay of 2.2 nights. In total, it is estimated that 282,769 annual user visits to the trail results in a total economic impact of \$19,075,921. From this figure, \$16,358,201 was estimated to be directly injected into the local economy.

Another Rails-to-Trails Conservancy study focused on the economic impact of the Erie to Pittsburgh Trail (Tomes & Knoch, 2013). From the study, researchers found that survey respondents spent an average of \$337.50 on hard goods and \$21.62 on soft goods. Only 13 percent of respondents reported paying for overnight lodging for an average of \$80.20 per night. In total, an estimated 158,507 annual user visits resulted in an impact of \$7,479,348 in 2013 with \$6,928,620 of that going directly back to the local economies.

On a broader scale, Tourism Economics completed an economic analysis of tourism in Pennsylvania for visitpa.com. This 2012 study found that the total tourism industry sales in Pennsylvania was \$38.4 billion in 2012. Of that \$38.4 billion, just under 17% included spending associated with recreation (both indoor and outdoor). This equates to roughly \$6.4 billion dollars in spending, making it the third most profitable industry in relation to tourism (behind transportation, and food/beverage services). Since 2008, recreation-related spending has increased 14.3% from \$5.6 million in 2008 to \$6.4 million in 2012. Though the classification for “recreation” in this study included both indoor and outdoor recreation, it is clear that outdoor recreation can be considered an important resource in Pennsylvania’s tourism and economic well-being (Tourism Economics, 2012).

On a national level, The Outdoor Industry Association (OIA) publishes an annual *Outdoor Recreation Economy* guide that details the economic value of outdoor recreation in the United States. Based on survey data collected in 2011 and 2012, OIA estimated that Americans spent \$646 billion annually on outdoor recreation supporting 6.1 million jobs. State-specific numbers were also provided. OIA estimated that outdoor recreation in Pennsylvania accounted for \$21.5 billion in consumer spending, 219,000 direct Pennsylvania jobs, \$7.2 billion in wages and salaries, and \$1.6 billion in state and local tax revenue. These numbers form a valuable source of economic evidence which highlight the importance of outdoor recreation to the nation and to Pennsylvania (Outdoor Industry Association, 2012).

The business of outdoor recreation is an undeniable asset to economies on the local, state, and national levels. With such a high return on investment ratio, outdoor recreation can be valued for its economic benefits in addition to its inherent physical, emotional, and developmental benefits. In the face of budgetary challenges, there is a need to substantiate the economic value of funding for parks and outdoor recreation and sustain the investment. The studies detailed above provide evidence for such investments into the future.

## Health and Wellness

Human health and well-being are a fundamental element of park and outdoor recreation services. Indeed, the historical roots of the park and outdoor recreation movements of the late 19<sup>th</sup> Century can be traced back to the pressing health concerns facing the nation at that time. Creating and expanding park and outdoor recreation opportunities were viewed as a way to rejuvenate a rapidly industrialized workforce, address youth development concerns, and improve overall sanitation and health in America's cities. National and state parks/forests were also established to conserve significant natural resources, while also providing a place for Americans to pursue active, healthy recreation. These services were established, not on the basis of scientific evidence, but rather the faith that early park champions placed on their inherent health value.

While many of those original health concerns are still relevant today, technological and societal changes have brought about a new set of health challenges, which confront modern society. In our efforts to reduce labor intensive work, we have become a victim of progress. Americans are getting less physical activity, are becoming increasingly overweight, and are undergoing stress/anxiety effects as a result of a society that is constantly "plugged in" and disconnected from nature.

Park and recreation services, too, have evolved since the early movement. The mid-20<sup>th</sup> Century was characterized by impressive gains in park and outdoor recreation areas/programs along with the growth of professional, public and private organizations who managed these opportunities. However, the late 20<sup>th</sup> Century witnessed a retrenchment of these investments and saw the field straying away from its role in addressing the core social problems of the nation. Moreover, the recent Great Recession had significant impacts on park capital budgets/staffing and may have lowered parks' capacity to sustain services (Weitzel & Mowen, 2010).

Nevertheless, the nation's increasing physical and mental health concerns have now brought that core mission back into focus. Park and outdoor recreation services are once again being recognized as a central asset in combating these concerns (Godbey & Mowen, 2010). Funding support for environmental and policy health research has increased over the past decade with public park and recreation areas being a core focus of evidence-based research and evaluation. A range of professions and stakeholders from public health to transportation/community planning are examining the role of park and outdoor services in shaping a range of health outcomes. The evidence base in the scientific literature is considerable and continues to proliferate. Much of the current research focuses on the associations between park settings/environments (as well as specific park features on physical activity and BMI), but new studies are considering program and policy impacts and are examining a wider range of health outcomes related to mental well-being and stress reduction. The majority of this work is correlational; establishing a connection between park settings, capacity, and programming on physical activity, BMI, and mental health indicators. What follows is a brief summary of this evidence.

*Living closer to a park or outdoor recreation area is associated with higher levels of use and physical activity and lower levels of BMI.*

Park proximity is associated with higher levels of park use and physical activity among a variety of populations, particularly among youth. In their systematic review of the park and physical activity literature, Kaczynski & Henderson (2007) found that 8 of the 13 studies that specifically examined parks and physical activity reported positive associations. A national survey of U.S. adults found that perceived access to parks and recreational facilities were positively related to self-reported physical activity. Those who perceived that park facilities were accessible to them were almost twice as likely to meet recommended physical activity levels as those who did not perceive parks as being accessible (Brownson, Baker, Housemann, Brennen, & Bacek, 2001). Another study of 3,000 youth in Atlanta, GA found that youth with recreation or open space facilities close to their homes were two to three times more likely to walk than youth with no parks nearby (Frank, Kerr, Chapman, & Sallis 2007). Likewise, Duncan and Mummery (2005) found that people with parkland within 0.6 km of their residence were 41% more likely to meet recommended physical activity levels.

*The more parks and park area that exists within a community, the more likely residents are to be physically active and the less likely they are to be overweight.*

Beyond proximity, park capacity (number of parks, community landmass devoted to parks/open space) is also associated with physical activity. For example, Li et al. (2005) found that Portland, Oregon communities with more recreation facilities and green space had higher levels of walking than those communities with less capacity. A six-city study of adolescent females found that each additional park within a ½ mile of their homes resulted in 17 more minutes of moderate-to-vigorous physical activity (MVPA) (Cohen et al. 2006). Park capacity is linked with weight status as well. For example, a recent study of New York City neighborhoods found that park density was inversely correlated with adult BMI levels. The more park area within the community, the lower residents' BMI levels were (Stark et al. 2014). In their study on youth health disparities in the built environment, Gordon-Larson, Nelson, Page, and Popkin (2006) found that as the number of recreation facilities within a block of youths' homes increased their odds of being physically active increased and their odds of being overweight decreased. Finally, an Oregon macro count-level analysis conducted by Rosenberger, Berger, and Kline (2009) found that the prevalence of hiking and urban trails was associated with higher proportions of physically active adults. Moreover, counties where people were more engaged in non- motorized trail-related activities, road and street activities (e.g., walking, jogging, biking), and other outdoor sports were more likely to have higher overall proportions of physical activity.

*Park and recreation areas with specific features and with a wider range of features are more likely to attract visitors and more likely to be associated with increased physical activity.*

The recreation opportunities provided *within* parks and outdoor recreation areas also have an effect on health outcomes. Recent evidence shows that certain park features attract higher levels of physical activity and that parks with a wider range of features (e.g., more things to do) attract higher visitation and higher physical activity levels. For example, within parks, people tend to be more physically active on paved trails, playgrounds, and at sport facilities (e.g., soccer fields, ball courts; Floyd, Spengler, Maddock, Gobster, & Suau, 2008). Likewise, Rung, Mowen, Broyles, and Gustat (2011) found that basketball courts were associated with higher individual and park level energy expenditures while playgrounds were associated with higher overall park energy expenditures. Kaczynski, Potwarka, and Saelens (2008) examined park features in 33 Ontario, Canada parks and found that parks with paved trails were 26 times more likely to be used for physical activity than parks without such trails. They also found that parks with more features (more activity options, more things to do) were more likely to be used for physical activity than parks with fewer features (Kaczynski et al. 2008).

*The aesthetics, maintenance and condition of parks and park features contribute to their use and the physical activity that occurs in these settings.*

Parks that are aesthetically pleasing and well maintained (in good condition) are also likely to provide increased health benefits. For example, a qualitative study conducted by Corti, Donovan, and Holman (1996) concluded that parks were more likely to promote physical activity if they were aesthetically pleasing to visitors, with tree lined paths rather than empty open space. Beyond aesthetics, the condition and maintenance of parks correspond with use and physical activity. For example, a study of Montreal neighborhood parks found that parks with poor maintenance/condition ratings were more likely to exist in communities with poor health status (e.g., life expectancy, cancer incidence, heart disease mortality rates). Romero's (2005) study found that adolescent physical activity was associated with perceptions of higher quality local facilities. Rung et al. (2011) examined the relationship between park feature condition and park use/physical activity. They found that the condition of park basketball courts was positively associated with higher utilization levels and total energy expenditures within these areas, but that the condition of green space or open space was negatively related to use and physical activity. Despite the evidence presented in these studies, it is worth noting that a number of other investigations report insignificant or negative relationships between park conditions and use/physical activity (e.g., Bai, Stanis, & Kaczynski, 2013) and more science is needed to substantiate the nature of these relationships.

*Organized programming and supervision at parks and outdoor recreation areas is associated with visitation levels and with the physical activity that occurs in these spaces, particularly among youth.*

Park and outdoor recreation areas can provide opportunities for both unstructured and structured activities. Structured programs can contribute to visitation levels within parks and parks that have an active programming element often correlate with higher levels of physical activity. For example, a study of Los Angeles city parks found that parks with a greater number of supervised activities and programs had higher visitation levels. Having events at the park, including sport competitions and other attractions was the strongest correlate of use and community level physical activity (Cohen et al., 2010). In a related analysis across communities with varying poverty levels, these authors found the strongest correlates of park use to be the number of part-time staff, knowing staff members, as well as the number of park programs provided (Cohen et al. 2012).

Collectively, the evidence highlighted above suggests that, the closer people live to parks; the more parks that are available, the more things there are to do in parks (either through features or programming), and the more well-maintained parks are; the more likely they are to be used and the more physical activity that occurs in these spaces. However, the health value of park and outdoor recreation services extend beyond their associations with physical activity and weight status. Park and outdoor recreation areas/experiences can contribute to psychological or mental health outcomes as well.

*Spending time in parks, natural areas and open-space is associated with favorable physiological and mental health outcomes*

Much of the research concerning relationships between parks and mental health focus on the effects of “being in nature or being in green settings.” These studies have demonstrated physiological effects from spending time in a park or outdoor recreation area and have assessed how perceived park experiences contribute to reduced stress/anxiety levels. It has been suggested that natural park and outdoor environments promote well-being through their self-restorative properties (e.g., helping visitors clear their mind and re-energize themselves; Kaplan & Kaplan, 1989). These effects have been assessed using perceived (moods, anxiety levels) and objective (blood pressure, pulse, cortisol) measures. For example an experimental study conducted by Park, Tsunetsugu, Kasetani, Kagawa, and Miyazaki (2010) found that even a brief 15 minute walk in a forest setting reduced stress more than that same walk in a city-like environment. Nature walkers had lower pulse rates, blood pressure, cortisol concentrations, and sympathetic nerve activity.

A number of older studies have found similar relationships using perceived measures of stress and mood. Godbey and Blazey’s (1983) study of older adult park users found that, among those who engaged in light to moderate park activity, about half reported being in a better mood after visiting parks. Hull and Michael (1995) examined the role of time spent in park settings as it related to reported stress levels. They found that the longer participants stayed in the parks, the less stressed they became. Moreover, respondents felt less calm and more anxious at home than

they did at the park. Caltabiano (1995) studied the effects of leisure participation on illness symptoms and found that outdoor physical activity (e.g., sports) had the strongest positive effect on health, regardless of stressful life events. Grahn & Stigsdotter (2003) assessed the relationships between self-reported stress and use of urban green spaces. They found statistically significant relationships between urban green space use and stress reduction regardless of age, sex, or socio-economic status. The more these green spaces were used, the less often stress-related illnesses were reported.

In addition to their stress-reduction properties, outdoor recreation experiences at parks and other forms of green space have been linked to increased concentration and cognitive functioning. For example, Taylor and Kuo (2009) found that children with attention deficit hyperactivity disorder (ADHD) who walked in urban parks scored significantly higher on tests of concentration with effects as large as peak performance boosts from ADHD medications.

While the linkages between nature and mental health is promising and intuitively appealing, more research on the effects of parks and specific park interventions on reducing stress and anxiety are needed. Such investigations could focus on how increased park access (as well as increased park capacity/quality) correspond with gains in perceived and objectively measured mental health outcomes.

*Leveraging parks and outdoor recreation services to increase their health impact.*

The current evidence base suggests a strong connection between parks and outdoor recreation services and health. Recognizing this connection is one thing; evaluating the worth of park and outdoor recreation initiatives to enhance health is another matter entirely. What current efforts are working? What specific park and outdoor recreation strategies and action steps are most effective in increasing health? The evidence informing these questions is less conclusive; although a number of health improvement programs/initiatives are generally based on the evidence as outlined in major health improvement plans (e.g., National Prevention Strategy; United States National Physical Activity Plan) and the Guide to Community Preventive Services (Task Force of Community Preventive Services, 2005).

Of particular relevance to infrastructure change, a number of studies have documented the impact of park capital investments on park use and physical activity. These studies generally conclude that park, playground, and sport facility renovations increase use among particular populations (Colabianchi Kinsella, Coulton, & Moore, 2009; Mowen, Hickerson, & Kaczynski, 2013; Tester & Baker, 2009; Veitch, Ball, Crawford, Abbott, & Salmon 2012), but that other external factors beyond the physical renovation (such as programming and promotional efforts) shape park use and physical activity (Cohen et al., 2009).

Efforts to improve parks' health contributions involve a variety of simultaneous efforts/activities collaboratively with the planning, transportation, health,

education, and business sectors to name a few. There are, in fact, a wide variety of avenues to pursue in the effort to promote physical activity, physical health, and mental health. For example, The United States National Physical Activity Plan has identified key strategies that the parks and outdoor recreation sector can pursue collaboratively with other sectors such as infrastructure investments, programming, personnel training/capacity building, and policy changes to increase physical activity (Mowen & Baker, 2010). Community-wide campaigns that position parks and outdoor recreation as an essential part of our health care system, can elevate the publics' awareness and support of these services (Hoehner et al. 2010) and these campaigns can occur in tandem with specific park personnel, program, and facility investments to maximize their impact.

One promising effort to promote park use (and ultimately improved physical activity and health outcomes) is to engage/enlist the medical community to prescribe parks as a means to ameliorate chronic health conditions and risk markers. While these programs have been warmly received within the park and outdoor recreation industry; their long term effects upon various health outcomes are unknown. Federal, state, and local policy changes related to improved park funding, program support, zoning/planning ordinances decisions can also impact park capacity and, indirectly, population-level health outcomes. However, with a few exceptions (e.g., shared use policies), the evidence concerning the health merit of these policies is not well established.

The potential to re-energize park and outdoor services and improve their contribution to human health is considerable. A multi-faceted set of coordinated and measurable health improvement strategies/action steps should be considered by park and outdoor recreation providers working in cooperation with allied disciplines/organizations. The existing evidence-base suggests park and recreation professionals:

1. Strive to enhance the publics' access or proximity to park and outdoor recreation services (either through improved connections or new parks/facilities)
2. Maintain or improve the quality/condition of low-cost outdoor recreation facilities
3. Increase the number of organized programs and active features within existing park settings
4. Enlist partners to share in the provision and promotion of healthy outdoor recreation activities.

### **Local Parks and Recreation**

Local parks serve as the primary outdoor recreation destination for many citizens within the United States. As opposed to national or state parks that are often difficult to get to, local parks are "right in our backyards." Numerous studies have examined management, challenges, and funding of local parks in the United States.

For over a decade, The Trust for Public Land has conducted an annual report entitled *City Park Facts* that gathers information on urban park systems (The Trust for Public Land, 2012). Data collected analyzes acreage, facilities, staffing, budgets, usership, and other metrics. The 2012 City Park Facts report featured an overview of the 100 most populous cities in the United States. The 100 cities contained over 1.5 million acres of parkland within their city limits. Two Pennsylvania cities were included in this report: Philadelphia and Pittsburgh.

Philadelphia administers 11,187 park acres (13% of the city land area) to serve their population of 1,526,006 residents. Pittsburgh administers 3,122 park acres (8.8% of the city land area) to serve their population of 305,704 residents. Funding allocations for city parks in Philadelphia totaled over \$71.3 million a year amounting to a total expenditure of \$47 per resident. This ranks Philadelphia in the bottom quarter of funding allocations. Funding allocations for city parks in Pittsburgh totaled \$32.7 million a year amounting to a total expenditure of \$107 per resident. This ranks Pittsburgh in the upper half of funding allocations compared to the other 100 most populous cities.

Philadelphia contains two of the most visited city parks in the country including Fairmont Park (with 10,000,000 visitors annually) and Independence National Historical Park (with 3,751,000 visitors annually). Pittsburgh contains two of the top 50 most visited city parks including Schenley Park and Plaza (with 1,750,000 visitors annually) and Point State Park (with 1,500,000 visitors annually). Finally Philadelphia ranks fifth out of the 40 largest cities in the percent of population within walkable park access (91%; The Trust for Public Land, 2012).

Funding for local parks has been an issue of concern for managers over the years. A 2009 Resources for the Future report surveyed 46 city and county parks and recreation directors about the current issues/challenges they face while providing park and recreation services to the public (Walls, 2009a). All respondents believed insufficient funds for the operation and maintenance of parks were a challenge. This was also the single biggest challenge reported by respondents with 24 local park managers agreeing this was the main challenge they face. Ninety-three percent of park managers stated that over 50% of their operating budget came from a general fund. In total, 76% of park managers said they received their funding from a general fund. The next largest source came from fees, facility rentals, and leases (15%).

Federal support of local parks through grant programs is an important way to leverage local park investments. However, federal funding for local parks has decreased dramatically over the past several decades (Walls, 2009b). In particular, funding from federal government programs such as the Land and Water Conservation Fund (LWCF) and the Urban Park and Recreation Recovery Program (UPARR) declined sharply in the past 20 years. LWCF funding is currently awarding funding at a level around one-tenth of its original rate. UPARR funding has declined severely since 1984 and was disbanded in 2002. With the decline of these two

traditional funding sources for local parks and recreation, the federal government has played a smaller role in funding local park and recreation facilities.

In 2010, DCNR and PRPS brought together 100 park and recreation professionals from across Pennsylvania who crafted a list of “Ten Commandments” to produce a new local park and recreation renaissance in Pennsylvania. Since their inception, these ten principles have helped to guide the direction of local park and recreation services in this new decade. Included within these principles are the need to 1) develop a statewide marketing campaign for community recreation and parks; 2) publicize the economic, social, and human health benefits of local recreation and parks; 3) stress the essential nature of park and recreation services by specifically talking about crime reduction, health promotion, lifestyle and behavior change, and vandalism reduction; 4) provide park and recreation agencies with specific funding strategies both to obtain new funds from alternative sources and derive maximum benefit from existing revenues; and 5) establish an “Urban Parks Leadership Team” to confront the unique issues and problems facing that segment of Pennsylvania’s population.

In 2012, DCNR and PRPS launched the Urban Recreation Initiative to develop priorities and recommendations for urban parks and recreation in Pennsylvania. The group recommended that a statewide urban parks and recreation program be established. They also believed that parks and recreation organizations would benefit from “talking points” to effectively position local services and voice their value in the community to public officials. Programming and services were cited as being essential to increasing park use, encouraging active living, connecting people to nature, and promoting social equity. Participants also felt that Pennsylvania’s grant programs should allow for more innovation in programming, managing and maintaining facilities, and providing services. Finally, as discussed earlier in the infrastructure section of this report, maintenance was identified as the chief problem within urban parks and recreation systems (DCNR, 2013a).

As part of the 2014-2019 SCORP research effort, a survey was conducted of Pennsylvania local park and recreation providers to assess the needs, priorities, and challenges they face. The sample was drawn from elected officials, appointed officials, and park and recreation directors who all have a hand in providing outdoor recreation to the public (N=1,037). The response represented a predominantly rural, small government sample with limited facility, staffing, and budgetary capacity. To illustrate, 55% of respondents said their agency/local government served a population of less than 5,000 residents (Mowen, Graefe, Elmendorf, & Barrett, 2014). This predominately rural response contrasts well with data generated through the Urban Recreation Focus Group Initiative. Though the two research efforts differed in their sample composition, the findings were relatively similar. Included in the provider survey were a number of questions similar in design and content to the Walls (2009a) as well as a host of other potential challenges that local park and recreation providers might face.

Provider survey results indicated that the core challenges involved fiscal/funding issues. Particularly, the most challenging issue was to develop alternative/non-traditional revenue sources for parks and recreation (78% reporting this as a significant or major challenge). Another challenging issue was insufficient funds to rehabilitate existing facilities. In total, all six fiscal/funding issues listed in the questionnaire received over half of the respondents reporting them as significant or major challenges, as well as being ranked among the top eight challenges that local park and recreation providers faced in Pennsylvania. These other fiscal/funding challenges included: insufficient funds for land acquisition, insufficient funds for programs/activities at parks, insufficient funds for operation & maintenance at parks, and retaining allocated local government funds for parks and recreation.

Another challenge for local park and recreation providers related to management/maintenance issues. In particular, creating new park and recreation facilities was identified by 75% of respondents as a significant or major challenge. Other reported challenges included creating and enhancing trail access and connectivity, responding to emerging or new types of outdoor recreation activities, the ability to properly staff and trail employees/volunteers, and mobilizing citizens to support and advocate for park and recreation services.

Collectively, this local provider survey and other existing data sources suggest that local park and recreation services, while common and accessible to a wide population, have experienced considerable challenges related to their capacity to invest in parks and provide recreation programs to a changing population. Local parks are clearly important to the citizens of the United States and the residents of Pennsylvania. Their close proximity and reliable availability are what make them an invaluable public resource. However, fiscal/funding, maintenance/management, and programming/services issues have made the sustainable provision of these public goods quite difficult to achieve. More detailed results from the Pennsylvania provider survey can be found in the Pennsylvania Outdoor Recreation Provider Survey Report posted on the [paoutdoorrecplan.com](http://paoutdoorrecplan.com) website.

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